

FCC Test Report

(Class II Permissive Change)

Product Name	Intel® Dual Band Wireless-AC 3160
Model No	3160NGW
FCC ID	2AEDY-EM10-00

Applicant	Empathy Co., Ltd.
Address	KDX Nakameguro Bldg. 6F, 1-5-4, Higashiyama, Meguro-ku, Tokyo, 150-0043

Date of Receipt	Jun. 13, 2016
Issued Date	Jul. 11, 2016
Report No.	1660274R-RFUSP05V00
Report Version	V1.0



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration of the equipment and evaluated measurement uncertainty herein.

This report must not be used to claim product endorsement by TAF or any agency of the government.

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Test Report

Issued Date: Jul. 11, 2016

Report No.: 1660274R-RFUSP05V00



Product Name	Intel® Dual Band Wireless-AC 3160
Applicant	Empathy Co., Ltd.
Address	KDX Nakameguro Bldg. 6F, 1-5-4, Higashiyama, Meguro-ku, Tokyo, 150-0043
Manufacturer	Empathy Co., Ltd.
Model No.	3160NGW
FCC ID.	2AEDY-EM10-00
EUT Rated Voltage	DC 3.3V (via Mini-PCI Express slot)
EUT Test Voltage	AC 120V, 60Hz
Trade Name	EMPATHY
Applicable Standard	FCC CFR Title 47 Part 15 Subpart E: 2015 ANSI C63.4: 2014, ANSI C63.10: 2013 789033 D02 General UNII Test Procedures New Rules v01r03
Test Result	Complied

Documented By : Jinn Chen

(Senior Adm. Specialist / Jinn Chen)

Tested By : Bill Lin

(Engineer / Bill Lin)

Approved By : Vincent Lin

(Director / Vincent Lin)

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Attachment 1: EUT Test Photographs

Attachment 2: EUT Detailed Photographs

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Intel® Dual Band Wireless-AC 3160
Trade Name	EMPATHY
FCC ID.	2AEDY-EM10-00
Model No.	3160NGW
Frequency Range	802.11a/n-20MHz/ac-20MHz:5745-5825MHz 802.11n-40MHz/ac-40MHz:5755-5795MHz 802.11ac-80MHz: 5775MHz
Number of Channels	802.11a/n-20MHz/ac-20MHz: 5, n-40MHz/ac-40MHz: 2, ac-80MHz: 1
Data Rate	802.11a/g: 6-54Mbps, 802.11n: up to 300Mbps 802.11ac: up to 866.7Mbps
Channel Control	Auto
Type of Modulation	802.11a/n/ac:OFDM, BPSK, QPSK, 16QAM, 64QAM, 256QAM
Antenna type	Dish Antenna
Antenna Gain	Refer to the table “Antenna List”
Power Adapter	MFR: EMPATHY, M/N: ETSA150400U Input: AC 100-240V~50-60Hz 1.5A Output: DC 15V, 4A Cable Out: Shielded, 1.5m, with one ferrite core bonded. Power Cord: Shielded, 1.8m

Antenna List

No.	Manufacturer	Part No.	Antenna type	Peak Gain
1.	EMPATHY	ATWLN0	Dipole Antenna	1.7 dBi for 5.725~5.85GHz

Note: The antenna of EUT is conform to FCC 15.203.

802.11a/n-20MHz Center Working Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 149:	5745 MHz	Channel 153:	5765 MHz	Channel 157:	5785 MHz	Channel 161:	5805 MHz
Channel 165:	5825 MHz						

802.11n-40MHz Center Working Frequency of Each Channel:

Channel	Frequency	Channel	Frequency
Channel 151:	5755 MHz	Channel 159:	5795 MHz

802.11ac-80MHz Center Working Frequency of Each Channel:

Channel	Frequency
Channel 155:	5775 MHz

Note:

1. This device is a Intel® Dual Band Wireless-AC 3160, including an IEEE 802.11 a/n/ac WLAN transceiver.
2. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
3. Lowest and highest data rates are tested in each mode. Only worst case is shown in the report. (802.11a is 6Mbps 、 802.11n(20M-BW) is 7.2Mbps 、 802.11n(40M-BW) is 15Mbps 、 802.11ac(20M-BW) is 7.2Mbps 、 802.11ac(40M-BW) is 15Mbps and 802.11ac(80M-BW) is 32.5Mbps).).
4. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.
5. These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart E for Unlicensed National Information Infrastructure devices.
6. This is to request a Class II permissive change for **FCC ID: 2AEDY-EM10-00**, originally granted on **01/22/2016**.

The differences are listed as below:

The Band 1, Band 2a, Band 2c and Band 3 previously authorized under “Old Rules”, Base on Original Grant has obtained new rules certificate, a Class II permissive change filing to demonstrate compliance with the “New Rules”, all other hardware and output power is identical with original granted.

This change is for a device previously granted under rule parts of 15.247 and is now applying for approval under 15.407(b)(4)(i).

Test Mode	Mode 1: Transmit (802.11a-6Mbps) Mode 2: Transmit (802.11n-20BW-14.4Mbps) Mode 3: Transmit (802.11n-40BW-30Mbps) Mode 4: Transmit (802.11ac-80BW-65Mbps)
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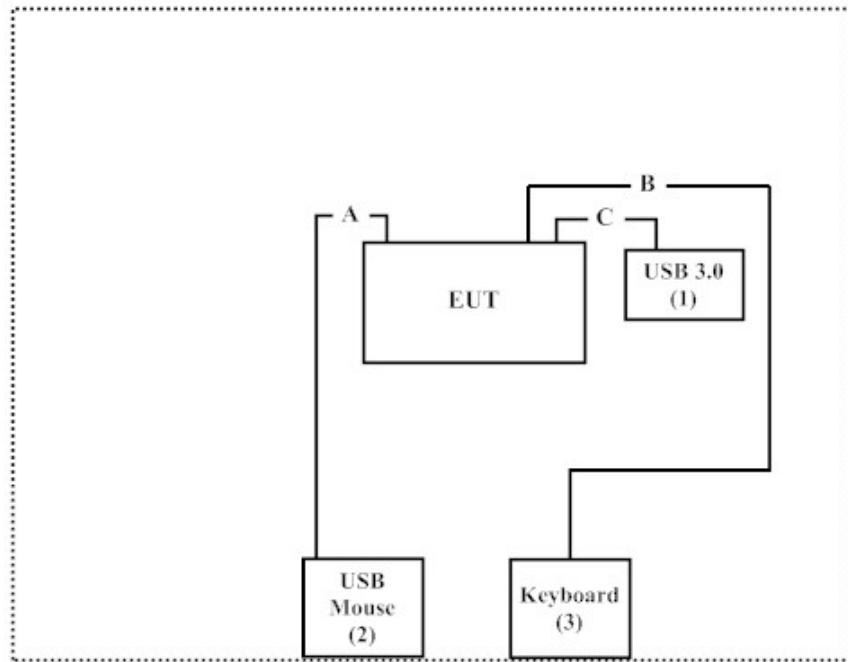
1.3. Tested System Details

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

Product	Manufacturer	Model No.	Serial No.	Power Cord
(1) USB 3.0	BUFFALO	HD-H1.0TU3	15476991119984	N/A
(2) Keyboard	BTC	5200U	N/A	N/A
(3) USB Mouse	Logitech	M-BE58	HCA30103357	N/A

Signal Cable Type		Signal cable Description
A	Keyboard Cable	Shielded, 1.8m
B	Mouse Cable	Shielded, 1.8m
C	HDD Cable	Shielded, 0.5m

1.4. Configuration of tested System



1.5. EUT Exercise Software

- (1) Setup the EUT and peripherals as shown in section 1.4.
- (2) Execute “DRTU Version 1.7.6-1195” program on the Notebook PC.
- (3) Configure the test mode, the test channel, and the data rate.
- (4) Start the continuous transmission.
- (5) Verify that the EUT works properly.

1.6. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	50-65
Barometric pressure (mbar)	860-1060	950-1000

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/chinese/about/certificates.aspx?bval=5>

The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site : <http://www.quietek.com/>

Site Description: File on
Federal Communications Commission
FCC Engineering Laboratory
7435 Oakland Mills Road
Columbia, MD 21046
Registration Number: 92195

Site Name: Quietek Corporation
Site Address: No. 5-22, Ruei-Shu Valley, Ruei-Ping Tsuen,
Lin-Kou Shiang, Taipei,
Taiwan, R.O.C.
TEL: 886-2-8601-3788 / FAX : 886-2-8601-3789
E-Mail : service@quietek.com

FCC Accreditation Number: TW1014

2. Conducted Emission

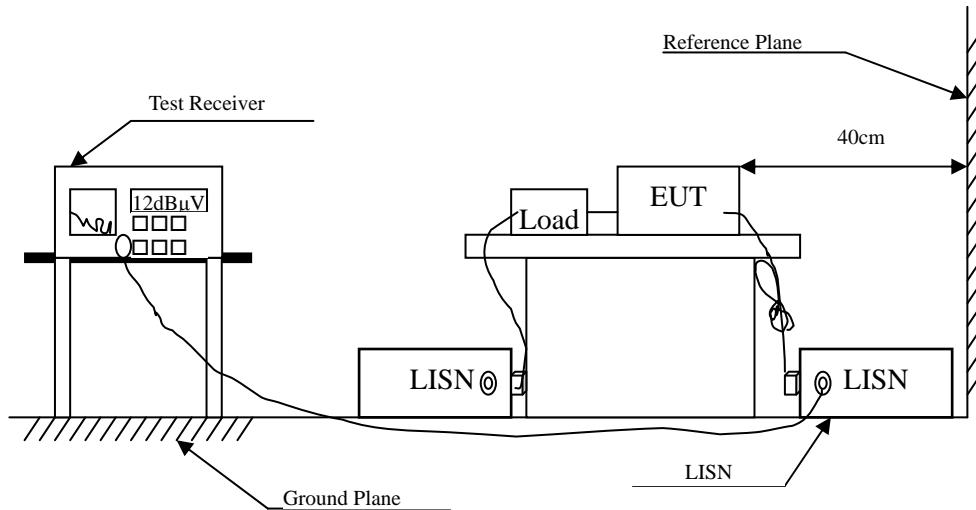
2.1. Test Equipment

	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.	Remark
X	Test Receiver	R & S	ESCS 30 / 825442/018	Sep., 2015	
X	Artificial Mains Network	R & S	ENV4200 / 848411/10	Feb., 2016	Peripherals
X	LISN	R & S	ESH3-Z5 / 825562/002	Feb., 2016	EUT
	DC LISN	Schwarzbeck	8226 / 176	Mar, 2016	EUT
X	Pulse Limiter	R & S	ESH3-Z2 / 357.8810.52	Feb., 2016	
	No.1 Shielded Room				

Note:

1. All equipments are calibrated every one year.
2. The test instruments marked by “X” are used to measure the final test results.

2.2. Test Setup



2.3. Limits

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

Remarks : In the above table, the tighter limit applies at the band edges.

2.4. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2013 on conducted measurement.

Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

The EUT was setup to ANSI C63.4, 2014; tested to UNII test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.

2.5. Uncertainty

± 2.26 dB

2.6. Test Result of Conducted Emission

Product : Intel® Dual Band Wireless-AC 3160
 Test Item : Conducted Emission Test
 Power Line : Line 1
 Test Mode : Mode 4: Transmit (802.11ac-80BW-65Mbps) (5775MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB μ V	dB μ V	dB	dB μ V
LINE 1					
Quasi-Peak					
0.189	9.697	41.358	51.055	-13.831	64.886
0.319	9.703	28.768	38.471	-22.700	61.171
0.429	9.723	21.600	31.323	-26.706	58.029
2.319	9.804	12.590	22.394	-33.606	56.000
4.959	9.890	15.776	25.666	-30.334	56.000
22.029	10.148	7.456	17.604	-42.396	60.000
Average					
0.189	9.697	26.833	36.530	-18.356	54.886
0.319	9.703	15.084	24.787	-26.384	51.171
0.429	9.723	8.810	18.532	-29.497	48.029
2.319	9.804	7.860	17.664	-28.336	46.000
4.959	9.890	10.188	20.078	-25.922	46.000
22.029	10.148	1.893	12.041	-37.959	50.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “  “ means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Intel® Dual Band Wireless-AC 3160
 Test Item : Conducted Emission Test
 Power Line : Line 2
 Test Mode : Mode 4: Transmit (802.11ac-80BW-65Mbps) (5775MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB μ V	dB μ V	dB	dB μ V

LINE 2

Quasi-Peak

0.179	9.695	35.293	44.989	-20.182	65.171
0.309	9.699	28.153	37.851	-23.606	61.457
0.499	9.728	17.823	27.551	-28.478	56.029
2.489	9.800	14.277	24.077	-31.923	56.000
4.809	9.870	15.758	25.628	-30.372	56.000
24.809	10.208	5.131	15.339	-44.661	60.000

Average

0.179	9.695	15.820	25.516	-29.655	55.171
0.309	9.699	12.465	22.164	-29.293	51.457
0.499	9.728	7.079	16.807	-29.222	46.029
2.489	9.800	9.152	18.952	-27.048	46.000
4.809	9.870	10.004	19.874	-26.126	46.000
24.809	10.208	1.403	11.610	-38.390	50.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “  “ means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

3. Maximum conducted output power

3.1. Test Equipment

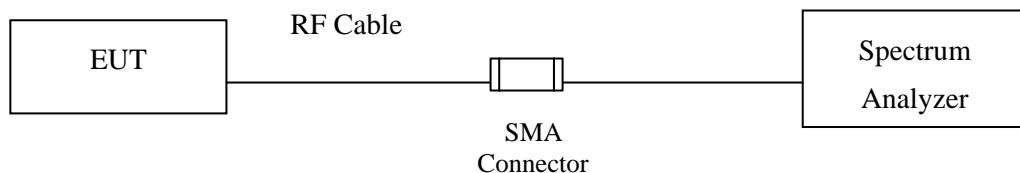
Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X Power Meter	Anritsu	ML2495A/6K00003357	May, 2016
X Power Sensor	Anritsu	MA2411B/0738448	Jun, 2016
X Spectrum Analyzer	R & S	FSV30 / 103464	Dec., 2015

Note:

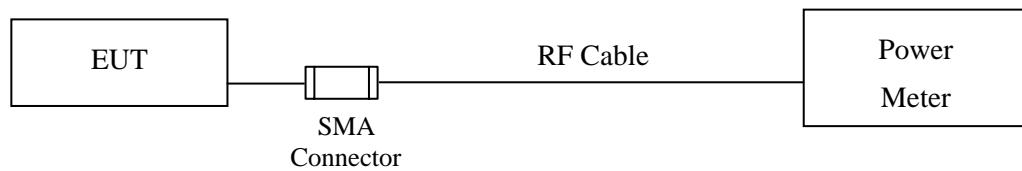
1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
2. The test instruments marked with “X” are used to measure the final test results.

3.2. Test Setup

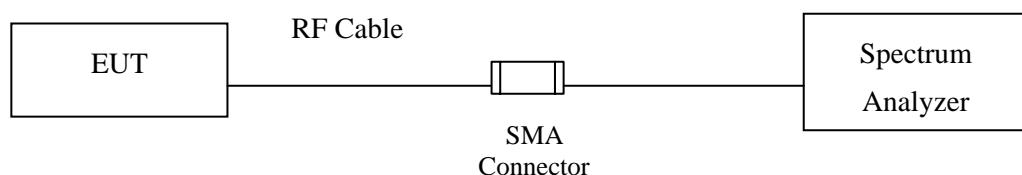
26dBc Occupied Bandwidth



Conduction Power Measurement (for 802.11an)



Conduction Power Measurement (for 802.11ac)



3.3. Limits

- (1) For the band 5.15-5.25 GHz,
 - (i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).
 - (ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
 - (iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-topoint U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.
 - (iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
- (2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} - 10 \log B$, where B is the 26 dB emission bandwidth in megahertz. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
- (3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point UNII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any

corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

3.4. Test Procedure

As an alternative to FCC KDB-789033, the EUT maximum conducted output power was measured with an average power meter employing a video bandwidth greater the 6dB BW of the emission under test. Maximum conducted output power was read directly from the meter across all data rates, and across three channels within each sub-band. Special care was used to make sure that the EUT was transmitting in continuous mode. This method exceeds the limitations of FCC KDB-789033, and provides more accurate measurements.

802.11an (BW \leq 40MHz) Maximum conducted output power using KDB 789033 section E)3)b)
Method PM-G (Measurement using a gated RF average power meter)

Note: the power meter have a video bandwidth that is greater than or equal to the measurement bandwidth, (Anritsu/ MA2411B video bandwidth: 65MHz)

802.11ac (BW=80MHz) Maximum conducted output power using KDB 789033 section E)2)b)
Method SA-1 (trace averaging with the EUT transmitting at full power throughout each sweep).

When transmitted signals consist of two or more non-contiguous spectrum segments (e.g., 80+80 MHz mode) or when a single spectrum segment of a transmission crosses the boundary between two adjacent U-NII bands, KDB 644545 D01 section F) procedure is used for measurements.

3.5. Uncertainty

± 1.27 dB

3.6. Test Result of Maximum conducted output power

Product : Intel® Dual Band Wireless-AC 3160
 Test Item : Maximum conducted output power
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11a-6Mbps)

Cable loss=1dB		Maximum conducted output power								
Channel No.	Frequency (MHz)	Data Rate (Mbps)								Required Limit
		6	9	12	18	24	36	48	54	
		Measurement Level (dBm)								
149	5745	16.27	--	--	--	--	--	--	--	<30dBm
157	5785	16.39	16.15	16.02	15.88	15.73	15.57	15.42	15.31	<30dBm
165	5825	16.35	--	--	--	--	--	--	--	<30dBm

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss

Maximum conducted output power Measurement:

Channel Number	Frequency (MHz)	99% Bandwidth (MHz)	Output Power (dBm)	Output Power Limit (dBm)
149	5745	--	16.27	30
157	5785	--	16.39	30
165	5825	--	16.35	30

Note:

1. Power Output Value =Reading value on average power meter + cable loss

Product : Intel® Dual Band Wireless-AC 3160
 Test Item : Maximum conducted output power
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11n-20BW-14.4Mbps)

Cable loss=1dB		Maximum conducted output power									
Channel No.	Frequency (MHz)	Data Rate (Mbps)								Required Limit	
		HT0	HT1	HT2	HT3	HT4	HT5	HT6	HT7		
		Measurement Level (dBm)									
149	5745	16.36	--	--	--	--	--	--	--	<30dBm	
157	5785	16.52	16.43	16.32	16.2	16.09	15.89	15.74	15.62	<30dBm	
165	5825	16.1	--	--	--	--	--	--	--	<30dBm	

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss

Maximum conducted output power Measurement:

Channel Number	Frequency (MHz)	99% Bandwidth (MHz)	Output Power (dBm)	Output Power Limit
				(dBm)
149	5745	--	16.36	30
157	5785	--	16.52	30
165	5825	--	16.1	30

Note:

1. Power Output Value =Reading value on average power meter + cable loss
2. Output Power (dBm) = $10\log(\text{Chain A Power (mW)} + \text{Chain B Power (mW)})$

Product : Intel® Dual Band Wireless-AC 3160
 Test Item : Maximum conducted output power
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit (802.11n-40BW-30Mbps)

Cable loss=1dB		Maximum conducted output power								
Channel No.	Frequency (MHz)	Data Rate (Mbps)								Required Limit
		HT0	HT1	HT2	HT3	HT4	HT5	HT6	HT7	
		Measurement Level (dBm)								
151	5755	15.84	15.73	15.61	15.54	15.47	15.32	15.23	15.11	<30dBm
159	5795	15.89	--	--	--	--	--	--	--	<30dBm

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss

Maximum conducted output power Measurement:

Channel Number	Frequency (MHz)	99% Bandwidth (MHz)	Output Power (dBm)	Output Power Limit
				(dBm)
151	5755	--	15.84	30
159	5795	--	15.89	30

Note:

1. Power Output Value =Reading value on average power meter + cable loss
2. Output Power (dBm) = $10\log(\text{Chain A Power (mW)} + \text{Chain B Power (mW)})$

Product : Intel® Dual Band Wireless-AC 3160
 Test Item : Maximum conducted output power
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit (802.11ac-80BW-65Mbps)

Cable loss=1dB		Maximum conducted output power									
Channel No	Frequency (MHz)	Data Rate (Mbps)									
		VTH0	VTH1	VTH2	VTH3	VTH4	VTH5	VTH6	VTH7	VTH8	VTH9
155	5775	14.63	14.51	14.42	14.33	14.24	14.17	14.05	13.97	13.84	13.72

Note: Maximum conducted output power Value =Reading value on average power meter + cable loss

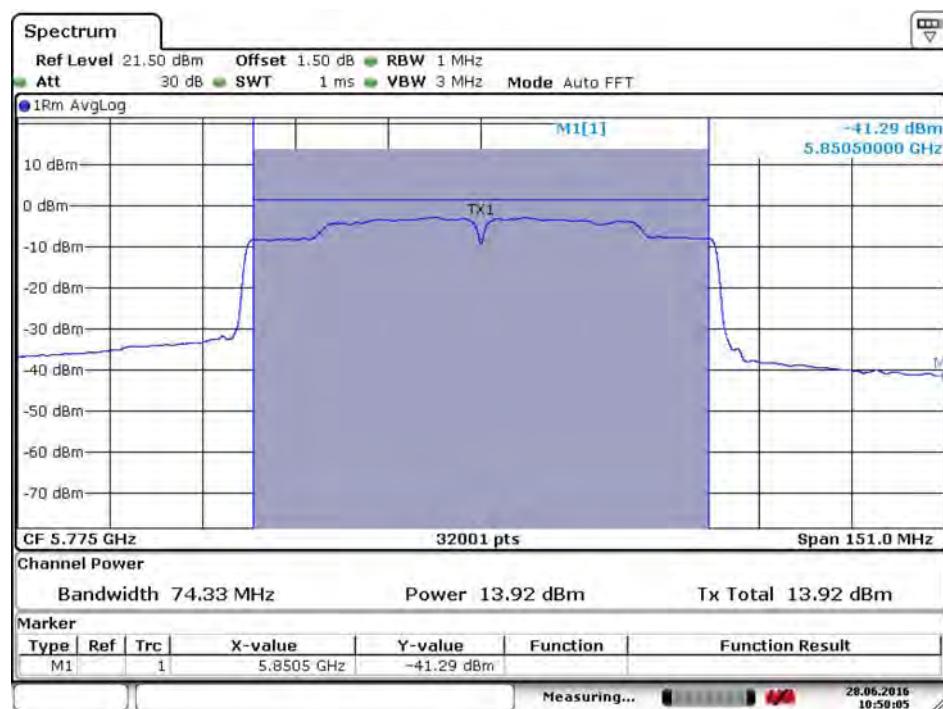
Maximum conducted output power Measurement:

Channel Number	Frequency (MHz)	99% Bandwidth (MHz)	Output Power (dBm)	Output Power Limit
				(dBm)
155	5775	--	14.63	30

Note:

1. Power Output Value =Reading value on average power meter + cable loss
2. Output Power (dBm) = $10\log(\text{Chain A Power (mW)} + \text{Chain B Power (mW)})$

**Maximum conducted output power:
Channel 155**



Date: 28.JUN.2016 10:50:05

4. Peak Power Spectral Density

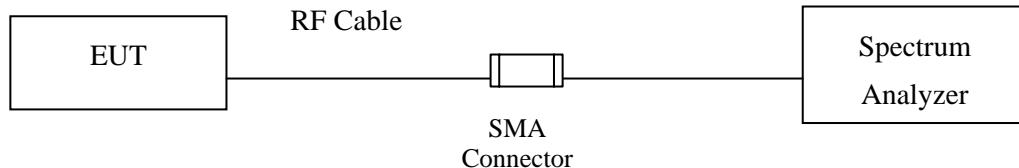
4.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Spectrum Analyzer	R & S	FSV30 / 103464	Dec., 2015
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2016
	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr, 2016

Note:

1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
2. The test instruments marked with “X” are used to measure the final test results.

4.2. Test Setup



4.3. Limits

- (1) For the band 5.15-5.25 GHz,
 - (i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
 - (ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
 - (iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated

transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. +

- (2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
- (3) For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point UNII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

4.4. Test Procedure

The EUT was setup to ANSI C63.10: 2013; tested to UNII test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.

The Peak Power Spectral Density using KDB 789033 section F) procedure, Create an average power spectrum for the EUT operating mode being tested by following the instructions in section E)2) for measuring maximum conducted output power using a spectrum analyzer.

SA-1 method is selected to run the test.

Scale the observed power level to an equivalent value in 500 kHz by adjusting (increase) the measured power by a bandwidth correction factor (BWCF) where $BWCF = 10\log(500\text{ kHz}/100\text{ kHz}) = 6.98\text{ dB}$.

4.5. Uncertainty

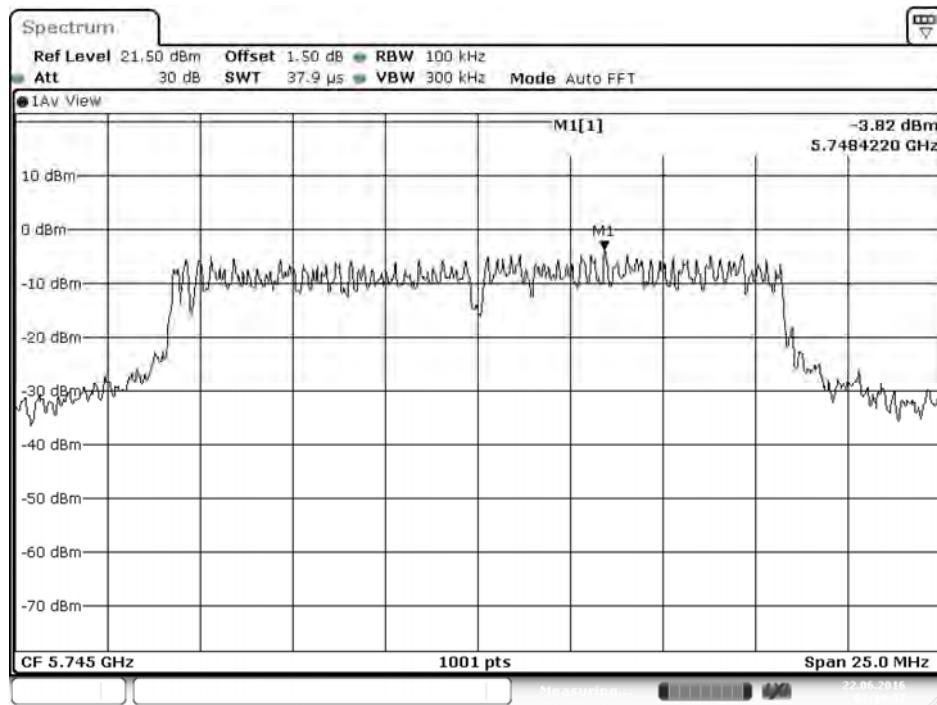
$\pm 1.27\text{ dB}$

4.6. Test Result of Peak Power Spectral Density

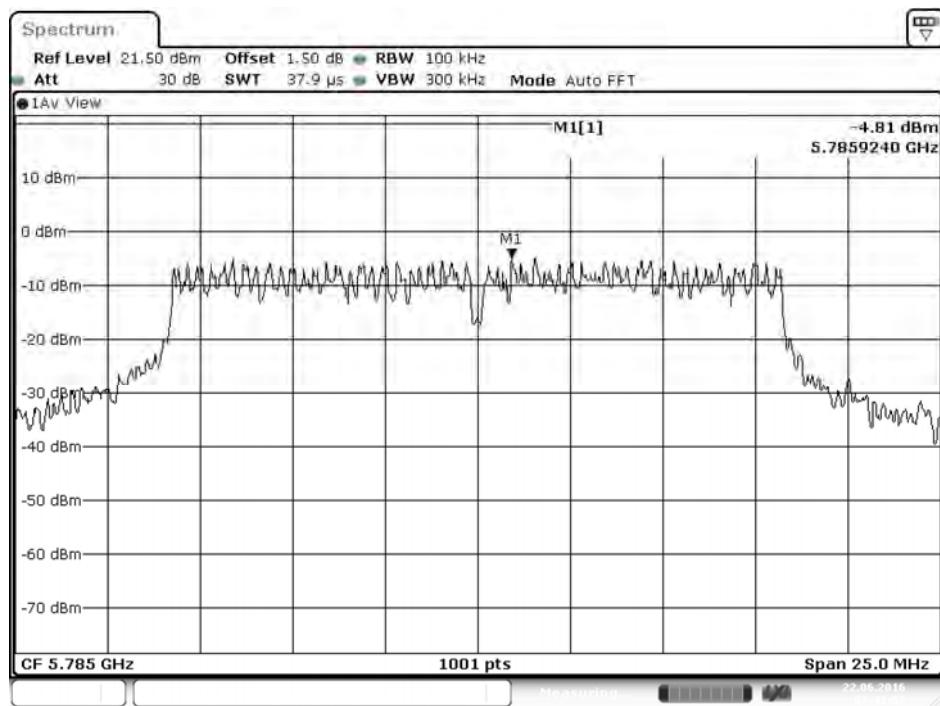
Product : Intel® Dual Band Wireless-AC 3160
 Test Item : Peak Power Spectral Density
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11a-6Mbps)

Channel Number	Frequency (MHz)	Data Rate (Mbps)	PPSD (dBm)	BWCF (dB)	Total PPSD (dBm)	Required Limit (dBm)	Result
149	5745	6	-3.82	6.98	3.16	<30	Pass
157	5785	6	-4.81	6.98	2.17	<30	Pass
165	5825	6	-4.39	6.98	2.59	<30	Pass

Channel 149:

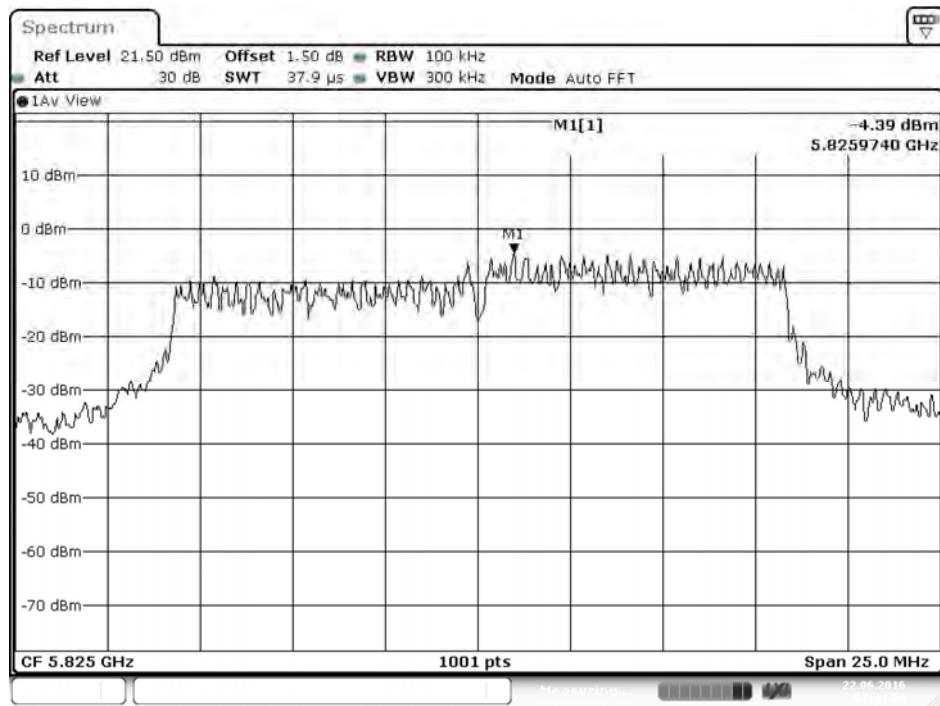


Channel 157:



Date: 22.JUN.2016 07:41:57

Channel 165:



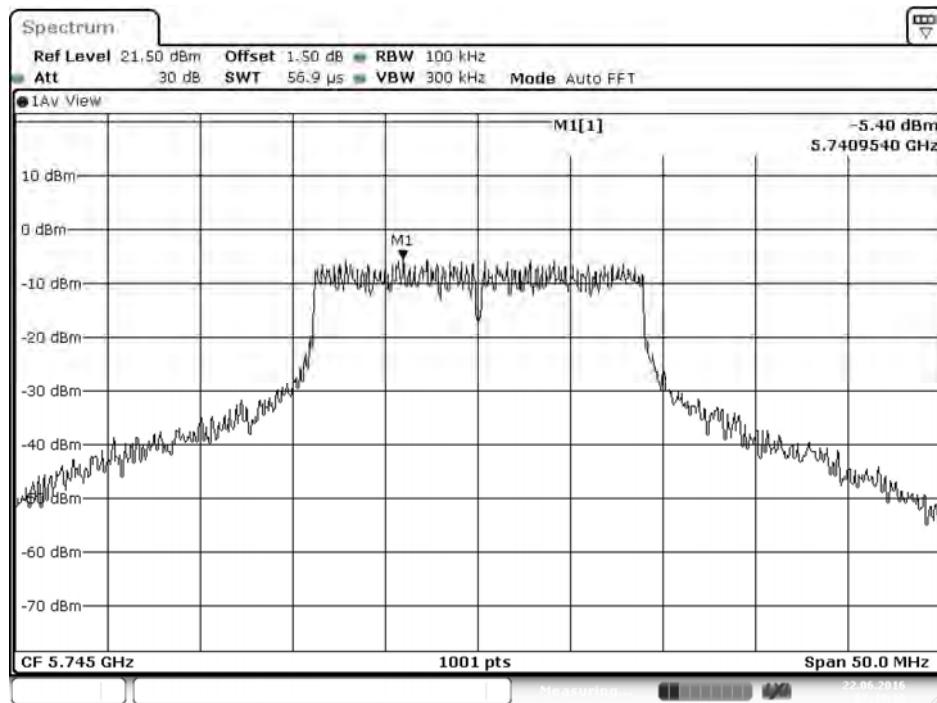
Date: 22.JUN.2016 07:44:09

Product : Intel® Dual Band Wireless-AC 3160
 Test Item : Peak Power Spectral Density
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11n-20BW-14.4Mbps)

Channel Number	Frequency (MHz)	PPSD (dBm)	BWCF (dB)	Total PPSD (dBm) ₁	Required Limit (dBm)	Result
149	5745	-5.40	6.98	1.58	<30	Pass
157	5785	-5.59	6.98	1.39	<30	Pass
165	5825	-5.61	6.98	1.37	<30	Pass

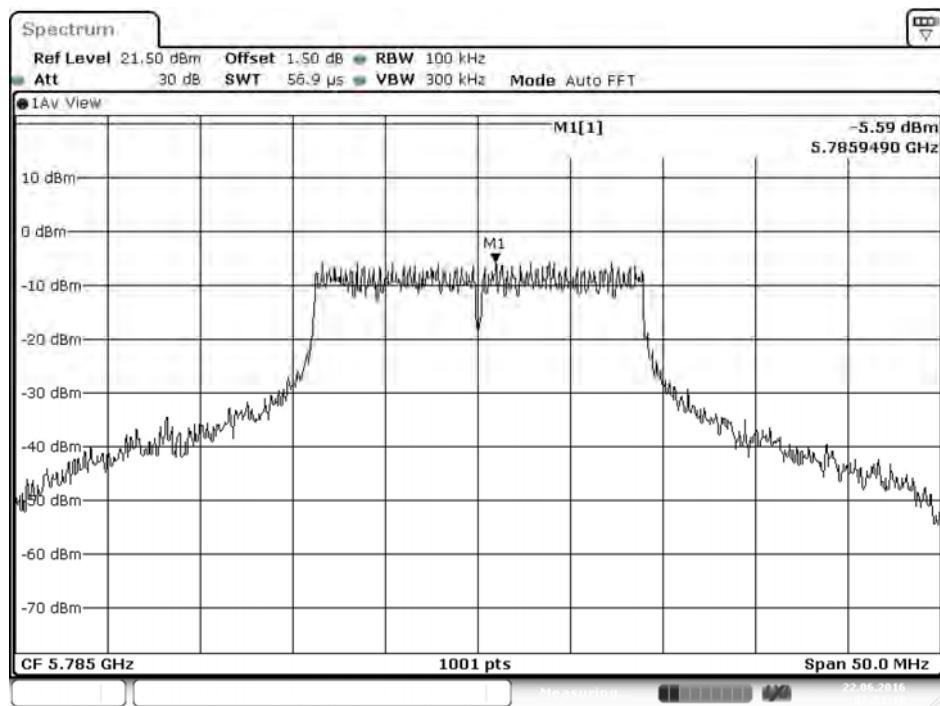
Note 1: The quantity $10 \log 2$ (two antennas) is added to the spectrum peak value according to document 662911 D01.

Channel 149



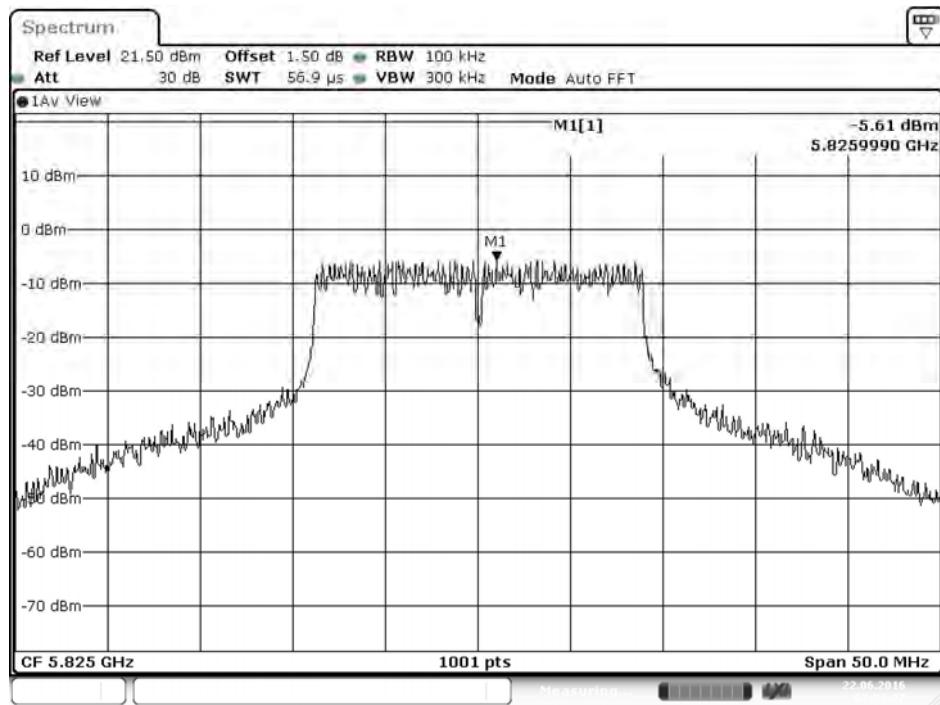
Date: 22.JUN.2016 07:49:10

Channel 157



Date: 22.JUN.2016 07:51:18

Channel 165



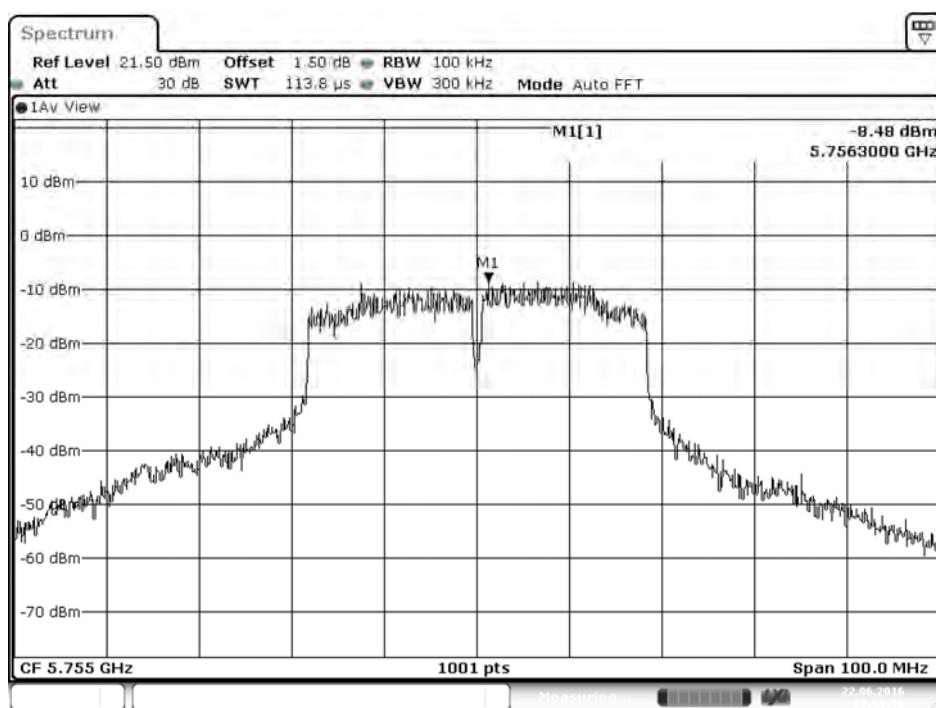
Date: 22.JUN.2016 07:53:27

Product : Intel® Dual Band Wireless-AC 3160
 Test Item : Peak Power Spectral Density
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit (802.11n-40BW-30Mbps)

Channel Number	Frequency (MHz)	PPSD (dBm)	BWCF (dB)	Total PPSD (dBm) ₁	Required Limit (dBm)	Result
151	5755	-8.48	6.98	-1.50	<30	Pass
159	5795	-7.46	6.98	-0.48	<30	Pass

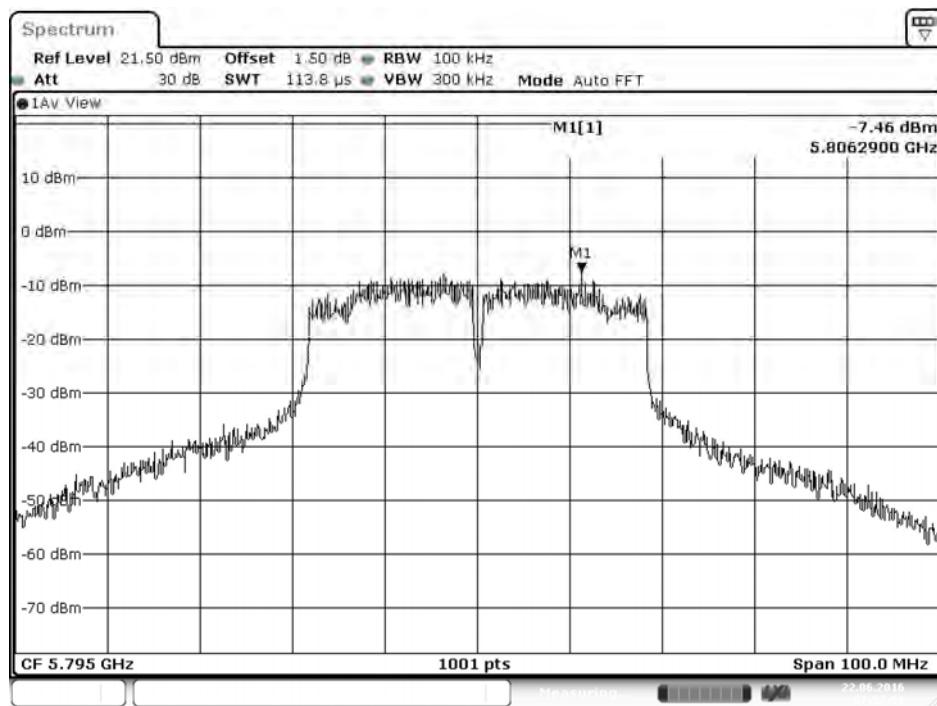
Note 1: The quantity $10 \log 2$ (two antennas) is added to the spectrum peak value according to document 662911 D01.

Channel 151



Date: 22.JUN.2016 07:55:50

Channel 159



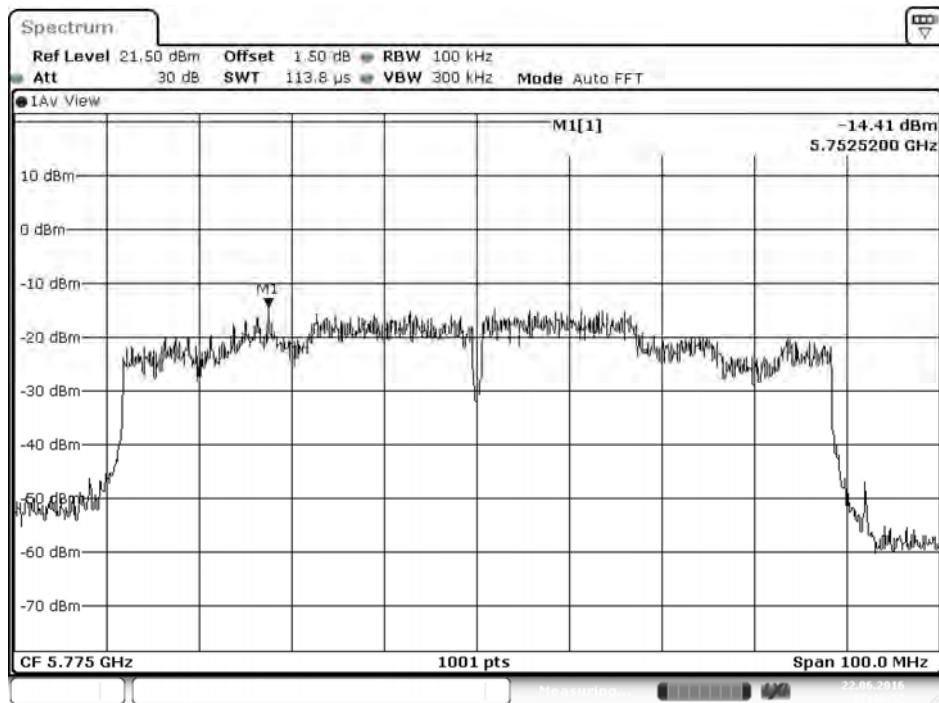
Date: 22.JUN.2016 07:57:51

Product : Intel® Dual Band Wireless-AC 3160
 Test Item : Peak Power Spectral Density
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit (802.11ac-80BW-65Mbps)

Channel Number	Frequency (MHz)	PPSD (dBm)	BWCF (dB)	Total PPSD (dBm) ₁	Required Limit (dBm)	Result
155	5775	-14.41	6.98	-7.430	<30	Pass

Note 1: The quantity $10 \log 2$ (two antennas) is added to the spectrum peak value according to document 662911 D01.

Channel 155:



Date: 22.JUN.2016 07:46:53

5. Radiated Emission

5.1. Test Equipment

The following test equipments are used during the radiated emission test:

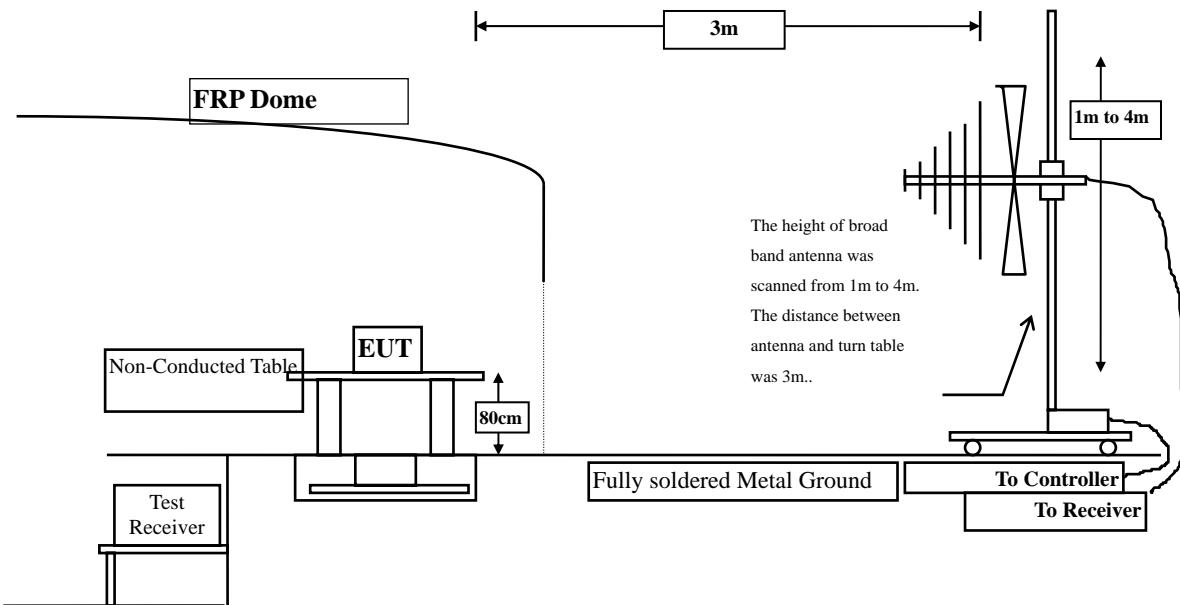
Test Site	Equipment		Manufacturer	Model No./Serial No.	Last Cal.
☒Site # 3	X	Magnetic Loop Antenna	Teseq	HLA6121/ 37133	Sep, 2015
	X	Bilog Antenna	Schaffner Chase	CBL6112B/ 2707	Jun, 2016
	X	EMI Test Receiver	R&S	ESCS 30/838251/ 001	Jun, 2016
	X	Coaxial Cable	QTK(Arnist)	RG 214/ LC003-RG	Jun, 2016
	X	Coaxial signal switch	Arnist	MP59B/ 6200798682	Jun, 2016

Test Site	Equipment		Manufacturer	Model No./Serial No.	Last Cal.
☒CB # 8	X	Spectrum Analyzer	R&S	FSP40/ 100339	Oct, 2015
	X	Horn Antenna	ETS-Lindgren	3117/ 35205	Mar, 2016
	X	Horn Antenna	Schwarzbeck	BBHA9170/209	Jan, 2016
	X	Horn Antenna	TRC	AH-0801/95051	Aug, 2015
	X	Pre-Amplifier	EMCI	EMC012630SE/980210	Jan, 2016
	X	Pre-Amplifier	MITEQ	JS41-001040000-58-5P/153945	Jul, 2016
	X	Pre-Amplifier	NARDA	DBL-1840N506/013	Jul, 2016

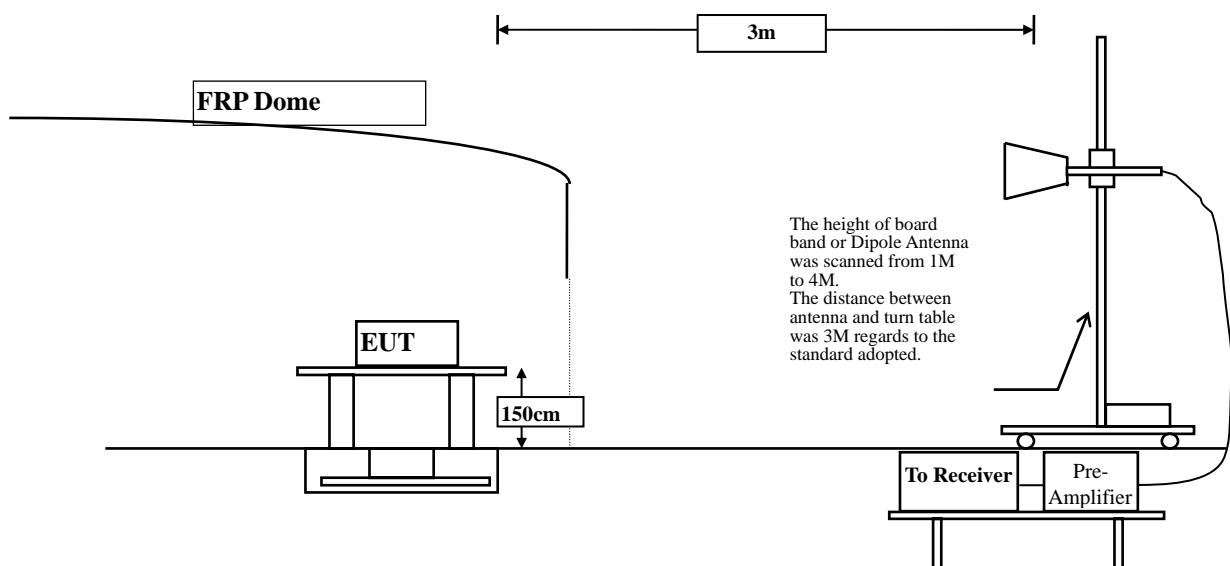
Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
 2. The test instruments marked with "X" are used to measure the final test results.

5.2. Test Setup

Radiated Emission Below 1GHz



Radiated Emission Above 1GHz



5.3. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209(a) Limits		
Frequency MHz	Field strength (microvolts/meter)	Measurement distance (meter)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remarks: E field strength (dB μ V/m) = 20 log E field strength (uV/m)

5.4. Test Procedure

The EUT was setup according to ANSI C63.10, 2013 and tested according to FCC KDB-789033 test procedure for compliance to FCC 47CFR 15. 407 requirements.

Measuring the frequency range below 1GHz, the EUT is placed on a turn table which is 0.8 meter above ground, when measuring the frequency range above 1GHz, 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 between 1 meter and 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 C63.10: 2013 on radiated measurement.

The resolution bandwidth below 30MHz setting on the field strength meter is 9kHz and 30MHz~1GHz is 120kHz and above 1GHz is 1MHz.

Radiated emission measurements below 30MHz are made using Loop Antenna and 30MHz~1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna.

The worst radiated emission is measured in the Open Area Test Site on the Final Measurement.

The measurement frequency range from 9kHz - 10th Harmonic of fundamental was investigated.

5.5. Uncertainty

± 3.8 dB below 1GHz

± 3.9 dB above 1GHz

5.6. Test Result of Radiated Emission

Product : Intel® Dual Band Wireless-AC 3160
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5745MHz)

Frequency MHz	Correct Factor	Reading Level dB	Measurement Level dB μ V/m	Margin dB	Limit dB μ V/m
Horizontal					
Peak Detector:					
11490.000	4.683	41.520	46.204	-27.796	74.000
17235.000	*	*	*	*	74.000
20720.000	*	*	*	*	74.000
25900.000	*	*	*	*	74.000
31080.000	*	*	*	*	74.000
36260.000	*	*	*	*	74.000
Average					
Detector:					
*	*	*	*	*	*
Vertical					
Peak Detector:					
11490.000	4.683	42.330	47.014	-26.986	74.000
17235.000	*	*	*	*	74.000
20720.000	*	*	*	*	74.000
25900.000	*	*	*	*	74.000
31080.000	*	*	*	*	74.000
36260.000	*	*	*	*	74.000
Average					
Detector:					
*	*	*	*	*	*

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Intel® Dual Band Wireless-AC 3160
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5785MHz)

Frequency MHz	Correct Factor	Reading Level dB μ V	Measurement Level dB μ V/m	Margin dB	Limit dB μ V/m
Horizontal					
Peak Detector:					
11570.000	4.897	41.400	46.297	-27.703	74.000
17355.000	*	*	*	*	74.000
20800.000	*	*	*	*	74.000
26000.000	*	*	*	*	74.000
31200.000	*	*	*	*	74.000
36400.000	*	*	*	*	74.000
Average Detector:					
*	*	*	*	*	*
Vertical					
Peak Detector:					
11570.000	4.897	42.190	47.087	-26.913	74.000
17355.000	*	*	*	*	74.000
20800.000	*	*	*	*	74.000
26000.000	*	*	*	*	74.000
31200.000	*	*	*	*	74.000
36400.000	*	*	*	*	74.000
Average Detector:					
*	*	*	*	*	*

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Intel® Dual Band Wireless-AC 3160
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5825MHz)

Frequency MHz	Correct Factor	Reading Level dB μ V	Measurement Level dB μ V/m	Margin dB	Limit dB μ V/m
Horizontal					
Peak Detector:					
11650.000	5.101	44.570	49.671	-24.329	74.000
17475.000	*	*	*	*	74.000
20960.000	*	*	*	*	74.000
26200.000	*	*	*	*	74.000
31440000	*	*	*	*	74.000
36680.000	*	*	*	*	74.000
Average Detector:					
*	*	*	*	*	*
Vertical					
Peak Detector:					
11650.000	5.101	47.290	52.391	-21.609	74.000
17475.000	*	*	*	*	74.000
20960.000	*	*	*	*	74.000
26200.000	*	*	*	*	74.000
31440000	*	*	*	*	74.000
36680.000	*	*	*	*	74.000
Average Detector:					
*	*	*	*	*	*

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Intel® Dual Band Wireless-AC 3160
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11n-20BW-14.4Mbps) (5745MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB μ V	dB μ V/m	dB	dB μ V/m
Horizontal					
Peak Detector:					
11490.000	4.683	41.580	46.264	-27.736	74.000
17235.000	*	*	*	*	74.000
20720.000	*	*	*	*	74.000
25900.000	*	*	*	*	74.000
31080.000	*	*	*	*	74.000
36260.000	*	*	*	*	74.000
Average					
Detector:					
*	*	*	*	*	*
Vertical					
Peak Detector:					
11490.000	4.683	40.600	45.284	-28.716	74.000
17235.000	*	*	*	*	74.000
20720.000	*	*	*	*	74.000
25900.000	*	*	*	*	74.000
31080.000	*	*	*	*	74.000
36260.000	*	*	*	*	74.000
Average					
Detector:					
*	*	*	*	*	*

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Intel® Dual Band Wireless-AC 3160
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11n-20BW-14.4Mbps) (5785MHz)

Frequency MHz	Correct Factor	Reading Level dB μ V	Measurement Level dB μ V/m	Margin dB	Limit dB μ V/m
Horizontal					
Peak Detector:					
11570.000	4.897	41.240	46.137	-27.863	74.000
17355.000	*	*	*	*	74.000
20880.000	*	*	*	*	74.000
26100.000	*	*	*	*	74.000
31320.000	*	*	*	*	74.000
36540.000	*	*	*	*	74.000
Average Detector:					
*	*	*	*	*	*
Vertical					
Peak Detector:					
11570.000	4.897	41.920	46.817	-27.183	74.000
17355.000	*	*	*	*	74.000
20880.000	*	*	*	*	74.000
26100.000	*	*	*	*	74.000
31320.000	*	*	*	*	74.000
36540.000	*	*	*	*	74.000
Average Detector:					
*	*	*	*	*	*

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Intel® Dual Band Wireless-AC 3160
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11n-20BW-14.4Mbps) (5825MHz)

Frequency MHz	Correct Factor	Reading Level dB μ V	Measurement Level dB μ V/m	Margin dB	Limit dB μ V/m
Horizontal					
Peak Detector:					
11650.000	5.101	44.250	49.351	-24.649	74.000
17475.000	*	*	*	*	74.000
20960.000	*	*	*	*	74.000
26200.000	*	*	*	*	74.000
31440.000	*	*	*	*	74.000
36680.000	*	*	*	*	74.000
Average Detector:					
*	*	*	*	*	*
Vertical					
Peak Detector:					
11650.000	5.101	47.160	52.261	-21.739	74.000
17475.000	*	*	*	*	74.000
20960.000	*	*	*	*	74.000
26200.000	*	*	*	*	74.000
31440.000	*	*	*	*	74.000
36680.000	*	*	*	*	74.000
Average Detector:					
*	*	*	*	*	*

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Intel® Dual Band Wireless-AC 3160
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit (802.11n-40BW-30Mbps) (5755MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB μ V	dB μ V/m	dB	dB μ V/m

Horizontal

Peak Detector:

11510.000	4.738	40.610	45.348	-28.652	74.000
17265.000	*	*	*	*	74.000
20760.000	*	*	*	*	74.000
25950.000	*	*	*	*	74.000
31140.000	*	*	*	*	74.000
36330.000	*	*	*	*	74.000

Average

Detector:

*	*	*	*	*	*
---	---	---	---	---	---

Vertical

Peak Detector:

11510.000	4.738	41.020	45.758	-28.242	74.000
17265.000	*	*	*	*	74.000
20760.000	*	*	*	*	74.000
25950.000	*	*	*	*	74.000
31140.000	*	*	*	*	74.000
36330.000	*	*	*	*	74.000

Average

Detector:

*	*
---	---

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Intel® Dual Band Wireless-AC 3160
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit (802.11n-40BW-30Mbps) (5795MHz)

Frequency MHz	Correct Factor	Reading Level dB μ V	Measurement Level dB μ V/m	Margin dB	Limit dB μ V/m
Horizontal					
Peak Detector:					
11590.000	4.948	40.880	45.828	-28.172	74.000
17385.000	*	*	*	*	74.000
20920.000	*	*	*	*	74.000
26150.000	*	*	*	*	74.000
31380.000	*	*	*	*	74.000
36610.000	*	*	*	*	74.000
Average Detector:					
*	*	*	*	*	*
Vertical					
Peak Detector:					
11590.000	4.948	41.620	46.568	-27.432	74.000
17385.000	*	*	*	*	74.000
20920.000	*	*	*	*	74.000
26150.000	*	*	*	*	74.000
31380.000	*	*	*	*	74.000
36610.000	*	*	*	*	74.000
Average Detector:					
*	*	*	*	*	*

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Intel® Dual Band Wireless-AC 3160
 Test Item : Harmonic Radiated Emission Data
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit (802.11ac-80BW-65Mbps) (5775MHz)

Frequency MHz	Correct Factor	Reading Level dB μ V	Measurement Level dB μ V/m	Margin dB	Limit dB μ V/m
Horizontal					
Peak Detector:					
11550.000	4.836	41.030	45.866	-28.134	74.000
17325.000	*	*	*	*	74.000
20720.000	*	*	*	*	74.000
25900.000	*	*	*	*	74.000
31080.000	*	*	*	*	74.000
36260.000	*	*	*	*	74.000
Average Detector:					
*	*	*	*	*	*
Vertical					
Peak Detector:					
11550.000	4.836	40.780	45.616	-28.384	74.000
17325.000	*	*	*	*	74.000
20720.000	*	*	*	*	74.000
25900.000	*	*	*	*	74.000
31080.000	*	*	*	*	74.000
36260.000	*	*	*	*	74.000
Average Detector:					
*	*	*	*	*	*

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Intel® Dual Band Wireless-AC 3160
 Test Item : General Radiated Emission
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5785MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB μ V	dB μ V/m	dB	dB μ V/m

Horizontal

Peak Detector

166.362	-10.900	41.989	31.090	-12.410	43.500
221.188	-13.063	48.032	34.969	-11.031	46.000
319.594	-9.716	44.135	34.419	-11.581	46.000
633.087	-3.373	40.084	36.712	-9.288	46.000
800.377	-1.066	34.965	33.899	-12.101	46.000
960.638	1.106	36.419	37.524	-16.476	54.000

Vertical

Peak Detector

104.507	-15.252	37.659	22.408	-21.092	43.500
211.348	-13.304	41.778	28.474	-15.026	43.500
395.507	-7.899	35.759	27.860	-18.140	46.000
479.855	-6.163	40.946	34.783	-11.217	46.000
600.754	-3.633	39.688	36.056	-9.944	46.000
960.638	1.106	31.185	32.290	-21.710	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : Intel® Dual Band Wireless-AC 3160
 Test Item : General Radiated Emission
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11n-20BW-14.4Mbps) (5785MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB μ V	dB μ V/m	dB	dB μ V/m

Horizontal

Peak Detector

164.957	-10.850	40.729	29.878	-13.622	43.500
222.594	-13.017	47.285	34.268	-11.732	46.000
316.783	-9.784	44.276	34.492	-11.508	46.000
395.507	-7.899	40.940	33.041	-12.959	46.000
630.275	-3.397	41.561	38.164	-7.836	46.000
900.188	0.430	32.164	32.594	-13.406	46.000

Vertical

Peak Detector

238.058	-12.187	42.082	29.895	-16.105	46.000
395.507	-7.899	35.104	27.205	-18.795	46.000
479.855	-6.163	41.771	35.608	-10.392	46.000
567.014	-4.501	39.621	35.120	-10.880	46.000
630.275	-3.397	39.631	36.234	-9.766	46.000
960.638	1.106	31.240	32.345	-21.655	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : Intel® Dual Band Wireless-AC 3160
 Test Item : General Radiated Emission
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit (802.11n-40BW-30Mbps) (5755MHz)

Frequency MHz	Correct Factor	Reading dB	Measurement Level dB μ V	Margin dB	Limit dB μ V/m
Horizontal					
Peak Detector					
219.783	-13.107	48.159	35.052	-10.948	46.000
316.783	-9.784	44.326	34.542	-11.458	46.000
479.855	-6.163	38.175	32.012	-13.988	46.000
633.087	-3.373	40.812	37.440	-8.560	46.000
734.304	-1.758	35.834	34.076	-11.924	46.000
900.188	0.430	32.497	32.927	-13.073	46.000
Vertical					
Peak Detector					
212.754	-13.272	43.016	29.745	-13.755	43.500
391.290	-7.998	34.518	26.520	-19.480	46.000
479.855	-6.163	41.952	35.789	-10.211	46.000
567.014	-4.501	39.205	34.704	-11.296	46.000
624.652	-3.446	38.330	34.884	-11.116	46.000
960.638	1.106	31.898	33.003	-20.997	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : Intel® Dual Band Wireless-AC 3160
 Test Item : General Radiated Emission
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit (802.11ac-80BW-65Mbps) (5775MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB μ V	dB μ V/m	dB	dB μ V/m

Horizontal

Peak Detector

219.783	-13.107	47.285	34.178	-11.822	46.000
319.594	-9.716	45.812	36.096	-9.904	46.000
392.696	-7.964	41.928	33.964	-12.036	46.000
479.855	-6.163	39.600	33.437	-12.563	46.000
633.087	-3.373	40.898	37.526	-8.474	46.000
960.638	1.106	31.542	32.647	-21.353	54.000

Vertical

Peak Detector

105.913	-15.003	38.267	23.264	-20.236	43.500
250.710	-11.908	40.824	28.916	-17.084	46.000
479.855	-6.163	41.312	35.149	-10.851	46.000
567.014	-4.501	36.679	32.178	-13.822	46.000
633.087	-3.373	39.960	36.588	-9.412	46.000
877.696	0.114	30.437	30.551	-15.449	46.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

6. Band Edge

6.1. Test Equipment

RF Radiated Measurement:

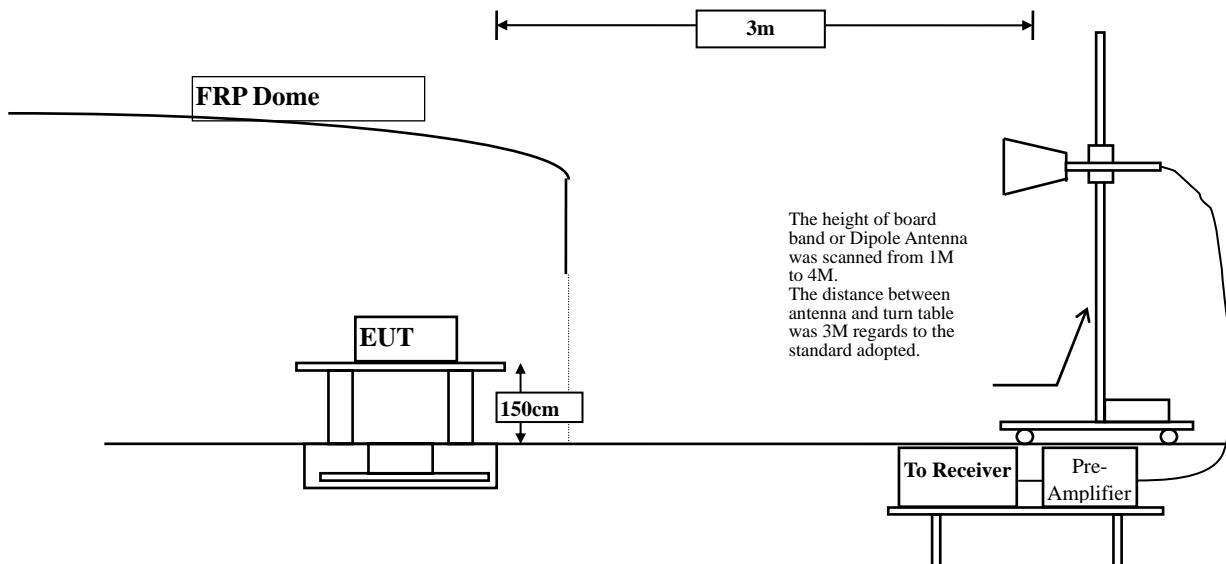
The following test equipments are used during the band edge tests:

Test Site	Equipment		Manufacturer	Model No./Serial No.	Last Cal.
CB # 8	X	Spectrum Analyzer	R&S	FSP40/ 100339	Oct, 2015
	X	Horn Antenna	ETS-Lindgren	3117/ 35205	Mar, 2016
	X	Horn Antenna	Schwarzbeck	BBHA9170/209	Jan, 2016
	X	Horn Antenna	TRC	AH-0801/95051	Aug, 2015
	X	Pre-Amplifier	EMCI	EMC012630SE/980210	Jan, 2016
	X	Pre-Amplifier	MITEQ	JS41-001040000-58-5P/153945	Jul, 2016
	X	Pre-Amplifier	NARDA	DBL-1840N506/013	Jul, 2016

Note: 1. All instruments are calibrated every one year.
2. The test instruments marked by “X” are used to measure the final test results.

6.2. Test Setup

RF Radiated Measurement:



6.3. Limits

The provisions of Section 15.205 of this part apply to intentional radiators operating under this section.

Radiated emissions which fall in the restricted bands, as defined in Section 15.205, must also comply with the radiated emission limits specified in Section 15.209:

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency MHz	uV/m @3m	dB μ V/m@3m
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Remarks : 1. RF Voltage (dB μ V) = 20 log RF Voltage (uV)
 2. In the Above Table, the tighter limit applies at the band edges.
 3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

6.4. Test Procedure

The EUT is placed on a turn table which is 1.5 meter above ground. The turn table can rotate 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 can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10:2013 on radiated measurement.

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

The EUT was setup to ANSI C63.10, 2013; tested to UNII test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.

6.5. Uncertainty

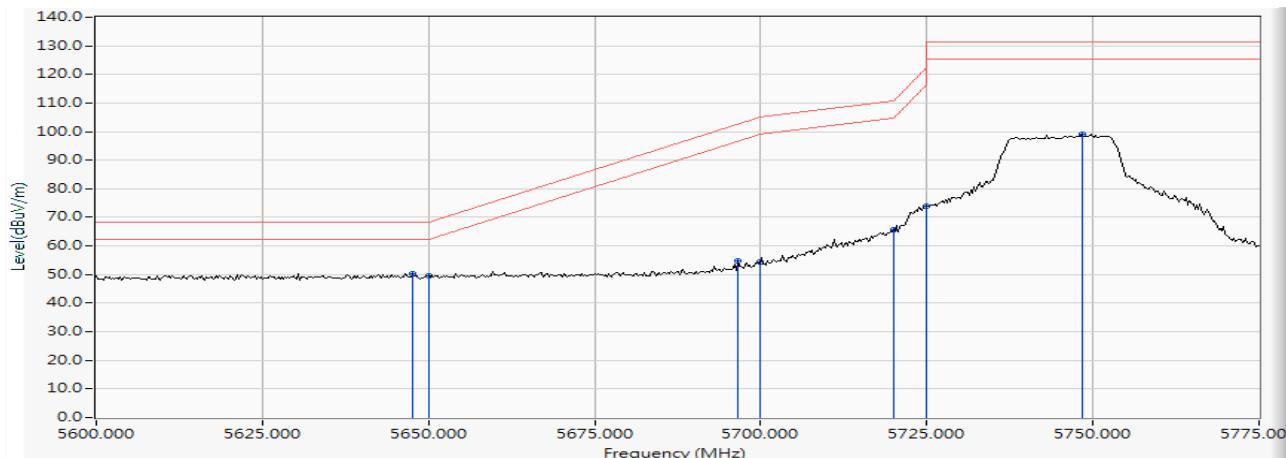
± 3.8 dB below 1GHz

± 3.9 dB above 1GHz

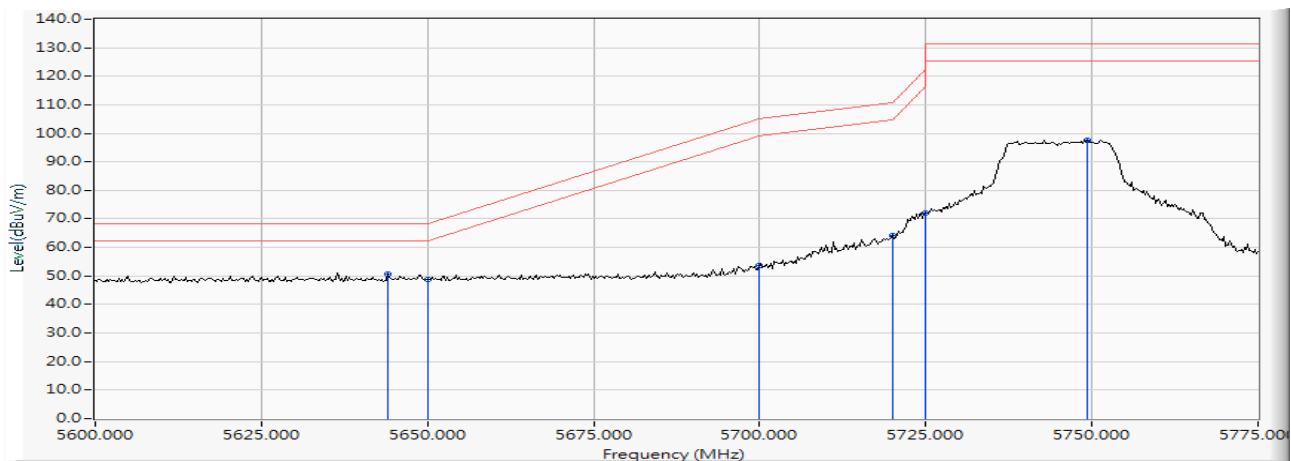
6.6. Test Result of Band Edge

Product : Intel® Dual Band Wireless-AC 3160
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11a-6Mbps)-Channel 149

RF Radiated Measurement:



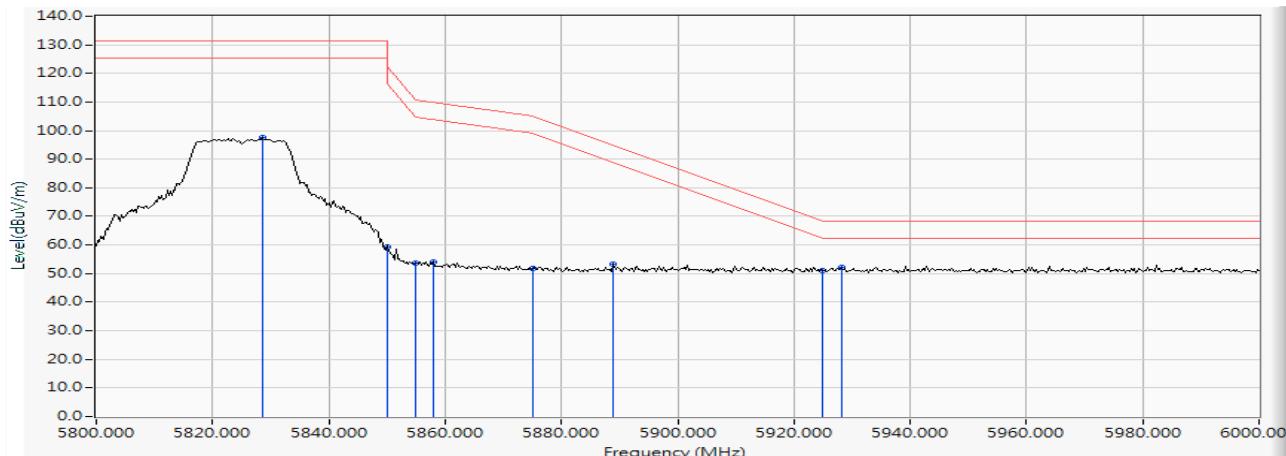
	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Measure Level (dB μ V /m)	Margin (dB)	Limit (dB μ V /m)	Result
Horizontal	5647.681	18.759	31.482	50.242	-17.978	68.220	Pass
Horizontal	5650.000	18.766	30.762	49.529	-18.691	68.220	Pass
Horizontal	5696.630	18.907	35.999	54.906	-47.802	102.708	Pass
Horizontal	5700.000	18.917	35.320	54.237	-50.963	105.200	Pass
Horizontal	5720.000	18.977	46.555	65.532	-45.268	110.800	Pass
Horizontal	5725.000	18.993	54.933	73.926	-48.274	122.200	Pass
Horizontal	5748.370	19.074	79.978	99.052	-32.148	131.200	Pass



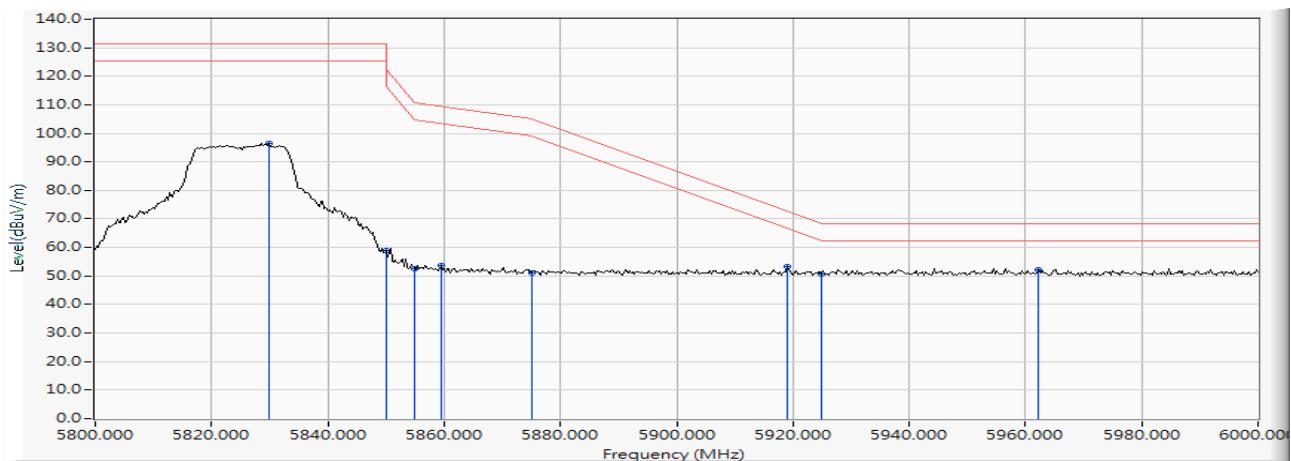
	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Measure Level (dB μ V /m)	Margin (dB)	Limit (dB μ V /m)	Result
Vertical	5644.130	18.749	31.867	50.616	-17.604	68.220	Pass
Vertical	5650.000	18.766	29.974	48.741	-19.479	68.220	Pass
Vertical	5700.000	18.917	34.586	53.503	-51.697	105.200	Pass
Vertical	5720.000	18.977	45.239	64.216	-46.584	110.800	Pass
Vertical	5725.000	18.993	53.006	71.999	-50.201	122.200	Pass
Vertical	5749.384	19.077	78.522	97.599	-33.601	131.200	Pass

Product : Intel® Dual Band Wireless-AC 3160
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11a-6Mbps)-Channel 165

RF Radiated Measurement:



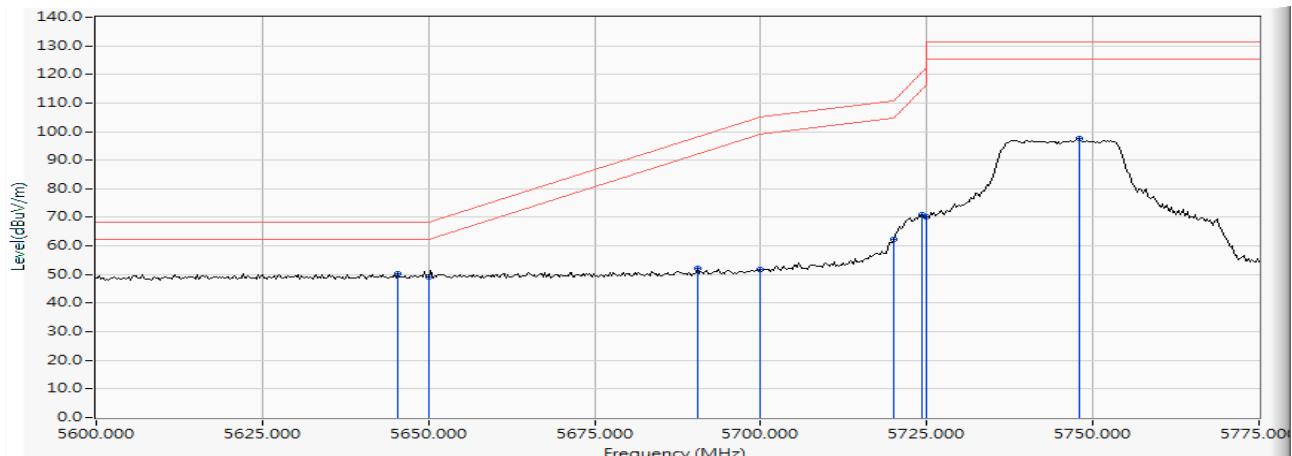
	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Measure Level (dB μ V /m)	Margin (dB)	Limit (dB μ V /m)	Result
Horizontal	5828.696	19.384	78.254	97.638	-33.562	131.200	Pass
Horizontal	5850.000	19.468	39.737	59.205	-62.995	122.200	Pass
Horizontal	5855.000	19.487	34.025	53.512	-57.288	110.800	Pass
Horizontal	5857.971	19.497	34.732	54.229	-55.739	109.968	Pass
Horizontal	5875.000	19.558	32.091	51.649	-53.551	105.200	Pass
Horizontal	5888.986	19.618	33.860	53.478	-41.372	94.850	Pass
Horizontal	5925.000	19.755	31.175	50.931	-17.269	68.200	Pass
Horizontal	5928.116	19.767	32.462	52.230	-15.970	68.200	Pass



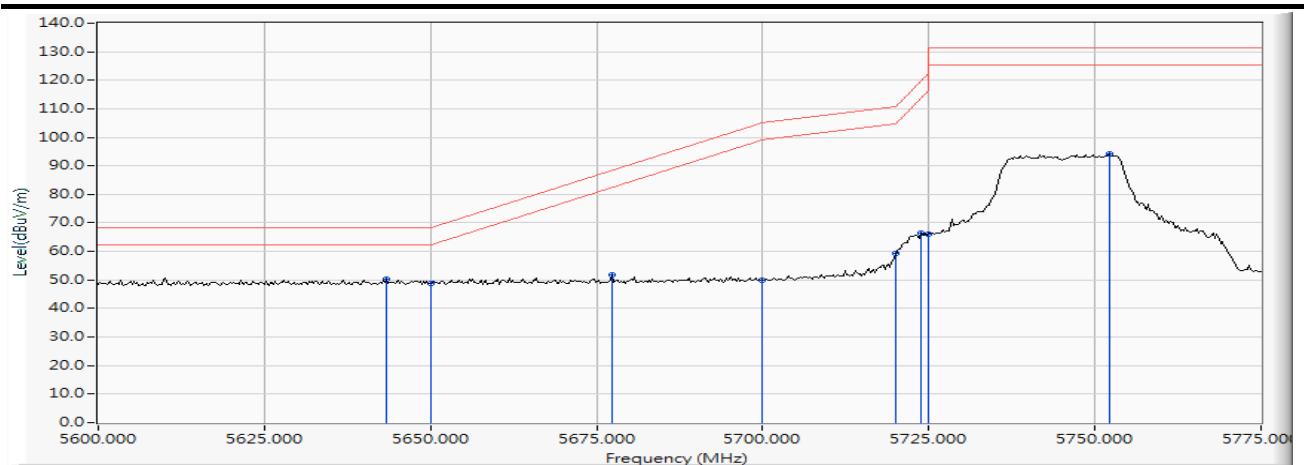
	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Measure Level (dB μ V /m)	Margin (dB)	Limit (dB μ V /m)	Result
Vertical	5829.855	19.387	77.152	96.540	-34.660	131.200	Pass
Vertical	5850.000	19.468	39.401	58.869	-63.331	122.200	Pass
Vertical	5855.000	19.487	33.026	52.513	-58.287	110.800	Pass
Vertical	5859.420	19.502	34.028	53.530	-56.032	109.562	Pass
Vertical	5875.000	19.558	31.375	50.933	-54.267	105.200	Pass
Vertical	5919.130	19.730	33.422	53.153	-19.391	72.544	Pass
Vertical	5925.000	19.755	31.023	50.779	-17.421	68.200	Pass
Vertical	5962.319	19.890	32.407	52.297	-15.903	68.200	Pass

Product : Intel® Dual Band Wireless-AC 3160
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11n-20BW-14.4Mbps) -Channel 149

RF Radiated Measurement:



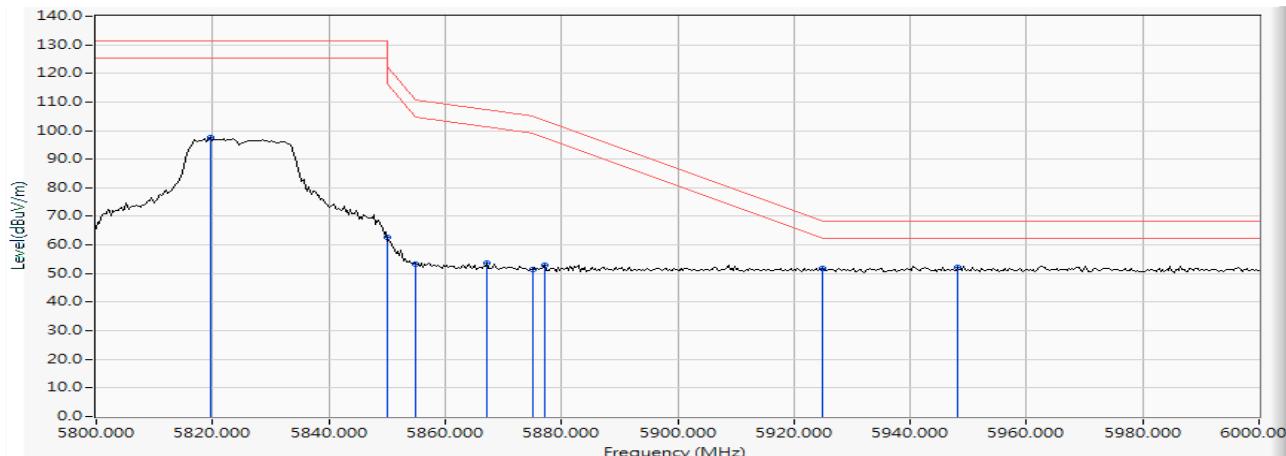
	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Measure Level (dB μ V /m)	Margin (dB)	Limit (dB μ V /m)	Result
Horizontal	5645.399	18.752	31.490	50.243	-17.977	68.220	Pass
Horizontal	5650.000	18.766	30.413	49.180	-19.040	68.220	Pass
Horizontal	5690.543	18.888	33.106	51.994	-46.212	98.206	Pass
Horizontal	5700.000	18.917	32.739	51.656	-53.544	105.200	Pass
Horizontal	5720.000	18.977	43.286	62.263	-48.537	110.800	Pass
Horizontal	5724.275	18.991	52.101	71.091	-49.456	120.547	Pass
Horizontal	5725.000	18.993	51.072	70.065	-52.135	122.200	Pass
Horizontal	5747.862	19.072	78.482	97.554	-33.646	131.200	Pass



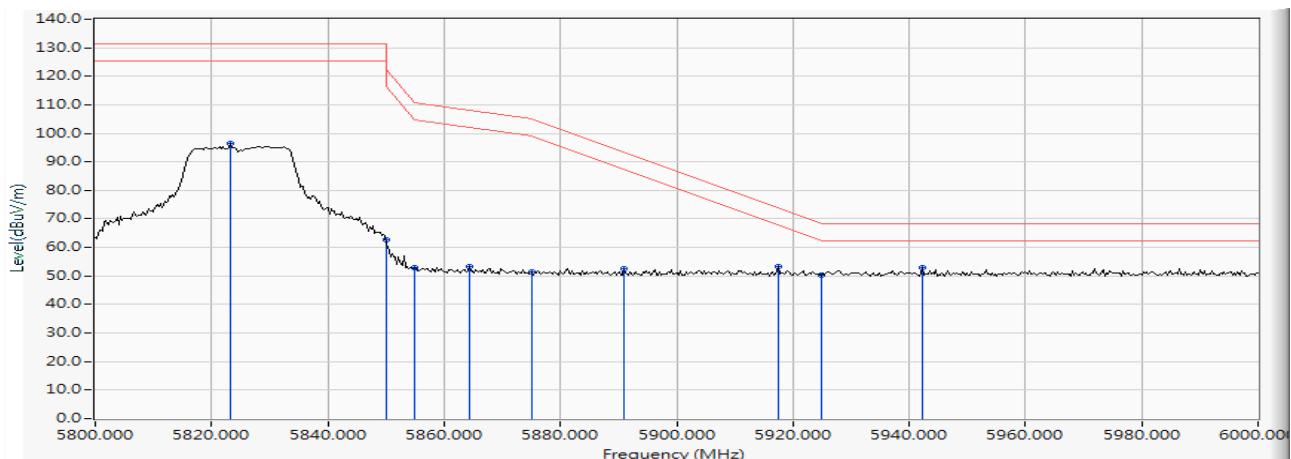
	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Measure Level (dB μ V /m)	Margin (dB)	Limit (dB μ V /m)	Result
5643.370	18.747	31.377	50.124	-18.096	68.220	-27.000	Pass
5650.000	18.766	30.046	48.813	-19.407	68.220	-17.000	Pass
5677.355	18.850	32.844	51.693	-36.759	88.452	-27.000	Pass
5700.000	18.917	31.131	50.048	-55.152	105.200	-17.000	Pass
5720.000	18.977	40.260	59.237	-51.563	110.800	-27.000	Pass
5723.768	18.988	47.323	66.312	-53.079	119.391	-17.000	Pass
5725.000	18.993	47.186	66.179	-56.021	122.200	-27.000	Pass
5752.174	19.085	75.179	94.264	-36.936	131.200	-17.000	Pass

Product : Intel® Dual Band Wireless-AC 3160
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11n-20BW-14.4Mbps) -Channel 165

RF Radiated Measurement:



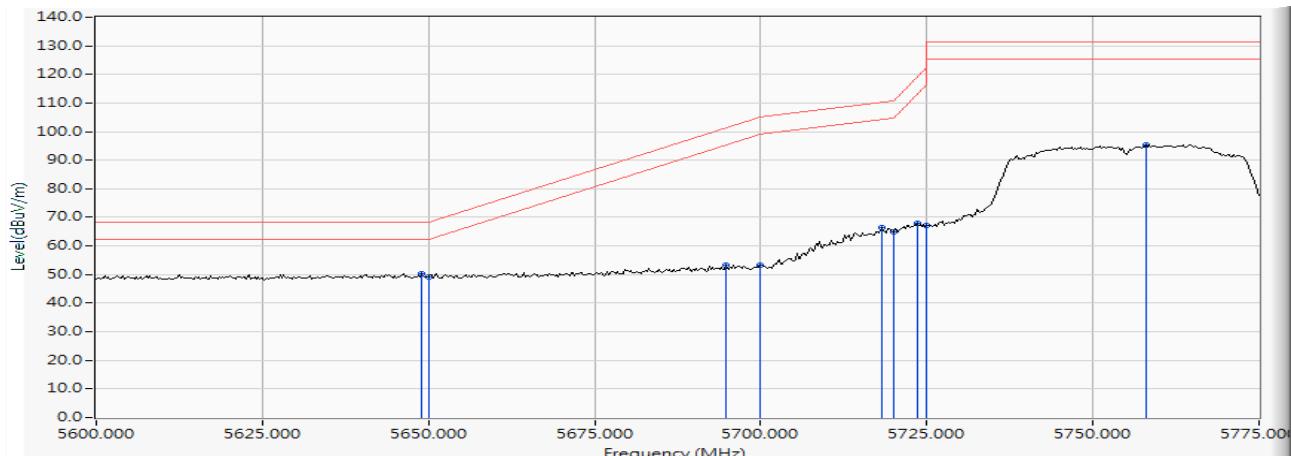
	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Measure Level (dB μ V /m)	Margin (dB)	Limit (dB μ V /m)	Result
Horizontal	5819.710	19.360	78.089	97.449	-33.751	131.200	Pass
Horizontal	5850.000	19.468	43.277	62.745	-59.455	122.200	Pass
Horizontal	5855.000	19.487	33.841	53.328	-57.472	110.800	Pass
Horizontal	5867.246	19.527	34.082	53.609	-53.762	107.371	Pass
Horizontal	5875.000	19.558	31.820	51.378	-53.822	105.200	Pass
Horizontal	5877.101	19.567	33.345	52.912	-50.733	103.645	Pass
Horizontal	5925.000	19.755	31.901	51.657	-16.543	68.200	Pass
Horizontal	5948.116	19.841	32.391	52.232	-15.968	68.200	Pass



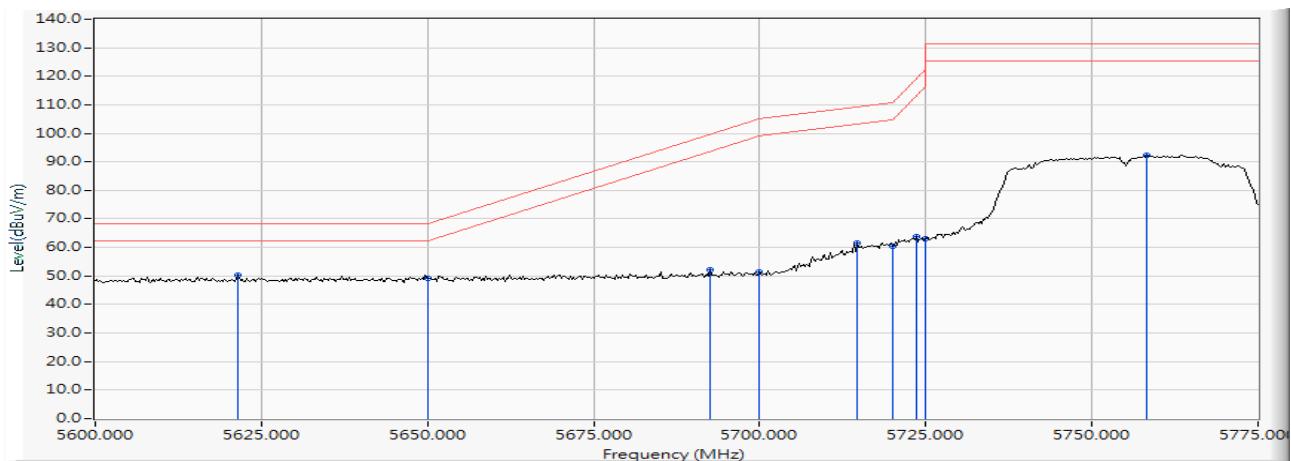
	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Measure Level (dB μ V /m)	Margin (dB)	Limit (dB μ V /m)	Result
Vertical	5823.188	19.369	77.005	96.374	-34.826	131.200	Pass
Vertical	5850.000	19.468	43.120	62.588	-59.612	122.200	Pass
Vertical	5855.000	19.487	33.345	52.832	-57.968	110.800	Pass
Vertical	5864.348	19.518	33.872	53.390	-54.793	108.183	Pass
Vertical	5875.000	19.558	31.988	51.546	-53.654	105.200	Pass
Vertical	5891.015	19.625	32.766	52.391	-40.958	93.349	Pass
Vertical	5917.391	19.723	33.527	53.250	-20.581	73.831	Pass
Vertical	5925.000	19.755	30.619	50.375	-17.825	68.200	Pass
Vertical	5942.319	19.822	32.969	52.791	-15.409	68.200	Pass

Product : Intel® Dual Band Wireless-AC 3160
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit (802.11n-40BW-30Mbps) -Channel 151

RF Radiated Measurement :



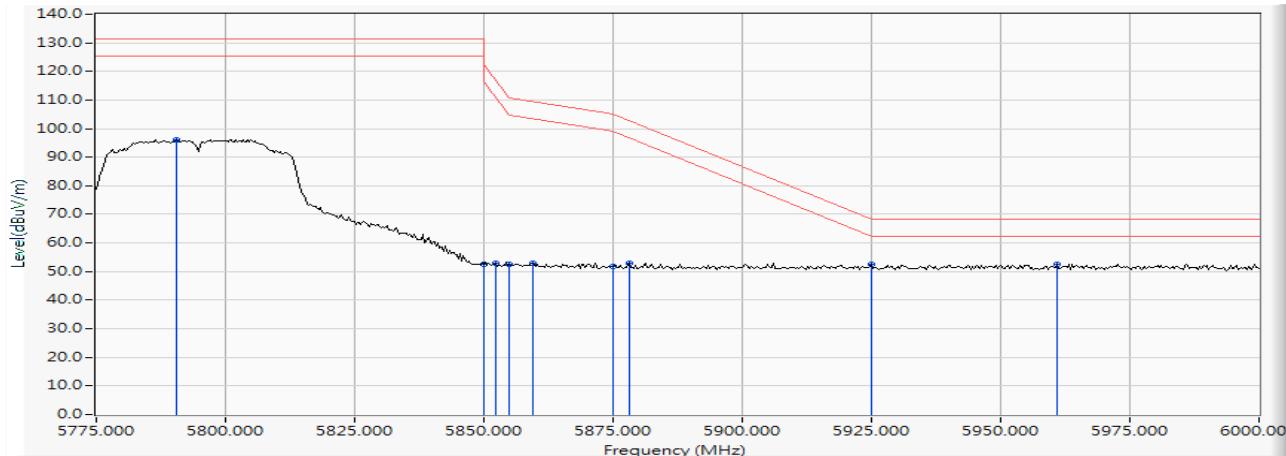
	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Measure Level (dB μ V /m)	Margin (dB)	Limit (dB μ V /m)	Result
Horizontal	5648.949	18.764	31.701	50.464	-17.756	68.220	Pass
Horizontal	5650.000	18.766	30.580	49.347	-18.873	68.220	Pass
Horizontal	5694.855	18.901	34.563	53.464	-47.931	101.395	Pass
Horizontal	5700.000	18.917	34.326	53.243	-51.957	105.200	Pass
Horizontal	5718.188	18.972	47.311	66.283	-44.010	110.293	Pass
Horizontal	5720.000	18.977	45.923	64.900	-45.900	110.800	Pass
Horizontal	5723.514	18.988	48.816	67.804	-51.008	118.812	Pass
Horizontal	5725.000	18.993	48.104	67.097	-55.103	122.200	Pass
Horizontal	5758.007	19.102	76.216	95.317	-35.883	131.200	Pass



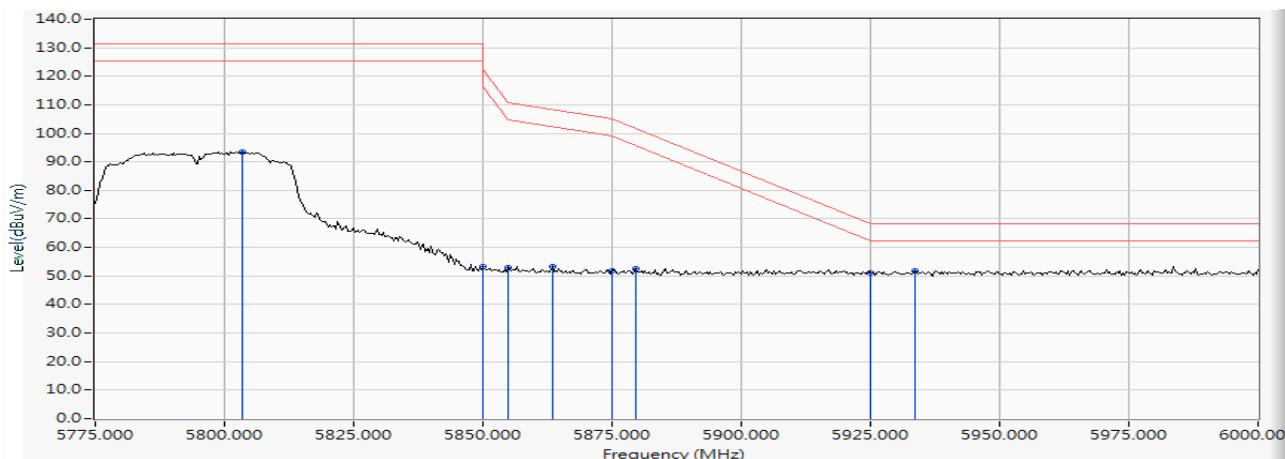
	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Measure Level (dB μ V /m)	Margin (dB)	Limit (dB μ V /m)	Result
Vertical	5621.558	18.689	31.695	50.384	-17.836	68.220	Pass
Vertical	5650.000	18.766	30.350	49.117	-19.103	68.220	Pass
Vertical	5692.572	18.894	33.220	52.114	-47.592	99.706	Pass
Vertical	5700.000	18.917	32.344	51.261	-53.939	105.200	Pass
Vertical	5714.638	18.962	42.515	61.477	-47.822	109.299	Pass
Vertical	5720.000	18.977	41.581	60.558	-50.242	110.800	Pass
Vertical	5723.514	18.988	44.887	63.875	-54.937	118.812	Pass
Vertical	5725.000	18.993	44.014	63.007	-59.193	122.200	Pass
Vertical	5758.261	19.102	73.271	92.373	-38.827	131.200	Pass

Product : Intel® Dual Band Wireless-AC 3160
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit (802.11n-40BW-30Mbps) -Channel 159

RF Radiated Measurement:



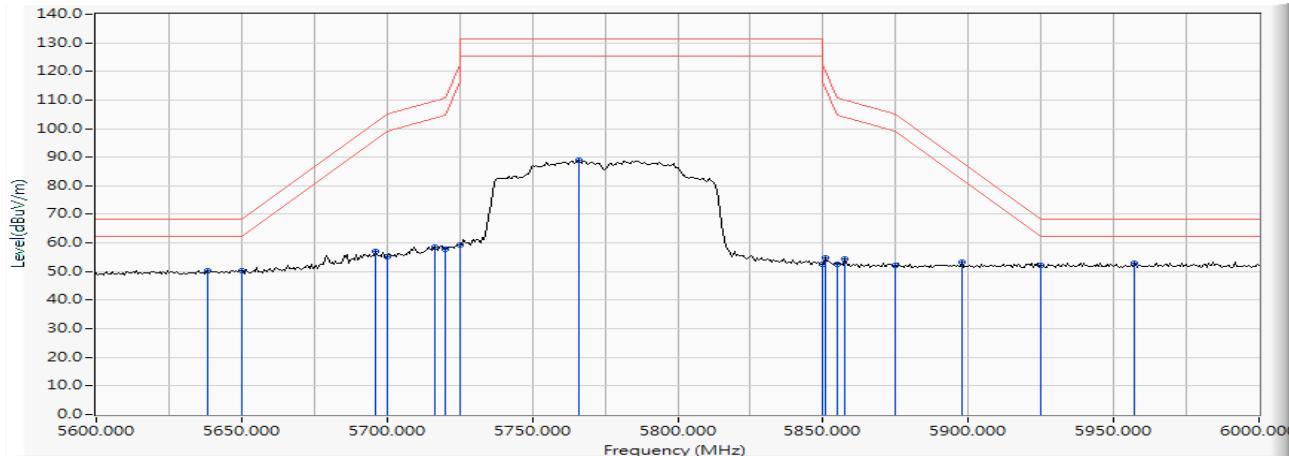
	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Measure Level (dB μ V /m)	Margin (dB)	Limit (dB μ V /m)	Result
Horizontal	5790.652	19.233	77.005	96.238	-34.962	131.200	Pass
Horizontal	5850.000	19.468	32.905	52.373	-69.827	122.200	Pass
Horizontal	5852.283	19.479	33.334	52.812	-64.183	116.995	Pass
Horizontal	5855.000	19.487	33.053	52.540	-58.260	110.800	Pass
Horizontal	5859.457	19.502	33.482	52.984	-56.568	109.552	Pass
Horizontal	5875.000	19.558	32.179	51.737	-53.463	105.200	Pass
Horizontal	5878.043	19.572	33.362	52.933	-50.015	102.948	Pass
Horizontal	5925.000	19.755	32.618	52.374	-15.826	68.200	Pass
Horizontal	5960.870	19.884	32.846	52.730	-15.470	68.200	Pass



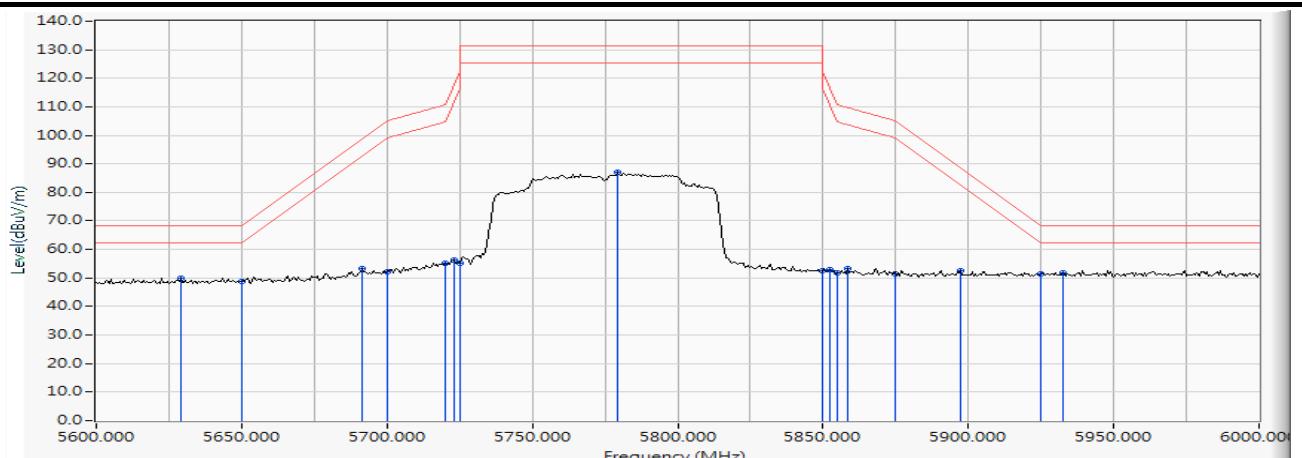
	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Measure Level (dB μ V /m)	Margin (dB)	Limit (dB μ V /m)	Result
Vertical	5803.370	19.287	74.184	93.471	-37.729	131.200	Pass
Vertical	5850.000	19.468	33.967	53.435	-68.765	122.200	Pass
Vertical	5855.000	19.487	33.312	52.799	-58.001	110.800	Pass
Vertical	5863.370	19.515	33.641	53.156	-55.300	108.456	Pass
Vertical	5875.000	19.558	32.110	51.668	-53.532	105.200	Pass
Vertical	5879.674	19.578	32.964	52.542	-49.199	101.741	Pass
Vertical	5925.000	19.755	31.368	51.124	-17.076	68.200	Pass
Vertical	5933.478	19.788	32.032	51.820	-16.380	68.200	Pass

Product : Intel® Dual Band Wireless-AC 3160
 Test Item : Band Edge Data
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit (802.11ac-80BW-65Mbps)-Channel 155

RF Radiated Measurement:



	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Measure Level (dB μ V / m)	Margin (dB)	Limit (dB μ V / m)	Result
Horizontal	5638.261	18.731	31.745	50.476	-17.744	68.220	Pass
Horizontal	5650.000	18.766	31.443	50.210	-18.010	68.220	Pass
Horizontal	5696.232	18.905	38.119	57.025	-45.388	102.413	Pass
Horizontal	5700.000	18.917	36.251	55.168	-50.032	105.200	Pass
Horizontal	5716.522	18.967	39.733	58.700	-51.126	109.826	Pass
Horizontal	5720.000	18.977	38.742	57.719	-53.081	110.800	Pass
Horizontal	5725.000	18.993	40.156	59.149	-63.051	122.200	Pass
Horizontal	5765.797	19.131	69.734	88.864	-42.336	131.200	Pass
Horizontal	5850.000	19.468	33.165	52.633	-69.567	122.200	Pass
Horizontal	5851.014	19.473	35.249	54.722	-65.166	119.888	Pass
Horizontal	5855.000	19.487	33.072	52.559	-58.241	110.800	Pass
Horizontal	5857.391	19.495	34.793	54.288	-55.843	110.131	Pass
Horizontal	5875.000	19.558	32.523	52.081	-53.119	105.200	Pass
Horizontal	5897.971	19.648	33.523	53.171	-35.030	88.201	Pass
Horizontal	5925.000	19.755	32.389	52.145	-16.055	68.200	Pass
Horizontal	5957.101	19.870	33.208	53.078	-15.122	68.200	Pass



	Frequency (MHz)	Correct Factor (dB)	Reading Level (dB μ V)	Measure Level (dB μ V /m)	Margin (dB)	Limit (dB μ V /m)	Result
Vertical	5628.986	18.708	31.348	50.056	-18.164	68.220	Pass
Vertical	5650.000	18.766	30.178	48.945	-19.275	68.220	Pass
Vertical	5691.594	18.892	34.470	53.361	-45.622	98.983	Pass
Vertical	5700.000	18.917	33.312	52.229	-52.971	105.200	Pass
Vertical	5720.000	18.977	36.190	55.167	-55.633	110.800	Pass
Vertical	5722.899	18.986	37.400	56.386	-61.024	117.410	Pass
Vertical	5725.000	18.993	36.201	55.194	-67.006	122.200	Pass
Vertical	5779.130	19.189	67.706	86.895	-44.305	131.200	Pass
Vertical	5850.000	19.468	33.121	52.589	-69.611	122.200	Pass
Vertical	5852.174	19.478	33.346	52.824	-64.419	117.243	Pass
Vertical	5855.000	19.487	32.293	51.780	-59.020	110.800	Pass
Vertical	5858.551	19.499	33.633	53.132	-56.674	109.806	Pass
Vertical	5875.000	19.558	32.049	51.607	-53.593	105.200	Pass
Vertical	5897.391	19.646	32.921	52.567	-36.064	88.631	Pass
Vertical	5925.000	19.755	31.694	51.450	-16.750	68.200	Pass
Vertical	5932.754	19.786	31.939	51.725	-16.475	68.200	Pass

7. Occupied Bandwidth

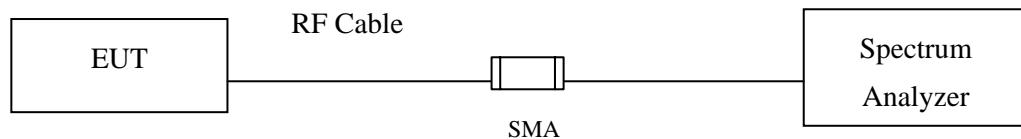
7.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Spectrum Analyzer	R&S	FSV30 / 103464	Dec., 2015
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2016
	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2016

Note:

1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
2. The test instruments marked with “X” are used to measure the final test results.

7.2. Test Setup



7.3. Limits

For the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz

7.4. Test Procedure

The EUT was setup to ANSI C63.10, 2013; tested to UNII test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.

7.5. Uncertainty

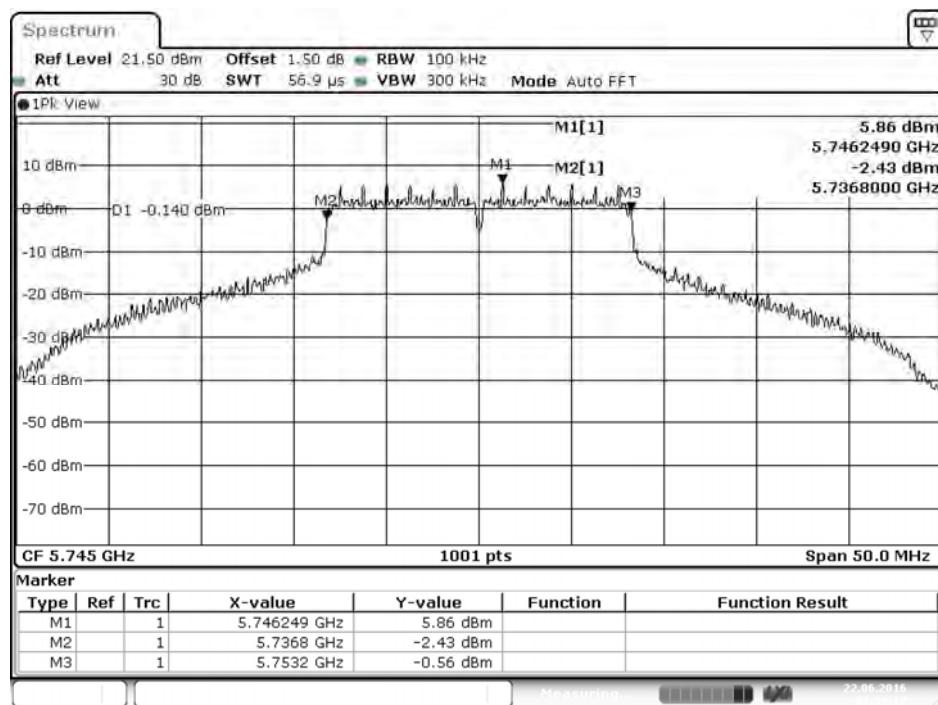
± 150Hz

7.6. Test Result of Occupied Bandwidth

Product : Intel® Dual Band Wireless-AC 3160
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5745MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
149	5745.00	16400	>500	Pass

Figure Channel 149:

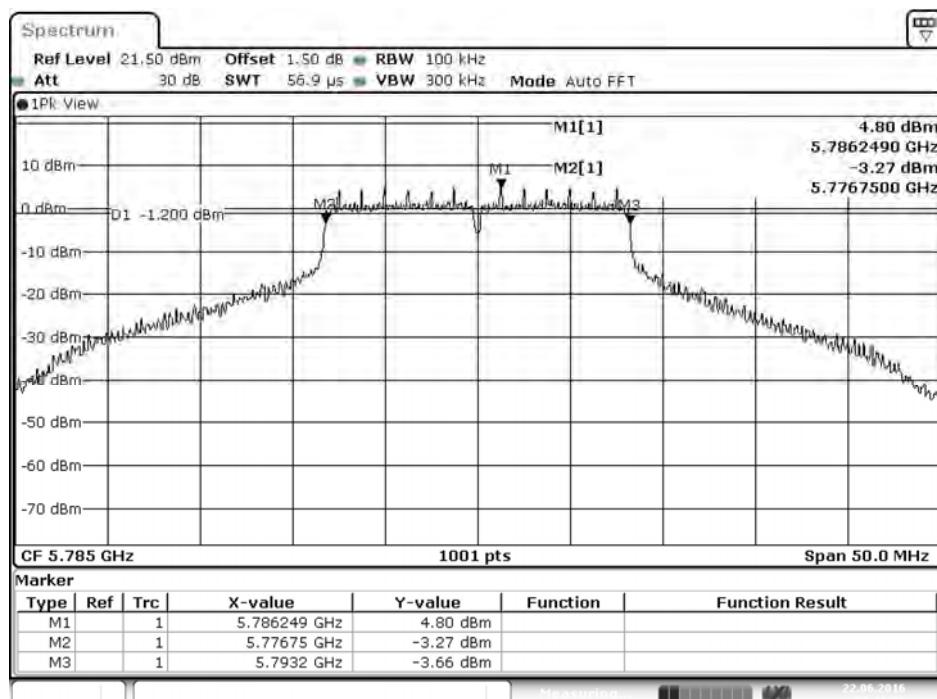


Date: 22.JUN.2016 07:39:17

Product : Intel® Dual Band Wireless-AC 3160
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5785MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
157	5785.00	16450	>500	Pass

Figure Channel 157:

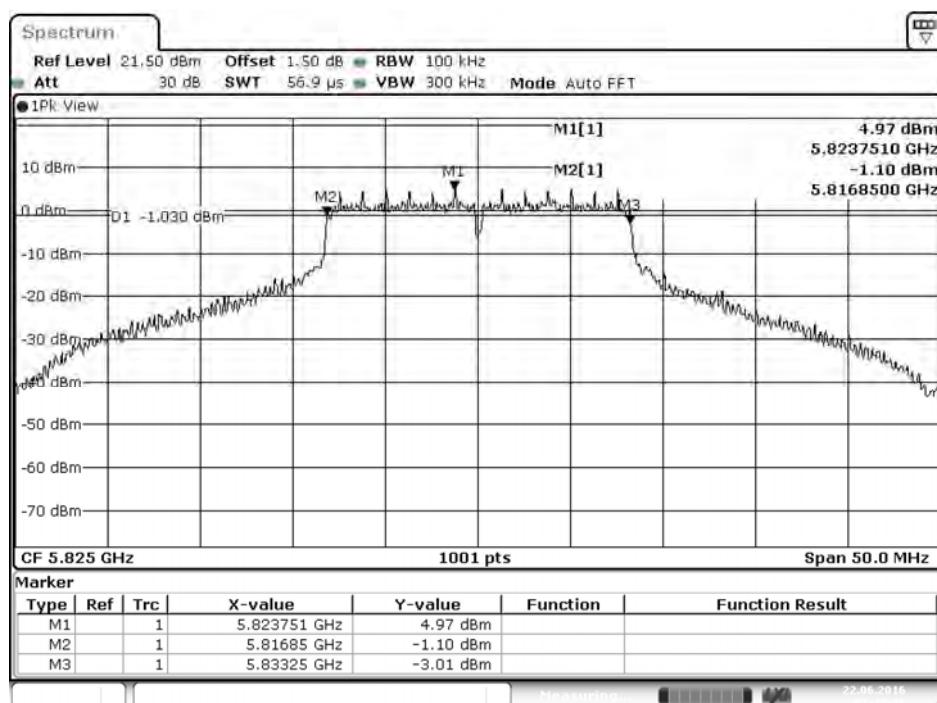


Date: 22.JUN.2016 07:41:36

Product : Intel® Dual Band Wireless-AC 3160
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmit (802.11a-6Mbps) (5825MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
165	5825.00	16400	>500	Pass

Figure Channel 165:

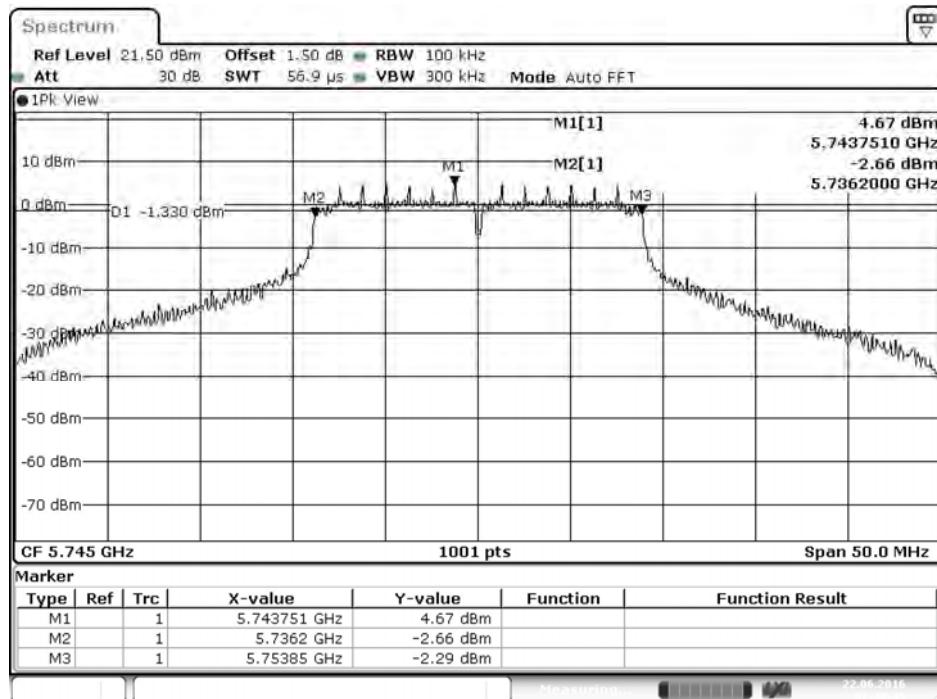


Date: 22.JUN.2016 07:43:48

Product : Intel® Dual Band Wireless-AC 3160
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11n-20BW-14.4Mbps) (5745MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
149	5745.00	17650	>500	Pass

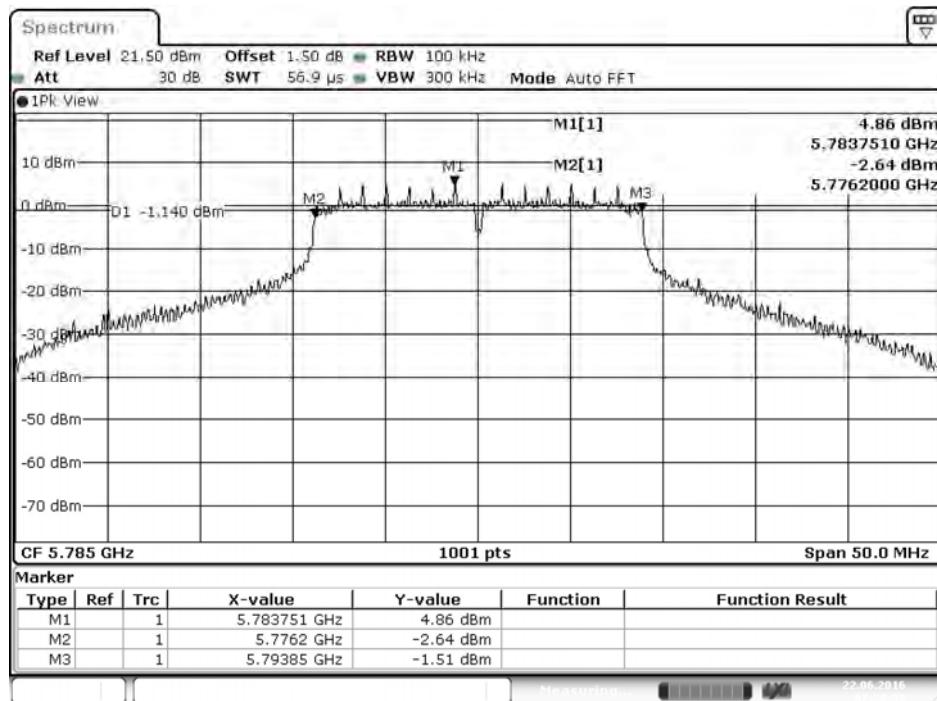
Figure Channel 149:



Product : Intel® Dual Band Wireless-AC 3160
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11n-20BW-14.4Mbps) (5785MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
157	5785.00	17650	>500	Pass

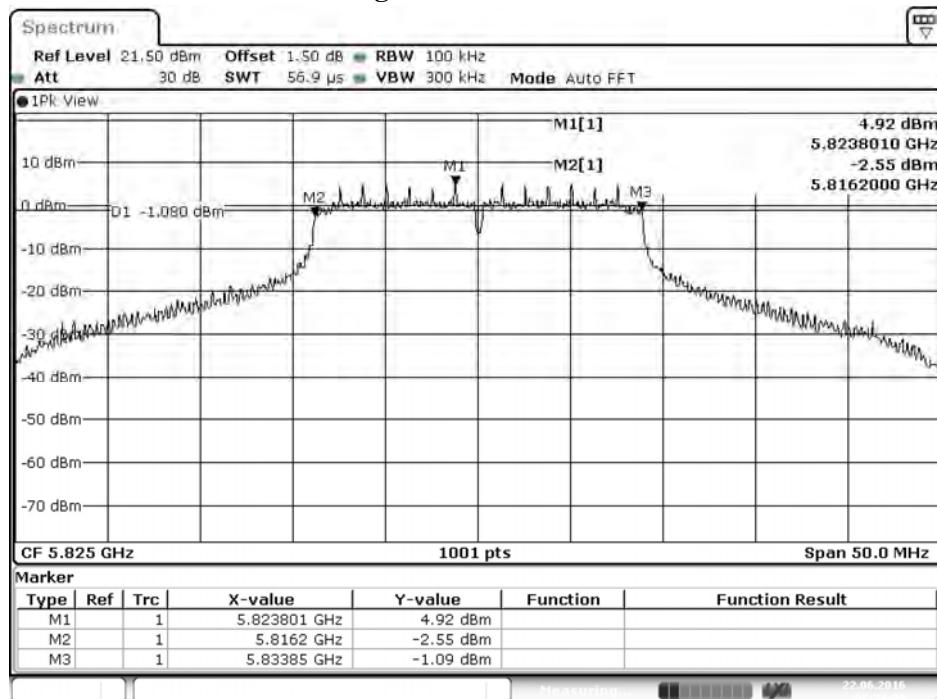
Figure Channel 157:



Product : Intel® Dual Band Wireless-AC 3160
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 2: Transmit (802.11n-20BW-14.4Mbps) (5825MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
165	5825.00	17650	>500	Pass

Figure Channel 165:

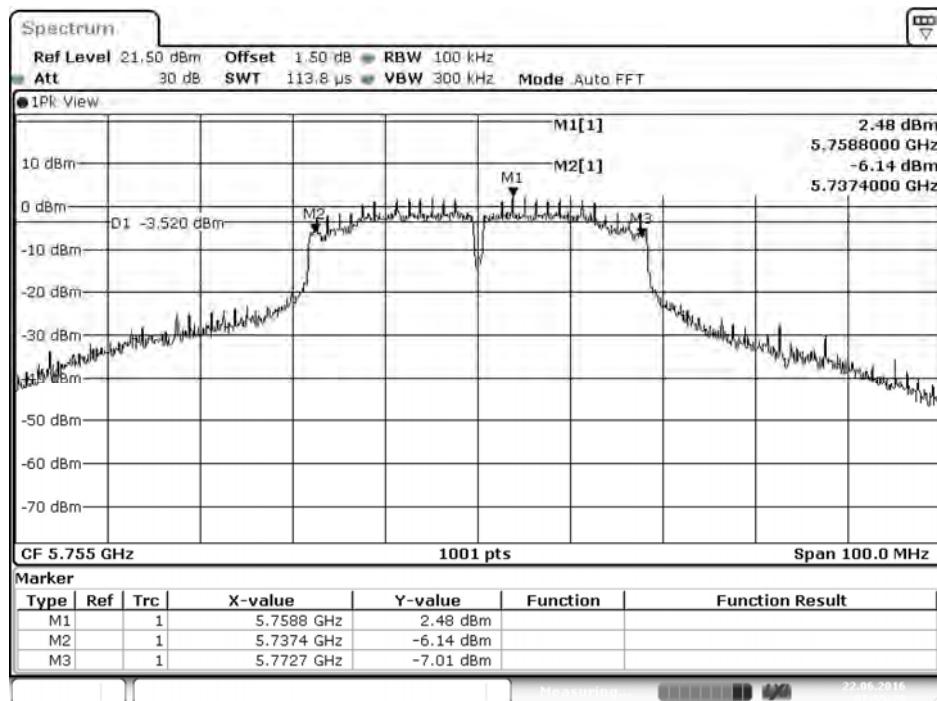


Date: 22.JUN.2016 07:53:06

Product : Intel® Dual Band Wireless-AC 3160
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit (802.11n-40BW-30Mbps) (5755MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
151	5755.00	35300	>500	Pass

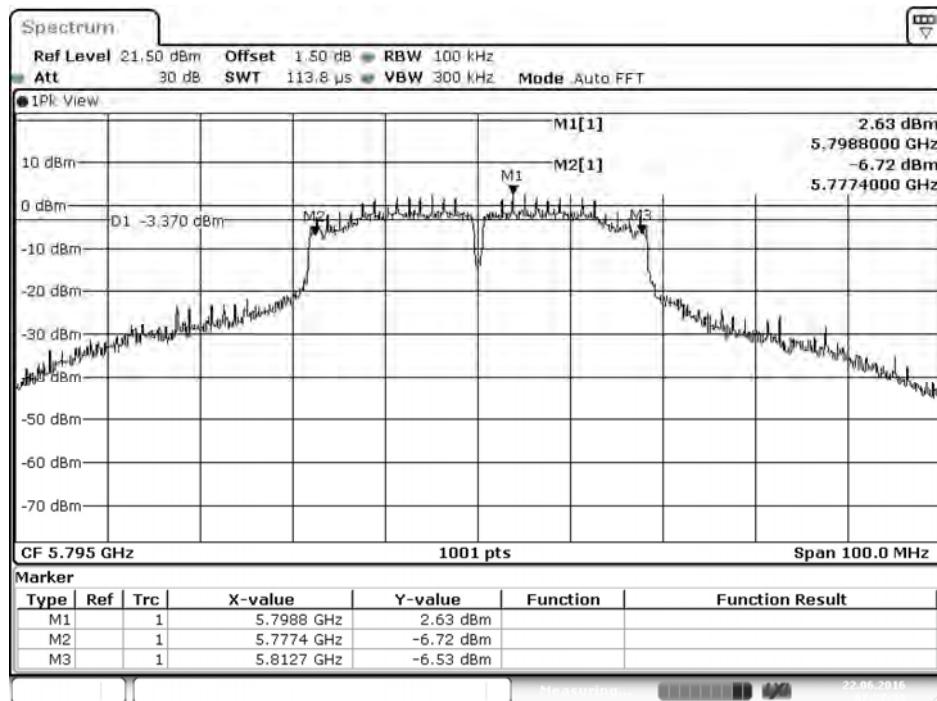
Figure Channel 151:



Product : Intel® Dual Band Wireless-AC 3160
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 3: Transmit (802.11n-40BW-30Mbps) (5795MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
159	5795.00	35300	>500	Pass

Figure Channel 159:

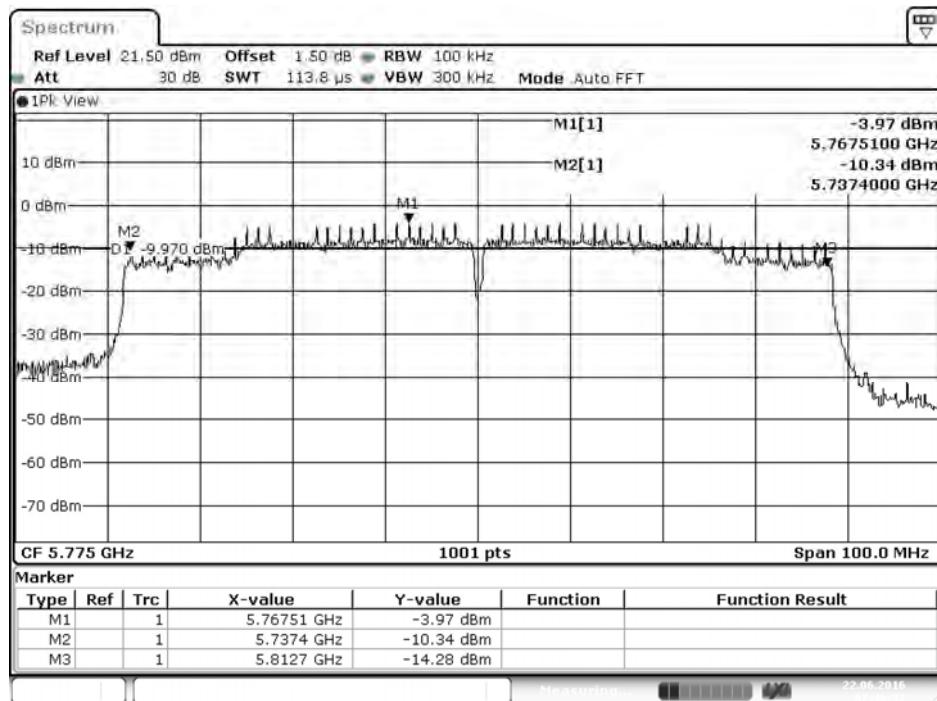


Date: 22.JUN.2016 07:57:30

Product : Intel® Dual Band Wireless-AC 3160
 Test Item : Occupied Bandwidth Data
 Test Site : No.3 OATS
 Test Mode : Mode 4: Transmit (802.11ac-80BW-65Mbps) (5775MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
155	5775.00	75300	>500	Pass

Figure Channel 155:



Date: 22.JUN.2016 07:46:32

8. Frequency Stability

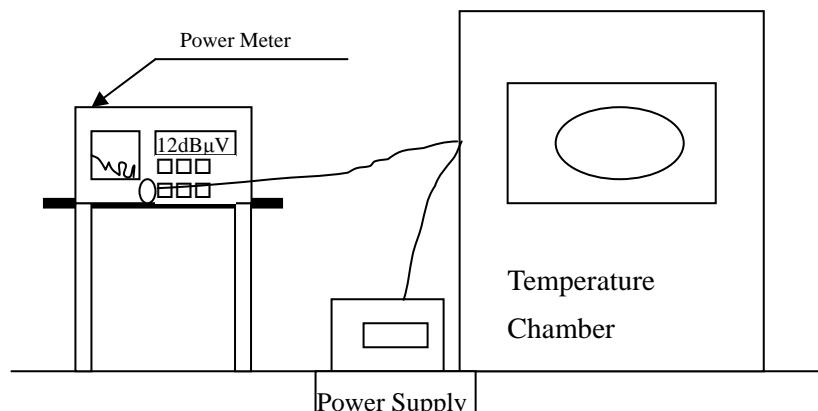
8.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Spectrum Analyzer	R&S	FSV30 / 103464	Dec., 2015
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2016
	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2016

Note:

1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
2. The test instruments marked with “X” are used to measure the final test results.

8.2. Test Setup



8.3. Limits

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified

8.4. Test Procedure

The EUT was setup to ANSI C63.10, 2013; tested to UNII test procedure of FCC KDB-789033 for compliance to FCC 47CFR Subpart E requirements.

8.5. Uncertainty

± 150 Hz

8.6. Test Result of Frequency Stability

Product : Intel® Dual Band Wireless-AC 3160
 Test Item : Frequency Stability
 Test Site : Temperature Chamber
 Test Mode : Carrier Wave

Test Conditions		Channel	Frequency (MHz)	Frequency (MHz)	△F (MHz)
T _{nom} (20) °C	V _{nom} (120)V	149	5745.0000	5744.9951	0.0049
		151	5755.0000	5754.9963	0.0037
		157	5785.0000	5784.9985	0.0015
		159	5795.0000	5794.9928	0.0072
		165	5825.0000	5824.9935	0.0065
T _{max} (50) °C	V _{max} (138)V	149	5745.0000	5744.9955	0.0045
		151	5755.0000	5754.9964	0.0036
		157	5785.0000	5784.9971	0.0029
		159	5795.0000	5794.9949	0.0051
		165	5825.0000	5824.9933	0.0067
T _{max} (50) °C	V _{min} (102)V	149	5745.0000	5744.9938	0.0062
		151	5755.0000	5754.9969	0.0031
		157	5785.0000	5784.9918	0.0082
		159	5795.0000	5794.9991	0.0009
		165	5825.0000	5824.9936	0.0064
T _{min} (0) °C	V _{max} (138)V	149	5745.0000	5745.0024	-0.0024
		151	5755.0000	5755.0019	-0.0019
		157	5785.0000	5785.0002	-0.0002
		159	5795.0000	5795.0031	-0.0031
		165	5825.0000	5825.0017	-0.0017
T _{min} (0) °C	V _{min} (102)V	149	5745.0000	5745.0019	-0.0019
		151	5755.0000	5755.0020	-0.0020
		157	5785.0000	5785.0004	-0.0004
		159	5795.0000	5795.0025	-0.0025
		165	5825.0000	5825.0014	-0.0014

9. EMI Reduction Method During Compliance Testing

No modification was made during testing.