# FCC TEST REPORT

**REPORT NO.:** RF130621D03A
**MODEL NO.:** CTH-300, CTH-300XXXXXXX
**FCC ID:** HV4CTH300
**RECEIVED:** Aug. 8, 2013
**TESTED:** Aug. 8, 2013
**ISSUED:** Aug. 9, 2013

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

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

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

**LAB ADDRESS:** No. 47, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan, R.O.C.

This report should not be used by the client to claim product certification, approval, or endorsement by TAF or any government agencies.

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# RELEASE CONTROL RECORD

| ISSUE NO. | REASON FOR CHANGE | DATE ISSUED |
|---|---|---|
| RF130621D03A | Original release | Aug. 9, 2013 |

# 1 CERTIFICATION

| | |
|---|---|
| **PRODUCT:** | Wireless Touch Pad With Stylus |
| **BRAND:** | Wacom |
| **MODEL NO.:** | CTH-300, CTH-300XXXXXXX |
| | (X may be alphanumeric / Symbol or blank) |
| **APPLICANT:** | Wacom Co., Ltd. |
| **TESTED:** | Aug. 8, 2013 |
| **TEST SAMPLE:** | MASS-PRODUCTION |
| **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** : Celia Chen , **DATE:** Aug. 9, 2013

( Celia Chen / Senior Specialist )

**APPROVED BY** : Ken Liu , **DATE:** Aug. 9, 2013

( 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 C | | | |
|---|---|---|---|
| **STANDARD PARAGRAPH** | **TEST TYPE** | **RESULT** | **REMARK** |
| 15.207 | Conducted Emission Test | N/A | Power supply is 3.2Vdc from batteries |
| 15.209 | Radiated Emission Test | PASS | Meet the requirement of limit. Minimum passing margin is -18.1dB at 936.95MHz. |

## 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 | UNCERTAINTY |
|---|---|
| Radiated emissions | 4.30 dB |

# 3 GENERAL INFORMATION

## 3.1 GENERAL DESCRIPTION OF EUT

| | |
|---|---|
| **EUT** | Wireless Touch Pad With Stylus |
| **MODEL NO.** | CTH-300, CTH-300XXXXXXX |
| **POWER SUPPLY** | 3.2Vdc, 47mA from batteries |
| **MODULATION TYPE** | AM |
| **CARRIER FREQUENCY OF EACH CHANNEL** | 531.25kHz, 562.5kHz, 593.75kHz |
| **NUMBER OF CHANNEL** | 3 |
| **ANTENNA TYPE** | Internal antenna |
| **DATA CABLE** | N/A |
| **I/O PORT** | N/A |
| **ACCESSORY DEVICES** | Refer to note below |

**NOTE:**

1. The EUT is a Wireless Touch Pad With Stylus.

2. The EUT contains following accessory devices:

| Product | Brand | Model |
|---|---|---|
| Stylus | Wacom | UP-7721 |

3. All models are electrically identical, different model names are for marketing purpose.

| MODEL NO. |
|---|
| CTH-300 |
| CTH-300XXXXXXX<br>(X may be alphanumeric / Symbol or blank) |

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

3 channels were provided to this EUT

| Channel | Frequency (kHz) |
|---|---|
| 1 | 531.25 |
| 2 | 562.50 |
| 3 | 593.75 |

## 3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

| EUT CONFIGURE MODE | Applicable to | | Description |
|---|---|---|---|
| | PLC | RE<1G | |
| - | Note | √ | - |

Where PLC: Power Line Conducted Emission RE<1G RE: Radiated Emission below 1GHz

**NOTE:** No need to concern of Conducted Emission due to the EUT is powered by batteries

**RADIATED EMISSION TEST (BELOW 1 GHZ):**

☒Following channel(s) was (were) selected for the final test as listed below.

| AVAILABLE CHANNEL | TESTED CHANNEL |
|---|---|
| 1 to 3 | 2 |

**TEST CONDITION:**

| APPLICABLE TO | ENVIRONMENTAL CONDITIONS | INPUT POWER | TESTED BY |
|---|---|---|---|
| RE<1G | 26deg. C, 76% RH | 3.2Vdc | Dalen Dai |

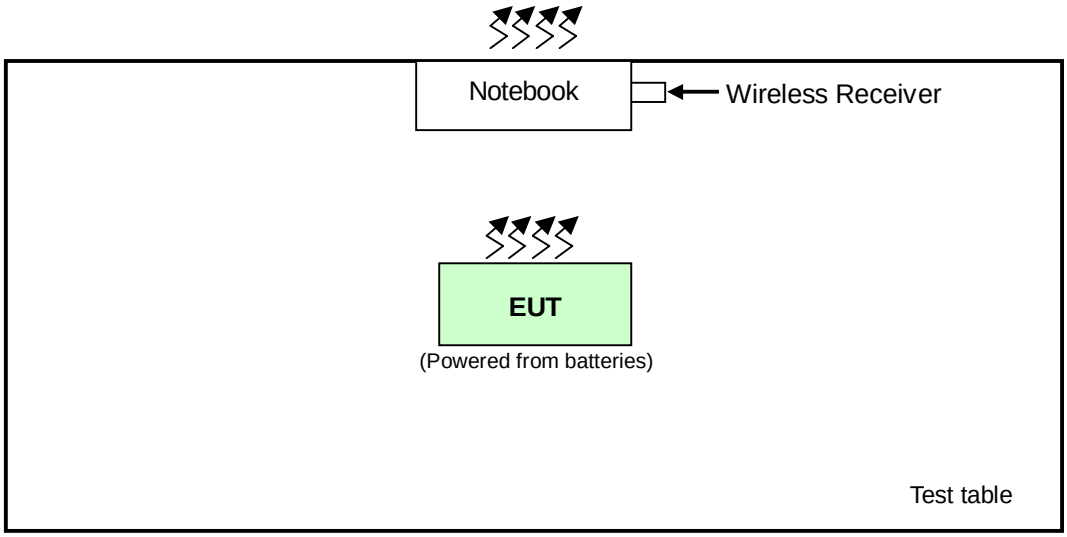
## 3.3 DESCRIPTION OF SUPPORT UNITS

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

| NO. | PRODUCT | BRAND | MODEL NO. | SERIAL NO. | FCC ID |
|---|---|---|---|---|---|
| 1 | NOTEBOOK COMPUTER | DELL | PP27L | 8SNZ12S | FCC DoC Approved |
| 2 | Wireless Receiver | Wacom | INF-A081 | N/A | FCC DoC Approved |

**Note:** The support unit 2 was provided by client.

### 3.3.1 CONFIGURATION OF SYSTEM UNDER TEST



## 3.4 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

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

**ANSI C63.10-2009**

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

**NOTE**: The product 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 PROCEDURE AND RESULT

## 4.1 CONDUCTED EMISSION MEASUREMENT

N/A

## 4.2 RADIATED EMISSION MEASUREMENT

### 4.2.1 LIMITS OF RADIATED EMISSION 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 BETWEEN 30-1000MHz**

| FREQUENCY (MHz) | Class A (at 10m) | | Class B (at 3m) | |
|---|---|---|---|---|
| | uV/m | dBuV/m | uV/m | dBuV/m |
| 30-88 | 90 | 39.1 | 100 | 40.0 |
| 88-216 | 150 | 43.5 | 150 | 43.5 |
| 216-960 | 210 | 46.4 | 200 | 46.0 |
| Above 960 | 300 | 49.5 | 500 | 54.0 |

## 4.2.2 TEST INSTRUMENT

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED DATE | CALIBRATED UNTIL |
|---|---|---|---|---|
| HP Preamplifier | 8447D | 2432A03504 | Feb. 26, 2013 | Feb. 25, 2014 |
| HP Preamplifier | 8449B | 3008A01201 | Feb. 26, 2013 | Feb. 25, 2014 |
| Agilent TEST RECEIVER | N9038A | MY51210129 | Jan. 03, 2013 | Jan. 02, 2014 |
| Schwarzbeck Antenna | VULB 9168 | 137 | Mar. 20, 2013 | Mar. 19, 2014 |
| Schwarzbeck Antenna | VHBA 9123 | 480 | May 29, 2013 | May 28, 2014 |
| ADT. Turn Table | TT100 | 0306 | NA | NA |
| ADT. Tower | AT100 | 0306 | NA | NA |
| Software | ADT_Radiated_V 7.6.15.9.2 | NA | NA | NA |
| SUHNER RF cable | SF102 | CABLE-CH6 | Aug. 19, 2012 | Aug. 18, 2013 |
| Loop Antenna R & S | HFH2-Z2 | 100070 | Jan. 31, 2012 | Jan. 30, 2014 |

**NOTE:** 1. The calibration interval of the above test instruments is 12/24 months. And the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in Chamber No. 6.
4. The Industry Canada Reference No. IC 7450E-6.
5. The FCC Site Registration No. is 447212.

## 4.2.3 TEST PROCEDURE

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's 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 lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

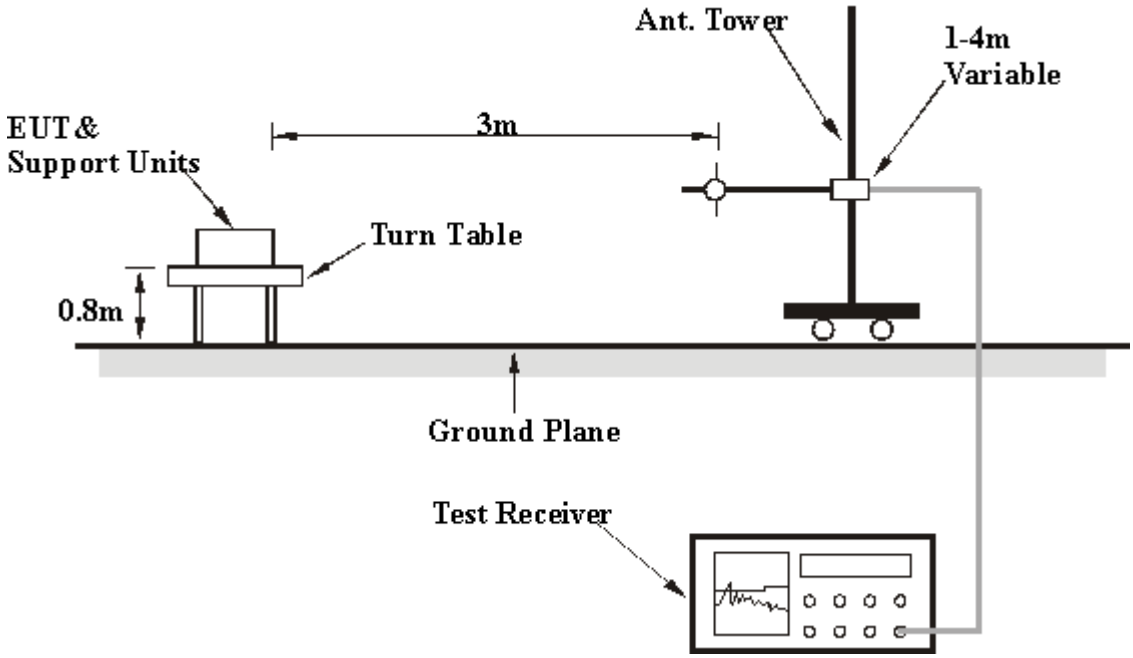
**NOTE:**

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. 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




For the actual test configuration, please refer to the related item in this test report - Photographs of the Test Configuration.

## 4.2.6 EUT OPERATING CONDITION

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

## 4.2.7 TEST RESULT

| FREQUENCY RANGE | 9 kHz ~ 30 MHz | DETECTOR FUNCTION | Average |
|---|---|---|---|
| CHANNEL | 2 | | |

| 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 | *0.5625 | 21.9 AV | 72.6 | -50.7 | 1.00 | 232 | 1.53 | 20.36 |
| 2 | 1.1250 | 15.3 AV | 66.6 | -51.3 | 1.00 | 315 | -5.38 | 20.68 |
| 3 | 1.6875 | 18.1 AV | 63.1 | -45.0 | 1.00 | 56 | -2.78 | 20.84 |
| 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 | *0.5625 | 20.6 AV | 72.6 | -52.0 | 1.00 | 164 | 0.21 | 20.36 |
| 2 | 1.1250 | 14.9 AV | 66.6 | -51.6 | 1.00 | 334 | -5.74 | 20.68 |
| 3 | 1.6875 | 17.7 AV | 63.1 | -45.4 | 1.00 | 188 | -3.15 | 20.84 |

**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. Loop antenna was used for all radiated emission below 30MHz.

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:

| | | |
|---|---|---|
| 24000/562.5kHz | =42.7 uV/m | 30m |
| | =32.6 dBuV/m | 30m |
| | $=32.6+20\log(30/3)^2$ | 3m |
| | =72.6 dBuV/m | |

| FREQUENCY RANGE | 30-1000MHz | DETECTOR FUNCTION | Quasi-Peak |
|---|---|---|---|
| CHANNEL | 2 | | |

| 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 | 115.36 | 22.5 QP | 43.5 | -21.0 | 1.58 H | 303 | 38.62 | -16.13 |
| 2 | 208.48 | 16.5 QP | 43.5 | -27.0 | 1.42 H | 9 | 32.21 | -15.70 |
| 3 | 515.97 | 21.3 QP | 46.0 | -24.7 | 1.06 H | 269 | 28.40 | -7.08 |
| 4 | 650.80 | 23.6 QP | 46.0 | -22.4 | 1.69 H | 208 | 28.07 | -4.48 |
| 5 | 808.91 | 27.0 QP | 46.0 | -19.0 | 1.33 H | 297 | 28.81 | -1.81 |
| 6 | 925.31 | 27.8 QP | 46.0 | -18.2 | 1.05 H | 149 | 27.84 | 0.00 |
| **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 | 97.90 | 18.4 QP | 43.5 | -25.1 | 1.08 V | 278 | 36.82 | -18.44 |
| 2 | 116.33 | 20.4 QP | 43.5 | -23.1 | 1.26 V | 181 | 36.37 | -15.94 |
| 3 | 182.29 | 16.6 QP | 43.5 | -26.9 | 1.13 V | 92 | 31.49 | -14.91 |
| 4 | 711.91 | 25.5 QP | 46.0 | -20.5 | 1.56 V | 15 | 29.18 | -3.69 |
| 5 | 841.89 | 27.2 QP | 46.0 | -18.8 | 1.00 V | 27 | 28.64 | -1.41 |
| **6** | **936.95** | **27.9 QP** | **46.0** | **-18.1** | **1.32 V** | **8** | **27.83** | **0.10** |

**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 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.

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