



# FCC TEST REPORT

**REPORT NO.:** RF150613E01-1

**MODEL NO.:** CDS-600\*\*\*\*\*(\* may be alphanumeric/symbol or blank)

**FCC ID:** HV4CDS600

**RECEIVED:** May 28, 2015

**TESTED:** May 28 to June 17, 2015

**ISSUED:** July 08, 2015

**APPLICANT:** Wacom Co., Ltd.

**ADDRESS:** 2-510-1 Toyonodai, Kazo-shi Saitama  
349-1148 Japan

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

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R.O.C.

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## RELEASE CONTROL RECORD

| ISSUE NO.     | REASON FOR CHANGE | DATE ISSUED   |
|---------------|-------------------|---------------|
| RF150613E01-1 | Original release  | July 08, 2015 |



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## 1. CERTIFICATION

**PRODUCT:** Digital Notepad  
**BRAND NAME:** Wacom  
**MODEL NO.:** CDS-600\*\*\*\*\*(\* may be alphanumeric/symbol or blank)  
**TEST SAMPLE:** ENGINEERING SAMPLE  
**APPLICANT:** Wacom Co., Ltd.  
**TESTED:** May 28 to June 17, 2015  
**STANDARDS:** **FCC Part 15, Subpart C (Section 15.209)**  
ANSI C63.10-2009

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

**Prepared By** :  , **Date:** July 08, 2015  
( Midoli Peng, Specialist )

**Approved By** :  , **Date:** July 08, 2015  
( May Chen, Manager )



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## 2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

| APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.209) |                             |        |   |
|---|-----------------------------|--------|---|
| STANDARD SECTION  | TEST TYPE                   | RESULT | REMARK  |
| 15.207  | AC Power Conducted Emission | PASS   | Meet the requirement of limit. Minimum passing margin is -22.78 dB at 0.33575 MHz |
| 15.209  | Radiated Emissions          | PASS   | Meet the requirement of limit. Minimum passing margin is -14.8dB at 836.981MHz    |
| 15.203  | Antenna Requirement         | PASS   | No antenna connector is used.   |



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## 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:

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

| Measurement                     | Value   |
|---------------------------------|---------|
| Conducted emissions             | 2.86 dB |
| Radiated emissions (30-1000MHz) | 5.43 dB |



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### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

|                           |  |
|---------------------------|--|
| <b>PRODUCT</b>            | Digital Notepad  |
| <b>MODEL NO.</b>          | CDS-600*****(* may be alphanumeric/symbol or blank)    |
| <b>POWER SUPPLY</b>       | DC 5V from USB interface<br>DC 3.9V from Battery       |
| <b>POWER CORD</b>         | NA   |
| <b>FREQUENCY RANGE</b>    | 562.5 kHz  |
| <b>NUMBER OF CHANNEL</b>  | 1  |
| <b>ANTENNA TYPE</b>       | Loop antenna   |
| <b>DATA CABLE</b>         | USB to Mini USB cable x 1 (unshielded, 1m)             |
| <b>I/O PORTS</b>          | Refer to user's manual                                 |
| <b>ASSOCIATED DEVICES</b> | Pen x 1 (Brand: Wacom, Model: UP-3703)<br>Notebook x 1 |

Note:

1. The EUT has three types which are identical to each other in all aspects except for the following table:

| Product Name    | Brand | Model   | Type        | Difference  |
|-----------------|-------|---------|-------------|---|
| Digital Notepad | Wacom | CDS-600 | Cover Type  | 1. With the same HW/SW<br>2. With different appearance. |
|                 |       |         | Pocket Type |   |
|                 |       |         | Sleeve Type |   |

From the above types, type: **Cover Type** was selected as representative model for the test and its data was recorded in this report.

2. The EUT was pre-tested under following test modes :

| Pre-test Mode | Power                           |
|---------------|---------------------------------|
| Mode A        | Battery                         |
| <b>Mode B</b> | <b>Power from USB interface</b> |

From the above modes, the worst spurious emission was found in **Mode B**. Therefore only the test data of the modes were recorded in this report.

3. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.



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### 3.2 DESCRIPTION OF TEST MODES

One channel is provided to this EUT.

| Channel | Frequency |
|---------|-----------|
| 1       | 562.5 kHz |





### 3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

| EUT CONFIGURE MODE | APPLICABLE TO |    | DESCRIPTION |
|--------------------|---------------|----|-------------|
|                    | PLC           | RE |             |
| -                  | √             | √  | -           |

Where **PLC**: Power Line Conducted Emission

**RE**: Radiated Emission below 1GHz

**NOTE:** The EUT had been pre-tested on the positioned of each 3 axis. For Radiated emissions (9 kHz ~ 30 MHz), the worst case was found when positioned on **Z-plane**: for Radiated emissions (30-1000MHz), the worst case was found when positioned on **X-plane**.

#### 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.

| TESTED CHANNEL | FREQUENCY |
|----------------|-----------|
| 1              | 562.5 kHz |

#### RADIATED 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.

| TESTED CHANNEL | FREQUENCY |
|----------------|-----------|
| 1              | 562.5 kHz |

#### TEST CONDITION:

| APPLICABLE TO | ENVIRONMENTAL CONDITIONS | INPUT POWER  | TESTED BY    |
|---------------|--------------------------|--------------|--------------|
| PLC           | 25deg. C, 64%RH          | 120Vac, 60Hz | JyunChun.Lin |
| RE<1G         | 22deg. C, 66%RH          | 120Vac, 60Hz | Andy Ho      |
|               | 25deg. C, 70%RH          | 120Vac, 60Hz | Tim Ho       |

### 3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

#### **FCC Part 15, Subpart C (15.209)**

ANSI C63.10-2009

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

**NOTE:** The EUT has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

### 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.

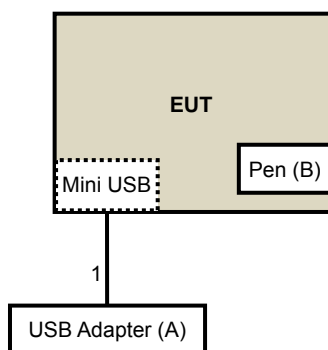
| ID | Product     | Brand    | Model No.  | Serial No. | FCC ID | Remarks         |
|----|-------------|----------|------------|------------|--------|-----------------|
| A. | USB Adapter | Nicelink | US-T12B(W) | NA         | NA     | Provided by Lab |
| B. | Pen         | Wacom    | UP-3703    | NA         | NA     | Accessory       |

Note:

1. All power cords of the above support units are non-shielded (1.8m).

| ID | Descriptions          | Qty. | Length (m) | Shielding (Yes/No) | Cores (Qty.) | Remarks   |
|----|-----------------------|------|------------|--------------------|--------------|-----------|
| 1. | USB to Mini USB cable | 1    | 1          | No                 | 0            | Accessory |

### 3.5 CONFIGURATION OF SYSTEM UNDER TEST





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## 4. TEST TYPES AND RESULTS

### 4.1 CONDUCTED EMISSION MEASUREMENT

#### 4.1.1 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 0.50 MHz.

#### 4.1.2 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER  | MODEL NO.               | SERIAL NO. | CALIBRATED DATE | CALIBRATED UNTIL |
|---|-------------------------|------------|-----------------|------------------|
| Test Receiver<br>R&S  | ESCS 30                 | 100375     | May 06, 2015    | May 05, 2016     |
| Line-Impedance<br>Stabilization Network<br>(for EUT)<br>SCHWARZBECK | NSLK-8127               | 8127-522   | Sep. 15, 2014   | Sep. 14, 2015    |
| Line-Impedance<br>Stabilization Network<br>(for Peripheral)<br>R&S  | ENV216                  | 100071     | Nov. 10, 2014   | Nov. 09, 2015    |
| RF Cable  | 5D-FB                   | COCCAB-001 | Mar. 09, 2015   | Mar. 08, 2016    |
| 50 ohms Terminator  | N/A                     | EMC-03     | Sep. 22, 2014   | Sep. 21, 2015    |
| 50 ohms Terminator  | N/A                     | EMC-02     | Sep. 30, 2014   | Sep. 29, 2015    |
| Software<br>BVADT   | BVADT_Cond_<br>V7.3.7.3 | NA         | NA              | NA               |

**Note:**

1. The calibration interval of the above test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. C.
3. The VCCI Con C Registration No. is C-3611.
4. Tested Date: June 15, 2015



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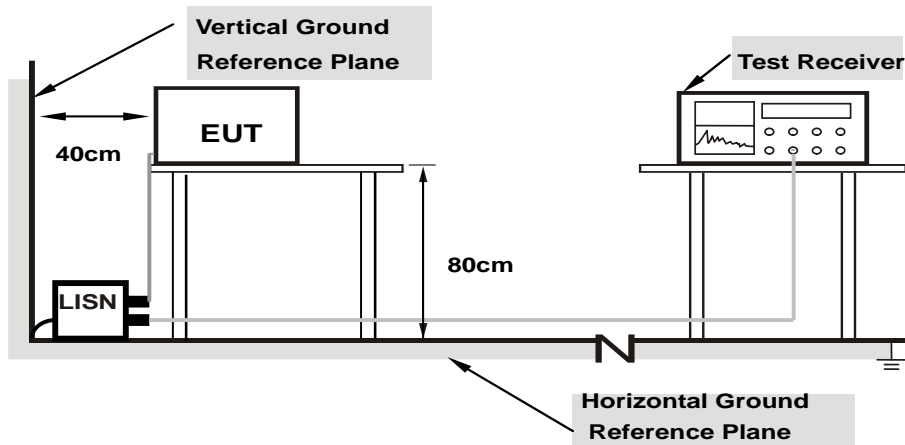
#### 4.1.3 TEST PROCEDURES

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

#### 4.1.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.1.5 TEST SETUP



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

For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

#### 4.1.6 EUT OPERATING CONDITIONS

1. Placed the EUT on testing table.
2. Controlling software has been activated to set the EUT under transmission/receiving condition continuously.

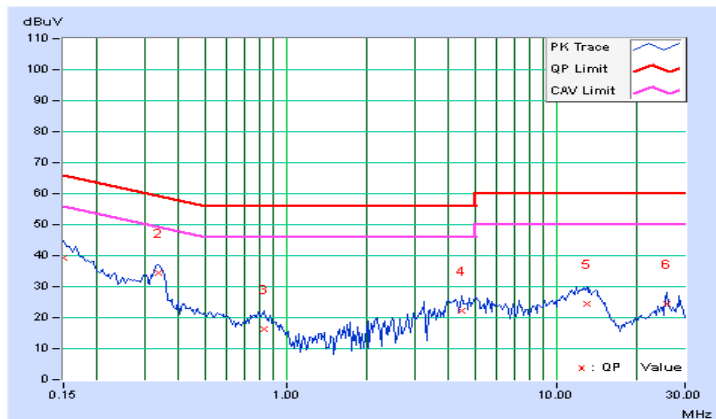
### 4.1.7 TEST RESULTS

|              |          |                      |       |
|--------------|----------|----------------------|-------|
| <b>PHASE</b> | Line (L) | <b>6dB BANDWIDTH</b> | 9 kHz |
|--------------|----------|----------------------|-------|

| No       | Freq.          | Corr.       | Reading Value |              | Emission Level |              | Limit        |              | Margin        |               |
|----------|----------------|-------------|---------------|--------------|----------------|--------------|--------------|--------------|---------------|---------------|
|          | [MHz]          | (dB)        | [dB (uV)]     |              | [dB (uV)]      |              | [dB (uV)]    |              | (dB)          |               |
|          |                |             | Q.P.          | AV.          | Q.P.           | AV.          | Q.P.         | AV.          | Q.P.          | AV.           |
| 1        | 0.15000        | 0.14        | 39.15         | 28.20        | 39.29          | 28.34        | 66.00        | 56.00        | -26.71        | -27.66        |
| <b>2</b> | <b>0.33575</b> | <b>0.16</b> | <b>34.13</b>  | <b>26.36</b> | <b>34.29</b>   | <b>26.52</b> | <b>59.31</b> | <b>49.31</b> | <b>-25.01</b> | <b>-22.78</b> |
| 3        | 0.83359        | 0.19        | 16.00         | 7.08         | 16.19          | 7.27         | 56.00        | 46.00        | -39.81        | -38.73        |
| 4        | 4.48047        | 0.41        | 21.64         | 8.12         | 22.05          | 8.53         | 56.00        | 46.00        | -33.95        | -37.47        |
| 5        | 12.94922       | 0.85        | 23.73         | 17.60        | 24.58          | 18.45        | 60.00        | 50.00        | -35.42        | -31.55        |
| 6        | 25.69531       | 1.32        | 23.01         | 14.53        | 24.33          | 15.85        | 60.00        | 50.00        | -35.67        | -34.15        |

**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.

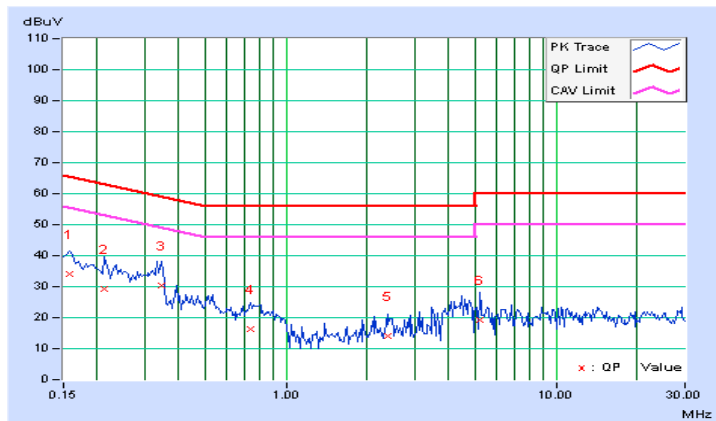


|       |             |               |       |
|-------|-------------|---------------|-------|
| PHASE | Neutral (N) | 6dB BANDWIDTH | 9 kHz |
|-------|-------------|---------------|-------|

| No | Freq.   | Corr.       | Reading Value |           | Emission Level |           | Limit     |           | Margin |        |
|----|---------|-------------|---------------|-----------|----------------|-----------|-----------|-----------|--------|--------|
|    | [MHz]   | Factor (dB) | Q.P.          | AV.       | Q.P.           | AV.       | Q.P.      | AV.       | Q.P.   | AV.    |
|    |         |             | [dB (uV)]     | [dB (uV)] | [dB (uV)]      | [dB (uV)] | [dB (uV)] | [dB (uV)] | (dB)   | (dB)   |
| 1  | 0.15781 | 0.14        | 33.87         | 14.65     | 34.01          | 14.79     | 65.58     | 55.58     | -31.57 | -40.79 |
| 2  | 0.21250 | 0.15        | 29.02         | 13.49     | 29.17          | 13.64     | 63.11     | 53.11     | -33.93 | -39.46 |
| 3  | 0.34531 | 0.18        | 30.17         | 19.02     | 30.35          | 19.20     | 59.07     | 49.07     | -28.73 | -29.88 |
| 4  | 0.73594 | 0.22        | 16.17         | 3.37      | 16.39          | 3.59      | 56.00     | 46.00     | -39.61 | -42.41 |
| 5  | 2.38672 | 0.32        | 13.57         | 3.09      | 13.89          | 3.41      | 56.00     | 46.00     | -42.11 | -42.59 |
| 6  | 5.21094 | 0.49        | 18.82         | 2.82      | 19.31          | 3.31      | 60.00     | 50.00     | -40.69 | -46.69 |

**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.







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## 4.2 RADIATED EMISSION AND BANDEGE MEASUREMENT

### 4.2.1 LIMITS OF RADIATED EMISSION AND BANDEGE MEASUREMENT

#### FOR FREQUENCY BELOW 30MHz

| FREQUENCY (MHz) | FIELD STRENGTH (dBuV/m) |             | MEASUREMENT DISTANCE (meters) |
|-----------------|-------------------------|-------------|-------------------------------|
|                 | uV/m                    | dBuV/m      |                               |
| 0.009 – 0.490   | 2400 / F (kHz)          | 48.52-13.80 | 300                           |
| 0.490 – 1.705   | 24000 / F (kHz)         | 33.80-22.97 | 30                            |
| 1.705 – 30.0    | 30                      | 29.54       | 30                            |

#### FOR FREQUENCY ABOVE 30MHz

| FREQUENCY (MHz) | FIELD STRENGTH (dBuV/m) |        | MEASUREMENT DISTANCE (meters) |
|-----------------|-------------------------|--------|-------------------------------|
|                 | uV/m                    | dBuV/m |                               |
| 30-88           | 100                     | 40.0   | 3                             |
| 88-216          | 150                     | 43.5   | 3                             |
| 216-960         | 200                     | 46.0   | 3                             |
| Above 960       | 500                     | 54.0   | 3                             |



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## 4.2.2 TEST INSTRUMENTS

For frequency range: 9 kHz ~ 30 MHz

| DESCRIPTION & MANUFACTURER                     | MODEL NO.                | SERIAL NO.                 | CALIBRATED DATE | CALIBRATED UNTIL |
|--|--------------------------|----------------------------|-----------------|------------------|
| Test Receiver<br>Agilent                       | N9038A                   | MY51210105                 | July 21, 2014   | July 20, 2015    |
| Pre-Amplifier <sup>(*)</sup><br>EMCI           | EMC001340                | 980142                     | Jan. 13, 2014   | Jan. 12, 2016    |
| Loop Antenna <sup>(*)</sup><br>Electro-Metrics | EM-6879                  | 264                        | Dec. 16, 2014   | Dec. 15, 2016    |
| RF Cable                                       | NA                       | LOOPCAB-001<br>LOOPCAB-002 | Jan. 18, 2015   | Jan. 17, 2016    |
| Software                                       | ADT_Radiated<br>_V8.7.07 | NA                         | NA              | NA               |
| Antenna Tower & Turn Table<br>CT               | NA                       | 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 calibration interval of the above test instruments is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. The test was performed in 966 Chamber No. G.
4. The FCC Site Registration No. is 966073.
5. The CANADA Site Registration No. is IC 7450H-2.  
Tested Date: June 17, 2015



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For frequency range: 30-1000MHz

| DESCRIPTION & MANUFACTURER              | MODEL NO.                | SERIAL NO.                           | CALIBRATED DATE | CALIBRATED UNTIL |
|---|--------------------------|--------------------------------------|-----------------|------------------|
| Test Receiver<br>Agilent                | N9038A                   | MY50010156                           | Aug. 11, 2014   | Aug. 10, 2015    |
| Pre-Amplifier<br>Mini-Circuits          | ZFL-1000VH2<br>B         | AMP-ZFL-04                           | Nov. 12, 2014   | Nov. 11, 2015    |
| Trilog Broadband Antenna<br>SCHWARZBECK | VULB 9168                | 9168-361                             | Feb. 09, 2015   | Feb. 08, 2016    |
| RF Cable                                | 8D-FB                    | CHHCAB-001-<br>1<br>CHHCAB-001-<br>2 | Oct. 05, 2014   | Oct. 04, 2015    |
|   | RF-141                   | CHHCAB-004                           | Oct. 05, 2014   | Oct. 04, 2015    |
| Software                                | ADT_Radiated<br>_V8.7.07 | NA                                   | NA              | NA               |
| Antenna Tower & Turn Table<br>CT        | NA                       | 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 966 Chamber No. H.
3. The FCC Site Registration No. is 797305.
4. The CANADA Site Registration No. is IC 7450H-3.
5. Tested Date: June 17, 2015

### 4.2.3 TEST PROCEDURES

#### **For Radiated emission below 30MHz**

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna. The height of antenna is 1 meter above the ground.
- c. Both open and close axes of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

**NOTE:** 1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 200Hz at frequency below 150kHz.  
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9kHz at frequency 150kHz~ 30MHz.

#### **For Radiated emission 30~1000MHz**

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

**NOTE:** The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency 30MHz ~ 1GHz.



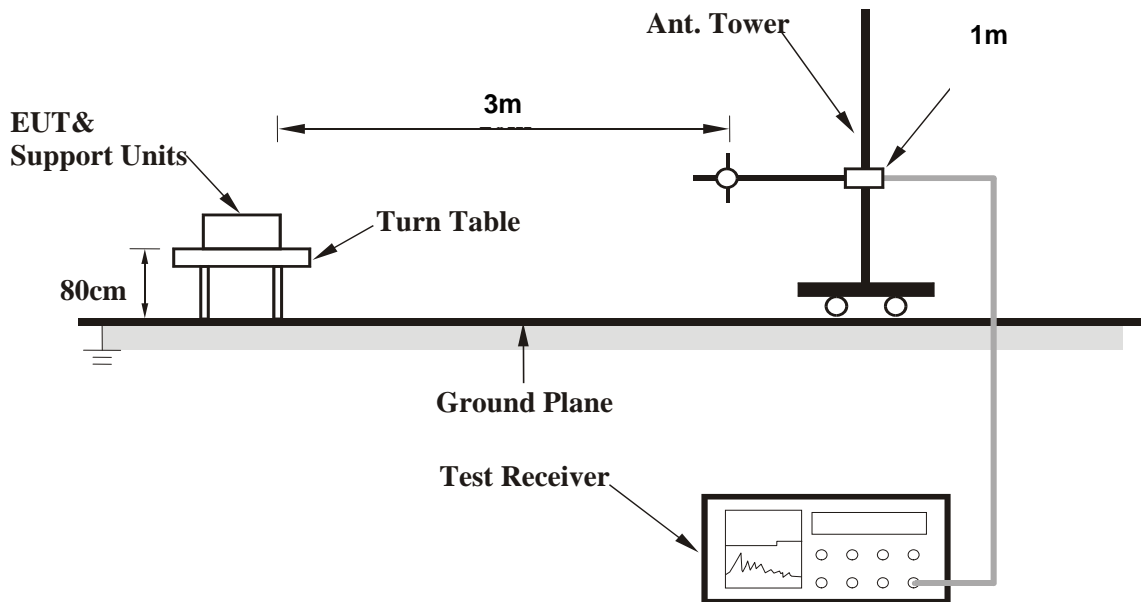
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#### 4.2.4 DEVIATION FROM TEST STANDARD

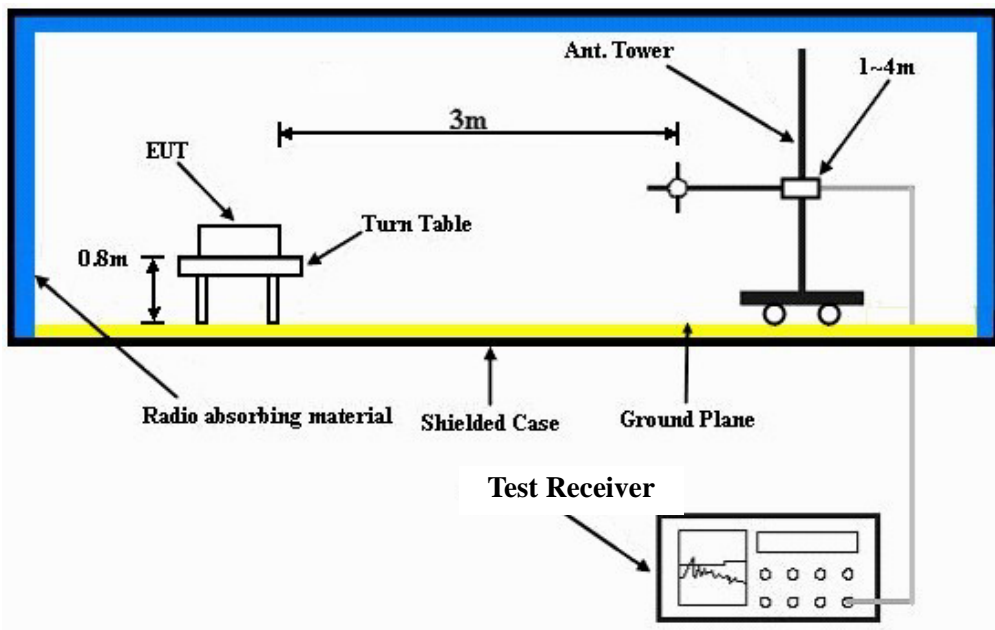
No deviation

### 4.2.5 TEST SETUP

< Frequency range: 9 kHz ~ 30 MHz >



< Frequency range: 30-1000MHz >



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.



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## 4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6



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#### 4.2.7 TEST RESULTS

|                        |                |                          |            |
|------------------------|----------------|--------------------------|------------|
| <b>CHANNEL</b>         | Channel 1      | <b>DETECTOR FUNCTION</b> | Quasi-Peak |
| <b>FREQUENCY RANGE</b> | 9 kHz ~ 30 MHz |                          |            |

#### ANTENNA POLARITY & TEST DISTANCE: LOOP ANTENNA OPEN AT 3M

| NO. | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
|-----|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| 1   | 0.03        | 53.6 QP                 | 118.1          | -64.5       | 1.00 V             | 346                  | 24.89            | 28.71                    |
| 2   | 0.06        | 44.2 QP                 | 112.0          | -67.8       | 1.00 V             | 149                  | 22.04            | 22.16                    |
| 3   | 0.56        | 38.5 QP                 | 72.6           | -34.1       | 1.00 V             | 119                  | 34.47            | 4.03                     |
| 4   | 13.34       | 40.4 QP                 | 69.5           | -29.1       | 1.00 V             | 241                  | 43.87            | -3.47                    |
| 5   | 23.13       | 43.1 QP                 | 69.5           | -26.4       | 1.00 V             | 20                   | 46.94            | -3.84                    |
| 6   | 24.51       | 45.7 QP                 | 69.5           | -23.8       | 1.00 V             | 60                   | 49.23            | -3.53                    |
| 7   | 26.48       | 49.3 QP                 | 69.5           | -20.2       | 1.00 V             | 304                  | 52.43            | -3.13                    |

#### ANTENNA POLARITY & TEST DISTANCE: LOOP ANTENNA CLOSE AT 3M

| NO. | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
|-----|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| 1   | 0.03        | 54.6 QP                 | 118.1          | -63.5       | 1.00 V             | 238                  | 25.89            | 28.71                    |
| 2   | 0.06        | 44.2 QP                 | 112.0          | -67.8       | 1.00 V             | 26                   | 22.04            | 22.16                    |
| 3   | 0.56        | 35.8 QP                 | 72.6           | -36.8       | 1.00 V             | 225                  | 31.77            | 4.03                     |
| 4   | 13.34       | 36.4 QP                 | 69.5           | -33.2       | 1.00 V             | 265                  | 39.83            | -3.47                    |
| 5   | 16.21       | 29.5 QP                 | 69.5           | -40.1       | 1.00 V             | 66                   | 33.42            | -3.94                    |
| 6   | 23.13       | 41.3 QP                 | 69.5           | -28.2       | 1.00 V             | 77                   | 45.14            | -3.84                    |
| 7   | 24.93       | 46.6 QP                 | 69.5           | -22.9       | 1.00 V             | 98                   | 50.04            | -3.44                    |

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
  2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
  3. The other emission levels were very low against the limit.
  4. Margin value = Emission level – Limit value.
  5. Above limits have been translated by the formula

The measured field strength was extrapolated to distance 30 meters, using the formula that the limit of field strength varies as the inverse distance square (40dB per decade of distance)

Example:

$$\begin{aligned}
 24000/562.5\text{kHz} &= 42.6 \text{ uV/m} && 30\text{m} \\
 &= 32.6 \text{ dBuV/m} && 30\text{m} \\
 &= 32.6 \text{ dBuV/m} + 20\log(30/3)^2 && 3\text{m} \\
 &= 72.6 \text{ dBuV/m} && 3\text{m}
 \end{aligned}$$





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|                        |            |                          |            |
|------------------------|------------|--------------------------|------------|
| <b>CHANNEL</b>         | Channel 1  | <b>DETECTOR FUNCTION</b> | Quasi-Peak |
| <b>FREQUENCY RANGE</b> | 30-1000MHz |                          |            |

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

| NO. | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
|-----|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| 1   | 86.32       | 19.8 QP                 | 40.0           | -20.2       | 1.00 H             | 103                  | 38.63            | -18.81                   |
| 2   | 183.07      | 20.2 QP                 | 43.5           | -23.3       | 1.00 H             | 309                  | 34.99            | -14.82                   |
| 3   | 238.02      | 17.8 QP                 | 46.0           | -28.2       | 1.20 H             | 46                   | 31.98            | -14.14                   |
| 4   | 586.77      | 20.3 QP                 | 46.0           | -25.7       | 1.70 H             | 154                  | 25.41            | -5.15                    |
| 5   | 610.60      | 21.2 QP                 | 46.0           | -24.9       | 1.60 H             | 133                  | 25.58            | -4.43                    |
| 6   | 822.78      | 25.9 QP                 | 46.0           | -20.1       | 2.20 H             | 209                  | 26.88            | -1.00                    |

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

| NO. | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
|-----|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| 1   | 51.12       | 24.2 QP                 | 40.0           | -15.8       | 1.10 V             | 5                    | 37.57            | -13.33                   |
| 2   | 66.61       | 24.7 QP                 | 40.0           | -15.3       | 1.00 V             | 12                   | 39.57            | -14.84                   |
| 3   | 140.02      | 22.7 QP                 | 43.5           | -20.8       | 1.90 V             | 12                   | 36.02            | -13.36                   |
| 4   | 193.06      | 17.6 QP                 | 43.5           | -25.9       | 1.60 V             | 51                   | 33.38            | -15.81                   |
| 5   | 357.71      | 15.6 QP                 | 46.0           | -30.4       | 1.10 V             | 9                    | 26.15            | -10.53                   |
| 6   | 836.98      | 31.2 QP                 | 46.0           | -14.8       | 1.60 V             | 82                   | 32.02            | -0.80                    |

**REMARKS:**

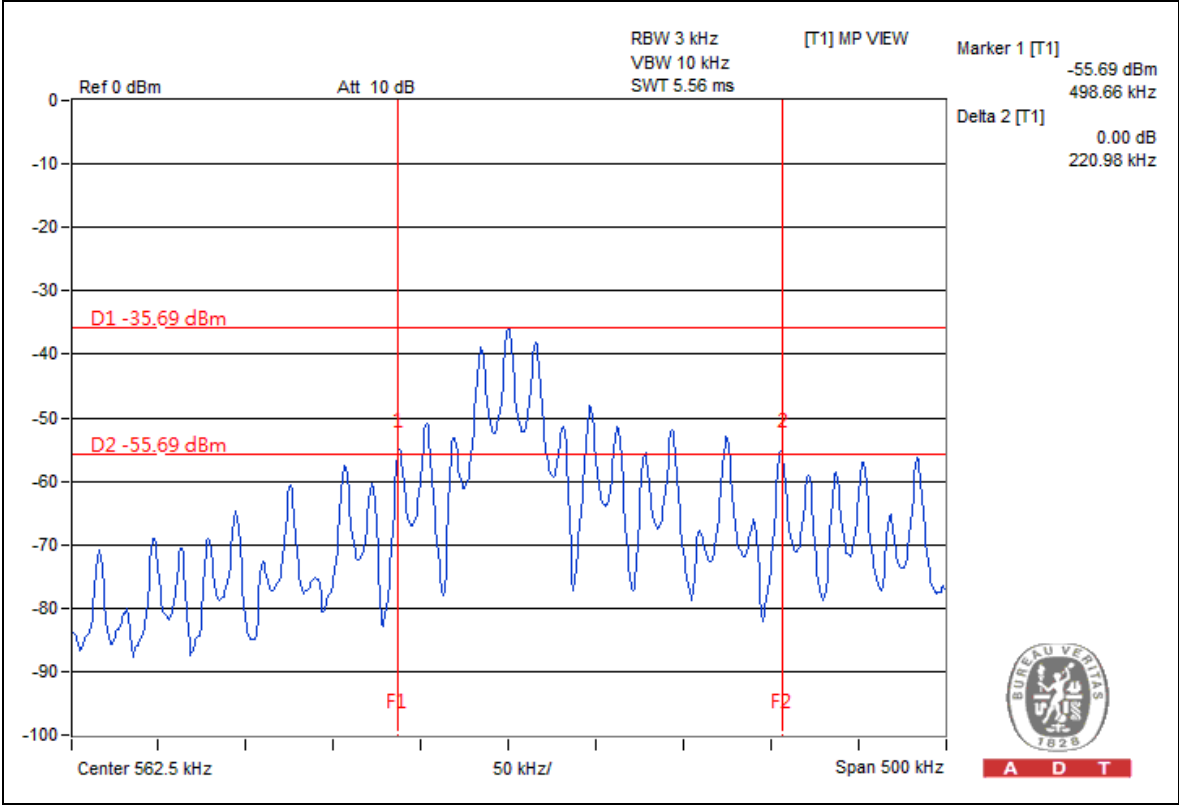
1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value



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### 4.2.8 TEST RESULTS (SPECTRUM BANDWIDTH)

**BANDWIDTH: 220.98 kHz**



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## 5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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





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## 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.

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

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Fax: 886-2-26051924

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

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

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



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## **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 ---**