MEASUREMENT REPORT

FCC PART 15 Subpart C ZigBee 802.15.4

FCC ID:	Q9DAPEX057457
APPLICANT:	Hewlett Packard Enterprise Company
Application Type:	Certification
Product:	ACCESS POINT
Model No.:	APEX0574, APEX0575, APEX0577
Brand Name:	aruba a Hewlett Packard Enterprise company , Hewlett Packard Enterprise
FCC Classification:	Digital Transmission System (DTS)
FCC Rule Part(s):	Part15 Subpart C (Section 15.247)
Test Procedure(s):	ANSI C63.10-2013
Test Date:	December 25, 2019 ~ March 31, 2020

Reviewed By: Paddy Chen
(Paddy Chen)

Approved By: Chenz Ker
(Chenz Ker)

Testing Laboratory
3261

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 ANSI C63.10-2013. Test results reported herein relate only to the item(s) tested.

Revision History

Report No.	Version	Description	Issue Date	Note
2003TW0002-U2	Rev. 01	Initial report	04-20-2020	Valid

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General Information

Applicant:	Hewlett Packard Enterprise Company
Applicant Address:	3333 Scott Blvd, Santa Clara, CA 94089, USA
Manufacturer:	Hewlett Packard Enterprise Company
Manufacturer Address:	3333 Scott Blvd, Santa Clara, CA 94089, USA
Test Site:	MRT Technology (Taiwan) Co., Ltd
Test Site Address:	No. 38, Fuxing Second Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C)
Test Device Serial No.:	APEX0574 S/N: DE29AO0006 APEX0575 S/N: DE29AO0078 APEX0577 S/N: DE29AO0079

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 and 153292) 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.**

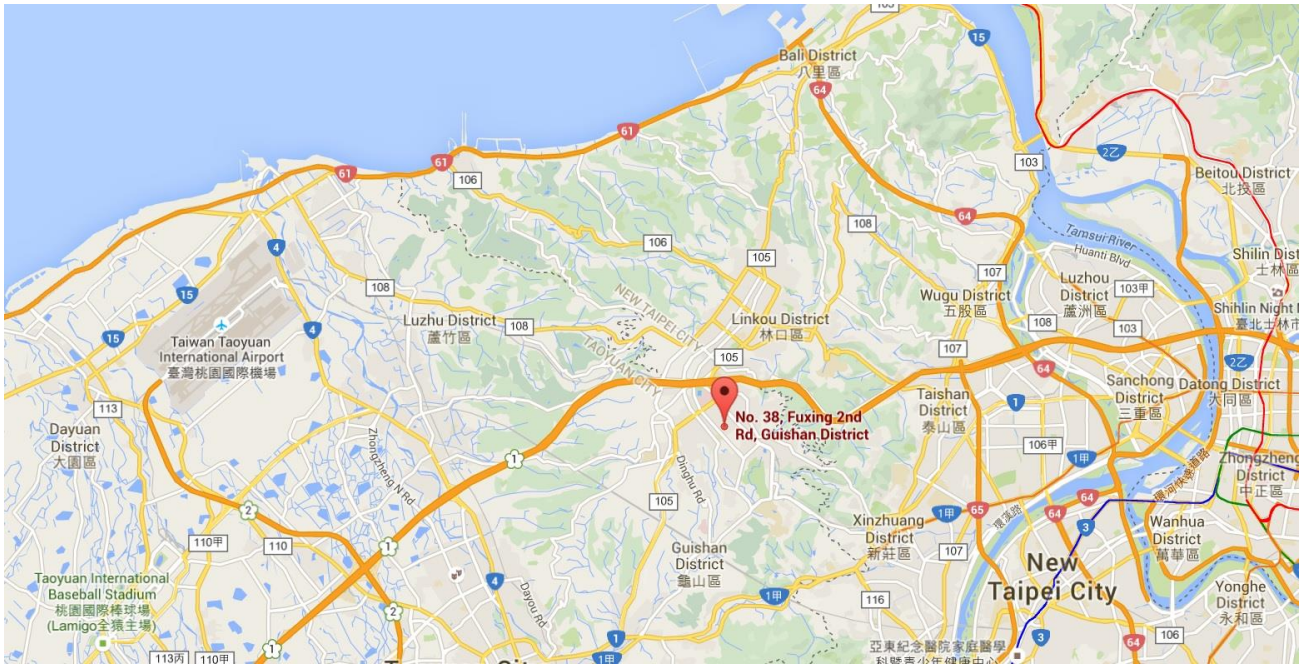
1. INTRODUCTION

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 Innovation, Science and Economic Development Canada and 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. Feature of Equipment under Test

Product Name:	ACCESS POINT
Model No.:	APEX0574, APEX0575, APEX0577
Wi-Fi Specification:	802.11a/b/g/n/ac/ax
Bluetooth Specification:	v4.2 single mode
Zigbee Specification:	802.15.4
Software Version:	V1.00
Operating Temperature:	-40 ~ 65 °C
Power Type:	PoE input
Operating Environment:	Outdoor Use

Note 1: The difference between three models is that EUT use different antenna and appearance, other hardware and software are the same. Each model has its own power parameter value.
Note 2: The applicant provided one PoE adapter (Manufacturer: MICROSEMI & Model: 9001GO) for approval testing, it is not for sale.

2.2. Product Specification Subjective to this Report

Frequency Range:	2405 ~ 2480 MHz
Channel Number:	16
Type of Modulation:	O-QPSK

Note: For other features of this EUT, test report will be issued separately.

2.3. Working Frequencies for this report

Channel	Frequency	Channel	Frequency	Channel	Frequency
11	2405 MHz	12	2410 MHz	13	2415 MHz
14	2420 MHz	15	2425 MHz	16	2430 MHz
17	2435 MHz	18	2440 MHz	19	2445 MHz
20	2450 MHz	21	2455 MHz	22	2460 MHz
23	2465 MHz	24	2470 MHz	25	2475 MHz
26	2480 MHz	--	--	--	--

2.4. Description of Available Antennas

Model No.: APEX0574

Antenna No.	Antenna Type	Frequency Band (GHz)	Model No.	Max Peak Gain (dBi)	30 Degree Ant Gain (dBi)	BF Dir Gain (dBi)	CDD Dir Gain (dBi)	
							For Power	For PSD
Wi-Fi External Antenna List (2.4GHz 2*2 MIMO, 5GHz 4*4 MIMO)								
1 (Note 3)	Omni	2.4	ANT-2x2-2005	5.0	N/A	5.0	5.0	5.0
2 (Note 3)	Omni	5	ANT-2x2-5005	5.0	0	8.01	5.0	8.01
3 (Note 3)	Omni	5	ANT-2x2-5010	10.0	0	13.01	10.0	13.01
4 (Note 3)	Directional	2.4	ANT-2x2-2314	14.0	N/A	14.0	14.0	14.0
5 (Note 3)	Directional	5	ANT-3x3-5712	11.5	1.5	14.51	11.5	14.51
6 (Note 3)	Directional	5	ANT-4x4-5314	14.0	6.0	17.01	14.0	17.01
7 (Note 3)	Directional	5	MT-484052/NVH	16.0	3.0	19.01	16.0	19.01
8 (Note 3)	Directional	2.4	ANT-3x3-D608	7.5	N/A	10.51	7.5	10.51
		5		7.5	4.5	10.51	7.5	10.51
9 (Note 3)	Directional	2.4	ANT-3x3-D100	5.0	N/A	8.01	5.0	8.01
		5		5.0	4.0	8.01	5.0	8.01
Bluetooth Internal Antenna								
PCB		2.4		4.2				

Model No.: APEX0577

Antenna Type	Frequency Band (GHz)	Max Peak Gain (dBi)	30 Degree Ant Gain (dBi)	BF Dir Gain (dBi)	CDD Dir Gain (dBi)	
					For Power	For PSD
Wi-Fi Internal Antenna List (2.4GHz 2*2 MIMO, 5GHz 4*4 MIMO)						
Directional (Note 3)	2.4	6.8	N/A	6.80	6.8	6.80
Directional (Note 3)	5	5.6	5.6	8.60	5.6	8.60
Bluetooth Internal Antenna						
PCB	2.4	8.4				

Model No.: APEX0575

Antenna Type	Frequency Band (GHz)	Max Peak Gain (dBi)	30 Degree Ant Gain (dBi)	BF Dir Gain (dBi)	CDD Dir Gain (dBi)	
					For Power	For PSD
Wi-Fi Internal Antenna List (2.4GHz 2*2 MIMO, 5GHz 4*4 MIMO)						
Omni (Note 3)	2.4	3.4	N/A	3.4	3.4	3.4
Omni (Note 3)	5	5.0	-2.7	8.0	5.0	8.0
Bluetooth Internal Antenna						
PCB	2.4	6.0				

Note:

1. The EUT supports Cyclic Delay Diversity (CDD) mode, and CDD signals are correlated.
   For CDD transmissions, directional gain is calculated as follows, N_{ANT} = 2 or 4, N_{SS} = 1.
   If all antennas have the same gain, G_{ANT}, Directional gain = G_{ANT} + Array Gain, where Array Gain is as follows.
   - For power spectral density (PSD) measurements on all devices,
     Array Gain = 10 log (N_{ANT}/ N_{SS}) dB = 3.01;
   - For power measurements on IEEE 802.11 devices,
     Array Gain = 0 dB for $N_{ANT} \leq 4$;

   Abbreviation “Dir” means directional.
2. The EUT also supports Beam Forming mode, and the Beam Forming support 802.11n/ac/ax, not include 802.11a/b/g.
   Directional gain = G_{ANT} + BF Gain, BF Gain was declared by the applicant.
3. These antennas have Cross-Polarized design, only each two outputs driving a pair of antennas that are cross-polarized, the detail see the antenna specification.

2.5. Description of Antenna RF Port

<table>
<tr><td colspan="7">Antenna RF Port</td></tr>
<tr><td>--</td><td colspan="2">2.4GHz RF Port</td><td colspan="4">5GHz RF Port</td></tr>
<tr><td>Software Control Port</td><td>Ant 0</td><td>Ant 1</td><td>Ant 0</td><td>Ant 1</td><td>Ant 2</td><td>Ant 3</td></tr>
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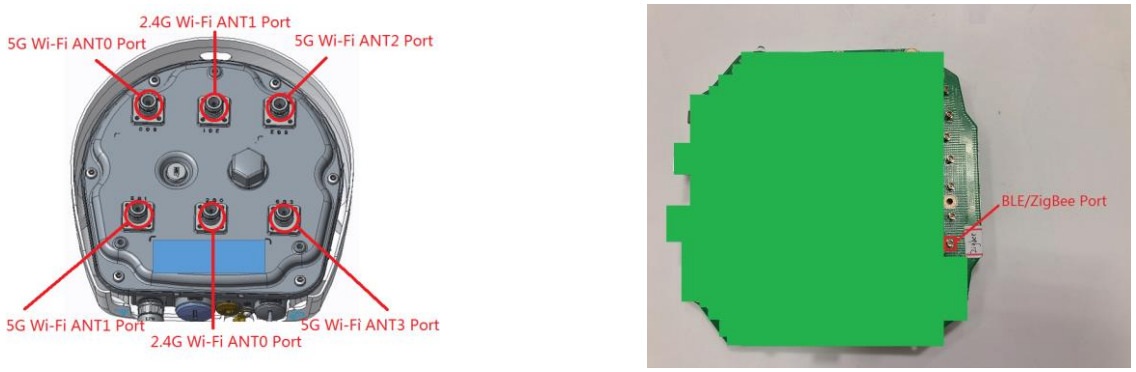
<tr><td colspan="7"> 
</td></tr>
<tr><td colspan="3">APEX0577</td><td colspan="4">APEX0575</td></tr>
<tr><td colspan="3"> 
</td><td colspan="4"> 
</td></tr>
</table>

2.6. Duty Cycle

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. 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	T = Transmission Duration	Duty Cycle
ZigBee	3.41ms	96.18%

2.7. Description of Test Software

The test utility software used during testing was “telnet.exe”
Detail power setting refer to operation description.

2.8. EMI Suppression Device(s)/Modifications

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

2.9. 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 procedure described in the document titled “American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices” (ANSI C63.10-2013) was used in the measurement.

3.2. AC Line Conducted Emissions

The line-conducted facility is located inside an 8'x4'x4' 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.

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 MF Model 210SS 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."

Conclusion:

The product is defined as the professional installation of equipment by the manufacturer, there is no necessary to comply with the requirement of §15.203.

5. TEST EQUIPMENT CALIBRATION DATE

Conducted Emissions

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Two-Line V-Network	R&S	ENV 216	MRTTWA00019	1 year	2021/03/26
Two-Line V-Network	R&S	ENV 216	MRTTWA00020	1 year	2020/04/25
8-Wire ISN (T8)	R&S	ENY81	MRTTWA00018	1 year	2020/04/23
EMI Test Receiver	R&S	ESR3	MRTTWA00045	1 year	2020/05/29
Temperature/Humidity Meter	TFA	35.1078.10.IT	MRTTWA00033	1 year	2020/05/30

Radiated Emissions

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Acitve Loop Antenna	SCHWARZBECK	FMZB 1519B	MRTTWA00002	1 year	2020/04/29
Broadband TRILOG Antenna	SCHWARZBECK	VULB 9162	MRTTWA00001	1 year	2020/06/04
Broadband Horn antenna	SCHWARZBECK	BBHA 9120D	MRTTWA00003	1 year	2020/04/22
Breitband Horn antenna	SCHWARZBECK	BBHA 9170	MRTTWA00004	1 year	2020/04/23
Broadband Preamplifier	SCHWARZBECK	BBV 9718	MRTTWA00005	1 year	2020/04/24
Broadband Amplifier	SCHWARZBECK	BBV 9721	MRTTWA00006	1 year	2020/04/24
Signal Analyzer	R&S	FSV40	MRTTWA00007	1 year	2021/03/24
EMI Test Receiver	R&S	ESR3	MRTTWA00009	1 year	2021/03/25
EXA Signal Analyzer	KEYSIGHT	N9010A	MRTTWA00012	1 year	2020/10/02
Antenna Cable	HUBERSUHNER	SF106	MRTTWE00010	1 year	2020/04/22
Temperature/Humidity Meter	TFA	35.1078.10.IT	MRTTWA00032	1 year	2020/05/30

Conducted Test Equipment

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
X-Series USB Peak and Average Power Sensor	KEYSIGHT	U2021XA	MRTTWA00014	1 year	2020/04/22
Wideband Radio Communication Taster	R&S	CMW 500	MRTTWA00041	1 year	2021/01/28
EXA Signal Analyzer	KEYSIGHT	N9010A	MRTTWA00012	1 year	2020/10/02
EXA Signal Analyzer	KEYSIGHT	N9010B	MRTTWA00074	1 year	2020/07/11
Signal Analyzer	R&S	FSV40	MRTTWA00007	1 year	2021/03/24
Temperature/Humidity Meter	TFA	35.1078.10.IT	MRTTWA00033	1 year	2020/05/30

Software	Version	Function
e3	9.160520a	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
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 150kHz~30MHz: 2.53dB
Radiated Emission Measurement
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 9kHz ~ 1GHz: 4.25dB 1GHz ~ 40GHz: 4.45dB

7. TEST RESULT

7.1. Summary

FCC Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
15.247(a)(2)	6dB Bandwidth	≥ 500kHz	Conducted	Pass	Section 7.2
15.247(b)(3)	Output Power	≤ 30dBm		Pass	Section 7.3
15.247(e)	Power Spectral Density	≤ 8dBm/3kHz		Pass	Section 7.4
15.247(d)	Band Edge / Out-of-Band Emissions	≥ 20dBc (Peak)		Pass	Section 7.5
15.205 15.209	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	Emissions in restricted bands must meet the radiated limits detailed in 15.209	Radiated	Pass	Section 7.6 & 7.7
15.207	AC Conducted Emissions 150kHz - 30MHz	< FCC 15.207 limits	Line Conducted	Pass	Section 7.8

Notes:

1) 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 ofthe system to connect the EUT to the analyzer at all frequencies of interest.
2) All modes of operation and data rates were investigated. For radiated emission test, every axis (X, Y, Z) was also verified. The test results shown in the following sections represent the worst case emissions.

7.2. 6dB Bandwidth Measurement

7.2.1.Test Limit

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

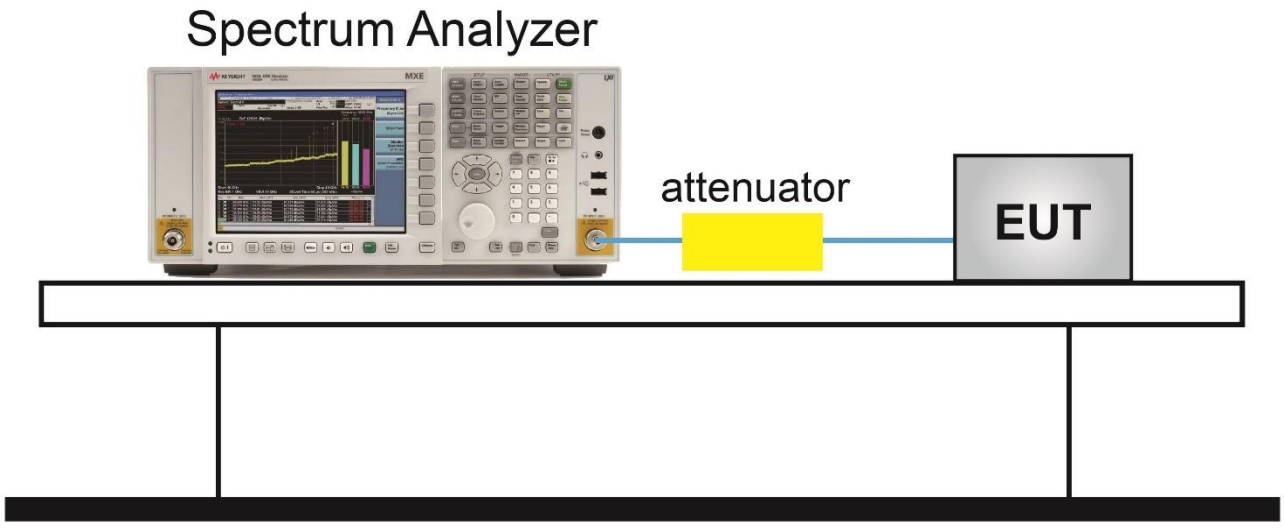
7.2.2.Test Procedure used

ANSI C63.10-2013 Section 11.8

7.2.3.Test Setting

1. The Spectrum's automatic bandwidth measurement capability was used to perform the 6dB bandwidth measurement. The "X" dB bandwidth parameter was set to X = 6. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. Set RBW = 100 kHz
3. VBW ≥ 3 × RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. Allow the trace was allowed to stabilize

7.2.4.Test Setup



7.2.5.Test Result

Product	ACCESS POINT	Temperature	25°C
Test Engineer	Kevin Ker	Relative Humidity	54%
Test Site	SR2	Test Date	2020/01/13
Model No.	APEX0574	Test Item	6dB Bandwidth

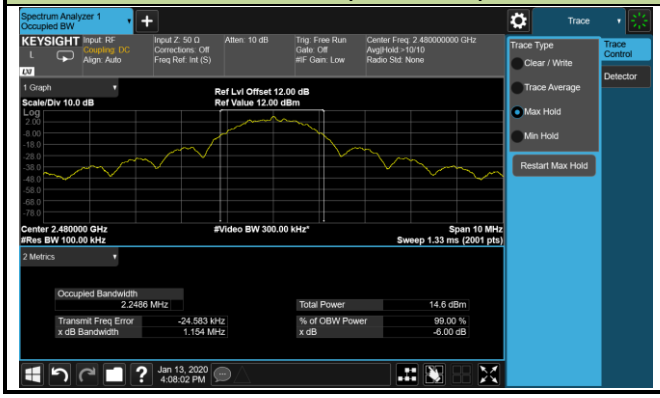
Test Mode	Modulation Mode	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Result
802.15.4	O-QPSK	11	2405	1.192	≥ 0.5	Pass
802.15.4	O-QPSK	18	2440	1.157	≥ 0.5	Pass
802.15.4	O-QPSK	26	2480	1.154	≥ 0.5	Pass

802.15.4 6dB Bandwidth

Channel 11 (2405MHz)

Channel 18 (2440MHz)

Channel 26 (2480MHz)



7.3. Output Power Measurement

7.3.1.Test Limit

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

The conducted output power limit specified in paragraph FCC Part 15.247(b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs FCC Part 15.247(b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

7.3.2.Test Procedure Used

ANSI C63.10 Section 11.9.1.3

ANSI C63.10 Section 11.9.2.3

7.3.3.Test Setting

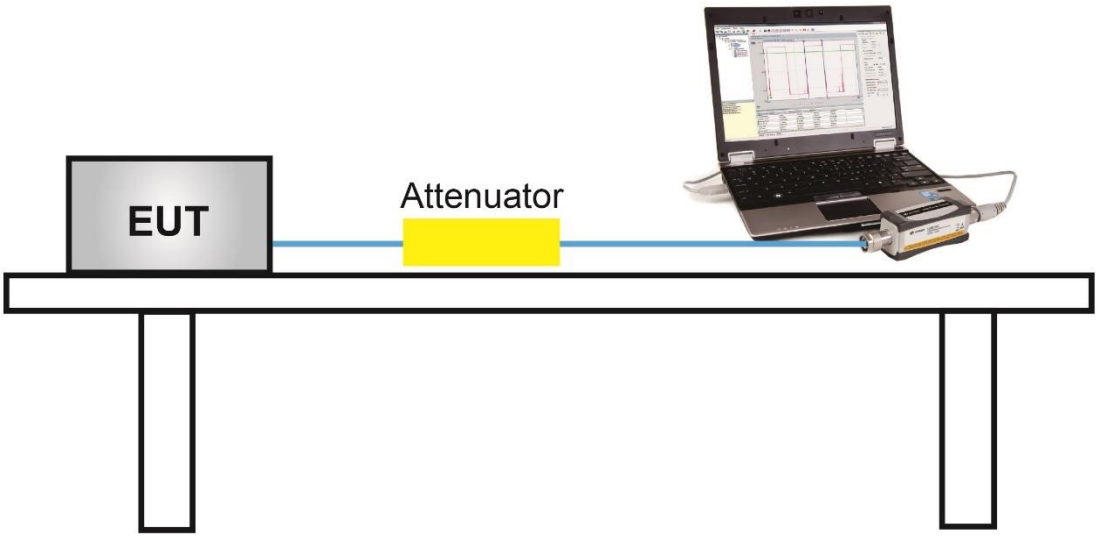
Method PKPM1 (Peak Power Measurement)

Peak 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 pulse sensor employs a VBW = 50MHz so this method was only used for signals whose DTS bandwidth was less than or equal to 50MHz.

Average Power Measurement

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.

7.3.4.Test Setup



7.3.5.Test Result of Output Power

Product	ACCESS POINT	Temperature	25°C
Test Engineer	Kevin Ker	Relative Humidity	54%
Test Site	SR2	Test Date	2020/01/16
Model No.	APEX0574	Test Item	Output Power

Test Result of Peak Output Power

Test Mode	Modulation Mode	Channel No.	Freq. (MHz)	Peak Power (dBm)	Limit (dBm)	Result
802.15.4	O-QPSK	11	2405	7.65	≤ 30.00	Pass
802.15.4	O-QPSK	18	2440	8.44	≤ 30.00	Pass
802.15.4	O-QPSK	26	2480	7.85	≤ 30.00	Pass

Note: E.I.R.P (dBm) = Max Peak Power (dBm) + Antenna Gain (dBi) = 8.44 dBm + 4.20 dBi = 12.64 dBm.

Test Result of Average Output Power (Reporting Only)

Test Mode	Modulation Mode	Channel No.	Freq. (MHz)	Average Power (dBm)	Limit (dBm)	Result
802.15.4	O-QPSK	11	2405	7.57	≤ 30.00	Pass
802.15.4	O-QPSK	18	2440	8.37	≤ 30.00	Pass
802.15.4	O-QPSK	26	2480	7.77	≤ 30.00	Pass

Note: E.I.R.P (dBm) = Max Average Power (dBm) + Antenna Gain (dBi) = 8.37 dBm + 4.20 dBi = 12.57 dBm.

Product	ACCESS POINT	Temperature	25°C
Test Engineer	Kevin Ker	Relative Humidity	54%
Test Site	SR2	Test Date	2020/01/16
Model No.	APEX0577	Test Item	Output Power

Test Result of Peak Output Power

Test Mode	Modulation Mode	Channel No.	Freq. (MHz)	Peak Power (dBm)	Limit (dBm)	Result
802.15.4	O-QPSK	11	2405	7.35	≤ 30.00	Pass
802.15.4	O-QPSK	18	2440	7.47	≤ 30.00	Pass
802.15.4	O-QPSK	26	2480	6.88	≤ 30.00	Pass

Note: E.I.R.P (dBm) = Max Peak Power (dBm) + Antenna Gain (dBi) = 7.47 dBm + 8.40 dBi = 13.47 dBm.

Test Result of Average Output Power (Reporting Only)

Test Mode	Modulation Mode	Channel No.	Freq. (MHz)	Average Power (dBm)	Limit (dBm)	Result
802.15.4	O-QPSK	11	2405	7.21	≤ 30.00	Pass
802.15.4	O-QPSK	18	2440	7.37	≤ 30.00	Pass
802.15.4	O-QPSK	26	2480	6.78	≤ 30.00	Pass

Note: E.I.R.P (dBm) = Max Average Power (dBm) + Antenna Gain (dBi) = 7.37 dBm + 8.40 dBi = 13.37 dBm.

Product	ACCESS POINT	Temperature	25°C
Test Engineer	Kevin Ker	Relative Humidity	54%
Test Site	SR2	Test Date	2020/01/16
Model No.	APEX0575	Test Item	Output Power

Test Result of Peak Output Power

Test Mode	Modulation Mode	Channel No.	Freq. (MHz)	Peak Power (dBm)	Limit (dBm)	Result
802.15.4	O-QPSK	11	2405	7.33	≤ 30.00	Pass
802.15.4	O-QPSK	18	2440	7.45	≤ 30.00	Pass
802.15.4	O-QPSK	26	2480	6.78	≤ 30.00	Pass

Note: E.I.R.P (dBm) = Max Peak Power (dBm) + Antenna Gain (dBi) = 7.45 dBm + 6.00 dBi = 13.45 dBm.

Test Result of Average Output Power (Reporting Only)

Test Mode	Modulation Mode	Channel No.	Freq. (MHz)	Average Power (dBm)	Limit (dBm)	Result
802.15.4	O-QPSK	11	2405	7.25	≤ 30.00	Pass
802.15.4	O-QPSK	18	2440	7.36	≤ 30.00	Pass
802.15.4	O-QPSK	26	2480	6.68	≤ 30.00	Pass

Note: E.I.R.P (dBm) = Max Average Power (dBm) + Antenna Gain (dBi) = 7.36 dBm + 6.00 dBi = 13.36 dBm.

7.4. Power Spectral Density Measurement

7.4.1.Test Limit

The maximum permissible power spectral density is 8dBm in any 3 kHz band.

The same method of determining the conducted output power shall be used to determine the power spectral density.

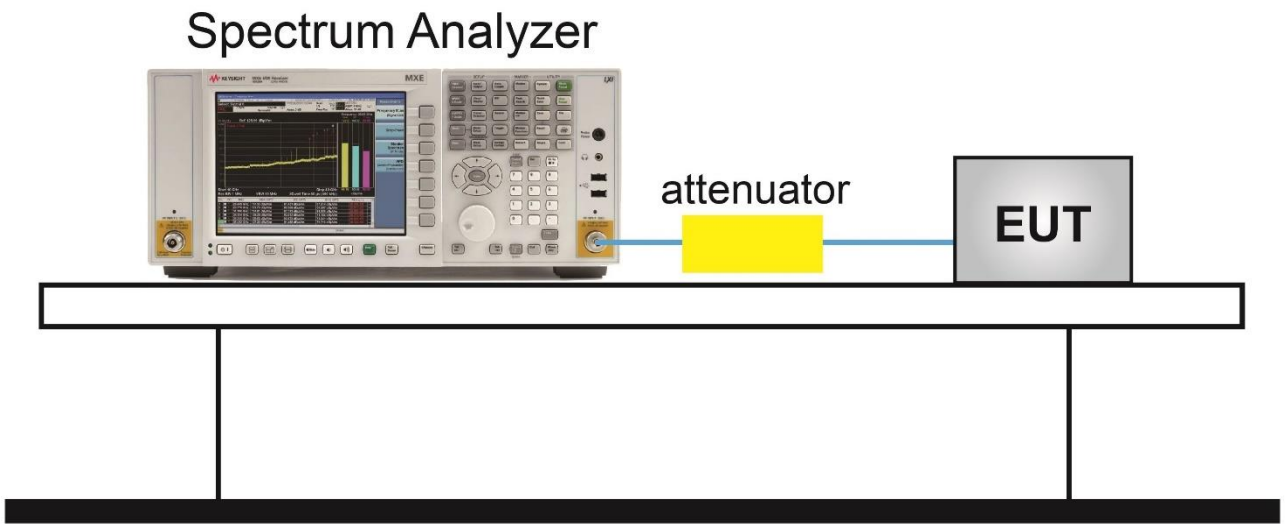
7.4.2.Test Procedure Used

ANSI C63.10 Section 11.10.2

7.4.3.Test Setting

1. Analyzer was set to the center frequency of the DTS channel under investigation
2. Span = 1.5 times the DTS channel bandwidth
3. RBW = 3kHz
4. VBW = 10kHz
5. Detector = peak
6. Sweep time = auto couple
7. Trace mode = max hold
8. Trace was allowed to stabilize

7.4.4.Test Setup



7.4.5.Test Result

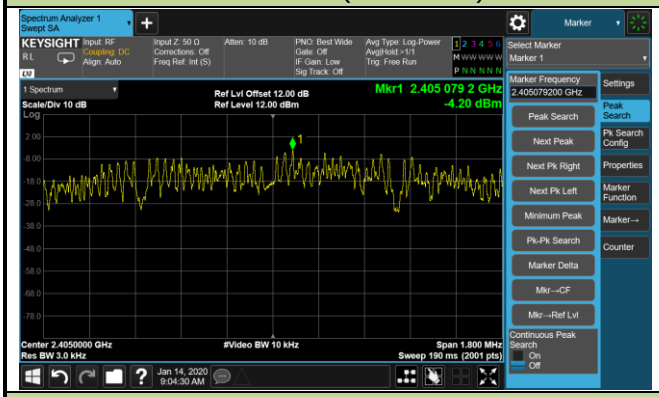
Product	ACCESS POINT	Temperature	25°C
Test Engineer	Kevin Ker	Relative Humidity	54%
Test Site	SR2	Test Date	2020/01/14
Model No.	APEX0574	Test Item	Power Spectral Density

Test Mode	Modulation Mode	Channel No.	Frequency (MHz)	PK PSD (dBm / 3kHz)	Limit (dBm / 3kHz)	Result
802.15.4	O-QPSK	11	2405	-4.20	≤ 5.60	Pass
802.15.4	O-QPSK	18	2440	-4.30	≤ 5.60	Pass
802.15.4	O-QPSK	26	2480	-4.31	≤ 5.60	Pass

Note: Limit = 8dBm/3kHz – (8.4dBi – 6dBi) = 5.6dBm/3kHz.

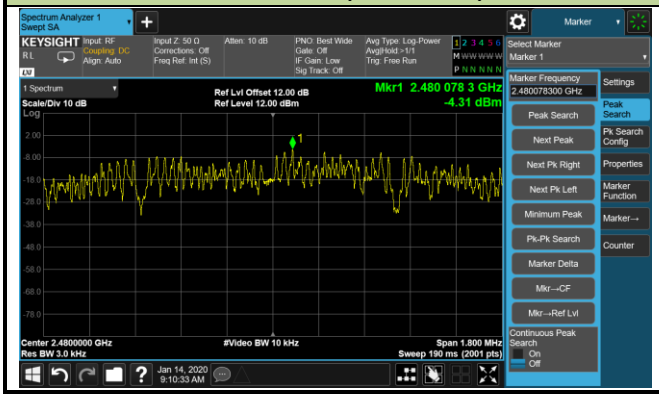
802.15.4 Power Density

Channel 11 (2405MHz)



Channel 18 (2440MHz)

Channel 26 (2480MHz)



7.5. Conducted Band Edge and Out-of-Band Emissions

7.5.1.Test Limit

The limit for out-of-band spurious emissions at the band edge is 20dB below the fundamental emission level, as determined from the in-band power measurement of the DTS channel performed in a 100 kHz bandwidth per the PSD procedure.

7.5.2.Test Procedure Used

ANSI C63.10 Section 11.11

7.5.3.Test Settitng

Reference level measurement

1. Set instrument center frequency to DTS channel center frequency
2. Set the span to ≥ 1.5 times the DTS bandwidth
3. Set the RBW = 100 kHz
4. Set the VBW ≥ 3 x RBW
5. Detector = peak
6. Sweep time = auto couple
7. Trace mode = max hold
8. Allow trace to fully stabilize

Emission level measurement

1. Start frequency was set to 30MHz and stop frequency was set to 25GHz (separated into two plots per channel)
2. RBW = 1.3MHz
3. VBW = 4MHz
4. Detector = Peak
5. Trace mode = max hold
6. Sweep time = auto couple
7. The trace was allowed to stabilize

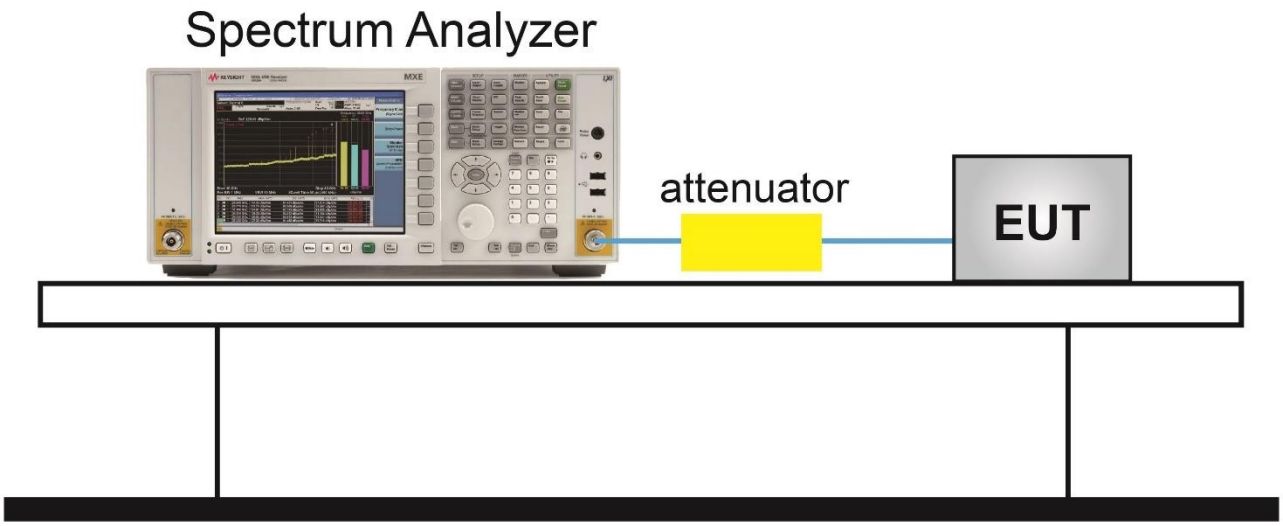
Test Notes

1. RBW was set to 1.3MHz rather than 100kHz in order to increase the measurement speed.

2. The display line shown in the following plots denotes the limit at 20dB below the fundamental emission level measured in a 100kHz bandwidth. However, since the traces in the following plots are measured with a 1.3MHz RBW, the display line may not necessarily appear to be 20dB below the level of the fundamental in a 1.3MHz bandwidth.

3. For plots showing conducted spurious emissions near the limit, the frequencies were investigated with a reduced RBW to ensure that no emissions were present.

7.5.4.Test Setup



7.5.5.Test Result

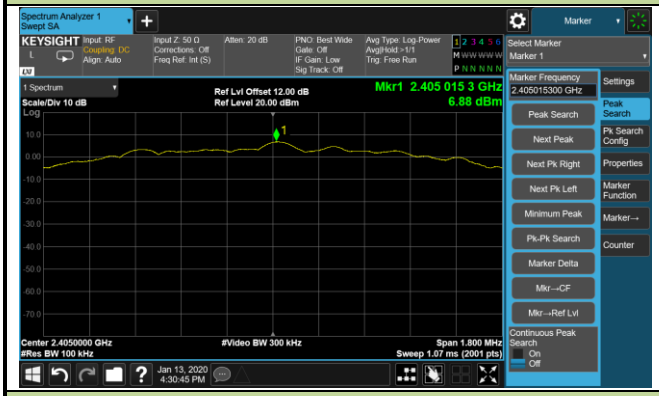
Product	ACCESS POINT	Temperature	25°C
Test Engineer	Kevin Ker	Relative Humidity	54%
Test Site	SR2	Test Date	2020/01/13
Model No.	APEX0574	Test Item	Conducted Band Edge and Out-of-Band Emissions

Test Mode	Data Rate / MCS	Channel No.	Frequency (MHz)	Limit	Result
802.15.4	O-QPSK	11	2405	20dBc	Pass
802.15.4	O-QPSK	18	2440	20dBc	Pass
802.15.4	O-QPSK	26	2480	20dBc	Pass

802.15.4 Out-of-Band Emissions - APEX0575

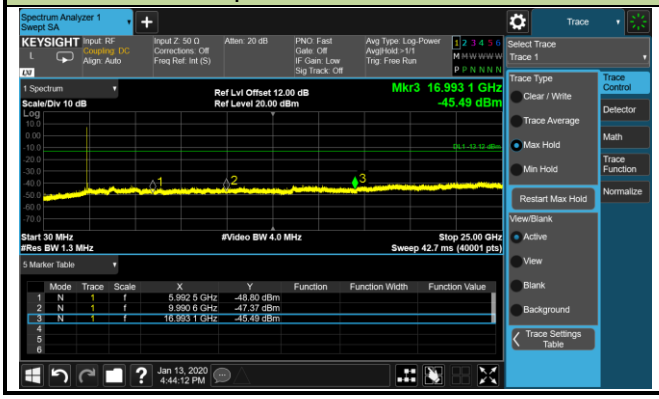
Channel 11 (2405MHz)

100kHz PSD Reference Level

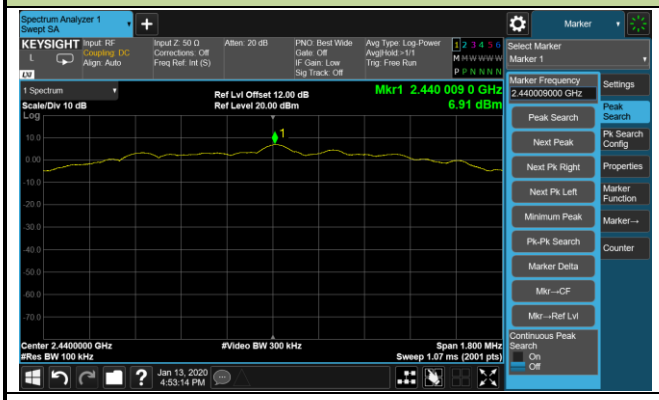
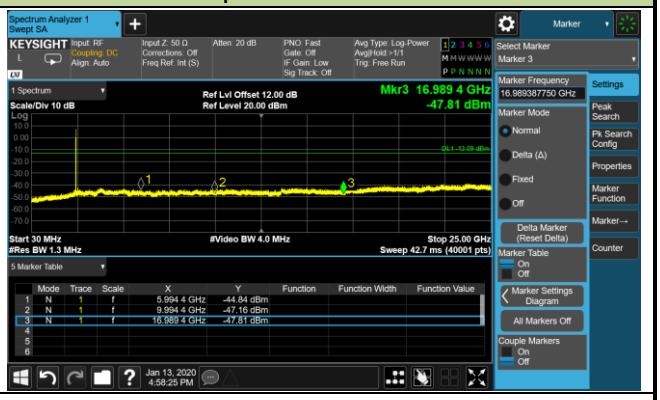
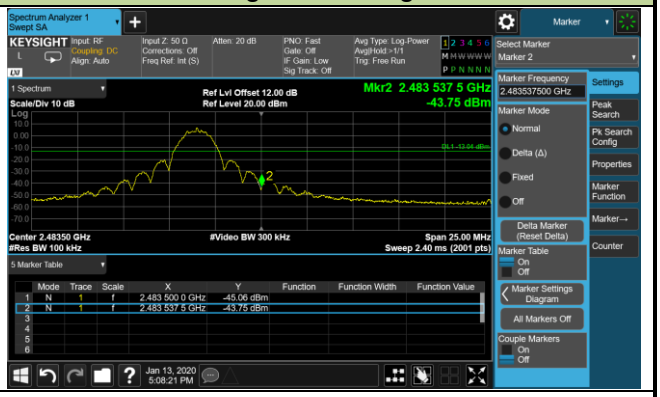
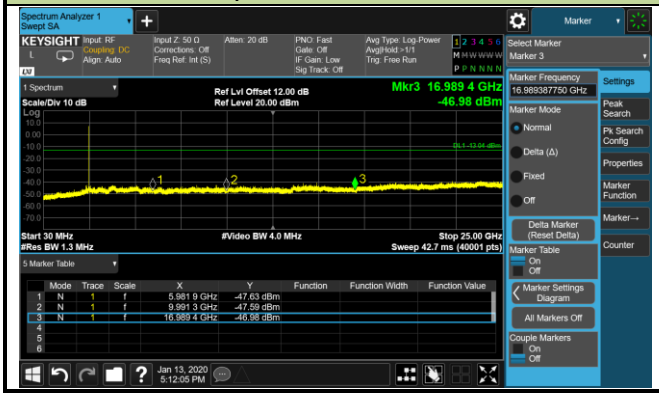


Low Band Edge

Spurious Emission



Note: The Value of the Display Line is -13.12dBm

Channel 18 (2440MHz)	
100kHz PSD Reference Level	Spurious Emission
	
Note: The Value of the Display Line is -13.09dBm	
Channel 26 (2480MHz)	
100kHz PSD Reference Level	High Band Edge
	
Spurious Emission	
	Note: The Value of the Display Line is -13.04dBm

7.6. Radiated Spurious Emission Measurement

7.6.1.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 [uV/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

7.6.2.Test Procedure Used

ANSI C63.10 Section 6.3 (General Requirements)

ANSI C63.10 Section 6.4 (Standard test method below 30MHz)

ANSI C63.10 Section 6.5 (Standard test method above 30MHz to 1GHz)

ANSI C63.10 Section 6.6 (Standard test method above 1GHz)

7.6.3.Test Setting

Table 1 - RBW as a function of frequency

Frequency	RBW
9 ~ 150 kHz	200 ~ 300 Hz
0.15 ~ 30 MHz	9 ~ 10 kHz
30 ~ 1000 MHz	100 ~ 120 kHz

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 = as specified in Table 1

4. Detector = CISPR quasi-peak

5. Sweep time = auto couple

6. Trace was allowed to stabilize

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

Average Measurements above 1GHz

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest

2. RBW = 1MHz

3. VBW; If the EUT is configured to transmit with duty cycle ≥ 98%, set VBW = 10 Hz.

If the EUT duty cycle is < 98%, set VBW ≥ 1/T. T is the minimum transmission duration.

4. Detector = Peak

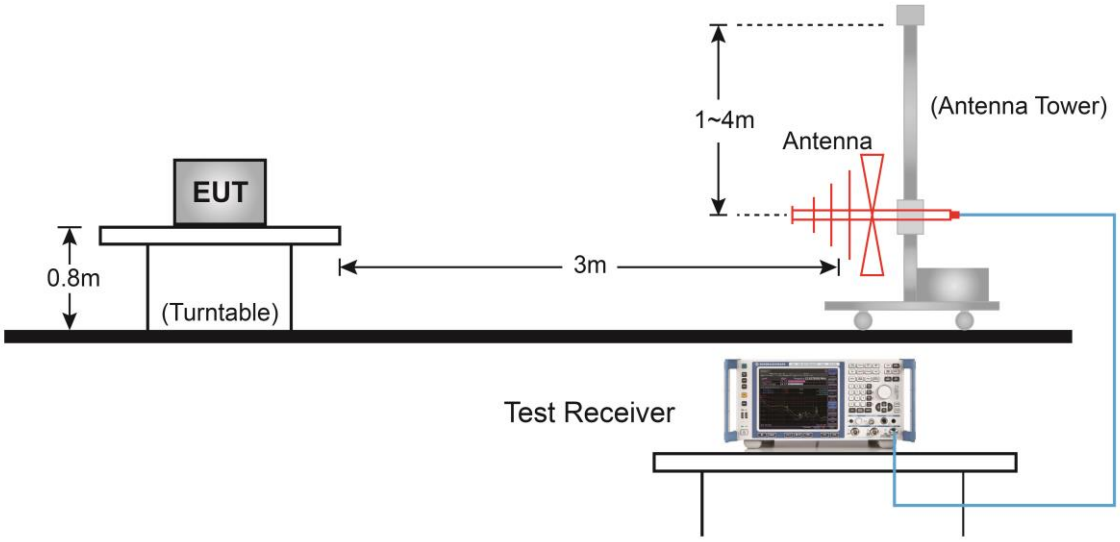
5. Sweep time = auto

6. Trace mode = max hold

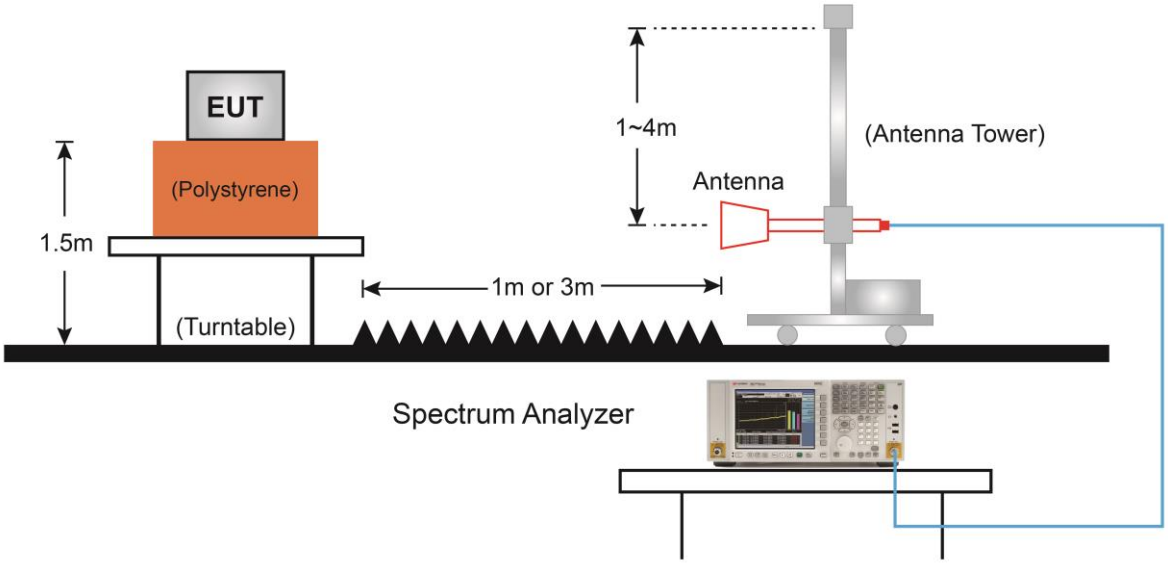
7. Trace was allowed to stabilize

7.6.4.Test Setup

Below 1GHz Test Setup:



Above 1GHz Test Setup:



7.6.5.Test Result

Product	ACCESS POINT	Temperature	26°C
Test Engineer	Kevin Ker	Relative Humidity	56%
Test Site	AC1	Test Date	2020/02/22
Model No.	APEX0574	Test Channel	11
Remark	1. Average measurement was not performed if peak level lower than average limit. So the margin was calculated using the average limit for emissions fall within the restricted bands. 2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report.		

Mark	Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
	4094.0	41.9	0.5	42.4	54.0	-11.6	Peak	Horizontal
	4842.0	41.8	3.2	45.0	54.0	-9.0	Peak	Horizontal
*	6032.0	39.9	5.9	45.8	74.7	-28.9	Peak	Horizontal
*	7094.5	38.7	10.8	49.5	74.7	-25.2	Peak	Horizontal
	4179.0	41.7	1.0	42.7	54.0	-11.3	Peak	Vertical
	5012.0	41.5	3.6	45.1	54.0	-8.9	Peak	Vertical
*	5930.0	39.7	5.5	45.2	74.7	-29.5	Peak	Vertical
*	6933.0	37.4	10.2	47.6	74.7	-27.1	Peak	Vertical

Note 1: "*" is not in restricted band, its limit is 20dBc of the fundamental emission level (94.77dBμV/m) or 15.209 which is higher.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

Product	ACCESS POINT	Temperature	26°C
Test Engineer	Kevin Ker	Relative Humidity	56%
Test Site	AC1	Test Date	2020/02/22
Model No.	APEX0574	Test Channel	18
Remark	1. Average measurement was not performed if peak level lower than average limit. So the margin was calculated using the average limit for emissions fall within the restricted bands. 2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report.		

Mark	Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
	3898.5	42.5	-0.2	42.3	54.0	-11.7	Peak	Horizontal
	5088.5	41.8	3.6	45.4	54.0	-8.6	Peak	Horizontal
*	6125.5	38.9	6.3	45.2	74.0	-28.8	Peak	Horizontal
*	6678.0	38.7	8.7	47.4	74.0	-26.6	Peak	Horizontal
	3779.5	43.5	-0.5	43.0	54.0	-11.0	Peak	Vertical
	4842.0	40.3	3.2	43.5	54.0	-10.5	Peak	Vertical
*	5955.5	39.9	5.6	45.5	74.0	-28.5	Peak	Vertical
*	6780.0	38.6	9.3	47.9	74.0	-26.1	Peak	Vertical

Note 1: “*” is not in restricted band, its limit is 20dBc of the fundamental emission level (93.43dBμV/m) or 15.209 which is higher.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

Product	ACCESS POINT	Temperature	26°C
Test Engineer	Kevin Ker	Relative Humidity	56%
Test Site	AC1	Test Date	2020/02/22
Model No.	APEX0574	Test Channel	26
Remark	1. Average measurement was not performed if peak level lower than average limit. So the margin was calculated using the average limit for emissions fall within the restricted bands. 2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report.		

Mark	Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
	3881.5	43.1	-0.2	42.9	54.0	-11.1	Peak	Horizontal
	4740.0	41.5	3.0	44.5	54.0	-9.5	Peak	Horizontal
*	6006.5	39.8	5.8	45.6	74.0	-28.4	Peak	Horizontal
*	6950.0	38.7	10.3	49.0	74.0	-25.0	Peak	Horizontal
	4094.0	41.4	0.5	41.9	54.0	-12.1	Peak	Vertical
	4927.0	41.4	3.4	44.8	54.0	-9.2	Peak	Vertical
*	6185.0	38.8	6.5	45.3	74.0	-28.7	Peak	Vertical
*	6593.0	39.5	8.2	47.7	74.0	-26.3	Peak	Vertical

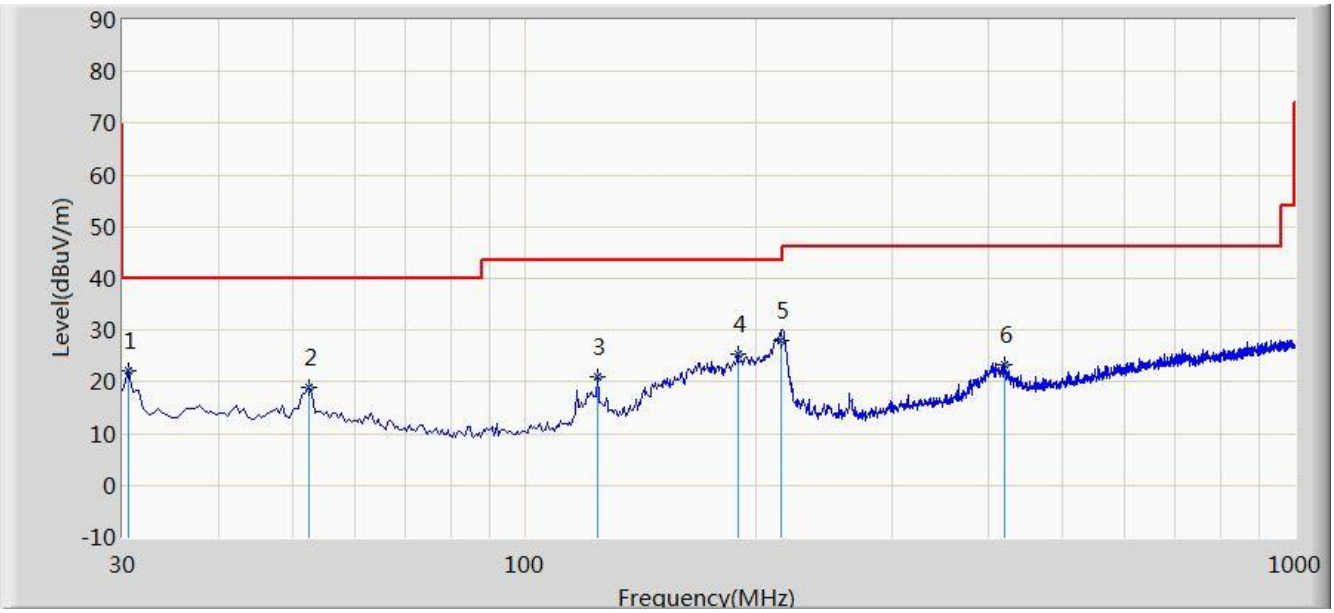
Note 1: “*” is not in restricted band, its limit is 20dBc of the fundamental emission level (93.958dBμV/m) or 15.209 which is higher.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

The Worst Case of Radiated Emission below 1GHz:

Site: AC1	Time: 2020/03/05 - 15:11
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: TW VULB 9162 30MHz-8GHz_2019	Polarity: Horizontal
EUT: ACCESS POINT	Power: By PoE
Test Mode: There is the worst case within frequency range 30MHz~1GHz.	



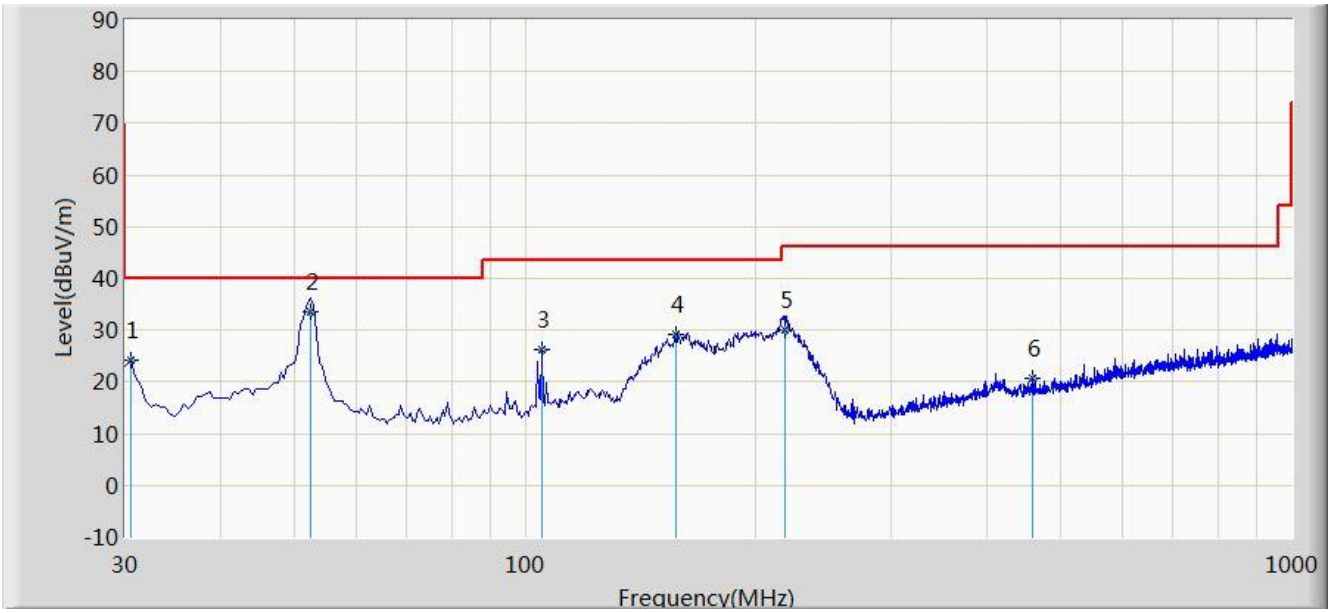
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			30.485	22.273	4.191	-17.727	40.000	18.082	QP
2			52.310	19.085	-2.205	-20.915	40.000	21.290	QP
3			124.090	21.122	4.571	-22.378	43.500	16.551	QP
4			189.080	25.302	6.719	-18.198	43.500	18.583	QP
5		*	215.230	28.157	9.340	-15.343	43.500	18.817	QP
6			418.970	23.395	-1.042	-22.605	46.000	24.437	QP

Note 1: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Note 2: The amplitude of spurious emissions (frequency range 9kHz ~ 30MHz, 18GHz ~ 40GHz) is that proximity to ambient noise, which also are attenuated more than 20 dB below the permissible value. Therefore, the data is not presented in the report.

Site: AC1	Time: 2020/03/16 - 19:20
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: TW VULB 9162 30MHz-8GHz_2019	Polarity: Vertical
EUT: ACCESS POINT	Power: By PoE
Test Mode: There is the worst case within frequency range 30MHz~1GHz.	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			30.485	24.331	6.249	-15.669	40.000	18.082	QP
2		*	52.320	33.639	12.350	-6.361	40.000	21.288	QP
3			105.175	26.357	7.188	-17.143	43.500	19.168	QP
4			157.070	29.286	13.269	-14.214	43.500	16.017	QP
5			217.640	30.152	11.230	-15.848	46.000	18.922	QP
6			459.710	20.738	-4.332	-25.262	46.000	25.070	QP

Note 1: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Note 2: The amplitude of spurious emissions (frequency range 9kHz ~ 30MHz, 18GHz ~ 40GHz) is that proximity to ambient noise, which also are attenuated more than 20 dB below the permissible value. Therefore, the data is not presented in the report.

Product	ACCESS POINT	Temperature	26°C
Test Engineer	Kevin Ker	Relative Humidity	56%
Test Site	AC1	Test Date	2020/03/04
Model No.	APEX0575	Test Channel	11
Remark	1. Average measurement was not performed if peak level lower than average limit. So the margin was calculated using the average limit for emissions fall within the restricted bands. 2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report.		

Mark	Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
	3788.0	44.1	-0.5	43.6	54.0	-10.4	Peak	Horizontal
	4825.0	42.0	3.2	45.2	54.0	-8.8	Peak	Horizontal
*	5879.0	41.8	5.3	47.1	78.8	-31.7	Peak	Horizontal
*	7069.0	38.5	10.8	49.3	78.8	-29.5	Peak	Horizontal
	4170.5	42.4	0.9	43.3	54.0	-10.7	Peak	Vertical
	4808.0	46.1	3.2	49.3	54.0	-4.7	Peak	Vertical
*	6304.0	39.5	6.9	46.4	78.8	-32.4	Peak	Vertical
*	7069.0	39.2	10.8	50.0	78.8	-28.8	Peak	Vertical

Note 1: "*" is not in restricted band, its limit is 20dBc of the fundamental emission level (98.799dBμV/m) or 15.209 which is higher.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

Product	ACCESS POINT	Temperature	26°C
Test Engineer	Kevin Ker	Relative Humidity	56%
Test Site	AC1	Test Date	2020/03/04
Model No.	APEX0575	Test Channel	18
Remark	1. Average measurement was not performed if peak level lower than average limit. So the margin was calculated using the average limit for emissions fall within the restricted bands. 2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report.		

Mark	Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
	4264.0	42.1	1.4	43.5	54.0	-10.5	Peak	Horizontal
	4748.5	41.0	3.0	44.0	54.0	-10.0	Peak	Horizontal
*	5692.0	40.9	4.6	45.5	75.6	-30.1	Peak	Horizontal
*	6635.5	38.6	8.5	47.1	75.6	-28.5	Peak	Horizontal
	3890.0	42.8	-0.2	42.6	54.0	-11.4	Peak	Vertical
	4884.5	45.2	3.3	48.5	54.0	-5.5	Peak	Vertical
*	5930.0	40.4	5.5	45.9	75.6	-29.7	Peak	Vertical
*	7001.0	38.1	10.6	48.7	75.6	-26.9	Peak	Vertical

Note 1: “*” is not in restricted band, its limit is 20dBc of the fundamental emission level (95.62dBμV/m) or 15.209 which is higher.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

Product	ACCESS POINT	Temperature	26°C
Test Engineer	Kevin Ker	Relative Humidity	56%
Test Site	AC1	Test Date	2020/03/04
Model No.	APEX0575	Test Channel	26
Remark	1. Average measurement was not performed if peak level lower than average limit. So the margin was calculated using the average limit for emissions fall within the restricted bands. 2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report.		

Mark	Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
	4136.5	41.7	0.8	42.5	54.0	-11.5	Peak	Horizontal
	5037.5	41.0	3.6	44.6	54.0	-9.4	Peak	Horizontal
*	5573.0	42.9	4.2	47.1	74.0	-26.9	Peak	Horizontal
*	7060.5	37.8	10.7	48.5	74.0	-25.5	Peak	Horizontal
	4255.5	42.0	1.3	43.3	54.0	-10.7	Peak	Vertical
	4961.0	42.3	3.5	45.8	54.0	-8.2	Peak	Vertical
*	5887.5	39.9	5.4	45.3	74.0	-28.7	Peak	Vertical
*	6984.0	37.7	10.5	48.2	74.0	-25.8	Peak	Vertical

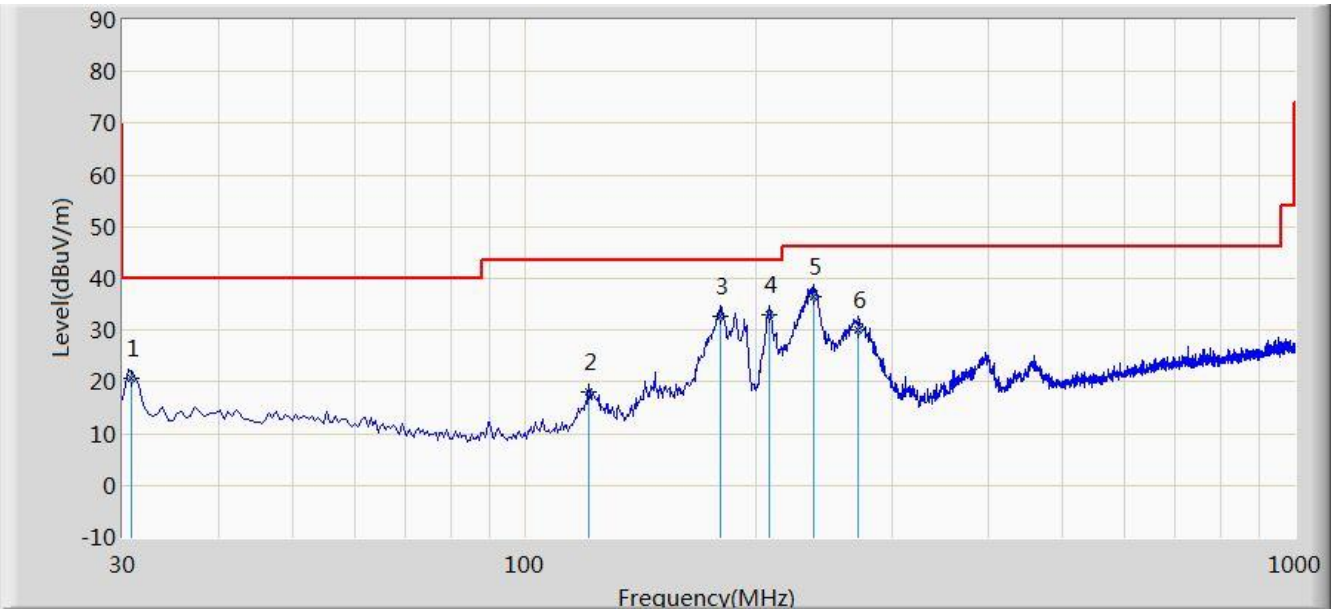
Note 1: “*” is not in restricted band, its limit is 20dBc of the fundamental emission level (92.033dBμV/m) or 15.209 which is higher.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

The Worst Case of Radiated Emission below 1GHz:

Site: AC1	Time: 2020/03/05 - 14:46
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: TW VULB 9162 30MHz-8GHz_2019	Polarity: Horizontal
EUT: ACCESS POINT	Power: By PoE
Test Mode: There is the worst case within frequency range 30MHz~1GHz.	



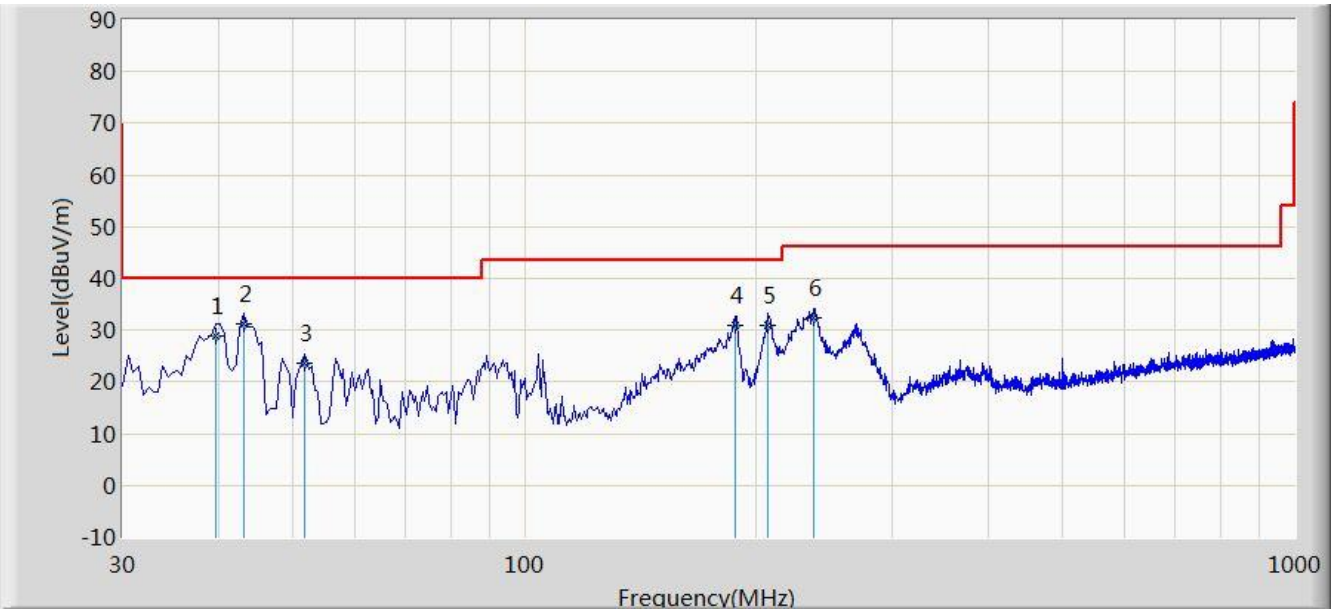
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			30.850	20.588	2.430	-19.412	40.000	18.158	QP
2			121.140	18.086	1.250	-25.414	43.500	16.836	QP
3			179.420	32.657	15.430	-10.843	43.500	17.226	QP
4			207.240	33.008	14.320	-10.492	43.500	18.689	QP
5		*	237.120	36.354	16.250	-9.646	46.000	20.104	QP
6			270.540	30.172	9.450	-15.828	46.000	20.723	QP

Note 1: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Note 2: The amplitude of spurious emissions (frequency range 9kHz ~ 30MHz, 18GHz ~ 40GHz) is that proximity to ambient noise, which also are attenuated more than 20 dB below the permissible value. Therefore, the data is not presented in the report.

Site: AC1	Time: 2020/03/05 - 14:47
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: TW VULB 9162 30MHz-8GHz_2019	Polarity: Vertical
EUT: ACCESS POINT	Power: By PoE
Test Mode: There is the worst case within frequency range 30MHz~1GHz.	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			39.670	28.762	8.210	-11.238	40.000	20.552	QP
2		*	43.120	31.372	10.250	-8.628	40.000	21.123	QP
3			51.730	23.729	2.350	-16.271	40.000	21.379	QP
4			187.250	31.081	12.760	-12.419	43.500	18.320	QP
5			206.430	30.947	12.230	-12.553	43.500	18.717	QP
6			237.450	32.355	12.240	-13.645	46.000	20.115	QP

Note 1: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Note 2: The amplitude of spurious emissions (frequency range 9kHz ~ 30MHz, 18GHz ~ 40GHz) is that proximity to ambient noise, which also are attenuated more than 20 dB below the permissible value. Therefore, the data is not presented in the report.

Product	ACCESS POINT	Temperature	26°C
Test Engineer	Kevin Ker	Relative Humidity	56%
Test Site	AC1	Test Date	2020/03/05
Model No.	APEX0577	Test Channel	11
Remark	1. Average measurement was not performed if peak level lower than average limit. So the margin was calculated using the average limit for emissions fall within the restricted bands. 2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report.		

Mark	Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
	3941.0	42.0	-0.1	41.9	54.0	-12.1	Peak	Horizontal
	4816.5	39.7	3.2	42.9	54.0	-11.1	Peak	Horizontal
*	6083.0	39.7	6.1	45.8	74.0	-28.2	Peak	Horizontal
*	7094.5	37.6	10.8	48.4	74.0	-25.6	Peak	Horizontal
	4060.0	41.9	0.4	42.3	54.0	-11.7	Peak	Vertical
	4927.0	40.2	3.4	43.6	54.0	-10.4	Peak	Vertical
*	5904.5	39.1	5.4	44.5	74.0	-29.5	Peak	Vertical
*	6941.5	37.7	10.3	48.0	74.0	-26.0	Peak	Vertical

Note 1: “*” is not in restricted band, its limit is 20dBc of the fundamental emission level (92.289dBμV/m) or 15.209 which is higher.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

Product	ACCESS POINT	Temperature	26°C
Test Engineer	Kevin Ker	Relative Humidity	56%
Test Site	AC1	Test Date	2020/03/05
Model No.	APEX0577	Test Channel	18
Remark	1. Average measurement was not performed if peak level lower than average limit. So the margin was calculated using the average limit for emissions fall within the restricted bands. 2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report.		

Mark	Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
	4230.0	42.0	1.2	43.2	54.0	-10.8	Peak	Horizontal
	5054.5	39.9	3.6	43.5	54.0	-10.5	Peak	Horizontal
*	5819.5	40.1	5.1	45.2	74.0	-28.8	Peak	Horizontal
*	6508.0	38.8	7.7	46.5	74.0	-27.5	Peak	Horizontal
	4060.0	43.0	0.4	43.4	54.0	-10.6	Peak	Vertical
	4969.5	41.8	3.5	45.3	54.0	-8.7	Peak	Vertical
*	5683.5	40.0	4.6	44.6	74.0	-29.4	Peak	Vertical
*	6593.0	39.6	8.2	47.8	74.0	-26.2	Peak	Vertical

Note 1: “*” is not in restricted band, its limit is 20dBc of the fundamental emission level (91.56dBμV/m) or 15.209 which is higher.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

Product	ACCESS POINT	Temperature	26°C
Test Engineer	Kevin Ker	Relative Humidity	56%
Test Site	AC1	Test Date	2020/03/05
Model No.	APEX0577	Test Channel	26
Remark	1. Average measurement was not performed if peak level lower than average limit. So the margin was calculated using the average limit for emissions fall within the restricted bands. 2. Other frequency was 20dB below limit line within 1-18GHz, there is not show in the report.		

Mark	Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
	3958.0	42.6	0.0	42.6	54.0	-11.4	Peak	Horizontal
	4952.5	41.2	3.5	44.7	54.0	-9.3	Peak	Horizontal
*	5751.5	40.7	4.8	45.5	74.0	-28.5	Peak	Horizontal
*	6941.5	38.1	10.3	48.4	74.0	-25.6	Peak	Horizontal
	4196.0	42.5	1.0	43.5	54.0	-10.5	Peak	Vertical
	5020.5	41.6	3.6	45.2	54.0	-8.8	Peak	Vertical
*	5981.0	40.6	5.7	46.3	74.0	-27.7	Peak	Vertical
*	6975.5	38.1	10.5	48.6	74.0	-25.4	Peak	Vertical

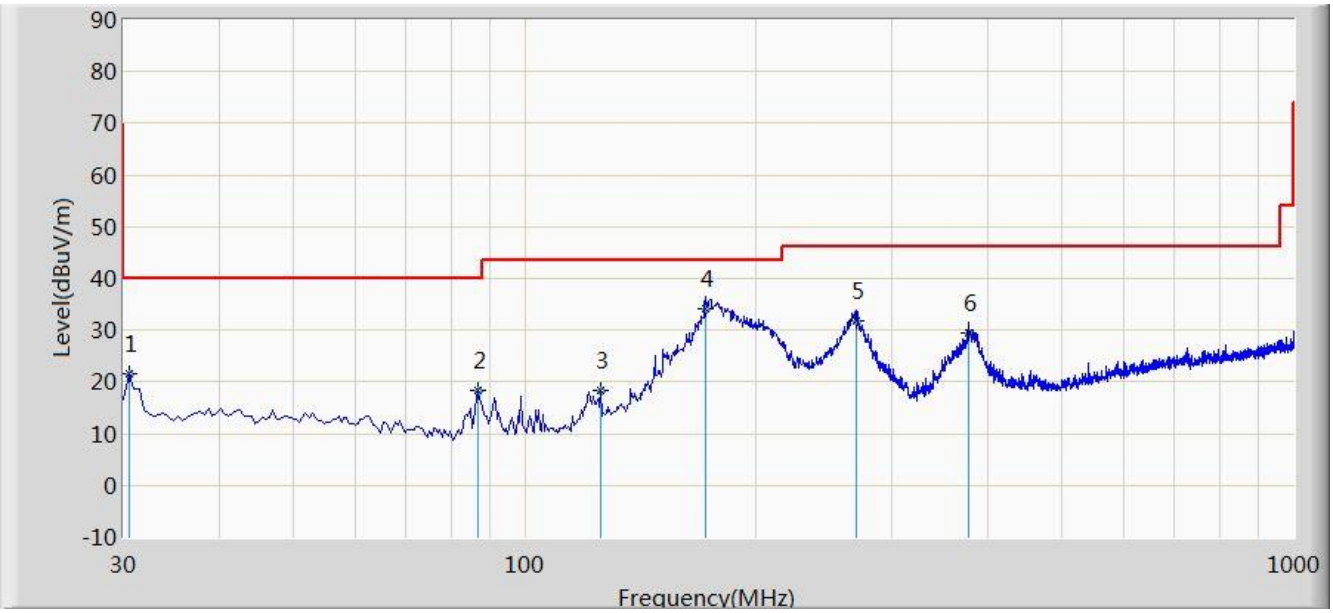
Note 1: “*” is not in restricted band, its limit is 20dBc of the fundamental emission level (91.676dBμV/m) or 15.209 which is higher.

Note 2: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) - Pre_Amplifier Gain (dB)

The Worst Case of Radiated Emission below 1GHz:

Site: AC1	Time: 2020/03/05 - 14:02
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: TW VULB 9162 30MHz-8GHz_2019	Polarity: Horizontal
EUT: ACCESS POINT	Power: By PoE
Test Mode: There is the worst case within frequency range 30MHz~1GHz.	



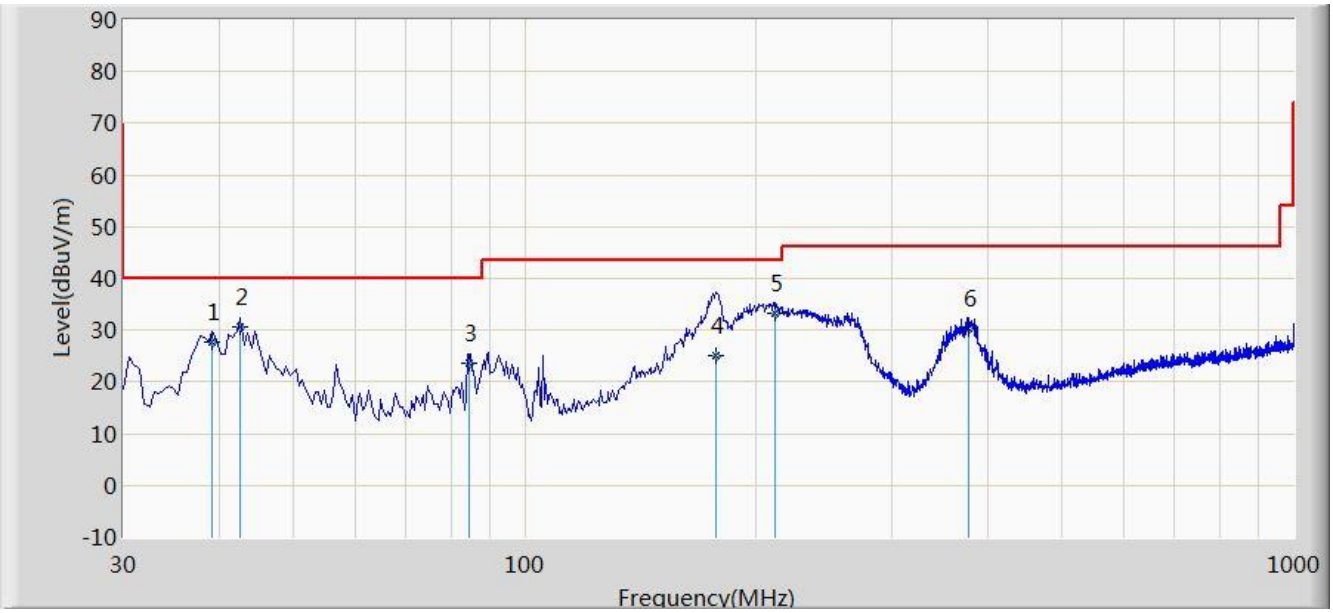
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			30.485	21.632	3.550	-18.368	40.000	18.082	QP
2			86.745	18.221	2.194	-21.779	40.000	16.027	QP
3			125.545	18.429	2.018	-25.071	43.500	16.410	QP
4		*	171.528	34.225	17.733	-9.275	43.500	16.493	QP
5			269.097	31.915	11.223	-14.085	46.000	20.692	QP
6			377.652	29.543	5.709	-16.457	46.000	23.834	QP

Note 1: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Note 2: The amplitude of spurious emissions (frequency range 9kHz ~ 30MHz, 18GHz ~ 40GHz) is that proximity to ambient noise, which also are attenuated more than 20 dB below the permissible value. Therefore, the data is not presented in the report.

Site: AC1	Time: 2020/03/05 - 14:04
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: TW VULB 9162 30MHz-8GHz_2019	Polarity: Vertical
EUT: ACCESS POINT	Power: By PoE
Test Mode: There is the worst case within frequency range 30MHz~1GHz.	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			39.162	27.615	7.229	-12.385	40.000	20.386	QP
2		*	42.519	30.696	9.663	-9.304	40.000	21.033	QP
3			84.621	23.481	8.082	-16.519	40.000	15.399	QP
4			176.882	25.015	8.025	-18.485	43.500	16.990	QP
5			211.210	33.404	14.762	-10.096	43.500	18.642	QP
6			377.628	30.296	6.462	-15.704	46.000	23.834	QP

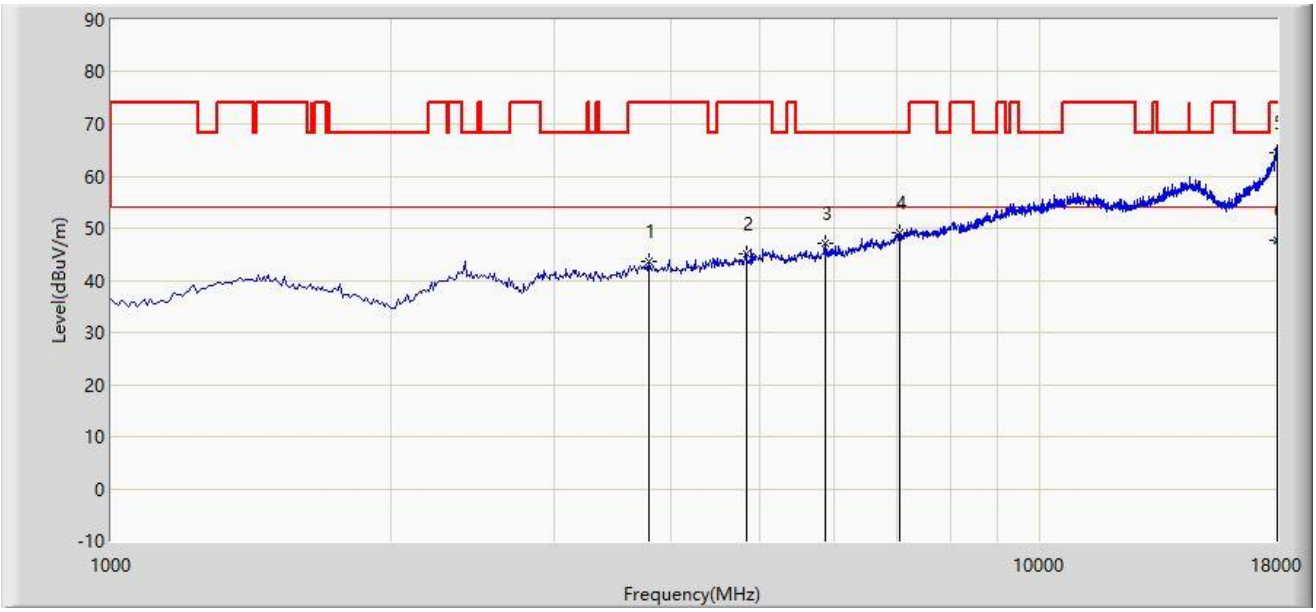
Note 1: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Note 2: The amplitude of spurious emissions (frequency range 9kHz ~ 30MHz, 18GHz ~ 40GHz) is that proximity to ambient noise, which also are attenuated more than 20 dB below the permissible value. Therefore, the data is not presented in the report.

The Worst Case of Radiated Emission above 1GHz:

Site: AC1	Time: 2020/03/04 - 02:35
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: BBHA 9120D_1-18GHz	Polarity: Horizontal
EUT: ACCESS POINT (APEX0575)	Power: By PoE
Test Mode: Transmit by ZigBee at Channel 2405MHz	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			3788.000	43.599	44.079	-30.401	74.000	-0.480	PK
2			4825.000	45.189	41.989	-28.811	74.000	3.200	PK
3			5879.000	47.084	41.759	-21.116	68.200	5.325	PK
4			7069.000	49.264	38.510	-18.936	68.200	10.754	PK
5			18000.000	64.470	33.000	-9.530	74.000	31.470	PK
6		*	18000.000	47.780	16.310	-6.220	54.000	31.470	AV

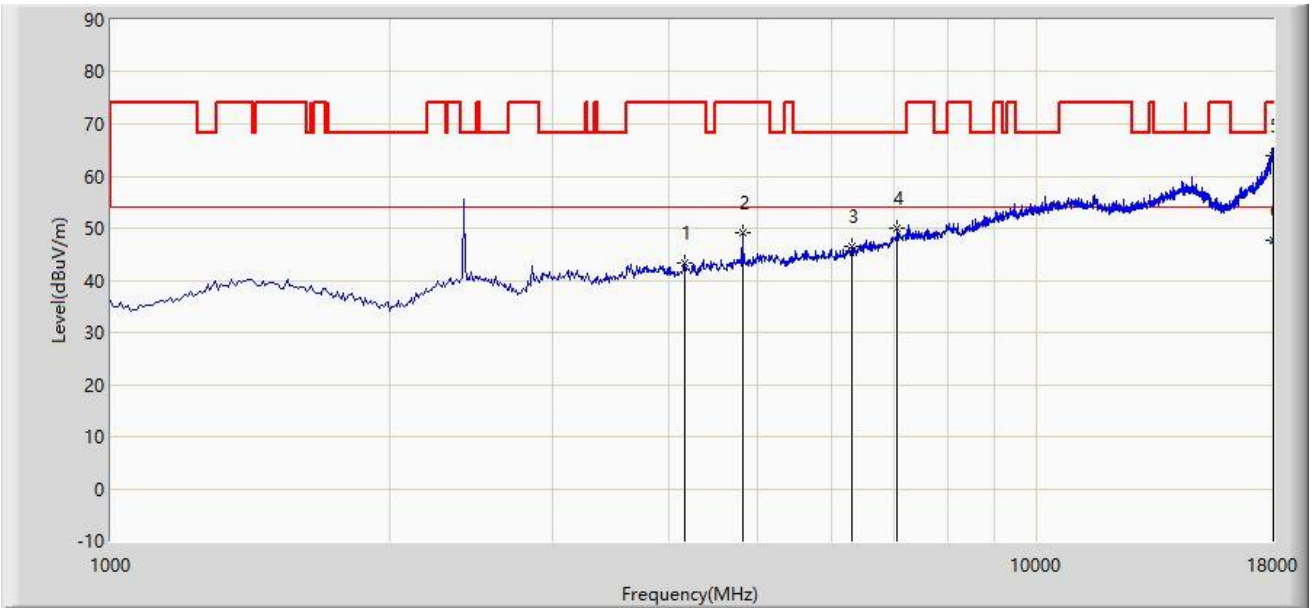
Note 1: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Note 2: The amplitude of spurious emissions (frequency range 9kHz ~ 30MHz, 18GHz ~ 40GHz) is that proximity to ambient noise, which also are attenuated more than 20 dB below the permissible value. Therefore,

the data is not presented in the report.

Site: AC1	Time: 2020/03/04 - 02:47
Limit: FCC_Part15.209_RSE(3m)	Engineer: Kevin Ker
Probe: BBHA 9120D_1-18GHz	Polarity: Vertical
EUT: ACCESS POINT (APEX0575)	Power: By PoE
Test Mode: Transmit by ZigBee at Channel 2405MHz	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			4170.500	43.289	42.367	-30.711	74.000	0.922	PK
2			4808.000	49.252	46.086	-24.748	74.000	3.166	PK
3			6304.000	46.407	39.459	-21.793	68.200	6.948	PK
4			7069.000	49.970	39.216	-18.230	68.200	10.754	PK
5			18000.000	63.776	32.306	-10.224	74.000	31.470	PK
6		*	18000.000	47.680	16.210	-6.320	54.000	31.470	AV

Note 1: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Note 2: The amplitude of spurious emissions (frequency range 9kHz ~ 30MHz, 18GHz ~ 40GHz) is that proximity to ambient noise, which also are attenuated more than 20 dB below the permissible value. Therefore,

the data is not presented in the report.

7.7. Radiated Restricted Band Edge Measurement

7.7.1.Test Limit

For 15.205 requirement:

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

Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (GHz)
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1] 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.25 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	([2])
13.36 - 13.41	--	--	--

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

FCC Part 15 Subpart C Paragraph 15.209		
Frequency [MHz]	Field Strength [uV/m]	Measured Distance [Meters]
0.009 - 0.490	2400/F (kHz)	300
0.490 - 1.705	24000/F (kHz)	30
1.705 - 30	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

7.7.2.Test Procedure Used

ANSI C63.10 Section 6.3 (General Requirements)

ANSI C63.10 Section 6.6 (Standard test method above 1GHz)

7.7.3.Test Setting

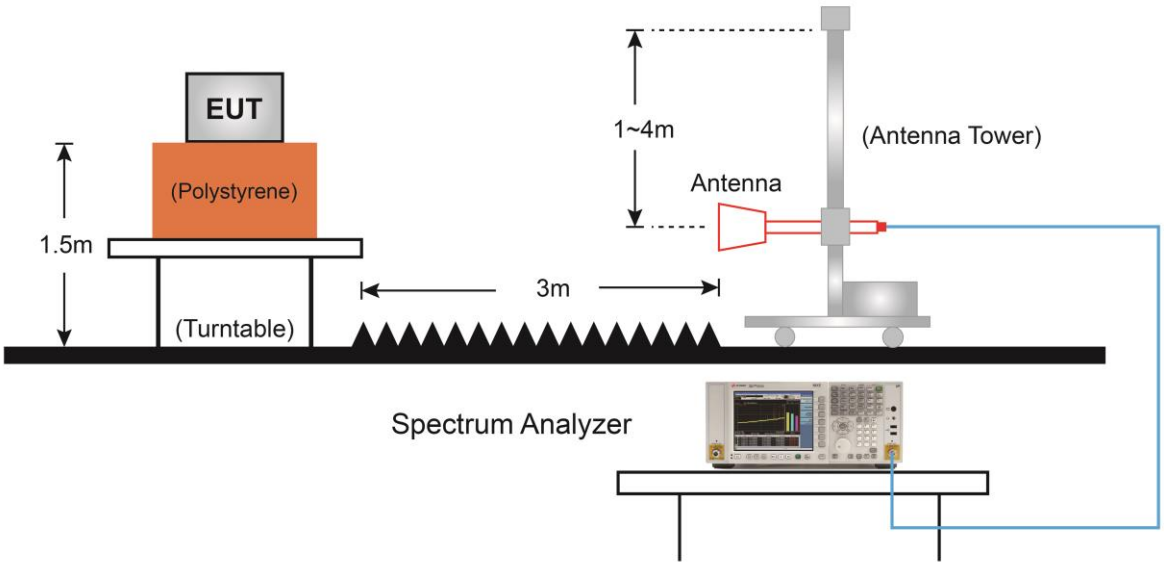
Peak Field Strength Measurements

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

Average Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW ≥ 1/T
4. De As an alternative, the instrument may be set to linear detector mode. Ensure that video filtering is applied in linear voltage domain (rather than in a log or dB domain). Some instruments require linear display mode in order to accomplish this. Others have a setting for Average-VBW Type, which can be set to “Voltage” regardless of the display mode
5. Detector = Peak
6. Sweep time = auto
7. Trace mode = max hold
8. Allow max hold to run for at least 50 times (1/duty cycle) traces

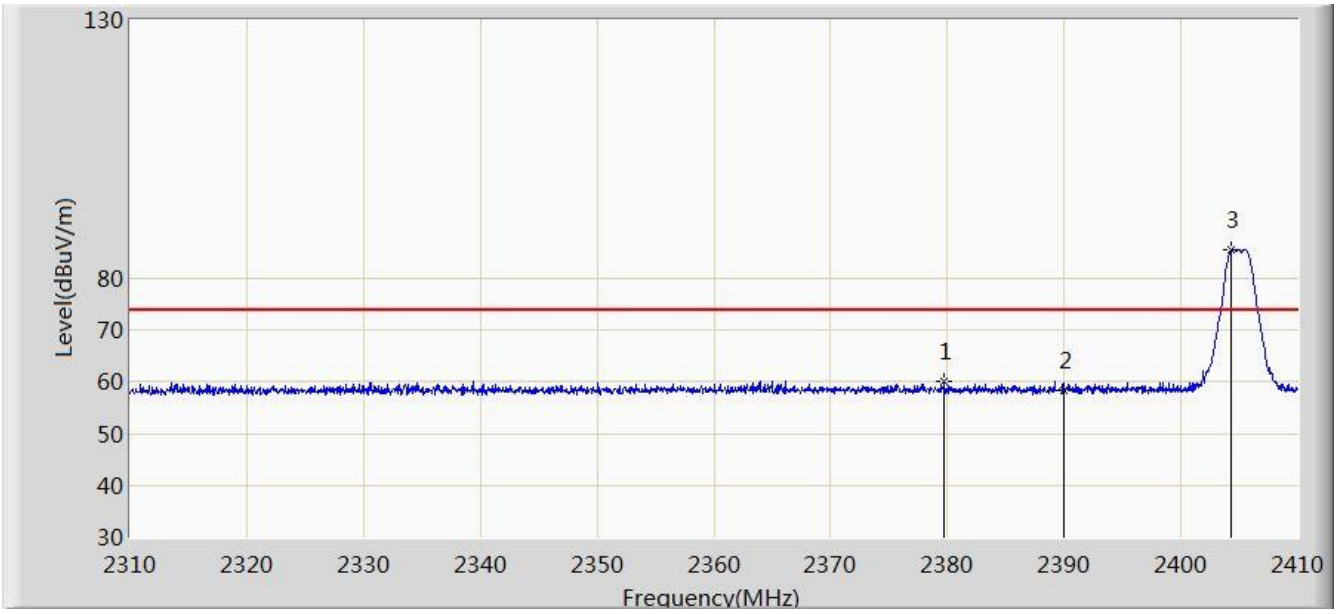
7.7.4.Test Setup



7.7.5.Test Result

For APEX0574

Site: AC1	Time: 2020/02/22 - 10:48
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: BBHA 9120D_1-18GHz	Polarity: Horizontal
EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by ZigBee at channel 2405MHz	

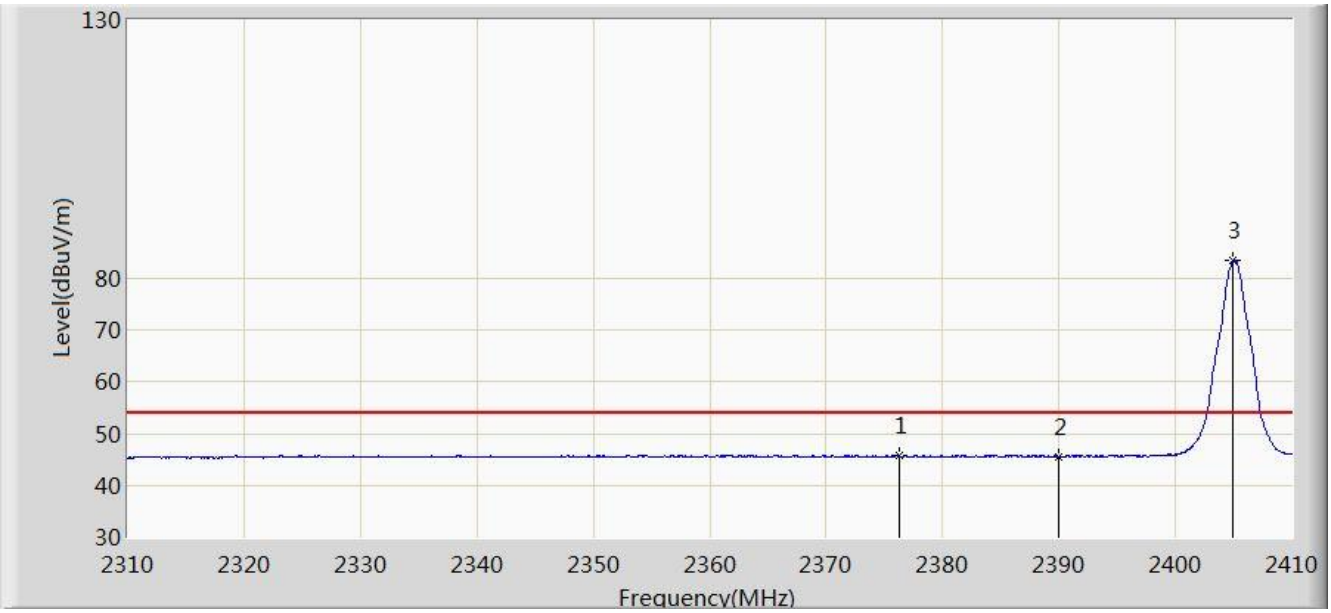


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2379.750	60.028	27.801	-13.972	74.000	32.227	PK
2			2390.000	58.497	26.223	-15.503	74.000	32.274	PK
3		*	2404.350	85.499	53.159	N/A	N/A	32.340	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2020/02/22 - 10:57
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: BBHA 9120D_1-18GHz	Polarity: Horizontal
EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by ZigBee at channel 2405MHz	

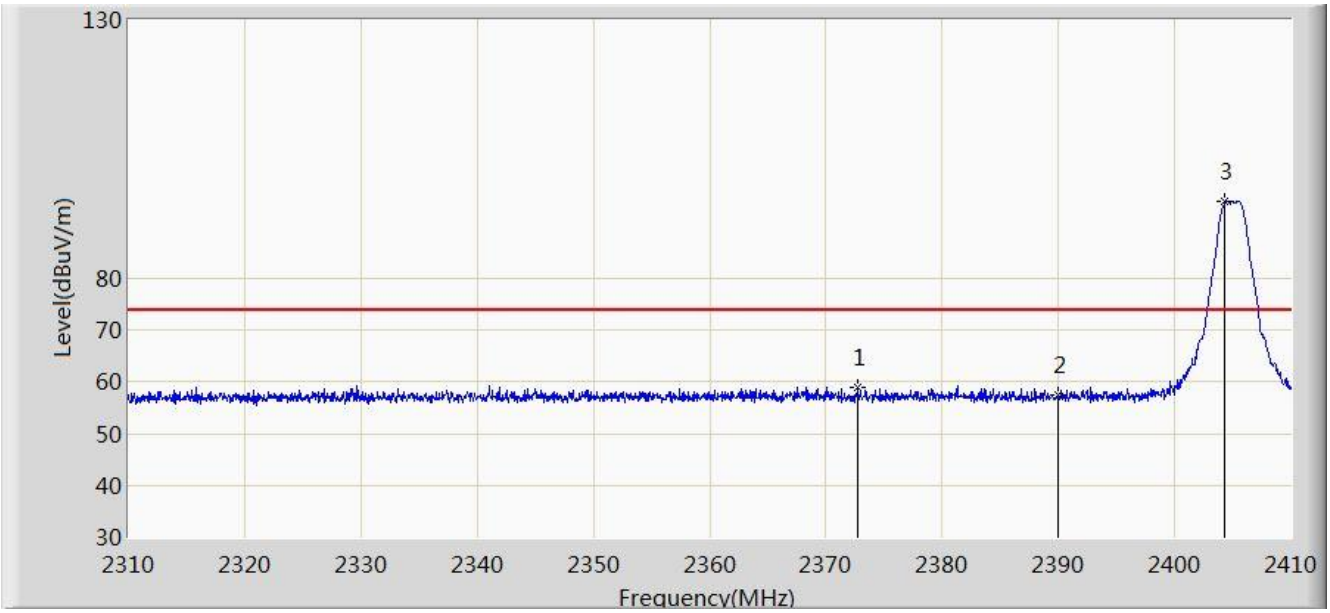


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2376.250	45.685	13.474	-8.315	54.000	32.210	AV
2			2390.000	45.595	13.321	-8.405	54.000	32.274	AV
3		*	2404.950	83.392	51.050	N/A	N/A	32.343	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2020/02/22 - 11:08
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: BBHA 9120D_1-18GHz	Polarity: Vertical
EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by ZigBee at channel 2405MHz	

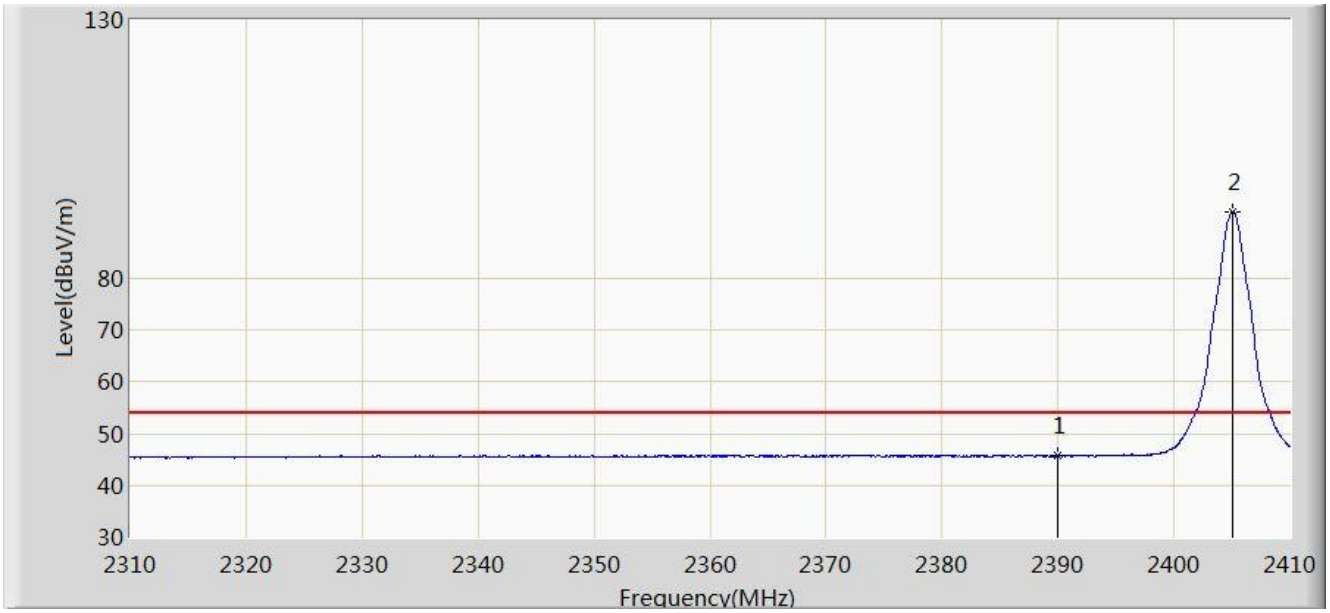


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2372.800	58.819	26.624	-15.181	74.000	32.195	PK
2			2390.000	57.442	25.168	-16.558	74.000	32.274	PK
3		*	2404.350	94.770	62.430	N/A	N/A	32.340	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2020/02/22 - 10:59
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: BBHA 9120D_1-18GHz	Polarity: Vertical
EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by ZigBee at channel 2405MHz	

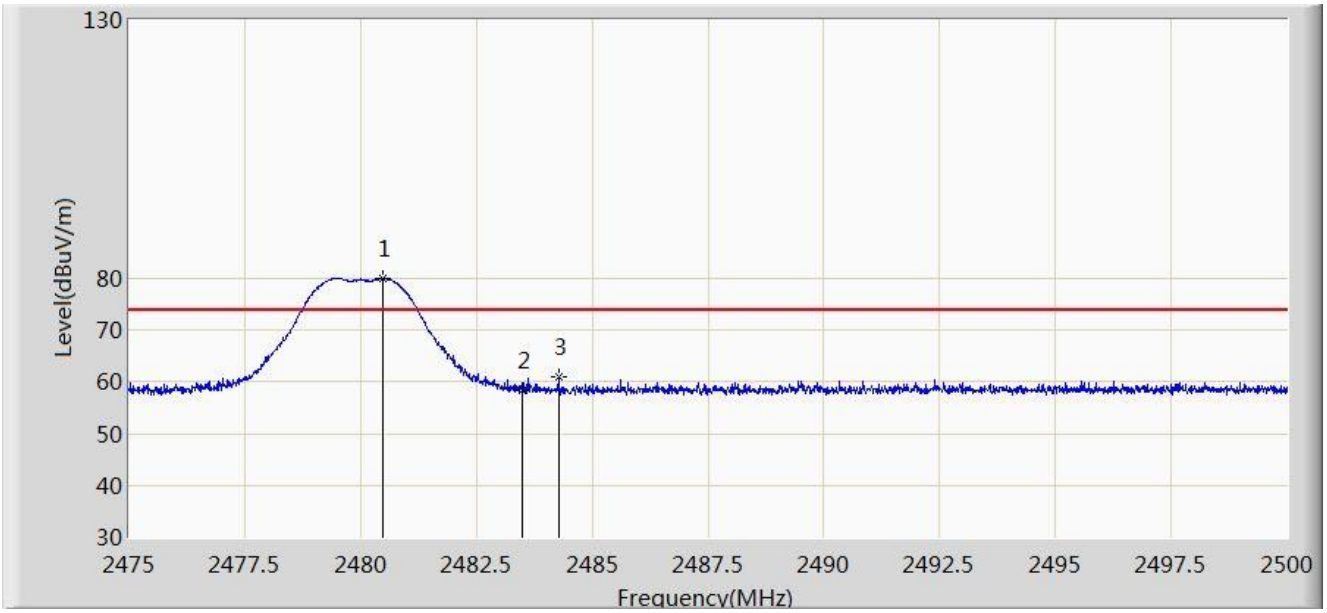


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2390.000	45.701	13.427	-8.299	54.000	32.274	AV
2		*	2405.100	92.900	60.557	N/A	N/A	32.343	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2020/02/22 - 11:26
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: BBHA 9120D_1-18GHz	Polarity: Horizontal
EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by ZigBee at channel 2480MHz	

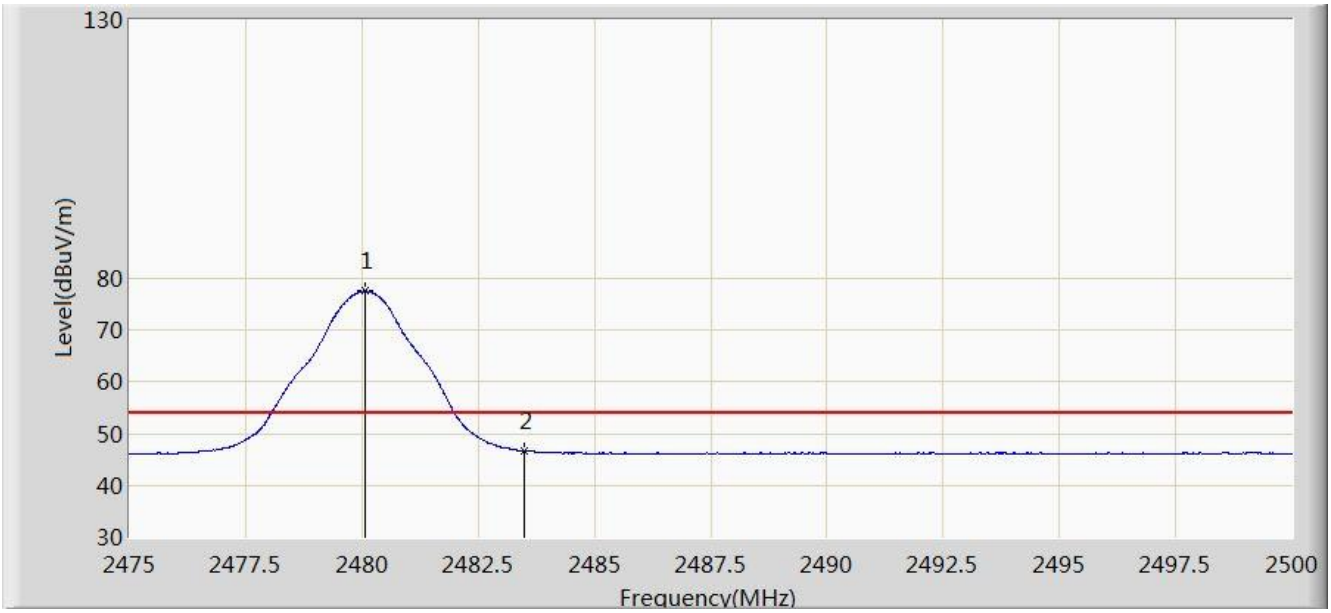


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2480.475	79.970	47.279	N/A	N/A	32.691	PK
2			2483.500	58.497	25.793	-15.503	74.000	32.704	PK
3			2484.275	60.878	28.170	-13.122	74.000	32.708	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2020/02/22 - 11:31
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: BBHA 9120D_1-18GHz	Polarity: Horizontal
EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by ZigBee at channel 2480MHz	

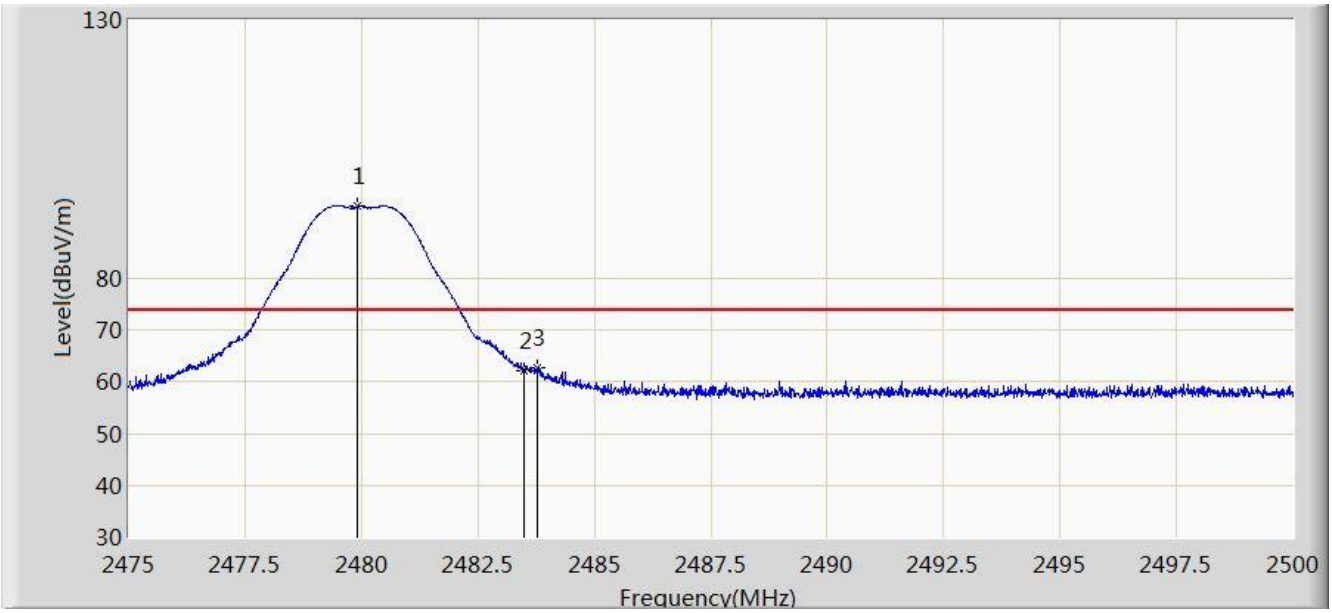


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2480.075	77.527	N/A	N/A	54.000	32.689	AV
2			2483.500	46.649	13.945	-7.351	54.000	32.704	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2020/02/22 - 11:32
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: BBHA 9120D_1-18GHz	Polarity: Vertical
EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by ZigBee at channel 2480MHz	

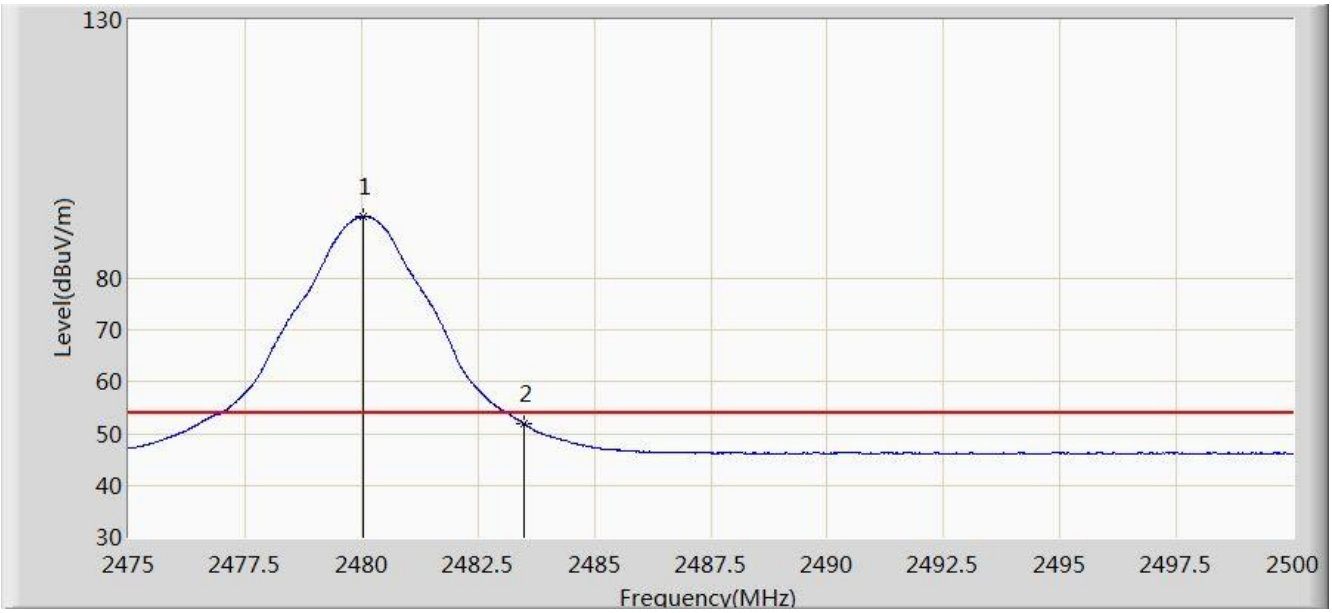


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2479.925	93.958	N/A	N/A	74.000	32.688	PK
2			2483.500	62.256	29.552	-11.744	74.000	32.704	PK
3			2483.775	62.884	30.178	-11.116	74.000	32.706	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2020/02/22 - 11:33
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: BBHA 9120D_1-18GHz	Polarity: Vertical
EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by ZigBee at channel 2480MHz	



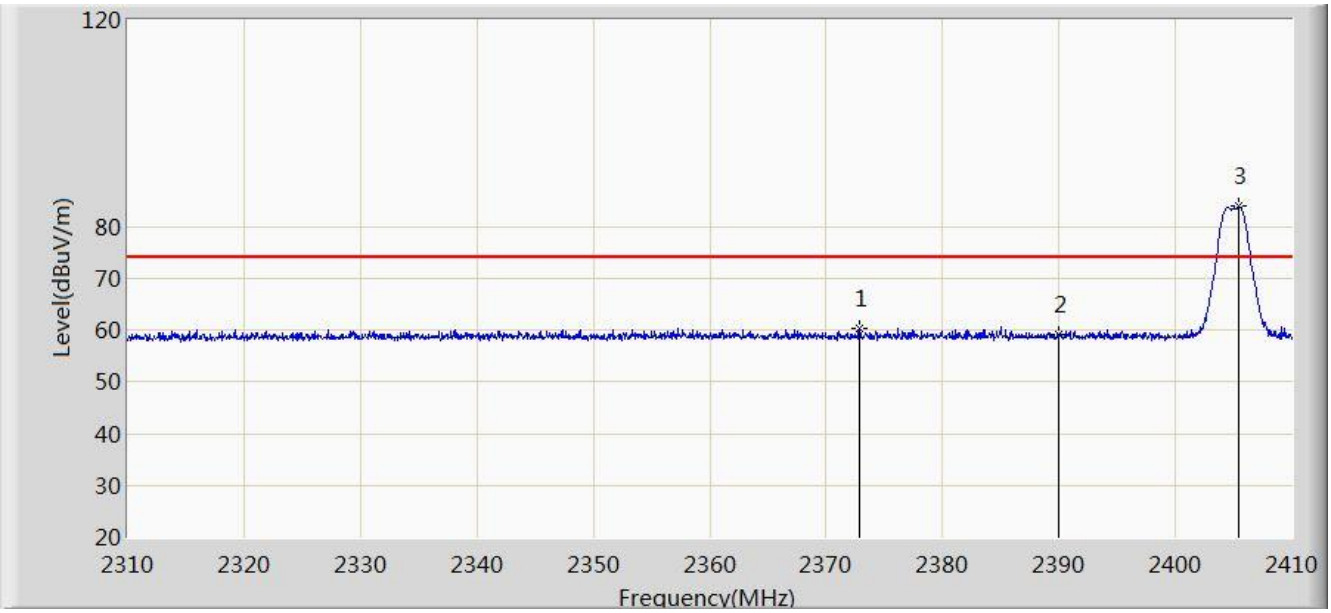
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2480.038	91.943	N/A	N/A	54.000	32.688	AV
2			2483.500	51.896	19.192	-2.104	54.000	32.704	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

For APEX0575

Site: AC1	Time: 2020/03/03 - 13:16
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: BBHA 9120D_1-18GHz	Polarity: Horizontal
EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by ZigBee at channel 2405MHz	

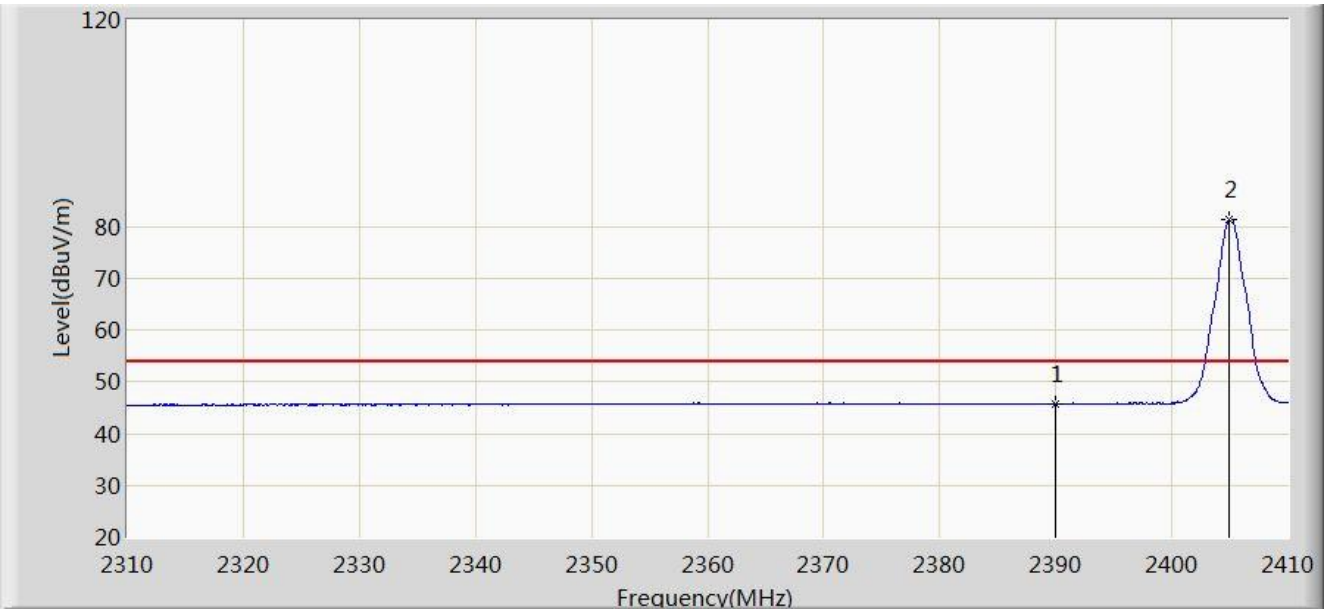


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2372.900	60.222	28.027	-13.778	74.000	32.195	PK
2			2390.000	59.103	26.829	-14.897	74.000	32.274	PK
3		*	2405.400	83.903	51.558	N/A	N/A	32.344	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2020/03/03 - 13:24
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: BBHA 9120D_1-18GHz	Polarity: Horizontal
EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by ZigBee at channel 2405MHz	

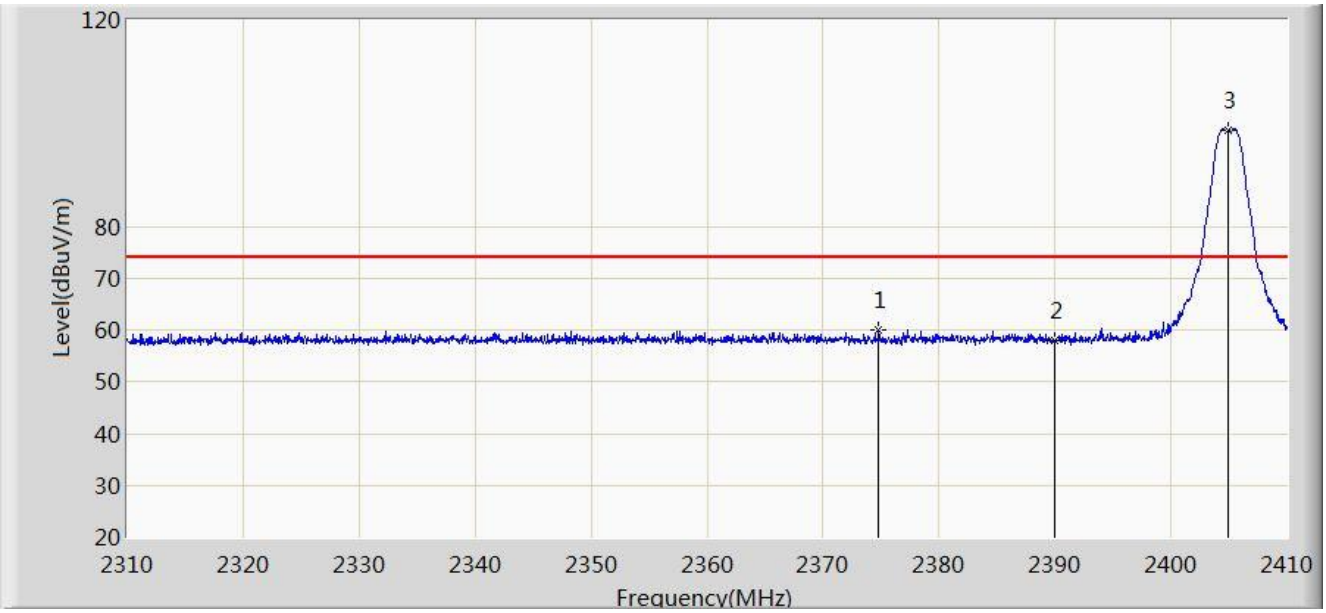


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2390.000	45.791	13.517	-8.209	54.000	32.274	AV
2		*	2404.950	81.499	49.157	N/A	N/A	32.343	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2020/03/03 - 13:25
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: BBHA 9120D_1-18GHz	Polarity: Vertical
EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by ZigBee at channel 2405MHz	

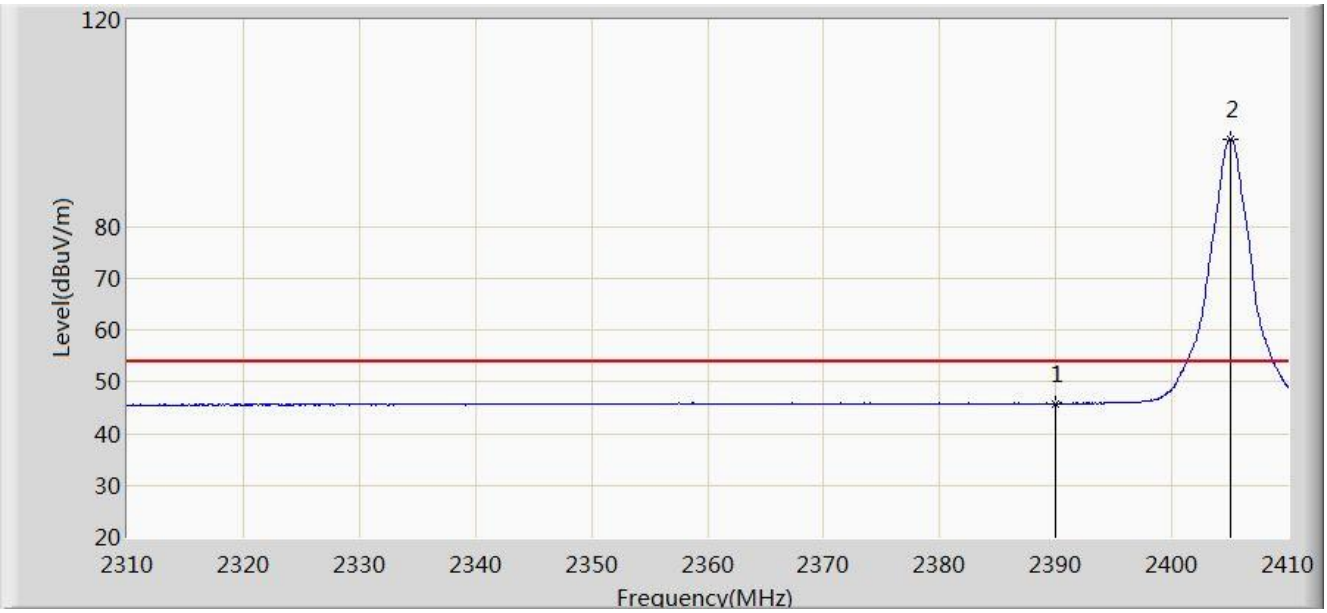


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2374.800	60.027	27.823	-13.973	74.000	32.204	PK
2			2390.000	58.044	25.770	-15.956	74.000	32.274	PK
3		*	2404.900	98.799	66.457	N/A	N/A	32.343	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2020/03/03 - 13:27
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: BBHA 9120D_1-18GHz	Polarity: Vertical
EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by ZigBee at channel 2405MHz	

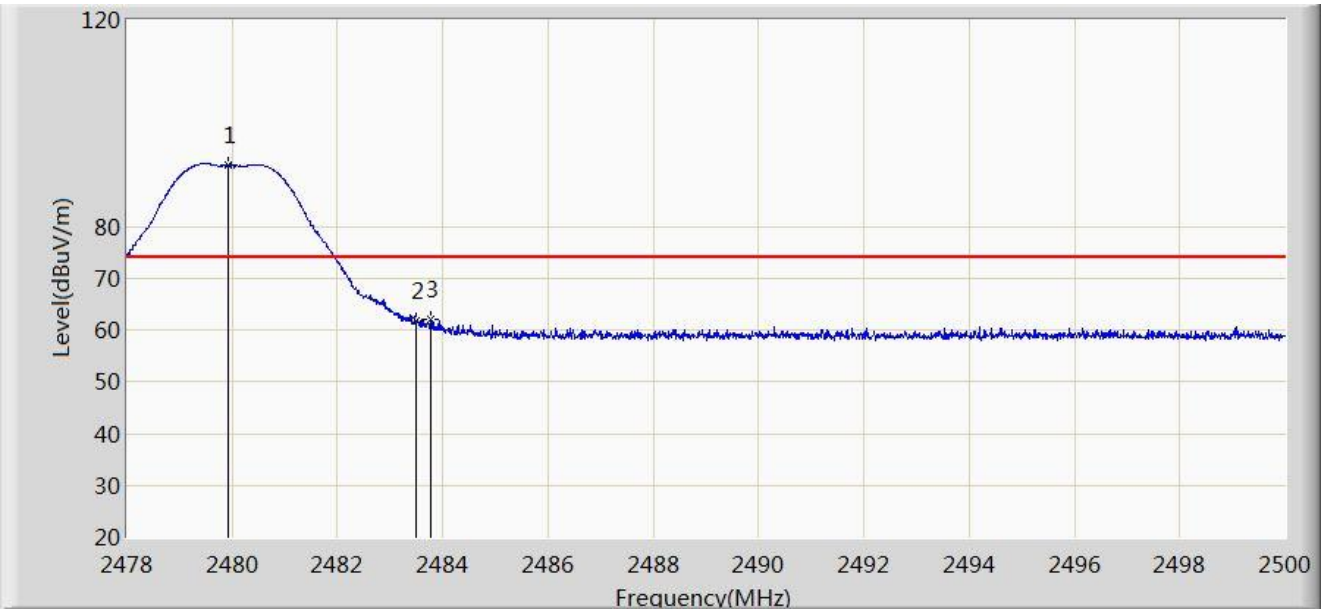


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2390.000	45.761	13.487	-8.239	54.000	32.274	AV
2		*	2405.000	96.925	64.582	N/A	N/A	32.343	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2020/03/04 - 02:29
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: BBHA 9120D_1-18GHz	Polarity: Horizontal
EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by ZigBee at channel 2480MHz	

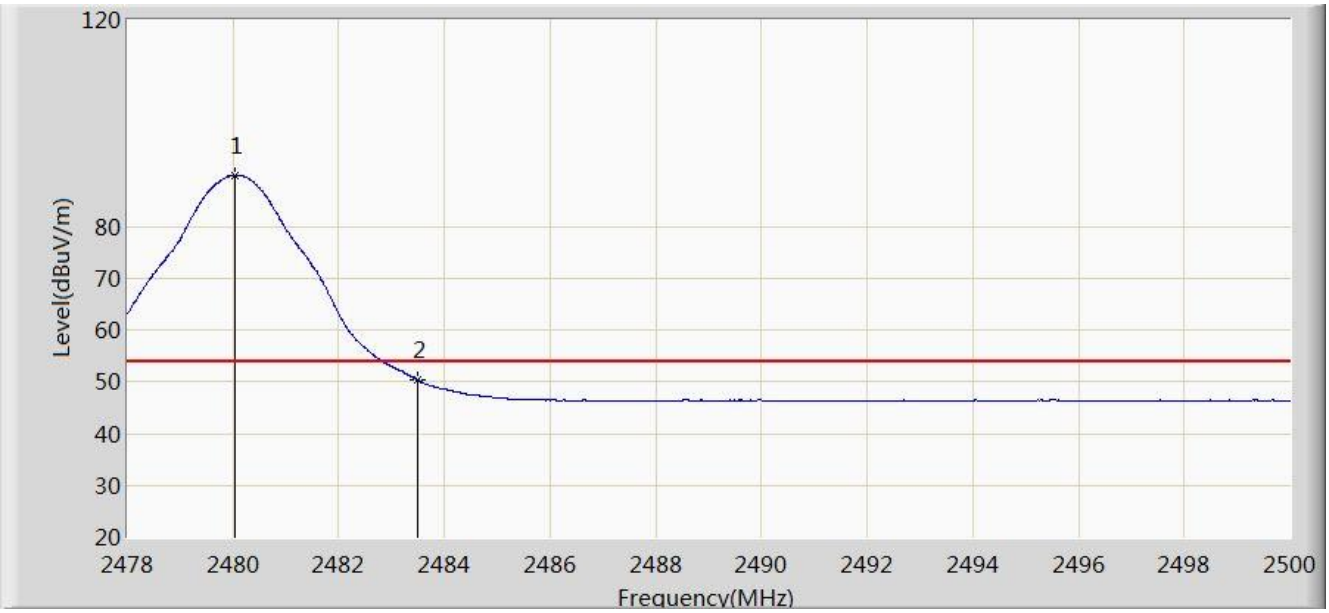


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2479.936	92.033	59.345	N/A	N/A	32.688	PK
2			2483.500	61.916	29.212	-12.084	74.000	32.704	PK
3			2483.764	62.074	29.368	-11.926	74.000	32.706	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2020/03/04 - 02:31
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: BBHA 9120D_1-18GHz	Polarity: Horizontal
EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by ZigBee at channel 2480MHz	

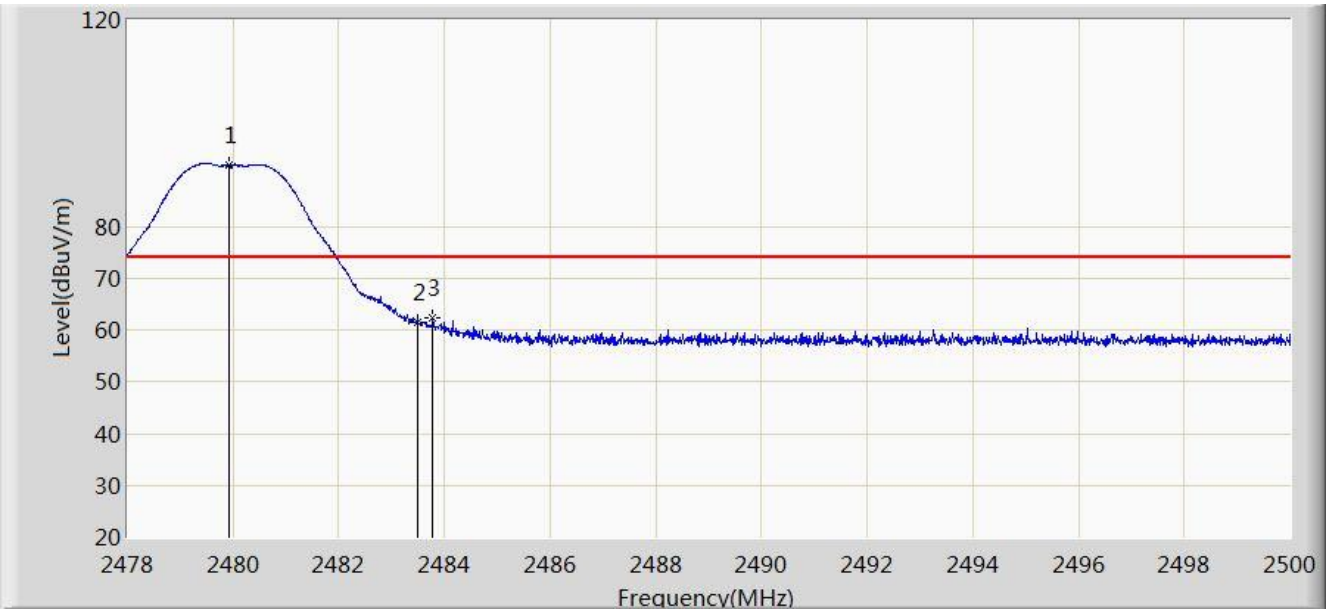


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2480.046	89.958	57.269	N/A	N/A	32.689	AV
2			2483.500	50.397	17.693	-3.603	54.000	32.704	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2020/03/04 - 02:28
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: BBHA 9120D_1-18GHz	Polarity: Vertical
EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by ZigBee at channel 2480MHz	

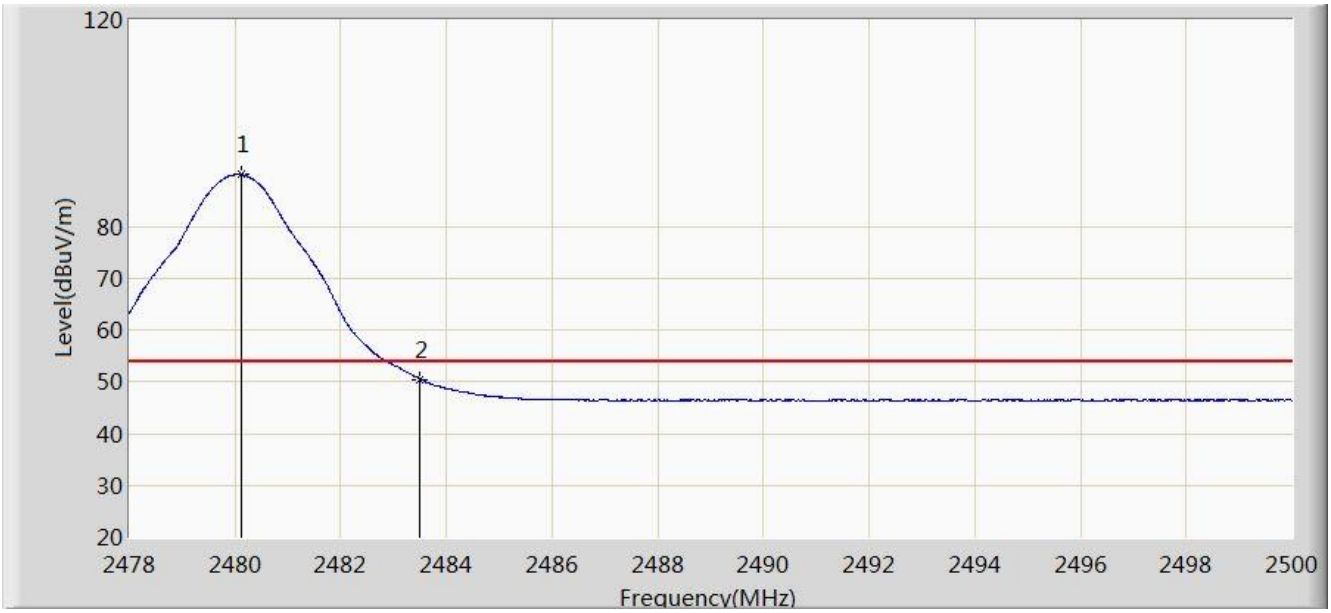


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2479.936	92.002	59.314	N/A	N/A	32.688	PK
2			2483.500	61.411	28.707	-12.589	74.000	32.704	PK
3			2483.775	62.265	29.559	-11.735	74.000	32.706	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2020/03/04 - 02:26
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: BBHA 9120D_1-18GHz	Polarity: Vertical
EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by ZigBee at channel 2480MHz	



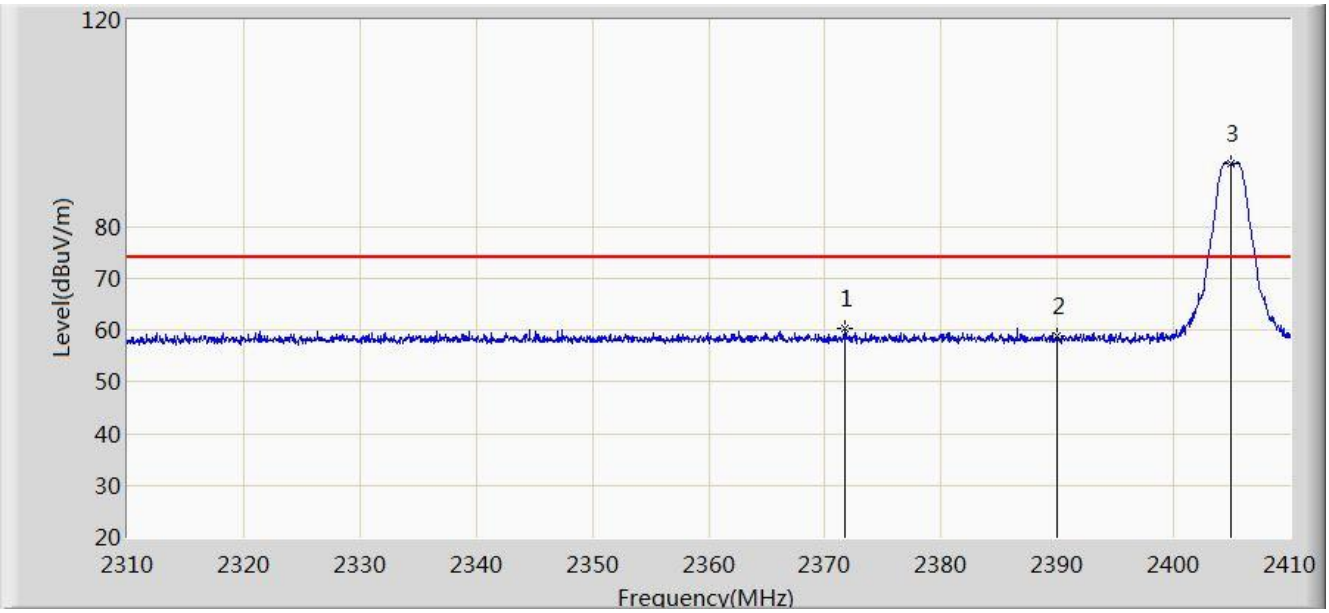
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2480.112	90.091	57.402	N/A	N/A	32.689	AV
2			2483.500	50.542	17.838	-3.458	54.000	32.704	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

For APEX0577

Site: AC1	Time: 2020/03/05 - 10:52
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: BBHA 9120D_1-18GHz	Polarity: Horizontal
EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by ZigBee at channel 2405MHz	

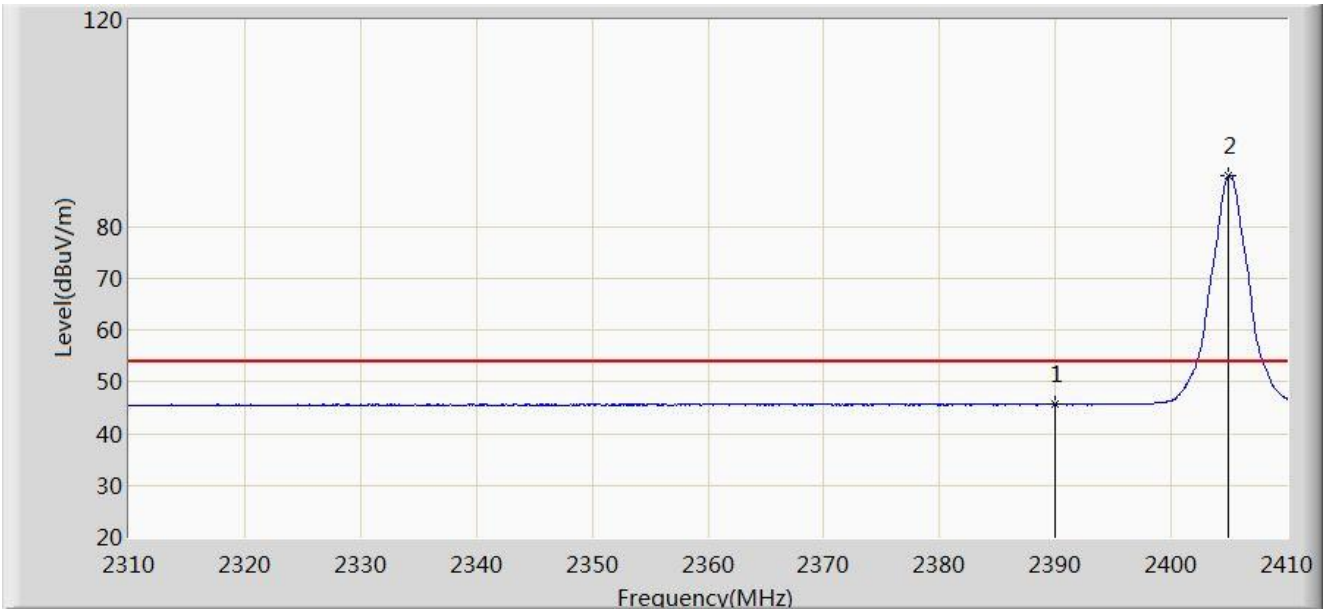


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2371.700	60.421	28.231	-13.579	74.000	32.190	PK
2			2390.000	58.817	26.543	-15.183	74.000	32.274	PK
3		*	2404.950	92.289	59.947	N/A	N/A	32.343	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2020/03/05 - 11:13
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: BBHA 9120D_1-18GHz	Polarity: Horizontal
EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by ZigBee at channel 2405MHz	

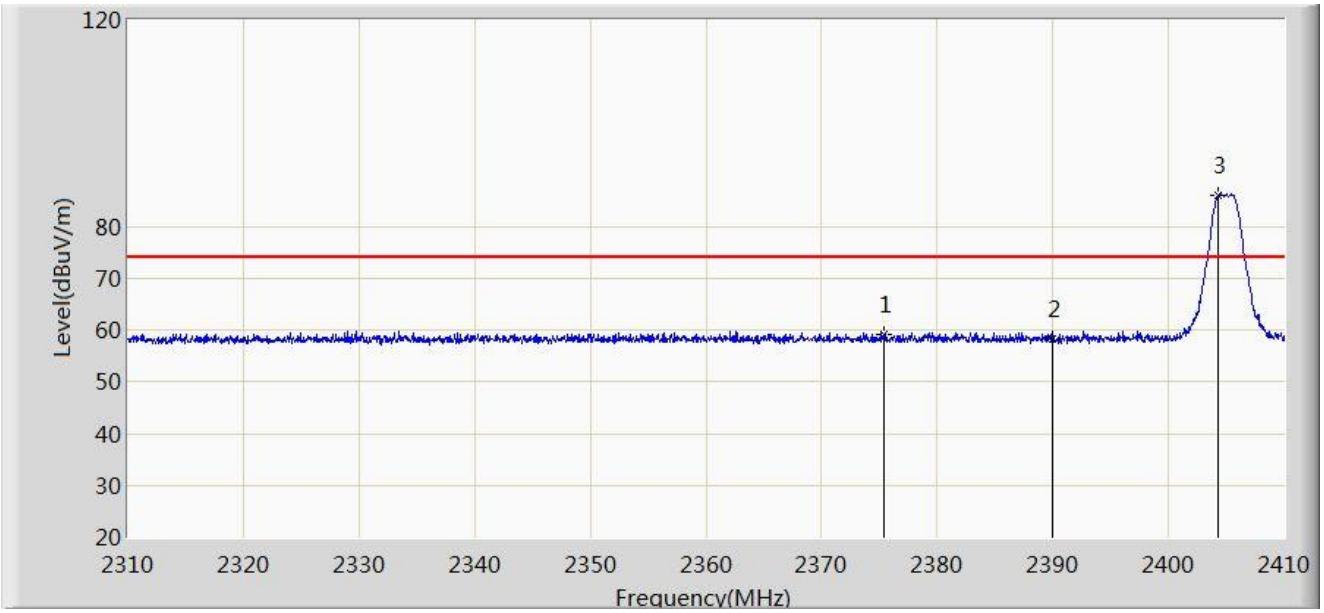


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2390.000	45.680	13.406	-8.320	54.000	32.274	AV
2		*	2404.950	89.832	57.490	N/A	N/A	32.343	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2020/03/05 - 11:14
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: BBHA 9120D_1-18GHz	Polarity: Vertical
EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by ZigBee at channel 2405MHz	

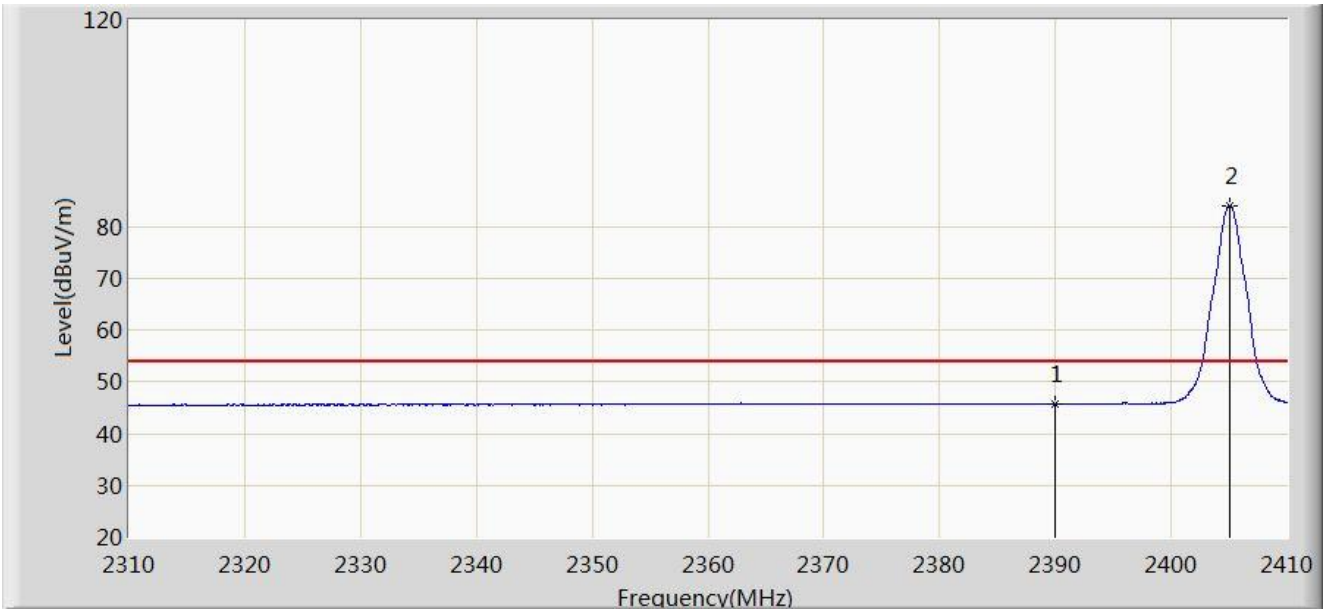


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2375.350	59.325	27.118	-14.675	74.000	32.206	PK
2			2390.000	58.194	25.920	-15.806	74.000	32.274	PK
3		*	2404.350	86.192	53.852	N/A	N/A	32.340	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2020/03/05 - 11:16
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: BBHA 9120D_1-18GHz	Polarity: Vertical
EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by ZigBee at channel 2405MHz	

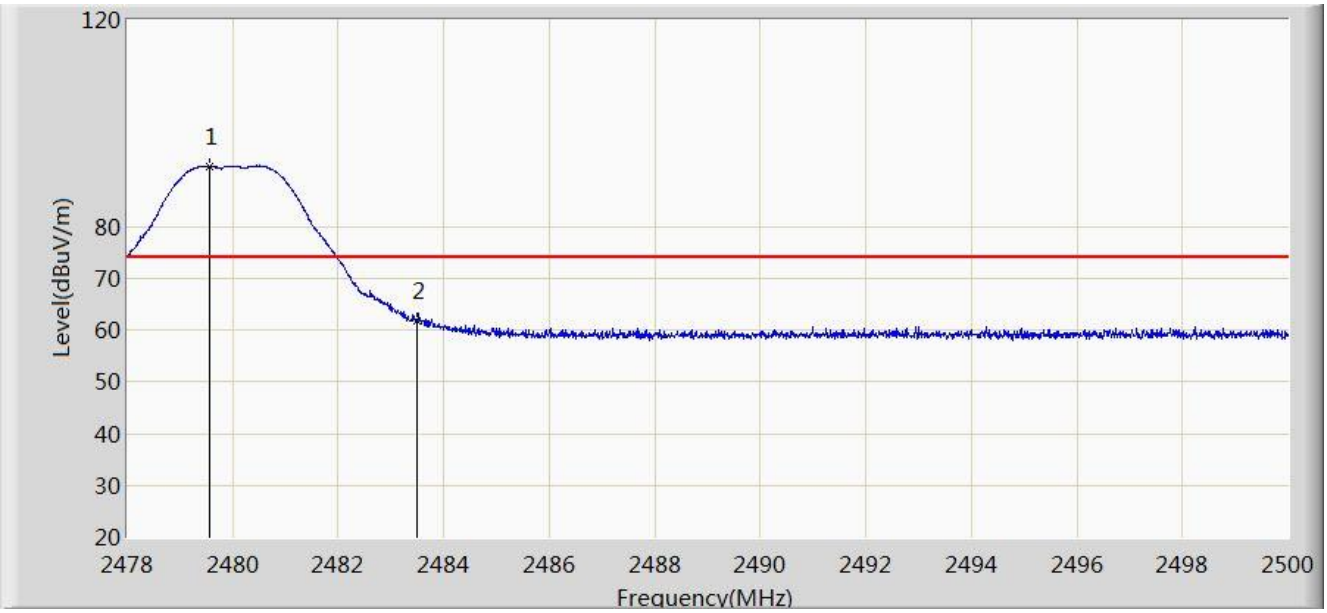


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2390.000	45.818	13.544	-8.182	54.000	32.274	AV
2		*	2405.050	84.143	51.800	N/A	N/A	32.343	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2020/03/05 - 11:17
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: BBHA 9120D_1-18GHz	Polarity: Horizontal
EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by ZigBee at channel 2480MHz	

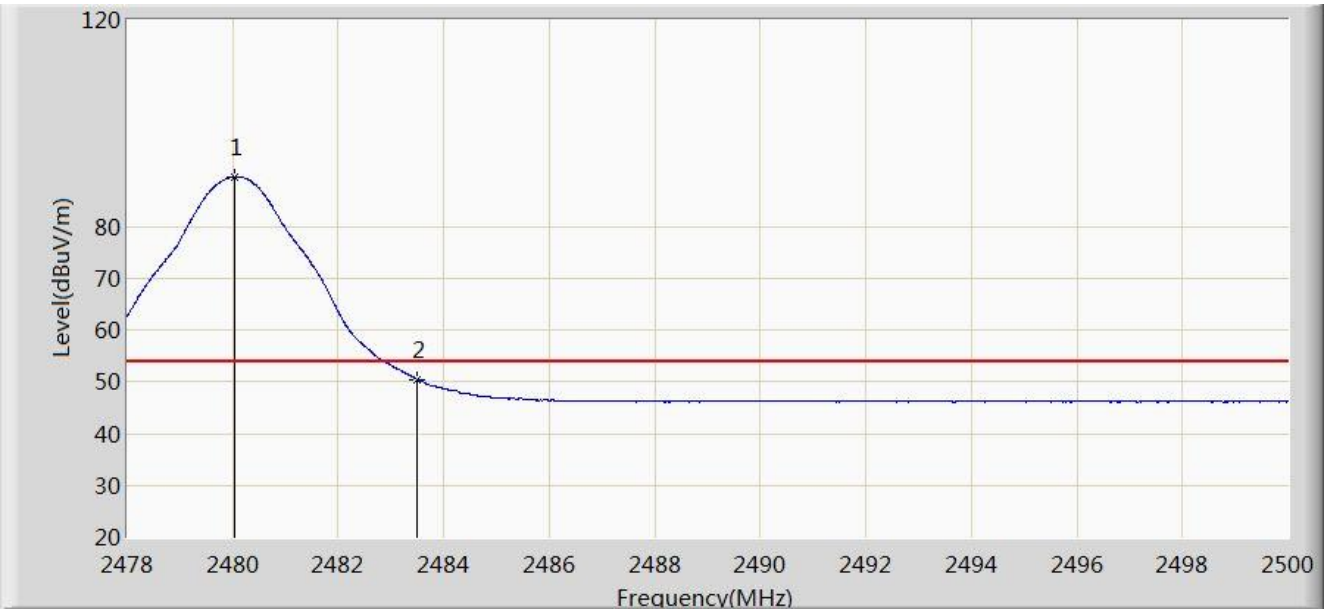


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2479.562	91.676	58.990	N/A	N/A	32.687	PK
2			2483.500	61.796	29.092	-12.204	74.000	32.704	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2020/03/05 - 11:21
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: BBHA 9120D_1-18GHz	Polarity: Horizontal
EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by ZigBee at channel 2480MHz	

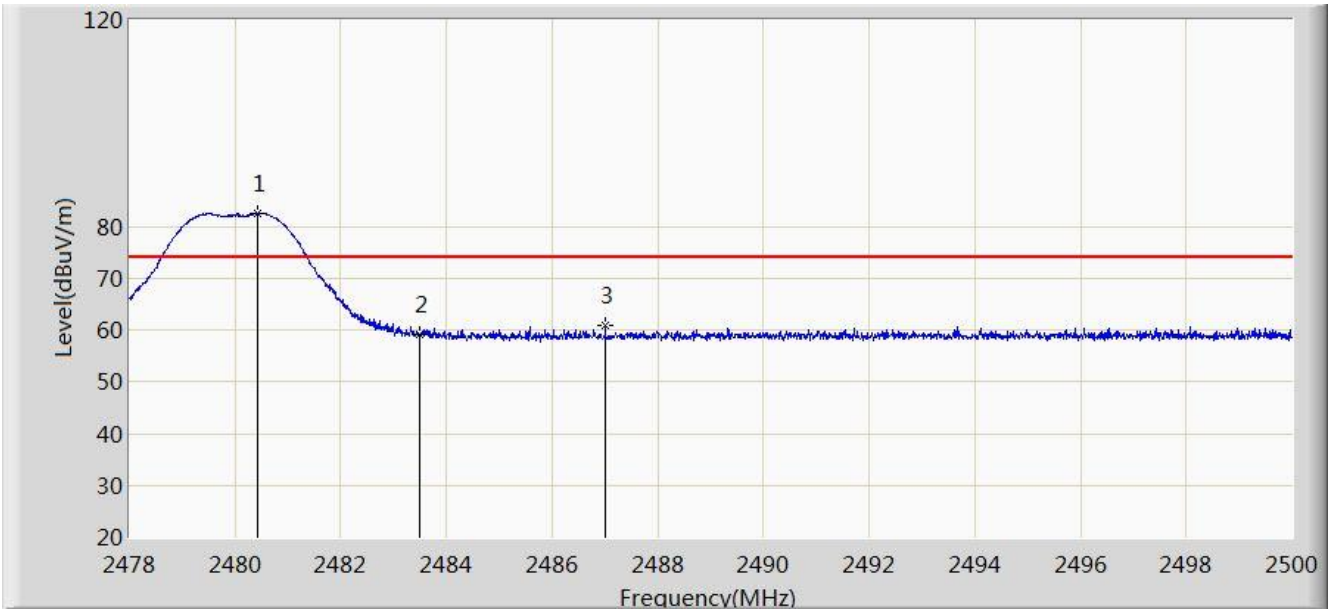


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2480.046	89.717	57.028	N/A	N/A	32.689	AV
2			2483.500	50.450	17.746	-3.550	54.000	32.704	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2020/03/05 - 11:21
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: BBHA 9120D_1-18GHz	Polarity: Vertical
EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by ZigBee at channel 2480MHz	

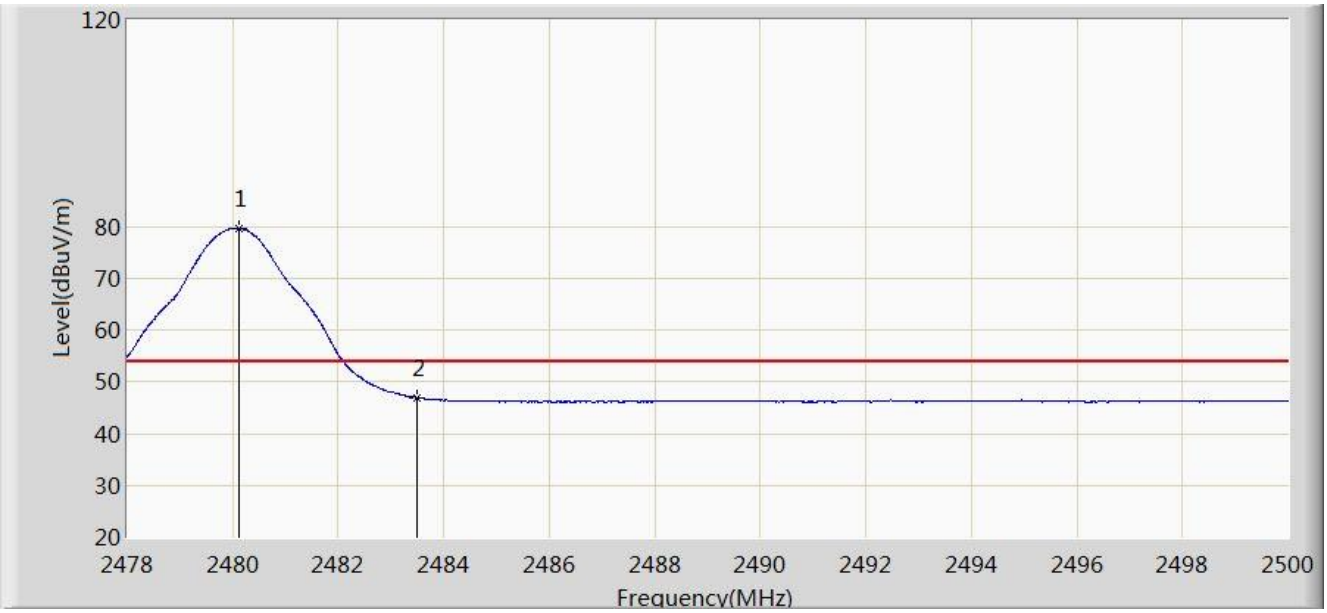


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2480.420	82.601	49.911	N/A	N/A	32.691	PK
2			2483.500	59.087	26.383	-14.913	74.000	32.704	PK
3			2487.009	61.050	28.330	-12.950	74.000	32.721	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

Site: AC1	Time: 2020/03/05 - 11:23
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: BBHA 9120D_1-18GHz	Polarity: Vertical
EUT: ACCESS POINT	Power: By PoE
Test Mode: Transmit by ZigBee at channel 2480MHz	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2480.112	79.744	47.055	N/A	N/A	32.689	AV
2			2483.500	46.976	14.272	-7.024	54.000	32.704	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m)

7.8. AC Conducted Emissions Measurement

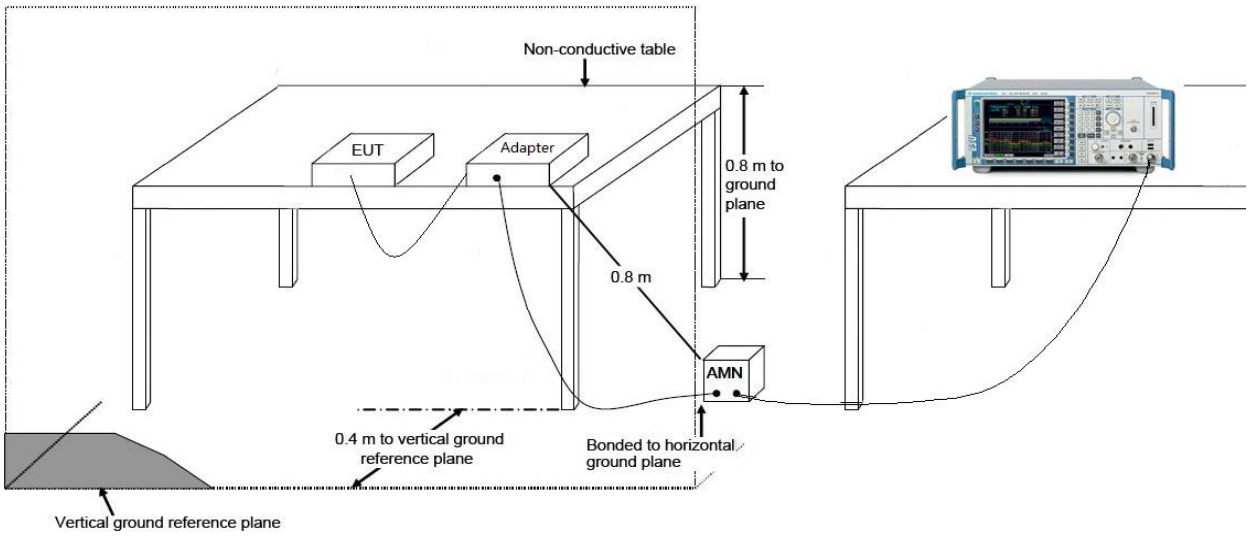
7.8.1.Test Limit

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

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

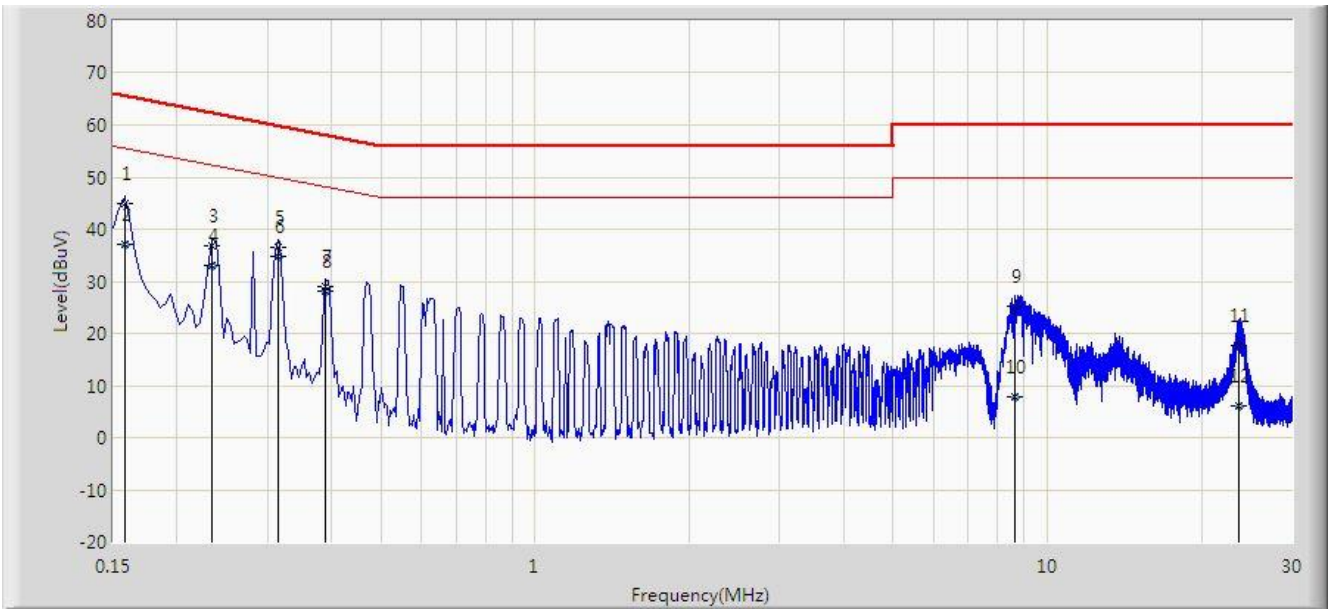
Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.

7.8.2.Test Setup



7.8.3.Test Result

Site: SR2	Time: 2020/03/21 - 18:30
Limit: FCC_Part15.207_CE_AC Power	Engineer: Kevin Ker
Probe: ENV216_101683_Filter On	Polarity: Line
EUT: ACCESS POINT	Power: AC 120V/60Hz
Test Mode 1 (APEX0574)	

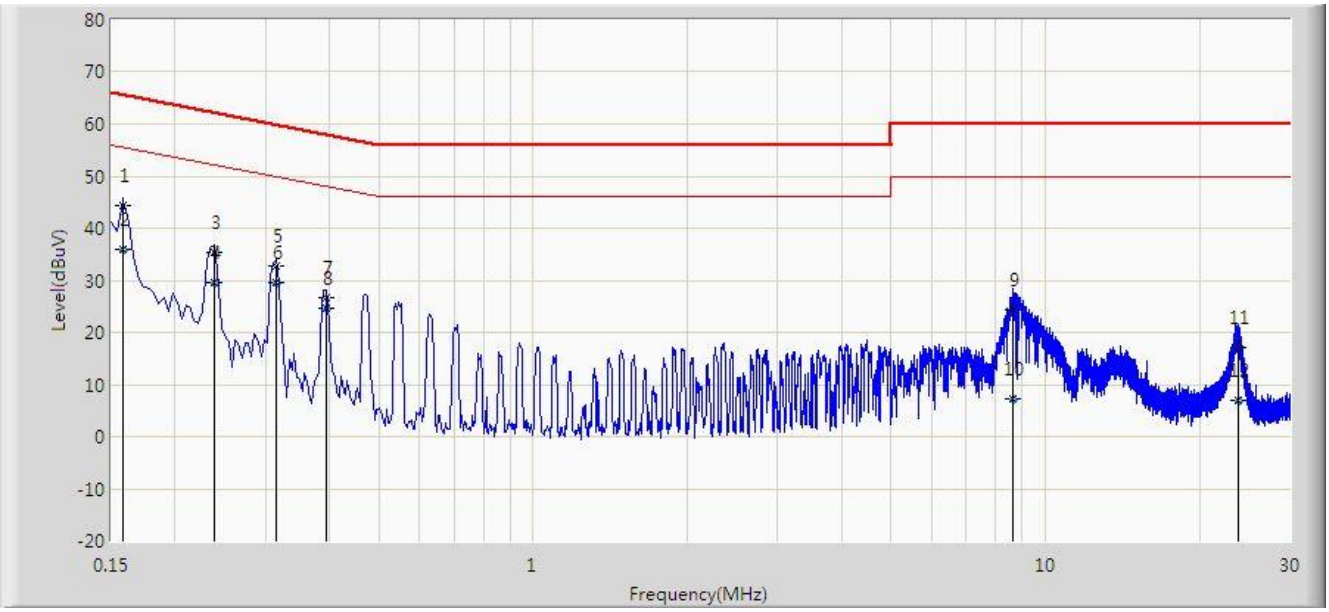


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV)	Factor (dB)	Type
1			0.158	45.042	34.731	-20.526	65.568	10.311	QP
2			0.158	37.057	26.746	-18.511	55.568	10.311	AV
3			0.234	36.751	26.800	-25.556	62.307	9.951	QP
4			0.234	32.902	22.951	-19.405	52.307	9.951	AV
5			0.314	36.618	26.603	-23.246	59.864	10.015	QP
6		*	0.314	34.920	24.904	-14.944	49.864	10.015	AV
7			0.390	29.022	18.945	-29.042	58.064	10.077	QP
8			0.390	28.104	18.027	-19.960	48.064	10.077	AV
9			8.634	25.134	14.952	-34.866	60.000	10.181	QP
10			8.634	7.965	-2.216	-42.035	50.000	10.181	AV
11			23.686	17.772	7.582	-42.228	60.000	10.190	QP
12			23.686	6.117	-4.073	-43.883	50.000	10.190	AV

Note: Measure Level (dBμV) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + LISN Factor (dB)

Site: SR2	Time: 2020/03/21 - 18:32
Limit: FCC_Part15.207_CE_AC Power	Engineer: Kevin Ker
Probe: ENV216_101683_Filter On	Polarity: Neutral
EUT: ACCESS POINT	Power: AC 120V/60Hz
Test Mode 1 (APEX0574)	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Margin (dB)	Limit (dBuV)	Factor (dB)	Type
1			0.158	44.256	33.967	-21.312	65.568	10.290	QP
2		*	0.158	35.839	25.549	-19.729	55.568	10.290	AV
3			0.238	35.459	25.467	-26.707	62.166	9.992	QP
4			0.238	29.680	19.689	-22.485	52.166	9.992	AV
5			0.314	32.772	22.724	-27.092	59.864	10.048	QP
6			0.314	29.508	19.460	-20.356	49.864	10.048	AV
7			0.394	26.799	16.691	-31.180	57.979	10.108	QP
8			0.394	24.720	14.613	-23.259	47.979	10.108	AV
9			8.650	24.204	14.007	-35.796	60.000	10.197	QP
10			8.650	7.231	-2.965	-42.769	50.000	10.197	AV
11			23.834	17.236	6.962	-42.764	60.000	10.274	QP
12			23.834	7.058	-3.215	-42.942	50.000	10.274	AV

Note: Measure Level (dBμV) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + LISN Factor (dB)

8. CONCLUSION

The data collected relate only the item(s) tested and show that the unit is compliance with Part 15C of the FCC Rules.

The End

Appendix A - Test Setup Photograph

Refer to “2003TW0002-UT” file.

Appendix B - EUT Photograph

Refer to “2003TW0002-UE” file.