EMTEK
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# ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT
# INTENTIONAL RADIATOR CERTIFICATION TO
# FCC PART 15 SUBPART C REQUIREMENT

*OF*

## Portal of Power

## Model No.: 0000655

## FCC ID: XLU0000655

## Trademark: Activision

## Report No.:KAD150528153E

## Issue Date: July 31, 2015

*Prepared for*

**Activision Publishing, Inc.**
**3100 Ocean Park Blvd., Santa Monica, CA90405, USA**

*Prepared by*
**DONGGUAN EMTEK CO., LTD.**

**No.281, Guantai Road, Nancheng District,**
**Shenzhen, Guangdong, China**

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# VERIFICATION OF COMPLIANCE

| | |
|---|---|
| Applicant: | Activision Publishing, Inc<br>3100 Ocean Park Blvd., Santa Monica, CA90405, USA |
| Manufacturer: | Sunlight Technology Electronic Manufacturing Co., Ltd.<br>New Asia Industrial City, Lin Village, Tangxia Town, Dongguan City, China. |
| Product Description: | Portal of Power |
| Model Number: | 0000655 |
| Trademark: | Activision |

## We hereby certify that:

The above equipment was tested by DONGGUAN EMTEK CO., LTD. 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 conducted and radiated emission limits of FCC Rules Part 15.225(2014).

Date of Test : May 28, 2015 to July 09, 2015

Prepared by : Ivy Huang/Editor

Reviewer : Hong Yang/Supervisor

Approved & Authorized Signer : Sam Lv/Manager

DONGGUAN EMTEK CO., LTD. TESTING

# Modified Information

| Version | Summary | Revision Date | Report No. |
|---|---|---|---|
| Ver.1.0 | Original Report | / | KAD150528153E |
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# Table of Contents

# 1 General Information

## 1.1 Product Description

A major technical descriptions of EUT is described as following:

A). Operation Frequency: 13.56MHz
B). Modulation: ASK
C). Number of Channel: 1 channel
D). Power Supply: DC 5V From Wii U Input AC 120V/60Hz
E). Antenna Type: Internal Loop antenna
F).Antenna Gain: 0 dBi
G). Hardware Version: V04
H). Software Version: V3.02

Note: for a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

## 1.2 Related Submittal(s) / Grant(s)

This submittal(s) (test report) is intended for FCC ID: XLU0000655 filing to comply with Section 15.225 of the FCC Part 15, Subpart C Rules.

## 1.3 Test Methodology

Both conducted and radiated testing was performed according to the procedures in ANSI C63.10-2013. Radiated testing was performed at an antenna to EUT distance 3 meters.

## 1.4 Special Accessories

There is a USB cable with two ferrite cores in this submission.

## 1.5 Equipment Modifications

Not available for this EUT intended for grant.

## 1.6 Test Facility

Site Description
EMC Lab. :

Registered on FCC, June 18, 2014
The Certificate Number is 247565

Registered on Industry Canada, February 19, 2014
The Certificate Number is 9444A.

Name of Firm : DONGGUAN EMTEK CO., LTD.
Site Location : No.281, Guantai Road, Nancheng District, Dongguan, Guangdong, China

# 2 System Test Configuration

## 2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

## 2.2 EUT Exercise

The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

## 2.3 Test Procedure

### 2.3.1 Conducted Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-Peak and average detector mode.

### 2.3.2 Radiated Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this transmitter(EUT) was tested according to the requirements in Section 13.1.4.1 of ANSI C63.10-2013.

## 2.4 Configuration of Tested System

**Fig. 2-1 Configuration of Tested System**

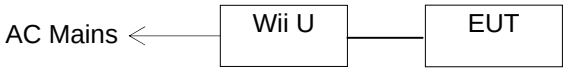



**Table 2-1 Equipment Used in Tested System**

| Item | Equipment | Mfr/Brand | Model/Type No. | FCC ID | Series No. | Note |
|---|---|---|---|---|---|---|
| 1 | Portal of Power | Activision | 0000655 | XLU0000655 | N/A | ***EUT*** |
| 2 | Wii U | Nintendo | WUT-003 | MCLMICA2 | N/A | Support Equipment |
| 3 | Wii U Adapter | Nintendo | WUP-002(USA) Input: AC 120V, 60Hz, 1.1A Output: DC 15V, 5A | N/A | N/A | Support Equipment |

**Note:**

(1) Unless otherwise denoted as EUT in『Remark』column, device(s) used in tested system is a support equipment.

# 3 Summary of Test Results

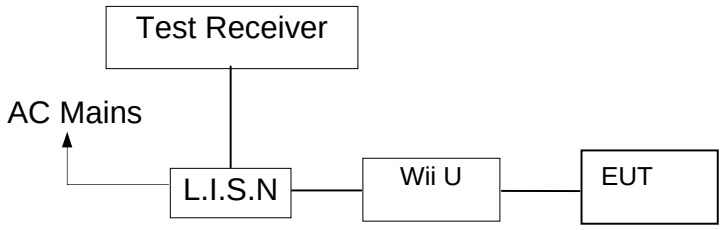
| FCC Rules | Description Of Test | Result |
|---|---|---|
| §15.207 | AC Power Conducted Emission | Complied |
| §15.225(a)(b)(c), (d), §15.209 | Radiated Emission | Complied |
| §15.225(e) | Frequency Stability | Complied |
| §15.203 | Antenna Application | Complied |

# 4 Conducted Emissions Test

## 4.1 Measurement Procedure

1. The EUT was placed on a table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured was complete.

## 4.2 Test SET-UP (Block Diagram of Configuration)




## 4.3 Measurement Equipment Used

| Conducted Emission Test Site | | | | | | |
|---|---|---|---|---|---|---|
| **EQUIPMENT TYPE** | **MFR** | **MODEL NUMBER** | **SERIAL NUMBER** | **Characteristics** | **Last Cal.** | **Due date** |
| Test Receiver | Rohde & Schwarz | ESCS30 | 100018 | 9kHz~3GHz | 03/15/2015 | 03/14/2016 |
| L.I.S.N | Rohde & Schwarz | ENV216 | 100017 | 9KHz-300MHz | 03/15/2015 | 03/14/2016 |
| RF Switching Unit | CDS | RSU-M2 | 38401 | 9KHz-300MHz | 03/15/2015 | 03/14/2016 |
| Coaxial Cable | CDS | 79254 | 46107086 | 9kHz~3GHz | 03/15/2015 | 03/14/2016 |

## 4.4 Conducted Emission Limit

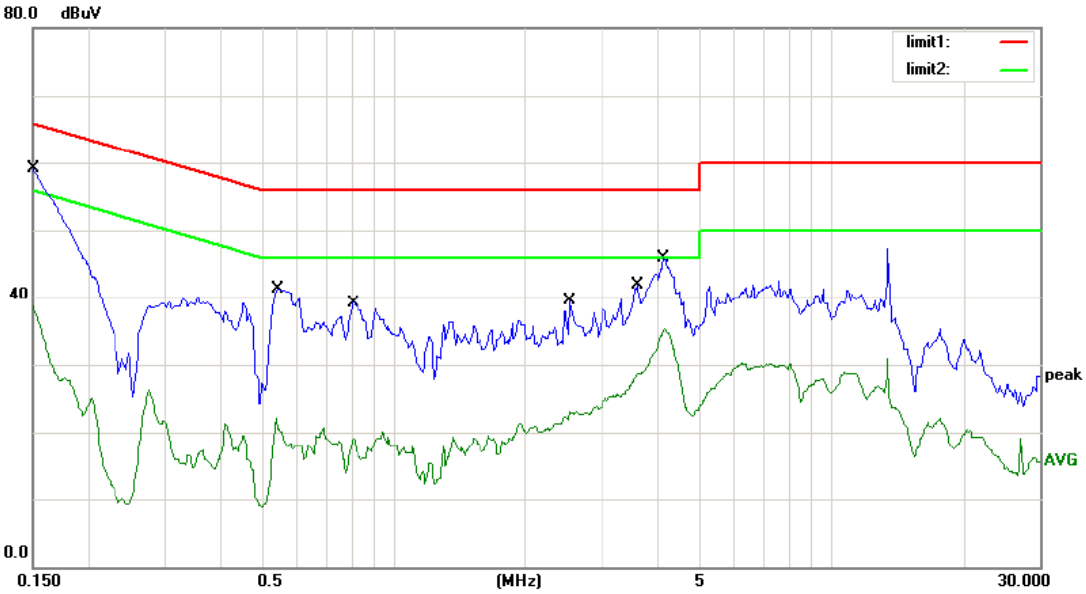
| **Conducted Emission Frequency(MHz)** | **Quasi-peak** | **Average** |
|---|---|---|
| 0.15-0.5 | 66-56 | 56-46 |
| 0.5-5.0 | 56 | 46 |
| 5.0-30.0 | 60 | 50 |

**Note:** 1. The lower limit shall apply at the transition frequencies
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

## 4.5 Measurement Result

Pass.

Please refer to the following.




Site site #1 Phase: *L1* Temperature: 24

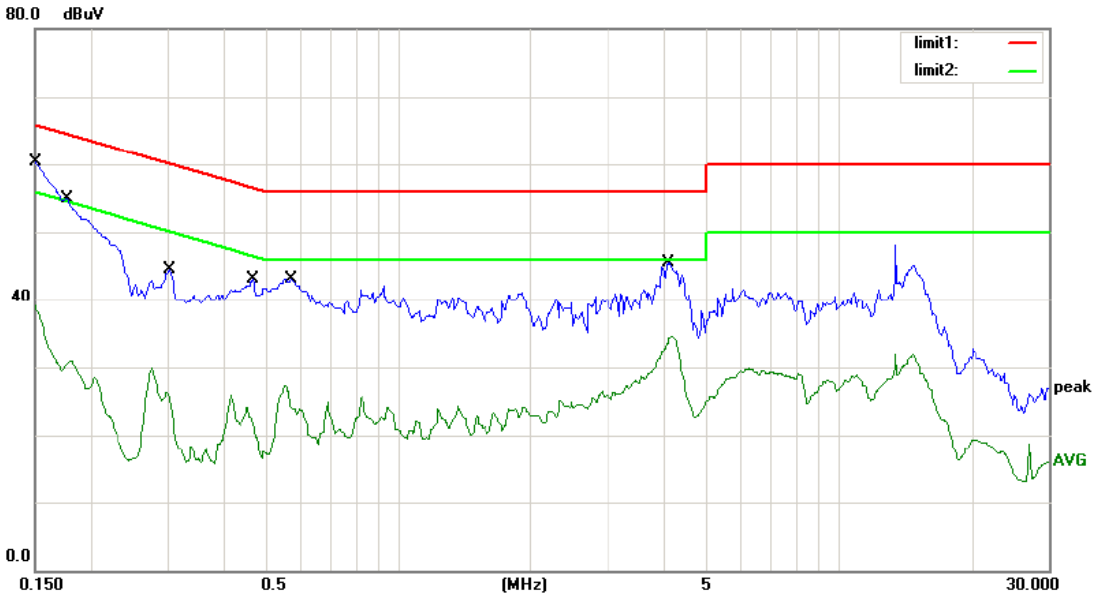
Limit: (CE)FCC PART 15B_QP Power: DC 5V From Wii U(AC 120V/60Hz) Humidity: 55 %

Mode: TX

Note:

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | Comment |
| 1 | * | 0.1500 | 56.24 | 0.00 | 56.24 | 66.00 | -9.76 | QP | |
| 2 | | 0.1500 | 38.68 | 0.00 | 38.68 | 56.00 | -17.32 | AVG | |
| 3 | | 0.5460 | 38.64 | 0.00 | 38.64 | 56.00 | -17.36 | QP | |
| 4 | | 0.5460 | 22.18 | 0.00 | 22.18 | 46.00 | -23.82 | AVG | |
| 5 | | 0.8115 | 36.81 | 0.00 | 36.81 | 56.00 | -19.19 | QP | |
| 6 | | 0.8115 | 19.14 | 0.00 | 19.14 | 46.00 | -26.86 | AVG | |
| 7 | | 2.5200 | 36.45 | 0.00 | 36.45 | 56.00 | -19.55 | QP | |
| 8 | | 2.5200 | 23.13 | 0.00 | 23.13 | 46.00 | -22.87 | AVG | |
| 9 | | 3.6100 | 38.25 | 0.00 | 38.25 | 56.00 | -17.75 | QP | |
| 10 | | 3.6100 | 29.76 | 0.00 | 29.76 | 46.00 | -16.24 | AVG | |
| 11 | | 4.1500 | 42.17 | 0.00 | 42.17 | 56.00 | -13.83 | QP | |
| 12 | | 4.1500 | 35.22 | 0.00 | 35.22 | 46.00 | -10.78 | AVG | |

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver.




Site site #1 Phase: N Temperature: 24

Limit: (CE)FCC PART 15B_QP Power: DC 5VFrom Wii U(AC 120V/60Hz) Humidity: 55 %

Mode: TX

Note:

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | Comment |
| 1 | * | 0.1500 | 57.24 | 0.00 | 57.24 | 66.00 | -8.76 | QP | |
| 2 | | 0.1500 | 39.05 | 0.00 | 39.05 | 56.00 | -16.95 | AVG | |
| 3 | | 0.1787 | 51.45 | 0.00 | 51.45 | 64.55 | -13.10 | QP | |
| 4 | | 0.1787 | 30.66 | 0.00 | 30.66 | 54.55 | -23.89 | AVG | |
| 5 | | 0.3030 | 41.25 | 0.00 | 41.25 | 60.16 | -18.91 | QP | |
| 6 | | 0.3030 | 27.95 | 0.00 | 27.95 | 50.16 | -22.21 | AVG | |
| 7 | | 0.4695 | 40.57 | 0.00 | 40.57 | 56.52 | -15.95 | QP | |
| 8 | | 0.4695 | 24.15 | 0.00 | 24.15 | 46.52 | -22.37 | AVG | |
| 9 | | 0.5730 | 40.36 | 0.00 | 40.36 | 56.00 | -15.64 | QP | |
| 10 | | 0.5730 | 27.40 | 0.00 | 27.40 | 46.00 | -18.60 | AVG | |
| 11 | | 4.1300 | 42.13 | 0.00 | 42.13 | 56.00 | -13.87 | QP | |
| 12 | | 4.1300 | 34.59 | 0.00 | 34.59 | 46.00 | -11.41 | AVG | |

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver.

## 4.6 Conducted Measurement Photos:

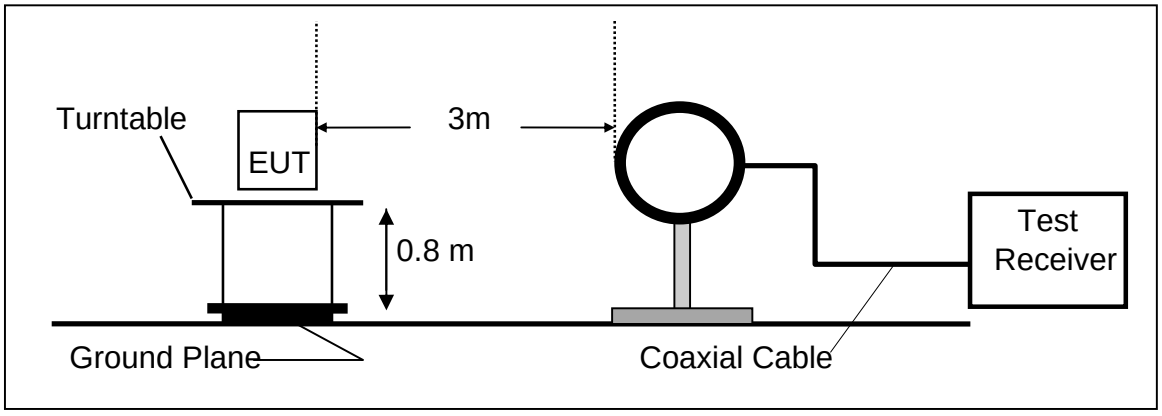
# 5 Radiated Emission Test

## 5.1 Measurement Procedure

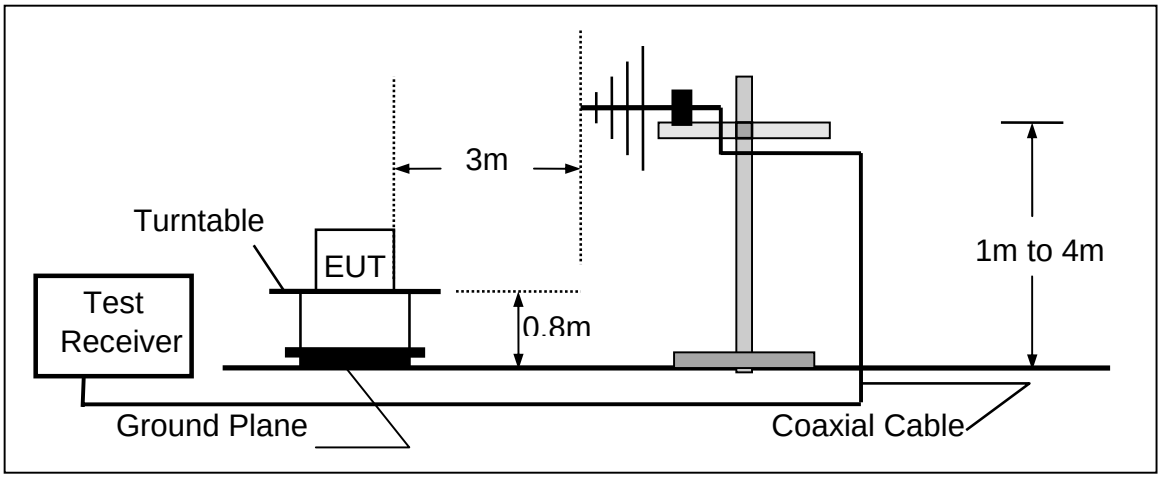
1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measured were complete.

## 5.2 Test SET-UP (Block Diagram of Configuration)

(A) Radiated Emission Test Set-Up, Frequency Below 30MHz




(B) Radiated Emission Test Set-Up, Frequency Below 1000MHz



## 5.3 Measurement Equipment Used

| Item | Equipment | Manufacturer | Model No. | Serial No. | Characteristics | Last Cal. | Cal. Interval |
|---|---|---|---|---|---|---|---|
| 1. | Test Receiver | Rohde & Schwarz | ESCI | 1166.5950.03 | 9KHz-3GHz | 3/15/2015 | 1 Year |
| 2. | Loop Antenna | Schwarzbeck | FMZB 1519 | 012 | 9 KHz -30MHz | 12/29/2014 | 1 Year |
| 3. | Bilog Antenna | Schwarzbeck | VULB9163 | 000141 | 25MHz-2GHz | 3/15/2015 | 1 Year |
| 4. | Power Amplifier | HP | 8447F | OPT H64 | 1GHz-26.5GHz | 3/15/2015 | 1 Year |
| 5. | Color Monitor | SUNSPO | SP-140A | N/A | -- | 3/15/2015 | 1 Year |
| 6. | Single Line Filter | JIANLI | XL-3 | N/A | -- | 3/15/2015 | 1 Year |
| 7. | Single Phase Power Line Filter | JIANLI | DL-2X100B | N/A | -- | 3/15/2015 | 1 Year |
| 8. | Cable | Schwarzbeck | PLF-100 | 549489 | 9KHz-3GHz | 3/15/2015 | 1 Year |
| 9. | Cable | Rosenberger | CIL02 | A0783566 | 9KHz-3GHz | 3/15/2015 | 1 Year |
| 10. | Cable | Rosenberger | RG 233/U | 525178 | 9KHz-3GHz | 3/15/2015 | 1 Year |

## 5.4 Radiated Emission Limit

The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table 15.209(a):

| FCC Part 15.209 | | | | |
|---|---|---|---|---|
| Frequency (MHz) | Field Strength Limitation | | Field Strength Limitation Frequency at 3m Measurement Distance | |
| | (uV/m) | Dist | (uV/m) | (dBuV/m) |
| 0.009 – 0.490 | 2400 / F(KHz) | 300m | 10000 * 2400/F(KHz) | 20log 2400/F(KHz) + 80 |
| 0.490 – 1.705 | 24000 / F(KHz) | 30m | 100 * 24000/F(KHz) | 20log 24000/F(KHz) + 40 |
| 1.705 – 30.00 | 30 | 30m | 100* 30 | 20log 30 + 40 |
| 30.0 – 88.0 | 100 | 3m | 100 | 20log 100 |
| 88.0 – 216.0 | 150 | 3m | 150 | 20log 150 |
| 216.0 – 960.0 | 200 | 3m | 200 | 20log 200 |
| Above 960.0 | 500 | 3m | 500 | 20log 500 |

| FCC Part 15.225(a)/(b)/(c) | | | | |
|---|---|---|---|---|
| Frequency (MHz) | Field Strength Limitation | | Field Strength Limitation Frequency at 3m Measurement Distance | |
| | (uV/m) | Dist | (uV/m) | (dBuV/m) |
| 13.110 – 13.410 | 106 | 30 m | 106*100 | 80.5 |
| 13.410 – 13.553 | 334 | 30 m | 334*100 | 90.5 |
| 13.553 – 13.567 | 15,848 | 30 m | 15,848*100 | 124 |
| 13.567 – 13.710 | 334 | 30 m | 334*100 | 90.5 |
| 13.710 – 14.010 | 106 | 30 m | 106*100 | 80.5 |

15.205 Restricted bands of operation

| MHz | MHz | MHz | 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 - 156.52525 | 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]) |

Remark : 1. Emission level in dBuV/m=20 log (uV/m)
2. Measurement was performed at an antenna to the closed point of EUT distance of meters.
3. Only spurious frequency is permitted to locate within the Restricted Bands specified in provision of ξ 15.205, and the emissions located in restricted bands also comply with 15.209 limit.

## 5.5 Measurement Result

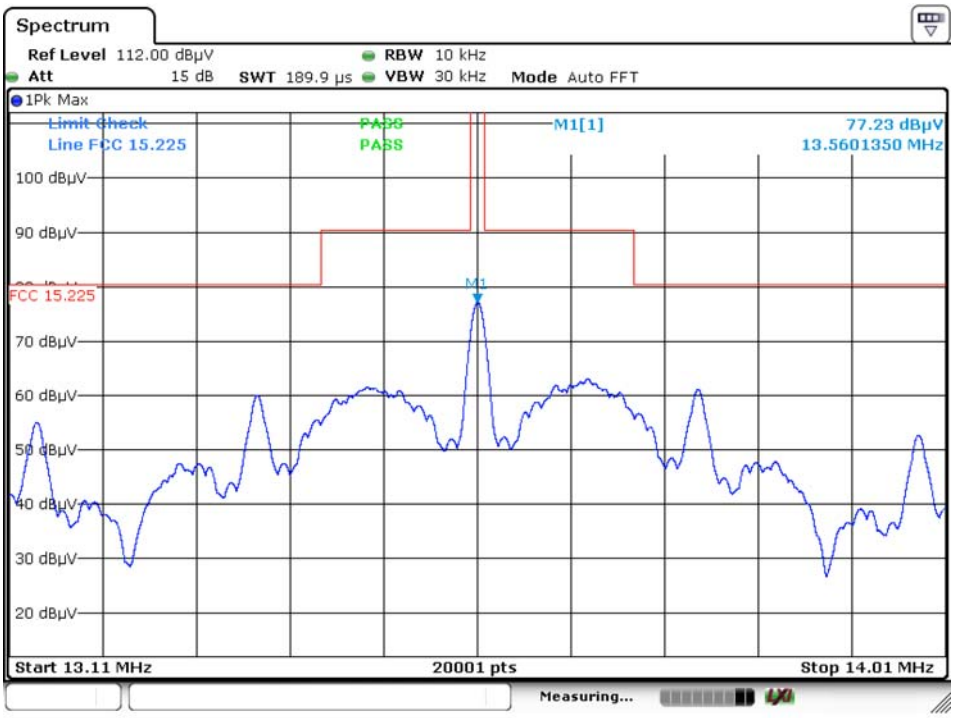
| | | | |
|---|---|---|---|
| Operation Mode: | TX Mode | Test Date : | June 05, 2015 |
| Frequency Range: | 9KHz~30MHz | Temperature : | 28℃ |
| Test Result: | PASS | Humidity : | 65 % |
| Measured Distance: | 3m | Test By: | KYO |

| Freq. (MHz) | Ant.Pol. H/V | Emission Level (dBuV/m) | Limit 3m (dBuV/m) | Over (dB) | Note |
|---|---|---|---|---|---|
| 8.53 | V | 33.05 | 69.54 | -36.49 | QP |
| 12.32 | V | 31.23 | 69.54 | -38.31 | QP |
| 14.56 | V | 35.48 | 69.54 | -34.06 | QP |
| 17.12 | V | 34.16 | 69.54 | -35.38 | QP |
| 21.78 | V | 36.92 | 69.54 | -32.62 | QP |
| 28.44 | V | 37.42 | 69.54 | -32.12 | QP |
| | | | | | |
| 6.17 | H | 31.46 | 69.54 | -38.08 | QP |
| 11.78 | H | 32.58 | 69.54 | -36.96 | QP |
| 15.22 | H | 36.69 | 69.54 | -32.85 | QP |
| 20.66 | H | 37.82 | 69.54 | -31.72 | QP |
| 25.34 | H | 34.05 | 69.54 | -35.49 | QP |
| 27.21 | H | 36.18 | 69.54 | -33.36 | QP |

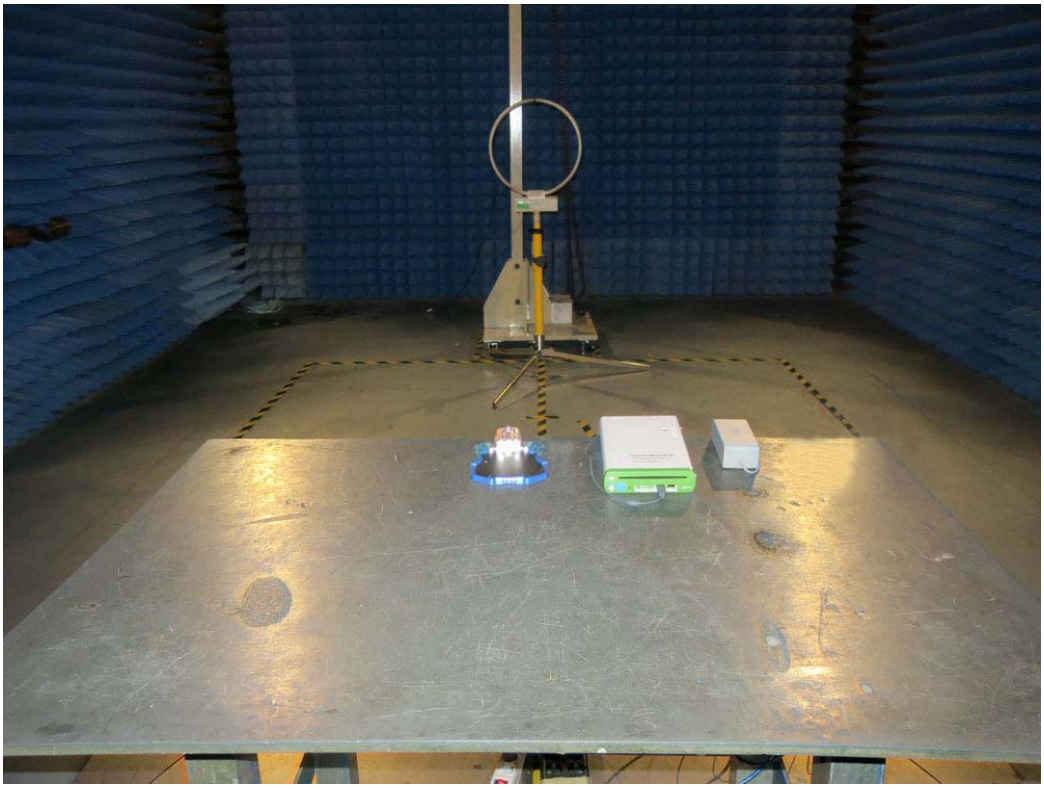
| | | | |
|---|---|---|---|
| Operation Mode: | TX Mode | Test Date : | June 05, 2015 |
| Frequency Range: | 30~1000MHz | Temperature : | 28℃ |
| Test Result: | PASS | Humidity : | 65 % |
| Measured Distance: | 3m | Test By: | KYO |

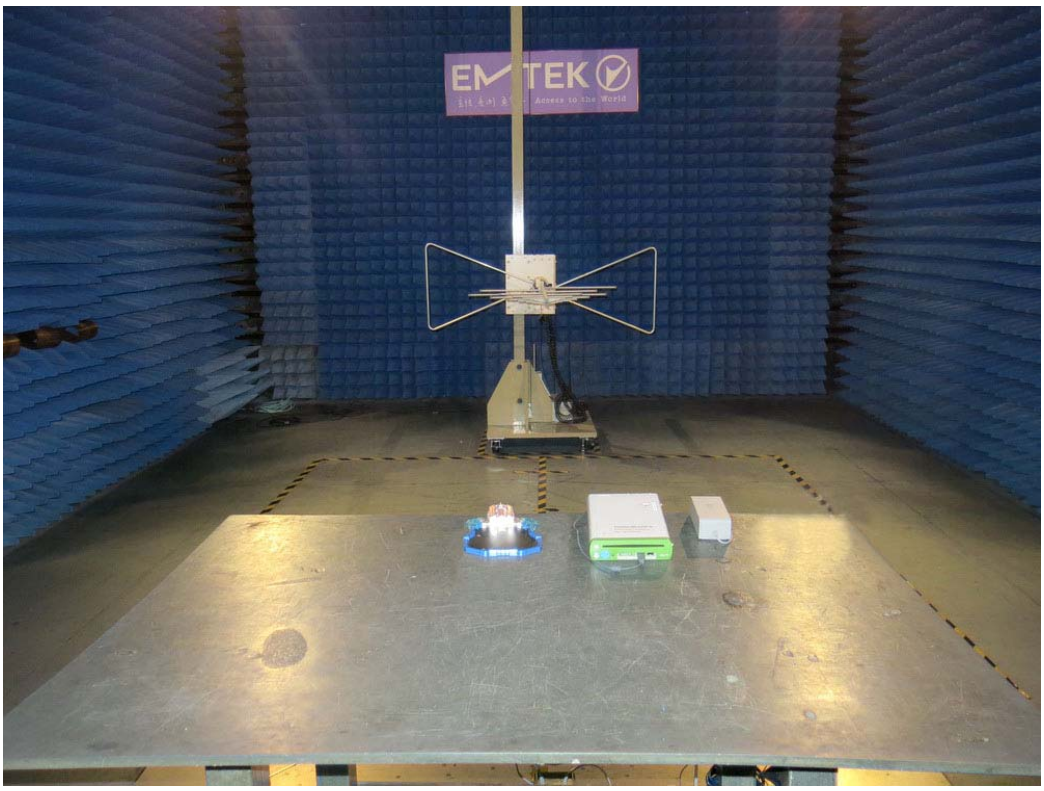
| Freq. (MHz) | Ant.Pol. H/V | Emission Level (dBuV/m) | Limit 3m (dBuV/m) | Over (dB) | Note |
|---|---|---|---|---|---|
| 30.9700 | V | 32.62 | 40.00 | -7.38 | QP |
| 40.6700 | V | 35.61 | 40.00 | -4.39 | QP |
| 122.1500 | V | 32.87 | 43.50 | -10.63 | QP |
| 149.3100 | V | 31.78 | 43.50 | -11.72 | QP |
| 316.1500 | V | 27.96 | 46.00 | -18.04 | QP |
| 542.1600 | V | 34.97 | 46.00 | -11.03 | QP |
| | | | | | |
| 284.1400 | H | 28.74 | 46.00 | -17.26 | QP |
| 433.5200 | H | 33.24 | 46.00 | -12.76 | QP |
| 460.6800 | H | 35.59 | 46.00 | -10.41 | QP |
| 487.8400 | H | 35.50 | 46.00 | -10.50 | QP |
| 542.1600 | H | 35.66 | 46.00 | -10.34 | QP |
| 569.3200 | H | 32.67 | 46.00 | -13.33 | QP |

| | | | |
|---|---|---|---|
| Operation Mode: | TX Mode | Test Date : | June 05, 2015 |
| Frequency Range: | 13.110MHz~14.010 MHz | Temperature : | 28℃ |
| Test Result: | PASS | Humidity : | 65 % |
| Measured Distance: | 3m | Test By: | KYO |



## 5.6 Radiated Measurement Photos:





# 6 FREQUENCY STABILITY MEASUREMENT

## 6.1 FREQUENCY STABILITY LIMITS

FCC Part 15.225(e)

the frequency tolerance of the carrier signal shall be maintained within +/-0.01% of the operating frequency over a temperature variation of –20 degrees to + 50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

## 6.2 MEASUREMENT INSTRUMENTS LIST

| EQUIPMENT TYPE | MFR | MODEL NUMBER | SERIAL NUMBER | Characteristics | LAST CAL. | CAL DUE. |
|---|---|---|---|---|---|---|
| Spectrum Analyzer | Rohde & Schwarz | FSV30 | 1321.3008K | 10Hz-30GHz | 03/15/2015 | 03/14/2016 |
| Coaxial Cable | CDS | 79254 | 46107086 | 10Hz-30GHz | 03/15/2015 | 03/14/2016 |
| Antenna Connector | ARTHUR-YANG | 2244-N1TG1 | N/A | 10Hz-30GHz | 03/15/2015 | 03/14/2016 |

Remark: The temporary antenna connector is soldered on the PCB board in order to perform conducted tests and this temporary antenna connector is listed in the equipment list.

## 6.3 TEST PROCEDURE

a. The EUT was placed inside the temperature chamber. After the temperature stabilized for approximately 20 minutes, the frequency of the output signal was recorded from the counter. At room temperature (25±5°C)
b. For the actual test configuration, please refer to the related Item –EUT Test Photos.

## 6.4 EUT OPERATING CONDITIONS

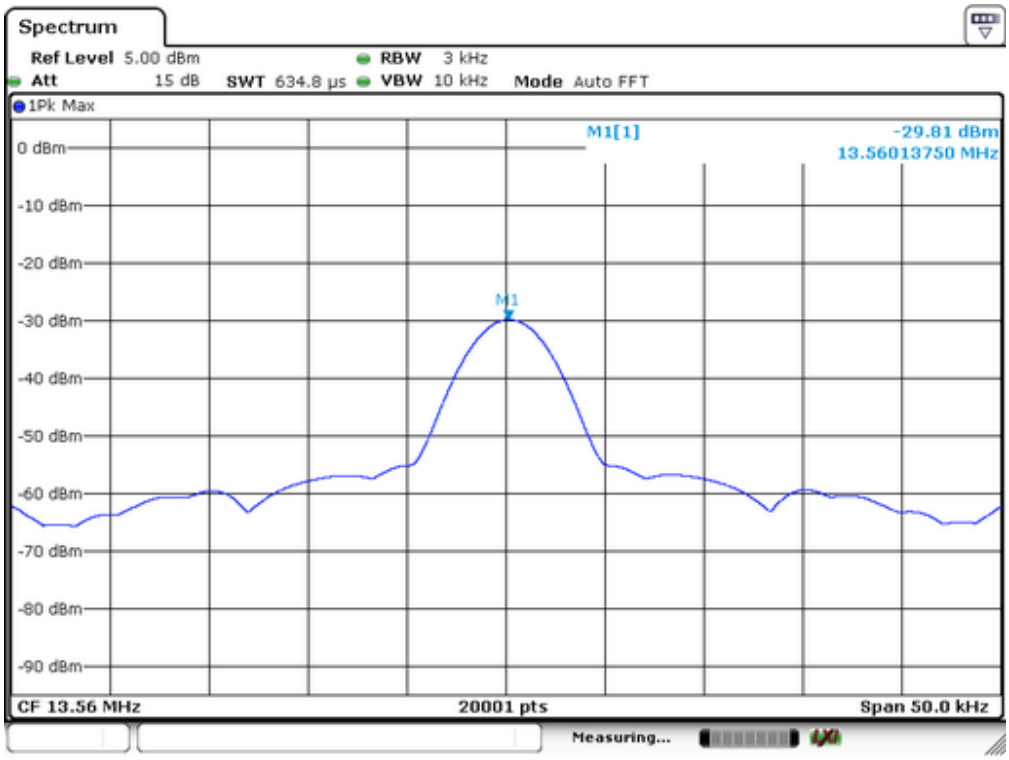
The EUT tested system was configured as the statements of 4.1.6 Unless otherwise a special operating condition is specified in the follows during the testing.

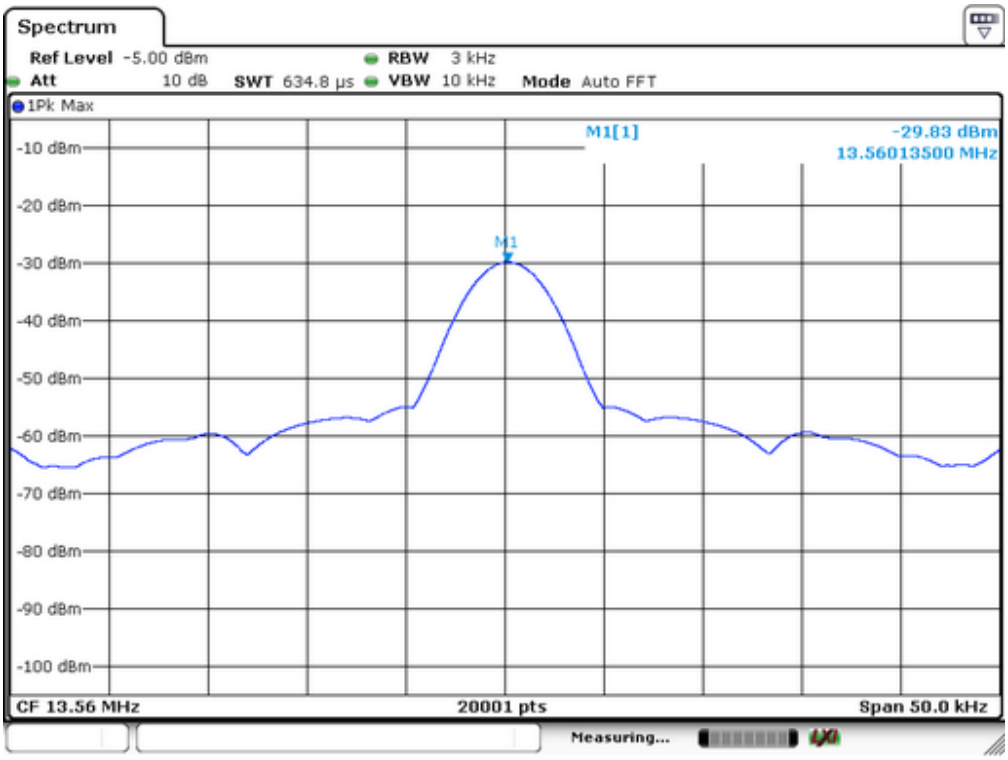
## 6.5 TEST RESULTS

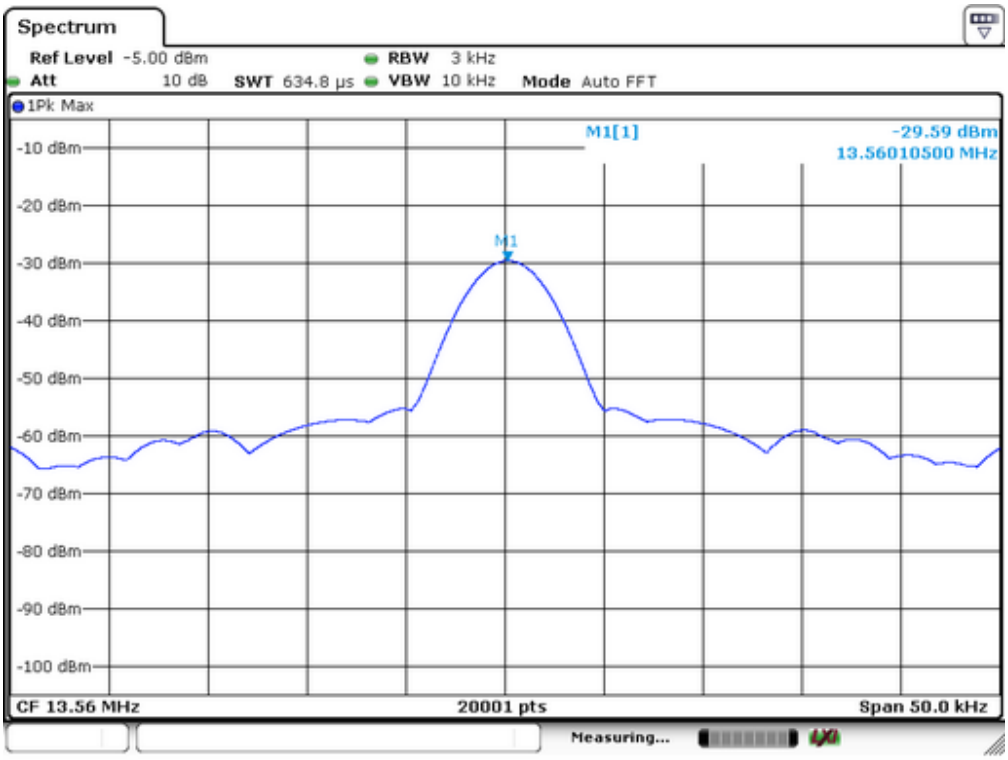
| E.U.T : | Portal of Power | Test Mode : | TX Mode |
|---|---|---|---|
| Test Voltage : | DC 5V | | |

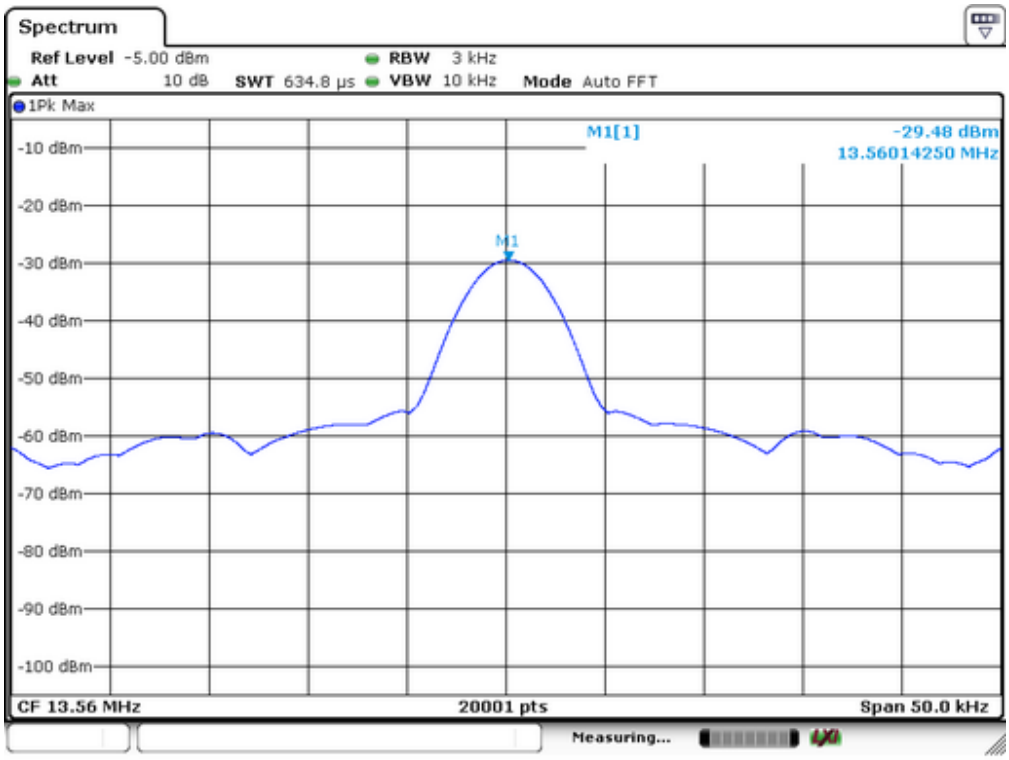
| Frequency Stability Versus Environmental Temperature | | | | | |
|---|---|---|---|---|---|
| **Temperature (℃)** | **Voltage (Vdc)** | **Frequency (MHz)** | **Freq Error (ppm)** | **Limit (ppm)** | **Results** |
| -20 | 5V | 13.5601375 | 10.14 | 100 | PASS |
| -10 | 5V | 13.5601350 | 9.96 | 100 | PASS |
| 0 | 5V | 13.5601050 | 7.74 | 100 | PASS |
| 10 | 5V | 13.5601425 | 10.51 | 100 | PASS |
| 20 | 5V | 13.5601500 | 11.06 | 100 | PASS |
| 30 | 5V | 13.5602250 | 16.59 | 100 | PASS |
| 40 | 5V | 13.5600850 | 6.27 | 100 | PASS |
| 50 | 5V | 13.5601750 | 12.91 | 100 | PASS |

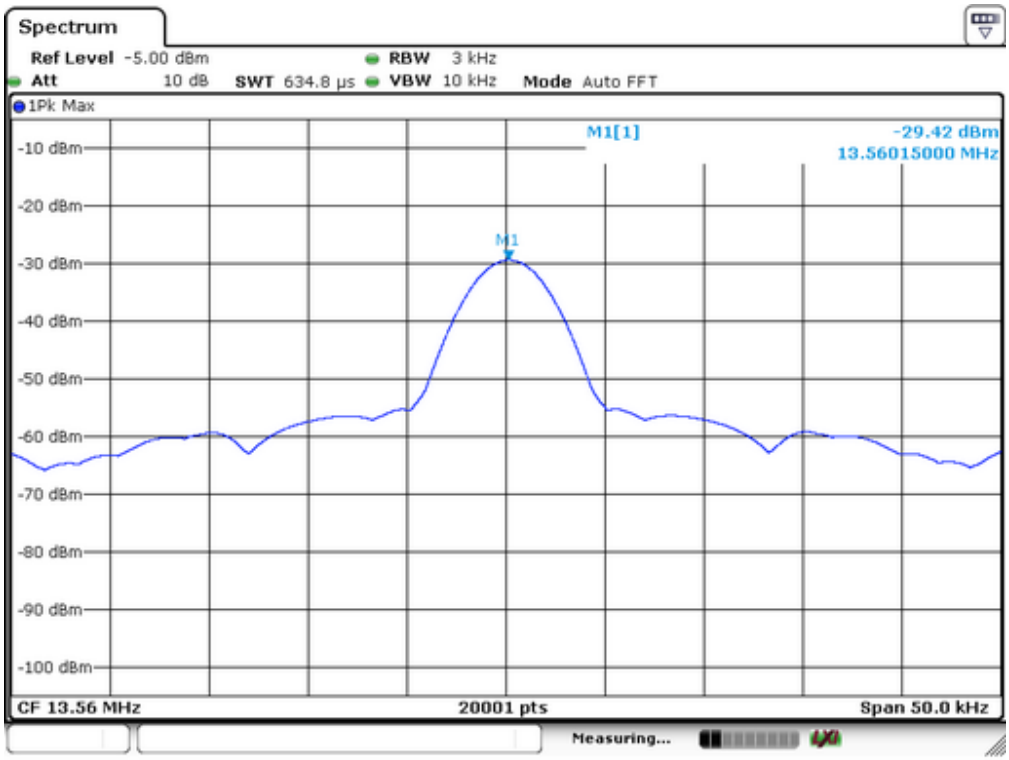
**Frequency Stability Versus Environmental Temperature**

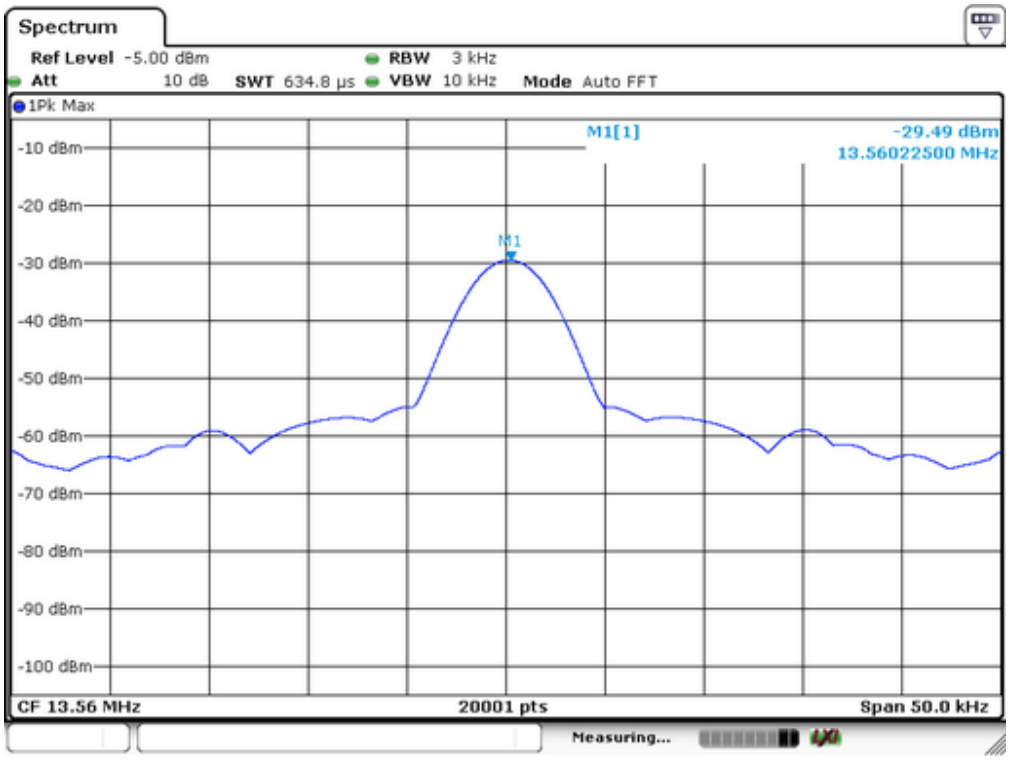


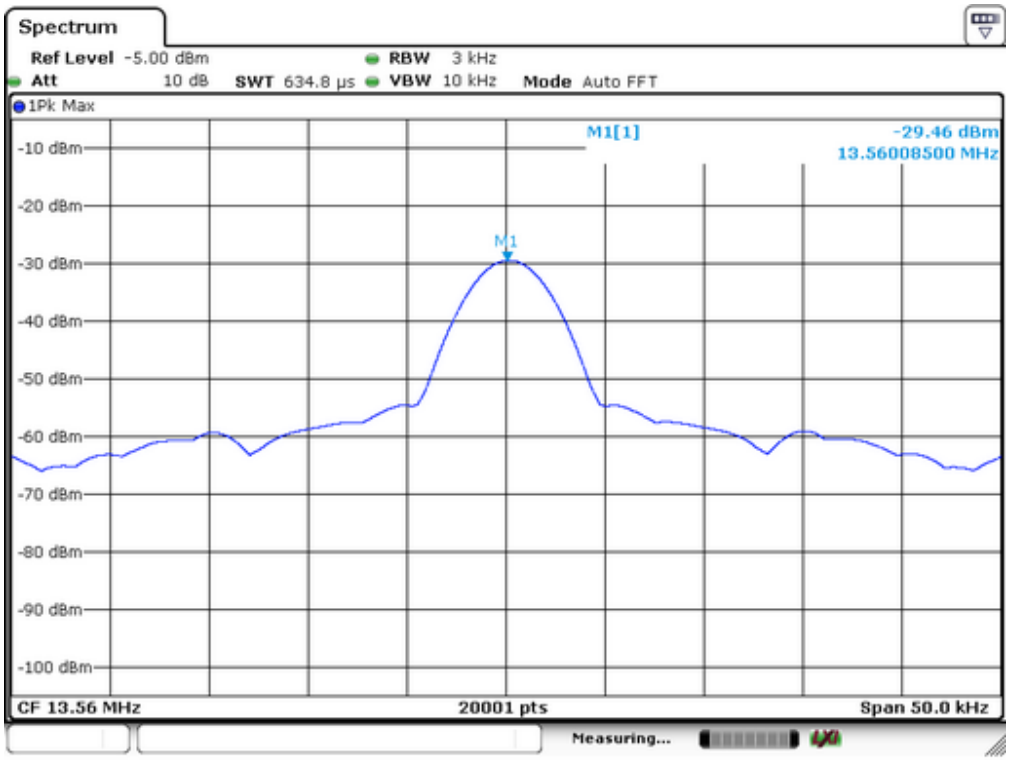

Spectrum
Ref Level -5.00 dBm
RBW 3 kHz
Att 10 dB
SWT 634.8 µs
VBW 10 kHz
Mode Auto FFT
1Pk Max
M1[1]
-29.83 dBm
13.56013500 MHz
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
-100 dBm
M1
CF 13.56 MHz
20001 pts
Span 50.0 kHz
Measuring...

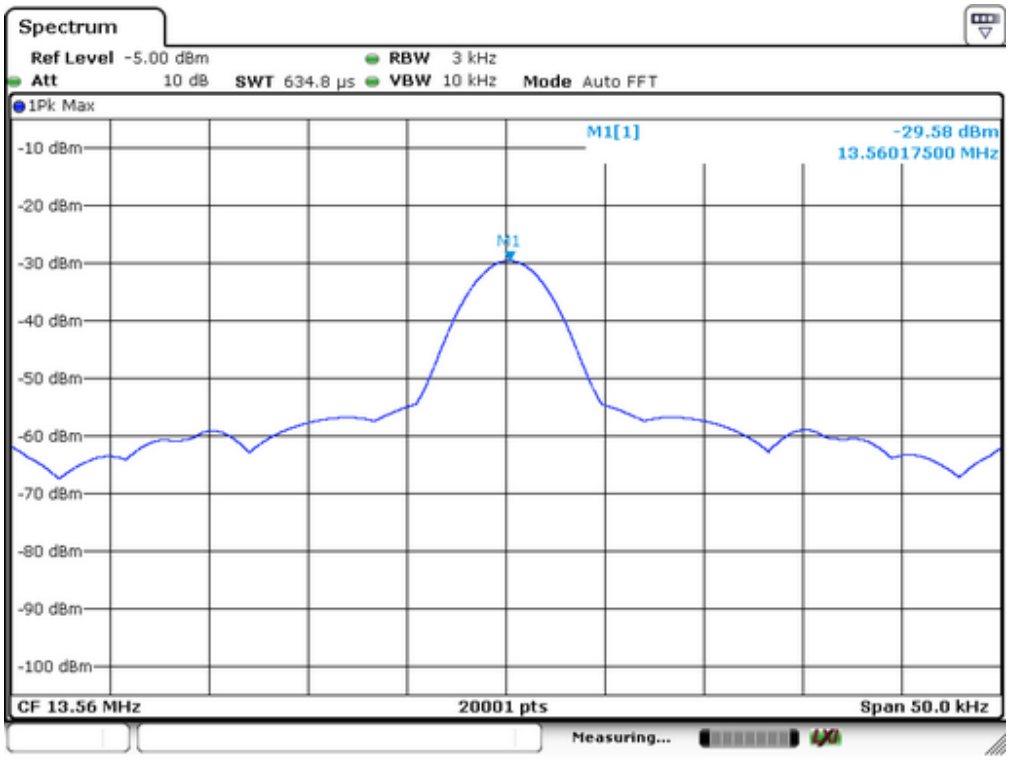

Spectrum
Ref Level -5.00 dBm
RBW 3 kHz
Att 10 dB
SWT 634.8 µs
VBW 10 kHz
Mode Auto FFT
1Pk Max
M1[1]
-29.59 dBm
13.56010500 MHz
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
-100 dBm
M1
CF 13.56 MHz
20001 pts
Span 50.0 kHz
Measuring...


Spectrum
Ref Level -5.00 dBm
RBW 3 kHz
Att 10 dB
SWT 634.8 µs
VBW 10 kHz
Mode Auto FFT
1Pk Max
M1[1]
-29.48 dBm
13.56014250 MHz
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
-100 dBm
M1
CF 13.56 MHz
20001 pts
Span 50.0 kHz
Measuring...


Spectrum
Ref Level -5.00 dBm
RBW 3 kHz
Att 10 dB
SWT 634.8 µs
VBW 10 kHz
Mode Auto FFT
1Pk Max
M1[1]
-29.42 dBm
13.56015000 MHz
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
-100 dBm
M1
CF 13.56 MHz
20001 pts
Span 50.0 kHz
Measuring...

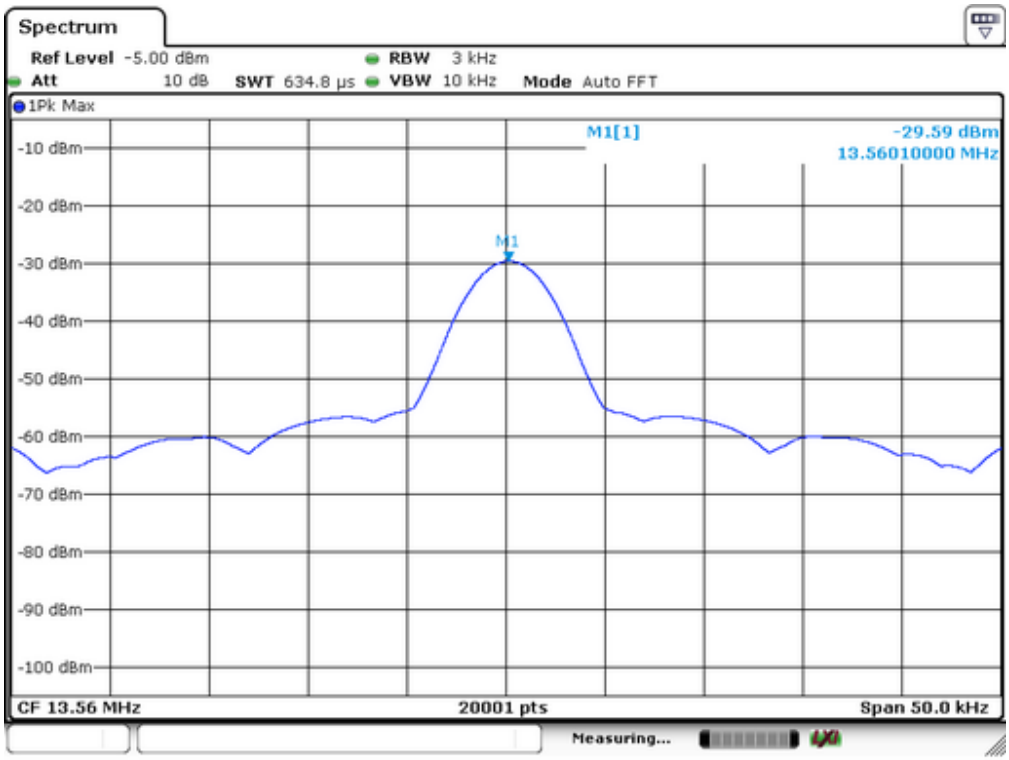

Spectrum
Ref Level -5.00 dBm
RBW 3 kHz
Att 10 dB
SWT 634.8 µs
VBW 10 kHz
Mode Auto FFT
1Pk Max
M1[1]
-29.49 dBm
13.56022500 MHz
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
-100 dBm
M1
CF 13.56 MHz
20001 pts
Span 50.0 kHz
Measuring...

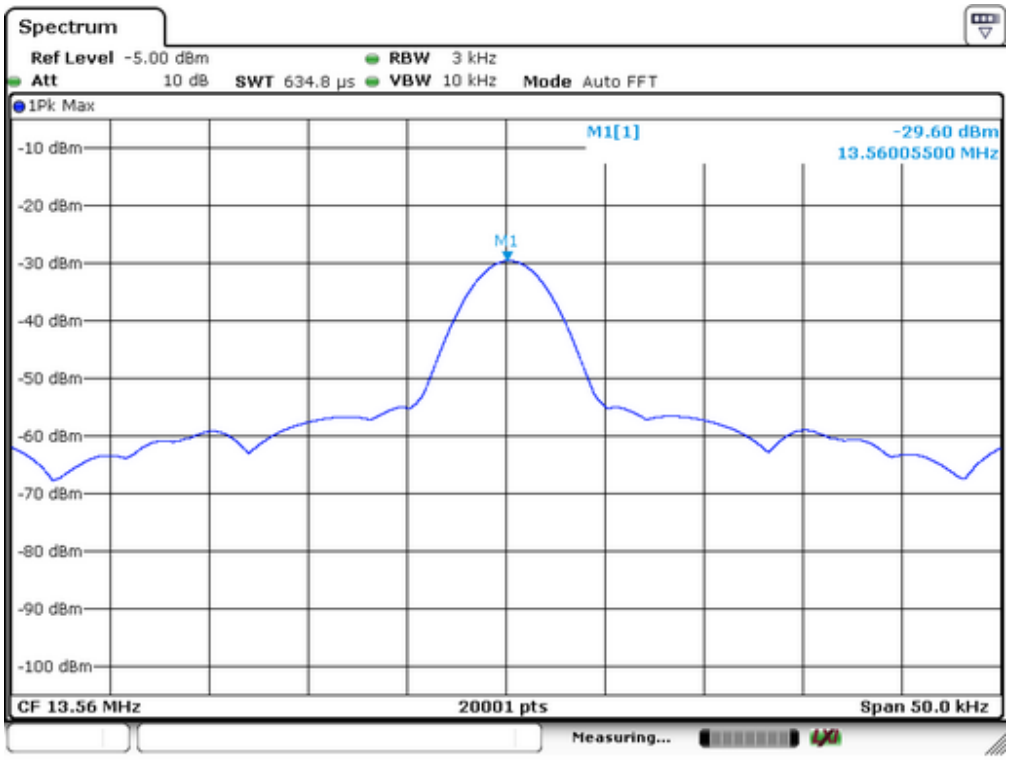

Spectrum
Ref Level -5.00 dBm
RBW 3 kHz
Att 10 dB
SWT 634.8 µs
VBW 10 kHz
Mode Auto FFT
1Pk Max
M1[1]
-29.46 dBm
13.56008500 MHz
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
-100 dBm
M1
CF 13.56 MHz
20001 pts
Span 50.0 kHz
Measuring...

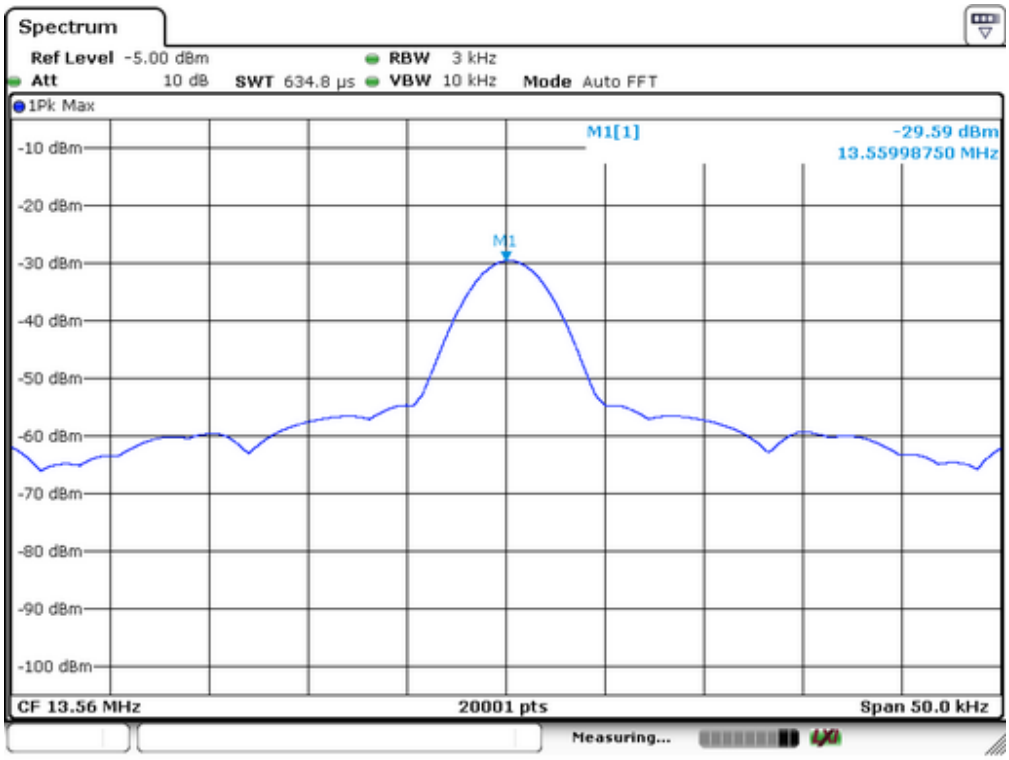


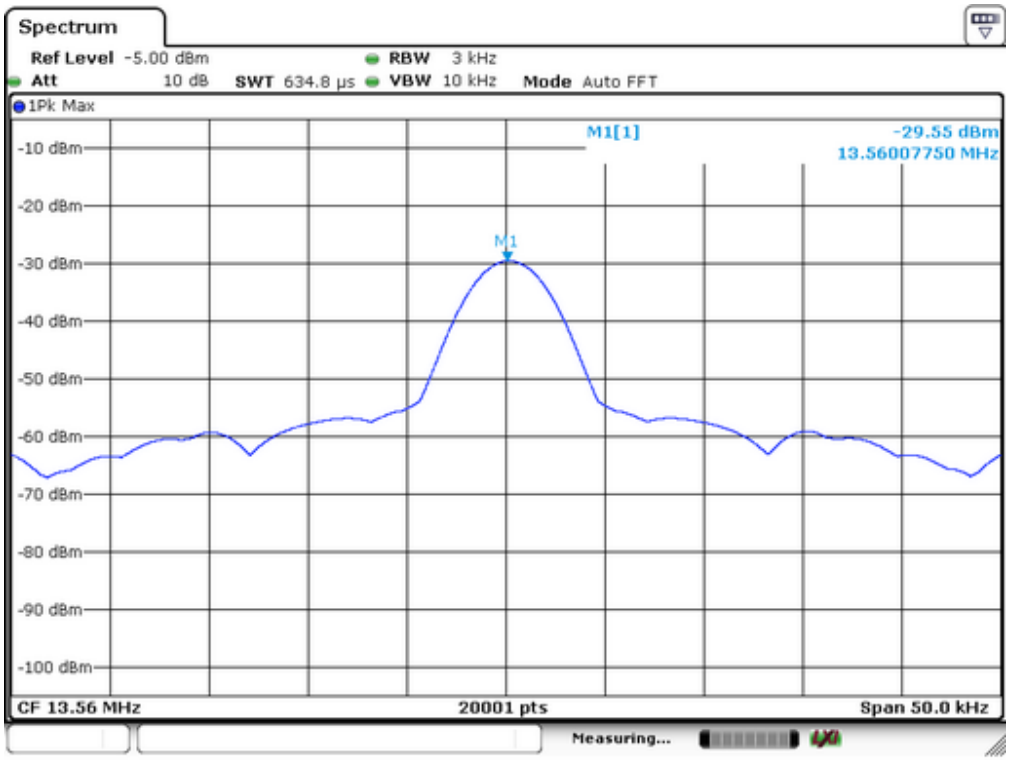

| Frequency Stability Versus Input Voltage | | | | | |
|---|---|---|---|---|---|
| **Temperature (℃)** | **Voltage (Vac)** | **Frequency (MHz)** | **Freq Error (ppm)** | **Limit (ppm)** | **Results** |
| 20 | 4.25 | 13.5601000 | 7.37 | 100 | PASS |
| 20 | 4.50 | 13.5600550 | 4.06 | 100 | PASS |
| 20 | 4.75 | 13.5599875 | -0.92 | 100 | PASS |
| 20 | 5.00 | 13.5600775 | 5.72 | 100 | PASS |
| 20 | 5.25 | 13.5600150 | 1.11 | 100 | PASS |
| 20 | 5.50 | 13.5600600 | 4.42 | 100 | PASS |
| 20 | 5.75 | 13.5601425 | 10.51 | 100 | PASS |

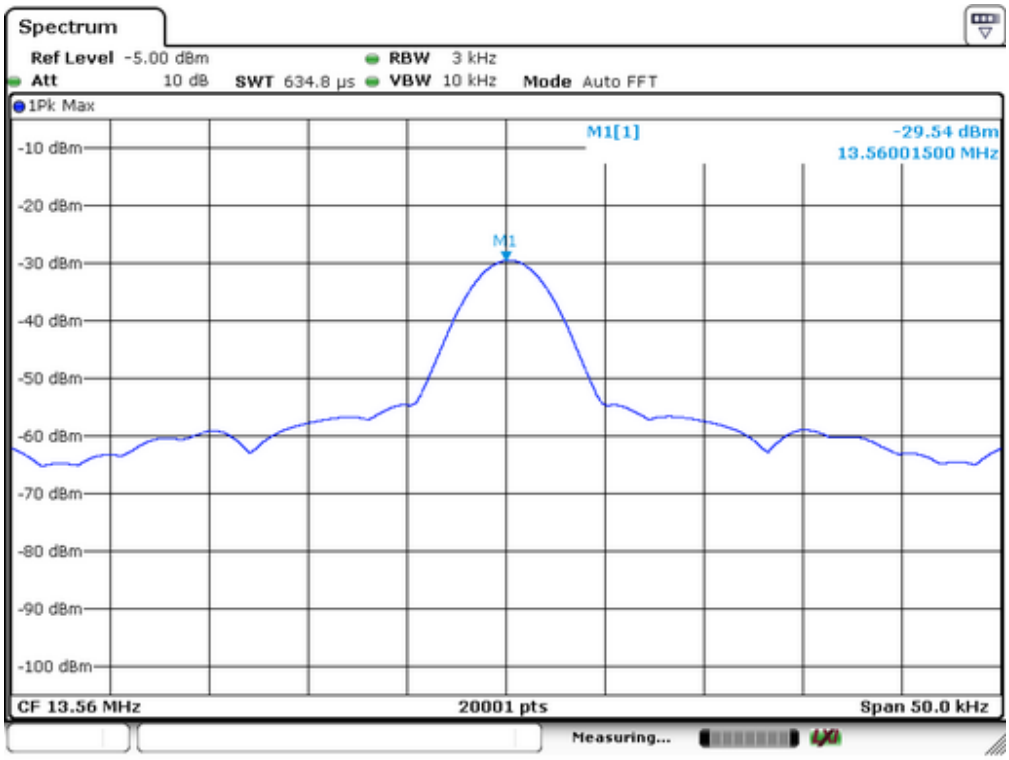
## Frequency Stability Versus Input Voltage

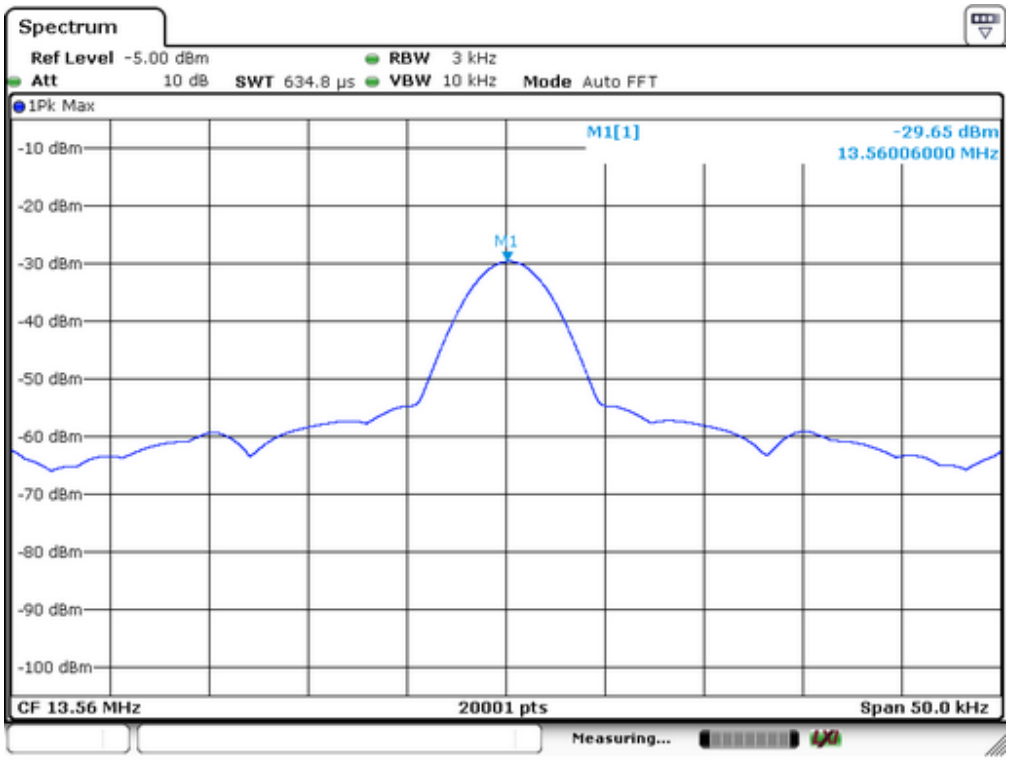


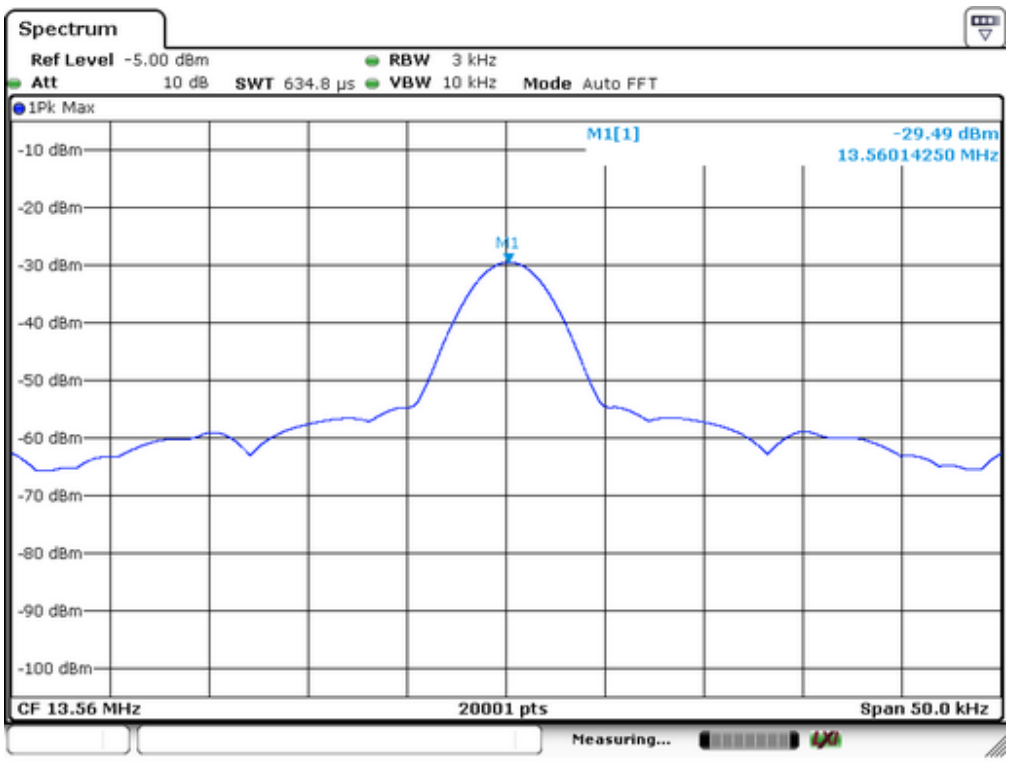




Spectrum
Ref Level -5.00 dBm
RBW 3 kHz
Att 10 dB
SWT 634.8 µs
VBW 10 kHz
Mode Auto FFT
1Pk Max
M1[1]
-29.59 dBm
13.55998750 MHz
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
-100 dBm
M1
CF 13.56 MHz
20001 pts
Span 50.0 kHz
Measuring...


Spectrum
Ref Level -5.00 dBm
RBW 3 kHz
Att 10 dB
SWT 634.8 µs
VBW 10 kHz
Mode Auto FFT
1Pk Max
M1[1]
-29.55 dBm
13.56007750 MHz
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
-100 dBm
M1
CF 13.56 MHz
20001 pts
Span 50.0 kHz
Measuring...


Spectrum
Ref Level -5.00 dBm
RBW 3 kHz
Att 10 dB
SWT 634.8 µs
VBW 10 kHz
Mode Auto FFT
1Pk Max
M1[1]
-29.54 dBm
13.56001500 MHz
M1
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
-100 dBm
CF 13.56 MHz
20001 pts
Span 50.0 kHz
Measuring...


Spectrum
Ref Level -5.00 dBm
RBW 3 kHz
Att 10 dB
SWT 634.8 µs
VBW 10 kHz
Mode Auto FFT
1Pk Max
M1[1]
-29.65 dBm
13.56006000 MHz
M1
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
-100 dBm
CF 13.56 MHz
20001 pts
Span 50.0 kHz
Measuring...


Spectrum
Ref Level -5.00 dBm
RBW 3 kHz
Att 10 dB
SWT 634.8 µs
VBW 10 kHz
Mode Auto FFT
1Pk Max
M1[1]
-29.49 dBm
13.56014250 MHz
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
-90 dBm
-100 dBm
M1
CF 13.56 MHz
20001 pts
Span 50.0 kHz
Measuring...

# 7 EMISSION BANDWIDTH

## 7.1 Emission Bandwidth Limit

Intentional radiators must be designed to ensure that the 20 dB bandwidth of the emissions in the specific band (13.553 – 13.567 MHz).

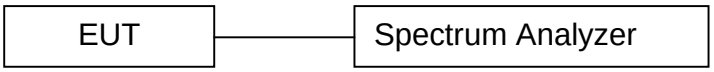
## 7.2 TEST INSTRUMENTS

Refer a test equipment and calibration data table in this test report.

## 7.3 TEST PROCEDURE

The bandwidth of the fundamental frequency was measured by spectrum analyzer with 10kHz RBW and 30kHz VBW. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

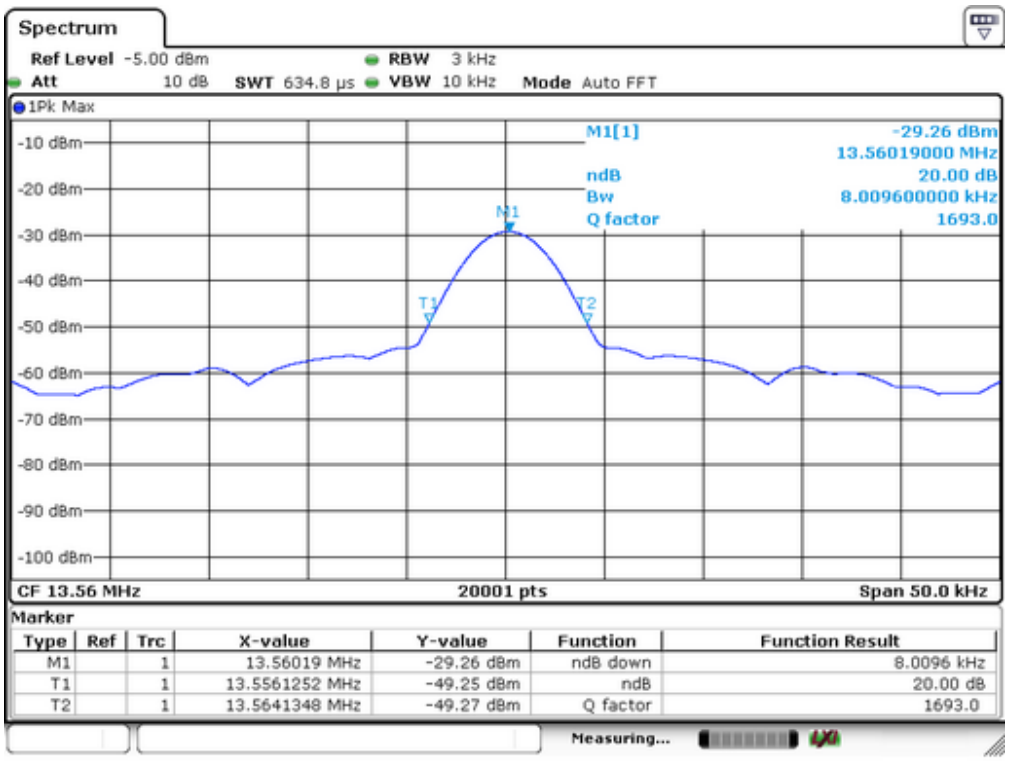
## 7.4 Test Setup




## 7.5 Test Result

| Frequency (MHz) | 20dB Bandwidth (kHz) | Results |
|---|---|---|
| 13.56 | 8.0096 | PASS |

## BANDWIDTH TEST PLOT



# 8 ANTENNA REQUIREMENT

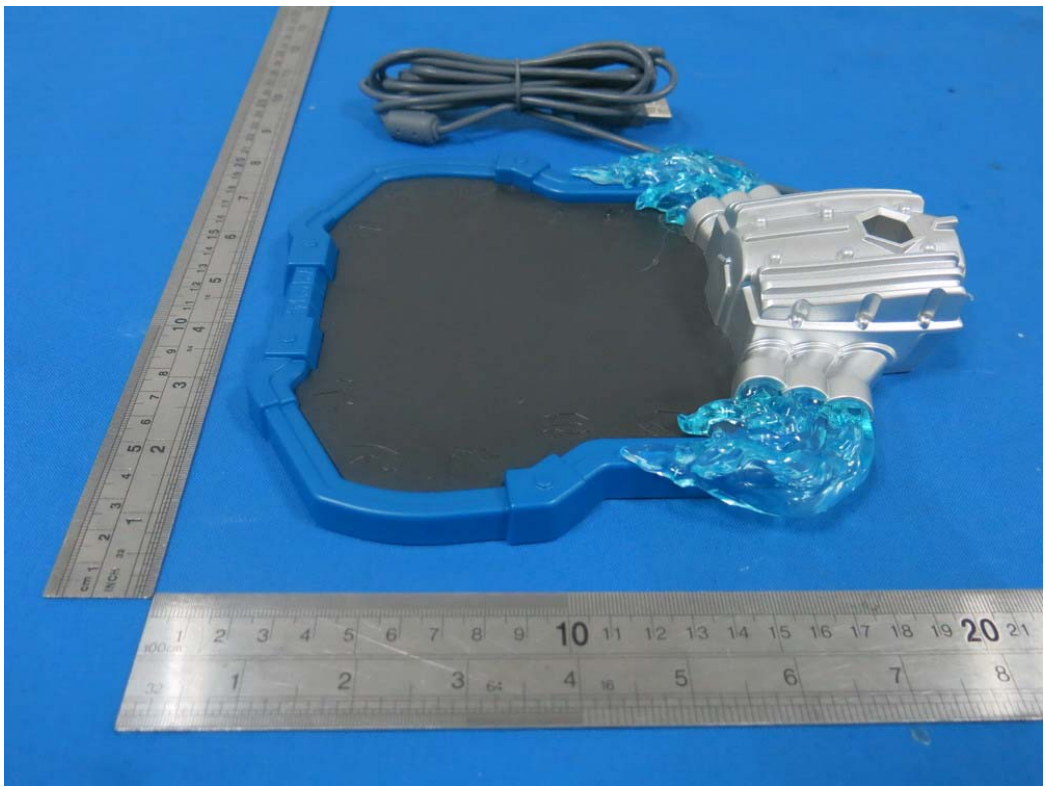
The EUT'S antenna is met the requirement of FCC part 15C section 15.203.

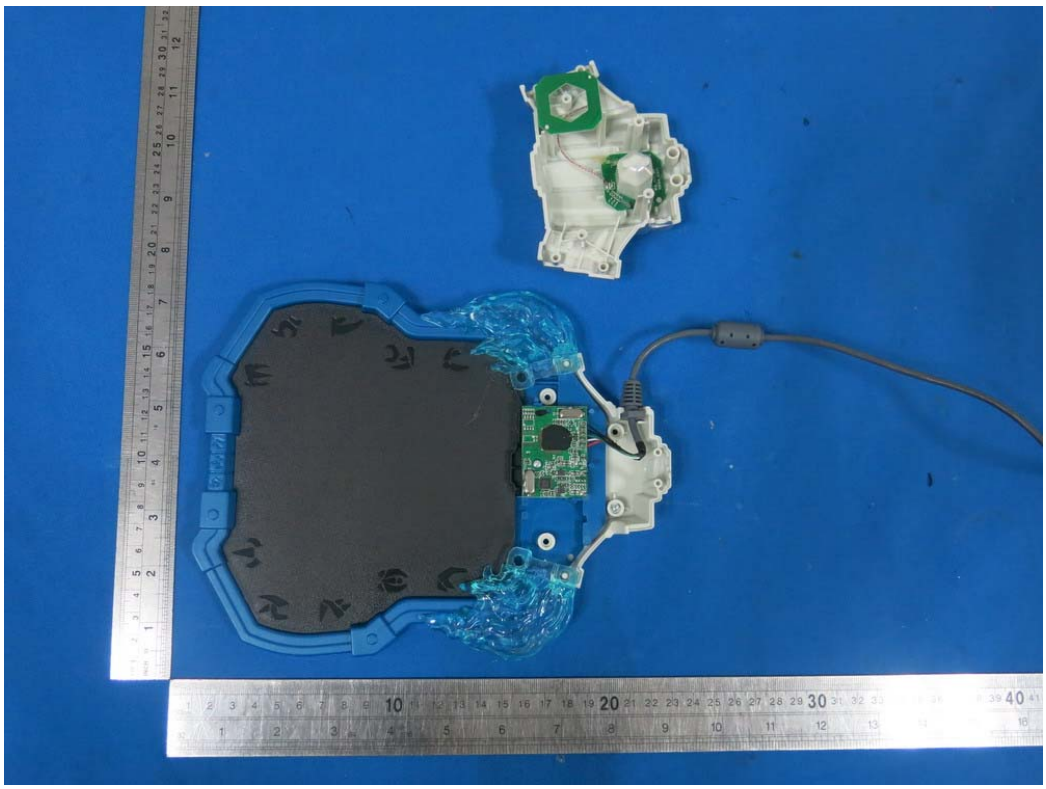
Systems operating in the 2402-2480MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum peak output power of the intentional radiator is reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

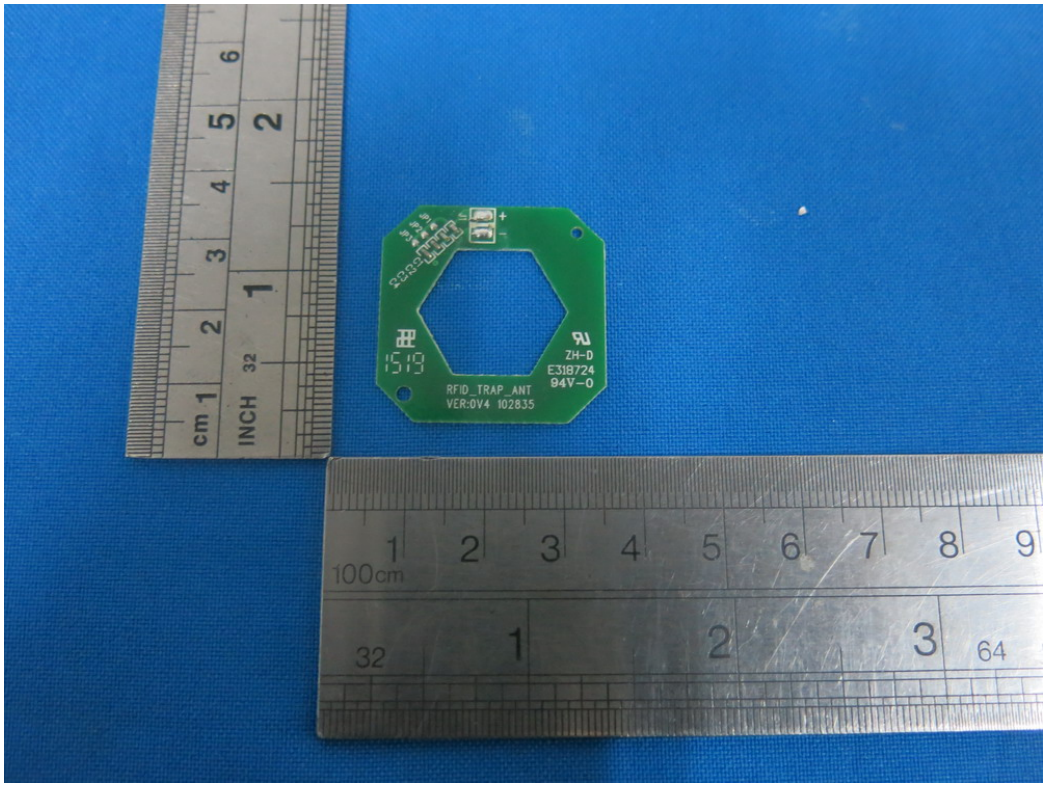
## 8.1 Result

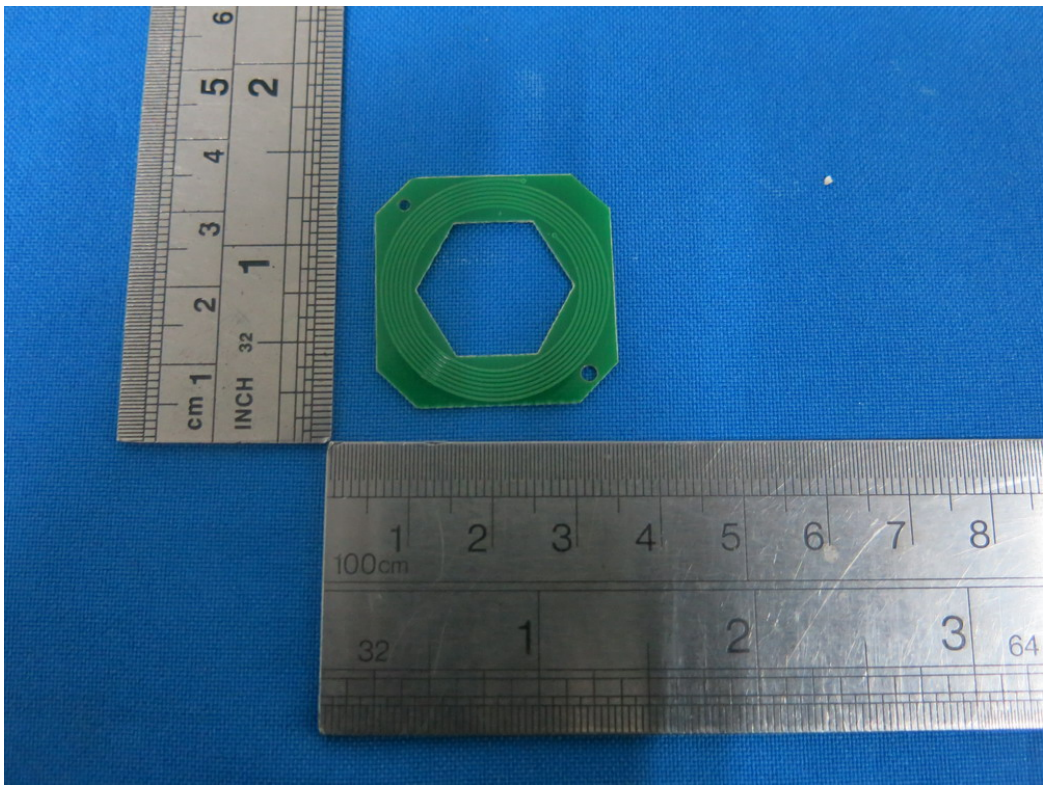
The EUT's antenna used an inter Loop Antenna and integral on the PCB.

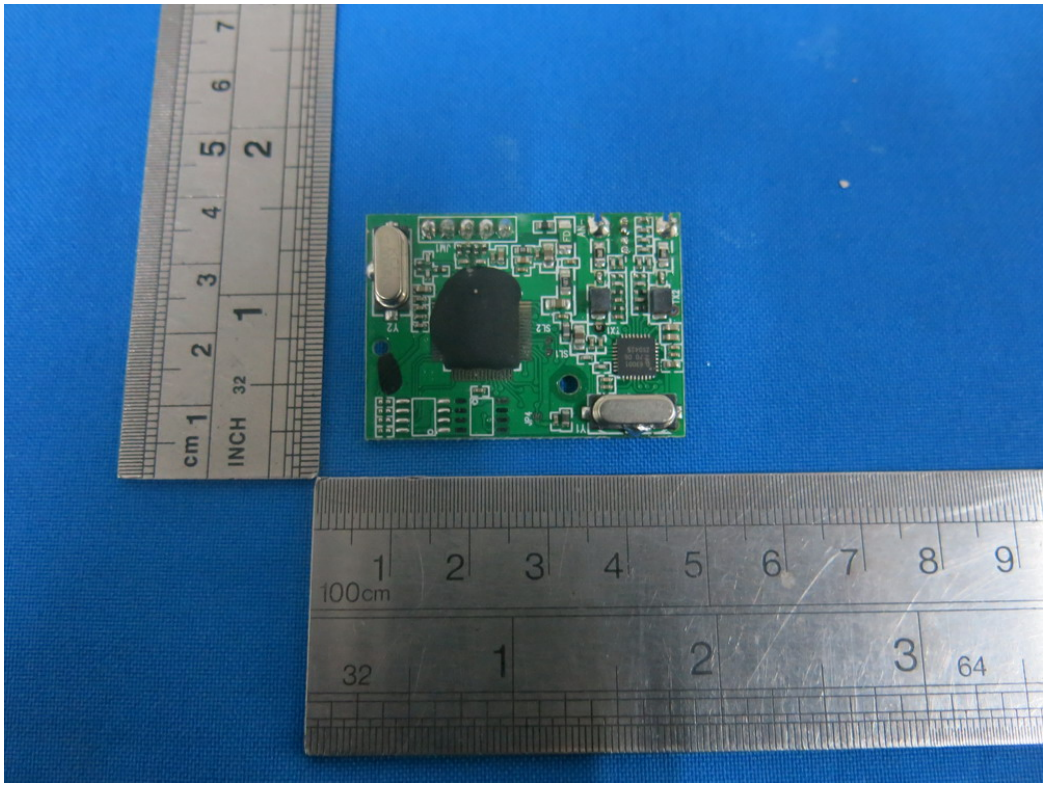
# APPENDIX I
# (Photos of EUT)

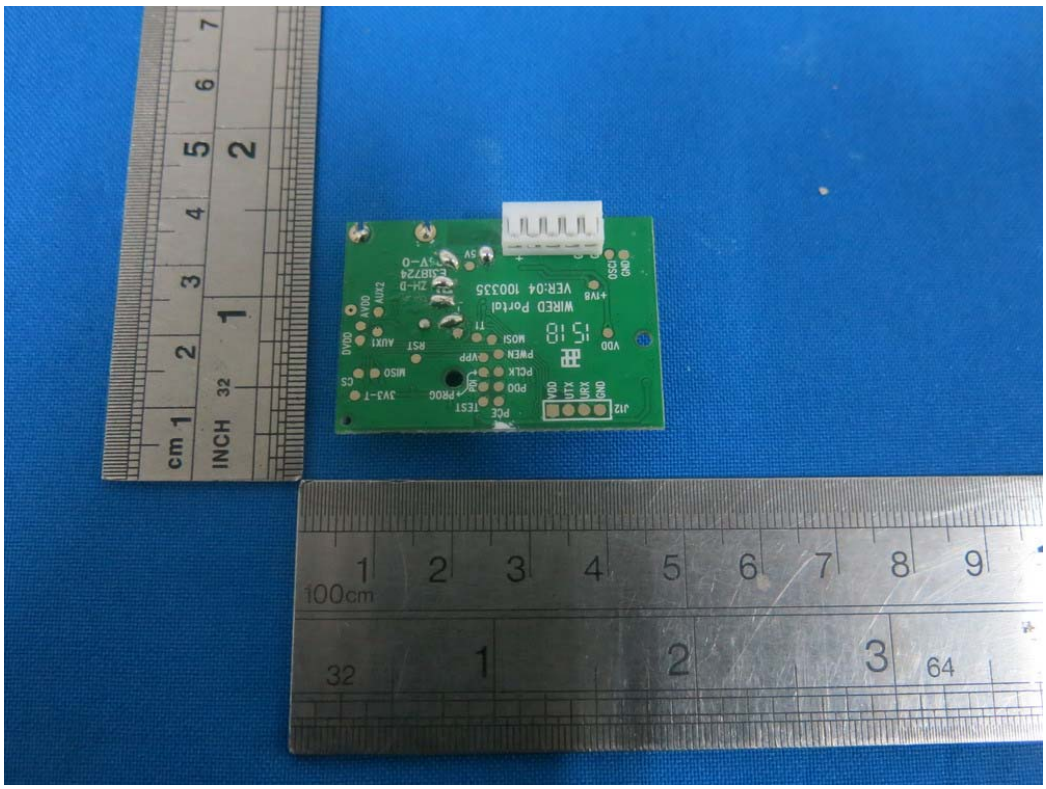


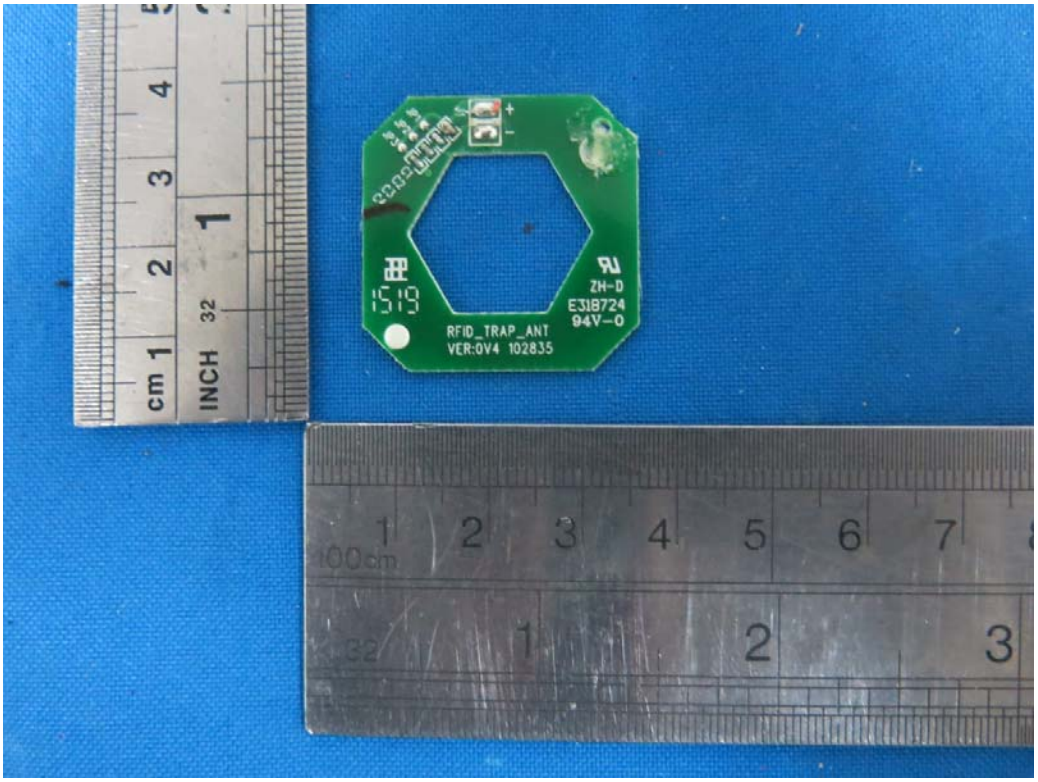


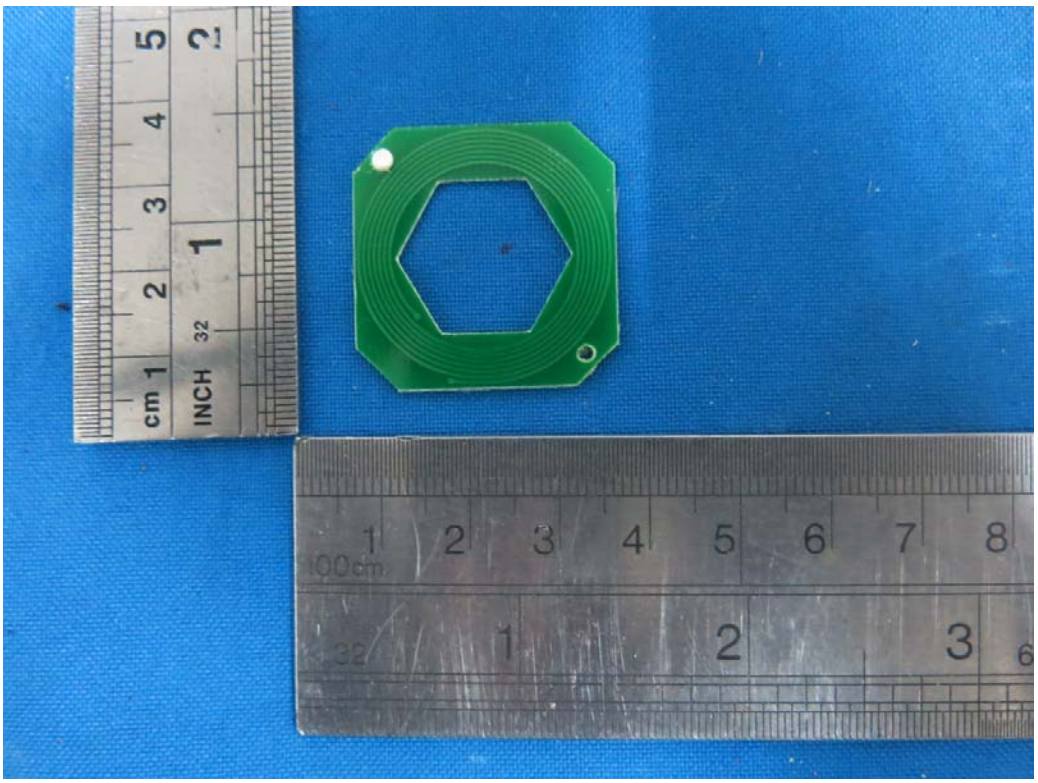

RFID_TRAP_ANT
VER:0V4 102835
ZH-D
E318724
94V-0


cm 1
INCH 32
100cm
32
64


cm 1
INCH 32
100cm
32
64


WIRED Portal
VER:04 100335
cm 1
INCH 32
100cm


RFID_TRAP_ANT
VER:0V4 102835
E318724
94V-0
cm 1
INCH 32
100cm


cm 1
INCH 32
100cm