

Partial FCC Test Report

Report No.: RF190816C17-2

FCC ID: I4L-BM25SD

Test Model: 124000-99

Series Model: GFX-350, XCN-750 (Refer to section 3.1 for more details)

Received Date: Aug. 16, 2019

Test Date: Sep. 13, 2019 ~ Sep. 18, 2019

Issued Date: Sep. 25, 2019

Applicant: Micro Star International Co., Ltd.

Address: No. 69, Li-De Street, Jung He City, Taipei Hsien, R.O.C. TAIWAN

Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lin Kou Laboratories

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33383, Taiwan

**FCC Registration /
Designation Number:** 788550 / TW0003



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Release Control Record

| Issue No. | Description | Date Issued |
|---------------|------------------|---------------|
| RF190816C17-2 | Original Release | Sep. 25, 2019 |

1 Certificate of Conformity

Product: Display System

Brand: Trimble

Test Model: 124000-99

Series Model: GFX-350, XCN-750

Sample Status: Identical Prototype

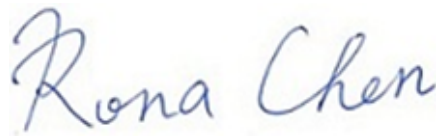
Applicant: Micro Star International Co., Ltd.

Test Date: Sep. 13, 2019 ~ Sep. 18, 2019

Standards: 47 CFR FCC Part 15, Subpart C (Section 15.247)
ANSI C63.10:2013

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

Prepared by :



Date:

Sep. 25, 2019

Rona Chen / Specialist

Approved by :



Date:

Sep. 25, 2019

Dylan Chiou / Project Engineer

2 Summary of Test Results

| 47 CFR FCC Part 15, Subpart C (Section 15.247) | | | |
|--|--|--------|--|
| FCC Clause | Test Item | Result | Remarks |
| 15.207 | AC Power Conducted Emission | Pass | Meet the requirement of limit. Minimum passing margin is -2.81 dB at 0.22038 MHz. |
| 15.205 / 15.209 / 15.247(d) | Radiated Emissions and Band Edge Measurement | Pass | Meet the requirement of limit. Minimum passing margin is -1.41 dB at 2390 MHz. |
| 15.247(d) | Antenna Port Emission | N/A | Refer to Note |
| 15.247(a)(2) | 6 dB Bandwidth | N/A | Refer to Note |
| --- | Occupied Bandwidth Measurement | N/A | Refer to Note |
| 15.247(b) | Conducted power | Pass | Meet the requirement of limit. |
| 15.247(e) | Power Spectral Density | N/A | Refer to Note |
| 15.203 | Antenna Requirement | Pass | No antenna connector is used. |

Note:

1. This report is a partial report, only test item of AC Power Conducted Emission, Conducted Power and Radiated Emissions tests were performed for this report. Other testing data please refer to BV CPS report no.: RF180518C15 for module (Brand: MSI, Model: BM25).
2. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

| Measurement | Frequency | Expanded Uncertainty (k=2) (±) |
|------------------------------------|--------------------|--------------------------------|
| Conducted Emissions at mains ports | 150 kHz ~ 30 MHz | 2.94 dB |
| Radiated Emissions up to 1 GHz | 9 kHz ~ 30 MHz | 3.04 dB |
| | 30 MHz ~ 200 MHz | 2.93 dB |
| | 200 MHz ~ 1000 MHz | 2.95 dB |
| Radiated Emissions above 1 GHz | 1 GHz ~ 18 GHz | 2.26 dB |
| | 18 GHz ~ 40 GHz | 1.94 dB |

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

| | |
|------------------------------|---|
| Product | Display System |
| Brand | Trimble |
| Test Model | 124000-99 |
| Series Model | GFX-350, XCN-750 |
| Status of EUT | Identical Prototype |
| Power Supply Rating | 12 Vdc (DC Power Supply) |
| Modulation Type | CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM |
| Modulation Technology | DSSS, OFDM |
| Transfer Rate | 802.11b: 11.0 / 5.5 / 2.0 / 1.0 Mbps 802.11g: 54.0 / 48.0 / 36.0 / 24.0 / 18.0 / 12.0 / 9.0 / 6.0 Mbps 802.11n: up to 72.2 Mbps |
| Operating Frequency | 2412 ~ 2462 MHz |
| Number of Channel | 11 for 802.11b, 802.11g, 802.11n (HT20) |
| Output Power | 228.034 mW |
| Antenna Type | Monopole antenna with 2.83 dBi gain |
| Antenna Connector | N/A |
| Accessory Device | N/A |
| Data Cable Supplied | N/A |

Note:

1. The EUT provides 1 completed transmitter and 1 receiver.

| Modulation Mode | Tx Function |
|-----------------|-------------|
| 802.11b | 1TX |
| 802.11g | 1TX |
| 802.11n (HT20) | 1TX |

2. The BT/WLAN module (Brand: MSI, Model: BM25) was installed in EUT.
3. All models are listed as below. (Tested model: 124000-99)

| Brand | Model | Difference |
|---------|-----------|---|
| Trimble | GFX-350 | All models are electrically identical, different model names are for marketing purpose. |
| | 124000-99 | |
| | XCN-750 | |

4. The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.

3.2 Description of Test Modes

11 channels are provided for 802.11b, 802.11g and 802.11n (HT20):

| Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---------|-----------------|---------|-----------------|
| 1 | 2412 | 7 | 2442 |
| 2 | 2417 | 8 | 2447 |
| 3 | 2422 | 9 | 2452 |
| 4 | 2427 | 10 | 2457 |
| 5 | 2432 | 11 | 2462 |
| 6 | 2437 | | |

3.2.1 Test Mode Applicability and Tested Channel Detail

| EUT Configure Mode | Applicable To | | | | Description |
|--------------------|---------------|-------|-----|------|-------------|
| | RE≥1G | RE<1G | PLC | APCM | |
| - | √ | √ | √ | √ | - |

Where **RE≥1G**: Radiated Emission above 1 GHz **RE<1G**: Radiated Emission below 1 GHz
PLC: Power Line Conducted Emission **APCM**: Antenna Port Conducted Measurement

NOTE: The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane**.

Radiated Emission Test (Above 1 GHz):

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

| EUT Configure Mode | Mode | Available Channel | Tested Channel | Modulation Technology | Modulation Type | Data Rate (Mbps) |
|--------------------|----------------|-------------------|----------------|-----------------------|-----------------|------------------|
| - | 802.11b | 1 to 11 | 1, 6, 11 | DSSS | DBPSK | 1.0 |
| - | 802.11g | 1 to 11 | 1, 6, 11 | OFDM | BPSK | 6.0 |
| - | 802.11n (HT20) | 1 to 11 | 1, 6, 11 | OFDM | BPSK | 6.5 |

Radiated Emission Test (Below 1 GHz):

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

| EUT Configure Mode | Mode | Available Channel | Tested Channel | Modulation Technology | Modulation Type | Data Rate (Mbps) |
|--------------------|---------|-------------------|----------------|-----------------------|-----------------|------------------|
| - | 802.11g | 1 to 11 | 1 | OFDM | BPSK | 6.0 |

Power Line Conducted Emission Test:

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

| EUT Configure Mode | Mode | Available Channel | Tested Channel | Modulation Technology | Modulation Type | Data Rate (Mbps) |
|--------------------|---------|-------------------|----------------|-----------------------|-----------------|------------------|
| - | 802.11g | 1 to 11 | 1 | OFDM | BPSK | 6.0 |

Antenna Port Conducted Measurement:

- This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

| EUT Configure Mode | Mode | Available Channel | Tested Channel | Modulation Technology | Modulation Type | Data Rate (Mbps) |
|--------------------|----------------|-------------------|----------------|-----------------------|-----------------|------------------|
| - | 802.11b | 1 to 11 | 1, 6, 11 | DSSS | DBPSK | 1.0 |
| - | 802.11g | 1 to 11 | 1, 6, 11 | OFDM | BPSK | 6.0 |
| - | 802.11n (HT20) | 1 to 11 | 1, 6, 11 | OFDM | BPSK | 6.5 |

Test Condition:

| Applicable To | Environmental Conditions | Input Power | Tested by |
|---------------|--------------------------|----------------|------------|
| RE≥1G | 25 deg. C, 65 % RH | 120 Vac, 60 Hz | Tim Chen |
| RE<1G | 25 deg. C, 65 % RH | 120 Vac, 60 Hz | Tim Chen |
| PLC | 25 deg. C, 65 % RH | 120 Vac, 60 Hz | Thomas Wei |
| APCM | 25 deg. C, 65 % RH | 12 Vdc | Wayne Lin |

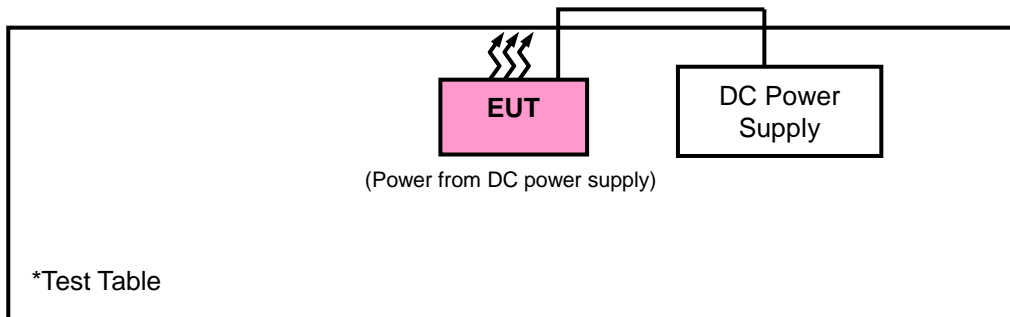
3.3 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

| No. | Product | Brand | Model No. | Serial No. | FCC ID |
|-----|-----------------|---------|-----------|------------|--------|
| 1. | DC Power Supply | Topward | 33010D | 807748 | N/A |

| No. | Signal Cable Description Of The Above Support Units |
|-----|---|
| 1. | N/A |

3.3.1 Configuration of System under Test



3.4 General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart C (15.247)

KDB 558074 D01 15.247 Meas Guidance v05r02

ANSI C63.10-2013

All test items have been performed and recorded as per the above standards.

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20 dB below the highest level of the desired power:

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

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition of modulation.

4.1.2 Test Instruments

| Description & Manufacturer | Model No. | Serial No. | Date of Calibration | Due Date of Calibration |
|--|----------------------------|-------------------------------|---------------------|-------------------------|
| Test Receiver Agilent | N9038A | MY51210203 | Mar. 18, 2019 | Mar. 17, 2020 |
| Spectrum Analyzer Agilent | N9010A | MY52220314 | Dec. 13, 2018 | Dec. 12, 2019 |
| Spectrum Analyzer ROHDE & SCHWARZ | FSU43 | 101261 | Apr. 15, 2019 | Apr. 14, 2020 |
| Broadband Horn Antenna SCHWARZBECK | BBHA 9170 | 148 | Nov. 25, 2018 | Nov. 24, 2019 |
| HORN Antenna SCHWARZBECK | BBHA 9120D | 9120D-969 | Nov. 25, 2018 | Nov. 24, 2019 |
| BILOG Antenna SCHWARZBECK | VULB 9168 | 9168-472 | Nov. 23, 2018 | Nov. 22, 2019 |
| Fixed Attenuator WORKEN | MDCS18N-10 | MDCS18N-10-01 | Apr. 15, 2019 | Apr. 14, 2020 |
| Loop Antenna | HLA 6121 | 45745 | Jul. 01, 2019 | Jun. 30, 2020 |
| Preamplifier EMCI | EMC001340 | 980201 | Oct. 12, 2018 | Oct. 11, 2019 |
| Bluetooth Tester | CBT | 100946 | Aug. 09, 2018 | Aug. 08, 2020 |
| Preamplifier EMCI | EMC 012645 | 980115 | Oct. 12, 2018 | Oct. 11, 2019 |
| Preamplifier EMCI | EMC 184045 | 980116 | Oct. 12, 2018 | Oct. 11, 2019 |
| Preamplifier EMCI | EMC 330H | 980112 | Oct. 12, 2018 | Oct. 11, 2019 |
| Power Meter Anritsu | ML2495A | 1012010 | Sep. 04, 2019 | Sep. 03, 2020 |
| Power Sensor Anritsu | MA2411B | 1315050 | Sep. 04, 2019 | Sep. 03, 2020 |
| RF Coaxial Cable HUBER+SUHNNER | EMC104-SM-SM-8 000&3000 | 140811+170717 | Oct. 12, 2018 | Oct. 11, 2019 |
| RF Coaxial Cable HUBER+SUHNNER | SUCOFLEX 104 | EMC104-SM-SM-1 000(140807) | Oct. 12, 2018 | Oct. 11, 2019 |
| RF Coaxial Cable Worken | 8D-FB | Cable-Ch10-01 | Oct. 12, 2018 | Oct. 11, 2019 |
| Software BV ADT | E3 6.120103 | NA | NA | NA |
| Antenna Tower MF | MFA-440H | NA | NA | NA |
| Turn Table MF | MFT-201SS | NA | NA | NA |
| Antenna Tower & Turn Table Controller MF | MF-7802 | NA | NA | NA |

- Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 10.

4.1.3 Test Procedures

For Radiated Emission below 30 MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz at frequency below 30 MHz.

For Radiated Emission above 30 MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters (for 30 MHz ~ 1 GHz) / 1.5 meters (for above 1 GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detected function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

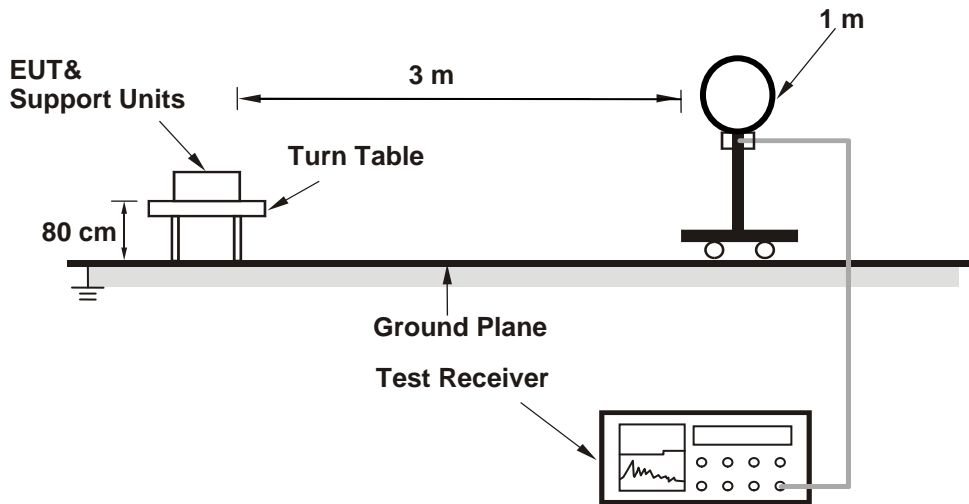
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) or Peak detection (PK) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1 GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is $\geq 1/T$ (Duty cycle < 98 %) or 10 Hz (Duty cycle ≥ 98 %) for Average detection (AV) at frequency above 1 GHz.
(11b: RBW = 1 MHz, VBW = 300 Hz ; 11g: RBW = 1 MHz, VBW = 1 kHz ;
11n (HT20): RBW = 1 MHz, VBW = 1 kHz)
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

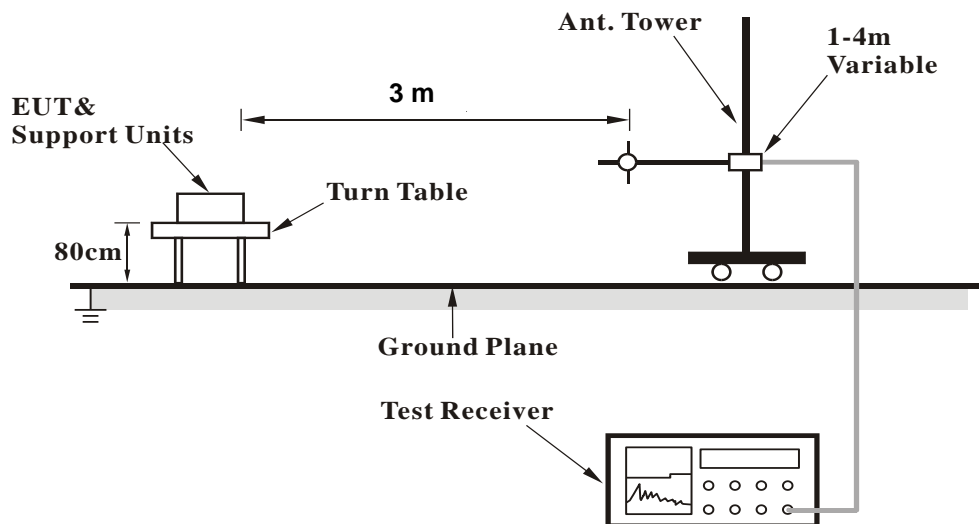
No deviation.

4.1.5 Test Set Up

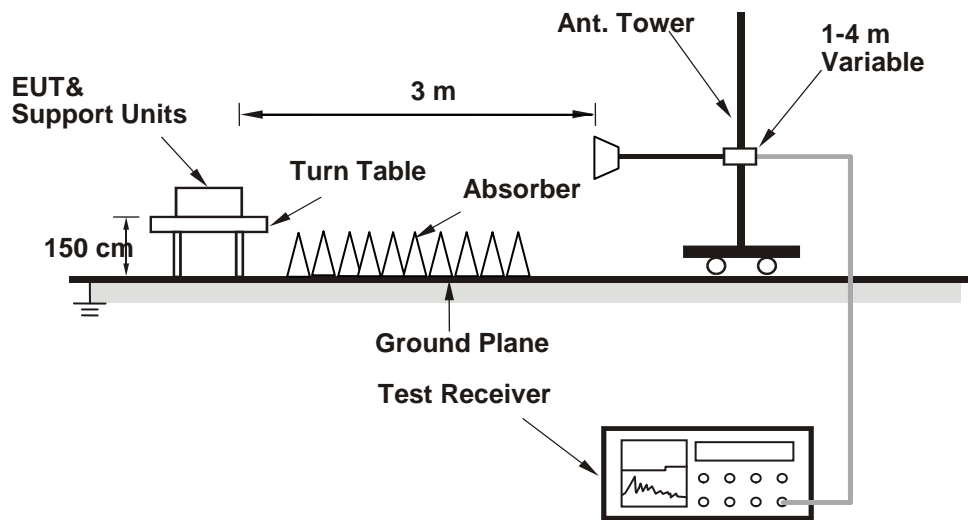
<Radiated Emission below 30 MHz>



<Radiated Emission 30 MHz to 1 GHz>



<Radiated Emission above 1 GHz>



For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.1.6 EUT Operating Conditions

- a. Placed the EUT on a testing table.
- b. Use the software to control the EUT under transmission condition continuously at specific channel frequency.

4.1.7 Test Results

Above 1 GHz Data :
802.11b

| EUT Test Condition | | Measurement Detail | |
|--------------------------|--------------------|--------------------|---------------------------|
| Channel | Channel 1 | Frequency Range | 1 GHz ~ 25 GHz |
| Input Power | 120 Vac, 60 Hz | Detector Function | Peak (PK) Average (AV) |
| Environmental Conditions | 25 deg. C, 65 % RH | Tested By | Tim Chen |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | |
|---|-------------------------|-------------------|---------------|----------------|-------------|---------------------|----------------------|---------|
| Frequency (MHz) | Emission Level (dBuV/m) | Read Level (dBuV) | Factor (dB/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark |
| 2389.94 | 47.93 | 52.93 | -5 | 54 | -6.07 | 198 | 187 | Average |
| 2389.94 | 54.64 | 59.64 | -5 | 74 | -19.36 | 198 | 187 | Peak |
| 2412 | 105.19 | 110.2 | -5.01 | | | 198 | 187 | Average |
| 2412 | 107.55 | 112.56 | -5.01 | | | 198 | 187 | Peak |
| 4824 | 43.63 | 58.01 | -14.38 | 54 | -10.37 | 135 | 145 | Average |
| 4824 | 48.96 | 63.34 | -14.38 | 74 | -25.04 | 135 | 145 | Peak |

| Antenna Polarity & Test Distance: Vertical at 3 m | | | | | | | | |
|---|-------------------------|-------------------|---------------|----------------|-------------|---------------------|----------------------|---------|
| Frequency (MHz) | Emission Level (dBuV/m) | Read Level (dBuV) | Factor (dB/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark |
| 2389.94 | 39.58 | 44.58 | -5 | 54 | -14.42 | 112 | 346 | Average |
| 2389.94 | 49.63 | 54.63 | -5 | 74 | -24.37 | 112 | 346 | Peak |
| 2412 | 95.04 | 100.05 | -5.01 | | | 112 | 346 | Average |
| 2412 | 97.46 | 102.47 | -5.01 | | | 112 | 346 | Peak |
| 4824 | 44.63 | 59.01 | -14.38 | 54 | -9.37 | 126 | 253 | Average |
| 4824 | 49.23 | 63.61 | -14.38 | 74 | -24.77 | 126 | 253 | Peak |

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 2412 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

| EUT Test Condition | | Measurement Detail | |
|--------------------------|--------------------|--------------------|---------------------------|
| Channel | Channel 6 | Frequency Range | 1 GHz ~ 25 GHz |
| Input Power | 120 Vac, 60 Hz | Detector Function | Peak (PK) Average (AV) |
| Environmental Conditions | 25 deg. C, 65 % RH | Tested By | Tim Chen |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | |
|---|-------------------------|-------------------|---------------|----------------|-------------|---------------------|----------------------|---------|
| Frequency (MHz) | Emission Level (dBuV/m) | Read Level (dBuV) | Factor (dB/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark |
| 2361.1 | 44.66 | 49.47 | -4.81 | 54 | -9.34 | 156 | 207 | Average |
| 2361.1 | 52.44 | 57.25 | -4.81 | 74 | -21.56 | 156 | 207 | Peak |
| 2437 | 107.28 | 112.26 | -4.98 | | | 156 | 207 | Average |
| 2437 | 109.96 | 114.94 | -4.98 | | | 156 | 207 | Peak |
| 2483.5 | 41.04 | 45.89 | -4.85 | 54 | -12.96 | 156 | 207 | Average |
| 2483.5 | 50.39 | 55.24 | -4.85 | 74 | -23.61 | 156 | 207 | Peak |
| 4874 | 46.69 | 60.77 | -14.08 | 54 | -7.31 | 100 | 79 | Average |
| 4874 | 48.94 | 63.02 | -14.08 | 74 | -25.06 | 100 | 79 | Peak |

| Antenna Polarity & Test Distance: Vertical at 3 m | | | | | | | | |
|---|-------------------------|-------------------|---------------|----------------|-------------|---------------------|----------------------|---------|
| Frequency (MHz) | Emission Level (dBuV/m) | Read Level (dBuV) | Factor (dB/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark |
| 2390 | 40.51 | 45.51 | -5 | 54 | -13.49 | 100 | 333 | Average |
| 2390 | 51.21 | 56.21 | -5 | 74 | -22.79 | 100 | 333 | Peak |
| 2437 | 99.28 | 104.26 | -4.98 | | | 100 | 333 | Average |
| 2437 | 101.98 | 106.96 | -4.98 | | | 100 | 333 | Peak |
| 2483.5 | 38.48 | 43.33 | -4.85 | 54 | -15.52 | 100 | 333 | Average |
| 2483.5 | 49.75 | 54.6 | -4.85 | 74 | -24.25 | 100 | 333 | Peak |
| 4874 | 50.33 | 64.41 | -14.08 | 54 | -3.67 | 128 | 131 | Average |
| 4874 | 51.8 | 65.88 | -14.08 | 74 | -22.2 | 128 | 131 | Peak |

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 2437 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

| EUT Test Condition | | Measurement Detail | |
|--------------------------|--------------------|--------------------|---------------------------|
| Channel | Channel 11 | Frequency Range | 1 GHz ~ 25 GHz |
| Input Power | 120 Vac, 60 Hz | Detector Function | Peak (PK) Average (AV) |
| Environmental Conditions | 25 deg. C, 65 % RH | Tested By | Tim Chen |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | |
|---|-------------------------|-------------------|---------------|----------------|-------------|---------------------|----------------------|---------|
| Frequency (MHz) | Emission Level (dBuV/m) | Read Level (dBuV) | Factor (dB/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark |
| 2462 | 101.58 | 106.49 | -4.91 | | | 133 | 237 | Average |
| 2462 | 104.31 | 109.22 | -4.91 | | | 133 | 237 | Peak |
| 2483.5 | 44.35 | 49.2 | -4.85 | 54 | -9.65 | 133 | 237 | Average |
| 2483.5 | 52.03 | 56.88 | -4.85 | 74 | -21.97 | 133 | 237 | Peak |
| 4924 | 39.7 | 53.66 | -13.96 | 54 | -14.3 | 124 | 240 | Average |
| 4924 | 47.49 | 61.45 | -13.96 | 74 | -26.51 | 124 | 240 | Peak |
| Antenna Polarity & Test Distance: Vertical at 3 m | | | | | | | | |
| Frequency (MHz) | Emission Level (dBuV/m) | Read Level (dBuV) | Factor (dB/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark |
| 2462 | 94.36 | 99.27 | -4.91 | | | 100 | 237 | Average |
| 2462 | 97.07 | 101.98 | -4.91 | | | 100 | 237 | Peak |
| 2483.5 | 39.91 | 44.76 | -4.85 | 54 | -14.09 | 100 | 237 | Average |
| 2483.5 | 48.83 | 53.68 | -4.85 | 74 | -25.17 | 100 | 237 | Peak |
| 4924 | 39.45 | 53.41 | -13.96 | 54 | -14.55 | 136 | 132 | Average |
| 4924 | 48.49 | 62.45 | -13.96 | 74 | -25.51 | 136 | 132 | Peak |

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 2462 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

802.11g

| EUT Test Condition | | Measurement Detail | |
|--------------------------|--------------------|--------------------|---------------------------|
| Channel | Channel 1 | Frequency Range | 1 GHz ~ 25 GHz |
| Input Power | 120 Vac, 60 Hz | Detector Function | Peak (PK) Average (AV) |
| Environmental Conditions | 25 deg. C, 65 % RH | Tested By | Tim Chen |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | |
|---|-------------------------|-------------------|---------------|----------------|-------------|---------------------|----------------------|---------|
| Frequency (MHz) | Emission Level (dBuV/m) | Read Level (dBuV) | Factor (dB/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark |
| 2390 | 52.59 | 57.59 | -5 | 54 | -1.41 | 161 | 205 | Average |
| 2390 | 67.52 | 72.52 | -5 | 74 | -6.48 | 161 | 205 | Peak |
| 2412 | 101.23 | 106.24 | -5.01 | | | 161 | 205 | Average |
| 2412 | 108.1 | 113.11 | -5.01 | | | 161 | 205 | Peak |
| 4824 | 33.47 | 47.85 | -14.38 | 54 | -20.53 | 167 | 235 | Average |
| 4824 | 44.21 | 58.59 | -14.38 | 74 | -29.79 | 167 | 235 | Peak |
| Antenna Polarity & Test Distance: Vertical at 3 m | | | | | | | | |
| Frequency (MHz) | Emission Level (dBuV/m) | Read Level (dBuV) | Factor (dB/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark |
| 2390 | 45.71 | 50.71 | -5 | 54 | -8.29 | 100 | 229 | Average |
| 2390 | 60.58 | 65.58 | -5 | 74 | -13.42 | 100 | 229 | Peak |
| 2412 | 92.64 | 97.65 | -5.01 | | | 100 | 229 | Average |
| 2412 | 99.53 | 104.54 | -5.01 | | | 100 | 229 | Peak |
| 4824 | 34 | 48.38 | -14.38 | 54 | -20 | 112 | 166 | Average |
| 4824 | 44.75 | 59.13 | -14.38 | 74 | -29.25 | 112 | 166 | Peak |

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 2412 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

| EUT Test Condition | | Measurement Detail | |
|--------------------------|--------------------|--------------------|---------------------------|
| Channel | Channel 6 | Frequency Range | 1 GHz ~ 25 GHz |
| Input Power | 120 Vac, 60 Hz | Detector Function | Peak (PK) Average (AV) |
| Environmental Conditions | 25 deg. C, 65 % RH | Tested By | Tim Chen |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | |
|---|-------------------------|-------------------|---------------|----------------|-------------|---------------------|----------------------|---------|
| Frequency (MHz) | Emission Level (dBuV/m) | Read Level (dBuV) | Factor (dB/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark |
| 2390 | 49.46 | 54.46 | -5 | 54 | -4.54 | 135 | 207 | Average |
| 2390 | 58.89 | 63.89 | -5 | 74 | -15.11 | 135 | 207 | Peak |
| 2437 | 103.3 | 108.28 | -4.98 | | | 135 | 207 | Average |
| 2437 | 110.04 | 115.02 | -4.98 | | | 135 | 207 | Peak |
| 2483.5 | 46.12 | 50.97 | -4.85 | 54 | -7.88 | 135 | 207 | Average |
| 2483.5 | 55.95 | 60.8 | -4.85 | 74 | -18.05 | 135 | 207 | Peak |
| 4874 | 34.23 | 48.31 | -14.08 | 54 | -19.77 | 188 | 216 | Average |
| 4874 | 45.46 | 59.54 | -14.08 | 74 | -28.54 | 188 | 216 | Peak |

| Antenna Polarity & Test Distance: Vertical at 3 m | | | | | | | | |
|---|-------------------------|-------------------|---------------|----------------|-------------|---------------------|----------------------|---------|
| Frequency (MHz) | Emission Level (dBuV/m) | Read Level (dBuV) | Factor (dB/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark |
| 2390 | 42.68 | 47.68 | -5 | 54 | -11.32 | 100 | 331 | Average |
| 2390 | 51.93 | 56.93 | -5 | 74 | -22.07 | 100 | 331 | Peak |
| 2437 | 95.5 | 100.48 | -4.98 | | | 100 | 331 | Average |
| 2437 | 102.54 | 107.52 | -4.98 | | | 100 | 331 | Peak |
| 2483.5 | 39.27 | 44.12 | -4.85 | 54 | -14.73 | 100 | 331 | Average |
| 2483.5 | 48.09 | 52.94 | -4.85 | 74 | -25.91 | 100 | 331 | Peak |
| 4874 | 33.77 | 47.85 | -14.08 | 54 | -20.23 | 103 | 166 | Average |
| 4874 | 47.12 | 61.2 | -14.08 | 74 | -26.88 | 103 | 166 | Peak |

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 2437 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

| EUT Test Condition | | Measurement Detail | |
|--------------------------|--------------------|--------------------|---------------------------|
| Channel | Channel 11 | Frequency Range | 1 GHz ~ 25 GHz |
| Input Power | 120 Vac, 60 Hz | Detector Function | Peak (PK) Average (AV) |
| Environmental Conditions | 25 deg. C, 65 % RH | Tested By | Tim Chen |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | |
|---|-------------------------|-------------------|---------------|----------------|-------------|---------------------|----------------------|---------|
| Frequency (MHz) | Emission Level (dBuV/m) | Read Level (dBuV) | Factor (dB/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark |
| 2462 | 99.43 | 104.34 | -4.91 | | | 133 | 238 | Average |
| 2462 | 106.56 | 111.47 | -4.91 | | | 133 | 238 | Peak |
| 2483.5 | 51.24 | 56.09 | -4.85 | 54 | -2.76 | 133 | 238 | Average |
| 2483.5 | 64.12 | 68.97 | -4.85 | 74 | -9.88 | 133 | 238 | Peak |
| 4924 | 34.26 | 48.22 | -13.96 | 54 | -19.74 | 186 | 223 | Average |
| 4924 | 45.18 | 59.14 | -13.96 | 74 | -28.82 | 186 | 223 | Peak |

| Antenna Polarity & Test Distance: Vertical at 3 m | | | | | | | | |
|---|-------------------------|-------------------|---------------|----------------|-------------|---------------------|----------------------|---------|
| Frequency (MHz) | Emission Level (dBuV/m) | Read Level (dBuV) | Factor (dB/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark |
| 2462 | 91.99 | 96.9 | -4.91 | | | 100 | 236 | Average |
| 2462 | 99.43 | 104.34 | -4.91 | | | 100 | 236 | Peak |
| 2483.5 | 44.79 | 49.64 | -4.85 | 54 | -9.21 | 100 | 236 | Average |
| 2483.5 | 57.15 | 62 | -4.85 | 74 | -16.85 | 100 | 236 | Peak |
| 4924 | 33.14 | 47.1 | -13.96 | 54 | -20.86 | 108 | 166 | Average |
| 4924 | 44.27 | 58.23 | -13.96 | 74 | -29.73 | 108 | 166 | Peak |

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 2462 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

802.11n (HT20)

| EUT Test Condition | | Measurement Detail | |
|--------------------------|--------------------|--------------------|---------------------------|
| Channel | Channel 1 | Frequency Range | 1 GHz ~ 25 GHz |
| Input Power | 120 Vac, 60 Hz | Detector Function | Peak (PK) Average (AV) |
| Environmental Conditions | 25 deg. C, 65 % RH | Tested By | Tim Chen |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | |
|---|-------------------------|-------------------|---------------|----------------|-------------|---------------------|----------------------|---------|
| Frequency (MHz) | Emission Level (dBuV/m) | Read Level (dBuV) | Factor (dB/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark |
| 2390 | 51.93 | 56.93 | -5 | 54 | -2.07 | 159 | 206 | Average |
| 2390 | 66.57 | 71.57 | -5 | 74 | -7.43 | 159 | 206 | Peak |
| 2412 | 100.77 | 105.78 | -5.01 | | | 159 | 206 | Average |
| 2412 | 107.47 | 112.48 | -5.01 | | | 159 | 206 | Peak |
| 4824 | 32.77 | 47.15 | -14.38 | 54 | -21.23 | 186 | 257 | Average |
| 4824 | 44.34 | 58.72 | -14.38 | 74 | -29.66 | 186 | 257 | Peak |
| Antenna Polarity & Test Distance: Vertical at 3 m | | | | | | | | |
| Frequency (MHz) | Emission Level (dBuV/m) | Read Level (dBuV) | Factor (dB/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark |
| 2390 | 45.03 | 50.03 | -5 | 54 | -8.97 | 100 | 339 | Average |
| 2390 | 59.58 | 64.58 | -5 | 74 | -14.42 | 100 | 339 | Peak |
| 2412 | 92.39 | 97.4 | -5.01 | | | 100 | 339 | Average |
| 2412 | 98.75 | 103.76 | -5.01 | | | 100 | 339 | Peak |
| 4824 | 34.3 | 48.68 | -14.38 | 54 | -19.7 | 116 | 173 | Average |
| 4824 | 45.13 | 59.51 | -14.38 | 74 | -28.87 | 116 | 173 | Peak |

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 2412 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

| EUT Test Condition | | Measurement Detail | |
|--------------------------|--------------------|--------------------|---------------------------|
| Channel | Channel 6 | Frequency Range | 1 GHz ~ 25 GHz |
| Input Power | 120 Vac, 60 Hz | Detector Function | Peak (PK) Average (AV) |
| Environmental Conditions | 25 deg. C, 65 % RH | Tested By | Tim Chen |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | |
|---|-------------------------|-------------------|---------------|----------------|-------------|---------------------|----------------------|---------|
| Frequency (MHz) | Emission Level (dBuV/m) | Read Level (dBuV) | Factor (dB/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark |
| 2390 | 48.71 | 53.71 | -5 | 54 | -5.29 | 159 | 206 | Average |
| 2390 | 60.66 | 65.66 | -5 | 74 | -13.34 | 159 | 206 | Peak |
| 2437 | 103.77 | 108.75 | -4.98 | | | 159 | 206 | Average |
| 2437 | 110.54 | 115.52 | -4.98 | | | 159 | 206 | Peak |
| 2483.5 | 44.33 | 49.18 | -4.85 | 54 | -9.67 | 159 | 206 | Average |
| 2483.5 | 56.86 | 61.71 | -4.85 | 74 | -17.14 | 159 | 206 | Peak |
| 4874 | 32.03 | 46.11 | -14.08 | 54 | -21.97 | 107 | 139 | Average |
| 4874 | 41.98 | 56.06 | -14.08 | 74 | -32.02 | 107 | 139 | Peak |

| Antenna Polarity & Test Distance: Vertical at 3 m | | | | | | | | |
|---|-------------------------|-------------------|---------------|----------------|-------------|---------------------|----------------------|---------|
| Frequency (MHz) | Emission Level (dBuV/m) | Read Level (dBuV) | Factor (dB/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark |
| 2390 | 42.21 | 47.21 | -5 | 54 | -11.79 | 100 | 332 | Average |
| 2390 | 53.24 | 58.24 | -5 | 74 | -20.76 | 100 | 332 | Peak |
| 2437 | 95.65 | 100.63 | -4.98 | | | 100 | 332 | Average |
| 2437 | 102.46 | 107.44 | -4.98 | | | 100 | 332 | Peak |
| 2483.5 | 38.94 | 43.79 | -4.85 | 54 | -15.06 | 100 | 332 | Average |
| 2483.5 | 48.57 | 53.42 | -4.85 | 74 | -25.43 | 100 | 332 | Peak |
| 4874 | 32.65 | 46.73 | -14.08 | 54 | -21.35 | 129 | 114 | Average |
| 4874 | 43.2 | 57.28 | -14.08 | 74 | -30.8 | 129 | 114 | Peak |

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 2437 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

| EUT Test Condition | | Measurement Detail | |
|--------------------------|--------------------|--------------------|---------------------------|
| Channel | Channel 11 | Frequency Range | 1 GHz ~ 25 GHz |
| Input Power | 120 Vac, 60 Hz | Detector Function | Peak (PK) Average (AV) |
| Environmental Conditions | 25 deg. C, 65 % RH | Tested By | Tim Chen |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | |
|---|-------------------------|-------------------|---------------|----------------|-------------|---------------------|----------------------|---------|
| Frequency (MHz) | Emission Level (dBuV/m) | Read Level (dBuV) | Factor (dB/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark |
| 2462 | 95.89 | 100.8 | -4.91 | | | 133 | 349 | Average |
| 2462 | 103.2 | 108.11 | -4.91 | | | 133 | 349 | Peak |
| 2483.5 | 45.85 | 50.7 | -4.85 | 54 | -8.15 | 133 | 349 | Average |
| 2483.5 | 60.32 | 65.17 | -4.85 | 74 | -13.68 | 133 | 349 | Peak |
| 4924 | 33.67 | 47.63 | -13.96 | 54 | -20.33 | 113 | 224 | Average |
| 4924 | 44.78 | 58.74 | -13.96 | 74 | -29.22 | 113 | 224 | Peak |
| Antenna Polarity & Test Distance: Vertical at 3 m | | | | | | | | |
| Frequency (MHz) | Emission Level (dBuV/m) | Read Level (dBuV) | Factor (dB/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark |
| 2462 | 93.58 | 98.49 | -4.91 | | | 100 | 339 | Average |
| 2462 | 100.26 | 105.17 | -4.91 | | | 100 | 339 | Peak |
| 2483.5 | 45.69 | 50.54 | -4.85 | 54 | -8.31 | 100 | 339 | Average |
| 2483.5 | 60.7 | 65.55 | -4.85 | 74 | -13.3 | 100 | 339 | Peak |
| 4924 | 34.5 | 48.46 | -13.96 | 54 | -19.5 | 167 | 209 | Average |
| 4924 | 45.1 | 59.06 | -13.96 | 74 | -28.9 | 167 | 209 | Peak |

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 2462 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

9 kHz ~ 30 MHz Data:

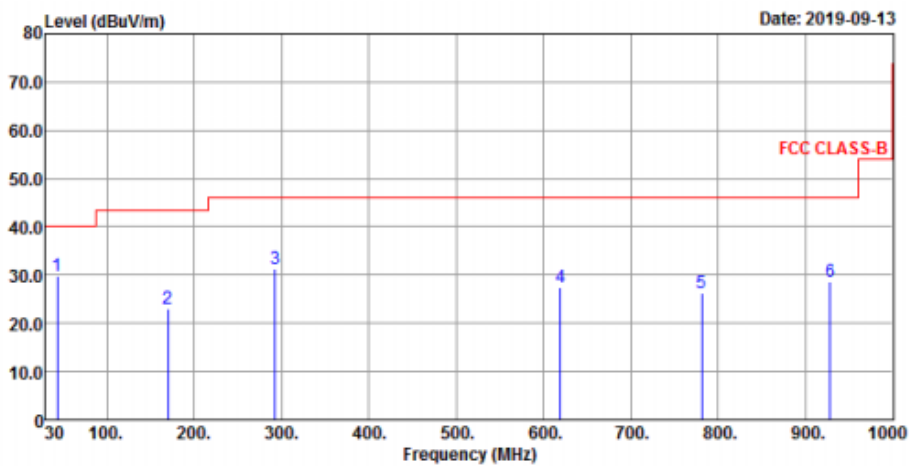
The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

30 MHz ~ 1 GHz Worst-Case Data:

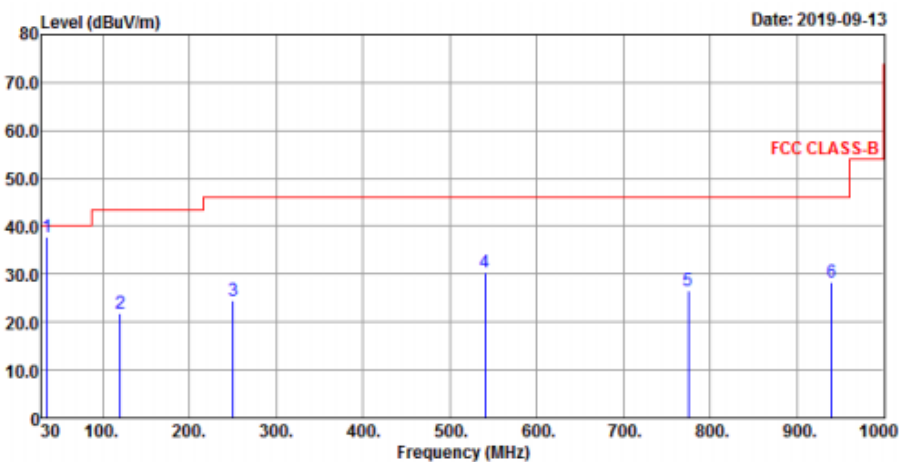
802.11g

| EUT Test Condition | | Measurement Detail | |
|--------------------------|--------------------|--------------------|------------------------------|
| Channel | Channel 1 | Frequency Range | 30 MHz ~ 1 GHz |
| Input Power | 120 Vac, 60 Hz | Detector Function | Peak (PK) Quasi-peak (QP) |
| Environmental Conditions | 25 deg. C, 65 % RH | Tested By | Tim Chen |

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m

| Frequency (MHz) | Emission Level (dBuV/m) | Read Level (dBuV) | Factor (dB/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark |
|-----------------|-------------------------|-------------------|---------------|----------------|-------------|---------------------|----------------------|--------|
| 43.58 | 29.75 | 46.7 | -16.95 | 40 | -10.25 | 172 | 166 | Peak |
| 169.68 | 22.93 | 40.55 | -17.62 | 43.5 | -20.57 | 203 | 144 | Peak |
| 292.87 | 31.38 | 48.14 | -16.76 | 46 | -14.62 | 205 | 225 | Peak |
| 619.76 | 27.36 | 35.74 | -8.38 | 46 | -18.64 | 173 | 97 | Peak |
| 780.78 | 26.37 | 30.93 | -4.56 | 46 | -19.63 | 167 | 204 | Peak |
| 928.22 | 28.57 | 31.52 | -2.95 | 46 | -17.43 | 173 | 239 | Peak |

Antenna Polarity & Test Distance: Vertical at 3 m

| Frequency (MHz) | Emission Level (dBuV/m) | Read Level (dBuV) | Factor (dB/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (cm) | Table Angle (Degree) | Remark |
|-----------------|-------------------------|-------------------|---------------|----------------|-------------|---------------------|----------------------|--------|
| 35.82 | 37.92 | 55.09 | -17.17 | 40 | -2.08 | 103 | 155 | Peak |
| 120.21 | 21.81 | 41.13 | -19.32 | 43.5 | -21.69 | 121 | 59 | Peak |
| 250.19 | 24.44 | 42.04 | -17.6 | 46 | -21.56 | 143 | 307 | Peak |
| 540.22 | 30.51 | 40.78 | -10.27 | 46 | -15.49 | 115 | 192 | Peak |
| 774.96 | 26.59 | 31.06 | -4.47 | 46 | -19.41 | 108 | 27 | Peak |
| 939.86 | 28.38 | 31.16 | -2.78 | 46 | -17.62 | 100 | 335 | Peak |

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value.
- The emission levels of other frequencies were very low against the limit.

4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

| Frequency (MHz) | Conducted Limit (dBuV) | |
|-----------------|------------------------|---------|
| | Quasi-Peak | Average |
| 0.15 - 0.5 | 66 - 56 | 56 - 46 |
| 0.50 - 5.0 | 56 | 46 |
| 5.0 - 30.0 | 60 | 50 |

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

4.2.2 Test Instruments

| Description & Manufacturer | Model No. | Serial No. | Date of Calibration | Due Date of Calibration |
|---|--------------------------|----------------|---------------------|-------------------------|
| Test Receiver ROHDE & SCHWARZ | ESCI | 100613 | Dec. 10, 2018 | Dec. 09, 2019 |
| RF signal cable Woken | 5D-FB | Cable-cond1-01 | Sep. 05, 2019 | Sep. 04, 2020 |
| LISN ROHDE & SCHWARZ (EUT) | ENV216 | 101826 | Feb. 21, 2019 | Feb. 20, 2020 |
| LISN ROHDE & SCHWARZ (Peripheral) | ESH3-Z5 | 100311 | Aug. 22, 2019 | Aug. 21, 2020 |
| Software ADT | BV ADT_Cond_ V7.3.7.4 | NA | NA | NA |

- Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. The test was performed in HwaYa Shielded Room 1.
 3. The VCCI Site Registration No. is C-12040.

4.2.3 Test Procedures

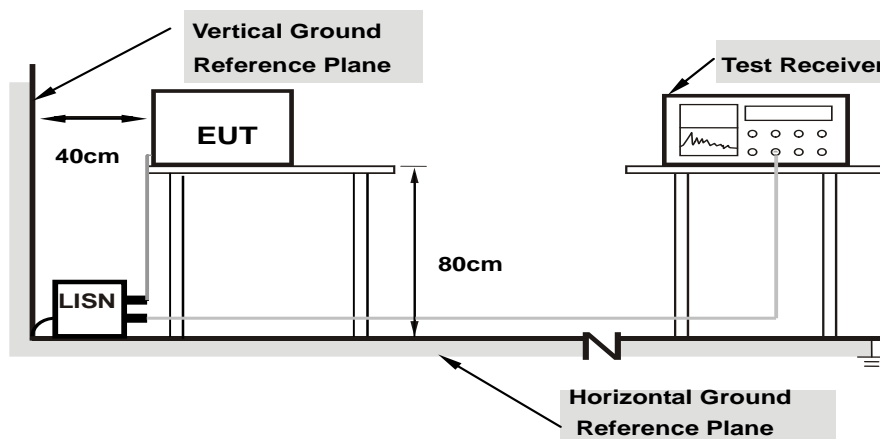
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/50 uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit – 20 dB) was not recorded.

Note: The resolution bandwidth and video bandwidth of test receiver is 9 kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15 MHz – 30 MHz.

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



Note: 1.Support units were connected to second LISN.

For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.2.6 EUT Operating Conditions

- a. Placed the EUT on a testing table.
- b. Use the software to control the EUT under transmission condition continuously at specific channel frequency.

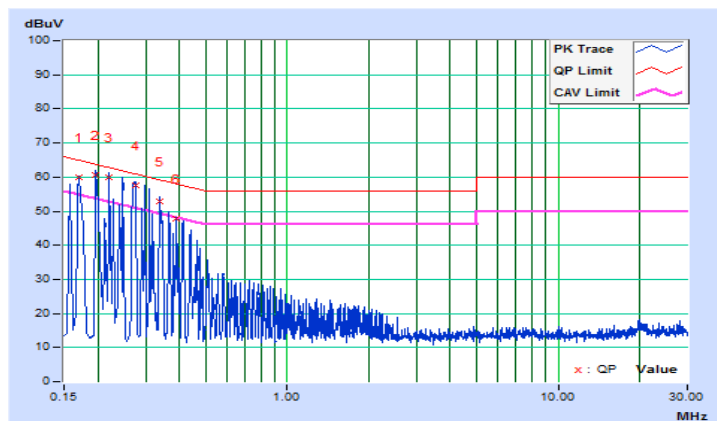
4.2.7 Test Results

| | | | |
|-----------------|----------------|--|--------------------------------------|
| Frequency Range | 150kHz ~ 30MHz | Detector Function & Resolution Bandwidth | Quasi-Peak (QP) / Average (AV), 9kHz |
| Input Power | 120Vac, 60Hz | Environmental Conditions | 25°C, 65%RH |
| Tested by | Thomas Wei | Test Date | 2019/9/16 |

| Phase Of Power : Line (L) | | | | | | | | | | |
|---------------------------|-----------------|------------------------|----------------------|--------------|-----------------------|--------------|--------------|--------------|--------------|--------------|
| No | Frequency (MHz) | Correction Factor (dB) | Reading Value (dBuV) | | Emission Level (dBuV) | | Limit (dBuV) | | Margin (dB) | |
| | | | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.16955 | 9.67 | 50.41 | 37.46 | 60.08 | 47.13 | 64.98 | 54.98 | -4.90 | -7.85 |
| 2 | 0.19692 | 9.66 | 51.05 | 35.62 | 60.71 | 45.28 | 63.74 | 53.74 | -3.03 | -8.46 |
| 3 | 0.22038 | 9.66 | 50.33 | 36.52 | 59.99 | 46.18 | 62.80 | 52.80 | -2.81 | -6.62 |
| 4 | 0.27480 | 9.67 | 48.07 | 32.74 | 57.74 | 42.41 | 60.97 | 50.97 | -3.23 | -8.56 |
| 5 | 0.33768 | 9.68 | 43.06 | 30.62 | 52.74 | 40.30 | 59.26 | 49.26 | -6.52 | -8.96 |
| 6 | 0.38851 | 9.69 | 37.96 | 21.31 | 47.65 | 31.00 | 58.10 | 48.10 | -10.45 | -17.10 |

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

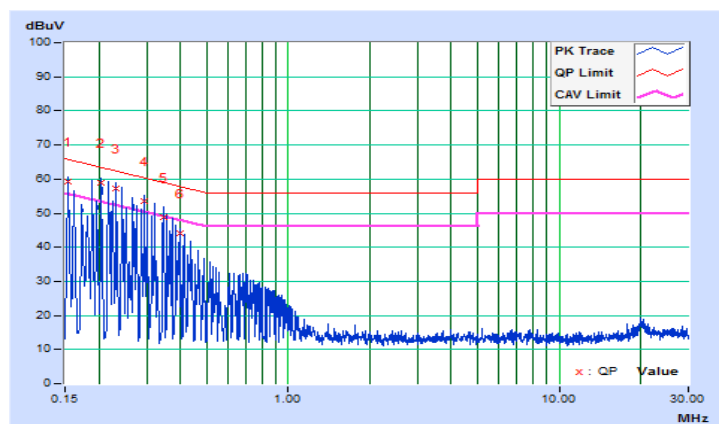


| | | | |
|-----------------|----------------|--|--------------------------------------|
| Frequency Range | 150kHz ~ 30MHz | Detector Function & Resolution Bandwidth | Quasi-Peak (QP) / Average (AV), 9kHz |
| Input Power | 120Vac, 60Hz | Environmental Conditions | 25°C, 65%RH |
| Tested by | Thomas Wei | Test Date | 2019/9/16 |

| Phase Of Power : Neutral (N) | | | | | | | | | | |
|------------------------------|-----------------|------------------------|----------------------|-------|-----------------------|-------|--------------|-------|-------------|--------|
| No | Frequency (MHz) | Correction Factor (dB) | Reading Value (dBuV) | | Emission Level (dBuV) | | Limit (dBuV) | | Margin (dB) | |
| | | | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.15391 | 9.64 | 49.46 | 37.12 | 59.10 | 46.76 | 65.79 | 55.79 | -6.69 | -9.03 |
| 2 | 0.20474 | 9.64 | 49.37 | 33.91 | 59.01 | 43.55 | 63.42 | 53.42 | -4.41 | -9.87 |
| 3 | 0.23211 | 9.64 | 47.67 | 34.41 | 57.31 | 44.05 | 62.37 | 52.37 | -5.06 | -8.32 |
| 4 | 0.29467 | 9.65 | 43.91 | 31.19 | 53.56 | 40.84 | 60.39 | 50.39 | -6.83 | -9.55 |
| 5 | 0.34550 | 9.65 | 39.28 | 26.18 | 48.93 | 35.83 | 59.07 | 49.07 | -10.14 | -13.24 |
| 6 | 0.40024 | 9.66 | 34.39 | 25.39 | 44.05 | 35.05 | 57.85 | 47.85 | -13.80 | -12.80 |

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

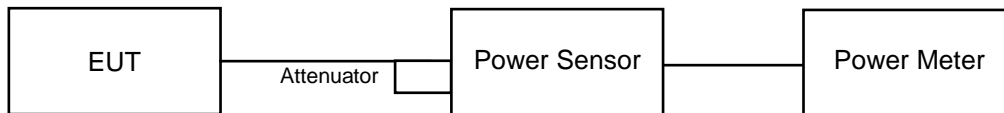


4.3 Conducted Output Power Measurement

4.3.1 Limits of Conducted Output Power Measurement

For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30 dBm)

4.3.2 Test Setup



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedures

A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor. Record the power level.

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 Test Results

802.11b

| Channel | Frequency (MHz) | Peak Power (mW) | Peak Power (dBm) | Limit (dBm) | Pass / Fail |
|---------|-----------------|-----------------|------------------|-------------|-------------|
| 1 | 2412 | 74.302 | 18.71 | 30 | Pass |
| 6 | 2437 | 143.880 | 21.58 | 30 | Pass |
| 11 | 2462 | 57.148 | 17.57 | 30 | Pass |

802.11g

| Channel | Frequency (MHz) | Peak Power (mW) | Peak Power (dBm) | Limit (dBm) | Pass / Fail |
|---------|-----------------|-----------------|------------------|-------------|-------------|
| 1 | 2412 | 175.388 | 22.44 | 30 | Pass |
| 6 | 2437 | 222.844 | 23.48 | 30 | Pass |
| 11 | 2462 | 189.671 | 22.78 | 30 | Pass |

802.11n (HT20)

| Channel | Frequency (MHz) | Peak Power (mW) | Peak Power (dBm) | Limit (dBm) | Pass / Fail |
|---------|-----------------|-----------------|------------------|-------------|-------------|
| 1 | 2412 | 174.582 | 22.42 | 30 | Pass |
| 6 | 2437 | 228.034 | 23.58 | 30 | Pass |
| 11 | 2462 | 173.380 | 22.39 | 30 | Pass |

5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

Appendix – Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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Web Site: www.bureauveritas-adt.com

The address and road map of all our labs can be found in our web site also.

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