

# Test Report

## FCC 15 Subpart E 15.407

Product Name : IP-STB  
Model No. : 3600X  
FCC ID : TC2-RCB8

Applicant : Roku Inc.

Address : 12980 Saratoga Ave, Suite D Saratoga, CA 95070

Date of Receipt : Dec.25, 2015  
Test Date : Dec.26, 2015~Jan.15, 2016  
Issued Date : Jan.21, 2016  
Report No. : 15C2073R-RF-US-P09V01  
Report Version : V1.0

The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration of the equipment and evaluated measurement uncertainty herein.

This report must not be used to claim product endorsement by any TAF agency of the government.

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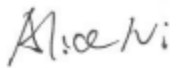
## Test Report Certification

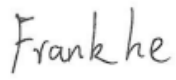
Issued Date : Jan. 21, 2016

Report No. : 15C2073R-RF-US-P09V01



Product Name : IP-STB  
Applicant : Roku Inc.  
Address : 12980 Saratoga Ave, Suite D Saratoga, CA 95070  
Manufacturer : Ambit Mircosystems (Shanghai) LTD.  
Address : 1925, Nanle Road, Songjiang Export Processing Zone,  
Shanghai, China 201613  
Model No. : 3600X  
FCC ID : TC2-RCB8  
EUT Voltage : DC 5V  
Brand Name : Roku  
Applicable Standard : FCC CFR Title 47 Part 15 Subpart E: 2015  
ANSI C63.4:2014;  
ANSI C63.10:2013;  
789033 D02 General UNII Test Procedures New Rules  
v01 Industry Canada RSS-Gen Issue 4  
Industry Canada RSS-247 Issue 1  
Test Result : Complied  
Performed Location : Quietek Corporation - Suzhou EMC Laboratory  
No.99 Hongye Rd., Suzhou Industrial Park,  
Suzhou,215006, Jiangsu, China  
TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098  
FCC Registration Number: 800392; IC Lab Code: 4075B

Documented By :   
(Senior Adm. Specialist: Alice Ni )

Reviewed By :   
(Senior Engineer: Frank He )

Approved By :   
(Engineering Manager : Harry Zhao )

## Laboratory Information

We, **Quietek Corporation**, are an independent EMC and safety consultancy that was established the whole facility in our laboratories. The test facility has been accredited/accepted(audited or listed) by the following related bodies in compliance with ISO 17025, EN 45001 and specified testing scope:

|                      |          |                      |
|----------------------|----------|----------------------|
| <b>Taiwan R.O.C.</b> | <b>:</b> | <b>BSMI, NCC,TAF</b> |
| <b>USA</b>           | <b>:</b> | <b>FCC</b>           |
| <b>Japan</b>         | <b>:</b> | <b>VCCI</b>          |
| <b>China</b>         | <b>:</b> | <b>CNAS</b>          |

The related certificate for our laboratories about the test site and management system can be downloaded from Quietek Corporation's Web Site : <http://www.quietek.com/english/about/certificates.aspx?bval=5>  
The address and introduction of Quietek Corporation's laboratories can be founded in our Web site : [http://www.quietek.com/index\\_en.aspx](http://www.quietek.com/index_en.aspx)

If you have any comments, Please don't hesitate to contact us. Our contact information is as below:

### **HsinChu Testing Laboratory :**

No.75-2, 3rd Lin, Wangye Keng, Yonghxing Tsuen, Qionglin Shiang, Hsinchu County 307, Taiwan, R.O.C.  
TEL:+886-3-592-8858 / FAX:+886-3-592-8859 E-Mail : [service@quietek.com](mailto:service@quietek.com)

### **LinKou Testing Laboratory :**

No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451, Taiwan, R.O.C.  
TEL : 886-2-8601-3788 / FAX : 886-2-8601-3789 E-Mail : [service@quietek.com](mailto:service@quietek.com)

### **Suzhou Testing Laboratory :**

No.99 Hongye Rd., Suzhou Industrial Park, Suzhou, 215006, Jiangsu, China  
TEL : +86-512-6251-5088 / FAX : 86-512-6251-5098 E-Mail : [service@quietek.com](mailto:service@quietek.com)

## TABLE OF CONTENTS

| Description                               | Page |
|-------------------------------------------|------|
| 1. General Information .....              | 7    |
| 1.1. EUT Description .....                | 7    |
| 1.2. Mode of Operation .....              | 13   |
| 1.3. Tested System Details .....          | 14   |
| 1.4. Configuration of Tested System ..... | 15   |
| 1.5. EUT Exercise Software .....          | 16   |
| 2. Technical Test .....                   | 17   |
| 2.1. Summary of Test Result .....         | 17   |
| 2.2. Test Environment .....               | 18   |
| 3. Conducted Emission .....               | 19   |
| 3.1. Test Equipment .....                 | 19   |
| 3.2. Test Setup .....                     | 19   |
| 3.3. Limit.....                           | 20   |
| 3.4. Test Procedure .....                 | 20   |
| 3.5. Uncertainty .....                    | 20   |
| 3.6. Test Result .....                    | 21   |
| 4. Radiated Emission .....                | 23   |
| 4.1. Test Equipment .....                 | 23   |
| 4.2. Test Setup .....                     | 24   |
| 4.3. Limit.....                           | 25   |
| 4.4. Test Procedure .....                 | 25   |
| 4.5. Uncertainty .....                    | 27   |
| 4.6. Test Result .....                    | 28   |
| 5. Occupied Bandwidth .....               | 38   |
| 5.1. Test Equipment .....                 | 38   |
| 5.2. Test Setup .....                     | 38   |
| 5.3. Limit.....                           | 38   |
| 5.4. Test Procedure .....                 | 39   |
| 5.5. Uncertainty .....                    | 39   |
| 5.6. Test Result .....                    | 41   |
| 6. 6dB Occupied Bandwidth.....            | 46   |
| 6.1. Test Equipment .....                 | 46   |
| 6.2. Test Setup .....                     | 46   |
| 6.3. Limit.....                           | 46   |
| 6.4. Test Procedure .....                 | 46   |
| 6.5. Uncertainty .....                    | 47   |
| 6.6. Test Result .....                    | 48   |

|       |                                   |     |
|-------|-----------------------------------|-----|
| 7.    | Power Output.....                 | 51  |
| 7.1.  | Test Equipment .....              | 51  |
| 7.2.  | Test Setup .....                  | 51  |
| 7.3.  | Limit.....                        | 51  |
| 7.4.  | Test Procedure .....              | 52  |
| 7.5.  | Uncertainty .....                 | 52  |
| 7.6.  | Test Result .....                 | 53  |
| 8.    | Peak Power Spectral Density.....  | 61  |
| 8.1.  | Test Equipment .....              | 61  |
| 8.2.  | Test Setup .....                  | 61  |
| 8.3.  | Limit.....                        | 61  |
| 8.4.  | Test Procedure .....              | 62  |
| 8.5.  | Uncertainty .....                 | 63  |
| 8.6.  | Test Result .....                 | 64  |
| 9.    | Radiated Emission Band Edge ..... | 82  |
| 9.1.  | Test Equipment .....              | 82  |
| 9.2.  | Test Setup .....                  | 82  |
| 9.3.  | Limit.....                        | 82  |
| 9.4.  | Test Procedure .....              | 84  |
| 9.5.  | Uncertainty .....                 | 85  |
| 9.6.  | Test Result .....                 | 86  |
| 10.   | Frequency Stability .....         | 182 |
| 10.1. | Test Equipment .....              | 182 |
| 10.2. | Test Setup .....                  | 182 |
| 10.3. | Limit.....                        | 182 |
| 10.4. | Test Procedure .....              | 183 |
| 10.5. | Uncertainty .....                 | 183 |
| 10.6. | Test Result .....                 | 184 |

### History of This Test Report

| REPORT NO.            | VERSION | DESCRIPTION           | ISSUED DATE  |
|-----------------------|---------|-----------------------|--------------|
| 15C2073R-RF-US-P09V01 | V1.0    | Initial Issued Report | Jan.21, 2016 |
|                       |         |                       |              |
|                       |         |                       |              |
|                       |         |                       |              |

## 1. General Information

### 1.1. EUT Description

|                    |                                                                                                                                                                                                                          |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product Name       | IP-STB                                                                                                                                                                                                                   |
| Brand Name         | Roku                                                                                                                                                                                                                     |
| Model No.          | 3600X                                                                                                                                                                                                                    |
| EUT Voltage        | DC 5V                                                                                                                                                                                                                    |
| Frequency Range    | <b>For 2.4GHz Band</b><br>802.11b/g/n(20MHz): 2412~2462MHz<br>802.11n(40MHz): 2422~2452MHz<br><b>For 5.0GHz Band</b><br>802.11a/n(20MHz):<br>5180~5240MHz, 5745~5825MHz<br>802.11n(40MHz):<br>5190~5230MHz, 5755~5795MHz |
| Channel Number     | For 2.4GHz Band<br>802.11b/g/n(20MHz): 11    802.11n(40MHz): 7<br>For 5.0GHz Band<br>802.11a/n(20MHz): 9    802.11n(40MHz): 4                                                                                            |
| Type of Modulation | 802.11b: DSSS<br>802.11a/g/n: OFDM                                                                                                                                                                                       |
| Data Rate          | 802.11a/g: 6/9/12/18/24/36/48/54 Mbps<br>802.11b: 1/2/5.5/11 Mbps<br>802.11n: up to 300 Mbps                                                                                                                             |
| Channel Control    | Auto                                                                                                                                                                                                                     |
| Antenna Delivery   | 2*Tx + 2*Rx                                                                                                                                                                                                              |
| Antenna Type       | Reference to Antenna List                                                                                                                                                                                                |
| Peak Antenna Gain  | Reference to Antenna List                                                                                                                                                                                                |
| <b>Components</b>  |                                                                                                                                                                                                                          |
| Power Adapter #1   | Brand Name: LEI<br>M/N:MU08-P050150-A1<br>Input: AC 100-240V~50/60Hz 0.25A<br>Output: DC 5V, 1.5A                                                                                                                        |
| Power Adapter #2   | Brand Name: Chicony<br>M/N:W15-007N1A<br>Input: AC 100-120V~50/60Hz 0.5A<br>Output: DC 5V, 1.5A                                                                                                                          |

### For 2.4GHz Band

| 802.11b/g/n(20MHz) Working Frequency of Each Channel: |           |         |           |         |           |         |           |
|-------------------------------------------------------|-----------|---------|-----------|---------|-----------|---------|-----------|
| Channel                                               | Frequency | Channel | Frequency | Channel | Frequency | Channel | Frequency |
| 01                                                    | 2412 MHz  | 02      | 2417 MHz  | 03      | 2422 MHz  | 04      | 2427 MHz  |
| 05                                                    | 2432 MHz  | 06      | 2437 MHz  | 07      | 2442 MHz  | 08      | 2447 MHz  |
| 09                                                    | 2452 MHz  | 10      | 2457 MHz  | 11      | 2462 MHz  | N/A     | N/A       |
| 802.11n(40MHz) Working Frequency of Each Channel:     |           |         |           |         |           |         |           |
| Channel                                               | Frequency | Channel | Frequency | Channel | Frequency | Channel | Frequency |
| 03                                                    | 2422 MHz  | 04      | 2427 MHz  | 05      | 2432 MHz  | 06      | 2437 MHz  |
| 07                                                    | 2442 MHz  | 08      | 2447 MHz  | 09      | 2452 MHz  | N/A     | N/A       |

### For 5.0GHz Band

| 802.11a/n(20MHz) Working Frequency of Each Channel: |           |         |           |         |           |         |           |
|-----------------------------------------------------|-----------|---------|-----------|---------|-----------|---------|-----------|
| Channel                                             | Frequency | Channel | Frequency | Channel | Frequency | Channel | Frequency |
| 36                                                  | 5180 MHz  | 40      | 5200 MHz  | 44      | 5220 MHz  | 48      | 5240 MHz  |
| 149                                                 | 5745 MHz  | 153     | 5765 MHz  | 157     | 5785 MHz  | 161     | 5805 MHz  |
| 165                                                 | 5825 MHz  | N/A     | N/A       | N/A     | N/A       | N/A     | N/A       |
| 802.11n(40MHz) Working Frequency of Each Channel:   |           |         |           |         |           |         |           |
| Channel                                             | Frequency | Channel | Frequency | Channel | Frequency | Channel | Frequency |
| 38                                                  | 5190 MHz  | 46      | 5230 MHz  | 151     | 5755 MHz  | 159     | 5795 MHz  |

### 802.11a/b/g/n Antenna List

| Antenna   | Manufacturer        | Model No.           | Peak Gain                              | Directional Gain                       |
|-----------|---------------------|---------------------|----------------------------------------|----------------------------------------|
| Antenna 1 | TDK-EPC Corporation | ANT016008LCD2442MA1 | 2.38dBi for 2.4GHz<br>5.54dBi for 5GHz | 5.39dBi for 2.4GHz<br>8.55dBi for 5GHz |
| Antenna 2 | TDK-EPC Corporation | ANT016008LCD2442MA1 | 2.38dBi for 2.4GHz<br>5.54dBi for 5GHz |                                        |

Note: 1. The EUT uses MIMO technology and use basic methodology.

2. The EUT has two antennas, and each port has same gain, when transmit at MIMO modes, transmit signals are correlated with each other. The calculate formula is below according to KDB 662911 D01v02r01 2)a):

(1) 5G Directional gain for Directional Gain Calculation is:

$$\text{Directional gain} = G_{\text{ANT}} + 10 \log(N_{\text{ANT}}) \text{ dBi} \approx 8.55 \text{ dBi.}$$

(2) 2.4G Directional gain for Directional Gain Calculation is:

$$\text{Directional gain} = G_{\text{ANT}} + 10 \log(N_{\text{ANT}}) \text{ dBi} \approx 5.39 \text{ dBi.}$$

Power Parameter Value of the test software

| Test Mode      | Test Channel | Ant 1 | Ant 2 | Ant1+2 |
|----------------|--------------|-------|-------|--------|
| 802.11a        | 5180         | 70    | 73    | -      |
|                | 5220         | 78    | 78    | -      |
|                | 5240         | 78    | 73    | -      |
|                | 5745         | 58    | 62    | -      |
|                | 5785         | 78    | 78    | -      |
|                | 5825         | 68    | 66    | -      |
| 802.11n(20MHz) | 5180         | 68    | 68    | 70     |
|                | 5220         | 78    | 78    | 78     |
|                | 5240         | 78    | 78    | 78     |
|                | 5745         | 57    | 58    | 56     |
|                | 5785         | 78    | 78    | 78     |
|                | 5825         | 70    | 65    | 63     |
| 802.11n(40MHz) | 5190         | 52    | 54    | 50     |
|                | 5230         | 78    | 78    | 78     |
|                | 5755         | 40    | 43    | 39     |
|                | 5795         | 61    | 60    | 59     |

The test mode of the test software can support.

| Test Mode      | Ant 1 | Ant 2 | Ant 1+2 |
|----------------|-------|-------|---------|
| 802.11a        | ✓     | ✓     | ×       |
| 802.11n(20MHz) | ✓     | ✓     | ✓       |
| 802.11n(40MHz) | ✓     | ✓     | ✓       |

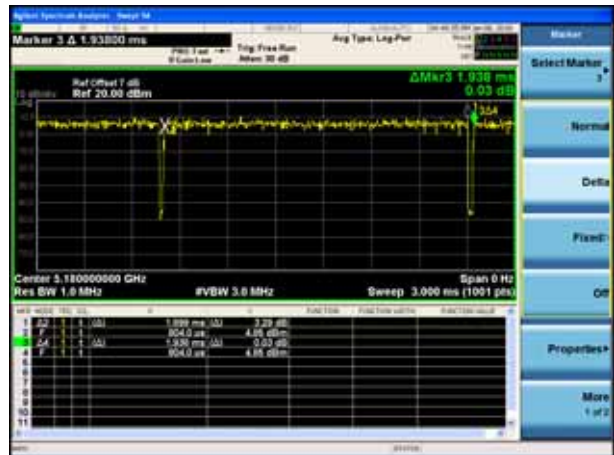
Duty Cycle

| Test Mode      | Duty Cycle |
|----------------|------------|
| 802.11a        | 97.8%      |
| 802.11n(20MHz) | 98.0%      |
| 802.11n(40MHz) | 95.4%      |

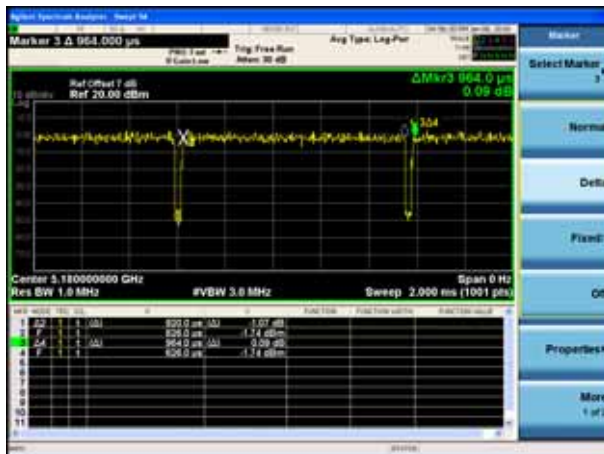
802.11a



802.11n(20MHz)



802.11n(40MHz)



## 1.2. Mode of Operation

Quietek has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

| Test Mode                           |
|-------------------------------------|
| Mode 1: Transmit by 802.11a         |
| Mode 2: Transmit by 802.11n (20MHz) |
| Mode 3: Transmit by 802.11n (40MHz) |

Note:

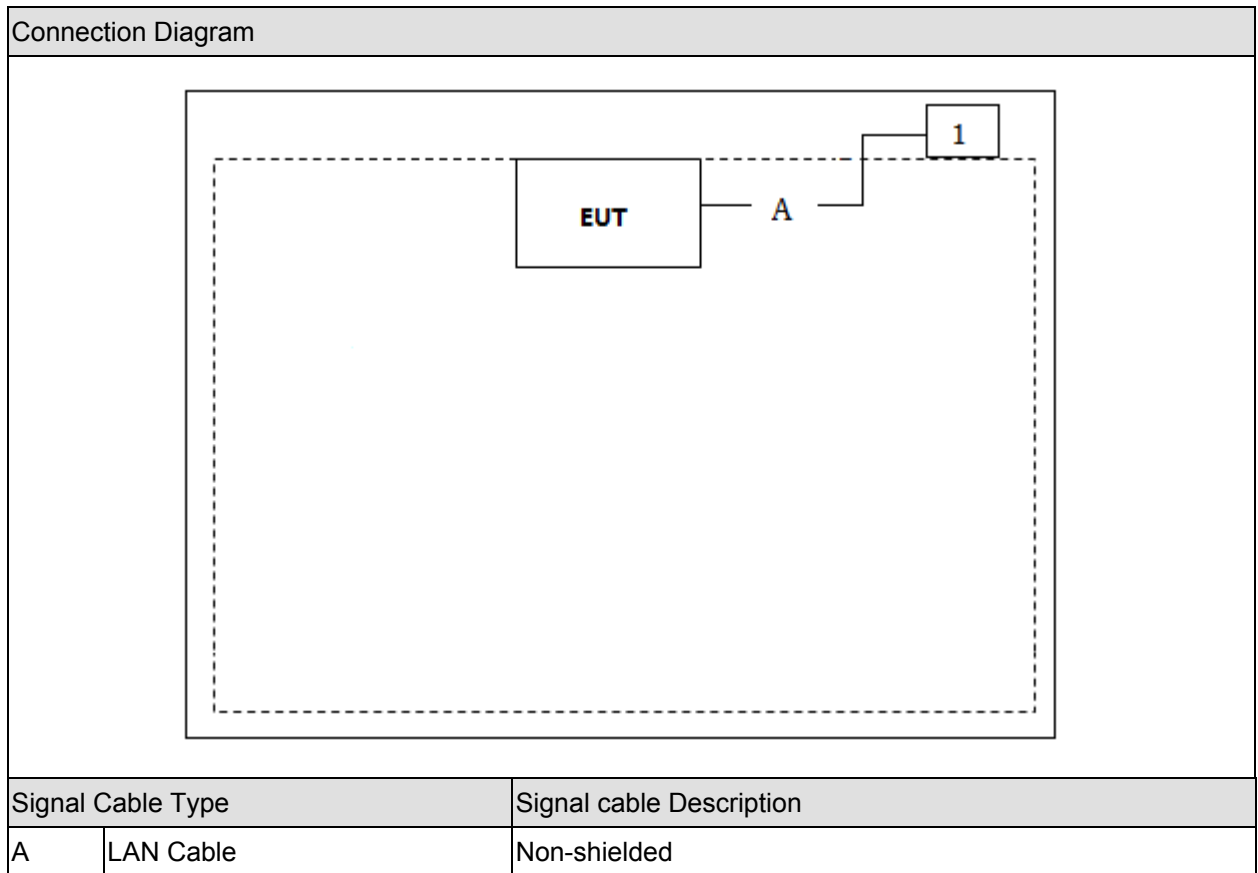
1. Regards to the frequency band operation: the lowest, middle and highest frequency of channel were selected to perform the test, then shown on this report.

### 1.3. Tested System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

| Product |           | Manufacturer | Model No. | Serial No.      | Power Cord |
|---------|-----------|--------------|-----------|-----------------|------------|
| 3       | Laptop PC | Asus         | N80V      | 8BN0AS226971468 | N/A        |

## 1.4. Configuration of Tested System



### 1.5. EUT Exercise Software

|   |                                                                                                                |
|---|----------------------------------------------------------------------------------------------------------------|
| 1 | Setup the EUT and simulators as shown on above.                                                                |
| 2 | Turn on the power of equipment.                                                                                |
| 3 | Run the test software, and set the test mode and channel, then press OK to start continue Transmit or receive. |

## 2. Technical Test

### 2.1. Summary of Test Result

- ☒ No deviations from the test standards
- ☐ Deviations from the test standards as below description:

| Performed Test Item         | Normative References                                                  | Test Performed | Deviation |
|-----------------------------|-----------------------------------------------------------------------|----------------|-----------|
| Conducted Emission          | FCC CFR Title 47 Part 15 Subpart E: 2015<br>Section 15.207            | Yes            | No        |
| Radiated Emission           | FCC CFR Title 47 Part 15 Subpart E: 2015<br>Section 15.209            | Yes            | No        |
| 26dB Occupied Bandwidth     | FCC CFR Title 47 Part 15 Subpart E: 2015<br>Section 15.407(a)         | Yes            | No        |
| 6dB Occupied Bandwidth      | FCC CFR Title 47 Part 15 Subpart E: 2015<br>Section 15.407(e)         | Yes            | No        |
| Power Output                | FCC CFR Title 47 Part 15 Subpart E: 2015<br>Section 15.407(a)         | Yes            | No        |
| Peak Power Spectral Density | FCC CFR Title 47 Part 15 Subpart E: 2015<br>Section 15.407(a)         | Yes            | No        |
| Radiated Emission Band Edge | FCC CFR Title 47 Part 15 Subpart E: 2015<br>Section 15.205, 15.407(b) | Yes            | No        |
| Frequency Stability         | FCC CFR Title 47 Part 15 Subpart E: 2015<br>Section 15.407(g)         | Yes            | No        |

## 2.2. Test Environment

| Items                      | Required (IEC 68-1) | Actual   |
|----------------------------|---------------------|----------|
| Temperature (°C)           | 15-35               | 21       |
| Humidity (%RH)             | 25-75               | 50       |
| Barometric pressure (mbar) | 860-1060            | 950-1000 |

### 3. Conducted Emission

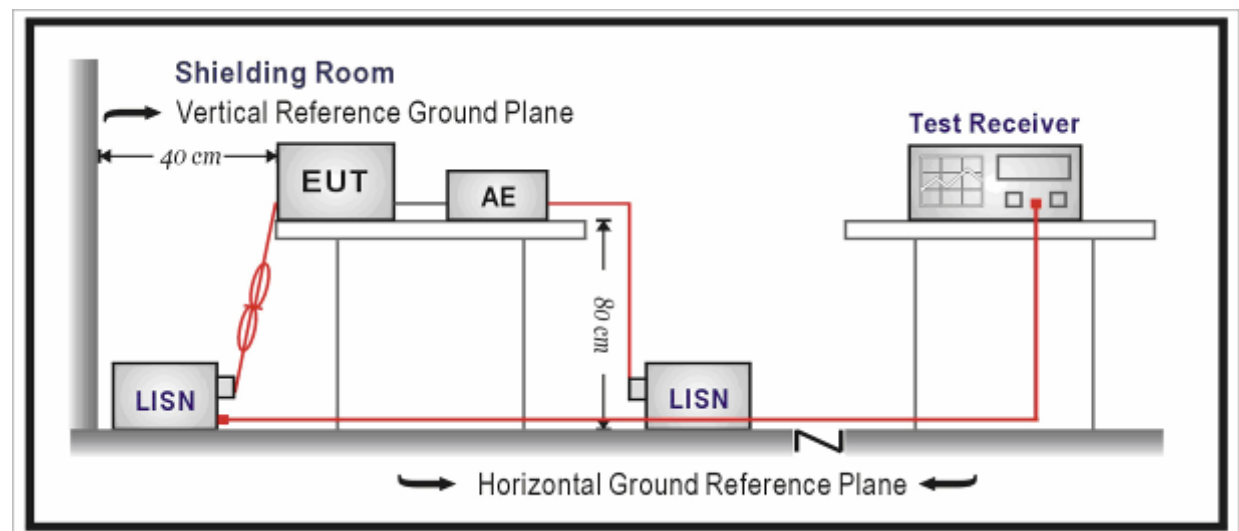
#### 3.1. Test Equipment

Conducted Emission / TR-1

| Instrument                 | Manufacturer | Type No. | Serial No. | Cal. Due Date |
|----------------------------|--------------|----------|------------|---------------|
| EMI Test Receiver          | R&S          | ESCI     | 100726     | 2016.03.28    |
| Two-Line V-Network         | R&S          | ENV216   | 100043     | 2016.03.28    |
| Two-Line V-Network         | R&S          | ENV216   | 100044     | 2016.09.16    |
| 50ohm Coaxial Switch       | Anritsu      | MP59B    | 6200464462 | 2016.03.01    |
| 50ohm Termination          | SHX          | TF2      | 07081401   | 2016.09.16    |
| Temperature/Humidity Meter | zhicheng     | ZC1-2    | TR1-TH     | 2017.01.04    |

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

#### 3.2. Test Setup



### 3.3. 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 0.15 MHz to 0.5 MHz.

### 3.4. Test Procedure

According to ANSI C63.4:2014& ANSI C63.10:2013&789033 D02 General UNII Test Procedures New Rules v01

The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs)

Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.

The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.

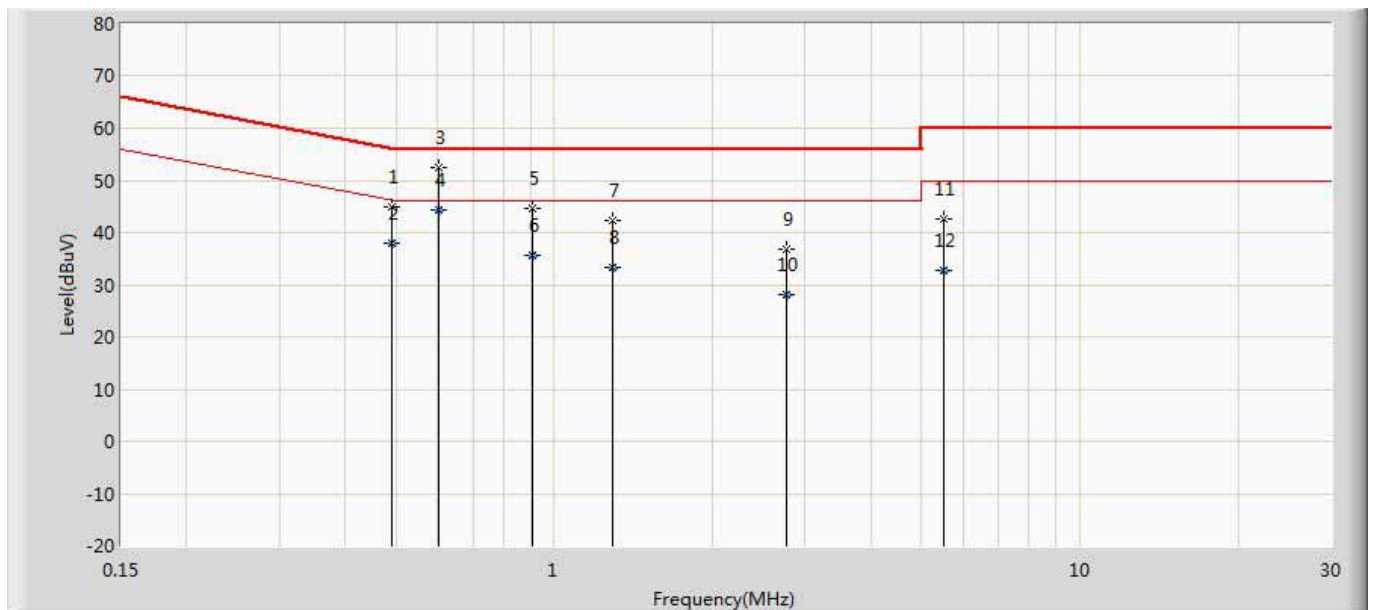
Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

### 3.5. Uncertainty

The measurement uncertainty is defined as  $\pm 2.02$  dB

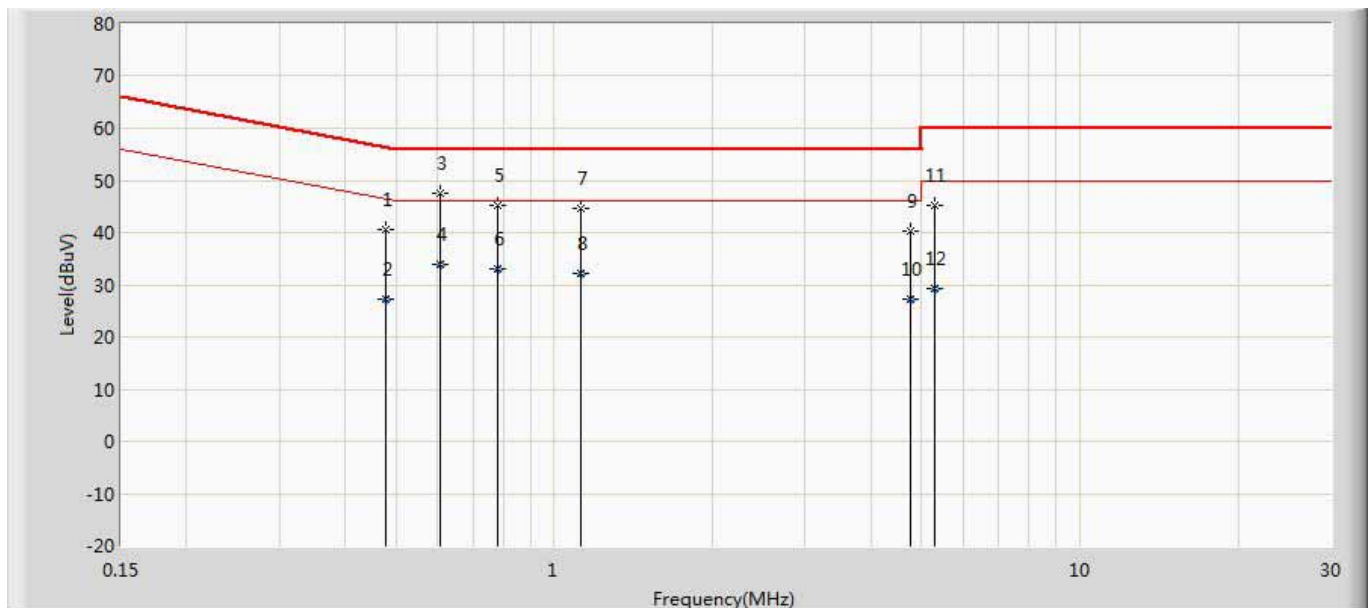
### 3.6. Test Result

|                                          |                          |
|------------------------------------------|--------------------------|
| Engineer: Scott                          |                          |
| Site: TR1                                | Time: 2016/01/04 - 18:36 |
| Limit: FCC_Part15.107_CE_AC Power_ClassB | Margin: 0                |
| Probe: ENV216_101044(0.009-30MHz)        | Polarity: Line           |
| EUT: IP-STB                              | Power: AC 120V/60Hz      |
| Note: Mode 1                             |                          |



| No | Mark | Frequency (MHz) | Measure Level (dBuV) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV) | Factor (dB) | Type |
|----|------|-----------------|----------------------|----------------------|-----------------|--------------|-------------|------|
| 1  |      | 0.490           | 45.028               | 35.395               | -11.140         | 56.168       | 9.633       | QP   |
| 2  |      | 0.490           | 37.885               | 28.252               | -8.283          | 46.168       | 9.633       | AV   |
| 3  |      | 0.602           | 52.418               | 42.781               | -3.582          | 56.000       | 9.637       | QP   |
| 4  | *    | 0.602           | 44.440               | 34.802               | -1.560          | 46.000       | 9.637       | AV   |
| 5  |      | 0.910           | 44.654               | 35.002               | -11.346         | 56.000       | 9.653       | QP   |
| 6  |      | 0.910           | 35.538               | 25.885               | -10.462         | 46.000       | 9.653       | AV   |
| 7  |      | 1.290           | 42.343               | 32.675               | -13.657         | 56.000       | 9.668       | QP   |
| 8  |      | 1.290           | 33.418               | 23.750               | -12.582         | 46.000       | 9.668       | AV   |
| 9  |      | 2.766           | 36.934               | 27.209               | -19.066         | 56.000       | 9.725       | QP   |
| 10 |      | 2.766           | 28.190               | 18.465               | -17.810         | 46.000       | 9.725       | AV   |
| 11 |      | 5.498           | 42.660               | 32.884               | -17.340         | 60.000       | 9.775       | QP   |
| 12 |      | 5.498           | 32.712               | 22.936               | -17.288         | 50.000       | 9.775       | AV   |

|                                          |                          |
|------------------------------------------|--------------------------|
| Engineer: Scott                          |                          |
| Site: TR1                                | Time: 2016/01/04 - 18:40 |
| Limit: FCC_Part15.107_CE_AC Power_ClassB | Margin: 0                |
| Probe: ENV216_101044(0.009-30MHz)        | Polarity: Neutral        |
| EUT: IP-STB                              | Power: AC 120V/60Hz      |
| Note: Mode 1                             |                          |



| No | Mark | Frequency (MHz) | Measure Level (dBuV) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV) | Factor (dB) | Type |
|----|------|-----------------|----------------------|----------------------|-----------------|--------------|-------------|------|
| 1  |      | 0.478           | 40.608               | 30.987               | -15.765         | 56.374       | 9.622       | QP   |
| 2  |      | 0.478           | 27.300               | 17.679               | -19.074         | 46.374       | 9.622       | AV   |
| 3  | *    | 0.606           | 47.468               | 37.825               | -8.532          | 56.000       | 9.643       | QP   |
| 4  |      | 0.606           | 33.845               | 24.202               | -12.155         | 46.000       | 9.643       | AV   |
| 5  |      | 0.782           | 45.267               | 35.611               | -10.733         | 56.000       | 9.656       | QP   |
| 6  |      | 0.782           | 32.925               | 23.270               | -13.075         | 46.000       | 9.656       | AV   |
| 7  |      | 1.122           | 44.746               | 35.101               | -11.254         | 56.000       | 9.645       | QP   |
| 8  |      | 1.122           | 32.262               | 22.617               | -13.738         | 46.000       | 9.645       | AV   |
| 9  |      | 4.774           | 40.347               | 30.596               | -15.653         | 56.000       | 9.752       | QP   |
| 10 |      | 4.774           | 27.299               | 17.548               | -18.701         | 46.000       | 9.752       | AV   |
| 11 |      | 5.302           | 45.312               | 35.550               | -14.688         | 60.000       | 9.762       | QP   |
| 12 |      | 5.302           | 29.186               | 19.424               | -20.814         | 50.000       | 9.762       | AV   |

Note: All the test modes are pretested and mode 1 802.11a mode was found to be the worst mode, so the data of this test mode was recorded.

## 4. Radiated Emission

### 4.1. Test Equipment

#### Radiated Emission / AC-2

| Instrument                 | Manufacturer | Type No.     | Serial No. | Cal. Due Date |
|----------------------------|--------------|--------------|------------|---------------|
| EMI Test Receiver          | R&S          | ESCI         | 100573     | 2016.03.28    |
| Loop Antenna               | R&S          | HFH2-Z2      | 833799/003 | 2015.11.17    |
| Bilog Chainenna            | Teseq GmbH   | CBL6112D     | 27611      | 2015.10.15    |
| Coaxial Cable              | Huber+Suhner | SUCOFLEX 106 | AC2-C      | 2016.03.01    |
| Temperature/Humidity Meter | Zhicheng     | ZC1-2        | AC2-TH     | 2017.01.04    |

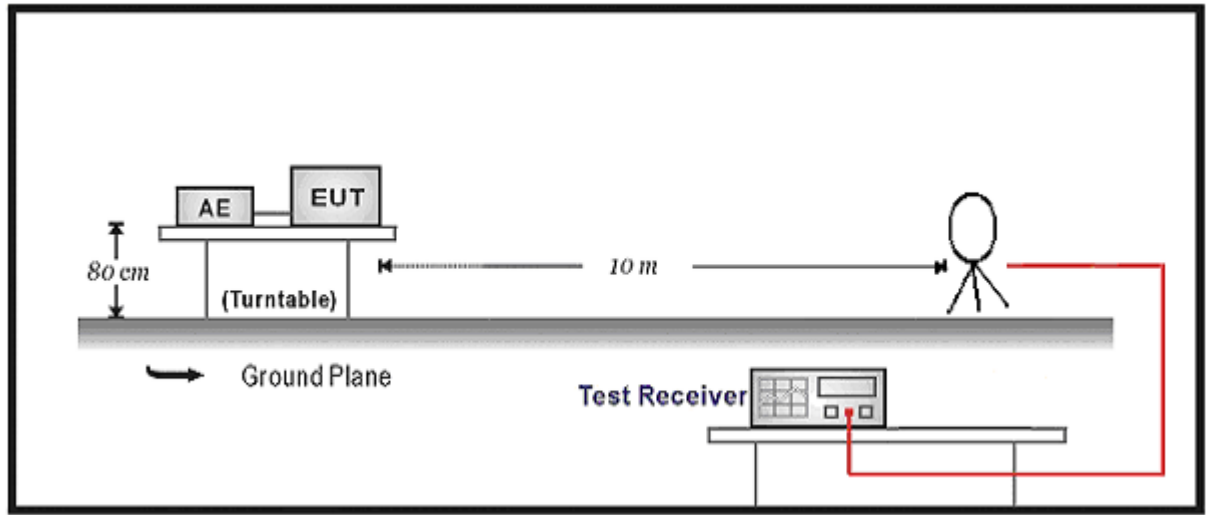
#### Radiated Emission / AC-5

| Instrument                 | Manufacturer | Type No.     | Serial No.  | Cal. Due Date |
|----------------------------|--------------|--------------|-------------|---------------|
| Spectrum Analyzer          | Agilent      | N9020A       | MY49100159  | 2016.03.28    |
| Spectrum Analyzer          | Agilent      | E4446A       | MY45300103  | 2017.01.04    |
| Preamplifier               | Miteq        | NSP1800-25   | 1364185     | 2016.05.05    |
| Preamplifier               | QuieTek      | AP-040G      | CHM-0906001 | 2016.05.05    |
| DRG Horn                   | ETS-Lindgren | 3117         | 00123988    | 2016.01.21    |
| Broad-Band Horn Antenna    | Schwarzbeck  | BBHA9170     | 294         | 2016.11.24    |
| Coaxial Cable              | Huber+Suhner | SUCOFLEX 106 | AC5-C1      | 2016.03.01    |
| Coaxial Cable              | Huber+Suhner | SUCOFLEX 106 | AC5-C2      | 2016.03.01    |
| Coaxial Cable              | Huber+Suhner | SUCOFLEX 102 | AC5-C3      | 2016.03.01    |
| EMI Receiver               | Agilent      | N9038A       | MY51210196  | 2016.06.09    |
| Temperature/Humidity Meter | Zhichen      | ZC1-2        | AC5-TH      | 2017.01.04    |

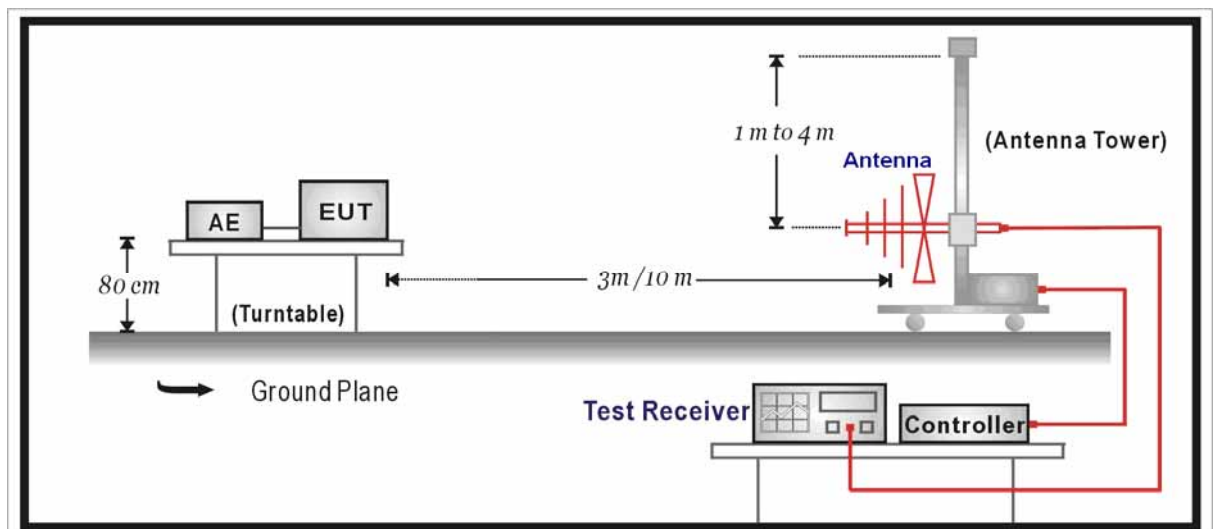
Note 1: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

## 4.2. Test Setup

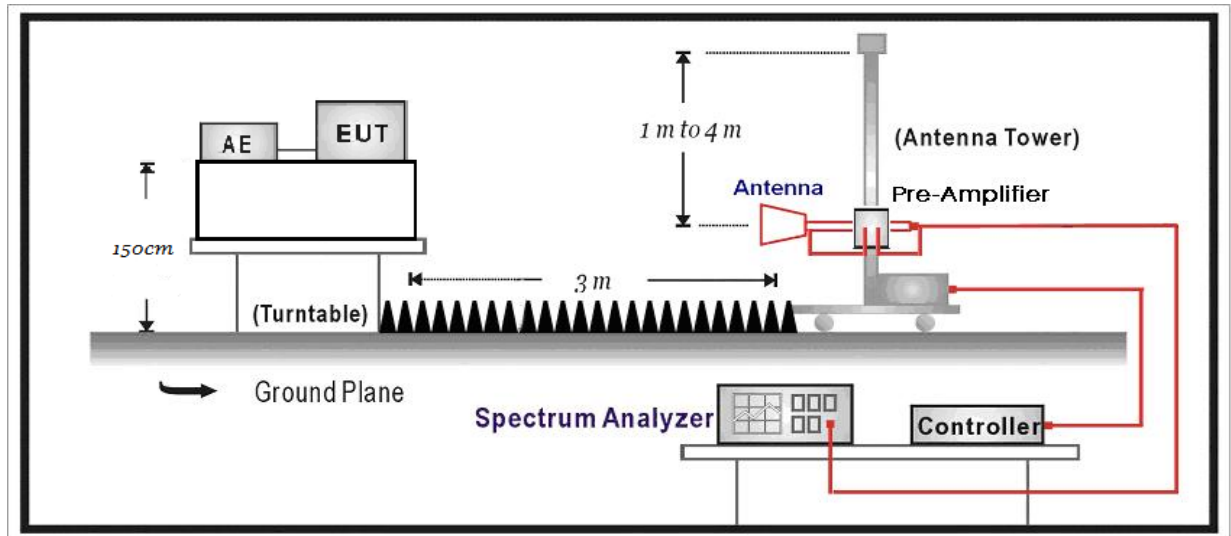
Below 30MHz Test Setup:



Below 1GHz Test Setup:



#### Above 1GHz Test Setup:



#### 4.3. Limit

| FCC Part 15 Subpart C Paragraph 15.209 |              |                |
|----------------------------------------|--------------|----------------|
| Frequency (MHz)                        | Distance (m) | Level (dBuV/m) |
| 30 - 88                                | 3            | 40             |
| 88 - 216                               | 3            | 43.5           |
| 216 - 960                              | 3            | 46             |
| Above 960(Note)                        | 3            | 54             |

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

Note 2: Distance refers to the distance in meters between the measuring instrument Antenna and the closed point of any part of the device or system.

Note 3: E field strength (dBuV/m) = 20 log E field strength (uV/m)

#### 4.4. Test Procedure

According to ANSI C63.4:2014& ANSI C63.10:2013&789033 D02 General UNII Test Procedures New Rules v01& FCC CFR Title 47 Part 15 Subpart E: 2015

The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from Chainenna to the EUT was 3 meters.

The Chainenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the Chainenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4:2014 on radiated measurement.

The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

The frequency range from 30MHz to 10th harmonic is checked.

The procedure for peak unwanted emissions measurements above 1000 MHz is as follows:

Peak emission levels are measured by setting the instrument as follows:

- 1) RBW = 1 MHz.
- 2) VBW  $\geq [3 \times \text{RBW}]$ .
- 3) Detector = peak
- 4) Sweep time = auto.
- 5) Trace mode = max hold.
- 6) Allow sweeps to continue until the trace stabilizes. Note that if the transmission is not continuous, then the time required for the trace to stabilize will increase by a factor of approximately  $1 / D$ , where  $D$  is the duty cycle. For example, at 50% duty cycle, the measurement time will increase by a factor of two, relative to measurement time for continuous transmission.

Average emission levels are measured by setting the instrument as follows:

- a) RBW = 1 MHz.
- b) Video bandwidth:
  - 1) If the EUT is configured to transmit with  $D \geq 98\%$ , then set  $\text{VBW} \leq \text{RBW} / 100$  (i.e., 10 kHz), but not less than 10 Hz.
  - 2) If the EUT  $D$  is  $< 98\%$ , then set  $\text{VBW} \geq 1 / T$ , where  $T$  is defined in item a1) of 12.2.
- c) Video bandwidth mode or display mode:
  - 1) The instrument shall be set with video filtering applied in the power domain. Typically, this requires setting the detector mode to RMS (power averaging) and setting the average-VBW type to power (rms).
  - 2) As an alternative, the instrument may be set to linear detector mode. Video filtering shall be applied in linear voltage domain (rather than in a log or dB domain). Some instruments require linear display mode to accomplish this. Others have a setting for average-VBW type, which can be set to "voltage" regardless of the display mode.
- d) Detector = peak.
- e) Sweep time = auto.
- f) Trace mode = max hold.
- g) Allow max hold to run for at least 50 traces if the transmitted signal is continuous or has at

least 98% duty cycle. For lower duty cycles, increase the minimum number of traces by a factor of  $1/x$ , where  $D$  is the duty cycle. For example, use at least 200 traces if the duty cycle is 25%. (If a specific emission is demonstrated to be continuous—i.e., 100% duty cycle—then rather than turning ON and OFF with the transmit cycle, at least 50 traces should be averaged.)

Note: When doing emission measurement above 1GHz, the horn Chainenna will be bended down a little (as horn antenna has the narrow beamwidth) in order to keeping the Chainenna in the “cone of radiation” of EUT. The 3dB beamwidth is 60~10 degrees for H-plane and 90~10 degrees for E-plane.

#### **4.5. Uncertainty**

The measurement uncertainty above 1GHz is defined as  $\pm 3.9$  dB  
below 1GHz is defined as  $\pm 3.8$  dB

#### 4.6. Test Result

|           |   |                             |
|-----------|---|-----------------------------|
| Product   | : | IP-STB                      |
| Test Item | : | Radiated Emission           |
| Test Site | : | AC-5                        |
| Test Mode | : | Mode 1: Transmit by 802.11a |

|            | CH  | Antenna | Frequency<br>(MHz) | Reading<br>Level<br>(dBuV/m) | Factor<br>(dB) | Measure<br>Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector |
|------------|-----|---------|--------------------|------------------------------|----------------|------------------------------|-------------------|----------------|----------|
| Chain<br>1 | 36  | H       | 10360.0            | 42.3                         | 16.7           | 59.0                         | 74                | -15.0          | PK       |
|            |     | H       | 10360.0            | 30.7                         | 16.5           | 47.2                         | 54                | -6.8           | AV       |
|            |     | V       | 10360.0            | 33.2                         | 16.5           | 49.7                         | 54(Note3)         | -4.3           | PK       |
|            |     | H       | 15540.0            | 18.2                         | 24.1           | 42.3                         | 54(Note3)         | -11.7          | PK       |
|            |     | V       | 15540.0            | 18.0                         | 24.1           | 42.1                         | 54(Note3)         | -11.9          | PK       |
|            | 44  | H       | 10440.0            | 44.1                         | 16.8           | 60.9                         | 74                | -13.1          | PK       |
|            |     | H       | 10440.0            | 33.5                         | 16.8           | 50.3                         | 54                | -3.7           | AV       |
|            |     | V       | 10440.0            | 35.1                         | 16.8           | 51.9                         | 54(Note3)         | -2.1           | PK       |
|            |     | H       | 15660.0            | 23.6                         | 24.6           | 48.2                         | 54(Note3)         | -5.8           | PK       |
|            |     | V       | 15660.0            | 24.0                         | 24.6           | 48.6                         | 54(Note3)         | -5.4           | PK       |
|            | 48  | H       | 10480.0            | 45.2                         | 16.7           | 61.9                         | 74                | -12.1          | PK       |
|            |     | H       | 10480.0            | 34.3                         | 16.6           | 50.9                         | 54                | -3.1           | AV       |
|            |     | V       | 10480.0            | 34.6                         | 16.6           | 51.2                         | 54(Note3)         | -2.8           | PK       |
|            |     | H       | 15720.0            | 19.6                         | 26.8           | 46.4                         | 54(Note3)         | -7.6           | PK       |
|            |     | V       | 15720.0            | 20.9                         | 26.8           | 47.7                         | 54(Note3)         | -6.3           | PK       |
|            | 149 | H       | 11490.0            | 25.2                         | 21.3           | 46.5                         | 54(Note3)         | -7.5           | PK       |
|            |     | V       | 11490.0            | 26.1                         | 21.3           | 47.4                         | 54(Note3)         | -6.6           | PK       |
|            |     | H       | 17235.0            | 21.0                         | 25.7           | 46.7                         | 54(Note3)         | -7.3           | PK       |
|            |     | V       | 17235.0            | 22.1                         | 25.7           | 47.8                         | 54(Note3)         | -6.2           | PK       |
|            | 157 | H       | 11570.0            | 29.5                         | 22.1           | 51.6                         | 54(Note3)         | -2.4           | PK       |
|            |     | V       | 11570.0            | 27.5                         | 22.1           | 49.6                         | 54(Note3)         | -4.4           | PK       |
|            |     | H       | 17355.0            | 22.6                         | 25.3           | 47.9                         | 54(Note3)         | -6.1           | PK       |
|            |     | V       | 17355.0            | 25.4                         | 25.3           | 50.7                         | 54(Note3)         | -3.3           | PK       |
|            | 165 | H       | 11650.0            | 28.5                         | 23.0           | 51.5                         | 54(Note3)         | -2.5           | PK       |
|            |     | V       | 11650.0            | 27.1                         | 23.0           | 50.1                         | 54(Note3)         | -3.9           | PK       |
|            |     | H       | 17475.0            | 22.6                         | 25.3           | 47.9                         | 54(Note3)         | -6.1           | PK       |
|            |     | V       | 17475.0            | 25.9                         | 25.3           | 51.2                         | 54(Note3)         | -2.8           | PK       |

|            | CH  | Antenna | Frequency<br>(MHz) | Reading<br>Level<br>(dBuV/m) | Factor<br>(dB) | Measure<br>Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector |
|------------|-----|---------|--------------------|------------------------------|----------------|------------------------------|-------------------|----------------|----------|
| Chain<br>2 | 36  | H       | 10360.0            | 40.0                         | 16.7           | 56.7                         | 74                | -17.3          | PK       |
|            |     | H       | 10360.0            | 27.8                         | 16.5           | 44.3                         | 54                | -9.7           | AV       |
|            |     | V       | 10360.0            | 32.8                         | 16.7           | 49.5                         | 54(Note3)         | -4.5           | PK       |
|            |     | H       | 15540.0            | 18.2                         | 24.1           | 42.3                         | 54(Note3)         | -11.7          | PK       |
|            |     | V       | 15540.0            | 18.1                         | 24.1           | 42.2                         | 54(Note3)         | -11.8          | PK       |
|            | 44  | H       | 10440.0            | 48.7                         | 16.7           | 65.4                         | 74                | -8.6           | PK       |
|            |     | H       | 10440.0            | 36.1                         | 16.8           | 52.9                         | 54                | -1.1           | AV       |
|            |     | V       | 10440.0            | 38.9                         | 16.8           | 55.7                         | 74                | -18.3          | PK       |
|            |     | V       | 10440.0            | 26.7                         | 16.8           | 43.5                         | 54                | -10.5          | AV       |
|            |     | H       | 15660.0            | 31.6                         | 24.6           | 56.2                         | 54(Note3)         | 2.2            | PK       |
|            |     | V       | 15660.0            | 28.0                         | 24.6           | 52.6                         | 54(Note3)         | -1.4           | PK       |
|            | 48  | H       | 10480.0            | 41.5                         | 16.6           | 58.1                         | 74                | -15.9          | PK       |
|            |     | H       | 10480.0            | 30.3                         | 16.6           | 46.9                         | 54                | -7.1           | AV       |
|            |     | V       | 10480.0            | 33.0                         | 16.6           | 49.6                         | 54(Note3)         | -4.4           | PK       |
|            |     | H       | 15720.0            | 20.2                         | 26.8           | 47                           | 54(Note3)         | -7.0           | PK       |
|            |     | V       | 15720.0            | 23.1                         | 26.8           | 49.9                         | 54(Note3)         | -4.1           | PK       |
|            | 149 | H       | 11490.0            | 24.8                         | 21.3           | 46.1                         | 54(Note3)         | -7.9           | PK       |
|            |     | V       | 11490.0            | 25.2                         | 21.3           | 46.5                         | 54(Note3)         | -7.5           | PK       |
|            |     | H       | 17235.0            | 21.7                         | 25.7           | 47.4                         | 54(Note3)         | -6.6           | PK       |
|            |     | V       | 17235.0            | 22.6                         | 25.7           | 48.3                         | 54(Note3)         | -5.7           | PK       |
|            | 157 | H       | 11570.0            | 28.5                         | 22.1           | 50.6                         | 54(Note3)         | -3.4           | PK       |
|            |     | V       | 11570.0            | 29.5                         | 22.1           | 51.6                         | 54(Note3)         | -2.4           | PK       |
|            |     | H       | 17355.0            | 21.8                         | 25.3           | 47.1                         | 54(Note3)         | -6.9           | PK       |
|            |     | V       | 17355.0            | 24.6                         | 25.3           | 49.9                         | 54(Note3)         | -4.1           | PK       |
|            | 165 | H       | 11650.0            | 24.9                         | 23.0           | 47.9                         | 54(Note3)         | -6.1           | PK       |
|            |     | V       | 11650.0            | 26.4                         | 23.0           | 49.4                         | 54(Note3)         | -4.6           | PK       |
|            |     | H       | 17475.0            | 21.2                         | 25.3           | 46.5                         | 54(Note3)         | -7.5           | PK       |
|            |     | V       | 17475.0            | 23.2                         | 25.3           | 48.5                         | 54(Note3)         | -5.5           | PK       |

Note: 1. Measure Level = Reading Level + Factor.

2. The test frequency range, 9kHz~30MHz, 18GHz~25GHz, both of the worst case are at least 6dB below the limits, therefore no data appear in the report.

3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

|           |   |                                    |
|-----------|---|------------------------------------|
| Product   | : | IP-STB                             |
| Test Item | : | Radiated Emission                  |
| Test Site | : | AC-5                               |
| Test Mode | : | Mode 2: Transmit by 802.11n(20MHz) |

|            | CH  | Antenna | Frequency<br>(MHz) | Reading<br>Level<br>(dBuV/m) | Factor<br>(dB) | Measure<br>Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector |
|------------|-----|---------|--------------------|------------------------------|----------------|------------------------------|-------------------|----------------|----------|
| Chain<br>1 | 36  | H       | 10360.0            | 44.4                         | 16.5           | 60.9                         | 74                | -13.1          | PK       |
|            |     | H       | 10360.0            | 31.5                         | 16.5           | 48.0                         | 54                | -6.0           | AV       |
|            |     | V       | 10360.0            | 34.1                         | 16.5           | 50.6                         | 54(Note3)         | -3.4           | PK       |
|            |     | H       | 15540.0            | 17.9                         | 24.1           | 42.0                         | 54(Note3)         | -12.0          | PK       |
|            |     | V       | 15540.0            | 17.8                         | 24.1           | 41.9                         | 54(Note3)         | -12.1          | PK       |
|            | 44  | H       | 10440.0            | 44.7                         | 16.8           | 61.5                         | 74                | -12.5          | PK       |
|            |     | H       | 10440.0            | 32.7                         | 16.8           | 49.5                         | 54                | -4.5           | AV       |
|            |     | V       | 10440.0            | 34.1                         | 16.7           | 50.8                         | 54(Note3)         | -3.2           | PK       |
|            |     | H       | 15660.0            | 24.6                         | 24.6           | 49.2                         | 54(Note3)         | -4.8           | PK       |
|            |     | V       | 15660.0            | 23.6                         | 24.6           | 48.2                         | 54(Note3)         | -5.8           | PK       |
|            | 48  | H       | 10480.0            | 45.2                         | 16.7           | 61.9                         | 74                | -12.1          | PK       |
|            |     | H       | 10480.0            | 33.6                         | 16.6           | 50.2                         | 54                | -3.8           | AV       |
|            |     | V       | 10480.0            | 35.9                         | 16.6           | 52.5                         | 54(Note3)         | -1.5           | PK       |
|            |     | H       | 15720.0            | 19.4                         | 26.8           | 46.2                         | 54(Note3)         | -7.8           | PK       |
|            |     | V       | 15720.0            | 19.5                         | 26.8           | 46.3                         | 54(Note3)         | -7.7           | PK       |
|            | 149 | H       | 11490.0            | 26.5                         | 21.3           | 47.8                         | 54(Note3)         | -6.2           | PK       |
|            |     | V       | 11490.0            | 24.5                         | 21.3           | 45.8                         | 54(Note3)         | -8.2           | PK       |
|            |     | H       | 17235.0            | 21.6                         | 25.7           | 47.3                         | 54(Note3)         | -6.7           | PK       |
|            |     | V       | 17235.0            | 21.1                         | 25.7           | 46.8                         | 54(Note3)         | -7.2           | PK       |
|            | 157 | H       | 11570.0            | 31.8                         | 22.1           | 53.9                         | 54(Note3)         | -0.1           | PK       |
|            |     | V       | 11570.0            | 27.5                         | 22.1           | 49.6                         | 54(Note3)         | -4.4           | PK       |
|            |     | H       | 17355.0            | 22.5                         | 25.3           | 47.8                         | 54(Note3)         | -6.2           | PK       |
|            |     | V       | 17355.0            | 25.1                         | 25.3           | 50.4                         | 54(Note3)         | -3.6           | PK       |
|            | 165 | H       | 11650.0            | 29.8                         | 23.0           | 52.8                         | 54(Note3)         | -1.2           | PK       |
|            |     | V       | 11650.0            | 26.8                         | 23.0           | 49.8                         | 54(Note3)         | -4.2           | PK       |
|            |     | H       | 17475.0            | 22.8                         | 25.3           | 48.1                         | 54(Note3)         | -5.9           | PK       |
|            |     | V       | 17475.0            | 26.4                         | 25.3           | 51.7                         | 54(Note3)         | -2.3           | PK       |

|            | CH  | Antenna | Frequency<br>(MHz) | Reading<br>Level<br>(dBuV/m) | Factor<br>(dB) | Measure<br>Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector |
|------------|-----|---------|--------------------|------------------------------|----------------|------------------------------|-------------------|----------------|----------|
| Chain<br>2 | 36  | H       | 10360.0            | 41.5                         | 16.5           | 58.0                         | 74                | -16.0          | PK       |
|            |     | H       | 10360.0            | 30.5                         | 16.5           | 47.0                         | 54                | -7.0           | AV       |
|            |     | V       | 10360.0            | 32.7                         | 16.5           | 49.2                         | 54(Note3)         | -4.8           | PK       |
|            |     | H       | 15540.0            | 16.7                         | 24.1           | 40.8                         | 54(Note3)         | -13.2          | PK       |
|            |     | V       | 15540.0            | 18.6                         | 24.1           | 42.7                         | 54(Note3)         | -11.3          | PK       |
|            | 44  | H       | 10440.0            | 42.5                         | 16.7           | 59.2                         | 74                | -14.8          | PK       |
|            |     | H       | 10440.0            | 31.3                         | 16.8           | 48.1                         | 54                | -5.9           | AV       |
|            |     | V       | 10440.0            | 33.2                         | 16.6           | 49.8                         | 54(Note3)         | -4.2           | PK       |
|            |     | H       | 15660.0            | 23.1                         | 24.6           | 47.7                         | 54(Note3)         | -6.3           | PK       |
|            |     | V       | 15660.0            | 25.8                         | 24.6           | 50.4                         | 54(Note3)         | -3.6           | PK       |
|            | 48  | H       | 10480.0            | 40.9                         | 16.6           | 57.5                         | 74                | -16.5          | PK       |
|            |     | H       | 10480.0            | 28.6                         | 16.8           | 45.4                         | 54                | -8.6           | AV       |
|            |     | V       | 10480.0            | 33.3                         | 16.6           | 49.9                         | 54(Note3)         | -4.1           | PK       |
|            |     | H       | 15720.0            | 19.3                         | 26.8           | 46.1                         | 54(Note3)         | -7.9           | PK       |
|            |     | V       | 15720.0            | 21.4                         | 26.8           | 48.2                         | 54(Note3)         | -5.8           | PK       |
|            | 149 | H       | 11490.0            | 25.0                         | 21.3           | 46.3                         | 54(Note3)         | -7.7           | PK       |
|            |     | V       | 11490.0            | 24.6                         | 21.3           | 45.9                         | 54(Note3)         | -8.1           | PK       |
|            |     | H       | 17235.0            | 21.7                         | 25.7           | 47.4                         | 54(Note3)         | -6.6           | PK       |
|            |     | V       | 17235.0            | 21.1                         | 25.7           | 46.8                         | 54(Note3)         | -7.2           | PK       |
|            | 157 | H       | 11570.0            | 28.8                         | 22.1           | 50.9                         | 54(Note3)         | -3.1           | PK       |
|            |     | V       | 11570.0            | 30.2                         | 22.1           | 52.3                         | 54(Note3)         | -1.7           | PK       |
|            |     | H       | 17355.0            | 22.3                         | 25.3           | 47.6                         | 54(Note3)         | -6.4           | PK       |
|            |     | V       | 17355.0            | 26.4                         | 25.3           | 51.7                         | 54(Note3)         | -2.3           | PK       |
|            | 165 | H       | 11650.0            | 25.1                         | 23.0           | 48.1                         | 54(Note3)         | -5.9           | PK       |
|            |     | V       | 11650.0            | 25.9                         | 23.0           | 48.9                         | 54(Note3)         | -5.1           | PK       |
|            |     | H       | 17475.0            | 21.9                         | 25.3           | 47.2                         | 54(Note3)         | -6.8           | PK       |
|            |     | V       | 17475.0            | 24.0                         | 25.3           | 49.3                         | 54(Note3)         | -4.7           | PK       |

|              | CH  | Antenna | Frequency<br>(MHz) | Reading<br>Level<br>(dBuV/m) | Factor<br>(dB) | Measure<br>Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector |
|--------------|-----|---------|--------------------|------------------------------|----------------|------------------------------|-------------------|----------------|----------|
| Chain<br>1+2 | 36  | H       | 10360.0            | 45.6                         | 16.5           | 62.1                         | 74                | -11.9          | PK       |
|              |     | H       | 10360.0            | 32.9                         | 16.5           | 49.4                         | 54                | -4.6           | AV       |
|              |     | V       | 10360.0            | 36.2                         | 16.5           | 52.7                         | 54(Note3)         | -1.3           | PK       |
|              |     | H       | 15540.0            | 17.8                         | 24.1           | 41.9                         | 54(Note3)         | -12.1          | PK       |
|              |     | V       | 15540.0            | 19.0                         | 24.1           | 43.1                         | 54(Note3)         | -10.9          | PK       |
|              | 44  | H       | 10440.0            | 44.2                         | 16.8           | 61.0                         | 74                | -13.0          | PK       |
|              |     | H       | 10440.0            | 33.6                         | 16.8           | 50.4                         | 54                | -3.6           | AV       |
|              |     | V       | 10440.0            | 35.4                         | 16.7           | 52.1                         | 54(Note3)         | -1.9           | PK       |
|              |     | H       | 15660.0            | 22.8                         | 24.6           | 47.4                         | 54(Note3)         | -6.6           | PK       |
|              |     | V       | 15660.0            | 25.3                         | 24.6           | 49.9                         | 54(Note3)         | -4.1           | PK       |
|              | 48  | H       | 10480.0            | 44.5                         | 16.7           | 61.2                         | 74                | -12.8          | PK       |
|              |     | H       | 10480.0            | 33.9                         | 16.6           | 50.5                         | 54                | -3.5           | AV       |
|              |     | V       | 10480.0            | 33.0                         | 16.6           | 49.6                         | 54(Note3)         | -4.4           | PK       |
|              |     | H       | 15720.0            | 21.1                         | 26.8           | 47.9                         | 54(Note3)         | -6.1           | PK       |
|              |     | V       | 15720.0            | 20.6                         | 26.8           | 47.4                         | 54(Note3)         | -6.6           | PK       |
|              | 149 | H       | 11490.0            | 27.0                         | 21.3           | 48.3                         | 54(Note3)         | -5.7           | PK       |
|              |     | V       | 11490.0            | 25.5                         | 21.3           | 46.8                         | 54(Note3)         | -7.2           | PK       |
|              |     | H       | 17235.0            | 21.6                         | 25.7           | 47.3                         | 54(Note3)         | -6.7           | PK       |
|              |     | V       | 17235.0            | 23.7                         | 25.7           | 49.4                         | 54(Note3)         | -4.6           | PK       |
|              | 157 | H       | 11570.0            | 30.7                         | 22.1           | 52.8                         | 54(Note3)         | -1.2           | PK       |
|              |     | V       | 11570.0            | 29.8                         | 22.1           | 51.9                         | 54(Note3)         | -2.1           | PK       |
|              |     | H       | 17355.0            | 23.4                         | 25.3           | 48.7                         | 54(Note3)         | -5.3           | PK       |
|              |     | V       | 17355.0            | 26.5                         | 25.3           | 51.8                         | 54(Note3)         | -2.2           | PK       |
|              | 165 | H       | 11650.0            | 26.4                         | 23.0           | 49.4                         | 54(Note3)         | -4.6           | PK       |
|              |     | V       | 11650.0            | 25.9                         | 23.0           | 48.9                         | 54(Note3)         | -5.1           | PK       |
|              |     | H       | 17475.0            | 21.7                         | 25.3           | 47.0                         | 54(Note3)         | -7.0           | PK       |
|              |     | V       | 17475.0            | 24.0                         | 25.3           | 49.3                         | 54(Note3)         | -4.7           | PK       |

Note: 1. Measure Level = Reading Level + Factor.

2. The test frequency range, 9kHz~30MHz, 18GHz~25GHz, both of the worst case are at least 6dB below the limits, therefore no data appear in the report.

3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

|           |   |                                    |
|-----------|---|------------------------------------|
| Product   | : | IP-STB                             |
| Test Item | : | Radiated Emission                  |
| Test Site | : | AC-5                               |
| Test Mode | : | Mode 3: Transmit by 802.11n(40MHz) |

| CH         |     | Antenna | Frequency<br>(MHz) | Reading<br>Level<br>(dBuV/m) | Factor<br>(dB) | Measure<br>Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector |
|------------|-----|---------|--------------------|------------------------------|----------------|------------------------------|-------------------|----------------|----------|
| Chain<br>1 | 38  | H       | 10380.0            | 35.2                         | 17.5           | 52.7                         | 54(Note3)         | -1.3           | PK       |
|            |     | V       | 10380.0            | 27.5                         | 17.2           | 44.7                         | 54(Note3)         | -9.3           | PK       |
|            |     | H       | 15570.0            | 16.7                         | 27.1           | 43.8                         | 54(Note3)         | -10.2          | PK       |
|            |     | V       | 15570.0            | 16.5                         | 27.1           | 43.6                         | 54(Note3)         | -10.4          | PK       |
|            | 46  | H       | 10460.0            | 42.5                         | 16.5           | 59.0                         | 74                | -15.0          | PK       |
|            |     | H       | 10460.0            | 29.9                         | 16.5           | 46.4                         | 54                | -7.6           | AV       |
|            |     | V       | 10460.0            | 19.6                         | 23.6           | 43.2                         | 54(Note3)         | -10.8          | PK       |
|            |     | H       | 15690.0            | 30.3                         | 16.7           | 47.0                         | 54(Note3)         | -7.0           | PK       |
|            |     | V       | 15690.0            | 20.1                         | 23.6           | 43.7                         | 54(Note3)         | -10.3          | PK       |
|            | 151 | H       | 11510.0            | 23.8                         | 21.6           | 45.4                         | 54(Note3)         | -8.6           | PK       |
|            |     | V       | 11510.0            | 23.7                         | 21.6           | 45.3                         | 54(Note3)         | -8.7           | PK       |
|            |     | H       | 17265.0            | 22.7                         | 25.2           | 47.9                         | 54(Note3)         | -6.1           | PK       |
|            |     | V       | 17265.0            | 22.7                         | 25.2           | 47.9                         | 54(Note3)         | -6.1           | PK       |
|            | 159 | H       | 11590.0            | 25.6                         | 21.2           | 46.8                         | 54(Note3)         | -7.2           | PK       |
|            |     | V       | 11590.0            | 26.3                         | 21.2           | 47.5                         | 54(Note3)         | -6.5           | PK       |
|            |     | H       | 17385.0            | 20.7                         | 27.0           | 47.7                         | 54(Note3)         | -6.3           | PK       |
|            |     | V       | 17385.0            | 22.7                         | 27.0           | 49.7                         | 54(Note3)         | -4.3           | PK       |

| CH         |     | Antenna | Frequency<br>(MHz) | Reading<br>Level<br>(dBuV/m) | Factor<br>(dB) | Measure<br>Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector |
|------------|-----|---------|--------------------|------------------------------|----------------|------------------------------|-------------------|----------------|----------|
| Chain<br>2 | 38  | H       | 10380.0            | 34.5                         | 17.5           | 52.0                         | 54(Note3)         | -2.0           | PK       |
|            |     | V       | 10380.0            | 27.3                         | 17.2           | 44.5                         | 54(Note3)         | -9.5           | PK       |
|            |     | H       | 15570.0            | 16.7                         | 27.1           | 43.8                         | 54(Note3)         | -10.2          | PK       |
|            |     | V       | 15570.0            | 16.0                         | 27.1           | 43.1                         | 54(Note3)         | -10.9          | PK       |
|            | 46  | H       | 10460.0            | 38.9                         | 16.6           | 55.5                         | 74                | -18.5          | PK       |
|            |     | H       | 10460.0            | 27.9                         | 16.5           | 44.4                         | 54                | -9.6           | AV       |
|            |     | V       | 10460.0            | 32.3                         | 16.6           | 48.9                         | 54(Note3)         | -5.1           | PK       |
|            |     | H       | 15690.0            | 20.1                         | 23.6           | 43.7                         | 54(Note3)         | -10.3          | PK       |
|            |     | V       | 15690.0            | 21.5                         | 23.6           | 45.1                         | 54(Note3)         | -8.9           | PK       |
|            |     | H       | 11510.0            | 24.6                         | 21.6           | 46.2                         | 54(Note3)         | -7.8           | PK       |
|            | 151 | V       | 11510.0            | 24.5                         | 21.6           | 46.1                         | 54(Note3)         | -7.9           | PK       |
|            |     | H       | 17265.0            | 22.5                         | 25.2           | 47.7                         | 54(Note3)         | -6.3           | PK       |
|            |     | V       | 17265.0            | 22.4                         | 25.2           | 47.6                         | 54(Note3)         | -6.4           | PK       |
|            |     | H       | 11590.0            | 25.8                         | 21.2           | 47.0                         | 54(Note3)         | -7.0           | PK       |
|            | 159 | V       | 11590.0            | 25.9                         | 21.2           | 47.1                         | 54(Note3)         | -6.9           | PK       |
|            |     | H       | 17385.0            | 21.6                         | 27.0           | 48.6                         | 54(Note3)         | -5.4           | PK       |
|            |     | V       | 17385.0            | 21.6                         | 27.0           | 48.6                         | 54(Note3)         | -5.4           | PK       |

| CH           |     | Antenna | Frequency<br>(MHz) | Reading<br>Level<br>(dBuV/m) | Factor<br>(dB) | Measure<br>Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector |
|--------------|-----|---------|--------------------|------------------------------|----------------|------------------------------|-------------------|----------------|----------|
| Chain<br>1+2 | 38  | H       | 10380.0            | 36.7                         | 17.0           | 53.7                         | 54(Note3)         | -0.3           | PK       |
|              |     | V       | 10380.0            | 27.5                         | 17.2           | 44.7                         | 54(Note3)         | -9.3           | PK       |
|              |     | H       | 15570.0            | 16.1                         | 27.1           | 43.2                         | 54(Note3)         | -10.8          | PK       |
|              |     | V       | 15570.0            | 16.9                         | 27.1           | 44.0                         | 54(Note3)         | -10.0          | PK       |
|              | 46  | H       | 10460.0            | 41.8                         | 16.5           | 58.3                         | 74                | 4.3            | PK       |
|              |     | H       | 10460.0            | 29.7                         | 16.5           | 46.2                         | 54                | -7.8           | AV       |
|              |     | V       | 10460.0            | 20.4                         | 23.6           | 44.0                         | 54(Note3)         | -10.0          | PK       |
|              |     | H       | 15690.0            | 29.2                         | 16.5           | 45.7                         | 54(Note3)         | -8.3           | PK       |
|              |     | V       | 15690.0            | 20.7                         | 23.6           | 44.3                         | 54(Note3)         | -9.7           | PK       |
|              |     | H       | 17265.0            | 22.0                         | 25.2           | 47.2                         | 54(Note3)         | -6.8           | PK       |
|              | 151 | V       | 17265.0            | 21.7                         | 25.2           | 46.9                         | 54(Note3)         | -7.1           | PK       |
|              |     | H       | 11510.0            | 24.2                         | 21.6           | 45.8                         | 54(Note3)         | -8.2           | PK       |
|              |     | V       | 11510.0            | 24.2                         | 21.6           | 45.8                         | 54(Note3)         | -8.2           | PK       |
|              |     | H       | 17265.0            | 22.0                         | 25.2           | 47.2                         | 54(Note3)         | -6.8           | PK       |
|              | 159 | V       | 17265.0            | 21.7                         | 25.2           | 46.9                         | 54(Note3)         | -7.1           | PK       |
|              |     | H       | 11590.0            | 27.1                         | 21.2           | 48.3                         | 54(Note3)         | -5.7           | PK       |
|              |     | V       | 11590.0            | 27.3                         | 21.2           | 48.5                         | 54(Note3)         | -5.5           | PK       |
|              |     | H       | 17385.0            | 21.1                         | 27.0           | 48.1                         | 54(Note3)         | -5.9           | PK       |
|              |     | V       | 17385.0            | 23.0                         | 27.0           | 50.0                         | 54(Note3)         | -4.0           | PK       |

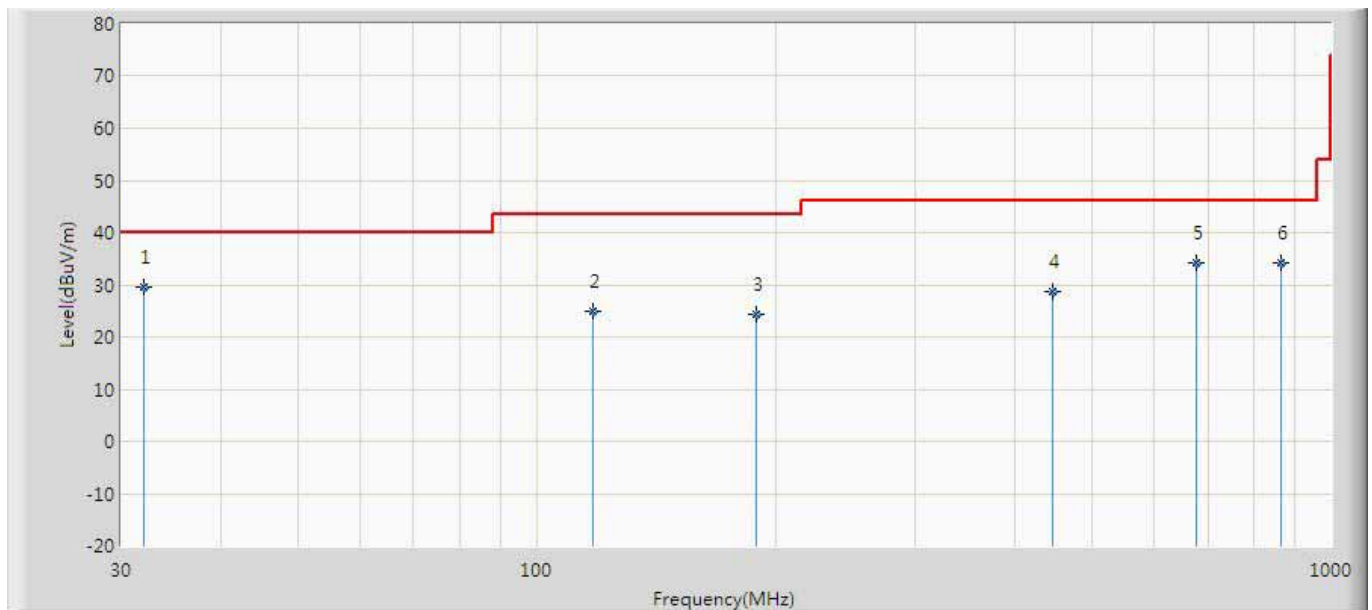
Note: 1. Measure Level = Reading Level + Factor.

2. The test frequency range, 9kHz~30MHz, 18GHz~25GHz, both of the worst case are at least 6dB below the limits, therefore no data appear in the report.

3. This limit applies for using average detector, if the test result on peak is lower than average limit, then average measurement needn't be performed.

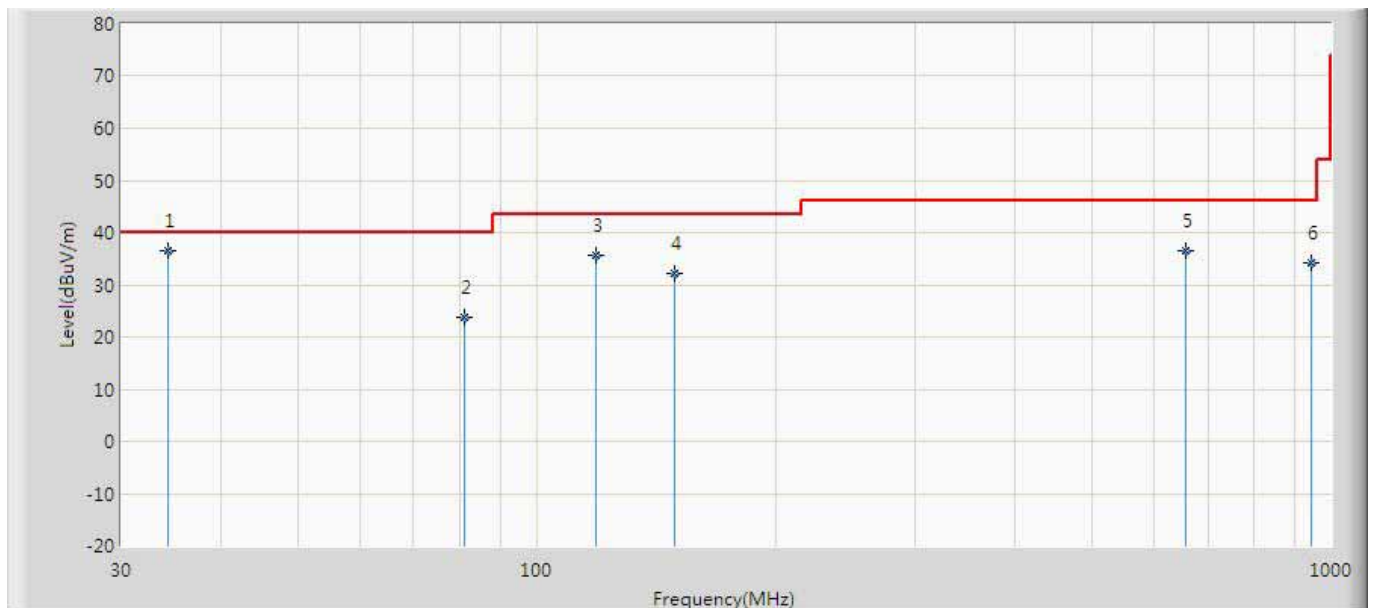
## The worst case of Radiated Emission below 1GHz:

|                                     |                          |
|-------------------------------------|--------------------------|
| Engineer: Scott                     |                          |
| Site: AC3                           | Time: 2016/01/04 – 19:33 |
| Limit: FCC_Part15.109_RE(3m)_ClassB | Margin: 0                |
| Probe: AC3_10m (30-1000MHz)         | Polarity: Horizontal     |
| EUT: IP-STB                         | Power: AC 120V/60Hz      |
| Note: Mode 1                        |                          |



| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  | *    | 32.061          | 29.514                 | 2.130                | -10.486         | 40.000         | 27.384      | QP   |
| 2  |      | 118.027         | 24.813                 | 8.110                | -18.687         | 43.500         | 16.703      | QP   |
| 3  |      | 189.201         | 24.430                 | 7.230                | -19.070         | 43.500         | 17.200      | QP   |
| 4  |      | 446.735         | 28.654                 | 2.110                | -17.346         | 46.000         | 26.545      | QP   |
| 5  |      | 676.154         | 34.060                 | 5.130                | -11.940         | 46.000         | 28.930      | QP   |
| 6  |      | 864.927         | 34.190                 | 1.230                | -11.810         | 46.000         | 32.960      | QP   |

|                                     |                          |
|-------------------------------------|--------------------------|
| Engineer: Scott                     |                          |
| Site: AC3                           | Time: 2016/01/04 – 19:33 |
| Limit: FCC_Part15.109_RE(3m)_ClassB | Margin: 0                |
| Probe: AC3_10m (30-1000MHz)         | Polarity: Horizontal     |
| EUT: IP-STB                         | Power: AC 120V/60Hz      |
| Note: Mode 1                        |                          |



| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  | *    | 34.365          | 36.626                 | 13.550               | -3.374          | 40.000         | 23.075      | QP   |
| 2  |      | 81.045          | 23.775                 | 8.530                | -16.225         | 40.000         | 15.245      | QP   |
| 3  |      | 118.997         | 35.655                 | 14.880               | -7.845          | 43.500         | 20.775      | QP   |
| 4  |      | 149.530         | 32.241                 | 14.220               | -11.259         | 43.500         | 18.021      | QP   |
| 5  |      | 656.623         | 36.474                 | 7.130                | -9.526          | 46.000         | 29.344      | QP   |
| 6  |      | 946.165         | 34.275                 | 1.030                | -11.725         | 46.000         | 33.245      | QP   |

Note: All the test modes are pretested and mode 1 802.11a mode was found to be the worst mode, so the data of this test mode was recorded.

## 5. Occupied Bandwidth

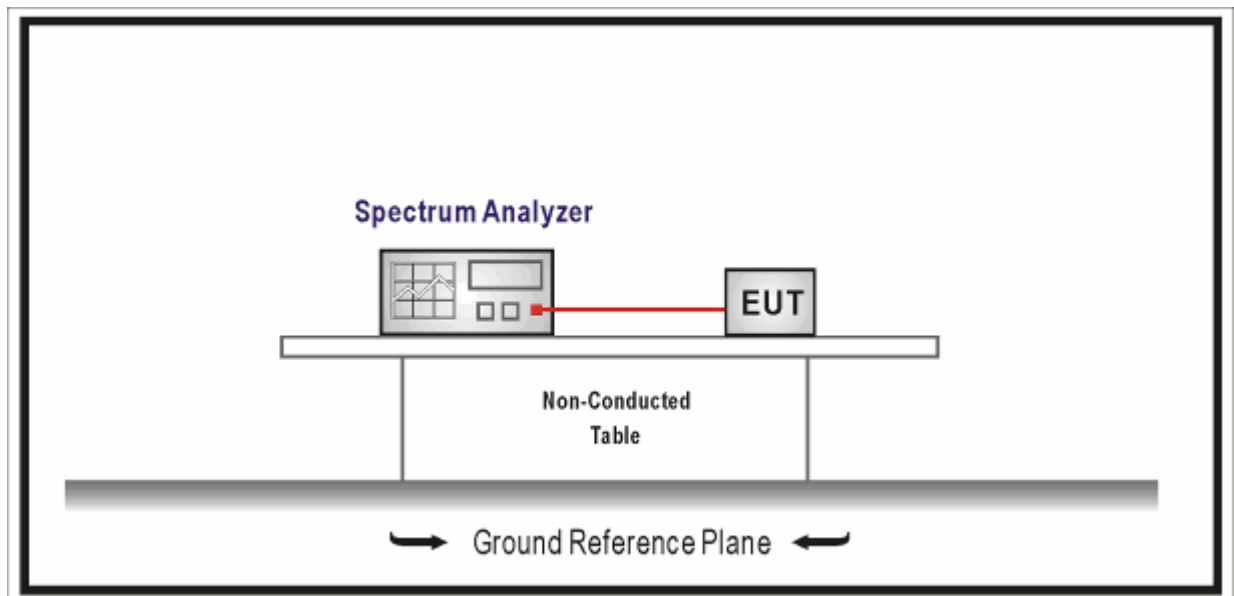
### 5.1. Test Equipment

Occupied Bandwidth / TR-8

| Instrument                 | Manufacturer | Type No. | Serial No. | Cal.Due Date |
|----------------------------|--------------|----------|------------|--------------|
| Spectrum Analyzer          | Agilent      | N9010A   | MY48030494 | 2016.03.10   |
| Temperature/Humidity Meter | zhicheng     | ZC1-2    | TR8-TH     | 2016.04.09   |

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

### 5.2. Test Setup



### 5.3. Limit

N/A

## 5.4. Test Procedure

According to ANSI C63.4:2014& ANSI C63.10:2013&789033 D02 General UNII Test Procedures New Rules v01& FCC CFR Title 47 Part 15 Subpart E: 2014

### Emission Bandwidth

- a) Set RBW = approximately 1% of the emission bandwidth.
- b) Set the VBW > RBW.
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

### 99% Occupied Bandwidth

- a) The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.
- b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be approximately three times the RBW, unless otherwise specified by the applicable requirement.
- c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than  $[10 \log (OBW/RBW)]$  below the reference level. Specific guidance is given in 4.1.5.2.
- d) Step a) through step c) might require iteration to adjust within the specified range.
- e) Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
- f) Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.
- g) If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies.
- h) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

## 5.5. Uncertainty

The measurement uncertainty is defined as  $\pm 1$  kHz

## 5.6. Test Result

|           |   |                             |
|-----------|---|-----------------------------|
| Product   | : | IP-STB                      |
| Test Item | : | Occupied Bandwidth          |
| Test Site | : | TR-8                        |
| Test Mode | : | Mode 1: Transmit by 802.11a |

| Channel No. | Frequency<br>(MHz) | 26dB Occupied Bandwidth<br>(MHz) | 99% Occupied Bandwidth<br>(MHz) |
|-------------|--------------------|----------------------------------|---------------------------------|
| 36          | 5180               | 29.12                            | 17.072                          |
| 44          | 5220               | 30.00                            | 18.230                          |
| 48          | 5240               | 30.00                            | 18.092                          |
| 149         | 5745               | 23.78                            | 16.608                          |
| 157         | 5785               | 29.27                            | 16.841                          |
| 165         | 5825               | 28.74                            | 16.922                          |

Channel 36 (5180MHz)



Channel 44 (5220MHz)



Channel 48 (5240MHz)



Channel 149 (5745MHz)



Channel 157 (5785MHz)



Channel 165 (5825MHz)



|           |   |                                    |
|-----------|---|------------------------------------|
| Product   | : | IP-STB                             |
| Test Item | : | Occupied Bandwidth                 |
| Test Site | : | TR-8                               |
| Test Mode | : | Mode 2: Transmit by 802.11n(20MHz) |

| Channel No. | Frequency<br>(MHz) | 26dB Occupied Bandwidth<br>(MHz) | 99% Occupied Bandwidth<br>(MHz) |
|-------------|--------------------|----------------------------------|---------------------------------|
| 36          | 5180               | 29.34                            | 17.868                          |
| 44          | 5220               | 30.00                            | 18.615                          |
| 48          | 5240               | 30.00                            | 20.159                          |
| 149         | 5745               | 24.97                            | 17.684                          |
| 157         | 5785               | 29.94                            | 17.969                          |
| 165         | 5825               | 29.61                            | 17.863                          |

**Channel 36 (5180MHz)**



**Channel 44 (5220MHz)**



**Channel 48 (5240MHz)**



**Channel 149 (5745MHz)**



**Channel 157 (5785MHz)**



**Channel 165 (5825MHz)**



|           |   |                                     |
|-----------|---|-------------------------------------|
| Product   | : | IP-STB                              |
| Test Item | : | Occupied Bandwidth                  |
| Test Site | : | TR-8                                |
| Test Mode | : | Mode 3: Transmit by 802.11n (40MHz) |

| Channel No. | Frequency (MHz) | 26dB Occupied Bandwidth (MHz) | 99% Occupied Bandwidth (MHz) |
|-------------|-----------------|-------------------------------|------------------------------|
| 38          | 5190            | 39.96                         | 36.450                       |
| 46          | 5230            | 60.00                         | 36.896                       |
| 151         | 5755            | 39.44                         | 36.328                       |
| 159         | 5795            | 39.75                         | 36.420                       |

Channel 38 (5190MHz)



Channel 46 (5230MHz)



Channel 151 (5755MHz)



Channel 159 (5795MHz)



## 6. 6dB Occupied Bandwidth

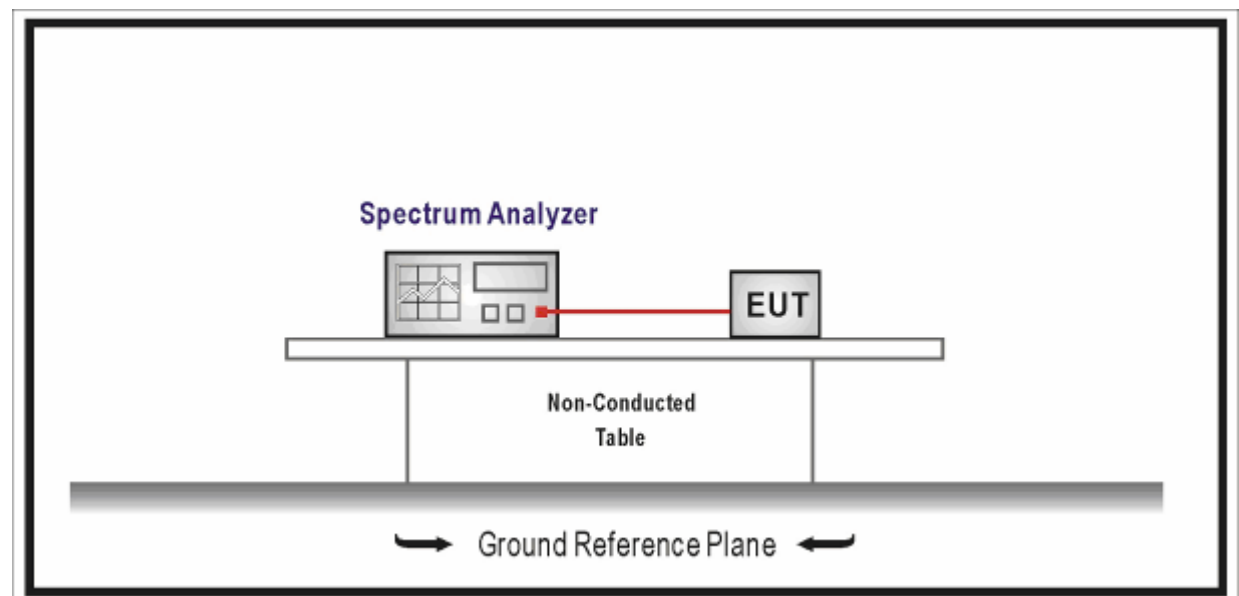
### 6.1. Test Equipment

Occupied Bandwidth / TR-8

| Instrument                 | Manufacturer | Type No. | Serial No. | Cal. Due Date |
|----------------------------|--------------|----------|------------|---------------|
| Spectrum Analyzer          | Agilent      | N9010A   | MY48030494 | 2016.03.10    |
| Temperature/Humidity Meter | zhicheng     | ZC1-2    | TR8-TH     | 2016.04.09    |

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

### 6.2. Test Setup



### 6.3. Limit

For FCC

The minimum 6 dB bandwidth shall be 500 kHz.

### 6.4. Test Procedure

According to ANSI C63.4:2014& ANSI C63.10:2013&789033 D02 General UNII Test Procedures New Rules v01& FCC CFR Title 47 Part 15 Subpart E: 2014

- a) Set RBW = in the range of 1% to 5% of the OBW.

- b) Set the video bandwidth (VBW)  $\geq 3 \times \text{RBW}$ .
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Sweep = auto couple.
- f) Allow the trace to stabilize.
- g) Use the -6dBm function of the instrument (if available) and report the measured bandwidth.

## 6.5. Uncertainty

The measurement uncertainty is defined as  $\pm 1 \text{ kHz}$

## 6.6. Test Result

|           |   |                             |
|-----------|---|-----------------------------|
| Product   | : | IP-STB                      |
| Test Item | : | Occupied Bandwidth          |
| Test Site | : | TR-8                        |
| Test Mode | : | Mode 1: Transmit by 802.11a |

| Channel No. | Frequency (MHz) | 6dB Occupied Bandwidth (MHz) |
|-------------|-----------------|------------------------------|
| 149         | 5745            | 15.97                        |
| 157         | 5785            | 16.08                        |
| 165         | 5825            | 16.02                        |

Channel 149 (5745MHz)



Channel 157 (5785MHz)



Channel 165 (5825MHz)



|           |   |                                    |
|-----------|---|------------------------------------|
| Product   | : | IP-STB                             |
| Test Item | : | Occupied Bandwidth                 |
| Test Site | : | TR-8                               |
| Test Mode | : | Mode 2: Transmit by 802.11n(20MHz) |

| Channel No. | Frequency<br>(MHz) | 6dB Occupied Bandwidth<br>(MHz) |
|-------------|--------------------|---------------------------------|
| 149         | 5745               | 17.22                           |
| 157         | 5785               | 17.29                           |
| 165         | 5825               | 17.17                           |

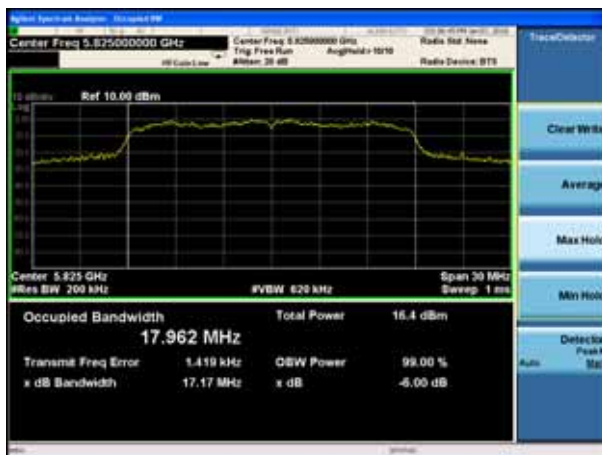
Channel 149 (5745MHz)



Channel 157 (5785MHz)



Channel 165 (5825MHz)



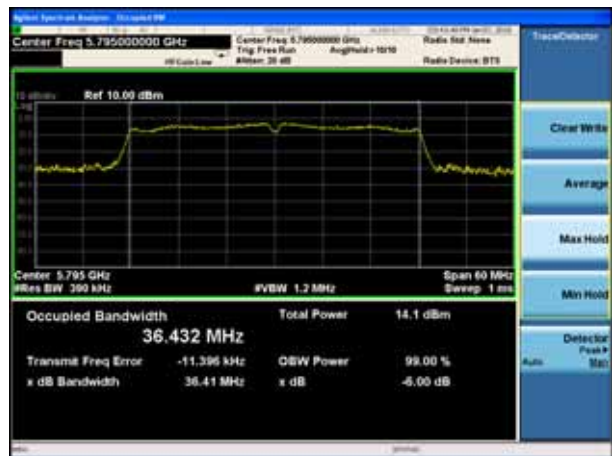
|           |   |                                    |
|-----------|---|------------------------------------|
| Product   | : | IP-STB                             |
| Test Item | : | Occupied Bandwidth                 |
| Test Site | : | TR-8                               |
| Test Mode | : | Mode 3: Transmit by 802.11n(40MHz) |

| Channel No. | Frequency<br>(MHz) | 6dB Occupied Bandwidth<br>(MHz) |
|-------------|--------------------|---------------------------------|
| 151         | 5755               | 36.34                           |
| 159         | 5795               | 36.41                           |

Channel 151 (5755MHz)



Channel 159 (5795MHz)



## 7. Power Output

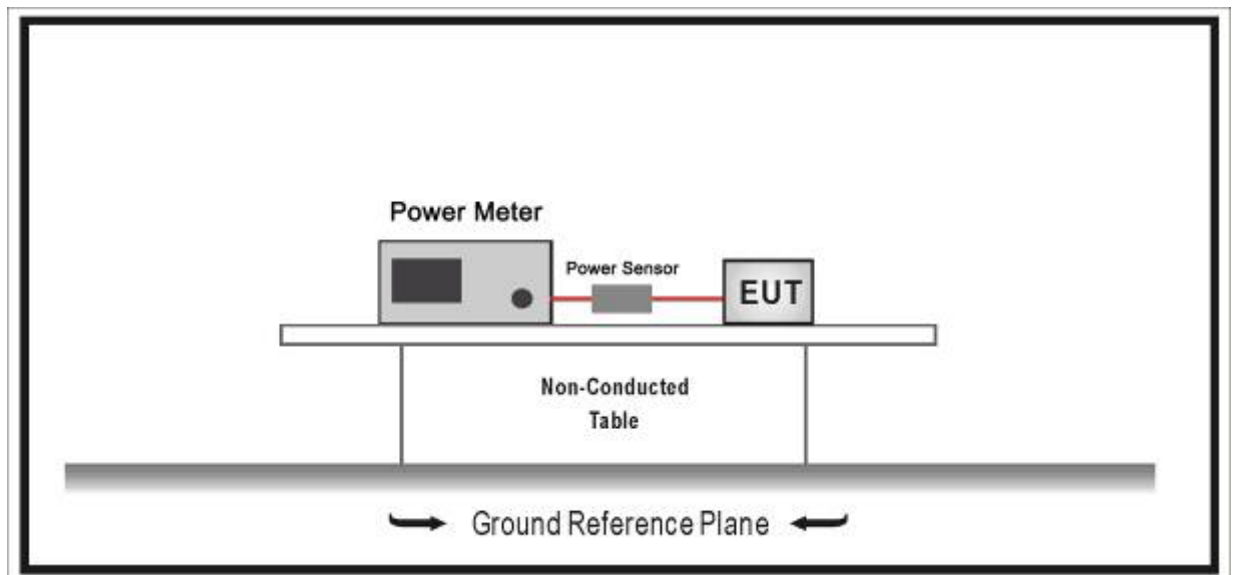
### 7.1. Test Equipment

Power Output / TR-8

| Instrument                 | Manufacturer | Type No. | Serial No. | Cal. Due Date |
|----------------------------|--------------|----------|------------|---------------|
| Spectrum Analyzer          | Agilent      | N9010A   | MY48030494 | 2016.03.10    |
| Temperature/Humidity Meter | zhicheng     | ZC1-2    | TR8-TH     | 2016.04.09    |

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

### 7.2. Test Setup



### 7.3. Limit

#### For FCC

- For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
- For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm +

10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

- For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

#### 7.4. Test Procedure

According to ANSI C63.4:2014& ANSI C63.10:2013&789033 D02 General UNAccording to ANSI C63.4:2014& ANSI C63.10:2013&789033 D02 General UNII Test Procedures New Rules v01& FCC CFR Title 47 Part 15 Subpart E: 2015

Use the wideband power meter to test peak power and record the result.

#### 7.5. Uncertainty

The measurement uncertainty is defined as  $\pm 1.27$  dB

## 7.6. Test Result

Power output test was verified over all data rates of each mode shown as below, and then choose the maximum power output (blue marker) for final test of each channel.

| MCS Index for 802.11n | Spatial Streams | Data Rate (Mbps) |                 |          |                 |          |
|-----------------------|-----------------|------------------|-----------------|----------|-----------------|----------|
|                       |                 | 802.11a          | 20MHz Bandwidth |          | 40MHz Bandwidth |          |
|                       |                 |                  | 800ns GI        | 400ns GI | 800ns GI        | 400ns GI |
| 0                     | 1               | 6                | 6.5             | 7.2      | 13.5            | 15.0     |
| 1                     | 1               | 9                | 13.0            | 14.4     | 27.0            | 30.0     |
| 2                     | 1               | 12               | 19.5            | 21.7     | 40.5            | 45.0     |
| 3                     | 1               | 18               | 26.0            | 28.9     | 54.0            | 60.0     |
| 4                     | 1               | 24               | 39.0            | 43.3     | 81.0            | 90.0     |
| 5                     | 1               | 36               | 52.0            | 57.8     | 108.0           | 120.0    |
| 6                     | 1               | 48               | 58.5            | 65.0     | 121.5           | 135.0    |
| 7                     | 1               | 54               | 65.0            | 72.2     | 135.0           | 150.0    |
| 8                     | 2               | ---              | 13.0            | 14.4     | 27.0            | 30.0     |
| 9                     | 2               | ---              | 26.0            | 28.9     | 54.0            | 60.0     |
| 10                    | 2               | ---              | 39.0            | 43.3     | 81.0            | 90.0     |
| 11                    | 2               | ---              | 52.0            | 57.8     | 108.0           | 120.0    |
| 12                    | 2               | ---              | 78.0            | 86.7     | 162.0           | 180.0    |
| 13                    | 2               | ---              | 104.0           | 115.6    | 216.0           | 240.0    |
| 14                    | 2               | ---              | 117.0           | 130.0    | 243.0           | 270.0    |
| 15                    | 2               | ---              | 130.0           | 144.0    | 270.0           | 300.0    |

| Spatial Streams | MCS Index | Modulation type | Coding rate | Data Rate(Mb/s) |       |                |       |                |       |                |        |
|-----------------|-----------|-----------------|-------------|-----------------|-------|----------------|-------|----------------|-------|----------------|--------|
|                 |           |                 |             | 20MHz           |       | 40MHz          |       | 80MHz          |       | 160MHz         |        |
|                 |           |                 |             | Guard Interval  |       | Guard Interval |       | Guard Interval |       | Guard Interval |        |
|                 |           |                 |             | 800ns           | 400ns | 800ns          | 400ns | 800ns          | 400ns | 800ns          | 400ns  |
| 1               | 0         | BPSK            | 1/2         | 6.5             | 7.2   | 13.5           | 15    | 29.3           | 32.5  | 58.5           | 65     |
|                 | 1         | QPSK            | 1/2         | 13              | 14.4  | 27             | 30    | 58.5           | 65    | 117            | 130    |
|                 | 2         | QPSK            | 3/4         | 19.5            | 21.7  | 40.5           | 45    | 87.8           | 97.5  | 175.5          | 195    |
|                 | 3         | 16-QAM          | 1/2         | 26              | 28.9  | 54             | 60    | 117            | 130   | 234            | 260    |
|                 | 4         | 16-QAM          | 3/4         | 39              | 43.3  | 81             | 90    | 175.5          | 195   | 351            | 390    |
|                 | 5         | 64-QAM          | 2/3         | 52              | 57.8  | 108            | 120   | 234            | 260   | 468            | 520    |
|                 | 6         | 64-QAM          | 3/4         | 58.5            | 65    | 121.5          | 135   | 263.3          | 292.5 | 526.5          | 585    |
|                 | 7         | 64-QAM          | 5/6         | 65              | 72.2  | 135            | 150   | 292.5          | 325   | 585            | 650    |
|                 | 8         | 256-QAM         | 3/4         | 78              | 86.7  | 162            | 180   | 351            | 390   | 702            | 780    |
|                 | 9         | 256-QAM         | 5/6         | N/A             | N/A   | 180            | 200   | 390            | 433.3 | 780            | 866.7  |
| 2               | 0         | BPSK            | 1/2         | 13              | 14.4  | 27             | 30    | 58.6           | 65    | 117            | 130    |
|                 | 1         | QPSK            | 1/2         | 26              | 28.8  | 54             | 60    | 117            | 130   | 234            | 260    |
|                 | 2         | QPSK            | 3/4         | 39              | 43.4  | 81             | 90    | 175.6          | 195   | 351            | 390    |
|                 | 3         | 16-QAM          | 1/2         | 52              | 57.8  | 108            | 120   | 234            | 260   | 468            | 520    |
|                 | 4         | 16-QAM          | 3/4         | 78              | 86.6  | 162            | 180   | 351            | 390   | 702            | 780    |
|                 | 5         | 64-QAM          | 2/3         | 104             | 115.6 | 216            | 240   | 468            | 520   | 936            | 1040   |
|                 | 6         | 64-QAM          | 3/4         | 117             | 130   | 243            | 270   | 526.6          | 585   | 1053           | 1170   |
|                 | 7         | 64-QAM          | 5/6         | 130             | 144.4 | 270            | 300   | 585            | 650   | 1170           | 1300   |
|                 | 8         | 256-QAM         | 3/4         | 156             | 173.4 | 324            | 360   | 702            | 780   | 1404           | 1560   |
|                 | 9         | 256-QAM         | 5/6         | N/A             | N/A   | 360            | 400   | 780            | 866.6 | 1560           | 1733.4 |

Power output at various data rates:

| Test Mode                 | Bandwidth | Frequency (MHz) | Channel | Data Rate | Average Power (dBm) |
|---------------------------|-----------|-----------------|---------|-----------|---------------------|
| 802.11a<br>(Ant 1)        | 20        | 5180            | 36      | 6         | 14.11               |
|                           |           |                 |         | 24        | 13.86               |
|                           |           |                 |         | 54        | 13.71               |
| 802.11n(20MHz)<br>(Ant 1) | 20        | 5180            | 36      | MCS0      | 13.87               |
|                           |           |                 |         | MCS4      | 13.61               |
|                           |           |                 |         | MCS7      | 13.27               |
| 802.11n(40MHz)<br>(Ant 1) | 40        | 5190            | 38      | MCS0      | 10.01               |
|                           |           |                 |         | MCS4      | 9.84                |
|                           |           |                 |         | MCS7      | 9.23                |

|           |   |                             |
|-----------|---|-----------------------------|
| Product   | : | IP-STB                      |
| Test Item | : | Power Output                |
| Test Site | : | TR-8                        |
| Test Mode | : | Mode 1: Transmit by 802.11a |

| Channel No. | Frequency<br>(MHz) | Measurement Power Output<br>(dBm) |       | Limit<br>(dBm) | Result |
|-------------|--------------------|-----------------------------------|-------|----------------|--------|
|             |                    | Ant 1                             | Ant 2 |                |        |
| 36          | 5180               | 14.11                             | 16.44 | 24.0           | Pass   |
| 44          | 5220               | 15.82                             | 16.48 | 24.0           | Pass   |
| 48          | 5240               | 15.54                             | 16.20 | 24.0           | Pass   |
| 149         | 5745               | 12.94                             | 12.85 | 30.0           | Pass   |
| 157         | 5785               | 15.87                             | 15.82 | 30.0           | Pass   |
| 165         | 5825               | 15.95                             | 13.94 | 30.0           | Pass   |

Note1: If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

|           |   |                                    |
|-----------|---|------------------------------------|
| Product   | : | IP-STB                             |
| Test Item | : | Power Output                       |
| Test Site | : | TR-8                               |
| Test Mode | : | Mode 2: Transmit by 802.11n(20MHz) |

| Channel No. | Frequency<br>(MHz) | Measurement Power Output<br>(dBm) |       | Limit<br>(dBm) | Result |
|-------------|--------------------|-----------------------------------|-------|----------------|--------|
|             |                    | Ant 1                             | Ant 2 |                |        |
| 36          | 5180               | 13.87                             | 14.82 | 24.0           | Pass   |
| 44          | 5220               | 15.65                             | 16.86 | 24.0           | Pass   |
| 48          | 5240               | 15.52                             | 16.64 | 24.0           | Pass   |
| 149         | 5745               | 12.69                             | 11.86 | 30.0           | Pass   |
| 157         | 5785               | 16.52                             | 16.30 | 30.0           | Pass   |
| 165         | 5825               | 16.43                             | 13.57 | 30.0           | Pass   |

Note1: If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

|           |   |                                              |
|-----------|---|----------------------------------------------|
| Product   | : | IP-STB                                       |
| Test Item | : | Power Output                                 |
| Test Site | : | TR-8                                         |
| Test Mode | : | Mode 2: Transmit by 802.11n(20MHz) (Ant 1+2) |

| Channel No. | Frequency<br>(MHz) | Measurement Power<br>Output<br>(dBm) |       | Total Power<br>(dBm) | Limit<br>(dBm) | Result |
|-------------|--------------------|--------------------------------------|-------|----------------------|----------------|--------|
|             |                    | Ant 1                                | Ant 2 |                      |                |        |
| 36          | 5180               | 13.75                                | 14.70 | 17.26                | 21.45          | Pass   |
| 44          | 5220               | 15.04                                | 15.21 | 18.14                | 21.45          | Pass   |
| 48          | 5240               | 15.31                                | 15.13 | 18.23                | 21.45          | Pass   |
| 149         | 5745               | 12.24                                | 10.74 | 14.56                | 27.45          | Pass   |
| 157         | 5785               | 14.38                                | 14.64 | 17.52                | 27.45          | Pass   |
| 165         | 5825               | 14.22                                | 12.59 | 16.49                | 27.45          | Pass   |

Note1: If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Note2 : Directional gain =  $G_{ANT} + 10 \log(N_{ANT})$  dBi=8.55dBi>6dBi, so The Limit is 21.45dBm for Band I and 27.45dBm for Band IV.

|           |   |                                    |
|-----------|---|------------------------------------|
| Product   | : | IP-STB                             |
| Test Item | : | Power Output                       |
| Test Site | : | TR-8                               |
| Test Mode | : | Mode 3: Transmit by 802.11n(40MHz) |

| Channel No. | Frequency<br>(MHz) | Measurement Power Output<br>(dBm) |       | Limit<br>(dBm) | Result |
|-------------|--------------------|-----------------------------------|-------|----------------|--------|
|             |                    | Ant 1                             | Ant 2 |                |        |
| 38          | 5190               | 10.01                             | 11.24 | 24.0           | Pass   |
| 46          | 5230               | 15.91                             | 18.22 | 24.0           | Pass   |
| 151         | 5755               | 8.59                              | 8.04  | 30.0           | Pass   |
| 159         | 5795               | 14.15                             | 12.35 | 30.0           | Pass   |

Note1: If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

|           |   |                                               |
|-----------|---|-----------------------------------------------|
| Product   | : | IP-STB                                        |
| Test Item | : | Power Output                                  |
| Test Site | : | TR-8                                          |
| Test Mode | : | Mode 3: Transmit by 802.11n(40MHz) (Ant 1 +2) |

| Channel No. | Frequency (MHz) | Measurement Power Output (dBm) |       | Total Power (dBm) | Limit (dBm) | Result |
|-------------|-----------------|--------------------------------|-------|-------------------|-------------|--------|
|             |                 | Ant 1                          | Ant 2 |                   |             |        |
| 38          | 5190            | 9.60                           | 10.41 | 13.03             | 21.45       | Pass   |
| 46          | 5230            | 15.89                          | 16.82 | 19.39             | 21.45       | Pass   |
| 151         | 5755            | 8.53                           | 7.51  | 11.06             | 27.45       | Pass   |
| 159         | 5795            | 13.33                          | 12.24 | 15.83             | 27.45       | Pass   |

Note1: If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Note2 : Directional gain = GANT + 10 log(NANT) dBi=8.55dBi>6dBi, so The Limit is 21.45dBm for Band I and 27.45dBm for Band IV.

## 8. Peak Power Spectral Density

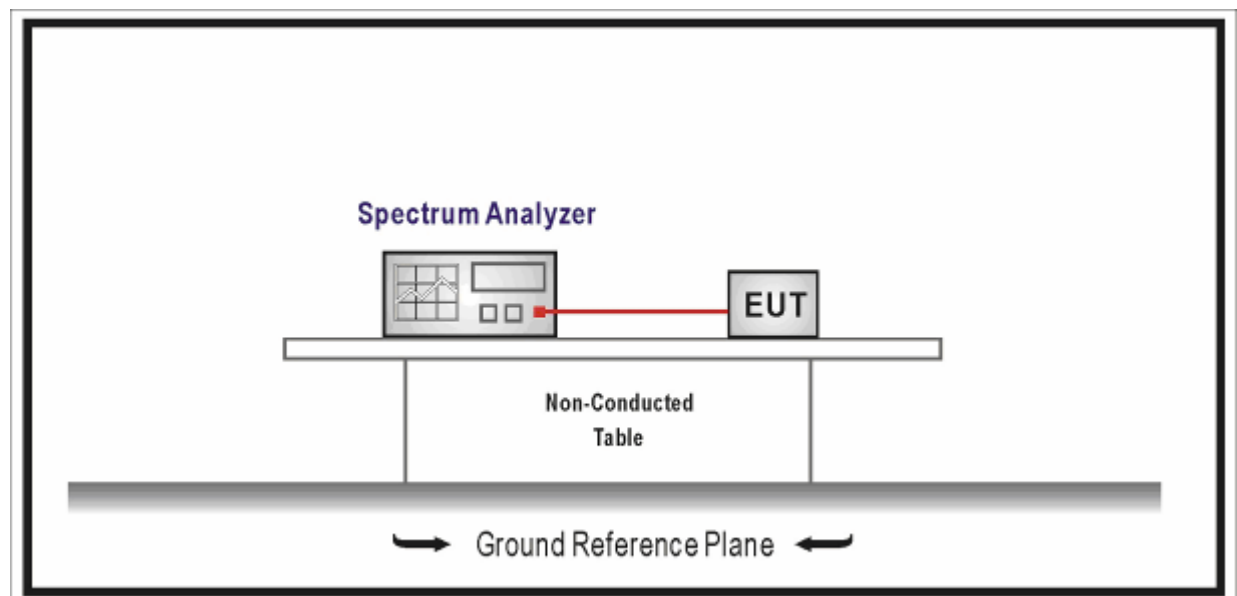
### 8.1. Test Equipment

Peak Power Spectral Density / TR-8

| Instrument                 | Manufacturer | Type No. | Serial No. | Cal. Due Date |
|----------------------------|--------------|----------|------------|---------------|
| Spectrum Analyzer          | Agilent      | N9010A   | MY48030494 | 2016.03.10    |
| Temperature/Humidity Meter | zhicheng     | ZC1-2    | TR8-TH     | 2016.04.09    |

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

### 8.2. Test Setup



### 8.3. Limit

- For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
- For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm +

10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

- For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

#### 8.4. Test Procedure

According to ANSI C63.4:2014& ANSI C63.10:2013&789033 D02 General UNII Test Procedures New Rules v01& FCC CFR Title 47 Part 15 Subpart E: 2014

Set span to encompass the entire emission bandwidth (EBW) of the signal.

For 5150-5725MHz

- a) Set RBW = 1 MHz.
- b) Set VBW  $\geq$  3 MHz.
- c) Sweep time = auto.
- d) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.

For 5725-5875MHz

- e) Set RBW=510KHz
- f) VBW $\geq$ 3RBW
- g) Sweep time=auto
- h) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.
- i) Scale the observed power level to an equivalent value in 500 kHz by adjusting (increase) the measured power by a bandwidth correction factor (BWCF) where BWCF = 10log (500

kHz/100 kHz) = 6.98 dB.

### 8.5. Uncertainty

The measurement uncertainty is defined as  $\pm 1.27$  dB

## 8.6. Test Result

|           |   |                                     |
|-----------|---|-------------------------------------|
| Product   | : | IP-STB                              |
| Test Item | : | Peak Power Spectral Density         |
| Test Site | : | TR-8                                |
| Test Mode | : | Mode 1: Transmit by 802.11a (Ant 1) |

| Channel No. | Frequency (MHz) | Reading Value (dBm/MHz) | Duty Cycle (%) | Total PPSD (dBm/MHz) | Limit (dBm/MHz) |
|-------------|-----------------|-------------------------|----------------|----------------------|-----------------|
| 36          | 5180            | 4.134                   | 97.8           | 4.231                | 11.0            |
| 44          | 5220            | 5.433                   | 97.8           | 5.530                | 11.0            |
| 48          | 5240            | 5.497                   | 97.8           | 5.594                | 11.0            |

| Channel No. | Frequency (MHz) | Reading Value (dBm/500KHz) | Duty Cycle (%) | Total PPSD (dBm/500KHz) | Limit (dBm/500KHz) |
|-------------|-----------------|----------------------------|----------------|-------------------------|--------------------|
| 149         | 5745            | 0.065                      | 97.8           | 0.162                   | 30.0               |
| 157         | 5785            | 2.635                      | 97.8           | 2.732                   | 30.0               |
| 165         | 5825            | 2.886                      | 97.8           | 2.983                   | 30.0               |

Note1: Total PSD = Reading Level + 10\*log(1/duty cycle)

Note2: If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Channel 36 (5180MHz)



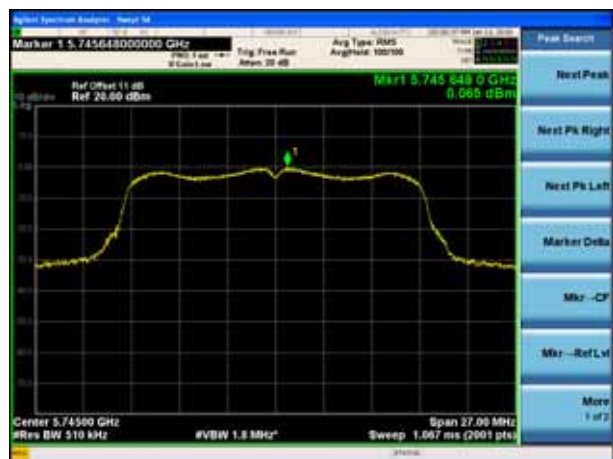
Channel 44 (5220MHz)



Channel 48 (5240MHz)



Channel 149 (5745MHz)



Channel 157(5785MHz)



Channel 165 (5825MHz)



|           |   |                                            |
|-----------|---|--------------------------------------------|
| Product   | : | IP-STB                                     |
| Test Item | : | Peak Power Spectral Density                |
| Test Site | : | TR-8                                       |
| Test Mode | : | Mode 2: Transmit by 802.11n(20MHz) (Ant 1) |

| Channel No. | Frequency (MHz) | Reading Value (dBm/MHz) | Duty Cycle (%) | Total PPSD (dBm/MHz) | Limit (dBm/MHz) |
|-------------|-----------------|-------------------------|----------------|----------------------|-----------------|
| 36          | 5180            | 3.192                   | 98.0           | 3.280                | 11.0            |
| 44          | 5200            | 4.861                   | 98.0           | 4.949                | 11.0            |
| 48          | 5240            | 4.939                   | 98.0           | 5.027                | 11.0            |

| Channel No. | Frequency (MHz) | Reading Value (dBm/500KHz) | Duty Cycle (%) | Total PPSD (dBm/500KHz) | Limit (dBm/500KHz) |
|-------------|-----------------|----------------------------|----------------|-------------------------|--------------------|
| 149         | 5745            | -0.860                     | 98.0           | -0.772                  | 30.0               |
| 157         | 5785            | 2.574                      | 98.0           | 2.662                   | 30.0               |
| 165         | 5825            | 2.339                      | 98.0           | 2.427                   | 30.0               |

Note1: Total PSD = Reading Level + 10\*log(1/duty cycle)

Note2: If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Channel 36 (5180MHz)



Channel 44 (5220MHz)



Channel 48 (5240MHz)



Channel 149 (5745MHz)



Channel 157(5785MHz)



Channel 165 (5825MHz)



|           |   |                                           |
|-----------|---|-------------------------------------------|
| Product   | : | IP-STB                                    |
| Test Item | : | Peak Power Spectral Density               |
| Test Site | : | TR-8                                      |
| Test Mode | : | Mode 3 Transmit by 802.11n(40MHz) (Ant 1) |

| Channel No. | Frequency (MHz) | Reading Value (dBm/MHz) | Duty Cycle (%) | Total PPSD (dBm/MHz) | Limit (dBm/MHz) |
|-------------|-----------------|-------------------------|----------------|----------------------|-----------------|
| 38          | 5190            | -3.825                  | 95.4           | -3.620               | 11.0            |
| 46          | 5230            | 2.278                   | 95.4           | 2.483                | 11.0            |

| Channel No. | Frequency (MHz) | Reading Value (dBm/500KHz) | Duty Cycle (%) | Total PPSD (dBm/500KHz) | Limit (dBm/500KHz) |
|-------------|-----------------|----------------------------|----------------|-------------------------|--------------------|
| 151         | 5755            | -7.616                     | 95.4           | -7.411                  | 30.0               |
| 159         | 5795            | -2.072                     | 95.4           | -1.867                  | 30.0               |

Note1: Total PSD = Reading Level +  $10 \cdot \log(1/\text{duty cycle})$

Note2: If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Channel 38 (5190MHz)



Channel 46 (5230MHz)



Channel 151 (5755MHz)



Channel 159 (5795MHz)



|           |   |                                     |
|-----------|---|-------------------------------------|
| Product   | : | IP-STB                              |
| Test Item | : | Peak Power Spectral Density         |
| Test Site | : | TR-8                                |
| Test Mode | : | Mode 1: Transmit by 802.11a (Ant 2) |

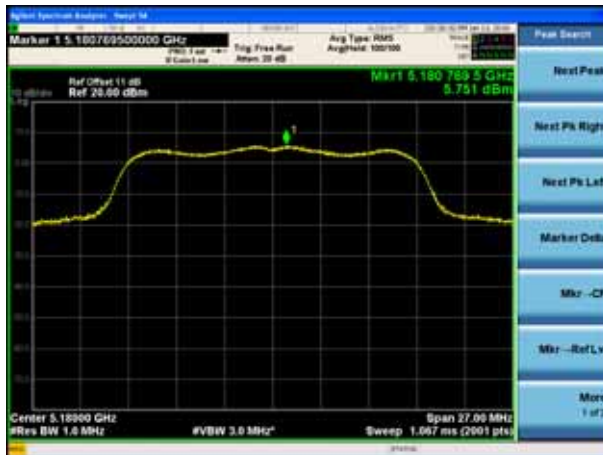
| Channel No. | Frequency (MHz) | Reading Value (dBm/MHz) | Duty Cycle (%) | Total PPSD (dBm/MHz) | Limit (dBm/MHz) |
|-------------|-----------------|-------------------------|----------------|----------------------|-----------------|
| 36          | 5180            | 5.751                   | 97.8           | 5.848                | 11.0            |
| 44          | 5220            | 5.693                   | 97.8           | 5.790                | 11.0            |
| 48          | 5240            | 5.922                   | 97.8           | 6.019                | 11.0            |

| Channel No. | Frequency (MHz) | Reading Value (dBm/500KHz) | Duty Cycle (%) | Total PPSD (dBm/500KHz) | Limit (dBm/500KHz) |
|-------------|-----------------|----------------------------|----------------|-------------------------|--------------------|
| 149         | 5745            | 0.094                      | 97.8           | 0.191                   | 30.0               |
| 157         | 5785            | 2.616                      | 97.8           | 2.713                   | 30.0               |
| 165         | 5825            | 0.823                      | 97.8           | 0.920                   | 30.0               |

Note1: Total PSD = Reading Level + 10\*log(1/duty cycle)

Note2: If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Channel 36 (5180MHz)



Channel 44 (5220MHz)



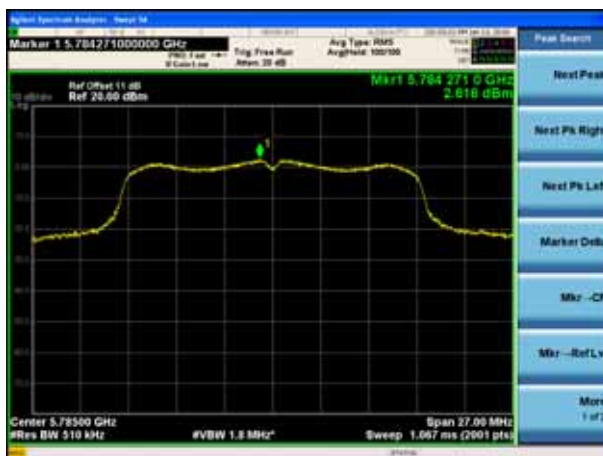
Channel 48 (5240MHz)



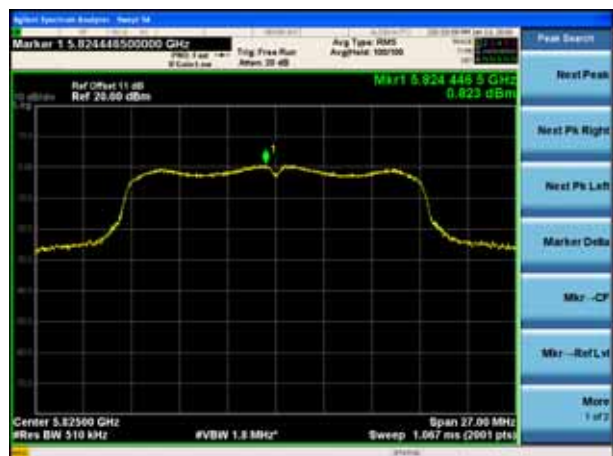
Channel 149 (5745MHz)



Channel 157(5785MHz)



Channel 165 (5825MHz)



|           |   |                                            |
|-----------|---|--------------------------------------------|
| Product   | : | IP-STB                                     |
| Test Item | : | Peak Power Spectral Density                |
| Test Site | : | TR-8                                       |
| Test Mode | : | Mode 2: Transmit by 802.11n(20MHz) (Ant 2) |

| Channel No. | Frequency (MHz) | Reading Value (dBm/MHz) | Duty Cycle (%) | Total PPSD (dBm/MHz) | Limit (dBm/MHz) |
|-------------|-----------------|-------------------------|----------------|----------------------|-----------------|
| 36          | 5180            | 4.462                   | 98             | 4.550                | 11.0            |
| 44          | 5220            | 6.036                   | 98             | 6.124                | 11.0            |
| 48          | 5240            | 5.600                   | 98             | 5.688                | 11.0            |

| Channel No. | Frequency (MHz) | Reading Value (dBm/500KHz) | Duty Cycle (%) | Total PPSD (dBm/500KHz) | Limit (dBm/500KHz) |
|-------------|-----------------|----------------------------|----------------|-------------------------|--------------------|
| 149         | 5745            | -1.146                     | 98             | -1.058                  | 30.0               |
| 157         | 5785            | 2.662                      | 98             | 2.750                   | 30.0               |
| 165         | 5825            | 0.250                      | 98             | 0.338                   | 30.0               |

Note1: Total PSD = Reading Level + 10\*log(1/duty cycle)

Note2: If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Channel 36 (5180MHz)



Channel 44 (5220MHz)



Channel 48 (5240MHz)



Channel 149 (5745MHz)



Channel 157(5785MHz)



Channel 165 (5825MHz)



|           |   |                                           |
|-----------|---|-------------------------------------------|
| Product   | : | IP-STB                                    |
| Test Item | : | Peak Power Spectral Density               |
| Test Site | : | TR-8                                      |
| Test Mode | : | Mode 3 Transmit by 802.11n(40MHz) (Ant 2) |

| Channel No. | Frequency (MHz) | Reading Value (dBm/MHz) | Duty Cycle (%) | Total PPSD (dBm/MHz) | Limit (dBm/MHz) |
|-------------|-----------------|-------------------------|----------------|----------------------|-----------------|
| 38          | 5190            | -2.158                  | 95.4           | -1.953               | 11.0            |
| 46          | 5230            | 4.364                   | 95.4           | 4.569                | 11.0            |

| Channel No. | Frequency (MHz) | Reading Value (dBm/500KHz) | Duty Cycle (%) | Total PPSD (dBm/500KHz) | Limit (dBm/500KHz) |
|-------------|-----------------|----------------------------|----------------|-------------------------|--------------------|
| 151         | 5755            | -8.571                     | 95.4           | -8.366                  | 30.0               |
| 159         | 5795            | -4.117                     | 95.4           | -3.912                  | 30.0               |

Note1: Total PSD = Reading Level +  $10 \cdot \log(1/\text{duty cycle})$

Note2: If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Channel 38 (5190MHz)



Channel 46 (5230MHz)



Channel 151 (5755MHz)



Channel 159 (5795MHz)



|           |   |                                              |
|-----------|---|----------------------------------------------|
| Product   | : | IP-STB                                       |
| Test Item | : | Peak Power Spectral Density                  |
| Test Site | : | TR-8                                         |
| Test Mode | : | Mode 2: Transmit by 802.11n(20MHz) (Ant 1+2) |

| Channel No. | Frequency<br>(MHz) | Reading Value<br>(dBm/MHz) |       | Duty Cycle<br>(%) | Total PPSP<br>(dBm/MHz) | Limit<br>(dBm/MHz) |
|-------------|--------------------|----------------------------|-------|-------------------|-------------------------|--------------------|
|             |                    | Ant 1                      | Ant 2 |                   |                         |                    |
| 36          | 5180               | 3.616                      | 4.672 | 98                | 7.274                   | 8.45               |
| 44          | 5220               | 4.479                      | 4.311 | 98                | 7.494                   | 8.45               |
| 48          | 5240               | 4.470                      | 4.306 | 98                | 7.487                   | 8.45               |

| Channel No. | Frequency<br>(MHz) | Reading Value<br>(dBm/500KHz) |        | Duty Cycle<br>(%) | Total PPSP<br>(dBm/500KHz) | Limit<br>(dBm/500KHz) |
|-------------|--------------------|-------------------------------|--------|-------------------|----------------------------|-----------------------|
|             |                    | Ant 1                         | Ant 2  |                   |                            |                       |
| 149         | 5745               | -0.992                        | -2.540 | 98                | 1.401                      | 27.45                 |
| 157         | 5785               | 0.365                         | 0.852  | 98                | 3.714                      | 27.45                 |
| 165         | 5825               | 0.409                         | -1.175 | 98                | 2.787                      | 27.45                 |

Note1: Total PSD = Reading Level + 10\*log(1/duty cycle)

Note2: If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Note3 : Directional gain = GANT + 10 log(NANT) dBi=8.55dBi>6dBi, so The Limit is 8.45dBm for Band I and 27.45dBm for Band IV.

Ant 1

Channel 36 (5180MHz)



Channel 44 (5220MHz)



Channel 48 (5240MHz)



Channel 149 (5745MHz)



Channel 157(5785MHz)



Channel 165 (5825MHz)



Ant 2

Channel 36 (5180MHz)



Channel 44 (5220MHz)



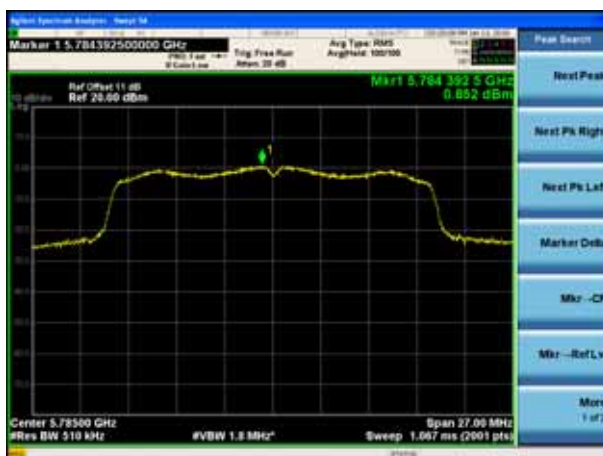
Channel 48 (5240MHz)



Channel 149 (5745MHz)



Channel 157(5785MHz)



Channel 165 (5825MHz)



|           |   |                                             |
|-----------|---|---------------------------------------------|
| Product   | : | IP-STB                                      |
| Test Item | : | Peak Power Spectral Density                 |
| Test Site | : | TR-8                                        |
| Test Mode | : | Mode 3 Transmit by 802.11n(40MHz) (Ant 1+2) |

| Channel No. | Frequency<br>(MHz) | Reading Value<br>(dBm/MHz) |        | Duty Cycle<br>(%) | Total PPSD<br>(dBm/MHz) | Limit<br>(dBm/MHz) |
|-------------|--------------------|----------------------------|--------|-------------------|-------------------------|--------------------|
|             |                    | Ant 1                      | Ant 2  |                   |                         |                    |
| 38          | 5190               | -4.619                     | -3.753 | 95.4              | -0.949                  | 8.45               |
| 46          | 5230               | 2.017                      | 2.464  | 95.4              | 5.462                   | 8.45               |

| Channel No. | Frequency<br>(MHz) | Reading Value<br>(dBm/500KHz) |        | Duty Cycle<br>(%) | Total PPSD<br>(dBm/500KHz) | Limit<br>(dBm/500KHz) |
|-------------|--------------------|-------------------------------|--------|-------------------|----------------------------|-----------------------|
|             |                    | Ant 1                         | Ant 2  |                   |                            |                       |
| 151         | 5755               | -8.316                        | -9.744 | 95.4              | -5.756                     | 27.45                 |
| 159         | 5795               | -3.821                        | -4.802 | 95.4              | -1.069                     | 27.45                 |

Note1: Total PSD = Reading Level +  $10 \cdot \log(1/\text{duty cycle})$

Note2: If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Note3 : Directional gain = GANT +  $10 \log(\text{NANT})$  dBi=8.55dBi>6dBi, so The Limit is 8.45dBm for Band I and 27.45dBm for Band IV.

Ant 1

Channel 38 (5190MHz)



Channel 46 (5230MHz)



Channel 151 (5755MHz)



Channel 159 (5795MHz)



Ant 2

Channel 38 (5190MHz)



Channel 46 (5230MHz)



Channel 151 (5755MHz)



Channel 159 (5795MHz)



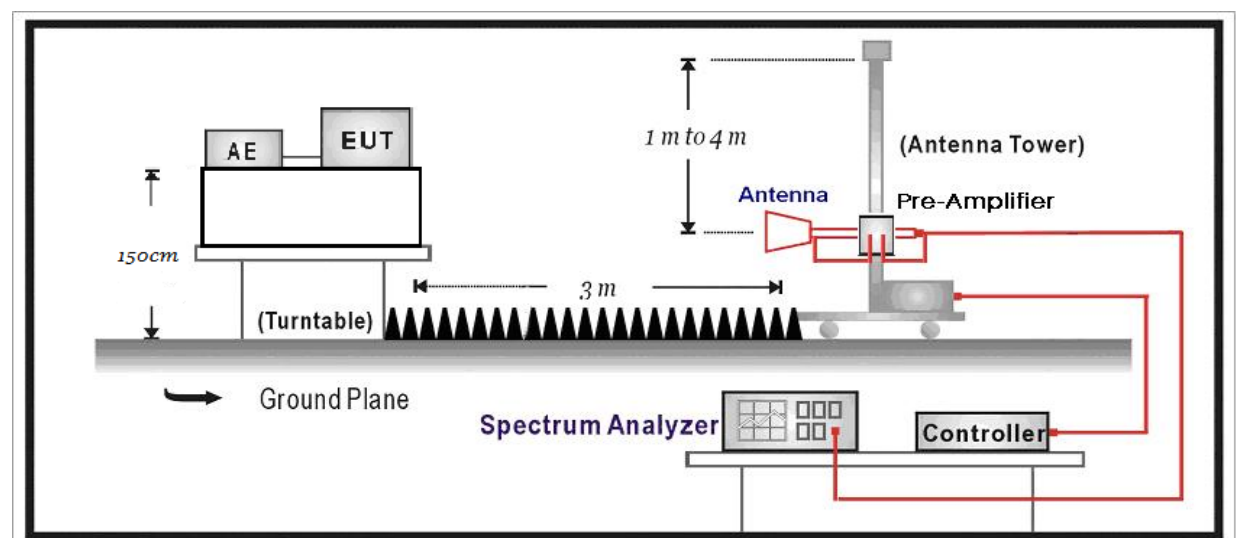
## 9. Radiated Emission Band Edge

## 9.1. Test Equipment

Radiated Emission / AC-5

| Instrument           | Manufacturer | Type No.     | Serial No.  | Cal. Due Date |
|----------------------|--------------|--------------|-------------|---------------|
| Spectrum Analyzer    | Agilent      | N9020A       | MY49100159  | 2016.03.28    |
| Spectrum Analyzer    | Agilent      | E4446A       | MY45300103  | 2017.01.04    |
| Preamplifier         | Miteq        | NSP1800-25   | 1364185     | 2016.05.05    |
| Preamplifier         | QuieTek      | AP-040G      | CHM-0906001 | 2016.05.05    |
| DRG Horn             | ETS-Lindgren | 3117         | 00123988    | 2016.01.21    |
| Broad-Band Horn      |              |              |             |               |
| Antenna              | Schwarzbeck  | BBHA9170     | 294         | 2016.11.24    |
| Coaxial Cable        | Huber+Suhner | SUCOFLEX 106 | AC5-C1      | 2016.03.01    |
| Coaxial Cable        | Huber+Suhner | SUCOFLEX 106 | AC5-C2      | 2016.03.01    |
| Coaxial Cable        | Huber+Suhner | SUCOFLEX 102 | AC5-C3      | 2016.03.01    |
| EMI Receiver         | Agilent      | N9038A       | MY51210196  | 2016.06.09    |
| Temperature/Humidity |              |              |             |               |
| Meter                | Zhichen      | ZC1-2        | AC5-TH      | 2017.01.04    |

## 9.2. Test Setup



### 9.3. Limit

### For FCC

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).

| MHz                        | MHz                   | MHz             | GHz              |
|----------------------------|-----------------------|-----------------|------------------|
| 0.090 - 0.110              | 16.42 - 16.423        | 399.9 - 410     | 4.5 - 5.15       |
| <sup>1</sup> 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     | ( <sup>2</sup> ) |

(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(4) For transmitters operating in the 5.725-5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of -17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of -27 dBm/MHz.

| Operating Frequency Band<br>(MHz)                                                                                                                                                        | EIRP Limit<br>(dBm/MHz) | Equivalent Field Strength at 3m<br>(dBuV/m) |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|---------------------------------------------|
| 5150 - 5250                                                                                                                                                                              | -27                     | 68.3                                        |
| 5250 - 5350                                                                                                                                                                              | -27                     | 68.3                                        |
| 5470 - 5725                                                                                                                                                                              | -27                     | 68.3                                        |
| 5725 - 5825                                                                                                                                                                              | -27 [Note(1)]           | 68.3                                        |
|                                                                                                                                                                                          | -17 [Note(2)]           | 78.3                                        |
| Note(1): Outside the frequency range 5715 - 5835MHz.<br>Note(2): Within the frequency range from the band edge to 10MHz below or above the band edge, 5715 – 5725MHz and 5825 - 5835MHz. |                         |                                             |

#### 9.4. Test Procedure

According to ANSI C63.4:2014& ANSI C63.10:2013&789033 D02 General UNII Test Procedures New Rules v01& FCC CFR Title 47 Part 15 Subpart E: 2015

The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4: 2014 on radiated measurement.

The procedure for peak unwanted emissions measurements above 1000 MHz is as follows: Peak emission levels are measured by setting the instrument as follows:

- 1) RBW = 1 MHz.
- 2) VBW  $\geq [3 \times \text{RBW}]$ .
- 3) Detector = peak
- 4) Sweep time = auto.
- 5) Trace mode = max hold.
- 6) Allow sweeps to continue until the trace stabilizes. Note that if the transmission is not continuous, then the time required for the trace to stabilize will increase by a factor of approximately  $1 / D$ , where D is the duty cycle. For example, at 50% duty cycle, the

measurement time will increase by a factor of two, relative to measurement time for continuous transmission.

Average emission levels are measured by setting the instrument as follows:

- a) RBW = 1 MHz.
- b) Video bandwidth:
  - 1) If the EUT is configured to transmit with  $D \geq 98\%$ , then set  $VBW \leq RBW / 100$  (i.e., 10 kHz), but not less than 10 Hz.
  - 2) If the EUT  $D$  is  $< 98\%$ , then set  $VBW \geq 1 / T$ , where  $T$  is defined in item a1) of 12.2.
- c) Video bandwidth mode or display mode:
  - 1) The instrument shall be set with video filtering applied in the power domain. Typically, this requires setting the detector mode to RMS (power averaging) and setting the average-VBW type to power (rms).
  - 2) As an alternative, the instrument may be set to linear detector mode. Video filtering shall be applied in linear voltage domain (rather than in a log or dB domain). Some instruments require linear display mode to accomplish this. Others have a setting for average-VBW type, which can be set to “voltage” regardless of the display mode.
- d) Detector = peak.
- e) Sweep time = auto.
- f) Trace mode = max hold.
- g) Allow max hold to run for at least 50 traces if the transmitted signal is continuous or has at least 98% duty cycle. For lower duty cycles, increase the minimum number of traces by a factor of  $1/x$ , where  $D$  is the duty cycle. For example, use at least 200 traces if the duty cycle is 25%. (If a specific emission is demonstrated to be continuous—i.e., 100% duty cycle—then rather than turning ON and OFF with the transmit cycle, at least 50 traces should be averaged.)

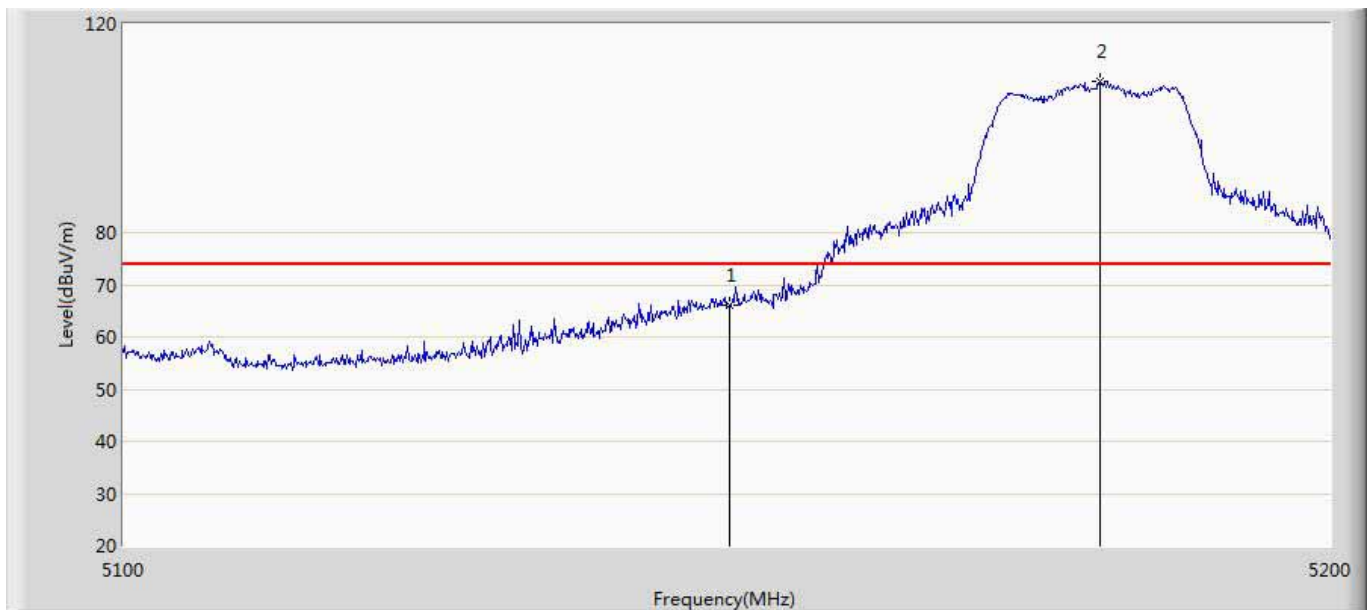
Note: When doing emission measurement above 1GHz, the horn Chainenna will be bended down a little (as horn Chainenna has the narrow beamwidth) in order to keeping the Chainenna in the “cone of radiation” of EUT. The 3dB beamwidth is 10~60 degrees for H-plane and 10~90 degrees for E-plane.

## 9.5. Uncertainty

The measurement uncertainty above 1GHz is defined as  $\pm 3.9$  dB

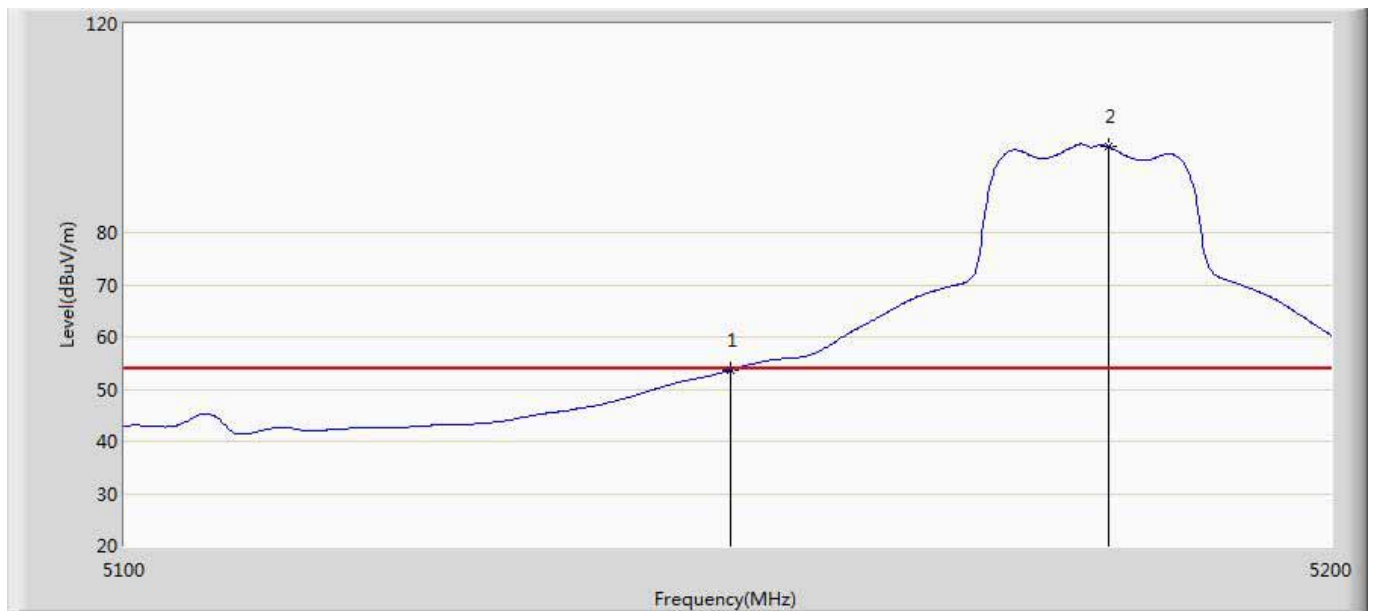
## 9.6. Test Result

|                                                    |                                    |
|----------------------------------------------------|------------------------------------|
| Engineer: Scott                                    |                                    |
| Site: AC5                                          | Time: 2015/12/31 - 10:09           |
| Limit: FCC_Part15.209_RE(3m)                       | Limit: FCC_Part15.209_RE(3m)       |
| Probe: Horn_3117_00167055(1-18GHz)                 | Probe: Horn_3117_00167055(1-18GHz) |
| EUT: IP-STB                                        | EUT: IP-STB                        |
| Note: Mode 1:Transmit at CH5180MHz by 802.11a ant1 |                                    |



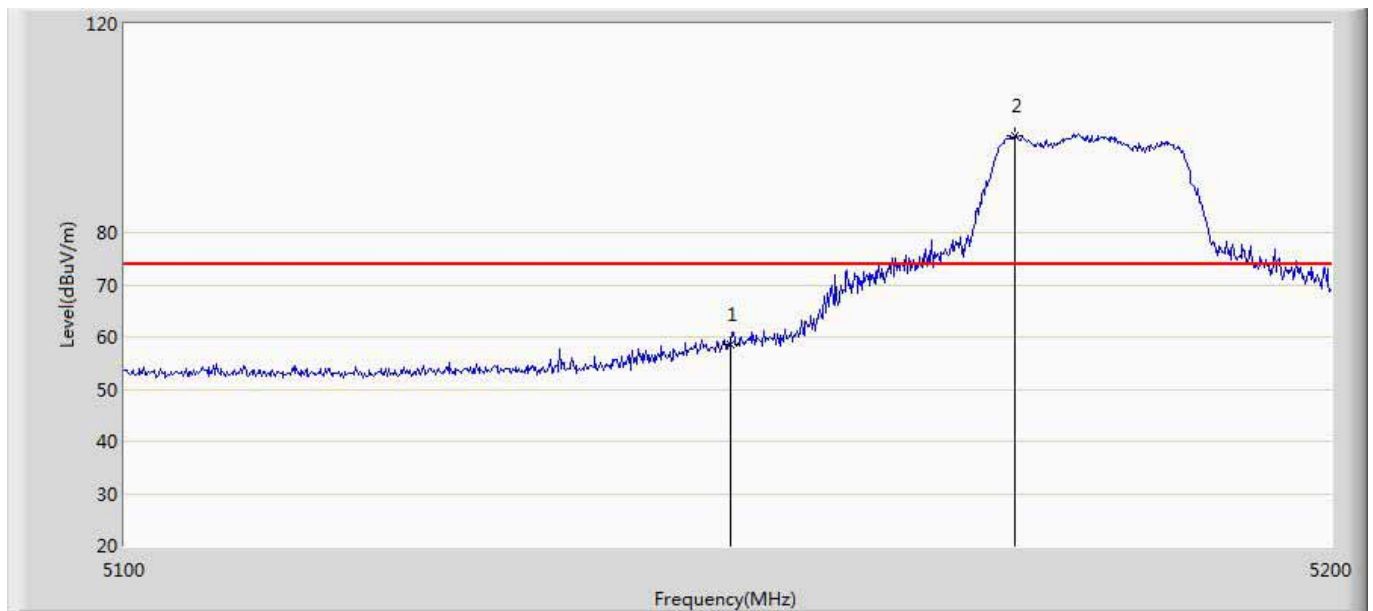
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 66.028                 | 24.013               | -7.972          | 74.000         | 42.015      | PK   |
| 2  | *    | 5180.800        | 109.060                | 66.915               | N/A             | N/A            | 42.146      | PK   |

|                                                    |                                    |
|----------------------------------------------------|------------------------------------|
| Engineer: Scott                                    |                                    |
| Site: AC5                                          | Time: 2015/12/31 - 09:56           |
| Limit: FCC_Part15.209_RE(3m)                       | Limit: FCC_Part15.209_RE(3m)       |
| Probe: Horn_3117_00167055(1-18GHz)                 | Probe: Horn_3117_00167055(1-18GHz) |
| EUT: IP-STB                                        | EUT: IP-STB                        |
| Note: Mode 1:Transmit at CH5180MHz by 802.11a ant1 |                                    |



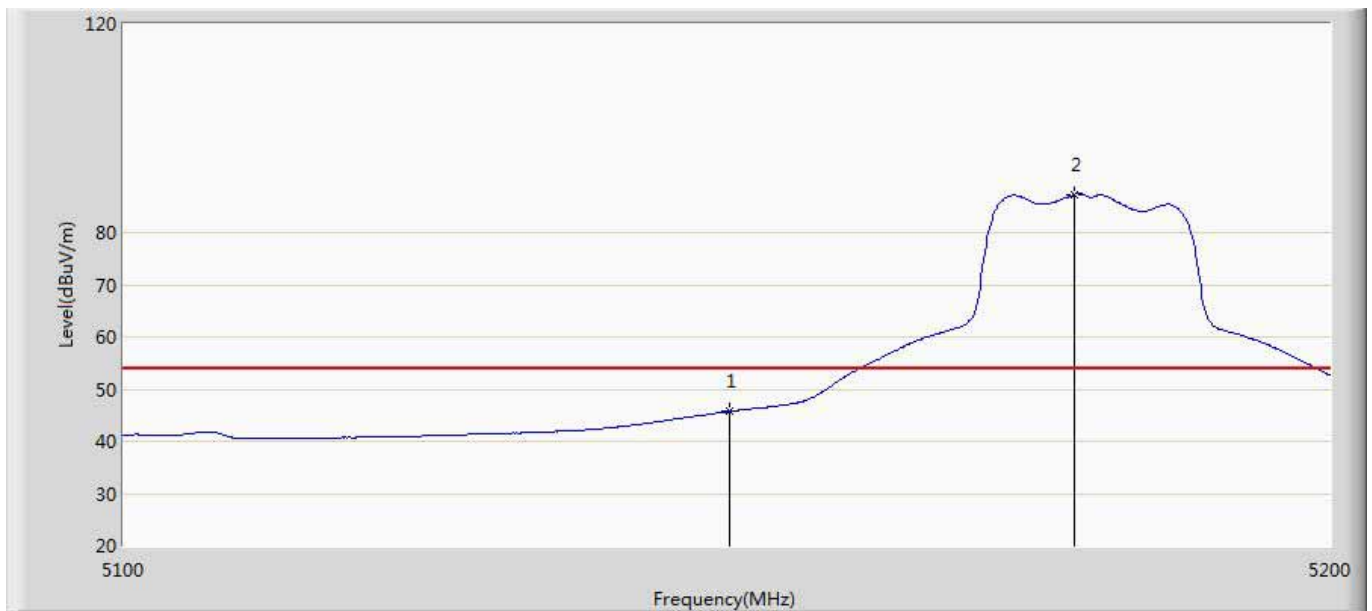
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 53.682                 | 11.667               | -0.318          | 54.000         | 42.015      | AV   |
| 2  | *    | 5181.400        | 96.553                 | 54.408               | N/A             | N/A            | 42.145      | AV   |

|                                                    |                          |
|----------------------------------------------------|--------------------------|
| Engineer: Scott                                    |                          |
| Site: AC5                                          | Time: 2015/12/31 - 10:11 |
| Limit: FCC_Part15.209_RE(3m)                       | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                 | Polarity: Vertical       |
| EUT: IP-STB                                        | Power: AC 120V/60Hz      |
| Note: Mode 1:Transmit at CH5180MHz by 802.11a ant1 |                          |



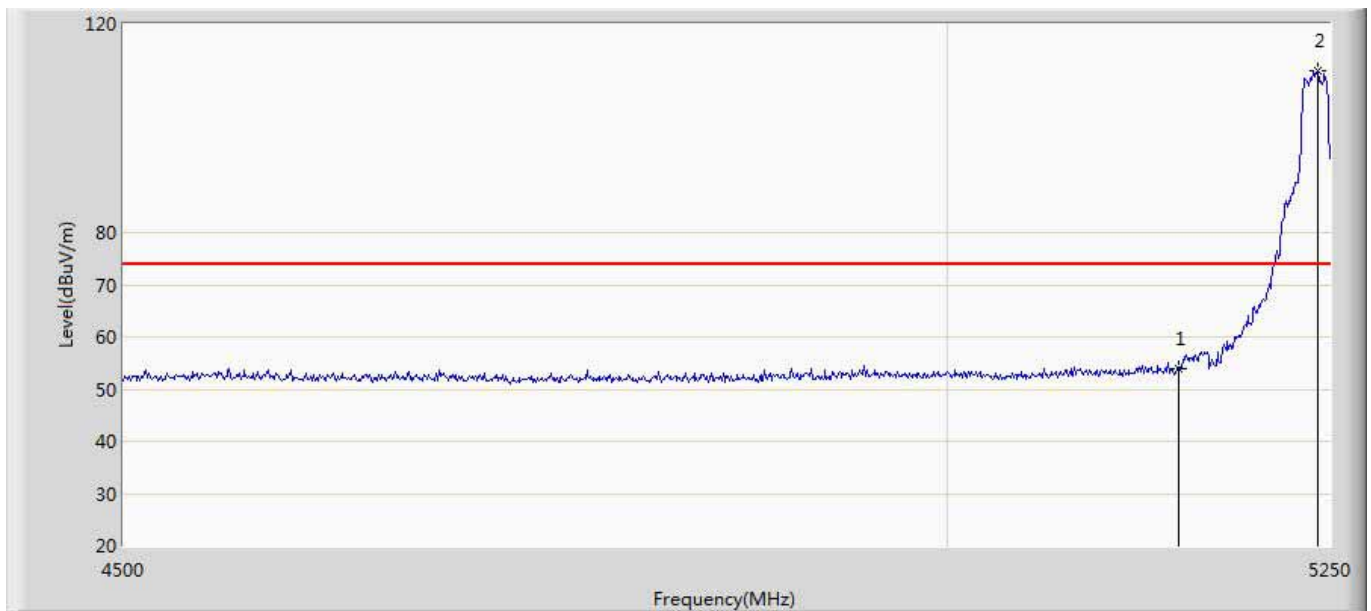
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 58.480                 | 16.465               | -15.520         | 74.000         | 42.015      | PK   |
| 2  | *    | 5173.600        | 98.562                 | 56.417               | N/A             | N/A            | 42.146      | PK   |

|                                                    |                          |
|----------------------------------------------------|--------------------------|
| Engineer: Scott                                    |                          |
| Site: AC5                                          | Time: 2015/12/31 - 10:12 |
| Limit: FCC_Part15.209_RE(3m)                       | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                 | Polarity: Vertical       |
| EUT: IP-STB                                        | Power: AC 120V/60Hz      |
| Note: Mode 1:Transmit at CH5180MHz by 802.11a ant1 |                          |



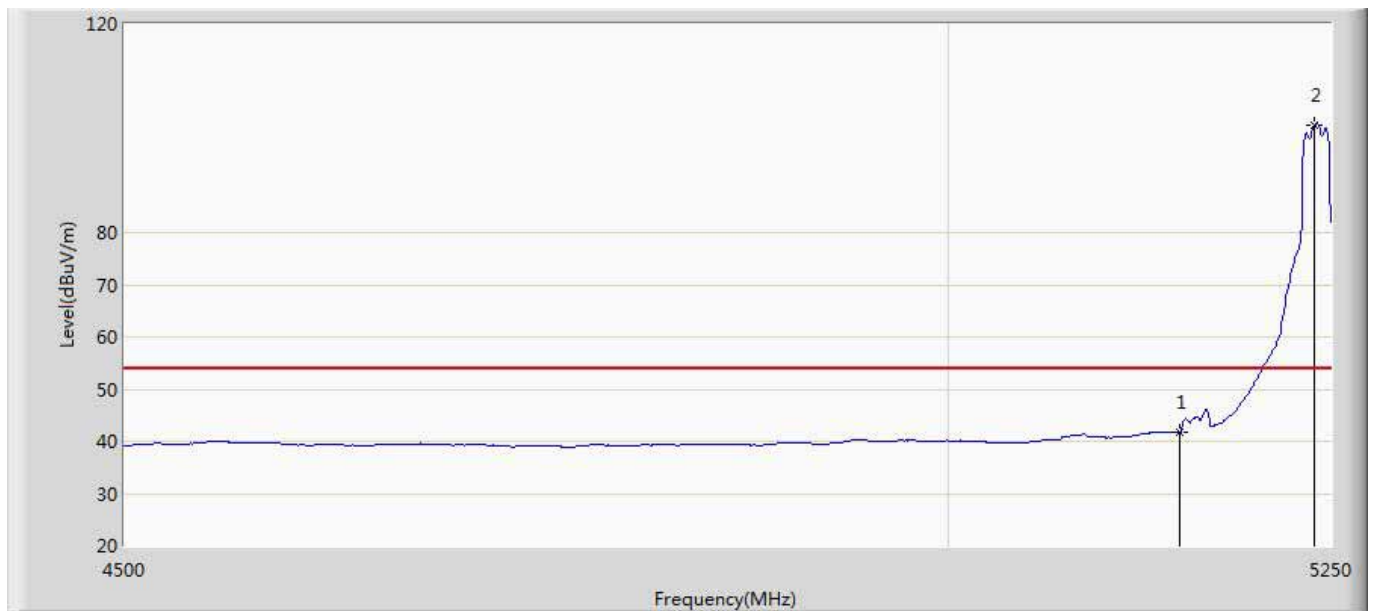
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 45.714                 | 3.699                | -8.286          | 54.000         | 42.015      | AV   |
| 2  | *    | 5178.600        | 87.271                 | 45.126               | N/A             | N/A            | 42.146      | AV   |

|                                                    |                          |
|----------------------------------------------------|--------------------------|
| Engineer: Scott                                    |                          |
| Site: AC5                                          | Time: 2015/12/31 - 10:17 |
| Limit: FCC_Part15.209_RE(3m)                       | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                 | Polarity: Horizontal     |
| EUT: IP-STB                                        | Power: AC 120V/60Hz      |
| Note: Mode 1:Transmit at CH5240MHz by 802.11a ant1 |                          |



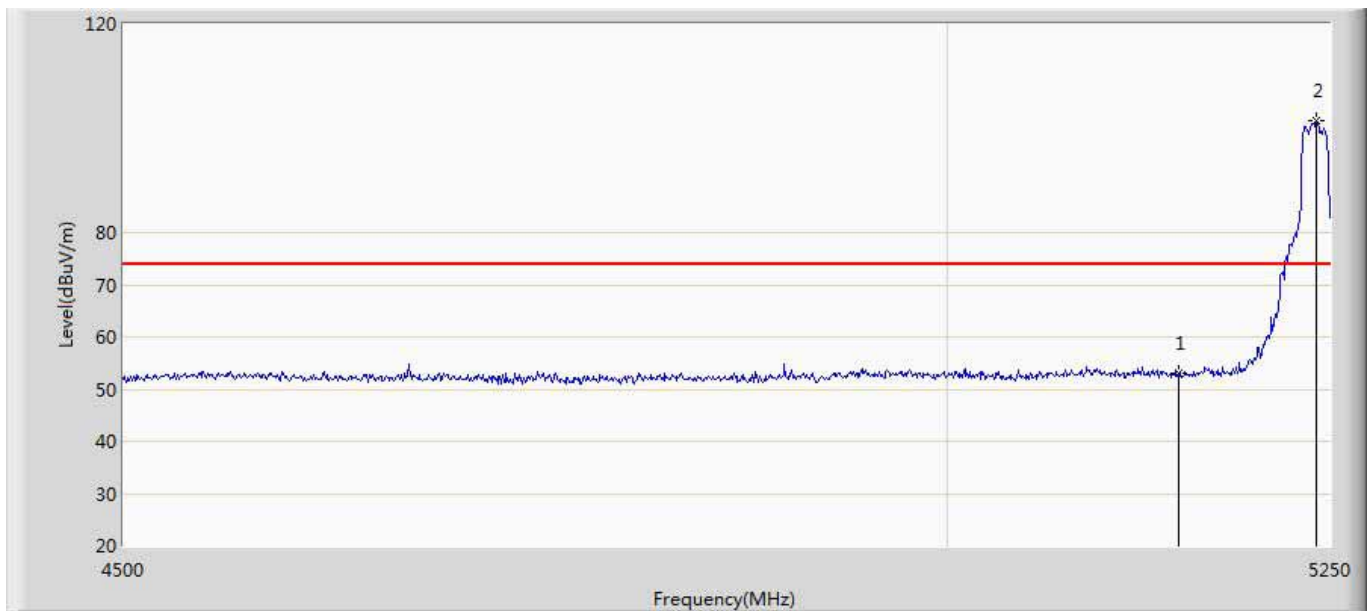
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 53.969                 | 11.954               | -20.031         | 74.000         | 42.015      | PK   |
| 2  | *    | 5241.750        | 111.142                | 68.993               | N/A             | N/A            | 42.149      | PK   |

|                                                    |                          |
|----------------------------------------------------|--------------------------|
| Engineer: Scott                                    |                          |
| Site: AC5                                          | Time: 2015/12/31 - 10:19 |
| Limit: FCC_Part15.209_RE(3m)                       | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                 | Polarity: Horizontal     |
| EUT: IP-STB                                        | Power: AC 120V/60Hz      |
| Note: Mode 1:Transmit at CH5240MHz by 802.11a ant1 |                          |



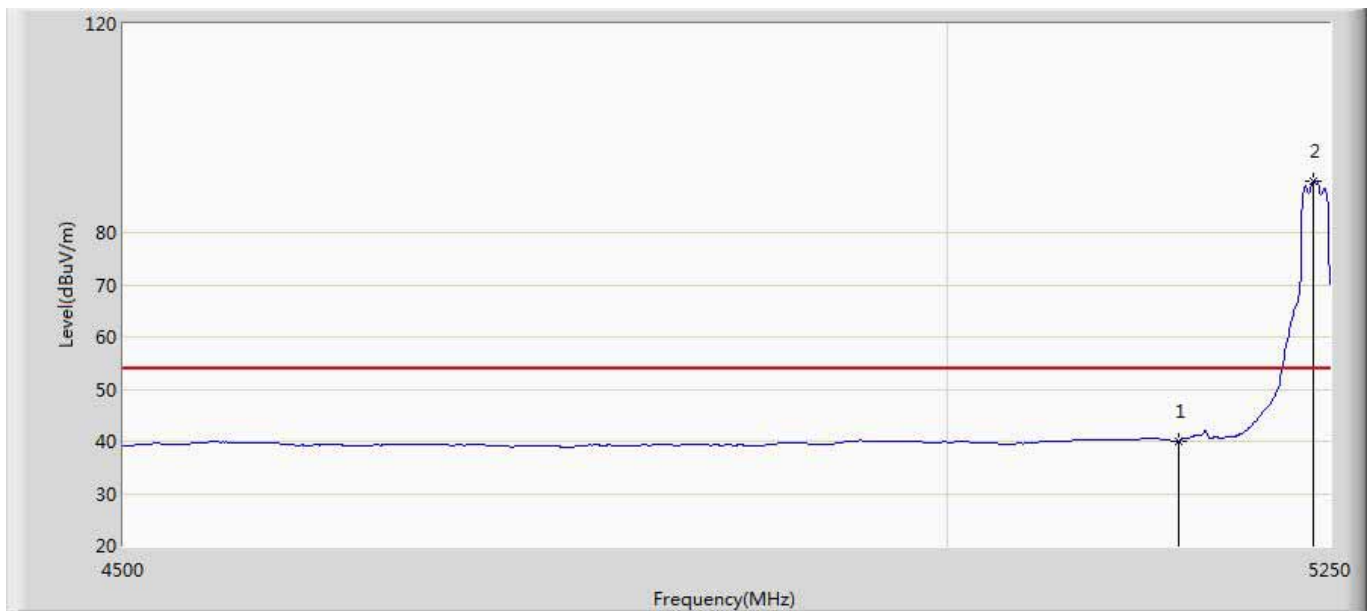
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 41.711                 | -0.304               | -12.289         | 54.000         | 42.015      | AV   |
| 2  | *    | 5238.750        | 100.623                | 58.504               | N/A             | N/A            | 42.119      | AV   |

|                                                    |                          |
|----------------------------------------------------|--------------------------|
| Engineer: Scott                                    |                          |
| Site: AC5                                          | Time: 2015/12/31 - 10:24 |
| Limit: FCC_Part15.209_RE(3m)                       | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                 | Polarity: Vertical       |
| EUT: IP-STB                                        | Power: AC 120V/60Hz      |
| Note: Mode 1:Transmit at CH5240MHz by 802.11a ant1 |                          |



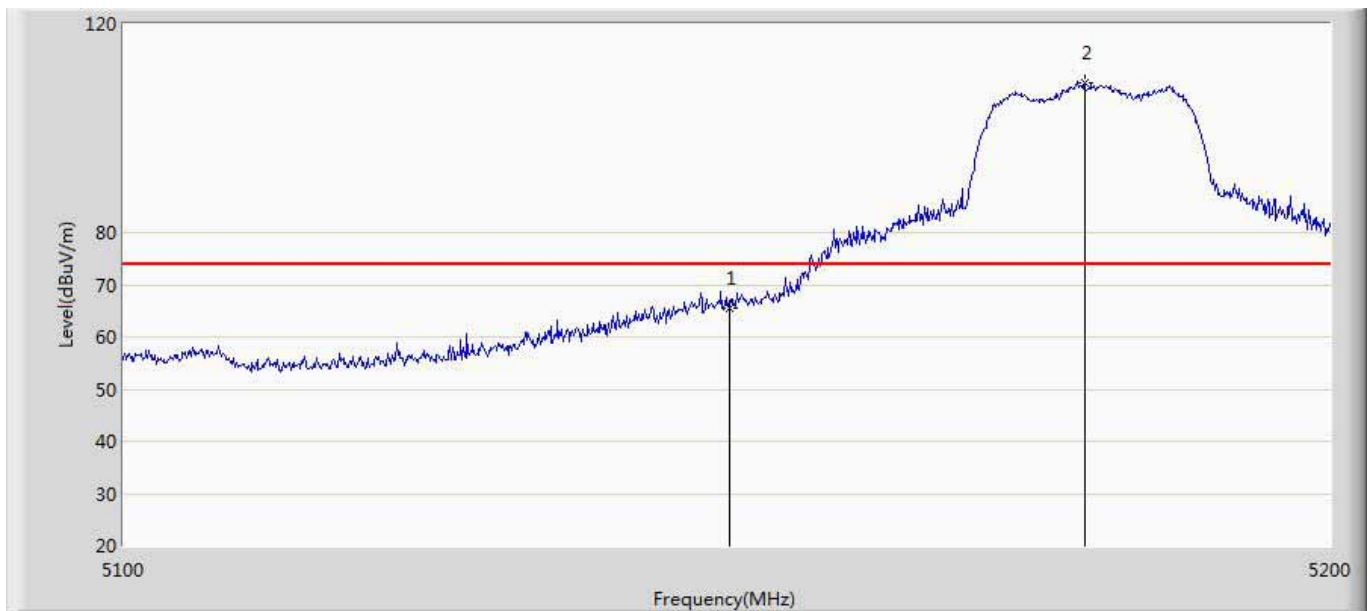
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 52.988                 | 10.973               | -21.012         | 74.000         | 42.015      | PK   |
| 2  | *    | 5241.000        | 101.593                | 59.452               | N/A             | N/A            | 42.141      | PK   |

|                                                    |                          |
|----------------------------------------------------|--------------------------|
| Engineer: Scott                                    |                          |
| Site: AC5                                          | Time: 2015/12/31 - 10:27 |
| Limit: FCC_Part15.209_RE(3m)                       | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                 | Polarity: Vertical       |
| EUT: IP-STB                                        | Power: AC 120V/60Hz      |
| Note: Mode 1:Transmit at CH5240MHz by 802.11a ant1 |                          |



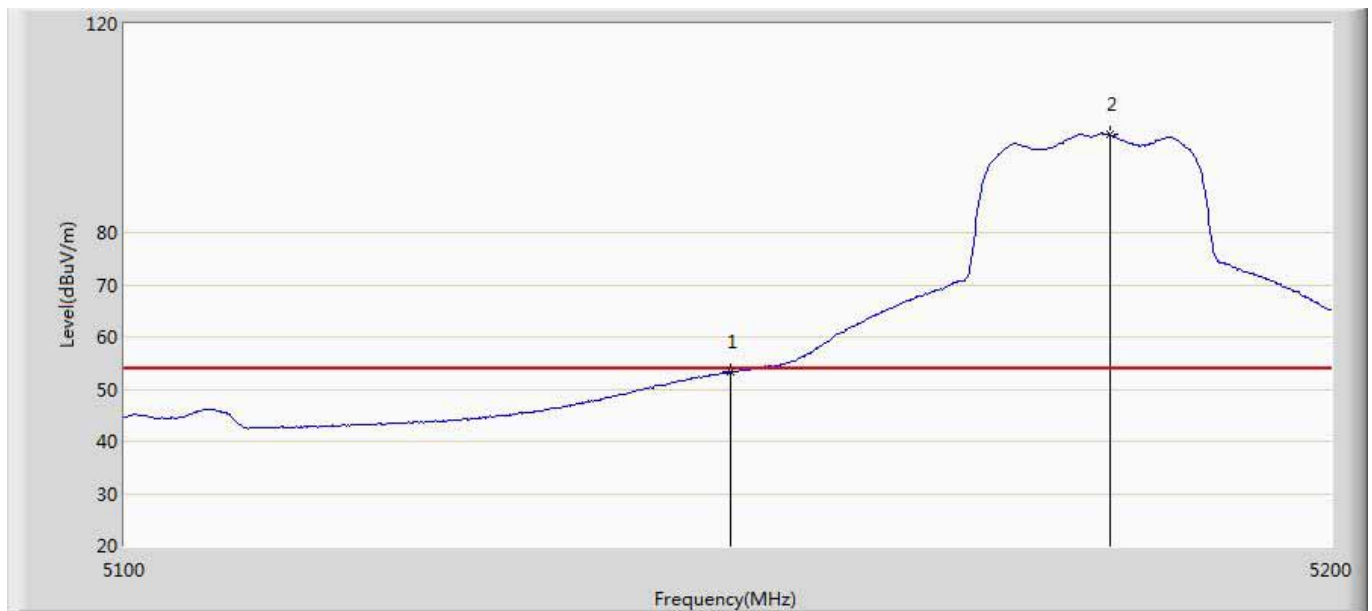
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 40.060                 | -1.955               | -13.940         | 54.000         | 42.015      | AV   |
| 2  | *    | 5238.750        | 89.802                 | 47.683               | N/A             | N/A            | 42.119      | AV   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2015/12/31 - 10:32 |
| Limit: FCC_Part15.209_RE(3m)                         | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Horizontal     |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 2:Transmit at CH5180MHz by 802.11n20 ant1 |                          |



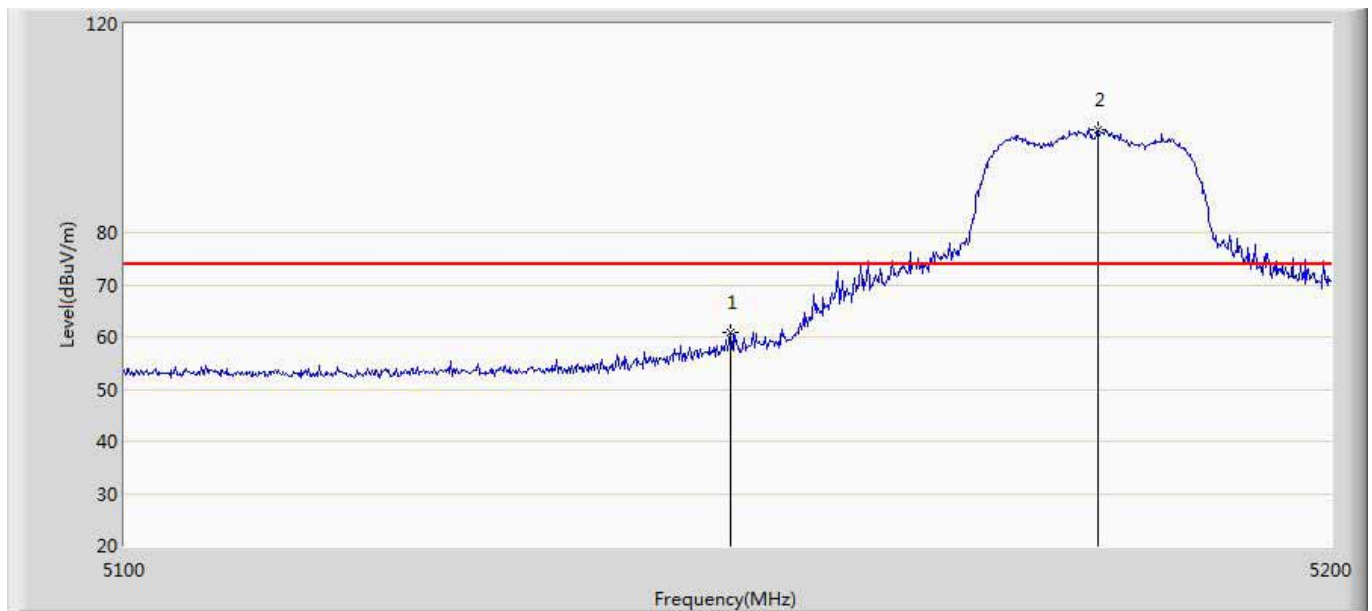
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 65.435                 | 23.420               | -8.565          | 74.000         | 42.015      | PK   |
| 2  | *    | 5179.500        | 108.806                | 66.661               | N/A             | N/A            | 42.146      | PK   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2015/12/31 - 10:33 |
| Limit: FCC_Part15.209_RE(3m)                         | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Horizontal     |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 2:Transmit at CH5180MHz by 802.11n20 ant1 |                          |



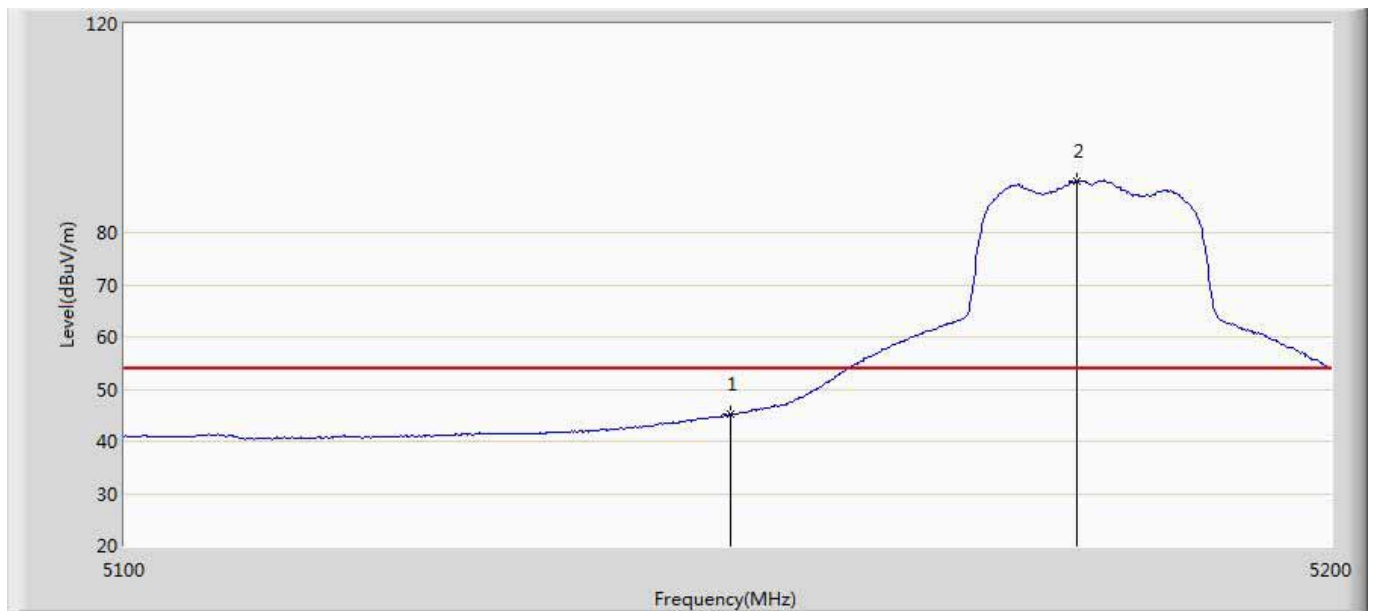
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 53.194                 | 11.179               | -0.806          | 54.000         | 42.015      | AV   |
| 2  | *    | 5181.500        | 98.850                 | 56.705               | N/A             | N/A            | 42.145      | AV   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2015/12/31 - 10:38 |
| Limit: FCC_Part15.209_RE(3m)                         | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Vertical       |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 2:Transmit at CH5180MHz by 802.11n20 ant1 |                          |



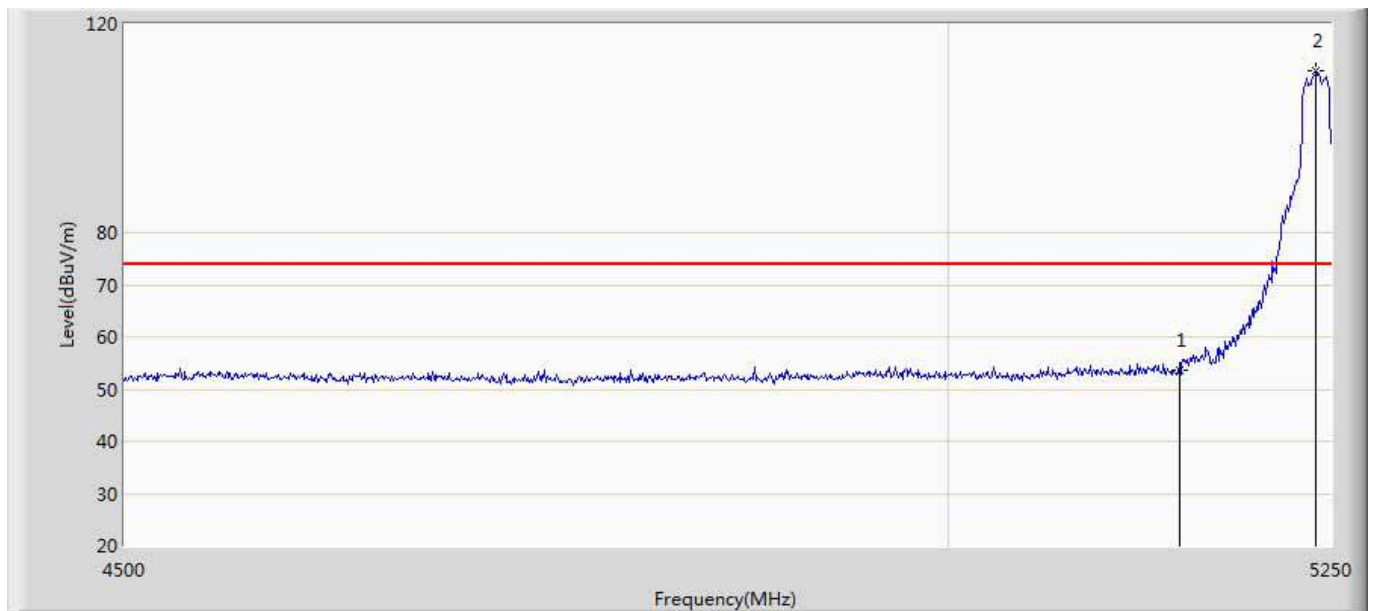
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 60.840                 | 18.825               | -13.160         | 74.000         | 42.015      | PK   |
| 2  | *    | 5180.500        | 99.675                 | 57.530               | N/A             | N/A            | 42.146      | PK   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2015/12/31 - 10:39 |
| Limit: FCC_Part15.209_RE(3m)                         | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Vertical       |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 2:Transmit at CH5180MHz by 802.11n20 ant1 |                          |



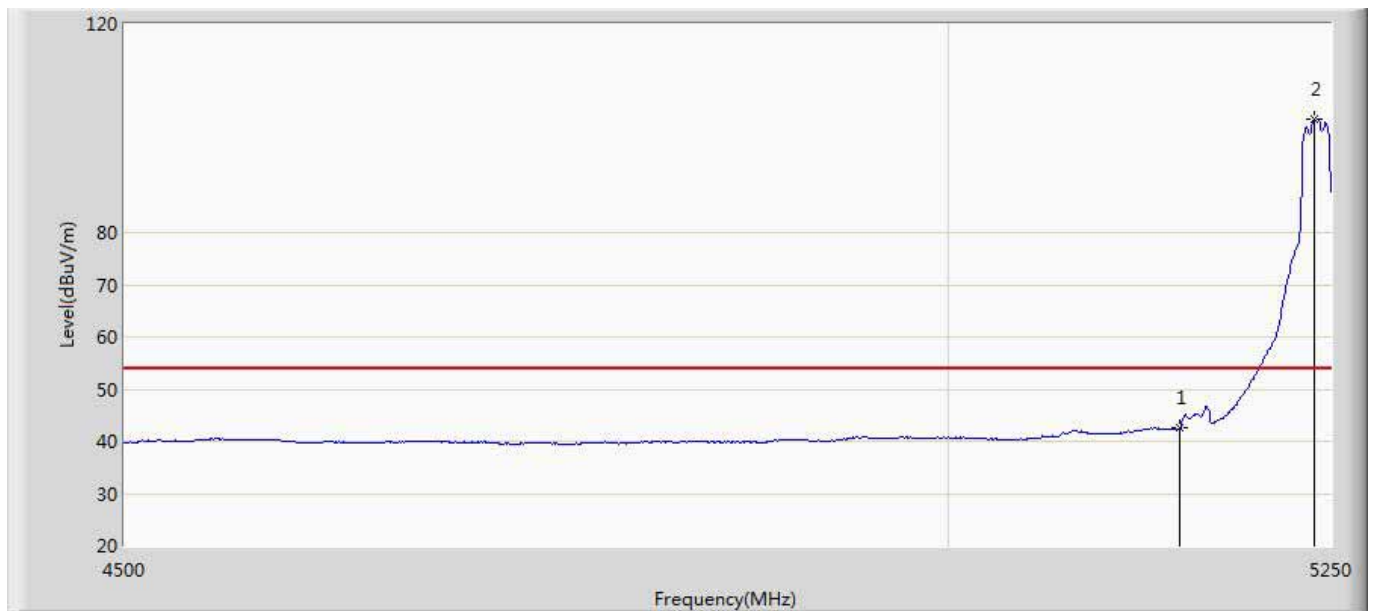
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 45.158                 | 3.143                | -8.842          | 54.000         | 42.015      | AV   |
| 2  | *    | 5178.800        | 89.892                 | 47.747               | N/A             | N/A            | 42.146      | AV   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2015/12/31 - 10:44 |
| Limit: FCC_Part15.209_RE(3m)                         | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Horizontal     |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 2:Transmit at CH5240MHz by 802.11n20 ant1 |                          |



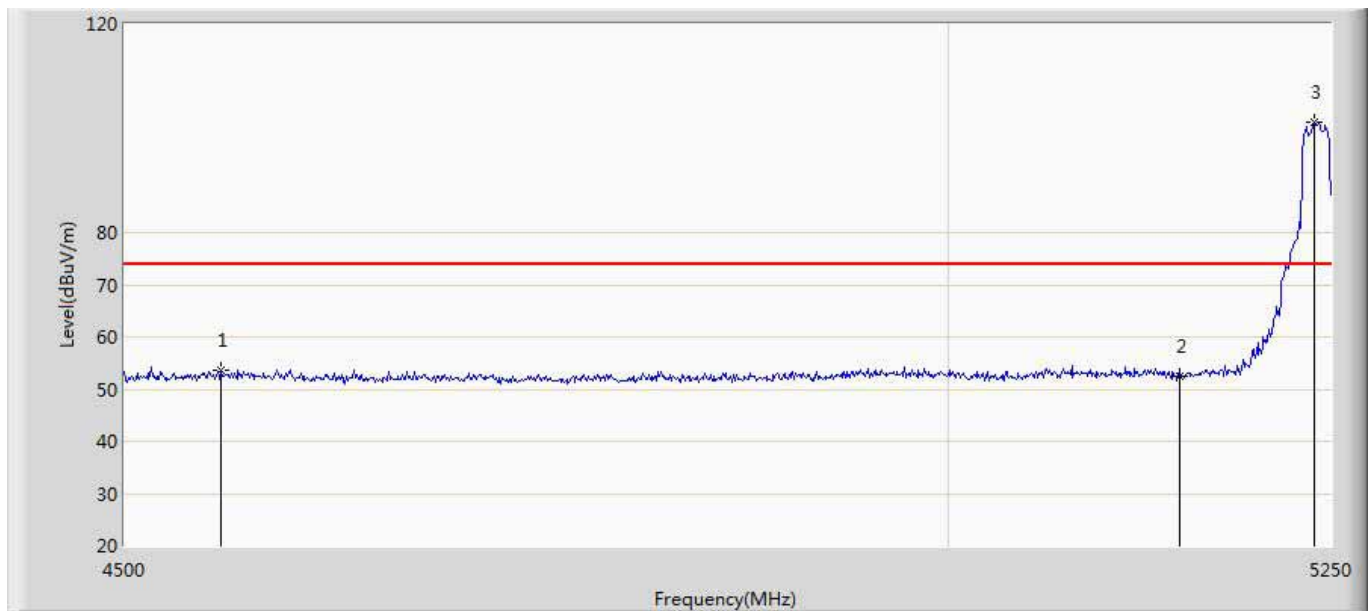
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 53.560                 | 11.545               | -20.440         | 74.000         | 42.015      | PK   |
| 2  | *    | 5240.250        | 111.048                | 68.914               | N/A             | N/A            | 42.134      | PK   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2015/12/31 - 10:45 |
| Limit: FCC_Part15.209_RE(3m)                         | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Horizontal     |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 2:Transmit at CH5240MHz by 802.11n20 ant1 |                          |



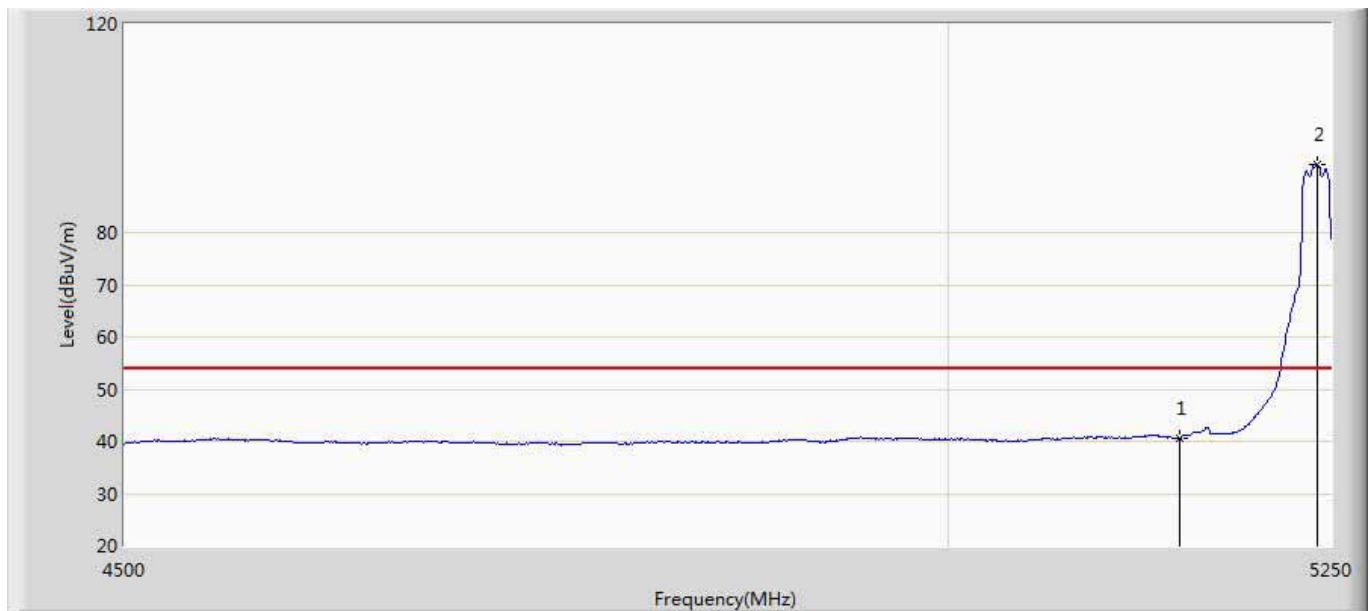
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 42.578                 | 0.563                | -11.422         | 54.000         | 42.015      | AV   |
| 2  | *    | 5238.750        | 101.743                | 59.624               | N/A             | N/A            | 42.119      | AV   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2015/12/31 - 10:49 |
| Limit: FCC_Part15.209_RE(3m)                         | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Vertical       |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 2:Transmit at CH5240MHz by 802.11n20 ant1 |                          |



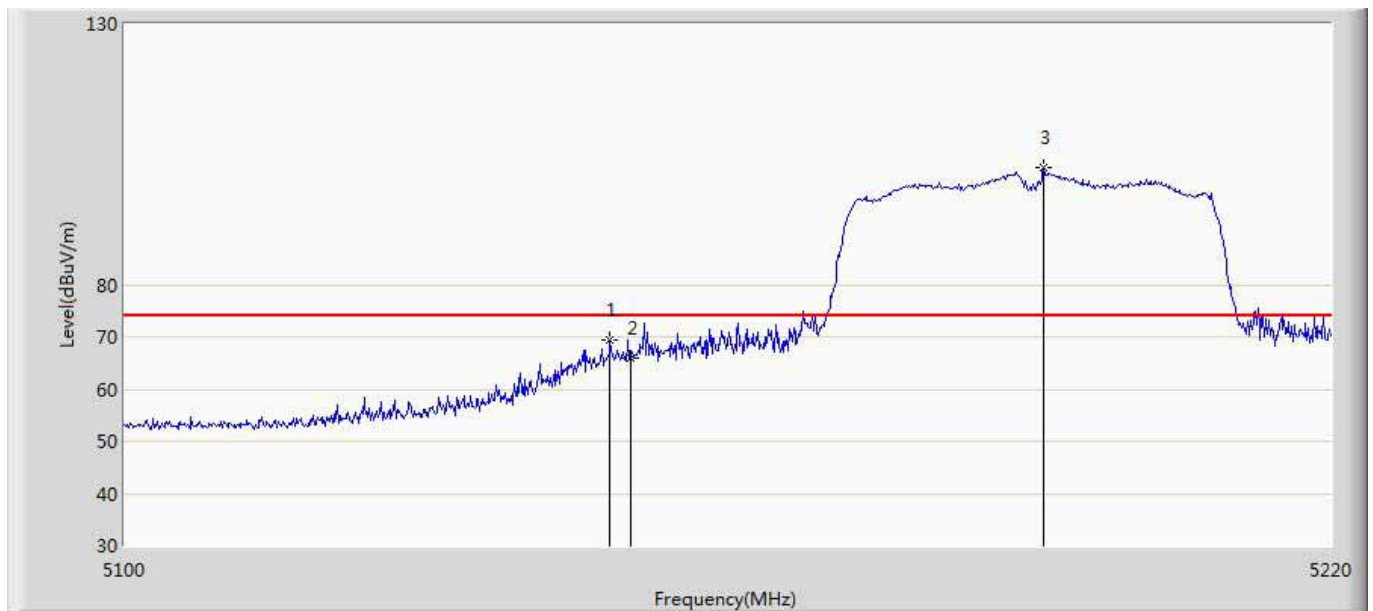
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 4556.250        | 53.726                 | 12.409               | -20.274         | 74.000         | 41.318      | PK   |
| 2  |      | 5150.000        | 52.452                 | 10.437               | -21.548         | 74.000         | 42.015      | PK   |
| 3  | *    | 5238.750        | 101.280                | 59.161               | N/A             | N/A            | 42.119      | PK   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2015/12/31 - 10:51 |
| Limit: FCC_Part15.209_RE(3m)                         | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Vertical       |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 2:Transmit at CH5240MHz by 802.11n20 ant1 |                          |



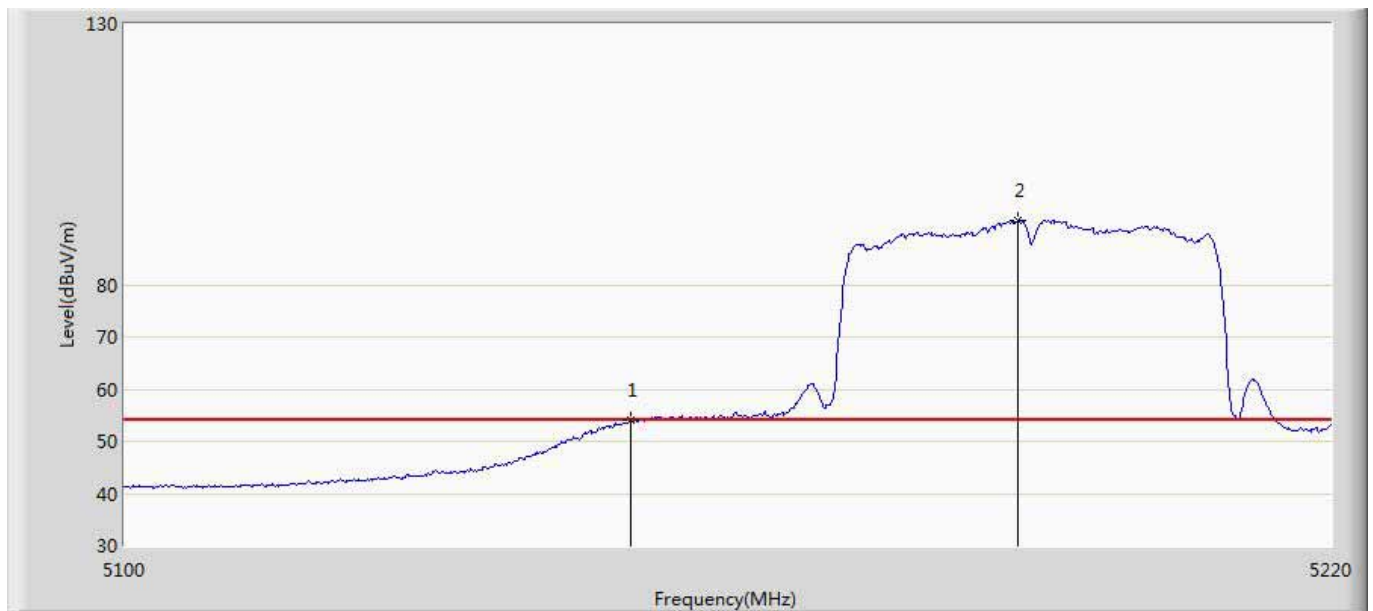
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 40.535                 | -1.480               | -13.465         | 54.000         | 42.015      | AV   |
| 2  | *    | 5241.000        | 93.002                 | 50.861               | N/A             | N/A            | 42.141      | AV   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2015/12/31 - 10:57 |
| Limit: FCC_Part15.209_RE(3m)                         | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Horizontal     |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 3:Transmit at CH5190MHz by 802.11n40 ant1 |                          |



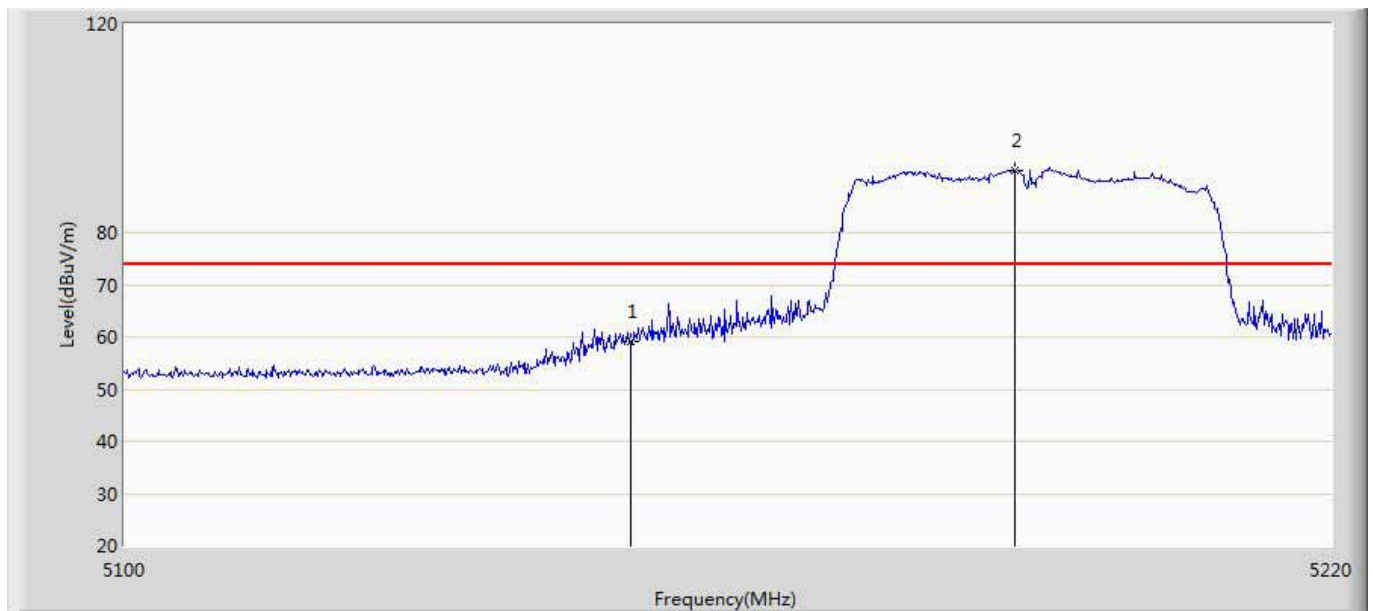
| No | Mark | Frequency<br>(MHz) | Measure Level<br>(dBuV/m) | Reading Level<br>(dBuV) | Over Limit<br>(dB) | Limit<br>(dBuV/m) | Factor<br>(dB) | Type |
|----|------|--------------------|---------------------------|-------------------------|--------------------|-------------------|----------------|------|
| 1  |      | 5148.000           | 69.445                    | 27.447                  | -4.555             | 74.000            | 41.998         | PK   |
| 2  |      | 5150.000           | 65.913                    | 23.898                  | -8.087             | 74.000            | 42.015         | PK   |
| 3  | *    | 5191.200           | 102.386                   | 60.300                  | N/A                | N/A               | 42.086         | PK   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2015/12/31 - 10:59 |
| Limit: FCC_Part15.209_RE(3m)                         | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Horizontal     |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 3:Transmit at CH5190MHz by 802.11n40 ant1 |                          |



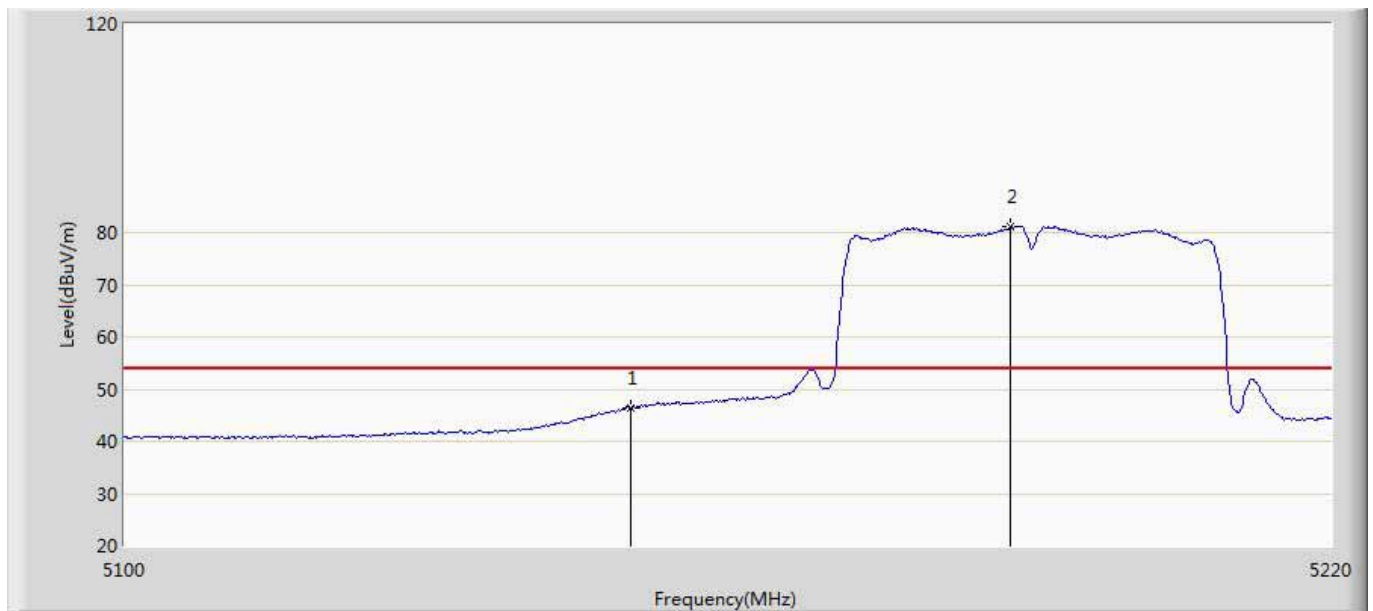
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 53.960                 | 11.945               | -0.040          | 54.000         | 42.015      | AV   |
| 2  | *    | 5188.560        | 92.330                 | 50.227               | N/A             | N/A            | 42.104      | AV   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2015/12/31 - 11:08 |
| Limit: FCC_Part15.209_RE(3m)                         | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Vertical       |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 3:Transmit at CH5190MHz by 802.11n40 ant1 |                          |



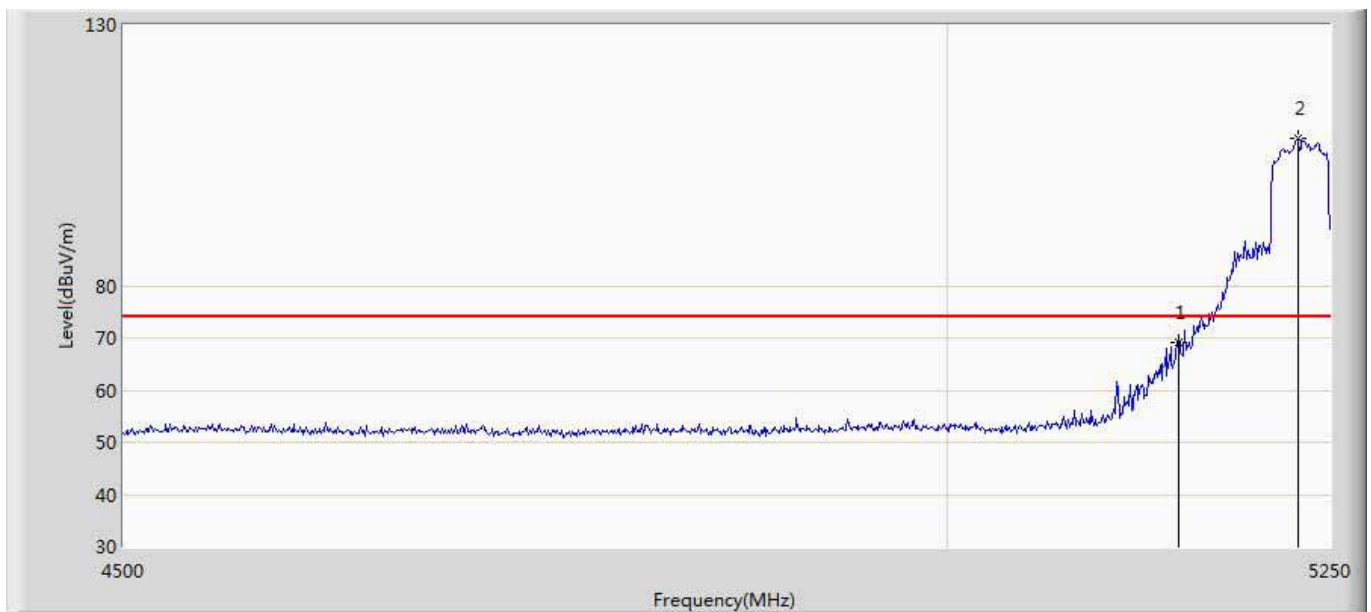
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 59.226                 | 17.211               | -14.774         | 74.000         | 42.015      | PK   |
| 2  | *    | 5188.320        | 91.948                 | 49.843               | N/A             | N/A            | 42.105      | PK   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2015/12/31 - 11:09 |
| Limit: FCC_Part15.209_RE(3m)                         | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Vertical       |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 3:Transmit at CH5190MHz by 802.11n40 ant1 |                          |



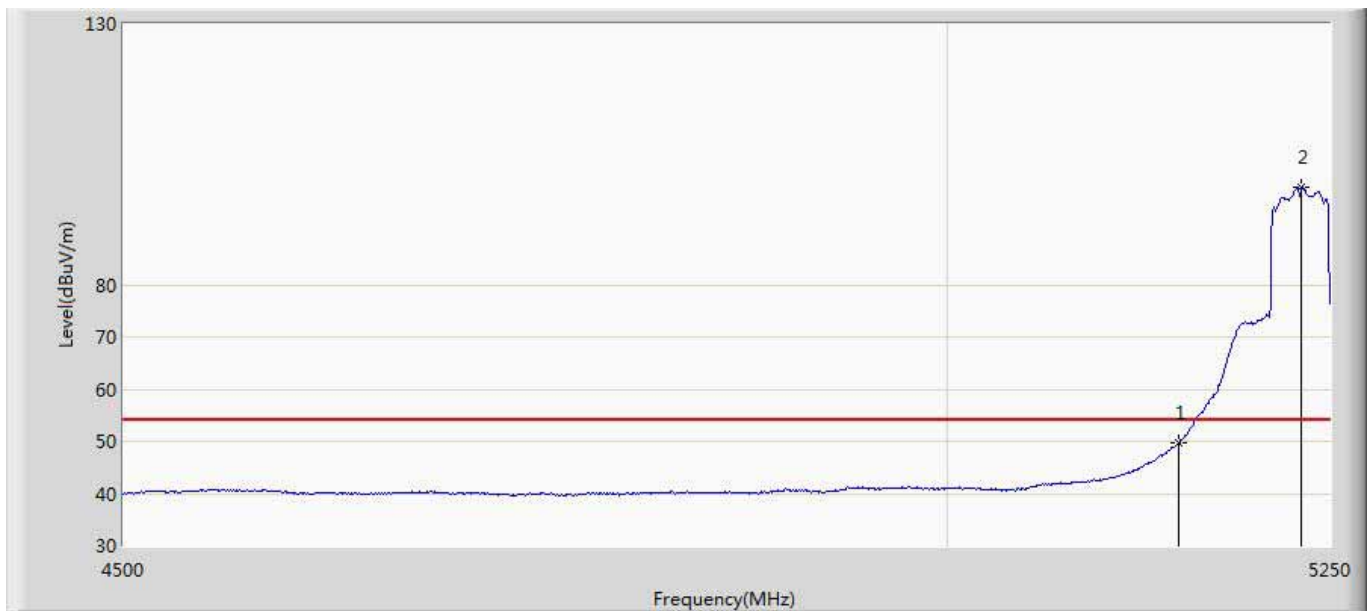
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 46.308                 | 4.293                | -7.692          | 54.000         | 42.015      | AV   |
| 2  | *    | 5187.840        | 81.046                 | 38.938               | N/A             | N/A            | 42.108      | AV   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2015/12/31 - 11:18 |
| Limit: FCC_Part15.209_RE(3m)                         | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Horizontal     |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 3:Transmit at CH5230MHz by 802.11n40 ant1 |                          |



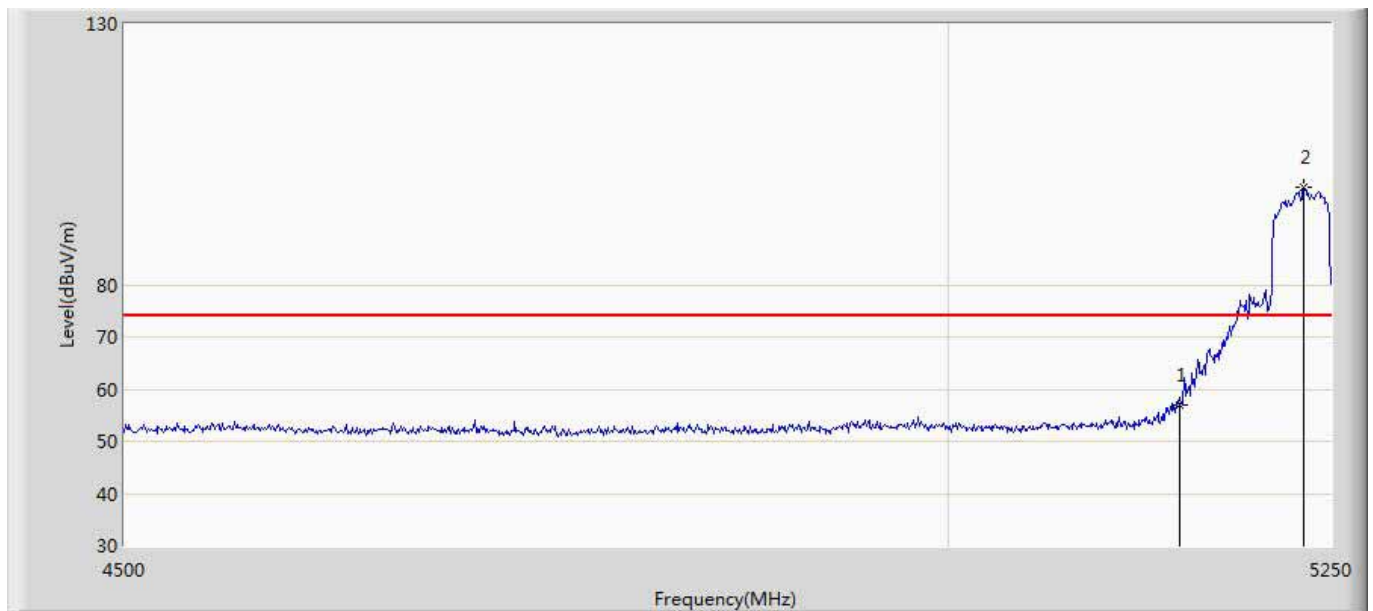
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 69.124                 | 27.109               | -4.876          | 74.000         | 42.015      | PK   |
| 2  | *    | 5228.250        | 108.377                | 66.337               | N/A             | N/A            | 42.040      | PK   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2015/12/31 - 11:18 |
| Limit: FCC_Part15.209_RE(3m)                         | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Horizontal     |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 3:Transmit at CH5230MHz by 802.11n40 ant1 |                          |



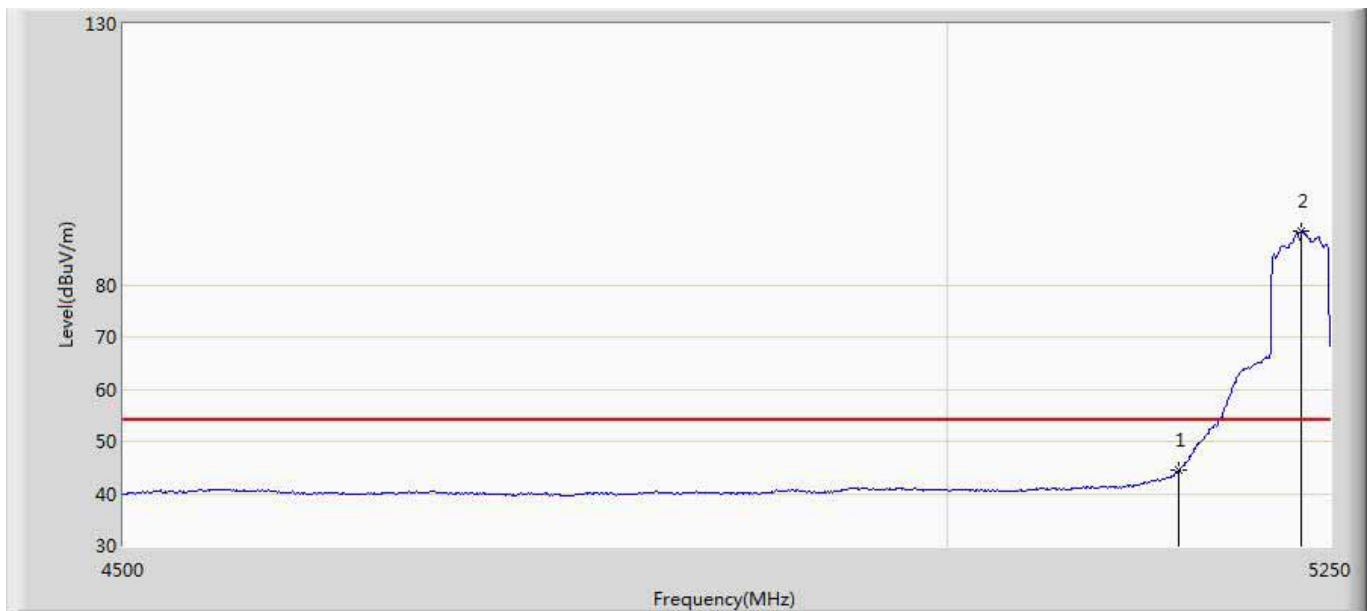
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 49.771                 | 7.756                | -4.229          | 54.000         | 42.015      | AV   |
| 2  | *    | 5231.250        | 98.819                 | 56.765               | N/A             | N/A            | 42.054      | AV   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2015/12/31 - 11:21 |
| Limit: FCC_Part15.209_RE(3m)                         | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Vertical       |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 3:Transmit at CH5230MHz by 802.11n40 ant1 |                          |



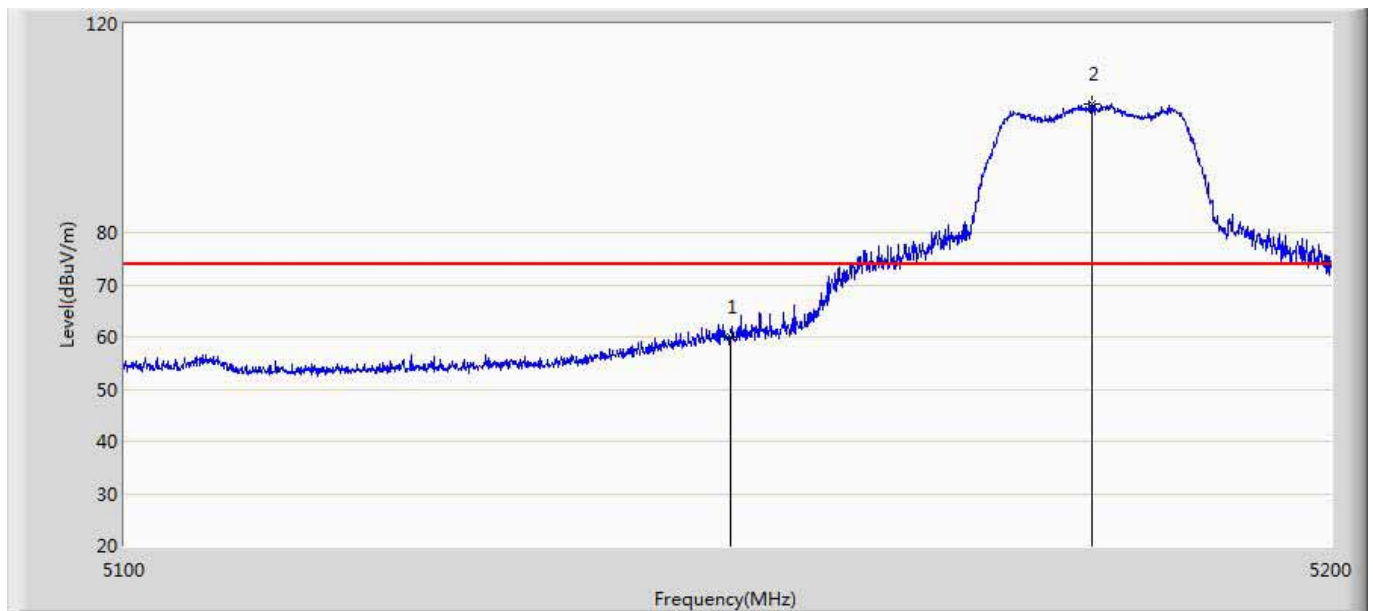
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 57.091                 | 15.076               | -16.909         | 74.000         | 42.015      | PK   |
| 2  | *    | 5232.000        | 98.563                 | 56.505               | N/A             | N/A            | 42.058      | PK   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2015/12/31 - 11:23 |
| Limit: FCC_Part15.209_RE(3m)                         | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Vertical       |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 3:Transmit at CH5230MHz by 802.11n40 ant1 |                          |



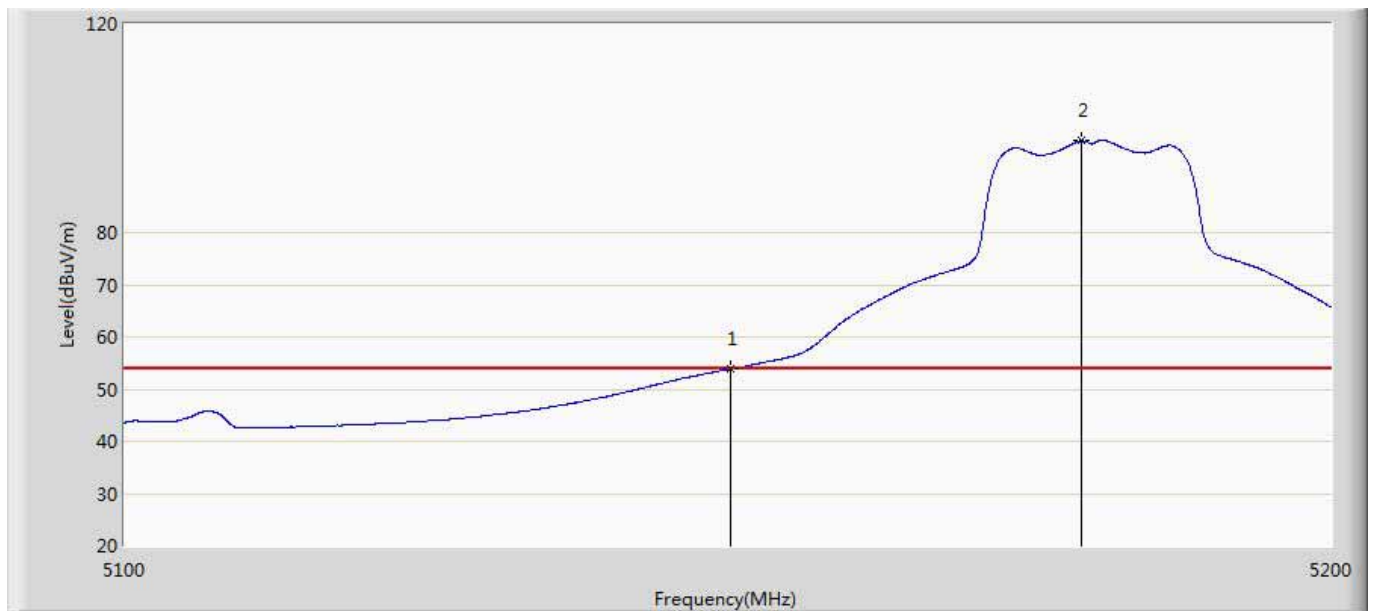
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 44.531                 | 2.516                | -9.469          | 54.000         | 42.015      | AV   |
| 2  | *    | 5231.250        | 90.407                 | 48.353               | N/A             | N/A            | 42.054      | AV   |

|                                                    |                          |
|----------------------------------------------------|--------------------------|
| Engineer: Scott                                    |                          |
| Site: AC5                                          | Time: 2015/12/31 - 15:43 |
| Limit: FCC_Part15.209_RE(3m)                       | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                 | Polarity: Horizontal     |
| EUT: IP-STB                                        | Power: AC 120V/60Hz      |
| Note: Mode 1:Transmit at CH5180MHz by 802.11a ant2 |                          |



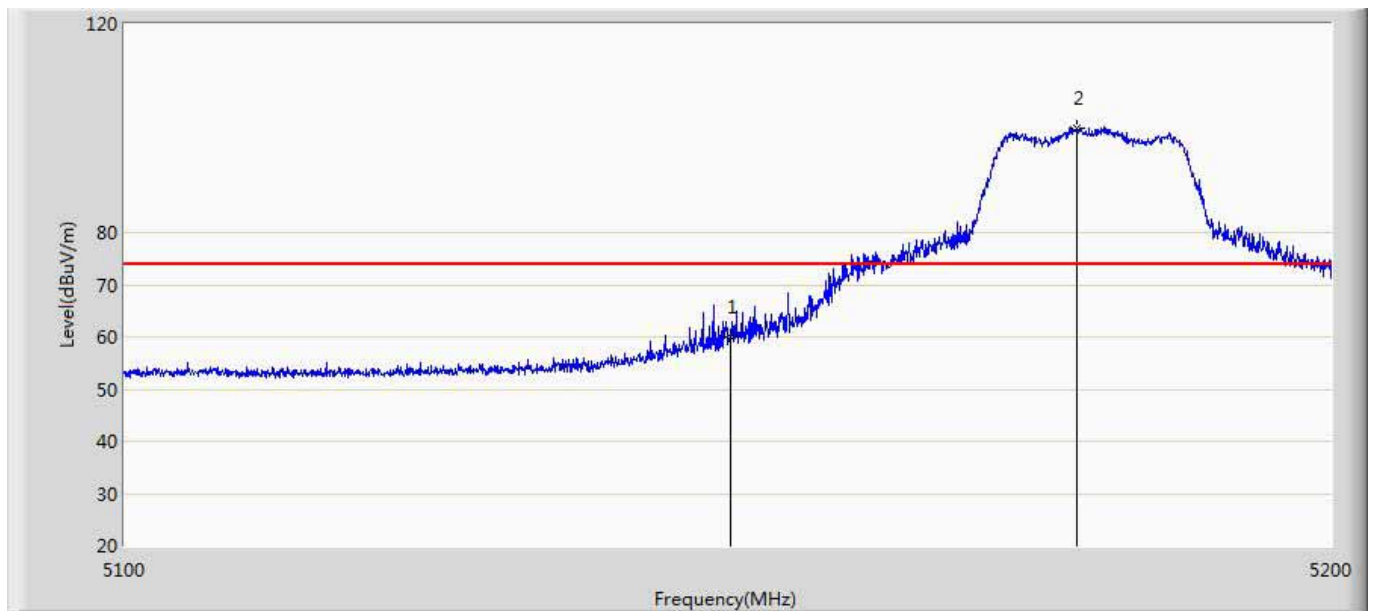
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 60.022                 | 18.007               | -13.978         | 74.000         | 42.015      | PK   |
| 2  | *    | 5180.000        | 104.680                | 62.535               | N/A             | N/A            | 42.145      | PK   |

|                                                    |                          |
|----------------------------------------------------|--------------------------|
| Engineer: Scott                                    |                          |
| Site: AC5                                          | Time: 2015/12/31 - 15:44 |
| Limit: FCC_Part15.209_RE(3m)                       | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                 | Polarity: Horizontal     |
| EUT: IP-STB                                        | Power: AC 120V/60Hz      |
| Note: Mode 1:Transmit at CH5180MHz by 802.11a ant2 |                          |



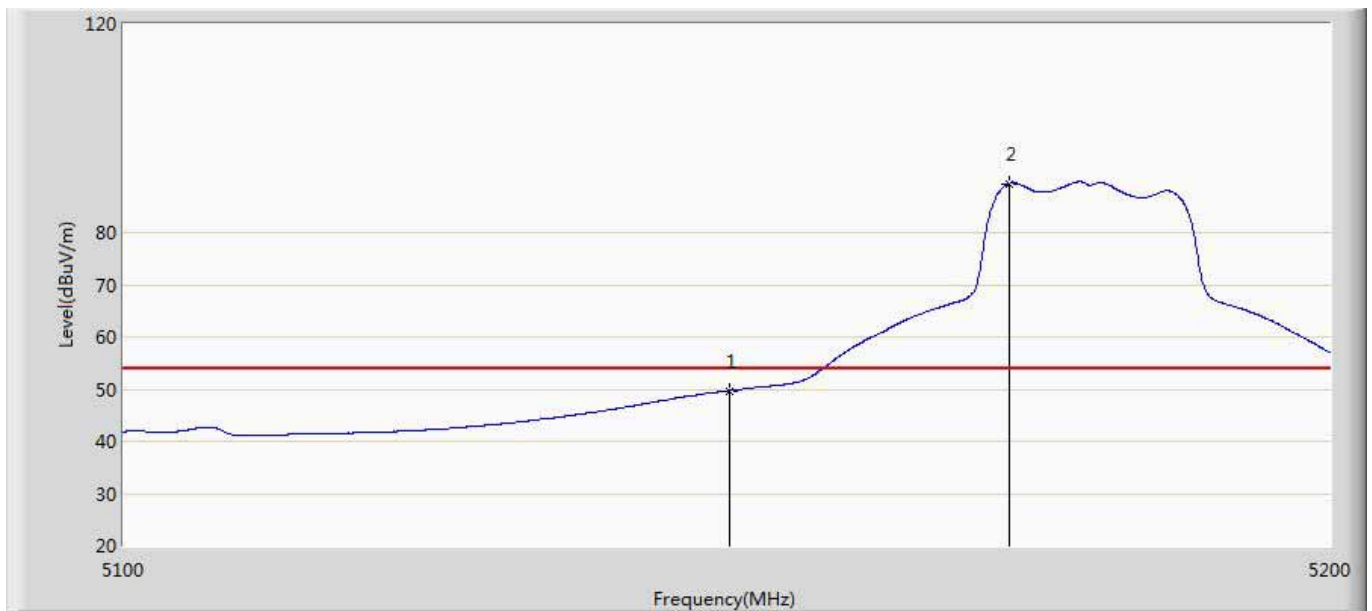
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 53.872                 | 11.857               | -0.128          | 54.000         | 42.015      | AV   |
| 2  | *    | 5179.150        | 97.622                 | 55.477               | N/A             | N/A            | 42.145      | AV   |

|                                                    |                          |
|----------------------------------------------------|--------------------------|
| Engineer: Scott                                    |                          |
| Site: AC5                                          | Time: 2015/12/31 - 16:02 |
| Limit: FCC_Part15.209_RE(3m)                       | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                 | Polarity: Vertical       |
| EUT: IP-STB                                        | Power: AC 120V/60Hz      |
| Note: Mode 1:Transmit at CH5180MHz by 802.11a ant2 |                          |



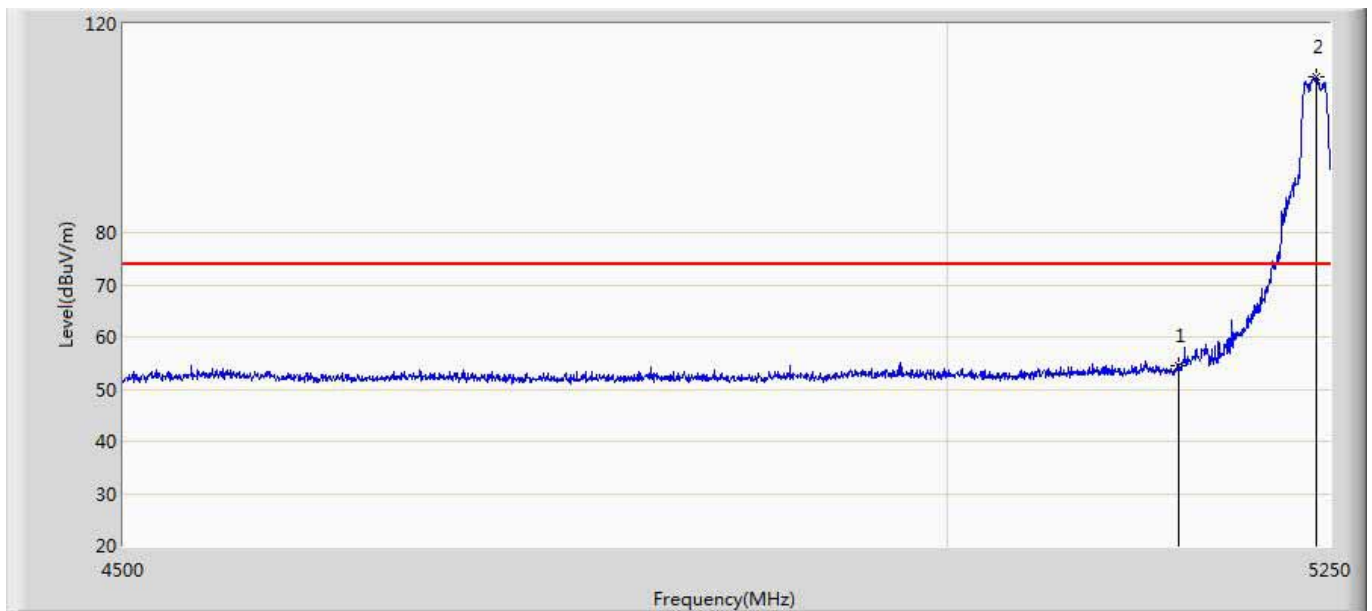
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 59.921                 | 17.906               | -14.079         | 74.000         | 42.015      | PK   |
| 2  | *    | 5178.750        | 99.979                 | 57.834               | N/A             | N/A            | 42.146      | PK   |

|                                                    |                          |
|----------------------------------------------------|--------------------------|
| Engineer: Scott                                    |                          |
| Site: AC5                                          | Time: 2016/01/04 - 10:12 |
| Limit: FCC_Part15.209_RE(3m)                       | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                 | Polarity: Vertical       |
| EUT: IP-STB                                        | Power: AC 120V/60Hz      |
| Note: Mode 1:Transmit at CH5180MHz by 802.11a ant2 |                          |



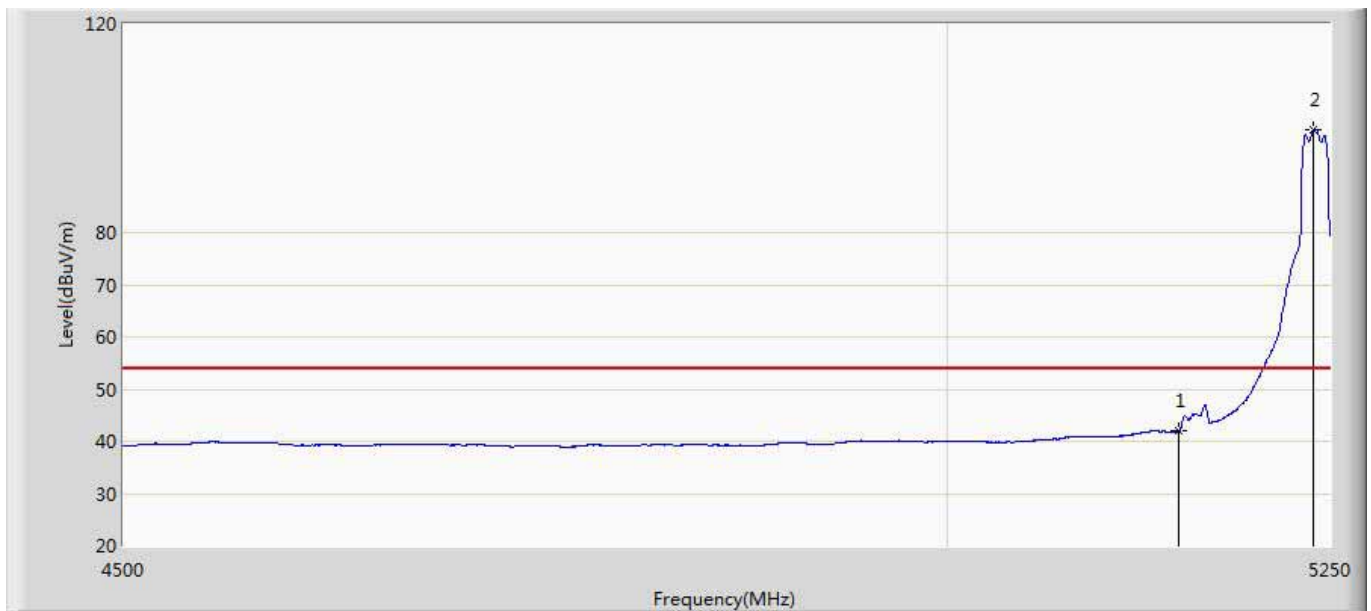
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 49.702                 | 7.687                | -4.298          | 54.000         | 42.015      | AV   |
| 2  | *    | 5173.300        | 89.417                 | 47.272               | N/A             | N/A            | 42.145      | AV   |

|                                                    |                          |
|----------------------------------------------------|--------------------------|
| Engineer: Scott                                    |                          |
| Site: AC5                                          | Time: 2016/01/04 - 10:20 |
| Limit: FCC_Part15.209_RE(3m)                       | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                 | Polarity: Horizontal     |
| EUT: IP-STB                                        | Power: AC 120V/60Hz      |
| Note: Mode 1:Transmit at CH5240MHz by 802.11a ant2 |                          |



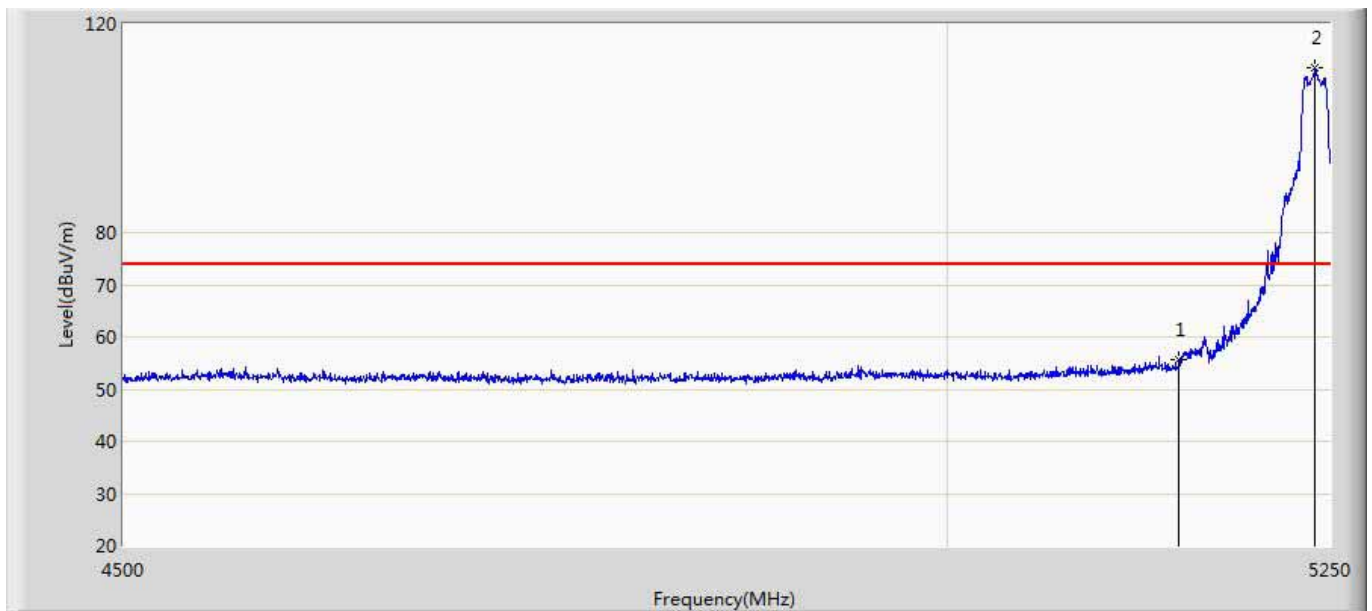
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 54.414                 | 12.399               | -19.586         | 74.000         | 42.015      | PK   |
| 2  | *    | 5241.000        | 109.994                | 67.853               | N/A             | N/A            | 42.141      | PK   |

|                                                    |                          |
|----------------------------------------------------|--------------------------|
| Engineer: Scott                                    |                          |
| Site: AC5                                          | Time: 2016/01/04 - 10:21 |
| Limit: FCC_Part15.209_RE(3m)                       | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                 | Polarity: Horizontal     |
| EUT: IP-STB                                        | Power: AC 120V/60Hz      |
| Note: Mode 1:Transmit at CH5240MHz by 802.11a ant2 |                          |



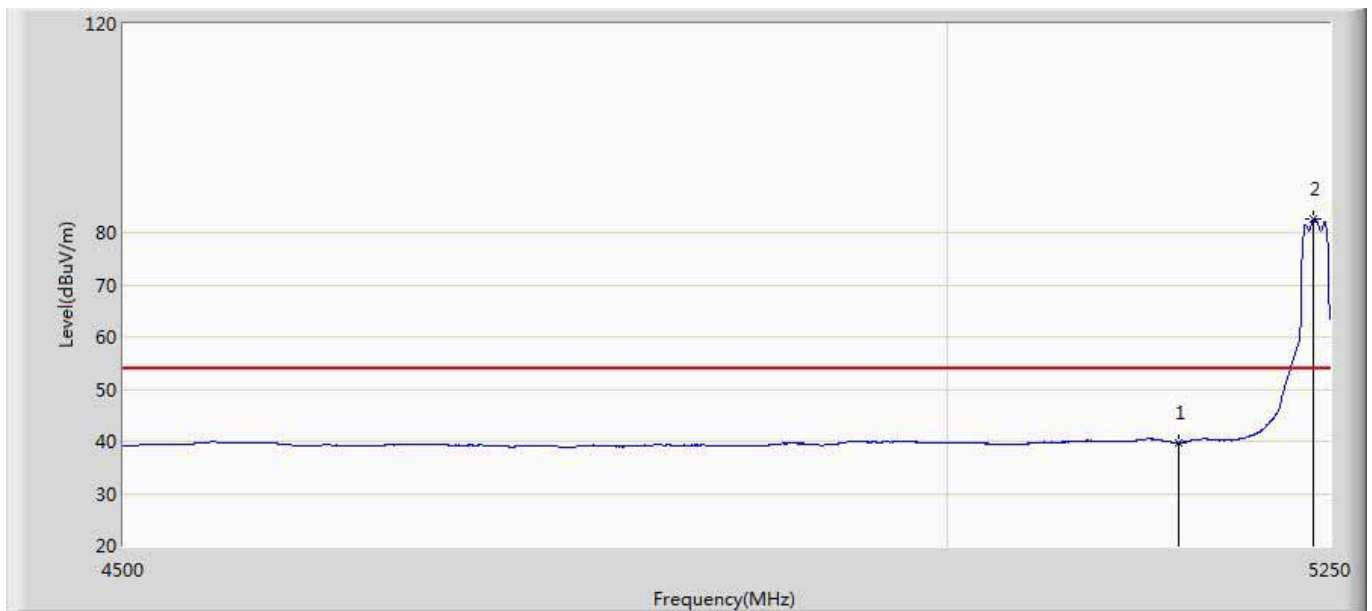
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 42.039                 | 0.024                | -11.961         | 54.000         | 42.015      | AV   |
| 2  | *    | 5238.750        | 99.780                 | 57.661               | N/A             | N/A            | 42.119      | AV   |

|                                                    |                          |
|----------------------------------------------------|--------------------------|
| Engineer: Scott                                    |                          |
| Site: AC5                                          | Time: 2016/01/04 - 10:24 |
| Limit: FCC_Part15.209_RE(3m)                       | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                 | Polarity: Vertical       |
| EUT: IP-STB                                        | Power: AC 120V/60Hz      |
| Note: Mode 1:Transmit at CH5240MHz by 802.11a ant2 |                          |



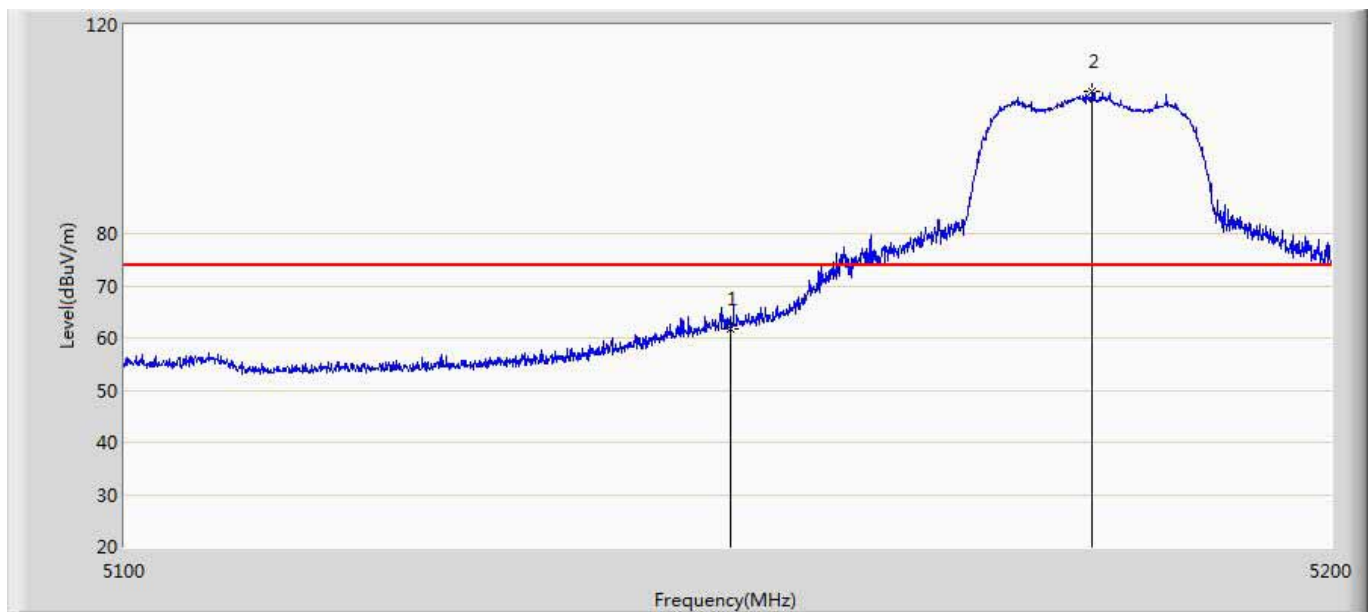
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 55.654                 | 13.639               | -18.346         | 74.000         | 42.015      | PK   |
| 2  | *    | 5239.875        | 111.674                | 69.544               | N/A             | N/A            | 42.130      | PK   |

|                                                    |                          |
|----------------------------------------------------|--------------------------|
| Engineer: Scott                                    |                          |
| Site: AC5                                          | Time: 2016/01/04 - 10:24 |
| Limit: FCC_Part15.209_RE(3m)                       | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                 | Polarity: Vertical       |
| EUT: IP-STB                                        | Power: AC 120V/60Hz      |
| Note: Mode 1:Transmit at CH5240MHz by 802.11a ant2 |                          |



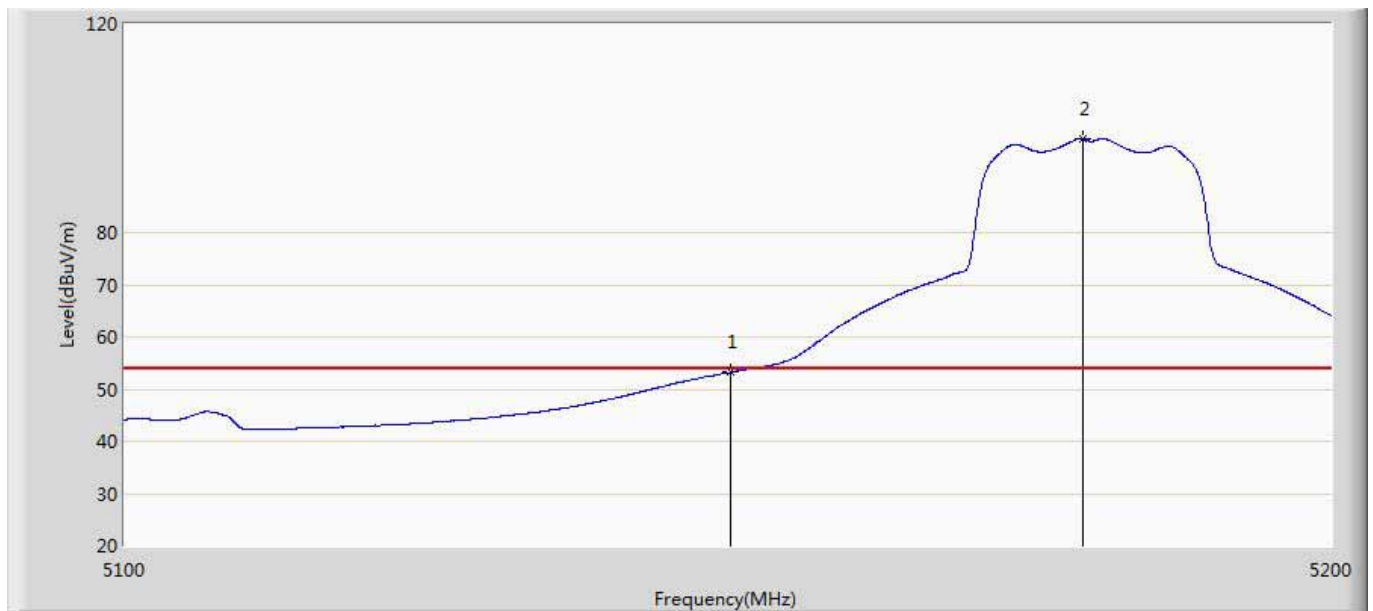
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 39.774                 | -2.241               | -14.226         | 54.000         | 42.015      | AV   |
| 2  | *    | 5238.750        | 82.528                 | 40.409               | N/A             | N/A            | 42.119      | AV   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2016/01/04 - 10:34 |
| Limit: FCC_Part15.209_RE(3m)                         | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Horizontal     |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 2:Transmit at CH5180MHz by 802.11n20 ant2 |                          |



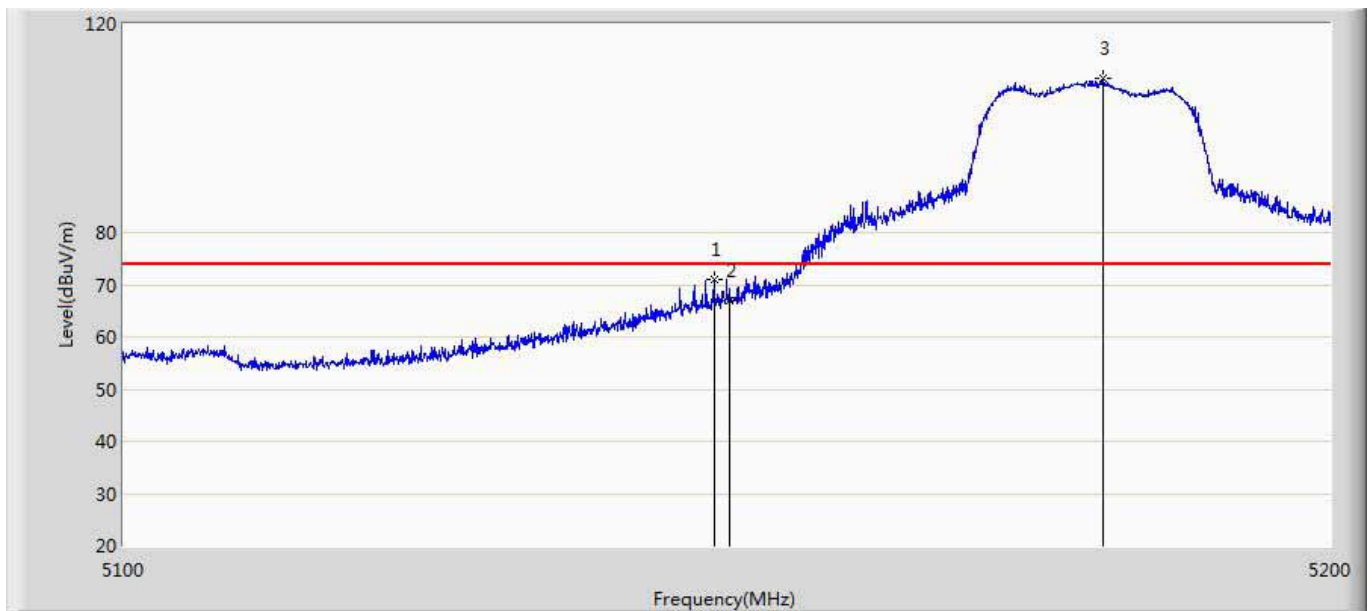
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 61.707                 | 19.692               | -12.293         | 74.000         | 42.015      | PK   |
| 2  | *    | 5180.000        | 107.280                | 65.135               | N/A             | N/A            | 42.145      | PK   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2016/01/04 - 10:34 |
| Limit: FCC_Part15.209_RE(3m)                         | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Horizontal     |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 2:Transmit at CH5180MHz by 802.11n20 ant2 |                          |



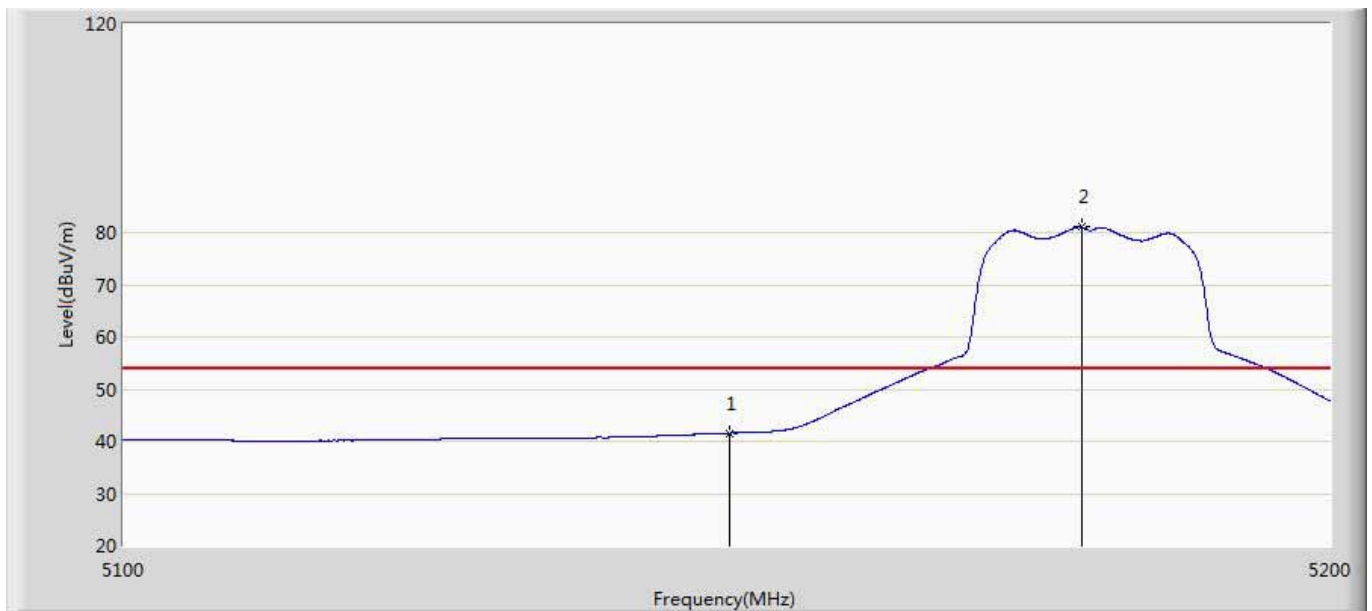
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 53.240                 | 11.225               | -0.760          | 54.000         | 42.015      | AV   |
| 2  | *    | 5179.300        | 97.997                 | 55.852               | N/A             | N/A            | 42.145      | AV   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2016/01/04 - 10:40 |
| Limit: FCC_Part15.209_RE(3m)                         | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Vertical       |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 2:Transmit at CH5180MHz by 802.11n20 ant2 |                          |



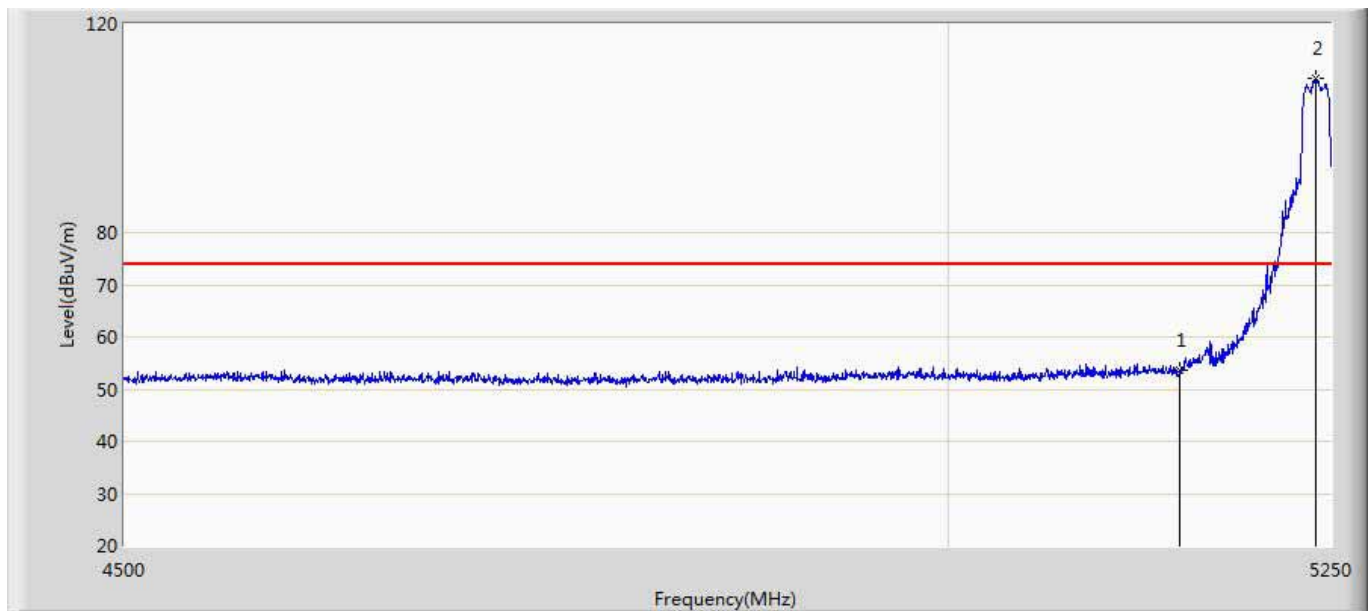
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5148.700        | 71.118                 | 29.114               | -2.882          | 74.000         | 42.004      | PK   |
| 2  |      | 5150.000        | 66.904                 | 24.889               | -7.096          | 74.000         | 42.015      | PK   |
| 3  | *    | 5181.100        | 109.426                | 67.281               | N/A             | N/A            | 42.145      | PK   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2016/01/04 - 10:40 |
| Limit: FCC_Part15.209_RE(3m)                         | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Vertical       |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 2:Transmit at CH5180MHz by 802.11n20 ant2 |                          |



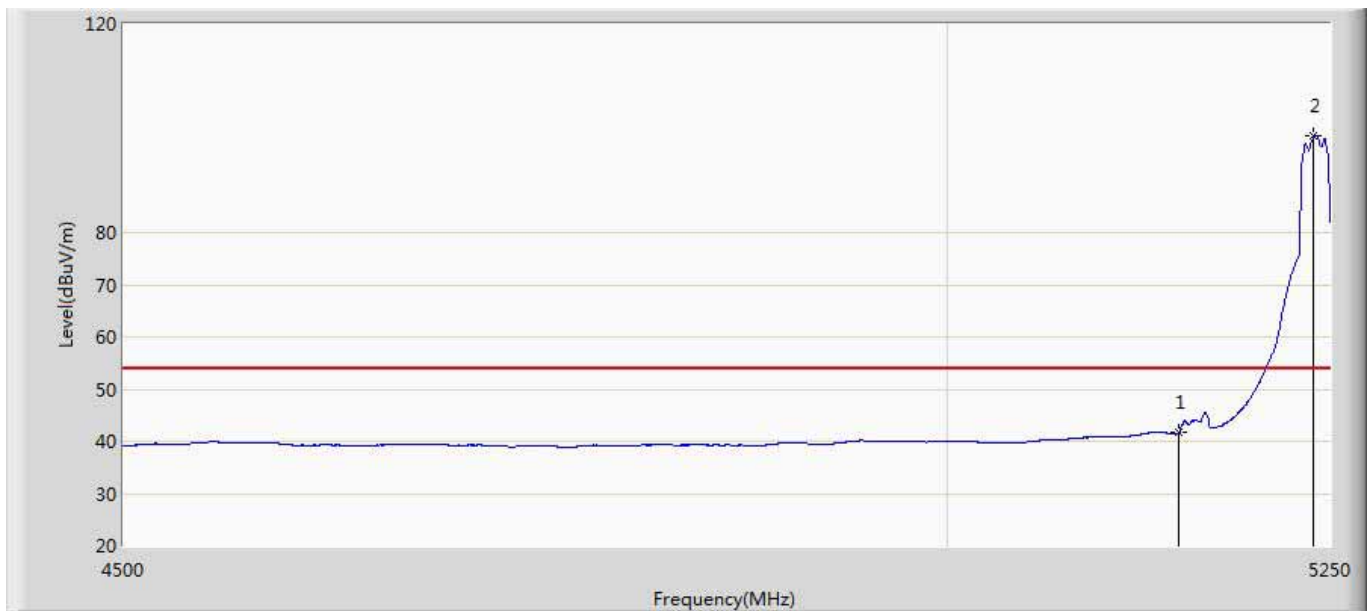
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 41.577                 | -0.438               | -12.423         | 54.000         | 42.015      | AV   |
| 2  | *    | 5179.300        | 81.048                 | 38.903               | N/A             | N/A            | 42.145      | AV   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2016/01/04 - 10:44 |
| Limit: FCC_Part15.209_RE(3m)                         | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Horizontal     |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 2:Transmit at CH5240MHz by 802.11n20 ant2 |                          |



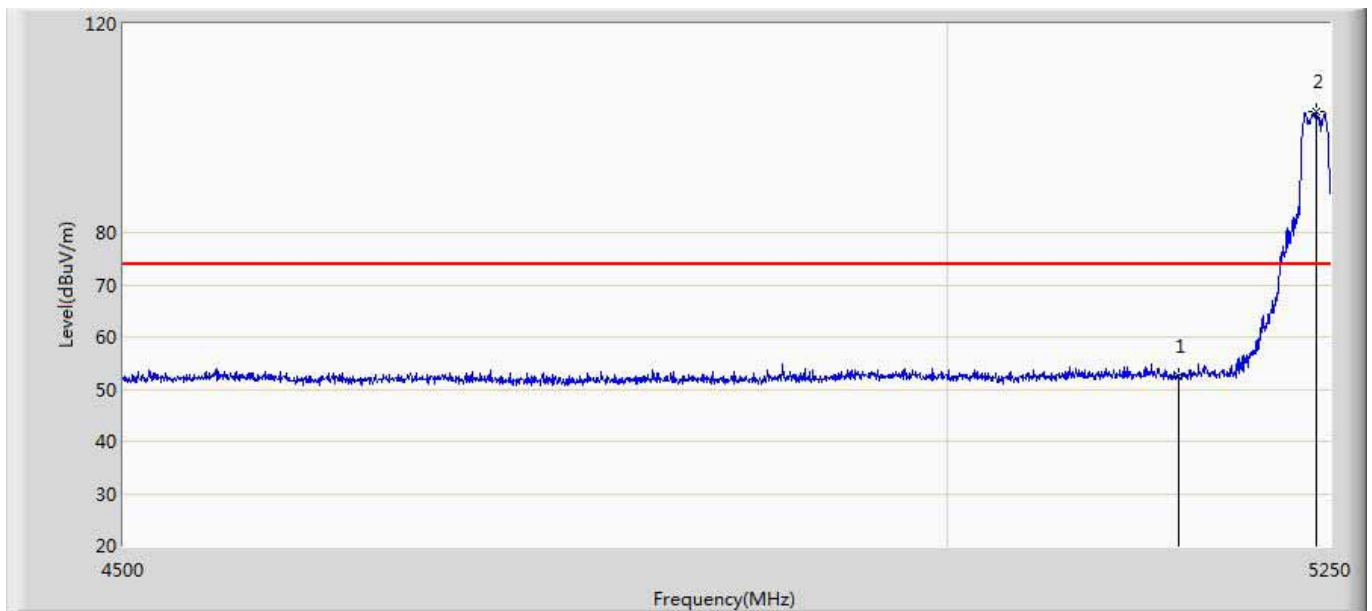
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 53.586                 | 11.571               | -20.414         | 74.000         | 42.015      | PK   |
| 2  | *    | 5240.250        | 109.566                | 67.432               | N/A             | N/A            | 42.134      | PK   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2016/01/04 - 10:45 |
| Limit: FCC_Part15.209_RE(3m)                         | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Horizontal     |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 2:Transmit at CH5240MHz by 802.11n20 ant2 |                          |



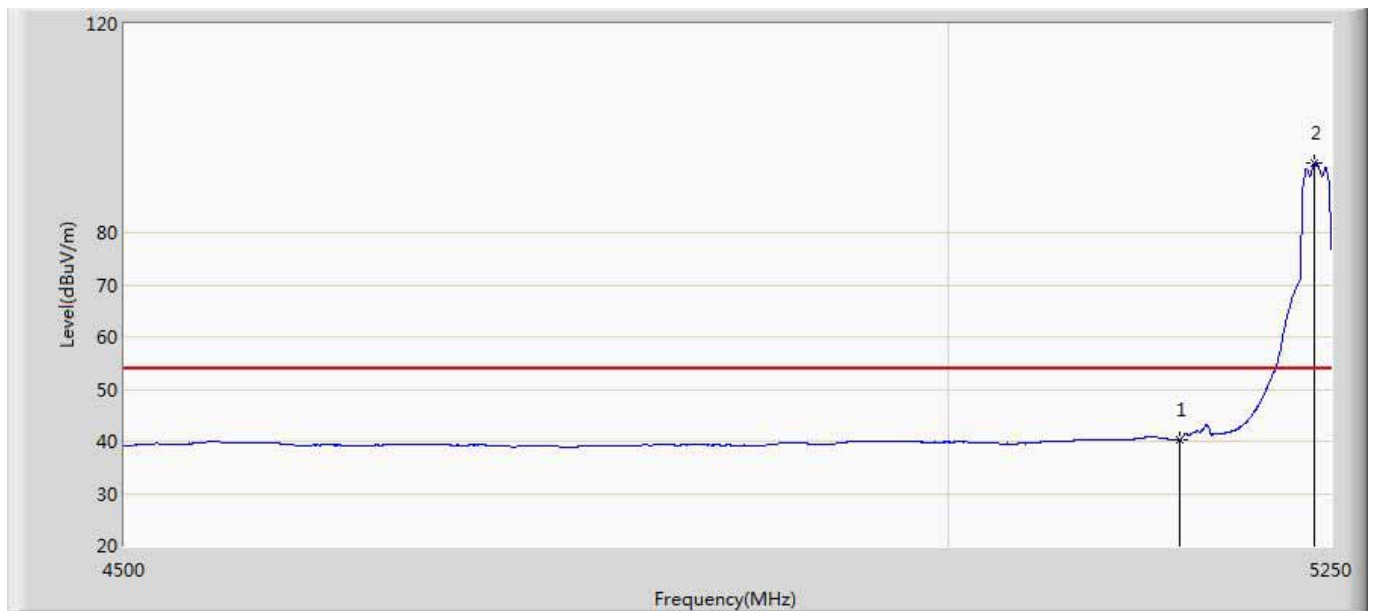
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 41.656                 | -0.359               | -12.344         | 54.000         | 42.015      | AV   |
| 2  | *    | 5238.750        | 98.523                 | 56.404               | N/A             | N/A            | 42.119      | AV   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2016/01/04 - 10:49 |
| Limit: FCC_Part15.209_RE(3m)                         | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Vertical       |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 2:Transmit at CH5240MHz by 802.11n20 ant2 |                          |



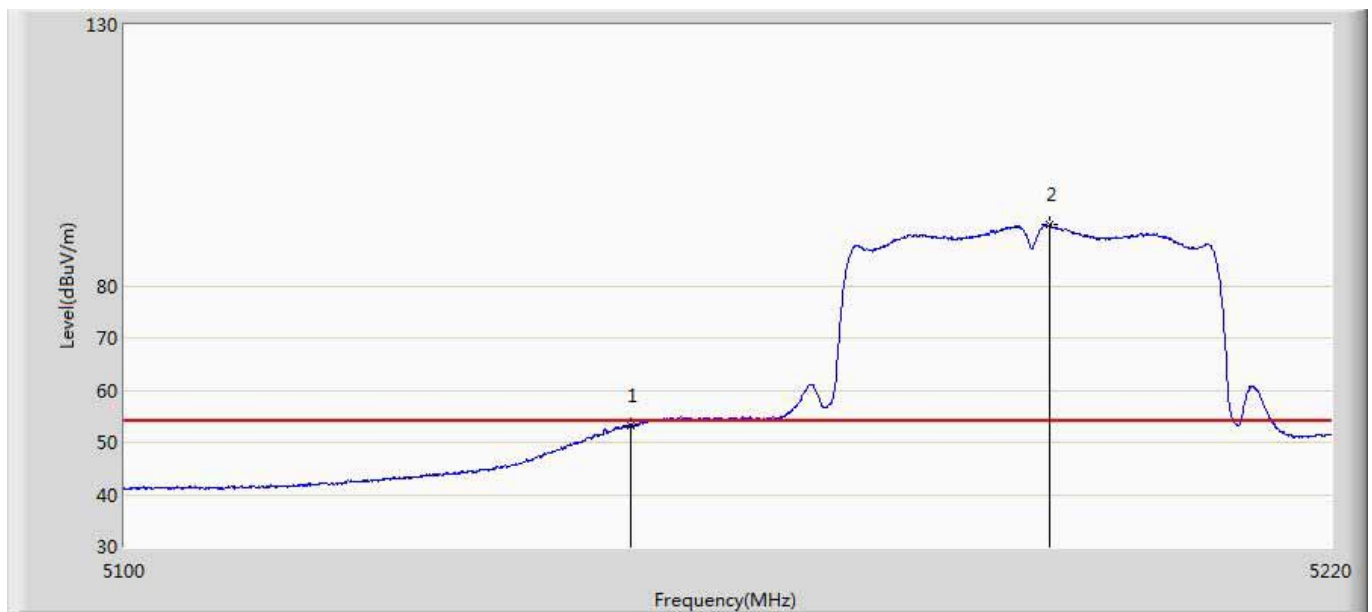
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 52.526                 | 10.511               | -21.474         | 74.000         | 42.015      | PK   |
| 2  | *    | 5240.625        | 103.179                | 61.041               | N/A             | N/A            | 42.138      | PK   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2016/01/04 - 10:49 |
| Limit: FCC_Part15.209_RE(3m)                         | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Vertical       |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 2:Transmit at CH5240MHz by 802.11n20 ant2 |                          |



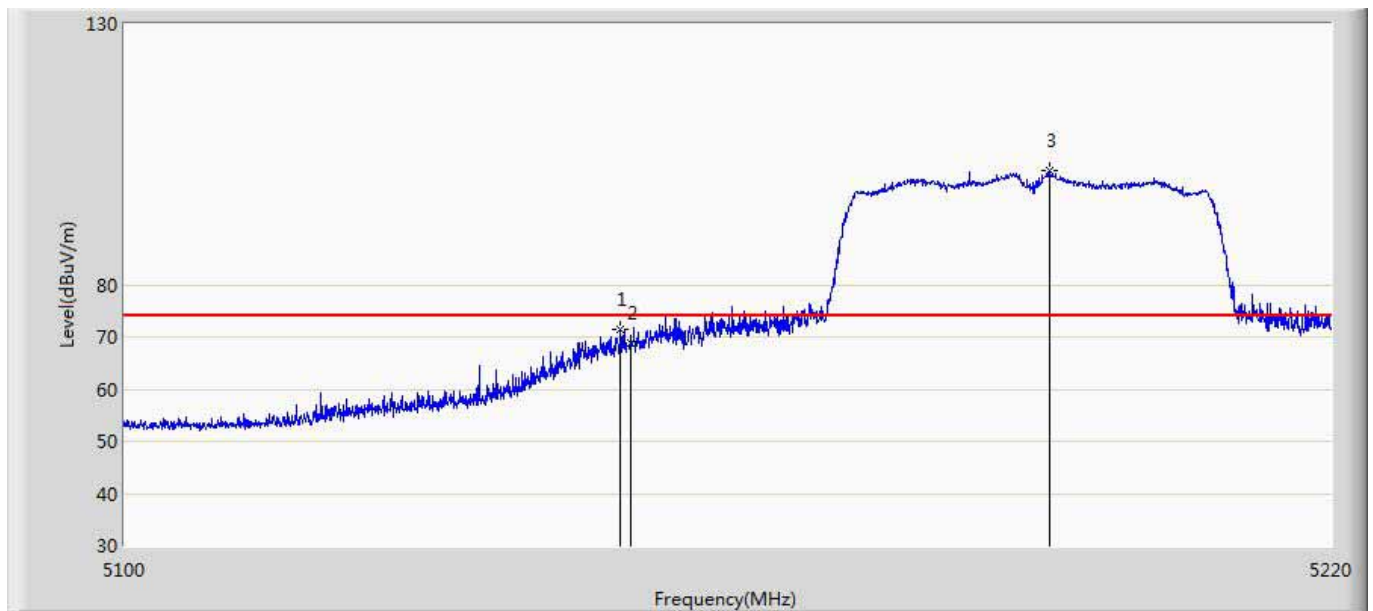
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 40.381                 | -1.634               | -13.619         | 54.000         | 42.015      | AV   |
| 2  | *    | 5238.750        | 93.223                 | 51.104               | N/A             | N/A            | 42.119      | AV   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2016/01/04 - 10:58 |
| Limit: FCC_Part15.209_RE(3m)                         | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Horizontal     |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 3:Transmit at CH5190MHz by 802.11n40 ant2 |                          |



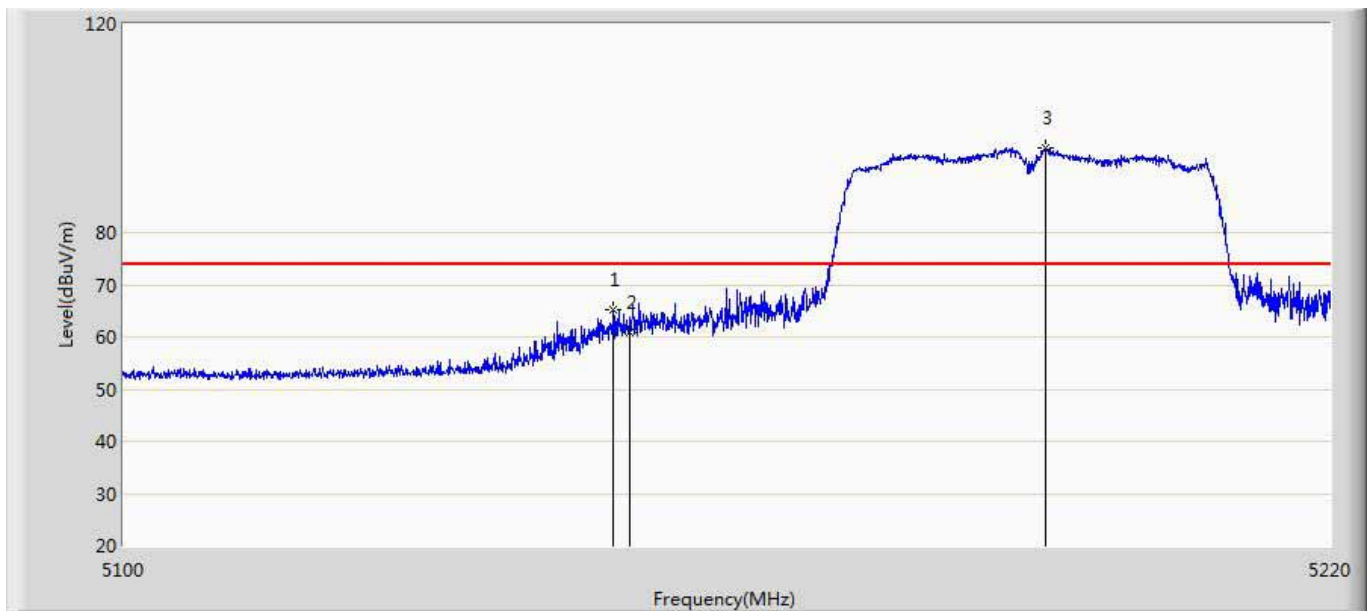
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 53.293                 | 11.278               | -0.707          | 54.000         | 42.015      | AV   |
| 2  | *    | 5191.800        | 91.647                 | 49.564               | N/A             | N/A            | 42.083      | AV   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2016/01/04 - 11:06 |
| Limit: FCC_Part15.209_RE(3m)                         | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Horizontal     |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 3:Transmit at CH5190MHz by 802.11n40 ant2 |                          |



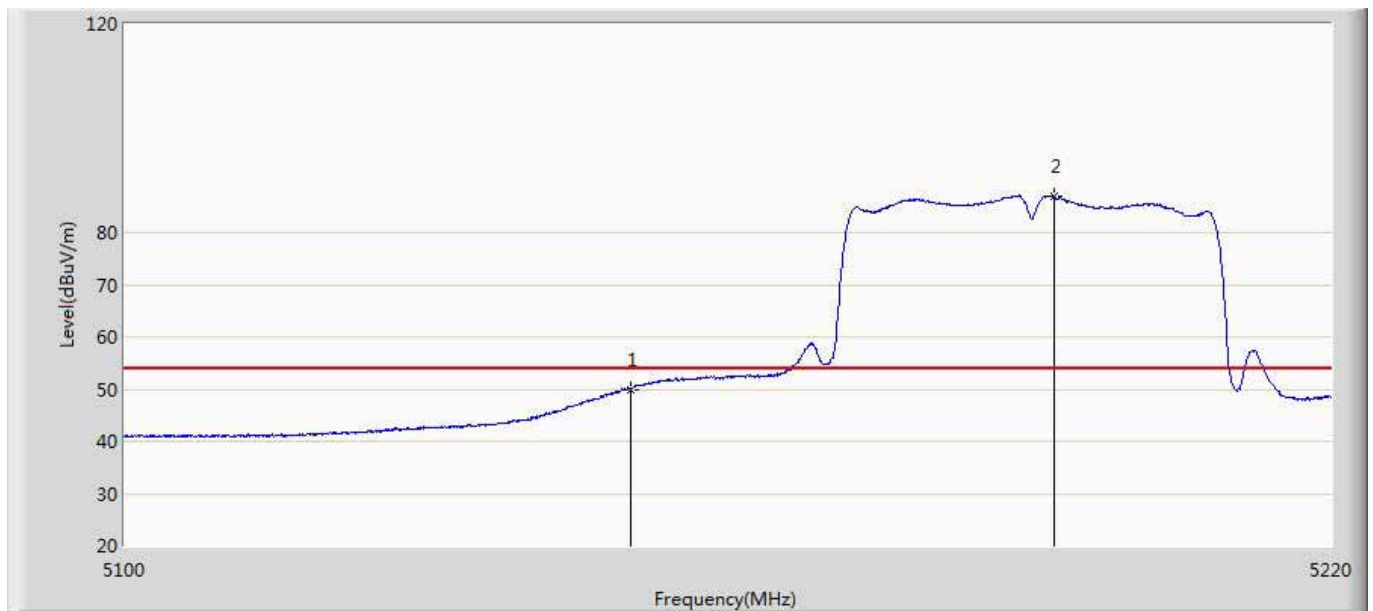
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5149.020        | 71.306                 | 29.299               | -2.694          | 74.000         | 42.007      | PK   |
| 2  |      | 5150.000        | 68.916                 | 26.901               | -5.084          | 74.000         | 42.015      | PK   |
| 3  | *    | 5191.740        | 101.928                | 59.845               | N/A             | N/A            | 42.083      | PK   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2016/01/04 - 11:07 |
| Limit: FCC_Part15.209_RE(3m)                         | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Vertical       |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 3:Transmit at CH5190MHz by 802.11n40 ant2 |                          |



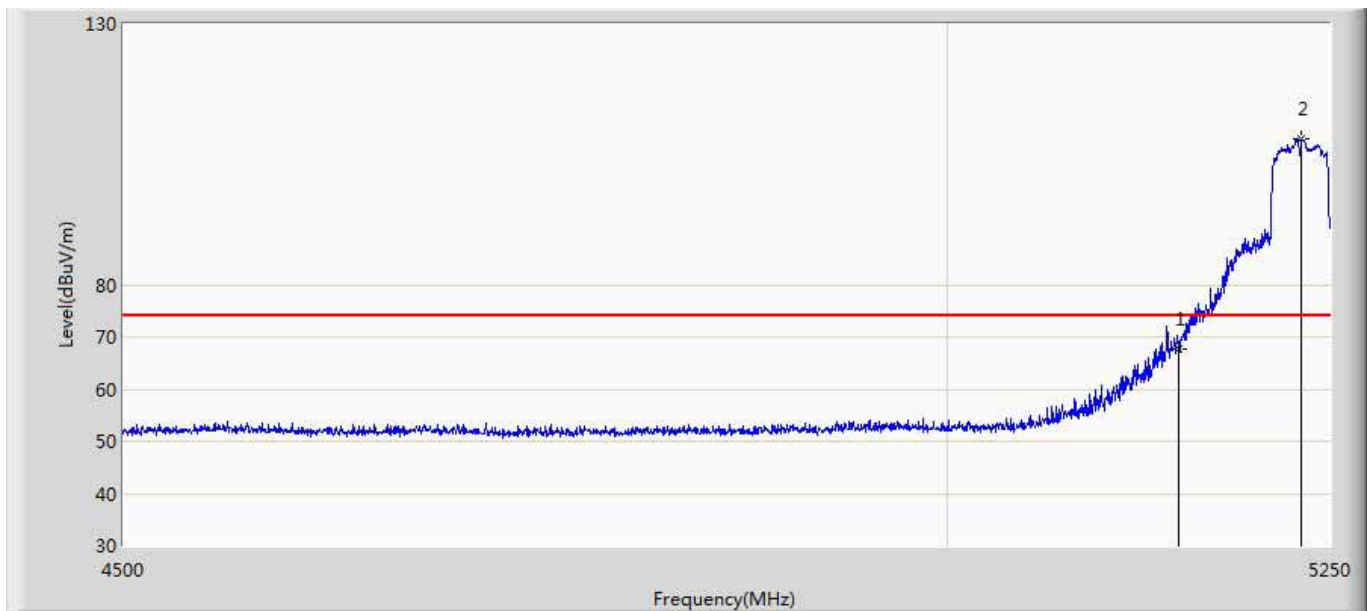
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5148.420        | 65.282                 | 23.281               | -8.718          | 74.000         | 42.001      | PK   |
| 2  |      | 5150.000        | 60.948                 | 18.933               | -13.052         | 74.000         | 42.015      | PK   |
| 3  | *    | 5191.500        | 96.334                 | 54.250               | N/A             | N/A            | 42.084      | PK   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2016/01/04 - 11:14 |
| Limit: FCC_Part15.209_RE(3m)                         | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Vertical       |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 3:Transmit at CH5190MHz by 802.11n40 ant2 |                          |



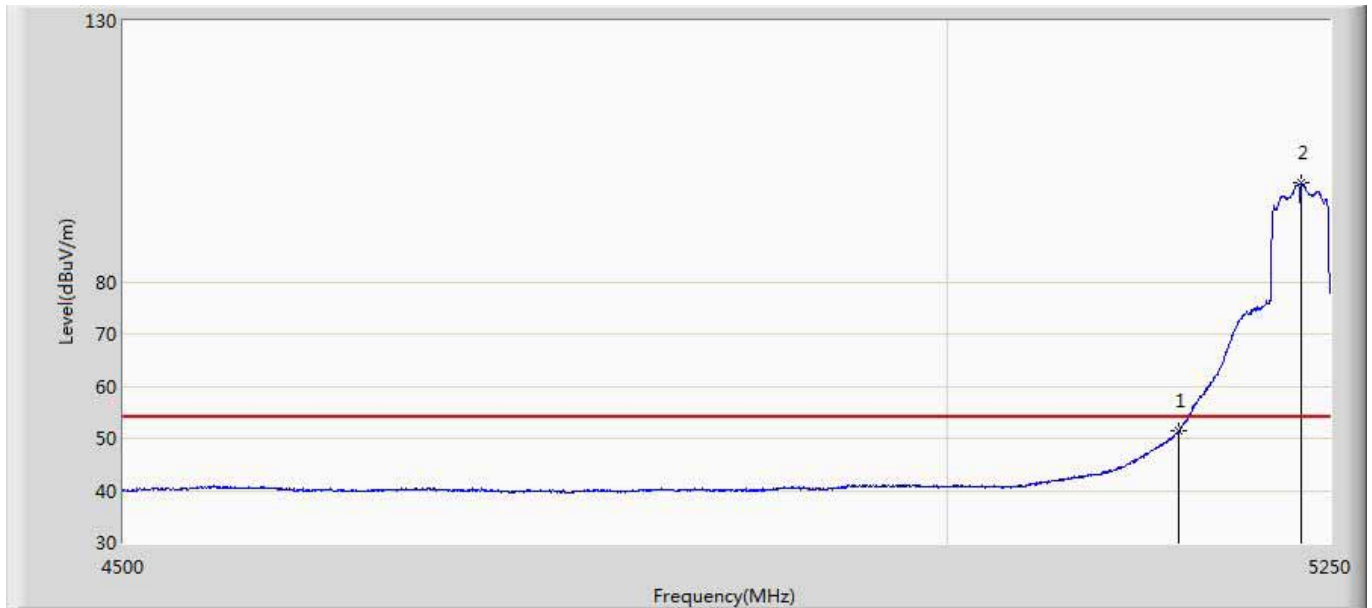
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 49.979                 | 7.964                | -4.021          | 54.000         | 42.015      | AV   |
| 2  | *    | 5192.160        | 86.947                 | 44.867               | N/A             | N/A            | 42.080      | AV   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2016/01/04 - 11:20 |
| Limit: FCC_Part15.209_RE(3m)                         | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Horizontal     |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 3:Transmit at CH5230MHz by 802.11n40 ant2 |                          |



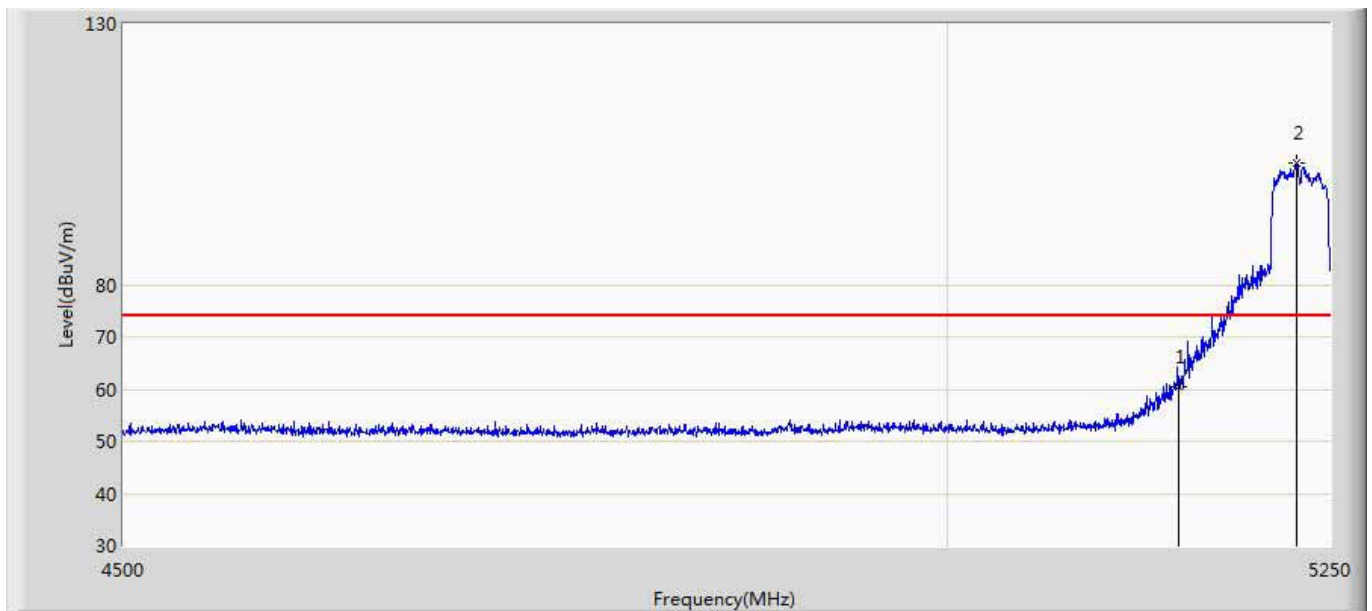
| No | Mark | Frequency<br>(MHz) | Measure Level<br>(dBuV/m) | Reading Level<br>(dBuV) | Over Limit<br>(dB) | Limit<br>(dBuV/m) | Factor<br>(dB) | Type |
|----|------|--------------------|---------------------------|-------------------------|--------------------|-------------------|----------------|------|
| 1  |      | 5150.000           | 67.715                    | 25.700                  | -6.285             | 74.000            | 42.015         | PK   |
| 2  | *    | 5231.250           | 107.987                   | 65.933                  | N/A                | N/A               | 42.054         | PK   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2016/01/04 - 11:21 |
| Limit: FCC_Part15.209_RE(3m)                         | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Horizontal     |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 3:Transmit at CH5230MHz by 802.11n40 ant2 |                          |



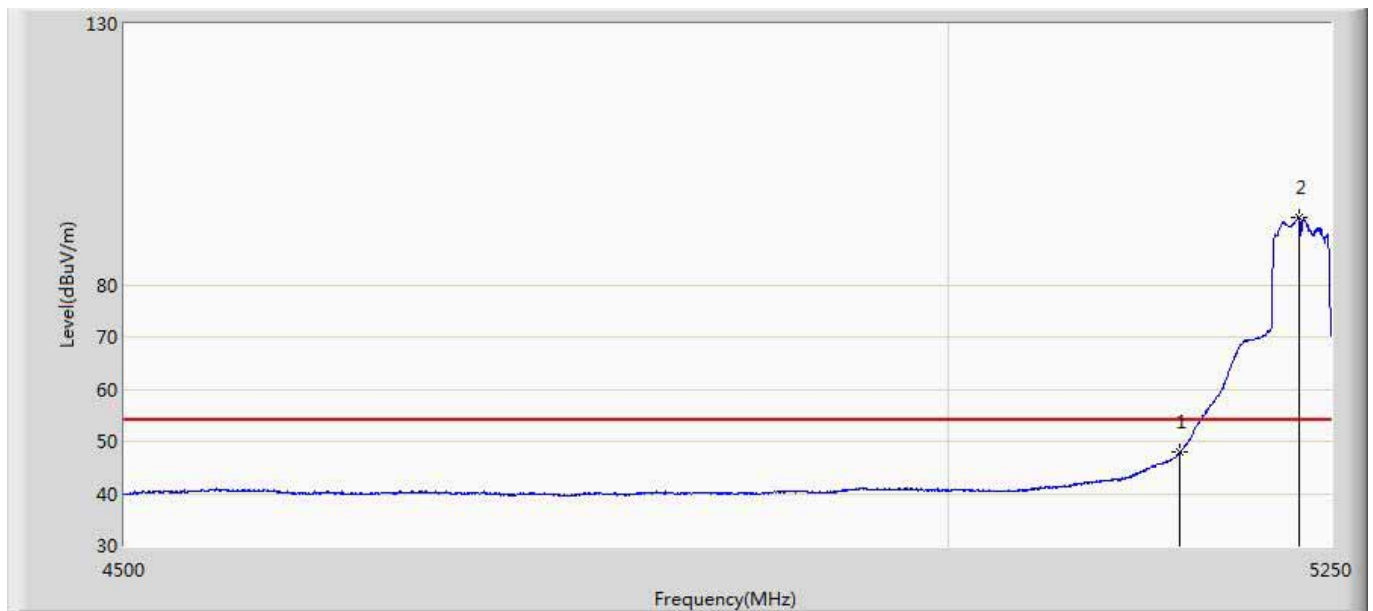
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 51.387                 | 9.372                | -2.613          | 54.000         | 42.015      | AV   |
| 2  | *    | 5231.250        | 98.841                 | 56.787               | N/A             | N/A            | 42.054      | AV   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2016/01/04 - 11:24 |
| Limit: FCC_Part15.209_RE(3m)                         | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Vertical       |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 3:Transmit at CH5230MHz by 802.11n40 ant2 |                          |



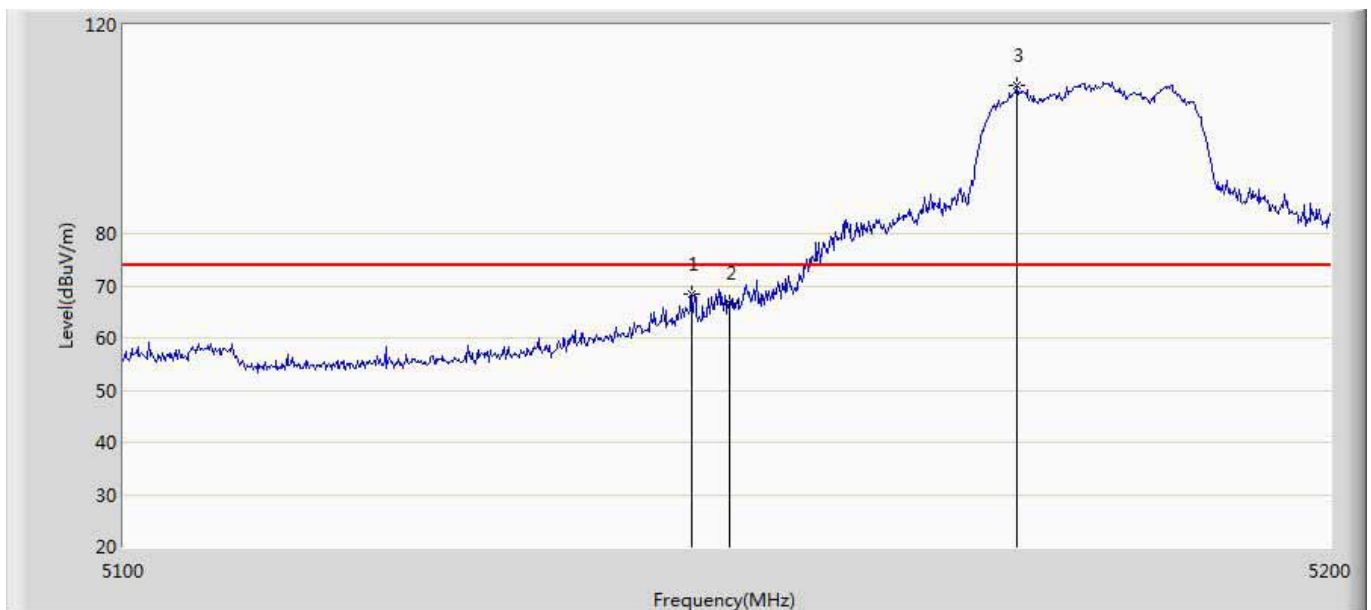
| No | Mark | Frequency<br>(MHz) | Measure Level<br>(dBuV/m) | Reading Level<br>(dBuV) | Over Limit<br>(dB) | Limit<br>(dBuV/m) | Factor<br>(dB) | Type |
|----|------|--------------------|---------------------------|-------------------------|--------------------|-------------------|----------------|------|
| 1  |      | 5150.000           | 60.577                    | 18.562                  | -13.423            | 74.000            | 42.015         | PK   |
| 2  | *    | 5227.500           | 103.206                   | 61.169                  | N/A                | N/A               | 42.036         | PK   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2016/01/04 - 11:25 |
| Limit: FCC_Part15.209_RE(3m)                         | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Vertical       |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 3:Transmit at CH5230MHz by 802.11n40 ant2 |                          |



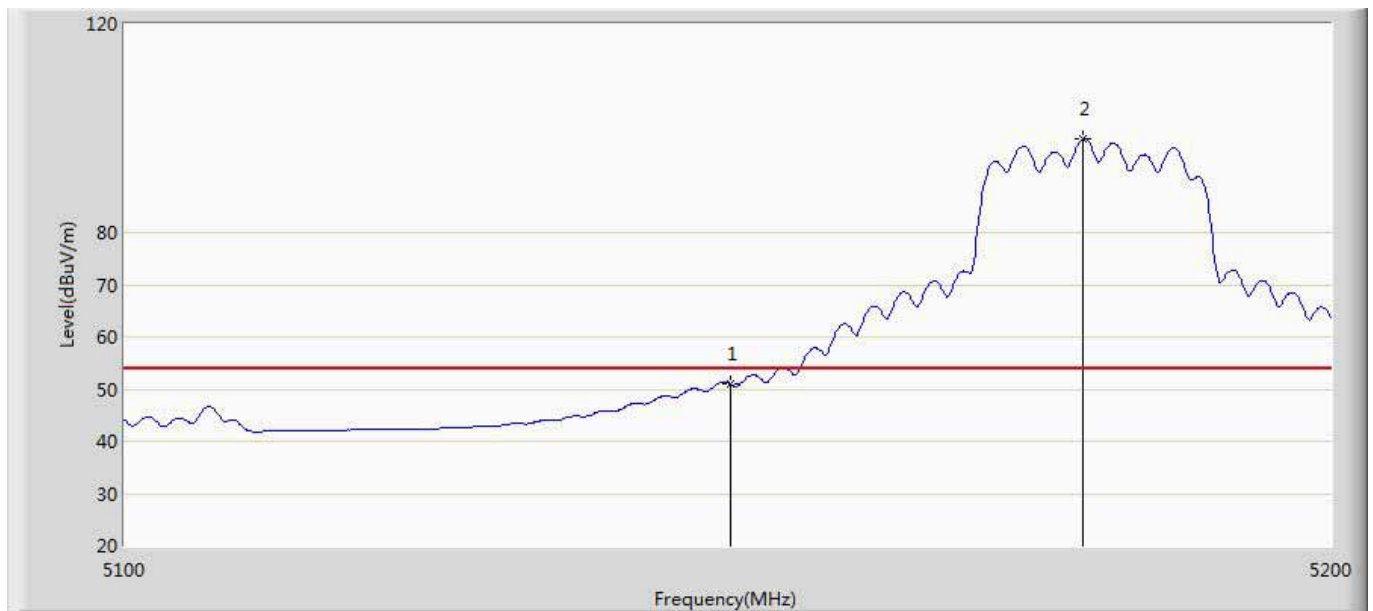
| No | Mark | Frequency<br>(MHz) | Measure Level<br>(dBuV/m) | Reading Level<br>(dBuV) | Over Limit<br>(dB) | Limit<br>(dBuV/m) | Factor<br>(dB) | Type |
|----|------|--------------------|---------------------------|-------------------------|--------------------|-------------------|----------------|------|
| 1  |      | 5150.000           | 47.967                    | 5.952                   | -6.033             | 54.000            | 42.015         | AV   |
| 2  | *    | 5228.625           | 92.930                    | 50.888                  | N/A                | N/A               | 42.042         | AV   |

|                                                        |                          |
|--------------------------------------------------------|--------------------------|
| Engineer: Scott                                        |                          |
| Site: AC5                                              | Time: 2015/12/31 - 11:54 |
| Limit: FCC_Part15.209_RE(3m)                           | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                     | Polarity: Horizontal     |
| EUT: IP-STB                                            | Power: AC 120V/60Hz      |
| Note: Mode 2:Transmit at CH5180MHz by 802.11n20 ant1+2 |                          |



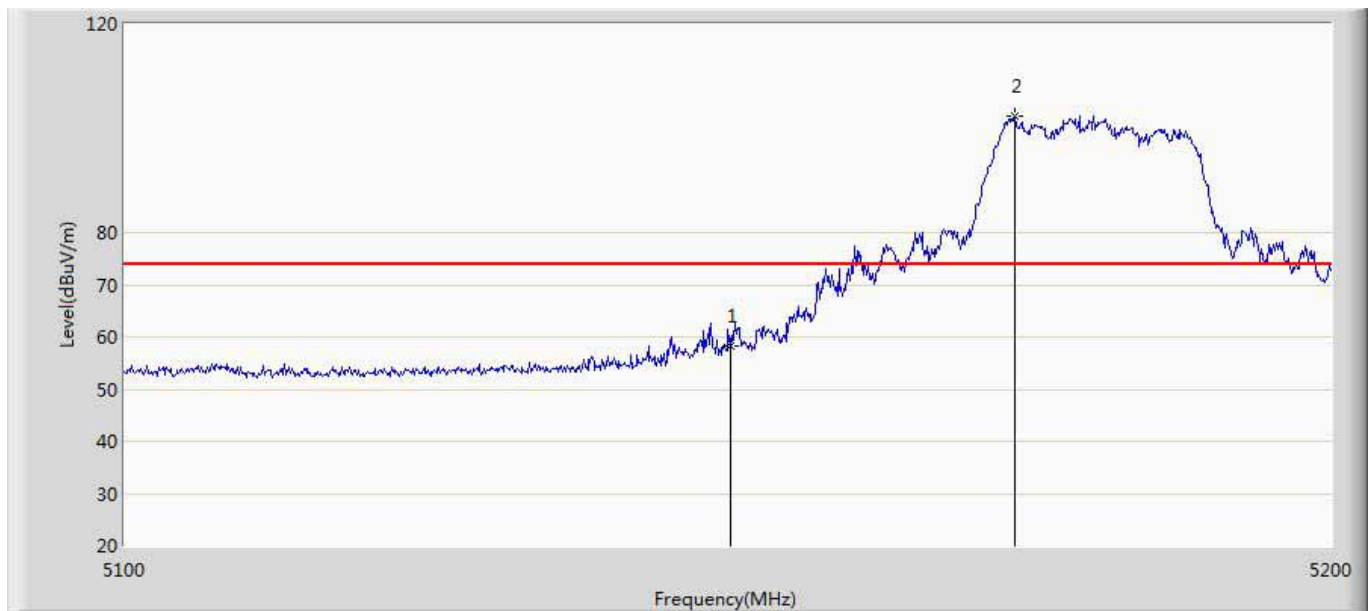
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5146.900        | 68.353                 | 26.339               | -5.647          | 74.000         | 42.014      | PK   |
| 2  |      | 5150.000        | 66.542                 | 24.527               | -7.458          | 74.000         | 42.015      | PK   |
| 3  | *    | 5173.900        | 108.352                | 66.207               | N/A             | N/A            | 42.146      | PK   |

|                                                        |                          |
|--------------------------------------------------------|--------------------------|
| Engineer: Scott                                        |                          |
| Site: AC5                                              | Time: 2015/12/31 - 11:49 |
| Limit: FCC_Part15.209_RE(3m)                           | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                     | Polarity: Horizontal     |
| EUT: IP-STB                                            | Power: AC 120V/60Hz      |
| Note: Mode 2:Transmit at CH5180MHz by 802.11n20 ant1+2 |                          |



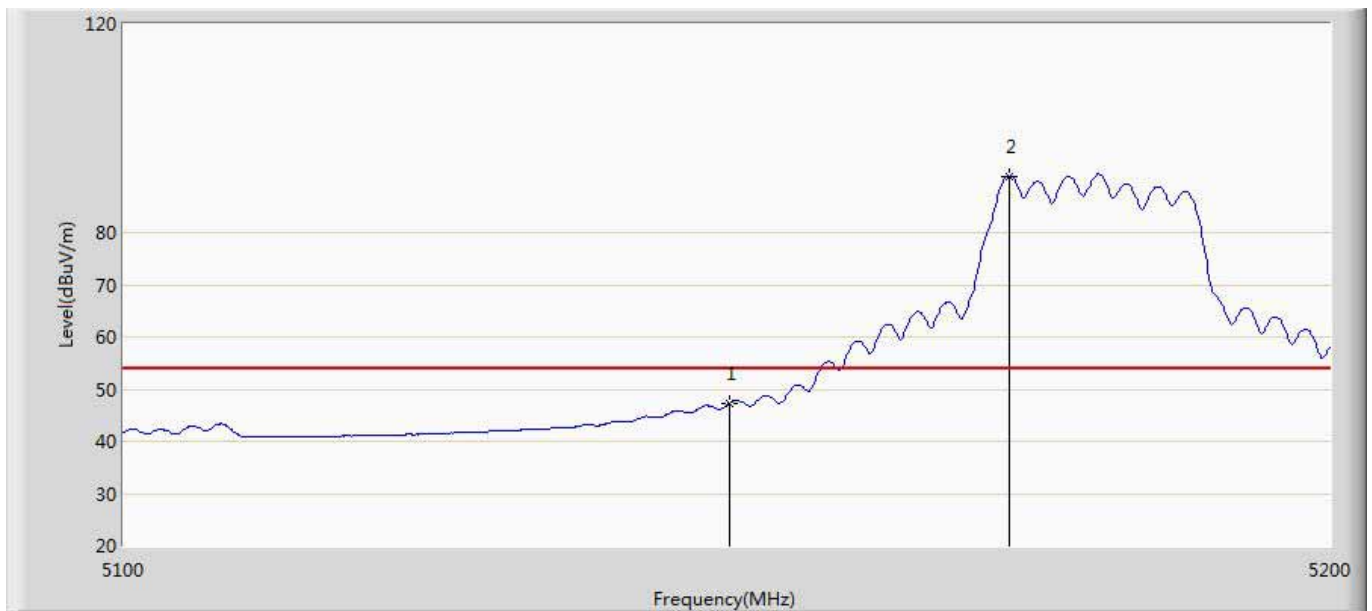
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 50.956                 | 8.941                | -3.044          | 54.000         | 42.015      | AV   |
| 2  | *    | 5179.300        | 97.896                 | 55.751               | N/A             | N/A            | 42.145      | AV   |

|                                                        |                          |
|--------------------------------------------------------|--------------------------|
| Engineer: Scott                                        |                          |
| Site: AC5                                              | Time: 2015/12/31 - 11:55 |
| Limit: FCC_Part15.209_RE(3m)                           | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                     | Polarity: Vertical       |
| EUT: IP-STB                                            | Power: AC 120V/60Hz      |
| Note: Mode 2:Transmit at CH5180MHz by 802.11n20 ant1+2 |                          |



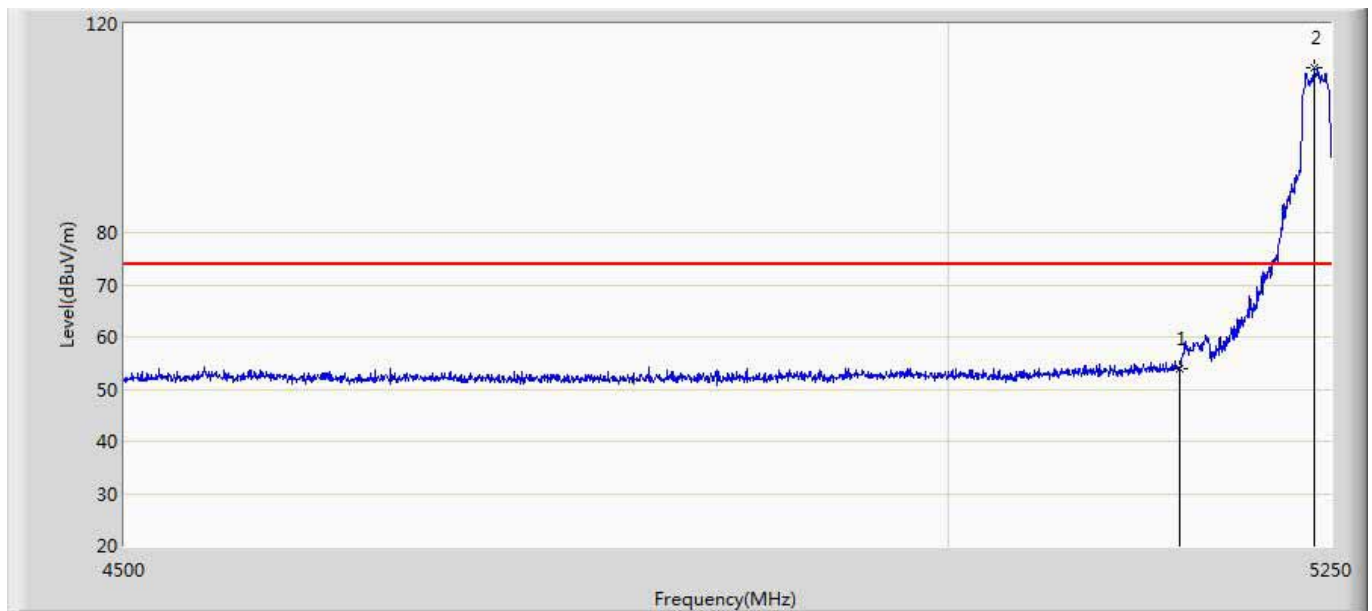
| No | Mark | Frequency<br>(MHz) | Measure Level<br>(dBuV/m) | Reading Level<br>(dBuV) | Over Limit<br>(dB) | Limit<br>(dBuV/m) | Factor<br>(dB) | Type |
|----|------|--------------------|---------------------------|-------------------------|--------------------|-------------------|----------------|------|
| 1  |      | 5150.000           | 58.389                    | 16.374                  | -15.611            | 74.000            | 42.015         | PK   |
| 2  | *    | 5173.600           | 102.347                   | 60.202                  | N/A                | N/A               | 42.146         | PK   |

|                                                        |                          |
|--------------------------------------------------------|--------------------------|
| Engineer: Scott                                        |                          |
| Site: AC5                                              | Time: 2015/12/31 - 11:56 |
| Limit: FCC_Part15.209_RE(3m)                           | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                     | Polarity: Vertical       |
| EUT: IP-STB                                            | Power: AC 120V/60Hz      |
| Note: Mode 2:Transmit at CH5180MHz by 802.11n20 ant1+2 |                          |



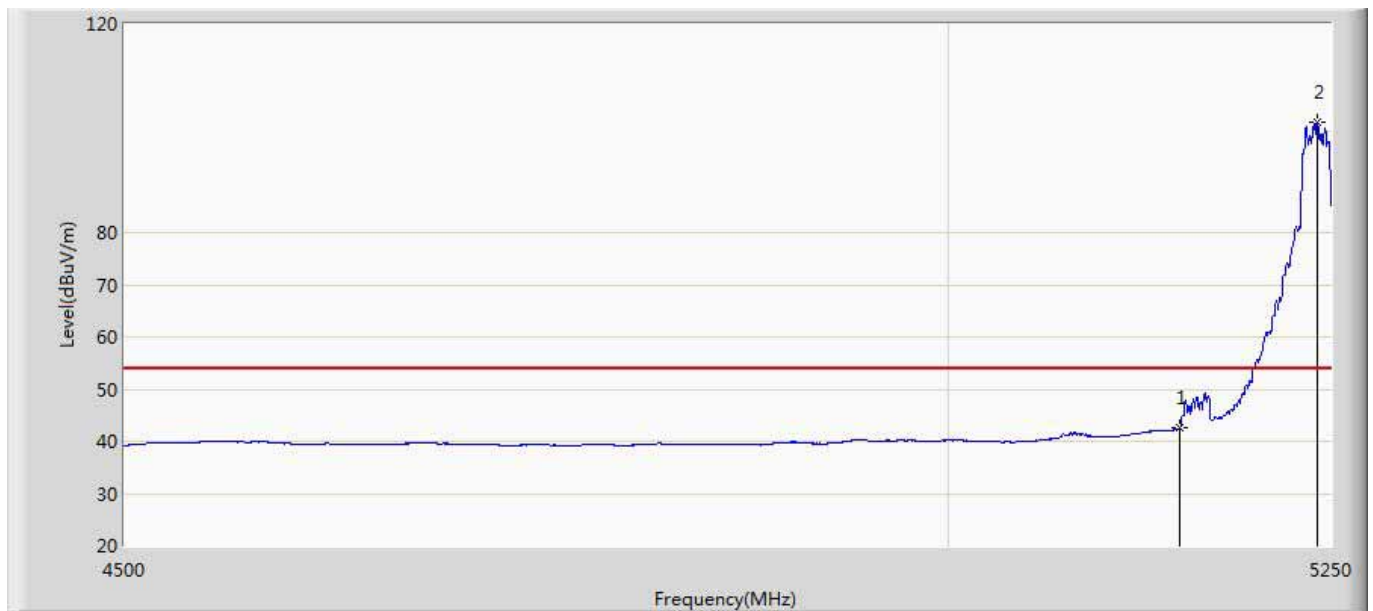
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 47.332                 | 5.317                | -6.668          | 54.000         | 42.015      | AV   |
| 2  | *    | 5173.300        | 90.845                 | 48.700               | N/A             | N/A            | 42.145      | AV   |

|                                                        |                          |
|--------------------------------------------------------|--------------------------|
| Engineer: Scott                                        |                          |
| Site: AC5                                              | Time: 2015/12/31 - 15:11 |
| Limit: FCC_Part15.209_RE(3m)                           | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                     | Polarity: Horizontal     |
| EUT: IP-STB                                            | Power: AC 120V/60Hz      |
| Note: Mode 2:Transmit at CH5240MHz by 802.11n20 ant1+2 |                          |



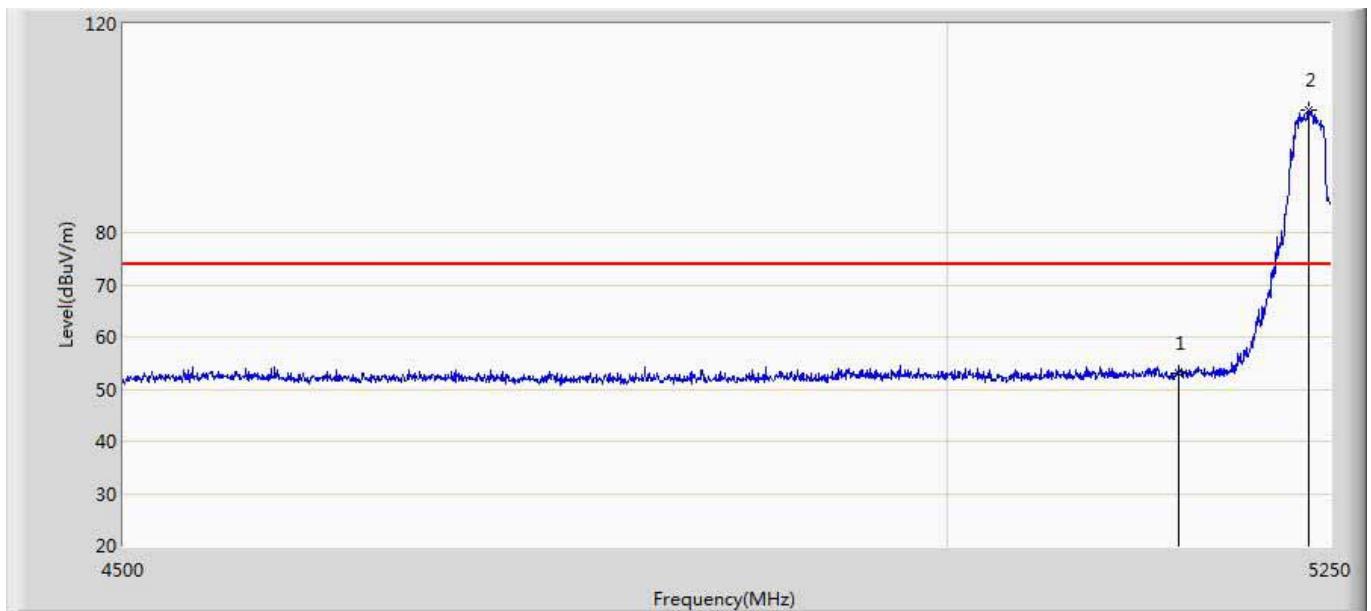
| No | Mark | Frequency<br>(MHz) | Measure Level<br>(dBuV/m) | Reading Level<br>(dBuV) | Over Limit<br>(dB) | Limit<br>(dBuV/m) | Factor<br>(dB) | Type |
|----|------|--------------------|---------------------------|-------------------------|--------------------|-------------------|----------------|------|
| 1  |      | 5150.000           | 53.834                    | 11.819                  | -20.166            | 74.000            | 42.015         | PK   |
| 2  | *    | 5238.750           | 111.485                   | 69.366                  | N/A                | N/A               | 42.119         | PK   |

|                                                        |                          |
|--------------------------------------------------------|--------------------------|
| Engineer: Scott                                        |                          |
| Site: AC5                                              | Time: 2015/12/31 - 15:11 |
| Limit: FCC_Part15.209_RE(3m)                           | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                     | Polarity: Horizontal     |
| EUT: IP-STB                                            | Power: AC 120V/60Hz      |
| Note: Mode 2:Transmit at CH5240MHz by 802.11n20 ant1+2 |                          |



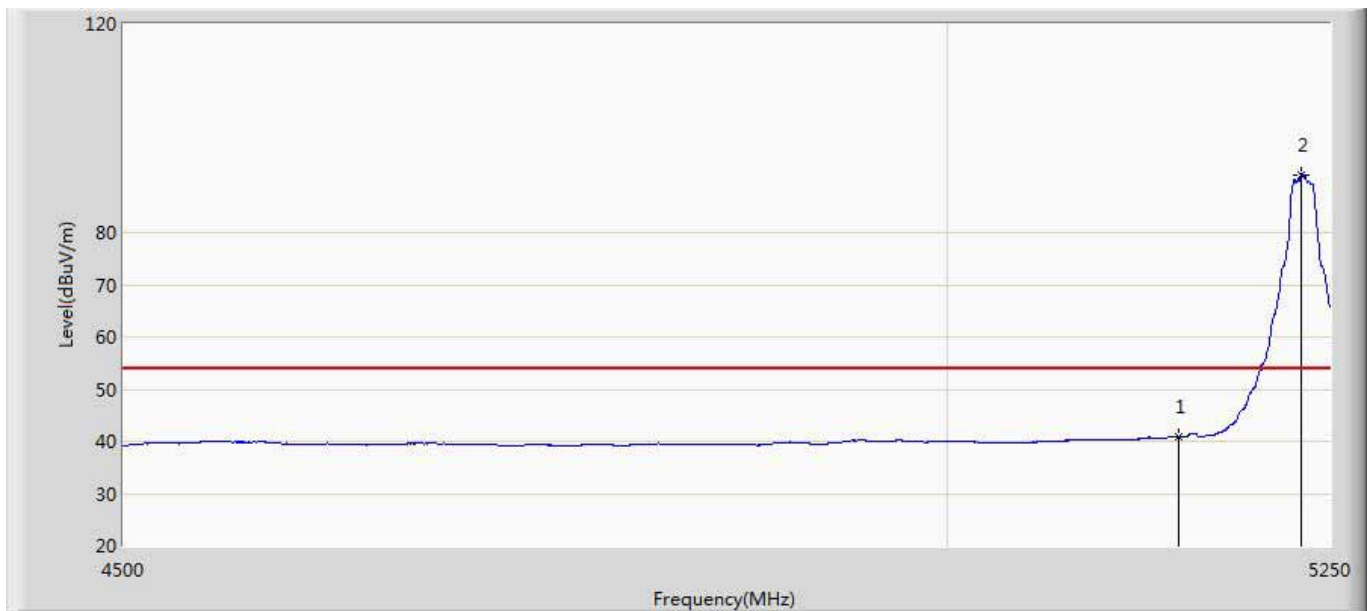
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 42.482                 | 0.467                | -11.518         | 54.000         | 42.015      | AV   |
| 2  | *    | 5241.000        | 101.273                | 59.132               | N/A             | N/A            | 42.141      | AV   |

|                                                        |                          |
|--------------------------------------------------------|--------------------------|
| Engineer: Scott                                        |                          |
| Site: AC5                                              | Time: 2015/12/31 - 15:15 |
| Limit: FCC_Part15.209_RE(3m)                           | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                     | Polarity: Vertical       |
| EUT: IP-STB                                            | Power: AC 120V/60Hz      |
| Note: Mode 2:Transmit at CH5240MHz by 802.11n20 ant1+2 |                          |



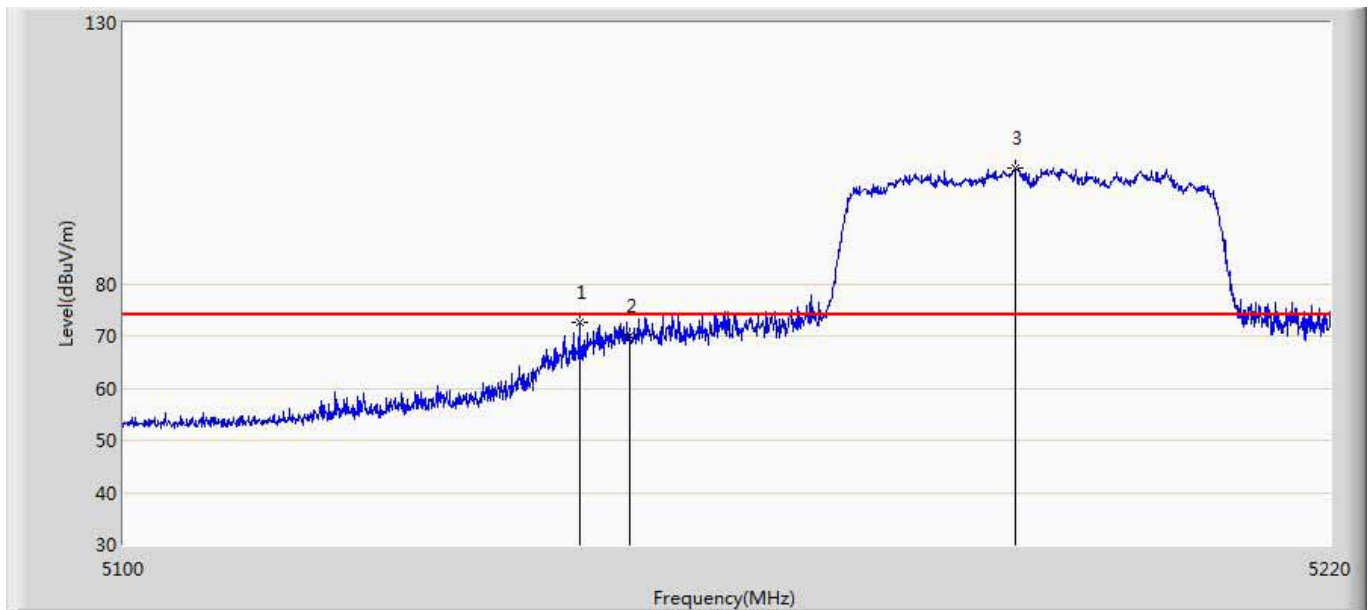
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 52.942                 | 10.927               | -21.058         | 74.000         | 42.015      | PK   |
| 2  | *    | 5236.125        | 103.493                | 61.400               | N/A             | N/A            | 42.093      | PK   |

|                                                        |                          |
|--------------------------------------------------------|--------------------------|
| Engineer: Scott                                        |                          |
| Site: AC5                                              | Time: 2015/12/31 - 15:15 |
| Limit: FCC_Part15.209_RE(3m)                           | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                     | Polarity: Vertical       |
| EUT: IP-STB                                            | Power: AC 120V/60Hz      |
| Note: Mode 2:Transmit at CH5240MHz by 802.11n20 ant1+2 |                          |



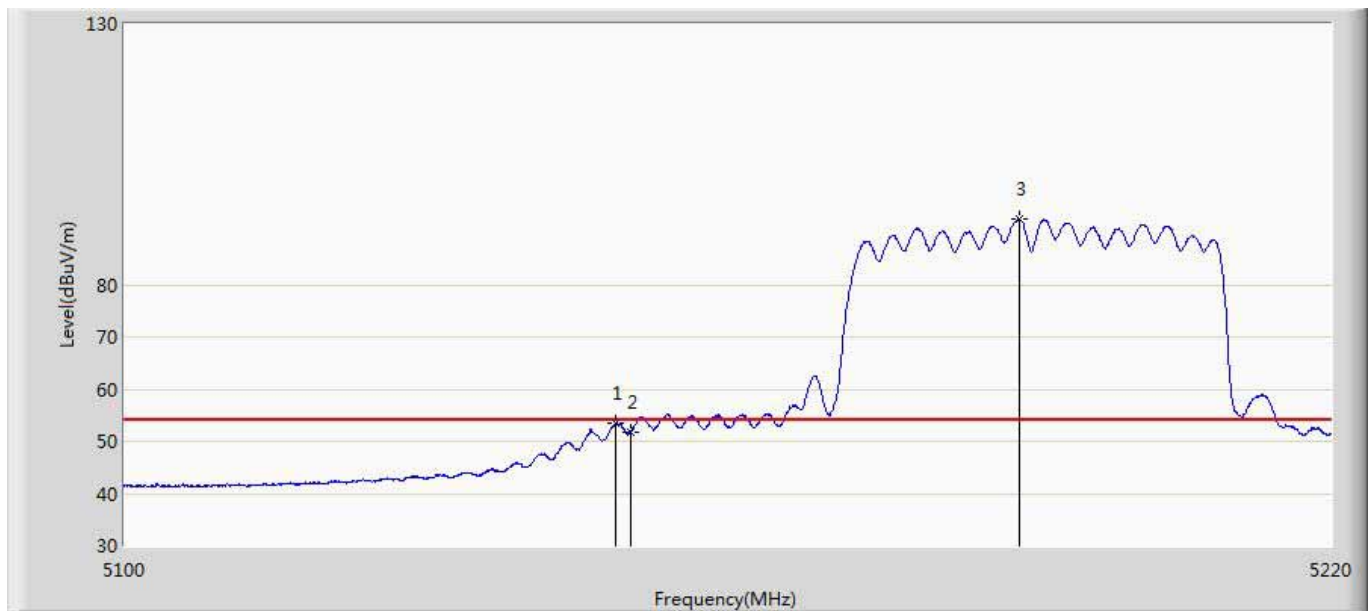
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 40.959                 | -1.056               | -13.041         | 54.000         | 42.015      | AV   |
| 2  | *    | 5230.500        | 91.067                 | 49.016               | N/A             | N/A            | 42.050      | AV   |

|                                                        |                          |
|--------------------------------------------------------|--------------------------|
| Engineer: Scott                                        |                          |
| Site: AC5                                              | Time: 2015/12/31 - 15:21 |
| Limit: FCC_Part15.209_RE(3m)                           | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                     | Polarity: Horizontal     |
| EUT: IP-STB                                            | Power: AC 120V/60Hz      |
| Note: Mode 3:Transmit at CH5190MHz by 802.11n40 ant1+2 |                          |



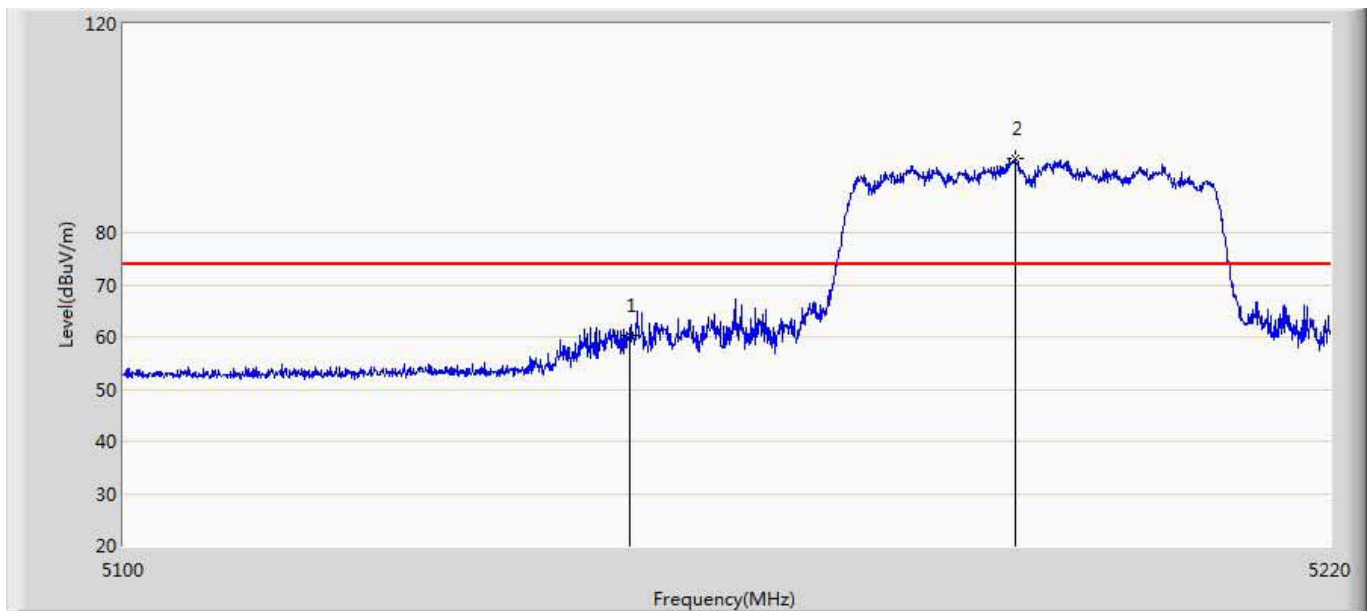
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5145.060        | 72.492                 | 30.451               | -1.508          | 74.000         | 42.041      | PK   |
| 2  |      | 5150.000        | 70.073                 | 28.058               | -3.927          | 74.000         | 42.015      | PK   |
| 3  | *    | 5188.500        | 102.243                | 60.139               | N/A             | N/A            | 42.103      | PK   |

|                                                        |                          |
|--------------------------------------------------------|--------------------------|
| Engineer: Scott                                        |                          |
| Site: AC5                                              | Time: 2015/12/31 - 15:22 |
| Limit: FCC_Part15.209_RE(3m)                           | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                     | Polarity: Horizontal     |
| EUT: IP-STB                                            | Power: AC 120V/60Hz      |
| Note: Mode 3:Transmit at CH5190MHz by 802.11n40 ant1+2 |                          |



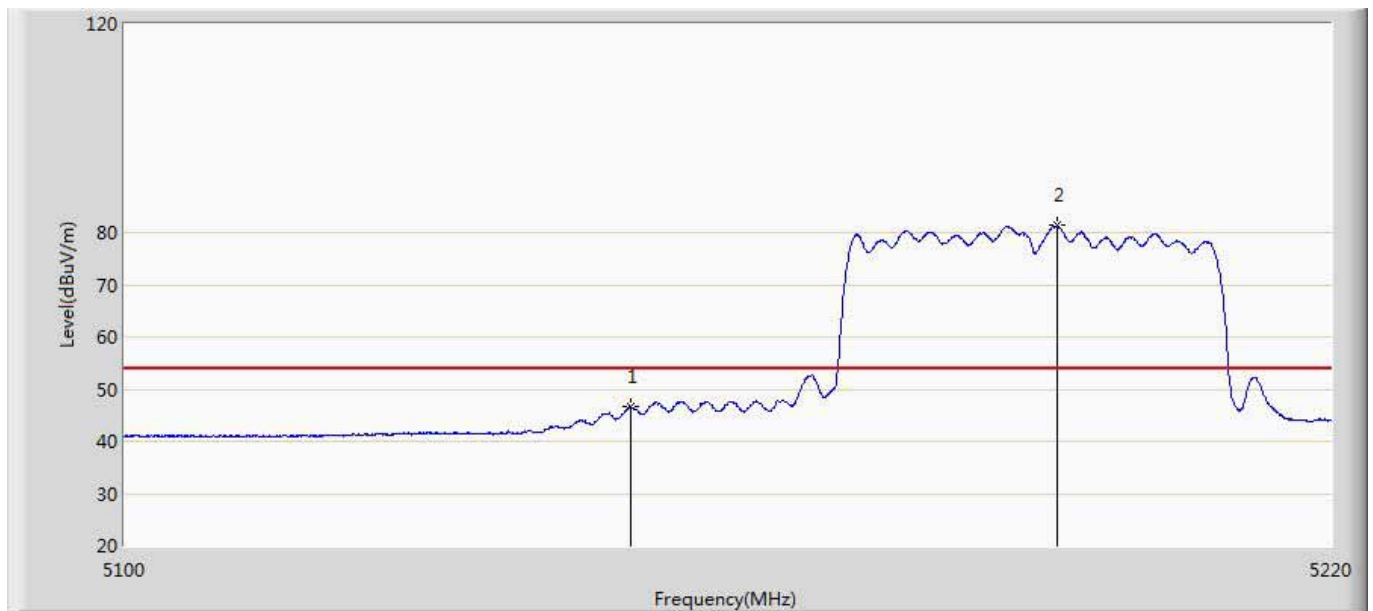
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5148.480        | 53.500                 | 11.498               | -0.500          | 54.000         | 42.001      | AV   |
| 2  |      | 5150.000        | 51.779                 | 9.764                | -2.221          | 54.000         | 42.015      | AV   |
| 3  | *    | 5188.680        | 92.653                 | 50.550               | N/A             | N/A            | 42.103      | AV   |

|                                                        |                          |
|--------------------------------------------------------|--------------------------|
| Engineer: Scott                                        |                          |
| Site: AC5                                              | Time: 2015/12/31 - 15:29 |
| Limit: FCC_Part15.209_RE(3m)                           | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                     | Polarity: Vertical       |
| EUT: IP-STB                                            | Power: AC 120V/60Hz      |
| Note: Mode 3:Transmit at CH5190MHz by 802.11n40 ant1+2 |                          |



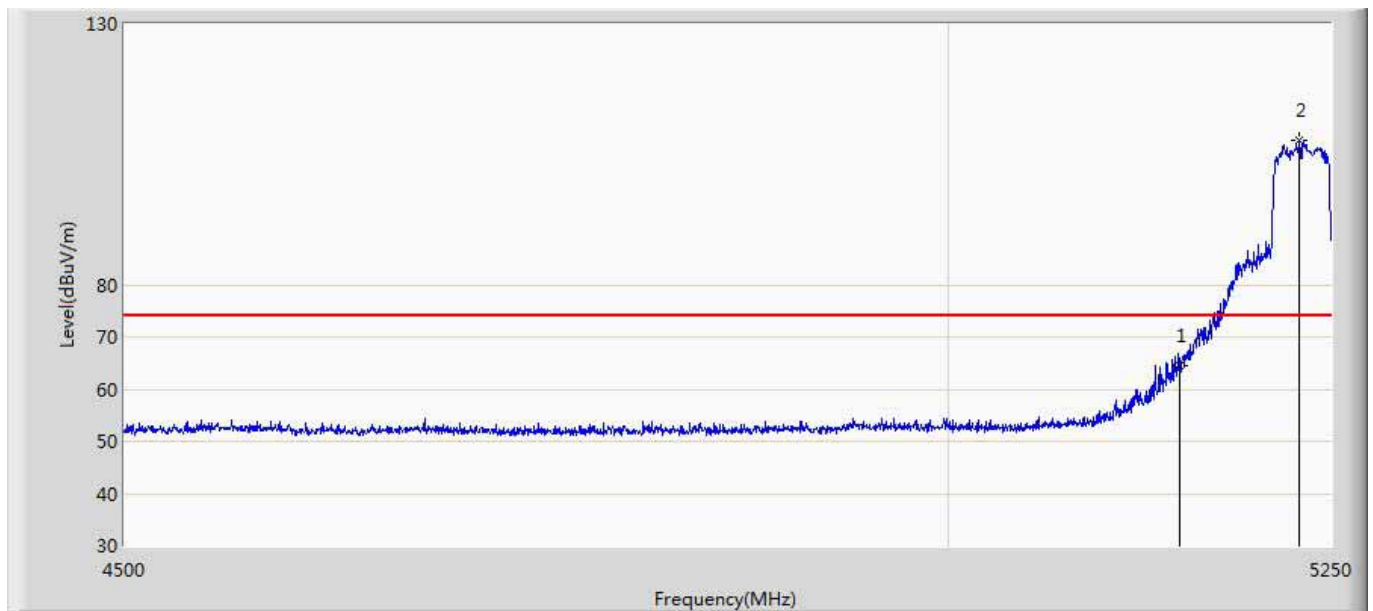
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 60.184                 | 18.169               | -13.816         | 74.000         | 42.015      | PK   |
| 2  | *    | 5188.440        | 94.117                 | 52.013               | N/A             | N/A            | 42.104      | PK   |

|                                                        |                          |
|--------------------------------------------------------|--------------------------|
| Engineer: Scott                                        |                          |
| Site: AC5                                              | Time: 2015/12/31 - 15:29 |
| Limit: FCC_Part15.209_RE(3m)                           | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                     | Polarity: Vertical       |
| EUT: IP-STB                                            | Power: AC 120V/60Hz      |
| Note: Mode 3:Transmit at CH5190MHz by 802.11n40 ant1+2 |                          |



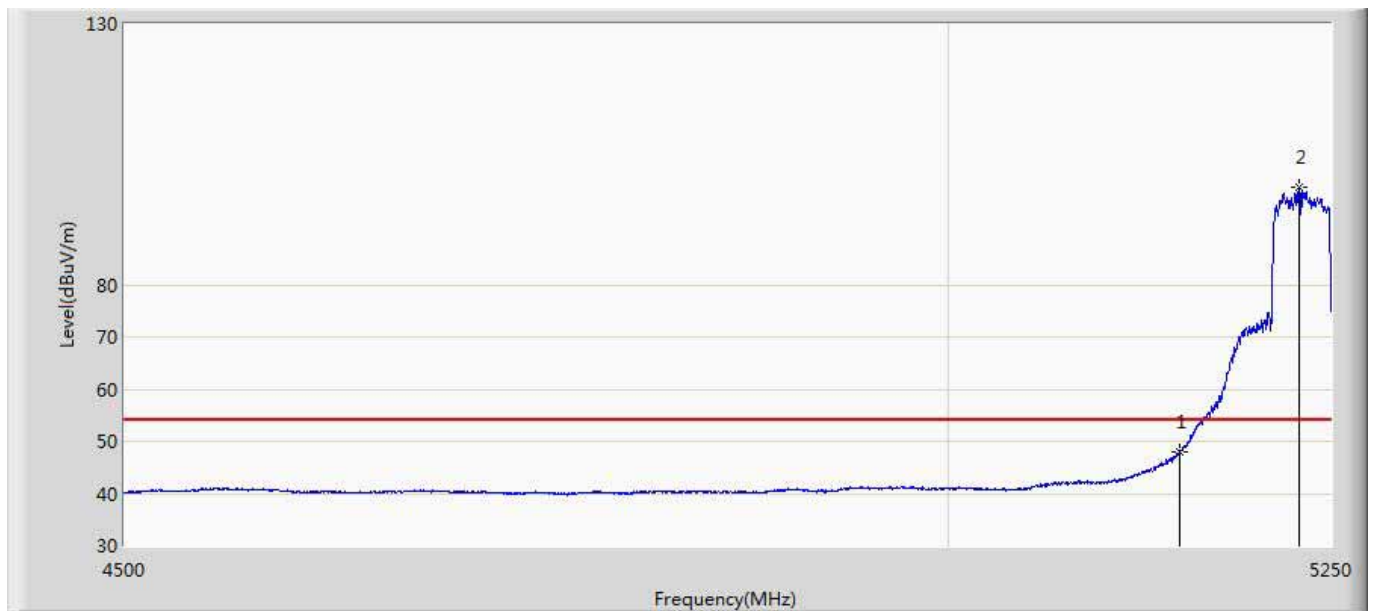
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 46.564                 | 4.549                | -7.436          | 54.000         | 42.015      | AV   |
| 2  | *    | 5192.520        | 81.336                 | 39.258               | N/A             | N/A            | 42.078      | AV   |

|                                                        |                          |
|--------------------------------------------------------|--------------------------|
| Engineer: Scott                                        |                          |
| Site: AC5                                              | Time: 2015/12/31 - 15:34 |
| Limit: FCC_Part15.209_RE(3m)                           | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                     | Polarity: Horizontal     |
| EUT: IP-STB                                            | Power: AC 120V/60Hz      |
| Note: Mode 3:Transmit at CH5230MHz by 802.11n40 ant1+2 |                          |



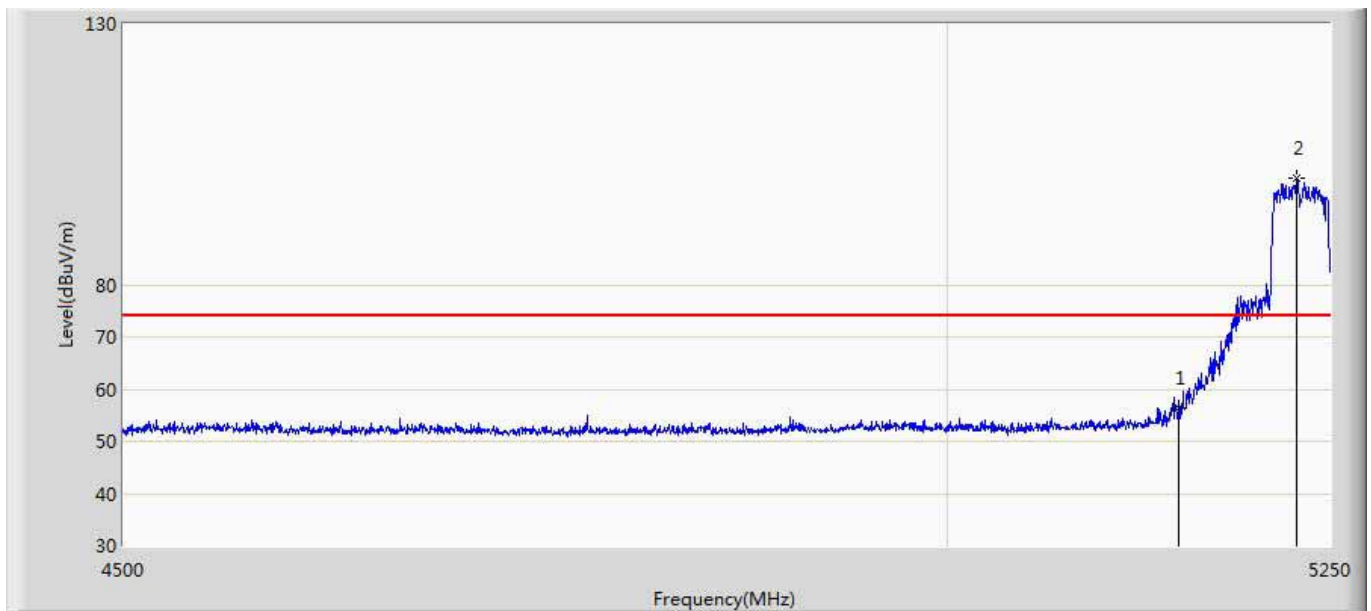
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 64.531                 | 22.516               | -9.469          | 74.000         | 42.015      | PK   |
| 2  | *    | 5228.625        | 107.764                | 65.722               | N/A             | N/A            | 42.042      | PK   |

|                                                        |                          |
|--------------------------------------------------------|--------------------------|
| Engineer: Scott                                        |                          |
| Site: AC5                                              | Time: 2015/12/31 - 15:34 |
| Limit: FCC_Part15.209_RE(3m)                           | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                     | Polarity: Horizontal     |
| EUT: IP-STB                                            | Power: AC 120V/60Hz      |
| Note: Mode 3:Transmit at CH5230MHz by 802.11n40 ant1+2 |                          |



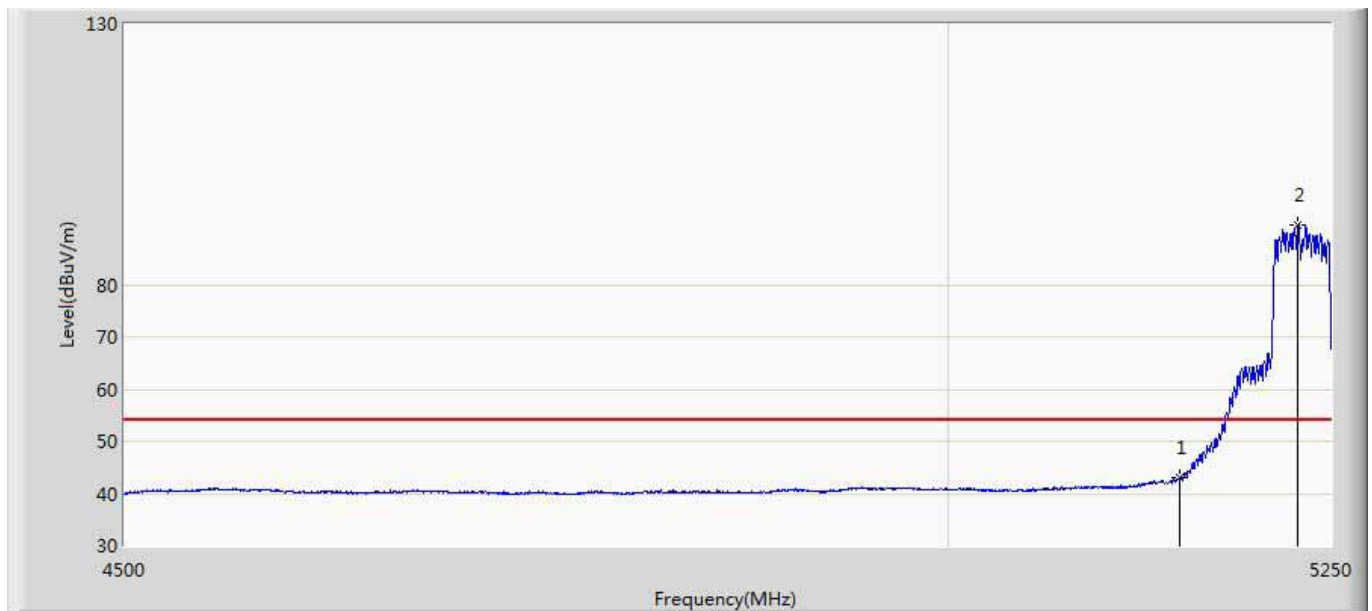
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 48.092                 | 6.077                | -5.908          | 54.000         | 42.015      | AV   |
| 2  | *    | 5228.625        | 98.618                 | 56.576               | N/A             | N/A            | 42.042      | AV   |

|                                                        |                          |
|--------------------------------------------------------|--------------------------|
| Engineer: Scott                                        |                          |
| Site: AC5                                              | Time: 2015/12/31 - 15:38 |
| Limit: FCC_Part15.209_RE(3m)                           | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                     | Polarity: Vertical       |
| EUT: IP-STB                                            | Power: AC 120V/60Hz      |
| Note: Mode 3:Transmit at CH5230MHz by 802.11n40 ant1+2 |                          |



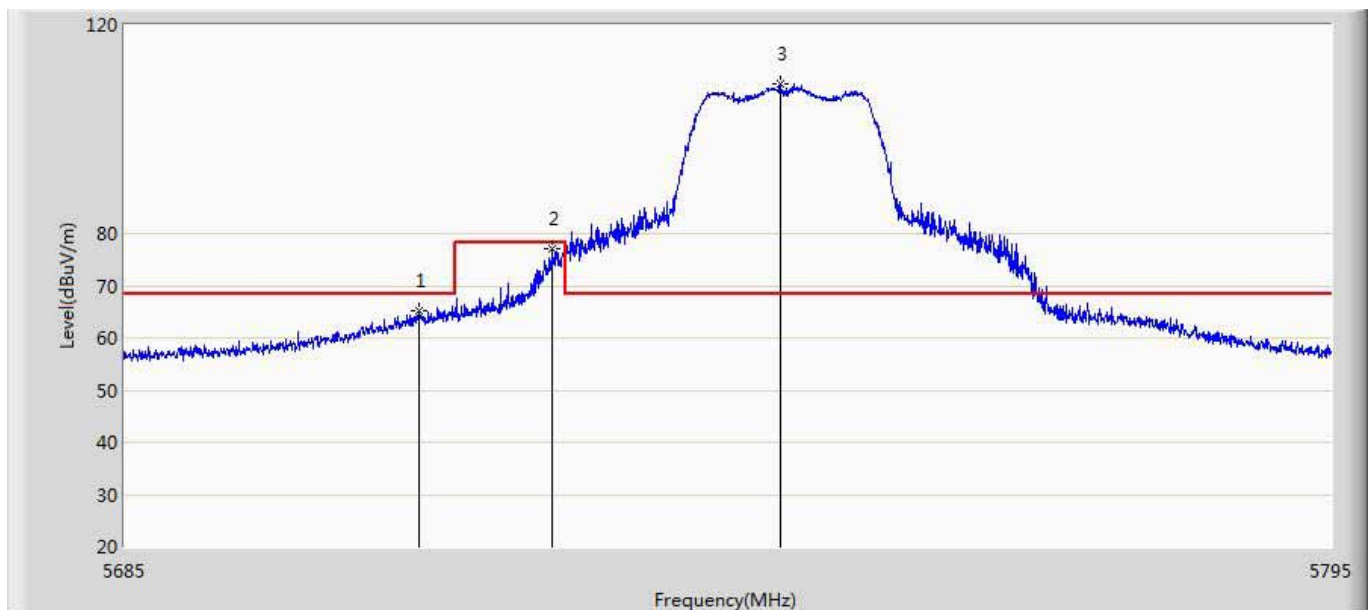
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 56.457                 | 14.442               | -17.543         | 74.000         | 42.015      | PK   |
| 2  | *    | 5227.875        | 100.439                | 58.401               | N/A             | N/A            | 42.039      | PK   |

|                                                        |                          |
|--------------------------------------------------------|--------------------------|
| Engineer: Scott                                        |                          |
| Site: AC5                                              | Time: 2015/12/31 - 15:38 |
| Limit: FCC_Part15.209_RE(3m)                           | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                     | Polarity: Vertical       |
| EUT: IP-STB                                            | Power: AC 120V/60Hz      |
| Note: Mode 3:Transmit at CH5230MHz by 802.11n40 ant1+2 |                          |



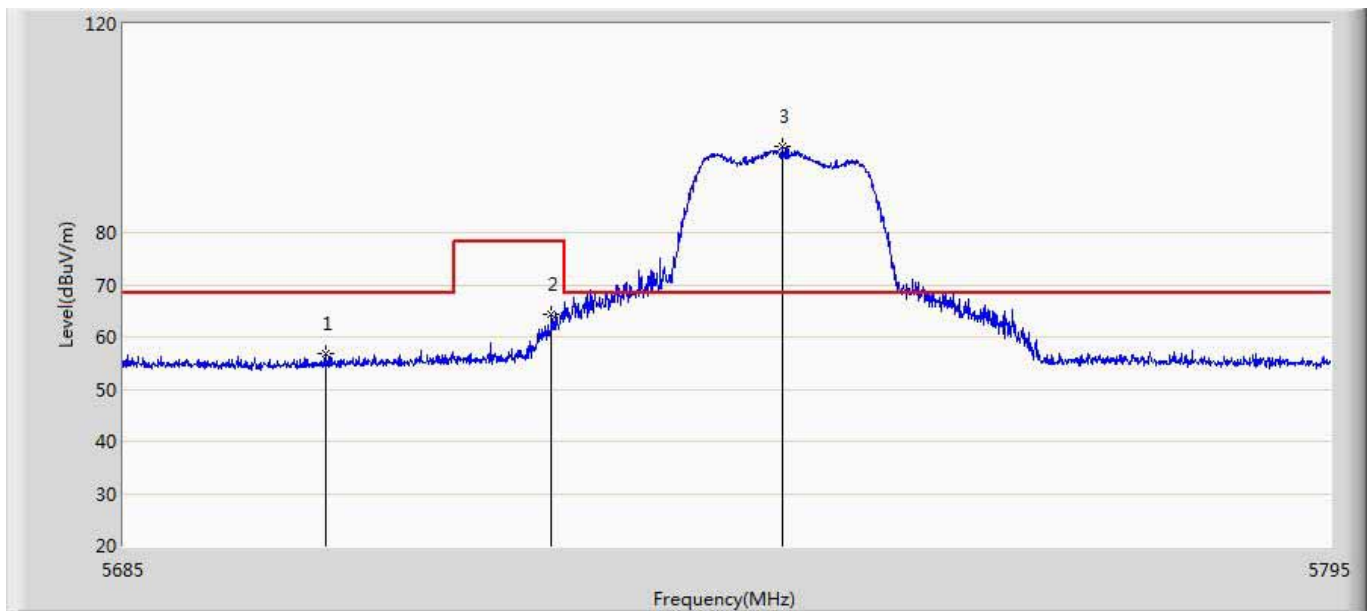
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5150.000        | 43.025                 | 1.010                | -10.975         | 54.000         | 42.015      | AV   |
| 2  | *    | 5227.875        | 91.353                 | 49.315               | N/A             | N/A            | 42.039      | AV   |

|                                                    |                          |
|----------------------------------------------------|--------------------------|
| Engineer: Scott                                    |                          |
| Site: AC5                                          | Time: 2016/01/04 - 11:28 |
| Limit: FCC-15.407 new                              | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                 | Polarity: Horizontal     |
| EUT: IP-STB                                        | Power: AC 120V/60Hz      |
| Note: Mode 1:Transmit at CH5745MHz by 802.11a ant1 |                          |



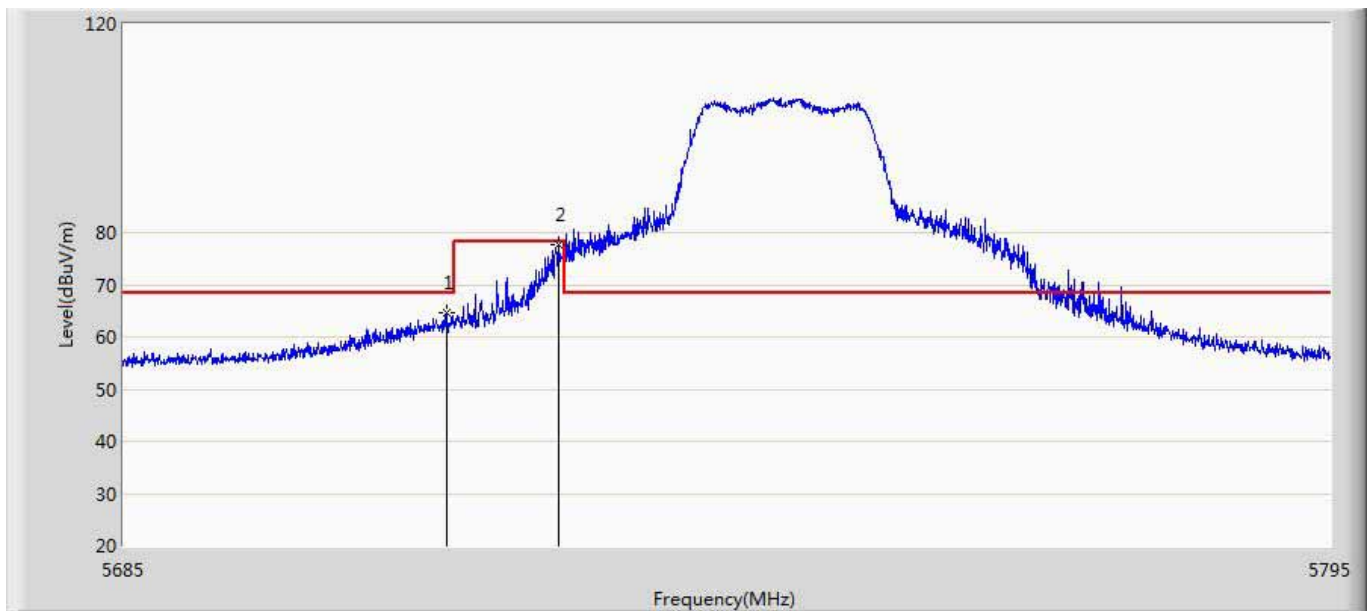
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5711.730        | 65.362                 | 22.051               | -2.938          | 68.300         | 43.311      | PK   |
| 2  |      | 5723.775        | 77.225                 | 33.955               | -1.075          | 78.300         | 43.270      | PK   |
| 3  | *    | 5744.510        | 108.559                | 65.262               | N/A             | N/A            | 43.297      | PK   |

|                                                    |                          |
|----------------------------------------------------|--------------------------|
| Engineer: Scott                                    |                          |
| Site: AC5                                          | Time: 2016/01/04 - 11:38 |
| Limit: FCC-15.407 new                              | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                 | Polarity: Vertical       |
| EUT: IP-STB                                        | Power: AC 120V/60Hz      |
| Note: Mode 1:Transmit at CH5745MHz by 802.11a ant1 |                          |



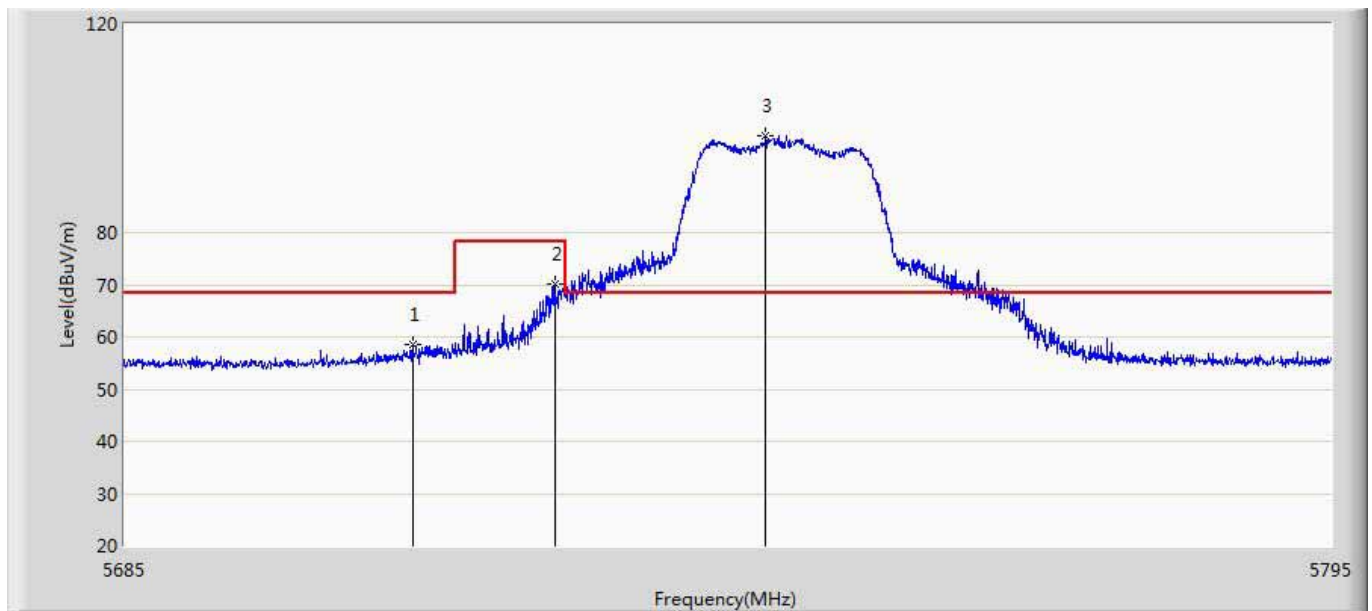
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5703.260        | 56.887                 | 13.585               | -11.413         | 68.300         | 43.302      | PK   |
| 2  |      | 5723.775        | 64.263                 | 20.993               | -14.037         | 78.300         | 43.270      | PK   |
| 3  | *    | 5744.840        | 96.535                 | 53.239               | N/A             | N/A            | 43.297      | PK   |

|                                                    |                          |
|----------------------------------------------------|--------------------------|
| Engineer: Scott                                    |                          |
| Site: AC5                                          | Time: 2016/01/04 - 11:40 |
| Limit: FCC-15.407 new                              | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                 | Polarity: Horizontal     |
| EUT: IP-STB                                        | Power: AC 120V/60Hz      |
| Note: Mode 1:Transmit at CH5745MHz by 802.11a ant2 |                          |



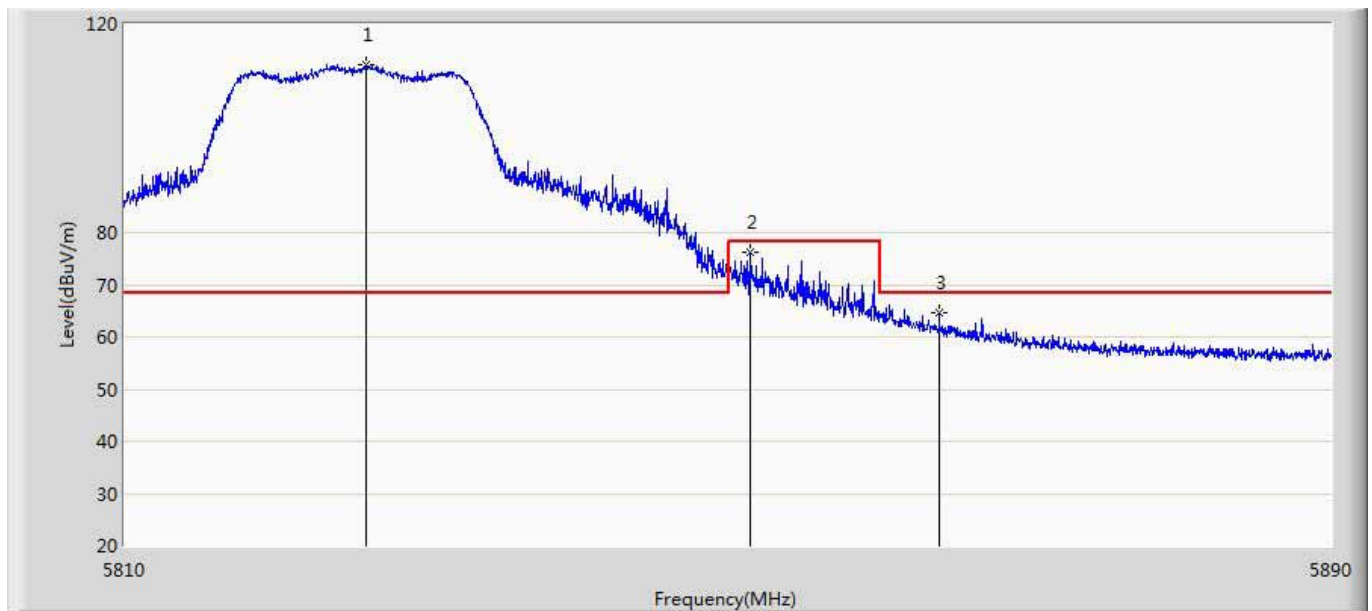
| No | Mark | Frequency<br>(MHz) | Measure Level<br>(dBuV/m) | Reading Level<br>(dBuV) | Over Limit<br>(dB) | Limit<br>(dBuV/m) | Factor<br>(dB) | Type |
|----|------|--------------------|---------------------------|-------------------------|--------------------|-------------------|----------------|------|
| 1  |      | 5714.315           | 64.639                    | 21.337                  | -3.661             | 68.300            | 43.302         | PK   |
| 2  | *    | 5724.490           | 77.563                    | 34.295                  | -0.737             | 78.300            | 43.268         | PK   |

|                                                    |                          |
|----------------------------------------------------|--------------------------|
| Engineer: Scott                                    |                          |
| Site: AC5                                          | Time: 2016/01/04 - 11:47 |
| Limit: FCC-15.407 new                              | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                 | Polarity: Vertical       |
| EUT: IP-STB                                        | Power: AC 120V/60Hz      |
| Note: Mode 1:Transmit at CH5745MHz by 802.11a ant2 |                          |



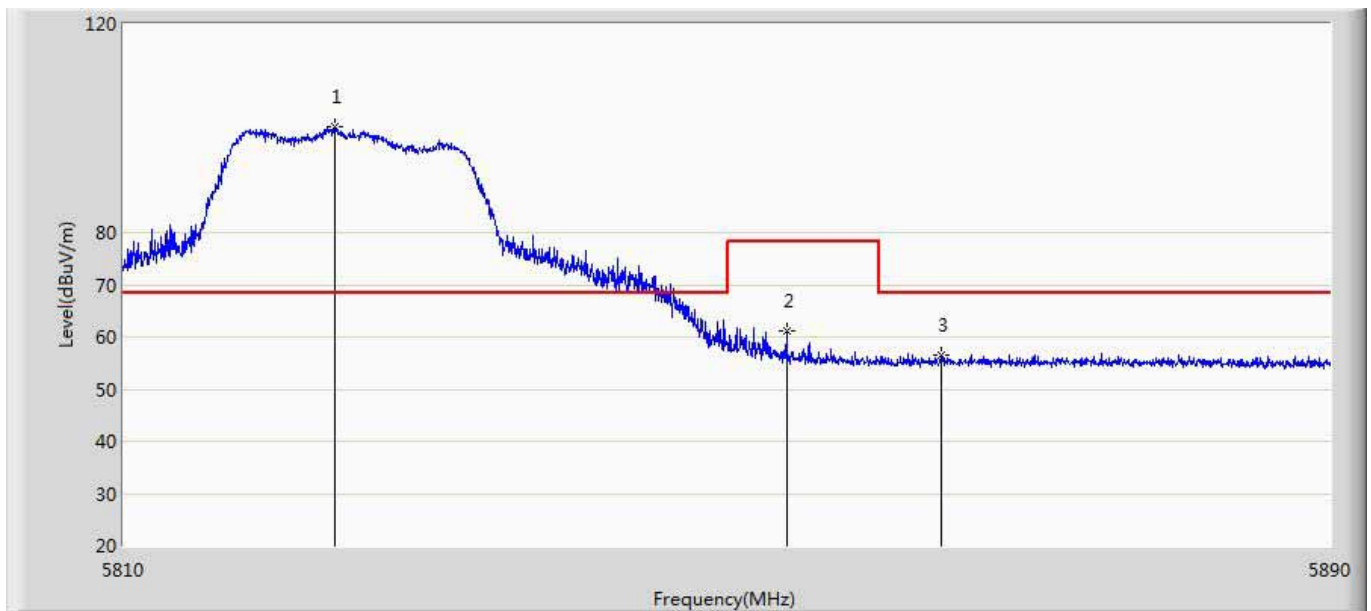
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5711.070        | 58.464                 | 15.151               | -9.836          | 68.300         | 43.314      | PK   |
| 2  |      | 5724.050        | 70.096                 | 26.827               | -8.204          | 78.300         | 43.269      | PK   |
| 3  | *    | 5743.245        | 98.446                 | 55.144               | N/A             | N/A            | 43.302      | PK   |

|                                                    |                          |
|----------------------------------------------------|--------------------------|
| Engineer: Scott                                    |                          |
| Site: AC5                                          | Time: 2016/01/04 - 11:49 |
| Limit: FCC-15.407 new                              | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                 | Polarity: Horizontal     |
| EUT: IP-STB                                        | Power: AC 120V/60Hz      |
| Note: Mode 1:Transmit at CH5825MHz by 802.11a ant1 |                          |



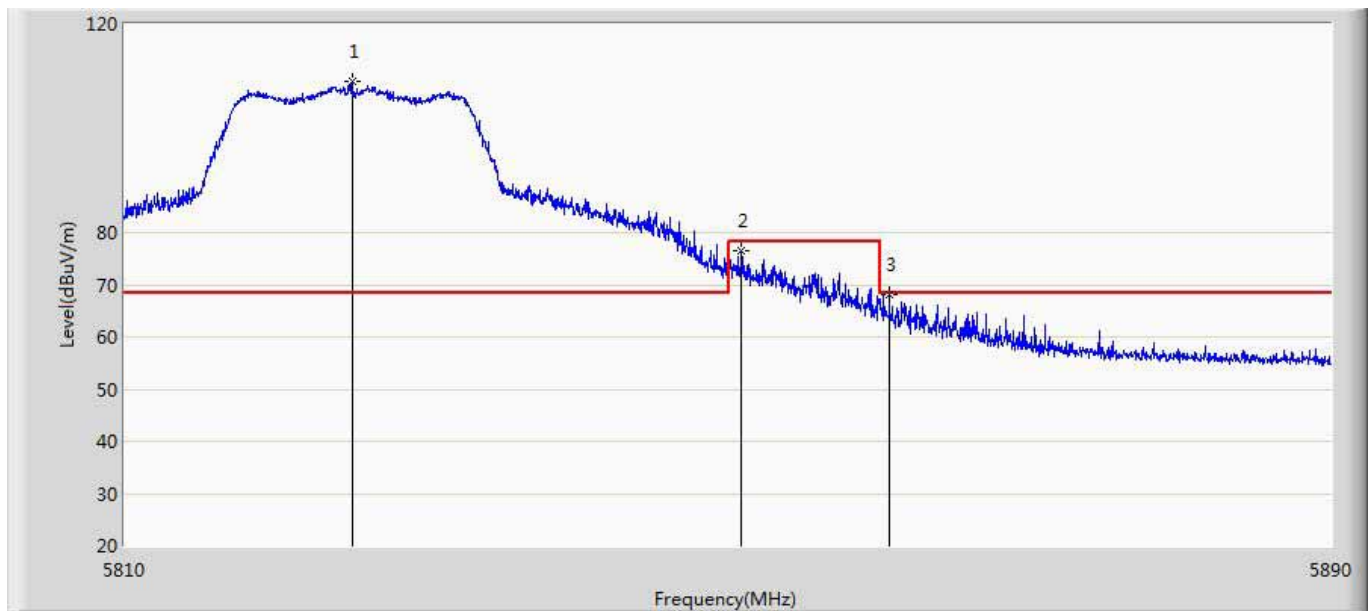
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  | *    | 5825.920        | 112.246                | 68.841               | N/A             | N/A            | 43.405      | PK   |
| 2  |      | 5851.400        | 76.256                 | 32.776               | -2.044          | 78.300         | 43.480      | PK   |
| 3  |      | 5863.920        | 64.590                 | 21.023               | -3.710          | 68.300         | 43.567      | PK   |

|                                                    |                          |
|----------------------------------------------------|--------------------------|
| Engineer: Scott                                    |                          |
| Site: AC5                                          | Time: 2016/01/04 - 11:52 |
| Limit: FCC-15.407 new                              | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                 | Polarity: Vertical       |
| EUT: IP-STB                                        | Power: AC 120V/60Hz      |
| Note: Mode 1:Transmit at CH5825MHz by 802.11a ant1 |                          |



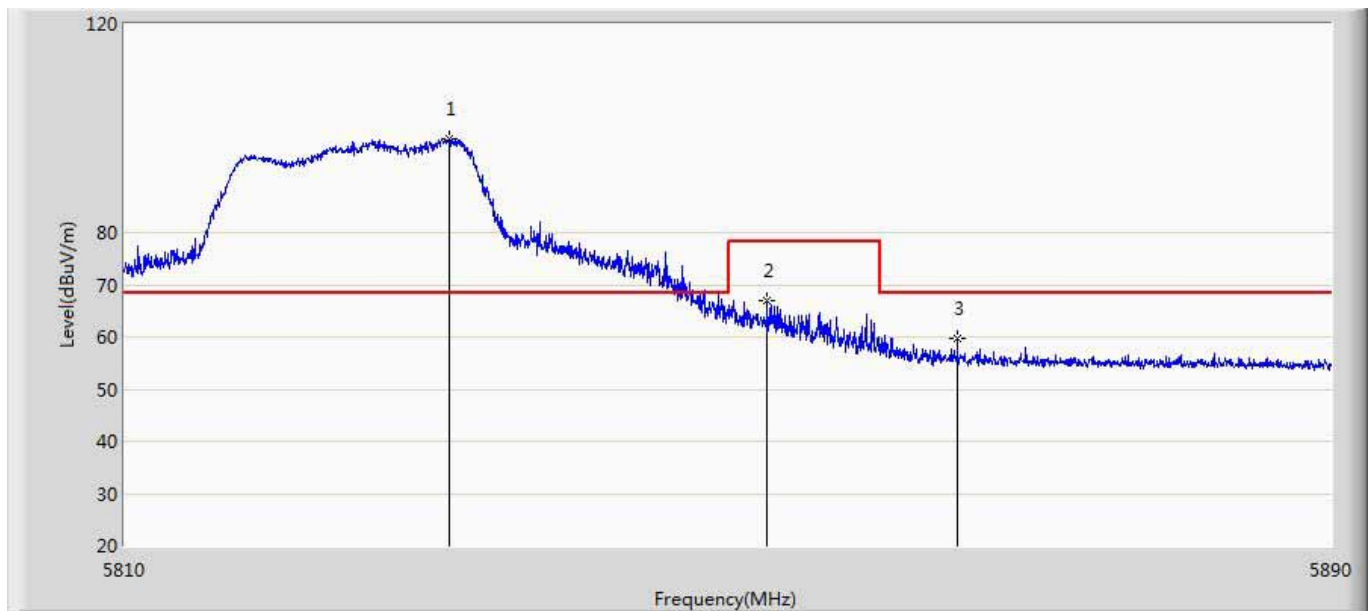
| No | Mark | Frequency<br>(MHz) | Measure Level<br>(dBuV/m) | Reading Level<br>(dBuV) | Over Limit<br>(dB) | Limit<br>(dBuV/m) | Factor<br>(dB) | Type |
|----|------|--------------------|---------------------------|-------------------------|--------------------|-------------------|----------------|------|
| 1  | *    | 5824.000           | 100.397                   | 56.997                  | N/A                | N/A               | 43.400         | PK   |
| 2  |      | 5853.840           | 61.052                    | 17.553                  | -17.248            | 78.300            | 43.498         | PK   |
| 3  |      | 5864.080           | 56.639                    | 13.071                  | -11.661            | 68.300            | 43.568         | PK   |

|                                                    |                          |
|----------------------------------------------------|--------------------------|
| Engineer: Scott                                    |                          |
| Site: AC5                                          | Time: 2016/01/04 - 11:53 |
| Limit: FCC-15.407 new                              | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                 | Polarity: Horizontal     |
| EUT: IP-STB                                        | Power: AC 120V/60Hz      |
| Note: Mode 1:Transmit at CH5825MHz by 802.11a ant2 |                          |



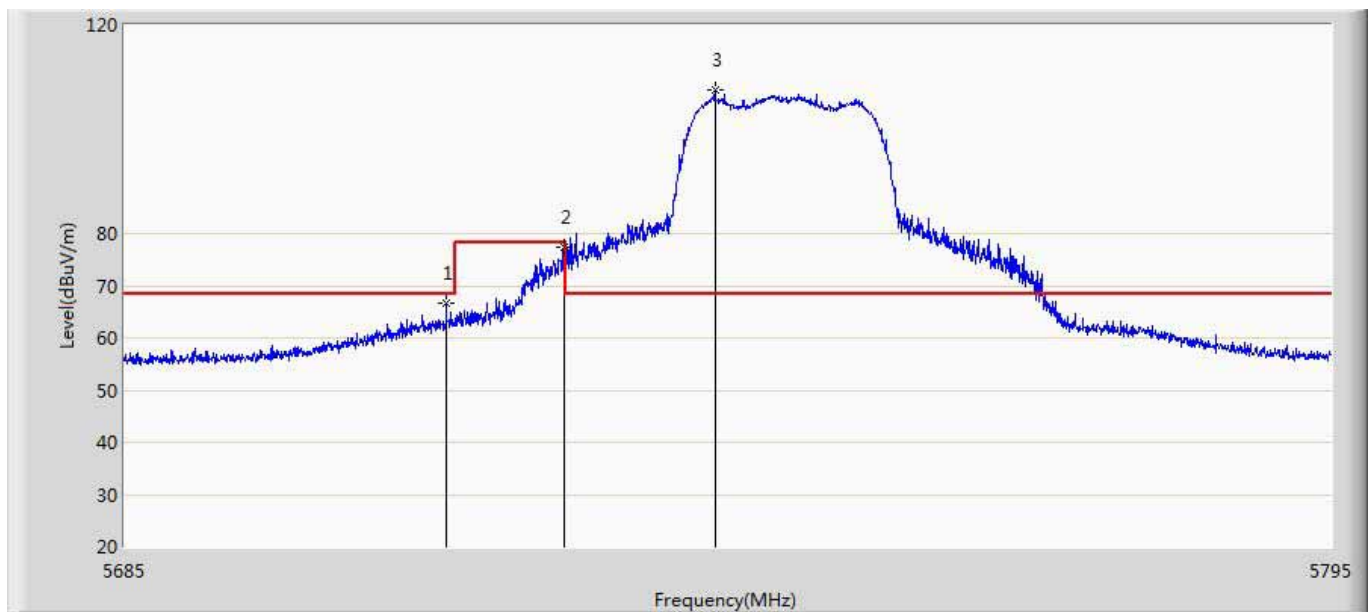
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  | *    | 5825.040        | 108.868                | 65.465               | N/A             | N/A            | 43.403      | PK   |
| 2  |      | 5850.800        | 76.462                 | 32.987               | -1.838          | 78.300         | 43.475      | PK   |
| 3  |      | 5860.600        | 68.197                 | 24.647               | -0.103          | 68.300         | 43.550      | PK   |

|                                                    |                          |
|----------------------------------------------------|--------------------------|
| Engineer: Scott                                    |                          |
| Site: AC5                                          | Time: 2016/01/04 - 11:58 |
| Limit: FCC-15.407 new                              | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                 | Polarity: Vertical       |
| EUT: IP-STB                                        | Power: AC 120V/60Hz      |
| Note: Mode 1:Transmit at CH5825MHz by 802.11a ant2 |                          |



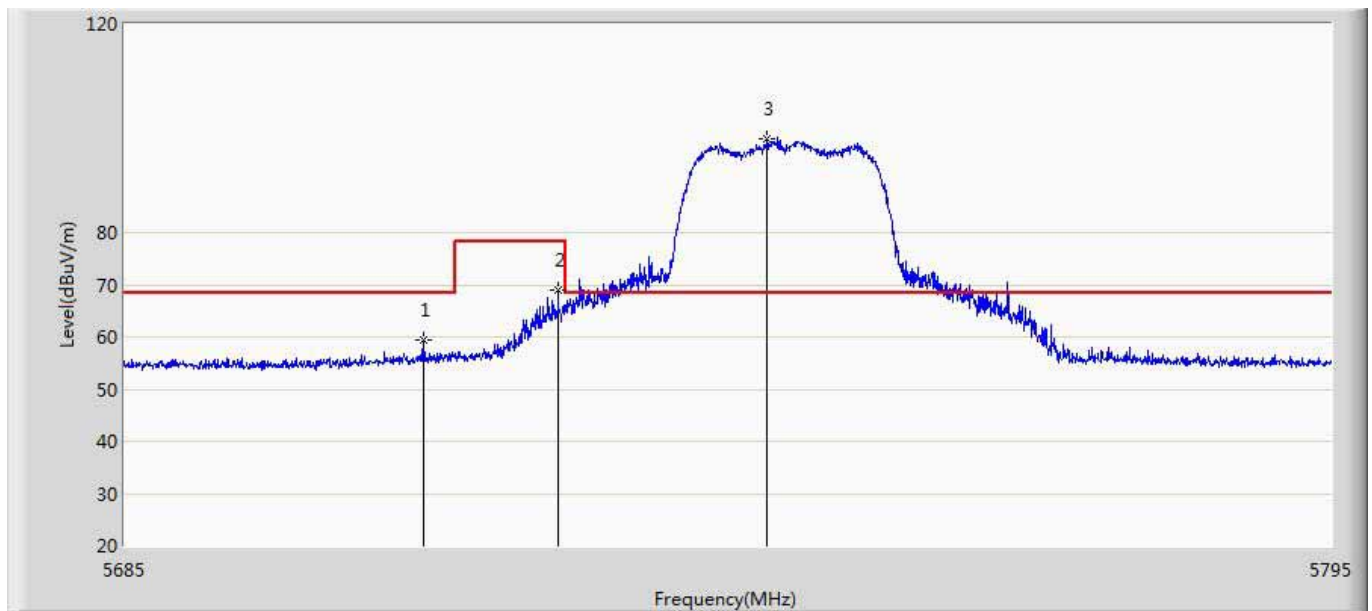
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  | *    | 5831.480        | 97.852                 | 54.438               | N/A             | N/A            | 43.414      | PK   |
| 2  |      | 5852.520        | 66.842                 | 23.353               | -11.458         | 78.300         | 43.489      | PK   |
| 3  |      | 5865.120        | 59.734                 | 16.163               | -8.566          | 68.300         | 43.571      | PK   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2016/01/05 - 09:35 |
| Limit: FCC-15.407 new                                | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Horizontal     |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 2:Transmit at CH5745MHz by 802.11n20 ant1 |                          |



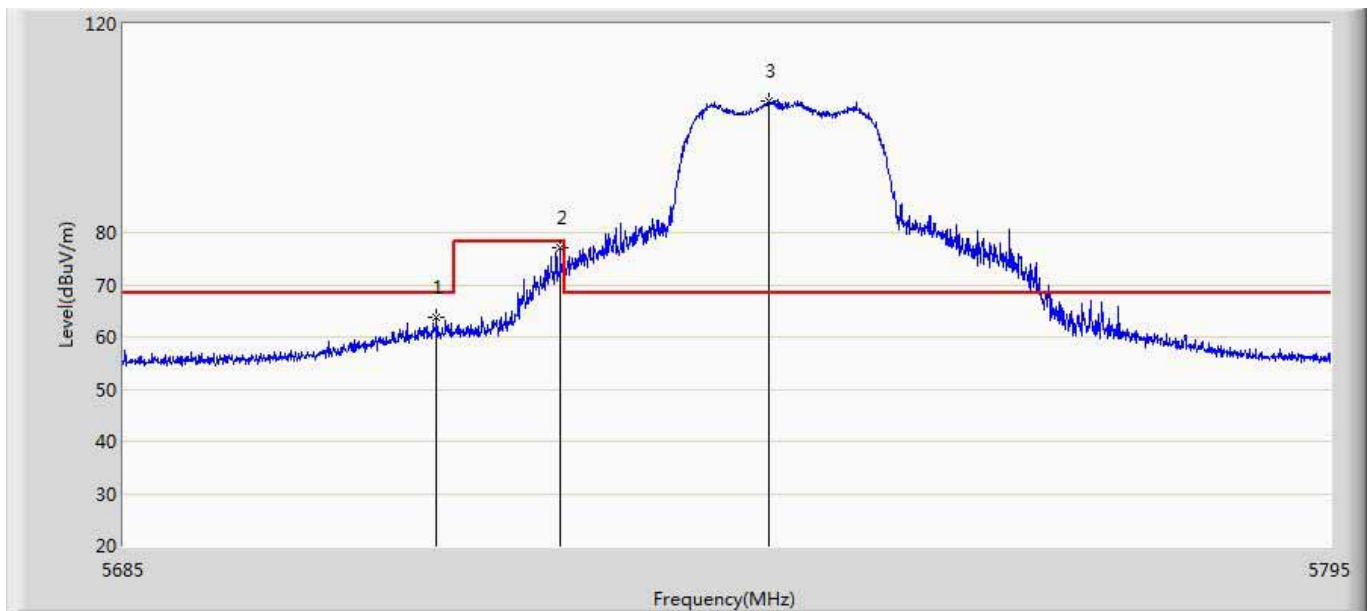
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5714.150        | 66.646                 | 23.343               | -1.654          | 68.300         | 43.303      | PK   |
| 2  |      | 5724.930        | 77.465                 | 34.199               | -0.835          | 78.300         | 43.267      | PK   |
| 3  | *    | 5738.570        | 107.550                | 64.258               | N/A             | N/A            | 43.293      | PK   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2016/01/05 - 09:48 |
| Limit: FCC-15.407 new                                | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Vertical       |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 2:Transmit at CH5745MHz by 802.11n20 ant1 |                          |



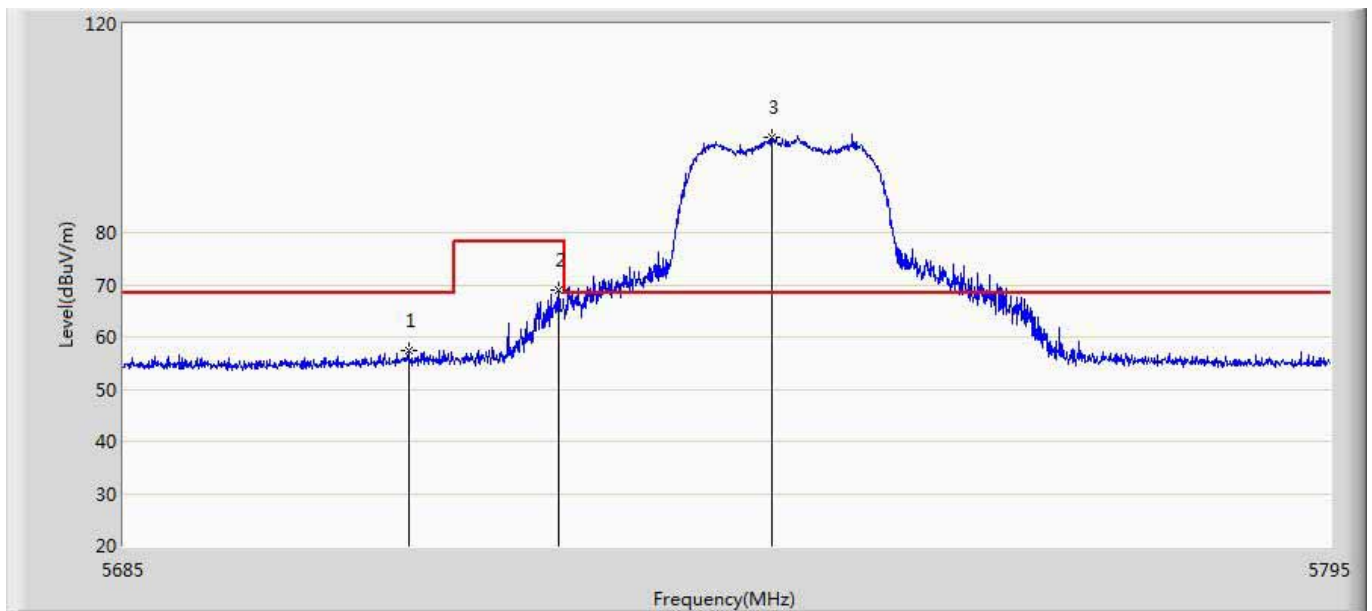
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5712.060        | 59.300                 | 15.990               | -9.000          | 68.300         | 43.310      | PK   |
| 2  |      | 5724.325        | 68.965                 | 25.697               | -9.335          | 78.300         | 43.269      | PK   |
| 3  | *    | 5743.355        | 98.075                 | 54.774               | N/A             | N/A            | 43.302      | PK   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2016/01/05 - 09:50 |
| Limit: FCC-15.407 new                                | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Horizontal     |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 2:Transmit at CH5745MHz by 802.11n20 ant2 |                          |



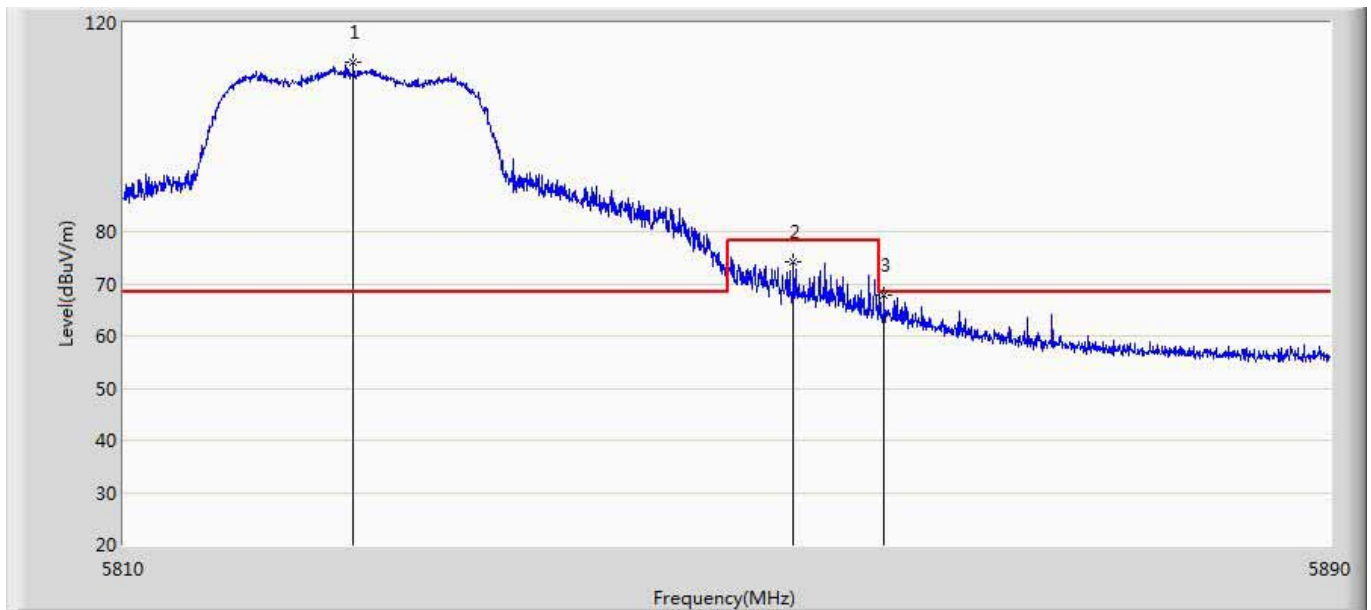
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5713.325        | 63.799                 | 20.493               | -4.501          | 68.300         | 43.306      | PK   |
| 2  |      | 5724.600        | 77.151                 | 33.884               | -1.149          | 78.300         | 43.267      | PK   |
| 3  | *    | 5743.575        | 105.357                | 62.056               | N/A             | N/A            | 43.301      | PK   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2016/01/05 - 09:53 |
| Limit: FCC-15.407 new                                | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Vertical       |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 2:Transmit at CH5745MHz by 802.11n20 ant2 |                          |



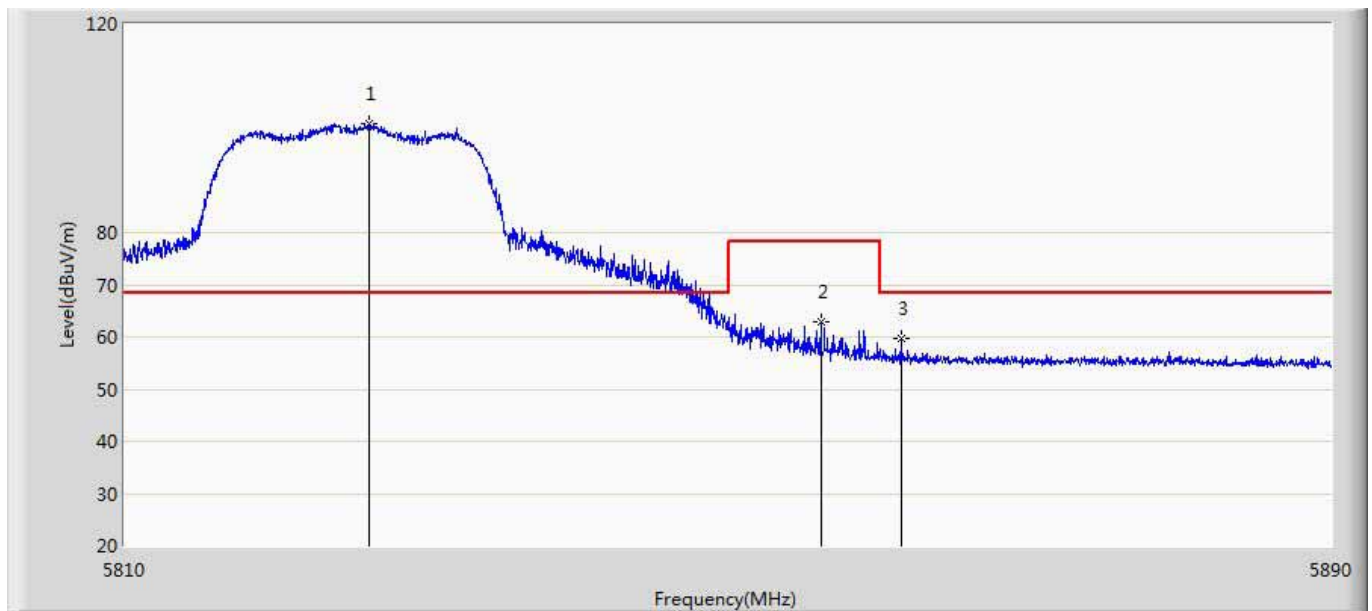
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5710.795        | 57.285                 | 13.971               | -11.015         | 68.300         | 43.314      | PK   |
| 2  |      | 5724.435        | 69.011                 | 25.743               | -9.289          | 78.300         | 43.268      | PK   |
| 3  | *    | 5743.905        | 98.303                 | 55.003               | N/A             | N/A            | 43.299      | PK   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2016/01/05 - 09:55 |
| Limit: FCC-15.407 new                                | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Horizontal     |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 2:Transmit at CH5825MHz by 802.11n20 ant1 |                          |



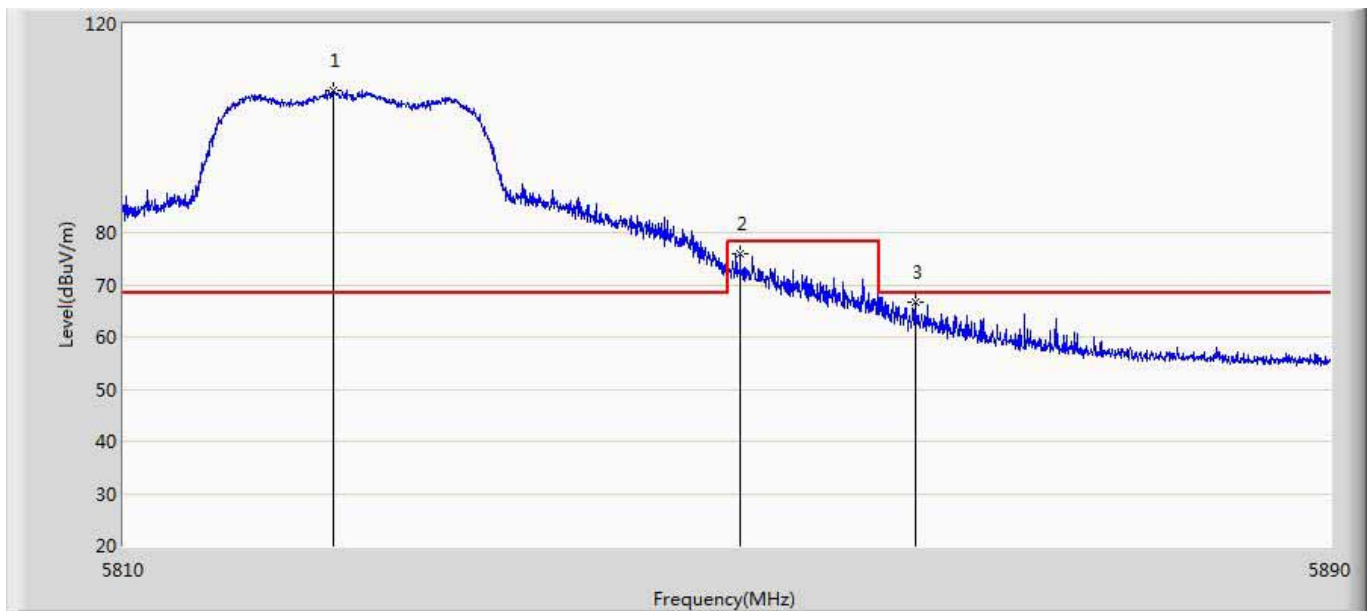
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  | *    | 5825.200        | 112.381                | 68.978               | N/A             | N/A            | 43.403      | PK   |
| 2  |      | 5854.320        | 74.235                 | 30.733               | -4.065          | 78.300         | 43.502      | PK   |
| 3  |      | 5860.320        | 67.697                 | 24.149               | -0.603          | 68.300         | 43.549      | PK   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2016/01/05 - 10:05 |
| Limit: FCC-15.407 new                                | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Vertical       |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 2:Transmit at CH5825MHz by 802.11n20 ant1 |                          |



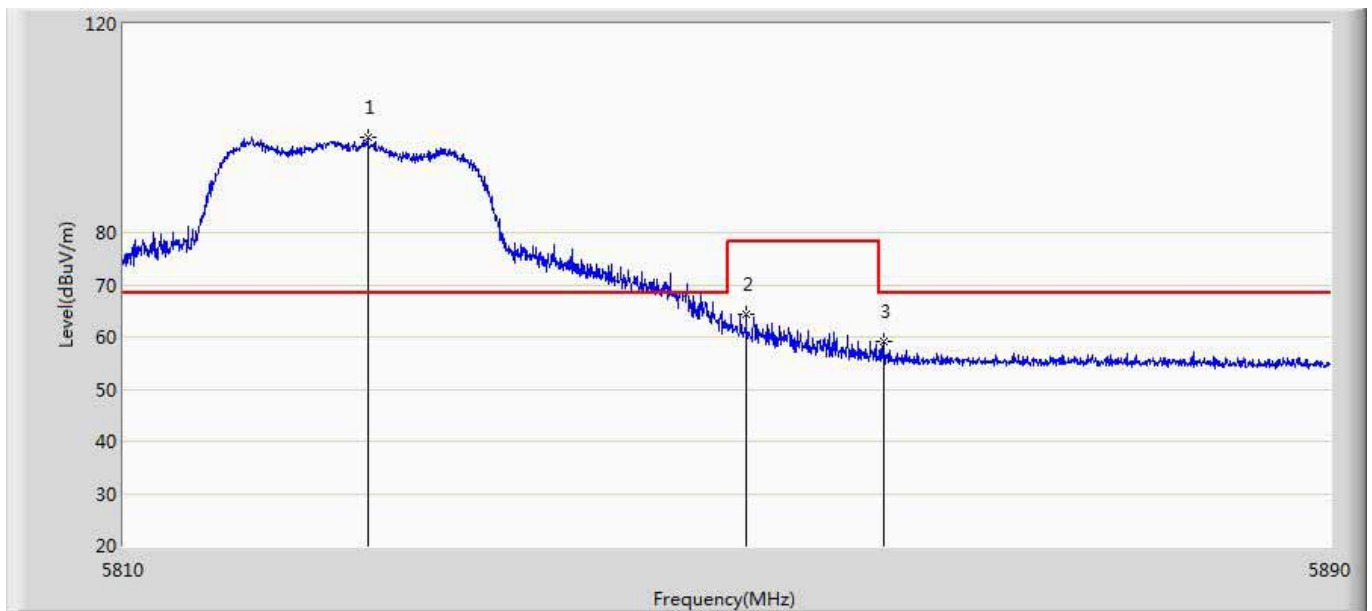
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  | *    | 5826.160        | 100.905                | 57.500               | N/A             | N/A            | 43.405      | PK   |
| 2  |      | 5856.040        | 62.829                 | 19.313               | -15.471         | 78.300         | 43.516      | PK   |
| 3  |      | 5861.360        | 59.658                 | 16.102               | -8.642          | 68.300         | 43.556      | PK   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2016/01/05 - 10:08 |
| Limit: FCC-15.407 new                                | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Horizontal     |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 2:Transmit at CH5825MHz by 802.11n20 ant2 |                          |



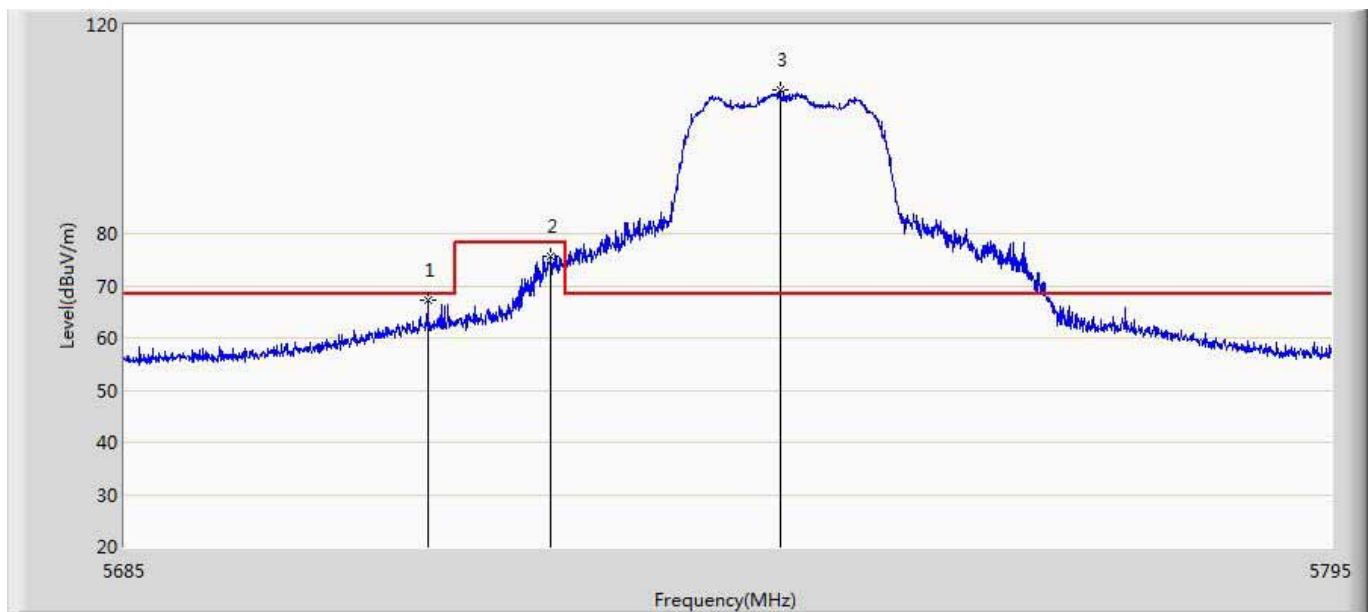
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  | *    | 5823.880        | 107.365                | 63.965               | N/A             | N/A            | 43.400      | PK   |
| 2  |      | 5850.760        | 75.920                 | 32.445               | -2.380          | 78.300         | 43.475      | PK   |
| 3  |      | 5862.360        | 66.538                 | 22.976               | -1.762          | 68.300         | 43.563      | PK   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2016/01/05 - 10:23 |
| Limit: FCC-15.407 new                                | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Vertical       |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 2:Transmit at CH5825MHz by 802.11n20 ant2 |                          |



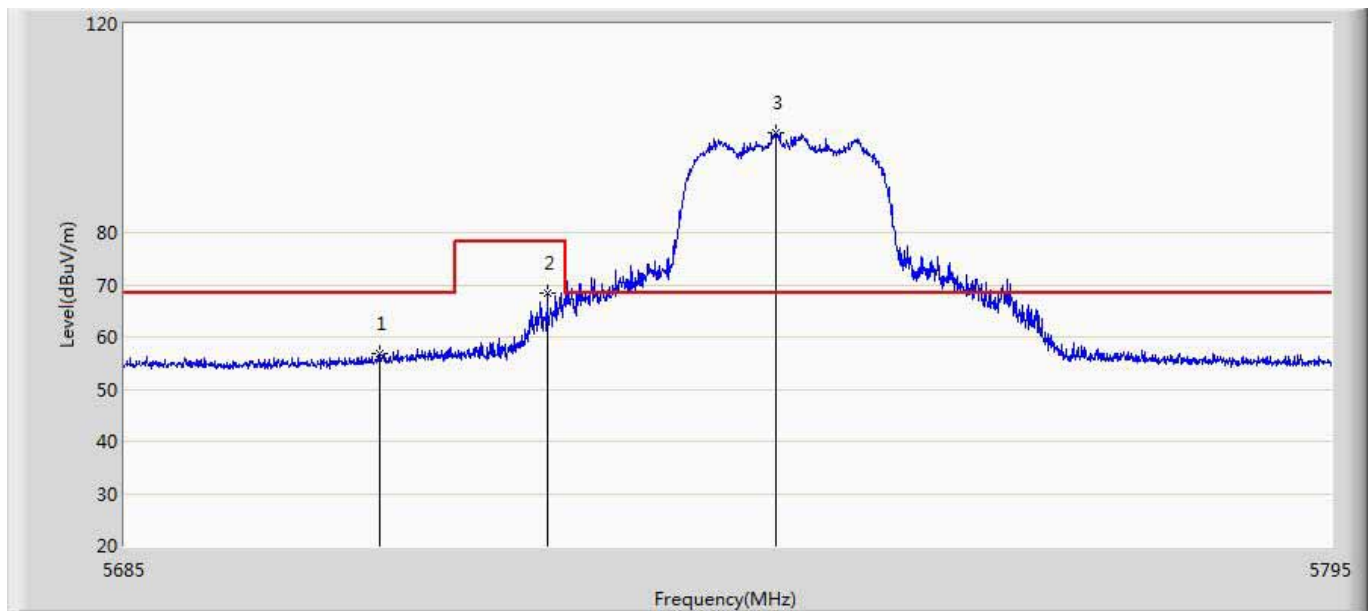
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  | *    | 5826.120        | 98.292                 | 54.887               | N/A             | N/A            | 43.405      | PK   |
| 2  |      | 5851.160        | 64.309                 | 20.831               | -13.991         | 78.300         | 43.478      | PK   |
| 3  |      | 5860.280        | 59.030                 | 15.482               | -9.270          | 68.300         | 43.548      | PK   |

|                                                        |                          |
|--------------------------------------------------------|--------------------------|
| Engineer: Scott                                        |                          |
| Site: AC5                                              | Time: 2016/01/05 - 10:25 |
| Limit: FCC-15.407 new                                  | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                     | Polarity: Horizontal     |
| EUT: IP-STB                                            | Power: AC 120V/60Hz      |
| Note: Mode 2:Transmit at CH5745MHz by 802.11n20 ant1+2 |                          |



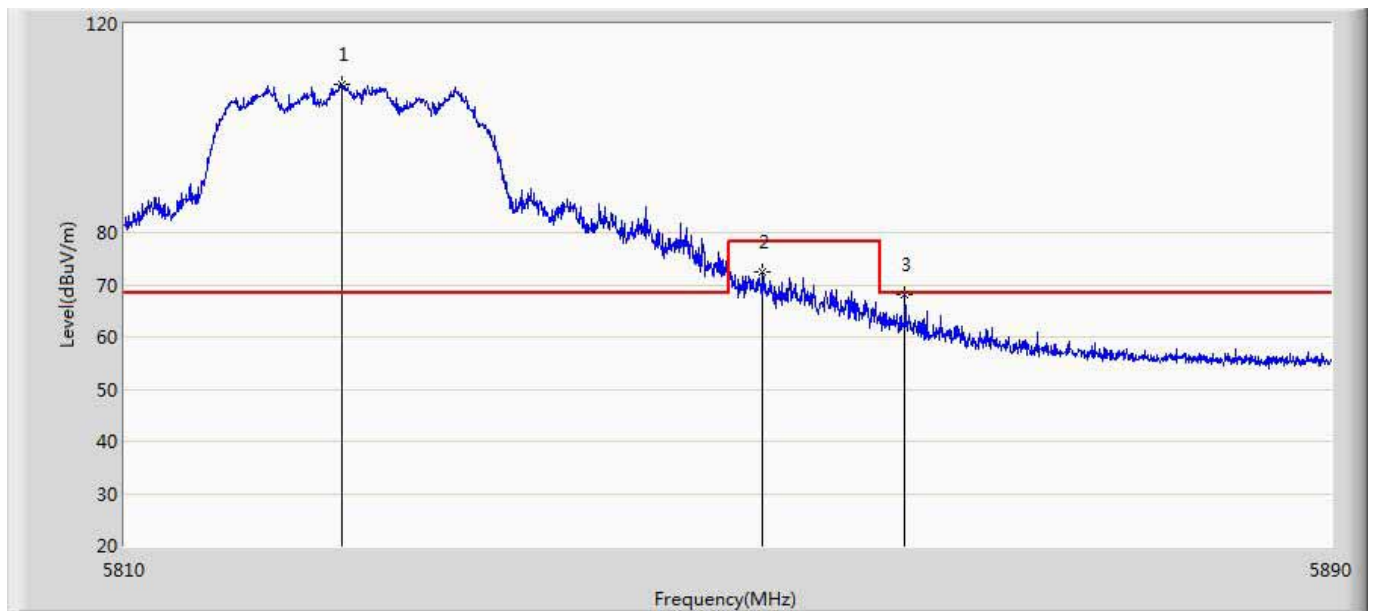
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5712.445        | 67.327                 | 24.018               | -0.973          | 68.300         | 43.309      | PK   |
| 2  |      | 5723.665        | 75.601                 | 32.331               | -2.699          | 78.300         | 43.271      | PK   |
| 3  | *    | 5744.565        | 107.556                | 64.259               | N/A             | N/A            | 43.297      | PK   |

|                                                        |                          |
|--------------------------------------------------------|--------------------------|
| Engineer: Scott                                        |                          |
| Site: AC5                                              | Time: 2016/01/05 - 10:27 |
| Limit: FCC-15.407 new                                  | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                     | Polarity: Vertical       |
| EUT: IP-STB                                            | Power: AC 120V/60Hz      |
| Note: Mode 2:Transmit at CH5745MHz by 802.11n20 ant1+2 |                          |



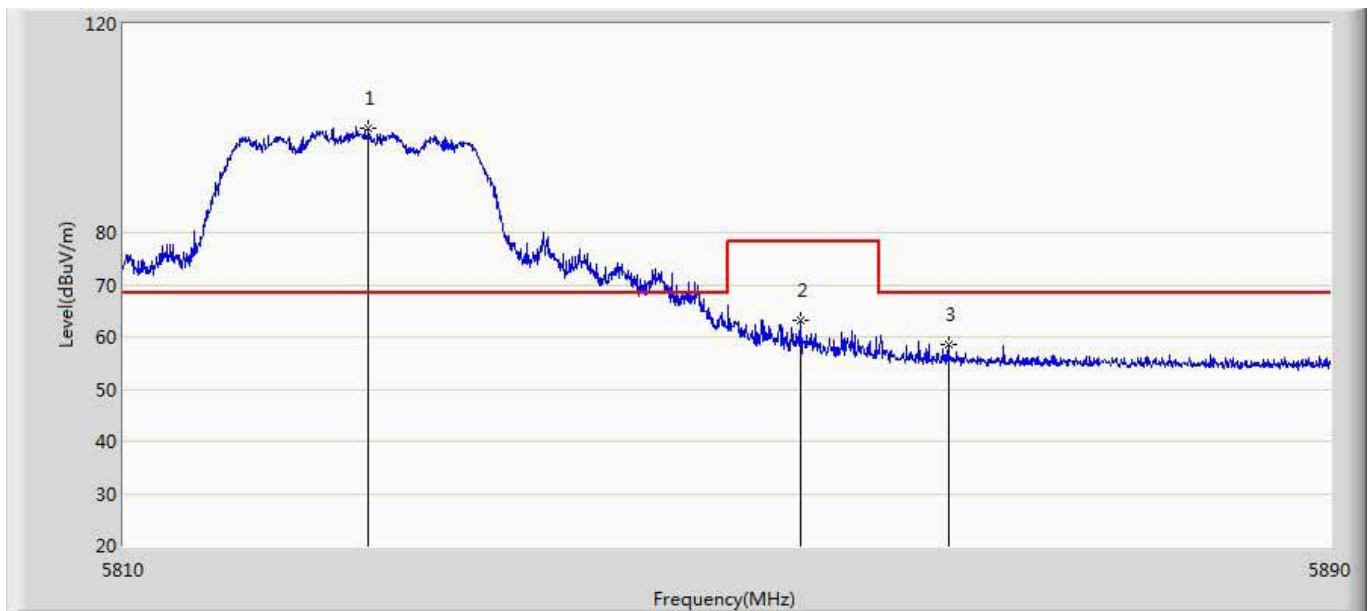
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5708.155        | 56.926                 | 13.608               | -11.374         | 68.300         | 43.318      | PK   |
| 2  |      | 5723.335        | 68.441                 | 25.169               | -9.859          | 78.300         | 43.271      | PK   |
| 3  | *    | 5744.125        | 99.070                 | 55.771               | N/A             | N/A            | 43.299      | PK   |

|                                                        |                          |
|--------------------------------------------------------|--------------------------|
| Engineer: Scott                                        |                          |
| Site: AC5                                              | Time: 2016/01/05 - 10:28 |
| Limit: FCC-15.407 new                                  | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                     | Polarity: Horizontal     |
| EUT: IP-STB                                            | Power: AC 120V/60Hz      |
| Note: Mode 2:Transmit at CH5825MHz by 802.11n20 ant1+2 |                          |



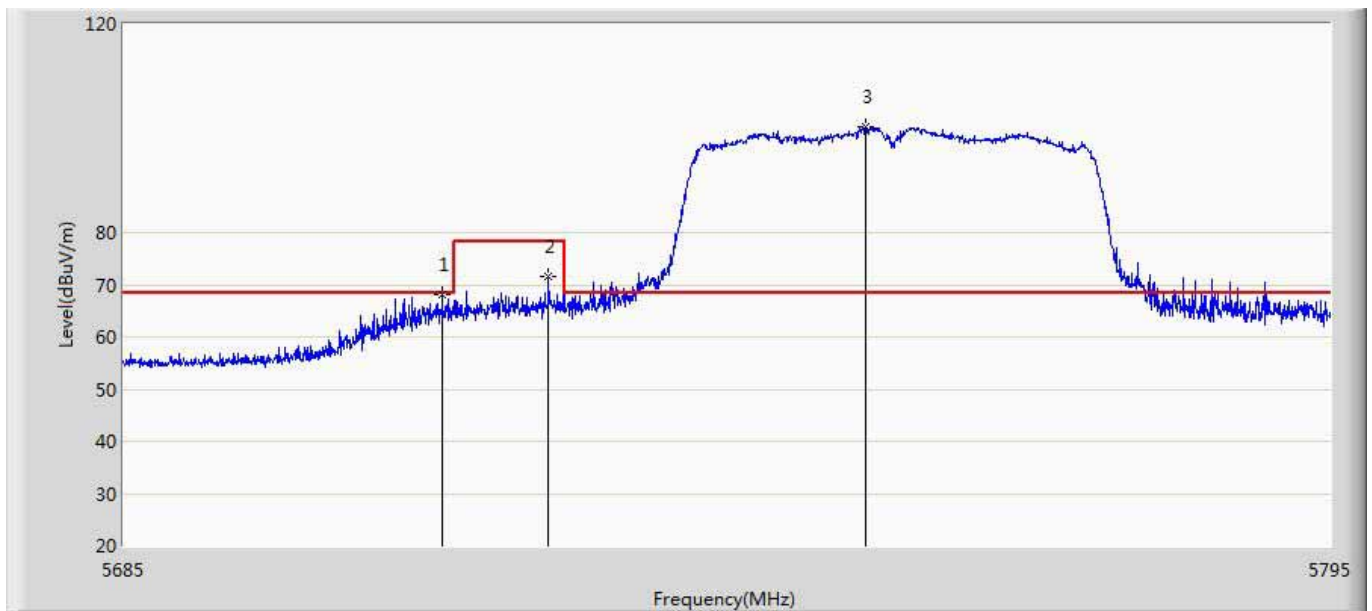
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  | *    | 5824.400        | 108.483                | 65.082               | N/A             | N/A            | 43.401      | PK   |
| 2  |      | 5852.200        | 72.496                 | 29.010               | -5.804          | 78.300         | 43.486      | PK   |
| 3  |      | 5861.600        | 67.976                 | 24.418               | -0.324          | 68.300         | 43.558      | PK   |

|                                                        |                          |
|--------------------------------------------------------|--------------------------|
| Engineer: Scott                                        |                          |
| Site: AC5                                              | Time: 2016/01/05 - 10:35 |
| Limit: FCC-15.407 new                                  | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                     | Polarity: Vertical       |
| EUT: IP-STB                                            | Power: AC 120V/60Hz      |
| Note: Mode 2:Transmit at CH5825MHz by 802.11n20 ant1+2 |                          |



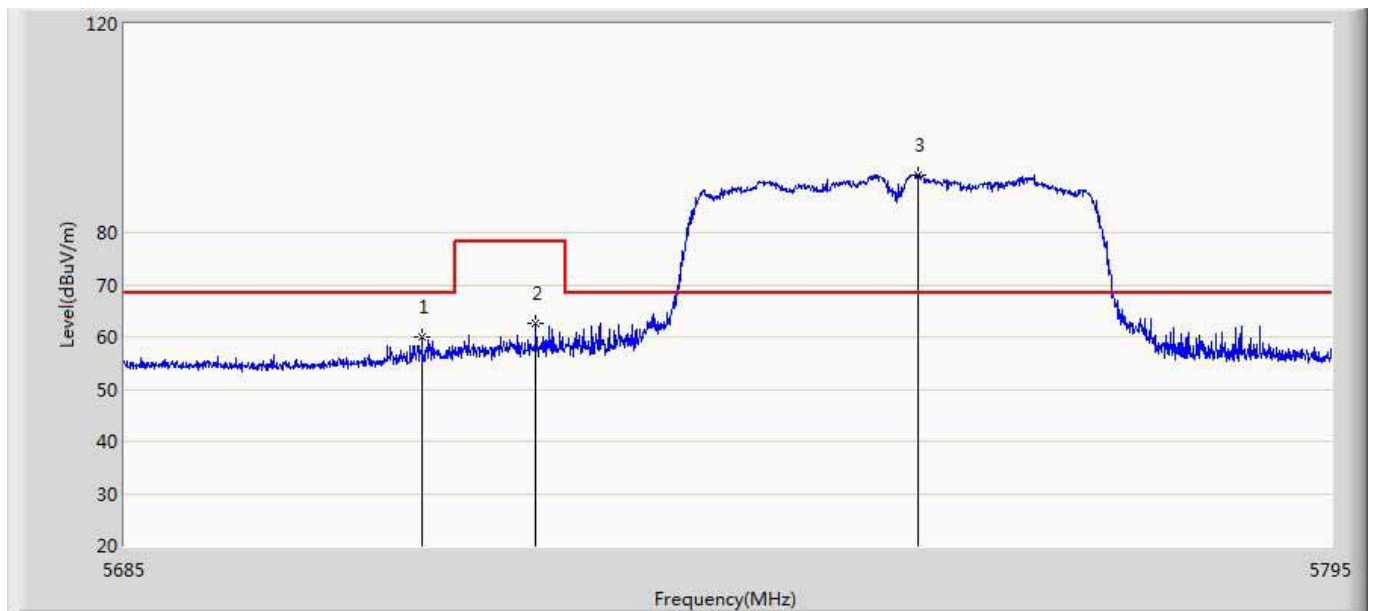
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  | *    | 5826.160        | 100.032                | 56.627               | N/A             | N/A            | 43.405      | PK   |
| 2  |      | 5854.760        | 63.116                 | 19.610               | -15.184         | 78.300         | 43.506      | PK   |
| 3  |      | 5864.600        | 58.583                 | 15.014               | -9.717          | 68.300         | 43.570      | PK   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2016/01/05 - 10:47 |
| Limit: FCC-15.407 new                                | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Horizontal     |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 3:Transmit at CH5755MHz by 802.11n40 ant1 |                          |



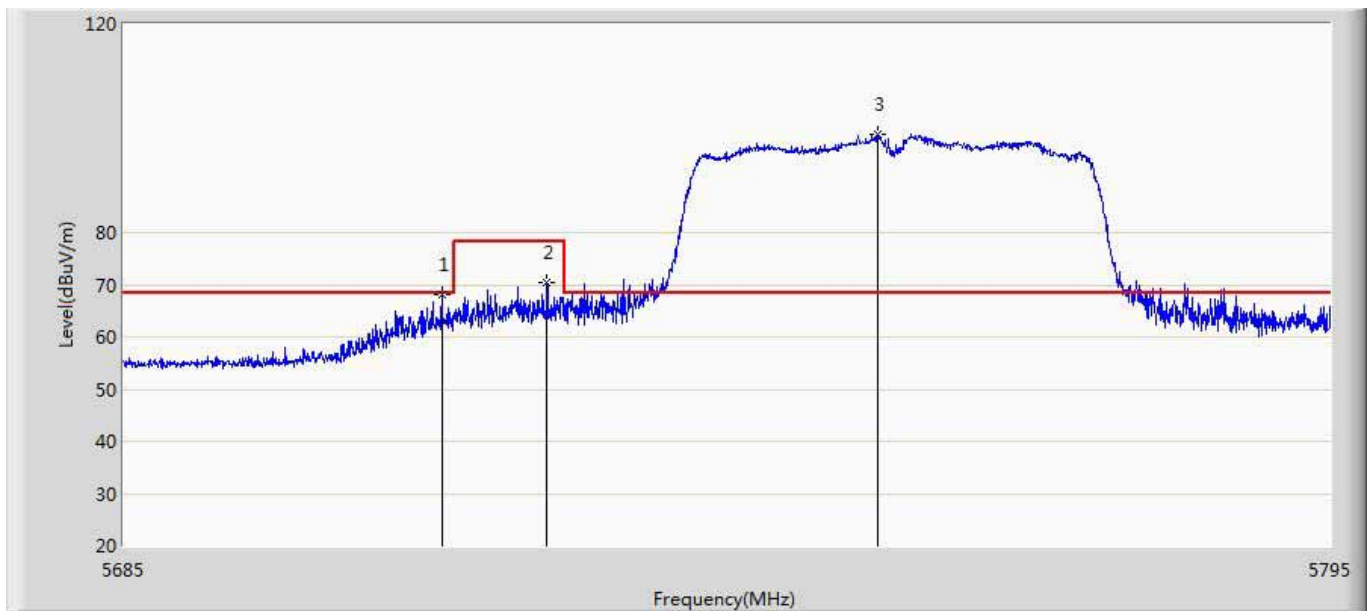
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5713.875        | 67.994                 | 24.690               | -0.306          | 68.300         | 43.304      | PK   |
| 2  |      | 5723.555        | 71.561                 | 28.290               | -6.739          | 78.300         | 43.271      | PK   |
| 3  | *    | 5752.375        | 100.423                | 57.153               | N/A             | N/A            | 43.269      | PK   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2016/01/05 - 10:47 |
| Limit: FCC-15.407 new                                | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Vertical       |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 3:Transmit at CH5755MHz by 802.11n40 ant1 |                          |



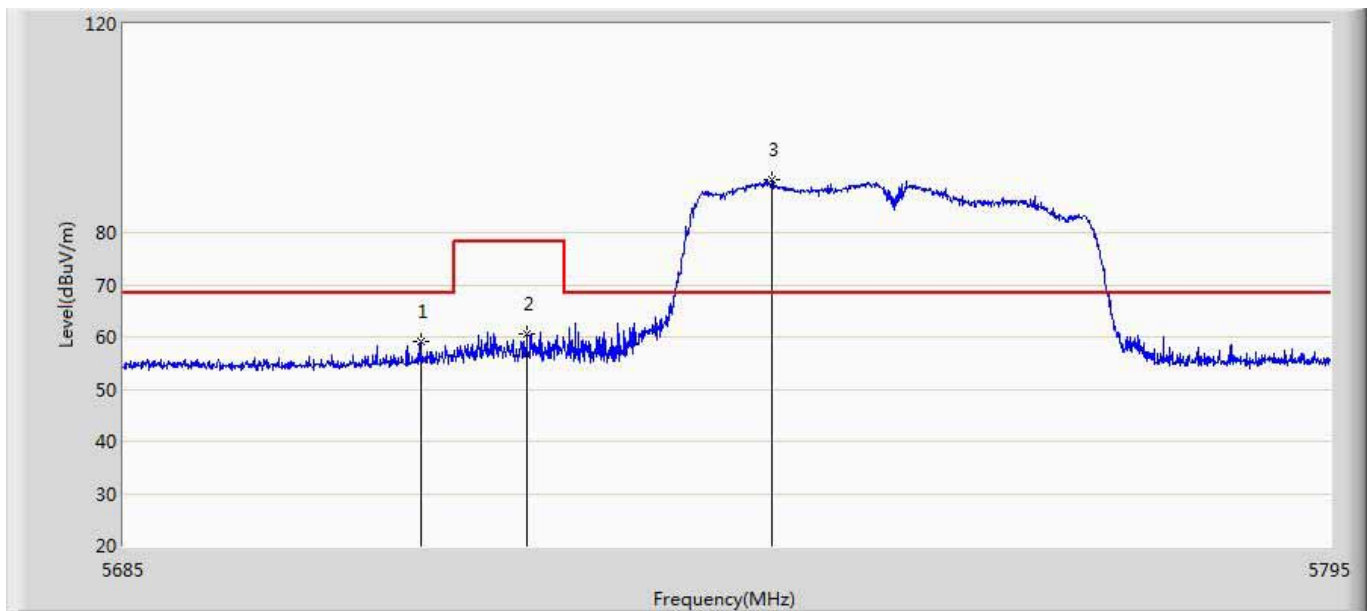
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5711.950        | 59.996                 | 16.686               | -8.304          | 68.300         | 43.310      | PK   |
| 2  |      | 5722.290        | 62.720                 | 19.445               | -15.580         | 78.300         | 43.275      | PK   |
| 3  | *    | 5757.105        | 91.122                 | 47.869               | N/A             | N/A            | 43.253      | PK   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2016/01/05 - 10:48 |
| Limit: FCC-15.407 new                                | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Horizontal     |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 3:Transmit at CH5755MHz by 802.11n40 ant2 |                          |



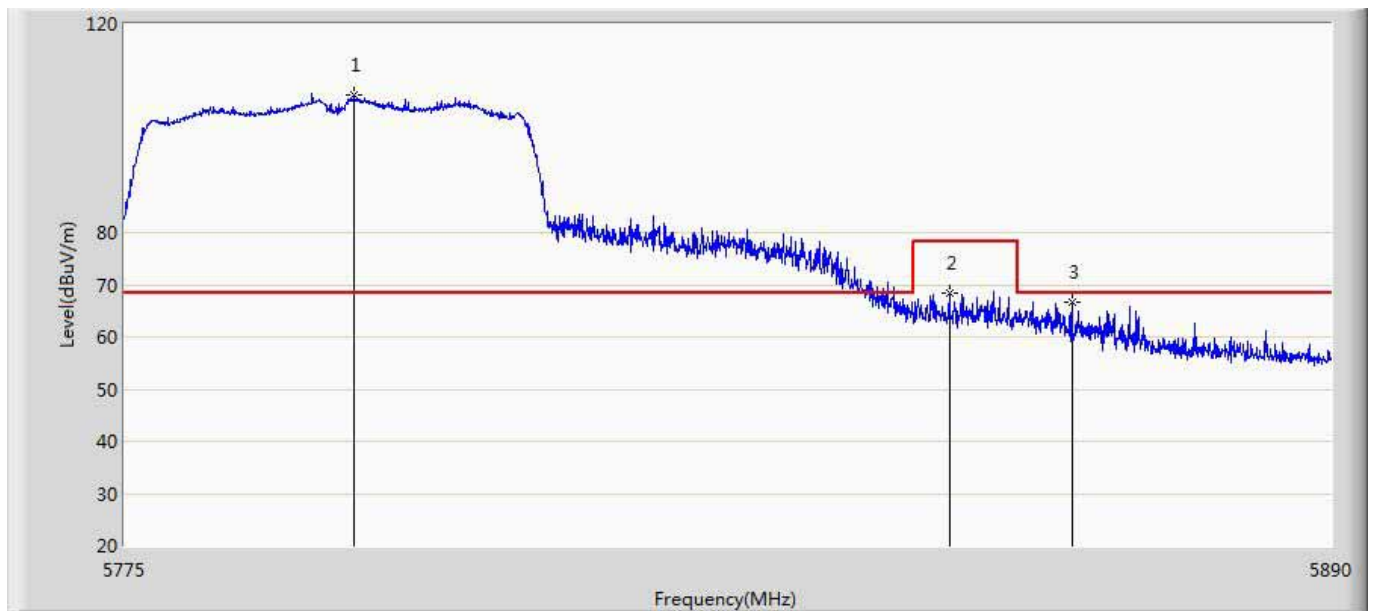
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5713.820        | 68.030                 | 24.726               | -0.270          | 68.300         | 43.304      | PK   |
| 2  |      | 5723.390        | 70.497                 | 27.226               | -7.803          | 78.300         | 43.271      | PK   |
| 3  | *    | 5753.585        | 98.785                 | 55.520               | N/A             | N/A            | 43.265      | PK   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2016/01/05 - 10:53 |
| Limit: FCC-15.407 new                                | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Vertical       |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 3:Transmit at CH5755MHz by 802.11n40 ant2 |                          |



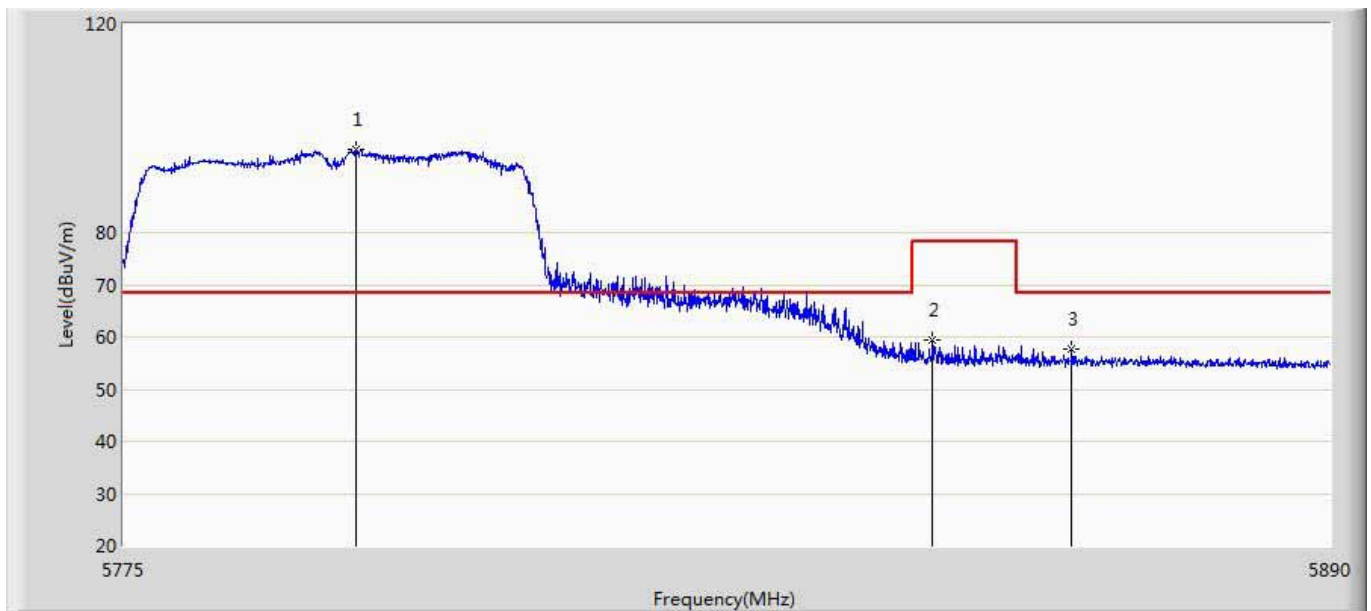
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5711.950        | 59.030                 | 15.720               | -9.270          | 68.300         | 43.310      | PK   |
| 2  |      | 5721.575        | 60.623                 | 17.345               | -17.677         | 78.300         | 43.278      | PK   |
| 3  | *    | 5743.905        | 90.140                 | 46.840               | N/A             | N/A            | 43.299      | PK   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2016/01/05 - 10:55 |
| Limit: FCC-15.407 new                                | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Horizontal     |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 3:Transmit at CH5795MHz by 802.11n40 ant1 |                          |



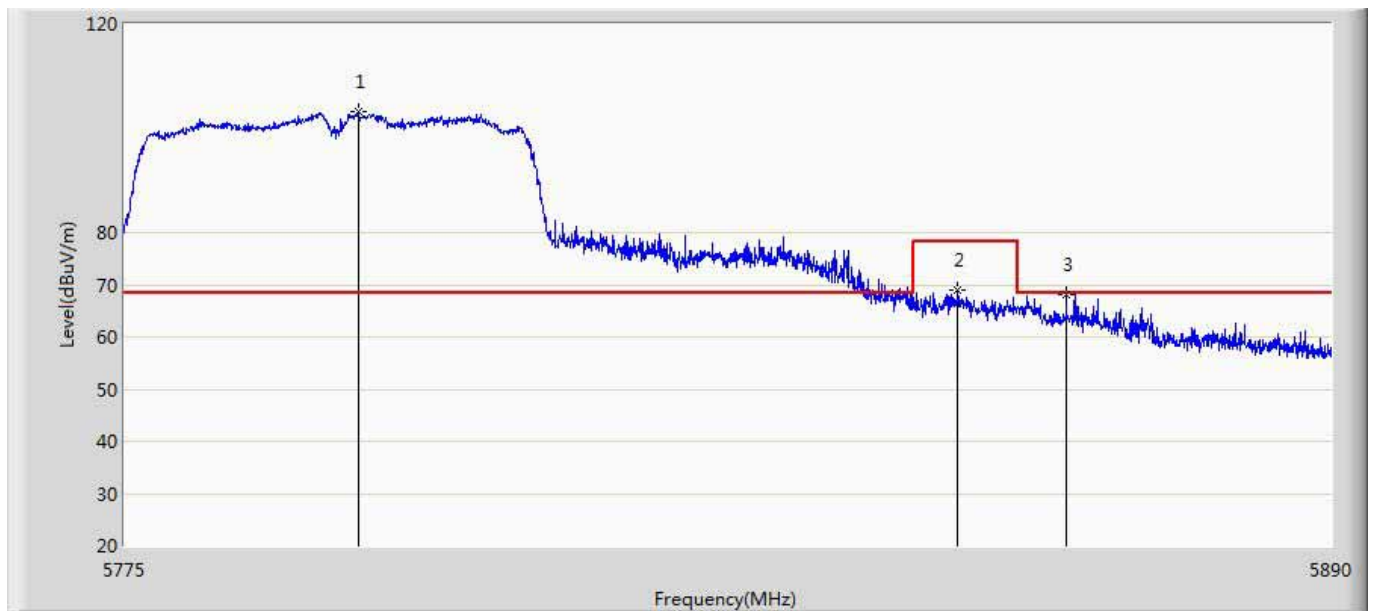
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  | *    | 5796.792        | 106.392                | 63.092               | N/A             | N/A            | 43.300      | PK   |
| 2  |      | 5853.373        | 68.517                 | 25.022               | -9.783          | 78.300         | 43.495      | PK   |
| 3  |      | 5865.103        | 66.541                 | 22.970               | -1.759          | 68.300         | 43.570      | PK   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2016/01/05 - 11:06 |
| Limit: FCC-15.407 new                                | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Vertical       |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 3:Transmit at CH5795MHz by 802.11n40 ant1 |                          |



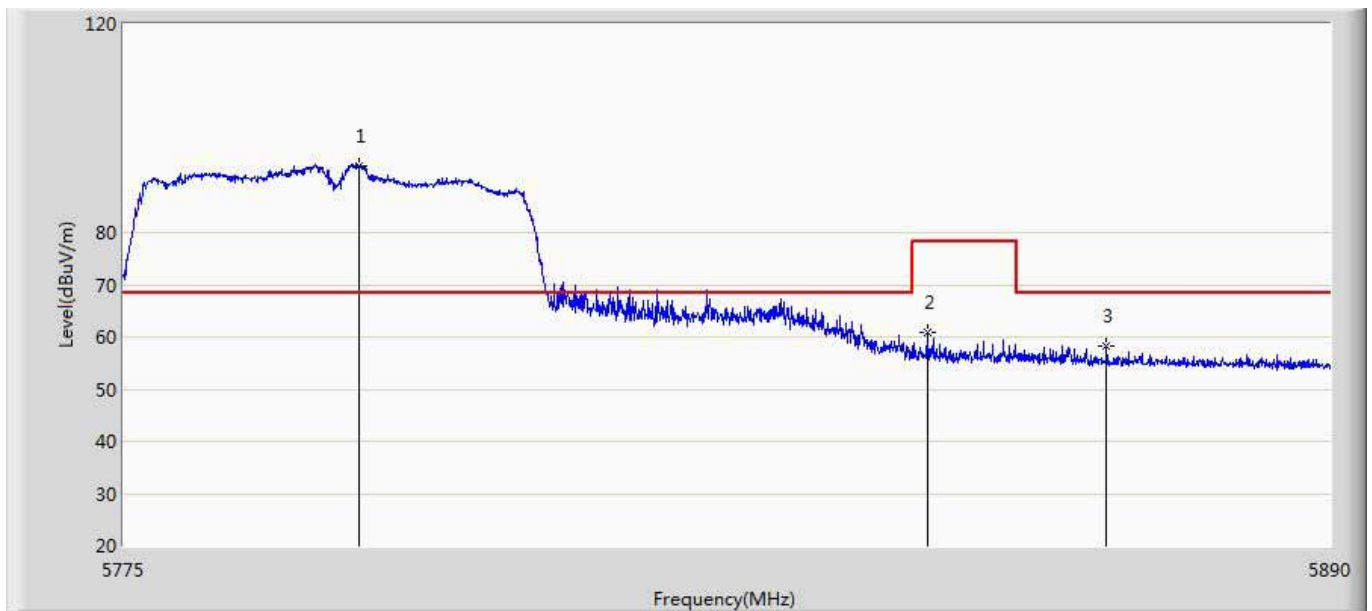
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  | *    | 5796.965        | 96.006                 | 52.705               | N/A             | N/A            | 43.301      | PK   |
| 2  |      | 5851.877        | 59.497                 | 16.013               | -18.803         | 78.300         | 43.484      | PK   |
| 3  |      | 5865.160        | 57.677                 | 14.106               | -10.623         | 68.300         | 43.571      | PK   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2016/01/05 - 11:08 |
| Limit: FCC-15.407 new                                | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Horizontal     |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 3:Transmit at CH5795MHz by 802.11n40 ant2 |                          |



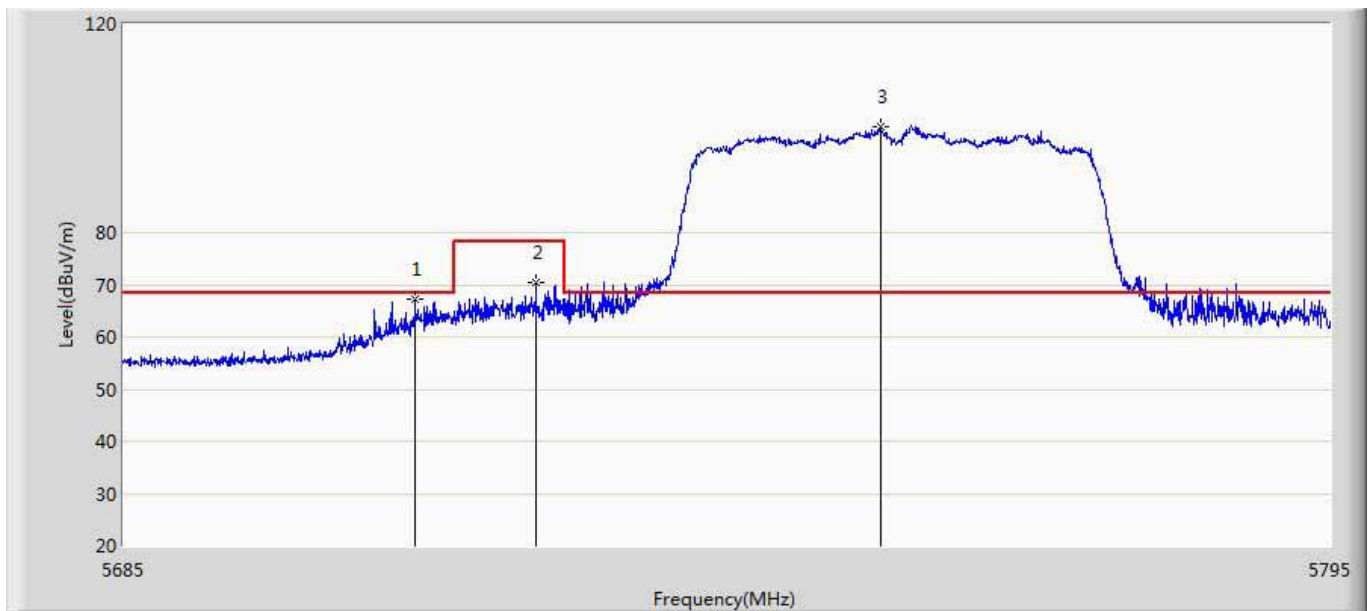
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  | *    | 5797.138        | 103.118                | 59.816               | N/A             | N/A            | 43.302      | PK   |
| 2  |      | 5854.178        | 69.003                 | 25.502               | -9.297          | 78.300         | 43.501      | PK   |
| 3  |      | 5864.585        | 68.064                 | 24.495               | -0.236          | 68.300         | 43.570      | PK   |

|                                                      |                          |
|------------------------------------------------------|--------------------------|
| Engineer: Scott                                      |                          |
| Site: AC5                                            | Time: 2016/01/05 - 11:09 |
| Limit: FCC-15.407 new                                | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                   | Polarity: Vertical       |
| EUT: IP-STB                                          | Power: AC 120V/60Hz      |
| Note: Mode 3:Transmit at CH5795MHz by 802.11n40 ant2 |                          |



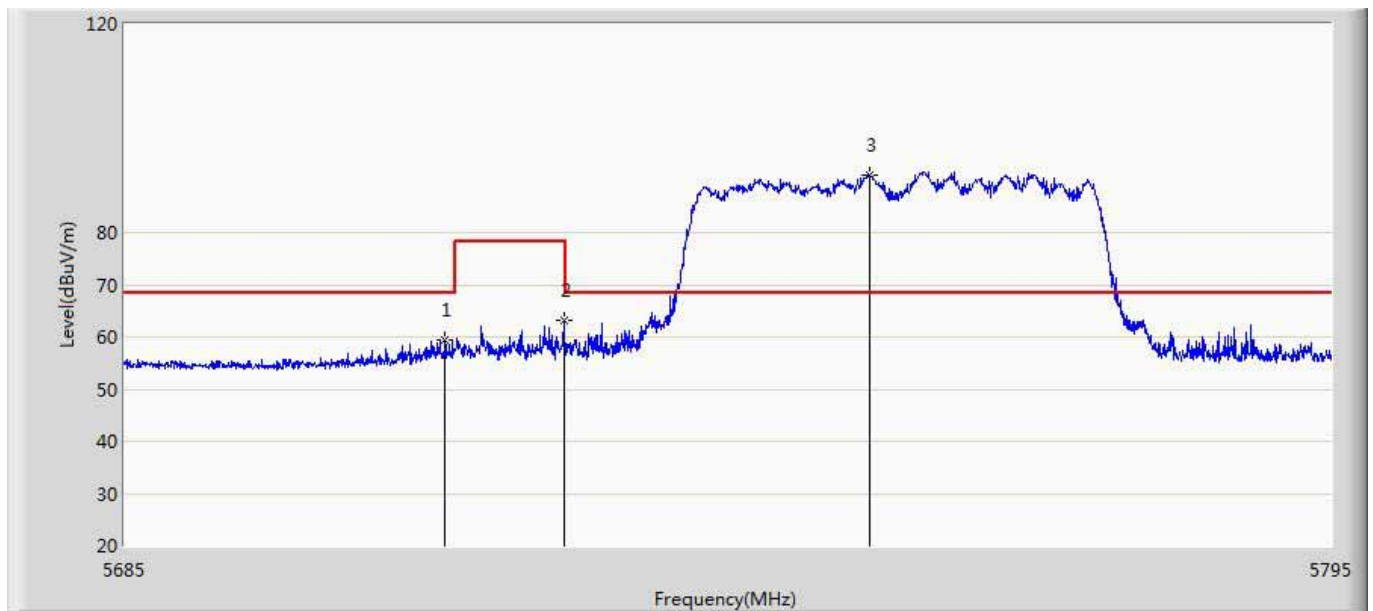
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  | *    | 5797.368        | 92.829                 | 49.526               | N/A             | N/A            | 43.304      | PK   |
| 2  |      | 5851.360        | 60.967                 | 17.487               | -17.333         | 78.300         | 43.480      | PK   |
| 3  |      | 5868.495        | 58.241                 | 14.660               | -10.059         | 68.300         | 43.581      | PK   |

|                                                        |                          |
|--------------------------------------------------------|--------------------------|
| Engineer: Scott                                        |                          |
| Site: AC5                                              | Time: 2016/01/05 - 11:22 |
| Limit: FCC-15.407 new                                  | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                     | Polarity: Horizontal     |
| EUT: IP-STB                                            | Power: AC 120V/60Hz      |
| Note: Mode 3:Transmit at CH5755MHz by 802.11n40 ant1+2 |                          |



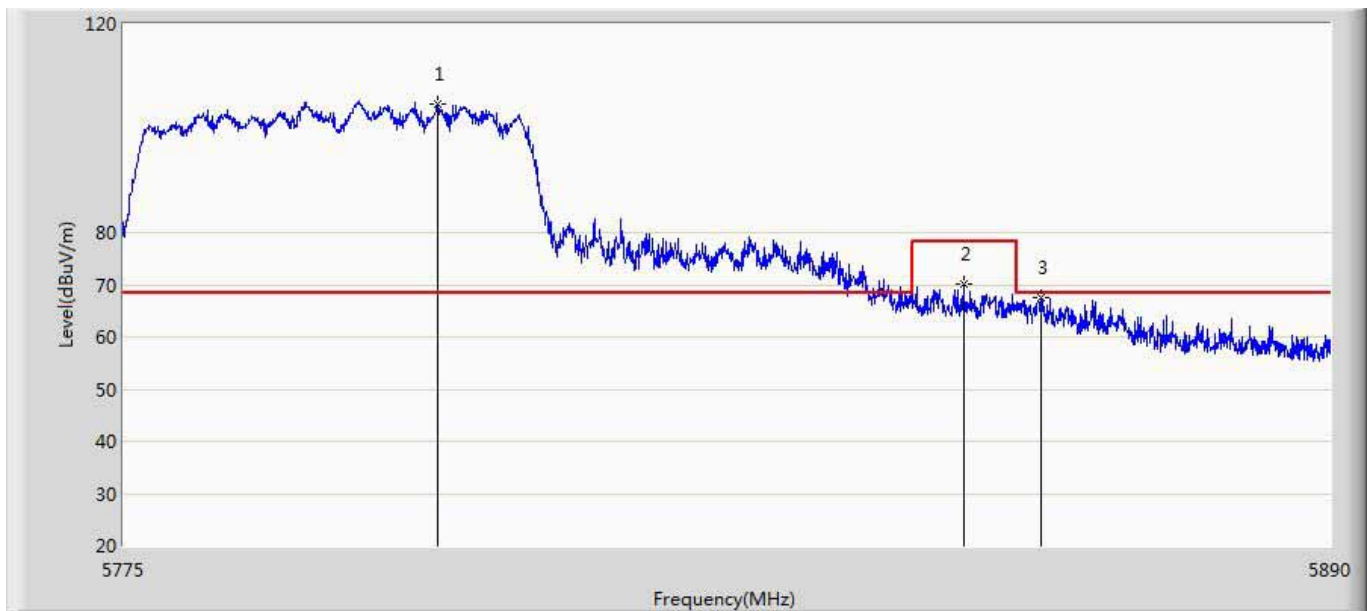
| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  |      | 5711.400        | 67.377                 | 24.065               | -0.923          | 68.300         | 43.312      | PK   |
| 2  |      | 5722.400        | 70.540                 | 27.265               | -7.760          | 78.300         | 43.275      | PK   |
| 3  | *    | 5753.805        | 100.203                | 56.938               | N/A             | N/A            | 43.264      | PK   |

|                                                        |                          |
|--------------------------------------------------------|--------------------------|
| Engineer: Scott                                        |                          |
| Site: AC5                                              | Time: 2016/01/05 - 11:27 |
| Limit: FCC-15.407 new                                  | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                     | Polarity: Vertical       |
| EUT: IP-STB                                            | Power: AC 120V/60Hz      |
| Note: Mode 3:Transmit at CH5755MHz by 802.11n40 ant1+2 |                          |



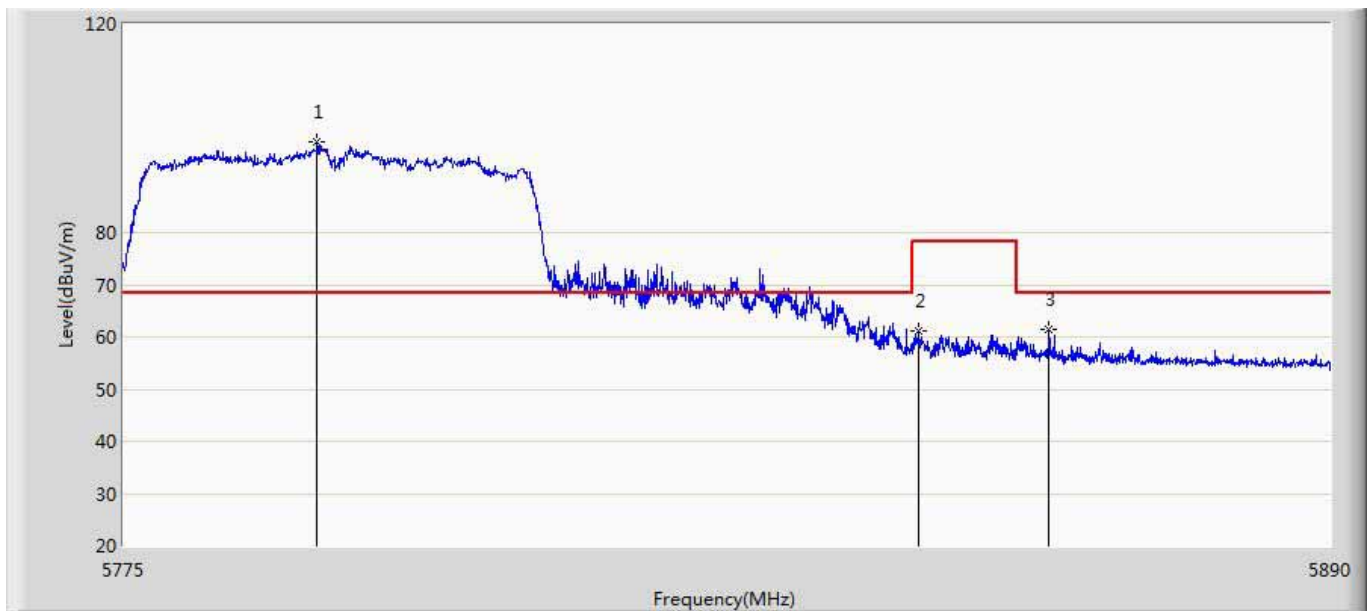
| No | Mark | Frequency<br>(MHz) | Measure Level<br>(dBuV/m) | Reading Level<br>(dBuV) | Over Limit<br>(dB) | Limit<br>(dBuV/m) | Factor<br>(dB) | Type |
|----|------|--------------------|---------------------------|-------------------------|--------------------|-------------------|----------------|------|
| 1  |      | 5714.040           | 59.297                    | 15.994                  | -9.003             | 68.300            | 43.303         | PK   |
| 2  |      | 5724.820           | 63.143                    | 19.876                  | -15.157            | 78.300            | 43.266         | PK   |
| 3  | *    | 5752.705           | 91.038                    | 47.770                  | N/A                | N/A               | 43.269         | PK   |

|                                                        |                          |
|--------------------------------------------------------|--------------------------|
| Engineer: Scott                                        |                          |
| Site: AC5                                              | Time: 2016/01/05 - 11:28 |
| Limit: FCC-15.407 new                                  | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                     | Polarity: Horizontal     |
| EUT: IP-STB                                            | Power: AC 120V/60Hz      |
| Note: Mode 3:Transmit at CH5795MHz by 802.11n40 ant1+2 |                          |



| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  | *    | 5804.785        | 104.570                | 61.230               | N/A             | N/A            | 43.340      | PK   |
| 2  |      | 5854.868        | 70.150                 | 26.643               | -8.150          | 78.300         | 43.507      | PK   |
| 3  |      | 5862.228        | 67.490                 | 23.928               | -0.810          | 68.300         | 43.562      | PK   |

|                                                        |                          |
|--------------------------------------------------------|--------------------------|
| Engineer: Scott                                        |                          |
| Site: AC5                                              | Time: 2016/01/05 - 11:33 |
| Limit: FCC-15.407 new                                  | Margin: 0                |
| Probe: Horn_3117_00167055(1-18GHz)                     | Polarity: Vertical       |
| EUT: IP-STB                                            | Power: AC 120V/60Hz      |
| Note: Mode 3:Transmit at CH5795MHz by 802.11n40 ant1+2 |                          |



| No | Mark | Frequency (MHz) | Measure Level (dBuV/m) | Reading Level (dBuV) | Over Limit (dB) | Limit (dBuV/m) | Factor (dB) | Type |
|----|------|-----------------|------------------------|----------------------|-----------------|----------------|-------------|------|
| 1  | *    | 5793.285        | 97.320                 | 54.031               | N/A             | N/A            | 43.289      | PK   |
| 2  |      | 5850.555        | 61.167                 | 17.694               | -17.133         | 78.300         | 43.474      | PK   |
| 3  |      | 5863.033        | 61.576                 | 18.012               | -6.724          | 68.300         | 43.564      | PK   |

## 10. Frequency Stability

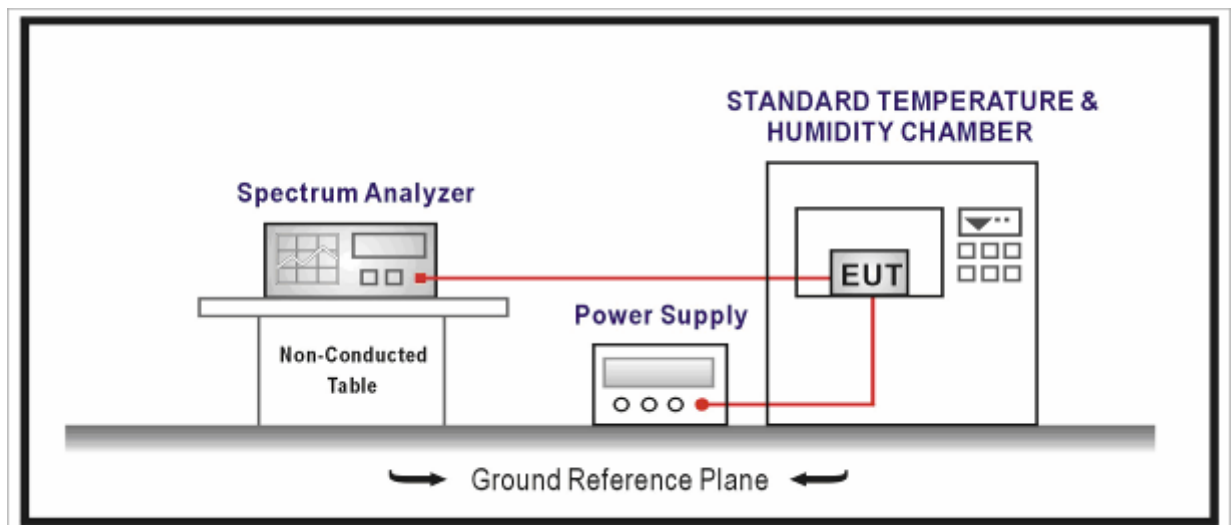
### 10.1. Test Equipment

Frequency Stability / TR-8

| Instrument                                        | Manufacturer | Type No.     | Serial No.   | Cal. Due Date |
|---------------------------------------------------|--------------|--------------|--------------|---------------|
| Spectrum Analyzer                                 | Agilent      | E4446A       | MY45300103   | 2016.03.10    |
| AC Power Supply                                   | IDRC         | CF-500TP     | 979422       | 2016.09.22    |
| DC Power Supply                                   | IDRC         | CD-035-020PR | 977272       | 2016.09.22    |
| Programmable<br>Temperature &<br>Humidity Chamber | Gaoyu        | TH-1P-B      | WIT-05121302 | 2017.01.04    |
| Temperature/Humidity<br>Meter                     | zhicheng     | ZC1-2        | TR8-TH       | 2016.05.07    |

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

### 10.2. Test Setup



### 10.3. Limit

Manufactures of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

## 10.4. Test Procedure

### **Frequency Stability Under Temperature Variations:**

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to highest. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C decreased per stage until the lowest temperature reached.

### **Frequency Stability Under Voltage Variations:**

Set chamber temperature to 20°C. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.

Reduce the input voltage to specify extreme voltage variation ( $\pm 15\%$ ) and endpoint, record the maximum frequency change.

## 10.5. Uncertainty

The measurement uncertainty is defined as  $\pm 100$  Hz

## 10.6. Test Result

|           |   |                     |
|-----------|---|---------------------|
| Product   | : | IP-STB              |
| Test Item | : | Frequency Stability |
| Test Site | : | TR-8                |
| Test Mode | : | Carrier Transmit    |

Frequency Stability under Temperature

| Temperature Interval<br>(°C) | Test Frequency (MHz) | Deviation<br>(Hz) |
|------------------------------|----------------------|-------------------|
| -30                          | 5220.000             | 157               |
| -20                          | 5220.000             | 147               |
| -10                          | 5220.000             | -148              |
| 0                            | 5220.000             | -117              |
| 10                           | 5220.000             | -146              |
| 20                           | 5220.000             | -175              |
| 30                           | 5220.000             | 133               |
| 40                           | 5220.000             | 162               |
| 50                           | 5220.000             | -151              |

Frequency Stability under Voltage

| DC Voltage<br>(V) | Test Frequency<br>(MHz) | Deviation<br>(Hz) |
|-------------------|-------------------------|-------------------|
| 102               | 5220.000                | 149               |
| 120               | 5220.000                | 131               |
| 138               | 5220.000                | 155               |

|           |   |                     |
|-----------|---|---------------------|
| Product   | : | IP-STB              |
| Test Item | : | Frequency Stability |
| Test Site | : | TR-8                |
| Test Mode | : | Carrier Transmit    |

Frequency Stability under Temperature

| Temperature Interval<br>(°C) | Test Frequency (MHz) | Deviation<br>(Hz) |
|------------------------------|----------------------|-------------------|
| -30                          | 5785.000             | -144              |
| -20                          | 5785.000             | -132              |
| -10                          | 5785.000             | -120              |
| 0                            | 5785.000             | -111              |
| 10                           | 5785.000             | 114               |
| 20                           | 5785.000             | -135              |
| 30                           | 5785.000             | -172              |
| 40                           | 5785.000             | 156               |
| 50                           | 5785.000             | -137              |

Frequency Stability under Voltage

| DC Voltage<br>(V) | Test Frequency<br>(MHz) | Deviation<br>(Hz) |
|-------------------|-------------------------|-------------------|
| 102               | 5785.000                | 112               |
| 120               | 5785.000                | 221               |
| 138               | 5785.000                | 102               |