Test Report

FCC Part15 Subpart C

Product Name	:	AC1750 Wireless Dual Band Gigabit Router
Model No.	:	Archer C8
FCC ID	:	TE7C8V2

Applicant	:	TP-LINK TECHNOLOGIES CO., LTD.
Address	:	Building 24 (floors 1,3,4,5) and 28 (floors1-4) Central Science and Technology Park,Shennan Rd, Nanshan, Shenzhen,China

Date of Receipt	:	Jul. 10, 2015
Test Date	:	Jul. 10, 2015~ Nov. 25, 2015
Issued Date	:	Nov. 30, 2015
Report No.	:	1570321R-RF-US-P06V01
Report Version	:	V2.1

Test Report Certification

Issued Date : Nov. 30, 2015
Report No. : 1570321R-RF-US-P06V01

Product Name	:	AC1750 Wireless Dual Band Gigabit Router
Applicant	:	TP-LINK TECHNOLOGIES CO., LTD.
Address	:	Building 24 (floors 1,3,4,5) and 28 (floors1-4) Central Science and Technology Park,Shennan Rd, Nanshan, Shenzhen,China
Manufacturer	:	TP-LINK TECHNOLOGIES CO., LTD
Address	:	Building 24 (floors 1,3,4,5) and 28 (floors1-4) Central Science and Technology Park,Shennan Rd, Nanshan, Shenzhen,China
Model No.	:	Archer C8
FCC ID	:	TE7C8V2
EUT Voltage	:	DC 12V/3.3A
Brand Name	:	TP-LINK
Applicable Standard	:	FCC CFR Title 47 Part 15 Subpart C: 2014 ANSI C63.4:2014; ANSI C63.10:2013; KDB 558074 D01v03r03 KDB 662911 D01 Multiple Transmitter Output v02r01
Test Result	:	Complied
Performed Location	:	Suzhou EMC Laboratory No.99 Hongye Rd., Suzhou Industrial Park, Suzhou,215006, Jiangsu, China TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098 FCC Registration Number: 800392; IC Lab Code: 4075B

Documented By	:	Elaine Yang
Reviewed By	:	Jack Zhang
Approved By	:	Harry Zhao

Laboratory Information

We, **QuieTek Corporation,** are an independent EMC and safety consultancy that was established the whole facility in our laboratories. The test facility has been accredited/accepted(audited or listed) by the following related bodies in compliance with ISO 17025, EN 45001 and specified testing scope:

Taiwan R.O.C.	**:**	**BSMI, NCC, TAF**
USA	**:**	**FCC**
Japan	**:**	**VCCI**
China	**:**	**CNAS**

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site :http://www.quietek.com/tw/ctg/cts/accreditations.htm
The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site : http://www.quietek.com/
If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

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TEL : +86-512-6251-5088 / FAX : 86-512-6251-5098 E-Mail : service@quietek.com

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History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
1570321R-RF-US-P06V01	V1.0	Initial Issued Report	Nov. 26, 2015
1570321R-RF-US-P06V01	V 2.0	On page 8,Update 5G Band frequency and antenna list, also add directional gain description.	Nov. 28, 2015
1570321R-RF-US-P06V01	V2.1	1. Modified the EUT voltage information. 2. TX on+ TX off instead of TX off on page 12	Nov. 30, 2015

1. General Information

1.1. EUT Description

Product Name	AC1750 Wireless Dual Band Gigabit Router
Brand Name	TP-LINK
Model No.	Archer C8
EUT Voltage	DC 12V/3.3A
Frequency Range	For 2.4GHz Band 802.11b/g/n(20MHz): 2412~2462MHz 802.11n(40MHz): 2422~2452MHz For 5GHz Band 802.11a/n(20MHz)/ac(20MHz): 5180~5240MHz, 5745~5825MHz 802.11n(40MHz)/ac(40MHz): 5190~5230MHz, 5755~5795MHz 802.11ac(80MHz): 5210MHz, 5775MHz
Channel Number	For 2.4GHz Band 802.11b/g/n(20MHz): 11 802.11n(40MHz): 7 For 5.0GHz Band 802.11a /n(20MHz) /ac(20MHz): 9 802.11n(40MHz)/ac(40MHz): 4 802.11ac(80MHz): 2
Type of Modulation	802.11b: DSSS
	802.11a/g/n/ac: OFDM
Data Rate	802.11a/g: 6/9/12/18/24/36/48/54 Mbps
	802.11b: 1/2/5.5/11 Mbps
	802.11n: up to 450 Mbps
	802.11ac: up to 1.3 Gbps
Channel Control	Auto
Antenna Delivery	3*Tx + 3*Rx
Antenna Type	Reference to Antenna List
Peak Antenna Gain	Reference to Antenna List

For 2.4GHz Band

802.11b/g/n(20MHz) Working Frequency of Each Channel:							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
01	2412 MHz	02	2417 MHz	03	2422 MHz	04	2427 MHz
05	2432 MHz	06	2437 MHz	07	2442 MHz	08	2447 MHz
09	2452 MHz	10	2457 MHz	11	2462 MHz	N/A	N/A
802.11n(40MHz) Working Frequency of Each Channel:							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
03	2422 MHz	04	2427 MHz	05	2432 MHz	06	2437 MHz
07	2442 MHz	08	2447 MHz	09	2452 MHz	N/A	N/A

For 5.0GHz Band

802.11a/n(20MHz)/ac(20MHz) Working Frequency of Each Channel:							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
149	5745 MHz	153	5765 MHz	157	5785 MHz	161	5805 MHz
165	5825 MHz	N/A	N/A	N/A	N/A	N/A	N/A
802.11n(20MHz)/ac(40MHz) Working Frequency of Each Channel:							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
151	5755 MHz	159	5795 MHz	N/A	N/A	N/A	N/A
802.11ac(80MHz) Working Frequency of Each Channel:							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
155	5775 MHz	N/A	N/A	N/A	N/A	N/A	N/A

Antenna List

Antenna	Type	Product Number	Peak Gain	Directional gain for Beamforming	Directional gain for CDD
Dipole Antenna	Dipole	3101500451	2.1dBi for 2.4G	N/A	6.87dBi
Dipole Antenna	Dipole	3101500451	1.7dBi for 5G	6.47dBi	6.47dBi

Note: 1: The EUT has three antennas, and each port has same gain, they transmit signals are correlated with each other.

(1) 5G Directional gain for Beamforming Calculation is:

Directional gain = G_{ANT} + 10 log(N_{ANT}/N_{SS}) dBi≈6.47dBi.

(2) 2.4G Directional gain for CDD Calculation is:

a. For power measurements

Array Gain = 0 dB (i.e., no array gain) for NANT ≤ 4;

Directional gain = G_{ANT} + Array Gain=2.1dBi

b. For power spectral density (PSD) measurements
Directional gain = G_{ANT} + Array Gain$\approx$6.87dBi

5G Directional gain for CDD Calculation is:

c. For power measurements
Array Gain = 0 dB (i.e., no array gain) for NANT ≤ 4;
Directional gain = G_{ANT} + Array Gain=1.7dBi

d. For power spectral density (PSD) measurements
Directional gain = G_{ANT} + Array Gain$\approx$6.47dBi

Power Parameter Value of the test software

For 2.4G with CDD

Test Mode	Test Channel	Ant 0	Ant 1	Ant 2	MODE(Ant1+2+3)
802.11b	2412	×	×	×	80
	2437	×	×	×	93
	2462	×	×	×	78
802.11g	2412	×	×	×	56
	2437	×	×	×	89
	2462	×	×	×	58
802.11n(20MHz)	2412	×	×	×	48
	2437	×	×	×	89
	2462	×	×	×	42
802.11n(40MHz)	2422	×	×	×	44
	2437	×	×	×	52
	2452	×	×	×	40

For 5.0G with CDD

Test Mode	Test Channel	Ant 0	Ant 1	Ant 2	MODE(Ant1+2+3)
802.11a	5745	×	×	×	95
	5785	×	×	×	95
	5825	×	×	×	92
802.11 n(20MHz)	5745	×	×	×	95
	5785	×	×	×	95
	5825	×	×	×	95
802.11ac(20MHz)	5745	×	×	×	95
	5785	×	×	×	95
	5825	×	×	×	95
802.11n(40MHz)	5755	×	×	×	95
	5795	×	×	×	95
802.11ac(40MHz)	5755	×	×	×	95
	5795	×	×	×	95
802.11ac(80MHz)	5775	×	×	×	95

For 5.0G with Beamforming

Test Mode	Test Channel	Ant 0	Ant 1	Ant 2	MODE(Ant1+2+3)
802.11ac(20MHz)	5745	×	×	×	94
	5785	×	×	×	92
	5825	×	×	×	94
802.11ac(40MHz)	5755	×	×	×	92
	5795	×	×	×	93
802.11ac(80MHz)	5775	×	×	×	94

Note : 1: The EUT uses CDD or Beamforming technology. The EUT of all test mode which always operate with the antennas transmitting simultaneously, so we only test the mode when the antennas transmitting simultaneously.

Duty Cycle

For 2.4GHz Band with CDD

Test Mode	Tx On (ms)	T (ms)	VBW	Tx On + Tx Off (ms)	Duty Cycle
802.11b	12.42	12.42	80Hz	13.08	94.95%
802.11g	2.03	2.03	510Hz	2.18	93.12%
802.11n(20MHz)	1.93	1.93	510Hz	2.03	95.07%
802.11n(40MHz)	0.94	0.94	1.0kHz	1.04	90.38%

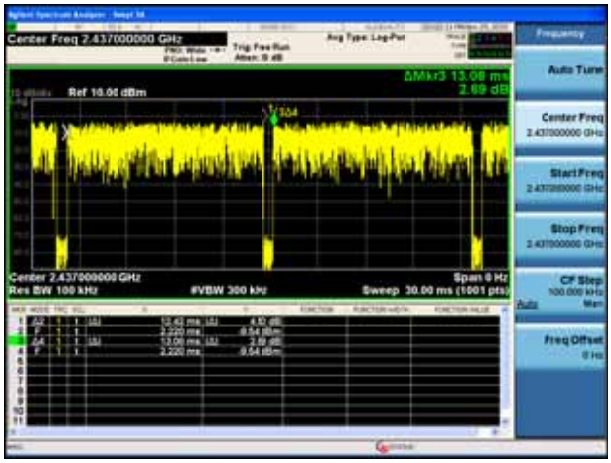
For 5.0GHz Band with CDD

Test Mode	Tx On (ms)	T (ms)	VBW	Tx On + Tx Off (ms)	Duty Cycle
802.11a	2.04	2.04	510Hz	2.18	93.58%
802.11 n(20MHz)	1.92	1.92	520Hz	2.02	95.05%
802.11ac(20MHz)	1.91	1.91	530Hz	1.96	97.40%
802.11n(40MHz)	0.95	0.95	1.2kHz	1.04	91.35%
802.11ac(40MHz)	0.96	0.96	1.2KHz	0.98	97.96%
802.11ac(80MHz)	2.07	2.07	510Hz	2.18	94.95%

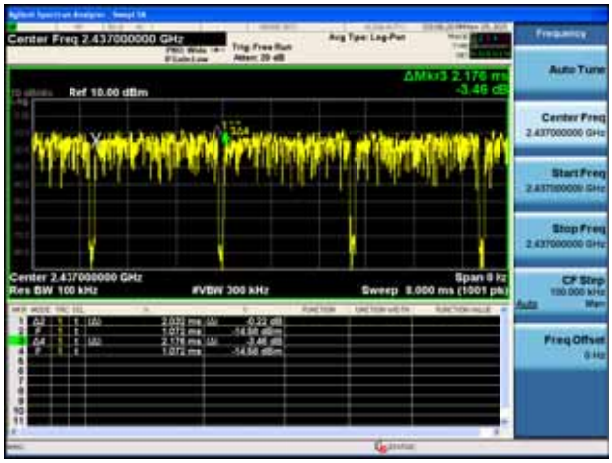
For 5.0GHz Band with Beamforming

Test Mode	Tx On (ms)	T (ms)	VBW	Tx On + Tx Off (ms)	Duty Cycle
802.11ac(20MHz)	1.92	1.92	530Hz	2.56	75.00%
802.11ac(40MHz)	0.73	0.73	1.4KHz	0.99	73.74%
802.11ac(80MHz)	2.01	2.01	510Hz	2.92	68.84%

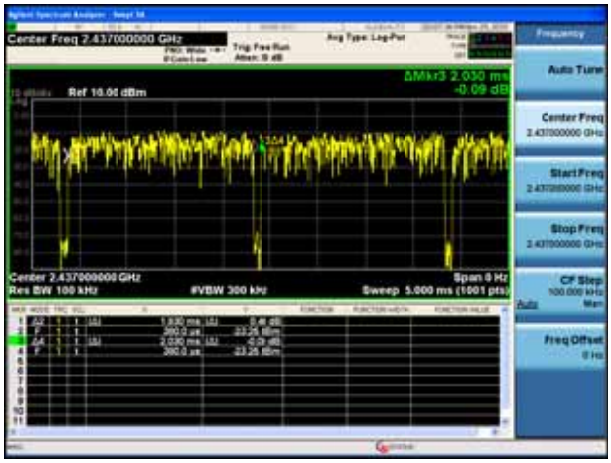
802.11b with CDD



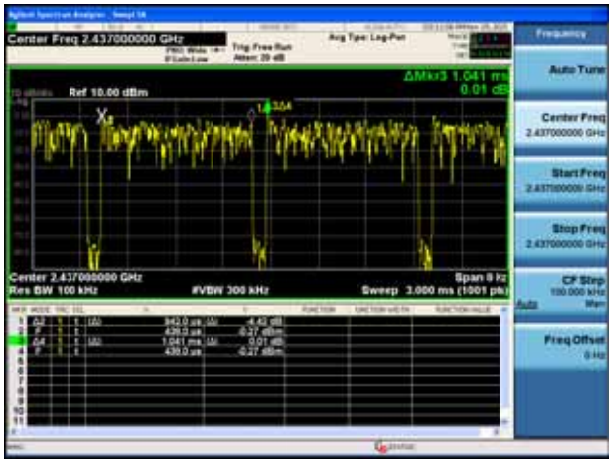
802.11g with CDD



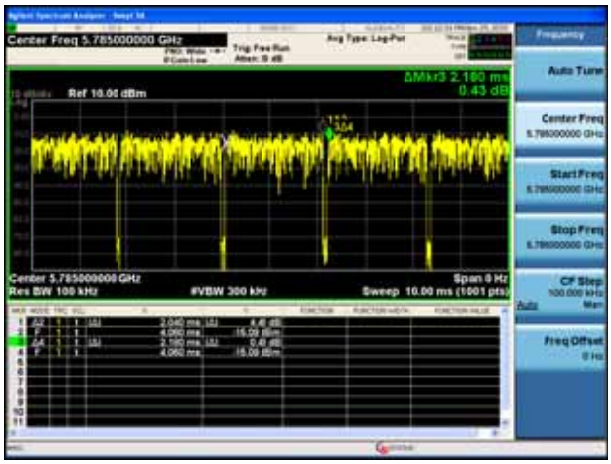
802.11n(20MHz) with CDD



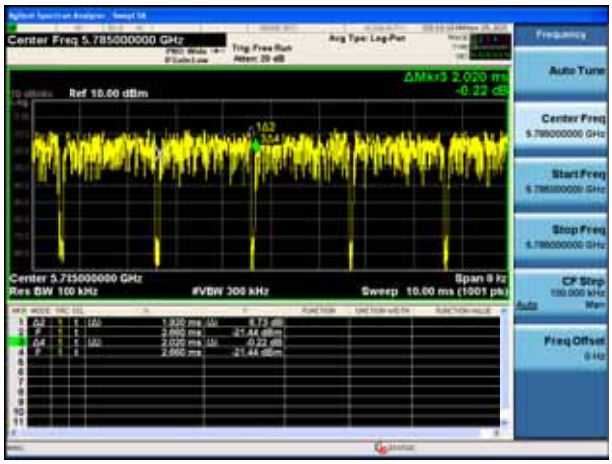
802.11n(40MHz) with CDD



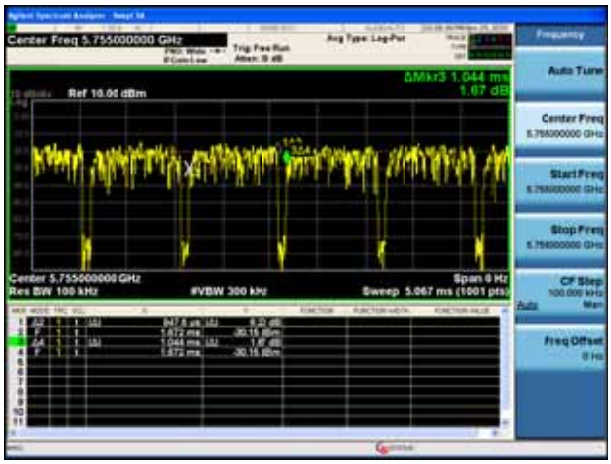
802.11a with CDD



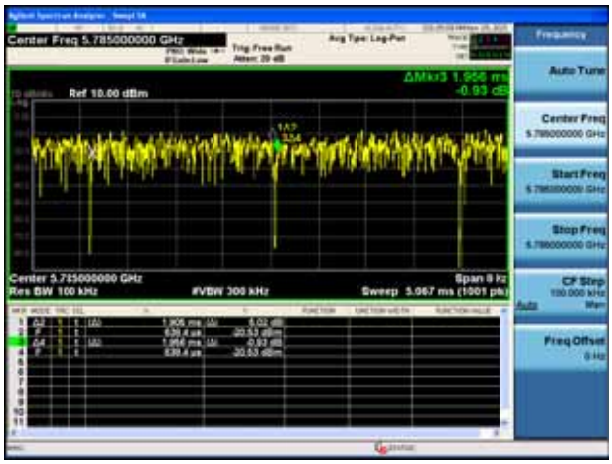
802.11n(20MHz) with CDD



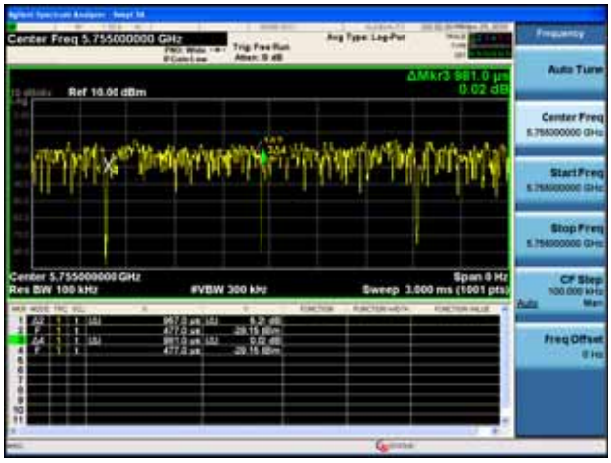
802.11n(40MHz) with CDD



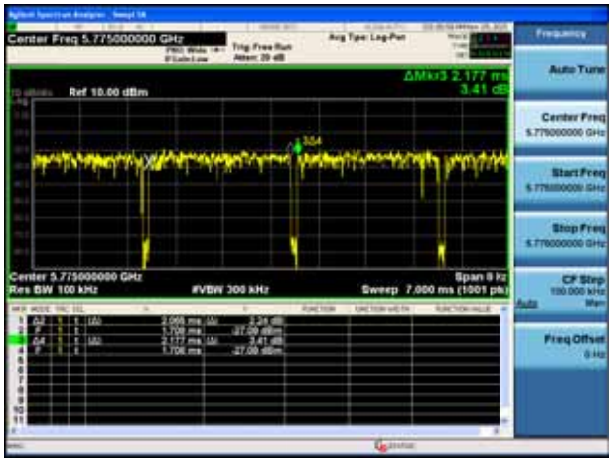
802.11ac(20MHz) with CDD



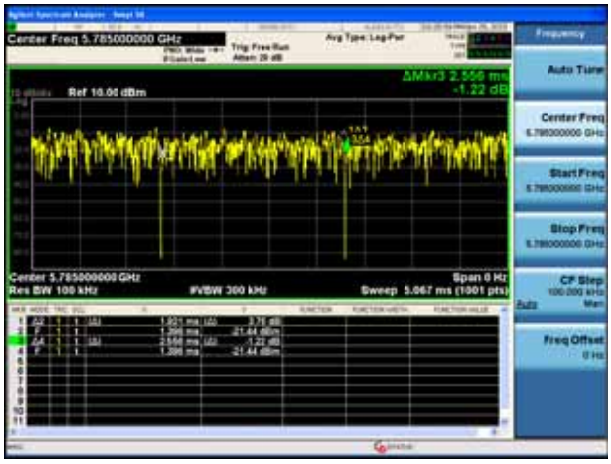
802.11ac(40MHz) with CDD



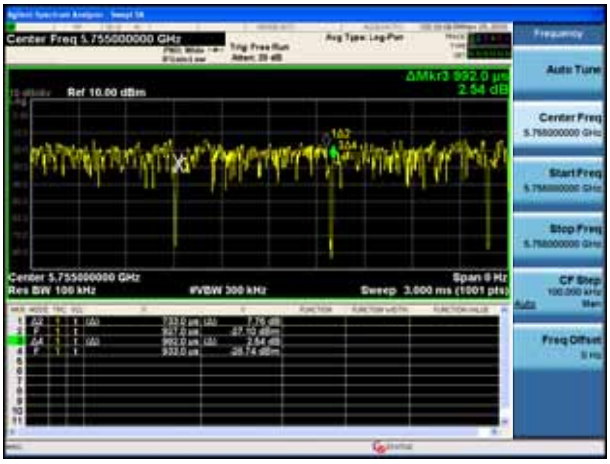
802.11ac(80MHz) with CDD



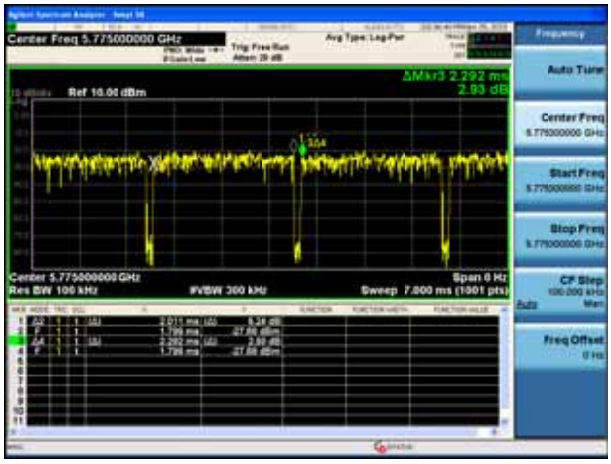
802.11ac(20MHz) with beamforming



802.11ac(40MHz) with beamforming



802.11ac(80MHz) with beamforming



Note：1. T means the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

2. According to KDB 558074，when test for Radiated Emission Band Edge and Radiated Emission， VBW ≥ 1/T will be used.

1.2. Mode of Operation

QuieTek has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Test Mode
Mode 1: Transmit by 802.11b for 2.4G with CDD
Mode 2: Transmit by 802.11g for 2.4G with CDD
Mode 3: Transmit by 802.11n(20MHz) for 2.4G with CDD
Mode 4: Transmit by 802.11n(40MHz) for 2.4G with CDD
Mode 5: Transmit by 802.11a for 5.0G with CDD
Mode 6: Transmit by 802.11n(20MHz) for 5.0G with CDD
Mode 7: Transmit by 802.11ac(20MHz) for 5.0G with CDD
Mode 8: Transmit by 802.11n(40MHz) for 5.0G with CDD
Mode 9: Transmit by 802.11ac(40MHz) for 5.0G with CDD
Mode 10: Transmit by 802.11ac(80MHz) for 5.0G with CDD
Mode 11: Transmit by 802.11ac(20MHz) for 5.0G with Beamforming
Mode 12: Transmit by 802.11ac(40MHz) for 5.0G with Beamforming
Mode 13: Transmit by 802.11ac(80MHz) for 5.0G with Beamforming

Note: 1. Regards to the frequency band operation: the lowest, middle and highest frequency of channel were selected to perform the test, and be shown on this report.

2. For this device, radiated test was verified over X, Y, Z Axis, and shown the worst case on this report.

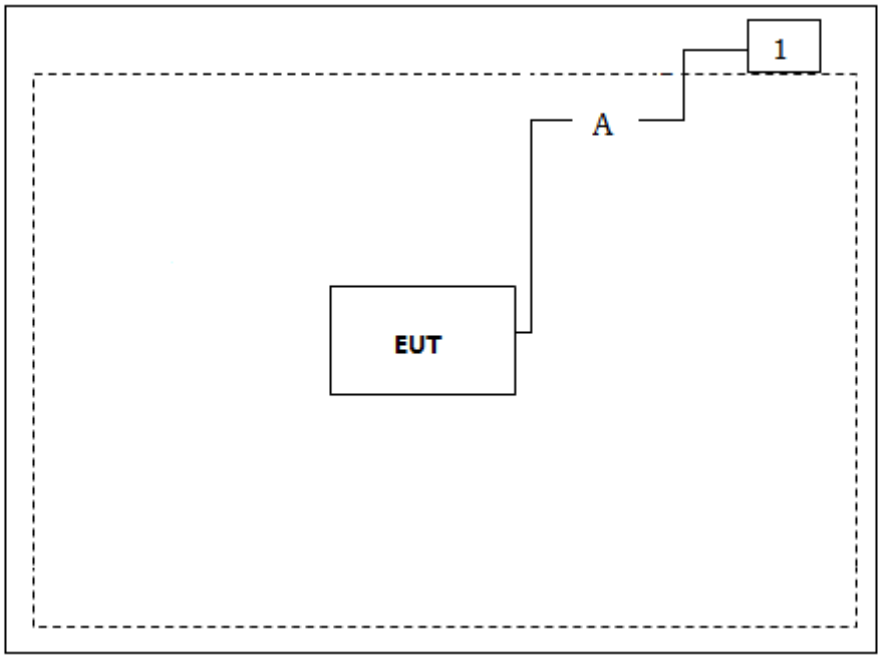
1.3. Tested System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	Power Cord
1	Notebook	Asus	N80V	8BN0AS226971468	None-shielded
1	Notebook	Lenovo	Think pad x220	SUA0600195	Non-shielded

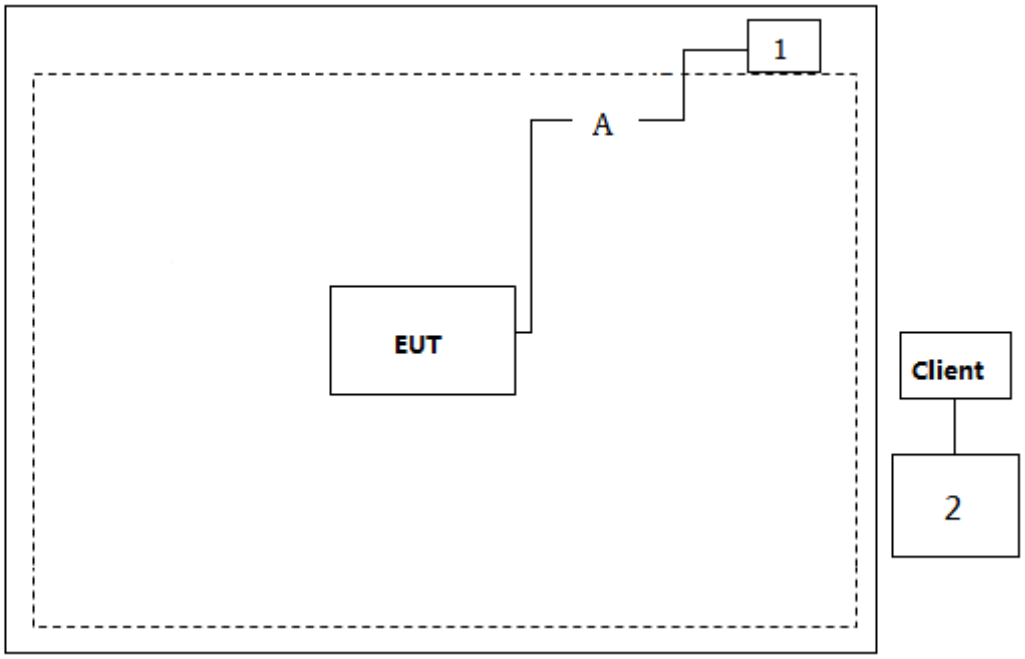
1.4. Configuration of Tested System

With CDD

Connection Diagram


Signal Cable Type		Signal cable Description
A	LAN Cable	Non-shielded, 15m

With beamforming:

Connection Diagram		
		
Signal Cable Type		Signal cable Description
A	LAN Cable	Non-shielded, 15m

1.5. EUT Exercise Software

Without Beamforming:

1	Setup the EUT and simulators as shown on above.
2	Turn on the power of equipment.
3	Input RF commands, and set the test mode and channel, then press OK to start to continue transmit or receive.

With Beamforming:

1	Setup the EUT and Client as shown on above.
2	Turn on the power of equipment.
3	Configure the client and connect the EUT.
3	Input RF commands, and set the test mode and channel, then use “Tfgen” to traffic and test.

2. Technical Test

2.1. Summary of Test Result

☒ No deviations from the test standards

☐ Deviations from the test standards as below description:

Performed Test Item	Normative References	Test Performed	Deviation
Conducted Emission	FCC CFR Title 47 Part 15 Subpart C: 2014 Section 15.207	Yes	No
Radiated Emission	FCC CFR Title 47 Part 15 Subpart C: 2014 Section 15.209	Yes	No
RF Antenna Conducted Spurious	FCC CFR Title 47 Part 15 Subpart C: 2014 Section 15.247(d)	Yes	No
Radiated Emission Band Edge	FCC CFR Title 47 Part 15 Subpart C: 2014 15.247(d)	Yes	No
Conducted Band Edge	FCC CFR Title 47 Part 15 Subpart C: 2014 15.215(c)	Yes	No
Occupied Bandwidth	FCC CFR Title 47 Part 15 Subpart C: 2014 Section 15.247(a)(2)	Yes	No
Power Output	FCC CFR Title 47 Part 15 Subpart C: 2014 Section 15.247(b)(3)	Yes	No
Power Spectral Density	FCC CFR Title 47 Part 15 Subpart C: 2014 Section 15.247(e)	Yes	No

2.2. Test Environment

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	21
Humidity (%RH)	25-75	50
Barometric pressure (mbar)	860-1060	950-1000

3. Conducted Emission

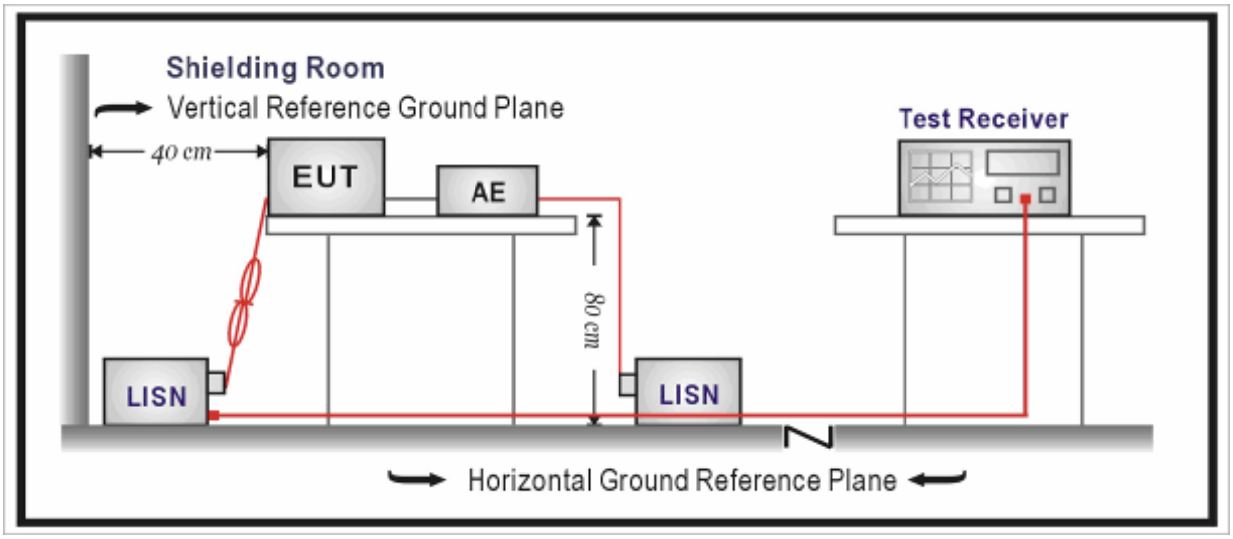
3.1. Test Equipment

Conducted Emission / TR-1

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
EMI Test Receiver	R&S	ESCI	100726	2015.03.29	2016.03.28
Two-Line V-Network	R&S	ENV216	100043	2015.03.29	2016.03.28
Two-Line V-Network	R&S	ENV216	100044	2015.09.17	2016.09.16
50ohm Coaxial Switch	Anritsu	MP59B	6200464462	2015.03.02	2016.03.01
50ohm Termination	SHX	TF2	07081401	2015.09.17	2016.09.16
Temperature/Humidity Meter	zhicheng	ZC1-2	TR1-TH	2015.01.09	2016.01.08

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

3.2. Test Setup



3.3. Limit

FCC Part 15 Subpart C Paragraph 15.207 Limits		
Frequency (MHz)	QP (dBuV)	AV (dBuV)
0.15 - 0.50	66 - 56	56 – 46
0.50 - 5.0	56	46
5.0 - 30	60	50

Note 1: The lower limit shall apply at the transition frequencies.

Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

3.4. Test Procedure

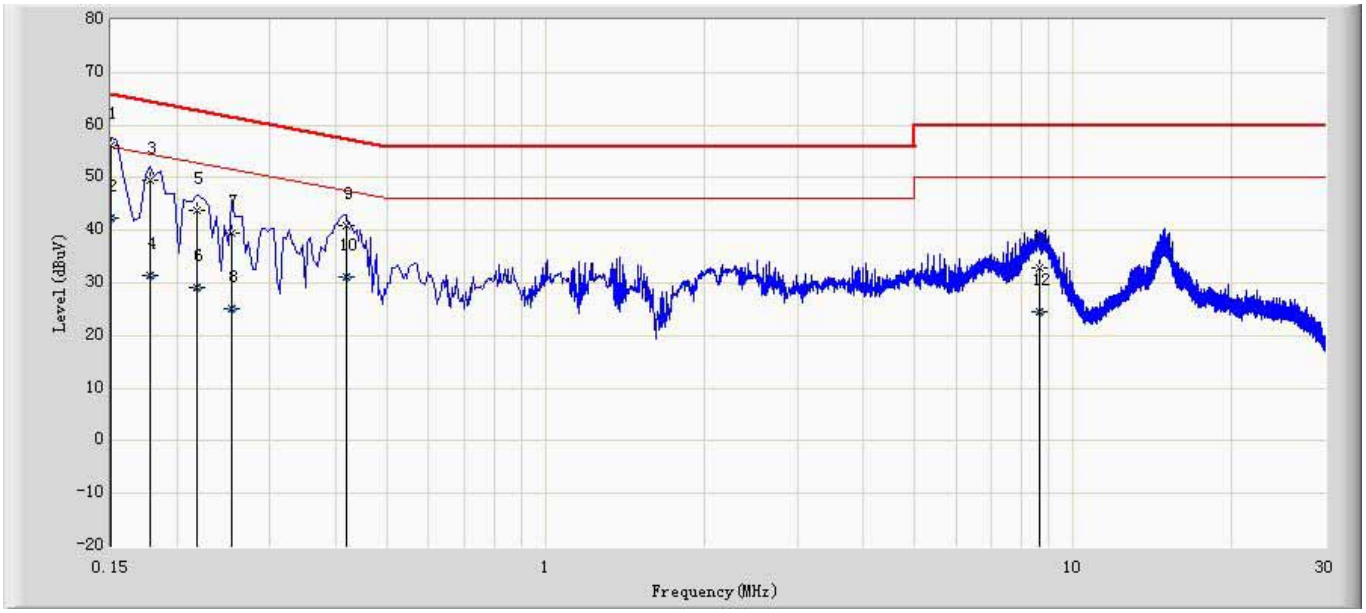
The EUT was setup according to ANSI C63.4, 2014 for compliance to FCC 47CFR 15.247 requirements. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs) Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source. The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length. Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.

3.5. Uncertainty

The measurement uncertainty is defined as ± 2.02 dB

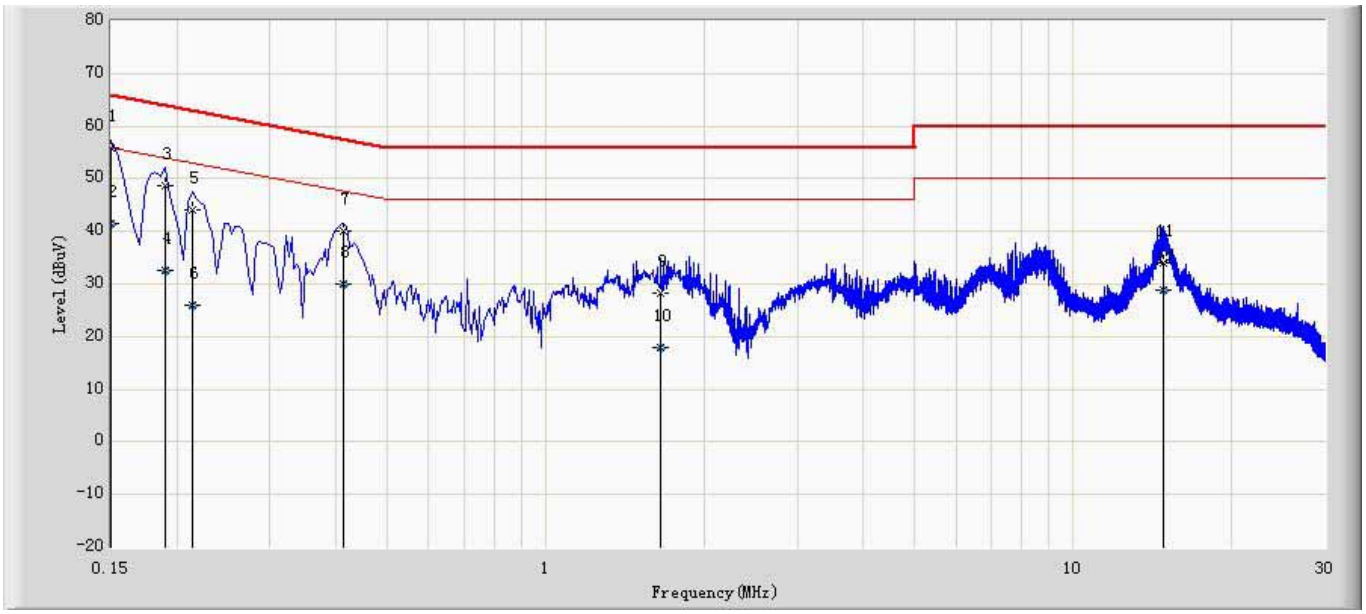
3.6. Test Result

Site: TR1	Time: 2015/07/20
Limit: FCC_Part15.107_CE_AC Power_ClassB	Margin: 0
Probe: ENV216-L1	Polarity: Line
EUT: AC1750 Wireless Dual Band Gigabit Router	Power: AC 120V/60Hz
Note: Mode 1	



No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Probe (dB)	Cable (dB)	Amp (dB)	Type
1	*	0.150	56.224	46.348	-9.776	66.000	9.676	0.200	0.000	QP
2		0.150	42.381	32.505	-13.619	56.000	9.676	0.200	0.000	AV
3		0.178	49.495	39.638	-15.083	64.578	9.657	0.200	0.000	QP
4		0.178	31.462	21.605	-23.116	54.578	9.657	0.200	0.000	AV
5		0.218	43.857	34.007	-19.038	62.895	9.650	0.200	0.000	QP
6		0.218	29.141	19.291	-23.754	52.895	9.650	0.200	0.000	AV
7		0.254	39.511	29.663	-22.114	61.625	9.648	0.200	0.000	QP
8		0.254	25.057	15.209	-26.568	51.625	9.648	0.200	0.000	AV
9		0.418	40.890	31.056	-16.598	57.488	9.634	0.200	0.000	QP
10		0.418	31.262	21.428	-16.226	47.488	9.634	0.200	0.000	AV
11		8.626	32.836	22.916	-27.164	60.000	9.720	0.200	0.000	QP
12		8.626	24.480	14.560	-25.520	50.000	9.720	0.200	0.000	AV

Site: TR1	Time: 2015/07/20
Limit: FCC_Part15.107_CE_AC Power_ClassB	Margin: 0
Probe: ENV216-N	Polarity: Neutral
EUT: AC1750 Wireless Dual Band Gigabit Router	Power: AC 120V/60Hz
Note: Mode 1	



No	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Probe (dB)	Cable (dB)	Amp (dB)	Type
1	*	0.150	55.997	46.121	-10.003	66.000	9.676	0.200	0.000	QP
2		0.150	41.577	31.701	-14.423	56.000	9.676	0.200	0.000	AV
3		0.190	48.749	38.889	-15.288	64.037	9.660	0.200	0.000	QP
4		0.190	32.716	22.856	-21.321	54.037	9.660	0.200	0.000	AV
5		0.214	44.202	34.342	-18.847	63.049	9.660	0.200	0.000	QP
6		0.214	25.916	16.056	-27.133	53.049	9.660	0.200	0.000	AV
7		0.414	40.090	30.250	-17.478	57.568	9.640	0.200	0.000	QP
8		0.414	29.950	20.110	-17.618	47.568	9.640	0.200	0.000	AV
9		1.650	28.245	18.405	-27.755	56.000	9.640	0.200	0.000	QP
10		1.650	18.022	8.182	-27.978	46.000	9.640	0.200	0.000	AV
11		14.846	34.143	23.896	-25.857	60.000	9.847	0.400	0.000	QP
12		14.846	28.956	18.709	-21.044	50.000	9.847	0.400	0.000	AV

Note: All the test modes are pretested and mode 1 802.11b mode was found to be the worst mode, so the data of this test mode was recorded.

4. Radiated Emission

4.1. Test Equipment

Radiated Emission / AC-2

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
EMI Test Receiver	R&S	ESCI	100573	2015.03.29	2016.03.28
Loop Antenna	R&S	HFH2-Z2	833799/003	2015.11.18	2016.11.17
Bilog Chainenna	Teseq GmbH	CBL6112D	27611	2015.10.16	2016.10.15
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC2-C	2015.03.02	2016.03.01
Temperature/Humidity Meter	Zhicheng	ZC1-2	AC2-TH	2015.01.09	2016.01.08

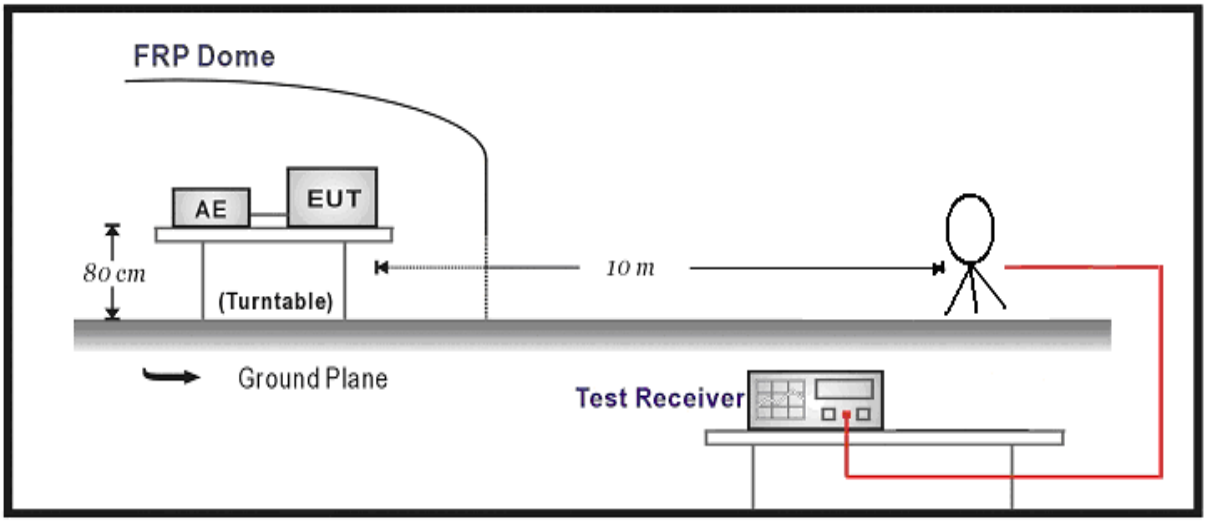
Radiated Emission / AC-5

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	N9020A	MY49100159	2015.03.29	2016.03.28
Spectrum Analyzer	Agilent	E4446A	MY45300103	2015.01.08	2016.01.07
Preamplifier	Miteq	NSP1800-25	1364185	2015.05.06	2016.05.05
Preamplifier	QuieTek	AP-040G	CHM-0906001	2015.05.06	2016.05.05
DRG Horn	ETS-Lindgren	3117	00123988	2015.01.22	2016.01.21
Broad-Band Horn Antenna	Schwarzbeck	BBHA9170	294	2015.11.25	2016.11.24
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C1	2015.03.02	2016.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2015.03.02	2016.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	AC5-C3	2015.03.02	2016.03.01
EMI Receiver	Agilent	N9038A	MY51210196	2015.06.10	2016.06.09
Temperature/Humidity Meter	Zhichen	ZC1-2	AC5-TH	2015.01.09	2016.01.08

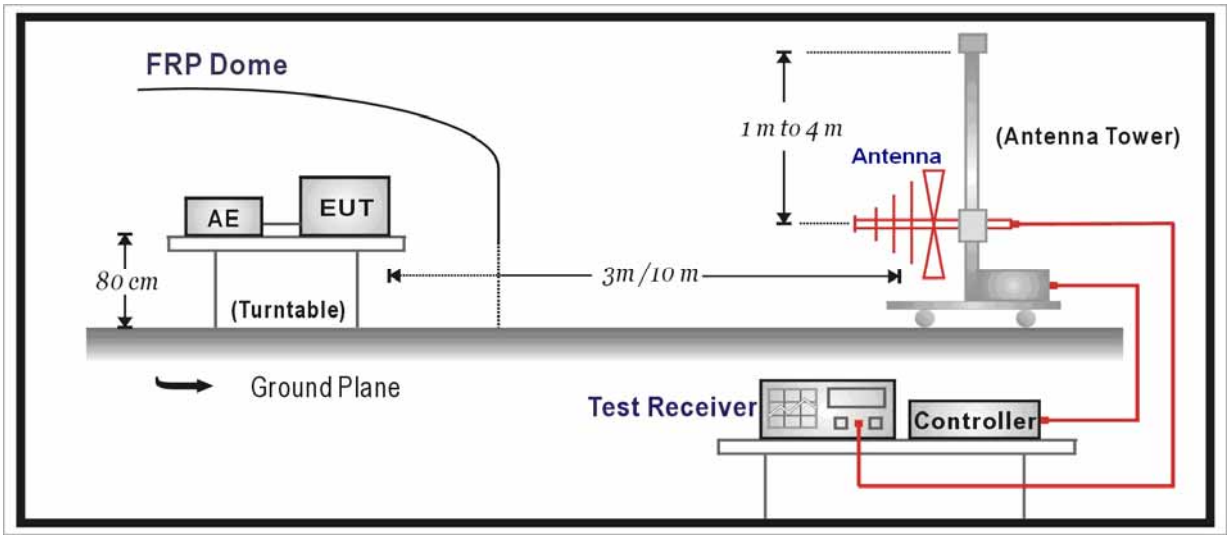
Note 1: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

4.2. Test Setup

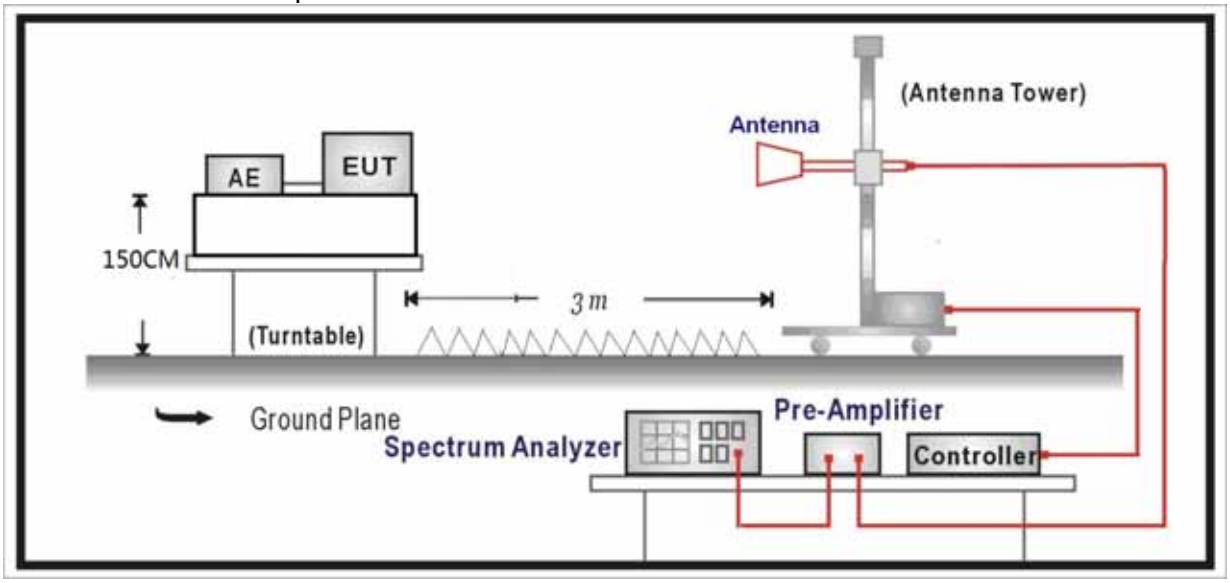
Below 30MHz Test Setup:



Below 1GHz Test Setup:



Above 1GHz Test Setup:



4.3. Limit

FCC Part 15 Subpart C Paragraph 15.209		
Frequency (MHz)	Distance (m)	Level (dBuV/m)
30 - 88	3	40
88 - 216	3	43.5
216 - 960	3	46
Above 960	3	54

Note 1: The lower limit shall apply at the transition frequency.

Note 2: Distance refers to the distance in meters between the measuring instrument Antenna and the closed point of any part of the device or system.

Note 3: E field strength (dBuV/m) = 20 log E field strength (uV/m)

4.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2014 and tested according to ANSI C63.10, 2013.

The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from Antenna to the EUT was 3 meters.

The Antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This

is repeated for both horizontal and vertical polarization of the Antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4:2014 on radiated measurement.

The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

The frequency range from 30MHz to 10th harmonic is checked.

Note: When doing emission measurement above 1GHz, the horn Antenna will be bended down a little (as horn Antenna has the narrow beamwidth) in order to keeping the Antenna in the "cone of radiation" of EUT. The 3dB beamwidth is 10~60 degrees for H-plane and 10~90 degrees for E-plane.

If continuous transmission of the EUT (i.e., duty cycle ≥ 98 percent) cannot be achieved and the duty cycle is not constant (i.e., duty cycle variations exceed ± 2 percent), then the following procedure shall be used:

a) Set RBW = 1 MHz.

b) Set VBW ≥ 1/T.

c) Video bandwidth mode or display mode

1) The instrument shall be set to ensure that video filtering is applied in the power domain. Typically, this requires setting the detector mode to RMS and setting the Average-VBW Type to Power (RMS).

2) As an alternative, the instrument may be set to linear detector mode. Ensure that video filtering is applied in linear voltage domain (rather than in a log or dB domain). Some instruments require linear display mode in order to accomplish this. Others have a setting for Average-VBW Type, which can be set to "Voltage" regardless of the display mode.

d) Detector = Peak.

e) Sweep time = auto.

f) Trace mode = max hold.

g) Allow max hold to run for at least 50 times (1/duty cycle) traces.

4.5. Uncertainty

The measurement uncertainty above 1G is defined as ± 3.9 dB

below 1G is defined as ± 3.8 dB

4.6. Test Result

For 2.4G

Mode1: Transmit by 802.11b for 2.4G with CDD

Chain	CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
Ant 0+1+2	1	H	4824.0	51.3	-6.7	44.6	54(note3)	-9.4	PK
		H	7236.0	47.0	-2.6	44.4	54(note3)	-9.6	PK
		H	9648.0	43.4	1.0	44.4	54(note3)	-9.6	PK
		V	4824.0	52.0	-6.7	45.3	54(note3)	-8.7	PK
		V	7236.0	50.1	-2.6	47.5	54(note3)	-6.5	PK
		V	9648.0	43.4	1.0	44.4	54(note3)	-9.6	PK
	6	H	4874.0	60.0	-6.6	53.4	54(note3)	-0.6	PK
		H	7311.0	48.3	-2.9	45.4	54(note3)	-8.6	PK
		H	9748.0	46.0	1.0	47.0	54(note3)	-7.0	PK
		V	4874.0	58.4	-6.6	51.8	54(note3)	-2.2	PK
		V	7311.0	54.7	-2.9	51.8	54(note3)	-2.2	PK
		V	9748.0	46.8	1.0	47.8	54(note3)	-6.2	PK
	11	H	4924.0	50.7	-6.7	44.0	54(note3)	-10.0	PK
		H	7386.0	47.2	-2.4	44.8	54(note3)	-9.2	PK
		H	9848.0	43.4	1.2	44.6	54(note3)	-9.4	PK
		V	4924.0	51.8	-6.7	45.1	54(note3)	-8.9	PK
		V	7386.0	48.7	-2.4	46.3	54(note3)	-7.7	PK
		V	9848.0	43.7	1.2	44.9	54(note3)	-9.1	PK

Note: 1. Measure Level = Reading Level + Factor.

2. The test frequency range, 9kHz~30MHz, 18GHz~25GHz, both of the worst case are at least 6dB below the limits, therefore no data appear in the report.

3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

Mode2: Transmit by 802.11g for 2.4G with CDD

Chain	CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
Ant 0+1+2	1	H	4824.0	48.3	-6.7	41.6	54(note3)	-12.4	PK
		H	7236.0	46.4	-2.6	43.8	54(note3)	-10.2	PK
		H	9648.0	43.4	1.0	44.4	54(note3)	-9.6	PK
		V	4824.0	48.9	-6.7	42.2	54(note3)	-11.8	PK
		V	7236.0	47.1	-2.6	44.5	54(note3)	-9.5	PK
		V	9648.0	43.8	1.0	44.8	54(note3)	-9.2	PK
	6	H	4874.0	58.8	-6.6	52.2	54(note3)	-1.8	PK
		H	7311.0	50.4	-2.9	47.5	54(note3)	-6.5	PK
		H	9748.0	44.0	1.0	45.0	54(note3)	-9.0	PK
		V	4874.0	60.6	-6.6	54.0	74	20.0	PK
		V	4874.0	52.3	-6.6	45.7	54	-8.3	AV
		V	7311.0	54.1	-2.9	51.2	54(note3)	-2.8	PK
		V	9748.0	44.0	1.0	45.0	54(note3)	-9.0	PK
	11	H	4924.0	49.2	-6.7	42.5	54(note3)	-11.5	PK
		H	7386.0	46.6	-2.4	44.2	54(note3)	-9.8	PK
		H	9848.0	43.8	1.2	45.0	54(note3)	-9.0	PK
		V	4924.0	49.1	-6.7	42.4	54(note3)	-11.6	PK
		V	7386.0	46.1	-2.4	43.7	54(note3)	-10.3	PK
		V	9848.0	43.6	1.2	44.8	54(note3)	-9.2	PK

Note: 1. Measure Level = Reading Level + Factor.

2. The test frequency range, 9kHz~30MHz, 18GHz~25GHz, both of the worst case are at least 6dB below the limits, therefore no data appear in the report.

3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

Mode3: Transmit by 802.11n(20MHz) for 2.4G with CDD

Chain	CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
Ant 0+1+2	1	H	4824.0	49.3	-6.7	42.6	54(note3)	-11.4	PK
		H	7236.0	46.7	-2.6	44.1	54(note3)	-9.9	PK
		H	9648.0	43.8	1.0	44.8	54(note3)	-9.2	PK
		V	4824.0	48.7	-6.7	42.0	54(note3)	-12.0	PK
		V	7236.0	46.9	-2.6	44.3	54(note3)	-9.7	PK
		V	9648.0	43.2	1.0	44.2	54(note3)	-9.8	PK
	6	H	4874.0	52.3	-6.6	45.7	54(note3)	-8.3	PK
		H	7311.0	47.2	-2.9	44.3	54(note3)	-9.7	PK
		H	9748.0	42.1	1.0	43.1	54(note3)	-10.9	PK
		V	4874.0	56.7	-6.6	50.1	54(note3)	-3.9	PK
		V	7311.0	54.9	-2.9	52.0	54(note3)	-2.0	PK
		V	9748.0	43.1	1.0	44.1	54(note3)	-9.9	PK
	11	H	4924.0	48.4	-6.7	41.7	54(note3)	-12.3	PK
		H	7386.0	45.3	-2.4	42.9	54(note3)	-11.1	PK
		H	9848.0	43.2	1.2	44.4	54(note3)	-9.6	PK
		V	4924.0	48.5	-6.7	41.8	54(note3)	-12.2	PK
		V	7386.0	45.8	-2.4	43.4	54(note3)	-10.6	PK
		V	9848.0	42.6	1.2	43.8	54(note3)	-10.2	PK

Note: 1. Measure Level = Reading Level + Factor.

2. The test frequency range, 9kHz~30MHz, 18GHz~25GHz, both of the worst case are at least 6dB below the limits, therefore no data appear in the report.

3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

Mode4: Transmit by 802.11n(40MHz) for 2.4G with CDD

Chain	CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
Ant 0+1+2	3	H	4844.0	49.6	-6.6	43.0	54(note3)	-11.0	PK
		H	7266.0	47.1	-2.7	44.4	54(note3)	-9.6	PK
		H	9688.0	43.5	0.8	44.3	54(note3)	-9.7	PK
		V	4844.0	49.3	-6.6	42.7	54(note3)	-11.3	PK
		V	7266.0	46.7	-2.7	44.0	54(note3)	-10.0	PK
		V	9688.0	43.6	0.8	44.4	54(note3)	-9.6	PK
	6	H	4874.0	49.1	-6.6	42.5	54(note3)	-11.5	PK
		H	7311.0	46.9	-2.9	44.0	54(note3)	-10.0	PK
		H	9748.0	43.6	1.0	44.6	54(note3)	-9.4	PK
		V	4874.0	56.1	-6.6	49.5	54(note3)	-4.5	PK
		V	7311.0	53.6	-2.9	50.7	54(note3)	-3.3	PK
		V	9748.0	44.2	1.0	45.2	54(note3)	-8.8	PK
	9	H	7356.0	45.0	-2.5	42.5	54(note3)	-11.5	PK
		H	9808.0	42.9	1.3	44.2	54(note3)	-9.8	PK
		V	4904.0	51.7	-6.7	45.0	54(note3)	-9.0	PK
		V	7356.0	49.0	-2.5	46.5	54(note3)	-7.5	PK
		V	9808.0	42.9	1.3	44.2	54(note3)	-9.8	PK
		H	4844.0	51.8	-6.6	45.2	54(note3)	-8.8	PK

Note: 1. Measure Level = Reading Level + Factor.

2. The test frequency range, 9kHz~30MHz, 18GHz~25GHz, both of the worst case are at least 6dB below the limits, therefore no data appear in the report.

3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

For 5.0G

Mode 5: Transmit by 802.11a for 5G with CDD

Chain	CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
Ant 0+1+2	149	H	11490.0	52.4	6.2	58.6	74	-15.4	PK
		H	11490.0	41.4	6.2	47.6	54	-6.4	AV
		H	17235.0	38.6	13.2	51.8	54(note3)	-2.2	PK
		V	11490.0	53.7	6.2	59.9	74	-14.1	PK
		V	11490.0	34.7	6.2	40.9	54	-13.1	AV
		V	17235.0	38.8	13.3	52.1	54(note3)	-1.9	PK
	157	H	11570.0	51.3	6.5	57.8	74	-16.2	PK
		H	11570.0	43.0	6.5	49.5	54	-4.5	AV
		H	17355.0	37.9	11.9	49.8	54(note3)	-4.2	PK
		V	11570.0	54.6	6.5	61.1	74	-12.9	PK
		V	11570.0	44.3	6.5	50.8	54	-3.2	AV
		V	17355.0	37.7	11.9	49.6	54(note3)	-4.4	PK
	165	H	11650.0	55.7	6.5	62.2	74	-11.8	PK
		H	11650.0	47.0	6.5	53.5	54	-0.5	AV
		H	17475.0	39.6	11.8	51.4	54(note3)	-2.6	PK
		V	11650.0	55.4	6.5	61.9	74	-12.1	PK
		V	11650.0	46.5	6.5	53.0	54	-1.0	AV
		V	17475.0	39.0	11.8	50.8	54(note3)	-3.2	PK

Note: 1. Measure Level = Reading Level + Factor.

2. The test frequency range, 9kHz~30MHz, 18GHz~40GHz, both of the worst case are at least 6dB below the limits, therefore no data appear in the report.

3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

Mode 6: Transmit by 802.11n(20MHz) for 5G with CDD

Chain	CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
Ant 0+1+2	149	H	11490.0	49.9	6.2	56.1	74	-17.9	PK
		H	11490.0	39.8	6.2	46.0	54	-8.0	AV
		H	17235.0	38.3	13.2	51.5	54(note3)	-2.5	PK
		V	11490.0	52.2	6.2	58.4	74	-15.6	PK
		V	11490.0	40.5	6.2	46.7	54	-7.3	AV
		V	17235.0	38.6	13.3	51.9	54(note3)	-2.1	PK
	157	H	11570.0	52.3	6.5	58.8	74	-15.2	PK
		H	11570.0	40.7	6.5	47.2	54	-6.8	AV
		H	17355.0	38.3	11.9	50.2	54(note3)	-3.8	PK
		V	11570.0	53.4	6.5	59.9	74	-14.1	PK
		V	11570.0	42.3	6.5	48.8	54	-5.2	AV
		V	17355.0	38.0	11.9	49.9	54(note3)	-4.1	PK
	165	H	11650.0	55.0	6.5	61.5	74	-12.5	PK
		H	11650.0	46.5	6.5	53.0	54	-1.0	AV
		H	17475.0	38.7	11.8	50.5	54(note3)	-3.5	PK
		V	11650.0	57.9	6.5	64.4	74	-9.6	PK
		V	11650.0	46.1	6.5	52.6	54	-1.4	AV
		V	17475.0	39.1	11.8	50.9	54(note3)	-3.1	PK

Note: 1. Measure Level = Reading Level + Factor.

2. The test frequency range, 9kHz~30MHz, 18GHz~40GHz, both of the worst case are at least 6dB below the limits, therefore no data appear in the report.

3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

Mode 7: Transmit by 802.11ac(20MHz) for 5G with CDD

Chain	CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
Ant 0+1+2	149	H	11490.0	50.3	6.2	56.5	74	-17.5	PK
		H	11490.0	35.7	6.2	41.9	54	-12.1	AV
		H	17235.0	39.6	13.2	52.8	54(note3)	-1.2	PK
		V	11490.0	51.6	6.2	57.8	74	-16.2	PK
		V	11490.0	41.7	6.2	47.9	54	-6.1	AV
		V	17235.0	37.8	13.3	51.1	54(note3)	-2.9	PK
	157	H	11570.0	52.8	6.5	59.3	74	-14.7	PK
		H	11570.0	41.3	6.5	47.8	54	-6.2	AV
		H	17355.0	39.0	11.9	50.9	54(note3)	-3.1	PK
		V	11570.0	54.9	6.5	61.4	74	-12.6	PK
		V	11570.0	42.4	6.5	48.9	54	-5.1	AV
		V	17355.0	37.7	11.9	49.6	54(note3)	-4.4	PK
	165	H	11650.0	55.7	6.5	62.2	74	-11.8	PK
		H	11650.0	46.4	6.5	52.9	54	-1.1	AV
		H	17475.0	39.8	11.8	51.6	54(note3)	-2.4	PK
		V	11650.0	57.3	6.5	63.8	74	-10.2	PK
		V	11650.0	46.7	6.5	53.2	54	-0.8	AV
		V	17475.0	38.7	11.8	50.5	54(note3)	-3.5	PK

Note: 1. Measure Level = Reading Level + Factor.

2. The test frequency range, 9kHz~30MHz, 18GHz~40GHz, both of the worst case are at least 6dB below the limits, therefore no data appear in the report.

3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

Mode 8: Transmit by 802.11n(40MHz) for 5G with CDD

Chain	CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
Ant 0+1+2	151	H	11510.0	45.3	6.6	51.9	54(note3)	-2.1	PK
		H	17265.0	39.1	11.4	50.5	54(note3)	-3.5	PK
		V	11510.0	46.6	6.6	53.2	54(note3)	-0.8	PK
		V	17265.0	38.0	11.3	49.3	54(note3)	-4.7	PK
	159	H	11590.0	51.7	6.2	57.9	74	-16.1	PK
		H	11590.0	38.4	6.2	44.6	54	-9.4	AV
		H	17385.0	37.7	12.8	50.5	54(note3)	-3.5	PK
		V	11590.0	50.7	6.2	56.9	74	-17.1	PK
		V	11590.0	39.9	6.2	46.1	54	-7.9	AV
		V	17385.0	37.6	12.8	50.4	54(note3)	-3.6	PK

Note: 1. Measure Level = Reading Level + Factor.

2. The test frequency range, 9kHz~30MHz, 18GHz~40GHz, both of the worst case are at least 6dB below the limits, therefore no data appear in the report.

3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

Mode 9: Transmit by 802.11ac(40MHz) for 5G with CDD

Chain	CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
Ant 0+1+2	151	H	11510.0	46.8	6.6	53.4	54(note3)	-0.6	PK
		H	17265.0	38.7	11.4	50.1	54(note3)	-3.9	PK
		V	11510.0	47.3	6.6	53.9	54(note3)	-0.1	PK
		V	17265.0	39.3	11.3	50.6	54(note3)	-3.4	PK
	159	H	11590.0	42.9	6.2	49.1	74	-24.9	PK
		H	11590.0	33.0	6.2	39.2	54	-14.8	AV
		H	17385.0	24.8	12.8	37.6	54(note3)	-16.4	PK
		V	11590.0	44.3	6.2	50.5	74	-23.5	PK
		V	11590.0	34.5	6.2	40.7	54	-13.3	AV
		V	17385.0	25.0	12.8	37.8	54(note3)	-16.2	PK

Note: 1. Measure Level = Reading Level + Factor.

2. The test frequency range, 9kHz~30MHz, 18GHz~40GHz, both of the worst case are at least 6dB below the limits, therefore no data appear in the report.

3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

Mode 10: Transmit by 802.11n(40MHz) for 5G with CDD

Chain	CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
Ant 0+1+2	155	H	11550.0	45.2	6.6	51.8	54(note3)	-2.2	PK
		H	17325.0	38.5	11.7	50.2	54(note3)	-3.8	PK
		V	11550.0	45.9	6.6	52.5	54(note3)	-1.5	PK
		V	17325.0	38.7	11.7	50.4	54(note3)	-3.6	PK

Note: 1. Measure Level = Reading Level + Factor.

2. The test frequency range, 9kHz~30MHz, 18GHz~40GHz, both of the worst case are at least 6dB below the limits, therefore no data appear in the report.

3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

Mode 11: Transmit by 802.11ac(20MHz) for 5G with Beamforming

Chain	CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
Ant 0+1+2	149	H	11490.0	45.0	6.2	51.2	54(note3)	-2.8	PK
		H	17235.0	38.1	13.2	51.3	54(note3)	-2.7	PK
		V	11490.0	44.9	6.2	51.1	54(note3)	-2.9	PK
		V	17235.0	37.9	13.3	51.2	54(note3)	-2.8	PK
	157	H	11570.0	44.7	6.5	51.2	54(note3)	-2.8	PK
		H	17355.0	38.2	11.9	50.1	54(note3)	-3.9	PK
		V	11570.0	44.8	6.5	51.3	54(note3)	-2.7	PK
		V	17355.0	37.5	11.9	49.4	54(note3)	-4.6	PK
	165	H	11650.0	42.8	6.5	49.3	54(note3)	-4.7	PK
		H	17475.0	38.4	11.8	50.2	54(note3)	-3.8	PK
		V	11650.0	43.4	6.5	49.9	54(note3)	-4.1	PK
		V	17475.0	37.3	11.8	49.1	54(note3)	-4.9	PK

Note: 1. Measure Level = Reading Level + Factor.

2. The test frequency range, 9kHz~30MHz, 18GHz~40GHz, both of the worst case are at least 6dB below the limits, therefore no data appear in the report.

3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

Mode 12: Transmit by 802.11ac(40MHz) for 5G with Beamforming

Chain	CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
Ant 0+1+2	151	H	11510.0	44.5	6.6	51.1	54(note3)	-2.9	PK
		H	17265.0	37.8	11.4	49.2	54(note3)	-4.8	PK
		V	11510.0	44.6	6.6	51.2	54(note3)	-2.8	PK
		V	17265.0	38.0	11.3	49.3	54(note3)	-4.7	PK
	159	H	11590.0	43.5	6.2	49.7	54(note3)	-4.3	PK
		H	17385.0	25.4	12.8	38.2	54(note3)	-15.8	PK
		V	11590.0	43.0	6.2	49.2	54(note3)	-4.8	PK
		V	17385.0	26.1	12.8	38.9	54(note3)	-15.1	PK

Note: 1. Measure Level = Reading Level + Factor.

2. The test frequency range, 9kHz~30MHz, 18GHz~40GHz, both of the worst case are at least 6dB below the limits, therefore no data appear in the report.

3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

Mode 13: Transmit by 802.11ac(80MHz) for 5G with Beamforming

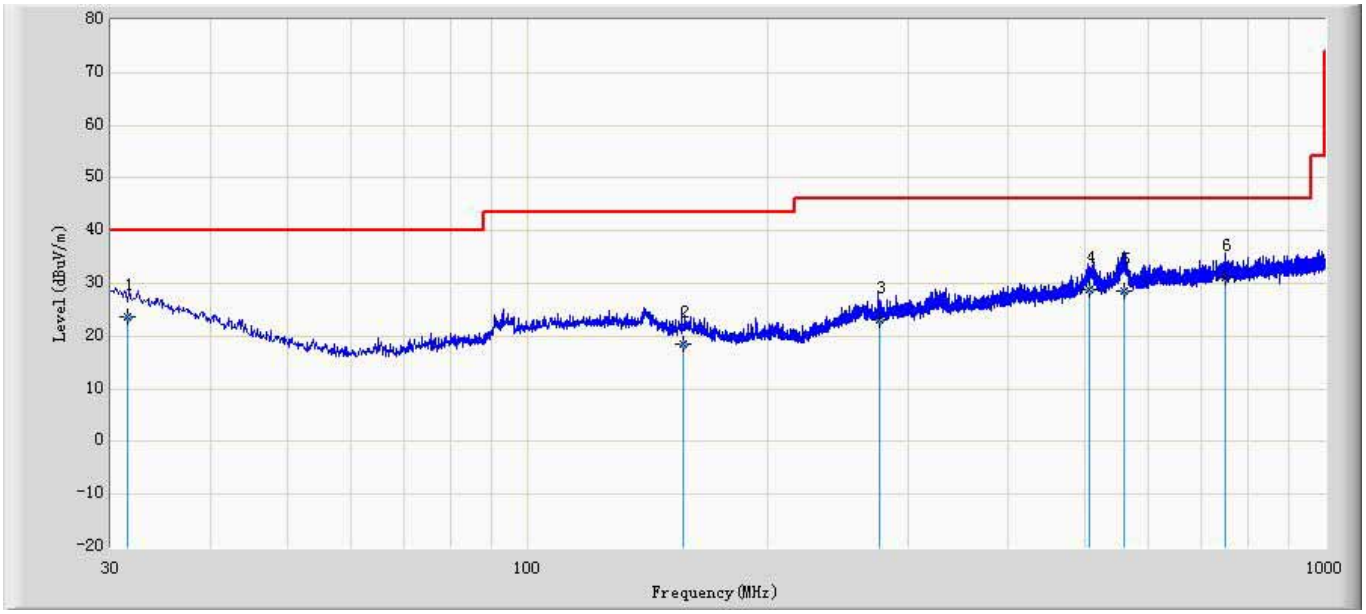
Chain	CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
Ant 0+1+2	155	H	11550.0	44.3	6.6	50.9	54(note3)	-3.1	PK
		H	17325.0	38.6	11.7	50.3	54(note3)	-3.7	PK
		V	11550.0	44.3	6.6	50.9	54(note3)	-3.1	PK
		V	17325.0	38.8	11.7	50.5	54(note3)	-3.5	PK

Note: 1. Measure Level = Reading Level + Factor.

2. The test frequency range, 9kHz~30MHz, 18GHz~40GHz, both of the worst case are at least 6dB below the limits, therefore no data appear in the report.
3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

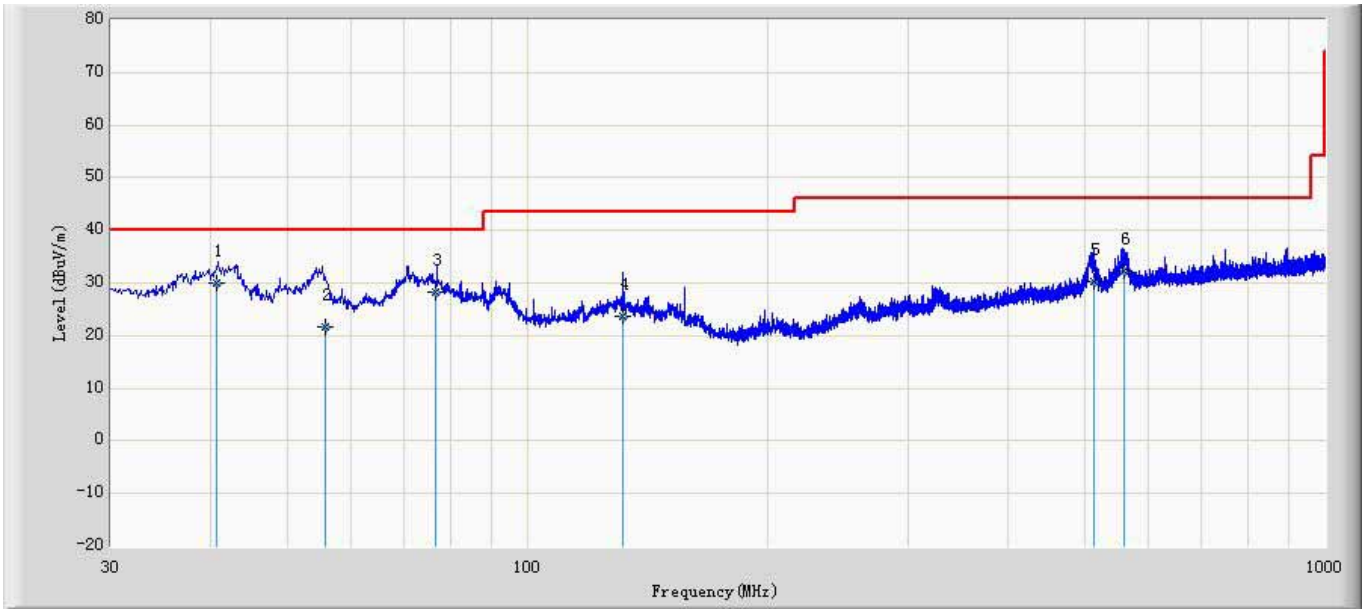
The worst case of Radiated Emission below 1GHz:

Site: AC2	Time: 2015/08/24
Limit: FCC_Part15.209_RE(3m)_ClassB	Margin: 0
Probe: AC2_10M(30-1000M)20150408	Polarity: Horizontal
EUT: AC1750 Wireless Dual Band Gigabit Router	Power: AC 120V/60Hz
Note: Mode 1	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1		31.524	23.583	28.163	-16.417	40.000	17.916	0.616	23.111	100	125	QP
2		156.636	18.461	30.024	-25.039	43.500	10.102	1.356	23.020	200	9	QP
3		275.664	23.145	31.643	-22.855	46.000	12.857	1.783	23.137	200	158	QP
4		505.634	28.957	31.349	-17.043	46.000	17.935	2.433	22.760	100	136	QP
5		559.966	28.649	29.855	-17.351	46.000	19.000	2.574	22.780	100	32	QP
6	*	749.665	31.231	31.048	-14.769	46.000	19.794	3.029	22.640	195	360	QP

Site: AC2	Time: 2015/08/24
Limit: FCC_Part15.209_RE(3m)_ClassB	Margin: 0
Probe: AC2_10M(30-1000M)20150408	Polarity: Vertical
EUT: AC1750 Wireless Dual Band Gigabit Router	Power: AC 120V/60Hz
Note: Mode 1	



No	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Probe (dB/m)	Cable (dB)	Amp (dB)	Ant Pos (cm)	Table Pos (deg)	Type
1	*	40.634	30.141	40.075	-9.859	40.000	12.645	0.690	23.269	100	298	QP
2		55.664	21.769	36.746	-18.231	40.000	7.237	0.810	23.025	200	169	QP
3		76.635	28.312	43.698	-11.688	40.000	6.764	0.941	23.091	100	28	QP
4		131.634	23.612	33.665	-19.888	43.500	11.769	1.240	23.062	100	22	QP
5		512.665	30.198	32.404	-15.802	46.000	18.104	2.450	22.760	200	114	QP
6		558.935	32.368	33.578	-13.632	46.000	19.000	2.570	22.780	100	21	QP

Note: All the test modes are pretested and mode 1 802.11b mode was found to be the worst mode, so the data of this test mode was recorded.

5. RF Antenna Conducted Spurious Emission

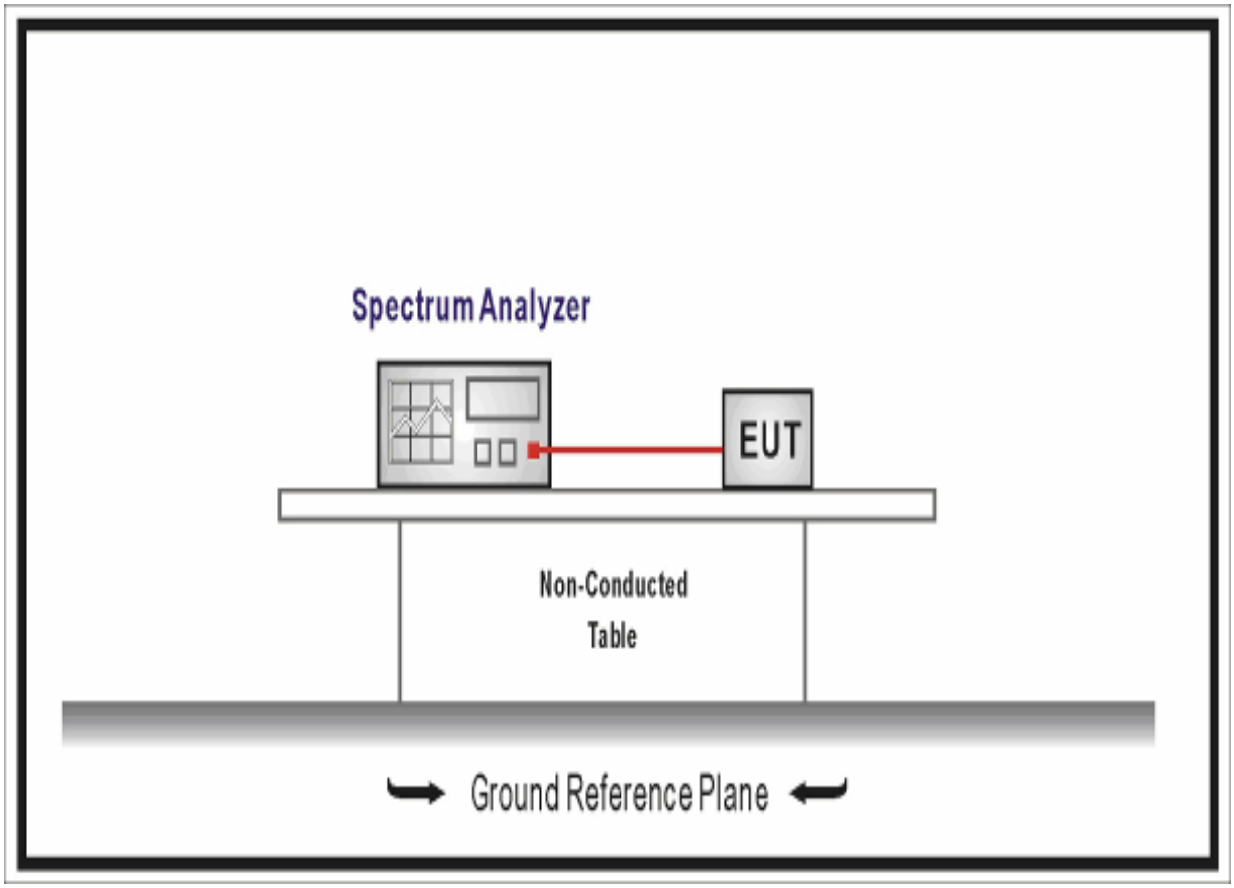
5.1. Test Equipment

Occupied Bandwidth / TR-8

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2015.03.11	2016.03.10
Temperature/Humidity Meter	zhicheng	ZC1-2	TR8-TH	2015.04.10	2016.04.09

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

5.2. Test Setup



5.3. Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.
If maximum conducted (average) output power was used to determine compliance as described in 11.9.2, then the peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum in-band peak PSD level in 100 kHz (i.e., 30 dBc)

5.4. Test Procedure

The EUT was tested according to ANSI C63.10 for compliance to FCC 47CFR 15.247 requirements.
Set RBW = 100 kHz, Set VBW > RBW, scan up through 10th harmonic.

5.5. Uncertainty

The measurement uncertainty is defined as ± 1.27 dB

5.6. Test Result

Product	:	AC1750 Wireless Dual Band Gigabit Router
Test Item	:	RF Antenna Conducted Spurious
Test Site	:	TR-8
Test Mode	:	Transmit by 2.4G with CDD

Mode	Channel	Test Frequency (MHz)	In-Band PSD[a] (dBm/100KHz)	Frequency (MHz)	Out-Band PSD[b] (dBm/100KHz)	[a]-[b] (dB)	Limit (dB)	Result
802.11b	01	2412	14.849	2400	-31.613	46.462	30	Pass
802.11b	11	2462	13.099	2483.5	-39.571	52.670	30	Pass
802.11g	01	2412	15.780	2400	-20.032	35.812	30	Pass
802.11g	11	2462	15.636	2483.5	-35.937	51.573	30	Pass
802.11n (20MHz)	01	2412	13.253	2400	-17.945	31.198	30	Pass
802.11n (20MHz)	11	2462	11.071	2483.5	-34.271	45.342	30	Pass
802.11n (40MHz)	03	2422	10.545	2400	-24.084	34.629	30	Pass
802.11n (40MHz)	09	2452	9.062	2483.5	-40.217	49.279	30	Pass

Note: 1, For this test item, the modulation of this mode we have evaluated three antennas, presented data in the report is the worst case.

Product	:	AC1750 Wireless Dual Band Gigabit Router
Test Item	:	RF Antenna Conducted Spurious
Test Site	:	TR-8
Test Mode	:	Transmit by 5G with CDD

Mode	Channel	Test Frequency (MHz)	In-Band PSD[a] (dBm/100KHz)	Frequency (MHz)	Out-Band PSD[b] (dBm/100KHz)	[a]-[b] (dB)	Limit (dB)	Result
802.11a	149	5745	20.522	5725	-22.544	43.066	30	Pass
802.11a	165	5825	22.227	5850	-28.742	50.969	30	Pass
802.11n (20MHz)	149	5745	24.049	5725	-22.544	46.593	30	Pass
802.11n (20MHz)	165	5825	22.140	5850	-20.169	42.309	30	Pass
802.11ac (20MHz)	149	5745	23.163	5725	-11.623	34.786	30	Pass
802.11ac (20MHz)	165	5825	21.801	5850	-23.470	45.271	30	Pass
802.11n (40MHz)	151	5755	19.512	5725	-10.913	30.425	30	Pass
802.11n (40MHz)	159	5795	19.440	5850	-29.321	48.761	30	Pass
802.11ac (40MHz)	151	5755	19.418	5725	-10.741	30.159	30	Pass
802.11ac (40MHz)	159	5795	19.180	5850	-27.841	47.021	30	Pass
802.11ac (80MHz)	155	5775	19.318	5725	-10.721	30.039	30	Pass

Note: 1, For this test item, the modulation of this mode we have evaluated three antennas, presented data in the report is the worst case.

Product	:	AC1750 Wireless Dual Band Gigabit Router
Test Item	:	RF Antenna Conducted Spurious
Test Site	:	TR-8
Test Mode	:	Transmit by 5G with Beamforming

Mode	Channel	Test Frequency (MHz)	In-Band PSD[a] (dBm/100KHz)	Frequency (MHz)	Out-Band PSD[b] (dBm/100KHz)	[a]-[b] (dB)	Limit (dB)	Result
802.11ac (20MHz)	149	5745	14.551	5725	-15.958	30.509	30	Pass
802.11ac (20MHz)	165	5825	14.030	5850	-41.606	55.636	30	Pass
802.11ac (40MHz)	151	5755	14.112	5725	-16.298	30.410	30	Pass
802.11ac (40MHz)	159	5795	10.442	5850	-39.371	49.813	30	Pass
802.11ac (80MHz)	155	5775	17.149	5725	-12.918	30.067	30	Pass

Note: 1, For this test item, the modulation of this mode we have evaluated three antennas, presented data in the report is the worst case.

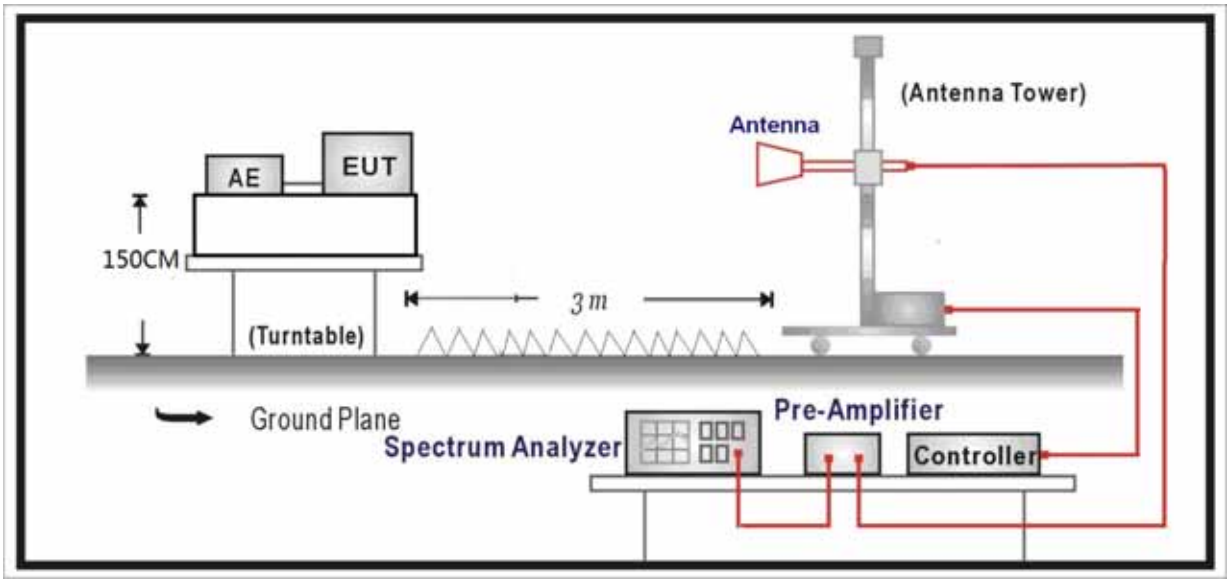
6. Radiated Emission Band Edge

6.1. Test Equipment

☒Radiated Emission Band Edge / AC-5

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2015.03.11	2016.03.10
Preamplifier	Miteq	NSP1800-25	1364185	2015.05.04	2016.05.03
Preamplifier	QuieTek	AP-040G	CHM-0906001	2015.05.04	2016.05.03
Bilog Antenna	Teseq GmbH	CBL6112D	27612	2015.10.16	2016.10.15
DRG Horn	ETS-Lindgren	3117	00123988	2015.01.08	2016.01.07
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C1	2015.03.02	2016.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 106	AC5-C2	2015.03.02	2016.03.01
Coaxial Cable	Huber+Suhner	SUCOFLEX 102	AC5-C3	2015.03.02	2016.03.01
EMI Receiver	Agilent	N9038A	MY51210196	2015.06.10	2016.06.09
Temperature/Humidity Meter	Zhichen	ZC1-2	AC5-TH	2015.01.09	2016.01.08

6.2. Test Setup



6.3. Limit

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a) of FCC part 15, must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

6.4. Test Procedure

According to ANSI C63.10: 2013.

This test is required for any spurious emission or modulation product that falls in a Restricted Band, as defined in Section 15.205 of FCC part 15. It must be performed with the highest gain of each type of antenna proposed for use with the EUT. Use the following spectrum analyzer settings:

Span = wide enough to fully capture the emission being measured

RBW = 1 MHz for f ≧ 1 GHz, 100 kHz for f < 1GHz

VBW ≧ RBW

Sweep = auto

Detector function = peak

Trace = max hold

Follow the guidelines in ANSI C63.4 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization, etc. A pre-amp and a high pass filter are required for this test, in order to provide the measuring system with sufficient sensitivity. Allow the trace to stabilize. The peak reading of the emission, after being corrected by the antenna factor, cable loss, pre-amp gain, etc., is the peak field strength, which must comply with the limit specified in Section 15.35(b) of FCC part 15.

Now set the VBW ≥ 1 / T (the minimum transmission duration), while maintaining all of the other instrument settings. This peak level, once corrected, must comply with the limit specified in Section 15.209 of FCC Part 15.

If the emission on which a radiated measurement must be made is located at the edge of the authorized band of operation, then the alternative “marker-delta” method may be employed.

6.5. Uncertainty

The measurement uncertainty above 1G is defined as ± 3.9 dB

6.6. Test Result

802.11b

Chain	CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
Ant 0+1+2	1	V	2390.0	29.1	37.5	66.6	74.0	-7.4	PK
		V	2390.0	16.0	37.5	53.5	54.0	-0.5	AV
		H	2390.0	24.5	37.5	62.0	74.0	-12.0	PK
		H	2390.0	8.0	37.5	45.5	54.0	-8.5	AV
	11	V	2483.5	28.8	37.9	66.7	74.0	-7.3	PK
		V	2483.5	14.6	37.9	52.5	54.0	-1.5	AV
		H	2483.5	24.2	37.9	62.1	74.0	-11.9	PK
		H	2483.5	9.0	37.9	46.9	54.0	-7.1	AV

802.11g

Chain	CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
Ant 0+1+2	1	V	2389.9	36.0	37.5	73.5	74.0	-0.5	PK
		V	2390.0	16.0	37.5	53.5	54.0	-0.5	AV
		H	2390.0	23.4	37.5	60.9	74.0	-13.1	PK
		H	2390.0	8.6	37.5	46.1	54.0	-7.9	AV
	11	V	2484.7	34.8	37.9	72.7	74.0	-1.3	PK
		V	2483.5	15.7	37.9	53.6	54.0	-0.4	AV
		H	2483.5	24.2	37.9	62.1	74.0	-11.9	PK
		H	2483.5	11.5	37.9	49.4	54.0	-4.6	AV

802.11n(20MHz)

Chain	CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
Ant 0+1+2	1	V	2390.0	36.2	37.5	73.7	74.0	-0.3	PK
		V	2390.0	15.9	37.5	53.4	54.0	-0.6	AV
		H	2390.0	22.7	37.5	60.2	74.0	-13.8	PK
		H	2390.0	6.6	37.5	44.1	54.0	-9.9	AV
	11	V	2483.5	28.8	37.9	66.7	74.0	-7.3	PK
		V	2483.5	15.4	37.9	53.3	54.0	-0.7	AV
		H	2483.5	23.8	37.9	61.7	74.0	-12.3	PK
		H	2483.5	11.8	37.9	49.7	54.0	-4.3	AV

802.11n(40MHz)

Chain	CH	Antenna	Frequency (MHz)	Reading Level (dBuV/m)	Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
Ant 0+1+2	3	V	2390.0	33.8	37.5	71.3	74.0	-2.7	PK
		V	2390.0	15.7	37.5	53.2	54.0	-0.8	AV
		H	2390.0	22.1	37.5	59.6	74.0	-14.4	PK
		H	2390.0	8.8	37.5	46.3	54.0	-7.7	AV
	9	V	2485.0	34.9	38.0	72.9	74.0	-1.1	PK
		V	2485.2	15.1	37.9	53.0	54.0	-1.0	AV
		H	2483.5	22.4	37.9	60.3	74.0	-13.7	PK
		H	2483.5	10.3	37.9	48.2	54.0	-5.8	AV

7. Occupied Bandwidth

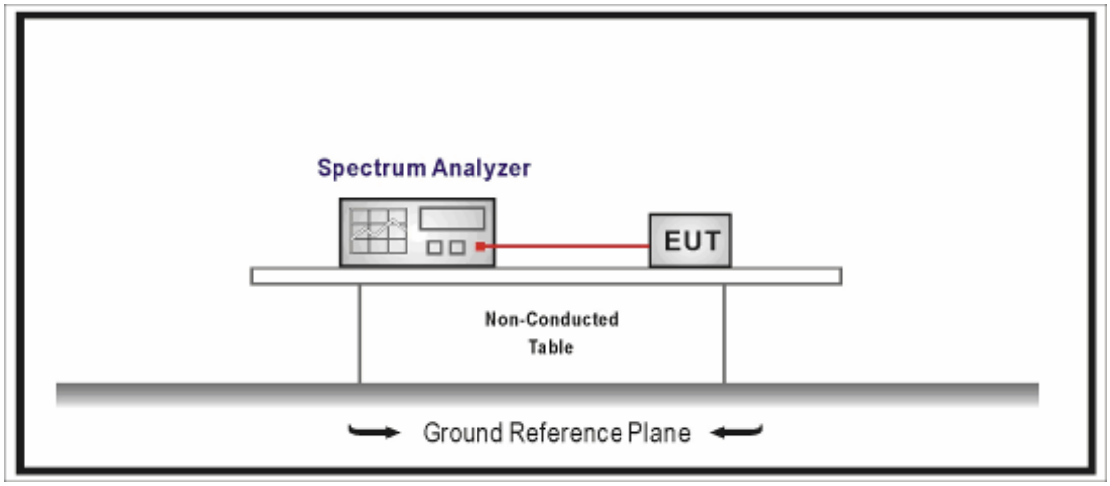
7.1. Test Equipment

Peak Power Spectral Density / TR-8

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2015.03.11	2016.03.10
Temperature/Humidity Meter	zhicheng	ZC1-2	TR8-TH	2015.04.10	2016.04.09

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

7.2. Test Setup



7.3. Limit

According to ANSI C63.10 11.2 c) test 99% occupied bandwidth.
Should be less than the nominal bandwidth.
The minimum 6dB bandwidth shall be at least 500 kHz.

7.4. Test Procedure

The EUT was setup according to ANSI C63.4: 2014; tested according to DTS test procedure of ANSI C63.10 requirements.
When the average power is exercised, the measured power is to be referenced to the OBW (99% occupied bandwidth) rather than to the DTS bandwidth according to Clause 11.9.2.1 of ANSI C63.10.
The 99% bandwidth test is using ANSI C63.10 Section 6.9.3 method.

a) Set RBW = in the range of 1% to 5% of the OBW.
b) Set the video bandwidth (VBW) ≥ 3 × RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) Sweep = auto couple.
f) Allow the trace to stabilize.
g) Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.

7.5. Uncertainty

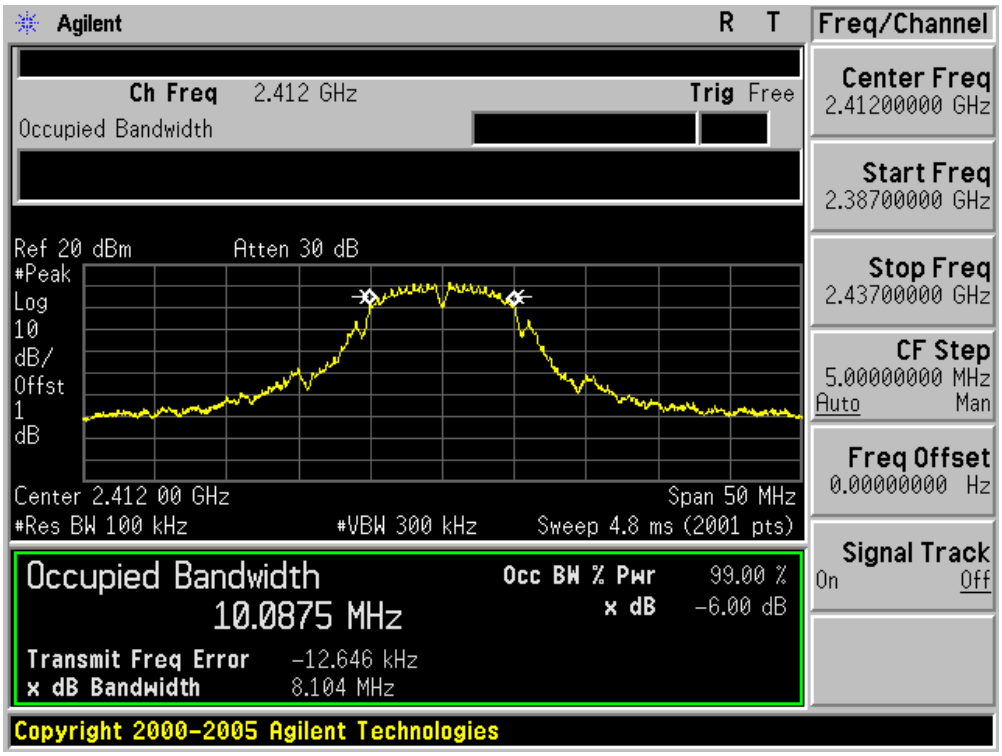
The measurement uncertainty is defined as ± 1 kHz

7.6. Test Result

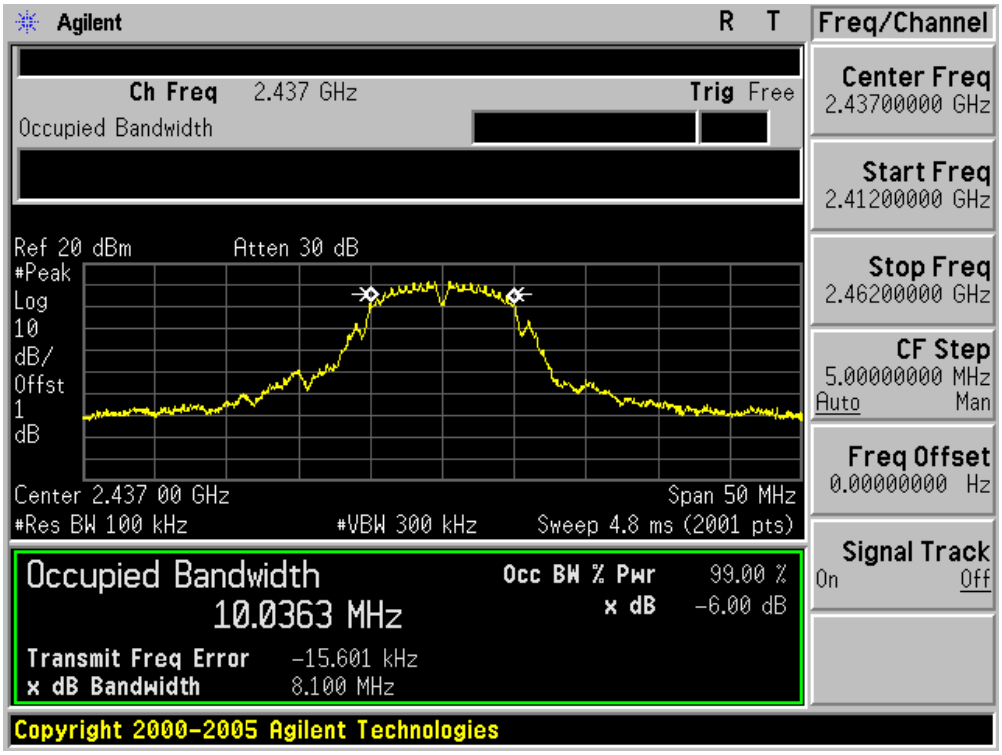
Product	:	AC1750 Wireless Dual Band Gigabit Router
Test Item	:	Occupied Bandwidth
Test Mode	:	Mode 1: Transmit by 802.11b for 2.4G with CDD (Ant 1)

Channel No.	Frequency (MHz)	99%Occupied Bandwidth (kHz)	6dB Occupied Bandwidth (kHz)	Limit (KHz)	Result
01	2412	10087.5	8104	500	Pass
06	2437	10036.3	8100	500	Pass
11	2462	10029.3	8097	500	Pass

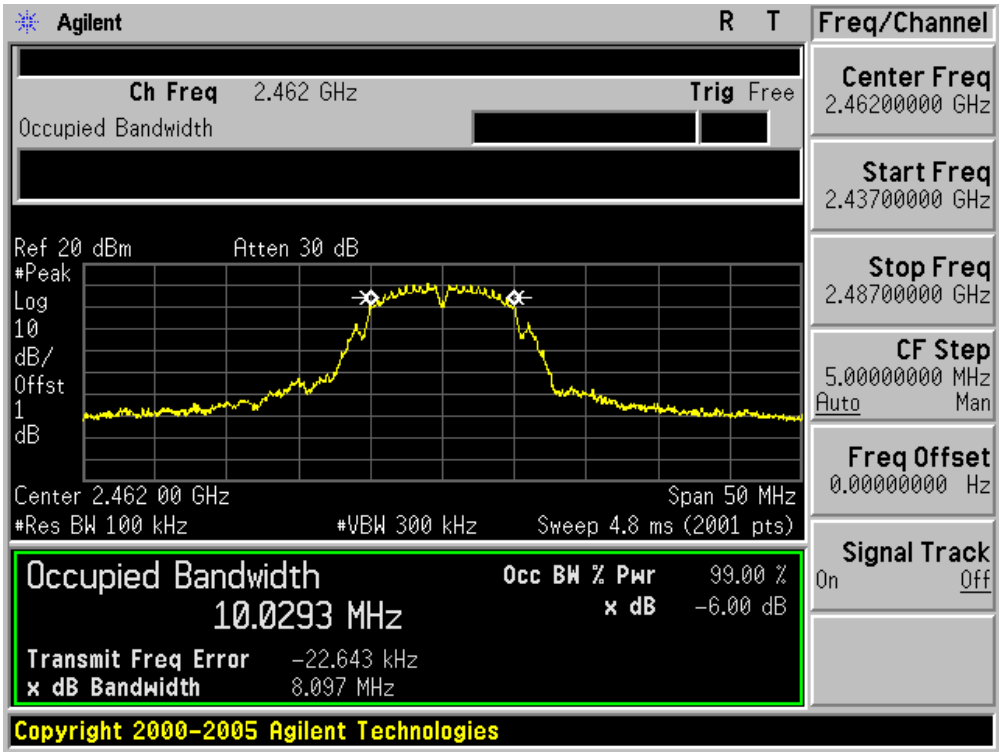
Channel 01 (2412MHz)



Channel 06 (2437MHz)



Channel 11 (2462MHz)

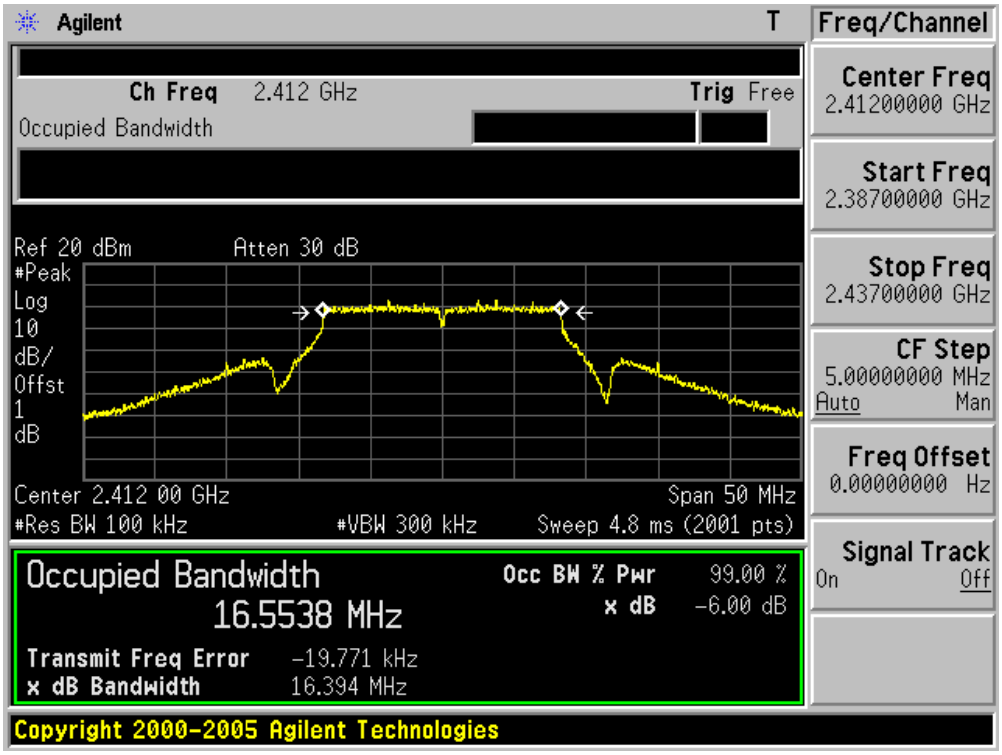


Note: For this test item, the modulation of this mode we have evaluated three antennas, presented data in the report is the worst case.

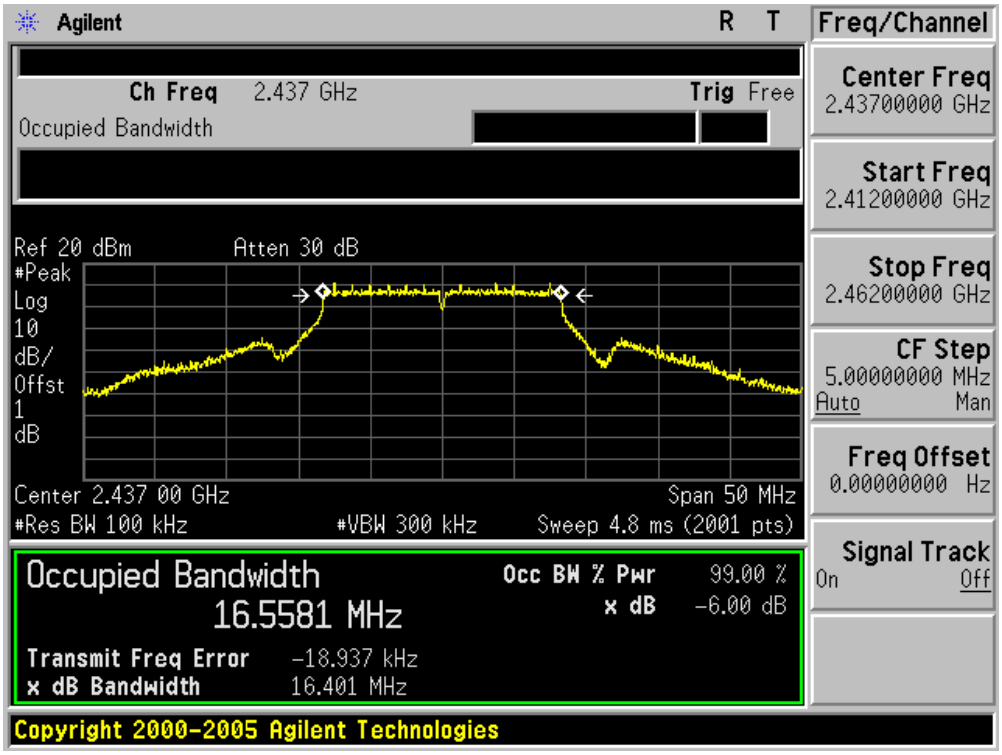
Product	:	AC1750 Wireless Dual Band Gigabit Router
Test Item	:	Occupied Bandwidth
Test Mode	:	Mode 2: Transmit by 802.11g for 2.4G with CDD (Ant 1)

Channel No.	Frequency (MHz)	99%Occupied Bandwidth (kHz)	6dB Occupied Bandwidth (kHz)	Limit (KHz)	Result
01	2412	16553.8	16394	500	Pass
06	2437	16558.1	16401	500	Pass
11	2462	16531.9	16430	500	Pass

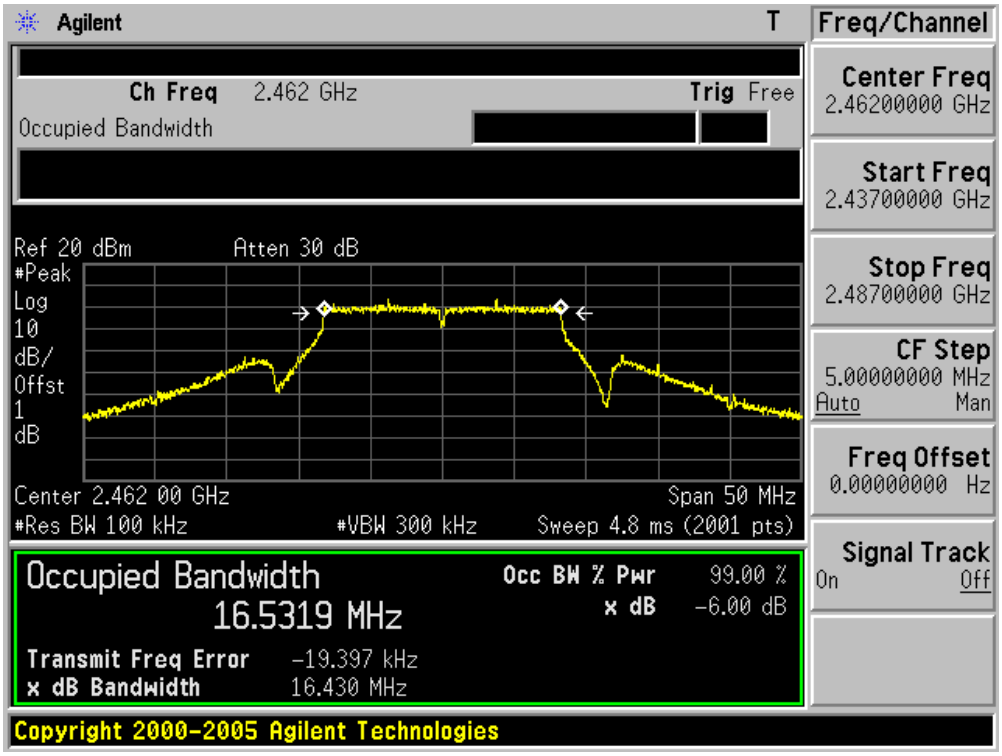
Channel 01 (2412MHz)



Channel 06 (2437MHz)



Channel 11 (2462MHz)

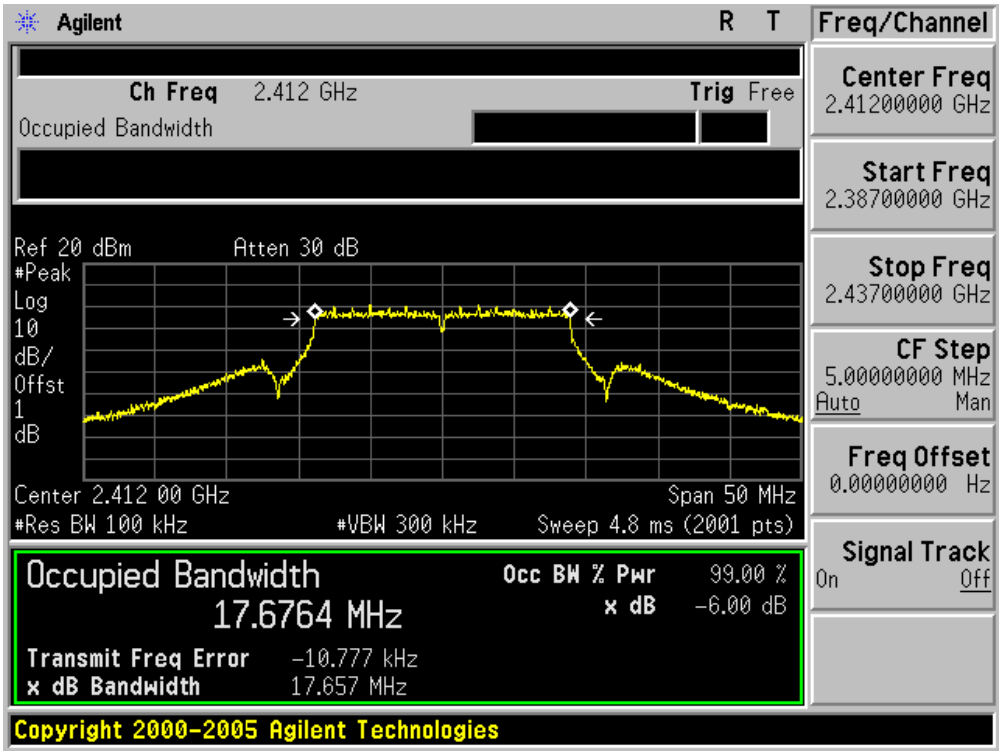


Note: For this test item, the modulation of this mode we have evaluated three antennas, presented data in the report is the worst case.

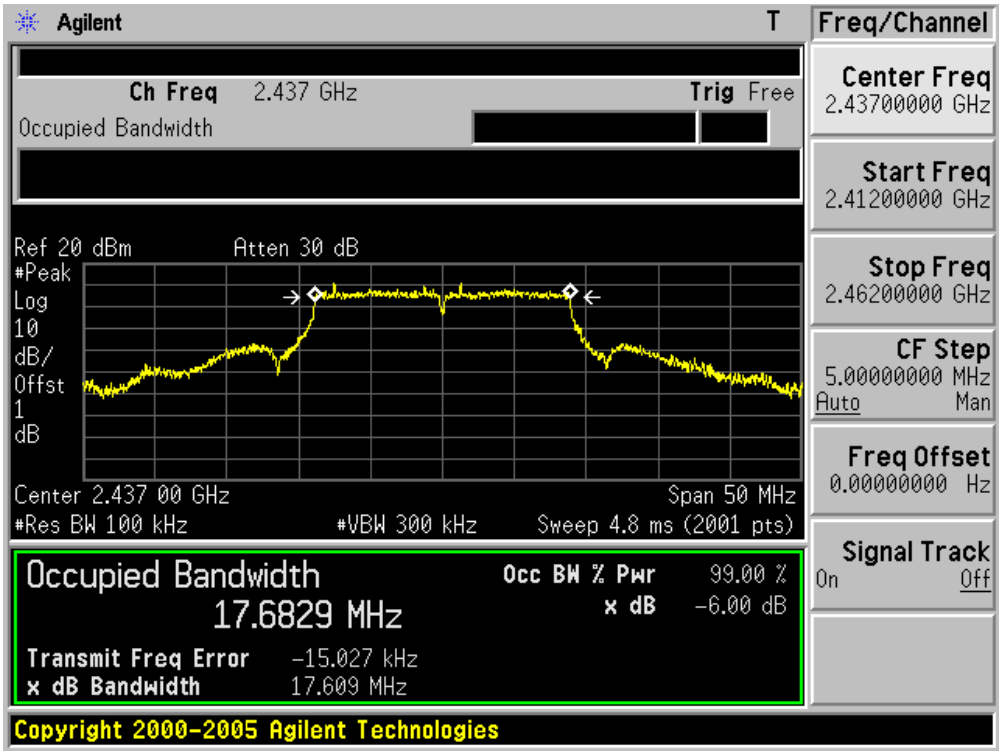
Product	:	AC1750 Wireless Dual Band Gigabit Router
Test Item	:	Occupied Bandwidth
Test Mode	:	Mode 3: Transmit by 802.11n(20MHz) for 2.4G with CDD (Ant 1)

Channel No.	Frequency (MHz)	99%Occupied Bandwidth (kHz)	6dB Occupied Bandwidth (kHz)	Limit (KHz)	Result
01	2412	17676.4	17657	500	Pass
06	2437	17682.9	17609	500	Pass
11	2462	17674.9	17603	500	Pass

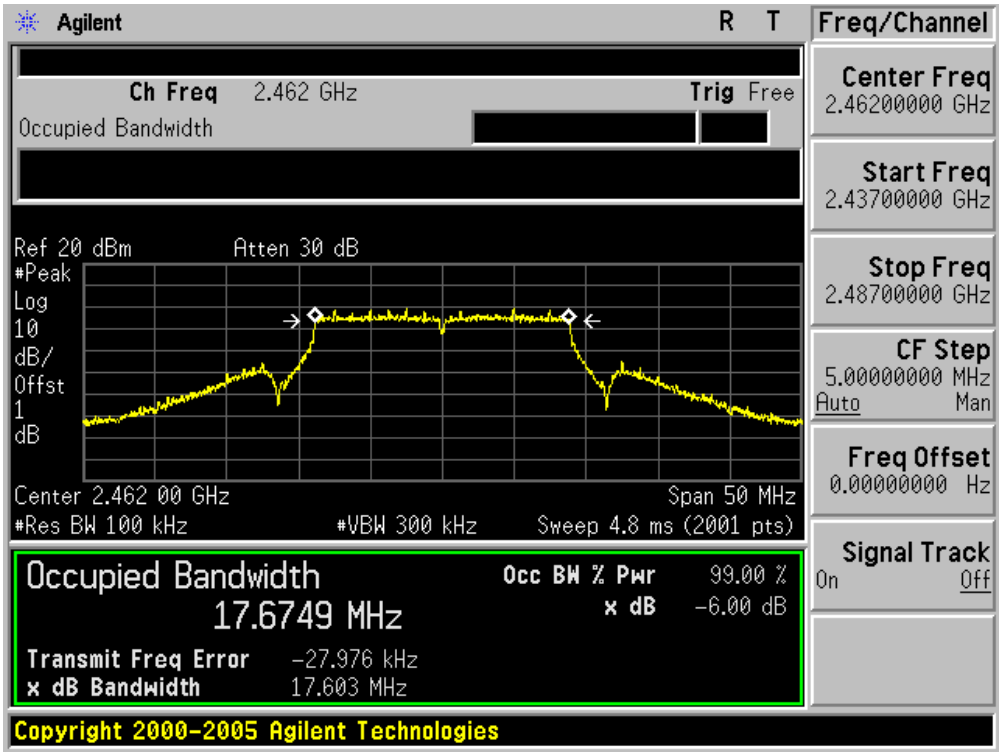
Channel 01 (2412MHz)



Channel 06 (2437MHz)



Channel 11 (2462MHz)

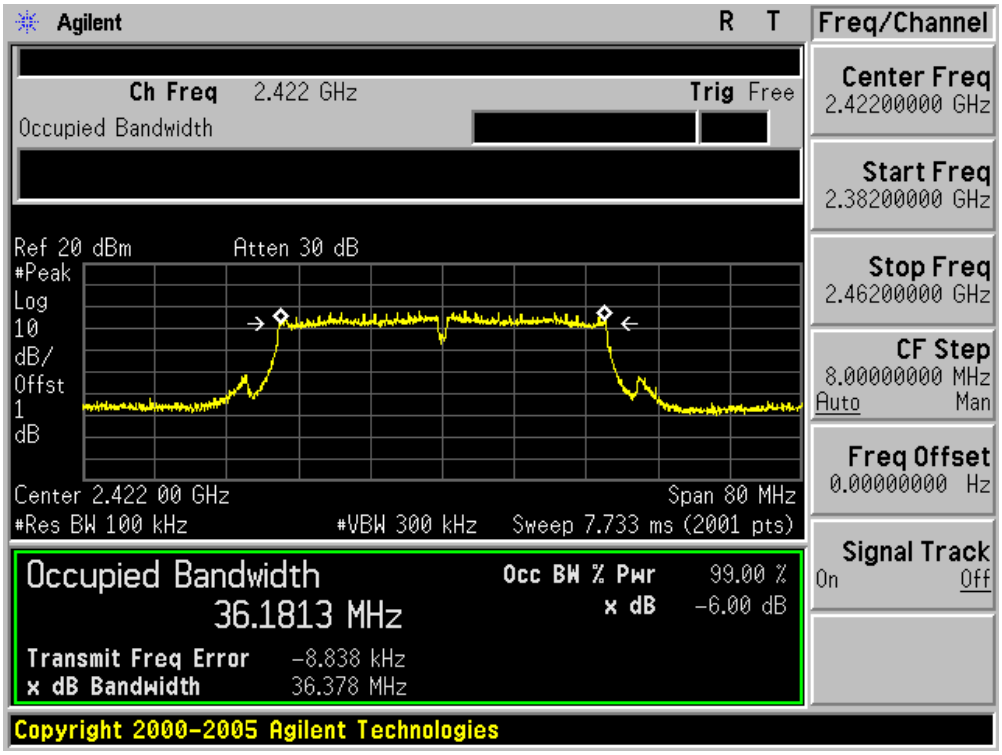


Note: For this test item, the modulation of this mode we have evaluated three antennas, presented data in the report is the worst case.

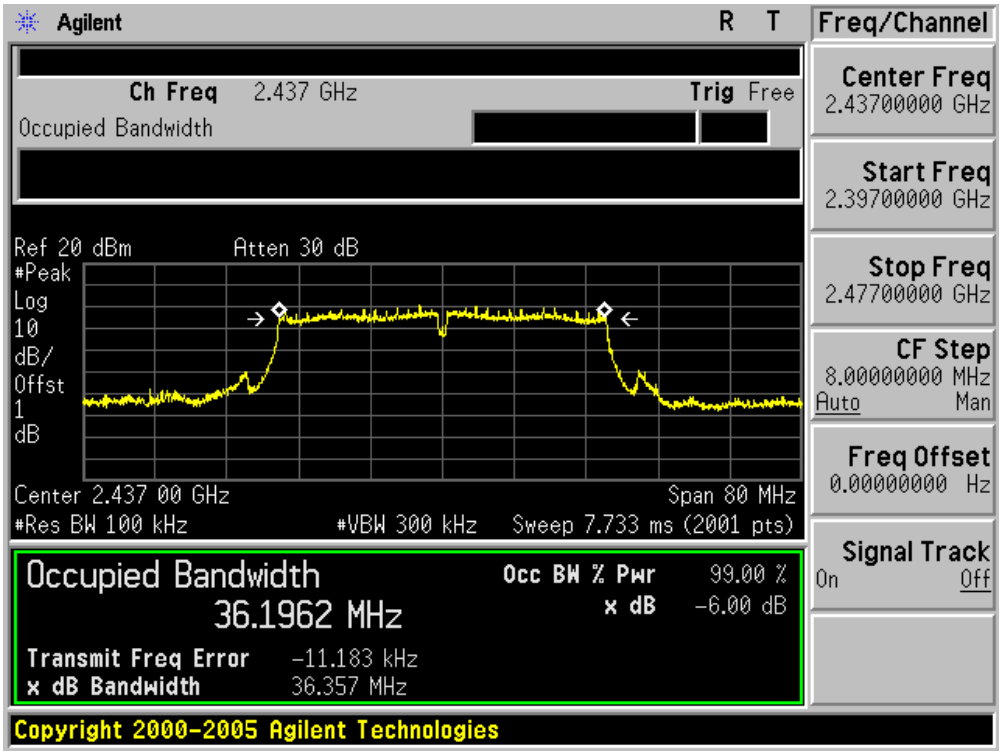
Product	:	AC1750 Wireless Dual Band Gigabit Router
Test Item	:	Occupied Bandwidth
Test Mode	:	Mode 4: Transmit by 802.11n(40MHz) for 2.4G with CDD (Ant 1)

Channel No.	Frequency (MHz)	99%Occupied Bandwidth (kHz)	6dB Occupied Bandwidth (kHz)	Limit (KHz)	Result
03	2422	36181.3	36378	500	Pass
06	2437	36196.2	36357	500	Pass
09	2452	36189.4	36355	500	Pass

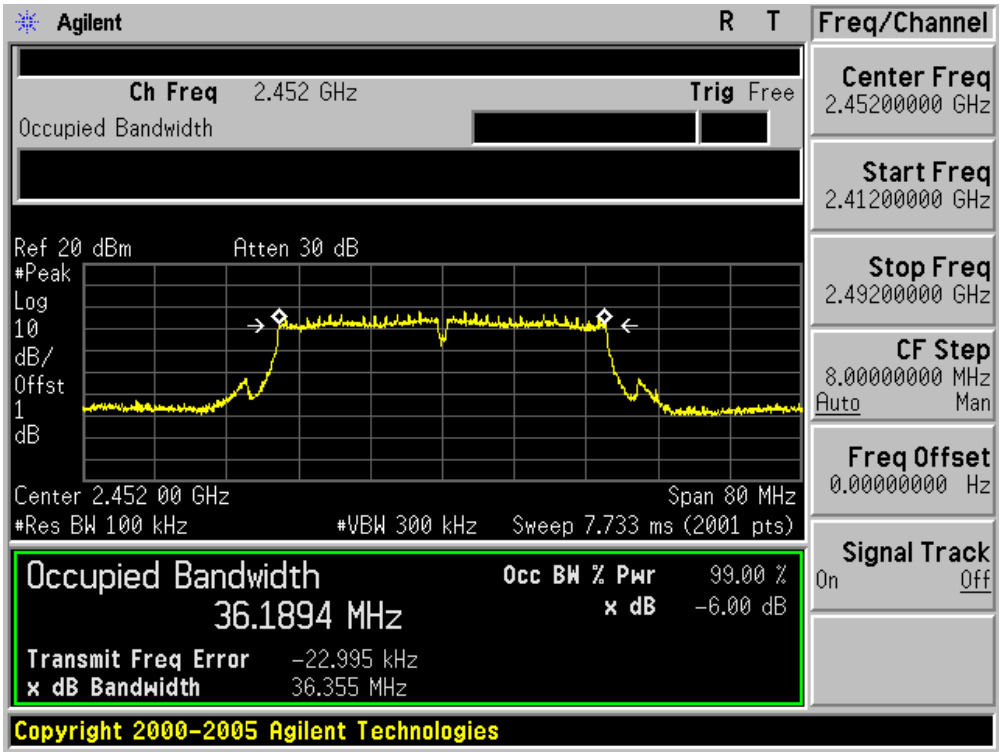
Channel 03 (2422MHz)



Channel 06 (2437MHz)



Channel 09 (2452MHz)

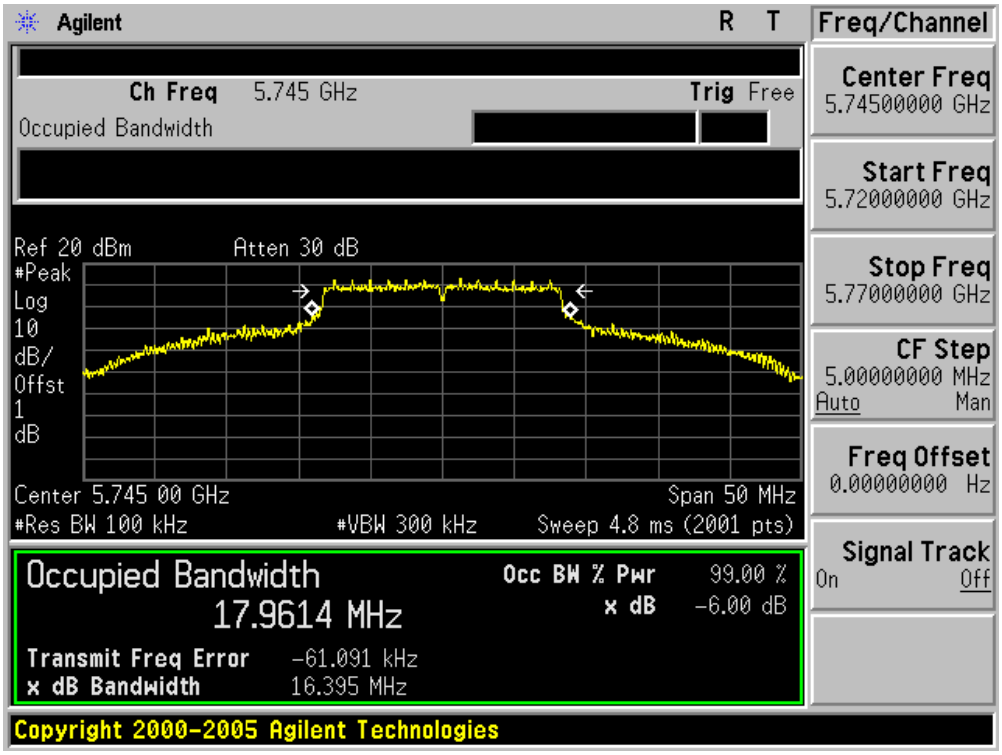


Note: For this test item, the modulation of this mode we have evaluated three antennas, presented data in the report is the worst case.

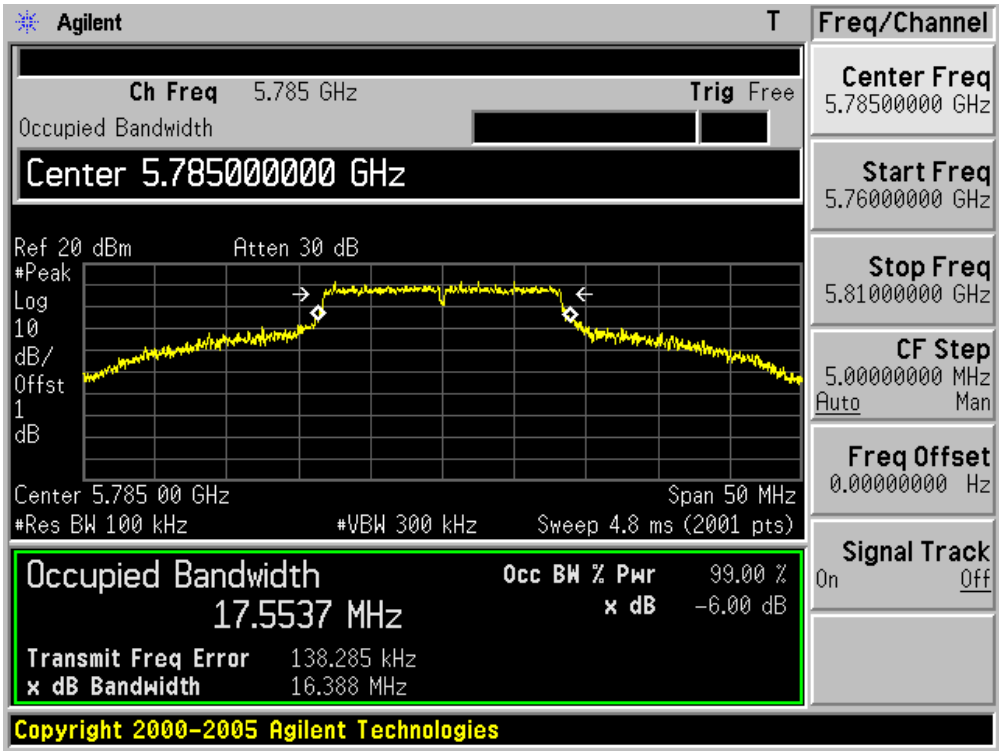
Product	:	AC1750 Wireless Dual Band Gigabit Router
Test Item	:	Occupied Bandwidth
Test Mode	:	Mode 5: Transmit by 802.11a for 5G with CDD(Ant 1)

Channel No.	Frequency (MHz)	99%Occupied Bandwidth (kHz)	6dB Occupied Bandwidth (kHz)	Limit (KHz)	Result
149	5745	17961.4	16395	500	Pass
157	5785	17553.7	16388	500	Pass
165	5825	18084.9	16430	500	Pass

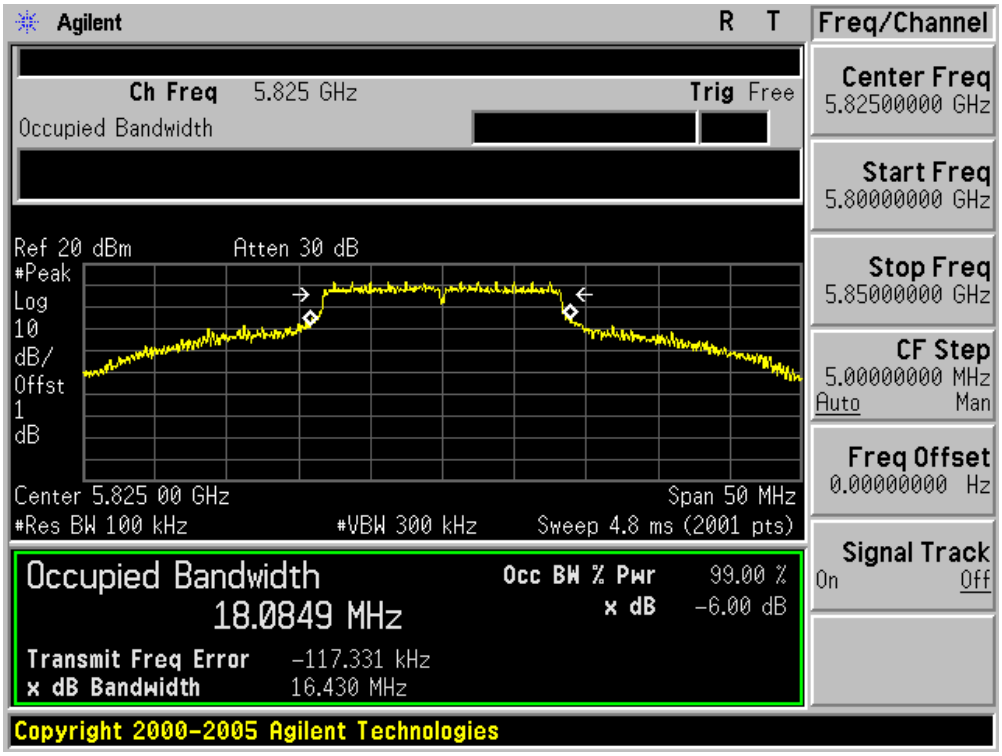
Channel 149 (5745MHz)



Channel 157 (5785MHz)



Channel 165 (5825MHz)

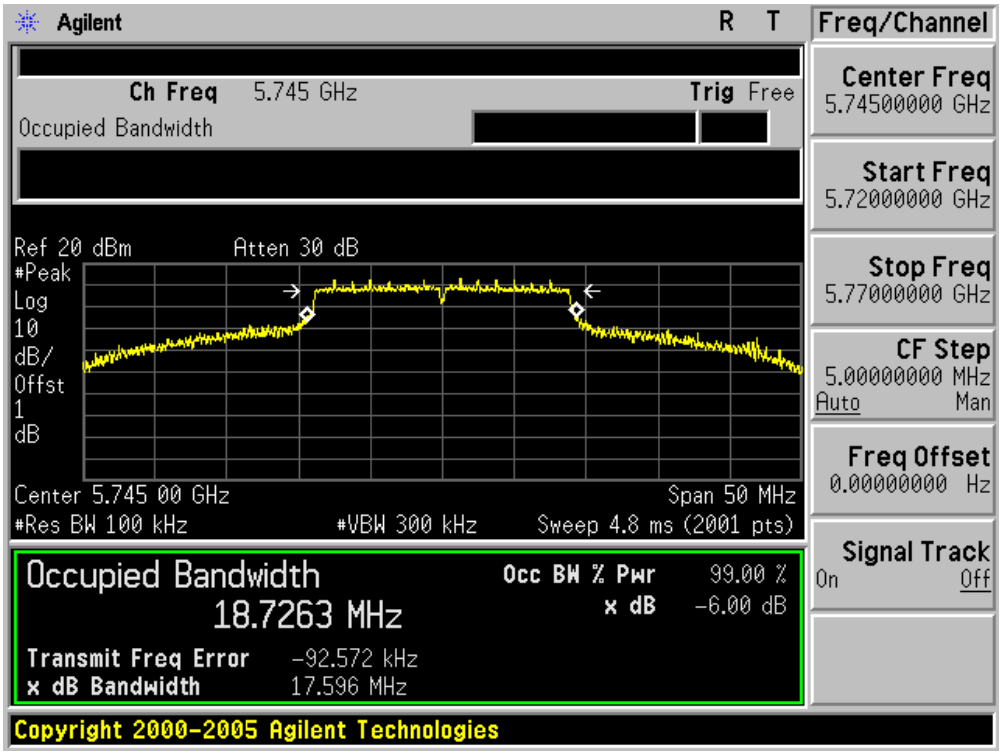


Note: For this test item, the modulation of this mode we have evaluated three antennas, presented data in the report is the worst case.

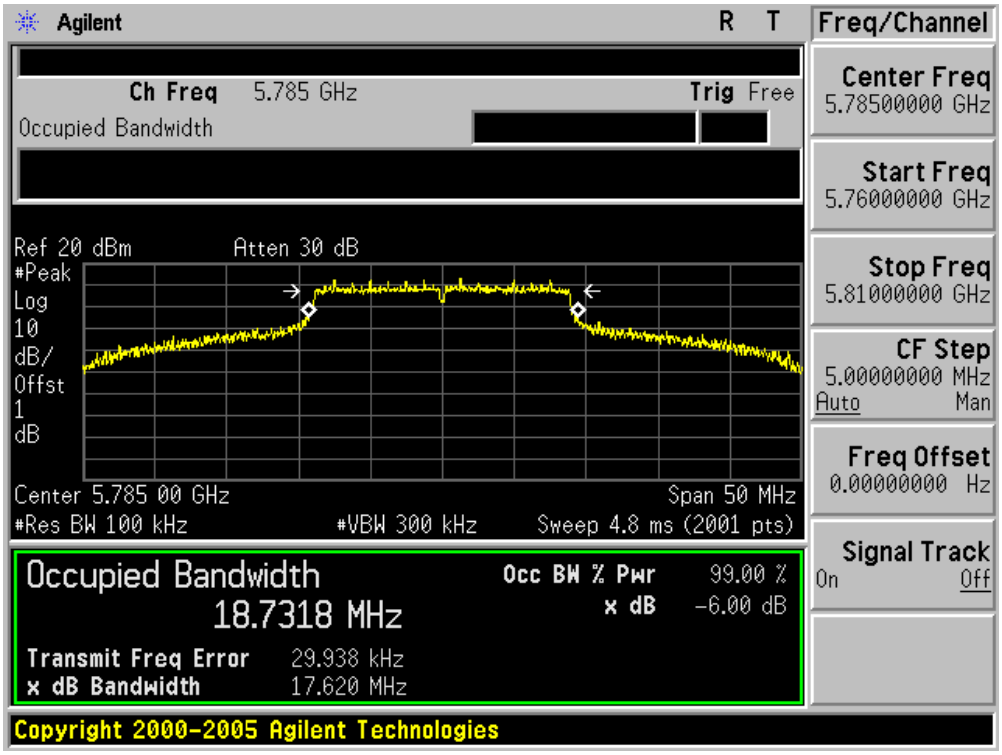
Product	:	AC1750 Wireless Dual Band Gigabit Router
Test Item	:	Occupied Bandwidth
Test Mode	:	Mode 6: Transmit by 802.11n(20MHz) for 5G with CDD (Ant 1)

Channel No.	Frequency (MHz)	99%Occupied Bandwidth (kHz)	6dB Occupied Bandwidth (kHz)	Limit (KHz)	Result
149	5745	18726.3	17596	500	Pass
157	5785	18731.8	17620	500	Pass
165	5825	18256.3	17635	500	Pass

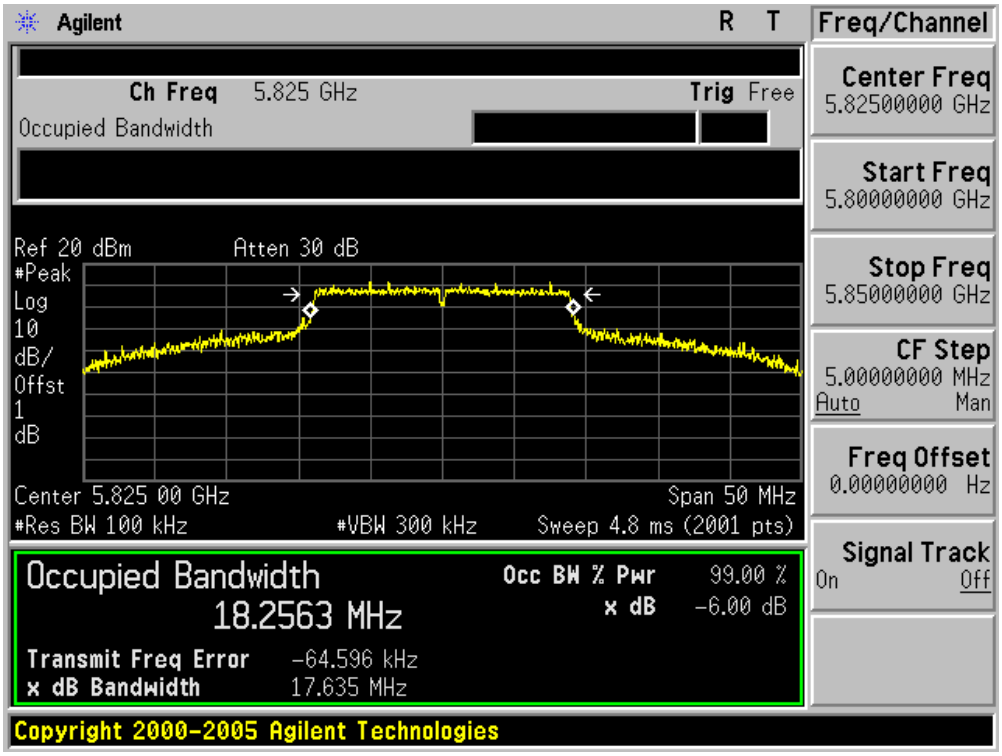
Channel 149 (5745MHz)



Channel 157 (5785MHz)



Channel 165 (5825MHz)

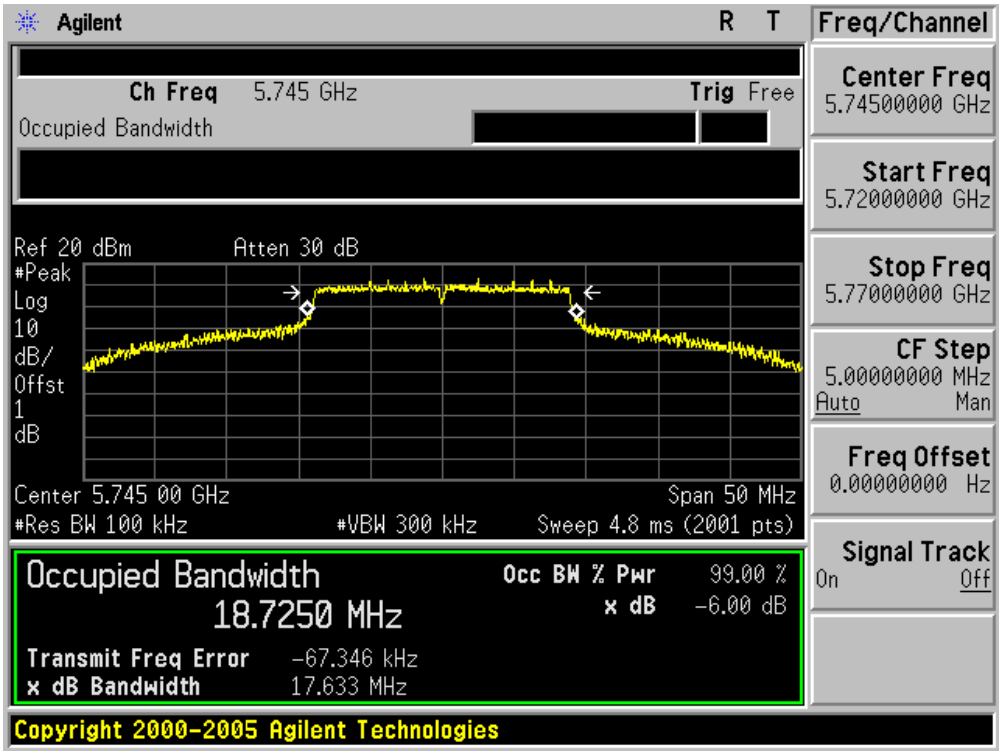


Note: For this test item, the modulation of this mode we have evaluated three antennas, presented data in the report is the worst case.

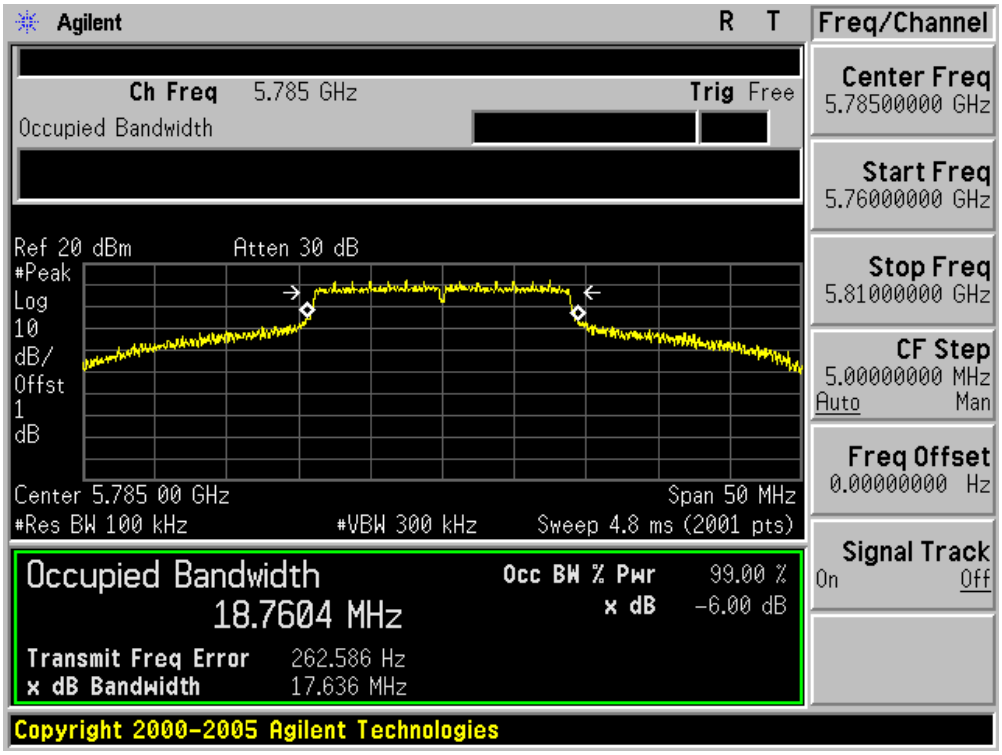
Product	:	AC1750 Wireless Dual Band Gigabit Router
Test Item	:	Occupied Bandwidth
Test Mode	:	Mode 7: Transmit by 802.11ac(20MHz) for 5G with CDD (Ant 1)

Channel No.	Frequency (MHz)	99%Occupied Bandwidth (kHz)	6dB Occupied Bandwidth (kHz)	Limit (KHz)	Result
149	5745	18725.0	17633	500	Pass
157	5785	18760.4	17636	500	Pass
165	5825	19130.4	17597	500	Pass

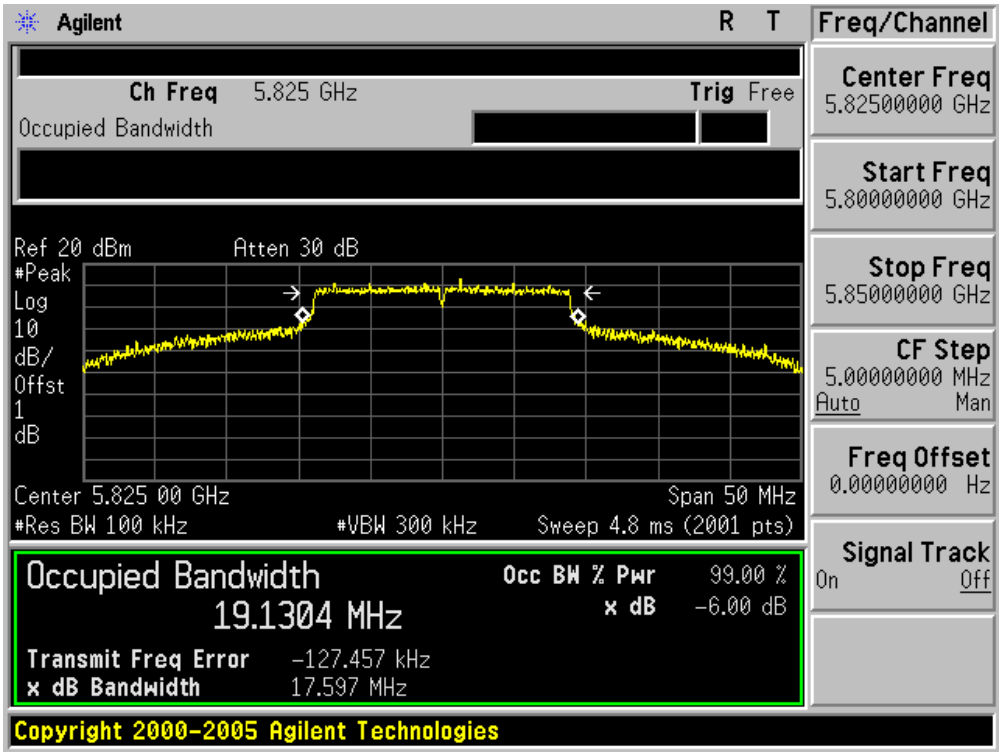
Channel 149 (5745MHz)



Channel 157 (5785MHz)



Channel 165 (5825MHz)

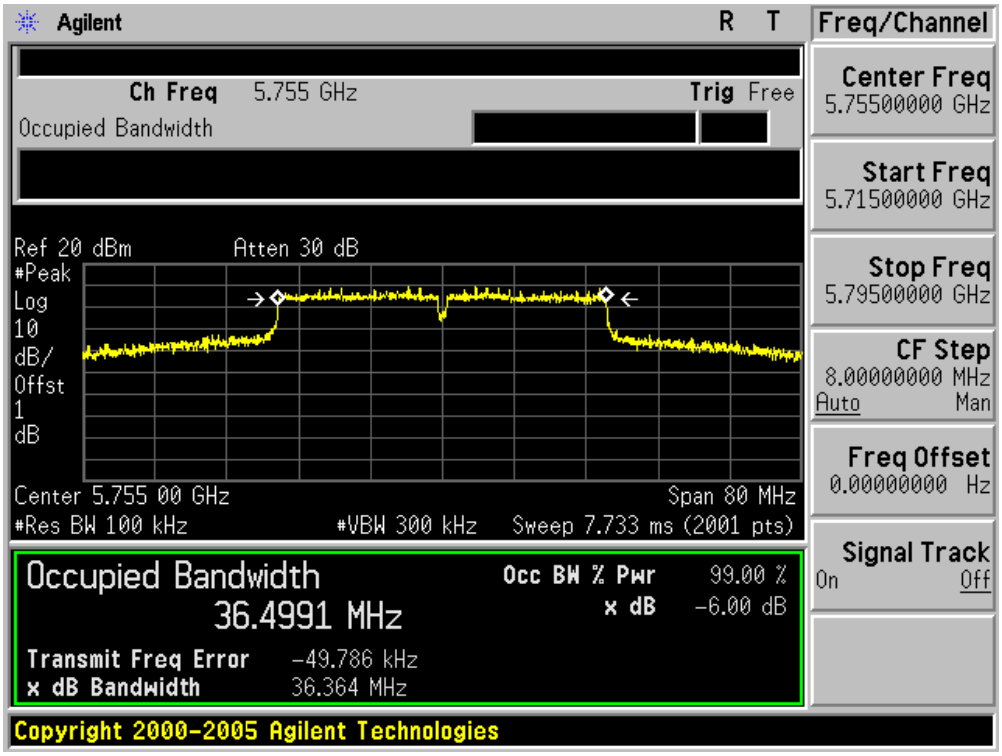


Note: For this test item, the modulation of this mode we have evaluated three antennas, presented data in the report is the worst case.

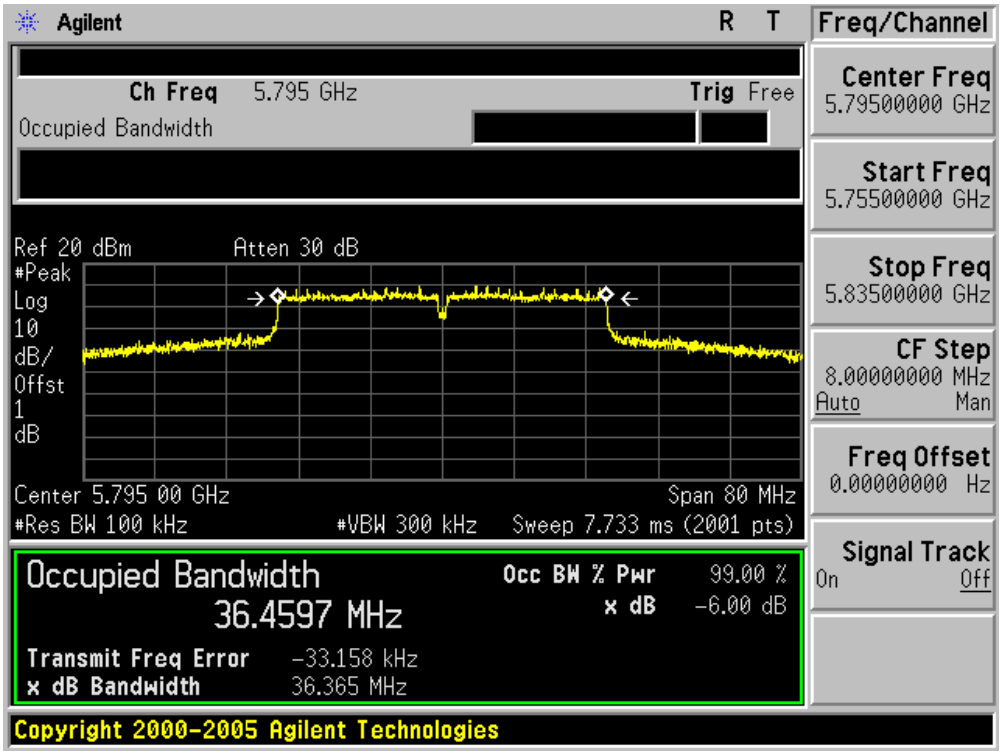
Product	:	AC1750 Wireless Dual Band Gigabit Router
Test Item	:	Occupied Bandwidth
Test Mode	:	Mode 8: Transmit by 802.11n(40MHz) for 5G with CDD (Ant 1)

Channel No.	Frequency (MHz)	99%Occupied Bandwidth (kHz)	6dB Occupied Bandwidth (kHz)	Limit (KHz)	Result
151	5755	36499.1	36364	500	Pass
159	5795	36459.7	36365	500	Pass

Channel 151 (5755MHz)



Channel 159 (5795MHz)

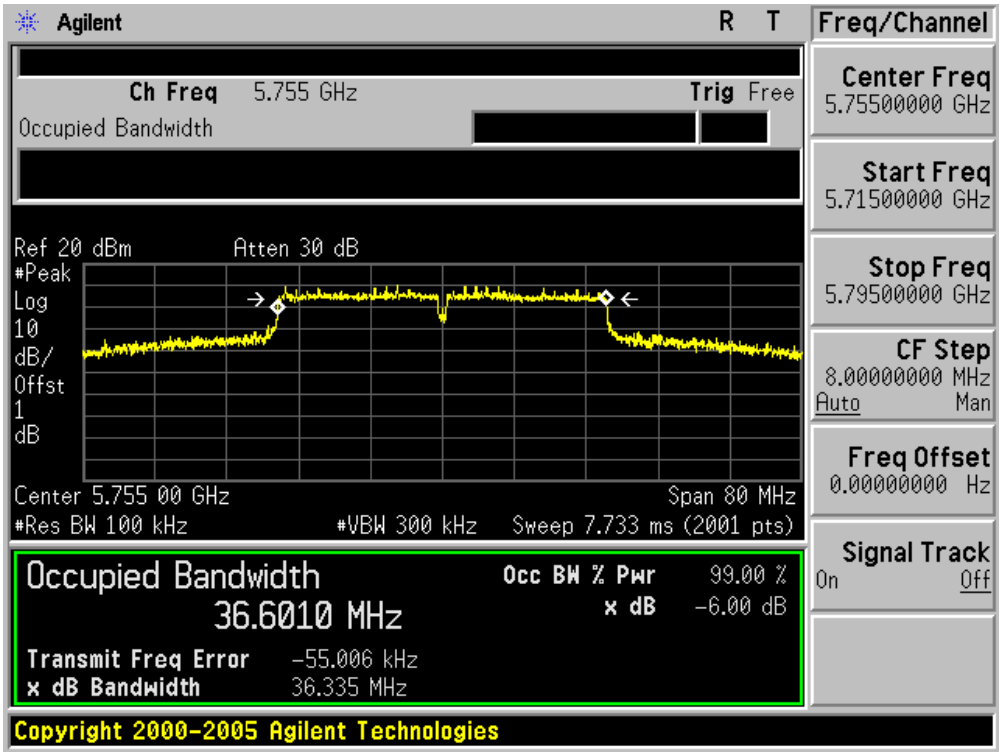


Note: For this test item, the modulation of this mode we have evaluated three antennas, presented data in the report is the worst case.

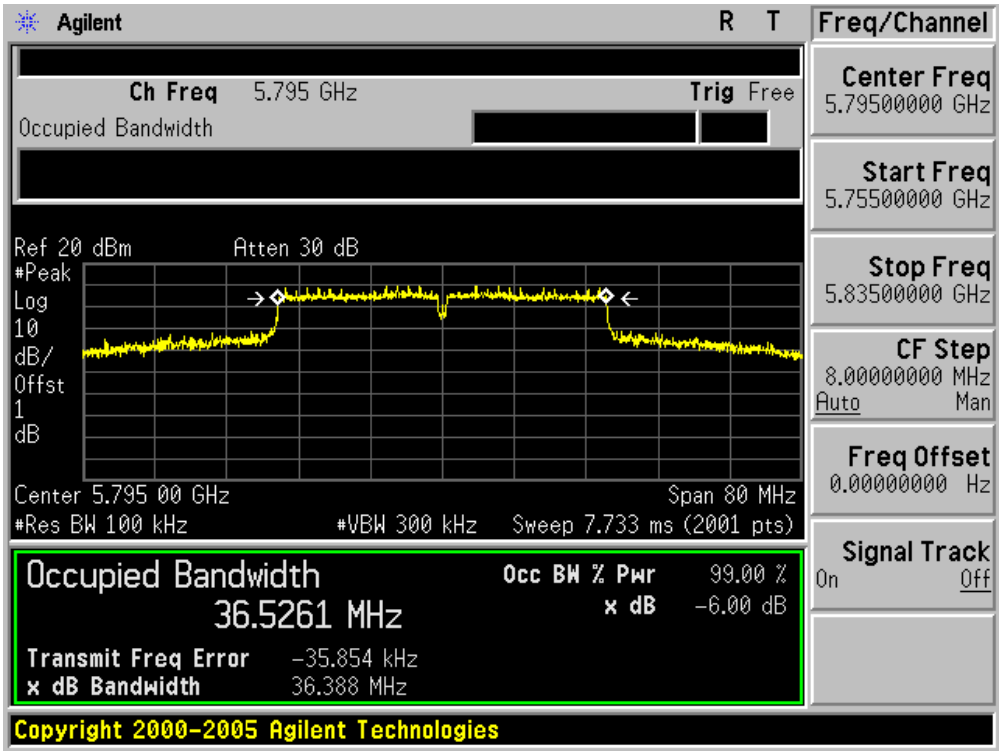
Product	:	AC1750 Wireless Dual Band Gigabit Router
Test Item	:	Occupied Bandwidth
Test Mode	:	Mode 9: Transmit by 802.11ac(40MHz) for 5G with CDD (Ant 1)

Channel No.	Frequency (MHz)	99%Occupied Bandwidth (kHz)	6dB Occupied Bandwidth (kHz)	Limit (KHz)	Result
151	5755	36601.0	36335	500	Pass
159	5795	36526.1	36388	500	Pass

Channel 151 (5755MHz)



Channel 159 (5795MHz)

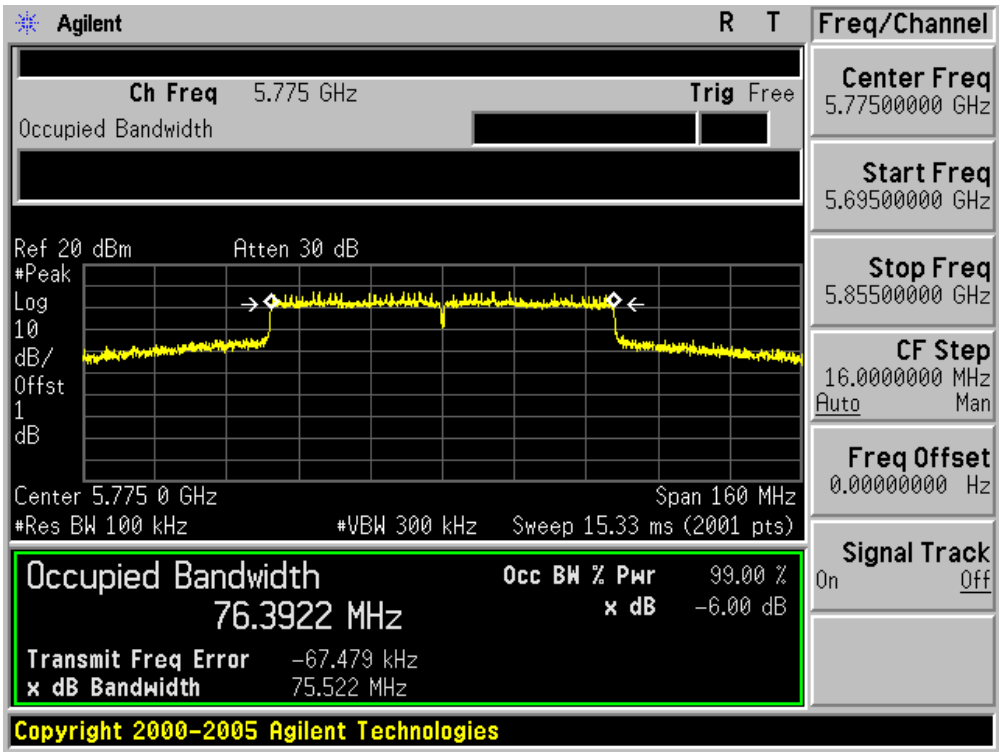


Note: For this test item, the modulation of this mode we have evaluated three antennas, presented data in the report is the worst case.

Product	:	AC1750 Wireless Dual Band Gigabit Router
Test Item	:	Occupied Bandwidth
Test Mode	:	Mode 10: Transmit by 802.11ac(80MHz) for 5G with CDD (Ant 1)

Channel No.	Frequency (MHz)	99%Occupied Bandwidth (kHz)	6dB Occupied Bandwidth (kHz)	Limit (KHz)	Result
155	5775	76392.2	75522	500	Pass

Channel 155 (5775MHz)

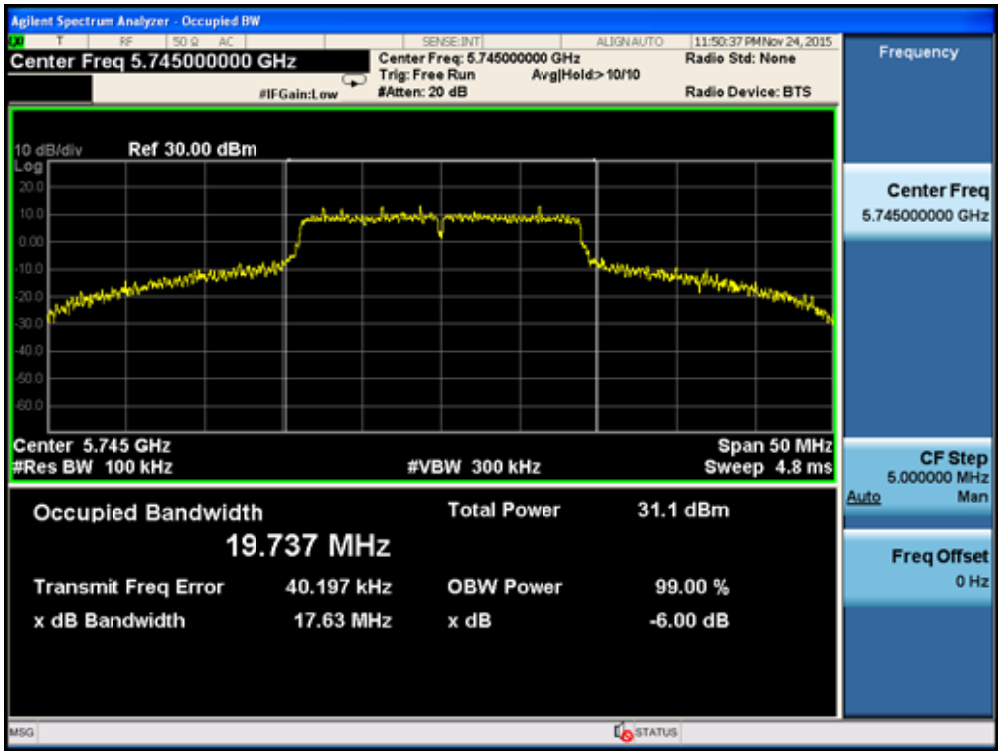


Note: For this test item, the modulation of this mode we have evaluated three antennas, presented data in the report is the worst case.

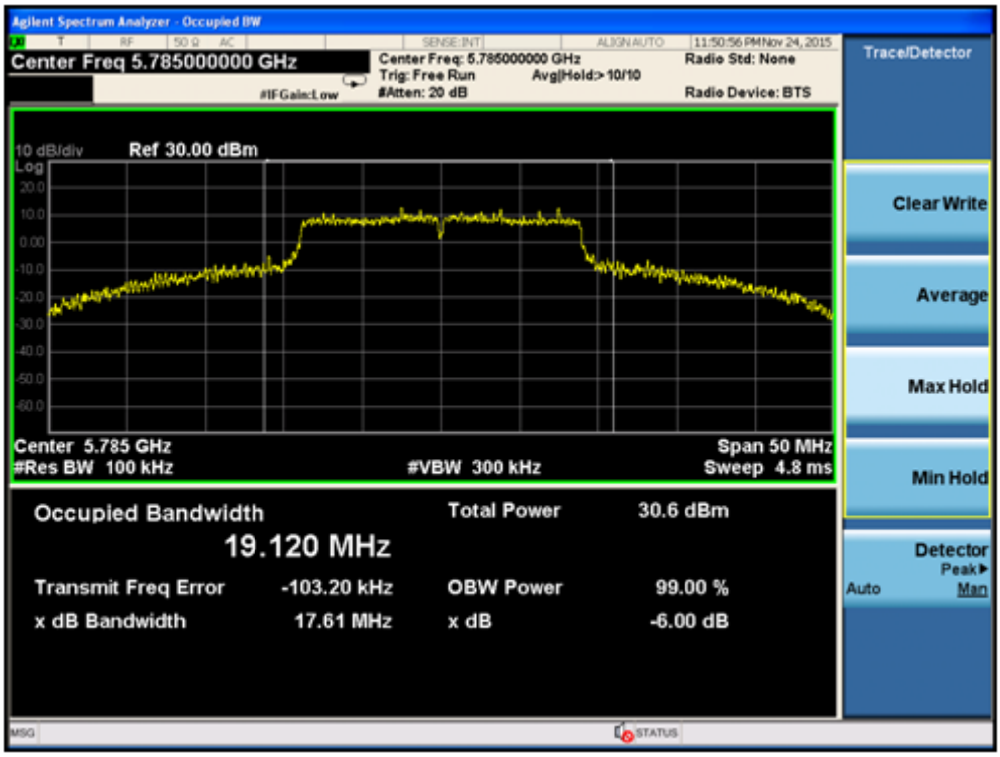
Product	:	AC1750 Wireless Dual Band Gigabit Router
Test Item	:	99% Occupied Bandwidth
Test Mode	:	Mode 11: Transmit by 802.11ac(20MHz) for 5G with Beamforming(Ant1)

Channel No.	Frequency (MHz)	99%Occupied Bandwidth (kHz)	6dB Occupied Bandwidth (kHz)	Limit (KHz)	Result
149	5745	19737.0	17630	500	Pass
157	5785	19120.0	17610	500	Pass
165	5825	19000.0	17650	500	Pass

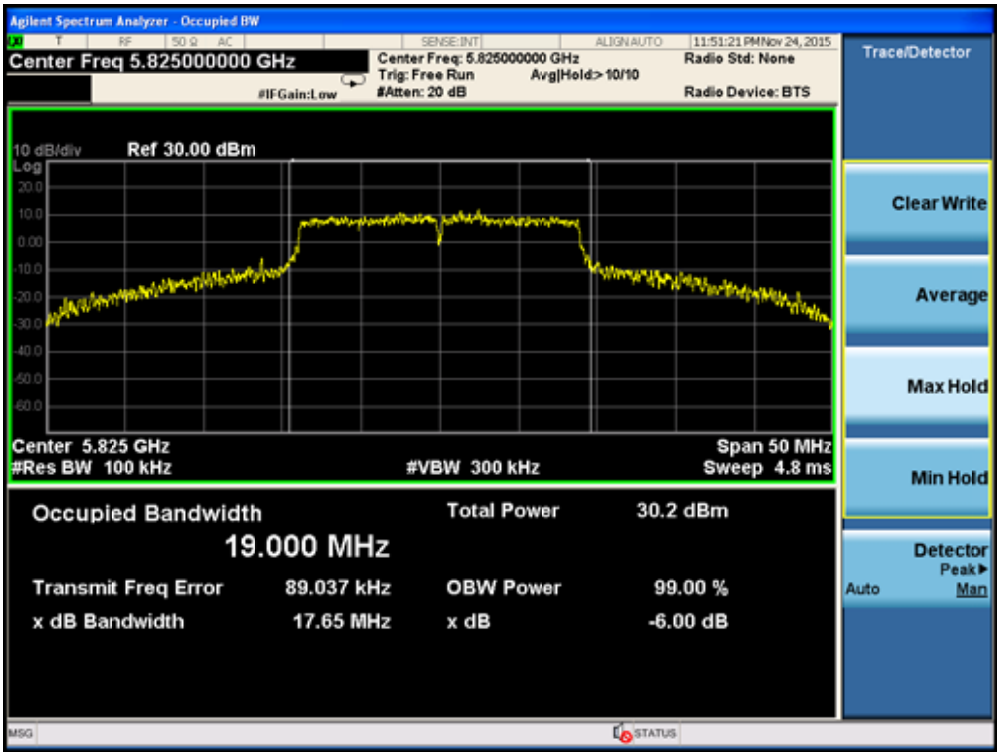
Channel 149 (5745MHz)



Channel 157 (5785MHz)



Channel 165 (5825MHz)

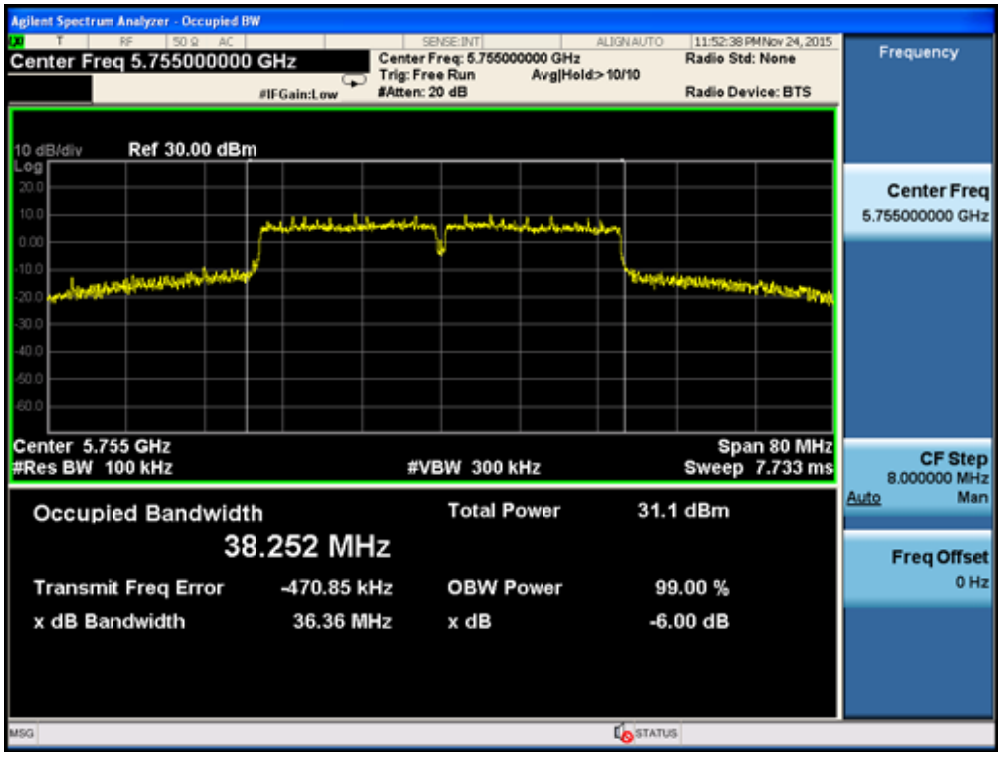


Note: For this test item, the modulation of this mode we have evaluated three antennas, presented data in the report is the worst case.

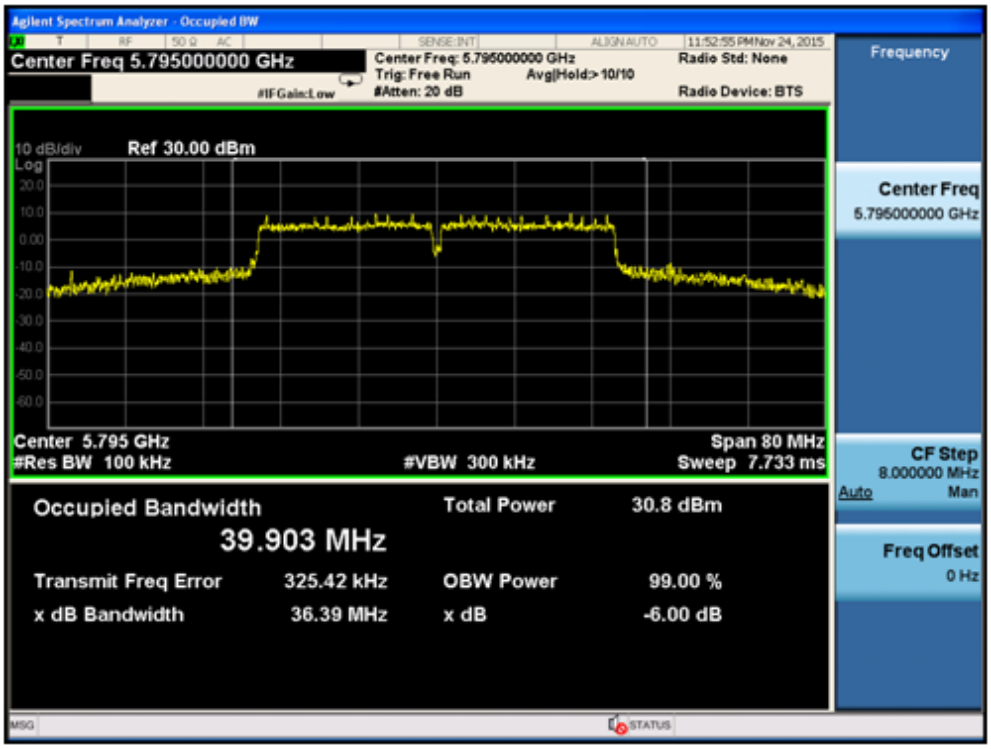
Product	:	AC1750 Wireless Dual Band Gigabit Router
Test Item	:	99% Occupied Bandwidth
Test Mode	:	Mode 12: Transmit by 802.11ac(40MHz) for 5G with Beamforming(Ant1)

Channel No.	Frequency (MHz)	99%Occupied Bandwidth (kHz)	6dB Occupied Bandwidth (kHz)	Limit (KHz)	Result
151	5755	38252.0	36360	500	Pass
159	5795	39903.0	36390	500	Pass

Channel 151 (5755MHz)



Channel 159 (5795MHz)

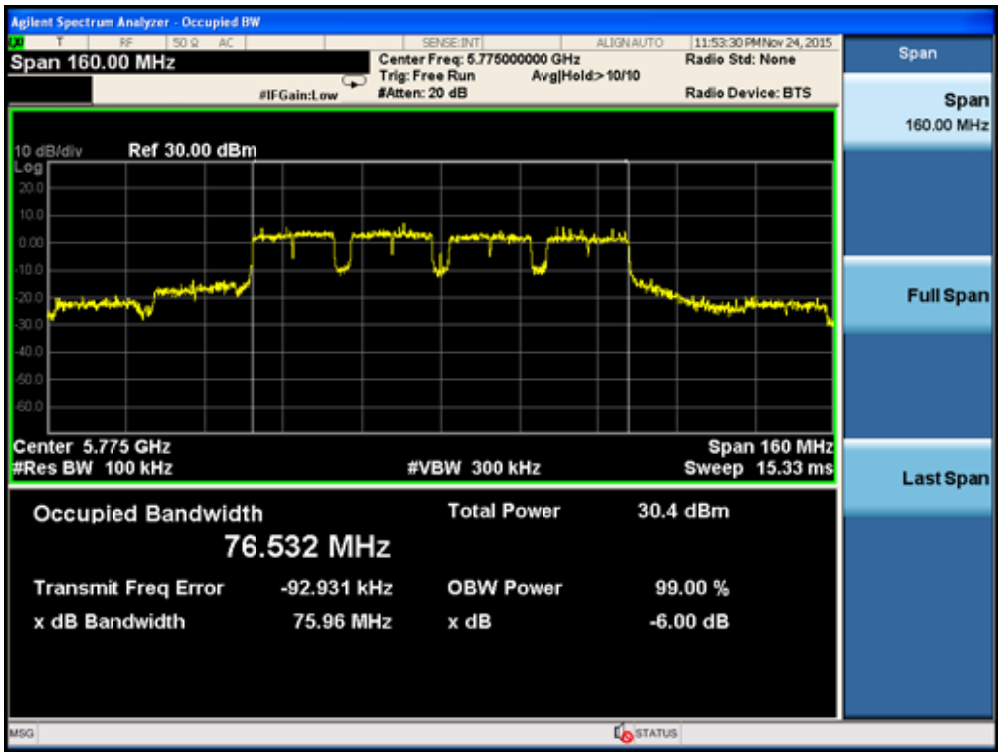


Note: For this test item, the modulation of this mode we have evaluated three antennas, presented data in the report is the worst case.

Product	:	AC1750 Wireless Dual Band Gigabit Router
Test Item	:	99% Occupied Bandwidth
Test Mode	:	Mode 13: Transmit by 802.11ac(80MHz) for 5G with Beamforming(Ant1)

Channel No.	Frequency (MHz)	99%Occupied Bandwidth (kHz)	6dB Occupied Bandwidth (kHz)	Limit (KHz)	Result
155	5775	76532.0	75960	500	Pass

Channel 155 (5775MHz)



Note: For this test item, the modulation of this mode we have evaluated three antennas, presented data in the report is the worst case.

8. Power Output

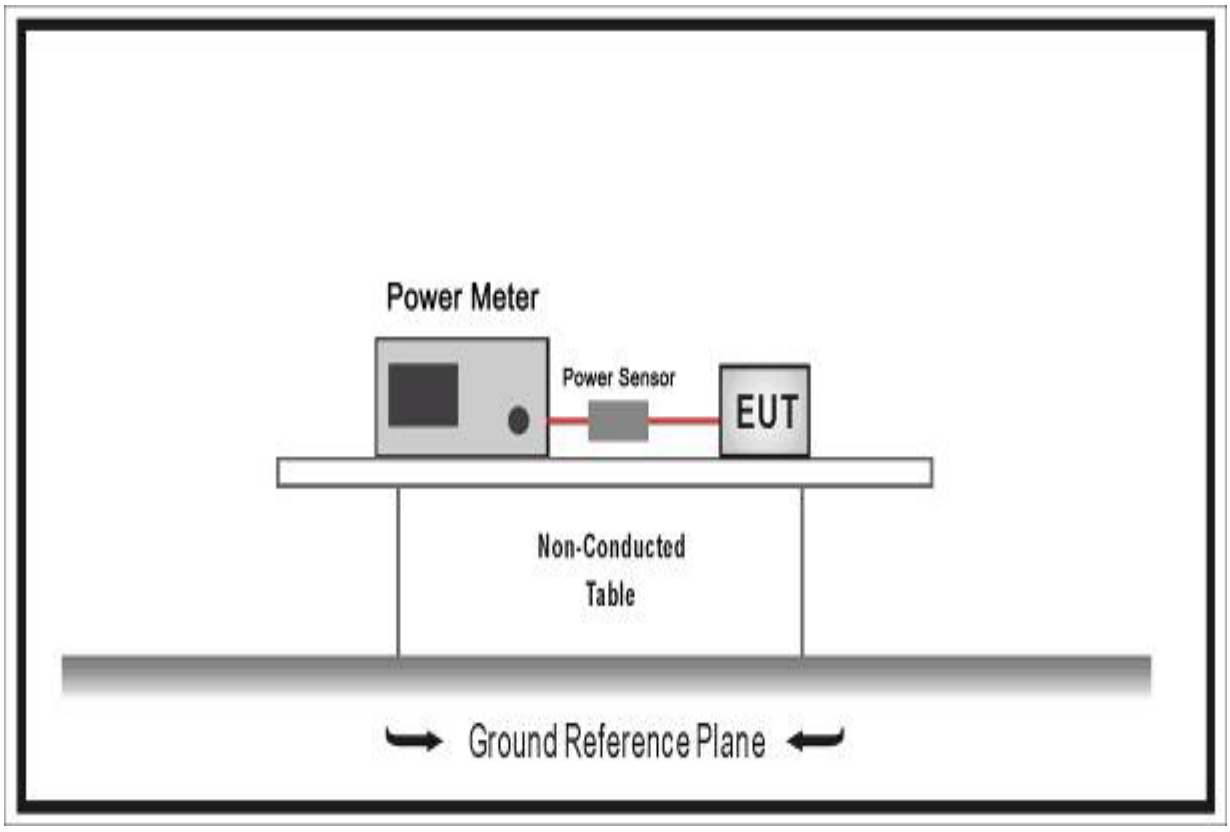
8.1. Test Equipment

Power Output / TR-8

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2015.03.11	2016.03.10
Power Sensor	Anritsu	MA2411B	0846014	2016.11.11	2016.11.10
Temperature/Humidity Meter	zhicheng	ZC1-2	TR8-TH	2015.04.10	2016.04.09

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

8.2. Test Setup



8.3. Limit

The maximum peak power shall be less 1 Watt (30dBm).

Note: the conducted output power limit specified above is based on the use the antennas with directional gains that do not exceed 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values above, as appropriate, by the amount in dB that the directional gain of antenna exceeds 6 dBi.

Systems operating in the 2400-2483.5 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

8.4. Test Procedure

(1)The EUT was tested according to DTS test procedure of ANSI C63.10 for compliance to FCC 47CFR 15.247 requirements. The maximum conducted output power using ANSI C63.10 section 11.9.2.3 AVGPM Average power meter method.

1. Power meter and sensor's minimum video bandwidth is 50MHz, larger than 802.11n(40MHz) bandwidth;
2. Fast responding diode sensors respond immediately to changes in power level to reduce total test time.
3. Use average detector to test.

(2) According to 662911 and KDB 558074

1 Cyclic Delay Diversity (CDD) [also known as cyclic shift diversity (CSD)]. CDD signals are correlated and create unintended array gain that varies with signal bandwidth, antenna geometry, and cyclic delay values. Consequently, depending on system parameters, it may be appropriate to use different values of array gain for compliance with power limits versus compliance with power spectral density limits. CAUTION: The term CDD, as used here, does not apply to any transmission mode in which the cyclic delay values are chosen to optimize performance at a given receiver; such a system shall be classified as an intentional beamforming system. CDD refers only to cases in which the cyclic delay values are selected apriori with out regard to the specific communication device pair.

For CDD transmissions, directional gain is calculated as follows. In all formulas,

NANT = number of transmit antennas and

NSS = number of spatial streams. (Assume NSS = 1 unless you have specific information to the contrary.)

CAUTION: Most devices can operate with one spatial stream (NSS = 1) even if they also are capable of more spatial streams. The worst case directional gain will occur when NSS = 1; therefore, it is especially important to ensure that the device complies with all emission limits for the case of NSS = 1 (or with the lowest possible value of NSS, if the device always uses spatial multiplexing).

For power measurements on IEEE 802.11 devices

Array Gain = 0 dB (i.e., no array gain) for NANT ≤ 4;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any NANT;

Array Gain = 5 log(NANT/NSS) dB or 3 dB, whichever is less, for 20-MHz channel widths with NANT ≥ 5

2 The conducted output power limits for DTS EUTs are based on the use of transmit antennas with directional gains that do not exceed 6 dBi. If transmit antennas with an effective directional gain greater than 6 dBi are used, then the conducted output power from the EUT shall be reduced, as specified in the applicable requirements for DTS. For those cases where the rule specifies that the conducted output power be reduced by the amount in dB that the directional gain of the transmitting antenna exceeds 6 dBi, the applicable output power limit shall be calculated as follows:

$P_{out}=P_{Limit-}(G_{Tx}-6)$

8.5. Uncertainty

The measurement uncertainty is defined as ± 1.27 dB

8.6. Test Result

Power output test was verified over all data rates of each mode shown as below, and then choose the maximum power output (blue marker) for final test of each channel.
Power output at various data rates:

MCS Index for 802.11n	Spatial Streams	Data Rate (Mbps)						
		802.11b	802.11g	802.11a	20MHz Bandwidth		40MHz Bandwidth	
					800ns GI	400ns GI	800ns GI	400ns GI
0	1	1	6	6	6.5	7.2	13.5	15.0
1	1	2	9	9	13.0	14.4	27.0	30.0
2	1	5.5	12	12	19.5	21.7	40.5	45.0
3	1	11	18	18	26.0	28.9	54.0	60.0
4	1	---	24	24	39.0	43.3	81.0	90.0
5	1	---	36	36	52.0	57.8	108.0	120.0
6	1	---	48	48	58.5	65.0	121.5	135.0
7	1	---	54	54	65.0	72.2	135.0	150.0
8	2	---	---	---	13.0	14.4	27.0	30.0
9	2	---	---	---	26.0	28.9	54.0	60.0
10	2	---	---	---	39.0	43.3	81.0	90.0
11	2	---	---	---	52.0	57.8	108.0	120.0
12	2	---	---	---	78.0	86.7	162.0	180.0
13	2	---	---	---	104.0	115.6	216.0	240.0
14	2	---	---	---	117.0	130.0	243.0	270.0
15	2	---	---	---	130.0	144.0	270.0	300.0
16	3	---	---	---	19.5	21.6	40.5	45
17	3	---	---	---	39	43.2	81	90
18	3	---	---	---	58.5	65.1	121.5	135
19	3	---	---	---	78	86.7	162	180
20	3	---	---	---	117	129.9	243	270
21	3	---	---	---	156	173.4	324	360
22	3	---	---	---	175.5	195	364.5	405
23	3	---	---	---	195	216.6	405	450

Spatial Streams (Note1)	MCS Index	Modulation type	Coding rate	Data Rate(Mb/s)							
				20MHz		40MHz		80MHz		160MHz	
				Guard Interval		Guard Interval		Guard Interval		Guard Interval	
				800ns	400ns	800ns	400ns	800ns	400ns	800ns	400ns
1	0	BPSK	1/2	6.5	7.2	13.5	15	29.3	32.5	58.5	65
	1	QPSK	1/2	13	14.4	27	30	58.5	65	117	130
	2	QPSK	3/4	19.5	21.7	40.5	45	87.8	97.5	175.5	195
	3	16-QAM	1/2	26	28.9	54	60	117	130	234	260
	4	16-QAM	3/4	39	43.3	81	90	175.5	195	351	390
	5	64-QAM	2/3	52	57.8	108	120	234	260	468	520
	6	64-QAM	3/4	58.5	65	121.5	135	263.3	292.5	526.5	585
	7	64-QAM	5/6	65	72.2	135	150	292.5	325	585	650
	8	256-QAM	3/4	78	86.7	162	180	351	390	702	780
	9	256-QAM	5/6	N/A	N/A	180	200	390	433.3	780	866.7
2	0	BPSK	1/2	13	14.4	27	30	58.6	65	117	130
	1	QPSK	1/2	26	28.8	54	60	117	130	234	260
	2	QPSK	3/4	39	43.4	81	90	175.6	195	351	390
	3	16-QAM	1/2	52	57.8	108	120	234	260	468	520
	4	16-QAM	3/4	78	86.6	162	180	351	390	702	780
	5	64-QAM	2/3	104	115.6	216	240	468	520	936	1040
	6	64-QAM	3/4	117	130	243	270	526.6	585	1053	1170
	7	64-QAM	5/6	130	144.4	270	300	585	650	1170	1300
	8	256-QAM	3/4	156	173.4	324	360	702	780	1404	1560
	9	256-QAM	5/6	N/A	N/A	360	400	780	866.6	1560	1733.4
3	0	BPSK	1/2	19.5	21.6	40.5	45	87.9	97.5	175.5	195
	1	QPSK	1/2	39	43.2	81	90	175.5	195	351	390
	2	QPSK	3/4	58.5	65.1	121.5	135	263.4	292.5	526.5	585
	3	16-QAM	1/2	78	86.7	162	180	351	390	702	780
	4	16-QAM	3/4	117	129.9	243	270	526.5	585	1053	1170
	5	64-QAM	2/3	156	173.4	324	360	702	780	1404	1560
	6	64-QAM	3/4	175.5	195	364.5	405	789.9	877.5	1579.5	1755
	7	64-QAM	5/6	195	216.6	405	450	877.5	975	1755	1950
	8	256-QAM	3/4	234	260.1	486	540	1053	1170	2106	2340
	9	256-QAM	5/6	N/A	N/A	540	600	1170	1299.9	2340	2600.1

For 2.4G

Test Mode	Bandwidth	Frequency (MHz)	Channel	Data Rate	Average Power (dBm)
802.11b	20	2437	6	1	29.37
				5.5	29.12
				11	29.02
802.11g	20	2437	6	6	27.06
				24	26.95
				54	26.89
802.11n	20	2437	6	MCS0	26.95
				MCS4	26.89
				MCS7	26.78
802.11n	40	2437	6	MCS0	18.73
				MCS4	18.65
				MCS7	18.51

For 5.0G

Test Mode	Bandwidth	Frequency (MHz)	Channel	Data Rate	Average Power (dBm)
802.11a	20	5785	157	6	27.08
				24	26.94
				54	26.87
802.11n	20	5785	157	MCS0	27.03
				MCS4	26.92
				MCS7	26.88
802.11ac	20	5785	157	MCS0NSS1	27.25
				MCS5NSS1	27.12
				MCS9NSS1	27.01
802.11n	40	5755	151	MCS0	26.59
				MCS4	26.45
				MCS7	26.41
802.11ac	40	5755	151	MCS0NSS1	26.25
				MCS5NSS1	26.19
				MCS9NSS1	26.12
802.11ac	80	5775	155	MCS0NSS1	27.42
				MCS5NSS1	27.38
				MCS9NSS1	27.29

For 5.0G with beamforming

Test Mode	Bandwidth	Frequency (MHz)	Channel	Data Rate	Average Power (dBm)
802.11ac	20	5785	157	MCS0NSS1	28.28
				MCS5NSS1	28.19
				MCS9NSS1	28.16
802.11ac	40	5755	151	MCS0NSS1	29.01
				MCS5NSS1	28.95
				MCS9NSS1	28.92
802.11ac	80	5775	155	MCS0NSS1	29.10
				MCS5NSS1	29.05
				MCS9NSS1	29.01

Product	:	AC1750 Wireless Dual Band Gigabit Router
Test Item	:	Power Output
Test Site	:	TR8
Test Mode	:	Mode : Transmit by 2.4G with CDD

802.11b

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
1	2412	20.95	21.65	20.92	25.96	30.00	Pass
6	2437	24.21	25.12	24.41	29.37	30.00	Pass
11	2462	20.56	20.89	20.16	25.32	30.00	Pass

802.11g

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
1	2412	14.42	16.12	15.37	20.13	30.00	Pass
6	2437	21.18	23.15	22.32	27.06	30.00	Pass
11	2462	15.06	16.24	15.58	20.42	30.00	Pass

802.11n(20MHz)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
1	2412	11.81	13.64	12.22	17.40	30.00	Pass
6	2437	21.32	22.97	22.08	26.95	30.00	Pass
11	2462	10.06	11.58	10.43	15.51	30.00	Pass

802.11n(40MHz)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
3	2422	11.04	11.74	11.6	16.24	30.00	Pass
6	2437	13.83	14.07	13.96	18.73	30.00	Pass
9	2452	9.57	11.54	10.13	15.27	30.00	Pass

Note : Directional gain = G_{ANT} + Array Gain=2.1dBi＜6dBi, so The Limit is 30dBm

Product	:	AC1750 Wireless Dual Band Gigabit Router
Test Item	:	Power Output
Test Site	:	TR8
Test Mode	:	Mode : Transmit by 5G with CDD

802.11a

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
149	5745	22.02	22.86	21.96	27.07	30dBm	Pass
157	5785	22.1	22.76	22.03	27.08	30dBm	Pass
165	5825	21.32	22.18	21.24	26.37	30dBm	Pass

802.11n(20MHz)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
149	5745	22.03	23.11	21.87	27.14	30dBm	Pass
157	5785	21.63	23.08	21.93	27.03	30dBm	Pass
165	5825	21.53	22.81	21.85	26.87	30dBm	Pass

802.11ac(20MHz)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
149	5745	22.39	23.29	22.18	27.42	30dBm	Pass
157	5785	22.11	23.19	22.04	27.25	30dBm	Pass
165	5825	22.11	23.93	22.35	27.65	30dBm	Pass

802.11n(40MHz)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
151	5755	21.98	21.76	21.71	26.59	30dBm	Pass
159	5795	22.03	22.15	21.53	26.68	30dBm	Pass

802.11ac(40MHz)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
151	5755	21.57	21.39	21.47	26.25	30dBm	Pass
159	5795	21.49	21.37	21.48	26.22	30dBm	Pass

802.11ac(80MHz)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
155	5775	22.52	22.67	22.76	27.42	30dBm	Pass

Note : Directional gain = G_{ANT} + Array Gain=1.7dBi＜6dBi, so The Limit is 30dBm

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Product	:	AC1750 Wireless Dual Band Gigabit Router
Test Item	:	Power Output
Test Site	:	TR8
Test Mode	:	Mode : Transmit by 5G with Beamforming

802.11ac(20MHz)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
149	5745	23.71	23.77	23.69	28.49	29.53	Pass
157	5785	22.79	23.85	23.81	28.28	29.53	Pass
165	5825	24.13	24.21	24.18	28.94	29.53	Pass

802.11ac(40MHz)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
151	5755	24.59	24.71	24.55	29.01	29.53	Pass
159	5795	24.25	24.31	24.26	29.04	29.53	Pass

802.11ac(80MHz)

Channel No.	Frequency (MHz)	Measurement Power Output (dBm)			Total Power (dBm)	Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2			
155	5775	24.67	24.72	24.64	29.10	29.53	Pass

Note : Directional gain = G_{ANT} + Array Gain=6.47dBi, so The Limit = 30dBm- G_{ANT}= 29.53dBm

9. Power Spectral Density

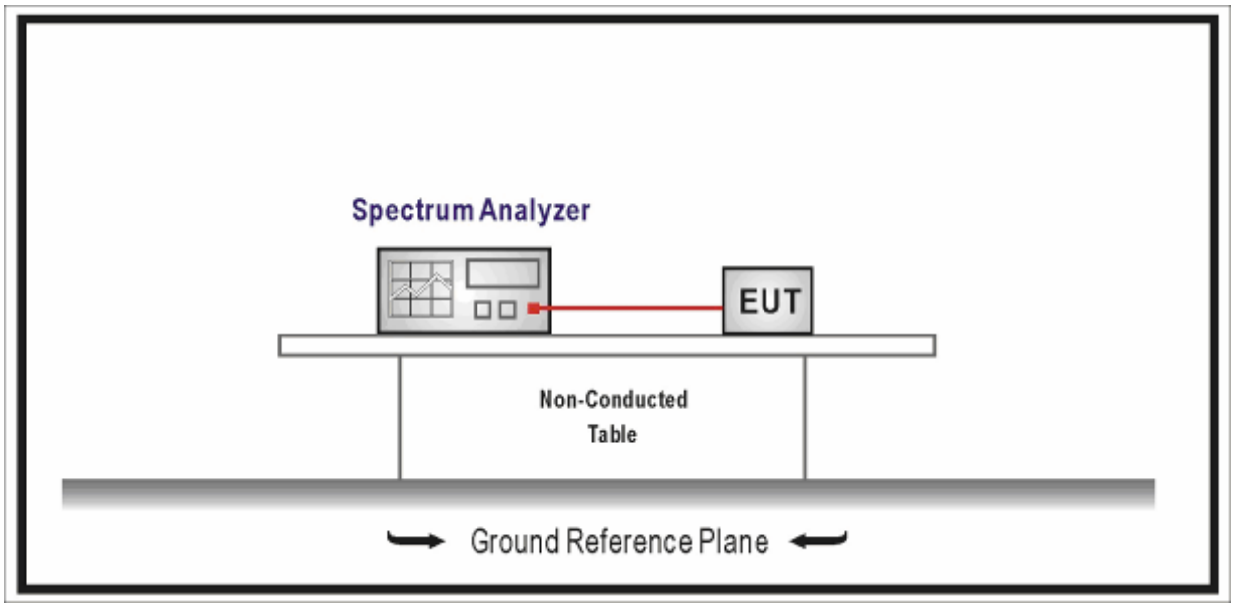
9.1. Test Equipment

Peak Power Spectral Density / TR-8

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2015.03.11	2016.03.10
Temperature/Humidity Meter	zhicheng	ZC1-2	TR8-TH	2015.04.10	2016.04.09

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

9.2. Test Setup



9.3. Limit

For digitally modulated systems, the power spectral density conducted from the intentional radiated to the Antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.

9.4. Test Procedure

1 The EUT was setup according to ANSI C63.4, 2014; tested according to DTS test procedure of KDB 558074 for compliance to FCC 47CFR 15.247 requirements.

The maximum power spectral density using KDB 558074 section 10.2 PKPSD (peak PSD) method.

a) Set analyzer center frequency to DTS channel center frequency.
b) Set the span to 1.5 times the DTS bandwidth.
c) Set the RBW to: 3 kHz ≤ RBW ≤ 100 kHz. (Actually we use 3kHz RBW)
d) Set the VBW ≥ 3 × RBW.
e) Detector = peak.
f) Sweep time = auto couple.
g) Trace mode = max hold.
h) Allow trace to fully stabilize.
i) Use the peak marker function to determine the maximum amplitude level within the band.
j) If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

2 Cyclic Delay Diversity (CDD) [also known as cyclic shift diversity (CSD)]. CDD signals are correlated and create unintended array gain that varies with signal bandwidth, antenna geometry, and cyclic delay values. Consequently, depending on system parameters, it may be appropriate to use different values of array gain for compliance with power limits versus compliance with power spectral density limits. CAUTION: The term CDD, as used here, does not apply to any transmission mode in which the cyclic delay values are chosen to optimize performance at a given receiver; such a system shall be classified as an intentional beamforming system. CDD refers only to cases in which the cyclic delay values are selected apriori with out regard to the specific communication device pair.

For CDD transmissions, directional gain is calculated as follows. In all formulas,

NANT = number of transmit antennas and

NSS = number of spatial streams. (Assume NSS = 1 unless you have specific information to the contrary.)

CAUTION: Most devices can operate with one spatial stream (NSS = 1) even if they also are capable of more spatial streams. The worst case directional gain will occur when NSS = 1; therefore, it is especially important to ensure that the device complies with all emission limits for the case of NSS = 1 (or with the lowest possible value of NSS, if the device always uses spatial multiplexing).

Directional gain = G_{ANT} + Array Gain,

For power spectral density (PSD) measurements on all devices,

Array Gain = 10 log(NANT/NSS) dB.

For power measurements on IEEE 802.11 devices

Array Gain = 0 dB (i.e., no array gain) for NANT ≤ 4;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any NANT;

Array Gain = 5 log(NANT/NSS) dB or 3 dB, whichever is less, for 20-MHz channel widths with NANT ≥ 5

3 The conducted output power limits for DTS EUTs are based on the use of transmit antennas with directional gains that do not exceed 6 dBi. If transmit antennas with an effective directional gain greater than 6 dBi are used, then the conducted output power from the EUT shall be reduced, as specified in the applicable requirements for DTS. For those cases where the rule specifies that the conducted output power be reduced by the amount in dB that the directional gain of the transmitting antenna exceeds 6 dBi, the applicable output power limit shall be calculated as follows:

$P_{out}=P_{Limit}-(G_{Tx}-6)$

9.5. Uncertainty

The measurement uncertainty is defined as ± 1.27 dB

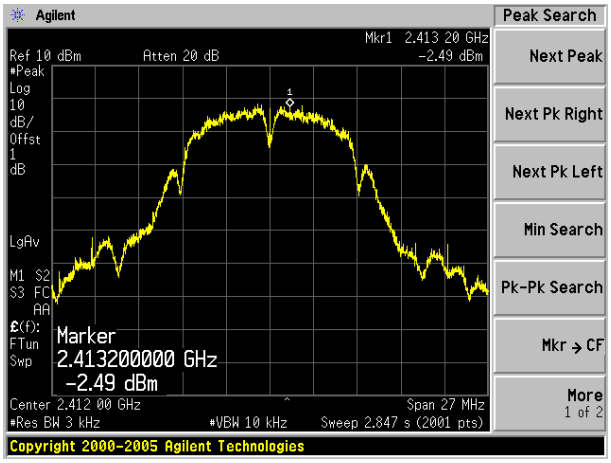
9.6. Test Result

Product	:	AC1750 Wireless Dual Band Gigabit Router
Test Item	:	Power Spectral Density
Test Site	:	TR-8
Test Mode	:	Mode 1: Transmit by 802.11b for 2.4G with CDD

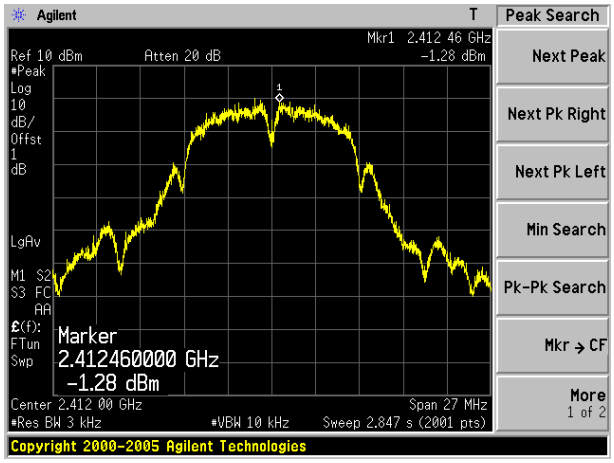
Channel No.	Frequency (MHz)	Measurement PPSD (dBm/3KHz)			Total PPSD (dBm/3KHz)	Limit (dBm/3KHz)	Result
		Ant 0	Ant 1	Ant 2			
01	2412	-2.49	-1.28	-1.44	3.07	7.13	Pass
06	2437	1.28	2.66	2.84	7.08	7.13	Pass
11	2462	-3.58	-1.23	-2.24	2.53	7.13	Pass

Directional gain = GANT + Array Gain=6.87dBi, so The Limit = 8dBm- (Directional gain -6dB)= 7.13dBm

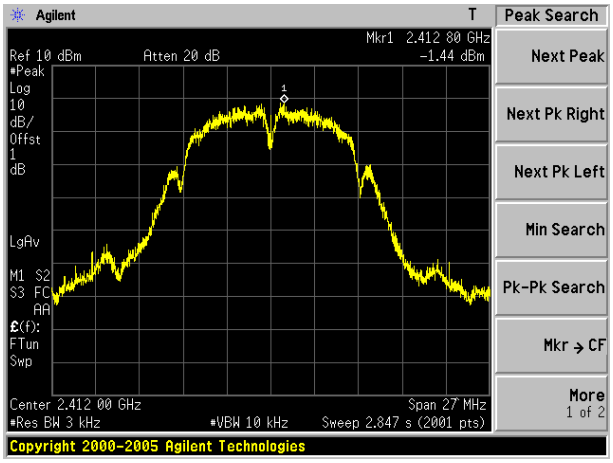
Channel 01 (2412MHz) Ant 0



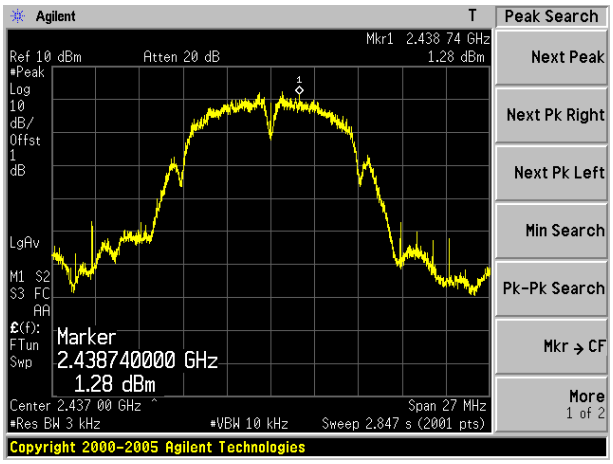
Channel 06 (2412MHz) Ant 1



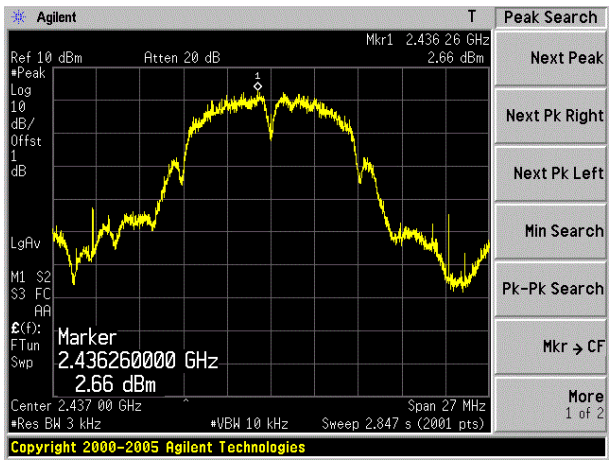
Channel 01 (2412MHz) Ant 2



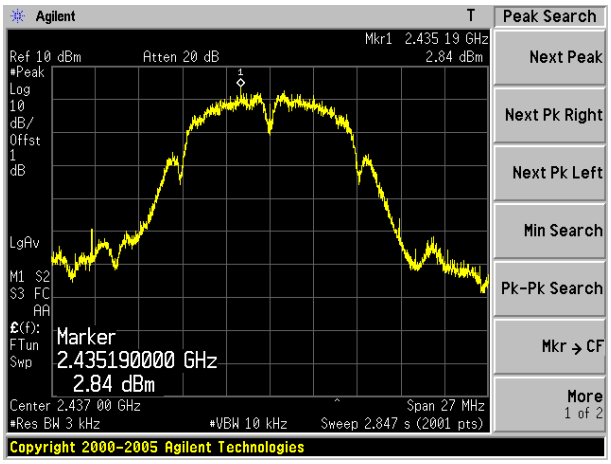
Channel 06 (2437MHz) Ant 0



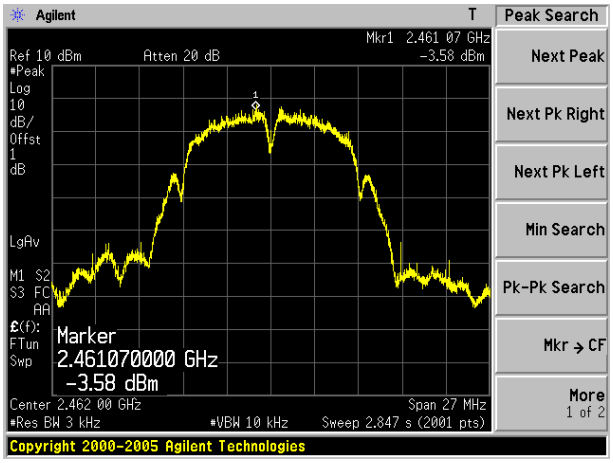
Channel 06 (2437MHz) Ant 1



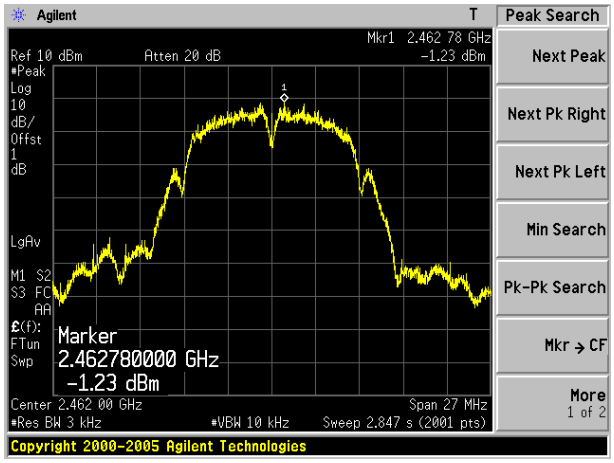
Channel 06 (2437MHz) Ant 2



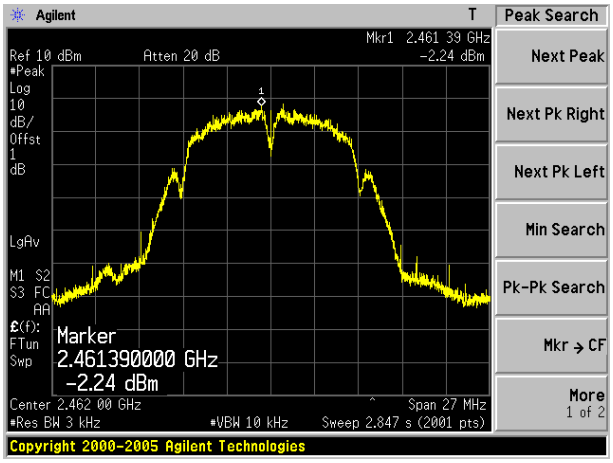
Channel 11 (2462MHz) Ant 0



Channel 11 (2462MHz) Ant 1



Channel 11 (2462MHz) Ant 2

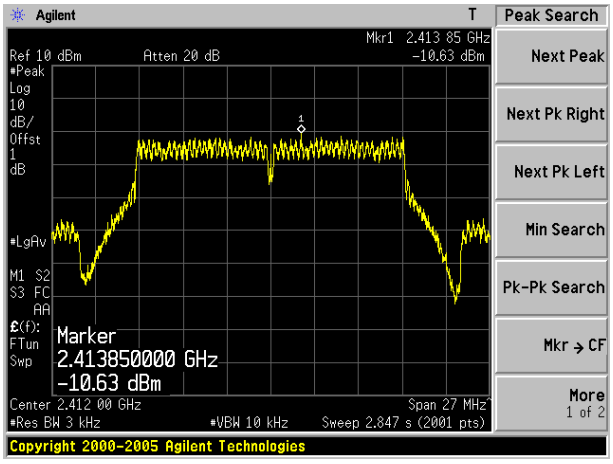


Product	:	AC1750 Wireless Dual Band Gigabit Router
Test Item	:	Power Spectral Density
Test Site	:	TR-8
Test Mode	:	Mode 2: Transmit by 802.11g for 2.4G with CDD

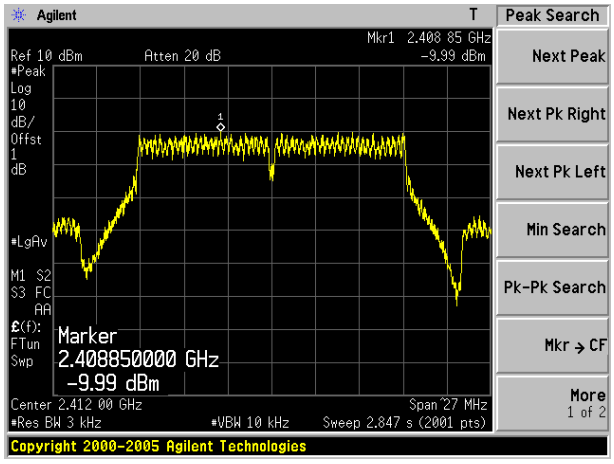
Channel No.	Frequency (MHz)	Measurement PPSD (dBm/3KHz)			Total PPSD (dBm/3KHz)	Limit (dBm/3KHz)	Result
		Ant 0	Ant 1	Ant 2			
01	2412	-10.63	-9.99	-11.13	-5.79	7.13	Pass
06	2437	-3.30	-1.41	-2.42	2.46	7.13	Pass
11	2462	-10.33	9.30	-10.36	-5.20	7.13	Pass

Directional gain = GANT + Array Gain=6.87dBi, so The Limit = 8dBm- (Directional gain -6dB)= 7.13dBm

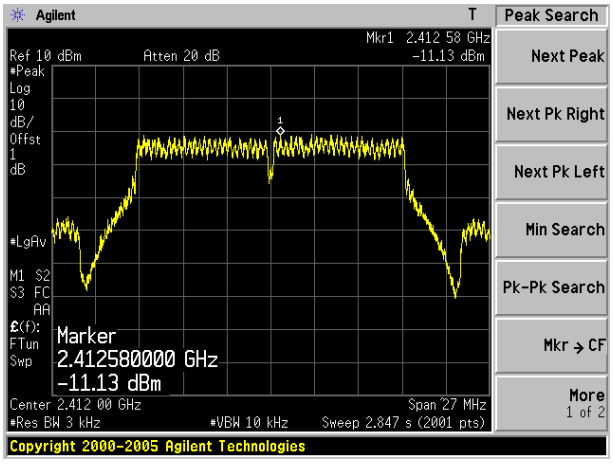
Channel 01 (2412MHz) Ant 0



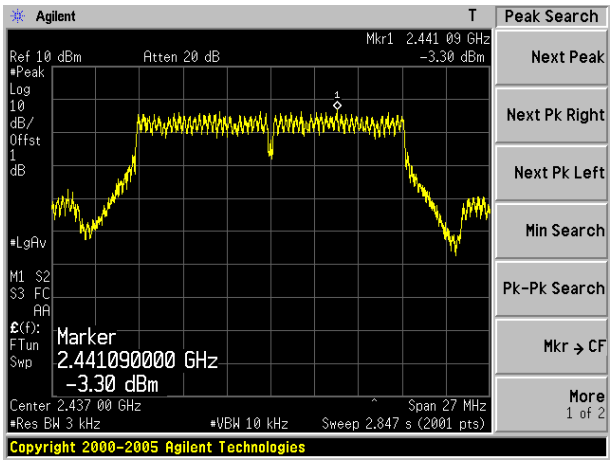
Channel 01 (2412MHz) Ant 0



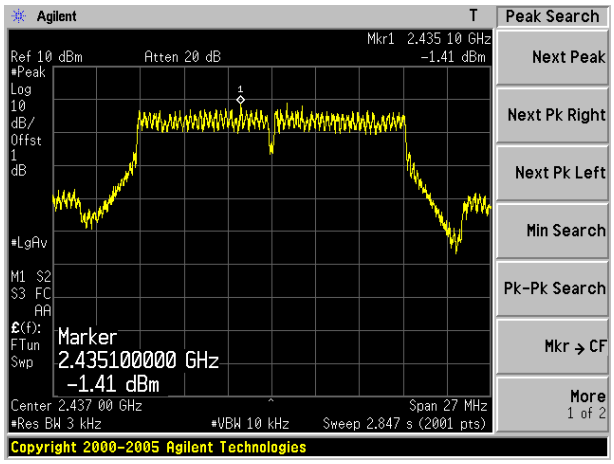
Channel 01 (2412MHz) Ant 0



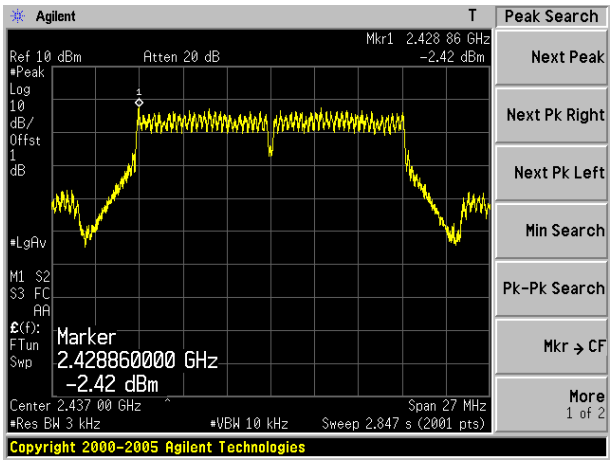
Channel 06 (2437MHz) Ant 0



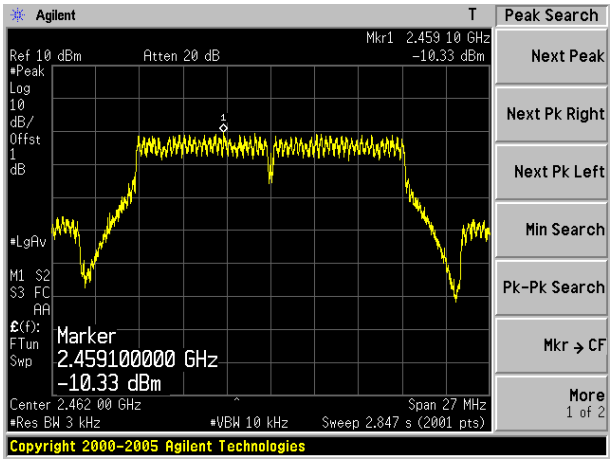
Channel 06 (2437MHz) Ant 1



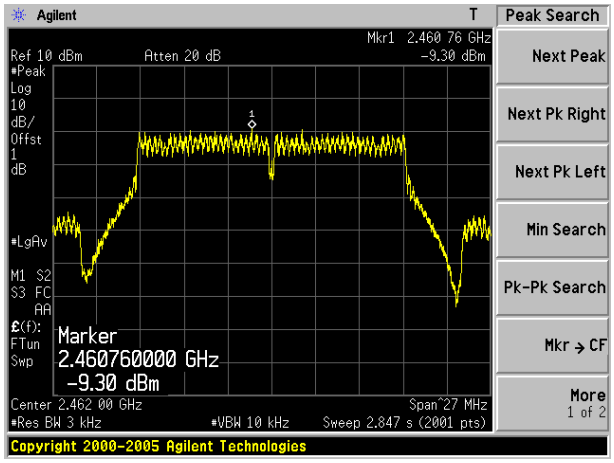
Channel 06 (2437MHz) Ant 2



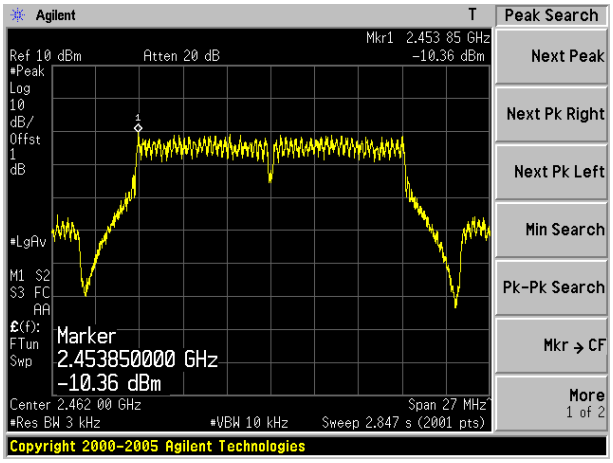
Channel 11 (2462MHz) Ant 0



Channel 11 (2462MHz) Ant 1



Channel 11 (2462MHz) Ant 2

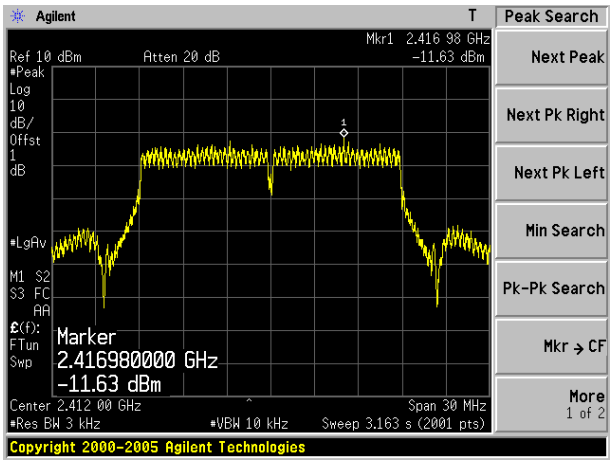


Product	:	AC1750 Wireless Dual Band Gigabit Router
Test Item	:	Power Spectral Density
Test Site	:	TR-8
Test Mode	:	Mode 3: Transmit by 802.11n(20MHz) for 2.4G with CDD

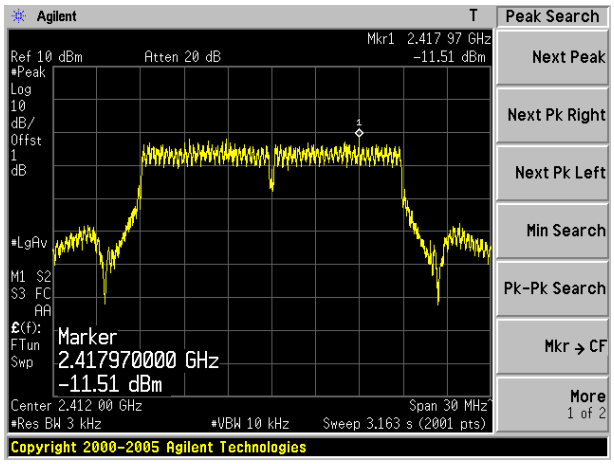
Channel No.	Frequency (MHz)	Measurement PPSD (dBm/3KHz)			Total PPSD (dBm/3KHz)	Limit (dBm/3KHz)	Result
		Ant 0	Ant 1	Ant 2			
01	2412	-11.63	-11.51	-13.02	-7.23	7.13	Pass
06	2437	-3.41	-2.66	-2.18	2.05	7.13	Pass
11	2462	-14.38	-14.53	-16.21	-10.19	7.13	Pass

Directional gain = GANT + Array Gain=6.87dBi, so The Limit = 8dBm- (Directional gain -6dB)= 7.13dBm

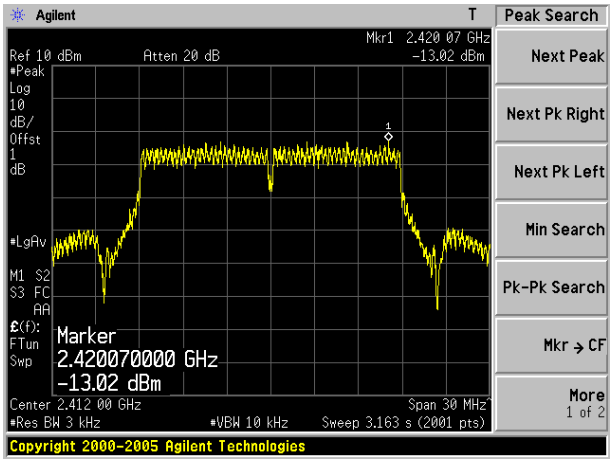
Channel 01 (2412MHz) Ant 0



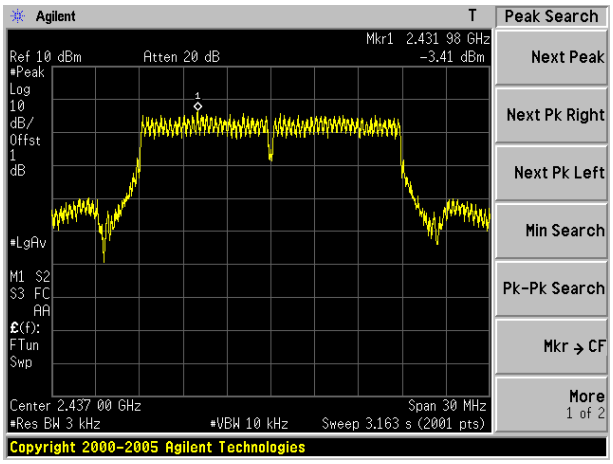
Channel 01 (2412MHz) Ant 0



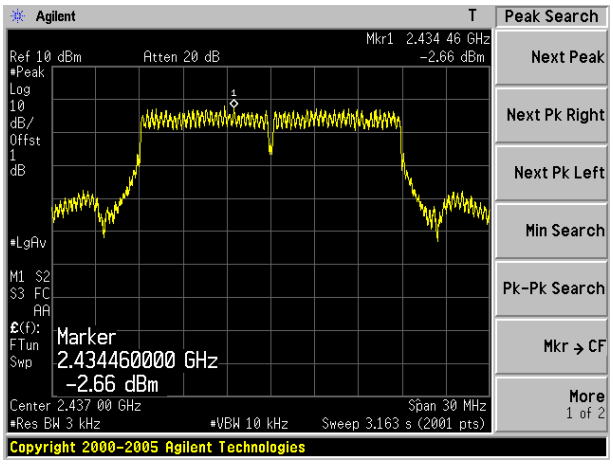
Channel 01 (2412MHz) Ant 0



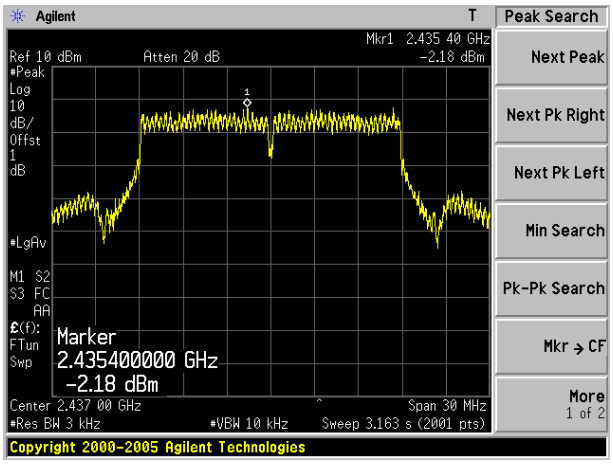
Channel 06 (2437MHz) Ant 0



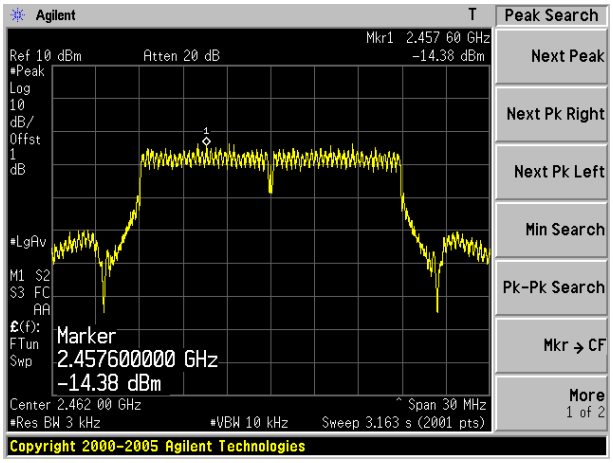
Channel 06 (2437MHz) Ant 1



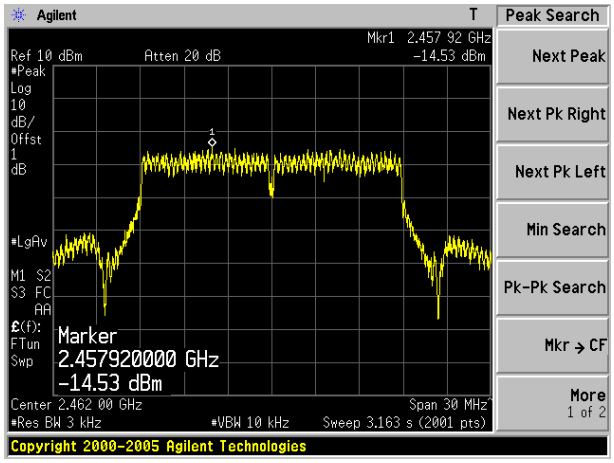
Channel 06 (2437MHz) Ant 2



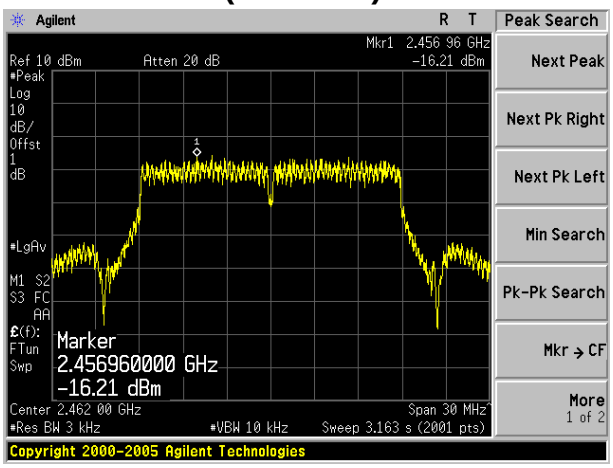
Channel 11 (2462MHz) Ant 0



Channel 11 (2462MHz) Ant 1



Channel 11 (2462MHz) Ant 2

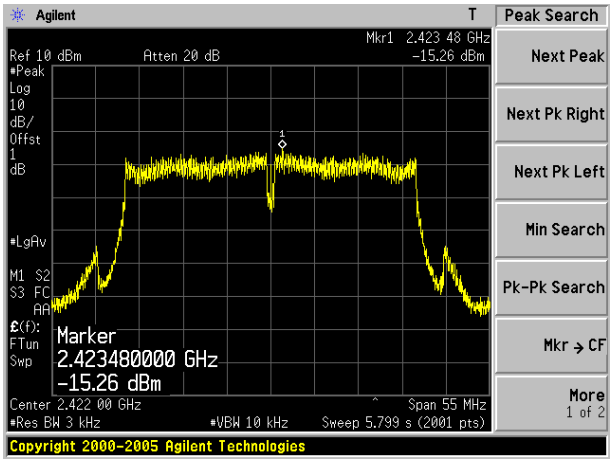


Product	:	AC1750 Wireless Dual Band Gigabit Router
Test Item	:	Power Spectral Density
Test Site	:	TR-8
Test Mode	:	Mode 4: Transmit by 802.11n(40MHz) for 2.4G with CDD

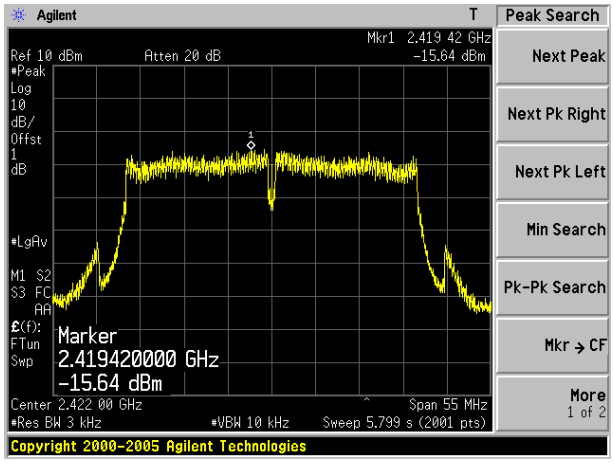
Channel No.	Frequency (MHz)	Measurement PPSD (dBm/3KHz)			Total PPSD (dBm/3KHz)	Limit (dBm/3KHz)	Result
		Ant 0	Ant 1	Ant 2			
03	2422	-15.26	-15.64	-15.11	-10.56	7.13	Pass
06	2437	-13.32	-12.36	-12.06	-7.78	7.13	Pass
09	2452	-15.89	-17.61	-17.32	-12.10	7.13	Pass

Directional gain = GANT + Array Gain=6.87dBi, so The Limit = 8dBm- (Directional gain -6dB)= 7.13dBm

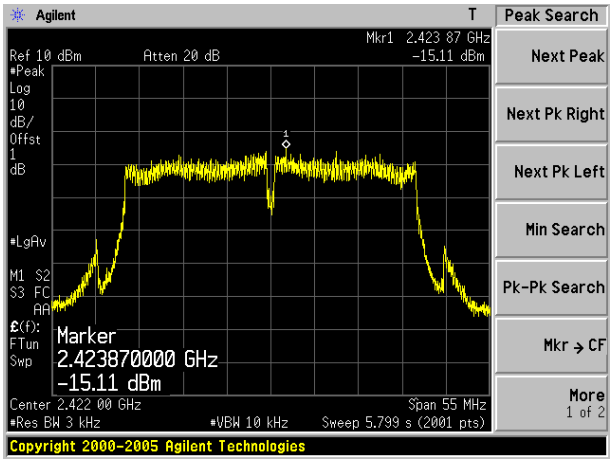
Channel 03 (2422MHz) Ant 0



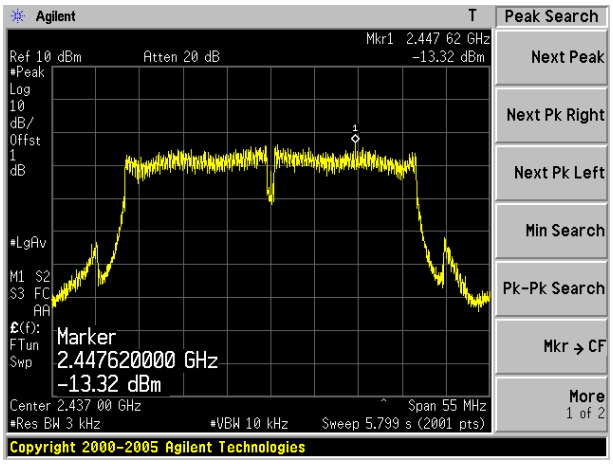
Channel 03 (2422MHz) Ant 0



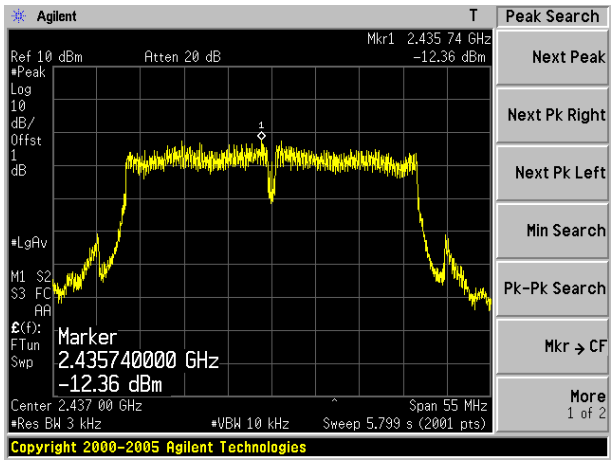
Channel 03 (2422MHz) Ant 0



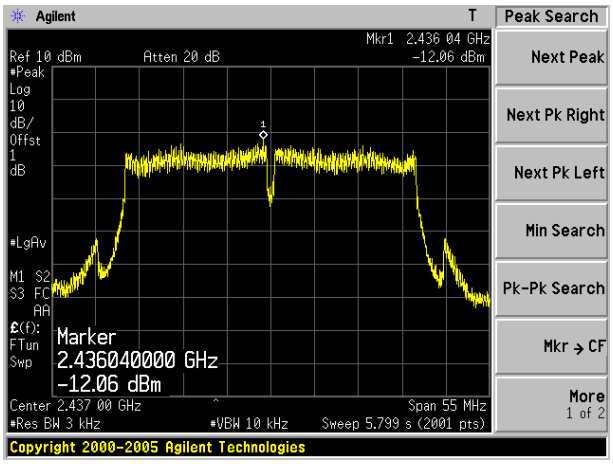
Channel 06 (2437MHz) Ant 0



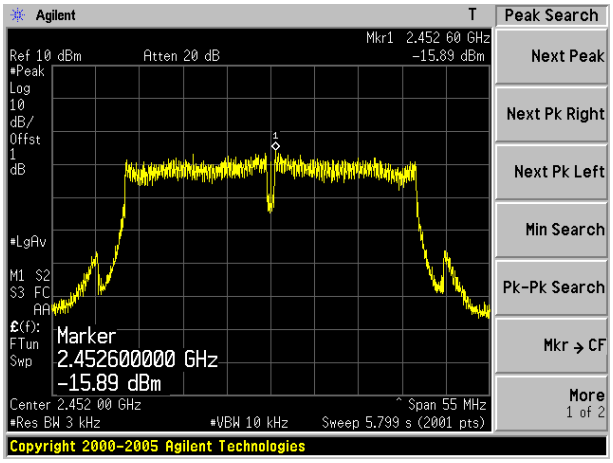
Channel 06 (2437MHz) Ant 1



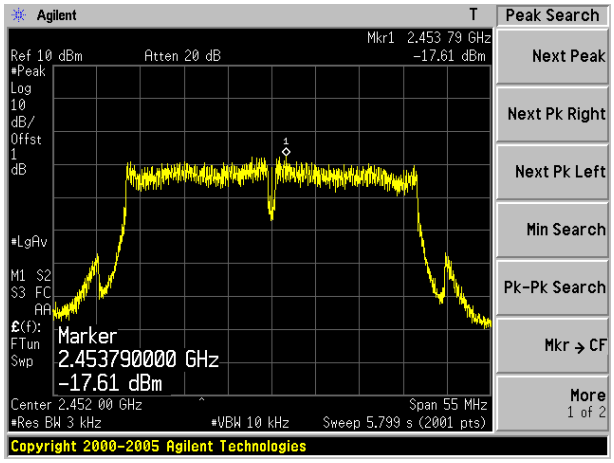
Channel 06 (2437MHz) Ant 2



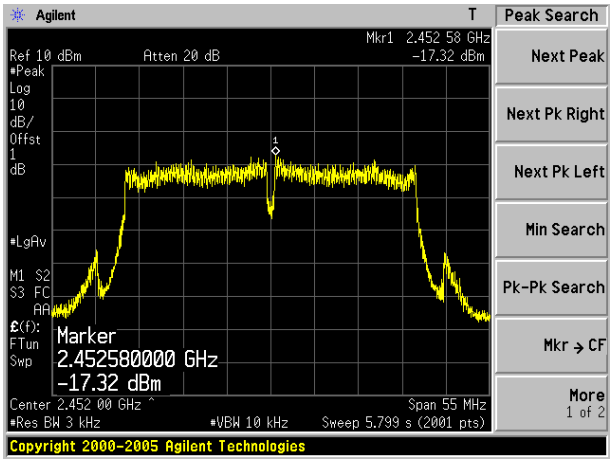
Channel 09 (2452MHz) Ant 0



Channel 09 (2452MHz) Ant 1



Channel 09 (2452MHz) Ant 2



Product	:	AC1750 Wireless Dual Band Gigabit Router
Test Item	:	Power Spectral Density
Test Site	:	TR-8
Test Mode	:	Mode 5: Transmit by 802.11a for 5G with CDD

Channel No.	Frequency (MHz)	Measurement PPSD (dBm/3KHz)			Total PPSD (dBm/3KHz)	Limit (dBm/3KHz)	Result
		Ant 0	Ant 1	Ant 2			
149	5745	-0.78	-2.14	-1.01	3.50	7.53	Pass
157	5785	-1.57	-1.61	-1.20	3.32	7.53	Pass
165	5825	-2.24	-2.43	-3.06	2.21	7.53	Pass

Directional gain = GANT + Array Gain=6.47dBi, so The Limit = 8dBm- (Directional gain -6dB)= 7.5dBm

Channel 149 (5745MHz) Ant 0

Channel 149 (5745MHz) Ant 1

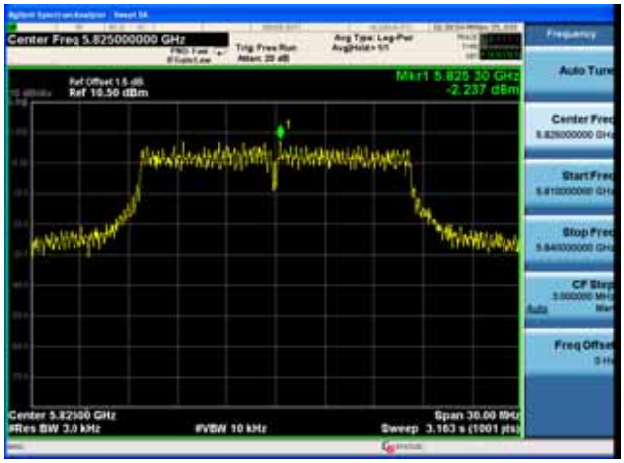
Channel 149 (5745MHz) Ant 2

Channel 157 (5785MHz) Ant 0

Channel 157 (5785MHz) Ant 1

Channel 157 (5785MHz) Ant 2

Channel 165 (5825MHz) Ant 0



Channel 165 (5825MHz) Ant 1

Channel 165 (5825MHz) Ant 2

Product	:	AC1750 Wireless Dual Band Gigabit Router
Test Item	:	Power Spectral Density
Test Site	:	TR-8
Test Mode	:	Mode 6: Transmit by 802.11n(20MHz) for 5G with CDD

Channel No.	Frequency (MHz)	Measurement PPSD (dBm/3KHz)			Total PPSD (dBm/3KHz)	Limit (dBm/3KHz)	Result
		Ant 0	Ant 1	Ant 2			
149	5745	-1.88	-1.69	-0.91	3.30	7.53	Pass
157	5785	-1.66	-1.41	-1.45	3.27	7.53	Pass
165	5825	0.15	-2.79	-2.45	3.28	7.53	Pass

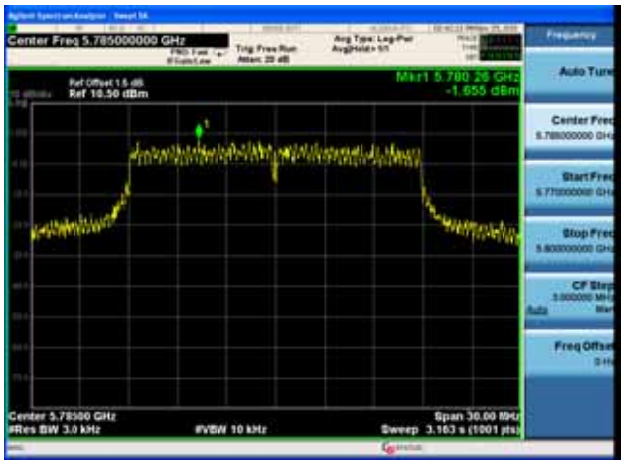
Directional gain = GANT + Array Gain=6.47dBi, so The Limit = 8dBm- (Directional gain -6dB)= 7.53dBm

Channel 149 (5745MHz) Ant 0

Channel 149 (5745MHz) Ant 1

Channel 149 (5745MHz) Ant 2

Channel 157 (5785MHz) Ant 0



Channel 157 (5785MHz) Ant 1

Channel 157 (5785MHz) Ant 2

Channel 165 (5825MHz) Ant 0

Channel 165 (5825MHz) Ant 1

Channel 165 (5825MHz) Ant 2

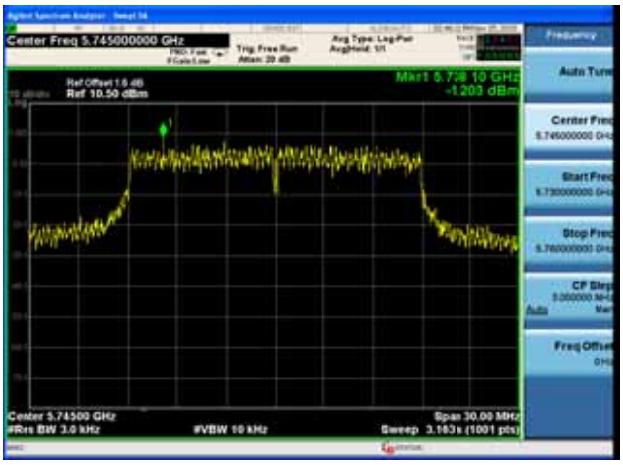
Product	:	AC1750 Wireless Dual Band Gigabit Router
Test Item	:	Power Spectral Density
Test Site	:	TR-8
Test Mode	:	Mode 7: Transmit by 802.11ac(20MHz) for 5G with CDD

Channel No.	Frequency (MHz)	Measurement PPSD (dBm/3KHz)			Total PPSD (dBm/3KHz)	Limit (dBm/3KHz)	Result
		Ant 0	Ant 1	Ant 2			
149	5745	-2.32	-1.20	-2.11	2.92	7.53	Pass
157	5785	-2.79	-2.04	-1.80	2.58	7.53	Pass
165	5825	-3.58	-2.91	-2.36	1.85	7.53	Pass

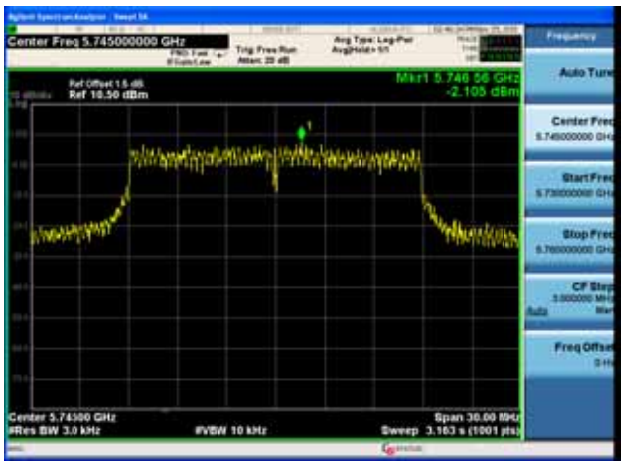
Directional gain = GANT + Array Gain=6.47dBi, so The Limit = 8dBm- (Directional gain -6dB)= 7.53dBm

Channel 149 (5745MHz) Ant 0

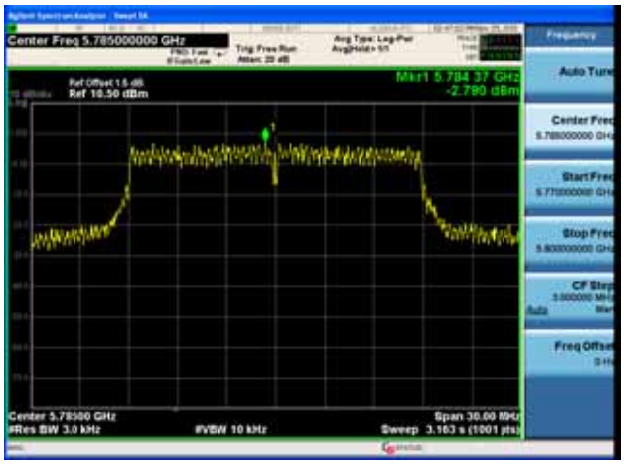
Channel 149 (5745MHz) Ant 1



Channel 149 (5745MHz) Ant 2



Channel 157 (5785MHz) Ant 0



Channel 157 (5785MHz) Ant 1

Channel 157 (5785MHz) Ant 2

Channel 165 (5825MHz) Ant 0

Channel 165 (5825MHz) Ant 1

Channel 165 (5825MHz) Ant 2

Product	:	AC1750 Wireless Dual Band Gigabit Router
Test Item	:	Power Spectral Density
Test Site	:	TR-8
Test Mode	:	Mode 8: Transmit by 802.11n(40MHz) for 5G with CDD

Channel No.	Frequency (MHz)	Measurement PPSD (dBm/3KHz)			Total PPSD (dBm/3KHz)	Limit (dBm/3KHz)	Result
		Ant 0	Ant 1	Ant 2			
151	5755	-4.77	-5.05	-5.43	-0.30	7.53	Pass
159	5795	-4.74	-4.86	-6.19	-0.44	7.53	Pass

Directional gain = G_{ANT} + Array Gain=6.47dBi, so The Limit = 8dBm- (Directional gain -6dB)= 7.53dBm

Channel 151 (5755MHz) Ant 0

Channel 151 (5755MHz) Ant 1

Channel 151 (5755MHz) Ant 2

Channel 159 (5795MHz) Ant 0

Channel 159 (5795MHz) Ant 1

Channel 159 (5795MHz) Ant 1

Product	:	AC1750 Wireless Dual Band Gigabit Router
Test Item	:	Power Spectral Density
Test Site	:	TR-8
Test Mode	:	Mode 9: Transmit by 802.11ac(40MHz) for 5G with CDD

Channel No.	Frequency (MHz)	Measurement PPSD (dBm/3KHz)			Total PPSD (dBm/3KHz)	Limit (dBm/3KHz)	Result
		Ant 0	Ant 1	Ant 2			
151	5755	-4.09	-4.59	-4.58	0.36	7.53	Pass
159	5795	-4.52	-4.86	-4.44	0.17	7.53	Pass

Directional gain = GANT + Array Gain=6.47dBi, so The Limit = 8dBm- (Directional gain -6dB)= 7.53dBm

Channel 151 (5755MHz) Ant 0

Channel 151 (5755MHz) Ant 1

Channel 151 (5755MHz) Ant 2

Channel 159 (5795MHz) Ant 0

Channel 159 (5795MHz) Ant 1

Channel 159 (5795MHz) Ant 1

Product	:	AC1750 Wireless Dual Band Gigabit Router
Test Item	:	Power Spectral Density
Test Site	:	TR-8
Test Mode	:	Mode 10: Transmit by 802.11ac(80MHz) for 5G with CDD

Channel No.	Frequency (MHz)	Measurement PPSD (dBm/3KHz)			Total PPSD (dBm/3KHz)	Limit (dBm/3KHz)	Result
		Ant 0	Ant 1	Ant 2			
155	5775	-6.09	-6.56	-7.18	-1.82	7.53	Pass

Directional gain = GANT + Array Gain=6.47dBi, so The Limit = 8dBm- (Directional gain -6dB)= 7.53dBm

Channel 155 (5775MHz) Ant 0

Channel 155 (5775MHz) Ant 1

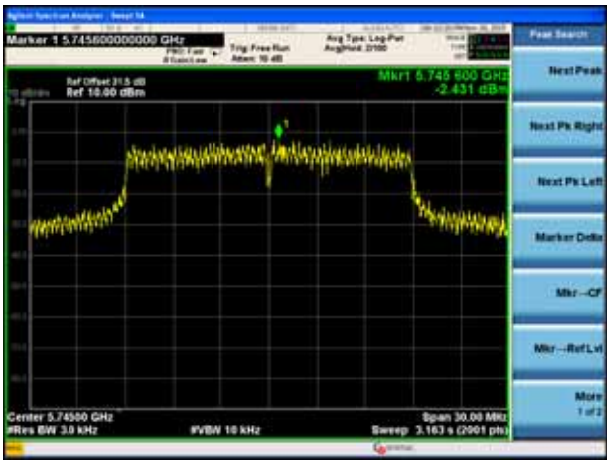
Channel 155 (5775MHz) Ant 2

Product	:	AC1750 Wireless Dual Band Gigabit Router
Test Item	:	Power Spectral Density
Test Site	:	TR-8
Test Mode	:	Mode 11: Transmit by 802.11ac(20MHz) for 5G with Beamforming

Channel No.	Frequency (MHz)	Measurement PPSD (dBm/3KHz)			Total PPSD (dBm/3KHz)	Limit (dBm/3KHz)	Result
		Ant 0	Ant 1	Ant 2			
149	5745	-2.43	-3.24	-2.75	1.98	7.53	Pass
157	5785	-1.68	-3.06	-3.20	2.18	7.53	Pass
165	5825	-3.63	-3.18	-3.45	1.36	7.53	Pass

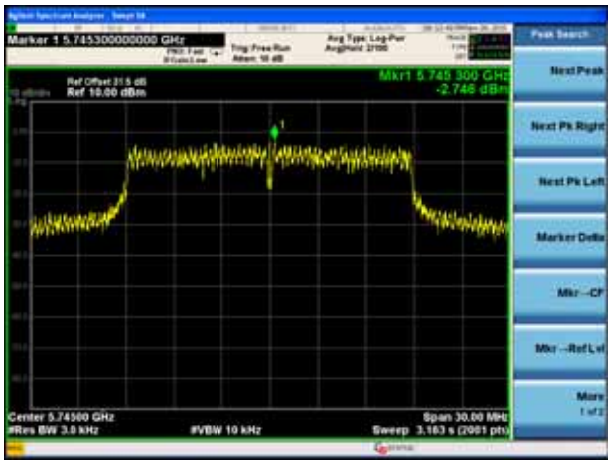
Directional gain = GANT + Array Gain=6.47dBi, so The Limit = 8dBm- (Directional Gain -6dB)=7.53dBm

Channel 149 (5745MHz) Ant 0

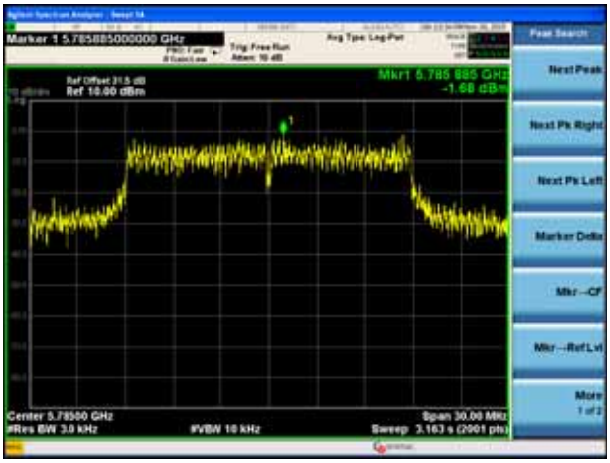


Channel 149 (5745MHz) Ant 1

Channel 149 (5745MHz) Ant 2



Channel 157 (5785MHz) Ant 0



Channel 157 (5785MHz) Ant 1

Channel 157 (5785MHz) Ant 2

Channel 165 (5825MHz) Ant 0

Channel 165 (5825MHz) Ant 1

Channel 165 (5825MHz) Ant 2

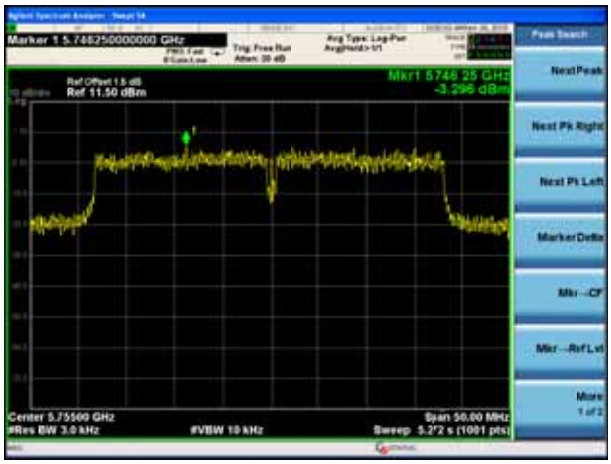
Product	:	AC1750 Wireless Dual Band Gigabit Router
Test Item	:	Power Spectral Density
Test Site	:	TR-8
Test Mode	:	Mode 12: Transmit by 802.11ac(40MHz) for 5G with Beamforming

Channel No.	Frequency (MHz)	Measurement PPSD (dBm/3KHz)			Total PPSD (dBm/3KHz)	Limit (dBm/3KHz)	Result
		Ant 0	Ant 1	Ant 2			
151	5755	-2.60	-3.30	-2.12	2.12	7.53	Pass
159	5795	-2.13	-2.51	-3.51	2.09	7.53	Pass

Directional gain = G_{ANT} + Array Gain=6.47dBi, so The Limit = 8dBm- (Directional Gain -6dB)=7.53dBm

Channel 151 (5755MHz) Ant 0

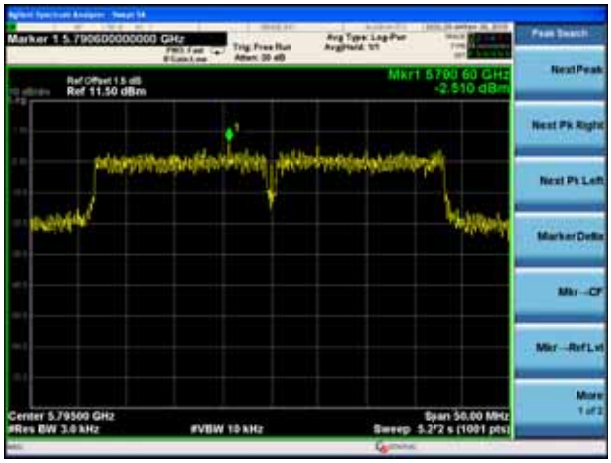
Channel 151 (5755MHz) Ant 1



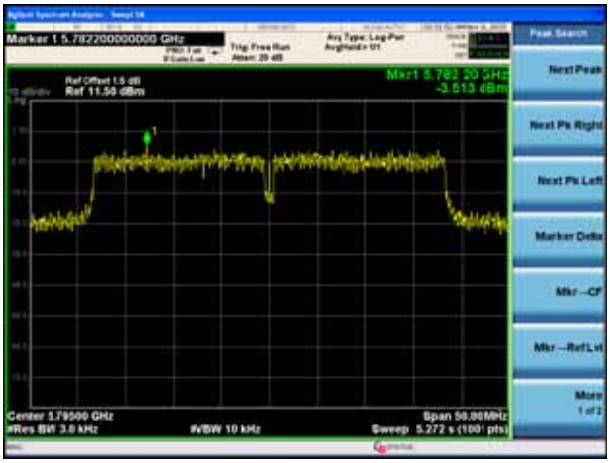
Channel 151 (5755MHz) Ant 2

Channel 159 (5795MHz) Ant 0

Channel 159 (5795MHz) Ant 1



Channel 159 (5795MHz) Ant 1



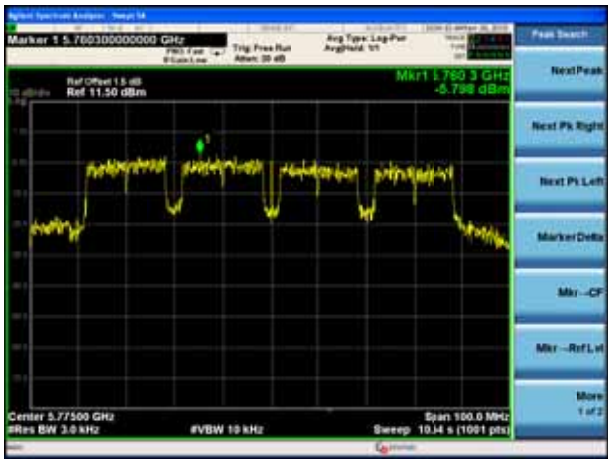
Product	:	AC1750 Wireless Dual Band Gigabit Router
Test Item	:	Power Spectral Density
Test Site	:	TR-8
Test Mode	:	Mode 13: Transmit by 802.11ac(80MHz) for 5G with Beamforming

Channel No.	Frequency (MHz)	Measurement PPSD (dBm/3KHz)			Total PPSD (dBm/3KHz)	Limit (dBm/3KHz)	Result
		Ant 0	Ant 1	Ant 2			
155	5775	-6.66	-5.80	-6.21	-1.44	7.53	Pass

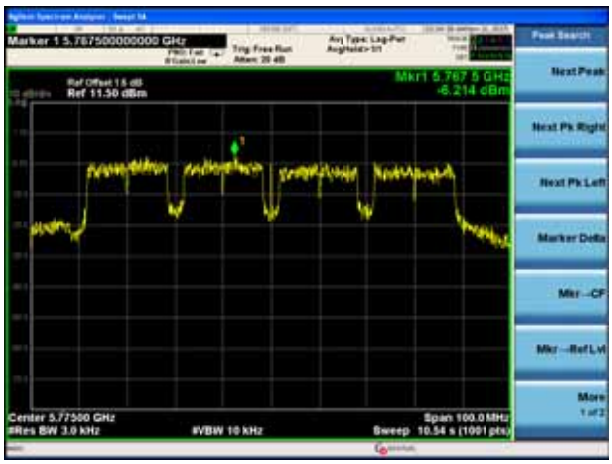
Directional gain = GANT + Array Gain=6.47dBi, so The Limit = 8dBm- (Directional Gain -6dB)=7.53dBm

Channel 155 (5775MHz) Ant 0

Channel 155 (5775MHz) Ant 1



Channel 155 (5775MHz) Ant 2



The End