

**ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT
INTENTIONAL RADIATOR CERTIFICATION TO
FCC PART 15 SUBPART C AND CANADIAN RSS 210 ISSUE 8
REQUIREMENTS
OF**

Tablet

MODEL No.: DMTAB-NV08B

FCC ID: ZYQ-DMTAB-NV08B

IC:10558B-DMTABNV08B

Trade Mark: dreamtab

REPORT NO.: ES140304032E1

ISSUE DATE: March 20, 2014

Prepared for
KEEN HIGH HOLDING (HK) LIMITED
Unit 13, 7/F Technology Park, 18 On Lai street Shatin New Territories HK

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VERIFICATION OF COMPLIANCE

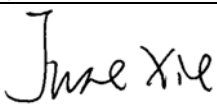
Applicant:	KEEN HIGH HOLDING (HK) LIMITED Unit 13, 7/F Technology Park, 18 On Lai street Shatin New Territories HK
Manufacturer:	KEEN HIGH HOLDING (HK) LIMITED Unit 13, 7/F Technology Park, 18 On Lai street Shatin New Territories HK
Product Description:	Tablet
Model Number:	DMTAB-NV08B
File Number:	ES140304032E1
Date of Test:	March 4, 2014 to March 19, 2014

We hereby certify that:

The above equipment was tested by SHENZHEN EMTEK CO., LTD. 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 15.247 and Canadian RSS 210 Issue 8 Requirements.

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

Date of Test : March 4, 2014 to March 19, 2014

Prepared by : 
June Xie/Editor

Reviewer : 
Joe Xia/Supervisor

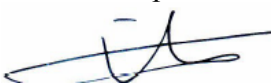
Approve & Authorized Signer : 
Lisa Wang/Manager

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1. General Information

1.1 Product Description

A major technical descriptions of EUT is described as following:

A). Operation Frequency:

2.4G 802.11b/g/n(HT20):2412MHz-2462MHz; 802.11n(HT40): 2422MHz-2452MHz

5G 802.11a/n(HT20):5180-5240 MHz; 5745-5805 MHz;

802.11n(HT40): 5190-5230 MHz; 5755-5795 MHz;

Bluetooth 4.0: 2402-2480MHz

RFID: 13.56MHz

B). Modulation:

GFSK, 1/4 Π -DQPSK, 8DPSK for Bluetooth DSS+EDR;

GFSK for Bluetooth DTS(BLE)

OFDM with BPSK/QPSK/16QAM/64QAM for 802.11a/g/n,

DSSS with DBPSK/DQPSK/CCK for 802.11b; ASK for RFID;

C). Number of Channel: 2.4G 802.11b/g/n(HT20): 11channels; 802.11n(HT40): 7channels

5G 802.11a/n(HT20): 8channels; 802.11n(HT40): 4 channels; RFID: 1channel;

Bluetooth 4.0 DSS: 79 channels; Bluetooth 4.0 DTS: 40 channels;

D).Max Peak Conducted Power: 2.4G wifi 15.1dBm, 5G wifi 7.91dBm, Bluetooth 4.0

DSS: -1.86dBm; Bluetooth 4.0 DTS:0.139dBm

E) Antenna Gain: 1.4dBi for 2.4G WIFI&BT; 2.3dBi for 5G WIFI;

F). Antenna Type: Ceramics antenna, ,

G). Power Supply: DC 3.7V from Li-ion Battery and DC 5V from AC adapter

H). Adapter : Model: W12-010N3A

Input: AC 100-240V, 50/60Hz, 0.3A

Output: DC 5.0V, 2A

Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	149	5745
38	5190	151	5755
40	5200	153	5765
44	5220	157	5785
46	5230	159	5795
48	5240	161	5805

Note:

1. This device is MID included 802.11b, 802.11g, 802.11n 2.4GHz and 802.11a/n 5GHz transceiver function.
2. Test of channel was included the lowest middle and highest frequency in lowest data rate and to perform the test, then record on this report.

1.2 Related Submittal(s) / Grant(s)

This submittal(s) (test report) is intended for FCC ID: ZYQ-DMTAB-NV08B filing to comply with Section 15.247 of the FCC Part 15, Subpart C Rules and also intended for IC ID:10558B-DMTABNV08Bfiling to comply with Canadian RSS 210 Issue 8.0.

The composite system is compliance with Subpart B is authorized under a DOC procedure.

1.3 Test Methodology

All the test program has follow FCC new test procedure KDB558074 D01 v03r01, Both conducted and radiated testing was performed according to the procedures in ANSI C63.10 (2009). Radiated testing was performed at an antenna to EUT distance 3 meters.

1.4 Special Accessories

Not available for this EUT intended for grant.

1.5 Equipment Modifications

Not available for this EUT intended for grant.

1.6 Test Facility

Site Description

EMC Lab.

: Accredited by CNAS, 2013.10.29
The certificate is valid until 2016.10.28
The Laboratory has been assessed and proved to be in compliance with CNAS/CL01: 2006(identical to ISO/IEC17025: 2005)
The Certificate Registration Number is L2291

Accredited by TUV Rheinland Shenzhen 2010.5.25
The Laboratory has been assessed according to the requirements ISO/IEC 17025

Accredited by FCC, October 28, 2010
The Certificate Registration Number is 406365.

Accredited by Industry Canada, March 05, 2010
The Certificate Registration Number is 46405-4480.

Name of Firm

: SHENZHEN EMTEK CO., LTD.

Site Location

: Bldg 69, Majialong Industry Zone,
Nanshan District, Shenzhen, Guangdong, China

2. System Test Configuration

2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT Exercise

The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

2.3 Test Procedure

2.3.1 Conducted Emissions

The EUT is placed on a turn table which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4-2009 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-Peak and average detector mode.

2.3.2 Radiated Emissions

The EUT is placed on a turn table which is 0.8 m above ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. Emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes according to the requirements in Section 13.1.4.1 of ANSI C63.4-2009.

2.4 Configuration of Tested System

Fig. 2-1 Configuration of Tested System

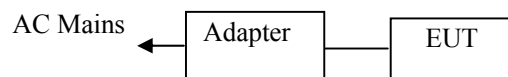


Table 2-1 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID	IC ID	Series No.	Note
1.	Tablet	dreamtab	DMTAB-N V08B	ZYQ-DMTAB-NV08B	10558B-DMTABN V08B	N/A	EUT

Note:

- (1) Unless otherwise denoted as EUT in 『Remark』 column, device(s) used in tested system is a support equipment.

3. Description of Test Modes

These is Digital Transmission system (DTS) and have modulation OFDM, DSSS, DBPSK, DQPSK, CCK, 16QAM, 64QAM. According exploratory test, EUT will have maximum output power in those data rate (802.11a/n: MCS0), so those data rate were used for all test.

The equipment enables high-speed access without wires to network assets. This adapter uses the IEEE 802.11 protocol to enable wireless communications between the host and Wireless router.

For 802.11a/n(HT20):

1. For lowest channel : 5180MHz (Channel 36)
2. For middle channel : 5200MHz (Channel 40)
3. For highest channel : 5240MHz (Channel 48)

For 802.11n(HT40):

4. For lowest channel : 5190MHz (Channel 38)
5. For highest channel : 5230MHz (Channel 46)

For 802.11a/n(HT20):

6. For lowest channel : 5745MHz (Channel 149)
7. For middle channel : 5765MHz (Channel 153)
8. For highest channel : 5805MHz (Channel 161)

For 802.11n(HT40):

9. For lowest channel : 5755MHz (Channel 151)
10. For highest channel : 5795MHz (Channel 159)

4. Summary of Test Results

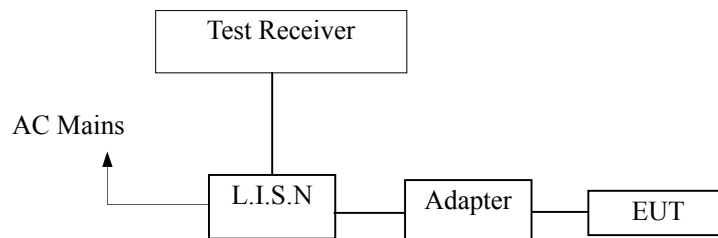
FCC Rules	IC Rule	Description Of Test	Result
§15.207	RSS-GEN, Section 7.2.2	AC Power Conducted Emission	Pass
§15.407(b), §15.209	RSS-210, A9.2, A9.4	Radiated Emission	Pass
§15.407 (a)	RSS-210, A9.2, A9.4	26dB bandwidth and 99%dB Bandwidth	Pass
§15.407 (a)	RSS-210, A9.2	Maximum conducted output Power	Pass
§15.407 (a)	RSS-210, A9.2	Power density	Pass
§15.407 (b)	RSS-210, A9.2	Band edge test	Pass
§15.407 (a)	N/A	Peak Excursion	Pass

5. Conducted Emissions Test

5.1 Measurement 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.

5.2 Test SET-UP (Block Diagram of Configuration)



5.3 Measurement Equipment Used

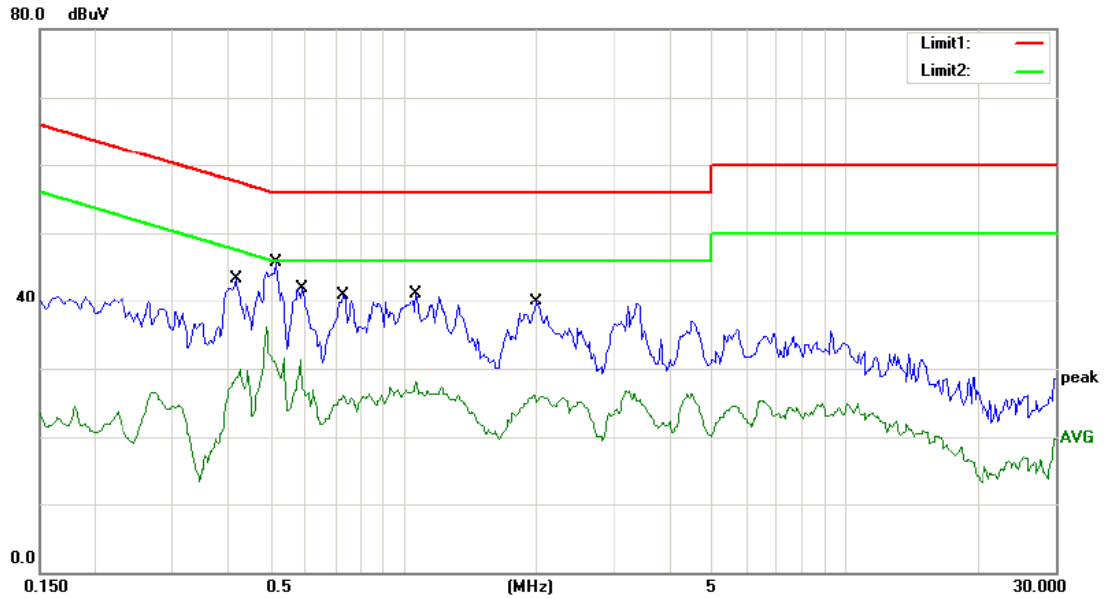
Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Test Receiver	Rohde & Schwarz	ESCS30	828985/018	05/29/2013	05/28/2014
L.I.S.N.	Schwarzbeck	NNLK8129	8129203	05/29/2013	05/28/2014
50Ω Coaxial Switch	Anritsu	MP59B	M20531	N/A	N/A
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100006	05/29/2013	05/28/2014

5.4 Conducted Emission Limit

Conducted Emission Frequency(MHz)	Quasi-peak	Average
0.15-0.5	66-56	56-46
0.5-5.0	56	46
5.0-30.0	60	50

- Note:** 1. The lower limit shall apply at the transition frequencies
 2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

5.5 Measurement Result



Site Conduction #2

Phase: **N**

Temperature: 26

Limit: (CE)FCC PART 15 class B_QP

Power: AC 120V/60Hz

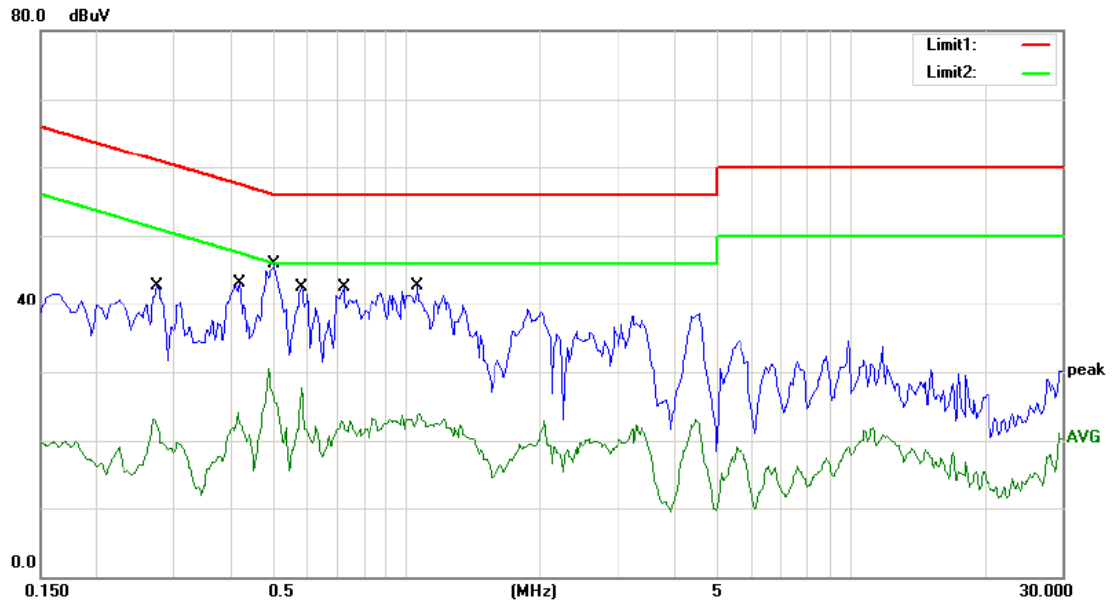
Humidity: 60 %

Mode: Bluetooth & WIFI & RFID on

Note:

No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	0.4150	43.28	0.00	43.28	57.55	-14.27	QP	
2	0.4150	30.00	0.00	30.00	47.55	-17.55	AVG	
3 *	0.5150	45.63	0.00	45.63	56.00	-10.37	QP	
4	0.5150	31.45	0.00	31.45	46.00	-14.55	AVG	
5	0.5900	41.80	0.00	41.80	56.00	-14.20	QP	
6	0.5900	30.94	0.00	30.94	46.00	-15.06	AVG	
7	0.7300	40.93	0.00	40.93	56.00	-15.07	QP	
8	0.7300	26.06	0.00	26.06	46.00	-19.94	AVG	
9	1.0700	41.03	0.00	41.03	56.00	-14.97	QP	
10	1.0700	28.07	0.00	28.07	46.00	-17.93	AVG	
11	2.0000	39.94	0.00	39.94	56.00	-16.06	QP	
12	2.0000	26.01	0.00	26.01	46.00	-19.99	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: XY



Site Conduction #2

Phase: **L1**

Temperature: 26

Limit: (CE)FCC PART 15 class B_QP

Power: AC 120V/60Hz

Humidity: 60 %

Mode: Bluetooth & WIFI& RFID on

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.2750	42.77	0.00	42.77	60.97	-18.20	QP	
2		0.2750	23.06	0.00	23.06	50.97	-27.91	AVG	
3		0.4200	43.10	0.00	43.10	57.45	-14.35	QP	
4		0.4200	24.15	0.00	24.15	47.45	-23.30	AVG	
5	*	0.5050	45.81	0.00	45.81	56.00	-10.19	QP	
6		0.5050	30.58	0.00	30.58	46.00	-15.42	AVG	
7		0.5800	42.52	0.00	42.52	56.00	-13.48	QP	
8		0.5800	27.67	0.00	27.67	46.00	-18.33	AVG	
9		0.7200	42.41	0.00	42.41	56.00	-13.59	QP	
10		0.7200	22.81	0.00	22.81	46.00	-23.19	AVG	
11		1.0600	42.73	0.00	42.73	56.00	-13.27	QP	
12		1.0600	23.91	0.00	23.91	46.00	-22.09	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: XY

6. Radiated Emission Test

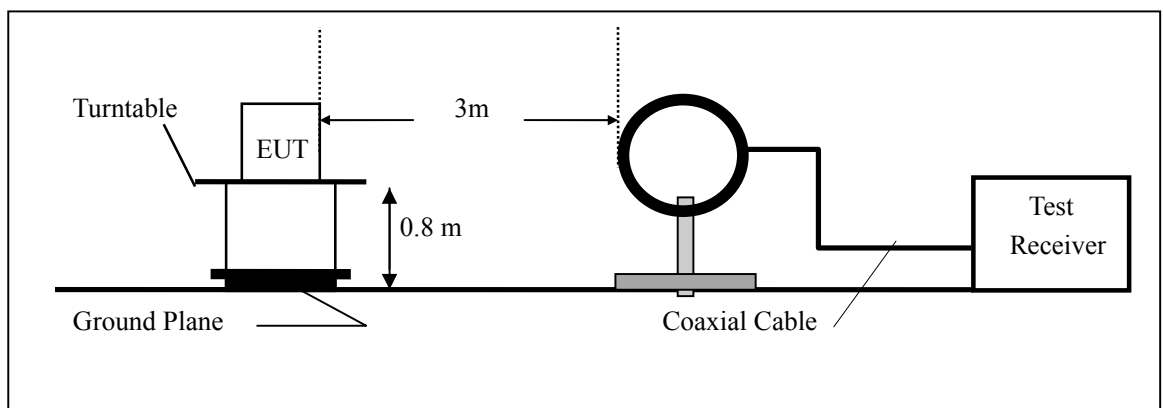
6.1 Measurement Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measured was complete.

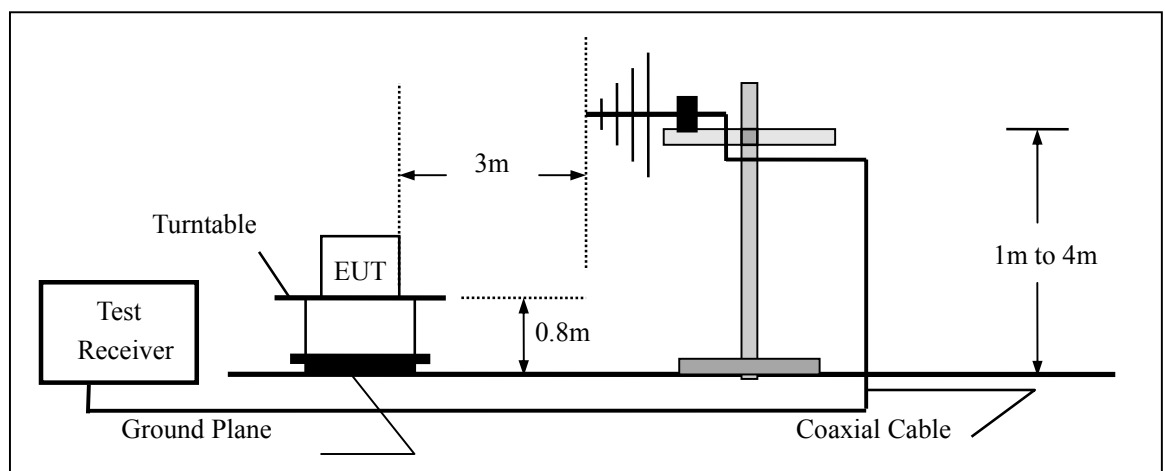
For emissions measurement set the bandwidth of the Spectrum's RBW at 1MHz above 1GHz and RBW 100 KHz below 1GHz.

6.2 Test SET-UP (Block Diagram of Configuration)

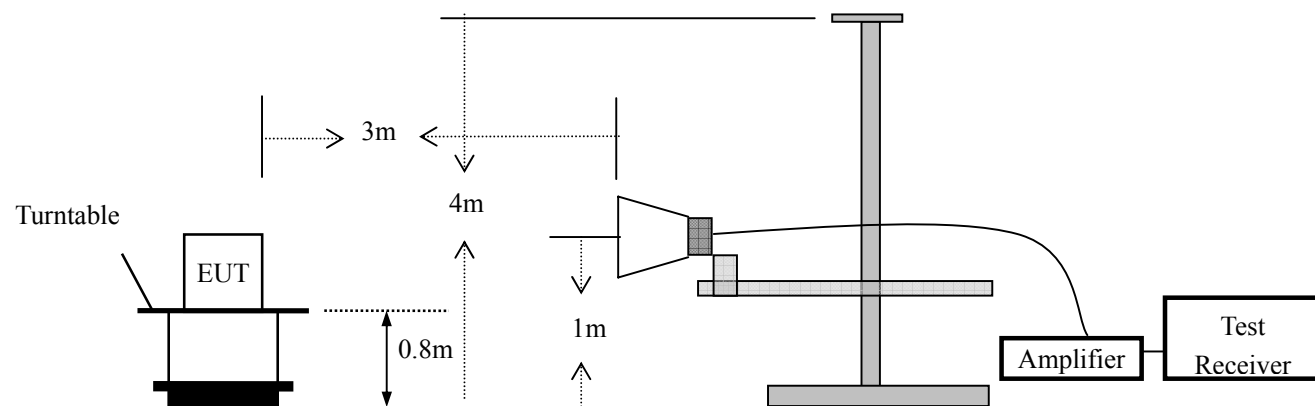
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(B) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(C) Radiated Emission Test Set-Up, Frequency above 1000MHz



6.3 Measurement Equipment Used

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Pre-Amplifier	HP	8447D	2944A07999	05/29/2013	05/28/2014
Spectrum Analyzer	Agilent	E4448A	56481557	Feb. 05, 2013	02/05/2014
Bilog Antenna	Schwarzbeck	VULB9163	142	05/29/2013	05/28/2014
Loop Antenna	ARA	PLA-1030/B	1029	05/29/2013	05/28/2014
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170399	05/29/2013	05/28/2014
Horn Antenna	Schwarzbeck	BBHA 9120	D143	05/29/2013	05/28/2014
Pre-Amplifier	A.H.	PAM-0126	1415261	05/29/2013	05/28/2014
Cable	Schwarzbeck	AK9513	ACRX1	05/29/2013	05/28/2014
Cable	Rosenberger	N/A	FP2RX2	05/29/2013	05/28/2014
Cable	Schwarzbeck	AK9513	CRPX1	05/29/2013	05/28/2014
Cable	Schwarzbeck	AK9513	CRRX2	05/29/2013	05/28/2014

6.4 Radiated Emission Limit

The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table 15.209(a):

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

15.205 Restricted bands of operation

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 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)

- Remark:
1. Emission level in dBuV/m=20 log (uV/m)
 2. Measurement was performed at an antenna to the closed point of EUT distance of meters.
 3. Only spurious frequency is permitted to locate within the Restricted Bands specified in provision of § 15.205, and the emissions located in restricted bands also comply with 15.209 limit.

6.5 Measurement Result

All the modes 802.11a/n has been tested and the worst result 802.11a recorded as below:

Operation Mode: TX Mode Test Date : March 6, 2014
Frequency Range: 9KHz~30MHz Temperature : 28℃
Test Result: PASS Humidity : 65 %
Measured Distance: 3m Test By: WOLF

Note:

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV/m)	Limit 3m (dBuV/m)	Over (dB)
--	--	--	--	--

Note: the amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.

Distance extrapolation factor = $40 \log(\text{Specific distance} / \text{test distance})$ (dB);

Limit line = Specific limits (dBuV) + distance extrapolation factor.

Operation Mode: 802.11a TX Channel 36 Test Date : March 6, 2014
Frequency Range: 30~1000MHz Temperature : 28℃
Test Result: PASS Humidity : 65 %
Measured Distance: 3m Test By: WOLF

Note:

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV/m)	Limit 3m (dBuV/m)	Over (dB)	Note
45.55	V	33.79	40.00	-6.21	QP
87.52	V	29.78	40.00	-10.22	QP
149.70	V	25.26	43.50	-18.24	QP
185.45	V	29.84	43.50	-13.66	QP
244.52	V	22.53	46.00	-23.47	QP
570.96	V	29.05	46.00	-16.95	QP
87.52	H	22.75	40.00	-17.25	QP
168.35	H	26.64	43.50	-16.86	QP
188.56	H	29.52	43.50	-13.98	QP
266.28	H	30.51	46.00	-15.49	QP
337.79	H	24.85	46.00	-21.15	QP
570.96	H	28.30	46.00	-17.70	QP

- Note:**
- (1) All Readings are Peak Value.
 - (2) Emission Level = Reading Level + Probe Factor + Cable Loss.
 - (3) The average measurement was not performed when the peak measured data under the limit of average detection.
 - (4) EUT stood on the table position is the worst case result in the report.

Operation Mode: 802.11a TX Channel 40 Test Date : March 6, 2014
 Frequency Range: 30~1000MHz Temperature : 28°C
 Test Result: PASS Humidity : 65 %
 Measured Distance: 3m Test By: WOLF
 Note:

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV/m)	Limit 3m (dBuV/m)	Over (dB)	Note
47.10	V	33.76	40.00	-6.24	QP
87.52	V	30.14	40.00	-9.86	QP
123.27	V	25.51	43.50	-17.99	QP
149.70	V	25.84	43.50	-17.66	QP
187.00	V	26.81	43.50	-16.69	QP
570.96	V	27.52	46.00	-18.48	QP
87.52	H	22.74	40.00	-17.26	QP
162.13	H	24.75	43.50	-18.75	QP
190.11	H	28.70	43.50	-14.80	QP
267.84	H	29.01	46.00	-16.99	QP
463.70	H	24.80	46.00	-21.20	QP
570.96	H	29.04	46.00	-16.96	QP

- Note:**
- (1) All Readings are Peak Value.
 - (2) Emission Level= Reading Level+Probe Factor +Cable Loss.
 - (3) The average measurement was not performed when the peak measured data under the limit of average detection.
 - (4) EUT stood on the table position is the worst case result in the report.

Operation Mode: 802.11a TX Channel 48 Test Date : March 6, 2014
 Frequency Range: 30~1000MHz Temperature : 28°C
 Test Result: PASS Humidity : 65 %
 Measured Distance: 3m Test By: WOLF

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV/m)	Limit 3m (dBuV/m)	Over (dB)	Note
47.10	V	32.45	40.00	-7.55	QP
87.52	V	29.52	40.00	-10.48	QP
127.93	V	21.24	43.50	-22.26	QP
187.00	V	22.04	43.50	-21.46	QP
244.52	V	21.80	46.00	-24.20	QP
743.51	V	26.53	46.00	-19.47	QP
87.52	H	23.29	40.00	-16.71	QP
162.13	H	23.98	43.50	-19.52	QP
187.00	H	28.12	43.50	-15.38	QP
266.28	H	28.15	46.00	-17.85	QP
344.01	H	21.52	46.00	-24.48	QP
570.96	H	28.70	46.00	-17.30	QP

- Note:**
- (1) All Readings are Peak Value.
 - (2) Emission Level= Reading Level+Probe Factor +Cable Loss.
 - (3) The average measurement was not performed when the peak measured data under the limit of average detection.
 - (4) EUT stood on the table position is the worst case result in the report.

Operation Mode: 802.11a TX Channel 36 Test Date : March 6, 2014
Frequency Range: 1-40GHz Temperature : 28°C
Test Result: PASS Humidity : 65 %
Measured Distance: 3m Test By: WOLF

Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
		PK	AV	PK	AV	PK	AV
10353.84	V	56.43	39.52	74.00	54.00	-17.57	-14.48
--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--
10326.6	H	56.13	39.85	74.00	54.00	-17.87	-14.15

All emissions not reported were more than 20dB below the specified limit or in the noise floor.

Note: (1) All Readings are Peak Value and AV.
(2) Emission Level= Reading Level+Probe Factor +Cable Loss.
(3) 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.

Operation Mode: 802.11a TX Channel 40 Test Date : March 6, 2014
Frequency Range: 1-40GHz Temperature : 28°C
Test Result: PASS Humidity : 65 %
Measured Distance: 3m Test By: WOLF

Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
		PK	AV	PK	AV	PK	AV
10454.15	V	55.65	39.77	74	54	-18.35	-14.23
--	--	--	--	--	--	--	--
10474.66	H	55.38	40.16	74	54	-18.62	-13.84

All emissions not reported were more than 20dB below the specified limit or in the noise floor.

Note: (1) All Readings are Peak Value and AV.
(2) Emission Level= Reading Level+Probe Factor +Cable Loss.
(3) 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.

Operation Mode: 802.11a TX Channel 48 Test Date : March 6, 2014
Frequency Range: 1-40GHz Temperature : 28°C
Test Result: PASS Humidity : 65 %
Measured Distance: 3m Test By: WOLF

Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
		PK	AV	PK	AV	PK	AV
10479.47	V	54.73	40.28	74.00	54.00	-19.27	-13.72
--	--	--	--	--	--	--	--
10498.03	H	54.58	40.76	74.00	54.00	-19.42	-13.24

All emissions not reported were more than 20dB below the specified limit or in the noise floor.

Note: (1) All Readings are Peak Value and AV.
(2) Emission Level= Reading Level+Probe Factor +Cable Loss.
(3) 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.

7 26dB and 99% Bandwidth Test

7.1 Measurement Procedure

The bandwidth at 26 dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating at its maximum power control level, as defined in KDB 789033, at the appropriate frequencies. The spectrum analyzer's bandwidth measurement function is configured to measure the 26 dB bandwidth.

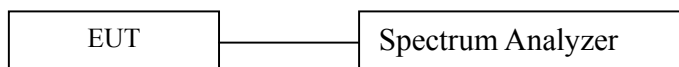
The 26 dB bandwidth is used to determine the conducted power limits.

- 1) Set RBW = approximately 1% of the emission bandwidth.
- 2) Set the VBW > RBW.
- 3) Detector = Peak.
- 4) Trace mode = max hold.
- 5) Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

The following procedure shall be used for measuring (99 %) power bandwidth.

- 1) Set center frequency to the nominal EUT channel center frequency.
- 2) Set span = 1.5 times to 5.0 times the OBW.
- 3) Set RBW = 1 % to 5 % of the OBW
- 4) Set VBW $\geq 3 \cdot$ RBW
- 5) Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.

7.2 Test SET-UP (Block Diagram of Configuration)



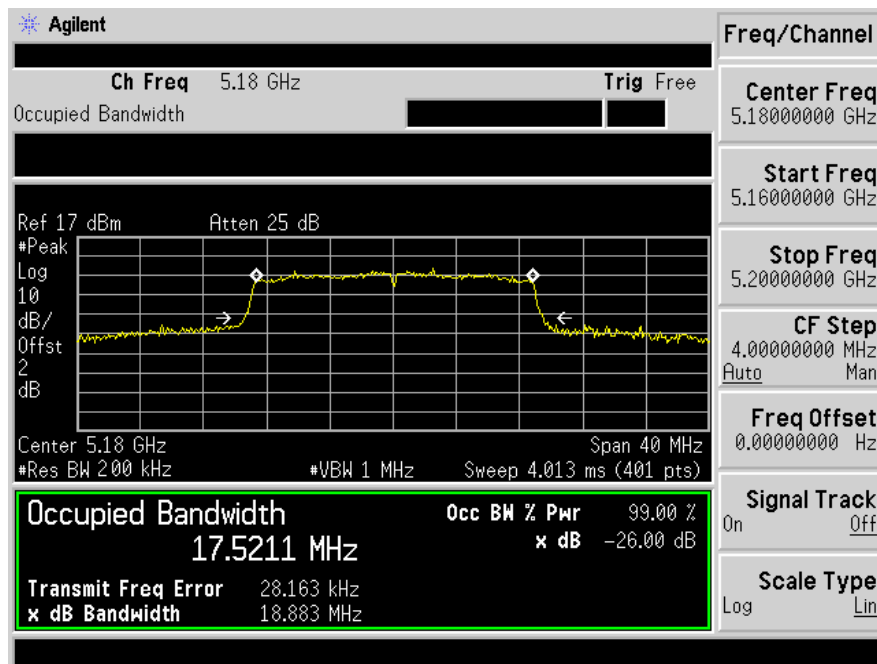
7.3 Measurement Equipment Used

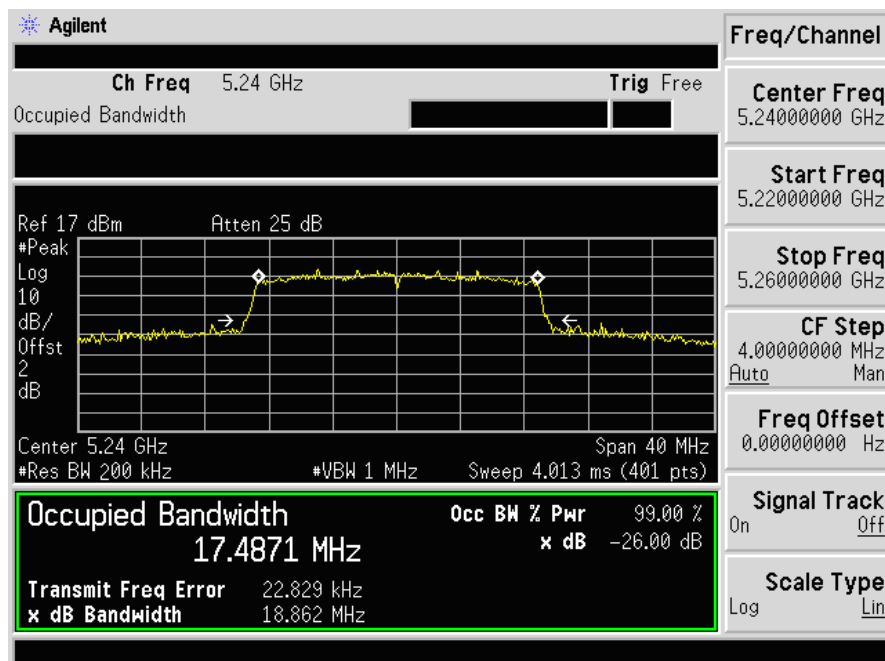
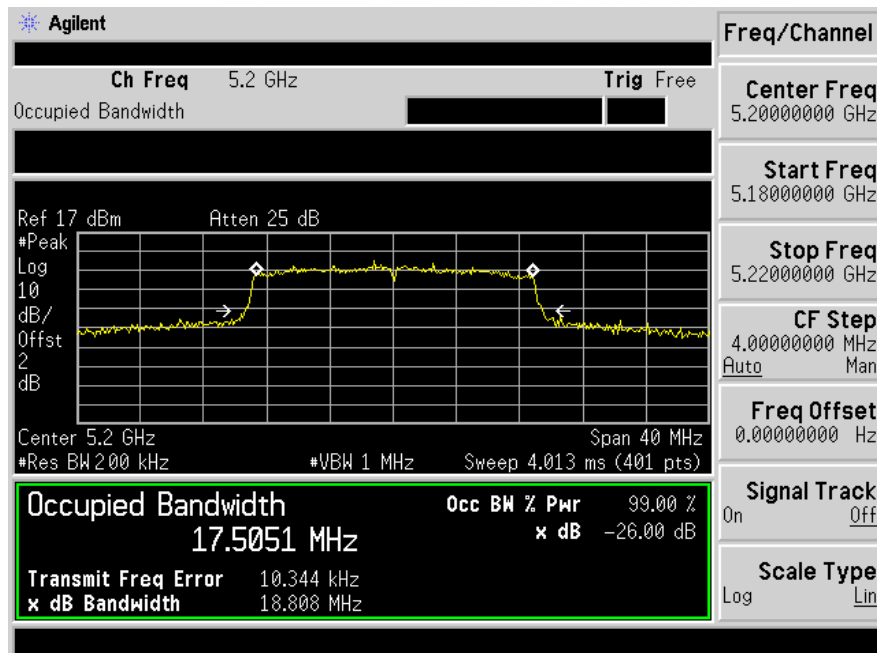
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	E4407B	88156318	05/29/2013	05/28/2014
Frequency Analyser	R&S/DE	FSV40	132.1.3008K3 9-100967-AP	12/14/2013	12/13/2014

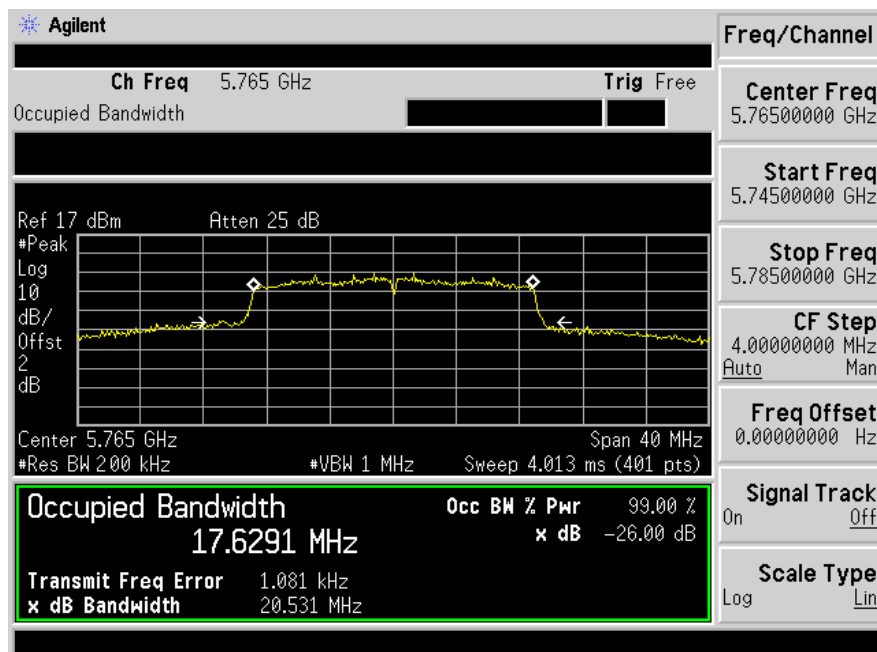
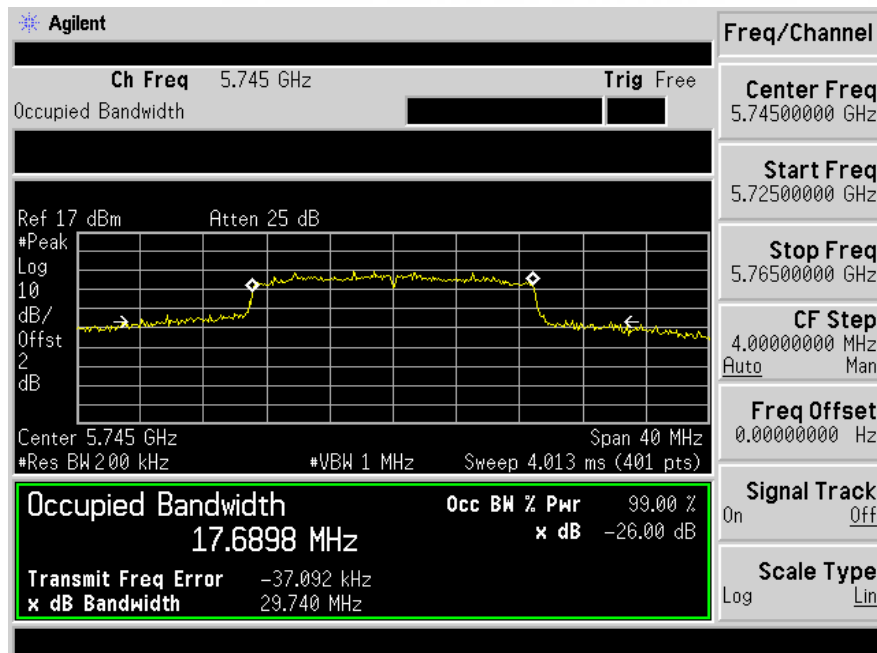
7.4 Measurement Results

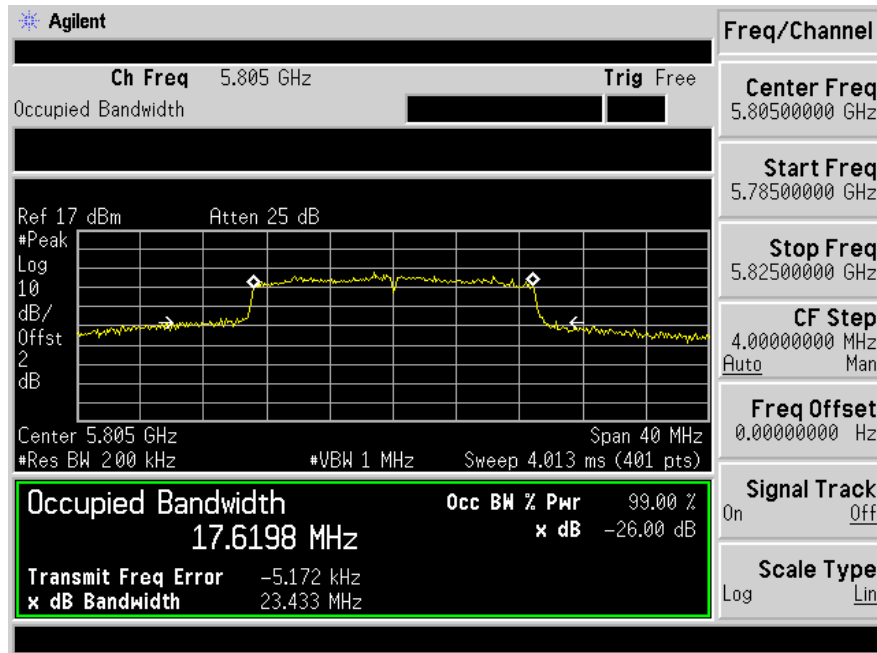
Spectrum Detector: PK Test Date : March 19, 2014
 Test By: Andy Temperature : 28°C
 Test Result: PASS Humidity : 65 %
 Operation Mode: 802.11a

Channel number	Channel frequency (MHz)	26dB Bandwidth (MHz)
36	5180	18.883
40	5200	18.808
48	5240	18.862
149	5745	29.74
153	5765	20.531
161	5805	23.433



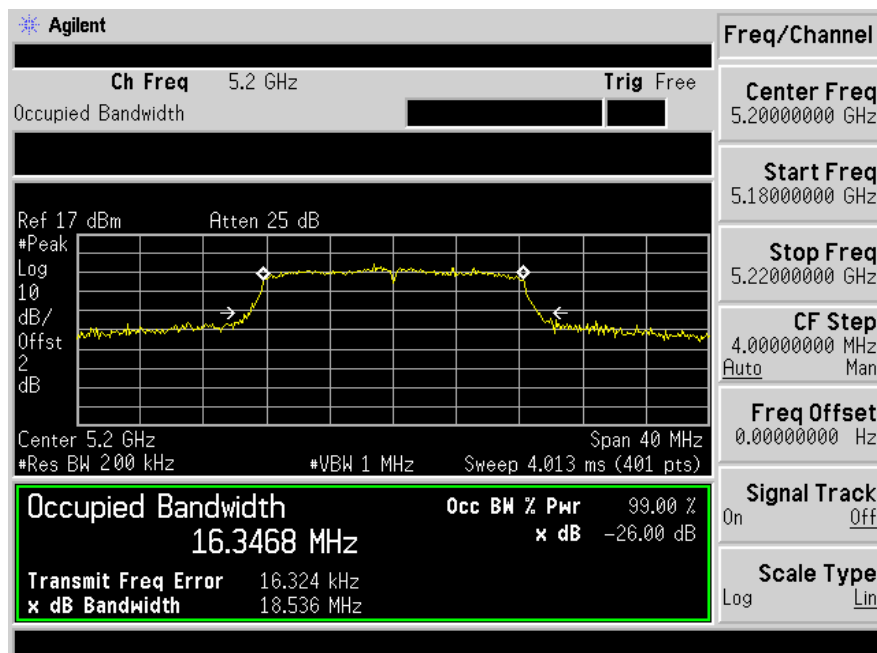
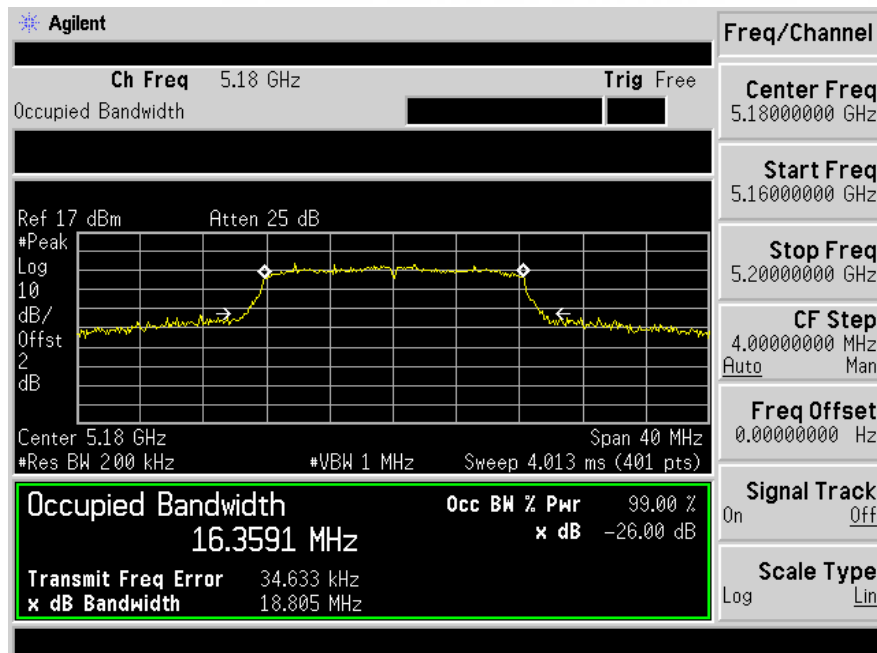


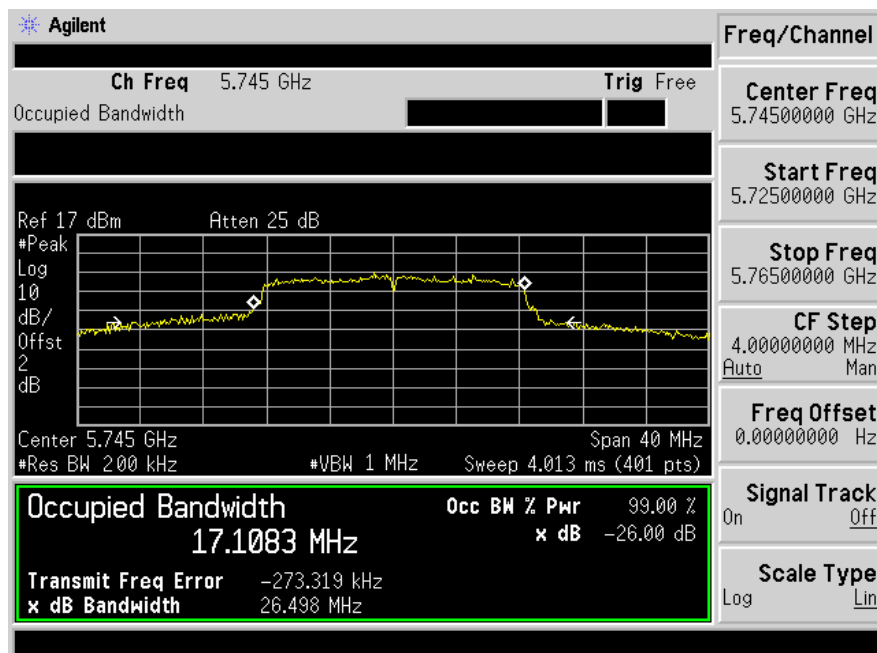
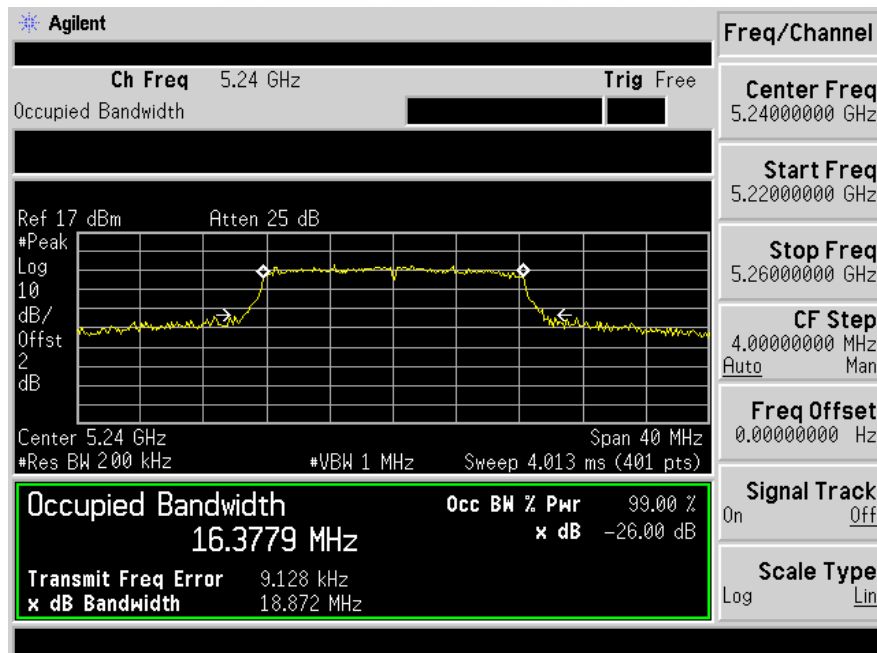


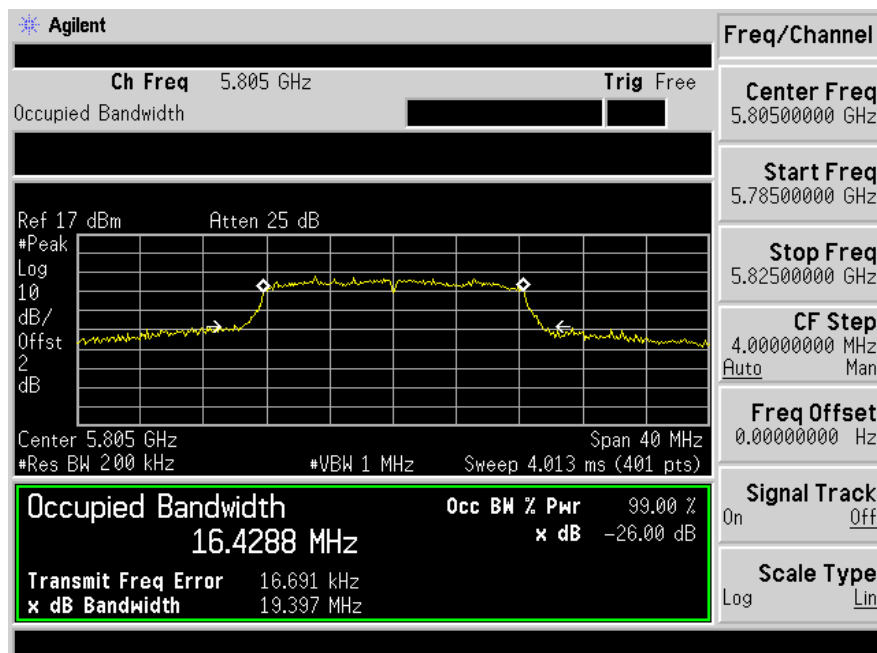
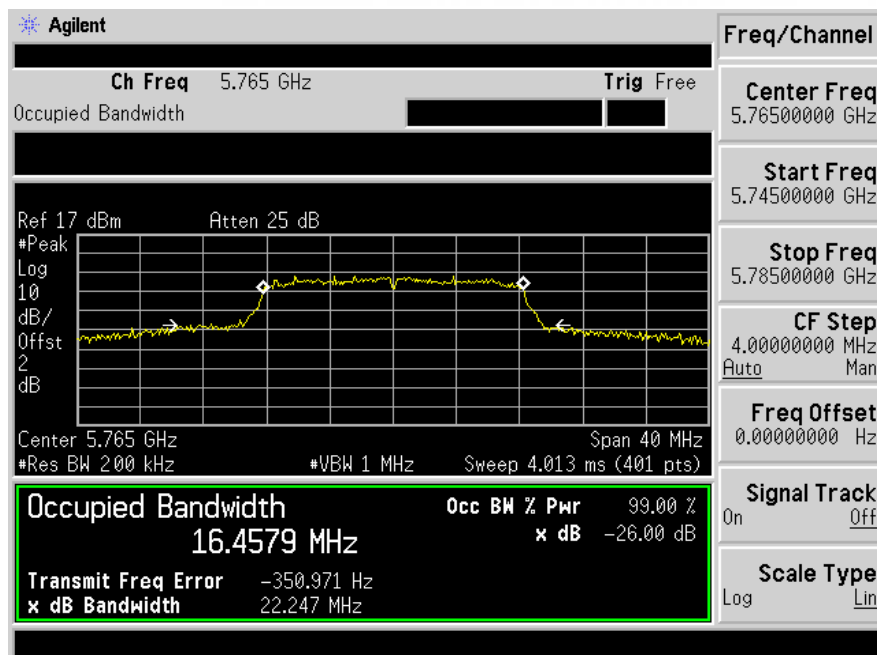


Spectrum Detector: PK Test Date : March 19, 2014
 Test By: Andy Temperature : 28°C
 Test Result: PASS Humidity : 65 %
 Operation Mode: 802.11n(HT20)

Channel number	Channel frequency (MHz)	26dB Bandwidth (MHz)
36	5180	18.805
40	5200	18.536
48	5240	18.872
149	5745	26.498
153	5765	22.247
161	5805	19.397

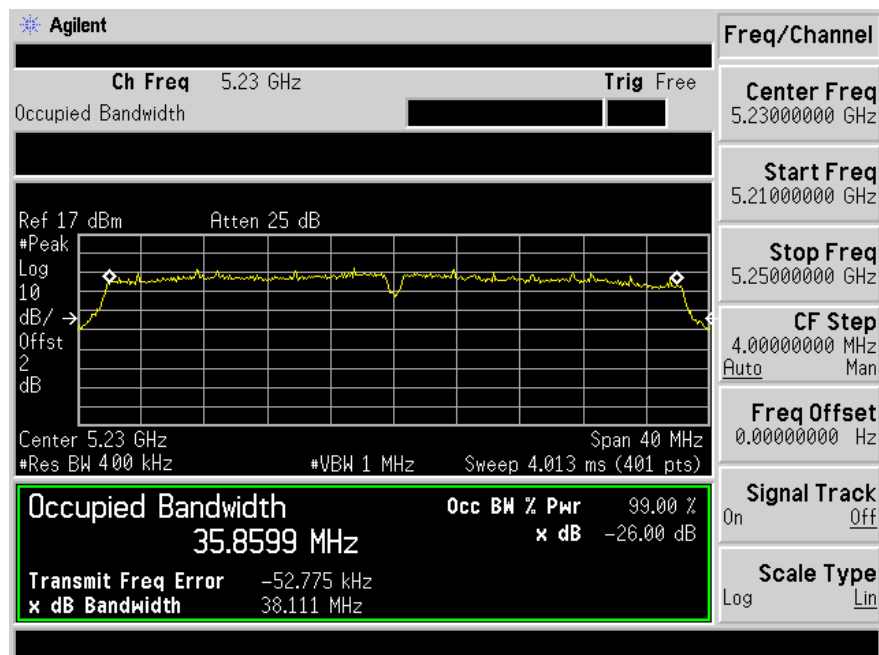


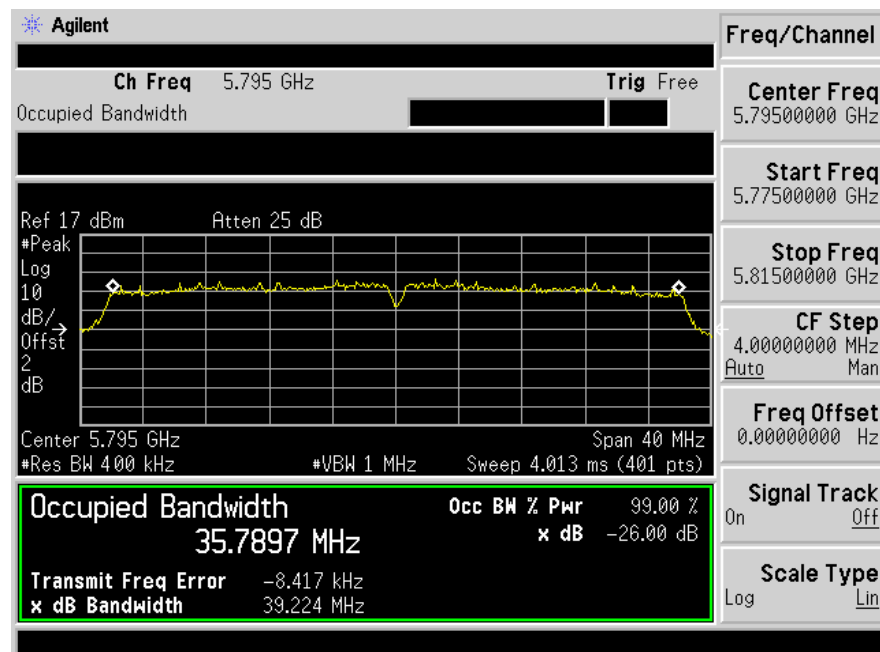
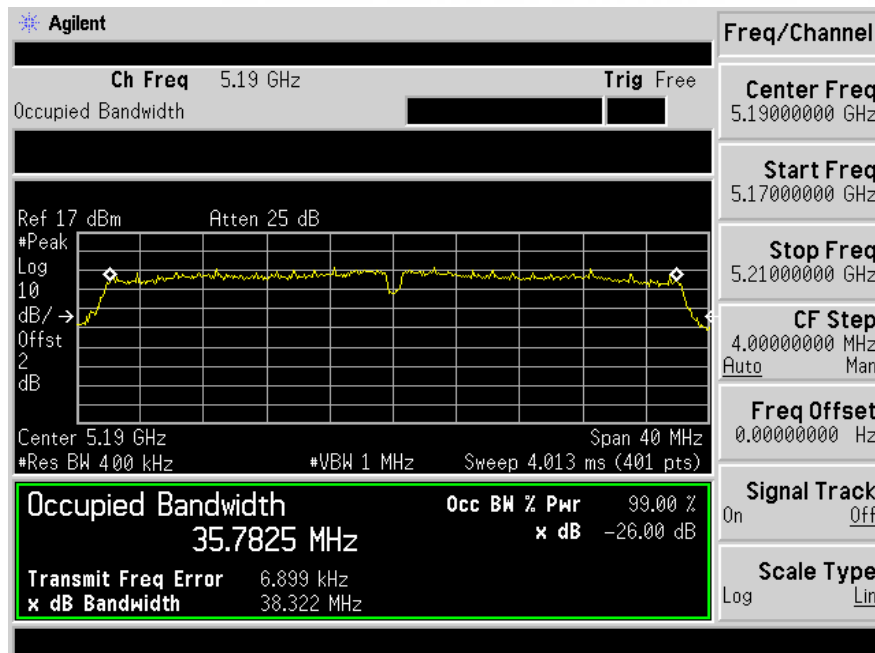


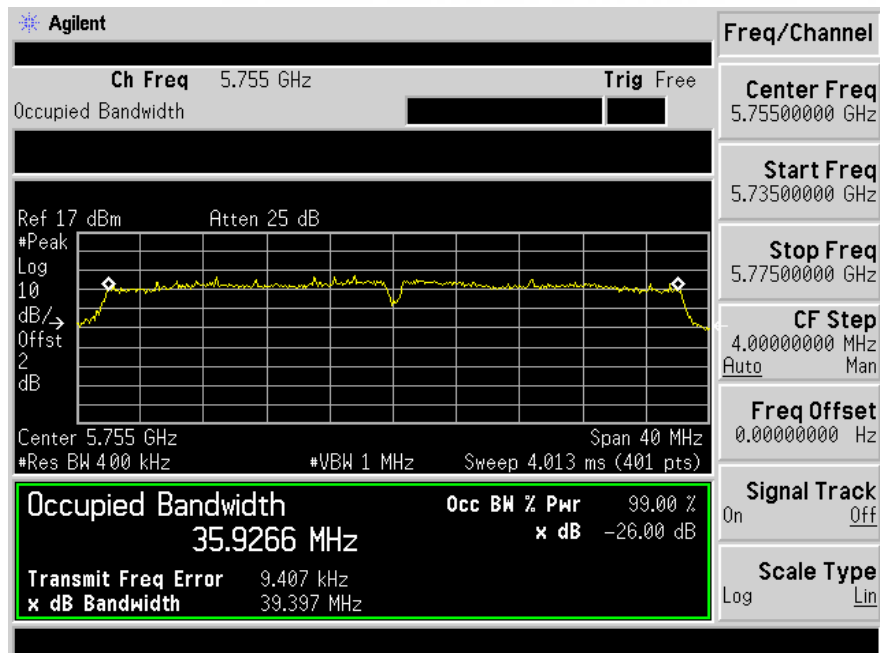


Spectrum Detector: PK Test Date : March 19, 2014
 Test By: Andy Temperature : 28°C
 Test Result: PASS Humidity : 65 %
 Operation Mode: 802.11n(HT40)

Channel number	Channel frequency (MHz)	26dB Bandwidth (MHz)
38	5190	38.111
46	5230	38.322
151	5755	39.224
159	5795	39.397

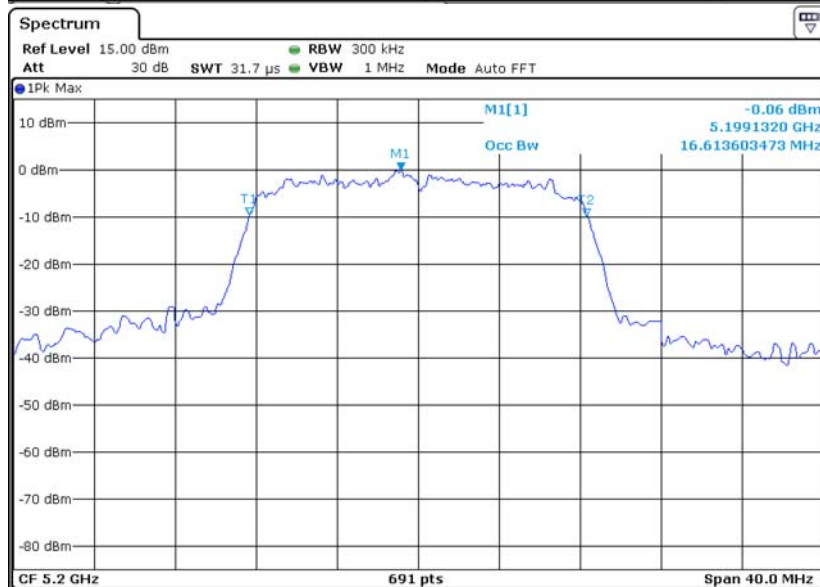
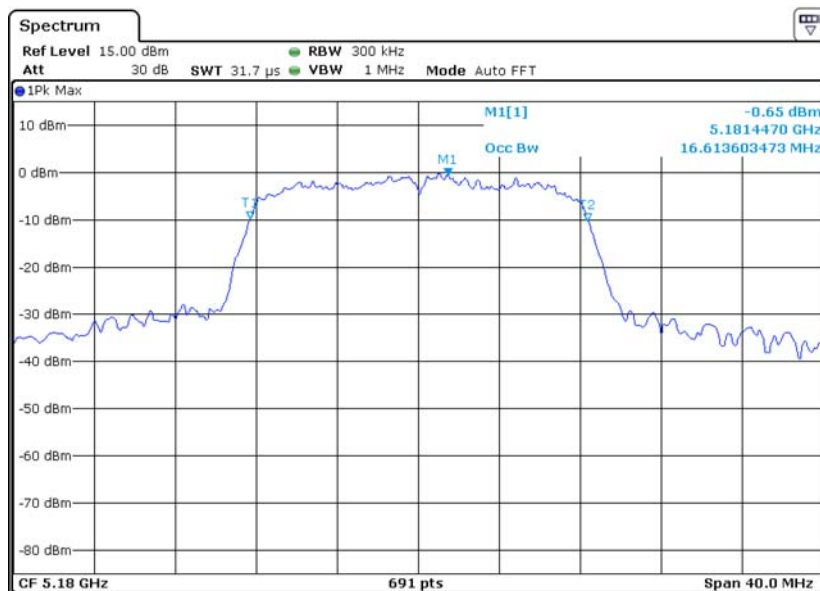


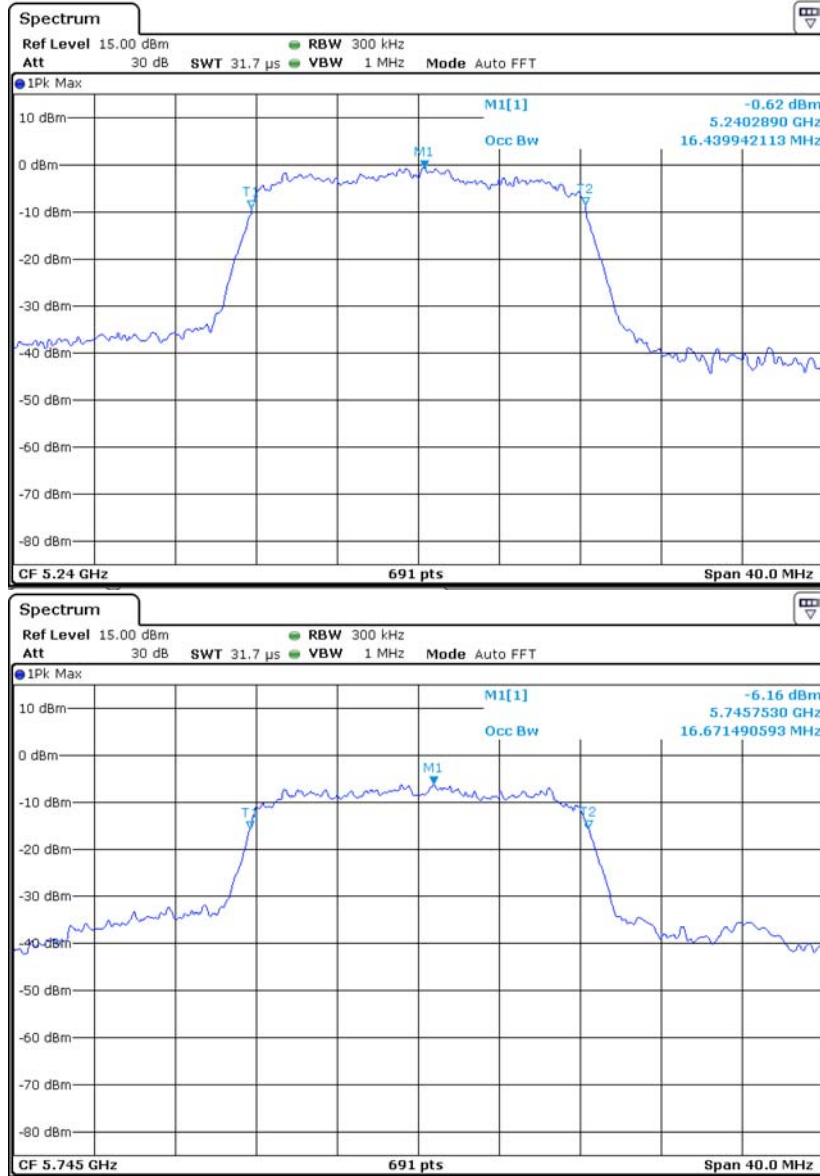


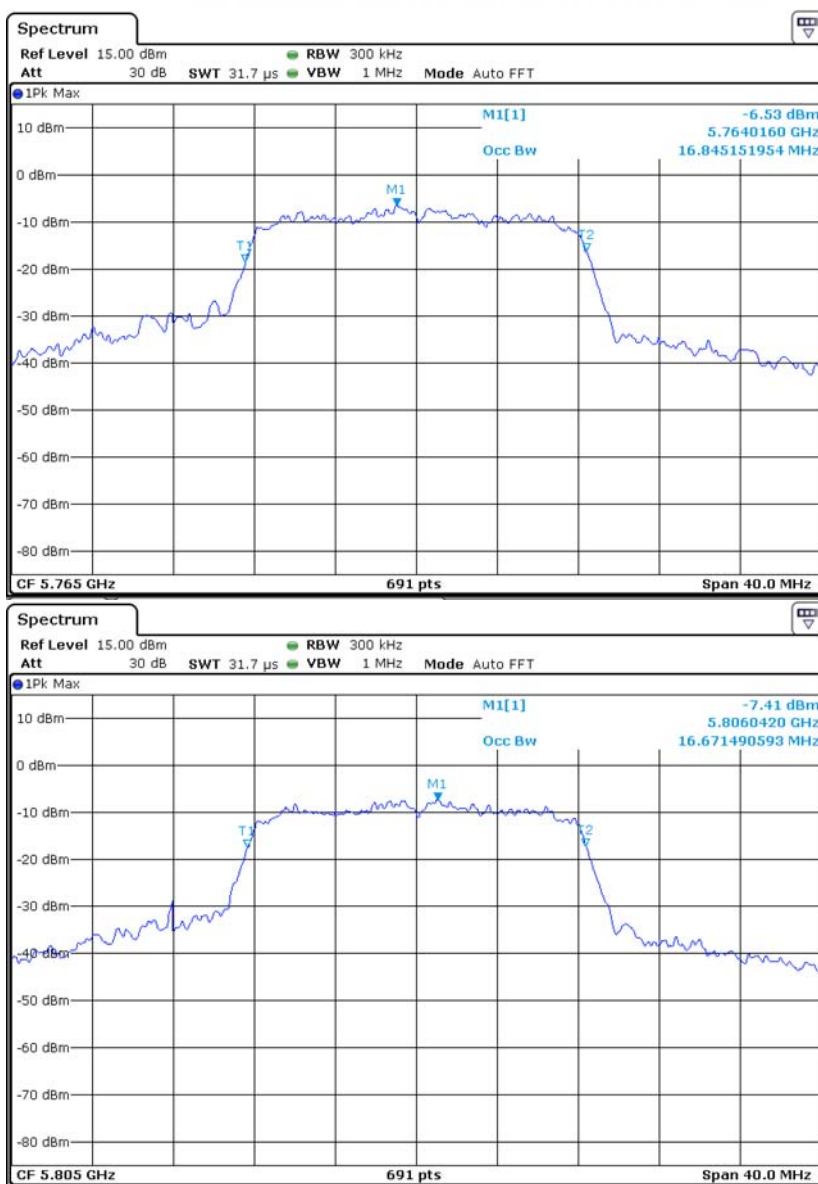


Spectrum Detector: PK Test Date : March 19, 2014
 Test By: Andy Temperature : 28°C
 Test Result: PASS Humidity : 65 %
 Operation Mode: 802.11a

Channel number	Channel frequency (MHz)	99%dB Bandwidth (MHz)
36	5180	16.61
40	5200	16.61
48	5240	16.43
149	5745	16.67
153	5765	16.84
161	5805	16.67





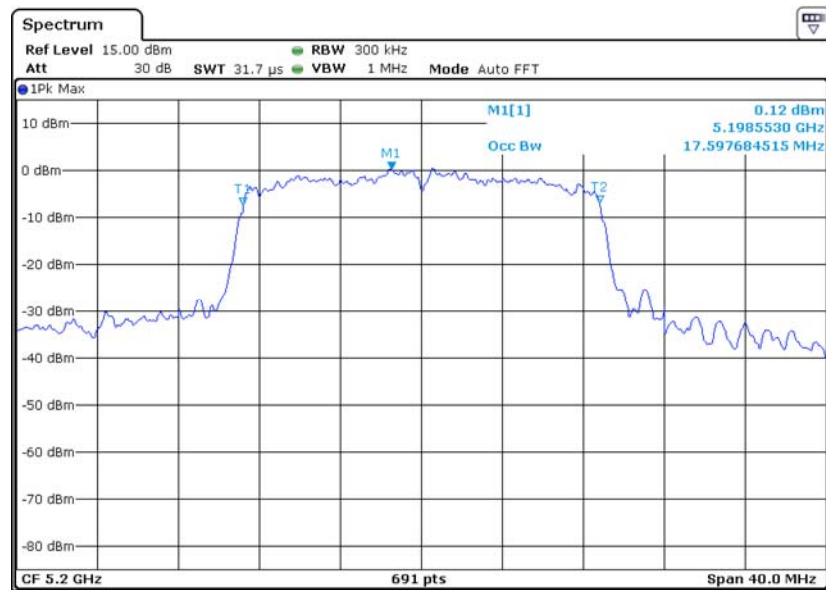
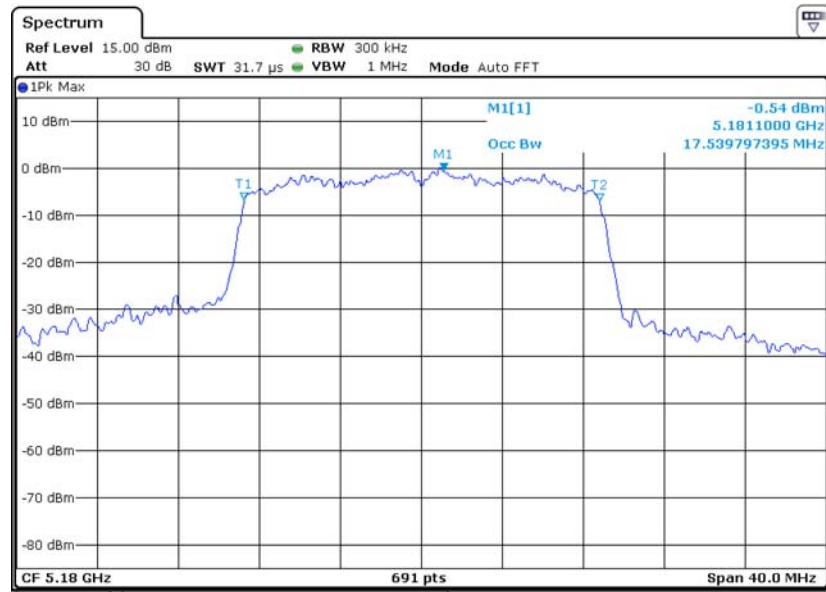


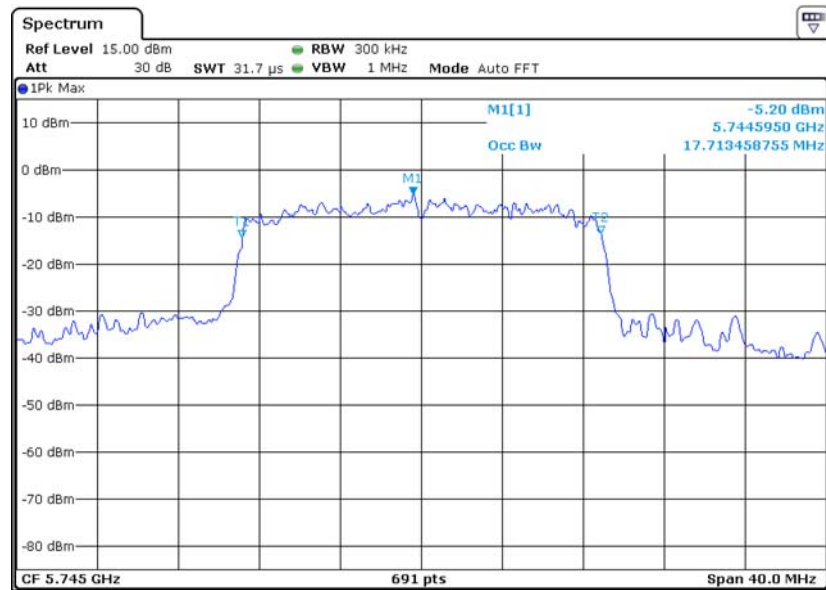
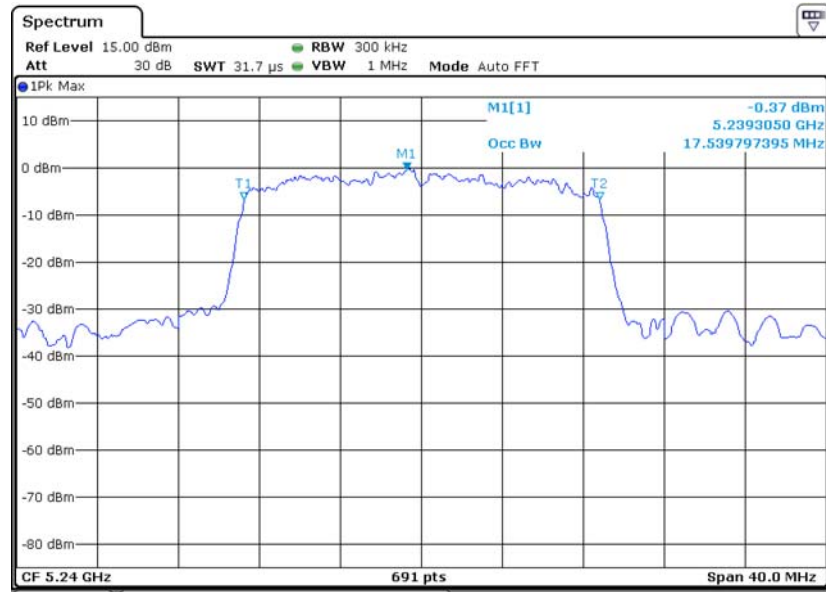
Spectrum Detector: PK
 Test By: Andy
 Test Result: PASS
 Operation Mode: 802.11n(HT20)

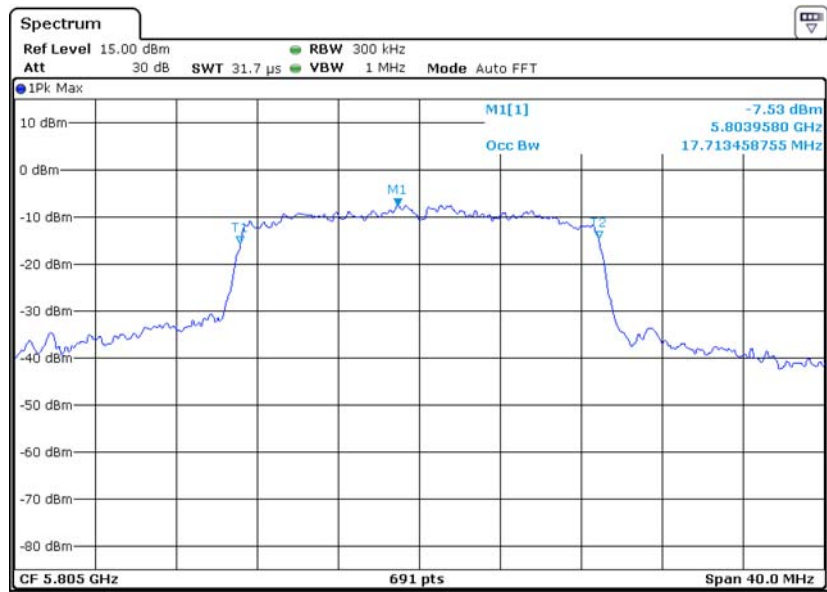
Test Date : March 19, 2014
 Temperature : 28°C
 Humidity : 65 %

Channel number	Channel frequency (MHz)	99%dB Bandwidth (MHz)
36	5180	17.54
40	5200	17.60
48	5240	17.54
149	5745	17.71
153	5765	17.77

161	5805	17.71
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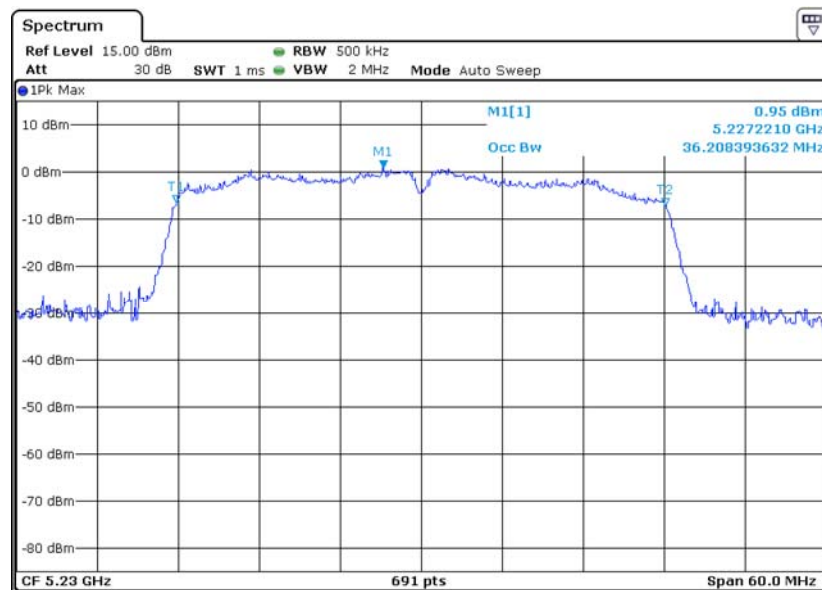
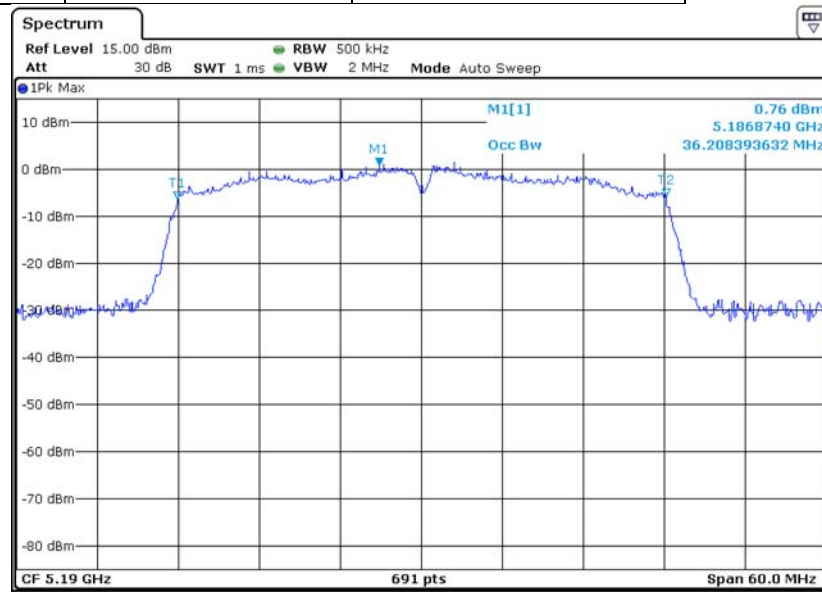


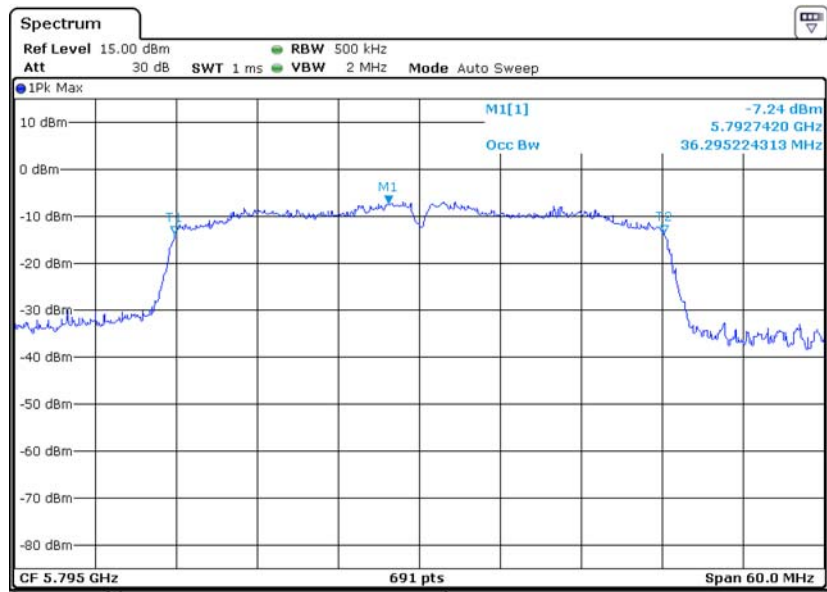
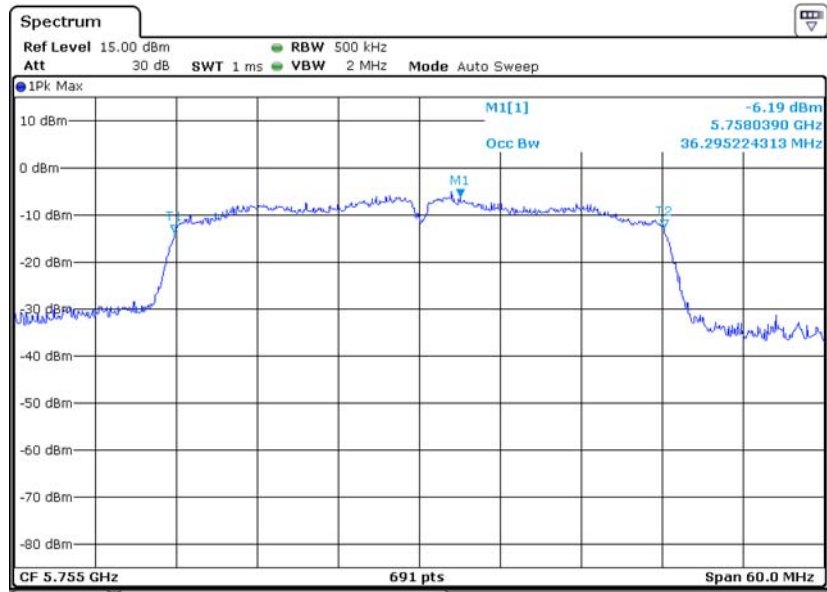




Spectrum Detector: PK Test Date : March 19, 2014
 Test By: Andy Temperature : 28°C
 Test Result: PASS Humidity : 65 %
 Operation Mode: 802.11n(HT40)

Channel number	Channel frequency (MHz)	99% Bandwidth (MHz)
38	5190	36.2
46	5230	36.2
151	5755	36.3
159	5795	36.3





8. Maximum Conducted Output Power Test

8.1 Measurement Procedure

The maximum average conducted output power can be measured using Method PM-G (Measurement using a gated RF average power meter):

Measurements may be performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

- The Transmitter output (antenna port) was connected to the power meter.
- Turn on the EUT and power meter and then record the power value.
- Repeat above procedures on all channels needed to be tested.

8.2 Test SET-UP (Block Diagram of Configuration)



8.3 Measurement Equipment Used

EQUIPMENT TYPE	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Power meter	ML2495A	0824006	05/29/2013	05/28/2014
Power sensor	MA2411B	0738172	05/29/2013	05/28/2014

8.4 Conducted output limit

Band 5.15-5.25GHz:

FCC: 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 -26dB emission bandwidth in MHz.

IC: The maximum e.i.r.p. shall not exceed 200 mW or 10 +10logB dBm, whichever power is less. B is the 99% emission bandwidth in MHz.

Band 5.725-5.825GHz:

FCC: the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 1 W or 17 dBm + 10log B, where B is the -26dB emission bandwidth in MHz.

IC: The maximum conducted output power shall not exceed 1.0 W or 17 + 10 log₁₀ B, dBm, whichever power is less.

8.5 Measurement Results

Spectrum Detector: PK Test Date : March 19, 2014
Test By: Andy Temperature : 28°C
Test Result: PASS Humidity : 65 %
Operation Mode: 802.11a

Channel number	Channel Frequency(MHz)	Power output(dBm)	Power Limit(dBm) FCC	Power Limit(dBm) IC	Pass/Fail
36	5180	7.71	16.8	22.2	PASS
40	5200	7.91	16.7	22.2	PASS
48	5240	7.45	16.8	22.2	PASS
149	5745	7.32	30.0	29.2	PASS
153	5765	7.42	30.0	29.3	PASS
161	5805	7.27	30.0	29.2	PASS

Spectrum Detector: PK Test Date : March 19, 2014
Test By: Andy Temperature : 28°C
Test Result: PASS Humidity : 65 %
Operation Mode: 802.11n(HT20)

Channel number	Channel Frequency(MHz)	Power output(dBm)	Power Limit(dBm) FCC	Power Limit(dBm) IC	Pass/Fail
36	5180	7.63	16.7	22.4	PASS
40	5200	7.53	16.7	22.5	PASS
48	5240	7.21	16.8	22.4	PASS
149	5745	7.68	30.0	29.5	PASS
153	5765	7.48	30.0	29.5	PASS
161	5805	7.28	29.9	29.5	PASS

Spectrum Detector: PK
Test By: Andy
Test Result: PASS
Operation Mode: 802.11n(HT40)

Test Date : March 19, 2014
Temperature : 28°C
Humidity : 65 %

Channel number	Channel Frequency(MHz)	Power output(dBm)	Power Limit(dBm) FCC	Power Limit(dBm) IC	Pass/Fail
38	5190	7.68	17.0	25.6	PASS
46	5230	7.48	17.0	25.6	PASS
151	5755	7.28	30.0	30.0	PASS
159	5795	7.38	30.0	30.0	PASS

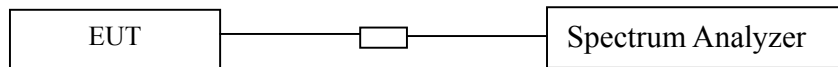
9. Peak Power Density

9.1 Test Procedures

Methods refer to FCC KDB 789033

- 1) Create an average power spectrum for the EUT operating mode being tested by following the instructions in section E)2) for measuring maximum conducted output power using a spectrum analyzer or EMI receiver: select the appropriate test method (SA-3, or alternatives to each) and apply it up to, but not including, the step labeled, "Compute power...".
- 2) Use the peak search function on the instrument to find the peak of the spectrum.
- 3) The result is the PPSD.
- 4) The above procedures make use of 1 MHz resolution bandwidth to satisfy the 1 MHz measurement bandwidth specified in the 15.407(a)(5). That rule section also permits use of resolution bandwidths less than 1 MHz "provided that the measured power is integrated to show the total power over the measurement bandwidth" (i.e., 1 MHz). If measurements are performed using a reduced resolution bandwidth and integrated over 1 MHz bandwidth

9.2 Block Diagram of Test Setup



9.3 Test Equipment

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Frequency Analyser	R&S/DE	FSV40	132.1.3008K3 9-100967-AP	12/14/2013	12/13/2014

9.4 Limit

Band 5.15-5.25GHz:

FCC: the peak power spectral density shall not exceed 4 dBm in any 1MHz band.

IC: The power spectral density shall not exceed 11 dBm in any 1.0 MHz band.

Band 5.725-5.825GHz:

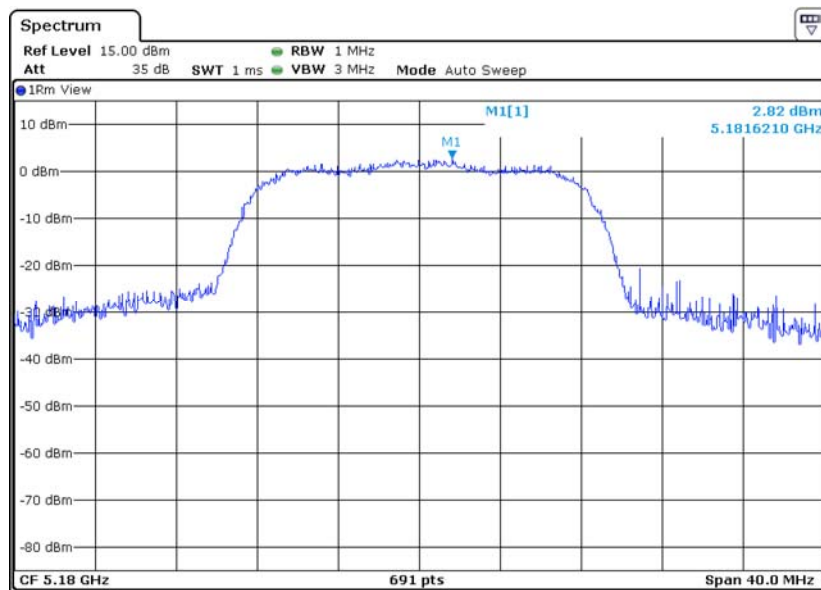
FCC: the peak power spectral density shall not exceed 17 dBm in any 1-MHz band.

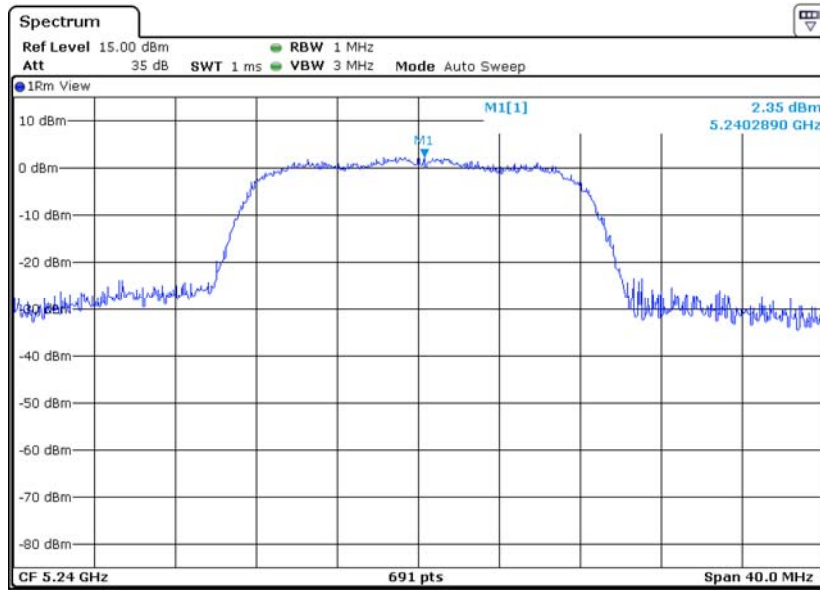
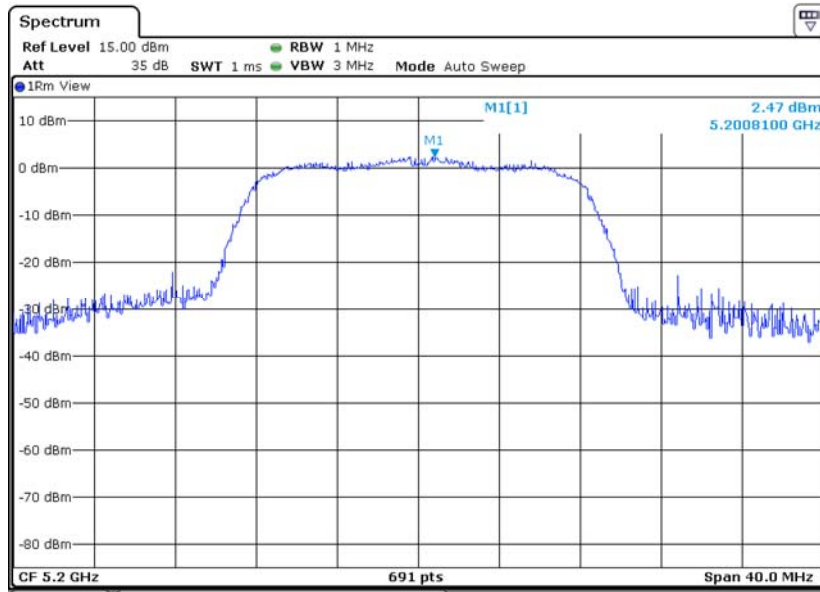
IC: the peak power spectral density shall not exceed 17 dBm in any 1-MHz band.

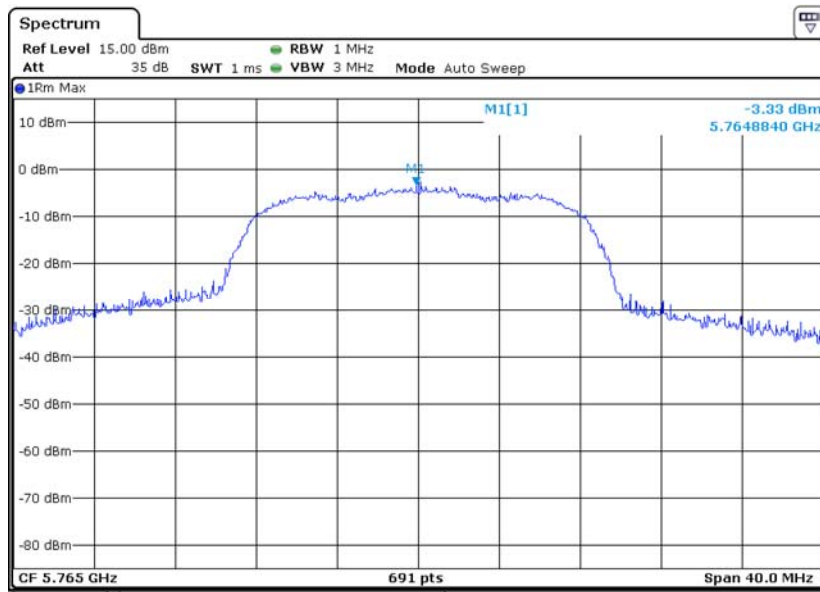
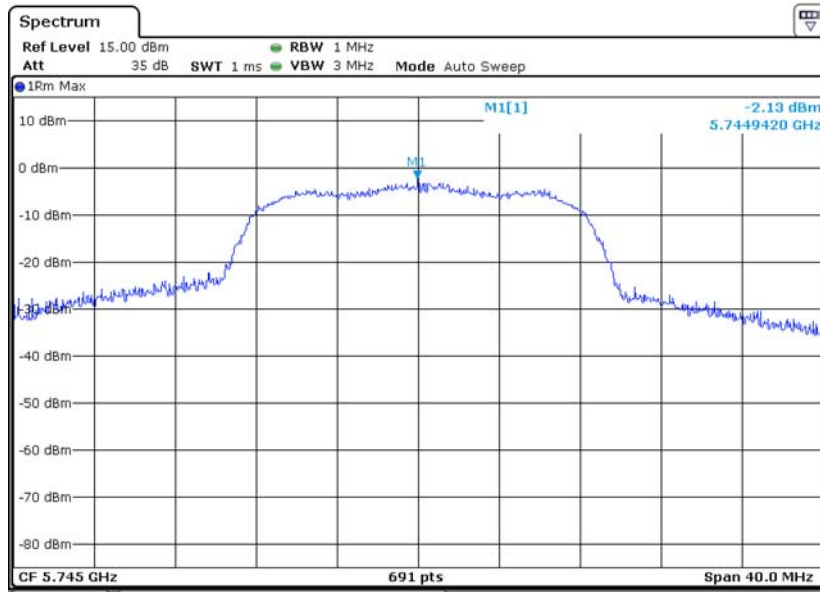
9.5 Test Result

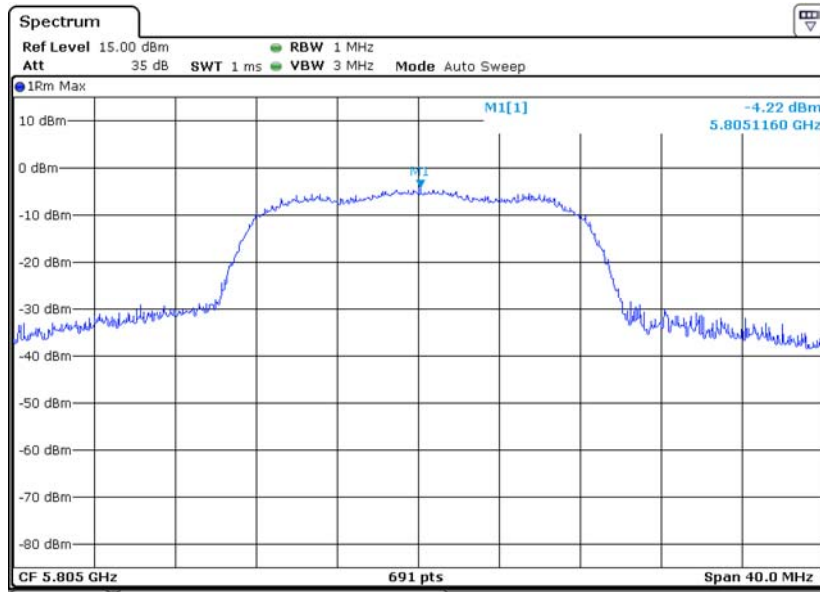
Spectrum Detector: PK Test Date : March 19, 2014
 Test By: Andy Temperature : 28°C
 Test Result: PASS Humidity : 65 %
 Operation Mode: 802.11a

Channel number	Channel Frequency(MHz)	Peak Power output(dBm)	Peak Power Limit(dBm) FCC	Peak Power Limit(dBm) IC	Pass/Fail
36	5180	2.82	4	11	PASS
40	5200	2.47	4	11	PASS
48	5240	2.35	4	11	PASS
149	5745	-2.13	17	17	PASS
153	5765	-3.33	17	17	PASS
161	5805	-4.22	17	17	PASS



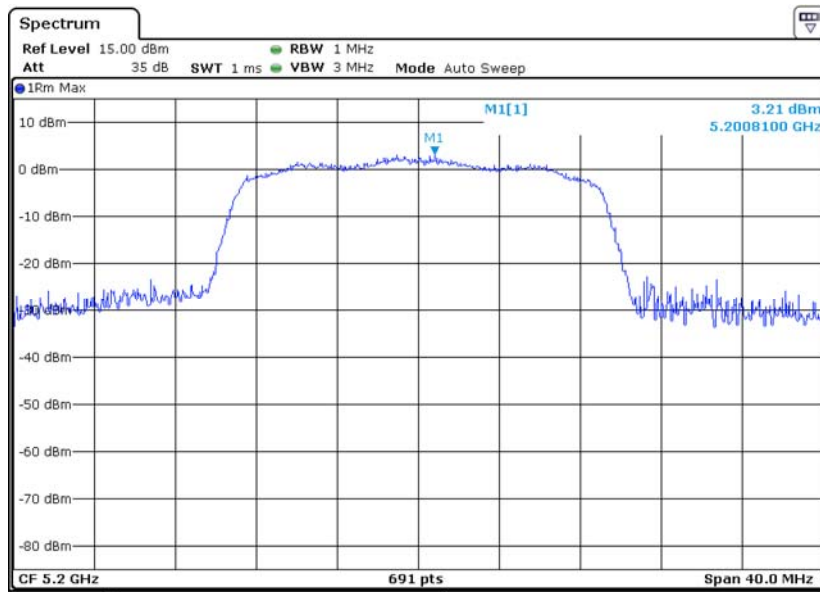
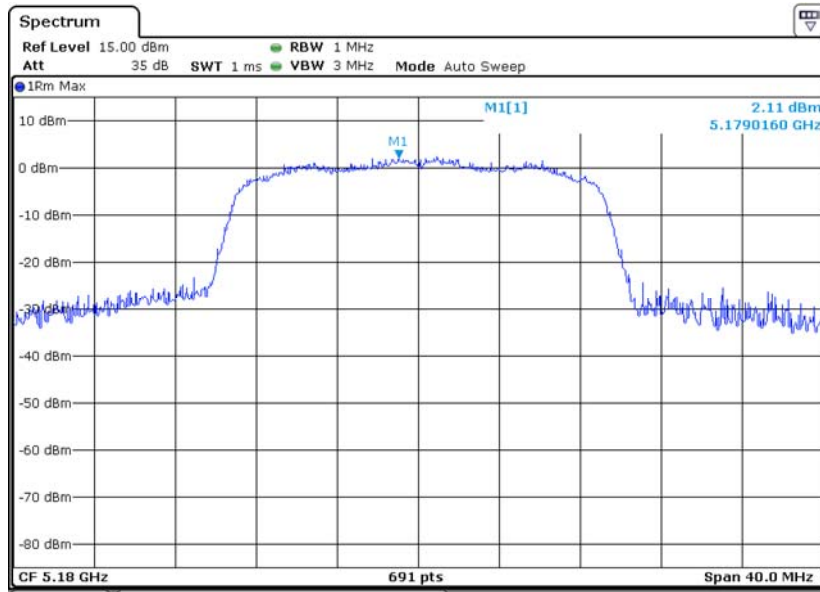


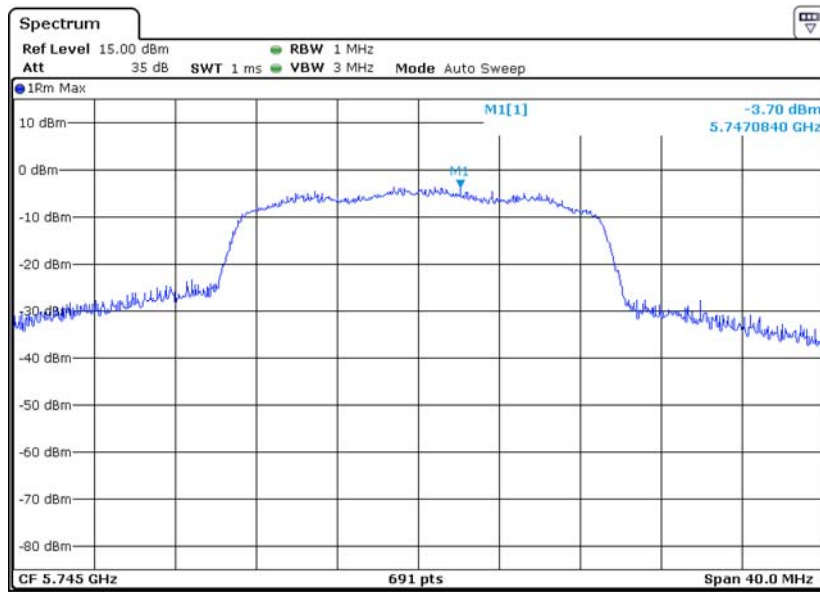
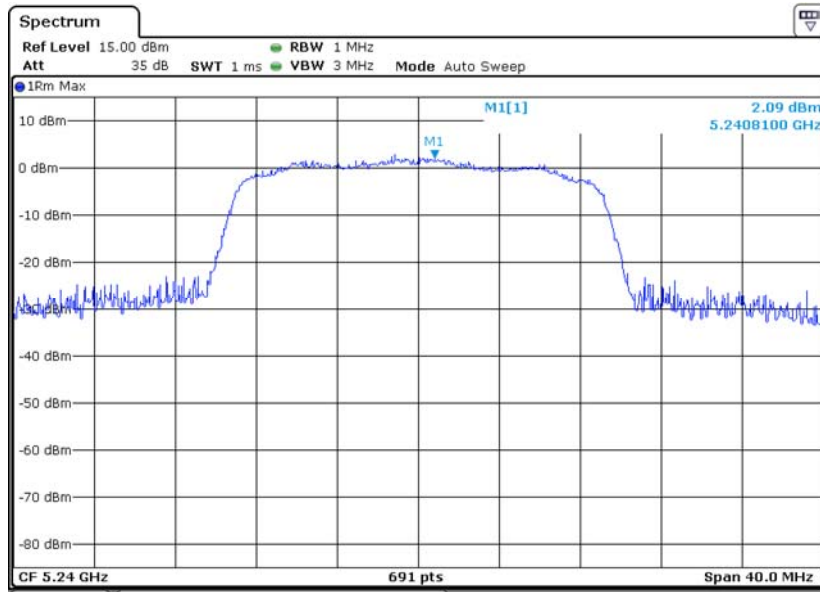


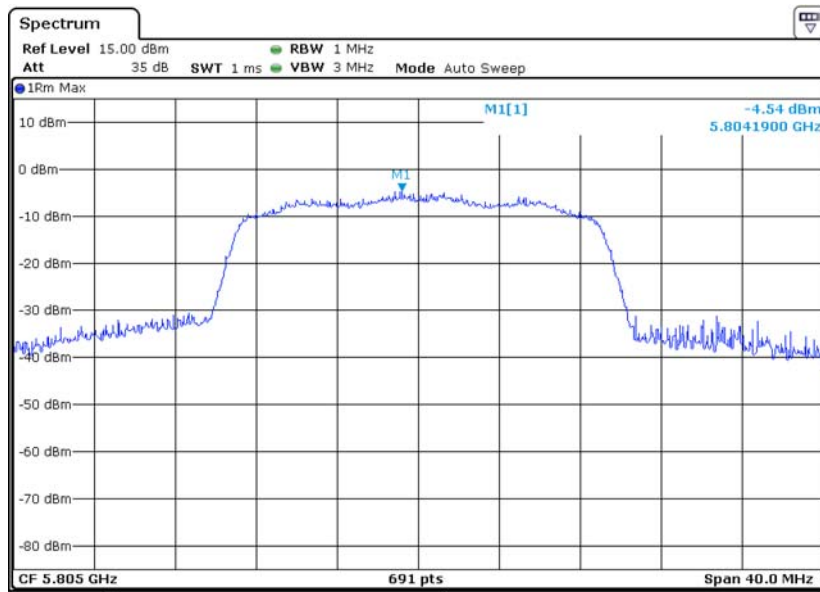
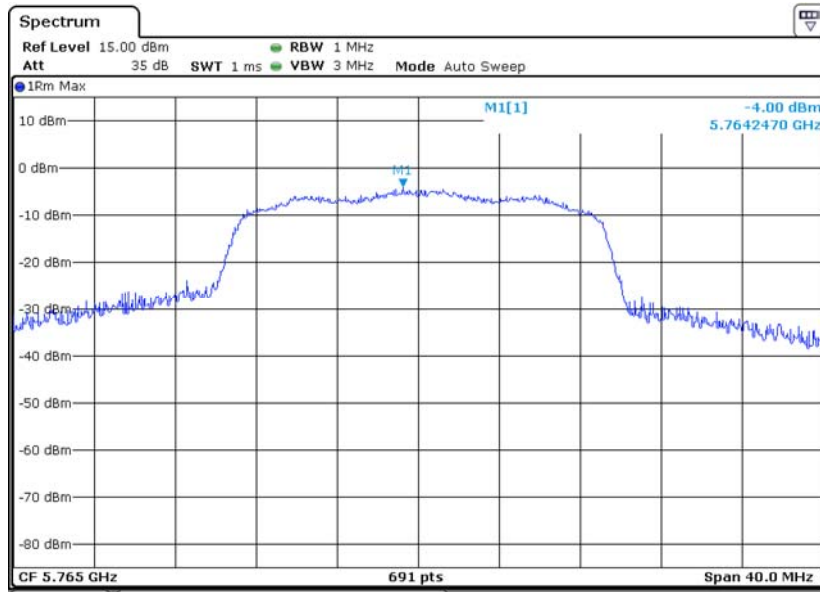


Spectrum Detector:	PK	Test Date :	March 19, 2014
Test By:	Andy	Temperature :	28°C
Test Result:	PASS	Humidity :	65 %
Operation Mode: 802.11n(HT20)			

Channel number	Channel Frequency(MHz)	Peak Power output(dBm)	Peak Power Limit(dBm) FCC	Peak Power Limit(dBm) IC	Pass/Fail
36	5180	2.11	4	11	PASS
40	5200	3.21	4	11	PASS
48	5240	2.09	4	11	PASS
149	5745	-3.70	17	17	PASS
153	5765	-4.0	17	17	PASS
161	5805	-4.54	17	17	PASS



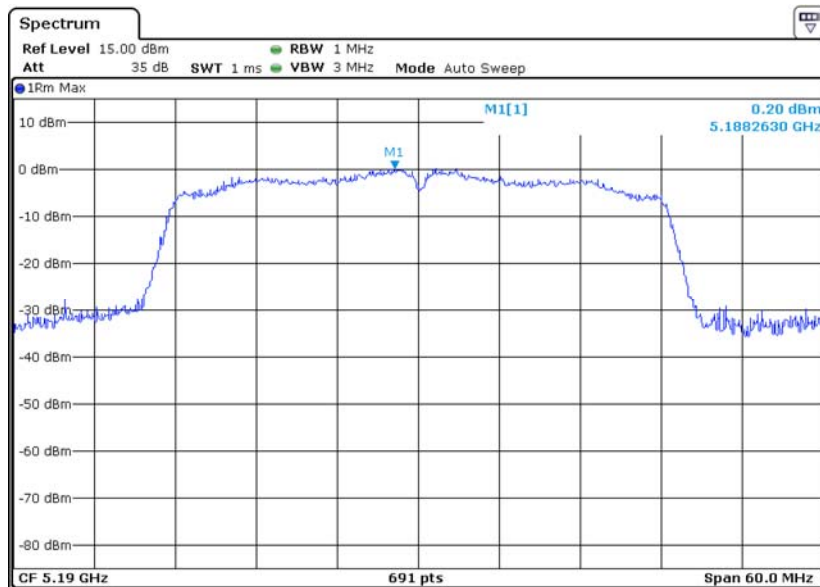


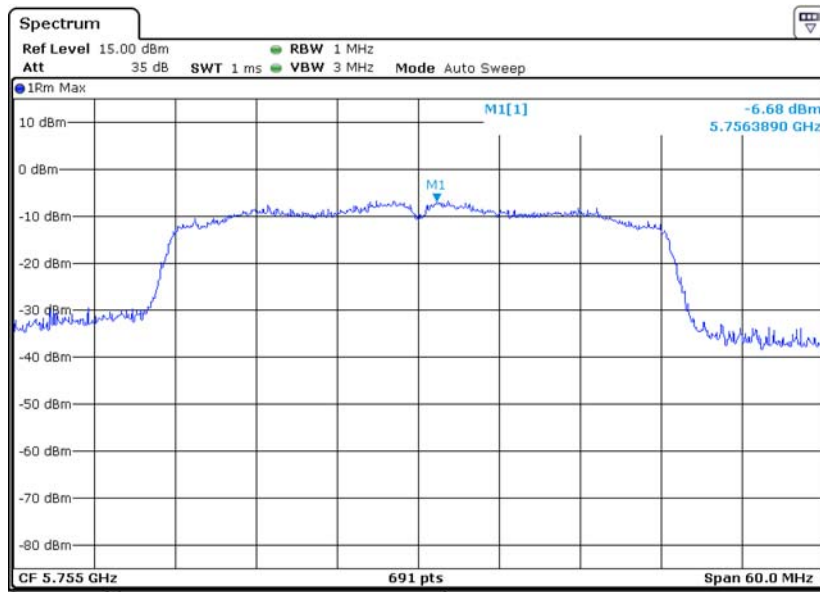
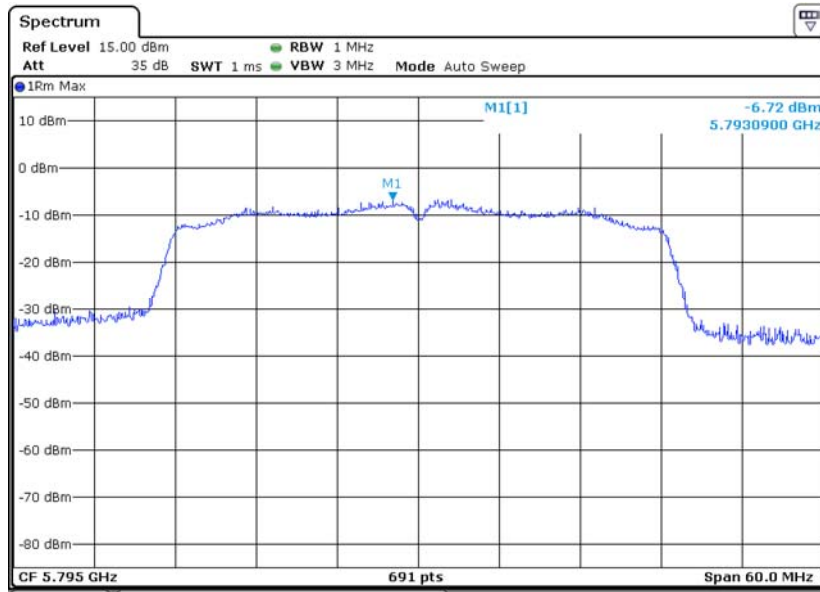


Spectrum Detector: PK
 Test By: Andy
 Test Result: PASS
 Operation Mode: 802.11n(HT40)

Test Date : March 19, 2014
 Temperature : 28°C
 Humidity : 65 %

Channel number	Channel Frequency(MHz)	Power output(dBm)	Power Limit(dBm) FCC	Power Limit(dBm) IC	Pass/Fail
38	5190	0.2	4	11	PASS
46	5230	0.19	4	11	PASS
151	5755	-6.72	17	17	PASS
159	5795	-6.68	17	17	PASS





10. Transmitter Peak Excursion

10.1 Test Procedures

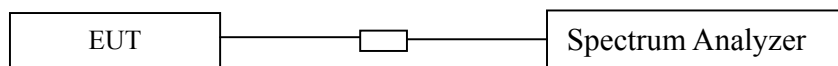
Methods refer to FCC KDB 789033

- 1) Set the spectrum analyzer or EMI receiver span to view the entire emission bandwidth.
- 2) Find the maximum of the peak-max-hold spectrum.
 - a) Set RBW = 1 MHz.
 - b) VBW $\geq$ 3 MHz.
 - c) Detector = peak.
 - d) Trace mode = max-hold.
 - e) Allow the sweeps to continue until the trace stabilizes.
 - f) Use the peak search function to find the peak of the spectrum.
- 3) Use the procedure found under 4. to measure the PPSD.
- 4) Compute the ratio of the maximum of the peak-max-hold spectrum to the PPSD.

10.2 Test Equipment

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Frequency Analyser	R&S/DE	FSV40	132.1.3008K3 9-100967-AP	12/14/2013	12/13/2014

10.3 Block Diagram of Test setup



10.4 Limit

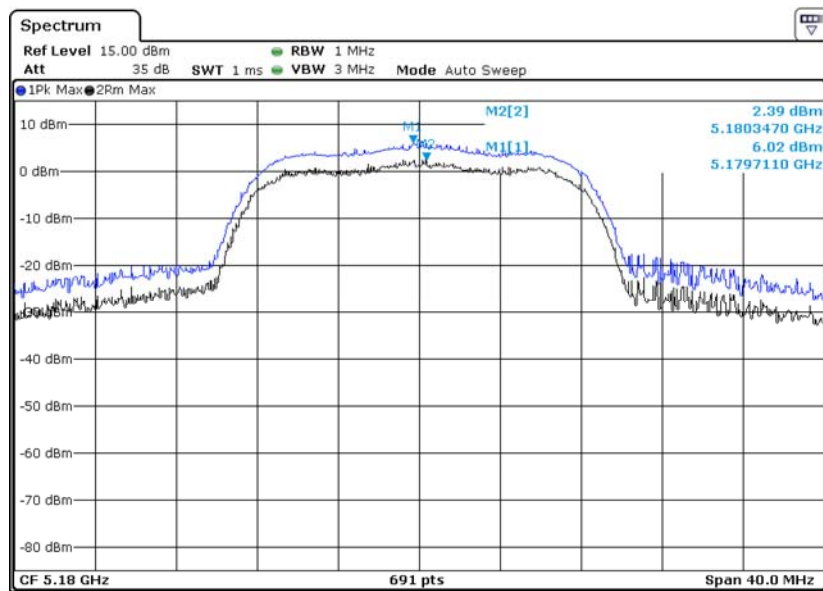
The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the maximum conducted output power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

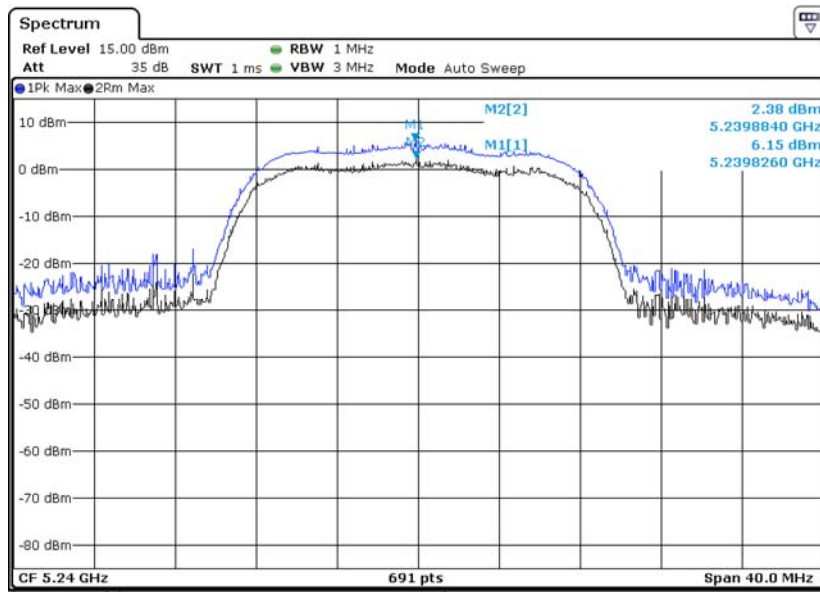
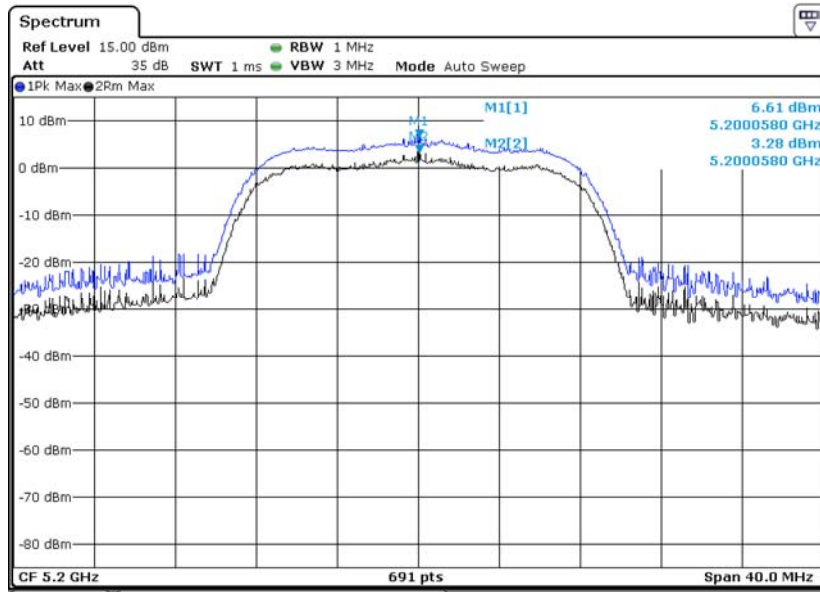
10.5 Test Result

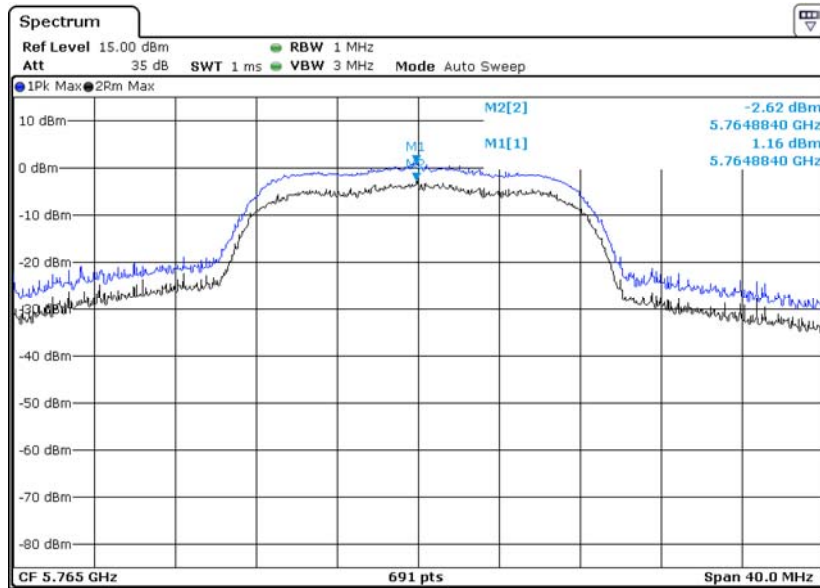
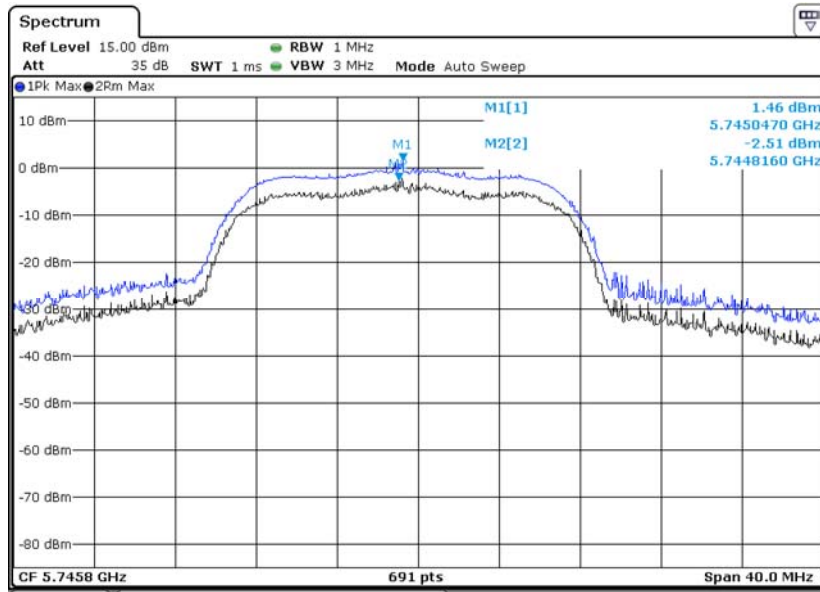
PASS.

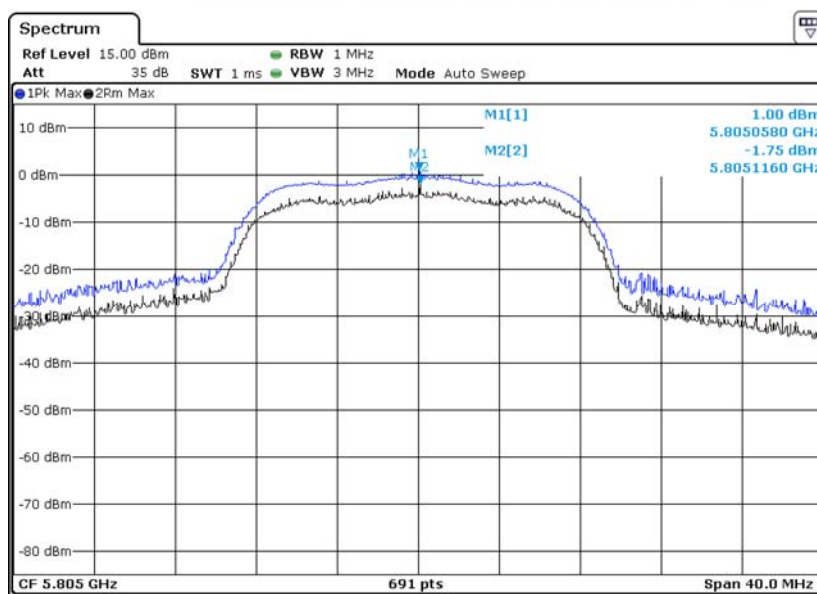
Spectrum Detector: PK Test Date : March 19, 2014
 Test By: Andy Temperature : 28°C
 Test Result: PASS Humidity : 65 %
 Operation Mode: 802.11a

Channel number	Channel Frequency(MHz)	Peak Excursion (dBm)	Peak Excursion Limit(dBm)	Pass/Fail
36	5180	3.63	13	Pass
40	5200	3.33	13	Pass
48	5240	3.77	13	Pass
149	5745	3.97	13	Pass
153	5765	3.78	13	Pass
161	5805	2.75	13	Pass



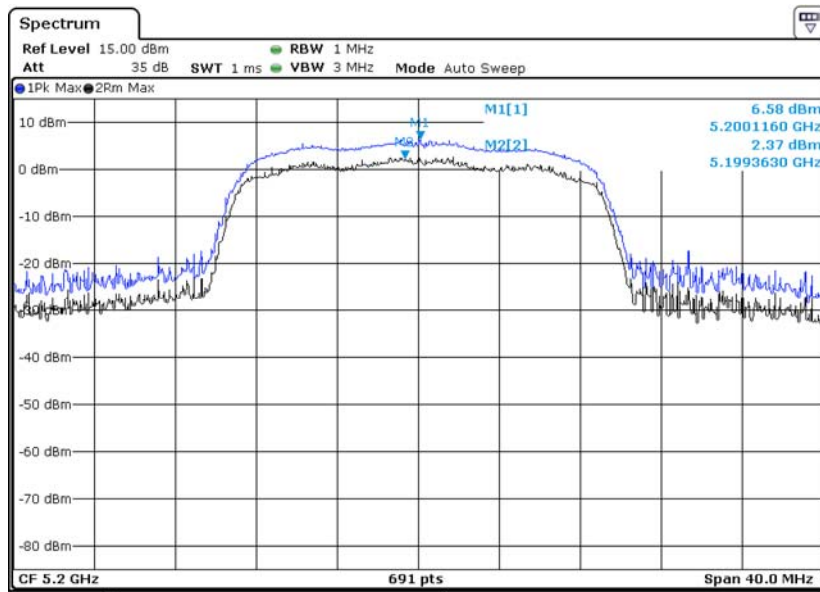
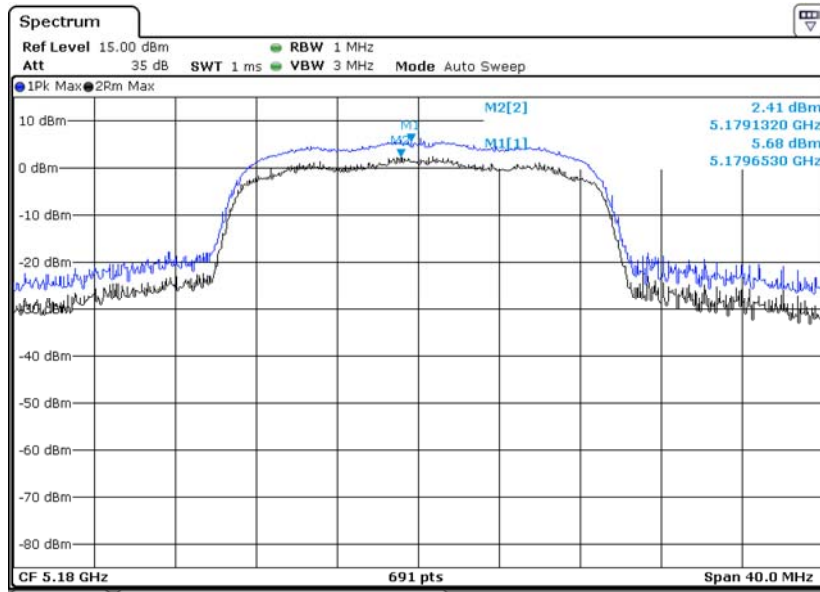


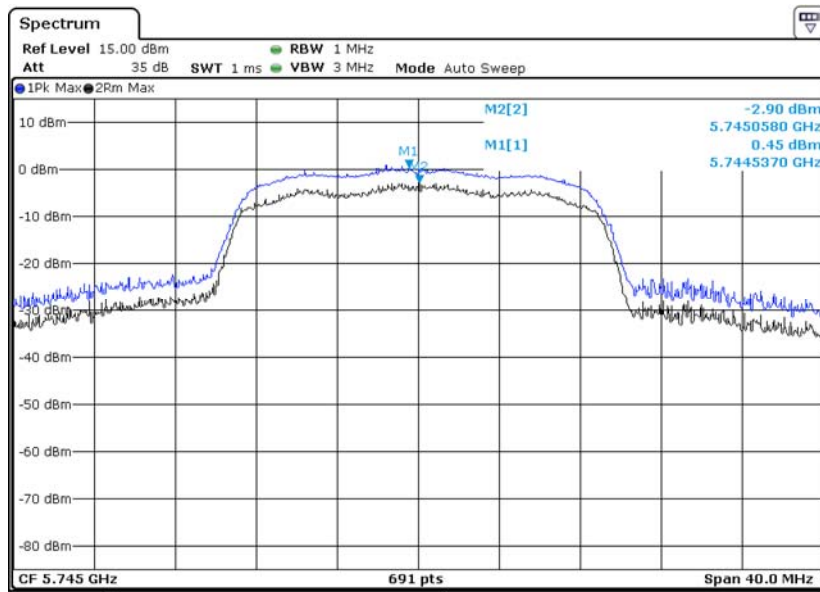
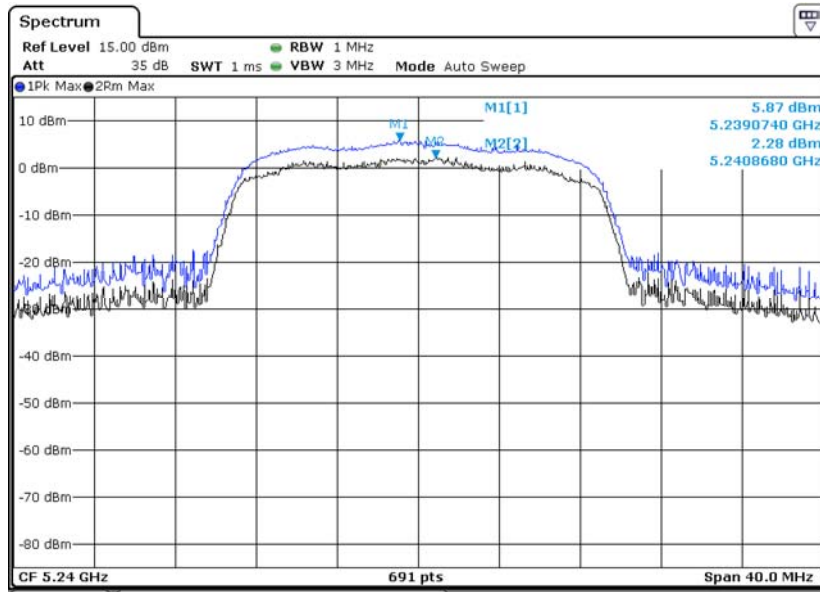


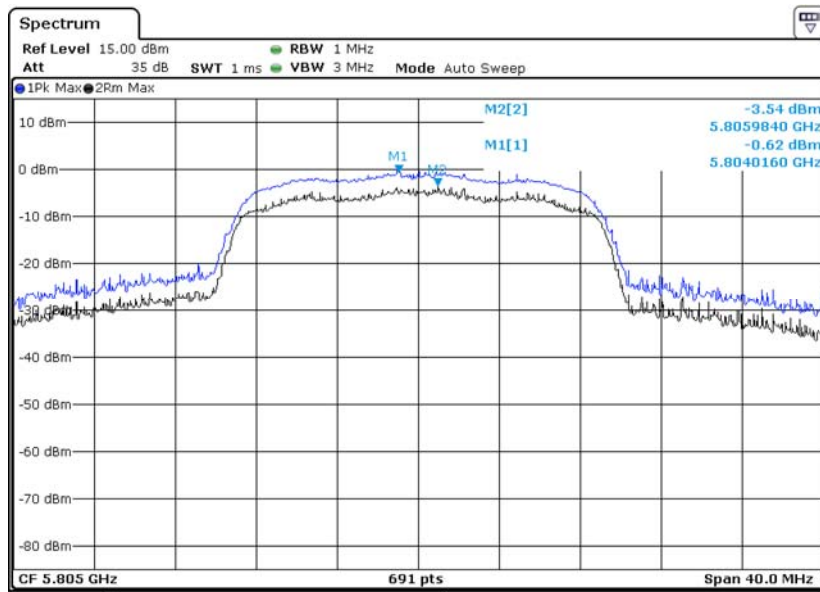
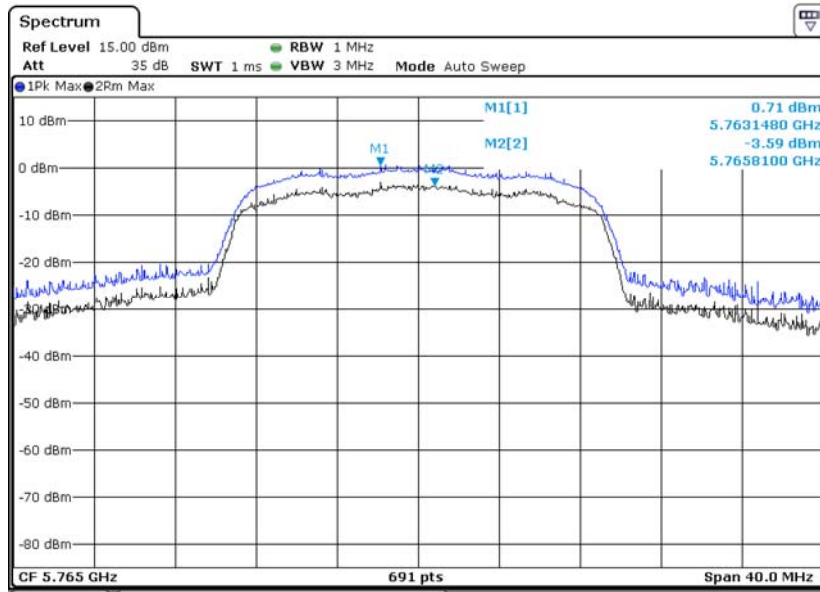


Spectrum Detector:	PK	Test Date :	March 19, 2014
Test By:	Andy	Temperature :	28°C
Test Result:	PASS	Humidity :	65 %
Operation Mode: 802.11n(HT20)			

Channel number	Channel Frequency(MHz)	Peak Excursion (dBm)	Peak Excursion Limit(dBm)	Pass/Fail
36	5180	3.27	13	Pass
40	5200	4.21	13	Pass
48	5240	3.59	13	Pass
149	5745	3.35	13	Pass
153	5765	4.3	13	Pass
161	5805	2.92	13	Pass



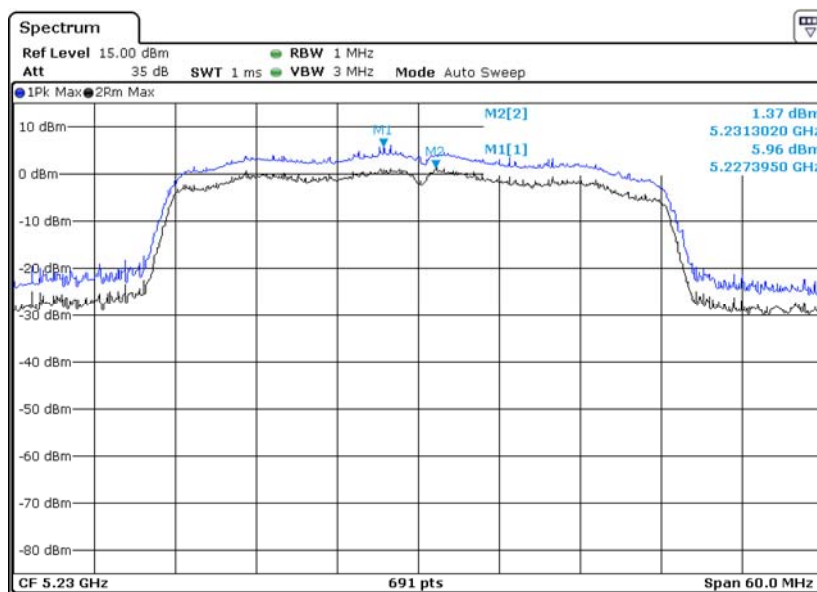
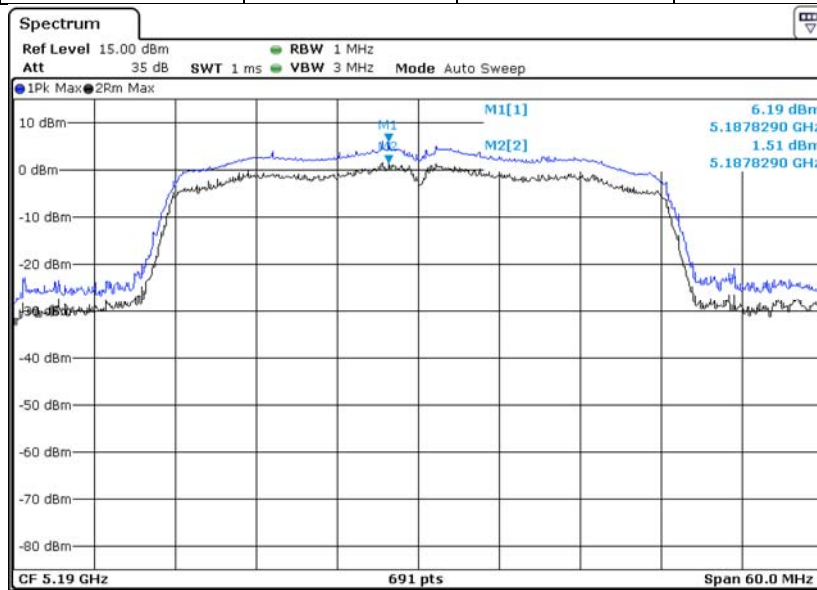


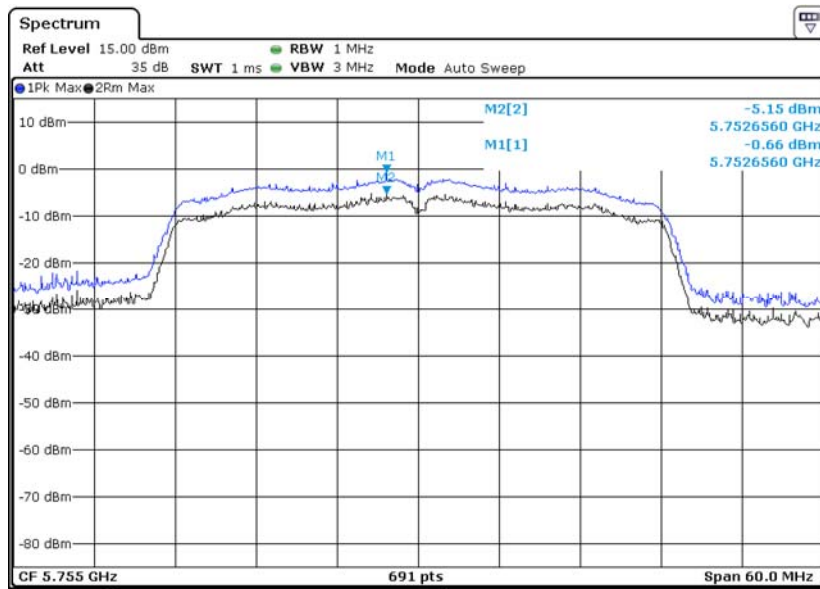
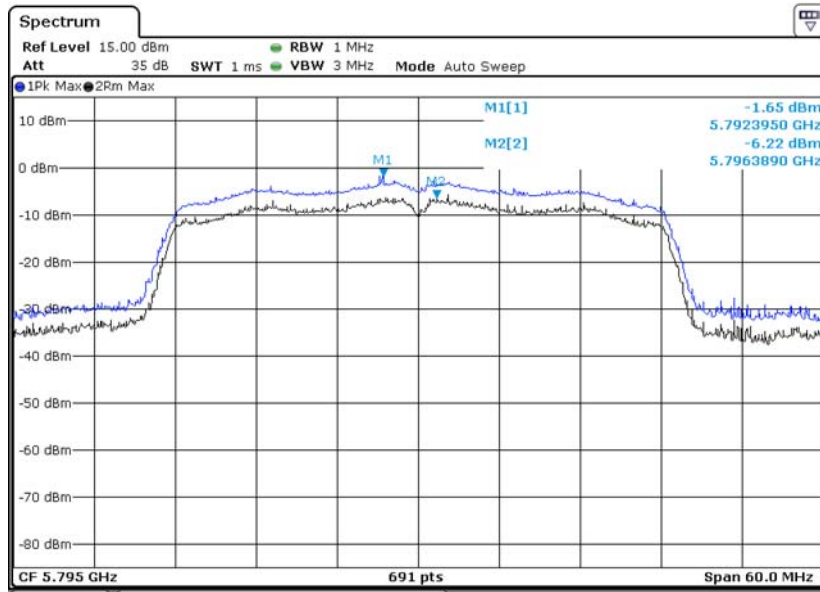


Spectrum Detector: PK
 Test By: Andy
 Test Result: PASS
 Operation Mode: 802.11n(HT40)

Test Date : March 19, 2014
 Temperature : 28°C
 Humidity : 65 %

Channel number	Channel Frequency(MHz)	Peak Excursion (dBm)	Peak Excursion Limit(dBm)	Pass/Fail
38	5190	4.68	13	Pass
46	5230	4.59	13	Pass
151	5755	4.57	13	Pass
159	5795	4.49	13	Pass





11. Band Edge Radiated Emission Test

11.1 Test Procedures

Same as clause 6.1

Test method: FCC KDB 789033 G)& Parts 15.407(b)(4) & 15.209(a)

11.2 Test Equipment

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Pre-Amplifier	HP	8447D	2944A07999	05/29/2013	05/28/2014
Frequency Analyser	R&S/DE	FSV40	132.1.3008K39-100967-AP	Feb. 05, 2013	02/05/2014
Bilog Antenna	Schwarzbeck	VULB9163	142	05/29/2013	05/28/2014
Loop Antenna	ARA	PLA-1030/B	1029	05/29/2013	05/28/2014
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170399	05/29/2013	05/28/2014
Horn Antenna	Schwarzbeck	BBHA 9120	D143	05/29/2013	05/28/2014
Pre-Amplifier	A.H.	PAM-0126	1415261	05/29/2013	05/28/2014
Cable	Schwarzbeck	AK9513	ACRX1	05/29/2013	05/28/2014
Cable	Rosenberger	N/A	FP2RX2	05/29/2013	05/28/2014
Cable	Schwarzbeck	AK9513	CRPX1	05/29/2013	05/28/2014
Cable	Schwarzbeck	AK9513	CRRX2	05/29/2013	05/28/2014

11.3 Block Diagram of Test setup

Same as Clause 6.2

11.4 Limit

Band 5.15-5.25GHz:

all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz.

Band 5.725-5.825GHz:

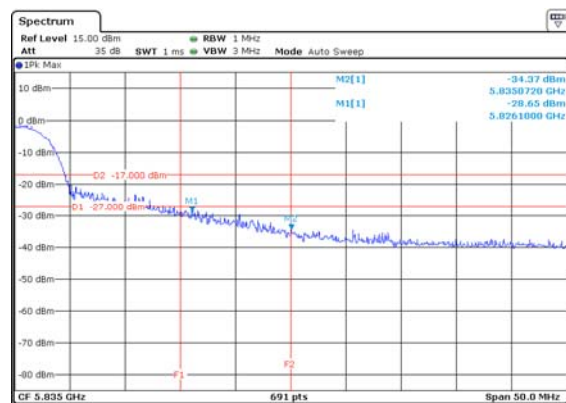
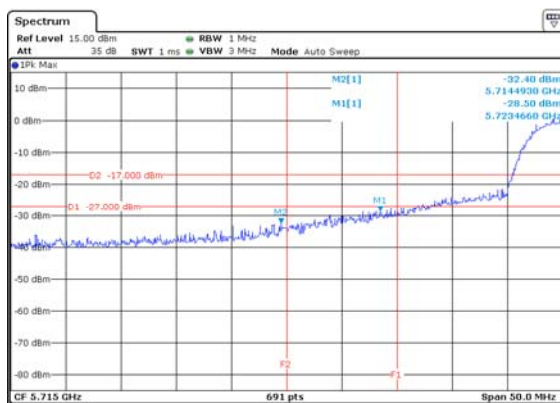
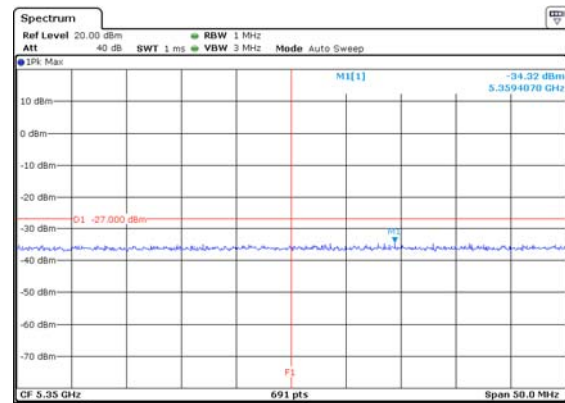
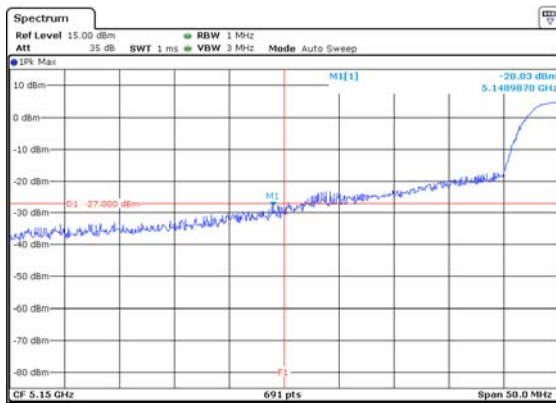
all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of -17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an EIRP of -27 dBm/MHz.

11.5 Test Result

PASS.

Spectrum Detector: PK Test Date : March 19, 2014
Test By: Andy Temperature : 28°C
Test Result: PASS Humidity : 65 %
Operation Mode: 802.11a

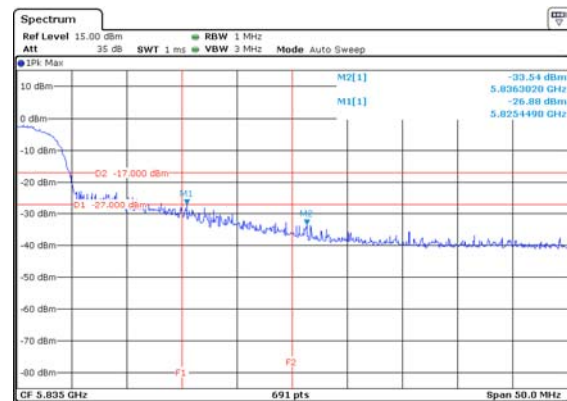
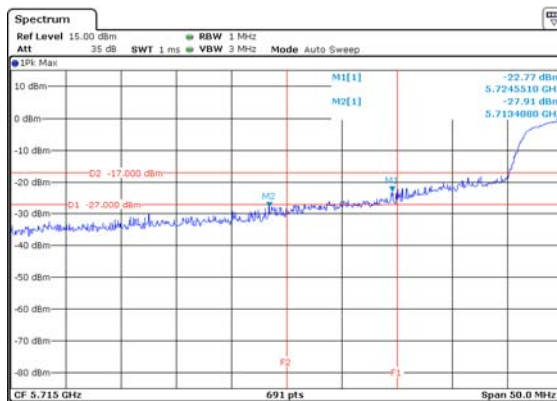
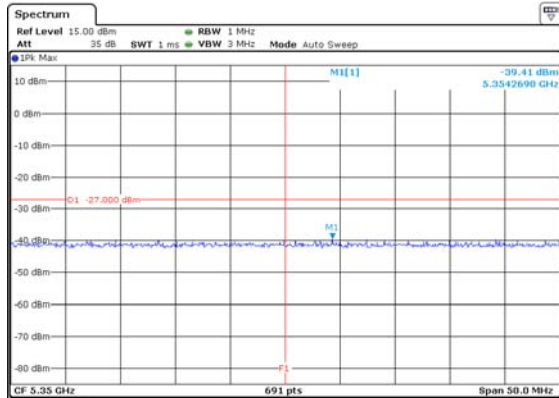
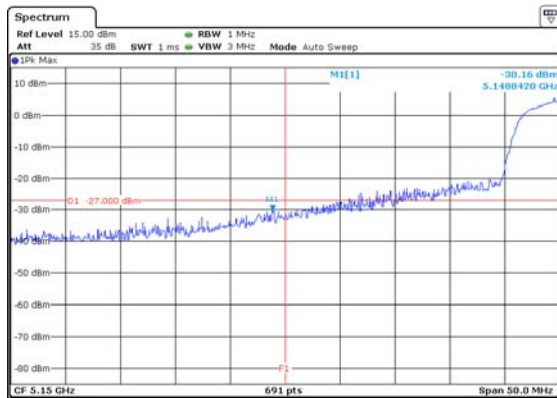
Band Edge Frequency (MHz)	Peak Level (dBm)	Peak Level Limit(dBm)	Pass/Fail
5149	-28.03	-27	PASS
5359	-34.32	-27	PASS
5723.5	-28.5	-17	PASS
5714.5	-32.4	-27	PASS
5826	-28.65	-17	PASS
5835	-34.37	-27	PASS



Spectrum Detector: PK
Test By: Andy
Test Result: PASS
Operation Mode: 802.11n(HT20)

Test Date : March 19, 2014
Temperature : 28°C
Humidity : 65 %

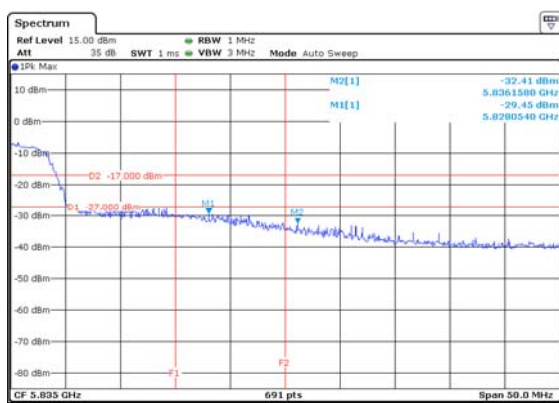
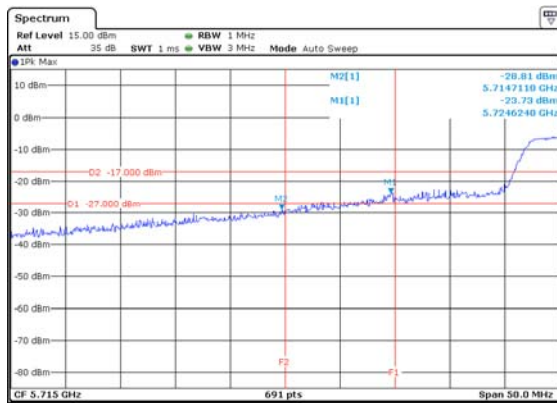
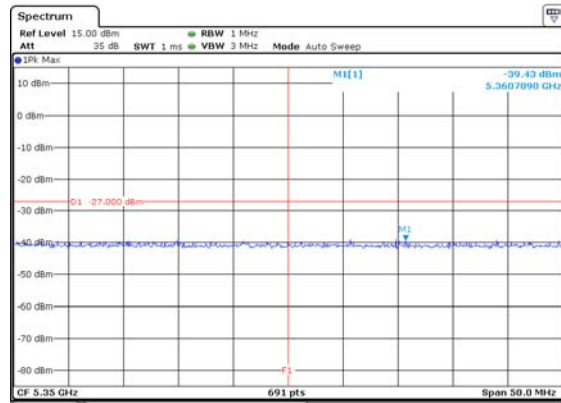
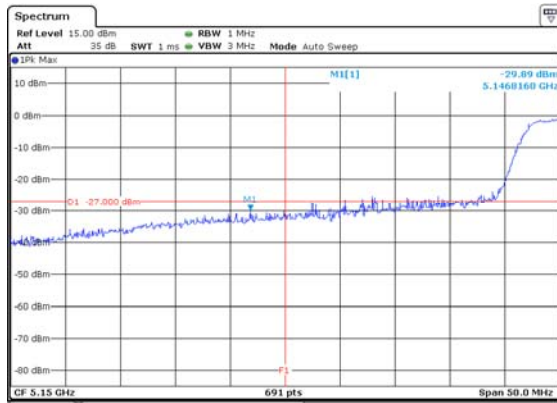
Band Edge Frequency (MHz)	Peak Level (dBm)	Peak Level Limit(dBm)	Pass/Fail
5149	-30.16	-27	PASS
5354	-39.41	-27	PASS
5724.5	-22.77	-17	PASS
5713.4	-27.91	-27	PASS
5825.5	-26.88	-17	PASS
5836.3	-33.54	-27	PASS



Spectrum Detector: PK
Test By: Andy
Test Result: PASS
Operation Mode: 802.11n(HT40)

Test Date : March 19, 2014
Temperature : 28°C
Humidity : 65 %

Band Edge Frequency (MHz)	Peak Level (dBm)	Peak Level Limit(dBm)	Pass/Fail
5146.8	-29.89	-27	PASS
5360.7	-39.43	-27	PASS
5724.6	-23.73	-17	PASS
5714.7	-28.81	-27	PASS
5828.05	-29.45	-17	PASS
5836.16	-32.41	-27	PASS



12. Uncertainty

Measurement Uncertainty for a level of Confidence of 95%

Parameter	Uncertainty
Radio Frequency	$\pm 1 \times 10^{-5}$
Maximum Conducted Output Power Test	$\pm 1.0\text{dB}$
Radiated Emission Test	$\pm 2.0\text{dB}$
Peak Power Density	$\pm 2.0\text{dB}$
Occupied Bandwidth Test	$\pm 1.0\text{dB}$
Band Edge Test	$\pm 3\text{dB}$
All emission, radiated	$\pm 3\text{dB}$
Antenna Port Emission	$\pm 3\text{dB}$
Temperature	$\pm 0.5^{\circ}\text{C}$
Humidity	$\pm 3\%$