

## FCC Test Report (Radiated Test)

**Report No.:** RF151228C18-3

**FCC ID:** VPYLB1DX

**Test Model:** 1DX

**Received Date:** Dec. 28, 2015

**Test Date:** Jan. 04 ~ Jan. 06, 2016

**Issued Date:** Jan. 13, 2016

**Applicant:** Murata Manufacturing Co., Ltd.

**Address:** 10-1, Higashikotari 1-chome, Nagaokakyo-shi, Kyoto 617-8555, Japan

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

**Lab Address:** No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan

**Test Location:** No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City  
33383, TAIWAN (R.O.C.)



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## Table of Contents

|                                                                  |           |
|------------------------------------------------------------------|-----------|
| <b>Release Control Record .....</b>                              | <b>3</b>  |
| <b>1 Certificate of Conformity.....</b>                          | <b>4</b>  |
| <b>2 Summary of Test Results .....</b>                           | <b>5</b>  |
| 2.1 Measurement Uncertainty .....                                | 5         |
| 2.2 Modification Record .....                                    | 5         |
| <b>3 General Information.....</b>                                | <b>6</b>  |
| 3.1 General Description of EUT .....                             | 6         |
| 3.2 Description of Test Modes .....                              | 7         |
| 3.2.1 Test Mode Applicability and Tested Channel Detail.....     | 8         |
| 3.3 Description of Support Units .....                           | 9         |
| 3.3.1 Configuration of System under Test .....                   | 9         |
| 3.4 General Description of Applied Standards .....               | 9         |
| <b>4 Test Types and Results .....</b>                            | <b>10</b> |
| 4.1 Radiated Emission and Bandedge Measurement.....              | 10        |
| 4.1.1 Limits of Radiated Emission and Bandedge Measurement ..... | 10        |
| 4.1.2 Test Instruments .....                                     | 11        |
| 4.1.3 Test Procedures.....                                       | 12        |
| 4.1.4 Deviation from Test Standard .....                         | 12        |
| 4.1.5 Test Set Up .....                                          | 13        |
| 4.1.6 EUT Operating Conditions.....                              | 13        |
| 4.1.7 Test Results .....                                         | 14        |
| <b>5 Pictures of Test Arrangements.....</b>                      | <b>24</b> |
| <b>Appendix – Information on the Testing Laboratories .....</b>  | <b>25</b> |



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### Release Control Record

| Issue No.     | Description       | Date Issued   |
|---------------|-------------------|---------------|
| RF151228C18-3 | Original release. | Jan. 13, 2016 |

## 1 Certificate of Conformity

**Product:** Communication Module

**Brand:** MURATA

**Test Model:** 1DX

**Sample Status:** Engineering sample

**Applicant:** Murata Manufacturing Co., Ltd.

**Test Date:** Jan. 04 ~ Jan. 06, 2016

**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 EMC characteristics under the conditions specified in this report.

**Prepared by :** Polly Chien, **Date:** Jan. 13, 2016  
Polly Chien / Specialist

**Approved by :** Ken Liu, **Date:** Jan. 13, 2016  
Ken Liu / Senior Manager

## 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   | Refer to Note                                                                     |
| 15.205 /<br>15.209 /<br>15.247(d)              | Radiated Emissions and Band Edge Measurement | Pass   | Meet the requirement of limit.<br>Minimum passing margin is -1.6dB at 2483.50MHz. |
| 15.247(d)                                      | Antenna Port Emission                        | Pass   | Refer to Note                                                                     |
| 15.247(a)(2)                                   | 6dB bandwidth                                | Pass   | Refer to Note                                                                     |
| 15.247(b)                                      | Conducted power                              | Pass   | Refer to Note                                                                     |
| 15.247(e)                                      | Power Spectral Density                       | Pass   | Refer to Note                                                                     |
| 15.203                                         | Antenna Requirement                          | Pass   | No antenna connector is used.                                                     |

Note: For other test items were recorded in Report No.: RF151228C18.

### 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       | Expended Uncertainty (k=2) (±) |
|--------------------------------|-----------------|--------------------------------|
| Radiated Emissions up to 1 GHz | 30MHz ~ 200MHz  | 3.63 dB                        |
|                                | 200MHz ~1000MHz | 3.64 dB                        |
| Radiated Emissions above 1 GHz | 1GHz ~ 18GHz    | 2.29 dB                        |
|                                | 18GHz ~ 40GHz   | 2.29 dB                        |

### 2.2 Modification Record

There were no modifications required for compliance.

### 3 General Information

#### 3.1 General Description of EUT

|                       |                                                                                                                        |
|-----------------------|------------------------------------------------------------------------------------------------------------------------|
| Product               | Communication Module                                                                                                   |
| Brand                 | MURATA                                                                                                                 |
| Test Model            | 1DX                                                                                                                    |
| Status of EUT         | Engineering sample                                                                                                     |
| Power Supply Rating   | 3.6Vdc VBAT and 3.3Vdc VDDIO                                                                                           |
| Modulation Type       | CCK, DQPSK, DBPSK for DSSS<br>64QAM, 16QAM, QPSK, BPSK for OFDM                                                        |
| Modulation Technology | DSSS, OFDM                                                                                                             |
| Transfer Rate         | 802.11b: 11.0/ 5.5/ 2.0/ 1.0Mbps<br>802.11g: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps<br>802.11n: up to 65Mbps |
| Operating Frequency   | 2412 ~ 2462MHz                                                                                                         |
| Number of Channel     | 11 for 802.11b, 802.11g, 802.11n (HT20)                                                                                |
| Output Power          | 173.780mW                                                                                                              |
| Antenna Type          | Refer to note as below                                                                                                 |
| Antenna Connector     | Refer to note as below                                                                                                 |
| Accessory Device      | NA                                                                                                                     |
| Data Cable Supplied   | NA                                                                                                                     |

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 following antenna was provided to the EUT.

|                                        |                  |         |  |
|----------------------------------------|------------------|---------|--|
| Ant. Type                              | Monopole Antenna |         |  |
| Connector Type                         | NA               |         |  |
| Antenna Gain(dBi) including cable loss |                  |         |  |
| 2400MHz                                | 2442MHz          | 2484MHz |  |
| 0.3                                    | 0.6              | 0.5     |  |

\* The maximum antenna gain is chosen for final test.

3. The above EUT information is declared by manufacturer and for more detailed features description, please refer 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 | Channel | Frequency |
|---------|-----------|---------|-----------|
| 1       | 2412MHz   | 7       | 2442MHz   |
| 2       | 2417MHz   | 8       | 2447MHz   |
| 3       | 2422MHz   | 9       | 2452MHz   |
| 4       | 2427MHz   | 10      | 2457MHz   |
| 5       | 2432MHz   | 11      | 2462MHz   |
| 6       | 2437MHz   |         |           |

### 3.2.1 Test Mode Applicability and Tested Channel Detail

| EUT<br>CONFIGURE<br>MODE | APPLICABLE TO |       | DESCRIPTION |
|--------------------------|---------------|-------|-------------|
|                          | RE $\geq$ 1G  | RE<1G |             |
| -                        | √             | √     | -           |

Where **RE $\geq$ 1G**: Radiated Emission above 1GHz & Bandedge Measurement **RE<1G**: Radiated Emission below 1GHz

**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 1GHz):**

- ☒ 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<br>CONFIGURE<br>MODE | MODE           | AVAILABLE<br>CHANNEL | TESTED<br>CHANNEL | MODULATION<br>TECHNOLOGY | MODULATION<br>TYPE | DATA RATE<br>(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 1GHz):**

- ☒ 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<br>CONFIGURE<br>MODE | MODE    | AVAILABLE<br>CHANNEL | TESTED<br>CHANNEL | MODULATION<br>TECHNOLOGY | MODULATION<br>TYPE | DATA RATE<br>(Mbps) |
|--------------------------|---------|----------------------|-------------------|--------------------------|--------------------|---------------------|
| -                        | 802.11g | 1 to 11              | 1                 | OFDM                     | BPSK               | 6.0                 |

#### **Test Condition:**

| APPLICABLE TO | ENVIRONMENTAL CONDITIONS | INPUT POWER (SYSTEM) | TESTED BY          |
|---------------|--------------------------|----------------------|--------------------|
| RE $\geq$ 1G  | 25deg. C, 65%RH          | 120Vac, 60Hz         | Tank Wu, Bayu Chen |
| RE<1G         | 25deg. C, 65%RH          | 120Vac, 60Hz         | Bayu Chen          |

### 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.

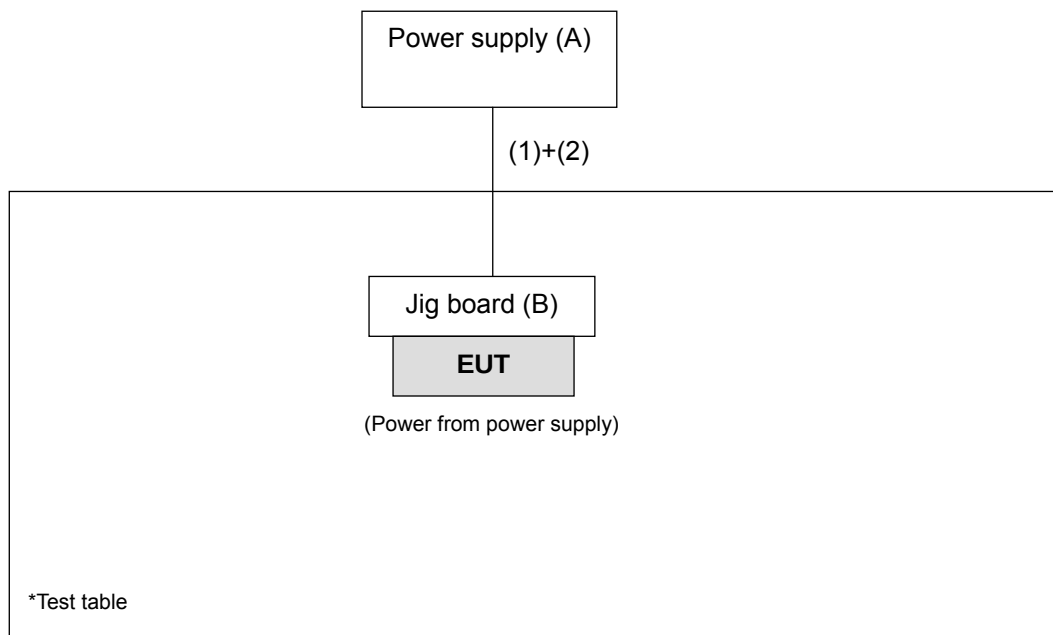
| ID | Product      | Brand   | Model No.  | Serial No. | FCC ID | Remarks                  |
|----|--------------|---------|------------|------------|--------|--------------------------|
| A. | Power Supply | Topward | 6603D      | 700637     | NA     | -                        |
| B. | Jig board    | MURATA  | P2ML4452-1 | 1~         | NA     | Provided by manufacturer |

Note:

1. All power cords of the above support units are non-shielded (1.8m).
2. Item A was placed under the test table.

| ID | Descriptions   | Qty. | Length (m) | Shielding (Yes/No) | Cores (Qty.) | Remarks                  |
|----|----------------|------|------------|--------------------|--------------|--------------------------|
| 1. | DC power cable | 4    | 1          | -                  | 0            | Provided by manufacturer |
| 2. | DC power cable | 4    | 1.8        | -                  | 0            | -                        |

#### 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)**  
**558074 D01 DTS Meas Guidance v03r04**  
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 20dB 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 1000MHz, 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 20dB 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<br>ROHDE & SCHWARZ     | ESCS30                       | 100289                           | Dec. 23, 2015       | Dec. 22, 2016           |
| Spectrum Analyzer<br>ROHDE & SCHWARZ | FSP40                        | 100269                           | Mar. 30, 2015       | Mar. 29, 2016           |
| BILOG Antenna<br>SCHWARZBECK         | VULB9168                     | 9168-150                         | Feb. 02, 2015       | Feb. 01, 2016           |
| HORN Antenna<br>SCHWARZBECK          | BBHA 9120 D                  | 9120D-1169                       | Feb. 09, 2015       | Feb. 08, 2016           |
| HORN Antenna<br>SCHWARZBECK          | BBHA 9170                    | BBHA9170241                      | Feb. 09, 2015       | Feb. 08, 2016           |
| Preamplifier<br>Agilent              | 8449B                        | 3008A01911                       | Aug. 09, 2015       | Aug. 08, 2016           |
| Preamplifier<br>Agilent              | 8447D                        | 2944A10638                       | Aug. 09, 2015       | Aug. 08, 2016           |
| RF signal cable<br>HUBER+SUHNER      | SUCOFLEX 104                 | CABLE-CH9-02(30<br>9222 +248780) | Aug. 09, 2015       | Aug. 08, 2016           |
| RF signal cable<br>HUBER+SUHNER      | SUCOFLEX 104                 | CABLE-CH9-03(27<br>4092)         | Aug. 09, 2015       | Aug. 08, 2016           |
| RF signal cable<br>Woken             | 8D-FB                        | Cable-CH9-01                     | Aug. 11, 2015       | Aug. 10, 2016           |
| Software<br>BV ADT                   | ADT_Radiated_<br>V7.6.15.9.4 | NA                               | NA                  | NA                      |
| Antenna Tower<br>EMCO                | 2070/2080                    | 512.835.4684                     | NA                  | NA                      |
| Turn Table<br>EMCO                   | 2087-2.03                    | NA                               | NA                  | NA                      |
| Antenna Tower & Turn<br>BV ADT       | AT100                        | AT93021705                       | NA                  | NA                      |
| Turn Table<br>BV ADT                 | TT100                        | TT93021705                       | NA                  | NA                      |
| Turn Table Controller<br>BV ADT      | SC100                        | SC93021705                       | 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 9.
  3. The horn antenna and preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
  4. The FCC Site Registration No. is 215374.
  5. The IC Site Registration No. is IC 7450F-9.

#### 4.1.3 Test Procedures

- a. The EUT was placed on the top of a rotating table 0.8 meters (for below 1GHz) / 1.5 meters (for above 1GHz) 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 detect 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:**

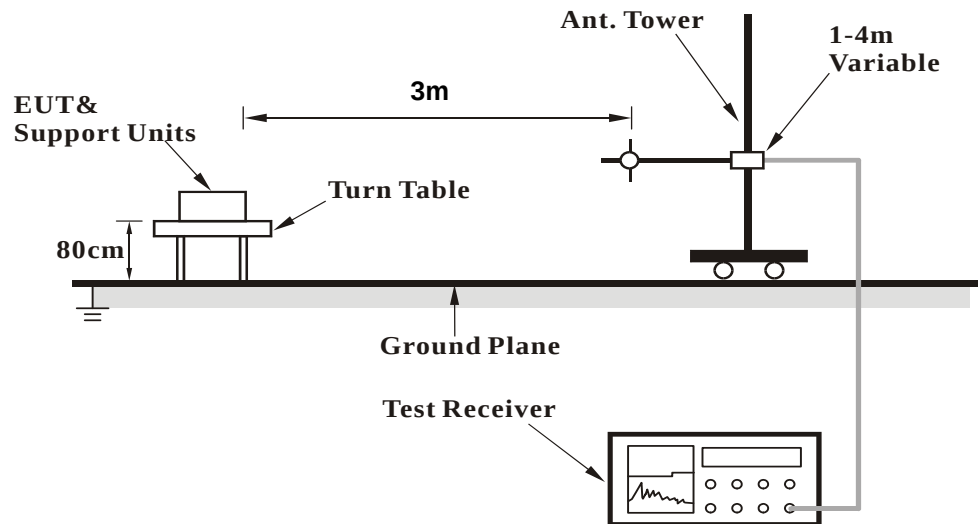
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average (Duty cycle < 98%) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor ( $10 \log(1/\text{duty cycle})$ ).
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (Duty cycle  $\geq 98\%$ ) for Average detection (AV) at frequency above 1GHz.
5. All modes of operation were investigated and the worst-case emissions are reported.

#### 4.1.4 Deviation from Test Standard

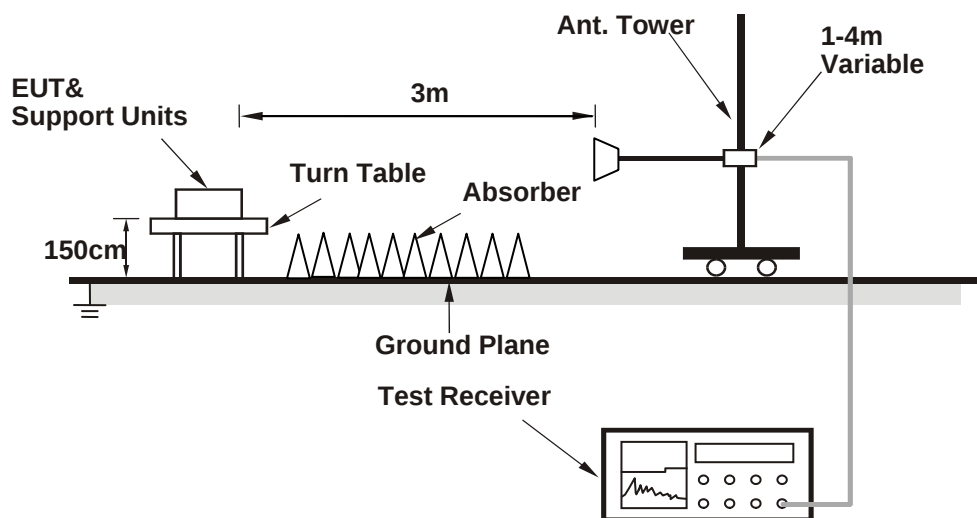
No deviation.

#### 4.1.5 Test Set Up

##### <Frequency Range below 1GHz>



##### <Frequency Range above 1GHz>



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

#### 4.1.6 EUT Operating Conditions

Set the EUT under transmission condition continuously at specific channel frequency.

#### 4.1.7 Test Results

Above 1GHz Worst-case Data :

802.11b

|                 |              |                      |              |
|-----------------|--------------|----------------------|--------------|
| CHANNEL         | TX Channel 1 | DETECTOR<br>FUNCTION | Peak (PK)    |
| FREQUENCY RANGE | 1GHz ~ 25GHz |                      | Average (AV) |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                |                               |                   |                |                          |                            |                        |                                |
|-----------------------------------------------------|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | 1064.00        | 52.5 PK                       | 74.0              | -21.5          | 1.90 H                   | 231                        | 61.50                  | -9.00                          |
| 2                                                   | 1064.00        | 45.9 AV                       | 54.0              | -8.1           | 1.90 H                   | 231                        | 54.90                  | -9.00                          |
| 3                                                   | 2390.00        | 60.6 PK                       | 74.0              | -13.4          | 1.39 H                   | 255                        | 25.90                  | 34.70                          |
| 4                                                   | 2390.00        | 49.4 AV                       | 54.0              | -4.6           | 1.39 H                   | 255                        | 14.70                  | 34.70                          |
| 5                                                   | *2412.00       | 108.3 PK                      |                   |                | 1.53 H                   | 258                        | 73.40                  | 34.90                          |
| 6                                                   | *2412.00       | 104.7 AV                      |                   |                | 1.53 H                   | 258                        | 69.80                  | 34.90                          |
| 7                                                   | 4824.00        | 49.0 PK                       | 74.0              | -25.0          | 1.88 H                   | 146                        | 45.00                  | 4.00                           |
| 8                                                   | 4824.00        | 35.8 AV                       | 54.0              | -18.2          | 1.88 H                   | 146                        | 31.80                  | 4.00                           |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |                |                               |                   |                |                          |                            |                        |                                |
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | 1064.00        | 50.4 PK                       | 74.0              | -23.6          | 1.20 V                   | 10                         | 59.40                  | -9.00                          |
| 2                                                   | 1064.00        | 43.4 AV                       | 54.0              | -10.6          | 1.20 V                   | 10                         | 52.40                  | -9.00                          |
| 3                                                   | 2390.00        | 60.2 PK                       | 74.0              | -13.8          | 2.44 V                   | 1                          | 25.50                  | 34.70                          |
| 4                                                   | 2390.00        | 48.2 AV                       | 54.0              | -5.8           | 2.44 V                   | 1                          | 13.50                  | 34.70                          |
| 5                                                   | *2412.00       | 106.3 PK                      |                   |                | 2.44 V                   | 1                          | 71.40                  | 34.90                          |
| 6                                                   | *2412.00       | 102.6 AV                      |                   |                | 2.44 V                   | 1                          | 67.70                  | 34.90                          |
| 7                                                   | 4824.00        | 49.3 PK                       | 74.0              | -24.7          | 2.44 V                   | 0                          | 45.30                  | 4.00                           |
| 8                                                   | 4824.00        | 36.5 AV                       | 54.0              | -17.5          | 2.44 V                   | 0                          | 32.50                  | 4.00                           |

#### REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " \* ": Fundamental frequency.

|                 |              |                      |              |
|-----------------|--------------|----------------------|--------------|
| CHANNEL         | TX Channel 6 | DETECTOR<br>FUNCTION | Peak (PK)    |
| FREQUENCY RANGE | 1GHz ~ 25GHz |                      | Average (AV) |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                |                               |                   |                |                          |                            |                        |                                |
|-----------------------------------------------------|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | 1064.00        | 52.3 PK                       | 74.0              | -21.7          | 2.02 H                   | 229                        | 61.30                  | -9.00                          |
| 2                                                   | 1064.00        | 44.7 AV                       | 54.0              | -9.3           | 2.02 H                   | 229                        | 53.70                  | -9.00                          |
| 3                                                   | *2437.00       | 110.3 PK                      |                   |                | 1.00 H                   | 255                        | 75.30                  | 35.00                          |
| 4                                                   | *2437.00       | 107.0 AV                      |                   |                | 1.00 H                   | 255                        | 72.00                  | 35.00                          |
| 5                                                   | 4874.00        | 49.5 PK                       | 74.0              | -24.5          | 1.03 H                   | 145                        | 45.50                  | 4.00                           |
| 6                                                   | 4874.00        | 36.1 AV                       | 54.0              | -17.9          | 1.03 H                   | 145                        | 32.10                  | 4.00                           |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |                |                               |                   |                |                          |                            |                        |                                |
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | 1064.00        | 49.8 PK                       | 74.0              | -24.2          | 1.19 V                   | 12                         | 58.80                  | -9.00                          |
| 2                                                   | 1064.00        | 43.1 AV                       | 54.0              | -10.9          | 1.19 V                   | 12                         | 52.10                  | -9.00                          |
| 3                                                   | *2437.00       | 106.2 PK                      |                   |                | 2.34 V                   | 11                         | 71.20                  | 35.00                          |
| 4                                                   | *2437.00       | 103.3 AV                      |                   |                | 2.34 V                   | 11                         | 68.30                  | 35.00                          |
| 5                                                   | 4874.00        | 49.6 PK                       | 74.0              | -24.4          | 1.35 V                   | 216                        | 45.60                  | 4.00                           |
| 6                                                   | 4874.00        | 36.7 AV                       | 54.0              | -17.3          | 1.35 V                   | 216                        | 32.70                  | 4.00                           |

#### REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " \* ": Fundamental frequency.

|                 |               |                      |              |
|-----------------|---------------|----------------------|--------------|
| CHANNEL         | TX Channel 11 | DETECTOR<br>FUNCTION | Peak (PK)    |
| FREQUENCY RANGE | 1GHz ~ 25GHz  |                      | Average (AV) |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                |                               |                   |                |                          |                            |                        |                                |
|-----------------------------------------------------|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | 1064.00        | 52.3 PK                       | 74.0              | -21.7          | 2.08 H                   | 227                        | 61.30                  | -9.00                          |
| 2                                                   | 1064.00        | 44.8 AV                       | 54.0              | -9.2           | 2.08 H                   | 227                        | 53.80                  | -9.00                          |
| 3                                                   | *2462.00       | 110.2 PK                      |                   |                | 1.00 H                   | 256                        | 75.00                  | 35.20                          |
| 4                                                   | *2462.00       | 106.2 AV                      |                   |                | 1.00 H                   | 256                        | 71.00                  | 35.20                          |
| 5                                                   | 2483.50        | 63.1 PK                       | 74.0              | -10.9          | 1.00 H                   | 256                        | 27.90                  | 35.20                          |
| 6                                                   | <b>2483.50</b> | <b>52.4 AV</b>                | <b>54.0</b>       | <b>-1.6</b>    | <b>1.00 H</b>            | <b>256</b>                 | <b>17.20</b>           | <b>35.20</b>                   |
| 7                                                   | 4924.00        | 49.6 PK                       | 74.0              | -24.4          | 1.00 H                   | 24                         | 45.40                  | 4.20                           |
| 8                                                   | 4924.00        | 36.8 AV                       | 54.0              | -17.2          | 1.00 H                   | 24                         | 32.60                  | 4.20                           |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |                |                               |                   |                |                          |                            |                        |                                |
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | 1064.00        | 50.6 PK                       | 74.0              | -23.4          | 1.16 V                   | 21                         | 59.60                  | -9.00                          |
| 2                                                   | 1064.00        | 43.5 AV                       | 54.0              | -10.5          | 1.16 V                   | 21                         | 52.50                  | -9.00                          |
| 3                                                   | *2462.00       | 106.4 PK                      |                   |                | 2.34 V                   | 358                        | 71.20                  | 35.20                          |
| 4                                                   | *2462.00       | 102.8 AV                      |                   |                | 2.34 V                   | 358                        | 67.60                  | 35.20                          |
| 5                                                   | 2483.50        | 61.6 PK                       | 74.0              | -12.4          | 2.34 V                   | 358                        | 26.40                  | 35.20                          |
| 6                                                   | 2483.50        | 51.5 AV                       | 54.0              | -2.5           | 2.34 V                   | 358                        | 16.30                  | 35.20                          |
| 7                                                   | 4924.00        | 49.8 PK                       | 74.0              | -24.2          | 1.34 V                   | 165                        | 45.60                  | 4.20                           |
| 8                                                   | 4924.00        | 36.7 AV                       | 54.0              | -17.3          | 1.34 V                   | 165                        | 32.50                  | 4.20                           |

#### REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " \* ": Fundamental frequency.

802.11g

|                 |              |                   |              |
|-----------------|--------------|-------------------|--------------|
| CHANNEL         | TX Channel 1 | DETECTOR FUNCTION | Peak (PK)    |
| FREQUENCY RANGE | 1GHz ~ 25GHz |                   | Average (AV) |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |             |                         |                |             |                    |                      |                  |                          |
|-----------------------------------------------------|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| NO.                                                 | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1                                                   | 1064.00     | 52.9 PK                 | 74.0           | -21.1       | 2.19 H             | 225                  | 61.90            | -9.00                    |
| 2                                                   | 1064.00     | 45.0 AV                 | 54.0           | -9.0        | 2.19 H             | 225                  | 54.00            | -9.00                    |
| 3                                                   | 2390.00     | 61.7 PK                 | 74.0           | -12.3       | 1.00 H             | 259                  | 27.00            | 34.70                    |
| 4                                                   | 2390.00     | 50.1 AV                 | 54.0           | -3.9        | 1.00 H             | 259                  | 15.40            | 34.70                    |
| 5                                                   | *2412.00    | 109.0 PK                |                |             | 1.00 H             | 259                  | 74.10            | 34.90                    |
| 6                                                   | *2412.00    | 98.4 AV                 |                |             | 1.00 H             | 259                  | 63.50            | 34.90                    |
| 7                                                   | 4824.00     | 49.2 PK                 | 74.0           | -24.8       | 1.85 H             | 284                  | 45.20            | 4.00                     |
| 8                                                   | 4824.00     | 35.9 AV                 | 54.0           | -18.1       | 1.85 H             | 284                  | 31.90            | 4.00                     |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |             |                         |                |             |                    |                      |                  |                          |
| NO.                                                 | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1                                                   | 1064.00     | 49.9 PK                 | 74.0           | -24.1       | 1.21 V             | 10                   | 58.90            | -9.00                    |
| 2                                                   | 1064.00     | 43.0 AV                 | 54.0           | -11.0       | 1.21 V             | 10                   | 52.00            | -9.00                    |
| 3                                                   | 2390.00     | 60.0 PK                 | 74.0           | -14.0       | 1.00 V             | 29                   | 25.30            | 34.70                    |
| 4                                                   | 2390.00     | 48.1 AV                 | 54.0           | -5.9        | 1.00 V             | 29                   | 13.40            | 34.70                    |
| 5                                                   | *2412.00    | 103.9 PK                |                |             | 1.00 V             | 29                   | 69.00            | 34.90                    |
| 6                                                   | *2412.00    | 92.7 AV                 |                |             | 1.00 V             | 29                   | 57.80            | 34.90                    |
| 7                                                   | 4824.00     | 49.7 PK                 | 74.0           | -24.3       | 1.34 V             | 211                  | 45.70            | 4.00                     |
| 8                                                   | 4824.00     | 36.0 AV                 | 54.0           | -18.0       | 1.34 V             | 211                  | 32.00            | 4.00                     |

## REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " \* ": Fundamental frequency.

|                 |              |                      |              |
|-----------------|--------------|----------------------|--------------|
| CHANNEL         | TX Channel 6 | DETECTOR<br>FUNCTION | Peak (PK)    |
| FREQUENCY RANGE | 1GHz ~ 25GHz |                      | Average (AV) |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                |                               |                   |                |                          |                            |                        |                                |
|-----------------------------------------------------|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | 1064.00        | 52.3 PK                       | 74.0              | -21.7          | 1.99 H                   | 233                        | 61.30                  | -9.00                          |
| 2                                                   | 1064.00        | 45.2 AV                       | 54.0              | -8.8           | 1.99 H                   | 233                        | 54.20                  | -9.00                          |
| 3                                                   | *2437.00       | 107.3 PK                      |                   |                | 1.00 H                   | 261                        | 72.30                  | 35.00                          |
| 4                                                   | *2437.00       | 97.0 AV                       |                   |                | 1.00 H                   | 261                        | 62.00                  | 35.00                          |
| 5                                                   | 4874.00        | 49.3 PK                       | 74.0              | -24.7          | 1.64 H                   | 188                        | 45.30                  | 4.00                           |
| 6                                                   | 4874.00        | 35.9 AV                       | 54.0              | -18.1          | 1.64 H                   | 188                        | 31.90                  | 4.00                           |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |                |                               |                   |                |                          |                            |                        |                                |
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | 1064.00        | 49.7 PK                       | 74.0              | -24.3          | 1.27 V                   | 357                        | 58.70                  | -9.00                          |
| 2                                                   | 1064.00        | 42.7 AV                       | 54.0              | -11.3          | 1.27 V                   | 357                        | 51.70                  | -9.00                          |
| 3                                                   | *2437.00       | 102.4 PK                      |                   |                | 1.03 V                   | 38                         | 67.40                  | 35.00                          |
| 4                                                   | *2437.00       | 92.6 AV                       |                   |                | 1.03 V                   | 38                         | 57.60                  | 35.00                          |
| 5                                                   | 4874.00        | 49.7 PK                       | 74.0              | -24.3          | 1.42 V                   | 215                        | 45.70                  | 4.00                           |
| 6                                                   | 4874.00        | 36.0 AV                       | 54.0              | -18.0          | 1.42 V                   | 215                        | 32.00                  | 4.00                           |

#### REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " \* ": Fundamental frequency.

|                 |               |                      |              |
|-----------------|---------------|----------------------|--------------|
| CHANNEL         | TX Channel 11 | DETECTOR<br>FUNCTION | Peak (PK)    |
| FREQUENCY RANGE | 1GHz ~ 25GHz  |                      | Average (AV) |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                |                               |                   |                |                          |                            |                        |                                |
|-----------------------------------------------------|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | 1064.00        | 52.5 PK                       | 74.0              | -21.5          | 2.02 H                   | 231                        | 61.50                  | -9.00                          |
| 2                                                   | 1064.00        | 45.9 AV                       | 54.0              | -8.1           | 2.02 H                   | 231                        | 54.90                  | -9.00                          |
| 3                                                   | *2462.00       | 107.8 PK                      |                   |                | 1.00 H                   | 260                        | 72.60                  | 35.20                          |
| 4                                                   | *2462.00       | 98.3 AV                       |                   |                | 1.00 H                   | 260                        | 63.10                  | 35.20                          |
| 5                                                   | 2483.50        | 65.1 PK                       | 74.0              | -8.9           | 1.00 H                   | 260                        | 29.90                  | 35.20                          |
| 6                                                   | 2483.50        | 50.5 AV                       | 54.0              | -3.5           | 1.00 H                   | 260                        | 15.30                  | 35.20                          |
| 7                                                   | 4924.00        | 49.8 PK                       | 74.0              | -24.2          | 1.20 H                   | 142                        | 45.60                  | 4.20                           |
| 8                                                   | 4924.00        | 35.9 AV                       | 54.0              | -18.1          | 1.20 H                   | 142                        | 31.70                  | 4.20                           |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |                |                               |                   |                |                          |                            |                        |                                |
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | 1064.00        | 49.4 PK                       | 74.0              | -24.6          | 1.19 V                   | 6                          | 58.40                  | -9.00                          |
| 2                                                   | 1064.00        | 43.3 AV                       | 54.0              | -10.7          | 1.19 V                   | 6                          | 52.30                  | -9.00                          |
| 3                                                   | *2462.00       | 103.0 PK                      |                   |                | 1.01 V                   | 48                         | 67.80                  | 35.20                          |
| 4                                                   | *2462.00       | 93.6 AV                       |                   |                | 1.01 V                   | 48                         | 58.40                  | 35.20                          |
| 5                                                   | 2483.50        | 62.5 PK                       | 74.0              | -11.5          | 1.01 V                   | 48                         | 27.30                  | 35.20                          |
| 6                                                   | 2483.50        | 48.7 AV                       | 54.0              | -5.3           | 1.01 V                   | 48                         | 13.50                  | 35.20                          |
| 7                                                   | 4924.00        | 50.0 PK                       | 74.0              | -24.0          | 1.34 V                   | 264                        | 45.80                  | 4.20                           |
| 8                                                   | 4924.00        | 36.3 AV                       | 54.0              | -17.7          | 1.34 V                   | 264                        | 32.10                  | 4.20                           |

#### REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " \* ": Fundamental frequency.

## 802.11n (HT20)

|                 |              |          |              |
|-----------------|--------------|----------|--------------|
| CHANNEL         | TX Channel 1 | DETECTOR | Peak (PK)    |
| FREQUENCY RANGE | 1GHz ~ 25GHz | FUNCTION | Average (AV) |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                |                               |                   |                |                          |                            |                        |                                |
|-----------------------------------------------------|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | 1064.00        | 53.0 PK                       | 74.0              | -21.0          | 1.93 H                   | 231                        | 62.00                  | -9.00                          |
| 2                                                   | 1064.00        | 45.4 AV                       | 54.0              | -8.6           | 1.93 H                   | 231                        | 54.40                  | -9.00                          |
| 3                                                   | 2390.00        | 62.3 PK                       | 74.0              | -11.7          | 1.00 H                   | 262                        | 27.60                  | 34.70                          |
| 4                                                   | 2390.00        | 49.5 AV                       | 54.0              | -4.5           | 1.00 H                   | 262                        | 14.80                  | 34.70                          |
| 5                                                   | *2412.00       | 107.1 PK                      |                   |                | 1.00 H                   | 262                        | 72.20                  | 34.90                          |
| 6                                                   | *2412.00       | 97.0 AV                       |                   |                | 1.00 H                   | 262                        | 62.10                  | 34.90                          |
| 7                                                   | 4824.00        | 49.6 PK                       | 74.0              | -24.4          | 1.32 H                   | 120                        | 45.60                  | 4.00                           |
| 8                                                   | 4824.00        | 35.7 AV                       | 54.0              | -18.3          | 1.32 H                   | 120                        | 31.70                  | 4.00                           |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |                |                               |                   |                |                          |                            |                        |                                |
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | 1064.00        | 50.7 PK                       | 74.0              | -23.3          | 1.25 V                   | 12                         | 59.70                  | -9.00                          |
| 2                                                   | 1064.00        | 43.7 AV                       | 54.0              | -10.3          | 1.25 V                   | 12                         | 52.70                  | -9.00                          |
| 3                                                   | 2390.00        | 59.9 PK                       | 74.0              | -14.1          | 1.00 V                   | 31                         | 25.20                  | 34.70                          |
| 4                                                   | 2390.00        | 48.0 AV                       | 54.0              | -6.0           | 1.00 V                   | 31                         | 13.30                  | 34.70                          |
| 5                                                   | *2412.00       | 100.9 PK                      |                   |                | 1.00 V                   | 31                         | 66.00                  | 34.90                          |
| 6                                                   | *2412.00       | 91.3 AV                       |                   |                | 1.00 V                   | 31                         | 56.40                  | 34.90                          |
| 7                                                   | 4824.00        | 49.9 PK                       | 74.0              | -24.1          | 1.00 V                   | 326                        | 45.90                  | 4.00                           |
| 8                                                   | 4824.00        | 36.1 AV                       | 54.0              | -17.9          | 1.00 V                   | 326                        | 32.10                  | 4.00                           |

## REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " \* ": Fundamental frequency.

|                 |              |                      |              |
|-----------------|--------------|----------------------|--------------|
| CHANNEL         | TX Channel 6 | DETECTOR<br>FUNCTION | Peak (PK)    |
| FREQUENCY RANGE | 1GHz ~ 25GHz |                      | Average (AV) |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                |                               |                   |                |                          |                            |                        |                                |
|-----------------------------------------------------|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | 1064.00        | 52.6 PK                       | 74.0              | -21.4          | 2.02 H                   | 230                        | 61.60                  | -9.00                          |
| 2                                                   | 1064.00        | 45.4 AV                       | 54.0              | -8.6           | 2.02 H                   | 230                        | 54.40                  | -9.00                          |
| 3                                                   | *2437.00       | 106.9 PK                      |                   |                | 1.00 H                   | 261                        | 71.90                  | 35.00                          |
| 4                                                   | *2437.00       | 97.6 AV                       |                   |                | 1.00 H                   | 261                        | 62.60                  | 35.00                          |
| 5                                                   | 4874.00        | 49.2 PK                       | 74.0              | -24.8          | 1.11 H                   | 135                        | 45.20                  | 4.00                           |
| 6                                                   | 4874.00        | 36.2 AV                       | 54.0              | -17.8          | 1.11 H                   | 135                        | 32.20                  | 4.00                           |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |                |                               |                   |                |                          |                            |                        |                                |
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | 1064.00        | 49.8 PK                       | 74.0              | -24.2          | 1.22 V                   | 6                          | 58.80                  | -9.00                          |
| 2                                                   | 1064.00        | 43.3 AV                       | 54.0              | -10.7          | 1.22 V                   | 6                          | 52.30                  | -9.00                          |
| 3                                                   | *2437.00       | 101.7 PK                      |                   |                | 1.01 V                   | 22                         | 66.70                  | 35.00                          |
| 4                                                   | *2437.00       | 93.4 AV                       |                   |                | 1.01 V                   | 22                         | 58.40                  | 35.00                          |
| 5                                                   | 4874.00        | 49.6 PK                       | 74.0              | -24.4          | 1.26 V                   | 34                         | 45.60                  | 4.00                           |
| 6                                                   | 4874.00        | 36.0 AV                       | 54.0              | -18.0          | 1.26 V                   | 34                         | 32.00                  | 4.00                           |

#### REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " \* ": Fundamental frequency.

|                 |               |                      |              |
|-----------------|---------------|----------------------|--------------|
| CHANNEL         | TX Channel 11 | DETECTOR<br>FUNCTION | Peak (PK)    |
| FREQUENCY RANGE | 1GHz ~ 25GHz  |                      | Average (AV) |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                |                               |                   |                |                          |                            |                        |                                |
|-----------------------------------------------------|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | 1064.00        | 53.4 PK                       | 74.0              | -20.6          | 1.88 H                   | 234                        | 62.40                  | -9.00                          |
| 2                                                   | 1064.00        | 45.6 AV                       | 54.0              | -8.4           | 1.88 H                   | 234                        | 54.60                  | -9.00                          |
| 3                                                   | *2462.00       | 107.0 PK                      |                   |                | 1.00 H                   | 260                        | 71.80                  | 35.20                          |
| 4                                                   | *2462.00       | 97.2 AV                       |                   |                | 1.00 H                   | 260                        | 62.00                  | 35.20                          |
| 5                                                   | 2483.50        | 64.1 PK                       | 74.0              | -9.9           | 1.00 H                   | 260                        | 28.90                  | 35.20                          |
| 6                                                   | 2483.50        | 50.3 AV                       | 54.0              | -3.7           | 1.00 H                   | 260                        | 15.10                  | 35.20                          |
| 7                                                   | 4924.00        | 49.1 PK                       | 74.0              | -24.9          | 1.12 H                   | 134                        | 44.90                  | 4.20                           |
| 8                                                   | 4924.00        | 36.0 AV                       | 54.0              | -18.0          | 1.12 H                   | 134                        | 31.80                  | 4.20                           |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |                |                               |                   |                |                          |                            |                        |                                |
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | 1064.00        | 50.6 PK                       | 74.0              | -23.4          | 1.19 V                   | 23                         | 59.60                  | -9.00                          |
| 2                                                   | 1064.00        | 43.0 AV                       | 54.0              | -11.0          | 1.19 V                   | 23                         | 52.00                  | -9.00                          |
| 3                                                   | *2462.00       | 103.6 PK                      |                   |                | 1.01 V                   | 28                         | 68.40                  | 35.20                          |
| 4                                                   | *2462.00       | 93.2 AV                       |                   |                | 1.01 V                   | 28                         | 58.00                  | 35.20                          |
| 5                                                   | 2483.50        | 61.7 PK                       | 74.0              | -12.3          | 1.01 V                   | 28                         | 26.50                  | 35.20                          |
| 6                                                   | 2483.50        | 48.6 AV                       | 54.0              | -5.4           | 1.01 V                   | 28                         | 13.40                  | 35.20                          |
| 7                                                   | 4924.00        | 49.4 PK                       | 74.0              | -24.6          | 1.42 V                   | 139                        | 45.20                  | 4.20                           |
| 8                                                   | 4924.00        | 36.3 AV                       | 54.0              | -17.7          | 1.42 V                   | 139                        | 32.10                  | 4.20                           |

#### REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " \* ": Fundamental frequency.

# Below 1GHz Worst-case Data: 802.11g

|                 |              |                      |                 |
|-----------------|--------------|----------------------|-----------------|
| CHANNEL         | TX Channel 1 | DETECTOR<br>FUNCTION | Quasi-Peak (QP) |
| FREQUENCY RANGE | 30MHz ~ 1GHz |                      |                 |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                |                               |                   |                |                          |                            |                        |                                |
|-----------------------------------------------------|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | 30.00          | 28.8 QP                       | 40.0              | -11.2          | 1.49 H                   | 245                        | 44.40                  | -15.60                         |
| 2                                                   | 70.74          | 24.9 QP                       | 40.0              | -15.1          | 1.49 H                   | 66                         | 40.90                  | -16.00                         |
| 3                                                   | 173.56         | 20.9 QP                       | 43.5              | -22.6          | 1.99 H                   | 182                        | 35.10                  | -14.20                         |
| 4                                                   | 493.66         | 24.2 QP                       | 46.0              | -21.8          | 1.00 H                   | 54                         | 32.60                  | -8.40                          |
| 5                                                   | 608.12         | 26.5 QP                       | 46.0              | -19.5          | 1.24 H                   | 231                        | 32.40                  | -5.90                          |
| 6                                                   | 815.70         | 30.0 QP                       | 46.0              | -16.0          | 1.24 H                   | 24                         | 32.40                  | -2.40                          |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |                |                               |                   |                |                          |                            |                        |                                |
| NO.                                                 | FREQ.<br>(MHz) | EMISSION<br>LEVEL<br>(dBuV/m) | LIMIT<br>(dBuV/m) | MARGIN<br>(dB) | ANTENNA<br>HEIGHT<br>(m) | TABLE<br>ANGLE<br>(Degree) | RAW<br>VALUE<br>(dBuV) | CORRECTION<br>FACTOR<br>(dB/m) |
| 1                                                   | 51.34          | 29.6 QP                       | 40.0              | -10.4          | 1.00 V                   | 14                         | 43.90                  | -14.30                         |
| 2                                                   | 107.60         | 15.0 QP                       | 43.5              | -28.5          | 1.00 V                   | 11                         | 32.60                  | -17.60                         |
| 3                                                   | 158.04         | 17.6 QP                       | 43.5              | -25.9          | 1.00 V                   | 32                         | 31.30                  | -13.70                         |
| 4                                                   | 511.12         | 24.5 QP                       | 46.0              | -21.5          | 2.00 V                   | 312                        | 32.40                  | -7.90                          |
| 5                                                   | 707.06         | 26.8 QP                       | 46.0              | -19.2          | 1.00 V                   | 8                          | 31.50                  | -4.70                          |
| 6                                                   | 835.10         | 29.5 QP                       | 46.0              | -16.5          | 1.25 V                   | 16                         | 31.80                  | -2.30                          |

## REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " \* ": Fundamental frequency.

## 5 Pictures of Test Arrangements

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

## Appendix – Information on 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 accredited and approved according to ISO/IEC 17025.

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

**Linko EMC/RF Lab**

Tel: 886-2-26052180

Fax: 886-2-26051924

**Hsin Chu EMC/RF/Telecom Lab**

Tel: 886-3-6668565

Fax: 886-3-6668323

**Hwa Ya EMC/RF/Safety Lab**

Tel: 886-3-3183232

Fax: 886-3-3270892

**Email:** [service.adt@tw.bureauveritas.com](mailto:service.adt@tw.bureauveritas.com)

**Web Site:** [www.bureauveritas-adt.com](http://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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