

# FCC TEST REPORT (15.407)

**REPORT NO.:** RF141108C01A

**MODEL NO.:** AP 100X

**FCC ID:** 2ACTO-AP100X

**RECEIVED:** Nov. 08, 2014

**TESTED:** Nov. 26 ~ Dec. 03, 2014

**ISSUED:** Dec. 23, 2014

**APPLICANT:** Sophos Ltd

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

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## RELEASE CONTROL RECORD

| ISSUE NO.    | REASON FOR CHANGE | DATE ISSUED   |
|--------------|-------------------|---------------|
| RF141108C01A | Original release. | Dec. 23, 2014 |

## 1. CERTIFICATION

**PRODUCT:** Sophos wireless Access Point AP 100X

**MODEL:** AP 100X

**BRAND:** Sophos

**APPLICANT:** Sophos Ltd

**TESTED:** Nov. 26 ~ Dec. 03, 2014

**TEST SAMPLE:** ENGINEERING SAMPLE

**STANDARDS:** FCC Part 15, Subpart E (Section 15.407)

The above equipment (model: AP 100X) 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 :** Celine Chou , **DATE :** Dec. 23, 2014  
Celine Chou / Specialist

**APPROVED BY :** Ken Liu , **DATE :** Dec. 23, 2014  
Ken Liu / Senior Manager

## 2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

| APPLIED STANDARD: FCC PART 15, SUBPART E (SECTION 15.407 UNDER OLD RULE) |                             |        |                                                                                                     |
|--------------------------------------------------------------------------|-----------------------------|--------|-----------------------------------------------------------------------------------------------------|
| STANDARD SECTION                                                         | TEST TYPE                   | RESULT | REMARK                                                                                              |
| 15.407(b)(6)                                                             | AC Power Conducted Emission | PASS   | Meet the requirement of limit. Minimum passing margin is -5.83dB at 21.66282MHz.                    |
| 15.407(b/1/2/3)(b)(6)                                                    | Radiated Emissions          | PASS   | Meet the requirement of limit. Minimum passing margin is -1.0dB at 5725.00, 5350.00 and 5470.00MHz. |
| 15.407(a/1/2)                                                            | Max Average Transmit Power  | PASS   | Meet the requirement of limit.                                                                      |
| 15.407(a)(6)                                                             | Peak Power Excursion        | PASS   | Meet the requirement of limit.                                                                      |
| 15.407(a/1/2)                                                            | Peak Power Spectral Density | PASS   | Meet the requirement of limit.                                                                      |
| 15.407(g)                                                                | Frequency Stability         | PASS   | Meet the requirement of limit.                                                                      |
| 15.203                                                                   | Antenna Requirement         | PASS   | Antenna connector is N plug. (The device is professionally installed)                               |

### 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       | UNCERTAINTY |
|---------------------|-----------------|-------------|
| Conducted emissions | 9kHz~30MHz      | 2.44 dB     |
| Radiated emissions  | 30MHz ~ 200MHz  | 3.63 dB     |
|                     | 200MHz ~1000MHz | 3.64 dB     |
|                     | 1GHz ~ 18GHz    | 2.29 dB     |
|                     | 18GHz ~ 40GHz   | 2.29 dB     |

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k = 2$ .

### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

|                              |                                                                                                                                                                                                                                                                                      |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>EUT</b>                   | Sophos wireless Access Point AP 100X                                                                                                                                                                                                                                                 |
| <b>MODEL NO.</b>             | AP 100X                                                                                                                                                                                                                                                                              |
| <b>POWER SUPPLY</b>          | 54Vdc max from POE                                                                                                                                                                                                                                                                   |
| <b>MODULATION TYPE</b>       | 256QAM, 64QAM, 16QAM, QPSK, BPSK                                                                                                                                                                                                                                                     |
| <b>MODULATION TECHNOLOGY</b> | OFDM                                                                                                                                                                                                                                                                                 |
| <b>TRANSFER RATE</b>         | 802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps<br>802.11n: up to 450Mbps<br>802.11ac: 1300Mbps                                                                                                                                                                            |
| <b>OPERATING FREQUENCY</b>   | 5260 ~ 5320MHz, 5500 ~ 5700MHz                                                                                                                                                                                                                                                       |
| <b>NUMBER OF CHANNEL</b>     | 5260 ~ 5320MHz:<br>4 for 802.11a, 802.11n (20MHz), 802.11ac (20MHz)<br>2 for 802.11n (40MHz), 802.11ac (40MHz)<br>1 for 802.11ac (80MHz)<br>5500 ~ 5700MHz:<br>8 for 802.11a, 802.11n (20MHz), 802.11ac (20MHz)<br>3 for 802.11n (40MHz), 802.11ac (40MHz)<br>1 for 802.11ac (80MHz) |
| <b>OUTPUT POWER</b>          | 123.725mW for 5260 ~ 5320MHz<br>122.837mW for 5500 ~ 5700MHz                                                                                                                                                                                                                         |
| <b>ANTENNA TYPE</b>          | Dipole antenna with 6dBi gain                                                                                                                                                                                                                                                        |
| <b>ANTENNA CONNECTOR</b>     | N Plug                                                                                                                                                                                                                                                                               |
| <b>DATA CABLE</b>            | 0.95m shielded ground cable without core                                                                                                                                                                                                                                             |
| <b>I/O PORTS</b>             | Refer to user's manual                                                                                                                                                                                                                                                               |
| <b>ACCESSORY DEVICES</b>     | Bracket                                                                                                                                                                                                                                                                              |

#### NOTE:

1. This report is prepared for FCC class II permissive change. This report is issued as a supplementary report of BV ADT report no.: RF141108C01-1. Difference compared with the original report is adding 5260~5320MHz and 5500~5700MHz band. Therefore, the EUT was re-tested and presented in the test report.
2. The EUT incorporates a MIMO function. Physically, the EUT provides 3 completed transmitters and 3 receivers.

| MODULATION MODE  | TX FUNCTION |
|------------------|-------------|
| 802.11a          | 1TX         |
| 802.11n (20MHz)  | 3TX         |
| 802.11n (40MHz)  | 3TX         |
| 802.11ac (20MHz) | 3TX         |
| 802.11ac (40MHz) | 3TX         |
| 802.11ac (80MHz) | 3TX         |



3. The EUT consumes power from the following POE. (provided as support units only)

| POE            |                            |
|----------------|----------------------------|
| <b>BRAND:</b>  | Power Desine               |
| <b>MODEL:</b>  | PD-9001GR/AC               |
| <b>INPUT:</b>  | 100-240Vac, 50-60Hz, 0.67A |
| <b>OUTPUT:</b> | 55Vdc, 0.6A                |

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



### 3.2 DESCRIPTION OF TEST MODES

#### FOR 5260 ~ 5320MHz

4 channels are provided for 802.11a, 802.11n (20MHz), 802.11ac (20MHz):

| CHANNEL | FREQUENCY | CHANNEL | FREQUENCY |
|---------|-----------|---------|-----------|
| 52      | 5260 MHz  | 60      | 5300 MHz  |
| 56      | 5280 MHz  | 64      | 5320 MHz  |

2 channels are provided for 802.11n (40MHz), 802.11ac (40MHz):

| CHANNEL | FREQUENCY | CHANNEL | FREQUENCY |
|---------|-----------|---------|-----------|
| 54      | 5270 MHz  | 62      | 5310 MHz  |

1 channel is provided for 802.11ac (80MHz):

| CHANNEL | FREQUENCY |
|---------|-----------|
| 58      | 5290MHz   |

#### FOR 5500 ~ 5700MHz

8 channels are provided for 802.11a, 802.11n (20MHz), 802.11ac (20MHz):

| CHANNEL | FREQUENCY | CHANNEL | FREQUENCY |
|---------|-----------|---------|-----------|
| 100     | 5500 MHz  | 116     | 5580 MHz  |
| 104     | 5520 MHz  | 132     | 5660 MHz  |
| 108     | 5540 MHz  | 136     | 5680 MHz  |
| 112     | 5560 MHz  | 140     | 5700 MHz  |

3 channels are provided for 802.11n (40MHz), 802.11ac (40MHz):

| CHANNEL | FREQUENCY | CHANNEL | FREQUENCY |
|---------|-----------|---------|-----------|
| 102     | 5510 MHz  | 134     | 5670 MHz  |
| 110     | 5550 MHz  |         |           |

1 channel is provided for 802.11ac (80MHz):

| CHANNEL | FREQUENCY |
|---------|-----------|
| 106     | 5530MHz   |

### 3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

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

Where **RE $\geq$ 1G**: Radiated Emission above 1GHz **RE<1G**: Radiated Emission below 1GHz  
**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 **Y-plane** for 802.11a and **Z-plane** for 802.11n.

#### 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 CONFIGURE MODE | MODE             | FREQ. BAND (MHz) | AVAILABLE CHANNEL | TESTED CHANNEL | MODULATION TECHNOLOGY | MODULATION TYPE | DATA RATE (Mbps) |
|--------------------|------------------|------------------|-------------------|----------------|-----------------------|-----------------|------------------|
| -                  | 802.11a          | 5260-5320        | 52 to 64          | 52, 60, 64     | OFDM                  | BPSK            | 6.0              |
| -                  | 802.11n (20MHz)  |                  | 52 to 64          | 52, 60, 64     | OFDM                  | BPSK            | 7.2              |
| -                  | 802.11n (40MHz)  |                  | 54 to 62          | 54, 62         | OFDM                  | BPSK            | 15.0             |
| -                  | 802.11ac (20MHz) |                  | 52 to 64          | 52, 60, 64     | OFDM                  | BPSK            | 7.2              |
| -                  | 802.11ac (40MHz) |                  | 54 to 62          | 54, 62         | OFDM                  | BPSK            | 15.0             |
| -                  | 802.11ac (80MHz) |                  | 58                | 58             | OFDM                  | BPSK            | 87.8             |
| -                  | 802.11a          | 5500-5700        | 100 to 140        | 100, 116, 140  | OFDM                  | BPSK            | 6.0              |
| -                  | 802.11n (20MHz)  |                  | 100 to 140        | 100, 116, 140  | OFDM                  | BPSK            | 7.2              |
| -                  | 802.11n (40MHz)  |                  | 102 to 134        | 102, 110, 134  | OFDM                  | BPSK            | 15.0             |
| -                  | 802.11ac (20MHz) |                  | 100 to 140        | 100, 116, 140  | OFDM                  | BPSK            | 7.2              |
| -                  | 802.11ac (40MHz) |                  | 102 to 134        | 102, 110, 134  | OFDM                  | BPSK            | 15.0             |
| -                  | 802.11ac (80MHz) |                  | 106               | 106            | OFDM                  | BPSK            | 87.8             |

#### 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 CONFIGURE MODE | MODE    | FREQ. BAND (MHz) | AVAILABLE CHANNEL | TESTED CHANNEL | MODULATION TECHNOLOGY | MODULATION TYPE | DATA RATE (Mbps) |
|--------------------|---------|------------------|-------------------|----------------|-----------------------|-----------------|------------------|
| -                  | 802.11a | 5260-5320        | 52 to 64          | 52             | OFDM                  | BPSK            | 6.0              |
| -                  | 802.11a | 5500-5700        | 100 to 140        |                | 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 CONFIGUR E MODE | MODE    | FREQ. BAND (MHz) | AVAILABLE CHANNEL | TESTED CHANNEL | MODULATION TECHNOLOGY | MODULATION TYPE | DATA RATE (Mbps) |
|---------------------|---------|------------------|-------------------|----------------|-----------------------|-----------------|------------------|
| -                   | 802.11a | 5260-5320        | 52 to 64          | 52             | OFDM                  | BPSK            | 6.0              |
| -                   | 802.11a | 5500-5700        | 100 to 140        |                | 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 CONFIGUR E MODE | MODE             | FREQ. BAND (MHz) | AVAILABLE CHANNEL | TESTED CHANNEL | MODULATION TECHNOLOGY | MODULATION TYPE | DATA RATE (Mbps) |
|---------------------|------------------|------------------|-------------------|----------------|-----------------------|-----------------|------------------|
| -                   | 802.11a          | 5260-5320        | 52 to 64          | 52, 60, 64     | OFDM                  | BPSK            | 6.0              |
| -                   | 802.11n (20MHz)  |                  | 52 to 64          | 52, 60, 64     | OFDM                  | BPSK            | 7.2              |
| -                   | 802.11n (40MHz)  |                  | 54 to 62          | 54, 62         | OFDM                  | BPSK            | 15.0             |
| -                   | 802.11ac (20MHz) |                  | 52 to 64          | 52, 60, 64     | OFDM                  | BPSK            | 7.2              |
| -                   | 802.11ac (40MHz) |                  | 54 to 62          | 54, 62         | OFDM                  | BPSK            | 15.0             |
| -                   | 802.11ac (80MHz) |                  | 58                | 58             | OFDM                  | BPSK            | 87.8             |
| -                   | 802.11a          | 5500-5700        | 100 to 140        | 100, 116, 140  | OFDM                  | BPSK            | 6.0              |
| -                   | 802.11n (20MHz)  |                  | 100 to 140        | 100, 116, 140  | OFDM                  | BPSK            | 7.2              |
| -                   | 802.11n (40MHz)  |                  | 102 to 134        | 102, 110, 134  | OFDM                  | BPSK            | 15.0             |
| -                   | 802.11ac (20MHz) |                  | 100 to 140        | 100, 116, 140  | OFDM                  | BPSK            | 7.2              |
| -                   | 802.11ac (40MHz) |                  | 102 to 134        | 102, 110, 134  | OFDM                  | BPSK            | 15.0             |
| -                   | 802.11ac (80MHz) |                  | 106               | 106            | OFDM                  | BPSK            | 87.8             |

#### TEST CONDITION:

| APPLICABLE TO | ENVIRONMENTAL CONDITIONS | INPUT POWER  | TESTED BY |
|---------------|--------------------------|--------------|-----------|
| RE $\geq$ 1G  | 25deg. C, 60%RH          | 120Vac, 60Hz | Ted Chang |
| RE $<$ 1G     | 25deg. C, 60%RH          | 120Vac, 60Hz | Tank Wu   |
| PLC           | 25deg. C, 60%RH          | 120Vac, 60Hz | Tank Wu   |
| APCM          | 25deg. C, 60%RH          | 120Vac, 60Hz | Frank Liu |

### 3.3 DUTY CYCLE OF TEST SIGNAL

#### MODULATION TYPE: BPSK

Duty cycle of test signal is > 98 %, duty factor is not required.



## MODULATION TYPE: QPSK

Duty cycle of test signal is > 98 %, duty factor is not required.





A D T

## MODULATION TYPE: 16QAM

Duty cycle of test signal is > 98 %, duty factor is not required.





A D T

## MODULATION TYPE: 64QAM

Duty cycle of test signal is > 98 %, duty factor is not required.





A D T

## MODULATION TYPE: 256QAM

Duty cycle of test signal is > 98 %, duty factor is not required.





### 3.4 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.

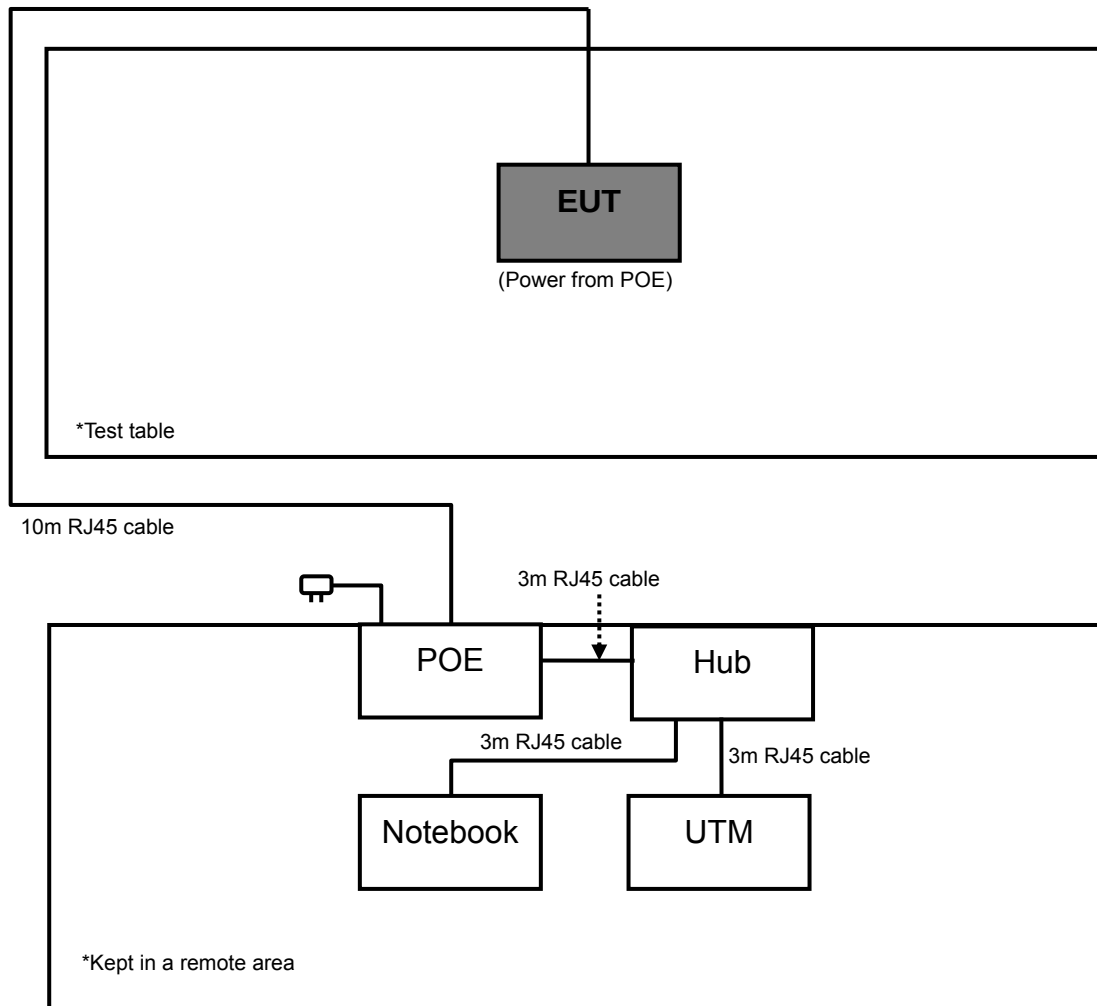
| NO. | PRODUCT  | BRAND        | MODEL NO.               | SERIAL NO.                   | FCC ID       |
|-----|----------|--------------|-------------------------|------------------------------|--------------|
| 1   | HUB      | D-Link       | DIR-810                 | NA                           | NA           |
| 2   | UTM      | SOPHOS       | UTM110/120/100<br>rev.5 | NA                           | NA           |
| 3   | NOTEBOOK | DELL         | D531                    | CN-0XM006-48643-81<br>U-2610 | QDS-BRCM1020 |
| 4   | POE      | Power Desine | PD-9001GR/AC            | NA                           | NA           |

| NO. | SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS |
|-----|-----------------------------------------------------|
| 1   | 3m RJ45 Cable.                                      |
| 2   | 3m RJ45 Cable.                                      |
| 3   | 3m RJ45 Cable.                                      |
| 4   | 10m RJ45 Cable.                                     |

**NOTE:**

1. All power cords of the above support units are non-shielded (1.8 m).
2. Item 2 & 4 were provided by the manufacturer.
3. Item 1-4 acted as a communication partner to transfer data.

### 3.4.1 CONFIGURATION OF SYSTEM UNDER TEST



### 3.5 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

**FCC Part 15, Subpart E (15.407)**

**789033 D01 General UNII Test Procedures Old Rules v01r04**

**662911 D01 Multiple Transmitter Output v02r01**

**ANSI C63.10-2009**

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

**NOTE:** The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

## 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:

| FREQUENCIES<br>(MHz) | FIELD STRENGTH<br>(microvolts/meter) | MEASUREMENT DISTANCE<br>(meters) |
|----------------------|--------------------------------------|----------------------------------|
| 0.009 ~ 0.490        | 2400/F(kHz)                          | 300                              |
| 0.490 ~ 1.705        | 24000/F(kHz)                         | 30                               |
| 1.705 ~ 30.0         | 30                                   | 30                               |
| 30 ~ 88              | 100                                  | 3                                |
| 88 ~ 216             | 150                                  | 3                                |
| 216 ~ 960            | 200                                  | 3                                |
| Above 960            | 500                                  | 3                                |

**NOTE:**

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 LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

| APPLICABLE TO | LIMIT                         |                                          |
|---------------|-------------------------------|------------------------------------------|
| √             | FIELD STRENGTH AT 3m (dBμV/m) |                                          |
|               | PK                            | AV                                       |
|               | 74                            | 54                                       |
|               | EIRP LIMIT (dBm)              | EQUIVALENT FIELD STRENGTH AT 3m (dBμV/m) |
|               | PK                            | PK                                       |
|               | -27                           | 68.3                                     |

**NOTE:** The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

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

#### 4.1.3 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER                       | MODEL NO.                    | SERIAL NO.                       | DATE OF CALIBRATION | DUE DATE OF CALIBRATION |
|--------------------------------------------------|------------------------------|----------------------------------|---------------------|-------------------------|
| Test Receiver<br>ROHDE & SCHWARZ                 | ESCS30                       | 100289                           | Nov. 29, 2013       | Nov. 28, 2014           |
|                                                  |                              |                                  | Nov. 29, 2014       | Nov. 28, 2015           |
| Spectrum Analyzer<br>ROHDE & SCHWARZ             | FSP40                        | 100269                           | Feb. 11, 2014       | Feb. 10, 2015           |
| BILOG Antenna<br>SCHWARZBECK                     | VULB9168                     | 9168-156                         | Feb. 25, 2014       | Feb. 24, 2015           |
| HORN Antenna<br>SCHWARZBECK                      | BBHA 9120 D                  | 9120D-209                        | Aug. 25, 2014       | Aug. 24, 2015           |
| HORN Antenna<br>SCHWARZBECK                      | BBHA 9170                    | BBHA9170241                      | Feb. 17, 2014       | Feb. 16, 2015           |
| Preamplifier<br>Agilent                          | 8449B                        | 3008A01911                       | Aug. 09, 2014       | Aug. 08, 2015           |
| Preamplifier<br>Agilent                          | 8447D                        | 2944A10638                       | Aug. 09, 2014       | Aug. 08, 2015           |
| RF signal cable<br>HUBER+SUHNNER                 | SUCOFLEX 104                 | 248780/4<br>309222/4<br>274092/4 | Aug. 09, 2014       | Aug. 08, 2015           |
| RF signal cable<br>Worken                        | 8D-FB                        | Cable-CH9-01                     | Aug. 11, 2014       | Aug. 10, 2015           |
| 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 Table<br>Controller<br>EMCO | 2090                         | NA                               | NA                  | NA                      |
| 26GHz ~ 40GHz Amplifier                          | EM26400                      | 815221                           | Oct. 18, 2014       | Oct. 17, 2015           |
| High Speed Peak Power<br>Meter                   | ML2495A                      | 0824011                          | Jul. 26, 2014       | Jul. 25, 2015           |
| Power Sensor                                     | MA2411B                      | 0738171                          | Jul. 26, 2014       | Jul. 25, 2015           |
| WIT Standard Temperature<br>And Humidity Chamber | TH-4S-C                      | W981030                          | Jun. 09, 2014       | Jun. 08, 2015           |

- 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 HP 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.

#### 4.1.4 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. 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 antenna is a broadband antenna, and its height 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 Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

**NOTE:**

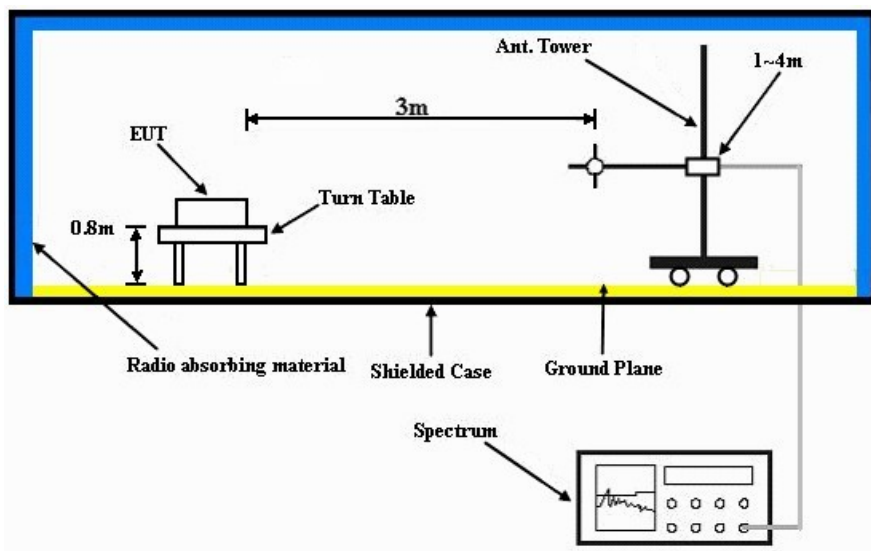
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is  $\geq 1/T$  (Duty cycle < 98%) or 10Hz (Duty cycle > 98%) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

#### 4.1.5 DEVIATION FROM TEST STANDARD

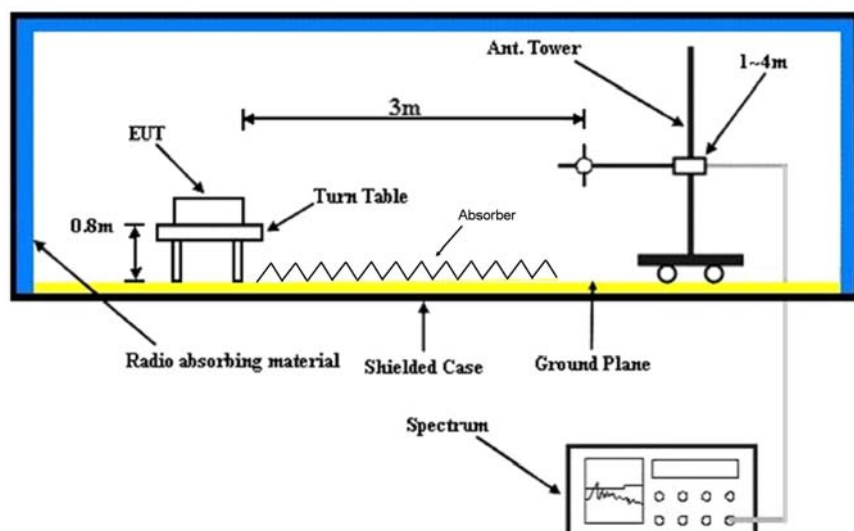
No deviation.

#### 4.1.6 TEST SETUP

##### Frequency range 30MHz~1GHz



##### Frequency range above 1GHz



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

#### 4.1.7 EUT OPERATING CONDITION

- a. Placed the EUT on the testing table.
- b. Prepared notebook to act as a communication partner and placed it outside of testing area.
- c. The communication partners connected with EUT via a RJ45 cable and run a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.
- d. The communication partner sent data to EUT by command "PING".



## 4.1.8 TEST RESULTS

### ABOVE 1GHz DATA

#### 802.11a

|                 |               |                      |              |
|-----------------|---------------|----------------------|--------------|
| CHANNEL         | TX Channel 52 | DETECTOR<br>FUNCTION | Peak (PK)    |
| FREQUENCY RANGE | 1GHz ~ 40GHz  |                      | 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                                                   | 5150.00        | 65.9 PK                       | 74.0              | -8.1           | 1.08 H                   | 84                         | 63.90                  | 2.00                           |
| 2                                                   | 5150.00        | 46.5 AV                       | 54.0              | -7.5           | 1.08 H                   | 84                         | 44.50                  | 2.00                           |
| 3                                                   | *5260.00       | 114.4 PK                      |                   |                | 1.54 H                   | 88                         | 74.30                  | 40.10                          |
| 4                                                   | *5260.00       | 102.9 AV                      |                   |                | 1.54 H                   | 88                         | 62.80                  | 40.10                          |
| 5                                                   | 5350.00        | 67.9 PK                       | 74.0              | -6.1           | 1.05 H                   | 344                        | 65.90                  | 2.00                           |
| 6                                                   | 5350.00        | 47.9 AV                       | 54.0              | -6.1           | 1.05 H                   | 344                        | 45.90                  | 2.00                           |
| 7                                                   | #10520.00      | 61.8 PK                       | 74.0              | -12.2          | 1.02 H                   | 38                         | 45.90                  | 15.90                          |
| 8                                                   | #10520.00      | 49.5 AV                       | 54.0              | -4.5           | 1.02 H                   | 38                         | 33.60                  | 15.90                          |
| 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                                                   | 5150.00        | 57.2 PK                       | 74.0              | -16.8          | 1.02 V                   | 84                         | 55.20                  | 2.00                           |
| 2                                                   | 5150.00        | 44.6 AV                       | 54.0              | -9.4           | 1.02 V                   | 84                         | 42.60                  | 2.00                           |
| 3                                                   | *5260.00       | 99.1 PK                       |                   |                | 1.05 V                   | 28                         | 59.00                  | 40.10                          |
| 4                                                   | *5260.00       | 87.7 AV                       |                   |                | 1.05 V                   | 28                         | 47.60                  | 40.10                          |
| 5                                                   | 5350.00        | 57.7 PK                       | 74.0              | -16.3          | 1.02 V                   | 58                         | 55.70                  | 2.00                           |
| 6                                                   | 5350.00        | 44.5 AV                       | 54.0              | -9.5           | 1.02 V                   | 58                         | 42.50                  | 2.00                           |
| 7                                                   | #10520.00      | 61.9 PK                       | 74.0              | -12.1          | 1.52 V                   | 354                        | 46.00                  | 15.90                          |
| 8                                                   | #10520.00      | 48.4 AV                       | 54.0              | -5.6           | 1.52 V                   | 354                        | 32.50                  | 15.90                          |

#### REMARKS:

- Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
- Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)  
– Pre-Amplifier Factor(dB)
- The other emission levels were very low against the limit.
- Margin value = Emission Level – Limit value
- " \* ": Fundamental frequency.
- " # ": The radiated frequency is out of the restricted band.

|                 |               |                      |              |
|-----------------|---------------|----------------------|--------------|
| CHANNEL         | TX Channel 60 | DETECTOR<br>FUNCTION | Peak (PK)    |
| FREQUENCY RANGE | 1GHz ~ 40GHz  |                      | 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                                                   | *5300.00       | 117.6 PK                      |                   |                | 1.52 H                   | 63                         | 77.50                  | 40.10                          |
| 2                                                   | *5300.00       | 107.1 AV                      |                   |                | 1.52 H                   | 63                         | 67.00                  | 40.10                          |
| 3                                                   | 5350.00        | 68.8 PK                       | 74.0              | -5.2           | 1.02 H                   | 63                         | 66.80                  | 2.00                           |
| 4                                                   | 5350.00        | 51.7 AV                       | 54.0              | -2.3           | 1.02 H                   | 63                         | 49.70                  | 2.00                           |
| 5                                                   | 10600.00       | 63.4 PK                       | 74.0              | -10.6          | 1.04 H                   | 89                         | 46.80                  | 16.60                          |
| 6                                                   | 10600.00       | 49.2 AV                       | 54.0              | -4.8           | 1.04 H                   | 89                         | 32.60                  | 16.60                          |
| 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                                                   | *5300.00       | 101.6 PK                      |                   |                | 1.05 V                   | 36                         | 61.50                  | 40.10                          |
| 2                                                   | *5300.00       | 91.1 AV                       |                   |                | 1.05 V                   | 36                         | 51.00                  | 40.10                          |
| 3                                                   | 5350.00        | 56.9 PK                       | 74.0              | -17.1          | 1.05 V                   | 22                         | 54.90                  | 2.00                           |
| 4                                                   | 5350.00        | 44.0 AV                       | 54.0              | -10.0          | 1.05 V                   | 22                         | 42.00                  | 2.00                           |
| 5                                                   | 10600.00       | 62.3 PK                       | 74.0              | -11.7          | 1.41 V                   | 88                         | 45.70                  | 16.60                          |
| 6                                                   | 10600.00       | 48.8 AV                       | 54.0              | -5.2           | 1.41 V                   | 88                         | 32.20                  | 16.60                          |

#### 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)  
– Pre-Amplifier 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 64 | DETECTOR<br>FUNCTION | Peak (PK)    |
| FREQUENCY RANGE | 1GHz ~ 40GHz  |                      | 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                                                   | *5320.00       | 114.9 PK                      |                   |                | 1.13 H                   | 188                        | 74.70                  | 40.20                          |
| 2                                                   | *5320.00       | 104.1 AV                      |                   |                | 1.13 H                   | 188                        | 63.90                  | 40.20                          |
| 3                                                   | 5350.00        | 65.7 PK                       | 74.0              | -8.3           | 1.14 H                   | 193                        | 63.70                  | 2.00                           |
| 4                                                   | 5350.00        | 52.5 AV                       | 54.0              | -1.5           | 1.14 H                   | 193                        | 50.50                  | 2.00                           |
| 5                                                   | 10640.00       | 62.7 PK                       | 74.0              | -11.3          | 1.00 H                   | 310                        | 45.90                  | 16.80                          |
| 6                                                   | 10640.00       | 49.4 AV                       | 54.0              | -4.6           | 1.00 H                   | 310                        | 32.60                  | 16.80                          |
| 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                                                   | *5320.00       | 100.4 PK                      |                   |                | 1.00 V                   | 174                        | 60.20                  | 40.20                          |
| 2                                                   | *5320.00       | 89.6 AV                       |                   |                | 1.00 V                   | 174                        | 49.40                  | 40.20                          |
| 3                                                   | 5350.00        | 57.6 PK                       | 74.0              | -16.4          | 1.00 V                   | 174                        | 55.60                  | 2.00                           |
| 4                                                   | 5350.00        | 44.5 AV                       | 54.0              | -9.5           | 1.00 V                   | 174                        | 42.50                  | 2.00                           |
| 5                                                   | 10640.00       | 63.0 PK                       | 74.0              | -11.0          | 1.00 V                   | 102                        | 46.20                  | 16.80                          |
| 6                                                   | 10640.00       | 49.3 AV                       | 54.0              | -4.7           | 1.00 V                   | 102                        | 32.50                  | 16.80                          |

#### 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)  
– Pre-Amplifier 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 100 | DETECTOR<br>FUNCTION | Peak (PK)    |
| FREQUENCY RANGE | 1GHz ~ 40GHz   |                      | 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                                                   | 5460.00        | 63.3 PK                       | 74.0              | -10.7          | 1.00 H                   | 185                        | 61.20                  | 2.10                           |
| 2                                                   | 5460.00        | 47.9 AV                       | 54.0              | -6.1           | 1.00 H                   | 185                        | 45.80                  | 2.10                           |
| 3                                                   | #5470.00       | 68.7 PK                       | 74.0              | -5.3           | 1.00 H                   | 185                        | 66.50                  | 2.20                           |
| 4                                                   | #5470.00       | 52.5 AV                       | 54.0              | -1.5           | 1.00 H                   | 185                        | 50.30                  | 2.20                           |
| 5                                                   | *5500.00       | 117.4 PK                      |                   |                | 1.00 H                   | 185                        | 77.10                  | 40.30                          |
| 6                                                   | *5500.00       | 106.2 AV                      |                   |                | 1.00 H                   | 185                        | 65.90                  | 40.30                          |
| 7                                                   | 11000.00       | 61.9 PK                       | 74.0              | -12.1          | 1.00 H                   | 102                        | 43.60                  | 18.30                          |
| 8                                                   | 11000.00       | 49.0 AV                       | 54.0              | -5.0           | 1.00 H                   | 102                        | 30.70                  | 18.30                          |
| 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                                                   | 5460.00        | 57.6 PK                       | 74.0              | -16.4          | 1.00 V                   | 22                         | 55.50                  | 2.10                           |
| 2                                                   | 5460.00        | 44.3 AV                       | 54.0              | -9.7           | 1.00 V                   | 22                         | 42.20                  | 2.10                           |
| 3                                                   | #5470.00       | 57.4 PK                       | 74.0              | -16.6          | 1.00 V                   | 25                         | 55.20                  | 2.20                           |
| 4                                                   | #5470.00       | 44.9 AV                       | 54.0              | -9.1           | 1.00 V                   | 25                         | 42.70                  | 2.20                           |
| 5                                                   | *5500.00       | 100.5 PK                      |                   |                | 1.00 V                   | 27                         | 60.20                  | 40.30                          |
| 6                                                   | *5500.00       | 89.6 AV                       |                   |                | 1.00 V                   | 27                         | 49.30                  | 40.30                          |
| 7                                                   | 11000.00       | 61.2 PK                       | 74.0              | -12.8          | 1.00 V                   | 219                        | 42.90                  | 18.30                          |
| 8                                                   | 11000.00       | 48.2 AV                       | 54.0              | -5.8           | 1.00 V                   | 219                        | 29.90                  | 18.30                          |

#### REMARKS:

- Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
- Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)  
– Pre-Amplifier Factor(dB)
- The other emission levels were very low against the limit.
- Margin value = Emission Level – Limit value
- " \* ": Fundamental frequency.
- " # ": The radiated frequency is out of the restricted band.

|                 |                |                      |              |
|-----------------|----------------|----------------------|--------------|
| CHANNEL         | TX Channel 116 | DETECTOR<br>FUNCTION | Peak (PK)    |
| FREQUENCY RANGE | 1GHz ~ 40GHz   |                      | 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                                                   | 5460.00        | 65.1 PK                       | 74.0              | -8.9           | 1.02 H                   | 96                         | 63.00                  | 2.10                           |
| 2                                                   | 5460.00        | 47.1 AV                       | 54.0              | -6.9           | 1.02 H                   | 96                         | 45.00                  | 2.10                           |
| 3                                                   | #5470.00       | 67.2 PK                       | 74.0              | -6.8           | 1.05 H                   | 332                        | 65.00                  | 2.20                           |
| 4                                                   | #5470.00       | 47.2 AV                       | 54.0              | -6.8           | 1.05 H                   | 332                        | 45.00                  | 2.20                           |
| 5                                                   | *5580.00       | 113.5 PK                      |                   |                | 1.05 H                   | 21                         | 73.00                  | 40.50                          |
| 6                                                   | *5580.00       | 101.8 AV                      |                   |                | 1.05 H                   | 21                         | 61.30                  | 40.50                          |
| 7                                                   | 11160.00       | 62.5 PK                       | 74.0              | -11.5          | 1.00 H                   | 63                         | 44.90                  | 17.60                          |
| 8                                                   | 11160.00       | 50.1 AV                       | 54.0              | -3.9           | 1.00 H                   | 63                         | 32.50                  | 17.60                          |
| 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                                                   | 5460.00        | 57.9 PK                       | 74.0              | -16.1          | 1.05 V                   | 34                         | 55.80                  | 2.10                           |
| 2                                                   | 5460.00        | 44.2 AV                       | 54.0              | -9.8           | 1.05 V                   | 34                         | 42.10                  | 2.10                           |
| 3                                                   | #5470.00       | 58.0 PK                       | 74.0              | -16.0          | 1.24 V                   | 195                        | 55.80                  | 2.20                           |
| 4                                                   | #5470.00       | 44.8 AV                       | 54.0              | -9.2           | 1.24 V                   | 195                        | 42.60                  | 2.20                           |
| 5                                                   | *5580.00       | 98.3 PK                       |                   |                | 1.58 V                   | 44                         | 57.80                  | 40.50                          |
| 6                                                   | *5580.00       | 86.2 AV                       |                   |                | 1.58 V                   | 44                         | 45.70                  | 40.50                          |
| 7                                                   | 11160.00       | 63.6 PK                       | 74.0              | -10.4          | 1.50 V                   | 24                         | 46.00                  | 17.60                          |
| 8                                                   | 11160.00       | 49.8 AV                       | 54.0              | -4.2           | 1.50 V                   | 24                         | 32.20                  | 17.60                          |

#### REMARKS:

- Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
- Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)  
– Pre-Amplifier Factor(dB)
- The other emission levels were very low against the limit.
- Margin value = Emission Level – Limit value
- " \* ": Fundamental frequency.
- " # ": The radiated frequency is out of the restricted band.

|                 |                |                      |              |
|-----------------|----------------|----------------------|--------------|
| CHANNEL         | TX Channel 140 | DETECTOR<br>FUNCTION | Peak (PK)    |
| FREQUENCY RANGE | 1GHz ~ 40GHz   |                      | 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                                                   | *5700.00       | 114.9 PK                      |                   |                | 1.06 H                   | 24                         | 74.10                  | 40.80                          |
| 2                                                   | *5700.00       | 104.1 AV                      |                   |                | 1.06 H                   | 24                         | 63.30                  | 40.80                          |
| 3                                                   | #5725.00       | 68.9 PK                       | 74.0              | -5.1           | 1.06 H                   | 26                         | 66.30                  | 2.60                           |
| 4                                                   | #5725.00       | 53.0 AV                       | 54.0              | -1.0           | 1.06 H                   | 26                         | 50.40                  | 2.60                           |
| 5                                                   | 11400.00       | 62.6 PK                       | 74.0              | -11.4          | 1.00 H                   | 262                        | 46.10                  | 16.50                          |
| 6                                                   | 11400.00       | 49.0 AV                       | 54.0              | -5.0           | 1.00 H                   | 262                        | 32.50                  | 16.50                          |
| 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                                                   | *5700.00       | 100.0 PK                      |                   |                | 1.00 V                   | 170                        | 59.20                  | 40.80                          |
| 2                                                   | *5700.00       | 89.6 AV                       |                   |                | 1.00 V                   | 170                        | 48.80                  | 40.80                          |
| 3                                                   | #5725.00       | 57.7 PK                       | 74.0              | -16.3          | 1.00 V                   | 170                        | 55.10                  | 2.60                           |
| 4                                                   | #5725.00       | 44.6 AV                       | 54.0              | -9.4           | 1.00 V                   | 170                        | 42.00                  | 2.60                           |
| 5                                                   | 11400.00       | 62.0 PK                       | 74.0              | -12.0          | 1.00 V                   | 100                        | 45.50                  | 16.50                          |
| 6                                                   | 11400.00       | 48.5 AV                       | 54.0              | -5.5           | 1.00 V                   | 100                        | 32.00                  | 16.50                          |

#### 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)  
– Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

## 802.11n (20MHz)

|                 |               |                      |              |
|-----------------|---------------|----------------------|--------------|
| CHANNEL         | TX Channel 52 | DETECTOR<br>FUNCTION | Peak (PK)    |
| FREQUENCY RANGE | 1GHz ~ 40GHz  |                      | 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                                                   | 5150.00        | 58.0 PK                       | 74.0              | -16.0          | 1.02 H                   | 65                         | 56.00                  | 2.00                           |
| 2                                                   | 5150.00        | 44.6 AV                       | 54.0              | -9.4           | 1.02 H                   | 65                         | 42.60                  | 2.00                           |
| 3                                                   | *5260.00       | 99.5 PK                       |                   |                | 1.05 H                   | 34                         | 59.40                  | 40.10                          |
| 4                                                   | *5260.00       | 88.9 AV                       |                   |                | 1.05 H                   | 34                         | 48.80                  | 40.10                          |
| 5                                                   | 5350.00        | 58.0 PK                       | 74.0              | -16.0          | 1.00 H                   | 360                        | 56.00                  | 2.00                           |
| 6                                                   | 5350.00        | 44.2 AV                       | 54.0              | -9.8           | 1.00 H                   | 360                        | 42.20                  | 2.00                           |
| 7                                                   | #10520.00      | 61.6 PK                       | 74.0              | -12.4          | 1.01 H                   | 48                         | 45.70                  | 15.90                          |
| 8                                                   | #10520.00      | 47.5 AV                       | 54.0              | -6.5           | 1.01 H                   | 48                         | 31.60                  | 15.90                          |
| 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                                                   | 5150.00        | 61.0 PK                       | 74.0              | -13.0          | 1.00 V                   | 159                        | 59.00                  | 2.00                           |
| 2                                                   | 5150.00        | 48.2 AV                       | 54.0              | -5.8           | 1.00 V                   | 159                        | 46.20                  | 2.00                           |
| 3                                                   | *5260.00       | 121.2 PK                      |                   |                | 1.00 V                   | 220                        | 81.10                  | 40.10                          |
| 4                                                   | *5260.00       | 111.2 AV                      |                   |                | 1.00 V                   | 220                        | 71.10                  | 40.10                          |
| 5                                                   | 5350.00        | 62.4 PK                       | 74.0              | -11.6          | 1.31 V                   | 158                        | 60.40                  | 2.00                           |
| 6                                                   | 5350.00        | 48.8 AV                       | 54.0              | -5.2           | 1.31 V                   | 158                        | 46.80                  | 2.00                           |
| 7                                                   | #10520.00      | 61.9 PK                       | 74.0              | -12.1          | 1.05 V                   | 32                         | 46.00                  | 15.90                          |
| 8                                                   | #10520.00      | 49.1 AV                       | 54.0              | -4.9           | 1.05 V                   | 32                         | 33.20                  | 15.90                          |

### 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)  
– Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

|                 |               |                      |              |
|-----------------|---------------|----------------------|--------------|
| CHANNEL         | TX Channel 60 | DETECTOR<br>FUNCTION | Peak (PK)    |
| FREQUENCY RANGE | 1GHz ~ 40GHz  |                      | 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                                                   | 5150.00        | 57.5 PK                       | 74.0              | -16.5          | 1.05 H                   | 34                         | 55.50                  | 2.00                           |
| 2                                                   | 5150.00        | 44.6 AV                       | 54.0              | -9.4           | 1.05 H                   | 34                         | 42.60                  | 2.00                           |
| 3                                                   | *5300.00       | 102.1 PK                      |                   |                | 1.05 H                   | 221                        | 62.00                  | 40.10                          |
| 4                                                   | *5300.00       | 91.5 AV                       |                   |                | 1.05 H                   | 221                        | 51.40                  | 40.10                          |
| 5                                                   | 5350.00        | 57.9 PK                       | 74.0              | -16.1          | 1.02 H                   | 352                        | 55.90                  | 2.00                           |
| 6                                                   | 5350.00        | 44.6 AV                       | 54.0              | -9.4           | 1.02 H                   | 352                        | 42.60                  | 2.00                           |
| 7                                                   | 10600.00       | 62.4 PK                       | 74.0              | -11.6          | 1.52 H                   | 47                         | 45.80                  | 16.60                          |
| 8                                                   | 10600.00       | 48.8 AV                       | 54.0              | -5.2           | 1.52 H                   | 47                         | 32.20                  | 16.60                          |
| 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                                                   | 5150.00        | 60.7 PK                       | 74.0              | -13.3          | 1.02 V                   | 64                         | 58.70                  | 2.00                           |
| 2                                                   | 5150.00        | 47.5 AV                       | 54.0              | -6.5           | 1.02 V                   | 64                         | 45.50                  | 2.00                           |
| 3                                                   | *5300.00       | 123.7 PK                      |                   |                | 1.02 V                   | 351                        | 83.60                  | 40.10                          |
| 4                                                   | *5300.00       | 112.8 AV                      |                   |                | 1.02 V                   | 351                        | 72.70                  | 40.10                          |
| 5                                                   | 5350.00        | 65.8 PK                       | 74.0              | -8.2           | 1.51 V                   | 35                         | 63.80                  | 2.00                           |
| 6                                                   | 5350.00        | 50.4 AV                       | 54.0              | -3.6           | 1.51 V                   | 35                         | 48.40                  | 2.00                           |
| 7                                                   | 10600.00       | 63.1 PK                       | 74.0              | -10.9          | 1.45 V                   | 153                        | 46.50                  | 16.60                          |
| 8                                                   | 10600.00       | 49.8 AV                       | 54.0              | -4.2           | 1.45 V                   | 153                        | 33.20                  | 16.60                          |

#### 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)  
– Pre-Amplifier 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 64 | DETECTOR<br>FUNCTION | Peak (PK)    |
| FREQUENCY RANGE | 1GHz ~ 40GHz  |                      | 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                                                   | *5320.00       | 101.8 PK                      |                   |                | 1.16 H                   | 227                        | 61.60                  | 40.20                          |
| 2                                                   | *5320.00       | 91.3 AV                       |                   |                | 1.16 H                   | 227                        | 51.10                  | 40.20                          |
| 3                                                   | 5350.00        | 57.6 PK                       | 74.0              | -16.4          | 1.58 H                   | 360                        | 55.60                  | 2.00                           |
| 4                                                   | 5350.00        | 44.6 AV                       | 54.0              | -9.4           | 1.58 H                   | 360                        | 42.60                  | 2.00                           |
| 5                                                   | 10640.00       | 62.0 PK                       | 74.0              | -12.0          | 1.05 H                   | 44                         | 45.20                  | 16.80                          |
| 6                                                   | 10640.00       | 49.0 AV                       | 54.0              | -5.0           | 1.05 H                   | 44                         | 32.20                  | 16.80                          |
| 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                                                   | *5320.00       | 122.6 PK                      |                   |                | 1.00 V                   | 211                        | 82.40                  | 40.20                          |
| 2                                                   | *5320.00       | 112.2 AV                      |                   |                | 1.00 V                   | 211                        | 72.00                  | 40.20                          |
| 3                                                   | 5350.00        | 69.0 PK                       | 74.0              | -5.0           | 1.00 V                   | 221                        | 67.00                  | 2.00                           |
| 4                                                   | 5350.00        | 53.0 AV                       | 54.0              | -1.0           | 1.00 V                   | 221                        | 51.00                  | 2.00                           |
| 5                                                   | 10640.00       | 63.6 PK                       | 74.0              | -10.4          | 1.05 V                   | 96                         | 46.80                  | 16.80                          |
| 6                                                   | 10640.00       | 50.3 AV                       | 54.0              | -3.7           | 1.05 V                   | 96                         | 33.50                  | 16.80                          |

#### 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)  
– Pre-Amplifier 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 100 | DETECTOR<br>FUNCTION | Peak (PK)    |
| FREQUENCY RANGE | 1GHz ~ 40GHz   |                      | 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                                                   | 5460.00        | 56.7 PK                       | 74.0              | -17.3          | 1.04 H                   | 88                         | 54.60                  | 2.10                           |
| 2                                                   | 5460.00        | 44.3 AV                       | 54.0              | -9.7           | 1.04 H                   | 88                         | 42.20                  | 2.10                           |
| 3                                                   | #5470.00       | 60.8 PK                       | 74.0              | -13.2          | 1.06 H                   | 34                         | 58.60                  | 2.20                           |
| 4                                                   | #5470.00       | 45.7 AV                       | 54.0              | -8.3           | 1.06 H                   | 34                         | 43.50                  | 2.20                           |
| 5                                                   | *5500.00       | 101.8 PK                      |                   |                | 1.20 H                   | 232                        | 61.50                  | 40.30                          |
| 6                                                   | *5500.00       | 91.2 AV                       |                   |                | 1.20 H                   | 232                        | 50.90                  | 40.30                          |
| 7                                                   | 11000.00       | 63.9 PK                       | 74.0              | -10.1          | 1.02 H                   | 325                        | 45.60                  | 18.30                          |
| 8                                                   | 11000.00       | 49.5 AV                       | 54.0              | -4.5           | 1.02 H                   | 325                        | 31.20                  | 18.30                          |
| 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                                                   | 5460.00        | 60.8 PK                       | 74.0              | -13.2          | 1.05 V                   | 166                        | 58.70                  | 2.10                           |
| 2                                                   | 5460.00        | 47.9 AV                       | 54.0              | -6.1           | 1.05 V                   | 166                        | 45.80                  | 2.10                           |
| 3                                                   | #5470.00       | 69.8 PK                       | 74.0              | -4.2           | 1.02 V                   | 178                        | 67.60                  | 2.20                           |
| 4                                                   | #5470.00       | 52.5 AV                       | 54.0              | -1.5           | 1.02 V                   | 178                        | 50.30                  | 2.20                           |
| 5                                                   | *5500.00       | 121.8 PK                      |                   |                | 1.02 V                   | 156                        | 81.50                  | 40.30                          |
| 6                                                   | *5500.00       | 111.4 AV                      |                   |                | 1.02 V                   | 156                        | 71.10                  | 40.30                          |
| 7                                                   | 11000.00       | 64.3 PK                       | 74.0              | -9.7           | 1.02 V                   | 6                          | 46.00                  | 18.30                          |
| 8                                                   | 11000.00       | 50.9 AV                       | 54.0              | -3.1           | 1.02 V                   | 6                          | 32.60                  | 18.30                          |

#### REMARKS:

- Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
- Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)  
– Pre-Amplifier Factor(dB)
- The other emission levels were very low against the limit.
- Margin value = Emission Level – Limit value
- " \* ": Fundamental frequency.
- " # ": The radiated frequency is out of the restricted band.

|                 |                |                      |              |
|-----------------|----------------|----------------------|--------------|
| CHANNEL         | TX Channel 116 | DETECTOR<br>FUNCTION | Peak (PK)    |
| FREQUENCY RANGE | 1GHz ~ 40GHz   |                      | 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                                                   | 5460.00        | 58.8 PK                       | 74.0              | -15.2          | 1.04 H                   | 84                         | 56.70                  | 2.10                           |
| 2                                                   | 5460.00        | 44.6 AV                       | 54.0              | -9.4           | 1.04 H                   | 84                         | 42.50                  | 2.10                           |
| 3                                                   | #5470.00       | 60.8 PK                       | 74.0              | -13.2          | 1.21 H                   | 56                         | 58.60                  | 2.20                           |
| 4                                                   | #5470.00       | 45.7 AV                       | 54.0              | -8.3           | 1.21 H                   | 56                         | 43.50                  | 2.20                           |
| 5                                                   | *5580.00       | 103.4 PK                      |                   |                | 1.02 H                   | 63                         | 62.90                  | 40.50                          |
| 6                                                   | *5580.00       | 92.5 AV                       |                   |                | 1.02 H                   | 63                         | 52.00                  | 40.50                          |
| 7                                                   | 11160.00       | 63.6 PK                       | 74.0              | -10.4          | 1.25 H                   | 224                        | 46.00                  | 17.60                          |
| 8                                                   | 11160.00       | 50.1 AV                       | 54.0              | -3.9           | 1.25 H                   | 224                        | 32.50                  | 17.60                          |
| 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                                                   | 5460.00        | 64.2 PK                       | 74.0              | -9.8           | 1.02 V                   | 44                         | 62.10                  | 2.10                           |
| 2                                                   | 5460.00        | 47.2 AV                       | 54.0              | -6.8           | 1.02 V                   | 44                         | 45.10                  | 2.10                           |
| 3                                                   | #5470.00       | 67.9 PK                       | 74.0              | -6.1           | 1.02 V                   | 65                         | 65.70                  | 2.20                           |
| 4                                                   | #5470.00       | 48.5 AV                       | 54.0              | -5.5           | 1.02 V                   | 65                         | 46.30                  | 2.20                           |
| 5                                                   | *5580.00       | 124.0 PK                      |                   |                | 1.02 V                   | 36                         | 83.50                  | 40.50                          |
| 6                                                   | *5580.00       | 112.5 AV                      |                   |                | 1.02 V                   | 36                         | 72.00                  | 40.50                          |
| 7                                                   | 11160.00       | 63.3 PK                       | 74.0              | -10.7          | 1.54 V                   | 88                         | 45.70                  | 17.60                          |
| 8                                                   | 11160.00       | 49.8 AV                       | 54.0              | -4.2           | 1.54 V                   | 88                         | 32.20                  | 17.60                          |

#### REMARKS:

- Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
- Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)  
– Pre-Amplifier Factor(dB)
- The other emission levels were very low against the limit.
- Margin value = Emission Level – Limit value
- " \* ": Fundamental frequency.
- " # ": The radiated frequency is out of the restricted band.

|                 |                |                      |              |
|-----------------|----------------|----------------------|--------------|
| CHANNEL         | TX Channel 140 | DETECTOR<br>FUNCTION | Peak (PK)    |
| FREQUENCY RANGE | 1GHz ~ 40GHz   |                      | 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                                                   | #5280.00       | 58.0 PK                       | 74.0              | -16.0          | 1.00 H                   | 63                         | 56.00                  | 2.00                           |
| 2                                                   | #5280.00       | 44.4 AV                       | 54.0              | -9.6           | 1.00 H                   | 63                         | 42.40                  | 2.00                           |
| 3                                                   | *5700.00       | 100.5 PK                      |                   |                | 1.00 H                   | 257                        | 59.70                  | 40.80                          |
| 4                                                   | *5700.00       | 90.3 AV                       |                   |                | 1.00 H                   | 257                        | 49.50                  | 40.80                          |
| 5                                                   | #5725.00       | 58.6 PK                       | 74.0              | -15.4          | 1.02 H                   | 64                         | 56.00                  | 2.60                           |
| 6                                                   | #5725.00       | 45.2 AV                       | 54.0              | -8.8           | 1.02 H                   | 64                         | 42.60                  | 2.60                           |
| 7                                                   | 11400.00       | 61.4 PK                       | 74.0              | -12.6          | 1.03 H                   | 62                         | 44.90                  | 16.50                          |
| 8                                                   | 11400.00       | 47.7 AV                       | 54.0              | -6.3           | 1.03 H                   | 62                         | 31.20                  | 16.50                          |
| 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                                                   | #5280.00       | 61.0 PK                       | 74.0              | -13.0          | 1.00 V                   | 215                        | 59.00                  | 2.00                           |
| 2                                                   | #5280.00       | 51.0 AV                       | 54.0              | -3.0           | 1.00 V                   | 215                        | 49.00                  | 2.00                           |
| 3                                                   | *5700.00       | 118.0 PK                      |                   |                | 1.43 V                   | 207                        | 77.20                  | 40.80                          |
| 4                                                   | *5700.00       | 107.3 AV                      |                   |                | 1.43 V                   | 207                        | 66.50                  | 40.80                          |
| 5                                                   | #5725.00       | 68.9 PK                       | 74.0              | -5.1           | 1.46 V                   | 220                        | 66.30                  | 2.60                           |
| 6                                                   | #5725.00       | 52.6 AV                       | 54.0              | -1.4           | 1.46 V                   | 220                        | 50.00                  | 2.60                           |
| 7                                                   | 11400.00       | 61.8 PK                       | 74.0              | -12.2          | 1.54 V                   | 152                        | 45.30                  | 16.50                          |
| 8                                                   | 11400.00       | 49.0 AV                       | 54.0              | -5.0           | 1.54 V                   | 152                        | 32.50                  | 16.50                          |

#### REMARKS:

- Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
- Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)  
– Pre-Amplifier Factor(dB)
- The other emission levels were very low against the limit.
- Margin value = Emission Level – Limit value
- " \* ": Fundamental frequency.
- " # ": The radiated frequency is out of the restricted band.

## 802.11n (40MHz)

|                 |               |                      |              |
|-----------------|---------------|----------------------|--------------|
| CHANNEL         | TX Channel 54 | DETECTOR<br>FUNCTION | Peak (PK)    |
| FREQUENCY RANGE | 1GHz ~ 40GHz  |                      | 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                                                   | 5150.00        | 57.6 PK                       | 74.0              | -16.4          | 1.05 H                   | 84                         | 55.60                  | 2.00                           |
| 2                                                   | 5150.00        | 43.6 AV                       | 54.0              | -10.4          | 1.05 H                   | 84                         | 41.60                  | 2.00                           |
| 3                                                   | *5270.00       | 98.0 PK                       |                   |                | 1.02 H                   | 63                         | 57.90                  | 40.10                          |
| 4                                                   | *5270.00       | 86.7 AV                       |                   |                | 1.02 H                   | 63                         | 46.60                  | 40.10                          |
| 5                                                   | 5350.00        | 57.8 PK                       | 74.0              | -16.2          | 1.02 H                   | 64                         | 55.80                  | 2.00                           |
| 6                                                   | 5350.00        | 44.6 AV                       | 54.0              | -9.4           | 1.02 H                   | 64                         | 42.60                  | 2.00                           |
| 7                                                   | #10540.00      | 62.9 PK                       | 74.0              | -11.1          | 1.51 H                   | 96                         | 46.80                  | 16.10                          |
| 8                                                   | #10540.00      | 49.3 AV                       | 54.0              | -4.7           | 1.51 H                   | 96                         | 33.20                  | 16.10                          |
| 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                                                   | 5150.00        | 59.5 PK                       | 74.0              | -14.5          | 1.02 V                   | 63                         | 57.50                  | 2.00                           |
| 2                                                   | 5150.00        | 47.1 AV                       | 54.0              | -6.9           | 1.02 V                   | 63                         | 45.10                  | 2.00                           |
| 3                                                   | *5270.00       | 118.5 PK                      |                   |                | 1.00 V                   | 252                        | 78.40                  | 40.10                          |
| 4                                                   | *5270.00       | 110.6 AV                      |                   |                | 1.00 V                   | 252                        | 70.50                  | 40.10                          |
| 5                                                   | 5350.00        | 66.2 PK                       | 74.0              | -7.8           | 1.02 V                   | 64                         | 64.20                  | 2.00                           |
| 6                                                   | 5350.00        | 52.1 AV                       | 54.0              | -1.9           | 1.02 V                   | 64                         | 50.10                  | 2.00                           |
| 7                                                   | #10540.00      | 63.6 PK                       | 74.0              | -10.4          | 1.05 V                   | 84                         | 47.50                  | 16.10                          |
| 8                                                   | #10540.00      | 49.7 AV                       | 54.0              | -4.3           | 1.05 V                   | 84                         | 33.60                  | 16.10                          |

### 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)  
– Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

|                 |               |                      |              |
|-----------------|---------------|----------------------|--------------|
| CHANNEL         | TX Channel 62 | DETECTOR<br>FUNCTION | Peak (PK)    |
| FREQUENCY RANGE | 1GHz ~ 40GHz  |                      | 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                                                   | *5310.00       | 92.8 PK                       |                   |                | 1.00 H                   | 121                        | 52.70                  | 40.10                          |
| 2                                                   | *5310.00       | 82.3 AV                       |                   |                | 1.00 H                   | 121                        | 42.20                  | 40.10                          |
| 3                                                   | 5350.00        | 57.9 PK                       | 74.0              | -16.1          | 1.03 H                   | 179                        | 55.90                  | 2.00                           |
| 4                                                   | 5350.00        | 44.9 AV                       | 54.0              | -9.1           | 1.03 H                   | 179                        | 42.90                  | 2.00                           |
| 5                                                   | 10620.00       | 63.1 PK                       | 74.0              | -10.9          | 1.00 H                   | 231                        | 46.50                  | 16.60                          |
| 6                                                   | 10620.00       | 49.7 AV                       | 54.0              | -4.3           | 1.00 H                   | 231                        | 33.10                  | 16.60                          |
| 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                                                   | *5310.00       | 113.8 PK                      |                   |                | 1.02 V                   | 160                        | 73.70                  | 40.10                          |
| 2                                                   | *5310.00       | 103.3 AV                      |                   |                | 1.02 V                   | 160                        | 63.20                  | 40.10                          |
| 3                                                   | 5350.00        | 68.5 PK                       | 74.0              | -5.5           | 1.00 V                   | 170                        | 66.50                  | 2.00                           |
| 4                                                   | 5350.00        | 52.7 AV                       | 54.0              | -1.3           | 1.00 V                   | 170                        | 50.70                  | 2.00                           |
| 5                                                   | 10620.00       | 62.8 PK                       | 74.0              | -11.2          | 1.00 V                   | 102                        | 46.20                  | 16.60                          |
| 6                                                   | 10620.00       | 49.3 AV                       | 54.0              | -4.7           | 1.00 V                   | 102                        | 32.70                  | 16.60                          |

#### 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)  
– Pre-Amplifier 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 102 | DETECTOR<br>FUNCTION | Peak (PK)    |
| FREQUENCY RANGE | 1GHz ~ 40GHz   |                      | 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                                                   | 5460.00        | 58.1 PK                       | 74.0              | -15.9          | 1.00 H                   | 211                        | 56.00                  | 2.10                           |
| 2                                                   | 5460.00        | 44.5 AV                       | 54.0              | -9.5           | 1.00 H                   | 211                        | 42.40                  | 2.10                           |
| 3                                                   | #5470.00       | 58.2 PK                       | 74.0              | -15.8          | 1.00 H                   | 102                        | 56.00                  | 2.20                           |
| 4                                                   | #5470.00       | 44.7 AV                       | 54.0              | -9.3           | 1.00 H                   | 102                        | 42.50                  | 2.20                           |
| 5                                                   | *5510.00       | 95.7 PK                       |                   |                | 1.00 H                   | 162                        | 55.40                  | 40.30                          |
| 6                                                   | *5510.00       | 86.1 AV                       |                   |                | 1.00 H                   | 162                        | 45.80                  | 40.30                          |
| 7                                                   | 11020.00       | 61.6 PK                       | 74.0              | -12.4          | 1.00 H                   | 56                         | 43.50                  | 18.10                          |
| 8                                                   | 11020.00       | 49.9 AV                       | 54.0              | -4.1           | 1.00 H                   | 56                         | 31.80                  | 18.10                          |
| 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                                                   | 5460.00        | 63.5 PK                       | 74.0              | -10.5          | 1.01 V                   | 226                        | 61.40                  | 2.10                           |
| 2                                                   | 5460.00        | 48.6 AV                       | 54.0              | -5.4           | 1.01 V                   | 226                        | 46.50                  | 2.10                           |
| 3                                                   | #5470.00       | 69.5 PK                       | 74.0              | -4.5           | 1.36 V                   | 144                        | 67.30                  | 2.20                           |
| 4                                                   | #5470.00       | 52.9 AV                       | 54.0              | -1.1           | 1.36 V                   | 144                        | 50.70                  | 2.20                           |
| 5                                                   | *5510.00       | 116.2 PK                      |                   |                | 1.38 V                   | 159                        | 75.90                  | 40.30                          |
| 6                                                   | *5510.00       | 105.1 AV                      |                   |                | 1.38 V                   | 159                        | 64.80                  | 40.30                          |
| 7                                                   | 11020.00       | 61.0 PK                       | 74.0              | -13.0          | 1.00 V                   | 321                        | 42.90                  | 18.10                          |
| 8                                                   | 11020.00       | 49.2 AV                       | 54.0              | -4.8           | 1.00 V                   | 321                        | 31.10                  | 18.10                          |

#### REMARKS:

- Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
- Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)  
– Pre-Amplifier Factor(dB)
- The other emission levels were very low against the limit.
- Margin value = Emission Level – Limit value
- " \* ": Fundamental frequency.
- " # ": The radiated frequency is out of the restricted band.

|                 |                |                      |              |
|-----------------|----------------|----------------------|--------------|
| CHANNEL         | TX Channel 110 | DETECTOR<br>FUNCTION | Peak (PK)    |
| FREQUENCY RANGE | 1GHz ~ 40GHz   |                      | 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                                                   | 5460.00        | 57.8 PK                       | 74.0              | -16.2          | 1.05 H                   | 89                         | 55.70                  | 2.10                           |
| 2                                                   | 5460.00        | 44.7 AV                       | 54.0              | -9.3           | 1.05 H                   | 89                         | 42.60                  | 2.10                           |
| 3                                                   | #5470.00       | 59.0 PK                       | 74.0              | -15.0          | 1.04 H                   | 51                         | 56.80                  | 2.20                           |
| 4                                                   | #5470.00       | 45.1 AV                       | 54.0              | -8.9           | 1.04 H                   | 51                         | 42.90                  | 2.20                           |
| 5                                                   | *5550.00       | 99.5 PK                       |                   |                | 1.02 H                   | 63                         | 59.10                  | 40.40                          |
| 6                                                   | *5550.00       | 88.9 AV                       |                   |                | 1.02 H                   | 63                         | 48.50                  | 40.40                          |
| 7                                                   | 11100.00       | 62.4 PK                       | 74.0              | -11.6          | 1.07 H                   | 85                         | 44.60                  | 17.80                          |
| 8                                                   | 11100.00       | 48.3 AV                       | 54.0              | -5.7           | 1.07 H                   | 85                         | 30.50                  | 17.80                          |
| 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                                                   | 5460.00        | 64.3 PK                       | 74.0              | -9.7           | 1.02 V                   | 35                         | 62.20                  | 2.10                           |
| 2                                                   | 5460.00        | 50.1 AV                       | 54.0              | -3.9           | 1.02 V                   | 35                         | 48.00                  | 2.10                           |
| 3                                                   | #5470.00       | 67.9 PK                       | 74.0              | -6.1           | 1.02 V                   | 64                         | 65.70                  | 2.20                           |
| 4                                                   | #5470.00       | 51.3 AV                       | 54.0              | -2.7           | 1.02 V                   | 64                         | 49.10                  | 2.20                           |
| 5                                                   | *5550.00       | 118.8 PK                      |                   |                | 1.00 V                   | 58                         | 78.40                  | 40.40                          |
| 6                                                   | *5550.00       | 108.9 AV                      |                   |                | 1.00 V                   | 58                         | 68.50                  | 40.40                          |
| 7                                                   | 11100.00       | 62.7 PK                       | 74.0              | -11.3          | 1.02 V                   | 96                         | 44.90                  | 17.80                          |
| 8                                                   | 11100.00       | 49.3 AV                       | 54.0              | -4.7           | 1.02 V                   | 96                         | 31.50                  | 17.80                          |

#### REMARKS:

- Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
- Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)  
– Pre-Amplifier Factor(dB)
- The other emission levels were very low against the limit.
- Margin value = Emission Level – Limit value
- " \* ": Fundamental frequency.
- " # ": The radiated frequency is out of the restricted band.



|                 |                |                      |              |
|-----------------|----------------|----------------------|--------------|
| CHANNEL         | TX Channel 134 | DETECTOR<br>FUNCTION | Peak (PK)    |
| FREQUENCY RANGE | 1GHz ~ 40GHz   |                      | 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                                                   | #5280.00       | 57.9 PK                       | 74.0              | -16.1          | 1.00 H                   | 66                         | 55.90                  | 2.00                           |
| 2                                                   | #5280.00       | 44.3 AV                       | 54.0              | -9.7           | 1.00 H                   | 66                         | 42.30                  | 2.00                           |
| 3                                                   | *5670.00       | 98.7 PK                       |                   |                | 1.06 H                   | 161                        | 58.00                  | 40.70                          |
| 4                                                   | *5670.00       | 88.5 AV                       |                   |                | 1.06 H                   | 161                        | 47.80                  | 40.70                          |
| 5                                                   | #5725.00       | 56.4 PK                       | 74.0              | -17.6          | 1.00 H                   | 166                        | 53.80                  | 2.60                           |
| 6                                                   | #5725.00       | 43.2 AV                       | 54.0              | -10.8          | 1.00 H                   | 166                        | 40.60                  | 2.60                           |
| 7                                                   | 11340.00       | 62.6 PK                       | 74.0              | -11.4          | 1.00 H                   | 233                        | 45.80                  | 16.80                          |
| 8                                                   | 11340.00       | 48.9 AV                       | 54.0              | -5.1           | 1.00 H                   | 233                        | 32.10                  | 16.80                          |
| 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                                                   | #5280.00       | 61.1 PK                       | 74.0              | -12.9          | 1.00 V                   | 216                        | 59.10                  | 2.00                           |
| 2                                                   | #5280.00       | 49.6 AV                       | 54.0              | -4.4           | 1.00 V                   | 216                        | 47.60                  | 2.00                           |
| 3                                                   | *5670.00       | 116.6 PK                      |                   |                | 1.56 V                   | 207                        | 75.90                  | 40.70                          |
| 4                                                   | *5670.00       | 106.2 AV                      |                   |                | 1.56 V                   | 207                        | 65.50                  | 40.70                          |
| 5                                                   | #5725.00       | 68.3 PK                       | 74.0              | -5.7           | 1.56 V                   | 223                        | 65.70                  | 2.60                           |
| 6                                                   | #5725.00       | 52.9 AV                       | 54.0              | -1.1           | 1.56 V                   | 223                        | 50.30                  | 2.60                           |
| 7                                                   | 11340.00       | 62.5 PK                       | 74.0              | -11.5          | 1.00 V                   | 102                        | 45.70                  | 16.80                          |
| 8                                                   | 11340.00       | 48.8 AV                       | 54.0              | -5.2           | 1.00 V                   | 102                        | 32.00                  | 16.80                          |

#### REMARKS:

- Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
- Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)  
– Pre-Amplifier Factor(dB)
- The other emission levels were very low against the limit.
- Margin value = Emission Level – Limit value
- " \* ": Fundamental frequency.
- " # ": The radiated frequency is out of the restricted band.

## 802.11ac (20MHz)

|                 |               |                      |              |
|-----------------|---------------|----------------------|--------------|
| CHANNEL         | TX Channel 52 | DETECTOR<br>FUNCTION | Peak (PK)    |
| FREQUENCY RANGE | 1GHz ~ 40GHz  |                      | 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                                                   | 5150.00        | 57.6 PK                       | 74.0              | -16.4          | 1.02 H                   | 84                         | 55.60                  | 2.00                           |
| 2                                                   | 5150.00        | 44.5 AV                       | 54.0              | -9.5           | 1.02 H                   | 84                         | 42.50                  | 2.00                           |
| 3                                                   | *5260.00       | 61.0 PK                       |                   |                | 1.02 H                   | 34                         | 59.00                  | 2.00                           |
| 4                                                   | *5260.00       | 50.6 AV                       |                   |                | 1.02 H                   | 34                         | 48.60                  | 2.00                           |
| 5                                                   | 5350.00        | 57.7 PK                       | 74.0              | -16.3          | 1.09 H                   | 95                         | 55.70                  | 2.00                           |
| 6                                                   | 5350.00        | 44.4 AV                       | 54.0              | -9.6           | 1.09 H                   | 95                         | 42.40                  | 2.00                           |
| 7                                                   | #10520.00      | 61.7 PK                       | 74.0              | -12.3          | 1.04 H                   | 154                        | 45.80                  | 15.90                          |
| 8                                                   | #10520.00      | 47.6 AV                       | 54.0              | -6.4           | 1.04 H                   | 154                        | 31.70                  | 15.90                          |
| 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                                                   | 5150.00        | 60.6 PK                       | 74.0              | -13.4          | 1.02 V                   | 64                         | 58.60                  | 2.00                           |
| 2                                                   | 5150.00        | 47.8 AV                       | 54.0              | -6.2           | 1.02 V                   | 64                         | 45.80                  | 2.00                           |
| 3                                                   | *5260.00       | 120.8 PK                      |                   |                | 1.02 V                   | 35                         | 80.70                  | 40.10                          |
| 4                                                   | *5260.00       | 112.0 AV                      |                   |                | 1.02 V                   | 35                         | 71.90                  | 40.10                          |
| 5                                                   | 5350.00        | 62.0 PK                       | 74.0              | -12.0          | 1.05 V                   | 27                         | 60.00                  | 2.00                           |
| 6                                                   | 5350.00        | 48.1 AV                       | 54.0              | -5.9           | 1.05 V                   | 27                         | 46.10                  | 2.00                           |
| 7                                                   | #10520.00      | 61.7 PK                       | 74.0              | -12.3          | 1.11 V                   | 18                         | 45.80                  | 15.90                          |
| 8                                                   | #10520.00      | 48.6 AV                       | 54.0              | -5.4           | 1.11 V                   | 18                         | 32.70                  | 15.90                          |

### 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)  
– Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

|                 |               |                      |              |
|-----------------|---------------|----------------------|--------------|
| CHANNEL         | TX Channel 60 | DETECTOR<br>FUNCTION | Peak (PK)    |
| FREQUENCY RANGE | 1GHz ~ 40GHz  |                      | 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                                                   | 5150.00        | 56.9 PK                       | 74.0              | -17.1          | 1.02 H                   | 75                         | 54.90                  | 2.00                           |
| 2                                                   | 5150.00        | 44.6 AV                       | 54.0              | -9.4           | 1.02 H                   | 75                         | 42.60                  | 2.00                           |
| 3                                                   | *5300.00       | 101.9 PK                      |                   |                | 1.02 H                   | 63                         | 61.80                  | 40.10                          |
| 4                                                   | *5300.00       | 91.2 AV                       |                   |                | 1.02 H                   | 63                         | 51.10                  | 40.10                          |
| 5                                                   | 5350.00        | 57.7 PK                       | 74.0              | -16.3          | 1.65 H                   | 49                         | 55.70                  | 2.00                           |
| 6                                                   | 5350.00        | 44.7 AV                       | 54.0              | -9.3           | 1.65 H                   | 49                         | 42.70                  | 2.00                           |
| 7                                                   | 10600.00       | 61.9 PK                       | 74.0              | -12.1          | 1.04 H                   | 177                        | 45.30                  | 16.60                          |
| 8                                                   | 10600.00       | 48.7 AV                       | 54.0              | -5.3           | 1.04 H                   | 177                        | 32.10                  | 16.60                          |
| 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                                                   | 5150.00        | 60.5 PK                       | 74.0              | -13.5          | 1.02 V                   | 34                         | 58.50                  | 2.00                           |
| 2                                                   | 5150.00        | 47.9 AV                       | 54.0              | -6.1           | 1.02 V                   | 34                         | 45.90                  | 2.00                           |
| 3                                                   | *5300.00       | 123.5 PK                      |                   |                | 1.02 V                   | 14                         | 83.40                  | 40.10                          |
| 4                                                   | *5300.00       | 112.6 AV                      |                   |                | 1.02 V                   | 14                         | 72.50                  | 40.10                          |
| 5                                                   | 5350.00        | 65.4 PK                       | 74.0              | -8.6           | 1.25 V                   | 95                         | 63.40                  | 2.00                           |
| 6                                                   | 5350.00        | 50.1 AV                       | 54.0              | -3.9           | 1.25 V                   | 95                         | 48.10                  | 2.00                           |
| 7                                                   | 10600.00       | 62.3 PK                       | 74.0              | -11.7          | 1.48 V                   | 87                         | 45.70                  | 16.60                          |
| 8                                                   | 10600.00       | 49.7 AV                       | 54.0              | -4.3           | 1.48 V                   | 87                         | 33.10                  | 16.60                          |

#### 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)  
– Pre-Amplifier 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 64 | DETECTOR<br>FUNCTION | Peak (PK)    |
| FREQUENCY RANGE | 1GHz ~ 40GHz  |                      | 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                                                   | *5320.00       | 99.5 PK                       |                   |                | 1.00 H                   | 193                        | 59.30                  | 40.20                          |
| 2                                                   | *5320.00       | 89.2 AV                       |                   |                | 1.00 H                   | 193                        | 49.00                  | 40.20                          |
| 3                                                   | 5350.00        | 61.9 PK                       | 74.0              | -12.1          | 1.05 H                   | 24                         | 59.90                  | 2.00                           |
| 4                                                   | 5350.00        | 44.6 AV                       | 54.0              | -9.4           | 1.05 H                   | 24                         | 42.60                  | 2.00                           |
| 5                                                   | 10640.00       | 62.3 PK                       | 74.0              | -11.7          | 1.54 H                   | 85                         | 45.50                  | 16.80                          |
| 6                                                   | 10640.00       | 49.3 AV                       | 54.0              | -4.7           | 1.54 H                   | 85                         | 32.50                  | 16.80                          |
| 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                                                   | *5320.00       | 120.6 PK                      |                   |                | 1.00 V                   | 211                        | 80.40                  | 40.20                          |
| 2                                                   | *5320.00       | 110.3 AV                      |                   |                | 1.00 V                   | 211                        | 70.10                  | 40.20                          |
| 3                                                   | 5350.00        | 69.3 PK                       | 74.0              | -4.7           | 1.00 V                   | 216                        | 67.30                  | 2.00                           |
| 4                                                   | 5350.00        | 52.5 AV                       | 54.0              | -1.5           | 1.00 V                   | 216                        | 50.50                  | 2.00                           |
| 5                                                   | 10640.00       | 62.6 PK                       | 74.0              | -11.4          | 1.02 V                   | 63                         | 45.80                  | 16.80                          |
| 6                                                   | 10640.00       | 49.9 AV                       | 54.0              | -4.1           | 1.02 V                   | 63                         | 33.10                  | 16.80                          |

#### 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)  
– Pre-Amplifier 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 100 | DETECTOR<br>FUNCTION | Peak (PK)    |
| FREQUENCY RANGE | 1GHz ~ 40GHz   |                      | 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                                                   | 5460.00        | 57.3 PK                       | 74.0              | -16.7          | 1.20 H                   | 335                        | 55.20                  | 2.10                           |
| 2                                                   | 5460.00        | 44.3 AV                       | 54.0              | -9.7           | 1.20 H                   | 335                        | 42.20                  | 2.10                           |
| 3                                                   | #5470.00       | 60.1 PK                       | 74.0              | -13.9          | 1.02 H                   | 354                        | 57.90                  | 2.20                           |
| 4                                                   | #5470.00       | 45.4 AV                       | 54.0              | -8.6           | 1.02 H                   | 354                        | 43.20                  | 2.20                           |
| 5                                                   | *5500.00       | 101.5 PK                      |                   |                | 1.04 H                   | 84                         | 61.20                  | 40.30                          |
| 6                                                   | *5500.00       | 91.0 AV                       |                   |                | 1.04 H                   | 84                         | 50.70                  | 40.30                          |
| 7                                                   | 11000.00       | 63.1 PK                       | 74.0              | -10.9          | 1.51 H                   | 115                        | 44.80                  | 18.30                          |
| 8                                                   | 11000.00       | 50.5 AV                       | 54.0              | -3.5           | 1.51 H                   | 115                        | 32.20                  | 18.30                          |
| 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                                                   | 5460.00        | 60.7 PK                       | 74.0              | -13.3          | 1.19 V                   | 223                        | 58.60                  | 2.10                           |
| 2                                                   | 5460.00        | 48.3 AV                       | 54.0              | -5.7           | 1.19 V                   | 223                        | 46.20                  | 2.10                           |
| 3                                                   | #5470.00       | 69.5 PK                       | 74.0              | -4.5           | 1.19 V                   | 223                        | 67.30                  | 2.20                           |
| 4                                                   | #5470.00       | 52.7 AV                       | 54.0              | -1.3           | 1.19 V                   | 223                        | 50.50                  | 2.20                           |
| 5                                                   | *5500.00       | 121.5 PK                      |                   |                | 1.10 V                   | 52                         | 81.20                  | 40.30                          |
| 6                                                   | *5500.00       | 111.3 AV                      |                   |                | 1.10 V                   | 52                         | 71.00                  | 40.30                          |
| 7                                                   | 11000.00       | 64.5 PK                       | 74.0              | -9.5           | 1.02 V                   | 34                         | 46.20                  | 18.30                          |
| 8                                                   | 11000.00       | 50.9 AV                       | 54.0              | -3.1           | 1.02 V                   | 34                         | 32.60                  | 18.30                          |

#### REMARKS:

- Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
- Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)  
– Pre-Amplifier Factor(dB)
- The other emission levels were very low against the limit.
- Margin value = Emission Level – Limit value
- " \* ": Fundamental frequency.
- " # ": The radiated frequency is out of the restricted band.

|                 |                |                      |              |
|-----------------|----------------|----------------------|--------------|
| CHANNEL         | TX Channel 116 | DETECTOR<br>FUNCTION | Peak (PK)    |
| FREQUENCY RANGE | 1GHz ~ 40GHz   |                      | 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                                                   | 5460.00        | 58.6 PK                       | 74.0              | -15.4          | 1.54 H                   | 119                        | 56.50                  | 2.10                           |
| 2                                                   | 5460.00        | 44.9 AV                       | 54.0              | -9.1           | 1.54 H                   | 119                        | 42.80                  | 2.10                           |
| 3                                                   | #5470.00       | 60.4 PK                       | 74.0              | -13.6          | 1.24 H                   | 74                         | 58.20                  | 2.20                           |
| 4                                                   | #5470.00       | 45.3 AV                       | 54.0              | -8.7           | 1.24 H                   | 74                         | 43.10                  | 2.20                           |
| 5                                                   | *5580.00       | 103.0 PK                      |                   |                | 1.67 H                   | 158                        | 62.50                  | 40.50                          |
| 6                                                   | *5580.00       | 92.2 AV                       |                   |                | 1.67 H                   | 158                        | 51.70                  | 40.50                          |
| 7                                                   | 11160.00       | 62.6 PK                       | 74.0              | -11.4          | 1.24 H                   | 123                        | 45.00                  | 17.60                          |
| 8                                                   | 11160.00       | 49.8 AV                       | 54.0              | -4.2           | 1.24 H                   | 123                        | 32.20                  | 17.60                          |
| 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                                                   | 5460.00        | 63.7 PK                       | 74.0              | -10.3          | 1.02 V                   | 34                         | 61.60                  | 2.10                           |
| 2                                                   | 5460.00        | 46.6 AV                       | 54.0              | -7.4           | 1.02 V                   | 34                         | 44.50                  | 2.10                           |
| 3                                                   | #5470.00       | 67.4 PK                       | 74.0              | -6.6           | 1.05 V                   | 87                         | 65.20                  | 2.20                           |
| 4                                                   | #5470.00       | 48.2 AV                       | 54.0              | -5.8           | 1.05 V                   | 87                         | 46.00                  | 2.20                           |
| 5                                                   | *5580.00       | 123.7 PK                      |                   |                | 1.24 V                   | 47                         | 83.20                  | 40.50                          |
| 6                                                   | *5580.00       | 112.4 AV                      |                   |                | 1.24 V                   | 47                         | 71.90                  | 40.50                          |
| 7                                                   | 11160.00       | 62.8 PK                       | 74.0              | -11.2          | 1.02 V                   | 334                        | 45.20                  | 17.60                          |
| 8                                                   | 11160.00       | 49.7 AV                       | 54.0              | -4.3           | 1.02 V                   | 334                        | 32.10                  | 17.60                          |

#### REMARKS:

- Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
- Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)  
– Pre-Amplifier Factor(dB)
- The other emission levels were very low against the limit.
- Margin value = Emission Level – Limit value
- " \* ": Fundamental frequency.
- " # ": The radiated frequency is out of the restricted band.

|                 |                |                      |              |
|-----------------|----------------|----------------------|--------------|
| CHANNEL         | TX Channel 140 | DETECTOR<br>FUNCTION | Peak (PK)    |
| FREQUENCY RANGE | 1GHz ~ 40GHz   |                      | 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                                                   | #5280.00       | 58.0 PK                       | 74.0              | -16.0          | 1.02 H                   | 65                         | 56.00                  | 2.00                           |
| 2                                                   | #5280.00       | 44.6 AV                       | 54.0              | -9.4           | 1.02 H                   | 65                         | 42.60                  | 2.00                           |
| 3                                                   | *5700.00       | 100.3 PK                      |                   |                | 1.02 H                   | 22                         | 59.50                  | 40.80                          |
| 4                                                   | *5700.00       | 90.1 AV                       |                   |                | 1.02 H                   | 22                         | 49.30                  | 40.80                          |
| 5                                                   | #5725.00       | 58.4 PK                       | 74.0              | -15.6          | 1.02 H                   | 36                         | 55.80                  | 2.60                           |
| 6                                                   | #5725.00       | 45.2 AV                       | 54.0              | -8.8           | 1.02 H                   | 36                         | 42.60                  | 2.60                           |
| 7                                                   | 11400.00       | 61.8 PK                       | 74.0              | -12.2          | 1.95 H                   | 54                         | 45.30                  | 16.50                          |
| 8                                                   | 11400.00       | 47.7 AV                       | 54.0              | -6.3           | 1.95 H                   | 54                         | 31.20                  | 16.50                          |
| 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                                                   | #5280.00       | 60.7 PK                       | 74.0              | -13.3          | 1.02 V                   | 63                         | 58.70                  | 2.00                           |
| 2                                                   | #5280.00       | 50.7 AV                       | 54.0              | -3.3           | 1.02 V                   | 63                         | 48.70                  | 2.00                           |
| 3                                                   | *5700.00       | 117.8 PK                      |                   |                | 1.00 V                   | 15                         | 77.00                  | 40.80                          |
| 4                                                   | *5700.00       | 107.0 AV                      |                   |                | 1.00 V                   | 15                         | 66.20                  | 40.80                          |
| 5                                                   | #5725.00       | 68.0 PK                       | 74.0              | -6.0           | 1.40 V                   | 208                        | 65.40                  | 2.60                           |
| 6                                                   | #5725.00       | 53.0 AV                       | 54.0              | -1.0           | 1.40 V                   | 208                        | 50.40                  | 2.60                           |
| 7                                                   | 11400.00       | 63.4 PK                       | 74.0              | -10.6          | 1.04 V                   | 84                         | 46.90                  | 16.50                          |
| 8                                                   | 11400.00       | 49.7 AV                       | 54.0              | -4.3           | 1.04 V                   | 84                         | 33.20                  | 16.50                          |

#### REMARKS:

- Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
- Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)  
– Pre-Amplifier Factor(dB)
- The other emission levels were very low against the limit.
- Margin value = Emission Level – Limit value
- " \* ": Fundamental frequency.
- " # ": The radiated frequency is out of the restricted band.

# 802.11ac (40MHz)

|                 |               |                      |              |
|-----------------|---------------|----------------------|--------------|
| CHANNEL         | TX Channel 54 | DETECTOR<br>FUNCTION | Peak (PK)    |
| FREQUENCY RANGE | 1GHz ~ 40GHz  |                      | 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                                                   | 5150.00        | 57.1 PK                       | 74.0              | -16.9          | 1.02 H                   | 34                         | 55.10                  | 2.00                           |
| 2                                                   | 5150.00        | 43.1 AV                       | 54.0              | -10.9          | 1.02 H                   | 34                         | 41.10                  | 2.00                           |
| 3                                                   | *5270.00       | 97.6 PK                       |                   |                | 1.08 H                   | 84                         | 57.50                  | 40.10                          |
| 4                                                   | *5270.00       | 86.2 AV                       |                   |                | 1.08 H                   | 84                         | 46.10                  | 40.10                          |
| 5                                                   | 5350.00        | 58.5 PK                       | 74.0              | -15.5          | 1.53 H                   | 95                         | 56.50                  | 2.00                           |
| 6                                                   | 5350.00        | 44.1 AV                       | 54.0              | -9.9           | 1.53 H                   | 95                         | 42.10                  | 2.00                           |
| 7                                                   | #10540.00      | 61.7 PK                       | 74.0              | -12.3          | 1.00 H                   | 88                         | 45.60                  | 16.10                          |
| 8                                                   | #10540.00      | 48.7 AV                       | 54.0              | -5.3           | 1.00 H                   | 88                         | 32.60                  | 16.10                          |
| 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                                                   | 5150.00        | 59.1 PK                       | 74.0              | -14.9          | 1.05 V                   | 96                         | 57.10                  | 2.00                           |
| 2                                                   | 5150.00        | 46.7 AV                       | 54.0              | -7.3           | 1.05 V                   | 96                         | 44.70                  | 2.00                           |
| 3                                                   | *5270.00       | 118.2 PK                      |                   |                | 1.56 V                   | 96                         | 78.10                  | 40.10                          |
| 4                                                   | *5270.00       | 110.3 AV                      |                   |                | 1.56 V                   | 96                         | 70.20                  | 40.10                          |
| 5                                                   | 5350.00        | 65.8 PK                       | 74.0              | -8.2           | 1.00 V                   | 84                         | 63.80                  | 2.00                           |
| 6                                                   | 5350.00        | 51.7 AV                       | 54.0              | -2.3           | 1.00 V                   | 84                         | 49.70                  | 2.00                           |
| 7                                                   | #10540.00      | 63.2 PK                       | 74.0              | -10.8          | 1.02 V                   | 48                         | 47.10                  | 16.10                          |
| 8                                                   | #10540.00      | 49.7 AV                       | 54.0              | -4.3           | 1.02 V                   | 48                         | 33.60                  | 16.10                          |

## 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)  
– Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



|                 |               |                      |              |
|-----------------|---------------|----------------------|--------------|
| CHANNEL         | TX Channel 62 | DETECTOR<br>FUNCTION | Peak (PK)    |
| FREQUENCY RANGE | 1GHz ~ 40GHz  |                      | 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                                                   | *5310.00       | 92.9 PK                       |                   |                | 1.02 H                   | 63                         | 52.80                  | 40.10                          |
| 2                                                   | *5310.00       | 82.4 AV                       |                   |                | 1.02 H                   | 63                         | 42.30                  | 40.10                          |
| 3                                                   | 5350.00        | 58.6 PK                       | 74.0              | -15.4          | 1.52 H                   | 62                         | 56.60                  | 2.00                           |
| 4                                                   | 5350.00        | 44.5 AV                       | 54.0              | -9.5           | 1.52 H                   | 62                         | 42.50                  | 2.00                           |
| 5                                                   | 10620.00       | 61.1 PK                       | 74.0              | -12.9          | 1.55 H                   | 117                        | 44.50                  | 16.60                          |
| 6                                                   | 10620.00       | 49.1 AV                       | 54.0              | -4.9           | 1.55 H                   | 117                        | 32.50                  | 16.60                          |
| 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                                                   | *5310.00       | 113.8 PK                      |                   |                | 1.00 V                   | 178                        | 73.70                  | 40.10                          |
| 2                                                   | *5310.00       | 103.3 AV                      |                   |                | 1.00 V                   | 178                        | 63.20                  | 40.10                          |
| 3                                                   | 5350.00        | 67.6 PK                       | 74.0              | -6.4           | 1.00 V                   | 167                        | 65.60                  | 2.00                           |
| 4                                                   | 5350.00        | 52.9 AV                       | 54.0              | -1.1           | 1.00 V                   | 167                        | 50.90                  | 2.00                           |
| 5                                                   | 10620.00       | 63.5 PK                       | 74.0              | -10.5          | 1.05 V                   | 64                         | 46.90                  | 16.60                          |
| 6                                                   | 10620.00       | 49.8 AV                       | 54.0              | -4.2           | 1.05 V                   | 64                         | 33.20                  | 16.60                          |

#### 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)  
– Pre-Amplifier 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 102 | DETECTOR<br>FUNCTION | Peak (PK)    |
| FREQUENCY RANGE | 1GHz ~ 40GHz   |                      | 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                                                   | 5460.00        | 58.0 PK                       | 74.0              | -16.0          | 1.02 H                   | 54                         | 55.90                  | 2.10                           |
| 2                                                   | 5460.00        | 44.7 AV                       | 54.0              | -9.3           | 1.02 H                   | 54                         | 42.60                  | 2.10                           |
| 3                                                   | #5470.00       | 58.8 PK                       | 74.0              | -15.2          | 1.02 H                   | 64                         | 56.60                  | 2.20                           |
| 4                                                   | #5470.00       | 44.5 AV                       | 54.0              | -9.5           | 1.02 H                   | 64                         | 42.30                  | 2.20                           |
| 5                                                   | *5510.00       | 95.6 PK                       |                   |                | 1.08 H                   | 88                         | 55.30                  | 40.30                          |
| 6                                                   | *5510.00       | 85.9 AV                       |                   |                | 1.08 H                   | 88                         | 45.60                  | 40.30                          |
| 7                                                   | 11020.00       | 63.4 PK                       | 74.0              | -10.6          | 1.02 H                   | 85                         | 45.30                  | 18.10                          |
| 8                                                   | 11020.00       | 50.6 AV                       | 54.0              | -3.4           | 1.02 H                   | 85                         | 32.50                  | 18.10                          |
| 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                                                   | 5460.00        | 63.4 PK                       | 74.0              | -10.6          | 1.38 V                   | 164                        | 61.30                  | 2.10                           |
| 2                                                   | 5460.00        | 48.6 AV                       | 54.0              | -5.4           | 1.38 V                   | 164                        | 46.50                  | 2.10                           |
| 3                                                   | #5470.00       | 70.8 PK                       | 74.0              | -3.2           | 1.38 V                   | 164                        | 68.60                  | 2.20                           |
| 4                                                   | #5470.00       | 52.9 AV                       | 54.0              | -1.1           | 1.38 V                   | 164                        | 50.70                  | 2.20                           |
| 5                                                   | *5510.00       | 116.0 PK                      |                   |                | 1.02 V                   | 84                         | 75.70                  | 40.30                          |
| 6                                                   | *5510.00       | 105.0 AV                      |                   |                | 1.02 V                   | 84                         | 64.70                  | 40.30                          |
| 7                                                   | 11020.00       | 63.8 PK                       | 74.0              | -10.2          | 1.02 V                   | 34                         | 45.70                  | 18.10                          |
| 8                                                   | 11020.00       | 50.3 AV                       | 54.0              | -3.7           | 1.02 V                   | 34                         | 32.20                  | 18.10                          |

#### REMARKS:

- Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
- Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)  
– Pre-Amplifier Factor(dB)
- The other emission levels were very low against the limit.
- Margin value = Emission Level – Limit value
- " \* ": Fundamental frequency.
- " # ": The radiated frequency is out of the restricted band.

|                 |                |                      |              |
|-----------------|----------------|----------------------|--------------|
| CHANNEL         | TX Channel 110 | DETECTOR<br>FUNCTION | Peak (PK)    |
| FREQUENCY RANGE | 1GHz ~ 40GHz   |                      | 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                                                   | 5460.00        | 57.2 PK                       | 74.0              | -16.8          | 1.52 H                   | 48                         | 55.10                  | 2.10                           |
| 2                                                   | 5460.00        | 44.6 AV                       | 54.0              | -9.4           | 1.52 H                   | 48                         | 42.50                  | 2.10                           |
| 3                                                   | #5470.00       | 58.4 PK                       | 74.0              | -15.6          | 1.15 H                   | 85                         | 56.20                  | 2.20                           |
| 4                                                   | #5470.00       | 44.8 AV                       | 54.0              | -9.2           | 1.15 H                   | 85                         | 42.60                  | 2.20                           |
| 5                                                   | *5550.00       | 99.0 PK                       |                   |                | 1.05 H                   | 24                         | 58.60                  | 40.40                          |
| 6                                                   | *5550.00       | 88.5 AV                       |                   |                | 1.05 H                   | 24                         | 48.10                  | 40.40                          |
| 7                                                   | 11100.00       | 63.0 PK                       | 74.0              | -11.0          | 1.05 H                   | 325                        | 45.20                  | 17.80                          |
| 8                                                   | 11100.00       | 48.2 AV                       | 54.0              | -5.8           | 1.05 H                   | 325                        | 30.40                  | 17.80                          |
| 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                                                   | 5460.00        | 63.9 PK                       | 74.0              | -10.1          | 1.02 V                   | 34                         | 61.80                  | 2.10                           |
| 2                                                   | 5460.00        | 49.6 AV                       | 54.0              | -4.4           | 1.02 V                   | 34                         | 47.50                  | 2.10                           |
| 3                                                   | #5470.00       | 67.3 PK                       | 74.0              | -6.7           | 1.00 V                   | 24                         | 65.10                  | 2.20                           |
| 4                                                   | #5470.00       | 50.7 AV                       | 54.0              | -3.3           | 1.00 V                   | 24                         | 48.50                  | 2.20                           |
| 5                                                   | *5550.00       | 118.4 PK                      |                   |                | 1.06 V                   | 95                         | 78.00                  | 40.40                          |
| 6                                                   | *5550.00       | 108.5 AV                      |                   |                | 1.06 V                   | 95                         | 68.10                  | 40.40                          |
| 7                                                   | 11100.00       | 62.9 PK                       | 74.0              | -11.1          | 1.05 V                   | 48                         | 45.10                  | 17.80                          |
| 8                                                   | 11100.00       | 50.3 AV                       | 54.0              | -3.7           | 1.05 V                   | 48                         | 32.50                  | 17.80                          |

#### REMARKS:

- Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
- Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)  
– Pre-Amplifier Factor(dB)
- The other emission levels were very low against the limit.
- Margin value = Emission Level – Limit value
- " \* ": Fundamental frequency.
- " # ": The radiated frequency is out of the restricted band.

|                 |                |                      |              |
|-----------------|----------------|----------------------|--------------|
| CHANNEL         | TX Channel 134 | DETECTOR<br>FUNCTION | Peak (PK)    |
| FREQUENCY RANGE | 1GHz ~ 40GHz   |                      | 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                                                   | #5280.00       | 58.1 PK                       | 74.0              | -15.9          | 1.00 H                   | 76                         | 56.10                  | 2.00                           |
| 2                                                   | #5280.00       | 44.4 AV                       | 54.0              | -9.6           | 1.00 H                   | 76                         | 42.40                  | 2.00                           |
| 3                                                   | *5670.00       | 99.6 PK                       |                   |                | 1.00 H                   | 261                        | 58.90                  | 40.70                          |
| 4                                                   | *5670.00       | 89.7 AV                       |                   |                | 1.00 H                   | 261                        | 49.00                  | 40.70                          |
| 5                                                   | #5725.00       | 56.8 PK                       | 74.0              | -17.2          | 1.00 H                   | 168                        | 54.20                  | 2.60                           |
| 6                                                   | #5725.00       | 43.7 AV                       | 54.0              | -10.3          | 1.00 H                   | 168                        | 41.10                  | 2.60                           |
| 7                                                   | 11340.00       | 62.6 PK                       | 74.0              | -11.4          | 1.00 H                   | 159                        | 45.80                  | 16.80                          |
| 8                                                   | 11340.00       | 49.0 AV                       | 54.0              | -5.0           | 1.00 H                   | 159                        | 32.20                  | 16.80                          |
| 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                                                   | #5280.00       | 62.9 PK                       | 74.0              | -11.1          | 1.23 V                   | 215                        | 60.90                  | 2.00                           |
| 2                                                   | #5280.00       | 49.8 AV                       | 54.0              | -4.2           | 1.23 V                   | 215                        | 47.80                  | 2.00                           |
| 3                                                   | *5670.00       | 115.7 PK                      |                   |                | 1.03 V                   | 178                        | 75.00                  | 40.70                          |
| 4                                                   | *5670.00       | 105.7 AV                      |                   |                | 1.03 V                   | 178                        | 65.00                  | 40.70                          |
| 5                                                   | #5725.00       | 67.6 PK                       | 74.0              | -6.4           | 1.59 V                   | 220                        | 65.00                  | 2.60                           |
| 6                                                   | #5725.00       | 53.0 AV                       | 54.0              | -1.0           | 1.59 V                   | 220                        | 50.40                  | 2.60                           |
| 7                                                   | 11340.00       | 62.3 PK                       | 74.0              | -11.7          | 1.00 V                   | 143                        | 45.50                  | 16.80                          |
| 8                                                   | 11340.00       | 48.6 AV                       | 54.0              | -5.4           | 1.00 V                   | 143                        | 31.80                  | 16.80                          |

#### REMARKS:

- Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
- Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)  
– Pre-Amplifier Factor(dB)
- The other emission levels were very low against the limit.
- Margin value = Emission Level – Limit value
- " \* ": Fundamental frequency.
- " # ": The radiated frequency is out of the restricted band.

# 802.11ac (80MHz)

|                 |               |                      |              |
|-----------------|---------------|----------------------|--------------|
| CHANNEL         | TX Channel 58 | DETECTOR<br>FUNCTION | Peak (PK)    |
| FREQUENCY RANGE | 1GHz ~ 40GHz  |                      | 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                                                   | 5150.00        | 55.8 PK                       | 74.0              | -18.2          | 1.00 H                   | 110                        | 53.80                  | 2.00                           |
| 2                                                   | 5150.00        | 43.3 AV                       | 54.0              | -10.7          | 1.00 H                   | 110                        | 41.30                  | 2.00                           |
| 3                                                   | *5290.00       | 86.7 PK                       |                   |                | 1.00 H                   | 113                        | 46.60                  | 40.10                          |
| 4                                                   | *5290.00       | 76.2 AV                       |                   |                | 1.00 H                   | 113                        | 36.10                  | 40.10                          |
| 5                                                   | 5350.00        | 57.6 PK                       | 74.0              | -16.4          | 1.00 H                   | 186                        | 55.60                  | 2.00                           |
| 6                                                   | 5350.00        | 44.8 AV                       | 54.0              | -9.2           | 1.00 H                   | 186                        | 42.80                  | 2.00                           |
| 7                                                   | #10580.00      | 63.7 PK                       | 74.0              | -10.3          | 1.00 H                   | 179                        | 47.40                  | 16.30                          |
| 8                                                   | #10580.00      | 49.4 AV                       | 54.0              | -4.6           | 1.00 H                   | 179                        | 33.10                  | 16.30                          |
| 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                                                   | 5150.00        | 56.6 PK                       | 74.0              | -17.4          | 1.00 V                   | 298                        | 54.60                  | 2.00                           |
| 2                                                   | 5150.00        | 43.8 AV                       | 54.0              | -10.2          | 1.00 V                   | 298                        | 41.80                  | 2.00                           |
| 3                                                   | *5290.00       | 106.8 PK                      |                   |                | 1.00 V                   | 159                        | 66.70                  | 40.10                          |
| 4                                                   | *5290.00       | 96.6 AV                       |                   |                | 1.00 V                   | 159                        | 56.50                  | 40.10                          |
| 5                                                   | 5350.00        | 69.4 PK                       | 74.0              | -4.6           | 1.00 V                   | 148                        | 67.40                  | 2.00                           |
| 6                                                   | 5350.00        | 52.8 AV                       | 54.0              | -1.2           | 1.00 V                   | 148                        | 50.80                  | 2.00                           |
| 7                                                   | #10580.00      | 63.8 PK                       | 74.0              | -10.2          | 1.00 V                   | 56                         | 47.50                  | 16.30                          |
| 8                                                   | #10580.00      | 49.8 AV                       | 54.0              | -4.2           | 1.00 V                   | 56                         | 33.50                  | 16.30                          |

## 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)  
– Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " \* ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

|                 |                |                      |              |
|-----------------|----------------|----------------------|--------------|
| CHANNEL         | TX Channel 106 | DETECTOR<br>FUNCTION | Peak (PK)    |
| FREQUENCY RANGE | 1GHz ~ 40GHz   |                      | 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                                                   | 5460.00        | 56.9 PK                       | 74.0              | -17.1          | 1.00 H                   | 53                         | 54.80                  | 2.10                           |
| 2                                                   | 5460.00        | 44.9 AV                       | 54.0              | -9.1           | 1.00 H                   | 53                         | 42.80                  | 2.10                           |
| 3                                                   | #5470.00       | 61.1 PK                       | 74.0              | -12.9          | 1.00 H                   | 39                         | 58.90                  | 2.20                           |
| 4                                                   | #5470.00       | 46.0 AV                       | 54.0              | -8.0           | 1.00 H                   | 39                         | 43.80                  | 2.20                           |
| 5                                                   | *5530.00       | 87.6 PK                       |                   |                | 1.00 H                   | 258                        | 47.20                  | 40.40                          |
| 6                                                   | *5530.00       | 77.3 AV                       |                   |                | 1.00 H                   | 258                        | 36.90                  | 40.40                          |
| 7                                                   | 11060.00       | 64.5 PK                       | 74.0              | -9.5           | 1.00 H                   | 311                        | 46.50                  | 18.00                          |
| 8                                                   | 11060.00       | 49.8 AV                       | 54.0              | -4.2           | 1.00 H                   | 311                        | 31.80                  | 18.00                          |
| 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                                                   | 5460.00        | 60.8 PK                       | 74.0              | -13.2          | 1.00 V                   | 141                        | 58.70                  | 2.10                           |
| 2                                                   | 5460.00        | 48.5 AV                       | 54.0              | -5.5           | 1.00 V                   | 141                        | 46.40                  | 2.10                           |
| 3                                                   | #5470.00       | 72.9 PK                       | 74.0              | -1.1           | 1.00 V                   | 147                        | 70.70                  | 2.20                           |
| 4                                                   | #5470.00       | 53.0 AV                       | 54.0              | -1.0           | 1.00 V                   | 147                        | 50.80                  | 2.20                           |
| 5                                                   | *5530.00       | 105.9 PK                      |                   |                | 1.09 V                   | 141                        | 65.50                  | 40.40                          |
| 6                                                   | *5530.00       | 95.7 AV                       |                   |                | 1.09 V                   | 141                        | 55.30                  | 40.40                          |
| 7                                                   | 11060.00       | 64.8 PK                       | 74.0              | -9.2           | 1.00 V                   | 126                        | 46.80                  | 18.00                          |
| 8                                                   | 11060.00       | 50.1 AV                       | 54.0              | -3.9           | 1.00 V                   | 126                        | 32.10                  | 18.00                          |

#### REMARKS:

- Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
- Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB)  
– Pre-Amplifier Factor(dB)
- The other emission levels were very low against the limit.
- Margin value = Emission Level – Limit value
- " \* ": Fundamental frequency.
- " # ": The radiated frequency is out of the restricted band.

## BELOW 1GHz WORST-CASE DATA

### 802.11a

|                 |               |                      |                 |
|-----------------|---------------|----------------------|-----------------|
| CHANNEL         | TX Channel 52 | 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                                                   | 152.80         | 29.7 QP                       | 43.5              | -13.8          | 1.24 H                   | 242                        | 43.40                  | -13.70                         |
| 2                                                   | 270.96         | 43.4 QP                       | 46.0              | -2.6           | 1.00 H                   | 121                        | 56.80                  | -13.40                         |
| 3                                                   | 323.80         | 37.6 QP                       | 46.0              | -8.4           | 1.00 H                   | 237                        | 49.40                  | -11.80                         |
| 4                                                   | 483.91         | 41.5 QP                       | 46.0              | -4.5           | 1.49 H                   | 218                        | 50.40                  | -8.90                          |
| 5                                                   | 525.88         | 42.7 QP                       | 46.0              | -3.3           | 1.24 H                   | 144                        | 50.90                  | -8.20                          |
| 6                                                   | 900.51         | 44.6 QP                       | 46.0              | -1.4           | 1.24 H                   | 208                        | 46.00                  | -1.40                          |
| 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                                                   | 31.55          | 33.3 QP                       | 40.0              | -6.7           | 1.24 V                   | 12                         | 49.30                  | -16.00                         |
| 2                                                   | 98.40          | 32.7 QP                       | 43.5              | -10.8          | 1.00 V                   | 275                        | 51.70                  | -19.00                         |
| 3                                                   | 148.14         | 31.4 QP                       | 43.5              | -12.1          | 1.24 V                   | 12                         | 45.50                  | -14.10                         |
| 4                                                   | 270.70         | 41.8 QP                       | 46.0              | -4.2           | 1.53 V                   | 172                        | 55.20                  | -13.40                         |
| 5                                                   | 525.88         | 39.8 QP                       | 46.0              | -6.2           | 1.00 V                   | 104                        | 48.00                  | -8.20                          |
| 6                                                   | 900.51         | 44.0 QP                       | 46.0              | -2.0           | 1.24 V                   | 180                        | 45.40                  | -1.40                          |

#### 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)  
– Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

## 4.2 CONDUCTED EMISSION MEASUREMENT

### 4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

| FREQUENCY OF EMISSION (MHz) | CONDUCTED LIMIT (dB $\mu$ V) |          |
|-----------------------------|------------------------------|----------|
|                             | Quasi-peak                   | Average  |
| 0.15 ~ 0.5                  | 66 to 56                     | 56 to 46 |
| 0.5 ~ 5                     | 56                           | 46       |
| 5 ~ 30                      | 60                           | 50       |

- 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 0.50MHz.  
 3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

### 4.2.2 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER              | MODEL NO.                | SERIAL NO.     | DATE OF CALIBRATION | DUE DATE OF CALIBRATION |
|-----------------------------------------|--------------------------|----------------|---------------------|-------------------------|
| Test Receiver<br>ROHDE & SCHWARZ        | ESCI                     | 100612         | Sep. 30, 2014       | Sep. 29, 2015           |
| RF signal cable<br>Woken                | 5D-FB                    | Cable-HYC01-01 | Dec. 27, 2013       | Dec. 26, 2014           |
| LISN<br>ROHDE & SCHWARZ<br>(EUT)        | ESH3-Z5                  | 835239/001     | Feb. 13, 2014       | Feb. 12, 2015           |
| LISN<br>ROHDE & SCHWARZ<br>(Peripheral) | ESH3-Z5                  | 100311         | Jul. 21, 2014       | Jul. 20, 2015           |
| Software<br>ADT                         | BV ADT_Cond_<br>V7.3.7.3 | 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-2040.



#### 4.2.3 TEST PROCEDURES

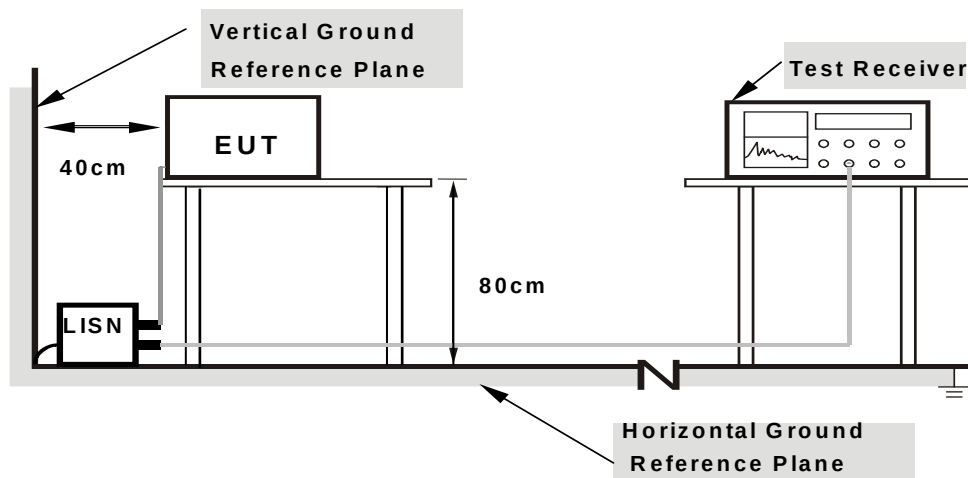
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

**NOTE:** All modes of operation were investigated and the worst-case emissions are reported.

#### 4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.2.5 TEST SETUP



**Note:** 1.Support units were connected to second LISN.  
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

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

#### 4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6.

## 4.2.7 TEST RESULTS

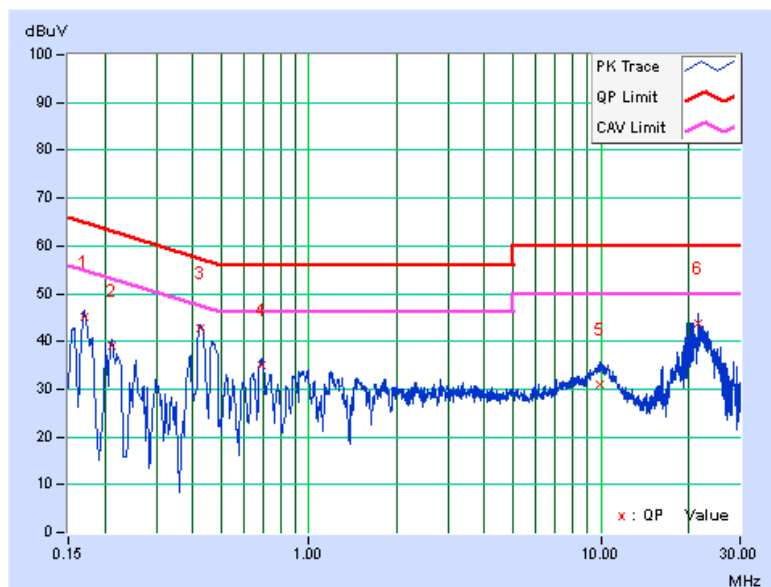
### CONDUCTED WORST-CASE DATA : 802.11a

|       |        |               |      |
|-------|--------|---------------|------|
| PHASE | Line 1 | 6dB BANDWIDTH | 9kHz |
|-------|--------|---------------|------|

| No | Freq.<br>[MHz] | Corr.<br>Factor<br>(dB) | Reading Value |       | Emission Level |       | Limit     |       | Margin |        |
|----|----------------|-------------------------|---------------|-------|----------------|-------|-----------|-------|--------|--------|
|    |                |                         | [dB (uV)]     |       | [dB (uV)]      |       | [dB (uV)] |       | (dB)   |        |
|    |                |                         | Q.P.          | AV.   | Q.P.           | AV.   | Q.P.      | AV.   | Q.P.   | AV.    |
| 1  | 0.16967        | 0.08                    | 45.17         | 36.46 | 45.25          | 36.54 | 64.98     | 54.98 | -19.73 | -18.44 |
| 2  | 0.21226        | 0.07                    | 39.05         | 31.35 | 39.12          | 31.42 | 63.12     | 53.12 | -24.00 | -21.70 |
| 3  | 0.42334        | 0.08                    | 42.55         | 36.40 | 42.63          | 36.48 | 57.38     | 47.38 | -14.75 | -10.90 |
| 4  | 0.68564        | 0.09                    | 34.78         | 27.73 | 34.87          | 27.82 | 56.00     | 46.00 | -21.13 | -18.18 |
| 5  | 9.97974        | 0.51                    | 30.48         | 25.07 | 30.99          | 25.58 | 60.00     | 50.00 | -29.01 | -24.42 |
| 6  | 21.66282       | 1.09                    | 42.82         | 40.94 | 43.91          | 42.03 | 60.00     | 50.00 | -16.09 | -7.97  |

### 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

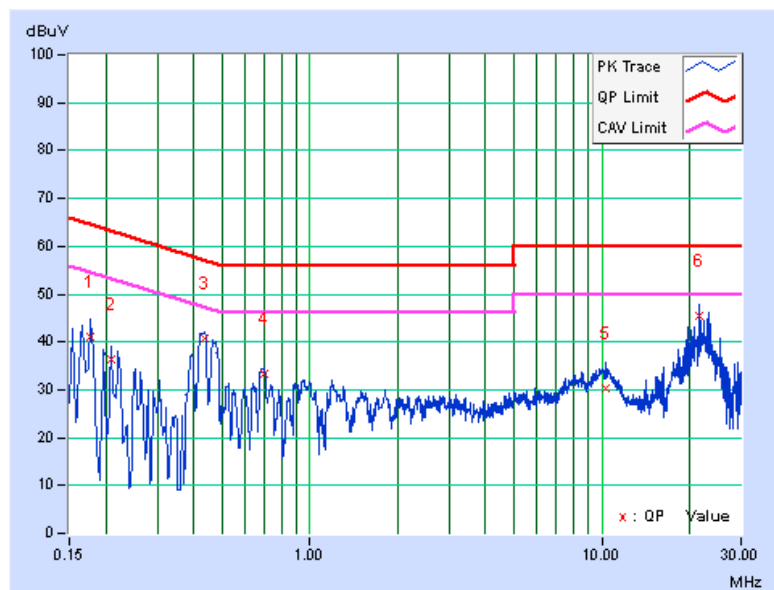


|       |        |               |      |
|-------|--------|---------------|------|
| PHASE | Line 2 | 6dB BANDWIDTH | 9kHz |
|-------|--------|---------------|------|

| No | Freq.<br>[MHz] | Corr.<br>Factor<br>(dB) | Reading Value |       | Emission Level |       | Limit     |       | Margin |        |
|----|----------------|-------------------------|---------------|-------|----------------|-------|-----------|-------|--------|--------|
|    |                |                         | [dB (uV)]     |       | [dB (uV)]      |       | [dB (uV)] |       | (dB)   |        |
|    |                |                         | Q.P.          | AV.   | Q.P.           | AV.   | Q.P.      | AV.   | Q.P.   | AV.    |
| 1  | 0.17744        | 0.05                    | 41.04         | 28.81 | 41.09          | 28.86 | 64.60     | 54.60 | -23.51 | -25.74 |
| 2  | 0.20865        | 0.05                    | 36.36         | 24.30 | 36.41          | 24.35 | 63.26     | 53.26 | -26.85 | -28.91 |
| 3  | 0.43543        | 0.07                    | 40.63         | 34.19 | 40.70          | 34.26 | 57.15     | 47.15 | -16.45 | -12.89 |
| 4  | 0.69349        | 0.08                    | 33.31         | 25.81 | 33.39          | 25.89 | 56.00     | 46.00 | -22.61 | -20.11 |
| 5  | 10.26126       | 0.45                    | 29.91         | 24.32 | 30.36          | 24.77 | 60.00     | 50.00 | -29.64 | -25.23 |
| 6  | 21.66282       | 0.95                    | 44.57         | 43.22 | 45.52          | 44.17 | 60.00     | 50.00 | -14.48 | -5.83  |

#### 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 TRANSMIT POWER MEASUREMENT

#### 4.3.1 LIMITS OF TRANSMIT POWER MEASUREMENT

| FREQUENCY BAND   | LIMIT                                         |
|------------------|-----------------------------------------------|
| 5.250 ~ 5.350GHz | The lesser of 250mW (24dBm) or 11dBm + 10logB |
| 5.470 ~ 5.725GHz | The lesser of 250mW (24dBm) or 11dBm + 10logB |

**NOTE:** Where B is the 26dB emission bandwidth in MHz.

Per KDB 662911 D01 Multiple Transmitter Output v02r01 Method of conducted output power measurement on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for NANT ≤ 4;

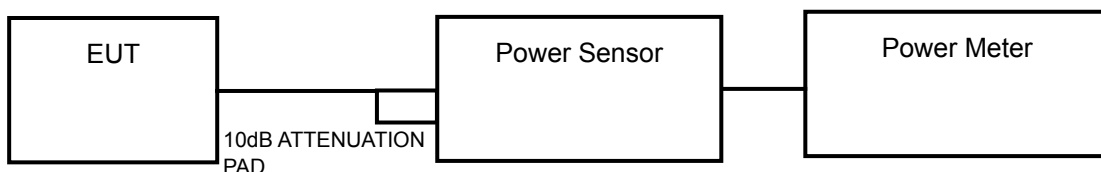
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any NANT;

Array Gain = 5 log(NANT/NSS) dB or 3 dB, whichever is less for 20-MHz channel widths with NANT ≥ 5.

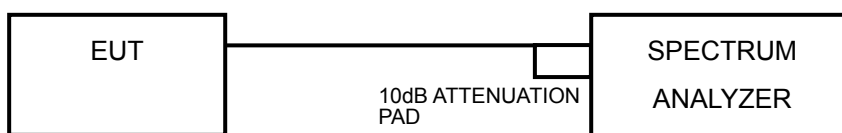
For power measurements on all other devices: Array Gain = 10 log(NANT/NSS) dB.

#### 4.3.2 TEST SETUP

**For 802.11a, 802.11n (20MHz), 802.11n (40MHz)**



**For 802.11ac (80MHz)**



#### 4.3.3 TEST INSTRUMENTS

Refer to section 4.1.3 to get information of above instrument.

#### 4.3.4 TEST PROCEDURE

##### FOR AVERAGE POWER MEASUREMENT

###### For 802.11a, 802.11n (20MHz), 802.11n (40MHz)

Method PM is used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

###### For 802.11ac (80MHz)

- 1) Set span to encompass the entire 26 dB EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal.
- 2) Set sweep trigger to “free run”.
- 3) Set RBW = 1 MHz.
- 4) Set VBW  $\geq$  3 MHz
- 5) Number of points in sweep  $\geq$  2 Span / RBW.
- 6) Sweep time  $\leq$  (number of points in sweep) \* T
- 7) Detector = RMS.
- 8) Trace mode = max hold.
- 9) Allow max hold to run for at least 60 seconds, or longer as needed to allow the trace to stabilize.

##### FOR 26dB BANDWIDTH

- 1) Set RBW = approximately 1% of the emission bandwidth.
- 2) Set the VBW > RBW.
- 3) Detector = Peak.
- 4) Trace mode = max hold.
- 5) Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

#### 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 specific channel frequencies individually.

#### 4.3.7 TEST RESULTS

##### POWER OUTPUT:

##### 802.11a

| CHANNEL | CHANNEL FREQUENCY (MHz) | AVERAGE POWER (mW) | AVERAGE POWER (dBm) | POWER LIMIT (dBm) | PASS/FAIL |
|---------|-------------------------|--------------------|---------------------|-------------------|-----------|
| 52      | 5260                    | 119.399            | 20.77               | 24                | PASS      |
| 60      | 5300                    | 113.763            | 20.56               | 24                | PASS      |
| 64      | 5320                    | 121.619            | 20.85               | 24                | PASS      |
| 100     | 5500                    | 112.720            | 20.52               | 24                | PASS      |
| 116     | 5580                    | 120.504            | 20.81               | 24                | PASS      |
| 140     | 5700                    | 102.802            | 20.12               | 24                | PASS      |

##### NOTE:

1.  $11\text{dBm} + 10\log(32.53) = 26.12\text{ dBm} > 24\text{dBm}$ .
2.  $11\text{dBm} + 10\log(29.77) = 25.74\text{ dBm} > 24\text{dBm}$ .
3.  $11\text{dBm} + 10\log(22.13) = 24.45\text{ dBm} > 24\text{dBm}$ .
4.  $11\text{dBm} + 10\log(21.93) = 24.41\text{ dBm} > 24\text{dBm}$ .
5.  $11\text{dBm} + 10\log(24.90) = 24.96\text{ dBm} > 24\text{dBm}$ .
6.  $11\text{dBm} + 10\log(21.96) = 24.42\text{ dBm} > 24\text{dBm}$ .

### 802.11n (20MHz)

| CHAN. | CHAN. FREQ. (MHz) | AVERAGE POWER (dBm) |         |         | TOTAL POWER (mW) | TOTAL POWER (dBm) | POWER LIMIT (dBm) | PASS / FAIL |
|-------|-------------------|---------------------|---------|---------|------------------|-------------------|-------------------|-------------|
|       |                   | CHAIN 0             | CHAIN 1 | CHAIN 2 |                  |                   |                   |             |
| 52    | 5260              | 14.10               | 13.70   | 15.20   | 82.259           | 19.15             | 24                | PASS        |
| 60    | 5300              | 14.20               | 13.90   | 16.10   | 91.588           | 19.62             | 24                | PASS        |
| 64    | 5320              | 14.00               | 13.80   | 15.90   | 88.012           | 19.45             | 24                | PASS        |
| 100   | 5500              | 13.40               | 13.50   | 15.10   | 76.624           | 18.84             | 24                | PASS        |
| 116   | 5580              | 13.50               | 13.60   | 15.20   | 78.409           | 18.94             | 24                | PASS        |
| 140   | 5700              | 14.30               | 13.70   | 15.90   | 89.262           | 19.51             | 24                | PASS        |

#### NOTE:

##### CHAIN 0

1.  $11\text{dBm} + 10\log(23.18) = 24.65\text{ dBm} > 24\text{dBm}$ .
2.  $11\text{dBm} + 10\log(23.17) = 24.65\text{ dBm} > 24\text{dBm}$ .
3.  $11\text{dBm} + 10\log(23.34) = 24.68\text{ dBm} > 24\text{dBm}$ .
4.  $11\text{dBm} + 10\log(23.17) = 24.65\text{ dBm} > 24\text{dBm}$ .
5.  $11\text{dBm} + 10\log(22.89) = 24.60\text{ dBm} > 24\text{dBm}$ .
6.  $11\text{dBm} + 10\log(23.18) = 24.65\text{ dBm} > 24\text{dBm}$ .

##### CHAIN 1

1.  $11\text{dBm} + 10\log(23.52) = 24.71\text{ dBm} > 24\text{dBm}$ .
2.  $11\text{dBm} + 10\log(23.20) = 24.65\text{ dBm} > 24\text{dBm}$ .
3.  $11\text{dBm} + 10\log(23.48) = 24.71\text{ dBm} > 24\text{dBm}$ .
4.  $11\text{dBm} + 10\log(23.82) = 24.77\text{ dBm} > 24\text{dBm}$ .
5.  $11\text{dBm} + 10\log(23.62) = 24.73\text{ dBm} > 24\text{dBm}$ .
6.  $11\text{dBm} + 10\log(23.78) = 24.76\text{ dBm} > 24\text{dBm}$ .

##### CHAIN 2

1.  $11\text{dBm} + 10\log(22.97) = 24.61\text{ dBm} > 24\text{dBm}$ .
2.  $11\text{dBm} + 10\log(23.04) = 24.62\text{ dBm} > 24\text{dBm}$ .
3.  $11\text{dBm} + 10\log(23.07) = 24.63\text{ dBm} > 24\text{dBm}$ .
4.  $11\text{dBm} + 10\log(23.02) = 24.62\text{ dBm} > 24\text{dBm}$ .
5.  $11\text{dBm} + 10\log(23.21) = 24.66\text{ dBm} > 24\text{dBm}$ .
6.  $11\text{dBm} + 10\log(23.34) = 24.68\text{ dBm} > 24\text{dBm}$ .

### 802.11n (40MHz)

| CHAN. | CHAN. FREQ. (MHz) | AVERAGE POWER (dBm) |         |         | TOTAL POWER (mW) | TOTAL POWER (dBm) | POWER LIMIT (dBm) | PASS / FAIL |
|-------|-------------------|---------------------|---------|---------|------------------|-------------------|-------------------|-------------|
|       |                   | CHAIN 0             | CHAIN 1 | CHAIN 2 |                  |                   |                   |             |
| 54    | 5270              | 15.39               | 15.21   | 17.30   | 121.486          | 20.85             | 24                | PASS        |
| 62    | 5310              | 13.03               | 12.93   | 14.71   | 69.305           | 18.41             | 24                | PASS        |
| 102   | 5510              | 14.29               | 13.68   | 15.29   | 83.994           | 19.24             | 24                | PASS        |
| 110   | 5550              | 15.53               | 15.03   | 17.19   | 119.929          | 20.79             | 24                | PASS        |
| 134   | 5670              | 15.70               | 14.63   | 17.37   | 120.770          | 20.82             | 24                | PASS        |

#### NOTE:

##### CHAIN 0

1.  $11\text{dBm} + 10\log(45.61) = 27.59\text{ dBm} > 24\text{dBm}$ .
2.  $11\text{dBm} + 10\log(47.83) = 27.80\text{ dBm} > 24\text{dBm}$ .
3.  $11\text{dBm} + 10\log(46.34) = 27.66\text{ dBm} > 24\text{dBm}$ .
4.  $11\text{dBm} + 10\log(46.50) = 27.67\text{ dBm} > 24\text{dBm}$ .
5.  $11\text{dBm} + 10\log(46.11) = 27.64\text{ dBm} > 24\text{dBm}$ .

##### CHAIN 1

1.  $11\text{dBm} + 10\log(46.90) = 27.71\text{ dBm} > 24\text{dBm}$ .
2.  $11\text{dBm} + 10\log(46.51) = 27.68\text{ dBm} > 24\text{dBm}$ .
3.  $11\text{dBm} + 10\log(45.61) = 27.59\text{ dBm} > 24\text{dBm}$ .
4.  $11\text{dBm} + 10\log(45.37) = 27.57\text{ dBm} > 24\text{dBm}$ .
5.  $11\text{dBm} + 10\log(45.43) = 27.57\text{ dBm} > 24\text{dBm}$ .

##### CHAIN 2

1.  $11\text{dBm} + 10\log(44.47) = 27.48\text{ dBm} > 24\text{dBm}$ .
2.  $11\text{dBm} + 10\log(47.17) = 27.74\text{ dBm} > 24\text{dBm}$ .
3.  $11\text{dBm} + 10\log(47.26) = 27.74\text{ dBm} > 24\text{dBm}$ .
4.  $11\text{dBm} + 10\log(45.58) = 27.59\text{ dBm} > 24\text{dBm}$ .
5.  $11\text{dBm} + 10\log(45.21) = 27.55\text{ dBm} > 24\text{dBm}$ .



### 802.11ac (20MHz)

| CHAN. | CHAN. FREQ. (MHz) | AVERAGE POWER (dBm) |         |         | TOTAL POWER (mW) | TOTAL POWER (dBm) | POWER LIMIT (dBm) | PASS / FAIL |
|-------|-------------------|---------------------|---------|---------|------------------|-------------------|-------------------|-------------|
|       |                   | CHAIN 0             | CHAIN 1 | CHAIN 2 |                  |                   |                   |             |
| 52    | 5260              | 14.00               | 13.80   | 15.10   | 81.466           | 19.11             | 24                | PASS        |
| 60    | 5300              | 14.10               | 13.70   | 16.00   | 88.957           | 19.49             | 24                | PASS        |
| 64    | 5320              | 14.20               | 13.90   | 16.00   | 90.661           | 19.57             | 24                | PASS        |
| 100   | 5500              | 13.30               | 13.50   | 15.20   | 76.880           | 18.86             | 24                | PASS        |
| 116   | 5580              | 13.40               | 13.60   | 15.10   | 77.146           | 18.87             | 24                | PASS        |
| 140   | 5700              | 14.20               | 13.60   | 15.80   | 87.231           | 19.41             | 24                | PASS        |

#### NOTE:

##### CHAIN 0

1.  $11\text{dBm} + 10\log(23.20) = 24.65\text{ dBm} > 24\text{dBm}$ .
2.  $11\text{dBm} + 10\log(23.48) = 24.71\text{ dBm} > 24\text{dBm}$ .
3.  $11\text{dBm} + 10\log(23.48) = 24.71\text{ dBm} > 24\text{dBm}$ .
4.  $11\text{dBm} + 10\log(23.41) = 24.69\text{ dBm} > 24\text{dBm}$ .
5.  $11\text{dBm} + 10\log(23.02) = 24.62\text{ dBm} > 24\text{dBm}$ .
6.  $11\text{dBm} + 10\log(23.39) = 24.69\text{ dBm} > 24\text{dBm}$ .

##### CHAIN 1

1.  $11\text{dBm} + 10\log(24.12) = 24.82\text{ dBm} > 24\text{dBm}$ .
2.  $11\text{dBm} + 10\log(23.23) = 24.66\text{ dBm} > 24\text{dBm}$ .
3.  $11\text{dBm} + 10\log(24.08) = 24.82\text{ dBm} > 24\text{dBm}$ .
4.  $11\text{dBm} + 10\log(23.81) = 24.77\text{ dBm} > 24\text{dBm}$ .
5.  $11\text{dBm} + 10\log(23.07) = 24.63\text{ dBm} > 24\text{dBm}$ .
6.  $11\text{dBm} + 10\log(23.08) = 24.63\text{ dBm} > 24\text{dBm}$ .

##### CHAIN 2

1.  $11\text{dBm} + 10\log(23.20) = 24.65\text{ dBm} > 24\text{dBm}$ .
2.  $11\text{dBm} + 10\log(23.29) = 24.67\text{ dBm} > 24\text{dBm}$ .
3.  $11\text{dBm} + 10\log(23.65) = 24.74\text{ dBm} > 24\text{dBm}$ .
4.  $11\text{dBm} + 10\log(23.36) = 24.68\text{ dBm} > 24\text{dBm}$ .
5.  $11\text{dBm} + 10\log(23.44) = 24.70\text{ dBm} > 24\text{dBm}$ .
6.  $11\text{dBm} + 10\log(23.04) = 24.62\text{ dBm} > 24\text{dBm}$ .

### 802.11ac (40MHz)

| CHAN. | CHAN. FREQ. (MHz) | AVERAGE POWER (dBm) |         |         | TOTAL POWER (mW) | TOTAL POWER (dBm) | POWER LIMIT (dBm) | PASS / FAIL |
|-------|-------------------|---------------------|---------|---------|------------------|-------------------|-------------------|-------------|
|       |                   | CHAIN 0             | CHAIN 1 | CHAIN 2 |                  |                   |                   |             |
| 54    | 5270              | 15.50               | 15.46   | 17.25   | 123.725          | 20.92             | 24                | PASS        |
| 62    | 5310              | 13.43               | 13.32   | 15.16   | 76.317           | 18.83             | 24                | PASS        |
| 102   | 5510              | 14.22               | 13.71   | 15.31   | 83.883           | 19.24             | 24                | PASS        |
| 110   | 5550              | 15.57               | 15.12   | 17.21   | 121.169          | 20.83             | 24                | PASS        |
| 134   | 5670              | 15.76               | 14.82   | 17.39   | 122.837          | 20.89             | 24                | PASS        |

#### NOTE:

##### CHAIN 0

1.  $11\text{dBm} + 10\log(46.65) = 27.69\text{ dBm} > 24\text{dBm}$ .
2.  $11\text{dBm} + 10\log(46.27) = 27.65\text{ dBm} > 24\text{dBm}$ .
3.  $11\text{dBm} + 10\log(47.23) = 27.74\text{ dBm} > 24\text{dBm}$ .
4.  $11\text{dBm} + 10\log(46.15) = 27.64\text{ dBm} > 24\text{dBm}$ .
5.  $11\text{dBm} + 10\log(46.16) = 27.64\text{ dBm} > 24\text{dBm}$ .

##### CHAIN 1

1.  $11\text{dBm} + 10\log(46.08) = 27.64\text{ dBm} > 24\text{dBm}$ .
2.  $11\text{dBm} + 10\log(46.16) = 27.64\text{ dBm} > 24\text{dBm}$ .
3.  $11\text{dBm} + 10\log(46.15) = 27.64\text{ dBm} > 24\text{dBm}$ .
4.  $11\text{dBm} + 10\log(45.65) = 27.59\text{ dBm} > 24\text{dBm}$ .
5.  $11\text{dBm} + 10\log(46.04) = 27.63\text{ dBm} > 24\text{dBm}$ .

##### CHAIN 2

1.  $11\text{dBm} + 10\log(46.17) = 27.64\text{ dBm} > 24\text{dBm}$ .
2.  $11\text{dBm} + 10\log(46.17) = 27.64\text{ dBm} > 24\text{dBm}$ .
3.  $11\text{dBm} + 10\log(46.90) = 27.71\text{ dBm} > 24\text{dBm}$ .
4.  $11\text{dBm} + 10\log(45.39) = 27.57\text{ dBm} > 24\text{dBm}$ .
5.  $11\text{dBm} + 10\log(45.52) = 27.58\text{ dBm} > 24\text{dBm}$ .

### 802.11ac (80MHz)

| CHAN. | CHAN. FREQ. (MHz) | AVERAGE POWER (dBm) |         |         | TOTAL POWER (mW) | TOTAL POWER (dBm) | POWER LIMIT (dBm) | PASS / FAIL |
|-------|-------------------|---------------------|---------|---------|------------------|-------------------|-------------------|-------------|
|       |                   | CHAIN 0             | CHAIN 1 | CHAIN 2 |                  |                   |                   |             |
| 58    | 5290              | 10.51               | 10.31   | 11.93   | 37.582           | 15.75             | 24                | PASS        |
| 106   | 5530              | 9.46                | 9.26    | 10.53   | 28.562           | 14.56             | 24                | PASS        |

#### NOTE:

##### CHAIN 0

1.  $11\text{dBm} + 10\log(94.78) = 30.77\text{ dBm} > 24\text{dBm}$ .
2.  $11\text{dBm} + 10\log(90.15) = 30.55\text{ dBm} > 24\text{dBm}$ .

##### CHAIN 1

1.  $11\text{dBm} + 10\log(88.40) = 30.46\text{ dBm} > 24\text{dBm}$ .
2.  $11\text{dBm} + 10\log(89.41) = 30.51\text{ dBm} > 24\text{dBm}$ .

##### CHAIN 2

1.  $11\text{dBm} + 10\log(90.60) = 30.57\text{ dBm} > 24\text{dBm}$ .
2.  $11\text{dBm} + 10\log(90.91) = 30.59\text{ dBm} > 24\text{dBm}$ .

## 26dB BANDWIDTH:

### 802.11a

| CHANNEL | CHANNEL FREQUENCY (MHz) | 26dBc BANDWIDTH (MHz) | PASS / FAIL |
|---------|-------------------------|-----------------------|-------------|
| 52      | 5260                    | 32.53                 | PASS        |
| 60      | 5300                    | 29.77                 | PASS        |
| 64      | 5320                    | 22.13                 | PASS        |
| 100     | 5500                    | 21.93                 | PASS        |
| 116     | 5580                    | 24.90                 | PASS        |
| 140     | 5700                    | 21.96                 | PASS        |

### 802.11n (20MHz)

| CHANNEL | CHANNEL FREQUENCY (MHz) | 26dBc BANDWIDTH (MHz) |         |         | PASS / FAIL |
|---------|-------------------------|-----------------------|---------|---------|-------------|
|         |                         | CHAIN 0               | CHAIN 1 | CHAIN 2 |             |
| 52      | 5260                    | 23.18                 | 23.52   | 22.97   | PASS        |
| 60      | 5300                    | 23.17                 | 23.20   | 23.04   | PASS        |
| 64      | 5320                    | 23.34                 | 23.48   | 23.07   | PASS        |
| 100     | 5500                    | 23.17                 | 23.82   | 23.02   | PASS        |
| 116     | 5580                    | 22.89                 | 23.62   | 23.21   | PASS        |
| 140     | 5700                    | 23.18                 | 23.78   | 23.34   | PASS        |

### 802.11n (40MHz)

| CHANNEL | CHANNEL FREQUENCY (MHz) | 26dBc BANDWIDTH (MHz) |         |         | PASS / FAIL |
|---------|-------------------------|-----------------------|---------|---------|-------------|
|         |                         | CHAIN 0               | CHAIN 1 | CHAIN 2 |             |
| 54      | 5270                    | 45.61                 | 46.90   | 44.47   | PASS        |
| 62      | 5310                    | 47.83                 | 46.51   | 47.17   | PASS        |
| 102     | 5510                    | 46.34                 | 45.61   | 47.26   | PASS        |
| 110     | 5550                    | 46.50                 | 45.37   | 45.58   | PASS        |
| 134     | 5670                    | 46.11                 | 45.43   | 45.21   | PASS        |

**A D T****802.11ac (20MHz)**

| CHANNEL | CHANNEL<br>FREQUENCY<br>(MHz) | 26dBc BANDWIDTH (MHz) |         |         | PASS / FAIL |
|---------|-------------------------------|-----------------------|---------|---------|-------------|
|         |                               | CHAIN 0               | CHAIN 1 | CHAIN 2 |             |
| 52      | 5260                          | 23.20                 | 24.12   | 23.20   | PASS        |
| 60      | 5300                          | 23.48                 | 23.23   | 23.29   | PASS        |
| 64      | 5320                          | 23.48                 | 24.08   | 23.65   | PASS        |
| 100     | 5500                          | 23.41                 | 23.81   | 23.36   | PASS        |
| 116     | 5580                          | 23.02                 | 23.07   | 23.44   | PASS        |
| 140     | 5700                          | 23.39                 | 23.08   | 23.04   | PASS        |

**802.11ac (40MHz)**

| CHANNEL | CHANNEL<br>FREQUENCY<br>(MHz) | 26dBc BANDWIDTH (MHz) |         |         | PASS / FAIL |
|---------|-------------------------------|-----------------------|---------|---------|-------------|
|         |                               | CHAIN 0               | CHAIN 1 | CHAIN 2 |             |
| 54      | 5270                          | 46.65                 | 46.08   | 46.17   | PASS        |
| 62      | 5310                          | 46.27                 | 46.16   | 46.17   | PASS        |
| 102     | 5510                          | 47.23                 | 46.15   | 46.90   | PASS        |
| 110     | 5550                          | 46.15                 | 45.65   | 45.39   | PASS        |
| 134     | 5670                          | 46.16                 | 46.04   | 45.52   | PASS        |

**802.11ac (80MHz)**

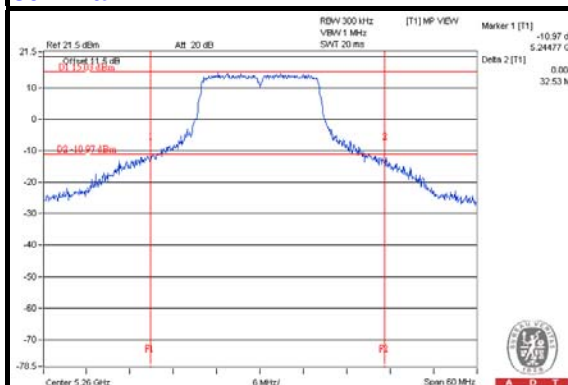
| CHANNEL | CHANNEL<br>FREQUENCY<br>(MHz) | 26dBc BANDWIDTH (MHz) |         |         | PASS / FAIL |
|---------|-------------------------------|-----------------------|---------|---------|-------------|
|         |                               | CHAIN 0               | CHAIN 1 | CHAIN 2 |             |
| 58      | 5290                          | 94.78                 | 88.40   | 90.60   | PASS        |
| 106     | 5530                          | 90.15                 | 89.41   | 90.91   | PASS        |



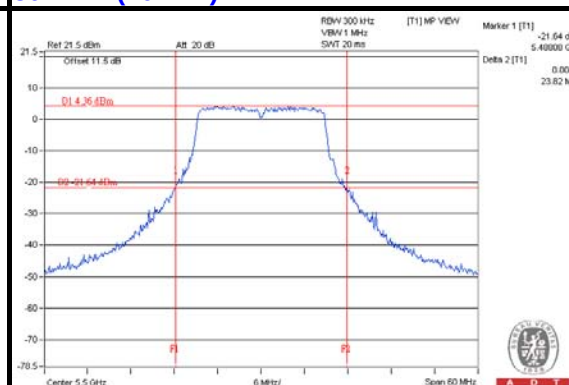
A D T

## SPECTRUM PLOT OF WORST VALUE

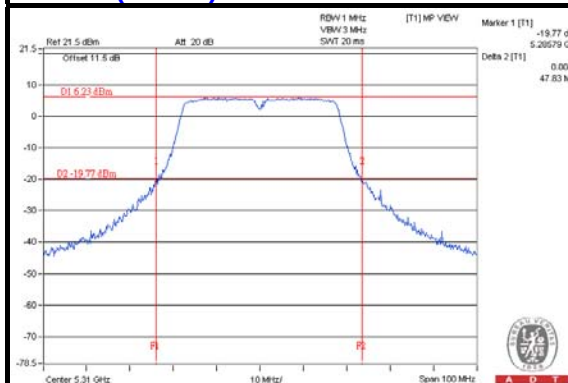
802.11a



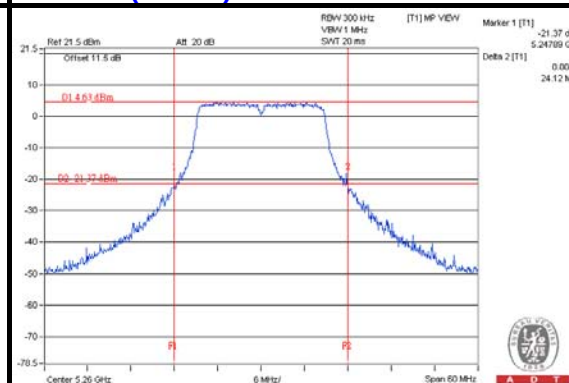
802.11n (20MHz)



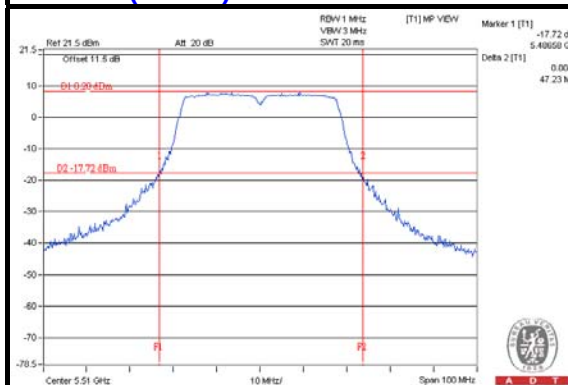
802.11n (40MHz)



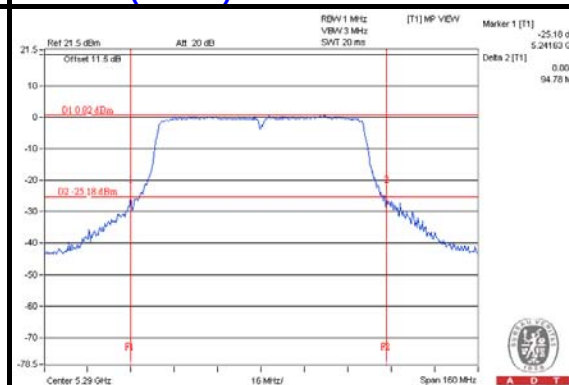
802.11ac (20MHz)



802.11ac (40MHz)



802.11ac (80MHz)



## EUT MAXIMUM CONDUCTED POWER

### 802.11a

| FREQUENCY BAND<br>(MHz) | MAX. POWER           |                       |
|-------------------------|----------------------|-----------------------|
|                         | OUTPUT<br>POWER (mW) | OUTPUT<br>POWER (dBm) |
| 5250~5350               | 121.619              | 20.85                 |
| 5470~5725               | 120.504              | 20.81                 |

**NOTE:** Manufacturer provides Transmit Power Control description to meet this requirement.

### 802.11n (20MHz)

| FREQUENCY BAND<br>(MHz) | MAX. POWER           |                       |
|-------------------------|----------------------|-----------------------|
|                         | OUTPUT<br>POWER (mW) | OUTPUT<br>POWER (dBm) |
| 5250~5350               | 91.588               | 19.62                 |
| 5470~5725               | 89.262               | 19.51                 |

**NOTE:** Manufacturer provides Transmit Power Control description to meet this requirement.

### 802.11n (40MHz)

| FREQUENCY BAND<br>(MHz) | MAX. POWER           |                       |
|-------------------------|----------------------|-----------------------|
|                         | OUTPUT<br>POWER (mW) | OUTPUT<br>POWER (dBm) |
| 5250~5350               | 121.486              | 20.85                 |
| 5470~5725               | 120.770              | 20.82                 |

**NOTE:** Manufacturer provides Transmit Power Control description to meet this requirement.

#### 802.11ac (20MHz)

| FREQUENCY BAND<br>(MHz) | MAX. POWER           |                       |
|-------------------------|----------------------|-----------------------|
|                         | OUTPUT<br>POWER (mW) | OUTPUT<br>POWER (dBm) |
| 5250~5350               | 90.661               | 19.57                 |
| 5470~5725               | 87.231               | 19.41                 |

**NOTE:** Manufacturer provides Transmit Power Control description to meet this requirement.

#### 802.11ac (40MHz)

| FREQUENCY BAND<br>(MHz) | MAX. POWER           |                       |
|-------------------------|----------------------|-----------------------|
|                         | OUTPUT<br>POWER (mW) | OUTPUT<br>POWER (dBm) |
| 5250~5350               | 123.725              | 20.92                 |
| 5470~5725               | 122.837              | 20.89                 |

**NOTE:** Manufacturer provides Transmit Power Control description to meet this requirement.

#### 802.11ac (80MHz)

| FREQUENCY BAND<br>(MHz) | MAX. POWER           |                       |
|-------------------------|----------------------|-----------------------|
|                         | OUTPUT<br>POWER (mW) | OUTPUT<br>POWER (dBm) |
| 5250~5350               | 37.582               | 15.75                 |
| 5470~5725               | 28.562               | 14.56                 |

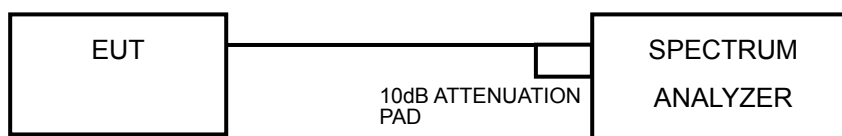
**NOTE:** Manufacturer provides Transmit Power Control description to meet this requirement.

#### 4.4 PEAK POWER SPECTRAL DENSITY MEASUREMENT

##### 4.4.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT

| FREQUENCY BAND   | LIMIT |
|------------------|-------|
| 5.250 ~ 5.350GHz | 11dBm |
| 5.470 ~ 5.725GHz | 11dBm |

##### 4.4.2 TEST SETUP



##### 4.4.3 TEST INSTRUMENTS

Refer to section 4.1.3 to get information of above instrument.

##### 4.4.4 TEST PROCEDURES

Using method SA-1

- 1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
- 2) Set RBW = 30 kHz, Set VBW  $\geq$  1 MHz, Detector = RMS
- 3) Set Channel power measure = 1MHz
- 4) Sweep time = auto, trigger set to "free run".
- 5) Trace average at least 100 traces in power averaging mode.
- 6) Record the max value

##### 4.4.5 DEVIATION FROM TEST STANDARD

No deviation.

##### 4.4.6 EUT OPERATING CONDITIONS

Same as 4.3.6.



#### 4.4.7 TEST RESULTS

##### 802.11a

| CHANNEL | FREQUENCY (MHz) | PSD (dBm) | MAXIMUM LIMIT (dBm) | PASS/FAIL |
|---------|-----------------|-----------|---------------------|-----------|
| 52      | 5260            | 10.23     | 11                  | PASS      |
| 60      | 5300            | 10.12     | 11                  | PASS      |
| 64      | 5320            | 7.56      | 11                  | PASS      |
| 100     | 5500            | 7.28      | 11                  | PASS      |
| 116     | 5580            | 10.11     | 11                  | PASS      |
| 140     | 5700            | 6.69      | 11                  | PASS      |

##### 802.11n (20MHz)

| CHAN. | CHAN. FREQ. (MHz) | PSD (dBm) |         |         | TOTAL POWER DENSITY (dBm) | MAX. LIMIT (dBm) | PASS / FAIL |
|-------|-------------------|-----------|---------|---------|---------------------------|------------------|-------------|
|       |                   | CHAIN 0   | CHAIN 1 | CHAIN 2 |                           |                  |             |
| 52    | 5260              | 0.49      | 0.38    | 1.74    | 5.69                      | 6.23             | PASS        |
| 60    | 5300              | 0.99      | 0.57    | 2.44    | 6.18                      | 6.23             | PASS        |
| 64    | 5320              | 0.81      | 0.23    | 2.77    | 6.18                      | 6.23             | PASS        |
| 100   | 5500              | 1.20      | 0.24    | 2.02    | 5.98                      | 6.23             | PASS        |
| 116   | 5580              | 0.96      | 0.31    | 2.52    | 6.14                      | 6.23             | PASS        |
| 140   | 5700              | 0.89      | 0.31    | 2.24    | 5.99                      | 6.23             | PASS        |

##### NOTE:

- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain =  $6\text{dBi} + 10\log(3) = 10.77\text{dBi} > 6\text{dBi}$ , so the power density limit shall be reduced to  $11 - (10.77 - 6) = 6.23\text{dBm}$ .

#### 802.11n (40MHz)

| CHAN. | CHAN. FREQ. (MHz) | PSD (dBm) |         |         | TOTAL POWER DENSITY (dBm) | MAX. LIMIT (dBm) | PASS / FAIL |
|-------|-------------------|-----------|---------|---------|---------------------------|------------------|-------------|
|       |                   | CHAIN 0   | CHAIN 1 | CHAIN 2 |                           |                  |             |
| 54    | 5270              | 0.90      | 0.80    | 1.68    | 5.92                      | 6.23             | PASS        |
| 62    | 5310              | -4.10     | -3.47   | -2.06   | 1.65                      | 6.23             | PASS        |
| 102   | 5510              | -2.43     | -2.99   | -1.43   | 2.54                      | 6.23             | PASS        |
| 110   | 5550              | 0.96      | 0.72    | 2.16    | 6.10                      | 6.23             | PASS        |
| 134   | 5670              | 0.87      | 0.60    | 2.40    | 6.14                      | 6.23             | PASS        |

#### NOTE:

1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain =  $6\text{dBi} + 10\log(3) = 10.77\text{dBi} > 6\text{dBi}$ , so the power density limit shall be reduced to  $11 - (10.77 - 6) = 6.23\text{dBm}$ .

#### 802.11ac (20MHz)

| CHAN. | CHAN. FREQ. (MHz) | PSD (dBm) |         |         | TOTAL POWER DENSITY (dBm) | MAX. LIMIT (dBm) | PASS / FAIL |
|-------|-------------------|-----------|---------|---------|---------------------------|------------------|-------------|
|       |                   | CHAIN 0   | CHAIN 1 | CHAIN 2 |                           |                  |             |
| 52    | 5260              | 0.83      | 0.50    | 1.83    | 5.86                      | 6.23             | PASS        |
| 60    | 5300              | 1.08      | 0.70    | 2.21    | 6.15                      | 6.23             | PASS        |
| 64    | 5320              | 0.79      | 0.48    | 2.25    | 6.02                      | 6.23             | PASS        |
| 100   | 5500              | 1.24      | 0.73    | 2.20    | 6.20                      | 6.23             | PASS        |
| 116   | 5580              | 1.16      | 0.58    | 2.26    | 6.16                      | 6.23             | PASS        |
| 140   | 5700              | 1.01      | 0.73    | 2.28    | 6.16                      | 6.23             | PASS        |

#### NOTE:

1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain =  $6\text{dBi} + 10\log(3) = 10.77\text{dBi} > 6\text{dBi}$ , so the power density limit shall be reduced to  $11 - (10.77 - 6) = 6.23\text{dBm}$ .

### 802.11ac (40MHz)

| CHAN. | CHAN. FREQ. (MHz) | PSD (dBm) |         |         | TOTAL POWER DENSITY (dBm) | MAX. LIMIT (dBm) | PASS / FAIL |
|-------|-------------------|-----------|---------|---------|---------------------------|------------------|-------------|
|       |                   | CHAIN 0   | CHAIN 1 | CHAIN 2 |                           |                  |             |
| 54    | 5270              | 1.15      | 0.98    | 2.02    | 6.18                      | 6.23             | PASS        |
| 62    | 5310              | -3.73     | -4.05   | -1.84   | 1.68                      | 6.23             | PASS        |
| 102   | 5510              | -2.33     | -2.76   | -1.56   | 2.58                      | 6.23             | PASS        |
| 110   | 5550              | 0.79      | 0.89    | 2.43    | 6.21                      | 6.23             | PASS        |
| 134   | 5670              | 0.80      | 0.82    | 2.33    | 6.15                      | 6.23             | PASS        |

#### NOTE:

- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain =  $6\text{dBi} + 10\log(3) = 10.77\text{dBi} > 6\text{dBi}$ , so the power density limit shall be reduced to  $11 - (10.77 - 6) = 6.23\text{dBm}$ .

### 802.11ac (80MHz)

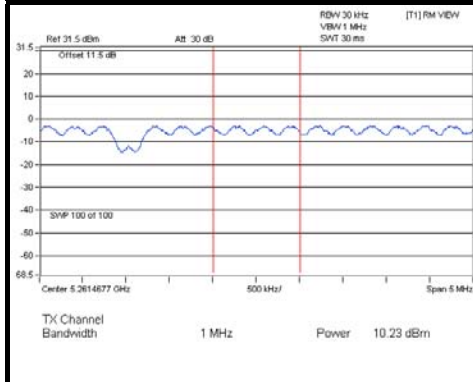
| CHAN. | CHAN. FREQ. (MHz) | PSD (dBm) |         |         | TOTAL POWER DENSITY (dBm) | MAX. LIMIT (dBm) | PASS / FAIL |
|-------|-------------------|-----------|---------|---------|---------------------------|------------------|-------------|
|       |                   | CHAIN 0   | CHAIN 1 | CHAIN 2 |                           |                  |             |
| 58    | 5290              | -9.64     | -9.99   | -8.27   | -4.46                     | 6.23             | PASS        |
| 106   | 5530              | -10.51    | -11.07  | -9.98   | -5.73                     | 6.23             | PASS        |

#### NOTE:

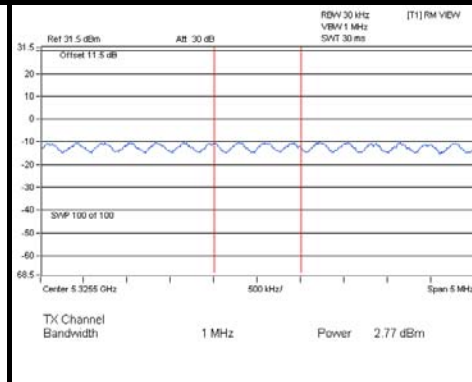
- Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain =  $6\text{dBi} + 10\log(3) = 10.77\text{dBi} > 6\text{dBi}$ , so the power density limit shall be reduced to  $11 - (10.77 - 6) = 6.23\text{dBm}$ .

## SPECTRUM PLOT OF WORST VALUE

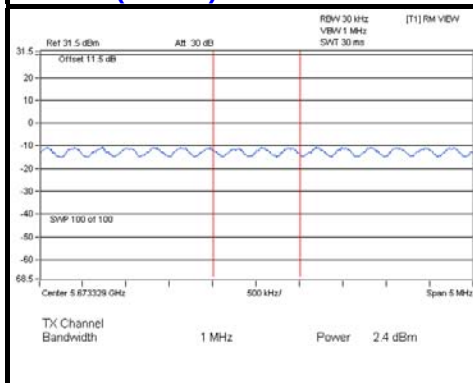
### 802.11a



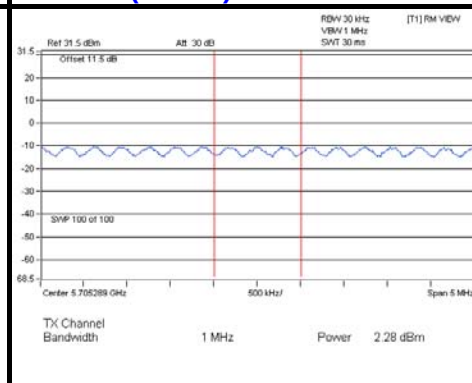
### 802.11n (20MHz)



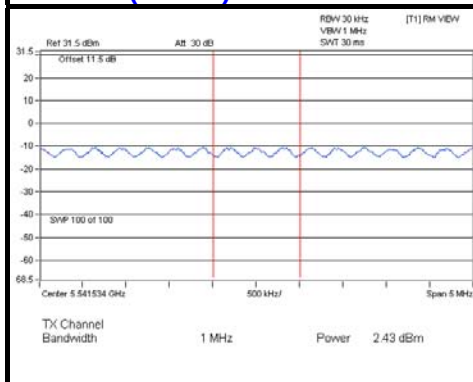
### 802.11n (40MHz)



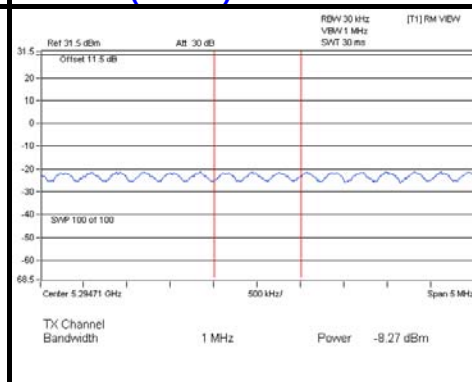
### 802.11ac (20MHz)



### 802.11ac (40MHz)



### 802.11ac (80MHz)

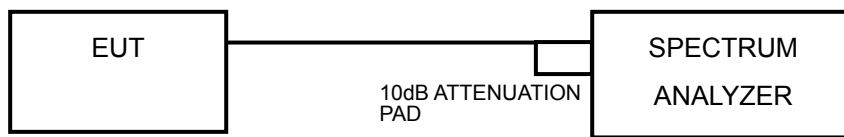


## 4.5 PEAK POWER EXCURSION MEASUREMENT

### 4.5.1 LIMITS OF PEAK POWER EXCURSION MEASUREMENT

Shall not exceed 13 dB.

### 4.5.2 TEST SETUP



### 4.5.3 TEST INSTRUMENTS

Refer to section 4.1.3 to get information of above instrument.

### 4.5.4 TEST PROCEDURE

- 1) Set RBW = 1 MHz, VBW  $\geq$  3 MHz, Detector = peak.
- 2) Trace mode = max-hold. Allow the sweeps to continue until the trace stabilizes.
- 3) Use the peak search function to find the peak of the spectrum.
- 4) Measure the PPSD.
- 5) Compute the ratio of the maximum of the peak-max-hold spectrum to the PPSD.  
Find the worst channel and modulation mode as above test procedure, and follow KDB 789033 D01 General UNII Test Procedures Old Rules v01r04 and repeat step 1 to 5 for final testing of each modulation mode on a single channel (all modulation types) in a single operating band to compliance with the peak excursion requirement.

### 4.5.5 DEVIATION FROM TEST STANDARD

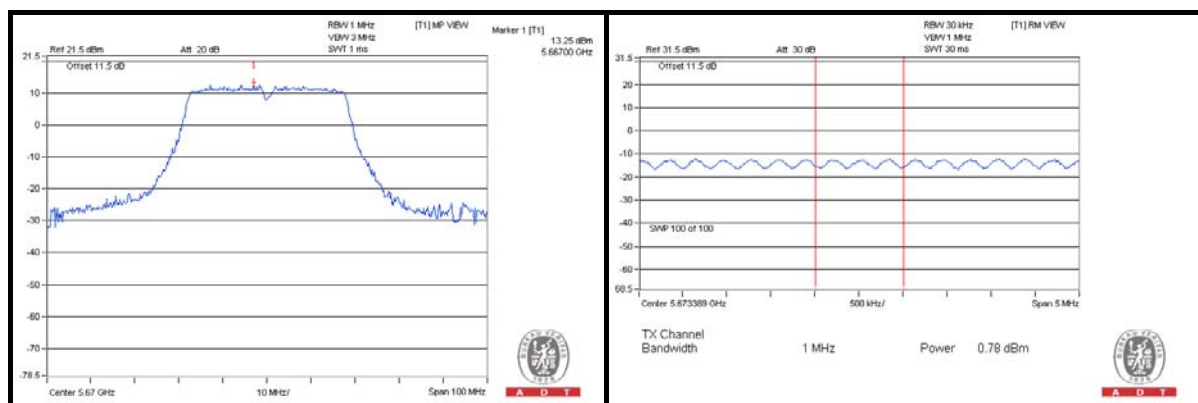
No deviation.

### 4.5.6 EUT OPERATING CONDITIONS

Same as 4.2.6

## 4.5.7 TEST RESULTS

| MODULATION MODE  | MODULATION TYPE | CHANNEL FREQUENCY (MHz) | PEAK VALUE (dBm) | PPSD (dBm) | PEAK ESCURSION (dB) | LIMIT (dB) | PASS / FAIL |
|------------------|-----------------|-------------------------|------------------|------------|---------------------|------------|-------------|
| 802.11a          | BPSK            | 5700                    | 16.83            | 6.69       | 10.14               | 13         | PASS        |
|                  | QPSK            |                         | 18.03            | 6.89       | 11.14               | 13         | PASS        |
|                  | 16QAM           |                         | 18.49            | 6.74       | 11.75               | 13         | PASS        |
|                  | 64QAM           |                         | 18.54            | 6.91       | 11.63               | 13         | PASS        |
| 802.11n (20MHz)  | BPSK            | 5700                    | 11.60            | 0.89       | 10.71               | 13         | PASS        |
|                  | QPSK            |                         | 11.82            | 0.54       | 11.28               | 13         | PASS        |
|                  | 16QAM           |                         | 9.49             | 0.88       | 8.61                | 13         | PASS        |
|                  | 64QAM           |                         | 12.56            | 0.94       | 11.62               | 13         | PASS        |
| 802.11n (40MHz)  | BPSK            | 5670                    | 11.42            | 0.87       | 10.55               | 13         | PASS        |
|                  | QPSK            |                         | 11.85            | 0.71       | 11.14               | 13         | PASS        |
|                  | 16QAM           |                         | 12.19            | 0.60       | 11.59               | 13         | PASS        |
|                  | 64QAM           |                         | 12.20            | 0.77       | 11.43               | 13         | PASS        |
| 802.11ac (20MHz) | BPSK            | 5700                    | 11.62            | 1.01       | 10.61               | 13         | PASS        |
|                  | QPSK            |                         | 12.13            | 0.99       | 11.14               | 13         | PASS        |
|                  | 16QAM           |                         | 12.96            | 1.09       | 11.87               | 13         | PASS        |
|                  | 64QAM           |                         | 12.46            | 0.80       | 11.66               | 13         | PASS        |
|                  | 256QAM          |                         | 13.00            | 0.85       | 12.15               | 13         | PASS        |
| 802.11ac (40MHz) | BPSK            | 5670                    | 11.13            | 0.80       | 10.33               | 13         | PASS        |
|                  | QPSK            |                         | 11.91            | 0.66       | 11.25               | 13         | PASS        |
|                  | 16QAM           |                         | 12.69            | 0.69       | 12.00               | 13         | PASS        |
|                  | 64QAM           |                         | 13.25            | 0.78       | 12.47               | 13         | PASS        |
|                  | 256QAM          |                         | 12.69            | 0.65       | 12.04               | 13         | PASS        |
| 802.11ac (80MHz) | BPSK            | 5530                    | 0.01             | -10.51     | 10.52               | 13         | PASS        |
|                  | QPSK            |                         | 1.95             | -10.29     | 12.24               | 13         | PASS        |
|                  | 16QAM           |                         | 1.53             | -10.58     | 12.11               | 13         | PASS        |
|                  | 64QAM           |                         | 1.96             | -9.90      | 11.86               | 13         | PASS        |
|                  | 256QAM          |                         | 1.69             | -9.92      | 11.61               | 13         | PASS        |

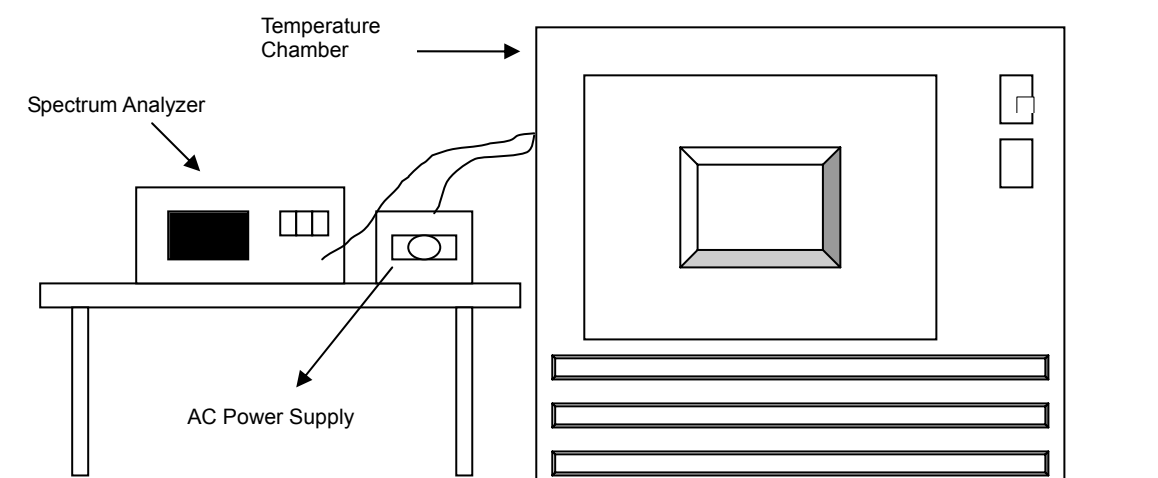


## 4.6 FREQUENCY STABILITY

### 4.6.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

The frequency of the carrier signal shall be maintained within band of operation

### 4.6.2 TEST SETUP



### 4.6.3 TEST INSTRUMENTS

Refer to section 4.1.3 to get information of above instrument.

#### 4.6.4 TEST PROCEDURE

- a. The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.
- b. Turn the EUT on and couple its output to a spectrum analyzer.
- c. Turn the EUT off and set the chamber to the highest temperature specified.
- d. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
- e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
- f. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

#### 4.6.5 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.6.6 EUT OPERATING CONDITION

Set the EUT transmit at un-modulation mode to test frequency stability.



#### 4.6.7 TEST RESULTS

| FREQUENCY STABILITY VERSUS TEMP. |                          |                                |                           |                                |                           |                                |                           |                                |                           |
|----------------------------------|--------------------------|--------------------------------|---------------------------|--------------------------------|---------------------------|--------------------------------|---------------------------|--------------------------------|---------------------------|
| OPERATING FREQUENCY: 5320MHz     |                          |                                |                           |                                |                           |                                |                           |                                |                           |
| TEMP.<br>(°C)                    | POWER<br>SUPPLY<br>(Vac) | 0 MINUTE                       |                           | 2 MINUTE                       |                           | 5 MINUTE                       |                           | 10 MINUTE                      |                           |
|                                  |                          | Measured<br>Frequency<br>(MHz) | Frequency<br>Drift<br>(%) | Measured<br>Frequency<br>(MHz) | Frequency<br>Drift<br>(%) | Measured<br>Frequency<br>(MHz) | Frequency<br>Drift<br>(%) | Measured<br>Frequency<br>(MHz) | Frequency<br>Drift<br>(%) |
| 50                               | 120                      | 5320.0191                      | 0.00036                   | 5320.0205                      | 0.00039                   | 5320.0203                      | 0.00038                   | 5320.0238                      | 0.00045                   |
| 40                               | 120                      | 5319.9925                      | -0.00014                  | 5319.992                       | -0.00015                  | 5319.9919                      | -0.00015                  | 5319.9917                      | -0.00016                  |
| 30                               | 120                      | 5320.0016                      | 0.00003                   | 5320.005                       | 0.00009                   | 5320.0009                      | 0.00002                   | 5320.0012                      | 0.00002                   |
| 20                               | 120                      | 5319.9875                      | -0.00023                  | 5319.9892                      | -0.00020                  | 5319.9885                      | -0.00022                  | 5319.9903                      | -0.00018                  |
| 10                               | 120                      | 5319.9973                      | -0.00005                  | 5319.9947                      | -0.00010                  | 5319.9986                      | -0.00003                  | 5319.9967                      | -0.00006                  |
| 0                                | 120                      | 5319.9713                      | -0.00054                  | 5319.9759                      | -0.00045                  | 5319.9733                      | -0.00050                  | 5319.9743                      | -0.00048                  |
| -10                              | 120                      | 5320.0245                      | 0.00046                   | 5320.0259                      | 0.00049                   | 5320.0247                      | 0.00046                   | 5320.0256                      | 0.00048                   |
| -20                              | 120                      | 5320.0212                      | 0.00040                   | 5320.0209                      | 0.00039                   | 5320.019                       | 0.00036                   | 5320.0193                      | 0.00036                   |
| -30                              | 120                      | 5320.012                       | 0.00023                   | 5320.0141                      | 0.00027                   | 5320.0146                      | 0.00027                   | 5320.0128                      | 0.00024                   |

| FREQUENCY STABILITY VERSUS TEMP. |                          |                                |                           |                                |                           |                                |                           |                                |                           |
|----------------------------------|--------------------------|--------------------------------|---------------------------|--------------------------------|---------------------------|--------------------------------|---------------------------|--------------------------------|---------------------------|
| OPERATING FREQUENCY: 5320MHz     |                          |                                |                           |                                |                           |                                |                           |                                |                           |
| TEMP.<br>(°C)                    | POWER<br>SUPPLY<br>(Vac) | 0 MINUTE                       |                           | 2 MINUTE                       |                           | 5 MINUTE                       |                           | 10 MINUTE                      |                           |
|                                  |                          | Measured<br>Frequency<br>(MHz) | Frequency<br>Drift<br>(%) | Measured<br>Frequency<br>(MHz) | Frequency<br>Drift<br>(%) | Measured<br>Frequency<br>(MHz) | Frequency<br>Drift<br>(%) | Measured<br>Frequency<br>(MHz) | Frequency<br>Drift<br>(%) |
| 20                               | 138                      | 5319.9873                      | -0.00024                  | 5319.9891                      | -0.00020                  | 5319.9883                      | -0.00022                  | 5319.9904                      | -0.00018                  |
|                                  | 120                      | 5319.9875                      | -0.00023                  | 5319.9892                      | -0.00020                  | 5319.9885                      | -0.00022                  | 5319.9903                      | -0.00018                  |
|                                  | 102                      | 5319.9868                      | -0.00025                  | 5319.9893                      | -0.00020                  | 5319.9889                      | -0.00021                  | 5319.9903                      | -0.00018                  |

## 5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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

## 6. 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.

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**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.

## **7. APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB**

No modifications were made to the EUT by the lab during the test.

**---END---**