



# FCC RADIO TEST REPORT

**FCC ID** : UZ7MC220K  
**Equipment** : Mobile computer  
**Brand Name** : Zebra  
**Model Name** : MC220K  
**Applicant** : Zebra Technologies Corporation  
1 Zebra Plaza, Holtsville, NY 11742  
**Manufacturer** : Zebra Technologies Corporation  
1 Zebra Plaza, Holtsville, NY 11742  
**Standard** : FCC Part 15 Subpart C §15.247

The product was received on Apr. 07, 2020 and testing was started from Apr. 17, 2020 and completed on Aug. 15, 2020. We, SPORTON INTERNATIONAL INC., EMC & Wireless Communications Laboratory, 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. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

*Louis Wu*

Approved by: Louis Wu

**SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory**

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## History of this test report

| Report No.   | Version | Description                                                              | Issued Date   |
|--------------|---------|--------------------------------------------------------------------------|---------------|
| FR040803-02C | 01      | Initial issue of report                                                  | Aug. 28, 2020 |
| FR040803-02C | 02      | Revise the typo of 802.11b maximum (average) output power in section 1.2 | Sep. 09, 2020 |
|              |         |                                                                          |               |
|              |         |                                                                          |               |
|              |         |                                                                          |               |
|              |         |                                                                          |               |
|              |         |                                                                          |               |
|              |         |                                                                          |               |
|              |         |                                                                          |               |
|              |         |                                                                          |               |
|              |         |                                                                          |               |
|              |         |                                                                          |               |
|              |         |                                                                          |               |
|              |         |                                                                          |               |
|              |         |                                                                          |               |

## Summary of Test Result

| Report Clause | Ref Std. Clause       | Test Items                                         | Result (PASS/FAIL) | Remark                                    |
|---------------|-----------------------|----------------------------------------------------|--------------------|-------------------------------------------|
| 3.1           | 15.247(a)(2)          | 6dB Bandwidth                                      | Pass               | -                                         |
| 3.1           | 2.1049                | 99% Occupied Bandwidth                             | Reporting only     | -                                         |
| 3.2           | 15.247(b)             | Power Output Measurement                           | Pass               | -                                         |
| 3.3           | 15.247(e)             | Power Spectral Density                             | Pass               | -                                         |
| 3.4           | 15.247(d)             | Conducted Band Edges                               | Pass               | -                                         |
|               |                       | Conducted Spurious Emission                        | Pass               | -                                         |
| 3.5           | 15.247(d)             | Radiated Band Edges and Radiated Spurious Emission | Pass               | Under limit<br>1.09 dB at<br>2389.940 MHz |
| 3.6           | 15.207                | AC Conducted Emission                              | Pass               | Under limit<br>12.95 dB at<br>13.560 MHz  |
| 3.7           | 15.203 &<br>15.247(b) | Antenna Requirement                                | Pass               | -                                         |

**Declaration of Conformity:**

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

**Comments and Explanations:**

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

**Reviewed by: Wii Chang**

**Report Producer: Vivian Hsu**

# 1 General Description

## 1.1 Product Feature of Equipment Under Test

| Product Feature                 |                                                                                       |
|---------------------------------|---------------------------------------------------------------------------------------|
| Equipment                       | Mobile computer                                                                       |
| Brand Name                      | Zebra                                                                                 |
| Model Name                      | MC220K                                                                                |
| FCC ID                          | UZ7MC220K                                                                             |
| EUT supports Radios application | NFC<br>WLAN 11a/b/g/n HT20/HT40<br>WLAN 11ac VHT20/VHT40/VHT80<br>Bluetooth BR/EDR/LE |
| HW Version                      | EV1                                                                                   |
| SW Version                      | 10-11-31.00-QG-U00-PRD-HEL-04                                                         |
| OS Version                      | Android 10                                                                            |
| MFD                             | 02JUN20                                                                               |
| EUT Stage                       | Engineering Sample                                                                    |

**Remark:** The above EUT's information was declared by manufacturer.

| Specification of Accessories            |            |       |             |                  |
|-----------------------------------------|------------|-------|-------------|------------------|
| AC Adapter                              | Brand Name | Zebra | Part Number | PWR-WUA5V12W0US  |
| Battery                                 | Brand Name | Zebra | Part Number | BT-000418-10     |
| USB Cable<br>(TypeA plug to TypeC plug) | Brand Name | Zebra | Part Number | CBL-TC2X-USBC-01 |
| Trigger Handle                          | Brand Name | Zebra | Part Number | TRG-MC2X-SNP1-01 |
| Holster 1                               | Brand Name | Zebra | Part Number | SG-MC2X-HLSTR-01 |
| Holster 2                               | Brand Name | Zebra | Part Number | SG-MC3021212-01R |

## 1.2 Product Specification of Equipment Under Test

| Product Specification subjective to this standard |                                                                                                                                                                                                                                  |
|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Tx/Rx Channel Frequency Range</b>              | 2412 MHz ~ 2462 MHz                                                                                                                                                                                                              |
| <b>Maximum (Peak) Output Power to antenna</b>     | 802.11b : 22.34 dBm (0.1714 W)<br>802.11g : 23.52 dBm (0.2249 W)<br>802.11n HT20 : 22.80 dBm (0.1905 W)<br>802.11n HT40 : 22.85 dBm (0.1928 W)<br>802.11ac VHT20 : 22.83 dBm (0.1919 W)<br>802.11ac VHT40 : 22.86 dBm (0.1932 W) |
| <b>Maximum (Average) Output Power to antenna</b>  | 802.11b : 20.70 dBm (0.1175 W)<br>802.11g : 20.10 dBm (0.1023 W)<br>802.11n HT20 : 20.20 dBm (0.1047 W)<br>802.11n HT40 : 17.20 dBm (0.0525 W)<br>802.11ac VHT20 : 20.30 dBm (0.1072 W)<br>802.11ac VHT40 : 17.30 dBm (0.0537 W) |
| <b>99% Occupied Bandwidth</b>                     | 802.11b : 14.19 MHz<br>802.11g : 17.68 MHz<br>802.11ac VHT20 : 18.43 MHz<br>802.11ac VHT40 : 36.66 MHz                                                                                                                           |
| <b>Antenna Type / Gain</b>                        | Monopole Antenna with gain 1.96 dBi                                                                                                                                                                                              |
| <b>Type of Modulation</b>                         | 802.11b : DSSS (DBPSK / DQPSK / CCK)<br>802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)<br>802.11ac: OFDM (BPSK / QPSK / 16QAM / 64QAM / 256QAM)                                                                                  |

## 1.3 Modification of EUT

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



## 1.4 Testing Location

|                           |                                                                                                                       |         |           |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------|---------|-----------|
| <b>Test Site</b>          | SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory                                                   |         |           |
| <b>Test Site Location</b> | No.52, Huaya 1st Rd., Guishan Dist.,<br>Taoyuan 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.

FCC designation No.: TW1190

## 1.5 Applicable Standards

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

- ♦ FCC Part 15 Subpart C §15.247
- ♦ FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v05r02
- ♦ FCC KDB 414788 D01 Radiated Test Site v01r01.
- ♦ 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. The TAF code is not including all the FCC KDB listed without accreditation.
3. 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 (Y 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) |
|-----------------|---------|-------------|---------|-------------|
| 2400-2483.5 MHz | 1       | 2412        | 7       | 2442        |
|                 | 2       | 2417        | 8       | 2447        |
|                 | 3       | 2422        | 9       | 2452        |
|                 | 4       | 2427        | 10      | 2457        |
|                 | 5       | 2432        | 11      | 2462        |
|                 | 6       | 2437        |         |             |

### 2.2 Test Mode

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

| Modulation                      | Data Rate |
|---------------------------------|-----------|
| 802.11b                         | 1 Mbps    |
| 802.11g                         | 6 Mbps    |
| 802.11n HT20 (Covered by VHT20) | MCS0      |
| 802.11n HT40 (Covered by VHT40) | MCS0      |
| 802.11ac VHT20                  | MCS0      |
| 802.11ac VHT40                  | MCS0      |

| Test Cases                   |                                                                                                                                                            |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>AC Conducted Emission</b> | Mode 1 : WLAN (2.4GHz) Link + Bluetooth Link + NFC On + USB Cable (CBL-TC2X-USBC-01) (Charging from AC Adapter (PWR-WUA5V12W0US)) + Battery (BT-000418-10) |

| Ch. #  | 2400-2483.5 MHz |         |                |                |
|--------|-----------------|---------|----------------|----------------|
|        | 802.11b         | 802.11g | 802.11ac VHT20 | 802.11ac VHT40 |
| Low    | 01              | 01      | 01             | 03             |
| Middle | 06              | 06      | 06             | 06             |
| High   | 11              | 11      | 11             | 09             |

**Remark:** For radiation spurious emission, the final modulation and the worst data rate was reference the max RF conducted power.

| 802.11b RF Peak Output Power (dBm) |                 |                 |                    |                 |       |       |
|------------------------------------|-----------------|-----------------|--------------------|-----------------|-------|-------|
| Power vs. Channel                  |                 |                 | Power vs Data Rate |                 |       |       |
| Channel                            | Frequency (MHz) | Data Rate (bps) | Channel            | Data Rate (bps) |       |       |
|                                    |                 | 1M              |                    | 2M              | 5.5M  | 11M   |
| CH 01                              | 2412            | 22.34           | CH 11              | 22.31           | 22.30 | 22.28 |
| CH 06                              | 2437            | 21.93           |                    |                 |       |       |
| CH 11                              | 2462            | 22.15           |                    |                 |       |       |

| 802.11g RF Peak Output Power (dBm) |                 |                 |                    |                 |        |        |        |        |        |        |
|------------------------------------|-----------------|-----------------|--------------------|-----------------|--------|--------|--------|--------|--------|--------|
| Power vs. Channel                  |                 |                 | Power vs Data Rate |                 |        |        |        |        |        |        |
| Channel                            | Frequency (MHz) | Data Rate (bps) | Channel            | Data Rate (bps) |        |        |        |        |        |        |
|                                    |                 | 6M              |                    | 9Mbps           | 12Mbps | 18Mbps | 24Mbps | 36Mbps | 48Mbps | 54Mbps |
| CH 01                              | 2412            | 22.64           | CH 06              | 23.38           | 23.25  | 23.45  | 23.42  | 23.33  | 23.45  | 23.46  |
| CH 06                              | 2437            | 23.52           |                    |                 |        |        |        |        |        |        |
| CH 11                              | 2462            | 22.43           |                    |                 |        |        |        |        |        |        |

| 802.11n HT20 RF Peak Output Power (dBm) |                 |           |                    |           |       |       |       |       |       |       |
|-----------------------------------------|-----------------|-----------|--------------------|-----------|-------|-------|-------|-------|-------|-------|
| Power vs. Channel                       |                 |           | Power vs Data Rate |           |       |       |       |       |       |       |
| Channel                                 | Frequency (MHz) | MCS Index | Channel            | MCS Index |       |       |       |       |       |       |
|                                         |                 | MCS 0     |                    | MCS 1     | MCS 2 | MCS 3 | MCS 4 | MCS 5 | MCS 6 | MCS 7 |
| CH 01                                   | 2412            | 21.72     | CH 06              | 22.74     | 22.74 | 22.76 | 22.72 | 22.72 | 22.71 | 22.67 |
| CH 06                                   | 2437            | 22.80     |                    |           |       |       |       |       |       |       |
| CH 11                                   | 2462            | 20.76     |                    |           |       |       |       |       |       |       |



| 802.11n HT40 RF Peak Output Power (dBm) |                    |              |                    |           |       |       |       |       |       |       |
|-----------------------------------------|--------------------|--------------|--------------------|-----------|-------|-------|-------|-------|-------|-------|
| Power vs. Channel                       |                    |              | Power vs Data Rate |           |       |       |       |       |       |       |
| Channel                                 | Frequency<br>(MHz) | MCS Index    | Channel            | MCS Index |       |       |       |       |       |       |
|                                         |                    | MCS 0        |                    | MCS 1     | MCS 2 | MCS 3 | MCS 4 | MCS 5 | MCS 6 | MCS 7 |
| CH 03                                   | 2422               | 19.81        | CH 06              | 21.88     | 22.46 | 22.39 | 22.68 | 22.60 | 22.66 | 22.69 |
| CH 06                                   | 2437               | <b>22.85</b> |                    |           |       |       |       |       |       |       |
| CH 09                                   | 2452               | 20.22        |                    |           |       |       |       |       |       |       |

| 802.11ac VHT20 RF Peak Output Power (dBm) |                    |           |                    |           |       |       |       |       |       |       |       |
|-------------------------------------------|--------------------|-----------|--------------------|-----------|-------|-------|-------|-------|-------|-------|-------|
| Power vs. Channel                         |                    |           | Power vs Data Rate |           |       |       |       |       |       |       |       |
| Channel                                   | Frequency<br>(MHz) | MCS Index | Channel            | MCS Index |       |       |       |       |       |       |       |
|                                           |                    | MCS 0     |                    | MCS 1     | MCS 2 | MCS 3 | MCS 4 | MCS 5 | MCS 6 | MCS 7 | MCS 8 |
| CH 01                                     | 2412               | 21.74     | CH 06              | 22.76     | 22.77 | 22.77 | 22.75 | 22.75 | 22.73 | 22.72 | 22.70 |
| CH 06                                     | 2437               | 22.83     |                    |           |       |       |       |       |       |       |       |
| CH 11                                     | 2462               | 20.77     |                    |           |       |       |       |       |       |       |       |

| 802.11ac VHT40 RF Peak Output Power (dBm) |                    |           |                    |           |       |       |       |       |       |       |       |       |
|-------------------------------------------|--------------------|-----------|--------------------|-----------|-------|-------|-------|-------|-------|-------|-------|-------|
| Power vs. Channel                         |                    |           | Power vs Data Rate |           |       |       |       |       |       |       |       |       |
| Channel                                   | Frequency<br>(MHz) | MCS Index | Channel            | MCS Index |       |       |       |       |       |       |       |       |
|                                           |                    | MCS 0     |                    | MCS 1     | MCS 2 | MCS 3 | MCS 4 | MCS 5 | MCS 6 | MCS 7 | MCS 8 | MCS 9 |
| CH 03                                     | 2422               | 19.83     | CH 06              | 22.32     | 22.80 | 22.65 | 22.72 | 22.68 | 22.72 | 22.75 | 22.77 | 22.78 |
| CH 06                                     | 2437               | 22.86     |                    |           |       |       |       |       |       |       |       |       |
| CH 09                                     | 2452               | 20.24     |                    |           |       |       |       |       |       |       |       |       |

| 802.11b RF Avg Output Power (dBm) |                 |                 |                    |                 |       |       |
|-----------------------------------|-----------------|-----------------|--------------------|-----------------|-------|-------|
| Power vs. Channel                 |                 |                 | Power vs Data Rate |                 |       |       |
| Channel                           | Frequency (MHz) | Data Rate (bps) | Channel            | Data Rate (bps) |       |       |
|                                   |                 | 1M              |                    | 2M              | 5.5M  | 11M   |
| CH 01                             | 2412            | 20.70           | CH 06              | 20.40           | 20.20 | 20.20 |
| CH 06                             | 2437            | 20.30           |                    |                 |       |       |
| CH 11                             | 2462            | 20.30           |                    |                 |       |       |

| 802.11g RF Avg Output Power (dBm) |                 |                 |                    |                 |        |        |        |        |        |
|-----------------------------------|-----------------|-----------------|--------------------|-----------------|--------|--------|--------|--------|--------|
| Power vs. Channel                 |                 |                 | Power vs Data Rate |                 |        |        |        |        |        |
| Channel                           | Frequency (MHz) | Data Rate (bps) | Channel            | Data Rate (bps) |        |        |        |        |        |
|                                   |                 | 6M              |                    | 9Mbps           | 12Mbps | 18Mbps | 24Mbps | 36Mbps | 48Mbps |
| CH 01                             | 2412            | 18.60           | CH 06              | 19.70           | 19.70  | 18.70  | 18.60  | 15.30  | 16.20  |
| CH 06                             | 2437            | 20.10           |                    |                 |        |        |        |        |        |
| CH 11                             | 2462            | 18.00           |                    |                 |        |        |        |        |        |

| 802.11n HT20 RF Avg Output Power (dBm) |                 |           |                    |           |       |       |       |       |       |
|----------------------------------------|-----------------|-----------|--------------------|-----------|-------|-------|-------|-------|-------|
| Power vs. Channel                      |                 |           | Power vs Data Rate |           |       |       |       |       |       |
| Channel                                | Frequency (MHz) | MCS Index | Channel            | MCS Index |       |       |       |       |       |
|                                        |                 | MCS 0     |                    | MCS 1     | MCS 2 | MCS 3 | MCS 4 | MCS 5 | MCS 6 |
| CH 01                                  | 2412            | 17.60     | CH 06              | 20.00     | 18.30 | 18.00 | 14.70 | 14.70 | 13.70 |
| CH 06                                  | 2437            | 20.20     |                    |           |       |       |       |       |       |
| CH 11                                  | 2462            | 17.00     |                    |           |       |       |       |       |       |

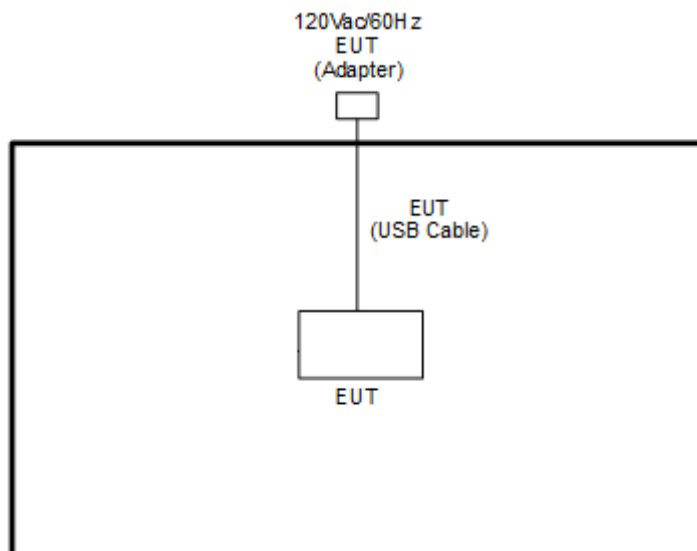
| 802.11n HT40 RF Avg Output Power (dBm) |                 |           |                    |           |       |       |       |       |       |
|----------------------------------------|-----------------|-----------|--------------------|-----------|-------|-------|-------|-------|-------|
| Power vs. Channel                      |                 |           | Power vs Data Rate |           |       |       |       |       |       |
| Channel                                | Frequency (MHz) | MCS Index | Channel            | MCS Index |       |       |       |       |       |
|                                        |                 | MCS 0     |                    | MCS 1     | MCS 2 | MCS 3 | MCS 4 | MCS 5 | MCS 6 |
| CH 03                                  | 2422            | 14.10     | CH 06              | 16.70     | 16.80 | 17.00 | 14.30 | 14.10 | 14.70 |
| CH 06                                  | 2437            | 17.20     |                    |           |       |       |       |       |       |
| CH 09                                  | 2452            | 14.10     |                    |           |       |       |       |       |       |

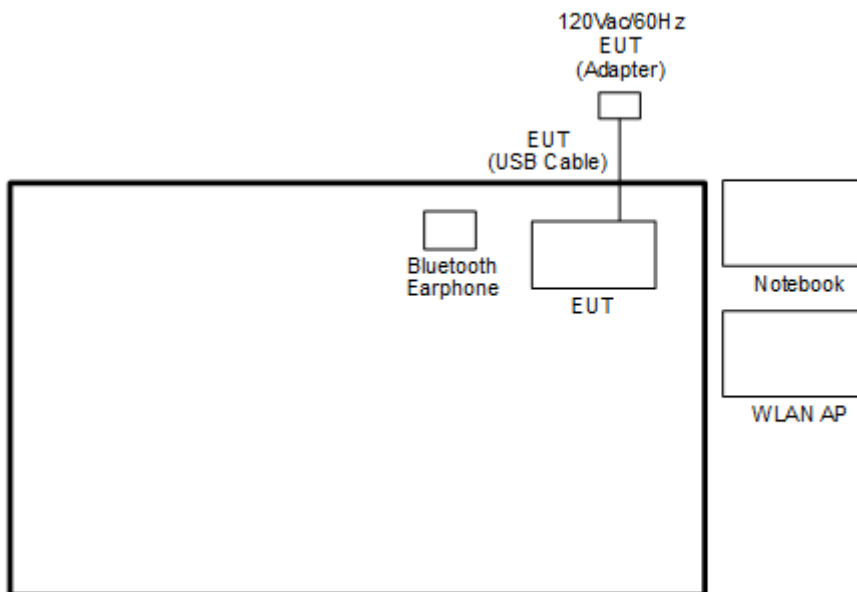
| 802.11ac VHT20 RF Avg Output Power (dBm) |                    |              |                    |           |       |       |       |       |       |       |       |
|------------------------------------------|--------------------|--------------|--------------------|-----------|-------|-------|-------|-------|-------|-------|-------|
| Power vs. Channel                        |                    |              | Power vs Data Rate |           |       |       |       |       |       |       |       |
| Channel                                  | Frequency<br>(MHz) | MCS Index    | Channel            | MCS Index |       |       |       |       |       |       |       |
|                                          |                    | MCS 0        |                    | MCS 1     | MCS 2 | MCS 3 | MCS 4 | MCS 5 | MCS 6 | MCS 7 | MCS 8 |
| CH 01                                    | 2412               | 17.70        | CH 06              | 18.80     | 17.60 | 17.60 | 14.70 | 14.70 | 13.70 | 14.60 | 14.20 |
| CH 06                                    | 2437               | <b>20.30</b> |                    |           |       |       |       |       |       |       |       |
| CH 11                                    | 2462               | 17.10        |                    |           |       |       |       |       |       |       |       |

| 802.11ac VHT40 RF Avg Output Power (dBm) |                    |              |                    |           |       |       |       |       |       |       |       |       |
|------------------------------------------|--------------------|--------------|--------------------|-----------|-------|-------|-------|-------|-------|-------|-------|-------|
| Power vs. Channel                        |                    |              | Power vs Data Rate |           |       |       |       |       |       |       |       |       |
| Channel                                  | Frequency<br>(MHz) | MCS Index    | Channel            | MCS Index |       |       |       |       |       |       |       |       |
|                                          |                    | MCS 0        |                    | MCS 1     | MCS 2 | MCS 3 | MCS 4 | MCS 5 | MCS 6 | MCS 7 | MCS 8 | MCS 9 |
| CH 03                                    | 2422               | 14.20        | CH 06              | 17.10     | 17.20 | 17.20 | 14.30 | 14.80 | 14.80 | 15.10 | 14.80 | 14.10 |
| CH 06                                    | 2437               | <b>17.30</b> |                    |           |       |       |       |       |       |       |       |       |
| CH 09                                    | 2452               | 14.20        |                    |           |       |       |       |       |       |       |       |       |

## 2.3 Connection Diagram of Test System

<WLAN Tx Mode>



**<AC Conducted Emission Mode>**

**2.4 Support Unit used in test configuration and system**

| Item | Equipment          | Brand 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, 1.8 m                                          |
| 3.   | Notebook           | DELL          | Latitude 3400 | FCC DoC     | N/A        | AC I/P:<br>Unshielded, 1.2 m<br>DC O/P:<br>Shielded, 1.8 m |
| 4.   | SD Card            | SanDisk       | MicroSD HC    | FCC DoC     | N/A        | N/A                                                        |



## 2.5 EUT Operation Test Setup

The RF test items, utility "QRCT V\_4.0.00156.0" 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 99% Bandwidth Measurement

##### 3.1.1 Limit of 6dB and 99% Bandwidth

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

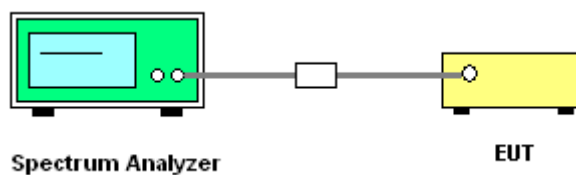
##### 3.1.2 Measuring Instruments

See list of measuring equipment of this test report.

##### 3.1.3 Test Procedures

1. The testing follows the ANSI C63.10 Section 6.9.3 (OBW) and 11.8.1 (6dB BW).
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 kHz.
5. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) is set 1-5% of the emission bandwidth and set the Video bandwidth (VBW)  $\geq 3 * RBW$ .
6. Measure and record the results in the test report.

##### 3.1.4 Test Setup

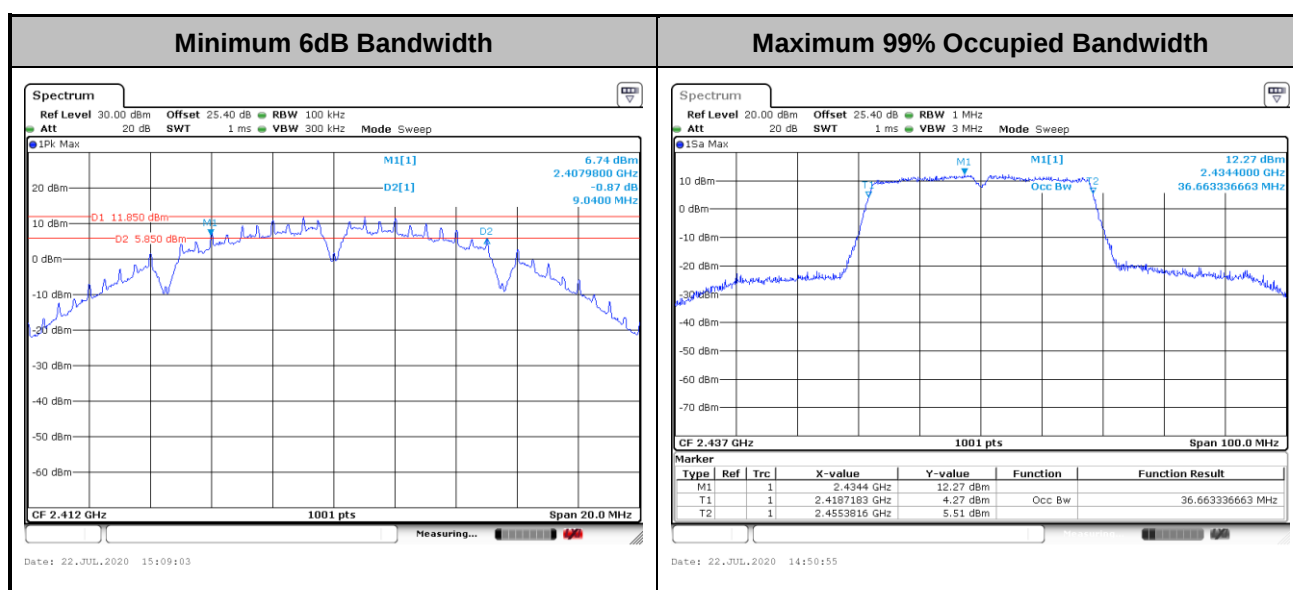




## 3.1.5 Test Result of 6dB and 99% Occupied Bandwidth

|                 |                                  |                     |            |
|-----------------|----------------------------------|---------------------|------------|
| Test Engineer : | Owen Yang, Hank Hsu and Ryan Lin | Temperature :       | 21.2~24.1℃ |
|                 |                                  | Relative Humidity : | 47.2~57.8% |

| 2.4GHz Band Single Antenna |           |     |     |             |                       |      |              |      |                    |           |
|----------------------------|-----------|-----|-----|-------------|-----------------------|------|--------------|------|--------------------|-----------|
| Mod.                       | Data Rate | NTX | CH. | Freq. (MHz) | 99% Occupied BW (MHz) |      | 6dB BW (MHz) |      | 6dB BW Limit (MHz) | Pass/Fail |
|                            |           |     |     |             | Ant1                  | Ant2 | Ant1         | Ant2 |                    |           |
| 11b                        | 1Mbps     | 1   | 1   | 2412        | 14.19                 | -    | 9.04         | -    | 0.50               | Pass      |
| 11b                        | 1Mbps     | 1   | 6   | 2437        | 14.04                 | -    | 9.06         | -    | 0.50               | Pass      |
| 11b                        | 1Mbps     | 1   | 11  | 2462        | 14.09                 | -    | 9.52         | -    | 0.50               | Pass      |
| 11g                        | 6Mbps     | 1   | 1   | 2412        | 17.58                 | -    | 16.06        | -    | 0.50               | Pass      |
| 11g                        | 6Mbps     | 1   | 6   | 2437        | 17.68                 | -    | 15.68        | -    | 0.50               | Pass      |
| 11g                        | 6Mbps     | 1   | 11  | 2462        | 16.78                 | -    | 15.50        | -    | 0.50               | Pass      |
| VHT20                      | MCS0      | 1   | 1   | 2412        | 18.08                 | -    | 16.68        | -    | 0.50               | Pass      |
| VHT20                      | MCS0      | 1   | 6   | 2437        | 18.43                 | -    | 17.52        | -    | 0.50               | Pass      |
| VHT20                      | MCS0      | 1   | 11  | 2462        | 17.83                 | -    | 16.08        | -    | 0.50               | Pass      |
| VHT40                      | MCS0      | 1   | 3   | 2422        | 36.46                 | -    | 35.12        | -    | 0.50               | Pass      |
| VHT40                      | MCS0      | 1   | 6   | 2437        | 36.66                 | -    | 35.96        | -    | 0.50               | Pass      |
| VHT40                      | MCS0      | 1   | 9   | 2452        | 36.46                 | -    | 35.36        | -    | 0.50               | Pass      |



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

## 3.2 Output Power Measurement

### 3.2.1 Limit of Output Power

For systems using digital modulation in the 2400-2483.5MHz, the limit for output power is 30dBm. If transmitting antenna with directional gain greater than 6dBi is used, the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

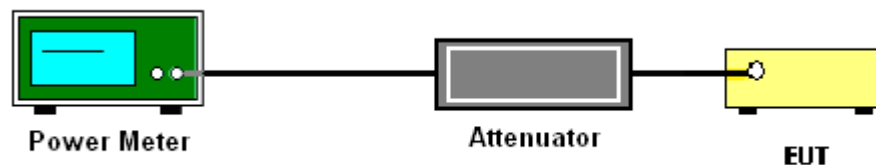
### 3.2.2 Measuring Instruments

See list of measuring equipment of this test report.

### 3.2.3 Test Procedures

1. For Peak Power, the testing follows ANSI C63.10 Section 11.9.1.3 PKPM1
2. For Average Power, the testing follows ANSI C63.10 Section 11.9.2.3.2 Method AVGPM-G
3. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
4. Set to the maximum power setting and enable the EUT transmit continuously.
5. Measure the conducted output power and record the results in the test report.

### 3.2.4 Test Setup





## 3.2.5 Test Result of Peak Output Power

|                 |                                  |                     |            |
|-----------------|----------------------------------|---------------------|------------|
| Test Engineer : | Owen Yang, Hank Hsu and Ryan Lin | Temperature :       | 21.2~24.1℃ |
|                 |                                  | Relative Humidity : | 47.2~57.8% |

| 2.4GHz Band Single Antenna |           |     |     |             |                            |      |     |                             |      |          |      |                  |      |                        |      |            |
|----------------------------|-----------|-----|-----|-------------|----------------------------|------|-----|-----------------------------|------|----------|------|------------------|------|------------------------|------|------------|
| Mod.                       | Data Rate | NTX | CH. | Freq. (MHz) | Peak Conducted Power (dBm) |      |     | Conducted Power Limit (dBm) |      | DG (dBi) |      | EIRP Power (dBm) |      | EIRP Power Limit (dBm) |      | Pass /Fail |
|                            |           |     |     |             | Ant1                       | Ant2 | SUM | Ant1                        | Ant2 | Ant1     | Ant2 | Ant1             | Ant2 | Ant1                   | Ant2 |            |
| 11b                        | 1Mbps     | 1   | 1   | 2412        | 22.34                      | -    |     | 30.00                       | -    | 1.96     | -    | 24.30            | -    | 36.00                  | -    | Pass       |
| 11b                        | 1Mbps     | 1   | 6   | 2437        | 21.93                      | -    |     | 30.00                       | -    | 1.96     | -    | 23.89            | -    | 36.00                  | -    | Pass       |
| 11b                        | 1Mbps     | 1   | 11  | 2462        | 22.15                      | -    |     | 30.00                       | -    | 1.96     | -    | 24.11            | -    | 36.00                  | -    | Pass       |
| 11g                        | 6Mbps     | 1   | 1   | 2412        | 22.64                      | -    |     | 30.00                       | -    | 1.96     | -    | 24.60            | -    | 36.00                  | -    | Pass       |
| 11g                        | 6Mbps     | 1   | 6   | 2437        | 23.52                      | -    |     | 30.00                       | -    | 1.96     | -    | 25.48            | -    | 36.00                  | -    | Pass       |
| 11g                        | 6Mbps     | 1   | 11  | 2462        | 22.43                      | -    |     | 30.00                       | -    | 1.96     | -    | 24.39            | -    | 36.00                  | -    | Pass       |
| HT20                       | MCS0      | 1   | 1   | 2412        | 21.72                      | -    |     | 30.00                       | -    | 1.96     | -    | 23.68            | -    | 36.00                  | -    | Pass       |
| HT20                       | MCS0      | 1   | 6   | 2437        | 22.80                      | -    |     | 30.00                       | -    | 1.96     | -    | 24.76            | -    | 36.00                  | -    | Pass       |
| HT20                       | MCS0      | 1   | 11  | 2462        | 20.76                      | -    |     | 30.00                       | -    | 1.96     | -    | 22.72            | -    | 36.00                  | -    | Pass       |
| HT40                       | MCS0      | 1   | 3   | 2422        | 19.81                      | -    |     | 30.00                       | -    | 1.96     | -    | 21.77            | -    | 36.00                  | -    | Pass       |
| HT40                       | MCS0      | 1   | 6   | 2437        | 22.85                      | -    |     | 30.00                       | -    | 1.96     | -    | 24.81            | -    | 36.00                  | -    | Pass       |
| HT40                       | MCS0      | 1   | 9   | 2452        | 20.22                      | -    |     | 30.00                       | -    | 1.96     | -    | 22.18            | -    | 36.00                  | -    | Pass       |
| VHT20                      | MCS0      | 1   | 1   | 2412        | 21.74                      | -    |     | 30.00                       | -    | 1.96     | -    | 23.70            | -    | 36.00                  | -    | Pass       |
| VHT20                      | MCS0      | 1   | 6   | 2437        | 22.83                      | -    |     | 30.00                       | -    | 1.96     | -    | 24.79            | -    | 36.00                  | -    | Pass       |
| VHT20                      | MCS0      | 1   | 11  | 2462        | 20.77                      | -    |     | 30.00                       | -    | 1.96     | -    | 22.73            | -    | 36.00                  | -    | Pass       |
| VHT40                      | MCS0      | 1   | 3   | 2422        | 19.83                      | -    |     | 30.00                       | -    | 1.96     | -    | 21.79            | -    | 36.00                  | -    | Pass       |
| VHT40                      | MCS0      | 1   | 6   | 2437        | 22.86                      | -    |     | 30.00                       | -    | 1.96     | -    | 24.82            | -    | 36.00                  | -    | Pass       |
| VHT40                      | MCS0      | 1   | 9   | 2452        | 20.24                      | -    |     | 30.00                       | -    | 1.96     | -    | 22.20            | -    | 36.00                  | -    | Pass       |



## 3.2.6 Test Result of Average Output Power (Reporting Only)

|                 |                                  |                     |            |
|-----------------|----------------------------------|---------------------|------------|
| Test Engineer : | Owen Yang, Hank Hsu and Ryan Lin | Temperature :       | 21.2~24.1℃ |
|                 |                                  | Relative Humidity : | 47.2~57.8% |

| 2.4GHz Band Single Antenna |           |                 |     |             |                               |      |     |          |      |                  |      |
|----------------------------|-----------|-----------------|-----|-------------|-------------------------------|------|-----|----------|------|------------------|------|
| Mod.                       | Data Rate | N <sub>TX</sub> | CH. | Freq. (MHz) | Average Conducted Power (dBm) |      |     | DG (dBi) |      | EIRP Power (dBm) |      |
|                            |           |                 |     |             | Ant1                          | Ant2 | SUM | Ant1     | Ant2 | Ant1             | Ant2 |
| 11b                        | 1Mbps     | 1               | 1   | 2412        | 20.70                         | -    | -   | 1.96     | -    | 22.66            | -    |
| 11b                        | 1Mbps     | 1               | 6   | 2437        | 20.30                         | -    |     | 1.96     | -    | 22.26            | -    |
| 11b                        | 1Mbps     | 1               | 11  | 2462        | 20.30                         | -    |     | 1.96     | -    | 22.26            | -    |
| 11g                        | 6Mbps     | 1               | 1   | 2412        | 18.60                         | -    |     | 1.96     | -    | 20.56            | -    |
| 11g                        | 6Mbps     | 1               | 6   | 2437        | 20.10                         | -    |     | 1.96     | -    | 22.06            | -    |
| 11g                        | 6Mbps     | 1               | 11  | 2462        | 18.00                         | -    |     | 1.96     | -    | 19.96            | -    |
| HT20                       | MCS0      | 1               | 1   | 2412        | 17.60                         | -    |     | 1.96     | -    | 19.56            | -    |
| HT20                       | MCS0      | 1               | 6   | 2437        | 20.20                         | -    |     | 1.96     | -    | 22.16            | -    |
| HT20                       | MCS0      | 1               | 11  | 2462        | 17.00                         | -    |     | 1.96     | -    | 18.96            | -    |
| HT40                       | MCS0      | 1               | 3   | 2422        | 14.10                         | -    |     | 1.96     | -    | 16.06            | -    |
| HT40                       | MCS0      | 1               | 6   | 2437        | 17.20                         | -    |     | 1.96     | -    | 19.16            | -    |
| HT40                       | MCS0      | 1               | 9   | 2452        | 14.10                         | -    |     | 1.96     | -    | 16.06            | -    |
| VHT20                      | MCS0      | 1               | 1   | 2412        | 17.70                         | -    |     | 1.96     | -    | 19.66            | -    |
| VHT20                      | MCS0      | 1               | 6   | 2437        | 20.30                         | -    |     | 1.96     | -    | 22.26            | -    |
| VHT20                      | MCS0      | 1               | 11  | 2462        | 17.10                         | -    |     | 1.96     | -    | 19.06            | -    |
| VHT40                      | MCS0      | 1               | 3   | 2422        | 14.20                         | -    |     | 1.96     | -    | 16.16            | -    |
| VHT40                      | MCS0      | 1               | 6   | 2437        | 17.30                         | -    |     | 1.96     | -    | 19.26            | -    |
| VHT40                      | MCS0      | 1               | 9   | 2452        | 14.20                         | -    |     | 1.96     | -    | 16.16            | -    |

### 3.3 Power Spectral Density Measurement

#### 3.3.1 Limit of Power Spectral Density

The peak power spectral density shall not be greater than 8dBm in any 3kHz band at any time interval of continuous transmission.

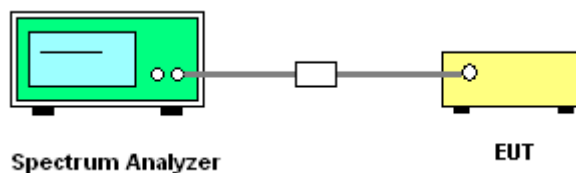
#### 3.3.2 Measuring Instruments

See list of measuring equipment of this test report.

#### 3.3.3 Test Procedures

1. The testing follows the ANSI C63.10 Section 11.10.2 Method PKPSD.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 3 kHz. Video bandwidth VBW = 10 kHz In order to make an accurate measurement, set the span to 1.5 times DTS Channel Bandwidth. (6dB BW)
5. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level.
6. Measure and record the results in the test report.

#### 3.3.4 Test Setup

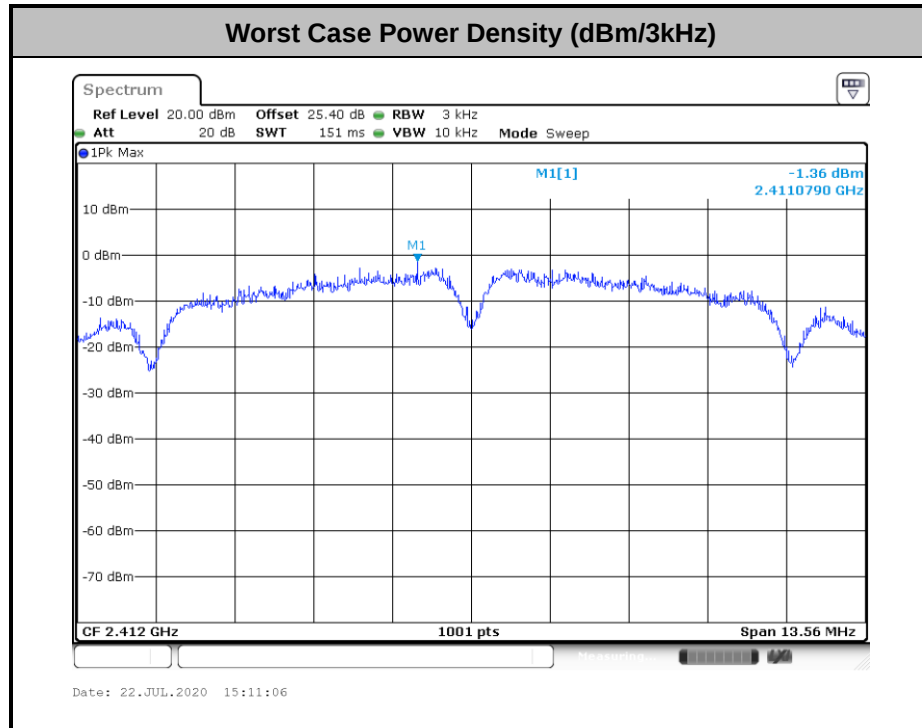




## 3.3.5 Test Result of Power Spectral Density

|                 |                                  |                     |            |
|-----------------|----------------------------------|---------------------|------------|
| Test Engineer : | Owen Yang, Hank Hsu and Ryan Lin | Temperature :       | 21.2~24.1℃ |
|                 |                                  | Relative Humidity : | 47.2~57.8% |

| 2.4GHz Band Single Antenna |           |     |     |             |                     |      |          |      |                           |      |           |
|----------------------------|-----------|-----|-----|-------------|---------------------|------|----------|------|---------------------------|------|-----------|
| Mod.                       | Data Rate | NTX | CH. | Freq. (MHz) | Peak PSD (dBm/3kHz) |      | DG (dBi) |      | Peak PSD Limit (dBm/3kHz) |      | Pass/Fail |
|                            |           |     |     |             | Ant1                | Ant2 | Ant1     | Ant2 | Ant1                      | Ant2 |           |
| 11b                        | 1Mbps     | 1   | 1   | 2412        | -1.36               | -    | 1.96     | -    | 8.00                      | -    | Pass      |
| 11b                        | 1Mbps     | 1   | 6   | 2437        | -1.41               | -    | 1.96     | -    | 8.00                      | -    | Pass      |
| 11b                        | 1Mbps     | 1   | 11  | 2462        | -2.10               | -    | 1.96     | -    | 8.00                      | -    | Pass      |
| 11g                        | 6Mbps     | 1   | 1   | 2412        | -6.29               | -    | 1.96     | -    | 8.00                      | -    | Pass      |
| 11g                        | 6Mbps     | 1   | 6   | 2437        | -6.70               | -    | 1.96     | -    | 8.00                      | -    | Pass      |
| 11g                        | 6Mbps     | 1   | 11  | 2462        | -7.67               | -    | 1.96     | -    | 8.00                      | -    | Pass      |
| VHT20                      | MCS0      | 1   | 1   | 2412        | -7.56               | -    | 1.96     | -    | 8.00                      | -    | Pass      |
| VHT20                      | MCS0      | 1   | 6   | 2437        | -5.34               | -    | 1.96     | -    | 8.00                      | -    | Pass      |
| VHT20                      | MCS0      | 1   | 11  | 2462        | -7.29               | -    | 1.96     | -    | 8.00                      | -    | Pass      |
| VHT40                      | MCS0      | 1   | 3   | 2422        | -10.84              | -    | 1.96     | -    | 8.00                      | -    | Pass      |
| VHT40                      | MCS0      | 1   | 6   | 2437        | -7.84               | -    | 1.96     | -    | 8.00                      | -    | Pass      |
| VHT40                      | MCS0      | 1   | 9   | 2452        | -10.04              | -    | 1.96     | -    | 8.00                      | -    | Pass      |



## 3.4 Conducted Band Edges and Spurious Emission Measurement

### 3.4.1 Limit of Conducted Band Edges and Spurious Emission Measurement

In any 100 kHz bandwidth outside of the authorized frequency band, the emissions which fall in the non-restricted bands shall be attenuated at least 20 dB / 30dB relative to the maximum PSD level in 100 kHz by RF conducted measurement.

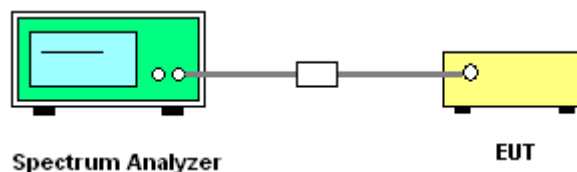
### 3.4.2 Measuring Instruments

See list of measuring equipment of this test report.

### 3.4.3 Test Procedures

1. The testing follows the ANSI C63.10 Section 11.11.3 Emission level measurement.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Set RBW = 100 kHz, VBW=300 kHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB per 15.247(d).
5. Measure and record the results in the test report.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

### 3.4.4 Test Setup



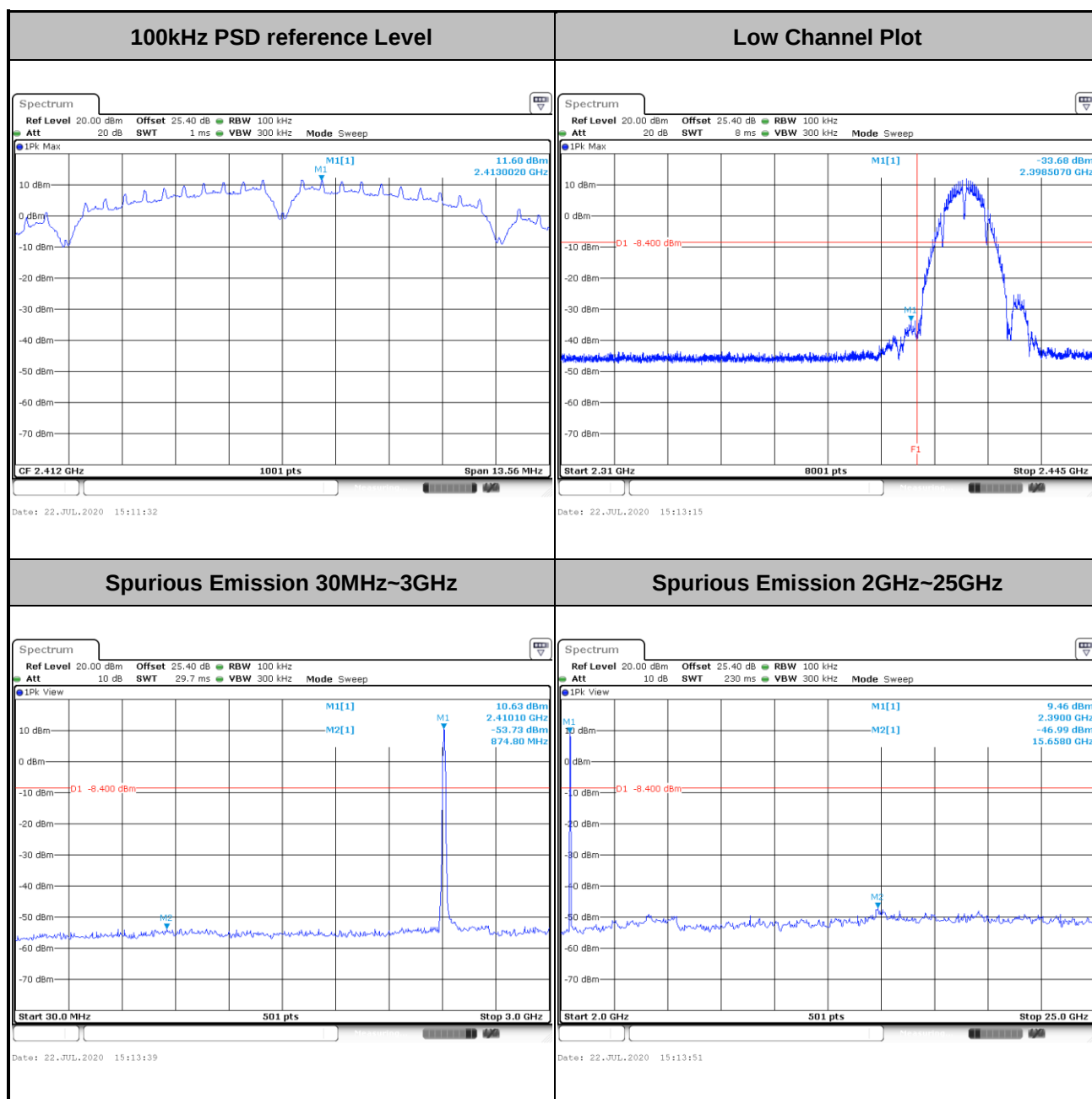


## 3.4.5 Test Result of Conducted Band Edges and Spurious Emission

|                 |                                  |                     |            |
|-----------------|----------------------------------|---------------------|------------|
| Test Engineer : | Owen Yang, Hank Hsu and Ryan Lin | Temperature :       | 21.2~24.1℃ |
|                 |                                  | Relative Humidity : | 47.2~57.8% |

Number of TX = 1, Ant. 1 (Measured)

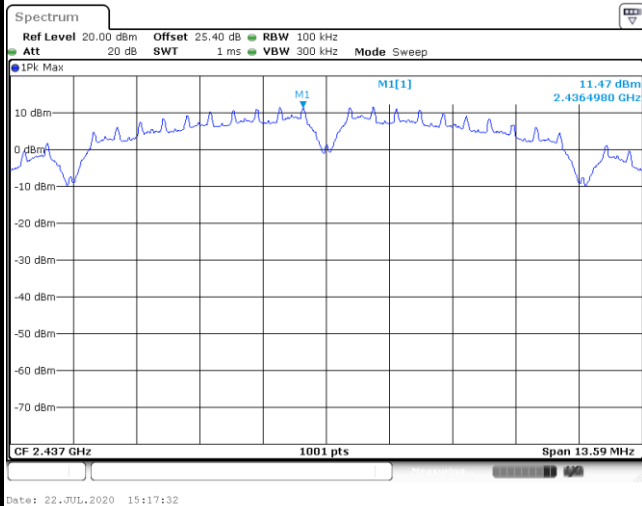
|             |         |                |    |
|-------------|---------|----------------|----|
| Test Mode : | 802.11b | Test Channel : | 01 |
|-------------|---------|----------------|----|





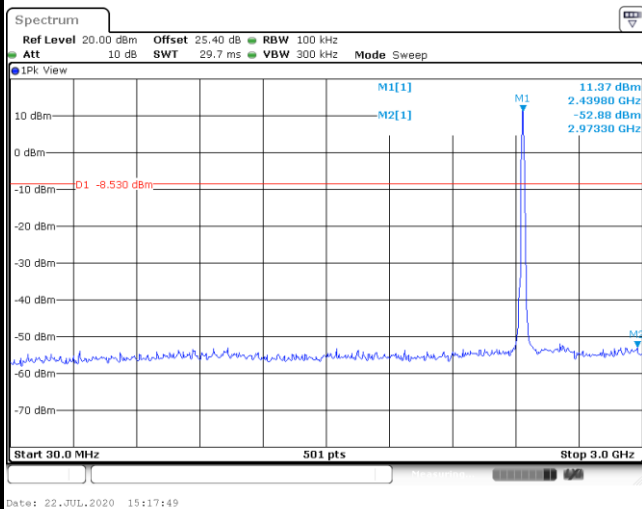
|             |         |                |    |
|-------------|---------|----------------|----|
| Test Mode : | 802.11b | Test Channel : | 06 |
|-------------|---------|----------------|----|

## 100kHz PSD reference Level

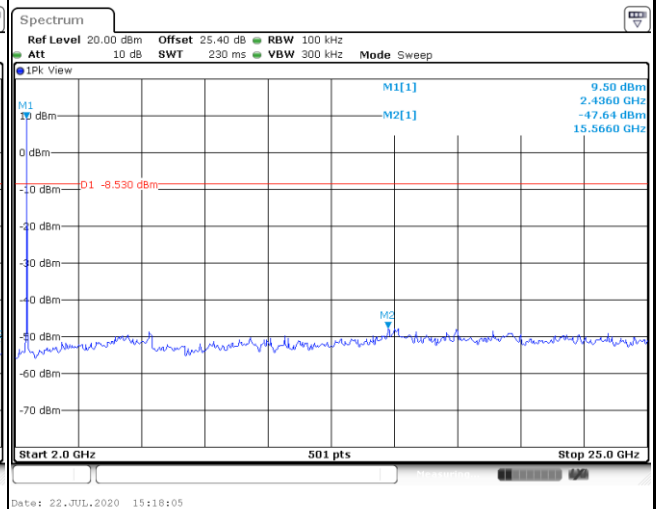


## Mid Channel Plot

## Spurious Emission 30MHz~3GHz

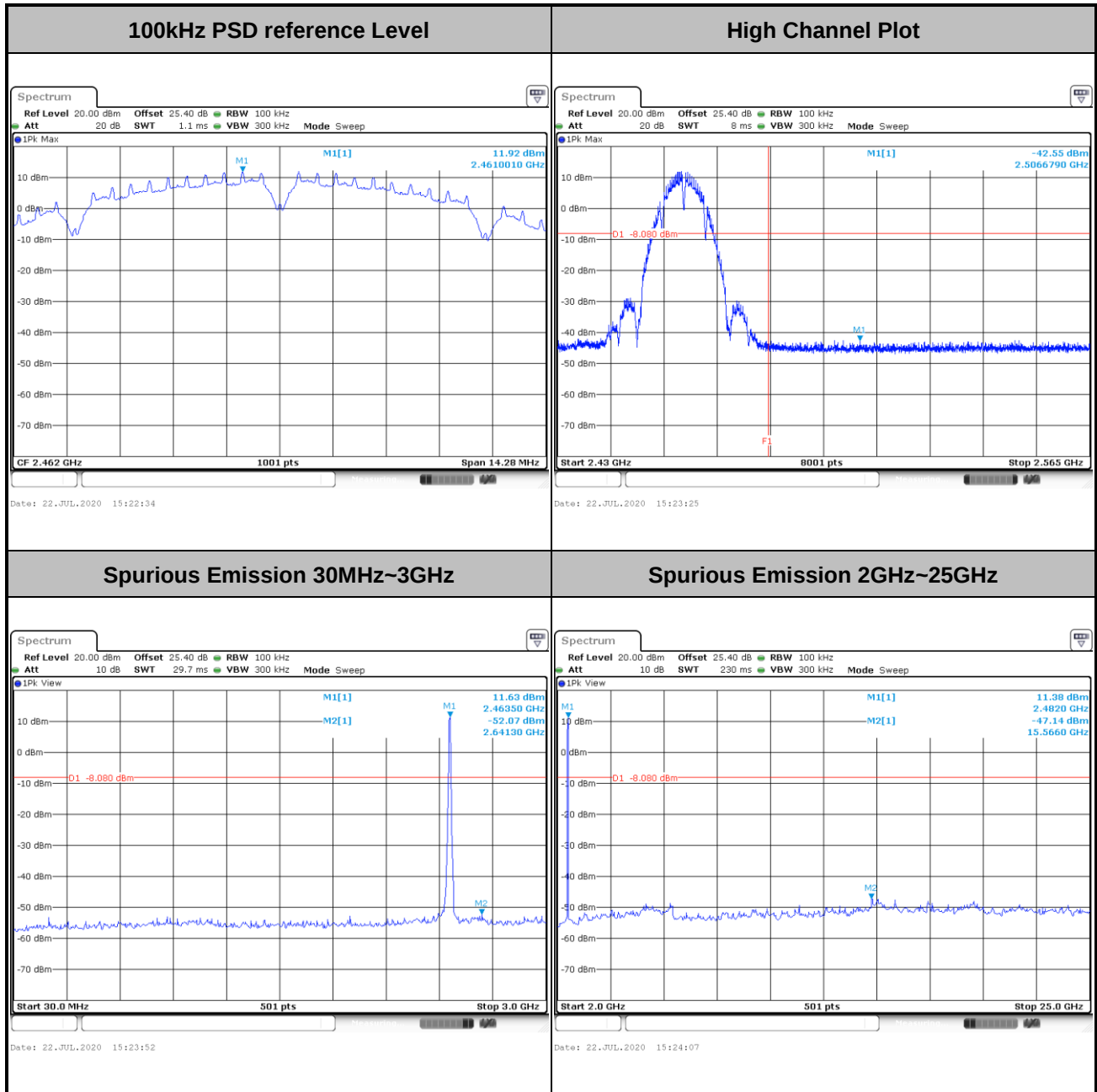


## Spurious Emission 2GHz~25GHz



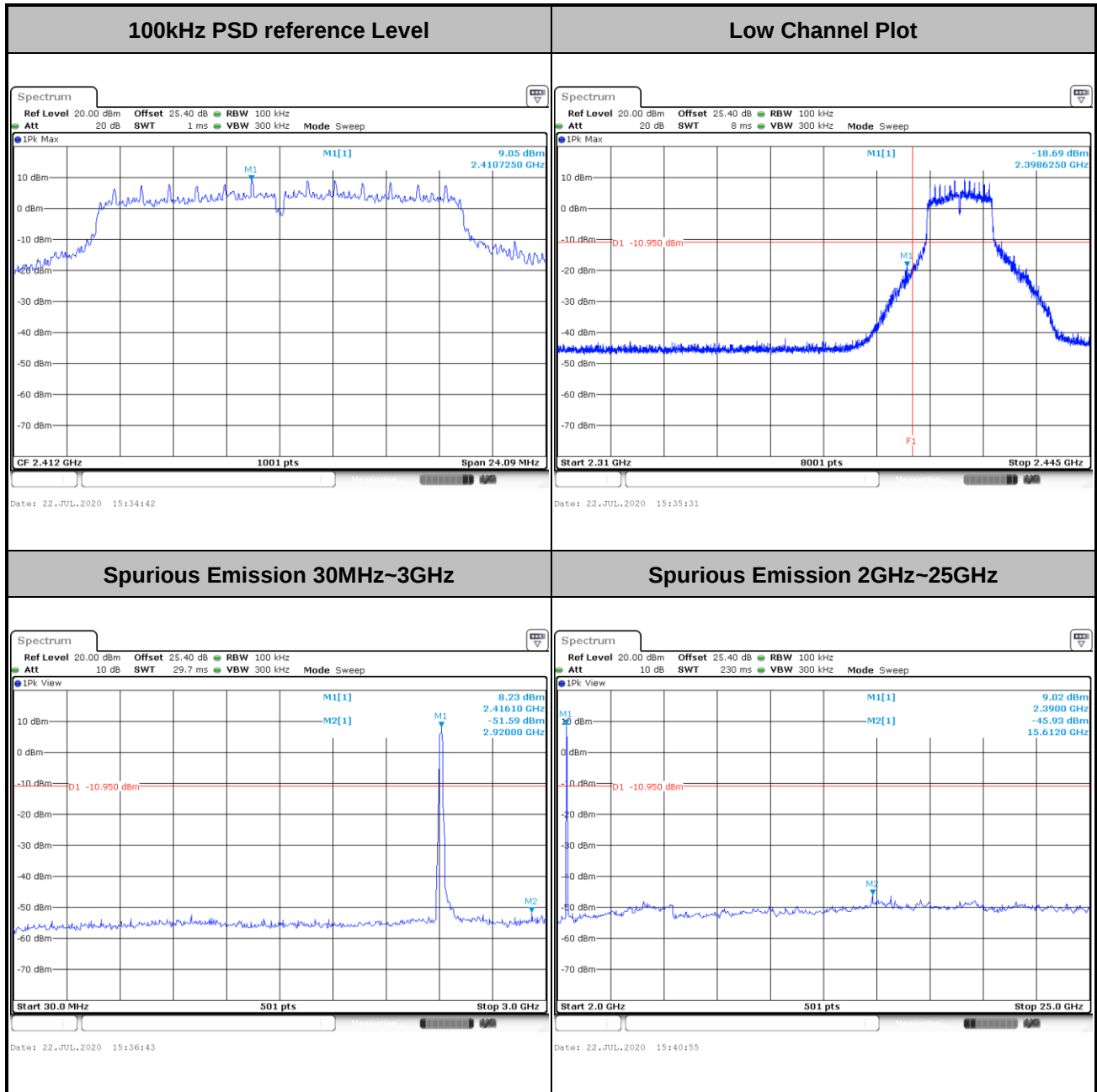


|             |         |                |    |
|-------------|---------|----------------|----|
| Test Mode : | 802.11b | Test Channel : | 11 |
|-------------|---------|----------------|----|



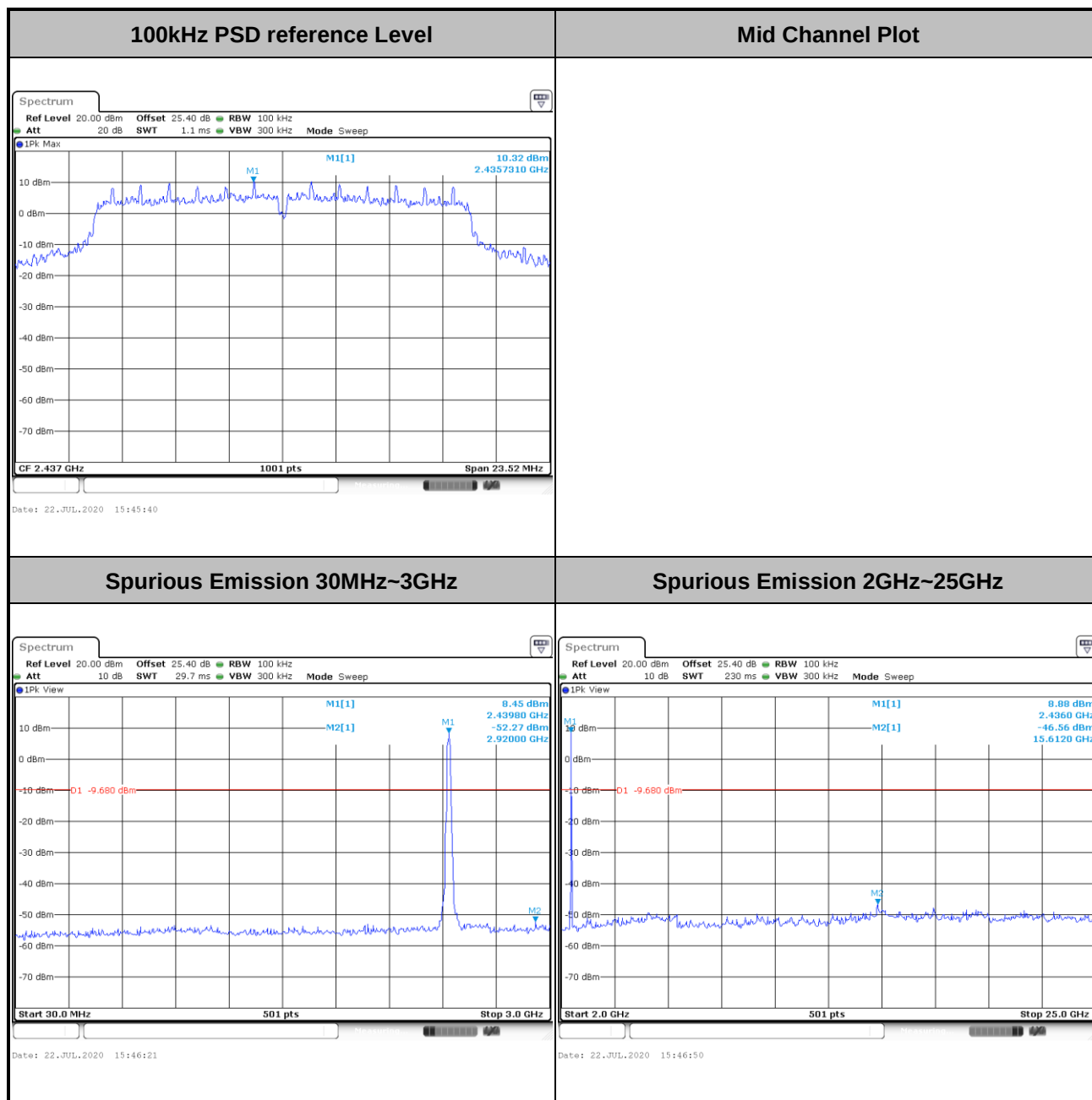


|                    |         |                       |    |
|--------------------|---------|-----------------------|----|
| <b>Test Mode :</b> | 802.11g | <b>Test Channel :</b> | 01 |
|--------------------|---------|-----------------------|----|



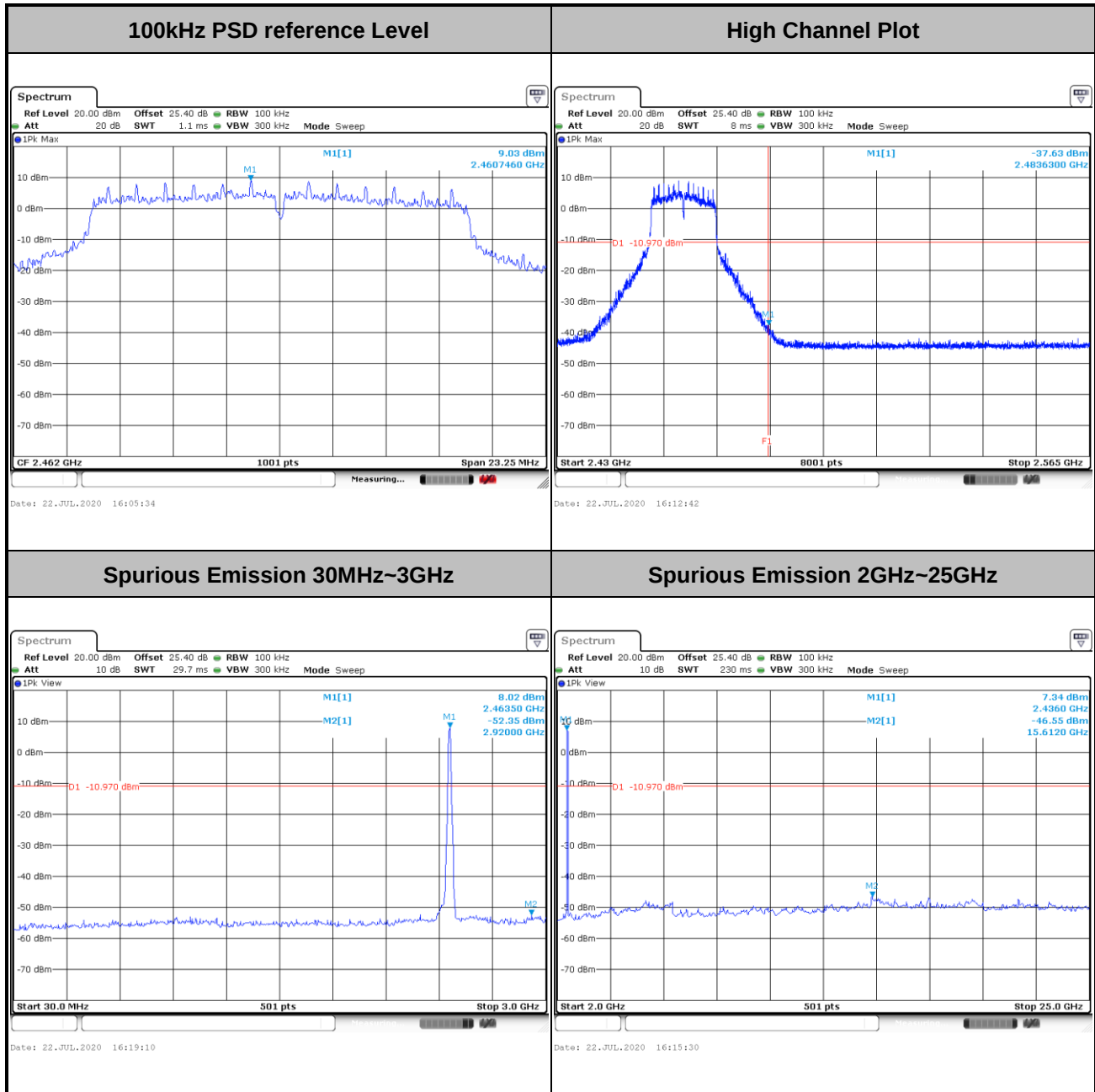


|             |         |                |    |
|-------------|---------|----------------|----|
| Test Mode : | 802.11g | Test Channel : | 06 |
|-------------|---------|----------------|----|



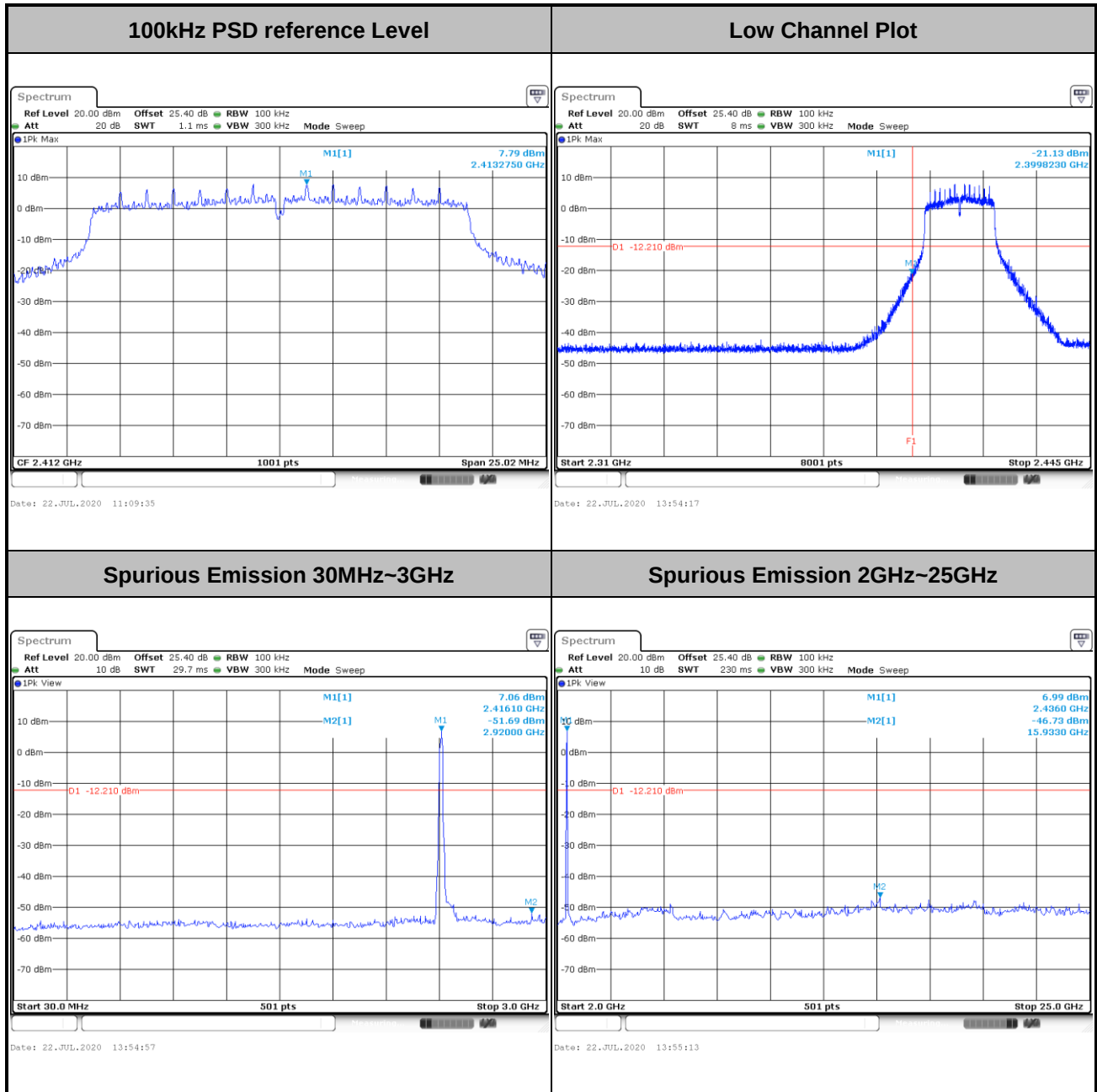


|             |         |                |    |
|-------------|---------|----------------|----|
| Test Mode : | 802.11g | Test Channel : | 11 |
|-------------|---------|----------------|----|



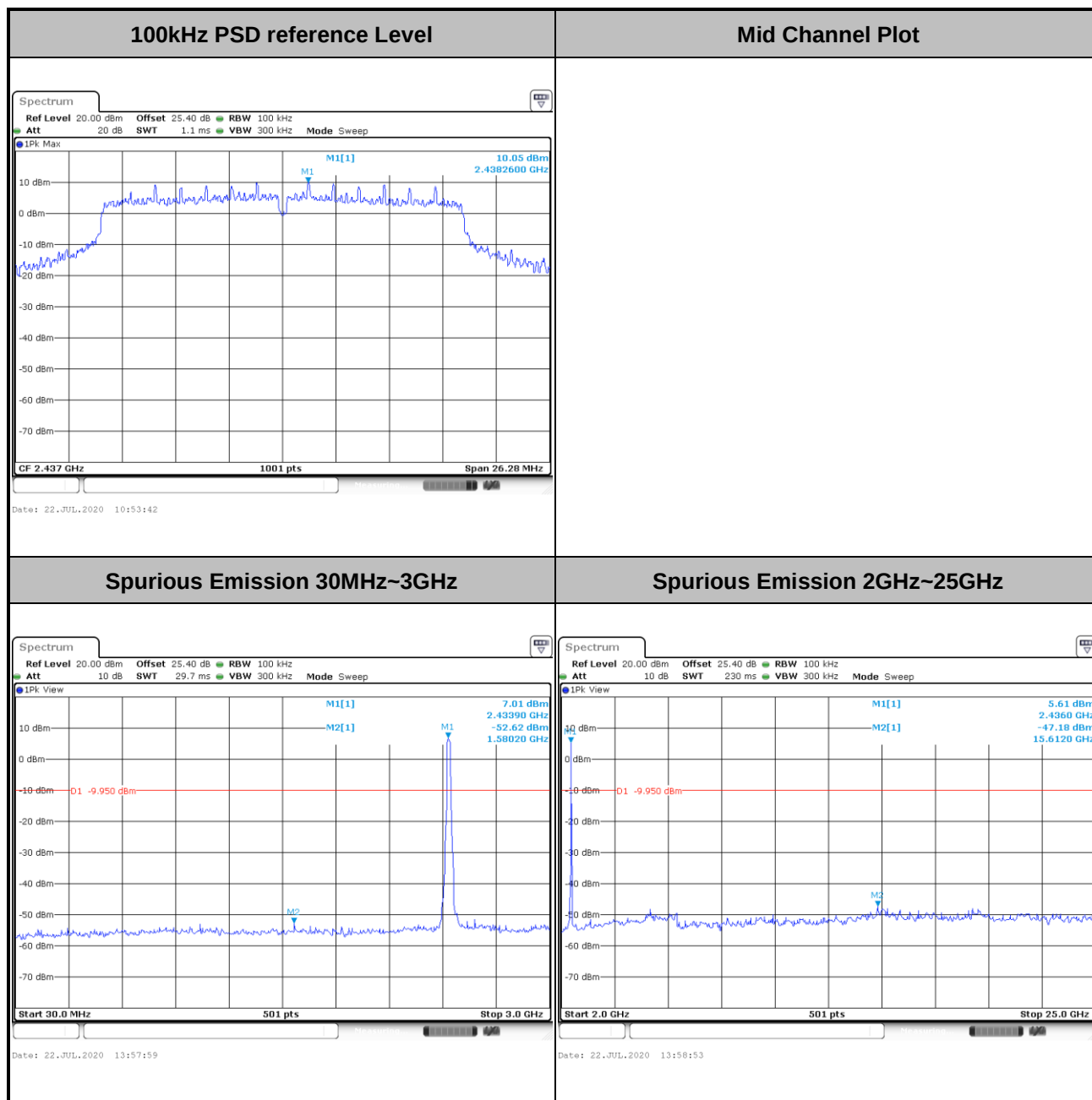


|             |                |                |    |
|-------------|----------------|----------------|----|
| Test Mode : | 802.11ac VHT20 | Test Channel : | 01 |
|-------------|----------------|----------------|----|



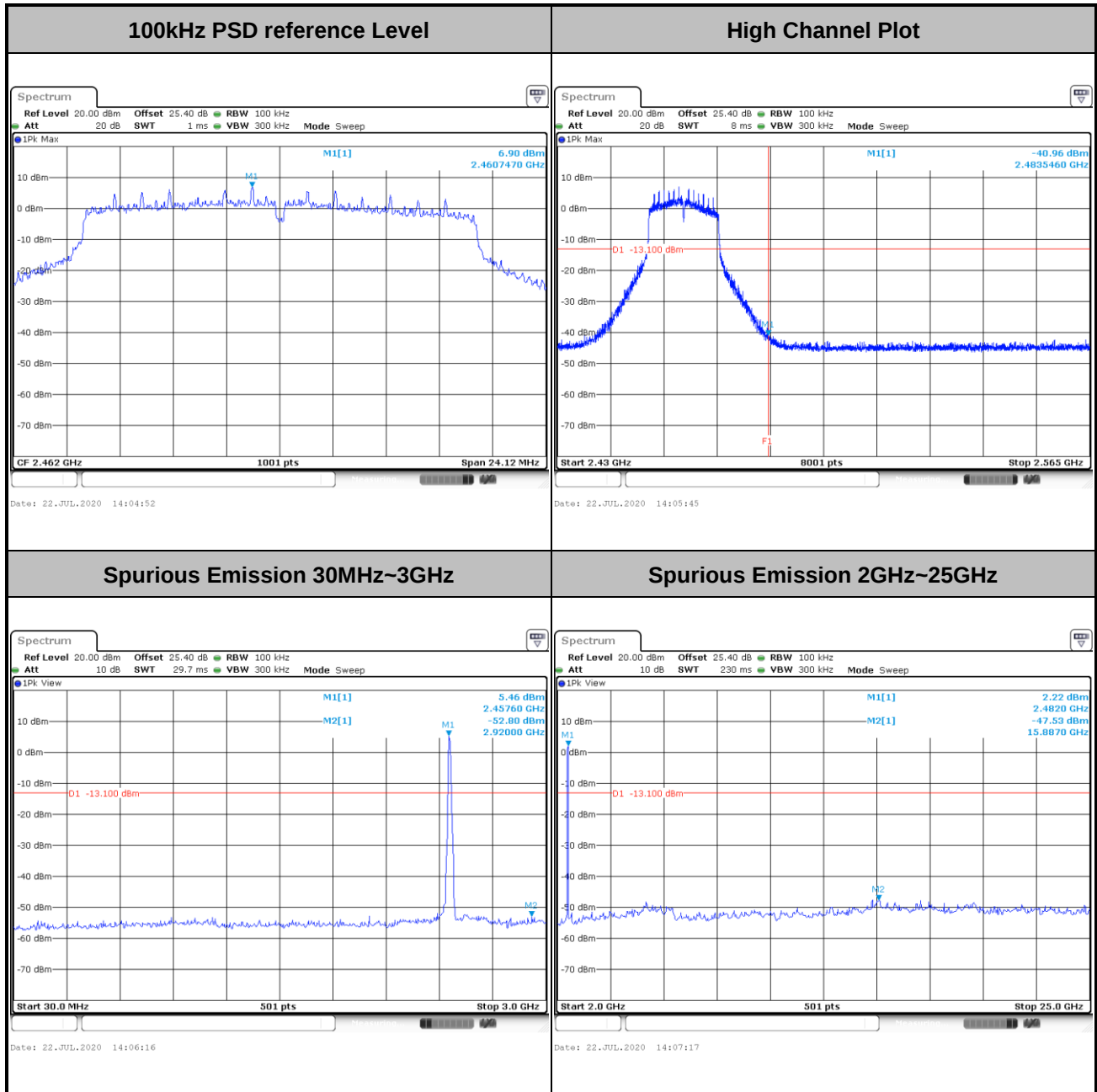


|             |                |                |    |
|-------------|----------------|----------------|----|
| Test Mode : | 802.11ac VHT20 | Test Channel : | 06 |
|-------------|----------------|----------------|----|



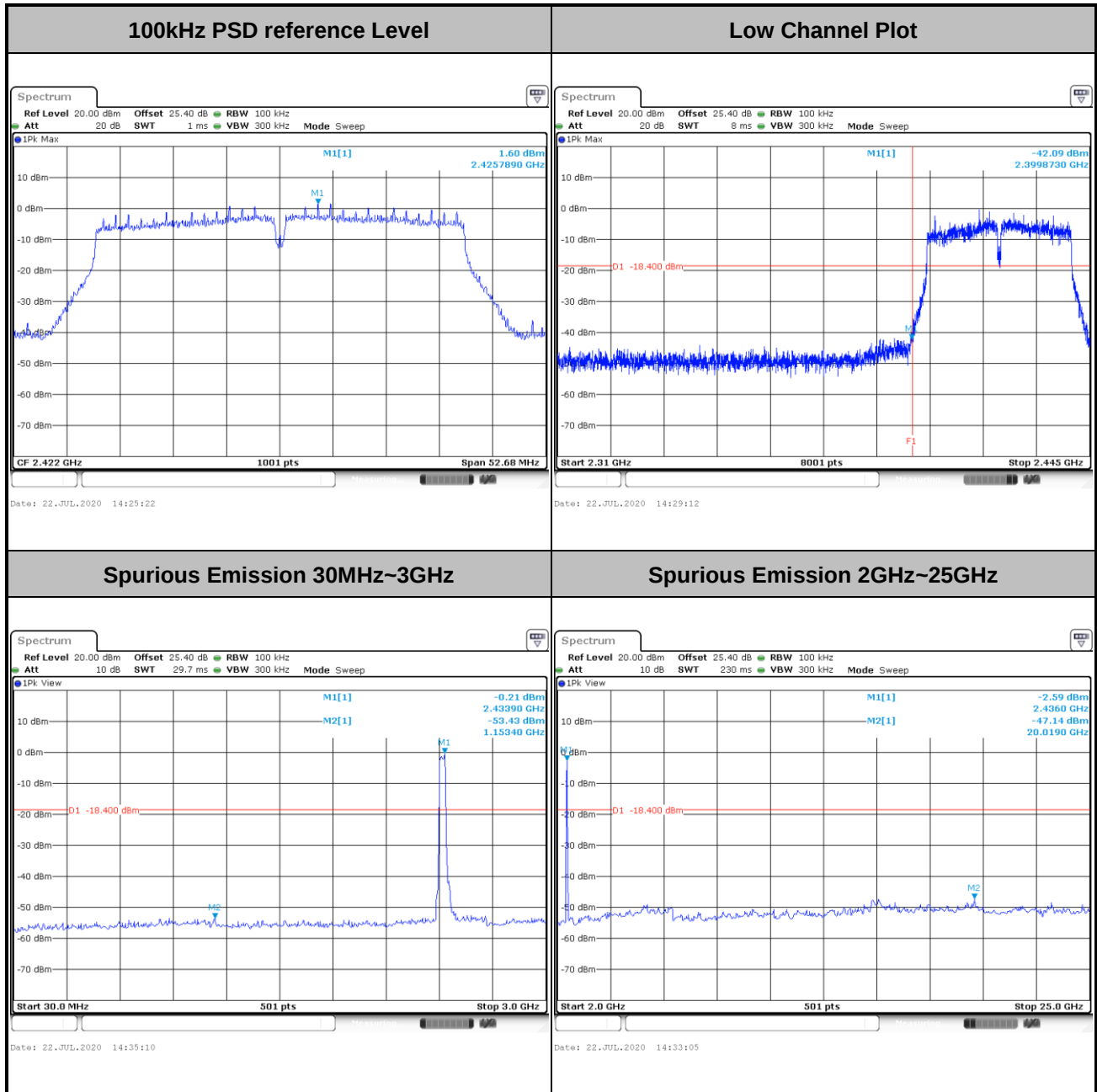


|                    |                |                       |    |
|--------------------|----------------|-----------------------|----|
| <b>Test Mode :</b> | 802.11ac VHT20 | <b>Test Channel :</b> | 11 |
|--------------------|----------------|-----------------------|----|





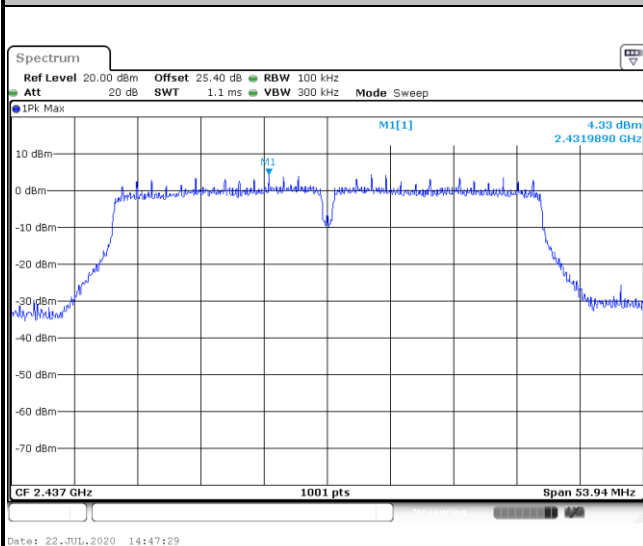
|                    |                |                       |    |
|--------------------|----------------|-----------------------|----|
| <b>Test Mode :</b> | 802.11ac VHT40 | <b>Test Channel :</b> | 03 |
|--------------------|----------------|-----------------------|----|





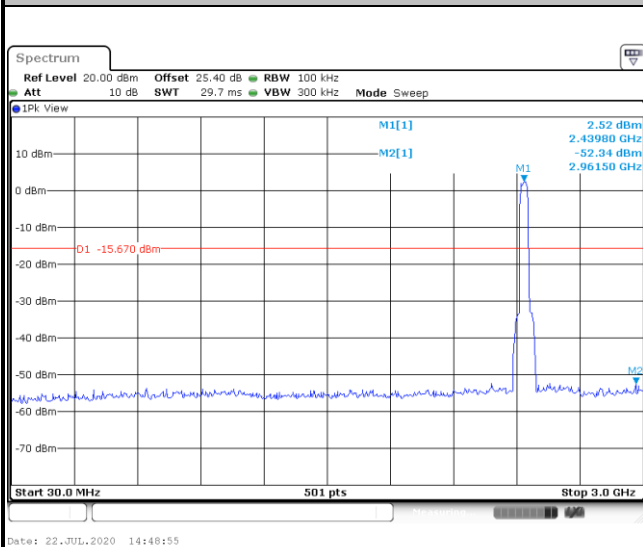
|             |                |                |    |
|-------------|----------------|----------------|----|
| Test Mode : | 802.11ac VHT40 | Test Channel : | 06 |
|-------------|----------------|----------------|----|

## 100kHz PSD reference Level

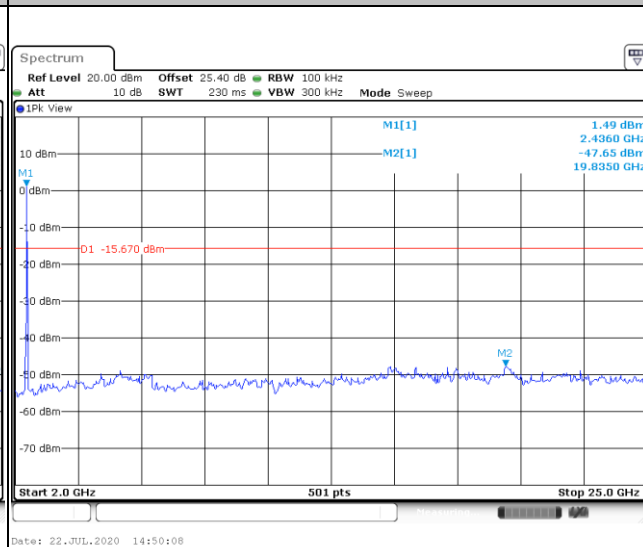


## Mid Channel Plot

## Spurious Emission 30MHz~3GHz

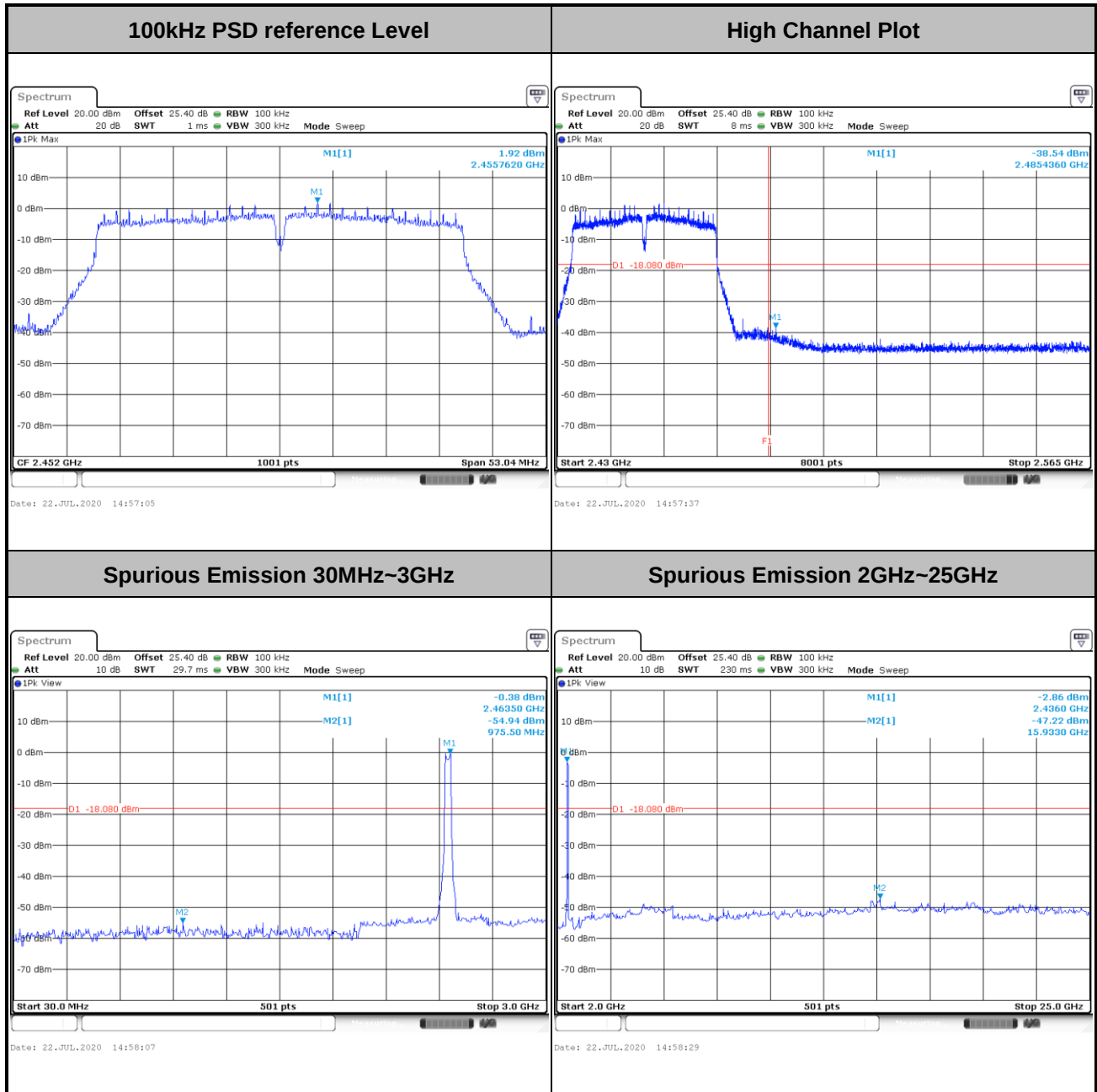


## Spurious Emission 2GHz~25GHz





|             |                |                |    |
|-------------|----------------|----------------|----|
| Test Mode : | 802.11ac VHT40 | Test Channel : | 09 |
|-------------|----------------|----------------|----|





### **3.5 Radiated Band Edges and Spurious Emission Measurement**

#### **3.5.1 Limit of Radiated band edge and Spurious Emission Measurement**

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the limits as below.

| <b>Frequency<br/>(MHz)</b> | <b>Field Strength<br/>(microvolts/meter)</b> | <b>Measurement Distance<br/>(meters)</b> |
|----------------------------|----------------------------------------------|------------------------------------------|
| 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                                        |

#### **3.5.2 Measuring Instruments**

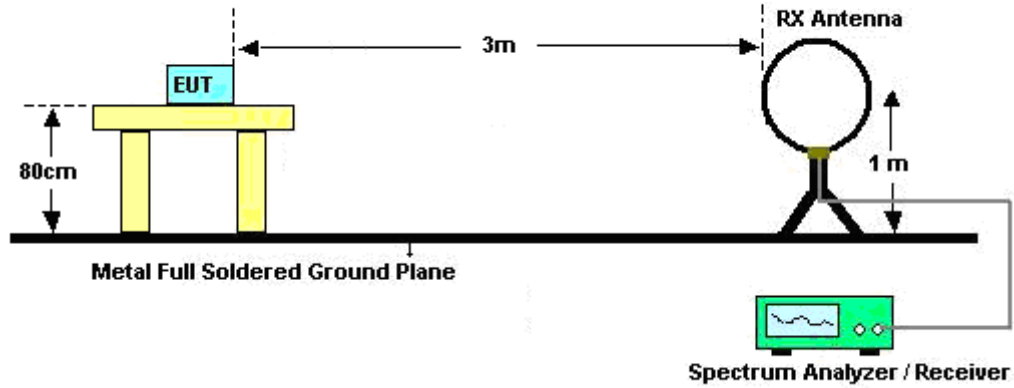
See list of measuring equipment of this test report.

### 3.5.3 Test Procedures

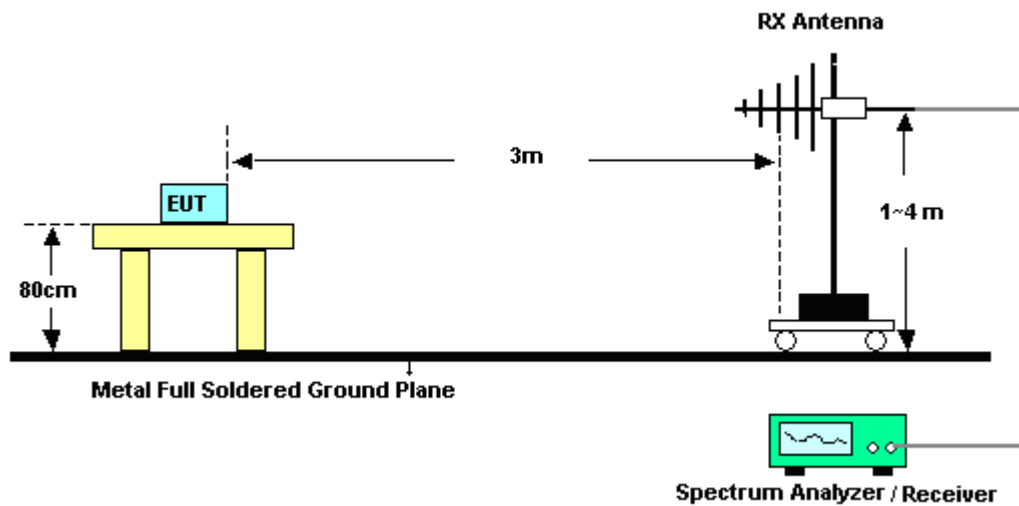
1. The testing follows the ANSI C63.10 Section 11.12.1 Radiated emission measurements.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. 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.
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
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.
8. Use the following spectrum analyzer settings:
  - (1) Span shall wide enough to fully capture the emission being measured;
  - (2) Set RBW=100 kHz for  $f < 1$  GHz;  $VBW \geq RBW$ ; Sweep = auto; Detector function = peak; Trace = max hold;
  - (3) Set RBW = 1 MHz, VBW= 3MHz for  $f \geq 1$  GHz for peak measurement.  
For average measurement:
    - $VBW = 10$  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.

### 3.5.4 Test Setup

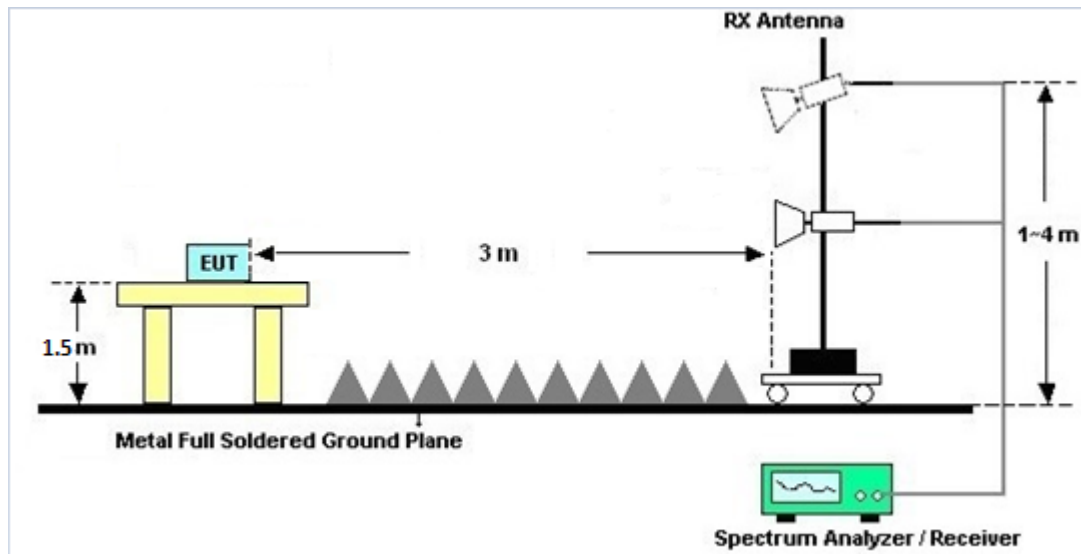
For radiated emissions below 30MHz



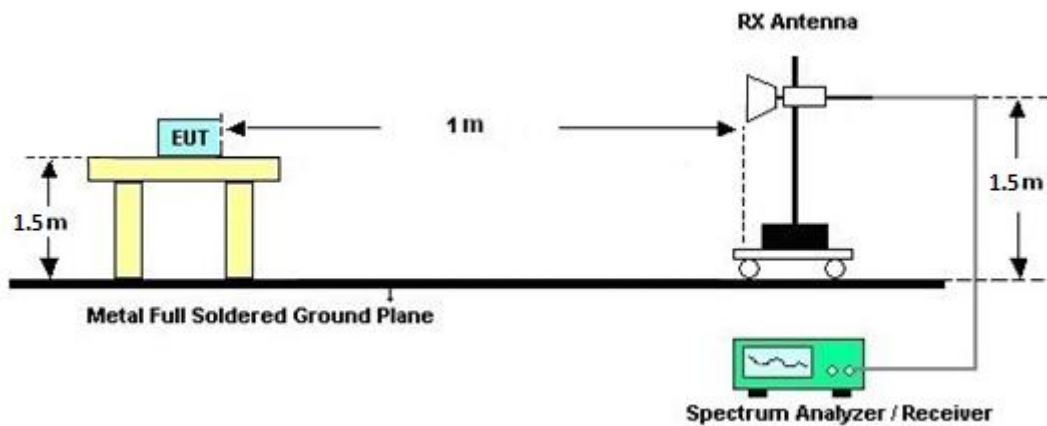
For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



For radiated emissions above 18GHz



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

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 alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result came out very similar.

**3.5.6 Test Result of Radiated Spurious at Band Edges**

Please refer to Appendix B and C.

**3.5.7 Duty Cycle**

Please refer to Appendix D.

**3.5.8 Test Result of Radiated Spurious Emission (30MHz ~ 10<sup>th</sup> Harmonic)**

Please refer to Appendix A and B.

### 3.6 AC Conducted Emission Measurement

#### 3.6.1 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<br>(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.

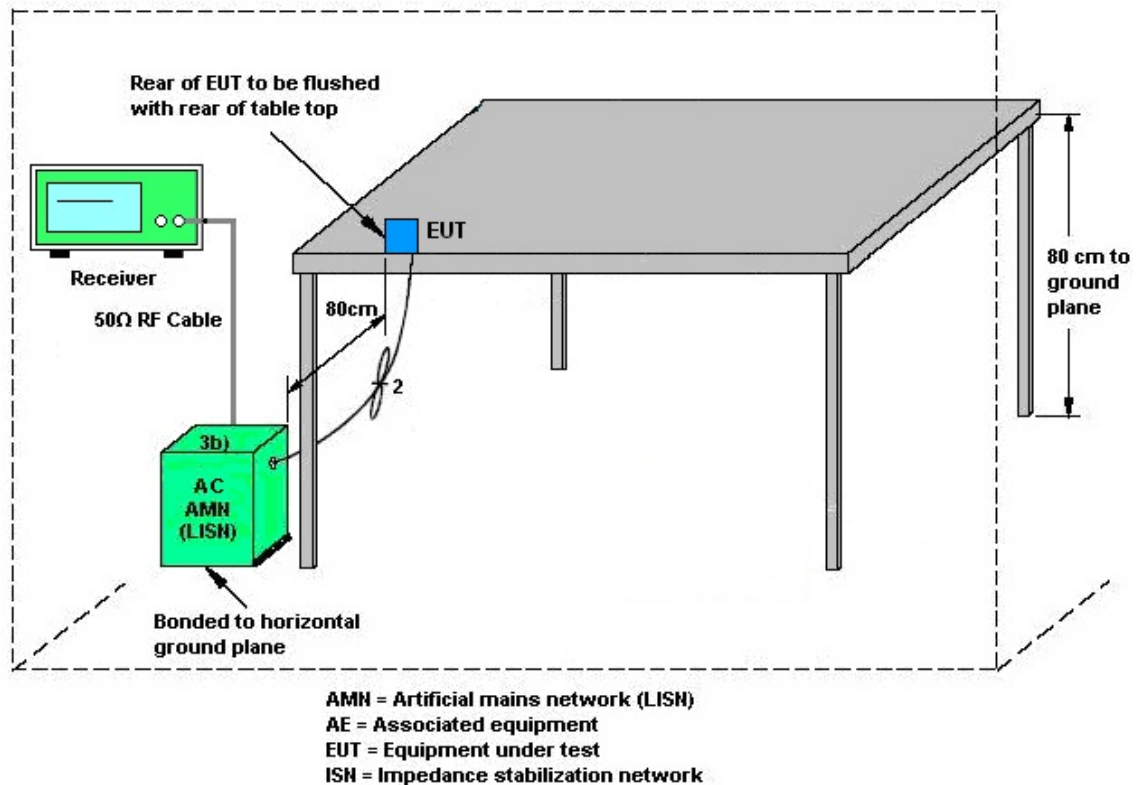
#### 3.6.2 Measuring Instruments

See list of measuring equipment of this test report.

#### 3.6.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it 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 (IF bandwidth = 9kHz) with Maximum Hold Mode.

### 3.6.4 Test Setup



### 3.6.5 Test Result of AC Conducted Emission

Please refer to Appendix B.



## **3.7 Antenna Requirements**

### **3.7.1 Standard Applicable**

If directional gain of transmitting Antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. The use of a permanently attached Antenna or of an Antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the rule.

### **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                | Brand Name      | Model No.                   | Serial No.                      | Characteristics    | Calibration Date | Test Date                     | Due Date      | Remark                |
|---------------------------|-----------------|-----------------------------|---------------------------------|--------------------|------------------|-------------------------------|---------------|-----------------------|
| Bilog Antenna             | TESEQ           | CBL 6111D & 00800N1D0 1N-06 | 35419 & 03                      | 30MHz~1GHz         | Apr. 30, 2019    | Apr. 17, 2020 ~ Apr. 28, 2020 | Apr. 29, 2020 | Radiation (03CH07-HY) |
| Bilog Antenna             | TESEQ           | CBL 6111D & 00800N1D0 1N-06 | 35419 & 03                      | 30MHz~1GHz         | Apr. 29, 2020    | Apr. 29, 2020~ Aug. 15, 2020  | Apr. 28, 2021 | Radiation (03CH07-HY) |
| Double Ridge Horn Antenna | ESCO            | 3117                        | 00075962                        | 1GHz ~ 18GHz       | Dec. 06, 2019    | Apr. 17, 2020~ Aug. 15, 2020  | Dec. 05, 2020 | Radiation (03CH07-HY) |
| EMI Test Receiver         | Agilent         | N9038A(MXE)                 | MY53290053                      | 20Hz~26.5GHz       | Jan. 18, 2020    | Apr. 17, 2020~ Aug. 15, 2020  | Jan. 17, 2021 | Radiation (03CH07-HY) |
| Loop Antenna              | Rohde & Schwarz | HFH2-Z2                     | 100315                          | 9 kHz~30 MHz       | Dec. 26, 2019    | Apr. 17, 2020~ Aug. 15, 2020  | Dec. 25, 2020 | Radiation (03CH07-HY) |
| Preamplifier              | MITEQ           | AMF-7D-001 01800-30-10 P    | 1590075                         | 1GHz~18GHz         | Apr. 24, 2019    | Apr. 17, 2020 ~ Apr. 22, 2020 | Apr. 23, 2020 | Radiation (03CH07-HY) |
| Preamplifier              | MITEQ           | AMF-7D-001 01800-30-10 P    | 1590075                         | 1GHz~18GHz         | Apr. 23, 2020    | Apr. 23, 2020 ~ Aug. 15, 2020 | Apr. 22, 2021 | Radiation (03CH07-HY) |
| Preamplifier              | COM-POWER       | PA-103A                     | 161241                          | 10MHz~1GHz         | May 20, 2019     | Apr. 17, 2020 ~ May 18, 2020  | May 19, 2020  | Radiation (03CH07-HY) |
| Preamplifier              | COM-POWER       | PA-103A                     | 161241                          | 10MHz~1GHz         | May 19, 2020     | May 19, 2020~ Aug. 15, 2020   | May 18, 2021  | Radiation (03CH07-HY) |
| RF Cable                  | HUBER + SUHNER  | SUCOFLEX 102                | MY2858/2,80 1606/2              | 18GHz~40GHz        | Feb. 25, 2020    | Apr. 17, 2020~ Aug. 15, 2020  | Feb. 24, 2021 | Radiation (03CH07-HY) |
| RF Cable                  | HUBER + SUHNER  | SUCOFLEX 126                | 532078/126E                     | 30MHz~18GHz        | N/A              | Apr. 17, 2020~ Aug. 15, 2020  | N/A           | Radiation (03CH07-HY) |
| RF Cable                  | HUBER + SUHNER  | SUCOFLEX 104                | MY24971/4, MY28655/4            | 9kHz~30MHz         | Feb. 25, 2020    | Apr. 17, 2020~ Aug. 15, 2020  | Feb. 24, 2021 | Radiation (03CH07-HY) |
| RF Cable                  | HUBER + SUHNER  | SUCOFLEX 104                | MY28655/4, MY24971/4, MY15682/4 | 30MHz~1GHz         | Feb. 25, 2020    | Apr. 17, 2020~ Aug. 15, 2020  | Feb. 24, 2021 | Radiation (03CH07-HY) |
| RF Cable                  | HUBER + SUHNER  | SUCOFLEX 104                | MY28655/4, MY24971/4, MY15682/4 | 1GHz~18GHz         | Feb. 25, 2020    | Apr. 17, 2020~ Aug. 15, 2020  | Feb. 24, 2021 | Radiation (03CH07-HY) |
| Controller                | ChainTek        | Chaintek 3000               | N/A                             | Control Turn table | N/A              | Apr. 17, 2020~ Aug. 15, 2020  | N/A           | Radiation (03CH07-HY) |
| Controller                | Max-Full        | MF7802                      | MF78020836 8                    | Control Ant Mast   | N/A              | Apr. 17, 2020~ Aug. 15, 2020  | N/A           | Radiation (03CH07-HY) |



| Instrument                 | Brand Name         | Model No.         | Serial No.        | Characteristics | Calibration Date | Test Date                       | Due Date      | Remark                   |
|----------------------------|--------------------|-------------------|-------------------|-----------------|------------------|---------------------------------|---------------|--------------------------|
| Antenna Mast               | Max-Full           | MFA520BS          | N/A               | 1m~4m           | N/A              | Apr. 17, 2020~<br>Aug. 15, 2020 | N/A           | Radiation<br>(03CH07-HY) |
| Turn Table                 | ChainTek           | Chaintek<br>3000  | N/A               | 0~360 Degree    | N/A              | Apr. 17, 2020~<br>Aug. 15, 2020 | N/A           | Radiation<br>(03CH07-HY) |
| USB Data Logger            | TECPEL             | TR-32             | HE17XB2495        | N/A             | N/A              | Apr. 17, 2020~<br>Aug. 15, 2020 | N/A           | Radiation<br>(03CH07-HY) |
| SHF-EHF Horn<br>Antenna    | SCHWARZBE<br>CK    | BBHA 9170         | BBHA917025<br>1   | 18GHz~40GHz     | Nov. 26, 2019    | Apr. 17, 2020~<br>Aug. 15, 2020 | Nov. 25, 2020 | Radiation<br>(03CH07-HY) |
| Spectrum<br>Analyzer       | Keysight           | N9010A            | MY54200485        | 10Hz~44GHz      | Feb. 10, 2020    | Apr. 17, 2020~<br>Aug. 15, 2020 | Feb. 09, 2021 | Radiation<br>(03CH07-HY) |
| Preamplifier               | EMEC               | EM18G40G          | 060801            | 18GHz~40GHz     | N/A              | Apr. 17, 2020~<br>Aug. 15, 2020 | N/A           | Radiation<br>(03CH07-HY) |
| Software                   | Audix              | E3<br>6.2009-8-24 | 80504004656<br>H  | N/A             | N/A              | Apr. 17, 2020~<br>Aug. 15, 2020 | N/A           | Radiation<br>(03CH07-HY) |
| AC Power<br>Source         | ChainTek           | APC-1000W         | N/A               | N/A             | N/A              | Jun. 25, 2020                   | N/A           | Conduction<br>(CO05-HY)  |
| EMI Test<br>Receiver       | Rohde &<br>Schwarz | ESR3              | 102388            | 9kHz~3.6GHz     | Nov. 15, 2019    | Jun. 25, 2020                   | Nov. 14, 2020 | Conduction<br>(CO05-HY)  |
| Hygrometer                 | Testo              | 608-H1            | 34913912          | N/A             | Nov. 07, 2019    | Jun. 25, 2020                   | Nov. 06, 2020 | Conduction<br>(CO05-HY)  |
| LISN                       | Rohde &<br>Schwarz | ENV216            | 100081            | 9kHz~30MHz      | Nov. 15, 2019    | Jun. 25, 2020                   | Nov. 14, 2020 | Conduction<br>(CO05-HY)  |
| Software                   | Rohde &<br>Schwarz | EMC32<br>V10.30   | N/A               | N/A             | N/A              | Jun. 25, 2020                   | N/A           | Conduction<br>(CO05-HY)  |
| LF Cable                   | HUBER +<br>SUHNER  | RG-214/U          | LF01              | N/A             | Jan. 02, 2020    | Jun. 25, 2020                   | Jan. 01, 2021 | Conduction<br>(CO05-HY)  |
| Pulse Limiter              | Rohde &<br>Schwarz | ESH3-Z2           | 100851            | N/A             | Jan. 02, 2020    | Jun. 25, 2020                   | Jan. 01, 2021 | Conduction<br>(CO05-HY)  |
| Hygrometer                 | Testo              | HTC-1             | 2                 | N/A             | Mar. 02, 2020    | May 04, 2020~<br>Aug. 04, 2020  | Mar. 01, 2021 | Conducted<br>(TH05-HY)   |
| Power Sensor               | DARE               | RPR3006W          | 16I00054SN<br>O10 | 10MHz~6GHz      | Dec. 23, 2019    | May 04, 2020~<br>Aug. 04, 2020  | Dec. 22, 2020 | Conducted<br>(TH05-HY)   |
| Signal Analyzer            | Rohde &<br>Schwarz | FSV40             | 101397            | 10Hz~40GHz      | Nov. 15, 2019    | May 04, 2020~<br>Aug. 04, 2020  | Nov. 14, 2020 | Conducted<br>(TH05-HY)   |
| Switch Control<br>Manframe | Burgeon            | ETF-058           | EC1300484         | N/A             | Aug. 22, 2019    | May 04, 2020~<br>Aug. 04, 2020  | Aug. 21, 2020 | Conducted<br>(TH05-HY)   |

## 5 Uncertainty of Evaluation

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

|                                                                         |     |
|-------------------------------------------------------------------------|-----|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 2.3 |
|-------------------------------------------------------------------------|-----|

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

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

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

|                                                                         |     |
|-------------------------------------------------------------------------|-----|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 5.3 |
|-------------------------------------------------------------------------|-----|

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

|                                                                         |     |
|-------------------------------------------------------------------------|-----|
| Measuring Uncertainty for a Level of Confidence of 95% ( $U = 2Uc(y)$ ) | 5.0 |
|-------------------------------------------------------------------------|-----|



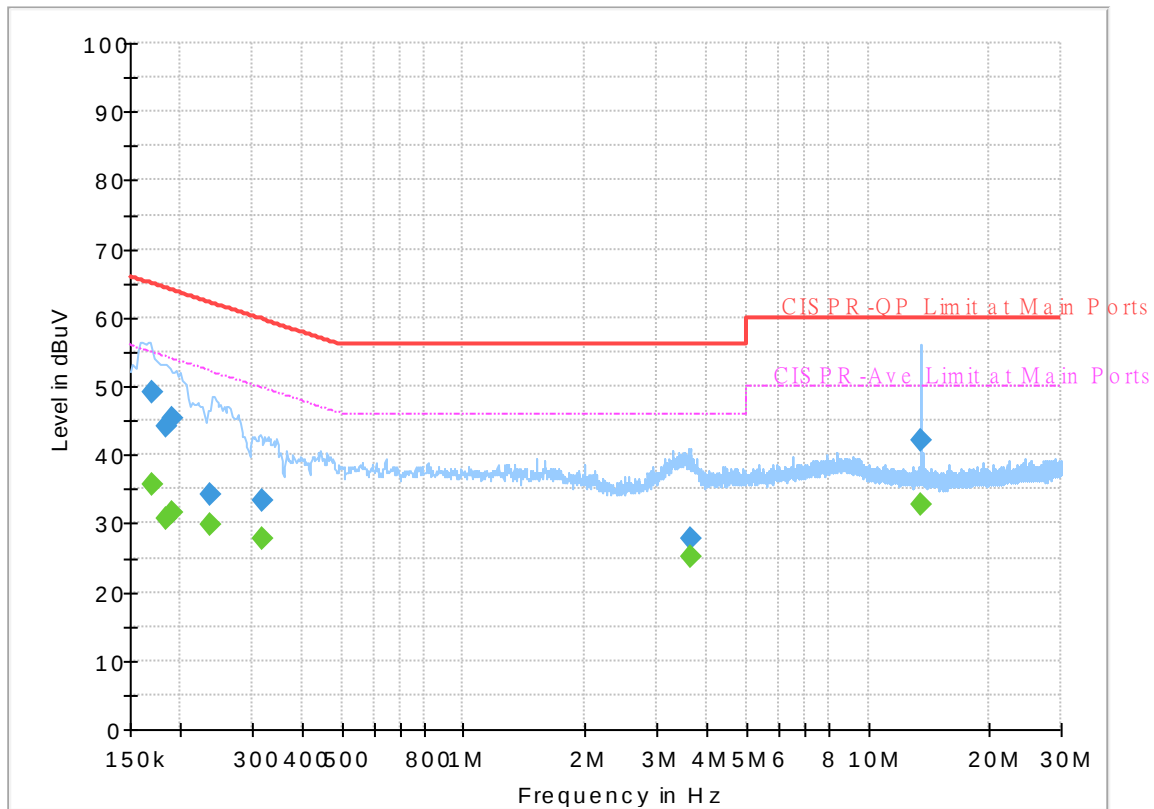
## **Appendix A. AC Conducted Emission Test Results**

|                        |         |                            |        |
|------------------------|---------|----------------------------|--------|
| <b>Test Engineer :</b> | Tom Lee | <b>Temperature :</b>       | 23~25℃ |
|                        |         | <b>Relative Humidity :</b> | 42~50% |

## EUT Information

Report NO : 040803-02  
Test Mode : Mode 1  
Test Voltage : 120Vac/60Hz  
Phase : Line

Full Spectrum



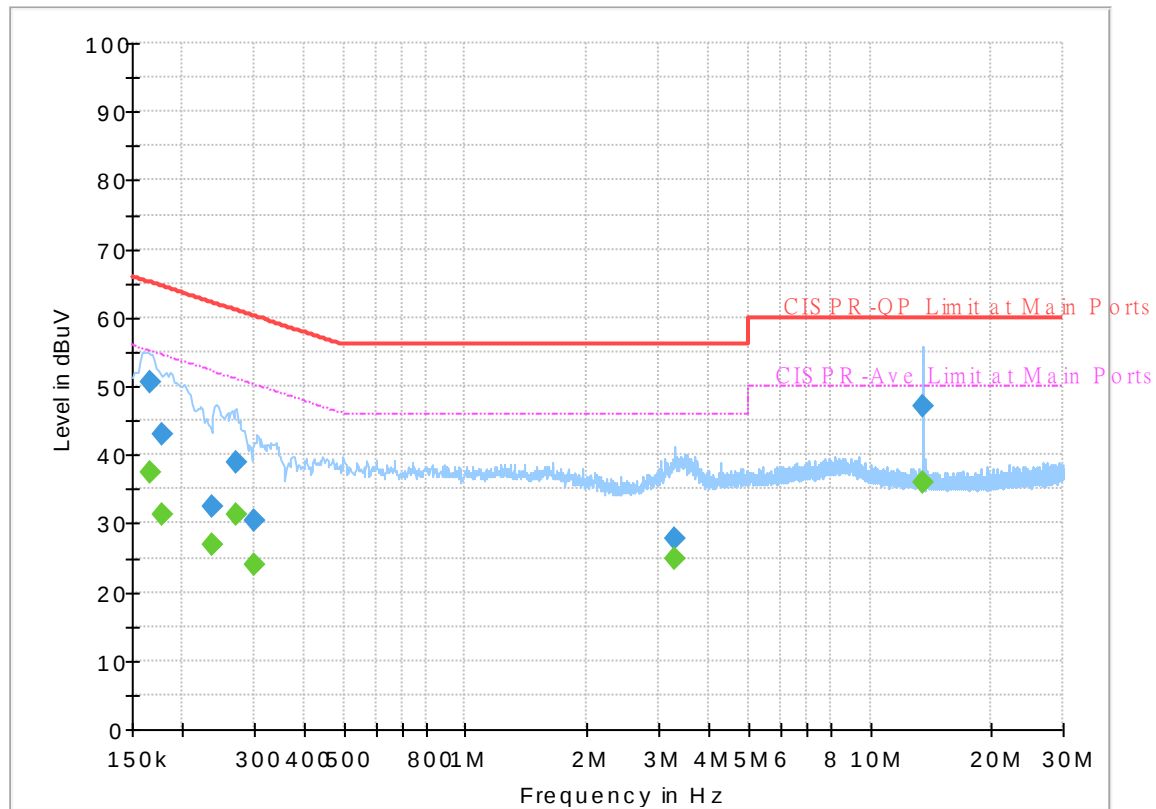
## Final\_Result

| Frequency (MHz) | QuasiPeak (dBuV) | CAverage (dBuV) | Limit (dBuV) | Margin (dB) | Line | Filter | Corr. (dB) |
|-----------------|------------------|-----------------|--------------|-------------|------|--------|------------|
| 0.170250        | ---              | 35.74           | 54.95        | 19.21       | L1   | OFF    | 19.6       |
| 0.170250        | 49.04            | ---             | 64.95        | 15.91       | L1   | OFF    | 19.6       |
| 0.183750        | ---              | 30.84           | 54.31        | 23.47       | L1   | OFF    | 19.6       |
| 0.183750        | 44.26            | ---             | 64.31        | 20.05       | L1   | OFF    | 19.6       |
| 0.190500        | ---              | 31.63           | 54.02        | 22.39       | L1   | OFF    | 19.6       |
| 0.190500        | 45.24            | ---             | 64.02        | 18.78       | L1   | OFF    | 19.6       |
| 0.235500        | ---              | 29.86           | 52.25        | 22.39       | L1   | OFF    | 19.6       |
| 0.235500        | 34.30            | ---             | 62.25        | 27.95       | L1   | OFF    | 19.6       |
| 0.318750        | ---              | 27.64           | 49.74        | 22.10       | L1   | OFF    | 19.6       |
| 0.318750        | 33.34            | ---             | 59.74        | 26.40       | L1   | OFF    | 19.6       |
| 3.625080        | ---              | 25.25           | 46.00        | 20.75       | L1   | OFF    | 19.7       |
| 3.625080        | 27.78            | ---             | 56.00        | 28.22       | L1   | OFF    | 19.7       |
| 13.560000       | ---              | 32.68           | 50.00        | 17.32       | L1   | OFF    | 20.2       |
| 13.560000       | 42.07            | ---             | 60.00        | 17.93       | L1   | OFF    | 20.2       |

## EUT Information

Report NO : 040803-02  
Test Mode : Mode 1  
Test Voltage : 120Vac/60Hz  
Phase : Neutral

Full Spectrum



## Final\_Result

| Frequency (MHz) | QuasiPeak (dBuV) | CAverage (dBuV) | Limit (dBuV) | Margin (dB) | Line | Filter | Corr. (dB) |
|-----------------|------------------|-----------------|--------------|-------------|------|--------|------------|
| 0.165750        | ---              | 37.47           | 55.17        | 17.70       | N    | OFF    | 19.5       |
| 0.165750        | 50.69            | ---             | 65.17        | 14.48       | N    | OFF    | 19.5       |
| 0.177000        | ---              | 31.25           | 54.63        | 23.38       | N    | OFF    | 19.5       |
| 0.177000        | 43.06            | ---             | 64.63        | 21.57       | N    | OFF    | 19.5       |
| 0.237750        | ---              | 26.79           | 52.17        | 25.38       | N    | OFF    | 19.5       |
| 0.237750        | 32.60            | ---             | 62.17        | 29.57       | N    | OFF    | 19.5       |
| 0.270420        | ---              | 31.20           | 51.11        | 19.91       | N    | OFF    | 19.5       |
| 0.270420        | 38.94            | ---             | 61.11        | 22.17       | N    | OFF    | 19.5       |
| 0.302190        | ---              | 24.01           | 50.18        | 26.17       | N    | OFF    | 19.5       |
| 0.302190        | 30.54            | ---             | 60.18        | 29.64       | N    | OFF    | 19.5       |
| 3.273000        | ---              | 24.98           | 46.00        | 21.02       | N    | OFF    | 19.6       |
| 3.273000        | 27.76            | ---             | 56.00        | 28.24       | N    | OFF    | 19.6       |
| 13.560000       | ---              | 36.05           | 50.00        | 13.95       | N    | OFF    | 19.9       |
| 13.560000       | 47.05            | ---             | 60.00        | 12.95       | N    | OFF    | 19.9       |



## Appendix B. Radiated Spurious Emission

|                 |                                   |                     |         |
|-----------------|-----------------------------------|---------------------|---------|
| Test Engineer : | Jesse Wang, Stan Hsieh and Ken Wu | Temperature :       | 21~25°C |
|                 |                                   | Relative Humidity : | 48~53%  |

### 2.4GHz 2400~2483.5MHz

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

| WIFI Ant.                   | Note | Frequency | Level      | Over Limit | Limit Line | Read Level | Antenna Factor | Path Loss | Preampl Factor | Ant Pos | Table Pos | Peak Avg. | Pol.    |
|-----------------------------|------|-----------|------------|------------|------------|------------|----------------|-----------|----------------|---------|-----------|-----------|---------|
| 1                           |      | ( MHz )   | ( dBμV/m ) | ( dB )     | ( dBμV/m ) | ( dBμV )   | ( dB/m )       | ( dB )    | ( dB )         | ( cm )  | ( deg )   | ( P/A )   | ( H/V ) |
| 802.11b<br>CH 01<br>2412MHz |      | 2363.55   | 54.08      | -19.92     | 74         | 39.49      | 31.87          | 17.94     | 35.22          | 102     | 354       | P         | H       |
|                             |      | 2390      | 44.74      | -9.26      | 54         | 30.19      | 31.8           | 17.98     | 35.23          | 102     | 354       | A         | H       |
|                             | *    | 2412      | 105.86     | -          | -          | 91.22      | 31.87          | 18.02     | 35.25          | 102     | 354       | P         | H       |
|                             | *    | 2412      | 102.47     | -          | -          | 87.83      | 31.87          | 18.02     | 35.25          | 102     | 354       | A         | H       |
|                             |      |           |            |            |            |            |                |           |                |         |           |           | H       |
|                             |      |           |            |            |            |            |                |           |                |         |           |           | H       |
|                             |      | 2387.7    | 56.2       | -17.8      | 74         | 41.65      | 31.8           | 17.98     | 35.23          | 219     | 21        | P         | V       |
|                             |      | 2390      | 50.76      | -3.24      | 54         | 36.21      | 31.8           | 17.98     | 35.23          | 219     | 21        | A         | V       |
|                             | *    | 2412      | 113.7      | -          | -          | 99.06      | 31.87          | 18.02     | 35.25          | 219     | 21        | P         | V       |
|                             | *    | 2412      | 110.28     | -          | -          | 95.64      | 31.87          | 18.02     | 35.25          | 219     | 21        | A         | V       |
|                             |      |           |            |            |            |            |                |           |                |         |           |           | V       |
|                             |      |           |            |            |            |            |                |           |                |         |           |           | V       |
| 802.11b<br>CH 06<br>2437MHz |      | 2349.06   | 53.58      | -20.42     | 74         | 38.99      | 31.9           | 17.9      | 35.21          | 124     | 21        | P         | H       |
|                             |      | 2389.1    | 43.03      | -10.97     | 54         | 28.48      | 31.8           | 17.98     | 35.23          | 124     | 21        | A         | H       |
|                             | *    | 2437      | 107.17     | -          | -          | 92.38      | 32             | 18.05     | 35.26          | 124     | 21        | P         | H       |
|                             | *    | 2437      | 103.86     | -          | -          | 89.07      | 32             | 18.05     | 35.26          | 124     | 21        | A         | H       |
|                             |      | 2492.72   | 54.28      | -19.72     | 74         | 39.35      | 32.1           | 18.13     | 35.3           | 124     | 21        | P         | H       |
|                             |      | 2483.69   | 43.92      | -10.08     | 54         | 29.02      | 32.07          | 18.12     | 35.29          | 124     | 21        | A         | H       |
|                             |      | 2313.92   | 53.48      | -20.52     | 74         | 39         | 31.83          | 17.84     | 35.19          | 243     | 7         | P         | V       |
|                             |      | 2389.38   | 44.11      | -9.89      | 54         | 29.56      | 31.8           | 17.98     | 35.23          | 243     | 7         | A         | V       |
|                             | *    | 2437      | 114.93     | -          | -          | 100.14     | 32             | 18.05     | 35.26          | 243     | 7         | P         | V       |
|                             | *    | 2437      | 111.7      | -          | -          | 96.91      | 32             | 18.05     | 35.26          | 243     | 7         | A         | V       |
|                             |      | 2492.65   | 54.62      | -19.38     | 74         | 39.69      | 32.1           | 18.13     | 35.3           | 243     | 7         | P         | V       |
|                             |      | 2485.79   | 44.7       | -9.3       | 54         | 29.8       | 32.07          | 18.12     | 35.29          | 243     | 7         | A         | V       |



|                                                  |                                                                                             |         |        |        |    |       |       |       |       |     |     |   |   |
|--------------------------------------------------|---------------------------------------------------------------------------------------------|---------|--------|--------|----|-------|-------|-------|-------|-----|-----|---|---|
| <b>802.11b</b><br><b>CH 11</b><br><b>2462MHz</b> | *                                                                                           | 2462    | 109.14 | -      | -  | 94.3  | 32.03 | 18.09 | 35.28 | 143 | 24  | P | H |
|                                                  | *                                                                                           | 2462    | 105.97 | -      | -  | 91.13 | 32.03 | 18.09 | 35.28 | 143 | 24  | A | H |
|                                                  |                                                                                             | 2484.08 | 57.26  | -16.74 | 74 | 42.36 | 32.07 | 18.12 | 35.29 | 143 | 24  | P | H |
|                                                  |                                                                                             | 2484    | 50.5   | -3.5   | 54 | 35.6  | 32.07 | 18.12 | 35.29 | 143 | 24  | A | H |
|                                                  |                                                                                             |         |        |        |    |       |       |       |       |     |     |   | H |
|                                                  |                                                                                             |         |        |        |    |       |       |       |       |     |     |   | H |
|                                                  | *                                                                                           | 2462    | 114.8  | -      | -  | 99.96 | 32.03 | 18.09 | 35.28 | 324 | 360 | P | V |
|                                                  | *                                                                                           | 2462    | 111.62 | -      | -  | 96.78 | 32.03 | 18.09 | 35.28 | 324 | 360 | A | V |
|                                                  |                                                                                             | 2483.88 | 58.12  | -15.88 | 74 | 43.22 | 32.07 | 18.12 | 35.29 | 324 | 360 | P | V |
|                                                  |                                                                                             | 2483.92 | 51.98  | -2.02  | 54 | 37.08 | 32.07 | 18.12 | 35.29 | 324 | 360 | A | V |
|                                                  |                                                                                             |         |        |        |    |       |       |       |       |     |     |   | V |
|                                                  |                                                                                             |         |        |        |    |       |       |       |       |     |     |   | V |
| <b>Remark</b>                                    | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. |         |        |        |    |       |       |       |       |     |     |   |   |



## 2.4GHz 2400~2483.5MHz

## WIFI 802.11b (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 ) | Path<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 ) |
|-----------------------------|---------------------------------------------------------------------------------------------|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-------------------------------|------------------------|----------------------------|----------------------|-------------------------|-------------------------|-----------------|
| 802.11b<br>CH 01<br>2412MHz |                                                                                             | 4824                 | 42.4                | -31.6                   | 74                          | 55.39                     | 34.05                         | 11.99                  | 59.03                      | 100                  | 0                       | P                       | H               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                             |                                                                                             | 4824                 | 40.97               | -33.03                  | 74                          | 53.96                     | 34.05                         | 11.99                  | 59.03                      | 100                  | 0                       | P                       | V               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | V               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | V               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | V               |
| 802.11b<br>CH 06<br>2437MHz |                                                                                             | 4874                 | 44.78               | -29.22                  | 74                          | 57.54                     | 34.1                          | 12.06                  | 58.92                      | 100                  | 0                       | P                       | H               |
|                             |                                                                                             | 7311                 | 40.38               | -33.62                  | 74                          | 48.5                      | 35.6                          | 14.58                  | 58.3                       | 100                  | 0                       | P                       | H               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                             |                                                                                             | 4874                 | 40.96               | -33.04                  | 74                          | 53.72                     | 34.1                          | 12.06                  | 58.92                      | 100                  | 0                       | P                       | V               |
|                             |                                                                                             | 7311                 | 40.45               | -33.55                  | 74                          | 48.57                     | 35.6                          | 14.58                  | 58.3                       | 100                  | 0                       | P                       | V               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | V               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | V               |
| 802.11b<br>CH 11<br>2462MHz |                                                                                             | 4924                 | 44.74               | -29.26                  | 74                          | 57.19                     | 34.23                         | 12.13                  | 58.81                      | 100                  | 0                       | P                       | H               |
|                             |                                                                                             | 7386                 | 39.73               | -34.27                  | 74                          | 47.84                     | 35.6                          | 14.64                  | 58.35                      | 100                  | 0                       | P                       | H               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                             |                                                                                             | 4924                 | 40.32               | -33.68                  | 74                          | 52.77                     | 34.23                         | 12.13                  | 58.81                      | 100                  | 0                       | P                       | V               |
|                             |                                                                                             | 7386                 | 39.45               | -34.55                  | 74                          | 47.56                     | 35.6                          | 14.64                  | 58.35                      | 100                  | 0                       | P                       | V               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | V               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | V               |
| Remark                      | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         |                 |



**2.4GHz 2400~2483.5MHz**  
**WIFI 802.11g (Band Edge @ 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 ) | Path<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 ) |
|--------------------------------------|------|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-------------------------------|------------------------|----------------------------|----------------------|-------------------------|-------------------------|-----------------|
| <b>802.11g<br/>CH 01<br/>2412MHz</b> |      | 2390                 | 60.47               | -13.53                  | 74                          | 45.92                     | 31.8                          | 17.98                  | 35.23                      | 148                  | 336                     | P                       | H               |
|                                      |      | 2390                 | 50.71               | -3.29                   | 54                          | 36.16                     | 31.8                          | 17.98                  | 35.23                      | 148                  | 336                     | A                       | H               |
|                                      | *    | 2412                 | 107.06              | -                       | -                           | 92.42                     | 31.87                         | 18.02                  | 35.25                      | 148                  | 336                     | P                       | H               |
|                                      | *    | 2412                 | 99.48               | -                       | -                           | 84.84                     | 31.87                         | 18.02                  | 35.25                      | 148                  | 336                     | A                       | H               |
|                                      |      |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                                      |      |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                                      |      | 2390                 | 62.58               | -11.42                  | 74                          | 48.03                     | 31.8                          | 17.98                  | 35.23                      | 343                  | 1                       | P                       | V               |
|                                      |      | 2390                 | 52.34               | -1.66                   | 54                          | 37.79                     | 31.8                          | 17.98                  | 35.23                      | 343                  | 1                       | A                       | V               |
|                                      | *    | 2412                 | 112.46              | -                       | -                           | 97.82                     | 31.87                         | 18.02                  | 35.25                      | 343                  | 1                       | P                       | V               |
|                                      | *    | 2412                 | 105                 | -                       | -                           | 90.36                     | 31.87                         | 18.02                  | 35.25                      | 343                  | 1                       | A                       | V               |
|                                      |      |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | V               |
|                                      |      |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | V               |
| <b>802.11g<br/>CH 06<br/>2437MHz</b> |      | 2389.66              | 54.74               | -19.26                  | 74                          | 40.19                     | 31.8                          | 17.98                  | 35.23                      | 123                  | 8                       | P                       | H               |
|                                      |      | 2389.94              | 44.6                | -9.4                    | 54                          | 30.05                     | 31.8                          | 17.98                  | 35.23                      | 123                  | 8                       | A                       | H               |
|                                      | *    | 2437                 | 109.8               | -                       | -                           | 95.01                     | 32                            | 18.05                  | 35.26                      | 123                  | 8                       | P                       | H               |
|                                      | *    | 2437                 | 102.5               | -                       | -                           | 87.71                     | 32                            | 18.05                  | 35.26                      | 123                  | 8                       | A                       | H               |
|                                      |      | 2483.55              | 57.68               | -16.32                  | 74                          | 42.78                     | 32.07                         | 18.12                  | 35.29                      | 123                  | 8                       | P                       | H               |
|                                      |      | 2483.5               | 47.39               | -6.61                   | 54                          | 32.49                     | 32.07                         | 18.12                  | 35.29                      | 123                  | 8                       | A                       | H               |
|                                      |      | 2389.52              | 56.87               | -17.13                  | 74                          | 42.32                     | 31.8                          | 17.98                  | 35.23                      | 301                  | 3                       | P                       | V               |
|                                      |      | 2389.94              | 47                  | -7                      | 54                          | 32.45                     | 31.8                          | 17.98                  | 35.23                      | 301                  | 3                       | A                       | V               |
|                                      | *    | 2437                 | 117.01              | -                       | -                           | 102.22                    | 32                            | 18.05                  | 35.26                      | 301                  | 3                       | P                       | V               |
|                                      | *    | 2437                 | 109.66              | -                       | -                           | 94.87                     | 32                            | 18.05                  | 35.26                      | 301                  | 3                       | A                       | V               |
|                                      |      | 2483.62              | 57.73               | -16.27                  | 74                          | 42.83                     | 32.07                         | 18.12                  | 35.29                      | 301                  | 3                       | P                       | V               |
|                                      |      | 2483.62              | 47.34               | -6.66                   | 54                          | 32.44                     | 32.07                         | 18.12                  | 35.29                      | 301                  | 3                       | A                       | V               |



|                                                  |                                                                                             |         |        |        |    |       |       |       |       |     |    |   |   |
|--------------------------------------------------|---------------------------------------------------------------------------------------------|---------|--------|--------|----|-------|-------|-------|-------|-----|----|---|---|
| <b>802.11g</b><br><b>CH 11</b><br><b>2462MHz</b> | *                                                                                           | 2462    | 106.53 | -      | -  | 91.69 | 32.03 | 18.09 | 35.28 | 145 | 10 | P | H |
|                                                  | *                                                                                           | 2462    | 98.94  | -      | -  | 84.1  | 32.03 | 18.09 | 35.28 | 145 | 10 | A | H |
|                                                  |                                                                                             | 2483.6  | 59.51  | -14.49 | 74 | 44.61 | 32.07 | 18.12 | 35.29 | 145 | 10 | P | H |
|                                                  |                                                                                             | 2483.52 | 49.06  | -4.94  | 54 | 34.16 | 32.07 | 18.12 | 35.29 | 145 | 10 | A | H |
|                                                  |                                                                                             |         |        |        |    |       |       |       |       |     |    |   | H |
|                                                  |                                                                                             |         |        |        |    |       |       |       |       |     |    |   | H |
|                                                  | *                                                                                           | 2462    | 112.57 | -      | -  | 97.73 | 32.03 | 18.09 | 35.28 | 323 | 5  | P | V |
|                                                  | *                                                                                           | 2462    | 105.02 | -      | -  | 90.18 | 32.03 | 18.09 | 35.28 | 323 | 5  | A | V |
|                                                  |                                                                                             | 2483.52 | 63.79  | -10.21 | 74 | 48.89 | 32.07 | 18.12 | 35.29 | 323 | 5  | P | V |
|                                                  |                                                                                             | 2483.56 | 52.75  | -1.25  | 54 | 37.85 | 32.07 | 18.12 | 35.29 | 323 | 5  | A | V |
|                                                  |                                                                                             |         |        |        |    |       |       |       |       |     |    |   | V |
|                                                  |                                                                                             |         |        |        |    |       |       |       |       |     |    |   | V |
| <b>Remark</b>                                    | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. |         |        |        |    |       |       |       |       |     |    |   |   |



## 2.4GHz 2400~2483.5MHz

## WIFI 802.11g (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 ) | Path<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 ) |
|-----------------------------|---------------------------------------------------------------------------------------------|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-------------------------------|------------------------|----------------------------|----------------------|-------------------------|-------------------------|-----------------|
| 802.11g<br>CH 01<br>2412MHz |                                                                                             | 4824                 | 41.17               | -32.83                  | 74                          | 54.02                     | 34.05                         | 11.99                  | 58.89                      | 100                  | 0                       | P                       | H               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                             |                                                                                             | 4824                 | 41.09               | -32.91                  | 74                          | 53.94                     | 34.05                         | 11.99                  | 58.89                      | 100                  | 0                       | P                       | V               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | V               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | V               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | V               |
| 802.11g<br>CH 06<br>2437MHz |                                                                                             | 4874                 | 42.44               | -31.56                  | 74                          | 55.04                     | 34.1                          | 12.06                  | 58.76                      | 100                  | 0                       | P                       | H               |
|                             |                                                                                             | 7311                 | 42.98               | -31.02                  | 74                          | 50.27                     | 35.6                          | 14.58                  | 57.47                      | 100                  | 0                       | P                       | H               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                             |                                                                                             | 4874                 | 40.71               | -33.29                  | 74                          | 53.31                     | 34.1                          | 12.06                  | 58.76                      | 100                  | 0                       | P                       | V               |
|                             |                                                                                             | 7311                 | 41.85               | -32.15                  | 74                          | 49.14                     | 35.6                          | 14.58                  | 57.47                      | 100                  | 0                       | P                       | V               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | V               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | V               |
| 802.11g<br>CH 11<br>2462MHz |                                                                                             | 4924                 | 40.92               | -33.08                  | 74                          | 53.2                      | 34.23                         | 12.13                  | 58.64                      | 100                  | 0                       | P                       | H               |
|                             |                                                                                             | 7386                 | 41.08               | -32.92                  | 74                          | 48.38                     | 35.6                          | 14.64                  | 57.54                      | 100                  | 0                       | P                       | H               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                             |                                                                                             | 4924                 | 41.04               | -32.96                  | 74                          | 53.32                     | 34.23                         | 12.13                  | 58.64                      | 100                  | 0                       | P                       | V               |
|                             |                                                                                             | 7386                 | 40.87               | -33.13                  | 74                          | 48.17                     | 35.6                          | 14.64                  | 57.54                      | 100                  | 0                       | P                       | V               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | V               |
|                             |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | V               |
| Remark                      | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         |                 |



**2.4GHz 2400~2483.5MHz**  
**WIFI 802.11ac VHT20 (Band Edge @ 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 ) | Path<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 ) |
|---------------------------------------|------|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-------------------------------|------------------------|----------------------------|----------------------|-------------------------|-------------------------|-----------------|
| 802.11ac<br>VHT20<br>CH 01<br>2412MHz |      | 2389.485             | 58.51               | -15.49                  | 74                          | 43.96                     | 31.8                          | 17.98                  | 35.23                      | 148                  | 336                     | P                       | H               |
|                                       |      | 2390                 | 49.33               | -4.67                   | 54                          | 34.78                     | 31.8                          | 17.98                  | 35.23                      | 148                  | 336                     | A                       | H               |
|                                       | *    | 2412                 | 105.5               | -                       | -                           | 90.86                     | 31.87                         | 18.02                  | 35.25                      | 148                  | 336                     | P                       | H               |
|                                       | *    | 2412                 | 98.18               | -                       | -                           | 83.54                     | 31.87                         | 18.02                  | 35.25                      | 148                  | 336                     | A                       | H               |
|                                       |      |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                                       |      |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                                       |      | 2390                 | 62.6                | -11.4                   | 74                          | 48.05                     | 31.8                          | 17.98                  | 35.23                      | 343                  | 1                       | P                       | V               |
|                                       |      | 2390                 | 52.37               | -1.63                   | 54                          | 37.82                     | 31.8                          | 17.98                  | 35.23                      | 343                  | 1                       | A                       | V               |
|                                       | *    | 2412                 | 112.21              | -                       | -                           | 97.57                     | 31.87                         | 18.02                  | 35.25                      | 343                  | 1                       | P                       | V               |
|                                       | *    | 2412                 | 104.22              | -                       | -                           | 89.58                     | 31.87                         | 18.02                  | 35.25                      | 343                  | 1                       | A                       | V               |
|                                       |      |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | V               |
|                                       |      |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | V               |
| 802.11ac<br>VHT20<br>CH 06<br>2437MHz |      | 2332.54              | 54.77               | -19.23                  | 74                          | 40.23                     | 31.87                         | 17.87                  | 35.2                       | 123                  | 8                       | P                       | H               |
|                                       |      | 2389.94              | 44.73               | -9.27                   | 54                          | 30.18                     | 31.8                          | 17.98                  | 35.23                      | 123                  | 8                       | A                       | H               |
|                                       | *    | 2437                 | 110.12              | -                       | -                           | 95.33                     | 32                            | 18.05                  | 35.26                      | 123                  | 8                       | P                       | H               |
|                                       | *    | 2437                 | 101.97              | -                       | -                           | 87.18                     | 32                            | 18.05                  | 35.26                      | 123                  | 8                       | A                       | H               |
|                                       |      | 2483.69              | 58.42               | -15.58                  | 74                          | 43.52                     | 32.07                         | 18.12                  | 35.29                      | 123                  | 8                       | P                       | H               |
|                                       |      | 2483.5               | 47.81               | -6.19                   | 54                          | 32.91                     | 32.07                         | 18.12                  | 35.29                      | 123                  | 8                       | A                       | H               |
|                                       |      | 2388.26              | 57.58               | -16.42                  | 74                          | 43.03                     | 31.8                          | 17.98                  | 35.23                      | 301                  | 3                       | P                       | V               |
|                                       |      | 2389.94              | 47.16               | -6.84                   | 54                          | 32.61                     | 31.8                          | 17.98                  | 35.23                      | 301                  | 3                       | A                       | V               |
|                                       | *    | 2437                 | 117.07              | -                       | -                           | 102.28                    | 32                            | 18.05                  | 35.26                      | 301                  | 3                       | P                       | V               |
|                                       | *    | 2437                 | 109.39              | -                       | -                           | 94.6                      | 32                            | 18.05                  | 35.26                      | 301                  | 3                       | A                       | V               |
|                                       |      | 2484.53              | 58.15               | -15.85                  | 74                          | 43.25                     | 32.07                         | 18.12                  | 35.29                      | 301                  | 3                       | P                       | V               |
|                                       |      | 2483.5               | 48.1                | -5.9                    | 54                          | 33.2                      | 32.07                         | 18.12                  | 35.29                      | 301                  | 3                       | A                       | V               |



|                                                                   |                                                                                             |         |        |        |    |       |       |       |       |     |    |   |   |
|-------------------------------------------------------------------|---------------------------------------------------------------------------------------------|---------|--------|--------|----|-------|-------|-------|-------|-----|----|---|---|
| <b>802.11ac</b><br><b>VHT20</b><br><b>CH 11</b><br><b>2462MHz</b> | *                                                                                           | 2462    | 105.84 | -      | -  | 91    | 32.03 | 18.09 | 35.28 | 145 | 10 | P | H |
|                                                                   | *                                                                                           | 2462    | 98.03  | -      | -  | 83.19 | 32.03 | 18.09 | 35.28 | 145 | 10 | A | H |
|                                                                   |                                                                                             | 2483.92 | 59.59  | -14.41 | 74 | 44.69 | 32.07 | 18.12 | 35.29 | 145 | 10 | P | H |
|                                                                   |                                                                                             | 2483.52 | 48.92  | -5.08  | 54 | 34.02 | 32.07 | 18.12 | 35.29 | 145 | 10 | A | H |
|                                                                   |                                                                                             |         |        |        |    |       |       |       |       |     |    |   | H |
|                                                                   |                                                                                             |         |        |        |    |       |       |       |       |     |    |   | H |
|                                                                   | *                                                                                           | 2462    | 111.79 | -      | -  | 96.95 | 32.03 | 18.09 | 35.28 | 326 | 5  | P | V |
|                                                                   | *                                                                                           | 2462    | 104.22 | -      | -  | 89.38 | 32.03 | 18.09 | 35.28 | 326 | 5  | A | V |
|                                                                   |                                                                                             | 2483.72 | 64.5   | -9.5   | 74 | 49.6  | 32.07 | 18.12 | 35.29 | 326 | 5  | P | V |
|                                                                   |                                                                                             | 2483.52 | 52.6   | -1.4   | 54 | 37.7  | 32.07 | 18.12 | 35.29 | 326 | 5  | A | V |
|                                                                   |                                                                                             |         |        |        |    |       |       |       |       |     |    |   | V |
|                                                                   |                                                                                             |         |        |        |    |       |       |       |       |     |    |   | V |
| <b>Remark</b>                                                     | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. |         |        |        |    |       |       |       |       |     |    |   |   |



## 2.4GHz 2400~2483.5MHz

## WIFI 802.11ac VHT20 (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 ) | Path<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 ) |
|---------------------------------------|--------------------------------------------------------------|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-------------------------------|------------------------|----------------------------|----------------------|-------------------------|-------------------------|-----------------|
| 802.11ac<br>VHT20<br>CH 01<br>2412MHz |                                                              | 4824                 | 40.8                | -33.2                   | 74                          | 53.65                     | 34.05                         | 11.99                  | 58.89                      | 100                  | 0                       | P                       | H               |
|                                       |                                                              |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                                       |                                                              |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                                       |                                                              |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                                       |                                                              | 4824                 | 41.2                | -32.8                   | 74                          | 54.05                     | 34.05                         | 11.99                  | 58.89                      | 100                  | 0                       | P                       | V               |
|                                       |                                                              |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | V               |
|                                       |                                                              |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | V               |
| 802.11ac<br>VHT20<br>CH 06<br>2437MHz |                                                              | 4874                 | 42.35               | -31.65                  | 74                          | 54.95                     | 34.1                          | 12.06                  | 58.76                      | 100                  | 0                       | P                       | H               |
|                                       |                                                              | 7311                 | 42.45               | -31.55                  | 74                          | 49.74                     | 35.6                          | 14.58                  | 57.47                      | 100                  | 0                       | P                       | H               |
|                                       |                                                              |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                                       |                                                              |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                                       |                                                              | 4874                 | 41.32               | -32.68                  | 74                          | 53.92                     | 34.1                          | 12.06                  | 58.76                      | 100                  | 0                       | P                       | V               |
|                                       |                                                              | 7311                 | 42.19               | -31.81                  | 74                          | 49.48                     | 35.6                          | 14.58                  | 57.47                      | 100                  | 0                       | P                       | V               |
|                                       |                                                              |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | V               |
| 802.11ac<br>VHT20<br>CH 11<br>2462MHz |                                                              | 4924                 | 41.39               | -32.61                  | 74                          | 53.67                     | 34.23                         | 12.13                  | 58.64                      | 100                  | 0                       | P                       | H               |
|                                       |                                                              | 7386                 | 41.67               | -32.33                  | 74                          | 48.97                     | 35.6                          | 14.64                  | 57.54                      | 100                  | 0                       | P                       | H               |
|                                       |                                                              |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                                       |                                                              |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                                       |                                                              | 4924                 | 41.73               | -32.27                  | 74                          | 54.01                     | 34.23                         | 12.13                  | 58.64                      | 100                  | 0                       | P                       | V               |
|                                       |                                                              | 7386                 | 41.65               | -32.35                  | 74                          | 48.95                     | 35.6                          | 14.64                  | 57.54                      | 100                  | 0                       | P                       | V               |
|                                       |                                                              |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | V               |
| Remark                                | 1. No other spurious found.                                  |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         |                 |
|                                       | 2. All results are PASS against Peak and Average limit line. |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         |                 |



**2.4GHz 2400~2483.5MHz**  
**WIFI 802.11ac VHT40 (Band Edge @ 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 ) | Path<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 ) |
|-------------------------------------------------|------|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-------------------------------|------------------------|----------------------------|----------------------|-------------------------|-------------------------|-----------------|
| <b>802.11ac<br/>VHT40<br/>CH 03<br/>2422MHz</b> |      | 2389.94              | 56.86               | -17.14                  | 74                          | 42.31                     | 31.8                          | 17.98                  | 35.23                      | 133                  | 351                     | P                       | H               |
|                                                 |      | 2389.38              | 49.59               | -4.41                   | 54                          | 35.04                     | 31.8                          | 17.98                  | 35.23                      | 133                  | 351                     | A                       | H               |
|                                                 | *    | 2422                 | 99.12               | -                       | -                           | 84.41                     | 31.93                         | 18.03                  | 35.25                      | 133                  | 351                     | P                       | H               |
|                                                 | *    | 2422                 | 92.23               | -                       | -                           | 77.52                     | 31.93                         | 18.03                  | 35.25                      | 133                  | 351                     | A                       | H               |
|                                                 |      | 2499.23              | 54.22               | -19.78                  | 74                          | 39.28                     | 32.1                          | 18.14                  | 35.3                       | 133                  | 351                     | P                       | H               |
|                                                 |      | 2486.28              | 45.25               | -8.75                   | 54                          | 30.34                     | 32.07                         | 18.13                  | 35.29                      | 133                  | 351                     | A                       | H               |
|                                                 |      | 2389.38              | 60.18               | -13.82                  | 74                          | 45.63                     | 31.8                          | 17.98                  | 35.23                      | 341                  | 357                     | P                       | V               |
|                                                 |      | 2389.94              | 52.91               | -1.09                   | 54                          | 38.36                     | 31.8                          | 17.98                  | 35.23                      | 341                  | 357                     | A                       | V               |
|                                                 | *    | 2422                 | 105.93              | -                       | -                           | 91.22                     | 31.93                         | 18.03                  | 35.25                      | 341                  | 357                     | P                       | V               |
|                                                 | *    | 2422                 | 98.54               | -                       | -                           | 83.83                     | 31.93                         | 18.03                  | 35.25                      | 341                  | 357                     | A                       | V               |
|                                                 |      | 2484.32              | 54.61               | -19.39                  | 74                          | 39.71                     | 32.07                         | 18.12                  | 35.29                      | 341                  | 357                     | P                       | V               |
|                                                 |      | 2485.58              | 45.9                | -8.1                    | 54                          | 31                        | 32.07                         | 18.12                  | 35.29                      | 341                  | 357                     | A                       | V               |
| <b>802.11ac<br/>VHT40<br/>CH 06<br/>2437MHz</b> |      | 2389.8               | 58.01               | -15.99                  | 74                          | 43.46                     | 31.8                          | 17.98                  | 35.23                      | 122                  | 350                     | P                       | H               |
|                                                 |      | 2389.8               | 48.79               | -5.21                   | 54                          | 34.24                     | 31.8                          | 17.98                  | 35.23                      | 122                  | 350                     | A                       | H               |
|                                                 | *    | 2437                 | 101.28              | -                       | -                           | 86.49                     | 32                            | 18.05                  | 35.26                      | 122                  | 350                     | P                       | H               |
|                                                 | *    | 2437                 | 93.92               | -                       | -                           | 79.13                     | 32                            | 18.05                  | 35.26                      | 122                  | 350                     | A                       | H               |
|                                                 |      | 2483.69              | 61.59               | -12.41                  | 74                          | 46.69                     | 32.07                         | 18.12                  | 35.29                      | 122                  | 350                     | P                       | H               |
|                                                 |      | 2483.55              | 52.54               | -1.46                   | 54                          | 37.64                     | 32.07                         | 18.12                  | 35.29                      | 122                  | 350                     | A                       | H               |
|                                                 |      | 2389.52              | 60.89               | -13.11                  | 74                          | 46.34                     | 31.8                          | 17.98                  | 35.23                      | 301                  | 4                       | P                       | V               |
|                                                 |      | 2389.94              | 52.37               | -1.63                   | 54                          | 37.82                     | 31.8                          | 17.98                  | 35.23                      | 301                  | 4                       | A                       | V               |
|                                                 | *    | 2437                 | 108.15              | -                       | -                           | 93.36                     | 32                            | 18.05                  | 35.26                      | 301                  | 4                       | P                       | V               |
|                                                 | *    | 2437                 | 101.02              | -                       | -                           | 86.23                     | 32                            | 18.05                  | 35.26                      | 301                  | 4                       | A                       | V               |
|                                                 |      | 2483.62              | 63.77               | -10.23                  | 74                          | 48.87                     | 32.07                         | 18.12                  | 35.29                      | 301                  | 4                       | P                       | V               |
|                                                 |      | 2483.5               | 52.78               | -1.22                   | 54                          | 37.88                     | 32.07                         | 18.12                  | 35.29                      | 301                  | 4                       | A                       | V               |



|                                                                   |                                                                                             |         |        |        |    |       |       |       |       |     |   |   |   |
|-------------------------------------------------------------------|---------------------------------------------------------------------------------------------|---------|--------|--------|----|-------|-------|-------|-------|-----|---|---|---|
| <b>802.11ac</b><br><b>VHT40</b><br><b>CH 09</b><br><b>2452MHz</b> |                                                                                             | 2310.84 | 54.58  | -19.42 | 74 | 40.11 | 31.83 | 17.83 | 35.19 | 142 | 7 | P | H |
|                                                                   |                                                                                             | 2332.54 | 44.82  | -9.18  | 54 | 30.28 | 31.87 | 17.87 | 35.2  | 142 | 7 | A | H |
|                                                                   | *                                                                                           | 2452    | 99.01  | -      | -  | 84.2  | 32    | 18.08 | 35.27 | 142 | 7 | P | H |
|                                                                   | *                                                                                           | 2452    | 91.72  | -      | -  | 76.91 | 32    | 18.08 | 35.27 | 142 | 7 | A | H |
|                                                                   |                                                                                             | 2484.11 | 57.06  | -16.94 | 74 | 42.16 | 32.07 | 18.12 | 35.29 | 142 | 7 | P | H |
|                                                                   |                                                                                             | 2483.62 | 49.08  | -4.92  | 54 | 34.18 | 32.07 | 18.12 | 35.29 | 142 | 7 | A | H |
|                                                                   |                                                                                             | 2388.96 | 53.81  | -20.19 | 74 | 39.26 | 31.8  | 17.98 | 35.23 | 324 | 5 | P | V |
|                                                                   |                                                                                             | 2387.84 | 44.75  | -9.25  | 54 | 30.2  | 31.8  | 17.98 | 35.23 | 324 | 5 | A | V |
|                                                                   | *                                                                                           | 2452    | 105.14 | -      | -  | 90.33 | 32    | 18.08 | 35.27 | 324 | 5 | P | V |
|                                                                   | *                                                                                           | 2452    | 98.08  | -      | -  | 83.27 | 32    | 18.08 | 35.27 | 324 | 5 | A | V |
|                                                                   |                                                                                             | 2483.69 | 59.66  | -14.34 | 74 | 44.76 | 32.07 | 18.12 | 35.29 | 324 | 5 | P | V |
|                                                                   |                                                                                             | 2483.55 | 52.32  | -1.68  | 54 | 37.42 | 32.07 | 18.12 | 35.29 | 324 | 5 | A | V |
| <b>Remark</b>                                                     | 1. No other spurious found.<br>2. All results are PASS against Peak and Average limit line. |         |        |        |    |       |       |       |       |     |   |   |   |



## 2.4GHz 2400~2483.5MHz

## WIFI 802.11ac VHT40 (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 ) | Path<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 ) |
|---------------------------------------|---------------------------------------------------------------------------------------------|----------------------|---------------------|-------------------------|-----------------------------|---------------------------|-------------------------------|------------------------|----------------------------|----------------------|-------------------------|-------------------------|-----------------|
| 802.11ac<br>VHT40<br>CH 03<br>2422MHz |                                                                                             | 4844                 | 41.71               | -32.29                  | 74                          | 54.43                     | 34.1                          | 12.02                  | 58.84                      | 100                  | 0                       | P                       | H               |
|                                       |                                                                                             | 7266                 | 42.34               | -31.66                  | 74                          | 49.62                     | 35.6                          | 14.55                  | 57.43                      | 100                  | 0                       | P                       | H               |
|                                       |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                                       |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                                       |                                                                                             | 4844                 | 41.55               | -32.45                  | 74                          | 54.27                     | 34.1                          | 12.02                  | 58.84                      | 100                  | 0                       | P                       | V               |
|                                       |                                                                                             | 7266                 | 41.92               | -32.08                  | 74                          | 49.2                      | 35.6                          | 14.55                  | 57.43                      | 100                  | 0                       | P                       | V               |
|                                       |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | V               |
|                                       |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | V               |
| 802.11ac<br>VHT40<br>CH 06<br>2437MHz |                                                                                             | 4874                 | 40.68               | -33.32                  | 74                          | 53.28                     | 34.1                          | 12.06                  | 58.76                      | 100                  | 0                       | P                       | H               |
|                                       |                                                                                             | 7311                 | 42.05               | -31.95                  | 74                          | 49.34                     | 35.6                          | 14.58                  | 57.47                      | 100                  | 0                       | P                       | H               |
|                                       |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                                       |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                                       |                                                                                             | 4874                 | 41.24               | -32.76                  | 74                          | 53.84                     | 34.1                          | 12.06                  | 58.76                      | 100                  | 0                       | P                       | V               |
|                                       |                                                                                             | 7311                 | 42.58               | -31.42                  | 74                          | 49.87                     | 35.6                          | 14.58                  | 57.47                      | 100                  | 0                       | P                       | V               |
|                                       |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | V               |
|                                       |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | V               |
| 802.11ac<br>VHT40<br>CH 09<br>2452MHz |                                                                                             | 4904                 | 40.87               | -33.13                  | 74                          | 53.28                     | 34.17                         | 12.11                  | 58.69                      | 100                  | 0                       | P                       | H               |
|                                       |                                                                                             | 7356                 | 41.35               | -32.65                  | 74                          | 48.75                     | 35.5                          | 14.61                  | 57.51                      | 100                  | 0                       | P                       | H               |
|                                       |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                                       |                                                                                             |                      |                     |                         |                             |                           |                               |                        |                            |                      |                         |                         | H               |
|                                       |                                                                                             | 4904                 | 41.14               | -32.86                  | 74                          | 53.55                     | 34.17                         | 12.11                  | 58.69                      | 100                  | 0                       | P                       | V               |
|                                       |                                                                                             | 7356                 | 41.24               | -32.76                  | 74                          | 48.64                     | 35.5                          | 14.61                  | 57.51                      | 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

## 2.4GHz WIFI 802.11ac VHT40 (LF)

| WIFI                              | Note                                                                       | Frequency | Level      | Over   | Limit      | Read     | Antenna  | Path   | 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 ) |
| 2.4GHz<br>802.11ac<br>VHT40<br>LF |                                                                            | 30.27     | 22.56      | -17.44 | 40         | 27.32    | 24.32    | 0.93   | 30.01  | -      | -       |         | H       |
|                                   |                                                                            | 119.64    | 20.26      | -23.24 | 43.5       | 30.9     | 17.48    | 1.84   | 29.96  | -      | -       |         | H       |
|                                   |                                                                            | 126.39    | 20.63      | -22.87 | 43.5       | 31.17    | 17.54    | 1.88   | 29.96  | -      | -       |         | H       |
|                                   |                                                                            | 878.2     | 31.73      | -14.27 | 46         | 26.9     | 28.87    | 5.05   | 29.09  | -      | -       |         | H       |
|                                   |                                                                            | 902       | 31.94      | -14.06 | 46         | 26.95    | 28.84    | 5.13   | 28.98  | -      | -       |         | H       |
|                                   |                                                                            | 939.8     | 33.2       | -12.8  | 46         | 27       | 29.73    | 5.23   | 28.76  | 100    | 0       |         | H       |
|                                   |                                                                            |           |            |        |            |          |          |        |        |        |         |         | H       |
|                                   |                                                                            |           |            |        |            |          |          |        |        |        |         |         | H       |
|                                   |                                                                            |           |            |        |            |          |          |        |        |        |         |         | H       |
|                                   |                                                                            |           |            |        |            |          |          |        |        |        |         |         | H       |
|                                   |                                                                            |           |            |        |            |          |          |        |        |        |         |         | H       |
|                                   |                                                                            |           |            |        |            |          |          |        |        |        |         |         | H       |
|                                   |                                                                            | 30.27     | 28.9       | -11.1  | 40         | 33.66    | 24.32    | 0.93   | 30.01  | 100    | 0       |         | V       |
|                                   |                                                                            | 40.53     | 26.09      | -13.91 | 40         | 36.01    | 19       | 1.08   | 30     | -      | -       |         | V       |
|                                   |                                                                            | 60.24     | 22.41      | -17.59 | 40         | 39.19    | 11.91    | 1.3    | 29.99  | -      | -       |         | V       |
|                                   |                                                                            | 903.4     | 31.74      | -14.26 | 46         | 26.73    | 28.85    | 5.13   | 28.97  | -      | -       |         | V       |
|                                   |                                                                            | 935.6     | 32.35      | -13.65 | 46         | 26.47    | 29.44    | 5.22   | 28.78  | -      | -       |         | V       |
|                                   |                                                                            | 956.6     | 32.57      | -13.43 | 46         | 25.45    | 30.5     | 5.28   | 28.66  | -      | -       |         | V       |
|                                   |                                                                            |           |            |        |            |          |          |        |        |        |         |         | V       |
|                                   |                                                                            |           |            |        |            |          |          |        |        |        |         |         | V       |
|                                   |                                                                            |           |            |        |            |          |          |        |        |        |         |         | V       |
|                                   |                                                                            |           |            |        |            |          |          |        |        |        |         |         | V       |
|                                   |                                                                            |           |            |        |            |          |          |        |        |        |         |         | V       |
|                                   |                                                                            |           |            |        |            |          |          |        |        |        |         |         | V       |
|                                   |                                                                            |           |            |        |            |          |          |        |        |        |         |         | V       |
| Remark                            | 3. No other spurious found.<br>4. 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>Peak</b> or <b>Average</b>                                                                                                                            |
| H/V | <b>Horizontal</b> or <b>Vertical</b>                                                                                                                     |

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

| WIFI    | Note | Frequency | Level      | Over   | Limit      | Read     | Antenna  | Path   | 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. Path Loss(dB) = Cable loss(dB) + Filter loss(dB) + Attenuator loss(dB)

2. Level(dBμV/m) =

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

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

**For Peak Limit @ 2390MHz:**

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Path 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) + Path 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 C. Radiated Spurious Emission Plots

|                 |                                   |                     |         |
|-----------------|-----------------------------------|---------------------|---------|
| Test Engineer : | Jesse Wang, Stan Hsieh and Ken Wu | Temperature :       | 21~25°C |
|                 |                                   | Relative Humidity : | 48~53%  |

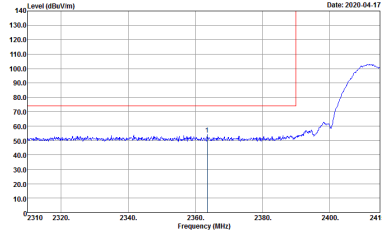
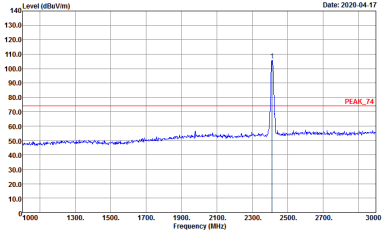
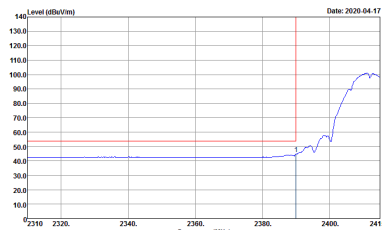
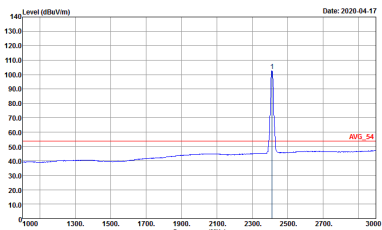
### Note symbol

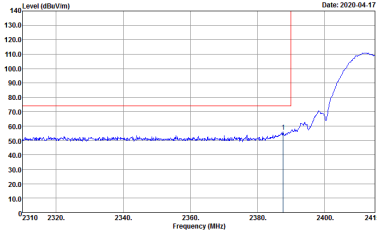
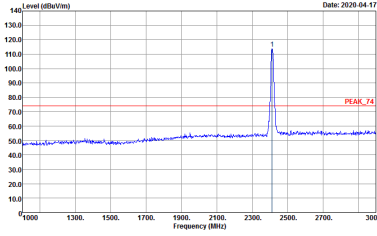
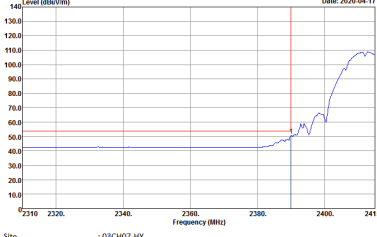
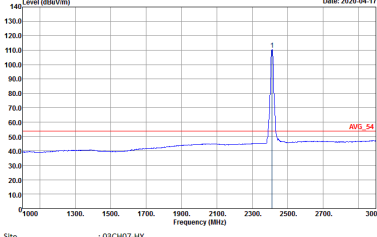
|    |                       |
|----|-----------------------|
| -L | Low channel location  |
| -R | High channel location |

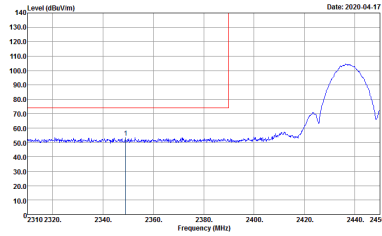
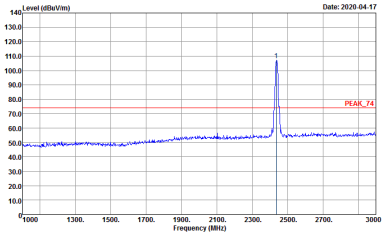
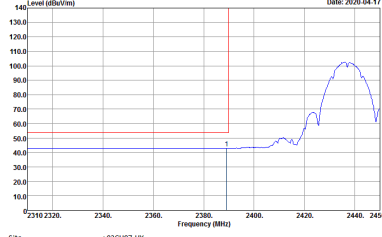
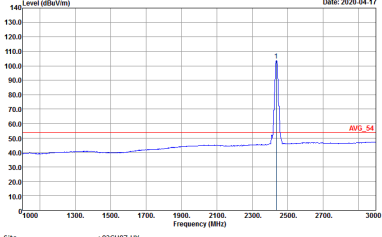


## 2.4GHz 2400~2483.5MHz

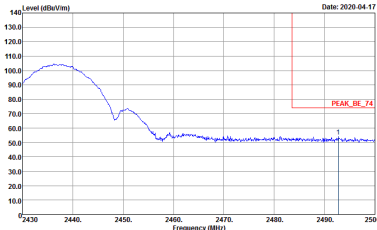
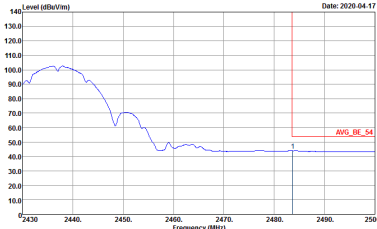
## WIFI 802.11b (Band Edge @ 3m)

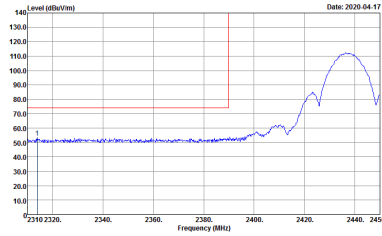
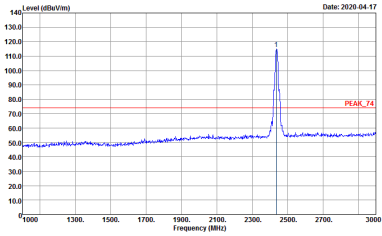
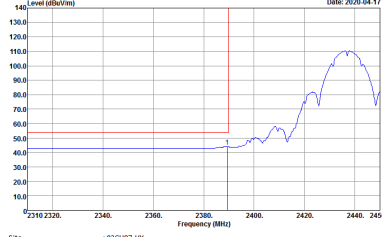
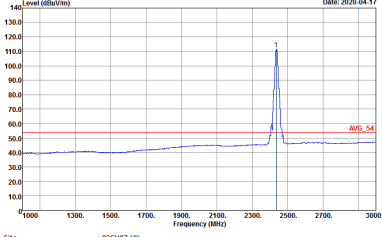
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                              |                                                                                                                                                                                                                 |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11b CH01 2412MHz                                                                                                                                                                                              |                                                                                                                                                                                                                 |
| 1    | Horizontal                                                                                                                                                                                                        | Fundamental                                                                                                                                                                                                     |
| Peak |  <p>Site : 03CH07-HY<br/>Condition : PEAK_BE_74 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p> |  <p>Site : 03CH07-HY<br/>Condition : PEAK_74 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p> |
| Avg. |  <p>Site : 03CH07-HY<br/>Condition : AVG_BE_54 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>   |  <p>Site : 03CH07-HY<br/>Condition : AVG_54 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>   |

| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                            |                                                                                                                                                                                                               |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11b CH01 2412MHz                                                                                                                                                                                            |                                                                                                                                                                                                               |
| 1    | Vertical                                                                                                                                                                                                        | Fundamental                                                                                                                                                                                                   |
| Peak |  <p>Site Condition : 03CH07-HY<br/>: PEAK_BE_74 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p> |  <p>Site Condition : 03CH07-HY<br/>: PEAK_74 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p> |
|      |  <p>Site Condition : 03CH07-HY<br/>: AVG_BE_54 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>   |  <p>Site Condition : 03CH07-HY<br/>: AVG_54 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>   |
| Avg. |                                                                                                                                                                                                                 |                                                                                                                                                                                                               |

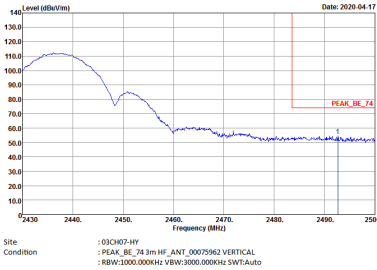
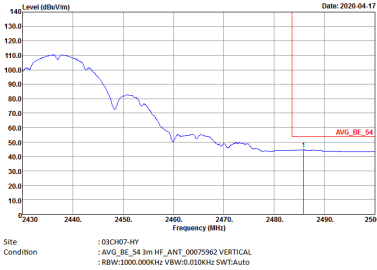
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                              |                                                                                                                                                                                                                 |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11b CH06 2437MHz - L                                                                                                                                                                                          |                                                                                                                                                                                                                 |
| 1    | Horizontal                                                                                                                                                                                                        | Fundamental                                                                                                                                                                                                     |
| Peak |  <p>Site Condition : 03CH07-HY<br/>: PEAK_BE_78 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p> |  <p>Site Condition : 03CH07-HY<br/>: PEAK_78 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p> |
| Avg. |  <p>Site Condition : 03CH07-HY<br/>: AVG_BE_S4 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>   |  <p>Site Condition : 03CH07-HY<br/>: AVG_S4 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>   |

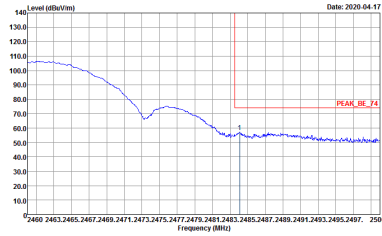
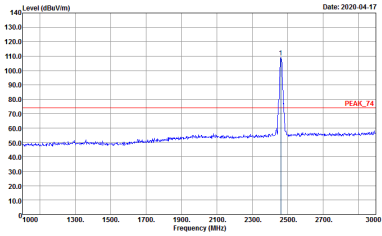
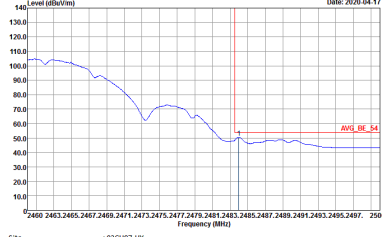
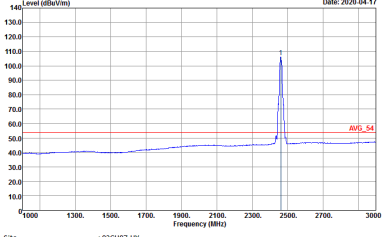


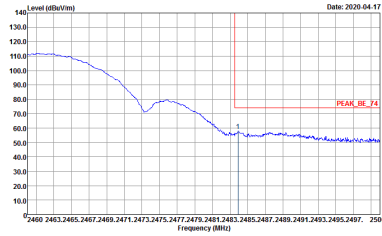
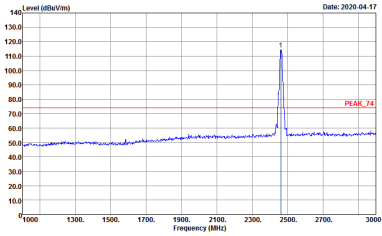
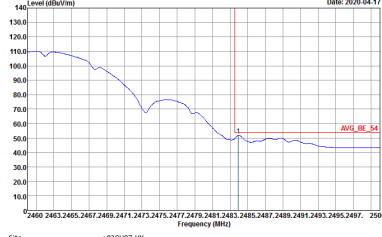
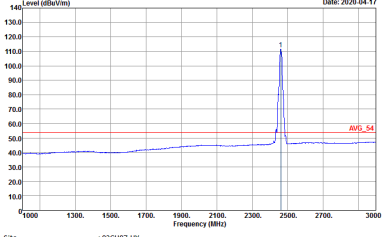
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                             |             |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| ANT  | 802.11b CH06 2437MHz - R                                                                                                                                                                                         |             |
| 1    | Horizontal                                                                                                                                                                                                       | Fundamental |
| Peak |  <p>Site Condition : 03CH07-HY<br/>: PEAK_BE_78 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000KHz VBW:3000.000KHz SWFAuto</p> | Left blank  |
| Avg. |  <p>Site Condition : 03CH07-HY<br/>: AVG_BE_54 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000KHz VBW:3.000KHz SWFAuto</p>   | Left blank  |

| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                            |                                                                                                                                                                                                               |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11b CH06 2437MHz - L                                                                                                                                                                                        |                                                                                                                                                                                                               |
| 1    | Vertical                                                                                                                                                                                                        | Fundamental                                                                                                                                                                                                   |
| Peak |  <p>Site Condition : 03CH07-HY<br/>: PEAK_BE_78 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p> |  <p>Site Condition : 03CH07-HY<br/>: PEAK_78 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p> |
|      |  <p>Site Condition : 03CH07-HY<br/>: AVG_BE_S4 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>   |  <p>Site Condition : 03CH07-HY<br/>: AVG_S4 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>   |

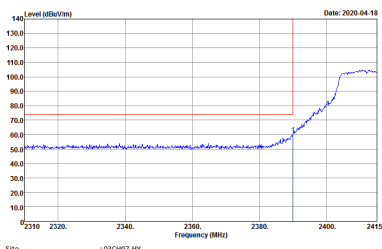
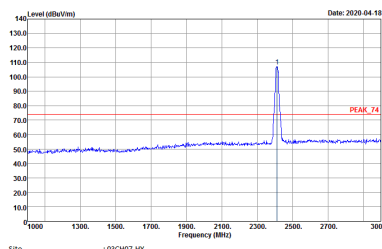
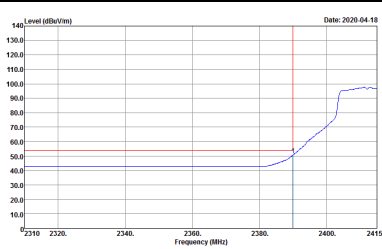
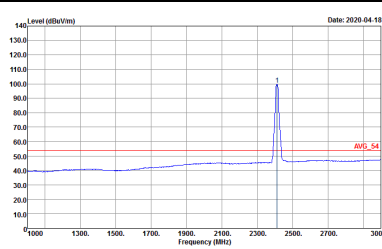


| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                |             |
|------|-------------------------------------------------------------------------------------|-------------|
| ANT  | 802.11b CH06 2437MHz - R                                                            |             |
| 1    | Vertical                                                                            | Fundamental |
| Peak |    | Left blank  |
| Avg. |  | Left blank  |

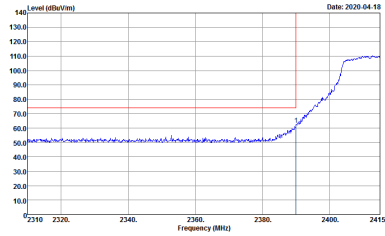
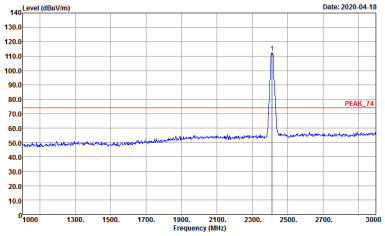
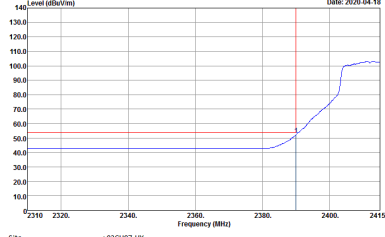
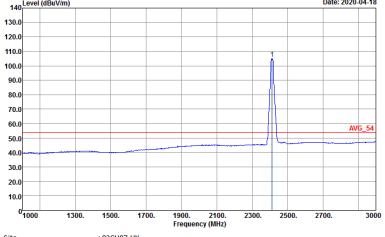
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                              |                                                                                                                                                                                                                 |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11b CH11 2462MHz                                                                                                                                                                                              |                                                                                                                                                                                                                 |
| 1    | Horizontal                                                                                                                                                                                                        | Fundamental                                                                                                                                                                                                     |
| Peak |  <p>Site Condition : 03CH07-HY<br/>: PEAK_BE_78 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p> |  <p>Site Condition : 03CH07-HY<br/>: PEAK_78 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p> |
|      |  <p>Site Condition : 03CH07-HY<br/>: AVG_BE_S4 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>   |  <p>Site Condition : 03CH07-HY<br/>: AVG_S4 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>   |
| Avg. |                                                                                                                                                                                                                   |                                                                                                                                                                                                                 |

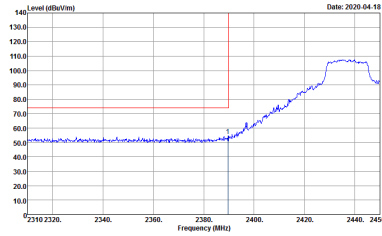
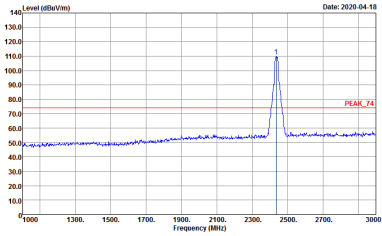
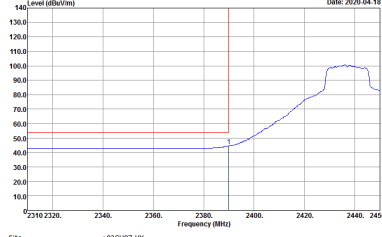
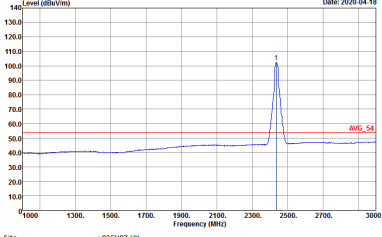
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                            |                                                                                                                                                                                                               |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11b CH11 2462MHz                                                                                                                                                                                            |                                                                                                                                                                                                               |
| 1    | Vertical                                                                                                                                                                                                        | Fundamental                                                                                                                                                                                                   |
| Peak |  <p>Site Condition : 03CH07-HY<br/>: PEAK_BE_74 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p> |  <p>Site Condition : 03CH07-HY<br/>: PEAK_74 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p> |
|      |  <p>Site Condition : 03CH07-HY<br/>: AVG_BE_S4 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>   |  <p>Site Condition : 03CH07-HY<br/>: AVG_S4 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>   |
| Avg. |                                                                                                                                                                                                                 |                                                                                                                                                                                                               |

**2.4GHz 2400~2483.5MHz**  
**WIFI 802.11g (Band Edge @ 3m)**

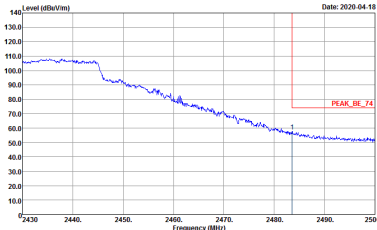
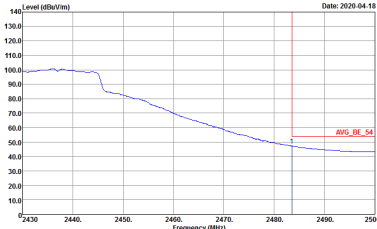
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                                |                                                                                                                                                                                                                   |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11g CH01 2412MHz                                                                                                                                                                                                |                                                                                                                                                                                                                   |
| 1    | Horizontal                                                                                                                                                                                                          | Fundamental                                                                                                                                                                                                       |
| Peak |  <p>Site Condition : 03CH07-HY<br/> : PEAK_BE_74 3m HF_ANT_00075962 HORIZONTAL<br/> : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p> |  <p>Site Condition : 03CH07-HY<br/> : PEAK_74 3m HF_ANT_00075962 HORIZONTAL<br/> : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p> |
|      |  <p>Site Condition : 03CH07-HY<br/> : AVG_BE_S4 3m HF_ANT_00075962 HORIZONTAL<br/> : RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>   |  <p>Site Condition : 03CH07-HY<br/> : AVG_S4 3m HF_ANT_00075962 HORIZONTAL<br/> : RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>   |
| Avg. |                                                                                                                                                                                                                     |                                                                                                                                                                                                                   |

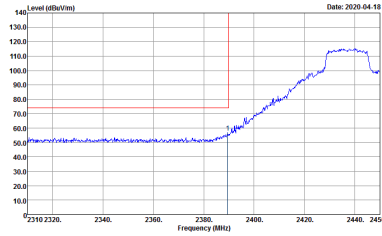
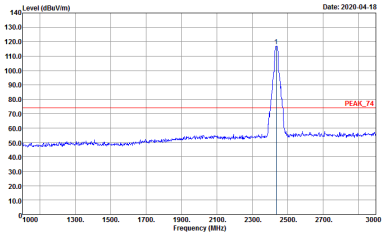
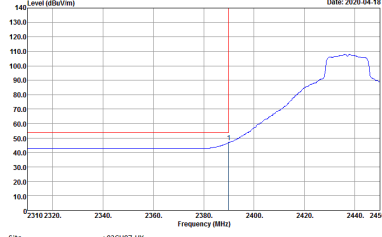
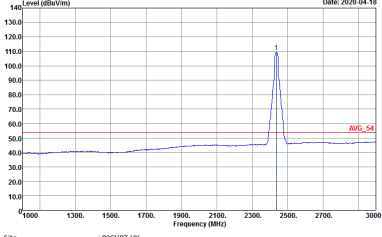


| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                            |                                                                                                                                                                                                               |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11g CH01 2412MHz                                                                                                                                                                                            |                                                                                                                                                                                                               |
| 1    | Vertical                                                                                                                                                                                                        | Fundamental                                                                                                                                                                                                   |
| Peak |  <p>Site Condition : 03CH07-HY<br/>: PEAK_BE_78 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p> |  <p>Site Condition : 03CH07-HY<br/>: PEAK_78 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p> |
|      |  <p>Site Condition : 03CH07-HY<br/>: AVG_BE_S4 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>   |  <p>Site Condition : 03CH07-HY<br/>: AVG_S4 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>   |

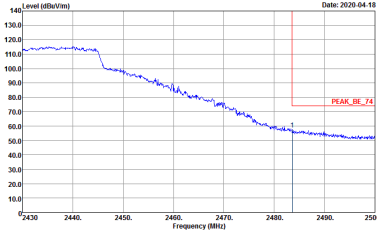
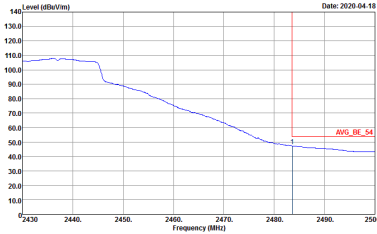
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                              |                                                                                                                                                                                                                 |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11g CH06 2437MHz - L                                                                                                                                                                                          |                                                                                                                                                                                                                 |
| 1    | Horizontal                                                                                                                                                                                                        | Fundamental                                                                                                                                                                                                     |
| Peak |  <p>Site Condition : 03CH07-HY<br/>: PEAK_BE_78 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p> |  <p>Site Condition : 03CH07-HY<br/>: PEAK_74 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p> |
| Avg. |  <p>Site Condition : 03CH07-HY<br/>: AVG_BE_S4 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>   |  <p>Site Condition : 03CH07-HY<br/>: AVG_S4 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>   |

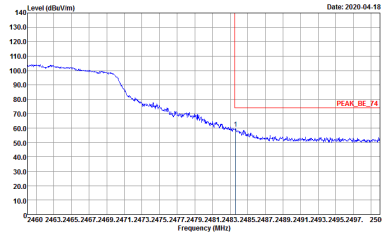
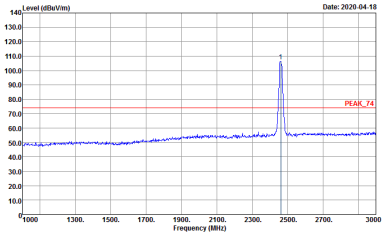
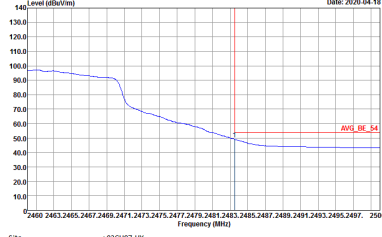
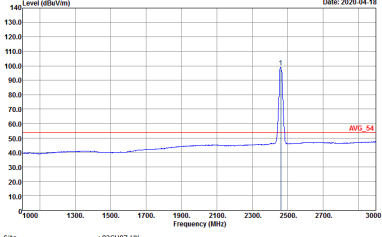


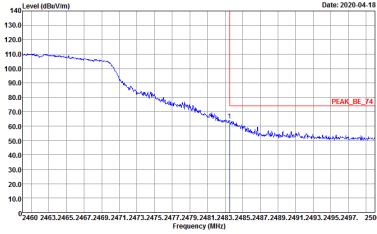
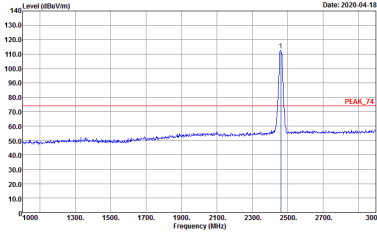
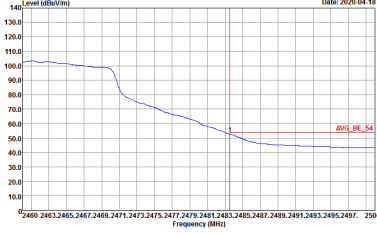
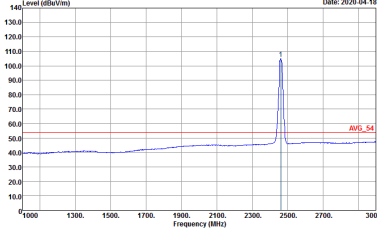
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                             |             |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| ANT  | 802.11g CH06 2437MHz - R                                                                                                                                                                                         |             |
| 1    | Horizontal                                                                                                                                                                                                       | Fundamental |
| Peak |  <p>Site Condition : 03CH07-HY<br/>: PEAK_BE_74 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000KHz VBW:3000.000KHz SWFAuto</p> | Left blank  |
| Avg. |  <p>Site Condition : 03CH07-HY<br/>: AVG_BE_54 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000KHz VBW:3.000KHz SWFAuto</p>   | Left blank  |

| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                            |                                                                                                                                                                                                               |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11g CH06 2437MHz - L                                                                                                                                                                                        |                                                                                                                                                                                                               |
| 1    | Vertical                                                                                                                                                                                                        | Fundamental                                                                                                                                                                                                   |
| Peak |  <p>Site Condition : 03CH07-HY<br/>: PEAK_BE_78 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p> |  <p>Site Condition : 03CH07-HY<br/>: PEAK_78 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p> |
|      |  <p>Site Condition : 03CH07-HY<br/>: AVG_BE_S4 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>   |  <p>Site Condition : 03CH07-HY<br/>: AVG_S4 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>   |
| Avg. |                                                                                                                                                                                                                 |                                                                                                                                                                                                               |



| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                           |             |
|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| ANT  | 802.11g CH06 2437MHz - R                                                                                                                                                                                       |             |
| 1    | Vertical                                                                                                                                                                                                       | Fundamental |
| Peak |  <p>Site Condition : 03CH07-HY<br/>: PEAK_BE_78 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000KHz VBW:3000.000KHz SWTAuto</p> | Left Blank  |
| Avg. |  <p>Site Condition : 03CH07-HY<br/>: AVG_BE_54 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000KHz VBW:3.000KHz SWTAuto</p>   | Left Blank  |

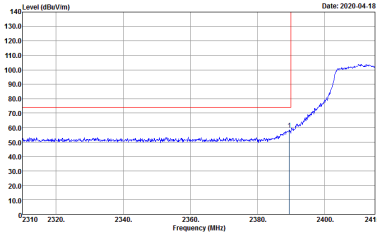
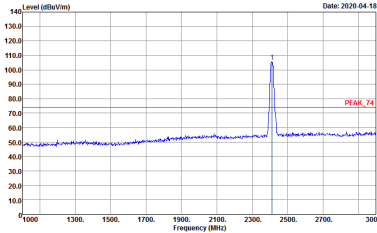
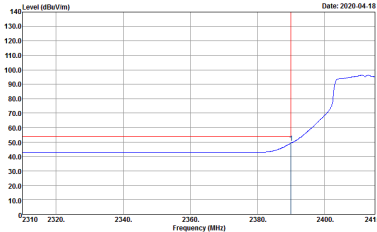
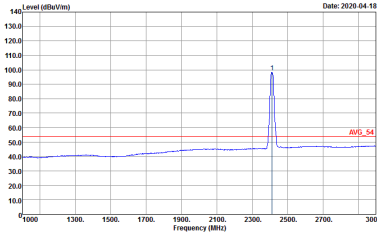
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                              |                                                                                                                                                                                                                 |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11g CH11 2462MHz                                                                                                                                                                                              |                                                                                                                                                                                                                 |
| 1    | Horizontal                                                                                                                                                                                                        | Fundamental                                                                                                                                                                                                     |
| Peak |  <p>Site Condition : 03CH07-HY<br/>: PEAK_BE_78 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p> |  <p>Site Condition : 03CH07-HY<br/>: PEAK_78 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p> |
|      |  <p>Site Condition : 03CH07-HY<br/>: AVG_BE_54 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>   |  <p>Site Condition : 03CH07-HY<br/>: AVG_54 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>   |
| Avg. |                                                                                                                                                                                                                   |                                                                                                                                                                                                                 |

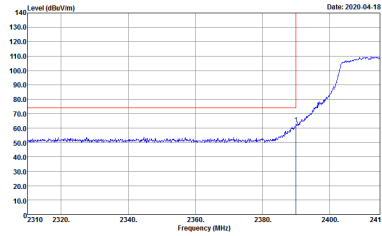
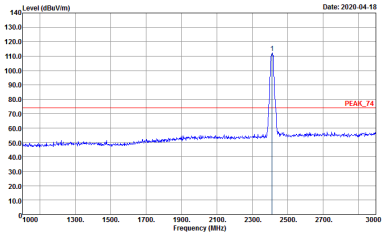
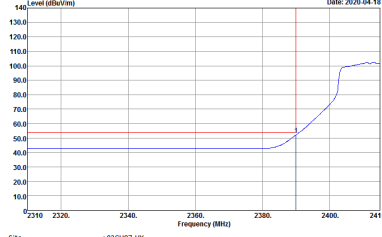
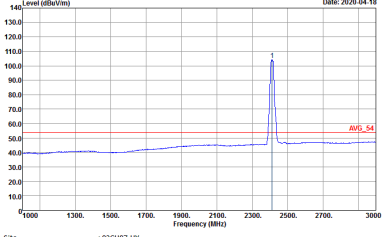
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                            |                                                                                                                                                                                                               |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11g CH11 2462MHz                                                                                                                                                                                            |                                                                                                                                                                                                               |
| 1    | Vertical                                                                                                                                                                                                        | Fundamental                                                                                                                                                                                                   |
| Peak |  <p>Site Condition : 03CH07-HY<br/>: PEAK_BE_78 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p> |  <p>Site Condition : 03CH07-HY<br/>: PEAK_78 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p> |
|      |  <p>Site Condition : 03CH07-HY<br/>: AVG_BE_S4 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>   |  <p>Site Condition : 03CH07-HY<br/>: AVG_S4 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>   |
| Avg. |                                                                                                                                                                                                                 |                                                                                                                                                                                                               |

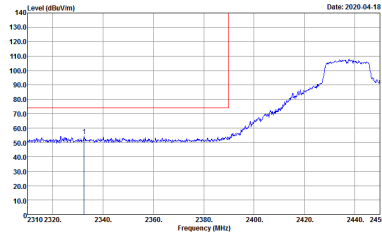
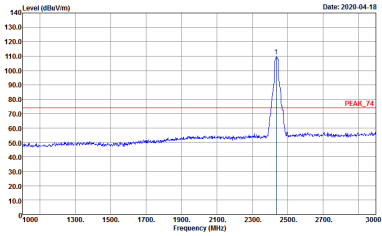
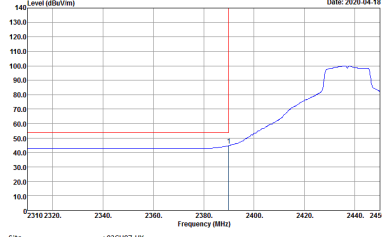
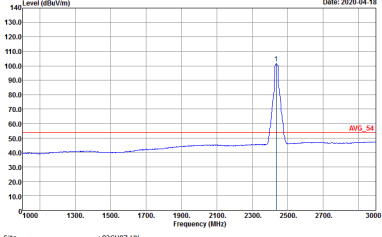


## 2.4GHz 2400~2483.5MHz

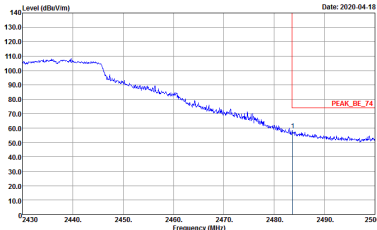
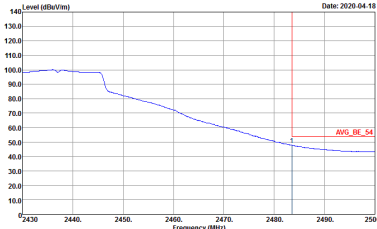
## WIFI 802.11ac VHT20 (Band Edge @ 3m)

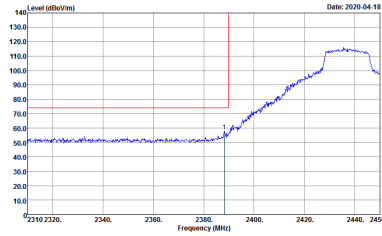
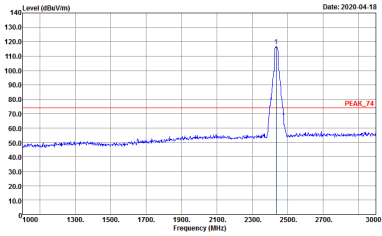
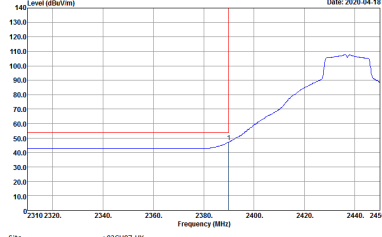
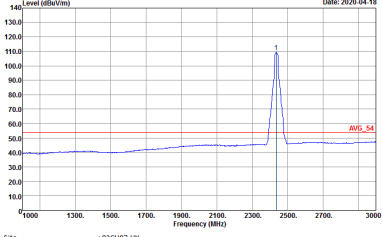
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                              |                                                                                                                                                                                                                 |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11ac VHT20 CH01 2412MHz                                                                                                                                                                                       |                                                                                                                                                                                                                 |
| 1    | Horizontal                                                                                                                                                                                                        | Fundamental                                                                                                                                                                                                     |
| Peak |  <p>Site : 03CH07-HY<br/>Condition : PEAK_BE_74 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p> |  <p>Site : 03CH07-HY<br/>Condition : PEAK_74 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p> |
| Avg. |  <p>Site : 03CH07-HY<br/>Condition : AVG_BE_S4 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>   |  <p>Site : 03CH07-HY<br/>Condition : AVG_S4 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000KHz VBW:0.010KHz SWT:Auto</p>   |

| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                            |                                                                                                                                                                                                               |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11ac VHT20 CH01 2412MHz                                                                                                                                                                                     |                                                                                                                                                                                                               |
| 1    | Vertical                                                                                                                                                                                                        | Fundamental                                                                                                                                                                                                   |
| Peak |  <p>Site Condition : 03CH07-HY<br/>: PEAK_BE_78 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p> |  <p>Site Condition : 03CH07-HY<br/>: PEAK_78 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p> |
|      |  <p>Site Condition : 03CH07-HY<br/>: AVG_BE_S4 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>   |  <p>Site Condition : 03CH07-HY<br/>: AVG_S4 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>   |
| Avg. |                                                                                                                                                                                                                 |                                                                                                                                                                                                               |

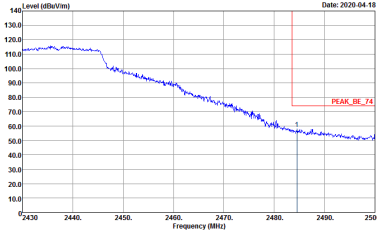
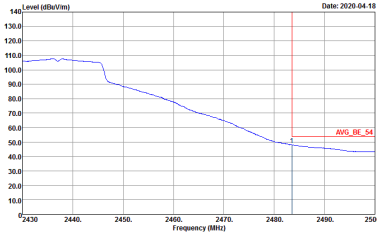
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                              |                                                                                                                                                                                                                 |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11ac VHT20 CH06 2437MHz - L                                                                                                                                                                                   |                                                                                                                                                                                                                 |
| 1    | Horizontal                                                                                                                                                                                                        | Fundamental                                                                                                                                                                                                     |
| Peak |  <p>Site Condition : 03CH07-HY<br/>: PEAK_BE_78 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p> |  <p>Site Condition : 03CH07-HY<br/>: PEAK_78 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p> |
| Avg. |  <p>Site Condition : 03CH07-HY<br/>: AVG_BE_S4 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>   |  <p>Site Condition : 03CH07-HY<br/>: AVG_S4 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>   |

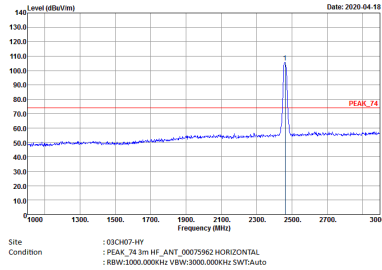
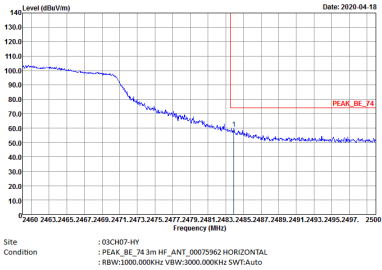
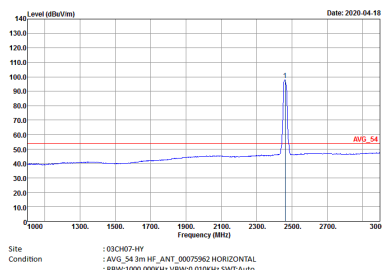
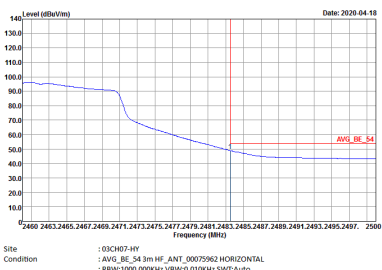


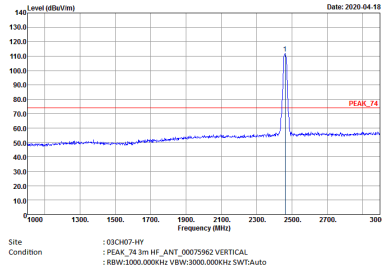
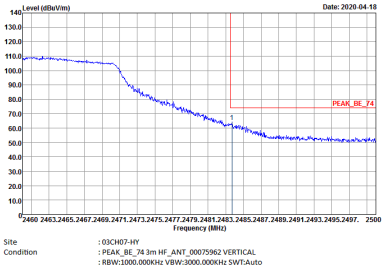
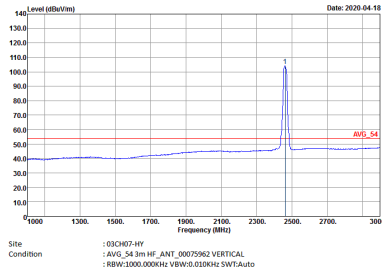
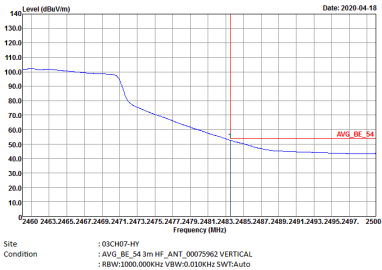
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                             |             |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| ANT  | 802.11ac VH20 CH06 2437MHz - R                                                                                                                                                                                   |             |
| 1    | Horizontal                                                                                                                                                                                                       | Fundamental |
| Peak |  <p>Site Condition : 03CH07-HY<br/>: PEAK_BE_78 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000KHz VBW:3000.000KHz SWFAuto</p> | Left blank  |
| Avg. |  <p>Site Condition : 03CH07-HY<br/>: AVG_BE_54 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000KHz VBW:3.000KHz SWFAuto</p>   | Left blank  |

| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                            |                                                                                                                                                                                                               |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11ac VH20 CH06 2437MHz - L                                                                                                                                                                                  |                                                                                                                                                                                                               |
| 1    | Vertical                                                                                                                                                                                                        | Fundamental                                                                                                                                                                                                   |
| Peak |  <p>Site Condition : 03CH07-HY<br/>: PEAK_BE_78 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p> |  <p>Site Condition : 03CH07-HY<br/>: PEAK_74 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p> |
| Avg. |  <p>Site Condition : 03CH07-HY<br/>: AVG_BE_54 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>   |  <p>Site Condition : 03CH07-HY<br/>: AVG_54 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>   |

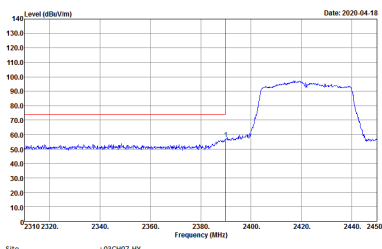
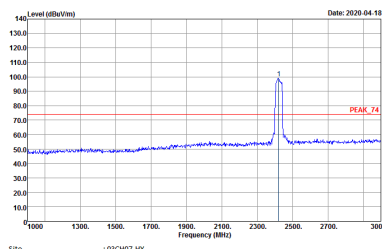
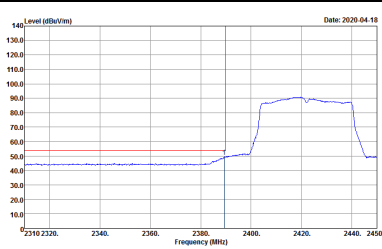
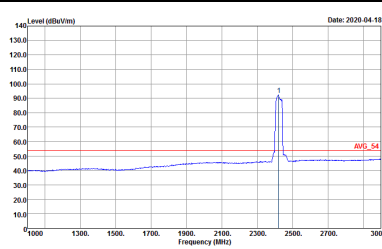


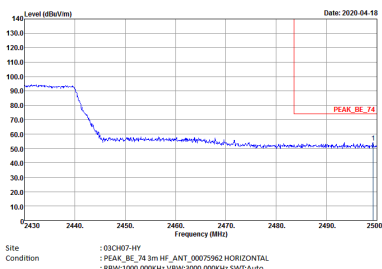
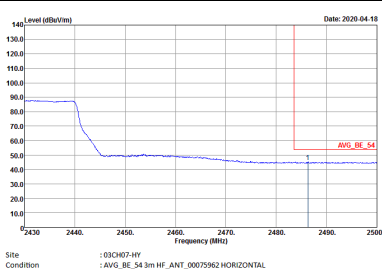
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                             |             |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| ANT  | 802.11ac VH20 CH06 2437MHz - R                                                                                                                                                                                   |             |
| 1    | Vertical                                                                                                                                                                                                         | Fundamental |
| Peak |  <p>Site Condition : 03CH07-HY<br/>: PEAK_BE_74 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p>  | Left blank  |
| Avg. |  <p>Site Condition : 03CH07-HY<br/>: AVG_BE_54 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p> | Left blank  |

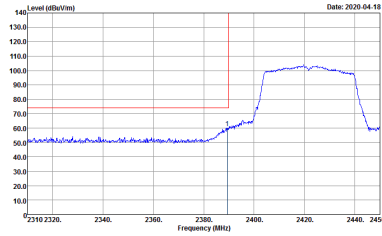
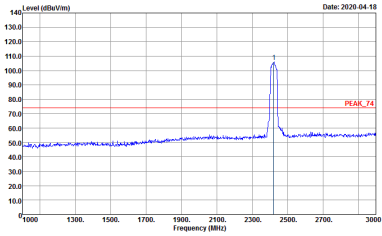
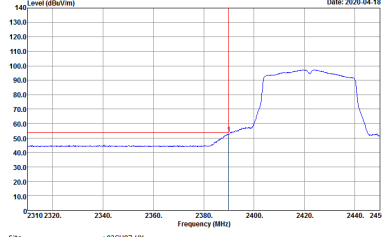
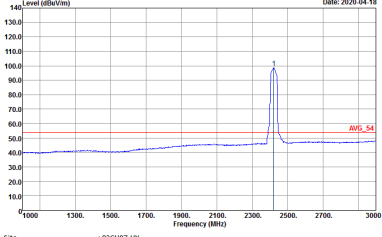
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                           |                                                                                                                                                                                                                    |
|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11ac VH20 CH11 2462MHz                                                                                                                                                                                     |                                                                                                                                                                                                                    |
| 1    | Horizontal                                                                                                                                                                                                     | Fundamental                                                                                                                                                                                                        |
| Peak |  <p>Site Condition : 03CH07-HY<br/>: PEAK_74 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p> |  <p>Site Condition : 03CH07-HY<br/>: PEAK_BE_74 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p> |
|      |  <p>Site Condition : 03CH07-HY<br/>: AVG_S4 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>   |  <p>Site Condition : 03CH07-HY<br/>: AVG_BE_S4 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>   |
| Avg. |                                                                                                                                                                                                                |                                                                                                                                                                                                                    |

| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                         |                                                                                                                                                                                                                  |
|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11ac VH20 CH11 2462MHz                                                                                                                                                                                   |                                                                                                                                                                                                                  |
| 1    | Vertical                                                                                                                                                                                                     | Fundamental                                                                                                                                                                                                      |
| Peak |  <p>Site Condition : 03CH07-HY<br/>: PEAK_74 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p> |  <p>Site Condition : 03CH07-HY<br/>: PEAK_BE_74 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p> |
|      |  <p>Site Condition : 03CH07-HY<br/>: AVG_S4 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>   |  <p>Site Condition : 03CH07-HY<br/>: AVG_BE_S4 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000kHz VBW:0.010kHz SWT:Auto</p>   |
| Avg. |                                                                                                                                                                                                              |                                                                                                                                                                                                                  |

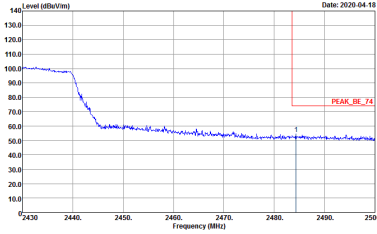
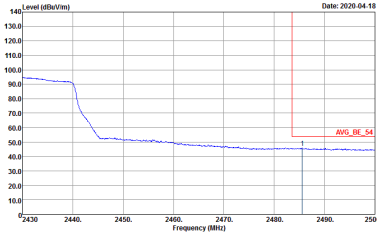
**2.4GHz 2400~2483.5MHz**  
**WIFI 802.11ac VHT40 (Band Edge @ 3m)**

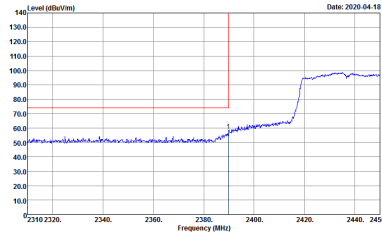
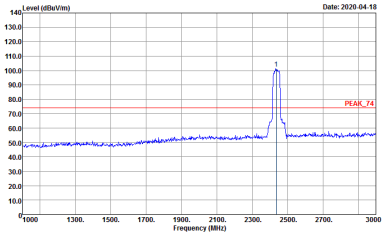
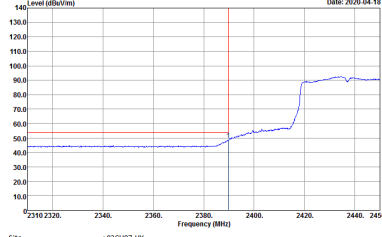
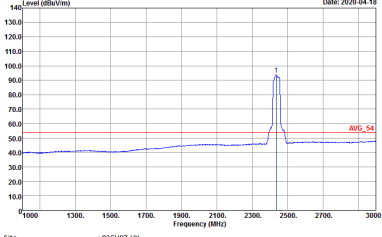
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                                |                                                                                                                                                                                                                   |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11ac VH40 CH03 2422MHz - L                                                                                                                                                                                      |                                                                                                                                                                                                                   |
| 1    | Horizontal                                                                                                                                                                                                          | Fundamental                                                                                                                                                                                                       |
| Peak |  <p>Site Condition : 03CH07-HY<br/> : PEAK_BE_74 3m HF_ANT_00075962 HORIZONTAL<br/> : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p> |  <p>Site Condition : 03CH07-HY<br/> : PEAK_74 3m HF_ANT_00075962 HORIZONTAL<br/> : RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p> |
| Avg. |  <p>Site Condition : 03CH07-HY<br/> : AVG_BE_54 3m HF_ANT_00075962 HORIZONTAL<br/> : RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>   |  <p>Site Condition : 03CH07-HY<br/> : AVG_54 3m HF_ANT_00075962 HORIZONTAL<br/> : RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>   |

| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                             |             |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| ANT  | 802.11ac VH40 CH03 2422MHz - R                                                                                                                                                                                   |             |
| 1    | Horizontal                                                                                                                                                                                                       | Fundamental |
| Peak |  <p>Site Condition : 03CH07-HY<br/>: PEAK_BE_74 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000KHz VBW:3000.000KHz SWFAuto</p> | Left blank  |
| Avg. |  <p>Site Condition : 03CH07-HY<br/>: AVG_BE_54 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000KHz VBW:3.000KHz SWFAuto</p>   | Left blank  |

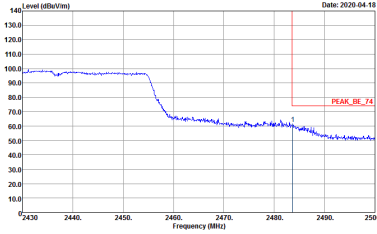
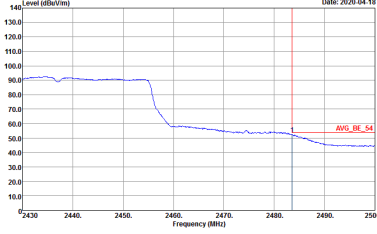
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                            |                                                                                                                                                                                                               |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11ac VH40 CH03 2422MHz - L                                                                                                                                                                                  |                                                                                                                                                                                                               |
| 1    | Vertical                                                                                                                                                                                                        | Fundamental                                                                                                                                                                                                   |
| Peak |  <p>Site Condition : 03CH07-HY<br/>: PEAK_BE_78 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p> |  <p>Site Condition : 03CH07-HY<br/>: PEAK_78 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p> |
| Avg. |  <p>Site Condition : 03CH07-HY<br/>: AVG_BE_54 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>   |  <p>Site Condition : 03CH07-HY<br/>: AVG_54 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>   |

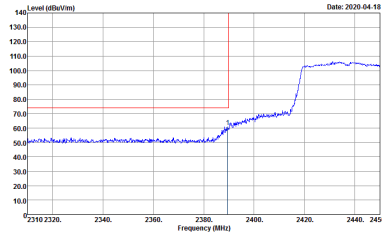
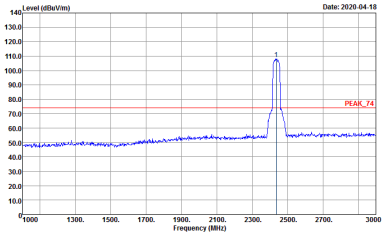
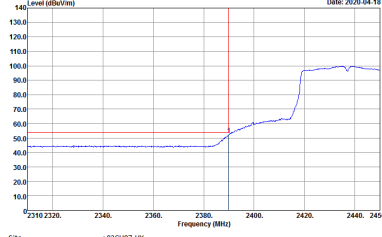
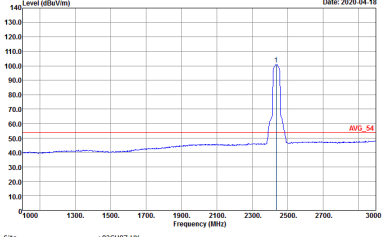


| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                            |             |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| ANT  | 802.11ac VH40 CH03 2422MHz - R                                                                                                                                                                                  |             |
| 1    | Vertical                                                                                                                                                                                                        | Fundamental |
| Peak |  <p>Site Condition : 03CH07-HY<br/>: PEAK_BE_74 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p> | Left blank  |
| Avg. |  <p>Site Condition : 03CH07-HY<br/>: AVG_BE_54 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000kHz VBW:3.000kHz SWT:Auto</p>   | Left blank  |

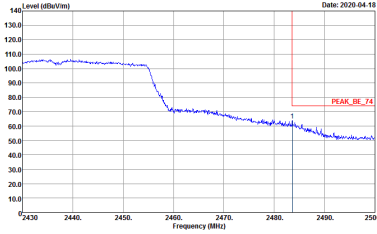
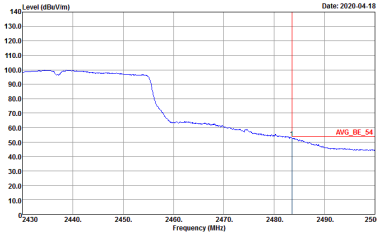
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                              |                                                                                                                                                                                                                 |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11ac VH40 CH06 2437MHz - L                                                                                                                                                                                    |                                                                                                                                                                                                                 |
| 1    | Horizontal                                                                                                                                                                                                        | Fundamental                                                                                                                                                                                                     |
| Peak |  <p>Site Condition : 03CH07-HY<br/>: PEAK_BE_78 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p> |  <p>Site Condition : 03CH07-HY<br/>: PEAK_74 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p> |
| Avg. |  <p>Site Condition : 03CH07-HY<br/>: AVG_BE_S4 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000kHz VBW:3.000kHz SWT:Auto</p>   |  <p>Site Condition : 03CH07-HY<br/>: AVG_S4 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000kHz VBW:3.000kHz SWT:Auto</p>   |

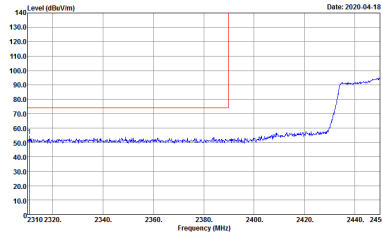
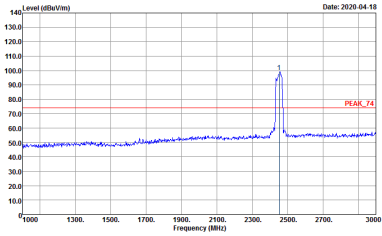
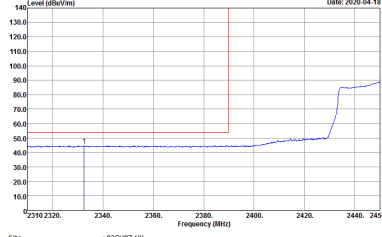
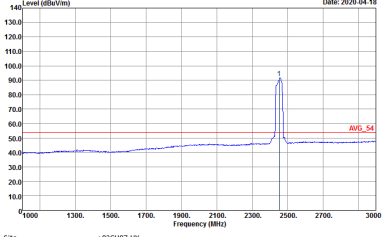


| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                             |             |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| ANT  | 802.11ac VH40 CH06 2437MHz - R                                                                                                                                                                                   |             |
| 1    | Horizontal                                                                                                                                                                                                       | Fundamental |
| Peak |  <p>Site Condition : 03CH07-HY<br/>: PEAK_BE_74 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000kHz VBW:3000.000kHz SWFAuto</p> | Left blank  |
| Avg. |  <p>Site Condition : 03CH07-HY<br/>: AVG_BE_54 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000kHz VBW:3.000kHz SWFAuto</p>   | Left blank  |

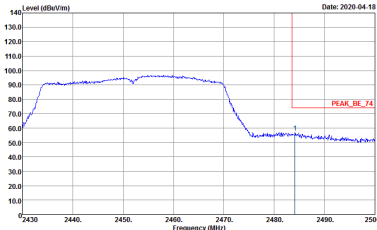
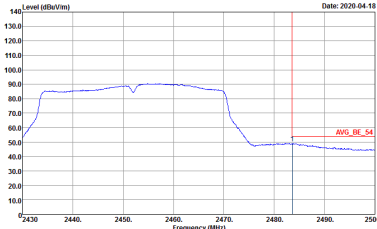
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                            |                                                                                                                                                                                                               |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11ac VH40 CH06 2437MHz - L                                                                                                                                                                                  |                                                                                                                                                                                                               |
| 1    | Vertical                                                                                                                                                                                                        | Fundamental                                                                                                                                                                                                   |
| Peak |  <p>Site Condition : 03CH07-HY<br/>: PEAK_BE_78 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p> |  <p>Site Condition : 03CH07-HY<br/>: PEAK_78 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p> |
| Avg. |  <p>Site Condition : 03CH07-HY<br/>: AVG_BE_S4 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000kHz VBW:3.000kHz SWT:Auto</p>   |  <p>Site Condition : 03CH07-HY<br/>: AVG_S4 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000kHz VBW:3.000kHz SWT:Auto</p>   |

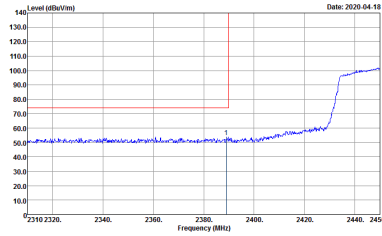
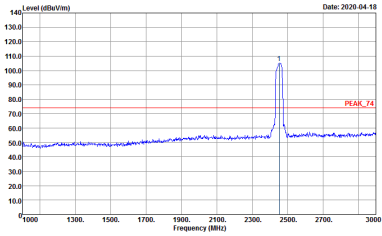
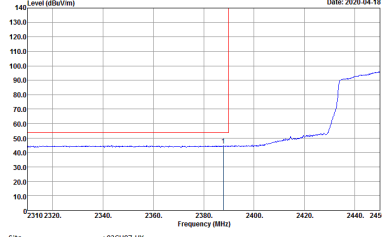
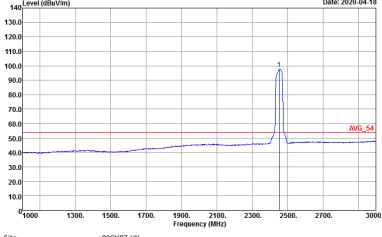


| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                            |             |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| ANT  | 802.11ac VH40 CH06 2437MHz - R                                                                                                                                                                                  |             |
| 1    | Vertical                                                                                                                                                                                                        | Fundamental |
| Peak |  <p>Site Condition : 03CH07-HY<br/>: PEAK_BE_74 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p> | Left blank  |
| Avg. |  <p>Site Condition : 03CH07-HY<br/>: AVG_BE_54 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>   | Left blank  |

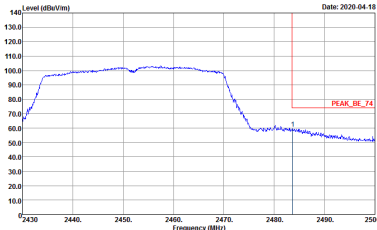
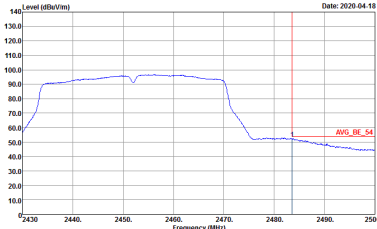
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                              |                                                                                                                                                                                                                 |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11ac VH40 CH09 2452MHz - L                                                                                                                                                                                    |                                                                                                                                                                                                                 |
| 1    | Horizontal                                                                                                                                                                                                        | Fundamental                                                                                                                                                                                                     |
| Peak |  <p>Site Condition : 03CH07-HY<br/>: PEAK_BE_78 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p> |  <p>Site Condition : 03CH07-HY<br/>: PEAK_74 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000kHz VBW:3000.000kHz SWT:Auto</p> |
| Avg. |  <p>Site Condition : 03CH07-HY<br/>: AVG_BE_54 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000kHz VBW:3.000kHz SWT:Auto</p>   |  <p>Site Condition : 03CH07-HY<br/>: AVG_54 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000kHz VBW:3.000kHz SWT:Auto</p>   |



| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                             |             |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| ANT  | 802.11ac VH40 CH09 2452MHz - R                                                                                                                                                                                   |             |
| 1    | Horizontal                                                                                                                                                                                                       | Fundamental |
| Peak |  <p>Site Condition : 03CH07-HY<br/>: PEAK_BE_74 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000kHz VBW:3000.000kHz SWFAuto</p> | Left blank  |
| Avg. |  <p>Site Condition : 03CH07-HY<br/>: AVG_BE_54 3m HF_ANT_00075962 HORIZONTAL<br/>: RBW:1000.000kHz VBW:3.000kHz SWFAuto</p>   | Left blank  |

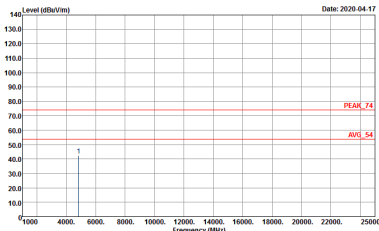
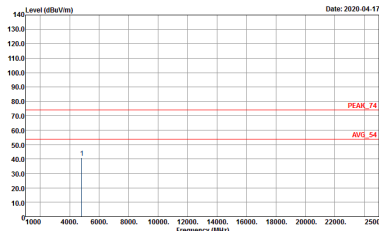
| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                            |                                                                                                                                                                                                               |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT  | 802.11ac VH40 CH09 2452MHz - L                                                                                                                                                                                  |                                                                                                                                                                                                               |
| 1    | Vertical                                                                                                                                                                                                        | Fundamental                                                                                                                                                                                                   |
| Peak |  <p>Site Condition : 03CH07-HY<br/>: PEAK_BE_78 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p> |  <p>Site Condition : 03CH07-HY<br/>: PEAK_78 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000KHz VBW:3000.000KHz SWT:Auto</p> |
| Avg. |  <p>Site Condition : 03CH07-HY<br/>: AVG_BE_S4 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>   |  <p>Site Condition : 03CH07-HY<br/>: AVG_S4 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000KHz VBW:3.000KHz SWT:Auto</p>   |



| WIFI | 2.4GHz 2400~2483.5MHz Band Edge @ 3m                                                                                                                                                                           |             |
|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| ANT  | 802.11ac VH40 CH09 2452MHz - R                                                                                                                                                                                 |             |
| 1    | Vertical                                                                                                                                                                                                       | Fundamental |
| Peak |  <p>Site Condition : 03CH07-HY<br/>: PEAK_BE_74 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000KHz VBW:3000.000KHz SWTAuto</p> | Left blank  |
| Avg. |  <p>Site Condition : 03CH07-HY<br/>: AVG_BE_54 3m HF_ANT_00075962 VERTICAL<br/>: RBW:1000.000KHz VBW:3.000KHz SWTAuto</p>   | Left blank  |



2.4GHz 2400~2483.5MHz  
WIFI 802.11b (Harmonic @ 3m)

| WIFI         | 2.4GHz 2400~2483.5MHz Harmonic @ 3m                                                                                                                             |                                                                                                                                                                |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT          | 802.11b CH01 2412MHz                                                                                                                                            |                                                                                                                                                                |
| 1            | Horizontal                                                                                                                                                      | Vertical                                                                                                                                                       |
| Peak<br>Avg. |  <p>Site : 03CH07-HY<br/>Condition : PEAK 74 3m HF ANT 00075962 HORIZONTAL</p> |  <p>Site : 03CH07-HY<br/>Condition : PEAK 74 3m HF ANT 00075962 VERTICAL</p> |



| WIFI         | 2.4GHz 2400~2483.5MHz Harmonic @ 3m                                           |                                                                             |
|--------------|-------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| ANT          | 802.11b CH06 2437MHz                                                          |                                                                             |
| 1            | Horizontal                                                                    | Vertical                                                                    |
| Peak<br>Avg. | <p>Site : 03CH07-HY<br/>Condition : PEAK_74 3m HF ANT 00075962 HORIZONTAL</p> | <p>Site : 03CH07-HY<br/>Condition : PEAK_74 3m HF ANT 00075962 VERTICAL</p> |

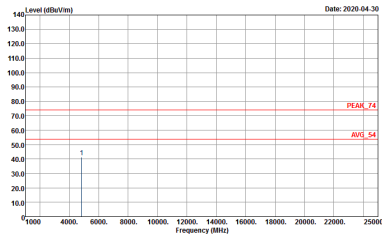
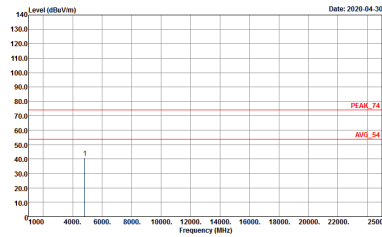


| WIFI         | 2.4GHz 2400~2483.5MHz Harmonic @ 3m |          |
|--------------|-------------------------------------|----------|
| ANT          | 802.11b CH11 2462MHz                |          |
| 1            | Horizontal                          | Vertical |
| Peak<br>Avg. |                                     |          |
|              |                                     |          |



2.4GHz 2400~2483.5MHz

WIFI 802.11g (Harmonic @ 3m)

| WIFI         | 2.4GHz 2400~2483.5MHz Harmonic @ 3m                                                                                                                             |                                                                                                                                                                |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT          | 802.11g CH01 2412MHz                                                                                                                                            |                                                                                                                                                                |
| 1            | Horizontal                                                                                                                                                      | Vertical                                                                                                                                                       |
| Peak<br>Avg. |  <p>Site : 03CH07-HY<br/>Condition : PEAK_74 3m HF ANT 00075962 HORIZONTAL</p> |  <p>Site : 03CH07-HY<br/>Condition : PEAK_74 3m HF ANT 00075962 VERTICAL</p> |



| WIFI         | 2.4GHz 2400~2483.5MHz Harmonic @ 3m                                                                                                                        |                                                                                                                                                          |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT          | 802.11g CH06 2437MHz                                                                                                                                       |                                                                                                                                                          |
| 1            | Horizontal                                                                                                                                                 | Vertical                                                                                                                                                 |
| Peak<br>Avg. | <div><p>Level (dBuV/m)</p><p>Date: 2020-04-30</p><p>Frequency (MHz)</p><p>Site : 03CH07-HY<br/>Condition : PEAK_74 3m HF ANT_00075962 HORIZONTAL</p></div> | <div><p>Level (dBuV/m)</p><p>Date: 2020-04-30</p><p>Frequency (MHz)</p><p>Site : 03CH07-HY<br/>Condition : PEAK_74 3m HF ANT_00075962 VERTICAL</p></div> |

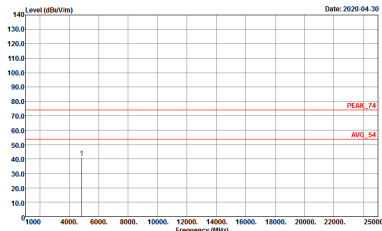
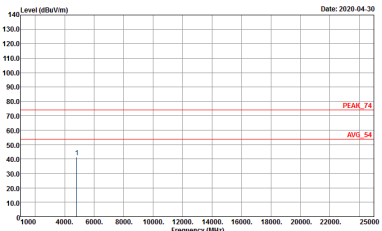


| WIFI         | 2.4GHz 2400~2483.5MHz Harmonic @ 3m                                           |                                                                             |
|--------------|-------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| ANT          | 802.11g CH11 2462MHz                                                          |                                                                             |
| 1            | Horizontal                                                                    | Vertical                                                                    |
| Peak<br>Avg. | <p>Site : 03CH07-HY<br/>Condition : PEAK_74 3m HF ANT 00075962 HORIZONTAL</p> | <p>Site : 03CH07-HY<br/>Condition : PEAK_74 3m HF ANT 00075962 VERTICAL</p> |



## 2.4GHz 2400~2483.5MHz

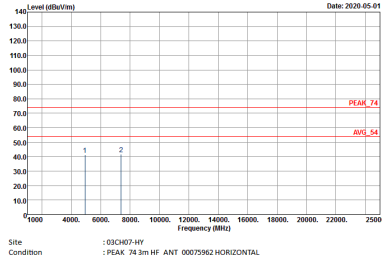
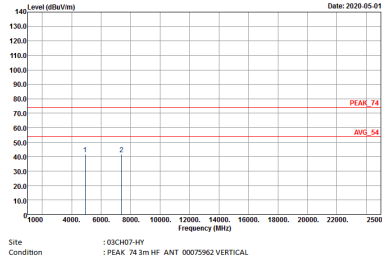
## WIFI 802.11ac VHT20 (Harmonic @ 3m)

| WIFI         | 2.4GHz 2400~2483.5MHz Harmonic @ 3m                                                                                                                             |                                                                                                                                                                |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT          | 802.11ac VHT20 CH01 2412MHz                                                                                                                                     |                                                                                                                                                                |
| 1            | Horizontal                                                                                                                                                      | Vertical                                                                                                                                                       |
| Peak<br>Avg. |  <p>Site : 03CH07-HY<br/>Condition : PEAK 74 3m HF ANT 00075962 HORIZONTAL</p> |  <p>Site : 03CH07-HY<br/>Condition : PEAK 74 3m HF ANT 00075962 VERTICAL</p> |



| WIFI         | 2.4GHz 2400~2483.5MHz Harmonic @ 3m |          |
|--------------|-------------------------------------|----------|
| ANT          | 802.11ac VHT20 CH06 2437MHz         |          |
| 1            | Horizontal                          | Vertical |
| Peak<br>Avg. |                                     |          |

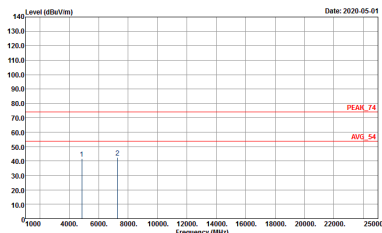
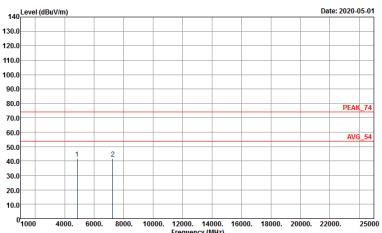


| WIFI         | 2.4GHz 2400~2483.5MHz Harmonic @ 3m                                               |                                                                                    |
|--------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| ANT          | 802.11ac VHT20 CH11 2462MHz                                                       |                                                                                    |
| 1            | Horizontal                                                                        | Vertical                                                                           |
| Peak<br>Avg. |  |  |



## 2.4GHz 2400~2483.5MHz

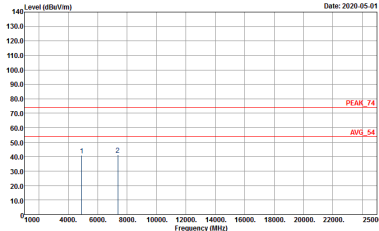
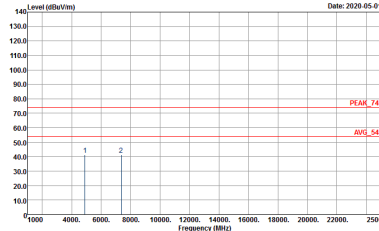
## WIFI 802.11ac VHT40 (Harmonic @ 3m)

| WIFI         | 2.4GHz 2400~2483.5MHz Harmonic @ 3m                                                                                                                             |                                                                                                                                                                |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT          | 802.11ac VHT40 CH03 2422MHz                                                                                                                                     |                                                                                                                                                                |
| 1            | Horizontal                                                                                                                                                      | Vertical                                                                                                                                                       |
| Peak<br>Avg. |  <p>Site : 03CH07-HY<br/>Condition : PEAK_74 3m HF ANT 00075962 HORIZONTAL</p> |  <p>Site : 03CH07-HY<br/>Condition : PEAK_74 3m HF ANT 00075962 VERTICAL</p> |

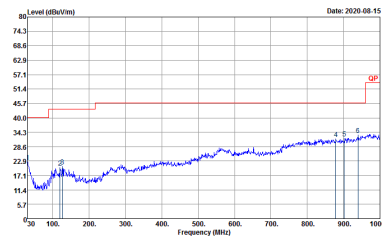
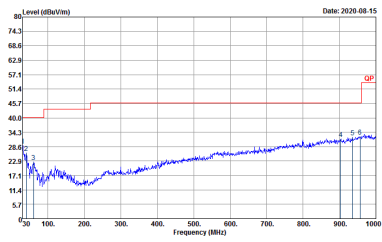


| WIFI         | 2.4GHz 2400~2483.5MHz Harmonic @ 3m |          |
|--------------|-------------------------------------|----------|
| ANT          | 802.11ac VHT40 CH06 2437MHz         |          |
| 1            | Horizontal                          | Vertical |
| Peak<br>Avg. |                                     |          |



| WIFI         | 2.4GHz 2400~2483.5MHz Harmonic @ 3m                                                                                                                             |                                                                                                                                                                |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT          | 802.11ac VHT40 CH09 2452MHz                                                                                                                                     |                                                                                                                                                                |
| 1            | Horizontal                                                                                                                                                      | Vertical                                                                                                                                                       |
| Peak<br>Avg. |  <p>Site : 03CH07-HY<br/>Condition : PEAK_74 3m HF ANT 00075962 HORIZONTAL</p> |  <p>Site : 03CH07-HY<br/>Condition : PEAK_74 3m HF ANT 00075962 VERTICAL</p> |
|              |                                                                                                                                                                 |                                                                                                                                                                |

**Emission below 1GHz**  
**2.4GHz WIFI 802.11ac VHT40 (LF)**

| WIFI                 | 2.4GHz 2400~2483.5MHz                                                                                                                                       |                                                                                                                                                            |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ANT                  | 802.11ac VHT40 LF                                                                                                                                           |                                                                                                                                                            |
| 1                    | Horizontal                                                                                                                                                  | Vertical                                                                                                                                                   |
| <b>QP /<br/>Peak</b> |  <p>Site : 03CH07-HY<br/> Condition : QP 3m LF-ANT-35419(s) HORIZONTAL</p> |  <p>Site : 03CH07-HY<br/> Condition : QP 3m LF-ANT-35419(s) VERTICAL</p> |
|                      |                                                                                                                                                             |                                                                                                                                                            |

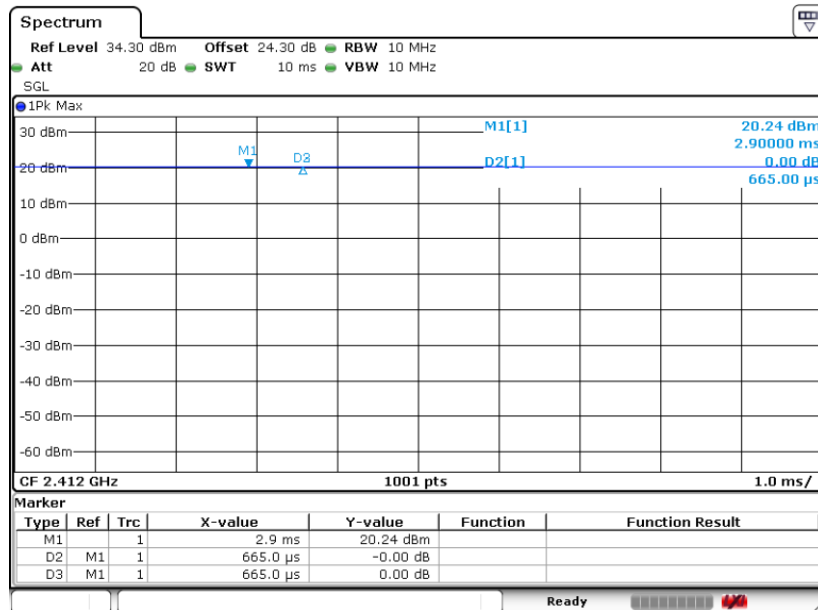


## Appendix D. Duty Cycle Plots

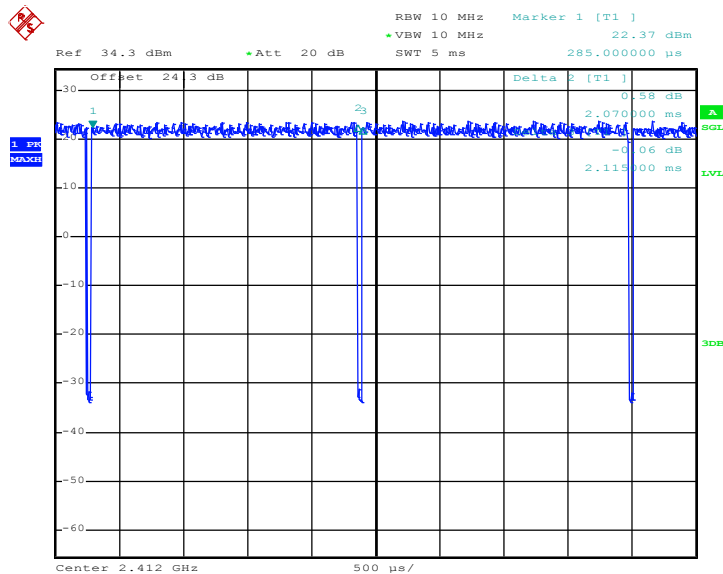
| Band              | Duty Cycle(%) | T(us) | 1/T(kHz) | VBW Setting | Duty Factor(dB) |
|-------------------|---------------|-------|----------|-------------|-----------------|
| 802.11b           | 99.04         | -     | -        | 10Hz        | 0.04            |
| 802.11g           | 98.10         | -     | -        | 10Hz        | 0.08            |
| 2.4GHz 802.11ac20 | 97.97         | 1930  | 0.52     | 1kHz        | 0.09            |
| 2.4GHz 802.11ac40 | 95.00         | 950   | 1.05     | 3kHz        | 0.22            |



## 802.11b

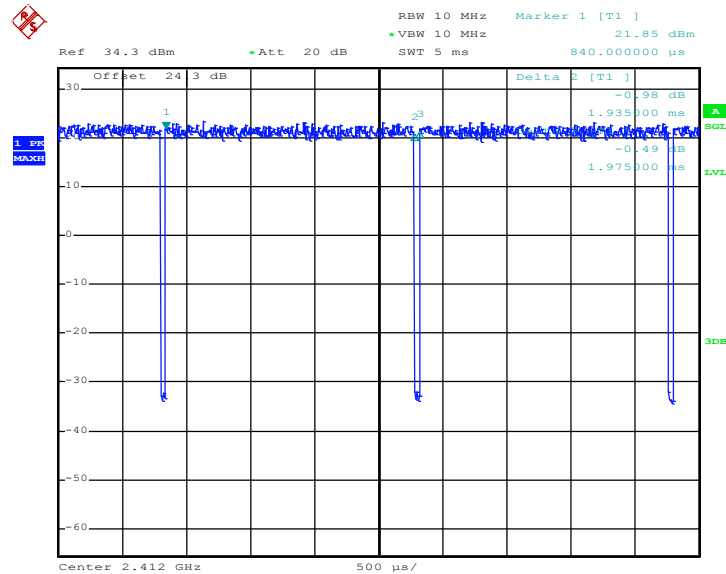


## 802.11g



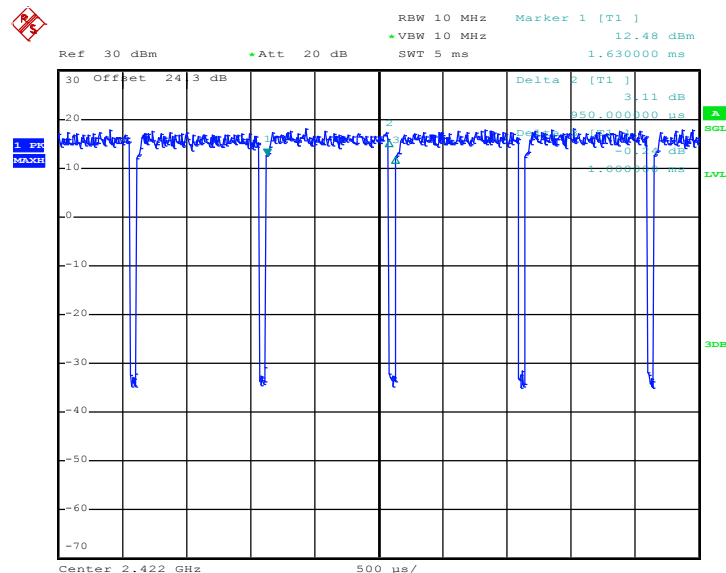
Date: 6.MAY.2020 18:36:44

## 802.11ac VHT20



Date: 6.MAY.2020 18:43:13

## 802.11ac VHT40



Date: 6.MAY.2020 18:47:22