



FCC RF Test Report

APPLICANT : HMD Global Oy
EQUIPMENT : Smart Phone
BRAND NAME : Nokia
MODEL NAME : TA-1046
FCC ID : 2AJOTTA-1046
STANDARD : FCC Part 15 Subpart E §15.407
CLASSIFICATION : (NII) Unlicensed National Information Infrastructure

The product was received on Dec. 07, 2017 and testing was completed on Mar. 05, 2018. 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.

Reviewed by: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager



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FCC ID: 2AJOTTA-1046

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REVISION HISTORY

| REPORT NO. | VERSION | DESCRIPTION | ISSUED DATE |
|------------|---------|-------------------------|---------------|
| FR7D0706F | Rev. 01 | Initial issue of report | Mar. 13, 2018 |
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SUMMARY OF TEST RESULT

| Report Section | FCC Rule | Description | Limit | Result | Remark |
|----------------|--------------------|--|-----------------------------|--------|--|
| 3.1 | 15.403(i) | 6dB, 26dB and 99% Occupied Bandwidth | > 500kHz | Pass | - |
| 3.2 | 15.407(a) | Maximum Conducted Output Power | ≤ 30 dBm | Pass | - |
| 3.3 | 15.407(a) | Power Spectral Density | ≤ 30 dBm/500kHz | Pass | - |
| 3.4 | 15.407(b) | Unwanted Emissions | 15.407(b)(4)(i) & 15.209(a) | Pass | Under limit 10.85 dB at 32.970 MHz |
| 3.5 | 15.207 | AC Conducted Emission | 15.207(a) | Pass | Under limit 9.74 dB at 0.195 MHz |
| 3.6 | 15.407(c) | Automatically Discontinue Transmission | Discontinue Transmission | Pass | - |
| 3.7 | 15.203 & 15.407(a) | Antenna Requirement | N/A | Pass | - |

1 General Description

1.1 Applicant

HMD Global Oy
Karaportti 2, 02610 Espoo, Finland

1.2 Manufacturer

HMD Global Oy
Karaportti 2, 02610 Espoo, Finland

1.3 Product Feature of Equipment Under Test

GSM/WCDMA/LTE, Bluetooth, Wi-Fi 2.4GHz 802.11b/g/n, Wi-Fi 5GHz 802.11a/n/ac, NFC, and GNSS

| Product specification subjective to this standard | |
|---|--|
| Antenna Type | WWAN: PIFA Antenna WLAN: PIFA Antenna Bluetooth: PIFA Antenna NFC: Single Loop Antenna GPS/GLONASS/BDS: PIFA 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 and TW0007 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC Test.

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

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

| | | |
|---------------------------|--|--|
| Test Site | SPORTON INTERNATIONAL INC. | |
| Test Site Location | No.58, Aly. 75, Ln. 564, Wenhua 3rd Rd. Guishan Dist, Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855 | |
| Test Site No. | Sporton Site No. | |
| | 03CH12-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 v02r01.
- ♦ 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 (X plane) were recorded in this report.
- b. AC power line Conducted Emission was tested under maximum output power.

2.1 Carrier Frequency and Channel

| Frequency Band | Channel | Freq. (MHz) | Channel | Freq. (MHz) |
|--------------------------------------|------------------|----------------|---------|----------------|
| 5725-5850 MHz Band 4 (U-NII-3) | 149 | 5745 | 157 | 5785 |
| | 151* | 5755 | 159* | 5795 |
| | 153 | 5765 | 161 | 5805 |
| | 155 [#] | 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 "[#]" were 802.11ac VHT80.

2.2 Test Mode

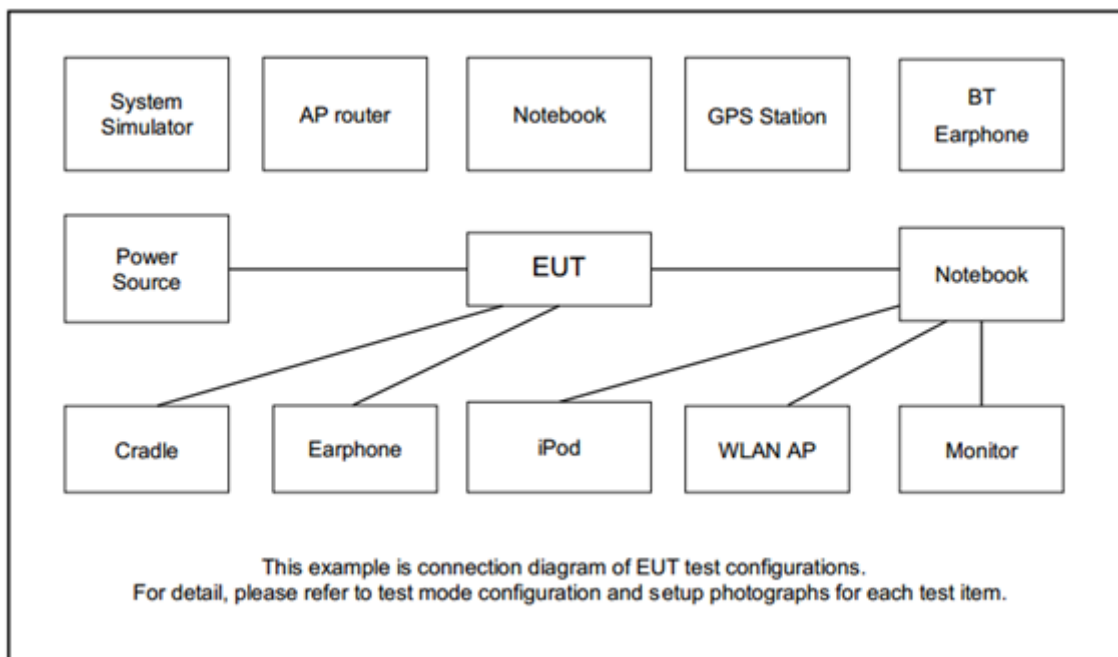
Final test modes are considering the modulation and worse data rates as below table.

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

| | |
|--|--|
| AC Conducted Emission | Mode 1 : LTE Band 38 Idle + Bluetooth Link + WLAN (5GHz) Link + Color Bar + Earphone 2 + USB Cable 1 (Charging from Adapter 3) |
| Remark: For Radiated Test Cases, The tests were performance with Adapter 1, Earphone 1, and USB Cable 1 | |

| Ch. # | | Band IV : 5725-5850 MHz | | |
|-------|--------|-------------------------|--------------|----------------|
| | | 802.11a | 802.11n HT40 | 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. | System Simulator | Anritsu | MT8820C | N/A | N/A | Unshielded, 1.8 m |
| 2. | WLAN AP | ASUS | RT-AC66U | MSQ-RTAC66U | N/A | Unshielded, 1.8 m |
| 3. | Notebook | DELL | Latitude E6320 | FCC DoC/ Contains FCC ID: QDS-BRCM1054 | N/A | AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m |
| 4. | Bluetooth Earphone | Sony Ericsson | MW600 | PY7DDA-2029 | N/A | N/A |
| 5. | SD Card | SanDisk | MicroSD HC | FCC DoC | N/A | N/A |

2.5 EUT Operation Test Setup

The RF test items, utility "QRCT" was installed in Notebook which was programmed in order to make the EUT get into the engineering modes to provide channel selection, power level, data rate and the application type and for continuous transmitting signals.



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 6dB and 26dB and 99% Occupied Bandwidth Measurement

3.1.1 Description of 6dB and 26dB and 99% Occupied Bandwidth

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

26dB and 99% Occupied bandwidth are reporting only.

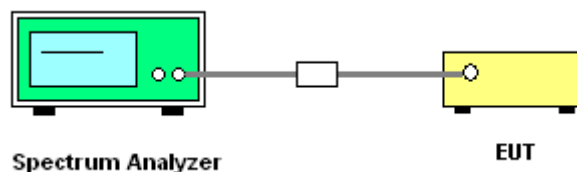
3.1.2 Measuring Instruments

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

3.1.3 Test Procedures

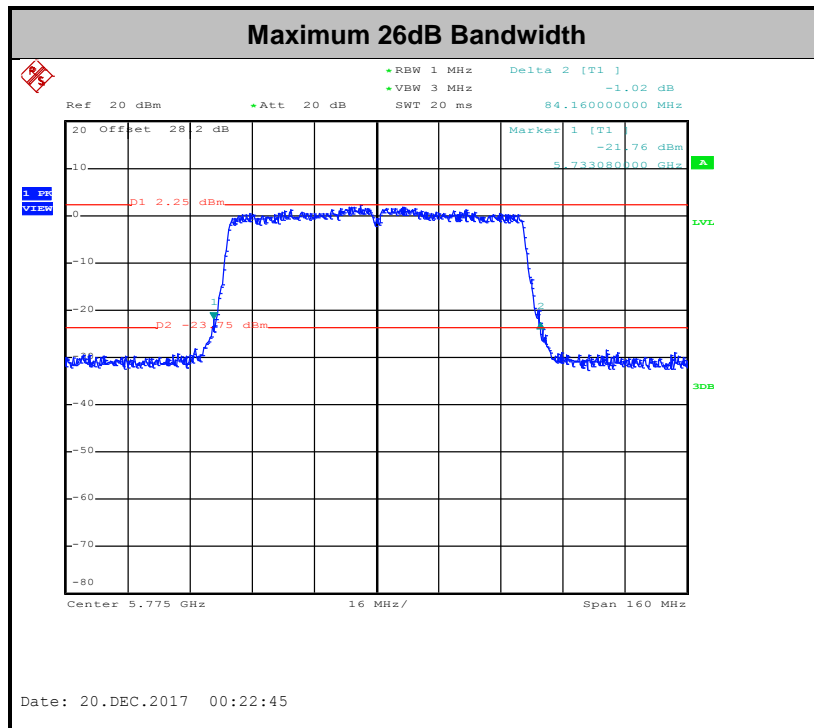
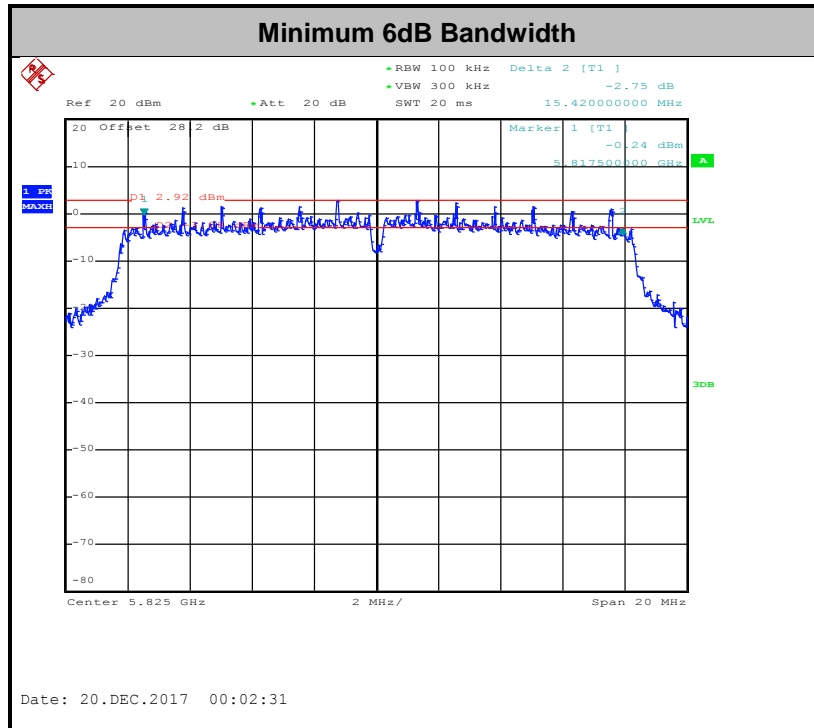
1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
Section C) Emission bandwidth for the band 5.725-5.85GHz
2. Set RBW = 100kHz.
3. Set the VBW $\geq 3 \times$ RBW.
4. Detector = Peak.
5. Trace mode = max hold
6. Measure the maximum width of the emission that is 6 dB down from the peak of the emission.
7. Measure and record the results in the test report.

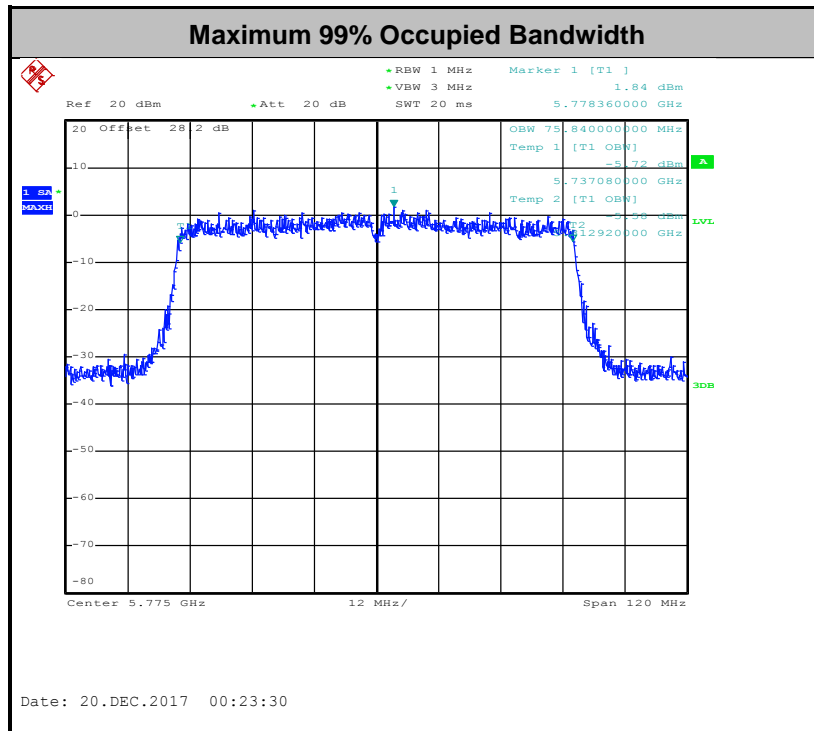
3.1.4 Test Setup



3.1.5 Test Result of 6dB Bandwidth

Please refer to Appendix A.





Note: The occupied channel bandwidth is maintained within the band of operation for all of the modulations.

3.2 Maximum Conducted Output Power Measurement

3.2.1 Limit of Maximum Conducted Output Power

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.

3.2.2 Measuring Instruments

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

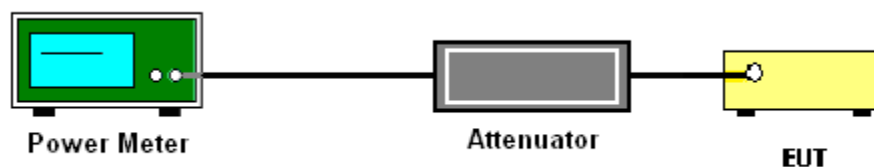
3.2.3 Test Procedures

The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

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.

3.2.4 Test Setup



3.2.5 Test Result of Maximum Conducted Output Power

Please refer to Appendix A.



3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

For the band 5.725–5.85 GHz, 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, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.3.2 Measuring Instruments

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

3.3.3 Test Procedures

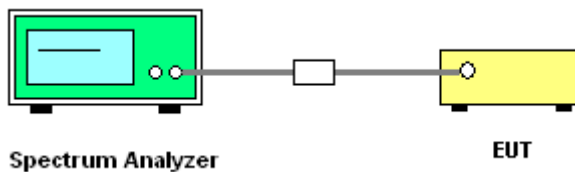
The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
Section F) Maximum power spectral density.

Method SA-2

(trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction).

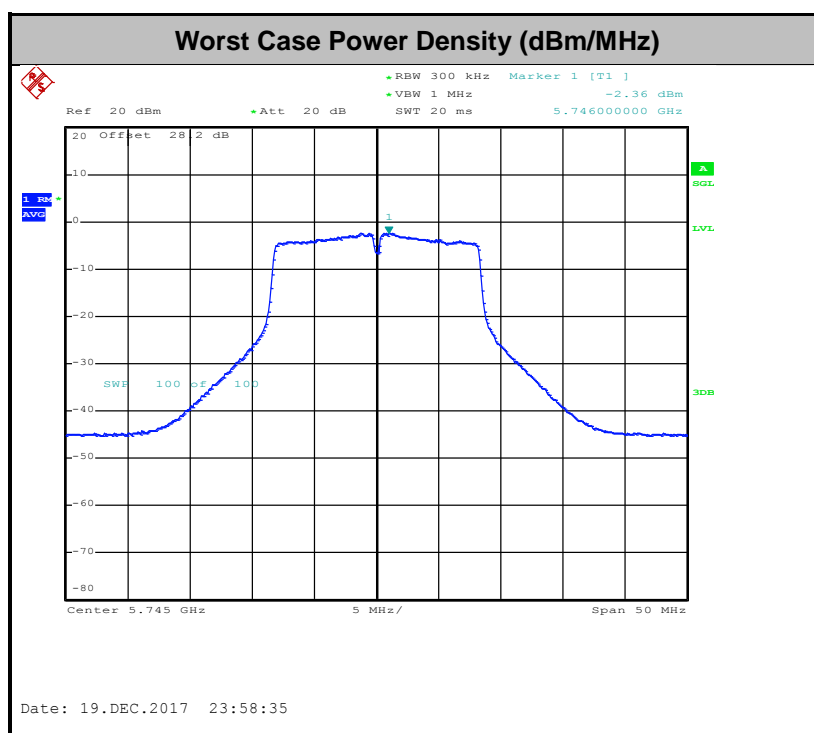
- Measure the duty cycle.
 - Set span to encompass the entire emission bandwidth (EBW) of the signal.
 - Set RBW = 300 kHz.
 - Set VBW \geq 1 MHz.
 - Number of points in sweep \geq 2 Span / RBW.
 - Sweep time = auto.
 - Detector = RMS
 - Trace average at least 100 traces in power averaging mode.
 - Add $10 \log(500\text{kHz}/\text{RBW})$ to the test result.
 - Add $10 \log(1/x)$, where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times. For example, add $10 \log(1/0.25) = 6$ dB if the duty cycle is 25 percent.
1. The RF output of EUT was connected to the spectrum analyzer by a low loss cable.
 2. Each plot has already offset with cable loss, and attenuator loss. Measure the PPSD and record it.

3.3.4 Test Setup



3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.



3.4 Unwanted Emissions Measurement

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

3.4.1 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 shall comply with the general field strength limits as below table,

| Frequency (MHz) | Field Strength (microvolts/meter) | Measurement Distance (meters) |
|--------------------|--------------------------------------|----------------------------------|
| 0.009 – 0.490 | 2400/F(kHz) | 300 |
| 0.490 – 1.705 | 24000/F(kHz) | 30 |
| 1.705 – 30.0 | 30 | 30 |
| 30 – 88 | 100 | 3 |
| 88 – 216 | 150 | 3 |
| 216 - 960 | 200 | 3 |
| 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 v02r01 G)2)c)

- (i) Section 15.407(b)(1) to (b)(3) specify the unwanted emission limits for the U-NII-1 and U-NII-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.³
- (ii) Section 15.407(b)(4) specifies the unwanted emission limit for the U-NII-3 band. A band emissions mask is specified in Section 15.407(b)(4)(i). The emission limits are in terms of a Peak detector. 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 devices using the alternative limit.⁴

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).

3.4.2 Measuring Instruments

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

3.4.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01. 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

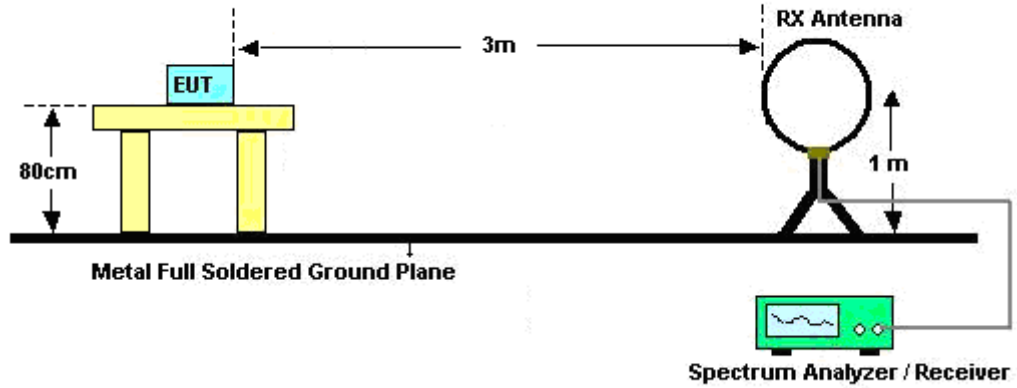


(3) Procedures for Average Unwanted Emissions Measurements Above 1000MHz

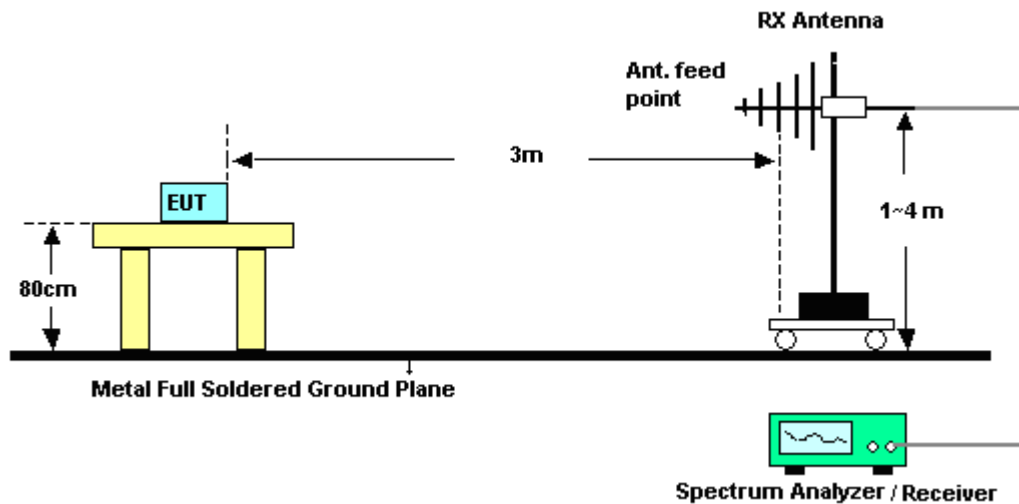
- $RBW = 1 \text{ MHz}$
 - $VBW = 10 \text{ Hz}$, when duty cycle is no less than 98 percent.
 - $VBW \geq 1/T$, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested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

3.4.4 Test Setup

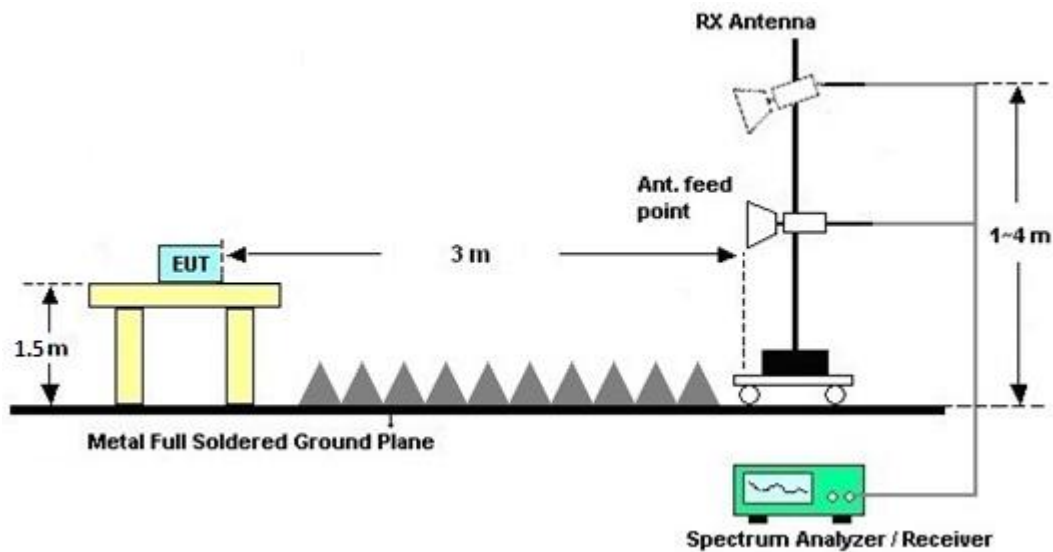
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.4.5 Test Results of Radiated 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.

There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

3.4.6 Test Result of Radiated Band Edges

Please refer to Appendix C and D.

3.4.7 Duty Cycle

Please refer to Appendix E.

3.4.8 Test Result of Unwanted Radiated Emission (30MHz ~ 10th Harmonic)

Please refer to Appendix C and D.

3.5 AC Conducted Emission Measurement

3.5.1 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 μ 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.

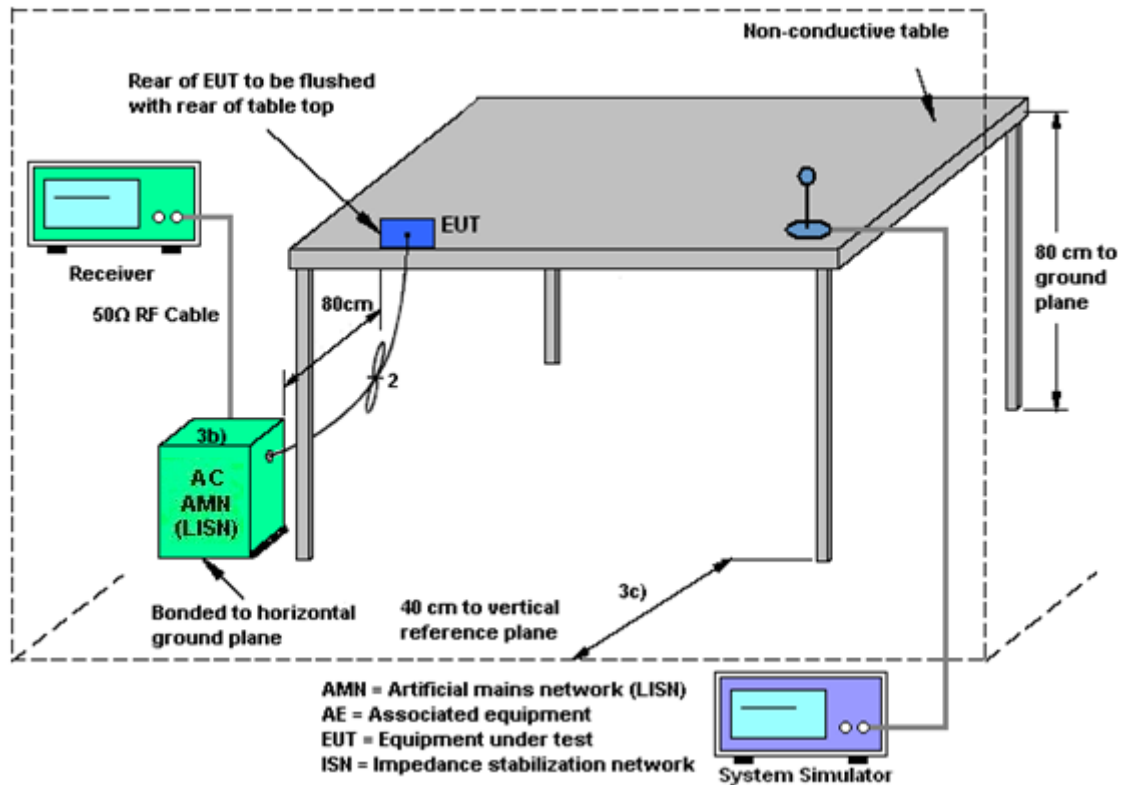
3.5.2 Measuring Instruments

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

3.5.3 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.

3.5.4 Test Setup



3.5.5 Test Result of AC Conducted Emission

Please refer to Appendix B.



3.6 Automatically Discontinue Transmission

3.6.1 Limit of Automatically Discontinue Transmission

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization to describe how this requirement is met.

3.6.2 Measuring Instruments

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

3.6.3 Test Result of Automatically Discontinue Transmission

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.



3.7 Antenna Requirements

3.7.1 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.

3.7.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.7.3 Antenna Gain

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



4 List of Measuring Equipment

| Instrument | Manufacturer | Model No. | Serial No. | Characteristics | Calibration Date | Test Date | Due Date | Remark |
|-------------------------|-----------------------|---------------------------------|-----------------|-------------------------------------|------------------|---------------------------------|---------------|--------------------------|
| Power Meter | Anritsu | ML2495A | 1240001 | N/A | Sep. 07, 2017 | Dec.12, 2017~ Dec. 20, 2017 | Sep. 06, 2018 | Conducted (TH05-HY) |
| Power Sensor | Anritsu | MA2411B | 1207349 | 300MHz~40GHz z | Sep. 07, 2017 | Dec.12, 2017~ Dec. 20, 2017 | Sep. 06, 2018 | Conducted (TH05-HY) |
| Spectrum Analyzer | Rohde & Schwarz | FSP40 | 100055 | 9kHz~40GHz | Jun. 20, 2017 | Dec.12, 2017~ Dec. 20, 2017 | Jun. 19, 2018 | Conducted (TH02-HY) |
| AC Power Source | ChainTek | APC-1000W | N/A | N/A | N/A | Mar. 05, 2018 | N/A | Conduction (CO05-HY) |
| EMI Test Receiver | Rohde & Schwarz | ESR3 | 102388 | 3.6GHz | Dec. 08, 2017 | Mar. 05, 2018 | Dec. 07, 2018 | Conduction (CO05-HY) |
| LISN | Rohde & Schwarz | ENV216 | 100080 | 9kHz~30MHz | Nov. 30, 2017 | Mar. 05, 2018 | Nov. 29, 2018 | Conduction (CO05-HY) |
| LISN | Rohde & Schwarz | ENV216 | 100081 | 9kHz~30MHz | Dec. 08, 2017 | Mar. 05, 2018 | Dec. 07, 2018 | Conduction (CO05-HY) |
| Software | Rohde & Schwarz | EMC32 V10.30 | N/A | N/A | N/A | Mar. 05, 2018 | N/A | Conduction (CO05-HY) |
| Amplifier | MITEQ | TTA1840-35- HG | 1871923 | 18GHz~40GHz, VSWR : 2.5:1 max | Jul. 18, 2017 | Dec. 18, 2017~ Dec. 20, 2017 | Jul. 17, 2018 | Radiation (03CH12-HY) |
| Loop Antenna | Rohde & Schwarz | HFH2-Z2 | 100488 | 9 kHz~30 MHz | Oct. 20, 2016 | Dec. 18, 2017~ Dec. 20, 2017 | Oct. 19, 2018 | Radiation (03CH12-HY) |
| EMI Test Receiver | Rohde & Schwarz | ESU26 | 100390 | 20Hz~26.5GHz | Dec. 23, 2016 | Dec. 18, 2017~ Dec. 20, 2017 | Dec. 22, 2017 | Radiation (03CH12-HY) |
| Horn Antenna | SCHWARZBE CK | BBHA 9120D | 9120D-132 8 | 1GHz ~ 18GHz | Oct. 20, 2017 | Dec. 18, 2017~ Dec. 20, 2017 | Oct. 19, 2018 | Radiation (03CH12-HY) |
| Preamplifier | COM-POWER | PA-103 | 161075 | 10MHz~1GHz | Mar. 23, 2017 | Dec. 18, 2017~ Dec. 20, 2017 | Mar. 22, 2018 | Radiation (03CH12-HY) |
| Preamplifier | MITEQ | AMF-7D-0010 1800 | 2025787 | 1GHz~18GHz | Feb. 13, 2017 | Dec. 18, 2017~ Dec. 20, 2017 | Feb. 12, 2018 | Radiation (03CH12-HY) |
| Preamplifier | Keysight | 83017A | MY532701 48 | 1GHz~26.5GHz | Jan. 12, 2017 | Dec. 18, 2017~ Dec. 20, 2017 | Jan. 11, 2018 | Radiation (03CH12-HY) |
| Spectrum Analyzer | Agilent | N9030A | MY523502 76 | 3Hz~44GHz | Mar. 23, 2017 | Dec. 18, 2017~ Dec. 20, 2017 | Mar. 22, 2018 | Radiation (03CH12-HY) |
| Antenna Mast | EMEC | AM-BS-4500- B | N/A | 1m~4m | N/A | Dec. 18, 2017~ Dec. 20, 2017 | N/A | Radiation (03CH12-HY) |
| Turn Table | EMEC | TT2000 | N/A | 0~360 Degree | N/A | Dec. 18, 2017~ Dec. 20, 2017 | N/A | Radiation (03CH12-HY) |
| Attenuator | Fairview Microwave | SA18S5W-10 | n/a | 10db | Mar. 24, 2017 | Dec. 18, 2017~ Dec. 20, 2017 | Mar. 23, 2018 | Radiation (03CH12-HY) |
| SHF-EHF Horn Antenna | SCHWARZBE CK | BBHA 9170 | BBHA9170 576 | 18GHz ~ 40GHz | Apr. 27, 2017 | Dec. 18, 2017~ Dec. 20, 2017 | Apr. 26, 2018 | Radiation (03CH12-HY) |
| Bilog Antenna | TESEQ | CBL 6111D&00800 N1D01N-06 | 40103&04 | 30MHz to 1GHz | Jan. 07, 2017 | Dec. 18, 2017~ Dec. 20, 2017 | Jan. 06, 2018 | Radiation (03CH12-HY) |



5 Uncertainty of Evaluation

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

| | |
|--|-----|
| Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$) | 2.7 |
|--|-----|

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

| | |
|--|-----|
| Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$) | 5.1 |
|--|-----|

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

| | |
|--|-----|
| Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$) | 5.2 |
|--|-----|

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

| | |
|--|-----|
| Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$) | 4.7 |
|--|-----|

Appendix A. Test Result of Conducted Test Items

| | | | | |
|----------------|-----------------------|--------------------|-------|----|
| Test Engineer: | Shiming Liu/Derek Hsu | Temperature: | 21~25 | °C |
| Test Date: | 2017/12/12~2017/12/20 | Relative Humidity: | 51~54 | % |

TEST RESULTS DATA
6dB and 26dB EBW and 99% OBW

| Band IV | | | | | | | | | |
|---------|-----------|-----|-----|-------------|---------------------|-----------------------|----------------------|--------------------------------|-----------|
| Mod. | Data Rate | NTX | CH. | Freq. (MHz) | 99% Bandwidth (MHz) | 26 dB Bandwidth (MHz) | 6 dB Bandwidth (MHz) | 6dB Bandwidth min. Limit (MHz) | Pass/Fail |
| 11a | 6M bps | 1 | 149 | 5745 | 17.60 | 25.08 | 15.66 | 0.5 | Pass |
| 11a | 6Mbps | 1 | 157 | 5785 | 17.50 | 24.89 | 15.78 | 0.5 | Pass |
| 11a | 6Mbps | 1 | 165 | 5825 | 17.45 | 23.28 | 15.42 | 0.5 | Pass |
| HT20 | MCS 0 | 1 | 149 | 5745 | 18.60 | 25.20 | 16.74 | 0.5 | Pass |
| HT20 | MCS 0 | 1 | 157 | 5785 | 18.55 | 25.41 | 16.02 | 0.5 | Pass |
| HT20 | MCS 0 | 1 | 165 | 5825 | 18.80 | 25.40 | 16.02 | 0.5 | Pass |
| HT40 | MCS 0 | 1 | 151 | 5755 | 36.60 | 41.52 | 36.28 | 0.5 | Pass |
| HT40 | MCS 0 | 1 | 159 | 5795 | 36.60 | 42.00 | 35.68 | 0.5 | Pass |
| VHT80 | MCS 0 | 1 | 155 | 5775 | 75.84 | 84.16 | 75.04 | 0.5 | Pass |

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 | 0.20 | 13.99 | 30.00 | -5.26 | | Pass |
| 11a | 6Mbps | 1 | 157 | 5785 | 0.20 | 13.95 | 30.00 | -5.26 | | Pass |
| 11a | 6Mbps | 1 | 165 | 5825 | 0.20 | 13.76 | 30.00 | -5.26 | | Pass |
| HT20 | MCS 0 | 1 | 149 | 5745 | 0.22 | 12.97 | 30.00 | -5.26 | | Pass |
| HT20 | MCS 0 | 1 | 157 | 5785 | 0.22 | 12.85 | 30.00 | -5.26 | | Pass |
| HT20 | MCS 0 | 1 | 165 | 5825 | 0.22 | 12.62 | 30.00 | -5.26 | | Pass |
| HT40 | MCS 0 | 1 | 151 | 5755 | 0.36 | 12.92 | 30.00 | -5.26 | | Pass |
| HT40 | MCS 0 | 1 | 159 | 5795 | 0.36 | 12.89 | 30.00 | -5.26 | | Pass |
| VHT20 | MCS 0 | 1 | 149 | 5745 | 0.25 | 10.97 | 30.00 | -5.26 | | Pass |
| VHT20 | MCS 0 | 1 | 157 | 5785 | 0.25 | 10.93 | 30.00 | -5.26 | | Pass |
| VHT20 | MCS 0 | 1 | 165 | 5825 | 0.25 | 10.60 | 30.00 | -5.26 | | Pass |
| VHT40 | MCS 0 | 1 | 151 | 5755 | 0.39 | 10.90 | 30.00 | -5.26 | | Pass |
| VHT40 | MCS 0 | 1 | 159 | 5795 | 0.39 | 10.81 | 30.00 | -5.26 | | Pass |
| VHT80 | MCS 0 | 1 | 155 | 5775 | 0.70 | 10.96 | 30.00 | -5.26 | | Pass |

TEST RESULTS DATA
Power Spectral Density

| Band IV | | | | | | | | | | |
|---------|-----------|-----------------|-----|-------------|------------------|---------------------------------|------------------------------------|--------------------------------|----------|-----------|
| Mod. | Data Rate | N _{TX} | CH. | Freq. (MHz) | Duty Factor (dB) | 10log (500kHz /RBW) Factor (dB) | Average Power Density (dBm/500kHz) | Average PSD Limit (dBm/500kHz) | DG (dBi) | Pass/Fail |
| 11a | 6M bps | 1 | 149 | 5745 | 0.20 | 2.22 | 0.06 | 30.00 | -5.26 | Pass |
| 11a | 6Mbps | 1 | 157 | 5785 | 0.20 | 2.22 | -0.10 | 30.00 | -5.26 | Pass |
| 11a | 6Mbps | 1 | 165 | 5825 | 0.20 | 2.22 | -0.45 | 30.00 | -5.26 | Pass |
| HT20 | MCS 0 | 1 | 149 | 5745 | 0.22 | 2.22 | -1.31 | 30.00 | -5.26 | Pass |
| HT20 | MCS 0 | 1 | 157 | 5785 | 0.22 | 2.22 | -1.57 | 30.00 | -5.26 | Pass |
| HT20 | MCS 0 | 1 | 165 | 5825 | 0.22 | 2.22 | -1.87 | 30.00 | -5.26 | Pass |
| HT40 | MCS 0 | 1 | 151 | 5755 | 0.36 | 2.22 | -4.38 | 30.00 | -5.26 | Pass |
| HT40 | MCS 0 | 1 | 159 | 5795 | 0.36 | 2.22 | -4.64 | 30.00 | -5.26 | Pass |
| VHT80 | MCS 0 | 1 | 155 | 5775 | 0.70 | 2.22 | -9.29 | 30.00 | -5.26 | Pass |



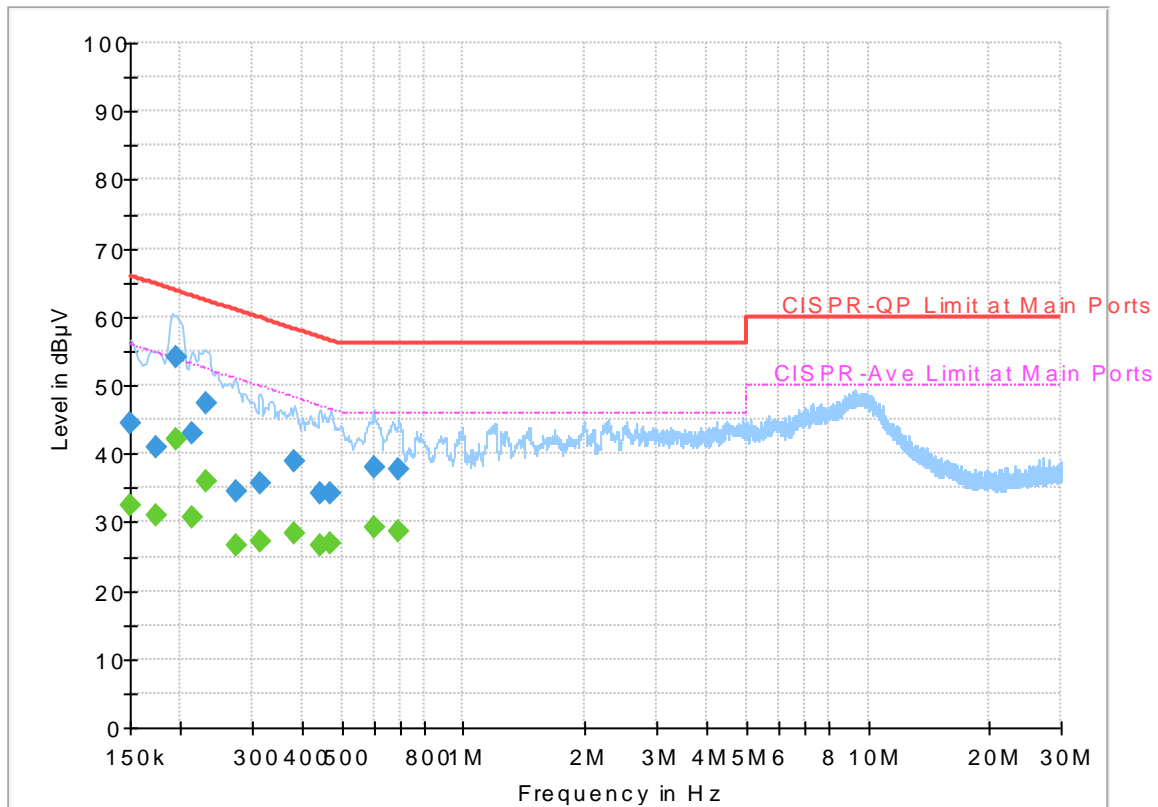
Appendix B. AC Conducted Emission Test Results

| | | | |
|------------------------|------------|----------------------------|---------|
| Test Engineer : | Shareef Yu | Temperature : | 21~23°C |
| | | Relative Humidity : | 53~56% |

EUT Information

Report NO : 7D0706
 Test Mode : Mode 1
 Test Voltage : 120Vac/60Hz
 Phase : Line

Full Spectrum



Final_Result

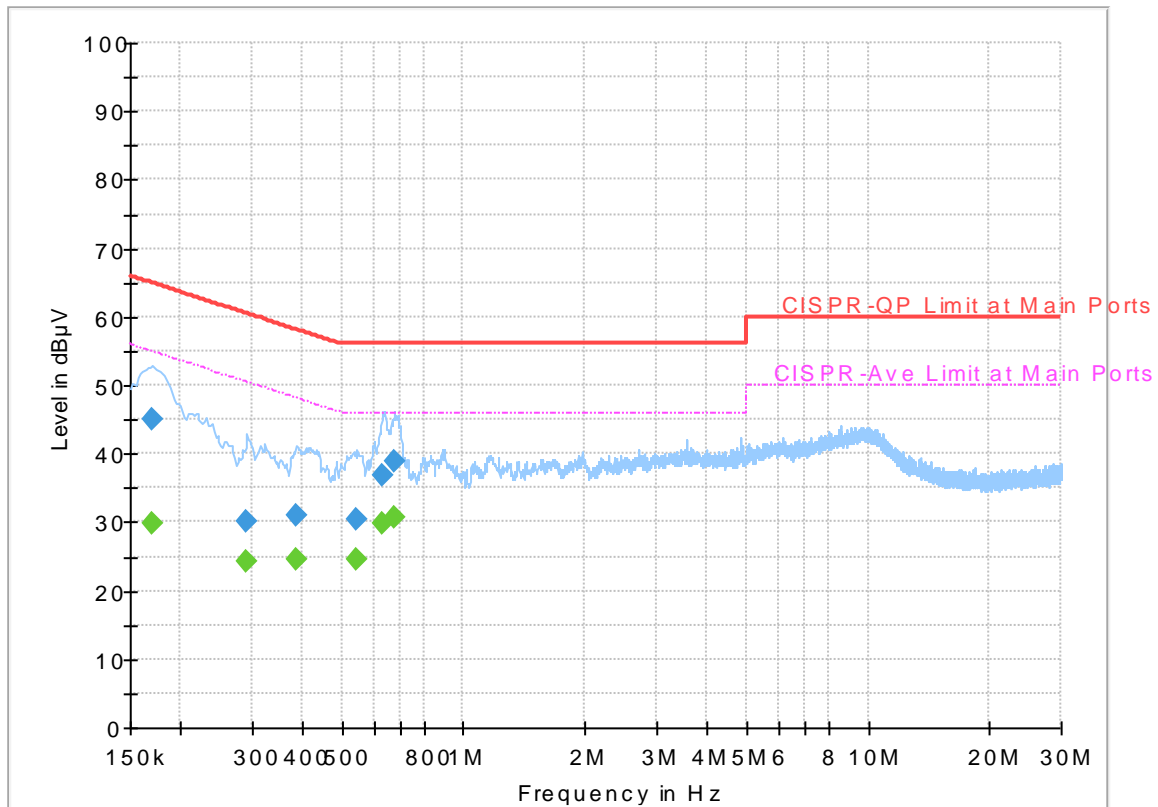
| Frequency (MHz) | QuasiPeak (dBμV) | Average (dBμV) | Limit (dBμV) | Margin (dB) | Line | Filter | Corr. (dB) |
|-----------------|------------------|----------------|--------------|-------------|------|--------|------------|
| 0.150000 | --- | 32.38 | 56.00 | 23.62 | L1 | OFF | 19.5 |
| 0.150000 | 44.52 | --- | 66.00 | 21.48 | L1 | OFF | 19.5 |
| 0.174750 | --- | 30.99 | 54.73 | 23.74 | L1 | OFF | 19.5 |
| 0.174750 | 40.89 | --- | 64.73 | 23.84 | L1 | OFF | 19.5 |
| 0.195000 | --- | 42.23 | 53.82 | 11.59 | L1 | OFF | 19.5 |
| 0.195000 | 54.08 | --- | 63.82 | 9.74 | L1 | OFF | 19.5 |
| 0.213000 | --- | 30.69 | 53.09 | 22.40 | L1 | OFF | 19.5 |
| 0.213000 | 43.08 | --- | 63.09 | 20.01 | L1 | OFF | 19.5 |
| 0.231000 | --- | 35.82 | 52.41 | 16.59 | L1 | OFF | 19.5 |
| 0.231000 | 47.35 | --- | 62.41 | 15.06 | L1 | OFF | 19.5 |
| 0.273750 | --- | 26.68 | 51.00 | 24.32 | L1 | OFF | 19.5 |
| 0.273750 | 34.45 | --- | 61.00 | 26.55 | L1 | OFF | 19.5 |
| 0.314250 | --- | 27.08 | 49.86 | 22.78 | L1 | OFF | 19.5 |
| 0.314250 | 35.53 | --- | 59.86 | 24.33 | L1 | OFF | 19.5 |
| 0.384000 | --- | 28.49 | 48.19 | 19.70 | L1 | OFF | 19.5 |
| 0.384000 | 38.76 | --- | 58.19 | 19.43 | L1 | OFF | 19.5 |
| 0.442500 | --- | 26.47 | 47.02 | 20.55 | L1 | OFF | 19.5 |
| 0.442500 | 34.34 | --- | 57.02 | 22.68 | L1 | OFF | 19.5 |
| 0.469500 | --- | 26.79 | 46.52 | 19.73 | L1 | OFF | 19.5 |
| 0.469500 | 34.21 | --- | 56.52 | 22.31 | L1 | OFF | 19.5 |
| 0.600000 | --- | 29.15 | 46.00 | 16.85 | L1 | OFF | 19.5 |

| | | | | | | | |
|-----------------|--------------|--------------|--------------|--------------|-----------|------------|-------------|
| 0.600000 | 37.87 | --- | 56.00 | 18.13 | L1 | OFF | 19.5 |
| 0.690000 | --- | 28.71 | 46.00 | 17.29 | L1 | OFF | 19.5 |
| 0.690000 | 37.70 | --- | 56.00 | 18.30 | L1 | OFF | 19.5 |

EUT Information

Report NO : 7D0706
Test Mode : Mode 1
Test Voltage : 120Vac/60Hz
Phase : Neutral

Full Spectrum



Final_Result

| Frequency (MHz) | QuasiPeak (dBµV) | Average (dBµV) | Limit (dBµV) | Margin (dB) | Line | Filter | Corr. (dB) |
|-----------------|------------------|----------------|--------------|-------------|------|--------|------------|
| 0.170250 | --- | 29.91 | 54.95 | 25.04 | N | OFF | 19.5 |
| 0.170250 | 45.04 | --- | 64.95 | 19.91 | N | OFF | 19.5 |
| 0.291750 | --- | 24.18 | 50.47 | 26.29 | N | OFF | 19.5 |
| 0.291750 | 30.17 | --- | 60.47 | 30.30 | N | OFF | 19.5 |
| 0.386250 | --- | 24.63 | 48.14 | 23.51 | N | OFF | 19.5 |
| 0.386250 | 30.99 | --- | 58.14 | 27.15 | N | OFF | 19.5 |
| 0.546000 | --- | 24.49 | 46.00 | 21.51 | N | OFF | 19.5 |
| 0.546000 | 30.51 | --- | 56.00 | 25.49 | N | OFF | 19.5 |
| 0.633750 | --- | 29.77 | 46.00 | 16.23 | N | OFF | 19.5 |
| 0.633750 | 36.96 | --- | 56.00 | 19.04 | N | OFF | 19.5 |
| 0.676500 | --- | 30.56 | 46.00 | 15.44 | N | OFF | 19.5 |
| 0.676500 | 38.98 | --- | 56.00 | 17.02 | N | OFF | 19.5 |



Appendix C. Radiated Spurious Emission

| | | | |
|-----------------|-----------------------------------|---------------------|---------|
| Test Engineer : | Watt Tseng, Nick Yu, and Karl Hou | Temperature : | 23~24°C |
| | | Relative Humidity : | 65~67% |

Band 4 - 5725~5850MHz

WIFI 802.11a (Band Edge @ 3m)

| WIFI | Note | Frequency | Level | Over | Limit | Read | Antenna | Cable | Preamp | Ant | Table | Peak | Pol. |
|------------------------------|------|-----------|------------|--------|------------|----------|----------|--------|--------|--------|---------|---------|---------|
| | | (MHz) | (dBμV/m) | (dB) | Limit Line | Level | Factor | Loss | Factor | Pos | Pos | Avg. | |
| | | (MHz) | (dBμV/m) | (dB) | (dBμV/m) | (dBμV) | (dB/m) | (dB) | (dB) | (cm) | (deg) | (P/A) | (H/V) |
| 802.11a CH 149 5745MHz | | 5606.2 | 49.84 | -18.36 | 68.2 | 42.35 | 32.14 | 6.34 | 30.99 | 114 | 67 | P | H |
| | | 5699.6 | 53.21 | -51.7 | 104.91 | 45.59 | 32.27 | 6.36 | 31.01 | 114 | 67 | P | H |
| | | 5718.4 | 54.8 | -55.55 | 110.35 | 47.14 | 32.31 | 6.37 | 31.02 | 114 | 67 | P | H |
| | | 5722.8 | 55.16 | -62.02 | 117.18 | 47.5 | 32.31 | 6.37 | 31.02 | 114 | 67 | P | H |
| | * | 5745 | 104.38 | - | - | 96.7 | 32.34 | 6.37 | 31.03 | 114 | 67 | P | H |
| | * | 5745 | 93.3 | - | - | 85.62 | 32.34 | 6.37 | 31.03 | 114 | 67 | A | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 5638.4 | 49.11 | -19.09 | 68.2 | 41.57 | 32.19 | 6.35 | 31 | 287 | 110 | P | V |
| | | 5697.8 | 51.84 | -51.74 | 103.58 | 44.22 | 32.27 | 6.36 | 31.01 | 287 | 110 | P | V |
| | | 5717.4 | 54.11 | -55.96 | 110.07 | 46.48 | 32.29 | 6.36 | 31.02 | 287 | 110 | P | V |
| | | 5722.4 | 56.1 | -60.17 | 116.27 | 48.44 | 32.31 | 6.37 | 31.02 | 287 | 110 | P | V |
| | * | 5745 | 105.19 | - | - | 97.51 | 32.34 | 6.37 | 31.03 | 287 | 110 | P | V |
| | * | 5745 | 94.1 | - | - | 86.42 | 32.34 | 6.37 | 31.03 | 287 | 110 | A | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |



| WIFI | Note | Frequency (MHz) | Level (dBμV/m) | Over Limit (dB) | Limit Line (dBμV/m) | Read Level (dBμV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Ant Pos (cm) | Table Pos (deg) | Peak Avg. (P/A) | Pol. (H/V) |
|------------------------------|------|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-------------------------------|-------------------------|----------------------------|----------------------|-------------------------|-------------------------|-----------------|
| 802.11a CH 157 5785MHz | | 5626 | 49.24 | -18.96 | 68.2 | 41.72 | 32.17 | 6.34 | 30.99 | 100 | 64 | P | H |
| | | 5677.8 | 49.73 | -39.08 | 88.81 | 42.15 | 32.24 | 6.35 | 31.01 | 100 | 64 | P | H |
| | | 5713.6 | 50.18 | -58.83 | 109.01 | 42.55 | 32.29 | 6.36 | 31.02 | 100 | 64 | P | H |
| | | 5721.8 | 50.55 | -64.35 | 114.9 | 42.89 | 32.31 | 6.37 | 31.02 | 100 | 64 | P | H |
| | * | 5785 | 104.81 | - | - | 97.09 | 32.39 | 6.38 | 31.05 | 100 | 64 | P | H |
| | * | 5785 | 93.71 | - | - | 85.99 | 32.39 | 6.38 | 31.05 | 100 | 64 | A | H |
| | | 5854.8 | 50.24 | -61.02 | 111.26 | 42.37 | 32.51 | 6.42 | 31.06 | 100 | 64 | P | H |
| | | 5863.8 | 50.4 | -57.93 | 108.33 | 42.53 | 32.51 | 6.43 | 31.07 | 100 | 64 | P | H |
| | | 5898.6 | 50.37 | -37.33 | 87.7 | 42.43 | 32.56 | 6.46 | 31.08 | 100 | 64 | P | H |
| | | 5945.4 | 50.25 | -17.95 | 68.2 | 42.23 | 32.63 | 6.48 | 31.09 | 100 | 64 | P | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 5616.2 | 49.6 | -18.6 | 68.2 | 42.08 | 32.17 | 6.34 | 30.99 | 301 | 109 | P | V |
| | | 5698.2 | 49.79 | -54.08 | 103.87 | 42.17 | 32.27 | 6.36 | 31.01 | 301 | 109 | P | V |
| | | 5715.2 | 49.9 | -59.56 | 109.46 | 42.27 | 32.29 | 6.36 | 31.02 | 301 | 109 | P | V |
| | | 5723.6 | 50.51 | -68.5 | 119.01 | 42.85 | 32.31 | 6.37 | 31.02 | 301 | 109 | P | V |
| | * | 5785 | 105.03 | - | - | 97.31 | 32.39 | 6.38 | 31.05 | 301 | 109 | P | V |
| | * | 5785 | 94.01 | - | - | 86.29 | 32.39 | 6.38 | 31.05 | 301 | 109 | A | V |
| | | 5851.4 | 51.05 | -67.96 | 119.01 | 43.21 | 32.48 | 6.42 | 31.06 | 301 | 109 | P | V |
| | | 5859.6 | 50.52 | -58.99 | 109.51 | 42.66 | 32.51 | 6.42 | 31.07 | 301 | 109 | P | V |
| | | 5887.8 | 50.3 | -45.4 | 95.7 | 42.38 | 32.56 | 6.44 | 31.08 | 301 | 109 | P | V |
| | | 5941 | 50.16 | -18.04 | 68.2 | 42.14 | 32.63 | 6.48 | 31.09 | 301 | 109 | P | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |



| WIFI | Note | Frequency (MHz) | Level (dBμV/m) | Over Limit (dB) | Limit Line (dBμV/m) | Read Level (dBμV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Ant Pos (cm) | Table Pos (deg) | Peak Avg. (P/A) | Pol. (H/V) |
|---------------------------------------|---|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-------------------------------|-------------------------|----------------------------|----------------------|-------------------------|-------------------------|-----------------|
| 802.11a CH 165 5825MHz | * | 5825 | 105.12 | - | - | 97.32 | 32.46 | 6.39 | 31.05 | 114 | 65 | P | H |
| | * | 5825 | 94 | - | - | 86.2 | 32.46 | 6.39 | 31.05 | 114 | 65 | A | H |
| | | 5854 | 53.46 | -59.62 | 113.08 | 45.59 | 32.51 | 6.42 | 31.06 | 114 | 65 | P | H |
| | | 5868.8 | 55.3 | -51.63 | 106.93 | 47.43 | 32.51 | 6.43 | 31.07 | 114 | 65 | P | H |
| | | 5883.4 | 51.41 | -47.55 | 98.96 | 43.52 | 32.53 | 6.44 | 31.08 | 114 | 65 | P | H |
| | | 5933.2 | 50.62 | -17.58 | 68.2 | 42.63 | 32.6 | 6.48 | 31.09 | 114 | 65 | P | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | * | 5825 | 105.13 | - | - | 97.33 | 32.46 | 6.39 | 31.05 | 327 | 112 | P | V |
| | * | 5825 | 94.04 | - | - | 86.24 | 32.46 | 6.39 | 31.05 | 327 | 112 | A | V |
| | | 5852.8 | 51.33 | -64.49 | 115.82 | 43.49 | 32.48 | 6.42 | 31.06 | 327 | 112 | P | V |
| | | 5860.2 | 54.18 | -55.16 | 109.34 | 46.32 | 32.51 | 6.42 | 31.07 | 327 | 112 | P | V |
| | | 5905.2 | 51 | -31.81 | 82.81 | 43.04 | 32.58 | 6.46 | 31.08 | 327 | 112 | P | V |
| | | 5942.8 | 50.47 | -17.73 | 68.2 | 42.45 | 32.63 | 6.48 | 31.09 | 327 | 112 | P | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| Remark | 1. No other spurious found. 2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |



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

| WIFI | Note | Frequency (MHz) | Level (dBμV/m) | Over Limit (dB) | Limit Line (dBμV/m) | Read Level (dBμV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Ant Pos (cm) | Table Pos (deg) | Peak Avg. (P/A) | Pol. (H/V) |
|---------------------------------------|---|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-------------------------------|-------------------------|----------------------------|----------------------|-------------------------|-------------------------|-----------------|
| 802.11a CH 149 5745MHz | | 11490 | 47.67 | -26.33 | 74 | 62.62 | 40.11 | 9.82 | 65.39 | 100 | 0 | P | H |
| | | 17235 | 50.62 | -17.58 | 68.2 | 60.62 | 41.54 | 12.09 | 64.27 | 100 | 0 | P | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 11490 | 47.55 | -26.45 | 74 | 62.5 | 40.11 | 9.82 | 65.39 | 100 | 0 | P | V |
| | | 17235 | 51.17 | -17.03 | 68.2 | 61.17 | 41.54 | 12.09 | 64.27 | 100 | 0 | P | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| 802.11a CH 157 5785MHz | | 11570 | 48.44 | -25.56 | 74 | 63.51 | 39.93 | 9.86 | 65.37 | 100 | 0 | P | H |
| | | 17355 | 49.75 | -18.45 | 68.2 | 59.08 | 41.96 | 12.19 | 64.11 | 100 | 0 | P | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 11570 | 47.93 | -26.07 | 74 | 63 | 39.93 | 9.86 | 65.37 | 100 | 0 | P | V |
| | | 17355 | 48.99 | -19.21 | 68.2 | 58.32 | 41.96 | 12.19 | 64.11 | 100 | 0 | P | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| 802.11a CH 165 5825MHz | | 11650 | 47.88 | -26.12 | 74 | 63.04 | 39.77 | 9.9 | 65.34 | 100 | 0 | P | H |
| | | 17475 | 47.68 | -20.52 | 68.2 | 56.34 | 42.38 | 12.29 | 63.95 | 100 | 0 | P | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 11650 | 48.18 | -25.82 | 74 | 63.34 | 39.77 | 9.9 | 65.34 | 100 | 0 | P | V |
| | | 17475 | 47.92 | -20.28 | 68.2 | 56.58 | 42.38 | 12.29 | 63.95 | 100 | 0 | P | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| Remark | 1. No other spurious found. 2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |



Band 4 5725~5850MHz

WIFI 802.11n HT40 (Band Edge @ 3m)

| WIFI | Note | Frequency (MHz) | Level (dBμV/m) | Over Limit (dB) | Limit Line (dBμV/m) | Read Level (dBμV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Ant Pos (cm) | Table Pos (deg) | Peak Avg. (P/A) | Pol. (H/V) |
|--------------------------------------|------|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-------------------------------|-------------------------|----------------------------|----------------------|-------------------------|-------------------------|-----------------|
| 802.11n HT40 CH 151 5755MHz | | 5635.2 | 49.14 | -19.06 | 68.2 | 41.6 | 32.19 | 6.35 | 31 | 110 | 63 | P | H |
| | | 5697 | 53.11 | -49.88 | 102.99 | 45.49 | 32.27 | 6.36 | 31.01 | 110 | 63 | P | H |
| | | 5713.6 | 54.39 | -54.62 | 109.01 | 46.76 | 32.29 | 6.36 | 31.02 | 110 | 63 | P | H |
| | | 5720.2 | 54.49 | -56.77 | 111.26 | 46.83 | 32.31 | 6.37 | 31.02 | 110 | 63 | P | H |
| | * | 5755 | 99.9 | - | - | 92.2 | 32.36 | 6.37 | 31.03 | 110 | 63 | P | H |
| | * | 5755 | 89.15 | - | - | 81.45 | 32.36 | 6.37 | 31.03 | 110 | 63 | A | H |
| | | 5853 | 51.35 | -64.01 | 115.36 | 43.51 | 32.48 | 6.42 | 31.06 | 110 | 63 | P | H |
| | | 5870.6 | 50.04 | -56.39 | 106.43 | 42.15 | 32.53 | 6.43 | 31.07 | 110 | 63 | P | H |
| | | 5905 | 50.36 | -32.6 | 82.96 | 42.4 | 32.58 | 6.46 | 31.08 | 110 | 63 | P | H |
| | | 5933.4 | 50.74 | -17.46 | 68.2 | 42.75 | 32.6 | 6.48 | 31.09 | 110 | 63 | P | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 5625.2 | 50.03 | -18.17 | 68.2 | 42.51 | 32.17 | 6.34 | 30.99 | 285 | 111 | P | V |
| | | 5697 | 54.6 | -48.39 | 102.99 | 46.98 | 32.27 | 6.36 | 31.01 | 285 | 111 | P | V |
| | | 5712.4 | 54.33 | -54.34 | 108.67 | 46.7 | 32.29 | 6.36 | 31.02 | 285 | 111 | P | V |
| | | 5722 | 55.72 | -59.64 | 115.36 | 48.06 | 32.31 | 6.37 | 31.02 | 285 | 111 | P | V |
| | * | 5755 | 100.03 | - | - | 92.33 | 32.36 | 6.37 | 31.03 | 285 | 111 | P | V |
| | * | 5755 | 89.42 | - | - | 81.72 | 32.36 | 6.37 | 31.03 | 285 | 111 | A | V |
| | | 5852.8 | 51.29 | -64.53 | 115.82 | 43.45 | 32.48 | 6.42 | 31.06 | 285 | 111 | P | V |
| | | 5856.8 | 49.83 | -60.47 | 110.3 | 41.96 | 32.51 | 6.42 | 31.06 | 285 | 111 | P | V |
| | | 5903 | 49.55 | -34.89 | 84.44 | 41.61 | 32.56 | 6.46 | 31.08 | 285 | 111 | P | V |
| | | 5928.4 | 50.56 | -17.64 | 68.2 | 42.58 | 32.6 | 6.47 | 31.09 | 285 | 111 | P | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |



| WIFI | Note | Frequency (MHz) | Level (dBμV/m) | Over Limit (dB) | Limit Line (dBμV/m) | Read Level (dBμV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Ant Pos (cm) | Table Pos (deg) | Peak Avg. (P/A) | Pol. (H/V) |
|--------------------------------------|--|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-------------------------------|-------------------------|----------------------------|----------------------|-------------------------|-------------------------|-----------------|
| 802.11n HT40 CH 159 5795MHz | | 5647.2 | 49.43 | -18.77 | 68.2 | 41.89 | 32.19 | 6.35 | 31 | 113 | 67 | P | H |
| | | 5663.2 | 50.16 | -27.84 | 78 | 42.6 | 32.22 | 6.35 | 31.01 | 113 | 67 | P | H |
| | | 5719.2 | 50.23 | -60.35 | 110.58 | 42.57 | 32.31 | 6.37 | 31.02 | 113 | 67 | P | H |
| | | 5724.6 | 52.21 | -69.08 | 121.29 | 44.55 | 32.31 | 6.37 | 31.02 | 113 | 67 | P | H |
| | * | 5795 | 99.74 | - | - | 92 | 32.41 | 6.38 | 31.05 | 113 | 67 | P | H |
| | * | 5795 | 89.27 | - | - | 81.53 | 32.41 | 6.38 | 31.05 | 113 | 67 | A | H |
| | | 5853 | 55.15 | -60.21 | 115.36 | 47.31 | 32.48 | 6.42 | 31.06 | 113 | 67 | P | H |
| | | 5858.4 | 54.61 | -55.24 | 109.85 | 46.75 | 32.51 | 6.42 | 31.07 | 113 | 67 | P | H |
| | | 5876.6 | 51.91 | -52.1 | 104.01 | 44.02 | 32.53 | 6.43 | 31.07 | 113 | 67 | P | H |
| | | 5936 | 50.02 | -18.18 | 68.2 | 42.03 | 32.6 | 6.48 | 31.09 | 113 | 67 | P | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 5643.2 | 49.43 | -18.77 | 68.2 | 41.89 | 32.19 | 6.35 | 31 | 294 | 110 | P | V |
| | | 5653.6 | 49.76 | -21.11 | 70.87 | 42.19 | 32.22 | 6.35 | 31 | 294 | 110 | P | V |
| | | 5717.6 | 50.08 | -60.05 | 110.13 | 42.42 | 32.31 | 6.37 | 31.02 | 294 | 110 | P | V |
| | | 5725 | 50.22 | -71.98 | 122.2 | 42.56 | 32.31 | 6.37 | 31.02 | 294 | 110 | P | V |
| | * | 5795 | 100.35 | - | - | 92.61 | 32.41 | 6.38 | 31.05 | 294 | 110 | P | V |
| | * | 5795 | 89.8 | - | - | 82.06 | 32.41 | 6.38 | 31.05 | 294 | 110 | A | V |
| | | 5850.8 | 55.91 | -64.47 | 120.38 | 48.07 | 32.48 | 6.42 | 31.06 | 294 | 110 | P | V |
| | | 5860 | 55.04 | -54.36 | 109.4 | 47.18 | 32.51 | 6.42 | 31.07 | 294 | 110 | P | V |
| | | 5876 | 51.54 | -52.92 | 104.46 | 43.65 | 32.53 | 6.43 | 31.07 | 294 | 110 | P | V |
| | | 5946.6 | 50.67 | -17.53 | 68.2 | 42.65 | 32.63 | 6.48 | 31.09 | 294 | 110 | P | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| Remark | 1. No other spurious found. | | | | | | | | | | | | |
| | 2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |



Band 4 5725~5850MHz

WIFI 802.11ac VHT80 (Band Edge @ 3m)

| WIFI | Note | Frequency (MHz) | Level (dBμV/m) | Over Limit (dB) | Limit Line (dBμV/m) | Read Level (dBμV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Ant Pos (cm) | Table Pos (deg) | Peak Avg. (P/A) | Pol. (H/V) |
|--|---|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-------------------------------|-------------------------|----------------------------|----------------------|-------------------------|-------------------------|-----------------|
| 802.11ac VHT80 CH 155 5775MHz | | 5648.2 | 49.48 | -18.72 | 68.2 | 41.94 | 32.19 | 6.35 | 31 | 100 | 61 | P | H |
| | | 5695 | 51.76 | -49.75 | 101.51 | 44.14 | 32.27 | 6.36 | 31.01 | 100 | 61 | P | H |
| | | 5715.6 | 54.92 | -54.65 | 109.57 | 47.29 | 32.29 | 6.36 | 31.02 | 100 | 61 | P | H |
| | | 5724.2 | 54.36 | -66.02 | 120.38 | 46.7 | 32.31 | 6.37 | 31.02 | 100 | 61 | P | H |
| | * | 5775 | 94.27 | - | - | 86.54 | 32.39 | 6.38 | 31.04 | 100 | 61 | P | H |
| | * | 5775 | 83.17 | - | - | 75.44 | 32.39 | 6.38 | 31.04 | 100 | 61 | A | H |
| | | 5851.2 | 52.71 | -66.75 | 119.46 | 44.87 | 32.48 | 6.42 | 31.06 | 100 | 61 | P | H |
| | | 5860.2 | 51.47 | -57.87 | 109.34 | 43.61 | 32.51 | 6.42 | 31.07 | 100 | 61 | P | H |
| | | 5888.8 | 50.21 | -44.75 | 94.96 | 42.29 | 32.56 | 6.44 | 31.08 | 100 | 61 | P | H |
| | | 5933.8 | 50.35 | -17.85 | 68.2 | 42.36 | 32.6 | 6.48 | 31.09 | 100 | 61 | P | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 5644.8 | 49.37 | -18.83 | 68.2 | 41.83 | 32.19 | 6.35 | 31 | 301 | 110 | P | V |
| | | 5698.8 | 50.65 | -53.67 | 104.32 | 43.03 | 32.27 | 6.36 | 31.01 | 301 | 110 | P | V |
| | | 5717.6 | 54.04 | -56.09 | 110.13 | 46.38 | 32.31 | 6.37 | 31.02 | 301 | 110 | P | V |
| | | 5724.8 | 55.05 | -66.69 | 121.74 | 47.39 | 32.31 | 6.37 | 31.02 | 301 | 110 | P | V |
| | * | 5775 | 95.36 | - | - | 87.63 | 32.39 | 6.38 | 31.04 | 301 | 110 | P | V |
| | * | 5775 | 84.14 | - | - | 76.41 | 32.39 | 6.38 | 31.04 | 301 | 110 | A | V |
| | | 5851.6 | 52.82 | -65.73 | 118.55 | 44.98 | 32.48 | 6.42 | 31.06 | 301 | 110 | P | V |
| | | 5862.4 | 52.87 | -55.86 | 108.73 | 45 | 32.51 | 6.43 | 31.07 | 301 | 110 | P | V |
| | | 5904.4 | 50.17 | -33.24 | 83.41 | 42.23 | 32.56 | 6.46 | 31.08 | 301 | 110 | P | V |
| | | 5927.4 | 50.35 | -17.85 | 68.2 | 42.37 | 32.6 | 6.47 | 31.09 | 301 | 110 | P | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| Remark | 1. No other spurious found. 2. All results are PASS against Peak and Average limit line. | | | | | | | | | | | | |

Emission below 1GHz

5GHz WIFI 802.11n HT40 (LF @ 3m)

| WIFI | Note | Frequency | Level | Over | Limit | Read | Antenna | Cable | Preamp | Ant | Table | Peak | Pol. |
|-----------------------------------|--|-----------|------------|--------|------------|--------|----------|--------|--------|--------|---------|-------|-------|
| | | | | Limit | Line | Level | Factor | Loss | Factor | Pos | Pos | Avg. | |
| | | (MHz) | (dBμV/m) | (dB) | (dBμV/m) | (dBμV) | (dB/m) | (dB) | (dB) | (cm) | (deg) | (P/A) | (H/V) |
| 5GHz 802.11n HT40 LF | | 68.34 | 20.57 | -19.43 | 40 | 38.07 | 12.2 | 0.68 | 30.43 | - | - | P | H |
| | | 103.98 | 27.51 | -15.99 | 43.5 | 40.78 | 16.27 | 0.8 | 30.39 | - | - | P | H |
| | | 178.77 | 24.42 | -19.08 | 43.5 | 38.42 | 15.04 | 1.09 | 30.3 | - | - | P | H |
| | | 505.8 | 26.12 | -19.88 | 46 | 30.13 | 23.9 | 1.8 | 29.78 | - | - | P | H |
| | | 645.8 | 28.56 | -17.44 | 46 | 29.72 | 26.3 | 2.02 | 29.6 | - | - | P | H |
| | | 875.4 | 33.05 | -12.95 | 46 | 30.69 | 29.02 | 2.39 | 29.2 | 100 | 0 | P | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | | | | | | | | | | | | H |
| | | 32.97 | 29.15 | -10.85 | 40 | 35.91 | 23.01 | 0.48 | 30.22 | 100 | 0 | P | V |
| | | 109.38 | 26.21 | -17.29 | 43.5 | 39.01 | 16.75 | 0.8 | 30.39 | - | - | P | V |
| | | 135.3 | 26.42 | -17.08 | 43.5 | 38.54 | 17.22 | 0.95 | 30.35 | - | - | P | V |
| | | 476.4 | 26.35 | -19.65 | 46 | 30.98 | 23.38 | 1.77 | 29.84 | - | - | P | V |
| | | 687.1 | 29.13 | -16.87 | 46 | 30.1 | 26.34 | 2.13 | 29.55 | - | - | P | V |
| | | 746.6 | 31.45 | -14.55 | 46 | 30.71 | 27.87 | 2.21 | 29.44 | - | - | P | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | | V |
| | | | | | | | | | | | | V | |
| | | | | | | | | | | | | V | |
| | | | | | | | | | | | | V | |
| | | | | | | | | | | | | V | |
| | | | | | | | | | | | | V | |
| Remark | 1. No other spurious found. 2. All results are PASS against limit line. | | | | | | | | | | | | |



Note symbol

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

| | | | |
|-----------------|-----------------------------------|---------------------|---------|
| Test Engineer : | Watt Tseng, Nick Yu, and Karl Hou | Temperature : | 23~24°C |
| | | Relative Humidity : | 65~67% |

Note symbol

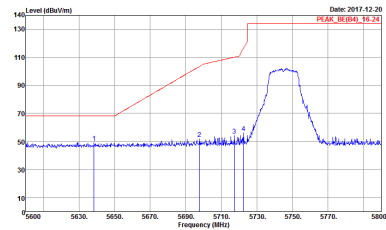
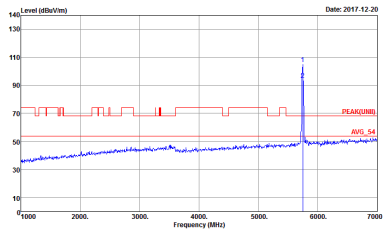
| | |
|----|-----------------------|
| -L | Low channel location |
| -R | High channel location |

Band 4 - 5725~5850MHz

WIFI 802.11a (Band Edge @ 3m)

| WIFI | Band 4 5725~5850MHz Band Edge @ 3m | |
|------|--|---|
| | 802.11a CH149 5745MHz | |
| | Horizontal | Fundamental |
| Peak | <p>Site : 03CH12-HY Condition : PEAK_RE(00_10_24) 16-24 3m HORN_91200_1328 HORIZONTAL : RBW:1000.0000Hz VBW:3000.0000Hz SW1:Auto</p> | <p>Site : 03CH12-HY Condition : PEAK(0000) 3m HORN_91200_1328 HORIZONTAL : RBW:1000.0000Hz VBW:3000.0000Hz SW1:Auto</p> |

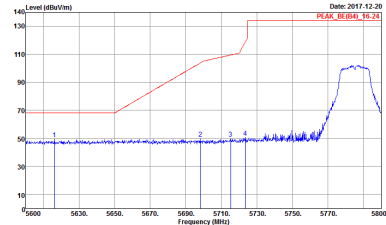
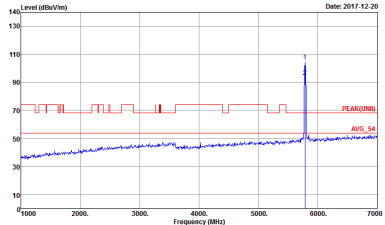
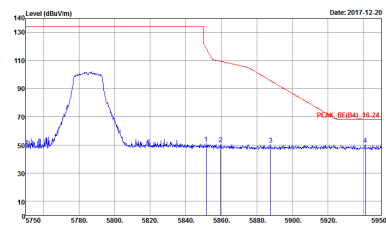


| WIFI | Band 4 5725~5850MHz Band Edge @ 3m | |
|------|--|---|
| | 802.11a CH149 5745MHz | |
| | Vertical | Fundamental |
| Peak | <div><p>Site : 03CH12-HY Condition : PEAK_BE(04)_16-24 3m HORN_5120D_1328 VERTICAL RBW:3000.000kHz VBW:3000.000kHz SWT:Auto</p></div> | <div><p>Site : 03CH12-HY Condition : PEAK_UNI(1) 3m HORN_5120D_1328 VERTICAL RBW:3000.000kHz VBW:3000.000kHz SWT:Auto</p></div> |



| WIFI | Band 4 5725~5850MHz Band Edge @ 3m | |
|------|---|---|
| | 802.11a CH157 5785MHz | |
| | Horizontal | Fundamental |
| Peak | <div><p>Site : 03CH12-HY Condition : PEAK_BE(00)_16-24 3m HORN_9120D_1328 HORIZONTAL RBW:3000.000KHz VBW:3000.000KHz SWT:Auto</p></div> | <div><p>Site : 03CH12-HY Condition : PEAK_UN(00)_16-24 3m HORN_9120D_1328 HORIZONTAL RBW:3000.000KHz VBW:3000.000KHz SWT:Auto</p></div> |
| Peak | <div><p>Site : 03CH12-HY Condition : PEAK_BE(00)_16-24 3m HORN_9120D_1328 HORIZONTAL RBW:3000.000KHz VBW:3000.000KHz SWT:Auto</p></div> | Left blank |

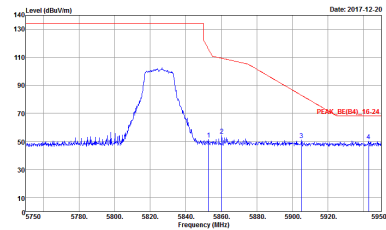
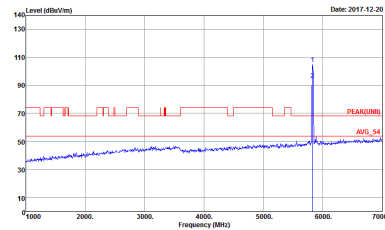


| WIFI | Band 4 5725~5850MHz Band Edge @ 3m | |
|------|--|--|
| | 802.11a CH157 5785MHz | |
| | Vertical | Fundamental |
| Peak | <div><p>Site Condition : 03CH12-4Y : PEAK_BE(84)_16-24 3m HORN_9120D_1328 VERTICAL : RBW:3000.000KHz VBW:3000.000KHz SWT:Auto</p></div> | <div><p>Site Condition : 03CH12-4Y : PEAK_UNE11 3m HORN_9120D_1328 VERTICAL : RBW:3000.000KHz VBW:3000.000KHz SWT:Auto</p></div> |
| Peak | <div><p>Site Condition : 03CH12-4Y : PEAK_BE(84)_16-24 3m HORN_9120D_1328 VERTICAL : RBW:3000.000KHz VBW:3000.000KHz SWT:Auto</p></div> | Left blank |



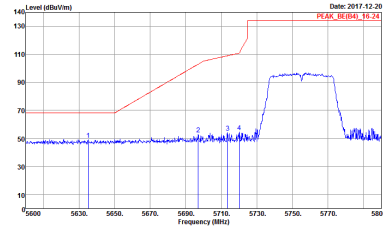
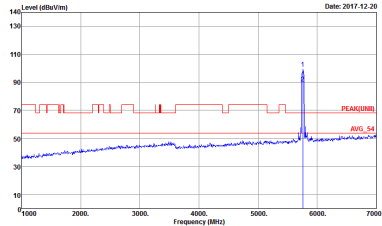
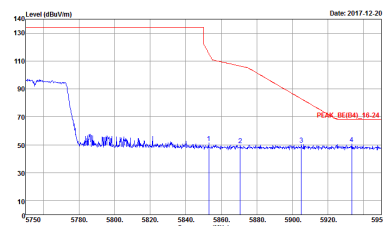
| WIFI | Band 4 5725~5850MHz Band Edge @ 3m | |
|------|---|--|
| | 802.11a CH165 5825MHz | |
| | Horizontal | Fundamental |
| Peak | <div><p>Site : 03CH12-HY Condition : PEAK_BE(84)_16-24 3m HORN_5120D_1328 HORIZONTAL RBW:3000.000kHz VBW:3000.000kHz SWT:Auto</p></div> | <div><p>Site : 03CH12-HY Condition : PEAK(UNL1)_16-24 3m HORN_5120D_1328 HORIZONTAL RBW:3000.000kHz VBW:3000.000kHz SWT:Auto</p></div> |



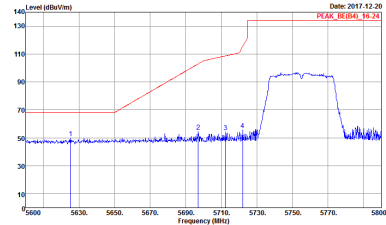
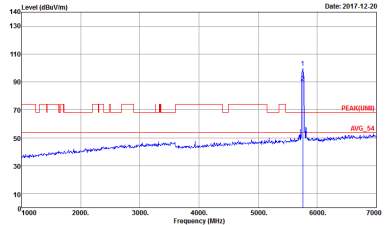
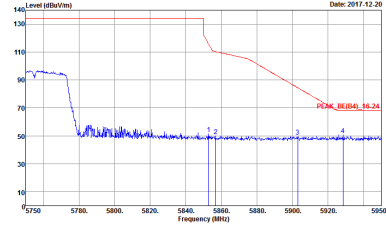
| WIFI | Band 4 5725~5850MHz Band Edge @ 3m | |
|------|--|---|
| | 802.11a CH165 5825MHz | |
| | Vertical | Fundamental |
| Peak | <div><p>Site : 03CH12-HY Condition : PEAK_BE(84)_16-24 3m HORN_5120D_1328 VERTICAL RBW:3000.000kHz VBW:3000.000kHz SWT:Auto</p></div> | <div><p>Site : 03CH12-HY Condition : PEAK_UNI(1) 3m HORN_5120D_1328 VERTICAL RBW:3000.000kHz VBW:3000.000kHz SWT:Auto</p></div> |



Band 4 5725~5850MHz
WIFI 802.11n HT40 (Band Edge @ 3m)

| WIFI | Band 4 5725~5850MHz Band Edge @ 3m | |
|------|--|--|
| | 802.11n HT40 CH151 5755MHz | |
| | Horizontal | Fundamental |
| Peak |  <p>Site Condition : 03CH12-HY : PEAK_BE(B4)_16-24 3m HORN_9120D_1328 HORIZONTAL : RBW:1000.0000Hz VBW:3000.0000Hz SWT:Auto</p> |  <p>Site Condition : 03CH12-HY : PEAK(UNIT) 3m HORN_9120D_1328 HORIZONTAL : RBW:1000.0000Hz VBW:3000.0000Hz SWT:Auto</p> |
| Peak |  <p>Site Condition : 03CH12-HY : PEAK_BE(B4)_16-24 3m HORN_9120D_1328 HORIZONTAL : RBW:1000.0000Hz VBW:3000.0000Hz SWT:Auto</p> | Left blank |



| WIFI | Band 4 5725~5850MHz Band Edge @ 3m | |
|------|--|---|
| | 802.11n HT40 CH151 5755MHz | |
| | Vertical | Fundamental |
| Peak | <div><p>Site : 03CH12-HY Condition : PEAK_BE(B4)_16-24 3m HORN_9120D_1328 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p></div> | <div><p>Site : 03CH12-HY Condition : PEAK_UNI1 3m HORN_9120D_1328 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p></div> |
| Peak | <div><p>Site : 03CH12-HY Condition : PEAK_BE(B4)_16-24 3m HORN_9120D_1328 VERTICAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p></div> | Left blank |



| WIFI | Band 4 5725~5850MHz Band Edge @ 3m | |
|------|--|---|
| | 802.11n HT40 CH159 5795MHz | |
| | Horizontal | Fundamental |
| Peak | <p>Site : 03CH12-HY Condition : PEAK_BE(B4)_16-24 3m HORN_9120D_1328 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p> | <p>Site : 03CH12-HY Condition : PEAK_UNI11 3m HORN_9120D_1328 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p> |
| Peak | <p>Site : 03CH12-HY Condition : PEAK_BE(B4)_16-24 3m HORN_9120D_1328 HORIZONTAL : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p> | Left blank |



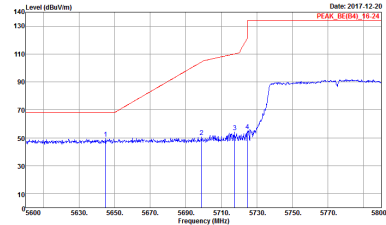
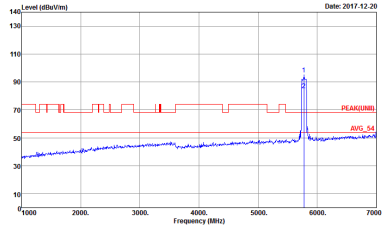
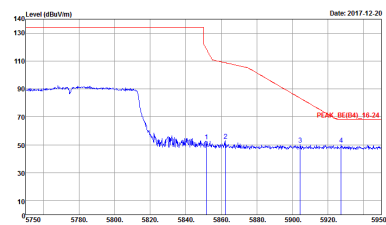
| WIFI | Band 4 5725~5850MHz Band Edge @ 3m | |
|------|--|--|
| | 802.11n HT40 CH159 5795MHz | |
| | Vertical | Fundamental |
| Peak | <p>Site : 03CH12-HY Condition : PEAK_BE(00)_16-24 3m HORN_9120D_1328 VERTICAL : RBW:1000.0000Hz VBW:3000.0000Hz SWT:Auto</p> | <p>Site : 03CH12-HY Condition : PEAK_BE(00)_16-24 3m HORN_9120D_1328 VERTICAL : RBW:1000.0000Hz VBW:3000.0000Hz SWT:Auto</p> |
| Peak | <p>Site : 03CH12-HY Condition : PEAK_BE(00)_16-24 3m HORN_9120D_1328 VERTICAL : RBW:1000.0000Hz VBW:3000.0000Hz SWT:Auto</p> | Left blank |



Band 4 5725~5850MHz
WIFI 802.11ac VHT80 (Band Edge @ 3m)


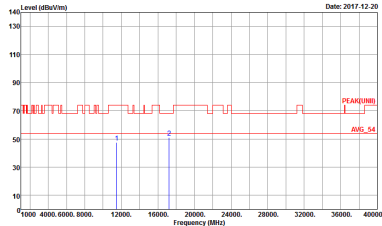
| WIFI | Band 4 5725~5850MHz Band Edge @ 3m | |
|------|--|---|
| | 802.11ac VHT80 CH155 5775MHz | |
| | Horizontal | Fundamental |
| Peak | <p>Site : 03CH12-HY Condition : PEAK_BE(B4)_16-24 3m HORN_9120D_1328 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p> | <p>Site : 03CH12-HY Condition : PEAK_U(B4)_16-24 3m HORN_9120D_1328 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p> |
| Peak | <p>Site : 03CH12-HY Condition : PEAK_BE(B4)_16-24 3m HORN_9120D_1328 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p> | Left blank |



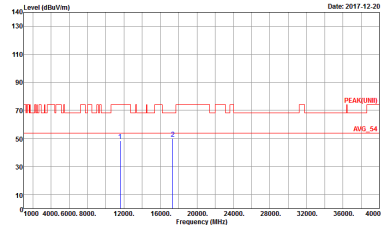
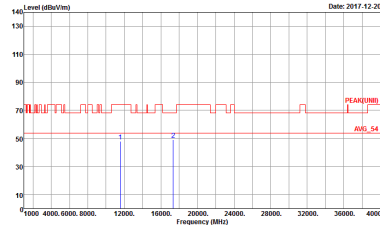
| WIFI | Band 4 5725~5850MHz Band Edge @ 3m | |
|------|--|---|
| | 802.11ac VHT80 CH155 5775MHz | |
| | Vertical | Fundamental |
| Peak | <div><p>Site : 03CH12-HY Condition : PEAK_BE(00)_16-24 3m HORN_9120D_1328 VERTICAL : RBW:1000.0000kHz VBW:3000.0000kHz SWT:Auto</p></div> | <div><p>Site : 03CH12-HY Condition : PEAK(UN1) 3m HORN_9120D_1328 VERTICAL : RBW:1000.0000kHz VBW:3000.0000kHz SWT:Auto</p></div> |
| Peak | <div><p>Site : 03CH12-HY Condition : PEAK_BE(00)_16-24 3m HORN_9120D_1328 VERTICAL : RBW:1000.0000kHz VBW:3000.0000kHz SWT:Auto</p></div> | Left blank |



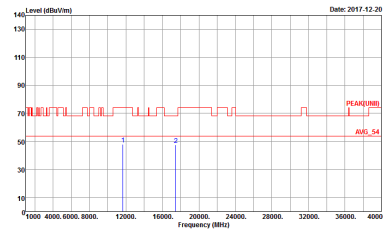
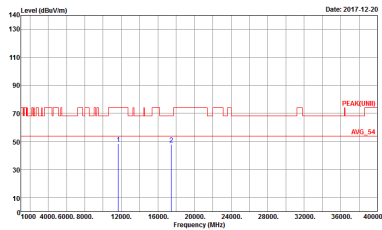
Band 4 - 5725~5850MHz
WIFI 802.11a (Harmonic @ 3m)

| WIFI | Band 4 5725~5850MHz Harmonic @ 3m | |
|--------------|--|---|
| | 802.11a CH149 5745MHz | |
| | Horizontal | Vertical |
| Peak Avg. |  <p>Site : 03CH12-HY Condition : PEAK(UNIT) 3m HORN_91200_1328 HORIZONTAL Detector : Peak</p> |  <p>Site : 03CH12-HY Condition : PEAK(UNIT) 3m HORN_91200_1328 VERTICAL Detector : Peak</p> |

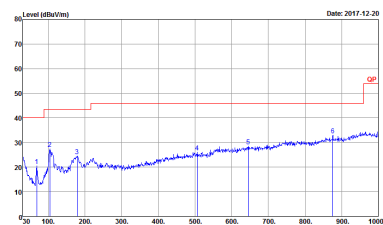
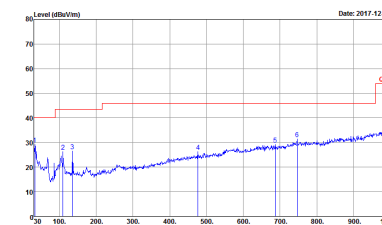


| WIFI | Band 4 5725~5850MHz Harmonic @ 3m | |
|--------------|--|---|
| | 802.11a CH157 5785MHz | |
| | Horizontal | Vertical |
| Peak Avg. |  <p>Site : 03CH12-HY Condition : PEAK(UNII) 3m HORN_91200_1328 HORIZONTAL Detector : Peak</p> |  <p>Site : 03CH12-HY Condition : PEAK(UNII) 3m HORN_91200_1328 VERTICAL Detector : Peak</p> |



| WIFI | Band 4 5725~5850MHz Harmonic @ 3m | |
|--------------|--|---|
| | 802.11a CH165 5825MHz | |
| | Horizontal | Vertical |
| Peak Avg. |  <p>Site : 03CH12-HY Condition : PEAK(UNII) 3m HORN_91200_1328 HORIZONTAL Detector : Peak</p> |  <p>Site : 03CH12-HY Condition : PEAK(UNII) 3m HORN_91200_1328 VERTICAL Detector : Peak</p> |

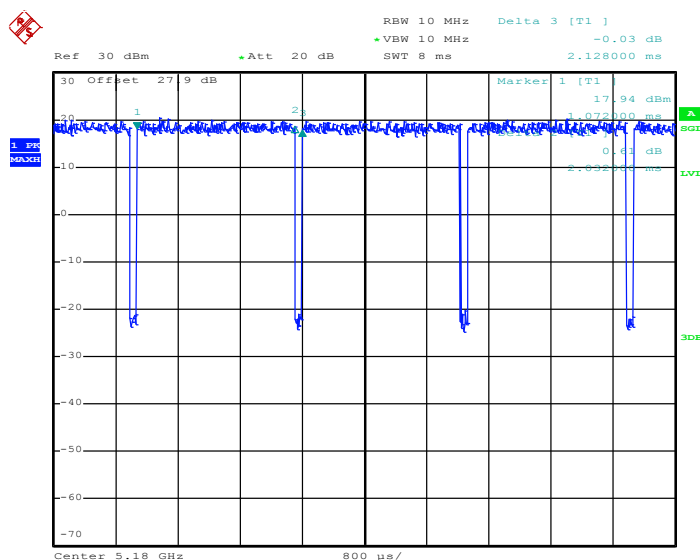
Emission below 1GHz
5GHz WIFI 802.11n HT40 (LF)

| WIFI | 5GHz 5725~5850MHz | |
|--------------|--|---|
| | 802.11n HT40 LF | |
| | Horizontal | Vertical |
| QP / Peak |  <p>Site : 03CH12-HY Condition : QP 3m BILO6_6111D_37059 HORIZONTAL Detector : Peak</p> |  <p>Site : 03CH12-HY Condition : QP 3m BILO6_6111D_37059 VERTICAL Detector : Peak</p> |

Appendix E. Duty Cycle Plots

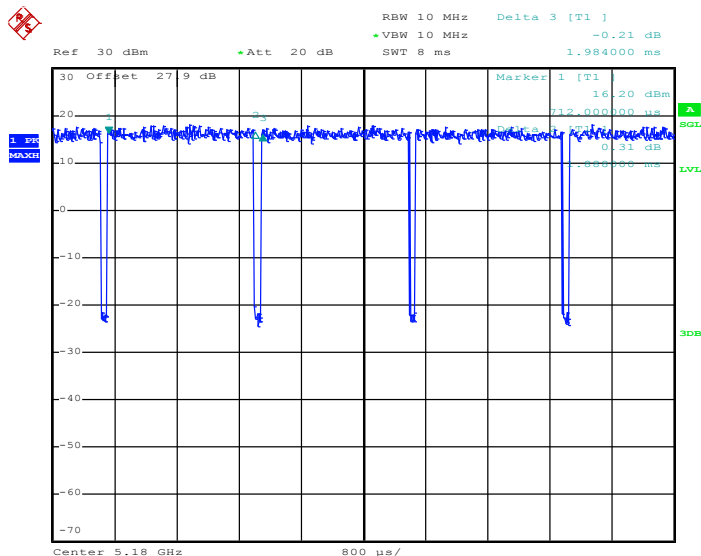
| Band | Duty Cycle (%) | T(us) | 1/T(kHz) | VBW Setting | Duty Factor (dB) |
|---------------------|----------------|---------|----------|-------------|------------------|
| 802.11a | 95.49 | 2032.00 | 0.49 | 1kHz | 0.20 |
| 5GHz 802.11n HT20 | 95.16 | 1888.00 | 0.53 | 1kHz | 0.22 |
| 5GHz 802.11n HT40 | 92.03 | 924.00 | 1.08 | 3kHz | 0.36 |
| 5GHz 802.11ac VHT20 | 94.40 | 1888.00 | 0.530 | 1kHz | 0.25 |
| 5GHz 802.11ac VHT40 | 91.34 | 928.00 | 1.078 | 3kHz | 0.39 |
| 5GHz 802.11ac VHT80 | 85.08 | 456.00 | 2.19 | 3kHz | 0.70 |

802.11a



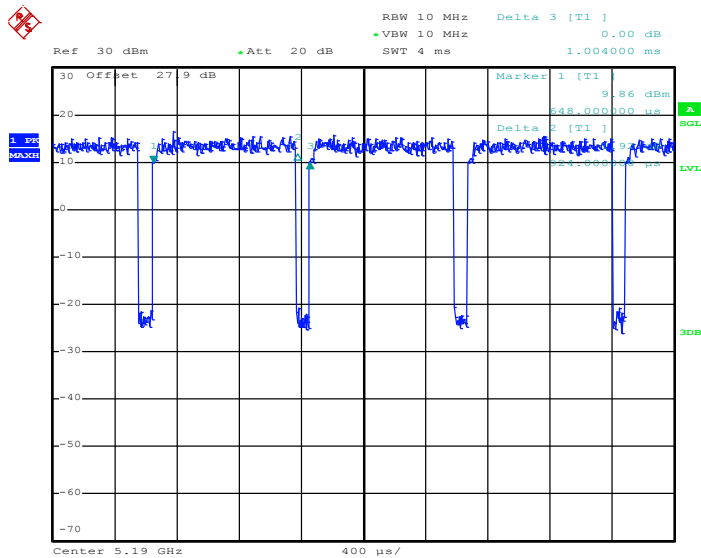
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802.11n HT20



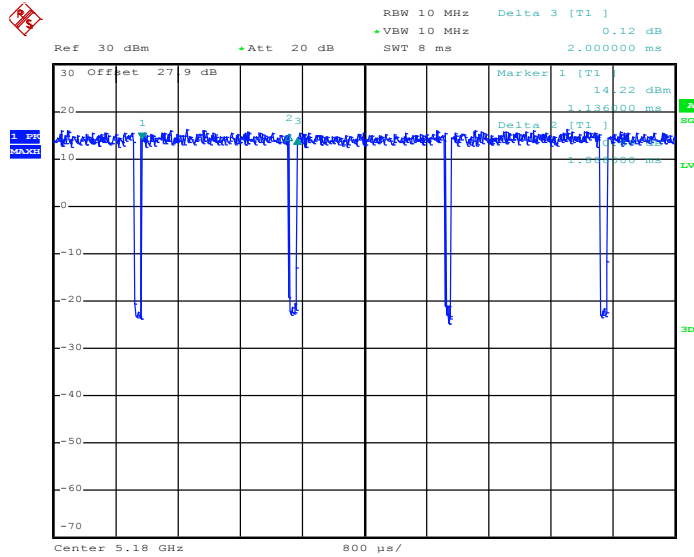
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802.11n HT40



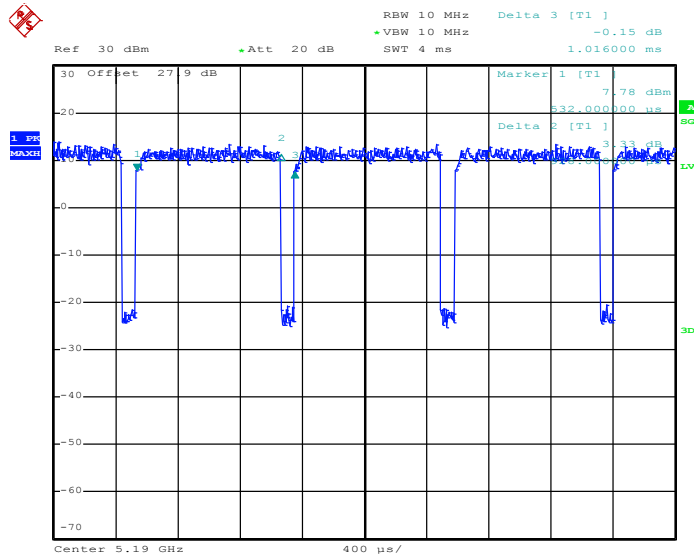
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802.11ac VHT20



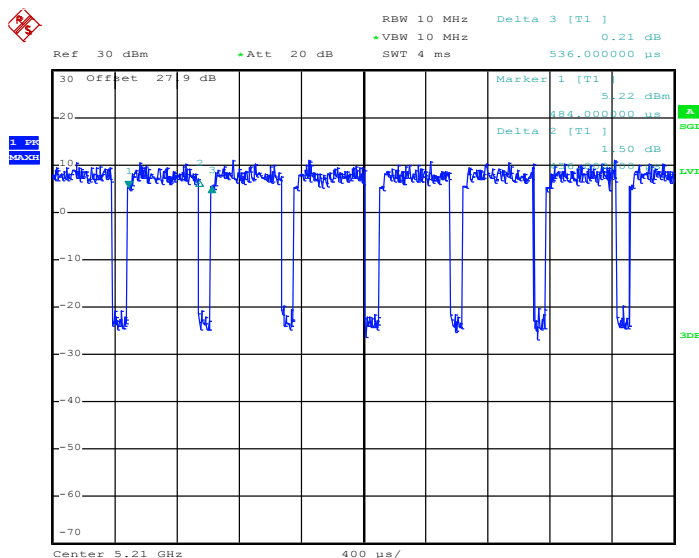
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802.11ac VHT40



Date: 12.DEC.2017 22:54:18

802.11ac VHT80



Date: 12.DEC.2017 23:00:35