MEASUREMENT REPORT

FCC PART 15.247 Bluetooth-LE

FCC ID:	Q9DAPIN0514515
APPLICANT:	Hewlett Packard Enterprise Company
Application Type:	Certification
Product:	ACCESS POINT
Model No.:	APIN0514, APIN0515
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, KDB 558074 D01v05
Test Date:	June 19 ~ August 10, 2018

Reviewed By: Paddy Chen
(Paddy Chen)

Approved By: Chenz Ker
(Chenz Ker)

ilac-MRA

TAF 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
1807TW0111-U2	Rev. 01	Initial report	08-30-2018	Valid

CONTENTS

Description Page

§2.1033 General Information

Applicant:	Hewlett Packard Enterprise Company
Applicant Address:	6280 America Center Drive, San Jose, CA 95002
Manufacturer:	Hewlett Packard Enterprise Company
Manufacturer Address:	6280 America Center Drive, San Jose, CA 95002
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 Registration No.:	153292
Test Device Serial No.:	APIN0514: Conducted & Radiated Sample S/N: CS18640002
	APIN0515: Conducted & Radiated Sample S/N: CQK85T0026

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. 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.**

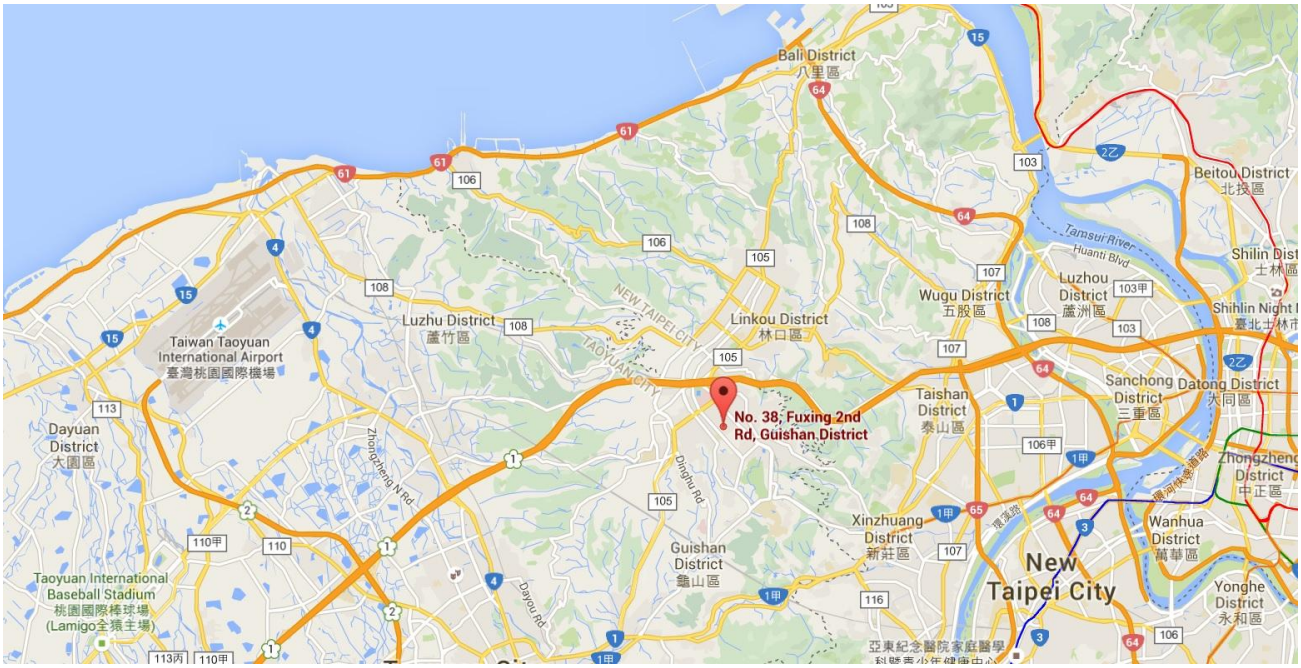
1. INTRODUCTION

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 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. Feature of Equipment under Test

Product Name:	ACCESS POINT
Model No.:	APIN0514, APIN0515
Brand Name:	aruba a Hewlett Packard Enterprise company , Hewlett Packard Enterprise
Wi-Fi Specification:	802.11a/b/g/n/ac/ax
Bluetooth Specification:	v4.2 single mode
Zigbee Specification:	802.15.4
Software Version:	v1.3
Operating Temperature:	0 ~ 50 °C
Power Type:	AC Adapter or POE input
Operating Environment:	Indoor Use

Note: The difference between models is that EUT use different antenna and appearance, APIN0514 use some external antennas, but APIN0515 use internal antenna, other hardware and software are the same. Besides, each model has its own power parameter value.

2.2. Product Specification Subjective to this Report

Bluetooth Frequency	2402~2480MHz
Bluetooth Version	v4.2
Type of modulation	GFSK
Data Rate	1Mbps

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
00	2402 MHz	01	2404 MHz	02	2406 MHz
03	2408 MHz	04	2410 MHz	05	2412 MHz
06	2414 MHz	07	2416 MHz	08	2418 MHz
09	2420 MHz	10	2422 MHz	11	2424 MHz
12	2426 MHz	13	2428 MHz	14	2430 MHz
15	2432 MHz	16	2434 MHz	17	2436 MHz
18	2438 MHz	19	2440 MHz	20	2442 MHz
21	2444 MHz	22	2446 MHz	23	2448 MHz
24	2450 MHz	25	2452 MHz	26	2454 MHz
27	2456 MHz	28	2458 MHz	29	2460 MHz
30	2462 MHz	31	2464 MHz	32	2466 MHz
33	2468 MHz	34	2470 MHz	35	2472 MHz
36	2474 MHz	37	2476 MHz	38	2478 MHz
39	2480 MHz	--	--	--	--

2.4. Test Configuration

The **ACCESS POINT** was tested per the guidance of ANSI C63.10-2013. ANSI C63.10-2013 was used to reference the appropriate EUT setup for radiated spurious emissions testing and AC line conducted testing.

2.5. EMI Suppression Device(s)/Modifications

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

2.6. Description of Available Antennas

Model No.: APIN0514

Antenna No.	Directionality	Frequency Band (GHz)	Model No.	Max Peak Gain (dBi)	BF Gain (dBi)	CDD Directional Gain (dBi)	
						For Power	For PSD
Wi-Fi External Antenna List (2.4GHz 2*2 MIMO, 5GHz 4*4 MIMO)							
1	Omni	2.4	AP-ANT-40	**4.0**	3.01	4.0	7.01
		5		5.0	6.02	5.0	11.02
2	Omni	2.4	AP-ANT-19	3.0	3.01	3.0	6.01
		5		**6.0**	6.02	6.0	12.02
3	Omni	2.4	AP-ANT-1W	3.8	3.01	3.8	6.81
		5		5.8	6.02	5.8	11.82
4	Omni	2.4	AP-ANT-13B	2.3	3.01	2.3	5.31
		5		4.0	6.02	4.0	10.02
5	Omni	2.4	AP-ANT-20W	**2.0**	3.01	2.0	5.01
		5		**2.0**	6.02	2.0	8.02
6 (Note 3)	Directional	2.4	AP-ANT-45	4.5	0.00	4.5	4.50
		5		5.5	3.01	5.5	8.51
7 (Note 3)	Directional	2.4	AP-ANT-48	**8.5**	0.00	8.5	8.5
		5		**8.5**	3.01	8.5	11.51
Bluetooth & ZigBee Internal Antenna							
PCB		2.4		4.9			

Model No.: APIN0515

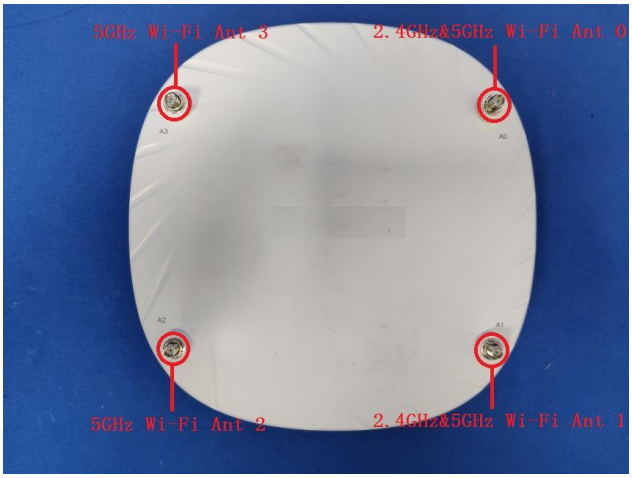
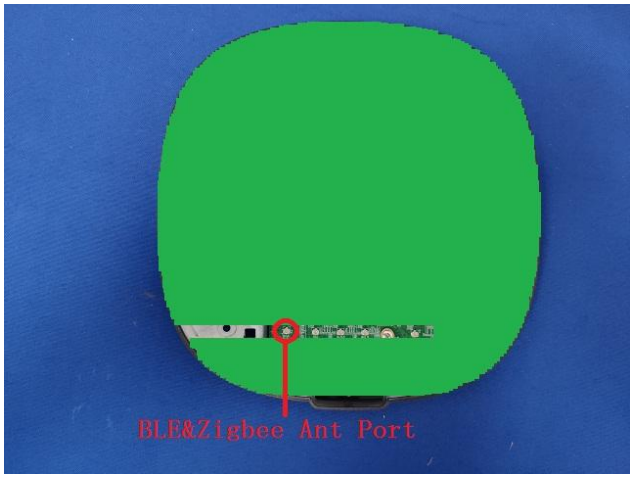
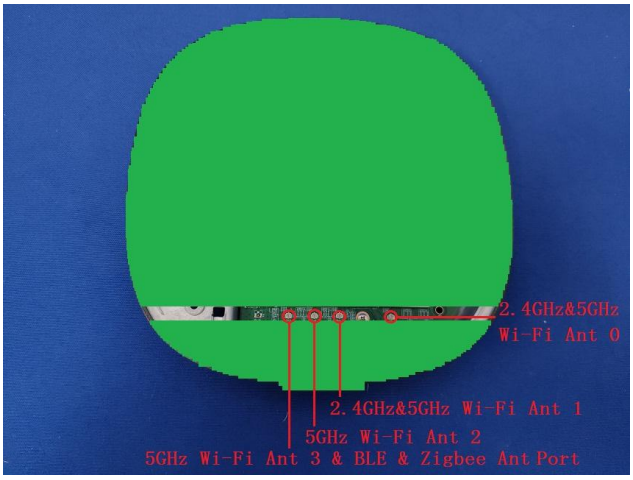
Directionality	Frequency Band (GHz)	Max Peak Gain (dBi)	BF Gain (dBi)	CDD Directional Gain (dBi)	
				For Power	For PSD
Wi-Fi Internal Antenna List (2.4GHz 2*2 MIMO, 5GHz 4*4 MIMO)					
Omni	2.4	3.77	3.01	3.77	6.78
Omni	5	4.55	5.97	4.55	10.52
Bluetooth & ZigBee Internal Antenna					
PCB	2.4	3.5			

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, 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} ≤ 4;
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. Two antennas have Cross-Polarized design, the detail see the antenna specification.
4. For model APIN0514, the final test antenna list was shown as below table.

Antenna	Conducted Testing	Radiated Testing
Omni Antenna 1# (Max 2.4GHz Omni ANT)	N/A	Yes
Omni Antenna 2# (Max 5GHz Omni ANT)	N/A	Yes
Omni Antenna 5# (Min 2.4&5GHz Omni ANT)	Yes (High Power Setting)	Yes
Directional Antenna 7# (Max 2.4&5GHz Directional ANT)	N/A	Yes

2.7. Description of Antenna RF Port

Antenna RF Port						
--	2.4GHz RF Port		5GHz RF Port			
Software Control Port	Ant 0	Ant 1	Ant 0	Ant 1	Ant 2	Ant 3
APIN0514						
						
APIN0515						
						

2.8. Description of Test Software

The test utility software used during testing was “telnet.exe”

Model No.	Test Mode	Test Frequency (MHz)	Power Parameter Value
APIN0514	BLE	2402	8.0
		2440	8.0
		2480	8.0
APIN0515	BLE	2402	8.0
		2440	8.0
		2480	8.0

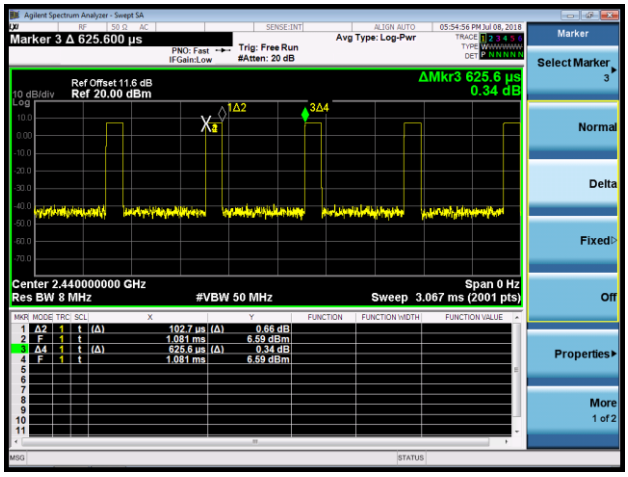
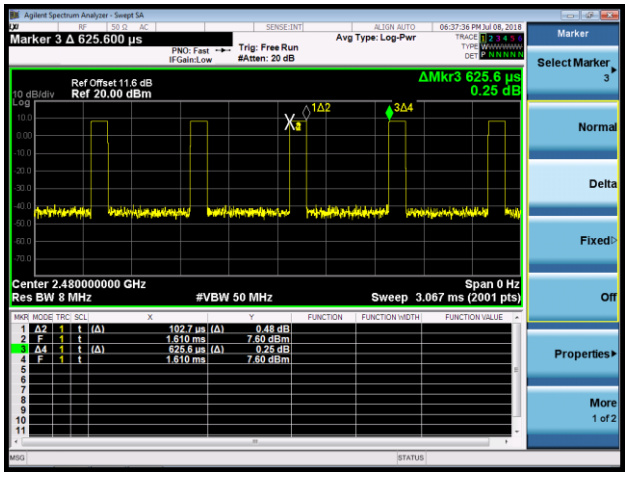
2.9. Device Capabilities

This device contains the following capabilities:

802.11a/b/g/n/ac/ax Wi-Fi, Bluetooth v4.2 single mode and ZigBee devices.

Note: The maximum achievable duty cycles was 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:

Model No.	Test Mode	Duty Cycle
APIN0514	BLE	16.42%
APIN0515	BLE	16.42%

Duty Cycle (T = Transmission Duration)	
APIN0514 (T = 102.7us)	**APIN0515 (T = 102.7us)**
	

2.10. 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 558074 D01v05 were used in the measurement.

Deviation from measurement procedure…….....None

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 were 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."

For APIN0515

- The antenna of the ACCESS POINT is permanently attached.
- There are no provisions for connection to an external antenna.

For APIN0514

- The antenna of the ACCESS POINT uses a reversed SMA connector.

Conclusion:

The unit complies with the requirement of §15.203.

5. TEST EQUIPMENT CALIBRATION DATE

Conducted Emissions

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EMI Test Receiver	R&S	ESR3	MRTTWA00045	1 year	2019/03/17
Two-Line V-Network	R&S	ENV216	MRTTWA00019	1 year	2019/03/23
Two-Line V-Network	R&S	ENV216	MRTTWA00020	1 year	2019/03/23
Temperature/Humidity Meter	TFA	35.1078.10.IT	MRTTWA00033	1 year	2019/06/08

Radiated Emissions

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Signal Analyzer	R&S	FSV40	MRTTWA00007	1 year	2019/03/02
EMI Test Receiver	R&S	ESR3	MRTTWA00009	1 year	2019/03/16
Broadband Preamplifier	SCHWARZBECK	BBV 9718	MRTTWA00005	1 year	2019/04/06
Broadband Amplifier	SCHWARZBECK	BBV 9721	MRTTWA00006	1 year	2019/04/06
Acitve Loop Antenna	SCHWARZBECK	FMZB 1519B	MRTTWA00002	1 year	2019/04/06
Broadband TRILOG Antenna	SCHWARZBECK	VULB 9162	MRTTWA00001	1 year	2019/04/06
Broadband Hornantenna	SCHWARZBECK	BBHA 9120D	MRTTWA00003	1 year	2019/04/06
Breitband Hornantenna	SCHWARZBECK	BBHA 9170	MRTTWA00004	1 year	2019/04/06
Temperature/Humidity Meter	TFA	35.1078.10.IT	MRTTWA00033	1 year	2019/06/08

Conducted Test Equipment

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EXA Signal Analyzer	KEYSIGHT	N9010A	MRTTWA00012	1 year	2018/07/10
				1 year	2019/07/10
PSA Series Spectrum Analyzer	Agilent	E4447A	MRTTWA00060	1 year	2018/12/11
X-Series USB Peak and Average Power Sensor	KEYSIGHT	U2021XA	MRTTWA00014	1 year	2019/03/18
X-Series USB Peak and Average Power Sensor	KEYSIGHT	U2021XA	MRTTWA00015	1 year	2019/03/18
Programmable Temperature & Humidity Chamber	TEN BILLION	TTH-B3UP	MRTTWA00036	1 year	2019/05/10
Temperature/Humidity Meter	TFA	35.1078.10.IT	MRTTWA00033	1 year	2019/06/08

Software	**Version**	**Function**
e3	V 8.3.5	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: 3.46dB
Radiated Emission Measurement - AC1
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 9kHz ~ 1GHz: 4.18dB 1GHz ~ 25GHz: 4.76dB
Spurious Emissions, Conducted - SR1
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 0.78dB
Output Power - SR1
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 1.13dB
Power Spectrum Density - SR1
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 1.15dB
Occupied Bandwidth - SR1
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 0.28%

7. TEST RESULT

7.1. Summary

Product Name: **ACCESS POINT**

FCC ID: **Q9DAPIN0514515**

FCC Part 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	≤ 1Watt		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

Note: 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. 6dB Bandwidth Measurement

7.2.1.Test Limit

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

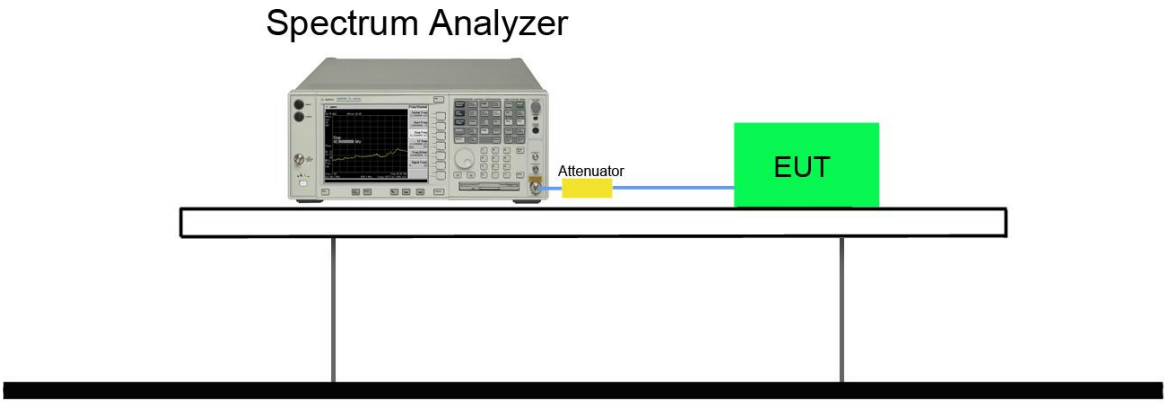
7.2.2.Test Procedure used

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



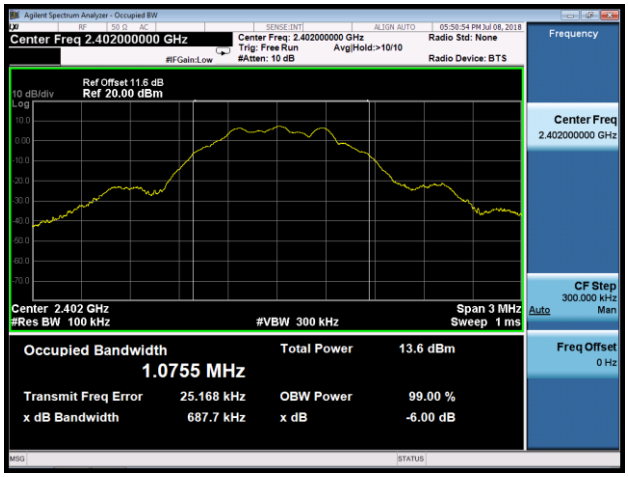
7.2.5.Test Result

Product	ACCESS POINT	Temperature	27°C
Test Engineer	Kevin Ker	Relative Humidity	65%
Test Site	SR2	Test Date	2018/07/08
Model No.	APIN0514	Test Item	6dB Bandwidth

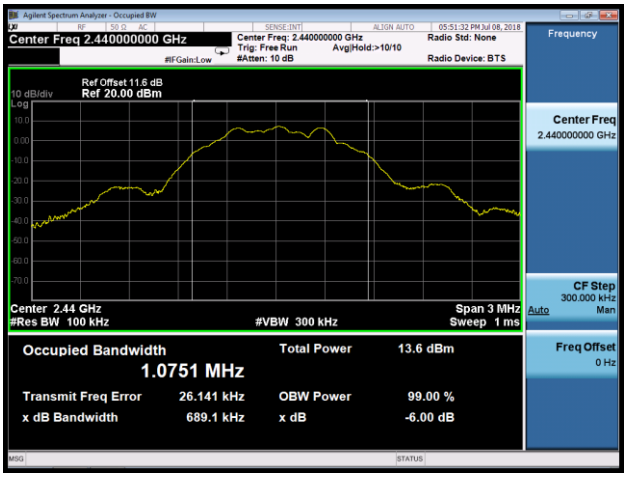
Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Result
BLE	1	00	2402	0.69	≥ 0.5	Pass
BLE	1	19	2440	0.69	≥ 0.5	Pass
BLE	1	39	2480	0.69	≥ 0.5	Pass

BLE 6dB Bandwidth

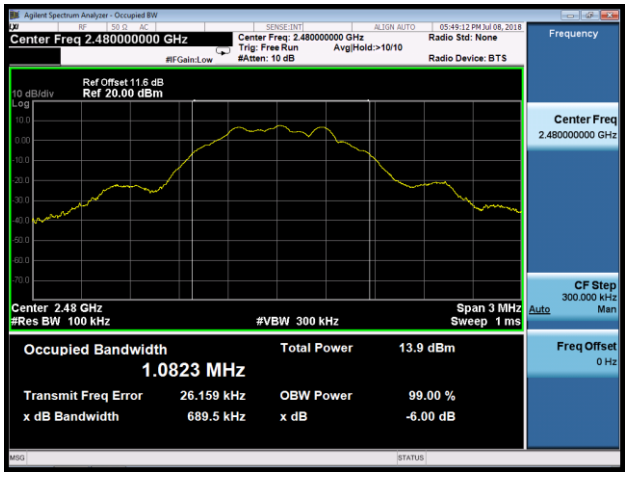
Channel 00 (2402MHz)



Channel 19 (2440MHz)



Channel 39 (2480MHz)

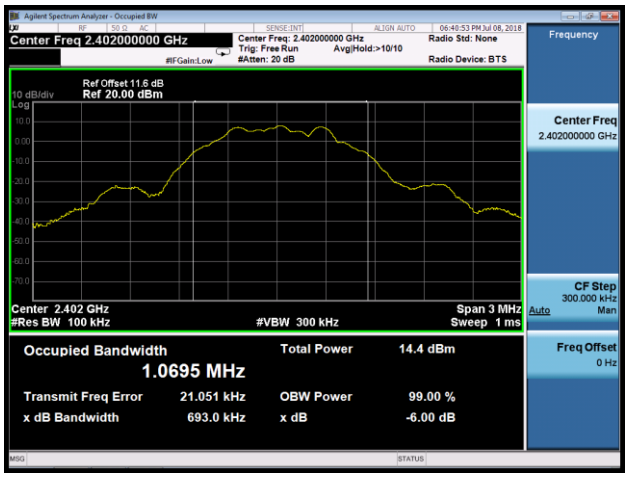


Product	ACCESS POINT	Temperature	27°C
Test Engineer	Kevin Ker	Relative Humidity	65%
Test Site	SR2	Test Date	2018/07/08
Model No.	APIN0515	Test Item	6dB Bandwidth

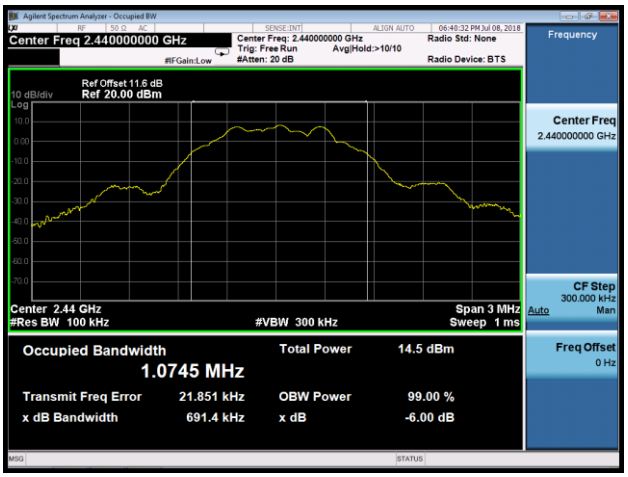
Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Result
BLE	1	00	2402	0.69	≥ 0.5	Pass
BLE	1	19	2440	0.69	≥ 0.5	Pass
BLE	1	39	2480	0.69	≥ 0.5	Pass

BLE 6dB Bandwidth

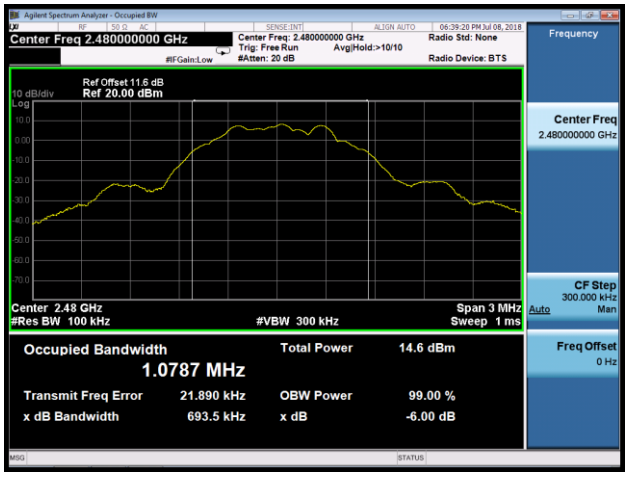
Channel 00 (2402MHz)



Channel 19 (2440MHz)



Channel 39 (2480MHz)



7.3. Output Power Measurement

7.3.1.Test Limit

The maximum out 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

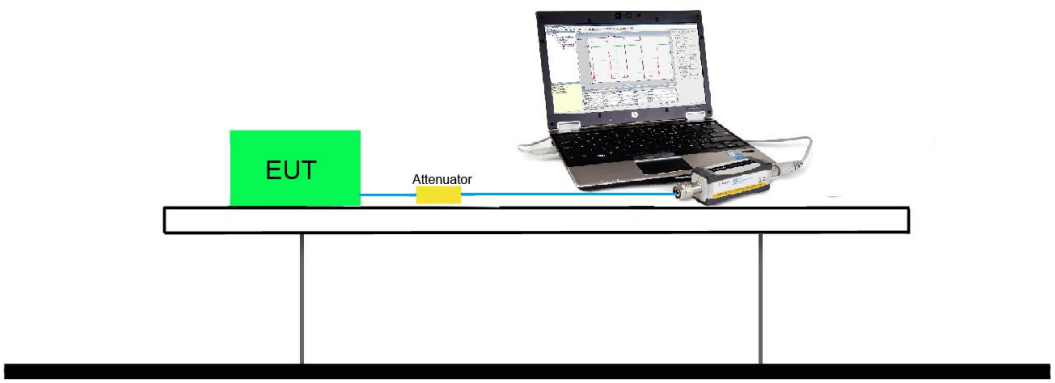
ANSI C63.10 Section 11.9.2.3

7.3.3.Test Setting

Method PKPM1 (Peak Power Measurement of Signals with DTS BW ≤ 50MHz)

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.

7.3.4.Test Setup



7.3.5.Test Result of Output Power

Product	ACCESS POINT	Temperature	27°C
Test Engineer	Kevin Ker	Relative Humidity	65%
Test Site	SR2	Test Date	2018/07/08
Model No.	APIN0514	Test Item	Output Power

Test Result of Peak Output Power

Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	Peak Power (dBm)	Limit (dBm)	Result
BLE	1	00	2402	7.11	≤ 30.00	Pass
BLE	1	19	2440	7.30	≤ 30.00	Pass
BLE	1	39	2480	7.38	≤ 30.00	Pass

Note: E.I.R.P (dBm) = Max Average Power (dBm) + Antenna Gain (dBi) = 7.38 dBm + 4.9 dBi = 12.28 dBm.

Test Result of Average Output Power (Reporting Only)

Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	Average Power (dBm)	Limit (dBm)	Result
BLE	1	00	2402	7.02	≤ 30.00	Pass
BLE	1	19	2440	7.21	≤ 30.00	Pass
BLE	1	39	2480	7.29	≤ 30.00	Pass

Note: E.I.R.P (dBm) = Max Average Power (dBm) + Antenna Gain (dBi) = 7.29 dBm + 4.9 dBi = 12.19 dBm.

Product	ACCESS POINT	Temperature	27°C
Test Engineer	Kevin Ker	Relative Humidity	65%
Test Site	SR2	Test Date	2018/07/08
Model No.	APIN0515	Test Item	Output Power

Test Result of Peak Output Power

Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	Peak Power (dBm)	Limit (dBm)	Result
BLE	1	00	2402	7.78	≤ 30.00	Pass
BLE	1	19	2440	7.99	≤ 30.00	Pass
BLE	1	39	2480	8.04	≤ 30.00	Pass

Note: E.I.R.P (dBm) = Max Average Power (dBm) + Antenna Gain (dBi) = 8.04 dBm + 3.5 dBi = 11.54 dBm.

Test Result of Average Output Power (Reporting Only)

Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	Average Power (dBm)	Limit (dBm)	Result
BLE	1	00	2402	7.71	≤ 30.00	Pass
BLE	1	19	2440	7.92	≤ 30.00	Pass
BLE	1	39	2480	7.95	≤ 30.00	Pass

Note: E.I.R.P (dBm) = Max Average Power (dBm) + Antenna Gain (dBi) = 7.95 dBm + 3.5 dBi = 11.45 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.

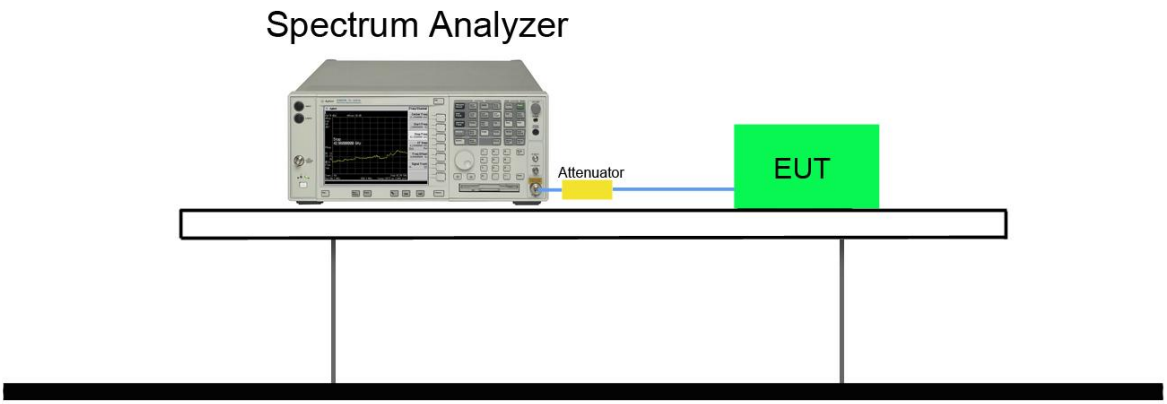
7.4.2.Test Procedure Used

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



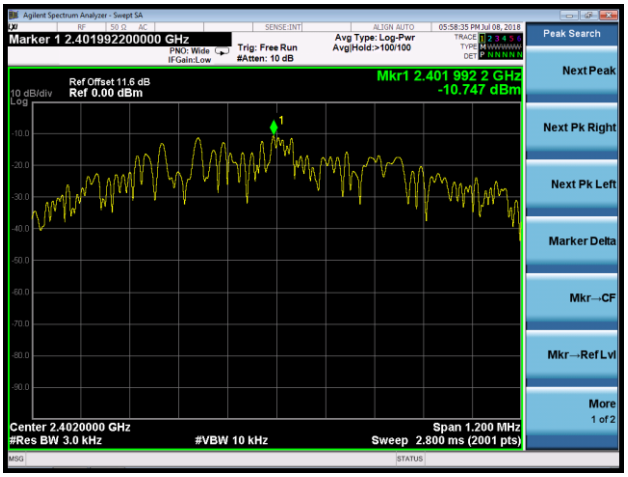
7.4.5.Test Result

Product	ACCESS POINT	Temperature	27°C
Test Engineer	Kevin Ker	Relative Humidity	65%
Test Site	SR2	Test Date	2018/07/08
Model No.	APIN0514	Test Item	Power Spectral Density

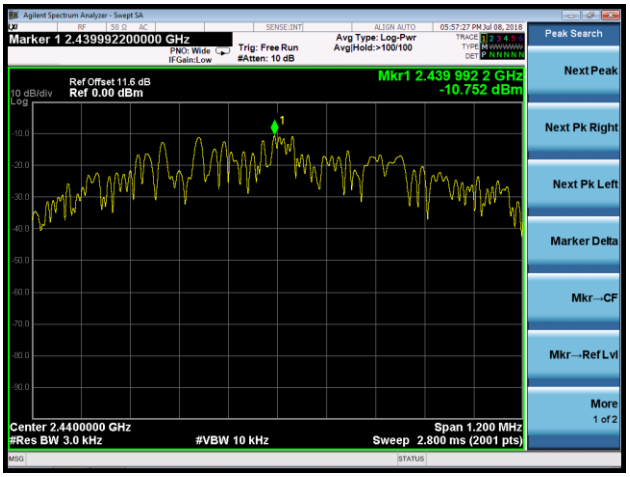
Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	PSD Result (dBm / 3kHz)	Limit (dBm / 3kHz)	Result
BLE	1	00	2402	-10.75	≤ 8.00	Pass
BLE	1	19	2440	-10.75	≤ 8.00	Pass
BLE	1	39	2480	-10.57	≤ 8.00	Pass

BLE PSD

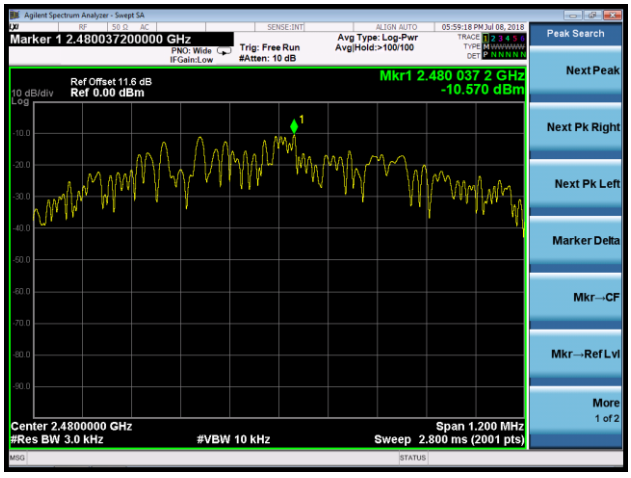
Channel 00 (2402MHz)



Channel 19 (2440MHz)



Channel 39 (2480MHz)

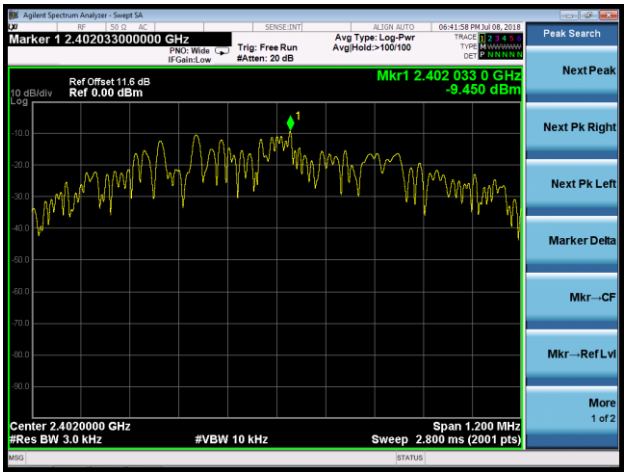


Product	ACCESS POINT	Temperature	27°C
Test Engineer	Kevin Ker	Relative Humidity	65%
Test Site	SR2	Test Date	2018/07/08
Model No.	APIN0515	Test Item	Power Spectral Density

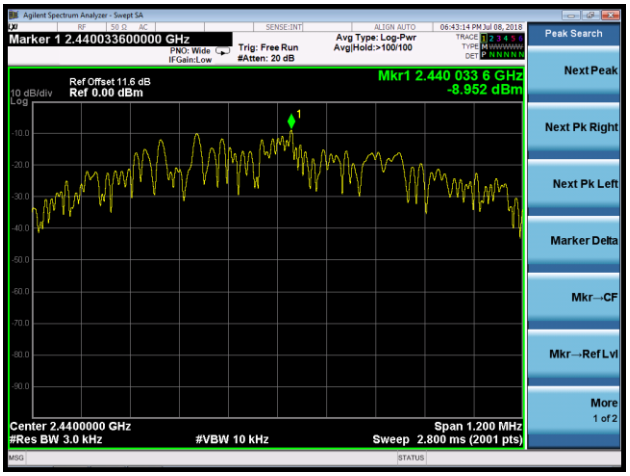
Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	PSD Result (dBm / 3kHz)	Limit (dBm / 3kHz)	Result
BLE	1	00	2402	-9.45	≤ 8.00	Pass
BLE	1	19	2440	-8.95	≤ 8.00	Pass
BLE	1	39	2480	-8.85	≤ 8.00	Pass

BLE PSD

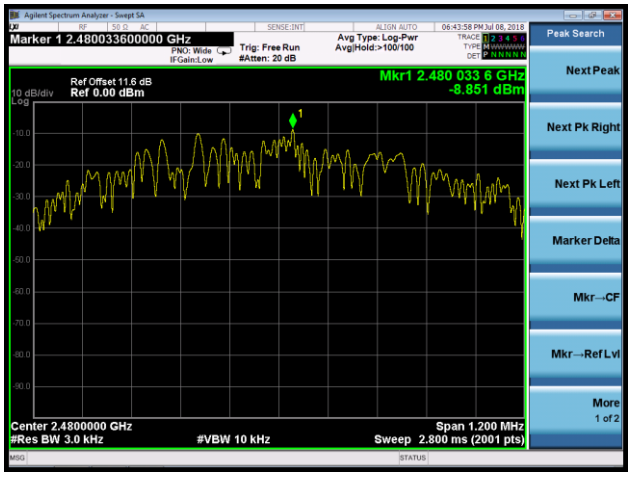
Channel 00 (2402MHz)



Channel 19 (2440MHz)



Channel 39 (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 100kHz bandwidth per the PSD procedure.

7.5.2.Test Procedure Used

ANSI C63.10 Section 11.11

7.5.3.Test Settitng

1. Reference level measurement

a) Set instrument center frequency to DTS channel center frequency

b) Set the span to ≥ 1.5 times the DTS bandwidth

c) Set the RBW = 100 kHz

d) Set the VBW ≥ 3 x RBW

e) Detector = peak

f) Sweep time = auto couple

g) Trace mode = max hold

h) Allow trace to fully stabilize

2. 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

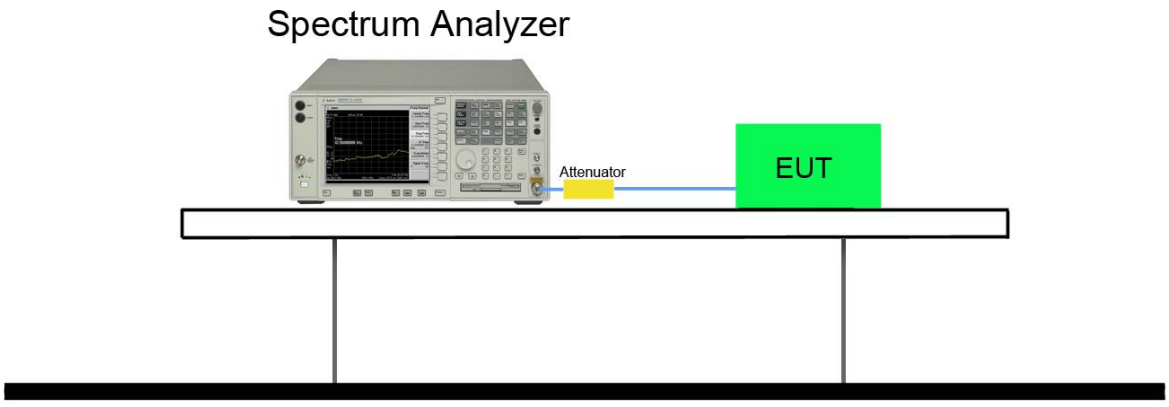
Test Notes

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.

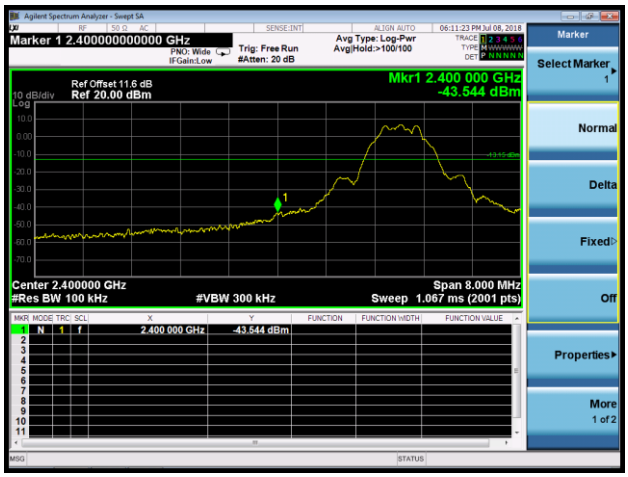
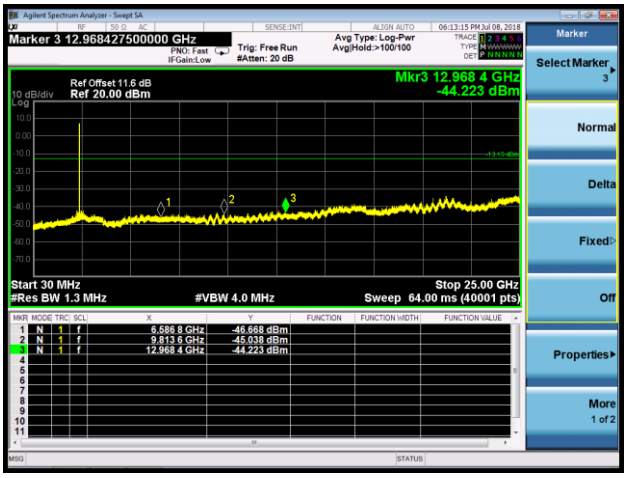
7.5.4.Test Setup

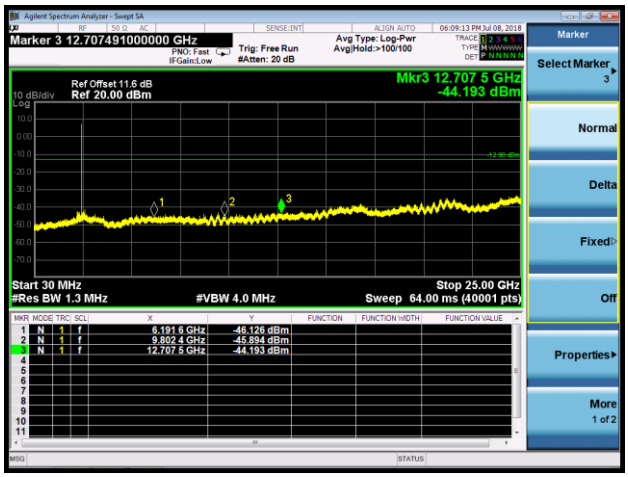
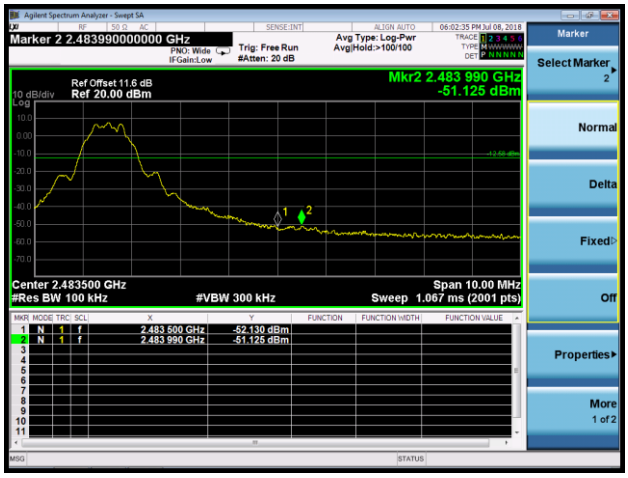
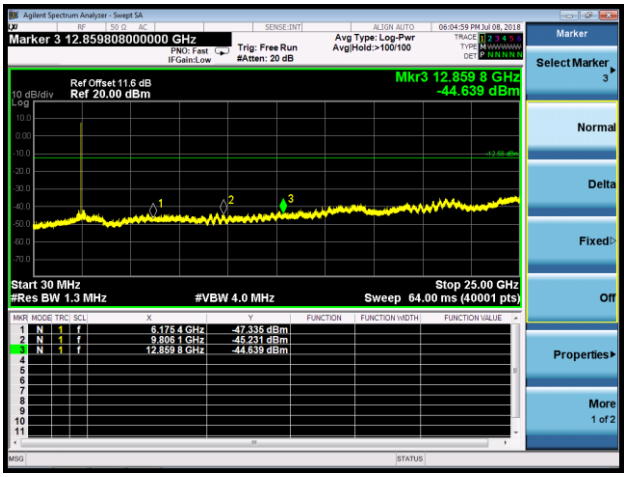


7.5.5.Test Result

Product	ACCESS POINT	Temperature	27°C
Test Engineer	Kevin Ker	Relative Humidity	65%
Test Site	SR2	Test Date	2018/07/08
Model No.	APIN0514	Test Item	Conducted Band Edge and Out-of-Band Emissions

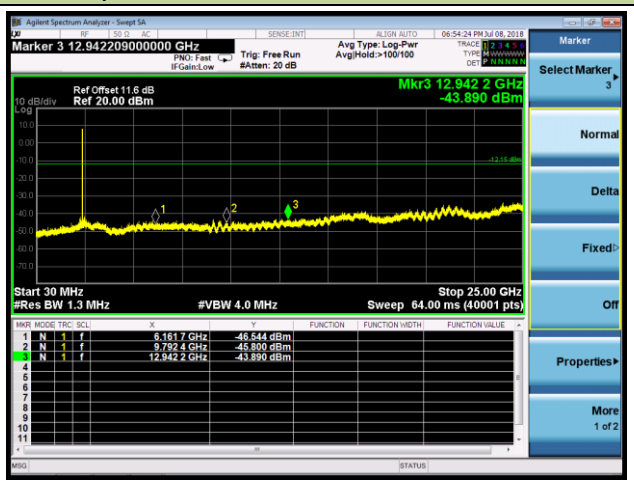
Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	Limit	Result
BLE	1	00	2402	20dBc	Pass
BLE	1	19	2440	20dBc	Pass
BLE	1	39	2480	20dBc	Pass

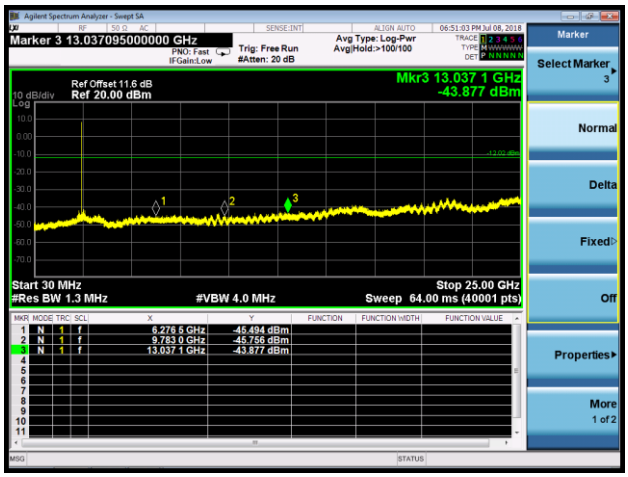
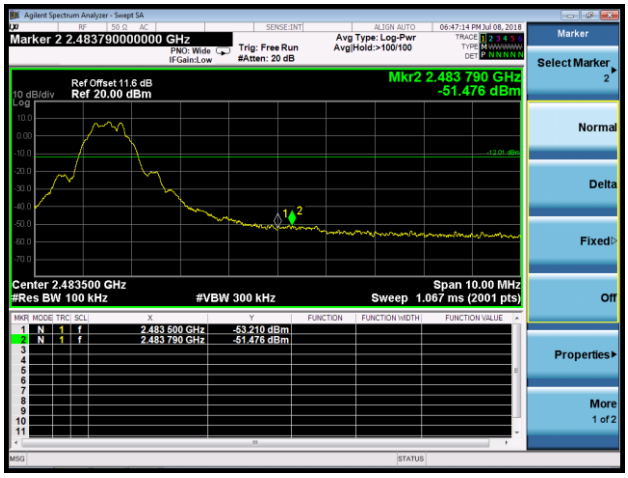
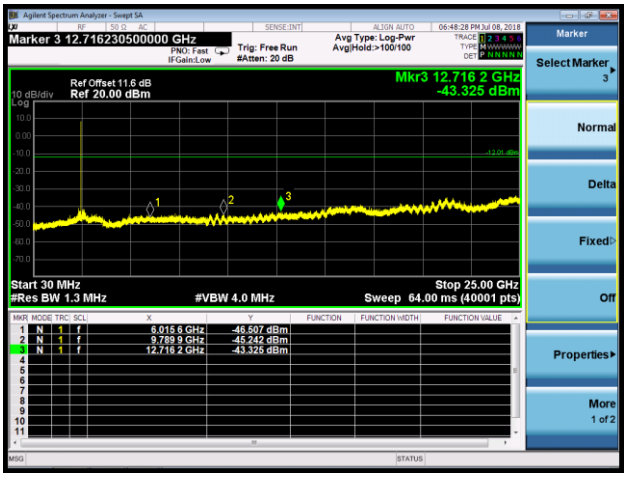
BLE Out-of-Band Emissions	
Channel 00 (2402MHz)	
100kHz PSD reference Level	Low Band Edge
	
Spurious Emission 30MHz ~ 25GHz	
	Note: The Value of the Display Line is -13.15dBm

Channel 19 (2440MHz)	
100kHz PSD reference Level	Spurious Emission 30MHz ~ 25GHz
	
Note: The Value of the Display Line is -12.90dBm	
Channel 39 (2480MHz)	
100kHz PSD reference Level	High Band Edge
	
Spurious Emission 30MHz ~ 25GHz	
	Note: The Value of the Display Line is -12.58dBm

Product	ACCESS POINT	Temperature	27°C
Test Engineer	Kevin Ker	Relative Humidity	65%
Test Site	SR2	Test Date	2018/07/08
Model No.	APIN0515	Test Item	Conducted Band Edge and Out-of-Band Emissions

Test Mode	Data Rate (Mbps)	Channel No.	Frequency (MHz)	Limit	Result
BLE	1	00	2402	20dBc	Pass
BLE	1	19	2440	20dBc	Pass
BLE	1	39	2480	20dBc	Pass

BLE Out-of-Band Emissions	
Channel 00 (2402MHz)	
100kHz PSD reference Level	Low Band Edge
	
Spurious Emission 30MHz ~ 25GHz	
	Note: The Value of the Display Line is -12.15dBm

Channel 19 (2440MHz)	
100kHz PSD reference Level	Spurious Emission 30MHz ~ 25GHz
	
Note: The Value of the Display Line is -12.02dBm	
Channel 39 (2480MHz)	
100kHz PSD reference Level	High Band Edge
	
Spurious Emission 30MHz ~ 25GHz	
	Note: The Value of the Display Line is -12.01dBm

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

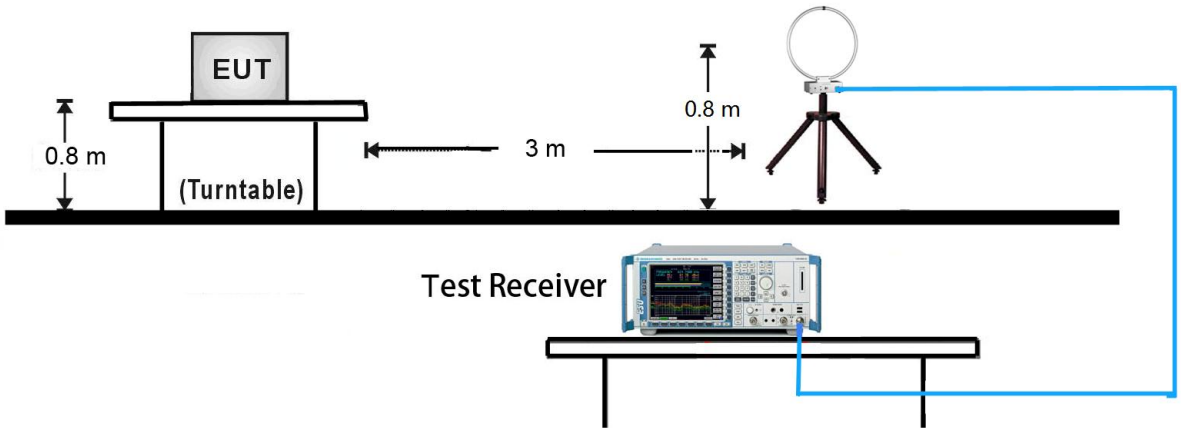
5. Sweep time = auto

6. Trace mode = max hold

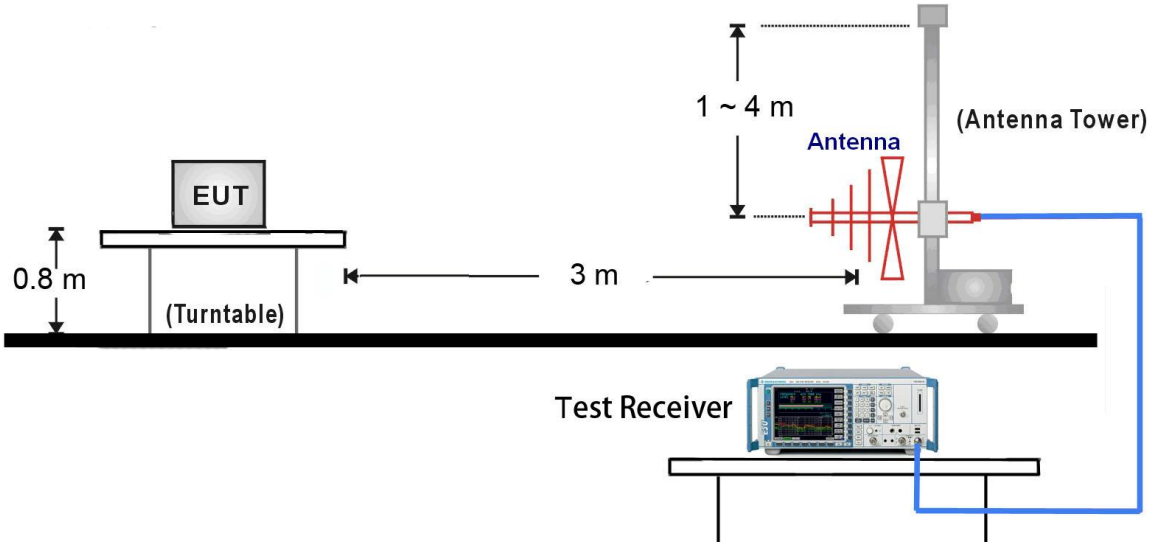
7. Trace was allowed to stabilize

7.6.4.Test Setup

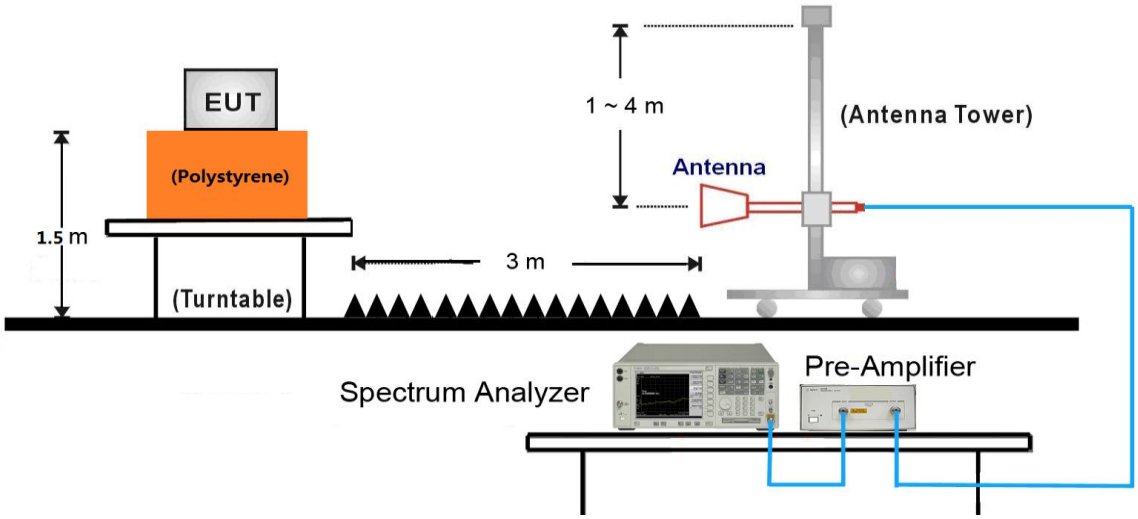
9kHz ~ 30MHz Test Setup:



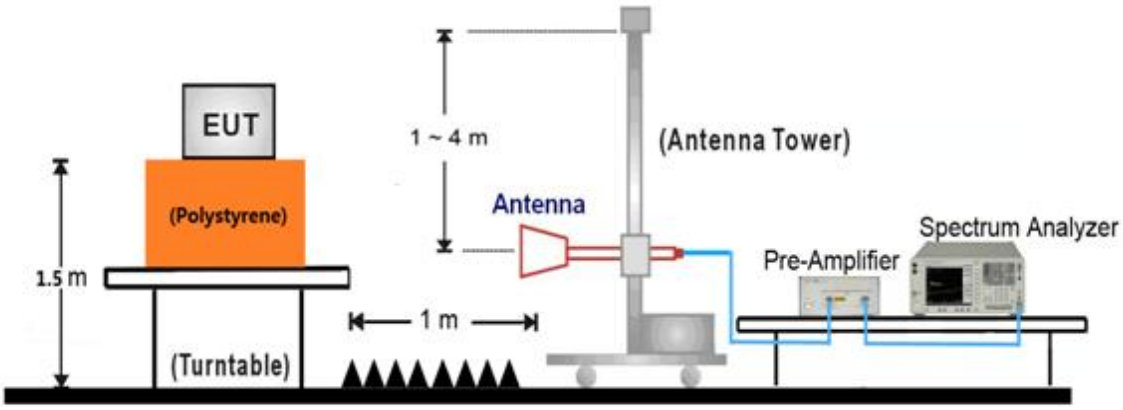
30MHz ~ 1GHz Test Setup:



1GHz ~ 18GHz Test Setup:



18GHz ~25GHz Test Setup:



Note: This item was performed with the BLE antenna connected.

7.6.5.Test Result

Product	ACCESS POINT	Temperature	26°C
Test Engineer	Kevin Ker	Relative Humidity	56%
Test Site	AC1	Test Date	2018/07/07
Model No.	APIN0514	Test Channel	00
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
	3983.5	42.7	0.4	43.1	54.0	-10.9	Peak	Horizontal
	4723.0	40.2	3.6	43.8	54.0	-10.2	Peak	Horizontal
*	5938.5	38.9	6.0	44.9	79.6	-34.7	Peak	Horizontal
*	6465.5	38.6	8.1	46.7	79.6	-32.9	Peak	Horizontal
	3694.5	44.9	0.1	45.0	54.0	-9.0	Peak	Vertical
	4808.0	40.9	3.7	44.6	54.0	-9.4	Peak	Vertical
*	5845.0	39.5	5.7	45.2	79.6	-34.4	Peak	Vertical
*	6423.0	39.0	7.8	46.8	79.6	-32.8	Peak	Vertical

Note 1: "*" is not in restricted band, its limit is 20dBc of the fundamental emission level (99.6dBμV/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	2018/07/07
Model No.	APIN0514	Test Channel	19
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	40.4	0.3	40.7	54.0	-13.3	Peak	Horizontal
	4893.0	40.1	3.7	43.8	54.0	-10.2	Peak	Horizontal
*	5870.5	38.6	5.8	44.4	79.1	-34.7	Peak	Horizontal
*	6950.0	37.8	10.2	48.0	79.1	-31.1	Peak	Horizontal
	4017.5	42.0	0.4	42.4	54.0	-11.6	Peak	Vertical
	5003.5	39.0	3.8	42.8	54.0	-11.2	Peak	Vertical
*	6023.5	38.6	6.2	44.8	79.1	-34.3	Peak	Vertical
*	6550.5	38.0	8.6	46.6	79.1	-32.5	Peak	Vertical

Note 1: “*” is not in restricted band, its limit is 20dBc of the fundamental emission level (99.1dBμV/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	2018/07/07
Model No.	APIN0514	Test Channel	39
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
	3779.5	42.2	0.2	42.4	54.0	-11.6	Peak	Horizontal
	4867.5	40.4	3.7	44.1	54.0	-9.9	Peak	Horizontal
*	5751.5	39.4	5.2	44.6	78.5	-33.9	Peak	Horizontal
*	6848.0	38.0	9.4	47.4	78.5	-31.1	Peak	Horizontal
	4034.5	40.7	0.5	41.2	54.0	-12.8	Peak	Vertical
	4842.0	39.8	3.7	43.5	54.0	-10.5	Peak	Vertical
*	5828.0	37.7	5.6	43.3	78.5	-35.2	Peak	Vertical
*	6550.5	38.1	8.6	46.7	78.5	-31.8	Peak	Vertical

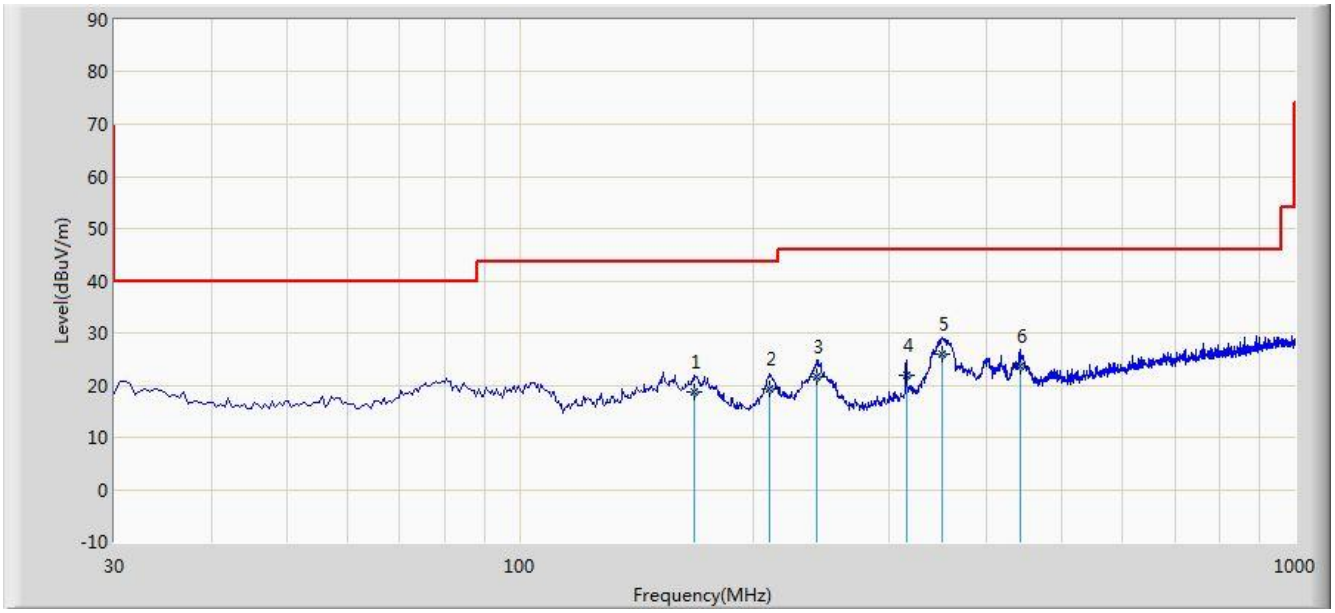
Note 1: “*” is not in restricted band, its limit is 20dBc of the fundamental emission level (98.5dBμV/m) or 15.209 which is higher.

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: 2018/07/08 - 17:27
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: VULB9168_20-2000MHz	Polarity: Horizontal
EUT: ACCESS POINT(APIN0514)	Power: AC 120V/60Hz
Worse Case Mode: Transmit by BLE at channel 2402MHz	



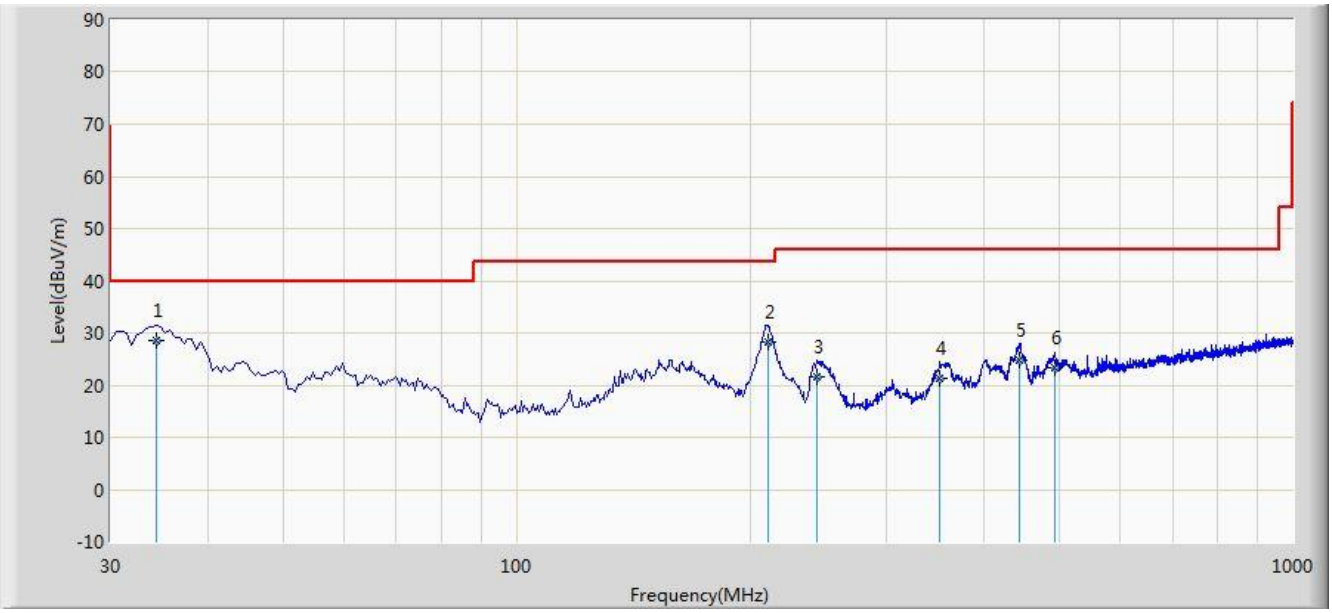
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			167.740	18.708	8.428	-24.792	43.500	10.280	QP
2			210.420	19.407	6.832	-24.093	43.500	12.575	QP
3			241.945	21.668	8.042	-24.332	46.000	13.627	QP
4			315.180	21.866	6.725	-24.134	46.000	15.141	QP
5		*	350.100	25.883	9.836	-20.117	46.000	16.046	QP
6			442.250	23.562	6.035	-22.438	46.000	17.527	QP

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

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

Note 2: The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible (the test frequency range: 9kHz ~ 30MHz, 18GHz ~ 25GHz), therefore no data appear in the report.

Site: AC1	Time: 2018/07/08 - 17:29
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: VULB9168_20-2000MHz	Polarity: Vertical
EUT: ACCESS POINT(APIN0514)	Power: AC 120V/60Hz
Worse Case Mode: Transmit by BLE at channel 2402MHz	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	34.365	28.504	15.672	-11.496	40.000	12.831	QP
2			210.905	28.308	15.726	-15.192	43.500	12.583	QP
3			243.885	21.550	7.864	-24.450	46.000	13.686	QP
4			351.070	21.335	5.273	-24.665	46.000	16.062	QP
5			444.675	24.925	7.362	-21.075	46.000	17.563	QP
6			494.145	23.207	4.728	-22.793	46.000	18.478	QP

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

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

Note 2: The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible (the test frequency range: 9kHz ~ 30MHz, 18GHz ~ 25GHz), therefore no data appear in the report.

Product	ACCESS POINT	Temperature	26°C
Test Engineer	Kevin Ker	Relative Humidity	56%
Test Site	AC1	Test Date	2018/07/07
Model No.	APIN0515	Test Channel	00
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
	3813.5	43.0	0.3	43.3	54.0	-10.7	Peak	Horizontal
	4740.0	40.9	3.6	44.5	54.0	-9.5	Peak	Horizontal
*	6499.5	38.4	8.4	46.8	83.5	-36.7	Peak	Horizontal
*	7060.5	37.6	11.1	48.7	83.5	-34.8	Peak	Horizontal
	4000.5	42.6	0.4	43.0	54.0	-11.0	Peak	Vertical
	4782.5	40.3	3.7	44.0	54.0	-10.0	Peak	Vertical
*	6440.0	39.2	8.0	47.2	83.5	-36.3	Peak	Vertical
*	7128.5	38.0	11.7	49.7	83.5	-33.8	Peak	Vertical

Note 1: “*” is not in restricted band, its limit is 20dBc of the fundamental emission level (103.5dBμV/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	2018/07/07
Model No.	APIN0515	Test Channel	19
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
	4051.5	41.9	0.5	42.4	54.0	-11.6	Peak	Horizontal
	4961.0	41.4	3.7	45.1	54.0	-8.9	Peak	Horizontal
*	6329.5	37.8	7.3	45.1	83.6	-38.5	Peak	Horizontal
*	6916.0	38.3	9.9	48.2	83.6	-35.4	Peak	Horizontal
	3890.0	41.3	0.3	41.6	54.0	-12.4	Peak	Vertical
	4901.5	39.9	3.7	43.6	54.0	-10.4	Peak	Vertical
*	6567.5	38.4	8.6	47.0	83.6	-36.6	Peak	Vertical
*	7961.5	37.7	12.5	50.2	83.6	-33.4	Peak	Vertical

Note 1: “*” is not in restricted band, its limit is 20dBc of the fundamental emission level (103.6dBμV/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	2018/07/07
Model No.	APIN0515	Test Channel	39
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
	3864.5	41.7	0.3	42.0	54.0	-12.0	Peak	Horizontal
	4961.0	40.1	3.7	43.8	54.0	-10.2	Peak	Horizontal
*	6372.0	38.2	7.5	45.7	83.8	-38.1	Peak	Horizontal
*	6839.5	38.0	9.3	47.3	83.8	-36.5	Peak	Horizontal
	3890.0	41.7	0.3	42.0	54.0	-12.0	Peak	Vertical
	4910.0	42.3	3.7	46.0	54.0	-8.0	Peak	Vertical
*	6525.0	39.0	8.5	47.5	83.8	-36.3	Peak	Vertical
*	7111.5	38.3	11.5	49.8	83.8	-34.0	Peak	Vertical

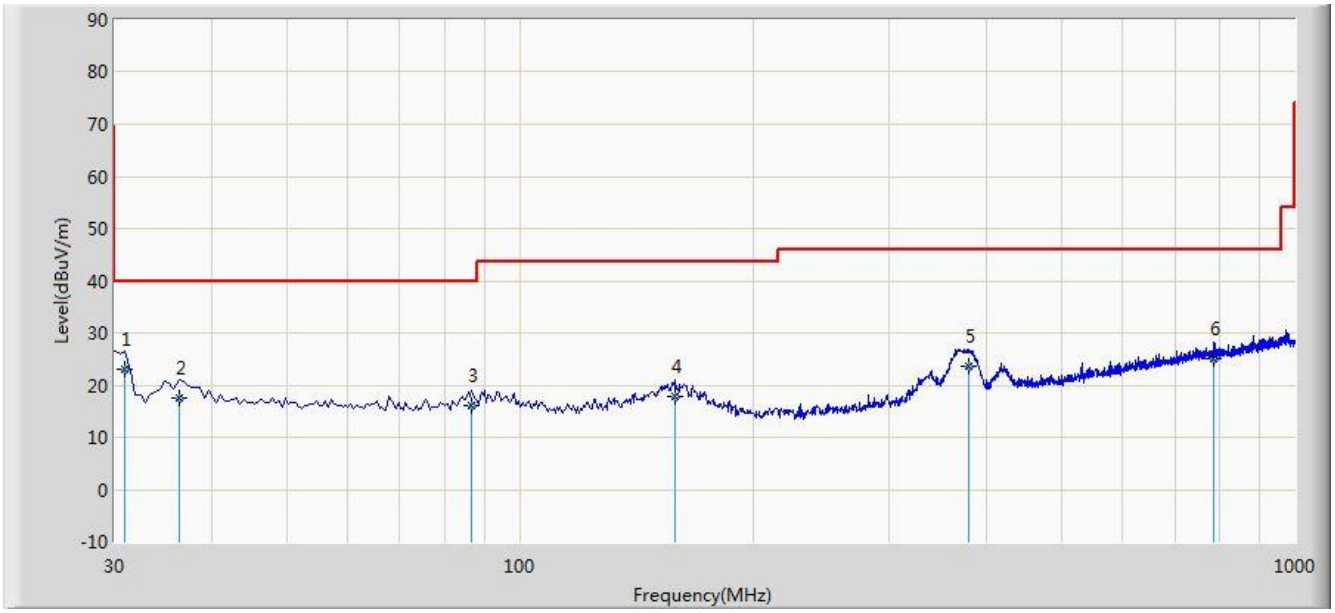
Note 1: “*” is not in restricted band, its limit is 20dBc of the fundamental emission level (103.8dBμV/m) or 15.209 which is higher.

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: 2018/07/08 - 17:06
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: VULB9168_20-2000MHz	Polarity: Horizontal
EUT: ACCESS POINT(APIN0515)	Power: AC 120V/60Hz
Worse Case Mode: Transmit by BLE at channel 2402MHz	



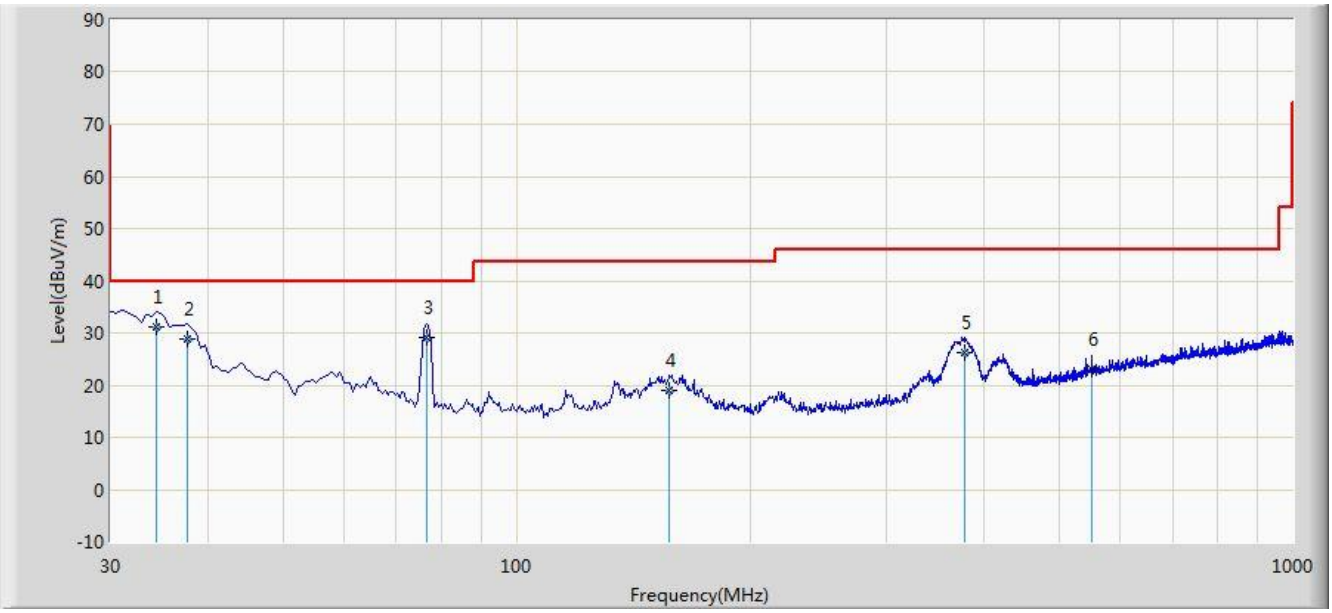
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	30.970	23.046	10.829	-16.954	40.000	12.217	QP
2			36.305	17.469	4.286	-22.531	40.000	13.182	QP
3			86.745	16.132	5.637	-23.868	40.000	10.495	QP
4			159.010	17.758	7.836	-25.742	43.500	9.922	QP
5			379.685	23.762	7.263	-22.238	46.000	16.498	QP
6			785.145	25.108	2.153	-20.892	46.000	22.955	QP

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

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

Note 2: The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible (the test frequency range: 9kHz ~ 30MHz, 18GHz ~ 25GHz), therefore no data appear in the report.

Site: AC1	Time: 2018/07/08 - 17:08
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: VULB9168_20-2000MHz	Polarity: Vertical
EUT: ACCESS POINT(APIN0515)	Power: AC 120V/60Hz
Worse Case Mode: Transmit by BLE at channel 2402MHz	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	34.365	31.208	18.376	-8.792	40.000	12.831	QP
2			37.760	28.971	15.524	-11.029	40.000	13.447	QP
3			76.560	29.059	19.632	-10.941	40.000	9.427	QP
4			157.555	18.928	9.064	-24.572	43.500	9.864	QP
5			378.230	26.101	9.624	-19.899	46.000	16.477	QP
6			551.375	23.148	3.728	-22.852	46.000	19.419	QP

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

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

Note 2: The test trace is same as the ambient noise and the amplitude of the emissions are attenuated more than 20dB below the permissible (the test frequency range: 9kHz ~ 30MHz, 18GHz ~ 25GHz), therefore no data appear 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	8.025 - 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

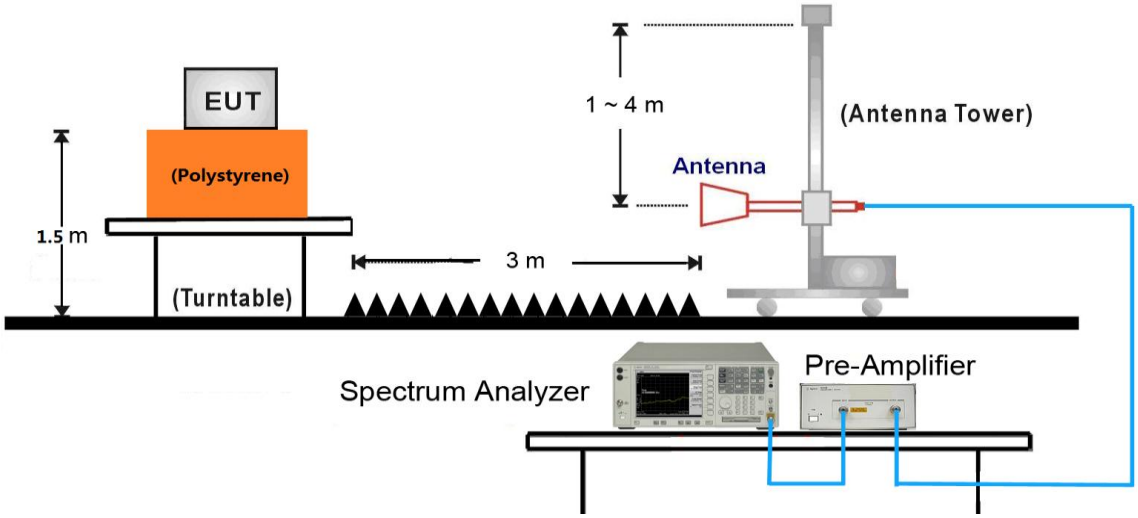
Peak Field Strength Measurements

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

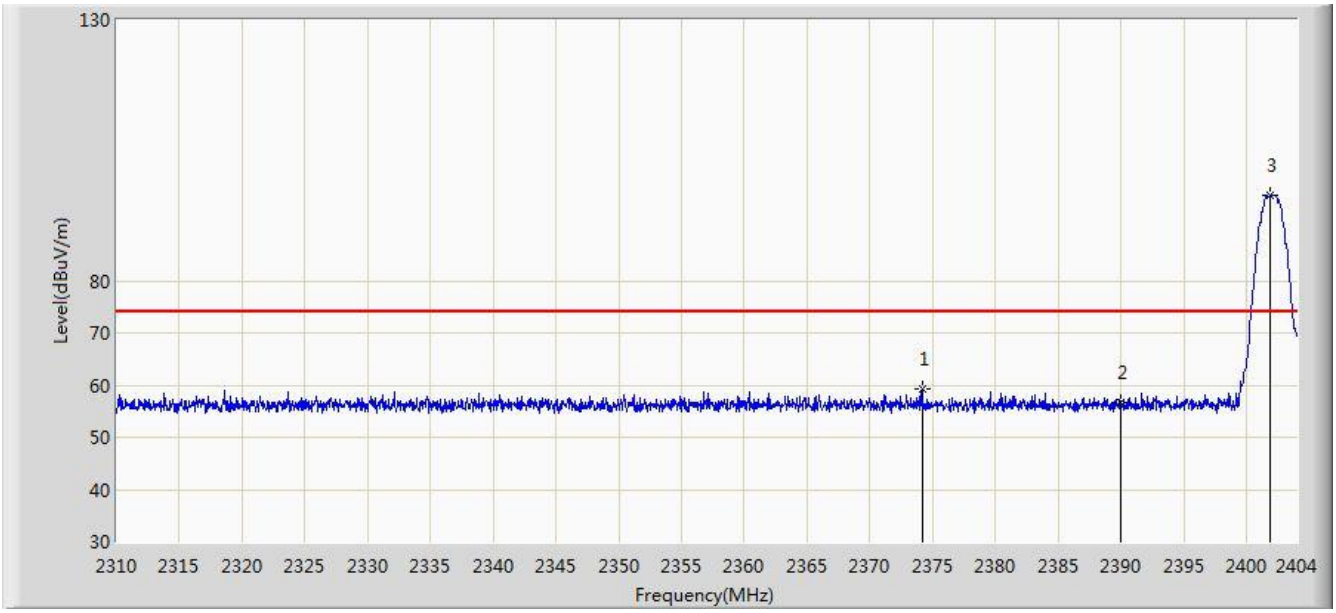
7.7.4.Test Setup



Note: This item was performed with the BLE antenna connected.

7.7.5.Test Result

Site: AC1	Time: 2018/07/07 - 19:54
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: BBHA9120D_1GHz_18GHz	Polarity: Horizontal
EUT: ACCESS POINT(APIN0514)	Power: AC 120V/60Hz
Test Mode: Transmit by BLE at Channel 2402MHz	

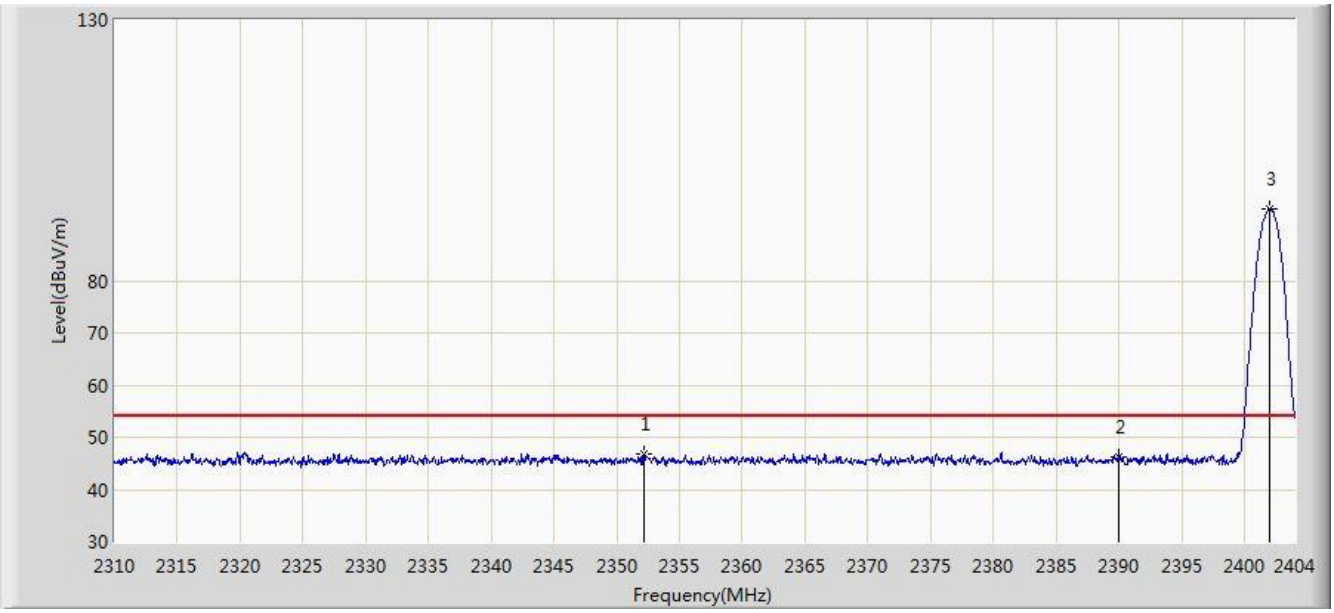


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2374.155	59.333	26.757	-14.667	74.000	32.576	PK
2			2390.000	56.793	24.239	-17.207	74.000	32.554	PK
3		*	2401.932	96.431	63.892	N/A	N/A	32.538	PK

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

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

Site: AC1	Time: 2018/07/07 - 19:55
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: BBHA9120D_1GHz_18GHz	Polarity: Horizontal
EUT: ACCESS POINT(APIN0514)	Power: AC 120V/60Hz
Test Mode: Transmit by BLE at Channel 2402MHz	

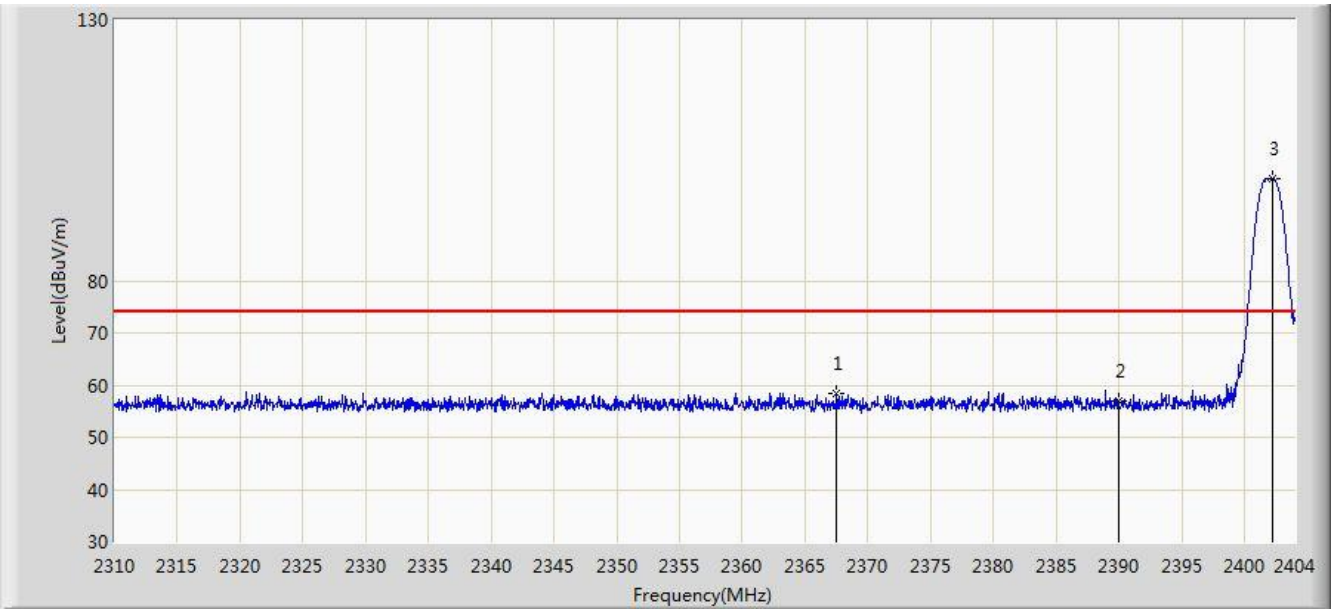


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2352.112	46.767	14.151	-7.233	54.000	32.617	AV
2			2390.000	46.220	13.666	-7.780	54.000	32.554	AV
3		*	2401.979	93.833	61.294	N/A	N/A	32.538	AV

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

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

Site: AC1	Time: 2018/07/07 - 19:56
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: BBHA9120D_1GHz_18GHz	Polarity: Vertical
EUT: ACCESS POINT(APIN0514)	Power: AC 120V/60Hz
Test Mode: Transmit by BLE at Channel 2402MHz	

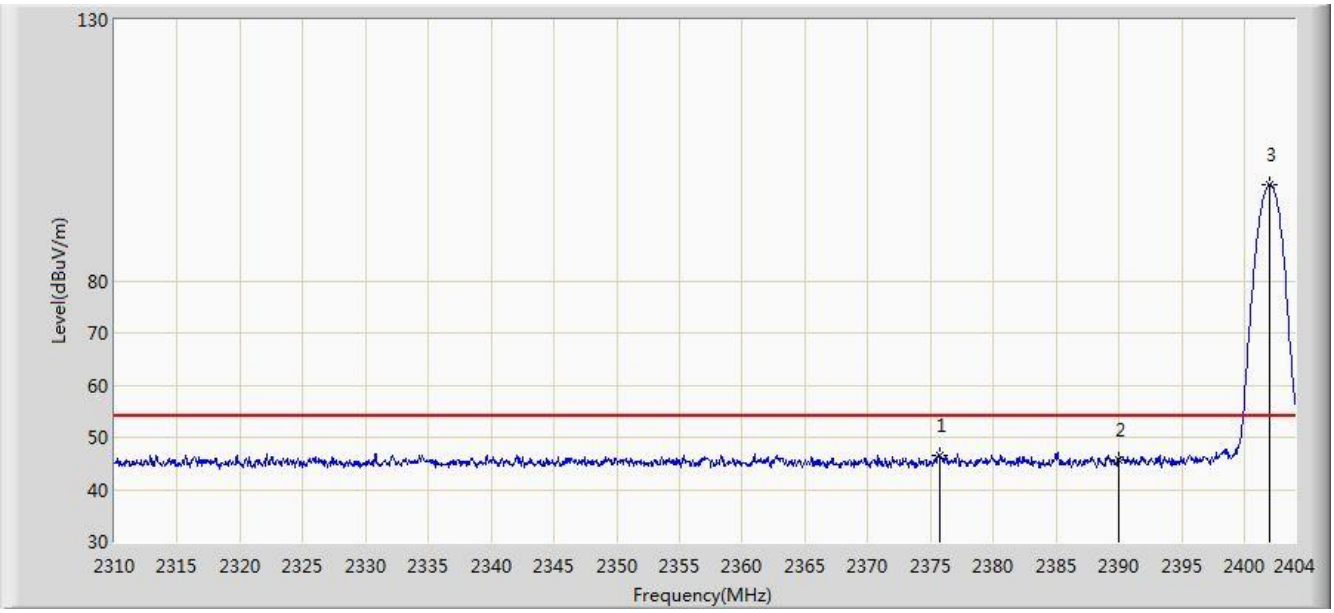


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2367.481	58.443	25.857	-15.557	74.000	32.586	PK
2			2390.000	56.832	24.278	-17.168	74.000	32.554	PK
3		*	2402.214	99.588	67.050	N/A	N/A	32.539	PK

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

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

Site: AC1	Time: 2018/07/07 - 19:57
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: BBHA9120D_1GHz_18GHz	Polarity: Vertical
EUT: ACCESS POINT(APIN0514)	Power: AC 120V/60Hz
Test Mode: Transmit by BLE at Channel 2402MHz	

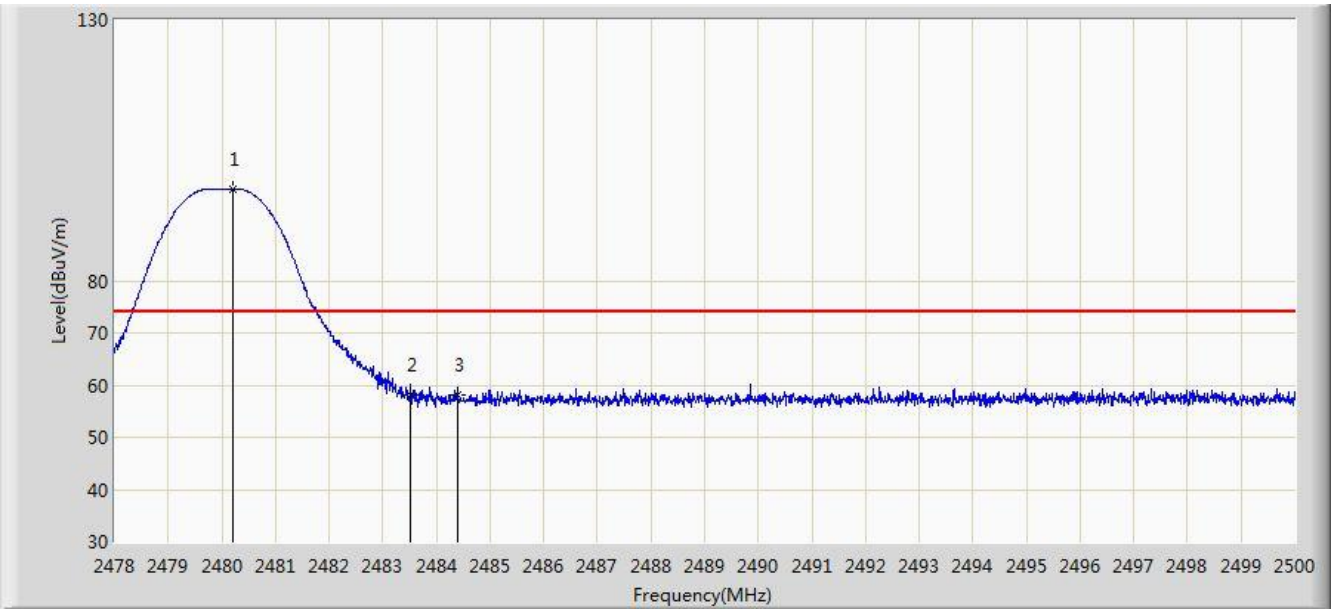


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2375.706	46.640	14.066	-7.360	54.000	32.574	AV
2			2390.000	45.595	13.041	-8.405	54.000	32.554	AV
3		*	2402.026	98.489	65.950	N/A	N/A	32.538	AV

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

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

Site: AC1	Time: 2018/07/07 - 19:59
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: BBHA9120D_1GHz_18GHz	Polarity: Horizontal
EUT: ACCESS POINT(APIN0514)	Power: AC 120V/60Hz
Test Mode: Transmit by BLE at Channel 2480MHz	

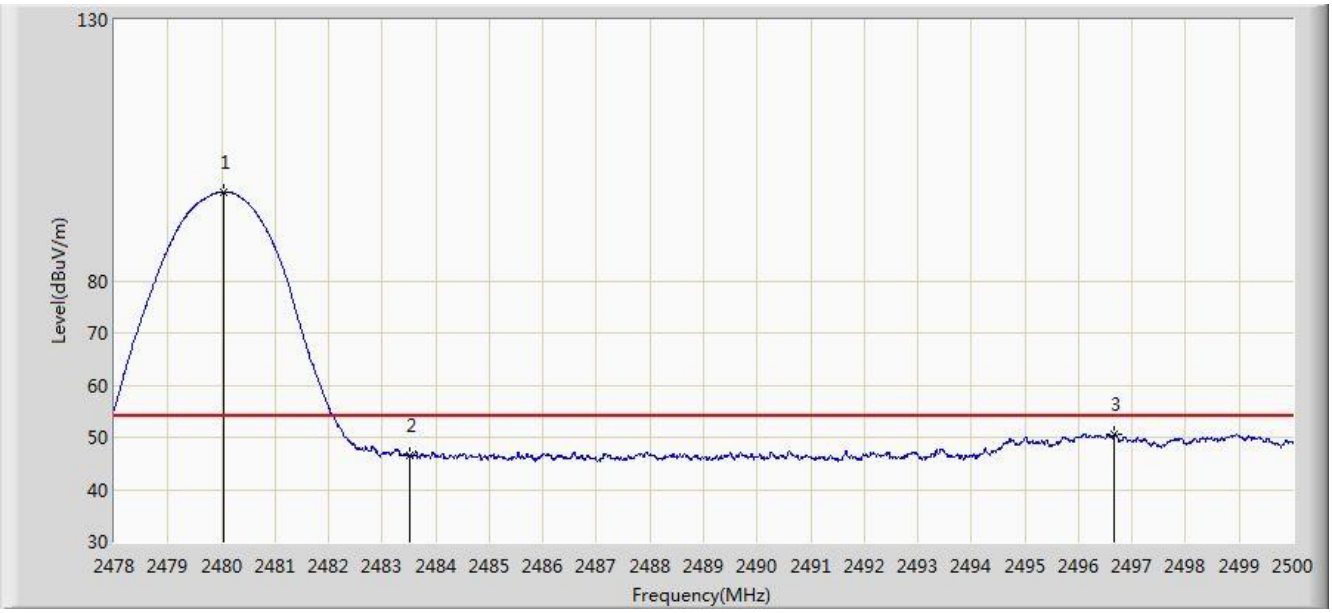


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2480.200	97.552	64.981	N/A	N/A	32.570	PK
2			2483.500	58.119	25.538	-15.881	74.000	32.580	PK
3			2484.391	58.195	25.612	-15.805	74.000	32.583	PK

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

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

Site: AC1	Time: 2018/07/07 - 20:03
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: BBHA9120D_1GHz_18GHz	Polarity: Horizontal
EUT: ACCESS POINT(APIN0514)	Power: AC 120V/60Hz
Test Mode: Transmit by BLE at Channel 2480MHz	

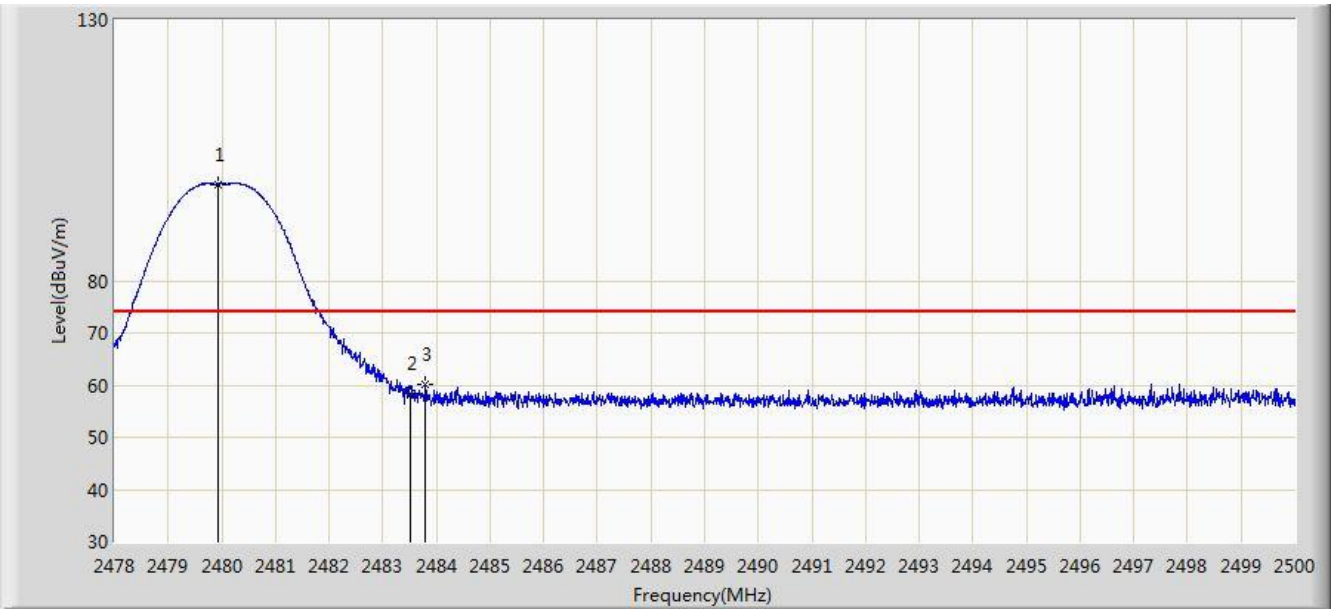


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2480.046	97.072	64.502	N/A	N/A	32.570	AV
2			2483.500	46.381	13.800	-7.619	54.000	32.580	AV
3			2496.667	50.669	18.049	-3.331	54.000	32.620	AV

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

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

Site: AC1	Time: 2018/07/07 - 20:03
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: BBHA9120D_1GHz_18GHz	Polarity: Vertical
EUT: ACCESS POINT(APIN0514)	Power: AC 120V/60Hz
Test Mode: Transmit by BLE at Channel 2480MHz	

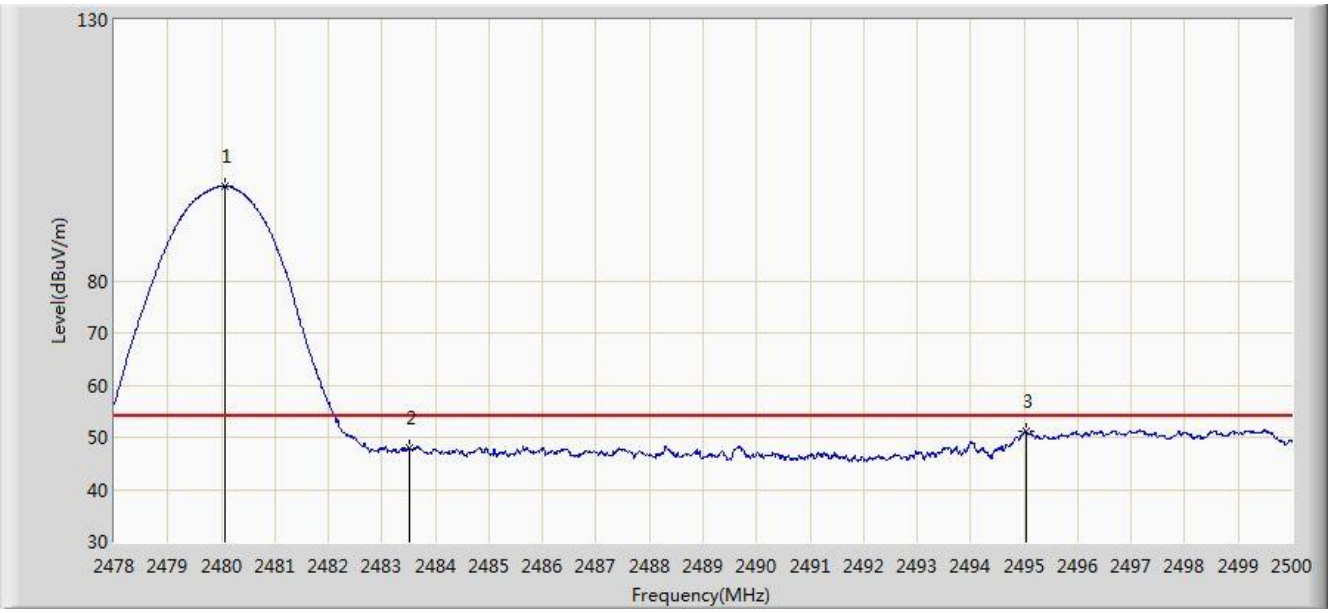


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2479.936	98.541	65.971	N/A	N/A	32.570	PK
2			2483.500	58.278	25.697	-15.722	74.000	32.580	PK
3			2483.797	60.016	27.435	-13.984	74.000	32.582	PK

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

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

Site: AC1	Time: 2018/07/07 - 20:05
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: BBHA9120D_1GHz_18GHz	Polarity: Vertical
EUT: ACCESS POINT(APIN0514)	Power: AC 120V/60Hz
Test Mode: Transmit by BLE at Channel 2480MHz	

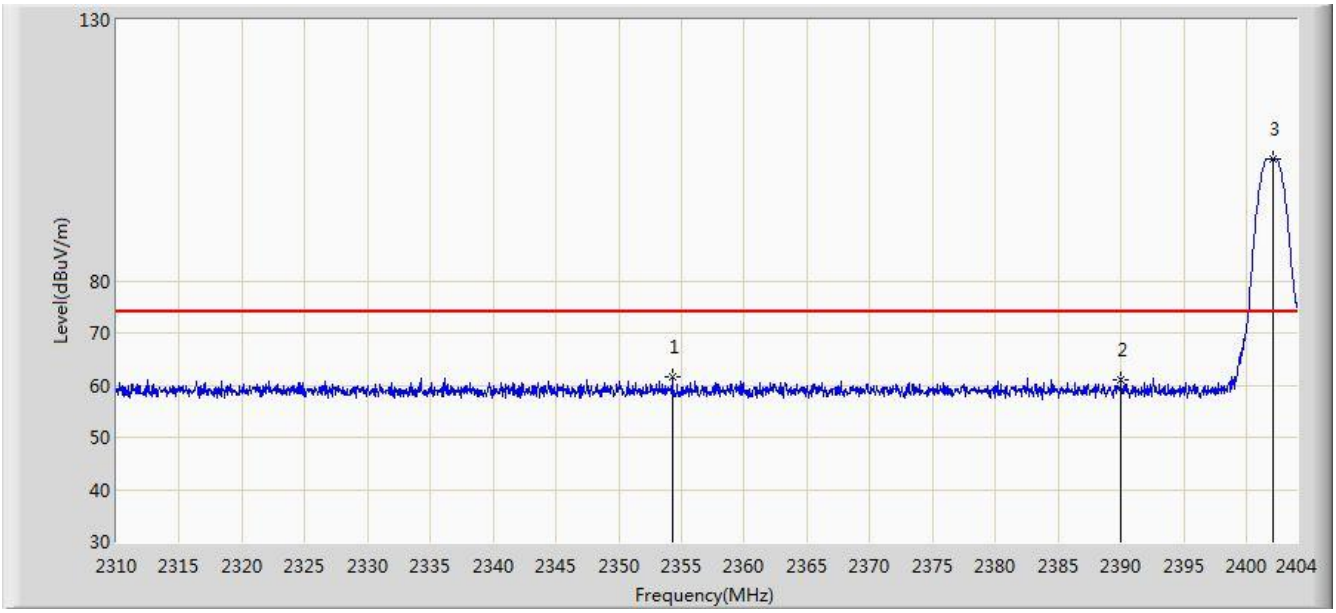


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2480.079	98.111	65.541	N/A	N/A	32.570	AV
2			2483.500	48.089	15.508	-5.911	54.000	32.580	AV
3			2495.028	51.083	18.468	-2.917	54.000	32.615	AV

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

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

Site: AC1	Time: 2018/07/07 - 18:56
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: BBHA9120D_1GHz_18GHz	Polarity: Horizontal
EUT: ACCESS POINT(APIN0515)	Power: AC 120V/60Hz
Test Mode: Transmit by BLE at Channel 2402MHz	

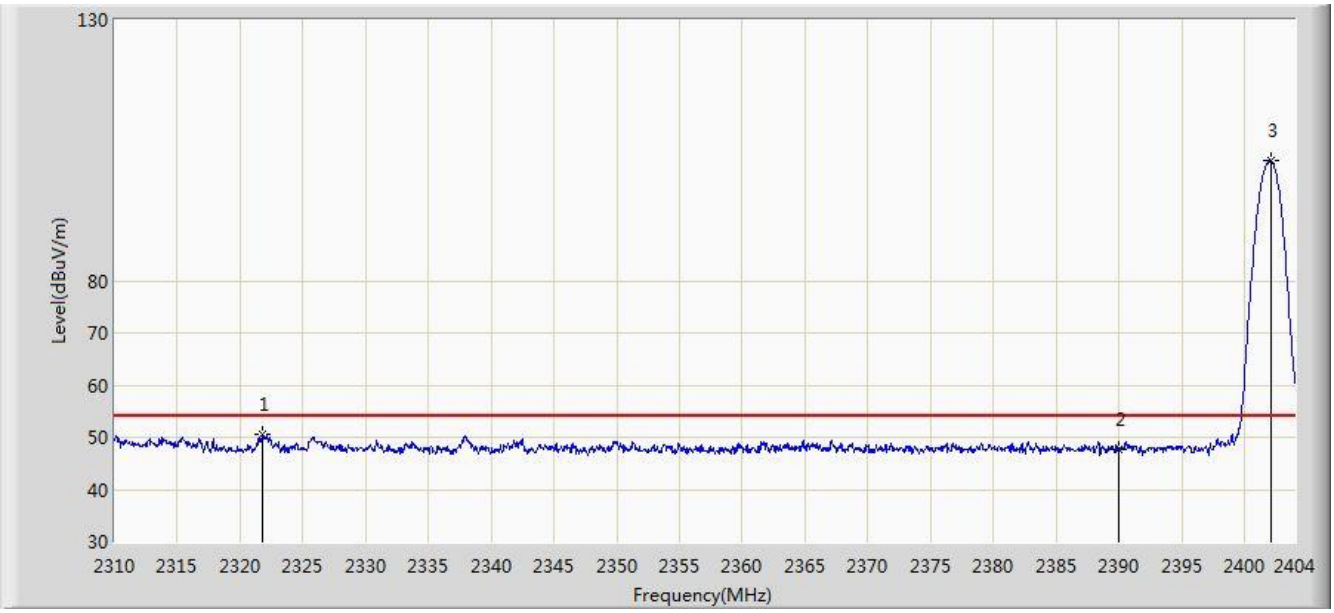


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2354.274	61.572	28.961	-12.428	74.000	32.611	PK
2			2390.000	61.122	28.568	-12.878	74.000	32.554	PK
3		*	2402.073	103.456	70.918	N/A	N/A	32.538	PK

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

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

Site: AC1	Time: 2018/07/07 - 18:58
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: BBHA9120D_1GHz_18GHz	Polarity: Horizontal
EUT: ACCESS POINT(APIN0515)	Power: AC 120V/60Hz
Test Mode: Transmit by BLE at Channel 2402MHz	

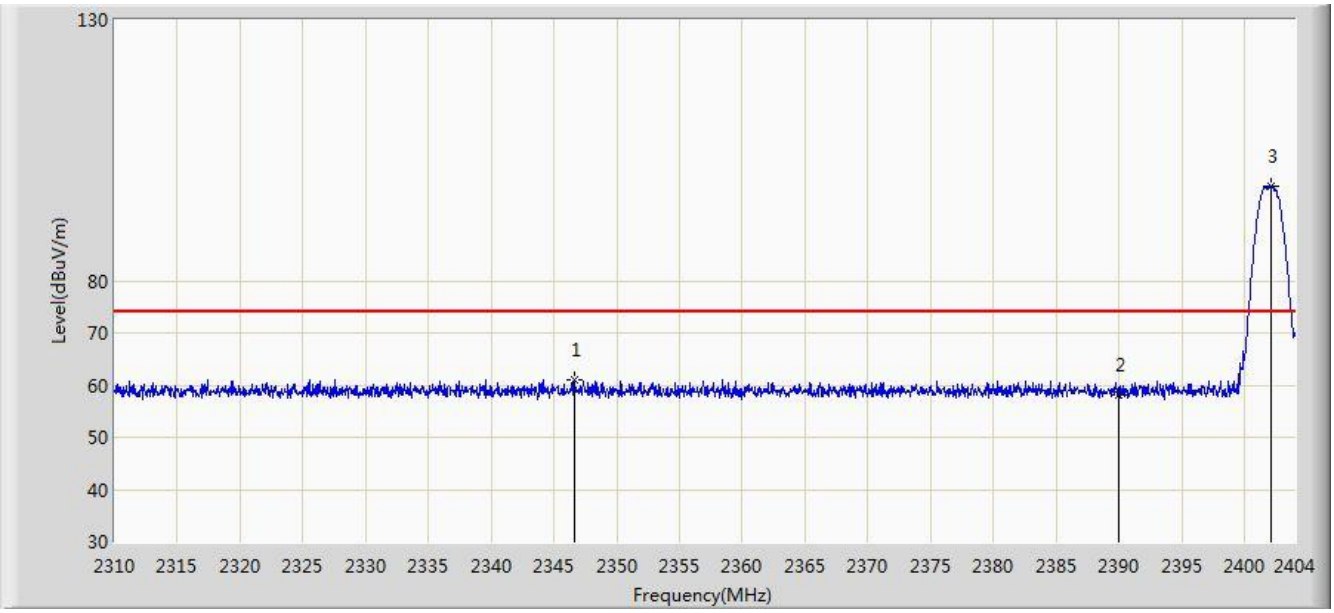


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2321.797	50.453	17.725	-3.547	54.000	32.728	AV
2			2390.000	47.793	15.239	-6.207	54.000	32.554	AV
3		*	2402.073	103.040	70.502	N/A	N/A	32.538	AV

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

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

Site: AC1	Time: 2018/07/07 - 18:58
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: BBHA9120D_1GHz_18GHz	Polarity: Vertical
EUT: ACCESS POINT(APIN0515)	Power: AC 120V/60Hz
Test Mode: Transmit by BLE at Channel 2402MHz	

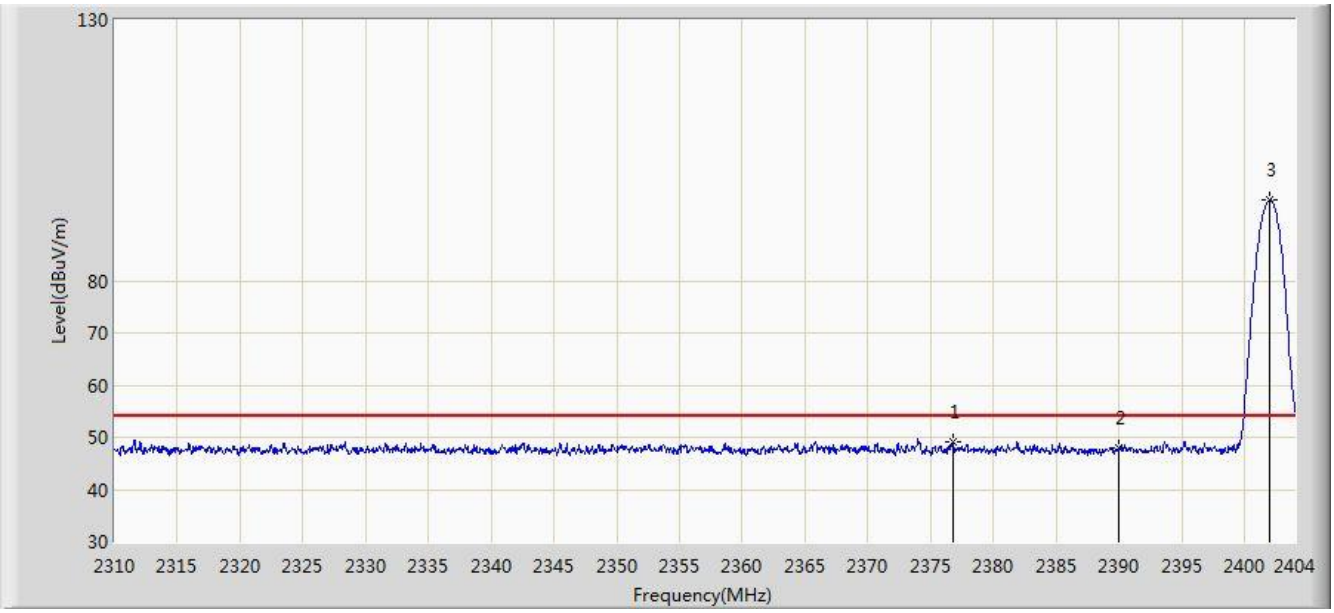


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2346.613	61.075	28.445	-12.925	74.000	32.630	PK
2			2390.000	58.191	25.637	-15.809	74.000	32.554	PK
3		*	2402.167	98.174	65.636	N/A	N/A	32.539	PK

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

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

Site: AC1	Time: 2018/07/07 - 19:00
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: BBHA9120D_1GHz_18GHz	Polarity: Vertical
EUT: ACCESS POINT(APIN0515)	Power: AC 120V/60Hz
Test Mode: Transmit by BLE at Channel 2402MHz	

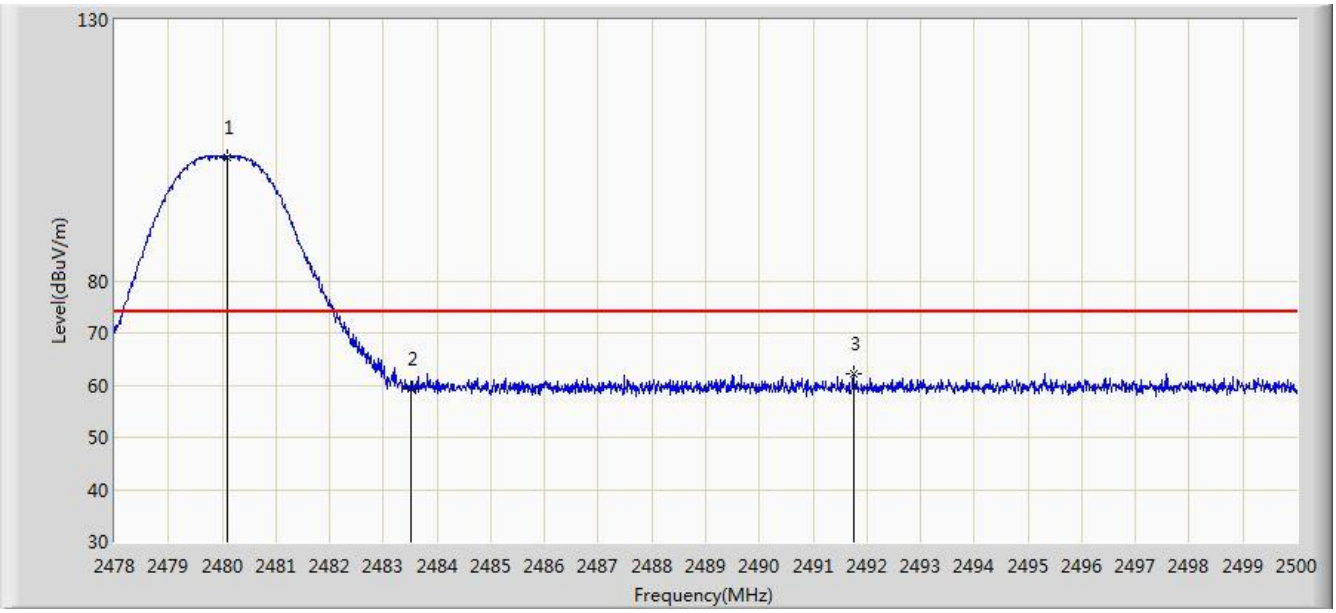


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2376.787	49.258	16.685	-4.742	54.000	32.573	AV
2			2390.000	47.890	15.336	-6.110	54.000	32.554	AV
3		*	2401.979	95.443	62.904	N/A	N/A	32.538	AV

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

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

Site: AC1	Time: 2018/07/07 - 19:10
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: BBHA9120D_1GHz_18GHz	Polarity: Horizontal
EUT: ACCESS POINT(APIN0515)	Power: AC 120V/60Hz
Test Mode: Transmit by BLE at Channel 2480MHz	

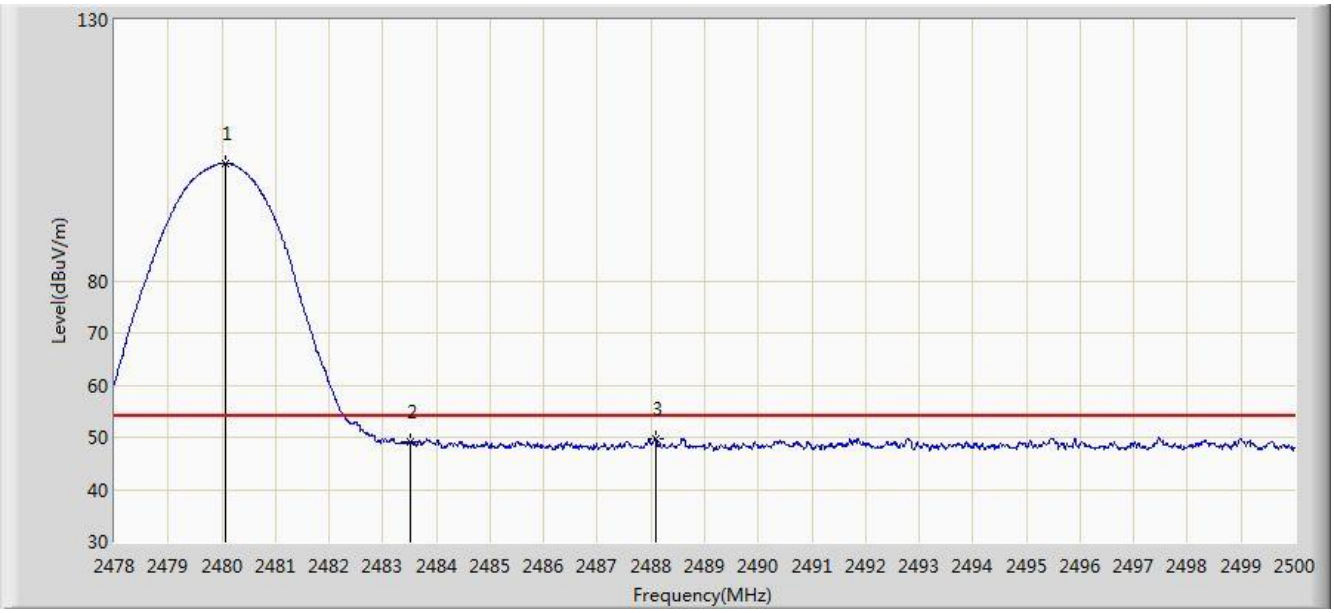


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2480.090	103.763	71.193	N/A	N/A	32.570	PK
2			2483.500	59.232	26.651	-14.768	74.000	32.580	PK
3			2491.750	62.115	29.510	-11.885	74.000	32.605	PK

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

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

Site: AC1	Time: 2018/07/07 - 19:12
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: BBHA9120D_1GHz_18GHz	Polarity: Horizontal
EUT: ACCESS POINT(APIN0515)	Power: AC 120V/60Hz
Test Mode: Transmit by BLE at Channel 2480MHz	

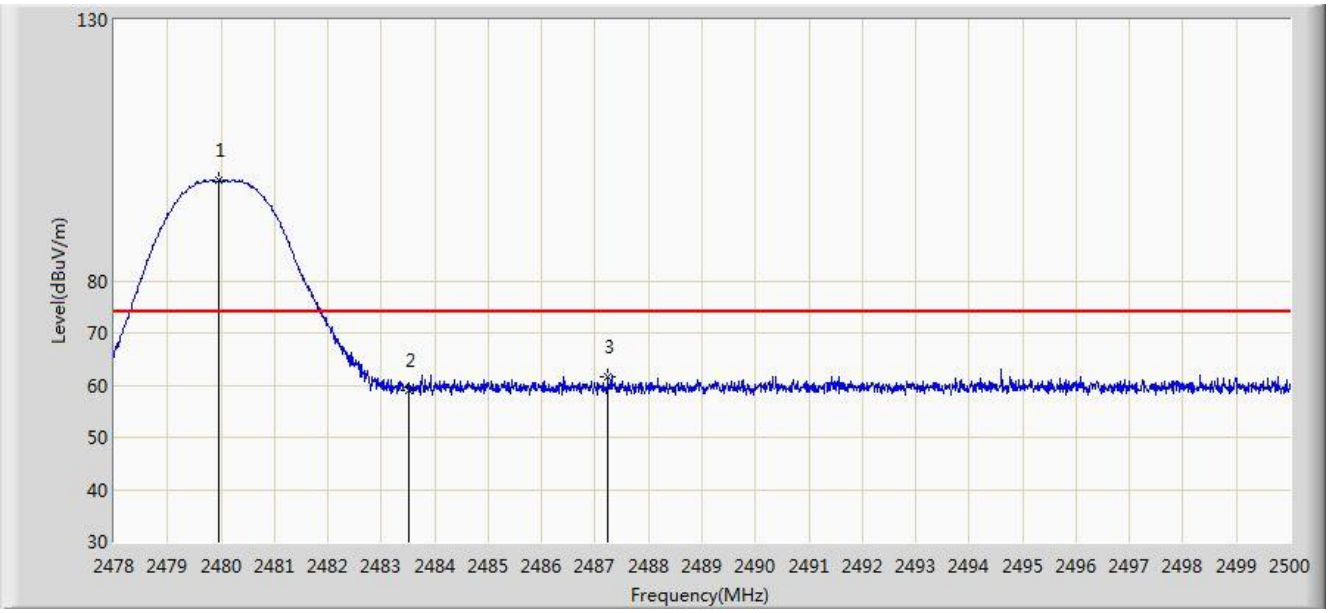


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2480.079	102.470	69.900	N/A	N/A	32.570	AV
2			2483.500	49.105	16.524	-4.895	54.000	32.580	AV
3			2488.087	49.783	17.189	-4.217	54.000	32.595	AV

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

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

Site: AC1	Time: 2018/07/07 - 19:12
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: BBHA9120D_1GHz_18GHz	Polarity: Vertical
EUT: ACCESS POINT(APIN0515)	Power: AC 120V/60Hz
Test Mode: Transmit by BLE at Channel 2480MHz	

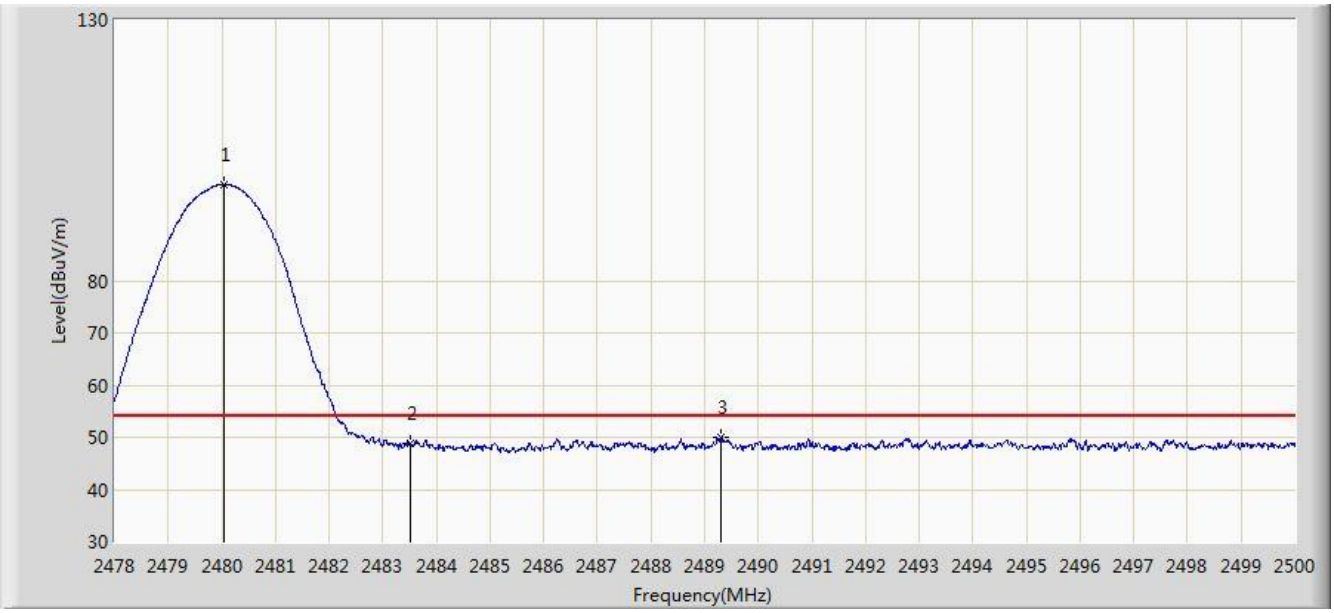


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2479.969	99.214	66.644	N/A	N/A	32.570	PK
2			2483.500	59.036	26.455	-14.964	74.000	32.580	PK
3			2487.240	61.591	28.999	-12.409	74.000	32.592	PK

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

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

Site: AC1	Time: 2018/07/07 - 19:14
Limit: FCC_Part15.209_RE(3m)	Engineer: Kevin Ker
Probe: BBHA9120D_1GHz_18GHz	Polarity: Vertical
EUT: ACCESS POINT(APIN0515)	Power: AC 120V/60Hz
Test Mode: Transmit by BLE at Channel 2480MHz	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	2480.046	98.506	65.936	N/A	N/A	32.570	AV
2			2483.500	48.913	16.332	-5.087	54.000	32.580	AV
3			2489.308	49.870	17.272	-4.130	54.000	32.598	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

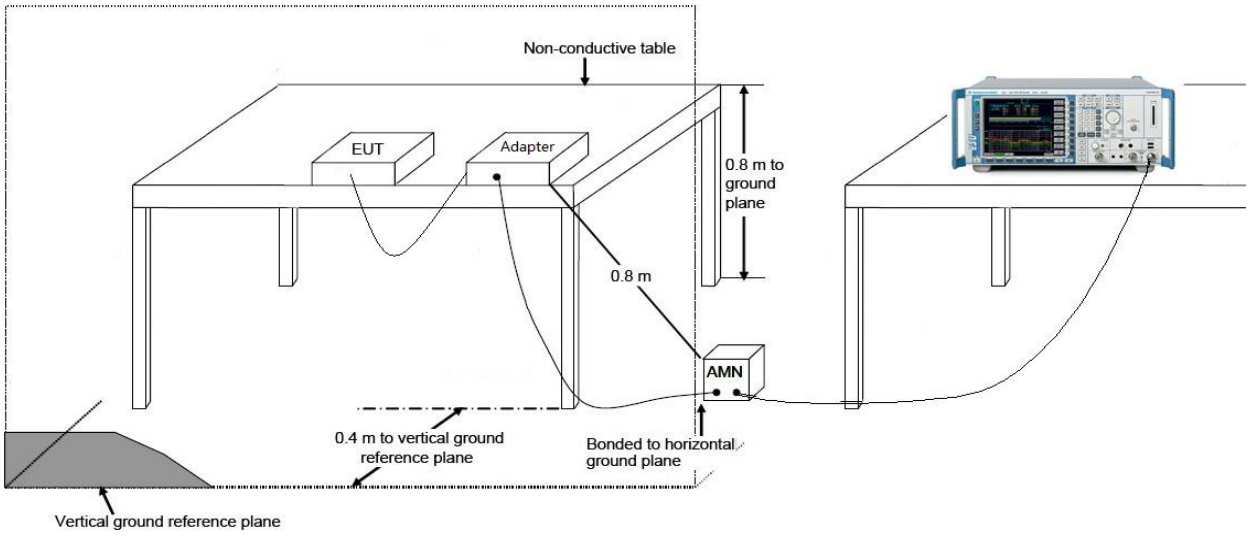
7.8.1.Test Limit

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.

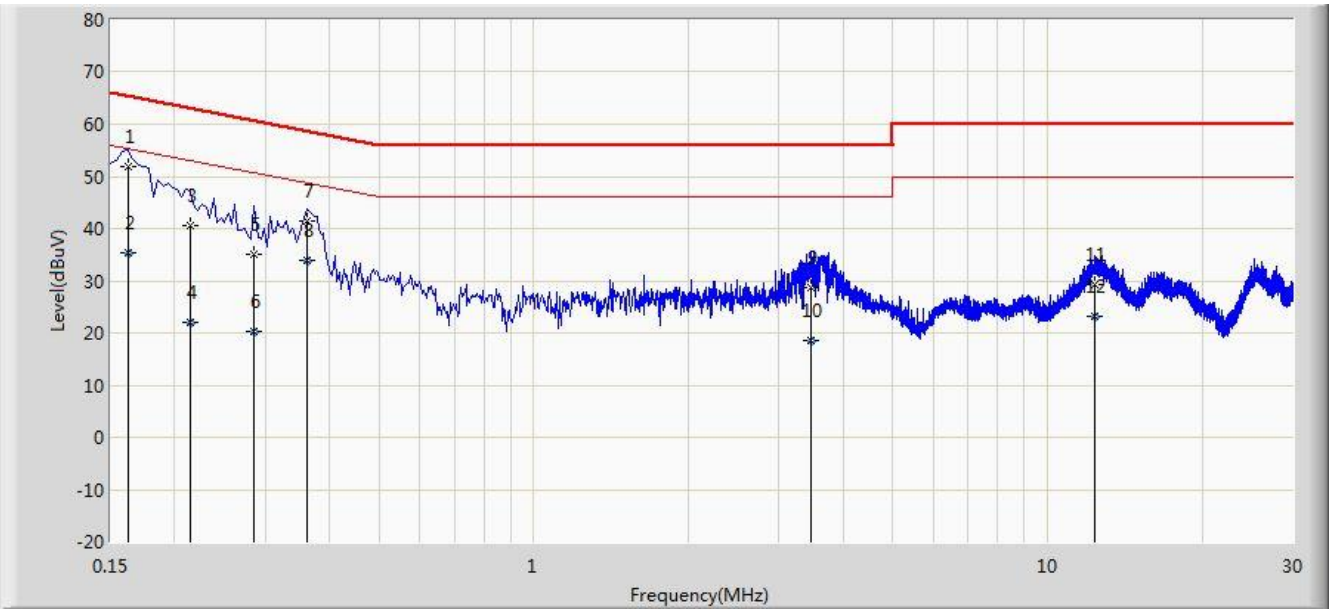
Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.

7.8.2.Test Setup



7.8.3.Test Result

Site: SR2	Time: 2018/07/25 - 10:43
Limit: FCC_Part15.207_CE_AC Power	Engineer: Kevin Ker
Probe: ENV216_101683_Filter On	Polarity: Line
EUT: ACCESS POINT(APIN0514)	Power: AC 120V/60Hz
Test Mode 1	

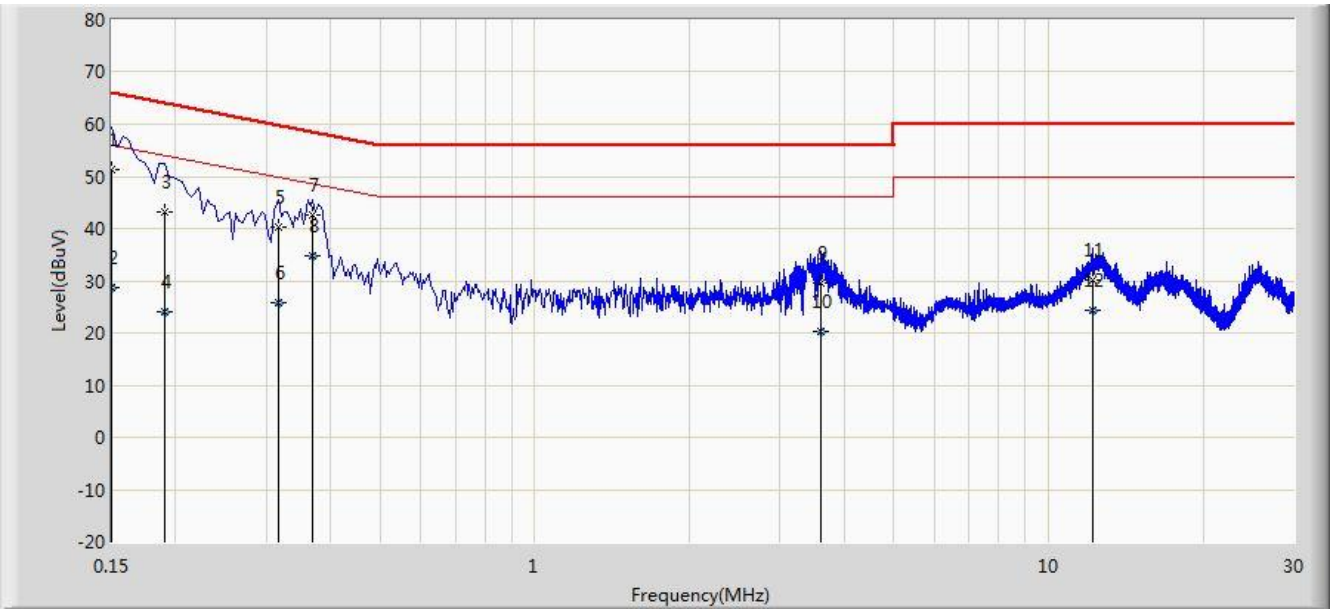


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1		*	0.162	51.775	41.677	-13.586	65.361	10.097	QP
2			0.162	35.395	25.298	-19.966	55.361	10.097	AV
3			0.214	40.474	30.517	-22.574	63.049	9.957	QP
4			0.214	22.089	12.133	-30.959	53.049	9.957	AV
5			0.286	35.030	25.037	-25.610	60.640	9.993	QP
6			0.286	20.321	10.328	-30.319	50.640	9.993	AV
7			0.362	41.394	31.339	-17.289	58.682	10.055	QP
8			0.362	33.848	23.793	-14.835	48.682	10.055	AV
9			3.462	28.699	18.794	-27.301	56.000	9.905	QP
10			3.462	18.636	8.732	-27.364	46.000	9.905	AV
11			12.358	29.249	19.172	-30.751	60.000	10.076	QP
12			12.358	23.061	12.985	-26.939	50.000	10.076	AV

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

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

Site: SR2	Time: 2018/07/25 - 10:47
Limit: FCC_Part15.207_CE_AC Power	Engineer: Kevin Ker
Probe: ENV216_101683_Filter On	Polarity: Neutral
EUT: ACCESS POINT(APIN0514)	Power: AC 120V/60Hz
Test Mode 1	

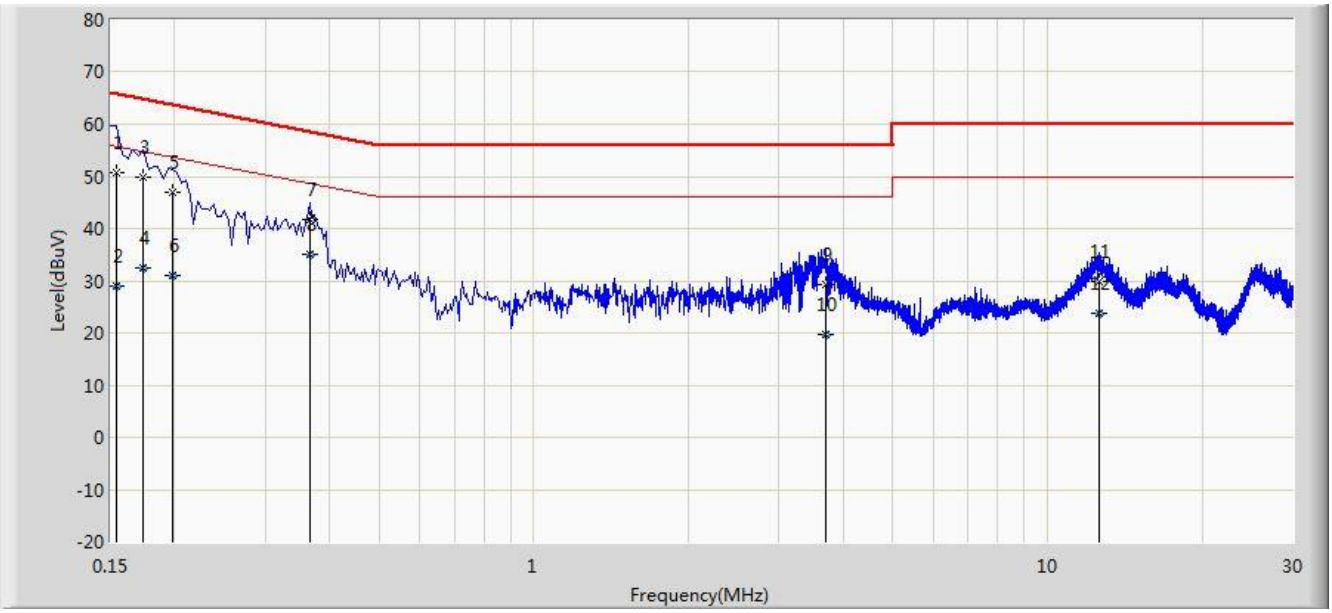


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1			0.150	51.277	40.134	-14.723	66.000	11.142	QP
2			0.150	28.693	17.551	-27.307	56.000	11.142	AV
3			0.190	43.316	33.288	-20.720	64.037	10.028	QP
4			0.190	23.970	13.943	-30.066	54.037	10.028	AV
5			0.318	40.150	30.099	-19.609	59.759	10.051	QP
6			0.318	25.774	15.723	-23.985	49.759	10.051	AV
7			0.370	42.721	32.631	-15.780	58.501	10.090	QP
8		*	0.370	34.809	24.719	-13.692	48.501	10.090	AV
9			3.610	29.655	19.730	-26.345	56.000	9.926	QP
10			3.610	20.370	10.445	-25.630	46.000	9.926	AV
11			12.210	30.087	19.964	-29.913	60.000	10.124	QP
12			12.210	24.466	14.343	-25.534	50.000	10.124	AV

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

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

Site: SR2	Time: 2018/07/25 - 10:07
Limit: FCC_Part15.207_CE_AC Power	Engineer: Kevin Ker
Probe: ENV216_101683_Filter On	Polarity: Line
EUT: ACCESS POINT(APIN0515)	Power: AC 120V/60Hz
Test Mode 1	

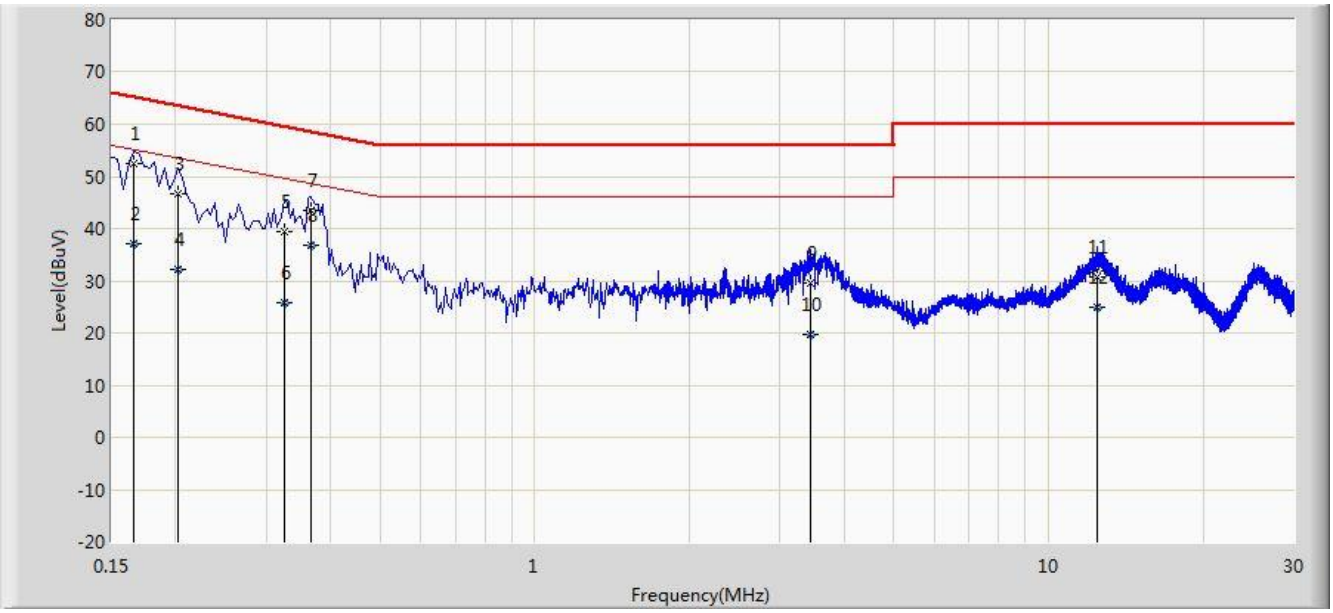


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1			0.154	50.582	39.842	-15.199	65.781	10.740	QP
2			0.154	28.967	18.227	-26.815	55.781	10.740	AV
3			0.174	49.973	39.905	-14.795	64.767	10.068	QP
4			0.174	32.555	22.487	-22.212	54.767	10.068	AV
5			0.198	47.045	37.040	-16.649	63.694	10.005	QP
6			0.198	30.949	20.944	-22.745	53.694	10.005	AV
7			0.366	41.682	31.624	-16.909	58.591	10.058	QP
8		*	0.366	35.214	25.157	-13.377	48.591	10.058	AV
9			3.694	29.372	19.430	-26.628	56.000	9.941	QP
10			3.694	19.607	9.665	-26.393	46.000	9.941	AV
11			12.602	29.911	19.849	-30.089	60.000	10.062	QP
12			12.602	23.723	13.661	-26.277	50.000	10.062	AV

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

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

Site: SR2	Time: 2018/07/25 - 10:10
Limit: FCC_Part15.207_CE_AC Power	Engineer: Kevin Ker
Probe: ENV216_101683_Filter On	Polarity: Neutral
EUT: ACCESS POINT(APIN0515)	Power: AC 120V/60Hz
Test Mode 1	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1			0.166	52.479	42.408	-12.679	65.158	10.071	QP
2			0.166	36.979	26.908	-18.179	55.158	10.071	AV
3			0.202	46.678	36.670	-16.850	63.528	10.008	QP
4			0.202	32.185	22.177	-21.343	53.528	10.008	AV
5			0.326	39.299	29.242	-20.254	59.552	10.057	QP
6			0.326	25.930	15.873	-23.623	49.552	10.057	AV
7			0.366	43.586	33.499	-15.006	58.591	10.087	QP
8		*	0.366	36.890	26.803	-11.701	48.591	10.087	AV
9			3.442	29.472	19.563	-26.528	56.000	9.910	QP
10			3.442	19.761	9.852	-26.239	46.000	9.910	AV
11			12.402	30.752	20.645	-29.248	60.000	10.108	QP
12			12.402	25.019	14.912	-24.981	50.000	10.108	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 **ACCESS POINT** is in compliance with Part 15C of the FCC Rules.

The End