



MEASUREMENT REPORT

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

FCC ID: 2ALS8VA50EC
APPLICANT: Ninebot (Changzhou) Tech. Co., Ltd.
Application Type: Certification
Product: VA50EC
Model No.: AP6356SDPR
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 D02v01r03,
KDB 662911 D01v02r01, KDB 644545 D03v01
Test Date: March 22 ~ April 11, 2017

Reviewed By :

Paddy Chen

(Paddy Chen)

Approved By :

Chenz Ker

(Chenz Ker)



The test results relate only to the samples tested.

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 D02v01r03. 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
1703TW1601-U4	1.0	Original report	2017-04-17	

CONTENTS

Description	Page
§2.1033 General Information	6
1. INTRODUCTION	7
1.1. Scope	7
1.2. MRT Test Location	7
2. PRODUCT INFORMATION	8
2.1. Equipment Description.....	8
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
3. DESCRIPTION OF TEST	12
3.1. Evaluation Procedure	12
3.2. AC Line Conducted Emissions	12
3.3. Radiated Emissions.....	13
4. ANTENNA REQUIREMENTS	14
5. TEST EQUIPMENT CALIBRATION DATE	15
6. MEASUREMENT UNCERTAINTY	16
7. TEST RESULT	17
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.....	41
7.3.1. Test Limit	41
7.3.2. Test Procedure used.....	41
7.3.3. Test Setting.....	41

7.3.4.	Test Setup	41
7.3.5.	Test Result.....	42
7.4.	Operation Frequency Range of 26dBc Bandwidth Measurement.....	49
7.4.1.	Test Limit	49
7.4.2.	Test Procedure used.....	49
7.4.3.	Test Setting.....	49
7.4.4.	Test Setup	49
7.4.5.	Test Result.....	50
7.5.	Output Power Measurement	51
7.5.1.	Test Limit	51
7.5.2.	Test Procedure Used	52
7.5.3.	Test Setting.....	53
7.5.4.	Test Setup	53
7.5.5.	Test Result.....	54
7.6.	Transmit Power Control	65
7.6.1.	Test Limit	65
7.6.2.	Test Procedure Used	65
7.6.3.	Test Setting.....	65
7.6.4.	Test Setup	65
7.6.5.	Test Result.....	66
7.7.	Power Spectral Density Measurement	67
7.7.1.	Test Limit	67
7.7.2.	Test Procedure Used	67
7.7.3.	Test Setting.....	68
7.7.4.	Test Setup	68
7.7.5.	Test Result.....	69
7.8.	Radiated Spurious Emission Measurement	99
7.8.1.	Test Limit	99
7.8.2.	Test Procedure Used	99
7.8.3.	Test Setting.....	99
7.8.4.	Test Setup	101
7.8.5.	Test Result.....	103
7.9.	Radiated Restricted Band Edge Measurement	227
7.9.1.	Test Limit	227
7.9.2.	Test Result.....	230
7.10.	AC Conducted Emissions Measurement	324
7.10.1.	Test Limit	324
7.10.2.	Test Procedure	324

7.10.3. Test Setup	325
7.10.4. Test Result.....	326
8. CONCLUSION	328
Appendix A - Test Photograph	329
Appendix B - External Photograph.....	332
Appendix C - Internal Photograph.....	333

§2.1033 General Information

Applicant	Ninebot (Changzhou) Tech. Co., Ltd.
Applicant Address	16F-17F, Block A, Building 3, Changwu Mid Road 18#, Wujin Dist., Changzhou, Jiangsu
Manufacturer	Elitegroup Computer System Co., Ltd.
Manufacturer Address	No.239, Sec.2, Ti Ding Blvd., Taipei 11493, Taiwan (R.O.C)
Test Site	MRT Technology (Taiwan) Co., Ltd
Test Site Address	No. 38, Fuxing Second Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C)
MRT FCC Registration No.	291082
FCC Rule Part(s)	Part 15 Subpart E (Section 15.407)
Model No.	AP6356SDPR
Test Device Serial No.	N/A <input type="checkbox"/> Production <input checked="" type="checkbox"/> Pre-Production <input type="checkbox"/> Engineering
FCC Classification	Unlicensed National Information Infrastructure (UNII)

Test Facility / Accreditations

Measurements were performed at MRT Laboratory located in Fuxing Rd., Taoyuan, Taiwan (R.O.C)

- 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 Film.
- MRT facility is an IC registered (MRT Reg. No. 21723-1) test laboratory with the site description on file at Industry Canada.
- MRT Lab is accredited to ISO 17025 by the American Association for Laboratory Accreditation (TAF) under the American Association for Laboratory Accreditation Program (TAF Cert. No. 3261) in EMC, Telecommunications and Radio testing for FCC, Industry Taiwan, EU and TELEC Rules.

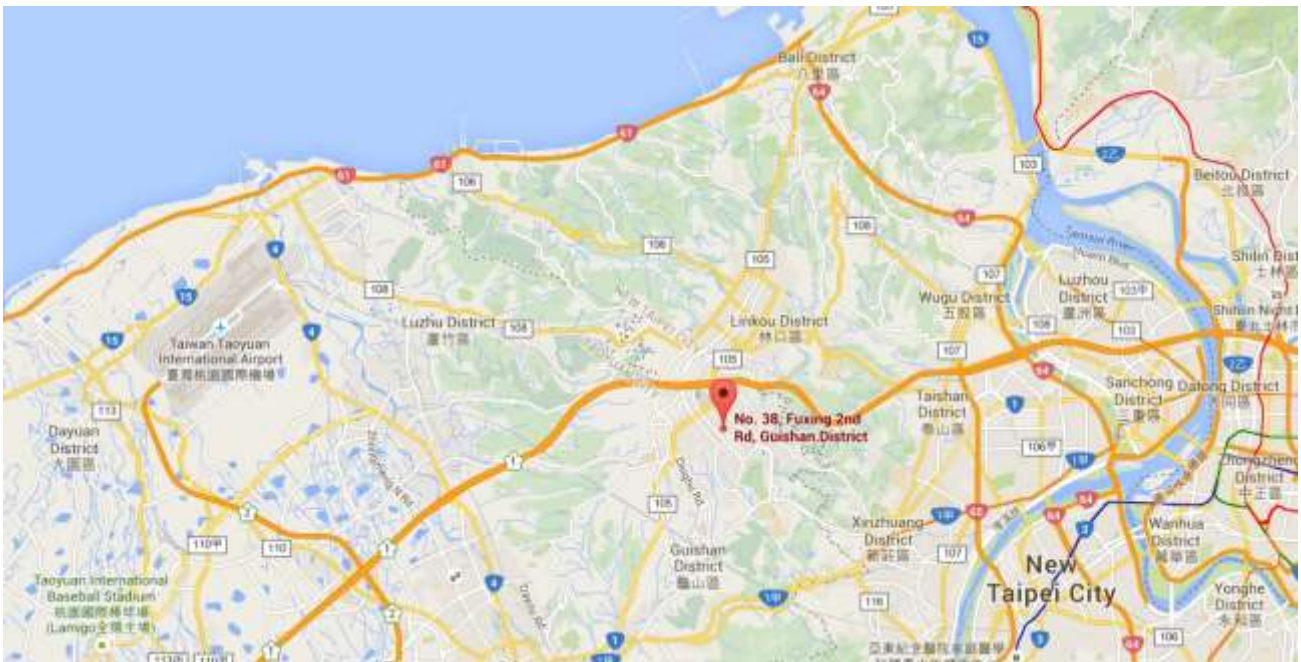
1. INTRODUCTION

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	VA50EC
FCC ID	2ALS8VA50EC
Model No.	AP6356SDPR
Supports Radios Spec.	WLAN : 2.4G : 802.11b/g/n-20; 5G : 802.11a/n-20/ac-20/n-40/ac-40/ac-80 WPAN : Bluetooth V4.0
Wi-Fi Specification	802.11a/b/g/n/ac
Frequency Range	<p><u>2.4GHz:</u> For 802.11b/g/n-HT20: 2412 ~ 2462 MHz For 802.11n-HT40: 2422 ~ 2452 MHz</p> <p><u>5GHz:</u> 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</p>
Maximum Output Power	802.11a: 15.01dBm 802.11n-HT20: 17.49dBm, 802.11n-HT40: 15.17dBm, 802.11ac-VHT80: 14.34dBm
Modulation Type	802.11a/n-20/ac-20/n-40/ac-40/ac-80: OFDM (BPSK, QPSK, 16QAM, 64QAM,256QAM)

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	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
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

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: Receive by 802.11n-HT20

2.4. Test Software

The test utility software used during testing was “Ampack RFTestTool, VER:5.4”.

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 D02v01r03. 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	97%
802.11n-HT20	97%
802.11n-HT40	95%
802.11ac-VHT80	90%

2.6. Test Configuration

This device was tested per the guidance of KDB 789033 D02v01r03. 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 **VA50EC**, 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	Sky Wave(Beijing)	AJP5028-RA-MAIN	PCB	-3.05 dBi for 5150 ~ 5250MHz -3.07 dBi for 5250 ~ 5350MHz -3.53 dBi for 5470 ~ 5725MHz -3.39 dBi for 5725 ~ 5850MHz
2	Sky Wave(Beijing)	AJP5028-RA-AUX	PCB	-3.04 dBi for 5150 ~ 5250MHz -3.01 dBi for 5250 ~ 5350MHz -3.07 dBi for 5470 ~ 5725MHz -3.23 dBi for 5725 ~ 5850MHz

Antenna List (directional gain)

No.	Frequency Band	Max gain(dBi)
1	5150 ~ 5250MHz	-0.03
2	5250 ~ 5350MHz	-0.03
3	5470 ~ 5725MHz	-0.29
4	5725 ~ 5850MHz	-0.30

Note : Refer to KDB 662911 F,2)f)(ii).

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	MRTTWA00020	1 year	2018.03.15
Cable	Rosnol	N1C50-RG400-B1 C50-500CM	MRTTWE00013	1 year	2017.05.19
EMI Test Receiver	R&S	ESR3	MRTTWA00009	1 year	2018.03.16

Radiated Emissions AC1

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Broadband TRILOG Antenna	SCHWARZBECK	VULB 9162	MRTTWA00001	1 year	2017.04.05
EMI Test Receiver	R&S	ESR3	MRTTWA00009	1 year	2018.03.16
Active Loop Antenna	Schwarzbeck	FMZB 1519B	MRTTWA00002	1 year	2017.04.05
Broadband Horn antenna	SCHWARZBECK	BBHA 9120D	MRTTWA00003	1 year	2017.04.05
Breitband Hornantenna	Schwarzbeck	BBHA 9170	MRTTWA00004	1 year	2017.04.05
Broadband Amplifier	Schwarzbeck	BBV 9721	MRTTWA00006	1 year	2017.04.05
Broadband Preamplifier	SCHWARZBECK	BBV 9718	MRTTWA00005	1 year	2017.04.05
Cable	HUBERSUHNER	SF106	MRTTWA00010	1 year	2017.05.19
Cable	Rosnol	K1K50-UP0264-K1 K50-4M	MRTTWA00012	1 year	2017.05.19
Broadband TRILOG Antenna	SCHWARZBECK	VULB 9162	MRTTWA00001	1 year	2017.04.05

Conducted Test Equipment SR1

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Spectrum Analyzer	KEYSIGHT	N9010A	MRTTWA00012	1 year	2016.07.10
USB Wideband Power Sensor	KEYSIGHT	U2021XA	MRTTWA00014	1 year	2018.03.19

Software	Version	Function
EMI Software	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 $k = 2$.

AC Conducted Emission Measurement – SR2
Measuring Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): 150kHz~30MHz: 2.42dB
Conducted Measurement– SR1
Measuring Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): 1.3dB
Radiated Emission Measurement – AC1
Measuring Uncertainty for a Level of Confidence of 95% ($U=2Uc(y)$): Horizontal: 9K~30MHz: 4.14dB 30MHz~1GHz: 4.22dB 1GHz~40GHz: 4.05dB Vertical: 9K~30MHz: 4.14dB 30MHz~1GHz: 3.37dB 1GHz~40GHz: 4.08dB

7. TEST RESULT

7.1. Summary

Company Name: VA50EC
FCC ID: 2ALS8VA50EC
Model No.: AP6356SDPR
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)

FCC Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
15.407(a)	26dB Bandwidth	N/A	Conducted	Pass	Section 7.2
15.407(e)	6dB Bandwidth	$\geq 500\text{kHz}$		Pass	Section 7.3
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	$\leq 24 \text{ dBm}$		N/A	Section 7.6
15.407(a)(1)(i), (2), (3), (5)	Power Spectral Density	Refer to Section 7.7		Pass	Section 7.7
15.407(b)(1), (4)	Undesirable Emissions	$\leq -27\text{dBm/MHz EIRP}$ $\leq -17\text{dBm/MHz EIRP}$	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

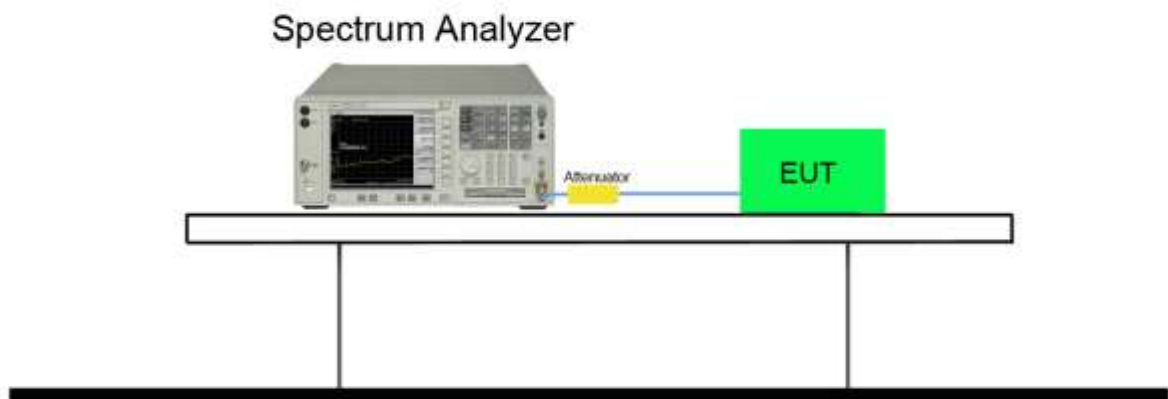
7.2.2. Test Procedure used

KDB 789033 D02v01r03 - 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

Product	VA50EC	Test Engineer	Kevin Ker
Test Site	SR2	Test Date	2017/04/06
Test Item	26dB Bandwidth		

Test Mode	Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Ant 1				
802.11a	36	5180	21.37	16.72
802.11a	44	5220	21.23	16.74
802.11a	48	5240	21.31	16.75
802.11a	52	5260	21.50	16.79
802.11a	60	5300	21.36	16.68
802.11a	64	5320	21.40	16.72
802.11a	100	5500	21.11	16.73
802.11a	116	5580	21.10	16.77
802.11a	120	5600	21.12	16.68
802.11a	140	5700	21.36	16.76
802.11a	144	5720	21.43	16.75
802.11a	149	5745	21.39	16.79
802.11a	157	5785	21.14	16.69
802.11a	165	5825	21.09	16.76
802.11n-HT20	36	5180	21.44	17.92
802.11n-HT20	44	5220	21.64	17.89
802.11n-HT20	48	5240	21.21	17.88
802.11n-HT20	52	5260	21.66	17.90
802.11n-HT20	60	5300	21.38	17.85
802.11n-HT20	64	5320	21.70	17.91
802.11n-HT20	100	5500	21.53	17.88
802.11n-HT20	116	5580	20.99	17.87
802.11n-HT20	120	5600	21.26	17.87
802.11n-HT20	140	5700	21.25	17.84
802.11n-HT20	144	5720	21.36	17.93
802.11n-HT20	149	5745	21.30	17.88
802.11n-HT20	157	5785	21.25	17.92
802.11n-HT20	165	5825	21.36	17.86

Test Mode	Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
802.11n-HT40	38	5190	40.14	36.36
802.11n-HT40	46	5230	40.34	36.34
802.11n-HT40	54	5270	40.10	36.33
802.11n-HT40	62	5310	39.86	36.26
802.11n-HT40	102	5510	39.69	36.37
802.11n-HT40	110	5550	39.88	36.32
802.11n-HT40	118	5590	39.77	36.26
802.11n-HT40	134	5670	39.82	36.34
802.11n-HT40	151	5755	39.67	36.35
802.11n-HT40	159	5795	39.99	36.33
802.11ac-VHT80	42	5210	81.10	75.65
802.11ac-VHT80	58	5290	80.92	75.68
802.11ac-VHT80	106	5530	81.47	75.72
802.11ac-VHT80	122	5610	80.98	75.91
802.11ac-VHT80	138	5690	81.45	75.70
802.11ac-VHT80	155	5775	81.20	75.72

Test Mode	Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
Ant 2				
802.11a	36	5180	21.58	16.77
802.11a	44	5220	21.67	16.81
802.11a	48	5240	21.15	16.68
802.11a	52	5260	21.35	16.77
802.11a	60	5300	21.17	16.76
802.11a	64	5320	21.09	16.72
802.11a	100	5500	20.83	16.64
802.11a	116	5580	20.81	16.74
802.11a	120	5600	21.35	16.73
802.11a	140	5700	20.99	16.75
802.11a	144	5720	21.20	16.73
802.11a	149	5745	21.34	16.72
802.11a	157	5785	21.20	16.75
802.11a	165	5825	21.50	16.74
802.11n-HT20	36	5180	21.42	17.86
802.11n-HT20	44	5220	21.86	17.90
802.11n-HT20	48	5240	21.46	17.80
802.11n-HT20	52	5260	21.41	17.82
802.11n-HT20	60	5300	21.47	17.88
802.11n-HT20	64	5320	21.49	17.93
802.11n-HT20	100	5500	21.43	17.92
802.11n-HT20	116	5580	21.42	17.83
802.11n-HT20	120	5600	21.25	17.88
802.11n-HT20	140	5700	21.65	17.86
802.11n-HT20	144	5720	21.34	17.90
802.11n-HT20	149	5745	21.50	17.88
802.11n-HT20	157	5785	21.50	17.88
802.11n-HT20	165	5825	21.30	17.90

Test Mode	Channel No.	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
802.11n-HT40	38	5190	39.92	36.37
802.11n-HT40	46	5230	39.89	36.35
802.11n-HT40	54	5270	39.61	36.40
802.11n-HT40	62	5310	39.68	36.32
802.11n-HT40	102	5510	39.72	36.34
802.11n-HT40	110	5550	36.54	36.40
802.11n-HT40	118	5590	39.99	36.37
802.11n-HT40	134	5670	40.03	36.34
802.11n-HT40	142	5710	39.96	36.34
802.11n-HT40	151	5755	40.30	36.31
802.11n-HT40	159	5795	39.77	36.36
802.11ac-VHT80	42	5210	81.49	75.54
802.11ac-VHT80	58	5290	82.08	75.81
802.11ac-VHT80	106	5530	81.28	75.85
802.11ac-VHT80	122	5610	80.76	75.74
802.11ac-VHT80	138	5690	81.60	75.73
802.11ac-VHT80	155	5775	81.07	75.72

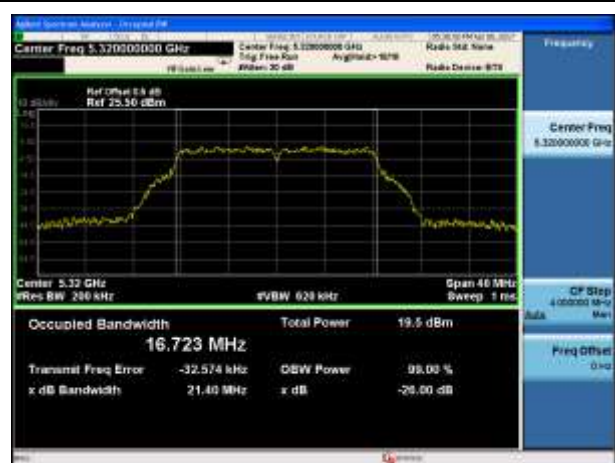
802.11a 26dB Bandwidth & 99% Bandwidth - Ant 1
Channel 36 (5180MHz)

Channel 44 (5220MHz)

Channel 48 (5240MHz)

Channel 52 (5260MHz)

Channel 60 (5300MHz)

Channel 64 (5320MHz)


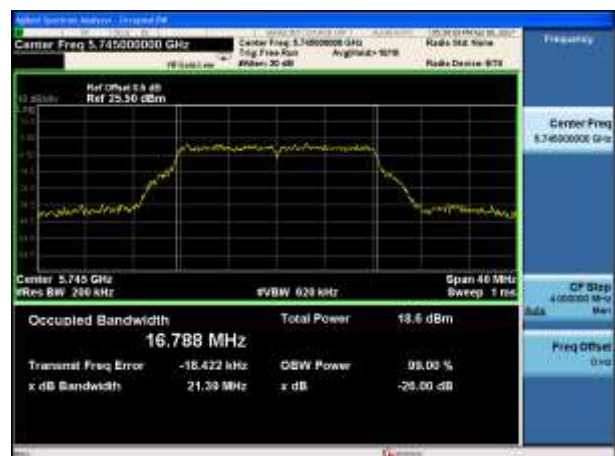
Channel 100 (5500MHz)

Channel 116 (5580MHz)

Channel 120 (5600MHz)

Channel 140 (5700MHz)

Channel 144 (5720MHz)

Channel 149 (5745MHz)


Channel 157 (5785MHz)



Channel 165 (5825MHz)



802.11n-HT20 26dB Bandwidth & 99% Bandwidth - Ant 1

Channel 36 (5180MHz)



Channel 44 (5220MHz)



Channel 48 (5240MHz)



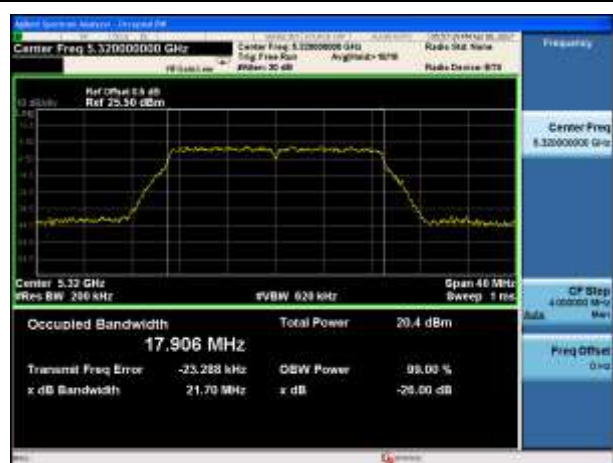
Channel 52 (5260MHz)



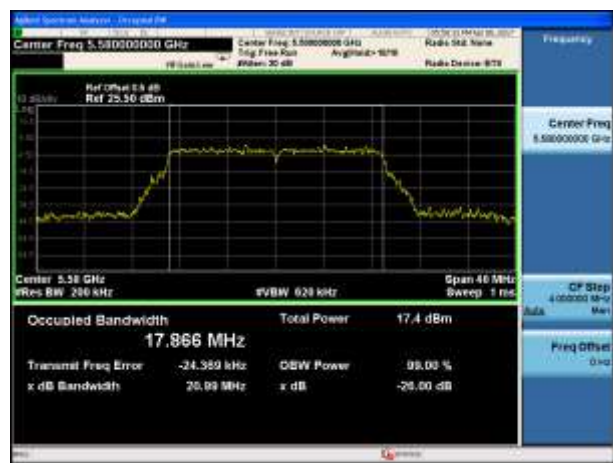
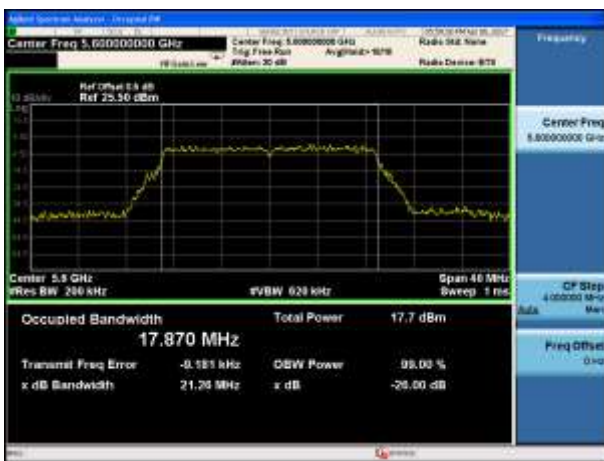
Channel 60 (5300MHz)

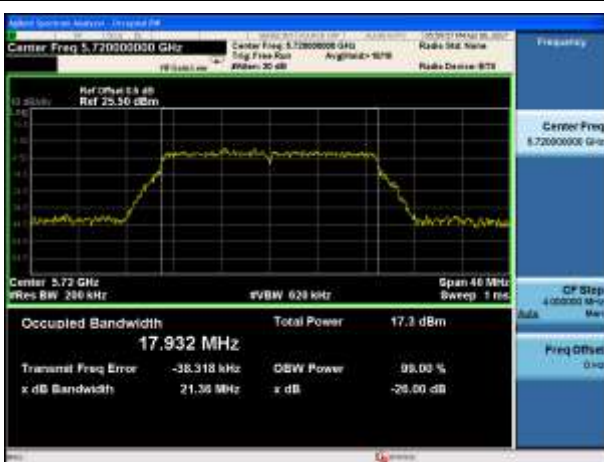
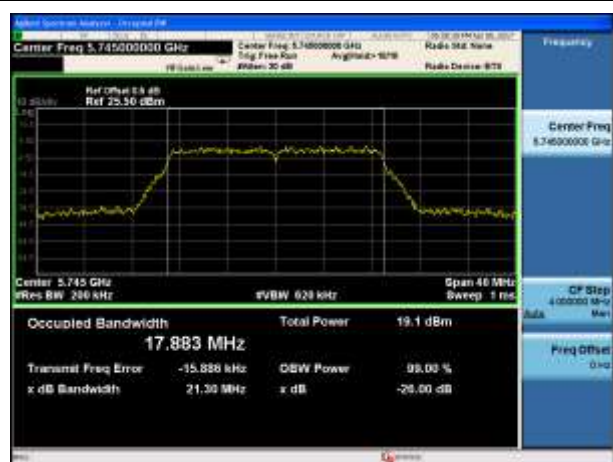


Channel 64 (5320MHz)



Channel 100 (5500MHz)

Channel 116 (5580MHz)

Channel 120 (5600MHz)

Channel 140 (5700MHz)

Channel 144 (5720MHz)

Channel 149 (5745MHz)


Channel 157 (5785MHz)

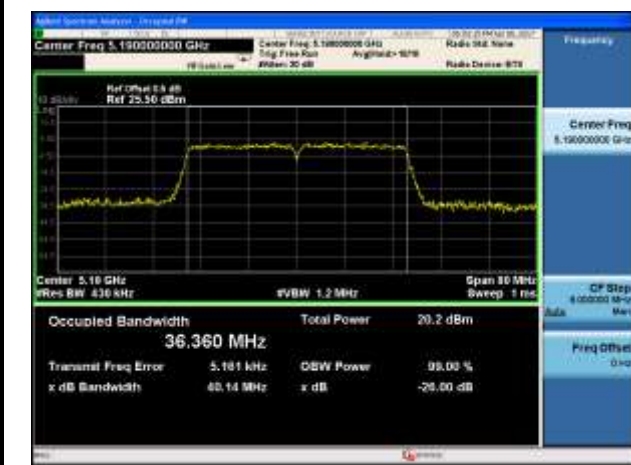


Channel 165 (5825MHz)



802.11n-HT40 26dB Bandwidth & 99% Bandwidth - Ant 1

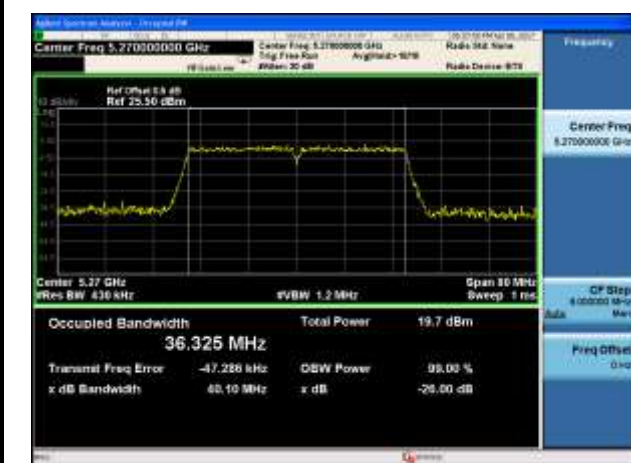
Channel 38 (5190MHz)



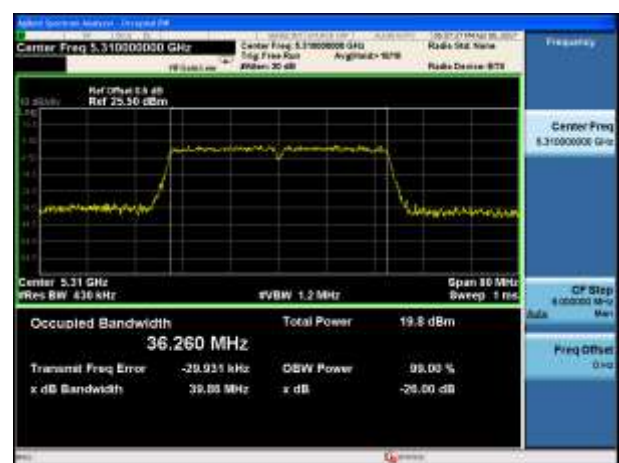
Channel 46 (5230MHz)



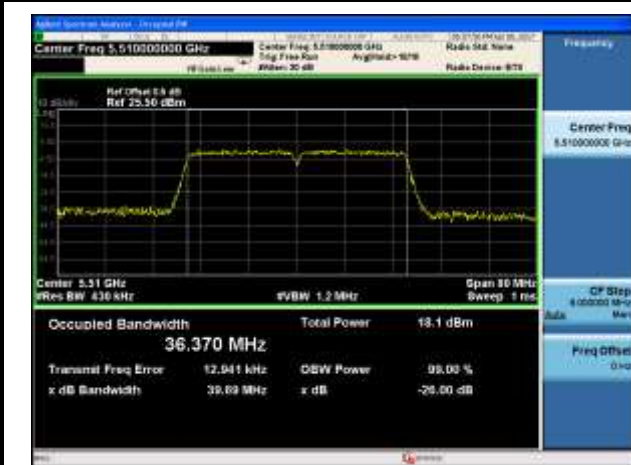
Channel 54 (5270MHz)



Channel 62 (5310MHz)

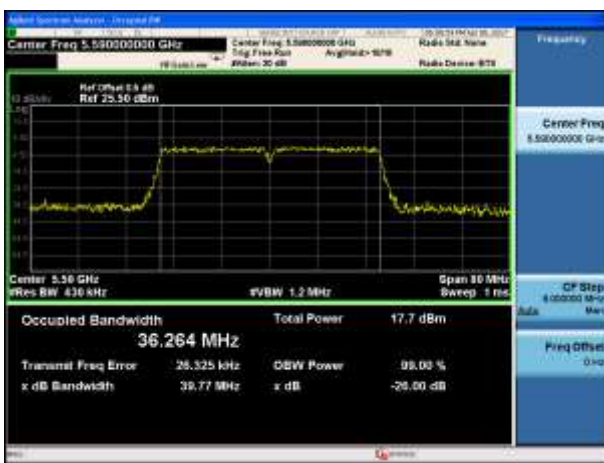
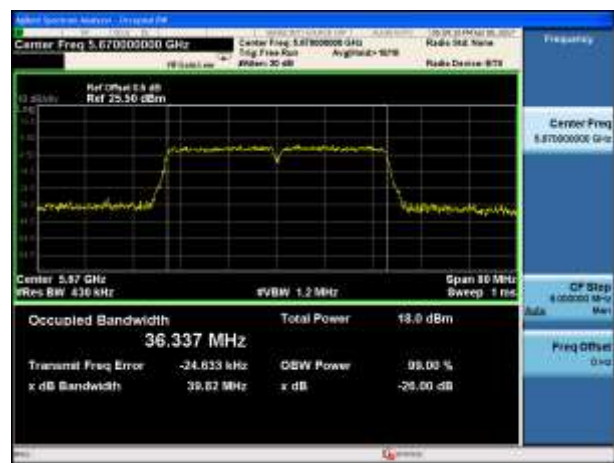


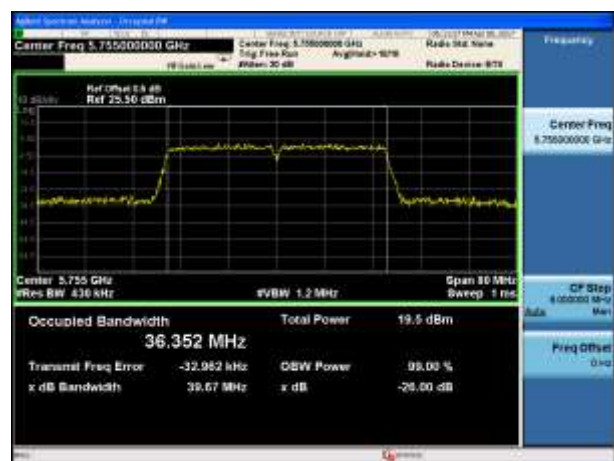
Channel 102 (5510MHz)



Channel 110 (5550MHz)



Channel 118 (5590MHz)

Channel 134 (5670MHz)

Channel 142 (5710MHz)

Channel 151 (5755MHz)

Channel 159 (5795MHz)


802.11ac-VHT80 26dB Bandwidth & 99% Bandwidth - Ant 1

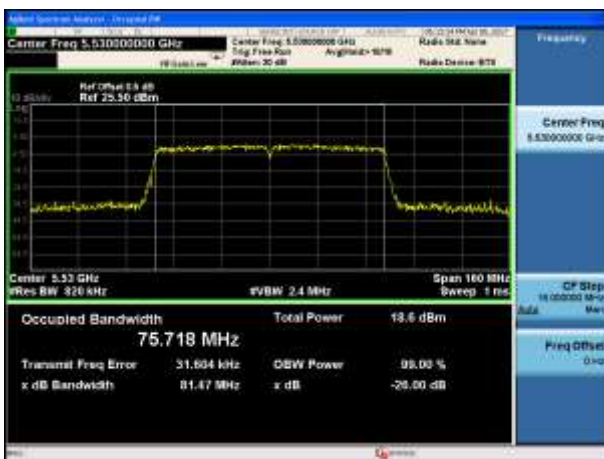
Channel 42 (5210MHz)



Channel 58 (5290MHz)



Channel 106 (5530MHz)



Channel 122 (5610MHz)



Channel 138 (5690MHz)



Channel 155 (5775MHz)



802.11a 26dB Bandwidth & 99% Bandwidth - Ant 2
Channel 36 (5180MHz)

Channel 44 (5220MHz)

Channel 48 (5240MHz)

Channel 52 (5260MHz)

Channel 60 (5300MHz)

Channel 64 (5320MHz)


Channel 100 (5500MHz)



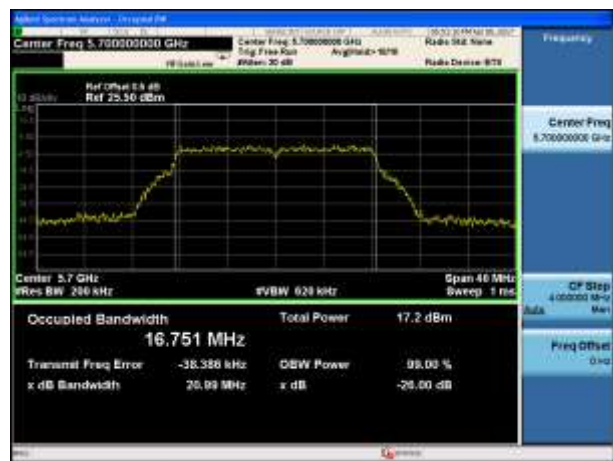
Channel 116 (5580MHz)



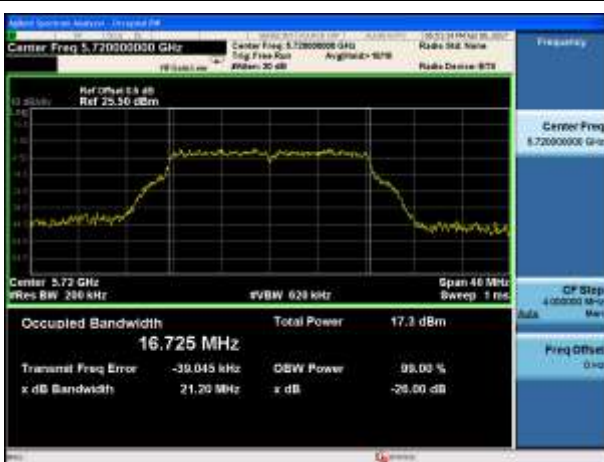
Channel 120 (5600MHz)



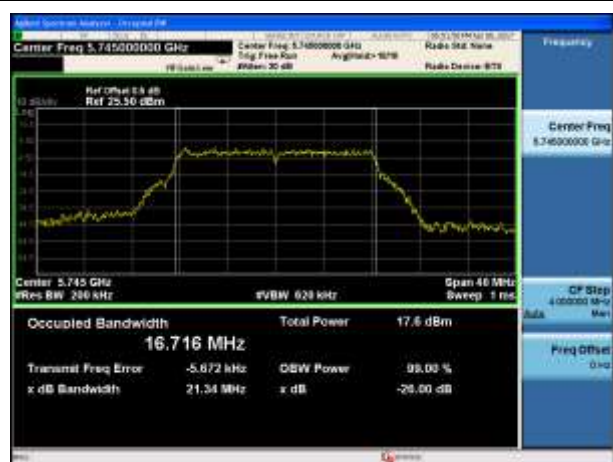
Channel 140 (5700MHz)



Channel 144 (5720MHz)



Channel 149 (5745MHz)



Channel 157 (5785MHz)

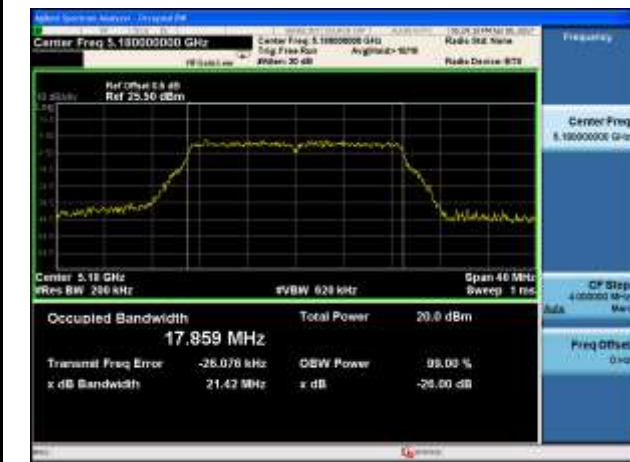


Channel 165 (5825MHz)



802.11n-HT20 26dB Bandwidth & 99% Bandwidth - Ant 2

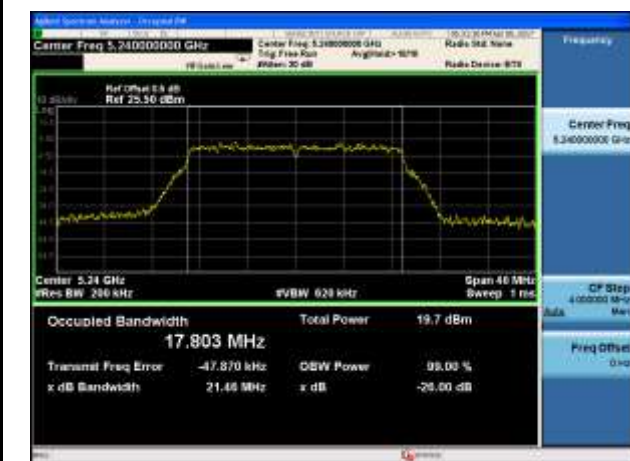
Channel 36 (5180MHz)



Channel 44 (5220MHz)



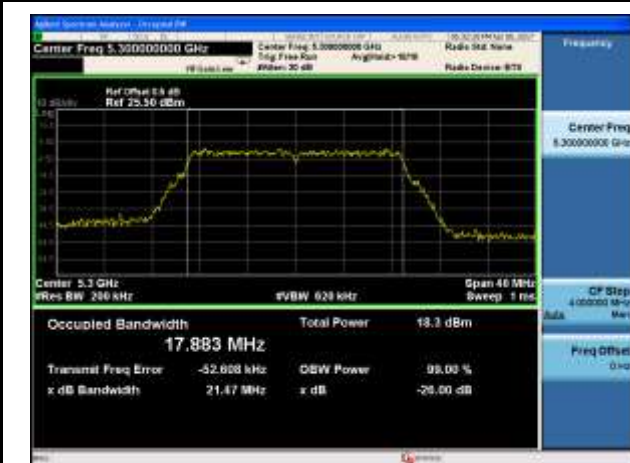
Channel 48 (5240MHz)



Channel 52 (5260MHz)



Channel 60 (5300MHz)



Channel 64 (5320MHz)



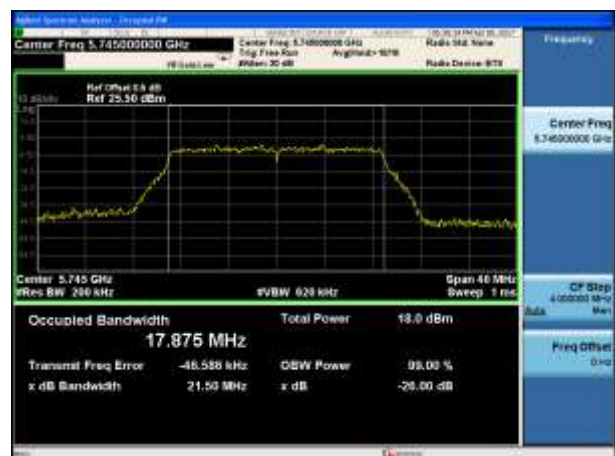
Channel 100 (5500MHz)

Channel 116 (5580MHz)

Channel 120 (5600MHz)

Channel 140 (5700MHz)

Channel 144 (5720MHz)

Channel 149 (5745MHz)


Channel 157 (5785MHz)



Channel 165 (5825MHz)



802.11n-HT40 26dB Bandwidth & 99% Bandwidth - Ant 2

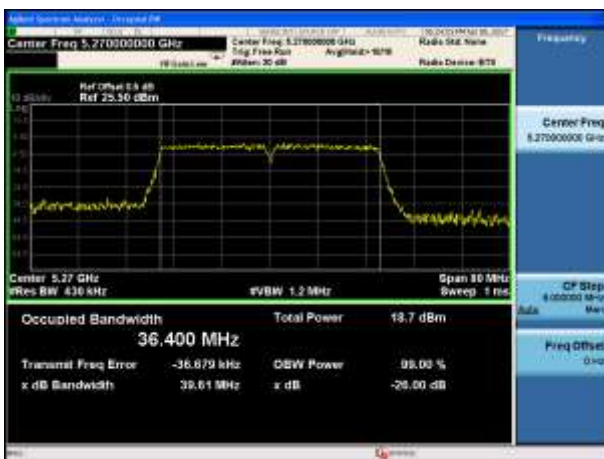
Channel 38 (5190MHz)



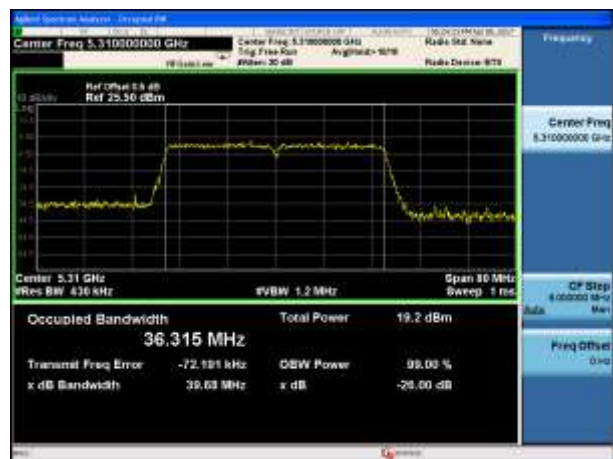
Channel 46 (5230MHz)



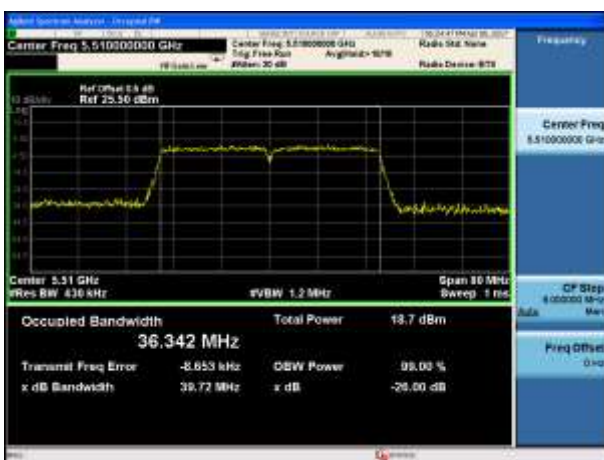
Channel 54 (5270MHz)



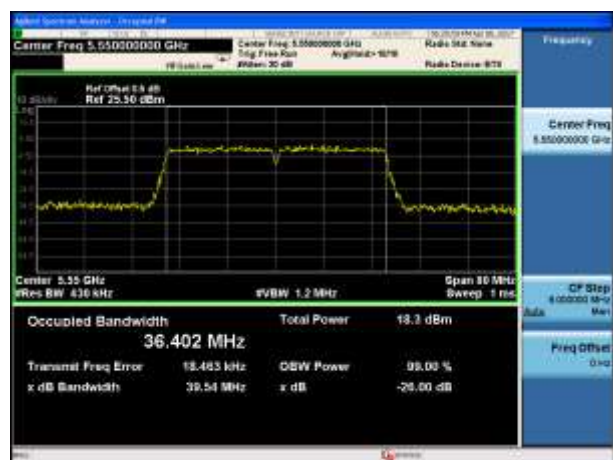
Channel 62 (5310MHz)

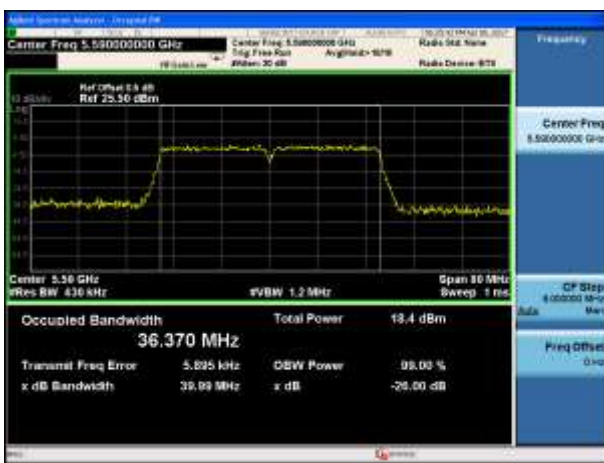


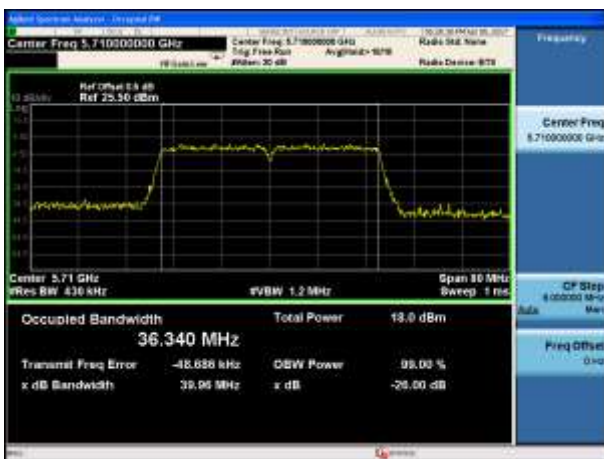
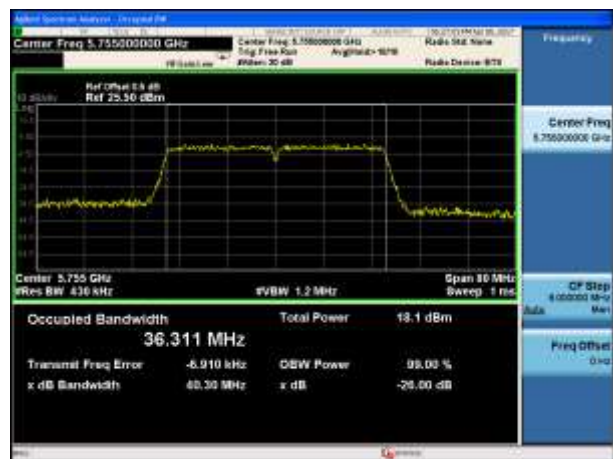
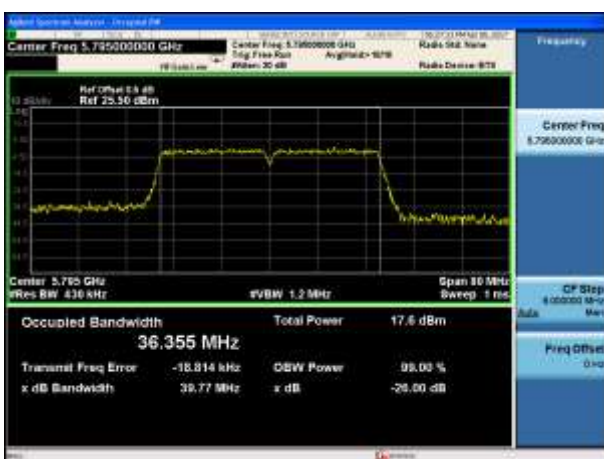
Channel 102 (5510MHz)



Channel 110 (5550MHz)



Channel 118 (5590MHz)

Channel 134 (5670MHz)

Channel 142 (5710MHz)

Channel 151 (5755MHz)

Channel 159 (5795MHz)


802.11ac-VHT80 26dB Bandwidth & 99% Bandwidth - Ant 2

Channel 42 (5210MHz)



Channel 58 (5290MHz)



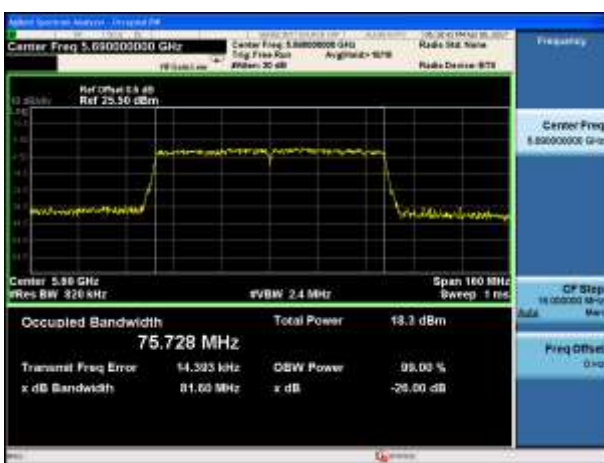
Channel 106 (5530MHz)



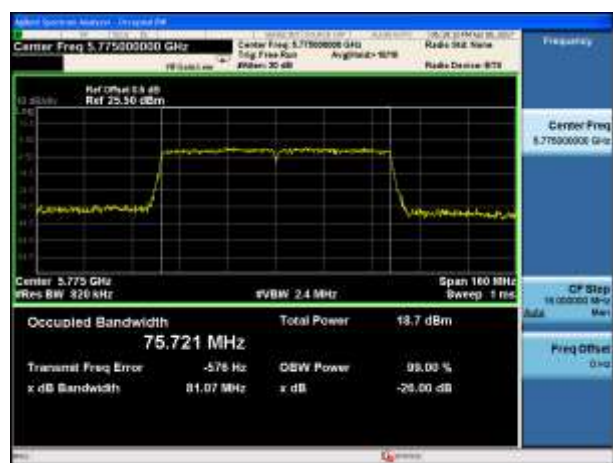
Channel 122 (5610MHz)



Channel 138 (5690MHz)



Channel 155 (5775MHz)



7.3. 6dB Bandwidth Measurement

7.3.1. Test Limit

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

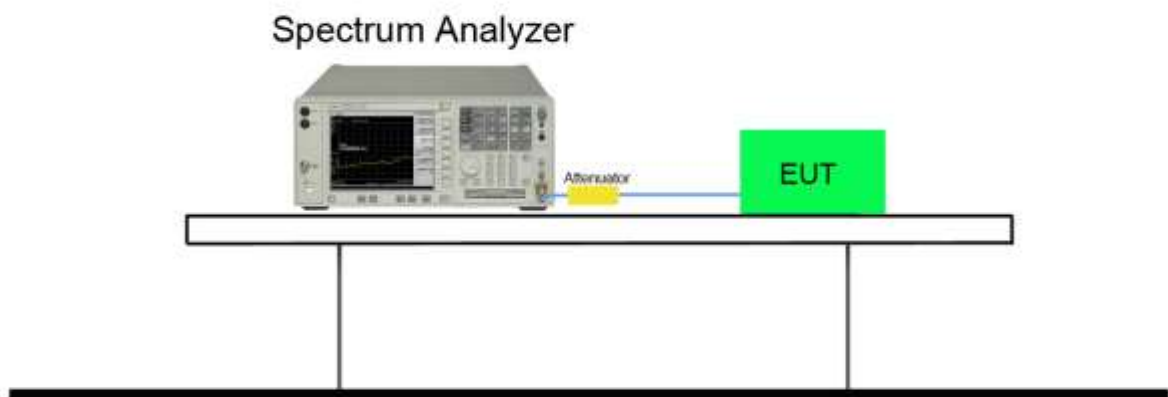
7.3.2. Test Procedure used

KDB 789033 D02v01r03 - 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

Product	VA50EC	Test Engineer	Kevin Ker
Test Site	SR2	Test Date	2017/04/05
Test Item	6dB Bandwidth	Antenna Model No.	WiFi Dual-band Omni Directional Antenna

Test Mode	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Result
Ant 1					
802.11a	149	5745	16.39	≥ 0.5	Pass
802.11a	157	5785	16.39	≥ 0.5	Pass
802.11a	165	5825	16.37	≥ 0.5	Pass
802.11n-HT20	149	5745	17.61	≥ 0.5	Pass
802.11n-HT20	157	5785	17.66	≥ 0.5	Pass
802.11n-HT20	165	5825	17.64	≥ 0.5	Pass
802.11n-HT40	151	5755	36.40	≥ 0.5	Pass
802.11n-HT40	159	5795	36.35	≥ 0.5	Pass
802.11ac-VHT80	155	5775	75.54	≥ 0.5	Pass
Ant2					
802.11a	149	5745	16.39	≥ 0.5	Pass
802.11a	157	5785	16.40	≥ 0.5	Pass
802.11a	165	5825	16.42	≥ 0.5	Pass
802.11n-HT20	149	5745	17.61	≥ 0.5	Pass
802.11n-HT20	157	5785	17.59	≥ 0.5	Pass
802.11n-HT20	165	5825	17.61	≥ 0.5	Pass
802.11n-HT40	151	5755	36.32	≥ 0.5	Pass
802.11n-HT40	159	5795	36.37	≥ 0.5	Pass
802.11ac-VHT80	155	5775	75.33	≥ 0.5	Pass

802.11a 6dB Bandwidth - Ant 1

Channel 149 (5745MHz)

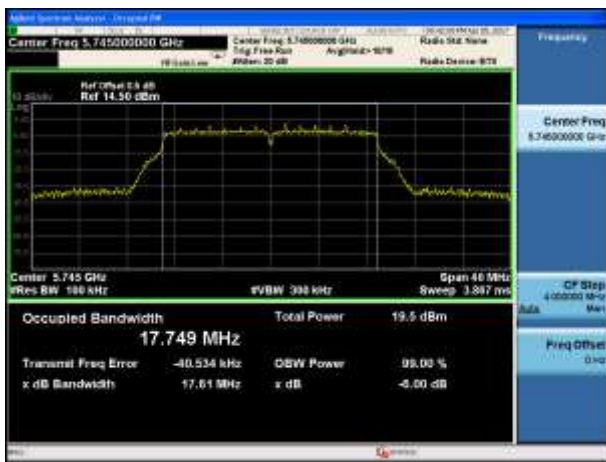
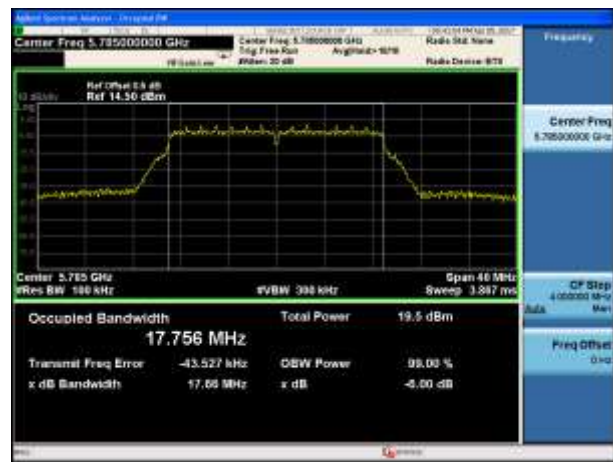
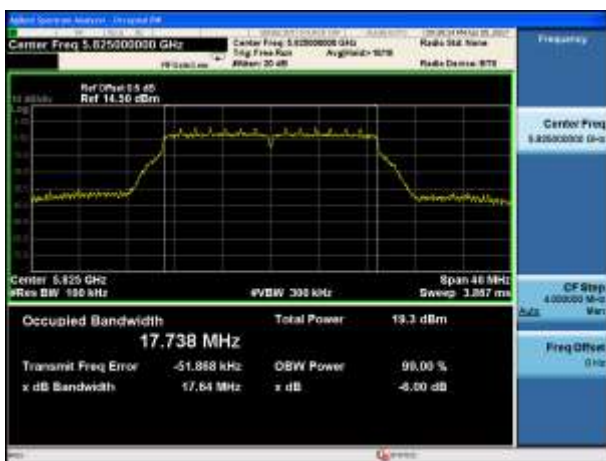
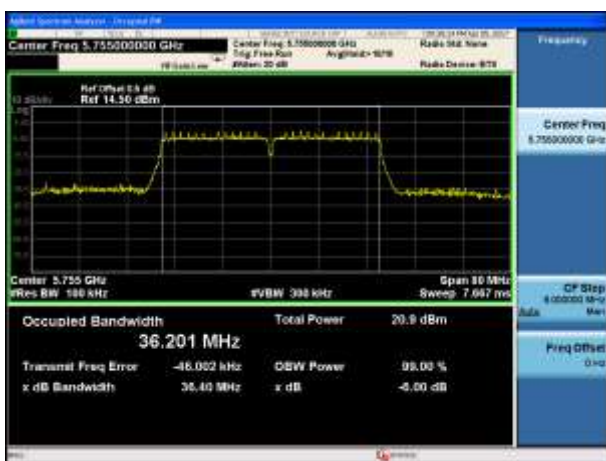
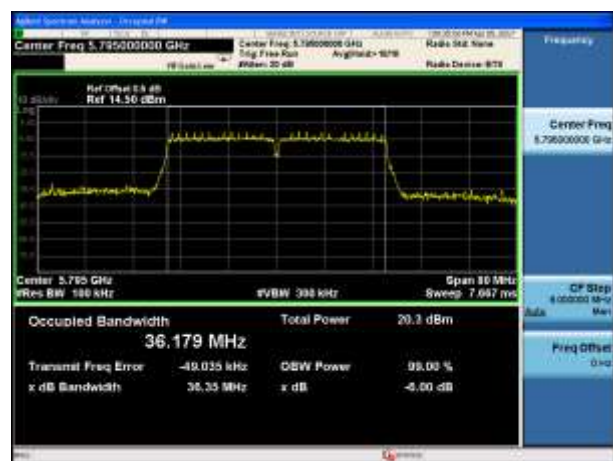


Channel 157 (5785MHz)



Channel 165 (5825MHz)



802.11n-HT20 6dB Bandwidth - Ant 1
Channel 149 (5745MHz)

Channel 157 (5785MHz)

Channel 165 (5825MHz)

802.11n-HT40 6dB Bandwidth - Ant 1
Channel 151 (5755MHz)

Channel 159 (5795MHz)


802.11ac-VHT80 6dB Bandwidth - Ant 1

Channel 155 (5775MHz)



802.11a 6dB Bandwidth - Ant 2

Channel 149 (5745MHz)



Channel 157 (5785MHz)



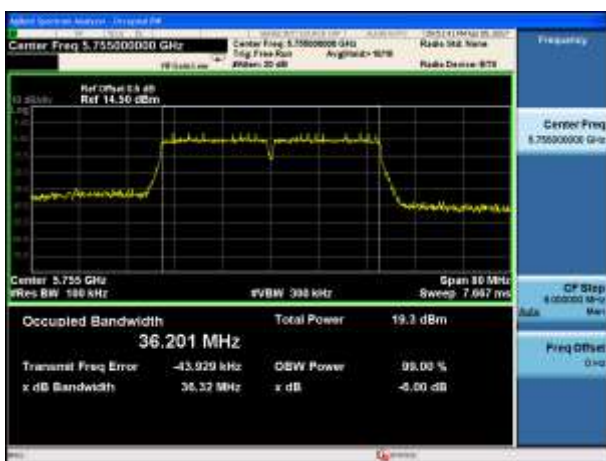
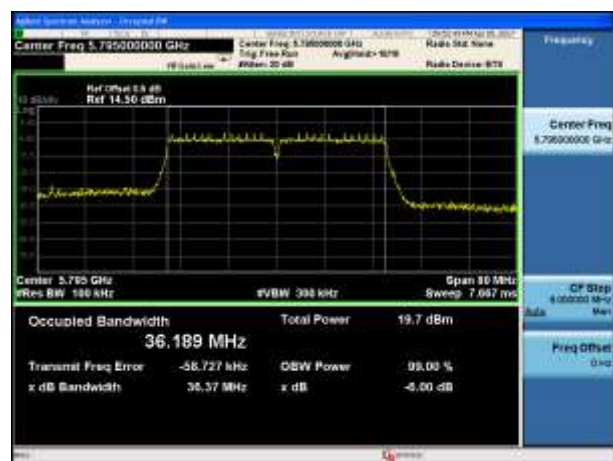
Channel 165 (5825MHz)



802.11n-HT20 6dB Bandwidth - Ant 2
Channel 149 (5745MHz)

Channel 157 (5785MHz)

Channel 165 (5825MHz)

802.11n-HT40 6dB Bandwidth - Ant 2
Channel 151 (5755MHz)

Channel 159 (5795MHz)


802.11ac-VHT80 6dB Bandwidth - Ant 2

Channel 155 (5775MHz)



7.4. Operation Frequency Range of 26dBc Bandwidth Measurement

7.4.1. Test Limit

For transmitters operating in the band 5150-5250 MHz, all emissions outside the band 5150-5350 MHz shall not exceed -27dBm/MHz e.i.r.p. However, any unwanted emissions that fall into the band 5250-5350 MHz must be 26 dBc, when measured using a resolution bandwidth between 1 and 5% of the occupied bandwidth, above 5.25 GHz.

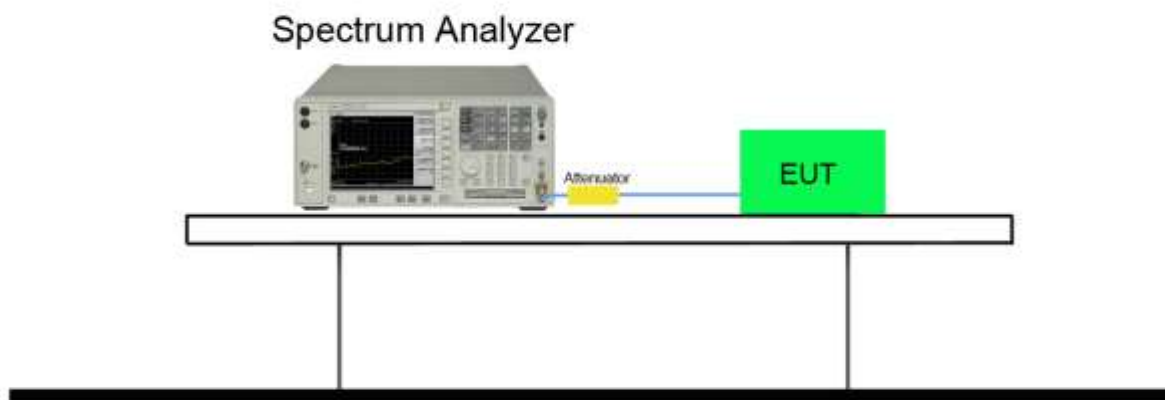
7.4.2. Test Procedure used

N/A

7.4.3. Test Setting

1. Set center frequency to the nominal EUT channel center frequency.
2. Span = 1.5 times to 5.0 times the OBW.
3. RBW = 1 % to 5 % of the OBW.
4. VBW $\geq 3 \times$ RBW.
5. Detector = Peak.
6. Trace mode = max hold.
7. Allow the trace to stabilize and set the spectrum analyzer marker to the highest level of the displayed trace (this is the reference value).
8. Determine the “-26 dB down amplitude” using [(reference value) - 26].
9. Using the marker function of the instrument to show 5250MHz frequency level.

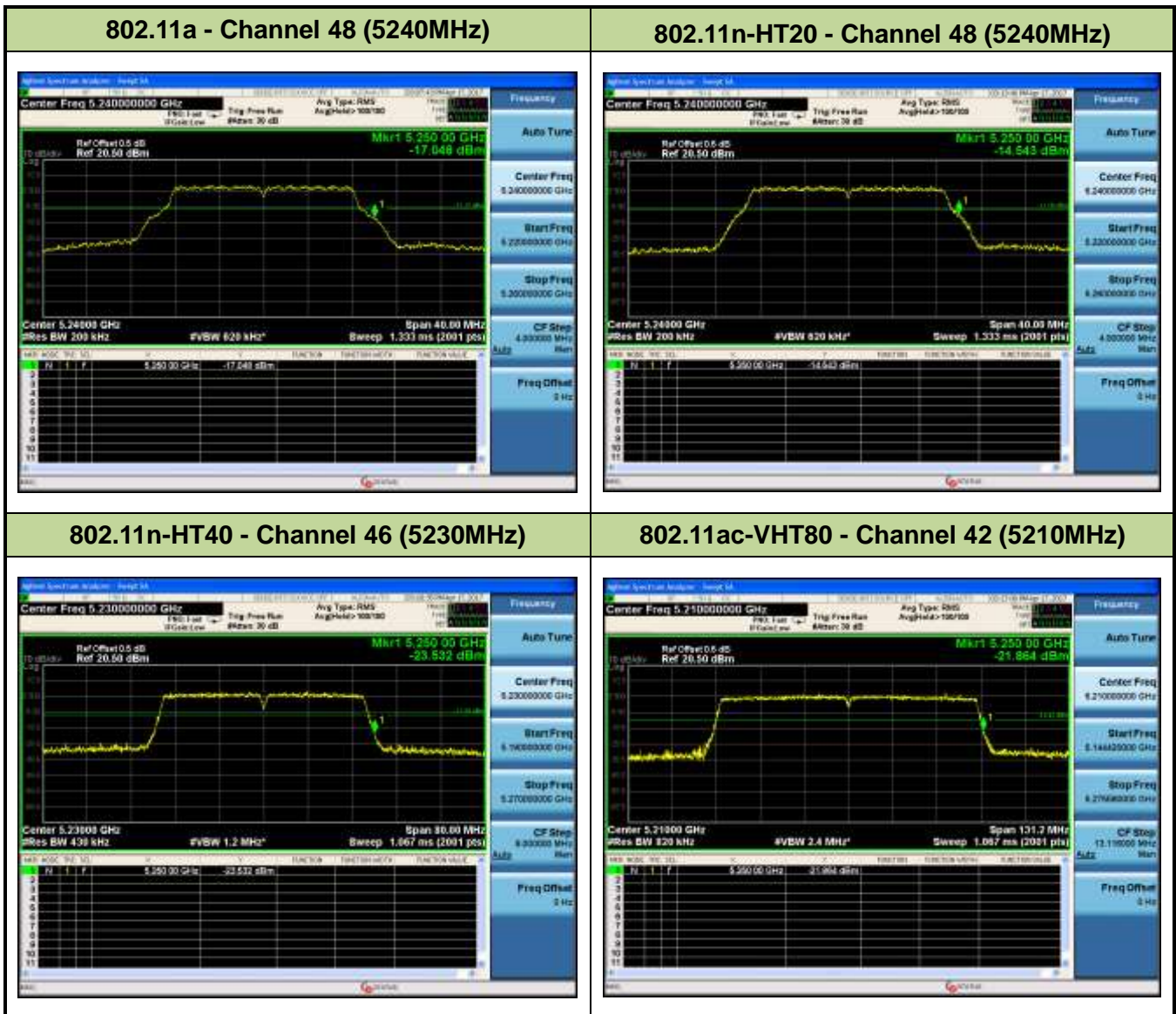
7.4.4. Test Setup



7.4.5. Test Result

Product	VA50EC	Test Engineer	Kevin Ker
Test Site	SR2	Test Date	2017/04/17
Test Item	Operation Frequency Range of 26dBc Bandwidth Measurement		

Test Mode	Channel No.	Frequency (MHz)	Result
802.11a	48	5240	Pass
802.11n-HT20	48	5240	Pass
802.11n-HT40	46	5230	Pass
802.11ac-VHT80	42	5210	Pass



7.5. Output Power Measurement

7.5.1. 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.

EIRP Limit Calculation as below:

For 5150-5250MHz

$$802.11a: 10 + 10 \log_{10} (16.81\text{MHz}) = 22.26\text{dBm} < 23.01\text{dBm};$$

$$802.11n\text{-HT20}: 10 + 10 \log_{10} (17.92\text{MHz}) = 22.53\text{dBm} < 23.01\text{dBm};$$

$$802.11n\text{-HT40}/ac\text{-VHT80}: 10 + 10 \log_{10} B > 23.01\text{dBm};$$

For 5250-5350MHz, 5470-5725MHz

$$802.11a: 17 + 10 \log_{10} (16.79\text{MHz}) = 29.27\text{dBm} < 30\text{dBm};$$

$$802.11n\text{-HT20}: 17 + 10 \log_{10} (17.93\text{MHz}) = 29.54\text{dBm} < 30\text{dBm};$$

$$802.11n\text{-HT40}/ac\text{-VHT80}: 10 + 10 \log_{10} B > 30\text{dBm};$$

Max Conducted Output Power Limit Calculation as below:

For 5250-5350MHz, 5470-5725MHz

$$802.11a: 11 + 10 \log_{10} (16.79\text{MHz}) = 23.26\text{dBm} < 23.98\text{dBm};$$

$$802.11n\text{-HT20}: 11 + 10 \log_{10} (17.93\text{MHz}) = 23.53\text{dBm} < 23.98\text{dBm};$$

$$802.11n\text{-HT40}/ac\text{-VHT80}: 11 + 10 \log_{10} B > 23.98\text{dBm};$$

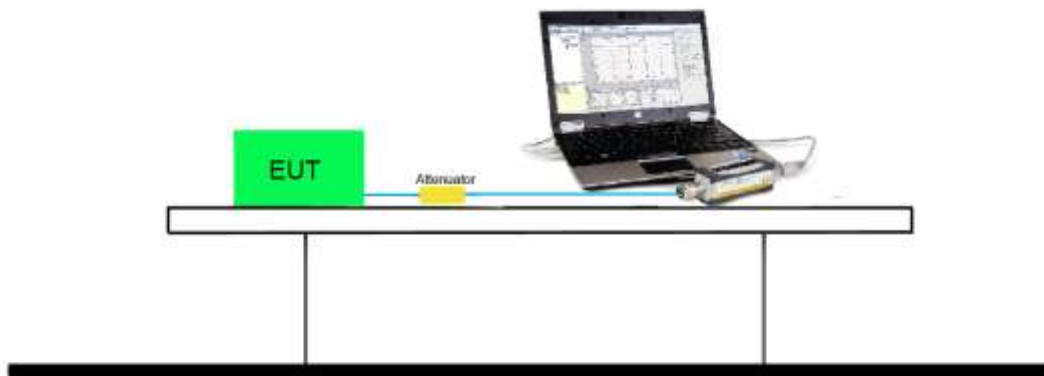
7.5.2. Test Procedure Used

KDB 789033 D02v01r03 - 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

Product	VA50EC	Test Engineer	Kevin Ker
Test Site	SR2	Test Date	2017/04/11
Test Item	Output Power		

802.11a - Ant1										
Channel No.	Frequency (MHz)	Average Power								Required Limit (dBm)
		For different Data Rate (Mbps)								
		6	9	12	18	24	36	48	54	
36	5180	14.99	--	--	--	--	--	--	--	≤ 23.98
44	5220	15.01	14.94	14.88	14.77	12.21	11.96	11.95	10.75	≤ 23.98
48	5240	14.81	--	--	--	--	--	--	--	≤ 23.98
52	5260	13.15	--	--	--	--	--	--	--	≤ 23.98
60	5300	13.45	13.27	13.28	13.14	11.82	11.63	11.62	10.49	≤ 23.98
64	5320	13.39	--	--	--	--	--	--	--	≤ 23.98
100	5500	12.57	--	--	--	--	--	--	--	≤ 23.98
116	5580	12.67	12.49	12.33	12.2	10.76	10.66	10.51	9.58	≤ 23.98
120	5600	12.67	12.58	12.38	12.19	10.89	10.52	10.47	9.6	≤ 23.98
140	5700	12.2	--	--	--	--	--	--	--	≤ 23.98
144	5720	11.87	--	--	--	--	--	--	--	≤ 23.98
149	5745	13.11	--	--	--	--	--	--	--	≤ 30
157	5785	12.71	12.53	12.52	12.38	10.5	10.16	10.11	9.07	≤ 30
165	5825	12.31	--	--	--	--	--	--	--	≤ 30

802.11a – Ant2										
Channel No.	Frequency (MHz)	Average Power								Required Limit (dBm)
		For different Data Rate (Mbps)								
		6	9	12	18	24	36	48	54	
36	5180	14.04	--	--	--	--	--	--	--	≤ 23.98
44	5220	13.99	13.93	13.83	13.78	10.72	10.36	10.28	9.31	≤ 23.98
48	5240	14.13	--	--	--	--	--	--	--	≤ 23.98
52	5260	12.64	--	--	--	--	--	--	--	≤ 23.98
60	5300	12.91	12.74	12.47	12.35	10.78	10.56	10.53	9.38	≤ 23.98
64	5320	12.99	--	--	--	--	--	--	--	≤ 23.98
100	5500	13.08	--	--	--	--	--	--	--	≤ 23.98
116	5580	13.05	12.98	12.95	12.65	10.94	10.81	10.75	9.64	≤ 23.98
120	5600	12.8	12.81	12.64	12.51	10.84	10.64	10.55	9.46	≤ 23.98
140	5700	12.27	--	--	--	--	--	--	--	≤ 23.98
144	5720	11.87	--	--	--	--	--	--	--	≤ 23.98
149	5745	12.34	--	--	--	--	--	--	--	≤ 30
157	5785	11.71	11.83	11.8	11.53	9.59	9.39	9.41	8.18	≤ 30
165	5825	11.23	--	--	--	--	--	--	--	≤ 30

802.11n-20M - Ant1										
Channel No.	Frequency (MHz)	Average Power								Required Limit (dBm)
		For different Data Rate (Mbps)								
		MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15	
36	5180	14.92	--	--	--	--	--	--	--	≤ 23.98
44	5220	14.88	14.66	14.66	12.12	12.02	11.89	10.79	10.69	≤ 23.98
48	5240	14.91	--	--	--	--	--	--	--	≤ 23.98
52	5260	13.12	--	--	--	--	--	--	--	≤ 23.98
60	5300	13.24	13.12	13.06	11.67	11.56	11.34	10.42	9.45	≤ 23.98
64	5320	13.27	--	--	--	--	--	--	--	≤ 23.98
100	5500	12.49	--	--	--	--	--	--	--	≤ 23.98
116	5580	12.46	12.26	12.24	10.88	10.75	10.53	9.61	8.55	≤ 23.98
120	5600	12.47	12.21	12.17	10.85	10.62	10.35	9.56	8.46	≤ 23.98
140	5700	11.96	--	--	--	--	--	--	--	≤ 23.98
144	5720	11.8	--	--	--	--	--	--	--	≤ 23.98
149	5745	12.79	--	--	--	--	--	--	--	≤ 30
157	5785	12.47	12.41	12.29	10.43	10.21	10.14	9.02	7.83	≤ 30
165	5825	12.21	--	--	--	--	--	--	--	≤ 30

802.11n-20M – Ant2										
Channel No.	Frequency (MHz)	Average Power								Required Limit (dBm)
		For different Data Rate (Mbps)								
		MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15	
36	5180	13.97	--	--	--	--	--	--	--	≤ 23.98
44	5220	14.04	13.93	13.74	10.78	10.39	10.18	9.3	9.18	≤ 23.98
48	5240	13.96	--	--	--	--	--	--	--	≤ 23.98
52	5260	12.59	--	--	--	--	--	--	--	≤ 23.98
60	5300	12.68	12.58	12.44	10.79	10.54	10.45	9.49	8.54	≤ 23.98
64	5320	12.63	--	--	--	--	--	--	--	≤ 23.98
100	5500	13.05	--	--	--	--	--	--	--	≤ 23.98
116	5580	12.84	12.69	12.54	11.22	10.79	10.58	9.63	8.34	≤ 23.98
120	5600	12.71	12.62	12.45	10.86	10.78	10.67	9.61	8.4	≤ 23.98
140	5700	12.1	--	--	--	--	--	--	--	≤ 23.98
144	5720	12.04	--	--	--	--	--	--	--	≤ 23.98
149	5745	12.36	--	--	--	--	--	--	--	≤ 30
157	5785	11.61	11.5	11.45	9.74	9.46	9.31	8.12	7.23	≤ 30
165	5825	10.93	--	--	--	--	--	--	--	≤ 30

802.11n-20M – An1+Ant2										
Channel No.	Frequency (MHz)	Average Power								Required Limit (dBm)
		For different Data Rate (Mbps)								
		MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15	
36	5180	17.48	--	--	--	--	--	--	--	≤ 23.98
44	5220	17.49	17.32	17.23	14.51	14.29	14.13	13.12	13.01	≤ 23.98
48	5240	17.47	--	--	--	--	--	--	--	≤ 23.98
52	5260	15.87	--	--	--	--	--	--	--	≤ 23.98
60	5300	15.98	15.87	15.77	14.26	14.09	13.93	12.99	12.03	≤ 23.98
64	5320	15.97	--	--	--	--	--	--	--	≤ 23.98
100	5500	15.79	--	--	--	--	--	--	--	≤ 23.98
116	5580	15.66	15.49	15.40	14.06	13.78	13.57	12.63	11.46	≤ 23.98
120	5600	15.60	15.43	15.32	13.87	13.71	13.52	12.60	11.44	≤ 23.98
140	5700	15.04	--	--	--	--	--	--	--	≤ 23.98
144	5720	14.93	--	--	--	--	--	--	--	≤ 23.98
149	5745	15.59	--	--	--	--	--	--	--	≤ 30
157	5785	15.07	14.99	14.90	13.11	12.86	12.76	11.60	10.55	≤ 30
165	5825	14.63	--	--	--	--	--	--	--	≤ 30

802.11n-40M - Ant1										
Channel No.	Frequency (MHz)	Average Power								Required Limit (dBm)
		For different Data Rate (Mbps)								
		MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15	
38	5190	12.44	--	--	--	--	--	--	--	≤ 23.98
46	5230	12.42	12.27	12.01	11.83	11.75	11.69	11.57	11.38	≤ 23.98
54	5270	11.86	--	--	--	--	--	--	--	≤ 23.98
62	5310	12.09	11.86	11.69	11.33	11.27	11.18	10.99	10.83	≤ 23.98
102	5510	11.63	--	--	--	--	--	--	--	≤ 23.98
110	5550	11.61	11.48	11.22	11.09	10.96	10.82	10.71	10.52	≤ 23.98
118	5590	11.45	11.26	11.14	10.97	10.82	10.76	10.68	10.5	≤ 23.98
134	5670	11.21	--	--	--	--	--	--	--	≤ 23.98
142	5710	11.02	--	--	--	--	--	--	--	≤ 23.98
151	5755	11	--	--	--	--	--	--	--	≤ 30
159	5795	10.55	10.41	10.24	10.19	9.96	9.84	9.75	9.58	≤ 30
802.11n-40M – Ant2										
Channel No.	Frequency (MHz)	Average Power								Required Limit (dBm)
		For different Data Rate (Mbps)								
		MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15	
38	5190	11.87	--	--	--	--	--	--	--	≤ 23.98
46	5230	11.72	11.59	11.45	11.39	11.21	10.97	10.82	10.66	≤ 23.98
54	5270	11.57	--	--	--	--	--	--	--	≤ 23.98
62	5310	11.71	11.56	11.39	11.32	11.17	10.94	10.68	10.55	≤ 23.98
102	5510	11.19	--	--	--	--	--	--	--	≤ 23.98
110	5550	11.17	10.99	10.83	10.61	10.46	10.33	10.27	10.12	≤ 23.98
118	5590	11.14	10.88	10.72	10.51	10.39	10.23	10.15	10.01	≤ 23.98
134	5670	10.64	--	--	--	--	--	--	--	≤ 23.98
142	5710	10.23	--	--	--	--	--	--	--	≤ 23.98
151	5755	10.16	--	--	--	--	--	--	--	≤ 30
159	5795	9.56	9.43	9.29	9.21	8.99	8.78	8.67	8.42	≤ 30

802.11n-40M - Ant1+Ant2										
Channel No.	Frequency (MHz)	Average Power								Required Limit (dBm)
		For different Data Rate (Mbps)								
		MCS8	MCS9	MCS10	MCS11	MCS12	MCS13	MCS14	MCS15	
38	5190	15.17	--	--	--	--	--	--	--	≤ 23.98
46	5230	15.09	14.95	14.75	14.63	14.50	14.36	14.22	14.05	≤ 23.98
54	5270	14.73	--	--	--	--	--	--	--	≤ 23.98
62	5310	14.91	14.72	14.55	14.34	14.23	14.07	13.85	13.70	≤ 23.98
102	5510	14.43	--	--	--	--	--	--	--	≤ 23.98
110	5550	14.41	14.25	14.04	13.87	13.73	13.59	13.51	13.33	≤ 23.98
118	5590	14.31	14.08	13.95	13.76	13.62	13.51	13.43	13.27	≤ 23.98
134	5670	13.94	--	--	--	--	--	--	--	≤ 23.98
142	5710	13.65	--	--	--	--	--	--	--	≤ 23.98
151	5755	13.61	--	--	--	--	--	--	--	≤ 30
159	5795	13.09	12.96	12.80	12.74	12.51	12.35	12.25	12.05	≤ 30

802.11ac-80M - Ant1												
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	11.58	11.14	10.77	11.04	10.66	10.43	10.38	10.42	10.18	10.22	≤ 24
58	5290	10.99	10.61	10.32	10.55	10.1	9.94	9.91	9.85	9.71	9.66	≤ 24
106	5530	10.68	10.41	10.05	10.18	9.9	9.74	9.62	9.55	9.47	9.45	≤ 24
122	5610	10.73	10.34	10.07	10.18	9.87	9.68	9.56	9.59	9.42	9.38	≤ 24
138	5690	10.26	--	--	--	--	--	--	--	--	--	≤ 24
155	5775	9.93	9.58	9.32	9.42	9.08	8.89	8.82	8.83	8.65	8.55	≤ 30
802.11ac-80M – Ant2												
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	11.06	10.61	10.26	10.48	10.22	10.05	9.79	9.86	9.64	9.77	≤ 24
58	5290	10.78	10.44	10.09	10.31	9.94	9.78	9.68	9.61	9.41	9.46	≤ 24
106	5530	10.41	10.06	9.83	9.89	9.54	9.32	9.29	9.35	9.09	9.1	≤ 24
122	5610	10.21	9.84	9.49	9.63	9.41	9.14	9.07	9.06	8.96	8.98	≤ 24
138	5690	9.67	--	--	--	--	--	--	--	--	--	≤ 24
155	5775	8.88	8.64	8.25	8.46	8.19	8.05	7.97	8	7.82	7.71	≤ 30
802.11ac-80M – Ant1+Ant2												
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	14.34	13.89	13.53	13.78	13.46	13.25	13.11	13.16	14.34	13.89	≤ 24
58	5290	13.90	13.54	13.22	13.44	13.03	12.87	12.81	12.74	13.90	13.54	≤ 24
106	5530	13.56	13.25	12.95	13.05	12.73	12.55	12.47	12.46	13.56	13.25	≤ 24
122	5610	13.49	13.11	12.80	12.92	12.66	12.43	12.33	12.34	13.49	13.11	≤ 24
138	5690	12.99	--	--	--	--	--	--	--	--	--	≤ 24
155	5775	12.45	12.15	11.83	11.98	11.67	11.50	11.43	11.45	12.45	12.15	≤ 30

For FCC Bands (UNII-2A & UNII-2C & UNII-3) & IC Bands (UNII-1 & UNII-2A & UNII-2C & UNII-3)

Test Mode	Channel No.	Freq. (MHz)	Average Power (dBm)	Total Average Power (dBm)	Average Power Limit (dBm)	EIRP (dBm)	EIRP Limit (dBm)	Result
Ant 1								
11a	36	5180	14.99	14.99	≤ 23.01	11.94	≤ 22.26	Pass
11a	44	5220	15.01	15.01	≤ 23.01	11.96	≤ 22.26	Pass
11a	48	5240	14.81	14.81	≤ 23.01	11.76	≤ 22.26	Pass
11a	52	5260	13.15	13.15	≤ 23.98	10.08	≤ 29.27	Pass
11a	60	5300	13.45	13.45	≤ 23.98	10.38	≤ 29.27	Pass
11a	64	5320	13.39	13.39	≤ 23.98	10.32	≤ 29.27	Pass
11a	100	5500	12.57	12.57	≤ 23.98	9.04	≤ 29.27	Pass
11a	116	5580	12.67	12.67	≤ 23.98	9.14	≤ 29.27	Pass
11a	120	5600	12.67	12.67	≤ 23.98	9.14	≤ 29.27	Pass
11a	140	5700	12.2	12.2	≤ 23.98	8.67	≤ 29.27	Pass
11a	144	5720	11.87	11.87	≤ 23.98	8.34	≤ 29.27	Pass
11a	149	5745	13.11	13.11	≤ 30	9.72	≤ 36.00	Pass
11a	157	5785	12.71	12.71	≤ 30	9.32	≤ 36.00	Pass
11a	165	5825	12.31	12.31	≤ 30	8.92	≤ 36.00	Pass
Ant 2								
11a	36	5180	14.04	14.04	≤ 23.01	11	≤ 22.26	Pass
11a	44	5220	13.99	13.99	≤ 23.01	10.95	≤ 22.26	Pass
11a	48	5240	14.13	14.13	≤ 23.01	11.09	≤ 22.26	Pass
11a	52	5260	12.64	12.64	≤ 23.98	9.63	≤ 29.27	Pass
11a	60	5300	12.91	12.91	≤ 23.98	9.9	≤ 29.27	Pass
11a	64	5320	12.99	12.99	≤ 23.98	9.98	≤ 29.27	Pass
11a	100	5500	13.08	13.08	≤ 23.98	10.01	≤ 29.27	Pass
11a	116	5580	13.05	13.05	≤ 23.98	9.98	≤ 29.27	Pass
11a	120	5600	12.8	12.8	≤ 23.98	9.73	≤ 29.27	Pass
11a	140	5700	12.27	12.27	≤ 23.98	9.2	≤ 29.27	Pass
11a	144	5720	11.87	11.87	≤ 23.98	8.8	≤ 29.27	Pass
11a	149	5745	12.34	12.34	≤ 30	9.11	≤ 36.00	Pass
11a	157	5785	11.71	11.71	≤ 30	8.48	≤ 36.00	Pass
11a	165	5825	11.23	11.23	≤ 30	8	≤ 36.00	Pass

Test Mode	Channel No.	Freq. (MHz)	Ant 1 Average Power (dBm)	Ant 2 Average Power (dBm)	Total Average Power (dBm)	Average Power Limit (dBm)	EIRP (dBm)	EIRP Limit (dBm)	Result
Ant1+2									
11n-HT20	36	5180	14.92	13.97	17.48	≤ 23.01	17.45	≤ 22.53	Pass
11n-HT20	44	5220	14.88	14.04	17.49	≤ 23.01	17.46	≤ 22.53	Pass
11n-HT20	48	5240	14.91	13.96	17.47	≤ 23.01	17.44	≤ 22.53	Pass
11n-HT20	52	5260	13.12	12.59	15.87	≤ 23.98	15.84	≤ 29.54	Pass
11n-HT20	60	5300	13.24	12.68	15.98	≤ 23.98	15.95	≤ 29.54	Pass
11n-HT20	64	5320	13.27	12.63	15.97	≤ 23.98	15.94	≤ 29.54	Pass
11n-HT20	100	5500	12.49	13.05	15.79	≤ 23.98	15.50	≤ 29.54	Pass
11n-HT20	116	5580	12.46	12.84	15.66	≤ 23.98	15.37	≤ 29.54	Pass
11n-HT20	120	5600	12.47	12.71	15.60	≤ 23.98	15.31	≤ 29.54	Pass
11n-HT20	140	5700	11.96	12.1	15.04	≤ 23.98	14.75	≤ 29.54	Pass
11n-HT20	144	5720	11.8	12.04	14.93	≤ 23.98	14.64	≤ 29.54	Pass
11n-HT20	149	5745	12.79	12.36	15.59	≤ 30	15.29	≤ 36.00	Pass
11n-HT20	157	5785	12.47	11.61	15.07	≤ 30	14.77	≤ 36.00	Pass
11n-HT20	165	5825	12.21	10.93	14.63	≤ 30	14.33	≤ 36.00	Pass
11n-HT40	38	5190	12.44	11.87	15.17	≤ 24	15.14	≤ 23.01	Pass
11n-HT40	46	5230	12.42	11.72	15.09	≤ 24	15.06	≤ 23.01	Pass
11n-HT40	54	5270	11.86	11.57	14.73	≤ 24	14.70	≤ 23.01	Pass
11n-HT40	62	5310	12.09	11.71	14.91	≤ 24	14.88	≤ 23.01	Pass
11n-HT40	102	5510	11.63	11.19	14.43	≤ 24	14.14	≤ 30.00	Pass
11n-HT40	110	5550	11.61	11.17	14.41	≤ 24	14.12	≤ 30.00	Pass
11n-HT40	118	5590	11.45	11.14	14.31	≤ 24	14.02	≤ 30.00	Pass
11n-HT40	134	5670	11.21	10.64	13.94	≤ 24	13.65	≤ 23.01	Pass
11n-HT40	142	5710	11.02	10.23	13.65	≤ 24	13.36	≤ 23.01	Pass
11n-HT40	151	5755	11	10.16	13.61	≤ 30	13.31	≤ 36.00	Pass
11n-HT40	159	5795	10.55	9.56	13.09	≤ 30	12.79	≤ 36.00	Pass
11ac-VHT80	42	5210	11.58	11.06	14.34	≤ 24	14.31	≤ 23.01	Pass
11ac-VHT80	58	5290	10.99	10.78	13.90	≤ 24	13.87	≤ 30.00	Pass
11ac-VHT80	106	5530	10.68	10.41	13.56	≤ 24	13.27	≤ 30.00	Pass
11ac-VHT80	122	5610	10.73	10.21	13.49	≤ 24	13.20	≤ 30.00	Pass
11ac-VHT80	138	5690	10.26	9.67	12.99	≤ 24	12.70	≤ 30.00	Pass
11ac-VHT80	155	5775	9.93	8.88	12.45	≤ 30	12.15	≤ 36.00	Pass

For FCC band (UNII-1)

Test Mode	Channel No.	Freq. (MHz)	Average Power (dBm)	Total Average Power (dBm)	Average Power Limit (dBm)	EIRP (dBm)	EIRP Limit (dBm)	Result	
Ant 1									
11a	36	5180	14.99	14.99	≤ 23.98	11.94	≤ 29.98	Pass	
11a	44	5220	15.01	15.01	≤ 23.98	11.96	≤ 29.98	Pass	
11a	48	5240	14.81	14.81	≤ 23.98	11.76	≤ 29.98	Pass	
Ant2									
11a	36	5180	14.04	14.04	≤ 23.98	11	≤ 29.98	Pass	
11a	44	5220	13.99	13.99	≤ 23.98	10.95	≤ 29.98	Pass	
11a	48	5240	14.13	14.13	≤ 23.98	11.09	≤ 29.98	Pass	
Test Mode	Channel No.	Freq. (MHz)	Ant 1 Average Power (dBm)	Ant 2 Average Power (dBm)	Total Average Power (dBm)	Average Power Limit (dBm)	EIRP (dBm)	EIRP Limit (dBm)	Result
Ant1+2									
11n-HT20	36	5180	14.92	13.97	17.48	≤ 23.98	17.45	≤ 29.98	Pass
11n-HT20	44	5220	14.88	14.04	17.49	≤ 23.98	17.46	≤ 29.98	Pass
11n-HT20	48	5240	14.91	13.96	17.47	≤ 23.98	17.44	≤ 29.98	Pass
11n-HT40	38	5190	12.44	11.87	15.17	≤ 23.98	15.14	≤ 29.98	Pass
11n-HT40	46	5230	12.42	11.72	15.09	≤ 23.98	15.06	≤ 29.98	Pass
11ac-VHT80	42	5210	11.58	11.06	14.34	≤ 23.98	14.31	≤ 29.98	Pass

Note 1: The Total Average Power (dBm) = $10 \cdot \log\{10^{(\text{Ant 1 Average Power} / 10)} + 10^{(\text{Ant 2 Average Power} / 10)}\}$.

7.6. Transmit Power Control

7.6.1. Test Limit

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

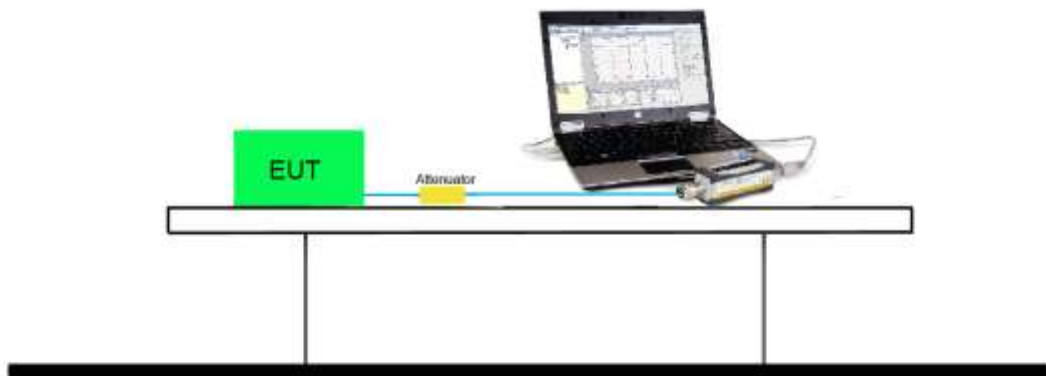
7.6.2. Test Procedure Used

KDB 789033 D02v01r03 - Section E) 3) b) Method PM-G

7.6.3. 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.

7.6.4. Test Setup



7.6.5. Test Result

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

7.7. Power Spectral Density Measurement

7.7.1. 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.

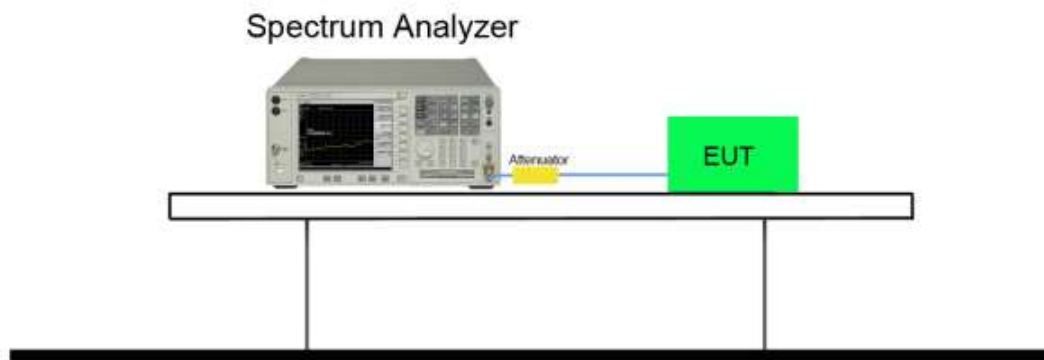
7.7.2. Test Procedure Used

KDB 789033 D02v01r03 - Section F

7.7.3. 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

7.7.4. Test Setup



7.7.5. Test Result

Product	VA50EC	Test Engineer	Kevin Ker
Test Site	SR2	Test Date	2017/04/05
Test Item	Power Spectral Density		

For FCC bands (UNII-2A & UNII-2C) & IC bands (UNII-1 & UNII-2A & UNII-2C)

Test Mode	Data Rate (Mbps)	Channel No.	Freq. (MHz)	PSD (dBm/MHz)	Duty Cycle (%)	Total PSD (dBm/MHz)	PSD Limit (dBm/MHz)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Result
Ant 1										
11a	6	36	5180	3.95	97	4.08	--	1.03	≤ 10	Pass
11a	6	44	5220	3.47	97	3.60	--	0.55	≤ 10	Pass
11a	6	48	5240	3.71	97	3.84	--	0.79	≤ 10	Pass
11a	6	52	5260	1.76	97	1.89	≤ 11	-1.18	--	Pass
11a	6	60	5300	2.35	97	2.48	≤ 11	-0.59	--	Pass
11a	6	64	5320	2.4	97	2.53	≤ 11	-0.54	--	Pass
11a	6	100	5500	0.61	97	0.74	≤ 11	-2.79	--	Pass
11a	6	116	5580	0.62	97	0.75	≤ 11	-2.78	--	Pass
11a	6	120	5600	0.29	97	0.42	≤ 11	-3.11	--	Pass
11a	6	140	5700	0.5	97	0.63	≤ 11	-2.90	--	Pass
11a	6	144	5720	0.62	97	0.75	≤ 11	-2.78	--	Pass
11n-HT20	6.5	36	5180	3.4	97	3.53	--	0.48	≤ 10	Pass
11n-HT20	6.5	44	5220	3.69	97	3.82	--	0.77	≤ 10	Pass
11n-HT20	6.5	48	5240	3.63	97	3.76	--	0.71	≤ 10	Pass
11n-HT20	6.5	52	5260	1.63	97	1.76	≤ 11	-1.31	--	Pass
11n-HT20	6.5	60	5300	2.81	97	2.94	≤ 11	-0.13	--	Pass
11n-HT20	6.5	64	5320	2.02	97	2.15	≤ 11	-0.92	--	Pass
11n-HT20	6.5	100	5500	0.3	97	0.43	≤ 11	-3.10	--	Pass
11n-HT20	6.5	116	5580	0.05	97	0.18	≤ 11	-3.35	--	Pass
11n-HT20	6.5	120	5600	0.12	97	0.25	≤ 11	-3.28	--	Pass
11n-HT20	6.5	140	5700	0.17	97	0.30	≤ 11	-3.23	--	Pass
11n-HT20	6.5	144	5720	-0.26	97	-0.13	≤ 11	-3.66	--	Pass

Test Mode	Data Rate (Mbps)	Channel No.	Freq. (MHz)	PSD (dBm/MHz)	Duty Cycle (%)	Total PSD (dBm/MHz)	PSD Limit (dBm/MHz)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Result
Ant 1										
11n-HT40	13.5	38	5190	-0.98	95	-0.76	--	-3.81	≤ 10	Pass
11n-HT40	13.5	46	5230	-0.93	95	-0.71	--	-3.76	≤ 10	Pass
11n-HT40	13.5	54	5270	-1.4	95	-1.18	≤ 11	-4.25	--	Pass
11n-HT40	13.5	62	5310	-1.35	95	-1.13	≤ 11	-4.20	--	Pass
11n-HT40	13.5	102	5510	-3.6	95	-3.38	≤ 11	-6.91	--	Pass
11n-HT40	13.5	110	5550	-2.91	95	-2.69	≤ 11	-6.22	--	Pass
11n-HT40	13.5	118	5590	-3.3	95	-3.08	≤ 11	-6.61	--	Pass
11n-HT40	13.5	134	5670	-2.82	95	-2.60	≤ 11	-6.13	--	Pass
11n-HT40	13.5	142	5710	-3.47	95	-3.25	≤ 11	-6.78	--	Pass
11ac-VHT80	29.3	42	5210	-4.31	90	-3.85	--	-6.90	≤ 10	Pass
11ac-VHT80	29.3	58	5290	-5.28	90	-4.82	≤ 11	-7.89	--	Pass
11ac-VHT80	29.3	106	5530	-7.23	90	-6.77	≤ 11	-10.30	--	Pass
11ac-VHT80	29.3	122	5610	-6.65	90	-6.19	≤ 11	-9.72	--	Pass
11ac-VHT80	29.3	138	5690	-7.12	90	-6.66	≤ 11	-10.19	--	Pass

Test Mode	Data Rate (Mbps)	Channel No.	Freq. (MHz)	PSD (dBm/MHz)	Duty Cycle (%)	Total PSD (dBm/MHz)	PSD Limit (dBm/MHz)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Result
Ant 2										
11a	6	36	5180	2.86	97	2.99	--	-0.05	≤ 10	Pass
11a	6	44	5220	2.56	97	2.69	--	-0.35	≤ 10	Pass
11a	6	48	5240	3.05	97	3.18	--	0.14	≤ 10	Pass
11a	6	52	5260	1.66	97	1.79	≤ 11	-1.25	--	Pass
11a	6	60	5300	1.73	97	1.86	≤ 11	-1.18	--	Pass
11a	6	64	5320	1.84	97	1.97	≤ 11	-1.07	--	Pass
11a	6	100	5500	1.13	97	1.26	≤ 11	-1.78	--	Pass
11a	6	116	5580	1.01	97	1.14	≤ 11	-1.90	--	Pass
11a	6	120	5600	0.59	97	0.72	≤ 11	-2.32	--	Pass
11a	6	140	5700	0.5	97	0.63	≤ 11	-2.41	--	Pass
11a	6	144	5720	-0.27	97	-0.14	≤ 11	-3.18	--	Pass
11n-HT20	6.5	36	5180	2.32	97	2.45	--	-0.59	≤ 10	Pass
11n-HT20	6.5	44	5220	1.86	97	1.99	--	-1.05	≤ 10	Pass
11n-HT20	6.5	48	5240	2.78	97	2.91	--	-0.13	≤ 10	Pass
11n-HT20	6.5	52	5260	1.36	97	1.49	≤ 11	-1.55	--	Pass
11n-HT20	6.5	60	5300	1.5	97	1.63	≤ 11	-1.41	--	Pass
11n-HT20	6.5	64	5320	1.45	97	1.58	≤ 11	-1.46	--	Pass
11n-HT20	6.5	100	5500	1.09	97	1.22	≤ 11	-1.82	--	Pass
11n-HT20	6.5	116	5580	0.17	97	0.30	≤ 11	-2.74	--	Pass
11n-HT20	6.5	120	5600	0.1	97	0.23	≤ 11	-2.81	--	Pass
11n-HT20	6.5	140	5700	0.14	97	0.27	≤ 11	-2.77	--	Pass
11n-HT20	6.5	144	5720	0.27	97	0.40	≤ 11	-2.64	--	Pass

Test Mode	Data Rate (Mbps)	Channel No.	Freq. (MHz)	PSD (dBm/MHz)	Duty Cycle (%)	Total PSD (dBm/MHz)	PSD Limit (dBm/MHz)	EIRP PSD (dBm/MHz)	EIRP PSD Limit (dBm/MHz)	Result
Ant 2										
11n-HT40	13.5	38	5190	-2.65	95	-2.43	--	-5.47	≤ 10	Pass
11n-HT40	13.5	46	5230	-2.13	95	-1.91	--	-4.95	≤ 10	Pass
11n-HT40	13.5	54	5270	-2	95	-1.78	≤ 11	-4.82	--	Pass
11n-HT40	13.5	62	5310	-2.02	95	-1.80	≤ 11	-4.84	--	Pass
11n-HT40	13.5	102	5510	-2.9	95	-2.68	≤ 11	-5.72	--	Pass
11n-HT40	13.5	110	5550	-2.75	95	-2.53	≤ 11	-5.57	--	Pass
11n-HT40	13.5	118	5590	-2.81	95	-2.59	≤ 11	-5.63	--	Pass
11n-HT40	13.5	134	5670	-3.69	95	-3.47	≤ 11	-6.51	--	Pass
11n-HT40	13.5	142	5710	-3.01	95	-2.79	≤ 11	-5.83	--	Pass
11ac-VHT80	29.3	42	5210	-6.11	90	-5.65	--	-8.69	≤ 10	Pass
11ac-VHT80	29.3	58	5290	-5.39	90	-4.93	≤ 11	-7.97	--	Pass
11ac-VHT80	29.3	106	5530	-6.02	90	-5.56	≤ 11	-8.60	--	Pass
11ac-VHT80	29.3	122	5610	-6.55	90	-6.09	≤ 11	-9.13	--	Pass
11ac-VHT80	29.3	138	5690	-6.36	90	-5.90	≤ 11	-8.94	--	Pass

Note 1: When EUT duty cycle < 98%, the total PSD = Ant PSD (dBm/MHz) + 10*log(1/duty cycle),

Note 2: EIRP PSD (dBm/MHz) = Total PSD (dBm/MHz) + Antenna Gain (dBi)

For FCC bands (UNII-1)

Test Mode	Data Rate (Mbps)	Channel No.	Freq. (MHz)	PSD (dBm/MHz)	Duty Cycle (%)	Total PSD (dBm/MHz)	PSD Limit (dBm/MHz)	Result
Ant 1								
11a	6	36	5180	3.95	97	4.08	≤ 17	Pass
11a	6	44	5220	3.47	97	3.60	≤ 17	Pass
11a	6	48	5240	3.71	97	3.84	≤ 17	Pass
11n-HT20	6.5	36	5180	3.4	97	3.53	≤ 17	Pass
11n-HT20	6.5	44	5220	3.69	97	3.82	≤ 17	Pass
11n-HT20	6.5	48	5240	3.63	97	3.76	≤ 17	Pass
11n-HT40	13.5	38	5190	-0.98	95	-0.76	≤ 17	Pass
11n-HT40	13.5	46	5230	-0.93	95	-0.71	≤ 17	Pass
11ac-VHT80	29.3	42	5210	-4.31	90	-3.85	≤ 17	Pass
Ant 2								
11a	6	36	5180	2.86	97	2.99	≤ 17	Pass
11a	6	44	5220	2.56	97	2.69	≤ 17	Pass
11a	6	48	5240	3.05	97	3.18	≤ 17	Pass
11n-HT20	6.5	36	5180	2.32	97	2.45	≤ 17	Pass
11n-HT20	6.5	44	5220	1.86	97	1.99	≤ 17	Pass
11n-HT20	6.5	48	5240	2.78	97	2.91	≤ 17	Pass
11n-HT40	13.5	38	5190	-2.65	95	-2.43	≤ 17	Pass
11n-HT40	13.5	46	5230	-2.13	95	-1.91	≤ 17	Pass
11ac-VHT80	29.3	42	5210	-6.11	90	-5.65	≤ 17	Pass

Note: Total PSD (dBm/MHz) = Ant PSD (dBm/MHz) + 10*log(1/duty cycle)

For FCC bands (UNII-4)

Test Mode	Data Rate (Mbps)	Channel No.	Freq. (MHz)	PSD (dBm/100kHz)	Duty Cycle (%)	Constant Factor	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Result
Ant 1									
11a	6	149	5745	-7.16	97	7	-0.03	≤ 30	Pass
11a	6	157	5785	-7.19	97	7	-0.06	≤ 30	Pass
11a	6	165	5825	-7.98	97	7	-0.85	≤ 30	Pass
11n-HT20	6.5	149	5745	-7.58	97	7	-0.45	≤ 30	Pass
11n-HT20	6.5	157	5785	-7.81	97	7	-0.68	≤ 30	Pass
11n-HT20	6.5	165	5825	-8.43	97	7	-1.30	≤ 30	Pass
11n-HT40	13.5	151	5755	-10.56	95	7	-3.34	≤ 30	Pass
11n-HT40	13.5	159	5795	-10.39	95	7	-3.17	≤ 30	Pass
11ac-VHT80	29.3	155	5775	-14.4	90	7	-6.94	≤ 30	Pass
Ant 2									
11a	6	149	5745	-7.96	97	7	-0.83	≤ 30	Pass
11a	6	157	5785	-8.15	97	7	-1.02	≤ 30	Pass
11a	6	165	5825	-8.95	97	7	-1.82	≤ 30	Pass
11n-HT20	6.5	149	5745	-8.15	97	7	-1.02	≤ 30	Pass
11n-HT20	6.5	157	5785	-8.83	97	7	-1.70	≤ 30	Pass
11n-HT20	6.5	165	5825	-9.62	97	7	-2.49	≤ 30	Pass
11n-HT40	13.5	151	5755	-11.76	95	7	-4.54	≤ 30	Pass
11n-HT40	13.5	159	5795	-12.12	95	7	-4.90	≤ 30	Pass
11ac-VHT80	29.3	155	5775	-14.94	90	7	-7.48	≤ 30	Pass

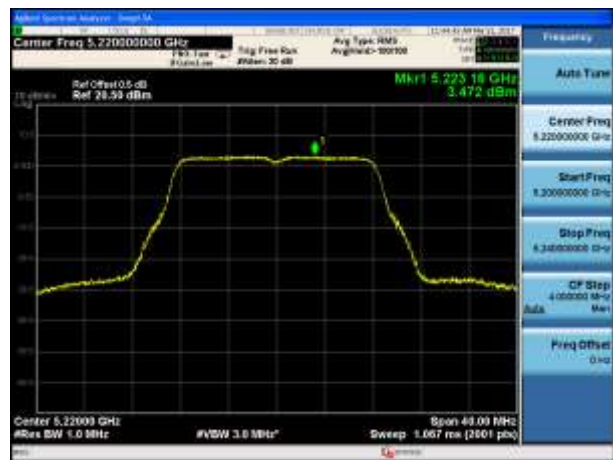
Note: Total PSD (dBm/500kHz) = Ant PSD (dBm/100kHz) + 10*log(1/duty cycle) + Constant Factor.

802.11a Power Spectral Density - Ant 1

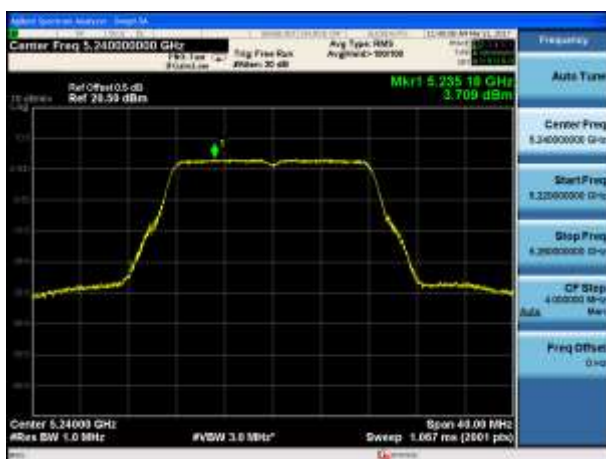
Channel 36 (5180MHz)



Channel 44 (5220MHz)



Channel 48 (5240MHz)



Channel 52 (5260MHz)



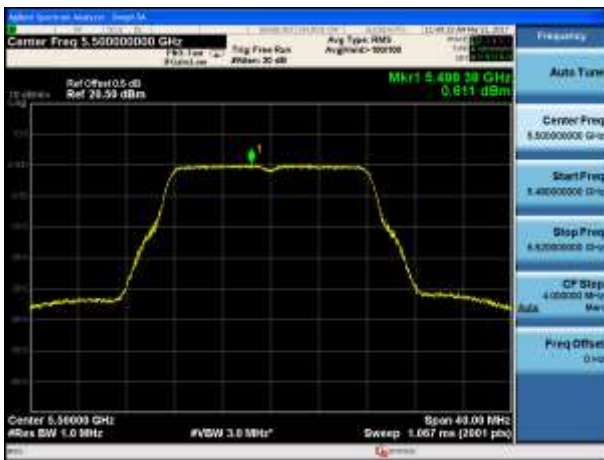
Channel 60 (5300MHz)



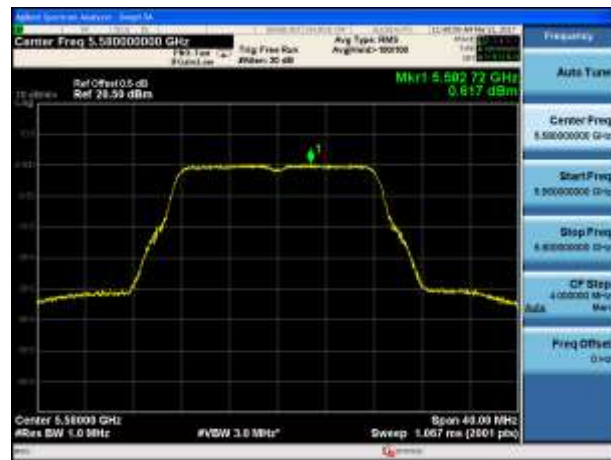
Channel 64 (5320MHz)



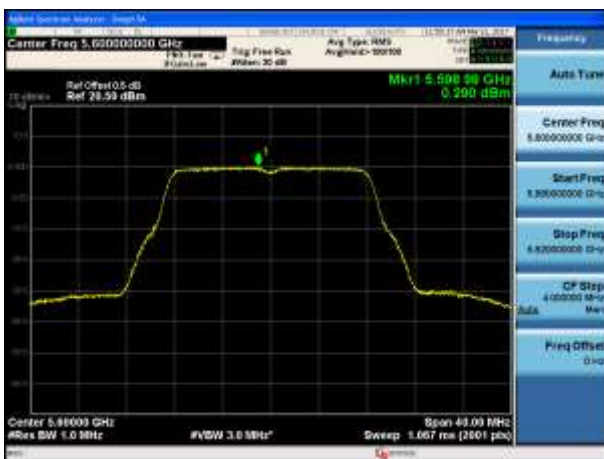
Channel 100 (5500MHz)



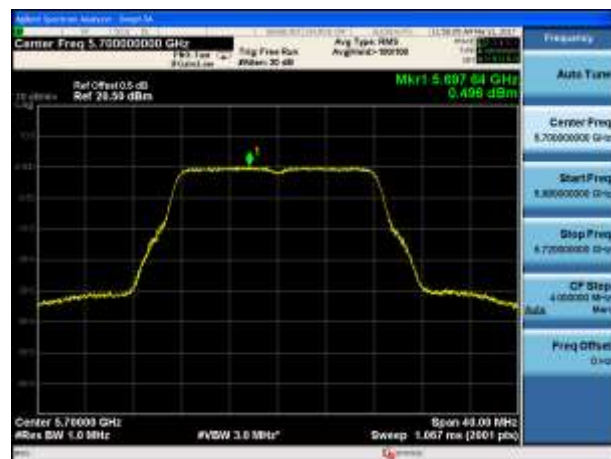
Channel 116 (5580MHz)



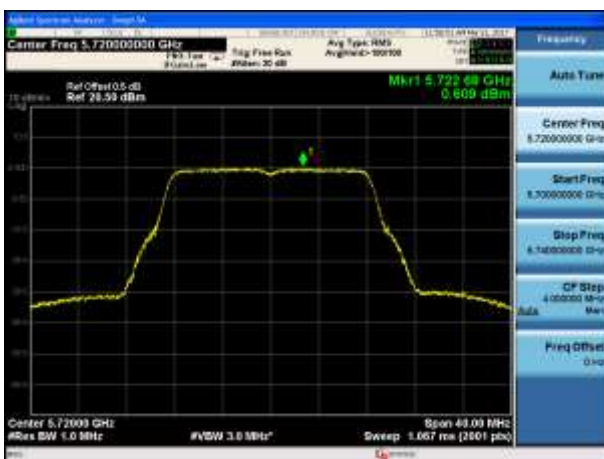
Channel 120 (5600MHz)



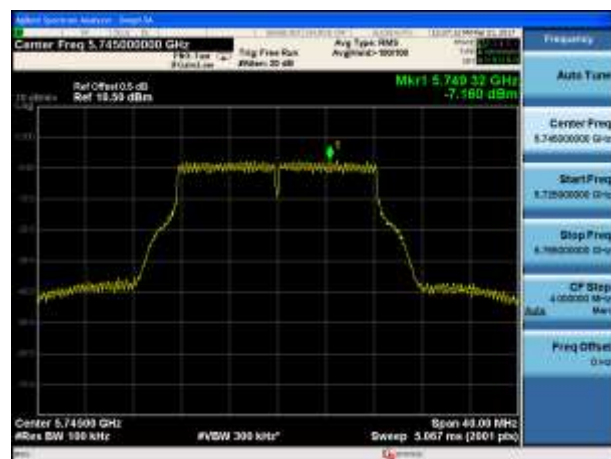
Channel 140 (5700MHz)



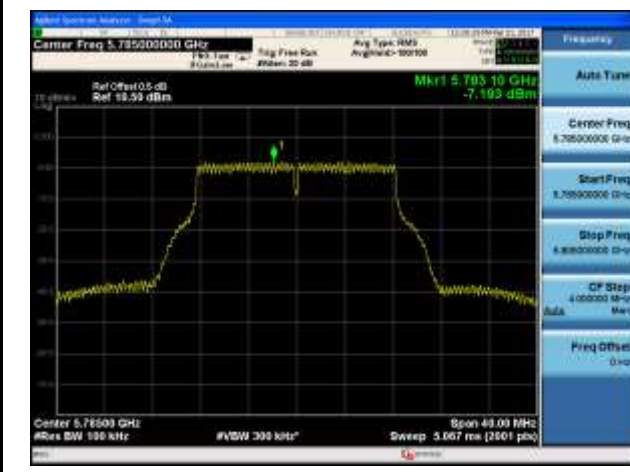
Channel 144 (5720MHz)



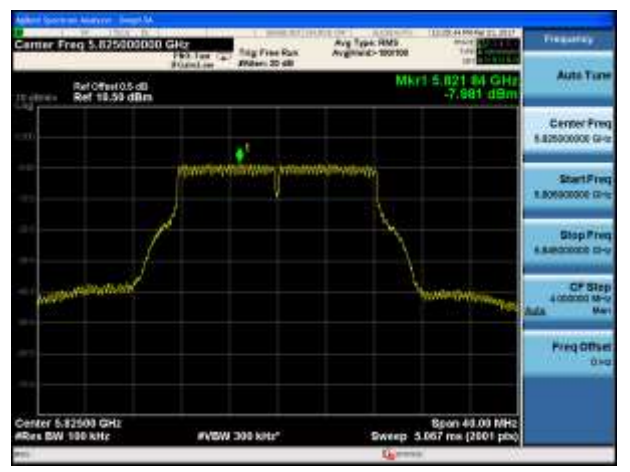
Channel 149 (5745MHz)



Channel 157 (5785MHz)

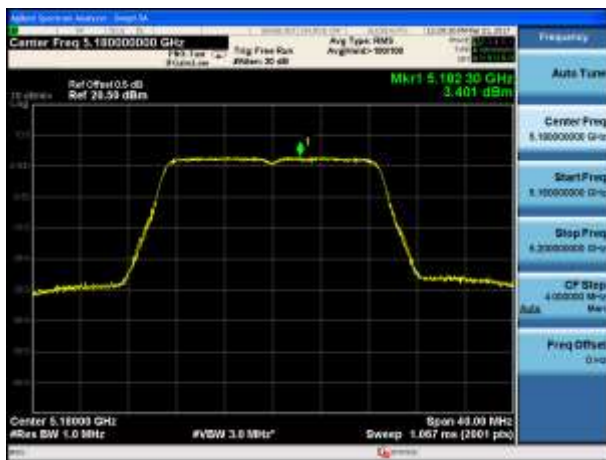


Channel 165 (5825MHz)



802.11n-HT20 Power Spectral Density - Ant 1

Channel 36 (5180MHz)



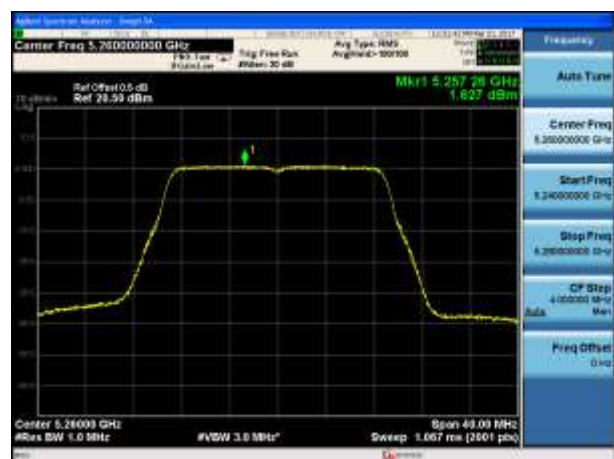
Channel 44 (5220MHz)



Channel 48 (5240MHz)



Channel 52 (5260MHz)



Channel 60 (5300MHz)



Channel 64 (5320MHz)



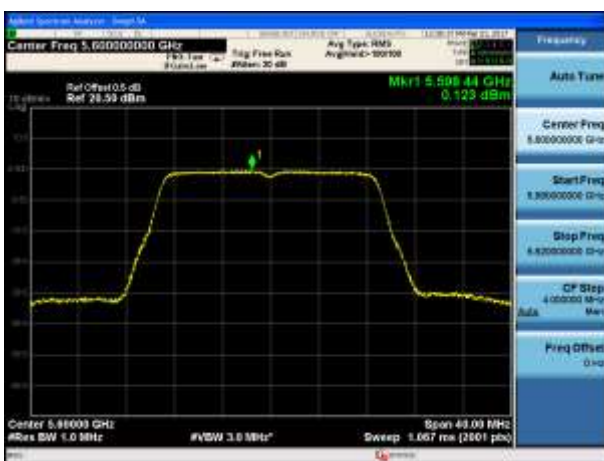
Channel 100 (5500MHz)



Channel 116 (5580MHz)



Channel 120 (5600MHz)



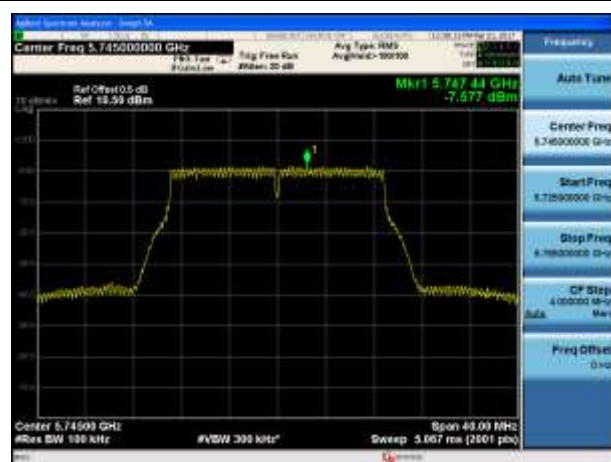
Channel 140 (5700MHz)



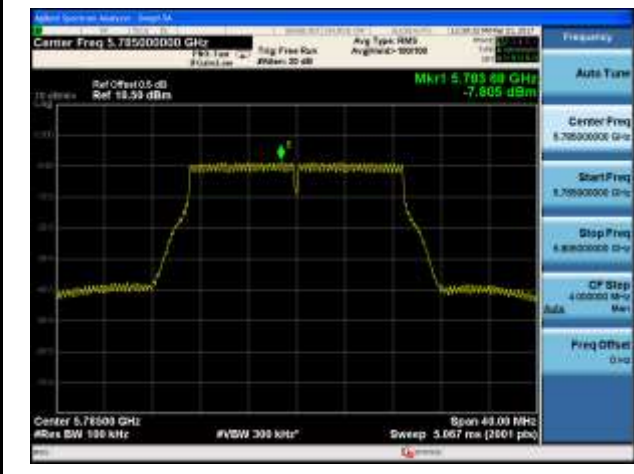
Channel 144 (5720MHz)



Channel 149 (5745MHz)



Channel 157 (5785MHz)

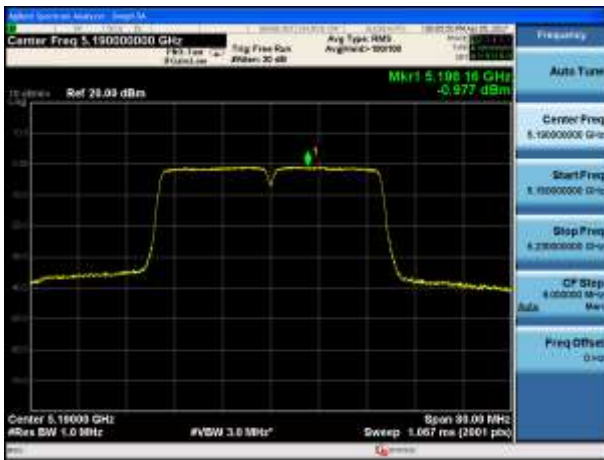


Channel 165 (5825MHz)

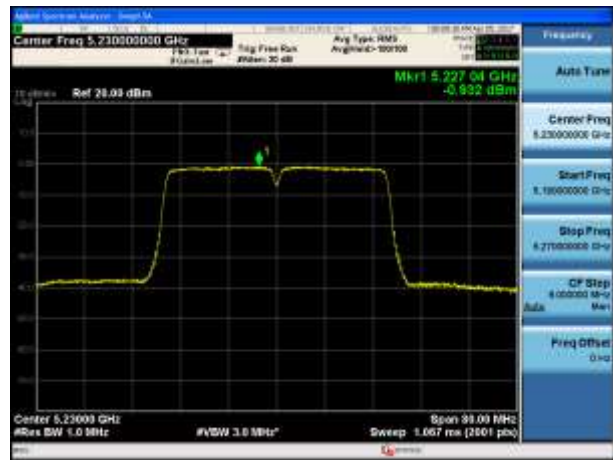


802.11n-HT40 Power Spectral Density - Ant 1

Channel 38 (5190MHz)



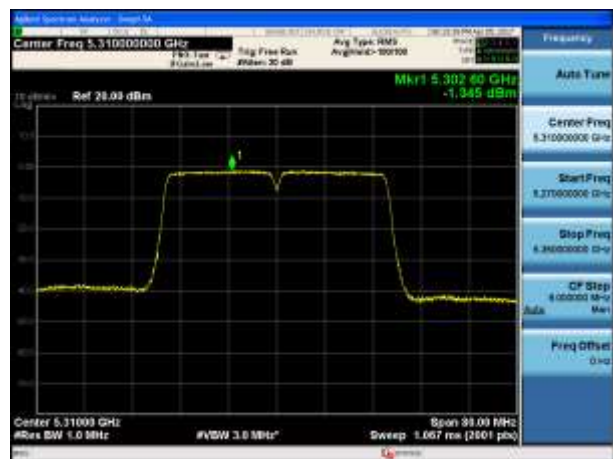
Channel 46 (5230MHz)



Channel 54 (5270MHz)



Channel 62 (5310MHz)



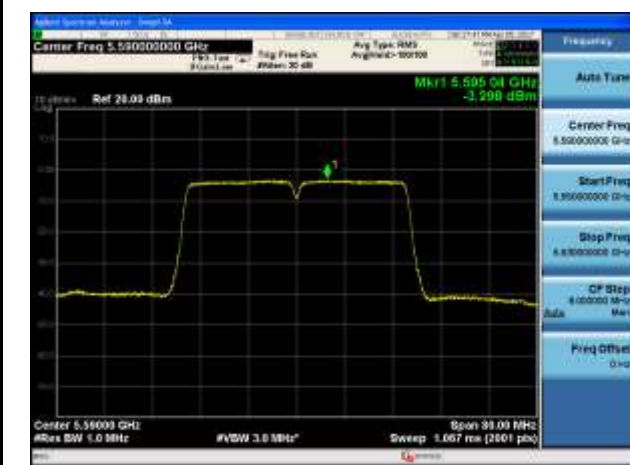
Channel 102 (5510MHz)



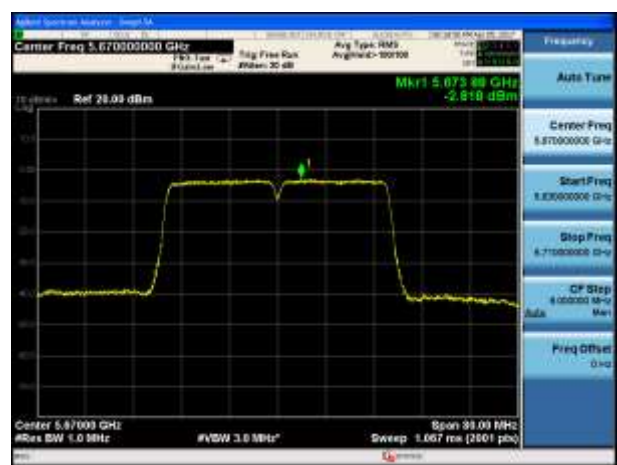
Channel 110 (5550MHz)



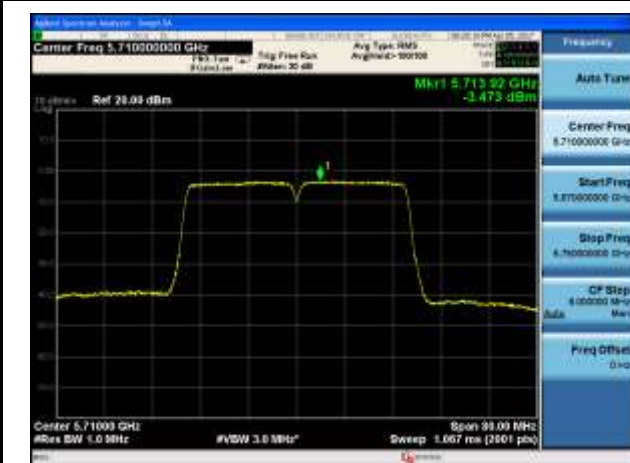
Channel 118 (5590MHz)



Channel 134 (5670MHz)



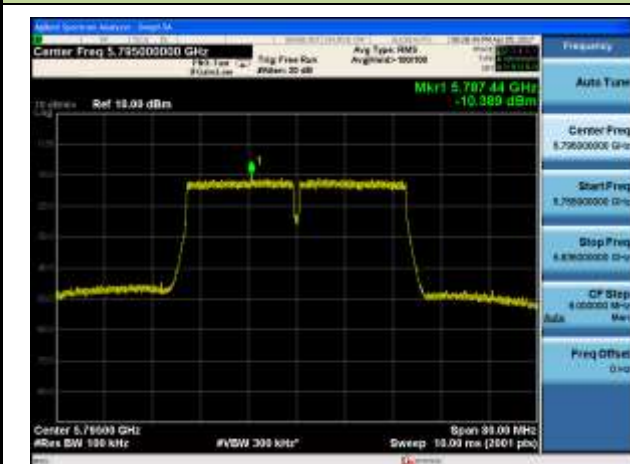
Channel 142 (5710MHz)



Channel 151 (5755MHz)



Channel 159 (5795MHz)



802.11ac-VHT80 Power Spectral Density - Ant 1

Channel 42 (5210MHz)



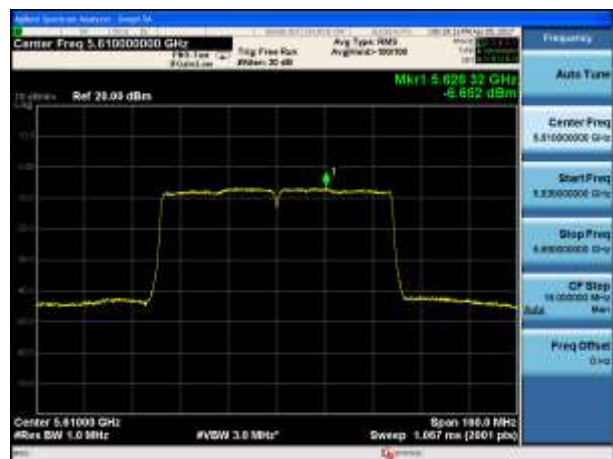
Channel 58 (5290MHz)



Channel 106 (5530MHz)



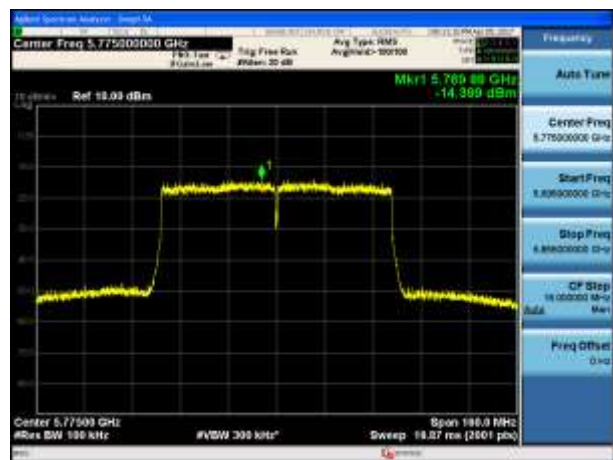
Channel 122 (5610MHz)



Channel 138 (5690MHz)



Channel 155 (5775MHz)



802.11a Power Spectral Density - Ant 2

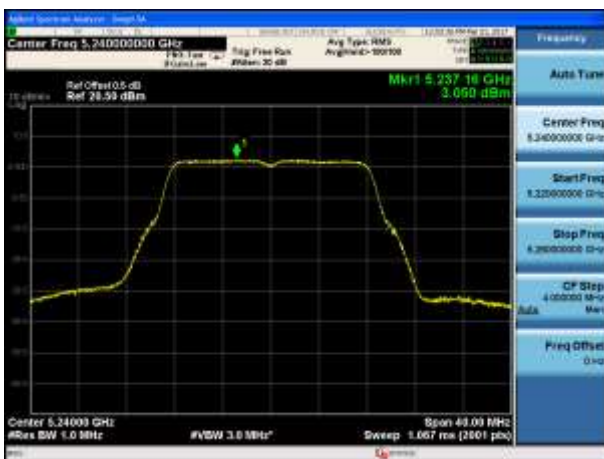
Channel 36 (5180MHz)



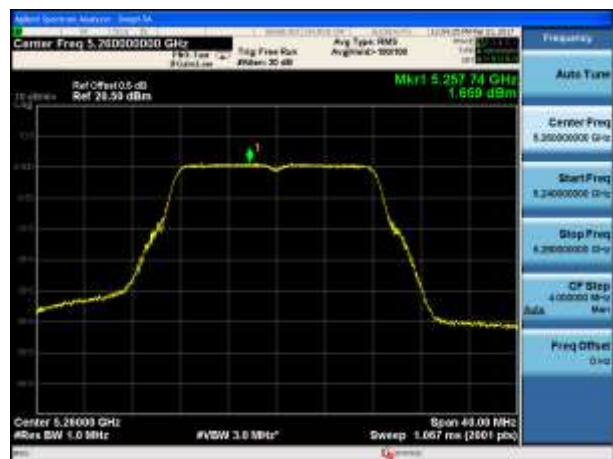
Channel 44 (5220MHz)



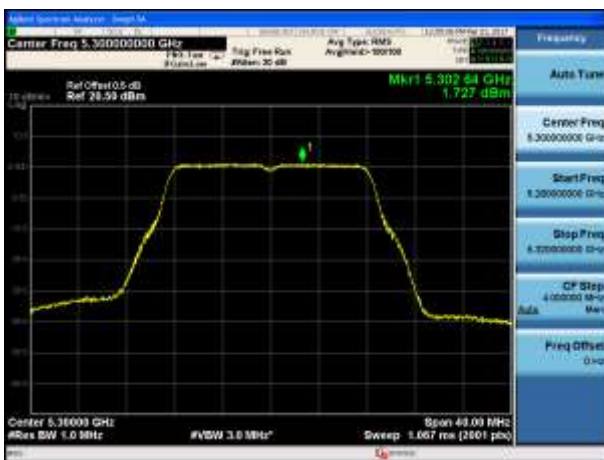
Channel 48 (5240MHz)



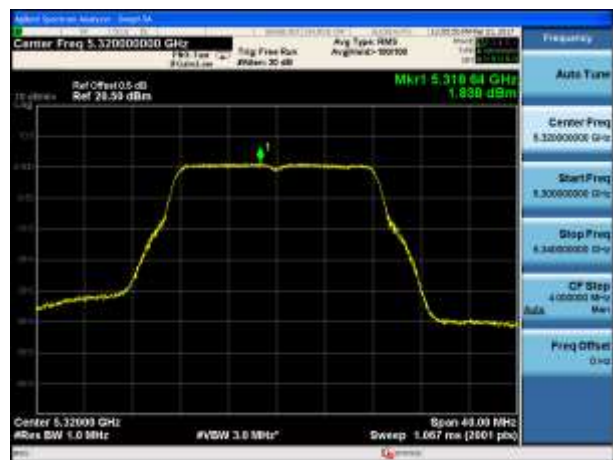
Channel 52 (5260MHz)



Channel 60 (5300MHz)



Channel 64 (5320MHz)



Channel 100 (5500MHz)



Channel 116 (5580MHz)



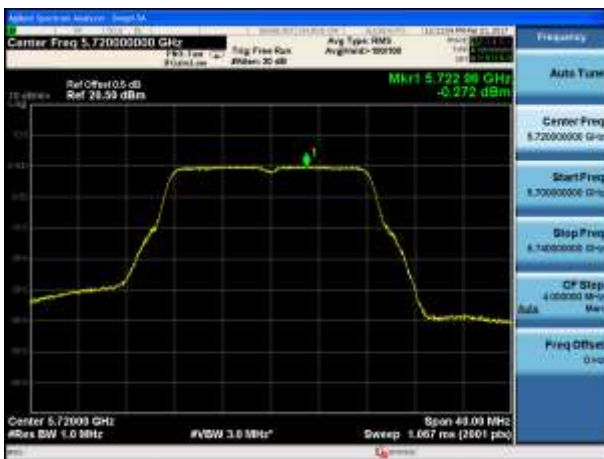
Channel 120 (5600MHz)



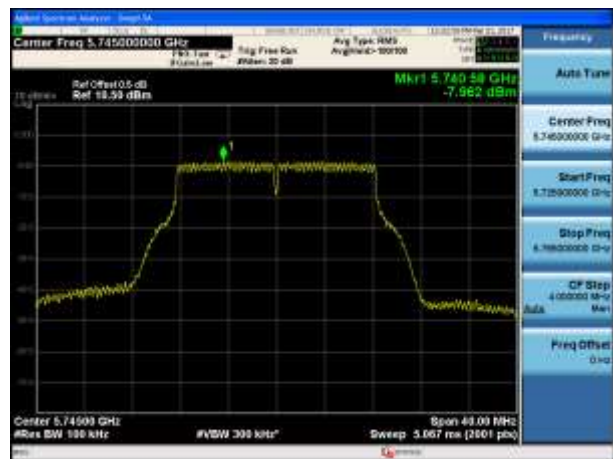
Channel 140 (5700MHz)



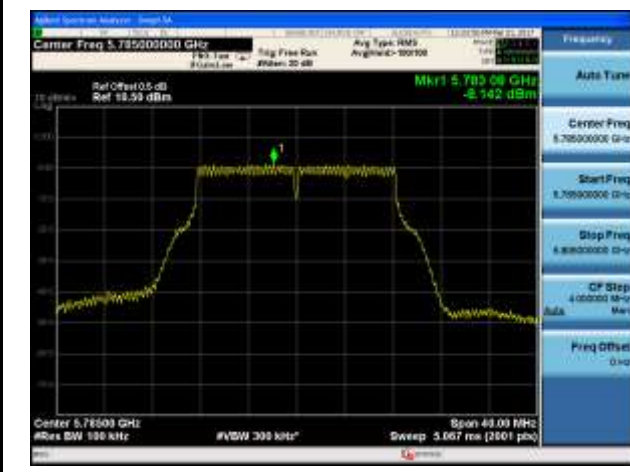
Channel 144 (5720MHz)



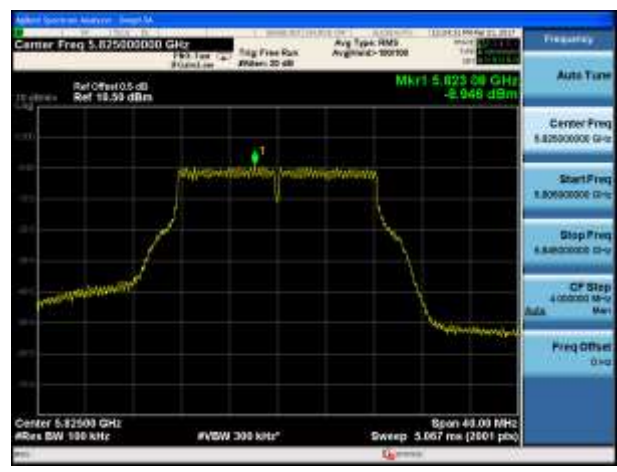
Channel 149 (5745MHz)



Channel 157 (5785MHz)



Channel 165 (5825MHz)



802.11n-HT20 Power Spectral Density - Ant 2

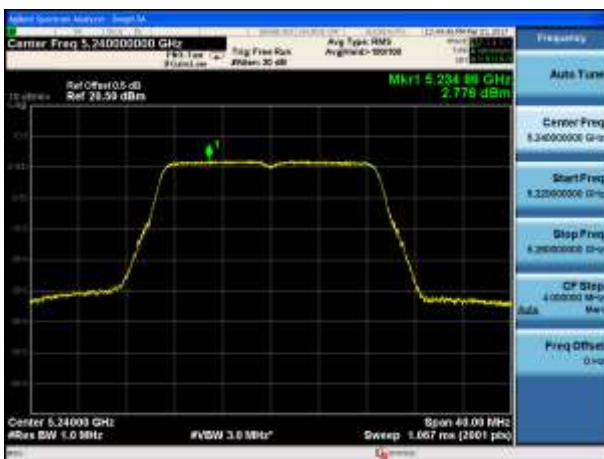
Channel 36 (5180MHz)



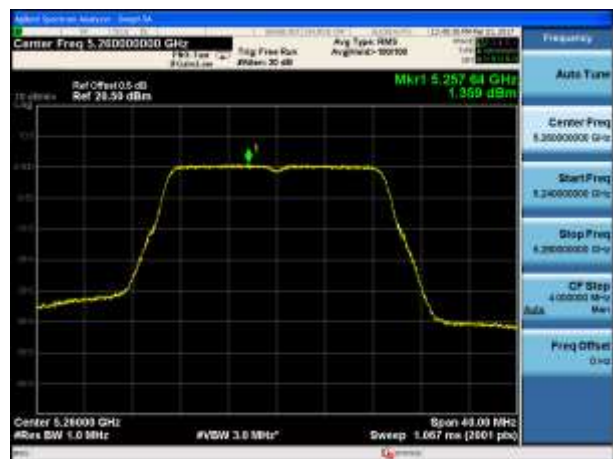
Channel 44 (5220MHz)



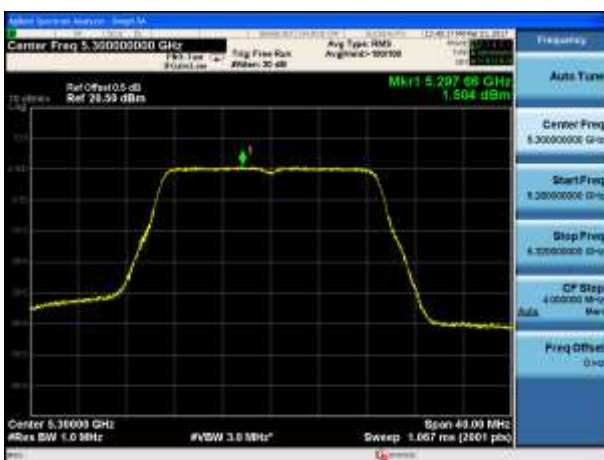
Channel 48 (5240MHz)



Channel 52 (5260MHz)



Channel 60 (5300MHz)



Channel 64 (5320MHz)



Channel 100 (5500MHz)



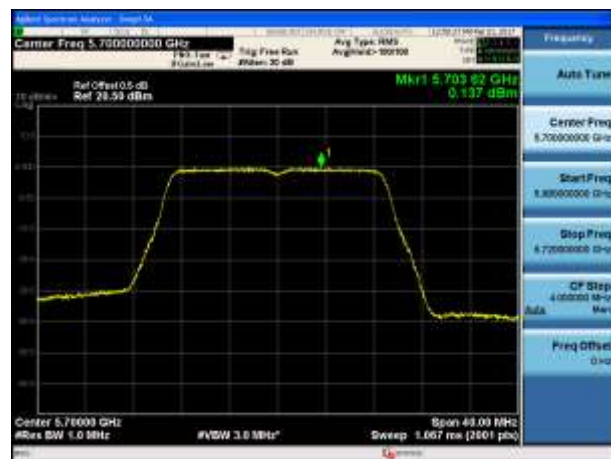
Channel 116 (5580MHz)



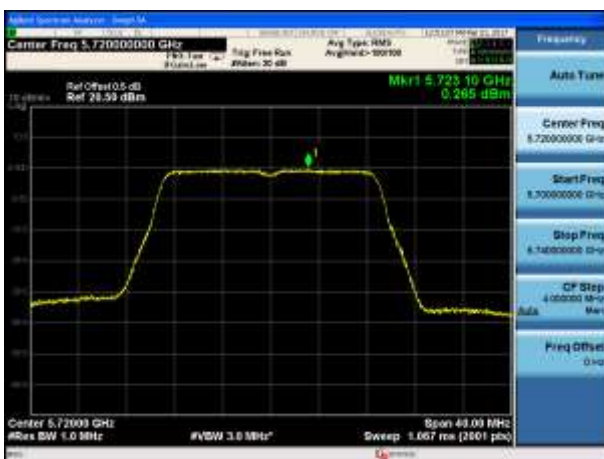
Channel 120 (5600MHz)



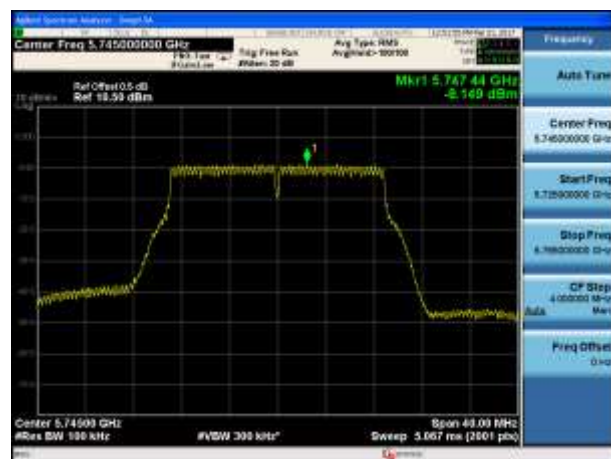
Channel 140 (5700MHz)



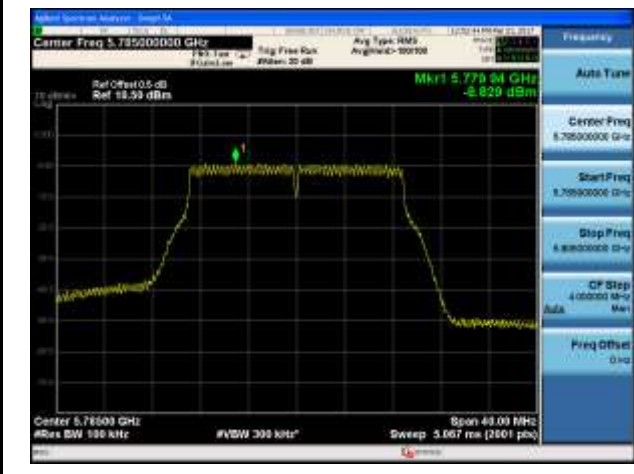
Channel 144 (5720MHz)



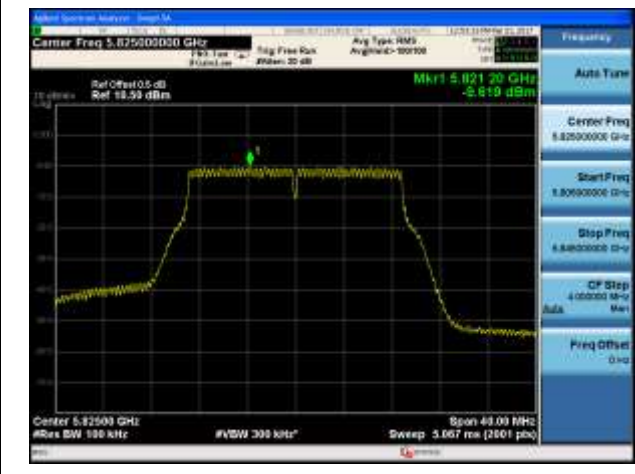
Channel 149 (5745MHz)



Channel 157 (5785MHz)



Channel 165 (5825MHz)

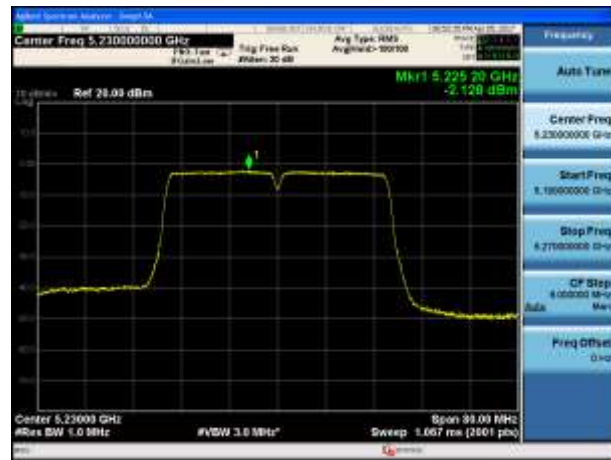


802.11n-HT40 Power Spectral Density - Ant 2

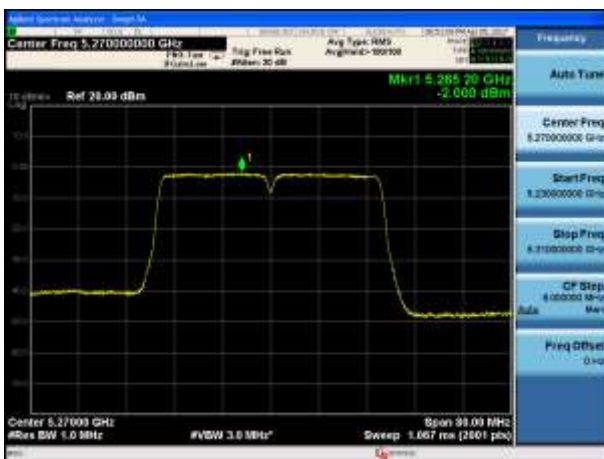
Channel 38 (5190MHz)



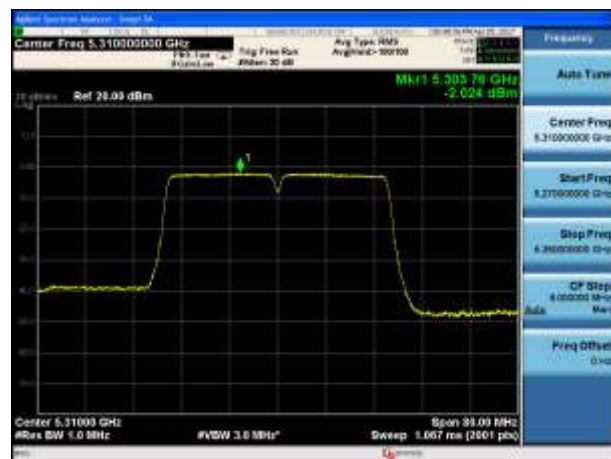
Channel 46 (5230MHz)



Channel 54 (5270MHz)



Channel 62 (5310MHz)



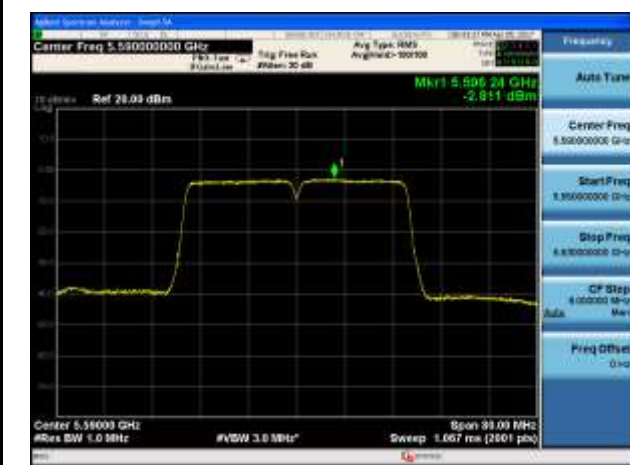
Channel 102 (5510MHz)



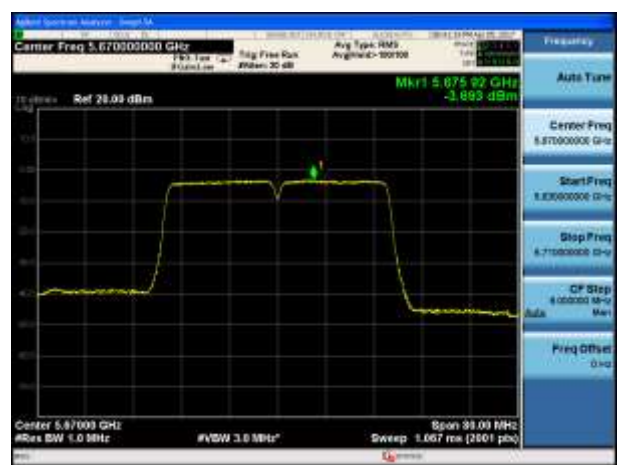
Channel 110 (5550MHz)



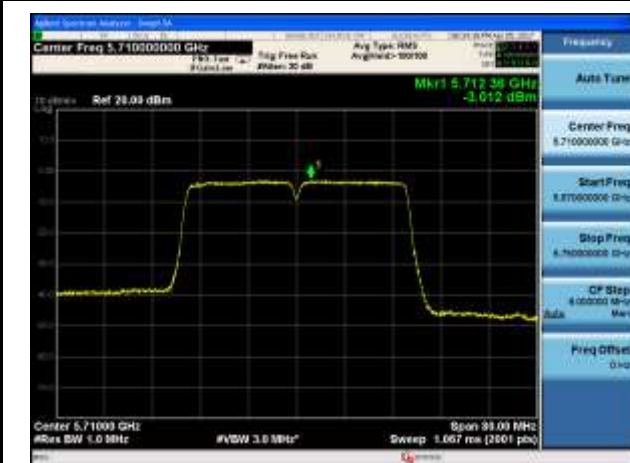
Channel 118 (5590MHz)



Channel 134 (5670MHz)



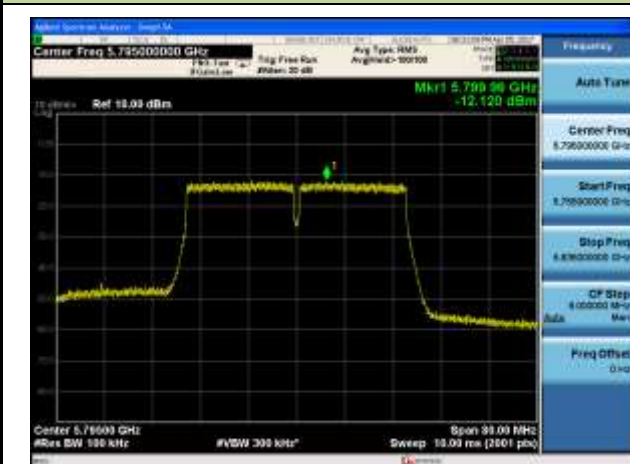
Channel 142 (5710MHz)



Channel 151 (5755MHz)



Channel 159 (5795MHz)

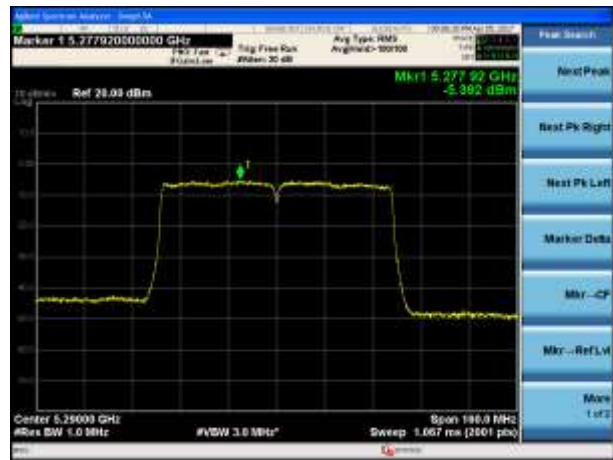


802.11ac-VHT80 Power Spectral Density - Ant 2

Channel 42 (5210MHz)



Channel 58 (5290MHz)



Channel 106 (5530MHz)



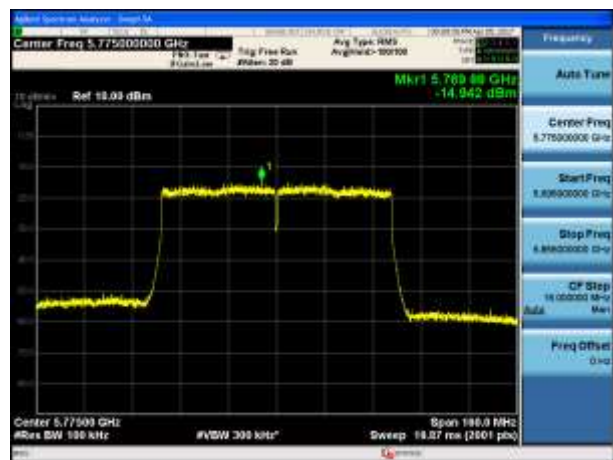
Channel 122 (5610MHz)



Channel 138 (5690MHz)



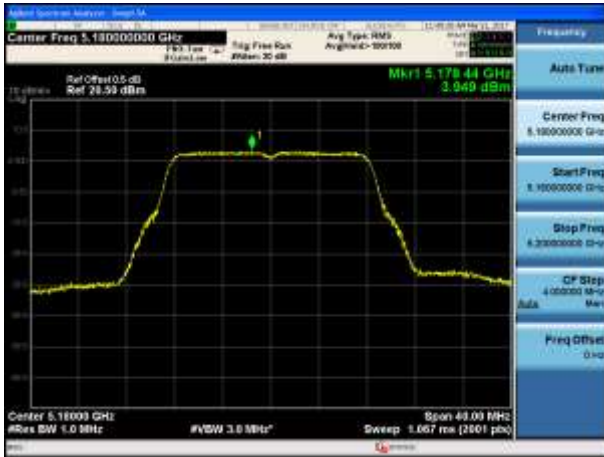
Channel 155 (5775MHz)



For IC Band (UNII-1)

802.11a Power Spectral Density - Ant 1

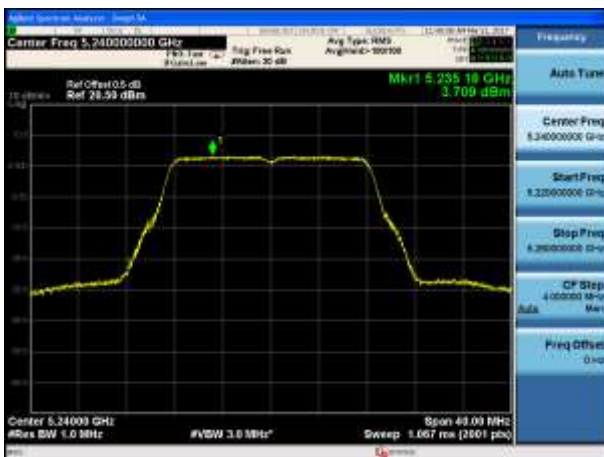
Channel 36 (5180MHz)



Channel 44 (5220MHz)



Channel 48 (5240MHz)



802.11n-HT20 Power Spectral Density - Ant 1

Channel 36 (5180MHz)



Channel 44 (5220MHz)

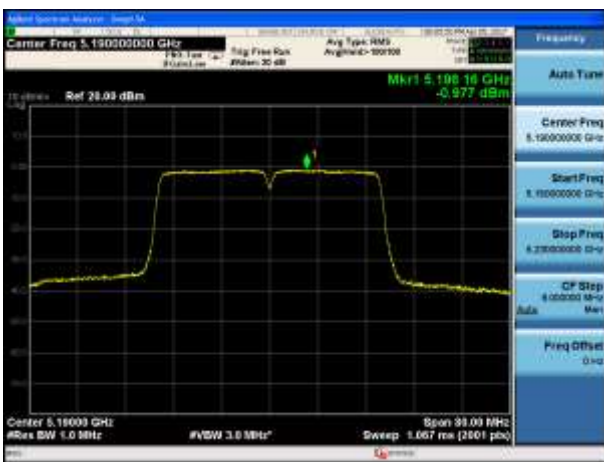


Channel 48 (5240MHz)

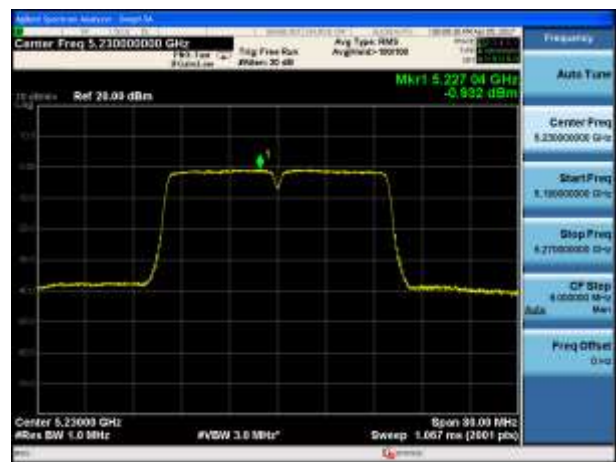


802.11n-HT40 Power Spectral Density - Ant 1

Channel 38 (5190MHz)

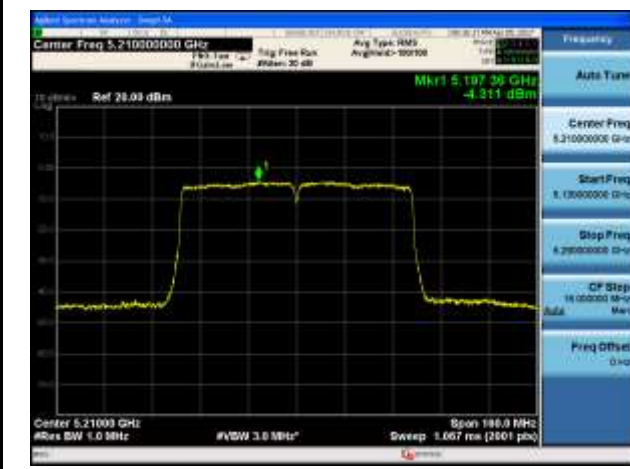


Channel 46 (5230MHz)



802.11ac-VHT80 Power Spectral Density - Ant 1

Channel 42 (5210MHz)



802.11a Power Spectral Density - Ant 2

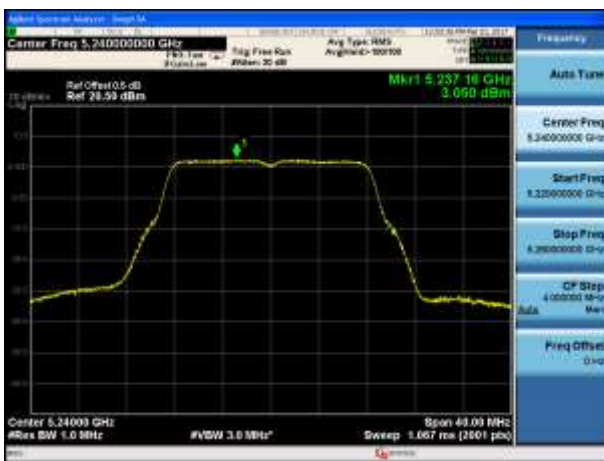
Channel 36 (5180MHz)



Channel 44 (5220MHz)



Channel 48 (5240MHz)



802.11n-HT20 Power Spectral Density - Ant 2

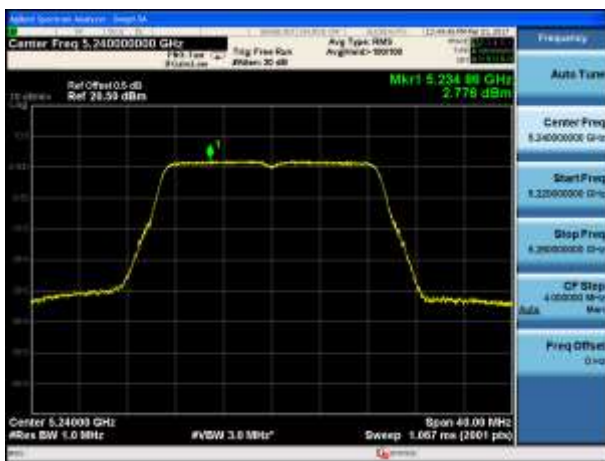
Channel 36 (5180MHz)



Channel 44 (5220MHz)

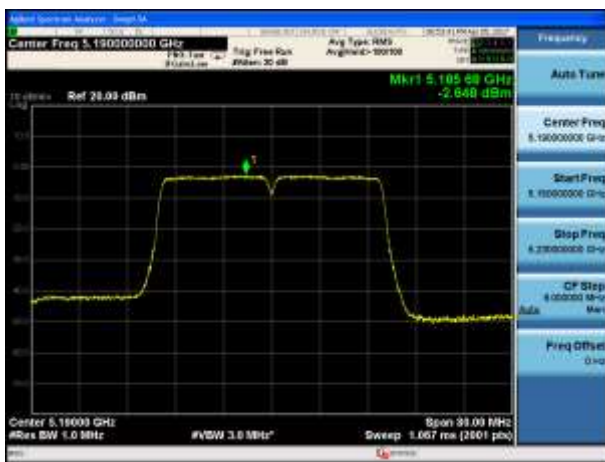


Channel 48 (5240MHz)

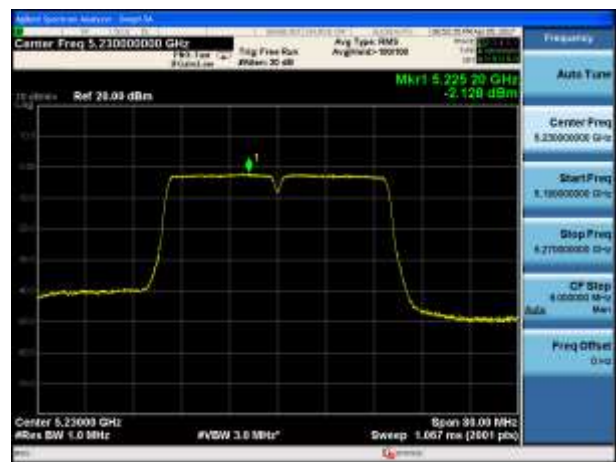


802.11n-HT40 Power Spectral Density - Ant 2

Channel 38 (5190MHz)

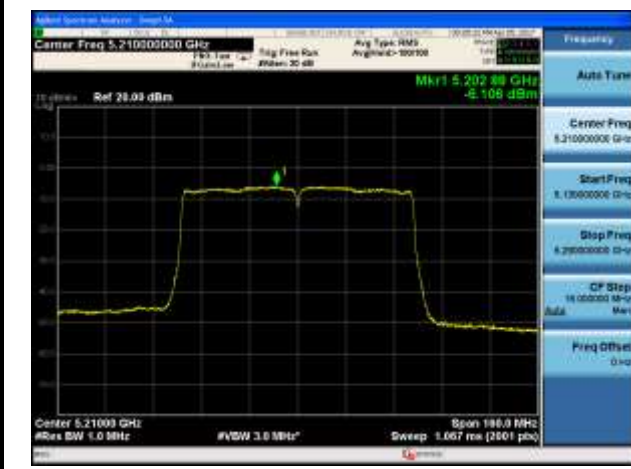


Channel 46 (5230MHz)



802.11ac-VHT80 Power Spectral Density - Ant 2

Channel 42 (5210MHz)



7.8. Radiated Spurious Emission Measurement

7.8.1. 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

7.8.2. Test Procedure Used

KDB 789033 D02v01r03 – Section G

7.8.3. 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)

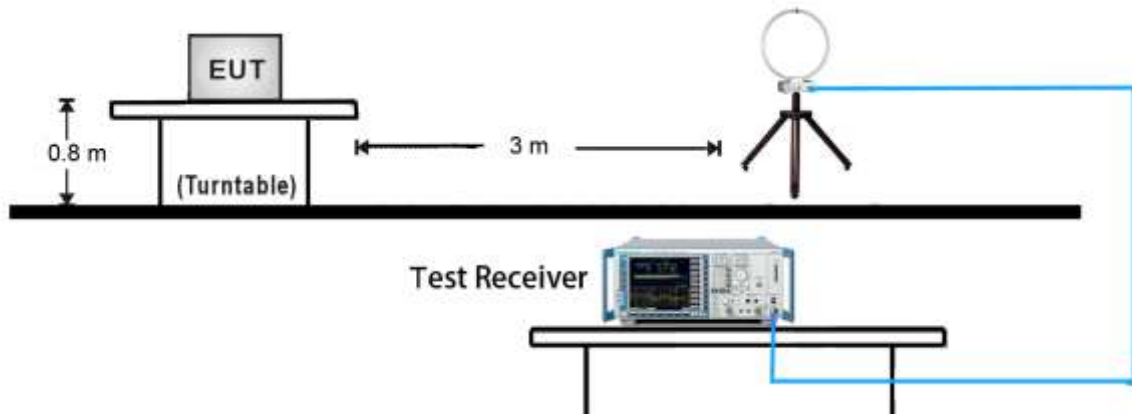
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = power average (Average)
5. Number of measurement points = 1001 (Number of points must be $> 2 \times \text{span/RBW}$)
6. Sweep time = auto
7. Trace was averaged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

Quasi-Peak & Average Measurements below 30MHz

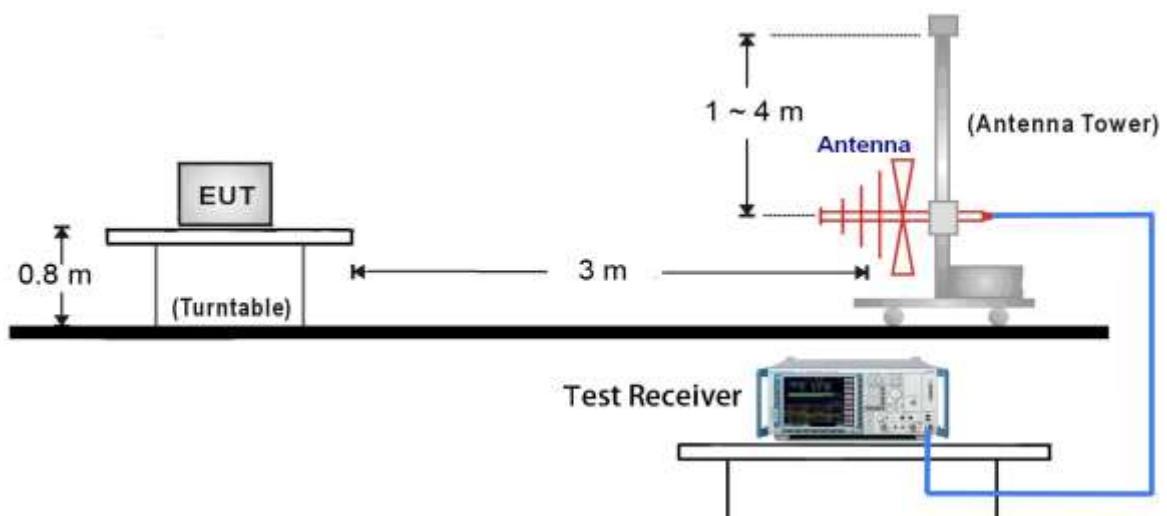
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. Span was set greater than 1MHz
3. RBW = 200Hz for 9kHz to 150kHz frequency; RBW = 9kHz for 0.15MHz to 30MHz frequency
4. Detector = CISPR quasi-peak or power average (Average)
5. Sweep time = auto couple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

7.8.4. Test Setup

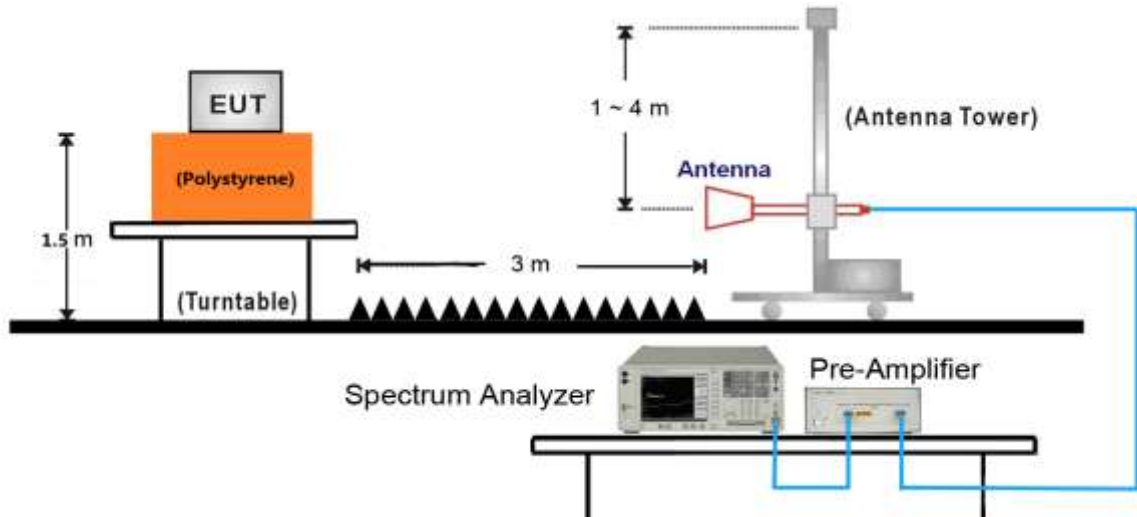
9kHz ~ 30MHz Test Setup:



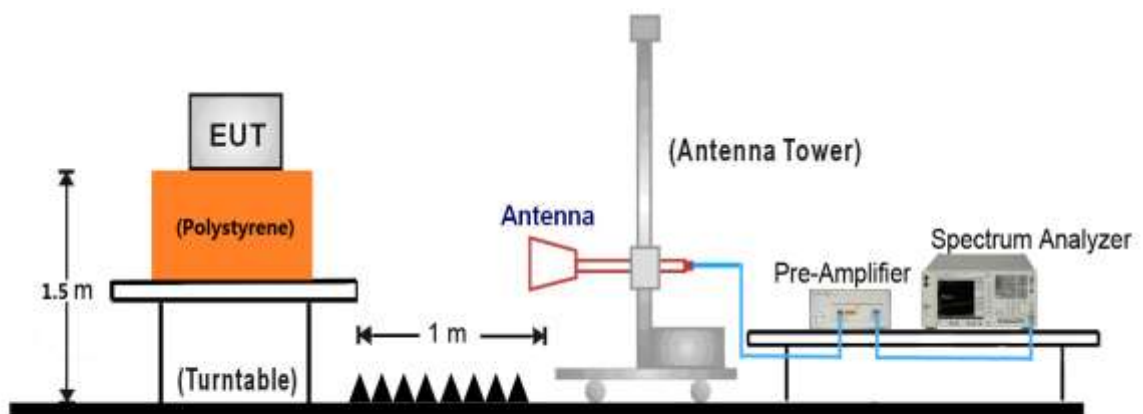
30MHz ~ 1GHz Test Setup:



1GHz ~18GHz Test Setup:

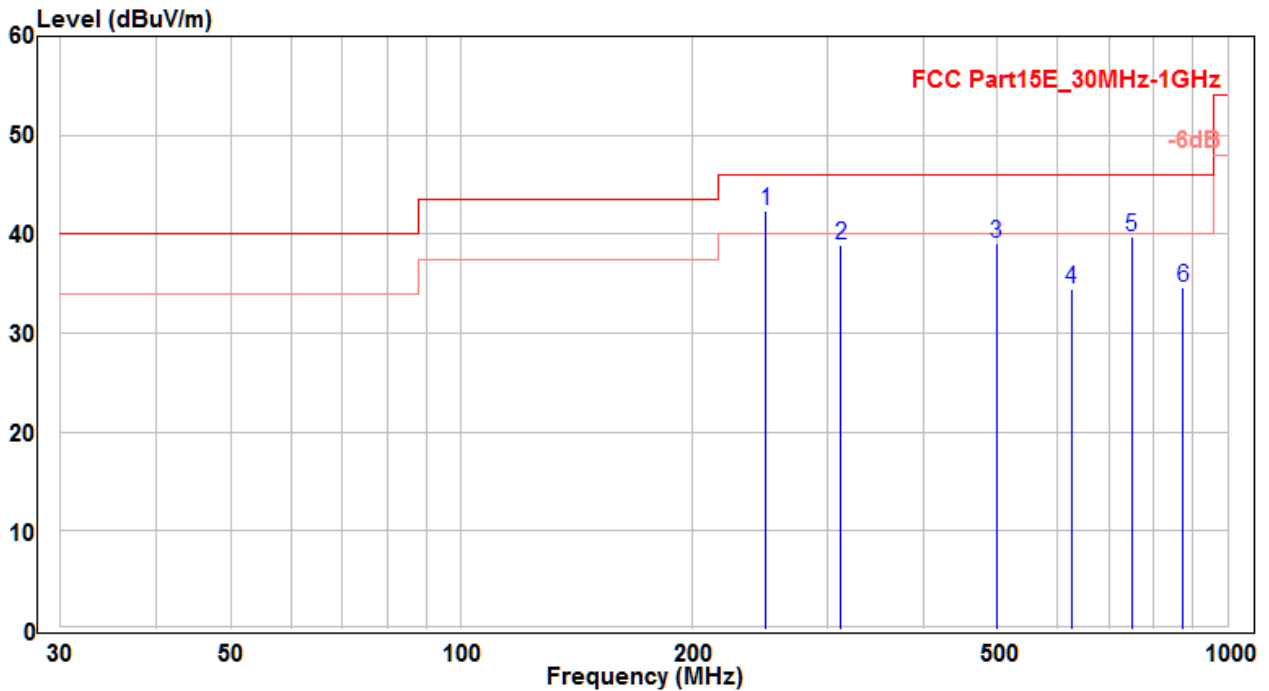


18GHz ~40GHz Test Setup:



7.8.5. Test Result

EUT	VA50EC	Test Date	2017/03/29
Factor	VULB 9162 (30MHz~8GHz)	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Kevin
Test Mode	MODE2_CH44	Test Voltage	AC 120V/60Hz

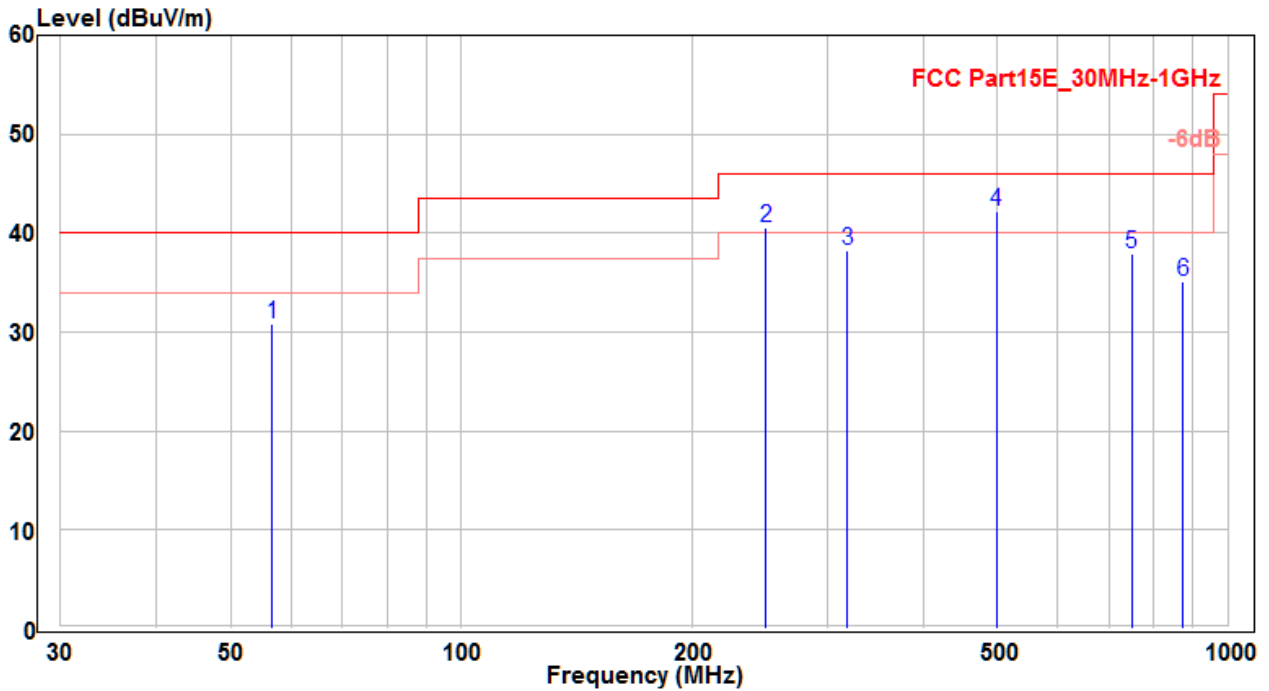


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)	
1	*	249.735	28.49	13.85	42.34	-3.66	46	100	320	QP
2		312.846	23.87	15.08	38.95	-7.05	46	150	190	QP
3		499.51	20.54	18.57	39.11	-6.89	46	120	-40	QP
4		624.398	13.76	20.62	34.38	-11.62	46	100	255	QP
5		749.255	17.25	22.52	39.77	-6.23	46	150	35	QP
6		874.143	10.4	24.21	34.61	-11.39	46	150	105	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	VA50EC	Test Date	2017/03/29
Factor	VULB 9162 (30MHz~8GHz)	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Kevin
Test Mode	MODE2_CH44	Test Voltage	AC 120V/60Hz

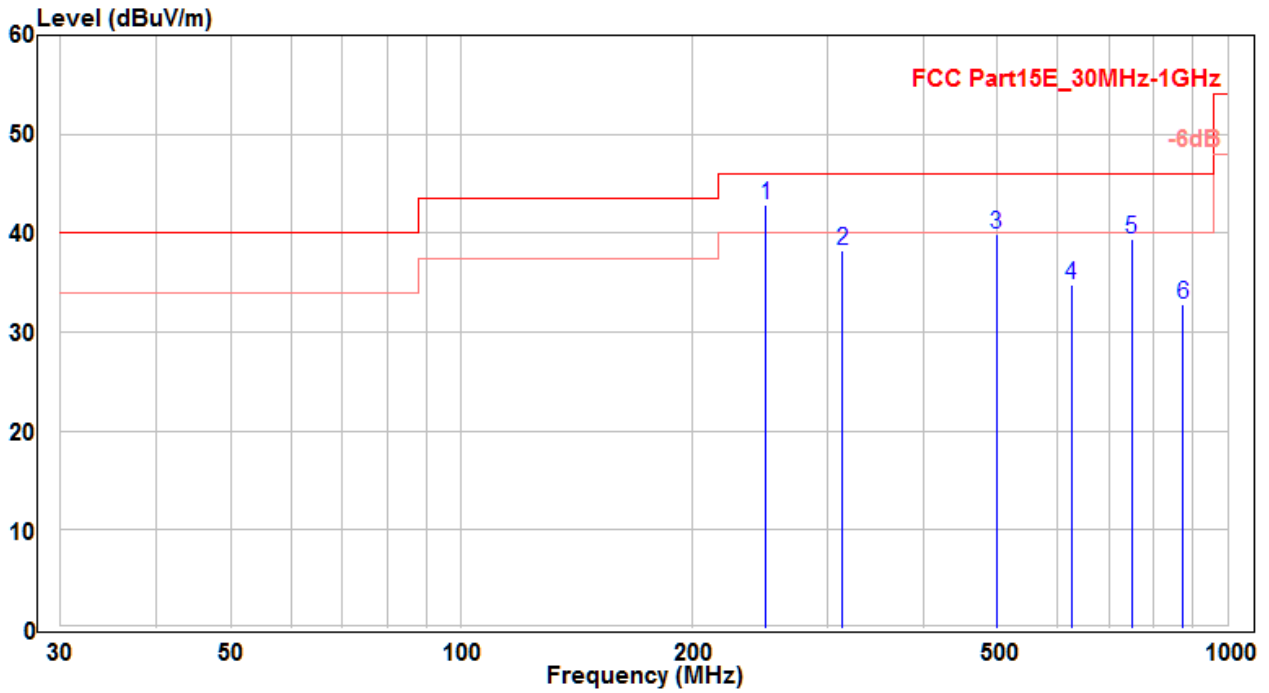


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	56.705	16.3	14.57	30.87	-9.13	40	100	60	QP
2	249.735	26.68	13.85	40.53	-5.47	46	150	390	QP
3	318.666	23.08	15.23	38.31	-7.69	46	100	-10	QP
4	* 499.51	23.58	18.57	42.15	-3.85	46	100	280	QP
5	749.255	15.33	22.52	37.85	-8.15	46	110	140	QP
6	874.143	10.92	24.21	35.13	-10.87	46	130	45	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	VA50EC	Test Date	2017/03/29
Factor	VULB 9162 (30MHz~8GHz)	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Kevin
Test Mode	MODE5_CH44	Test Voltage	AC 120V/60Hz

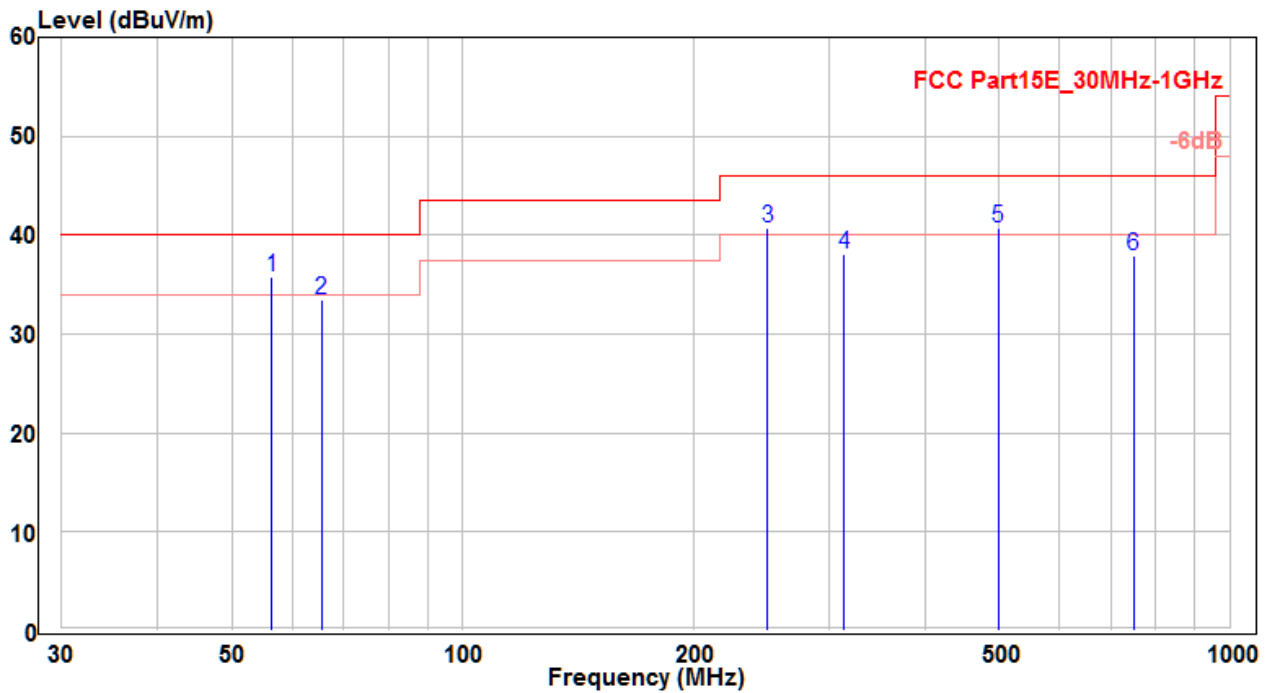


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	*	28.94	13.85	42.79	-3.21	46	120	-40	QP
2		23.19	15.12	38.31	-7.69	46	100	250	QP
3		21.27	18.57	39.84	-6.16	46	150	390	QP
4		14.1	20.62	34.72	-11.28	46	110	75	QP
5		16.94	22.52	39.46	-6.54	46	100	290	QP
6		8.52	24.21	32.73	-13.27	46	150	330	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	VA50EC	Test Date	2017/03/29
Factor	VULB 9162 (30MHz~8GHz)	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Kevin
Test Mode	MODE5_CH44	Test Voltage	AC 120V/60Hz

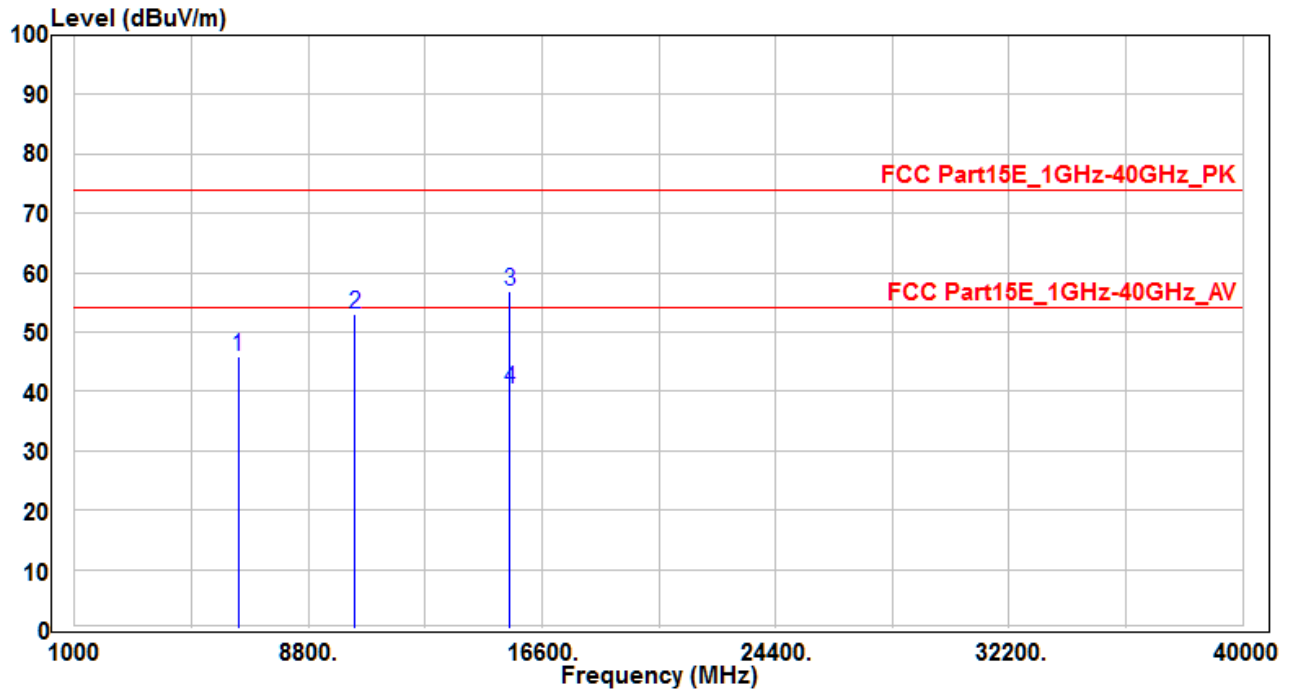


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)	
1	*	56.342	21.19	14.62	35.81	-4.19	40	120	85	QP
2		65.496	20.85	12.64	33.49	-6.51	40	100	105	QP
3		249.735	26.87	13.85	40.72	-5.28	46	150	200	QP
4		314.301	22.88	15.12	38	-8	46	110	-40	QP
5		499.51	22.13	18.57	40.7	-5.3	46	100	320	QP
6		749.255	15.45	22.52	37.97	-8.03	46	100	175	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	VA50EC	Test Date	2017/04/10
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Kevin
Test Mode	MODE1 -CH36_Ant 1	Test Voltage	AC 120V/60Hz

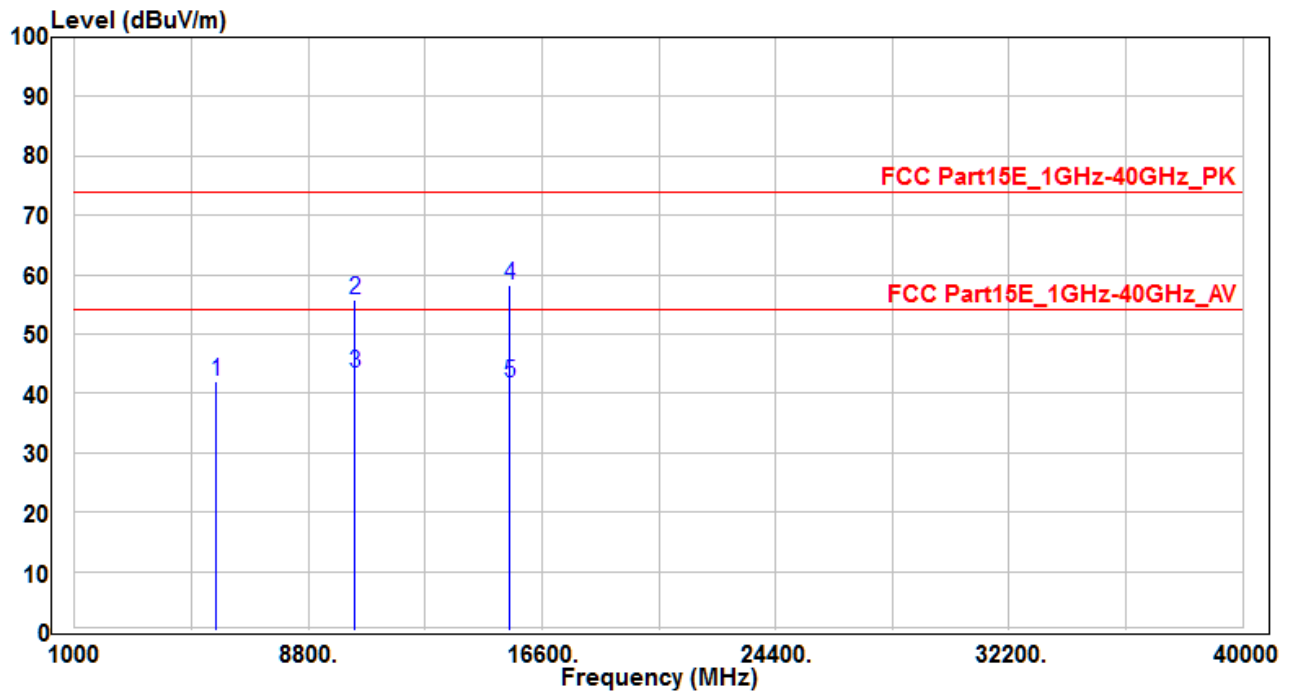


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	6475.16	37.66	8.21	45.87	-28.13	74	100	400	Peak
2	10360	36.14	16.81	52.95	-21.05	74	100	400	Peak
3	*	15540	20.62	57	-17	74	150	380	Peak
4	*	15540	19.77	40.39	-13.61	54	150	380	Average

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 °

EUT	VA50EC	Test Date	2017/04/10
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Kevin
Test Mode	MODE1 -CH36_Ant 1	Test Voltage	AC 120V/60Hz

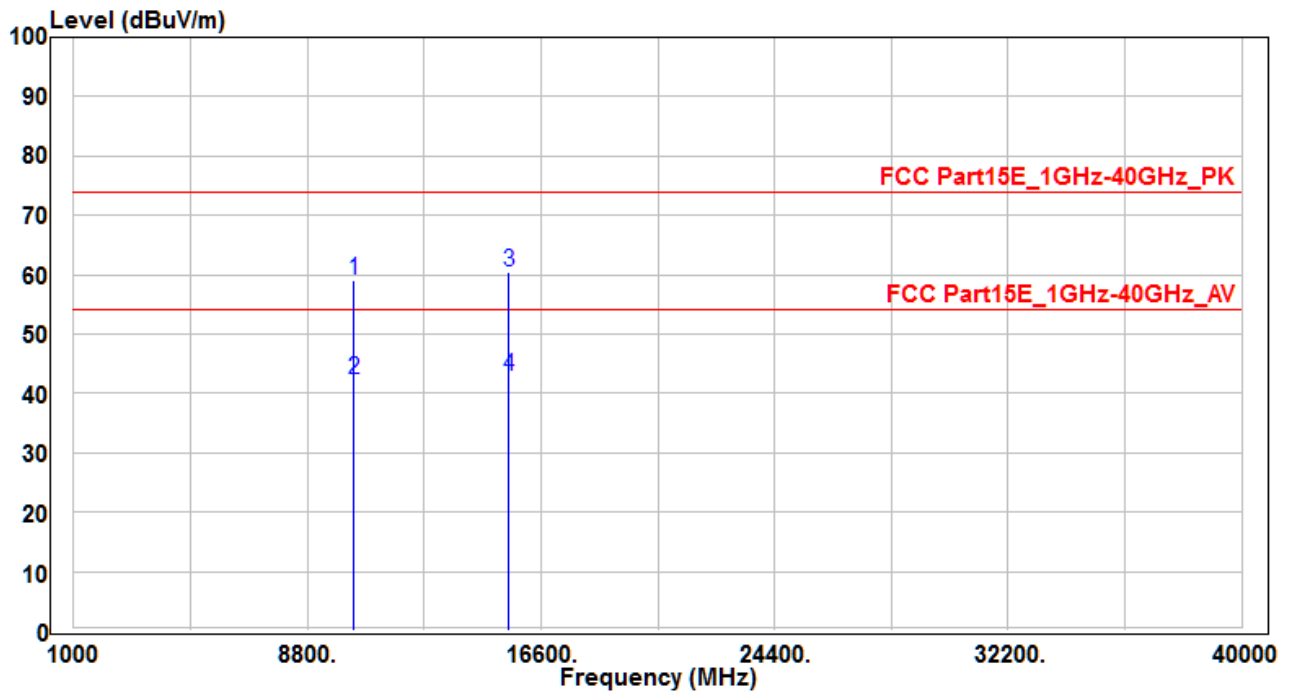


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	5742.05	36.79	5.14	41.93	-32.07	74	100	400	Peak
2	10360	39.01	16.81	55.82	-18.18	74	220	-30	Peak
3	10360	26.7	16.81	43.51	-10.49	54	220	-30	Average
4	* 15540	37.55	20.62	58.17	-15.83	74	100	20	Peak
5	* 15540	21.14	20.62	41.76	-12.24	54	100	20	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 emission levels of other frequencies are very lower than the limit and not show in test report °

EUT	VA50EC	Test Date	2017/04/10
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Kevin
Test Mode	MODE1 -CH36_Ant 2	Test Voltage	AC 120V/60Hz

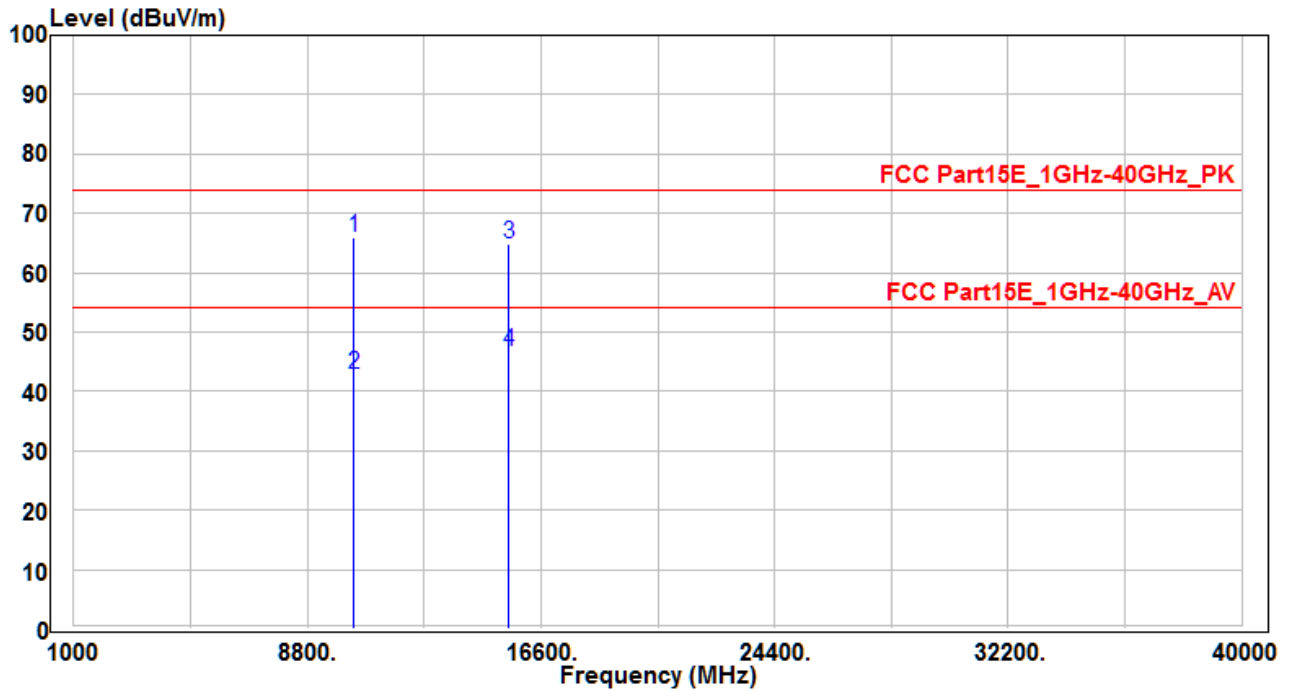


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	10360	42.31	16.81	59.12	-14.88	74	100	345	Peak
2	10360	25.62	16.81	42.43	-11.57	54	100	345	Average
3	* 15540	39.96	20.62	60.58	-13.42	74	105	360	Peak
4	* 15540	22.28	20.62	42.9	-11.1	54	105	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 emission levels of other frequencies are very lower than the limit and not show in test report °

EUT	VA50EC	Test Date	2017/04/10
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Kevin
Test Mode	MODE1 -CH36_Ant 2	Test Voltage	AC 120V/60Hz

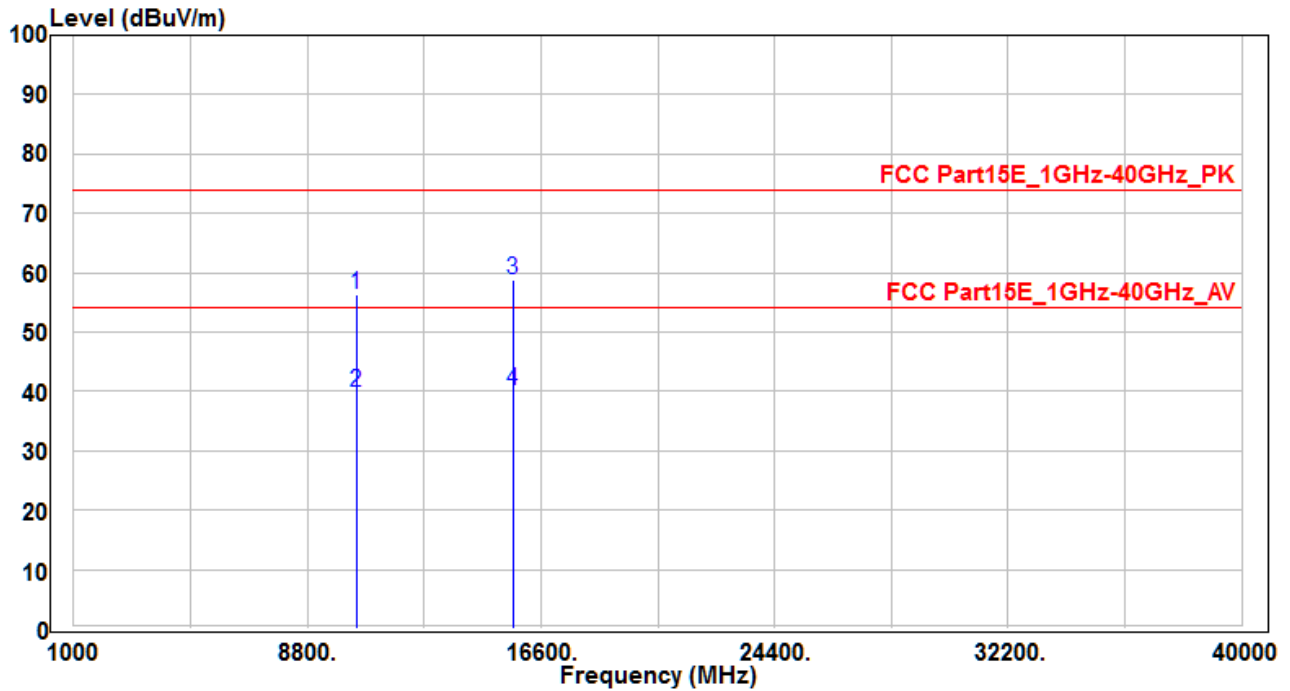


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	10360	49.19	16.81	66	-8	74	150	35	Peak
2	10360	25.99	16.81	42.8	-11.2	54	150	35	Average
3	15540	44.18	20.62	64.8	-9.2	74	100	370	Peak
4	* 15540	26.21	20.62	46.83	-7.17	54	100	370	Average

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 °

EUT	VA50EC	Test Date	2017/04/10
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Kevin
Test Mode	MODE1 -CH44_Ant 1	Test Voltage	AC 120V/60Hz

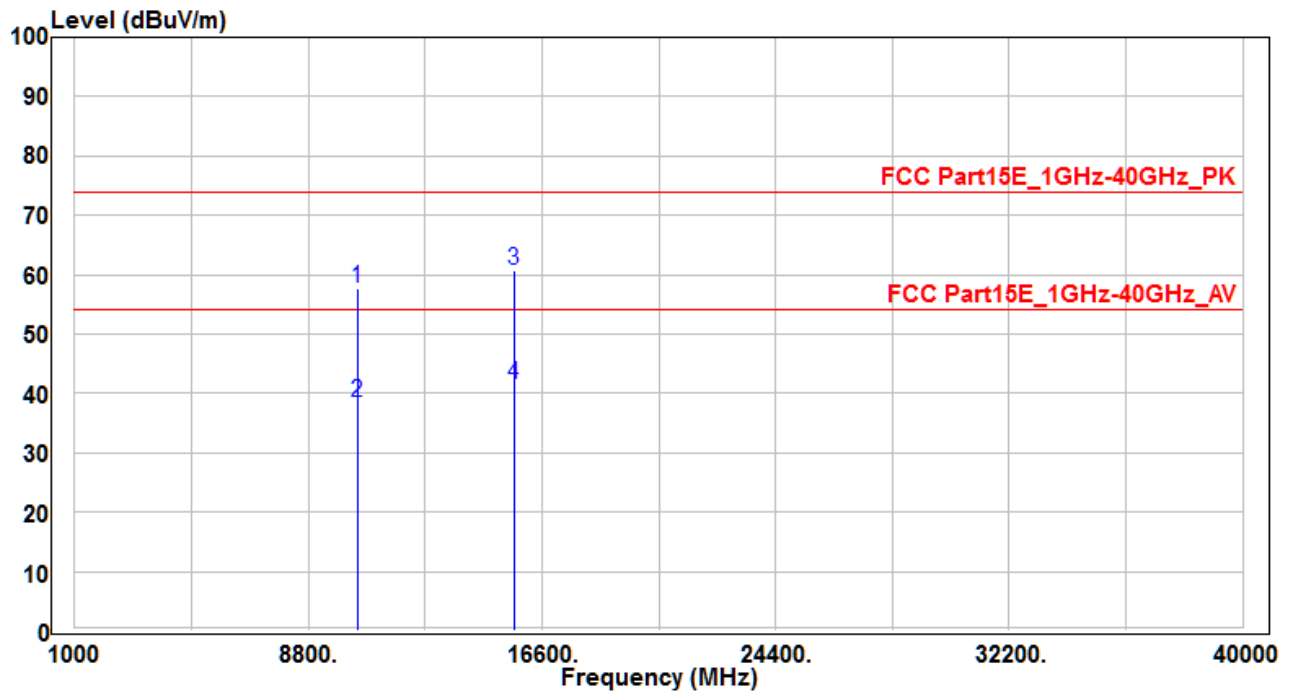


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	10440	39.33	17.05	56.38	-17.62	74	150	-25	Peak
2	10440	22.81	17.05	39.86	-14.14	54	150	-25	Average
3	* 15660	38.26	20.42	58.68	-15.32	74	100	-5	Peak
4	* 15660	19.83	20.42	40.25	-13.75	54	100	-5	Average

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 °

EUT	VA50EC	Test Date	2017/04/10
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Kevin
Test Mode	MODE1 -CH44_Ant 1	Test Voltage	AC 120V/60Hz

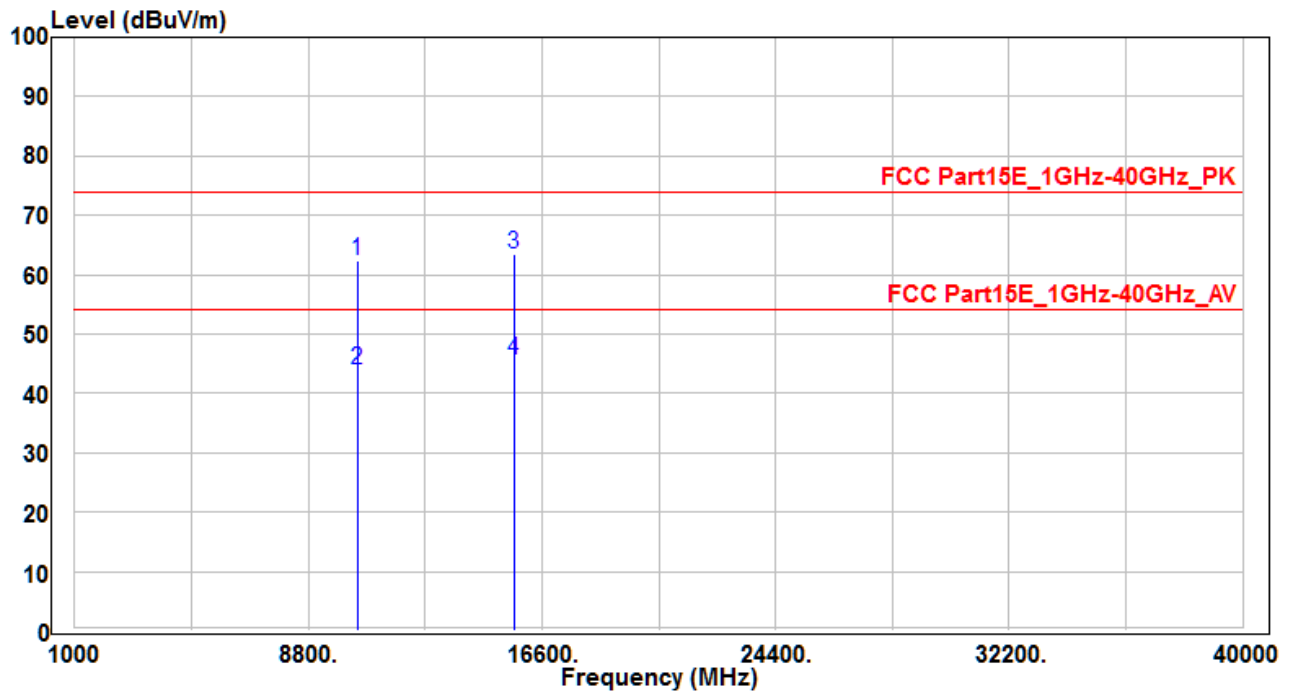


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	10440	40.63	17.05	57.68	-16.32	74	100	-15	Peak
2	10440	21.5	17.05	38.55	-15.45	54	100	-15	Average
3	* 15660	40.42	20.42	60.84	-13.16	74	150	30	Peak
4	* 15660	21.15	20.42	41.57	-12.43	54	150	30	Average

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 °

EUT	VA50EC	Test Date	2017/04/10
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Kevin
Test Mode	MODE1 -CH44_Ant 2	Test Voltage	AC 120V/60Hz

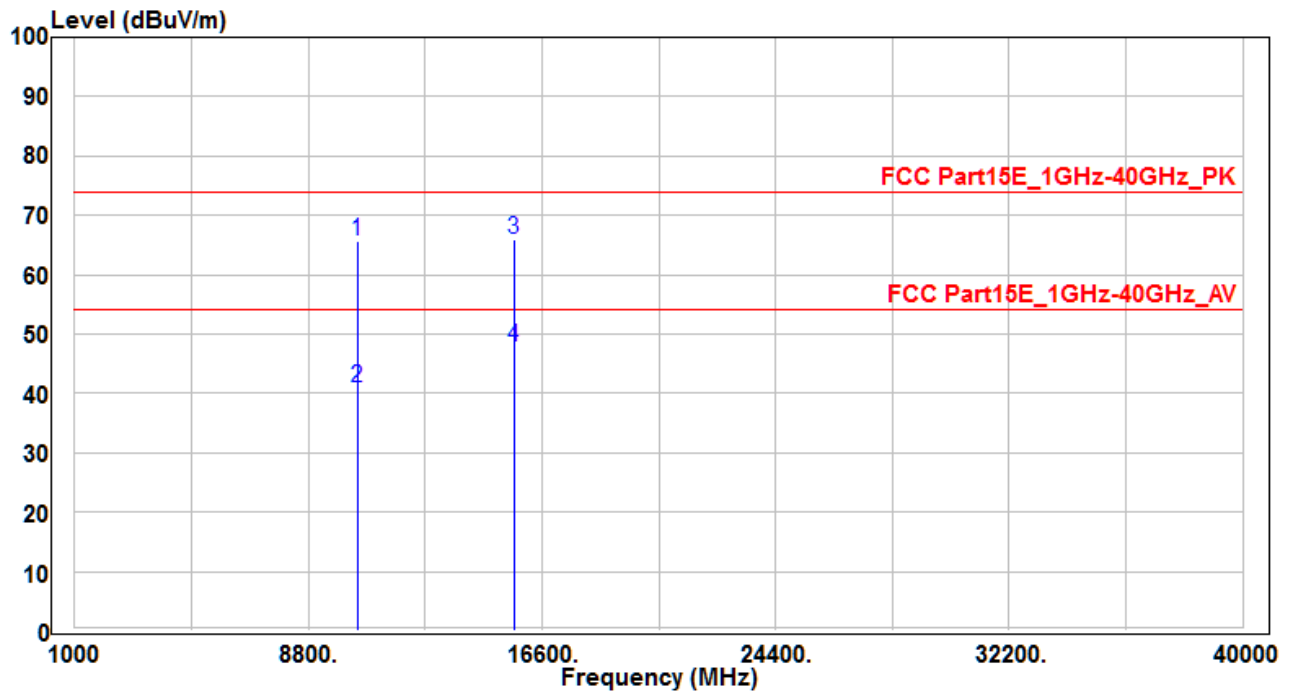


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	10440	45.28	17.05	62.33	-11.67	74	130	380	Peak
2	10440	26.91	17.05	43.96	-10.04	54	130	380	Average
3	* 15660	43.11	20.42	63.53	-10.47	74	150	50	Peak
4	* 15660	25.23	20.42	45.65	-8.35	54	150	50	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 emission levels of other frequencies are very lower than the limit and not show in test report ◦

EUT	VA50EC	Test Date	2017/04/10
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Kevin
Test Mode	MODE1 -CH44_Ant 2	Test Voltage	AC 120V/60Hz

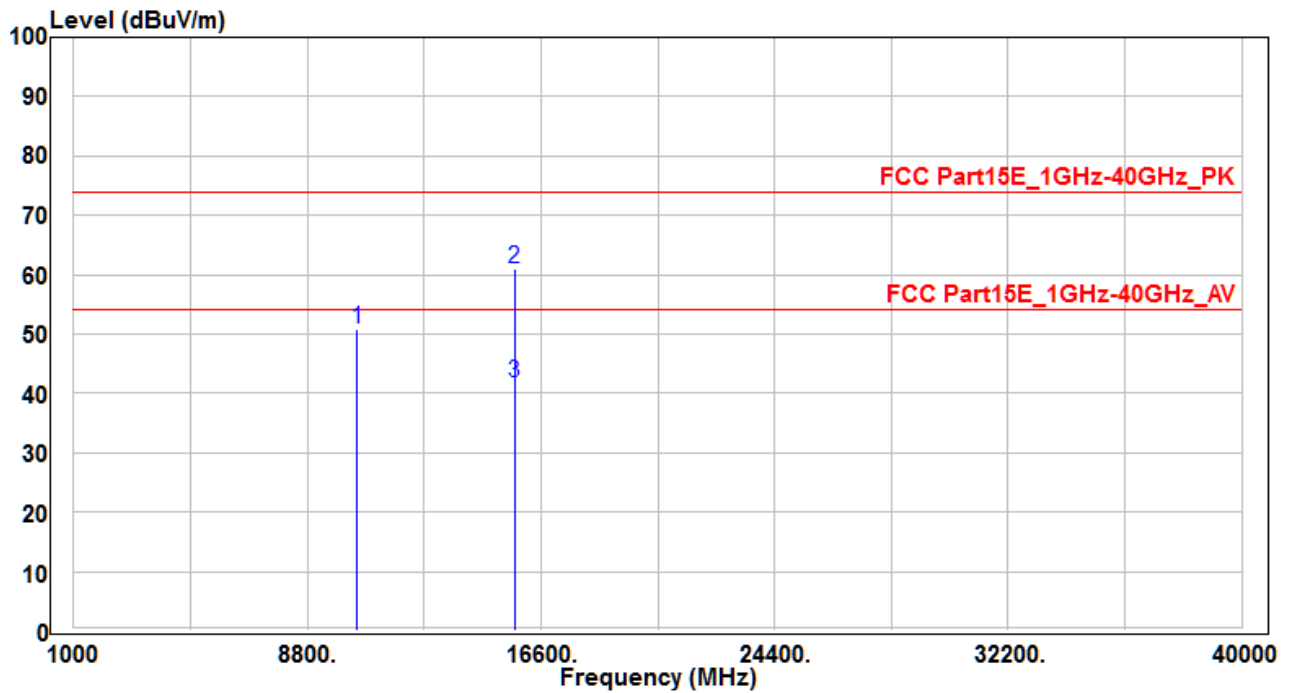


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	10440	48.75	17.05	65.8	-8.2	74	200	60	Peak
2	10440	23.99	17.05	41.04	-12.96	54	200	60	Average
3	* 15660	45.4	20.42	65.82	-8.18	74	180	20	Peak
4	* 15660	27.27	20.42	47.69	-6.31	54	180	20	Average

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 °

EUT	VA50EC	Test Date	2017/04/10
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Kevin
Test Mode	MODE1 -CH48_Ant 1	Test Voltage	AC 120V/60Hz

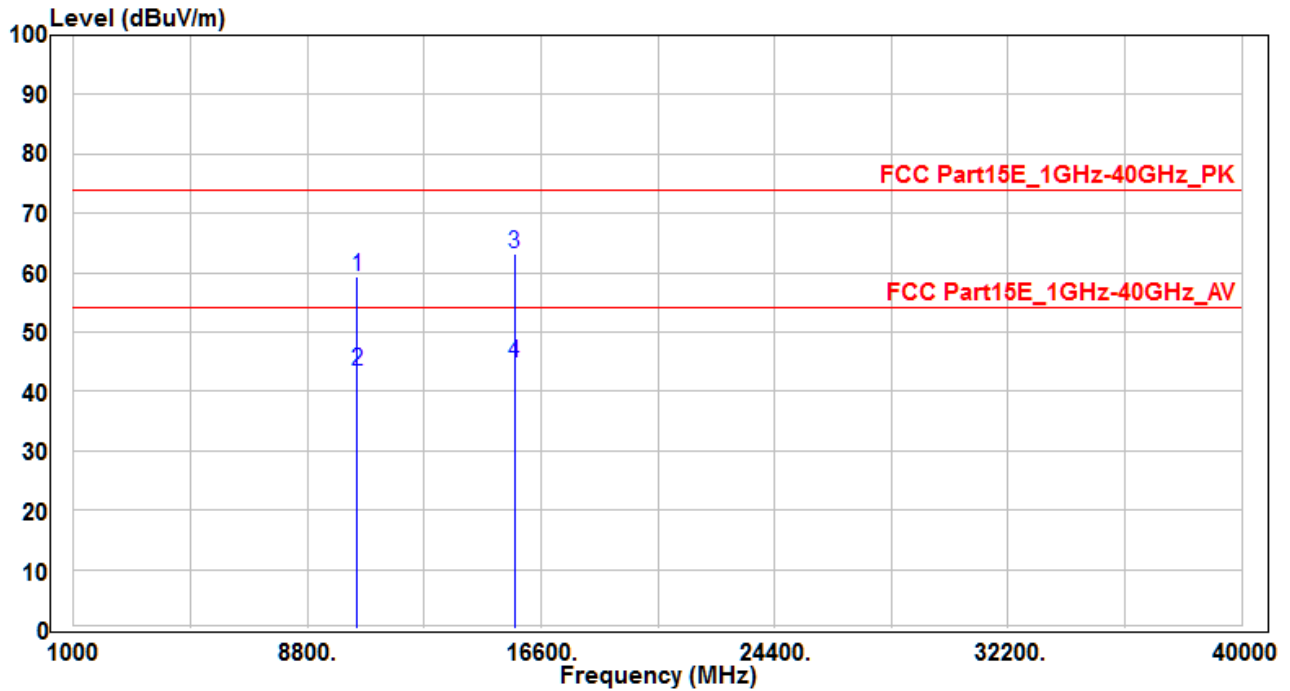


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	10480	33.6	17.13	50.73	-23.27	74	100	400	Peak
2	15720	40.42	20.46	60.88	-13.12	74	150	370	Peak
3	* 15720	21.24	20.46	41.7	-12.3	54	150	370	Average

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 °

EUT	VA50EC	Test Date	2017/04/10
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Kevin
Test Mode	MODE1 -CH48_Ant 1	Test Voltage	AC 120V/60Hz

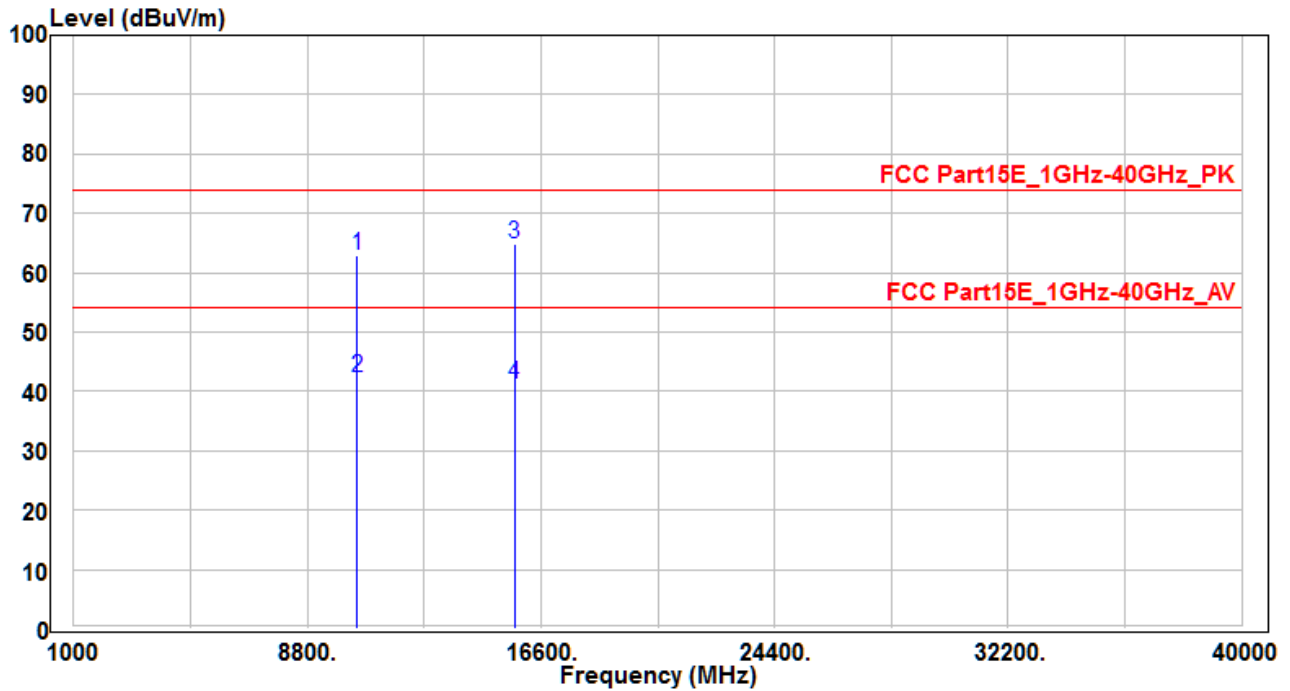


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	10480	42.26	17.13	59.39	-14.61	74	110	400	Peak
2	10480	26.24	17.13	43.37	-10.63	54	110	400	Average
3	* 15720	42.62	20.46	63.08	-10.92	74	125	50	Peak
4	* 15720	24.42	20.46	44.88	-9.12	54	125	50	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 emission levels of other frequencies are very lower than the limit and not show in test report ◦

EUT	VA50EC	Test Date	2017/04/10
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Kevin
Test Mode	MODE1 -CH48_Ant 2	Test Voltage	AC 120V/60Hz

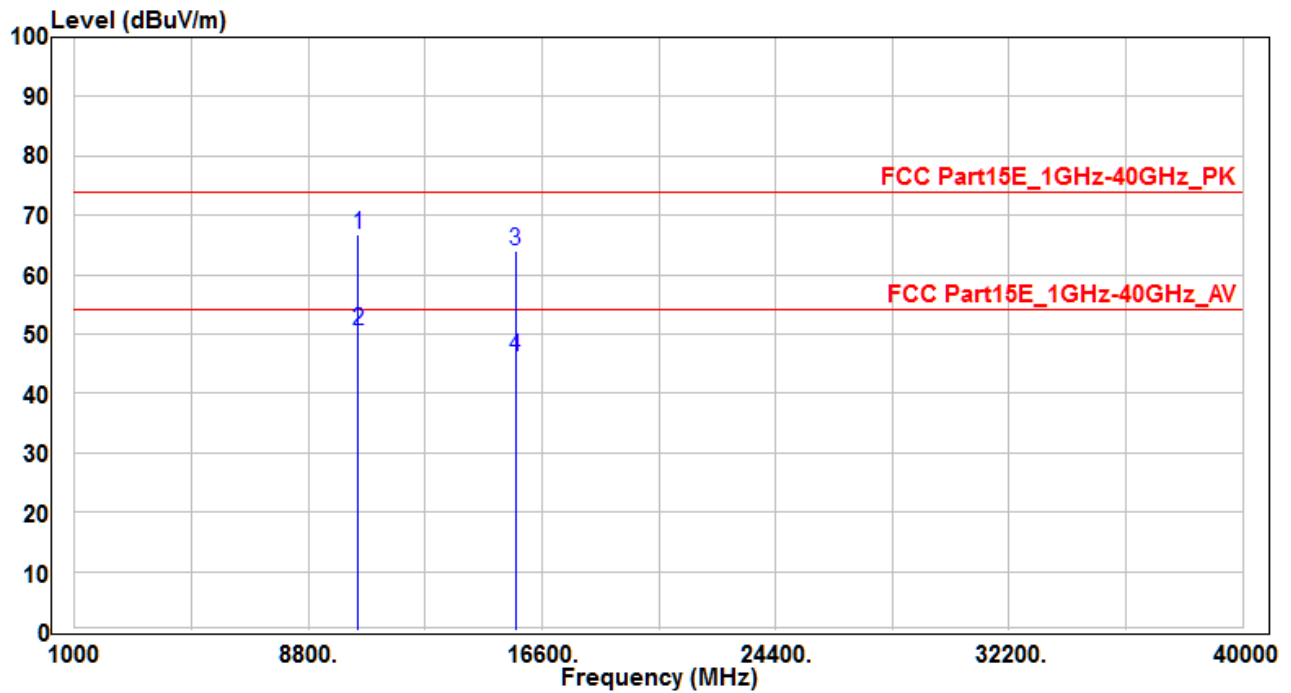


No		Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	*	10480	45.8	17.13	62.93	-11.07	74	110	375	Peak
2	*	10480	25.27	17.13	42.4	-11.6	54	110	375	Average
3		15720	44.5	20.46	64.96	-9.04	74	150	20	Peak
4		15720	20.88	20.46	41.34	-12.66	54	150	20	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 emission levels of other frequencies are very lower than the limit and not show in test report ◦

EUT	VA50EC	Test Date	2017/04/10
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Kevin
Test Mode	MODE1 -CH48_Ant 2	Test Voltage	AC 120V/60Hz

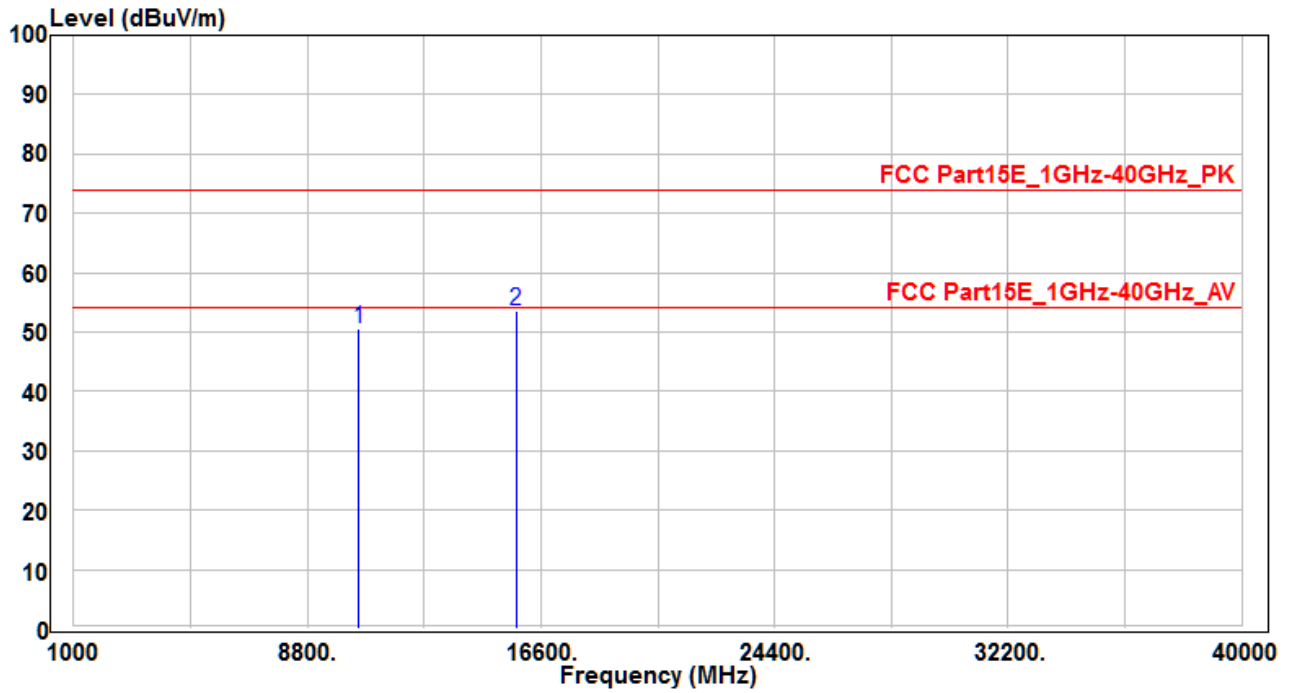


No		Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	*	10480	49.58	17.13	66.71	-7.29	74	110	400	Peak
2	*	10480	33.48	17.13	50.61	-3.39	54	110	400	Average
3		15720	43.53	20.46	63.99	-10.01	74	130	360	Peak
4		15720	25.82	20.46	46.28	-7.72	54	130	360	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 emission levels of other frequencies are very lower than the limit and not show in test report °

EUT	VA50EC	Test Date	2017/04/10
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Kevin
Test Mode	MODE1 -CH52_Ant 1	Test Voltage	AC 120V/60Hz

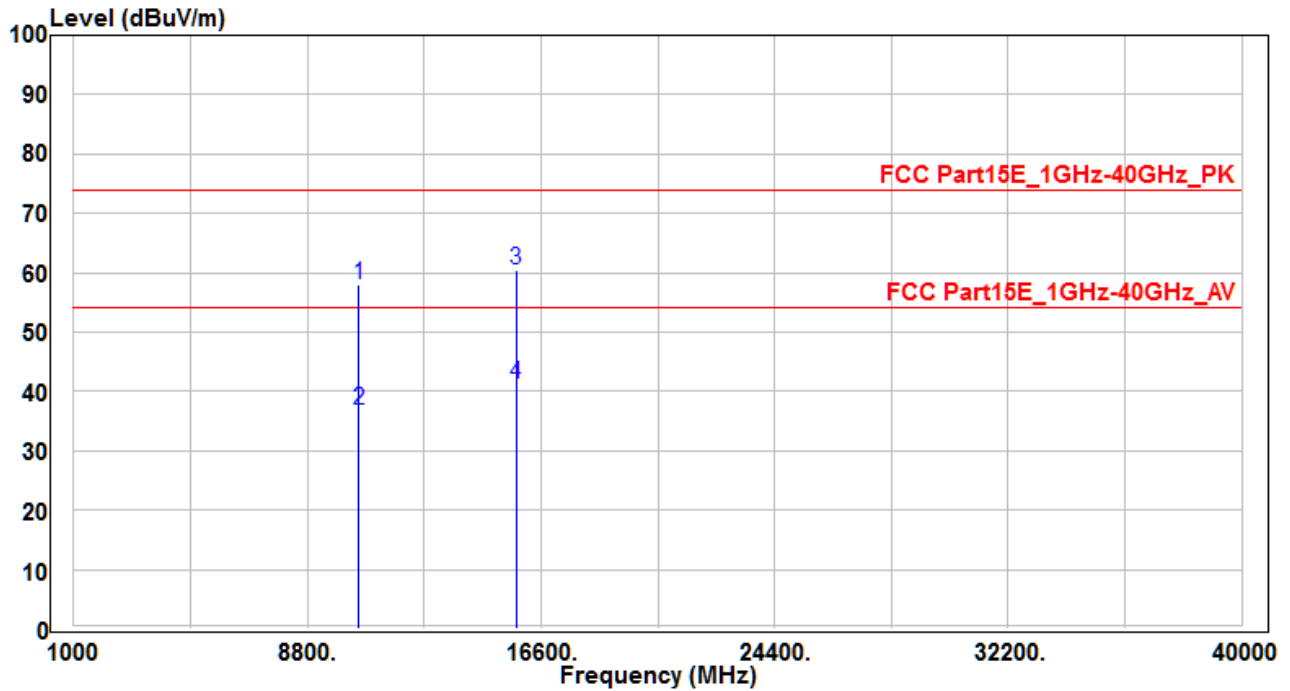


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	10520	33.37	17.19	50.56	-23.44	74	100	400	Peak
2	* 15780	33.28	20.39	53.67	-20.33	74	100	400	Peak

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 emission levels of other frequencies are very lower than the limit and not show in test report °

EUT	VA50EC	Test Date	2017/04/10
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Kevin
Test Mode	MODE1 -CH52_Ant 1	Test Voltage	AC 120V/60Hz

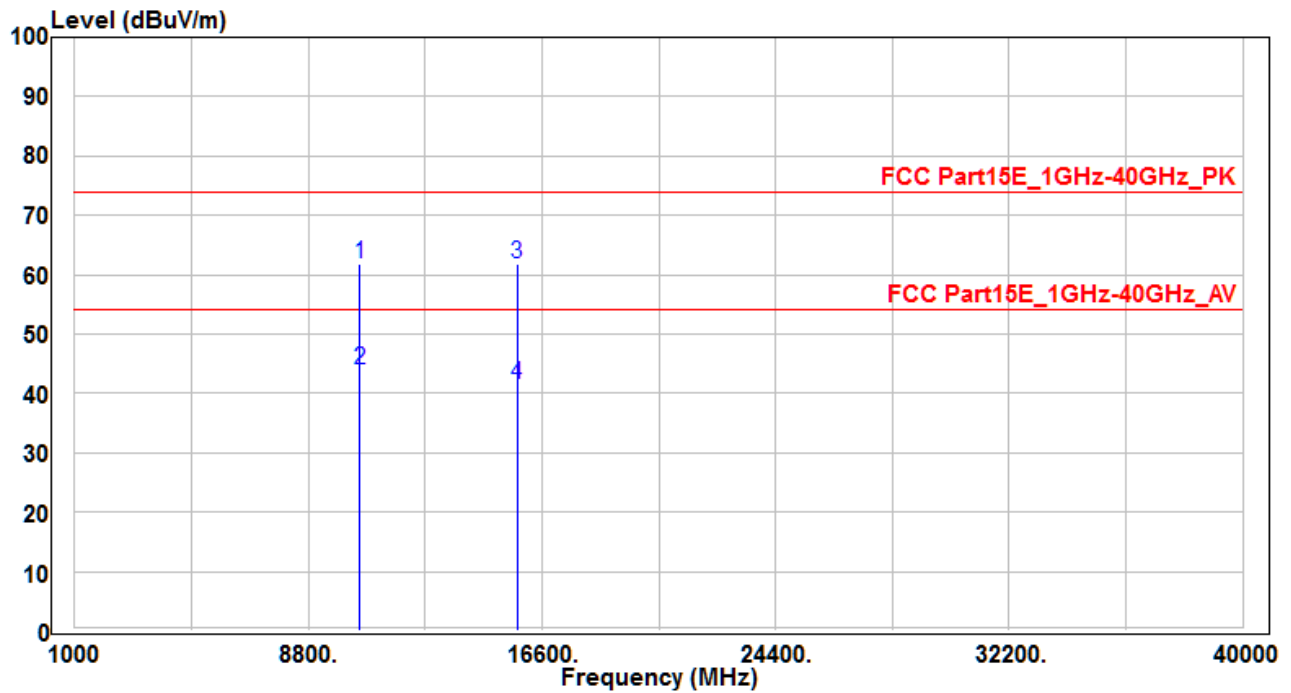


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	10520	40.81	17.19	58	-16	74	100	-15	Peak
2	10520	19.68	17.19	36.87	-17.13	54	100	-15	Average
3	* 15780	39.94	20.39	60.33	-13.67	74	150	-20	Peak
4	* 15780	20.82	20.39	41.21	-12.79	54	150	-20	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 emission levels of other frequencies are very lower than the limit and not show in test report ◦

EUT	VA50EC	Test Date	2017/04/10
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Kevin
Test Mode	MODE1 -CH52_Ant 2	Test Voltage	AC 120V/60Hz

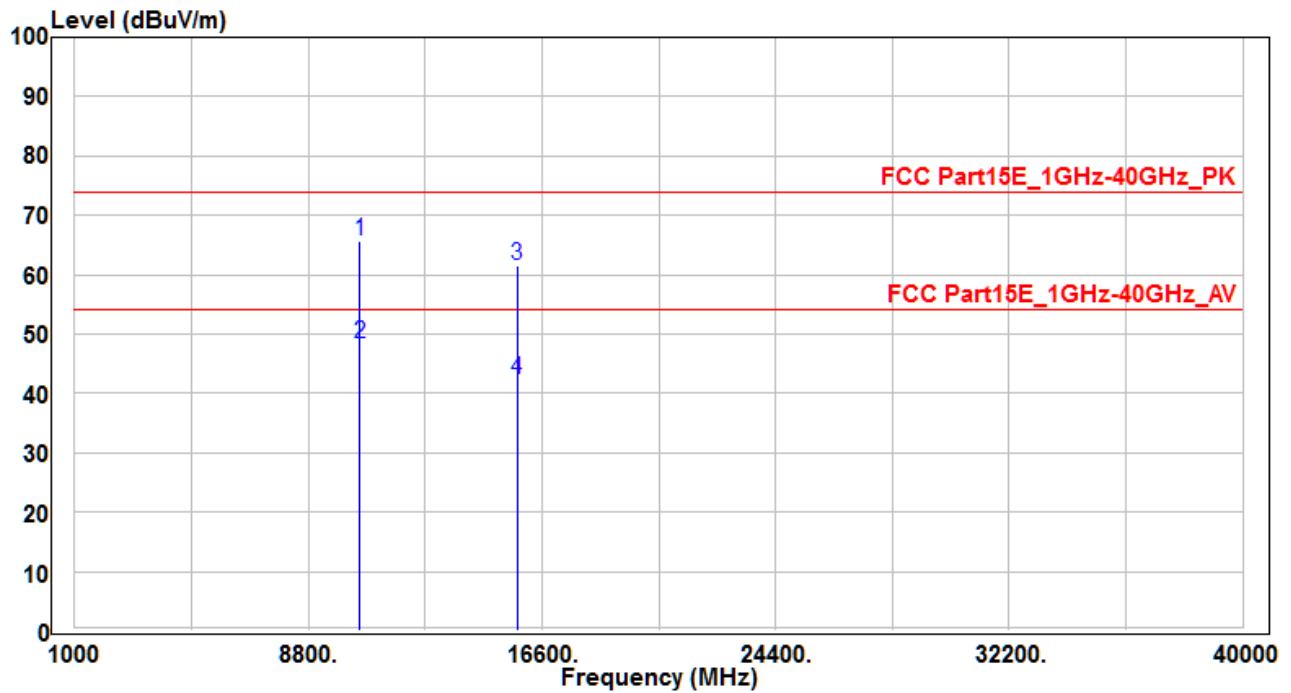


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	10520	44.52	17.19	61.71	-12.29	74	240	380	Peak
2	*	26.91	17.19	44.1	-9.9	54	240	380	Average
3	15780	41.43	20.39	61.82	-12.18	74	180	20	Peak
4	15780	21.21	20.39	41.6	-12.4	54	180	20	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 emission levels of other frequencies are very lower than the limit and not show in test report °

EUT	VA50EC	Test Date	2017/04/10
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Kevin
Test Mode	MODE1 -CH52_Ant 2	Test Voltage	AC 120V/60Hz

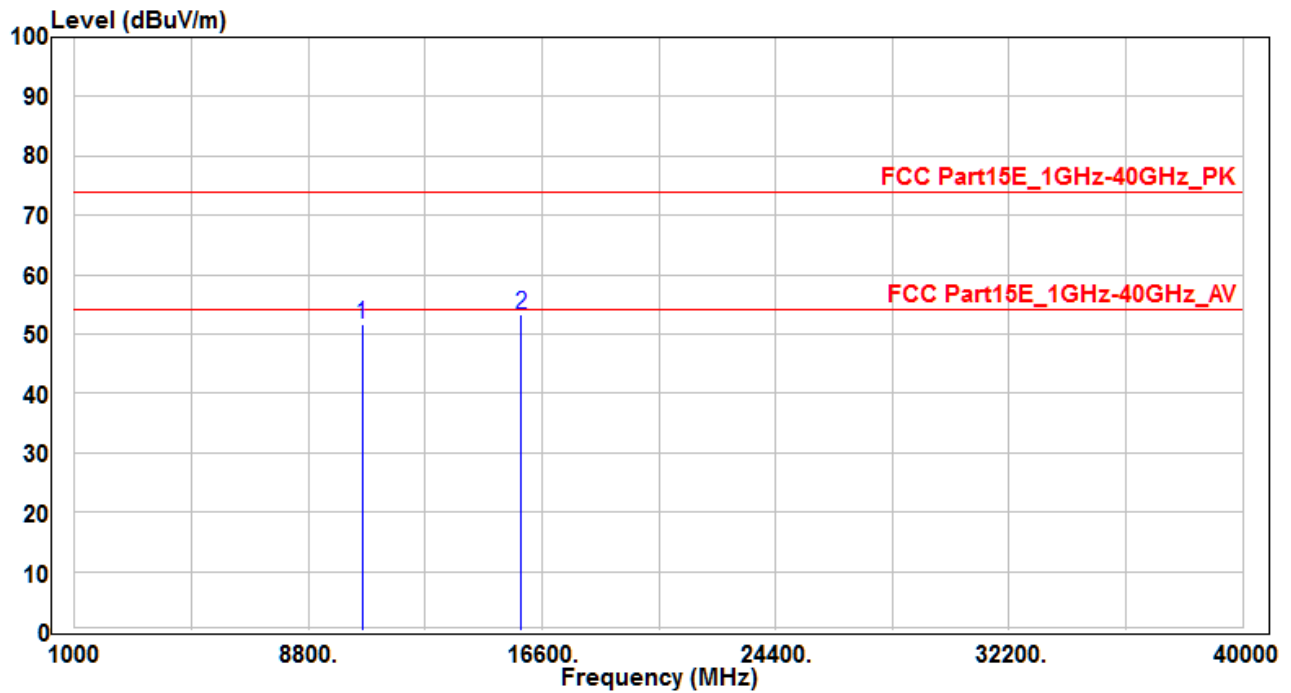


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	10520	48.37	17.19	65.56	-8.44	74	100	380	Peak
2	10520	31.23	17.19	48.42	-5.58	54	100	380	Average
3	* 15780	41.27	20.39	61.66	-12.34	74	190	350	Peak
4	* 15780	21.98	20.39	42.37	-11.63	54	190	350	Average

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 ◦

EUT	VA50EC	Test Date	2017/04/10
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Kevin
Test Mode	MODE1 -CH60_Ant 1	Test Voltage	AC 120V/60Hz

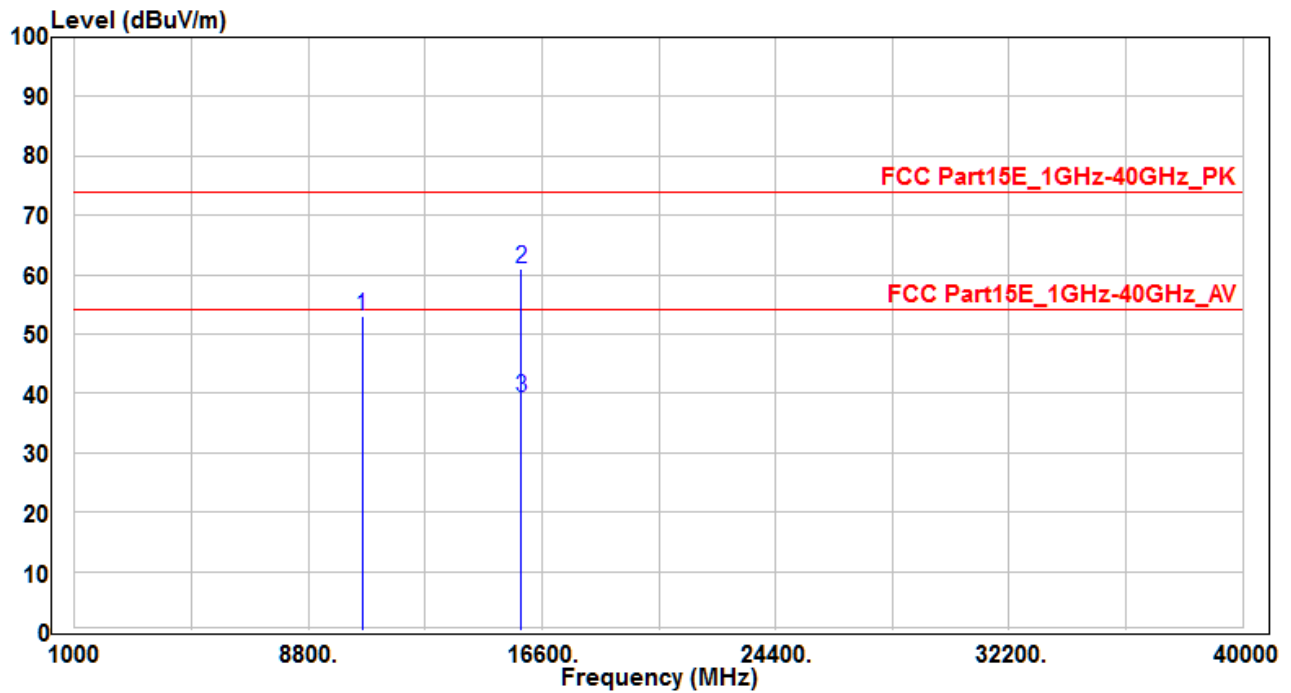


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	10600	34.31	17.26	51.57	-22.43	74	100	400	Peak
2	* 15900	32.98	20.39	53.37	-20.63	74	100	400	Peak

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 emission levels of other frequencies are very lower than the limit and not show in test report °

EUT	VA50EC	Test Date	2017/04/10
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Kevin
Test Mode	MODE1 -CH60_Ant 1	Test Voltage	AC 120V/60Hz

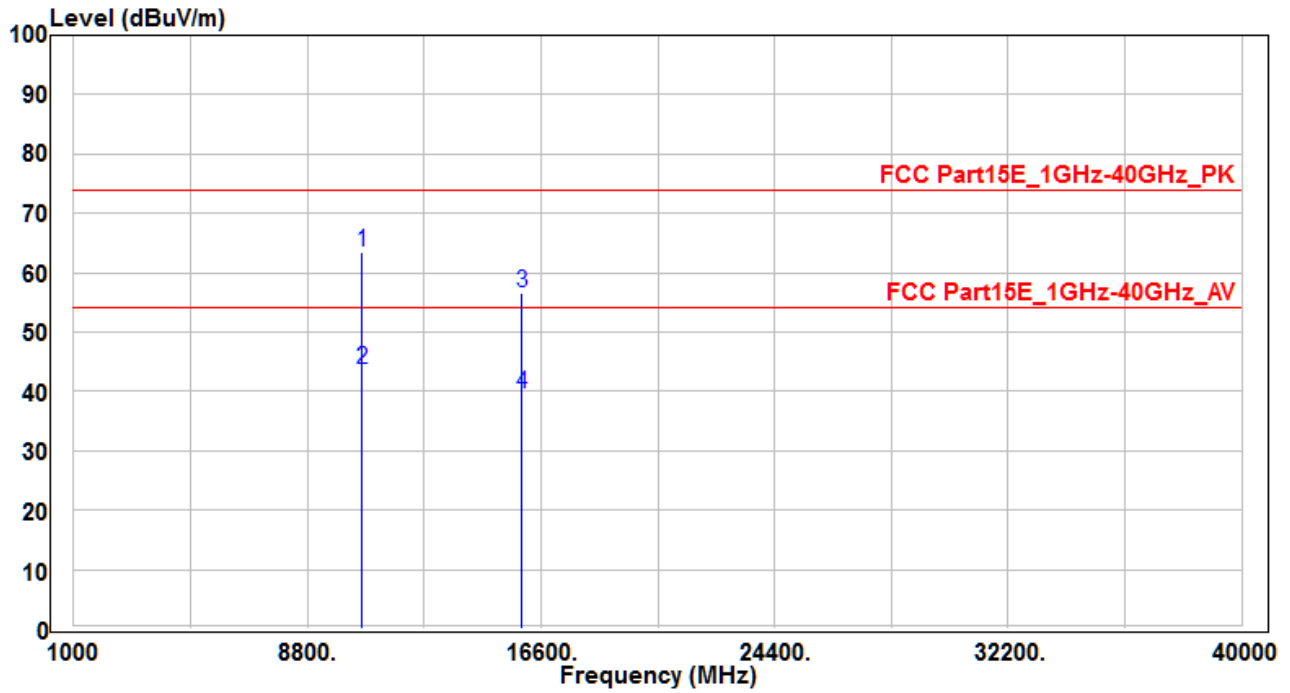


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	10600	35.81	17.26	53.07	-20.93	74	100	400	Peak
2	*	15900	20.39	60.96	-13.04	74	150	380	Peak
3	*	15900	18.9	39.29	-14.71	54	150	380	Average

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 °

EUT	VA50EC	Test Date	2017/04/10
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Kevin
Test Mode	MODE1 -CH60_Ant 2	Test Voltage	AC 120V/60Hz

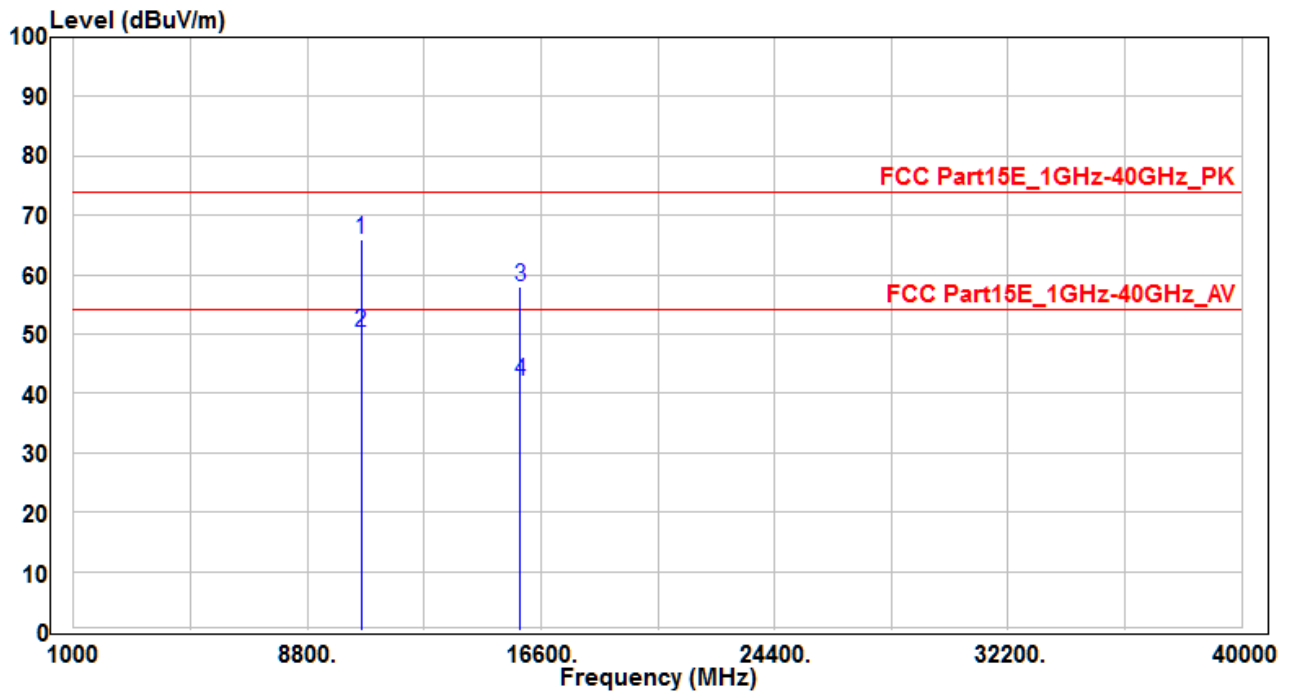


No		Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	*	10600	45.73	17.26	62.99	-11.01	74	110	360	Peak
2	*	10600	25	17.26	42.26	-11.74	54	110	360	Average
3		15900	37.95	20.39	58.34	-15.66	74	185	350	Peak
4		15900	18.73	20.39	39.12	-14.88	54	185	350	Average

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 °

EUT	VA50EC	Test Date	2017/04/10
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Kevin
Test Mode	MODE1 -CH60_Ant 2	Test Voltage	AC 120V/60Hz

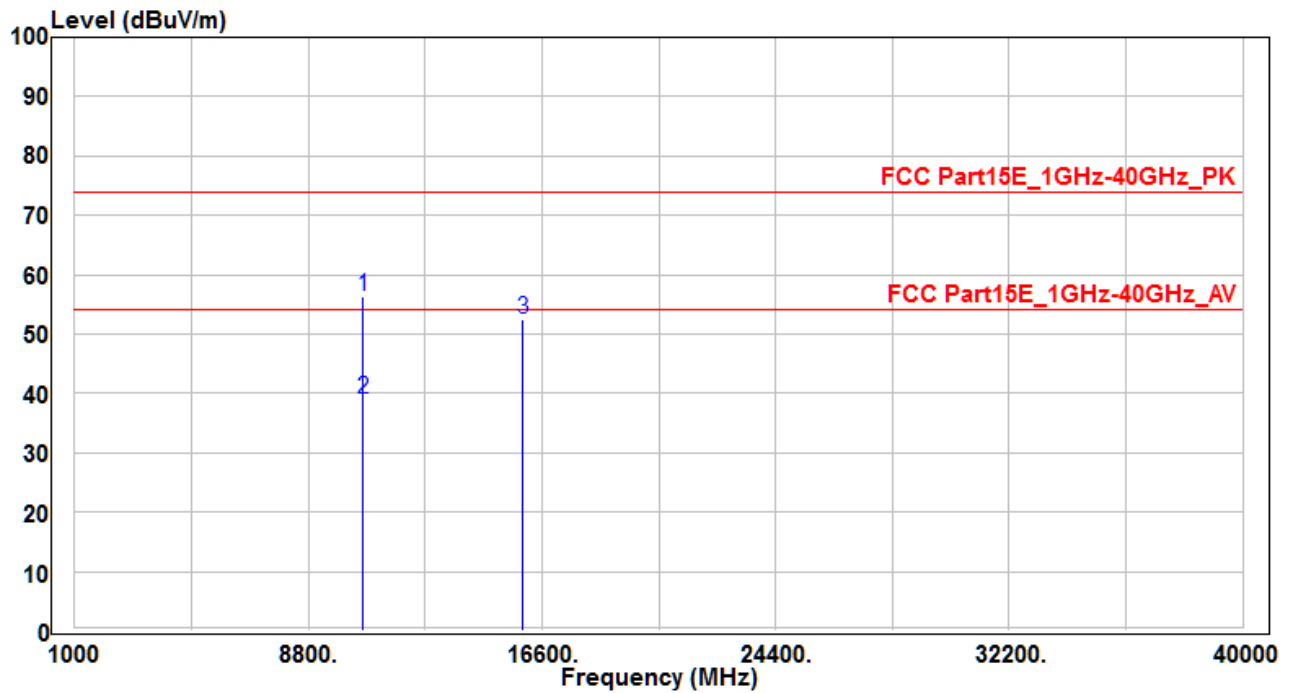


No		Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	*	10600	48.58	17.26	65.84	-8.16	74	100	400	Peak
2	*	10600	33.01	17.26	50.27	-3.73	54	100	400	Average
3		15900	37.72	20.39	58.11	-15.89	74	150	360	Peak
4		15900	21.64	20.39	42.03	-11.97	54	150	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 emission levels of other frequencies are very lower than the limit and not show in test report °

EUT	VA50EC	Test Date	2017/04/10
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Kevin
Test Mode	MODE1 -CH64_Ant 1	Test Voltage	AC 120V/60Hz

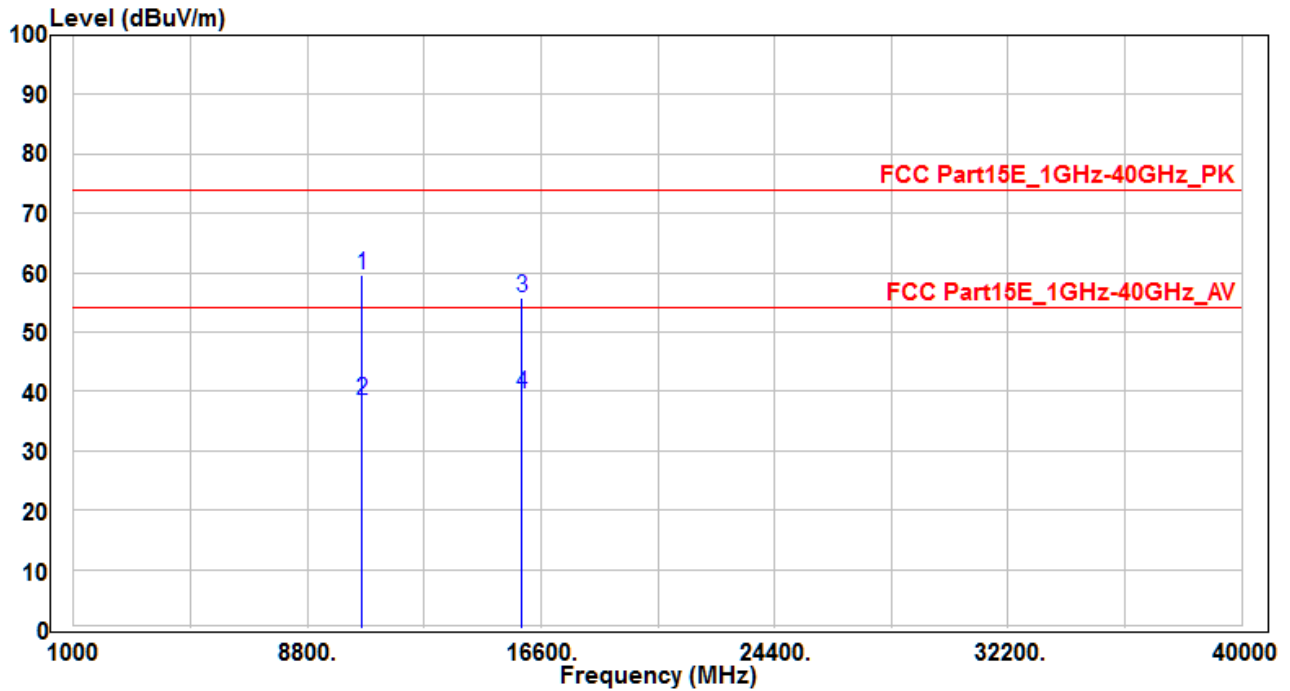


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	*	39.03	17.37	56.4	-17.6	74	250	20	Peak
2	*	21.76	17.37	39.13	-14.87	54	250	20	Average
3		32.04	20.33	52.37	-21.63	74	100	400	Peak

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 emission levels of other frequencies are very lower than the limit and not show in test report °

EUT	VA50EC	Test Date	2017/04/10
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Kevin
Test Mode	MODE1 -CH64_Ant 1	Test Voltage	AC 120V/60Hz

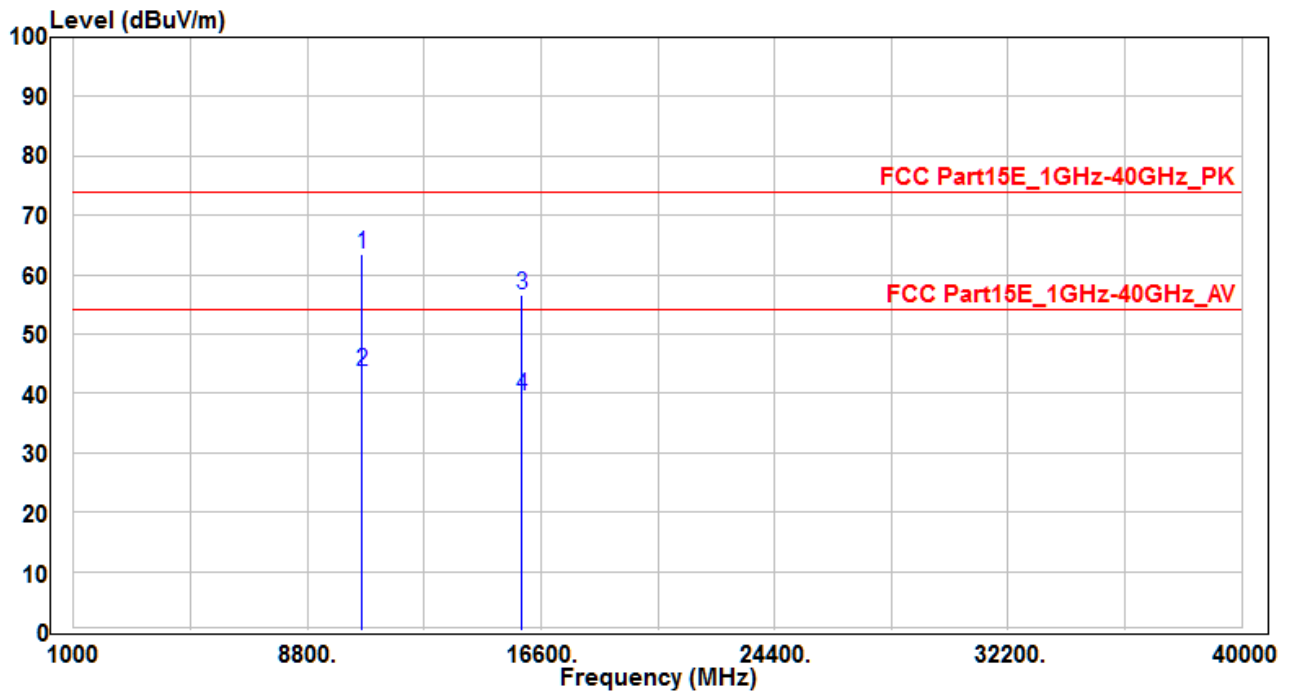


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	10640	42.32	17.37	59.69	-14.31	74	100	0	Peak
2	10640	21.07	17.37	38.44	-15.56	54	100	0	Average
3	* 15960	35.56	20.33	55.89	-18.11	74	140	360	Peak
4	* 15960	19.31	20.33	39.64	-14.36	54	140	360	Average

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 °

EUT	VA50EC	Test Date	2017/04/10
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Kevin
Test Mode	MODE1 -CH64_Ant 2	Test Voltage	AC 120V/60Hz

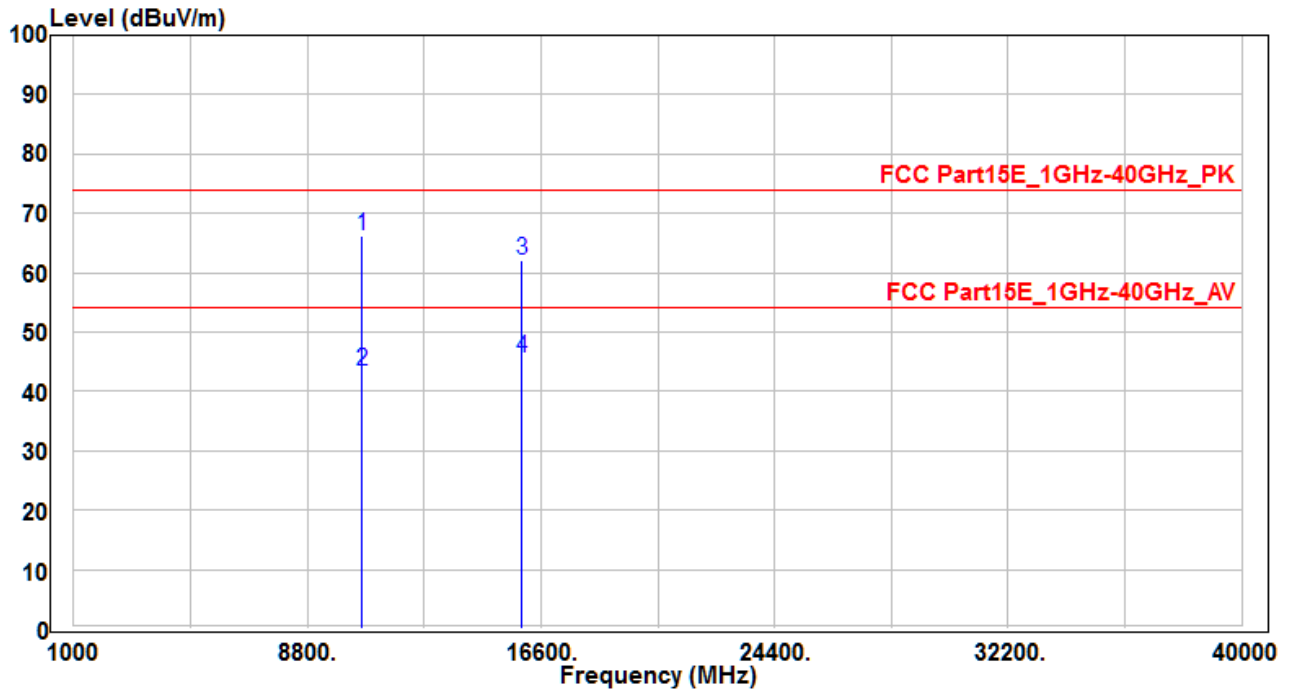


No		Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	*	10640	46.01	17.37	63.38	-10.62	74	100	0	Peak
2	*	10640	26.41	17.37	43.78	-10.22	54	100	0	Average
3		15960	36.36	20.33	56.69	-17.31	74	110	370	Peak
4		15960	19.3	20.33	39.63	-14.37	54	110	370	Average

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 °

EUT	VA50EC	Test Date	2017/04/10
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Kevin
Test Mode	MODE1 -CH64_Ant 2	Test Voltage	AC 120V/60Hz

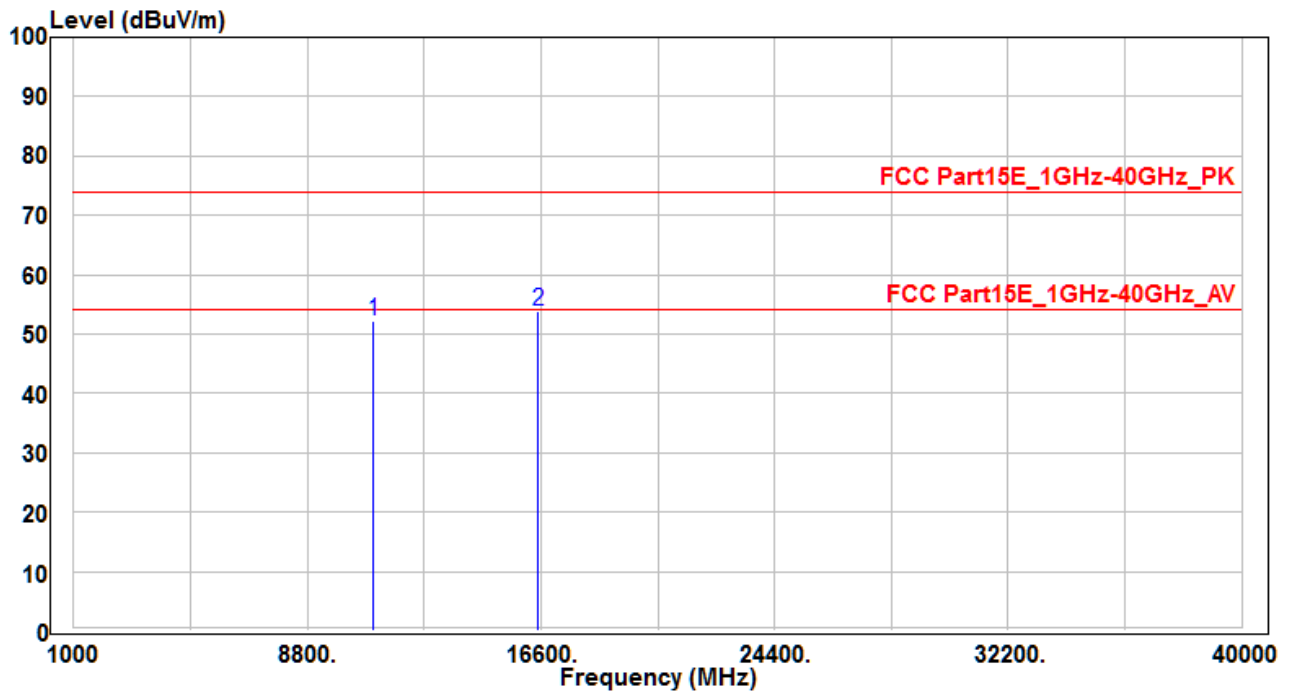


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	10640	48.87	17.37	66.24	-7.76	74	100	360	Peak
2	10640	26.11	17.37	43.48	-10.52	54	100	360	Average
3	* 15960	41.86	20.33	62.19	-11.81	74	160	370	Peak
4	* 15960	25.38	20.33	45.71	-8.29	54	160	370	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 emission levels of other frequencies are very lower than the limit and not show in test report ◦

EUT	VA50EC	Test Date	2017/04/10
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Kevin
Test Mode	MODE1 -CH100_Ant 1	Test Voltage	AC 120V/60Hz

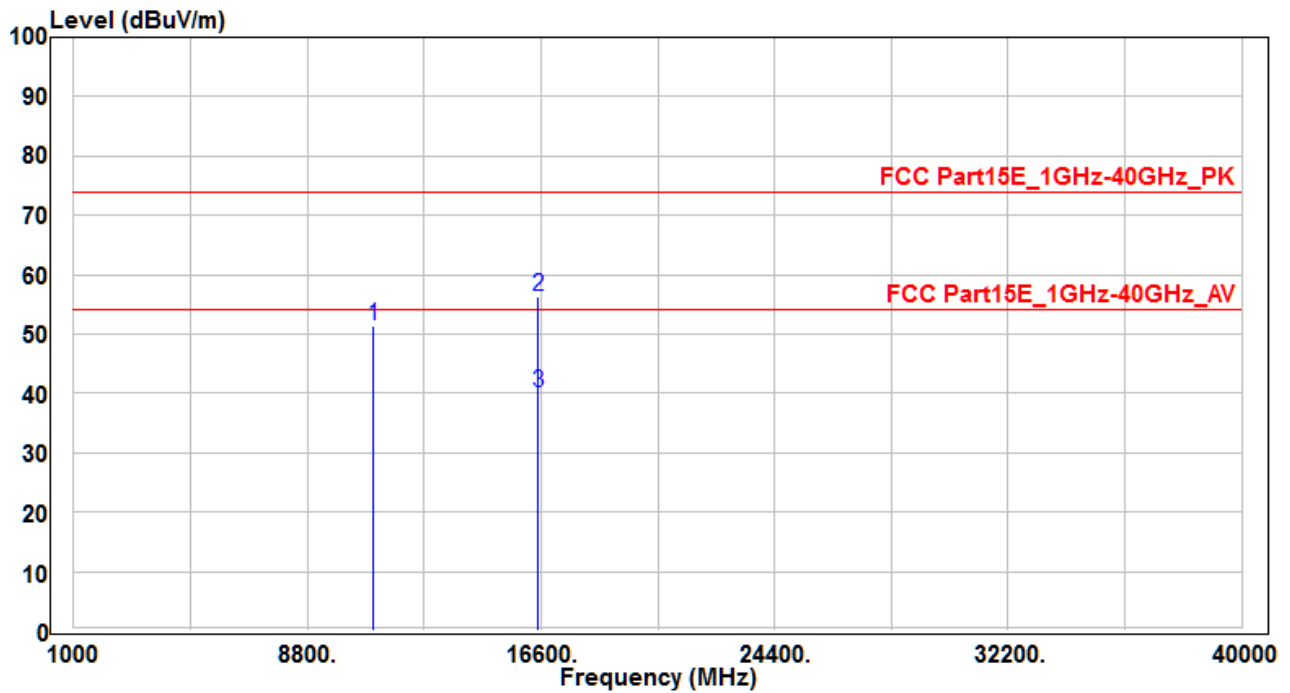


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	11000	33.88	18.46	52.34	-21.66	74	100	400	Peak
2	* 16500	32.06	21.88	53.94	-20.06	74	100	400	Peak

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 emission levels of other frequencies are very lower than the limit and not show in test report °

EUT	VA50EC	Test Date	2017/04/10
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Kevin
Test Mode	MODE1 -CH100_Ant 1	Test Voltage	AC 120V/60Hz

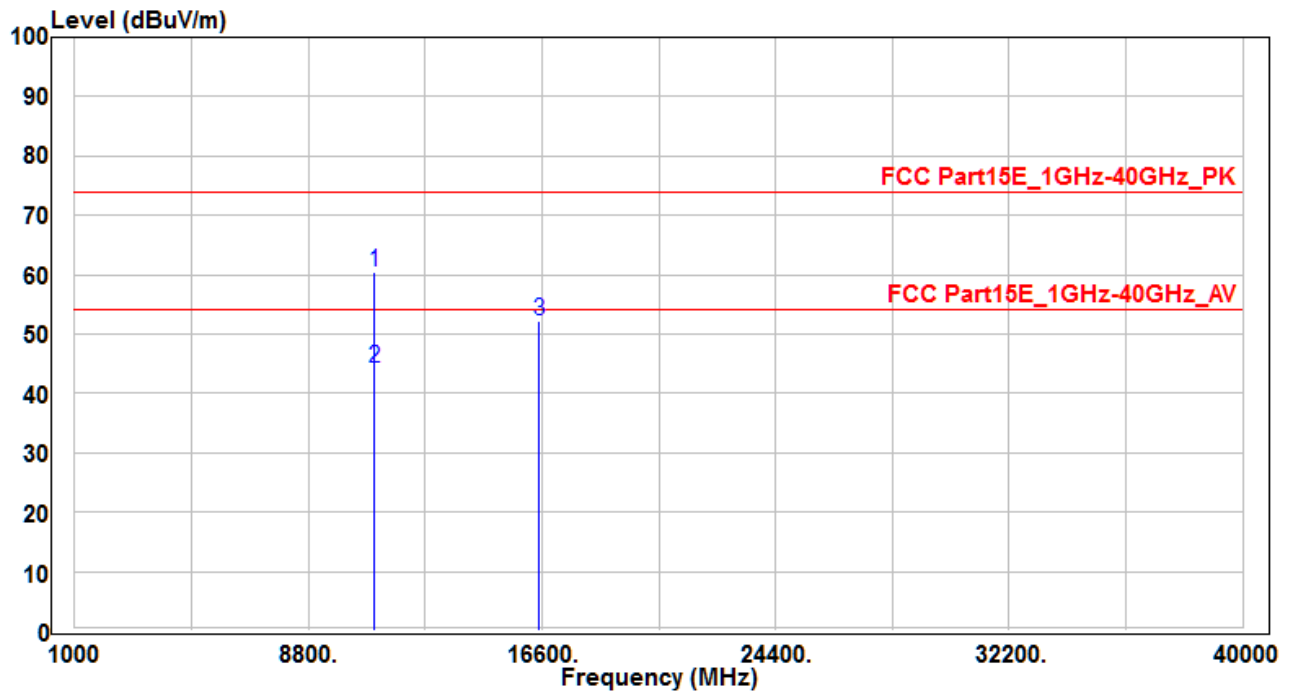


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	11000	32.79	18.46	51.25	-22.75	74	100	400	Peak
2	* 16500	34.4	21.88	56.28	-17.72	74	200	-20	Peak
3	* 16500	18.25	21.88	40.13	-13.87	54	200	-20	Average

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 °

EUT	VA50EC	Test Date	2017/04/10
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Kevin
Test Mode	MODE1 -CH100_Ant 2	Test Voltage	AC 120V/60Hz

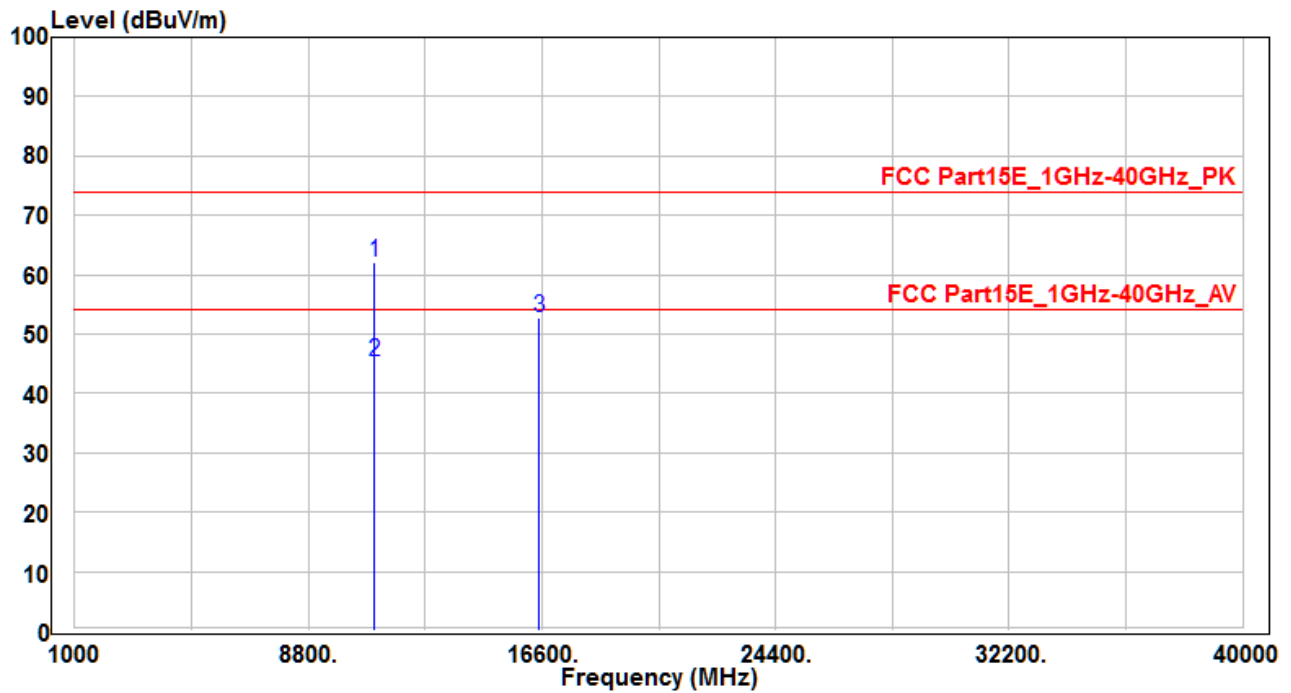


No		Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	*	11000	41.86	18.46	60.32	-13.68	74	120	10	Peak
2	*	11000	25.86	18.46	44.32	-9.68	54	120	10	Average
3		16500	30.25	21.88	52.13	-21.87	74	100	400	Peak

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 emission levels of other frequencies are very lower than the limit and not show in test report °

EUT	VA50EC	Test Date	2017/04/10
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Kevin
Test Mode	MODE1 -CH100_Ant 2	Test Voltage	AC 120V/60Hz

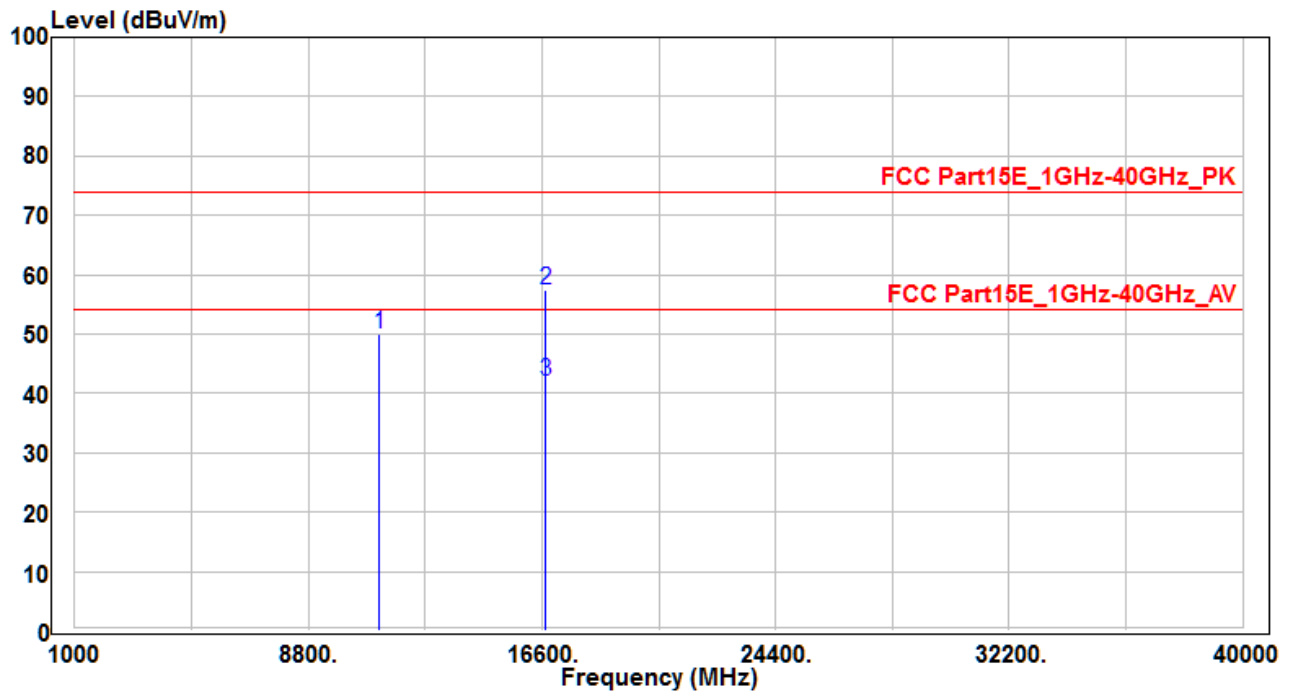


No		Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	*	11000	43.75	18.46	62.21	-11.79	74	110	30	Peak
2	*	11000	26.87	18.46	45.33	-8.67	54	110	30	Average
3		16500	30.94	21.88	52.82	-21.18	74	100	400	Peak

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 emission levels of other frequencies are very lower than the limit and not show in test report °

EUT	VA50EC	Test Date	2017/04/10
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Kevin
Test Mode	MODE1 -CH116_Ant 1	Test Voltage	AC 120V/60Hz

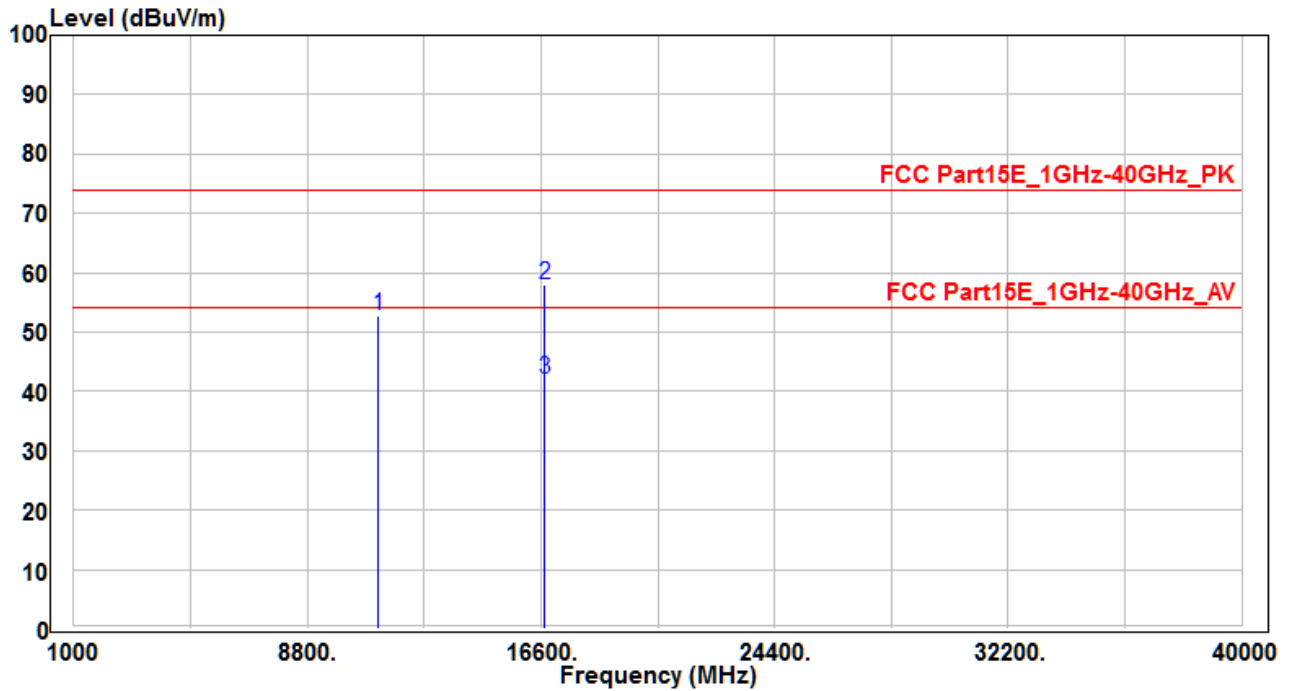


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	11160	31.39	18.68	50.07	-23.93	74	100	400	Peak
2	* 16740	34.23	23.25	57.48	-16.52	74	100	210	Peak
3	* 16740	18.83	23.25	42.08	-11.92	54	100	210	Average

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 °

EUT	VA50EC	Test Date	2017/04/10
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Kevin
Test Mode	MODE1 -CH116_Ant 1	Test Voltage	AC 120V/60Hz

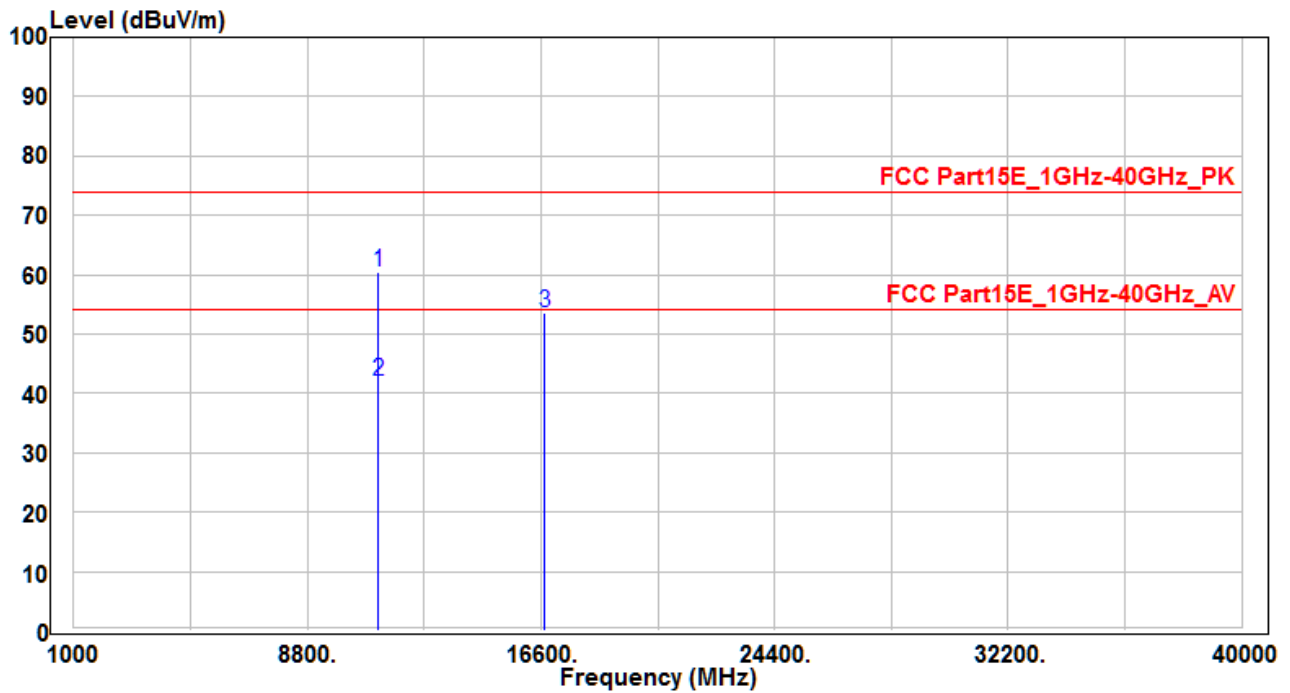


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	11160	34.2	18.68	52.88	-21.12	74	100	400	Peak
2	* 16740	34.67	23.25	57.92	-16.08	74	100	80	Peak
3	* 16740	18.88	23.25	42.13	-11.87	54	100	80	Average

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 °

EUT	VA50EC	Test Date	2017/04/10
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Kevin
Test Mode	MODE1 -CH116_Ant 2	Test Voltage	AC 120V/60Hz

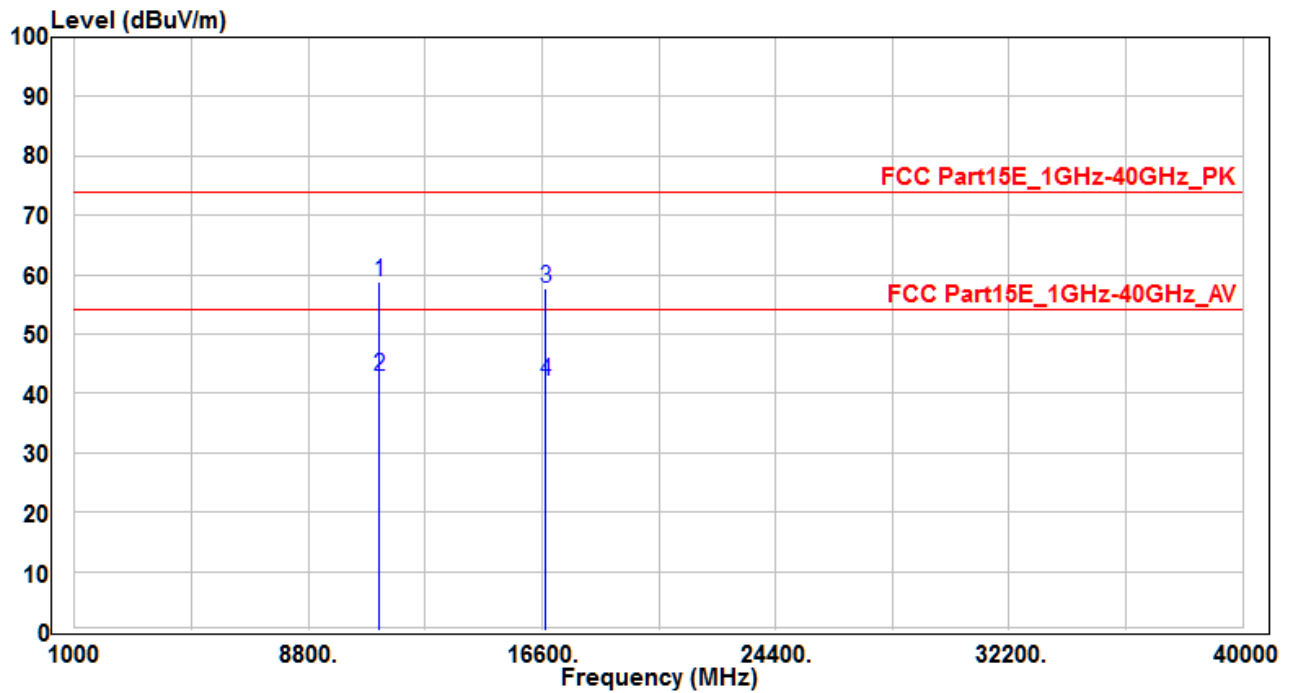


No		Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	*	11160	41.78	18.68	60.46	-13.54	74	120	-10	Peak
2	*	11160	23.4	18.68	42.08	-11.92	54	120	-10	Average
3		16740	30.37	23.25	53.62	-20.38	74	100	400	Peak

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 emission levels of other frequencies are very lower than the limit and not show in test report °

EUT	VA50EC	Test Date	2017/04/10
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Kevin
Test Mode	MODE1 -CH116_Ant 2	Test Voltage	AC 120V/60Hz

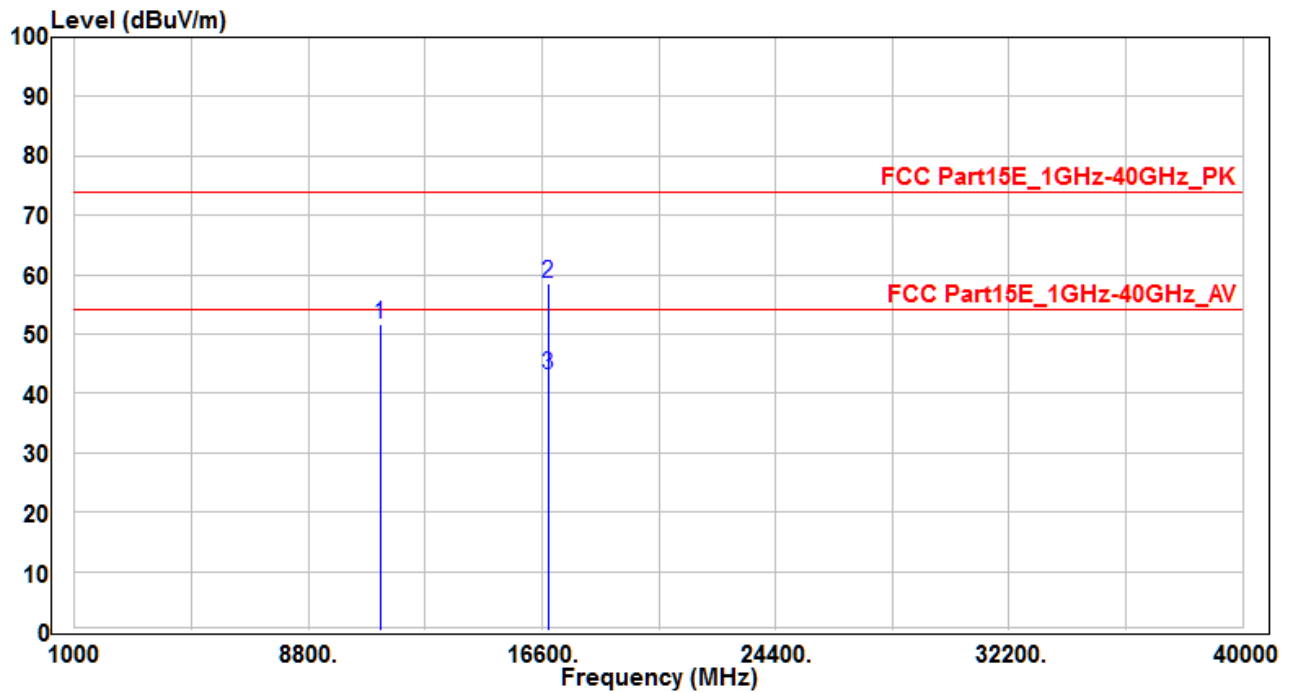


No		Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	*	11160	40.21	18.68	58.89	-15.11	74	110	400	Peak
2	*	11160	24.26	18.68	42.94	-11.06	54	110	400	Average
3		16740	34.5	23.25	57.75	-16.25	74	100	-10	Peak
4		16740	18.84	23.25	42.09	-11.91	54	100	-10	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 emission levels of other frequencies are very lower than the limit and not show in test report ◦

EUT	VA50EC	Test Date	2017/04/10
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Kevin
Test Mode	MODE1 -CH120_Ant 1	Test Voltage	AC 120V/60Hz

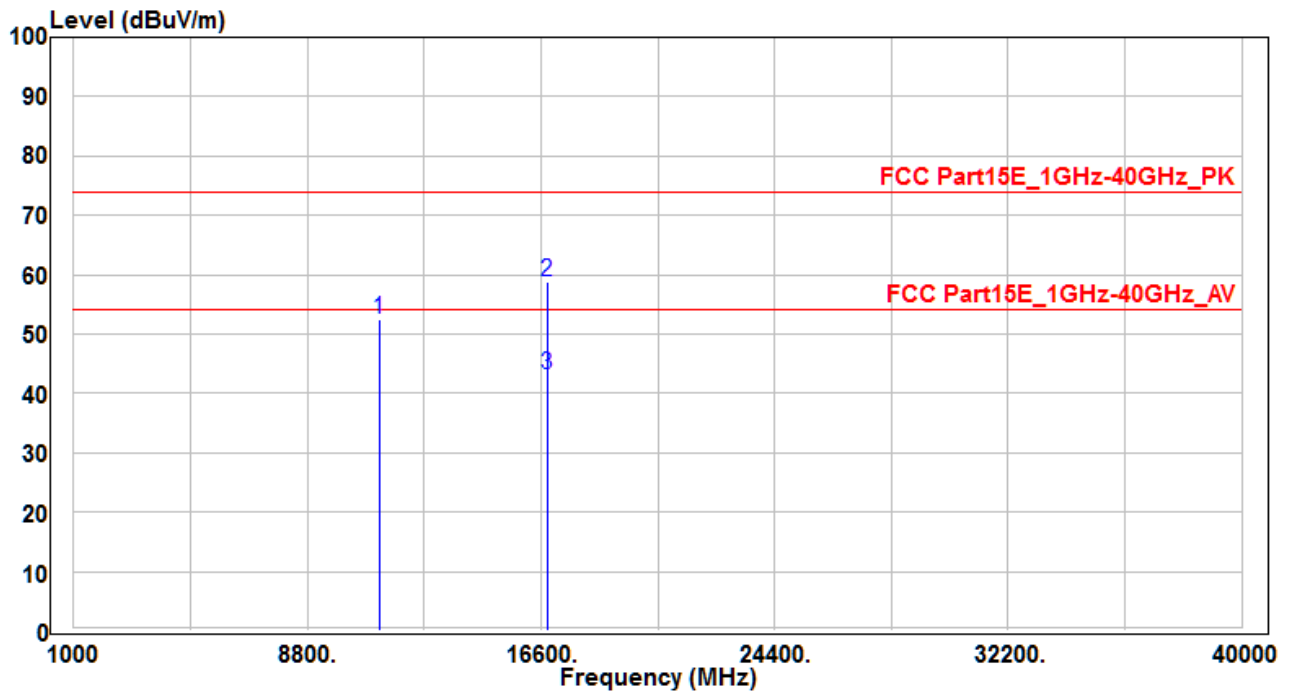


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	11200	33.03	18.75	51.78	-22.22	74	100	400	Peak
2	* 16800	34.8	23.75	58.55	-15.45	74	260	-30	Peak
3	* 16800	19.4	23.75	43.15	-10.85	54	260	-30	Average

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 emission levels of other frequencies are very lower than the limit and not show in test report °

EUT	VA50EC	Test Date	2017/04/10
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Kevin
Test Mode	MODE1 -CH120_Ant 1	Test Voltage	AC 120V/60Hz

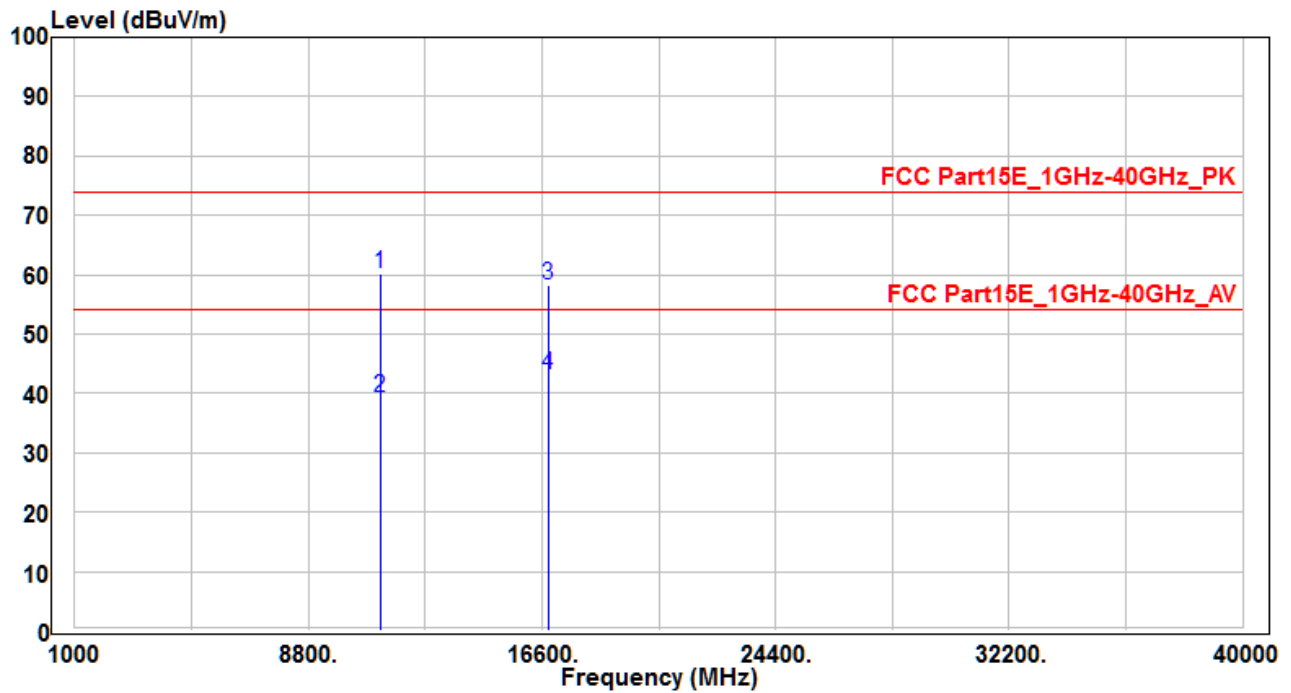


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)	
1	11200	33.65	18.75	52.4	-21.6	74	100	400	Peak	
2	*	16800	35.01	23.75	58.76	-15.24	74	100	50	Peak
3	*	16800	19.43	23.75	43.18	-10.82	54	100	50	Average

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 emission levels of other frequencies are very lower than the limit and not show in test report °

EUT	VA50EC	Test Date	2017/04/10
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Kevin
Test Mode	MODE1 -CH120_Ant 2	Test Voltage	AC 120V/60Hz

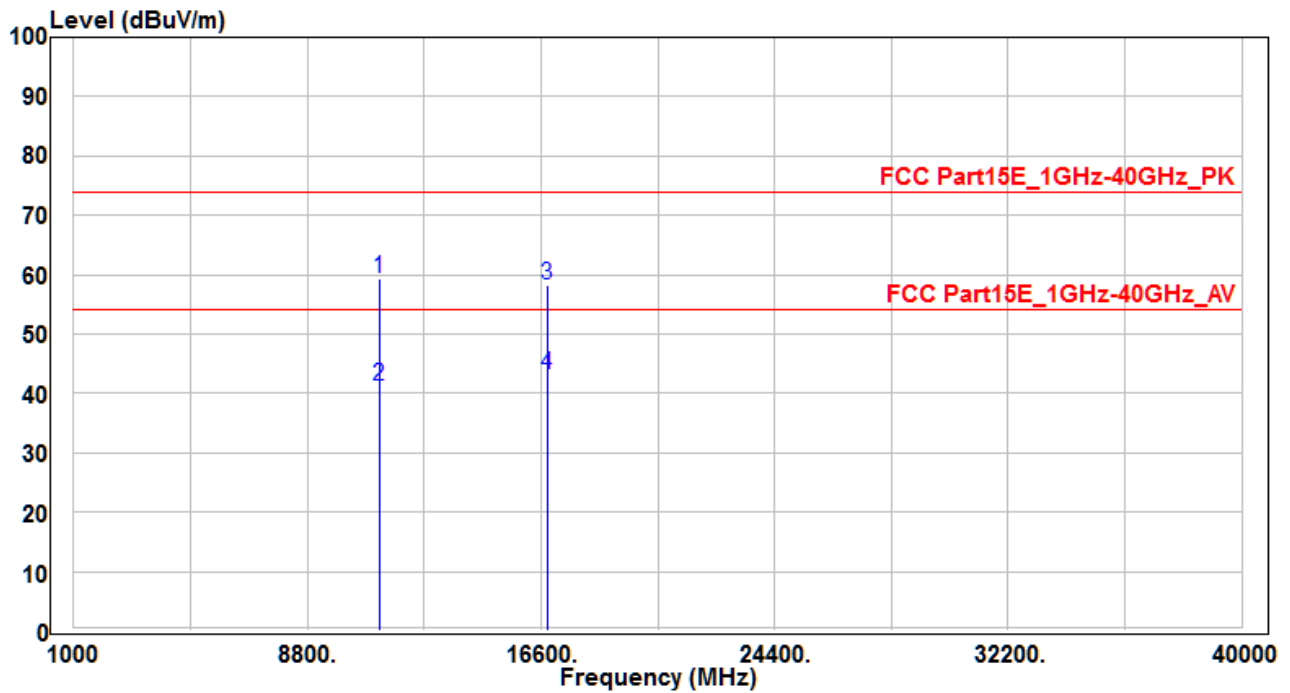


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	11200	41.39	18.75	60.14	-13.86	74	120	340	Peak
2	11200	20.56	18.75	39.31	-14.69	54	120	340	Average
3	* 16800	34.48	23.75	58.23	-15.77	74	100	310	Peak
4	* 16800	19.43	23.75	43.18	-10.82	54	100	310	Average

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 °

EUT	VA50EC	Test Date	2017/04/10
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Kevin
Test Mode	MODE1 -CH120_Ant 2	Test Voltage	AC 120V/60Hz

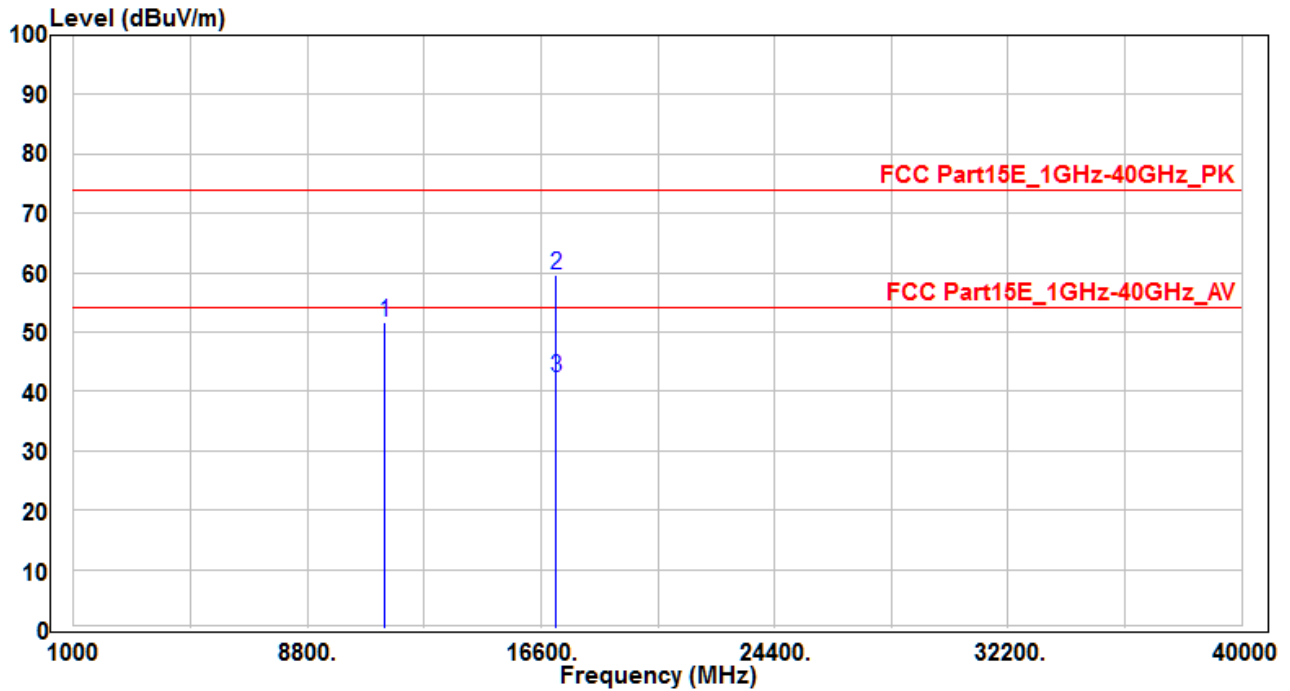


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	11200	40.51	18.75	59.26	-14.74	74	110	340	Peak
2	11200	22.41	18.75	41.16	-12.84	54	110	340	Average
3	* 16800	34.51	23.75	58.26	-15.74	74	100	80	Peak
4	* 16800	19.44	23.75	43.19	-10.81	54	100	80	Average

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 °

EUT	VA50EC	Test Date	2017/04/10
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Kevin
Test Mode	MODE1 -CH140_Ant 1	Test Voltage	AC 120V/60Hz

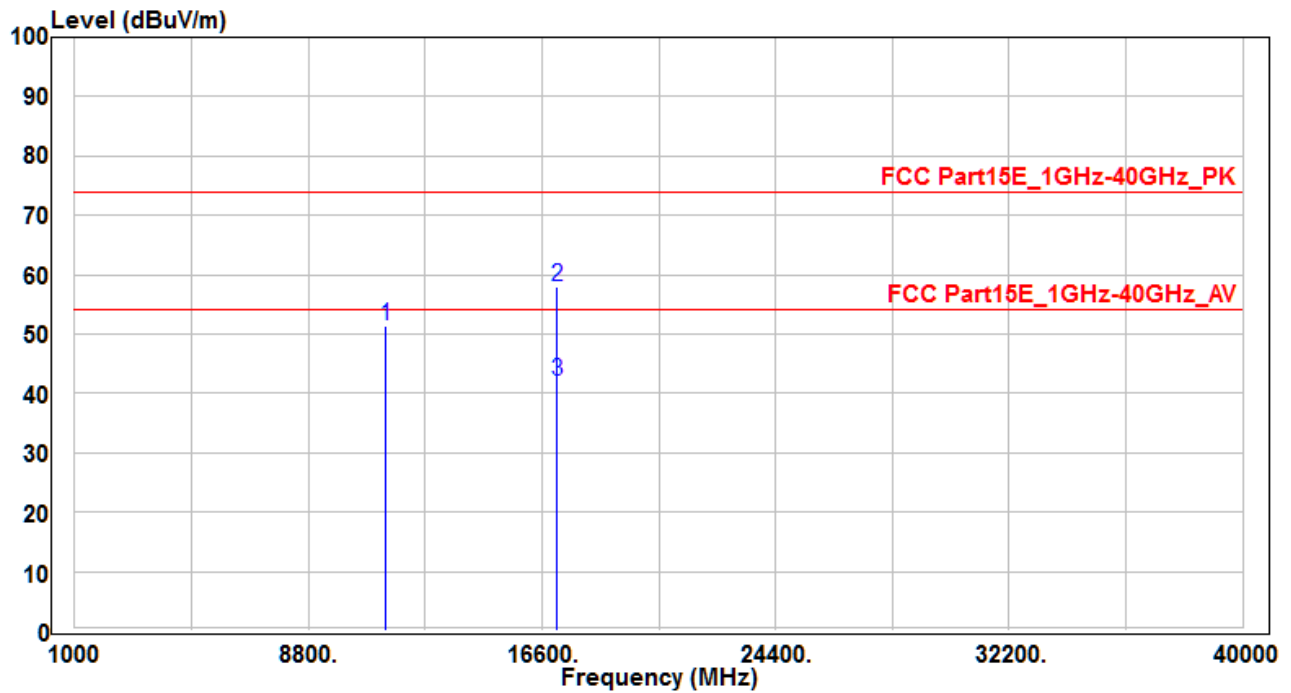


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	11400	32.58	19.1	51.68	-22.32	74	100	400	Peak
2	*	34.75	24.85	59.6	-14.4	74	100	-40	Peak
3	*	17.5	24.85	42.35	-11.65	54	100	-40	Average

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 °

EUT	VA50EC	Test Date	2017/04/10
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Kevin
Test Mode	MODE1 -CH140_Ant 1	Test Voltage	AC 120V/60Hz

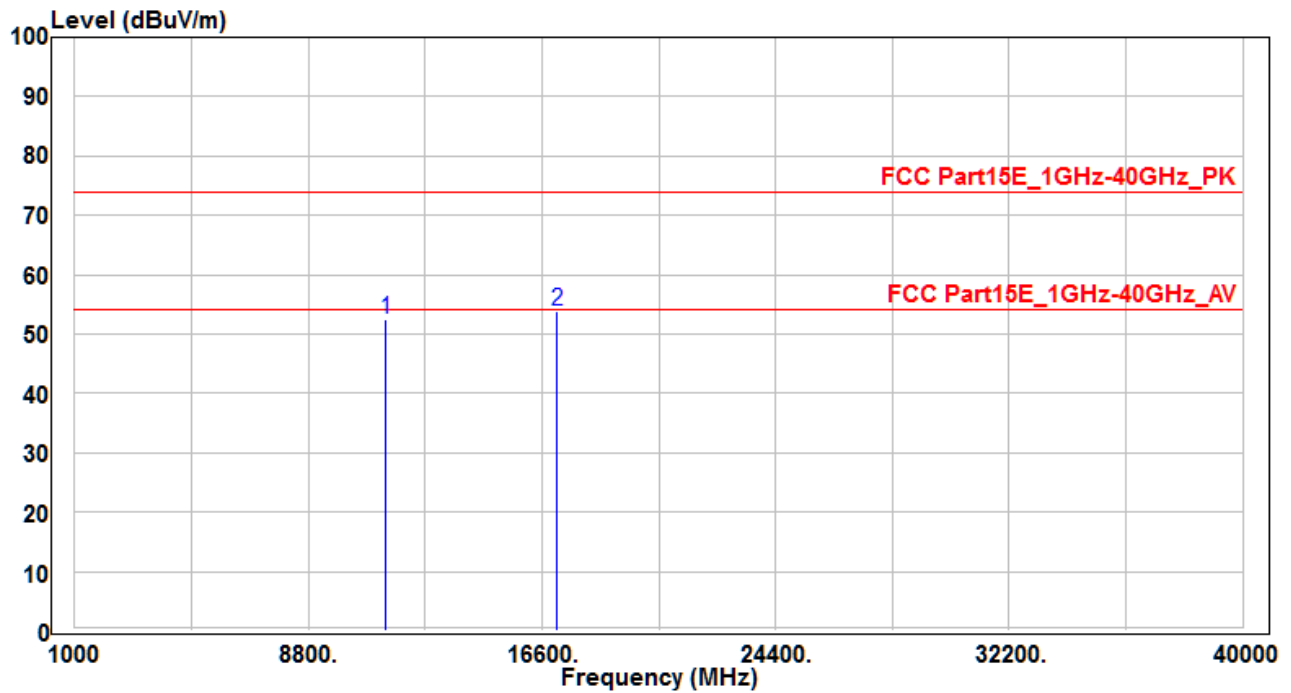


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	11400	32.16	19.1	51.26	-22.74	74	100	400	Peak
2	* 17100	33.26	24.85	58.11	-15.89	74	150	130	Peak
3	* 17100	17.15	24.85	42	-12	54	150	130	Average

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 emission levels of other frequencies are very lower than the limit and not show in test report °

EUT	VA50EC	Test Date	2017/04/10
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Kevin
Test Mode	MODE1 -CH140_Ant 2	Test Voltage	AC 120V/60Hz

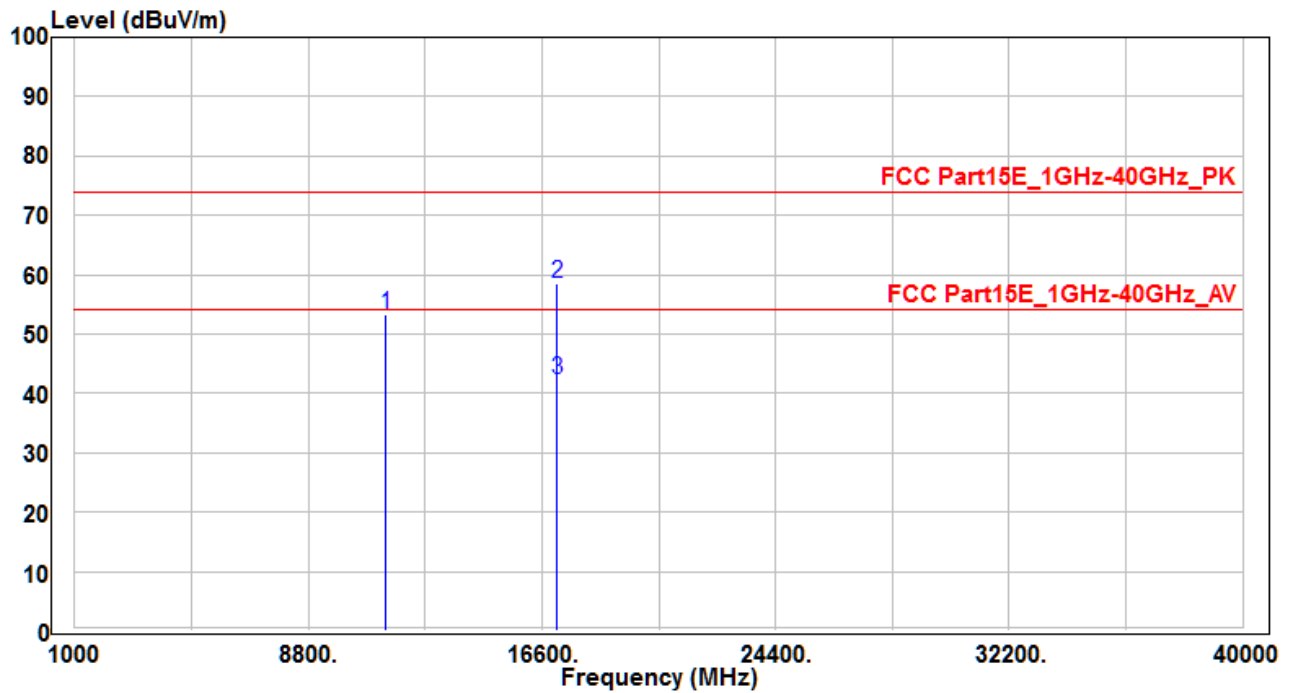


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	11400	33.28	19.1	52.38	-21.62	74	100	400	Peak
2	* 17100	28.97	24.85	53.82	-20.18	74	100	400	Peak

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 emission levels of other frequencies are very lower than the limit and not show in test report °

EUT	VA50EC	Test Date	2017/04/10
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Kevin
Test Mode	MODE1 -CH140_Ant 2	Test Voltage	AC 120V/60Hz

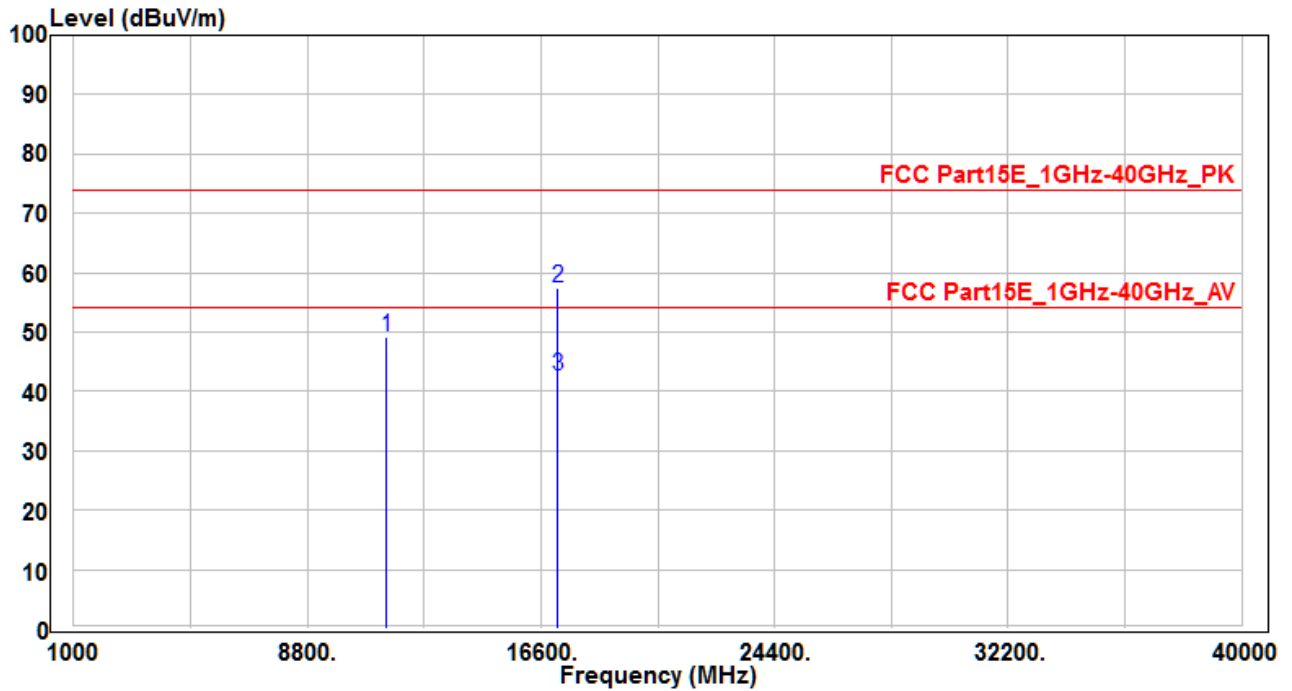


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	11400	34.18	19.1	53.28	-20.72	74	100	400	Peak
2	* 17100	33.58	24.85	58.43	-15.57	74	100	370	Peak
3	* 17100	17.51	24.85	42.36	-11.64	54	100	370	Average

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 emission levels of other frequencies are very lower than the limit and not show in test report °

EUT	VA50EC	Test Date	2017/04/10
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Kevin
Test Mode	MODE1 -CH144_Ant 1	Test Voltage	AC 120V/60Hz

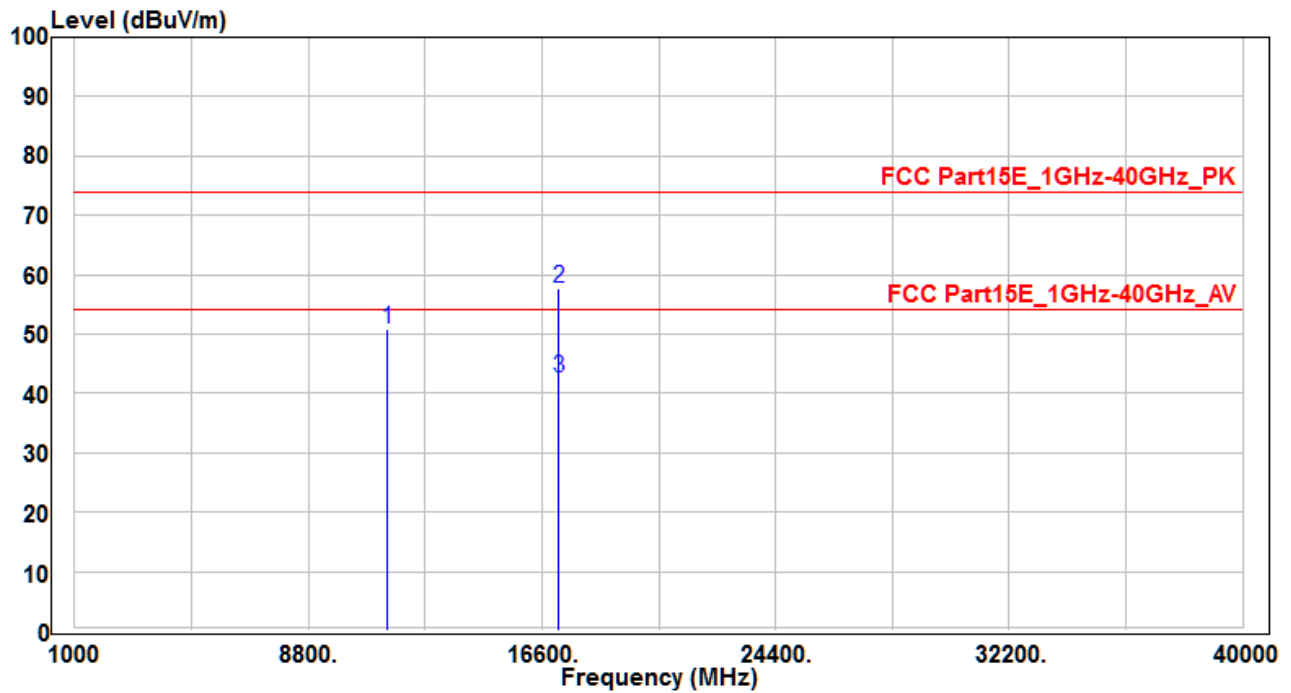


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	11440	29.93	19.2	49.13	-24.87	74	100	400	Peak
2	* 17160	32.27	25.03	57.3	-16.7	74	100	25	Peak
3	* 17160	17.46	25.03	42.49	-11.51	54	100	25	Average

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 °

EUT	VA50EC	Test Date	2017/04/10
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Kevin
Test Mode	MODE1 -CH144_Ant 1	Test Voltage	AC 120V/60Hz

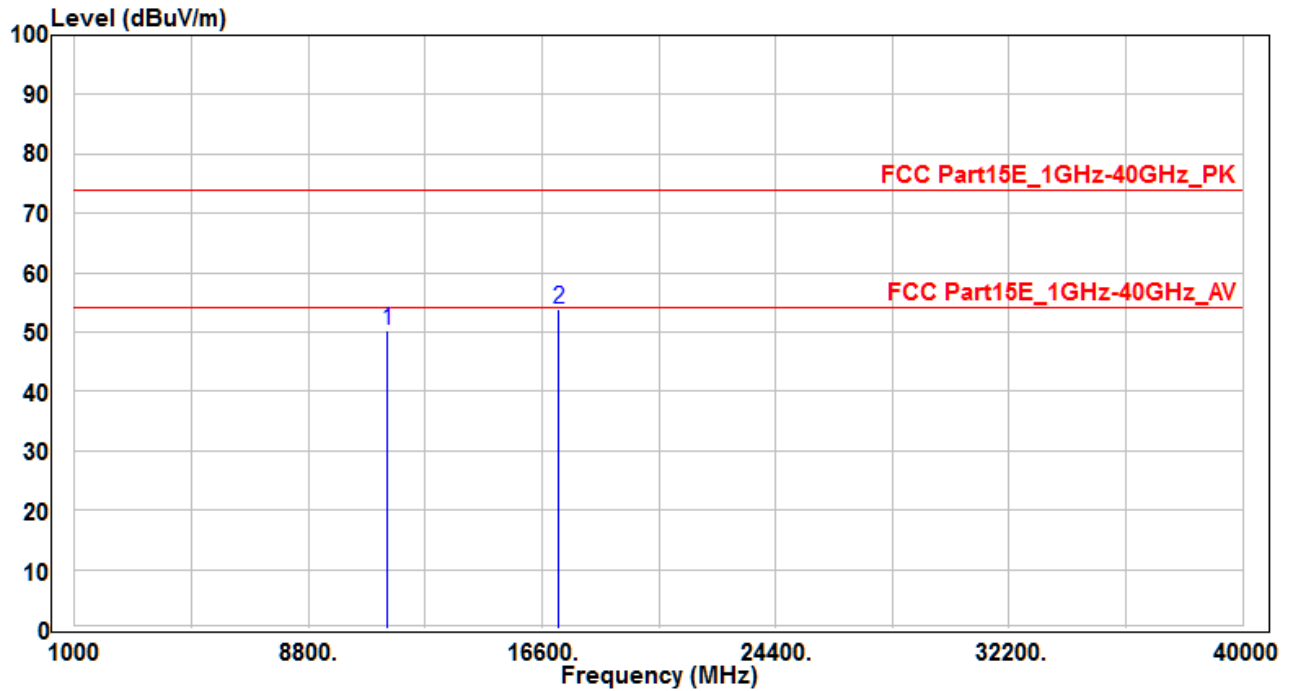


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	11440	31.53	19.2	50.73	-23.27	74	100	400	Peak
2	* 17160	32.79	25.03	57.82	-16.18	74	100	380	Peak
3	* 17160	17.64	25.03	42.67	-11.33	54	100	380	Average

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 emission levels of other frequencies are very lower than the limit and not show in test report °

EUT	VA50EC	Test Date	2017/04/10
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Horizontal	Site / Engineer	AC1 / Kevin
Test Mode	MODE1 -CH144_Ant 2	Test Voltage	AC 120V/60Hz

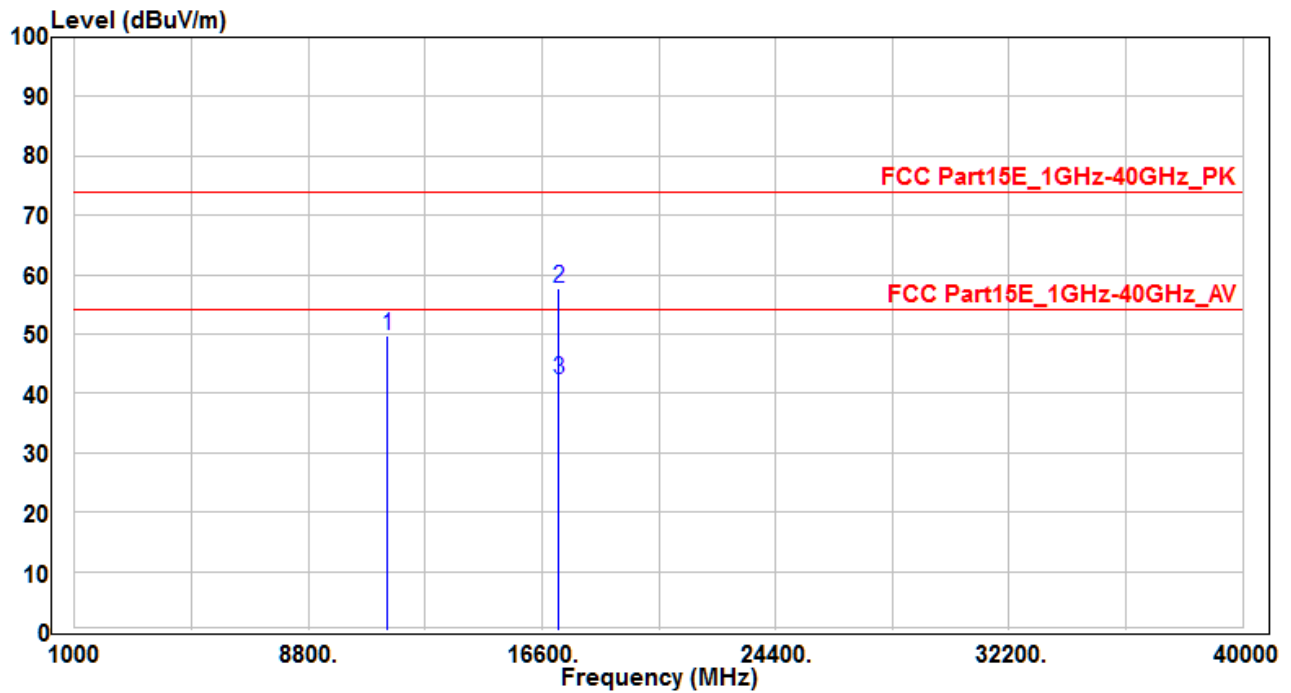


No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	11440	30.99	19.2	50.19	-23.81	74	100	400	Peak
2	* 17160	28.75	25.03	53.78	-20.22	74	100	400	Peak

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 emission levels of other frequencies are very lower than the limit and not show in test report °

EUT	VA50EC	Test Date	2017/04/10
Factor	BBHA 9120D (1GHz~18GHz)	Temp. / Humidity	25°C / 60%
Polarity	Vertical	Site / Engineer	AC1 / Kevin
Test Mode	MODE1 -CH144_Ant 2	Test Voltage	AC 120V/60Hz



No	Frequency (MHz)	Reading (dBuV)	C.F (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV)	Height (cm)	Angle (deg)	Remark (QP/PK/AV)
1	11440	30.62	19.2	49.82	-24.18	74	100	400	Peak
2	* 17160	32.58	25.03	57.61	-16.39	74	100	30	Peak
3	* 17160	17.36	25.03	42.39	-11.61	54	100	30	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 emission levels of other frequencies are very lower than the limit and not show in test report °