



FCC TEST REPORT

REPORT NO.: RF971126H02F

MODEL NO.: ZC-3635-55-23

RECEIVED: Oct. 26, 2009

TESTED: Nov. 28 to Dec. 08, 2008 and
Nov. 12 to 25, 2009

ISSUED: Nov. 25, 2009

APPLICANT: Z-COM, INC.

ADDRESS: 7F-2, No.9. Prosperity RD. I ,
Science-Based Industrial Park Hsinchu, 300
Taiwan

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

TEST LOCATION: No. 81-1, Lu Liao Keng, 9th Ling,Wu Lung
Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien
307, Taiwan

This test report consists of 45 pages in total. It may be duplicated completely for legal use with the approval of the applicant. It should not be reproduced except in full, without the written approval of our laboratory. The client should not use it to claim product endorsement by TAF or any government agencies. The test results in the report only apply to the tested sample.



Table of Contents

| | | |
|------------|--|----|
| 1. | CERTIFICATION | 4 |
| 2. | SUMMARY OF TEST RESULTS | 5 |
| 2.1 | MEASUREMENT UNCERTAINTY | 6 |
| 3. | GENERAL INFORMATION | 7 |
| 3.1 | GENERAL DESCRIPTION OF EUT | 7 |
| 3.2 | DESCRIPTION OF TEST MODES | 8 |
| 3.2.1 | TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL: | 9 |
| 3.3 | GENERAL DESCRIPTION OF APPLIED STANDARDS | 11 |
| 3.4 | DESCRIPTION OF SUPPORT UNITS..... | 12 |
| 3.5 | CONFIGURATION OF SYSTEM UNDER TEST..... | 13 |
| 4. | TEST TYPES AND RESULTS | 14 |
| 4.1 | CONDUCTED EMISSION MEASUREMENT | 14 |
| 4.1.1 | LIMITS OF CONDUCTED EMISSION MEASUREMENT | 14 |
| 4.1.2 | TEST INSTRUMENTS..... | 14 |
| 4.1.3 | TEST PROCEDURES | 15 |
| 4.1.4 | DEVIATION FROM TEST STANDARD | 15 |
| 4.1.5 | TEST SETUP | 16 |
| 4.1.6 | EUT OPERATING CONDITIONS | 17 |
| 4.1.7 | TEST RESULTS | 18 |
| 4.2 | RADIATED EMISSION MEASUREMENT | 20 |
| 4.2.1 | LIMITS OF RADIATED EMISSION MEASUREMENT..... | 20 |
| 4.2.2 | TEST INSTRUMENTS..... | 21 |
| 4.2.3 | TEST PROCEDURES | 23 |
| 4.2.4 | DEVIATION FROM TEST STANDARD | 23 |
| 4.2.5 | TEST SETUP | 24 |
| 4.2.6 | EUT OPERATING CONDITIONS | 24 |
| Below 1GHz | TEST DATA | 25 |
| 4.2.7 | TEST RESULTS..... | 25 |
| Above 1GHz | TEST DATA..... | 26 |
| 4.2.8 | TEST RESULTS..... | 26 |
| 4.3 | 6dB BANDWIDTH MEASUREMENT | 29 |
| 4.3.1 | LIMITS OF 6dB BANDWIDTH MEASUREMENT..... | 29 |
| 4.3.2 | TEST INSTRUMENTS..... | 29 |
| 4.3.3 | TEST PROCEDURE..... | 29 |
| 4.3.4 | DEVIATION FROM TEST STANDARD | 29 |
| 4.3.5 | TEST SETUP | 29 |
| 4.3.6 | EUT OPERATING CONDITIONS | 29 |
| 4.3.7 | TEST RESULTS..... | 30 |
| 4.4 | MAXIMUM PEAK OUTPUT POWER..... | 32 |
| 4.4.1 | LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT | 32 |



| | | |
|-------|---|----|
| 4.4.2 | INSTRUMENTS | 32 |
| 4.4.3 | TEST PROCEDURES | 33 |
| 4.4.4 | DEVIATION FROM TEST STANDARD | 33 |
| 4.4.5 | TEST SETUP | 33 |
| 4.4.6 | EUT OPERATING CONDITIONS | 33 |
| 4.4.7 | TEST RESULTS | 34 |
| 4.5 | POWER SPECTRAL DENSITY MEASUREMENT | 35 |
| 4.5.1 | LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT | 35 |
| 4.5.2 | TEST INSTRUMENTS | 35 |
| 4.5.3 | TEST PROCEDURE | 36 |
| 4.5.4 | DEVIATION FROM TEST STANDARD | 36 |
| 4.5.5 | TEST SETUP | 36 |
| 4.5.6 | EUT OPERATING CONDITION | 36 |
| 4.5.7 | TEST RESULTS | 37 |
| 4.6 | CONDUCTED OUT-BAND EMISSION MEASUREMENT | 39 |
| 4.6.1 | LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT | 39 |
| 4.6.2 | TEST INSTRUMENTS | 39 |
| 4.6.3 | TEST PROCEDURE | 40 |
| 4.6.4 | DEVIATION FROM TEST STANDARD | 40 |
| 4.6.5 | EUT OPERATING CONDITION | 40 |
| 4.6.6 | TEST RESULTS | 40 |
| 4.7 | ANTENNA REQUIREMENT | 43 |
| 4.7.1 | STANDARD APPLICABLE | 43 |
| 4.7.2 | ANTENNA CONNECTED CONSTRUCTION | 43 |
| 5. | INFORMATION ON THE TESTING LABORATORIES | 44 |
| 6. | APPENDIX-A- MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB | 45 |



A D T

1. CERTIFICATION

PRODUCT: Broadband Wireless Access ODU

BRAND NAME: ZCom

MODEL NO.: ZC-3635-55-23

TEST SAMPLE: R&D SAMPLE

TESTED: Nov. 28 to Dec. 08, 2008 and
Nov. 12 to 25, 2009 (For conducted, radiated emission
(below 1GHz) and peak output power test items)

APPLICANT: Z-COM, INC.

STANDARDS: FCC Part 15, Subpart C,
ANSI C63.4-2003

The above equipment (Model: ZC-3635-55-23) 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 : Carol Liao , **DATE:** Nov. 25, 2009
(Carol Liao, Specialist)

TECHNICAL ACCEPTANCE : Hank Chung , **DATE:** Nov. 25, 2009
(Hank Chung, Deputy Manager)

APPROVED BY : May Chen , **DATE:** Nov. 25, 2009
(May Chen, Deputy Manager)



2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

| APPLIED STANDARD: FCC Part 15, Subpart C | | | |
|--|--|--------|--|
| Standard Section | Test Type and Limit | Result | Remark |
| 15.207 | AC Power Conducted Emission | PASS | Meet the requirement of limit. Minimum passing margin is -14.49dB at 0.545MHz |
| 15.247(a)(2) | Spectrum Bandwidth of a Direct Sequence Spread Spectrum System Limit: min. 500kHz | PASS | Meet the requirement of limit. |
| 15.247(b) | Maximum Peak Output Power Limit: max. 30dBm | PASS | Meet the requirement of limit. |
| 15.247(d) | Radiated Emissions Limit: Table 15.209 | PASS | Meet the requirement of limit. Minimum passing margin is -0.5dB at 37.64MHz |
| 15.247(e) | Power Spectral Density Limit: max. 8dBm | PASS | Meet the requirement of limit. |
| 15.247(d) | Band Edge Measurement Limit: 20dB less than the peak value of fundamental frequency | PASS | Meet the requirement of limit. |



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 | 2.45 dB |
| Radiated emissions (30MHz-1GHz) | 3.94 dB |
| Radiated emissions (1GHz -18GHz) | 2.33 dB |
| Radiated emissions (18GHz -40GHz) | 2.56 dB |



3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

| | |
|------------------------------|--|
| PRODUCT | Broadband Wireless Access ODU |
| MODEL NO. | ZC-3635-55-23 |
| FCC ID | M4Y-ZC3635-55V02 |
| POWER SUPPLY | DC 48V from POE |
| MODULATION TYPE | 64QAM, 16QAM, QPSK, BPSK for OFDM |
| MODULATION TECHNOLOGY | OFDM |
| TRANSFER RATE | 802.11a: 54 / 48 / 36 / 24 / 18 / 12 / 9 / 6Mbps |
| FREQUENCY RANGE | 802.11a: 5.745 ~ 5.825GHz |
| NUMBER OF CHANNEL | 5 for 802.11a |
| MAXIMUM OUTPUT POWER | 802.11a: 575.4mW |
| ANTENNA TYPE | Please see note 1 |
| DATA CABLE | NA |
| I/O PORT | LAN port x 1 POE port x 1 Antenna port x 1 |
| ASSOCIATED DEVICES | POE x 1 |

NOTE:

1. There is one antenna provided to this EUT, please refer to the following table:

| No | Antenna Gain | Antenna Type | Connector |
|----|--------------|--------------|-----------|
| 1 | 23 dBi | Patch Array | SMA |

2. The EUT must be supplied with a POE as following information:

| | |
|-----------------------|---|
| Brand: | Touch Electronic Co., Ltd. |
| Model No.: | A5-20S48-V |
| Input power : | 100-240V, 0.6A, 50-60Hz Cable : Unshielded without core , 1.2m |
| Output power : | 48V, 0.4A |



3. The EUT has two same 11a modules inside, the detail information as below table:
(Two modules can't transmitter at the same time.)

| Brand Name | Model Name |
|------------|------------|
| ZCOM | XA-623AH |

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

3.2 DESCRIPTION OF TEST MODES

Five channels are provided for 802.11a:

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



3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL:

| EUT CONFIGURE MODE | APPLICABLE TO | | | | DESCRIPTION |
|--------------------|---------------|---------|---------|------|-------------|
| | PLC | RE < 1G | RE ≥ 1G | APCM | |
| - | √ | √ | - | - | - |

Where **PLC**: Power Line Conducted Emission **RE < 1G**: Radiated Emission below 1GHz
RE ≥ 1G: Radiated Emission above 1GHz **APCM**: Antenna Port Conducted Measurement

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.

| MODE | AVAILABLE CHANNEL | TESTED CHANNEL | MODULATION TECHNOLOGY | MODULATION TYPE | DATA RATE (Mbps) |
|---------|-------------------|----------------|-----------------------|-----------------|------------------|
| 802.11a | 149 to 165 | 149 | OFDM | BPSK | 6 |

RADIATED EMISSION TEST (BELOW 1 GHz):

- 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.

| MODE | AVAILABLE CHANNEL | TESTED CHANNEL | MODULATION TECHNOLOGY | MODULATION TYPE | DATA RATE (Mbps) |
|---------|-------------------|----------------|-----------------------|-----------------|------------------|
| 802.11a | 149 to 165 | 149 | OFDM | BPSK | 6 |

RADIATED EMISSION TEST (ABOVE 1 GHz):

- 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.

| MODE | AVAILABLE CHANNEL | TESTED CHANNEL | MODULATION TECHNOLOGY | MODULATION TYPE | DATA RATE (Mbps) |
|---------|-------------------|----------------|-----------------------|-----------------|------------------|
| 802.11a | 149 to 165 | 149, 157, 165 | OFDM | BPSK | 6 |



CONDUCTED OUT-BAND EMISSION MEASUREMENT:

- 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.

| MODE | AVAILABLE CHANNEL | TESTED CHANNEL | MODULATION TECHNOLOGY | MODULATION TYPE | DATA RATE (Mbps) |
|---------|-------------------|----------------|-----------------------|-----------------|------------------|
| 802.11a | 149 to 165 | 149, 165 | OFDM | BPSK | 6 |

ANTENNA PORT CONDUCTED MEASUREMENT:

- 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.

| MODE | AVAILABLE CHANNEL | TESTED CHANNEL | MODULATION TECHNOLOGY | MODULATION TYPE | DATA RATE (Mbps) |
|---------|-------------------|----------------|-----------------------|-----------------|------------------|
| 802.11a | 149 to 165 | 149, 157, 165 | OFDM | BPSK | 6 |



3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a Broadband Wireless Access ODU. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart C.

ANSI C63.4-2003

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.



3.4 DESCRIPTION OF SUPPORT UNITS

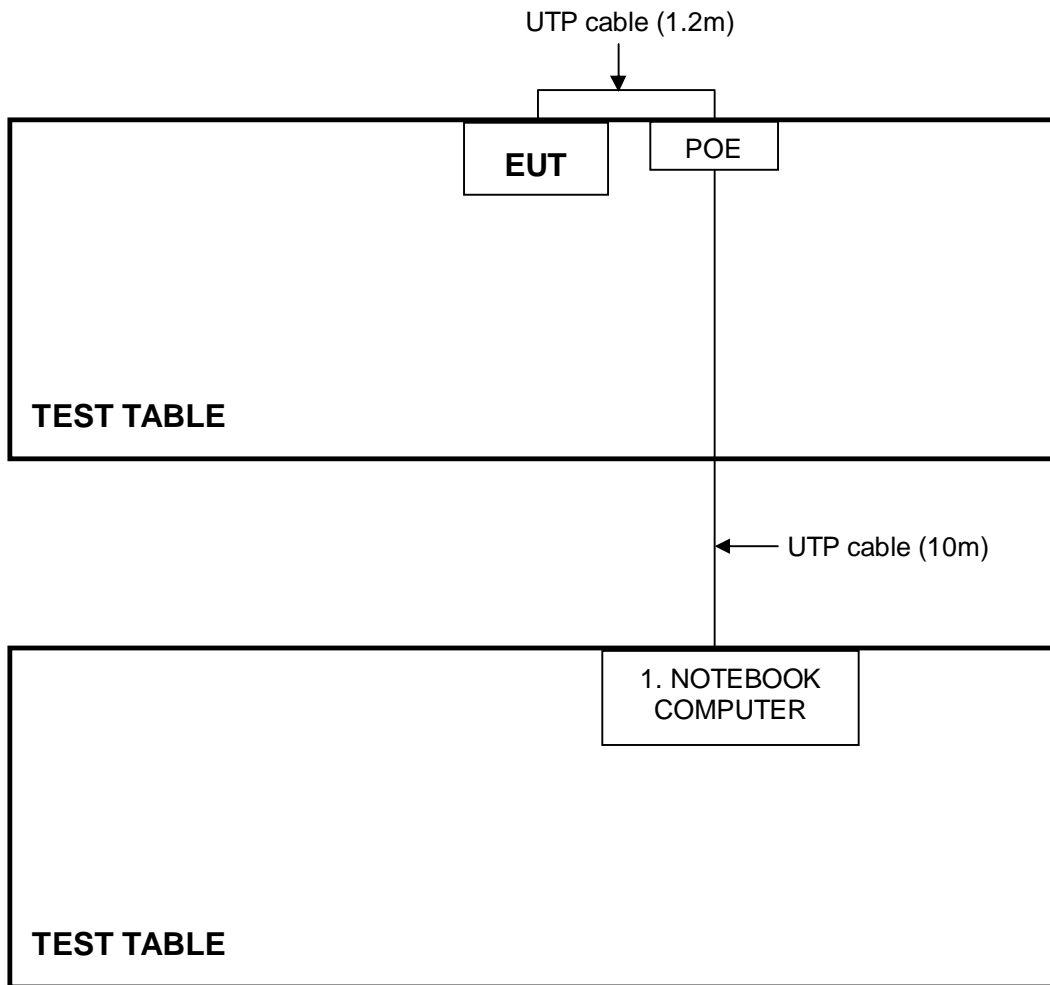
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

| NO. | PRODUCT | BRAND | MODEL NO. | SERIAL NO. | FCC ID |
|-----|-------------------|-------|-----------|-------------|-----------|
| 1 | NOTEBOOK COMPUTER | DELL | PPT | 17044664176 | E2K24GBRL |

| NO. | SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS |
|-----|---|
| 1 | UTP cable, 10m |

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

3.5 CONFIGURATION OF SYSTEM UNDER TEST





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 μ 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.
 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.

4.1.2 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED DATE | CALIBRATED UNTIL |
|---|-----------------------|------------|-----------------|------------------|
| ROHDE & SCHWARZ Test Receiver | ESCS 30 | 100287 | Mar. 05, 2009 | Mar. 04, 2010 |
| Line-Impedance Stabilization Network (for EUT) | KNW-407 | 8-1395-12 | May 04, 2009 | May 03, 2010 |
| Line-Impedance Stabilization Network (for Peripheral) | ENV-216 | 100072 | June 08, 2009 | June 07, 2010 |
| RF Cable (JYEBAO) | 5DFB | COACAB-001 | Dec 15, 2008 | Dec 14, 2009 |
| 50 ohms Terminator | 50 | 3 | Nov. 05, 2009 | Nov. 04, 2010 |
| Software | BV ADT_Cond_V7.3.7 | 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 Shielded Room No. A.
3. The VCCI Con A Registration No. is C-817.

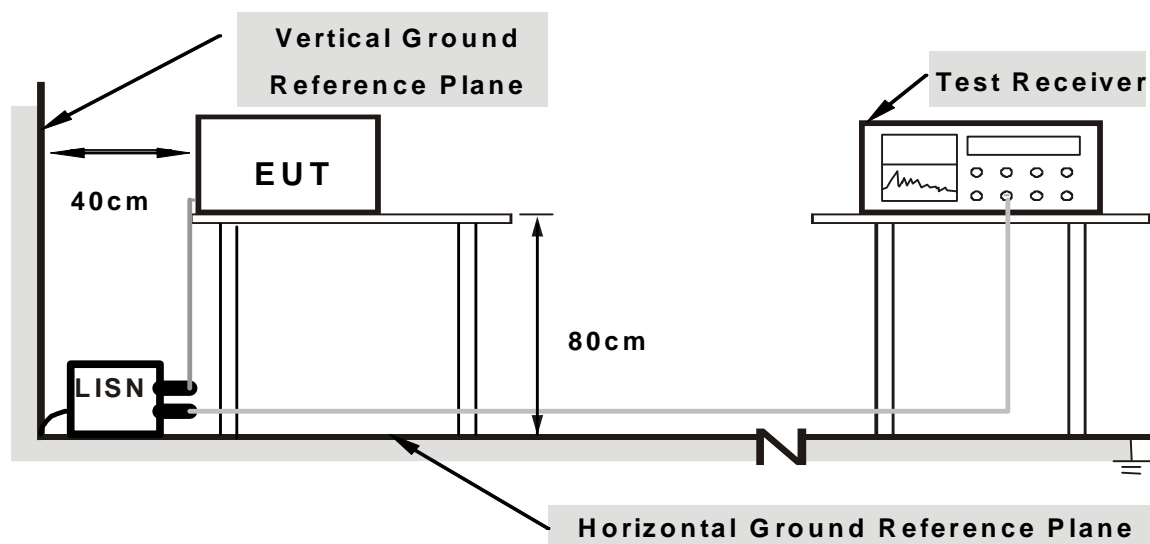
4.1.3 TEST PROCEDURES

- 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.

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 related item – Photographs of the Test Configuration.



4.1.6 EUT OPERATING CONDITIONS

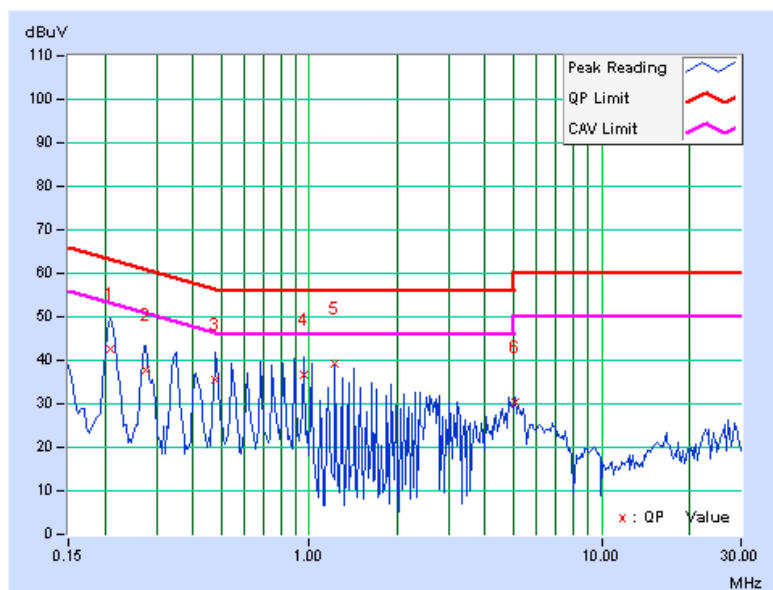
1. Placed the EUT on testing table.
2. Prepared other computer system (support unit 1) to act as communication partners and placed them outside of testing area.
3. The communication partners run test program “Web Page & Putty” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

4.1.7 TEST RESULTS

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|--------------------------|----------------------|---------------|
| CHANNEL | Channel 149 | PHASE | Line (L) |
| MODULATION TYPE | BPSK | 6dB BANDWIDTH | 9 kHz |
| TRANSFER RATE | 6Mbps | INPUT POWER (SYSTEM) | 120Vac, 60 Hz |
| ENVIRONMENTAL CONDITIONS | 25deg. C, 68%RH, 1021hPa | TESTED BY | Eagle Chen |

| No | Freq. [MHz] | Corr. Factor (dB) | Reading Value [dB (uV)] | | Emission Level [dB (uV)] | | Limit [dB (uV)] | | Margin (dB) | |
|----|-------------|-------------------|-------------------------|-------|--------------------------|-------|-----------------|-------|-------------|--------|
| | | | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| | 1 | 0.209 | 0.17 | 42.45 | - | 42.62 | - | 63.25 | 53.25 | -20.64 |
| 2 | 0.275 | 0.14 | 37.56 | - | 37.70 | - | 60.96 | 50.96 | -23.27 | - |
| 3 | 0.478 | 0.08 | 35.46 | - | 35.54 | - | 56.37 | 46.37 | -20.83 | - |
| 4 | 0.955 | 0.06 | 36.73 | - | 36.79 | - | 56.00 | 46.00 | -19.21 | - |
| 5 | 1.227 | 0.06 | 39.11 | - | 39.17 | - | 56.00 | 46.00 | -16.83 | - |
| 6 | 5.043 | 0.16 | 30.15 | - | 30.31 | - | 60.00 | 50.00 | -29.69 | - |

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level - Limit value
 5. Correction factor = Insertion loss + Cable loss
 6. Emission Level = Correction Factor + Reading Value.



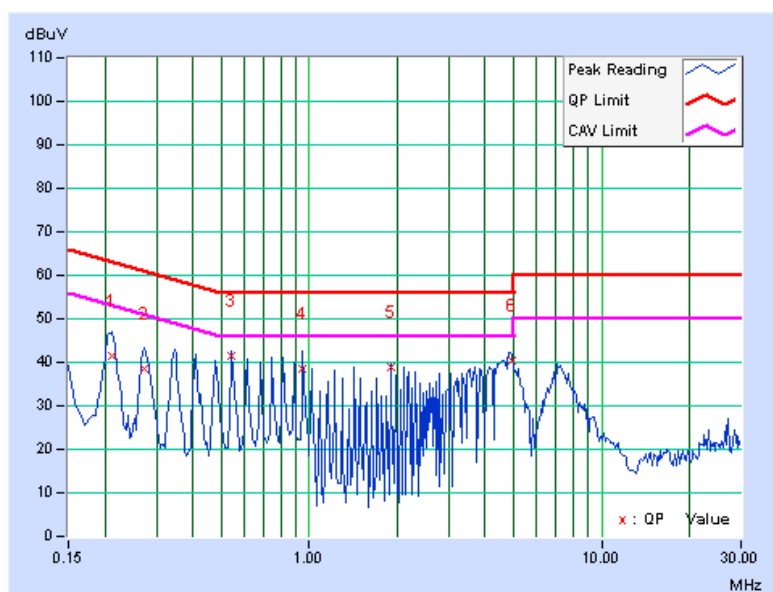


A D T

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|--------------------------|----------------------|---------------|
| CHANNEL | Channel 149 | PHASE | Neutral (N) |
| MODULATION TYPE | BPSK | 6dB BANDWIDTH | 9 kHz |
| TRANSFER RATE | 6Mbps | INPUT POWER (SYSTEM) | 120Vac, 60 Hz |
| ENVIRONMENTAL CONDITIONS | 25deg. C, 68%RH, 1021hPa | TESTED BY | Eagle Chen |

| No | Freq. [MHz] | Corr. Factor (dB) | Reading Value [dB (uV)] | | Emission Level [dB (uV)] | | Limit [dB (uV)] | | Margin (dB) | |
|----------|--------------|-------------------|-------------------------|-------|--------------------------|-------|-----------------|--------------|---------------|-------|
| | | | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| | | | 1 | 0.213 | 0.17 | 41.32 | - | 41.49 | - | 63.10 |
| 2 | 0.271 | 0.15 | 38.31 | - | 38.46 | - | 61.08 | 51.08 | -22.62 | - |
| 3 | 0.545 | 0.09 | 41.42 | - | 41.51 | - | 56.00 | 46.00 | -14.49 | - |
| 4 | 0.951 | 0.08 | 38.38 | - | 38.46 | - | 56.00 | 46.00 | -17.54 | - |
| 5 | 1.906 | 0.10 | 38.69 | - | 38.79 | - | 56.00 | 46.00 | -17.21 | - |
| 6 | 4.907 | 0.18 | 40.14 | - | 40.32 | - | 56.00 | 46.00 | -15.68 | - |

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level - Limit value
 5. Correction factor = Insertion loss + Cable loss
 6. Emission Level = Correction Factor + Reading Value.





4.2 RADIATED EMISSION MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

| 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. As shown in 15.35(b), 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.



4.2.2 TEST INSTRUMENTS

Below 1GHz:

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED DATE | CALIBRATED UNTIL |
|--------------------------------------|--------------------------|-------------|-----------------|------------------|
| ROHDE & SCHWARZ Spectrum Analyzer | FSP40 | 100036 | Dec. 09, 2008 | Dec. 08, 2009 |
| Agilent PSA Spectrum Analyzer | E4446A | MY46180622 | Apr. 24 , 2009 | Apr. 23 , 2010 |
| HP Pre_Amplifier | 8449B | 3008A01923 | Nov. 02, 2009 | Nov. 01, 2010 |
| ROHDE & SCHWARZ Test Receiver | ESCS30 | 847124/029 | Aug. 28, 2009 | Aug. 28, 2010 |
| SCHWARZBECK TRILOG Broadband Antenna | VULB 9168 | 138 | Apr. 29, 2009 | Apr. 28, 2010 |
| Schwarzbeck Horn_Antenna | BBHA9120 | D124 | Dec. 09, 2008 | Dec. 08, 2009 |
| Schwarzbeck Horn_Antenna | BBHA 9170 | BBHA9170153 | Jan. 22, 2009 | Jan. 21, 2010 |
| RF Switches | EMH-011 | 08009 | Sep. 26, 2009 | Sep. 25, 2010 |
| RF CABLE (Chaintek) | Sucoflex 106 | 28077 | Aug. 14, 2009 | Aug. 13, 2010 |
| RF Cable | 8D | STCCAB-001 | Sep. 26, 2009 | Sep. 25, 2010 |
| Software | ADT_Radiated_V7.6.15.9.2 | NA | NA | NA |
| CT Antenna Tower & Turn Table | 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 horn antenna, HP preamplifier (model: 8449B) and Spectrum Analyzer (model: FSP40) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in Open Site No. C.
4. The FCC Site Registration No. is 656396.
5. The VCCI Site Registration No. is R-1626.
6. The CANADA Site Registration No. is IC 7450G-3.



A D T

Above 1GHz:

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED DATE | CALIBRATED UNTIL |
|--------------------------------------|------------------------------|---------------------|-----------------|------------------|
| ADVANTEST Spectrum Analyzer | R3271A | 85060311 | July 16, 2008 | July 15, 2009 |
| HP Pre_Amplifier | 8449B | 3008A0192 2 | Sep. 25, 2008 | Sep. 24, 2009 |
| ROHDE & SCHWARZ Test Receiver | ESCS30 | 100375 | April 01, 2008 | Mar. 31, 2009 |
| SCHWARZBECK TRILOG Broadband Antenna | VULB 9168 | 138 | April 30, 2008 | April 29, 2009 |
| Schwarzbeck Horn_Antenna | BBHA9120 | D124 | Dec. 17, 2007 | Dec. 16, 2008 |
| Schwarzbeck Horn_Antenna | BBHA 9170 | BBHA91701 53 | Jan. 28, 2008 | Jan. 27, 2009 |
| R&S Loop Antenna | HFH2-Z2 | 100070 | Jan. 14, 2008 | Jan. 13, 2009 |
| RF Switches | EMH-011 | 08009 | Oct. 07, 2008 | Oct. 06, 2009 |
| RF CABLE (Chaintek) | SF102 | 22054-2 | Dec. 06, 2008 | Dec. 05, 2009 |
| RF Cable | 8DFB | STCCAB-30 M-1GHz | Oct. 07, 2008 | Oct. 06, 2009 |
| Software | ADT_Radiated _V7.6.15.9.2 | NA | NA | NA |
| CT Antenna Tower & Turn Table | 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 horn antenna, HP preamplifier (model: 8449B) and Spectrum Analyzer (model: R3271A) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in Open Site No. C.
4. The FCC Site Registration No. is 656396.
5. The VCCI Site Registration No. is R-1626.
6. The CANADA Site Registration No. is IC 7450G-3.



4.2.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10-meter open field site. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 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.

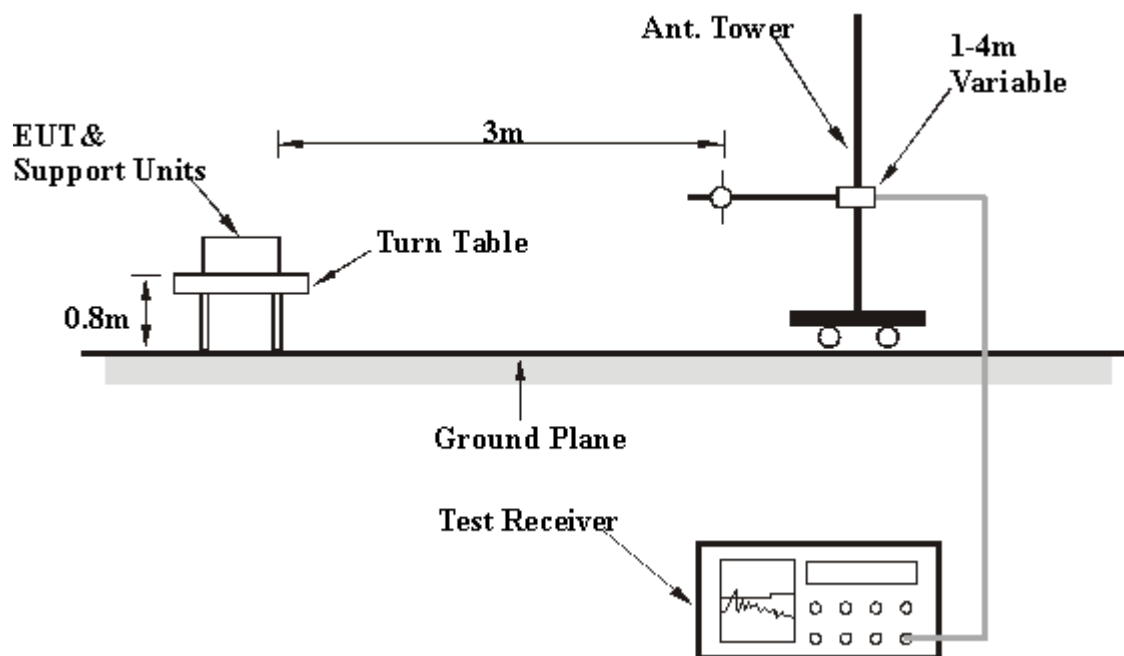
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth is 1MHz and video bandwidth of test receiver/spectrum analyzer 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 10Hz for Average detection (AV) at frequency above 1GHz.

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 – Photographs of the Test Configuration.

4.2.6 EUT OPERATING CONDITIONS

Same as the 4.1.6



A D T

Below 1GHz Test Data

4.2.7 TEST RESULTS

BELOW 1GHz WORST-CASE DATA : 802.11a OFDM MODULATION

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|----------------------------|--------------------|---------------|
| CHANNEL | Channel 149 | FREQUENCY RANGE | Below 1000MHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Quasi-Peak |
| ENVIRONMENTAL CONDITIONS | 25deg. C, 71%RH 1021hPa | TESTED BY | Frank Liu |

| 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 | 37.64 | 32.3 QP | 40.0 | -7.7 | 1.00 H | 64 | 18.65 | 13.66 |
| 2 | 73.31 | 28.7 QP | 40.0 | -11.3 | 1.00 H | 64 | 16.61 | 12.05 |
| 3 | 152.15 | 29.8 QP | 43.5 | -13.7 | 1.00 H | 0 | 14.68 | 15.16 |
| 4 | 164.62 | 27.6 QP | 43.5 | -15.9 | 1.03 H | 199 | 12.89 | 14.70 |
| 5 | 250.00 | 36.4 QP | 46.0 | -9.6 | 1.00 H | 243 | 22.70 | 13.70 |
| 6 | 375.00 | 31.7 QP | 46.0 | -14.3 | 1.20 H | 34 | 13.78 | 17.90 |

| 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 | 37.64 | 39.5 QP | 40.0 | -0.5 | 1.00 V | 19 | 25.81 | 13.66 |
| 2 | 73.31 | 35.3 QP | 40.0 | -4.7 | 1.12 V | 11 | 23.21 | 12.05 |
| 3 | 152.15 | 34.7 QP | 43.5 | -8.8 | 1.16 V | 0 | 19.51 | 15.16 |
| 4 | 164.62 | 32.8 QP | 43.5 | -10.7 | 1.05 V | 199 | 18.13 | 14.70 |
| 5 | 375.00 | 31.7 QP | 46.0 | -14.3 | 1.24 V | 355 | 13.78 | 17.90 |
| 6 | 833.24 | 36.8 QP | 46.0 | -9.2 | 1.50 V | 227 | 9.68 | 27.12 |

- 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.



A D T

Above 1GHz Test Data

4.2.8 TEST RESULTS

802.11a OFDM MODULATION

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|-------------------------|--------------------|---------------------------|
| CHANNEL | Channel 149 | FREQUENCY RANGE | 1 ~ 40GHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 26deg. C, %RH 965hPa | TESTED BY | Frank Liu |

| 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 | *5745.00 | 114.60 PK | | | 1.00 H | 249 | 77.39 | 37.21 |
| 2 | *5745.00 | 104.00 AV | | | 1.00 H | 249 | 66.79 | 37.21 |
| 3 | 11490.00 | 62.40 PK | 74.00 | -11.60 | 1.00 H | 138 | 15.37 | 47.03 |
| 4 | 11490.00 | 49.60 AV | 54.00 | -4.40 | 1.00 H | 138 | 2.57 | 47.03 |
| 5 | 17235.00 | 63.50 PK | 74.00 | -10.50 | 1.00 H | 221 | 13.00 | 50.50 |
| 6 | 17235.00 | 50.60 AV | 54.00 | -3.40 | 1.00 H | 221 | 0.10 | 50.50 |
| 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 | *5745.00 | 133.70 PK | | | 1.13 V | 177 | 96.49 | 37.21 |
| 2 | *5745.00 | 122.80 AV | | | 1.13 V | 177 | 85.59 | 37.21 |
| 3 | 11490.00 | 65.30 PK | 74.00 | -8.70 | 1.11 V | 220 | 18.27 | 47.03 |
| 4 | 11490.00 | 52.40 AV | 54.00 | -1.60 | 1.11 V | 220 | 5.37 | 47.03 |
| 5 | 17235.00 | 63.90 PK | 74.00 | -10.10 | 1.20 V | 147 | 13.40 | 50.50 |
| 6 | 17235.00 | 50.60 AV | 54.00 | -3.40 | 1.20 V | 147 | 0.10 | 50.50 |

- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. “ * “: Fundamental frequency.
 6. The limit value is defined as per 15.247.



A D T

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|-------------------------|--------------------|---------------------------|
| CHANNEL | Channel 157 | FREQUENCY RANGE | 1 ~ 40GHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 26deg. C, %RH 965hPa | TESTED BY | Frank Liu |

| 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 | *5785.00 | 114.30 PK | | | 1.00 H | 262 | 76.99 | 37.31 |
| 2 | *5785.00 | 104.20 AV | | | 1.00 H | 262 | 66.89 | 37.31 |
| 3 | 11570.00 | 63.60 PK | 74.00 | -10.40 | 1.00 H | 138 | 16.63 | 46.97 |
| 4 | 11570.00 | 50.10 AV | 54.00 | -3.90 | 1.00 H | 138 | 3.13 | 46.97 |
| 5 | 17355.00 | 63.70 PK | 74.00 | -10.30 | 1.00 H | 220 | 12.59 | 51.11 |
| 6 | 17355.00 | 50.40 AV | 54.00 | -3.60 | 1.00 H | 220 | -0.71 | 51.11 |
| 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 | *5785.00 | 134.50 PK | | | 1.12 V | 177 | 97.19 | 37.31 |
| 2 | *5785.00 | 123.40 AV | | | 1.12 V | 177 | 86.09 | 37.31 |
| 3 | 11570.00 | 65.10 PK | 74.00 | -8.90 | 1.07 V | 219 | 18.13 | 46.97 |
| 4 | 11570.00 | 51.70 AV | 54.00 | -2.30 | 1.07 V | 219 | 4.73 | 46.97 |
| 5 | 17355.00 | 63.80 PK | 74.00 | -10.20 | 1.27 V | 227 | 12.69 | 51.11 |
| 6 | 17355.00 | 50.50 AV | 54.00 | -3.50 | 1.27 V | 227 | -0.61 | 51.11 |

- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. “ * “: Fundamental frequency.
 6. The limit value is defined as per 15.247.



A D T

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|-------------------------|--------------------|---------------------------|
| CHANNEL | Channel 165 | FREQUENCY RANGE | 1 ~ 40GHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 26deg. C, %RH 965hPa | TESTED BY | Frank Liu |

| 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 | *5825.00 | 114.40 PK | | | 1.00 H | 267 | 76.98 | 37.42 |
| 2 | *5825.00 | 104.50 AV | | | 1.00 H | 267 | 67.08 | 37.42 |
| 3 | 11650.00 | 63.70 PK | 74.00 | -10.30 | 1.00 H | 310 | 16.80 | 46.90 |
| 4 | 11650.00 | 50.10 AV | 54.00 | -3.90 | 1.00 H | 310 | 3.20 | 46.90 |
| 5 | 17475.00 | 64.50 PK | 74.00 | -9.50 | 1.00 H | 147 | 12.78 | 51.72 |
| 6 | 17475.00 | 50.70 AV | 54.00 | -3.30 | 1.00 H | 147 | -1.02 | 51.72 |
| 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 | *5825.00 | 134.50 PK | | | 1.13 V | 177 | 97.08 | 37.42 |
| 2 | *5825.00 | 123.40 AV | | | 1.13 V | 177 | 85.98 | 37.42 |
| 3 | 11650.00 | 65.10 PK | 74.00 | -8.90 | 1.11 V | 220 | 18.20 | 46.90 |
| 4 | 11650.00 | 51.60 AV | 54.00 | -2.40 | 1.11 V | 220 | 4.70 | 46.90 |
| 5 | 17475.00 | 64.50 PK | 74.00 | -9.50 | 1.28 V | 214 | 12.78 | 51.72 |
| 6 | 17475.00 | 50.60 AV | 54.00 | -3.40 | 1.28 V | 214 | -1.12 | 51.72 |

- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. “ * “: Fundamental frequency.
 6. The limit value is defined as per 15.247.
 7. "#":The radiated frequency is out the restricted band.



4.3 6dB BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED DATE | CALIBRATED UNTIL |
|----------------------------|-----------|------------|-----------------|------------------|
| R&S SPECTRUM ANALYZER | FSP40 | 100037 | Aug. 09, 2008 | Aug. 08, 2009 |

NOTE:

- 1.The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.
- 2.The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

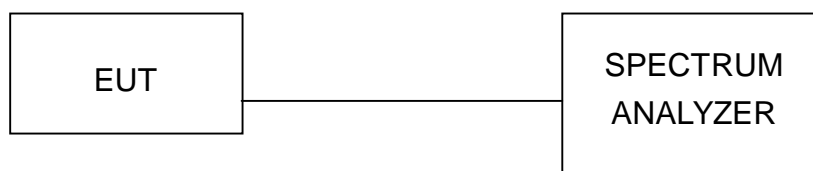
4.3.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100kHz RBW and 100kHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

4.3.4 DEVIATION FROM TEST STANDARD

No deviation

4.3.5 TEST SETUP



4.3.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.



A D T

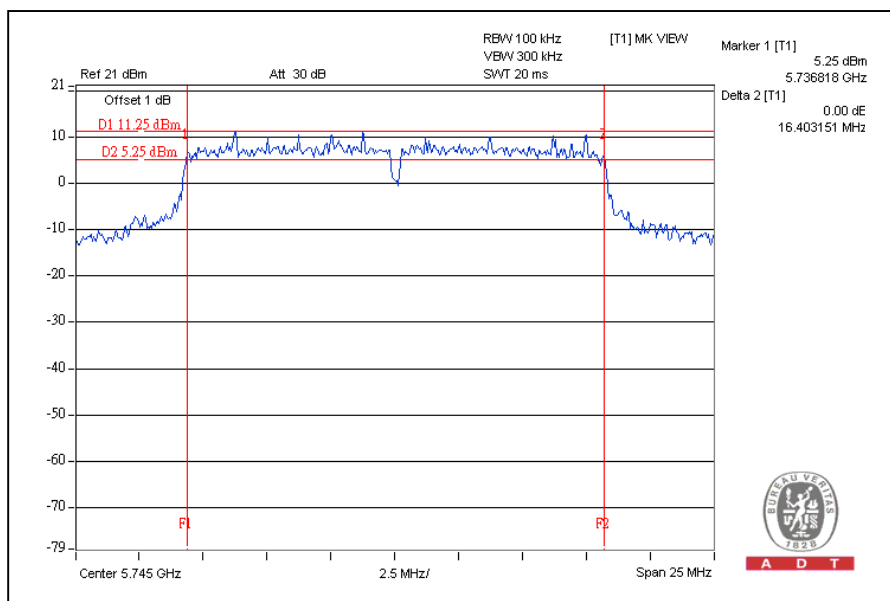
4.3.7 TEST RESULTS

802.11a OFDM MODULATION:

| | | | |
|-----------------------------|---------------|---------------------------------|-------------------------|
| MODULATION TYPE | BPSK | TRANSFER RATE | 6Mbps |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | ENVIRONMENTAL CONDITIONS | 20deg. C, 60%RH, 965hPa |
| TESTED BY | Rex Huang | | |

| CHANNEL | CHANNEL FREQUENCY (MHz) | 6dB BANDWIDTH (MHz) | MINIMUM LIMIT (MHz) | PASS / FAIL |
|---------|-------------------------|---------------------|---------------------|-------------|
| 149 | 5745 | 16.40 | 0.5 | PASS |
| 157 | 5785 | 16.35 | 0.5 | PASS |
| 165 | 5825 | 16.39 | 0.5 | PASS |

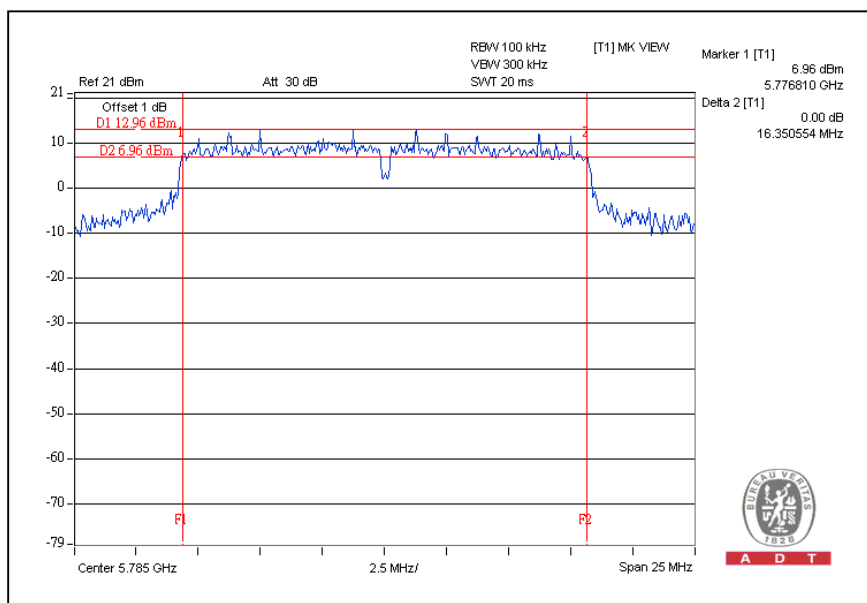
CH149





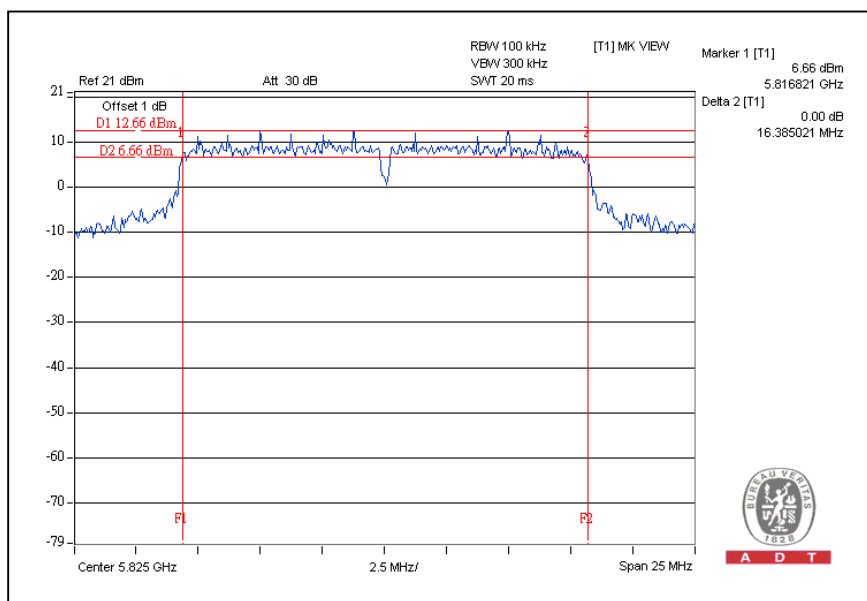
A D T

CH157



A D T

CH165



A D T



A D T

4.4 MAXIMUM PEAK OUTPUT POWER

4.4.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Measurement is 30dBm.

4.4.2 INSTRUMENTS

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED DATE | CALIBRATED UNTIL |
|----------------------------|-----------|------------|-----------------|------------------|
| Anritsu Power Meter | ML2495A | 0824006 | April 25, 2009 | April 24, 2010 |
| Pulse Power Sensor | MA2411B | 0738172 | April 25, 2009 | April 24, 2010 |

NOTE:

The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

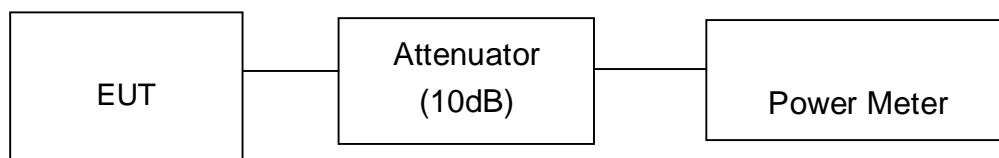
4.4.3 TEST PROCEDURES

1. The transmitter output was connected to the power meter through an attenuator; the bandwidth of the fundamental frequency was measured with the power meter.
2. Record the power level.

4.4.4 DEVIATION FROM TEST STANDARD

No deviation

4.4.5 TEST SETUP



4.4.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.



4.4.7 TEST RESULTS

802.11a OFDM modulation

| | | | |
|------------------------|---------------|---------------------------------|--------------------------|
| MODULATION TYPE | BPSK | TRANSFER RATE | 6Mbps |
| INPUT POWER | 120Vac, 60 Hz | ENVIRONMENTAL CONDITIONS | 20deg. C, 60%RH, 1021hPa |
| TESTED BY | Rex Huang | | |

| CHANNEL | CHANNEL FREQUENCY (MHz) | PEAK POWER OUTPUT (dBm) | PEAK POWER OUTPUT (mW) | PEAK POWER LIMIT (dBm) | PASS / FAIL |
|---------|-------------------------|-------------------------|------------------------|------------------------|-------------|
| 149 | 5745 | 27.40 | 549.5 | 30 | PASS |
| 157 | 5785 | 27.60 | 575.4 | 30 | PASS |
| 165 | 5825 | 27.50 | 562.3 | 30 | PASS |



A D T

4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED DATE | CALIBRATED UNTIL |
|----------------------------|-----------|------------|-----------------|------------------|
| R&S SPECTRUM ANALYZER | FSP40 | 100037 | Aug. 09, 2008 | Aug. 08, 2009 |

NOTE:

- 1.The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.
- 2.The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.



4.5.3 TEST PROCEDURE

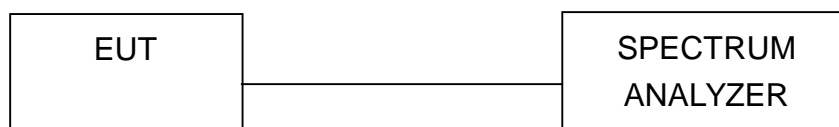
The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3 kHz RBW and 30 kHz VBW, set sweep time = span/3 kHz. The power spectral density was measured and recorded.

The sweep time is allowed to be longer than span/3 kHz for a full response of the mixer in the spectrum analyzer.

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6



A D T

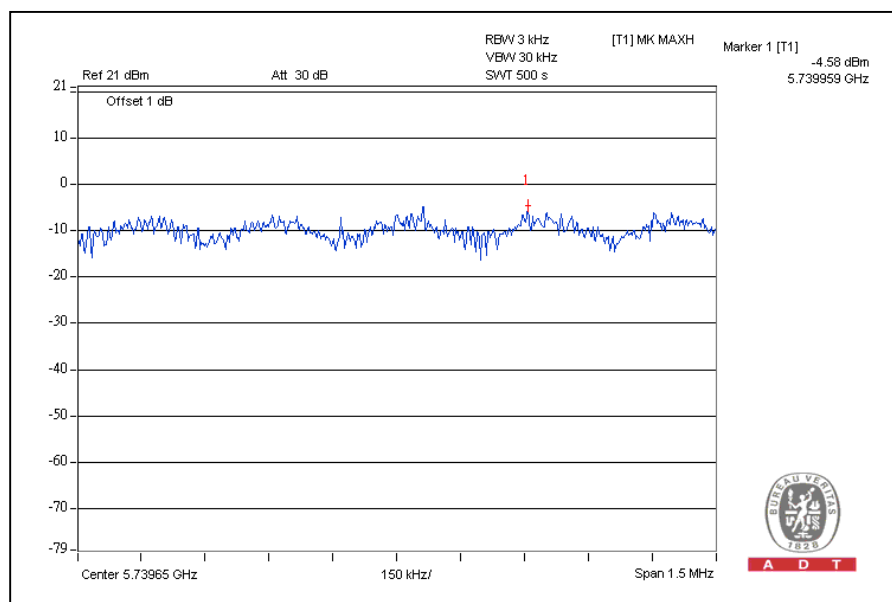
4.5.7 TEST RESULTS

802.11a OFDM modulation

| | | | |
|-----------------------------|---------------|---------------------------------|------------------------|
| MODULATION TYPE | BPSK | TRANSFER RATE | 6Mbps |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | ENVIRONMENTAL CONDITIONS | 20deg.C, 60%RH, 965hPa |
| TESTED BY | Rex Huang | | |

| CHANNEL | CHANNEL FREQUENCY (MHz) | RF POWER LEVEL IN 3kHz BW (dBm) | MAXIMUM LIMIT (dBm) | PASS / FAIL |
|---------|--------------------------|---------------------------------|---------------------|-------------|
| 149 | 5745 | -4.6 | 8 | PASS |
| 157 | 5785 | -3.2 | 8 | PASS |
| 165 | 5825 | -2.8 | 8 | PASS |

CH149

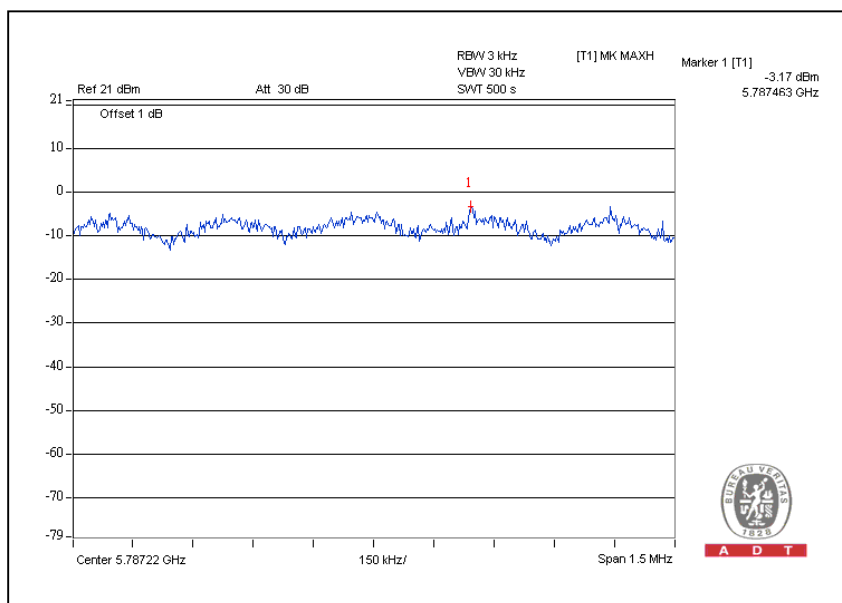


A D T

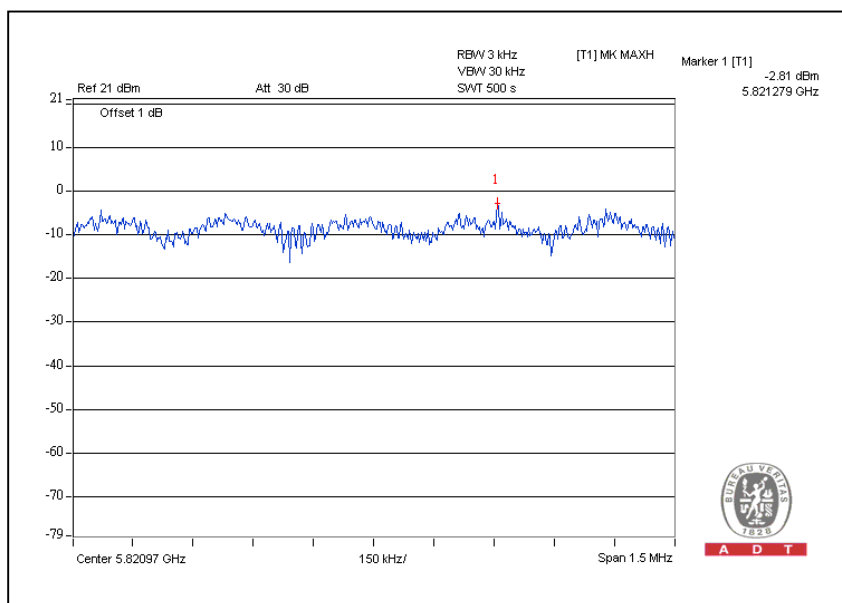


A D T

CH157



CH165





4.6 CONDUCTED OUT-BAND EMISSION MEASUREMENT

4.6.1 LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT

Below -20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

4.6.2 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED DATE | CALIBRATED UNTIL |
|----------------------------|-----------|------------|-----------------|------------------|
| R&S SPECTRUM ANALYZER | FSP40 | 100037 | Aug. 09, 2008 | Aug. 08, 2009 |

NOTE:

- 1.The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.
- 2.The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.



4.6.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low loss cable. Set RBW of spectrum analyzer to 100 kHz with suitable frequency span including 100 MHz bandwidth from band edge. The band edges was measured and recorded.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 EUT OPERATING CONDITION

Same as Item 4.3.6

4.6.6 TEST RESULTS

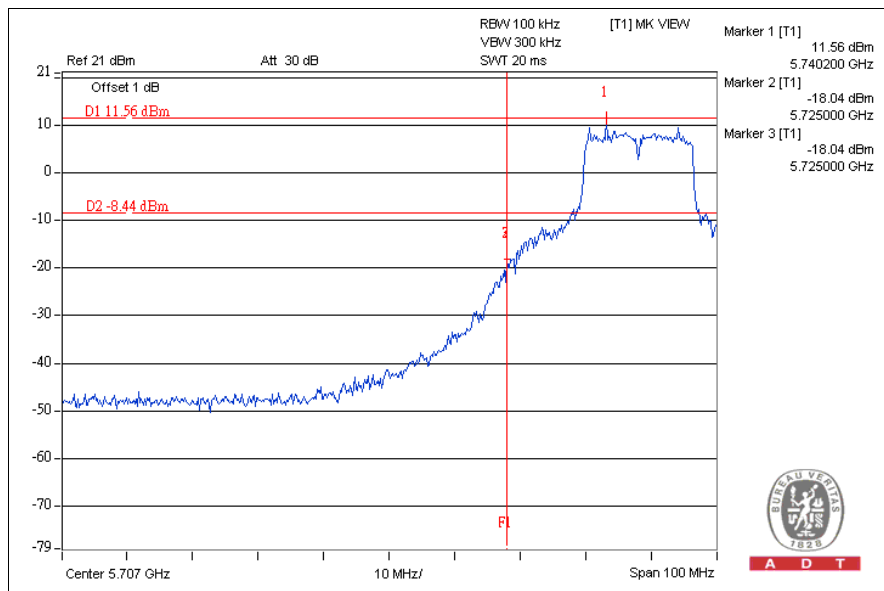
The spectrum plots are attached on the following pages. D2 line indicates the highest level, D1 line indicates the 20dB offset below D2. It shows compliance with the requirement in part 15.247(d).



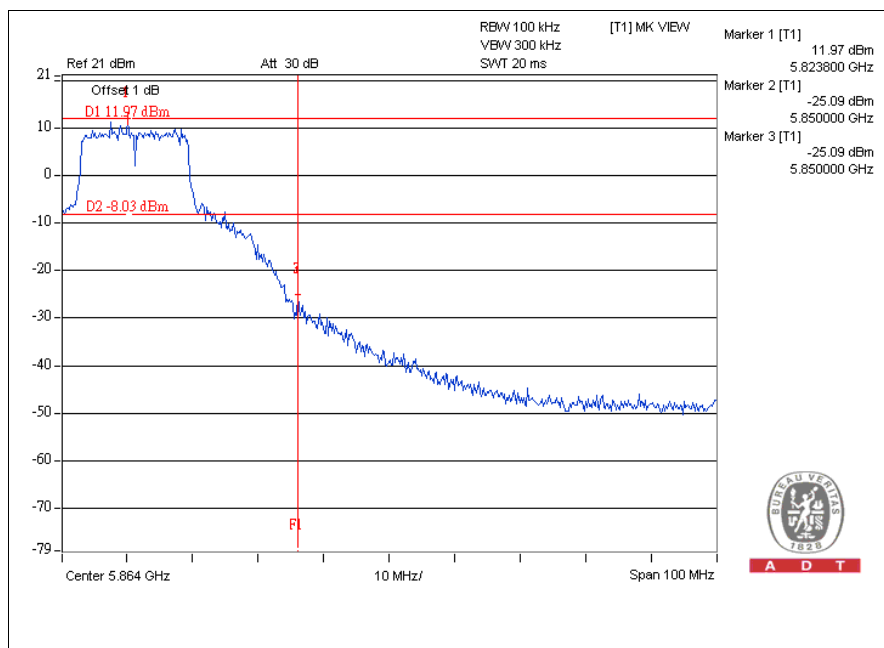
A D T

802.11a OFDM modulation

CH149



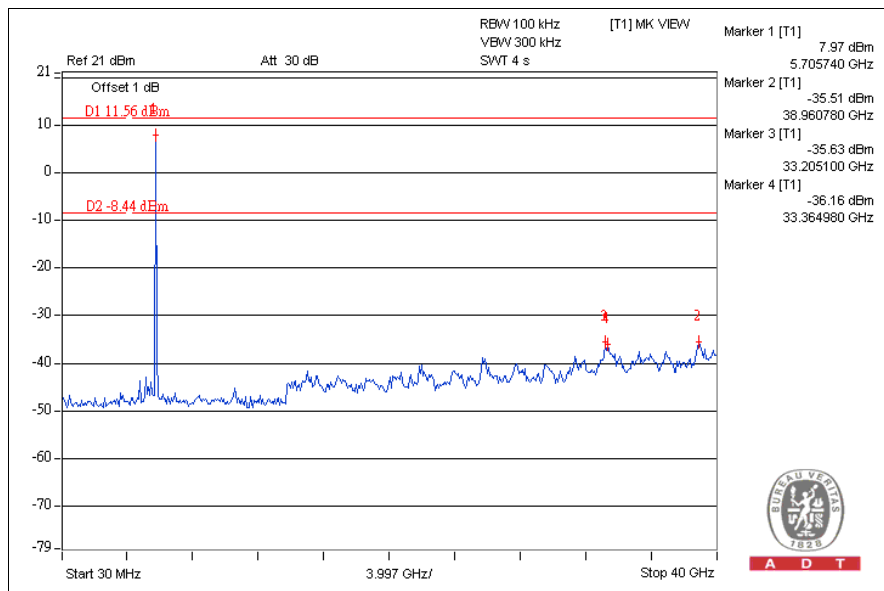
CH165





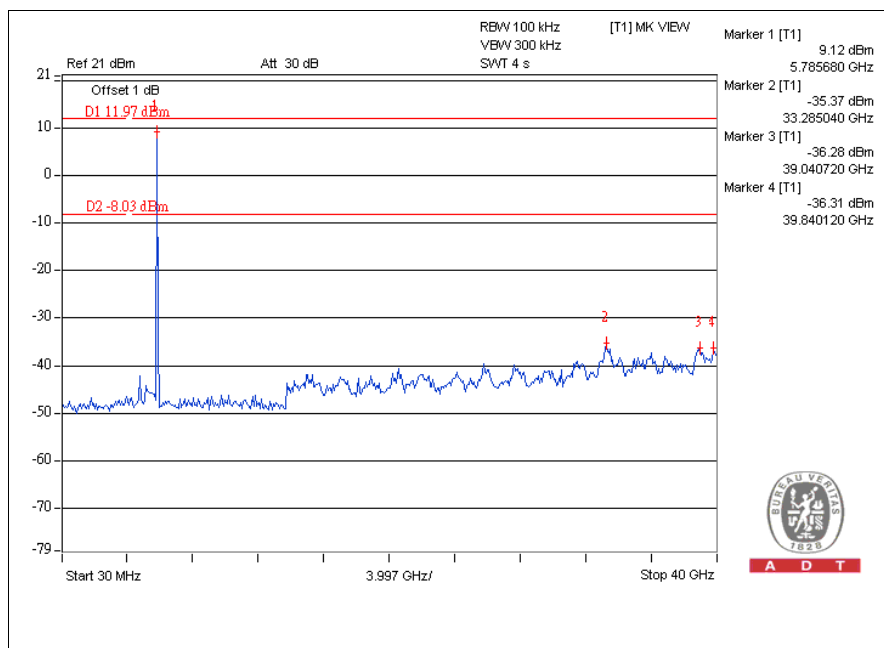
A D T

CH149



A D T

CH165



A D T



4.7 ANTENNA REQUIREMENT

4.7.1 STANDARD APPLICABLE

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247(a), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

4.7.2 ANTENNA CONNECTED CONSTRUCTION

There is one antenna provided to this EUT, please refer to the following table:

| No | Antenna Gain | Antenna Type | Connector |
|----|--------------|--------------|-----------|
| 1 | 23dBi | Patch Array | SMA |



A D T

5. 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 by the following approval agencies according to ISO/IEC 17025:

| | |
|--------------------|-----------------------|
| USA | FCC, NVLAP |
| Germany | TUV Rheinland |
| Japan | VCCI |
| Norway | NEMKO |
| Canada | INDUSTRY CANADA , CSA |
| R.O.C. | TAF, BSMI, NCC |
| Netherlands | Telefication |
| Singapore | GOST-ASIA(MOU) |
| Russia | CERTIS(MOU) |

Copies of accreditation certificates of our laboratories obtained from approval agencies can be downloaded from our web site:

www.adt.com.tw/index.5/phtml. If you have any comments, please feel free to contact us at the following:

Linko EMC/RF Lab:

Tel: 886-2-26052180
Fax: 886-2-26052943

Hsin Chu EMC/RF Lab:

Tel: 886-3-5935343
Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety Telecom Lab:

Tel: 886-3-3183232
Fax: 886-3-3185050

Web Site: www.adt.com.tw

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



A D T

6.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---