# PARTIAL FCC TEST REPORT (15.247)

| | |
|---|---|
| **REPORT NO.:** | RF140528C12E |
| **MODEL NO.:** | T100TAL/H100TAL/R104TAL |
| **FCC ID:** | MSQ-T100TAL |
| **RECEIVED:** | Jul. 14, 2014 |
| **TESTED:** | Aug. 31, 2014 |
| **ISSUED:** | Oct. 08, 2014 |

| | |
|---|---|
| **APPLICANT:** | ASUSTeK COMPUTER INC. |
| **ADDRESS:** | 4F, No. 150, LI-TE Rd., PEITOU, TAIPEI 112, TAIWAN |

| | |
|---|---|
| **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 ) |
| **TEST LOCATION:** | No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei Shan Hsiang, Taoyuan Hsien 333, 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 |
|---|---|---|
| RF140528C12E | Original release | Oct. 08, 2014 |

# 1. CERTIFICATION

| | |
|---|---|
| **PRODUCT:** | ASUS Tablet |
| **MODEL NO.:** | T100TAL/H100TAL/R104TAL |
| **BRAND:** | ASUS |
| **APPLICANT:** | ASUSTeK COMPUTER INC. |
| **TESTED:** | Aug. 31, 2014 |
| **TEST SAMPLE:** | Production Unit |
| **STANDARDS:** | **FCC Part 15, Subpart C (Section 15.247)** |
| | ANSI C63.10-2009 |

The above equipment (model: T100TAL/H100TAL/R104TAL) 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** : Rona Chen , **DATE :** Oct. 08, 2014

Rona Chen / Specialist

**APPROVED BY** : Sam chen , **DATE :** Oct. 08, 2014

Sam Chen / Senior Project Engineer

# 2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

| APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247) | | | |
|---|---|---|---|
| **STANDARD SECTION** | **TEST TYPE** | **RESULT** | **REMARK** |
| 15.207 | AC Power Conducted Emission | PASS | Meet the requirement of limit. Minimum passing margin is -17.41dB at 0.15000MHz. |
| 15.205 & 15.209 | Radiated Emissions | PASS | Meet the requirement of limit. Minimum passing margin is -6.07dB at 37.02MHz. |
| 15.247(d) | Band Edge Measurement | N/A | Refer to Note |
| 15.247(d) | Antenna Port Emission | N/A | Refer to Note |
| 15.247(a)(2) | 6dB bandwidth | N/A | Refer to Note |
| 15.247(b) | Conducted power | N/A | Refer to Note |
| 15.247(e) | Power Spectral Density | N/A | Refer to Note |
| 15.203 | Antenna Requirement | PASS | No antenna connector is used. |

**NOTE:** Test items for AC Power Conducted Emission and Radiated Emissions were performed for this report. Other testing data please refer to International Certification Corp. report no.: FR440102AC and FR440102AI for module (Brand: Ampak, Model: AP6234A, FCC ID: ZQ6-AP6234A).

## 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 | 2.93 dB |
| | 200MHz ~1000MHz | 2.95 dB |
| | 1GHz ~ 18GHz | 2.26 dB |
| | 18GHz ~ 40GHz | 1.94 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

| | |
|---|---|
| **EUT** | ASUS Tablet |
| **MODEL NO.** | T100TAL/H100TAL/R104TAL |
| **POWER SUPPLY** | 5.0 or 9.0Vdc (adapter or host equipment)<br>3.85Vdc (Li-ion battery) |
| **MODULATION TYPE** | CCK, DQPSK, DBPSK for DSSS<br>64QAM, 16QAM, QPSK, BPSK for OFDM |
| **MODULATION TECHNOLOGY** | DSSS, OFDM |
| **TRANSFER RATE** | 802.11b: 11.0 / 5.5 / 2.0 / 1.0 Mbps<br>802.11g: 54.0 / 48.0 / 36.0 / 24.0 / 18.0 / 12.0 / 9.0 / 6.0 Mbps<br>802.11a: 54.0 / 48.0 / 36.0 / 24.0 / 18.0 / 12.0 / 9.0 / 6.0 Mbps<br>802.11n: up to MCS7 |
| **OPERATING FREQUENCY** | **2.4GHz:** 2412 ~ 2462MHz<br>**5.0GHz:** 5745 ~ 5825MHz |
| **NUMBER OF CHANNEL** | **2.4GHz:** 11 for 802.11b, 802.11g, 802.11n (20MHz)<br>7 for 802.11n (40MHz)<br>**5.0GHz:** 5 for 802.11a, 802.11n (20MHz)<br>2 for 802.11n (40MHz)<br>1 for 802.11ac (80MHz) |
| **ANTENNA TYPE** | **2.4GHz:** PIFA antenna with 0.802dBi gain<br>**5.0GHz:** PIFA antenna with 2.611dBi gain |
| **ANTENNA CONNECTOR** | NA |
| **DATA CABLE** | Refer to Note as below |
| **I/O PORTS** | Refer to user's manual |
| **ACCESSORY DEVICES** | Refer to Note as below |

**NOTE:**

1. All models are listed as below.

| ITEM | BRAND | MODEL | Description |
|---|---|---|---|
| Mobile Dock | ASUS | T100TAL | All models are electrically identical, the different model names are for marketing purpose. |
| | | H100TAL | |
| | | R104TAL | |

2. The EUT contains following accessory devices.

| ITEM | BRAND | MODEL | SPECIFICATION |
|---|---|---|---|
| Adapter 1 | ASUS | AD2022320 | I/P: 100-240Vac, 50/60Hz, 0.5A<br>O/P: 5Vdc, 2A or 9Vdc, 2A |
| Adapter 2 | ASUS | W12-010N3A | I/P: 100-240Vac, 50/60Hz, 0.3A<br>O/P: 5Vdc, 2A |
| Adapter 3 | ASUS | AD897320 | I/P: 100-240Vac, 50/60Hz, 0.3A<br>O/P: 5Vdc, 2A |
| Adapter 4 | ASUS | AD835M1 | I/P: 100-240Vac, 50/60Hz, 0.3A<br>O/P: 5Vdc, 2A |
| Battery 1 | ASUS | C12N1406 | 3.85Vdc, 31W |
| Battery 2 | ASUS | C12N1406 | 3.85Vdc, 31W |
| USB Cable | ASUS | L65U2009-CS-B | 0.85m shielded cable, w/o ferrite core |
| CPU | Intel | Z3735D/E | 1.3G , FCBGA (1380 Pin) |
| eMMC 1 | HYNIX | H26M52103FMR | 16G FBGA153 |
| eMMC 2 | HYNIX | H26M64103EMR | 32G FBGA153 |
| eMMC 3 | HYNIX | H26M78103CCR | 64G FBGA153 |
| LCD Panel | AUO | B101XAN02.1 | TFT10.1' HD GLARE SL-B LED |
| Front Camera | LITEON | 4SF211N2 | 2M |
| Rear Camera | CHICONY | CJAD53320003871LH | 5M |
| MainBoard | ASUS | T100TAL MAIN BOARD | -- |
| WWAN Module | HUAWEI | ME936 | include GPS |
| WLAN /BT Module | AMPAK | AP6234AL (AP6234ALNS) | Chip factory: BROADCOM / BCM43340XKUBC |

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

| MODULATION MODE | TX FUNCTION |
|---|---|
| **802.11b** | 1TX |
| **802.11g** | 1TX |
| **802.11a** | 1TX |
| **802.11n (20MHz)** | 1TX |
| **802.11n (40MHz)** | 1TX |

4. The model name and components of support unit Mobile Dock are listed as below.

| ITEM | BRAND | MODEL | SPECIFICATION |
|---|---|---|---|
| Mobile Dock 1 | ASUS | T100T Mobile Dock<br>H100T Mobile Dock<br>R104T Mobile Dock | W/O HDD |
| Mobile Dock 2 (HDD 1) | | | HDD Brand: HGST<br>HDD Model: HTS545050A7E680 |
| Mobile Dock 3 (HDD 2) | | | HDD Brand: WD<br>HDD Model: WD5000LPVX |
| Mobile Dock 4 (HDD 3) | | | HDD Brand: TOSHIBA HDD Model: MQ01ABF050 |

- Mobile Dock is optional equipment. All models are electrically identical, the different model names are for marketing purpose.

5. 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 2.4GHz:**

11 channels are provided for 802.11b, 802.11g and 802.11n (20MHz):

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

7 channels are provided for 802.11n (40MHz):

| CHANNEL | FREQUENCY | CHANNEL | FREQUENCY |
|---|---|---|---|
| 3 | 2422MHz | 7 | 2442MHz |
| 4 | 2427MHz | 8 | 2447MHz |
| 5 | 2432MHz | 9 | 2452MHz |
| 6 | 2437MHz | | |

**FOR 5.0GHz (5745 ~ 5825MHz):**

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

| CHANNEL | FREQUENCY | CHANNEL | FREQUENCY |
|---|---|---|---|
| 149 | 5745MHz | 161 | 5805MHz |
| 153 | 5765MHz | 165 | 5825MHz |
| 157 | 5785MHz | | |

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

| CHANNEL | FREQUENCY | CHANNEL | FREQUENCY |
|---|---|---|---|
| 151 | 5755MHz | 159 | 5795MHz |

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

| CHANNEL | FREQUENCY |
|---|---|
| 155 | 5775MHz |

### 3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

**WLAN 2.4GHz:**

| EUT CONFIGURE MODE | APPLICABLE TO | | | DESCRIPTION |
|---|---|---|---|---|
| | RE≥1G | RE<1G | PLC | |
| A | √ | √ | - | Tablet (ASUS_T100TAL) |
| B | - | √ | √ | Tablet (ASUS_T100TAL) + Docking |

Where **RE≥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 **X-plane.**

**RADIATED EMISSION TEST (ABOVE 1GHz):**

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

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

| EUT CONFIGURE MODE | MODE | AVAILABLE CHANNEL | TESTED CHANNEL | MODULATION TECHNOLOGY | MODULATION TYPE | DATA RATE (Mbps) |
|---|---|---|---|---|---|---|
| A | 802.11b | 1 to 11 | 1 | DSSS | DBPSK | 1.0 |

**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 | AVAILABLE CHANNEL | TESTED CHANNEL | MODULATION TECHNOLOGY | MODULATION TYPE | DATA RATE (Mbps) |
|---|---|---|---|---|---|---|
| A, B | 802.11b | 1 to 11 | 1 | DSSS | DBPSK | 1.0 |

**POWER LINE CONDUCTED EMISSION TEST:**

| EUT CONFIGURE MODE | MODE | AVAILABLE CHANNEL | TESTED CHANNEL | MODULATION TECHNOLOGY | MODULATION TYPE | DATA RATE (Mbps) |
|---|---|---|---|---|---|---|
| B | 802.11b | 1 to 11 | 1 | DSSS | DBPSK | 1.0 |

**TEST CONDITION:**

| APPLICABLE TO | ENVIRONMENTAL CONDITIONS | INPUT POWER | TESTED BY |
|---|---|---|---|
| RE≥1G | 25deg. C, 65%RH | 120Vac, 60Hz | Anson Lin |
| RE<1G | 25deg. C, 65%RH | 120Vac, 60Hz | Anson Lin |
| PLC | 25deg. C, 65%RH | 120Vac, 60Hz | Gavin Wu |

**WLAN 5.0GHz (5745 ~ 5825MHz):**

| EUT CONFIGURE MODE | APPLICABLE TO | | | DESCRIPTION |
|---|---|---|---|---|
| | RE≥1G | RE<1G | PLC | |
| A | √ | √ | - | Tablet (ASUS_T100TAL) |
| B | - | √ | √ | Tablet (ASUS_T100TAL) + Docking |

Where **RE≥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 **Z-plane.**

**RADIATED EMISSION TEST (ABOVE 1GHz):**

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

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

| EUT CONFIGURE MODE | MODE | AVAILABLE CHANNEL | TESTED CHANNEL | MODULATION TECHNOLOGY | MODULATION TYPE | DATA RATE (Mbps) |
|---|---|---|---|---|---|---|
| A | 802.11n (20MHz) | 149 to 165 | 157 | OFDM | BPSK | MCS0 |

**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 | AVAILABLE CHANNEL | TESTED CHANNEL | MODULATION TECHNOLOGY | MODULATION TYPE | DATA RATE (Mbps) |
|---|---|---|---|---|---|---|
| A, B | 802.11n (20MHz) | 149 to 165 | 157 | OFDM | BPSK | MCS0 |

**POWER LINE CONDUCTED EMISSION TEST:**

| EUT CONFIGURE MODE | MODE | AVAILABLE CHANNEL | TESTED CHANNEL | MODULATION TECHNOLOGY | MODULATION TYPE | DATA RATE (Mbps) |
|---|---|---|---|---|---|---|
| B | 802.11n (20MHz) | 149 to 165 | 157 | OFDM | BPSK | MCS0 |

**TEST CONDITION:**

| APPLICABLE TO | ENVIRONMENTAL CONDITIONS | INPUT POWER | TESTED BY |
|---|---|---|---|
| RE≥1G | 25deg. C, 65%RH | 120Vac, 60Hz | Anson Lin |
| RE<1G | 25deg. C, 65%RH | 120Vac, 60Hz | Anson Lin |
| PLC | 25deg. C, 65%RH | 120Vac, 60Hz | Gavin Wu |

## 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.

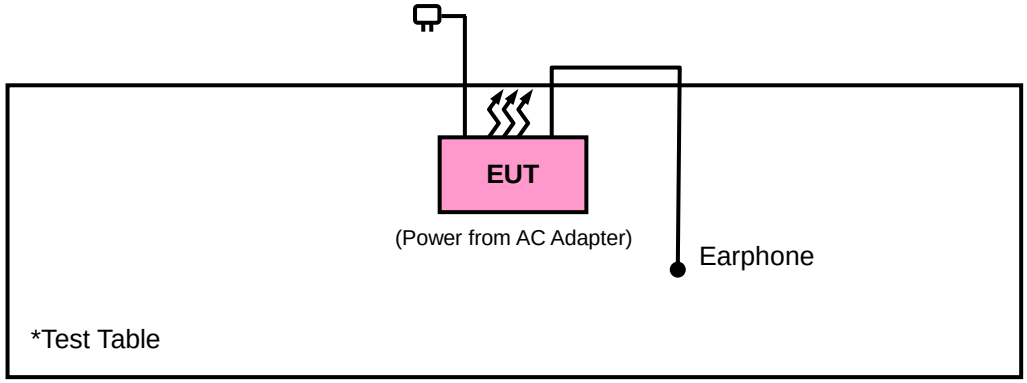
| NO. | PRODUCT | BRAND | MODEL NO. | SERIAL NO. | FCC ID |
|---|---|---|---|---|---|
| 1 | Mobile Dock | WD | WD5000LPVX | N/A | N/A |

| NO. | SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS |
|---|---|
| 1 | N/A |

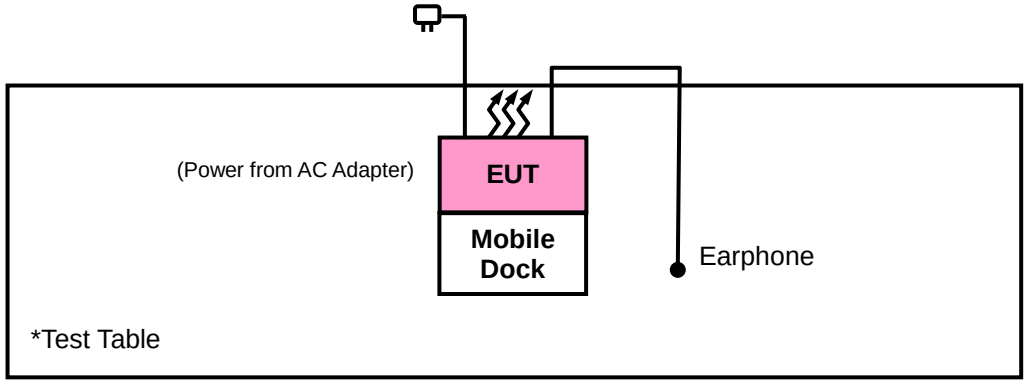
**NOTE:** 1. All power cords of the above support units are non shielded (1.8m).
2. Item 1 as a communication partner to transfer data.

### 3.3.1 CONFIGURATION OF SYSTEM UNDER TEST

**Mode A**




**Mode B**



## 3.4 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

**FCC Part 15, Subpart C (15.247)**
**558074 D01 DTS Meas Guidance v03r02**
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 (FOR 2.4GHz BAND)

## 4.1 RADIATED EMISSION AND BANDEDGE MEASUREMENT

### 4.1.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT

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

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

**NOTE:**

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

### 4.1.2 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | DATE OF CALIBRATION | DUE DATE OF CALIBRATION |
|---|---|---|---|---|
| Test Receiver Agilent | N9038A | MY51210203 | Jan. 17, 2014 | Jan. 16, 2015 |
| Spectrum Analyzer ROHDE & SCHWARZ | FSU43 | 101261 | Dec. 21, 2013 | Dec. 20, 2014 |
| BILOG Antenna SCHWARZBECK | VULB9168 | 9168-472 | Feb. 27. 2014 | Feb. 26, 2015 |
| HORN Antenna SCHWARZBECK | BBHA 9120 D | 9120D-969 | Feb. 19, 2014 | Feb. 18, 2015 |
| HORN Antenna SCHWARZBECK | BBHA 9170 | 9170-480 | Dec. 18, 2013 | Dec. 17, 2014 |
| Loop Antenna | HFH2-Z2 | 100070 | Mar. 06, 2014 | Mar. 05, 2016 |
| Preamplifier EMCI | EMC 012645 | 980115 | Dec. 26, 2013 | Dec. 25, 2014 |
| Preamplifier EMCI | EMC 184045 | 980116 | Jan. 13, 2014 | Jan. 12, 2015 |
| Preamplifier EMCI | EMC 330H | 980112 | Dec. 27, 2013 | Dec. 26, 2014 |
| RF signal cable HUBER+SUHNNER | SUCOFLEX 104 | 309219/4 2950114 | Oct. 18, 2013 | Oct. 17, 2014 |
| RF signal cable HUBER+SUHNNER | SUCOFLEX 104 | 250130/4 | Oct. 18, 2013 | Oct. 17, 2014 |
| RF signal cable Worken | RG-213 | NA | Nov. 07, 2013 | Nov. 06, 2014 |
| Software BV ADT | E3 6.120103 | NA | NA | NA |
| Antenna Tower MF | MFA-440H | NA | NA | NA |
| Turn Table MF | MFT-201SS | NA | NA | NA |
| Antenna Tower &Turn Table Controller MF | MF-7802 | NA | NA | NA |
| Power Meter | ML2495A | 1012010 | Aug. 22, 2014 | Aug. 21, 2015 |
| Power Sensor | MA2411B | 1315050 | Aug. 22, 2014 | Aug. 21, 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 calibration interval of the loop antenna is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. The test was performed in HwaYa Chamber 10.
4. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
5. The FCC Site Registration No. is 690701.
6. The IC Site Registration No. is IC 7450F-10.

### 4.1.3 TEST PROCEDURES

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters 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. Height of receiving 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 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:**

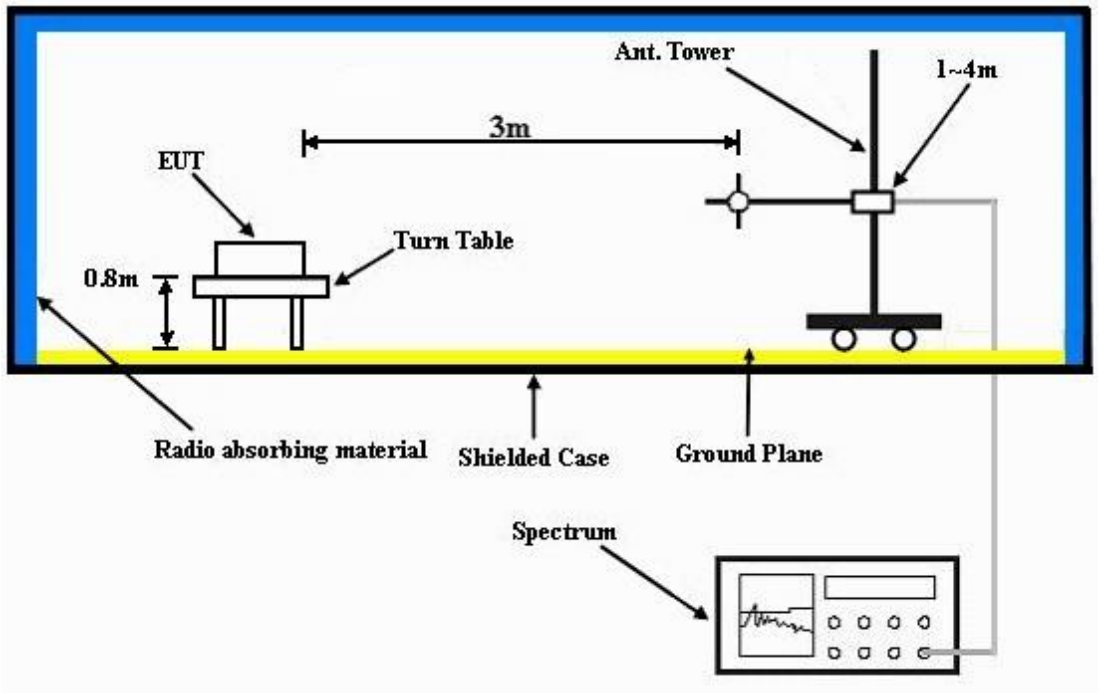
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 1kHz (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.

### 4.1.4 DEVIATION FROM TEST STANDARD

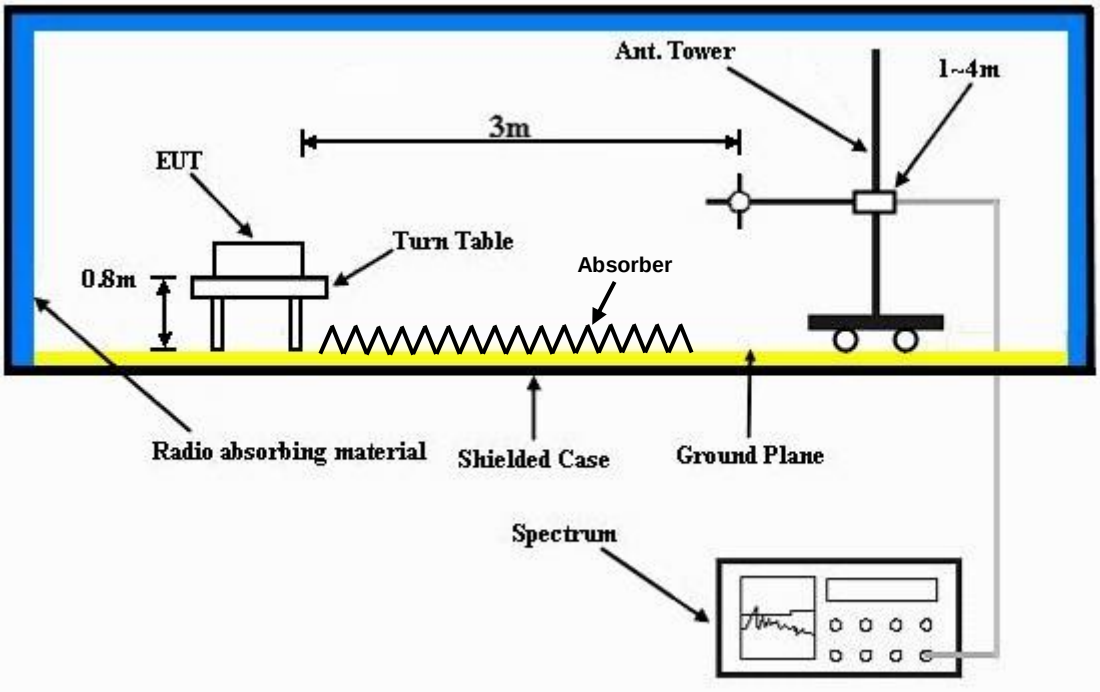
No deviation.

### 4.1.5 TEST SETUP

**Frequency Range 30MHz ~ 1GHz**




**Frequency Range above 1GHz**




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

### 4.1.6 EUT OPERATING CONDITIONS

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

### 4.1.7 TEST RESULTS

**ABOVE 1GHz WORST-CASE DATA**

**802.11b**

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|---|---|---|---|
| CHANNEL | Channel 1 | FREQUENCY RANGE | 1GHz ~ 25GHz |
| INPUT POWER | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK)<br>Average (AV) |
| ENVIRONMENTAL CONDITIONS | 25deg. C, 65%RH | TESTED BY | Anson Lin |
| MODE | A | | |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | READ LEVEL (dBuV) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA FACTOR (dB/m) | CABLE LOSS (dB) | PREAMP FACTOR (dB) | ANTENNA HEIGHT (cm) | TABLE ANGLE (Degree) | REMARK |
| 2386 | 47.97 | 55.04 | 54 | -6.03 | 26.91 | 3.52 | 37.5 | 110 | 187 | Average |
| 2386 | 59.09 | 66.16 | 74 | -14.91 | 26.91 | 3.52 | 37.5 | 110 | 187 | Peak |
| 2412 | 102.57 | 109.59 | | | 26.96 | 3.54 | 37.52 | 110 | 187 | Average |
| 2412 | 107.24 | 114.26 | | | 26.96 | 3.54 | 37.52 | 110 | 187 | Peak |
| 2488 | 34.52 | 41.02 | 54 | -19.48 | 27.2 | 3.62 | 37.32 | 110 | 187 | Average |
| 2488 | 56.76 | 63.26 | 74 | -17.24 | 27.2 | 3.62 | 37.32 | 110 | 187 | Peak |
| **ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M** | | | | | | | | | | |
| FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | READ LEVEL (dBuV) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA FACTOR (dB/m) | CABLE LOSS (dB) | PREAMP FACTOR (dB) | ANTENNA HEIGHT (cm) | TABLE ANGLE (Degree) | REMARK |
| 2370 | 38.72 | 45.84 | 54 | -15.28 | 26.86 | 3.52 | 37.5 | 100 | 295 | Average |
| 2370 | 56.9 | 64.02 | 74 | -17.1 | 26.86 | 3.52 | 37.5 | 100 | 295 | Peak |
| 2412 | 97.11 | 104.13 | | | 26.96 | 3.54 | 37.52 | 100 | 295 | Average |
| 2412 | 101.59 | 108.61 | | | 26.96 | 3.54 | 37.52 | 100 | 295 | Peak |
| 2486 | 33.48 | 40.05 | 54 | -20.52 | 27.15 | 3.6 | 37.32 | 100 | 295 | Average |
| 2486 | 57.15 | 63.72 | 74 | -16.85 | 27.15 | 3.6 | 37.32 | 100 | 295 | Peak |

**REMARKS:**

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 2412MHz: Fundamental frequency.

**BELOW 1GHz WORST-CASE DATA:**

**802.11b**

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|---|---|---|---|
| CHANNEL | Channel 1 | FREQUENCY RANGE | 30MHz ~ 1GHz |
| INPUT POWER | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK)<br>Average (AV) |
| ENVIRONMENTAL CONDITIONS | 25deg. C, 65%RH | TESTED BY | Anson Lin |
| MODE | A | | |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | READ LEVEL (dBuV) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA FACTOR (dB/m) | CABLE LOSS (dB) | PREAMP FACTOR (dB) | ANTENNA HEIGHT (cm) | TABLE ANGLE (Degree) | REMARK |
| 56.46 | 29.26 | 47.45 | 40 | -10.74 | 12.35 | 0.8 | 31.34 | 121 | 212 | Peak |
| 146.91 | 21.32 | 39 | 43.5 | -22.18 | 12.61 | 1.33 | 31.62 | 140 | 197 | Peak |
| 200.1 | 24.97 | 45.79 | 43.5 | -18.53 | 9.36 | 1.59 | 31.77 | 108 | 56 | Peak |
| 361.6 | 21.36 | 36.62 | 46 | -24.64 | 14.43 | 2.27 | 31.96 | 119 | 126 | Peak |
| 500.2 | 24.43 | 35.94 | 46 | -21.57 | 17.33 | 2.78 | 31.62 | 130 | 17 | Peak |
| 650.7 | 28.78 | 37.33 | 46 | -17.22 | 20.22 | 3.24 | 32.01 | 126 | 243 | Peak |
| **ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M** | | | | | | | | | | |
| FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | READ LEVEL (dBuV) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA FACTOR (dB/m) | CABLE LOSS (dB) | PREAMP FACTOR (dB) | ANTENNA HEIGHT (cm) | TABLE ANGLE (Degree) | REMARK |
| 37.29 | 33.19 | 50.34 | 40 | -6.81 | 13.24 | 0.63 | 31.02 | 129 | 183 | Peak |
| 56.46 | 29.25 | 47.44 | 40 | -10.75 | 12.35 | 0.8 | 31.34 | 128 | 333 | Peak |
| 200.1 | 19.56 | 40.38 | 43.5 | -23.94 | 9.36 | 1.59 | 31.77 | 135 | 248 | Peak |
| 367.9 | 19.61 | 34.68 | 46 | -26.39 | 14.56 | 2.3 | 31.93 | 102 | 117 | Peak |
| 569.5 | 28.2 | 38.38 | 46 | -17.8 | 18.9 | 3 | 32.08 | 110 | 159 | Peak |
| 650 | 27.75 | 36.32 | 46 | -18.25 | 20.21 | 3.24 | 32.02 | 137 | 86 | Peak |

**REMARKS:** Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor

Margin value = Emission level – Limit value

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|---|---|---|---|
| CHANNEL | Channel 1 | FREQUENCY RANGE | 30MHz ~ 1GHz |
| INPUT POWER | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK)<br>Average (AV) |
| ENVIRONMENTAL CONDITIONS | 25deg. C, 65%RH | TESTED BY | Anson Lin |
| MODE | B | | |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | READ LEVEL (dBuV) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA FACTOR (dB/m) | CABLE LOSS (dB) | PREAMP FACTOR (dB) | ANTENNA HEIGHT (cm) | TABLE ANGLE (Degree) | REMARK |
| 56.19 | 29.12 | 47.31 | 40 | -10.88 | 12.35 | 0.8 | 31.34 | 102 | 135 | Peak |
| 146.1 | 23.1 | 40.81 | 43.5 | -20.4 | 12.58 | 1.33 | 31.62 | 140 | 276 | Peak |
| 243.84 | 26.4 | 45.24 | 46 | -19.6 | 11.19 | 1.81 | 31.84 | 136 | 171 | Peak |
| 325.9 | 23.33 | 39.46 | 46 | -22.67 | 13.57 | 2.14 | 31.84 | 102 | 263 | Peak |
| 569.5 | 24.14 | 34.32 | 46 | -21.86 | 18.9 | 3 | 32.08 | 107 | 30 | Peak |
| 650 | 25.77 | 34.34 | 46 | -20.23 | 20.21 | 3.24 | 32.02 | 117 | 34 | Peak |
| **ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M** | | | | | | | | | | |
| FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | READ LEVEL (dBuV) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA FACTOR (dB/m) | CABLE LOSS (dB) | PREAMP FACTOR (dB) | ANTENNA HEIGHT (cm) | TABLE ANGLE (Degree) | REMARK |
| 37.02 | 33.93 | 51.25 | 40 | -6.07 | 13.09 | 0.62 | 31.03 | 127 | 312 | Peak |
| 147.99 | 20.59 | 38.24 | 43.5 | -22.91 | 12.64 | 1.33 | 31.62 | 117 | 313 | Peak |
| 243.84 | 18.68 | 37.52 | 46 | -27.32 | 11.19 | 1.81 | 31.84 | 120 | 308 | Peak |
| 419 | 19.72 | 33.55 | 46 | -26.28 | 15.71 | 2.5 | 32.04 | 106 | 23 | Peak |
| 569.5 | 27.21 | 37.39 | 46 | -18.79 | 18.9 | 3 | 32.08 | 100 | 207 | Peak |
| 650 | 29.11 | 37.68 | 46 | -16.89 | 20.21 | 3.24 | 32.02 | 125 | 15 | Peak |

**REMARKS:** Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor

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 (dBμV) | |
|---|---|---|
| | 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 ROHDE & SCHWARZ | ESCS30 | 100288 | Apr. 24, 2014 | Apr. 23, 2015 |
| RF signal cable Woken | 5D-FB | Cable-HYCO2-01 | Dec. 27, 2013 | Dec. 26, 2014 |
| LISN ROHDE & SCHWARZ (EUT) | ESH2-Z5 | 100100 | Dec. 23, 2013 | Dec. 22, 2014 |
| LISN ROHDE & SCHWARZ (Peripheral) | ESH3-Z5 | 100312 | Jul. 10, 2014 | Jul. 09, 2015 |
| Software ADT | BV ADT_Cond_ 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 2.
3. The VCCI Site Registration No. is C-2047.

### 4.2.3 TEST PROCEDURES

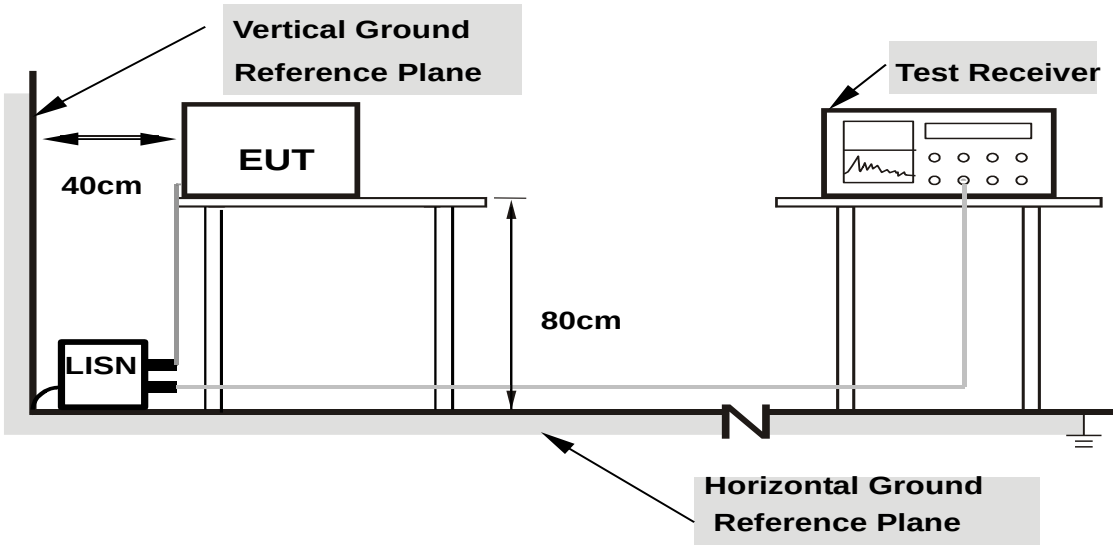
a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling 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) was 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 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 section 4.1.6.

### 4.2.7 TEST RESULTS

**CONDUCTED WORST-CASE DATA：**

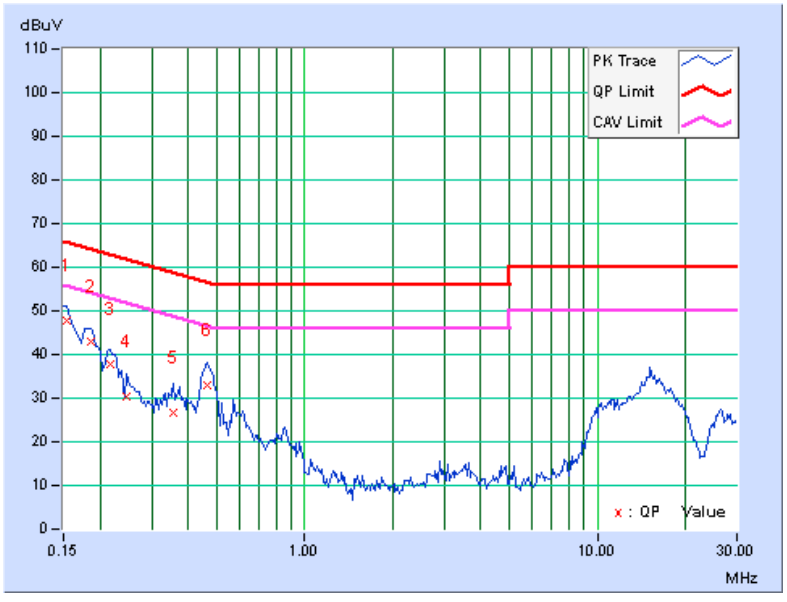
**MODE B**

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

| No | Freq. | Corr. Factor | Reading Value [dB (uV)] | | Emission Level [dB (uV)] | | Limit [dB (uV)] | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.15391 | 0.27 | 47.41 | 33.04 | 47.68 | 33.31 | 65.79 | 55.79 | -18.11 | -22.48 |
| 2 | 0.18516 | 0.28 | 42.50 | 29.20 | 42.78 | 29.48 | 64.25 | 54.25 | -21.48 | -24.78 |
| 3 | 0.21641 | 0.28 | 37.60 | 24.31 | 37.88 | 24.59 | 62.96 | 52.96 | -25.07 | -28.36 |
| 4 | 0.24766 | 0.28 | 30.18 | 17.01 | 30.46 | 17.29 | 61.84 | 51.84 | -31.37 | -34.54 |
| 5 | 0.35703 | 0.30 | 26.51 | 18.75 | 26.81 | 19.05 | 58.80 | 48.80 | -31.99 | -29.75 |
| 6 | 0.46641 | 0.30 | 32.70 | 26.75 | 33.00 | 27.05 | 56.58 | 46.58 | -23.57 | -19.52 |

**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

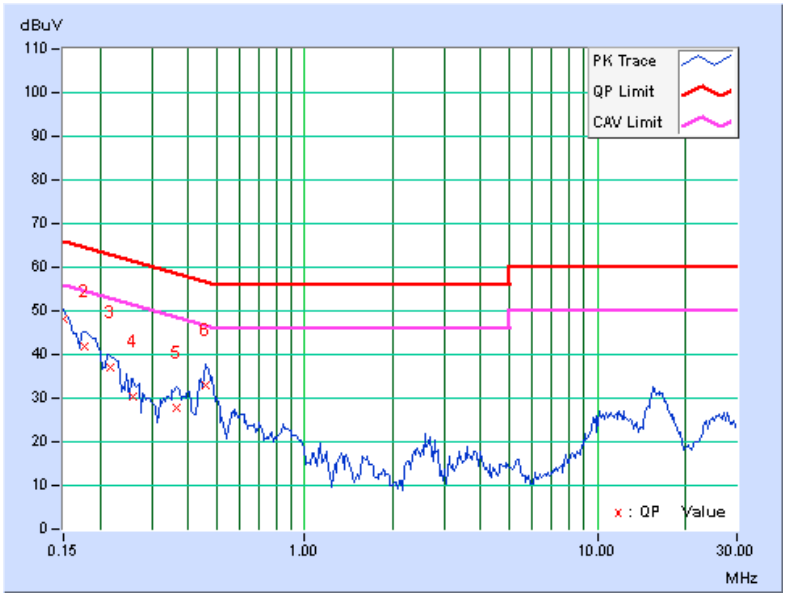


| PHASE | Line 2 | 6dB BANDWIDTH | 9kHz |
|---|---|---|---|

| No | Freq. | Corr. Factor | Reading Value [dB (uV)] | | Emission Level [dB (uV)] | | Limit [dB (uV)] | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.15000 | 0.26 | 48.03 | 35.59 | 48.29 | 35.85 | 66.00 | 56.00 | -17.71 | -20.15 |
| 2 | 0.17734 | 0.27 | 41.58 | 28.26 | 41.85 | 28.53 | 64.61 | 54.61 | -22.76 | -26.08 |
| 3 | 0.21641 | 0.28 | 36.82 | 25.41 | 37.10 | 25.69 | 62.96 | 52.96 | -25.85 | -27.26 |
| 4 | 0.25938 | 0.29 | 30.04 | 17.57 | 30.33 | 17.86 | 61.45 | 51.45 | -31.13 | -33.60 |
| 5 | 0.36484 | 0.30 | 27.50 | 19.77 | 27.80 | 20.07 | 58.62 | 48.62 | -30.82 | -28.55 |
| 6 | 0.45859 | 0.30 | 32.78 | 25.29 | 33.08 | 25.59 | 56.72 | 46.72 | -23.63 | -21.12 |

**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



# 5. TEST TYPES AND RESULTS (FOR 5.0GHz BAND)

## 5.1 RADIATED EMISSION AND BANDEDGE MEASUREMENT

### 5.1.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT

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

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

**NOTE**:

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

### 5.1.2 TEST INSTRUMENTS

Same as section 4.1.2.

### 5.1.3 TEST PROCEDURES

Same as section 4.1.3.

### 5.1.4 DEVIATION FROM TEST STANDARD

No deviation.

### 5.1.5 TEST SETUP

Same as section 4.1.5.

### 5.1.6 EUT OPERATING CONDITIONS

Same as section 4.1.6.

### 5.1.7 TEST RESULTS

**ABOVE 1GHz WORST-CASE DATA：**

**802.11n (20MHz)**

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|---|---|---|---|
| CHANNEL | Channel 157 | FREQUENCY RANGE | 1GHz ~ 40GHz |
| INPUT POWER | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK)<br>Average (AV) |
| ENVIRONMENTAL CONDITIONS | 25deg. C, 65%RH | TESTED BY | Anson Lin |
| MODE | A | | |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | READ LEVEL (dBuV) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA FACTOR (dB/m) | CABLE LOSS (dB) | PREAMP FACTOR (dB) | ANTENNA HEIGHT (cm) | TABLE ANGLE (Degree) | REMARK |
| 5725 | 39.63 | 39.51 | 71.47 | -31.84 | 31.96 | 5.59 | 37.43 | 100 | 53 | Average |
| 5725 | 58.93 | 58.81 | 81.6 | -22.67 | 31.96 | 5.59 | 37.43 | 100 | 53 | Peak |
| 5785 | 91.47 | 91.35 | | | 32.04 | 5.62 | 37.54 | 100 | 53 | Average |
| 5785 | 101.6 | 101.48 | | | 32.04 | 5.62 | 37.54 | 100 | 53 | Peak |
| 5850 | 40.27 | 39.97 | 71.47 | -31.2 | 32.15 | 5.66 | 37.51 | 100 | 53 | Average |
| 5850 | 58.87 | 58.57 | 81.6 | -22.73 | 32.15 | 5.66 | 37.51 | 100 | 53 | Peak |
| **ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M** | | | | | | | | | | |
| FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | READ LEVEL (dBuV) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA FACTOR (dB/m) | CABLE LOSS (dB) | PREAMP FACTOR (dB) | ANTENNA HEIGHT (cm) | TABLE ANGLE (Degree) | REMARK |
| 5725 | 40.39 | 40.27 | 73.28 | -32.89 | 31.96 | 5.59 | 37.43 | 100 | 332 | Average |
| 5725 | 59.46 | 59.34 | 83.52 | -24.06 | 31.96 | 5.59 | 37.43 | 100 | 332 | Peak |
| 5785 | 93.28 | 93.16 | | | 32.04 | 5.62 | 37.54 | 100 | 332 | Average |
| 5785 | 103.52 | 103.4 | | | 32.04 | 5.62 | 37.54 | 100 | 332 | Peak |
| 5850 | 39.53 | 39.23 | 73.28 | -33.75 | 32.15 | 5.66 | 37.51 | 100 | 332 | Average |
| 5850 | 59.49 | 59.19 | 83.52 | -24.03 | 32.15 | 5.66 | 37.51 | 100 | 332 | Peak |

**REMARKS:**

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5785MHz: Fundamental frequency.
3. 5725MHz & 5850MHz: Out of restricted band

**BELOW 1GHz WORST-CASE DATA：**

**802.11n (20MHz)**

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|---|---|---|---|
| CHANNEL | Channel 157 | FREQUENCY RANGE | 30MHz ~ 1GHz |
| INPUT POWER | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK) |
| ENVIRONMENTAL CONDITIONS | 25deg. C, 65%RH | TESTED BY | Anson Lin |
| MODE | A | | |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | READ LEVEL (dBuV) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA FACTOR (dB/m) | CABLE LOSS (dB) | PREAMP FACTOR (dB) | ANTENNA HEIGHT (cm) | TABLE ANGLE (Degree) | REMARK |
| 56.19 | 28.95 | 47.14 | 40 | -11.05 | 12.35 | 0.8 | 31.34 | 137 | 186 | Peak |
| 146.37 | 20.32 | 38.03 | 43.5 | -23.18 | 12.58 | 1.33 | 31.62 | 109 | 88 | Peak |
| 200.1 | 25.27 | 46.09 | 43.5 | -18.23 | 9.36 | 1.59 | 31.77 | 121 | 45 | Peak |
| 363.7 | 21.25 | 36.45 | 46 | -24.75 | 14.47 | 2.28 | 31.95 | 107 | 91 | Peak |
| 519.8 | 22.56 | 33.51 | 46 | -23.44 | 17.77 | 2.85 | 31.57 | 100 | 101 | Peak |
| 661.9 | 25.33 | 33.61 | 46 | -20.67 | 20.35 | 3.29 | 31.92 | 138 | 30 | Peak |
| **ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M** | | | | | | | | | | |
| FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | READ LEVEL (dBuV) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA FACTOR (dB/m) | CABLE LOSS (dB) | PREAMP FACTOR (dB) | ANTENNA HEIGHT (cm) | TABLE ANGLE (Degree) | REMARK |
| 37.29 | 33.01 | 50.16 | 40 | -6.99 | 13.24 | 0.63 | 31.02 | 120 | 152 | Peak |
| 56.19 | 28.9 | 47.09 | 40 | -11.1 | 12.35 | 0.8 | 31.34 | 130 | 49 | Peak |
| 146.91 | 19.63 | 37.31 | 43.5 | -23.87 | 12.61 | 1.33 | 31.62 | 118 | 23 | Peak |
| 358.8 | 18.25 | 33.59 | 46 | -27.75 | 14.36 | 2.26 | 31.96 | 135 | 50 | Peak |
| 569.5 | 27.34 | 37.52 | 46 | -18.66 | 18.9 | 3 | 32.08 | 118 | 14 | Peak |
| 651.4 | 27.59 | 36.12 | 46 | -18.41 | 20.23 | 3.25 | 32.01 | 100 | 208 | Peak |

**REMARKS:** Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor

Margin value = Emission level – Limit value

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|---|---|---|---|
| CHANNEL | Channel 157 | FREQUENCY RANGE | 30MHz ~ 1GHz |
| INPUT POWER | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK) |
| ENVIRONMENTAL CONDITIONS | 25deg. C, 65%RH | TESTED BY | Anson Lin |
| MODE | B | | |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | READ LEVEL (dBuV) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA FACTOR (dB/m) | CABLE LOSS (dB) | PREAMP FACTOR (dB) | ANTENNA HEIGHT (cm) | TABLE ANGLE (Degree) | REMARK |
| 56.19 | 29.22 | 47.41 | 40 | -10.78 | 12.35 | 0.8 | 31.34 | 137 | 308 | Peak |
| 146.91 | 23.02 | 40.7 | 43.5 | -20.48 | 12.61 | 1.33 | 31.62 | 100 | 156 | Peak |
| 244.38 | 25.24 | 44.04 | 46 | -20.76 | 11.24 | 1.81 | 31.85 | 116 | 216 | Peak |
| 325.2 | 24.97 | 41.14 | 46 | -21.03 | 13.54 | 2.14 | 31.85 | 105 | 93 | Peak |
| 547.8 | 22.74 | 33.3 | 46 | -23.26 | 18.41 | 2.94 | 31.91 | 107 | 265 | Peak |
| 650.7 | 26.06 | 34.61 | 46 | -19.94 | 20.22 | 3.24 | 32.01 | 131 | 160 | Peak |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | | | | | | | | |
| FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | READ LEVEL (dBuV) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA FACTOR (dB/m) | CABLE LOSS (dB) | PREAMP FACTOR (dB) | ANTENNA HEIGHT (cm) | TABLE ANGLE (Degree) | REMARK |
| 37.02 | 33.77 | 51.09 | 40 | -6.23 | 13.09 | 0.62 | 31.03 | 109 | 178 | Peak |
| 56.19 | 29.39 | 47.58 | 40 | -10.61 | 12.35 | 0.8 | 31.34 | 106 | 245 | Peak |
| 146.1 | 21.18 | 38.89 | 43.5 | -22.32 | 12.58 | 1.33 | 31.62 | 100 | 326 | Peak |
| 360.2 | 19.73 | 35.05 | 46 | -26.27 | 14.38 | 2.27 | 31.97 | 137 | 217 | Peak |
| 569.5 | 27.29 | 37.47 | 46 | -18.71 | 18.9 | 3 | 32.08 | 103 | 71 | Peak |
| 650.7 | 30.38 | 38.93 | 46 | -15.62 | 20.22 | 3.24 | 32.01 | 130 | 228 | Peak |

**REMARKS:** Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor

Margin value = Emission level – Limit value

## 5.2 CONDUCTED EMISSION MEASUREMENT

### 5.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

| FREQUENCY OF EMISSION (MHz) | CONDUCTED LIMIT (dBμV) | |
|---|---|---|
| | 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.

### 5.2.2 T EST INSTRUMENTS

Same as section 4.2.2.

### 5.2.3 TEST PROCEDURES

Same as section 4.2.3.

### 5.2.4 DEVIATION FROM TEST STANDARD

No deviation.

### 5.2.5 TEST SETUP

Same as section 4.2.5.

### 5.2.6 EUT OPERATING CONDITIONS

Same as section 4.1.6.

### 5.2.7 TEST RESULTS

**CONDUCTED WORST-CASE DATA：**

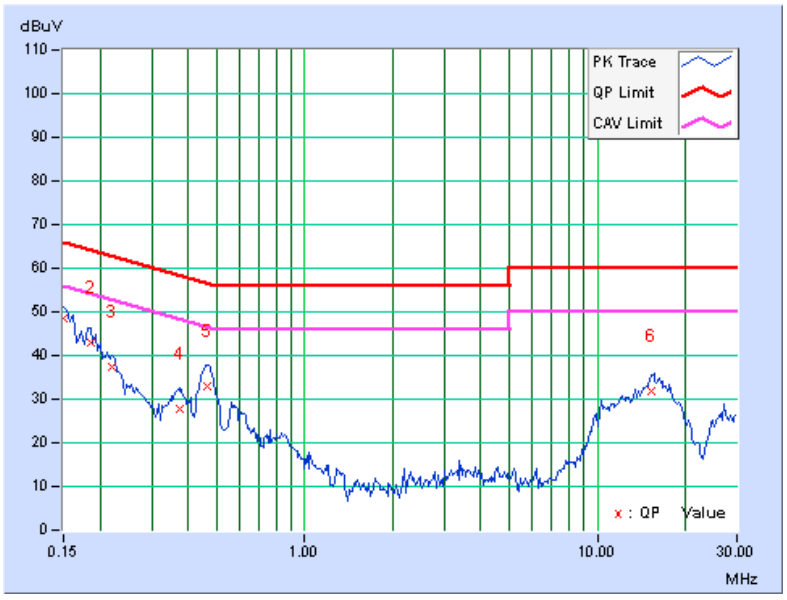
**MODE B**

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

| No | Freq. | Corr. Factor | Reading Value [dB (uV)] | | Emission Level [dB (uV)] | | Limit [dB (uV)] | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.15000 | 0.26 | 48.33 | 34.28 | 48.59 | 34.54 | 66.00 | 56.00 | -17.41 | -21.46 |
| 2 | 0.18516 | 0.28 | 42.62 | 29.22 | 42.90 | 29.50 | 64.25 | 54.25 | -21.36 | -24.76 |
| 3 | 0.22031 | 0.28 | 37.24 | 24.52 | 37.52 | 24.80 | 62.81 | 52.81 | -25.29 | -28.01 |
| 4 | 0.37266 | 0.30 | 27.65 | 20.93 | 27.95 | 21.23 | 58.44 | 48.44 | -30.49 | -27.21 |
| 5 | 0.46641 | 0.30 | 32.78 | 26.83 | 33.08 | 27.13 | 56.58 | 46.58 | -23.49 | -19.44 |
| 6 | 15.25391 | 0.53 | 31.28 | 26.56 | 31.81 | 27.09 | 60.00 | 50.00 | -28.19 | -22.91 |

**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

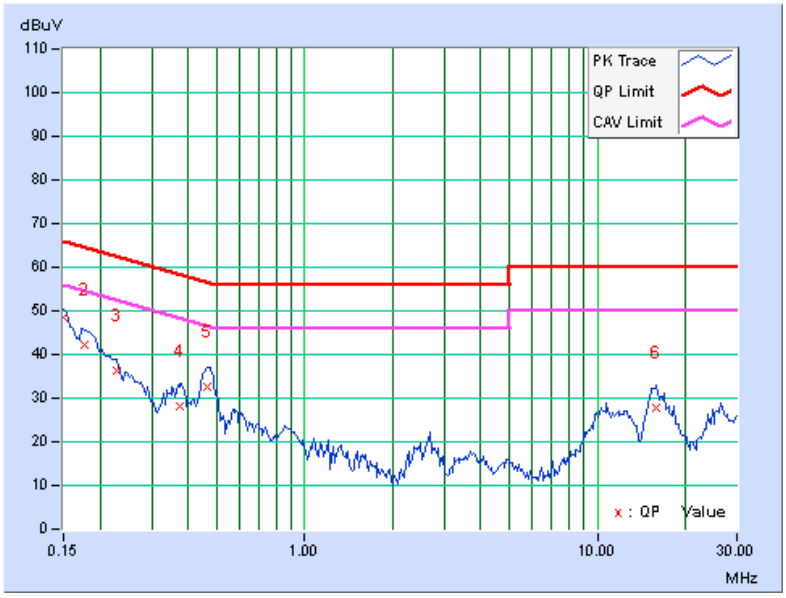


| PHASE | Line 2 | 6dB BANDWIDTH | 9kHz |
|---|---|---|---|

| No | Freq. | Corr. Factor | Reading Value [dB (uV)] | | Emission Level [dB (uV)] | | Limit [dB (uV)] | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| **1** | **0.15000** | **0.26** | **48.33** | **35.15** | **48.59** | **35.41** | **66.00** | **56.00** | **-17.41** | **-20.59** |
| 2 | 0.17734 | 0.27 | 41.83 | 27.57 | 42.10 | 27.84 | 64.61 | 54.61 | -22.51 | -26.77 |
| 3 | 0.22812 | 0.28 | 35.97 | 22.72 | 36.25 | 23.00 | 62.52 | 52.52 | -26.27 | -29.52 |
| 4 | 0.37656 | 0.30 | 27.99 | 19.99 | 28.29 | 20.29 | 58.35 | 48.35 | -30.07 | -28.07 |
| 5 | 0.46250 | 0.30 | 32.14 | 25.59 | 32.44 | 25.89 | 56.65 | 46.65 | -24.20 | -20.75 |
| 6 | 15.92578 | 0.58 | 27.07 | 22.59 | 27.65 | 23.17 | 60.00 | 50.00 | -32.35 | -26.83 |

**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



# 6. PHOTOGRAPHS OF THE TEST CONFIGURATION

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

# 7. INFORMATION ON THE TESTING LABORATORIES

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.
If you have any comments, please feel free to contact us at the following:


**Linko EMC/RF Lab**:
Tel: 886-2-26052180
Fax: 886-2-26051924

**Hsin Chu EMC/RF/Telecom Lab**:
Tel: 886-3-5935343
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**Hwa Ya EMC/RF/Safety Lab**:
Tel: 886-3-3183232
Fax: 886-3-3270892

**Email:** service.adt@tw.bureauveritas.com
**Web Site:** www.bureauveritas-adt.com


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

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

No any modifications are made to the EUT by the lab during the test.

**---END---**