



# MEASUREMENT REPORT (Class II Change)

## FCC PART 15 Subpart E- WLAN 802.11a/n/ac

---

**FCC ID:** 2ARBSEL3009260  
**APPLICANT:** Hewlett Packard Enterprise  
**Application Type:** Certification  
**Product:** Wifi/BT Module  
**Model No.:** EL300\_9260NGW  
**FCC Classification:** Unlicensed National Information Infrastructure (UNII)  
**FCC Rule Part(s):** Part 15 Subpart E (Section 15.407)  
**Test Procedure(s):** ANSI C63.10-2013, KDB 789033 D02v02r01,  
KDB 662911 D01v02r01  
**Received Date:** August 21, 2018  
**Test Date:** November 12, 2018 ~ January 18, 2019

Tested By : *Fran Chen*  
( Fran Chen )  
Reviewed By : *Paddy Chen*  
( Paddy Chen )  
Approved By : *Chenz Ker*  
( Chenz Ker )



The test results only relate to the tested samples.

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in KDB 789033 D02v02r01. Test results reported herein relate only to the item(s) tested.

The test report shall not be reproduced except in full without the written approval of MRT Technology (Taiwan) Co., Ltd.

---

## Revision History

Report No.	Version	Description	Issue Date	Note
1808TW5101-U9	1.0	Original Report	2019-01-21	

---

## CONTENTS

Description	Page
<b>§2.1033 General Information .....</b>	<b>5</b>
<b>1. INTRODUCTION .....</b>	<b>6</b>
1.1. Scope .....	6
1.2. MRT Test Location .....	6
<b>2. PRODUCT INFORMATION .....</b>	<b>7</b>
2.1. Equipment Description.....	7
2.2. Operation Frequencies and Channel List.....	9
2.3. Test Mode .....	10
2.4. Test Software.....	10
2.5. Device Capabilities .....	11
2.6. Test Configuration .....	11
2.7. EMI Suppression Device(s)/Modifications.....	11
2.8. Labeling Requirements.....	11
<b>3. DESCRIPTION OF TEST .....</b>	<b>12</b>
3.1. Evaluation Procedure .....	12
3.2. AC Line Conducted Emissions .....	12
3.3. Radiated Emissions.....	13
<b>4. ANTENNA REQUIREMENTS.....</b>	<b>14</b>
<b>5. TEST EQUIPMENT CALIBRATION DATE.....</b>	<b>15</b>
<b>6. MEASUREMENT UNCERTAINTY.....</b>	<b>16</b>
<b>7. TEST RESULT .....</b>	<b>17</b>
7.1. Summary.....	17
7.2. 26dB Bandwidth Measurement.....	18
7.2.1. Test Limit .....	18
7.2.2. Test Procedure used.....	18
7.2.3. Test Setting.....	18
7.2.4. Test Setup .....	18
7.2.5. Test Result.....	19
7.3. 6dB Bandwidth Measurement.....	20
7.3.1. Test Limit .....	20
7.3.2. Test Procedure used.....	20
7.3.3. Test Setting.....	20

---

7.3.4.	Test Setup .....	20
7.3.5.	Test Result.....	21
7.4.	Output Power Measurement .....	22
7.4.1.	Test Limit .....	22
7.4.2.	Test Procedure Used .....	23
7.4.3.	Test Setting.....	24
7.4.4.	Test Setup .....	24
7.4.5.	Test Result.....	25
7.5.	Transmit Power Control .....	49
7.5.1.	Test Limit .....	49
7.5.2.	Test Procedure Used .....	49
7.5.3.	Test Setting.....	49
7.5.4.	Test Setup .....	49
7.5.5.	Test Result.....	50
7.6.	Power Spectral Density Measurement .....	51
7.6.1.	Test Limit .....	51
7.6.2.	Test Procedure Used .....	51
7.6.3.	Test Setting.....	52
7.6.4.	Test Setup .....	52
7.6.5.	Test Result.....	53
7.7.	Radiated Spurious Emission Measurement .....	54
7.7.1.	Test Limit .....	54
7.7.2.	Test Procedure Used .....	54
7.7.3.	Test Setting.....	54
7.7.4.	Test Setup .....	56
7.7.5.	Test Result.....	58
7.8.	Radiated Restricted Band Edge Measurement .....	170
7.8.1.	Test Limit .....	170
7.8.2.	Test Result.....	173
7.9.	AC Conducted Emissions Measurement .....	272
7.9.1.	Test Limit .....	272
7.9.2.	Test Procedure .....	272
7.9.3.	Test Setup .....	273
7.9.4.	Test Result.....	274
<b>8.</b>	<b>CONCLUSION .....</b>	<b>276</b>

## §2.1033 General Information

<b>Applicant</b>	Hewlett Packard Enterprise
<b>Applicant Address</b>	11445 Compaq Center Dr W Houston 77070 United States
<b>Manufacturer</b>	Inventec Corporation
<b>Manufacturer Address</b>	No.88, Dazhi Rd. Taoyuan Dist. 33068 Taoyuan City, Taiwan
<b>Test Site</b>	MRT Technology (Taiwan) Co., Ltd
<b>Test Site Address</b>	No. 38, Fuxing Second Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C)
<b>MRT FCC Registration No.</b>	291082
<b>FCC Rule Part(s)</b>	Part 15 Subpart E (Section 15.407)
<b>Model No.</b>	EL300_9260NGW
<b>Test Device Serial No.</b>	N/A <input type="checkbox"/> Production <input checked="" type="checkbox"/> Pre-Production <input type="checkbox"/> Engineering
<b>FCC Classification</b>	Unlicensed National Information Infrastructure (UNII)

### Test Facility / Accreditations

1. MRT facility is a FCC registered (Reg. No. 291082) test facility with the site description report on file and is designated by the FCC as an Accredited Test Firm.
2. MRT facility is an IC registered (MRT Reg. No. 21723) test laboratory with the site description on file at Industry Canada.
3. MRT Lab is accredited to ISO 17025 by the Taiwan Accreditation Foundation (TAF Cert. No. 3261) in EMC, Telecommunications and Radio testing for FCC (Designation Number: TW3261), Industry Taiwan, EU and TELEC Rules.

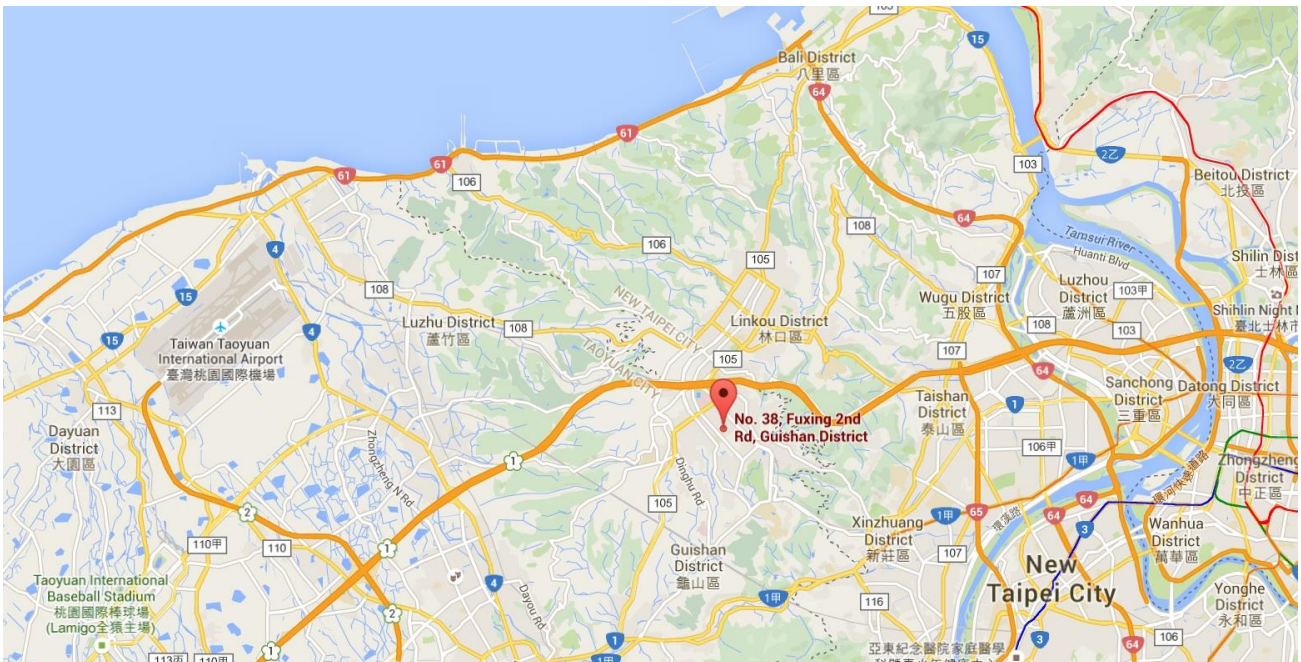
# 1. INTRODUCTION

## 1.1. Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Industry Canada Certification and Engineering Bureau.


## 1.2. MRT Test Location

The map below shows the location of the MRT LABORATORY, its proximity to the Taoyuan City. These measurement tests were conducted at the MRT Technology (Taiwan) Co., Ltd. Facility located at No.38, Fuxing 2nd Rd., Guishan Dist., Taoyuan City 33377, Taiwan (R.O.C).



## 2. PRODUCT INFORMATION

### 2.1. Equipment Description

Product Name	Wifi/BT Module
Model No.	EL300_9260NGW
Trademark	
Hardware Version Identification Number (HVIN)	958867
Firmware Version Identification Number (FVIN)	20.70.0.5
Emission Designator	D1D
Host Supports Radios Spec.	<p><b>WLAN ( Contains FCC ID : 2ARBSEL3009260):</b>            2.4G: 802.11b/g/n-20/n-40            5G: 802.11a/n-20/ac-20/n-40/ac-40/ac-80/ac-160, Band 1,2,3,4            Bluetooth Dual Mode: V2.1+EDR/ V5.0 LE</p> <p><b>WLAN ( Contains FCC ID : 2ARBSEL300530S):</b>            2.4G: 802.11b/g/n-20            5G: 802.11a/n-20/n-40, Band 1,2,3,4            Bluetooth Dual Mode: V2.1+EDR/ V4.2 LE</p> <p><b>WWAN ( Contains FCC ID : 2ARBSEL300756S):</b>            3G: WCDMA Band 2,4,5            4G: FDD Band 2,4,5,7,12,13,26,30,66; TDD Band 41            4G: CA Band 7,41</p> <p><b>GNSS</b></p>
Wi-Fi Specification	802.11a/n/ac
Frequency Range	<p><b>5GHz:</b>            For 802.11a/n-HT20/ac-VHT-20:            5180~5320MHz, 5500~5700MHz, 5745~5825MHz            For 802.11n-HT40/ ac-VHT40:            5190~5310MHz, 5510~5670MHz, 5755~5795MHz            For 802.11ac-VHT80:            5210MHz, 5290MHz, 5530MHz, 5610MHz, 5690MHz, 5775MHz            For 802.11ac-VHT160:            5250MHz, 5570MHz</p>

Maximum Output Power	802.11a: 21.38 dBm 802.11n-HT20: 24.10 dBm, 802.11n-HT40: 22.78 dBm, 802.11ac-VHT80: 22.76 dBm 802.11ac-VHT160: 15.84 dBm
Modulation Type	802.11a/n-20/ac-20/n-40/ac-40/ac-80/ac-160: OFDM (BPSK, QPSK, 16QAM, 64QAM,256QAM)
Power Adapter	MFR: FSP GROUP INC. Model No: FSP096-AHAN3 Input: AC 100-240V~1.8A, 50-60Hz Output: DC 12V, 8A Cable Out: Non-shielding, 1.8m with Core*1

Note: This case is change the following points from the original model, so the C2PC (Radiated Spurious Emission, Conducted Output Power, AC Conducted Emissions) is executed. (Original Report Grant Date: 12/19/2018, FCC ID: 2ARBSEL3009260)

1. Add a host: **HPE EL300 Converged Edge System** Brand: **HPE**, Product: **HSTNS-2162**.
2. Change the Antenna type .

	Frequency	Antenna Type	Gain(dBi)
Original	5.2G(5150~5350)	PIFA	5
New	5.6G(5470~5725)	Dipole	5
	5.8G(5725~5850)		

3. Reduce power on WIFI-2.4G & WIFI-5G by software in order to comply with spurious emission. No hardware changes have been made.



## 2.2. Operation Frequencies and Channel List

### 802.11 n-HT20/ ac-VHT20

Channel	Frequency	Channel	Frequency	Channel	Frequency
36	5180 MHz	40	5200 MHz	44	5220 MHz
48	5240 MHz	52	5260 MHz	56	5280 MHz
60	5300 MHz	64	5320 MHz	100	5500 MHz
104	5520 MHz	108	5540 MHz	112	5560 MHz
116	5580 MHz	120	5600 MHz	124	5620 MHz
128	5640 MHz	132	5660 MHz	136	5680 MHz
140	5700 MHz	142	5710 MHz	144	5720 MHz
149	5745 MHz	153	5765 MHz	157	5785 MHz
161	5805 MHz	165	5825 MHz	--	--

### 802.11 n-HT40/ ac-VHT40

Channel	Frequency	Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz	54	5270 MHz
62	5310 MHz	102	5510 MHz	110	5550 MHz
118	5590 MHz	126	5630 MHz	134	5670 MHz
142	5710 MHz	151	5755 MHz	159	5795 MHz

### 802.11ac-VHT80

Channel	Frequency	Channel	Frequency	Channel	Frequency
42	5210 MHz	58	5290 MHz	106	5530 MHz
122	5610 MHz	138	5690 MHz	155	5775 MHz

### 802.11ac-VHT160

Channel	Frequency	Channel	Frequency	Channel	Frequency
50	5250 MHz	114	5570 MHz	--	--

### 2.3. Test Mode

Test Mode	Mode 1: Transmit by 802.11a
	Mode 2: Transmit by 802.11n-HT20
	Mode 3: Transmit by 802.11n-HT40
	Mode 4: Transmit by 802.11ac-VHT80
	Mode 5: Transmit by 802.11ac-VHT160

### 2.4. Test Software

The test utility software used during testing was “DRTU”.

## 2.5. Device Capabilities

This device contains the following capabilities:

2.4GHz WLAN (DTS) and 5GHz WLAN (NII).

**Note:** 5GHz (NII) operation is possible in 20MHz, 40MHz and 80MHz channel bandwidths. The maximum achievable duty cycles for all modes were determined based on measurements performed on a spectrum analyzer in zero-span mode with RBW = 8MHz, VBW = 50MHz, and detector = average per the guidance of Section B)2)b) of KDB 789033 D02v02r01. The RBW and VBW were both greater than  $50/T$ , where T is the minimum transmission duration, and the number of sweep points across T was greater than 100. The duty cycles are as follows:

Test Mode	Duty Cycle
802.11a	99%
802.11n-HT20	99%
802.11n-HT40	99%
802.11ac-VHT80	99%
802.11ac-VHT160	99%

## 2.6. Test Configuration

This device was tested per the guidance of KDB 789033 D02v02r01. ANSI C63.10-2013 was used to reference the appropriate EUT setup for radiated spurious emissions testing and AC line conducted testing.

## 2.7. EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and/or no modifications were made during testing.

## 2.8. Labeling Requirements

Per 2.1074 & 15.19; Docket 95-19

The label shall be permanently affixed at a conspicuous location on the device; instruction manual or pamphlet supplied to the user and be readily visible to the purchaser at the time of purchase.

However, when the device is so small wherein placement of the label with specified statement is not practical, only the FCC ID must be displayed on the device per Section 15.19(a)(5). Please see attachment for FCC ID label and label location.

### 3. DESCRIPTION OF TEST

#### 3.1. Evaluation Procedure

The measurement procedures described in the American National Standard for Testing Unlicensed Wireless Devices (ANSI C63.10-2013), and the guidance provided in KDB 789033 were used in the measurement of the device.

**Deviation from measurement procedure.....None**

#### 3.2. AC Line Conducted Emissions

The line-conducted facility is located inside an 9'x4'x3' shielded enclosure. A 1m x 2m wooden table 80cm high is placed 40cm away from the vertical wall and 80cm away from the sidewall of the shielded room. Two 10kHz-30MHz, 50Ω/50uH Line-Impedance Stabilization Networks (LISNs) are bonded to the shielded room floor. Power to the LISNs is filtered by external high-current high-insertion loss power line filters. These filters attenuate ambient signal noise from entering the measurement lines. These filters are also bonded to the shielded enclosure.

The EUT is powered from one LISN and the support equipment is powered from the second LISN. All interconnecting cables more than 1 meter were shortened to a 1 meter length by non-inductive bundling (serpentine fashion) and draped over the back edge of the test table. All cables were at least 40cm above the horizontal reference ground-plane. Power cables for support equipment were routed down to the second LISN while ensuring that that cables were not draped over the second LISN.

Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The RF output of the LISN was connected to the receiver and exploratory measurements were made to determine the frequencies producing the maximum emission from the EUT. The receiver was scanned from 150kHz to 30MHz. The detector function was set to peak mode for exploratory measurements while the bandwidth of the analyzer was set to 9kHz. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Each emission was also maximized by varying: power lines, the mode of operation or data exchange speed, or support equipment whichever determined the worst-case emission. Once the worst case emissions have been identified, the one EUT cable configuration/arrangement and mode of operation that produced these emissions are used for final measurements on the same test site. The analyzer is set to CISPR quasi-peak and average detectors with a 9kHz resolution bandwidth for final measurements.

An extension cord was used to connect to a single LISN which powered by EUT. The extension cord was calibrated with LISN, the impedance and insertion loss are compliance with the requirements as stated in ANSI C63.10-2013.

Line conducted emissions test results are shown in Section 7.10.

### 3.3. Radiated Emissions

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. For measurements above 1GHz absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections. For measurements below 1GHz, the absorbers are removed. A turntable is used for radiated measurement. It is a continuously rotatable, remote controlled, metallic turntable and 2 meters (6.56 ft.) in diameter. The turn table is flush with the raised floor of the chamber in order to maintain its function as a ground plane. An 80cm high PVC support structure is placed on top of the turntable.

For all measurements, the spectrum was scanned through all EUT azimuths and from 1 to 4 meter receive antenna height using a broadband antenna from 30MHz up to the upper frequency shown in 15.33(b)(1) depending on the highest frequency generated or used in the device or on which the device operates or tunes. For frequencies above 1GHz, linearly polarized double ridge horn antennas were used. For frequencies below 30MHz, a calibrated loop antenna was used. When exploratory measurements were necessary, they were performed at 1 meter test distance inside the semi-anechoic chamber using broadband antennas, broadband amplifiers, and spectrum analyzers to determine the frequencies and modes producing the maximum emissions. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The test set-up for frequencies below 1GHz was placed on top of the 0.8 meter high, 1 x 1.5 meter table; and test set-up for frequencies 1-40GHz was placed on top of the 1.5 meter high, 1 x 1.5 meter table. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Appropriate precaution was taken to ensure that all emissions from the EUT were maximized and investigated. The system configuration, clock speed, mode of operation or video resolution, if applicable, turntable azimuth, and receive antenna height was noted for each frequency found.

Final measurements were made in the semi-anechoic chamber using calibrated, linearly polarized broadband and horn antennas. The test setup was configured to the setup that produced the worst case emissions. The spectrum analyzer was set to investigate all frequencies required for testing to compare the highest radiated disturbances with respect to the specified limits. The turntable containing the EUT was rotated through 360 degrees and the height of the receive antenna was varied 1 to 4 meters and stopped at the azimuth and height producing the maximum emission. Each emission was maximized by changing the orientation of the EUT through three orthogonal planes and changing the polarity of the receive antenna, whichever produced the worst-case emissions. According to 3dB Beam-Width of horn antenna, the horn antenna should be always directed to the EUT when rising height.

## 4. ANTENNA REQUIREMENTS

### Excerpt from §15.203 of the FCC Rules/Regulations:

“An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.”

- The antenna of the **Wifi/BT Module**, is permanently attached.
- There are no provisions for connection to an external antenna.

### Conclusion:

The EUT unit complies with the requirement of §15.203.

### Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	INPAQ TECHNOLOGY CO., LTD.	DAM-L23-H-N0-000-04-02	Dipole	5dBi

## 5. TEST EQUIPMENT CALIBRATION DATE

### Conducted Emissions – SR2

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Two-Line V-Network	R&S	ENV216	MRTTWA00019	1 year	2019/3/20
Cable	Rosnol	N1C50-RG400-B 1C50-500CM	MRTTWE00013	1 year	2019/5/18
EMI Test Receiver	R&S	ESR3	MRTTWA00009	1 year	2019/3/19

### Radiated Emissions – AC1

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Broadband TRILOG Antenna	SCHWARZBECK	VULB 9162	MRTTWA00001	1 year	2019/5/22
EMI Test Receiver	R&S	ESR3	MRTTWA00009	1 year	2019/3/19
Active Loop Antenna	Schwarzbeck	FMZB 1519B	MRTTWA00002	1 year	2019/4/24
Broadband Horn antenna	SCHWARZBECK	BBHA 9120D	MRTTWA00003	1 year	2019/4/24
Breitband Hornantenna	Schwarzbeck	BBHA 9170	MRTTWA00004	1 year	2019/4/23
Broadband Amplifier	Schwarzbeck	BBV 9721	MRTTWA00006	1 year	2019/4/23
Broadband Preampfier	SCHWARZBECK	BBV 9718	MRTTWA00005	1 year	2019/4/23
Cable	HUBERSUHNER	SF106	MRTTWA00010	1 year	2019/5/18
Cable	Rosnol	K1K50-UP0264- K1K50-4M	MRTTWA00012	1 year	2019/7/30

### Conducted Test Equipment – SR2

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Spectrum Analyzer	KEYSIGHT	N9010A	MRTTWA00012	1 year	2019/7/30
USB Wideband Power Sensor	KEYSIGHT	U2021XA	MRTTWA00015	1 year	2019/3/20

### Test Software

Software	Version	Function
e3	9.160520a	EMI Test Software
EMI	V3	EMI Test Software

## 6. MEASUREMENT UNCERTAINTY

Where relevant, the following test uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k = 2$ .

<b>Conducted Emission- Power Line</b>
Measuring Uncertainty for a Level of Confidence of 95% ( $U=2Uc(y)$ ): 2.53dB
<b>Conducted Emission- Impedance Stabilization Network Measurement</b>
Measuring Uncertainty for a Level of Confidence of 95% ( $U=2Uc(y)$ ): 3.96dB
<b>Radiated Spurious Emission</b>
Measuring Uncertainty for a Level of Confidence of 95% ( $U=2Uc(y)$ ): 3.92dB (Below 30M)
Measuring Uncertainty for a Level of Confidence of 95% ( $U=2Uc(y)$ ): 4.25dB (30M~1G)
Measuring Uncertainty for a Level of Confidence of 95% ( $U=2Uc(y)$ ): 4.40dB (1G~18G)
Measuring Uncertainty for a Level of Confidence of 95% ( $U=2Uc(y)$ ): 4.45dB (18G~40G)
<b>Frequency Error</b>
Measuring Uncertainty for a Level of Confidence of 95% ( $U=2Uc(y)$ ): $\pm 78.4\text{Hz}$
<b>Conducted Power</b>
Measuring Uncertainty for a Level of Confidence of 95% ( $U=2Uc(y)$ ): $\pm 0.84\text{dB}$
<b>Conducted Spurious Emission</b>
Measuring Uncertainty for a Level of Confidence of 95% ( $U=2Uc(y)$ ): $\pm 2.65\text{ dB}$
<b>Occupied Bandwidth</b>
Measuring Uncertainty for a Level of Confidence of 95% ( $U=2Uc(y)$ ): 3.3%
<b>Temp. / Humidity</b>
Measuring Uncertainty for a Level of Confidence of 95% ( $U=2Uc(y)$ ): $\pm 0.82^\circ\text{C}/ \pm 3\%$
<b>DC Voltage</b>
Measuring Uncertainty for a Level of Confidence of 95% ( $U=2Uc(y)$ ): $\pm 0.3\%$



## 7. TEST RESULT

### 7.1. Summary

**Product Name:** Wifi/BT Module  
**FCC Classification:** Unlicensed National Information Infrastructure (UNII)  
**Data Rate(s) Tested:** 6Mbps ~ 54Mbps (a);  
6.5/7.2Mbps ~ 130/144.4Mbps (n-HT20);  
13.5/15.0Mbps ~ 270/300Mbps (n-HT40);  
6.5/7.2Mbps ~ 156/173.4Mbps (ac-VHT20MHz);  
13.5/15.0Mbps ~ 360/400Mbps (ac-VHT40MHz);  
29.3/32.5Mbps ~ 780/866.6Mbps (ac-VHT80MHz);  
58.5/65Mbps ~ 1560/1733.3Mbps (ac-VHT160MHz)

FCC Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
15.407(a)	26dB Bandwidth	N/A	Conducted	N/A	Original Report
15.407(e)	6dB Bandwidth	≥ 500kHz		N/A	Original Report
15.407(a)(1)(i), (2), (3)	Maximum Conducted Output Power	Refer to Section 7.5		Pass	Section 7.5
15.407(h)(1)	Transmit Power Control	≤ 24 dBm		N/A	Original Report
15.407(a)(1)(i), (2), (3), (5)	Power Spectral Density	Refer to Section 7.7		N/A	Original Report
15.407(b)(1), (4)	Undesirable Emissions	≤ -27dBm/MHz EIRP ≤ -17dBm/MHz EIRP	Radiated	Pass	Section 7.8 & 7.9
15.205, 15.209 15.407(b)(5), (6), (7)	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	Emissions in restricted bands must meet the radiated limits detailed in 15.209		Pass	
15.207	AC Conducted Emissions 150kHz - 30MHz	< FCC 15.207 limits	Line Conducted	Pass	Section 7.10

**Notes:**

- 1) All channels, modes, and modulations/data rates were investigated among all UNII bands. The test results shown in the following sections represent the worst case emissions.
- 2) The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.

## 7.2. 26dB Bandwidth Measurement

### 7.2.1. Test Limit

N/A

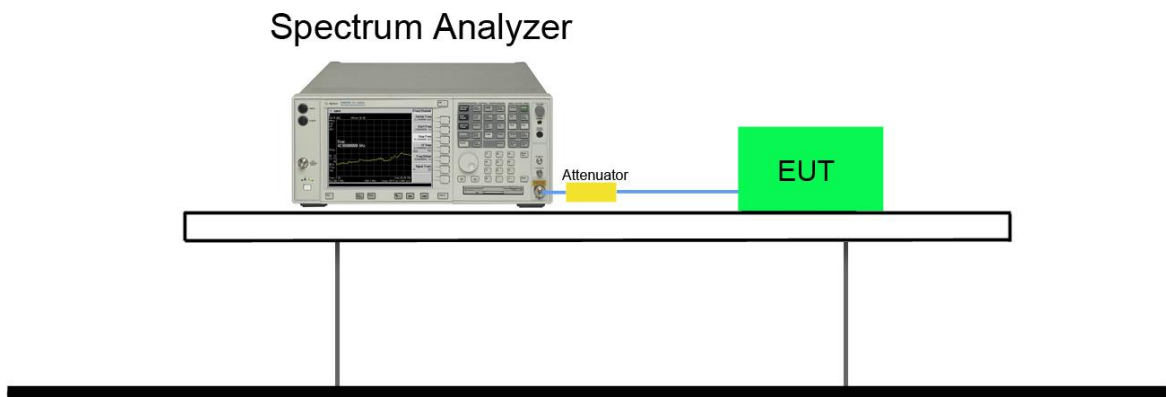
### 7.2.2. Test Procedure used

KDB 789033 D02v02r01 - Section C.1

### 7.2.3. Test Setting

1. The analyzers' automatic bandwidth measurement capability was used to perform the 26dB bandwidth measurement. The "X" dB bandwidth parameter was set to  $X = 26$ . The automatic bandwidth measurement function also has the capability of simultaneously measuring the 99% occupied bandwidth. The bandwidth measurement was not influenced by any intermediated power nulls in the fundamental emission.
2. RBW = approximately 1% of the emission bandwidth.
3. VBW  $\geq 3 \times$  RBW.
4. Detector = Peak.
5. Trace mode = max hold.

### 7.2.4. Test Setup



### 7.2.5. Test Result

Note: Reference Original Report Grant Date: 12/19/2018, FCC ID: 2ARBSEL3009260.

### 7.3. 6dB Bandwidth Measurement

#### 7.3.1. Test Limit

The minimum 6dB bandwidth shall be at least 500 kHz.

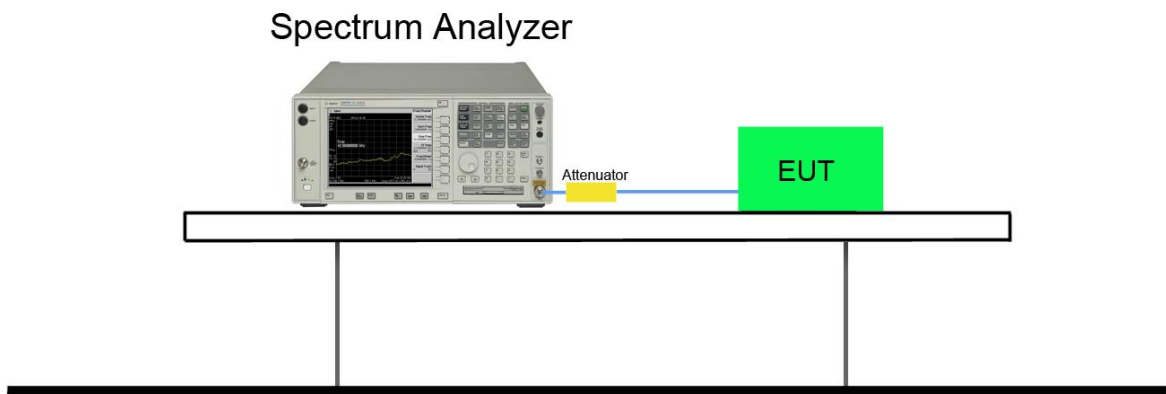
#### 7.3.2. Test Procedure used

KDB 789033 D02v02r01 - Section C.2

#### 7.3.3. Test Setting

1. Set center frequency to the nominal EUT channel center frequency.
2. RBW = 100 kHz.
3. VBW  $\geq 3 \times$  RBW.
4. Detector = Peak.
5. Trace mode = max hold.
6. Sweep = auto couple.
7. Allow the trace to stabilize.
8. 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.

#### 7.3.4. Test Setup



### 7.3.5. Test Result

Note: Reference Original Report Grant Date: 12/19/2018, FCC ID: 2ARBSEL3009260.

## 7.4. Output Power Measurement

### 7.4.1. Test Limit

#### For FCC Power Measurement Limit

For client operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 250mW.

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 (23.98dBm) or  $11\text{dBm} + 10 \log(26\text{dB BW})$ .

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W (30dBm).

If transmitting antennas of directional gain greater than 6dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

#### For IC Power Measurement Limit

For the band 5.15-5.25 GHz, the maximum e.i.r.p. shall not exceed 200 mW (23.01dBm) or  $10 + 10 \cdot \log_{10} B$ , dBm, whichever power is less. B is the 99% emission bandwidth in MHz.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power shall not exceed 250 mW (23.98dBm) or  $11 + 10 \log_{10} B$ , dBm, whichever power is less. The maximum e.i.r.p. shall not exceed 1.0 W (30dBm) or  $17 + 10 \log_{10} B$ , dBm, whichever power is less. B is the 99% emission bandwidth in MHz.

For the 5.725-5.85 GHz band, the maximum conducted output power shall not exceed 1 W.

If transmitting antennas of directional gain greater than 6dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

**Max Conducted Output Power Limit Calculation as below:**

For U-NII-1 (5150-5250MHz)

24dBm for Client Device

For U-NII-2A (5250-5350MHz), U-NII-2C (5470-5725MHz)

802.11a:  $11 + 10 \log_{10} (24.95\text{MHz}) = 25\text{dBm} > 24\text{dBm}$ ;

802.11n-HT20/ac-VHT20:  $11 + 10 \log_{10} (23.95\text{MHz}) = 25\text{dBm} > 24\text{dBm}$ ;

802.11n-HT40/ac-VHT40:  $11 + 10 \log_{10} (42.87\text{MHz}) = 27\text{dBm} > 24\text{dBm}$ ;

802.11n-HT80/ac-VHT80:  $11 + 10 \log_{10} (83.55\text{MHz}) = 30\text{dBm} > 24\text{dBm}$ ;

802.11ac-VHT160:  $11 + 10 \log_{10} (162.8\text{MHz}) = 33\text{dBm} > 24\text{dBm}$ ;

For U-NII-3 (5725-5850MHz)

30dBm for Client Device

**EIRP Limit Calculation as below:**

For U-NII-1 (5150-5250MHz)

36dBm with 6dBi Antenna Gain

For U-NII-2A (5250-5350MHz), U-NII-2C (5470-5725MHz)

30dBm with 6dBi Antenna Gain

For U-NII-3 (5725-5850MHz)

36dBm with 6dBi Antenna Gain

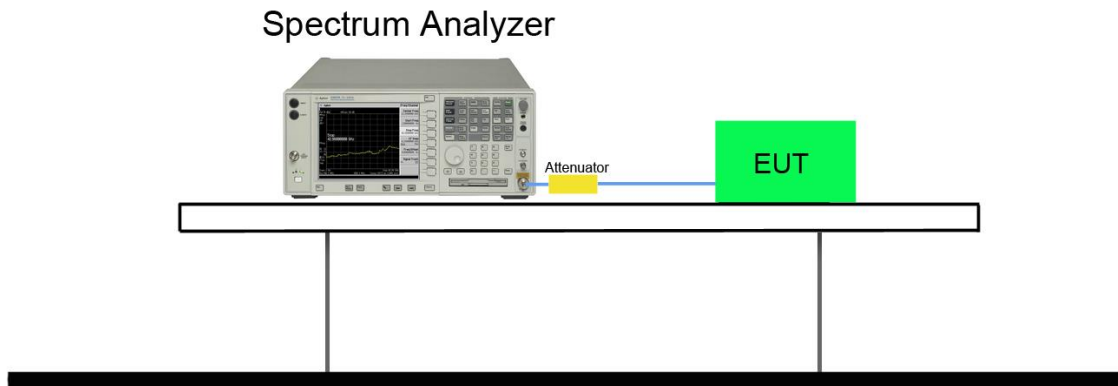
**7.4.2. Test Procedure Used**

KDB 789033 D02v02r01 - Section E) 3) b) Method PM-G

### 7.4.3. Test Setting

Average power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter. The trace was averaged over 100 traces to obtain the final measured average power.

### 7.4.4. Test Setup





**7.4.5. Test Result**

Product	Wifi/BT Module	Test Engineer	Fran
Test Site	SR2	Test Date	2019/1/18
Test Item	Output Power		

**Max Conducted Output Power**
**802.11a Mode:**

5GHz 802.11a RF Output Power (dBm) Antenna A										
Channel No.	Frequency (MHz)	Average Power								Required Limit (dBm)
		For different Data Rate (Mbps)								
		6	9	12	18	24	36	48	54	
36	5180	16.94	--	--	--	--	--	--	--	≤ 24
40	5200	20.08	19.95	19.81	19.69	19.57	19.50	19.43	19.36	≤ 24
48	5240	20.61	--	--	--	--	--	--	--	≤ 24
52	5260	20.60	--	--	--	--	--	--	--	≤ 24
56	5280	20.41	20.34	20.18	20.03	19.97	19.92	19.86	19.77	≤ 24
64	5320	16.91	--	--	--	--	--	--	--	≤ 24
100	5500	17.75	--	--	--	--	--	--	--	≤ 24
120	5600	20.72	20.57	20.45	20.28	20.17	20.09	19.93	19.89	≤ 24
140	5700	18.50	--	--	--	--	--	--	--	≤ 24
149	5745	21.38	--	--	--	--	--	--	--	≤ 30
157	5785	20.82	20.71	20.62	20.48	20.32	20.17	20.03	19.96	≤ 30
165	5825	21.02	--	--	--	--	--	--	--	≤ 30

Note: Output power = Reading value on power meter + duty cycle factor + cable loss.

**802.11a Mode:**

5GHz 802.11a RF Output Power (dBm) Antenna B										
Channel No.	Frequency (MHz)	Average Power								Required Limit (dBm)
		For different Data Rate (Mbps)								
		6	9	12	18	24	36	48	54	
36	5180	16.64	--	--	--	--	--	--	--	≤ 24
40	5200	20.31	20.18	20.06	19.81	19.46	19.37	19.18	19.03	≤ 24
48	5240	20.51	--	--	--	--	--	--	--	≤ 24
52	5260	20.56	--	--	--	--	--	--	--	≤ 24
56	5280	20.54	20.26	20.20	20.13	20.10	20.02	19.87	19.77	≤ 24
64	5320	16.01	--	--	--	--	--	--	--	≤ 24
100	5500	17.43	--	--	--	--	--	--	--	≤ 24
120	5600	20.66	20.50	20.26	20.08	20.00	19.92	19.76	19.58	≤ 24
140	5700	18.34	--	--	--	--	--	--	--	≤ 24
149	5745	21.06	--	--	--	--	--	--	--	≤ 30
157	5785	21.02	20.86	20.60	20.52	20.49	20.26	20.16	20.08	≤ 30
165	5825	20.51	--	--	--	--	--	--	--	≤ 30

Note: Output power = Reading value on power meter + duty cycle factor + cable loss.

**802.11n20 SISO Mode:**

5GHz 802.11n-20M RF Output Power (dBm) Antenna A (SISO)										
Channel No.	Frequency (MHz)	Average Power								Required Limit (dBm)
		For different Data Rate (Mbps)								
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	
36	5180	16.60	--	--	--	--	--	--	--	≤ 24
40	5200	19.39	19.34	19.26	19.21	19.11	19.04	18.91	18.73	≤ 24
48	5240	21.00	--	--	--	--	--	--	--	≤ 24
52	5260	20.78	--	--	--	--	--	--	--	≤ 24
56	5280	20.47	20.45	20.18	20.07	19.67	19.36	19.04	18.73	≤ 24
64	5320	16.52	--	--	--	--	--	--	--	≤ 24
100	5500	15.99	--	--	--	--	--	--	--	≤ 24
120	5600	20.64	20.08	20.05	20.02	20.01	19.96	19.92	19.89	≤ 24
140	5700	18.13	--	--	--	--	--	--	--	≤ 24
144	5720	19.52	--	--	--	--	--	--	--	≤ 24
149	5745	21.43	--	--	--	--	--	--	--	≤ 30
157	5785	20.75	20.72	20.50	20.41	20.11	20.04	20.01	19.99	≤ 30
165	5825	21.01	--	--	--	--	--	--	--	≤ 30

Note: Output power = Reading value on power meter + duty cycle factor + cable loss.

**802.11n20 SISO Mode:**

5GHz 802.11n-20M RF Output Power (dBm) Antenna B (SISO)										
Channel No.	Frequency (MHz)	Average Power								Required Limit (dBm)
		For different Data Rate (Mbps)								
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	
36	5180	16.95	--	--	--	--	--	--	--	≤ 24
40	5200	19.51	19.31	19.14	18.96	18.82	18.69	18.64	18.61	≤ 24
48	5240	20.80	--	--	--	--	--	--	--	≤ 24
52	5260	20.88	--	--	--	--	--	--	--	≤ 24
56	5280	20.77	20.55	20.37	20.19	20.08	20.02	19.89	19.74	≤ 24
64	5320	16.51	--	--	--	--	--	--	--	≤ 24
100	5500	17.29	--	--	--	--	--	--	--	≤ 24
120	5600	20.20	20.09	20.01	19.82	19.65	19.59	19.46	19.42	≤ 24
140	5700	18.52	--	--	--	--	--	--	--	≤ 24
144	5720	19.61	--	--	--	--	--	--	--	≤ 24
149	5745	21.06	--	--	--	--	--	--	--	≤ 30
157	5785	20.67	20.60	20.45	20.16	19.94	19.89	19.84	19.75	≤ 30
165	5825	20.86	--	--	--	--	--	--	--	≤ 30

Note: Output power = Reading value on power meter + duty cycle factor + cable loss.

**802.11n20 MIMO Mode:**

5GHz 802.11n-20M RF Output Power (dBm) Antenna A (MIMO)										
Channel No.	Frequency (MHz)	Average Power								Required Limit (dBm)
		For different Data Rate (Mbps)								
		MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15	
36	5180	16.28	--	--	--	--	--	--	--	≤ 24
40	5200	18.56	18.50	18.44	18.39	18.35	18.33	18.32	18.31	≤ 24
48	5240	19.10	--	--	--	--	--	--	--	≤ 24
52	5260	18.78	--	--	--	--	--	--	--	≤ 24
56	5280	18.32	18.15	18.09	17.98	17.89	17.88	17.86	17.85	≤ 24
64	5320	15.91	--	--	--	--	--	--	--	≤ 24
100	5500	16.10	--	--	--	--	--	--	--	≤ 24
120	5600	18.17	18.05	17.99	17.91	17.89	17.84	17.83	17.82	≤ 24
140	5700	16.29	--	--	--	--	--	--	--	≤ 24
144	5720	18.08	--	--	--	--	--	--	--	≤ 24
149	5745	20.18	--	--	--	--	--	--	--	≤ 30
157	5785	20.96	20.05	19.90	19.55	19.22	19.13	18.95	18.91	≤ 30
165	5825	20.83	--	--	--	--	--	--	--	≤ 30

Note: Output power = Reading value on power meter + duty cycle factor + cable loss.

**802.11n20 MIMO Mode:**

5GHz 802.11n-20M RF Output Power (dBm) Antenna B (MIMO)										
Channel No.	Frequency (MHz)	Average Power								Required Limit (dBm)
		For different Data Rate (Mbps)								
		MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15	
36	5180	16.29	--	--	--	--	--	--	--	≤ 24
40	5200	18.48	18.15	18.04	17.90	17.63	17.55	17.25	17.04	≤ 24
48	5240	19.23	--	--	--	--	--	--	--	≤ 24
52	5260	18.91	--	--	--	--	--	--	--	≤ 24
56	5280	18.62	18.45	18.17	17.97	17.61	17.48	17.42	17.26	≤ 24
64	5320	15.84	--	--	--	--	--	--	--	≤ 24
100	5500	16.35	--	--	--	--	--	--	--	≤ 24
120	5600	18.44	18.30	18.06	17.76	17.48	17.35	17.30	17.15	≤ 24
140	5700	16.60	--	--	--	--	--	--	--	≤ 24
144	5720	18.25	--	--	--	--	--	--	--	≤ 24
149	5745	20.02	--	--	--	--	--	--	--	≤ 30
157	5785	21.20	21.06	20.79	20.54	20.03	20.01	19.78	19.67	≤ 30
165	5825	21.05	--	--	--	--	--	--	--	≤ 30

Note: Output power = Reading value on power meter + duty cycle factor + cable loss.

**802.11n20 MIMO Mode:**

5GHz 802.11n-20M RF Output Power (dBm) Antenna A+ Antenna B (MIMO)										
Channel No.	Frequency (MHz)	Average Power								Required Limit (dBm)
		For different Data Rate (Mbps)								
		MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15	
36	5180	19.30	--	--	--	--	--	--	--	≤ 24
40	5200	21.54	21.34	21.26	21.17	21.02	20.97	20.83	20.74	≤ 24
48	5240	22.18	--	--	--	--	--	--	--	≤ 24
52	5260	21.86	--	--	--	--	--	--	--	≤ 24
56	5280	21.49	21.32	21.15	20.99	20.77	20.70	20.66	20.58	≤ 24
64	5320	18.89	--	--	--	--	--	--	--	≤ 24
100	5500	19.24	--	--	--	--	--	--	--	≤ 24
120	5600	21.32	21.19	21.04	20.85	20.71	20.62	20.59	20.51	≤ 24
140	5700	19.46	--	--	--	--	--	--	--	≤ 24
144	5720	21.18	--	--	--	--	--	--	--	≤ 24
149	5745	23.12	--	--	--	--	--	--	--	≤ 30
157	5785	24.10	23.60	23.38	23.09	22.66	22.61	22.40	22.32	≤ 30
165	5825	23.96	--	--	--	--	--	--	--	≤ 30

Note: Output power = Reading value on power meter + duty cycle factor + cable loss.

**802.11n40 SISO Mode:**

5GHz 802.11n-40M RF Output Power (dBm) Antenna A (SISO)										
Channel No.	Frequency (MHz)	Average Power								Required Limit (dBm)
		For different Data Rate (Mbps)								
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	
38	5190	17.53	--	--	--	--	--	--	--	≤ 24
46	5230	18.91	18.86	18.58	18.35	18.16	17.99	17.80	17.60	≤ 24
54	5270	18.23	--	--	--	--	--	--	--	≤ 24
62	5310	15.43	15.31	15.08	15.01	14.96	14.80	14.56	14.35	≤ 24
102	5510	17.58	--	--	--	--	--	--	--	≤ 24
118	5590	20.85	20.75	20.69	20.66	20.64	20.59	20.51	20.26	≤ 24
134	5670	18.25	--	--	--	--	--	--	--	≤ 24
142	5710	19.68	--	--	--	--	--	--	--	≤ 24
151	5755	19.24	--	--	--	--	--	--	--	≤ 30
159	5795	19.77	19.58	19.16	19.03	18.86	18.80	18.75	18.73	≤ 30
5GHz 802.11n-40M RF Output Power (dBm) Antenna B (SISO)										
Channel No.	Frequency (MHz)	Average Power								Required Limit (dBm)
		For different Data Rate (Mbps)								
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	
38	5190	17.39	--	--	--	--	--	--	--	≤ 24
46	5230	18.48	18.21	18.06	17.99	17.96	17.81	17.58	17.38	≤ 24
54	5270	18.26	--	--	--	--	--	--	--	≤ 24
62	5310	15.14	15.08	15.05	15.01	14.95	14.80	14.56	14.37	≤ 24
102	5510	17.36	--	--	--	--	--	--	--	≤ 24
118	5590	20.69	20.58	20.49	20.44	20.39	20.16	20.09	20.04	≤ 24
134	5670	18.75	--	--	--	--	--	--	--	≤ 24
142	5710	20.08	--	--	--	--	--	--	--	≤ 24
151	5755	19.34	--	--	--	--	--	--	--	≤ 30
159	5795	20.00	19.96	19.94	19.92	19.91	19.90	19.89	19.88	≤ 30

Note: Output power = Reading value on power meter + duty cycle factor + cable loss.



**802.11n40 MIMO Mode:**

5GHz 802.11n-40M RF Output Power (dBm) Antenna A (MIMO)										
Channel No.	Frequency (MHz)	Average Power								Required Limit (dBm)
		For different Data Rate (Mbps)								
		MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15	
38	5190	12.08	--	--	--	--	--	--	--	≤ 24
46	5230	17.88	17.85	17.81	17.76	17.70	17.66	17.58	17.47	≤ 24
54	5270	16.25	--	--	--	--	--	--	--	≤ 24
62	5310	13.18	13.14	13.08	13.01	12.93	12.60	12.26	12.13	≤ 24
102	5510	14.82	--	--	--	--	--	--	--	≤ 24
118	5590	18.21	18.16	18.05	17.88	17.80	17.60	17.37	17.28	≤ 24
134	5670	15.64	--	--	--	--	--	--	--	≤ 24
142	5710	17.14	--	--	--	--	--	--	--	≤ 24
151	5755	17.07	--	--	--	--	--	--	--	≤ 30
159	5795	18.41	18.27	18.18	18.09	18.02	17.98	17.71	17.37	≤ 30
5GHz 802.11n-40M RF Output Power (dBm) Antenna B (MIMO)										
Channel No.	Frequency (MHz)	Average Power								Required Limit (dBm)
		For different Data Rate (Mbps)								
		MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15	
38	5190	16.57	--	--	--	--	--	--	--	≤ 24
46	5230	17.45	17.36	17.28	17.21	17.07	17.01	16.98	16.87	≤ 24
54	5270	17.25	--	--	--	--	--	--	--	≤ 24
62	5310	13.78	13.62	13.58	13.47	13.36	13.18	12.84	12.60	≤ 24
102	5510	15.53	--	--	--	--	--	--	--	≤ 24
118	5590	19.16	19.13	19.10	19.06	18.94	18.87	18.78	18.67	≤ 24
134	5670	16.04	--	--	--	--	--	--	--	≤ 24
142	5710	19.11	--	--	--	--	--	--	--	≤ 24
151	5755	17.72	--	--	--	--	--	--	--	≤ 30
159	5795	19.12	19.91	19.76	19.70	19.57	19.38	19.16	18.62	≤ 30

Note: Output power = Reading value on power meter + duty cycle factor + cable loss.

**802.11n40 MIMO Mode:**

5GHz 802.11n-40 RF Output Power (dBm) Antenna A+ Antenna B (MIMO)										
Channel No.	Frequency (MHz)	Average Power								Required Limit (dBm)
		For different Data Rate (Mbps)								
		MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15	
38	5190	17.89	--	--	--	--	--	--	--	≤ 24
46	5230	20.68	20.62	20.56	20.50	20.40	20.36	20.30	20.19	≤ 24
54	5270	19.79	--	--	--	--	--	--	--	≤ 24
62	5310	16.50	16.40	16.35	16.25	16.16	15.91	15.57	15.38	≤ 24
102	5510	18.20	--	--	--	--	--	--	--	≤ 24
118	5590	21.72	21.68	21.62	21.52	21.42	21.29	21.14	21.04	≤ 24
134	5670	18.85	--	--	--	--	--	--	--	≤ 24
142	5710	21.24	--	--	--	--	--	--	--	≤ 24
151	5755	20.42	--	--	--	--	--	--	--	≤ 30
159	5795	21.79	22.18	22.05	21.98	21.87	21.74	21.50	21.05	≤ 30

Note: Output power = Reading value on power meter + duty cycle factor + cable loss.

**802.11ac80 SISO Mode:**

5GHz 802.11ac-80M RF Output Power (dBm) Antenna A (SISO)												
Channel No.	Frequency (MHz)	Average Power										Required Limit (dBm)
		For different Data Rate (Mbps)										
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9	
42	5210	17.59	17.56	17.55	17.54	17.51	17.46	17.43	17.40	17.38	17.35	≤ 24
58	5290	15.93	15.88	15.83	15.78	15.76	15.71	15.70	15.69	15.68	15.66	≤ 24
106	5530	17.93	--	--	--	--	--	--	--	--	--	≤ 24
122	5610	19.82	19.68	19.57	19.29	19.04	18.75	18.60	18.51	18.43	19.37	≤ 24
138	5690	20.30	--	--	--	--	--	--	--	--	--	≤ 24
155	5775	18.71	18.66	18.64	18.60	18.56	18.50	18.45	18.41	18.36	18.32	≤ 30
5GHz 802.11ac-80M RF Output Power (dBm) Antenna B (SISO)												
Channel No.	Frequency (MHz)	Average Power										Required Limit (dBm)
		For different Data Rate (Mbps)										
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9	
42	5210	17.50	17.47	17.43	17.38	17.36	17.32	17.30	17.26	17.25	17.24	≤ 24
58	5290	15.66	15.60	15.57	15.55	15.51	15.49	15.48	15.47	15.46	15.44	≤ 24
106	5530	17.13	--	--	--	--	--	--	--	--	--	≤ 24
122	5610	19.45	19.41	19.37	19.33	19.28	19.26	19.20	19.16	20.01	19.10	≤ 24
138	5690	20.42	--	--	--	--	--	--	--	--	--	≤ 24
155	5775	18.77	18.71	18.64	18.53	18.46	18.44	18.40	18.31	18.27	18.26	≤ 30

Note: Output power = Reading value on power meter + duty cycle factor + cable loss.

**802.11ac80 MIMO Mode:**

5GHz 802.11ac-80M RF Output Power (dBm) Antenna A (MIMO)												
Channel No.	Frequency (MHz)	Average Power										Required Limit (dBm)
		For different Data Rate (Mbps)										
		2-MCS0	2-MCS1	2-MCS2	2-MCS3	2-MCS4	2-MCS5	2-MCS6	2-MCS7	2-MCS8	2-MCS9	
42	5210	12.37	12.30	12.22	12.07	11.99	11.90	11.87	11.76	11.59	11.37	≤ 24
58	5290	11.55	11.51	11.36	11.21	11.20	11.19	11.13	10.70	12.72	12.68	≤ 24
106	5530	14.12	--	--	--	--	--	--	--	--	--	≤ 24
122	5610	17.98	17.92	17.90	17.79	17.56	17.51	17.46	17.37	17.35	17.29	≤ 24
138	5690	18.28	--	--	--	--	--	--	--	--	--	≤ 24
155	5775	17.81	17.75	17.59	17.37	17.15	16.92	16.70	16.48	16.26	16.22	≤ 30
5GHz 802.11ac-80M RF Output Power (dBm) Antenna B (MIMO)												
Channel No.	Frequency (MHz)	Average Power										Required Limit (dBm)
		For different Data Rate (Mbps)										
		2-MCS0	2-MCS1	2-MCS2	2-MCS3	2-MCS4	2-MCS5	2-MCS6	2-MCS7	2-MCS8	2-MCS9	
42	5210	13.42	13.25	13.20	13.16	13.03	12.81	12.61	12.26	12.25	12.22	≤ 24
58	5290	11.96	11.90	11.69	11.39	11.17	11.10	11.03	10.75	10.61	10.36	≤ 24
106	5530	15.02	--	--	--	--	--	--	--	--	--	≤ 24
122	5610	18.66	18.59	18.49	18.42	18.32	18.28	18.23	18.20	18.09	18.01	≤ 24
138	5690	19.18	--	--	--	--	--	--	--	--	--	≤ 24
155	5775	17.49	17.40	17.28	17.16	17.03	16.98	16.79	16.57	16.36	16.24	≤ 30

Note: Output power = Reading value on power meter + duty cycle factor + cable loss.

**802.11ac80 MIMO Mode:**

5GHz 802.11ac-80M RF Output Power (dBm) Antenna A + Antenna B (MIMO)												
Channel No.	Frequency (MHz)	Average Power										Required Limit (dBm)
		For different Data Rate (Mbps)										
		2-MCS0	2-MCS1	2-MCS2	2-MCS3	2-MCS4	2-MCS5	2-MCS6	2-MCS7	2-MCS8	2-MCS9	
42	5210	15.93	15.81	15.75	15.66	15.55	15.39	15.26	15.02	14.94	14.82	≤ 24
58	5290	14.77	14.72	14.54	14.31	14.19	14.15	14.09	13.73	14.80	14.68	≤ 24
106	5530	17.60	--	--	--	--	--	--	--	--	--	≤ 24
122	5610	21.34	21.28	21.21	21.12	20.96	20.92	20.87	20.81	20.74	20.67	≤ 24
138	5690	21.76	--	--	--	--	--	--	--	--	--	≤ 24
155	5775	20.66	20.59	20.45	20.27	20.10	19.96	19.75	19.53	19.32	19.24	≤ 30

Note: Output power = Reading value on power meter + duty cycle factor + cable loss.

**802.11ac160 SISO Mode:**

5GHz 802.11ac-160M RF Output Power (dBm) Antenna A (SISO)												
Channel No.	Frequency (MHz)	Average Power										Required Limit (dBm)
		For different Data Rate (Mbps)										
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9	
50	5250	12.16	--	--	--	--	--	--	--	--	--	≤ 24
114	5570	14.37	14.17	14.09	13.93	13.90	14.02	13.98	13.95	13.93	13.91	≤ 33
5GHz 802.11ac-160M RF Output Power (dBm) Antenna B (SISO)												
Channel No.	Frequency (MHz)	Average Power										Required Limit (dBm)
		For different Data Rate (Mbps)										
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8	MCS9	
50	5250	12.61	--	--	--	--	--	--	--	--	--	≤ 24
114	5570	14.20	14.11	14.06	14.00	13.87	13.74	13.72	13.70	13.68	13.67	≤ 33

**802.11ac160 MIMO Mode:**

5GHz 802.11ac-160M RF Output Power (dBm) Antenna A (MIMO)												
Channel No.	Frequency (MHz)	Average Power										Required Limit (dBm)
		For different Data Rate (Mbps)										
		2-MCS0	2-MCS1	2-MCS2	2-MCS3	2-MCS4	2-MCS5	2-MCS6	2-MCS7	2-MCS8	2-MCS9	
50	5250	9.60	--	--	--	--	--	--	--	--	--	≤ 24
114	5570	12.17	12.09	12.04	12.01	11.89	11.65	11.57	11.24	11.14	10.71	≤ 33
5GHz 802.11ac-160M RF Output Power (dBm) Antenna B (MIMO)												
Channel No.	Frequency (MHz)	Average Power										Required Limit (dBm)
		For different Data Rate (Mbps)										
		2-MCS0	2-MCS1	2-MCS2	2-MCS3	2-MCS4	2-MCS5	2-MCS6	2-MCS7	2-MCS8	2-MCS9	
50	5250	10.63	--	--	--	--	--	--	--	--	--	≤ 24
114	5570	13.39	13.25	13.22	13.20	13.13	12.97	12.93	12.59	12.38	12.22	≤ 33
5GHz 802.11ac-160M RF Output Power (dBm) Antenna A + Antenna B (MIMO)												
Channel No.	Frequency (MHz)	Average Power										Required Limit (dBm)
		For different Data Rate (Mbps)										
		2-MCS0	2-MCS1	2-MCS2	2-MCS3	2-MCS4	2-MCS5	2-MCS6	2-MCS7	2-MCS8	2-MCS9	
50	5250	13.16	--	--	--	--	--	--	--	--	--	≤ 24
114	5570	15.84	15.72	12.04	15.66	15.57	15.37	15.32	14.98	14.82	14.54	≤ 33

Note: Output power = Reading value on power meter + duty cycle factor + cable loss.

**EIRP Power**
**802.11a EIRP Power:**

Test Mode	Channel No.	Freq. (MHz)	EIRP (dBm)	EIRP Limit (dBm)	Result
<b>Antenna A</b>					
802.11a	36	5180	21.94	≤ 36	Pass
802.11a	40	5200	25.08	≤ 36	Pass
802.11a	48	5240	25.61	≤ 36	Pass
802.11a	52	5260	25.60	≤ 30	Pass
802.11a	56	5280	25.41	≤ 30	Pass
802.11a	64	5320	21.91	≤ 30	Pass
802.11a	100	5500	22.75	≤ 30	Pass
802.11a	120	5600	25.72	≤ 30	Pass
802.11a	140	5700	23.50	≤ 30	Pass
802.11a	149	5745	26.38	≤ 36	Pass
802.11a	157	5785	25.82	≤ 36	Pass
802.11a	165	5825	26.02	≤ 36	Pass
<b>Antenna B</b>					
802.11a	36	5180	21.64	≤ 36	Pass
802.11a	40	5200	25.31	≤ 36	Pass
802.11a	48	5240	25.51	≤ 36	Pass
802.11a	52	5260	25.56	≤ 30	Pass
802.11a	56	5280	25.54	≤ 30	Pass
802.11a	64	5320	21.01	≤ 30	Pass
802.11a	100	5500	22.43	≤ 30	Pass
802.11a	120	5600	25.66	≤ 30	Pass
802.11a	140	5700	23.34	≤ 30	Pass
802.11a	149	5745	26.06	≤ 36	Pass
802.11a	157	5785	26.02	≤ 36	Pass
802.11a	165	5825	25.51	≤ 36	Pass

Note: EIRP Power = Output Power + Antenna Gain

**802.11n20 SISO EIRP Power:**

Test Mode	Channel No.	Freq. (MHz)	EIRP (dBm)	EIRP Limit (dBm)	Result
<b>Antenna A</b>					
802.11n20	36	5180	21.60	≤ 36	Pass
802.11n20	40	5200	24.39	≤ 36	Pass
802.11n20	48	5240	26.00	≤ 36	Pass
802.11n20	52	5260	25.78	≤ 30	Pass
802.11n20	56	5280	25.47	≤ 30	Pass
802.11n20	64	5320	21.52	≤ 30	Pass
802.11n20	100	5500	20.99	≤ 30	Pass
802.11n20	120	5600	25.64	≤ 30	Pass
802.11n20	140	5700	23.13	≤ 30	Pass
802.11n20	144	5720	24.52	≤ 30	Pass
802.11n20	149	5745	26.43	≤ 36	Pass
802.11n20	157	5785	25.75	≤ 36	Pass
802.11n20	165	5825	26.01	≤ 36	Pass
<b>Antenna B</b>					
802.11n20	36	5180	21.95	≤ 36	Pass
802.11n20	40	5200	24.51	≤ 36	Pass
802.11n20	48	5240	25.80	≤ 36	Pass
802.11n20	52	5260	25.88	≤ 30	Pass
802.11n20	56	5280	25.77	≤ 30	Pass
802.11n20	64	5320	21.51	≤ 30	Pass
802.11n20	100	5500	22.29	≤ 30	Pass
802.11n20	120	5600	25.20	≤ 30	Pass
802.11n20	140	5700	23.52	≤ 30	Pass
802.11n20	144	5720	24.61	≤ 30	Pass
802.11n20	149	5745	26.06	≤ 36	Pass
802.11n20	157	5785	25.67	≤ 36	Pass
802.11n20	165	5825	25.86	≤ 36	Pass

Note: EIRP Power = Output Power + Antenna Gain



**802.11n20 MIMO EIRP Power:**

Test Mode	Channel No.	Freq. (MHz)	EIRP (dBm)	EIRP Limit (dBm)	Result
<b>Antenna A</b>					
802.11n20	36	5180	21.29	≤ 36	Pass
802.11n20	40	5200	23.57	≤ 36	Pass
802.11n20	48	5240	24.11	≤ 36	Pass
802.11n20	52	5260	24.93	≤ 30	Pass
802.11n20	56	5280	24.33	≤ 30	Pass
802.11n20	64	5320	20.92	≤ 30	Pass
802.11n20	100	5500	21.11	≤ 30	Pass
802.11n20	120	5600	24.18	≤ 30	Pass
802.11n20	140	5700	21.30	≤ 30	Pass
802.11n20	144	5720	23.09	≤ 30	Pass
802.11n20	149	5745	25.19	≤ 36	Pass
802.11n20	157	5785	25.97	≤ 36	Pass
802.11n20	165	5825	25.84	≤ 36	Pass
<b>Antenna B</b>					
802.11n20	36	5180	21.30	≤ 36	Pass
802.11n20	40	5200	23.49	≤ 36	Pass
802.11n20	48	5240	24.24	≤ 36	Pass
802.11n20	52	5260	25.33	≤ 30	Pass
802.11n20	56	5280	24.63	≤ 30	Pass
802.11n20	64	5320	20.85	≤ 30	Pass
802.11n20	100	5500	21.36	≤ 30	Pass
802.11n20	120	5600	24.45	≤ 30	Pass
802.11n20	140	5700	21.61	≤ 30	Pass
802.11n20	144	5720	23.26	≤ 30	Pass
802.11n20	149	5745	25.03	≤ 36	Pass
802.11n20	157	5785	26.21	≤ 36	Pass
802.11n20	165	5825	26.06	≤ 36	Pass

Note: EIRP Power = Output Power + Antenna Gain

**802.11n20 MIMO EIRP Power:**

Test Mode	Channel No.	Freq. (MHz)	EIRP (dBm)	EIRP Limit (dBm)	Result
<b>Antenna A + Antenna B</b>					
802.11n20	36	5180	24.31	≤ 36	Pass
802.11n20	40	5200	26.54	≤ 36	Pass
802.11n20	48	5240	27.19	≤ 36	Pass
802.11n20	52	5260	26.87	≤ 30	Pass
802.11n20	56	5280	26.50	≤ 30	Pass
802.11n20	64	5320	23.90	≤ 30	Pass
802.11n20	100	5500	24.25	≤ 30	Pass
802.11n20	120	5600	26.33	≤ 30	Pass
802.11n20	140	5700	24.47	≤ 30	Pass
802.11n20	144	5720	26.19	≤ 30	Pass
802.11n20	149	5745	28.12	≤ 36	Pass
802.11n20	157	5785	29.11	≤ 36	Pass
802.11n20	165	5825	28.97	≤ 36	Pass

Note: EIRP Power = Output Power + Antenna Gain

**802.11n40 SISO EIRP Power:**

Test Mode	Channel No.	Freq. (MHz)	EIRP (dBm)	EIRP Limit (dBm)	Result
<b>Antenna A</b>					
802.11n40	38	5190	22.53	≤ 36	Pass
802.11n40	46	5230	23.91	≤ 36	Pass
802.11n40	54	5270	23.23	≤ 30	Pass
802.11n40	62	5310	20.43	≤ 30	Pass
802.11n40	102	5510	22.58	≤ 30	Pass
802.11n40	118	5590	25.85	≤ 30	Pass
802.11n40	134	5670	23.25	≤ 30	Pass
802.11n40	142	5710	24.68	≤ 30	Pass
802.11n40	151	5755	24.24	≤ 36	Pass
802.11n40	159	5795	24.77	≤ 36	Pass
<b>Antenna B</b>					
802.11n40	38	5190	22.39	≤ 36	Pass
802.11n40	46	5230	23.48	≤ 36	Pass
802.11n40	54	5270	23.26	≤ 30	Pass
802.11n40	62	5310	20.14	≤ 30	Pass
802.11n40	102	5510	22.36	≤ 30	Pass
802.11n40	118	5590	25.69	≤ 30	Pass
802.11n40	134	5670	23.75	≤ 30	Pass
802.11n40	142	5710	25.08	≤ 30	Pass
802.11n40	151	5755	24.34	≤ 36	Pass
802.11n40	159	5795	25.00	≤ 36	Pass

Note: EIRP Power = Output Power + Antenna Gain

**802.11n40 MIMO EIRP Power:**

Test Mode	Channel No.	Freq. (MHz)	EIRP (dBm)	EIRP Limit (dBm)	Result
<b>Antenna A</b>					
802.11n40	38	5190	17.06	≤ 36	Pass
802.11n40	46	5230	22.86	≤ 36	Pass
802.11n40	54	5270	21.23	≤ 30	Pass
802.11n40	62	5310	18.16	≤ 30	Pass
802.11n40	102	5510	19.80	≤ 30	Pass
802.11n40	118	5590	24.19	≤ 30	Pass
802.11n40	134	5670	20.62	≤ 30	Pass
802.11n40	142	5710	23.12	≤ 30	Pass
802.11n40	151	5755	22.05	≤ 36	Pass
802.11n40	159	5795	23.39	≤ 36	Pass
<b>Antenna B</b>					
802.11n40	38	5190	21.55	≤ 36	Pass
802.11n40	46	5230	22.43	≤ 36	Pass
802.11n40	54	5270	22.23	≤ 30	Pass
802.11n40	62	5310	18.76	≤ 30	Pass
802.11n40	102	5510	20.51	≤ 30	Pass
802.11n40	118	5590	25.24	≤ 30	Pass
802.11n40	134	5670	21.02	≤ 30	Pass
802.11n40	142	5710	25.09	≤ 30	Pass
802.11n40	151	5755	22.70	≤ 36	Pass
802.11n40	159	5795	24.10	≤ 36	Pass

Note: EIRP Power = Output Power + Antenna Gain

**802.11n40 MIMO EIRP Power:**

Test Mode	Channel No.	Freq. (MHz)	EIRP (dBm)	EIRP Limit (dBm)	Result
<b>Antenna A + Antenna B</b>					
802.11n40	38	5190	22.87	≤ 36	Pass
802.11n40	46	5230	25.66	≤ 36	Pass
802.11n40	54	5270	24.77	≤ 30	Pass
802.11n40	62	5310	21.48	≤ 30	Pass
802.11n40	102	5510	23.18	≤ 30	Pass
802.11n40	118	5590	26.70	≤ 30	Pass
802.11n40	134	5670	23.83	≤ 30	Pass
802.11n40	142	5710	26.22	≤ 30	Pass
802.11n40	151	5755	25.40	≤ 36	Pass
802.11n40	159	5795	26.77	≤ 36	Pass

Note: EIRP Power = Output Power + Antenna Gain

**802.11ac80 SISO EIRP Power:**

Test Mode	Channel No.	Freq. (MHz)	EIRP (dBm)	EIRP Limit (dBm)	Result
<b>Antenna A</b>					
802.11ac80	42	5210	22.59	≤ 36	Pass
802.11ac80	58	5290	20.93	≤ 30	Pass
802.11ac80	106	5530	22.93	≤ 30	Pass
802.11ac80	122	5610	24.82	≤ 30	Pass
802.11ac80	138	5690	25.30	≤ 30	Pass
802.11ac80	155	5775	23.71	≤ 36	Pass
<b>Antenna B</b>					
802.11ac80	42	5210	22.50	≤ 36	Pass
802.11ac80	58	5290	20.66	≤ 30	Pass
802.11ac80	106	5530	22.13	≤ 30	Pass
802.11ac80	122	5610	24.45	≤ 30	Pass
802.11ac80	138	5690	25.42	≤ 30	Pass
802.11ac80	155	5775	23.77	≤ 36	Pass

Note: EIRP Power = Output Power + Antenna Gain

**802.11ac80 MIMO EIRP Power:**

Test Mode	Channel No.	Freq. (MHz)	EIRP (dBm)	EIRP Limit (dBm)	Result
<b>Antenna A</b>					
802.11ac80	42	5210	17.38	≤ 36	Pass
802.11ac80	58	5290	16.56	≤ 30	Pass
802.11ac80	106	5530	19.13	≤ 30	Pass
802.11ac80	122	5610	23.99	≤ 30	Pass
802.11ac80	138	5690	24.29	≤ 30	Pass
802.11ac80	155	5775	22.82	≤ 36	Pass
<b>Antenna B</b>					
802.11ac80	42	5210	18.43	≤ 36	Pass
802.11ac80	58	5290	16.97	≤ 30	Pass
802.11ac80	106	5530	20.03	≤ 30	Pass
802.11ac80	122	5610	24.67	≤ 30	Pass
802.11ac80	138	5690	25.19	≤ 30	Pass
802.11ac80	155	5775	22.50	≤ 36	Pass
<b>Antenna A + Antenna B</b>					
802.11ac80	42	5210	20.95	≤ 36	Pass
802.11ac80	58	5290	19.78	≤ 30	Pass
802.11ac80	106	5530	22.62	≤ 30	Pass
802.11ac80	122	5610	26.36	≤ 30	Pass
802.11ac80	138	5690	26.78	≤ 30	Pass
802.11ac80	155	5775	25.68	≤ 36	Pass

Note: EIRP Power = Output Power + Antenna Gain

**802.11ac160 SISO EIRP Power:**

Test Mode	Channel No.	Freq. (MHz)	EIRP (dBm)	EIRP Limit (dBm)	Result
<b>Antenna A</b>					
802.11ac160	50	5250	17.16	≤ 36	Pass
802.11ac160	114	5570	19.37	≤ 30	Pass
<b>Antenna B</b>					
802.11ac160	50	5250	17.61	≤ 36	Pass
802.11ac160	114	5570	19.20	≤ 30	Pass

**802.11ac160 MIMO EIRP Power:**

Test Mode	Channel No.	Freq. (MHz)	EIRP (dBm)	EIRP Limit (dBm)	Result
<b>Antenna A</b>					
802.11ac160	50	5250	14.61	≤ 36	Pass
802.11ac160	114	5570	17.18	≤ 30	Pass
<b>Antenna B</b>					
802.11ac160	50	5250	15.64	≤ 36	Pass
802.11ac160	114	5570	18.40	≤ 30	Pass
<b>Antenna A + Antenna B</b>					
802.11ac160	50	5250	18.16	≤ 36	Pass
802.11ac160	114	5570	20.84	≤ 30	Pass

Note: EIRP Power = Output Power + Antenna Gain



## 7.5. Transmit Power Control

### 7.5.1. Test Limit

The U-NII-2A & U-NII-2C device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm.

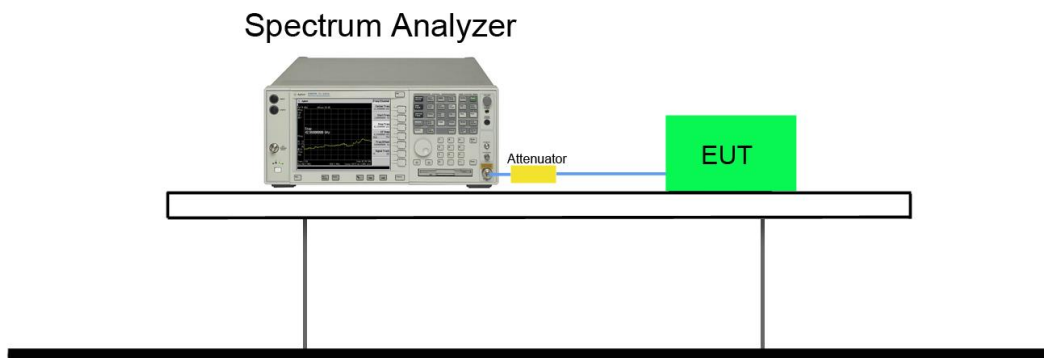
### 7.5.2. Test Procedure Used

KDB 789033 D02v02r01 - Section E) 3) b) Method PM-G

### 7.5.3. Test Setting

Average power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter. The trace was averaged over 100 traces to obtain the final measured average power.

### 7.5.4. Test Setup



### **7.5.5. Test Result**

Note: TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

## **7.6. Power Spectral Density Measurement**

### **7.6.1. Test Limit**

#### **For FCC Power Spectral Density Limit**

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.

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.

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 6dBi are used, the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

#### **For IC Power Spectral Density Limit**

For the band 5.15-5.25 GHz, the e.i.r.p. spectral density shall not exceed 10 dBm in any 1.0 MHz band.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the power spectral density shall not exceed 11 dBm in any 1.0 MHz band.

For the 5.725-5.85 GHz band, the power spectral density shall not exceed 30 dBm in any 500 kHz band.

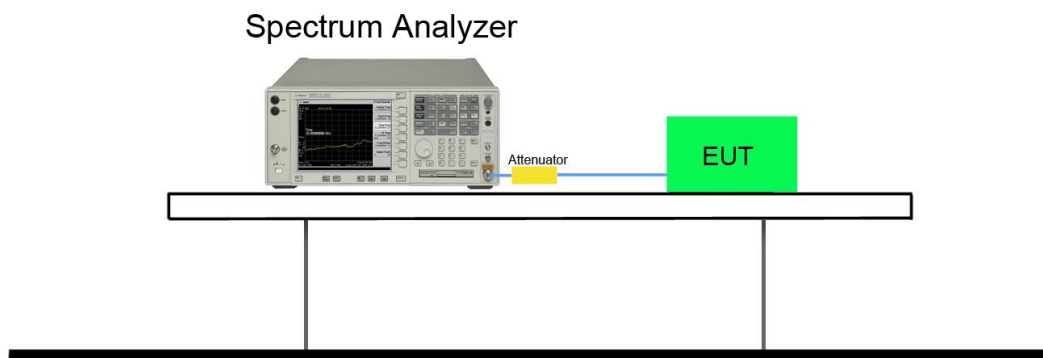
### **7.6.2. Test Procedure Used**

KDB 789033 D02v02r01 - Section F

### 7.6.3. Test Setting

1. Analyzer was set to the center frequency of the UNII channel under investigation
2. Span was set to encompass the entire 26dB EBW of the signal.
3. RBW = 1MHz, if measurement bandwidth of Maximum PSD is specified in 500 kHz,
4. RBW = 100 kHz
5. VBW = 3MHz
6. Number of sweep points  $\geq 2 \times (\text{span} / \text{RBW})$
7. Detector = power averaging (Average)
8. Sweep time = auto
9. Trigger = free run
10. Use the peak search function on the instrument to find the peak of the spectrum and record its value.
11. Add  $10 \cdot \log(1/x)$ , where  $x$  is the duty cycle, to the measured power in order to compute the average power during the actual transmission times (because the measurement represents an average over both the on and off times of the transmission). For example, add  $10 \cdot \log(1/0.25) = 6$  dB if the duty cycle is 25 percent.
12. When the measurement bandwidth of Maximum PSD is specified in 500 kHz, add a constant factor  $10 \cdot \log(500\text{kHz}/100\text{kHz}) = 7$  dB to the measured result

### 7.6.4. Test Setup



### 7.6.5. Test Result

Note: Reference Original Report Grant Date: 12/19/2018, FCC ID: 2ARBSEL3009260.

## 7.7. Radiated Spurious Emission Measurement

### 7.7.1. Test Limit

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR must not exceed the limits shown in Table per Section 15.209.

FCC Part 15 Subpart C Paragraph 15.209		
Frequency [MHz]	Field Strength [V/m]	Measured Distance [Meters]
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

### 7.7.2. Test Procedure Used

KDB 789033 D02v02r01 – Section G

### 7.7.3. Test Setting

#### **Peak Measurements above 1GHz**

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

**Quasi-Peak Measurements below 1GHz**

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. Span was set greater than 1MHz
3. RBW = 120 kHz
4. Detector = CISPR quasi-peak
5. Sweep time = auto couple
6. Trace was allowed to stabilize

**Average Measurements above 1GHz (Method AD)**

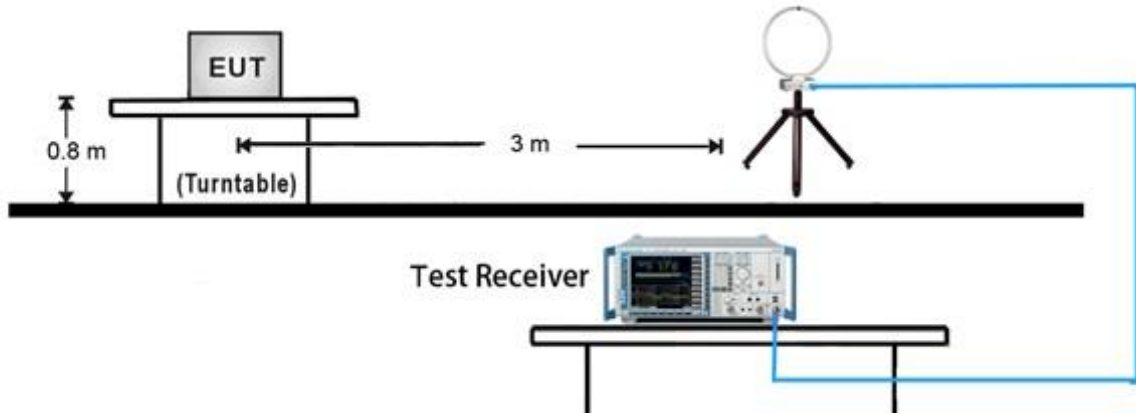
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = power average (Average)
5. Number of measurement points = 1001 (Number of points must be  $> 2 \times \text{span/RBW}$ )
6. Sweep time = auto
7. Trace was averaged over at 100 sweeps

**Quasi-Peak & Average Measurements below 30MHz**

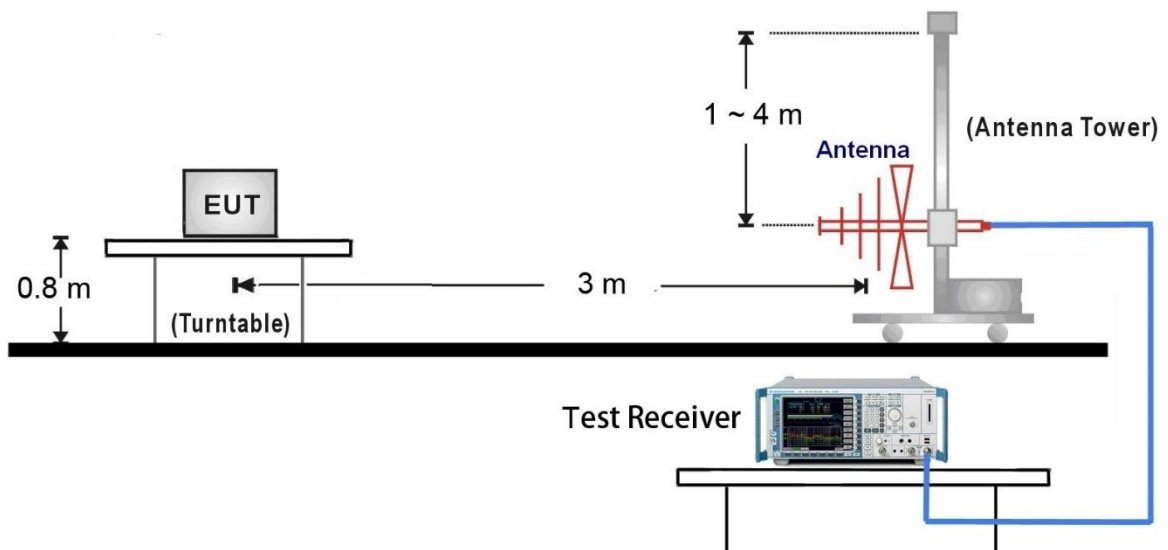
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. Span was set greater than 1MHz
3. RBW = 200Hz for 9kHz to 150kHz frequency; RBW = 9kHz for 0.15MHz to 30MHz frequency
4. Detector = CISPR quasi-peak or power average (Average)
5. Sweep time = auto couple
6. Trace was allowed to stabilize

### 7.7.4. Test Setup

#### 9kHz ~ 30MHz Test Setup:

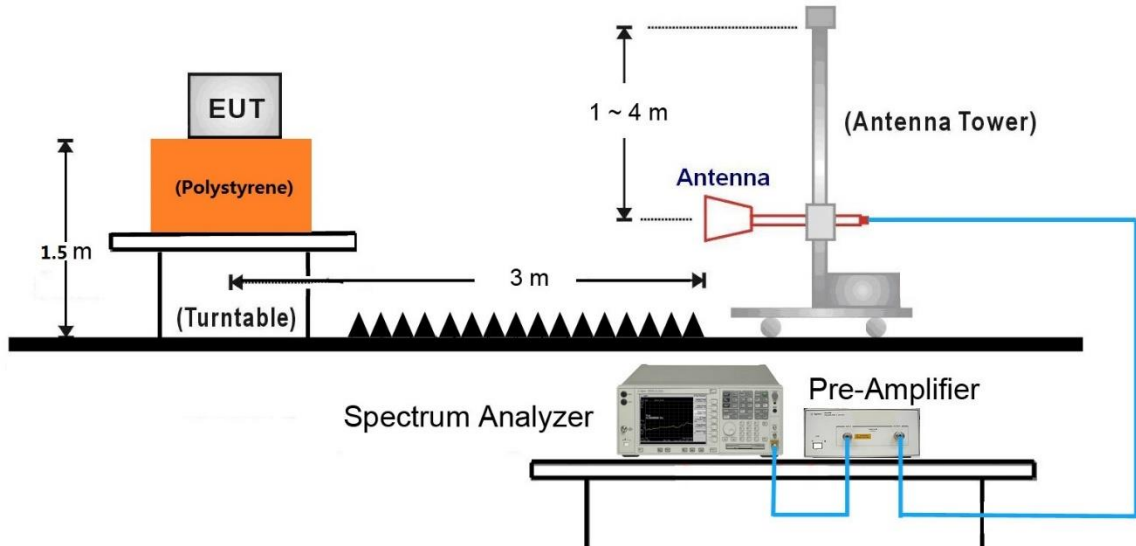


#### 30MHz ~ 1GHz Test Setup:

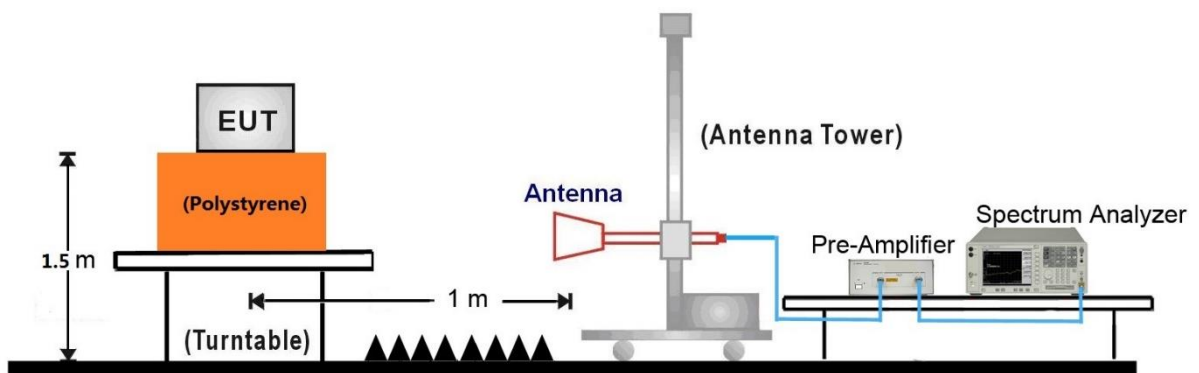




1GHz ~18GHz Test Setup:

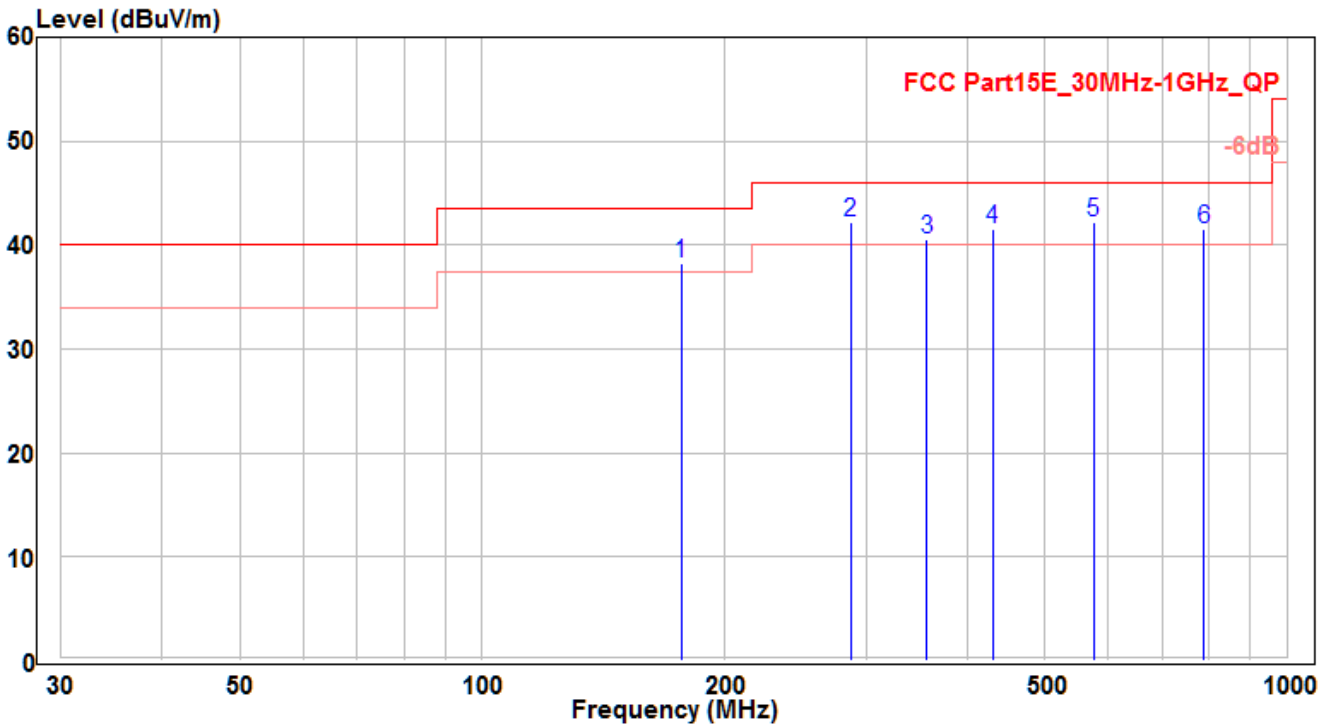


18GHz ~40GHz Test Setup:



**7.7.5. Test Result**

EUT	Wifi/BT Module	Test Date	2018/12/21
Factor	VULB 9162 (30MHz~8GHz)	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Fran
Test Mode	MODE2_CH40	Test Voltage	AC 120V/60Hz

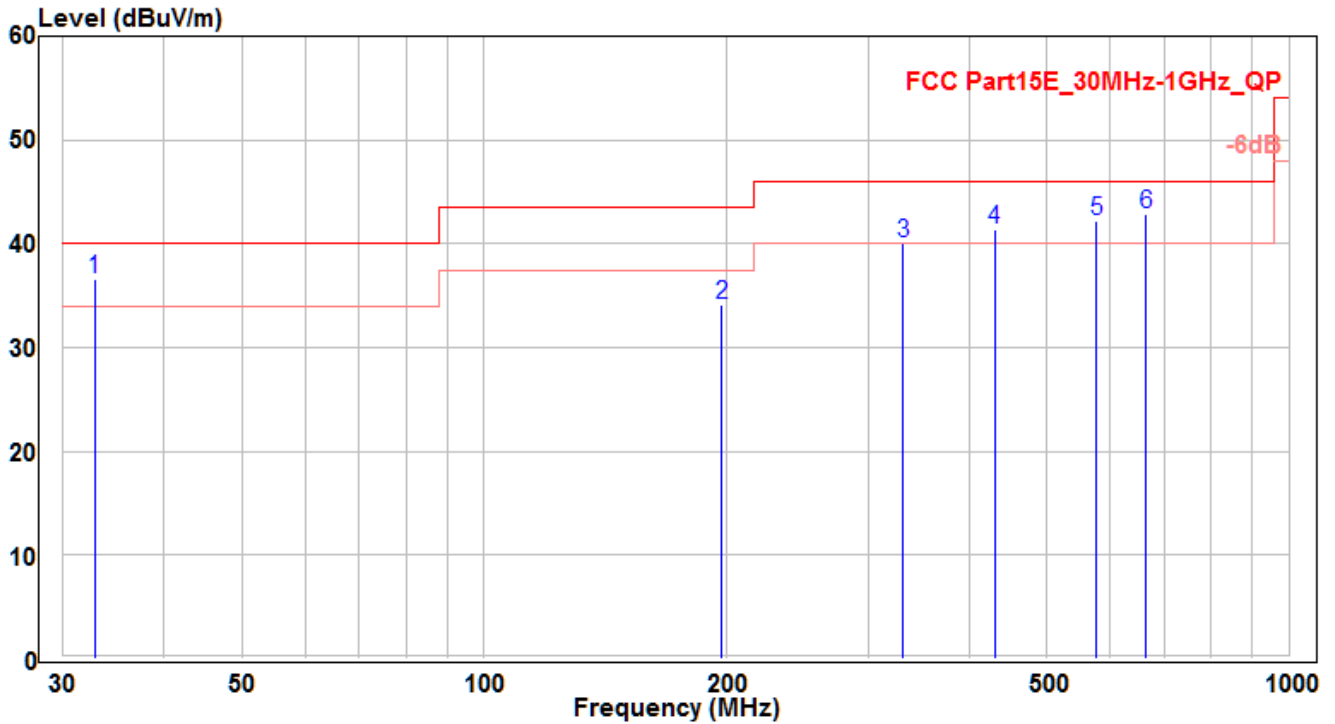


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	176.83	21.39	16.81	38.2	-5.3	43.5	140	310	QP
2	* 287.183	21.11	21.1	42.21	-3.79	46	150	295	QP
3	356.742	17.21	23.42	40.63	-5.37	46	160	180	QP
4	430.715	17.24	24.29	41.53	-4.47	46	165	100	QP
5	574.815	15.11	27.05	42.16	-3.84	46	135	380	QP
6	789.429	11.29	30.22	41.51	-4.49	46	125	255	QP

Note :

1. " \* " means the worst value in this measurement data ◦
2. Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB) ◦
3. Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) ◦
4. The emission levels of other frequencies are very lower than the limit and not show in test report ◦
5. Other channel/mode was also verified. The test results shown represent the worst case emissions ◦
6. No emission found between lowest internal used/generated frequency to 30MHz ◦

EUT	Wifi/BT Module	Test Date	2018/12/21
Factor	VULB 9162 (30MHz~8GHz)	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Fran
Test Mode	MODE2_CH40	Test Voltage	AC 120V/60Hz

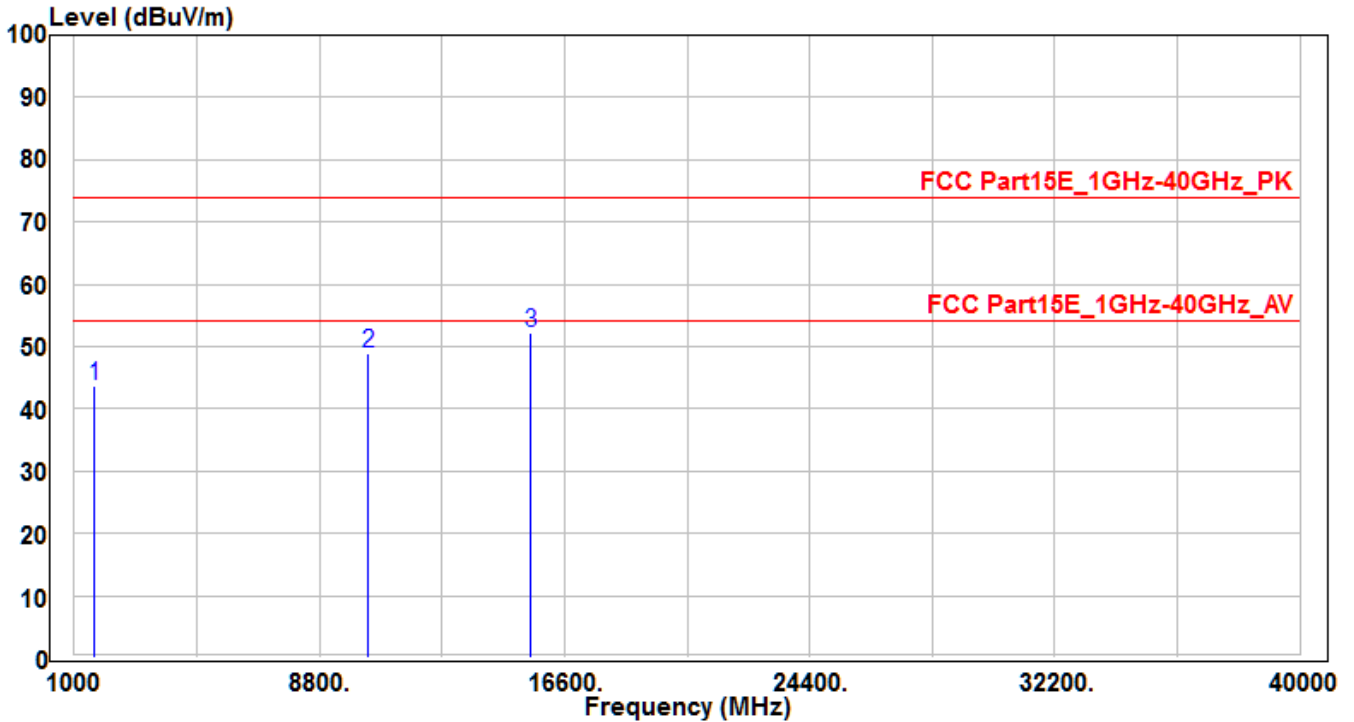


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	32.851	18.08	18.44	36.52	-3.48	40	100	165	QP
2	197.406	15.12	19.01	34.13	-9.37	43.5	130	245	QP
3	331.916	17.41	22.63	40.04	-5.96	46	160	340	QP
4	430.716	17.14	24.29	41.43	-4.57	46	100	315	QP
5	576.488	15.18	27.09	42.27	-3.73	46	150	310	QP
6	* 664.81	14.25	28.65	42.9	-3.1	46	100	205	QP

Note :

- " \* " means the worst value in this measurement data ◦
- Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB) ◦
- Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) ◦
- The emission levels of other frequencies are very lower than the limit and not show in test report ◦
- Other channel/mode was also verified. The test results shown represent the worst case emissions ◦
- No emission found between lowest internal used/generated frequency to 30MHz ◦

EUT	Wifi/BT Module	Test Date	2019/1/18
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Fran
Test Mode	MODE1 -CH36_Ant A	Test Voltage	AC 120V/60Hz

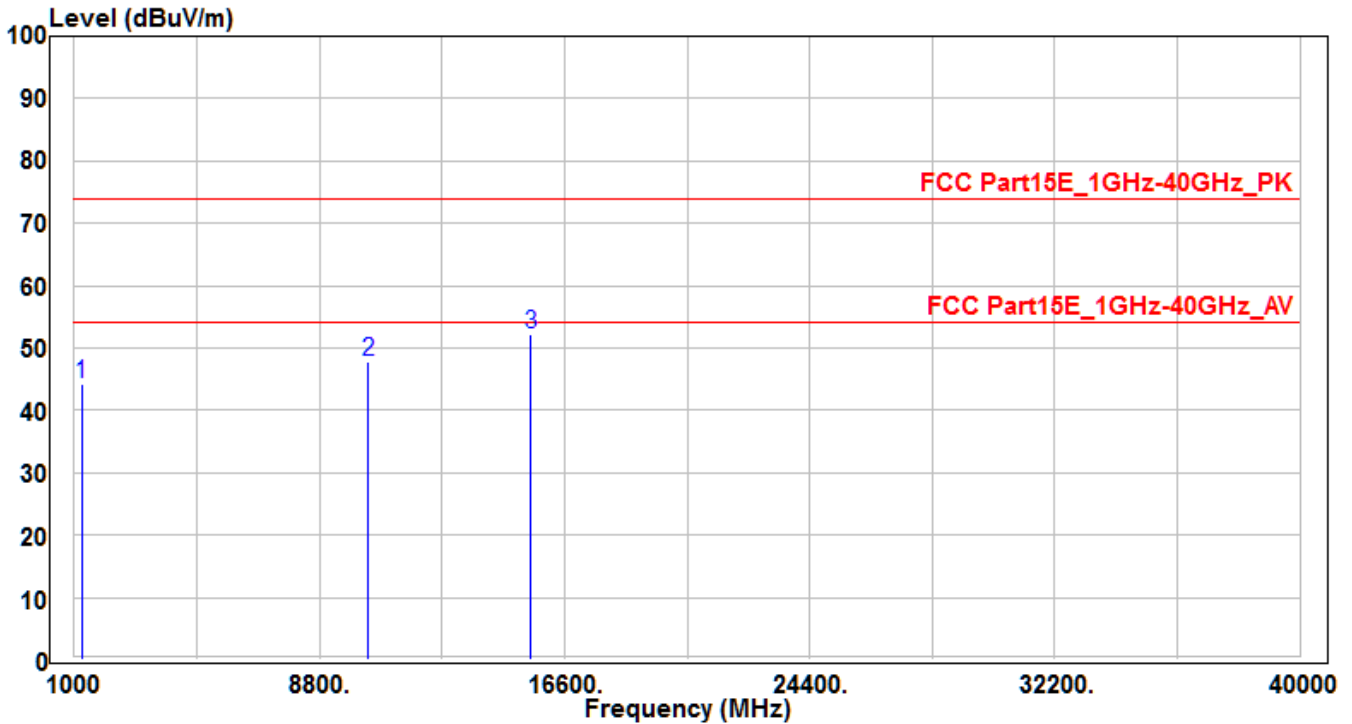


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1657.38	48.71	-4.96	43.75	-30.25	74	150	400	Peak
2	10360	31.69	17.34	49.03	-24.97	74	150	400	Peak
3	* 15540	30.46	21.82	52.28	-21.72	74	150	400	Peak

Note :

1. " \* " means the worst value in this measurement data ◦
2. Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB) ◦
3. Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) ◦
4. The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible, therefore no data appear in the report ◦

EUT	Wifi/BT Module	Test Date	2019/1/18
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Fran
Test Mode	MODE1 -CH36_Ant A	Test Voltage	AC 120V/60Hz

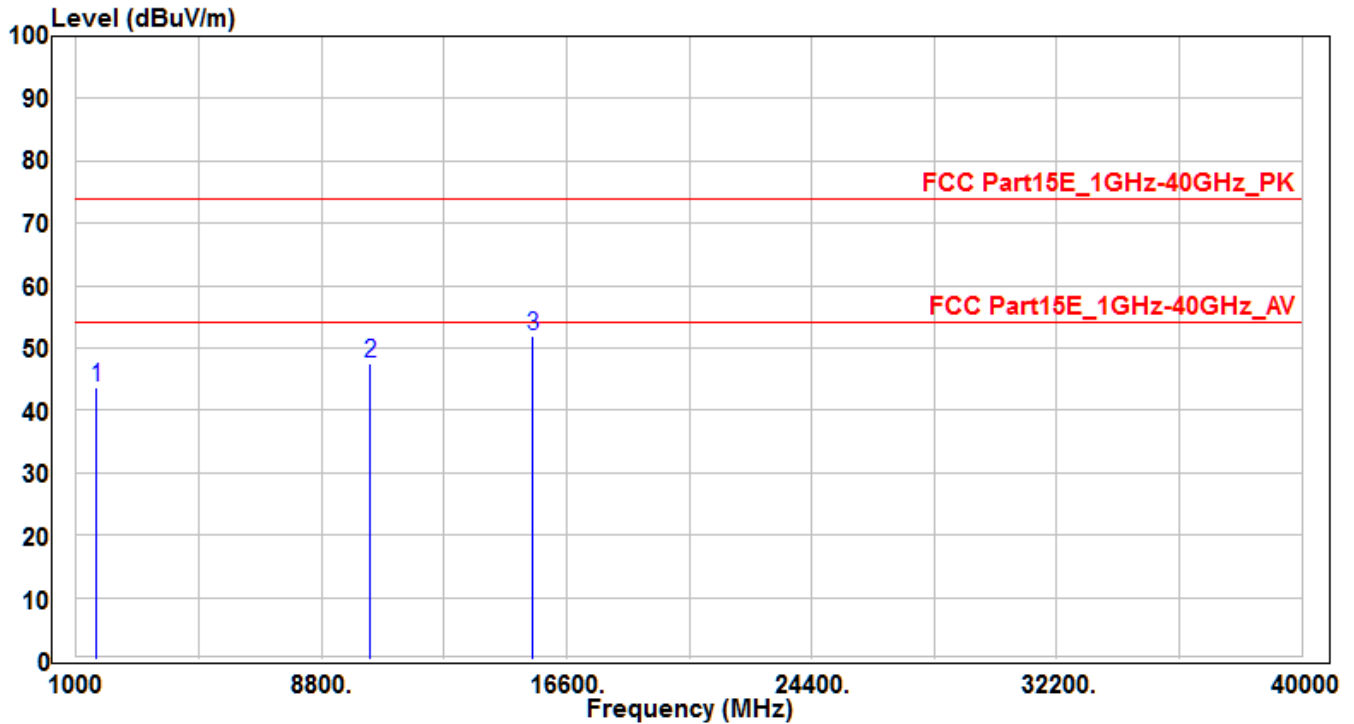


No	Frequency (MHz)	Reading (dBUV)	C.F (dB)	Measurement (dBUV/m)	Margin (dB)	Limit (dBUV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1246.27	50.89	-6.66	44.23	-29.77	74	150	400	Peak
2	10360	30.41	17.34	47.75	-26.25	74	150	400	Peak
3	* 15540	30.3	21.82	52.12	-21.88	74	150	400	Peak

Note :

1. " \* " means the worst value in this measurement data °
2. Measure Level (dBUV/m) = Reading Level (dBUV) + Factor (dB) °
3. Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) °
4. The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible, therefore no data appear in the report °

EUT	Wifi/BT Module	Test Date	2019/1/18
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Fran
Test Mode	MODE1 -CH36_Ant B	Test Voltage	AC 120V/60Hz

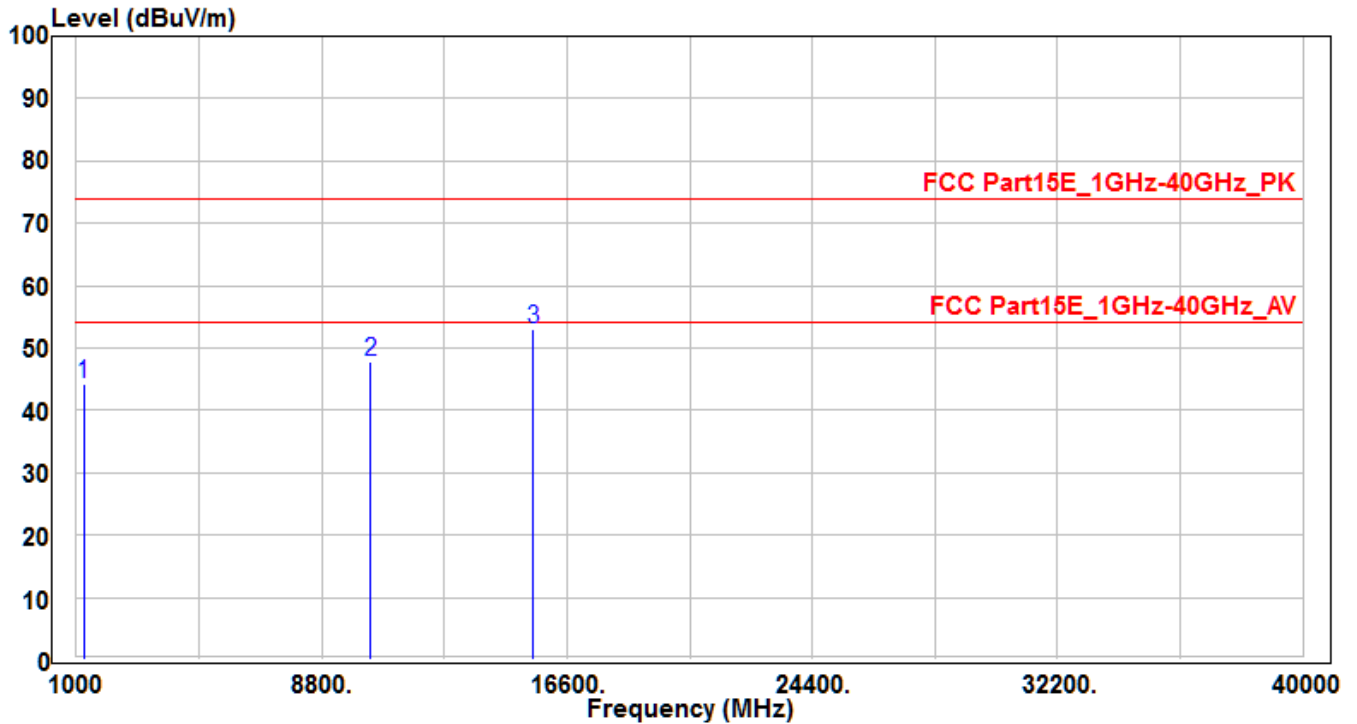


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1652.29	48.69	-4.97	43.72	-30.28	74	150	400	Peak
2	10360	30.18	17.34	47.52	-26.48	74	150	400	Peak
3	* 15540	30.11	21.82	51.93	-22.07	74	150	400	Peak

Note :

1. " \* " means the worst value in this measurement data ◦
2. Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB) ◦
3. Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) ◦
4. The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible, therefore no data appear in the report ◦

EUT	Wifi/BT Module	Test Date	2019/1/18
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Fran
Test Mode	MODE1 -CH36_Ant B	Test Voltage	AC 120V/60Hz

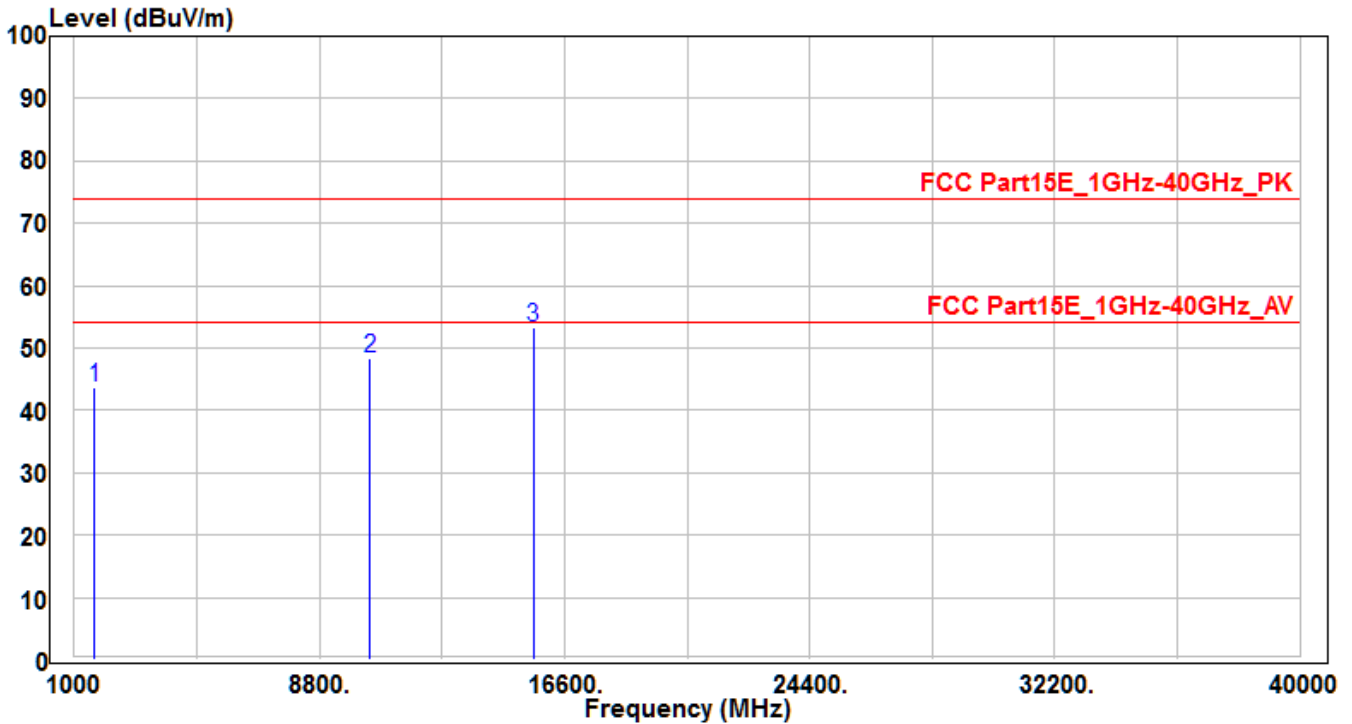


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1246.68	50.93	-6.65	44.28	-29.72	74	150	400	Peak
2	10360	30.52	17.34	47.86	-26.14	74	150	400	Peak
3	* 15540	31.32	21.82	53.14	-20.86	74	150	400	Peak

Note :

1. " \* " means the worst value in this measurement data °
2. Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB) °
3. Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) °
4. The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible, therefore no data appear in the report °

EUT	Wifi/BT Module	Test Date	2019/1/18
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Fran
Test Mode	MODE1 -CH40_Ant A	Test Voltage	AC 120V/60Hz



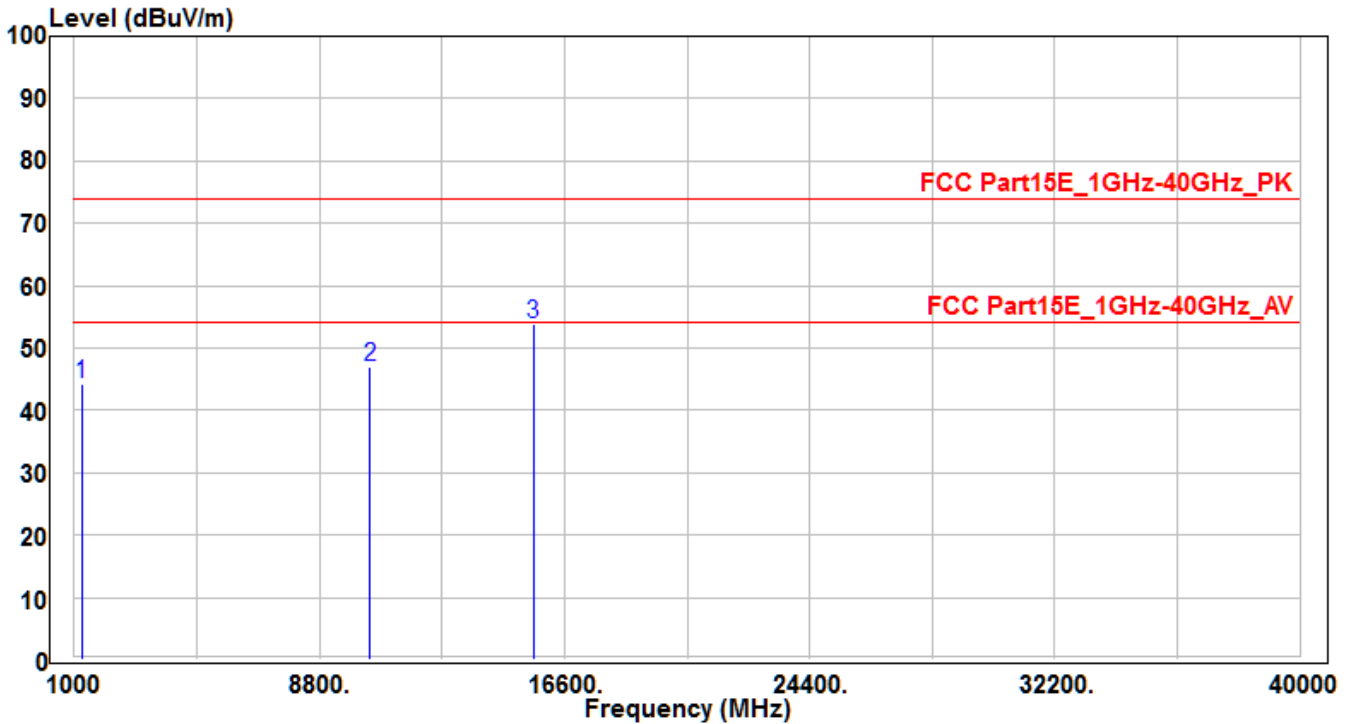
No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1651.38	48.65	-4.98	43.67	-30.33	74	150	400	Peak
2	10400	30.75	17.53	48.28	-25.72	74	150	400	Peak
3	* 15600	31.72	21.6	53.32	-20.68	74	150	400	Peak

Note :

1. " \* " means the worst value in this measurement data °
2. Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB) °
3. Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) °
4. The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible, therefore no data appear in the report °



EUT	Wifi/BT Module	Test Date	2019/1/18
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Fran
Test Mode	MODE1 -CH40_Ant A	Test Voltage	AC 120V/60Hz

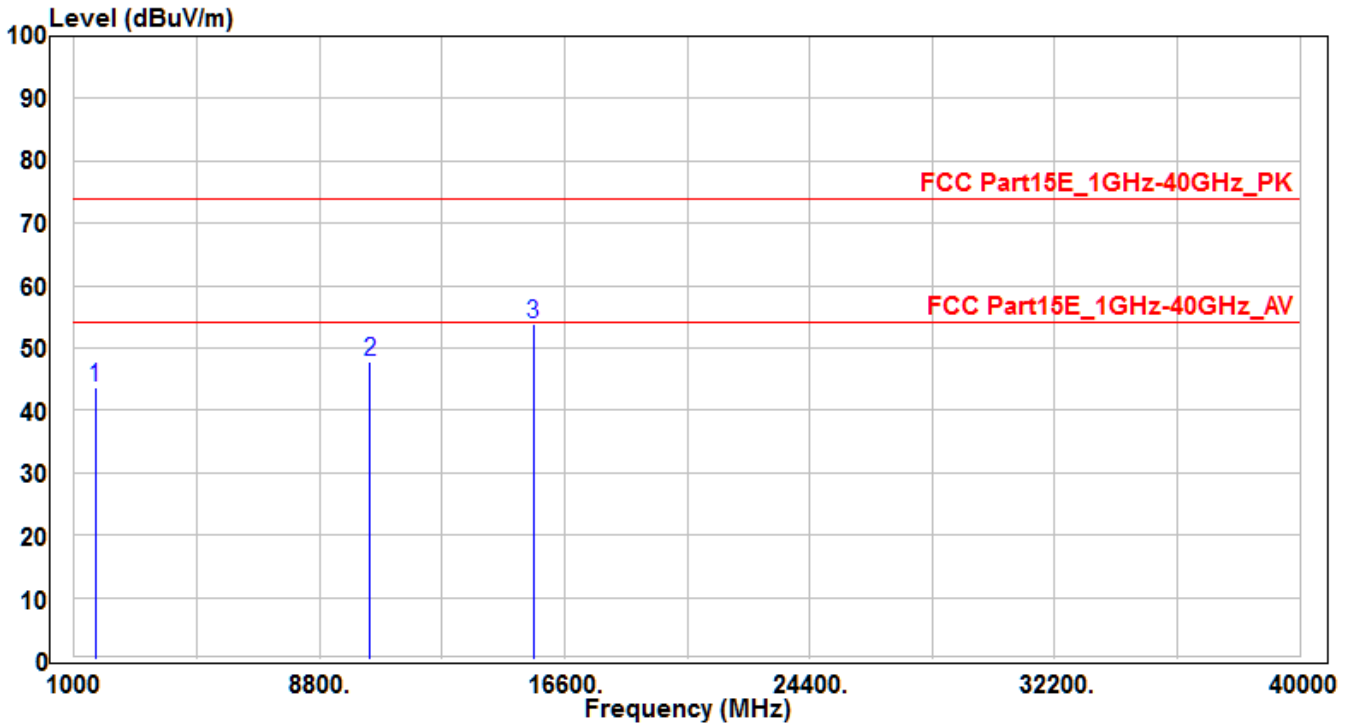


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1249.75	50.91	-6.64	44.27	-29.73	74	150	400	Peak
2	10400	29.51	17.53	47.04	-26.96	74	150	400	Peak
3	* 15600	32.17	21.6	53.77	-20.23	74	150	400	Peak

Note :

1. " \* " means the worst value in this measurement data °
2. Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB) °
3. Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) °
4. The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible, therefore no data appear in the report °

EUT	Wifi/BT Module	Test Date	2019/1/18
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Fran
Test Mode	MODE1 -CH40_Ant B	Test Voltage	AC 120V/60Hz

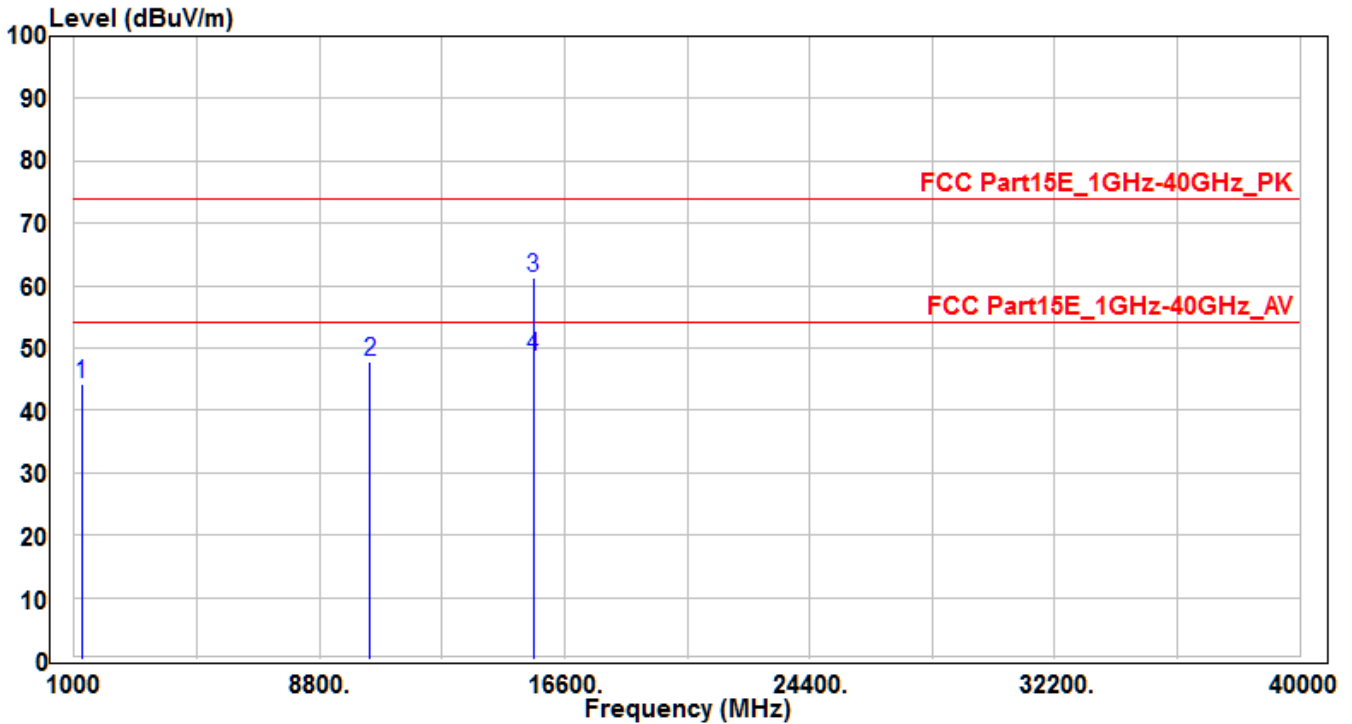


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1661.35	48.65	-4.94	43.71	-30.29	74	150	400	Peak
2	10400	30.31	17.53	47.84	-26.16	74	150	400	Peak
3	* 15600	32.18	21.6	53.78	-20.22	74	150	400	Peak

Note :

1. " \* " means the worst value in this measurement data °
2. Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB) °
3. Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) °
4. The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible, therefore no data appear in the report °

EUT	Wifi/BT Module	Test Date	2019/1/18
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Fran
Test Mode	MODE1 -CH40_Ant B	Test Voltage	AC 120V/60Hz

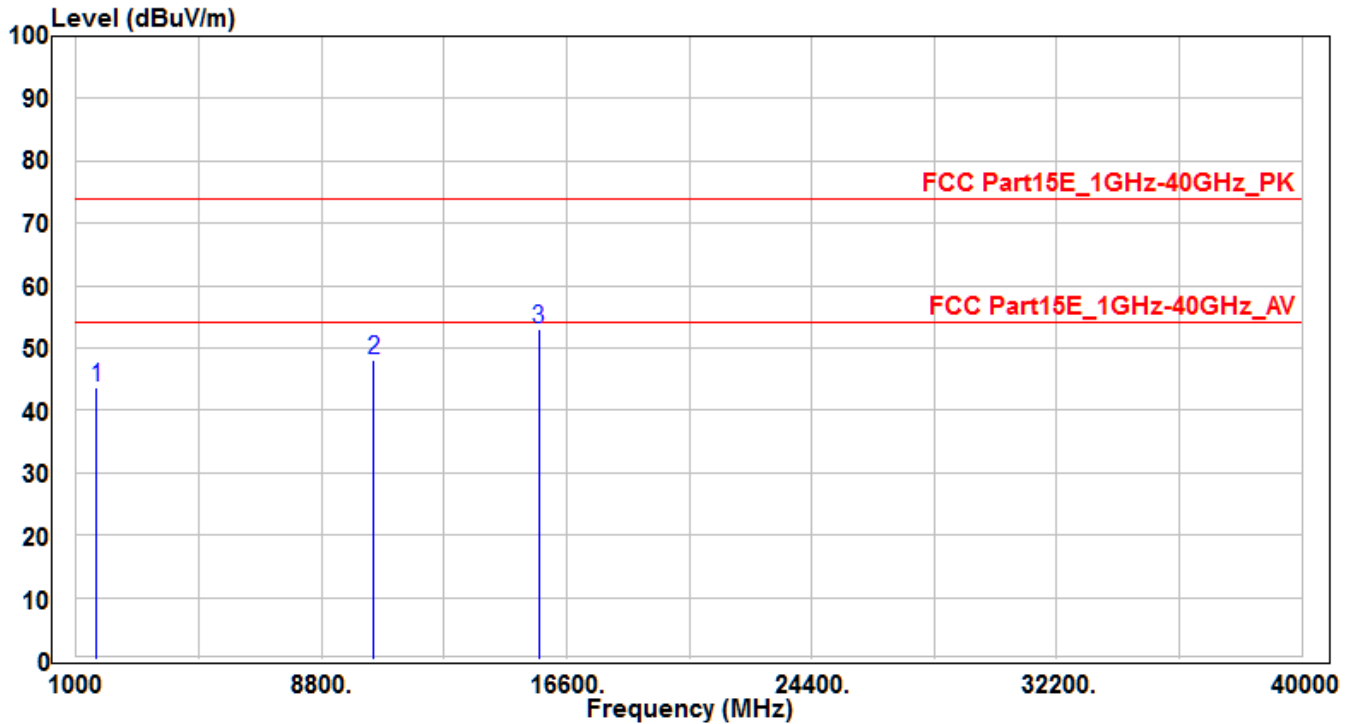


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1245.28	50.96	-6.66	44.3	-29.7	74	150	400	Peak
2	10400	30.4	17.53	47.93	-26.07	74	150	400	Peak
3	* 15600	39.59	21.6	61.19	-12.81	74	170	390	Peak
4	* 15600	26.97	21.6	48.57	-5.43	54	170	390	Average

Note :

1. " \* " means the worst value in this measurement data °
2. Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB) °
3. Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) °
4. The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible, therefore no data appear in the report °

EUT	Wifi/BT Module	Test Date	2019/1/18
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Fran
Test Mode	MODE1 -CH48_Ant A	Test Voltage	AC 120V/60Hz

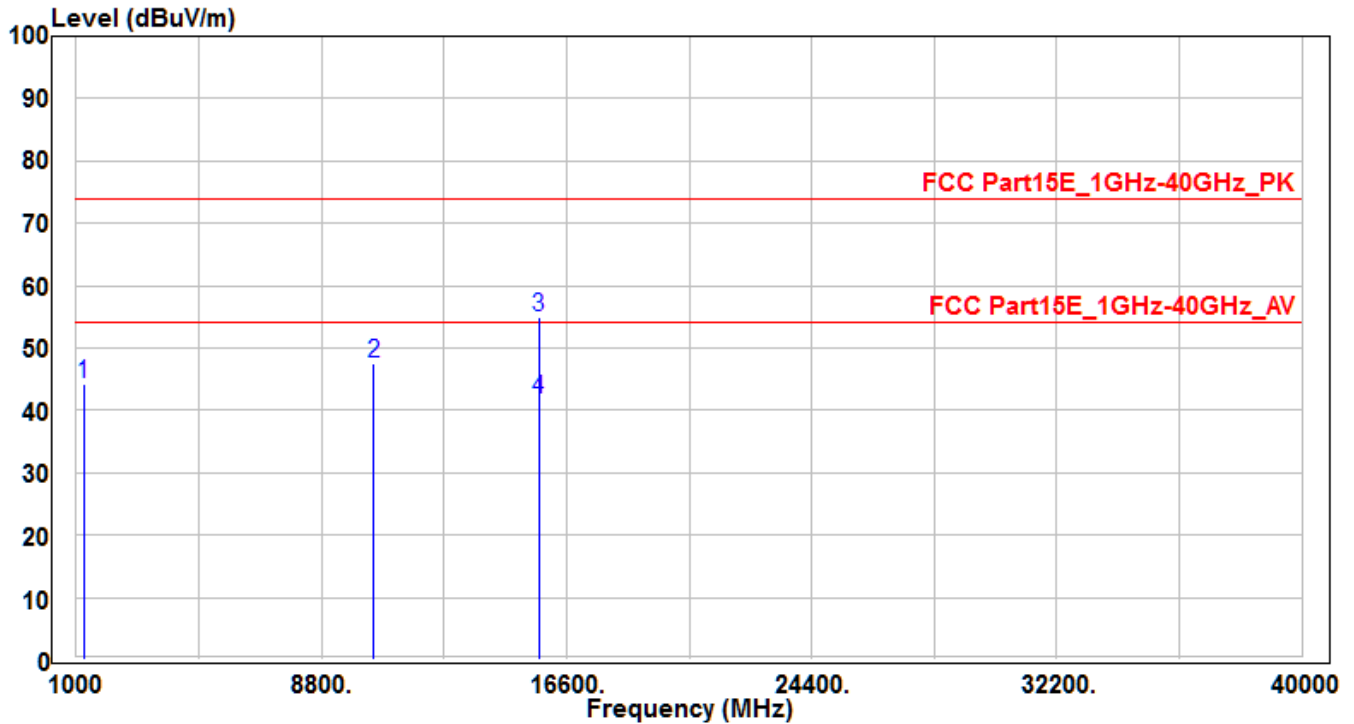


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1651.85	48.57	-4.97	43.6	-30.4	74	150	400	Peak
2	10480	30.07	17.88	47.95	-26.05	74	150	400	Peak
3	* 15720	31.85	21.18	53.03	-20.97	74	150	400	Peak

Note :

- "\*" means the worst value in this measurement data °
- Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB) °
- Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) °
- The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible, therefore no data appear in the report °

EUT	Wifi/BT Module	Test Date	2019/1/18
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Fran
Test Mode	MODE1 -CH48_Ant A	Test Voltage	AC 120V/60Hz

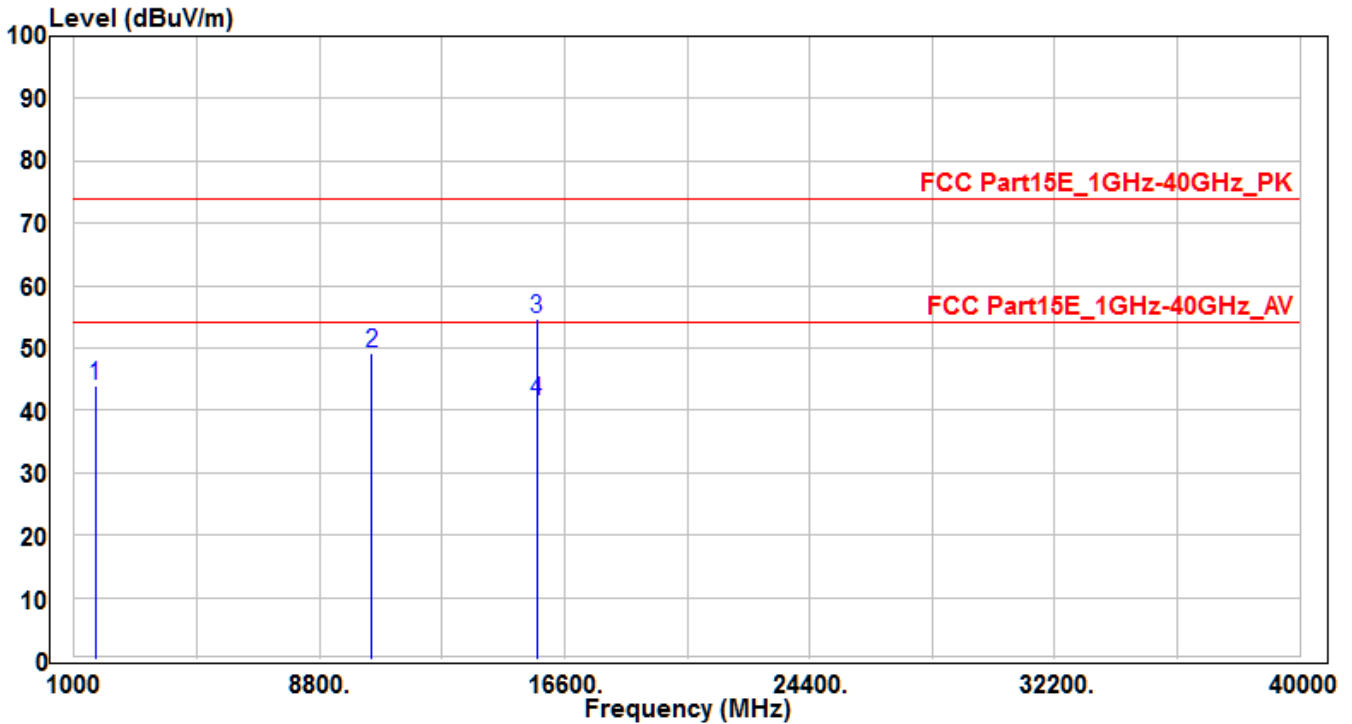


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1242.96	50.84	-6.67	44.17	-29.83	74	150	400	Peak
2	10480	29.78	17.88	47.66	-26.34	74	150	400	Peak
3	* 15720	33.67	21.18	54.85	-19.15	74	160	365	Peak
4	* 15720	20.48	21.18	41.66	-12.34	54	160	365	Average

Note :

1. " \* " means the worst value in this measurement data °
2. Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB) °
3. Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) °
4. The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible, therefore no data appear in the report °

EUT	Wifi/BT Module	Test Date	2019/1/18
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Fran
Test Mode	MODE1 -CH48_Ant B	Test Voltage	AC 120V/60Hz

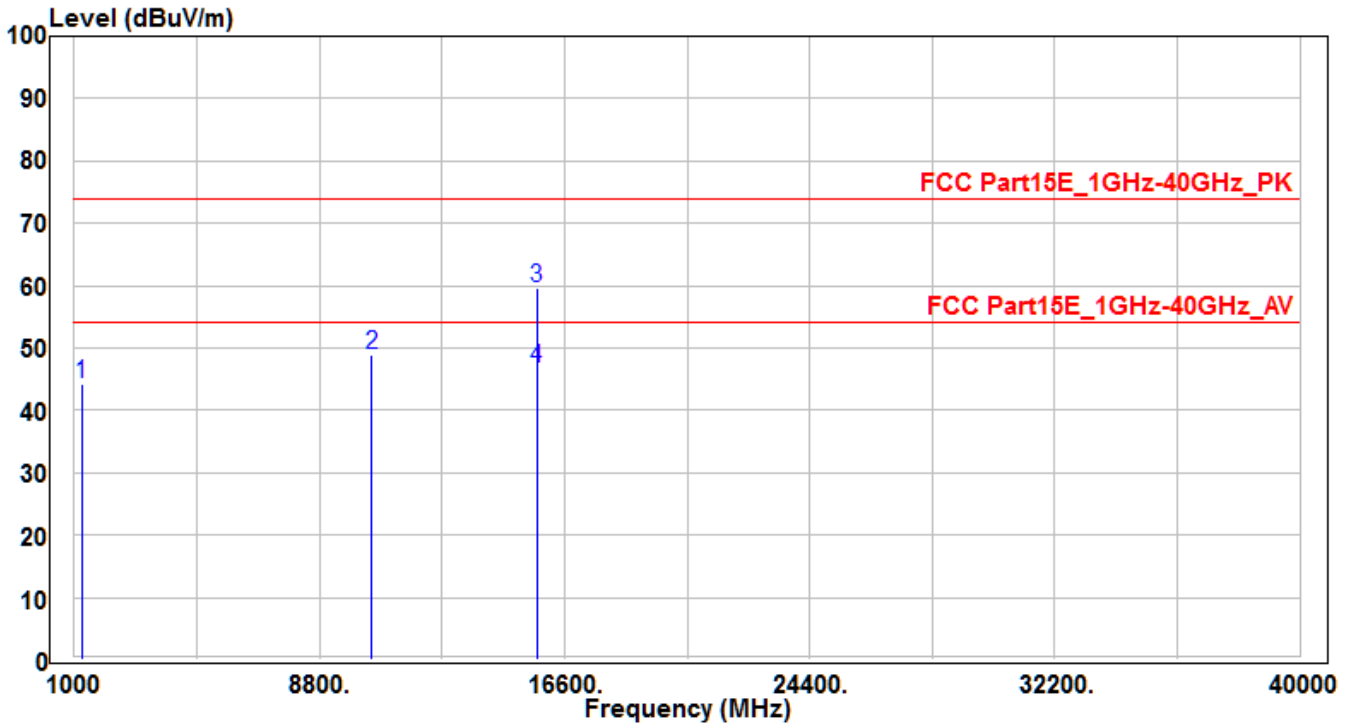


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1662.1	48.84	-4.94	43.9	-30.1	74	150	400	Peak
2	10480	31.18	17.88	49.06	-24.94	74	150	400	Peak
3	* 15720	33.4	21.18	54.58	-19.42	74	165	390	Peak
4	* 15720	20.2	21.18	41.38	-12.62	54	165	390	Average

Note :

1. " \* " means the worst value in this measurement data °
2. Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB) °
3. Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) °
4. The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible, therefore no data appear in the report °

EUT	Wifi/BT Module	Test Date	2019/1/18
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Fran
Test Mode	MODE1 -CH48_Ant B	Test Voltage	AC 120V/60Hz

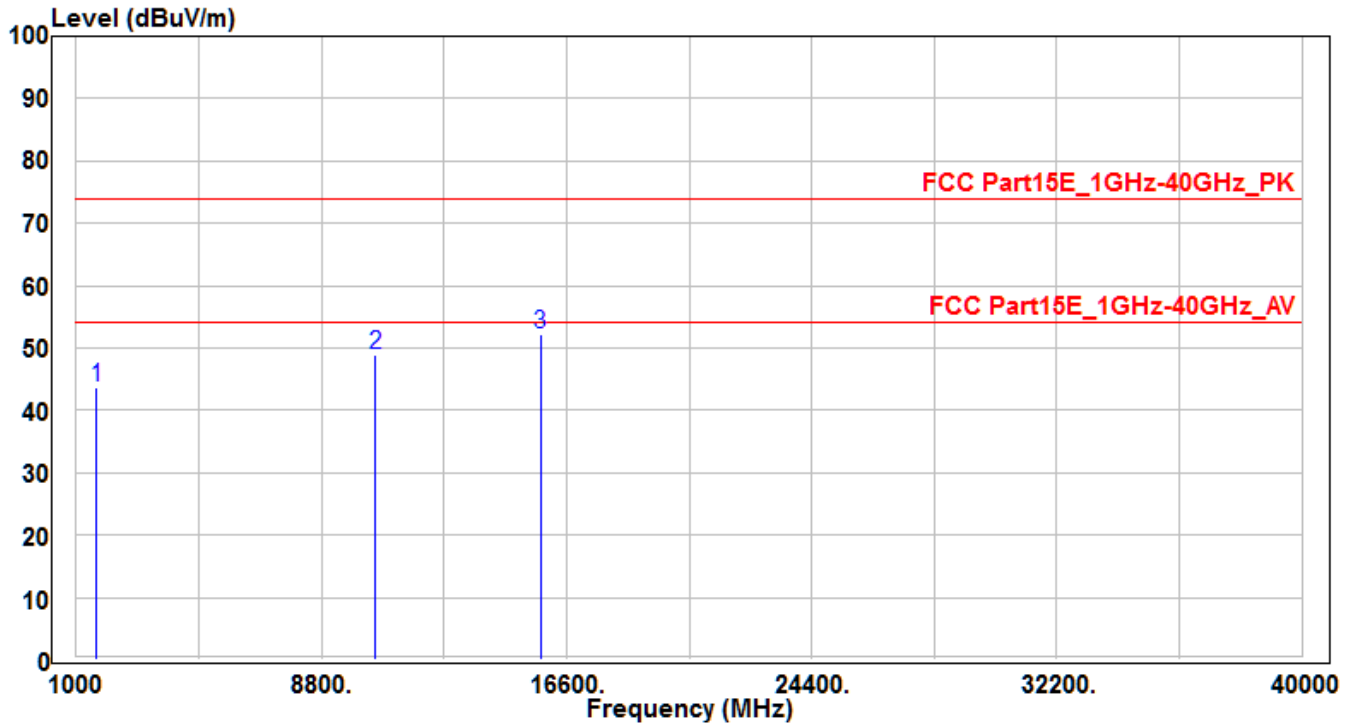


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1250.36	50.94	-6.64	44.3	-29.7	74	150	400	Peak
2	10480	31.09	17.88	48.97	-25.03	74	150	400	Peak
3	* 15720	38.49	21.18	59.67	-14.33	74	170	390	Peak
4	* 15720	25.53	21.18	46.71	-7.29	54	170	390	Average

Note :

1. " \* " means the worst value in this measurement data °
2. Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB) °
3. Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) °
4. The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible, therefore no data appear in the report °

EUT	Wifi/BT Module	Test Date	2019/1/18
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Fran
Test Mode	MODE1 -CH52_Ant A	Test Voltage	AC 120V/60Hz



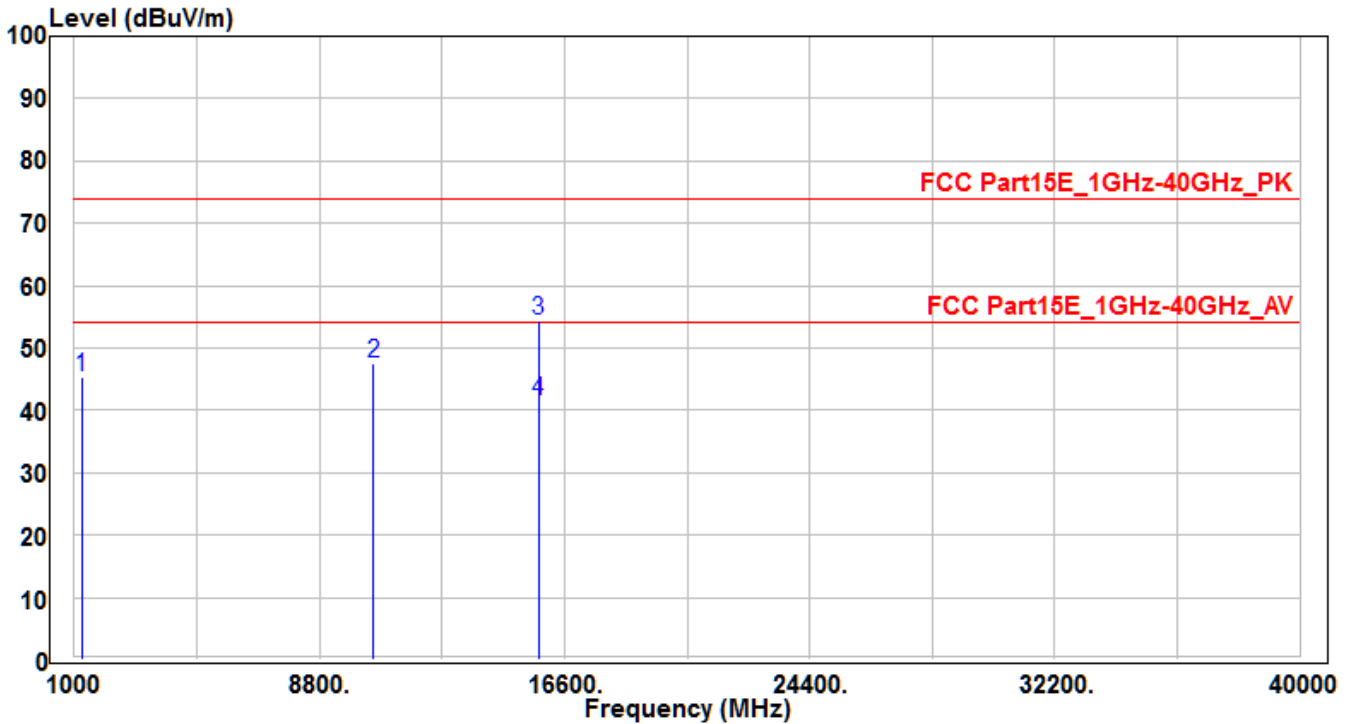
No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1654.72	48.78	-4.96	43.82	-30.18	74	150	400	Peak
2	10520	30.82	18.02	48.84	-25.16	74	150	400	Peak
3	* 15780	31.35	20.98	52.33	-21.67	74	150	400	Peak

Note :

- "\*" means the worst value in this measurement data °
- Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB) °
- Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) °
- The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible, therefore no data appear in the report °



EUT	Wifi/BT Module	Test Date	2019/1/18
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Fran
Test Mode	MODE1 -CH52_Ant A	Test Voltage	AC 120V/60Hz

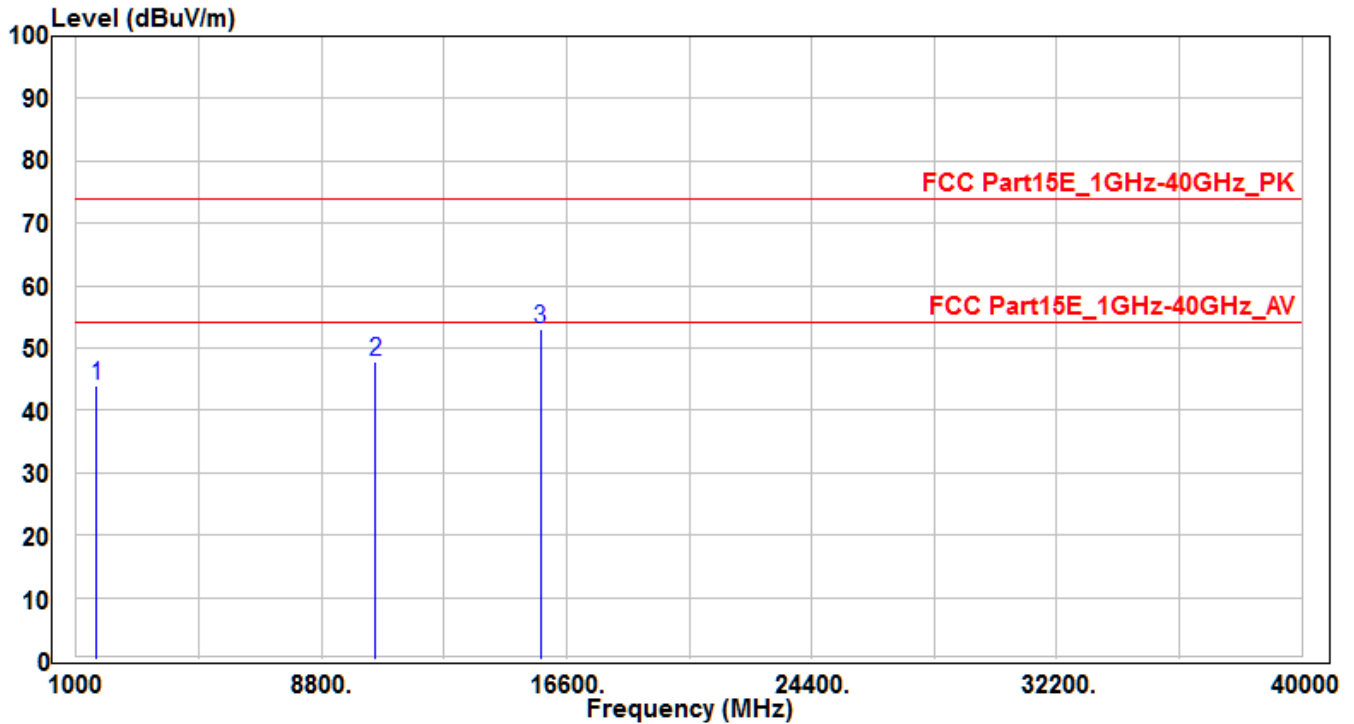


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1239.91	51.9	-6.69	45.21	-28.79	74	150	400	Peak
2	10520	29.57	18.02	47.59	-26.41	74	150	400	Peak
3	* 15780	33.45	20.98	54.43	-19.57	74	175	375	Peak
4	* 15780	20.63	20.98	41.61	-12.39	54	175	375	Average

## Note :

1. " \* " means the worst value in this measurement data °
2. Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB) °
3. Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) °
4. The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible, therefore no data appear in the report °

EUT	Wifi/BT Module	Test Date	2019/1/18
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Fran
Test Mode	MODE1 -CH52_Ant B	Test Voltage	AC 120V/60Hz

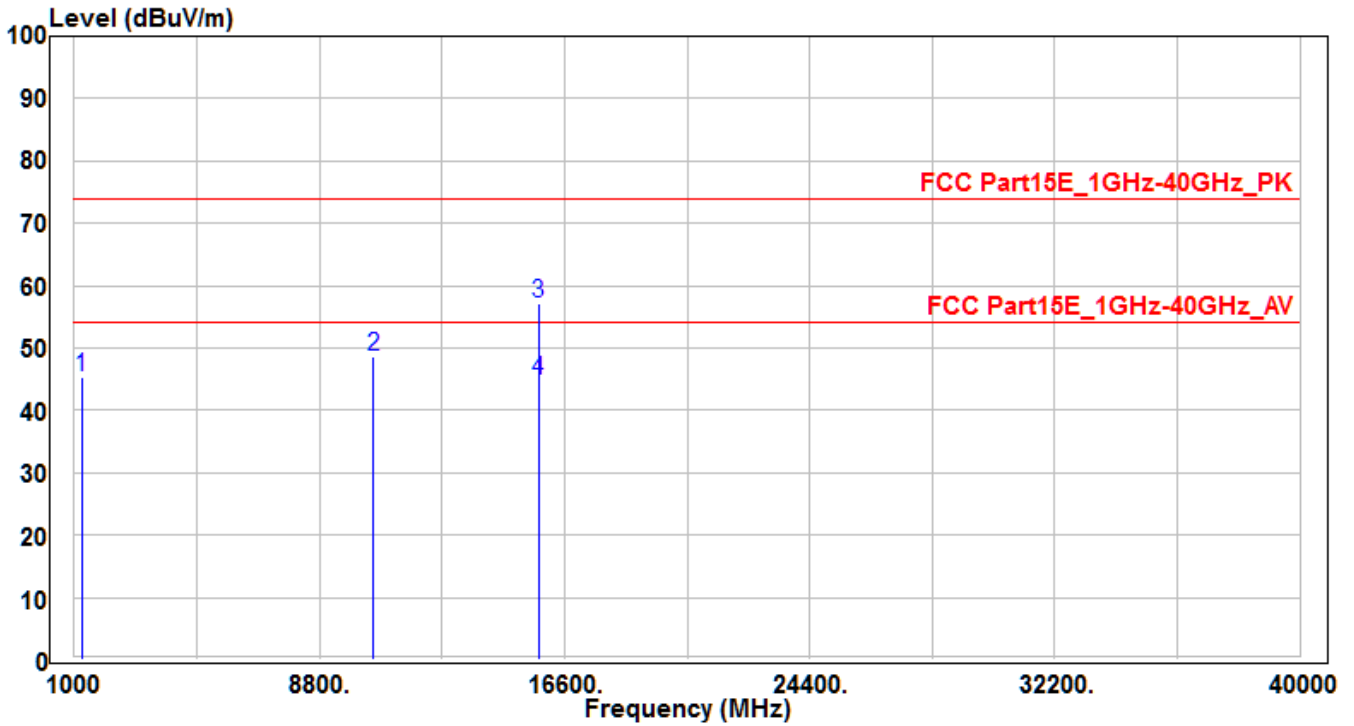


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1656.42	48.82	-4.96	43.86	-30.14	74	150	400	Peak
2	10520	29.88	18.02	47.9	-26.1	74	150	400	Peak
3	* 15780	32.19	20.98	53.17	-20.83	74	150	400	Peak

Note :

1. " \* " means the worst value in this measurement data °
2. Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB) °
3. Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) °
4. The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible, therefore no data appear in the report °

EUT	Wifi/BT Module	Test Date	2019/1/18
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Fran
Test Mode	MODE1 -CH52_Ant B	Test Voltage	AC 120V/60Hz

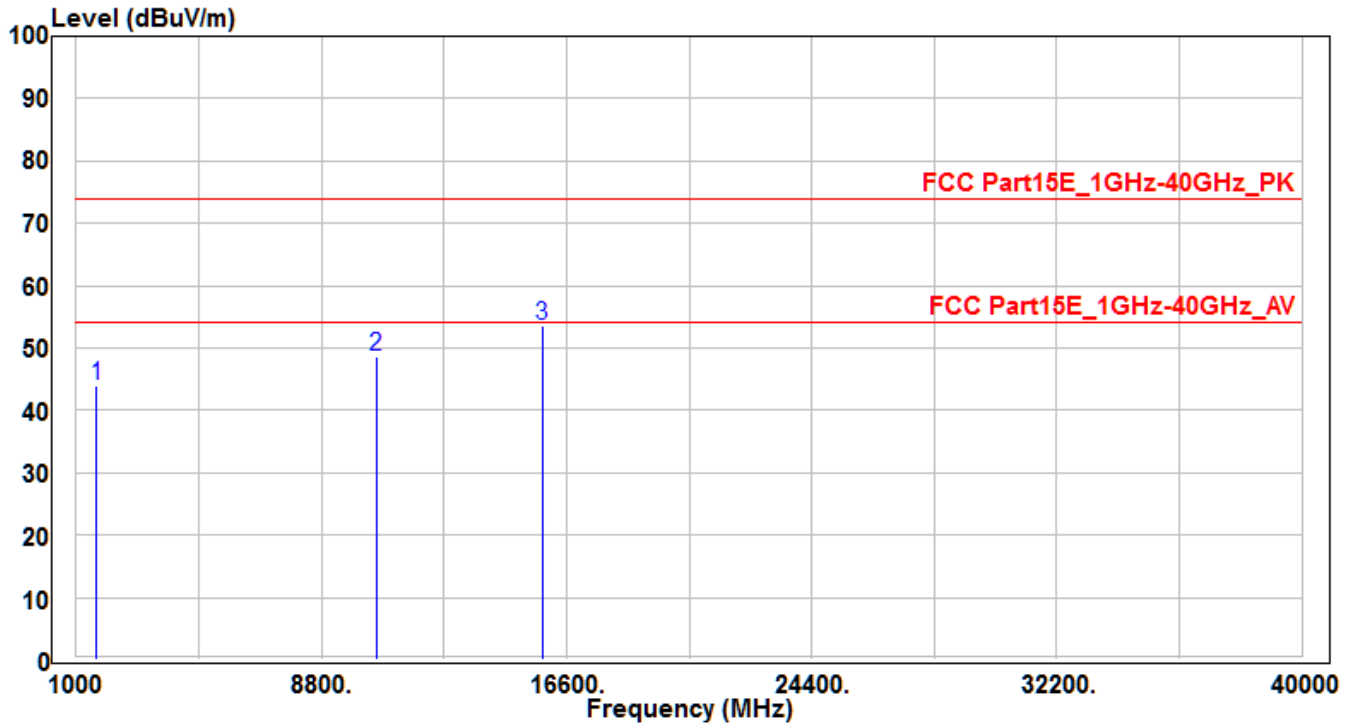


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1247.43	51.93	-6.65	45.28	-28.72	74	150	400	Peak
2	10520	30.7	18.02	48.72	-25.28	74	150	400	Peak
3	* 15780	36.31	20.98	57.29	-16.71	74	175	360	Peak
4	* 15780	23.75	20.98	44.73	-9.27	54	175	360	Average

Note :

1. " \* " means the worst value in this measurement data °
2. Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB) °
3. Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) °
4. The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible, therefore no data appear in the report °

EUT	Wifi/BT Module	Test Date	2019/1/18
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Fran
Test Mode	MODE1 -CH56_Ant A	Test Voltage	AC 120V/60Hz

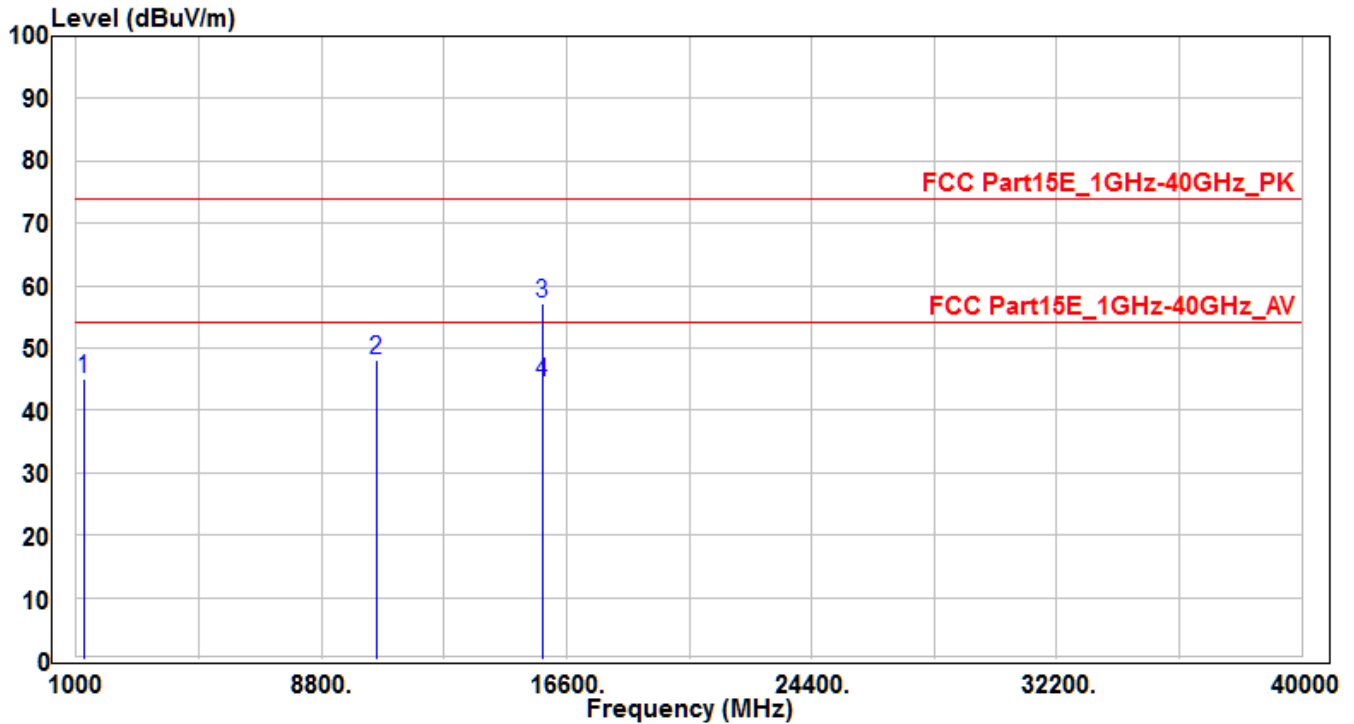


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1657.84	48.85	-4.96	43.89	-30.11	74	150	400	Peak
2	10560	30.47	18.11	48.58	-25.42	74	150	400	Peak
3	* 15840	32.77	20.77	53.54	-20.46	74	150	400	Peak

Note :

1. " \* " means the worst value in this measurement data °
2. Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB) °
3. Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) °
4. The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible, therefore no data appear in the report °

EUT	Wifi/BT Module	Test Date	2019/1/18
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Fran
Test Mode	MODE1 -CH56_Ant A	Test Voltage	AC 120V/60Hz

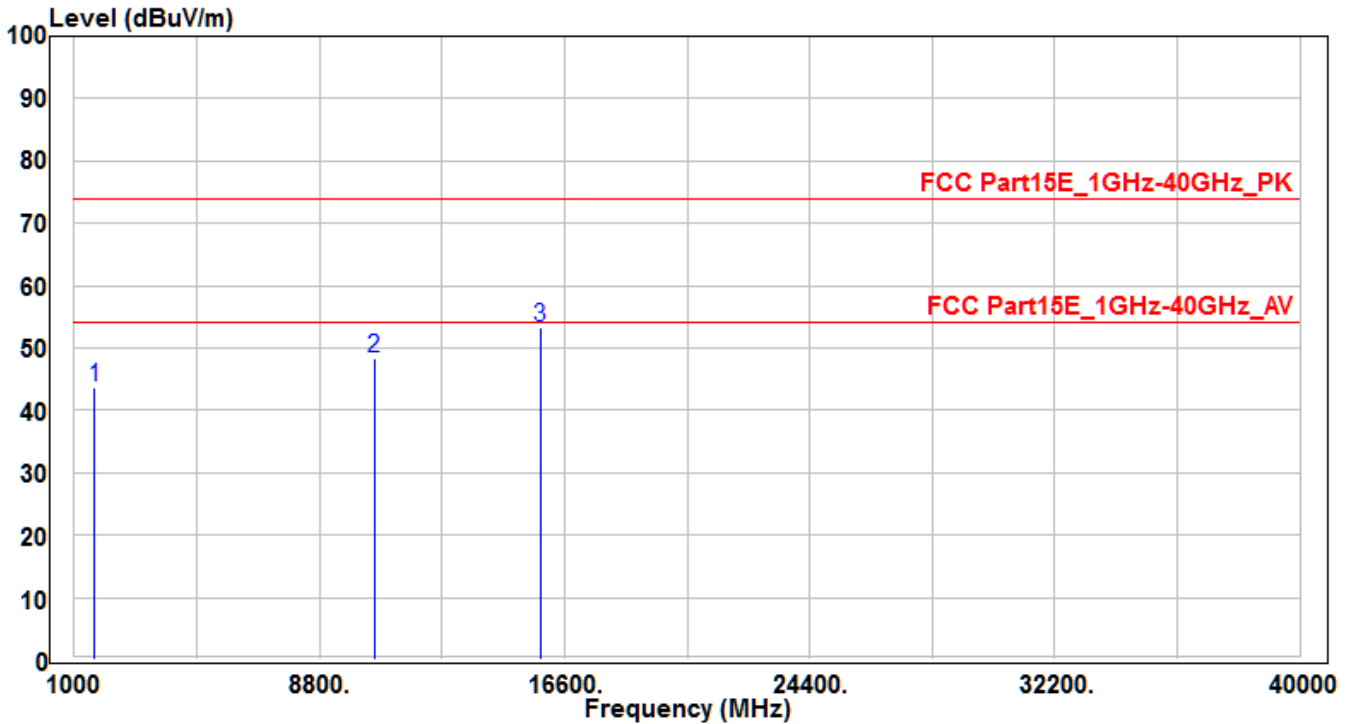


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1241.53	51.87	-6.68	45.19	-28.81	74	150	400	Peak
2	10560	30.11	18.11	48.22	-25.78	74	150	400	Peak
3	* 15840	36.47	20.77	57.24	-16.76	74	170	380	Peak
4	* 15840	23.86	20.77	44.63	-9.37	54	170	385	Average

Note :

1. " \* " means the worst value in this measurement data °
2. Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB) °
3. Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) °
4. The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible, therefore no data appear in the report °

EUT	Wifi/BT Module	Test Date	2019/1/18
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Fran
Test Mode	MODE1 -CH56_Ant B	Test Voltage	AC 120V/60Hz

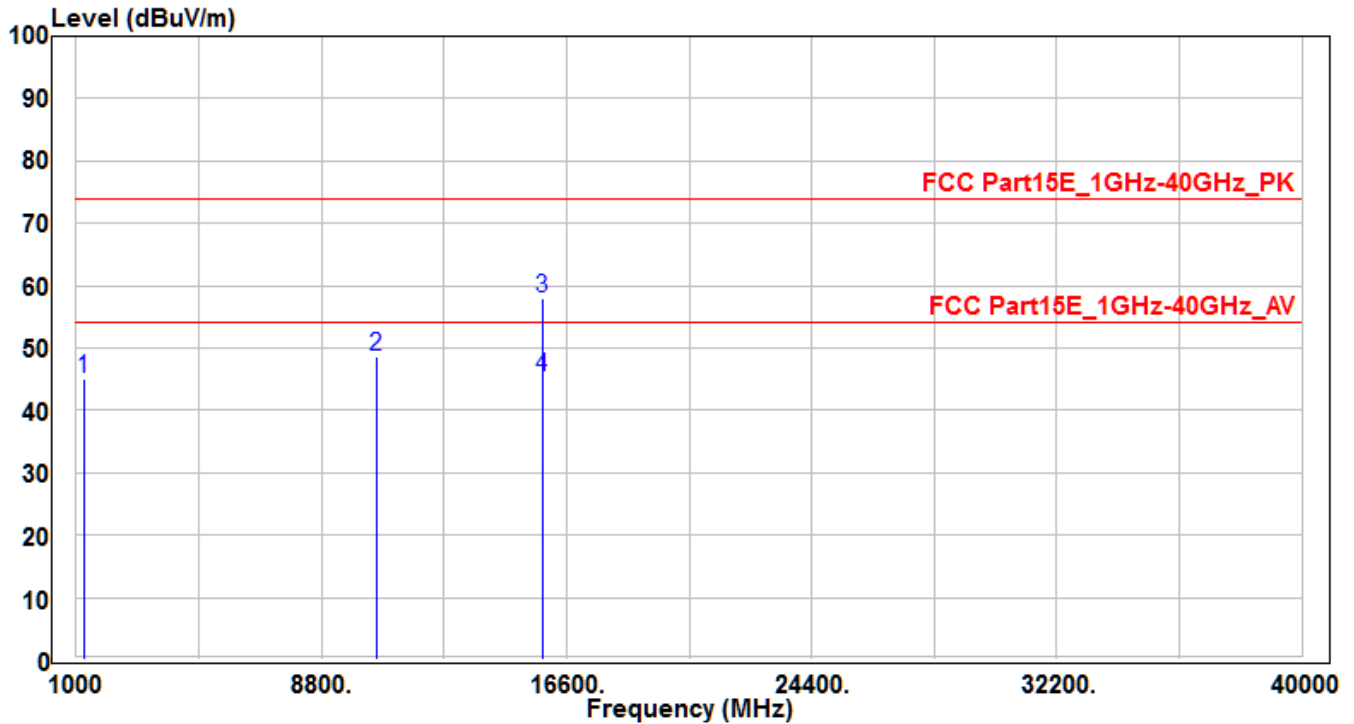


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1648.83	48.74	-4.98	43.76	-30.24	74	150	400	Peak
2	10560	30.25	18.11	48.36	-25.64	74	150	400	Peak
3	* 15840	32.54	20.77	53.31	-20.69	74	150	400	Peak

Note :

1. " \* " means the worst value in this measurement data °
2. Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB) °
3. Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) °
4. The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible, therefore no data appear in the report °

EUT	Wifi/BT Module	Test Date	2019/1/18
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Fran
Test Mode	MODE1 -CH56_Ant B	Test Voltage	AC 120V/60Hz

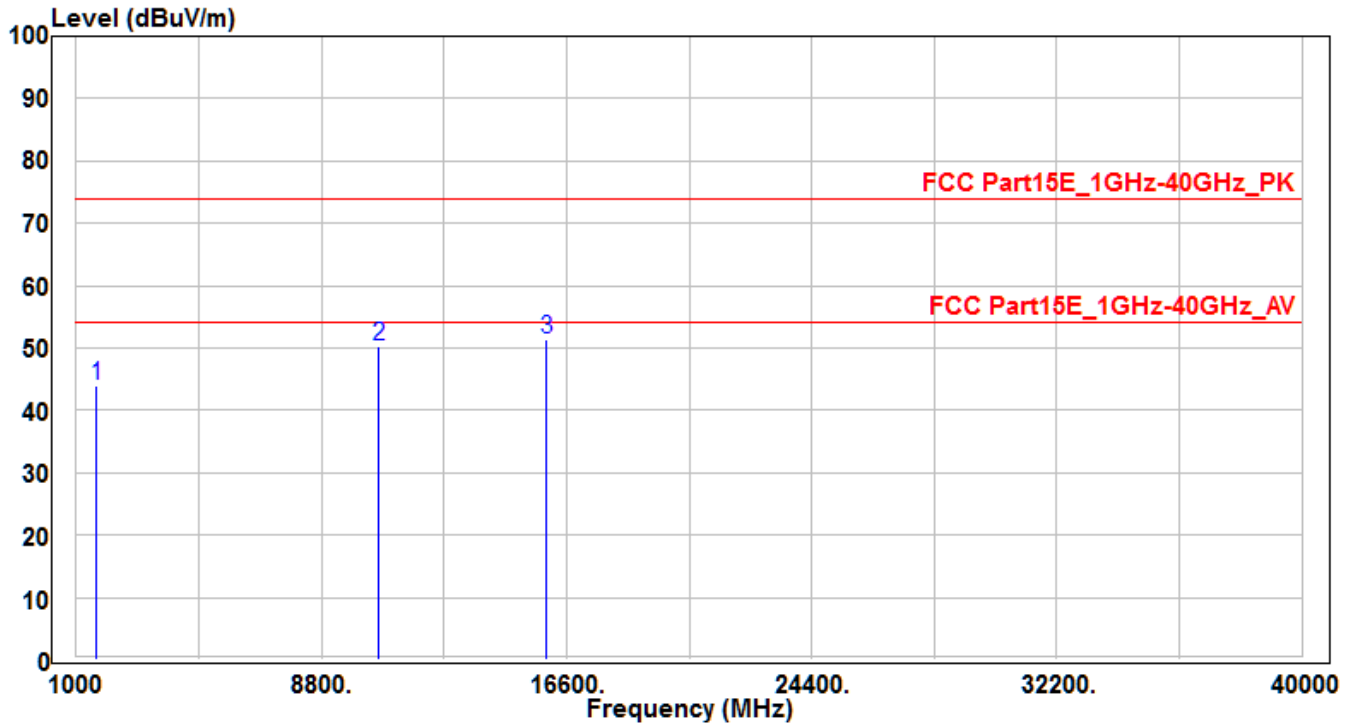


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1242.85	51.84	-6.67	45.17	-28.83	74	150	400	Peak
2	10560	30.4	18.11	48.51	-25.49	74	150	400	Peak
3	* 15840	37.15	20.77	57.92	-16.08	74	180	365	Peak
4	* 15840	24.68	20.77	45.45	-8.55	54	180	365	Average

Note :

1. " \* " means the worst value in this measurement data °
2. Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB) °
3. Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) °
4. The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible, therefore no data appear in the report °

EUT	Wifi/BT Module	Test Date	2019/1/18
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Fran
Test Mode	MODE1 -CH64_Ant A	Test Voltage	AC 120V/60Hz



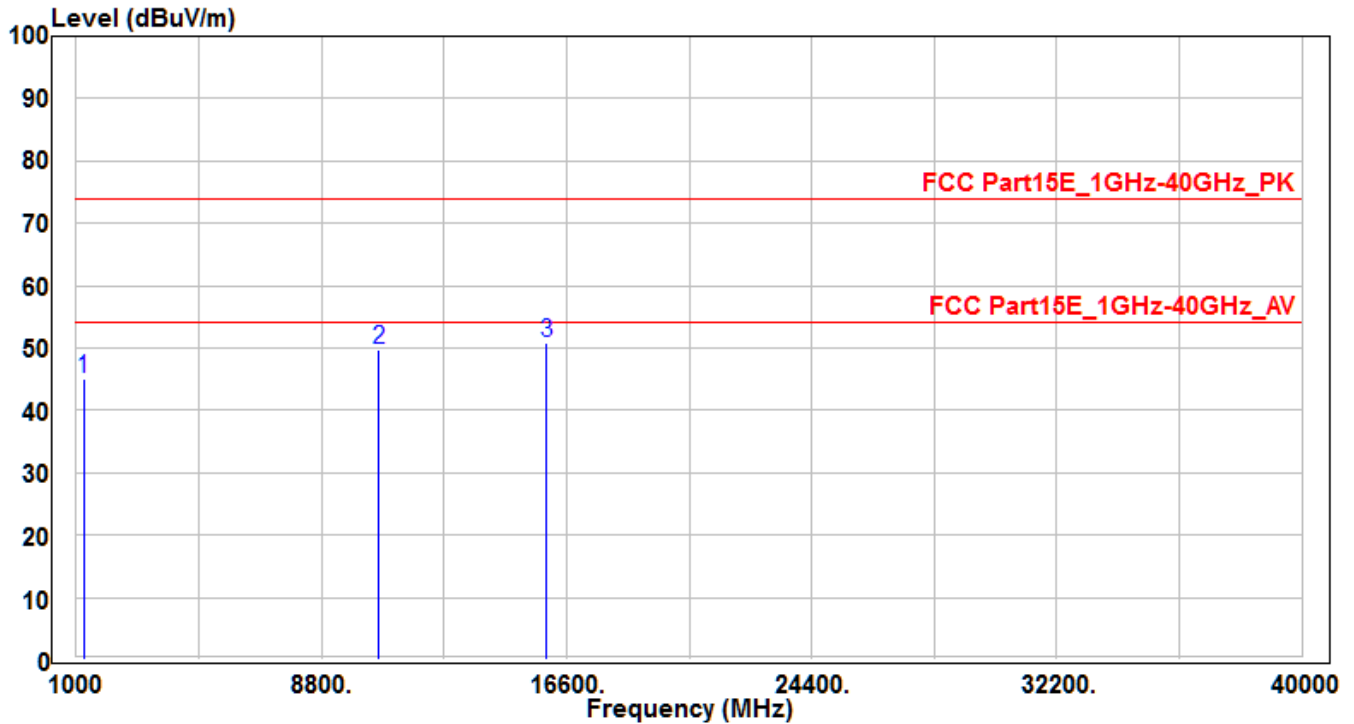
No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1651.74	48.86	-4.97	43.89	-30.11	74	150	400	Peak
2	10640	32.01	18.28	50.29	-23.71	74	150	400	Peak
3	* 15960	31.04	20.34	51.38	-22.62	74	150	400	Peak

Note :

- "\*" means the worst value in this measurement data °
- Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB) °
- Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) °
- The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible, therefore no data appear in the report °



EUT	Wifi/BT Module	Test Date	2019/1/18
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Fran
Test Mode	MODE1 -CH64_Ant A	Test Voltage	AC 120V/60Hz

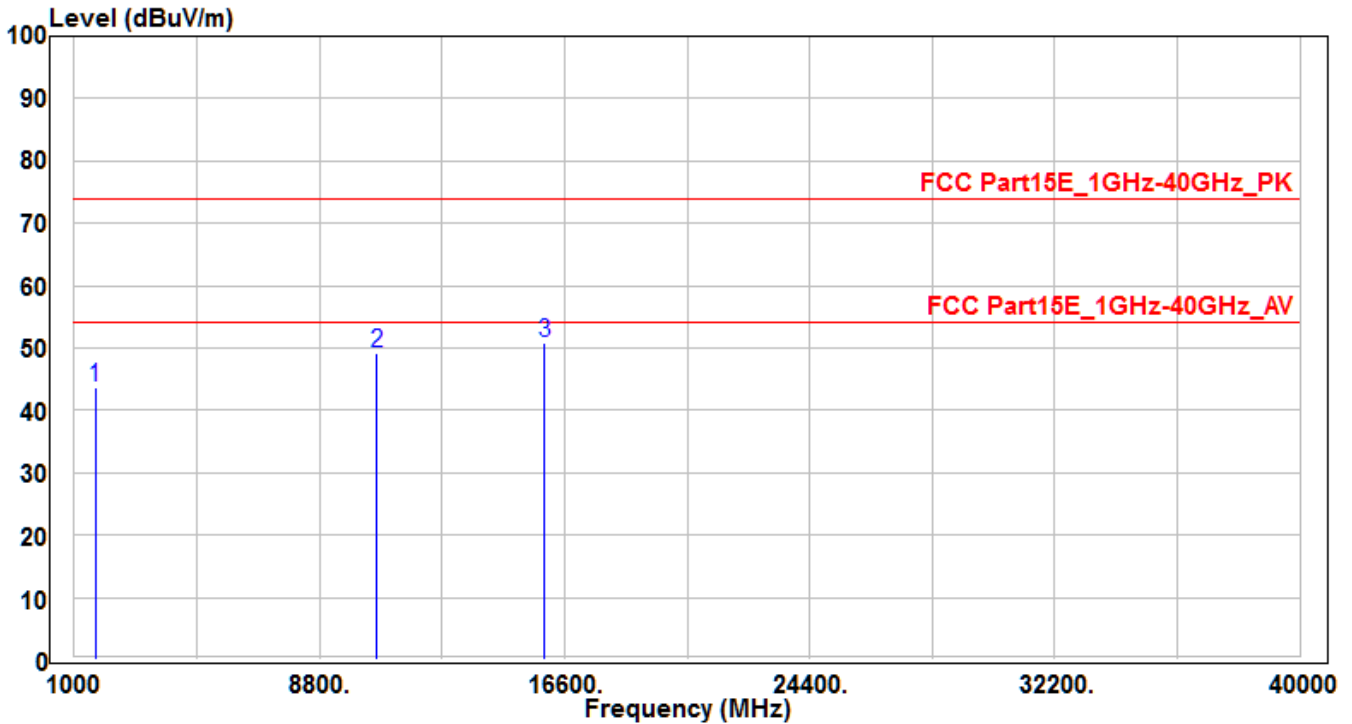


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1240.57	51.87	-6.69	45.18	-28.82	74	150	400	Peak
2	10640	31.38	18.28	49.66	-24.34	74	150	400	Peak
3	* 15960	30.39	20.34	50.73	-23.27	74	150	400	Peak

Note :

1. " \* " means the worst value in this measurement data °
2. Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB) °
3. Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) °
4. The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible, therefore no data appear in the report °

EUT	Wifi/BT Module	Test Date	2019/1/18
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Fran
Test Mode	MODE1 -CH64_Ant B	Test Voltage	AC 120V/60Hz

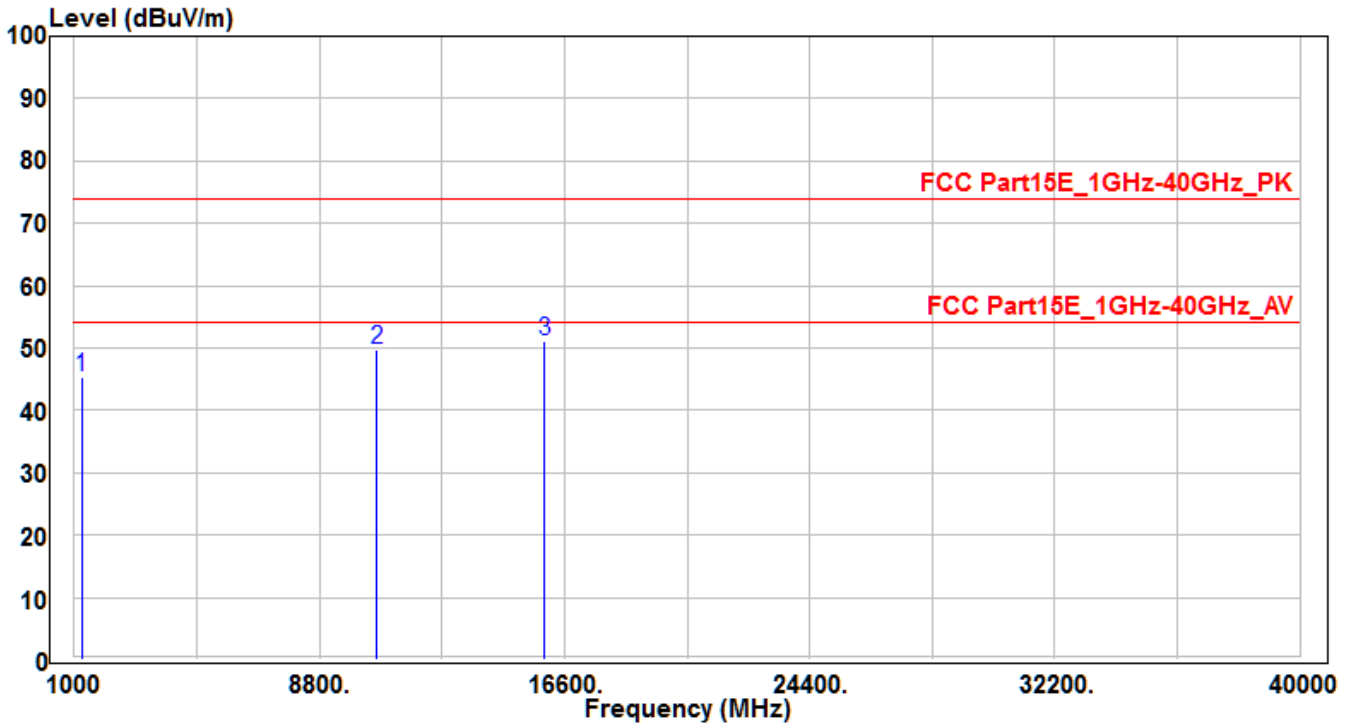


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1667.37	48.76	-4.93	43.83	-30.17	74	150	400	Peak
2	10640	31.02	18.28	49.3	-24.7	74	150	400	Peak
3	* 15960	30.41	20.34	50.75	-23.25	74	150	400	Peak

Note :

1. " \* " means the worst value in this measurement data °
2. Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB) °
3. Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) °
4. The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible, therefore no data appear in the report °

EUT	Wifi/BT Module	Test Date	2019/1/18
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Fran
Test Mode	MODE1 -CH64_Ant B	Test Voltage	AC 120V/60Hz

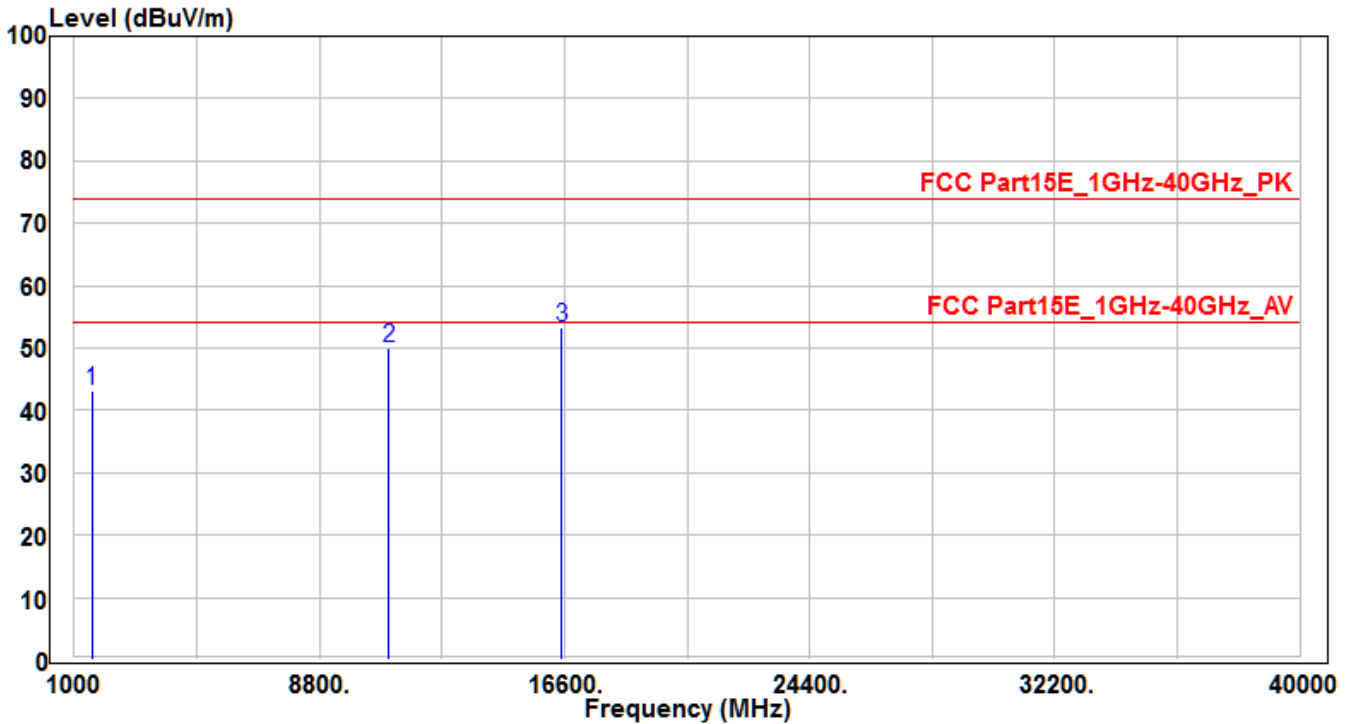


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1245.69	51.97	-6.66	45.31	-28.69	74	150	400	Peak
2	10640	31.45	18.28	49.73	-24.27	74	150	400	Peak
3	* 15960	30.83	20.34	51.17	-22.83	74	150	400	Peak

Note :

1. " \* " means the worst value in this measurement data °
2. Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB) °
3. Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) °
4. The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible, therefore no data appear in the report °

EUT	Wifi/BT Module	Test Date	2019/1/18
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Fran
Test Mode	MODE1 -CH100_Ant A	Test Voltage	AC 120V/60Hz

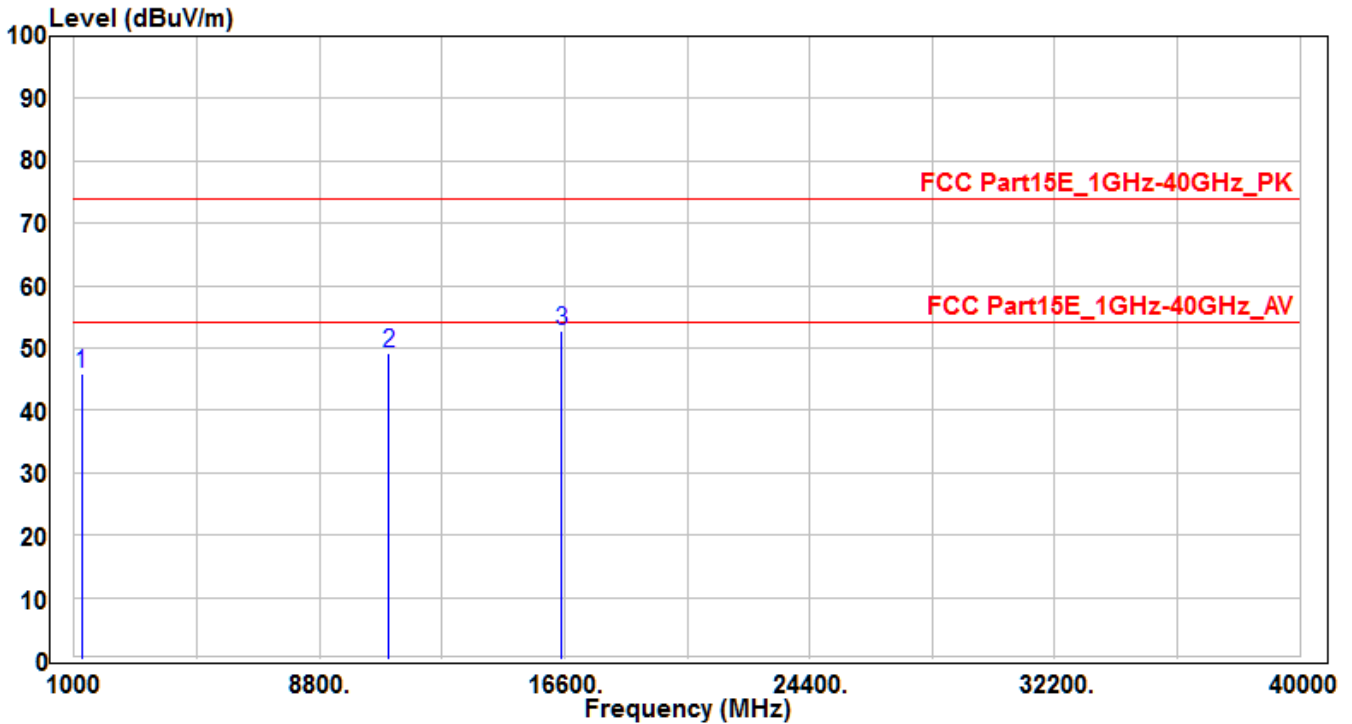


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1551.76	48.43	-5.28	43.15	-30.85	74	150	400	Peak
2	11000	31.05	19.08	50.13	-23.87	74	150	400	Peak
3	* 16500	31.35	22.06	53.41	-20.59	74	150	400	Peak

Note :

1. " \* " means the worst value in this measurement data °
2. Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB) °
3. Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) °
4. The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible, therefore no data appear in the report °

EUT	Wifi/BT Module	Test Date	2019/1/18
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Fran
Test Mode	MODE1 -CH100_Ant A	Test Voltage	AC 120V/60Hz

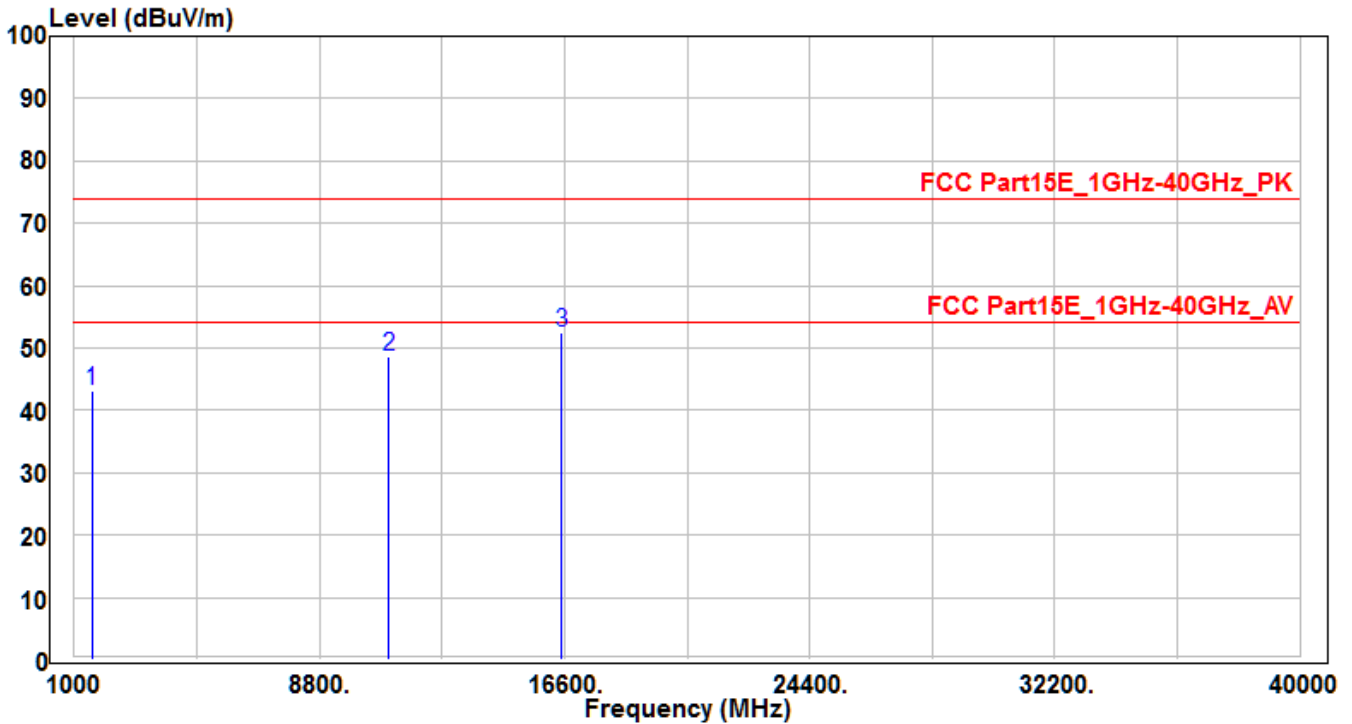


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1243.9	52.62	-6.67	45.95	-28.05	74	150	400	Peak
2	11000	30.23	19.08	49.31	-24.69	74	150	400	Peak
3	* 16500	30.8	22.06	52.86	-21.14	74	150	400	Peak

Note :

1. " \* " means the worst value in this measurement data °
2. Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB) °
3. Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) °
4. The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible, therefore no data appear in the report °

EUT	Wifi/BT Module	Test Date	2019/1/18
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Fran
Test Mode	MODE1 -CH100_Ant B	Test Voltage	AC 120V/60Hz

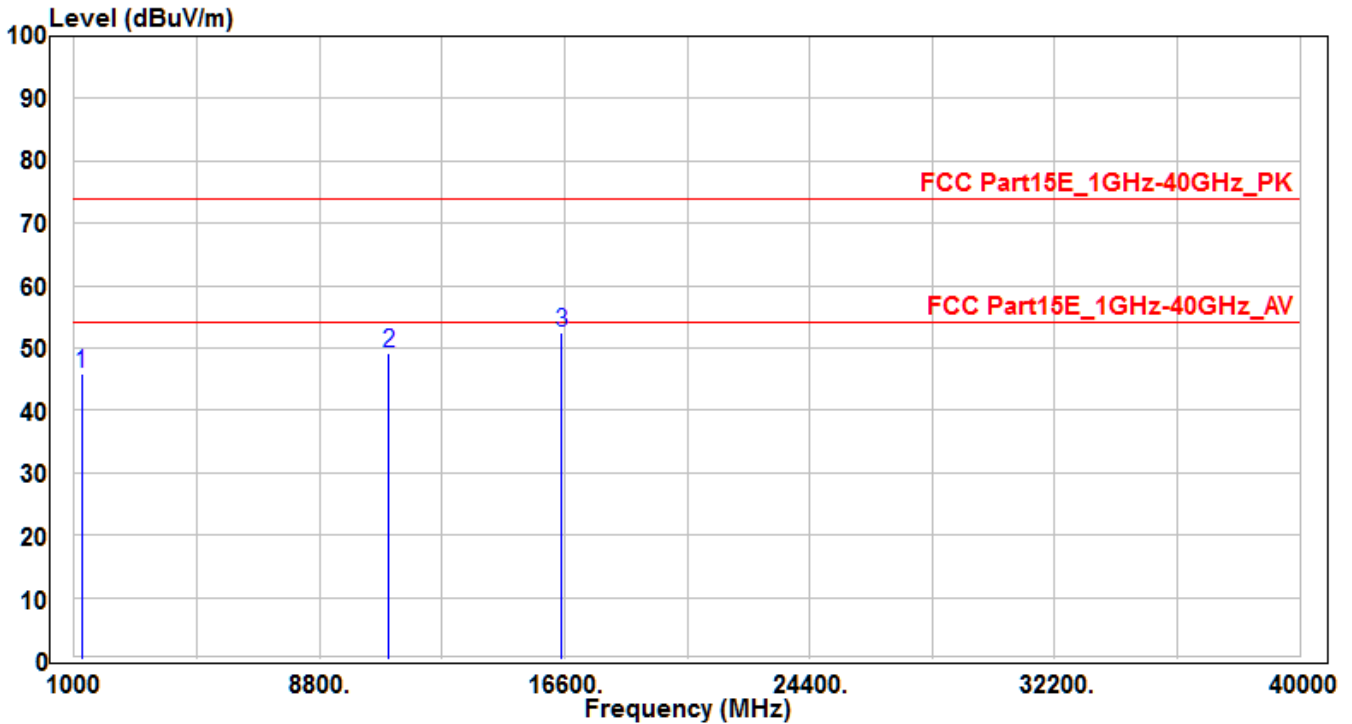


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1556.17	48.45	-5.26	43.19	-30.81	74	150	400	Peak
2	11000	29.57	19.08	48.65	-25.35	74	150	400	Peak
3	* 16500	30.56	22.06	52.62	-21.38	74	150	400	Peak

Note :

1. " \* " means the worst value in this measurement data °
2. Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB) °
3. Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) °
4. The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible, therefore no data appear in the report °

EUT	Wifi/BT Module	Test Date	2019/1/18
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Fran
Test Mode	MODE1 -CH100_Ant B	Test Voltage	AC 120V/60Hz

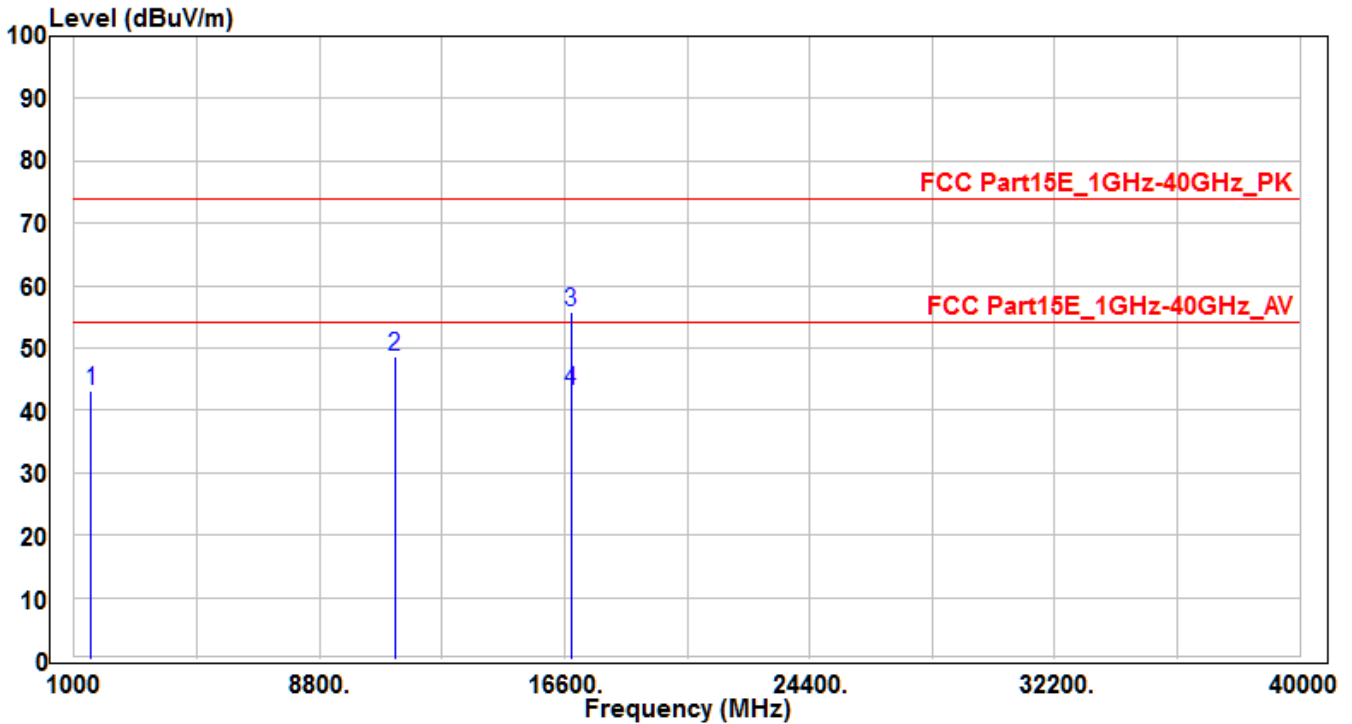


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1241.3	52.71	-6.68	46.03	-27.97	74	150	400	Peak
2	11000	30.21	19.08	49.29	-24.71	74	150	400	Peak
3	* 16500	30.56	22.06	52.62	-21.38	74	150	400	Peak

Note :

- "\*" means the worst value in this measurement data °
- Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB) °
- Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) °
- The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible, therefore no data appear in the report °

EUT	Wifi/BT Module	Test Date	2019/1/18
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Fran
Test Mode	MODE1 -CH120_Ant A	Test Voltage	AC 120V/60Hz



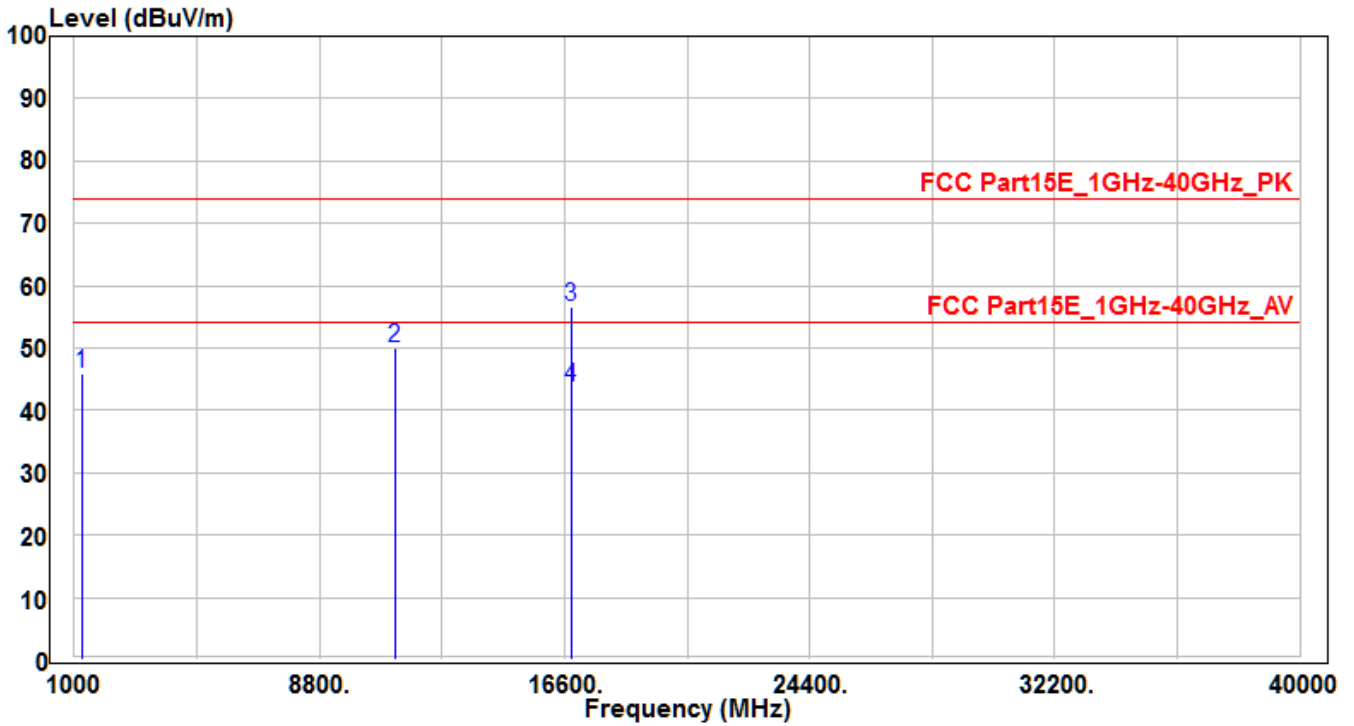
No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1548.78	48.39	-5.28	43.11	-30.89	74	150	400	Peak
2	11200	29.54	19.15	48.69	-25.31	74	150	400	Peak
3	* 16800	31.34	24.31	55.65	-18.35	74	170	375	Peak
4	* 16800	18.86	24.31	43.17	-10.83	54	170	375	Average

Note :

1. " \* " means the worst value in this measurement data °
2. Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB) °
3. Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) °
4. The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible, therefore no data appear in the report °



EUT	Wifi/BT Module	Test Date	2017/04/10
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Fran
Test Mode	MODE1 -CH120_Ant A	Test Voltage	AC 120V/60Hz

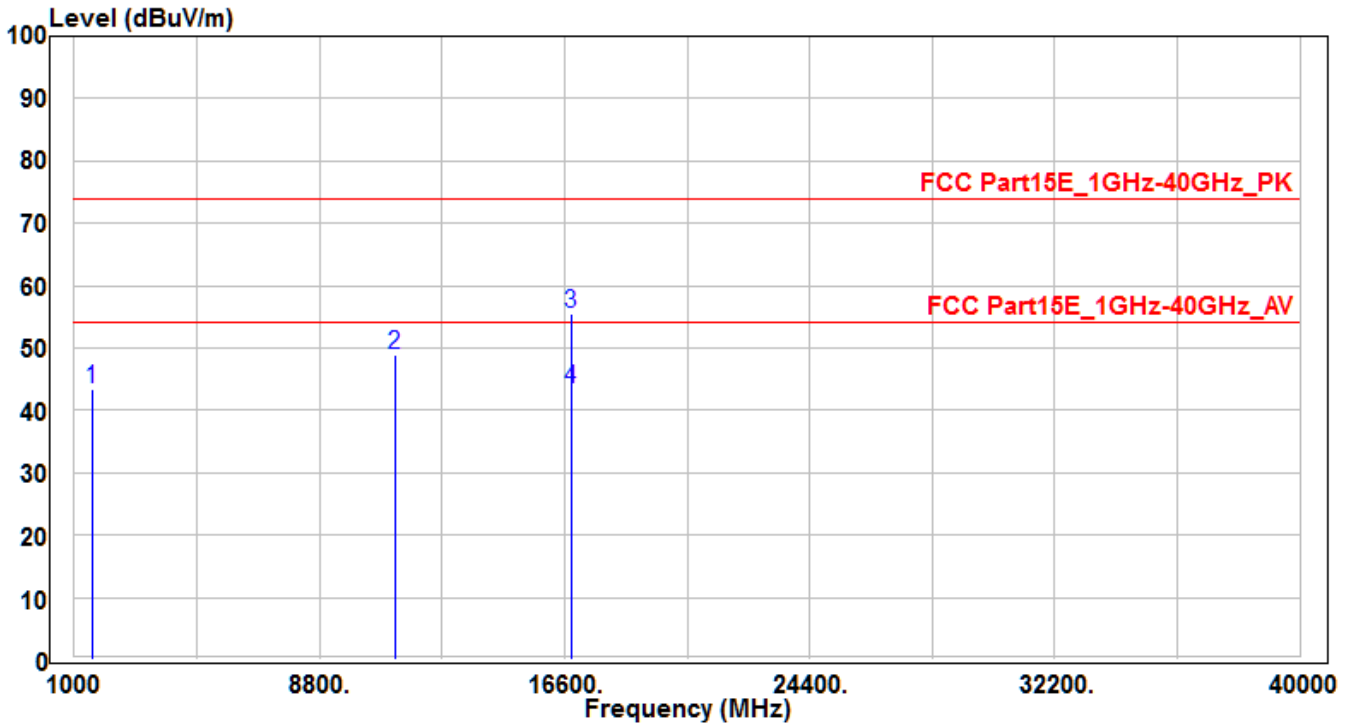


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1240.8	52.65	-6.69	45.96	-28.04	74	150	400	Peak
2	11200	30.76	19.15	49.91	-24.09	74	150	400	Peak
3	* 16800	32.28	24.31	56.59	-17.41	74	160	385	Peak
4	* 16800	19.39	24.31	43.7	-10.3	54	160	385	Average

Note :

1. " \* " means the worst value in this measurement data ◦
2. Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB) ◦
3. Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) ◦
4. The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible, therefore no data appear in the report ◦

EUT	Wifi/BT Module	Test Date	2019/1/18
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Fran
Test Mode	MODE1 -CH120_Ant B	Test Voltage	AC 120V/60Hz

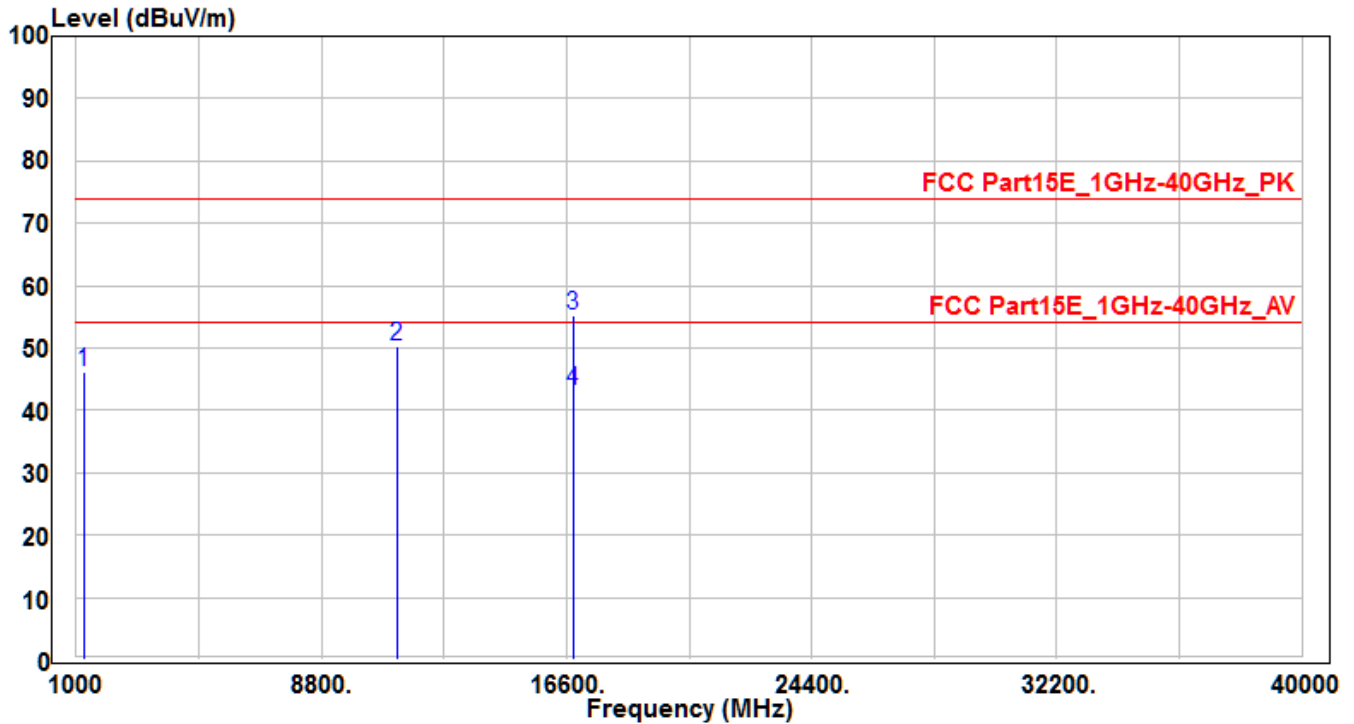


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1570.24	48.6	-5.22	43.38	-30.62	74	150	400	Peak
2	11200	29.86	19.15	49.01	-24.99	74	150	400	Peak
3	* 16800	31.26	24.31	55.57	-18.43	74	165	365	Peak
4	* 16800	19.03	24.31	43.34	-10.66	54	165	365	Average

Note :

1. " \* " means the worst value in this measurement data ◦
2. Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB) ◦
3. Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) ◦
4. The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible, therefore no data appear in the report ◦

EUT	Wifi/BT Module	Test Date	2019/1/18
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Fran
Test Mode	MODE1 -CH120_Ant B	Test Voltage	AC 120V/60Hz

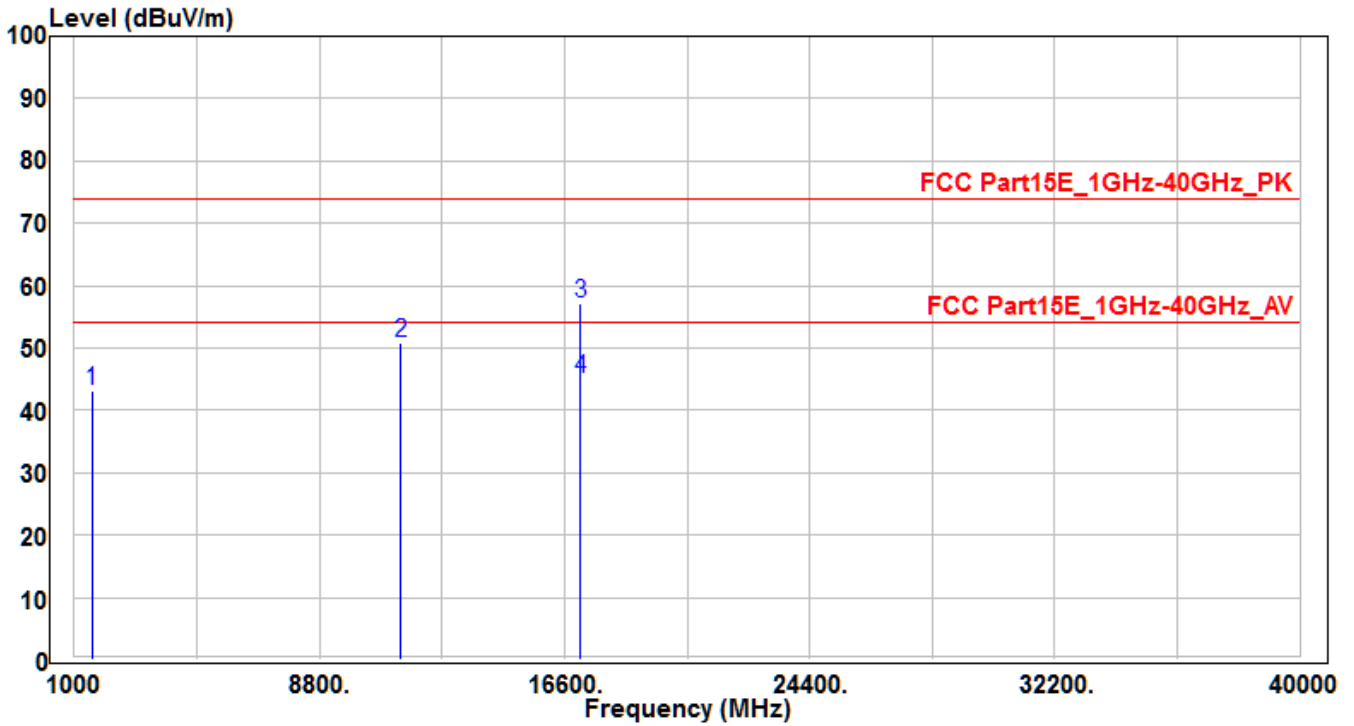


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1243.64	52.72	-6.67	46.05	-27.95	74	150	400	Peak
2	11200	31.27	19.15	50.42	-23.58	74	150	400	Peak
3	* 16800	31.03	24.31	55.34	-18.66	74	165	395	Peak
4	* 16800	18.96	24.31	43.27	-10.73	54	165	395	Average

Note :

1. " \* " means the worst value in this measurement data °
2. Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB) °
3. Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) °
4. The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible, therefore no data appear in the report °

EUT	Wifi/BT Module	Test Date	2019/1/18
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Fran
Test Mode	MODE1 -CH140_Ant A	Test Voltage	AC 120V/60Hz

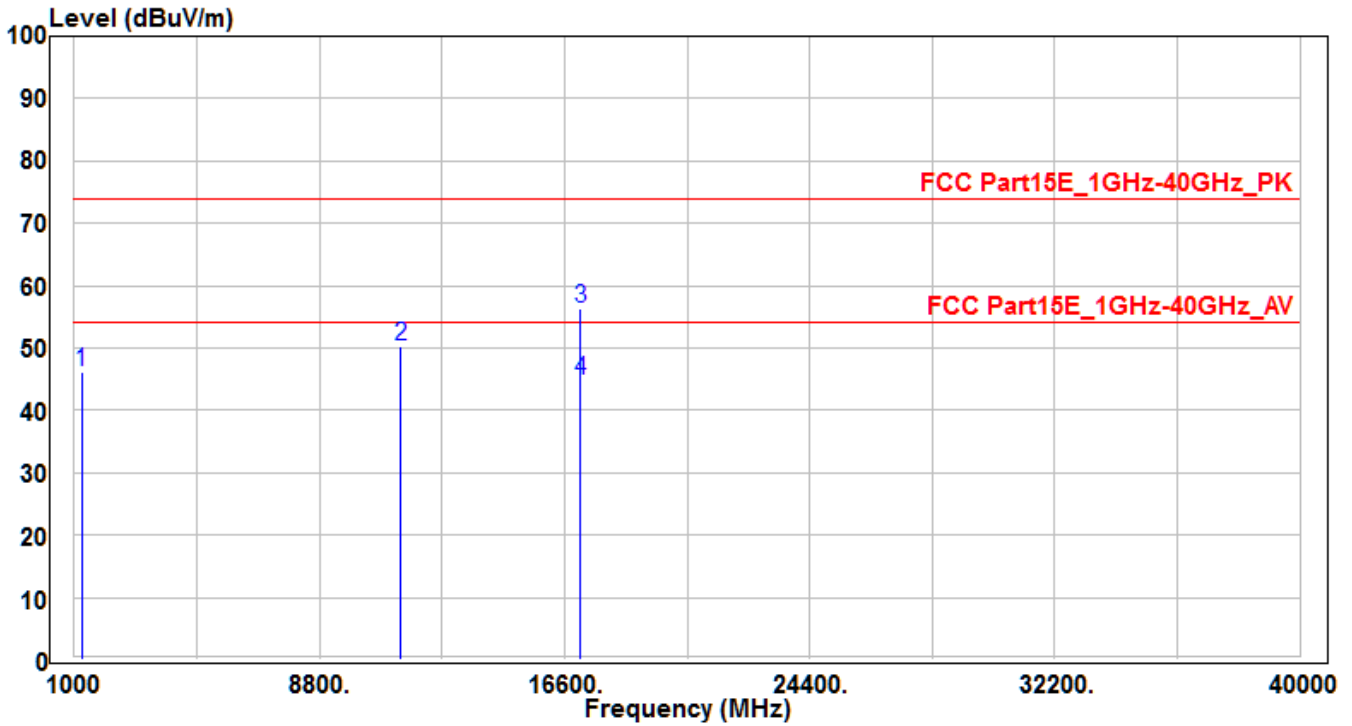


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1557.49	48.4	-5.26	43.14	-30.86	74	150	400	Peak
2	11400	31.61	19.22	50.83	-23.17	74	150	400	Peak
3	* 17100	30.47	26.64	57.11	-16.89	74	160	360	Peak
4	* 17100	18.3	26.64	44.94	-9.06	54	160	360	Average

Note :

1. " \* " means the worst value in this measurement data °
2. Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB) °
3. Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) °
4. The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible, therefore no data appear in the report °

EUT	Wifi/BT Module	Test Date	2019/1/18
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Fran
Test Mode	MODE1 -CH140_Ant A	Test Voltage	AC 120V/60Hz

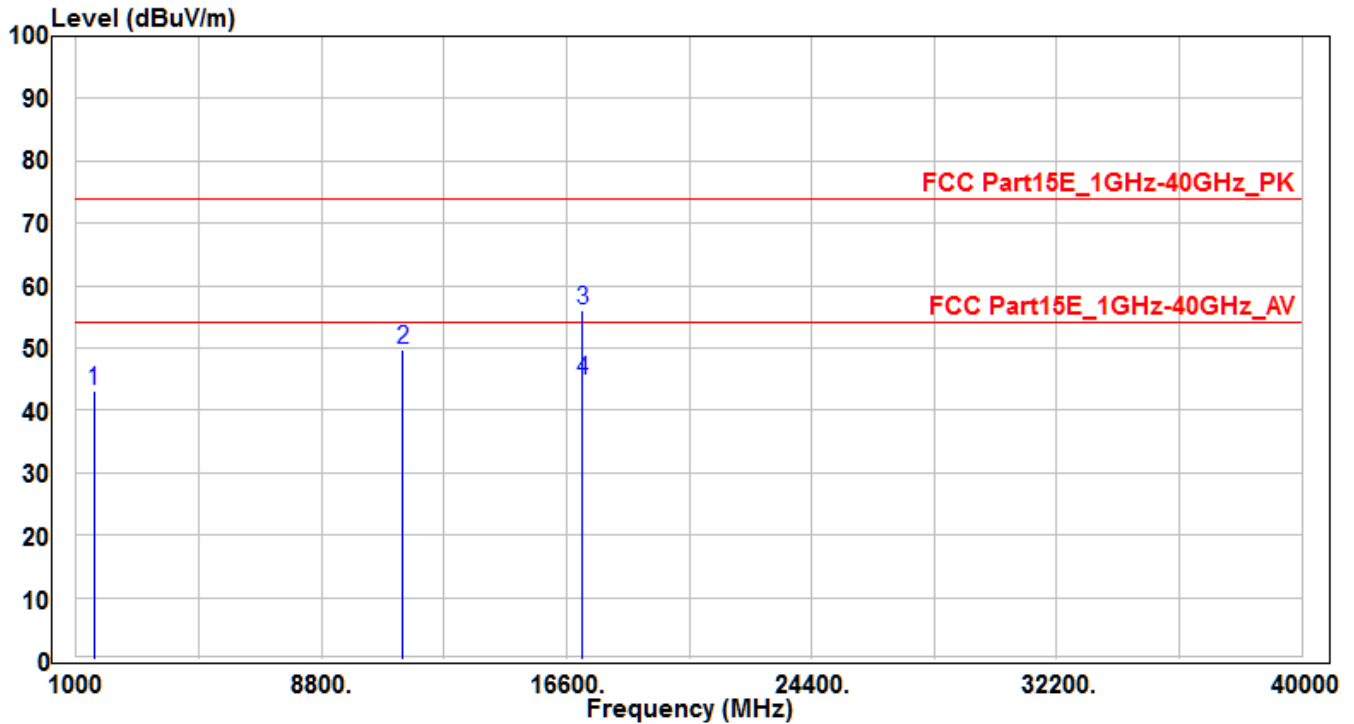


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1246.71	52.88	-6.65	46.23	-27.77	74	150	400	Peak
2	11400	31.05	19.22	50.27	-23.73	74	150	400	Peak
3	* 17100	29.73	26.64	56.37	-17.63	74	175	355	Peak
4	* 17100	18.03	26.64	44.67	-9.33	54	175	355	Average

Note :

1. " \* " means the worst value in this measurement data °
2. Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB) °
3. Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) °
4. The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible, therefore no data appear in the report °

EUT	Wifi/BT Module	Test Date	2019/1/18
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Fran
Test Mode	MODE1 -CH140_Ant B	Test Voltage	AC 120V/60Hz

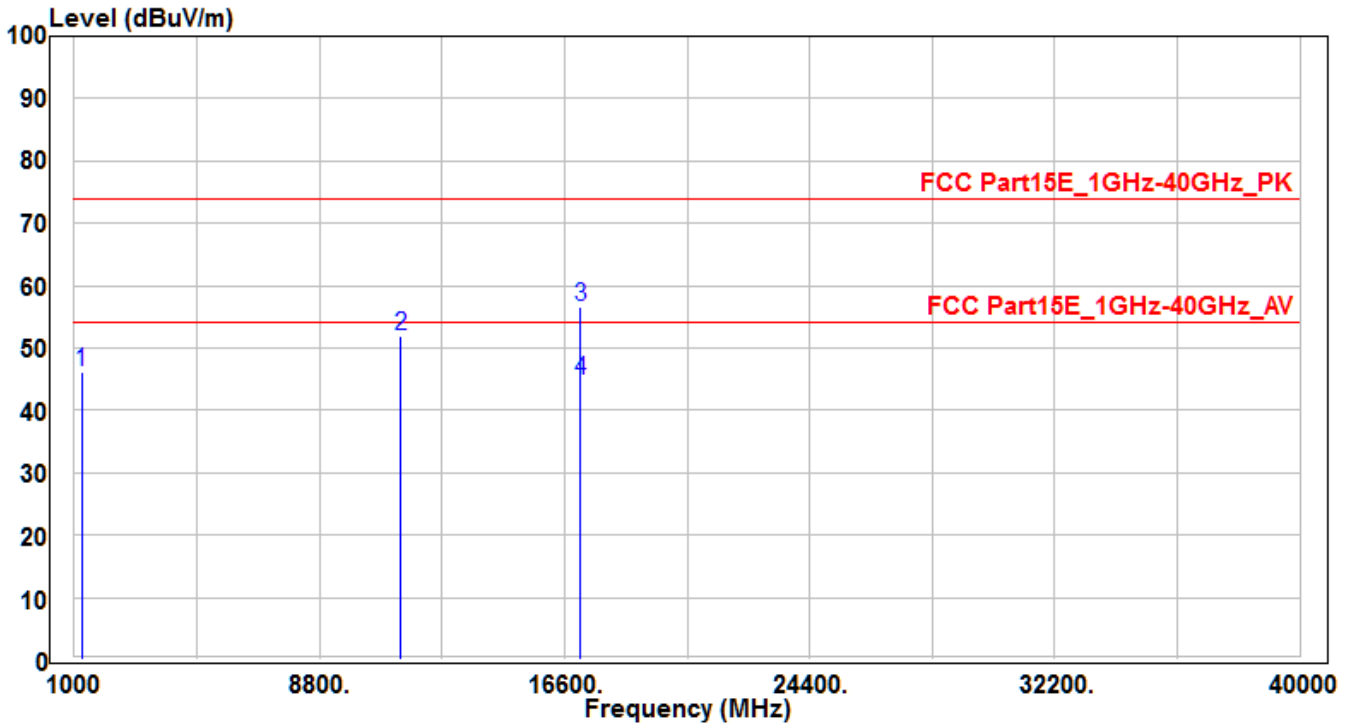


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1555.63	48.28	-5.26	43.02	-30.98	74	150	400	Peak
2	11400	30.47	19.22	49.69	-24.31	74	150	400	Peak
3	* 17100	29.33	26.64	55.97	-18.03	74	160	385	Peak
4	* 17100	18.13	26.64	44.77	-9.23	54	160	385	Average

Note :

1. " \* " means the worst value in this measurement data °
2. Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB) °
3. Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) °
4. The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible, therefore no data appear in the report °

EUT	Wifi/BT Module	Test Date	2019/1/18
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Fran
Test Mode	MODE1 -CH140_Ant B	Test Voltage	AC 120V/60Hz



No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	1239.94	52.78	-6.69	46.09	-27.91	74	150	400	Peak
2	11400	32.8	19.22	52.02	-21.98	74	150	400	Peak
3	* 17100	30	26.64	56.64	-17.36	74	180	395	Peak
4	* 17100	18.25	26.64	44.89	-9.11	54	180	395	Average

Note :

1. " \* " means the worst value in this measurement data °
2. Measure Level (dBuV/m) = Reading Level (dBuV) + Factor (dB) °
3. Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) °
4. The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible, therefore no data appear in the report °