

TEST REPORT

Applicant Name & : Les Entreprises P.A.C. International Inc.
Address : 688 Rue De Fribourg, Laval, Quebec, H7K3Y4, Canada

Sample Description
Product : Ceiling Fan with Heater
FCC ID : 2AHP4-ONOBCF668
Model No. : 688
Electrical Rating : 120 VAC, 60 Hz, 700 W

Date Received : 09 March 2016
Date Test Conducted : 09 March 2016 – 08 October 2016
Test standards : **47 CFR PART 15 Subpart C: 2015 section 15.247**

Test Result : Pass

Conclusion : The submitted samples complied with the above rules/standards.

Remark : TRF No.: FCC WIFI-a
Effective date: 01 July 2016

*****End of Page*****

Prepared and Checked By:



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Project Engineer
Intertek Guangzhou

Approved By:



Helen Ma
Team Leader
Intertek Guangzhou
25 October 2016

Signature
Date

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1.0 Summary of Test

TEST	TEST REQUIREMENT	TEST METHOD	RESULT
Antenna Requirement	FCC PART 15 C section 15.247 (c) and Section 15.203	FCC PART 15 C section 15.247 (c) and Section 15.203	PASS
6 dB Bandwidth (DTS bandwidth)	FCC PART 15 C section 15.247 (a)(2)	ANSI C63.10: Clause 11.8	PASS
Maximum Peak Conducted Output Power	FCC PART 15 C section 15.247(b)(3)	ANSI C63.10: Clause 11.9.1.2	PASS
Peak Power Spectral Density	FCC PART 15 C section 15.247(e)	ANSI C63.10: Clause 11.10.2	PASS
Out of Band Conducted Emissions	FCC PART 15 C section 15.209 &15.247(d)	ANSI C63.10: Clause 11.11	PASS
Out of Band Radiated Emission	FCC PART 15 C section 15.209 &15.247(d)	ANSI C63.10: Clause 11.11, 6.4, 6.5 and 6.6	N/A
Radiated Emissions in Restricted Bands	FCC PART 15 C section 15.209 &15.247(d)	ANSI C63.10: Clause 11.12.1, 6.4, 6.5 and 6.6	PASS
Band Edges Measurement	FCC PART 15 C section 15.247 (d) &15.205	ANSI C63.10: Clause 11.11 and 11.13	PASS
Conducted Emissions at Mains Terminals	FCC PART 15 C section 15.207	ANSI C63.10: Clause 6.2	PASS
Remark:			
N/A: not applicable. Refer to the relative section for the details. EUT: In this whole report EUT means Equipment Under Test. Tx: In this whole report Tx (or tx) means Transmitter. Rx: In this whole report Rx (or rx) means Receiver. RF: In this whole report RF means Radio Frequency. ANSI C63.10: the detail version is ANSI C63.10:2013 in the whole report.			

2.0 General Description**2.1 Product Description**

Operating Frequency	2412 MHz to 2462 MHz for 802.11b/g/n(HT20) 2422 MHz to 2452 MHz for 802.11n(HT40)
Type of Modulation:	802.11b: DSSS(CCK/QPSK/BPSK) 802.11g: OFDM(BPSK/QPSK/16QAM/64QAM) 802.11n: OFDM (BPSK/QPSK/16QAM/64QAM)
Transmit Data Rate:	802.11b :1/2/5.5/11 Mbps 802.11g :6/9/12/18/24/36/48/54 Mbps 802.11n(HT20): 6.5/13/19.5/26/39/52/58.5/65 /72.2Mbps 802.11n(HT40): 13.5/27/40.5/54/81/108/121.5/135 Mbps
Number of Channels	11 Channels for 802.11b/g/n(HT20) 7 Channels for 802.11n(HT40)
Channel Separation:	5 MHz
Antenna Type	wire Antenna
Antenna gain:	2 dBi
Function:	Communication with 2.4 GHz WIFI
EUT Power Supply:	AC 120V 60 Hz
Power cord:	1.1 m x 3 wires unscreened AC supply cable

EUT channels and frequencies list:

For 802.11b/g/n(HT20): test frequencies are lowest channel 1: 2412 MHz, middle channel 6: 2437 MHz and highest channel 11: 2462 MHz.

For 802.11n(HT40): test frequencies are lowest channel 3: 2422 MHz, middle channel 6: 2437 MHz and highest channel 9: 2452 MHz

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	7	2442
2	2417	8	2447
3	2422	9	2452
4	2427	10	2457
5	2432	11	2462
6	2437	/	/

2.2 Related Submittal(s) Grants

This is an application for certification of:

DTS- Part 15 Digital Transmission Systems (WIFI transmitter portion)

Remaining portions are subject to the following procedures:

1. Receiver portion of WIFI: exempt from technical requirement of this Part.
2. The Fan function: exempt from FCC requirement.

2.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.10:2013. Radiated emission measurement was performed in semi-anechoic chamber and conducted emission measurement was performed in shield room. For radiated emission measurement, preliminary scans and final tests were performed in the semi-anechoic chamber to determine the worst case modes. All radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise.

2.4 Test Facility

All of the tests are performed at:

Intertek Testing Services Shenzhen Ltd. Guangzhou Branch. located at Block E, No.7-2 Guang Dong Software Science Park, Caipin Road, Guangzhou Science City, GETDD

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Guangzhou, 510663, China. This test facility and site measurement data have been fully placed on file with the FCC, test firm registration number is 549654.

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3.0 System Test Configuration

3.1 Justification

For emissions testing, the equipment under test (EUT) setup to transmit continuously to simplify the measurement methodology. During testing, AC power line was manipulated to produce worst case emissions. It was powered by AC 120V/60Hz supply.

The signal is maximized through rotation and placement in the three orthogonal axes. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters. Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance.

All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance. Analyzer resolution is 100 kHz or greater for frequencies below 1000 MHz. The resolution is 1 MHz or greater for frequencies above 1000 MHz. The spurious emissions more than 20 dB below the permissible value are not reported.

For an intentional radiator, the spectrum shall be investigated from the lowest radio frequency signal generated in the device, without going below 9 kHz, up to at least the frequency shown in the following table:

Frequency range of radiated emission measurements

Lowest frequency generated in the device	Upper frequency range of measurement
9 kHz to below 10 GHz	10th harmonic of highest fundamental frequency or to 40 GHz, whichever is lower.
At or above 10 GHz to below 30 GHz	5th harmonic of highest fundamental frequency or to 100 GHz, whichever is lower.
At or above 30 GHz	5th harmonic of highest fundamental frequency or to 200 GHz, whichever is lower, unless otherwise specified.

Number of fundamental frequencies to be tested in EUT transmit band

Frequency range in which device operates	Number of frequencies	Location in frequency range of operation
1 MHz or less	1	Middle
1 MHz to 10 MHz	2	1 near top and 1 near bottom
More than 10 MHz	3	1 near top, 1 near middle and 1 near bottom

3.2 EUT Exercising Software

The test was performed under "MT 7601USB" which was provided by manufacturer.

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3.3 Special Accessories

No special accessories used.

3.4 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	RF output power (conducted)	1.1 dB
2	Occupied Channel Bandwidth	2.3%
3	Power Spectral Density	1.5dB
4	Spurious Emission (TX)-Radiated	4.7 dB (25 MHz-1 GHz)
		4.8 dB (1 GHz-18 GHz)
5	Spurious Emission (TX)-Conducted	1.5 dB
6	Spurious Emission (RX) -Radiated	4.7 dB (25 MHz-1 GHz)
		4.8 dB (1 GHz-25 GHz)
7	Spurious Emission (RX)-Conducted	1.5 dB
8	Temperature	0.5 °C
9	Humidity	0.4 %
10	Time	1.2%

When determining of the test conclusion, the Measurement Uncertainty of test has been considered.

Uncertainty and Compliance – Unless the standard specifically states that measured values are to be extended by the measurement uncertainty in determining compliance, all compliance determinations are based on the actual measured value.

3.5 Equipment Modification

Any modifications installed previous to testing by Les Entreprises P.A.C. International Inc. will be incorporated in each production model sold / leased in the United States.

No modifications were installed by Intertek Testing Services Shenzhen Ltd. Guangzhou Branch.

3.6 Support Equipment List and Description

This product was tested with corresponding accessories as below:

Supplied by Intertek:

Description	Manufacturer	Model No.	SN/Certificate NO
NoteBook	Lenovo	T143	PB-FR45R

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4.0 Measurement Results

4.1 Antenna Requirement:

Standard requirement

15.203 requirement:

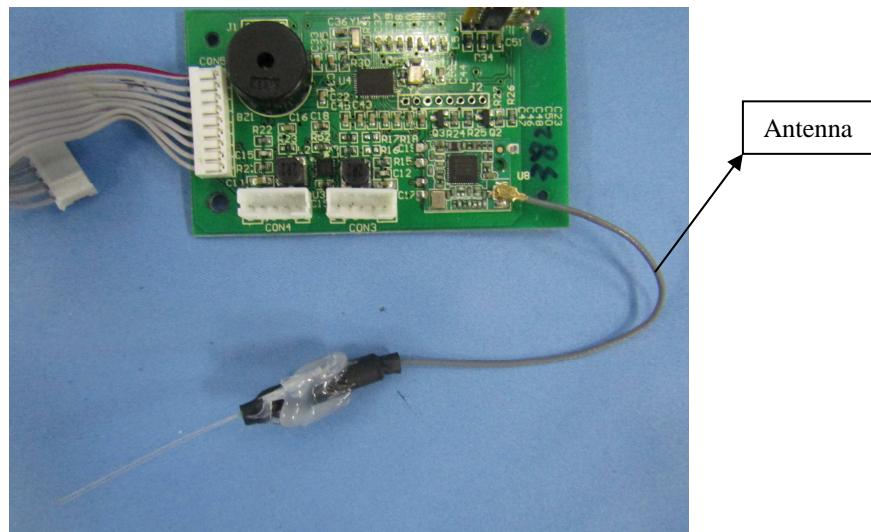
For intentional device. According to 15.203 an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

15.247(c) (1)(i) requirement:

(i) Systems operating in the 2400-2483.5 MHz bands 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.

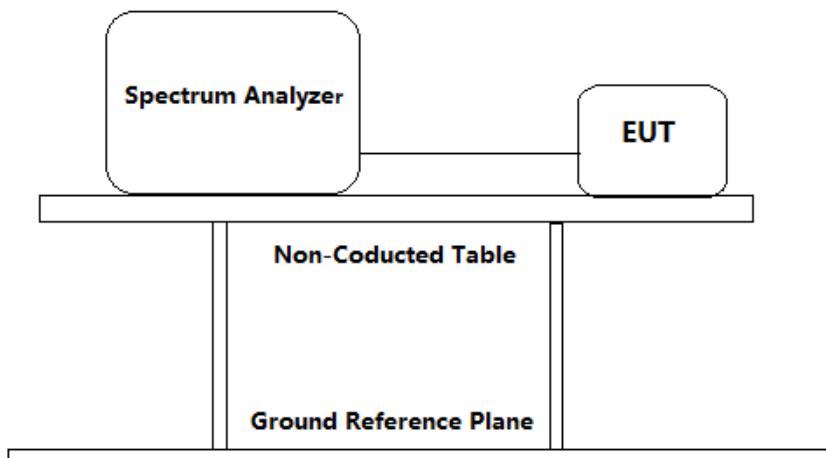
EUT Antenna

The antenna is an integral antenna and no consideration of replacement. The best case gain of the antenna is 2 dBi.



4.2 6 dB Bandwidth (DTS bandwidth):

Test Requirement:	FCC Part 15 C section 15.247
	(a)(2)Systems using digital modulation techniques may operate in the 902-928 MHz, 2400-2483.5MHz, and 5725-5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.
Test Method:	ANSI C63.10: Clause 11.8
Test Status:	Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.
Test Configuration:	



Test Procedure:

1. Remove the antenna from the EUT and then connect a low attention attenuation RF cable (cable loss =0.5 dB) from the antenna port to the spectrum.
2. Set the spectrum analyzer:
 - a) Set RBW = 100 kHz
 - b) Set the VBW \geq [3 \times RBW]
 - c) Detector = peak.
 - d) Trace mode = max hold.
 - e) Sweep = auto couple
 - f) Allow the trace to stabilize.
 - g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are

attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

h) Span=2*BW~5*BW

3. Repeat until all the test status is investigated.
4. Report the worst case.

Channel No.	Frequency (MHz)	Mode	Data Rate	Measured 6dB bandwidth (MHz)	Limit	Result
1	2412	802.11b	5.5 Mbps	8.465	$\geq 500\text{KHz}$	Pass
6	2437		5.5 Mbps	8.465		Pass
11	2462		5.5 Mbps	8.489		Pass
1	2412	802.11g	6 Mbps	16.619	$\geq 500\text{KHz}$	Pass
6	2437		6 Mbps	16.619		Pass
11	2462		6 Mbps	16.619		Pass
1	2412	802.11n (HT20)	65 Mbps	17.722	$\geq 500\text{KHz}$	Pass
6	2437		65 Mbps	17.722		Pass
11	2462		65 Mbps	17.770		Pass
3	2422	802.11n (HT40)	135 Mbps	36.163	$\geq 500\text{KHz}$	Pass
6	2437		135 Mbps	36.511		Pass
9	2452		135 Mbps	36.427		Pass

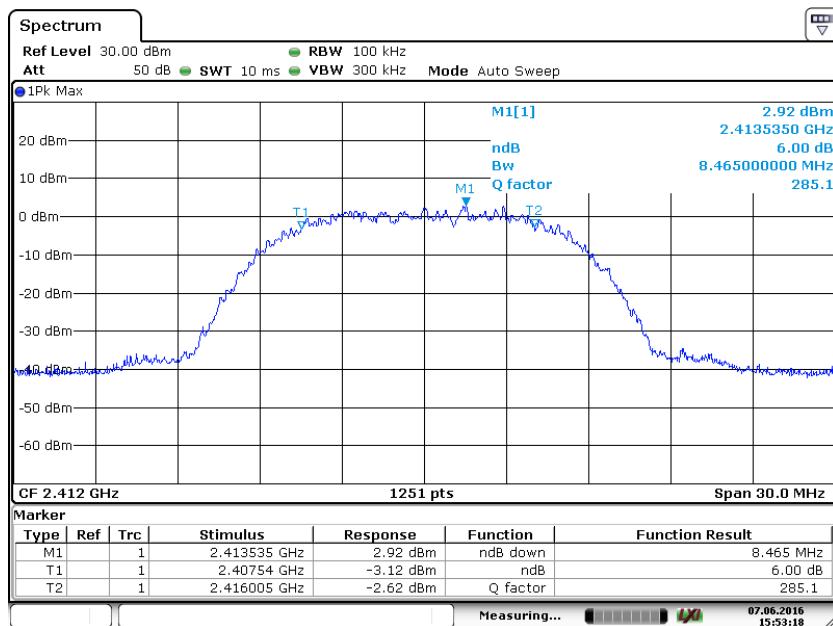
Test result: The unit does meet the FCC requirements.

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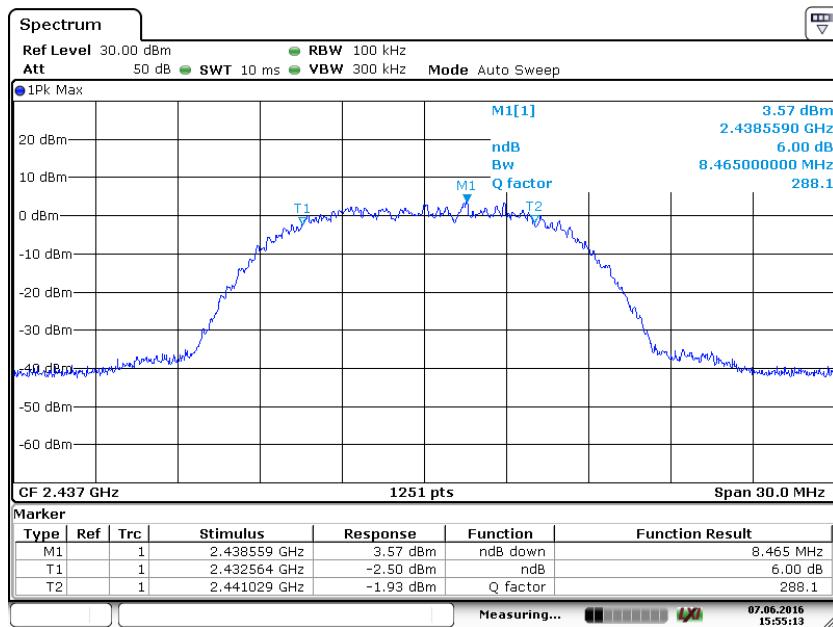
Result plot as follows:

802.11b mode

Channel 1: 2.412GHz:



Channel 6: 2.437GHz:

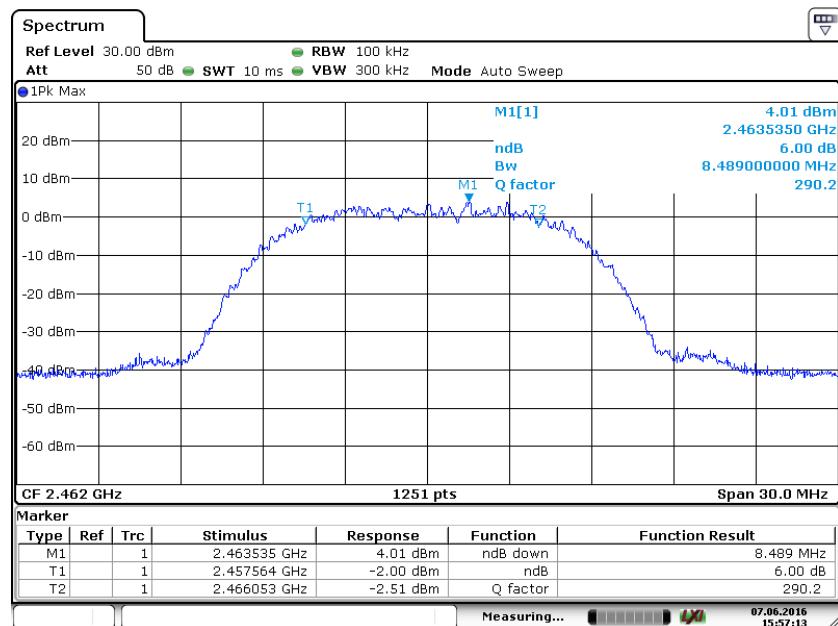


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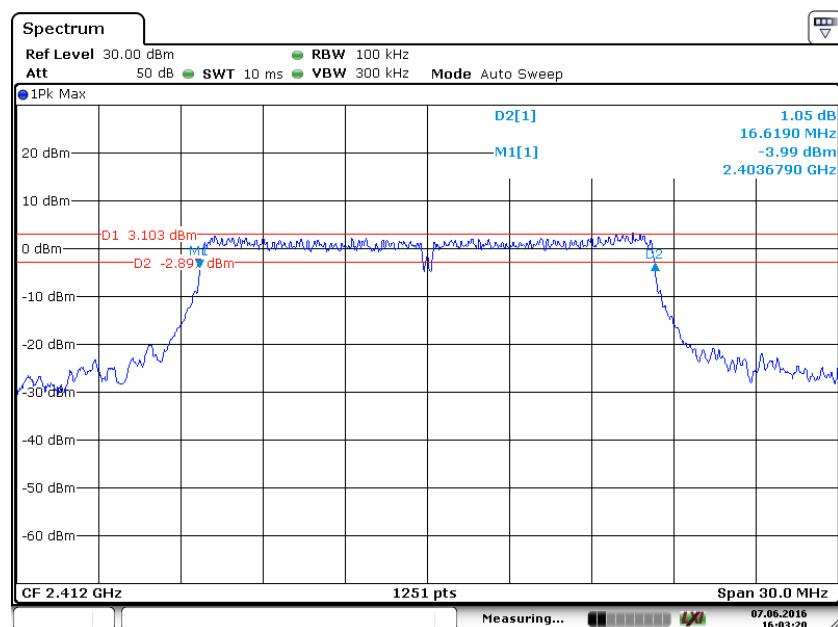
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Channel 11: 2.462GHz



802.11g mode

Channel 1: 2.412GHz:

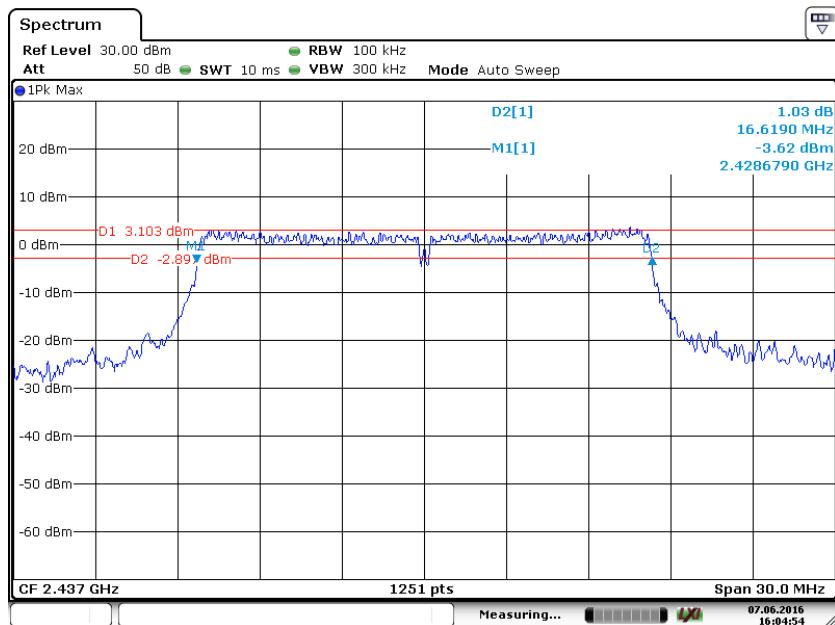


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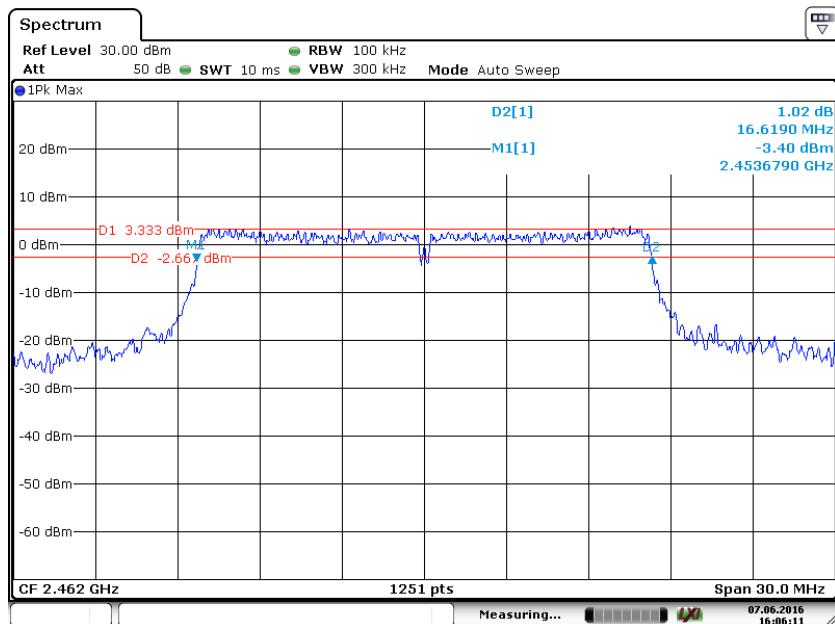
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Issued: 2016-10-25

Channel 6: 2.437GHz:



Channel 11: 2.462GHz:



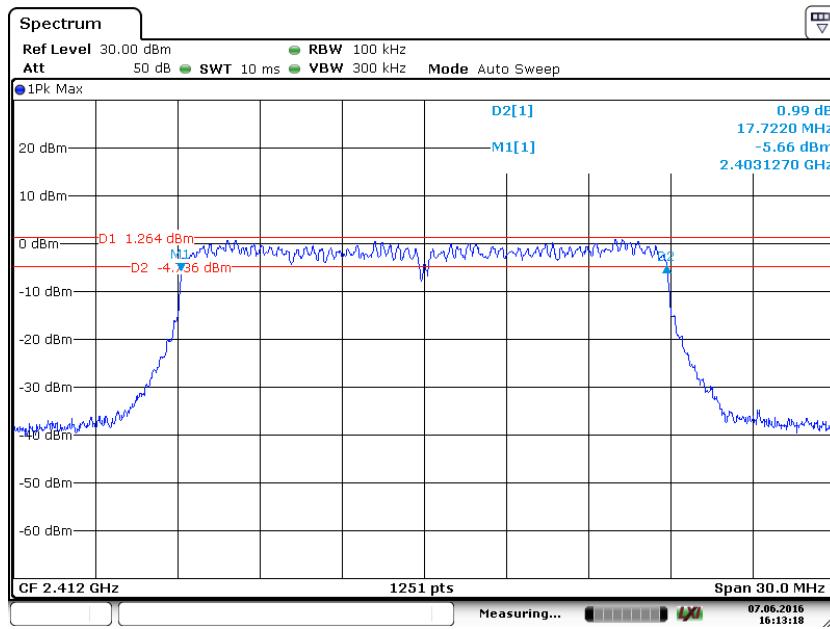
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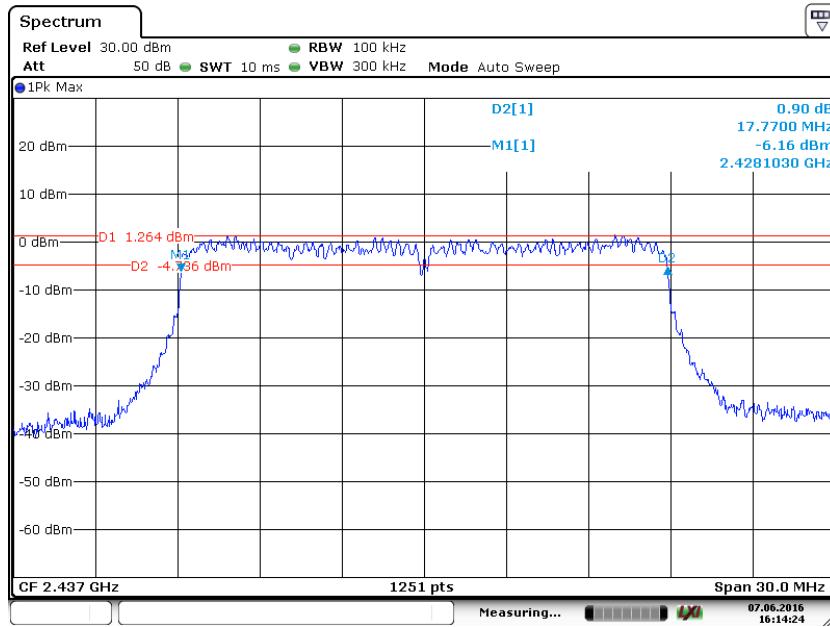
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802.11n(HT20) mode

Channel 1: 2.412GHz:



Channel 6: 2.437GHz:

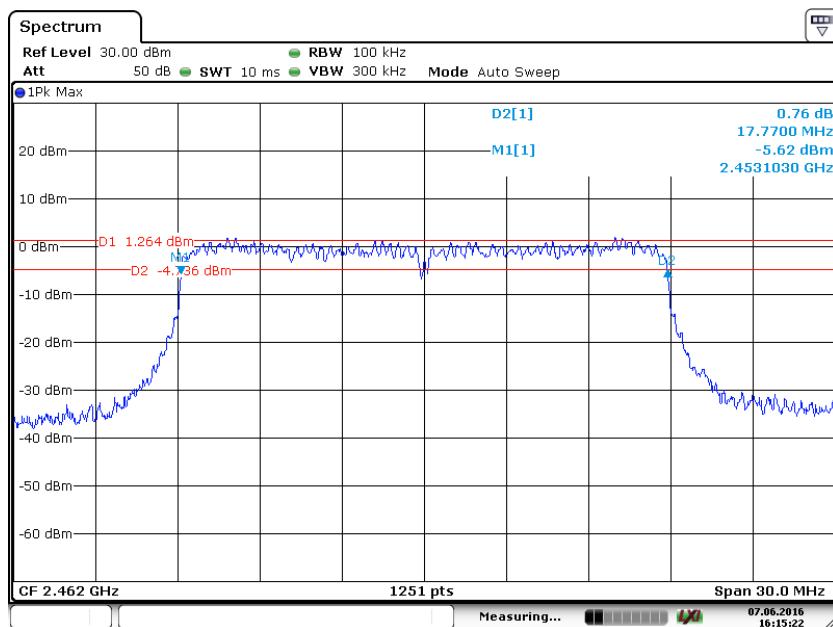


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TRF No.: FCC WIFI-a

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Channel 11: 2.462GHz:

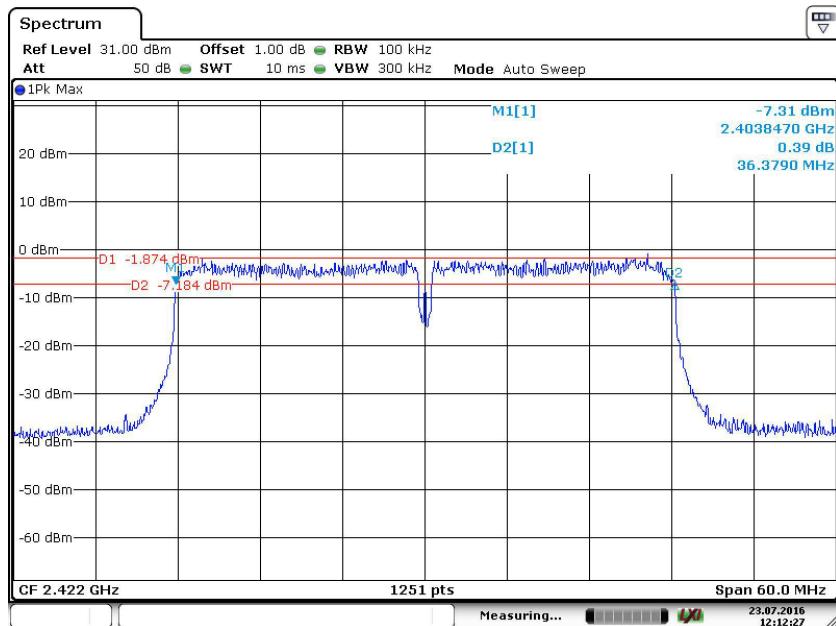


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TRF No.: FCC WIFI-a

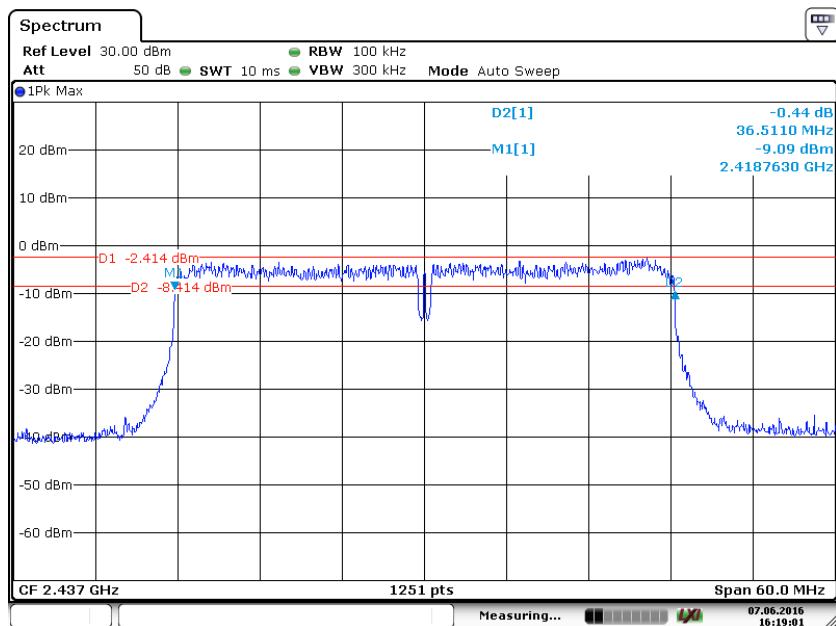
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802.11n(HT40) mode

Channel 3: 2.422GHz:



Channel 6: 2.437GHz:

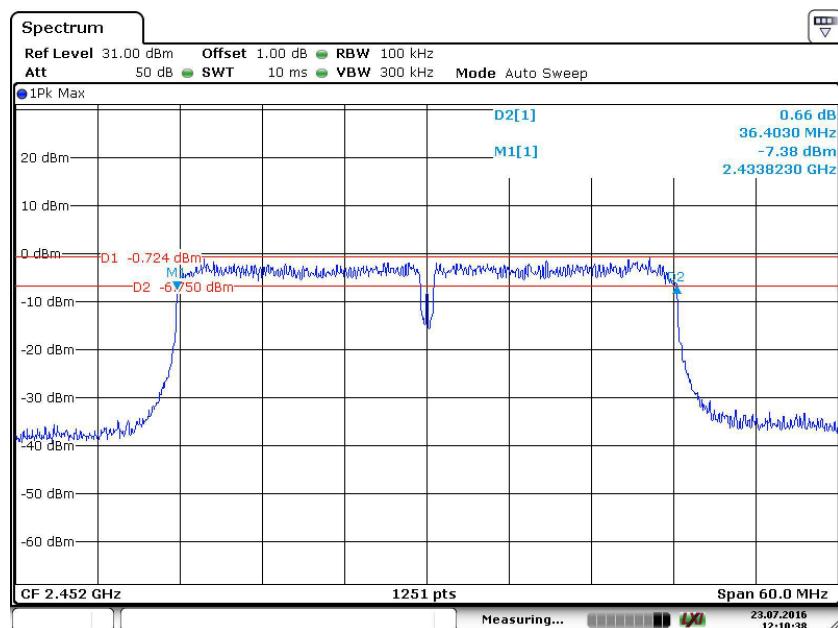


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Channel 9: 2.452GHz:



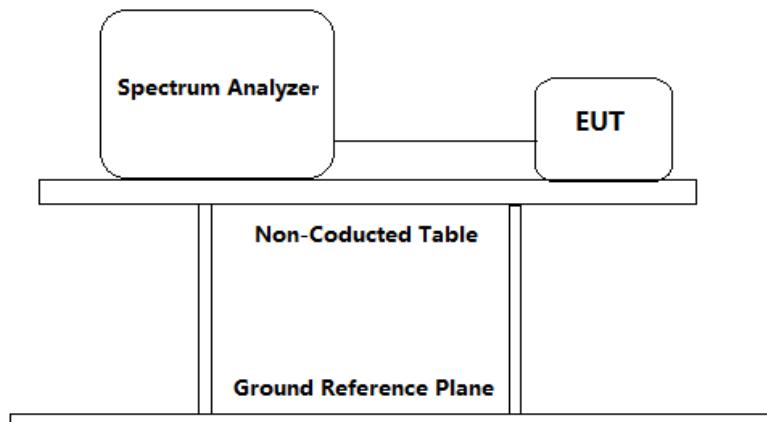
FCC ID: 2AHP4-ONOBCF668
TRF No.: FCC WIFI-a

4.3 Maximum Peak Conducted Output Power

Test Requirement: FCC Part 15 C section 15.247
(b)(3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt.
Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b) (1), (b) (2), and (b) (3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Test Method: ANSI C63.10: Clause 11.9.1.2(Integrated band power method)
Test Status: Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.

Test Configuration:



Test Procedure:

1. Remove the antenna from the EUT and then connect a low attention attenuation RF cable (cable loss =1 dB) from the antenna port to the spectrum.
2. Set the spectrum analyzer:
 - a) Set the RBW = 1 MHz.
 - b) Set the VBW $\geq [3 \times \text{RBW}]$.
 - c) Set the span $\geq [1.5 \times \text{DTS bandwidth}]$.
 - d) Detector = peak.
 - e) Sweep time = auto couple.
 - f) Trace mode = max hold.
 - g) Allow trace to fully stabilize.
 - h) Use the instrument's band/channel power measurement function with the band limits set equal to the DTS bandwidth edges.
3. Repeat until all the test status is investigated.
4. Report the worst case.

Test result:

Channel No.	Frequency (MHz)	Mode	Data Rate	Measured Channel Power (dBm)	Limit	Result
1	2412	802.11b	11 Mbps	18.72	1W (30dBm)	Pass
2	2417		11 Mbps	20.96		Pass
6	2437		11 Mbps	20.43		Pass
11	2462		11 Mbps	20.94		Pass
1	2412	802.11g	9 Mbps	25.82	1W (30dBm)	Pass
6	2437		9 Mbps	23.04		Pass
11	2462		9 Mbps	23.69		Pass
1	2412	802.11n (HT20)	6.5 Mbps	22.31		Pass
2	2417		6.5 Mbps	23.28		Pass
6	2437		6.5 Mbps	23.14		Pass
11	2462		6.5 Mbps	24.65		Pass
3	2422	802.11n (HT40)	135 Mbps	22.09		Pass
6	2437		135 Mbps	22.39		Pass
9	2452		135 Mbps	22.65		Pass

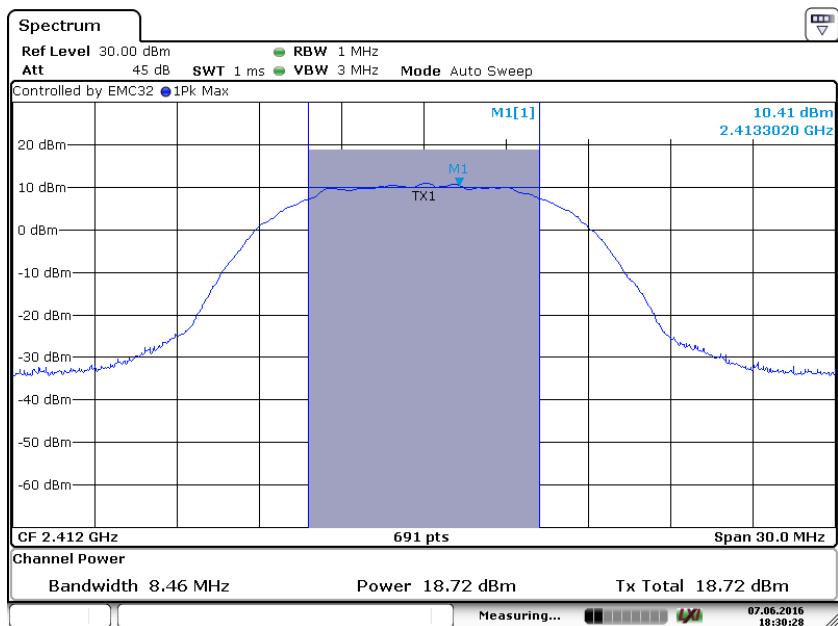
Remark: Level = Read Level + Cable Loss (1 dB).

The unit does meet the FCC requirements.

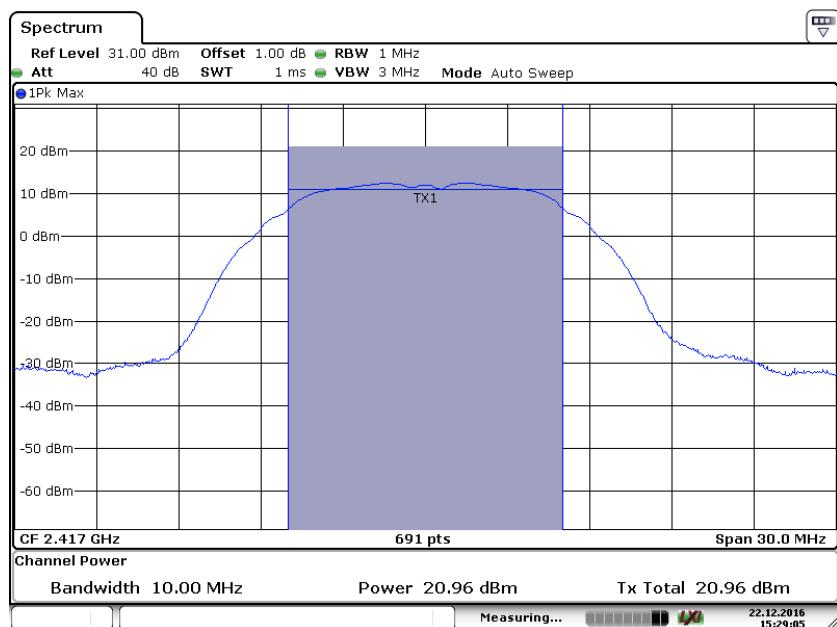
Result plot as follows:

802.11b mode

Channel 1: 2.412GHz:



Channel 2: 2.417GHz:

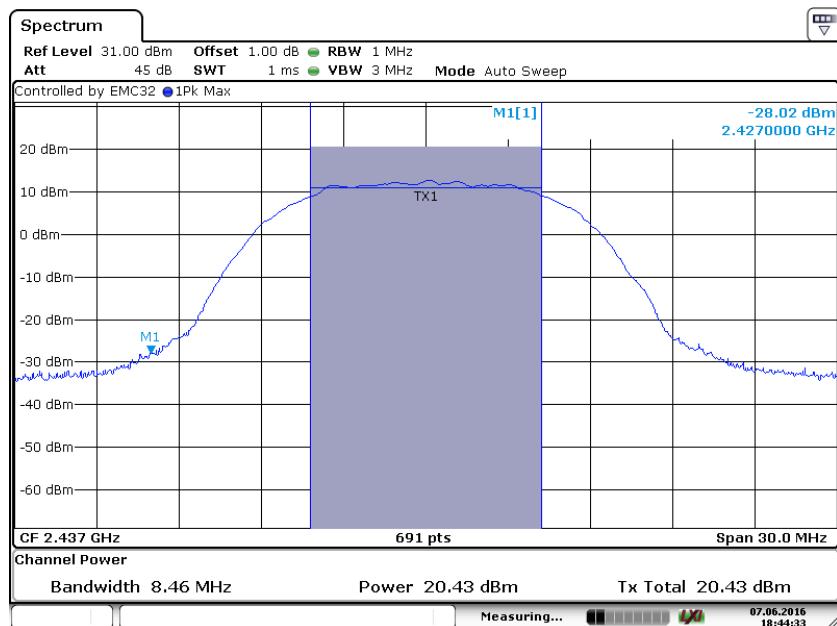


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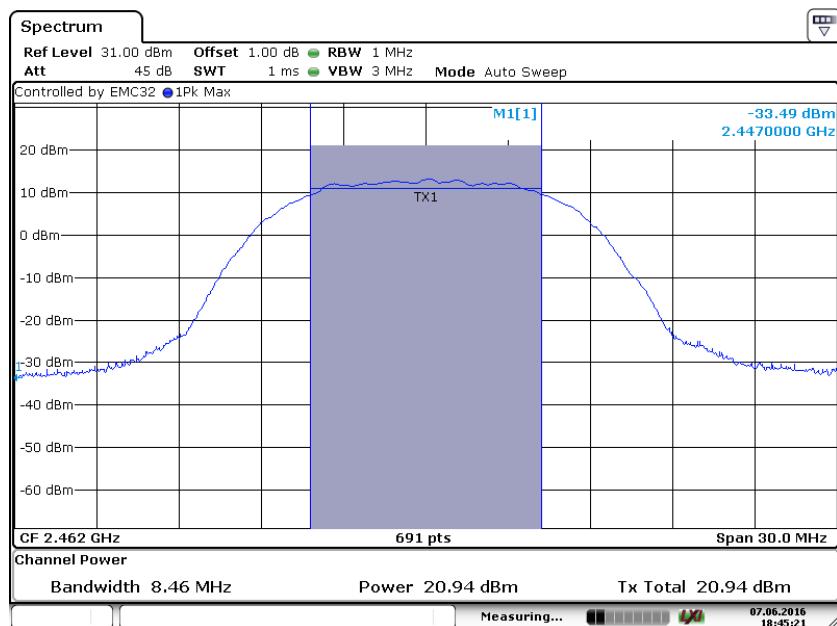
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Channel 6: 2.437GHz:



Channel 11: 2.462GHz:



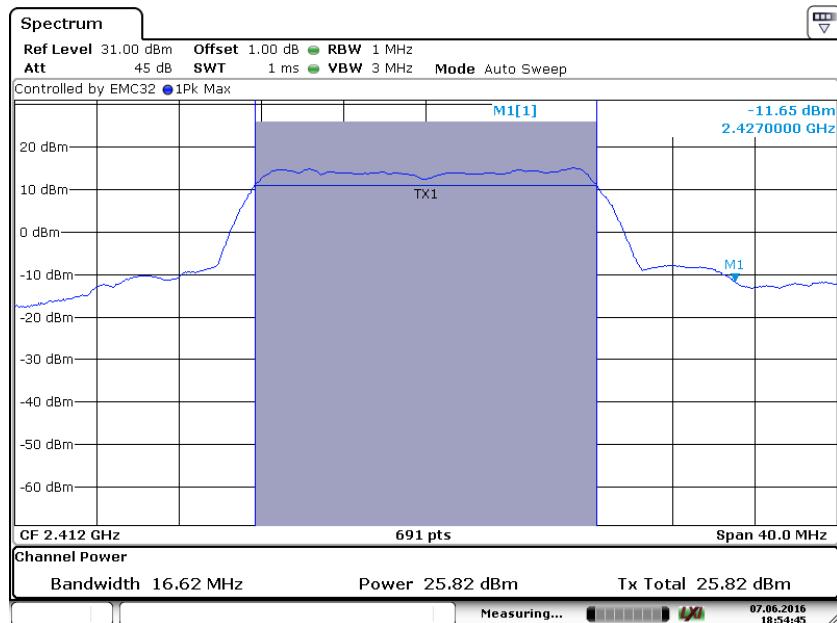
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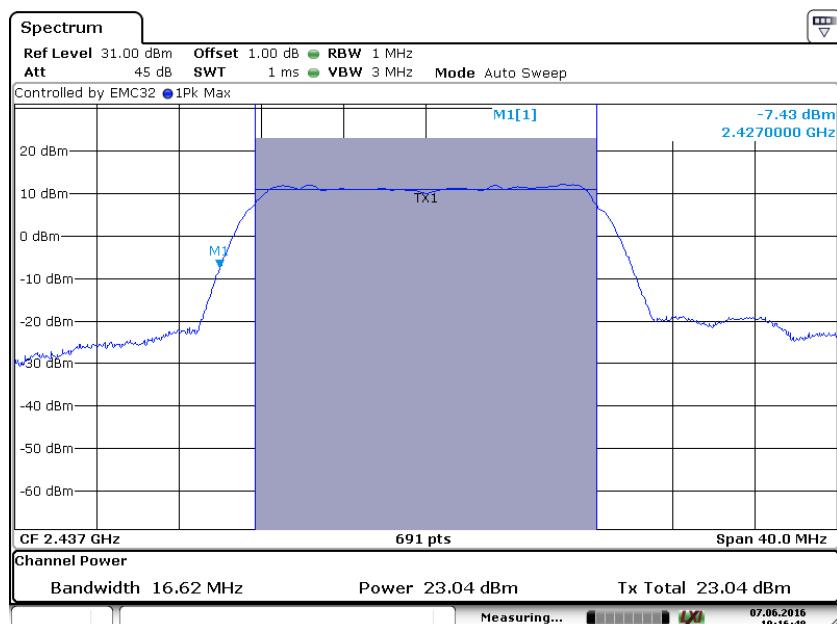
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802.11g mode

Channel 1: 2.412GHz:



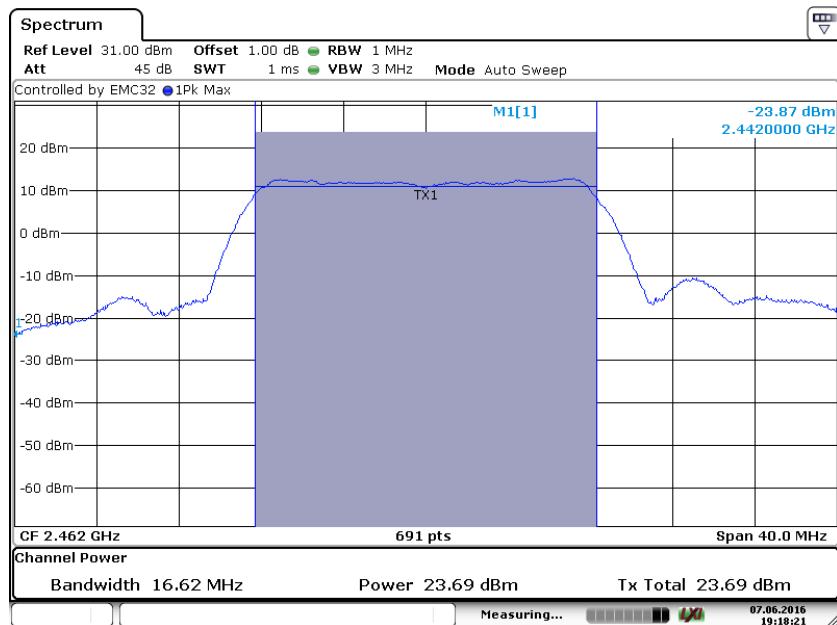
Channel 6: 2.437GHz:



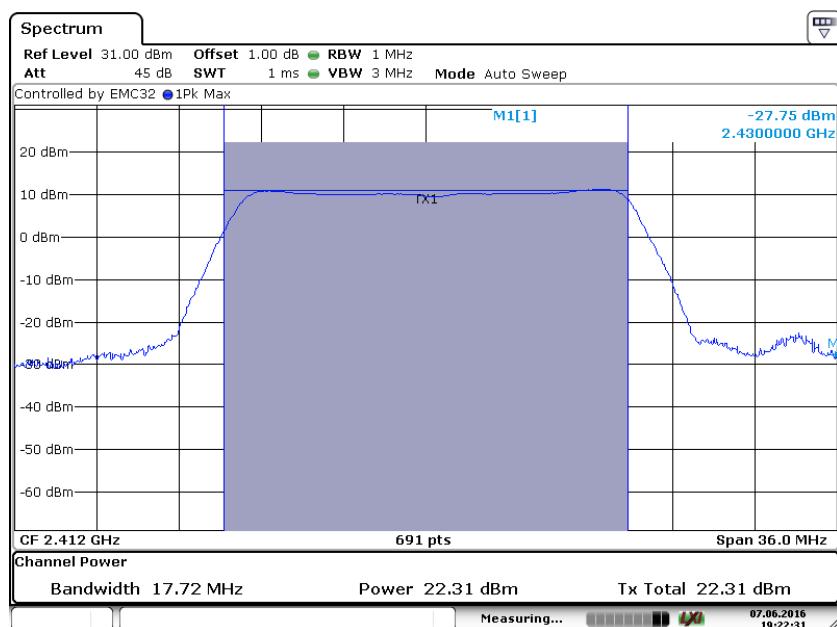
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Channel 11: 2.462GHz:

**802.11n(HT20) mode**

Channel 1: 2.412GHz:

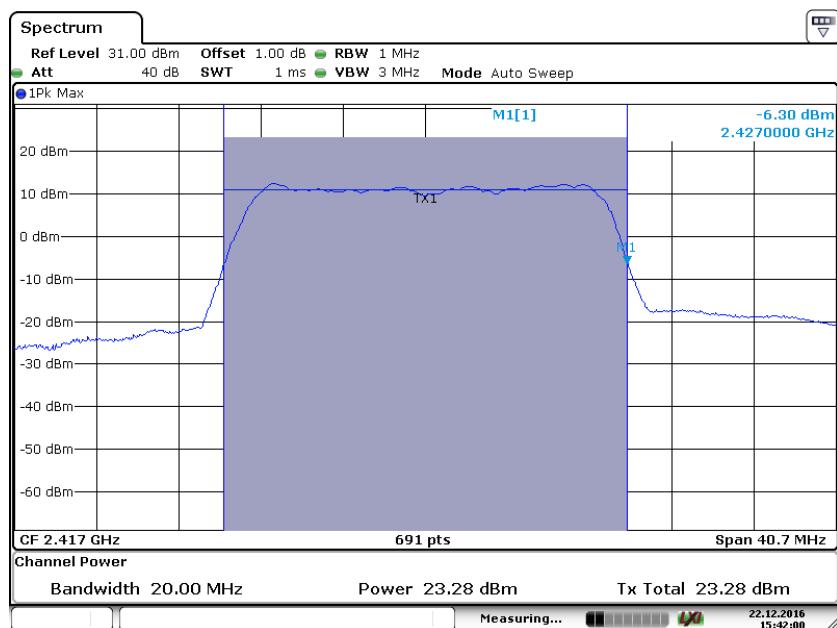


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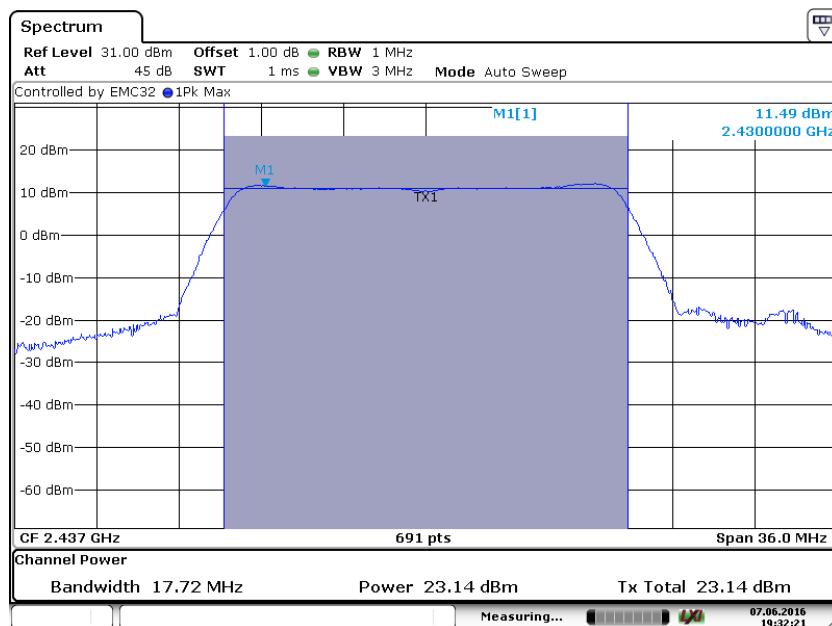
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Channel 6: 2.417GHz:



Channel 6: 2.437GHz:

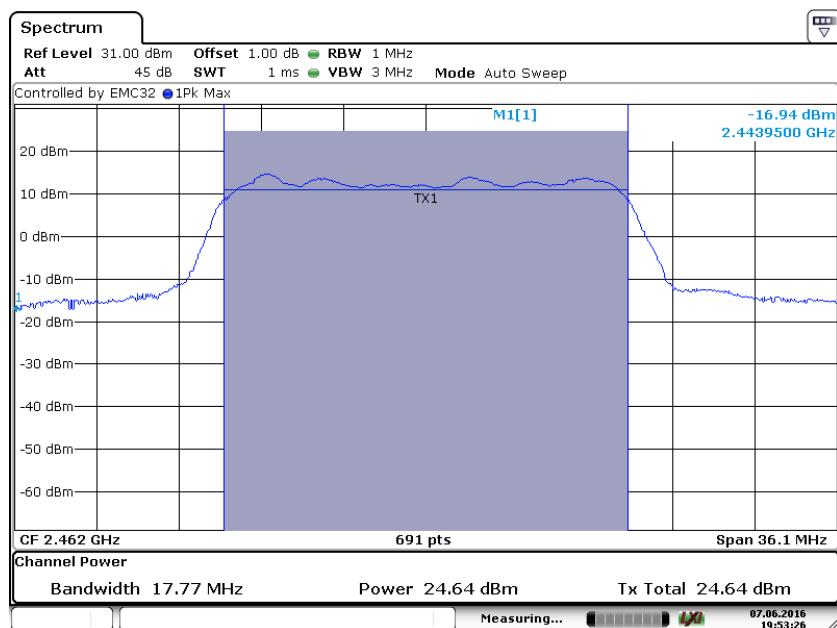


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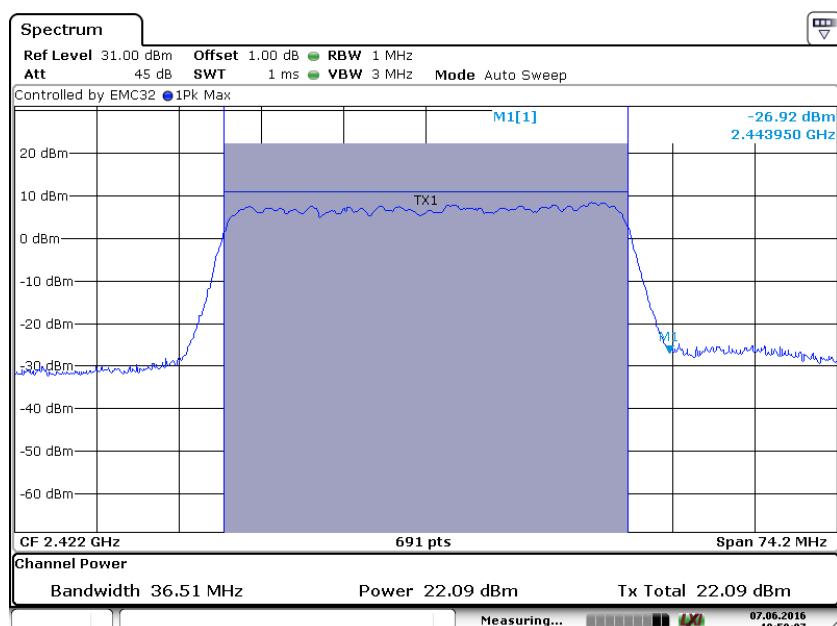
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Channel 11: 2.462GHz:



802.11n(HT40) mode

Channel 3: 2.422GHz:

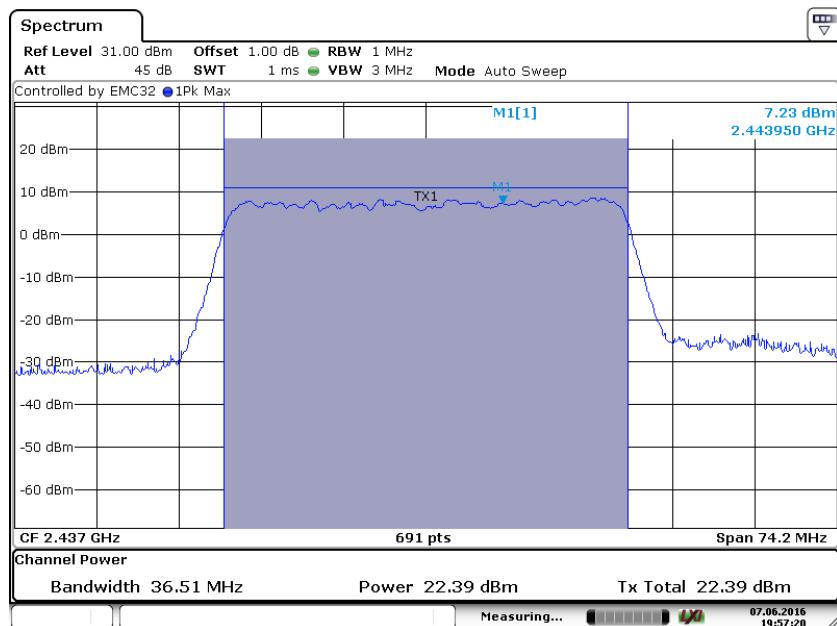


FCC ID: 2AHP4-ONOBCF668

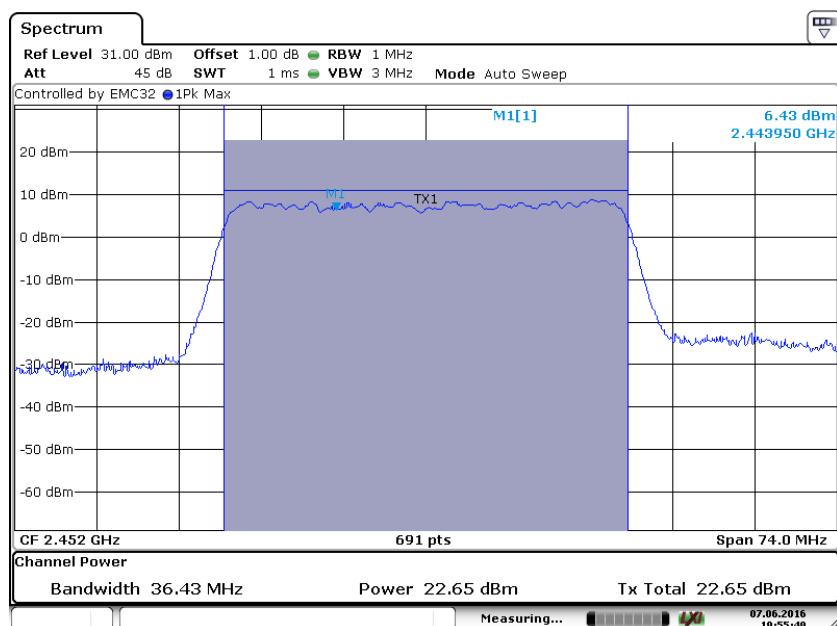
TRF No.: FCC WIFI-a

Report No.: 160309129GZU-003
Issued: 2016-10-25

Channel 6: 2.437GHz:



Channel 9: 2.452GHz:



FCC ID: 2AHP4-ONOBCF668

TRF No.: FCC WIFI-a

4.4 Peak Power Spectral Density

Test Requirement:

FCC Part 15 C section 15.247

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

This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

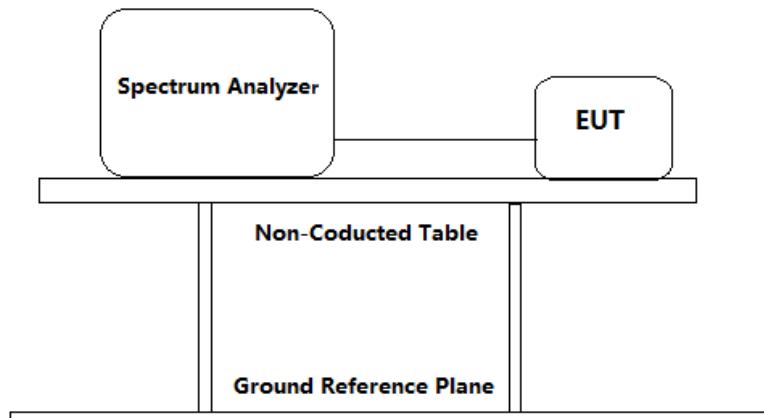
Test Method:

ANSI C63.10: Clause 11.10.2

Test Status:

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.

Test Configuration:



Test Procedure:

1. Remove the antenna from the EUT and then connect a low attention attenuation RF cable (cable loss =0.5 dB) from the antenna port to the spectrum analyzer or power meter.
2. Set the spectrum analyzer:
 - a) Set analyzer center frequency to DTS channel center frequency.
 - b) Set the span= $1.5 \times$ DTS bandwidth.
 - c) Set the RBW to $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
 - d) Set the VBW $\geq [3 \times \text{RBW}]$.
 - 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 RBW.
 - j) If measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat.
3. Measure the Power Spectral Density of the test frequency with special test status.
4. Repeat until all the test status is investigated.
5. Report the worst case.



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Channel No.	Frequency (MHz)	Mode	Data Rate	Measured Peak Power Spectral Density (dBm/3KHz)	Limit	Result
1	2412	802.11b	11 Mbps	-13.24	8dBm/3 kHz	Pass
6	2437		11 Mbps	-13.30		Pass
11	2462		11 Mbps	-13.97		Pass
1	2412		9 Mbps	-16.14		Pass
6	2437		9 Mbps	-16.23		Pass
11	2462		9 Mbps	-16.26		Pass
1	2412		6.5 Mbps	-15.27		Pass
6	2437		6.5 Mbps	-15.17		Pass
11	2462		6.5 Mbps	-15.26		Pass
3	2422	802.11n (HT40)	135 Mbps	-16.55		Pass
6	2437		135 Mbps	-16.41		Pass
9	2452		135 Mbps	-16.39		Pass

Test result: Level = Read Level + Cable Loss (0.5dB).

The unit does meet the FCC requirements.

FCC ID: 2AHP4-ONOBCF668

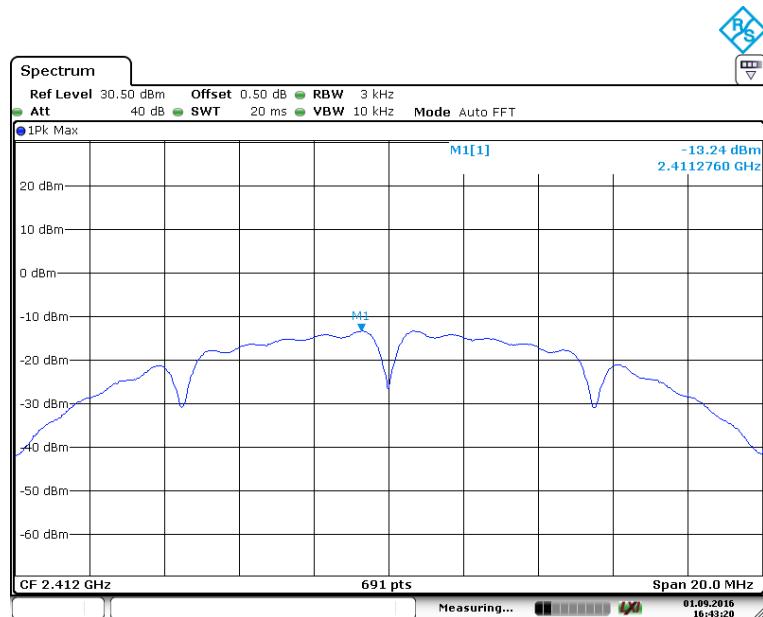
TRF No.: FCC WIFI-a

Report No.: 160309129GZU-003
Issued: 2016-10-25

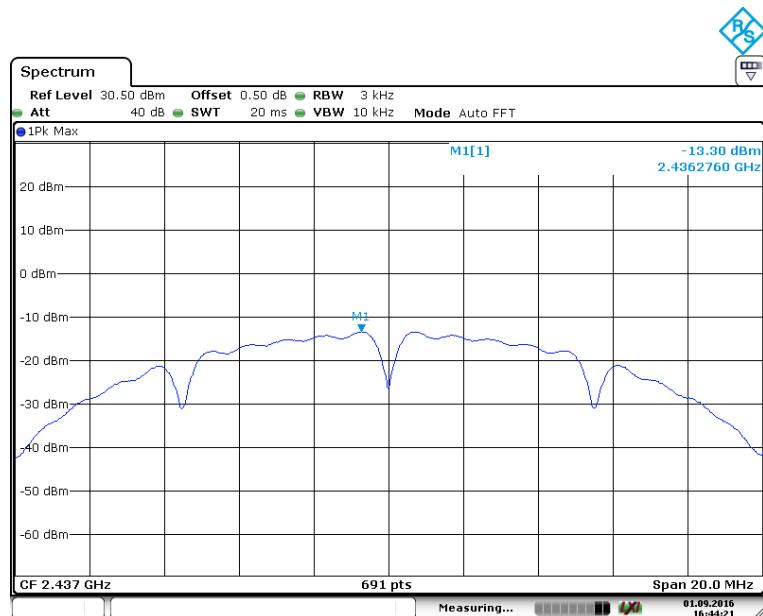
Result plot as follows:

802.11b mode

Channel 1: 2.412GHz:



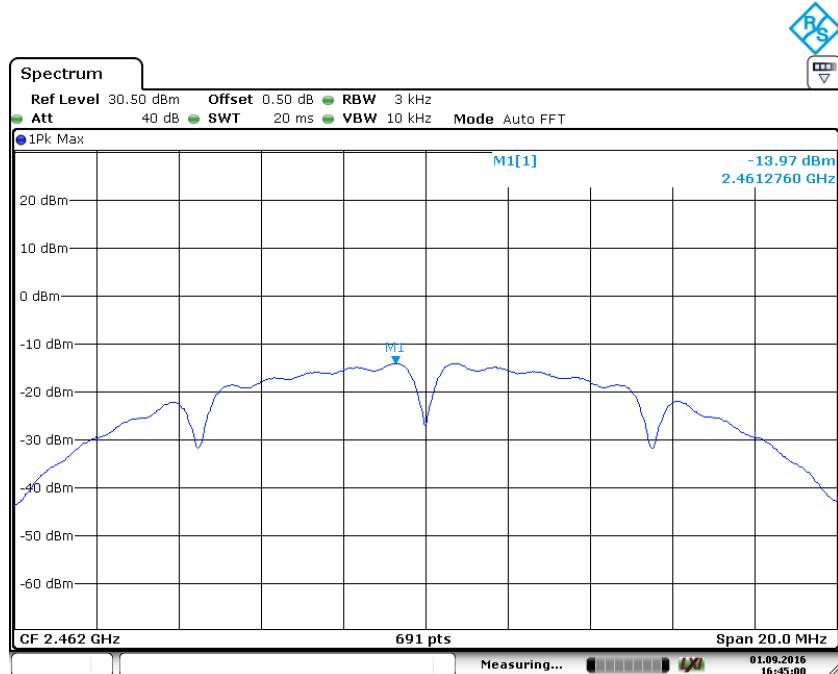
Channel 6: 2.437GHz:



FCC ID: 2AHP4-ONOBCF668
TRF No.: FCC WIFI-a

Report No.: 160309129GZU-003
Issued: 2016-10-25

Channel 11: 2.462GHz:

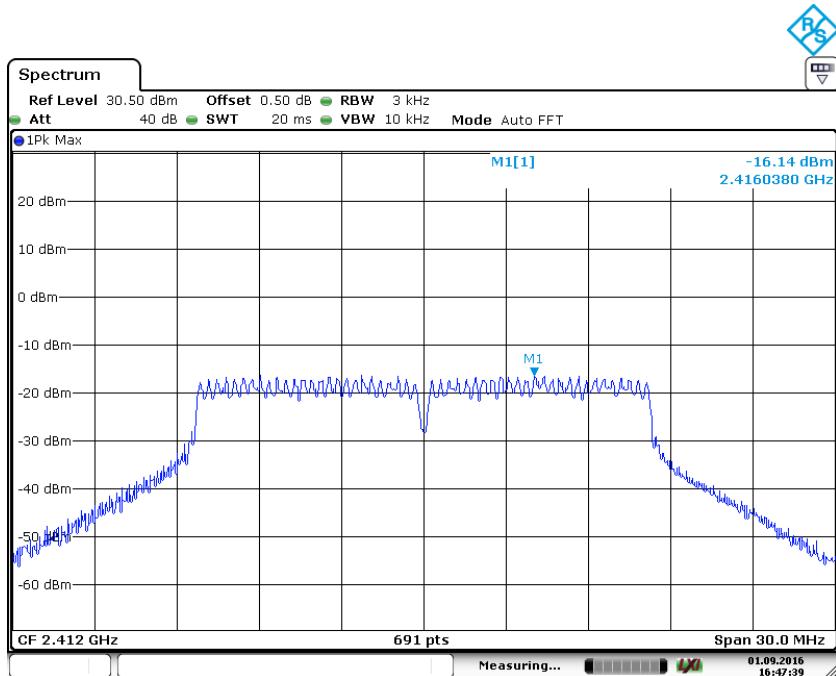


FCC ID: 2AHP4-ONOBCF668
TRF No.: FCC WIFI-a

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Issued: 2016-10-25

802.11g mode

Channel 1: 2.412GHz:

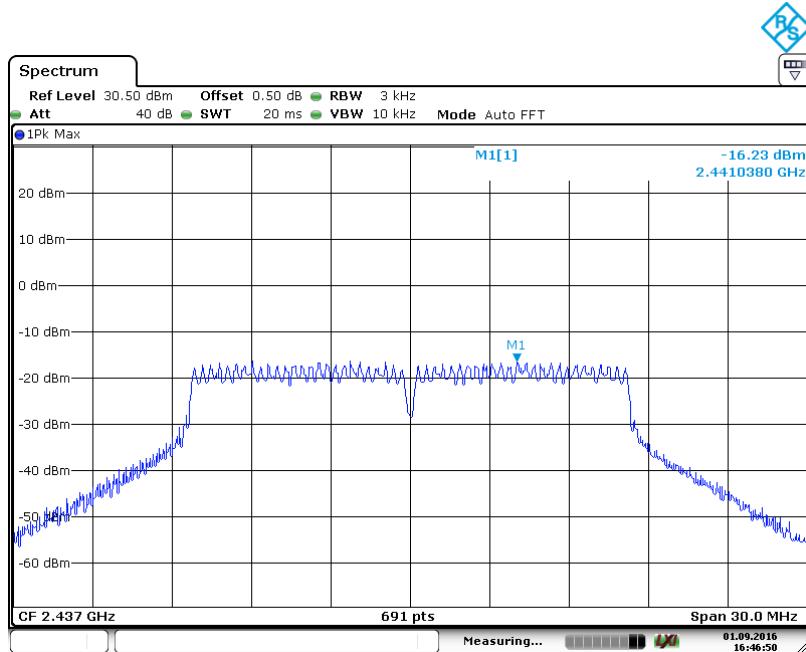


FCC ID: 2AHP4-ONOBCF668

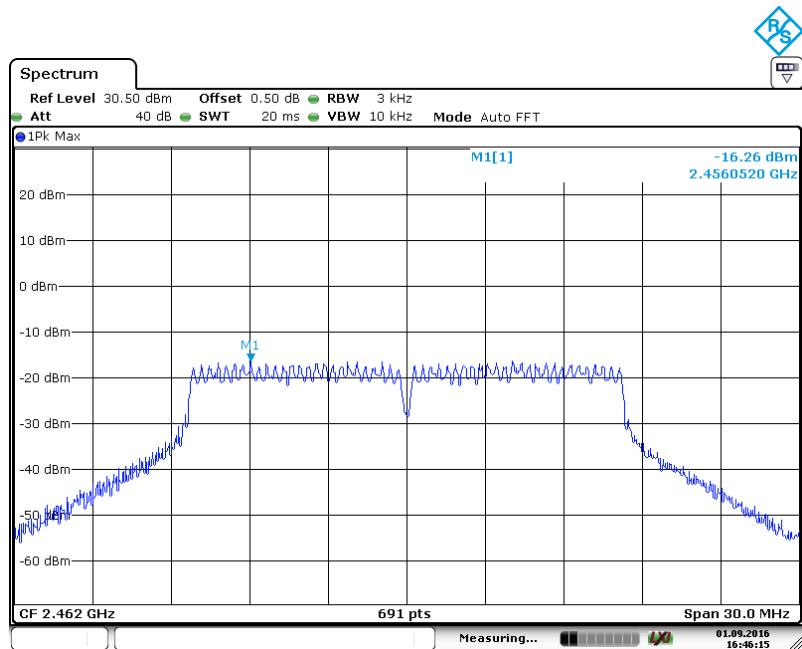
TRF No.: FCC WIFI-a

Report No.: 160309129GZU-003
Issued: 2016-10-25

Channel 6: 2.437GHz:



Channel 11: 2.462GHz:



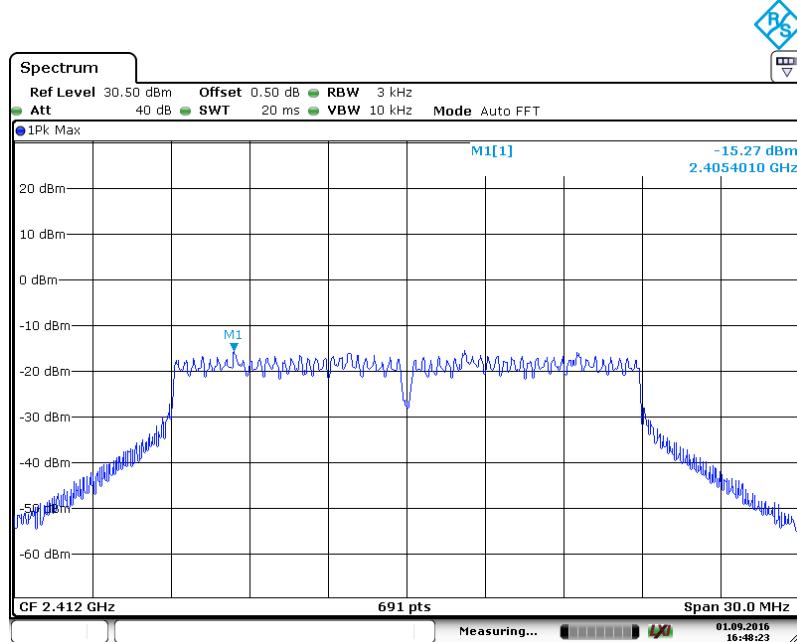
FCC ID: 2AHP4-ONOBCF668

TRF No.: FCC WIFI-a

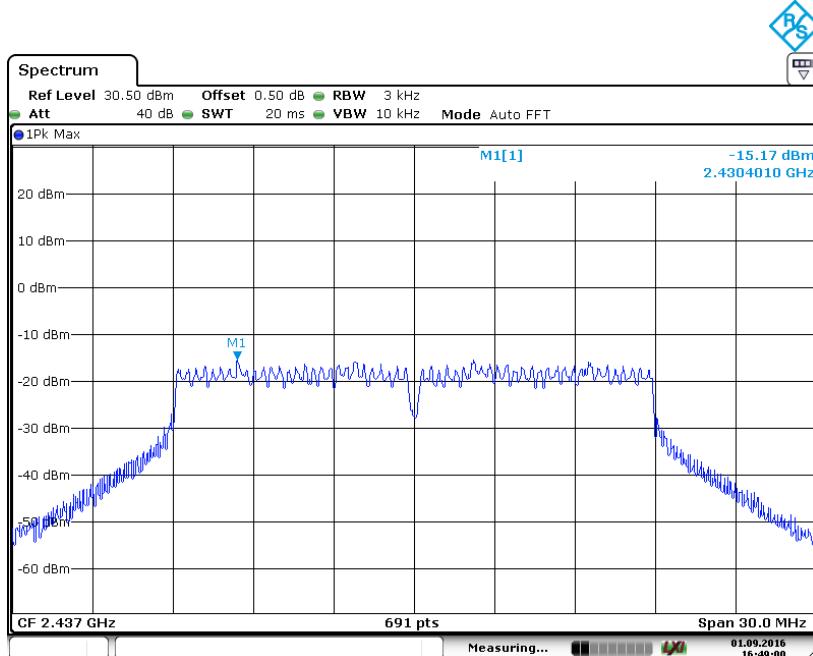
Report No.: 160309129GZU-003
Issued: 2016-10-25

802.11n(HT20) mode

Channel 1: 2.412GHz:



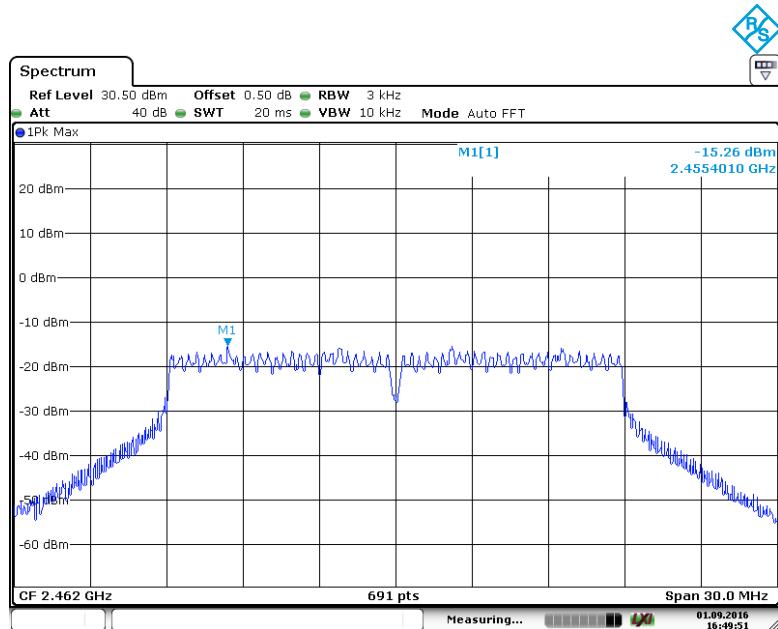
Channel 6: 2.437GHz:



FCC ID: 2AHP4-ONOBCF668

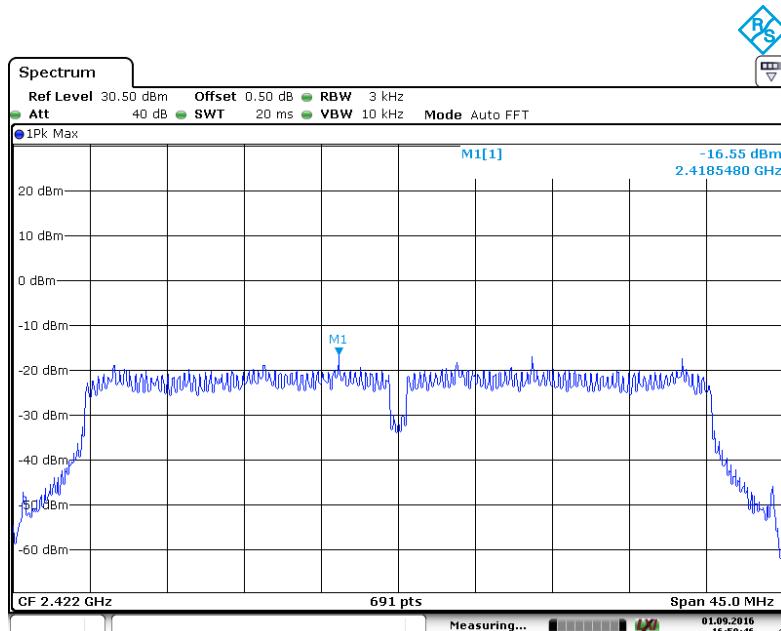
TRF No.: FCC WIFI-a

Channel 11: 2.462GHz:



802.11n(HT40) mode

Channel 3: 2.422GHz:

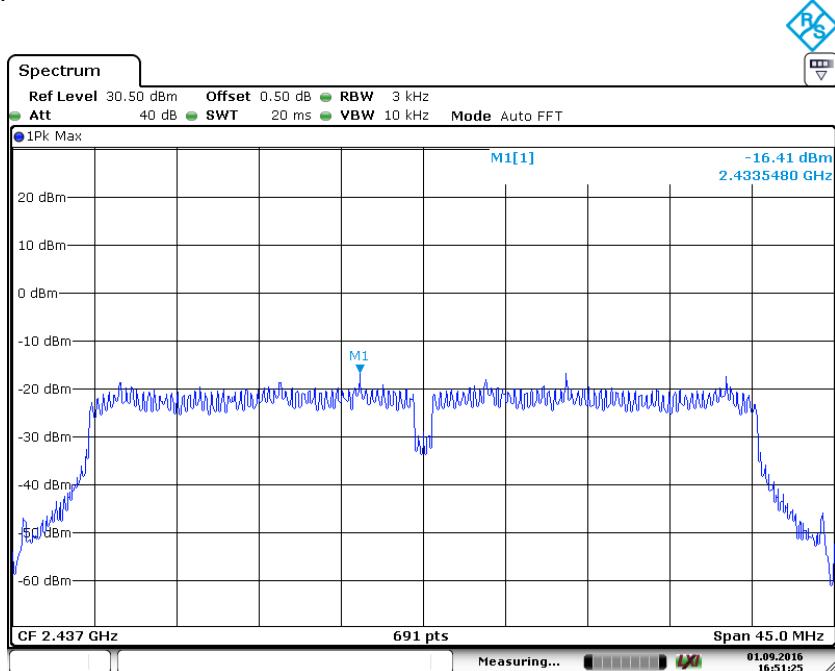


FCC ID: 2AHP4-ONOBCF668

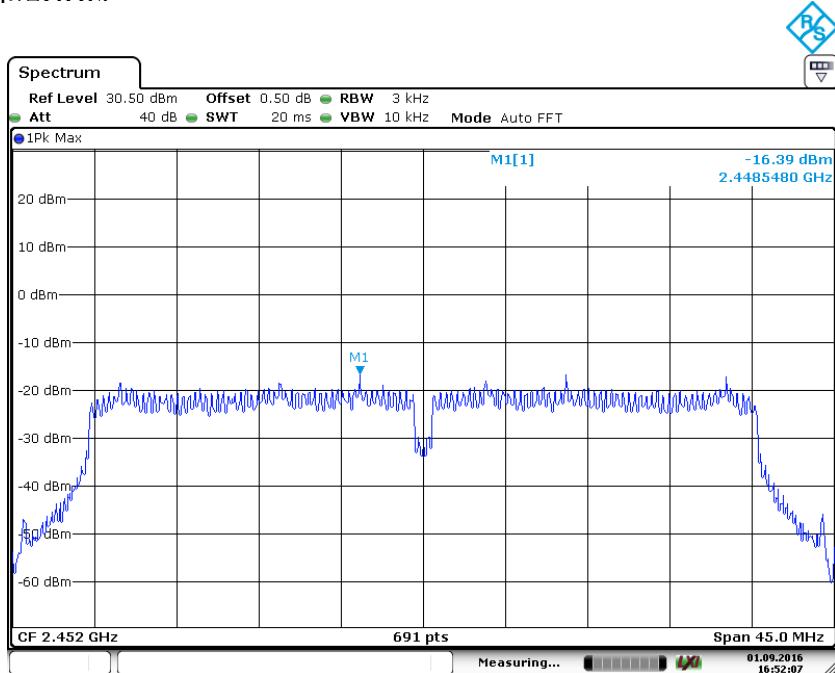
TRF No.: FCC WIFI-a

Report No.: 160309129GZU-003
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Channel 6: 2.437GHz:



Channel 9: 2.452GHz:



FCC ID: 2AHP4-ONOBCF668

TRF No.: FCC WIFI-a

4.5 Out of Band Conducted Emissions

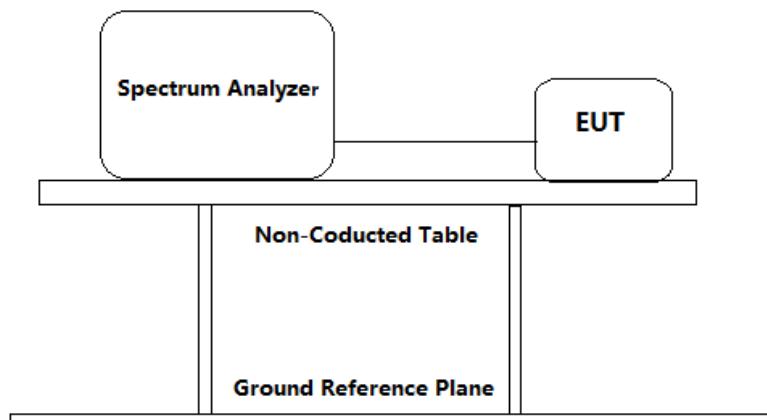
Test Requirement: FCC Part 15 C section 15.247

(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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. Provided the transmitter demonstrates compliance with the peak conducted power limits.

Test Method: ANSI C63.10: Clause 11.11

Test Status: Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.

Test Configuration:



Test Procedure:

1. Remove the antenna from the EUT and then connect a low RF cable (cable loss =1dB) from the antenna port to the spectrum analyzer or power meter.
2. Establish a reference level by using the following procedure:
 - a) Set instrument center frequency to DTS channel center frequency.
 - b) Set the span to $\geq 1.5 \times$ DTS bandwidth.
 - c) Set the RBW = 100 kHz.
 - d) Set the VBW $\geq [3 \times \text{RBW}]$.
 - e) Detector = peak.
 - f) Sweep time = auto couple.

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TRF No.: FCC WIFI-a

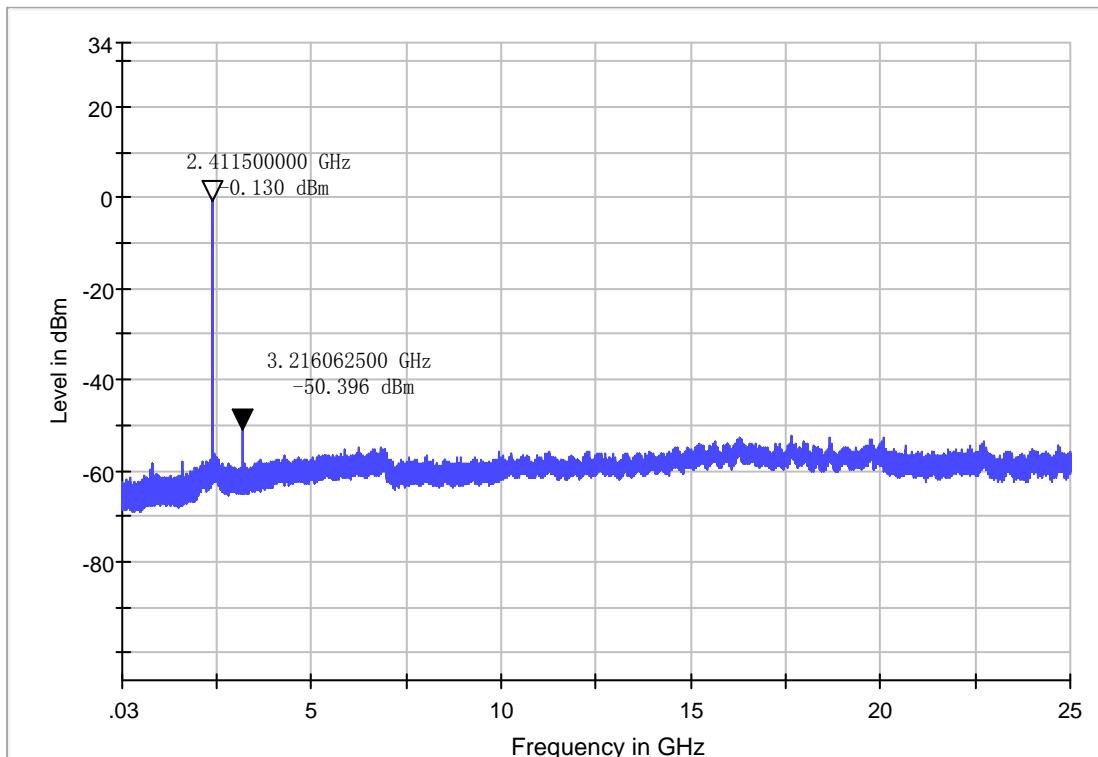
- g) Trace mode = max hold.
- h) Allow trace to fully stabilize.
- i) Use the peak marker function to determine the maximum PSD level.

Note that the channel found to contain the maximum PSD level can be used to establish the reference level

3. Emission level measurement
 - a) Set the center frequency and span to encompass frequency range to be measured.
 - b) Set the RBW = 100 kHz.
 - c) Set the VBW $\geq [3 \times \text{RBW}]$.
 - d) Detector = peak.
 - e) Sweep time = auto couple.
 - f) Trace mode = max hold.
 - g) Allow trace to fully stabilize.
 - h) Use the peak marker function to determine the maximum amplitude level.
4. Measure the Conducted unwanted Emissions of the test frequency with special test status.
5. Repeat until all the test status is investigated.
6. Report the worst case.

Result plot as follows:**802.11b mode with 11Mbps data rate**

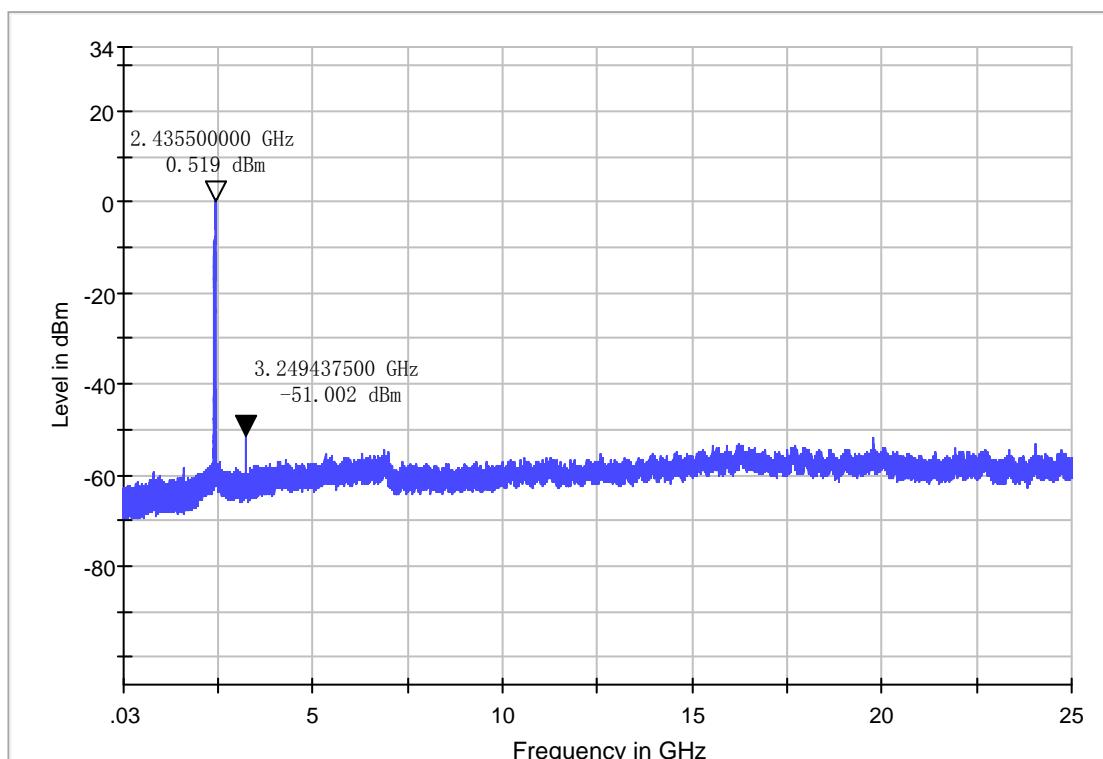
Channel 1: 2.412GHz:



In any 100kHz bandwidth, the Conducted Spurious Emissions from 30 MHz to 25 GHz were greater than 20dB below the peak emission within the band that contains the highest level of the desired power.

802.11b mode with 11Mbps data rate

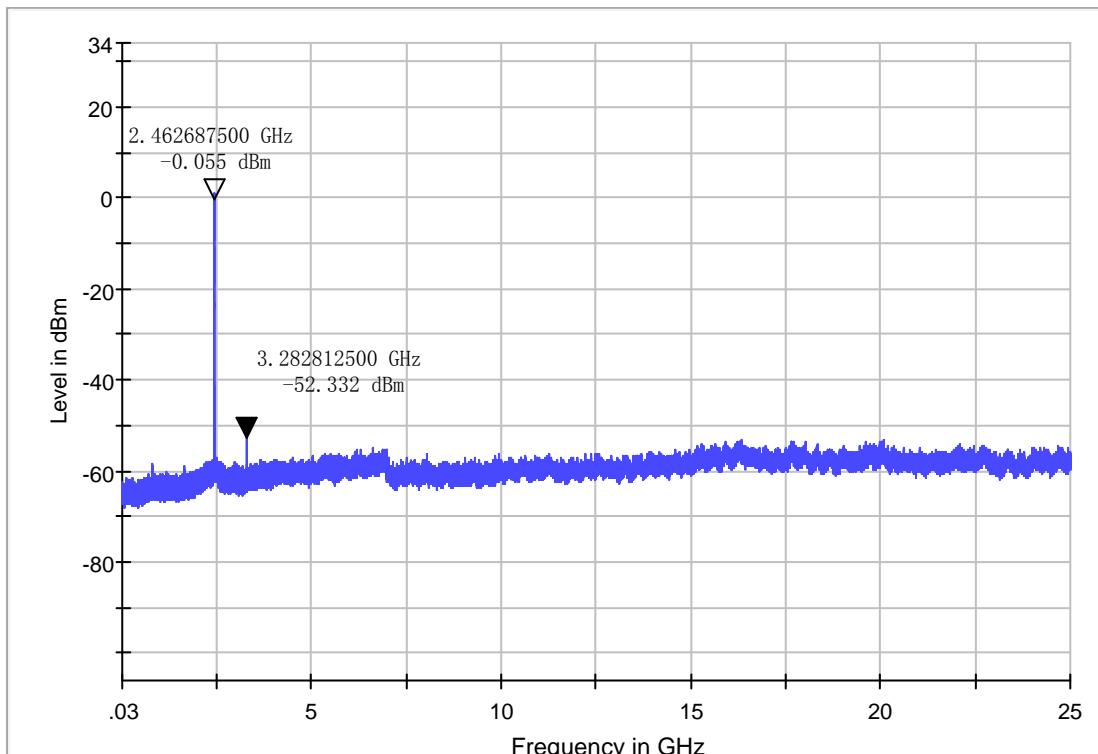
Channel 6: 2.437GHz:



In any 100kHz bandwidth, the Conducted Spurious Emissions from 30 MHz to 25 GHz were greater than 20dB below the peak emission within the band that contains the highest level of the desired power.

802.11b mode with 11Mbps data rate

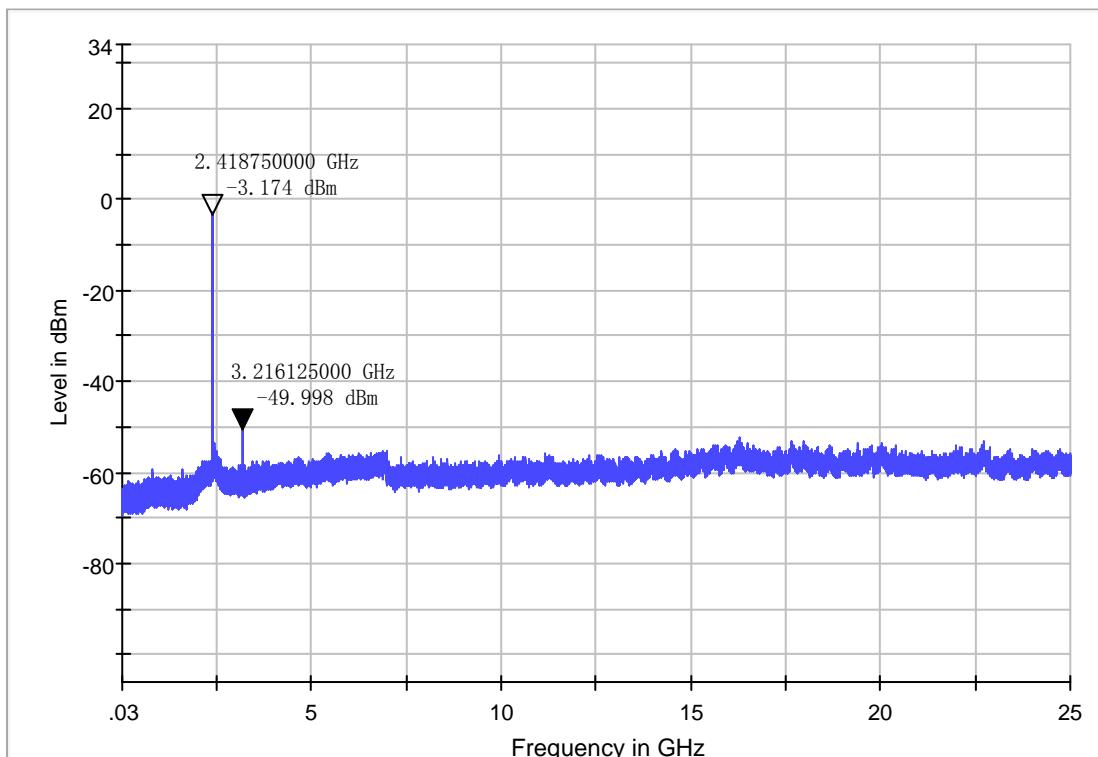
Channel 11:2.462 GHz:



In any 100kHz bandwidth, the Conducted Spurious Emissions from 30 MHz to 25 GHz were greater than 20dB below the peak emission within the band that contains the highest level of the desired power.

802.11g mode with 9Mbps data rate

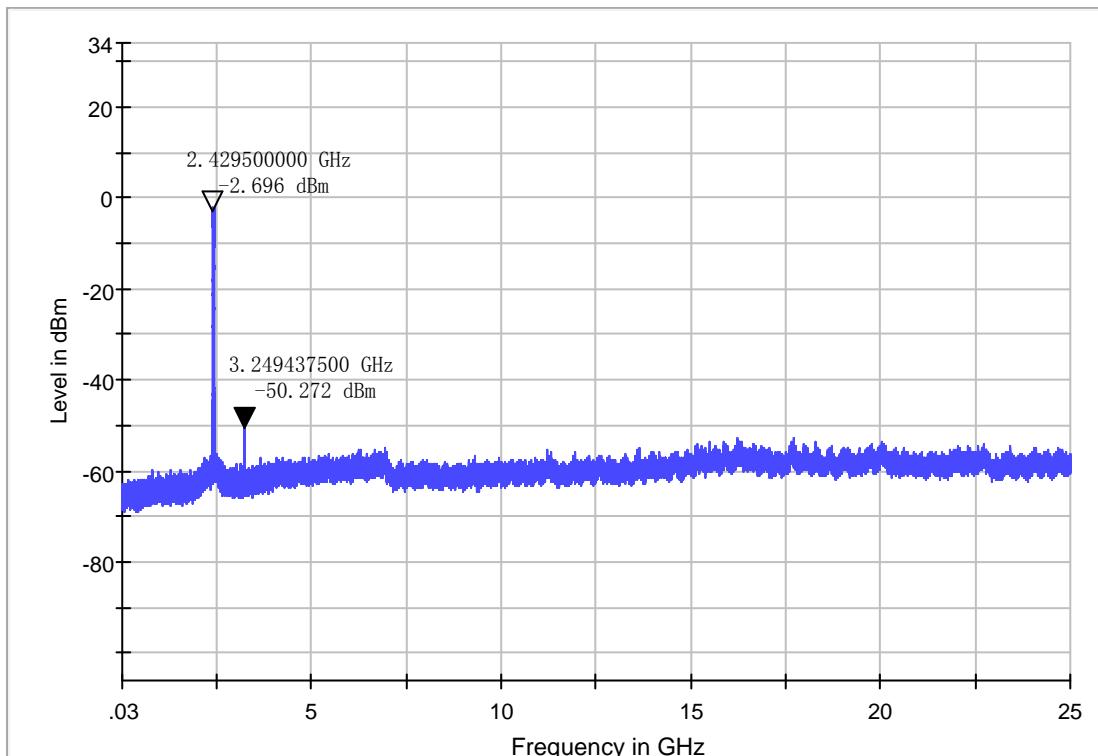
Channel 1: 2.412GHz:



In any 100kHz bandwidth, the Conducted Spurious Emissions from 30 MHz to 25 GHz were greater than 20dB below the peak emission within the band that contains the highest level of the desired power.

802.11g mode with 9Mbps data rate

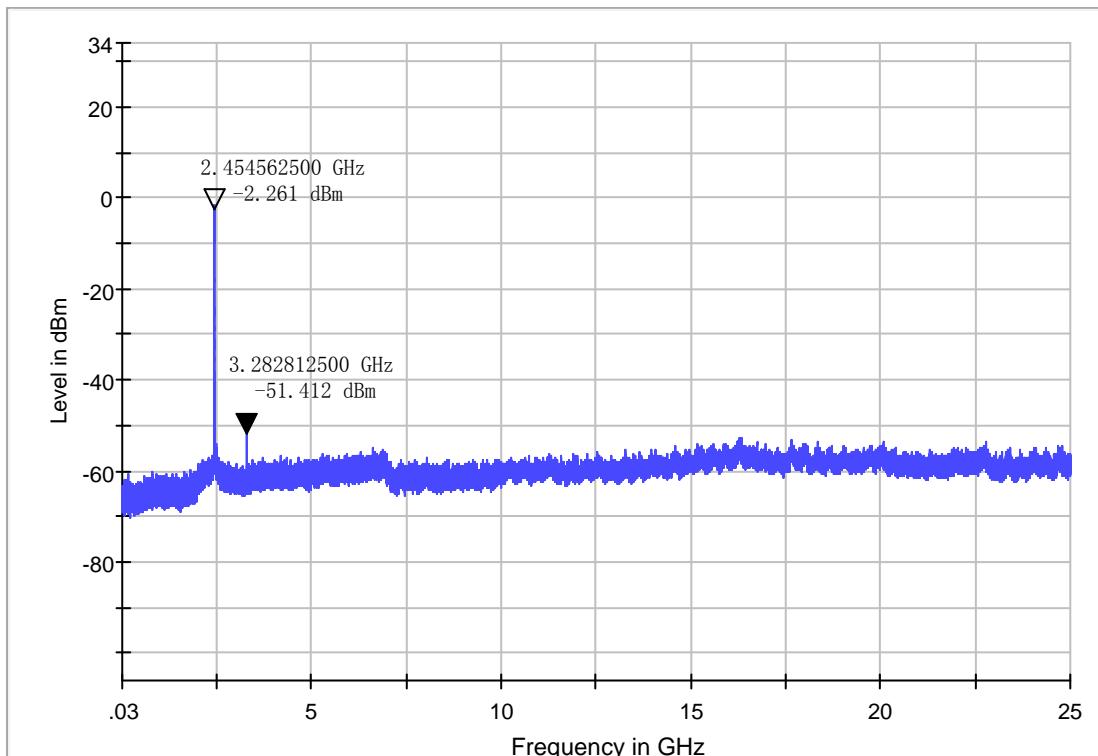
Channel 6: 2.437GHz:



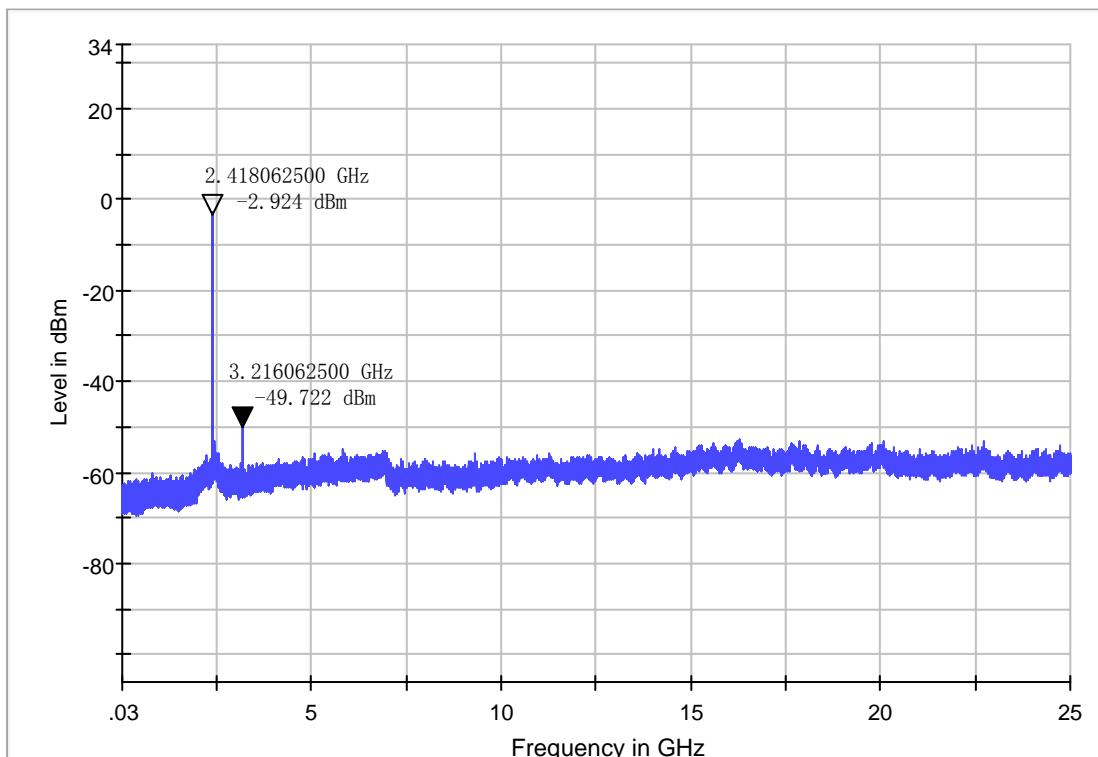
In any 100kHz bandwidth, the Conducted Spurious Emissions from 30 MHz to 25 GHz were greater than 20dB below the peak emission within the band that contains the highest level of the desired power.

802.11g mode with 9Mbps data rate

Channel 11:2.462 GHz:



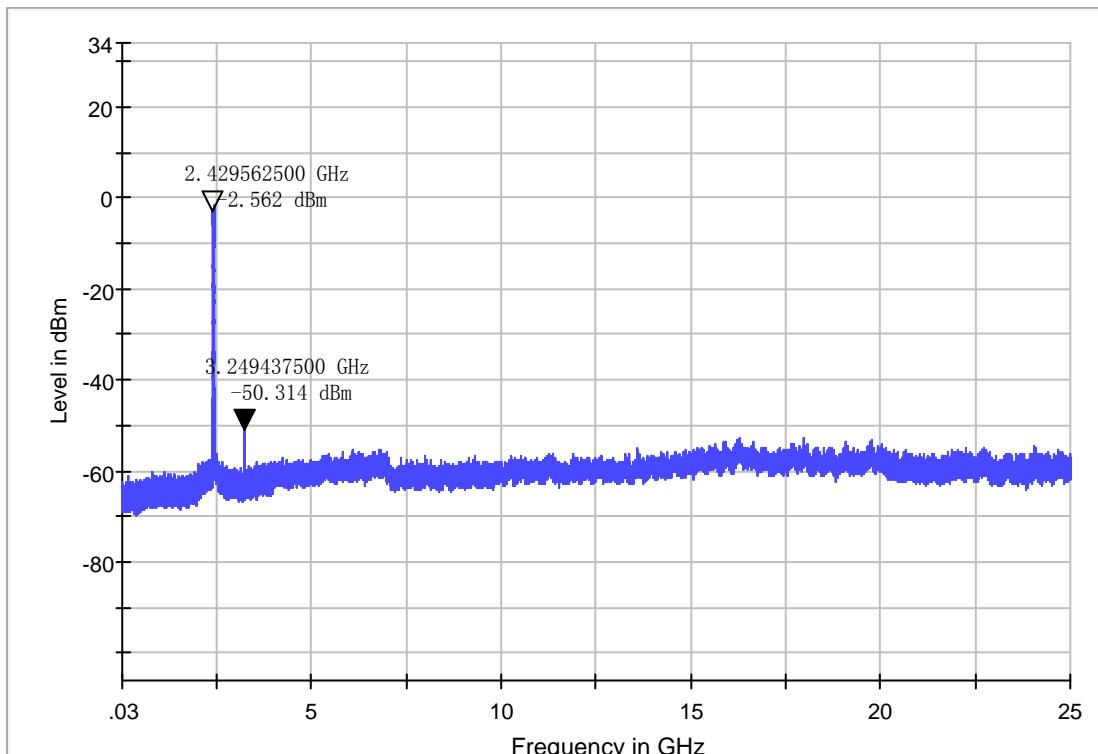
In any 100kHz bandwidth, the Conducted Spurious Emissions from 30 MHz to 25 GHz were greater than 20dB below the peak emission within the band that contains the highest level of the desired power.

802.11n(HT20) mode with 6.5Mbps data rate
Channel 1: 2.412GHz:

In any 100kHz bandwidth, the Conducted Spurious Emissions from 30 MHz to 25 GHz were greater than 20dB below the peak emission within the band that contains the highest level of the desired power.

802.11n(HT20) mode with 6.5Mbps data rate

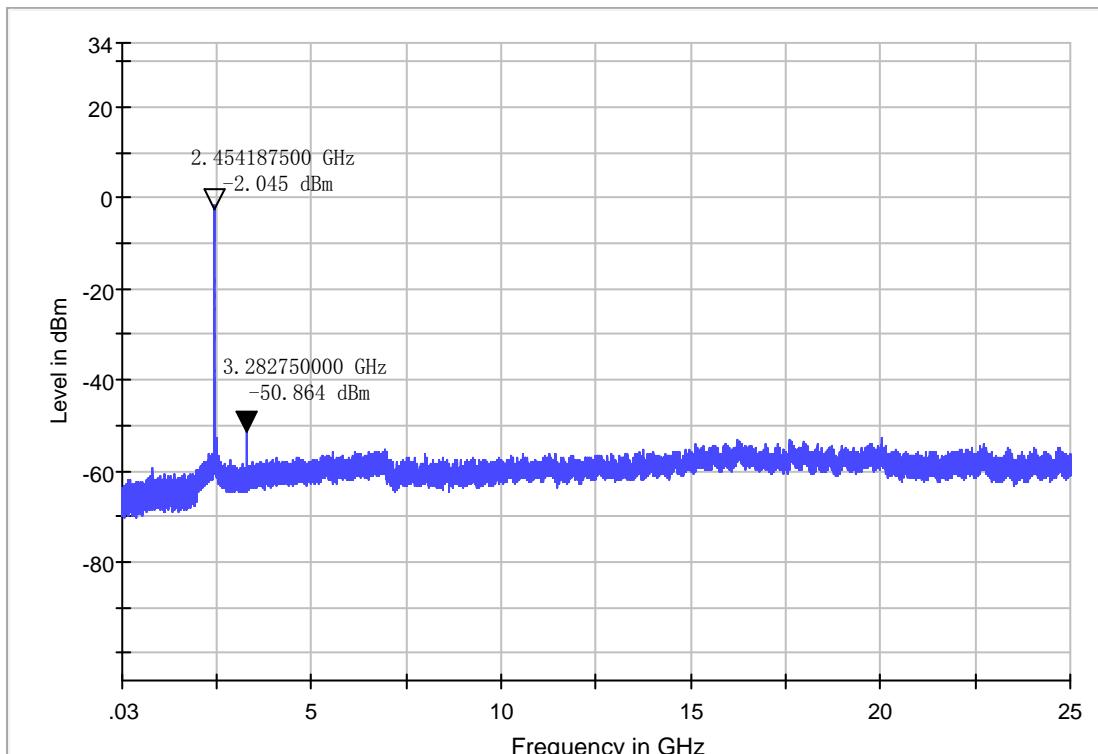
Channel 6: 2.437GHz:



In any 100kHz bandwidth, the Conducted Spurious Emissions from 30 MHz to 25 GHz were greater than 20dB below the peak emission within the band that contains the highest level of the desired power.

802.11n(HT20) mode with 6.5Mbps data rate

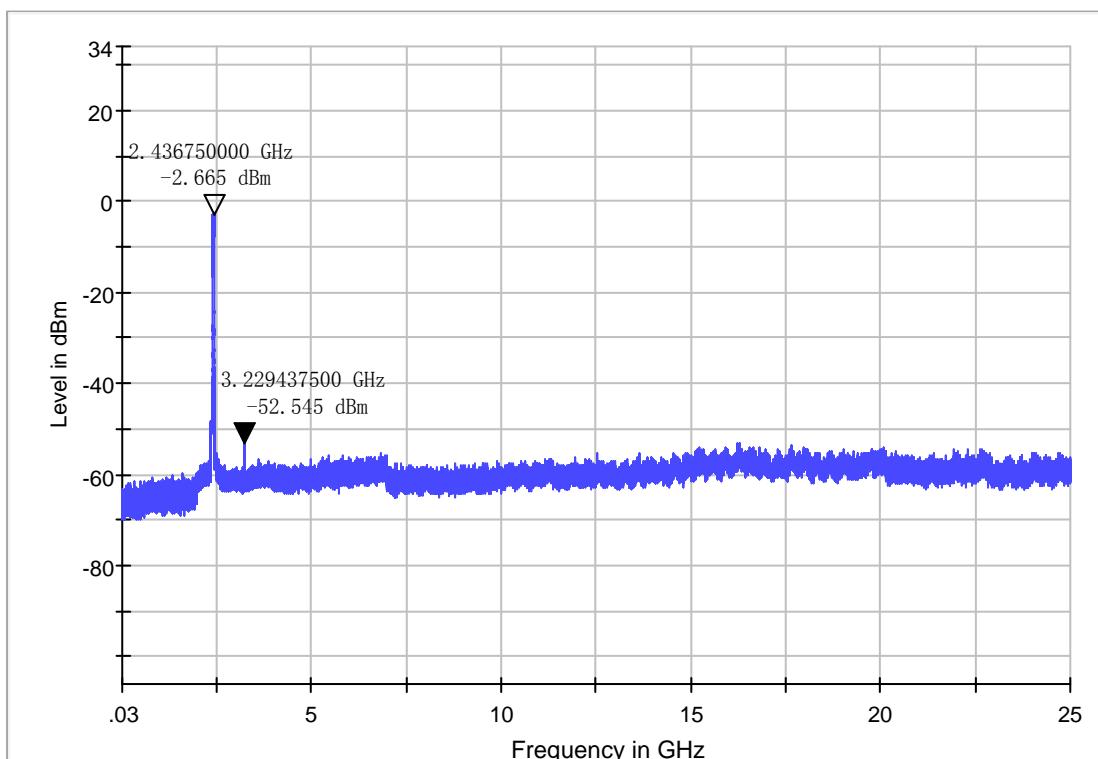
Channel 11:2.462 GHz:



In any 100kHz bandwidth, the Conducted Spurious Emissions from 30 MHz to 25 GHz were greater than 20dB below the peak emission within the band that contains the highest level of the desired power.

802.11n(HT40) mode with 135Mbps data rate

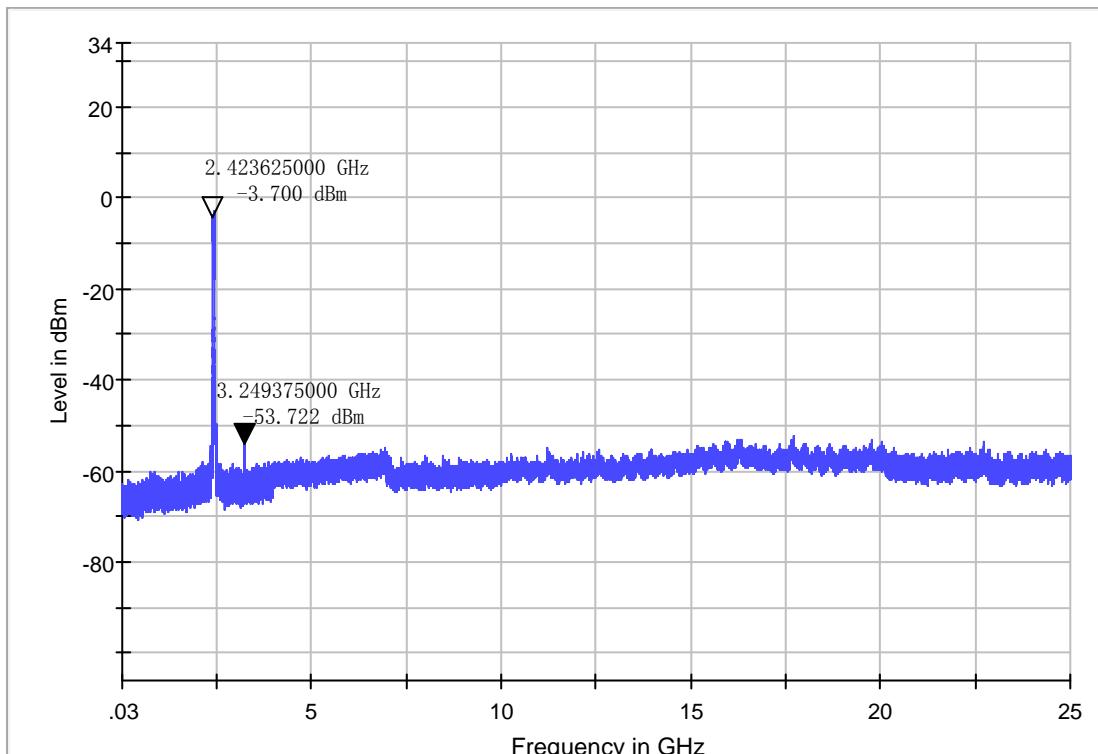
Channel 3: 2.422GHz:



In any 100kHz bandwidth, the Conducted Spurious Emissions from 30 MHz to 25 GHz were greater than 20dB below the peak emission within the band that contains the highest level of the desired power.

802.11n(HT40) mode with 135Mbps data rate

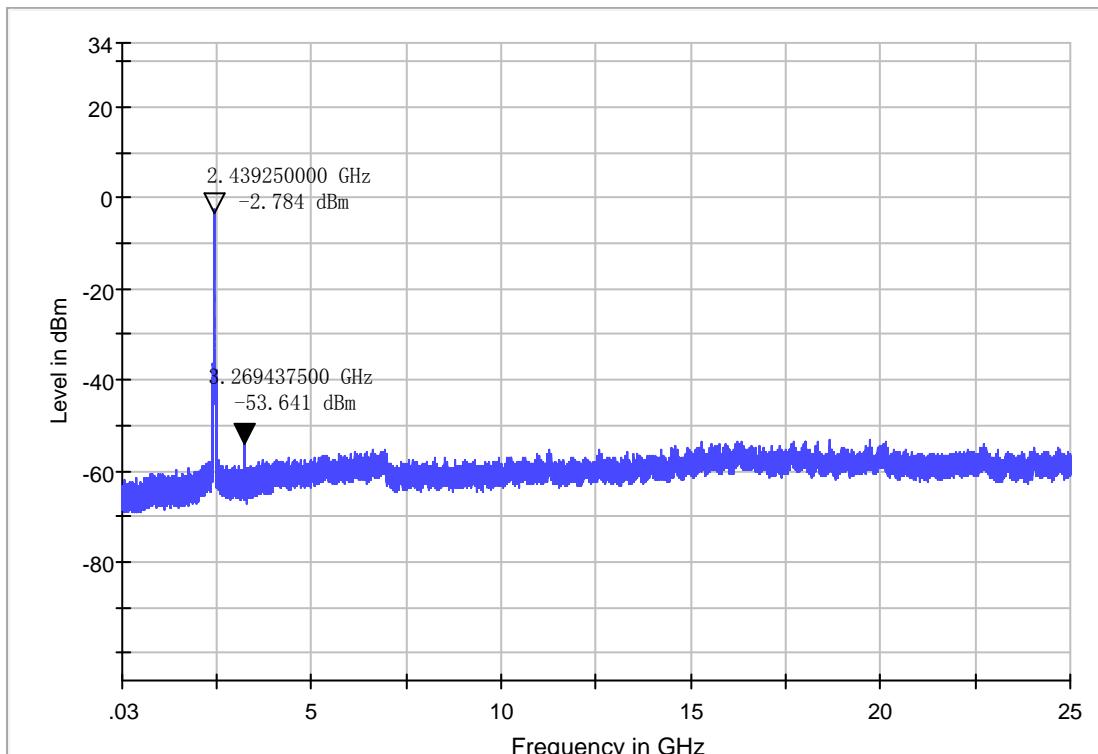
Channel 6: 2.437GHz:



In any 100kHz bandwidth, the Conducted Spurious Emissions from 30 MHz to 25 GHz were greater than 20dB below the peak emission within the band that contains the highest level of the desired power.

802.11n(HT40) mode with 135Mbps data rate

Channel 9: 2.452 GHz:



In any 100kHz bandwidth, the Conducted Spurious Emissions from 30 MHz to 25 GHz were greater than 20dB below the peak emission within the band that contains the highest level of the desired power.



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4.6 Out of Band Radiated Emissions

For out of band radiated emissions into Non-Restricted Frequency Bands were performed at a 3m separation distance to determine whether these emissions complied with the 20dB attenuation requirement.

- Not required, since all emissions are more than 20dB below fundamental
- See attached data sheet

4.7 Radiated Emissions in Restricted Bands

Test Requirement: FCC Part 15 C section 15.247
(d) In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

Test Method: ANSI C63.10: Clause 11.12.1, 6.4, 6.5 and 6.6

Test Status: Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.

Test site: Measurement Distance: 3m (Semi-Anechoic Chamber)

Limit: 40.0 dB μ V/m between 30MHz & 88MHz;
43.5 dB μ V/m between 88MHz & 216MHz;
46.0 dB μ V/m between 216MHz & 960MHz;
54.0 dB μ V/m above 960MHz.

Detector: For Peak and Quasi-Peak value:
RBW =
1 MHz for $f \geq 1$ GHz,
200 Hz for 9 kHz to 150 kHz
9 kHz for 150 kHz to 30 MHz
120 kHz for 30 MHz to 1GHz
VBW \geq RBW
Sweep = auto
Detector function = peak for $f \geq 1$ GHz, QP for $f < 1$ GHz
Trace = max hold

For AV value:
RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz
VBW=3 MHz
Detector function=AV detector
Sweep = auto
Trace = max hold

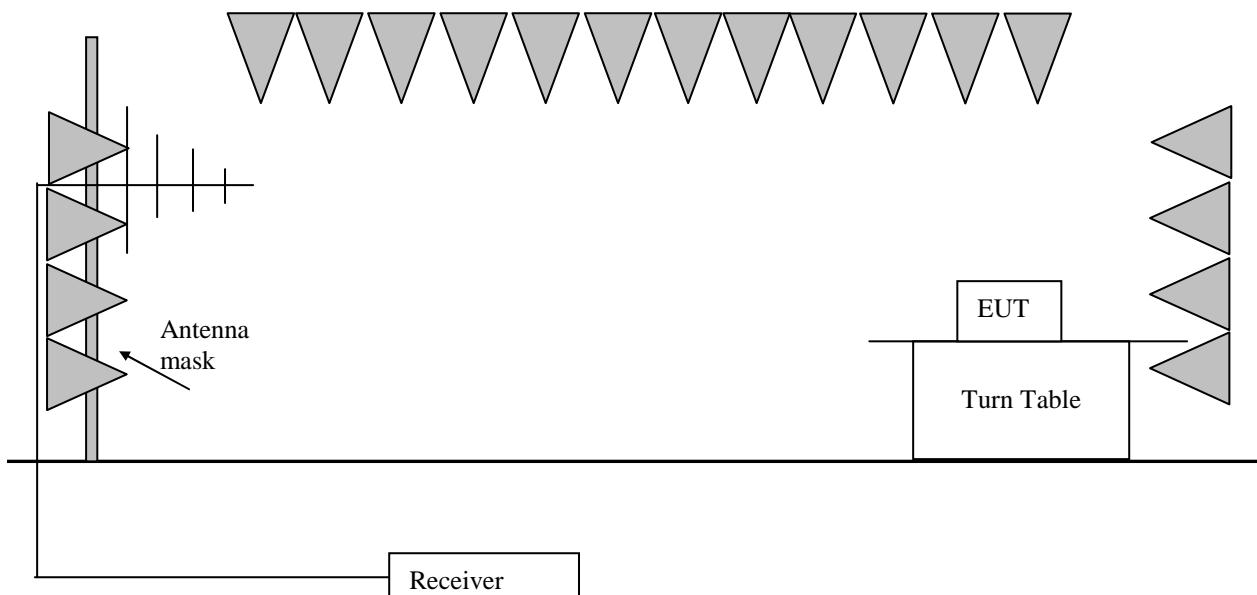
Section 15.205 Restricted bands of operation.

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

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

Test Configuration:

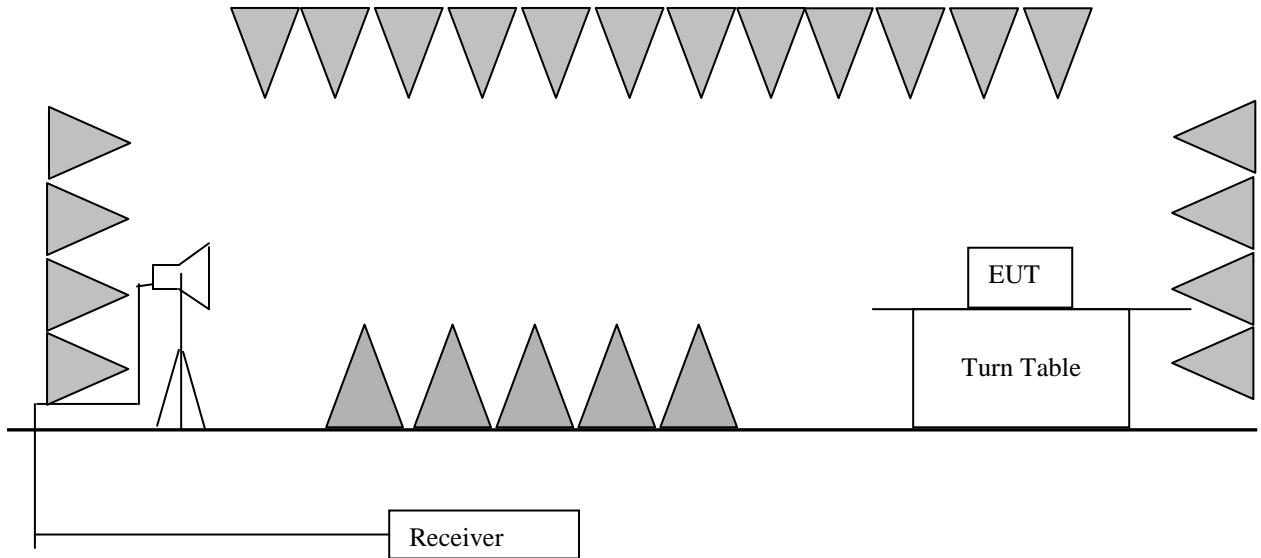
1) 30 MHz to 1 GHz emissions:



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2) 1 GHz to 40 GHz emissions:



Test Procedure:

Test site with RF absorbing material covering the ground plane that met the site validation criterion called out in CISPR 16-1-4:2010 was used to perform radiated emission test above 1 GHz.

The receiver was scanned from 9 kHz to 25 GHz. When an emission was found, the table was rotated to produce the maximum signal strength. An initial pre-scan was performed for in peak detection mode using the receiver. The EUT was measured for both the Horizontal and Vertical polarities and performed a pre-test three orthogonal planes. For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. The worst case emissions were reported.

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any), Average Factor (optional) from the measured reading. The basic equation with a sample calculation is as follows:

$$\begin{aligned} \text{FS} &= \text{RA} + \text{AF} + \text{CF} - \text{AG} \\ \rightarrow \quad \text{FS} &= \text{RA} + \text{Correct Factor} \\ \text{where FS} &= \text{Field Strength in } \text{dB}\mu\text{V/m} \\ \text{RA} &= \text{Receiver Amplitude (including preamplifier) in } \text{dB}\mu\text{V} \\ \text{CF} &= \text{Cable Attenuation Factor in dB} \\ \text{AF} &= \text{Antenna Factor in dB} \\ \text{AG} &= \text{Amplifier Gain in dB} \\ \text{Correct Factor} &= \text{AF} + \text{CF} - \text{AG} \end{aligned}$$

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows:

$$\text{FS} = \text{RA} + \text{Correct Factor}$$

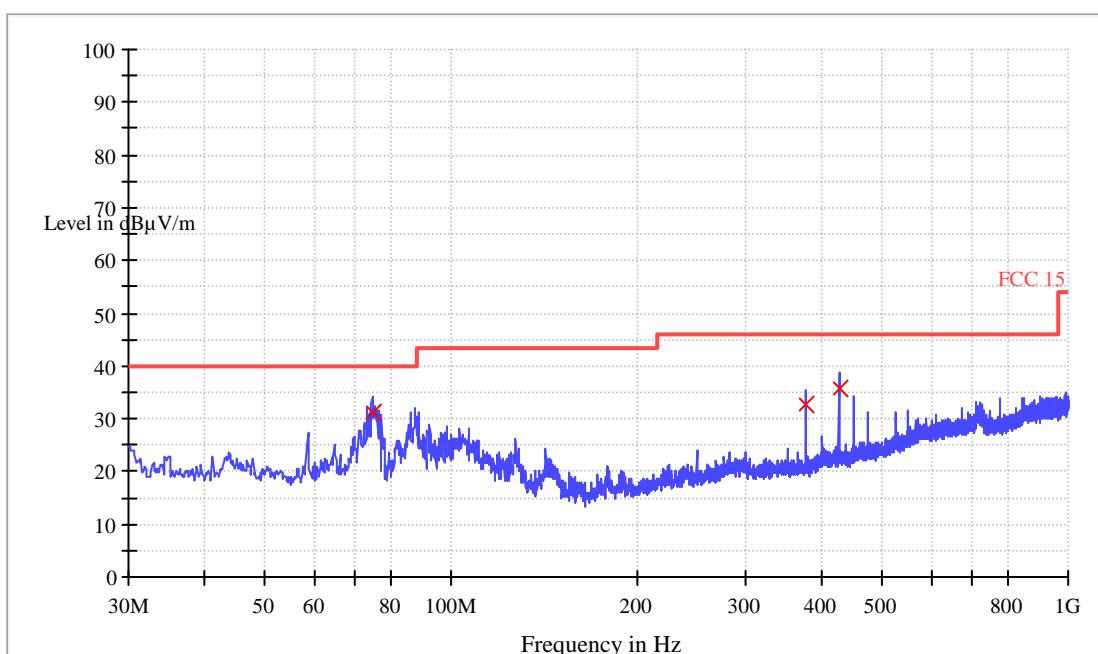
802.11b mode with 11Mbps data rate

9 kHz~30 MHz Field Strength of Unwanted Emissions for Quasi-Peak Measurement

The measurements with active loop antenna were greater than 20dB below the limit, so the test data were not recorded in the test report.

Test at Channel 1 (2.412 GHz) in transmitting status.

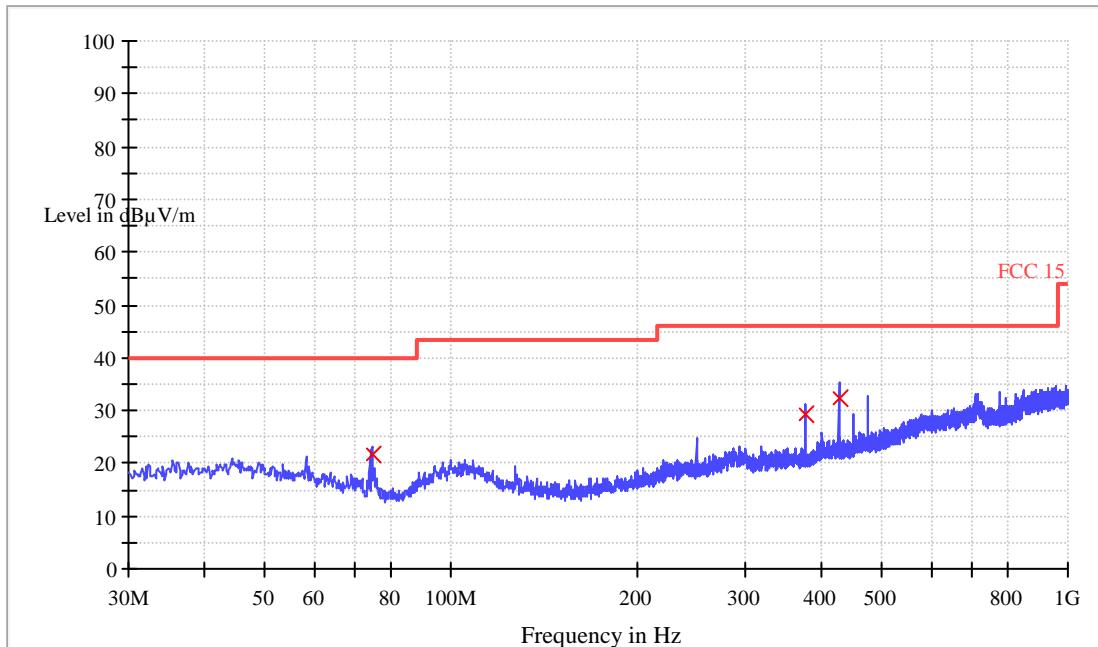
30 MHz~1 GHz Spurious Emissions .Quasi-Peak Measurement.

Vertical:**QP**

Frequency (MHz)	QuasiPeak (dB μ V/m)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dB μ V/m)
74.520000	31.4	120.000	V	7.9	8.6	40.0
374.920000	32.6	120.000	V	16.1	13.4	46.0
424.920000	35.9	120.000	V	17.6	10.1	46.0

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Horizontal:**QP**

Frequency (MHz)	QuasiPeak (dBµV/m)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBµV/m)
74.520000	21.6	120.000	H	7.9	18.4	40.0
374.920000	29.1	120.000	H	16.1	16.9	46.0
424.920000	32.4	120.000	H	17.6	13.6	46.0

1~25 GHz Radiated Emissions.

Polarization	Frequency (MHz)	PK Net at 3m (dB μ V/m)	AV Net at 3m (dB μ V/m)	Correction Factor (dB)	PK Limit at 3m (dB μ V/m)	PK Margin (dB)	AV Limit at 3m (dB μ V/m)	AV Margin (dB)
Horizontal	1328.312	46.0	/	-13.5	74.0	/	54.0	-8.0
Horizontal	3188.800	42.7	/	-4.6	74.0	/	54.0	-11.3
Horizontal	4823.000	49.3	/	-0.9	74.0	/	54.0	-4.7
Vertical	1327.600	52.9	/	-13.5	74.0	/	54.0	-1.1
Vertical	1646.000	42.1	/	-11.8	74.0	/	54.0	-11.9
Vertical	4823.000	49.8	/	-0.9	74.0	/	54.0	-4.2

The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

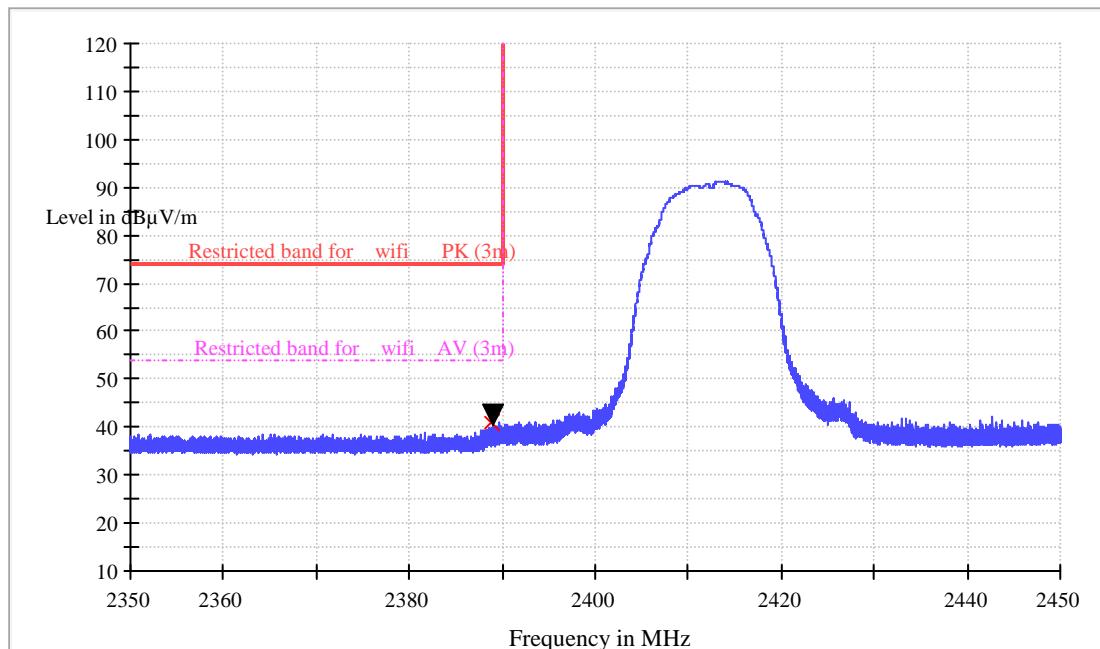
Correction Factor = Antenna Factor + Cable Loss -Preamplifier Factor.

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

Band Edge test Restricted Bands

Test in 2412MHz

Horizontal

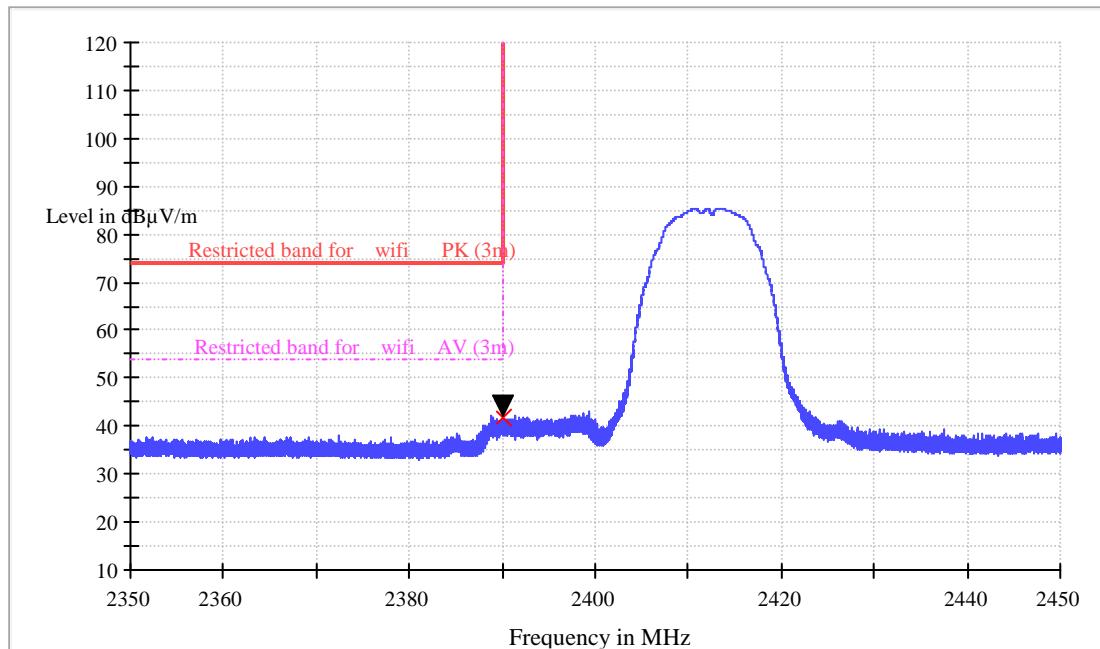
**Result Table_Single**

Frequency (MHz)	MaxPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Limits dB μ V/m
2388.800000	41.1	1000.0	1000.000	150.0	H	0.0	-7.8	54

FCC ID: 2AHP4-ONOBCF668

TRF No.: FCC WIFI-a

Vertical

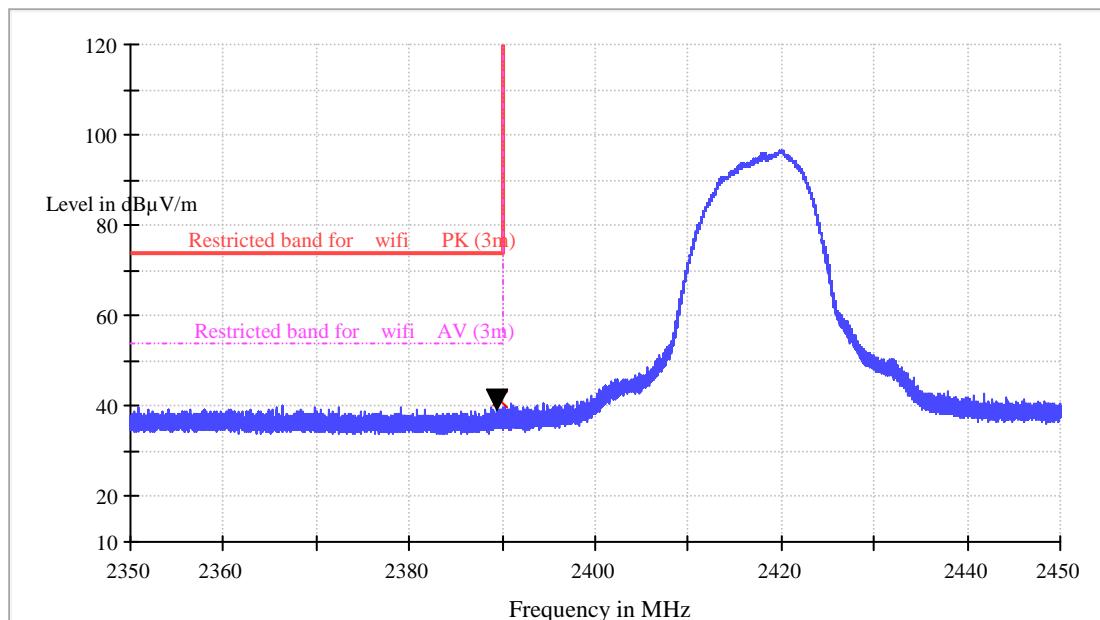
**Result Table_Single**

Frequency (MHz)	MaxPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Limits dB μ V/m
2390.000000	42.5	1000.0	1000.000	150.0	V	359.0	-7.8	54

FCC ID: 2AHP4-ONOBCF668

TRF No.: FCC WIFI-a

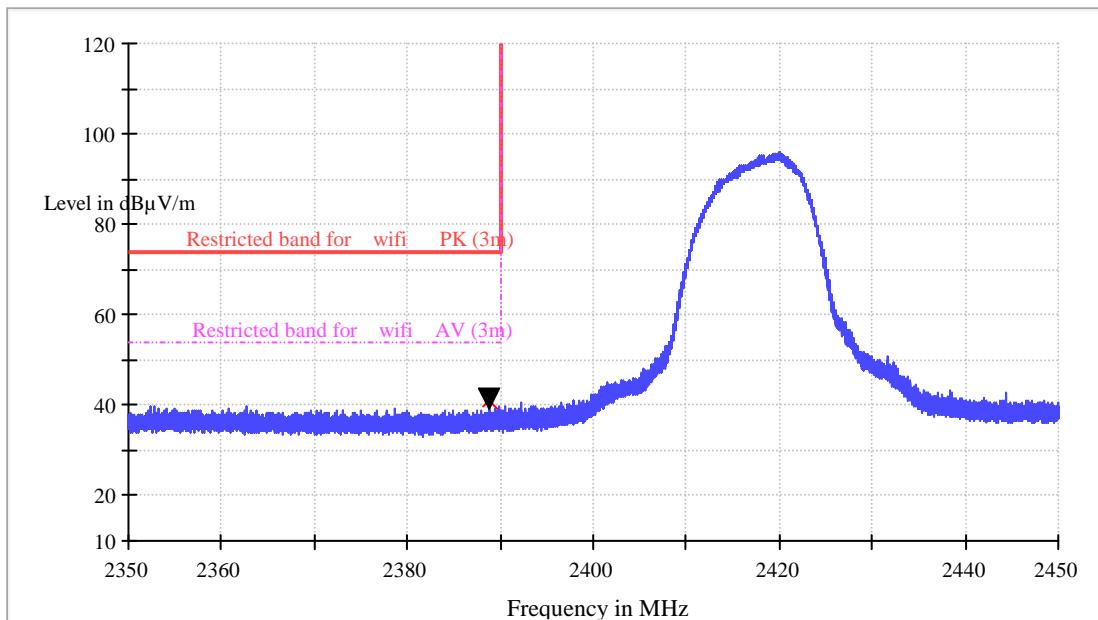
Test in 2417MHz

**Result Table_Single**

Frequency (MHz)	MaxPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Limits dB μ V/m
2389.600000	41.6	1000.0	1000.000	100.0	H	1.0	-7.3	54

FCC ID: 2AHP4-ONOBCF668

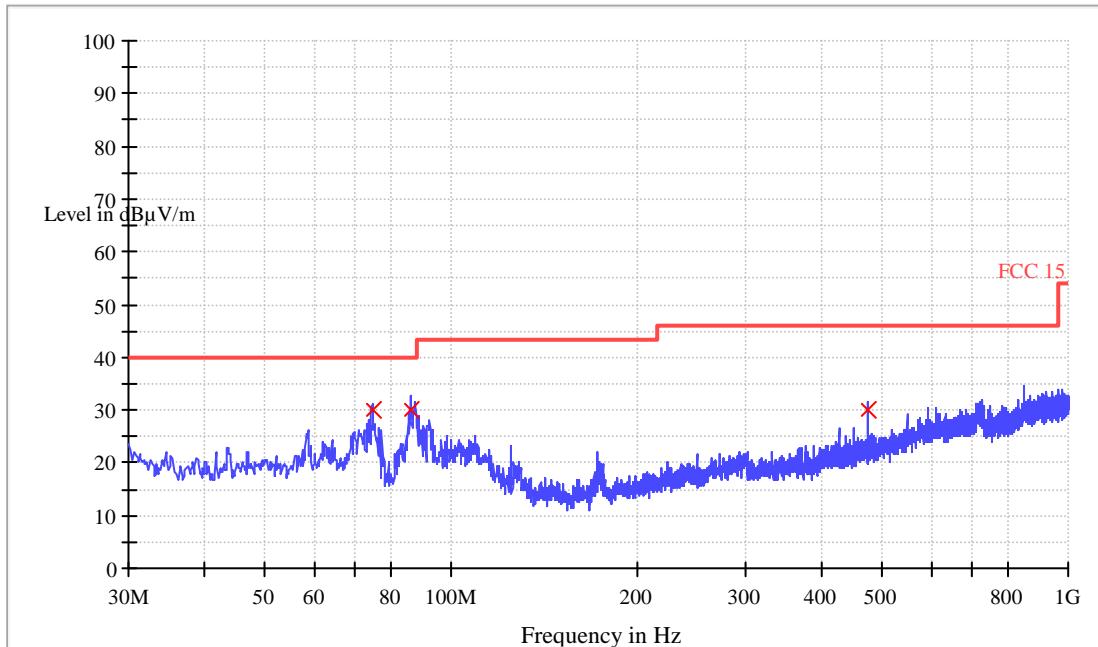
TRF No.: FCC WIFI-a

**Result Table_Single**

Frequency (MHz)	MaxPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Limits dB μ V/m
2388.800000	40.9	1000.0	1000.000	100.0	H	1.0	-7.3	54

Test at Channel 6 (2.437 GHz) in transmitting status

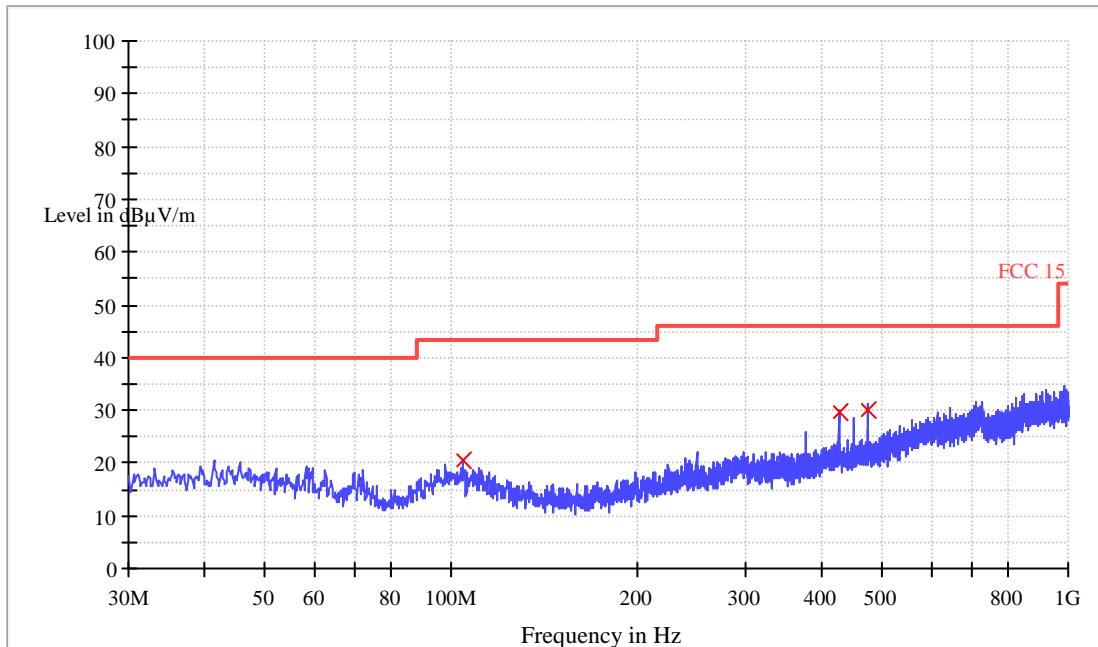
30 MHz~1 GHz Radiated Emissions .Quasi-Peak Measurement

Vertical:**QP**

Frequency (MHz)	QuasiPeak (dB μ V/m)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dB μ V/m)
74.520000	29.9	120.000	V	7.9	10.1	40.0
86.000000	30.1	120.000	V	8.9	9.9	40.0
475.040000	29.9	120.000	V	18.6	16.1	46.0

FCC ID: 2AHP4-ONOBCF668

TRF No.: FCC WIFI-a

Horizontal:**QP**

Frequency (MHz)	QuasiPeak (dBµV/m)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBµV/m)
104.680000	20.4	120.000	H	12.6	23.1	43.5
425.040000	29.6	120.000	H	17.6	16.4	46.0
475.040000	29.9	120.000	H	18.6	16.1	46.0

1~25 GHz Radiated Emissions.

Polarization	Frequency (MHz)	PK Net at 3m (dB μ V/m)	AV Net at 3m (dB μ V/m)	Correction Factor (dB)	PK Limit at 3m (dB μ V/m)	PK Margin (dB)	AV Limit at 3m (dB μ V/m)	AV Margin (dB)
Horizontal	1330.437	46.8	/	-13.5	74.0	/	54.0	-7.2
Horizontal	3186.093	41.7	/	-4.6	74.0	/	54.0	-12.3
Horizontal	4874.870	46.3	/	-0.9	74.0	/	54.0	-7.7
Vertical	1330.800	52.5	/	-13.5	74.0	/	54.0	-1.5
Vertical	1996.625	43.3	/	-9.6	74.0	/	54.0	-10.7
Vertical	4874.870	48.4	/	-0.9	74.0	/	54.0	-5.6

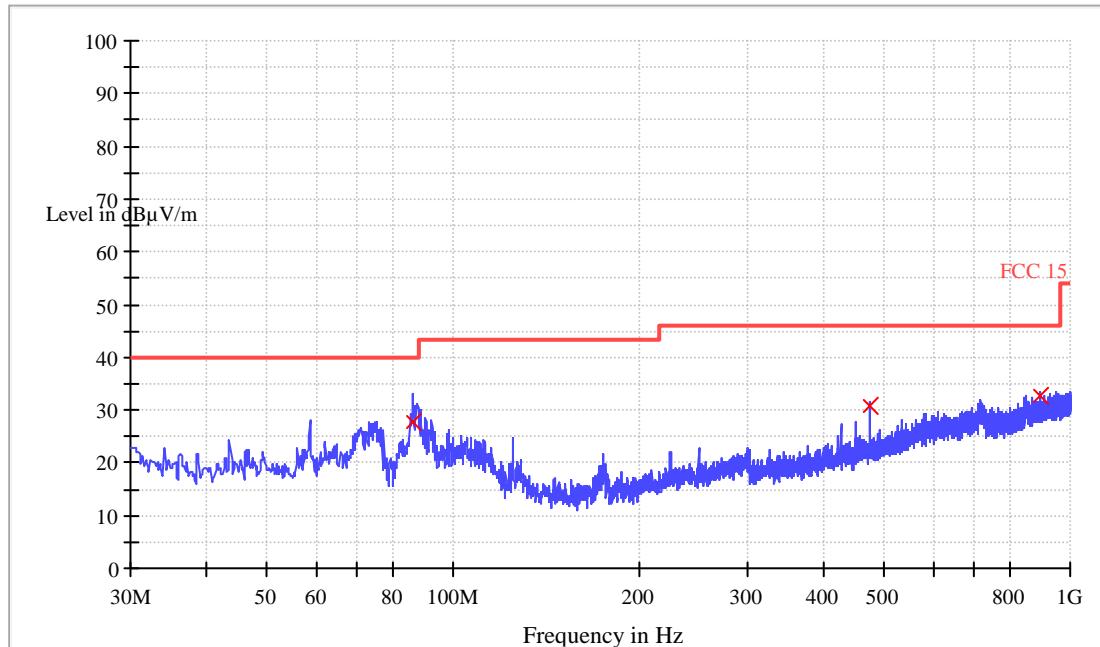
The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Correction Factor = Antenna Factor + Cable Loss -Preamplifier Factor.

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

Test at Channel 11 (2.462 GHz) in transmitting status

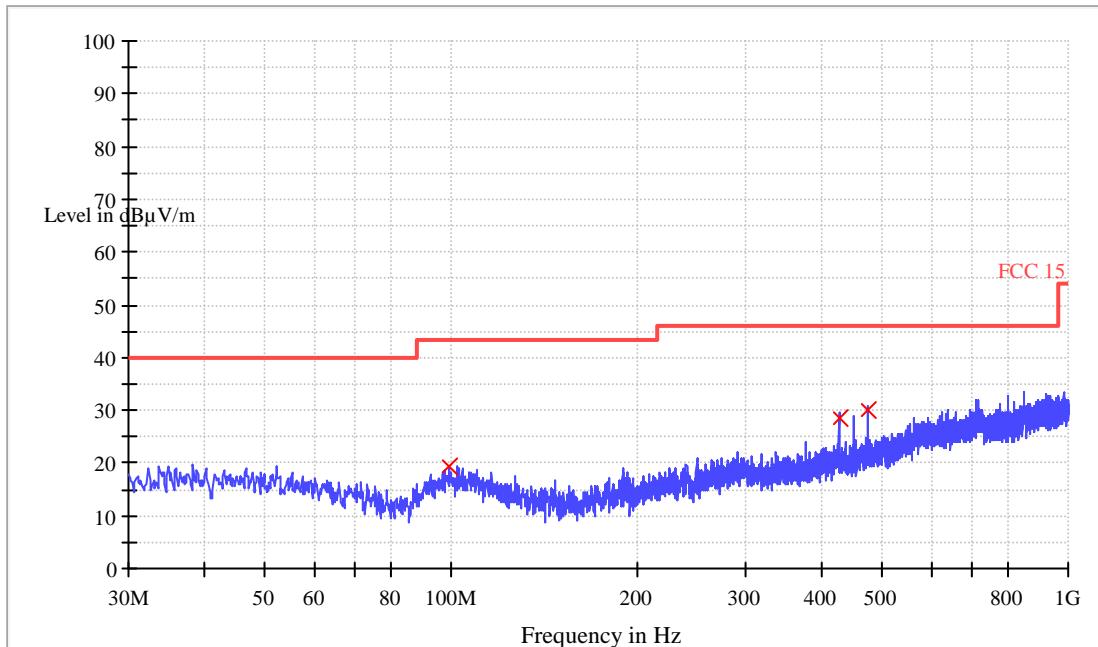
30 MHz~1 GHz Radiated Emissions .Quasi-Peak Measurement

Vertical:**QP**

Frequency (MHz)	QuasiPeak (dBμV/m)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBμV/m)
86.000000	27.7	120.000	V	8.9	12.3	40.0
475.040000	30.7	120.000	V	18.6	15.3	46.0
892.120000	32.7	120.000	V	25.2	13.3	46.0

FCC ID: 2AHP4-ONOBCF668

TRF No.: FCC WIFI-a

Horizontal:**QP**

Frequency (MHz)	QuasiPeak (dB μ V/m)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dB μ V/m)
99.240000	19.5	120.000	H	12.8	24.0	43.5
424.920000	28.6	120.000	H	17.6	17.4	46.0
475.040000	30.1	120.000	H	18.6	15.9	46.0

1~25 GHz Radiated Emissions. Peak & Average Measurement

Polarization	Frequency (MHz)	PK Net at 3m (dB μ V/m)	AV Net at 3m (dB μ V/m)	Correction Factor (dB)	PK Limit at 3m (dB μ V/m)	PK Margin (dB)	AV Limit at 3m (dB μ V/m)	AV Margin (dB)
Horizontal	1329.375	44.1	/	-13.5	74.0	/	54.0	-9.9
Horizontal	4924.812	46.4	/	-0.9	74.0	/	54.0	-7.6
Horizontal	7385.156	50.2	/	3.3	74.0	/	54.0	-3.8
Vertical	1326.718	49.4	/	-13.5	74.0	/	54.0	-4.6
Vertical	4923.200	44.3	/	-0.9	74.0	/	54.0	-9.7
Vertical	9848.690	49.4	/	6.5	74.0	/	54.0	-4.6

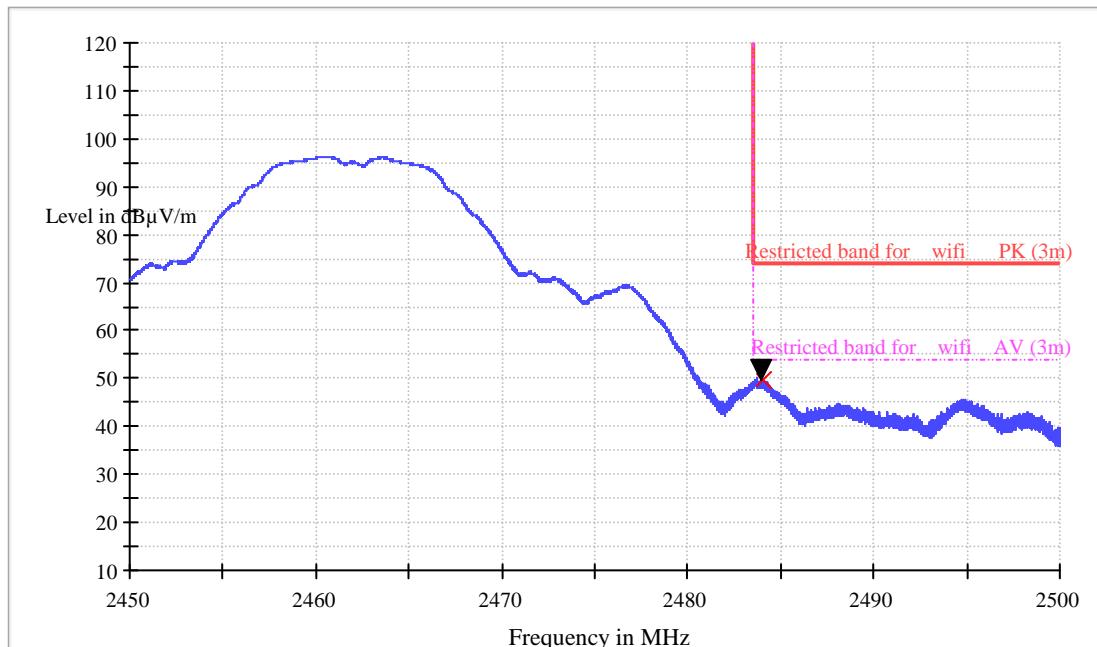
The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Correction Factor = Antenna Factor + Cable Loss -Preamplifier Factor.

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

Band Edge test Restricted Bands

Horizontal

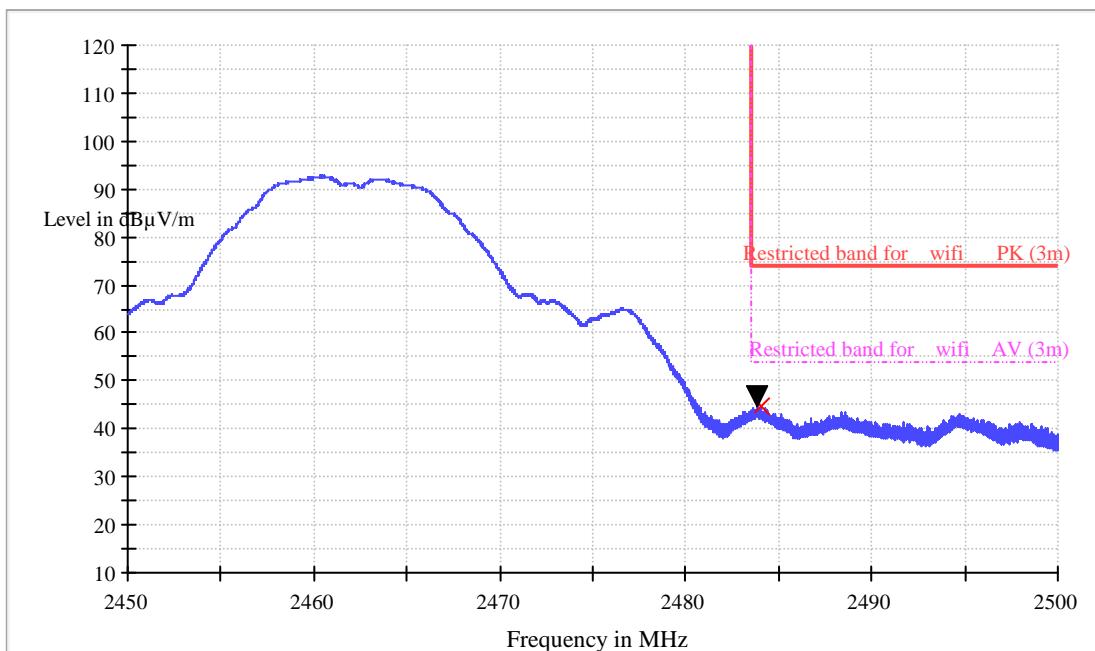
**Result Table_Single**

Frequency (MHz)	MaxPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Limit (dB μ V/m)
2484.000000	5027	1000.0	1000.000	150.0	H	0.0	-7.4	54

FCC ID: 2AHP4-ONOBCF668

TRF No.: FCC WIFI-a

Vertical

**Result Table_Single**

Frequency (MHz)	MaxPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Limit (dB μ V/m)
2484.000000	45.1	1000.0	1000.000	150.0	V	359.0	-7.4	54

FCC ID: 2AHP4-ONOBCF668

TRF No.: FCC WIFI-a

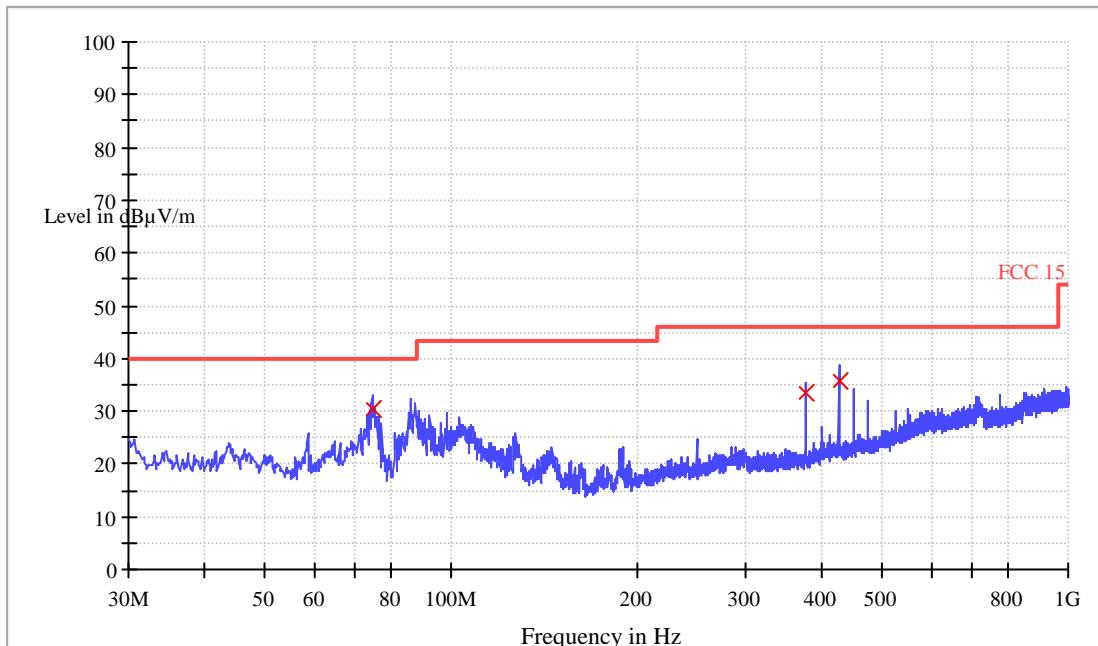
802.11g mode with 9Mbps data rate

9 kHz~30 MHz Field Strength of Unwanted Emissions. Quasi-Peak Measurement

The measurements with active loop antenna were greater than 20dB below the limit, so the test data were not recorded in the test report.

Test at Channel 1 (2.412 GHz) in transmitting status

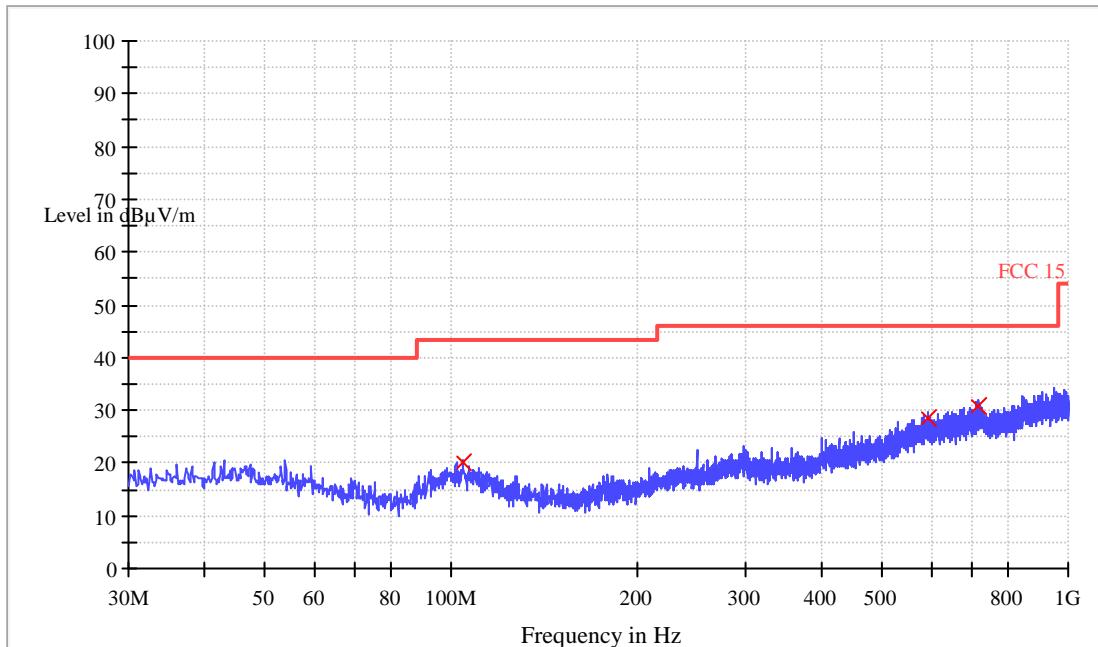
30 MHz~1 Radiated Emissions .Quasi-Peak Measurement

Vertical:**QP**

Frequency (MHz)	QuasiPeak (dB μ V/m)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dB μ V/m)
74.520000	30.6	120.000	V	7.9	9.4	40.0
374.920000	33.3	120.000	V	16.1	12.7	46.0
424.920000	35.7	120.000	V	17.6	10.3	46.0

FCC ID: 2AHP4-ONOBCF668

TRF No.: FCC WIFI-a

Horizontal:**QP**

Frequency (MHz)	QuasiPeak (dBµV/m)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBµV/m)
104.800000	20.3	120.000	H	12.6	23.2	43.5
592.320000	28.7	120.000	H	21.3	17.3	46.0
712.520000	30.6	120.000	H	22.3	15.4	46.0

1~25 GHz Radiated Emissions. Peak & Average Measurement

Polarization	Frequency (MHz)	PK Net at 3m (dB μ V/m)	AV Net at 3m (dB μ V/m)	Correction Factor (dB)	PK Limit at 3m (dB μ V/m)	PK Margin (dB)	AV Limit at 3m (dB μ V/m)	AV Margin (dB)
Horizontal	1328.845	46.2	/	-13.5	74.0	/	54.0	-7.8
Horizontal	3188.750	42.9	/	-4.6	74.0	/	54.0	-11.1
Horizontal	4822.800	49.3	/	-0.9	74.0	/	54.0	-4.7
Vertical	1330.800	52.3	/	-13.5	74.0	/	54.0	-1.7
Vertical	1990.800	41.5	/	-9.6	74.0	/	54.0	-12.5
Vertical	4823.600	49.2	/	-0.9	74.0	/	54.0	-4.8

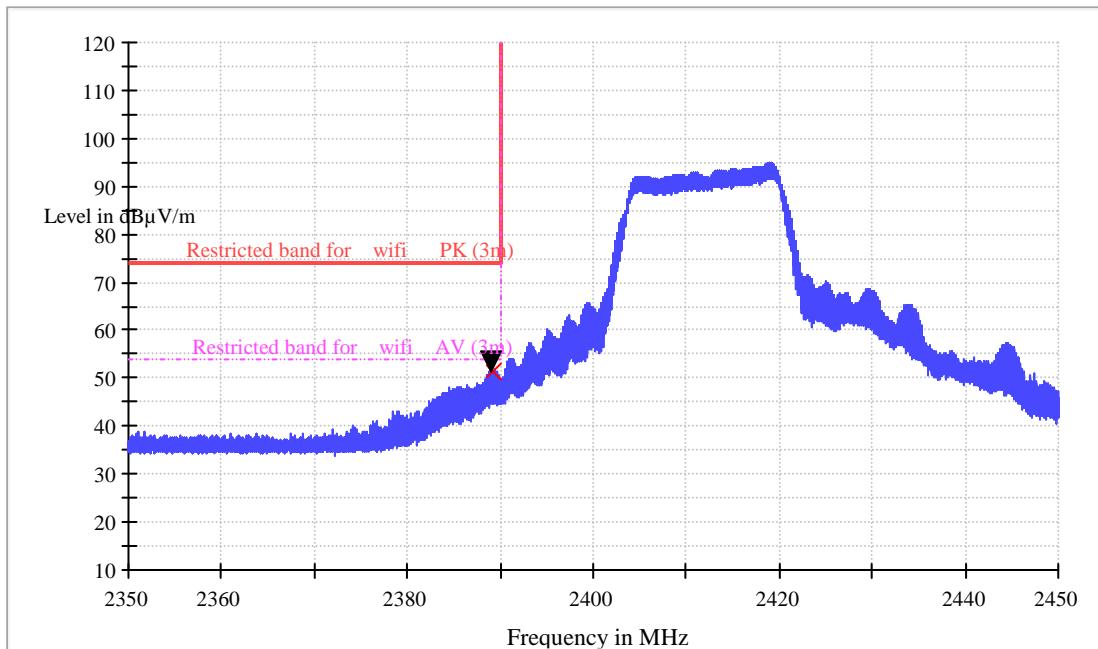
The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Correction Factor = Antenna Factor + Cable Loss -Preamplifier Factor.

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

Band Edge test Restricted Bands

Horizontal

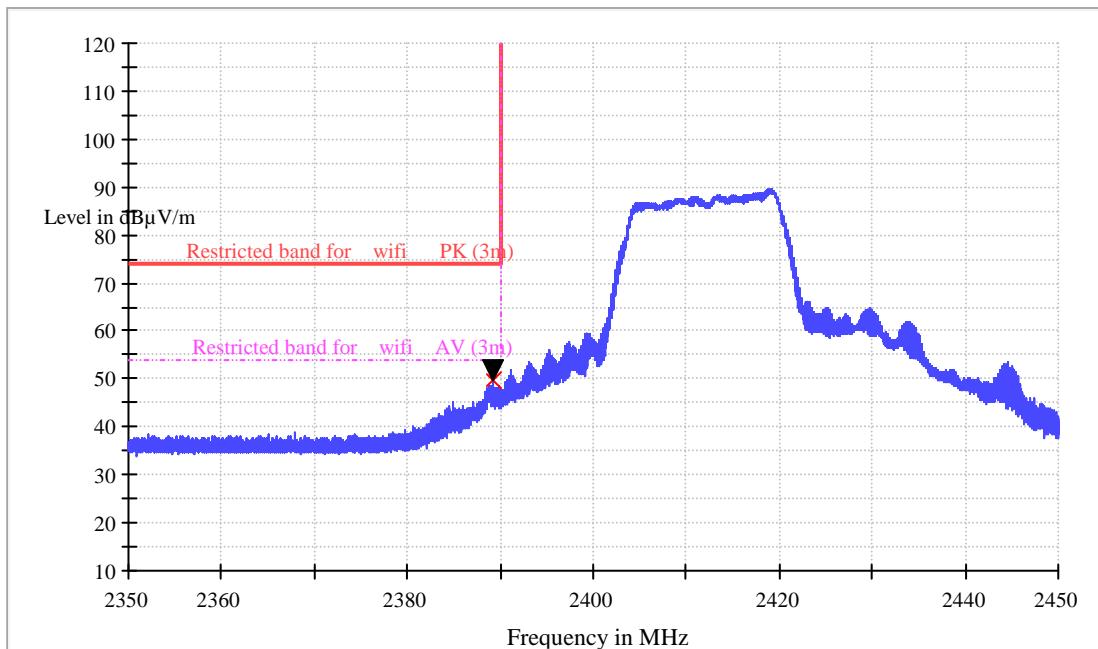
**Result Table_Single**

Frequency (MHz)	MaxPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Limit (dB μ V/m)
2389.200000	51.3	1000.0	1000.000	150.0	H	359.0	-7.8	54

FCC ID: 2AHP4-ONOBCF668

TRF No.: FCC WIFI-a

Vertical

**Result Table_Single**

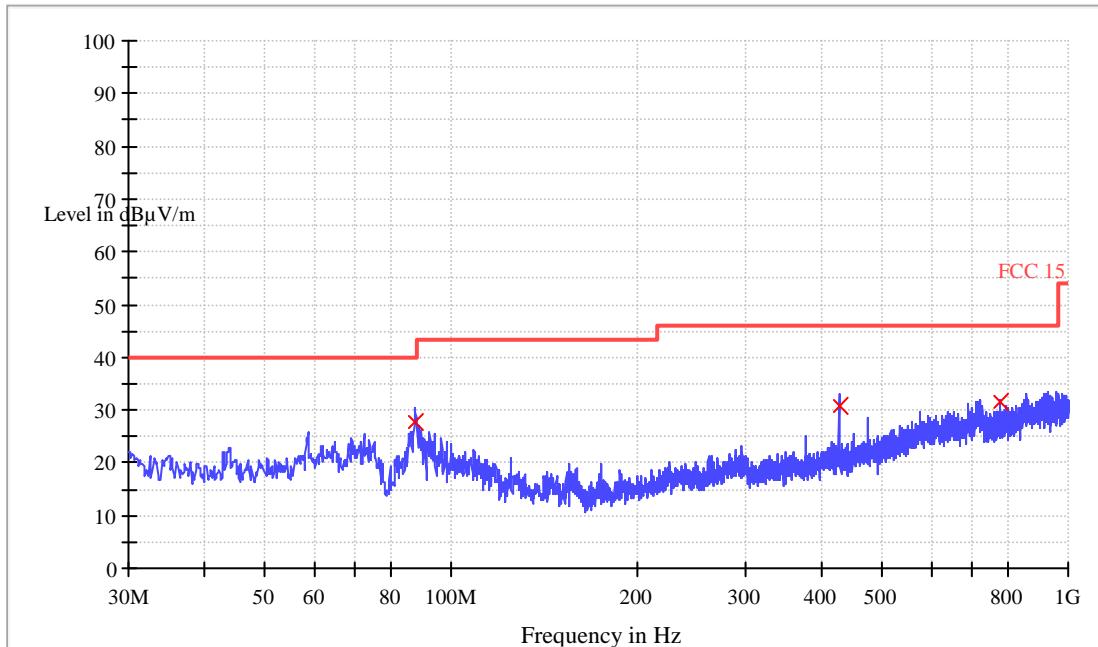
Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Limit (dBμV/m)
2389.200000	49.8	1000.0	1000.000	150.0	V	0.0	-7.8	54

FCC ID: 2AHP4-ONOBCF668

TRF No.: FCC WIFI-a

Test at Channel 6 (2.437GHz) in transmitting status

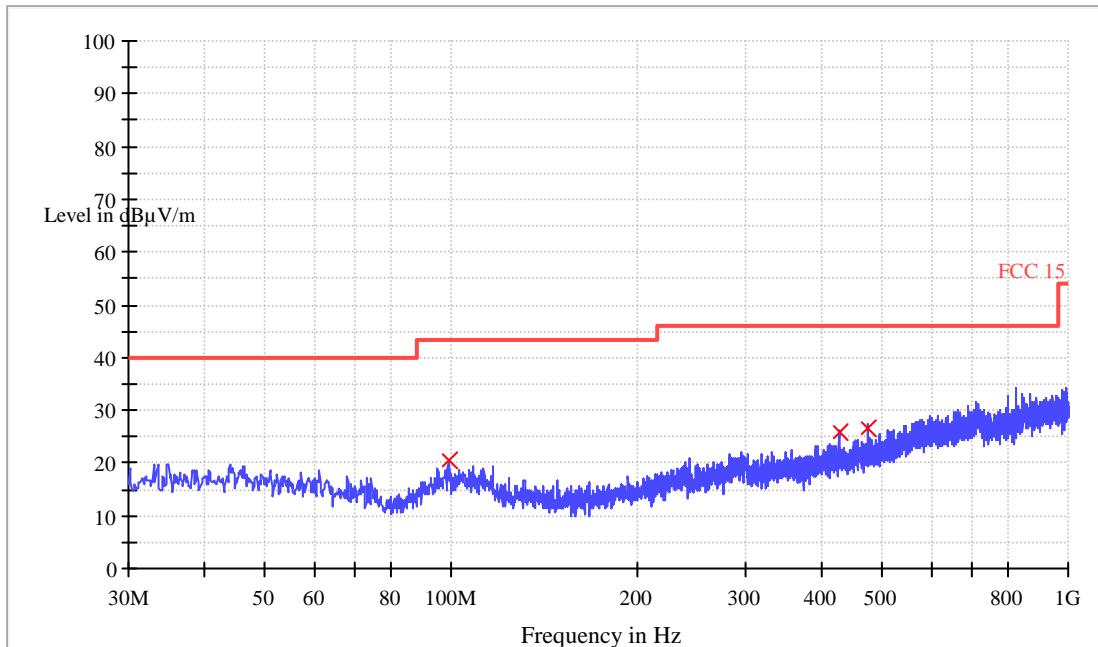
30 MHz~1 GHz Radiated Emissions .Quasi-Peak Measurement

Vertical:**QP**

Frequency (MHz)	QuasiPeak (dBμV/m)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBμV/m)
87.480000	27.9	120.000	V	9.3	12.1	40.0
424.920000	31.0	120.000	V	17.6	15.0	46.0
775.000000	31.4	120.000	V	23.0	14.6	46.0

FCC ID: 2AHP4-ONOBCF668

TRF No.: FCC WIFI-a

Horizontal:**QP**

Frequency (MHz)	QuasiPeak (dB μ V/m)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dB μ V/m)
98.920000	20.5	120.000	H	12.7	23.0	43.5
425.040000	25.8	120.000	H	17.6	20.2	46.0
475.040000	26.6	120.000	H	18.6	19.4	46.0

1~25 GHz Radiated Emissions. Peak & Average Measurement

Polarization	Frequency (MHz)	PK Net at 3m (dB μ V/m)	AV Net at 3m (dB μ V/m)	Correction Factor (dB)	PK Limit at 3m (dB μ V/m)	PK Margin (dB)	AV Limit at 3m (dB μ V/m)	AV Margin (dB)
Horizontal	1330.437	45.7	/	-13.5	74.0	/	54.0	-8.3
Horizontal	4866.800	45.2	/	-0.9	74.0	/	54.0	-8.8
Horizontal	7306.580	47.5	/	3.1	74.0	/	54.0	-6.5
Vertical	1328.800	52.3	/	-13.5	74.0	/	54.0	-1.7
Vertical	1990.800	44.2	/	-9.6	74.0	/	54.0	-9.8
Vertical	4871.200	45.5	/	-0.9	74.0	/	54.0	-8.5

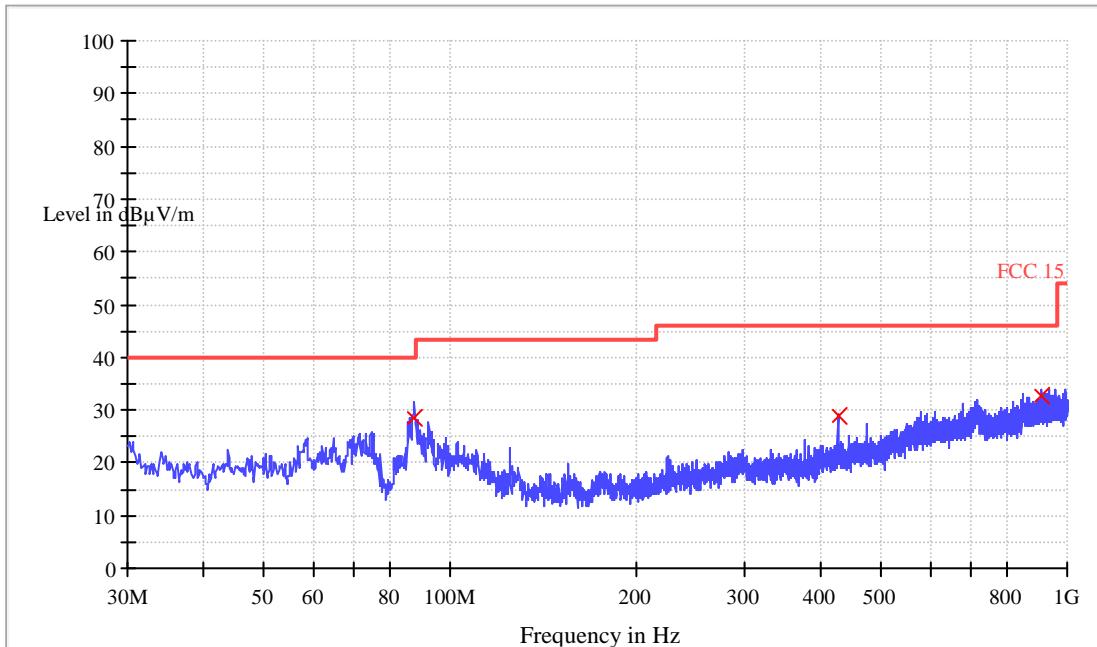
The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Correction Factor = Antenna Factor + Cable Loss -Preamplifier Factor.

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

Test at Channel 11 (2.462 GHz) in transmitting status

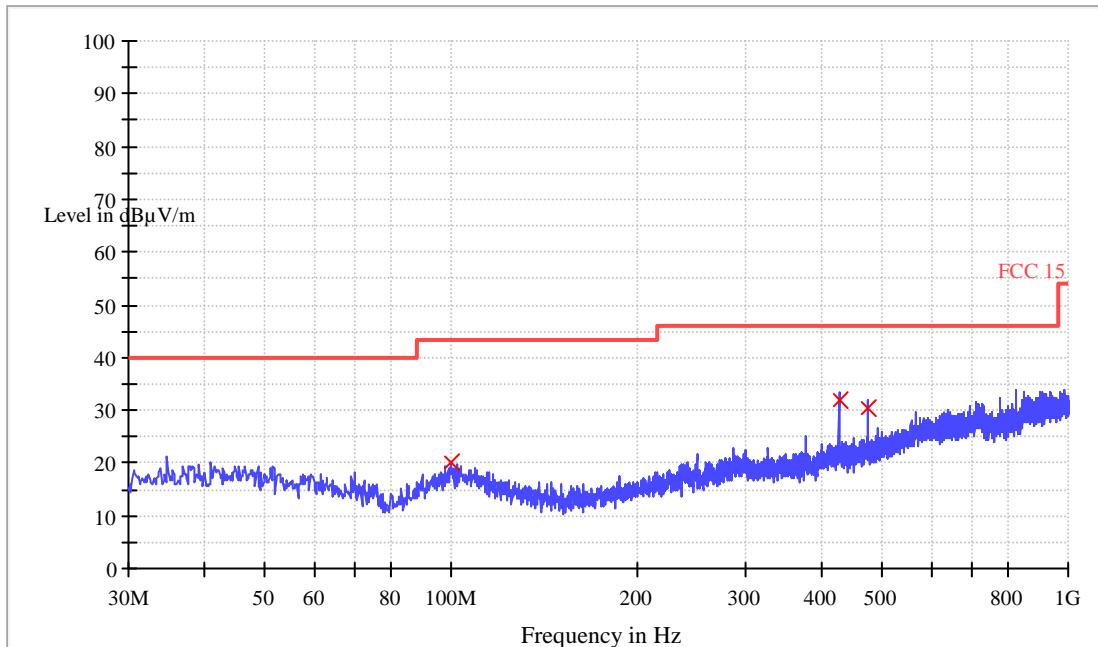
30 MHz~1 GHz Radiated Emissions .Quasi-Peak Measurement

Vertical:**QP**

Frequency (MHz)	QuasiPeak (dBμV/m)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBμV/m)
87.600000	28.6	120.000	V	9.4	11.4	40.0
424.920000	28.8	120.000	V	17.6	17.2	46.0
906.840000	32.9	120.000	V	25.4	13.1	46.0

FCC ID: 2AHP4-ONOBCF668

TRF No.: FCC WIFI-a

Horizontal:**QP**

Frequency (MHz)	QuasiPeak (dB μ V/m)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dB μ V/m)
99.680000	20.0	120.000	H	12.9	23.5	43.5
424.920000	32.1	120.000	H	17.6	13.9	46.0
475.040000	30.6	120.000	H	18.6	15.4	46.0

1~25 GHz Radiated Emissions. Peak & Average Measurement

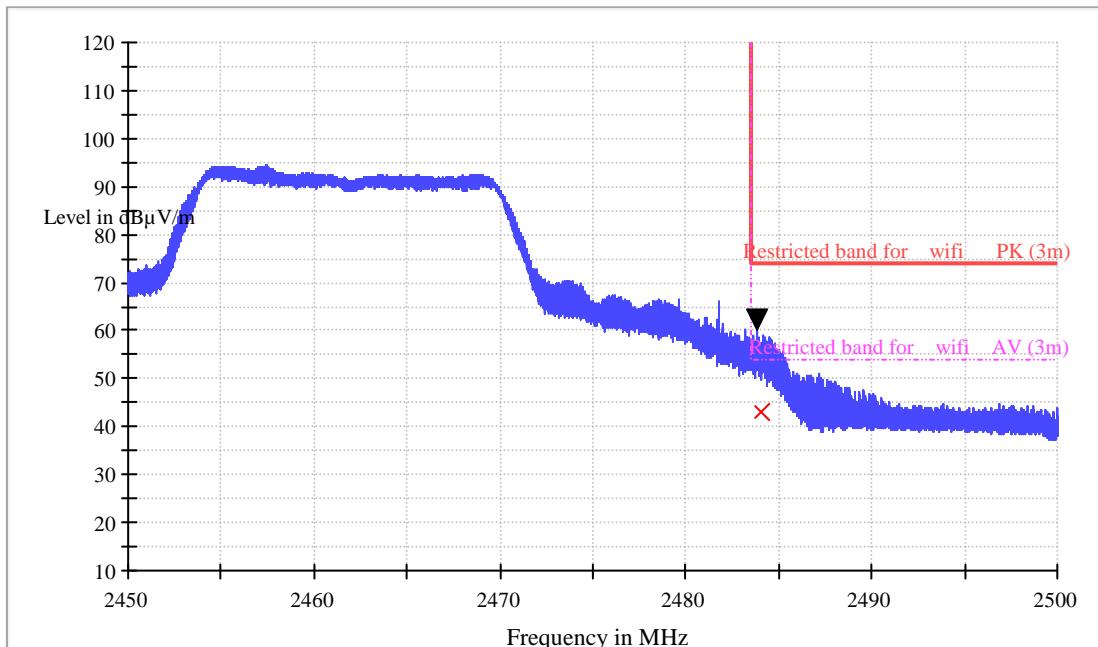
Polarization	Frequency (MHz)	PK Net at 3m (dB μ V/m)	AV Net at 3m (dB μ V/m)	Correction Factor (dB)	PK Limit at 3m (dB μ V/m)	PK Margin (dB)	AV Limit at 3m (dB μ V/m)	AV Margin (dB)
Horizontal	1327.600	46.5	/	-13.5	74.0	/	54.0	-7.5
Horizontal	4917.600	45.6	/	-0.9	74.0	/	54.0	-8.4
Horizontal	7380.400	50.1	/	3.3	74.0	/	54.0	-3.9
Vertical	1330.400	47.3	/	-13.5	74.0	/	54.0	-6.7
Vertical	1990.800	42.2	/	-9.6	74.0	/	54.0	-11.8
Vertical	7382.400	46.7	/	3.3	74.0	/	54.0	-7.3

The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Correction Factor = Antenna Factor + Cable Loss -Preamplifier Factor.

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

Band Edge test Restricted Bands

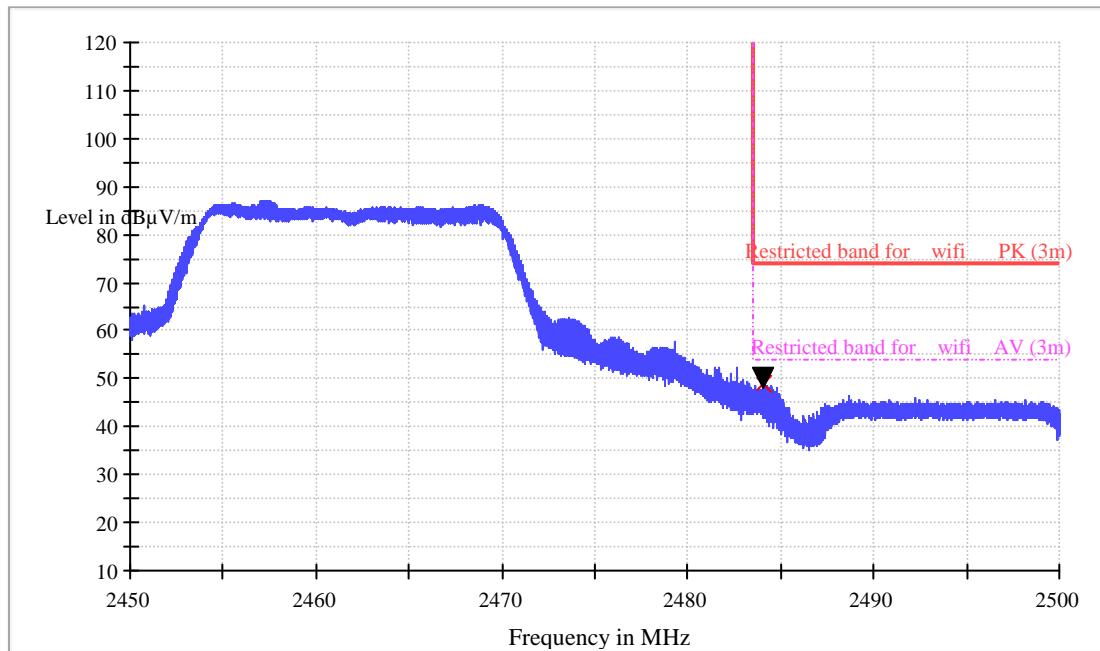
**Result Table_Single**

Frequency (MHz)	MaxPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Limit (dB μ V/m)
2484.00000	60.7	1000.0	1000.000	150.0	H	1.0	-7.4	74

Result Table_Single

Frequency (MHz)	Average (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Limit (dB μ V/m)
2484.00000	42.9	1000.0	1000.000	150.0	H	1.0	-7.4	54

Vertical

**Result Table_Single**

Frequency (MHz)	MaxPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Limit (dB μ V/m)
2484.000000	48.9	1000.0	1000.000	150.0	V	1.0	-7.4	54

FCC ID: 2AHP4-ONOBCF668

TRF No.: FCC WIFI-a

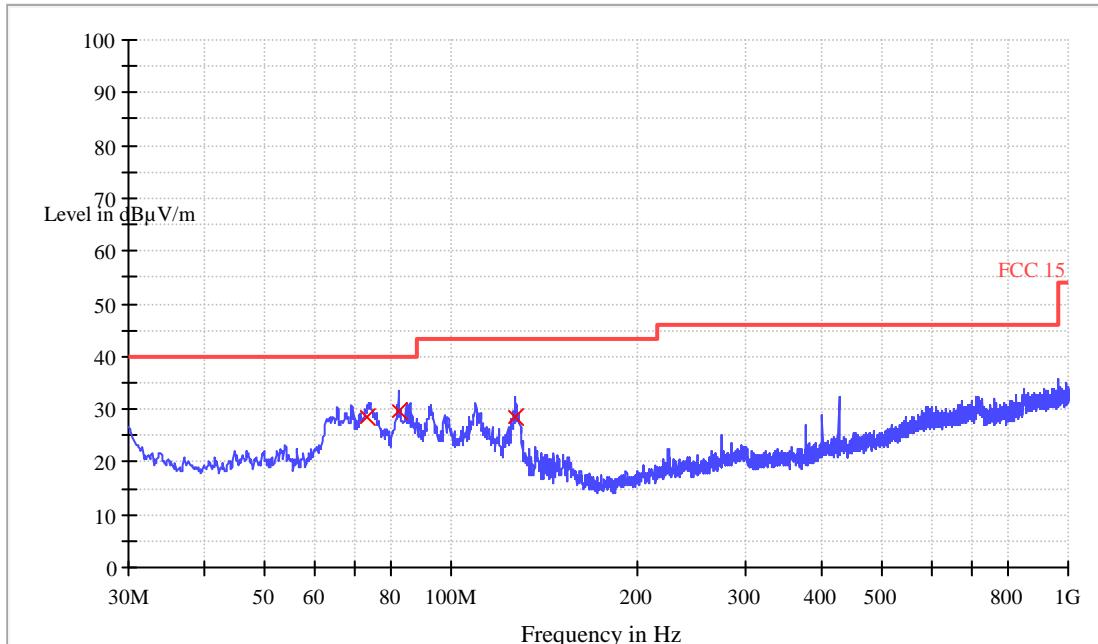
802.11n (HT20) mode with 6.5Mbps data rate

9 kHz~30 MHz Field Strength of Unwanted Emissions. Quasi-Peak Measurement

The measurements with active loop antenna were greater than 20dB below the limit, so the test data were not recorded in the test report.

Test at Channel 1 (2.412 GHz) in transmitting status

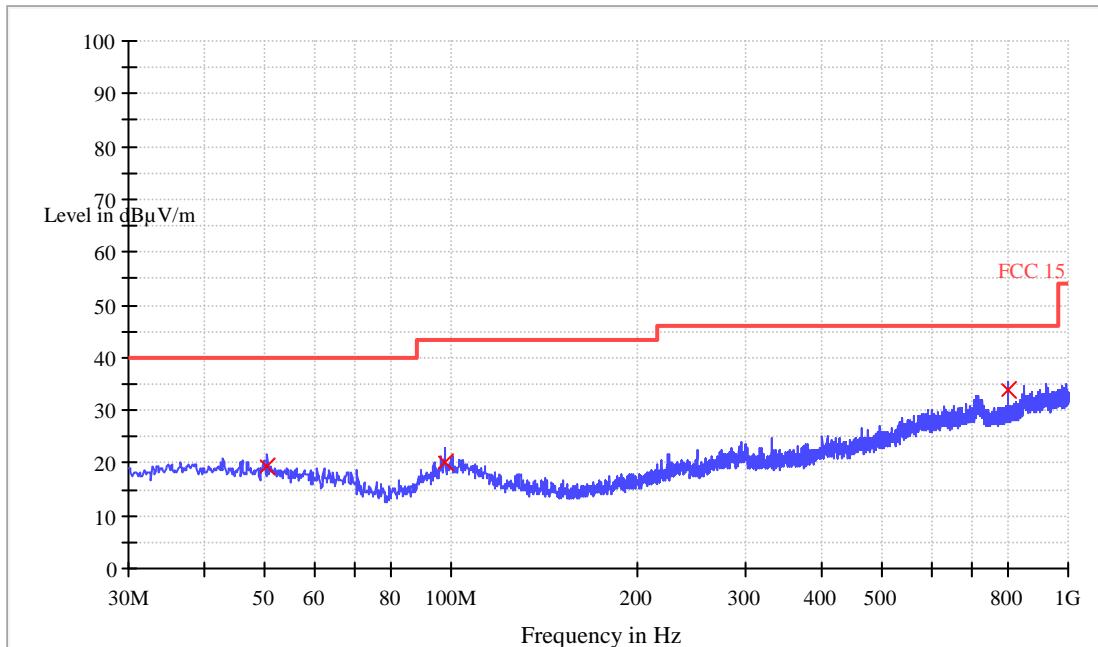
30 MHz~1 GHz Radiated Emissions .Quasi-Peak Measurement

Vertical:**QP**

Frequency (MHz)	QuasiPeak (dB μ V/m)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dB μ V/m)
73.080000	28.7	120.000	V	8.2	11.3	40.0
82.400000	29.7	120.000	V	8.0	10.3	40.0
127.000000	28.5	120.000	V	9.4	15.0	43.5

FCC ID: 2AHP4-ONOBCF668

TRF No.: FCC WIFI-a

Horizontal:**QP**

Frequency (MHz)	QuasiPeak (dB μ V/m)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dB μ V/m)
50.440000	19.4	120.000	H	12.7	20.6	40.0
97.600000	20.0	120.000	H	12.5	23.5	43.5
799.960000	33.9	120.000	H	23.3	12.1	46.0

FCC ID: 2AHP4-ONOBCF668

TRF No.: FCC WIFI-a

1~25 GHz Radiated Emissions. Peak & Average Measurement

Polarization	Frequency (MHz)	PK Net at 3m (dB μ V/m)	AV Net at 3m (dB μ V/m)	Correction Factor (dB)	PK Limit at 3m (dB μ V/m)	PK Margin (dB)	AV Limit at 3m (dB μ V/m)	AV Margin (dB)
Horizontal	1328.845	45.7	/	-13.5	74.0	/	54.0	-8.3
Horizontal	1996.132	39.5	/	-9.6	74.0	/	54.0	-14.5
Horizontal	4822.875	48.1	/	-0.9	74.0	/	54.0	-5.9
Vertical	1332.400	52.2	/	-13.5	74.0	/	54.0	-1.8
Vertical	1646.000	43.9	/	-11.8	74.0	/	54.0	-10.1
Vertical	4830.800	48.9	/	-0.9	74.0	/	54.0	-5.1

The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

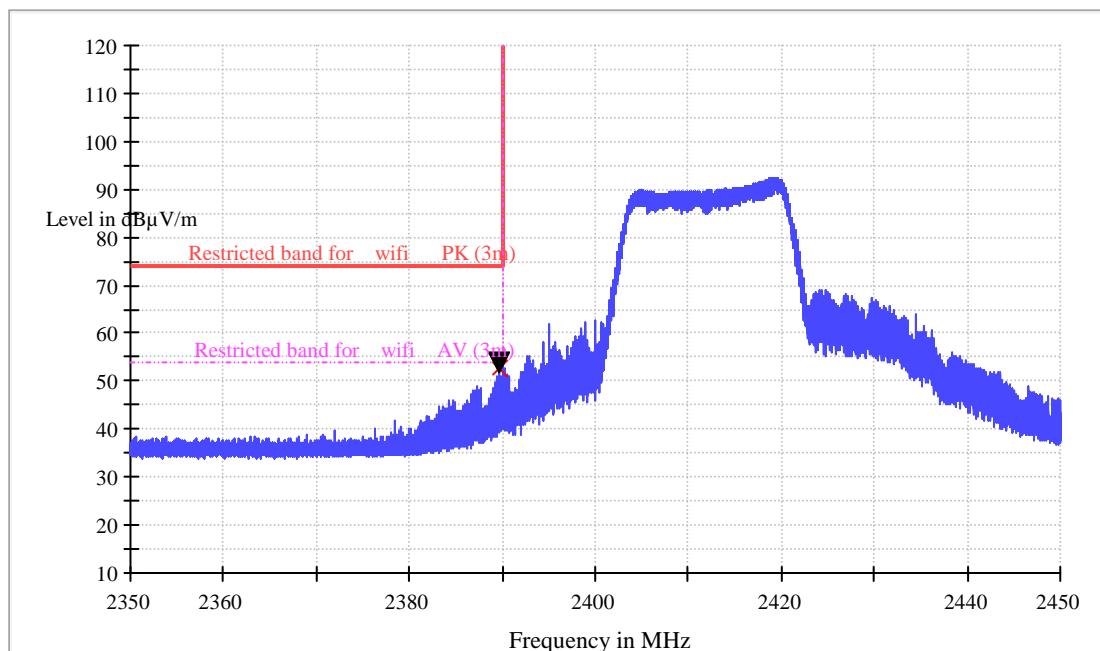
Correction Factor = Antenna Factor + Cable Loss -Preamplifier Factor.

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

Band Edge test Restricted Bands

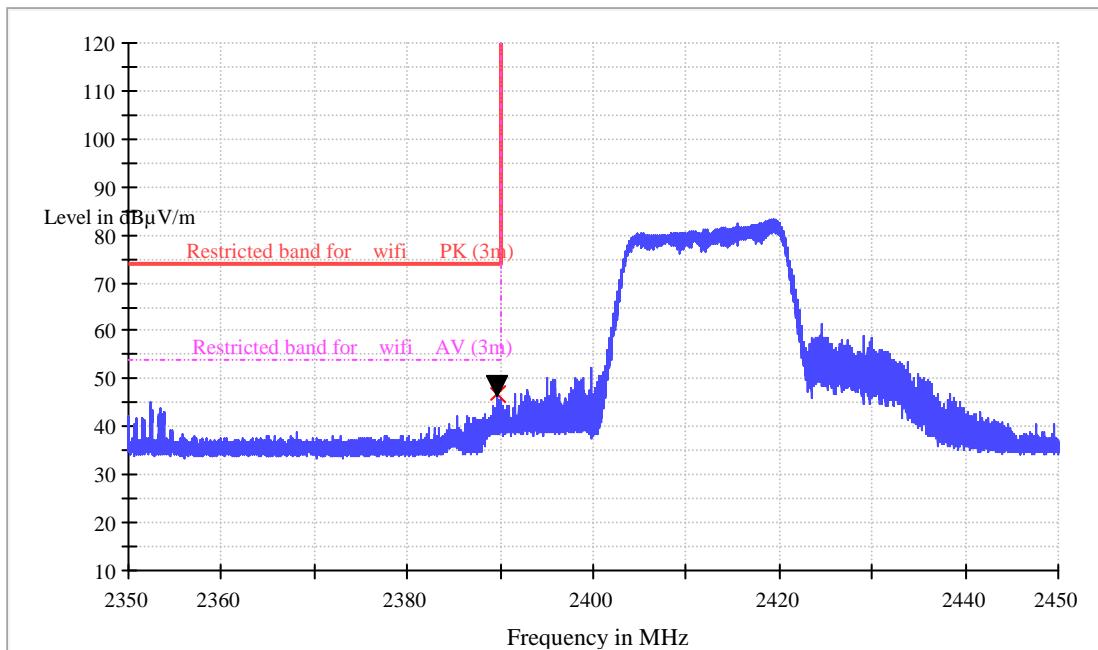
Test in 2412MHz

Horizontal

**Result Table_Single**

Frequency (MHz)	MaxPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Limit (dB μ V/m)
2389.600000	52.6	1000.0	1000.000	150.0	H	123.0	-7.8	54

Vertical

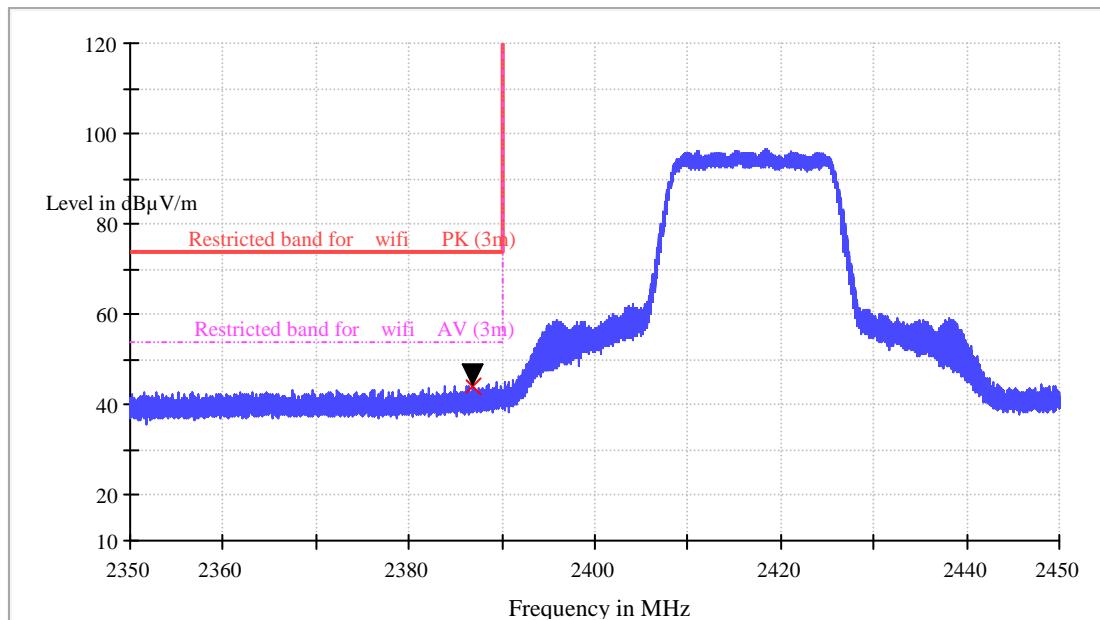
**Result Table_Single**

Frequency (MHz)	MaxPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Limit (dB μ V/m)
2389.600000	46.7	1000.0	1000.000	150.0	V	302.0	-7.8	54

FCC ID: 2AHP4-ONOBCF668

TRF No.: FCC WIFI-a

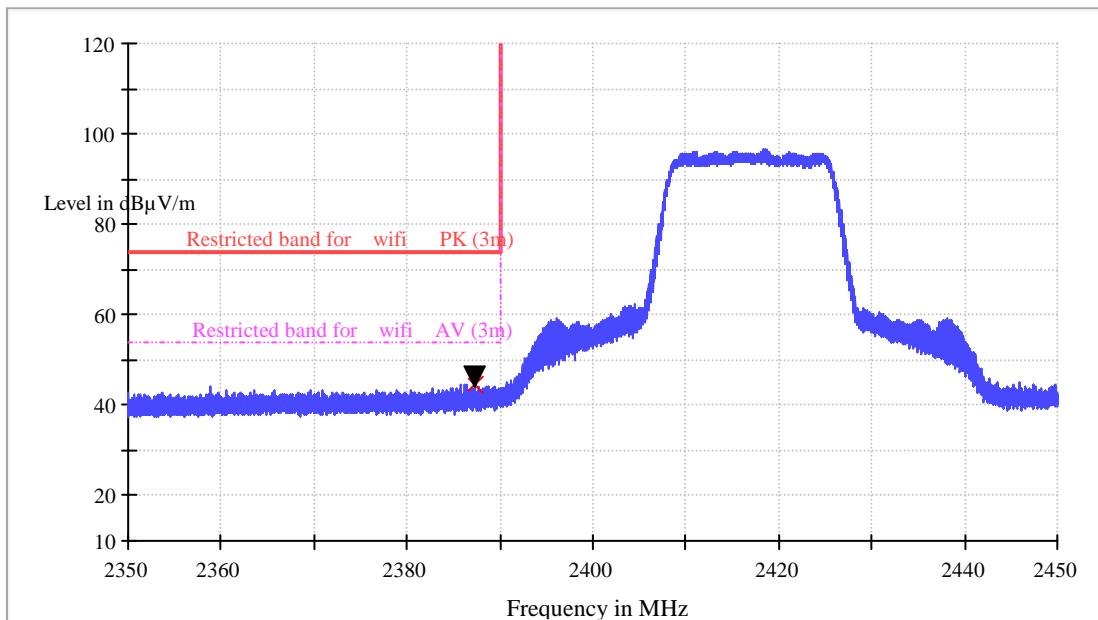
Test in 2417MHz

**Result Table_Single**

Frequency (MHz)	MaxPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Limit (dB μ V/m)
2386.800000	44.3	1000.0	1000.000	100.0	H	65.0	-7.3	54

FCC ID: 2AHP4-ONOBCF668

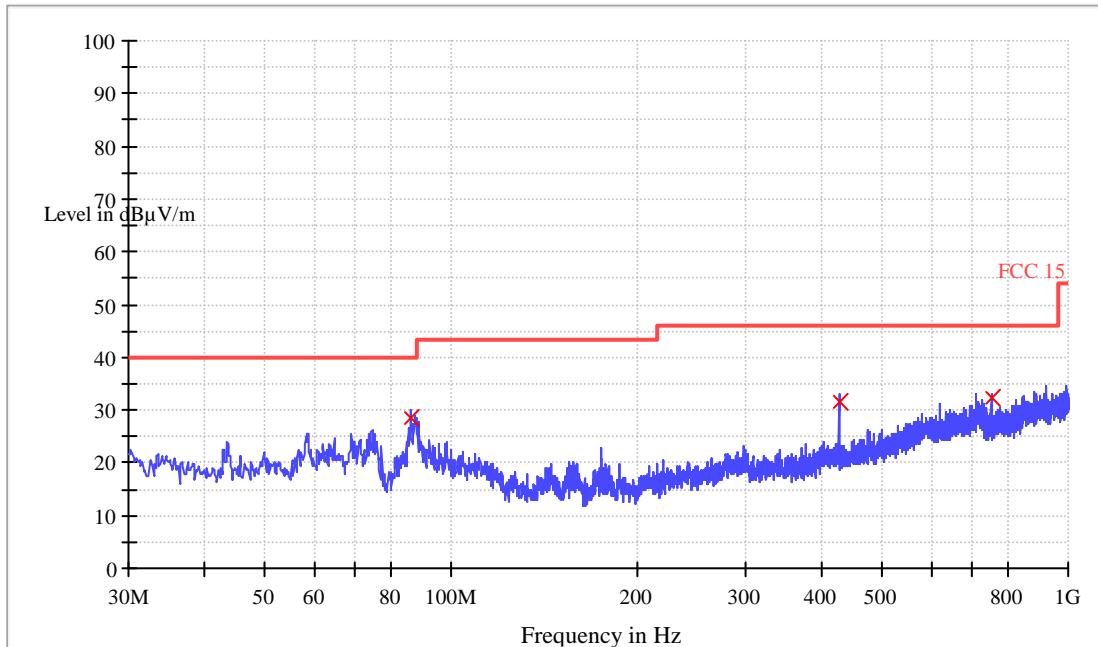
TRF No.: FCC WIFI-a

**Result Table_Single**

Frequency (MHz)	MaxPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Limit (dB μ V/m)
2387.200000	44.7	1000.0	1000.000	100.0	H	65.0	-7.3	54

Test at Channel 6 (2.437 GHz) in transmitting status

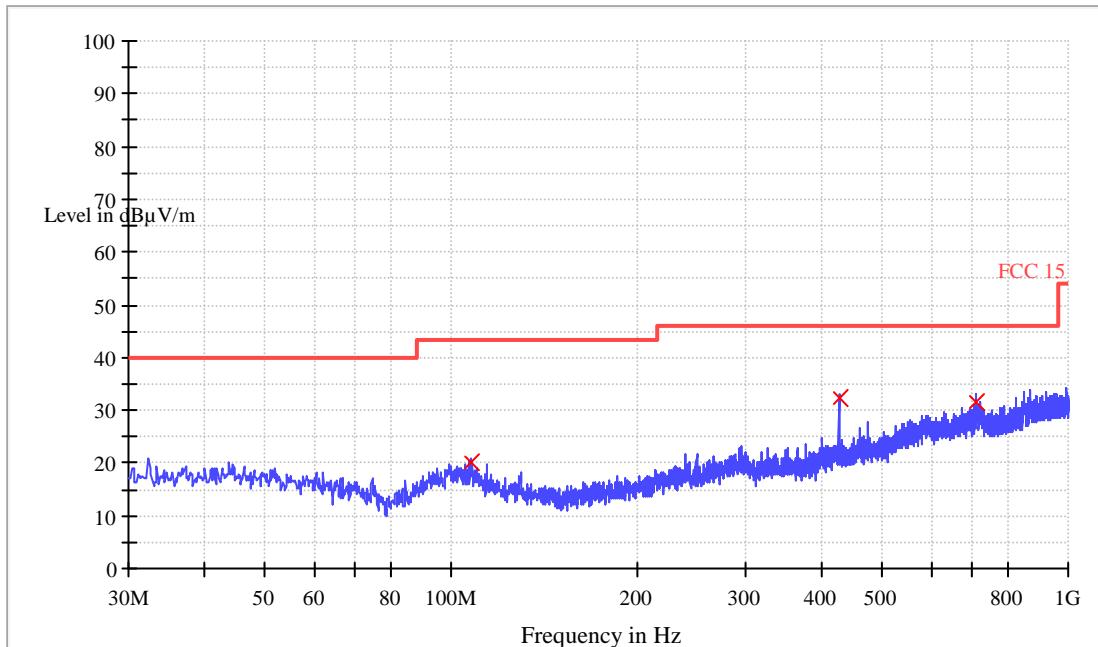
30 MHz~1 GHz Radiated Emissions .Quasi-Peak Measurement

Vertical:**QP**

Frequency (MHz)	QuasiPeak (dB μ V/m)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dB μ V/m)
86.000000	28.5	120.000	V	8.9	11.5	40.0
424.920000	31.4	120.000	V	17.6	14.6	46.0
750.000000	32.4	120.000	V	22.7	13.6	46.0

FCC ID: 2AHP4-ONOBCF668

TRF No.: FCC WIFI-a

Horizontal:**QP**

Frequency (MHz)	QuasiPeak (dB μ V/m)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dB μ V/m)
108.040000	20.3	120.000	H	12.3	23.2	43.5
424.920000	32.4	120.000	H	17.6	13.6	46.0
709.880000	31.6	120.000	H	22.3	14.4	46.0

1~25 GHz Radiated Emissions. Peak & Average Measurement

Polarization	Frequency (MHz)	PK Net at 3m (dB μ V/m)	AV Net at 3m (dB μ V/m)	Correction Factor (dB)	PK Limit at 3m (dB μ V/m)	PK Margin (dB)	AV Limit at 3m (dB μ V/m)	AV Margin (dB)
Horizontal	1326.800	46.3	/	-13.5	74.0	/	54.0	-7.7
Horizontal	4866.400	45.1	/	-9.6	74.0	/	54.0	-8.9
Horizontal	7318.000	48.6	/	3.2	74.0	/	54.0	-5.4
Vertical	1329.800	53.3	/	-13.5	74.0	/	54.0	-0.7
Vertical	1560.400	44.1	/	-12.4	74.0	/	54.0	-9.9
Vertical	4867.600	46.4	/	-0.9	74.0	/	54.0	-7.6

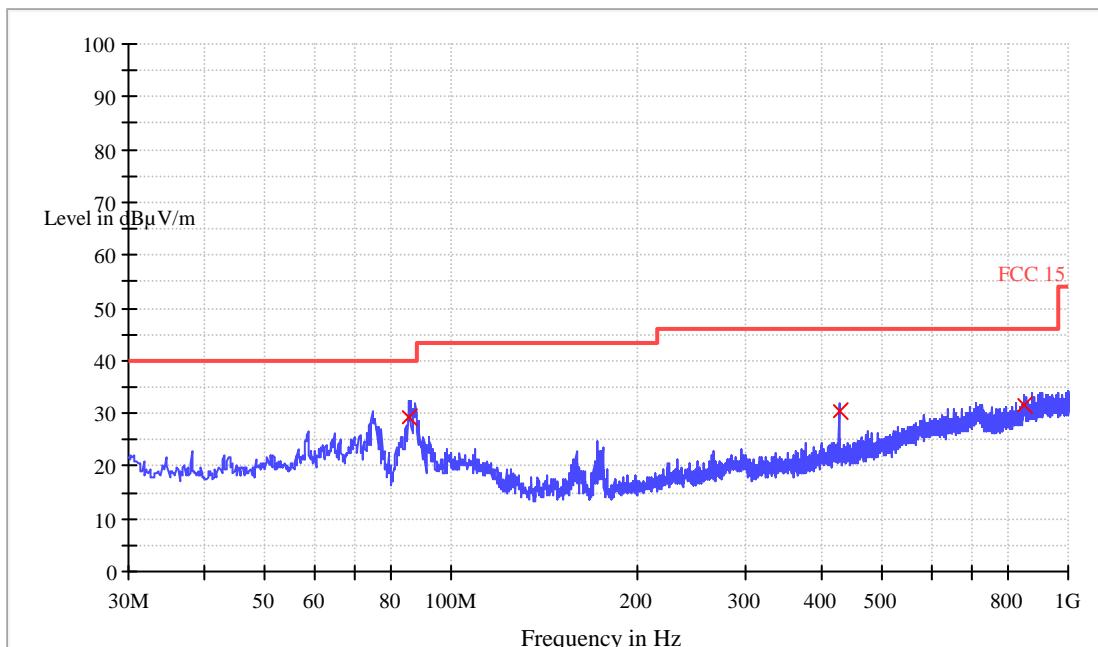
The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Correction Factor = Antenna Factor + Cable Loss -Preamplifier Factor.

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

Test at Channel 11 (2.462 GHz) in transmitting status

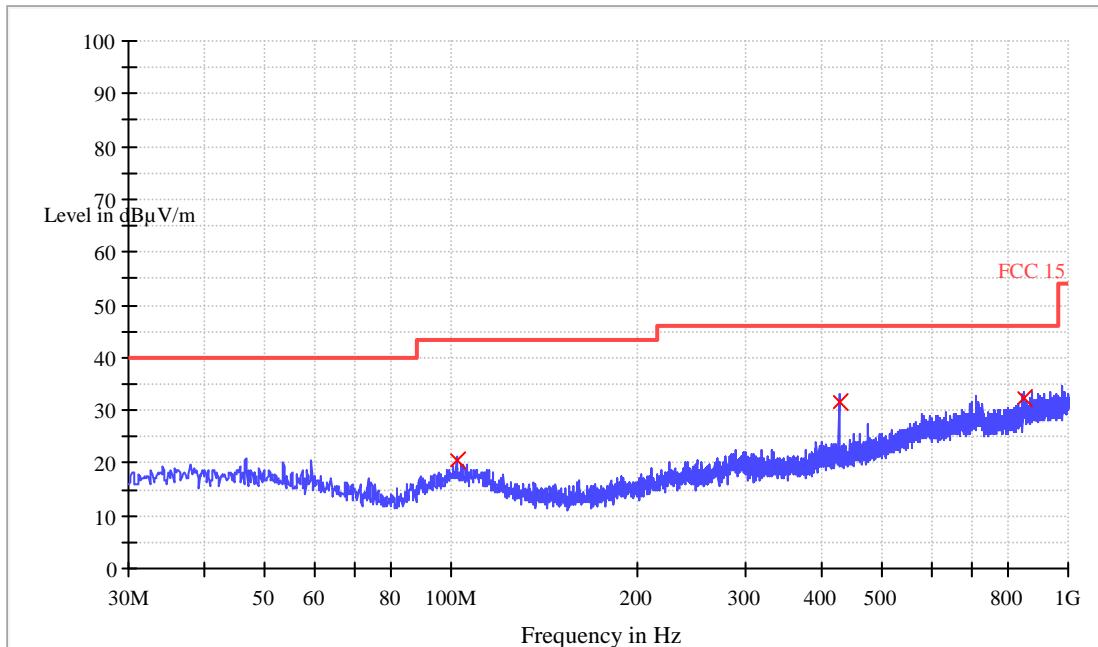
30 MHz~1 GHz Radiated Emissions .Quasi-Peak Measurement

Vertical:**QP**

Frequency (MHz)	QuasiPeak (dB μ V/m)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dB μ V/m)
85.400000	29.4	120.000	V	8.7	10.6	40.0
424.920000	30.4	120.000	V	17.6	15.6	46.0
848.480000	31.7	120.000	V	24.3	14.3	46.0

FCC ID: 2AHP4-ONOBCF668

TRF No.: FCC WIFI-a

Horizontal:**QP**

Frequency (MHz)	QuasiPeak (dBμV/m)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dBμV/m)
101.880000	20.6	120.000	H	12.8	22.9	43.5
425.040000	31.7	120.000	H	17.6	14.3	46.0
845.960000	32.5	120.000	H	24.2	13.5	46.0

1~25 GHz Radiated Emissions. Peak & Average Measurement

Polarization	Frequency (MHz)	PK Net at 3m (dB μ V/m)	AV Net at 3m (dB μ V/m)	Correction Factor (dB)	PK Limit at 3m (dB μ V/m)	PK Margin (dB)	AV Limit at 3m (dB μ V/m)	AV Margin (dB)
Horizontal	1326.800	48.2	/	-13.5	74.0	/	54.0	-5.8
Horizontal	4920.800	46.5	/	-0.9	74.0	/	54.0	-7.5
Horizontal	7392.400	50.1	/	3.3	74.0	/	54.0	-3.9
Vertical	1330.800	47.2	/	-13.5	74.0	/	54.0	-6.8
Vertical	3187.200	42.8	/	-4.6	74.0	/	54.0	-11.2
Vertical	4934.000	45.8	/	-0.9	74.0	/	54.0	-8.2

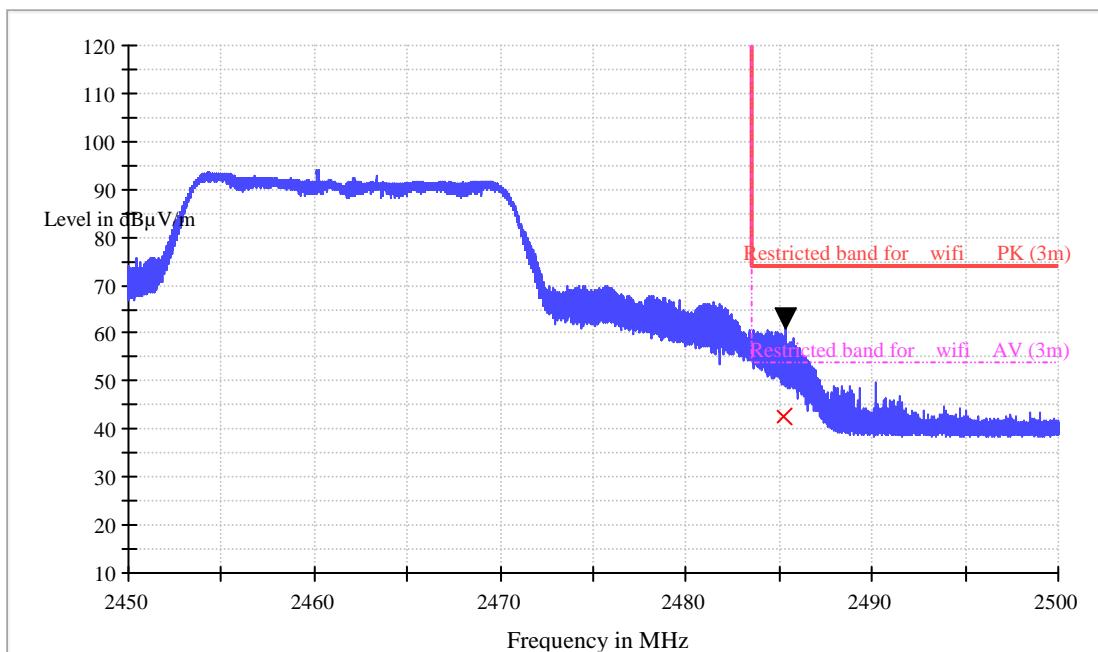
The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Correction Factor = Antenna Factor + Cable Loss -Preamplifier Factor.

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

Band Edge test Restricted Bands

Horizontal

**Result Table_Single**

Frequency (MHz)	MaxPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Limit (dB μ V/m)
2485.200000	61.6	1000.0	1000.000	150.0	H	1.0	-7.4	74

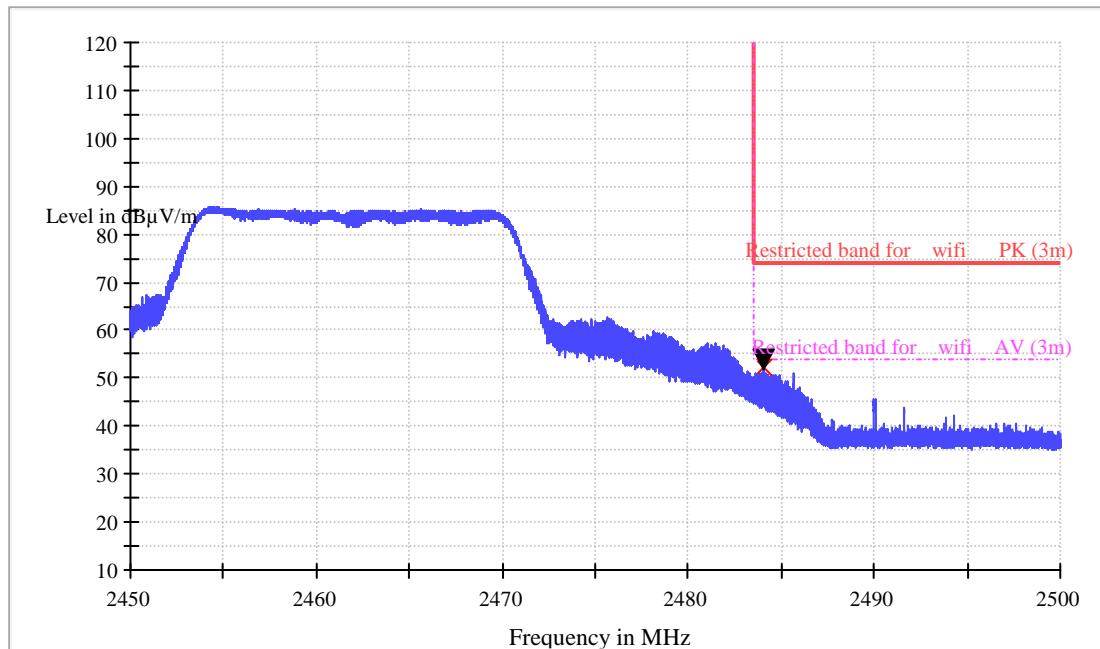
Result Table_Single

Frequency (MHz)	Average (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Limit (dB μ V/m)
2485.200000	42.6	1000.0	1000.000	150.0	H	1.0	-7.4	54

FCC ID: 2AHP4-ONOBCF668

TRF No.: FCC WIFI-a

Vertical

**Result Table_Single**

Frequency (MHz)	MaxPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Limit (dB μ V/m)
2484.000000	52.2	1000.0	1000.000	150.0	V	1.0	-7.4	54

FCC ID: 2AHP4-ONOBCF668

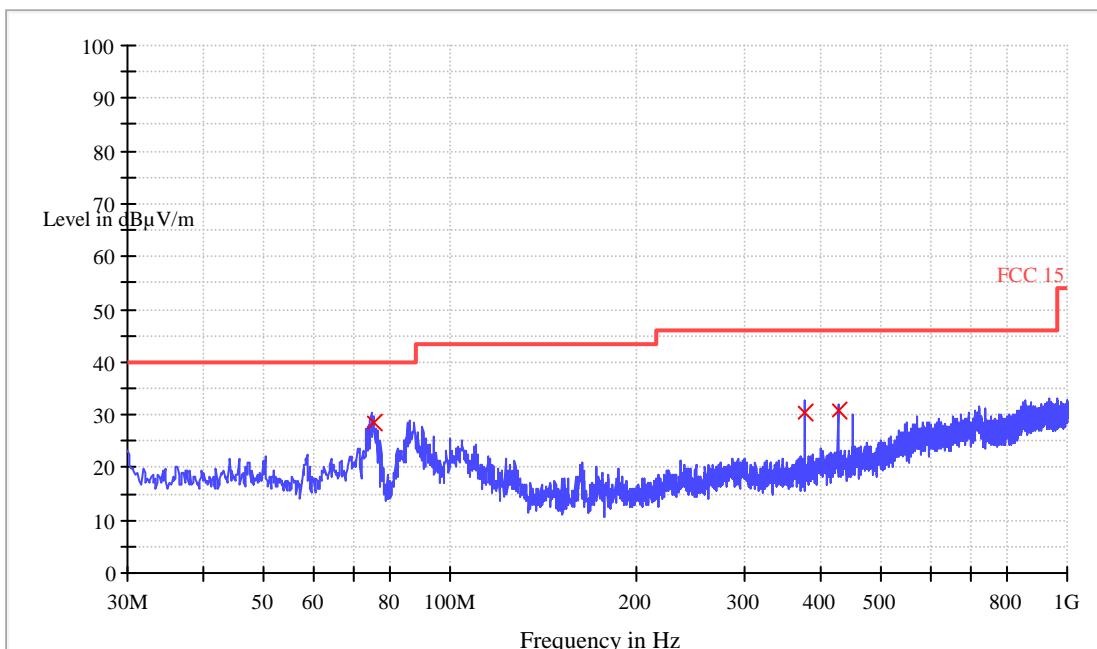
TRF No.: FCC WIFI-a

802.11n (HT40) mode with 135Mbps data rate

9 kHz~30 MHz Field Strength of Unwanted Emissions. Quasi-Peak Measurement

The measurements with active loop antenna were greater than 20dB below the limit, so the test data were not recorded in the test report.

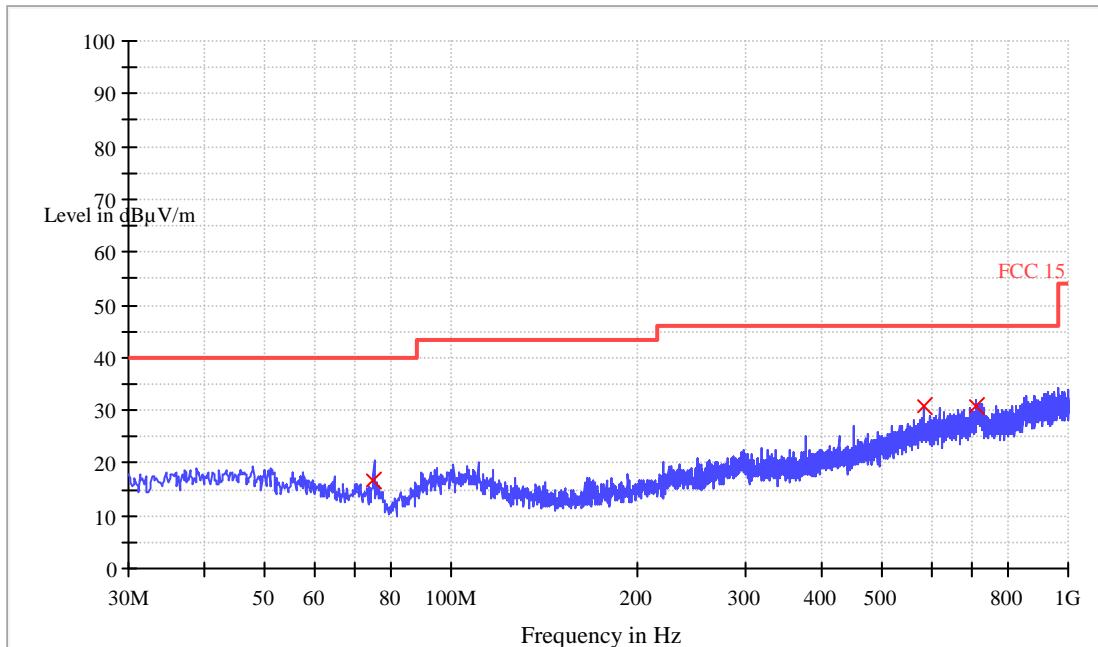
Test at Channel 3 (2.422 GHz) in transmitting status

30 MHz~1 GHz Radiated Emissions .Quasi-Peak Measurement**Vertical:****QP**

Frequency (MHz)	QuasiPeak (dB μ V/m)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dB μ V/m)
75.120000	28.4	120.000	V	7.9	11.6	40.0
374.920000	30.4	120.000	V	16.1	15.6	46.0
424.920000	30.8	120.000	V	17.6	15.2	46.0

FCC ID: 2AHP4-ONOBCF668

TRF No.: FCC WIFI-a

Horizontal:**QP**

Frequency (MHz)	QuasiPeak (dB μ V/m)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dB μ V/m)
74.960000	16.8	120.000	H	7.9	23.2	40.0
584.800000	30.7	120.000	H	21.1	15.3	46.0
710.920000	30.6	120.000	H	22.3	15.4	46.0

1~25 GHz Radiated Emissions. Peak & Average Measurement

Polarization	Frequency (MHz)	PK Net at 3m (dB μ V/m)	AV Net at 3m (dB μ V/m)	Correction Factor (dB)	PK Limit at 3m (dB μ V/m)	PK Margin (dB)	AV Limit at 3m (dB μ V/m)	AV Margin (dB)
Horizontal	1329.375	44.2	/	-13.5	74.0	/	54.0	-9.8
Horizontal	3195.600	41.9	/	-4.6	74.0	/	54.0	-12.1
Horizontal	4849.600	46.4	/	-0.9	74.0	/	54.0	-7.6
Vertical	1330.290	53.5	/	-13.5	74.0	/	54.0	-0.5
Vertical	1996.625	41.9	/	-9.6	74.0	/	54.0	-12.1
Vertical	4843.200	45.5	/	-0.9	74.0	/	54.0	-8.5

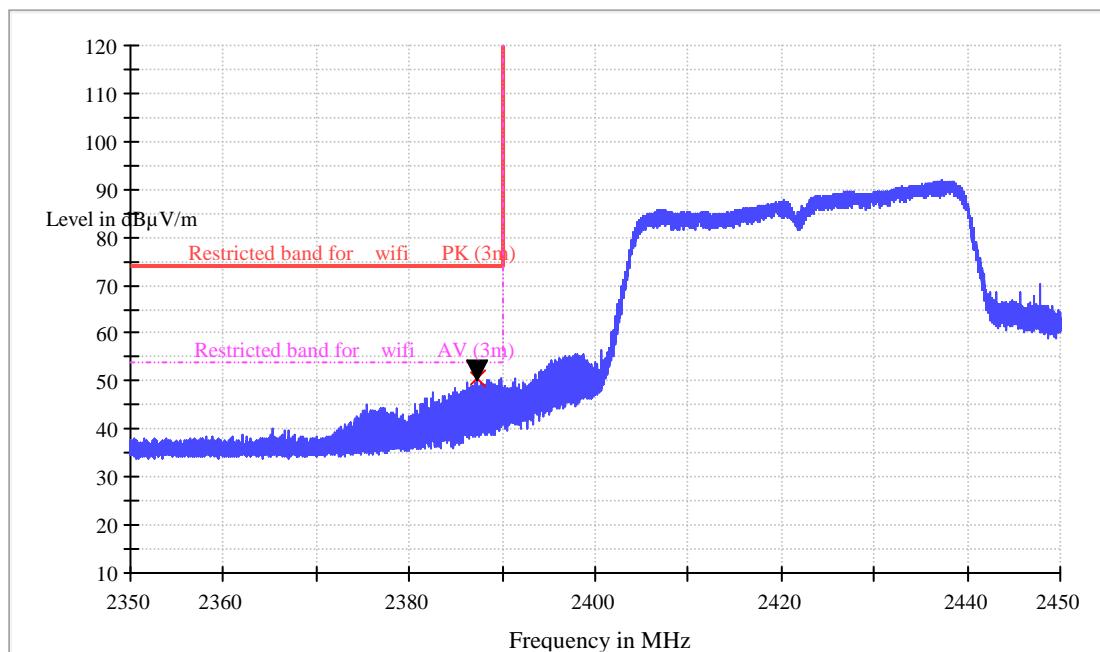
The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Correction Factor = Antenna Factor + Cable Loss -Preamplifier Factor.

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

Band Edge test Restricted Bands

Horizontal

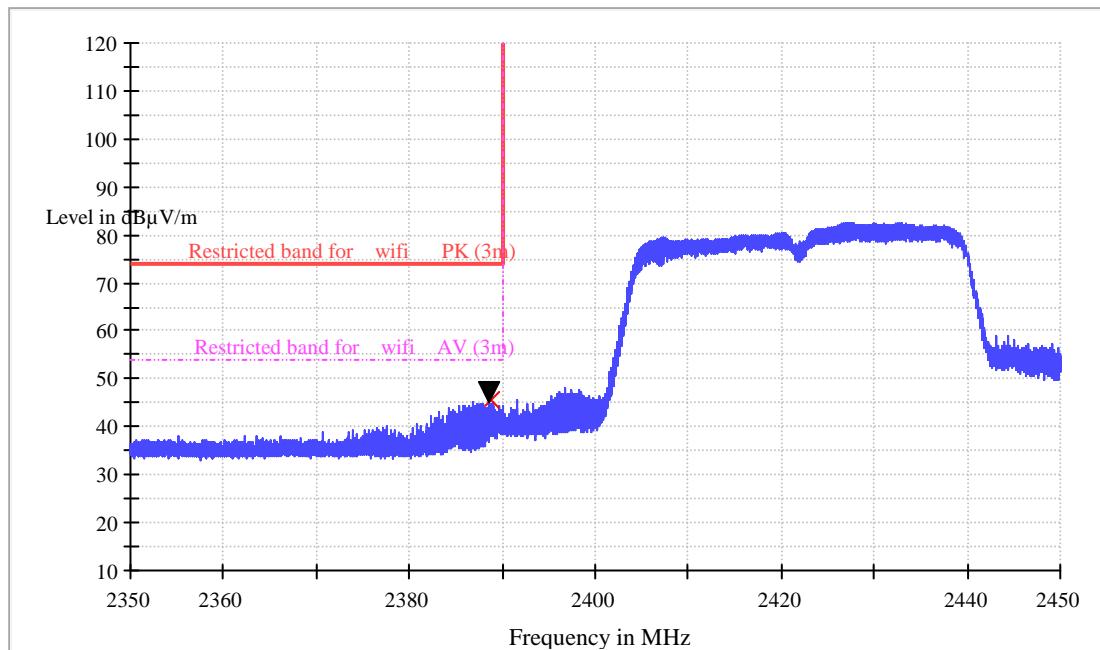
**Result Table_Single**

Frequency (MHz)	MaxPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Limit (dB μ V/m)
2387.200000	50.6	1000.0	1000.000	150.0	H	1.0	-7.8	54

FCC ID: 2AHP4-ONOBCF668

TRF No.: FCC WIFI-a

Vertical

**Result Table_Single**

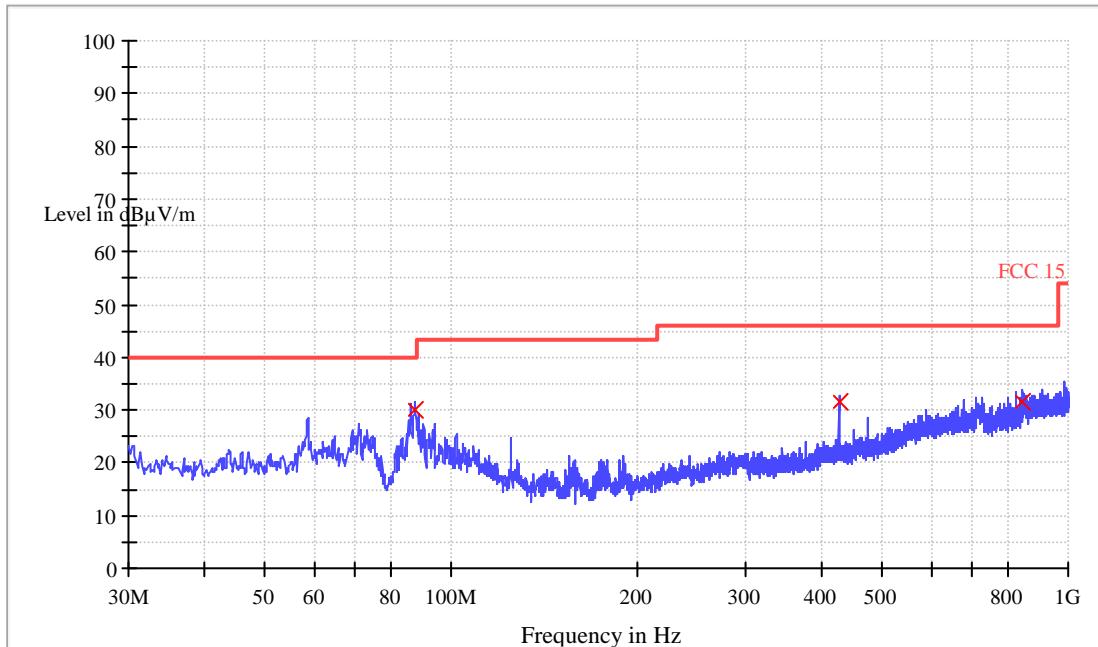
Frequency (MHz)	MaxPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Limit (dB μ V/m)
2388.800000	45.8	1000.0	1000.000	150.0	V	148.0	-7.8	54

FCC ID: 2AHP4-ONOBCF668

TRF No.: FCC WIFI-a

Test at Channel 6 (2.437 GHz) in transmitting status

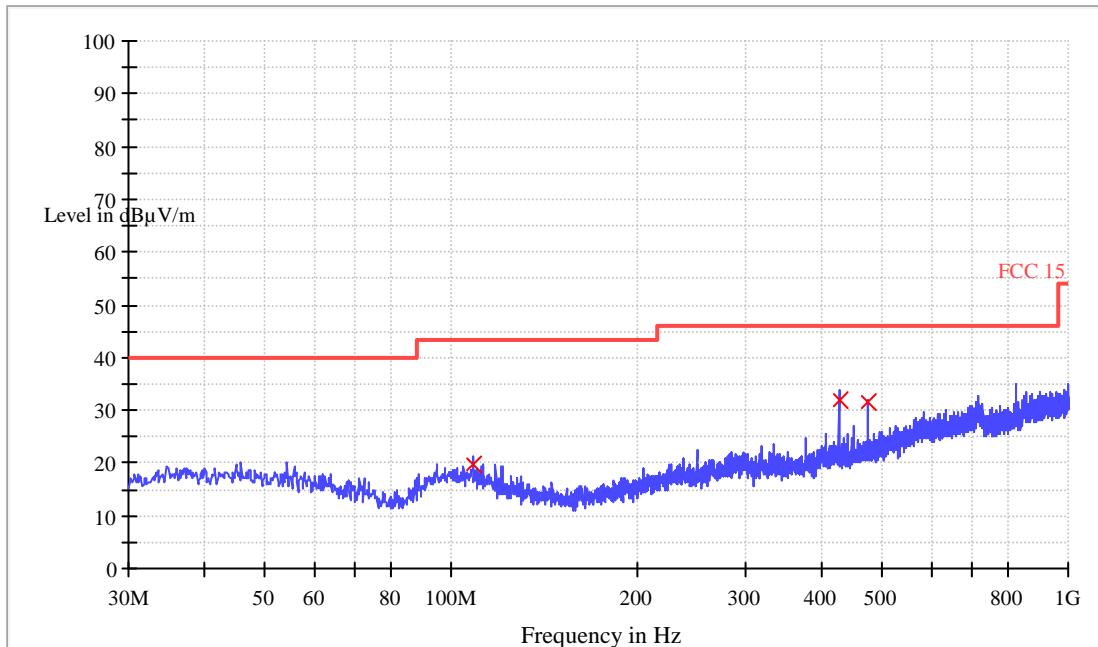
30 MHz~1 GHz Radiated Emissions .Quasi-Peak Measurement

Vertical:**QP**

Frequency (MHz)	QuasiPeak (dB μ V/m)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dB μ V/m)
87.480000	30.0	120.000	V	9.3	10.0	40.0
425.040000	31.6	120.000	V	17.6	14.4	46.0
845.080000	31.6	120.000	V	24.2	14.4	46.0

FCC ID: 2AHP4-ONOBCF668

TRF No.: FCC WIFI-a

Horizontal:**QP**

Frequency (MHz)	QuasiPeak (dB μ V/m)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dB μ V/m)
108.640000	19.9	120.000	H	12.3	23.6	43.5
424.920000	32.1	120.000	H	17.6	13.9	46.0
475.040000	31.4	120.000	H	18.6	14.6	46.0

1~25 GHz Radiated Emissions. Peak & Average Measurement

Polarization	Frequency (MHz)	PK Net at 3m (dB μ V/m)	AV Net at 3m (dB μ V/m)	Correction Factor (dB)	PK Limit at 3m (dB μ V/m)	PK Margin (dB)	AV Limit at 3m (dB μ V/m)	AV Margin (dB)
Horizontal	1329.375	45.3	/	-13.5	74.0	/	54.0	-8.7
Horizontal	4882.900	45.4	/	-0.9	74.0	/	54.0	-8.6
Horizontal	10260.700	46.4	/	6.4	74.0	/	54.0	-7.6
Vertical	1330.290	49.3	/	-13.5	74.0	/	54.0	-4.7
Vertical	4866.400	46.1	/	-0.9	74.0	/	54.0	-7.9
Vertical	10251.600	48.4	/	6.8	74.0	/	54.0	-5.6

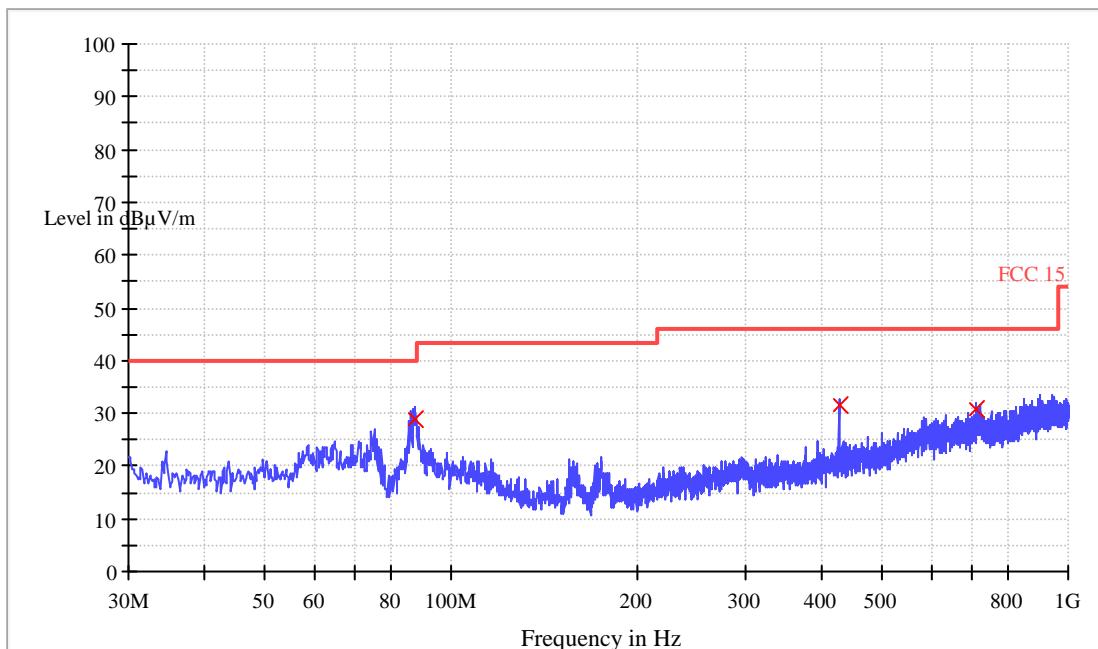
The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Correction Factor = Antenna Factor + Cable Loss -Preamplifier Factor.

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

Test at Channel 11 (2.452 GHz) in transmitting status

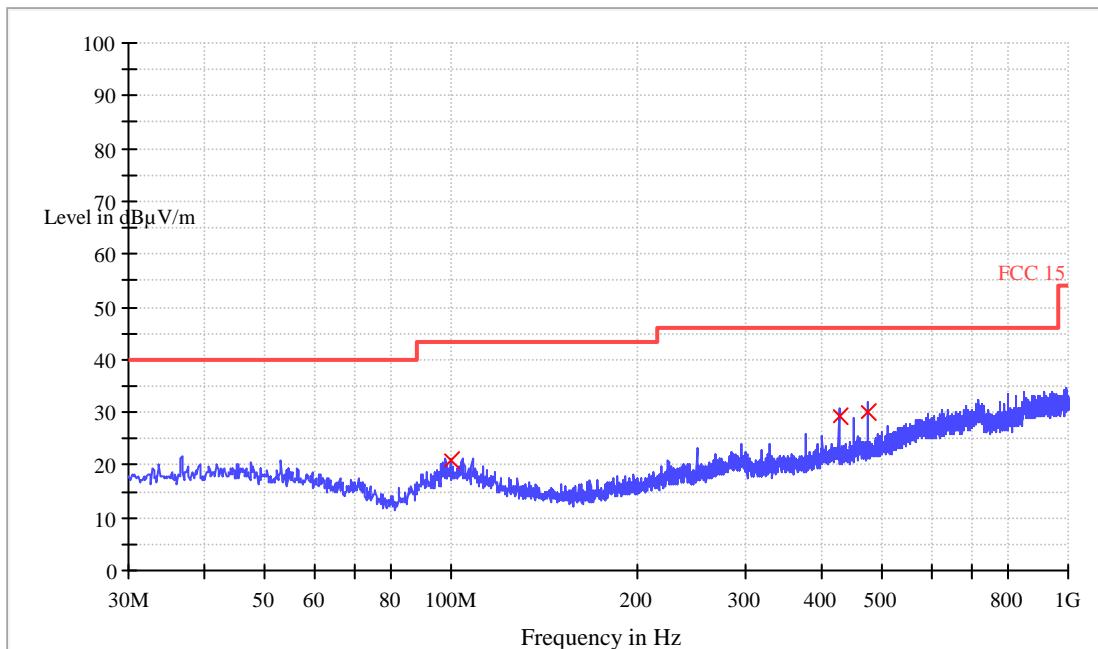
30 MHz~1 GHz Radiated Emissions .Quasi-Peak Measurement

Vertical:**QP**

Frequency (MHz)	QuasiPeak (dB μ V/m)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dB μ V/m)
87.480000	28.7	120.000	V	9.3	11.3	40.0
424.920000	31.4	120.000	V	17.6	14.6	46.0
711.360000	30.6	120.000	V	22.3	15.4	46.0

FCC ID: 2AHP4-ONOBCF668

TRF No.: FCC WIFI-a

Horizontal:**QP**

Frequency (MHz)	QuasiPeak (dB μ V/m)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - QPK (dB)	Limit - QPK (dB μ V/m)
99.680000	20.9	120.000	H	12.9	22.6	43.5
424.920000	29.4	120.000	H	17.6	16.6	46.0
475.040000	30.2	120.000	H	18.6	15.8	46.0

1~25 GHz Radiated Emissions. Peak & Average Measurement

Polarization	Frequency (MHz)	PK Net at 3m (dB μ V/m)	AV Net at 3m (dB μ V/m)	Correction Factor (dB)	PK Limit at 3m (dB μ V/m)	PK Margin (dB)	AV Limit at 3m (dB μ V/m)	AV Margin (dB)
Horizontal	1328.400	44.4	/	-13.5	74.0	/	54.0	-9.6
Horizontal	4908.020	47.6	/	-0.9	74.0	/	54.0	-6.4
Horizontal	7343.200	50.6	/	3.2	74.0	/	54.0	-3.4
Vertical	1330.290	51.9	/	-13.5	74.0	/	54.0	-2.1
Vertical	3190.000	42.5	/	-4.6	74.0	/	54.0	-11.5
Vertical	4885.200	45.1	/	-0.9	74.0	/	54.0	-8.9

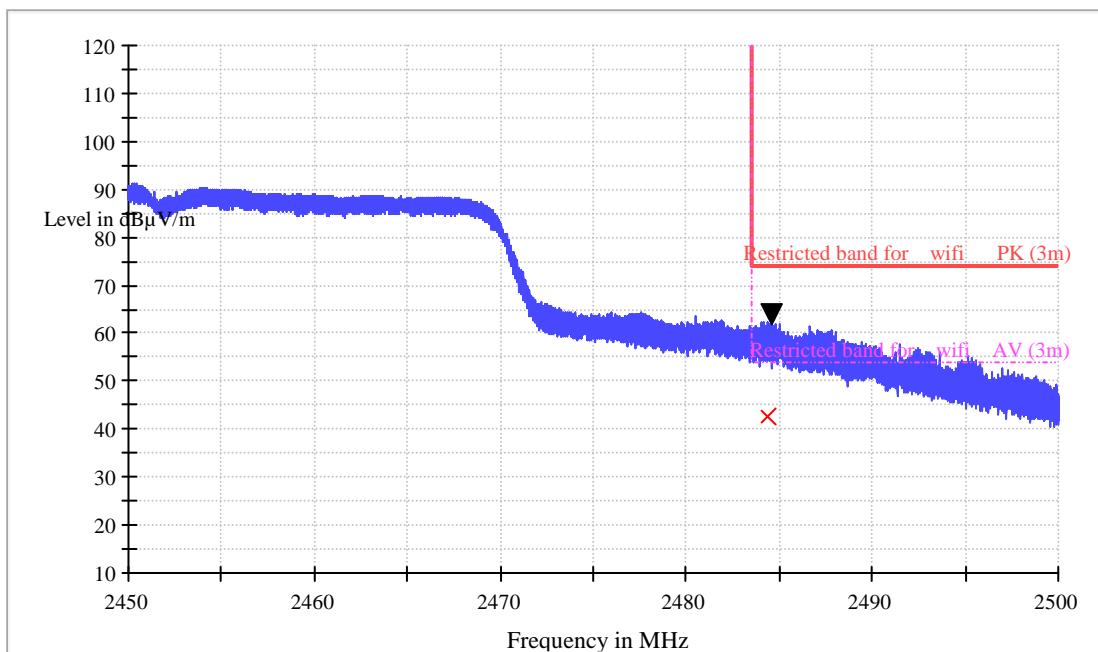
The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Correction Factor = Antenna Factor + Cable Loss -Preamplifier Factor.

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

Band Edge test Restricted Bands

Horizontal

**Result Table_Single**

Frequency (MHz)	MaxPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Limit (dB μ V/m)
2484.400000	42.6	1000.0	1000.000	150.0	H	1.0	-7.4	74

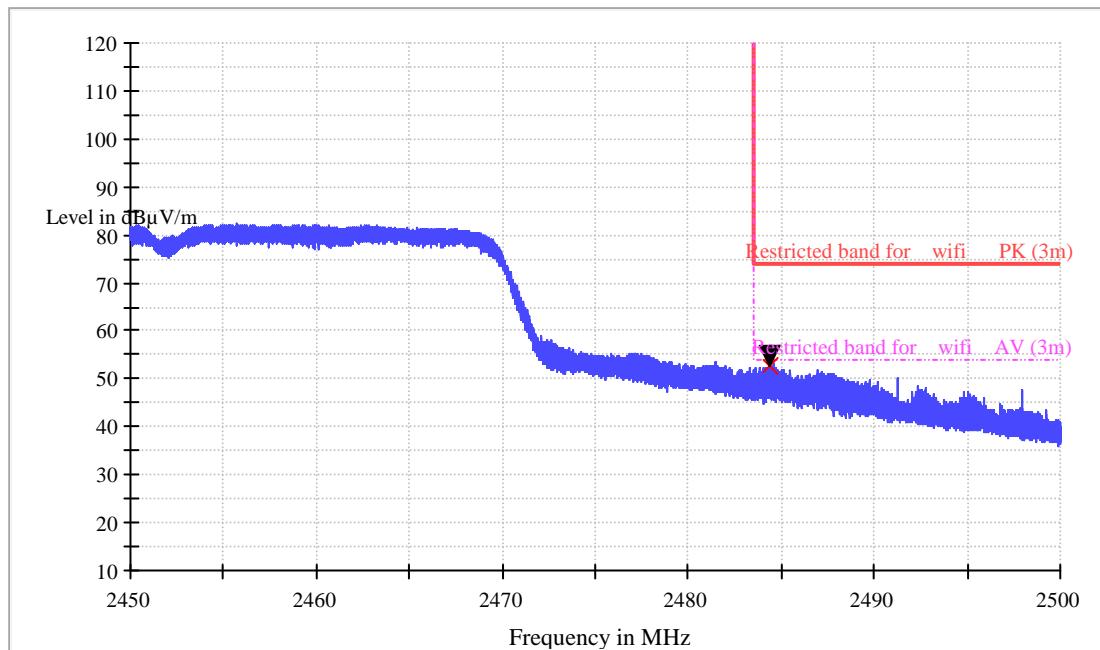
Result Table_Single

Frequency (MHz)	Average (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Limit (dB μ V/m)
2484.400000	42.6	1000.0	1000.000	150.0	H	1.0	-7.4	54

FCC ID: 2AHP4-ONOBCF668

TRF No.: FCC WIFI-a

Vertical

**Result Table_Single**

Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Limit (dBμV/m)
2484.400000	52.7	1000.0	1000.000	150.0	V	359.0	-7.4	54

FCC ID: 2AHP4-ONOBCF668

TRF No.: FCC WIFI-a

4.8 Band Edges Requirement

Test Requirement:

FCC Part 15 C section 15.247

(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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. Provided the transmitter demonstrates compliance with the peak conducted power limits.

Frequency Band:

2400 MHz to 2483.5 MHz

Test Method:

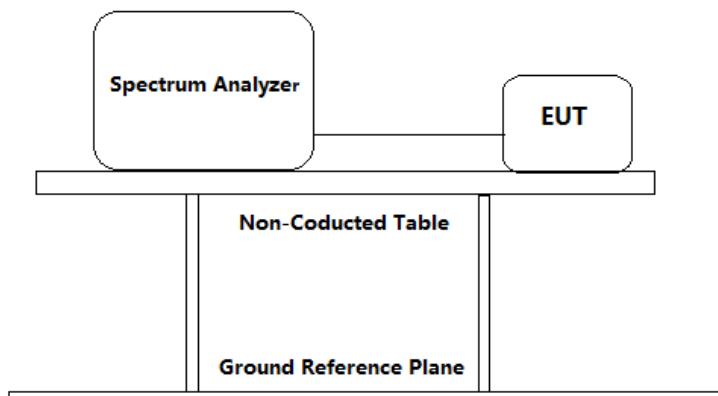
ANSI C63.10: Clause 11.11 and 11.13

Test Status:

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.

Test Configuration:

For Band Edges Emission in Radiated mode, Please refer to clause 4.7



Test Procedure:

For Band Edges Emission in Radiated mode, Please refer to clause 4.7

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum analyzer.
 - a) Set instrument center frequency to the frequency of the emission to be measured (must be within 2 MHz of the authorized band edge).
 - b) Set the center frequency and span to encompass frequency range to be measured.
 - c) RBW = 100 kHz.
 - d) VBW $\geq [3 \times \text{RBW}]$.

- e) Detector = peak.
- f) Sweep time = auto.
- g) Trace mode = max hold.
- h) Allow sweep to continue until the trace stabilizes (required measurement time may increase for low-duty-cycle applications).
- i) For radiated Band-edge emissions within a restricted band and within 2 MHz of an authorized band edge, integration method is considered.

2. Repeat until all the test status is investigated.
3. Report the worst case.



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Issued: 2016-10-25

Test result with plots as follows:

For conduct mode:

The band edges was measured and recorded Result:

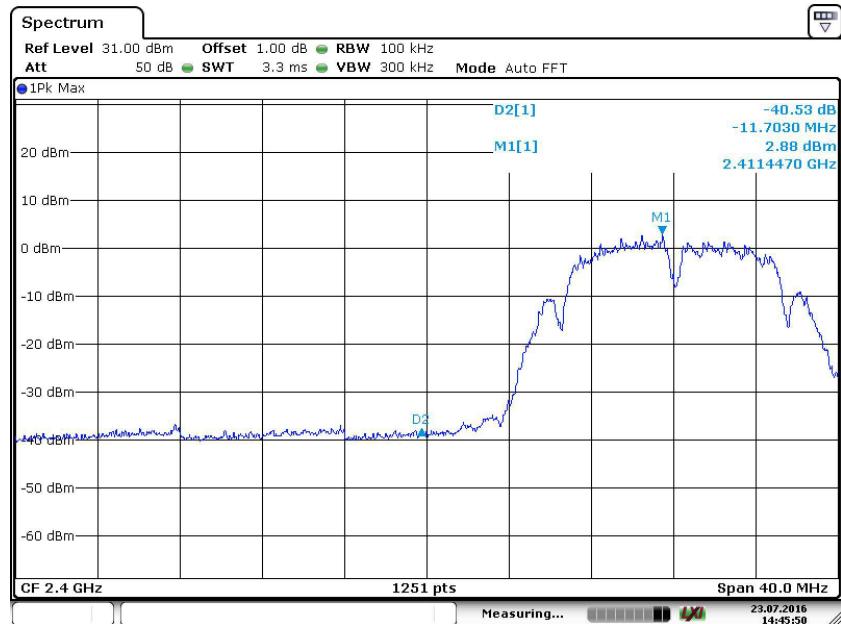
The Lower Edges attenuated more than 20dB.

The Upper Edges attenuated more than 20dB.

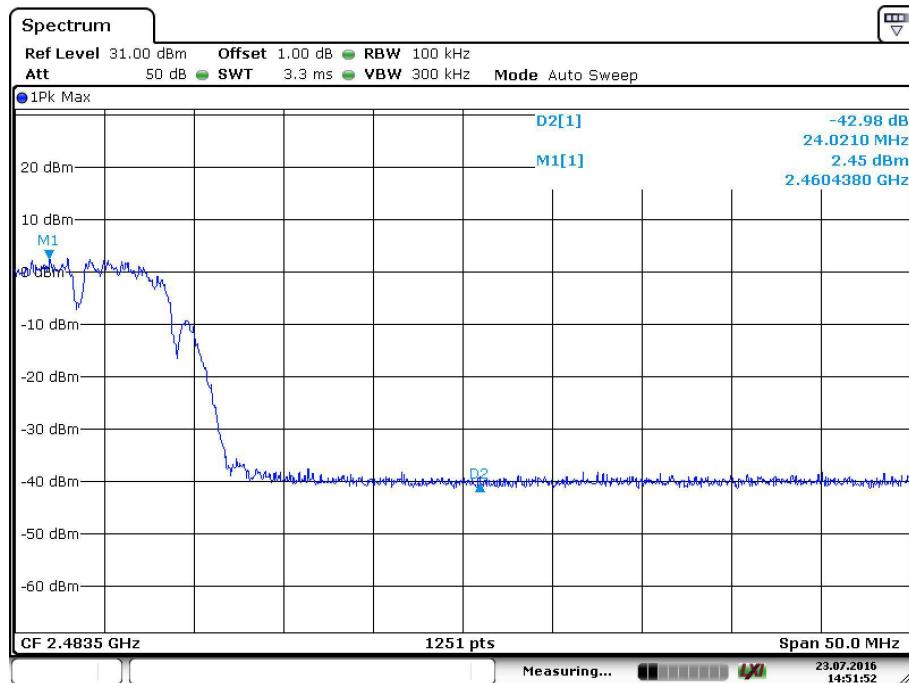
Report No.: 160309129GZU-003
 Issued: 2016-10-25

802.11b mode with 11 Mbps data rate

Channel1: 2.412 GHz



Channel 11: 2.462 GHz



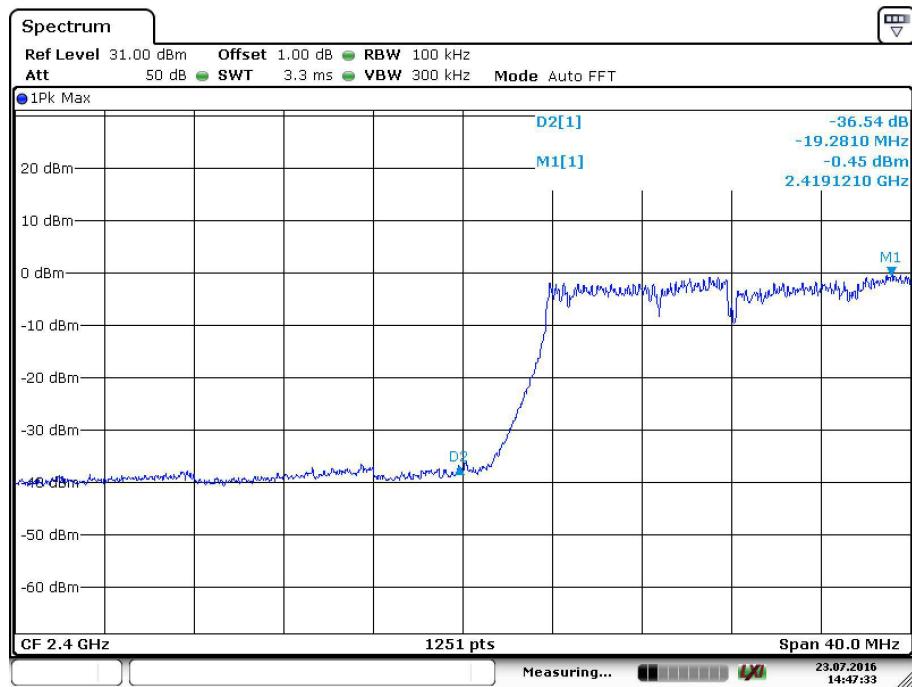
FCC ID: 2AHP4-ONOBCF668

TRF No.: FCC WIFI-a

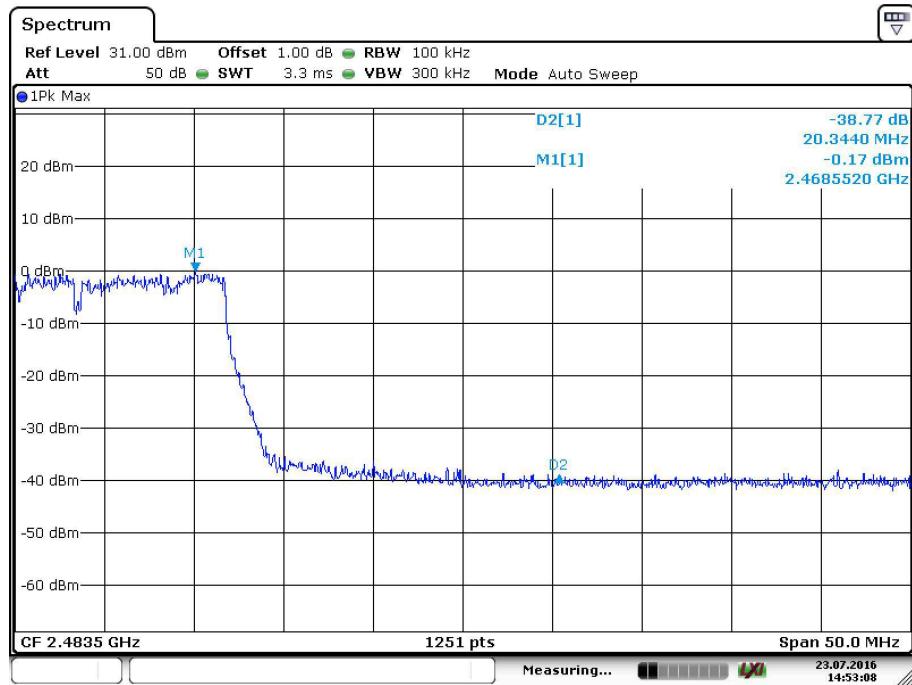
Report No.: 160309129GZU-003
 Issued: 2016-10-25

802.11g mode with 9 Mbps data rate

Channel1: 2.412 GHz



Channel 11: 2.462 GHz



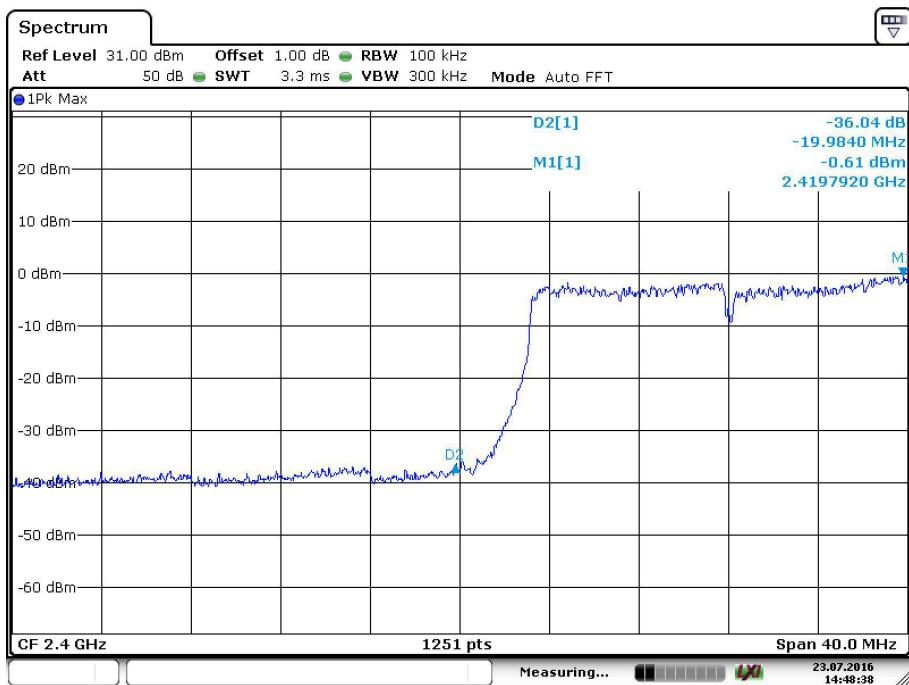
FCC ID: 2AHP4-ONOBCF668

TRF No.: FCC WIFI-a

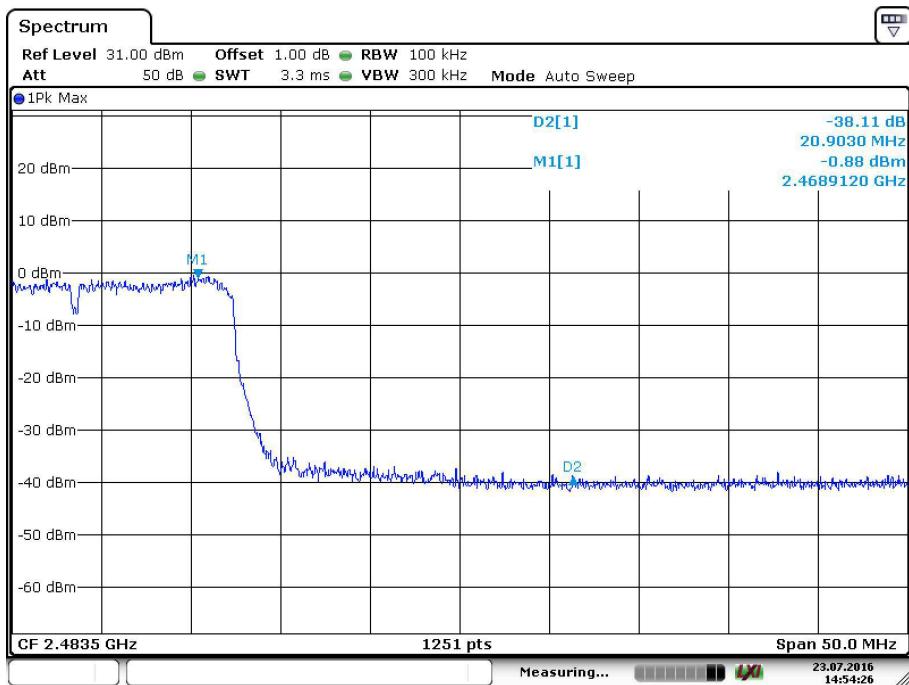
Report No.: 160309129GZU-003
Issued: 2016-10-25

802.11n(HT20) mode with 6.5Mbps data rate

Channel1: 2.412 GHz



Channel 11: 2.462 GHz



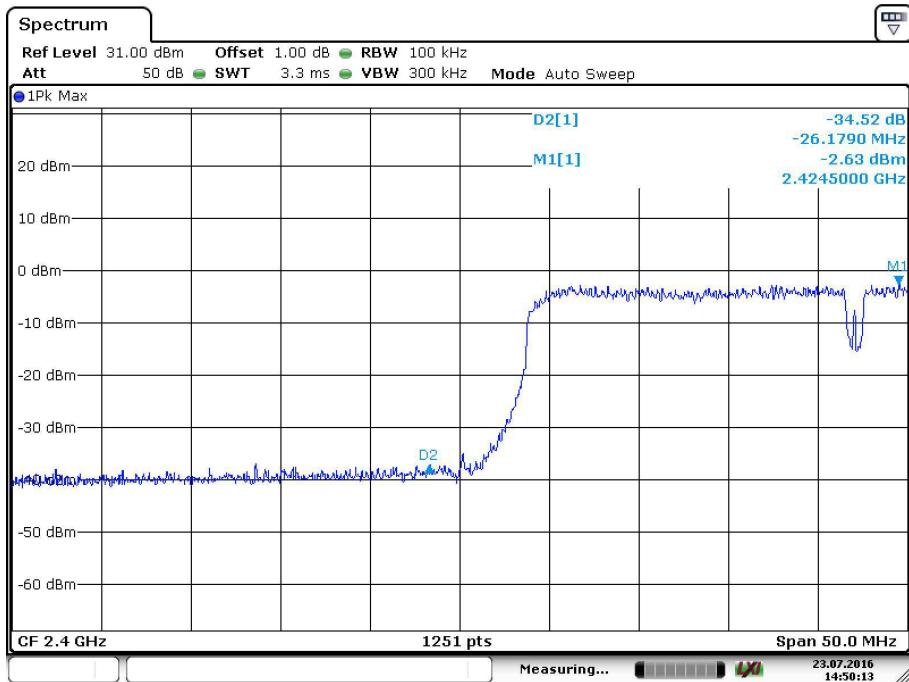
FCC ID: 2AHP4-ONOBCF668

TRF No.: FCC WIFI-a

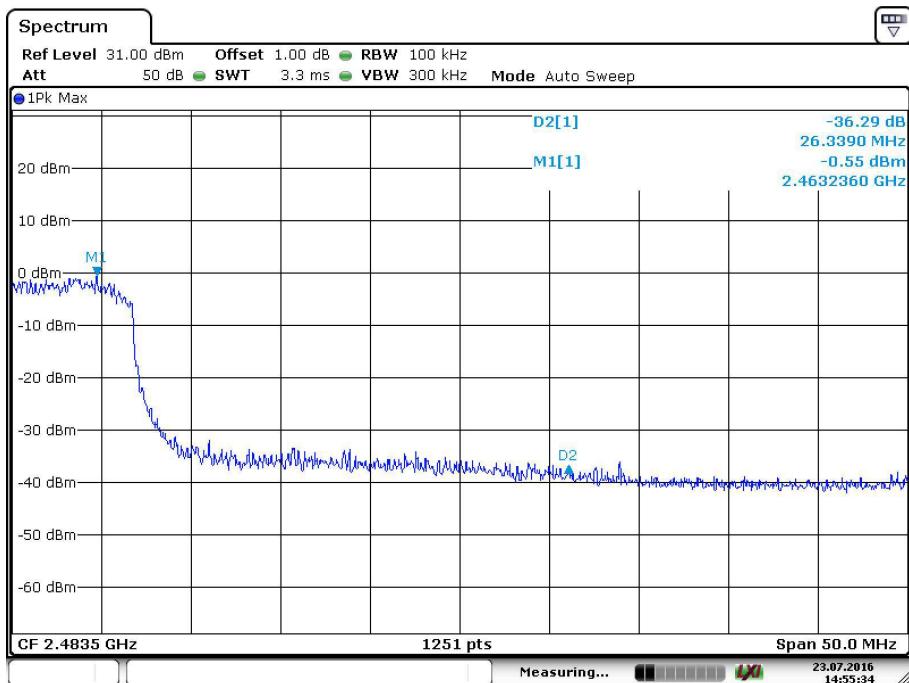
Report No.: 160309129GZU-003
Issued: 2016-10-25

802.11n(HT40) mode with 135Mbps data rate

Channel 3: 2.422 GHz



Channel 9: 2.452 GHz

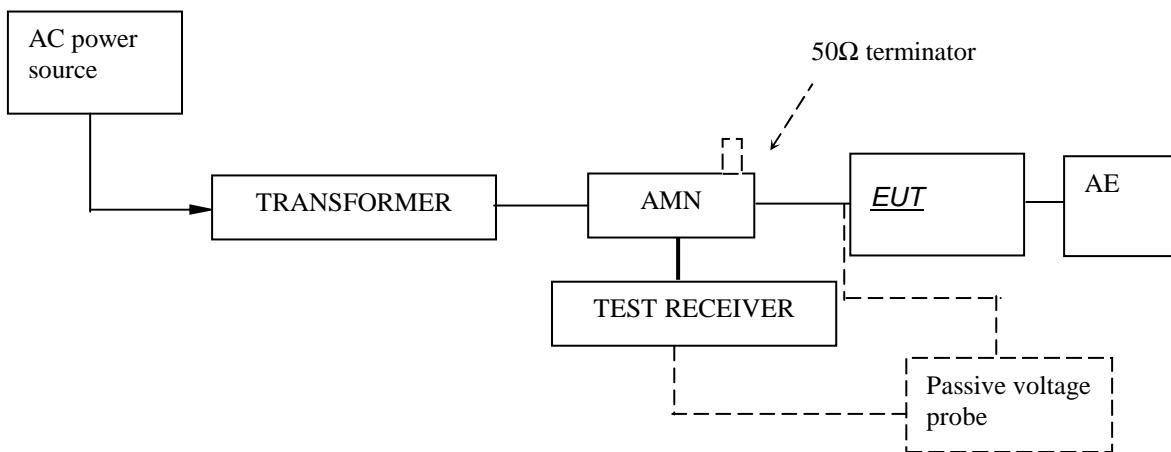


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4.9 Conducted Emission Test

Test Configuration:



Test Setup and Procedure

Test was performed according to ANSI C63.10 Clause 6.2. The EUT was set to achieve the maximum emission level. The mains terminal disturbance voltage was measured with the EUT in a shielded room. The EUT was connected to AC power source through an Artificial Mains Network which provides a 50Ω linear impedance Artificial hand is used if appropriate (for handheld apparatus). The load/control terminal disturbance voltage was measured with passive voltage probe if appropriate.

The table-top EUT was placed on a 0.8m high non-metallic table above earthed ground plane (Ground Reference Plane). And for floor standing EUT, was placed on a 0.1m high non-metallic supported on GRP. The EUT keeps a distance of at least 0.8m from any other of the metallic surface. The Artificial Mains Network is situated at a distance of 0.8m from the EUT.

During the test, mains lead of EUT excess 0.8m was folded back and forth parallel to the lead so as to form a horizontal bundle with a length between 0.3m and 0.4m.

The bandwidth of test receiver was set at 9 kHz. The frequency range from 150 kHz to 30MHz was checked.

Test Data

At main terminal: Pass

Tested Wire: Live

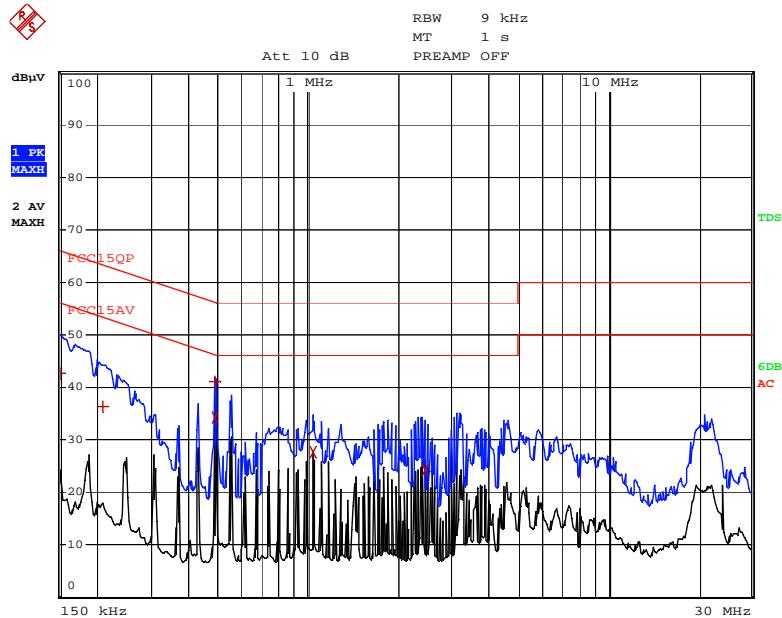
Operation Mode: transmitting mode at 2437MHz

EDIT PEAK LIST (Final Measurement Results)				
Trace1:	FCC15QP			
Trace2:	FCC15AV			
Trace3:	---			
TRACE	FREQUENCY	LEVEL dB μ V	DELTA	LIMIT dB
1	Quasi Peak 150 kHz	42.71 L1	-23.28	
1	Quasi Peak 210 kHz	36.42 L1	-26.77	
1	Quasi Peak 490 kHz	41.05 L1	-15.11	
2	Average 490 kHz	34.18 L1	-11.98	
2	Average 1.042 MHz	27.61 L1	-18.38	
2	Average 2.454 MHz	24.31 L1	-21.68	

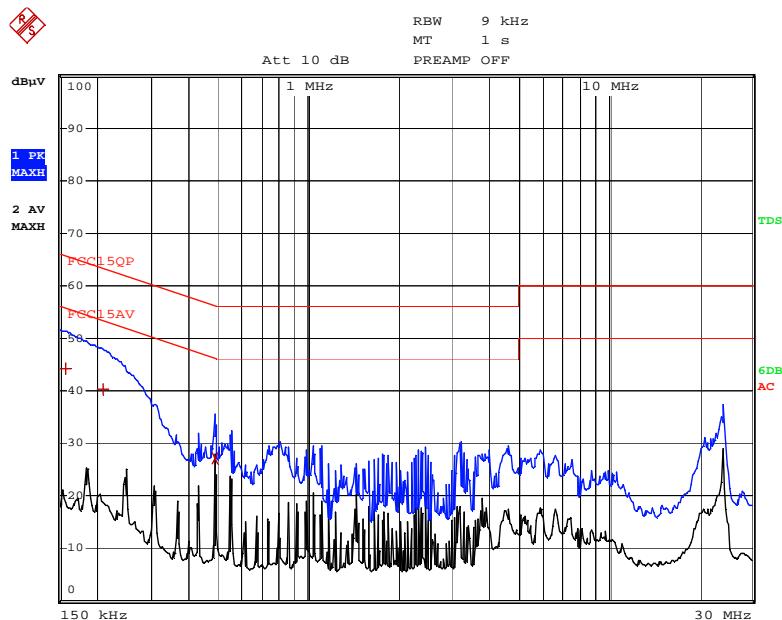
Tested Wire: Neutral

Operation Mode: transmitting mode at 2437MHz

EDIT PEAK LIST (Final Measurement Results)				
Trace1:	FCC15QP			
Trace2:	FCC15AV			
Trace3:	---			
TRACE	FREQUENCY	LEVEL dB μ V	DELTA	LIMIT dB
1	Quasi Peak 158 kHz	44.23 L1	-21.33	
1	Quasi Peak 210 kHz	40.27 L1	-22.93	
2	Average 490 kHz	27.17 L1	-18.99	

Emission Curve
Tested Wire: Live

Tested Wire: Neutral



5.0 Test Equipment List

Radiated Emission

Equipment No.	Equipment	Model	Manufacturer	Cal. Due date (YYYY-MM-DD)	Calibration Interval
EM030-04	3m Semi-Anechoic Chamber	9×6×6 m ³	ETS-LINDGREN	2017/5/9	1Y
EM031-02	EMI Test Receiver (9 kHz~7 GHz)	R&S ESR7	R&S	2017/6/7	1Y
EM031-03	Signal and Spectrum Analyzer (10 Hz~40 GHz)	R&S FSV40	R&S	2017/6/3	1Y
EM011-04	Loop antenna (9 kHz-30 MHz)	HFH2-Z2	R&S	2017/6/6	1Y
EM061-03	TRILOG Super Broadband test Antenna (30 MHz-1.5 GHz) (TX)	VULB 9161	SCHWARZBECK	2017/6/6	1Y
EM033-01	TRILOG Super Broadband test Antenna(30 MHz-3 GHz) (RX)	VULB 9163	SCHWARZBECK	2017/9/8	1Y
EM033-02	Bouble-Ridged Waveguide Horn Antenna (800 MHz-18 GHz)(RX)	R&S HF907	R&S	2017/6/6	1Y
EM033-03	High Frequency Antenna & preamplifier(18 GHz~26.5 GHz) (RX)	R&S SCU-26	R&S	2017/4/1	1Y
EM033-04	High Frequency Antenna & preamplifier (26 GHz-40 GHz)	R&S SCU-40	R&S	2017/4/1	1Y
EM031-02-01	Coaxial cable(9 kHz-1 GHz)	N/A	R&S	2017/5/30	1Y
EM033-02-02	Coaxial cable(1 GHz-18 GHz)	N/A	R&S	2017/5/30	1Y
EM033-04-02	Coaxial cable(18 GHz~40 GHz)	N/A	R&S	2017/4/1	1Y
EM031-01	Signal Generator (9 kHz~6 GHz)	SMB100A	R&S	2017/6/11	1Y
SZ180-10	Signal Generator (10MHz-40GHz)	68369B	Wiltron	2017/5/23	1Y
EM040-01	Band Reject/Notch Filter	WRHFV	Wainwright	N/A	1Y
EM040-02	Band Reject/Notch Filter	WRCGV	Wainwright	N/A	1Y
EM040-03	Band Reject/Notch Filter	WRCGV	Wainwright	N/A	1Y
EM022-03	2.45 GHz Filter	BRM50702	Micro-Tronics	2017/5/9	1Y
SA016-16	Programmable Temperature & Humidity Test Chamber	MHU-800LJ	TERCHY	2017/10/21	1Y
SA012-74	Digital Multimeter	FLUKE175	FLUKE	2017/10/13	1Y
EM010-01	Regulated DC Power supply	PAB-3003A	GUANHUA	N/A	1Y
SA040-22	Regulated DC Power supply	IT6721	ITECH	2017/9/18	1Y
EM084-06	Audio Analyzer	8903B	HP	2017/3/29	1Y
EM084-07	Modulation Analyzer	8901B	HP	2017/6/5	1Y

Conducted emission at the mains terminals

Equipment No.	Equipment	Model	Manufacturer	Cal. Due date (YYYY-MM-DD)	Calibration Interval
EM080-05	EMI receiver	ESCI	R&S	2017/7/26	1Y
EM006-05	LISN	ENV216	R&S	2017/9/18	1Y
EM006-06	LISN	ENV216	R&S	2017/9/18	1Y
EM006-06-01	Coaxial cable	/	R&S	2017/4/11	1Y
EM004-04	EMC shield Room	8m×3m×3m	Zhongyu	2017/1/25	1Y

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