MEASUREMENT REPORT

FCC PART 15.247/ IC RSS-247

FCC ID:	O3YARF
IC:	10744A-ARF
APPLICANT:	DewertOkin GmbH
Application Type:	Certification
Product:	Okin Commander
Model No.:	P1215
Brand Name:	Okin
FCC Classification:	Digital Transmission System (DTS)
FCC Rule Part(s):	Part 15 Subpart C (Section 15.247)
IC Rule(s)	RSS-247 Issue 2, RSS-GEN Issue 5
Test Procedure(s):	ANSI C63.10-2013, KDB 558074 D01v05
Test Date:	August 1, 2018 ~ September 27, 2018

Reviewed By: (Kevin Guo)

Approved By: (Robin Wu)

ACCREDITED
TESTING LABORATORY
CERTIFICATE #3628.01

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

Revision History

Report No.	Version	Description	Issue Date	Note
1806RSU033-U1	Rev. 01	Initial report	09-30-2018	Valid

CONTENTS

§2.1033 General Information

Applicant:	DewertOkin GmbH
Applicant Address:	Weststr. 1, 32278, Kirchlengern, Germany
Manufacturer:	DewertOkin GmbH
Manufacturer Address:	Weststr. 1, 32278, Kirchlengern, Germany
Test Site:	MRT Technology (Suzhou) Co., Ltd
Test Site Address:	D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China
FCC Registration No.:	893164
IC Registration No.:	11384A-1
Test Device Serial No.:	N/A ☐ Production ☒ Pre-Production ☐ Engineering

Test Facility / Accreditations

Measurements were performed at MRT Laboratory located in Tian'edang Rd., Suzhou, China.

- **MRT facility is a FCC registered (MRT Reg. No. 893164) test facility with the site description report on file and has met all the requirements specified in ANSI C63.4-2014.**
- **MRT facility is an IC registered (MRT Reg. No. 11384A-1) test laboratory with the site description on file at Industry Canada.**
- **MRT facility is a VCCI registered (R-20025, G-20034, C-20020, T-20020) test laboratory with the site description on file at VCCI Council.**
- **MRT Lab is accredited to ISO 17025 by the American Association for Laboratory Accreditation (A2LA) under the American Association for Laboratory Accreditation Program (A2LA Cert. No. 3628.01) in EMC, Telecommunications, Radio and SAR testing.**

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 Taihu Lake. These measurement tests were conducted at the MRT Technology (Suzhou) Co., Ltd. Facility located at D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China. The measurement facility compliant with the test site requirements specified in ANSI C63.4-2014.

2. PRODUCT INFORMATION

2.1. Feature of Equipment under Test

Product Name:	Okin Commander
Model No.:	P1215
Brand Name:	Okin
Wi-Fi Specification:	802.11 b/g/n
Bluetooth Specification:	Bluetooth v4.0 LE
Other RF Specification:	OKIN 2.4G
Working Voltage	AC 100-240V~50/60Hz

Note: The device contain Wi-Fi & Bluetooth module and OKIN 2.4GHz module, we assess OKIN 2.4G for all RF test since Wi-Fi & Bluetooth module has been certificated (FCC ID: 2AC7Z-ESPWROOM32).

2.2. Product Specification Subjective to this Report

RF Specification (2.4G)	
Frequency Range:	2402 ~ 2480 MHz
Type of modulation:	GFSK
Antenna Type:	PCB Antenna
Antenna Gain:	3.3dBi

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	--	--	--	--

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2.4. Description of Available Antennas

Antenna Name	Frequency Band (GHz)	TX Paths	Max Peak Gain (dBi)
PCB Antenna	2.4 ~ 2.5	1	1

2.5. Test Mode

Test Mode	Mode 1: Transmit by OKIN 2.4G

2.6. Test Software

The test utility software used during testing was provided from manufacturer.

2.7. Device 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, and detector = peak. 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:

Duty Cycle	
2440MHz (Duty cycle = 100%)	--
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2.8. Test Configuration

The device 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.

2.9. EMI Suppression Device(s)/Modifications

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

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.

RSP-100 Issue 11 Section 3

The manufacturer, importer or distributor shall meet the labelling requirements set out in this section for every unit:

(i) prior to marketing in Canada, for products manufactured in Canada

(ii) prior to importation into Canada, for imported products

For information regarding the e-labelling option, see Notice 2014–DRS1003. The label for the certified product represents the manufacturer's or importer's compliance with Innovation, Science and Economic Development Canada's (ISED) regulatory requirements.

Please see attachment for IC 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 of the device.

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 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."

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

Conclusion:

The device unit complies with the requirement of §15.203.

5. TEST EQUIPMENT CALIBRATION DATE

Conducted Emissions - SR2

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
EMI Test Receiver	R&S	ESR3	MRTSUE06185	1 year	2019/04/20
Two-Line V-Network	R&S	ENV216	MRTSUE06002	1 year	2019/06/15
Two-Line V-Network	R&S	ENV216	MRTSUE06003	1 year	2019/06/15
Temperature/Humidity Meter	Testo	608-H1	MRTSUE06404	1 year	2019/08/14
Shielding Anechoic Chamber	Mikebang	Chamber-SR2	MRTSUE06214	1 year	2019/05/10

Radiated Disturbance – AC1

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Spectrum Analyzer	Keysight	N9030B	MRTSUE06395	1 year	2018/09/30
EMI Test Receiver	R&S	ESR7	MRTSUE06001	1 year	2019/08/18
Loop Antenna	Schwarzbeck	FMZB 1519	MRTSUE06025	1 year	2018/11/20
Bilog Period Antenna	Schwarzbeck	VULB 9168	MRTSUE06172	1 year	2019/04/12
Horn Antenna	Schwarzbeck	BBHA9120D	MRTSUE06023	1 year	2018/10/21
Broadband Horn Antenna	Schwarzbeck	BBHA9170	MRTSUE06024	1 year	2018/12/14
Microwave System Amplifier	Agilent	83017A	MRTSUE06076	1 year	2018/11/17
Preamplifier	Schwarzbeck	BBV 9721	MRTSUE06121	1 year	2019/06/13
Temperature/Humidity Meter	Testo	608-H1	MRTSUE06403	1 year	2019/08/14
Anechoic Chamber	TDK	Chamber-AC1	MRTSUE06212	1 year	2019/05/02

Conducted Test Equipment - TR3

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Spectrum Analyzer	Agilent	N9020A	MRTSUE06106	1 year	2019/04/20
Power Meter	Agilent	U2021XA	MRTSUE06030	1 year	2018/12/06
Temperature&Humidity Chamber	BAOYT	BYH-150CL	MRTSUE06051	1 year	2018/12/06
Temperature/Humidity Meter	Testo	608-H1	MRTSUE06401	1 year	2018/11/21

Software	Version	Function
e3	V8.3.5	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 - TR3
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 0.78dB
Output Power - TR3
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 1.13dB
Power Spectrum Density - TR3
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 1.15dB
Occupied Bandwidth - TR3
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 0.28%

7. TEST RESULT

7.1. Summary

Company Name: **DewertOkin GmbH**
FCC ID: **O3YARF**
IC ID: **10744A-ARF**

FCC Section(s)	IC Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
15.247(a)(2)	RSS-247 [5.2]	6dB Bandwidth	≥ 500kHz	Conducted	Pass	Section 7.2
15.247(b)(3)	RSS-247 [5.4(4)]	Output Power	≤ 30dBm		Pass	Section 7.3
15.247(e)	RSS-247 [5.2]	Power Spectral Density	≤ 8dBm/3kHz		Pass	Section 7.4
15.247(d)	RSS-247 [5.5]	Band Edge / Out-of-Band Emissions	≤ 20dBc(Peak)		Pass	Section 7.5
15.205 15.209	RSS-247 [5.5]	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	RSS-Gen [8.8]	AC Conducted Emissions 150kHz - 30MHz	< FCC 15.207 limits	Line Conducted	Pass	Section 7.8

Notes:

1) 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.
2) The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.

7.2. 6dB Bandwidth Measurement

7.2.1.Test Limit

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

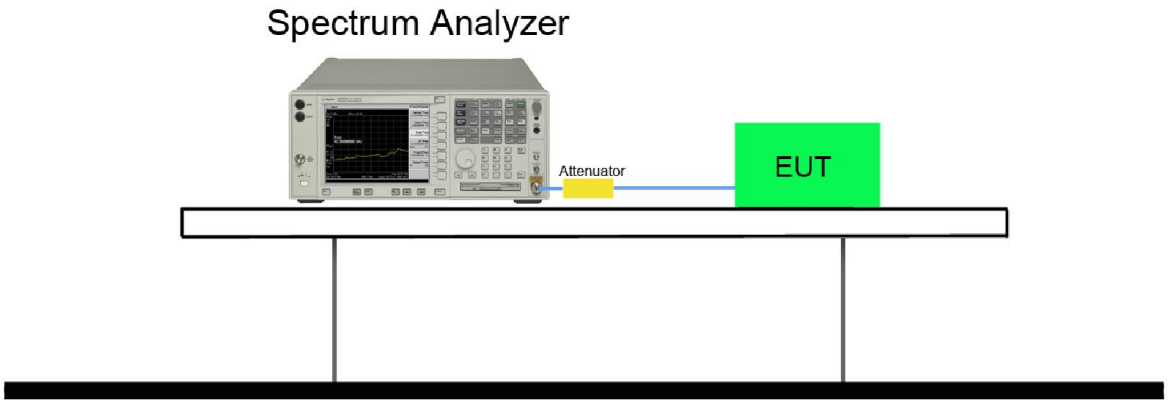
7.2.2.Test Procedure used

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



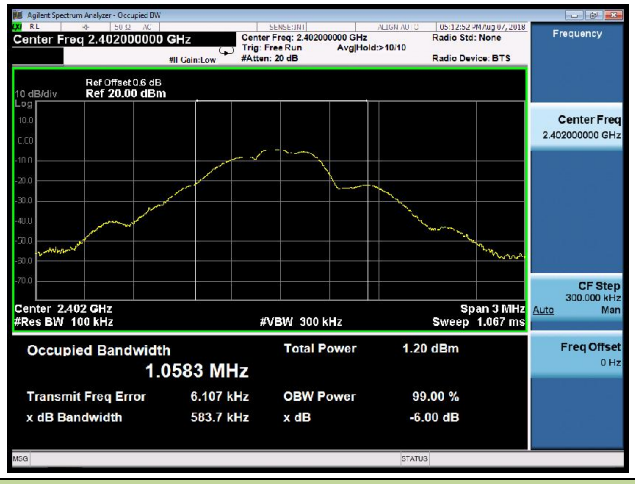
7.2.5.Test Result

Product	Okin Commander	Temperature	25°C
Test Engineer	Ternence Wang	Relative Humidity	52%
Test Site	TR3	Test Date	2018/08/07

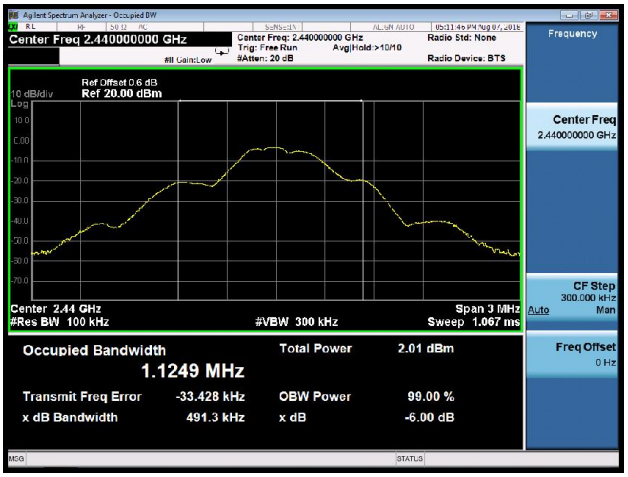
Test Mode	Channel No.	Frequency (MHz)	6dB Bandwidth (MHz)	Limit (MHz)	Result
OKIN 2.4G	00	2402	0.58	≥ 0.5	Pass
	19	2440	0.49	≥ 0.5	Pass
	39	2480	0.59	≥ 0.5	Pass

6dB Bandwidth

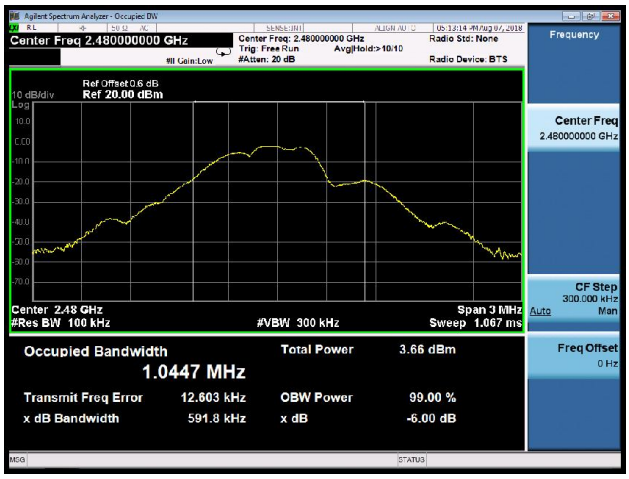
Channel 00 (2402MHz)



Channel 19 (2440MHz)



Channel 39 (2480MHz)



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7.3. Output Power Measurement

7.3.1.Test Limit

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

7.3.2.Test Procedure Used

ANSI C63.10 Section 11.9.1.3

ANSI C63.10 Section 11.9.2.3.2

7.3.3.Test Setting

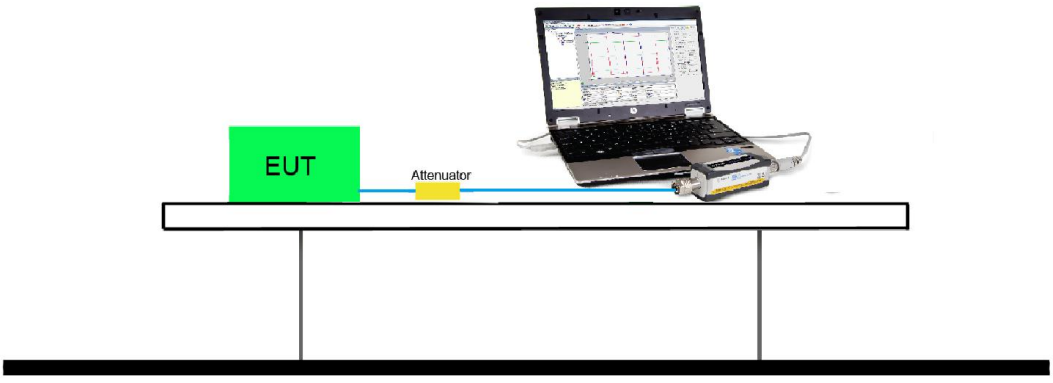
Method PKPM1 (Peak Power Measurement)

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.

Method AVGPM-G (Measurement using a gated RF average-reading power meter)

Measurements may be performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since this measurement is made only during the ON time of the transmitter, no duty cycle correction is required.

7.3.4.Test Setup



7.3.5.Test Result

Product	Okin Commander	Temperature	23°C
Test Engineer	Ternence Wang	Relative Humidity	51%
Test Site	TR3	Test Date	2018/08/07

Test Result of Peak Output Power

Test Mode	Channel No.	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Result
OKIN 2.4G	00	2402	-4.27	≤ 30	Pass
	19	2440	-4.30	≤ 30	Pass
	39	2480	-4.31	≤ 30	Pass

Note 1: EIRP (dBm) = Conducted Power (dBm) + Antenna Gain (dBi), Antenna Gain = 3.3 dBi.

Note 2: EIRP Limit (dBm) = 4 (W) = 36 (dBm)

Note 3: Max EIRP (dBm) = Max Conducted Power (dBm) + Antenna Gain (dBi)

= -4.27 dBm + 3.3 dBi

= -0.97 dBm < 36 dBm.

Test Result of Average Output Power (Reporting Only)

Test Mode	Channel No.	Frequency (MHz)	Conducted Power (dBm)	Limit (dBm)	Result
OKIN 2.4G	00	2402	-4.34	≤ 30	Pass
	19	2440	-4.36	≤ 30	Pass
	39	2480	-4.38	≤ 30	Pass

Note 1: EIRP (dBm) = Conducted Power (dBm) + Antenna Gain (dBi), Antenna Gain = 3.3 dBi.

Note 2: EIRP Limit (dBm) = 4 (W) = 36 (dBm)

Note 3: Max EIRP (dBm) = Max Conducted Power (dBm) + Antenna Gain (dBi)

= -4.34 dBm + 3.3 dBi

= -1.04 dBm < 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.

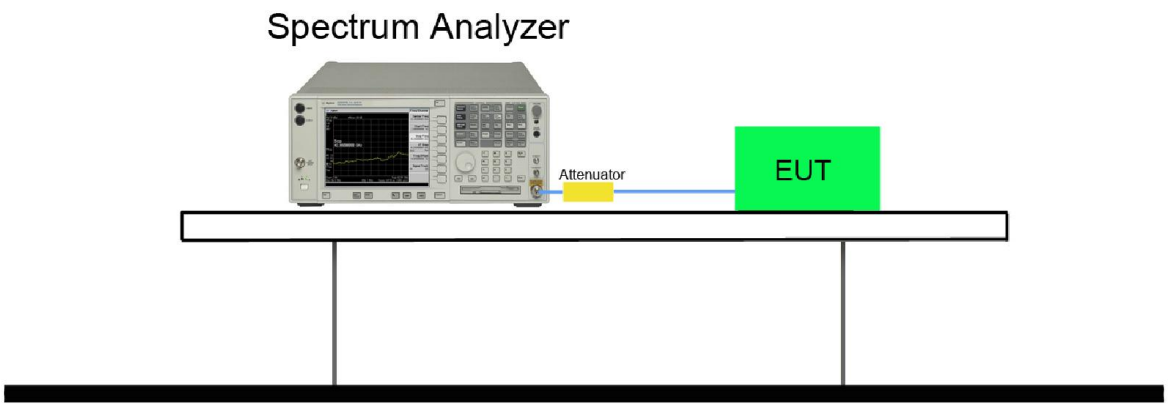
7.4.2.Test Procedure Used

ANSI C63.10 Section 11.10.6

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	Okin Commander	Temperature	23°C
Test Engineer	Ternence Wang	Relative Humidity	52%
Test Site	TR3	Test Date	2018/08/07

Test Mode	Channel No.	Frequency (MHz)	PSD Result (dBm / 3kHz)	Limit (dBm / 3kHz)	Result
OKIN 2.4G	00	2402	-5.32	≤ 8.00	Pass
	19	2440	-4.17	≤ 8.00	Pass
	39	2480	-3.73	≤ 8.00	Pass

Nordio PSD

Channel 00 (2402MHz)

Channel 19 (2440MHz)

Channel 39 (2480MHz)

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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

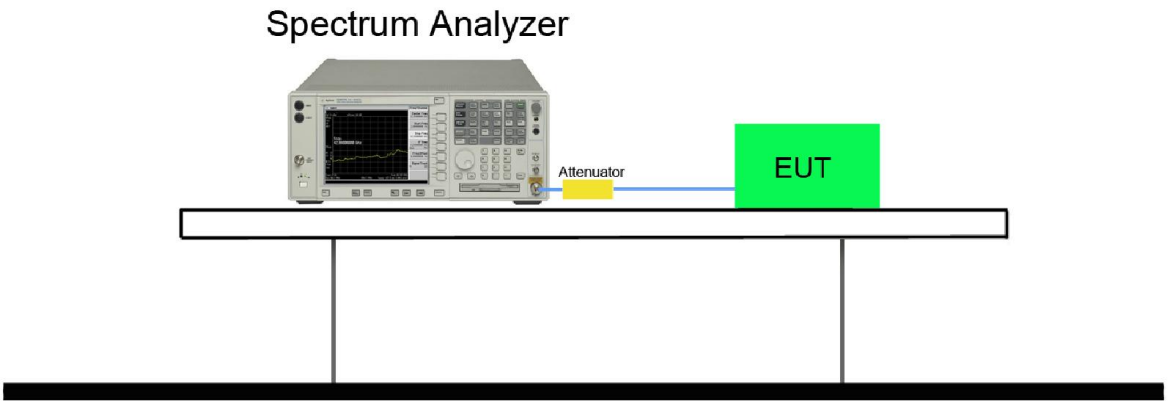
Emission level measurement

1. Set the center frequency and span to encompass frequency range to be measured
2. RBW = 100kHz
3. VBW = 300kHz
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	Okin Commander	Temperature	23°C
Test Engineer	Ternence Wang	Relative Humidity	52%
Test Site	TR3	Test Date	2018/08/07

Test Mode / Bandwidth	Channel No.	Frequency (MHz)	Limit	Result
OKIN 2.4G	00	2402	20dBc	Pass
	19	2440	20dBc	Pass
	39	2480	20dBc	Pass

Out-of-Band Emissions

Channel 00 (2402MHz)

100kHz PSD reference Level

Low Band Edge

Spurious Emission

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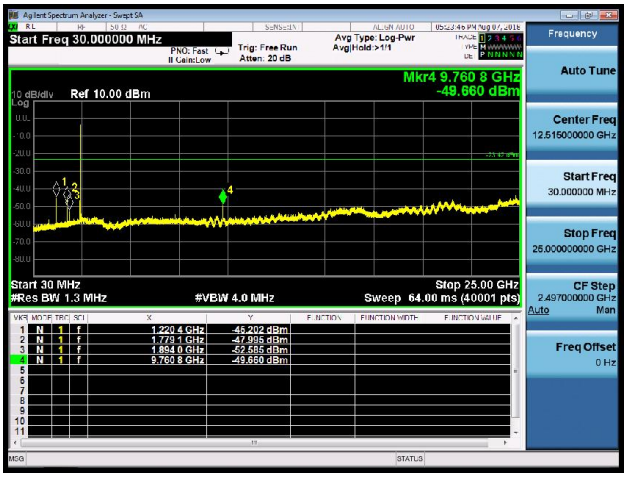
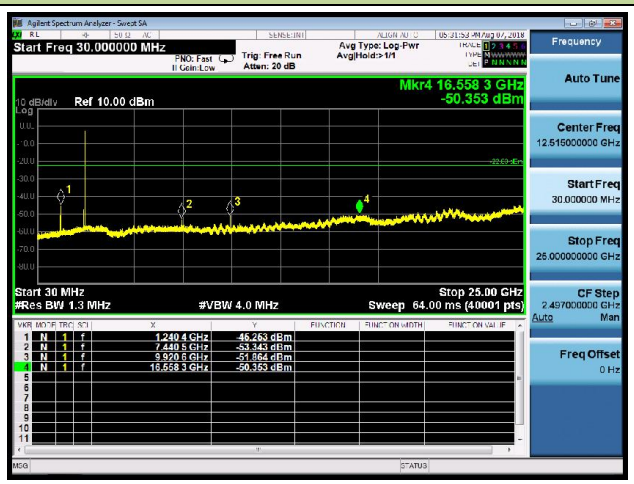
Channel 19 (2440MHz)	
100kHz PSD reference Level	**Spurious Emission**
	
Channel 39 (2480MHz)	
100kHz PSD reference Level	**High Band Edge**
	
Spurious Emission	**--**
	--

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

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 or average

5. Sweep time = auto couple

6. Trace was allowed to stabilize

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

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 (Method VB)

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

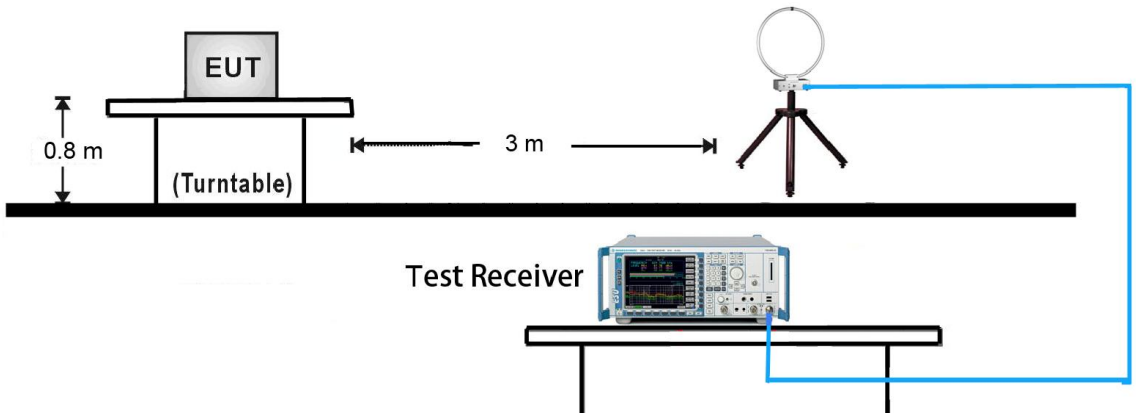
5. Sweep time = auto

6. Trace mode = max hold

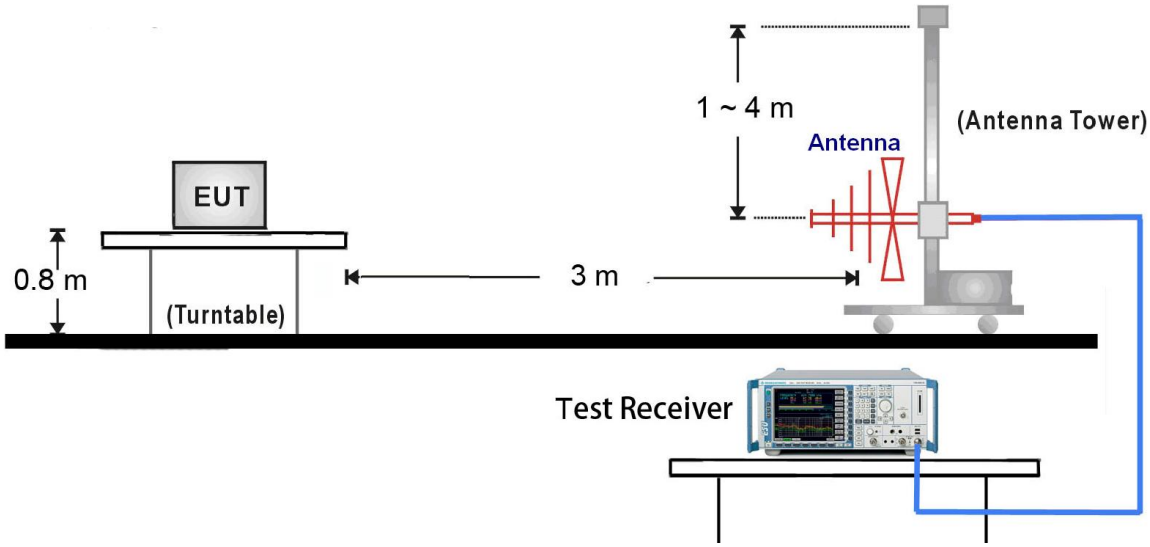
7. Trace was allowed to stabilize

7.6.4.Test Setup

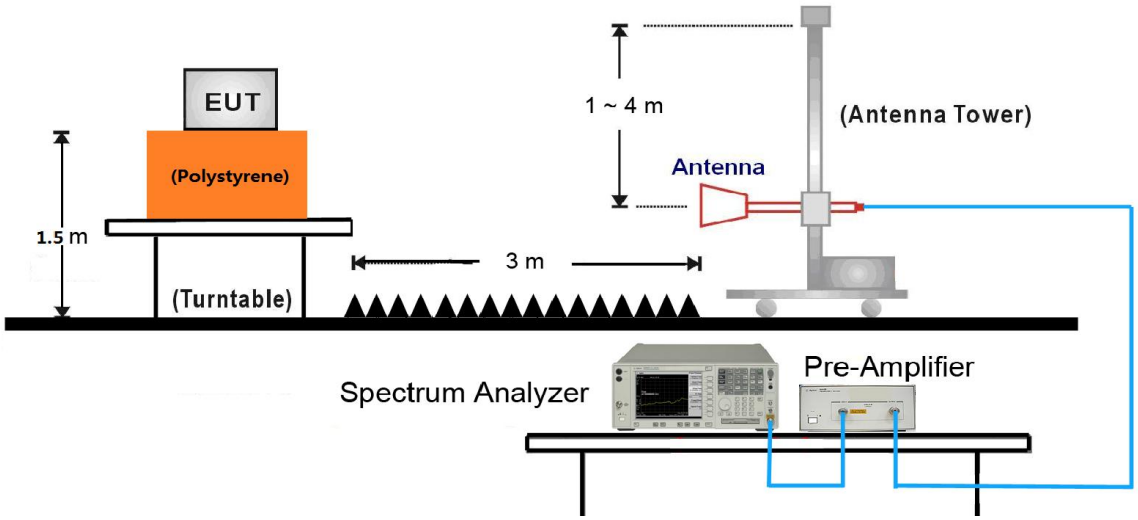
9kHz ~ 30MHz Test Setup:



30MHz ~ 1GHz Test Setup:



1GHz ~ 25GHz Test Setup:



7.6.5.Test Result

Product	Okin Commander	Temperature	25°C
Test Engineer	Cloud Guo	Relative Humidity	54%
Test Site	AC1	Test Date	2018/08/06
Test Mode:	OKIN 2.4G	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
*	7205.0	39.7	13.9	53.6	74.0	-20.4	Peak	Horizontal
*	9610.5	37.5	16.2	53.7	74.0	-20.3	Peak	Horizontal
	10970.5	30.8	20.0	50.8	74.0	-23.2	Peak	Horizontal
	12135.0	30.0	20.4	50.4	74.0	-23.6	Peak	Horizontal
*	7205.0	35.4	13.9	49.3	74.0	-24.7	Peak	Vertical
*	9610.5	35.3	16.2	51.5	74.0	-22.5	Peak	Vertical
	11361.5	28.4	20.6	49.0	74.0	-25.0	Peak	Vertical
	12560.0	29.7	20.0	49.7	74.0	-24.3	Peak	Vertical

Note 1: "*" is not in restricted band, its limit is 20dBc of the fundamental emission level (91.7dBμV/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	Okin Commander	Temperature	25°C
Test Engineer	Cloud Guo	Relative Humidity	54%
Test Site	AC1	Test Date	2018/08/06
Test Mode:	OKIN 2.4G	Test Channel:	19
Remark:	3. 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. 4. 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
*	7120.0	31.2	13.6	44.8	74.0	-29.2	Peak	Horizontal
*	7213.5	31.5	13.9	45.4	74.0	-28.6	Peak	Horizontal
	7320.0	35.9	13.8	49.7	74.0	-24.3	Peak	Horizontal
	11123.5	28.6	20.1	48.7	74.0	-25.3	Peak	Horizontal
*	7077.5	31.9	13.1	45.0	74.0	-29.0	Peak	Vertical
*	7145.5	31.7	13.7	45.4	74.0	-28.6	Peak	Vertical
	7324.0	38.0	13.8	51.8	74.0	-22.2	Peak	Vertical
	8327.0	31.2	13.9	45.1	74.0	-28.9	Peak	Vertical

Note 1: "*" is not in restricted band, its limit is 20dBc of the fundamental emission level (91.2dBμV/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	Okin Commander	Temperature	25°C
Test Engineer	Cloud Guo	Relative Humidity	54%
Test Site	AC1	Test Date	2018/08/06
Test Mode:	OKIN 2.4G	Test Channel:	39
Remark:	5. 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. 6. 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
*	8658.5	30.3	14.4	44.7	74.0	-29.3	Peak	Horizontal
*	9687.0	30.6	16.4	47.0	74.0	-27.0	Peak	Horizontal
	11098.0	29.0	20.0	49.0	74.0	-25.0	Peak	Horizontal
	12211.5	30.2	20.3	50.5	74.0	-23.5	Peak	Horizontal
*	8743.5	31.4	14.7	46.1	74.0	-27.9	Peak	Vertical
*	9865.5	30.3	17.3	47.6	74.0	-26.4	Peak	Vertical
	11089.5	29.4	20.1	49.5	74.0	-24.5	Peak	Vertical
	11769.5	28.7	20.5	49.2	74.0	-24.8	Peak	Vertical

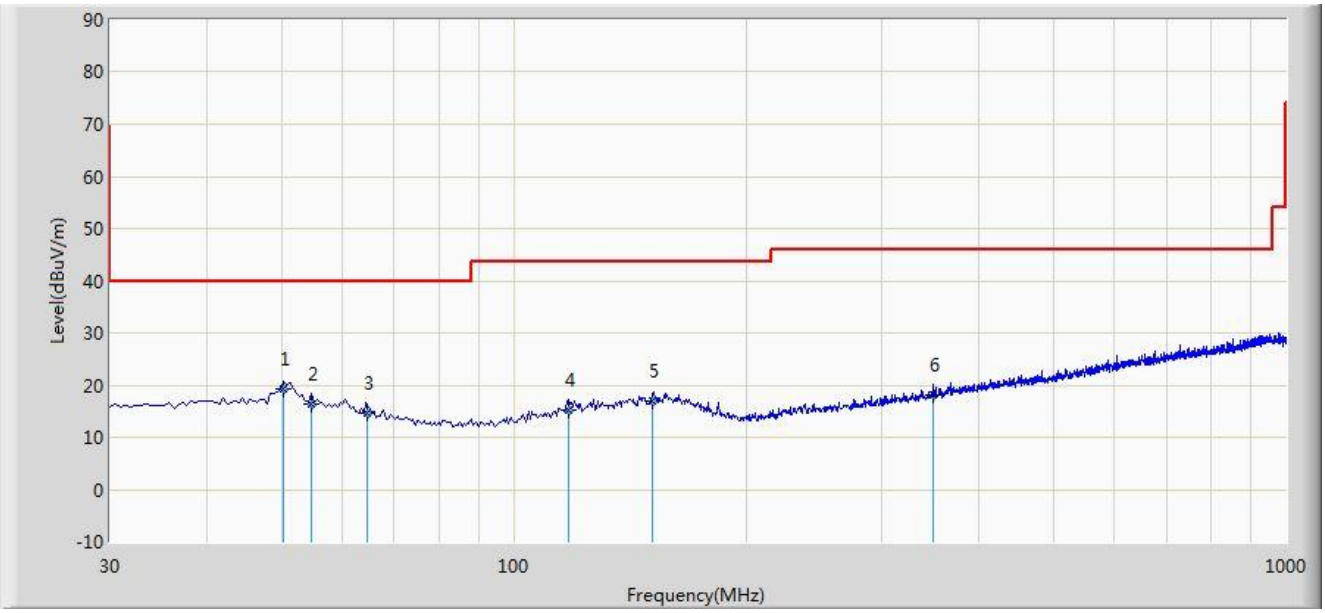
Note 1: “*” is not in restricted band, its limit is 20dBc of the fundamental emission level (90.8dBμV/m) or 15.209 which is higher.

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: 2018/08/06 - 15:22
Limit: FCC_Part15.209_RE(3m)	Engineer: Cloud Guo
Probe: VULB 9168 _20-2000MHz	Polarity: Horizontal
EUT: Okin Commander	Power: AC 120V/60Hz
Test Mode: There is the worst case within frequency range 30MHz~1GHz.	



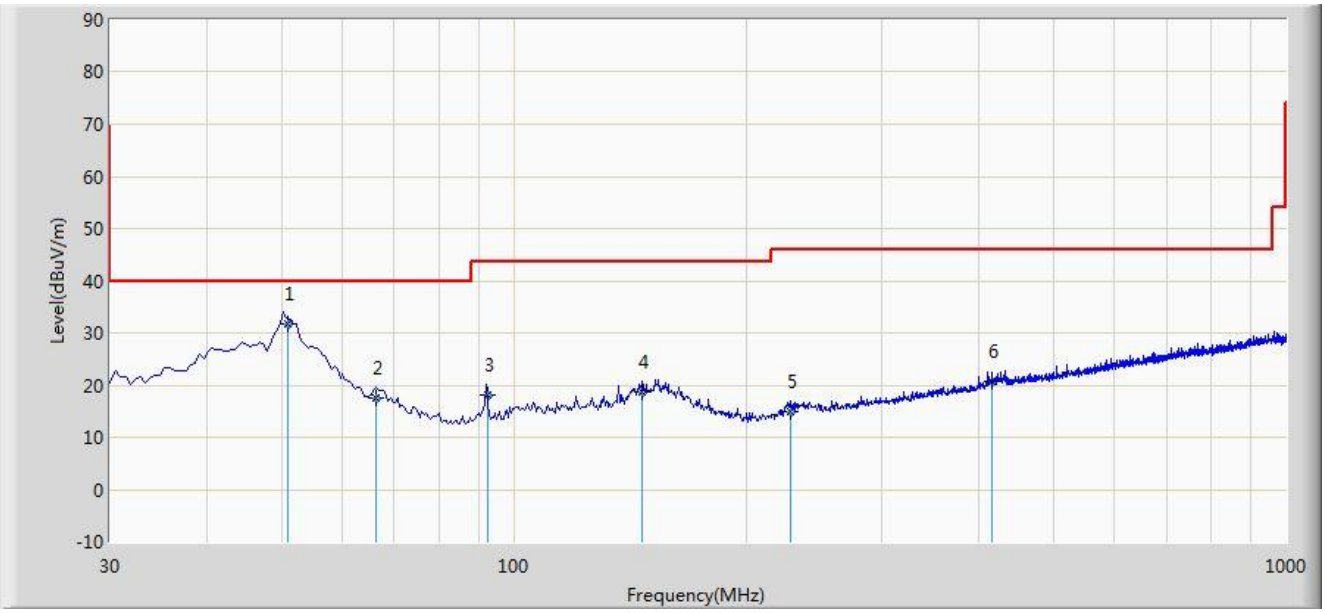
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	50.370	19.142	4.985	-20.858	40.000	14.157	QP
2			54.754	16.481	2.636	-23.519	40.000	13.845	QP
3			64.545	14.634	2.021	-25.366	40.000	12.613	QP
4			117.785	15.234	2.248	-28.266	43.500	12.986	QP
5			151.454	16.831	1.545	-26.669	43.500	15.285	QP
6			349.551	18.201	2.658	-27.799	46.000	15.543	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: 2018/08/06 - 15:26
Limit: FCC_Part15.209_RE(3m)	Engineer: Cloud Guo
Probe: VULB 9168 _20-2000MHz	Polarity: Vertical
EUT: Okin Commander	Power: AC 120V/60Hz
Test Mode: There is the worst case within frequency range 30MHz~1GHz.	



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			50.883	31.708	17.584	-8.292	40.000	14.124	QP
2			66.375	17.629	5.358	-22.371	40.000	12.271	QP
3			92.518	18.050	7.548	-25.450	43.500	10.502	QP
4			146.584	18.595	3.548	-24.905	43.500	15.047	QP
5			227.880	15.065	2.587	-30.935	46.000	12.478	QP
6		*	416.545	20.590	3.546	-25.410	46.000	17.045	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

For RSS-Gen Section 8.10 requirement:

Radiated emissions which fall in the restricted bands, as defined in Section 8.10 of RSS-Gen, must also comply with the radiated emission limits specified in Section 8.9.

Frequency (MHz)	Frequency (MHz)	Frequency (GHz)
0.090 - 0.110	149.9 -150.5	9.0 - 9.2
0.495 -0.505	156.52475 - 156.525225	9.3 - 9.5
2.1735 - 2.1905	156.7 - 156.9	10.6 - 12.7
3.020 - 3.026	162.0125 - 167.17	13.25 - 13.4
4.125 - 4.128	167.72 - 173.2	14.47 - 14.5
4.17725 - 4.17775	240 - 285	15.35 - 16.2
4.20725 - 4.20775	322 - 335.4	17.7 - 21.4
5.677 - 5.683	399.9 - 410	22.01 - 23.12
6.215 - 6.218	608 - 614	23.6 - 24.0
6.26775 - 6.26825	960 - 1427	31.2 - 31.8
6.31175 - 6.31225	1435 - 1626.5	36.43 - 36.5
8.291 - 8.294	1645.5 - 1646.5	Above 38.6
8.362 - 8.366	1660 - 1710	--
8.37625 - 8.38675	1718.8 -1722.2	
8.41425 - 8.41475	2200 - 2300	
12.29 - 12.293	2310 -2390	
12.51975 - 12.52025	2483.5 - 2500	
12.57675 - 12.57725	2655 - 2900	
13.36 -13.41	3260 - 3267	
16.42 - 16.423	3332 -3339	
16.69475 - 16.69525	334.5 - 3358	
16.80425 - 16.80475	3500 - 4400	
25.5 - 25.67	4500 - 5150	
37.5 - 38.25	5350 - 5460	
73 - 74.6	7250 - 7750	
74.8 - 75.2	8025 - 8500	
108 - 138	--	

All out of band emissions appearing in a restricted band as specified in Section 8.10 of the RSS-Gen must not exceed the limits shown in Table per Section 8.9.

RSS-Gen Section 8.9			
Frequency [MHz]	Magnetic field strength (H-Field) [uA/m]	Field Strength [uV/m]	Measured Distance [Meters]
0.009 - 0.490	6.37/F(F in kHz)	N/A	300
0.490 - 1.705	63.7/F(F in kHz)	N/A	30
1.705 - 30	0.08	N/A	30
30 - 88	N/A	100	3
88 - 216	N/A	150	3
216 - 960	N/A	200	3
Above 960	N/A	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 = as specified in Table 1
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

. 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.

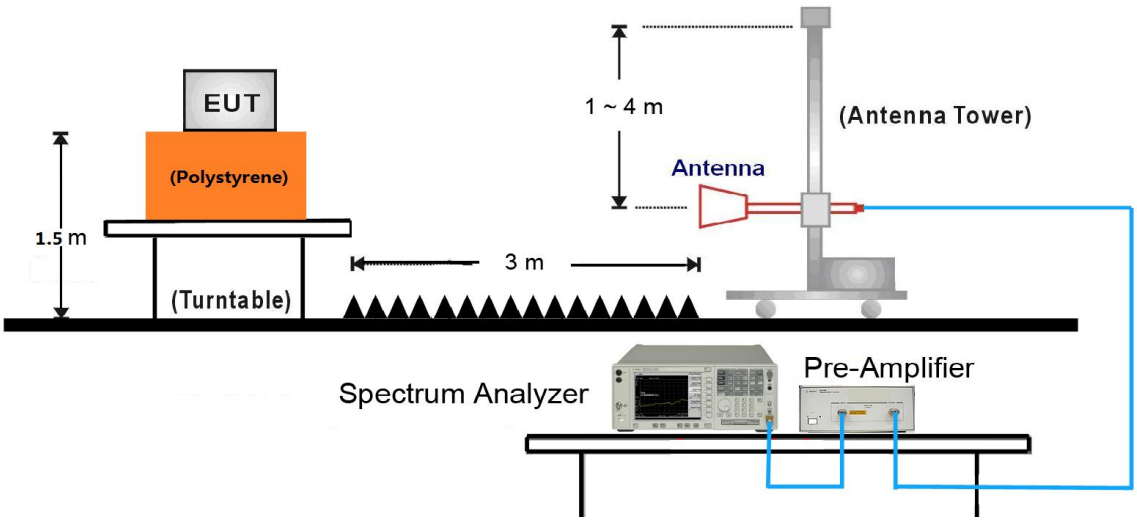
4. Detector = Peak

5. Sweep time = auto

6. Trace mode = max hold

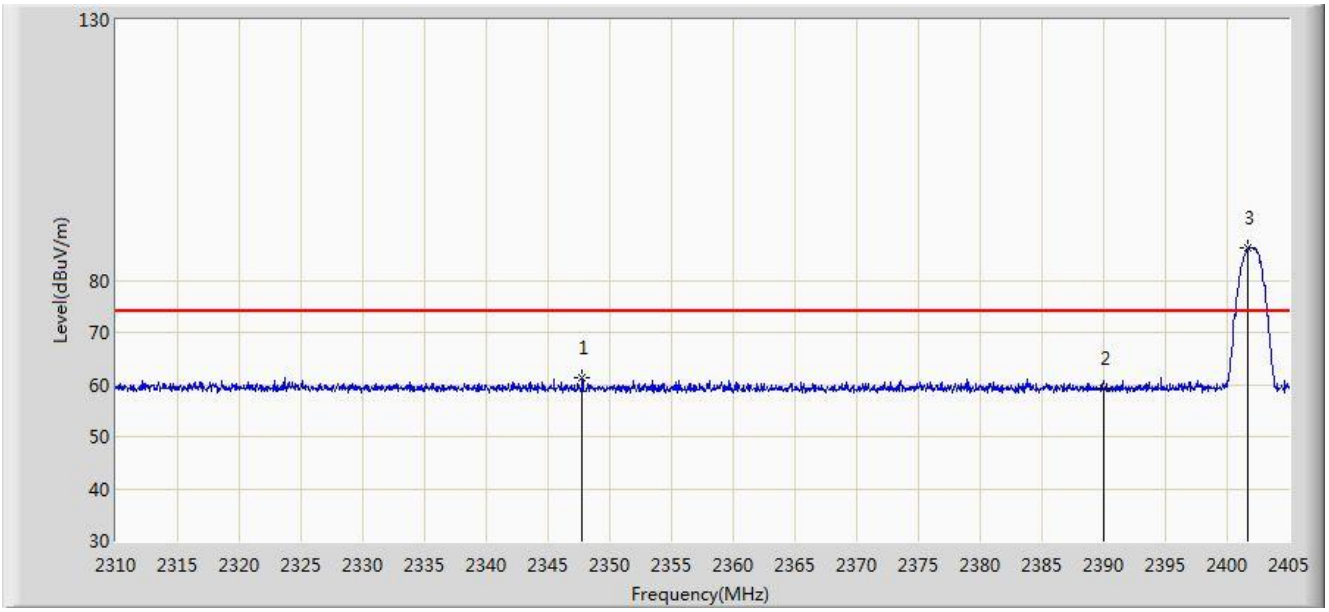
7. Trace was allowed to stabilize

7.7.4.Test Setup



7.7.5.Test Result

Site: AC1	Time: 2018/08/01 - 11:01
Limit: FCC_Part15.209_RE(3m)	Engineer: Cat Hu
Probe: BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Okin Commander	Power: AC 120V/60Hz
Test Mode: Transmit by OKIN 2.4G at channel 2402MHz	

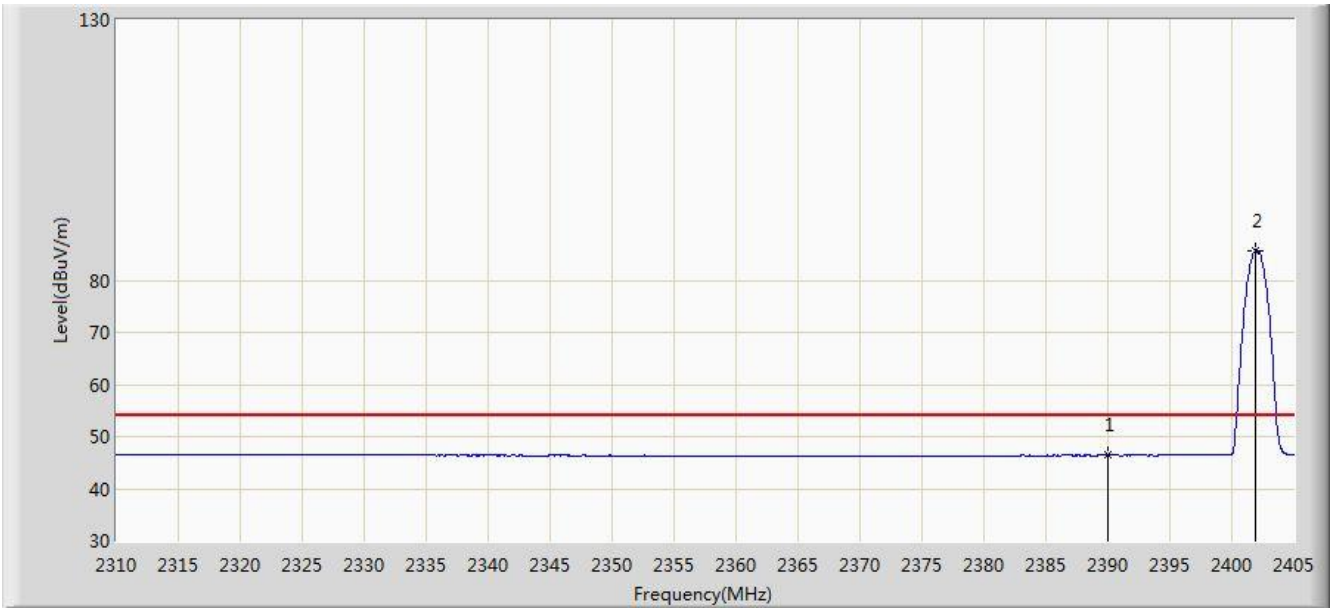


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2347.762	61.273	28.616	-12.727	74.000	32.657	PK
2			2390.000	59.150	26.575	-14.850	74.000	32.575	PK
3			2401.675	86.087	53.528	N/A	N/A	32.559	PK

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

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

Site: AC1	Time: 2018/08/01 - 11:03
Limit: FCC_Part15.209_RE(3m)	Engineer: Cat Hu
Probe: BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Okin Commander	Power: AC 120V/60Hz
Test Mode: Transmit by OKIN 2.4G at channel 2402MHz	

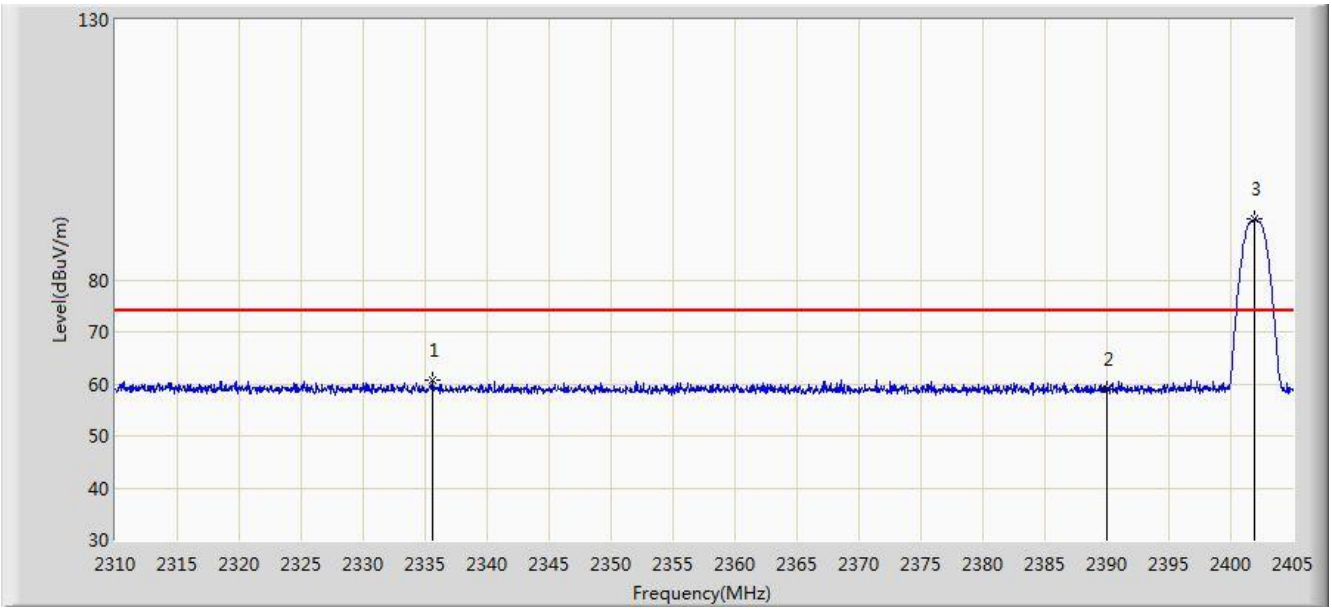


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2390.000	46.399	13.824	-7.601	54.000	32.575	AV
2			2401.913	85.777	53.218	N/A	N/A	32.559	AV

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

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

Site: AC1	Time: 2018/08/01 - 11:03
Limit: FCC_Part15.209_RE(3m)	Engineer: Cat Hu
Probe: BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Okin Commander	Power: AC 120V/60Hz
Test Mode: Transmit by OKIN 2.4G at channel 2402MHz	

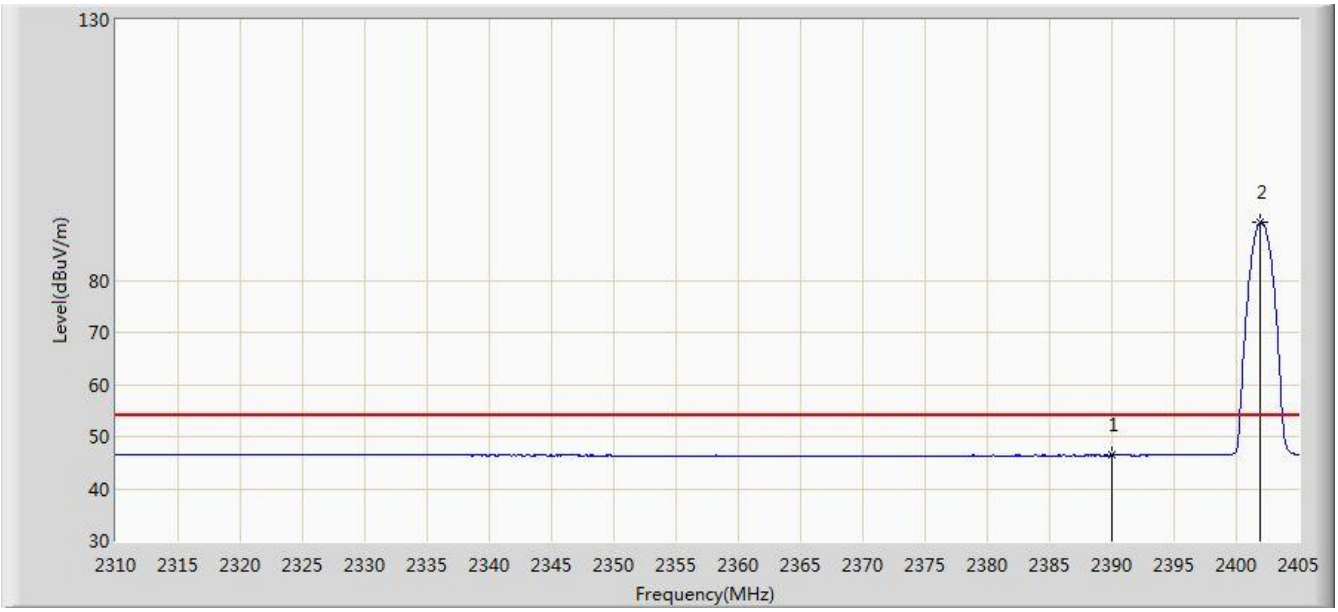


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2335.555	60.581	27.877	-13.419	74.000	32.704	PK
2			2390.000	59.052	26.477	-14.948	74.000	32.575	PK
3			2401.960	91.681	59.122	N/A	N/A	32.559	PK

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

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

Site: AC1	Time: 2018/08/01 - 11:04
Limit: FCC_Part15.209_RE(3m)	Engineer: Cat Hu
Probe: BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Okin Commander	Power: AC 120V/60Hz
Test Mode: Transmit by OKIN 2.4G at channel 2402MHz	

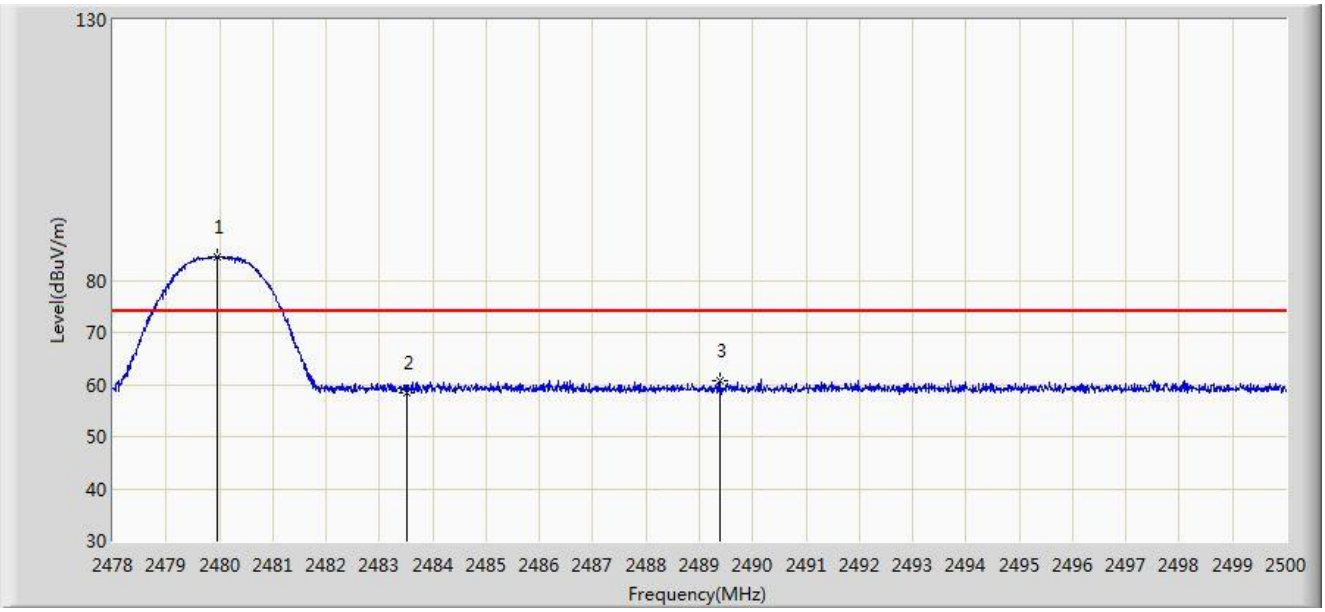


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2390.000	46.397	13.822	-7.603	54.000	32.575	AV
2			2401.913	91.066	58.507	N/A	N/A	32.559	AV

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

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

Site: AC1	Time: 2018/08/01 - 11:06
Limit: FCC_Part15.209_RE(3m)	Engineer: Cat Hu
Probe: BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Okin Commander	Power: AC 120V/60Hz
Test Mode: Transmit by OKIN 2.4G at channel 2480MHz	

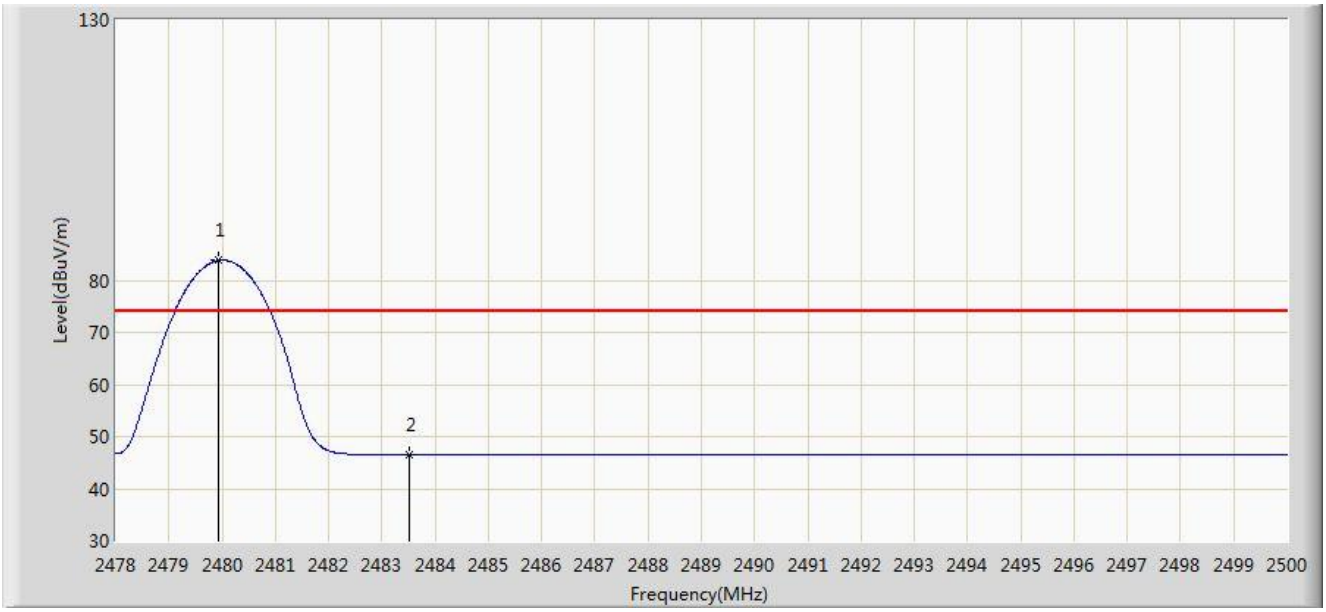


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2479.969	84.426	51.839	N/A	N/A	32.587	PK
2			2483.500	58.443	25.847	-15.557	74.000	32.596	PK
3			2489.374	60.663	28.052	-13.337	74.000	32.610	PK

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

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

Site: AC1	Time: 2018/08/01 - 11:08
Limit: FCC_Part15.209_RE(3m)	Engineer: Cat Hu
Probe: BBHA9120D_1-18GHz	Polarity: Horizontal
EUT: Okin Commander	Power: AC 120V/60Hz
Test Mode: Transmit by OKIN 2.4G at channel 2480MHz	

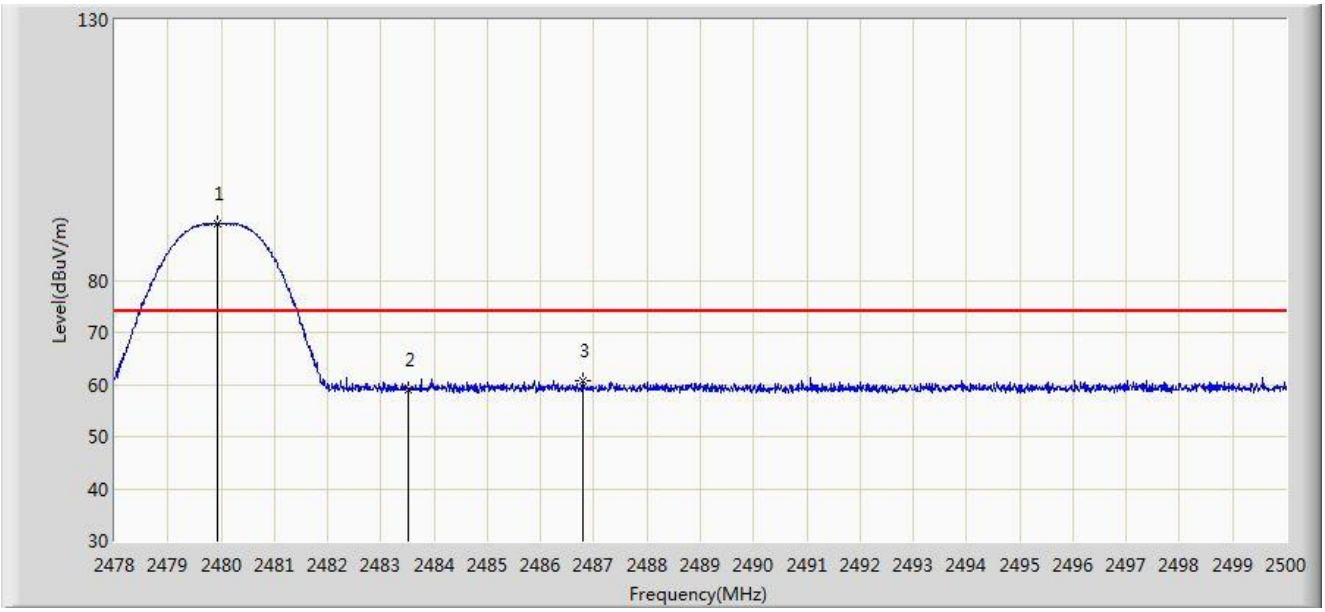


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2479.936	83.833	51.246	N/A	N/A	32.587	PK
2			2483.500	46.511	13.915	-27.489	74.000	32.596	PK

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

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

Site: AC1	Time: 2018/08/01 - 11:09
Limit: FCC_Part15.209_RE(3m)	Engineer: Cat Hu
Probe: BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Okin Commander	Power: AC 120V/60Hz
Test Mode: Transmit by OKIN 2.4G at channel 2480MHz	

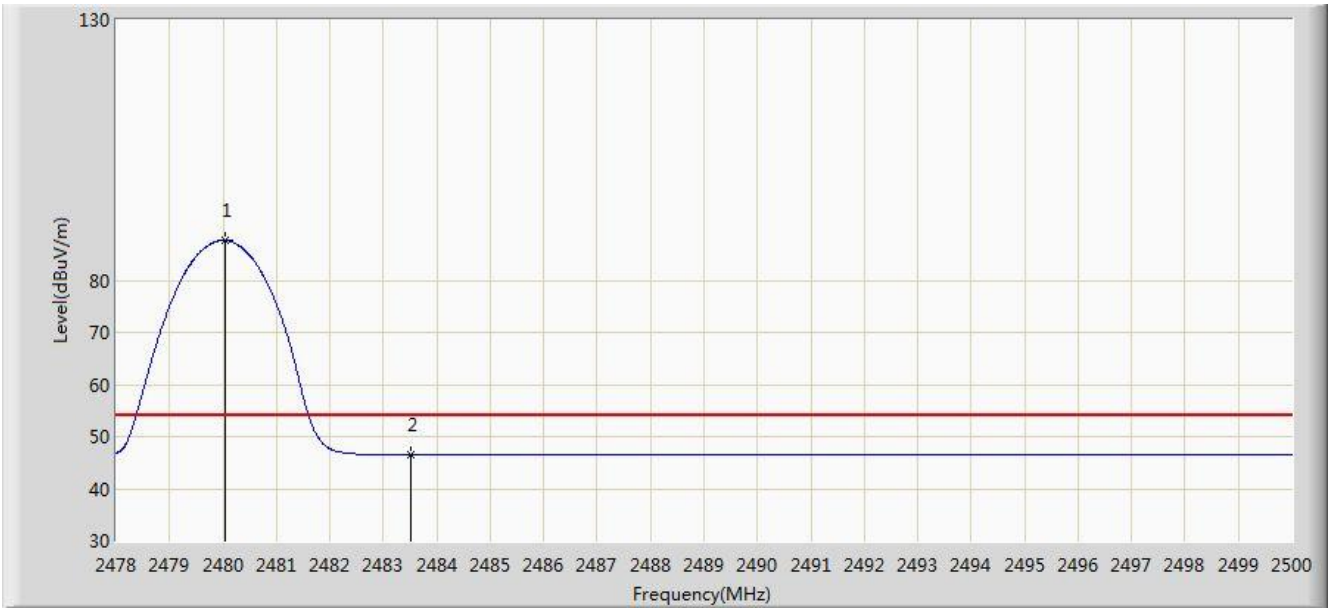


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			2479.936	90.845	58.258	N/A	N/A	32.587	PK
2			2483.500	58.959	26.363	-15.041	74.000	32.596	PK
3			2486.789	60.611	28.007	-13.389	74.000	32.604	PK

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

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

Site: AC1	Time: 2018/08/01 - 11:11
Limit: FCC_Part15.209_RE(3m)	Engineer: Cat Hu
Probe: BBHA9120D_1-18GHz	Polarity: Vertical
EUT: Okin Commander	Power: AC 120V/60Hz
Test Mode: Transmit by OKIN 2.4G 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	87.626	55.039	N/A	N/A	32.587	AV
2			2483.500	46.517	13.921	-7.483	54.000	32.596	AV

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

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

7.8. AC Conducted Emissions Measurement

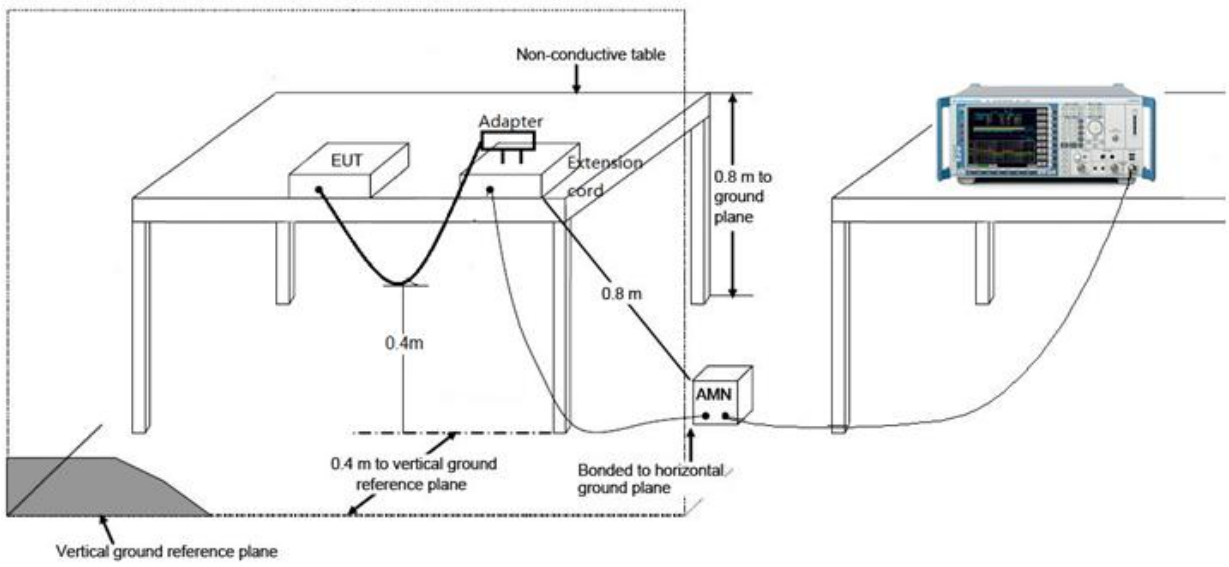
7.8.1.Test Limit

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.

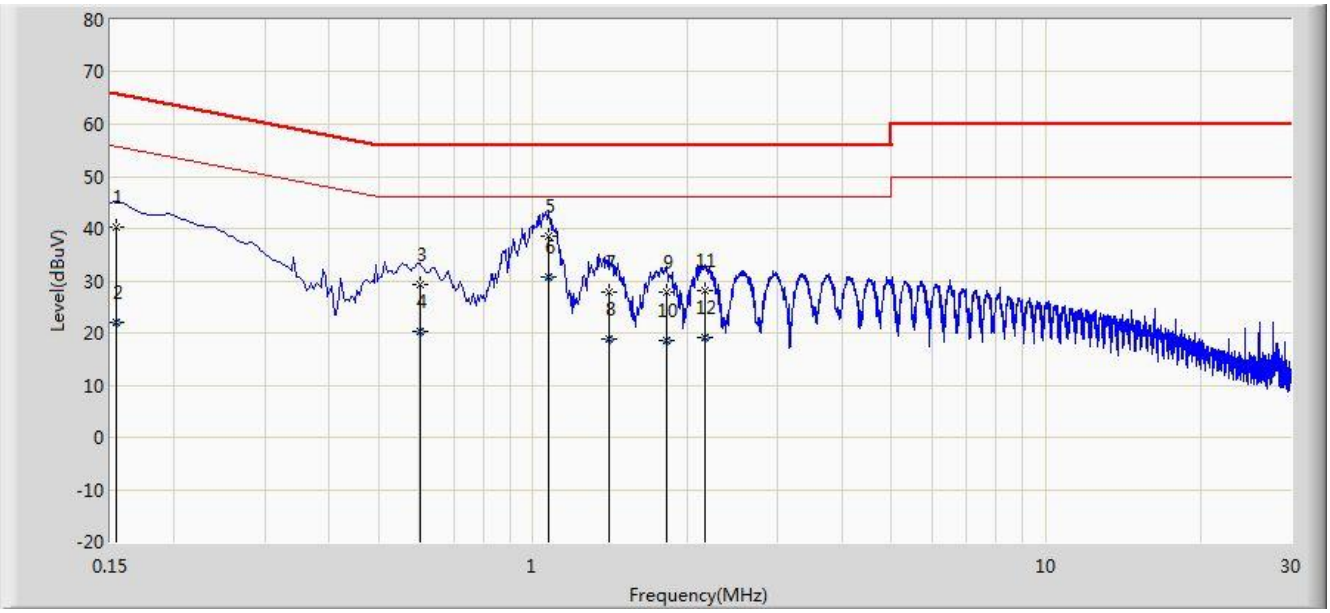
Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.

7.8.2.Test Setup



7.8.3.Test Result

Site: SR2	Time: 2018/08/15 - 16:39
Limit: FCC_Part15.207_CE_AC Power	Engineer: Messiah Li
Probe: ENV216_101683_Filter On	Polarity: Line
EUT: Okin Commander	Power: AC 120V/60Hz
Test Mode 1	

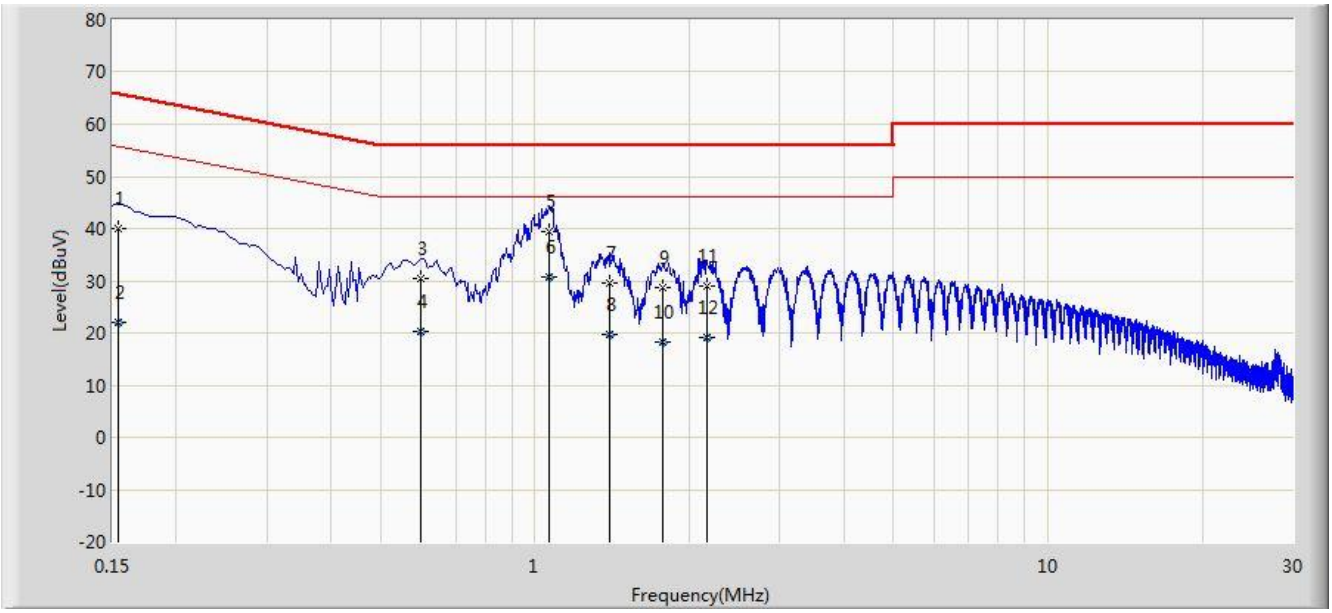


No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Factor (dB)	Type
1			0.154	40.347	29.607	-25.435	65.781	10.740	QP
2			0.154	22.158	11.418	-33.624	55.781	10.740	AV
3			0.602	29.350	19.236	-26.650	56.000	10.114	QP
4			0.602	20.231	10.117	-25.769	46.000	10.114	AV
5			1.070	38.676	28.770	-17.324	56.000	9.906	QP
6		*	1.070	30.831	20.926	-15.169	46.000	9.906	AV
7			1.406	27.892	17.999	-28.108	56.000	9.892	QP
8			1.406	18.927	9.034	-27.073	46.000	9.892	AV
9			1.818	27.957	18.080	-28.043	56.000	9.877	QP
10			1.818	18.570	8.693	-27.430	46.000	9.877	AV
11			2.158	28.093	18.226	-27.907	56.000	9.867	QP
12			2.158	19.038	9.172	-26.962	46.000	9.867	AV

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

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

Site: SR2	Time: 2018/08/15 - 16:44
Limit: FCC_Part15.207_CE_AC Power	Engineer: Messiah Li
Probe: ENV216_101683_Filter On	Polarity: Neutral
EUT: Okin Commander	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	39.956	29.240	-25.826	65.781	10.716	QP
2			0.154	22.087	11.371	-33.695	55.781	10.716	AV
3			0.598	30.300	20.168	-25.700	56.000	10.132	QP
4			0.598	20.357	10.225	-25.643	46.000	10.132	AV
5			1.062	39.466	29.559	-16.534	56.000	9.907	QP
6		*	1.062	30.854	20.947	-15.146	46.000	9.907	AV
7			1.394	29.657	19.763	-26.343	56.000	9.894	QP
8			1.394	19.830	9.936	-26.170	46.000	9.894	AV
9			1.774	28.801	18.920	-27.199	56.000	9.881	QP
10			1.774	18.335	8.454	-27.665	46.000	9.881	AV
11			2.166	29.090	19.221	-26.910	56.000	9.869	QP
12			2.166	19.128	9.259	-26.872	46.000	9.869	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 device is in compliance with Part 15C of the FCC Rules and ISED Rules.

The End

Appendix A – Test Setup Photograph

Refer to “1806RSU033-UT” file.

Appendix B – EUT Photograph

Refer to “1806RSU033-UE” file.