

# TEST REPORT

For

**JOYA TOUCH A6**

**Model Number: JTAWB GUN, JTAWB HH**

**FCC ID: U4GJTAWB**

**IC: 3862E-JTAWB**

**Report Number : WT178004081**

Test Laboratory	:	Shenzhen Academy of Metrology and Quality Inspection
		National Digital Electronic Product Testing Center
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## Test report declaration

Applicant : Datalogic S.r.l.  
Address : Via S. Vitalino 13, Calderara di Reno, Italy 40012  
Manufacturer : Datalogic S.r.l.  
Address : Via S. Vitalino 13, Calderara di Reno, Italy 40012  
EUT Description : JOYA TOUCH A6  
Model No(HVIN) : JTAWB GUN, JTAWB HH  
Trade mark : /  
PMN : JOYA TOUCH A6  
FCC ID : U4GJTAWB  
IC : 3862E-JTAWB

Test Standards:

**FCC Part 15.209, 15.247(2016)**

**RSS-247 Issue 2(2017-02)**

The EUT described above is tested by Shenzhen Academy of Metrology and Quality Inspection EMC Laboratory to determine the maximum emissions from the EUT. Shenzhen Academy of Metrology and Quality Inspection EMC Laboratory is assumed full responsibility for the accuracy of the test results. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with FCC Rules 15.209, 15.247 and IC Rules RSS-247 Issue 2(2017-02).

The test report is valid for above tested sample only and shall not be reproduced in part without written approval of the laboratory.

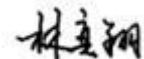
Project  
Engineer:



(Chen Silin 陈司林)

Date: Jul.12, 2017

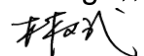
Checked by:



(Lin Yixiang 林奕翔)

Date: Jul.12, 2017

Approved by:



Date: Jul.12, 2017

## TABLE OF CONTENTS

<b>TEST REPORT DECLARATION.....</b>	<b>2</b>
<b>1. TEST RESULTS SUMMARY.....</b>	<b>4</b>
<b>2. GENERAL INFORMATION.....</b>	<b>5</b>
2.1. Report information.....	5
2.2. Laboratory Accreditation and Relationship to Customer .....	5
2.3. Measurement Uncertainty .....	6
<b>3. PRODUCT DESCRIPTION.....</b>	<b>7</b>
3.1. EUT Description .....	7
3.2. Related Submittal(s) / Grant (s) .....	7
3.3. Operating Condition of EUT .....	7
3.4. Support Equipment List.....	7
3.5. Test Conditions.....	7
3.6. Special Accessories.....	8
3.7. Equipment Modifications.....	8
3.8. Parameters of Test Software Setting .....	8
<b>4. TEST EQUIPMENT USED.....</b>	<b>9</b>
<b>5. RADIATED DISTURBANCE TEST .....</b>	<b>10</b>
5.1. Test Standard and Limit .....	10
5.2. Test Procedure .....	11
5.3. Test Arrangement .....	15
5.4. Test Data .....	15
<b>6. PEAK POWER .....</b>	<b>37</b>
6.1. LIMITS OF Peak Power .....	37
6.2. TEST PROCEDURE.....	37
6.3. TEST SETUP .....	37
6.4. TEST DATA.....	37
<b>7. BAND EDGES MEASUREMENT .....</b>	<b>39</b>
7.1. Limits of Band Edges Measurement .....	39

7.2.	TEST PROCEDURE.....	39
7.3.	Test Results .....	39

## 1. TEST RESULTS SUMMARY

Table 1 Test Results Summary

Test Items	FCC Rules	IC Rules	Test Results
Peak output power	15.247 (b) (1)	RSS-247 Clause 5.4(2)	Pass
Band edge compliance measurement	15.247 (d)	RSS-247 Clause 5.5	Pass
Radiated spurious emission & Radiated restricted band measurement	15.247 (d) / 15.209	RSS-247 Clause 5.5	Pass

Remark: "N/A" means "Not applicable."

## **2. GENERAL INFORMATION**

### **2.1. Report information**

This report is not a certificate of quality; it only applies to the sample of the specific product/equipment given at the time of its testing. The results are not used to indicate or imply that they are application to the similar items. In addition, such results must not be used to indicate or imply that SMQ approves recommends or endorses the manufacture, supplier or use of such product/equipment, or that SMQ in any way guarantees the later performance of the product/equipment.

The sample/s mentioned in this report is/are supplied by Applicant, SMQ therefore assumes no responsibility for the accuracy of information on the brand name, model number, origin of manufacture or any information supplied.

Additional copies of the report are available to the Applicant at an additional fee. No third part can obtain a copy of this report through SMQ, unless the applicant has authorized SMQ in writing to do so.

### **2.2. Laboratory Accreditation and Relationship to Customer**

The testing report were performed by the Shenzhen Academy of Metrology and quality Inspection EMC Laboratory (Guangdong EMC compliance testing center), in their facilities located at NETC Building, No.4 Tongfa Rd., Xili, Nanshan, Shenzhen, China. At the time of testing, Laboratory is accredited by the following organizations:

China National Accreditation Service for Conformity Assessment (CNAS) accredits the Laboratory for conformance to FCC standards, EMC international standards and EN standards. The Registration Number is CNAS L0579.

The Laboratory is listed in the United States of American Federal Communications Commission (FCC), and the registration number are 446246 806614 994606(semi anechoic chamber).

The Laboratory is registered to perform emission tests with Industry Canada (IC), and the registration number is 11177A-1 11177A-2.

TUV Rhineland accredits the Laboratory for conformance to IEC and EN standards, the registration number is E2024086Z02.

### 2.3.Measurement Uncertainty

For a 95% confidence level ( $k = 2$ ), the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 as following:

Conducted Emission

9kHz~30MHz 3.5dB

Radiated Emission

30MHz~1000MHz 4.5dB

1GHz~26.5GHz 4.6dB

### 3. PRODUCT DESCRIPTION

#### 3.1.EUT Description

Description : JOYA TOUCH A6  
Manufacturer : Datalogic S.r.l.  
Model Number : JTAWB GUN, JTAWB HH  
Operate Frequency : 2.402GHz~2.480GHz  
Antenna : 2.4GHz band:  
Designation JOYA TOUCH A6 Handheld variants: 1.94dBi  
JOYA TOUCH A6 Gun variants: 2.14dBi

Remark: /

#### 3.2.Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: **U4GJTAWB** and IC: **3862E-JTAWB** filing to comply with 15.209, 15.247 of the FCC Part 15, Subpart C and RSS-247 Issue 2(2017-02) Rules.

#### 3.3.Operating Condition of EUT

The transmitter has a maximum peak conducted output power of Basic rate GFSK modulation and EDR mode 8DPSK modulation. Tests were performed with Basic rate GFSK modulation and EDR mode 8DPSK modulation.

#### 3.4.Support Equipment List

Table 2 Support Equipment List

Name	Model No	S/N	Manufacturer
Notebook	Inspiron 14z - 5423	--	DELL

#### 3.5.Test Conditions

Date of test : Jun.19,2017- Jul.11, 2017  
Date of EUT Receive : Jun.19,2017  
Temperature: 16-25 °C  
Relative Humidity:48-62%

### 3.6.Special Accessories

Not available for this EUT intended for grant.

### 3.7.Equipment Modifications

Not available for this EUT intended for grant.

### 3.8.Parameters of Test Software Setting

During testing, Channel and Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

Test Software Vesion	CTA-BT TEST TOOL		
Mode	Test Frequency(MHz)		
	2402MHz	2441MHz	2480MHz
GFSK	8.00	8.00	8.00
Pi/4-DQPSK	8.00	8.00	8.00
8DPSK	8.00	8.00	8.00

Unit: dBm



#### 4. TEST EQUIPMENT USED

Table 3 Test Equipment

No.	Equipment	Manufacturer	Model No.	Last Cal.	Cal. Interval
SB8501/09	EMI Test Receiver	Rohde & Schwarz	ESU40	Mar.21, 2017	1 Year
SB8501/04	Bilog Antenna	Schwarzbeck	VULB9163	Mar.21, 2017	1 Year
SB8501/01	Horn Antenna	Rohde & Schwarz	HF907	Mar.22, 2017	1 Year
SB8501/11	Horn Antenna	ETS-Lindgren	3160-09	Mar.1,2017	1 Year
SB8501/12	Horn Antenna	ETS-Lindgren	3160-10	Mar.1,2017	1 Year
SB8501/15	Preamplifier	Rohde & Schwarz	SCU-03	Mar.06, 2017	1 Year
SB8501/17	Preamplifier	Rohde & Schwarz	SCU-18	Mar.06, 2017	1 Year
SB8501/16	Preamplifier	Rohde & Schwarz	SCU-26	Mar.06, 2017	1 Year
SB12827/01	Power Sensor	Rohde & Schwarz	NRP-Z22	Jun.19, 2017	1 Year
--	Test Software	Rohde & Schwarz	Power Viewer Plus	--	--
--	Test Software	Rohde & Schwarz	EMC 32	--	--
SB9721/02	Signal Analyzer	Agilent	N9020A	Dec.5,2016	1 Year

## 5. RADIATED DISTURBANCE TEST

### 5.1. Test Standard and Limit

#### 5.1.1. Test Standard

FCC Part 15.209  
RSS-247 Clause 5.5

#### 5.1.2. Test Limit

Table 4 Radiation Disturbance Test Limit for FCC (Class B)(9KHz-1GHz)

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
960~1000	500	3

Table 5 Radiation Disturbance Test Limit for FCC (Class B)(Above 1G)

Frequency (MHz)	(dBuV/m) (at 3 meters)	
	PEAK	AVERAGE
Above 1000	74	54

- \* The lower limit shall apply at the transition frequency.
- \* The test distance is 3m.

## 5.2. Test Procedure

### 1) Sequence of testing 9 kHz to 30 MHz

#### Setup:

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a rotatable table with 0.8 m height is used.
- If the EUT is a floor standing device, it is placed on the ground.
- Auxiliary equipment and cables were positioned to simulate normal operation conditions.
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- The measurement distance is 3 meter.
- The EUT was set into operation.

#### Premeasurement:

- The turntable rotates from 0° to 315° using 45° steps.
- The antenna height is 0.8 meter.
- At each turntable position the analyzer sweeps with peak detection to find the maximum of all emissions

#### Final measurement:

- Identified emissions during the premeasurement the software maximizes by rotating the turntable position (0° to 360°) and by rotating the elevation axes (0° to 360°).
- The final measurement will be done in the position (turntable and elevation) causing the highest emissions with QPK detector.
- The final levels, frequency, measuring time, bandwidth, turntable position, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement and the limit will be stored.

## **2) Sequence of testing 30 MHz to 1 GHz**

### **Setup:**

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a table with 0.8 m height is used, which is placed on the ground plane.
- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
- Auxiliary equipment and cables were positioned to simulate normal operation conditions
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- The measurement distance is 3 meter.
- The EUT was set into operation.

### **Premeasurement:**

- The turntable rotates from 0° to 315° using 45° steps.
- The antenna is polarized vertical and horizontal.
- The antenna height changes from 1 to 3 meter.
- At each turntable position, antenna polarization and height the analyzer sweeps three times in peak to find the maximum of all emissions.

### **Final measurement:**

- The final measurement will be performed with minimum the six highest peaks.
- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable position ( $\pm 45^\circ$ ) and antenna movement between 1 and 4 meter.
- The final measurement will be done with QP detector with an EMI receiver.
- The final levels, frequency, measuring time, bandwidth, antenna height, antenna polarization, turntable angle, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement with marked maximum final measurements and the limit will be stored.

### **3) Sequence of testing 1 GHz to 18 GHz**

#### **Setup:**

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.
- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
- Auxiliary equipment and cables were positioned to simulate normal operation conditions
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- The measurement distance is 3 meter.
- The EUT was set into operation.

#### **Premeasurement:**

- The turntable rotates from 0° to 315° using 45° steps.
- The antenna is polarized vertical and horizontal.
- The antenna height scan range is 1 meter to 2.5 meter.
- At each turntable position and antenna polarization the analyzer sweeps with peak detection to find the maximum of all emissions.

#### **Final measurement:**

- The final measurement will be performed with minimum the six highest peaks.
- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable position ( $\pm 45^\circ$ ) and antenna movement between 1 and 4 meter. This procedure is repeated for both antenna polarizations.
- The final measurement will be done in the position (turntable, EUT-table and antenna polarization) causing the highest emissions with Peak and Average detector.
- The final levels, frequency, measuring time, bandwidth, turntable position, EUT-table position, antenna polarization, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement with marked maximum final measurements and the limit will be stored.

#### **4) Sequence of testing above 18 GHz**

##### **Setup:**

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.
- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
- Auxiliary equipment and cables were positioned to simulate normal operation conditions
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- The measurement distance is 1 meter.
- The EUT was set into operation.

##### **Premeasurement:**

- The antenna is moved spherical over the EUT in different polarizations of the antenna.

##### **Final measurement:**

- The final measurement will be performed at the position and antenna orientation for all detected emissions that were found during the premeasurements with Peak and Average detector.
- The final levels, frequency, measuring time, bandwidth, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement and the limit will be stored.

### **5.3. Test Arrangement**

The arrangement of the equipment is installed to meet the standards and operating in a manner, which tends to maximize its emission characteristics in a normal application. The detailed information refers to test picture.

### **5.4. Test Data**

The emissions don't show in following result tables are more than 20dB below the limits.

Bluetooth basic rate and Bluetooth EDR mode were tested, below only shows worst case result of Bluetooth basic rate.

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

Table 6 Radiated Emission Test Data 9k Hz-30MHz(worst case)

Frequency MHz	Cable Loss(dB)	Antenna Factor(dB)	Readings(dBμV/m)	Level(dBμV/m)	Polarity(H/V)	Turntable Angle(deg)	Antenna Height(m)	Limits(dBμV/m)	Margin(dB)
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### 30MHz-1GHz

Pre-scan all mode and recorded the worst case results in this report (GFSK(Middle Channel)).

The emissions don't show in following result tables are more than 20dB below the limits.

Table 7 Radiated Emission Test Data 30MHz-1GHz

Frequency MHz	Cable Loss(dB)	Antenna Factor(dB)	Readings(dBμV/m)	Level(dBμV/m)	Polarity(H/V)	Turntable Angle(deg)	Antenna Height(m)	Limits(dBμV/m)	Margin(dB)
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# Test Plot- for Handheld variants ( Complete full test )

## Radiated Emission

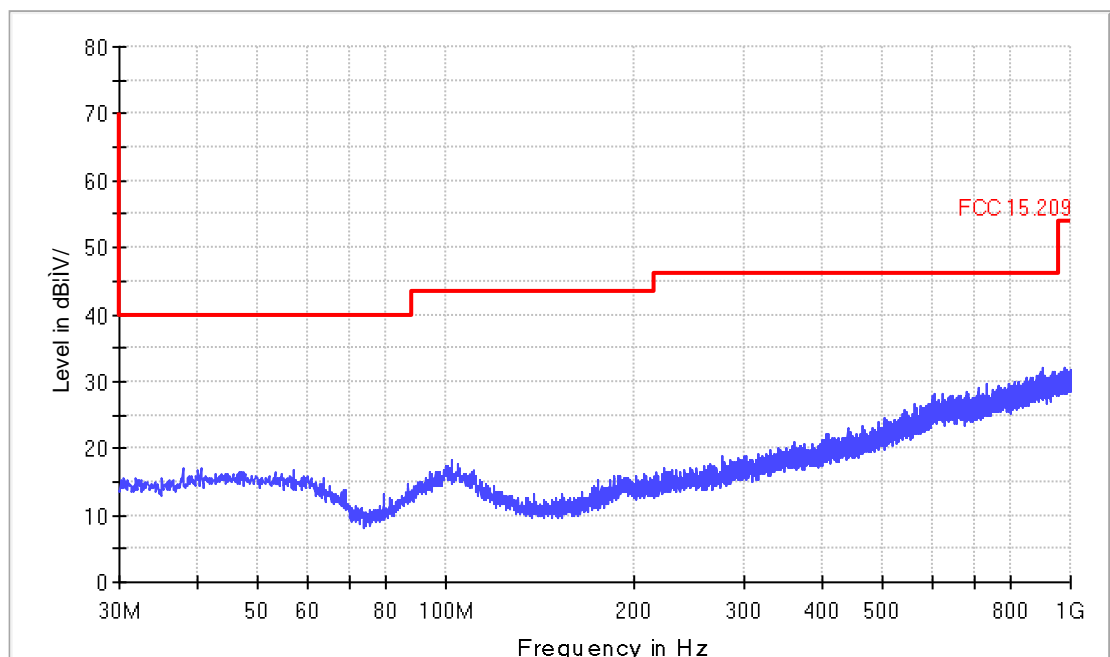
### EUT Information

EUT Model Name:	JTAWB HH
Operation mode:	Transmitting
Test Voltage:	DC 3.75V
Comment:	

### Common Information

Test Site:	SMQ EMC Lab.
Environment	Temperature:24.1° Humidity:54.1
Antenna Polarization:	Horizontal
Operator Name:	Belial.Lee
Date:	June 26

Electric Field Strength 30M-1GHz



# Radiated Emission

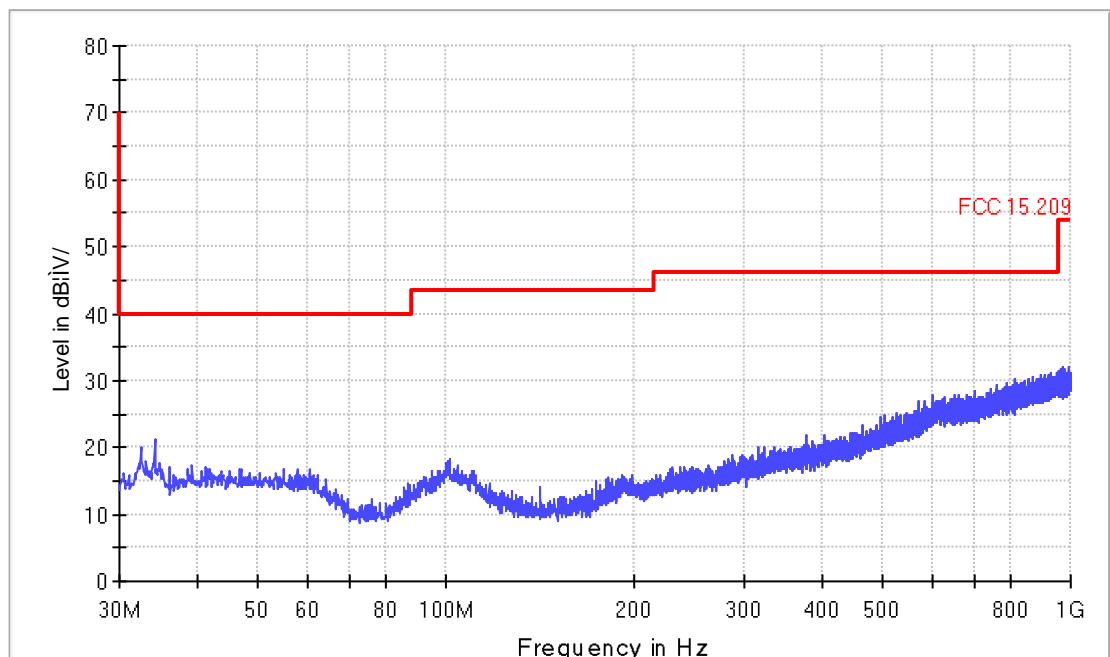
## EUT Information

EUT Model Name:	JTAWB HH
Operation mode:	Transmitting
Test Voltage:	DC 3.75V
Comment:	

## Common Information

Test Site:	SMQ EMC Lab.
Environment	Temperature:24.1° Humidity:54.1
Antenna Polarization:	Vertical
Operator Name:	Belial.Lee
Date:	June 26

Electric Field Strength 30M-1GHz



1GHz-18GHz

BDR CH0

## Radiated Emission

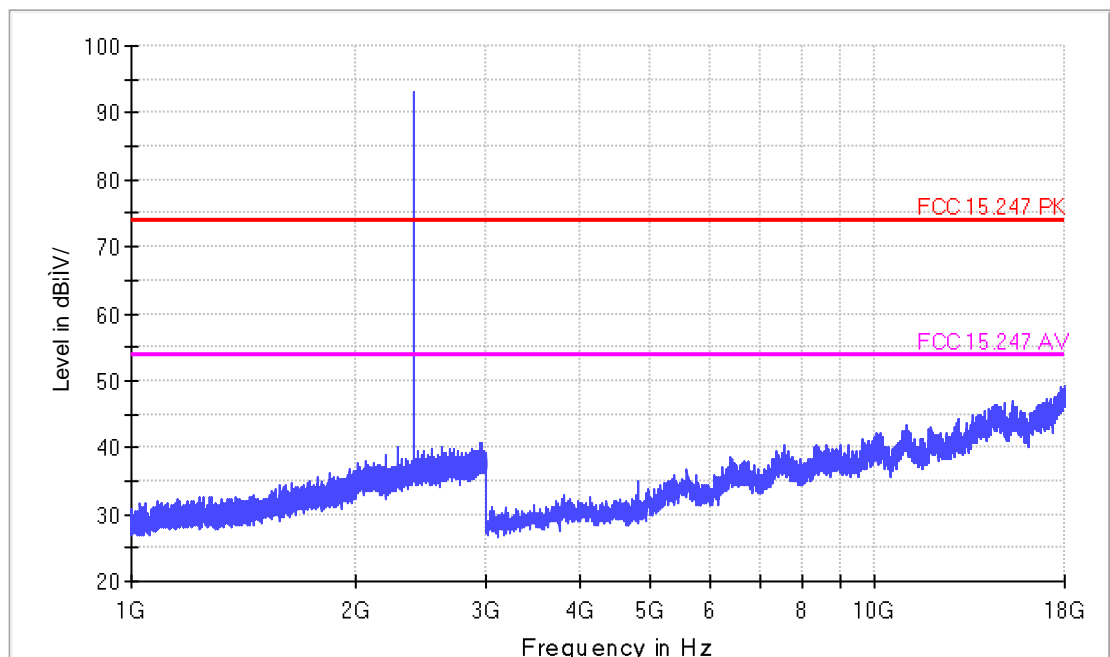
### EUT Information

EUT Model Name:	JTAWB HH
Operation mode:	BDR CH0
Test Voltage:	DC 3.75V
Comment:	

### Common Information

Test Site:	SMQ EMC Lab.
Environment	Temperature:24.1° Humidity:54.1
Antenna Polarization:	Horizontal
Operator Name:	Belial.Lee
Date:	June 26

FCC Electric Field Strength 1-18GHz operate on 2.4GHz



# Radiated Emission

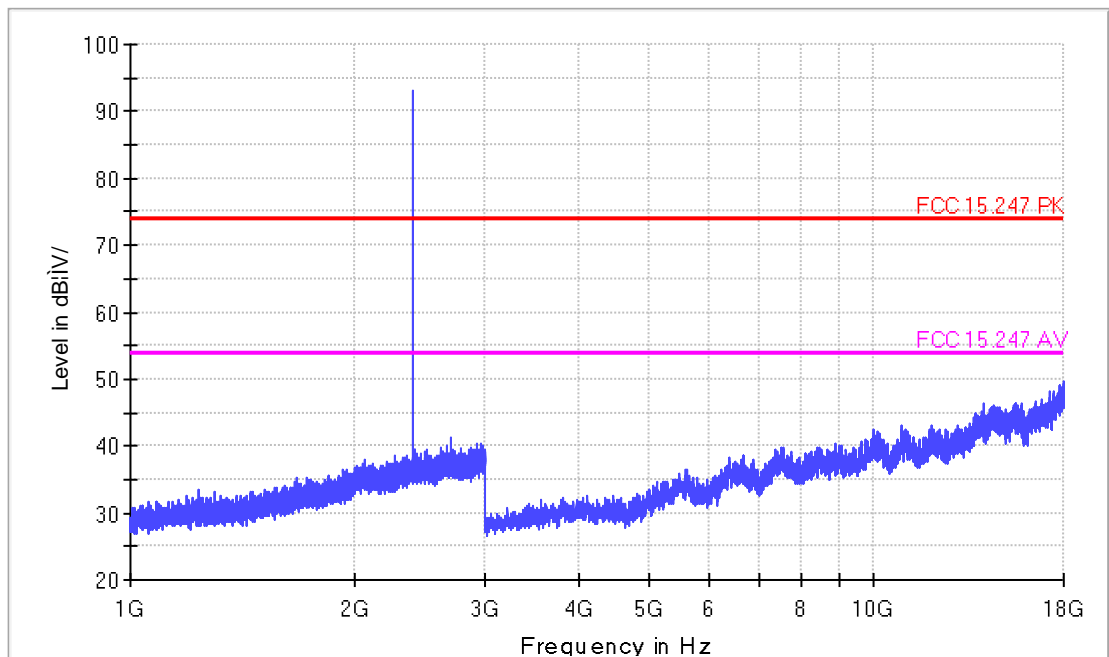
## EUT Information

EUT Model Name:	JTAWB HH
Operation mode:	BDR CH0
Test Voltage:	DC 3.75V
Comment:	

## Common Information

Test Site:	SMQ EMC Lab.
Environment	Temperature:24.1° Humidity:54.1
Antenna Polarization:	Vertical
Operator Name:	Belial.Lee
Date:	June 26

FCC Electric Field Strength 1-18GHz operate on 2.4GHz



1GHz-18GHz

BDR CH39

## Radiated Emission

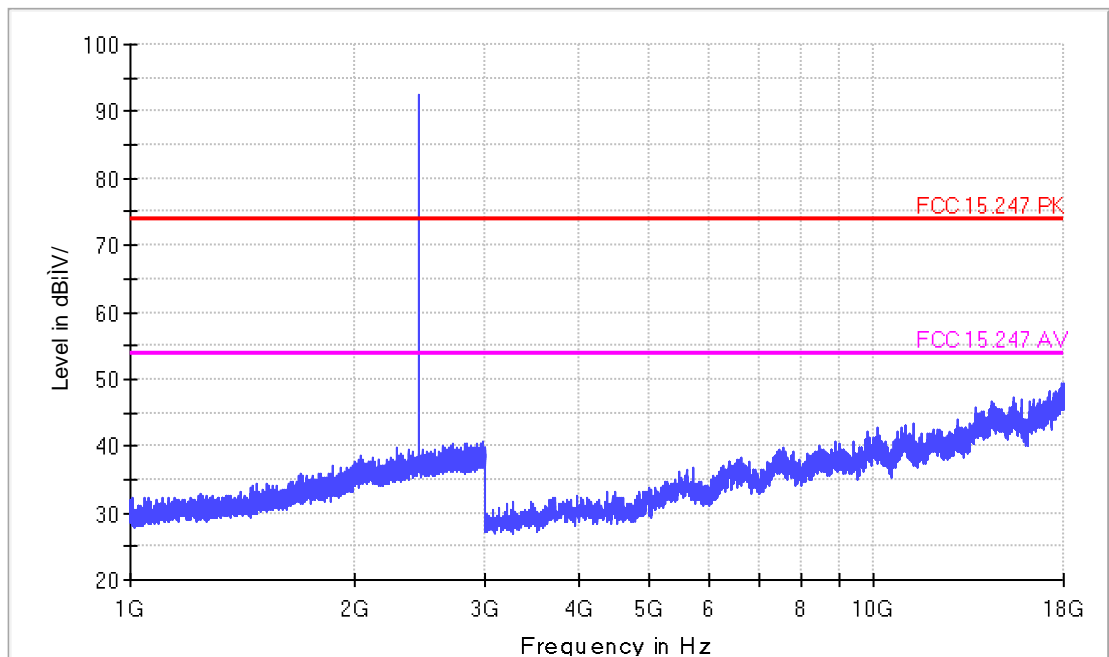
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Operation mode:	BDR CH39
Test Voltage:	DC 3.75V
Comment:	

### Common Information

Test Site:	SMQ EMC Lab.
Environment	Temperature:24.1° Humidity:54.1
Antenna Polarization:	Horizontal
Operator Name:	Belial.Lee
Date:	June 26

FCC Electric Field Strength 1-18GHz operate on 2.4GHz



# Radiated Emission

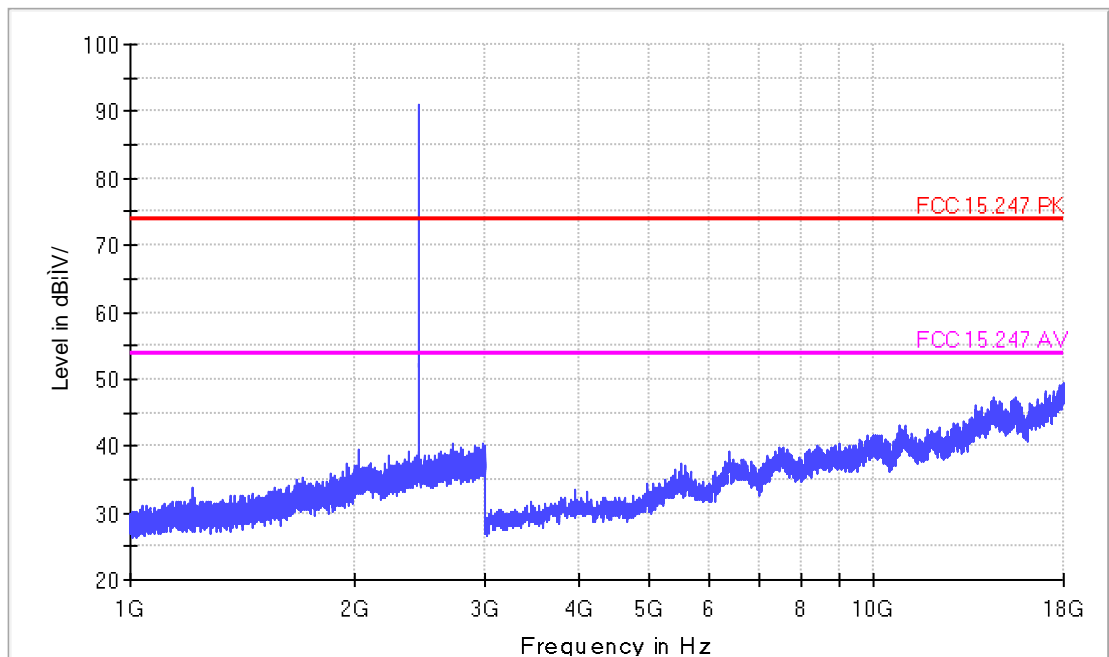
## EUT Information

EUT Model Name:	JTAWB HH
Operation mode:	BDR CH39
Test Voltage:	DC 3.75V
Comment:	

## Common Information

Test Site:	SMQ EMC Lab.
Environment	Temperature:24.1° Humidity:54.1
Antenna Polarization:	Vertical
Operator Name:	Belial.Lee
Date:	June 26

FCC Electric Field Strength 1-18GHz operate on 2.4GHz



1GHz-18GHz

BDR CH78

## Radiated Emission

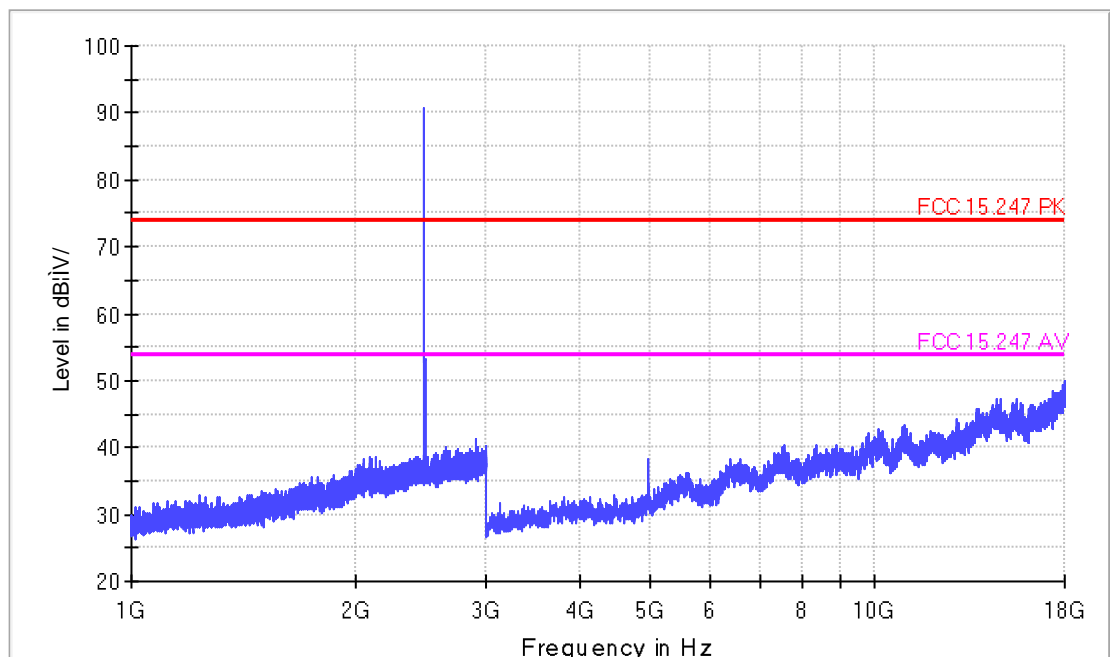
### EUT Information

EUT Model Name:	JTAWB HH
Operation mode:	BDR CH78
Test Voltage:	DC 3.75V
Comment:	

### Common Information

Test Site:	SMQ EMC Lab.
Environment	Temperature:24.1° Humidity:54.1
Antenna Polarization:	Horizontal
Operator Name:	Belial.Lee
Date:	June 26

FCC Electric Field Strength 1-18GHz operate on 2.4GHz



# Radiated Emission

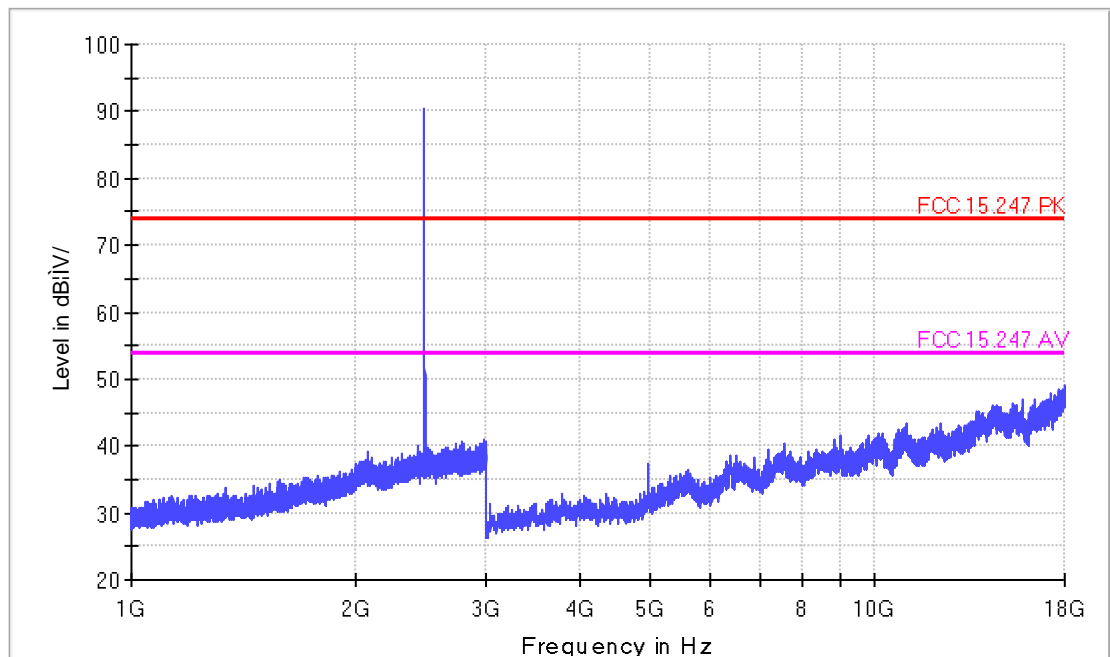
## EUT Information

EUT Model Name:	JTAWB HH
Operation mode:	BDR CH78
Test Voltage:	DC 3.75V
Comment:	

## Common Information

Test Site:	SMQ EMC Lab.
Environment	Temperature:24.1° Humidity:54.1
Antenna Polarization:	Vertical
Operator Name:	Belial.Lee
Date:	June 26

FCC Electric Field Strength 1-18GHz operate on 2.4GHz





1GHz-18GHz

EDR CH0

## Radiated Emission

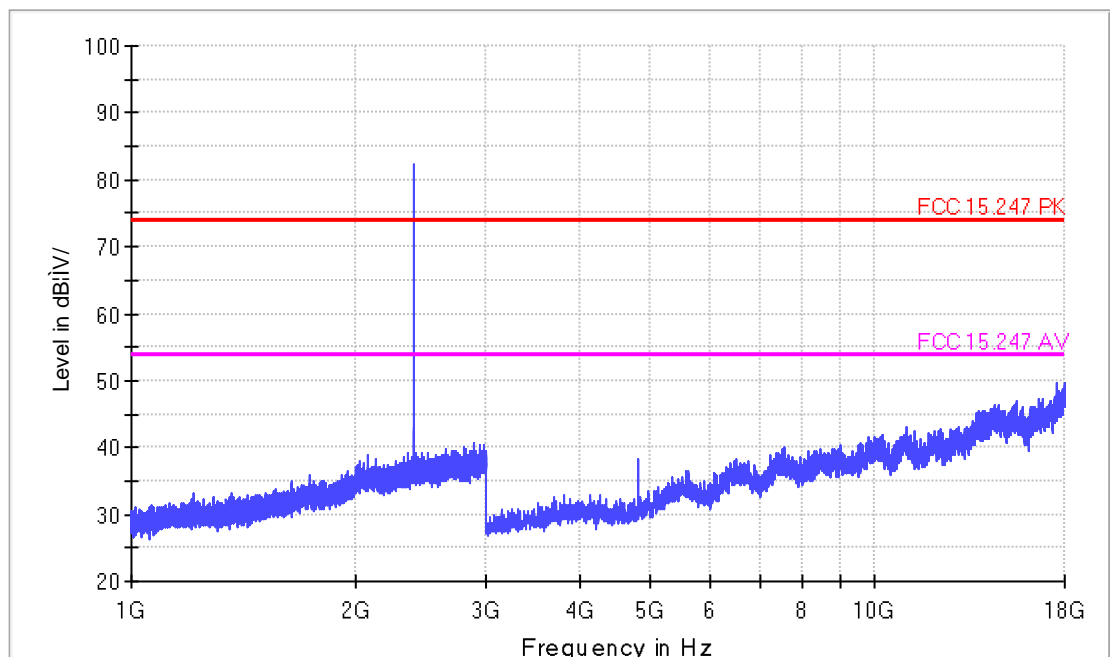
### EUT Information

EUT Model Name:	JTAWB HH
Operation mode:	EDR CH0
Test Voltage:	DC 3.75V
Comment:	

### Common Information

Test Site:	SMQ EMC Lab.
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Antenna Polarization:	Horizontal
Operator Name:	Belial.Lee
Date:	June 26

FCC Electric Field Strength 1-18GHz operate on 2.4GHz



# Radiated Emission

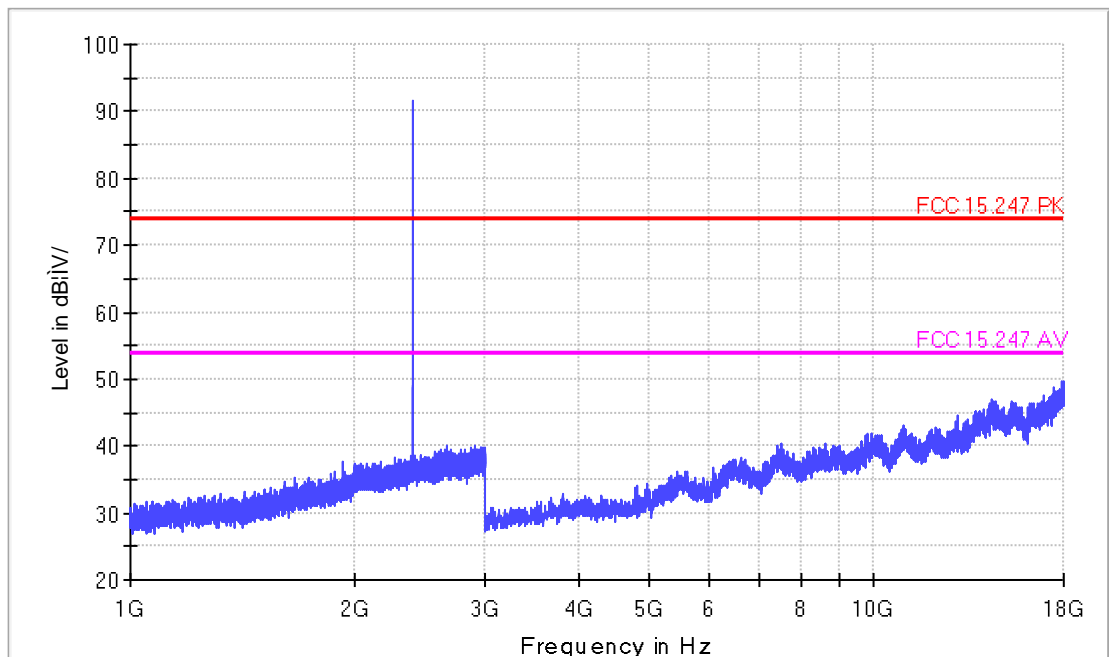
## EUT Information

EUT Model Name:	JTAWB HH
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Test Voltage:	DC 3.75V
Comment:	

## Common Information

Test Site:	SMQ EMC Lab.
Environment	Temperature:24.1° Humidity:54.1
Antenna Polarization:	Vertical
Operator Name:	Belial.Lee
Date:	June 26

FCC Electric Field Strength 1-18GHz operate on 2.4GHz



1GHz-18GHz

EDR CH39

## Radiated Emission

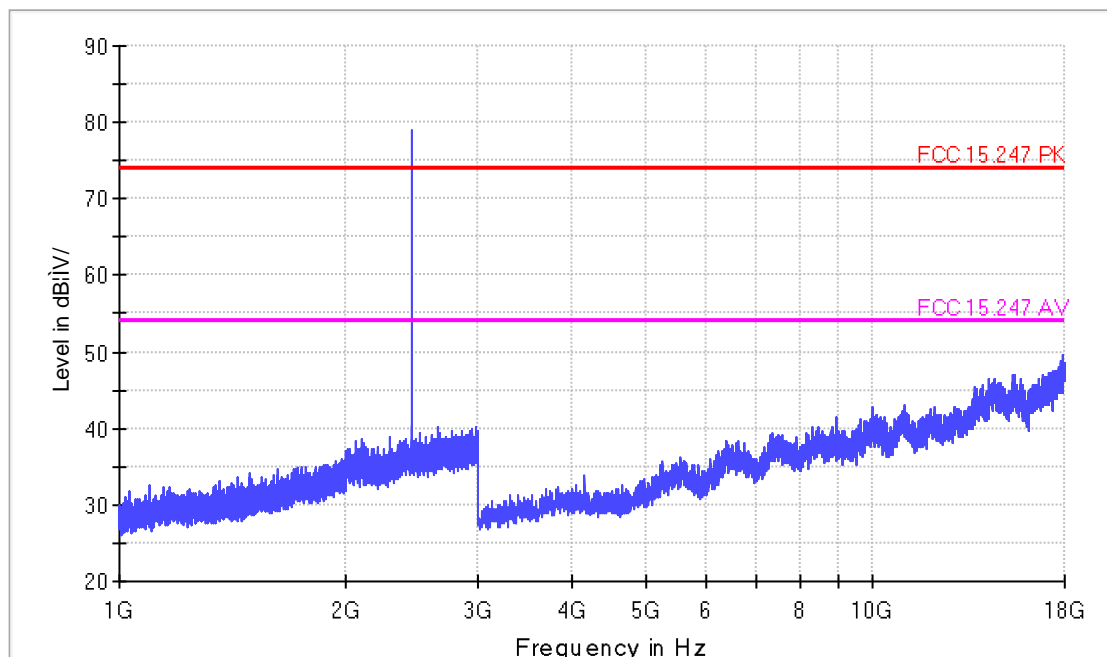
### EUT Information

EUT Model Name:	JTAWB HH
Operation mode:	EDR CH39
Test Voltage:	DC 3.75V
Comment:	

### Common Information

Test Site:	SMQ EMC Lab.
Environment	Temperature:24.1° Humidity:54.1
Antenna Polarization:	Horizontal
Operator Name:	Belial.Lee
Date:	June 26

FCC Electric Field Strength 1-18GHz operate on 2.4GHz



# Radiated Emission

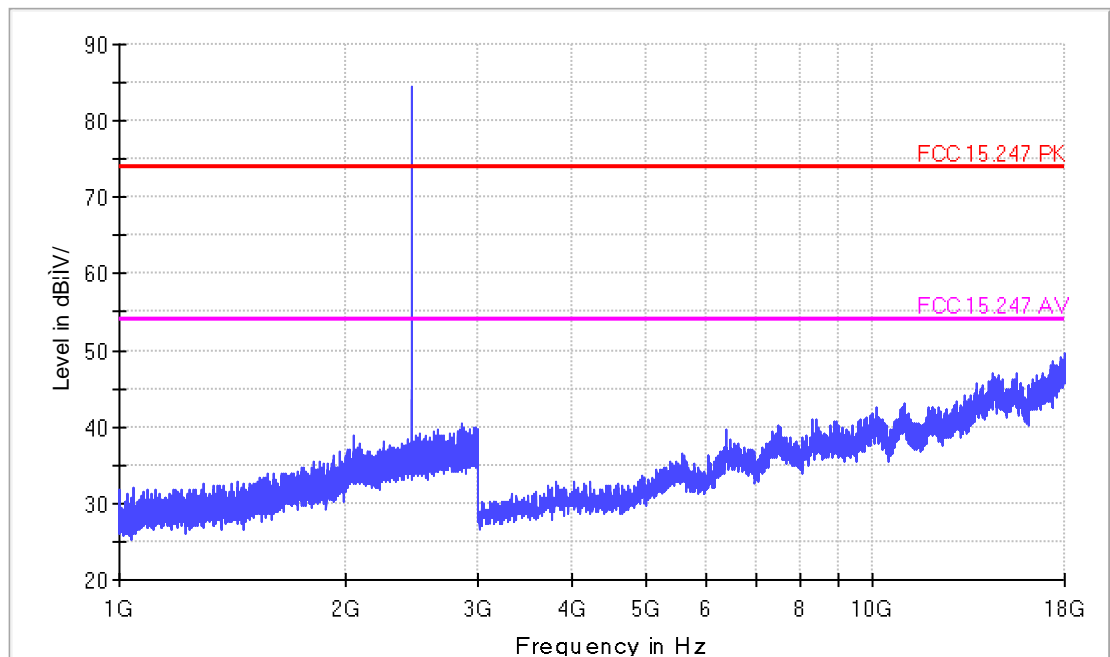
## EUT Information

EUT Model Name:	JTAWB HH
Operation mode:	EDR CH39
Test Voltage:	DC 3.75V
Comment:	

## Common Information

Test Site:	SMQ EMC Lab.
Environment	Temperature:24.1° Humidity:54.1
Antenna Polarization:	Vertical
Operator Name:	Belial.Lee
Date:	June 26

FCC Electric Field Strength 1-18GHz operate on 2.4GHz



1GHz-18GHz

EDR CH78

## Radiated Emission

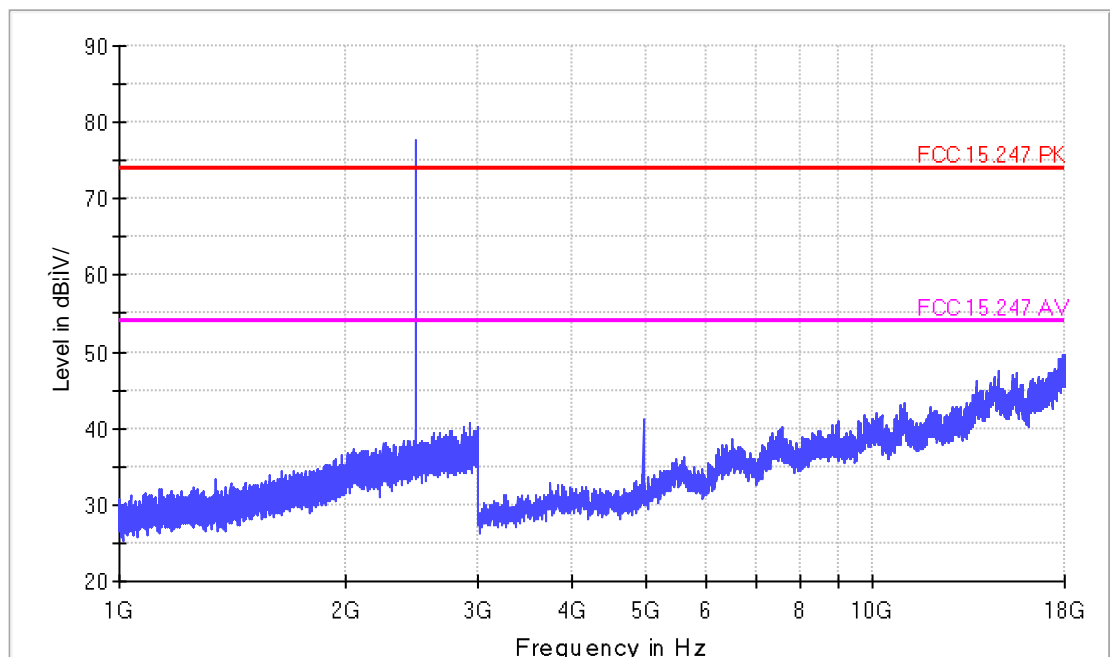
### EUT Information

EUT Model Name:	JTAWB HH
Operation mode:	EDR CH78
Test Voltage:	DC 3.75V
Comment:	

### Common Information

Test Site:	SMQ EMC Lab.
Environment	Temperature:24.1° Humidity:54.1
Antenna Polarization:	Horizontal
Operator Name:	Belial.Lee
Date:	June 26

FCC Electric Field Strength 1-18GHz operate on 2.4GHz



# Radiated Emission

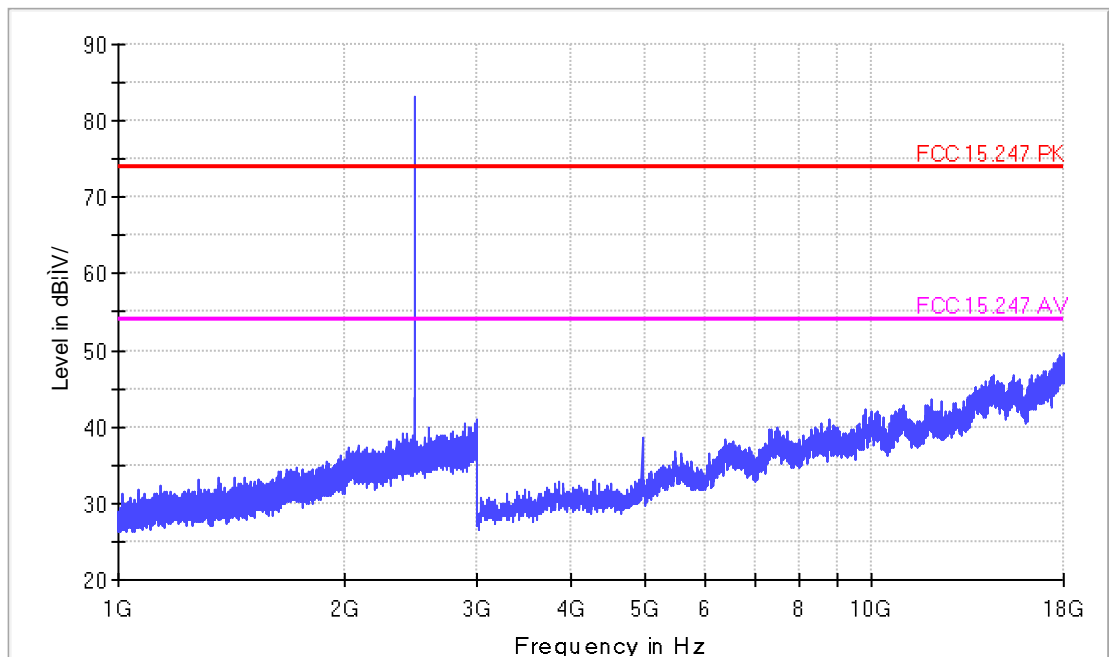
## EUT Information

EUT Model Name:	JTAWB HH
Operation mode:	EDR CH78
Test Voltage:	DC 3.75V
Comment:	

## Common Information

Test Site:	SMQ EMC Lab.
Environment	Temperature:24.1° Humidity:54.1
Antenna Polarization:	Vertical
Operator Name:	Belial.Lee
Date:	June 26

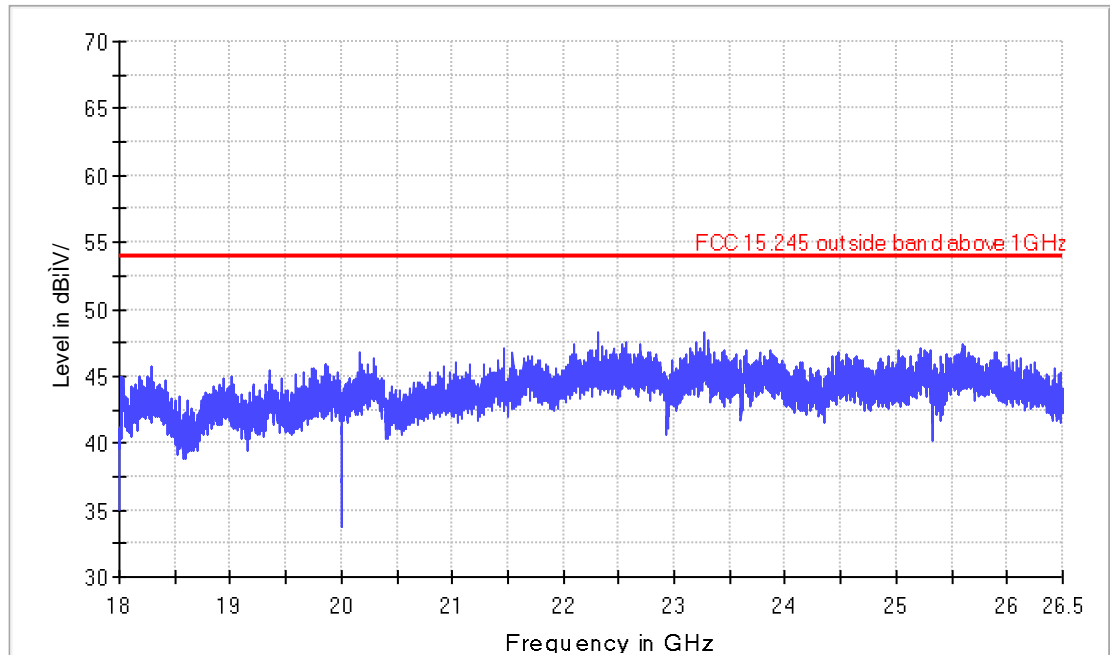
FCC Electric Field Strength 1-18GHz operate on 2.4GHz



18-26.5GHz

No Peak found in pre-scan, only worst case result is listed in this report.

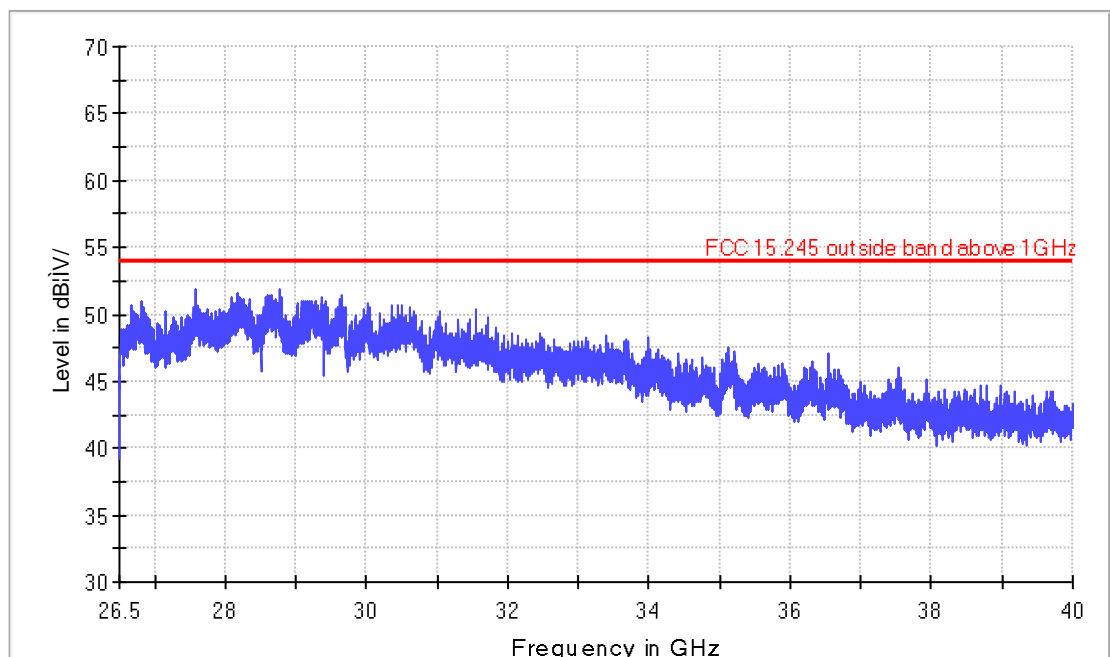
FCC Electric Field Strength 18-26.5GHz



26.5-40GHz

No Peak found in pre-scan, only worst case result is listed in this report.

FCC Electric Field Strength 26.5-40GHz



# Test Plot- for Gun variants

## ( Spots Check test )

1GHz-18GHz

BDR CH39

## Radiated Emission

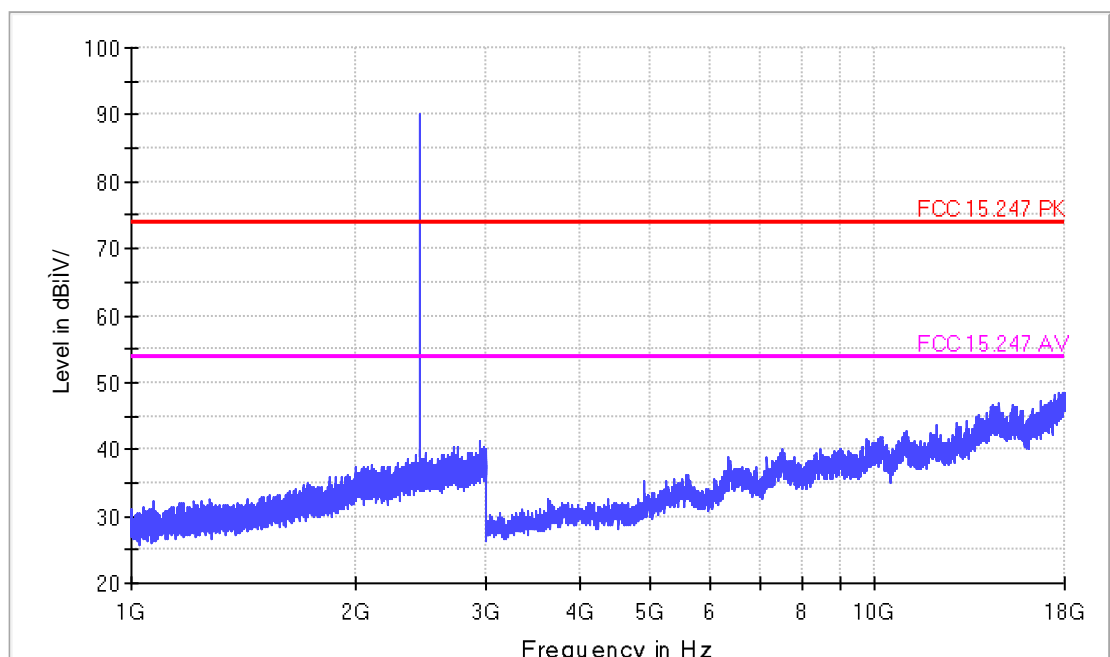
### EUT Information

EUT Model Name:	JTAWB GUN
Operation mode:	BDR CH39
Test Voltage:	DC 3.75V
Comment:	

### Common Information

Test Site:	SMQ EMC Lab.
Environment	Temperature:23.7° Humidity:52.9
Antenna Polarization:	Horizontal
Operator Name:	Belial.Lee
Comment:	

FCC Electric Field Strength 1-18GHz operate on 2.4GHz





# Radiated Emission

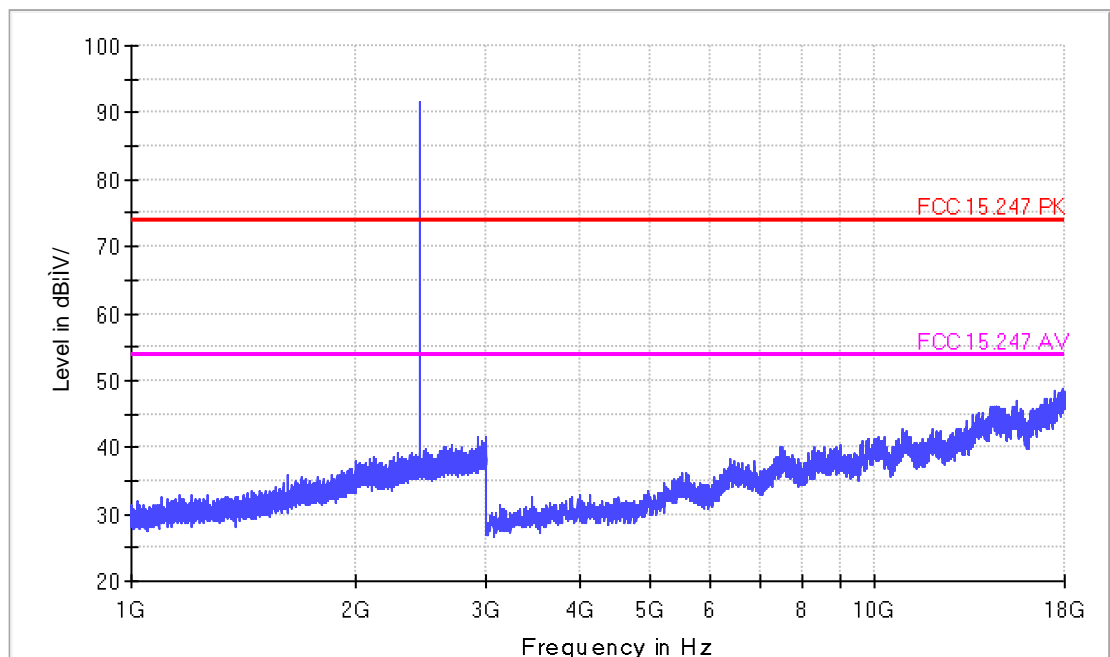
## EUT Information

EUT Model Name:	JTAWB GUN
Operation mode:	BDR CH39
Test Voltage:	DC 3.75V
Comment:	

## Common Information

Test Site:	SMQ EMC Lab.
Environment	Temperature:23.7° Humidity:52.9
Antenna Polarization:	Vertical
Operator Name:	Belial.Lee
Comment:	

FCC Electric Field Strength 1-18GHz operate on 2.4GHz



1GHz-18GHz

EDR CH39

## Radiated Emission

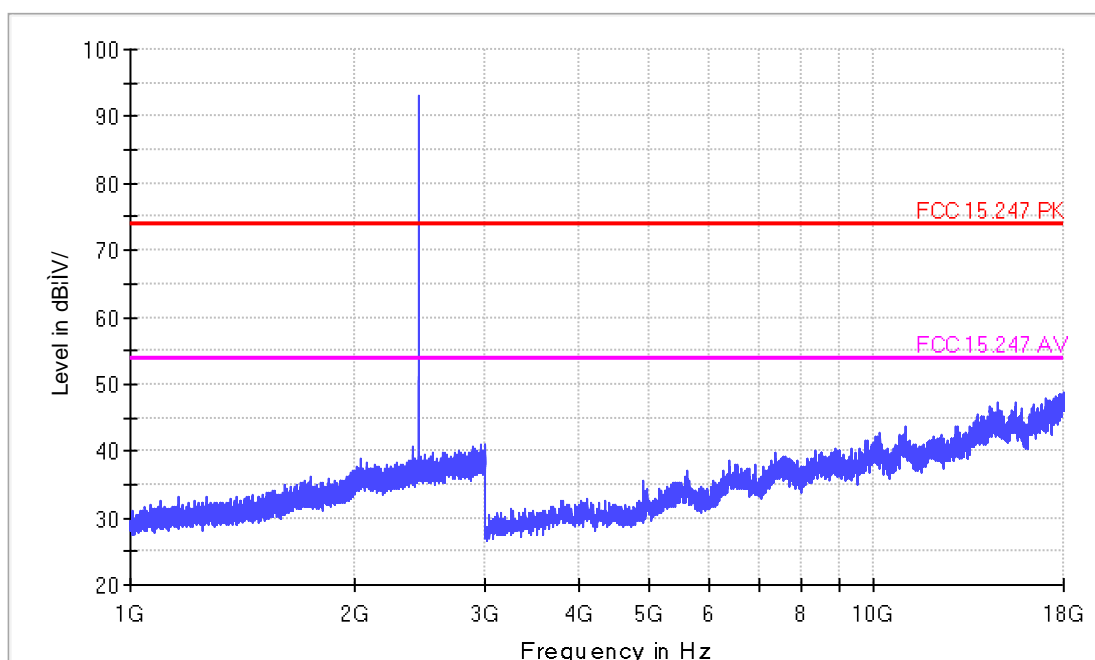
### EUT Information

EUT Model Name:	JTAWB GUN
Operation mode:	EDR CH39
Test Voltage:	DC 3.75V
Comment:	

### Common Information

Test Site:	SMQ EMC Lab.
Environment	Temperature:23.7° Humidity:52.9
Antenna Polarization:	Horizontal
Operator Name:	Belial.Lee
Comment:	

FCC Electric Field Strength 1-18GHz operate on 2.4GHz



# Radiated Emission

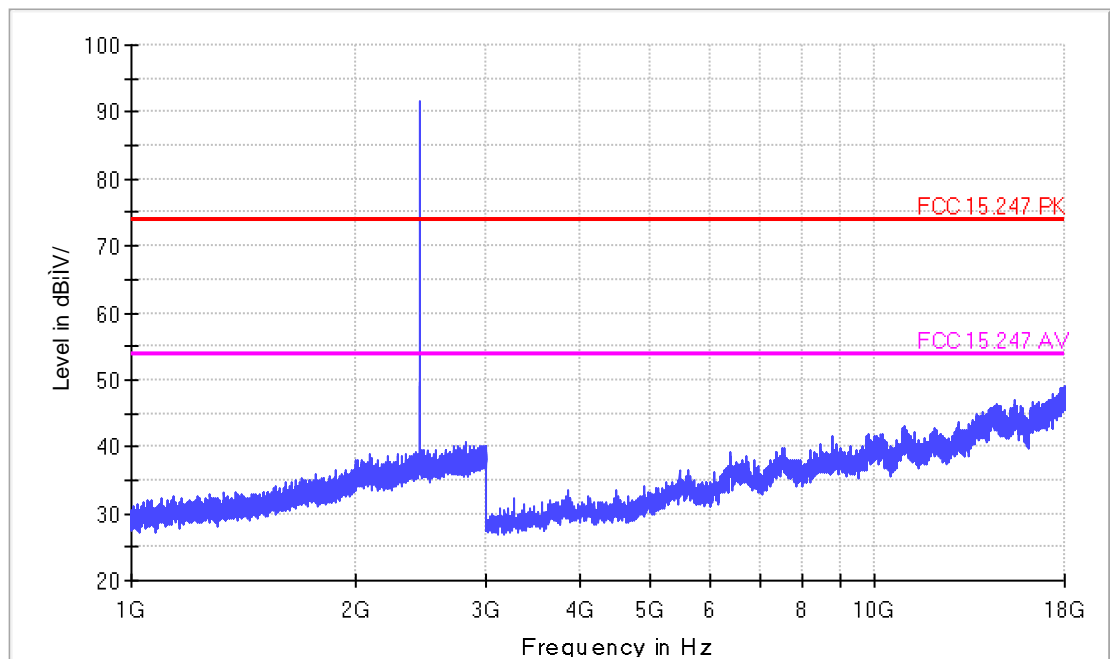
## EUT Information

EUT Model Name:	JTAWB GUN
Operation mode:	EDR CH39
Test Voltage:	DC 3.75V
Comment:	

## Common Information

Test Site:	SMQ EMC Lab.
Environment	Temperature:23.7° Humidity:52.9
Antenna Polarization:	Vertical
Operator Name:	Belial.Lee
Comment:	

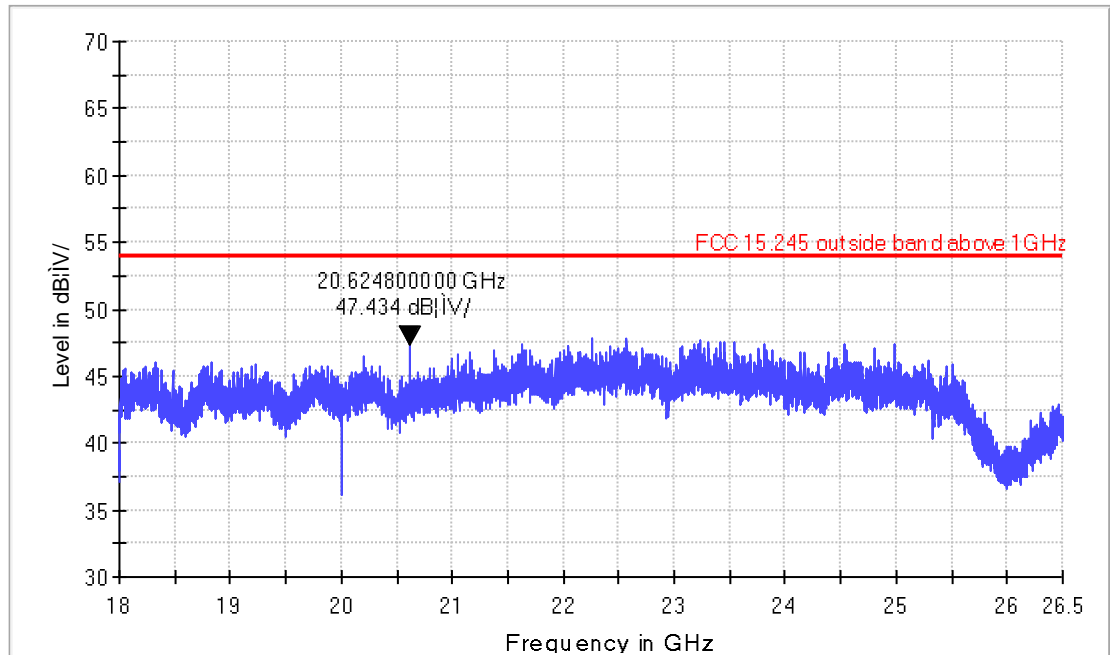
FCC Electric Field Strength 1-18GHz operate on 2.4GHz



18-26.5GHz

No Peak found in pre-scan, only worst case result is listed in this report.

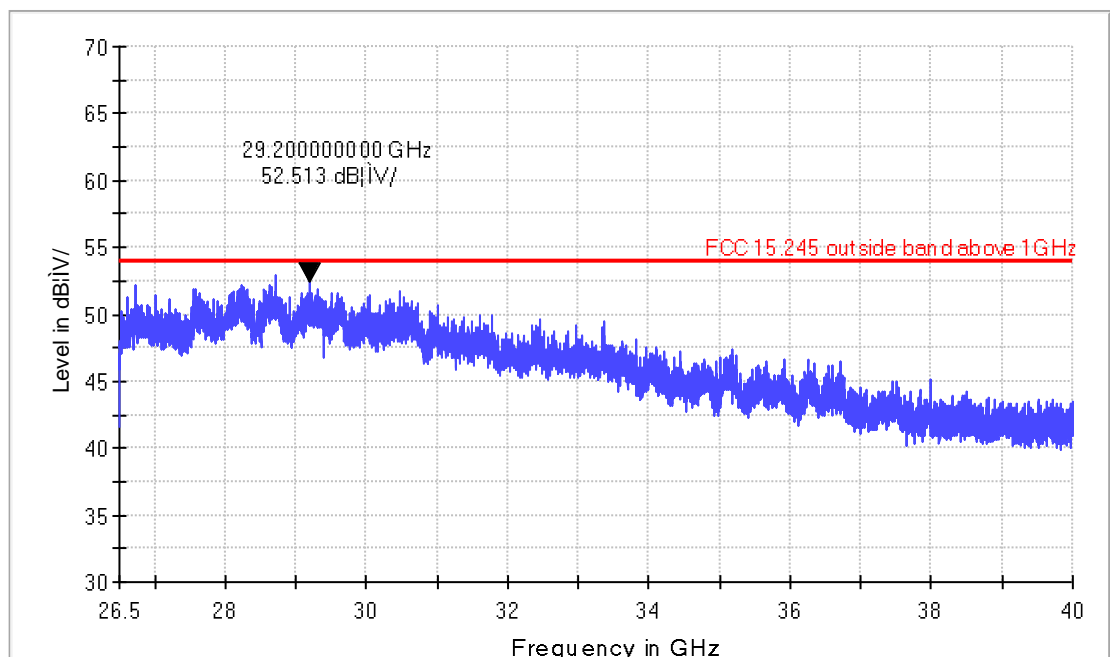
FCC Electric Field Strength 18-26.5GHz



26.5-40GHz

No Peak found in pre-scan, only worst case result is listed in this report.

FCC Electric Field Strength 26.5-40GHz



## 6. PEAK POWER

### 6.1.LIMITS OF Peak Power

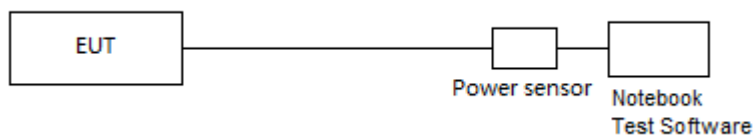
Compliance with part 15.247 (b) (1)& RSS-247Clause 5.4(2), for frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt.

For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watt.

### 6.2.TEST PROCEDURE

- (a) Connect test port of EUT to the RF Power Meter.
- (b) Set the EUT to transmit maximum output power at 2.4GHz and switch off frequency hopping function.
- (c) Then set the EUT to transmit at high, middle and low frequency and measure the conducted output power separately.

### 6.3.TEST SETUP



### 6.4.TEST DATA

Measurement Results (Modulation:GFSK)

Center Freq.[MHz]	Meas. Level (Cond.) [dBm]	Peak/AVG	Limit [dBm]	Result
2402	4.60	Peak	< 30	Pass
2441	5.14	Peak	< 30	Pass
2480	3.23	Peak	< 30	Pass
2402	4.49	AVG	< 30	Pass
2441	5.24	AVG	< 30	Pass
2480	2.91	AVG	< 30	Pass

Measurement Results (Modulation:  $\pi/4$ -DQPSK)

Center Freq.[MHz]	Meas. Level (Cond.) [dBm]	Peak/AVG	Limit [dBm]	Result
2402	2.29	Peak	< 30	Pass
2441	2.83	Peak	< 30	Pass
2480	0.93	Peak	< 30	Pass
2402	2.15	AVG	< 30	Pass
2441	2.88	AVG	< 30	Pass
2480	0.56	AVG	< 30	Pass

Measurement Results (Modulation: 8DPSK)

Center Freq.[MHz]	Meas. Level (Cond.) [dBm]	Peak/AVG	Limit [dBm]	Result
2402	2.23	Peak	< 30	Pass
2441	2.80	Peak	< 30	Pass
2480	0.88	Peak	< 30	Pass
2402	2.16	AVG	< 30	Pass
2441	2.69	AVG	< 30	Pass
2480	0.57	AVG	< 30	Pass

Remark:

1. Test results including cable loss;
2. Measured output power at difference Packet Type for each mode and recorded worst case for each mode.

## **7. BAND EDGES MEASUREMENT**

### **7.1.Limits of Band Edges Measurement**

Below –20dB of the highest emission level of operating band (in 100kHz resolution bandwidth).

### **7.2.TEST PROCEDURE**

1. The EUT is placed on a turntable, which is 1.5m above the ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
4. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:
  - (a) PEAK: RBW=VBW=1MHz / Sweep=AUTO
  - (b) AVERAGE: RBW=1MHz / VBW=1/T (on time) / Sweep=AUTO
5. Repeat the procedures until all the PEAK and AVERAGE versus POLARIZATION are measured.

### **7.3.Test Results**

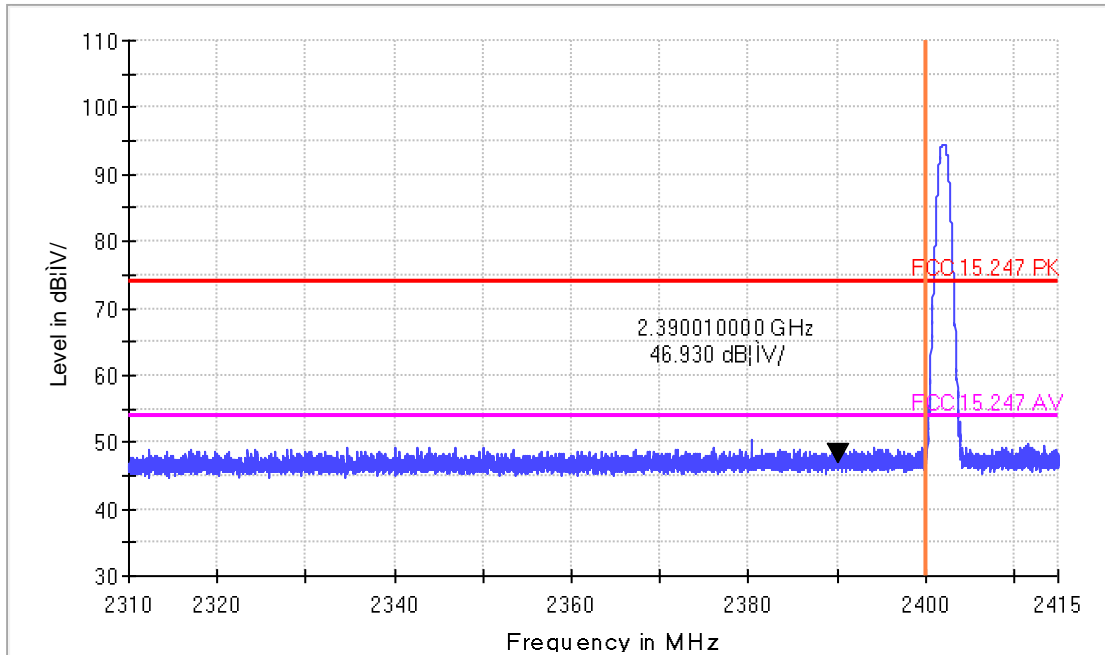
The measured plots are attached on the following. Test data shows compliance with the band edge requirement in part 15.247(d).

## Bluetooth Basic Rate

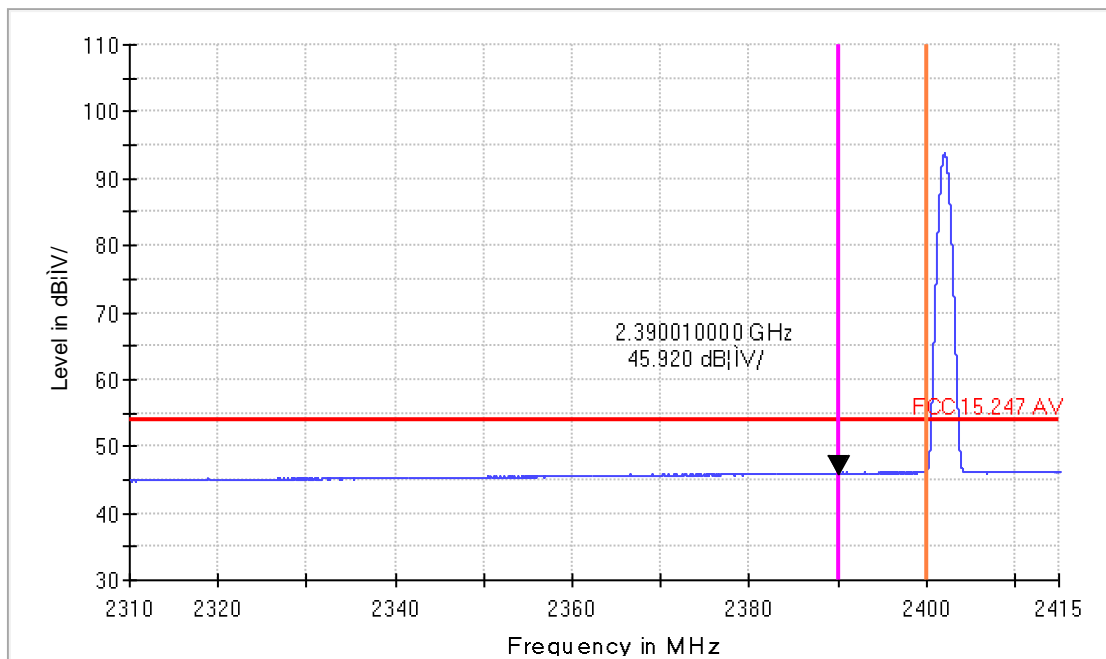
Low edge

Horizontal

FCC Electric Field Strength 2.4GHz Bandedge-PK



FCC Electric Field Strength 2.4GHz Bandedge-AV

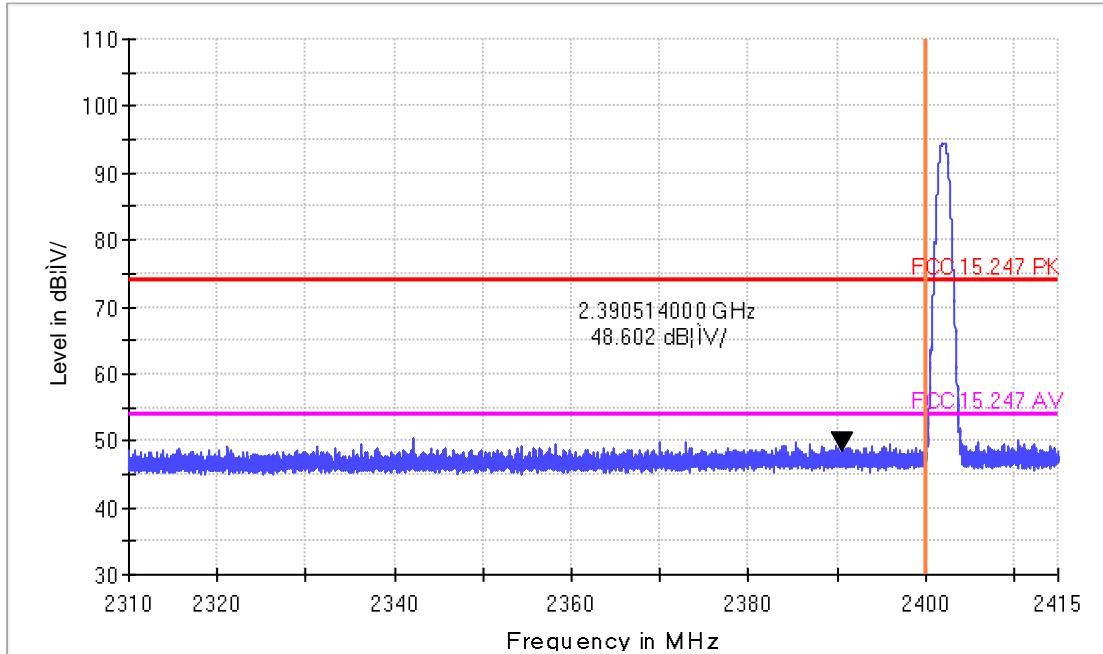


No.	Frequency (MHz)	Reading (dBμV)	Corrected (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Pole
1	2390.0000	50.51	-3.58	46.93	74.00	-27.07	Peak	Horizontal
2	2390.0000	49.50	-3.58	45.92	54.00	-8.08	Average	Horizontal

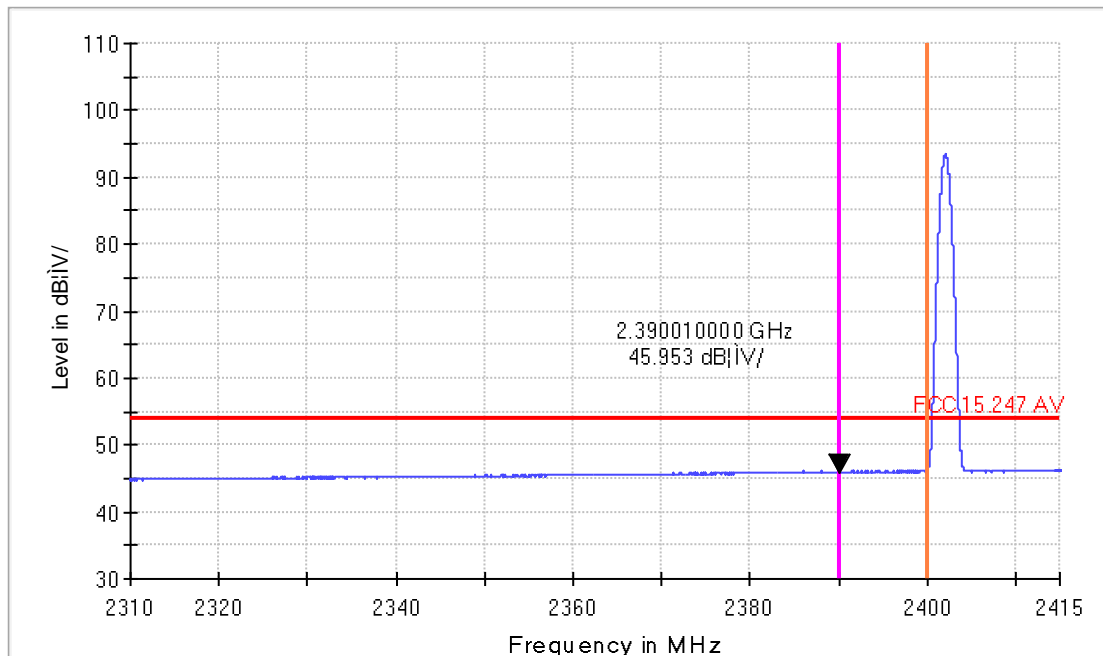


## Vertical

FCC Electric Field Strength 2.4GHz Bandedge-PK



FCC Electric Field Strength 2.4GHz Bandedge-AV

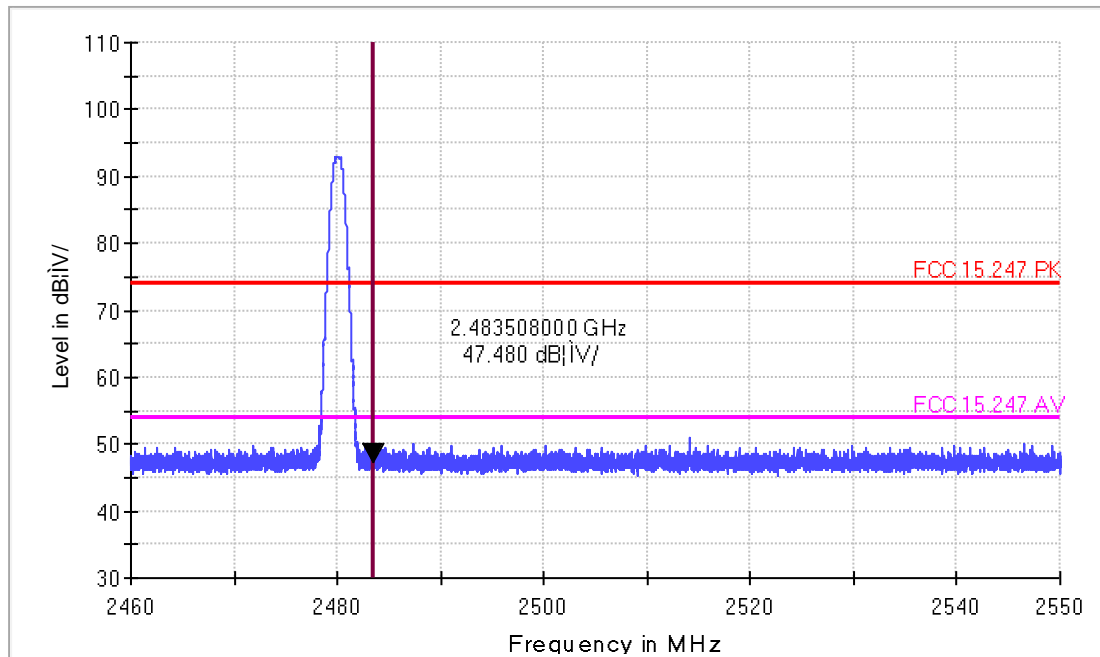


No.	Frequency (MHz)	Reading (dBµV)	Corrected (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Antenna Pole
1	2390.0000	52.18	-3.58	48.60	74.00	-25.40	Peak	Vertical
2	2390.0000	49.53	-3.58	45.95	54.00	-8.05	Average	Vertical

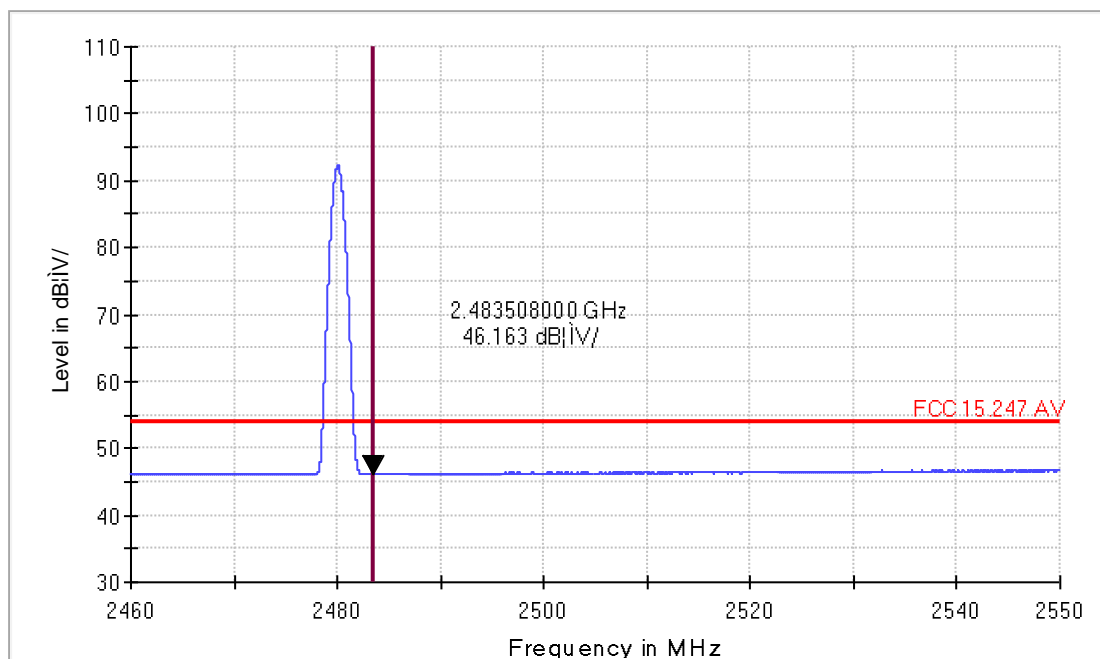
Upper Edge

Horizontal

FCC Electric Field Strength 2.4GHz Bandedge-PK



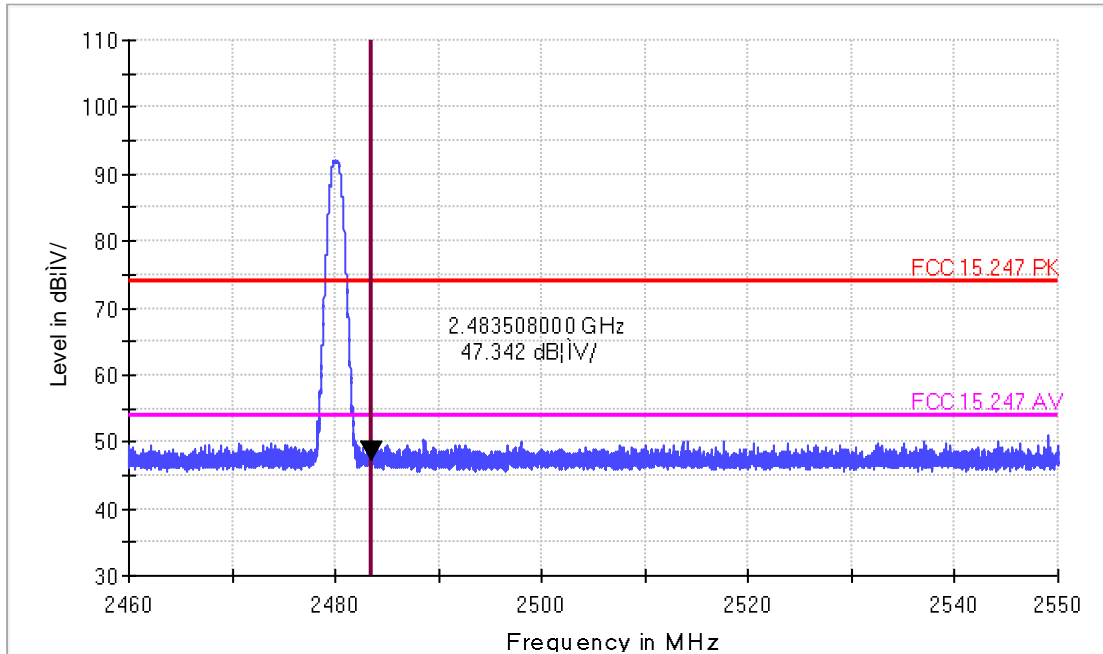
FCC Electric Field Strength 2.4GHz Bandedge-AV



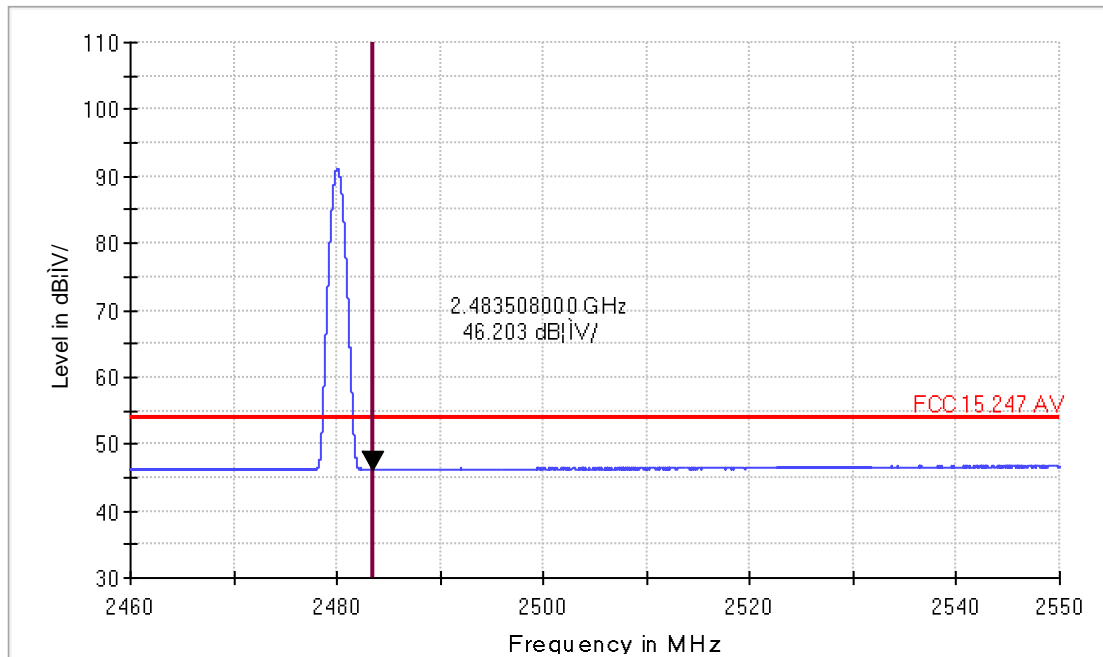
No.	Frequency (MHz)	Reading (dBuV)	Corrected (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Pole
1	2483.5000	51.02	-3.24	47.78	74.00	-26.22	Peak	Horizontal
2	2483.5000	49.40	-3.24	46.16	54.00	-7.84	Average	Horizontal

## Vertical

FCC Electric Field Strength 2.4GHz Bandedge-PK



FCC Electric Field Strength 2.4GHz Bandedge-AV



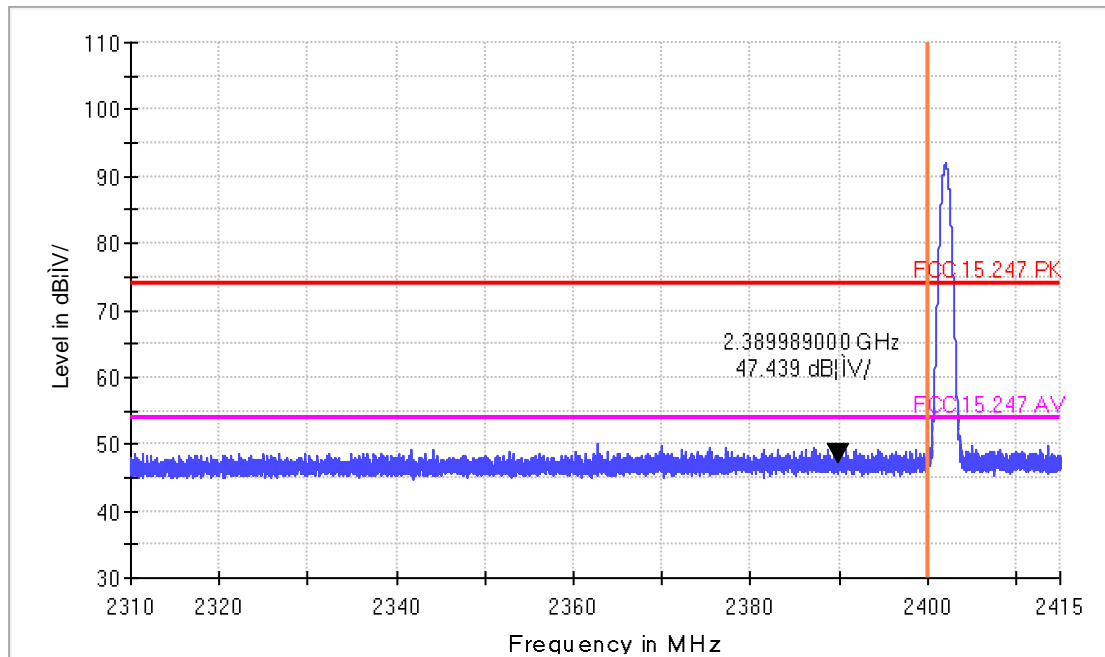
No.	Frequency (MHz)	Reading (dBμV)	Corrected (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Antenna Pole
1	2483.5000	50.58	-3.24	47.34	74.00	-26.66	Peak	Vertical
2	2483.5000	49.44	-3.24	46.20	54.00	-7.80	Average	Vertical

Bluetooth EDR

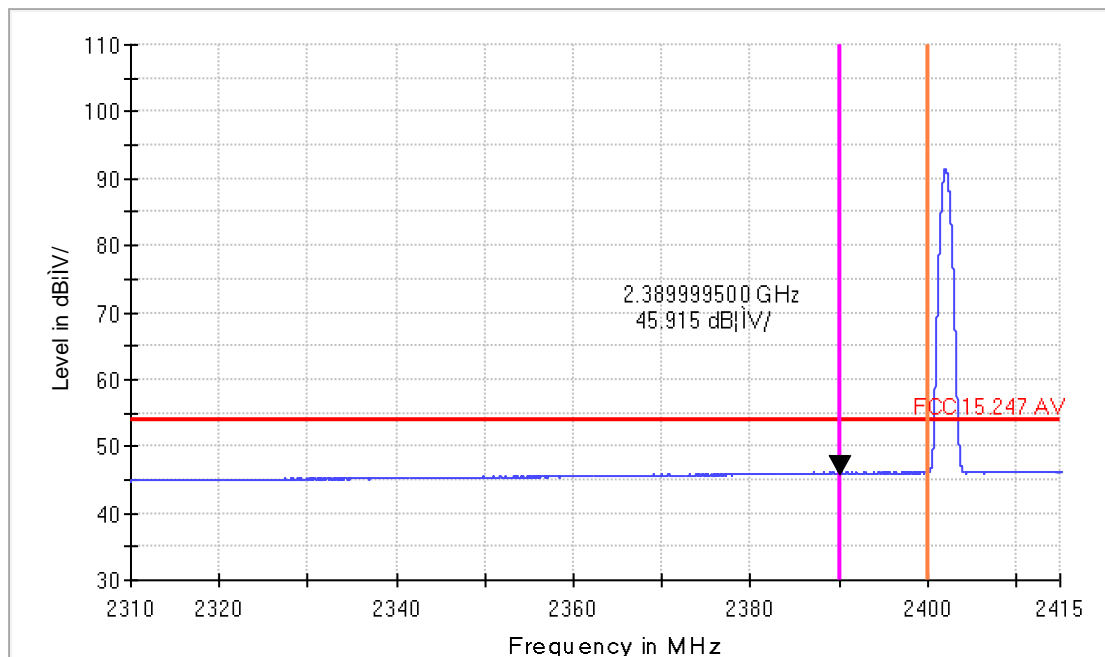
Low edge

Horizontal

FCC Electric Field Strength 2.4GHz Bandedge-PK



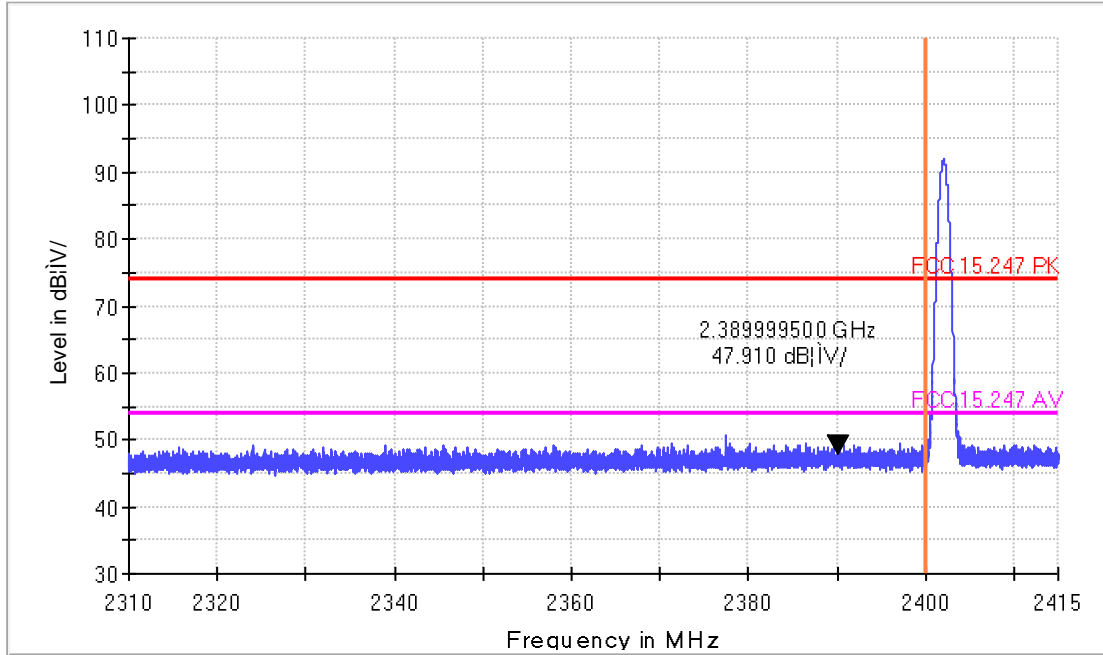
FCC Electric Field Strength 2.4GHz Bandedge-AV



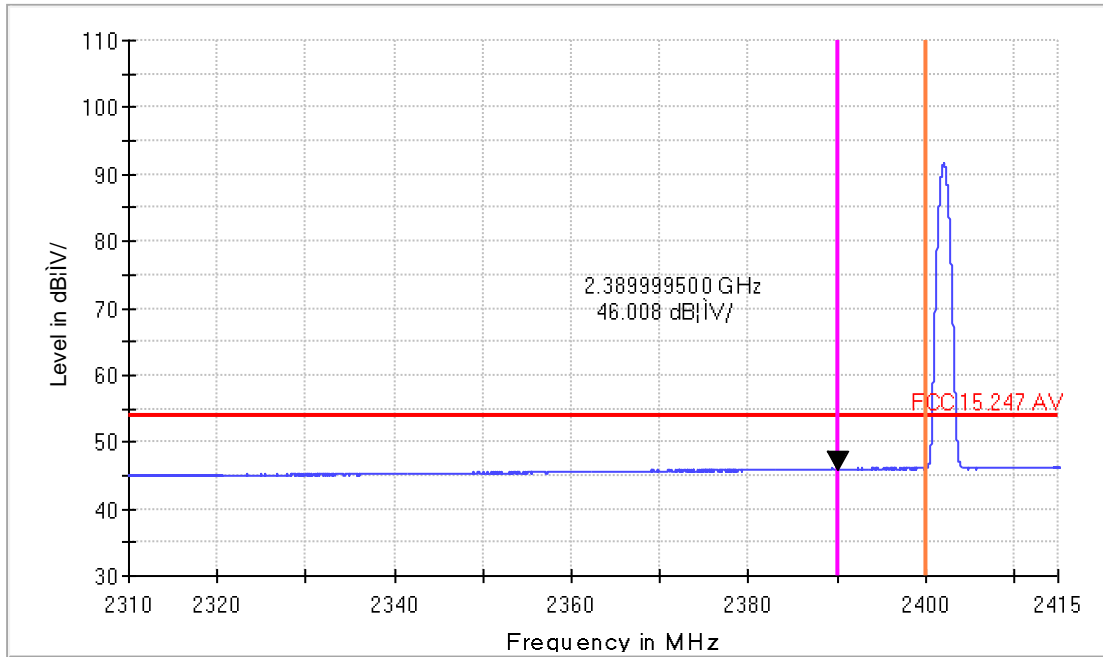
No.	Frequency (MHz)	Reading (dBuV)	Corrected (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Pole
1	2390.0000	51.02	-3.58	47.44	74.00	-26.56	Peak	Horizontal
2	2390.0000	49.50	-3.58	45.92	54.00	-8.08	Average	Horizontal

## Vertical

FCC Electric Field Strength 2.4GHz Bandedge-PK



FCC Electric Field Strength 2.4GHz Bandedge-AV



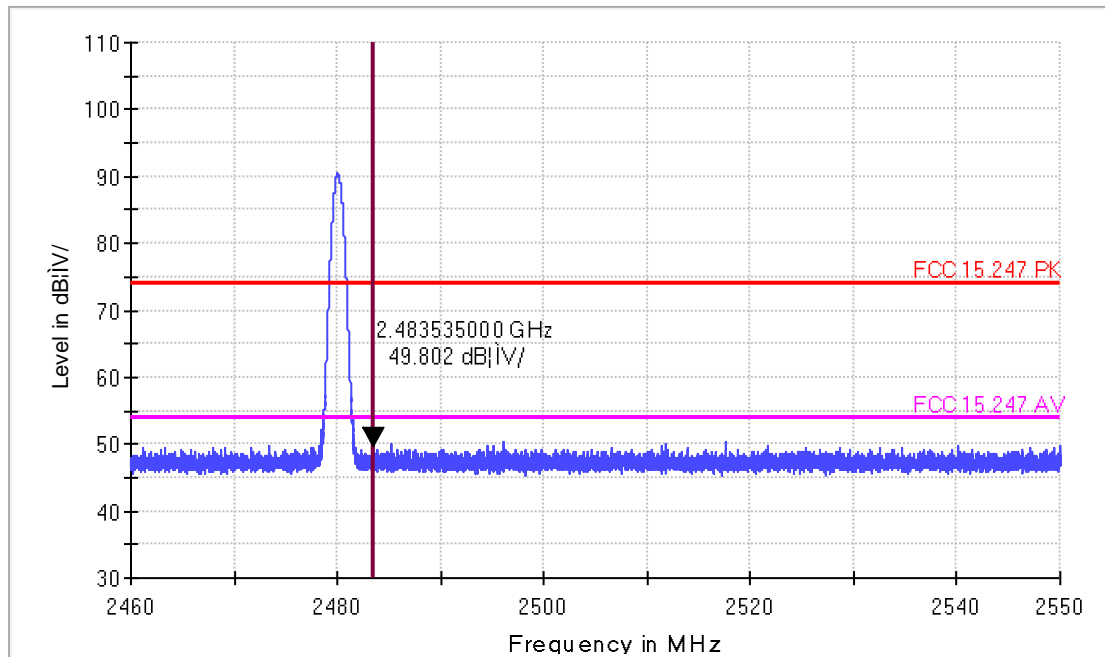
No.	Frequency (MHz)	Reading (dBµV)	Corrected (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Antenna Pole
1	2390.0000	51.49	-3.58	47.91	74.00	-26.09	Peak	Vertical
2	2390.0000	49.59	-3.58	46.01	54.00	-7.99	Average	Vertical

Bluetooth EDR

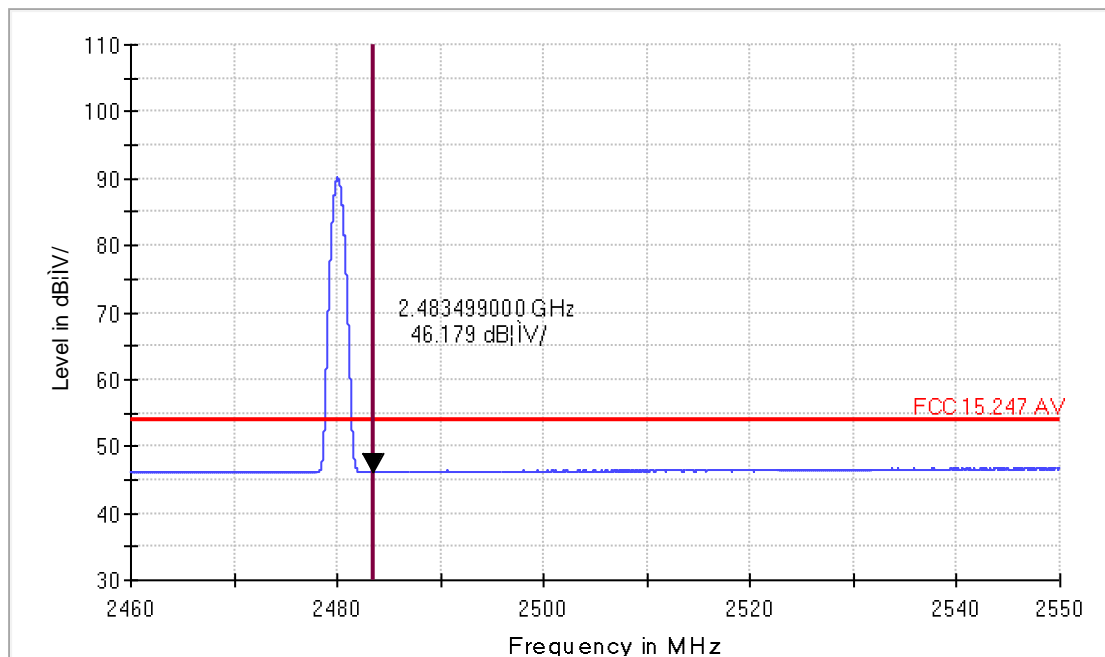
Upper edge

Horizontal

FCC Electric Field Strength 2.4GHz Bandedge-PK



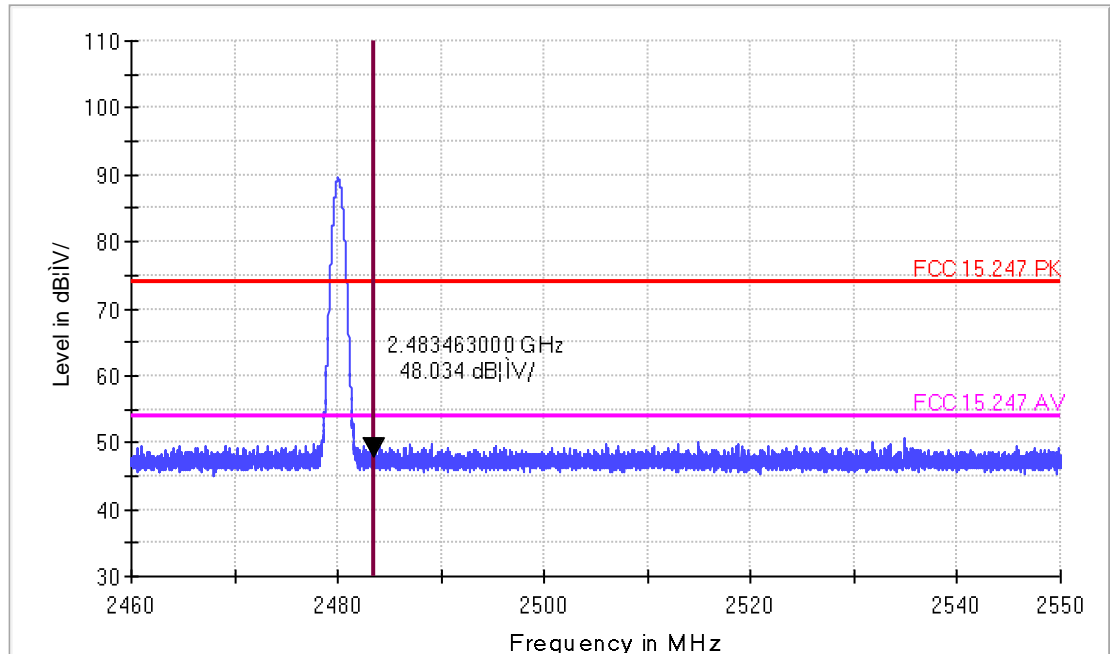
FCC Electric Field Strength 2.4GHz Bandedge-AV



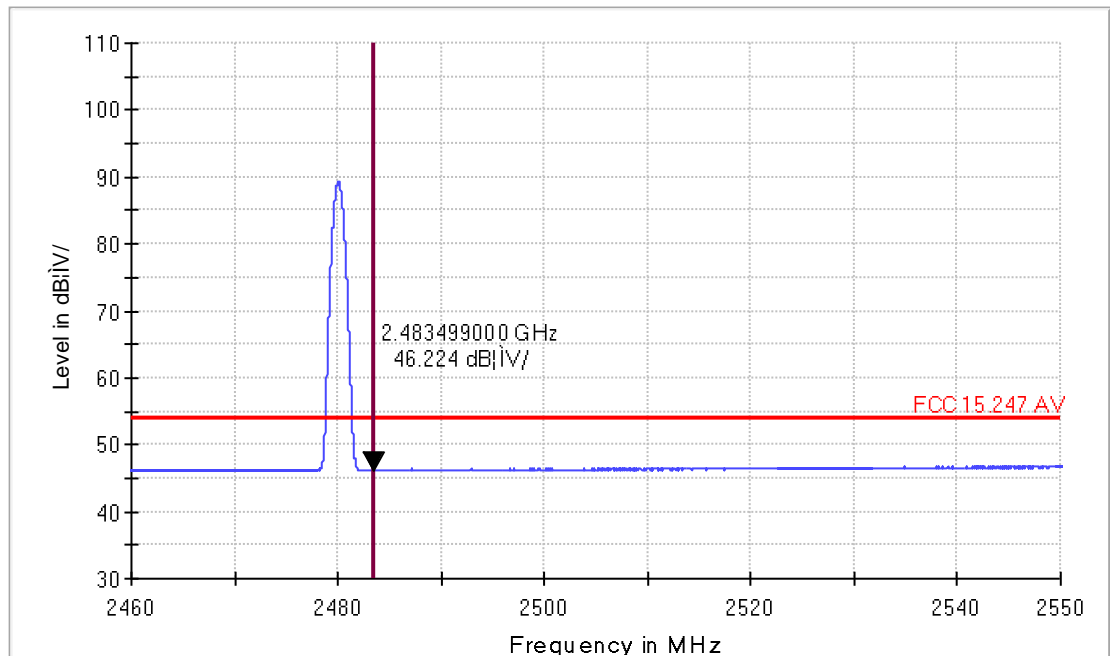
No.	Frequency (MHz)	Reading (dBµV)	Corrected (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Antenna Pole
1	2483.5000	53.04	-3.24	49.80	74.00	-24.20	Peak	Horizontal
2	2483.5000	49.42	-3.24	46.18	54.00	-7.82	Average	Horizontal

## Vertical

FCC Electric Field Strength 2.4GHz Bandedge-PK



FCC Electric Field Strength 2.4GHz Bandedge-AV



No.	Frequency (MHz)	Reading (dBµV)	Corrected (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Antenna Pole
1	2483.5000	51.27	-3.24	48.03	74.00	-25.97	Peak	Vertical
2	2483.5000	49.46	-3.24	46.22	54.00	-7.78	Average	Vertical