



FCC TEST REPORT (15.247)

REPORT NO.: RF980210H07

MODEL NO.: WU600-TS

RECEIVED: Feb. 10, 2009

TESTED: Feb. 21 to Apr. 01, 2009

ISSUED: Apr. 03, 2009

APPLICANT: SONY Corporation

ADDRESS: 1-7-1 Konan, Minato-ku, Tokyo 108-0075,
Japan

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

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1. CERTIFICATION

PRODUCT: 802.11a/b/g/n Wireless LAN Module
BRAND NAME: SONY Corporation
MODEL NO.: WU600-TS
TEST SAMPLE: ENGINEERING SAMPLE
TESTED: Feb. 21 to Apr. 01, 2009
APPLICANT: SONY Corporation
STANDARDS: FCC Part 15, Subpart C (Section 15.247),
ANSI C63.4-2003

The above equipment (Model: WU600-TS) 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 : Sunny Wen , **DATE:** Apr. 03, 2009
(Sunny Wen, Specialist)

TECHNICAL ACCEPTANCE : Hank Chung , **DATE:** Apr. 03, 2009
Responsible for RF (Hank Chung, Deputy Manager)

APPROVED BY : May Chen , **DATE:** Apr. 03, 2009
(May Chen, Deputy Manager)

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

For 802.11b & g, 2412~2462MHz Band

| APPLIED STANDARD: FCC Part 15, Subpart C (Section 15.247) | | | |
|--|--|---------------|--|
| Standard Section | Test Type and Limit | Result | Remark |
| 15.207 | AC Power Conducted Emission | PASS | Meet the requirement of limit. Minimum passing margin is -3.80dB at 0.166MHz |
| 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 -1.90dB At 2483.50MHz |
| 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. |



For 802.11a, 5725~5850MHz Band

| APPLIED STANDARD: FCC Part 15, Subpart C (Section 15.247) | | | |
|--|--|---------------|--|
| Standard Section | Test Type and Limit | Result | Remark |
| 15.207 | AC Power Conducted Emission | PASS | Meet the requirement of limit. Minimum passing margin is -5.43dB at 0.166MHz |
| 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 -6.32dB at 228.84MHz |
| 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. |

NOTE:

1. The EUT was operating in 2400 ~ 2483.5MHz, 5.15~5.35GHz, 5.47~5.725GHz and 5.725~5.85GHz frequencies band. This report was recorded the RF parameters including 2400 ~ 2483.5MHz and 5.725~5.850GHz. For the 5.15~5.35GHz and 5.47~5.725GHz RF parameters was recorded in another test report.

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 | 2.44 dB |
| Radiated emissions (30MHz-1GHz) | 3.94 dB |
| Radiated emissions (1GHz -18GHz) | 2.49 dB |
| Radiated emissions (18GHz -40GHz) | 2.70 dB |



3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

| | |
|------------------------------|--|
| PRODUCT | 802.11a/b/g/n Wireless LAN Module |
| MODEL NO. | WU600-TS |
| FCC ID | AK8WU600-TS |
| POWER SUPPLY | DC 5V from host equipment |
| MODULATION TYPE | CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM |
| MODULATION TECHNOLOGY | DSSS, OFDM |
| TRANSFER RATE | 802.11b: 11 / 5.5 / 2 / 1Mbps 802.11g: 54 / 48 / 36 / 24 / 18 / 12 / 9 / 6Mbps 802.11a: 54 / 48 / 36 / 24 / 18 / 12 / 9 / 6Mbps HT20 MCS0~7 (800ns GI): 65 / 58.5 / 52 / 39 / 26 / 19.5 / 13 / 6.5Mbps HT20 MCS8~15 (800ns GI): 130 / 117 / 104 / 78 / 52 / 39 / 26 / 13Mbps |
| FREQUENCY RANGE | For 15.407 5.18 ~ 5.32GHz, 5.50 ~ 5.70GHz For 15.247 802.11b & 802.11g: 2412 ~ 2462MHz 802.11a: 5.745 ~ 5.825GHz |
| NUMBER OF CHANNEL | For 15.407 19 for 802.11a, draft 802.11n (20MHz) For 15.247(2.4GHz) 11 for 802.11b, 802.11g, draft 802.11n (20MHz) For 15.247(5GHz) 5 for 802.11a, draft 802.11n (20MHz) |
| MAXIMUM OUTPUT POWER | For 15.407 802.11a: 23.659mW draft 802.11n (20MHz): 41.280mW For 15.247(2.4GHz) 802.11b: 82.224mW 802.11g: 133.352mW draft 802.11n (20MHz): 393.573mW For 15.247(5GHz) 802.11a: 141.254mW draft 802.11n (20MHz): 306.238mW |



A D T

| | |
|---------------------------|-------------------|
| ANTENNA TYPE | Please see note 1 |
| DATA CABLE | NA |
| I/O PORT | NA |
| ASSOCIATED DEVICES | NA |

NOTE:

1. There are two antennas provided to this EUT, please refer to the following table:

| No. | Antenna Type | Antenna Connector | For 2.4GHz Gain (dBi) | For 5GHz Gain (dBi) | Cable Loss (dB) | Cable Length (cm) |
|-----|--------------|-------------------|-----------------------|---------------------|-----------------|-------------------|
| 1 | PCB | Hirose U.FL | 2.7 | 3 | 0 | 24 |
| 2 | PCB | Hirose U.FL | 1.5 | 1.5 | 0 | 39 |

2. The EUT incorporates a MIMO function with draft 802.11n. Physically, the EUT provides two completed transmits and two completed receivers.
3. The EUT is 2 * 2 spatial MIMO (2Tx & 2Rx) without beam forming function. The antenna configurations are two transmitter antennas and two receiver antennas, as there are 2 PCB antennas. Spatial multiplexing modes for simultaneous transmission using 2 antennas, and for simultaneous receiver using 2 antennas. The 11a and 11bg legacy mode is limited to single transmitter only.
4. When the EUT operating in draft 802.11n, the software operation, which is defined by manufacturer, MCS (Modulation and Coding Schemes) from 0 to 15.
5. The EUT complies with draft 802.11n standards and backwards compatible with 802.11a, 802.11b, 802.11g products.
6. 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

Operated in 2400 ~ 2483.5MHz band:

Eleven channels are provided for 802.11b, 802.11g, draft 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 | | |

Operated in 5725 ~ 5850MHz band:

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

| CHANNEL | FREQUENCY | CHANNEL | FREQUENCY |
|---------|-----------|---------|-----------|
| 1 | 5745 MHz | 4 | 5805 MHz |
| 2 | 5765 MHz | 5 | 5825 MHz |
| 3 | 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

ANTENNA COMBINATION MODE:

| COMBINATION MODE | OPERATION MODE | CHAIN(0) (TX) | CHAIN(1) (TX) |
|------------------|------------------------------------|---------------|---------------|
| A | 802.11a | √ | |
| B | 802.11b | √ | |
| C | 802.11g | √ | |
| D | DRAFT 802.11n (20MHz) for MCS 0~7 | √ | |
| E | DRAFT 802.11n (20MHz) for MCS 8~15 | √ | √ |

Note:

- The above information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.
- Antenna 1~2 are PCB antennas.

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) | TX COMBINATION |
|--------------------------------------|-------------------|----------------|-----------------------|-----------------|------------------|----------------|
| For 2.4 GHz Draft 802.11n (20MHz) | 1 to 11 | 6 | OFDM | BPSK | 13 | E |
| For 5 GHz 802.11a | 1 to 5 | 1 | OFDM | BPSK | 6 | A |

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) | TX COMBINATION |
|--------------------------------------|-------------------|----------------|-----------------------|-----------------|------------------|----------------|
| For 2.4 GHz Draft 802.11n (20MHz) | 1 to 11 | 6 | OFDM | BPSK | 13 | E |
| For 5 GHz 802.11a | 1 to 5 | 1 | OFDM | BPSK | 6 | A |

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) | TX COMBINATION |
|--------------------------------------|-------------------|----------------|-----------------------|-----------------|------------------|----------------|
| 802.11b | 1 to 11 | 1, 6, 11 | DSSS | DBPSK | 1 | B |
| 802.11g | 1 to 11 | 1, 6, 11 | OFDM | BPSK | 6 | C |
| For 2.4 GHz Draft 802.11n (20MHz) | 1 to 11 | 1, 6, 11 | OFDM | BPSK | 13 | E |
| 802.11a | 1 to 5 | 1, 3, 5 | OFDM | BPSK | 6 | A |
| For 5 GHz Draft 802.11n (20MHz) | 1 to 5 | 1, 3, 5 | OFDM | BPSK | 13 | E |



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) | TX COMBINATION |
|--------------------------------------|-------------------|----------------|-----------------------|-----------------|------------------|----------------|
| 802.11b | 1 to 11 | 1, 11 | DSSS | DBPSK | 1 | B |
| 802.11g | 1 to 11 | 1, 11 | OFDM | BPSK | 6 | C |
| For 2.4 GHz Draft 802.11n (20MHz) | 1 to 11 | 1, 11 | OFDM | BPSK | 13 | E |
| 802.11a | 1 to 5 | 1, 5 | OFDM | BPSK | 6 | A |
| For 5 GHz Draft 802.11n (20MHz) | 1 to 5 | 1, 5 | OFDM | BPSK | 13 | E |

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).
- The EUT have MIMO power save mode, one transmitter may be active (chain 0) while other is inactive (chain 1). Output power is no different compared to operation when both transmitter chains are active. Transmitter power is not increased or decreased for chain 0 when in single chain mode, compared to dual chain active mode.
- 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) | TX COMBINATION |
|--------------------------------------|-------------------|----------------|-----------------------|-----------------|------------------|----------------|
| 802.11b | 1 to 11 | 1, 6, 11 | DSSS | DBPSK | 1 | B |
| 802.11g | 1 to 11 | 1, 6, 11 | OFDM | BPSK | 6 | C |
| For 2.4 GHz Draft 802.11n (20MHz) | 1 to 11 | 1, 6, 11 | OFDM | BPSK | 13 | E |
| 802.11a | 1 to 5 | 1, 3, 5 | OFDM | BPSK | 6 | A |
| For 5 GHz Draft 802.11n (20MHz) | 1 to 5 | 1, 3, 5 | OFDM | BPSK | 13 | E |

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is an 802.11a/b/g/n Wireless LAN Module. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart C. (15.247)

ANSI C63.4-2003

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

3.4 DESCRIPTION OF SUPPORT UNITS

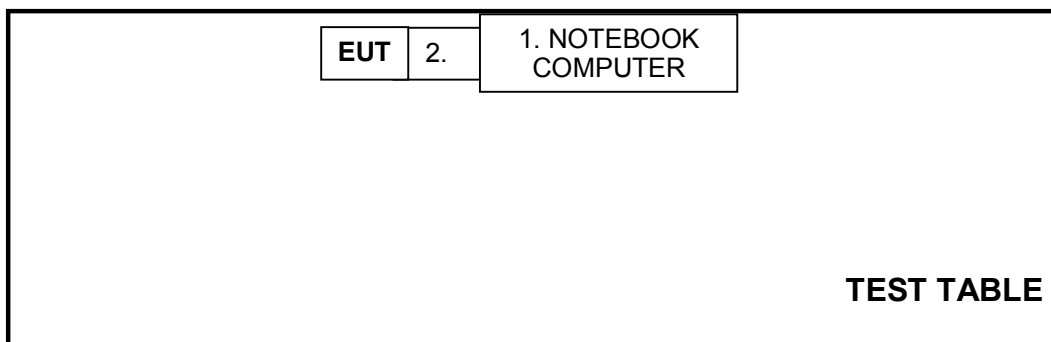
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

| NO. | PRODUCT | BRAND | MODEL NO. | SERIAL NO. | FCC ID |
|-----|-------------------|----------|-----------|--------------------------|-----------------|
| 1 | NOTEBOOK COMPUTER | DELL | PP19L | CN-OHC416-70166-5CA-0448 | PIW632500516610 |
| 2 | TEST TOOL | CyberTAN | NA | NA | NA |

| NO. | SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS |
|-----|---|
| 1 | NA |
| 2 | NA |

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 (802.11b & g, 2400 ~ 2483.5MHz Band)

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 |
|---|-----------------------|------------|-----------------|------------------|
| Test Receiver | ESCS 30 | 100375 | Mar. 23, 2009 | Mar. 22, 2010 |
| Line-Impedance Stabilization Network (for EUT) | ENV-216 | 100071 | Nov. 26, 2008 | Nov. 25, 2009 |
| Line-Impedance Stabilization Network (for Peripheral) | ESH3-Z5 | 848773/004 | Nov. 05, 2008 | Nov. 04, 2009 |
| RF Cable (JYBAO) | 5DFB | COBCAB-001 | Aug. 15, 2008 | Aug. 14, 2009 |
| 50 ohms Terminator | 50 | 3 | Nov. 05, 2008 | Nov. 04, 2009 |
| 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. B.
3. The VCCI Con B Registration No. is C-2193.

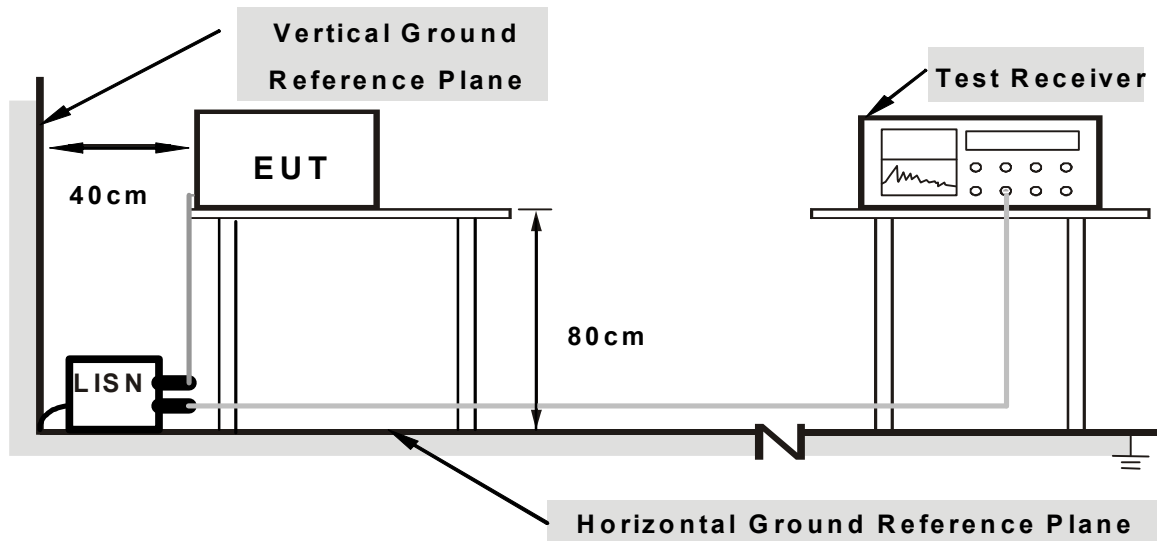
4.1.3 TEST PROCEDURES

- 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

- a. Plug the EUT into the support unit 1 (Notebook Computer) which placed on a testing table.
- b. Support unit 1 (Notebook Computer) run test program “MFGTest” to enable EUT under transmission condition continuously at specific channel frequency.



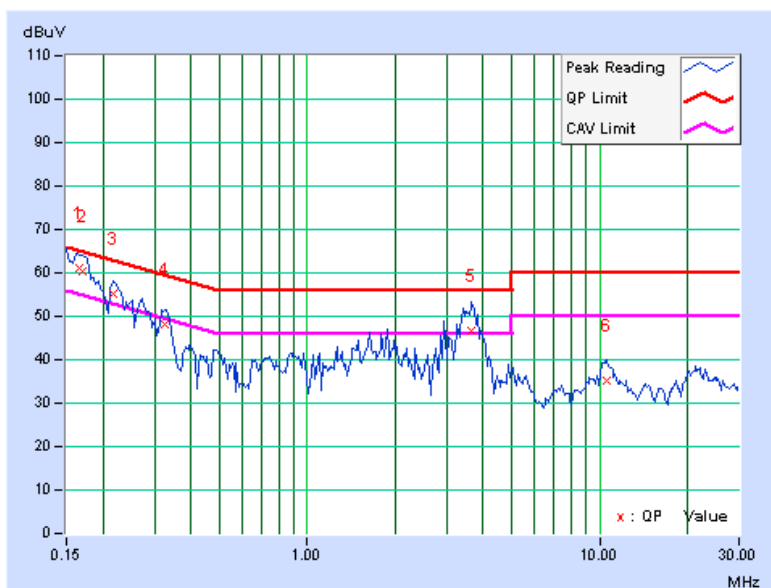
4.1.7 TEST RESULTS

DRAFT 802.11n (20MHz) OFDM MODULATION

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|-------------------------|----------------------|---------------|
| CHANNEL | Channel 6 | PHASE | Line (L) |
| MODULATION TYPE | BPSK | 6dB BANDWIDTH | 9 kHz |
| TRANSFER RATE | 13Mbps | INPUT POWER (SYSTEM) | 120Vac, 60 Hz |
| ENVIRONMENTAL CONDITIONS | 17deg. C, 64%RH, 965hPa | TESTED BY | Frank Liu |

| 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 | 0.166 | 9.78 | 51.35 | 41.60 | 61.13 | 51.38 | 65.18 |
| 2 | 0.170 | 9.78 | 50.46 | 38.20 | 60.24 | 47.98 | 64.98 | 54.98 | -4.74 | -7.00 |
| 3 | 0.216 | 9.82 | 45.22 | 36.33 | 55.04 | 46.15 | 62.96 | 52.96 | -7.92 | -6.81 |
| 4 | 0.326 | 9.94 | 38.21 | - | 48.15 | - | 59.56 | 49.56 | -11.40 | - |
| 5 | 3.617 | 9.85 | 36.69 | 22.92 | 46.54 | 32.77 | 56.00 | 46.00 | -9.46 | -13.23 |
| 6 | 10.547 | 9.97 | 25.16 | - | 35.13 | - | 60.00 | 50.00 | -24.87 | - |

- 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.

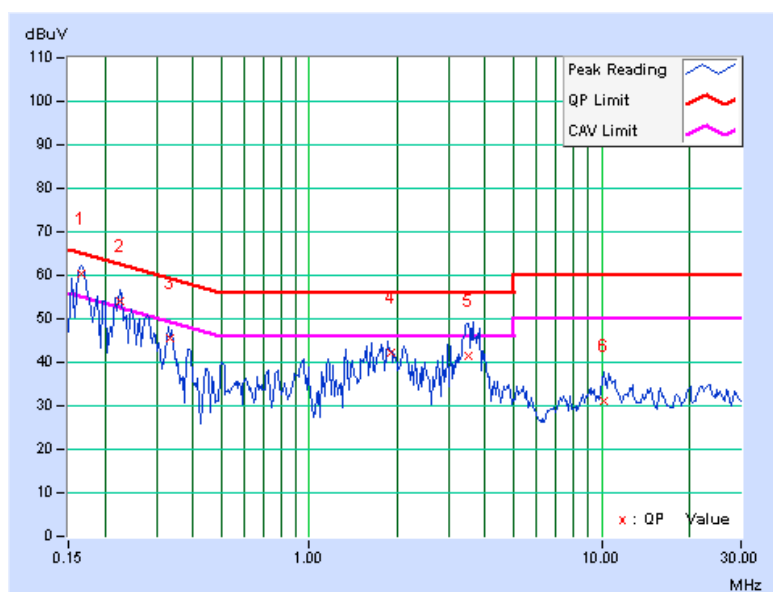




| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|-------------------------|----------------------|---------------|
| CHANNEL | Channel 6 | PHASE | Neutral (N) |
| MODULATION TYPE | BPSK | 6dB BANDWIDTH | 9 kHz |
| TRANSFER RATE | 13Mbps | INPUT POWER (SYSTEM) | 120Vac, 60 Hz |
| ENVIRONMENTAL CONDITIONS | 17deg. C, 64%RH, 965hPa | TESTED BY | Frank Liu |

| 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 | 0.166 | 9.77 | 50.48 | 39.81 | 60.25 | 49.58 | 65.18 |
| 2 | 0.224 | 9.81 | 44.30 | 35.92 | 54.11 | 45.73 | 62.66 | 52.66 | -8.55 | -6.93 |
| 3 | 0.333 | 9.94 | 35.51 | - | 45.45 | - | 59.38 | 49.38 | -13.93 | - |
| 4 | 1.913 | 9.80 | 32.45 | - | 42.25 | - | 56.00 | 46.00 | -13.75 | - |
| 5 | 3.508 | 9.84 | 31.52 | - | 41.36 | - | 56.00 | 46.00 | -14.64 | - |
| 6 | 10.246 | 9.98 | 21.16 | - | 31.14 | - | 60.00 | 50.00 | -28.86 | - |

- 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.



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4.2.2 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED DATE | CALIBRATED UNTIL |
|--------------------------------------|--------------------------|-----------------|-----------------|------------------|
| ROHDE & SCHWARZ Spectrum Analyzer | FSP40 | 100036 | Dec. 09, 2008 | Dec. 08, 2009 |
| HP Pre_Amplifier | 8449B | 3008A01923 | Nov. 10, 2008 | Nov. 09, 2009 |
| ROHDE & SCHWARZ Test Receiver | ESCS30 | 847124/029 | Sep. 09, 2008 | Sep. 08, 2009 |
| SCHWARZBECK TRILOG Broadband Antenna | VULB 9168 | 138 | April 30, 2008 | April 29, 2009 |
| 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 | Oct. 07, 2008 | Oct. 06, 2009 |
| RF CABLE (Chaintek) | Sucoflex 106 | 28077 | Aug. 15, 2008 | Aug. 14, 2009 |
| RF Cable | 8DFB | STCCAB-30M-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: 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.

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 area test 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 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

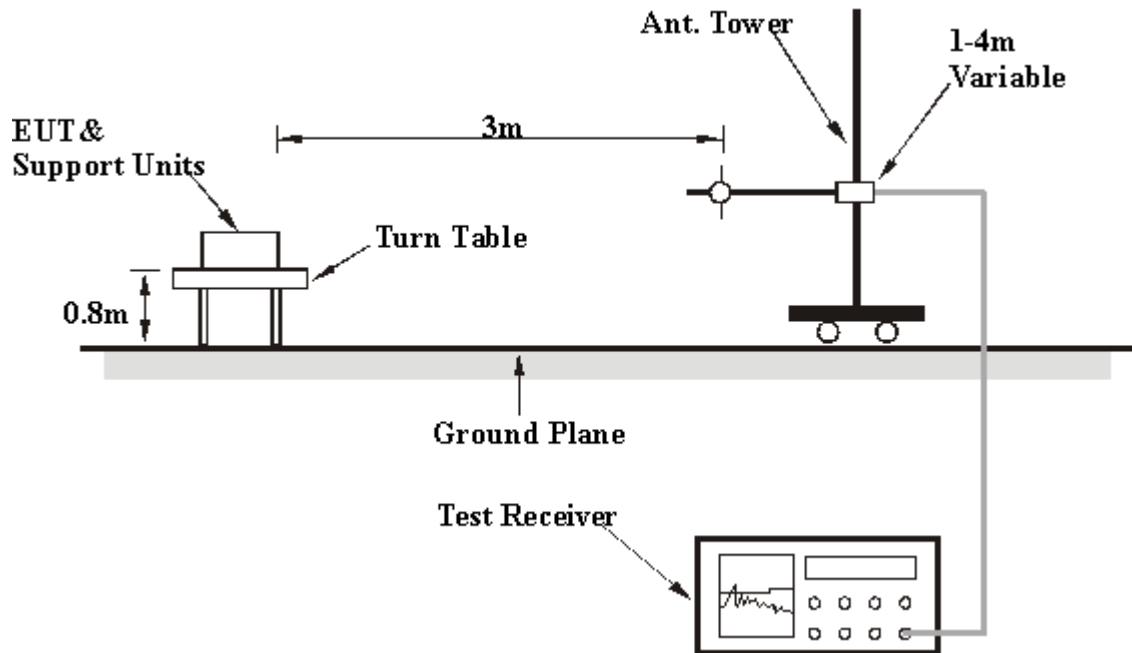
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz 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



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Below 1GHz Test Data

4.2.7 TEST RESULTS

BELOW 1GHz WORST-CASE DATA : DRAFT 802.11n (20MHz) OFDM MODULATION

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|---------------------------|--------------------|---------------|
| CHANNEL | Channel 1 | FREQUENCY RANGE | Below 1000MHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Quasi-Peak |
| ENVIRONMENTAL CONDITIONS | 22deg. C, 63%RH 965hPa | TESTED BY | Wen Yu |

| 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 | 190.70 | 28.14 QP | 43.50 | -15.36 | 1.51 H | 325 | 14.44 | 13.70 |
| 2 | 209.77 | 26.20 QP | 43.50 | -17.30 | 1.07 H | 9 | 12.74 | 13.46 |
| 3 | 228.84 | 26.07 QP | 46.00 | -19.93 | 1.62 H | 302 | 11.68 | 14.39 |
| 4 | 247.91 | 24.81 QP | 46.00 | -21.19 | 2.01 H | 213 | 9.49 | 15.32 |
| 5 | 266.98 | 24.59 QP | 46.00 | -21.41 | 1.46 H | 0 | 8.61 | 15.98 |
| 6 | 400.02 | 34.70 QP | 46.00 | -11.30 | 1.00 H | 95 | 13.56 | 21.14 |
| 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 | 190.70 | 35.30 QP | 43.50 | -8.20 | 1.00 V | 83 | 21.60 | 13.70 |
| 2 | 209.77 | 36.74 QP | 43.50 | -6.76 | 1.22 V | 101 | 23.28 | 13.46 |
| 3 | 228.84 | 39.71 QP | 46.00 | -6.29 | 1.00 V | 314 | 25.32 | 14.39 |
| 4 | 247.91 | 34.47 QP | 46.00 | -11.53 | 1.00 V | 1 | 19.15 | 15.32 |
| 5 | 266.98 | 34.19 QP | 46.00 | -11.81 | 1.05 V | 163 | 18.21 | 15.98 |
| 6 | 286.05 | 26.01 QP | 46.00 | -19.99 | 1.00 V | 47 | 9.42 | 16.59 |
| 7 | 305.12 | 28.74 QP | 46.00 | -17.26 | 1.00 V | 246 | 11.51 | 17.23 |

- 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.



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Above 1GHz Test Data

4.2.8 TEST RESULTS

802.11b DSSS MODULATION

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|---------------------------|--------------------|---------------------------|
| CHANNEL | Channel 1 | FREQUENCY RANGE | 1 ~ 25GHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 20deg. C, 60%RH 965hPa | TESTED BY | Phoenix Huang |

| 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 | 2389.68 | 54.75 PK | 74.00 | -19.25 | 1.67 H | 238 | 24.69 | 30.06 |
| 2 | 2389.68 | 43.99 AV | 54.00 | -10.01 | 1.67 H | 238 | 13.93 | 30.06 |
| 3 | *2412.00 | 99.50 PK | | | 1.70 H | 254 | 69.35 | 30.15 |
| 4 | *2412.00 | 95.20 AV | | | 1.70 H | 254 | 65.05 | 30.15 |
| 5 | 4824.00 | 47.10 PK | 74.00 | -26.90 | 1.34 H | 269 | 11.64 | 35.46 |
| 6 | 4824.00 | 39.00 AV | 54.00 | -15.00 | 1.34 H | 269 | 3.54 | 35.46 |
| 7 | #7236.00 | 48.20 PK | 79.50 | -31.30 | 1.41 H | 213 | 6.35 | 41.85 |
| 8 | #7236.00 | 35.10 AV | 75.20 | -40.10 | 1.41 H | 213 | -6.75 | 41.85 |
| 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 | 2389.36 | 56.02 PK | 74.00 | -17.98 | 1.57 V | 80 | 25.96 | 30.06 |
| 2 | 2389.36 | 45.34 AV | 54.00 | -8.66 | 1.57 V | 80 | 15.28 | 30.06 |
| 3 | *2412.00 | 103.60 PK | | | 1.56 V | 79 | 73.45 | 30.15 |
| 4 | *2412.00 | 99.10 AV | | | 1.56 V | 79 | 68.95 | 30.15 |
| 5 | 4824.00 | 51.60 PK | 74.00 | -22.40 | 1.14 V | 103 | 16.14 | 35.46 |
| 6 | 4824.00 | 46.90 AV | 54.00 | -7.10 | 1.14 V | 103 | 11.44 | 35.46 |
| 7 | #7236.00 | 48.40 PK | 83.60 | -35.20 | 1.20 V | 8 | 6.55 | 41.85 |
| 8 | #7236.00 | 35.80 AV | 79.10 | -43.30 | 1.20 V | 8 | -6.05 | 41.85 |

- 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 radiated frequency is out the restricted band.



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| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|---------------------------|--------------------|---------------------------|
| CHANNEL | Channel 6 | FREQUENCY RANGE | 1 ~ 25GHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 20deg. C, 60%RH 965hPa | TESTED BY | Phoenix Huang |

| 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 | *2437.00 | 99.38 PK | | | 1.71 H | 248 | 69.14 | 30.24 |
| 2 | *2437.00 | 95.12 AV | | | 1.71 H | 248 | 64.88 | 30.24 |
| 3 | 4874.00 | 47.50 PK | 74.00 | -26.50 | 1.32 H | 257 | 11.95 | 35.55 |
| 4 | 4874.00 | 39.30 AV | 54.00 | -14.70 | 1.32 H | 257 | 3.75 | 35.55 |
| 5 | 7311.00 | 47.30 PK | 74.00 | -26.70 | 1.43 H | 214 | 5.26 | 42.04 |
| 6 | 7311.00 | 34.20 AV | 54.00 | -19.80 | 1.43 H | 214 | -7.84 | 42.04 |
| 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 | *2437.00 | 103.10 PK | | | 1.57 V | 63 | 72.86 | 30.24 |
| 2 | *2437.00 | 99.37 AV | | | 1.57 V | 63 | 69.13 | 30.24 |
| 3 | 4874.00 | 51.10 PK | 74.00 | -22.90 | 1.17 V | 109 | 15.55 | 35.55 |
| 4 | 4874.00 | 45.30 AV | 54.00 | -8.70 | 1.17 V | 109 | 9.75 | 35.55 |
| 5 | 7311.00 | 47.20 PK | 74.00 | -26.80 | 1.21 V | 32 | 5.16 | 42.04 |
| 6 | 7311.00 | 34.30 AV | 54.00 | -19.70 | 1.21 V | 32 | -7.74 | 42.04 |

- 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.



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| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|---------------------------|--------------------|---------------------------|
| CHANNEL | Channel 11 | FREQUENCY RANGE | 1 ~ 25GHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 20deg. C, 60%RH 965hPa | TESTED BY | Phoenix Huang |

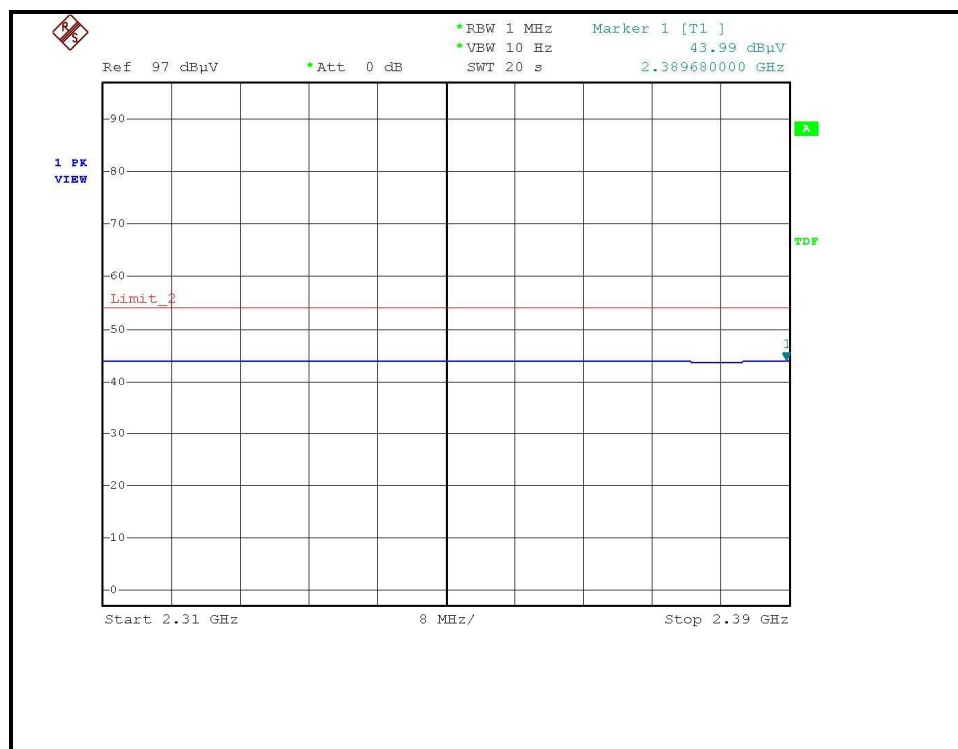
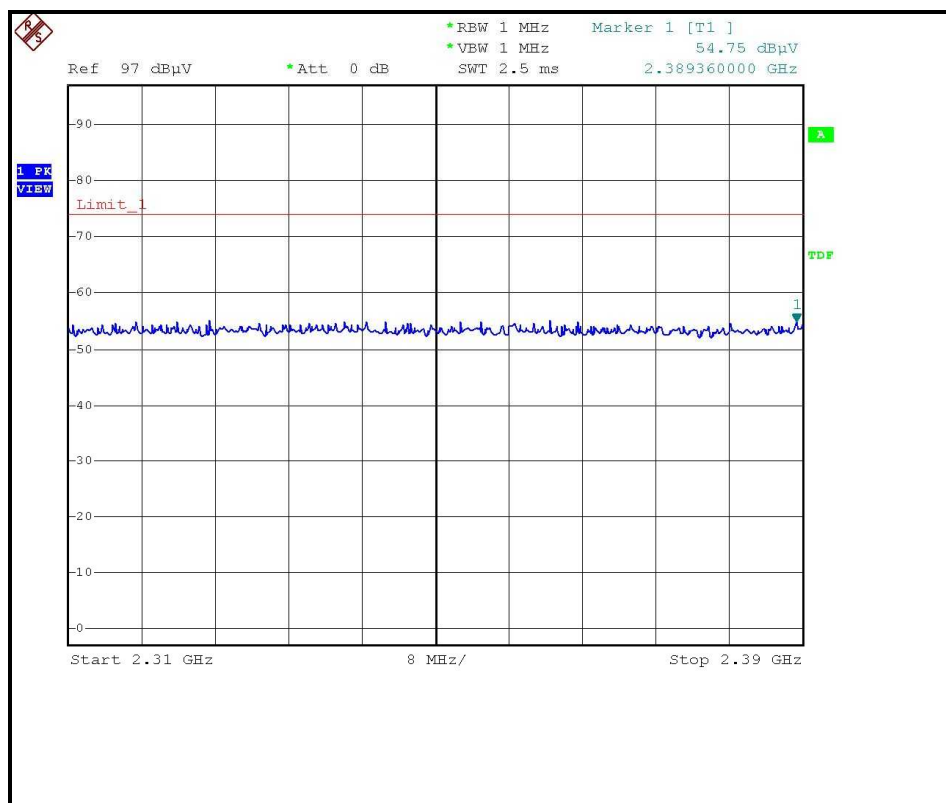
| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M | | | | | | | | |
|---|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| NO. | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1 | *2462.00 | 99.42 PK | | | 1.72 H | 243 | 69.08 | 30.34 |
| 2 | *2462.00 | 95.60 AV | | | 1.72 H | 243 | 65.26 | 30.34 |
| 3 | 2498.90 | 56.26 PK | 74.00 | -17.74 | 1.74 H | 241 | 25.77 | 30.49 |
| 4 | 2498.90 | 42.91 AV | 54.00 | -11.09 | 1.74 H | 241 | 12.42 | 30.49 |
| 5 | 4924.00 | 47.10 PK | 74.00 | -26.90 | 1.38 H | 213 | 11.47 | 35.63 |
| 6 | 4924.00 | 36.20 AV | 54.00 | -17.80 | 1.38 H | 213 | 0.57 | 35.63 |
| 7 | 7386.00 | 48.20 PK | 74.00 | -25.80 | 1.39 H | 220 | 5.97 | 42.23 |
| 8 | 7386.00 | 35.10 AV | 54.00 | -18.90 | 1.39 H | 220 | -7.13 | 42.23 |
| 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 | *2462.00 | 103.40 PK | | | 1.67 V | 272 | 73.06 | 30.34 |
| 2 | *2462.00 | 99.34 AV | | | 1.67 V | 272 | 69.00 | 30.34 |
| 3 | 2498.94 | 56.12 PK | 74.00 | -17.88 | 1.67 V | 275 | 25.63 | 30.49 |
| 4 | 2498.94 | 45.11 AV | 54.00 | -8.89 | 1.67 V | 275 | 14.62 | 30.49 |
| 5 | 4924.00 | 48.60 PK | 74.00 | -25.40 | 1.20 V | 314 | 12.97 | 35.63 |
| 6 | 4924.00 | 42.60 AV | 54.00 | -11.40 | 1.20 V | 314 | 6.97 | 35.63 |
| 7 | 7386.00 | 49.60 PK | 74.00 | -24.40 | 1.21 V | 7 | 7.37 | 42.23 |
| 8 | 7386.00 | 36.50 AV | 54.00 | -17.50 | 1.21 V | 7 | -5.73 | 42.23 |

- 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.



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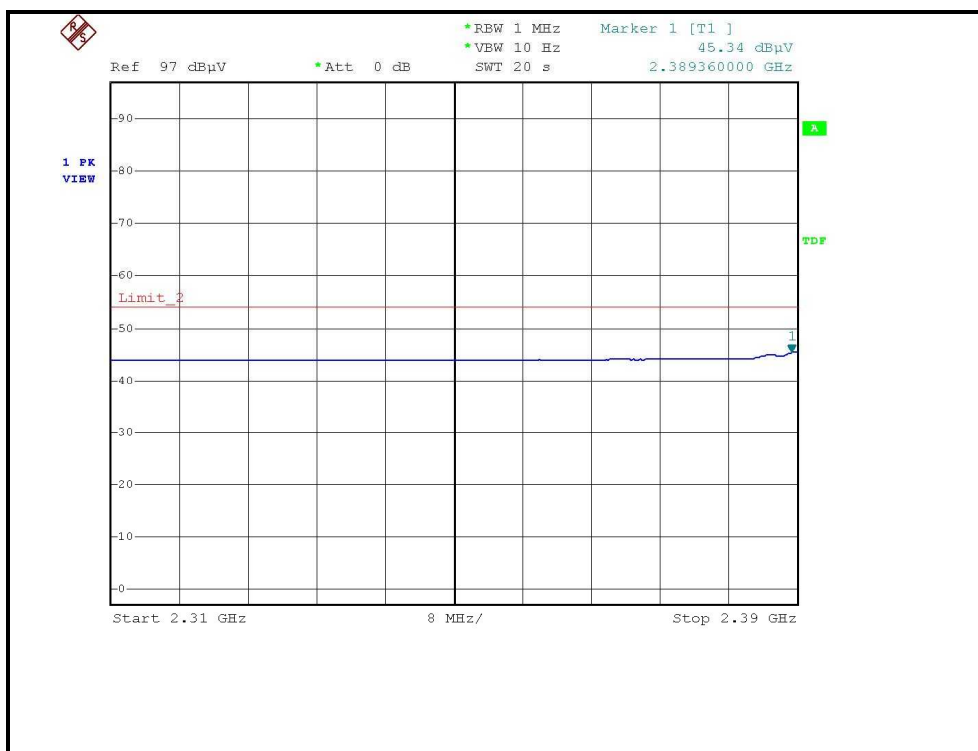
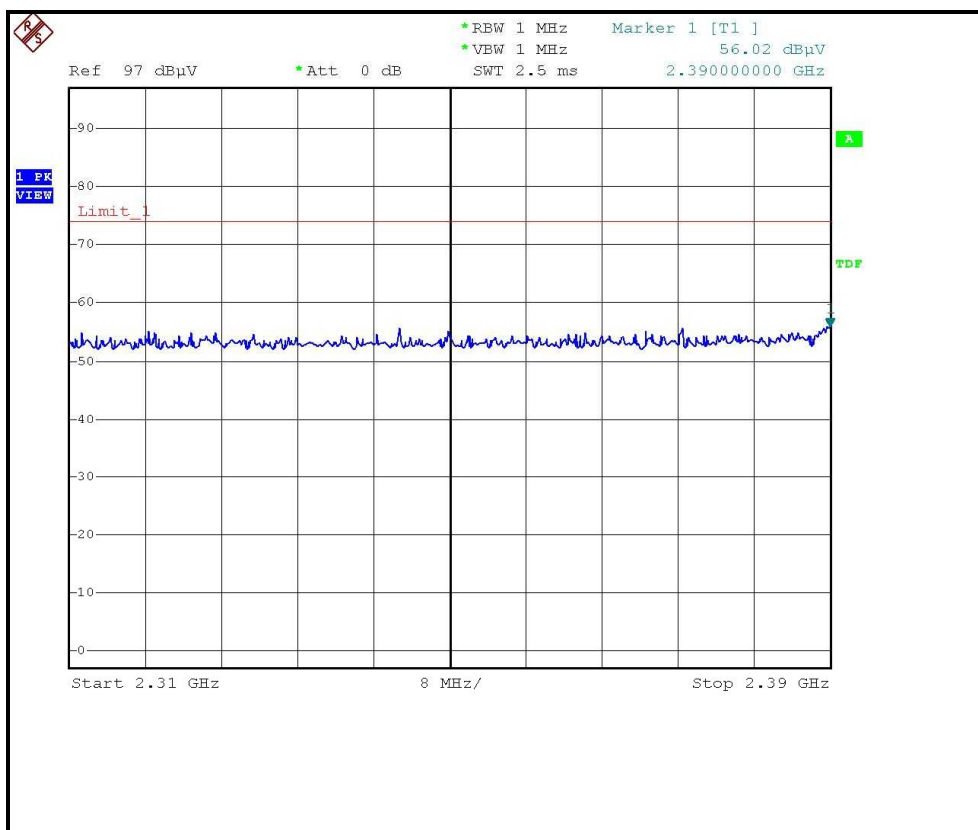
RESTRICTED BANDEDGE (802.11b MODE, CH1, HORIZONTAL)





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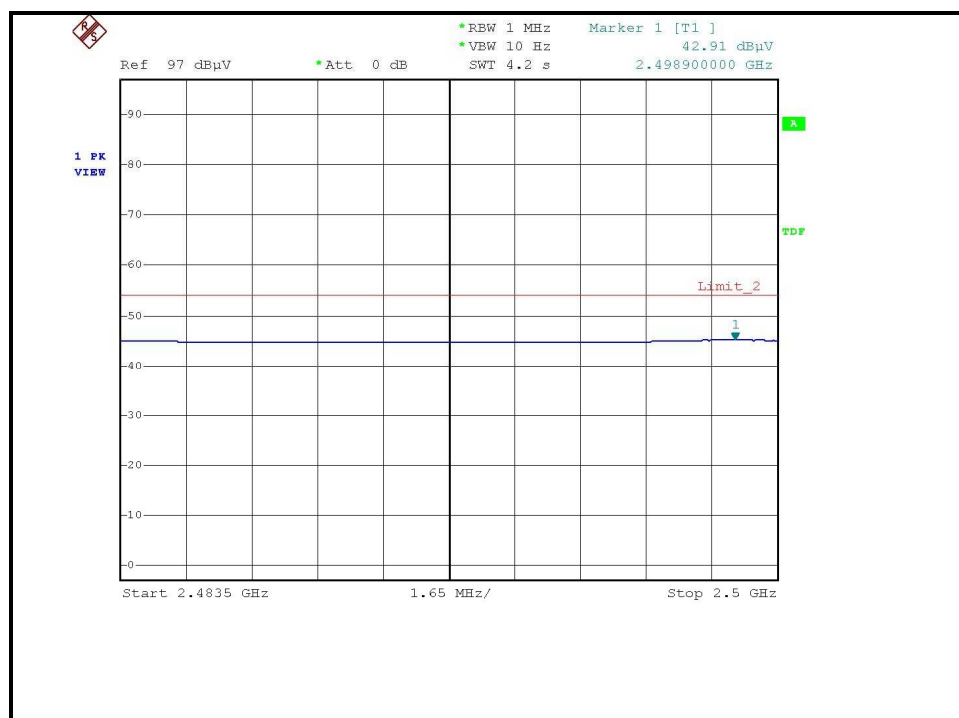
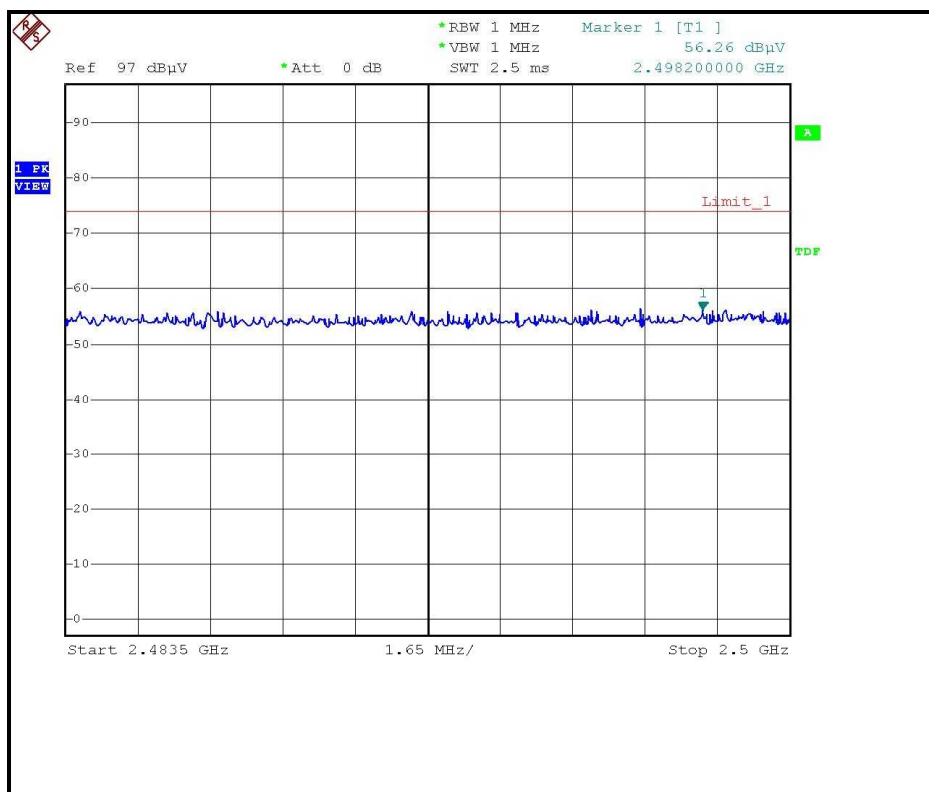
RESTRICTED BANDEDGE (802.11b MODE, CH1, VERTICAL)





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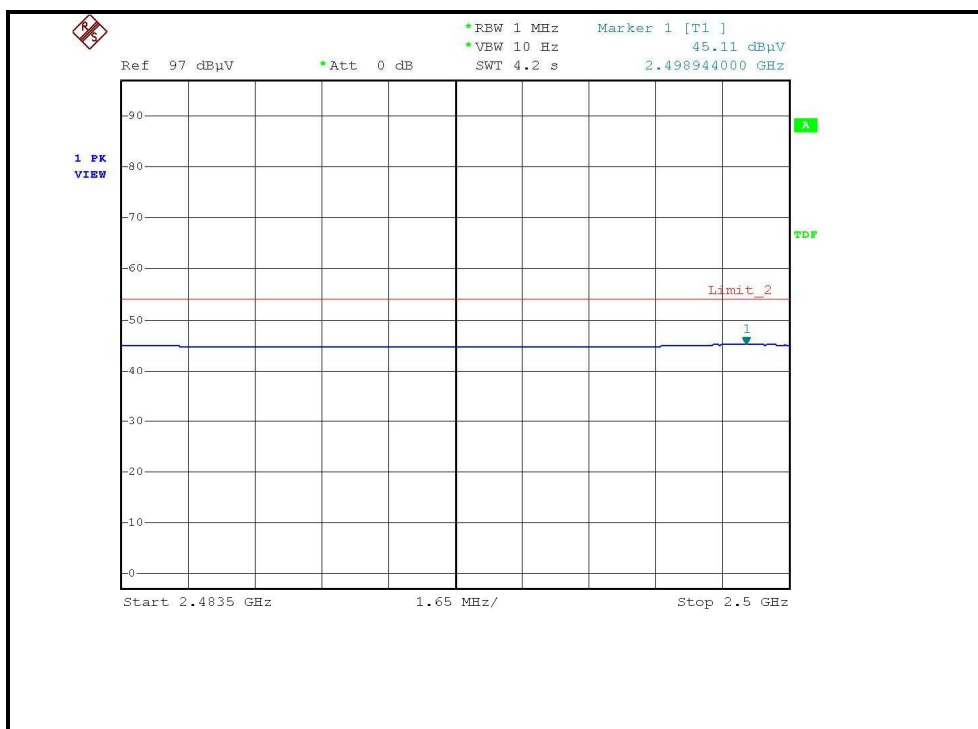
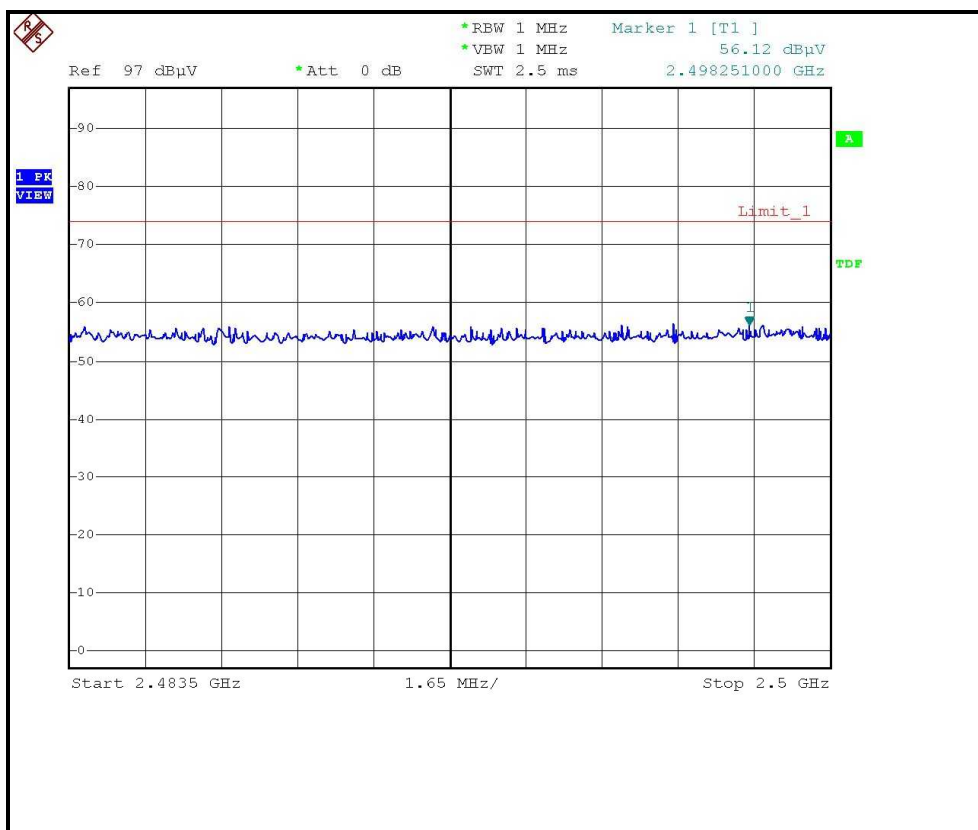
RESTRICTED BANDEDGE (802.11b MODE,CH11, HORIZONTAL)





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RESTRICTED BANDEDGE (802.11b MODE,CH11, VERTICAL)





802.11g OFDM MODULATION

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|---------------------------|--------------------|---------------------------|
| CHANNEL | Channel 1 | FREQUENCY RANGE | 1 ~ 25GHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 20deg. C, 60%RH 965hPa | TESTED BY | Phoenix Huang |

| 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 | 2390.00 | 63.91 PK | 74.00 | -10.09 | 1.61 H | 243 | 33.85 | 30.06 |
| 2 | 2390.00 | 47.26 AV | 54.00 | -6.74 | 1.61 H | 243 | 17.20 | 30.06 |
| 3 | *2412.00 | 107.20 PK | | | 1.63 H | 251 | 77.05 | 30.15 |
| 4 | *2412.00 | 95.10 AV | | | 1.63 H | 251 | 64.95 | 30.15 |
| 5 | 4824.00 | 45.30 PK | 74.00 | -28.70 | 1.39 H | 272 | 9.84 | 35.46 |
| 6 | 4824.00 | 37.20 AV | 54.00 | -16.80 | 1.39 H | 272 | 1.74 | 35.46 |
| 7 | #7236.00 | 47.20 PK | 87.20 | -40.00 | 1.40 H | 203 | 5.35 | 41.85 |
| 8 | #7236.00 | 35.10 AV | 75.10 | -40.00 | 1.40 H | 203 | -6.75 | 41.85 |
| 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 | 2389.20 | 69.23 PK | 74.00 | -4.77 | 1.60 V | 193 | 39.17 | 30.06 |
| 2 | 2389.20 | 49.65 AV | 54.00 | -4.35 | 1.60 V | 193 | 19.59 | 30.06 |
| 3 | *2412.00 | 110.01 PK | | | 1.56 V | 235 | 79.86 | 30.15 |
| 4 | *2412.00 | 99.20 AV | | | 1.56 V | 235 | 69.05 | 30.15 |
| 5 | 4824.00 | 48.56 PK | 74.00 | -25.44 | 1.13 V | 102 | 13.10 | 35.46 |
| 6 | 4824.00 | 40.30 AV | 54.00 | -13.70 | 1.13 V | 102 | 4.84 | 35.46 |
| 7 | #7236.00 | 48.10 PK | 90.01 | -41.91 | 1.27 V | 9 | 6.25 | 41.85 |
| 8 | #7236.00 | 35.40 AV | 79.20 | -43.80 | 1.27 V | 9 | -6.45 | 41.85 |

- 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 radiated frequency is out the restricted band.



A D T

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|---------------------------|--------------------|---------------------------|
| CHANNEL | Channel 6 | FREQUENCY RANGE | 1 ~ 25GHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 20deg. C, 60%RH 965hPa | TESTED BY | Phoenix Huang |

| 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 | *2437.00 | 107.60 PK | | | 1.69 H | 248 | 77.36 | 30.24 |
| 2 | *2437.00 | 95.30 AV | | | 1.69 H | 248 | 65.06 | 30.24 |
| 3 | 4874.00 | 46.30 PK | 74.00 | -27.70 | 1.34 H | 213 | 10.75 | 35.55 |
| 4 | 4874.00 | 37.80 AV | 54.00 | -16.20 | 1.34 H | 213 | 2.25 | 35.55 |
| 5 | 7311.00 | 47.60 PK | 74.00 | -26.40 | 1.36 H | 212 | 5.56 | 42.04 |
| 6 | 7311.00 | 35.70 AV | 54.00 | -18.30 | 1.36 H | 212 | -6.34 | 42.04 |
| 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 | *2437.00 | 110.60 PK | | | 1.54 V | 231 | 80.36 | 30.24 |
| 2 | *2437.00 | 99.70 AV | | | 1.54 V | 231 | 69.46 | 30.24 |
| 3 | 4874.00 | 48.90 PK | 74.00 | -25.10 | 1.19 V | 104 | 13.35 | 35.55 |
| 4 | 4874.00 | 40.60 AV | 54.00 | -13.40 | 1.19 V | 104 | 5.05 | 35.55 |
| 5 | 7311.00 | 48.90 PK | 74.00 | -25.10 | 1.31 V | 21 | 6.86 | 42.04 |
| 6 | 7311.00 | 35.70 AV | 54.00 | -18.30 | 1.31 V | 21 | -6.34 | 42.04 |

- 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.



A D T

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|---------------------------|--------------------|---------------------------|
| CHANNEL | Channel 11 | FREQUENCY RANGE | 1 ~ 25GHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 20deg. C, 60%RH 965hPa | TESTED BY | Phoenix Huang |

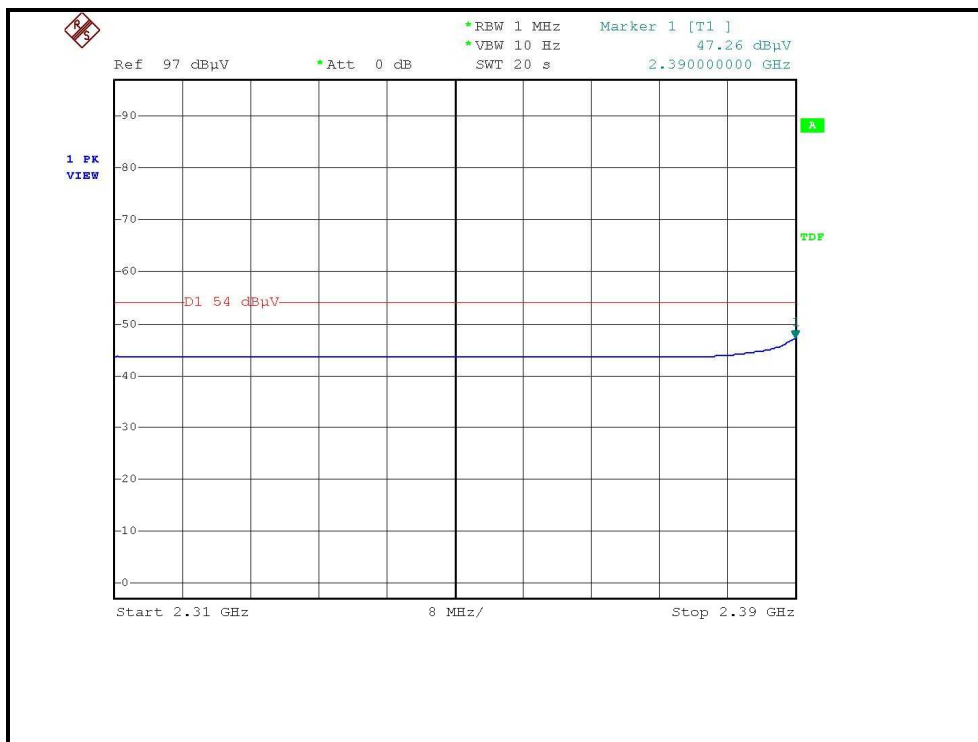
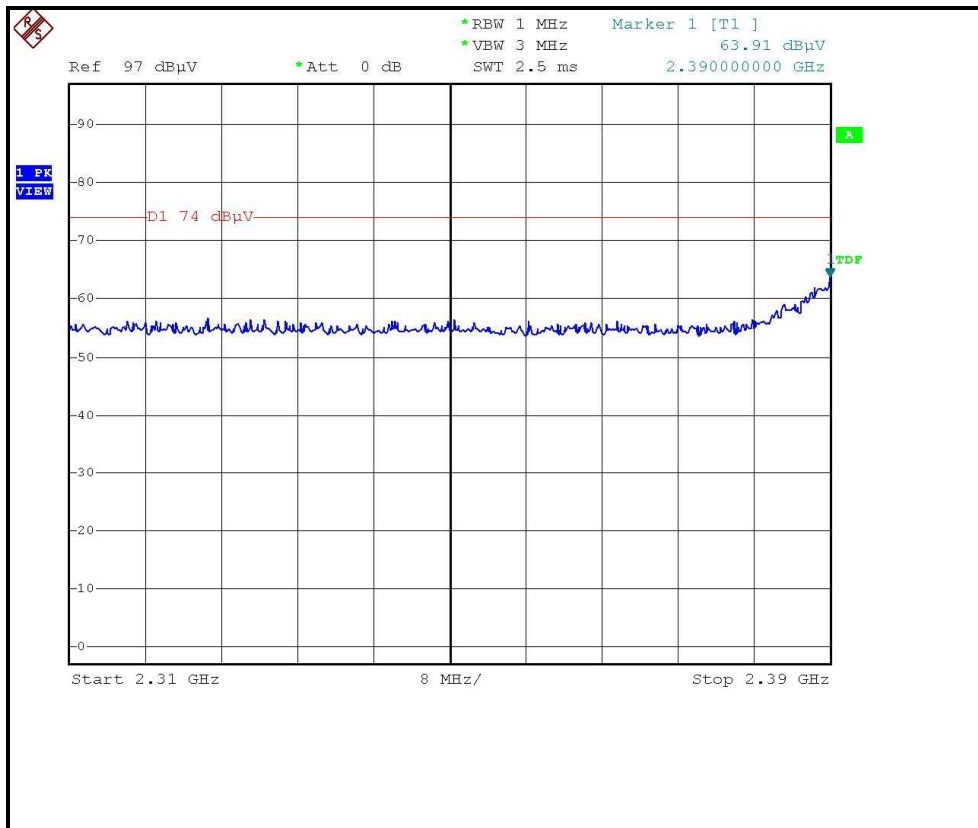
| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M | | | | | | | | |
|---|----------------|-------------------------|----------------|--------------|--------------------|----------------------|------------------|--------------------------|
| NO. | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1 | *2462.00 | 107.40 PK | | | 1.72 H | 231 | 77.06 | 30.34 |
| 2 | *2462.00 | 95.10 AV | | | 1.72 H | 231 | 64.76 | 30.34 |
| 3 | 2483.50 | 66.02 PK | 74.00 | -7.98 | 1.72 H | 228 | 35.59 | 30.43 |
| 4 | 2483.50 | 49.95 AV | 54.00 | -4.05 | 1.72 H | 228 | 19.52 | 30.43 |
| 5 | 4924.00 | 46.70 PK | 74.00 | -27.30 | 1.32 H | 208 | 11.07 | 35.63 |
| 6 | 4924.00 | 38.40 AV | 54.00 | -15.60 | 1.32 H | 208 | 2.77 | 35.63 |
| 7 | 7386.00 | 47.80 PK | 74.00 | -26.20 | 1.34 H | 210 | 5.57 | 42.23 |
| 8 | 7386.00 | 35.90 AV | 54.00 | -18.10 | 1.34 H | 210 | -6.33 | 42.23 |
| 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 | *2462.00 | 109.90 PK | | | 1.55 V | 297 | 79.56 | 30.34 |
| 2 | *2462.00 | 99.29 AV | | | 1.55 V | 297 | 68.95 | 30.34 |
| 3 | 2483.50 | 72.10 PK | 74.00 | -1.90 | 1.53 V | 10 | 41.67 | 30.43 |
| 4 | 2483.50 | 51.19 AV | 54.00 | -2.81 | 1.53 V | 10 | 20.76 | 30.43 |
| 5 | 4924.00 | 49.20 PK | 74.00 | -24.80 | 1.20 V | 114 | 13.57 | 35.63 |
| 6 | 4924.00 | 41.30 AV | 54.00 | -12.70 | 1.20 V | 114 | 5.67 | 35.63 |
| 7 | 7386.00 | 49.40 PK | 74.00 | -24.60 | 1.29 V | 13 | 7.17 | 42.23 |
| 8 | 7386.00 | 36.20 AV | 54.00 | -17.80 | 1.29 V | 13 | -6.03 | 42.23 |

- 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.



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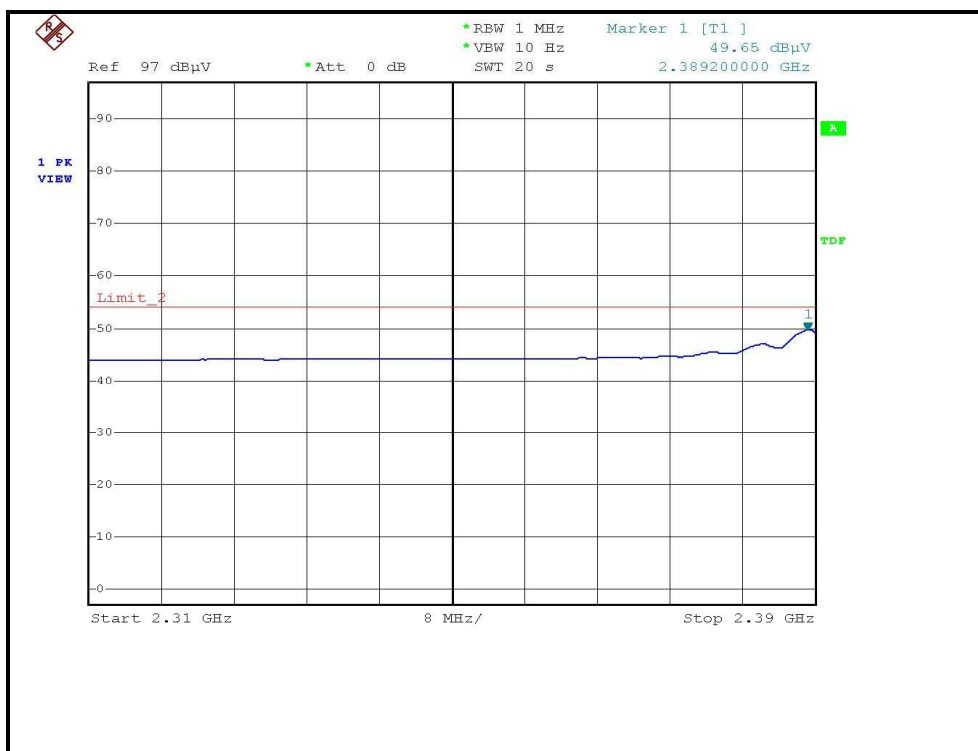
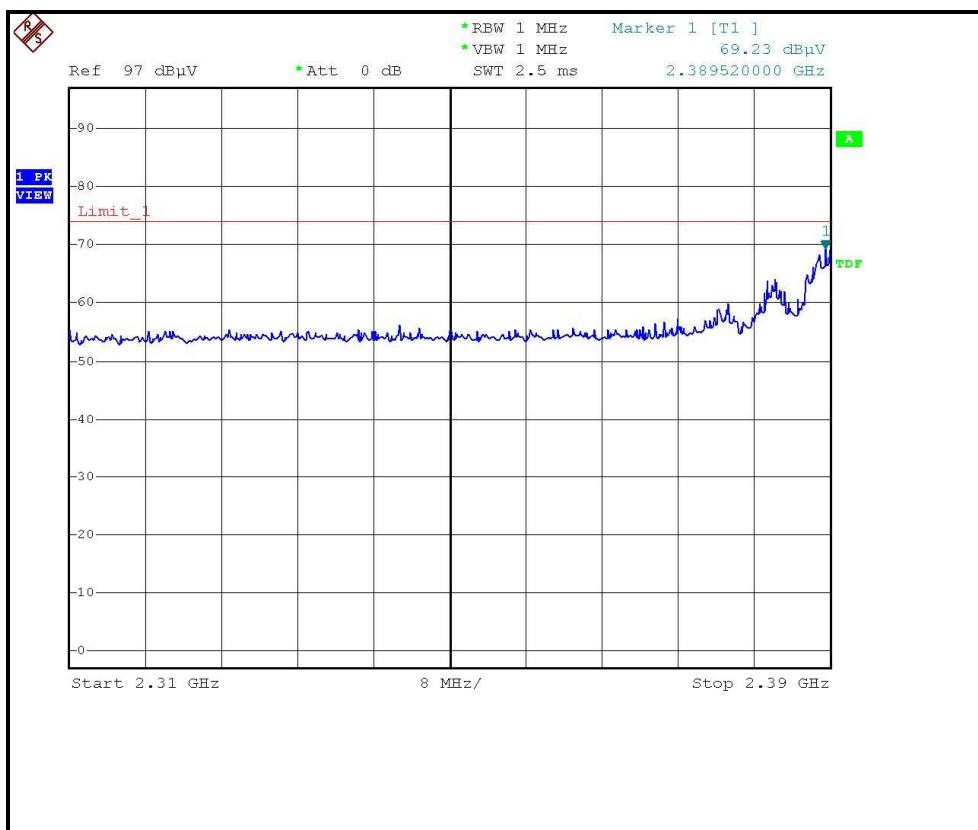
RESTRICTED BANDEDGE (802.11g MODE, CH1, HORIZONTAL)





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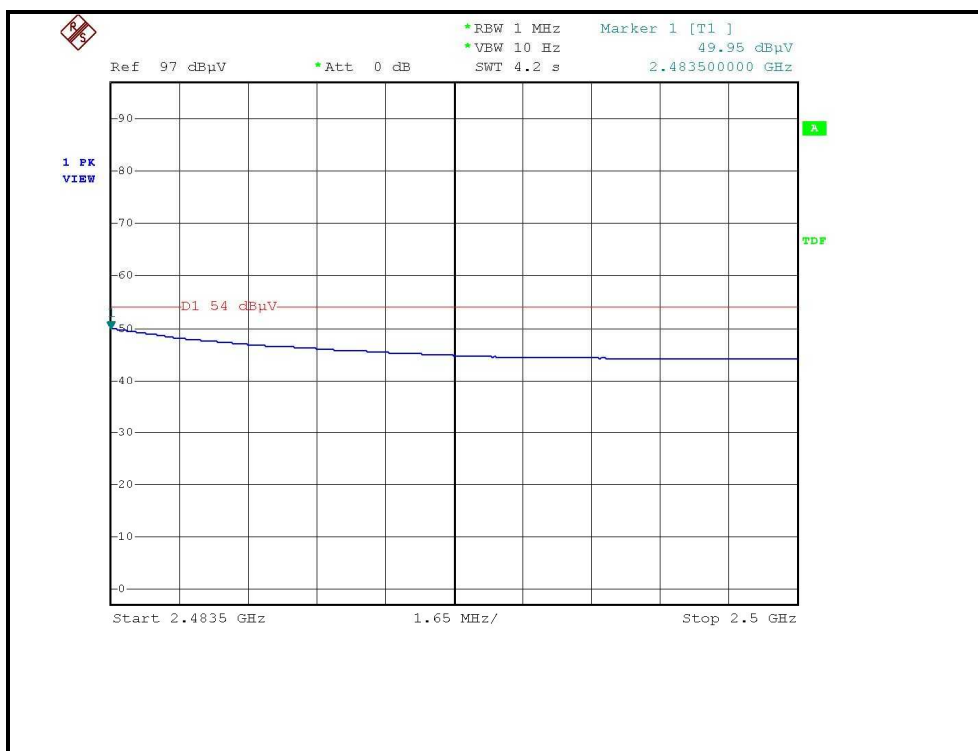
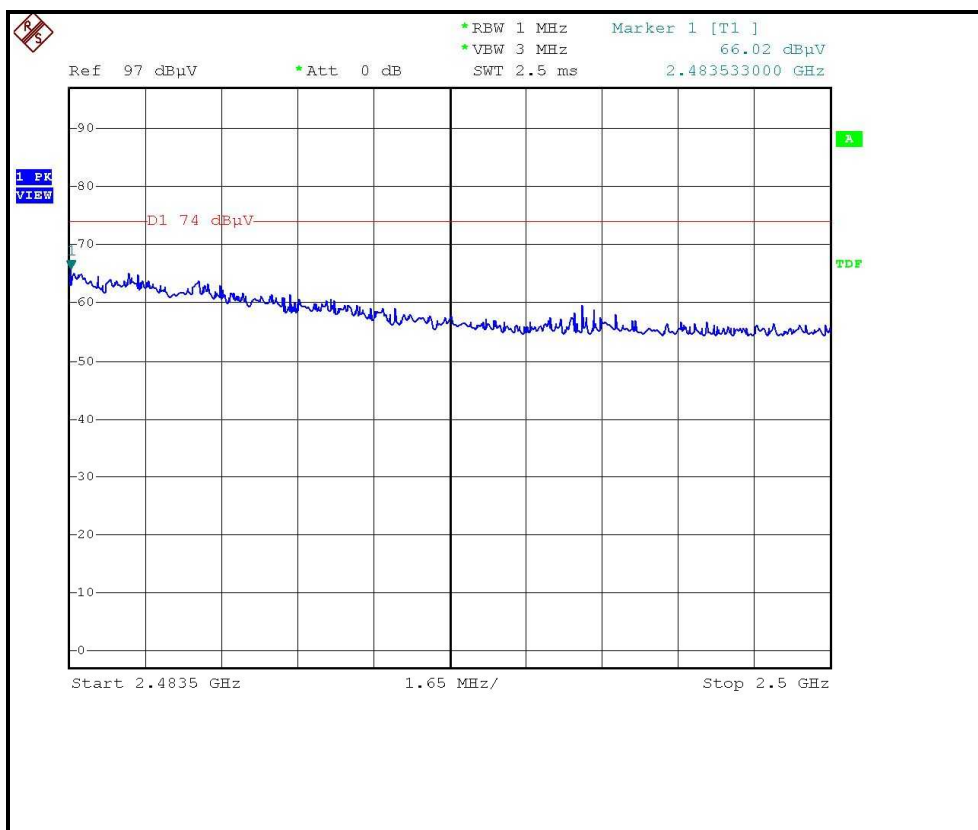
RESTRICTED BANDEDGE (802.11g MODE, CH1, VERTICAL)





A D T

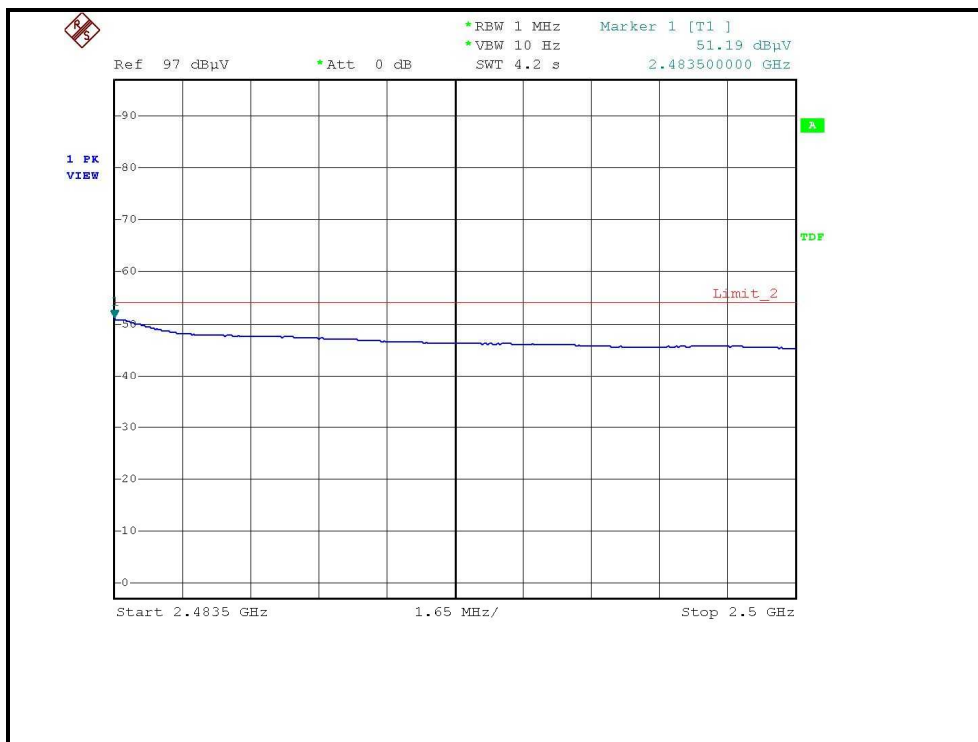
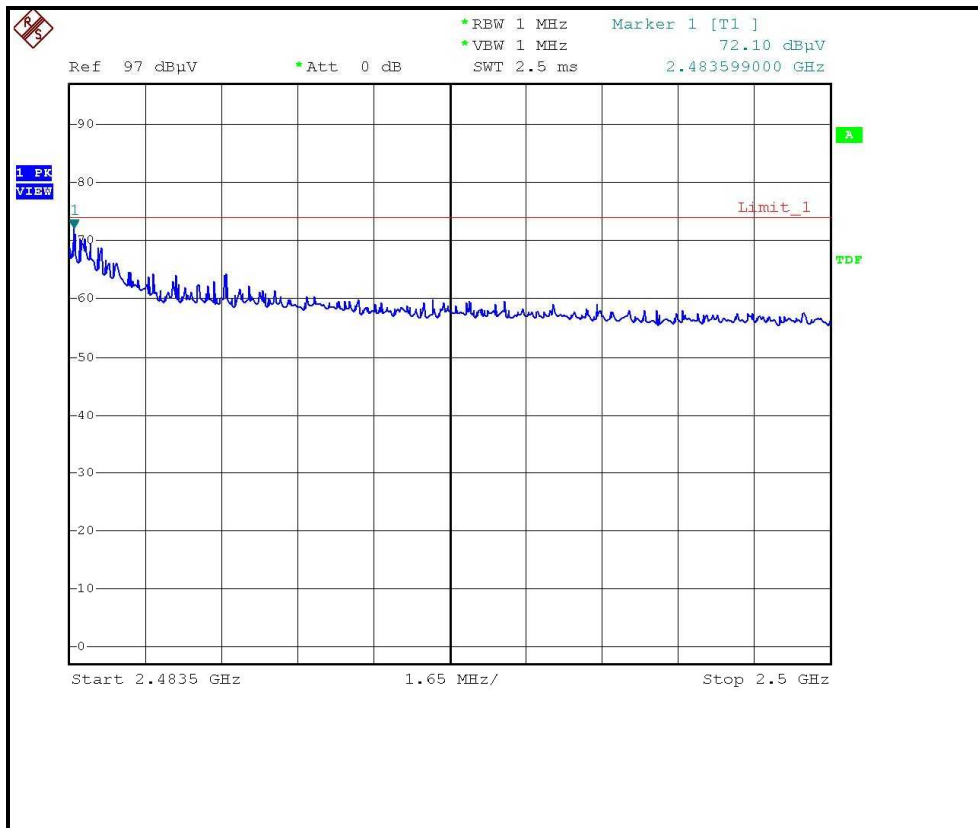
RESTRICTED BANDEDGE (802.11g MODE,CH11, HORIZONTAL)





A D T

RESTRICTED BANDEDGE (802.11g MODE,CH11, VERTICAL)





A D T

DRAFT 802.11n (20MHz) OFDM MODULATION

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|---------------------------|--------------------|---------------------------|
| CHANNEL | Channel 1 | FREQUENCY RANGE | 1 ~ 25GHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 20deg. C, 60%RH 965hPa | TESTED BY | Phoenix Huang |

| 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 | 2390.00 | 66.83 PK | 74.00 | -7.17 | 1.72 H | 213 | 36.77 | 30.06 |
| 2 | 2390.00 | 47.57 AV | 54.00 | -6.43 | 1.72 H | 213 | 17.51 | 30.06 |
| 3 | *2412.00 | 106.20 PK | | | 1.73 H | 212 | 76.05 | 30.15 |
| 4 | *2412.00 | 92.10 AV | | | 1.73 H | 212 | 61.95 | 30.15 |
| 5 | 4824.00 | 47.30 PK | 74.00 | -26.70 | 1.30 H | 212 | 11.84 | 35.46 |
| 6 | 4824.00 | 40.20 AV | 54.00 | -13.80 | 1.30 H | 212 | 4.74 | 35.46 |
| 7 | #7236.00 | 47.90 PK | 86.20 | -38.30 | 1.24 H | 189 | 6.05 | 41.85 |
| 8 | #7236.00 | 35.80 AV | 72.10 | -36.30 | 1.24 H | 189 | -6.05 | 41.85 |
| 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 | 2390.00 | 61.05 PK | 74.00 | -12.95 | 1.91 V | 146 | 30.99 | 30.06 |
| 2 | 2390.00 | 47.47 AV | 54.00 | -6.53 | 1.91 V | 146 | 17.41 | 30.06 |
| 3 | *2412.00 | 107.40 PK | | | 1.99 V | 148 | 77.25 | 30.15 |
| 4 | *2412.00 | 95.60 AV | | | 1.99 V | 148 | 65.45 | 30.15 |
| 5 | 4824.00 | 51.40 PK | 74.00 | -22.60 | 1.26 V | 130 | 15.94 | 35.46 |
| 6 | 4824.00 | 42.30 AV | 54.00 | -11.70 | 1.26 V | 130 | 6.84 | 35.46 |
| 7 | #7236.00 | 51.60 PK | 87.40 | -35.80 | 1.28 V | 42 | 9.75 | 41.85 |
| 8 | #7236.00 | 37.40 AV | 75.60 | -38.20 | 1.28 V | 42 | -4.45 | 41.85 |

- 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 radiated frequency is out the restricted band.



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| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|---------------------------|--------------------|---------------------------|
| CHANNEL | Channel 6 | FREQUENCY RANGE | 1 ~ 25GHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 20deg. C, 60%RH 965hPa | TESTED BY | Phoenix Huang |

| 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 | *2437.00 | 105.90 PK | | | 1.68 H | 204 | 75.66 | 30.24 |
| 2 | *2437.00 | 91.70 AV | | | 1.68 H | 204 | 61.46 | 30.24 |
| 3 | 4874.00 | 46.90 PK | 74.00 | -27.10 | 1.20 H | 210 | 11.35 | 35.55 |
| 4 | 4874.00 | 39.30 AV | 54.00 | -14.70 | 1.20 H | 210 | 3.75 | 35.55 |
| 5 | 7311.00 | 47.60 PK | 74.00 | -26.40 | 1.27 H | 184 | 5.56 | 42.04 |
| 6 | 7311.00 | 35.40 AV | 54.00 | -18.60 | 1.27 H | 184 | -6.64 | 42.04 |
| 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 | *2437.00 | 107.80 PK | | | 1.96 V | 182 | 77.56 | 30.24 |
| 2 | *2437.00 | 95.30 AV | | | 1.96 V | 182 | 65.06 | 30.24 |
| 3 | 4874.00 | 49.60 PK | 74.00 | -24.40 | 1.24 V | 128 | 14.05 | 35.55 |
| 4 | 4874.00 | 42.30 AV | 54.00 | -11.70 | 1.24 V | 128 | 6.75 | 35.55 |
| 5 | 7311.00 | 50.70 PK | 74.00 | -23.30 | 1.31 V | 39 | 8.66 | 42.04 |
| 6 | 7311.00 | 37.20 AV | 54.00 | -16.80 | 1.31 V | 39 | -4.84 | 42.04 |

- 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.



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| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|---------------------------|--------------------|---------------------------|
| CHANNEL | Channel 11 | FREQUENCY RANGE | 1 ~ 25GHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 20deg. C, 60%RH 965hPa | TESTED BY | Phoenix Huang |

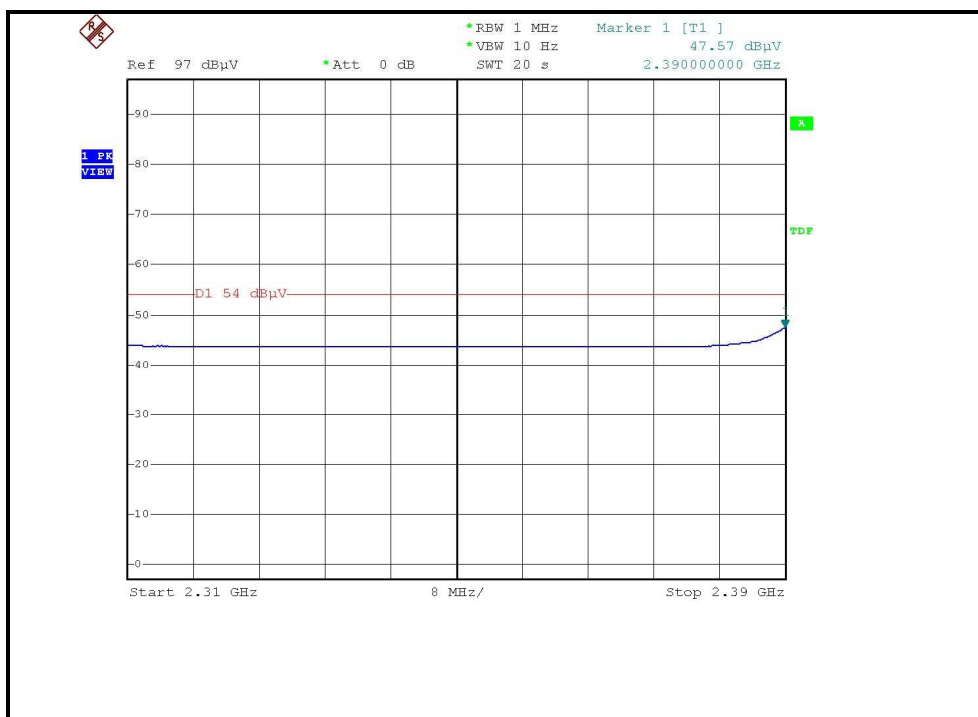
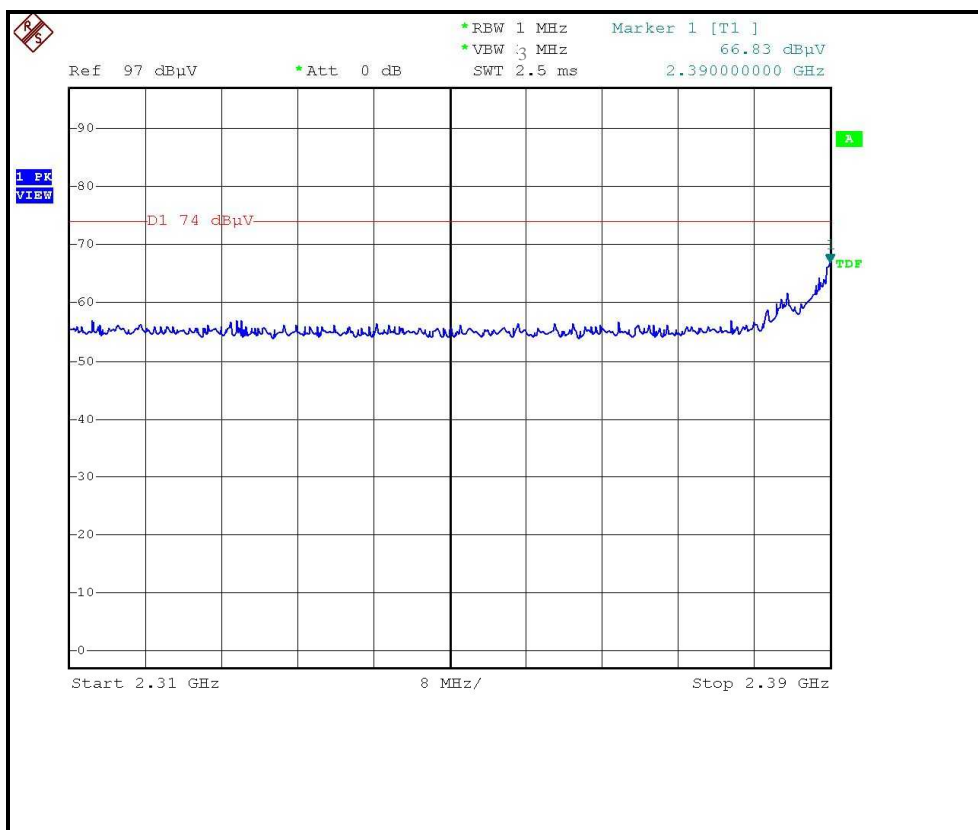
| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M | | | | | | | | |
|---|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| NO. | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1 | *2462.00 | 105.60 PK | | | 1.74 H | 213 | 75.26 | 30.34 |
| 2 | *2462.00 | 91.30 AV | | | 1.74 H | 213 | 60.96 | 30.34 |
| 3 | 2483.50 | 66.07 PK | 74.00 | -7.93 | 1.71 H | 219 | 35.64 | 30.43 |
| 4 | 2483.50 | 49.37 AV | 54.00 | -4.63 | 1.71 H | 219 | 18.94 | 30.43 |
| 5 | 4924.00 | 46.30 PK | 74.00 | -27.70 | 1.19 H | 204 | 10.67 | 35.63 |
| 6 | 4924.00 | 38.10 AV | 54.00 | -15.90 | 1.19 H | 204 | 2.47 | 35.63 |
| 7 | 7386.00 | 47.50 PK | 74.00 | -26.50 | 1.28 H | 192 | 5.27 | 42.23 |
| 8 | 7386.00 | 35.20 AV | 54.00 | -18.80 | 1.28 H | 192 | -7.03 | 42.23 |
| 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 | *2462.00 | 107.40 PK | | | 1.97 V | 190 | 77.06 | 30.34 |
| 2 | *2462.00 | 95.06 AV | | | 1.97 V | 190 | 64.72 | 30.34 |
| 3 | 2483.69 | 63.19 PK | 74.00 | -10.81 | 1.92 V | 168 | 32.76 | 30.43 |
| 4 | 2483.69 | 48.65 AV | 54.00 | -5.35 | 1.92 V | 168 | 18.22 | 30.43 |
| 5 | 4924.00 | 49.10 PK | 74.00 | -24.90 | 1.27 V | 129 | 13.47 | 35.63 |
| 6 | 4924.00 | 41.10 AV | 54.00 | -12.90 | 1.27 V | 129 | 5.47 | 35.63 |
| 7 | 7386.00 | 49.60 PK | 74.00 | -24.40 | 1.30 V | 36 | 7.37 | 42.23 |
| 8 | 7386.00 | 36.30 AV | 54.00 | -17.70 | 1.30 V | 36 | -5.93 | 42.23 |

- 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.



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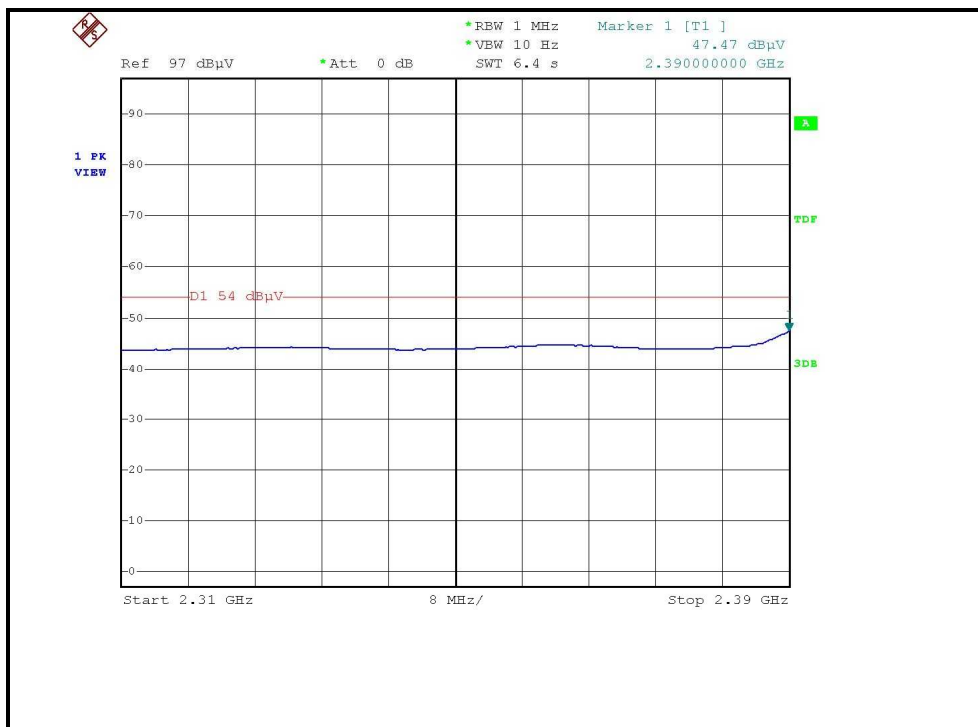
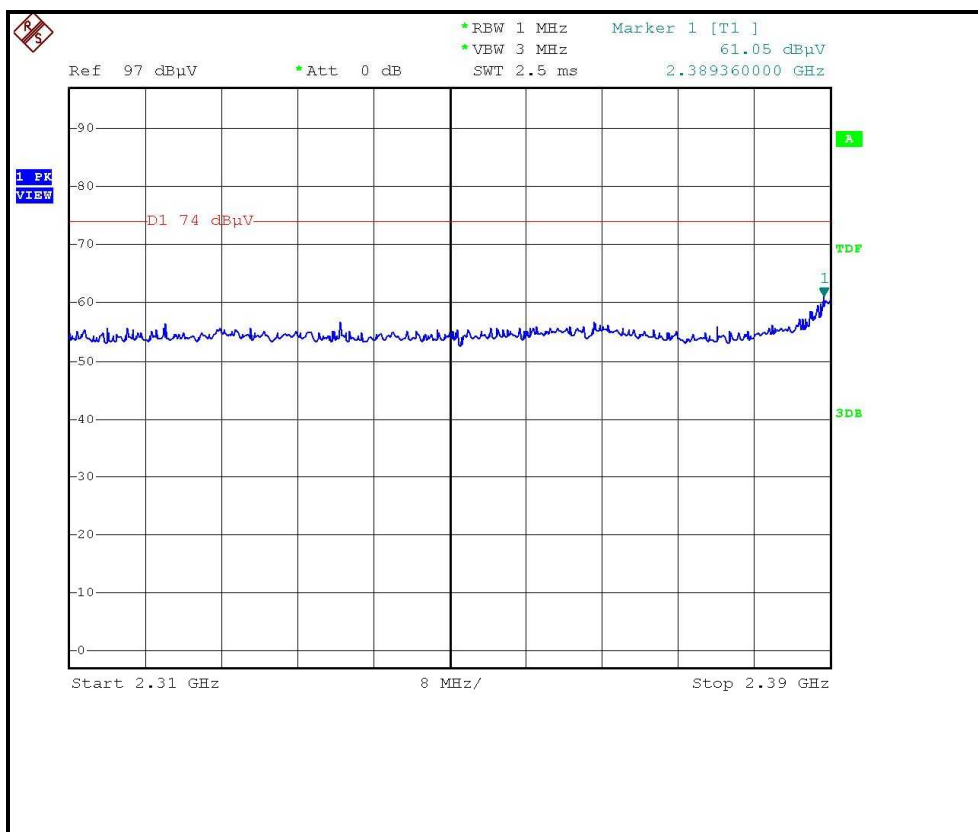
RESTRICTED BANDEDGE (DRAFT 802.11n (20MHz) MODE, CH1, HORIZONTAL)





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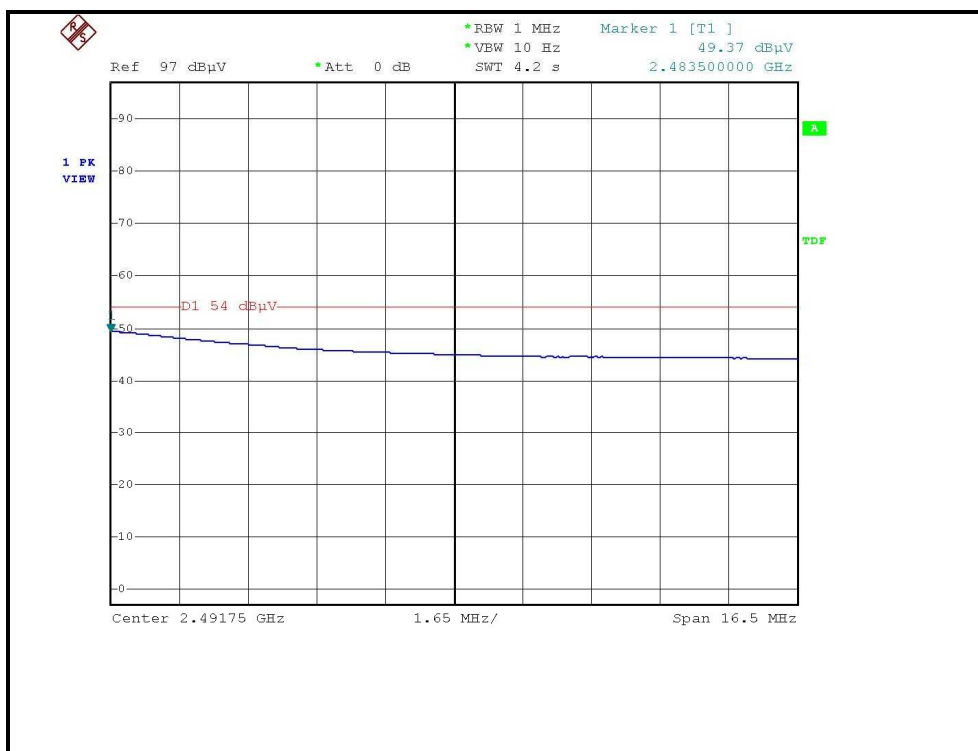
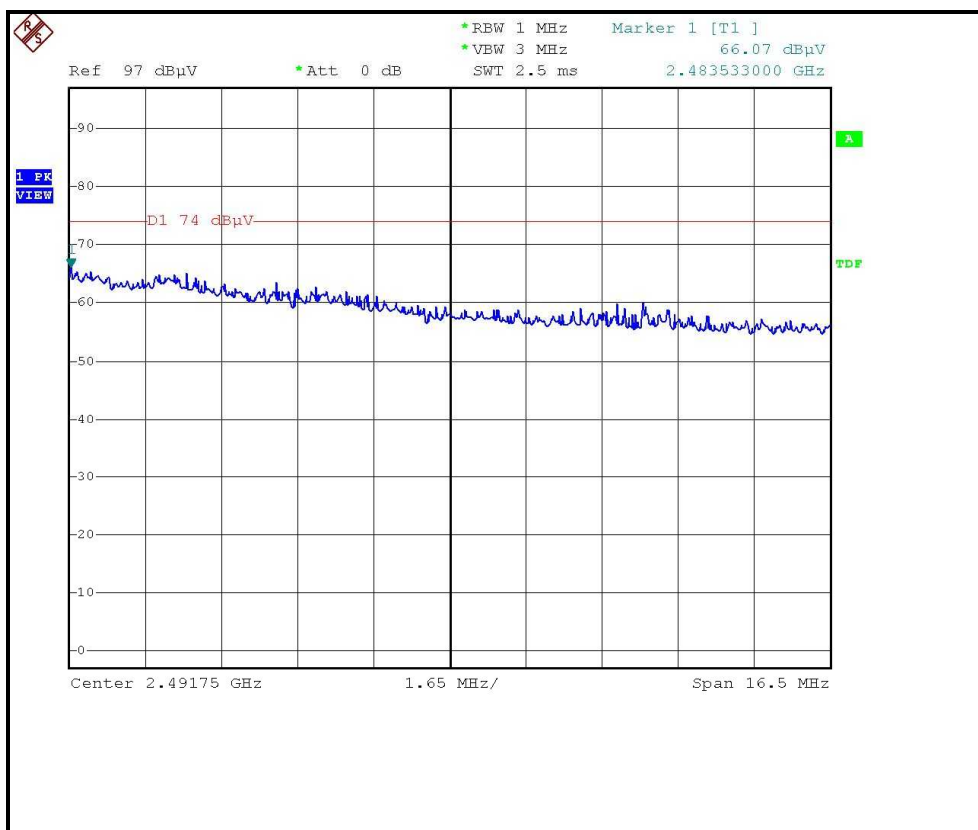
RESTRICTED BANDEDGE (DRAFT 802.11n (20MHz) MODE,CH1, VERTICAL)





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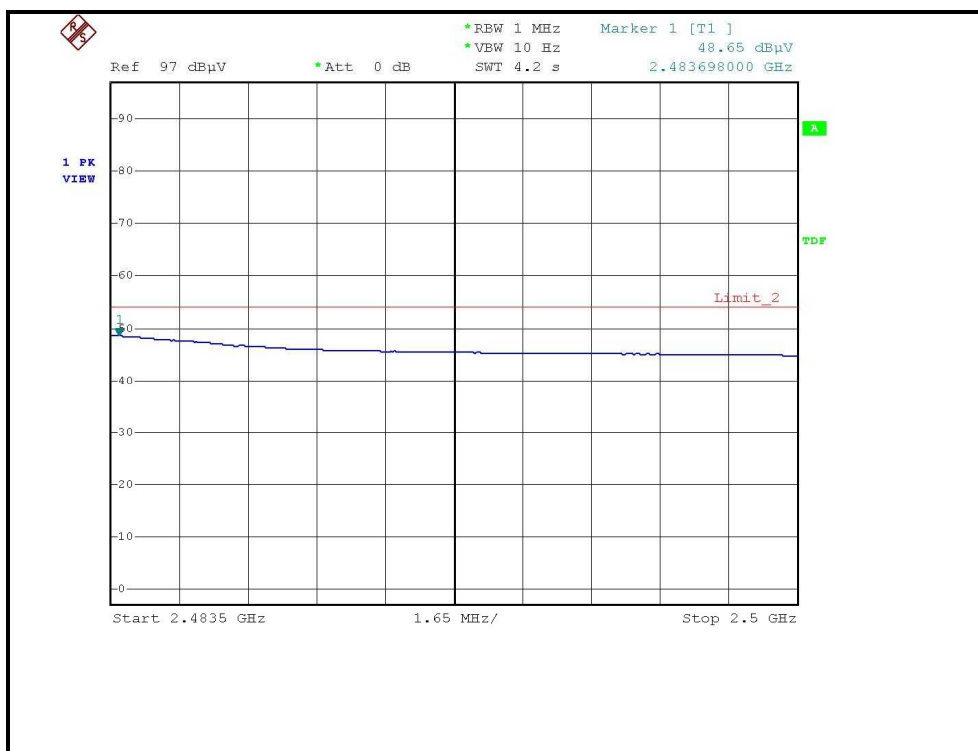
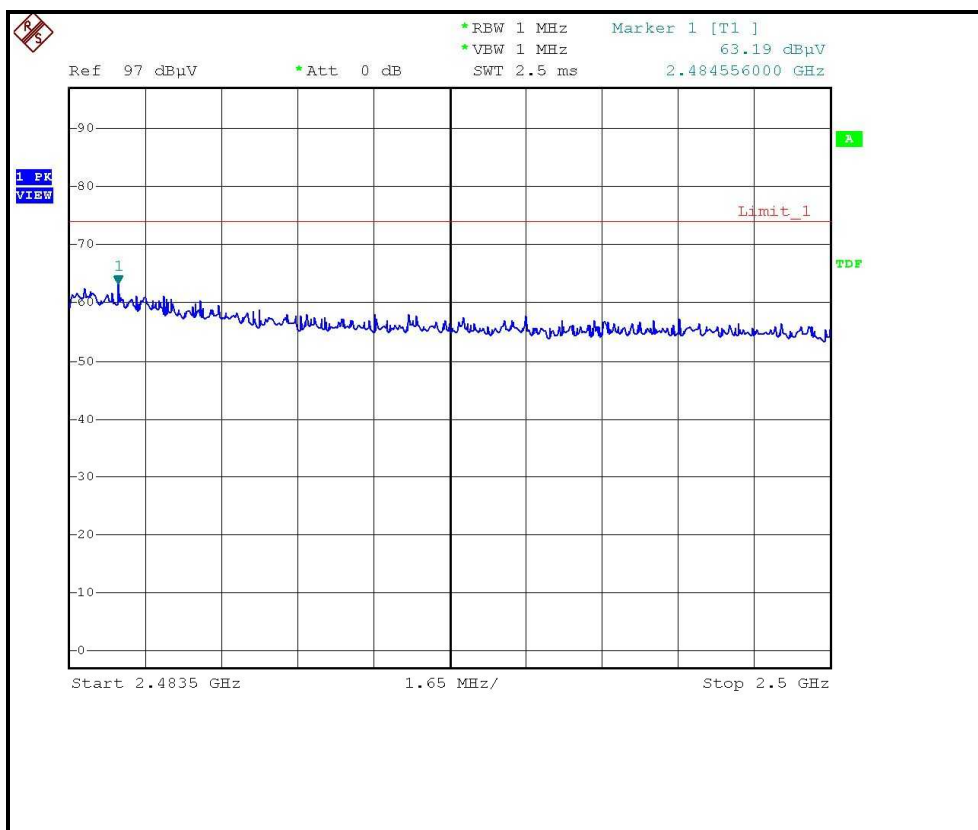
RESTRICTED BANDEDGE (DRAFT 802.11n (20MHz) MODE, CH11, HORIZONTAL)





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RESTRICTED BANDEDGE (DRAFT 802.11n (20MHz) MODE,CH11, VERTICAL)



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 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.



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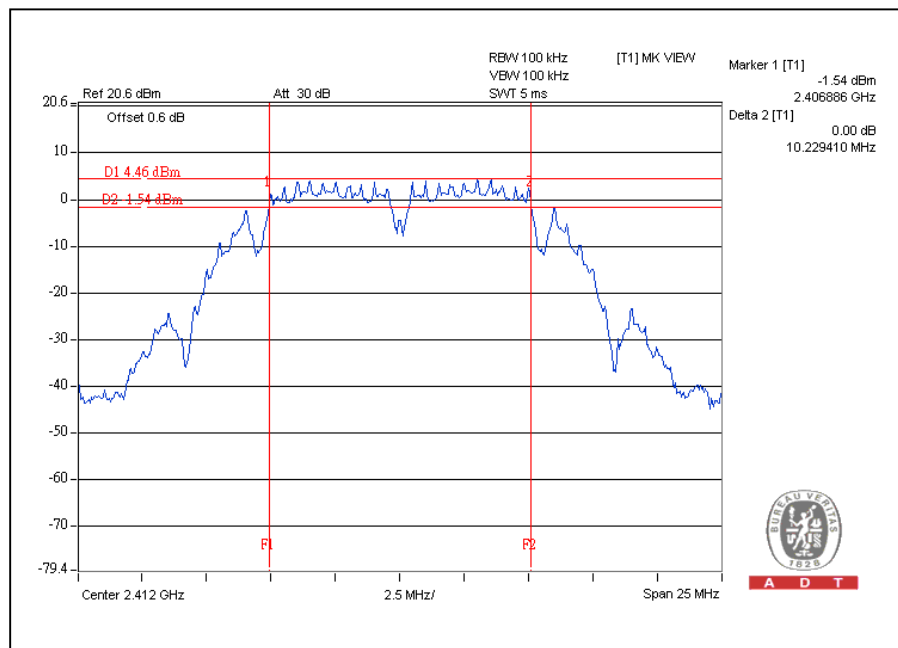
4.3.7 TEST RESULTS

802.11b DSSS MODULATION:

| | | | |
|-----------------------------|---------------|---------------------------------|------------------------|
| MODULATION TYPE | DBPSK | TRANSFER RATE | 1Mbps |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | ENVIRONMENTAL CONDITIONS | 25deg.C, 60%RH, 965hPa |
| TESTED BY | Eric Lee | | |

| CHANNEL | CHANNEL FREQUENCY (MHz) | 6dB BANDWIDTH (MHz) | MINIMUM LIMIT (MHz) | PASS / FAIL |
|---------|-------------------------|---------------------|---------------------|-------------|
| 1 | 2412 | 10.23 | 0.5 | PASS |
| 6 | 2437 | 10.19 | 0.5 | PASS |
| 11 | 2462 | 10.16 | 0.5 | PASS |

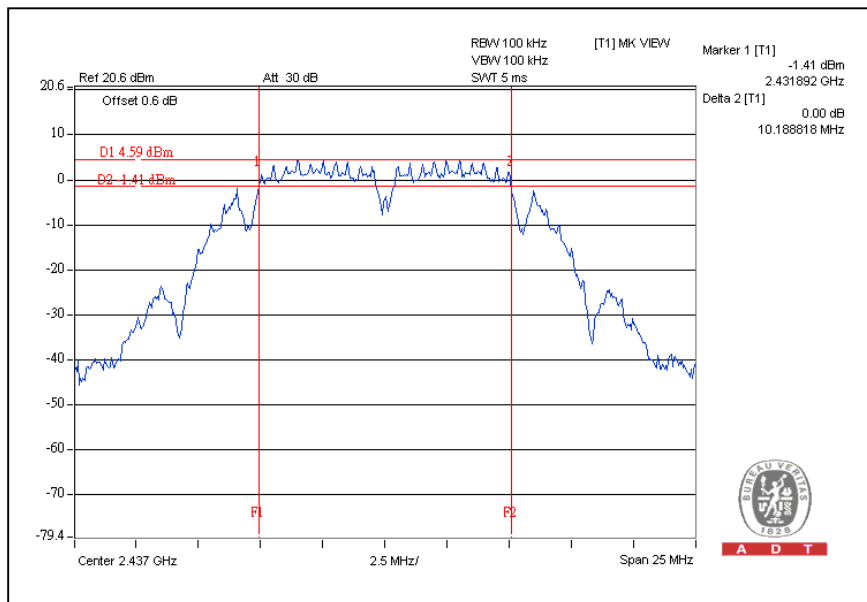
CH1





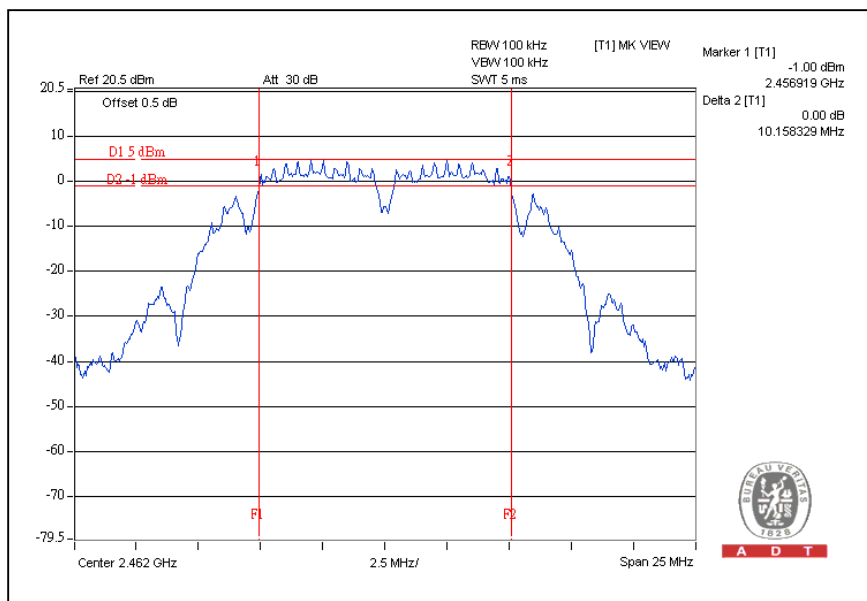
A D T

CH6



A D T

CH11



A D T



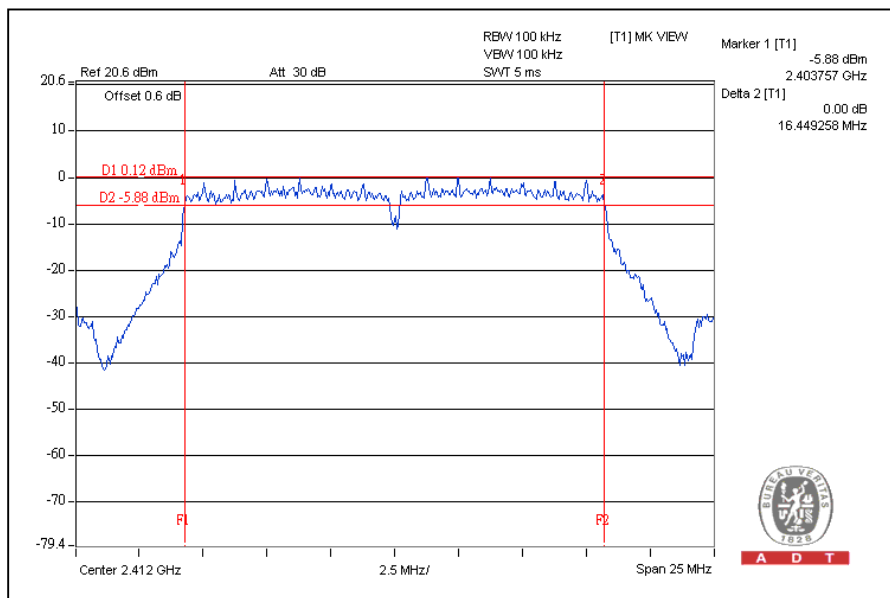
A D T

802.11g OFDM MODULATION:

| | | | |
|-----------------------------|---------------|---------------------------------|------------------------|
| MODULATION TYPE | BPSK | TRANSFER RATE | 6Mbps |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | ENVIRONMENTAL CONDITIONS | 25deg.C, 60%RH, 965hPa |
| TESTED BY | Rex Huang | | |

| CHANNEL | CHANNEL FREQUENCY (MHz) | 6dB BANDWIDTH (MHz) | MINIMUM LIMIT (MHz) | PASS / FAIL |
|---------|-------------------------|---------------------|---------------------|-------------|
| 1 | 2412 | 16.45 | 0.5 | PASS |
| 6 | 2437 | 16.46 | 0.5 | PASS |
| 11 | 2462 | 16.52 | 0.5 | PASS |

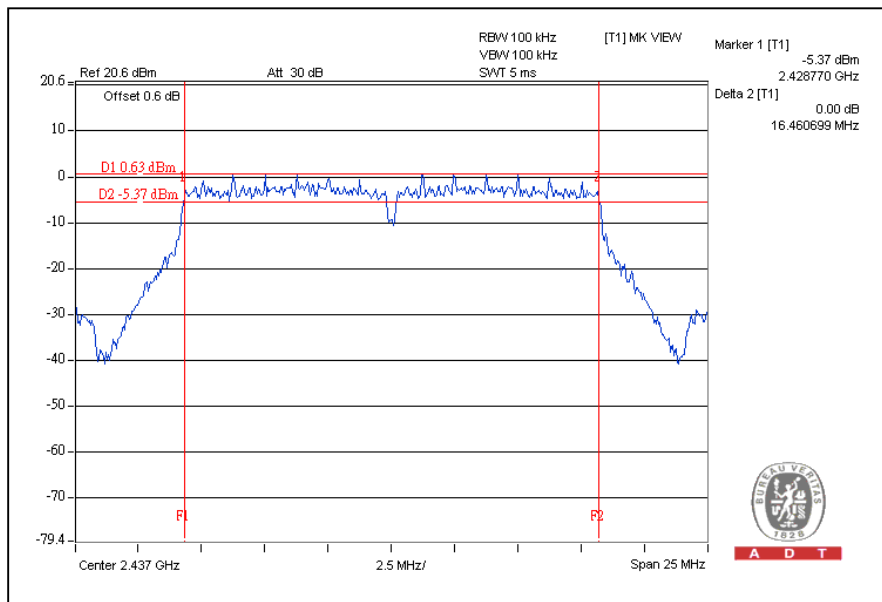
For CH1



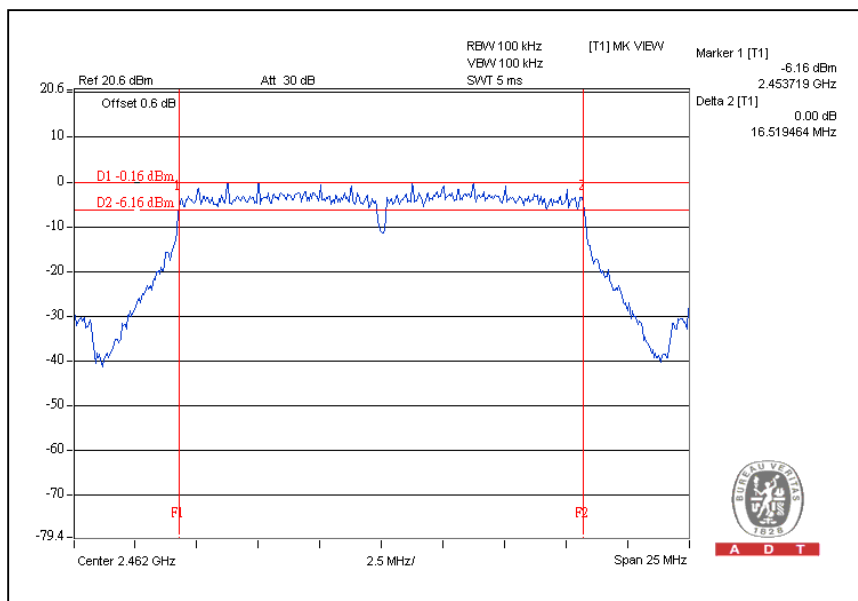


A D T

CH6



CH11





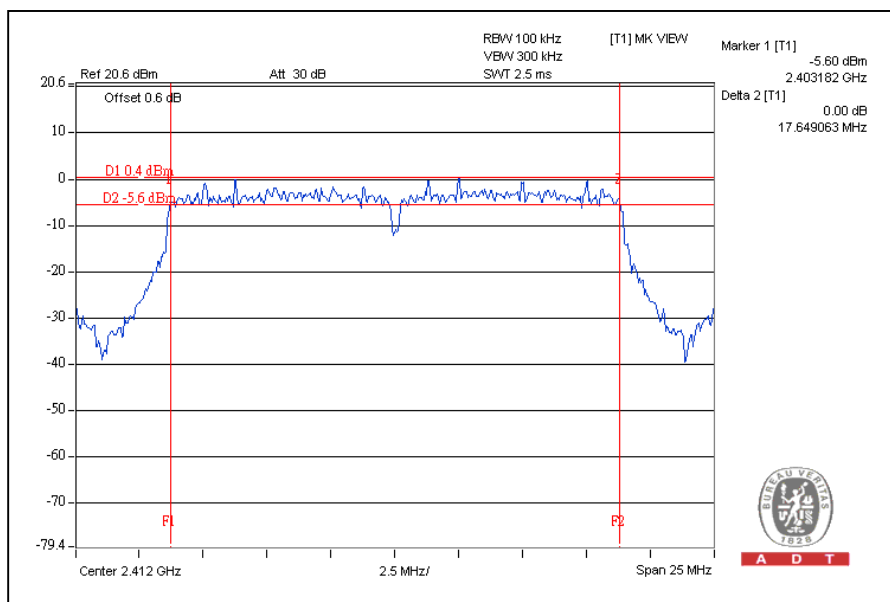
A D T

DRAFT 802.11n (20MHz) OFDM MODULATION:

| | | | |
|-----------------------------|---------------|---------------------------------|------------------------|
| MODULATION TYPE | BPSK | TRANSFER RATE | 13Mbps |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | ENVIRONMENTAL CONDITIONS | 25deg.C, 60%RH, 965hPa |
| TESTED BY | Eric Lee | | |

| CHANNEL | CHANNEL FREQUENCY (MHz) | 6dB BANDWIDTH (MHz) | | MINIMUM LIMIT (MHz) | PASS / FAIL |
|---------|-------------------------|---------------------|----------|---------------------|-------------|
| | | CHAIN(0) | CHAIN(1) | | |
| 1 | 2412 | 17.65 | 17.74 | 0.5 | PASS |
| 6 | 2437 | 17.69 | 17.72 | 0.5 | PASS |
| 11 | 2462 | 17.65 | 17.68 | 0.5 | PASS |

For Chain(0): CH1

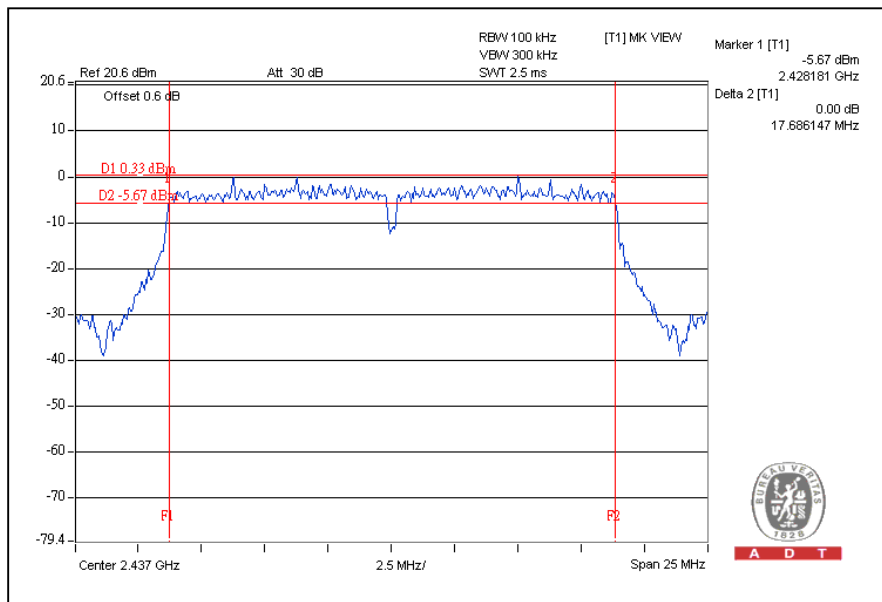


A D T

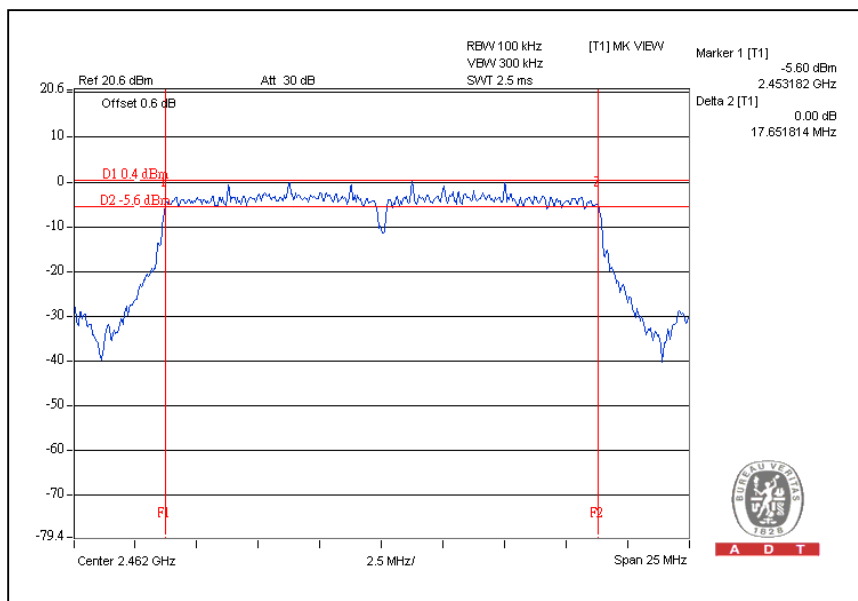


A D T

CH6



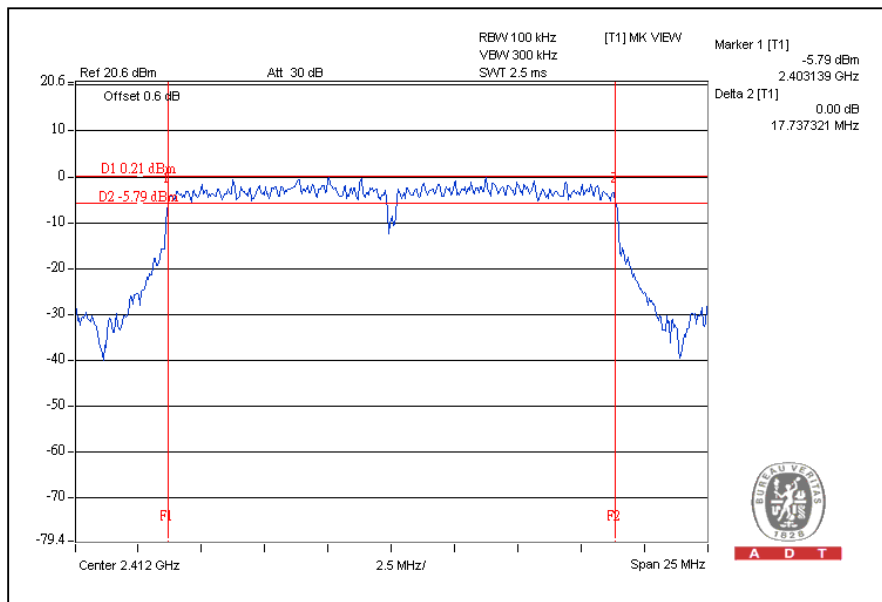
CH11



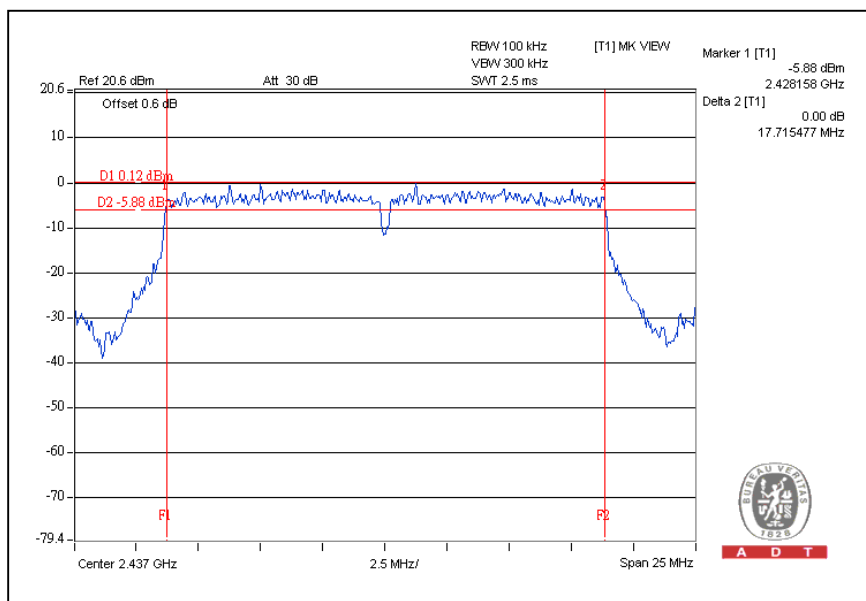


A D T

For CHAIN(1): CH1



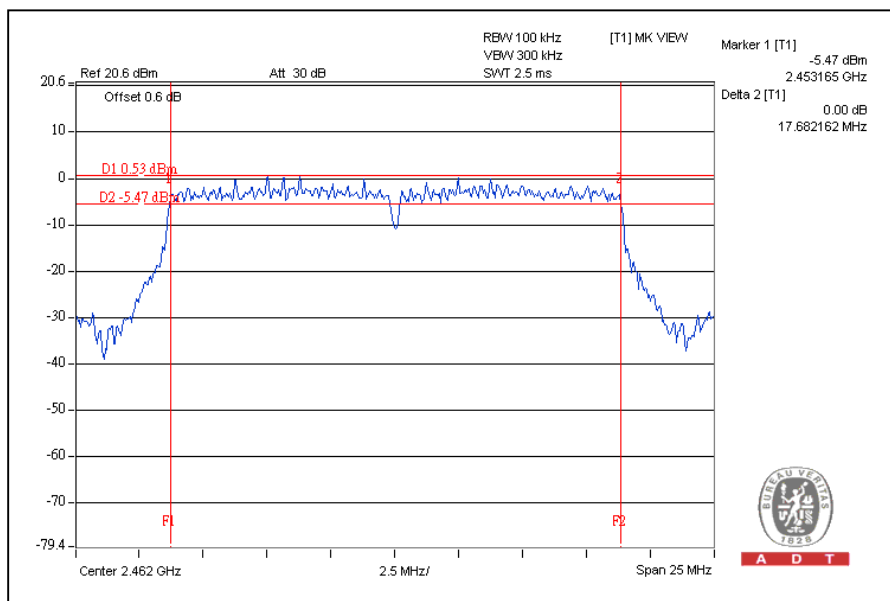
CH6





A D T

CH11





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 | June 14, 2008 | June 13, 2009 |
| Pulse Power Sensor | MA2411B | 0738172 | April 17, 2008 | April 16, 2009 |

NOTE:

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

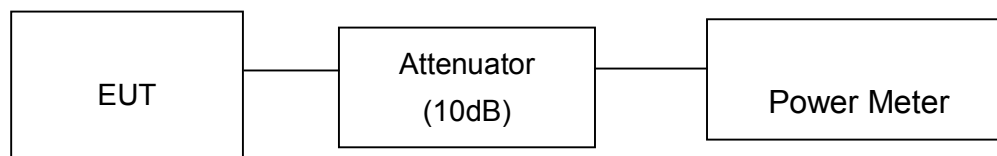
4.4.3 TEST PROCEDURES

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

Same as Item 4.3.6



4.4.7 TEST RESULTS

802.11b DSSS MODULATION:

| | | | |
|-----------------------------|---------------|---------------------------------|------------------------|
| MODULATION TYPE | DBPSK | TRANSFER RATE | 1Mbps |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | ENVIRONMENTAL CONDITIONS | 25deg.C, 60%RH, 965hPa |
| TESTED BY | Eric Lee | | |

| CHANNEL | CHANNEL FREQUENCY (MHz) | PEAK POWER OUTPUT (mW) | PEAK POWER OUTPUT (dBm) | PEAK POWER LIMIT (dBm) | PASS / FAIL |
|---------|-------------------------|------------------------|-------------------------|------------------------|-------------|
| 1 | 2412 | 76.033 | 18.81 | 30 | PASS |
| 6 | 2437 | 82.224 | 19.15 | 30 | PASS |
| 11 | 2462 | 82.035 | 19.14 | 30 | PASS |

802.11g OFDM MODULATION:

| | | | |
|-----------------------------|---------------|---------------------------------|------------------------|
| MODULATION TYPE | BPSK | TRANSFER RATE | 6Mbps |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | ENVIRONMENTAL CONDITIONS | 25deg.C, 60%RH, 965hPa |
| TESTED BY | Eric Lee | | |

| CHANNEL | CHANNEL FREQUENCY (MHz) | PEAK POWER OUTPUT (mW) | PEAK POWER OUTPUT (dBm) | PEAK POWER LIMIT (dBm) | PASS / FAIL |
|---------|-------------------------|------------------------|-------------------------|------------------------|-------------|
| 1 | 2412 | 124.738 | 20.96 | 30 | PASS |
| 6 | 2437 | 133.352 | 21.25 | 30 | PASS |
| 11 | 2462 | 123.880 | 20.93 | 30 | PASS |



DRAFT 802.11n (20MHz) OFDM MODULATION:

| | | | |
|-----------------------------|---------------|---------------------------------|------------------------|
| MODULATION TYPE | BPSK | TRANSFER RATE | 13Mbps |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | ENVIRONMENTAL CONDITIONS | 25deg.C, 60%RH, 965hPa |
| TESTED BY | Eric Lee | | |

| CHANNEL | CHANNEL FREQUENCY (MHz) | PEAK POWER OUTPUT (mW) | | PEAK POWER OUTPUT (dBm) | | TOTAL PEAK POWER (mW) | TOTAL PEAK POWER (dBm) | PEAK POWER LIMIT (dBm) | PASS / FAIL |
|---------|-------------------------|------------------------|----------|-------------------------|----------|-----------------------|------------------------|------------------------|-------------|
| | | CHAIN(0) | CHAIN(1) | CHAIN(0) | CHAIN(1) | | | | |
| 1 | 2412 | 176.198 | 138.676 | 22.46 | 21.42 | 314.874 | 24.98 | 30 | PASS |
| 6 | 2437 | 170.216 | 223.357 | 22.31 | 23.49 | 393.573 | 25.95 | 30 | PASS |
| 11 | 2462 | 167.494 | 172.982 | 22.24 | 22.38 | 340.476 | 25.32 | 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 calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.



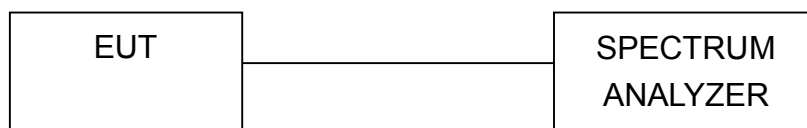
4.5.3 TEST PROCEDURE

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 3kHz RBW and 30kHz VBW, set sweep time = span/3kHz. The power spectral density was measured and recorded. The sweep time is allowed to be longer than span/3kHz 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

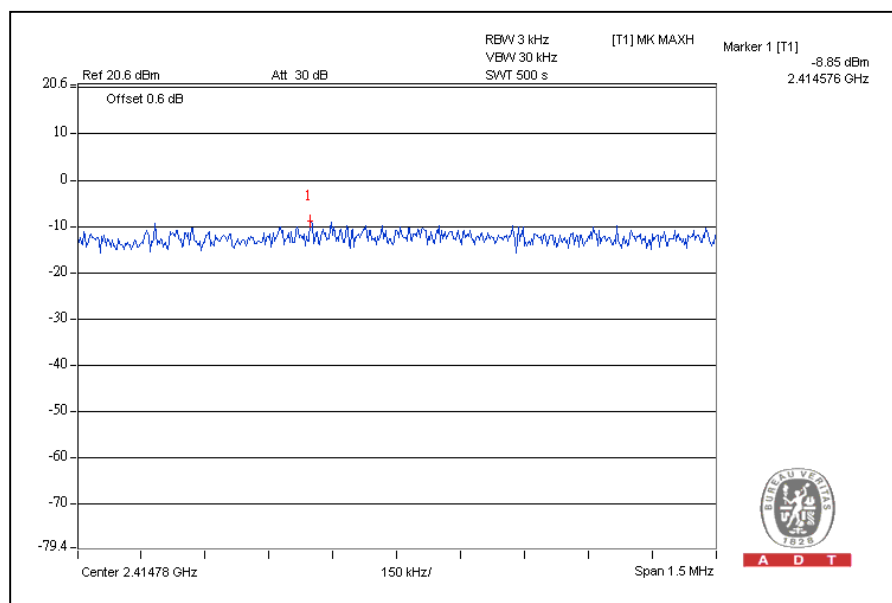
4.5.7 TEST RESULTS

802.11b DSSS MODULATION:

| | | | |
|-----------------------------|---------------|---------------------------------|------------------------|
| MODULATION TYPE | DBPSK | TRANSFER RATE | 1Mbps |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | ENVIRONMENTAL CONDITIONS | 25deg.C, 60%RH, 965hPa |
| TESTED BY | Eric Lee | | |

| CHANNEL | CHANNEL FREQUENCY (MHz) | RF POWER LEVEL IN 3kHz BW (dBm) | MAXIMUM LIMIT (dBm) | PASS / FAIL |
|---------|--------------------------|---------------------------------|---------------------|-------------|
| 1 | 2412 | -8.85 | 8 | PASS |
| 6 | 2437 | -8.99 | 8 | PASS |
| 11 | 2462 | -9.03 | 8 | PASS |

CH1

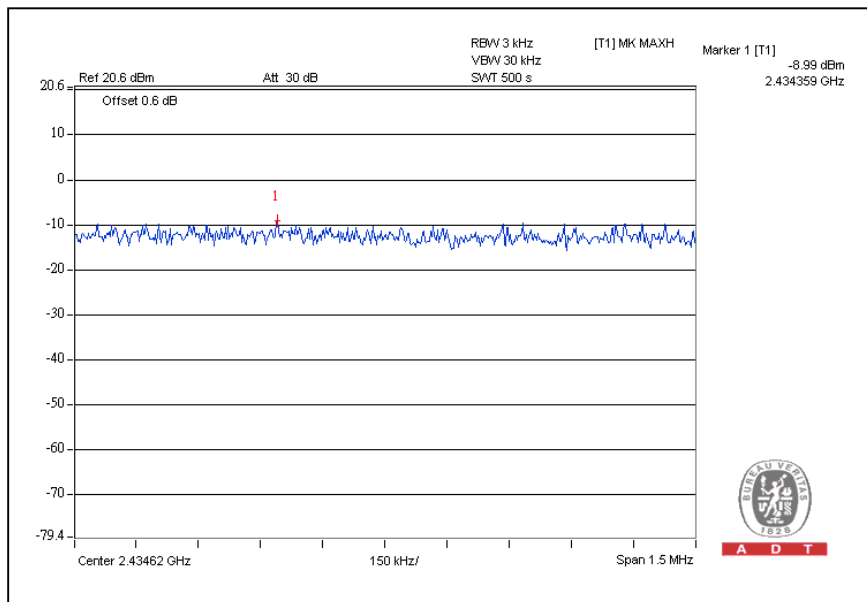


A D T

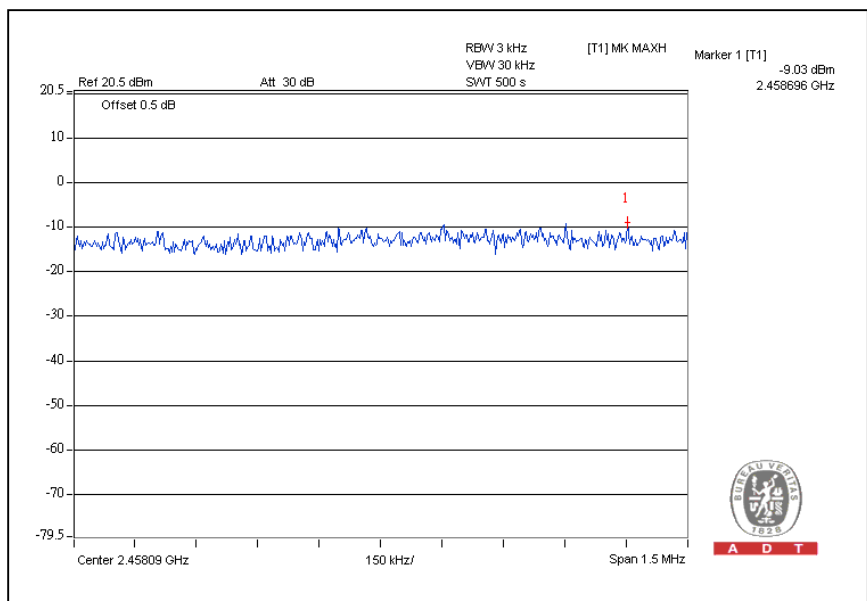


A D T

CH6



CH11





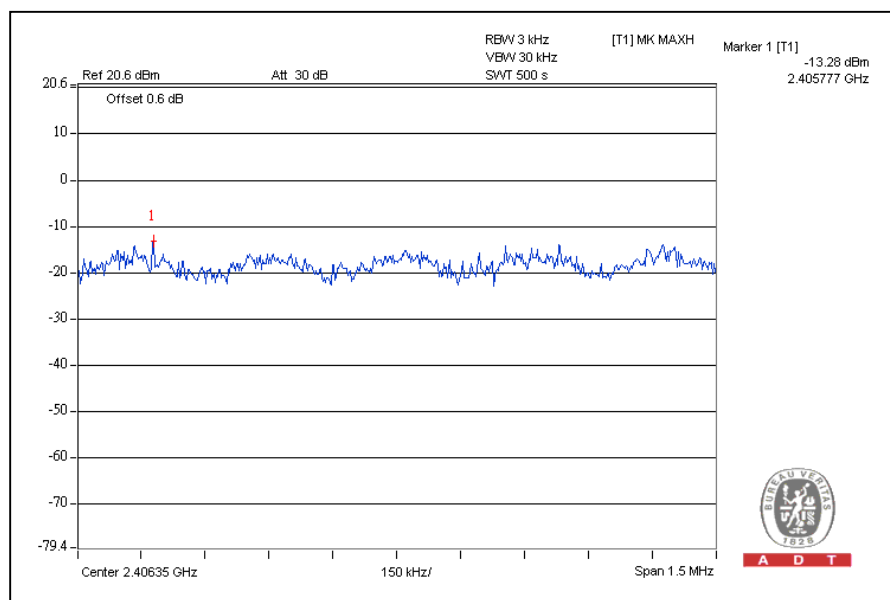
A D T

802.11g OFDM MODULATION:

| | | | |
|-----------------------------|---------------|---------------------------------|------------------------|
| MODULATION TYPE | BPSK | TRANSFER RATE | 6Mbps |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | ENVIRONMENTAL CONDITIONS | 25deg.C, 60%RH, 965hPa |
| TESTED BY | Eric Lee | | |

| CHANNEL | CHANNEL FREQUENCY (MHz) | RF POWER LEVEL IN 3kHz BW (dBm) | MAXIMUM LIMIT (dBm) | PASS / FAIL |
|---------|--------------------------|---------------------------------|---------------------|-------------|
| 1 | 2412 | -13.28 | 8 | PASS |
| 6 | 2437 | -11.73 | 8 | PASS |
| 11 | 2462 | -13.41 | 8 | PASS |

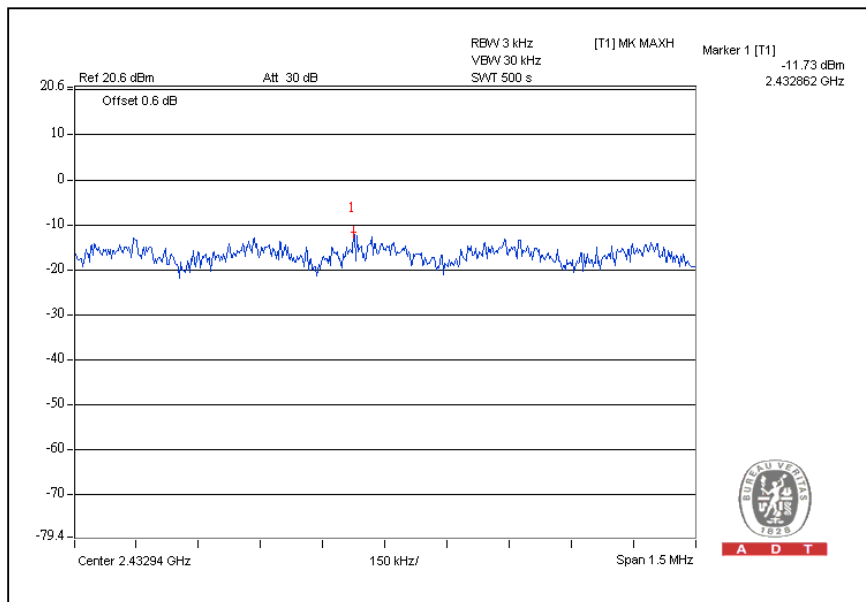
For CH1



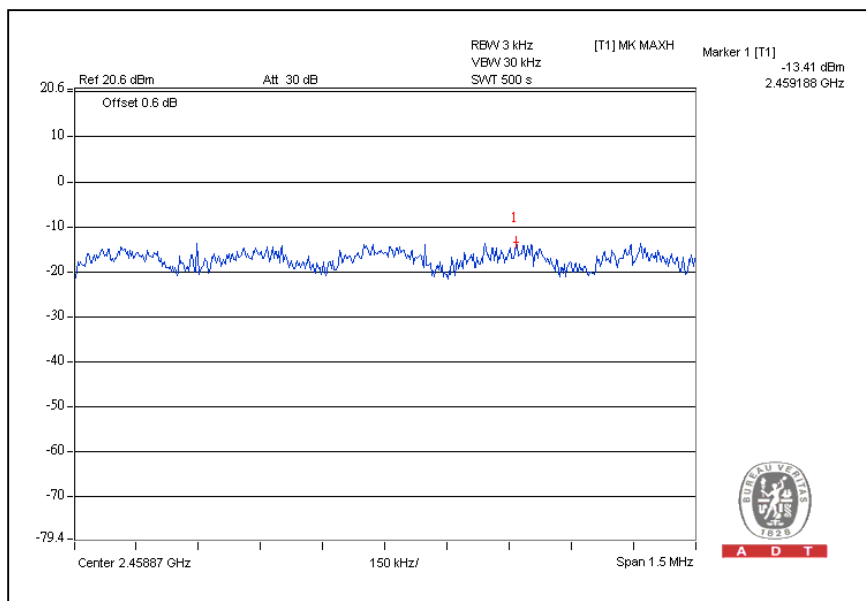


A D T

CH6



CH11





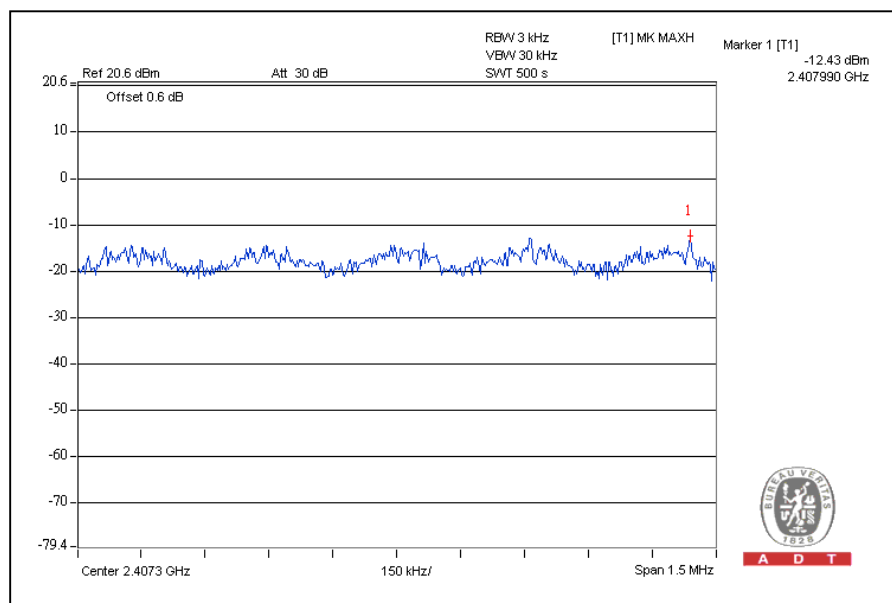
A D T

DRAFT 802.11n (20MHz) OFDM MODULATION:

| | | | |
|-----------------------------|---------------|---------------------------------|-------------------------|
| MODULATION TYPE | BPSK | TRANSFER RATE | 13Mbps |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | ENVIRONMENTAL CONDITIONS | 25 deg.C, 60%RH, 965hPa |
| TESTED BY | Eric Lee | | |

| CHANNEL | CHANNEL FREQUENCY (MHz) | RF POWER LEVEL IN 3kHz BW (mW) | | RF POWER LEVEL IN 3kHz BW (dBm) | | TOTAL POWER DENSITY (mW) | TOTAL POWER DENSITY (dBm) | MAXIMUM LIMIT (dBm) | PASS / FAIL |
|---------|-------------------------|--------------------------------|----------|---------------------------------|----------|--------------------------|---------------------------|---------------------|-------------|
| | | CHAIN(0) | CHAIN(1) | CHAIN(0) | CHAIN(1) | | | | |
| 1 | 2412 | 0.057 | 0.059 | -12.43 | -12.32 | 0.116 | -9.36 | 8 | PASS |
| 6 | 2437 | 0.048 | 0.051 | -13.18 | -12.93 | 0.099 | -10.04 | 8 | PASS |
| 11 | 2462 | 0.042 | 0.050 | -13.73 | -12.99 | 0.092 | -10.36 | 8 | PASS |

For Chain(0): CH1

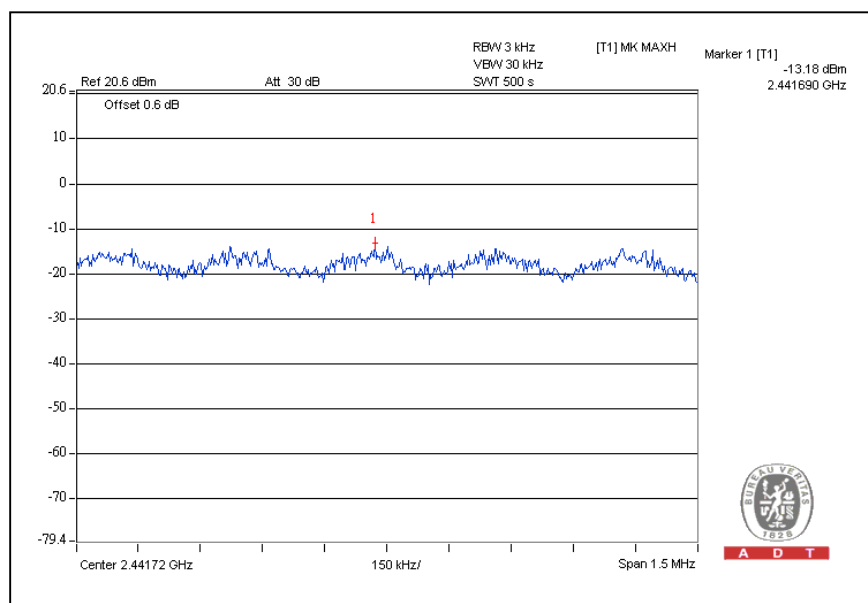


A D T

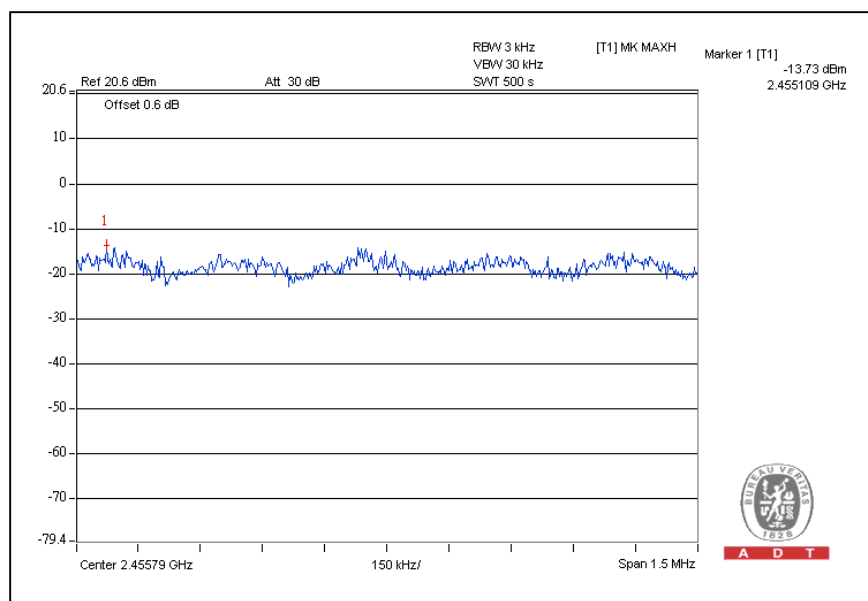


A D T

CH6



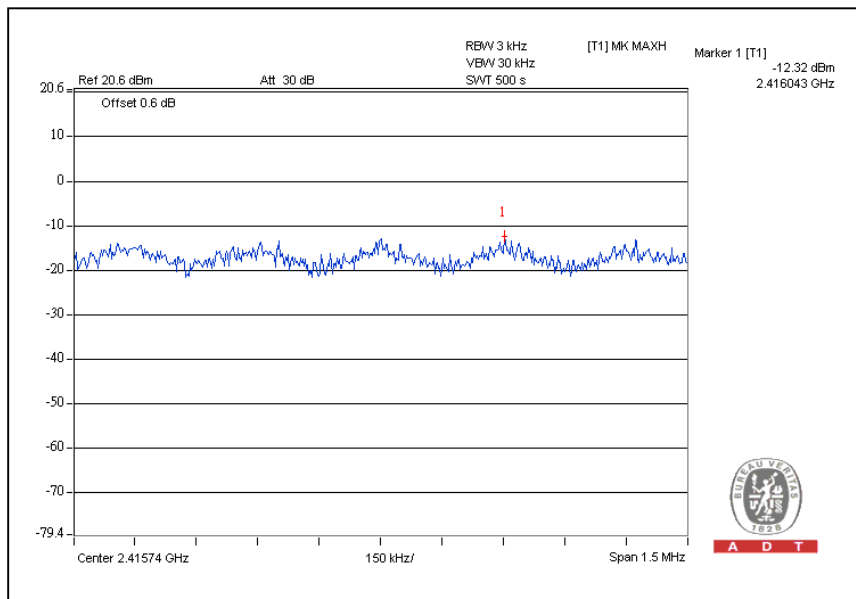
CH11



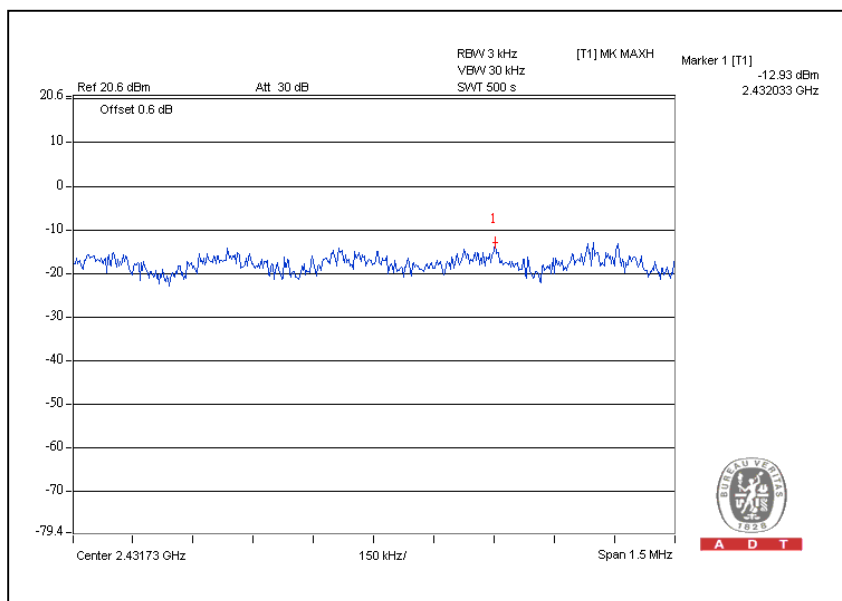


A D T

For Chain (1): CH1



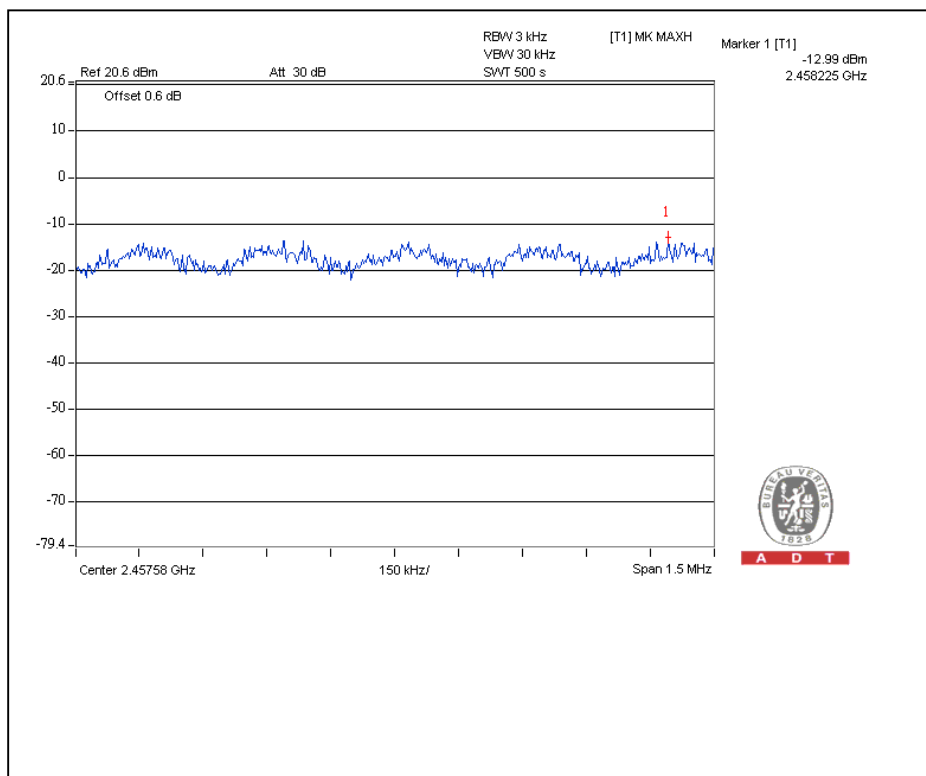
CH6





A D T

CH11





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 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 100kHz and VBW of spectrum analyzer to 300kHz with suitable frequency span including 100 MHz bandwidth from band edge. The band edges were measured and recorded.

The spectrum plots (RBW = 100kHz, VBW = 300kHz) are attached on the following pages.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 EUT OPERATING CONDITION

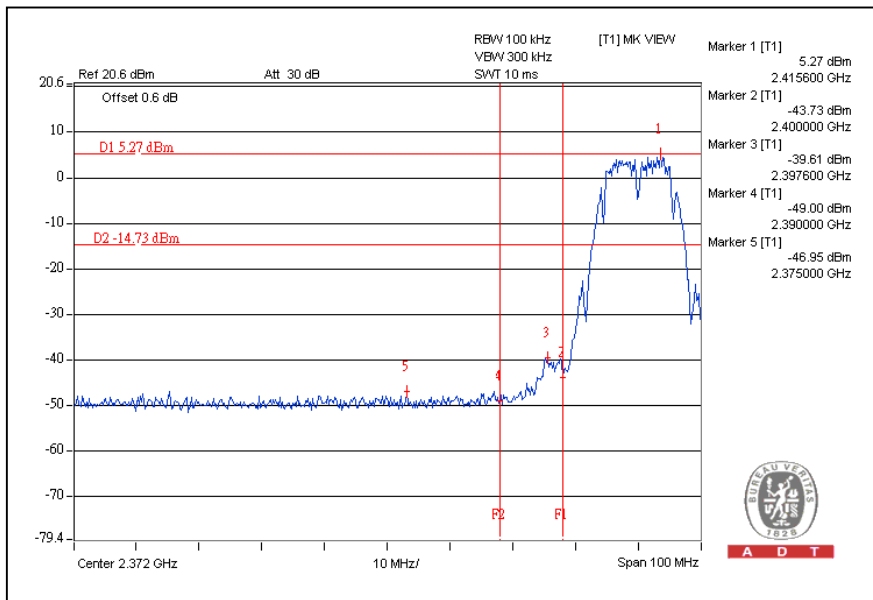
Same as Item 4.3.6

4.6.6 TEST RESULTS

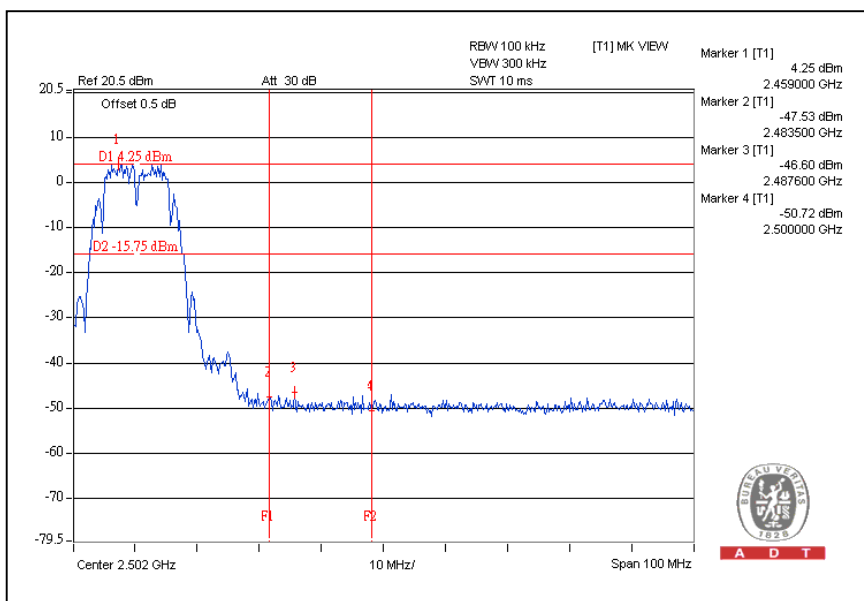
The spectrum plots are attached on the following images. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement in part 15.247(d).

802.11b DSSS MODULATION:

CH1



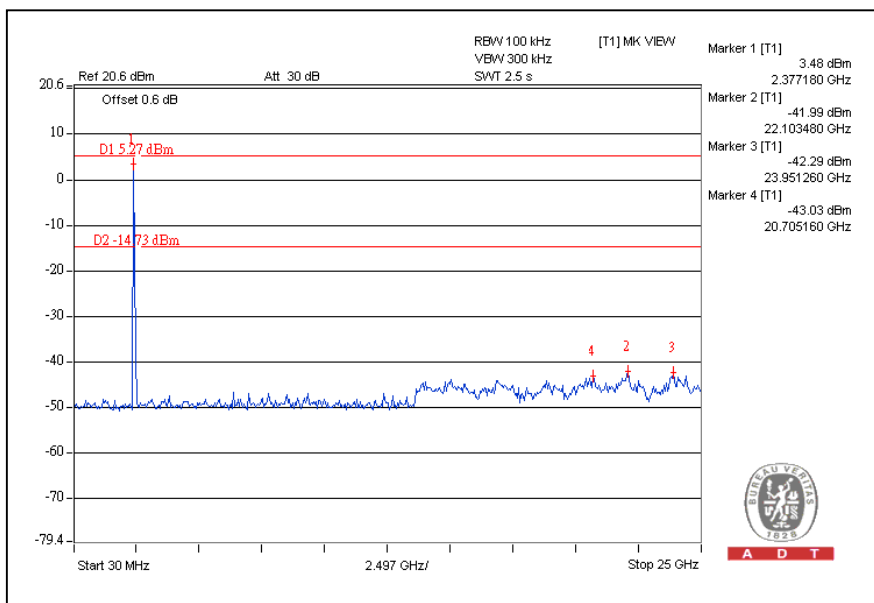
CH11



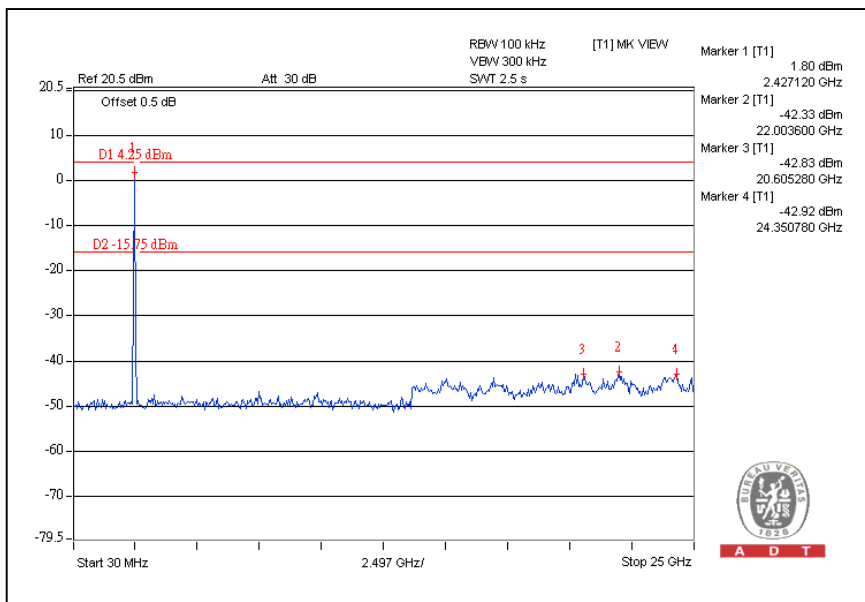


A D T

CH1

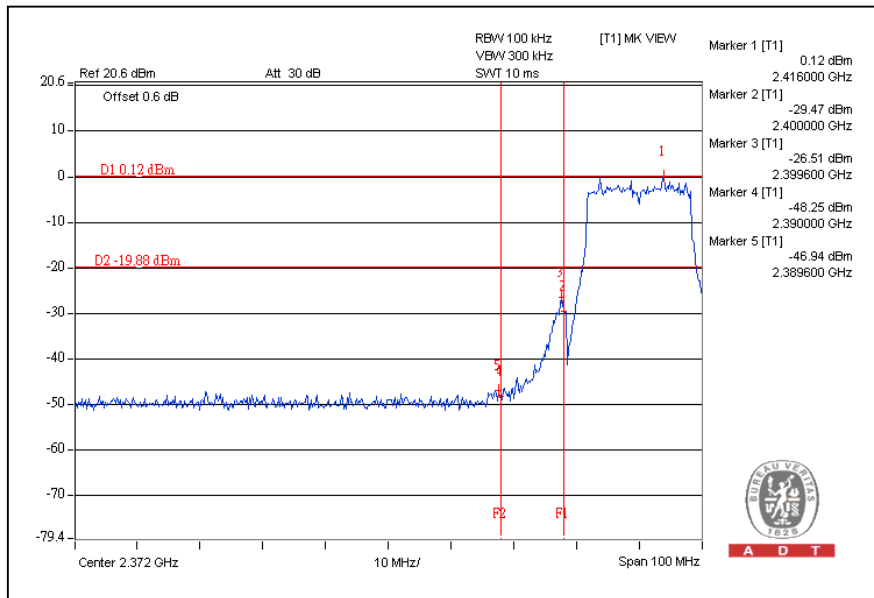


CH11

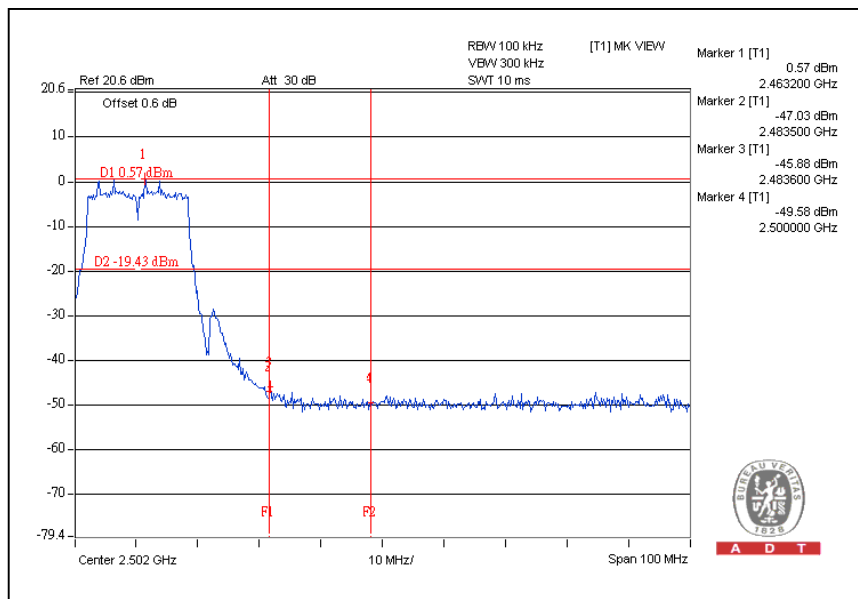


802.11g OFDM MODULATION:

For CH1



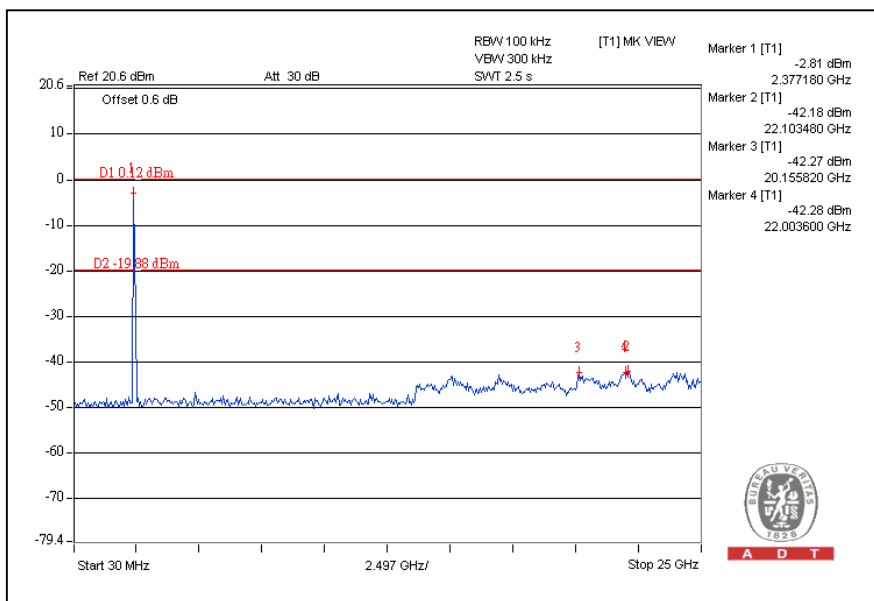
CH11



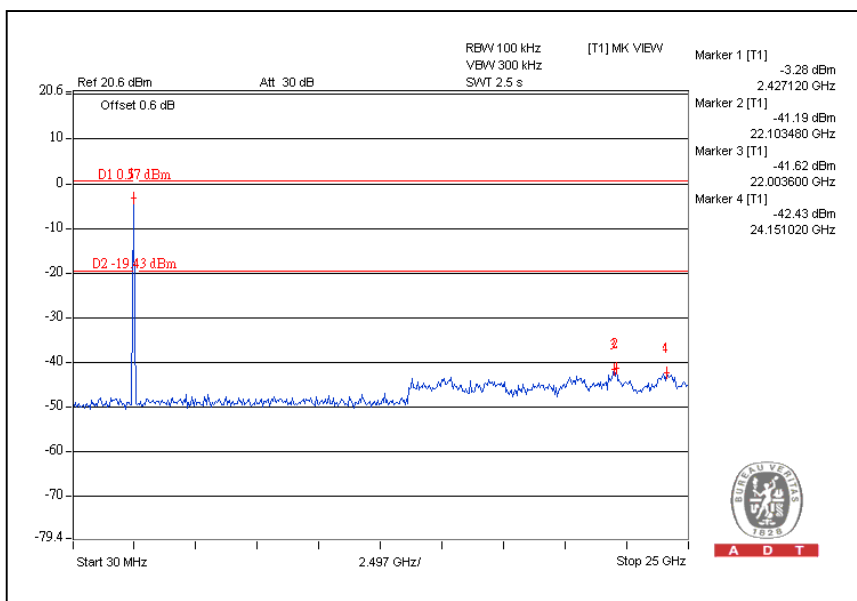


A D T

CH1



CH11

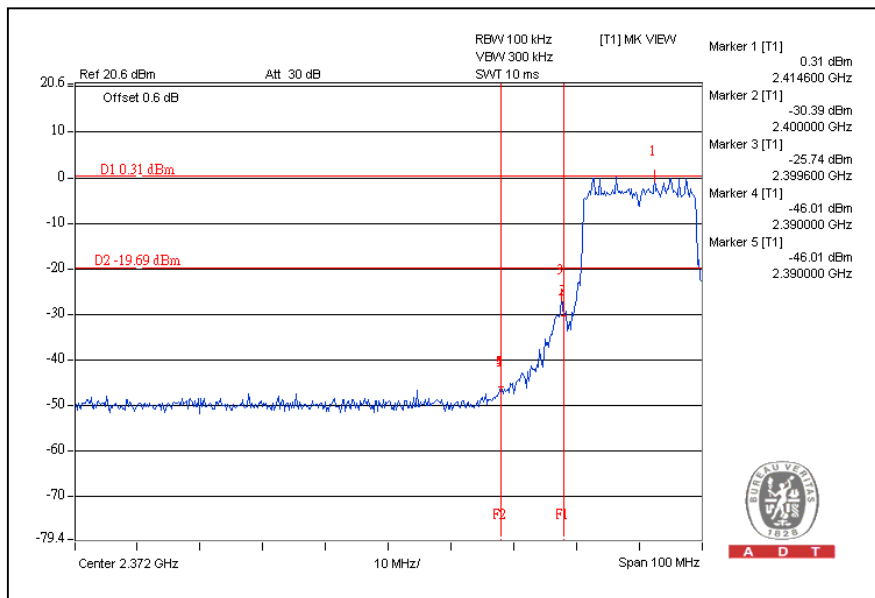




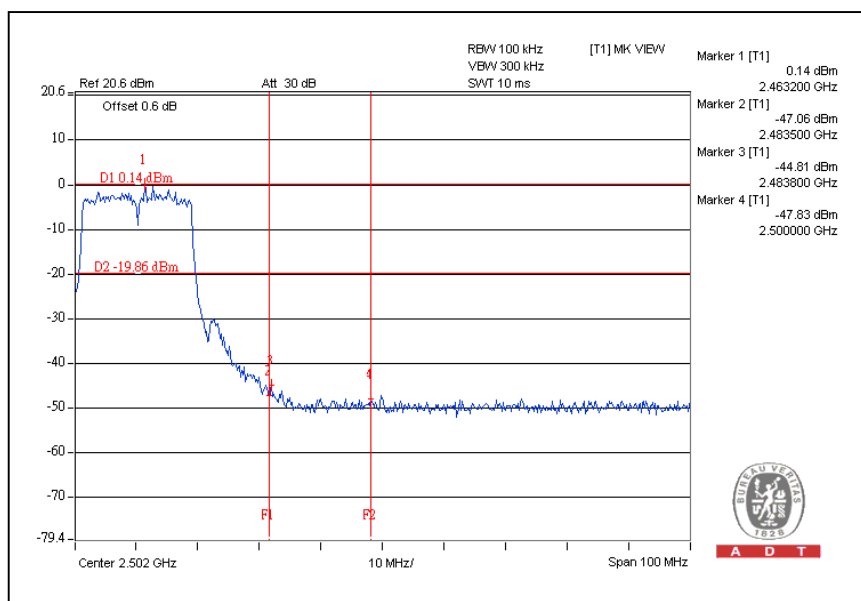
A D T

DRAFT 802.11n (20MHz) OFDM MODULATION:

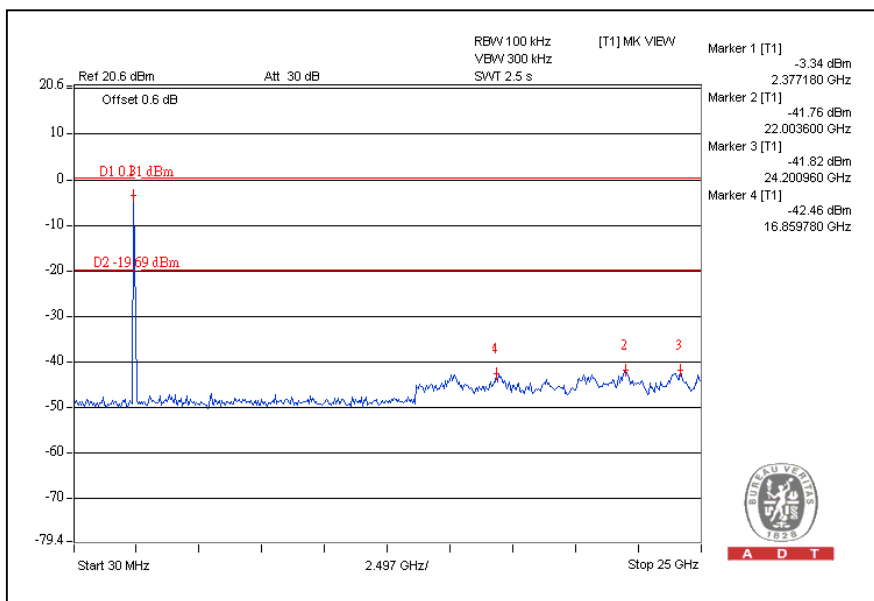
For Chain (0):CH1



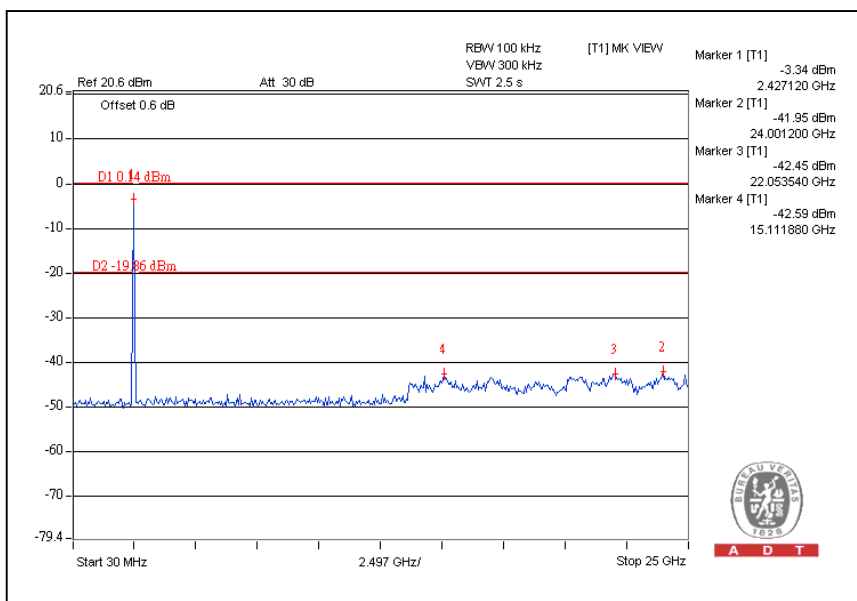
CH11



CH1



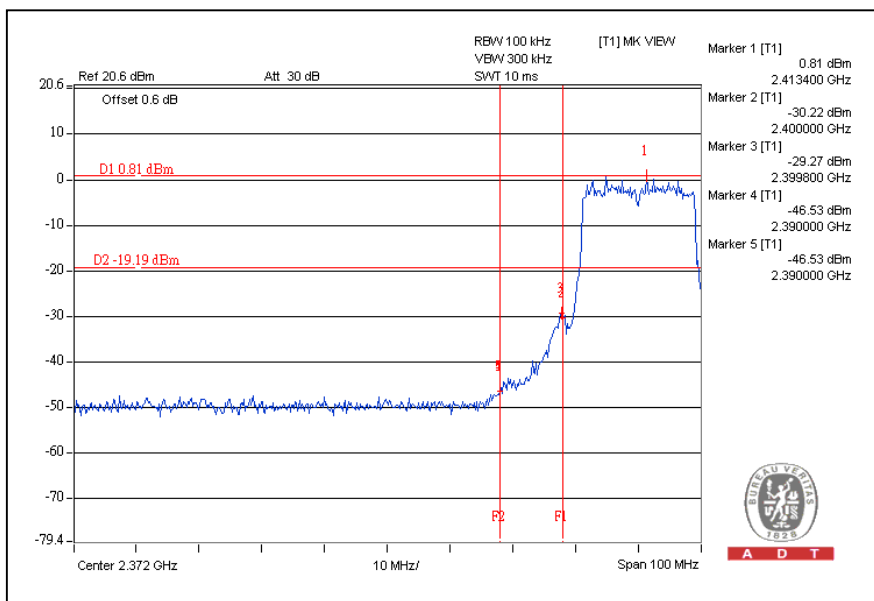
CH11



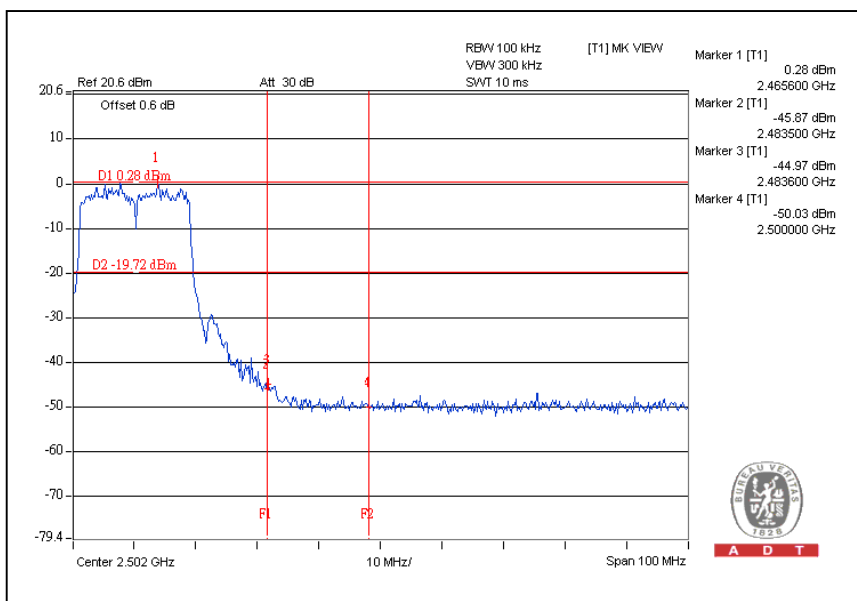


A D T

For Chain (1):CH1



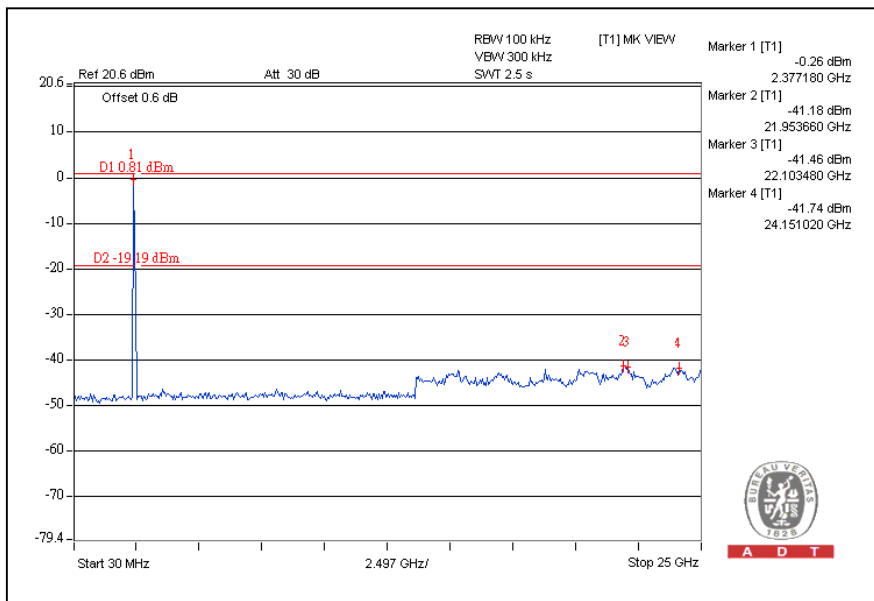
CH11



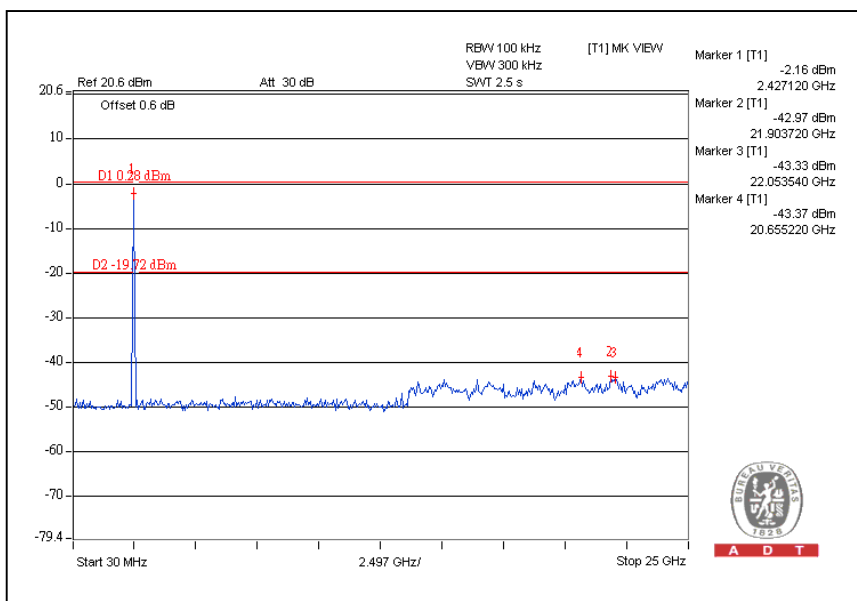


A D T

CH1



CH11





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 (b), 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 are two antennas provided to this EUT, please refer to the following table:

| No. | Antenna Type | Antenna Connector | For 2.4GHz Gain (dBi) | For 5GHz Gain (dBi) | Cable Loss (dB) | Cable Length (cm) |
|-----|--------------|-------------------|-----------------------|---------------------|-----------------|-------------------|
| 1 | PCB | Hirose U.FL | 2.7 | 3 | 0 | 24 |
| 2 | PCB | Hirose U.FL | 1.5 | 1.5 | 0 | 39 |



5. TEST TYPES AND RESULTS (802.11a, 5725~5850MHz Band)

5.1 CONDUCTED EMISSION MEASUREMENT

5.1.1 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.

5.1.2 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED DATE | CALIBRATED UNTIL |
|---|-----------------------|------------|-----------------|------------------|
| Test Receiver | ESCS 30 | 100375 | Mar. 23, 2009 | Mar. 22, 2010 |
| Line-Impedance Stabilization Network (for EUT) | ENV-216 | 100071 | Nov. 26, 2008 | Nov. 25, 2009 |
| Line-Impedance Stabilization Network (for Peripheral) | ESH3-Z5 | 848773/004 | Nov. 05, 2008 | Nov. 04, 2009 |
| RF Cable (JYEBAO) | 5DFB | COBCAB-001 | Aug. 15, 2008 | Aug. 14, 2009 |
| 50 ohms Terminator | 50 | 3 | Nov. 05, 2008 | Nov. 04, 2009 |
| 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. B.
3. The VCCI Con B Registration No. is C-2193.

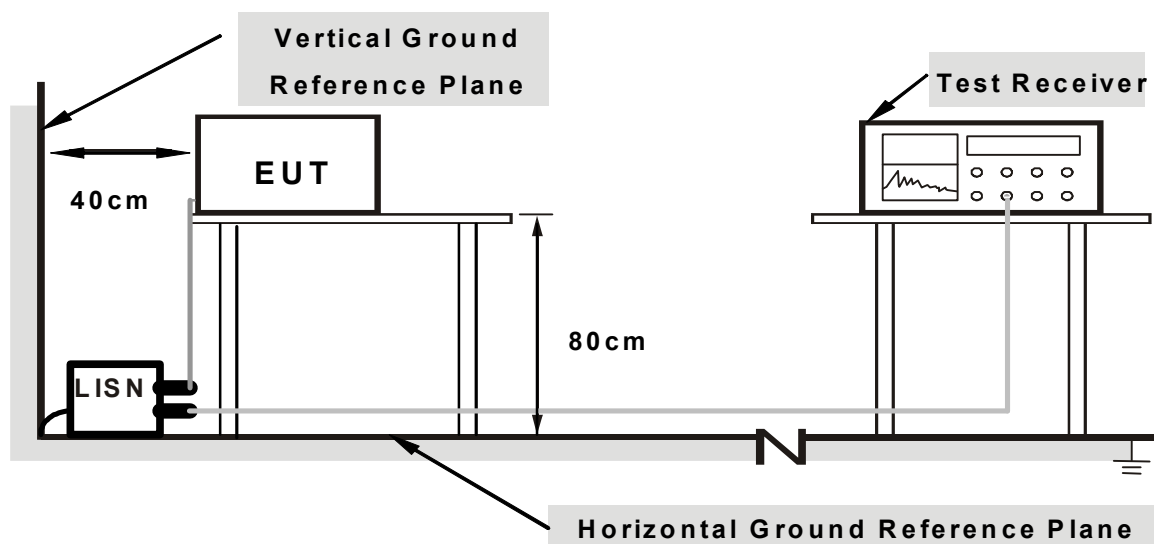
5.1.3 TEST PROCEDURES

- 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.

5.1.4 DEVIATION FROM TEST STANDARD

No deviation

5.1.5 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.

5.1.6 EUT OPERATING CONDITIONS

Same as the 4.1.6

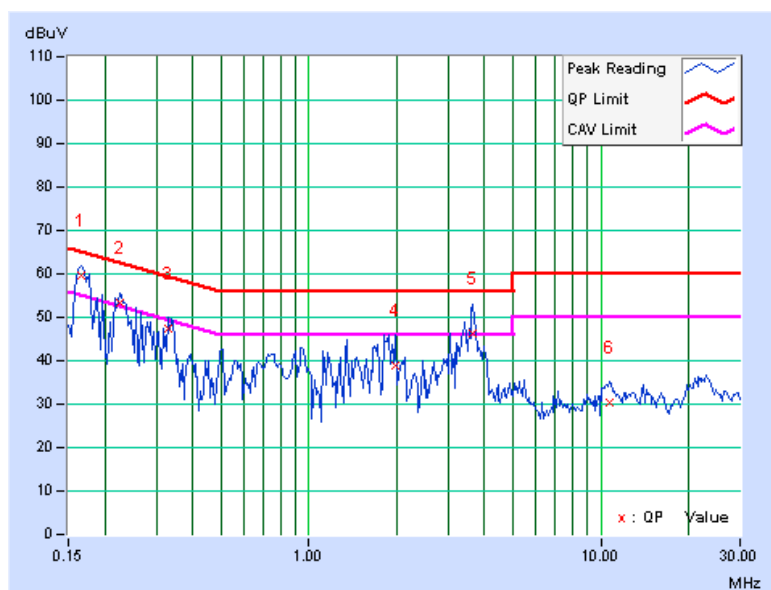
5.1.7 TEST RESULTS

DRAFT 802.11n (20MHz) OFDM MODULATION:

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|-------------------------|----------------------|---------------|
| CHANNEL | Channel 1 | PHASE | Line (L) |
| MODULATION TYPE | BPSK | 6dB BANDWIDTH | 9 kHz |
| TRANSFER RATE | 13Mbps | INPUT POWER (SYSTEM) | 120Vac, 60 Hz |
| ENVIRONMENTAL CONDITIONS | 17deg. C, 64%RH, 965hPa | TESTED BY | Frank Liu |

| 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 | 0.166 | 9.78 | 49.97 | 39.55 | 59.75 | 49.33 | 65.18 |
| 2 | 0.224 | 9.83 | 43.60 | 36.94 | 53.43 | 46.77 | 62.66 | 52.66 | -9.23 | -5.89 |
| 3 | 0.330 | 9.95 | 37.36 | - | 47.31 | - | 59.44 | 49.44 | -12.13 | - |
| 4 | 1.973 | 9.81 | 29.17 | - | 38.98 | - | 56.00 | 46.00 | -17.02 | - |
| 5 | 3.652 | 9.85 | 36.33 | 22.85 | 46.18 | 32.70 | 56.00 | 46.00 | -9.82 | -13.30 |
| 6 | 10.738 | 9.97 | 20.34 | - | 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.

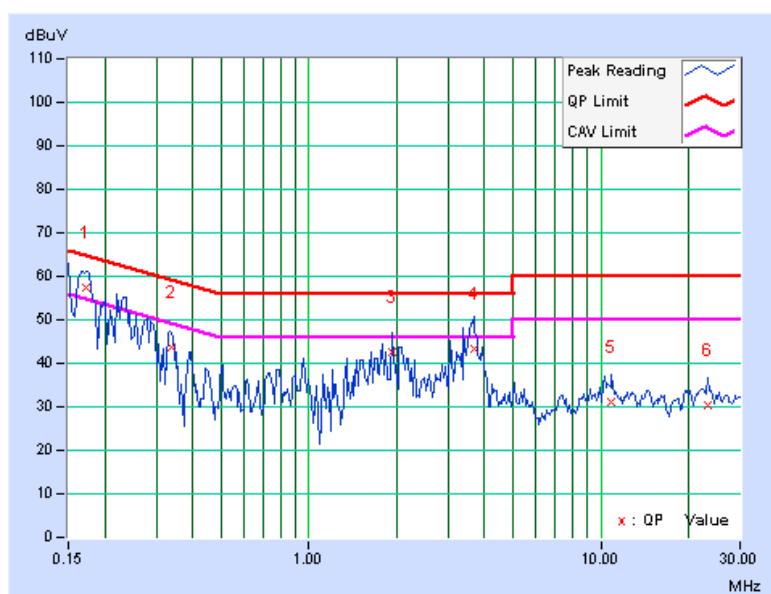




| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|-------------------------|----------------------|---------------|
| CHANNEL | Channel 1 | PHASE | Neutral (N) |
| MODULATION TYPE | BPSK | 6dB BANDWIDTH | 9 kHz |
| TRANSFER RATE | 13Mbps | INPUT POWER (SYSTEM) | 120Vac, 60 Hz |
| ENVIRONMENTAL CONDITIONS | 17deg. C, 64%RH, 965hPa | TESTED BY | Frank Liu |

| 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 | 0.173 | 9.77 | 47.76 | 37.20 | 57.53 | 46.97 | 64.84 |
| 2 | 0.336 | 9.94 | 33.61 | - | 43.55 | - | 59.29 | 49.29 | -15.74 | - |
| 3 | 1.918 | 9.80 | 32.89 | - | 42.69 | - | 56.00 | 46.00 | -13.31 | - |
| 4 | 3.691 | 9.84 | 33.59 | - | 43.43 | - | 56.00 | 46.00 | -12.57 | - |
| 5 | 10.883 | 9.99 | 21.02 | - | 31.01 | - | 60.00 | 50.00 | -28.99 | - |
| 6 | 23.125 | 10.25 | 20.01 | - | 30.26 | - | 60.00 | 50.00 | -29.74 | - |

- 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.





5.2 RADIATED EMISSION MEASUREMENT

5.2.1 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.



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5.2.2 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED DATE | CALIBRATED UNTIL |
|--------------------------------------|--------------------------|-----------------|-----------------|------------------|
| ROHDE & SCHWARZ Spectrum Analyzer | FSP40 | 100036 | Dec. 09, 2008 | Dec. 08, 2009 |
| HP Pre_Amplifier | 8449B | 3008A01923 | Nov. 10, 2008 | Nov. 09, 2009 |
| ROHDE & SCHWARZ Test Receiver | ESCS30 | 847124/029 | Sep. 09, 2008 | Sep. 08, 2009 |
| SCHWARZBECK TRILOG Broadband Antenna | VULB 9168 | 138 | April 30, 2008 | April 29, 2009 |
| 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 | Oct. 07, 2008 | Oct. 06, 2009 |
| RF CABLE (Chaintek) | Sucoflex 106 | 28077 | Aug. 15, 2008 | Aug. 14, 2009 |
| RF Cable | 8DFB | STCCAB-30M-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: 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.



5.2.3 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 area test 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 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

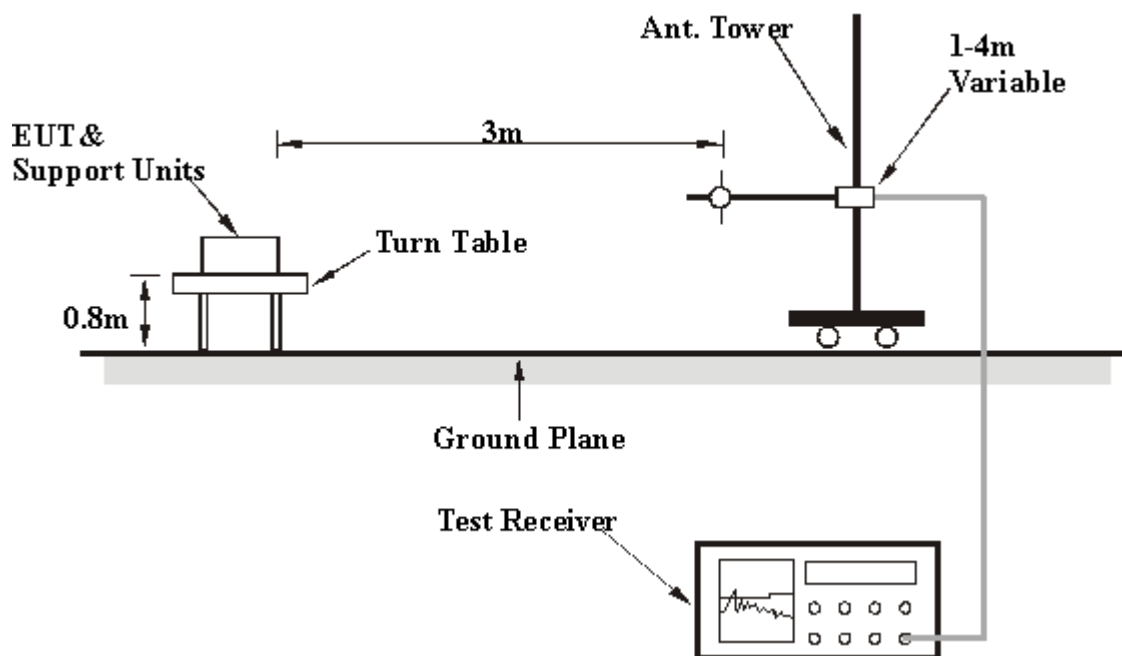
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz for Average detection (AV) at frequency above 1GHz.

5.2.4 DEVIATION FROM TEST STANDARD

No deviation

5.2.5 TEST SETUP



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

5.2.6 EUT OPERATING CONDITIONS

Same as the 4.1.6



Below 1GHz Test Data

5.2.7 TEST RESULTS

BELOW 1GHz WORST-CASE DATA : DRAFT 802.11n (20MHz) OFDM MODULATION

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|---------------------------|--------------------|---------------|
| CHANNEL | Channel 1 | FREQUENCY RANGE | Below 1000MHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Quasi-Peak |
| ENVIRONMENTAL CONDITIONS | 22deg. C, 63%RH 965hPa | TESTED BY | Wen Yu |

| 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 | 190.70 | 28.23 QP | 43.50 | -15.27 | 1.57 H | 312 | 14.53 | 13.70 |
| 2 | 209.77 | 26.27 QP | 43.50 | -17.23 | 1.12 H | 13 | 12.81 | 13.46 |
| 3 | 228.84 | 26.17 QP | 46.00 | -19.83 | 1.68 H | 322 | 11.78 | 14.39 |
| 4 | 247.91 | 24.21 QP | 46.00 | -21.79 | 1.97 H | 208 | 8.89 | 15.32 |
| 5 | 266.98 | 24.52 QP | 46.00 | -21.48 | 1.53 H | 17 | 8.54 | 15.98 |
| 6 | 400.02 | 34.79 QP | 46.00 | -11.21 | 1.00 H | 133 | 13.65 | 21.14 |

| 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 | 190.70 | 35.12 QP | 43.50 | -8.38 | 1.00 V | 87 | 21.42 | 13.70 |
| 2 | 209.77 | 36.58 QP | 43.50 | -6.92 | 1.00 V | 122 | 23.12 | 13.46 |
| 3 | 228.84 | 39.68 QP | 46.00 | -6.32 | 1.00 V | 324 | 25.29 | 14.39 |
| 4 | 247.91 | 34.51 QP | 46.00 | -11.49 | 1.00 V | 22 | 19.19 | 15.32 |
| 5 | 266.98 | 31.20 QP | 46.00 | -14.80 | 1.00 V | 163 | 15.22 | 15.98 |
| 6 | 286.05 | 26.11 QP | 46.00 | -19.89 | 1.00 V | 52 | 9.52 | 16.59 |
| 7 | 305.12 | 28.26 QP | 46.00 | -17.74 | 1.00 V | 226 | 11.03 | 17.23 |

- 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.



Above 1GHz Test Data

5.2.8 TEST RESULTS

802.11a OFDM MODULATION

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|---------------------------|--------------------|---------------------------|
| CHANNEL | Channel 1 | FREQUENCY RANGE | 1 ~ 40GHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 20deg. C, 60%RH 965hPa | TESTED BY | Eric Lee |

| 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 | 4596.00 | 58.70 PK | 74.00 | -15.30 | 1.21 H | 329 | 23.62 | 35.08 |
| 2 | 4596.00 | 41.90 AV | 54.00 | -12.10 | 1.21 H | 329 | 6.82 | 35.08 |
| 3 | *5745.00 | 100.60 PK | | | 1.04 H | 324 | 63.39 | 37.21 |
| 4 | *5745.00 | 90.30 AV | | | 1.04 H | 324 | 53.09 | 37.21 |
| 5 | 11490.00 | 56.50 PK | 74.00 | -17.50 | 1.34 H | 321 | 9.47 | 47.03 |
| 6 | 11490.00 | 41.60 AV | 54.00 | -12.40 | 1.34 H | 321 | -5.43 | 47.03 |
| 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 | 4596.00 | 55.80 PK | 74.00 | -18.20 | 1.41 V | 79 | 20.72 | 35.08 |
| 2 | 4596.00 | 40.20 AV | 54.00 | -13.80 | 1.41 V | 79 | 5.12 | 35.08 |
| 3 | *5745.00 | 112.19 PK | | | 1.09 V | 343 | 74.98 | 37.21 |
| 4 | *5745.00 | 98.67 AV | | | 1.09 V | 343 | 61.46 | 37.21 |
| 5 | 11490.00 | 54.57 PK | 74.00 | -19.43 | 1.48 V | 62 | 7.54 | 47.03 |
| 6 | 11490.00 | 41.93 AV | 54.00 | -12.07 | 1.48 V | 62 | -5.10 | 47.03 |

- 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 3 | FREQUENCY RANGE | 1 ~ 40GHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 20deg. C, 60%RH 965hPa | TESTED BY | Eric Lee |

| 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 | 4628.00 | 59.40 PK | 74.00 | -14.60 | 1.24 H | 331 | 24.26 | 35.14 |
| 2 | 4628.00 | 42.30 AV | 54.00 | -11.70 | 1.24 H | 331 | 7.16 | 35.14 |
| 3 | *5785.00 | 100.70 PK | | | 1.08 H | 308 | 63.39 | 37.31 |
| 4 | *5785.00 | 90.60 AV | | | 1.08 H | 308 | 53.29 | 37.31 |
| 5 | 11570.00 | 57.30 PK | 74.00 | -16.70 | 1.36 H | 319 | 10.33 | 46.97 |
| 6 | 11570.00 | 41.90 AV | 54.00 | -12.10 | 1.36 H | 319 | -5.07 | 46.97 |
| 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 | 4628.00 | 55.60 PK | 74.00 | -18.40 | 1.42 V | 84 | 20.46 | 35.14 |
| 2 | 4628.00 | 40.10 AV | 54.00 | -13.90 | 1.42 V | 84 | 4.96 | 35.14 |
| 3 | *5785.00 | 112.90 PK | | | 1.09 V | 98 | 75.59 | 37.31 |
| 4 | *5785.00 | 99.80 AV | | | 1.09 V | 98 | 62.49 | 37.31 |
| 5 | 11570.00 | 53.60 PK | 74.00 | -20.40 | 1.46 V | 58 | 6.63 | 46.97 |
| 6 | 11570.00 | 41.80 AV | 54.00 | -12.20 | 1.46 V | 58 | -5.17 | 46.97 |

- 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 5 | FREQUENCY RANGE | 1 ~ 40GHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 20deg. C, 60%RH 965hPa | TESTED BY | Eric Lee |

| 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 | 4644.00 | 60.20 PK | 74.00 | -13.80 | 1.27 H | 319 | 25.04 | 35.16 |
| 2 | 4644.00 | 42.90 AV | 54.00 | -11.10 | 1.27 H | 319 | 7.74 | 35.16 |
| 3 | *5825.00 | 100.80 PK | | | 1.02 H | 312 | 63.38 | 37.42 |
| 4 | *5825.00 | 90.80 AV | | | 1.02 H | 312 | 53.38 | 37.42 |
| 5 | 11610.00 | 57.80 PK | 74.00 | -16.20 | 1.41 H | 308 | 10.87 | 46.93 |
| 6 | 11610.00 | 42.60 AV | 54.00 | -11.40 | 1.41 H | 308 | -4.33 | 46.93 |
| 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 | 4644.00 | 55.90 PK | 74.00 | -18.10 | 1.46 V | 79 | 20.74 | 35.16 |
| 2 | 4644.00 | 40.30 AV | 54.00 | -13.70 | 1.46 V | 79 | 5.14 | 35.16 |
| 3 | *5825.00 | 113.40 PK | | | 1.12 V | 93 | 75.98 | 37.42 |
| 4 | *5825.00 | 100.30 AV | | | 1.12 V | 93 | 62.88 | 37.42 |
| 5 | 11610.00 | 54.70 PK | 74.00 | -19.30 | 1.49 V | 62 | 7.77 | 46.93 |
| 6 | 11610.00 | 42.10 AV | 54.00 | -11.90 | 1.49 V | 62 | -4.83 | 46.93 |

- 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.

**DRAFT 802.11n (20MHz) OFDM MODULATION**

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|---------------------------------|---------------------------|--------------------------|---------------------------|
| CHANNEL | Channel 1 | FREQUENCY RANGE | 1 ~ 40GHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 20deg. C, 60%RH 965hPa | TESTED BY | Eric Lee |

| 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 | 4596.00 | 56.80 PK | 74.00 | -17.20 | 1.29 H | 257 | 21.72 | 35.08 |
| 2 | 4596.00 | 43.60 AV | 54.00 | -10.40 | 1.29 H | 257 | 8.52 | 35.08 |
| 3 | *5745.00 | 101.60 PK | | | 1.46 H | 289 | 64.39 | 37.21 |
| 4 | *5745.00 | 89.20 AV | | | 1.46 H | 289 | 51.99 | 37.21 |
| 5 | 11490.00 | 58.10 PK | 74.00 | -15.90 | 1.20 H | 319 | 11.07 | 47.03 |
| 6 | 11490.00 | 43.20 AV | 54.00 | -10.80 | 1.20 H | 319 | -3.83 | 47.03 |
| 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 | 4596.00 | 54.80 PK | 74.00 | -19.20 | 1.43 V | 41 | 19.72 | 35.08 |
| 2 | 4596.00 | 41.10 AV | 54.00 | -12.90 | 1.43 V | 41 | 6.02 | 35.08 |
| 3 | *5745.00 | 112.10 PK | | | 1.12 V | 84 | 74.89 | 37.21 |
| 4 | *5745.00 | 99.20 AV | | | 1.12 V | 84 | 61.99 | 37.21 |
| 5 | 11490.00 | 58.10 PK | 74.00 | -15.90 | 1.34 V | 79 | 11.07 | 47.03 |
| 6 | 11490.00 | 42.70 AV | 54.00 | -11.30 | 1.34 V | 79 | -4.33 | 47.03 |

- 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.



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| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|---------------------------|--------------------|---------------------------|
| CHANNEL | Channel 3 | FREQUENCY RANGE | 1 ~ 40GHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 20deg. C, 60%RH 965hPa | TESTED BY | Eric Lee |

| 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 | 4628.00 | 56.80 PK | 74.00 | -17.20 | 1.29 H | 257 | 21.66 | 35.14 |
| 2 | 4628.00 | 43.60 AV | 54.00 | -10.40 | 1.29 H | 257 | 8.46 | 35.14 |
| 3 | *5785.00 | 101.10 PK | | | 1.42 H | 293 | 63.79 | 37.31 |
| 4 | *5785.00 | 90.30 AV | | | 1.42 H | 293 | 52.99 | 37.31 |
| 5 | 11570.00 | 58.10 PK | 74.00 | -15.90 | 1.20 H | 319 | 11.13 | 46.97 |
| 6 | 11570.00 | 43.20 AV | 54.00 | -10.80 | 1.20 H | 319 | -3.77 | 46.97 |
| 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 | 4628.00 | 55.10 PK | 74.00 | -18.90 | 1.46 V | 32 | 19.96 | 35.14 |
| 2 | 4628.00 | 41.30 AV | 54.00 | -12.70 | 1.46 V | 32 | 6.16 | 35.14 |
| 3 | *5785.00 | 112.60 PK | | | 1.13 V | 74 | 75.29 | 37.31 |
| 4 | *5785.00 | 99.80 AV | | | 1.13 V | 74 | 62.49 | 37.31 |
| 5 | 11570.00 | 57.50 PK | 74.00 | -16.50 | 1.22 V | 76 | 10.53 | 46.97 |
| 6 | 11570.00 | 42.60 AV | 54.00 | -11.40 | 1.22 V | 76 | -4.37 | 46.97 |

- 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 5 | FREQUENCY RANGE | 1 ~ 40GHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 20deg. C, 60%RH 965hPa | TESTED BY | Eric Lee |

| 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 | 4660.00 | 57.30 PK | 74.00 | -16.70 | 1.31 H | 259 | 22.11 | 35.19 |
| 2 | 4660.00 | 43.90 AV | 54.00 | -10.10 | 1.31 H | 259 | 8.71 | 35.19 |
| 3 | *5825.00 | 101.80 PK | | | 1.43 H | 284 | 64.38 | 37.42 |
| 4 | *5825.00 | 89.90 AV | | | 1.43 H | 284 | 52.48 | 37.42 |
| 5 | 11650.00 | 58.60 PK | 74.00 | -15.40 | 1.27 H | 321 | 11.70 | 46.90 |
| 6 | 11650.00 | 43.50 AV | 54.00 | -10.50 | 1.27 H | 321 | -3.40 | 46.90 |
| 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 | 4660.00 | 55.60 PK | 74.00 | -18.40 | 1.42 V | 29 | 20.41 | 35.19 |
| 2 | 4660.00 | 41.60 AV | 54.00 | -12.40 | 1.42 V | 29 | 6.41 | 35.19 |
| 3 | *5825.00 | 112.20 PK | | | 1.15 V | 81 | 74.78 | 37.42 |
| 4 | *5825.00 | 99.40 AV | | | 1.15 V | 81 | 61.98 | 37.42 |
| 5 | 11650.00 | 56.30 PK | 74.00 | -17.70 | 1.21 V | 64 | 9.40 | 46.90 |
| 6 | 11650.00 | 41.80 AV | 54.00 | -12.20 | 1.21 V | 64 | -5.10 | 46.90 |

- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
 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

5.3 6dB BANDWIDTH MEASUREMENT

5.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

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

5.3.3 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.

5.3.4 DEVIATION FROM TEST STANDARD

No deviation

5.3.5 TEST SETUP



5.3.6 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

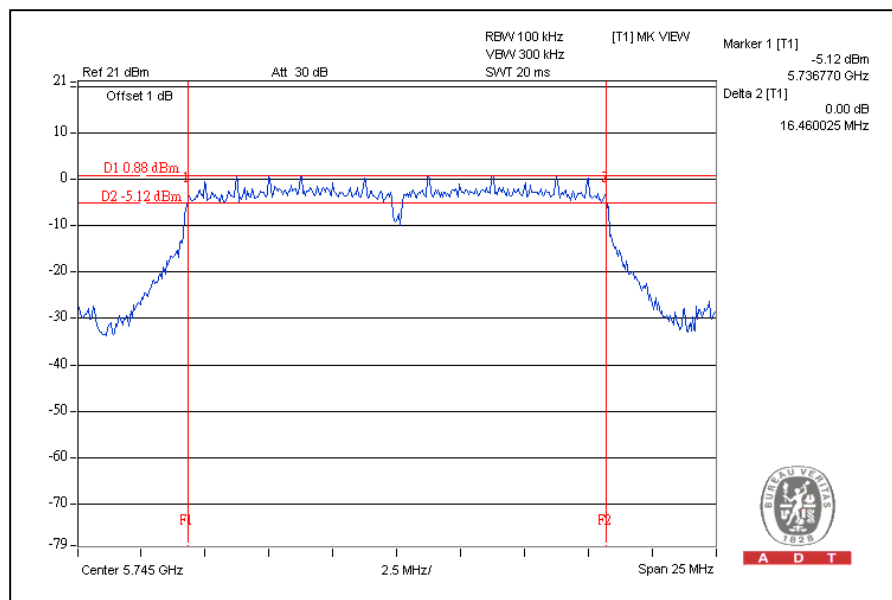
5.3.7 TEST RESULTS

802.11a OFDM MODULATION:

| | | | |
|-----------------------------|---------------|---------------------------------|-------------------------|
| MODULATION TYPE | BPSK | TRANSFER RATE | 6Mbps |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | ENVIRONMENTAL CONDITIONS | 25deg. C, 60%RH, 965hPa |
| TESTED BY | Eric Lee | | |

| CHANNEL | CHANNEL FREQUENCY (MHz) | 6dB BANDWIDTH (MHz) | MINIMUM LIMIT (MHz) | PASS / FAIL |
|---------|-------------------------|---------------------|---------------------|-------------|
| 1 | 5745 | 16.46 | 0.5 | PASS |
| 3 | 5785 | 16.41 | 0.5 | PASS |
| 5 | 5825 | 16.46 | 0.5 | PASS |

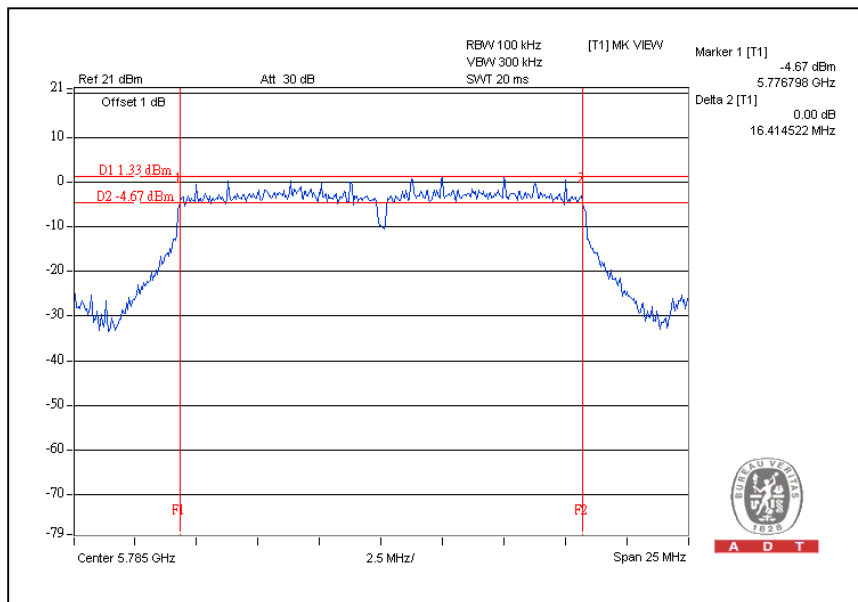
For CH1



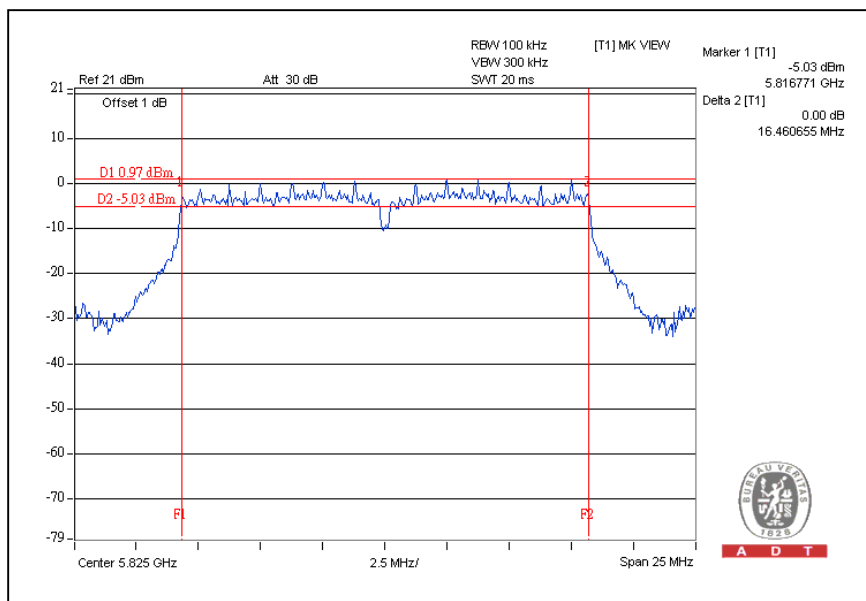


A D T

CH3



CH5





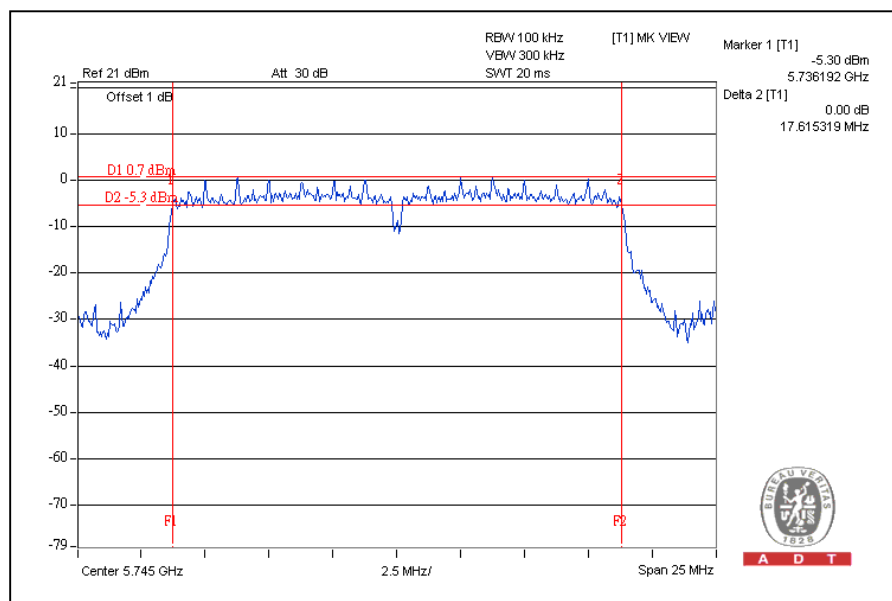
A D T

DRAFT 802.11n (20MHz) OFDM MODULATION:

| | | | |
|-----------------------------|---------------|---------------------------------|-------------------------|
| MODULATION TYPE | BPSK | TRANSFER RATE | 13Mbps |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | ENVIRONMENTAL CONDITIONS | 25deg. C, 60%RH, 965hPa |
| TESTED BY | Eric Lee | | |

| CHANNEL | CHANNEL FREQUENCY (MHz) | 6dB BANDWIDTH (MHz) | | MINIMUM LIMIT (MHz) | PASS / FAIL |
|---------|--------------------------|---------------------|----------|---------------------|-------------|
| | | CHAIN(0) | CHAIN(1) | | |
| 1 | 5745 | 17.62 | 17.62 | 0.5 | PASS |
| 3 | 5785 | 17.62 | 17.64 | 0.5 | PASS |
| 5 | 5825 | 17.61 | 17.61 | 0.5 | PASS |

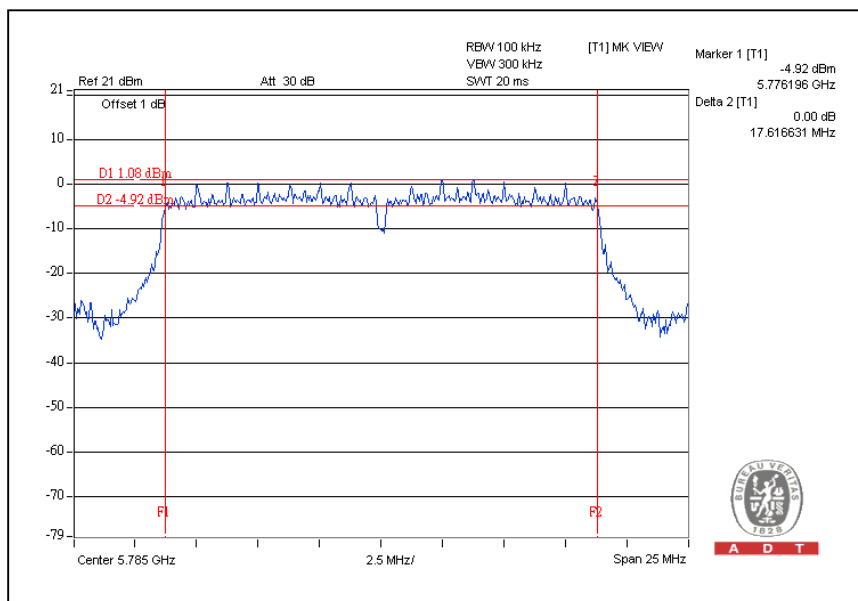
For Chain (0): CH1



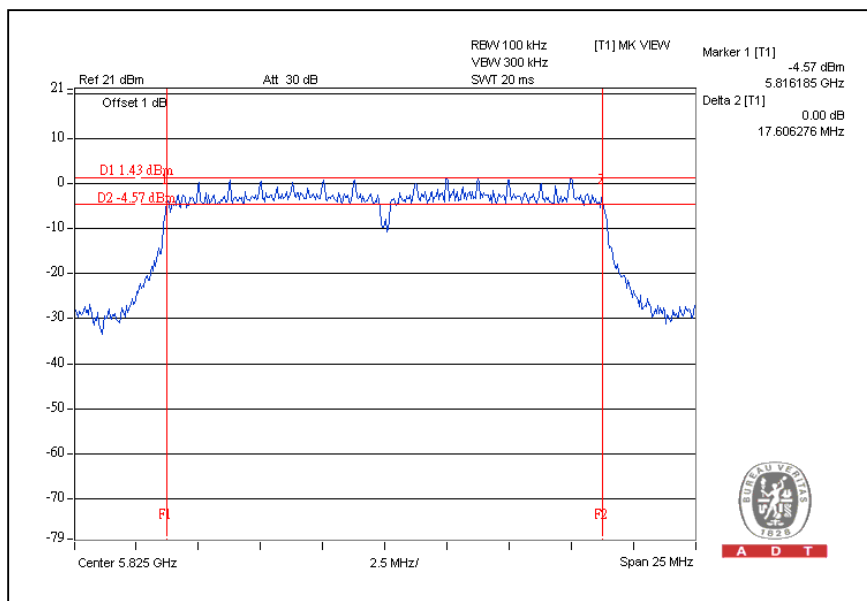


A D T

CH3



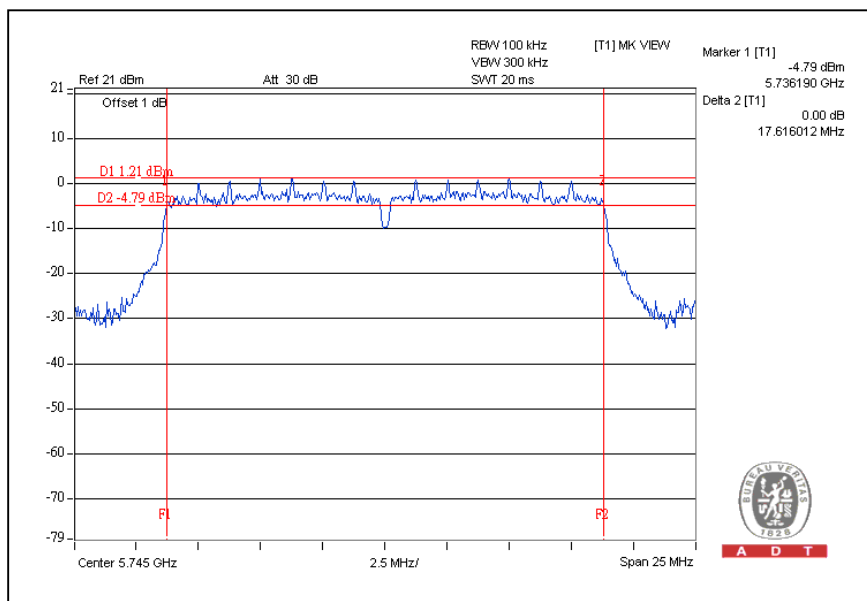
CH5



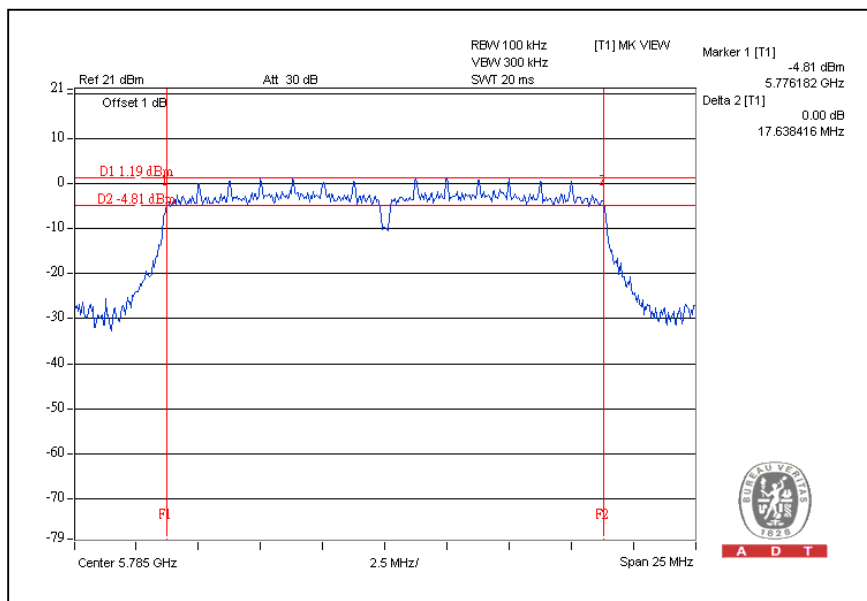


A D T

For Chain (1): CH1



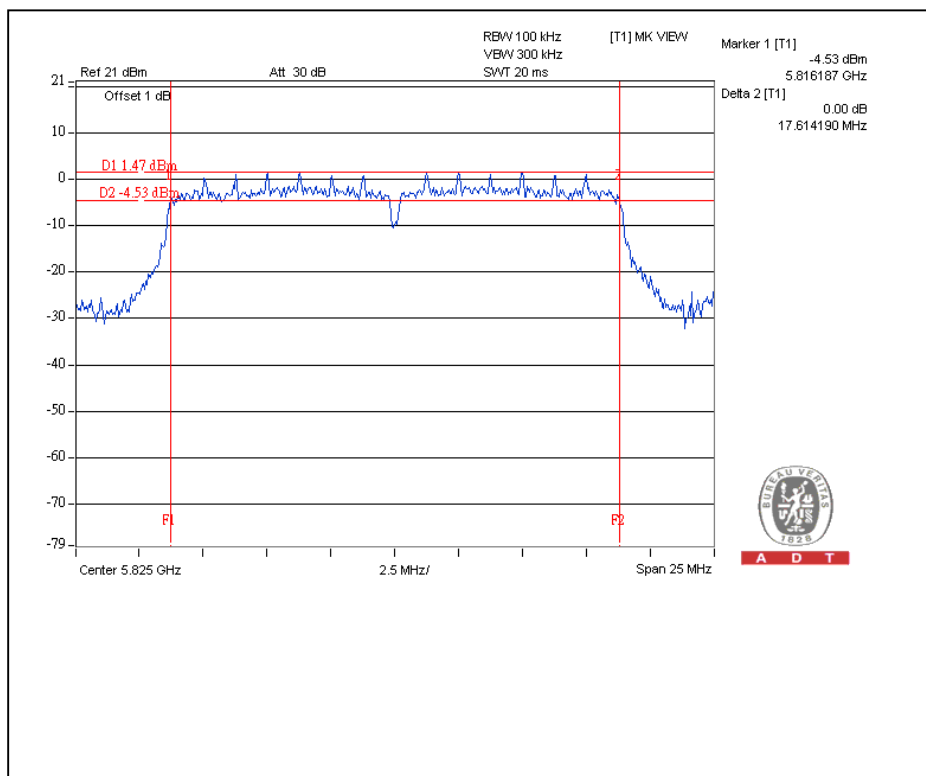
CH3





A D T

CH5





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5.4 MAXIMUM PEAK OUTPUT POWER

5.4.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Measurement is 30dBm.

5.4.2 INSTRUMENTS

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED DATE | CALIBRATED UNTIL |
|----------------------------|-----------|------------|-----------------|------------------|
| Anritsu Power Meter | ML2495A | 0824006 | June 14, 2008 | June 13, 2009 |
| Pulse Power Sensor | MA2411B | 0738172 | April 17, 2008 | April 16, 2009 |

NOTE:

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

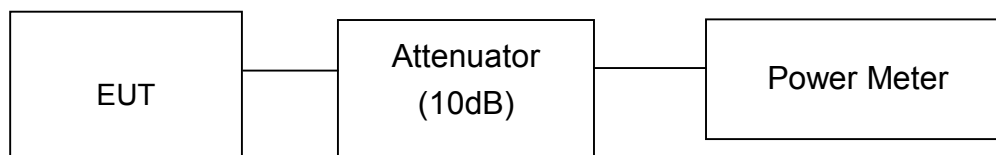
5.4.3 TEST PROCEDURES

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.

5.4.4 DEVIATION FROM TEST STANDARD

No deviation

5.4.5 TEST SETUP



5.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6



5.4.7 TEST RESULTS

802.11a OFDM modulation

| | | | |
|------------------------|---------------|---------------------------------|-------------------------|
| MODULATION TYPE | BPSK | TRANSFER RATE | 6Mbps |
| INPUT POWER | 120Vac, 60 Hz | ENVIRONMENTAL CONDITIONS | 25deg. C, 60%RH, 965hPa |
| TESTED BY | Eric Lee | | |

| CHANNEL | CHANNEL FREQUENCY (MHz) | PEAK POWER OUTPUT (mW) | PEAK POWER OUTPUT (dBm) | PEAK POWER LIMIT (dBm) | PASS / FAIL |
|---------|-------------------------|------------------------|-------------------------|------------------------|-------------|
| 1 | 5745 | 138.038 | 21.40 | 30 | PASS |
| 3 | 5785 | 134.896 | 21.30 | 30 | PASS |
| 5 | 5825 | 141.254 | 21.50 | 30 | PASS |

DRAFT 802.11n (20MHz) OFDM MODULATION:

| | | | |
|-----------------------------|---------------|---------------------------------|-------------------------|
| MODULATION TYPE | BPSK | TRANSFER RATE | 13Mbps |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | ENVIRONMENTAL CONDITIONS | 25deg. C, 60%RH, 965hPa |
| TESTED BY | Eric Lee | | |

| CHANNEL | CHANNEL FREQUENCY (MHz) | PEAK POWER OUTPUT (mW) | | PEAK POWER OUTPUT (dBm) | | TOTAL PEAK POWER (mW) | TOTAL PEAK POWER (dBm) | PEAK POWER LIMIT (dBm) | PASS / FAIL |
|---------|-------------------------|------------------------|----------|-------------------------|----------|-----------------------|------------------------|------------------------|-------------|
| | | CHAIN(0) | CHAIN(1) | CHAIN(0) | CHAIN(1) | | | | |
| 1 | 5745 | 151.356 | 154.882 | 21.80 | 21.90 | 306.238 | 24.86 | 30 | PASS |
| 3 | 5785 | 144.544 | 151.356 | 21.60 | 21.80 | 295.900 | 24.71 | 30 | PASS |
| 5 | 5825 | 141.254 | 138.038 | 21.50 | 21.40 | 279.292 | 24.46 | 30 | PASS |



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5.5 POWER SPECTRAL DENSITY MEASUREMENT

5.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

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

5.5.3 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.

5.5.4 DEVIATION FROM TEST STANDARD

No deviation

5.5.5 TEST SETUP



5.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6



A D T

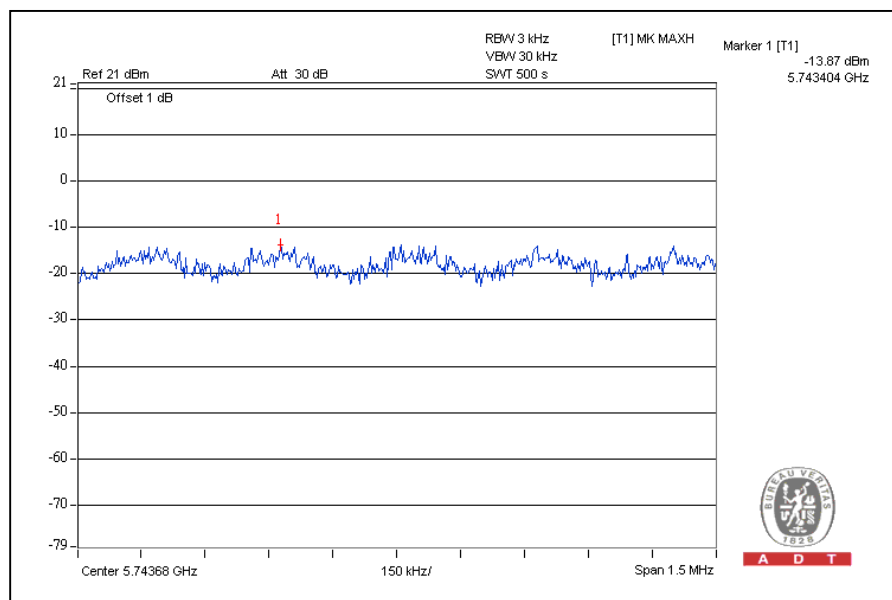
5.5.7 TEST RESULTS

802.11a OFDM modulation

| | | | |
|-----------------------------|---------------|---------------------------------|------------------------|
| MODULATION TYPE | BPSK | TRANSFER RATE | 6Mbps |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | ENVIRONMENTAL CONDITIONS | 25deg.C, 60%RH, 965hPa |
| TESTED BY | Eric Lee | | |

| CHANNEL | CHANNEL FREQUENCY (MHz) | RF POWER LEVEL IN 3kHz BW (dBm) | MAXIMUM LIMIT (dBm) | PASS / FAIL |
|---------|--------------------------|---------------------------------|---------------------|-------------|
| 1 | 5745 | -13.87 | 8 | PASS |
| 3 | 5785 | -12.61 | 8 | PASS |
| 5 | 5825 | -13.51 | 8 | PASS |

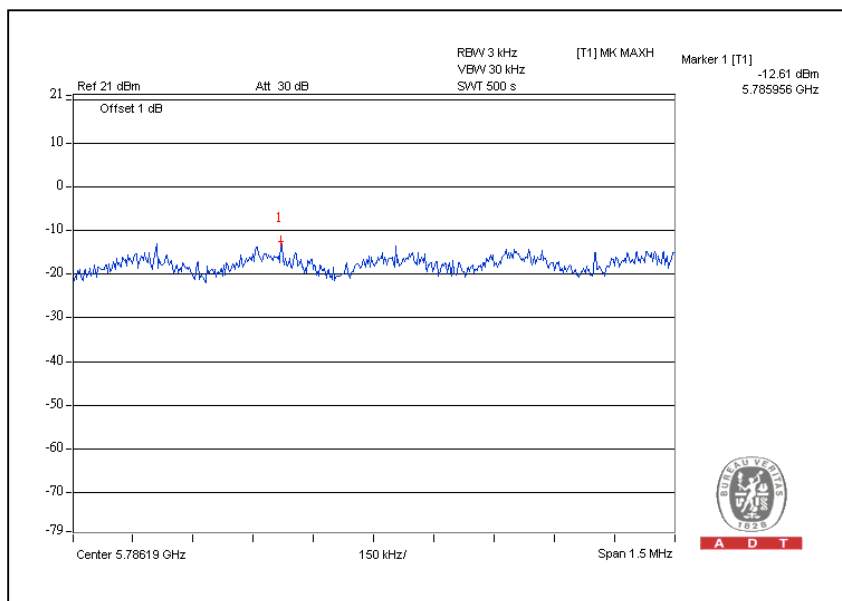
For CH1



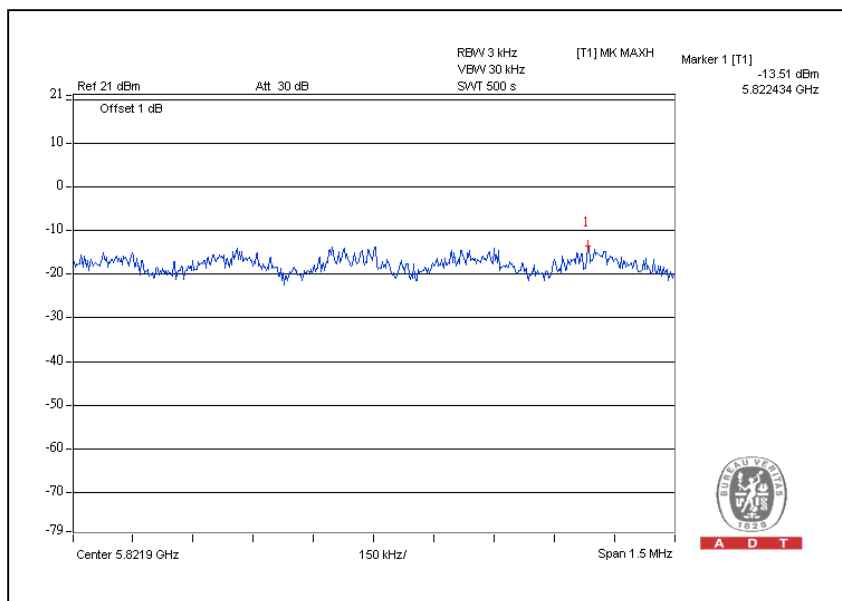


A D T

CH3



CH5





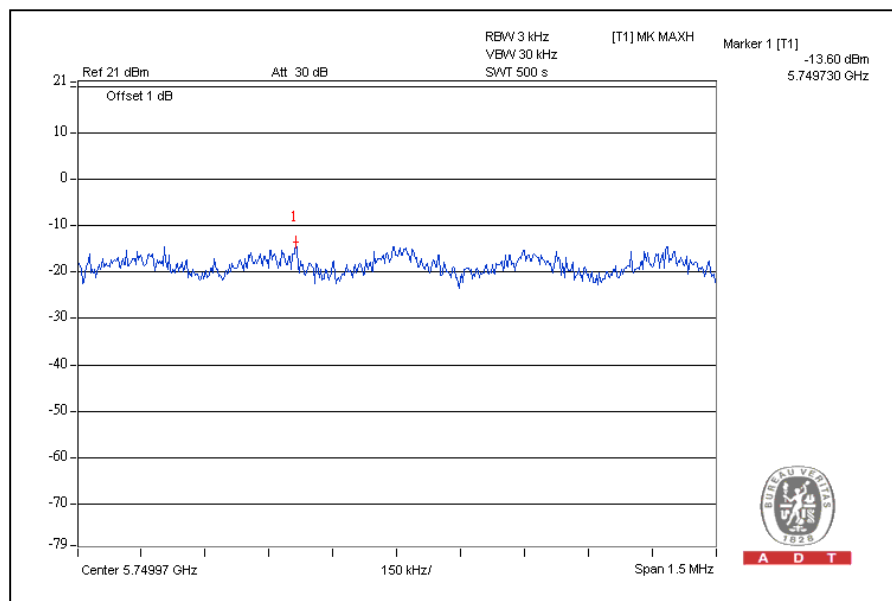
A D T

DRAFT 802.11n (20MHz) OFDM MODULATION:

| | | | |
|-----------------------------|---------------|---------------------------------|------------------------|
| MODULATION TYPE | BPSK | TRANSFER RATE | 13Mbps |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | ENVIRONMENTAL CONDITIONS | 25deg.C, 60%RH, 965hPa |
| TESTED BY | Eric Lee | | |

| CHANNEL | CHANNEL FREQUENCY (MHz) | RF POWER LEVEL IN 3kHz BW (mW) | | RF POWER LEVEL IN 3kHz BW (dBm) | | TOTAL POWER DENSITY (mW) | TOTAL POWER DENSITY (dBm) | MAXIMUM LIMIT (dBm) | PASS / FAIL |
|---------|-------------------------|--------------------------------|----------|---------------------------------|----------|--------------------------|---------------------------|---------------------|-------------|
| | | CHAIN(0) | CHAIN(1) | CHAIN(0) | CHAIN(1) | | | | |
| 1 | 5745 | 0.044 | 0.050 | -13.60 | -13.01 | 0.094 | -10.27 | 8 | PASS |
| 3 | 5785 | 0.048 | 0.042 | -13.18 | -13.81 | 0.090 | -10.46 | 8 | PASS |
| 5 | 5825 | 0.059 | 0.042 | -12.31 | -13.79 | 0.101 | -9.96 | 8 | PASS |

For Chain(0): CH1

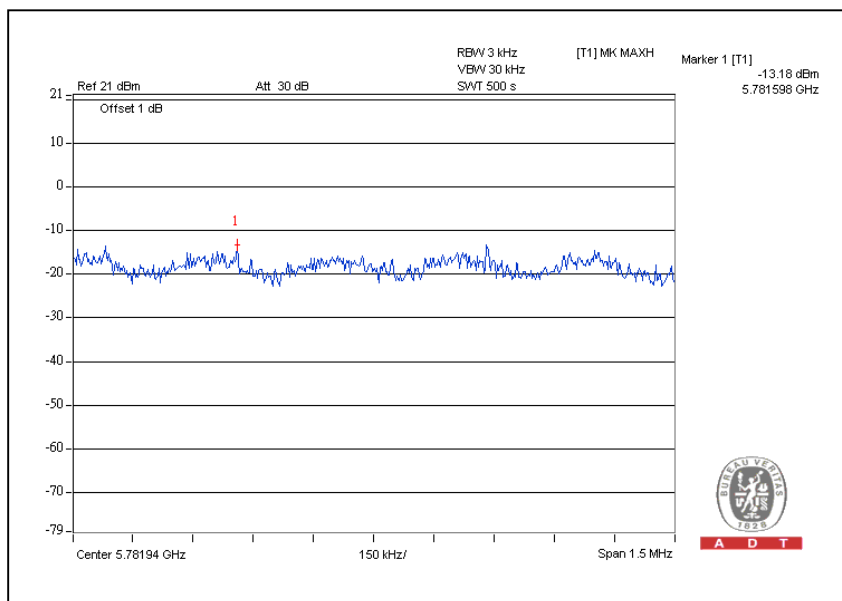


A D T

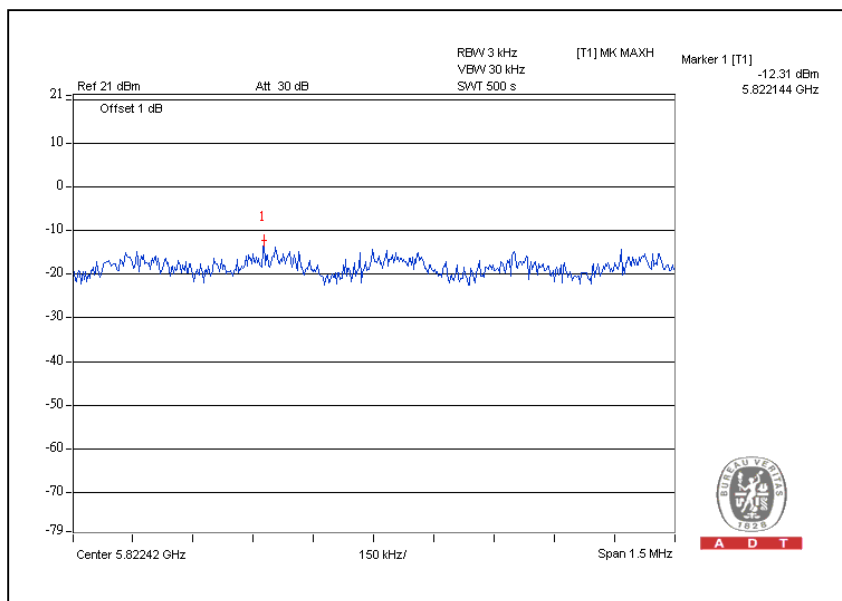


A D T

CH3



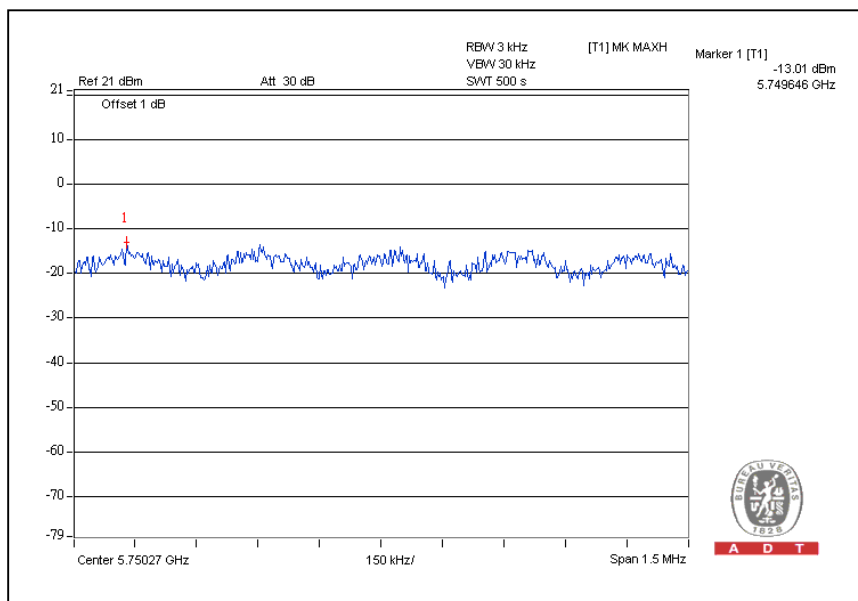
CH5



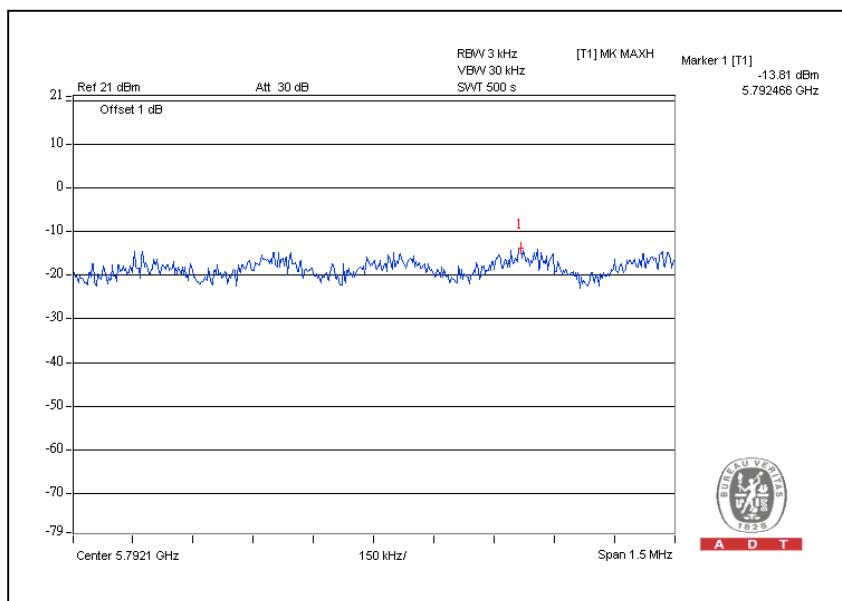


A D T

For Chain (1): CH1



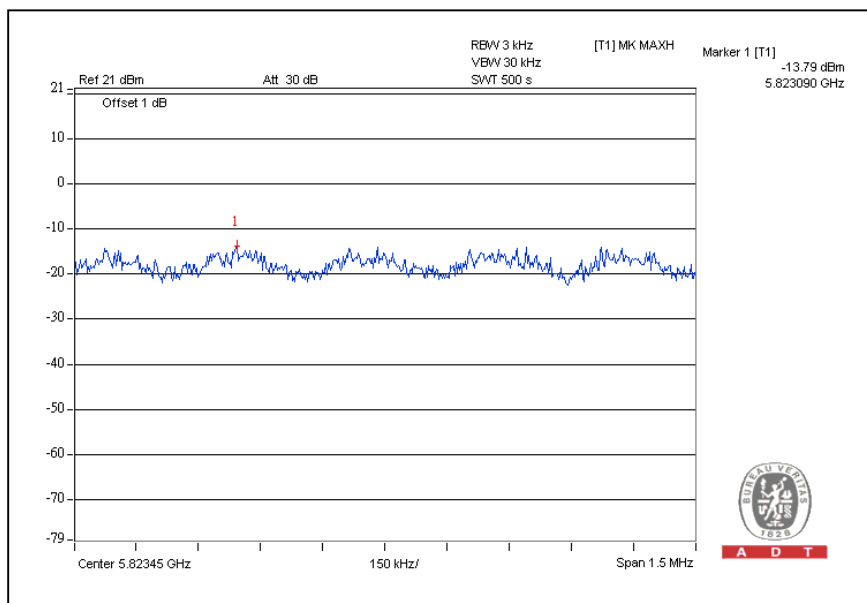
CH3





A D T

CH5





5.6 CONDUCTED OUT-BAND EMISSION MEASUREMENT

5.6.1 LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT

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

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

5.6.3 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.

5.6.4 DEVIATION FROM TEST STANDARD

No deviation

5.6.5 EUT OPERATING CONDITION

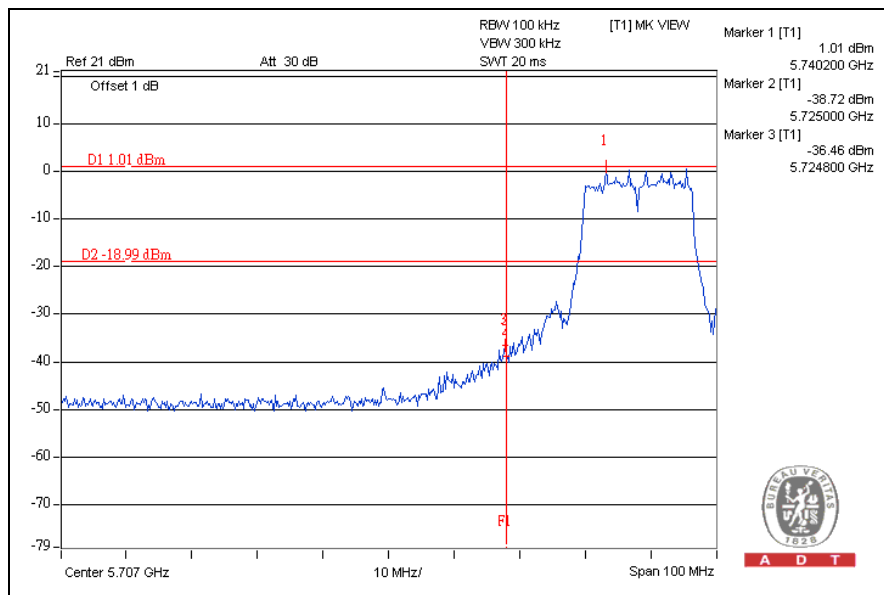
Same as Item 4.3.6

5.6.6 TEST RESULTS

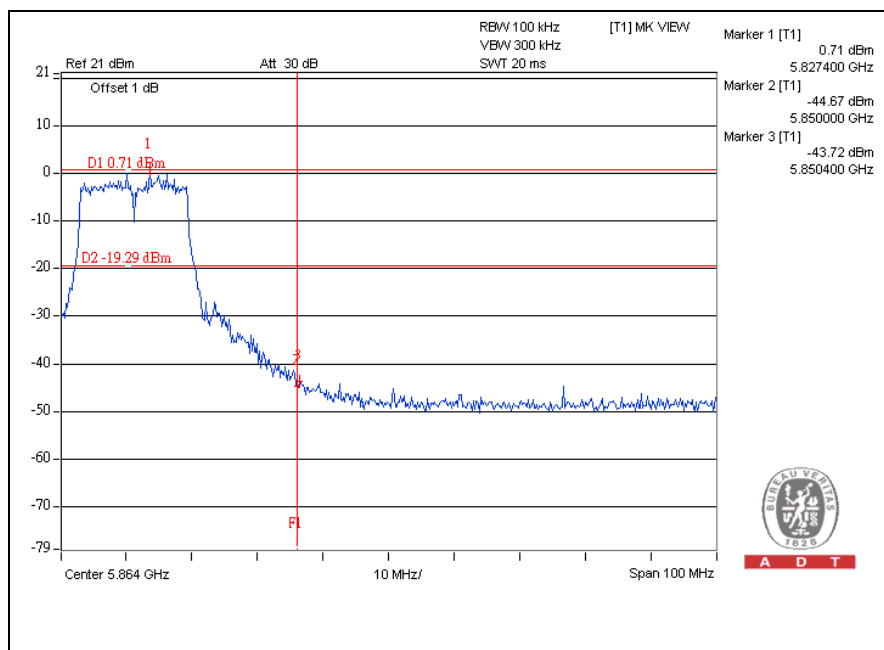
The spectrum plots are attached on the following pages. D2 line indicates the highest level, D1 line indicates the 20dB offset below D2. It shows compliance with the requirement in part 15.247(d).

802.11a OFDM modulation

For : CH1



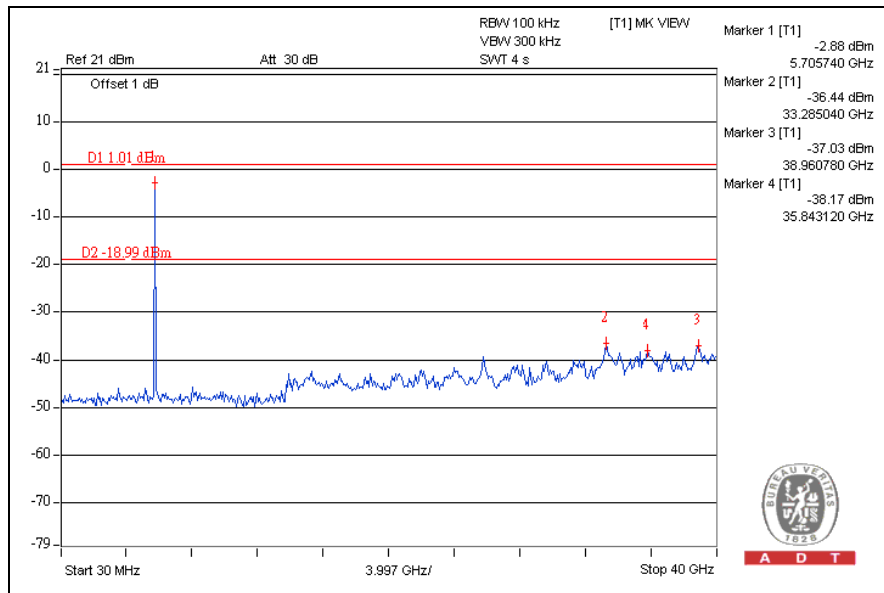
CH5



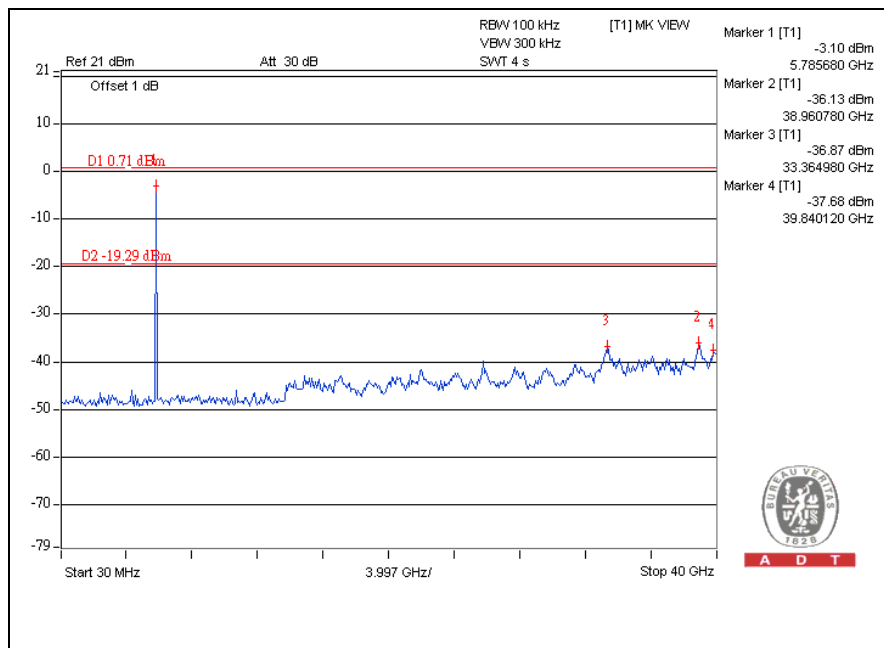


A D T

CH1



CH5

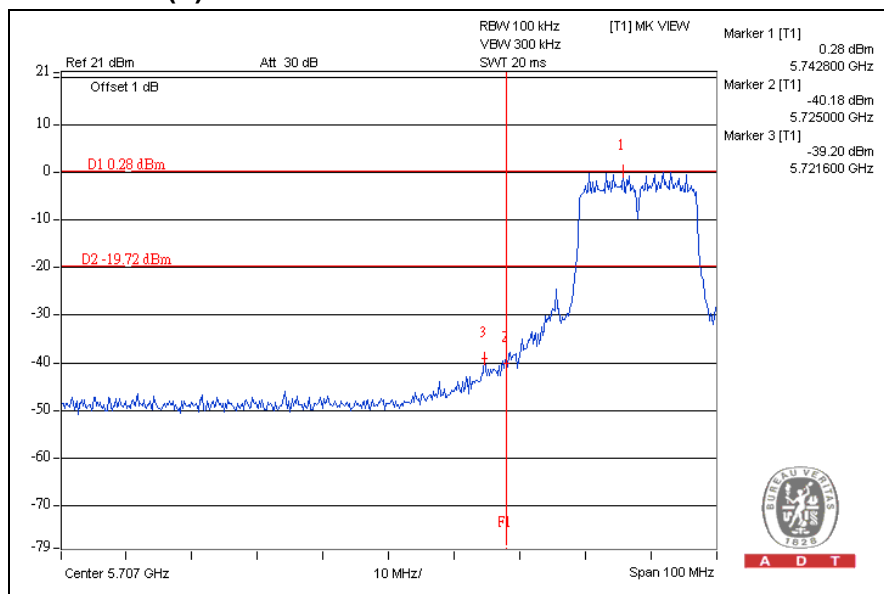




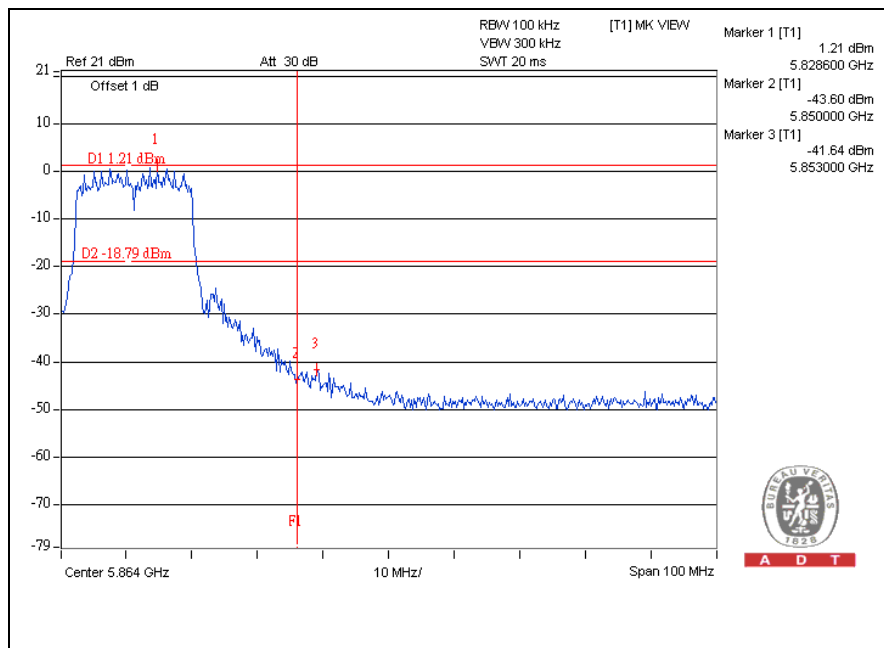
A D T

DRAFT 802.11n (20MHz) OFDM MODULATION:

For chain (0) :CH1



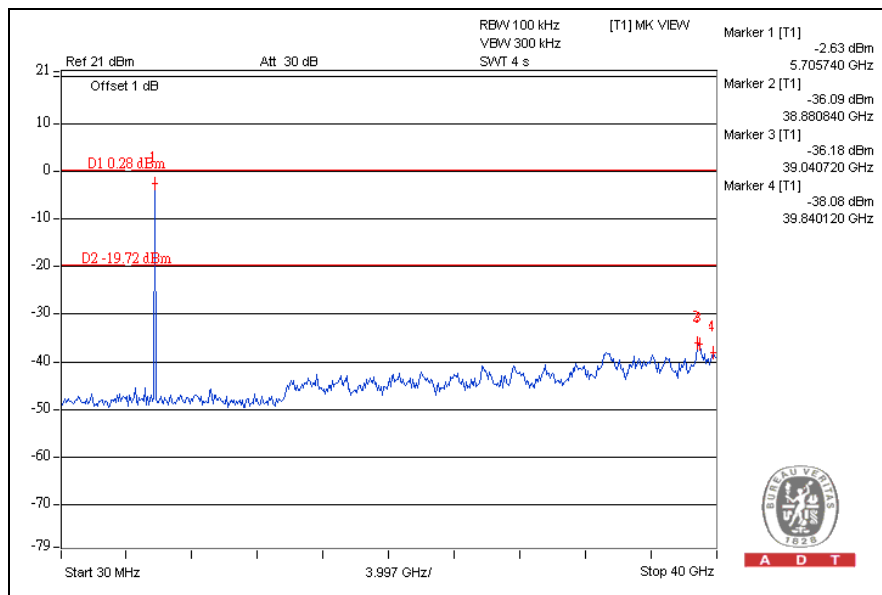
CH5



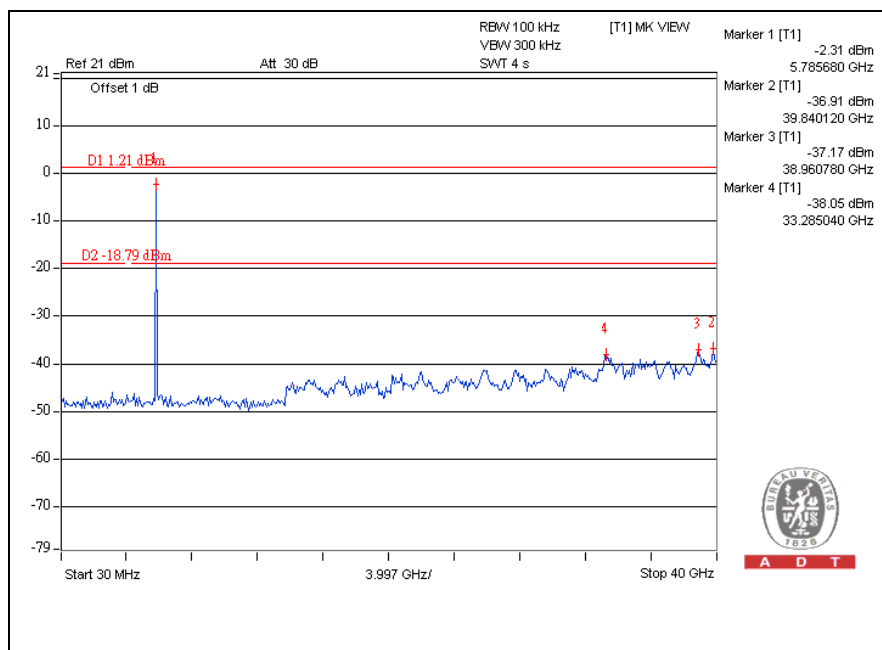


A D T

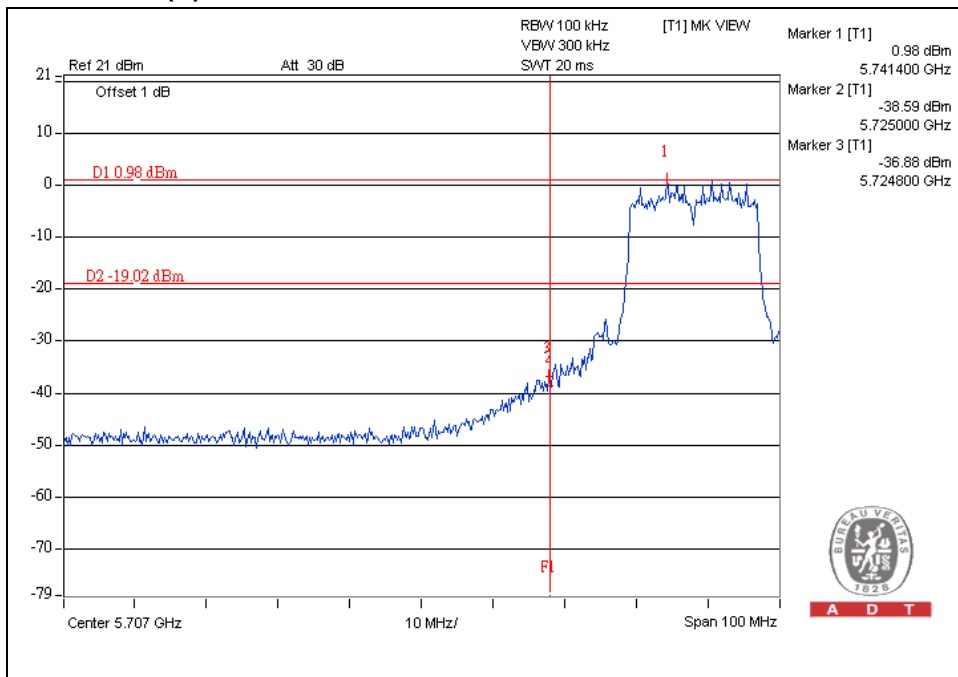
CH1



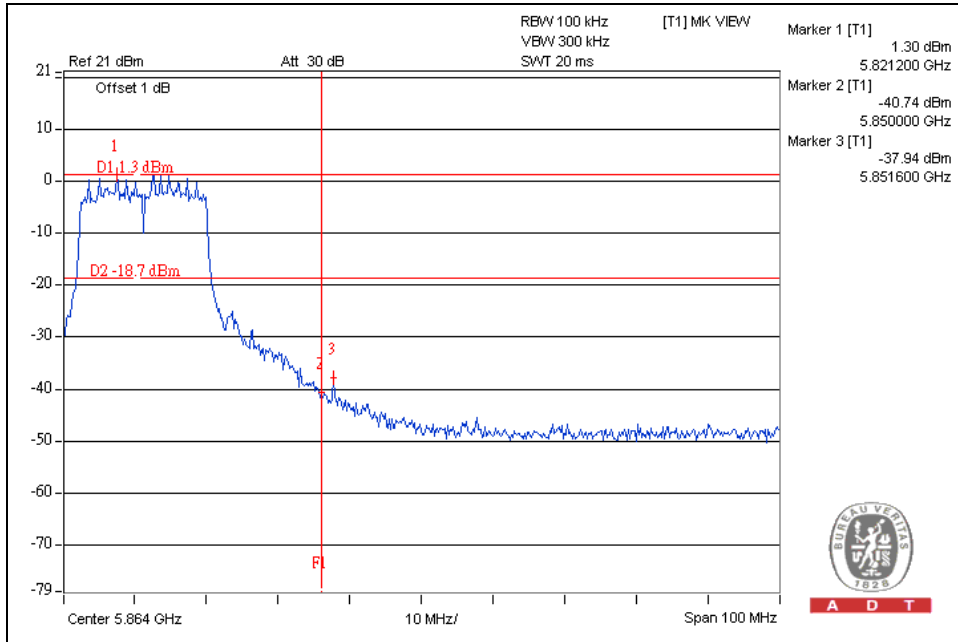
CH5



For chain (1):CH1



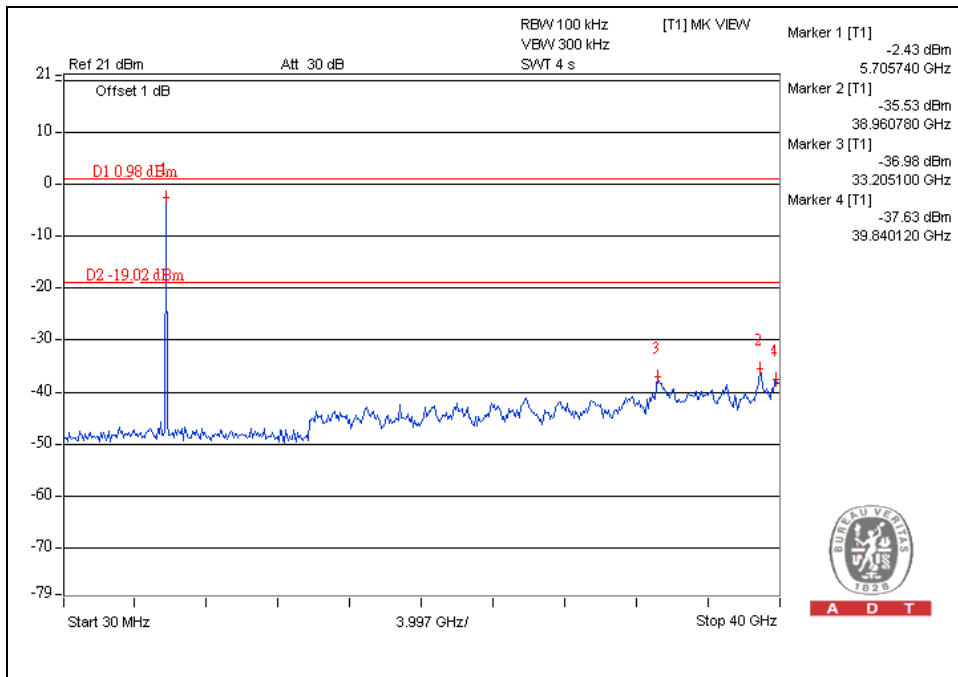
CH5



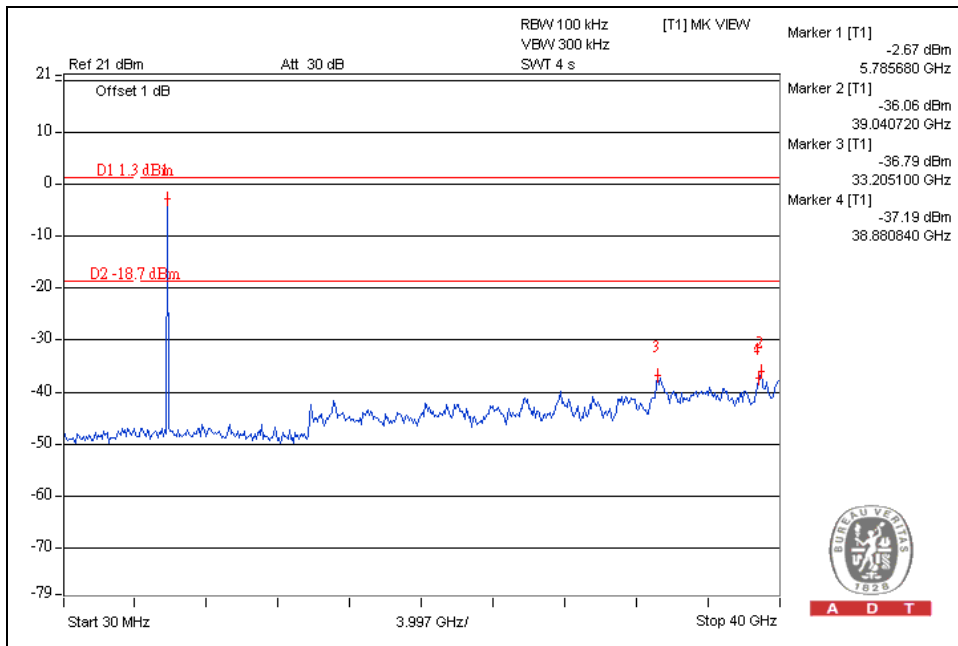


A D T

CH1



CH5



5.7 ANTENNA REQUIREMENT

5.7.1 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(b), 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.

5.7.2 ANTENNA CONNECTED CONSTRUCTION

There are two antennas provided to this EUT, please refer to the following table:

| No. | Antenna Type | Antenna Connector | For 2.4GHz Gain (dBi) | For 5GHz Gain (dBi) | Cable Loss (dB) | Cable Length (cm) |
|-----|--------------|-------------------|-----------------------|---------------------|-----------------|-------------------|
| 1 | PCB | Hirose U.FL | 2.7 | 3 | 0 | 24 |
| 2 | PCB | Hirose U.FL | 1.5 | 1.5 | 0 | 39 |



A D T

6. INFORMATION ON THE TESTING LABORATORIES

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved 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

7.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 ---