

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

Tablet

MODEL No.: WPT005, WP005, WPG005

FCC ID: ZYQ-WPT005

IC ID:10558B-WPT005

Trade Mark: wikipad

REPORT NO: ES130319170E3

ISSUE DATE: April 8, 2013

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

Prepared by
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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:	WPT005, WP005, WPG005 (Note: all the models are the same, except their model number, we take WPT005 to test.)
File Number:	ES130319170E3
Date of Test:	April 1, 2013 to April 8, 2013

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 : _____ April 1, 2013 to April 8, 2013 _____

Prepared by : _____
Jessie Hu/Editor

Reviewer : _____
King Wang/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). Standards: IEEE802.11a/n
B). Operation Frequency:
Bluetooth: 2402-2480MHz, WIFI 802.11b/g/n : 2412-2462MHz;
802.11a/n :5745MHz~5805MHz;
C). Modulation:
Bluetooth: GFSK, 1/4 Π -DQPSK, 8DPSK for Bluetooth
OFDM with BPSK/QPSK/16QAM/64QAM for 802.11a/g/n,
DSSS with DBPSK/DQPSK/CCK for 802.11b
D). Number of Channel: 802.11a/n: 4Channels;
E). Support Data Rate: 1, 2, 5.5, 11, 6, 9, 12, 24, 36, 48, 54, 65, 72.2, 150Mbps;
F). Conducted Power: 16.08dBm(802.11a), 15.93dBm(802.11n)
G) Antenna Gain: 3.21dBi(2.4G), 3.72dBi(5.8G)
H). Antenna Type: Chip Antenna
I). Power Supply: DC 5V with AC Adapter and DC 3.7V from Li-ion Battery.
J). Adapter : Model:KSAPK0110500200D5
Input: AC 100-240V, 50/60Hz, 0.5A MAX
Output: DC 5.0V, 2A

Channel	Frequency (MHz)
149	5745
153	5765
157	5785
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-WPT005 filing to comply with Section 15.247 of the FCC Part 15, Subpart C Rules and also intended for IC ID:10558B-WPT005filing 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, 2010.10.29
The certificate is valid until 2013.10.28
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

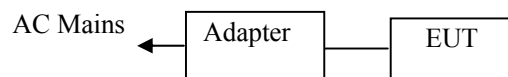


Table 2-1 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID	IC ID	Series No.	Note
1.	Tablet	wikipad	WPT005	ZYQ-WPT005	10558B-WPT005	N/A	EUT
2.	Adapter	Ktec	KSAPK011 0500200D5	N/A	N/A	N/A	
3.	Earphone	N/A	N/A	N/A	N/A	N/A	

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

The Transmitter of EUT is an Mobile Internet Device and powered by host equipment; 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:

1. For lowest channel : 5745MHz (Channel 149)
2. For middle channel : 5765MHz (Channel 153)
3. For highest channel : 5805MHz (Channel 161)

4. Summary of Test Results

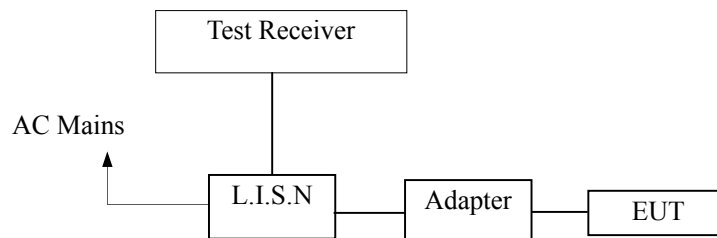
FCC Rules	IC Rule	Description Of Test	Result
§15.247(a)(2)	RSS-210, A8.2(a)	6dB bandwidth	Pass
§15.247(b)(3)	RSS-210, A8.4(2)	Max Peak output Power test	Pass
§15.247(e)	RSS-210, A8.2(b)	Power density	Pass
§15.247(d)	RSS-210, A2.9, A8.5	Band edge test	Pass
§15.207	RSS-GEN, Section 7.2.2	AC Power Conducted Emission	Pass
§15.247(d), §15.209	RSS-210, A2.9, A8.5	Radiated Emission	Pass
§15.247(d)	RSS-210, A8.5 RSS-GEN, Section 7.2.3	Antenna Port Emission	Pass
§15.247(b)&§15.203	N/A	Antenna Application	Pass
N/A	RSS-210, A1.1.3	99%dB Bandwidth	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	05/29/2012	05/28/2013
L.I.S.N.	Schwarzbeck	NNLK8129	8129203	05/29/2012	05/28/2013
50Ω Coaxial Switch	Anritsu	MP59B	M20531	N/A	N/A
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100006	05/29/2012	05/28/2013

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

Date of Test: April 1, 2013 Temperature: 22°C
 Frequency Detector: 0.15~30MHz Humidity: 50%
 Test Result: PASS Test Mode: TX Mode

Test Line	Frequency MHz	Emission Level QP dB(μV)	Emission Level AV dB(μV)	Limits QP dB(μV)	Limits AV dB(μV)	Over QP dB(μV)	Over AV dB(μV)
Line	0.19	58.75	43.77	64.04	54.04	-5.29	-10.27
	0.27	48.38	36.78	61.12	51.12	-12.74	-14.34
	0.3	51.97	36.84	60.24	50.24	-8.27	-13.4
	0.37	50.32	29.97	58.50	48.50	-8.18	-18.53
	0.45	50.65	28.23	56.88	46.88	-6.23	-18.65
	0.56	47.65	27.63	56.00	46.00	-8.35	-18.37
Neutral	0.2117	54.96	43.53	63.14	53.14	-8.18	-9.61
	0.29	53.6	33.99	60.52	50.52	-6.92	-16.53
	0.33	50.05	27.97	59.45	49.45	-9.40	-21.48
	0.352	49.37	26.95	58.92	48.92	-9.55	-21.97
	0.45	48.25	29.25	56.88	46.88	-8.63	-17.63
	0.19	58.75	43.77	64.04	54.04	-5.29	-10.27

6. Radiated Emission Test

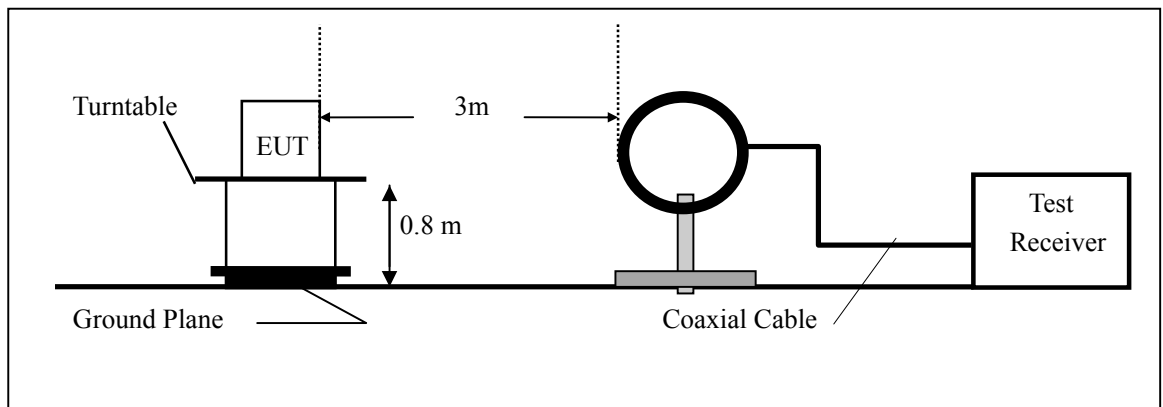
6.1 Measurement Procedure

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.

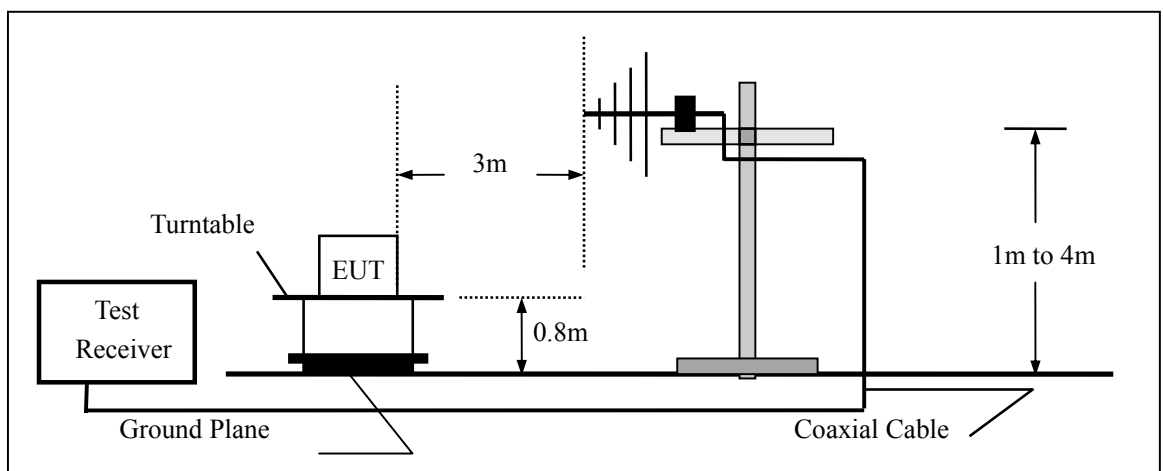
For emissions measurement set the bandwidth of the Spectrum's RBW at 1MHz above 1GHz and RBW 100 KHz below 1GHz.

6.2 Test SET-UP (Block Diagram of Configuration)

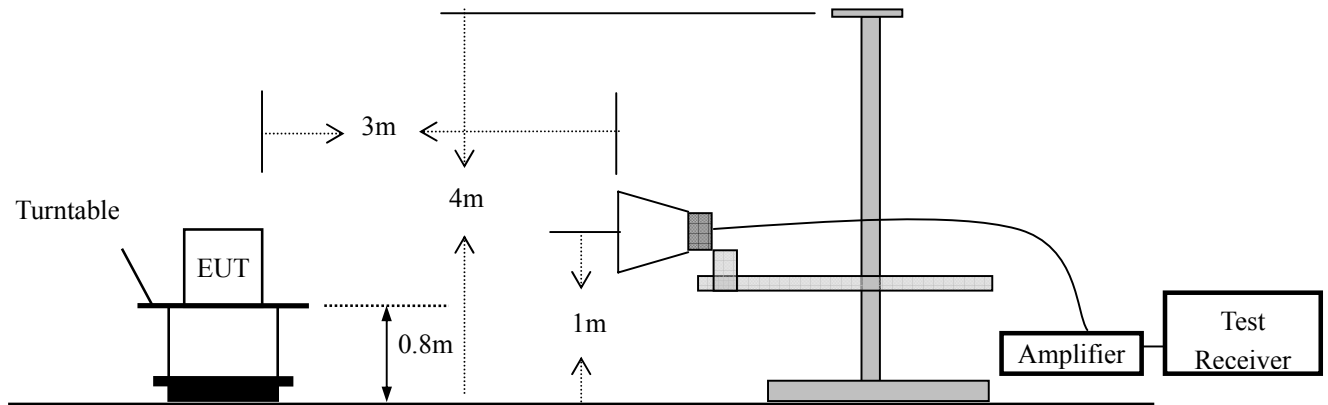
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(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	May 29, 2012	05/28/2013
Spectrum Analyzer	Agilent	E4448A	56481557	Feb. 05, 2013	02/05/2014
Bilog Antenna	Schwarzbeck	VULB9163	142	May 29, 2012	05/28/2013
Loop Antenna	ARA	PLA-1030/B	1029	May 29, 2012	05/28/2013
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170399	May 29, 2012	05/28/2013
Horn Antenna	Schwarzbeck	BBHA 9120	D143	May 29, 2012	05/28/2013
Pre-Amplifier	A.H.	PAM-0126	1415261	May 29, 2012	05/28/2013
Cable	Schwarzbeck	AK9513	ACRX1	May 29, 2012	05/28/2013
Cable	Rosenberger	N/A	FP2RX2	May 29, 2012	05/28/2013
Cable	Schwarzbeck	AK9513	CRPX1	May 29, 2012	05/28/2013
Cable	Schwarzbeck	AK9513	CRRX2	May 29, 2012	05/28/2013

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

Operation Mode: TX Mode Test Date : April 1, 2013
Frequency Range: 9KHz~30MHz 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)
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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: 802.11n TX Channel 149 Test Date : April 1, 2013
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
92.1795	V	20.37	43.50	-23.13	QP
210.3205	V	27.27	43.50	-16.23	QP
244.5192	V	29.17	46.00	-16.83	QP
407.7404	V	25.58	46.00	-20.42	QP
490.1282	V	31.74	46.00	-14.26	QP
570.9615	V	37.83	46.00	-8.17	QP
210.3205	H	25.12	43.50	-18.38	QP
244.5192	H	31.77	46.00	-14.23	QP
378.2051	H	24.18	46.00	-21.82	QP
570.9615	H	27.45	46.00	-18.55	QP
642.468	H	31.27	46.00	-14.73	QP
734.1826	H	35.59	46.00	-10.41	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: 802.11n TX Channel 153 Test Date : April 1, 2013
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
92.1795	V	20.22	43.50	-23.28	QP
210.3205	V	27.15	43.50	-16.35	QP
244.5192	V	29.04	46.00	-16.96	QP
407.7404	V	25.47	46.00	-20.53	QP
490.1282	V	31.60	46.00	-14.40	QP
570.9615	V	37.67	46.00	-8.33	QP
210.3205	H	24.98	43.50	-18.52	QP
244.5192	H	31.62	46.00	-14.38	QP
378.2051	H	23.99	46.00	-22.01	QP
570.9615	H	27.27	46.00	-18.73	QP
642.468	H	31.10	46.00	-14.90	QP
734.1826	H	35.43	46.00	-10.57	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: 802.11n TX Channel 161 Test Date : April 1, 2013
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
92.1795	V	20.07	43.50	-23.43	QP
210.3205	V	27.03	43.50	-16.47	QP
244.5192	V	28.91	46.00	-17.09	QP
407.7404	V	25.36	46.00	-20.64	QP
490.1282	V	31.46	46.00	-14.54	QP
570.9615	V	37.51	46.00	-8.49	QP
210.3205	H	24.84	43.50	-18.66	QP
244.5192	H	31.47	46.00	-14.53	QP
378.2051	H	23.80	46.00	-22.20	QP
570.9615	H	27.09	46.00	-18.91	QP
642.468	H	30.93	46.00	-15.07	QP
734.1826	H	35.27	46.00	-10.73	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 149 Test Date : April 1, 2013
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
92.1795	V	20.91	43.50	-22.59	QP
162.1314	V	19.96	43.50	-23.54	QP
244.5192	V	23.33	46.00	-22.67	QP
407.7404	V	22.39	46.00	-23.61	QP
497.9006	V	25.72	46.00	-20.28	QP
570.9615	V	38.00	46.00	-8.00	QP
210.3205	H	23.77	43.50	-19.73	QP
244.5192	H	30.19	46.00	-15.81	QP
407.7404	H	28.30	46.00	-17.70	QP
570.9615	H	39.81	46.00	-6.19	QP
653.3494	H	31.28	46.00	-14.72	QP
735.7372	H	33.50	46.00	-12.50	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 153 Test Date : April 1, 2013
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
92.1795	V	20.80	43.50	-22.70	QP
162.1314	V	19.83	43.50	-23.67	QP
244.5192	V	23.18	46.00	-22.82	QP
407.7404	V	22.23	46.00	-23.77	QP
497.9006	V	25.58	46.00	-20.42	QP
570.9615	V	37.83	46.00	-8.17	QP
210.3205	H	23.59	43.50	-19.91	QP
244.5192	H	30.06	46.00	-15.94	QP
407.7404	H	28.15	46.00	-17.85	QP
570.9615	H	39.65	46.00	-6.35	QP
653.3494	H	31.14	46.00	-14.86	QP
735.7372	H	33.34	46.00	-12.66	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 161 Test Date : April 1, 2013
 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
92.1795	V	20.69	43.50	-22.81	QP
162.1314	V	19.70	43.50	-23.80	QP
244.5192	V	23.03	46.00	-22.97	QP
407.7404	V	22.07	46.00	-23.93	QP
497.9006	V	25.44	46.00	-20.56	QP
570.9615	V	37.66	46.00	-8.34	QP
210.3205	H	23.41	43.50	-20.09	QP
244.5192	H	29.93	46.00	-16.07	QP
407.7404	H	28.00	46.00	-18.00	QP
570.9615	H	39.49	46.00	-6.51	QP
653.3494	H	31.00	46.00	-15.00	QP
735.7372	H	33.18	46.00	-12.82	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: 802.11n TX Channel 149 Test Date : April 1, 2013
 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
11490	V	45.52	32.93	74.00	54.00	-28.48	-21.07
13000	V	48.44	39.09	74.00	54.00	-25.56	-14.91
17235	V	50.08	40.00	74.00	54.00	-23.92	-14.00
24000	V	47.47	37.83	74.00	54.00	-26.53	-16.17
11530	H	48.40	34.13	74.00	54.00	-25.60	-19.87
13000	H	48.45	39.07	74.00	54.00	-25.55	-14.93
17295	H	50.09	40.03	74.00	54.00	-23.91	-13.97
24000	H	48.51	38.25	74.00	54.00	-25.49	-15.75
--	--	--	--	--	--	--	--

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: 802.11n TX Channel 153 Test Date : April 1, 2013
 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
11491	V	45.17	32.48	74.00	54.00	-28.83	-21.52
13000	V	48.09	38.64	74.00	54.00	-25.91	-15.36
17236	V	49.73	39.55	74.00	54.00	-24.27	-14.45
24000	V	47.12	37.38	74.00	54.00	-26.88	-16.62
11530	H	48.05	33.68	74.00	54.00	-25.95	-20.32
13000	H	48.10	38.62	74.00	54.00	-25.90	-15.38
17295	H	51.43	41.39	74.00	54.00	-22.57	-12.61
24000	H	45.22	32.46	74.00	54.00	-28.78	-21.54
--	--	--	--	--	--	--	--

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: 802.11n TX Channel 161 Test Date : April 1, 2013
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
11491	V	45.1	32.61	74.00	54.00	-28.90	-21.39
13000	V	48.02	38.77	74.00	54.00	-25.98	-15.23
17235	V	49.66	39.68	74.00	54.00	-24.34	-14.32
24001	V	47.05	37.51	74.00	54.00	-26.95	-16.49
11532	H	47.98	33.81	74.00	54.00	-26.02	-20.19
13000	H	48.03	38.75	74.00	54.00	-25.97	-15.25
17295	H	49.67	39.71	74.00	54.00	-24.33	-14.29
24000	H	48.09	37.93	74.00	54.00	-25.91	-16.07
--	--	--	--	--	--	--	--

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 149 Test Date : April 1, 2013
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
11490	V	46.20	33.49	74.00	54.00	-27.80	-20.51
13000	V	49.12	39.65	74.00	54.00	-24.88	-14.35
17235	V	50.76	40.56	74.00	54.00	-23.24	-13.44
24000	V	48.15	38.39	74.00	54.00	-25.85	-15.61
11530	H	49.08	34.69	74.00	54.00	-24.92	-19.31
13000	H	49.13	39.63	74.00	54.00	-24.87	-14.37
17295	H	50.77	40.59	74.00	54.00	-23.23	-13.41
24000	H	49.19	38.81	74.00	54.00	-24.81	-15.19
--	--	--	--	--	--	--	--

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 153 Test Date : April 1, 2013
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
11489	V	45.78	33.17	74.00	54.00	-28.22	-20.83
13001	V	48.70	39.33	74.00	54.00	-25.30	-14.67
17234	V	50.34	40.24	74.00	54.00	-23.66	-13.76
24000	V	47.73	38.07	74.00	54.00	-26.27	-15.93
11531	H	48.66	34.37	74.00	54.00	-25.34	-19.63
13000	H	48.71	39.31	74.00	54.00	-25.29	-14.69
17295	H	50.35	40.27	74.00	54.00	-23.65	-13.73
24000	H	48.77	38.49	74.00	54.00	-25.23	-15.51
--	--	--	--	--	--	--	--

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 161 Test Date : April 1, 2013
 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
11490	V	46.45	33.72	74.00	54.00	-27.55	-20.28
13000	V	49.37	37.88	74.00	54.00	-24.63	-16.12
17235	V	51.01	38.79	74.00	54.00	-22.99	-15.21
24000	V	48.40	36.62	74.00	54.00	-25.60	-17.38
11530	H	49.33	32.92	74.00	54.00	-24.67	-21.08
13000	H	49.38	37.86	74.00	54.00	-24.62	-16.14
17295	H	51.02	38.82	74.00	54.00	-22.98	-15.18
24000	H	49.44	37.04	74.00	54.00	-24.56	-16.96
--	--	--	--	--	--	--	--

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 6dB Bandwidth Test and 99% Bandwidth Test

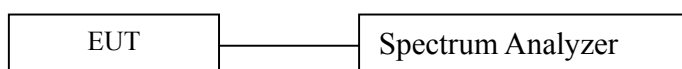
7.1 Measurement Procedure

The EUT was operating in IEEE 802.11b/g/n mode or could be controlled its channel. Printed out the test result from the spectrum by hard copy function.

1. Set resolution bandwidth (RBW) = 100 kHz.
2. Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequency) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Test SET-UP (Block Diagram of Configuration)

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	05/29/2012	05/28/2013

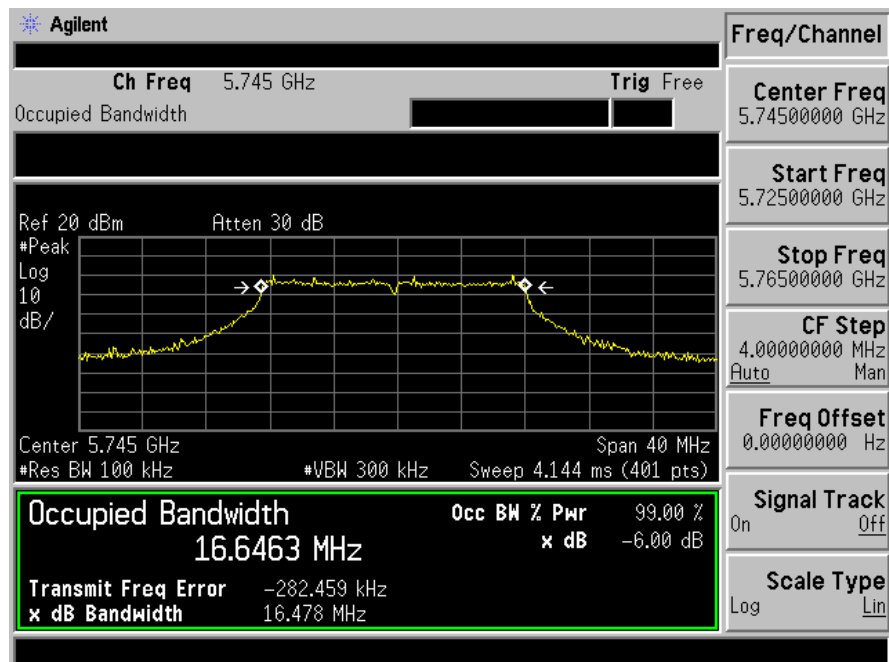
7.4 Measurement Results

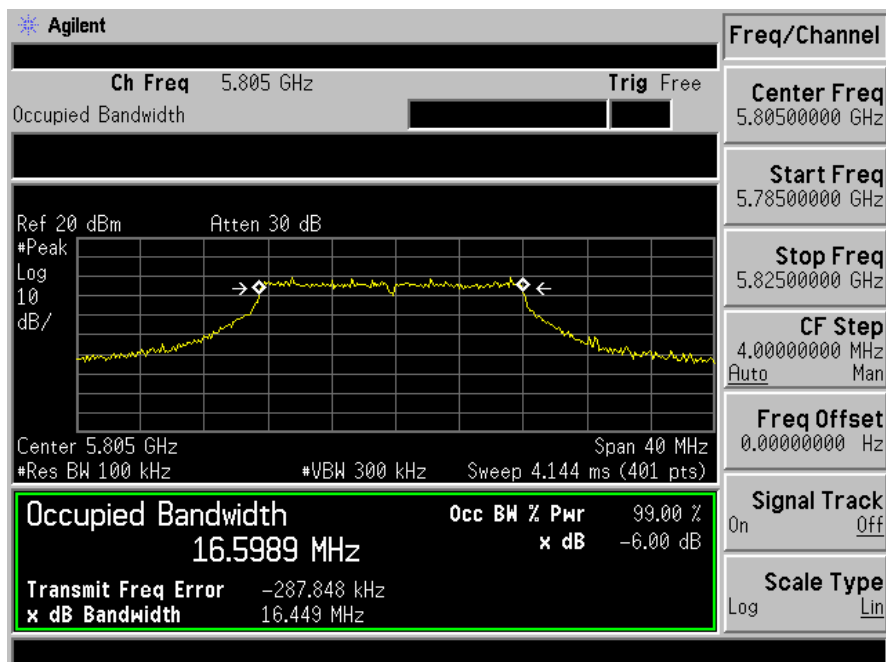
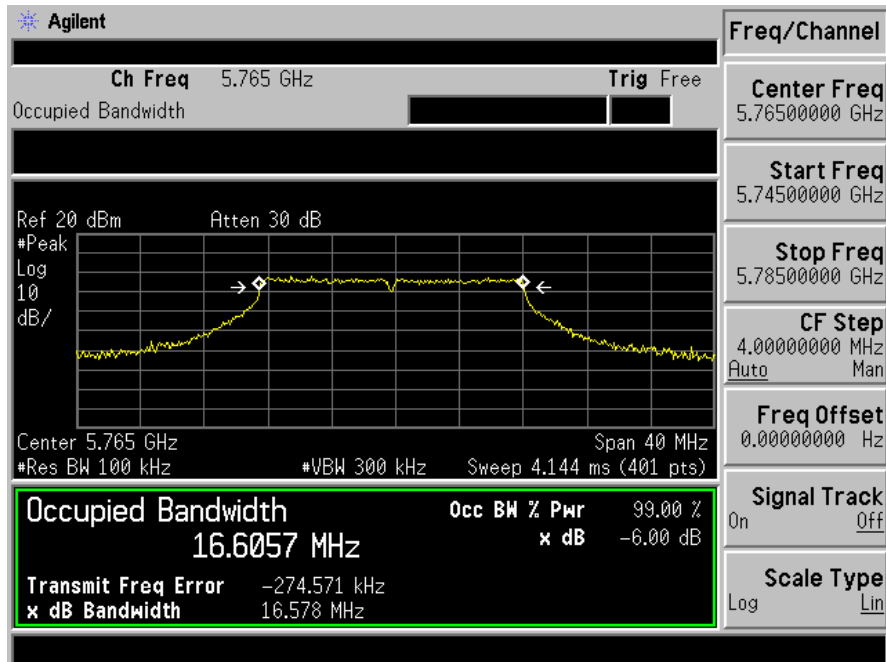
6db Bandwidth Test Data Chart and 99% Bandwidth Test Data Chart:
Refer to attached data chart.

6db Bandwidth Test

Spectrum Detector: PK Test Date : April 1, 2013
Test By: Andy Temperature : 28°C
Test Result: PASS Humidity : 65 %
Operation Mode: 802.11n

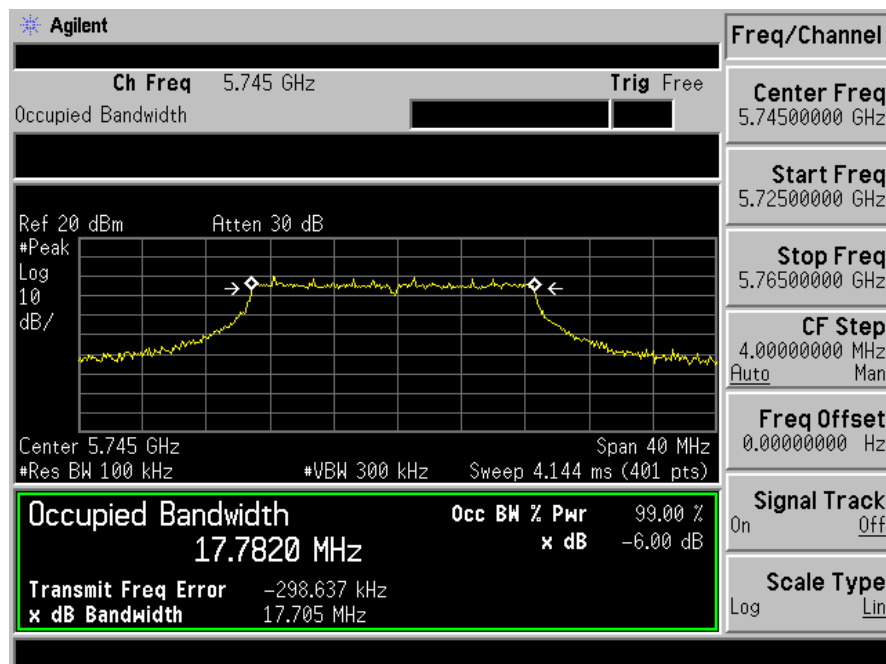
Channel number	Channel frequency (MHz)	Measurement level (MHz)	Mode
149	5745	16.478	6db Bandwidth
153	5765	16.578	6db Bandwidth
161	5805	16.449	6db Bandwidth

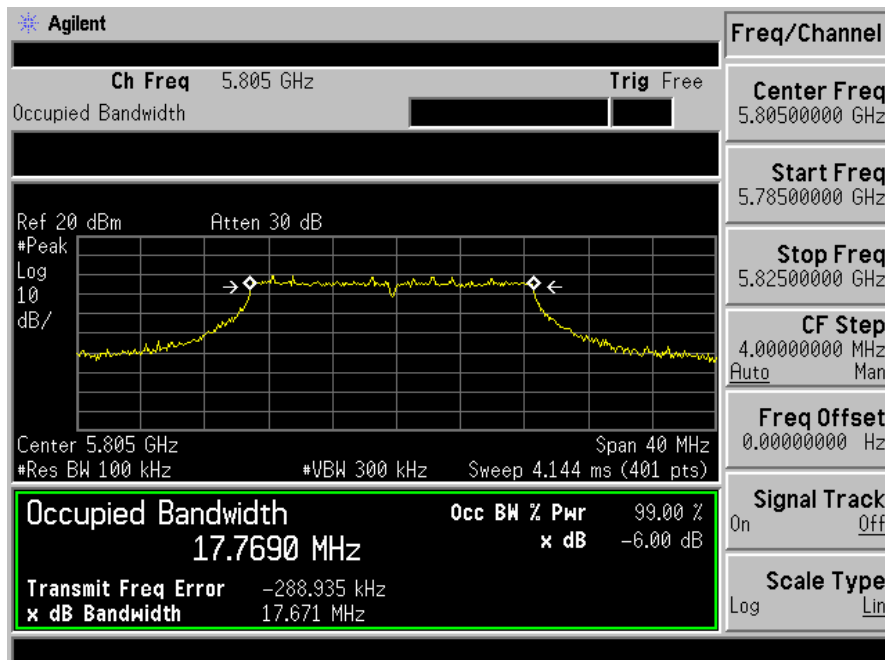
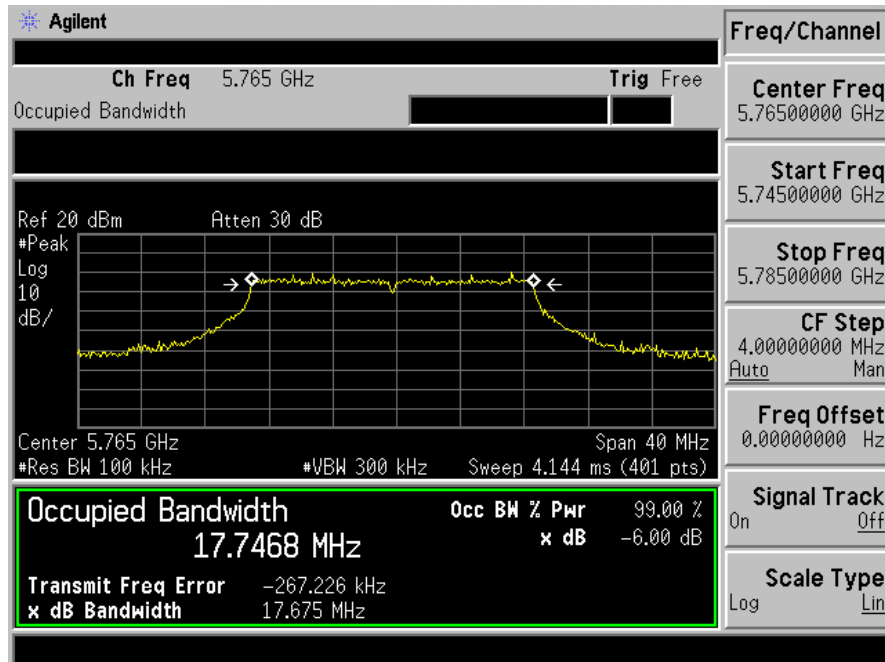




Spectrum Detector: PK Test Date : April 1, 2013
Test By: Andy Temperature : 28°C
Test Result: PASS Humidity : 65 %
Operation Mode: 802.11 n

Channel number	Channel frequency (MHz)	Measurement level (MHz)	Mode
149	5745	17.705	6db Bandwidth
153	5765	17.675	6db Bandwidth
161	5805	17.671	6db Bandwidth

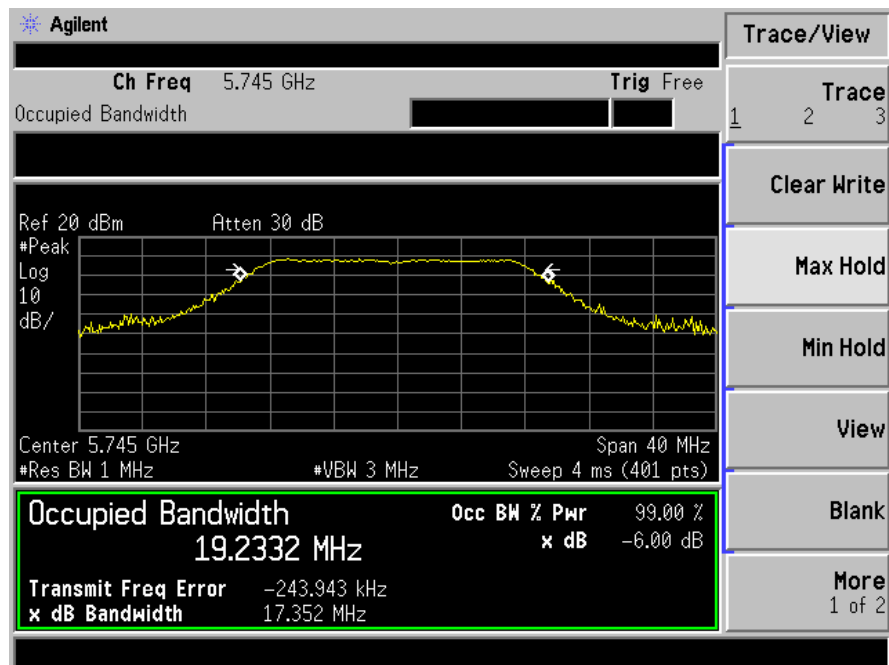


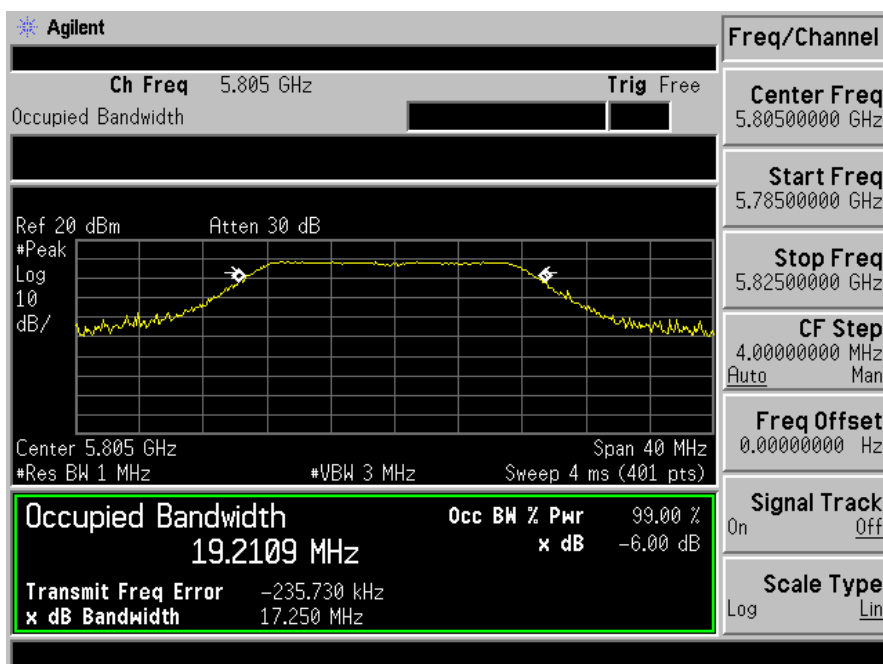
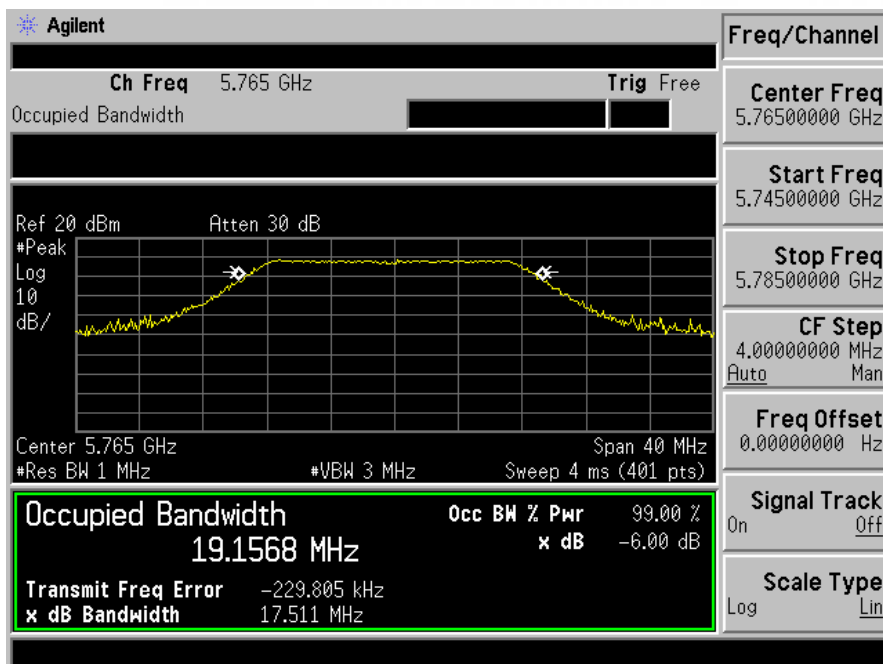


99% Bandwidth Test

Spectrum Detector:	PK	Test Date :	April 1, 2013
Test By:	Andy	Temperature :	28°C
Test Result:	PASS	Humidity :	65 %
Operation Mode:	802.11n		

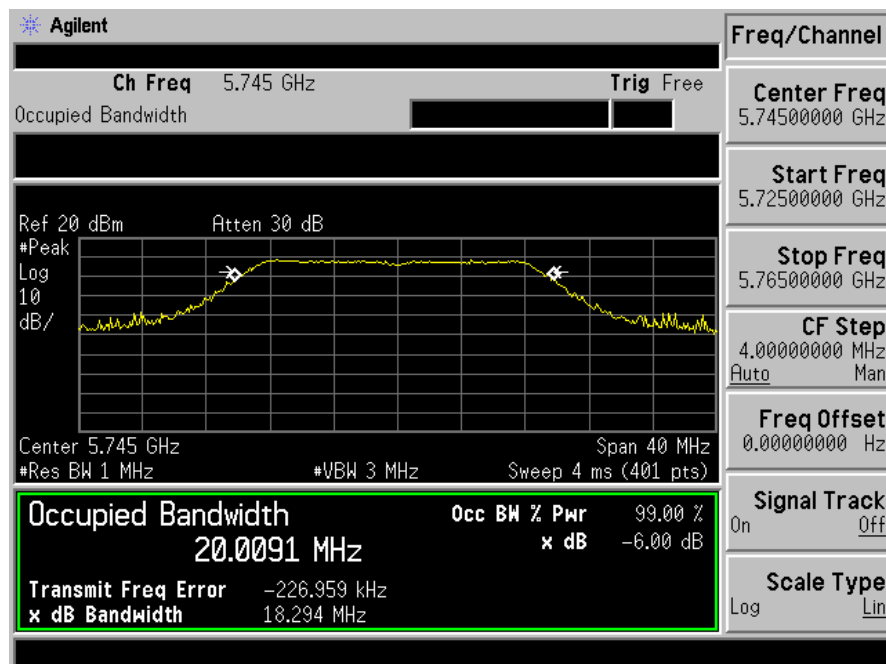
Channel number	Channel frequency (MHz)	Measurement level (MHz)	Mode
149	5745	19.233	99% Bandwidth Test
153	5765	19.156	99% Bandwidth Test
161	5805	19.210	99% Bandwidth Test

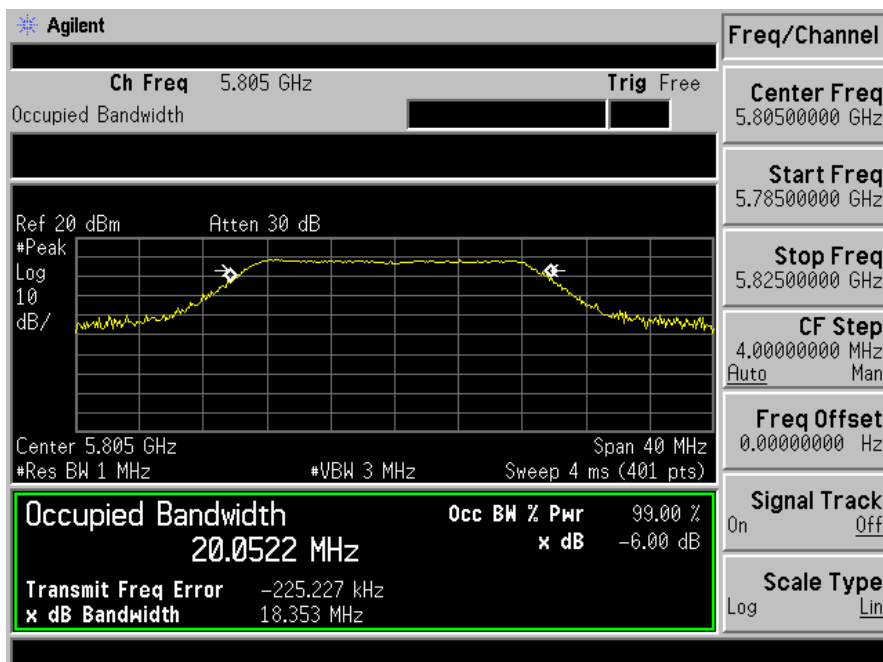
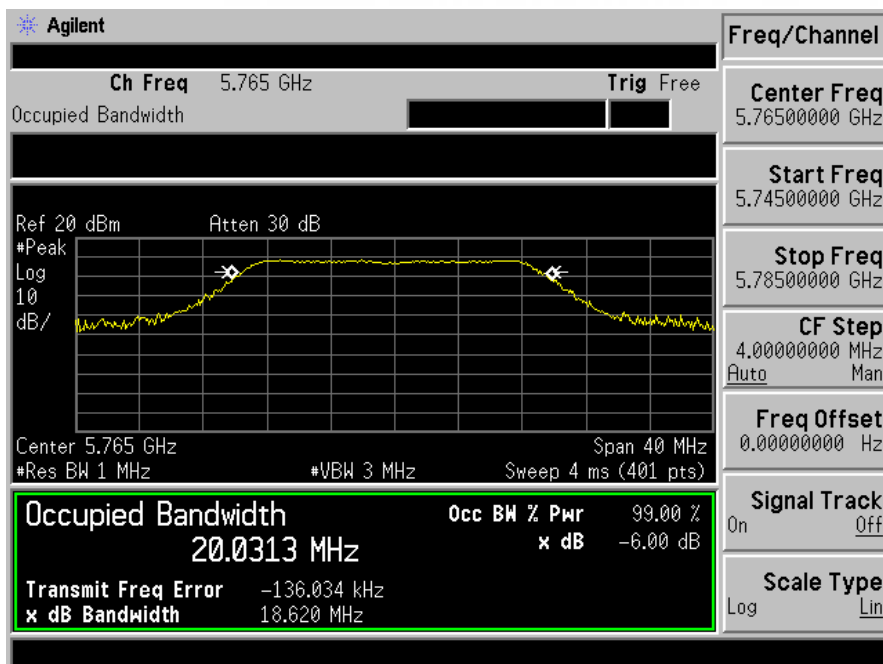




Spectrum Detector: PK Test Date : April 1, 2013
Test By: Andy Temperature : 28°C
Test Result: PASS Humidity : 65 %
Operation Mode: 802.11 n

Channel number	Channel frequency (MHz)	Measurement level (MHz)	Mode
149	5745	20.009	99% Bandwidth Test
153	5765	20.031	99% Bandwidth Test
161	5805	20.052	99% Bandwidth Test





8. Maximum Peak Output Power Test

8.1 Measurement Procedure

The maximum peak conducted output power can be measured using a broadband peak RF power meter. The power meter must have a video bandwidth that is greater than or equal to the DTS bandwidth and shall utilize a fast, average-responding diode type sensor.

- The Transmitter output (antenna port) was connected to the power meter.
- Turn on the EUT and power meter and then record the peak 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	05/29/2012	05/28/2013
Power sensor	MA2411B	0738172	05/29/2012	05/28/2013

8.4 Peak Power output limit

The maximum peak power shall be less 1Watt.

8.5 Measurement Results

Spectrum Detector: PK Test Date : April 1, 2013
 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(W)	Pass/Fail
149	5745	16.08	1W(30dBm)	PASS
153	5765	15.52	1W(30dBm)	PASS
161	5805	15.54	1W(30dBm)	PASS

Spectrum Detector: PK Test Date : April 1, 2013
Test By: Andy Temperature : 28°C
Test Result: PASS Humidity : 65 %
Operation Mode: 802.11n

Channel number	Channel Frequency (MHz)	Peak Power output(dBm)	Peak Power Limit(W)	Pass/Fail
149	5745	15.93	1W(30dBm)	PASS
153	5765	15.45	1W(30dBm)	PASS
161	5805	15.48	1W(30dBm)	PASS

9. Power Density

9.1 Test Equipment

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	E4407B	88156318	05/29/2012	05/28/2013

9.2 Measuring Instruments and Setting

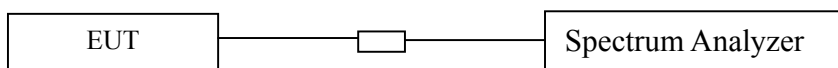
The following table is the setting of spectrum analyzer.

Spectrum analyzer	Setting
Attenuation	Auto
Span Frequency	Set the span to 1.5 times the DTS bandwidth.
RB	3kHz \geq RBW \leq 100KHz
VB	3 x RBW
Detector	Peak
Trace	Max hold
Sweep Time	Automatic

9.3 Test Procedures

- The transmitter output (antenna port) was connected to the spectrum analyzer.
- Set analyzer center frequency to DTS channel center frequency.
- Set the analyzer span to a minimum of 1.5 times the DTS bandwidth.
- Set the RBW \geq 3 kHz. Set the VBW \geq 3 x RBW.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum amplitude level within the RBW.

9.4 Block Diagram of Test Setup



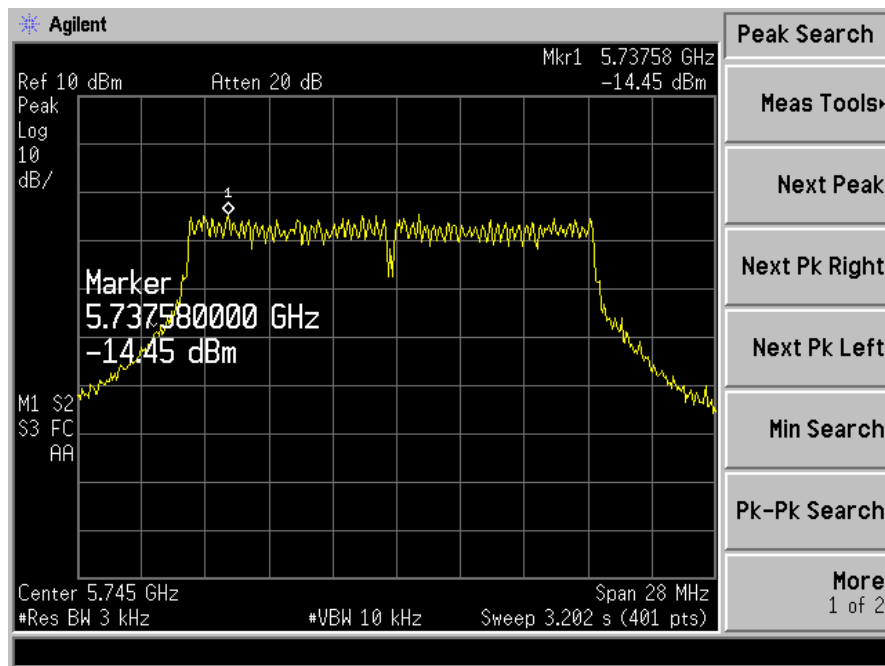
9.5 Limit

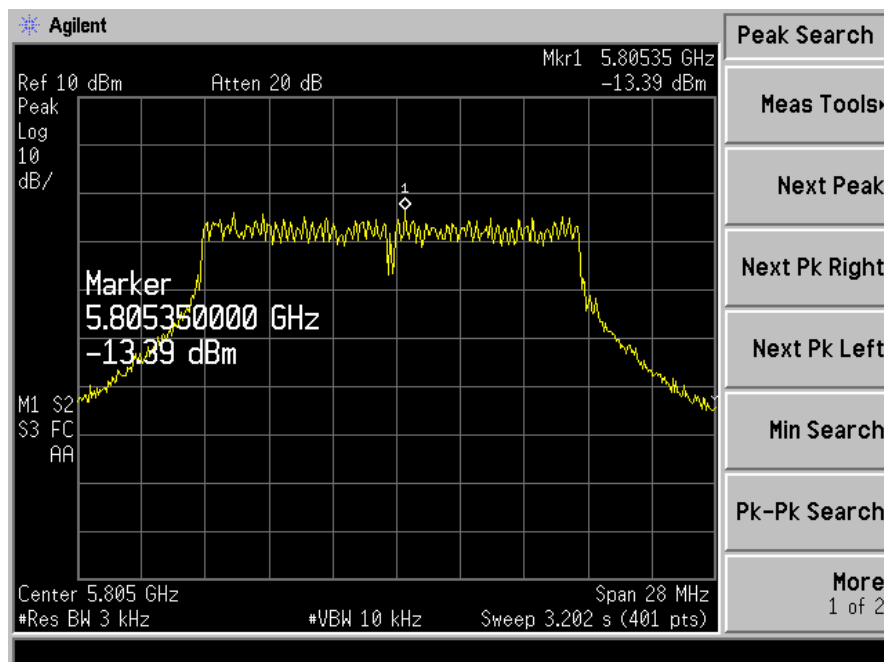
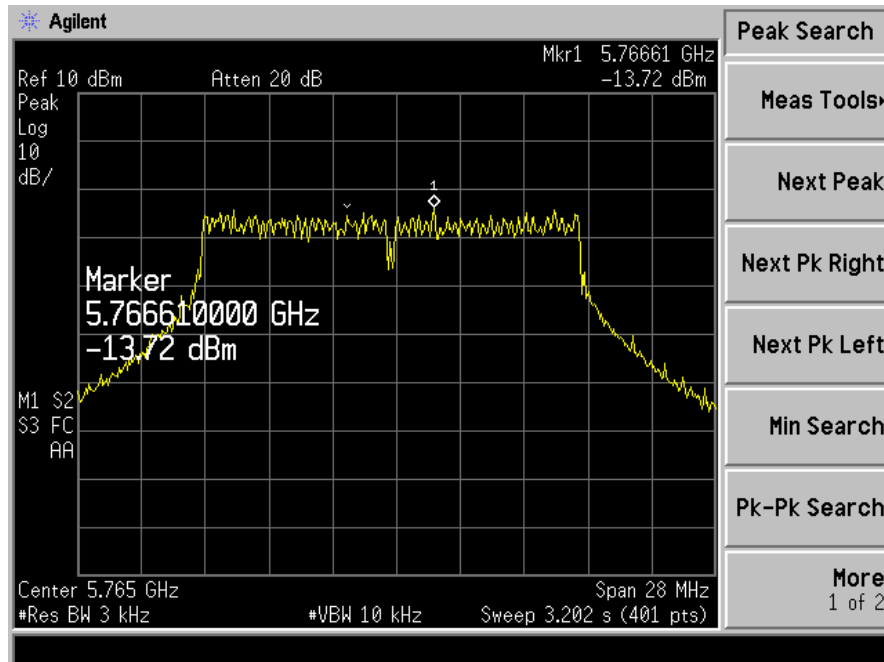
The transmitted power density averaged over any 1 second interval shall not be greater +8dBm in any 3 kHz bandwidth.

9.6 Test Result

Spectrum Detector: PK Test Date : April 1, 2013
 Test By: Andy Temperature : 28℃
 Test Result: PASS Humidity : 65 %
 Operation Mode: 802.11 a

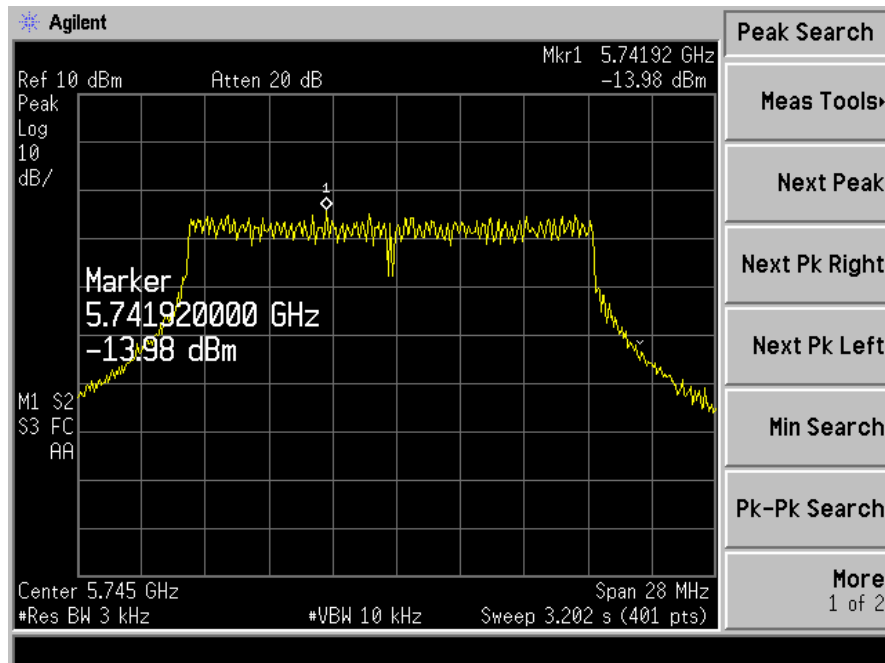
Channel	Measurement Level (dBm)	Required Limit (dBm)	Result
149	-14.45	<8dBm	PASS
153	-13.72	<8dBm	PASS
161	-13.39	<8dBm	PASS

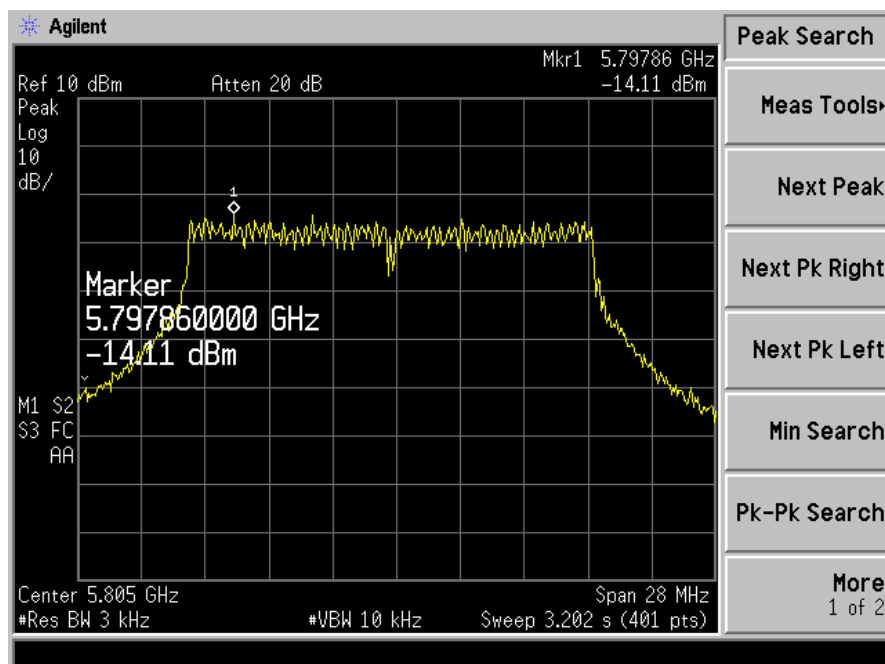
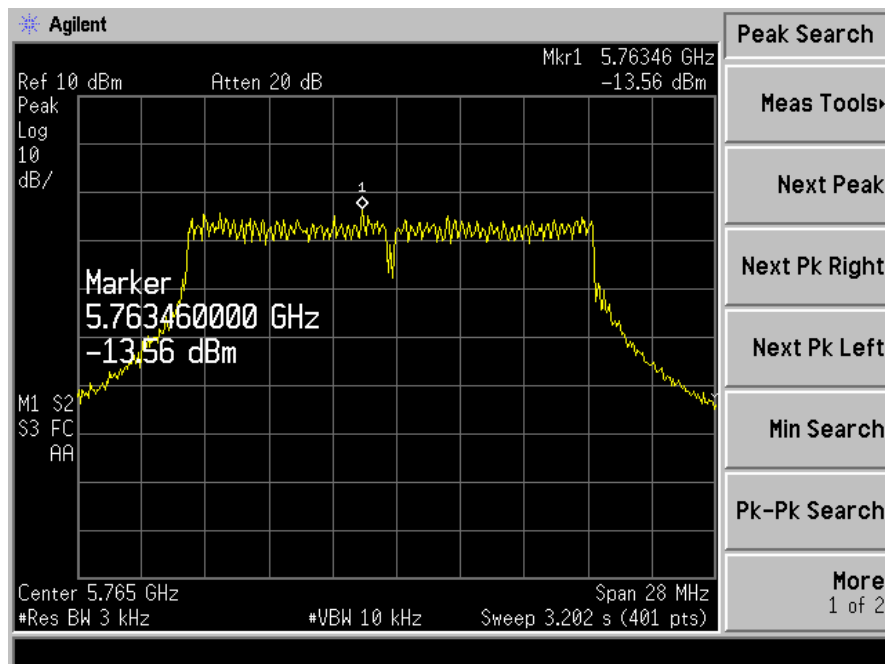




Spectrum Detector: PK Test Date : April 1, 2013
 Test By: Andy Temperature : 28°C
 Test Result: PASS Humidity : 65 %
 Operation Mode: 802.11 n

Channel	Measurement Level (dBm)	Required Limit (dBm)	Result
149	-13.98	<8dBm	PASS
153	-13.56	<8dBm	PASS
161	-14.11	<8dBm	PASS





10. Antenna Port Emission

10.1 Test Equipment

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	E4407B	88156318	05/29/2012	05/28/2013

10.2 Measuring Instruments and Setting

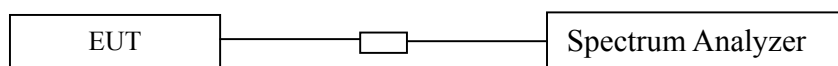
The following table is the setting of spectrum analyzer.

Spectrum analyzer	Setting
Attenuation	Auto
RB	100kHz
VB	300KHz
Detector	Peak
Trace	Max hold

10.3 Test Procedures

The conducted spurious emissions were measured conducted using a spectrum analyzer at low, Middle, and high channels, the limit was determined by attenuation 30dB of the RF peak power output.

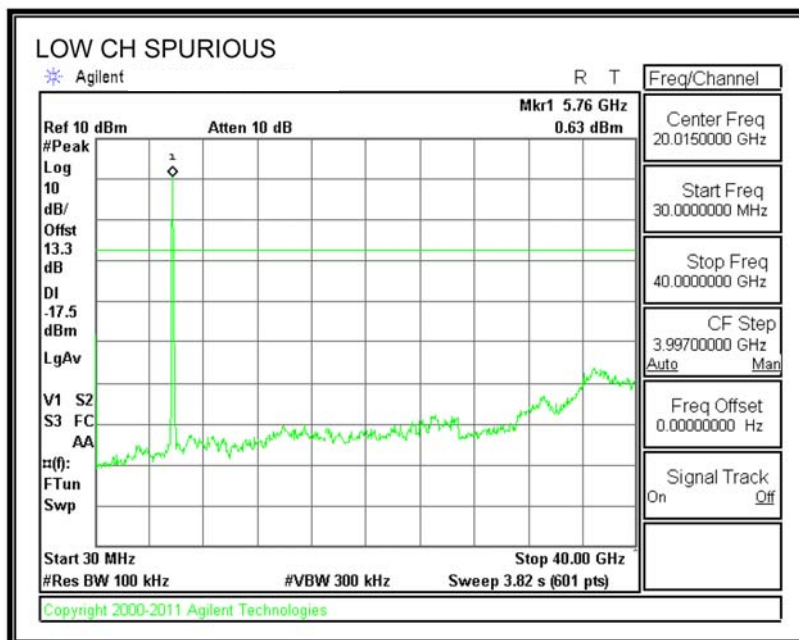
10.4 Block Diagram of Test setup



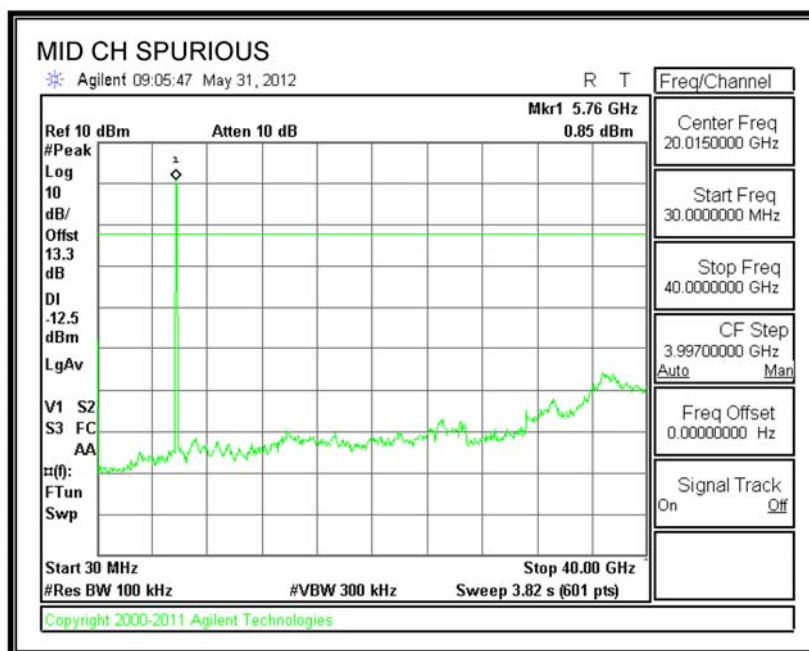
10.5 Test Result

PASS.

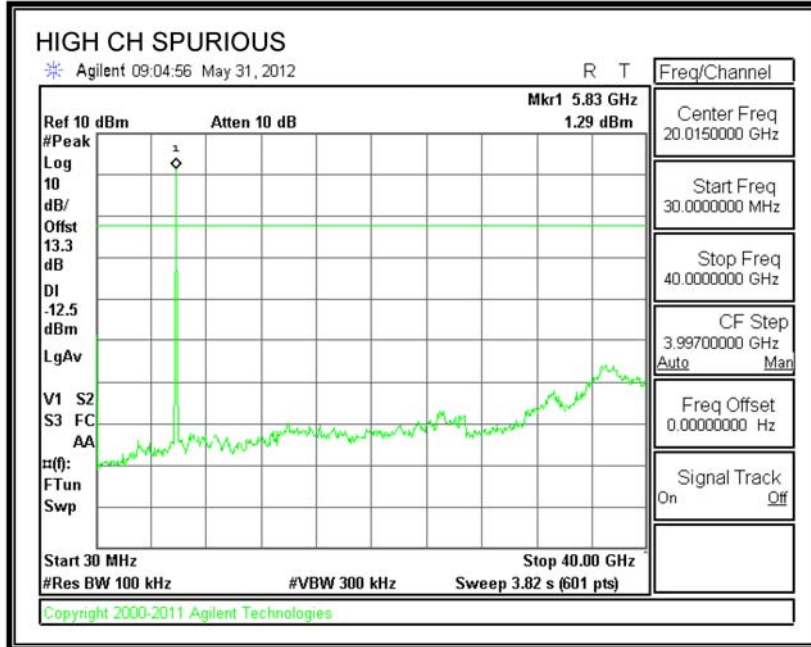
802.11a Channel 149



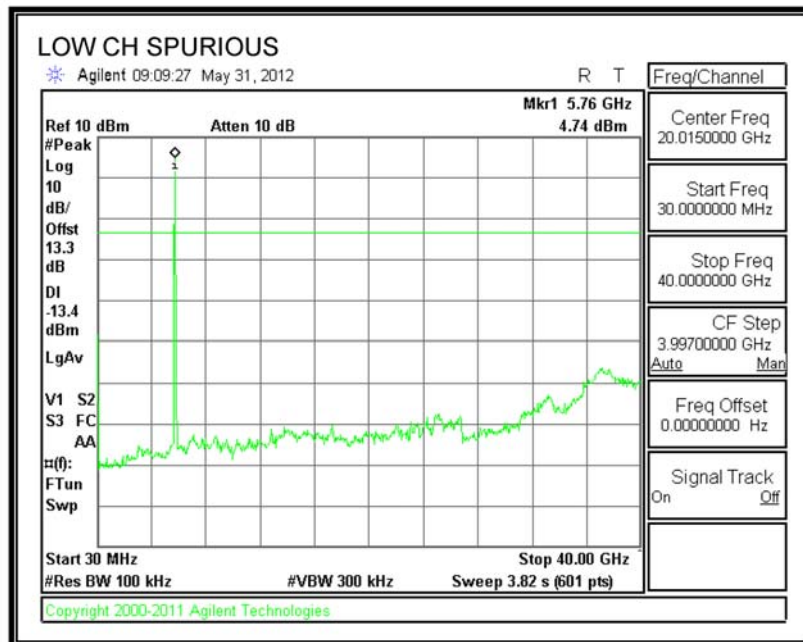
802.11a Channel 153



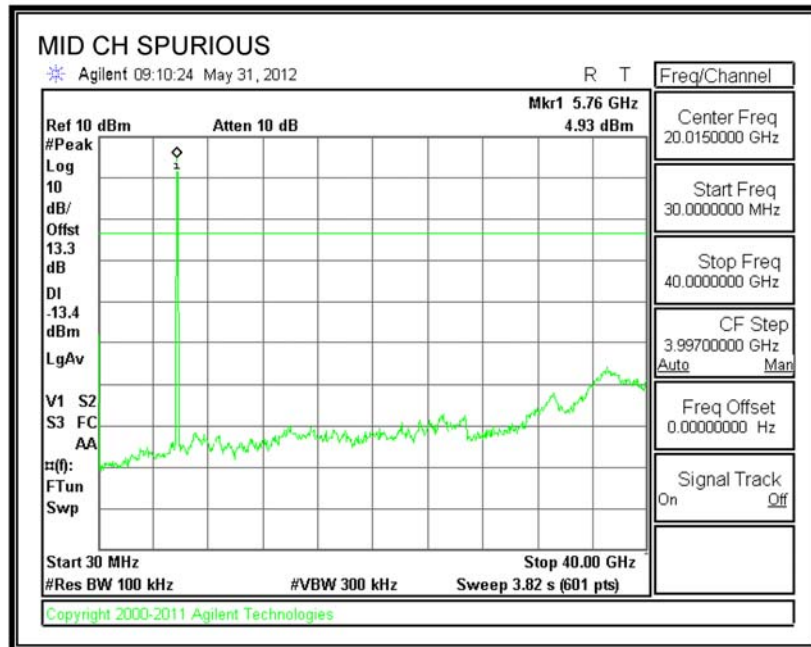
802.11a Channel 161



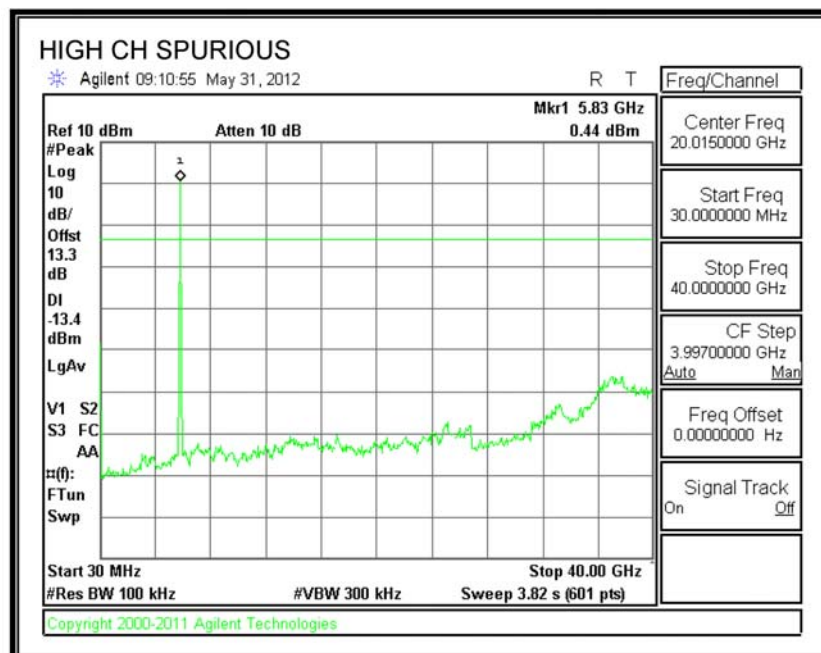
802.11n Channel 149



802.11n Channel 153



802.11n Channel 161



11. Antenna Application

11.1 Antenna Requirement

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

11.2 Result

The EUT'S antenna is Chip Antenna. The antenna's gain is 3.72dBi and meets the requirement.

12. Uncertainty

Measurement Uncertainty for a level of Confidence of 95%

Parameter	Uncertainty
Radio Frequency	$\pm 1 \times 10^{-5}$
Maximum Peak Output Power Test	$\pm 1.0\text{dB}$
Conducted Emissions Test	$\pm 2.0\text{dB}$
Radiated Emission Test	$\pm 2.0\text{dB}$
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	$\pm 3\%$