



# FCC RF Test Report

**APPLICANT** : IEI Integration Corp.  
**EQUIPMENT** : Tablet PC  
**BRAND NAME** : iEi  
**MODEL NAME** : TRN-3200T  
**FCC ID** : RFH-TRN3200T  
**STANDARD** : FCC Part 15 Subpart E §15.407  
**CLASSIFICATION** : (NII) Unlicensed National Information Infrastructure

This is a variant report. The product was received on Sep. 22, 2017 and testing was completed on Nov. 15, 2017. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

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Reviewed by: Joseph Lin / Supervisor

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Approved by: Jones Tsai / Manager



## **SPORTON INTERNATIONAL INC.**

**No. 52, Hwa Ya 1<sup>st</sup> Rd., Hwa Ya Technology Park, Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C.**



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## REVISION HISTORY

| REPORT NO.   | VERSION | DESCRIPTION                   | ISSUED DATE   |
|--------------|---------|-------------------------------|---------------|
| FR690221-01E | Rev. 01 | Initial issue of report       | Nov. 02, 2017 |
| FR690221-01E | Rev. 02 | Revising power in Appendix A. | Nov. 17, 2017 |
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## SUMMARY OF TEST RESULT

| Report Section                                                                                                                                                                                                                                                         | FCC Rule              | Description                    | Limit                                             | Result | Remark                                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|--------------------------------|---------------------------------------------------|--------|-----------------------------------------|
| 3.1                                                                                                                                                                                                                                                                    | 15.407(a)             | Maximum Conducted Output Power | $\leq 30$ dBm<br>(depend on band)                 | Pass   | -                                       |
| 3.2                                                                                                                                                                                                                                                                    | 15.407(b)             | Unwanted Emissions             | $\leq -17, -27$ dBm<br>(depend on band)&15.209(a) | Pass   | Under limit<br>4.57 dB at<br>81.030 MHz |
| 3.3                                                                                                                                                                                                                                                                    | 15.207                | AC Conducted Emission          | 15.207(a)                                         | Pass   | Under limit<br>13.40 dB at<br>4.542 MHz |
| 3.4                                                                                                                                                                                                                                                                    | 15.203 &<br>15.407(a) | Antenna Requirement            | N/A                                               | Pass   | -                                       |
| <b>Remark:</b> This is a variant report which can be referred Product Equality Declaration. All the test cases were performed on original report which can be referred to Sporton Report Number FR690221E. Based on the original report, only worst case was verified. |                       |                                |                                                   |        |                                         |



# 1 General Description

## 1.1 Applicant

**IEI Integration Corp.**

No.29, Zhongxing Rd., Xizhi Dist., New Taipei City 221. Taiwan (R.O.C)

## 1.2 Manufacturer

**IEI Integration Corp.**

No.29, Zhongxing Rd., Xizhi Dist., New Taipei City 221. Taiwan (R.O.C)

## 1.3 Product Feature of Equipment Under Test

Bluetooth, Wi-Fi 2.4GHz 802.11b/g/n, Wi-Fi 5GHz 802.11a/n/ac

| Product Specification subjective to this standard |                                             |
|---------------------------------------------------|---------------------------------------------|
| Antenna Type                                      | WLAN: PCB Antenna<br>Bluetooth: PCB Antenna |

## 1.4 Modification of EUT

No modifications are made to the EUT during all test items.



## 1.5 Testing Location

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code : 1190) and the FCC designation No. TW1190 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

|                           |                                                                                                                                                                  |         |           |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-----------|
| <b>Test Site</b>          | SPORTON INTERNATIONAL INC.                                                                                                                                       |         |           |
| <b>Test Site Location</b> | No. 52, Hwa Ya 1 <sup>st</sup> Rd., Hwa Ya Technology Park,<br>Kwei-Shan District, Tao Yuan City, Taiwan, R.O.C.<br>TEL: +886-3-327-3456<br>FAX: +886-3-328-4978 |         |           |
| <b>Test Site No.</b>      | <b>Sporton Site No.</b>                                                                                                                                          |         |           |
|                           | TH05-HY                                                                                                                                                          | CO05-HY | 03CH07-HY |

**Note:** The test site complies with ANSI C63.4 2014 requirement.

## 1.6 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ FCC Part 15 Subpart E
- ♦ FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04.
- ♦ ANSI C63.10-2013

### Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

## 2 Test Configuration of Equipment Under Test

- a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (Z plane) were recorded in this report.
- b. AC power line Conducted Emission was tested under maximum output power.

### 2.1 Carrier Frequency Channel

| Frequency Band                       | Channel          | Freq.<br>(MHz) | Channel | Freq.<br>(MHz) |
|--------------------------------------|------------------|----------------|---------|----------------|
| 5725-5850 MHz<br>Band 4<br>(U-NII-3) | 149              | 5745           | 157     | 5785           |
|                                      | 151*             | 5755           | 159*    | 5795           |
|                                      | 153              | 5765           | 161     | 5805           |
|                                      | 155 <sup>#</sup> | 5775           | 165     | 5825           |

**Note:**

1. The above Frequency and Channel in "\*" were 802.11n HT40 and 802.11ac VHT40.
2. The above Frequency and Channel in "<sup>#</sup>" were 802.11ac VHT80.

## 2.2 Test Mode

Final test mode of conducted test items and radiated spurious emissions are considering the modulation and worse data rates as below table.

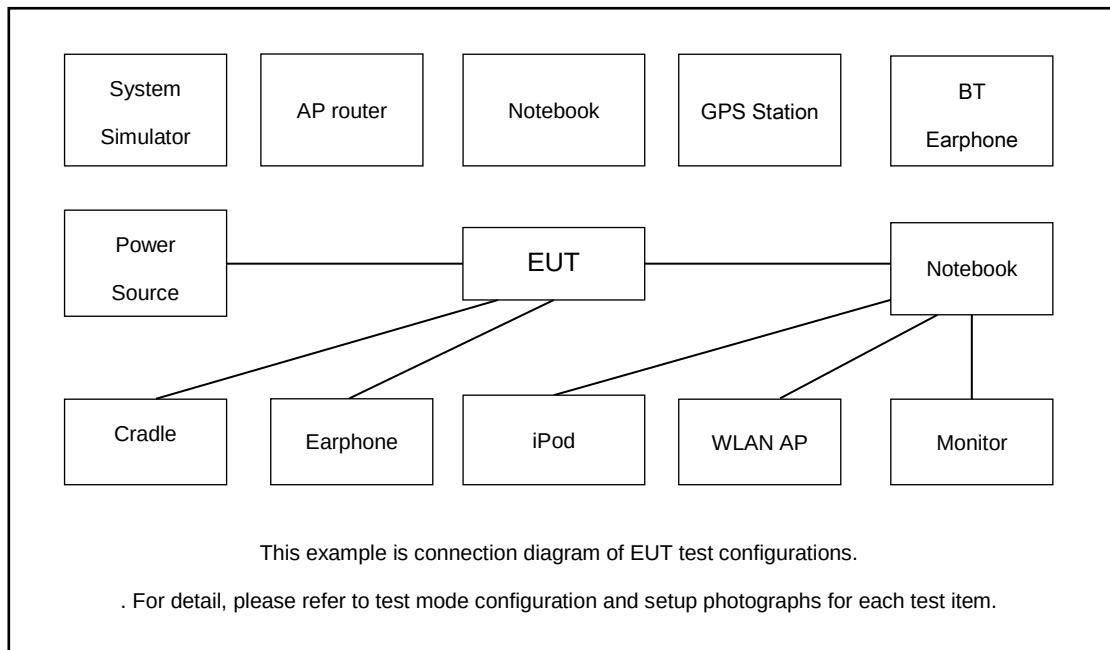
| Modulation     | Data Rate |
|----------------|-----------|
| 802.11a        | 6 Mbps    |
| 802.11n HT20   | MCS0      |
| 802.11n HT40   | MCS0      |
| 802.11ac VHT20 | MCS0      |
| 802.11ac VHT40 | MCS0      |
| 802.11ac VHT80 | MCS0      |

| Test Cases                                                                                                                                                                                                                                                       |                                                                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|
| AC Conducted Emission                                                                                                                                                                                                                                            | Mode 1 : Bluetooth Link + WLAN (5GHz) Link + TC + TF + New Adapter |
| <b>Remark:</b><br>1. TC stands for Test Configuration, and consists of SD Card, Earphone, LCD Monitor (Mini HDMI out), USB HD, RJ-45 Link, Ultrasound Probe (Load) and Adapter.<br>2. TF stands for Test Function, and consists of H-Pattern, MPEG4, and Camera. |                                                                    |

| Ch. # |        | Band IV : 5725-5850 MHz |              |              |
|-------|--------|-------------------------|--------------|--------------|
|       |        | 802.11a                 | 802.11n HT20 | 802.11n HT40 |
| L     | Low    | 149                     | 149          | 151          |
| M     | Middle | 157                     | 157          | -            |
| H     | High   | 165                     | 165          | 159          |

| Ch. # |        | Band IV : 5725-5850 MHz |                |                |
|-------|--------|-------------------------|----------------|----------------|
|       |        | 802.11ac VHT20          | 802.11ac VHT40 | 802.11ac VHT80 |
| L     | Low    | 149                     | 151            | -              |
| M     | Middle | 157                     | -              | 155            |
| H     | High   | 165                     | 159            | -              |

## 2.3 Connection Diagram of Test System





## 2.4 Support Unit used in test configuration and system

| Item | Equipment          | Trade Name    | Model Name             | FCC ID                                       | Data Cable        | Power Cord                                                 |
|------|--------------------|---------------|------------------------|----------------------------------------------|-------------------|------------------------------------------------------------|
| 1.   | Bluetooth Earphone | Sony Ericsson | MW600                  | PY7DDA-2029                                  | N/A               | N/A                                                        |
| 2.   | WLAN AP            | ASUS          | RT-AC66U               | MSQ-RTAC66U                                  | N/A               | Unshielded,1.8m                                            |
| 3.   | iPod Earphone      | Apple         | A1285                  | FCC DoC                                      | Shielded, 1.0 m   | N/A                                                        |
| 4.   | Notebook           | DELL          | P20G                   | FCC DoC/<br>Contains FCC ID:<br>QDS-BRCM1051 | N/A               | AC I/P:<br>Unshielded, 1.2 m<br>DC O/P:<br>Shielded, 1.8 m |
| 5.   | LCD Monitor        | DELL          | U2410                  | FCC DoC                                      | Shielded, 1.6 m   | Unshielded, 1.8 m                                          |
| 6.   | USB2.0 HD          | WD            | WDBAAR3200A<br>BK-PESN | FCC DoC                                      | Unshielded, 0.5 m | N/A                                                        |
| 7.   | USB HD             | DigiFusion    | HD-326U3S              | FCC DoC                                      | Shielded, 0.5m    | N/A                                                        |
| 8.   | SD Card            | SanDisk       | MicroSD HC             | FCC DoC                                      | N/A               | N/A                                                        |

## 2.5 EUT Operation Test Setup

The programmed RF utility “MPTool”, is installed in EUT to provide channel selection, power level, data rate and the application type. RF Utility can send transmitting signal for all testing. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.



## 2.6 Measurement Results Explanation Example

**For all conducted test items:**

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example :

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

*Offset = RF cable loss + attenuator factor.*

Following shows an offset computation example with cable loss 4.2 dB and 10dB attenuator.

$$\begin{aligned}\text{Offset(dB)} &= \text{RF cable loss(dB)} + \text{attenuator factor(dB)} \\ &= 4.2 + 10 = 14.2 \text{ (dB)}\end{aligned}$$



### **3 Test Result**

#### **3.1 Maximum Conducted Output Power Measurement**

##### **3.1.1 Limit of Maximum Conducted Output Power**

**<FCC 14-30 CFR 15.407>**

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.

For the 5.25–5.725 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.

For the band 5.725–5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Note that U-NII-2 band, devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

##### **3.1.2 Measuring Instruments**

The measuring equipment is listed in the section 4 of this test report.

### 3.1.3 Test Procedures

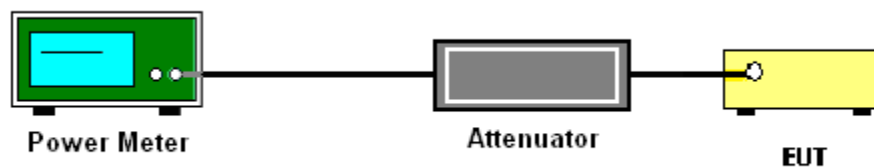
The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04.

Method PM (Measurement using an RF average power meter):

1. Measurement is performed using a wideband RF power meter.
2. The EUT is configured to transmit continuously with a consistent duty cycle at its maximum power control level.
3. Measure the average power of the transmitter, and the average power is corrected with duty factor,  $10 \log(1/x)$ , where  $x$  is the duty cycle.

### 3.1.4 Test Setup

For normal channel:



### 3.1.5 Test Result of Maximum Conducted Output Power

Please refer to Appendix A.



## 3.2 Unwanted Radiated Emission Measurement

This section is to measure unwanted emissions through radiated measurement for band edge spurious emissions and out of band emissions measurement.

### 3.2.1 Limit of Unwanted Emissions

- (1) For transmitters operating in the 5.725-5.85 GHz band:

15.407(b)(4)(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

- (2) Unwanted spurious emissions fallen in restricted bands per FCC Part15.205 shall comply with the general field strength limits set forth in § 15.209 as below table,

| Frequency<br>(MHz) | Field Strength<br>(microvolts/meter) | Measurement Distance<br>(meters) |
|--------------------|--------------------------------------|----------------------------------|
| 0.009 – 0.490      | 2400/F(kHz)                          | 300                              |
| 0.490 – 1.705      | 24000/F(kHz)                         | 30                               |
| 1.705 – 30.0       | 30                                   | 30                               |
| 30 – 88            | 100                                  | 3                                |
| 88 – 216           | 150                                  | 3                                |
| 216 - 960          | 200                                  | 3                                |
| Above 960          | 500                                  | 3                                |

**Note:** The following formula is used to convert the EIRP to field strength.

$$E = \frac{1000000\sqrt{30P}}{3} \quad \mu\text{V/m, where P is the eirp (Watts)}$$



| EIRP (dBm) | Field Strength at 3m (dBμV/m) |
|------------|-------------------------------|
| -17        | 78.3                          |
| - 27       | 68.3                          |

(3) KDB789033 D02 v01r04 G)2)c)

- (i) Section 15.407(b)(1-3) specifies the unwanted emissions limit for the U-NII-1 and 2 bands. As specified, emissions above 1000 MHz that are outside of the restricted bands are subject to a peak emission limit of -27 dBm/MHz. However, an out-of-band emission that complies with both the average and peak limits of Section 15.209 is not required to satisfy the -27 dBm/MHz dBm/MHz peak emission limit.
- (ii) Section 15.407(b)(4) specifies the unwanted emissions limit for the U-NII-3 band. A band emissions mask is specified in Section 15.407(b)(4)(i). An alternative to the band emissions mask is specified in Section 15.407(b)(4)(ii). The alternative limits are based on the highest antenna gain specified in the filing. There are also marketing and importation restrictions for the alternative limit.

**Note 3:** An out-of-band emission that complies with both the average and peak limits of Section 15.209 is not required to satisfy the -27 dBm/MHz peak emission limit.

**Note 4:** Only devices with antenna gains of 10 dBi or less may be approved using the emission limits specified in Section 15.247(d) till March 2, 2018; all other devices operating in this band must use the mask specified in Section 15.407(b)(4)(i).

### 3.2.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.



### 3.2.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r04.

Section G) Unwanted emissions measurement.

(1) Procedure for Unwanted Emissions Measurements Below 1000MHz

- RBW = 120 kHz
- VBW = 300 kHz
- Detector = Peak
- Trace mode = max hold

(2) Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz

- RBW = 1 MHz
- VBW  $\geq$  3 MHz
- Detector = Peak
- Sweep time = auto
- Trace mode = max hold

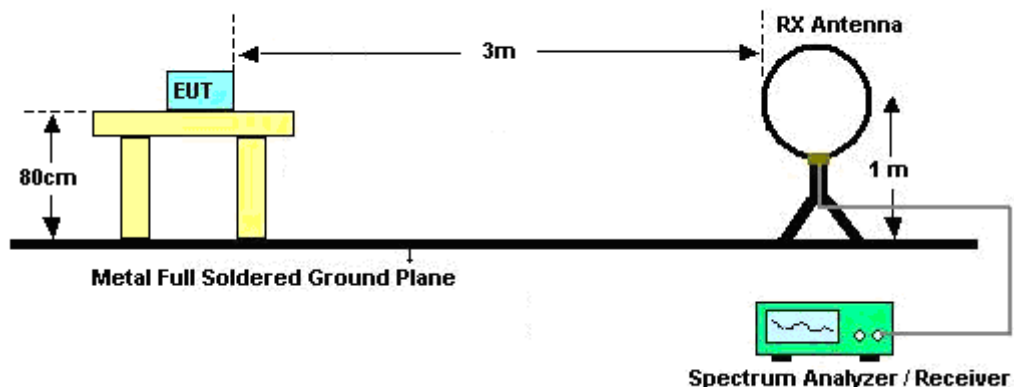
(3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz

- RBW = 1 MHz
- VBW = 10 Hz, when duty cycle is no less than 98 percent.
- VBW  $\geq$  1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

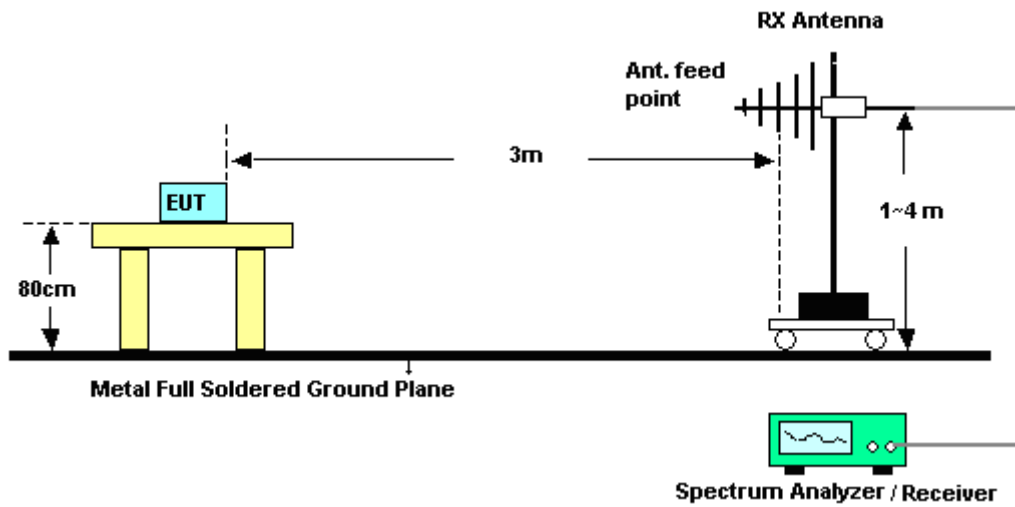
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

### 3.2.4 Test Setup

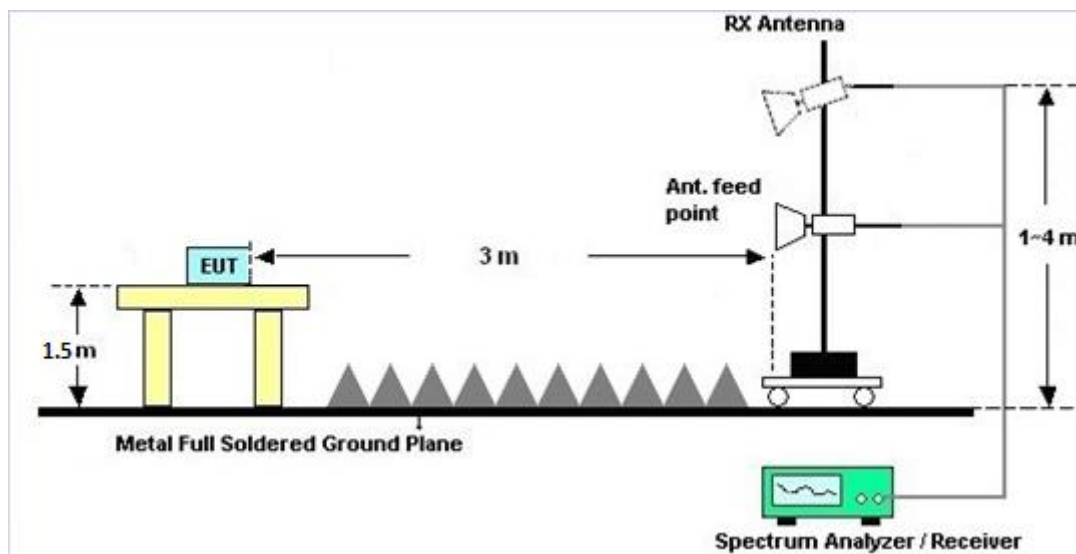
**For radiated emissions below 30MHz**



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz





### **3.2.5 Test Results of Radiated Spurious Emissions (9 kHz ~ 30 MHz)**

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

### **3.2.6 Test Result of Radiated Spurious at Band Edges**

Please refer to Appendix C and D.

### **3.2.7 Duty Cycle**

Please refer to Appendix E.

### **3.2.8 Test Result of Radiated Spurious Emissions (30MHz ~ 10th Harmonic)**

Please refer to Appendix C and D.

### 3.3 AC Conducted Emission Measurement

#### 3.3.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

| Frequency of emission (MHz) | Conducted limit (dB $\mu$ V) |           |
|-----------------------------|------------------------------|-----------|
|                             | Quasi-peak                   | Average   |
| 0.15-0.5                    | 66 to 56*                    | 56 to 46* |
| 0.5-5                       | 56                           | 46        |
| 5-30                        | 60                           | 50        |

\*Decreases with the logarithm of the frequency.

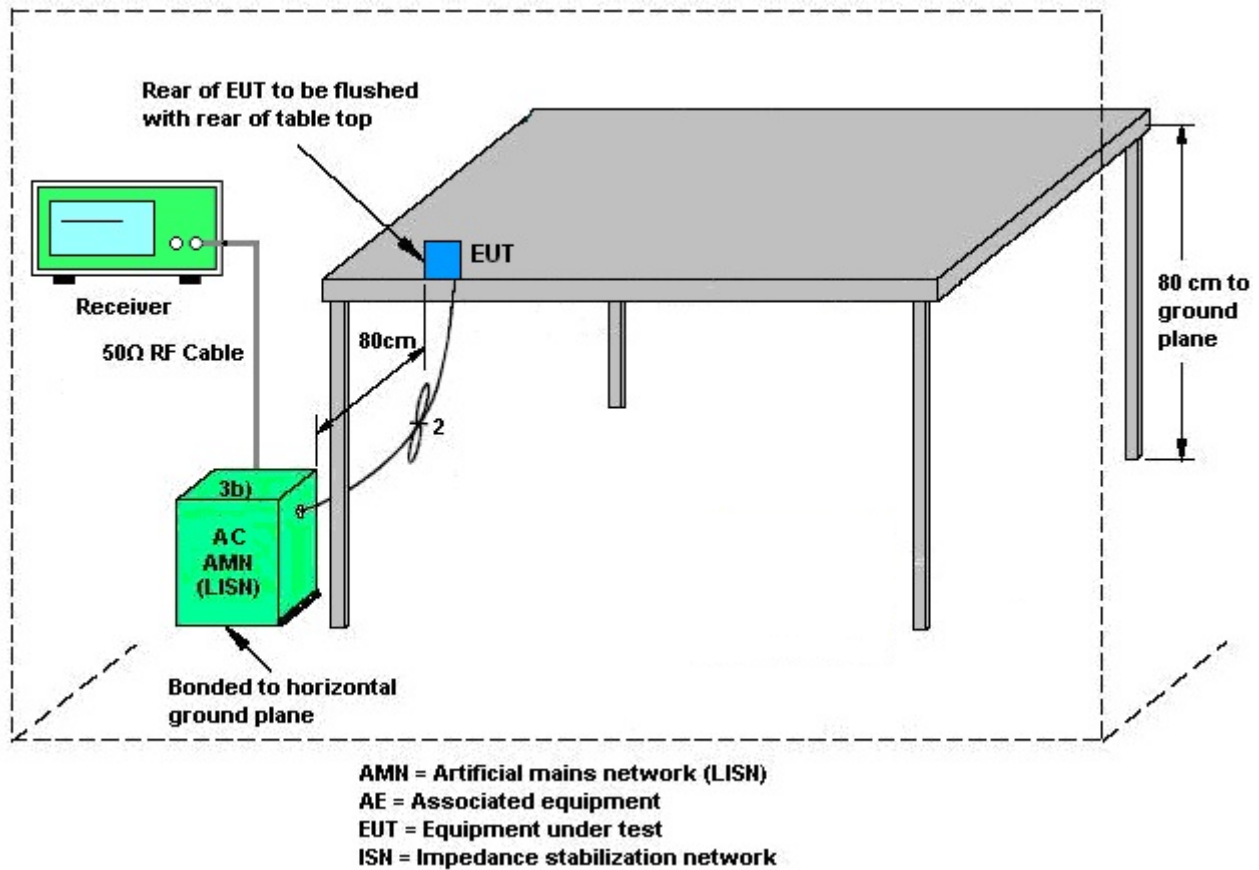
#### 3.3.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

#### 3.3.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

### 3.3.4 Test Setup



### 3.3.5 Test Result of AC Conducted Emission

Please refer to Appendix B.



## **3.4 Antenna Requirements**

### **3.4.1 Standard Applicable**

If transmitting antenna directional gain is greater than 6 dBi, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### **3.4.2 Antenna Anti-Replacement Construction**

An embedded-in antenna design is used.

### **3.4.3 Antenna Gain**

The antenna gain is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.



## 4 List of Measuring Equipments

| Instrument                | Manufacturer    | Model No.                  | Serial No.    | Characteristics                     | Calibration Date | Test Date                       | Due Date      | Remark                   |
|---------------------------|-----------------|----------------------------|---------------|-------------------------------------|------------------|---------------------------------|---------------|--------------------------|
| Power Sensor              | DARE            | RadiPower                  | 15I00041SN009 | 10MHz~6GHz                          | May 03, 2017     | Oct. 13, 2017~<br>Nov. 15, 2017 | May 02, 2018  | Conducted<br>(TH05-HY)   |
| Signal Analyzer           | Rohde & Schwarz | FSV40                      | 101397        | 10Hz~40GHz                          | Nov. 04, 2016    | Oct. 13, 2017~<br>Nov. 02, 2017 | Nov. 03, 2017 | Conducted<br>(TH05-HY)   |
| Signal Analyzer           | Rohde & Schwarz | FSV40                      | 101397        | 10Hz~40GHz                          | Nov. 07, 2017    | Nov. 07, 2017~<br>Nov. 15, 2017 | Nov. 06, 2018 | Conducted<br>(TH05-HY)   |
| Spectrum Analyzer         | Rohde & Schwarz | FSP30                      | 101067        | 9kHz~30GHz                          | Nov. 17, 2016    | Oct. 13, 2017~<br>Nov. 15, 2017 | Nov. 16, 2017 | Conducted<br>(TH05-HY)   |
| Temperature Chamber       | ESPEC           | SU-241                     | 92003713      | -30℃ ~95℃                           | Jun. 07, 2017    | Oct. 13, 2017~<br>Nov. 15, 2017 | Jun. 06, 2018 | Conducted<br>(TH05-HY)   |
| Programmable Power Supply | GW Instek       | PSS-2005                   | EL890001      | 1V~20V<br>0.5A~4A                   | Oct. 03, 2017    | Oct. 13, 2017~<br>Nov. 15, 2017 | Oct. 02, 2018 | Conducted<br>(TH05-HY)   |
| AC Power Source           | ChainTek        | APC-1000W                  | N/A           | N/A                                 | N/A              | Oct. 23, 2017                   | N/A           | Conduction<br>(CO05-HY)  |
| EMI Test Receiver         | Rohde & Schwarz | ESCI 7                     | 100724        | 9kHz~7GHz                           | Sep. 20, 2017    | Oct. 23, 2017                   | Sep. 19, 2018 | Conduction<br>(CO05-HY)  |
| LISN                      | Rohde & Schwarz | ENV216                     | 100080        | 9kHz~30MHz                          | Nov. 29, 2016    | Oct. 23, 2017                   | Nov. 28, 2017 | Conduction<br>(CO05-HY)  |
| LISN                      | Rohde & Schwarz | ENV216                     | 100081        | 9kHz~30MHz                          | Dec. 06, 2016    | Oct. 23, 2017                   | Dec. 05, 2017 | Conduction<br>(CO05-HY)  |
| Loop Antenna              | Rohde & Schwarz | HFH2-Z2                    | 100315        | 9 kHz~30 MHz                        | May 15, 2017     | Oct. 24, 2017                   | May 14, 2019  | Radiation<br>(03CH07-HY) |
| Preamplifier              | MITEQ           | AMF-7D-00101<br>800-30-10P | 1590075       | 1GHz ~ 18GHz                        | Apr. 25, 2017    | Oct. 24, 2017                   | Apr. 24, 2018 | Radiation<br>(03CH07-HY) |
| Preamplifier              | COM-POWER       | PA-103A                    | 161241        | 10MHz-1GHz                          | Mar. 14, 2017    | Oct. 24, 2017                   | Mar. 13, 2018 | Radiation<br>(03CH07-HY) |
| Preamplifier              | Agilent         | 8449B                      | 3008A02362    | 1GHz~ 26.5GHz                       | Oct. 13, 2017    | Oct. 24, 2017                   | Oct. 12, 2018 | Radiation<br>(03CH07-HY) |
| Spectrum Analyzer         | Agilent         | N9010A                     | MY53470118    | 10Hz~44GHz                          | Apr. 17, 2017    | Oct. 24, 2017                   | Apr. 16, 2018 | Radiation<br>(03CH07-HY) |
| Antenna Mast              | Max-Full        | MFA520BS                   | N/A           | 1m~4m                               | N/A              | Oct. 24, 2017                   | N/A           | Radiation<br>(03CH07-HY) |
| Turn Table                | ChainTek        | Chaintek 3000              | N/A           | 0~360 Degree                        | N/A              | Oct. 24, 2017                   | N/A           | Radiation<br>(03CH07-HY) |
| Amplifier                 | MITEQ           | TTA1840-35-H<br>G          | 1871923       | 18GHz~40GHz,<br>VSWR : 2.5:1<br>max | Jul. 18, 2017    | Oct. 24, 2017                   | Jul. 17, 2018 | Radiation<br>(03CH07-HY) |
| EMI Test Receiver         | Agilent         | N9038A(MXE)                | MY53290053    | 20Hz to<br>26.5GHz                  | Jan. 12, 2017    | Oct. 24, 2017                   | Jan. 11, 2018 | Radiation<br>(03CH07-HY) |
| SHF-EHF<br>Horn Antenna   | SCHWARZBECK     | BBHA 9170                  | BBHA9170584   | 18GHz- 40GHz                        | Nov. 08, 2016    | Oct. 24, 2017                   | Nov. 07, 2017 | Radiation<br>(03CH07-HY) |



## 5 Uncertainty of Evaluation

### Uncertainty of Conducted Emission Measurement (150kHz ~ 30MHz)

|                                                                            |      |
|----------------------------------------------------------------------------|------|
| Measuring Uncertainty for a Level of Confidence<br>of 95% ( $U = 2Uc(y)$ ) | 2.70 |
|----------------------------------------------------------------------------|------|

### Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

|                                                                            |      |
|----------------------------------------------------------------------------|------|
| Measuring Uncertainty for a Level of Confidence<br>of 95% ( $U = 2Uc(y)$ ) | 5.70 |
|----------------------------------------------------------------------------|------|

### Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

|                                                                            |      |
|----------------------------------------------------------------------------|------|
| Measuring Uncertainty for a Level of Confidence<br>of 95% ( $U = 2Uc(y)$ ) | 5.50 |
|----------------------------------------------------------------------------|------|

### Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

|                                                                            |      |
|----------------------------------------------------------------------------|------|
| Measuring Uncertainty for a Level of Confidence<br>of 95% ( $U = 2Uc(y)$ ) | 5.20 |
|----------------------------------------------------------------------------|------|

**Appendix A. Test Result of Conducted Test Items**

|                |                         |                    |       |    |
|----------------|-------------------------|--------------------|-------|----|
| Test Engineer: | Reece Lin               | Temperature:       | 21~25 | °C |
| Test Date:     | 2017/10/13 ~ 2017/11/15 | Relative Humidity: | 51~54 | %  |

**TEST RESULTS DATA****Average Power Table**

| Band IV |           |     |     |             |                  |                               |                                 |          |  |           |
|---------|-----------|-----|-----|-------------|------------------|-------------------------------|---------------------------------|----------|--|-----------|
| Mod.    | Data Rate | NTX | CH. | Freq. (MHz) | Duty Factor (dB) | Average Conducted Power (dBm) | FCC Conducted Power Limit (dBm) | DG (dBi) |  | Pass/Fail |
| 11a     | 6M bps    | 1   | 149 | 5745        | 0.00             | 12.73                         | 30.00                           | 2.00     |  | Pass      |
| 11a     | 6Mbps     | 1   | 157 | 5785        | 0.00             | 12.67                         | 30.00                           | 2.00     |  | Pass      |
| 11a     | 6Mbps     | 1   | 161 | 5805        | 0.00             | 12.75                         | 30.00                           | 2.00     |  | Pass      |
| HT20    | MCS 0     | 1   | 149 | 5745        | 0.00             | 11.67                         | 30.00                           | 2.00     |  | Pass      |
| HT20    | MCS 0     | 1   | 157 | 5785        | 0.00             | 11.70                         | 30.00                           | 2.00     |  | Pass      |
| HT20    | MCS 0     | 1   | 161 | 5805        | 0.00             | 11.70                         | 30.00                           | 2.00     |  | Pass      |
| HT40    | MCS 0     | 1   | 151 | 5755        | 0.00             | 11.48                         | 30.00                           | 2.00     |  | Pass      |
| HT40    | MCS 0     | 1   | 159 | 5795        | 0.00             | 11.40                         | 30.00                           | 2.00     |  | Pass      |
| VHT20   | MCS 0     | 1   | 149 | 5745        | 0.00             | 11.60                         | 30.00                           | 2.00     |  | Pass      |
| VHT20   | MCS 0     | 1   | 157 | 5785        | 0.00             | 11.72                         | 30.00                           | 2.00     |  | Pass      |
| VHT20   | MCS 0     | 1   | 161 | 5805        | 0.00             | 11.73                         | 30.00                           | 2.00     |  | Pass      |
| VHT40   | MCS 0     | 1   | 151 | 5755        | 0.00             | 11.60                         | 30.00                           | 2.00     |  | Pass      |
| VHT40   | MCS 0     | 1   | 159 | 5795        | 0.00             | 11.58                         | 30.00                           | 2.00     |  | Pass      |
| VHT80   | MCS 0     | 1   | 155 | 5775        | 0.00             | 9.99                          | 30.00                           | 2.00     |  | Pass      |



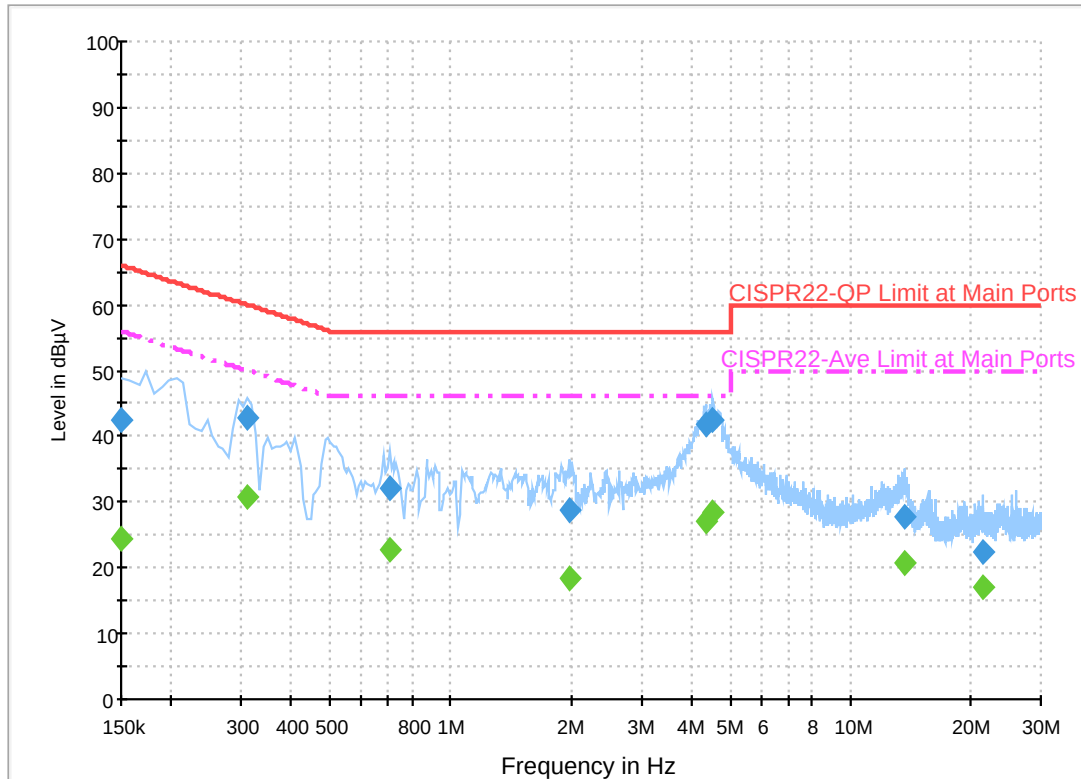
## Appendix B. AC Conducted Emission Test Results

|                 |          |                     |        |
|-----------------|----------|---------------------|--------|
| Test Engineer : | Blue Lan | Temperature :       | 23~24℃ |
|                 |          | Relative Humidity : | 37~38% |

## EUT Information

Report NO : 690221-01  
Test Mode : Mode 1  
Test Voltage : 120Vac/60Hz  
Phase : Line

ENV216 Auto Test-L



## Final Result 1

| Frequency (MHz) | QuasiPeak (dBμV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|------------------|--------|------|------------|-------------|--------------|
| 0.150000        | 42.6             | Off    | L1   | 19.6       | 23.4        | 66.0         |
| 0.310000        | 42.7             | Off    | L1   | 19.5       | 17.3        | 60.0         |
| 0.702000        | 32.2             | Off    | L1   | 19.5       | 23.8        | 56.0         |
| 1.982000        | 28.8             | Off    | L1   | 19.6       | 27.2        | 56.0         |
| 4.342000        | 41.7             | Off    | L1   | 19.6       | 14.3        | 56.0         |
| 4.542000        | 42.6             | Off    | L1   | 19.6       | 13.4        | 56.0         |
| 13.702000       | 27.9             | Off    | L1   | 19.7       | 32.1        | 60.0         |
| 21.390000       | 22.4             | Off    | L1   | 19.8       | 37.6        | 60.0         |

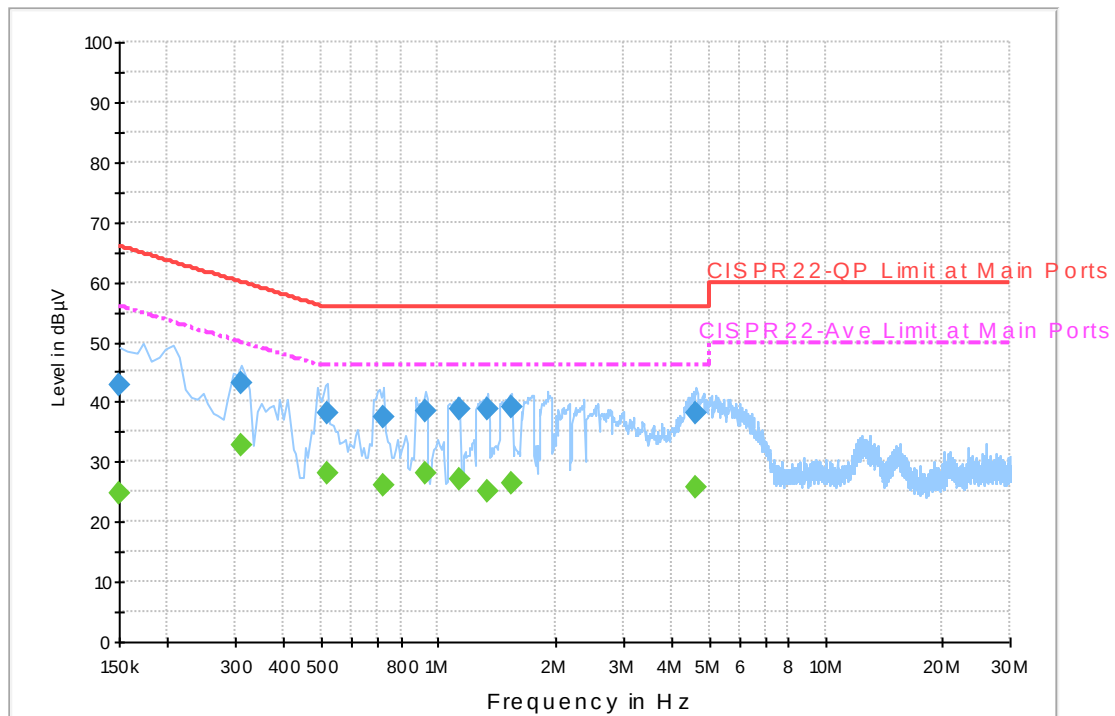
## Final Result 2

| Frequency (MHz) | Average (dBμV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBμV) |
|-----------------|----------------|--------|------|------------|-------------|--------------|
| 0.150000        | 24.6           | Off    | L1   | 19.6       | 31.4        | 56.0         |
| 0.310000        | 30.8           | Off    | L1   | 19.5       | 19.2        | 50.0         |
| 0.702000        | 22.6           | Off    | L1   | 19.5       | 23.4        | 46.0         |
| 1.982000        | 18.4           | Off    | L1   | 19.6       | 27.6        | 46.0         |
| 4.342000        | 27.0           | Off    | L1   | 19.6       | 19.0        | 46.0         |
| 4.542000        | 28.5           | Off    | L1   | 19.6       | 17.5        | 46.0         |
| 13.702000       | 20.8           | Off    | L1   | 19.7       | 29.2        | 50.0         |
| 21.390000       | 17.1           | Off    | L1   | 19.8       | 32.9        | 50.0         |

## EUT Information

Report NO : 690221-01  
Test Mode : Mode 1  
Test Voltage : 120Vac/60Hz  
Phase : Neutral

### ENV216 Auto Test-N



## Final Result 1

| Frequency (MHz) | QuasiPeak (dBµV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|-----------------|------------------|--------|------|------------|-------------|--------------|
| 0.150000        | 42.7             | Off    | N    | 19.5       | 23.3        | 66.0         |
| 0.310000        | 43.2             | Off    | N    | 19.5       | 16.8        | 60.0         |
| 0.518000        | 38.2             | Off    | N    | 19.5       | 17.8        | 56.0         |
| 0.726000        | 37.6             | Off    | N    | 19.5       | 18.4        | 56.0         |
| 0.926000        | 38.6             | Off    | N    | 19.5       | 17.4        | 56.0         |
| 1.134000        | 38.8             | Off    | N    | 19.5       | 17.2        | 56.0         |
| 1.342000        | 38.9             | Off    | N    | 19.5       | 17.1        | 56.0         |
| 1.550000        | 39.2             | Off    | N    | 19.5       | 16.8        | 56.0         |
| 4.654000        | 38.3             | Off    | N    | 19.6       | 17.7        | 56.0         |

## Final Result 2

| Frequency (MHz) | Average (dBµV) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|-----------------|----------------|--------|------|------------|-------------|--------------|
| 0.150000        | 24.7           | Off    | N    | 19.5       | 31.3        | 56.0         |
| 0.310000        | 32.9           | Off    | N    | 19.5       | 17.1        | 50.0         |
| 0.518000        | 28.1           | Off    | N    | 19.5       | 17.9        | 46.0         |
| 0.726000        | 26.1           | Off    | N    | 19.5       | 19.9        | 46.0         |
| 0.926000        | 28.0           | Off    | N    | 19.5       | 18.0        | 46.0         |
| 1.134000        | 27.1           | Off    | N    | 19.5       | 18.9        | 46.0         |
| 1.342000        | 25.1           | Off    | N    | 19.5       | 20.9        | 46.0         |
| 1.550000        | 26.5           | Off    | N    | 19.5       | 19.5        | 46.0         |
| 4.654000        | 25.9           | Off    | N    | 19.6       | 20.1        | 46.0         |



## Appendix C. Radiated Spurious Emission

|                 |                           |                     |         |
|-----------------|---------------------------|---------------------|---------|
| Test Engineer : | Jesse Wang and James Chiu | Temperature :       | 23~24°C |
|                 |                           | Relative Humidity : | 54~55%  |



## Band 4 - 5725~5850MHz

## WIFI 802.11a (Band Edge @ 3m)

| WIFI                         | Note | Frequency | Level      | Over   | Limit      | Read     | Antenna  | Cable  | Preamp | Ant    | Table   | Peak  | Pol.  |
|------------------------------|------|-----------|------------|--------|------------|----------|----------|--------|--------|--------|---------|-------|-------|
| Ant.                         |      |           |            | Limit  | Line       | Level    | Factor   | Loss   | Factor | Pos    | Pos     | Avg.  |       |
| 1                            |      | ( MHz )   | ( dBμV/m ) | ( dB ) | ( dBμV/m ) | ( dBμV ) | ( dB/m ) | ( dB ) | ( dB ) | ( cm ) | ( deg ) | (P/A) | (H/V) |
| 802.11a<br>CH 149<br>5745MHz |      | 5646      | 53.43      | -14.77 | 68.2       | 40.13    | 35.09    | 12.61  | 34.4   | 302    | 178     | P     | H     |
|                              |      | 5684      | 54.63      | -38.77 | 93.4       | 41.21    | 35.17    | 12.67  | 34.42  | 302    | 178     | P     | H     |
|                              |      | 5717.8    | 53.71      | -56.47 | 110.18     | 40.19    | 35.21    | 12.73  | 34.42  | 302    | 178     | P     | H     |
|                              |      | 5723.8    | 61.53      | -57.93 | 119.46     | 48.01    | 35.21    | 12.73  | 34.42  | 302    | 178     | P     | H     |
|                              | *    | 5745      | 105.09     | -      | -          | 91.49    | 35.24    | 12.79  | 34.43  | 302    | 178     | P     | H     |
|                              | *    | 5745      | 97.4       | -      | -          | 83.8     | 35.24    | 12.79  | 34.43  | 302    | 178     | A     | H     |
|                              |      |           |            |        |            |          |          |        |        |        |         |       | H     |
|                              |      |           |            |        |            |          |          |        |        |        |         |       | H     |
|                              |      | 5644.4    | 54.37      | -13.83 | 68.2       | 41.07    | 35.09    | 12.61  | 34.4   | 202    | 228     | P     | V     |
|                              |      | 5694.8    | 54.88      | -46.49 | 101.37     | 41.46    | 35.17    | 12.67  | 34.42  | 202    | 228     | P     | V     |
|                              |      | 5719.4    | 58.69      | -51.94 | 110.63     | 45.17    | 35.21    | 12.73  | 34.42  | 202    | 228     | P     | V     |
|                              |      | 5724.4    | 67.66      | -53.17 | 120.83     | 54.14    | 35.21    | 12.73  | 34.42  | 202    | 228     | P     | V     |
|                              | *    | 5745      | 108.94     | -      | -          | 95.34    | 35.24    | 12.79  | 34.43  | 202    | 228     | P     | V     |
|                              | *    | 5745      | 101.35     | -      | -          | 87.75    | 35.24    | 12.79  | 34.43  | 202    | 228     | A     | V     |
|                              |      |           |            |        |            |          |          |        |        |        |         |       | V     |
|                              |      |           |            |        |            |          |          |        |        |        |         |       | V     |

**Band 4 5725~5850MHz****WIFI 802.11a (Harmonic @ 3m)**

| WIFI<br>Ant.<br>1            | Note                                                                                        | Frequency<br>( MHz ) | Level<br>( dBμV/m ) | Over<br>Limit<br>( dB ) | Limit<br>Line<br>( dBμV/m ) | Read<br>Level<br>( dBμV ) | Antenna<br>Factor<br>( dB/m ) | Cable<br>Loss<br>( dB ) | Preamp<br>Factor<br>( dB ) | Ant<br>Pos<br>( cm ) | Table<br>Pos<br>( deg ) | Peak<br>Avg.<br>( P/A ) | Pol.<br>( H/V ) |
|------------------------------|---------------------------------------------------------------------------------------------|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-------------------------------|-------------------------|----------------------------|----------------------|-------------------------|-------------------------|-----------------|
| 802.11a<br>CH 149<br>5745MHz |                                                                                             | 11490                | 45.33               | -28.67                  | 74                          | 45.41                     | 38.38                         | 18.88                   | 57.34                      | 100                  | 0                       | P                       | H               |
|                              |                                                                                             | 17235                | 50.84               | -17.36                  | 68.2                        | 41.49                     | 41.77                         | 23.38                   | 55.8                       | 100                  | 0                       | P                       | H               |
|                              |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | H               |
|                              |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | H               |
|                              |                                                                                             | 11490                | 46.68               | -27.32                  | 74                          | 46.76                     | 38.38                         | 18.88                   | 57.34                      | 100                  | 0                       | P                       | V               |
|                              |                                                                                             | 17235                | 50.72               | -17.48                  | 68.2                        | 41.37                     | 41.77                         | 23.38                   | 55.8                       | 100                  | 0                       | P                       | V               |
|                              |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | V               |
|                              |                                                                                             |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         | V               |
| Remark                       | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. |                      |                     |                         |                             |                           |                               |                         |                            |                      |                         |                         |                 |

## Emission below 1GHz

## 5GHz WIFI 802.11a (LF @ 3m)

| WIFI                  | Note                                                                       | Frequency | Level      | Over   | Limit      | Read   | Antenna  | Cable  | Preamp | Ant    | Table   | Peak  | Pol.  |
|-----------------------|----------------------------------------------------------------------------|-----------|------------|--------|------------|--------|----------|--------|--------|--------|---------|-------|-------|
| Ant.                  |                                                                            |           |            | Limit  | Line       | Level  | Factor   | Loss   | Factor | Pos    | Pos     | Avg.  |       |
| 1                     |                                                                            | ( MHz )   | ( dBμV/m ) | ( dB ) | ( dBμV/m ) | (dBμV) | ( dB/m ) | ( dB ) | ( dB ) | ( cm ) | ( deg ) | (P/A) | (H/V) |
| 5GHz<br>802.11a<br>LF |                                                                            | 81.03     | 35.43      | -4.57  | 40         | 51.47  | 13.43    | 2.11   | 31.58  | 100    | 58      | P     | H     |
|                       |                                                                            | 186.06    | 33.72      | -9.78  | 43.5       | 47.76  | 14.71    | 2.72   | 31.47  | -      | -       | P     | H     |
|                       |                                                                            | 291.63    | 39.39      | -6.61  | 46         | 48.39  | 19.03    | 3.28   | 31.31  | -      | -       | P     | H     |
|                       |                                                                            | 323.8     | 38.36      | -7.64  | 46         | 46.7   | 19.49    | 3.43   | 31.26  | -      | -       | P     | H     |
|                       |                                                                            | 356.7     | 38.3       | -7.7   | 46         | 45.37  | 20.56    | 3.57   | 31.2   | -      | -       | P     | H     |
|                       |                                                                            | 576.5     | 38.2       | -7.8   | 46         | 39.3   | 25.57    | 4.2    | 30.87  | -      | -       | P     | H     |
|                       |                                                                            |           |            |        |            |        |          |        |        |        |         |       | H     |
|                       |                                                                            |           |            |        |            |        |          |        |        |        |         |       | H     |
|                       |                                                                            |           |            |        |            |        |          |        |        |        |         |       | H     |
|                       |                                                                            |           |            |        |            |        |          |        |        |        |         |       | H     |
|                       |                                                                            |           |            |        |            |        |          |        |        |        |         |       | H     |
|                       |                                                                            |           |            |        |            |        |          |        |        |        |         |       | H     |
|                       |                                                                            | 82.65     | 30.66      | -9.34  | 40         | 46.6   | 13.53    | 2.11   | 31.58  | -      | -       | P     | V     |
|                       |                                                                            | 186.87    | 25.49      | -18.01 | 43.5       | 39.53  | 14.7     | 2.72   | 31.46  | -      | -       | P     | V     |
|                       |                                                                            | 291.63    | 28.14      | -17.86 | 46         | 37.14  | 19.03    | 3.28   | 31.31  | -      | -       | P     | V     |
|                       |                                                                            | 453.3     | 35.36      | -10.64 | 46         | 39.48  | 23.05    | 3.88   | 31.05  | -      | -       | P     | V     |
|                       |                                                                            | 517.7     | 35.14      | -10.86 | 46         | 38.05  | 23.91    | 4.13   | 30.95  | -      | -       | P     | V     |
|                       |                                                                            | 575.8     | 37.85      | -8.15  | 46         | 38.95  | 25.57    | 4.2    | 30.87  | 100    | 102     | P     | V     |
|                       |                                                                            |           |            |        |            |        |          |        |        |        |         |       | V     |
|                       |                                                                            |           |            |        |            |        |          |        |        |        |         |       | V     |
|                       |                                                                            |           |            |        |            |        |          |        |        |        |         |       | V     |
|                       |                                                                            |           |            |        |            |        |          |        |        |        |         |       | V     |
|                       |                                                                            |           |            |        |            |        |          |        |        |        |         |       | V     |
|                       |                                                                            |           |            |        |            |        |          |        |        |        |         |       | V     |
| Remark                | 1. No other spurious found.<br>2. All results are PASS against limit line. |           |            |        |            |        |          |        |        |        |         |       |       |



**Note symbol**

|     |                                                                                                                                                          |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| *   | <b>Fundamental Frequency</b> which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency. |
| !   | Test result is <b>over limit</b> line.                                                                                                                   |
| P/A | <b>P</b> eak or <b>A</b> verage                                                                                                                          |
| H/V | <b>H</b> orizontal or <b>V</b> ertical                                                                                                                   |



A calculation example for radiated spurious emission is shown as below:

| WIFI    | Note | Frequency | Level      | Over   | Limit      | Read     | Antenna  | Cable  | Preamp | Ant    | Table   | Peak    | Pol.    |
|---------|------|-----------|------------|--------|------------|----------|----------|--------|--------|--------|---------|---------|---------|
| Ant.    |      |           |            | Limit  | Line       | Level    | Factor   | Loss   | Factor | Pos    | Pos     | Avg.    |         |
| 1       |      | ( MHz )   | ( dBμV/m ) | ( dB ) | ( dBμV/m ) | ( dBμV ) | ( dB/m ) | ( dB ) | ( dB ) | ( cm ) | ( deg ) | ( P/A ) | ( H/V ) |
| 802.11b |      | 2390      | 55.45      | -18.55 | 74         | 54.51    | 32.22    | 4.58   | 35.86  | 103    | 308     | P       | H       |
| CH 01   |      |           |            |        |            |          |          |        |        |        |         |         |         |
| 2412MHz |      | 2390      | 43.54      | -10.46 | 54         | 42.6     | 32.22    | 4.58   | 35.86  | 103    | 308     | A       | H       |

1. Level(dBμV/m) =

Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

2. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

**For Peak Limit @ 2390MHz:**

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)

= 55.45 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

**For Average Limit @ 2390MHz:**

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Cable Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)

= 43.54 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

= -10.46(dB)

**Both peak and average measured complies with the limit line, so test result is “PASS”.**



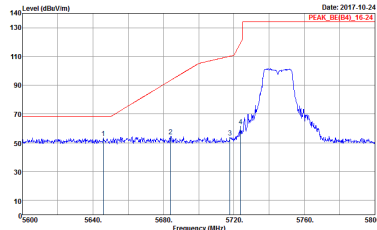
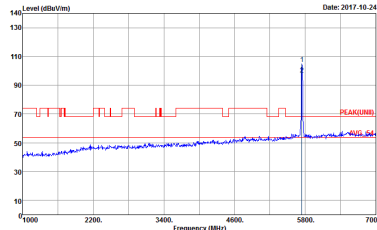
## **Appendix D. Radiated Spurious Emission Plots**

### **Note symbol**

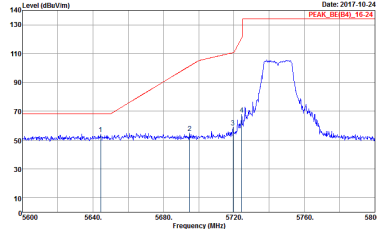
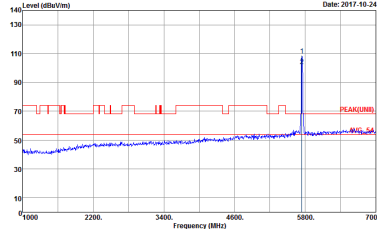
|    |                       |
|----|-----------------------|
| -L | Low channel location  |
| -R | High channel location |



Band 4 - 5725~5850MHz  
WIFI 802.11a (Band Edge @ 3m)

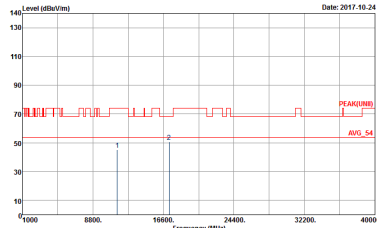
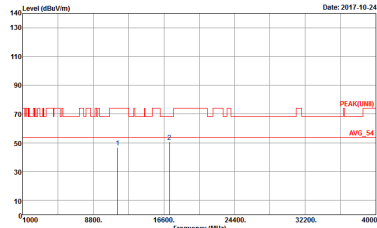
| WIFI | Band 4 5725~5850MHz Band Edge @ 3m                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                      |
|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11a CH149 5745MHz                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                      |
| 1    | Horizontal                                                                                                                                                                                                                                                                                 | Fundamental                                                                                                                                                                                                                                                                          |
| Peak | <div><p>Site : 03CH07-HY<br/>Condition : PEAK_BE(B4)_16-24 3m HF_ANT_00075962 HORIZONTAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 690221-01<br/>Mode : 30</p></div> | <div><p>Site : 03CH07-HY<br/>Condition : PEAK(UNIT) 3m HF_ANT_00075962 HORIZONTAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 690221-01<br/>Mode : 30</p></div> |



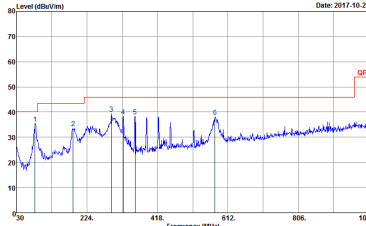
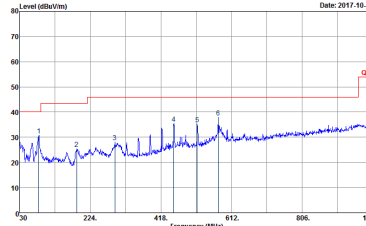
| WIFI | Band 4 5725~5850MHz Band Edge @ 3m                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                    |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11a CH149 5745MHz                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                    |
| 1    | Vertical                                                                                                                                                                                                                                                                                 | Fundamental                                                                                                                                                                                                                                                                        |
| Peak | <div><p>Site : 03CH07-HY<br/>Condition : PEAK_BE(84)_16-24 3m HF_ANT_00075962 VERTICAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 690221-01<br/>Mode : 30</p></div> | <div><p>Site : 03CH07-HY<br/>Condition : PEAK(UNII) 3m HF_ANT_00075962 VERTICAL<br/>RBW:1000.000KHz VBW:3000.000KHz SWT:Auto<br/>Detector : Peak<br/>Project : 690221-01<br/>Mode : 30</p></div> |
|      |                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                    |



Band 4 - 5725~5850MHz  
WIFI 802.11a (Harmonic @ 3m)

| WIFI         | Band 4 5725~5850MHz Harmonic @ 3m                                                                                                                                                                                            |                                                                                                                                                                                                                             |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT          | 802.11a CH149 5745MHz                                                                                                                                                                                                        |                                                                                                                                                                                                                             |
| 1            | Horizontal                                                                                                                                                                                                                   | Vertical                                                                                                                                                                                                                    |
| Peak<br>Avg. |  <p>Site : 03CH07-14Y<br/>Condition : PEAK(UNIT) 3m SHF-EHF_131029 HORIZONTAL<br/>Detector : Peak<br/>Project : 690221-01<br/>Mode : 30</p> |  <p>Site : 03CH07-14Y<br/>Condition : PEAK(UNIT) 3m SHF-EHF_131029 VERTICAL<br/>Detector : Peak<br/>Project : 690221-01<br/>Mode : 30</p> |

**Emission below 1GHz  
5GHz WIFI 802.11a (LF)**

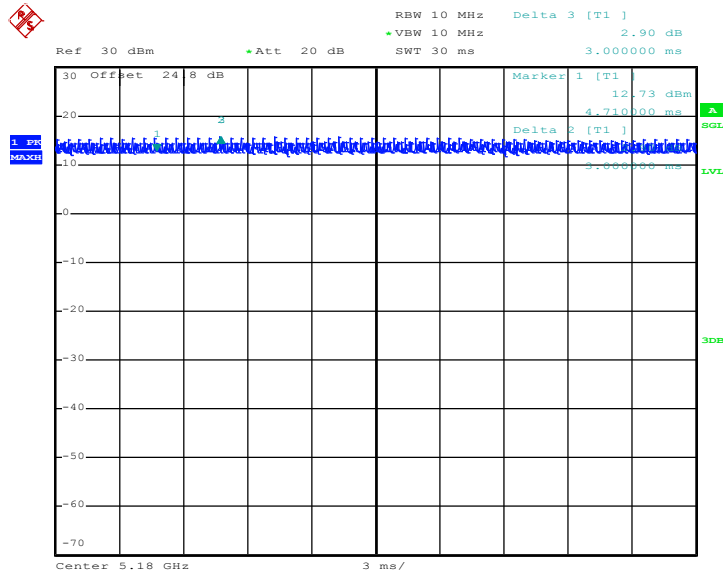
| WIFI                 | 5GHz 5725~5850MHz                                                                                                                                                                                                     |                                                                                                                                                                                                                      |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT                  | 802.11a LF                                                                                                                                                                                                            |                                                                                                                                                                                                                      |
| 1                    | Horizontal                                                                                                                                                                                                            | Vertical                                                                                                                                                                                                             |
| <b>QP /<br/>Peak</b> |  <p>Site : 03CH07-4FY<br/>Condition : QP 3m LF-ANT-35419(6) HORIZONTAL<br/>Detector : Peak<br/>Project : 690221-01<br/>Mode : 39</p> |  <p>Site : 03CH07-4FY<br/>Condition : QP 3m LF-ANT-35419(6) VERTICAL<br/>Detector : Peak<br/>Project : 690221-01<br/>Mode : 39</p> |
|                      |                                                                                                                                                                                                                       |                                                                                                                                                                                                                      |

## Appendix E. Duty Cycle Plots

| Band                | Duty Cycle(%) | T(us) | 1/T(kHz) | VBW Setting |
|---------------------|---------------|-------|----------|-------------|
| 802.11a             | 100           | -     | -        | 10Hz        |
| 5GHz 802.11n HT20   | 100           | -     | -        |             |
| 5GHz 802.11n HT40   | 100           | -     | -        |             |
| 5GHz 802.11ac VHT20 | 100           | -     | -        |             |
| 5GHz 802.11ac VHT40 | 100           | -     | -        |             |
| 5GHz 802.11ac VHT80 | 100           | -     | -        |             |

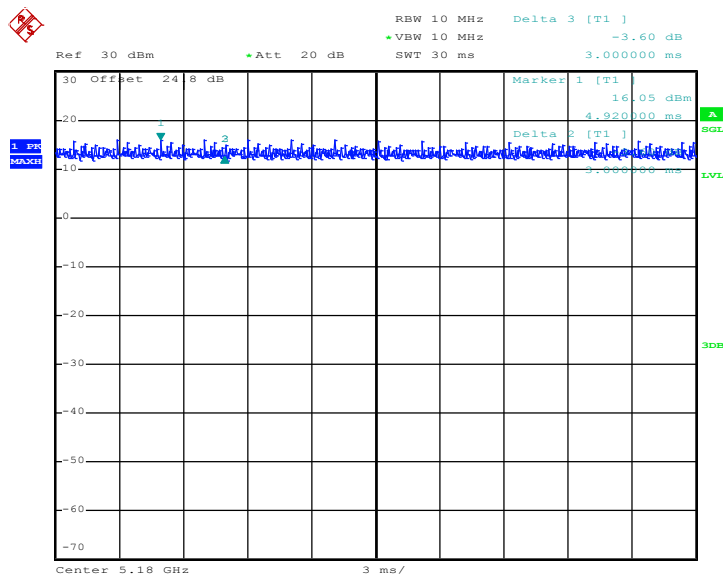


802.11a



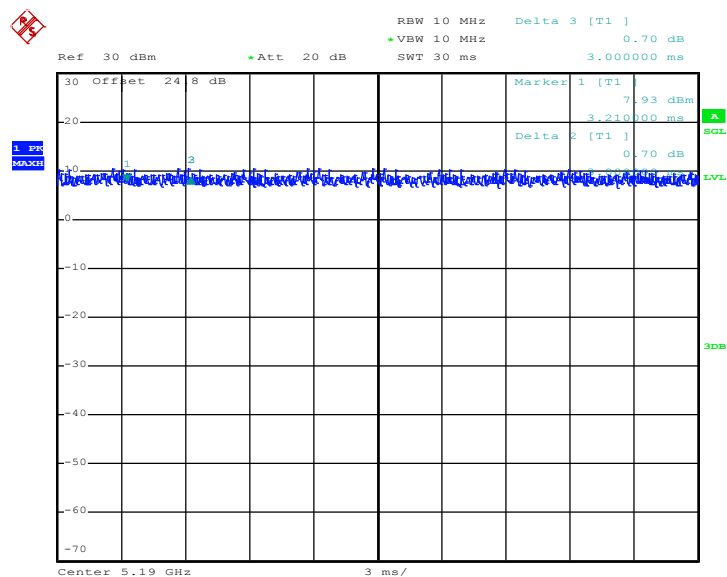
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802.11n HT20



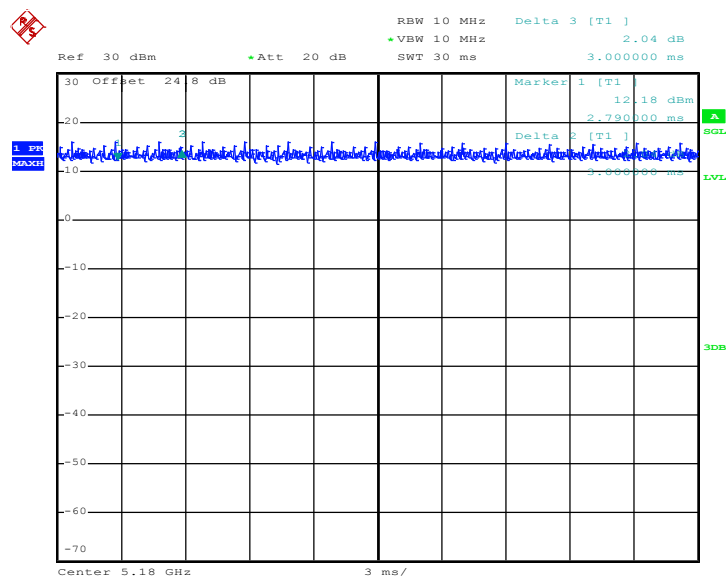
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## 802.11n HT40



Date: 13.OCT.2017 11:45:52

## 802.11ac VHT20



Date: 13.OCT.2017 11:46:41



## 802.11ac VHT80

