



FCC TEST REPORT (15.247)

REPORT NO. : RF940120A01
MODEL NO. : R15D
RECEIVED : Jan. 20, 2005
TESTED : Jan. 22 ~ 27, 2005
ISSUED : April 4, 2005

APPLICANT : TWINHEAD INTERNATIONAL CORP.

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ISSUED BY : Advance Data Technology Corporation

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1. CERTIFICATION

PRODUCT: Notebook PC
BRAND NAME: Twinhead
MODEL NO.: R15D
APPLICANT: TWINHEAD INTERNATIONAL CORP.
TEST ITEM: ENGINEERING SAMPLE
TESTED: Jan. 22 ~ 27, 2005
STANDARDS: FCC Part 15, Subpart C (Section 15.247)
ANSI C63.4:2003

The above equipment has been tested by **Advance Data Technology Corporation**, 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 : Annie Chang , **DATE:** April 4, 2005
(Annie Chang)

TECHNICAL ACCEPTANCE : Jun Wu , **DATE:** April 4, 2005
Responsible for EMI (Jun Wu)

APPROVED BY : Cody Chang , **DATE:** April 4, 2005
(Cody Chang, Deputy Manager)

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

| APPLIED STANDARD: FCC Part 15, Subpart C (Section 15.247) | | | |
|--|---|---------------|--|
| Standard Section | Test Type and Limit | Result | REMARK |
| 15.207 | AC Power Conducted Emission | PASS | Meet the requirement of limit Minimum passing margin is -11.05dB at 2.826MHz & 2.832MHz |
| 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 -2.91dB at 585.95MHz |
| 15.247(e) | Power Spectral Density Limit: max. 8dBm | PASS | Meet the requirement of limit |
| 15.247(d) | Band Edge Measurement Limit: 20 dB less than the peak value of fundamental frequency | PASS | Meet the requirement of limit |

Note:1. The EUT was a Notebook PC (including wireless LAN card).

2. The EUT as operates in 2.412~2.462GHz, 5.150~5.350GHz and 5.725~5.850GHz frequencies band. This test report was recorded the RF parameters including 2.412~2.462GHz and 5.725~5.850GHz. For the 5.150~5.350GHz 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:

| Measurement | Uncertainty |
|---------------------|--------------------|
| Conducted emissions | 2.45 dB |
| Radiated emissions | 3.74 dB |

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

| | |
|------------------------------|--|
| PRODUCT | Notebook PC |
| MODEL NO. | R15D |
| POWER SUPPLY | 20Vdc from power adapter |
| 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 |
| FREQUENCY RANGE | 802.11b & 802.11g: 2.412 ~ 2.462GHz 802.11a: 5.150 ~ 5.350GHz and 5.725 ~ 5.850GHz |
| NUMBER OF CHANNEL | 802.11b & 802.11g: 11 802.11a: 13 |
| OUTPUT POWER | 802.11b: 40.365mW 802.11g: 25.293mW 802.11a: 26.062mW for 5.150 ~ 5.350GHz 802.11a: 25.003mW for 5.725 ~ 5.850GHz |
| ANTENNA TYPE | PIFA antenna (UFL connector) For 2.412 ~ 2.462GHz frequency band: Antenna gain: 2.27dBi gain For 5.150 ~ 5.350GHz frequency band: Antenna gain: -2.35dBi gain For 5.725 ~ 5.850GHz frequency band: Antenna gain: -1.31dBi gain |
| DATA CABLE | N/A |
| I/O PORTS | Refer to user's manual |
| ASSOCIATED DEVICES | N/A |

NOTE:

1. The EUT is a Notebook PC (including wireless LAN card) which operates in both of the 5GHz and 2.4GHz Bands and compatibility with 802.11a and 802.11b, 802.11g technology.



2. The Notebook PC was powered by the following adapter:

| | |
|-------------------|--|
| Brand | LI SHIN |
| Model | LSE9802A2060 |
| AC I/P | 100-240V, 50/60Hz 1.5A |
| DC O/P | 20V, 3.0A 60W MAX |
| Power Line | Non-shielded AC 1.5m, Shielded DC 1.5m with one core |

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

3.2 DESCRIPTION OF TEST MODES

Operated in frequency range 2412 ~ 2462MHz:

For 802.11b/g: Eleven channels were provided to the EUT during the test:

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

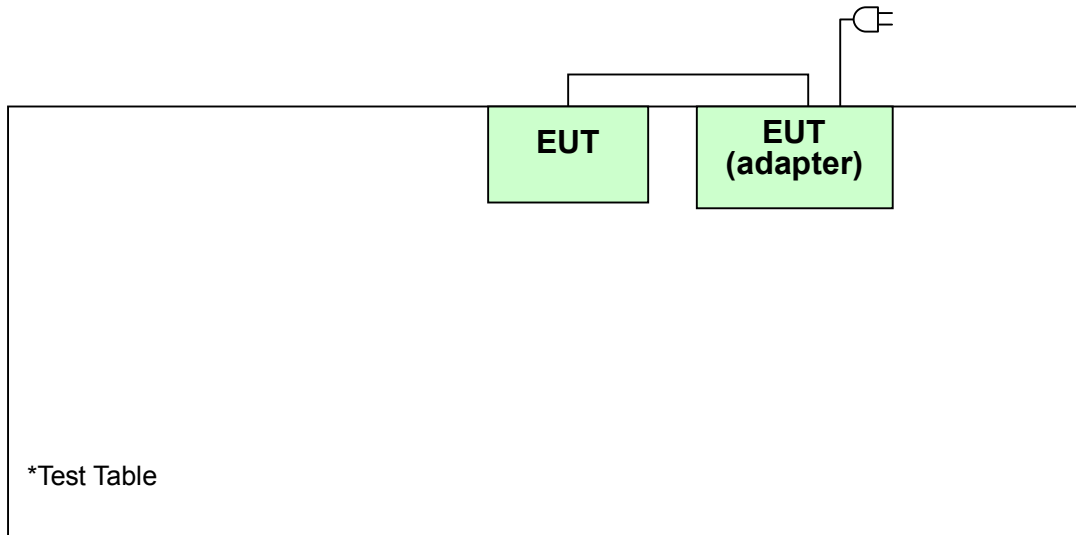
Operated in frequency range 5725 ~ 5850MHz:

For 802.11a: Five channels are provided to this EUT during the test:

| Channel | Frequency |
|---------|-----------|
| 1 | 5745 MHz |
| 2 | 5765 MHz |
| 3 | 5785 MHz |
| 4 | 5805 MHz |
| 5 | 5825 MHz |



3.2.1 CONFIGURATION OF SYSTEM UNDER TEST



3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL:

| Applicable to | | | | Description |
|---------------|-------|-------|------|-------------|
| PLC | RE<1G | RE≥1G | APCM | |
| X | X | X | X | |

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

Power Line Conducted Emission Test:

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

| Mode | Available Channel | Tested Channel | Modulation Technology | Modulation Type | Data Rate (Mbps) |
|---------|-------------------|----------------|-----------------------|-----------------|------------------|
| 802.11g | 1 to 11 | 1, 6, 11 | OFDM | BPSK | 6 |
| 802.11a | 1 to 5 | 3 | OFDM | BPSK | 6 |



Radiated Emission Test (Below 1 GHz):

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

| Mode | Available Channel | Tested Channel | Modulation Technology | Modulation Type | Data Rate (Mbps) |
|---------|-------------------|----------------|-----------------------|-----------------|------------------|
| 802.11g | 1 to 11 | 11 | OFDM | BPSK | 6 |
| 802.11a | 1 to 5 | 3 | OFDM | BPSK | 6 |

Radiated Emission Test (Above 1 GHz):

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

| Mode | Available Channel | Tested Channel | Modulation Technology | Modulation Type | Data Rate (Mbps) |
|---------|-------------------|----------------|-----------------------|-----------------|------------------|
| 802.11b | 1 to 11 | 1, 6, 11 | DSSS | CCK | 11 |
| 802.11g | 1 to 11 | 1, 6, 11 | OFDM | BPSK | 6 |
| 802.11a | 1 to 5 | 1, 3, 5 | OFDM | BPSK | 6 |

Bandedge Measurement:

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

| Mode | Available Channel | Tested Channel | Modulation Technology | Modulation Type | Data Rate (Mbps) |
|---------|-------------------|----------------|-----------------------|-----------------|------------------|
| 802.11b | 1 to 11 | 1, 11 | DSSS | CCK | 11 |
| 802.11g | 1 to 11 | 1, 11 | OFDM | BPSK | 6 |
| 802.11a | 1 to 5 | 1, 5 | OFDM | BPSK | 6 |

Antenna Port Conducted Measurement:

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

| Mode | Available Channel | Tested Channel | Modulation Technology | Modulation Type | Data Rate (Mbps) |
|---------|-------------------|----------------|-----------------------|-----------------|------------------|
| 802.11b | 1 to 11 | 1, 6, 11 | DSSS | CCK | 11 |
| 802.11g | 1 to 11 | 1, 6, 11 | OFDM | BPSK | 6 |
| 802.11a | 1 to 5 | 1, 3, 5 | OFDM | BPSK | 6 |



3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a Notebook PC (including wireless LAN card). 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.

NOTE: The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

3.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with its power adapter.



4. TEST TYPES AND RESULTS (2.4GHz 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 UNTIL |
|--|-----------------|--------------|------------------|
| ROHDE & SCHWARZ Test Receiver | ESHS 30 | 828765/002 | July 4, 2005 |
| ROHDE & SCHWARZ Artificial Mains Network (for EUT) | ESH3-Z5 | 835239/001 | Mar. 31, 2005 |
| LISN With Adapter (for EUT) | AD10 | C09Ada-001 | Mar. 31, 2005 |
| ROHDE & SCHWARZ Artificial Mains Network (for peripherals) | ESH3-Z5 | 835239/002 | Apr. 18, 2005 |
| ROHDE & SCHWARZ 4-wire ISN | ENY41 | 935154/007 | Apr. 20, 2005 |
| ROHDE & SCHWARZ 2-wire ISN | ENY22 | 833823/026 | Apr. 20, 2005 |
| Software | ADT_Conc_V7.3.2 | NA | NA |
| Software | ADT_ISN_V7.3.2 | NA | NA |
| RF cable (JYEBAO) | 5D-FB | Cable-C09.01 | May 9, 2005 |
| SUHNER Terminator (For ROHDE & SCHWARZ LISN) | 65BNC-5001 | E1-010789 | May 17, 2005 |

- 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 ADT Shielded Room No. 9.
 3. The VCCI Site Registration No. C-1312.



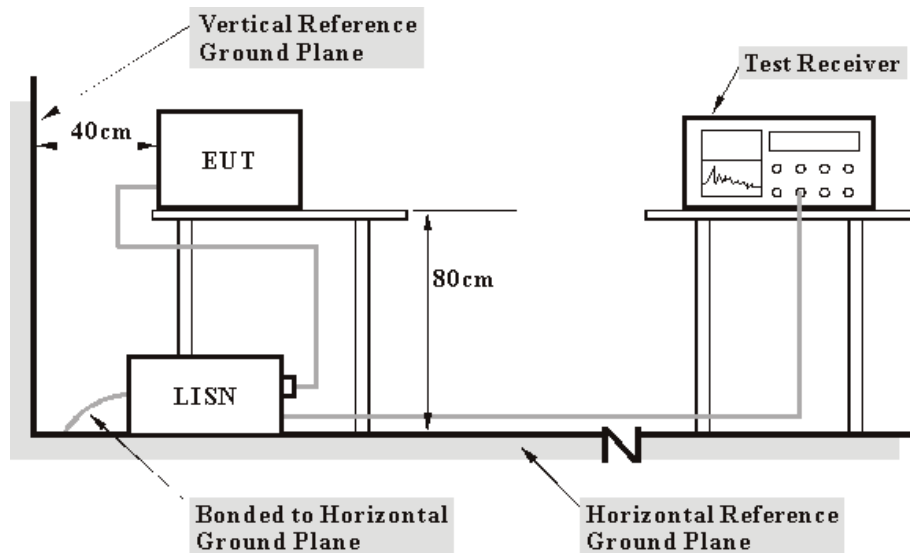
4.1.3 TEST PROCEDURES

- 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) was 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) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

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

4.1.6 EUT OPERATING CONDITIONS

- a. Turned on the power of all equipment.
- b. EUT ran a test program to enable to transmit/receive condition continuously at specific channel frequency.
- c. EUT sent “H” messages to its screen.
- d. Step c was repeated.



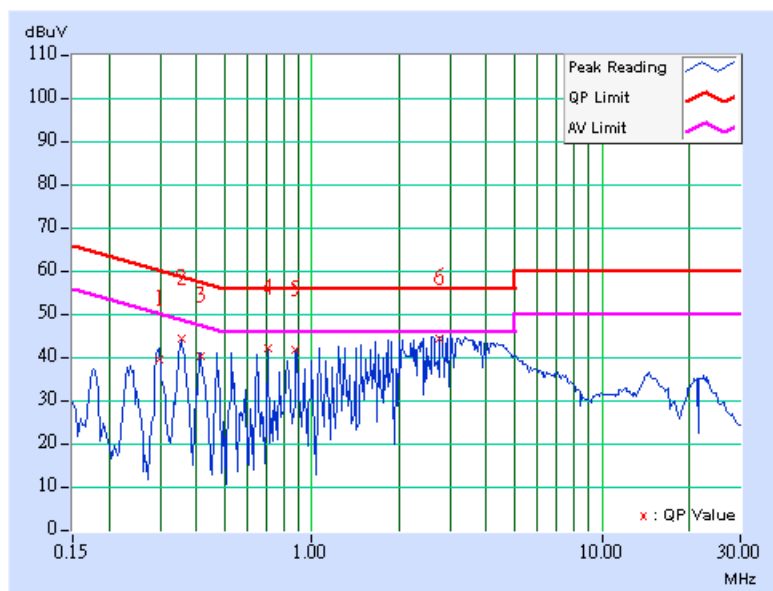
4.1.7 TEST RESULTS

Conducted Worst-Case Data

| | | | |
|---------------------------------|-----------------------------|----------------------|--------------|
| EUT | Notebook PC | MODEL NO. | R15D |
| CHANNEL | 1 | 6dB BANDWIDTH | 9kHz |
| MODULATION TYPE | BPSK | TRANSFER RATE | 6Mbps |
| INPUT POWER (SYSTEM) | 120Vac, 60Hz | PHASE | Line (L) |
| ENVIRONMENTAL CONDITIONS | 20 deg. C, 60% RH, 1004 hPa | TESTED BY | Jamison Chan |

| 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 | 0.297 | 0.20 | 39.31 | - | 39.51 | - | 60.33 |
| 2 | 0.354 | 0.20 | 44.08 | - | 44.28 | - | 58.87 | 48.87 | -14.59 | - |
| 3 | 0.414 | 0.20 | 40.20 | - | 40.40 | - | 57.57 | 47.57 | -17.17 | - |
| 4 | 0.708 | 0.20 | 41.84 | - | 42.04 | - | 56.00 | 46.00 | -13.96 | - |
| 5 | 0.882 | 0.20 | 41.50 | - | 41.70 | - | 56.00 | 46.00 | -14.30 | - |
| 6 | 2.769 | 0.24 | 44.13 | - | 44.37 | - | 56.00 | 46.00 | -11.63 | - |

- 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.

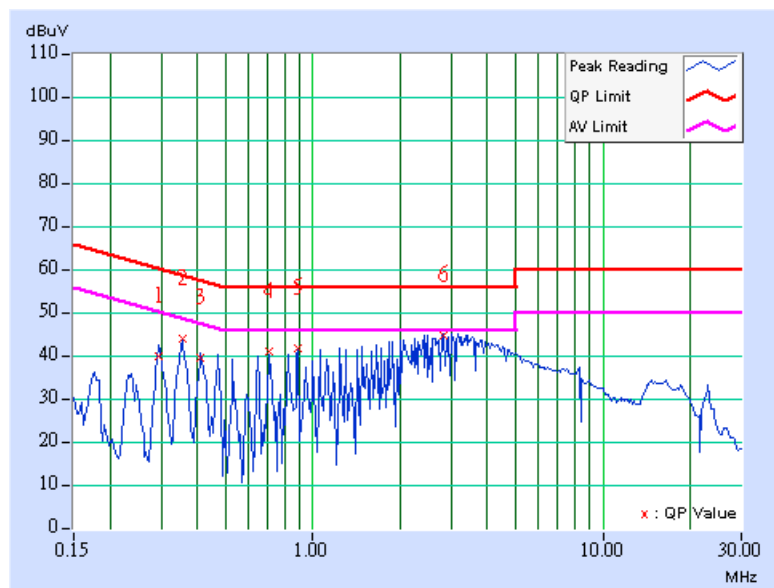




| | | | |
|---------------------------------|-----------------------------|----------------------|--------------|
| EUT | Notebook PC | MODEL NO. | R15D |
| CHANNEL | 1 | 6dB BANDWIDTH | 9kHz |
| MODULATION TYPE | BPSK | TRANSFER RATE | 6Mbps |
| INPUT POWER (SYSTEM) | 120Vac, 60Hz | PHASE | Neutral (N) |
| ENVIRONMENTAL CONDITIONS | 20 deg. C, 60% RH, 1004 hPa | TESTED BY | Jamison Chan |

| 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 | 0.294 | 0.20 | 39.67 | - | 39.87 | - | 60.41 |
| 2 | 0.354 | 0.20 | 43.76 | - | 43.96 | - | 58.87 | 48.87 | -14.91 | - |
| 3 | 0.411 | 0.20 | 39.36 | - | 39.56 | - | 57.63 | 47.63 | -18.07 | - |
| 4 | 0.708 | 0.20 | 40.75 | - | 40.95 | - | 56.00 | 46.00 | -15.05 | - |
| 5 | 0.885 | 0.20 | 41.58 | - | 41.78 | - | 56.00 | 46.00 | -14.22 | - |
| 6 | 2.832 | 0.30 | 44.65 | - | 44.95 | - | 56.00 | 46.00 | -11.05 | - |

- 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.

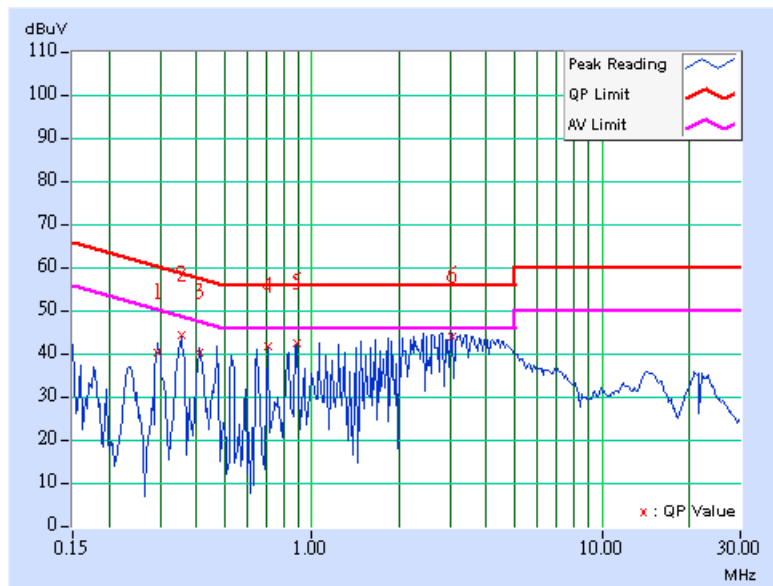




| | | | |
|---------------------------------|-----------------------------|----------------------|--------------|
| EUT | Notebook PC | MODEL NO. | R15D |
| CHANNEL | 6 | 6dB BANDWIDTH | 9kHz |
| MODULATION TYPE | BPSK | TRANSFER RATE | 6Mbps |
| INPUT POWER (SYSTEM) | 120Vac, 60Hz | PHASE | Line (L) |
| ENVIRONMENTAL CONDITIONS | 20 deg. C, 60% RH, 1004 hPa | TESTED BY | Jamison Chan |

| No | Freq. [MHz] | Corr. Factor (dB) | Reading Value | | Emission Level | | Limit | | Margin | |
|----|----------------|-------------------------|---------------|-----|----------------|-----|-----------|-------|--------|-----|
| | | | [dB (uV)] | | [dB (uV)] | | [dB (uV)] | | (dB) | |
| | | | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.294 | 0.20 | 40.11 | - | 40.31 | - | 60.41 | 50.41 | -20.10 | - |
| 2 | 0.354 | 0.20 | 44.06 | - | 44.26 | - | 58.87 | 48.87 | -14.61 | - |
| 3 | 0.411 | 0.20 | 40.00 | - | 40.20 | - | 57.63 | 47.63 | -17.43 | - |
| 4 | 0.708 | 0.20 | 41.76 | - | 41.96 | - | 56.00 | 46.00 | -14.04 | - |
| 5 | 0.885 | 0.20 | 42.40 | - | 42.60 | - | 56.00 | 46.00 | -13.40 | - |
| 6 | 3.063 | 0.25 | 43.98 | - | 44.23 | - | 56.00 | 46.00 | -11.77 | - |

- 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.

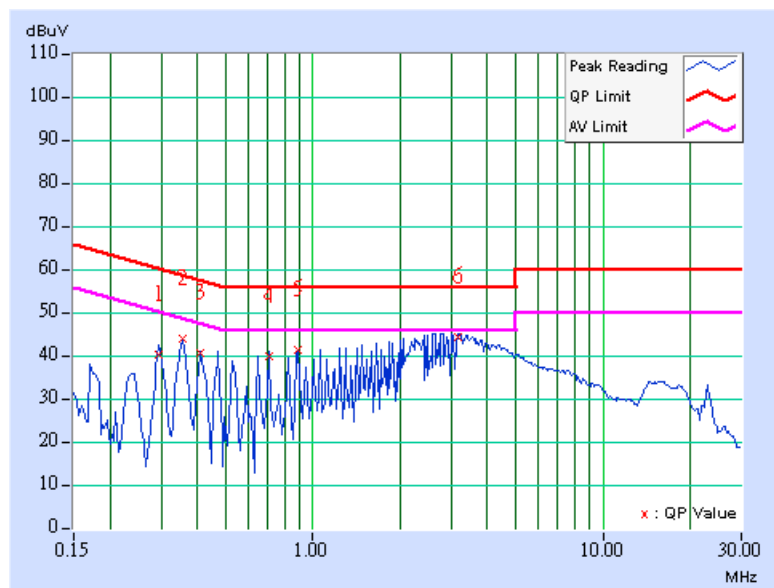




| | | | |
|---------------------------------|-----------------------------|----------------------|--------------|
| EUT | Notebook PC | MODEL NO. | R15D |
| CHANNEL | 6 | 6dB BANDWIDTH | 9kHz |
| MODULATION TYPE | BPSK | TRANSFER RATE | 6Mbps |
| INPUT POWER (SYSTEM) | 120Vac, 60Hz | PHASE | Neutral (N) |
| ENVIRONMENTAL CONDITIONS | 20 deg. C, 60% RH, 1004 hPa | TESTED BY | Jamison Chan |

| 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 | 0.294 | 0.20 | 39.99 | - | 40.19 | - | 60.41 |
| 2 | 0.354 | 0.20 | 43.68 | - | 43.88 | - | 58.87 | 48.87 | -14.99 | - |
| 3 | 0.411 | 0.20 | 40.26 | - | 40.46 | - | 57.63 | 47.63 | -17.17 | - |
| 4 | 0.705 | 0.20 | 39.87 | - | 40.07 | - | 56.00 | 46.00 | -15.93 | - |
| 5 | 0.885 | 0.20 | 41.26 | - | 41.46 | - | 56.00 | 46.00 | -14.54 | - |
| 6 | 3.183 | 0.30 | 44.00 | - | 44.30 | - | 56.00 | 46.00 | -11.70 | - |

- 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.

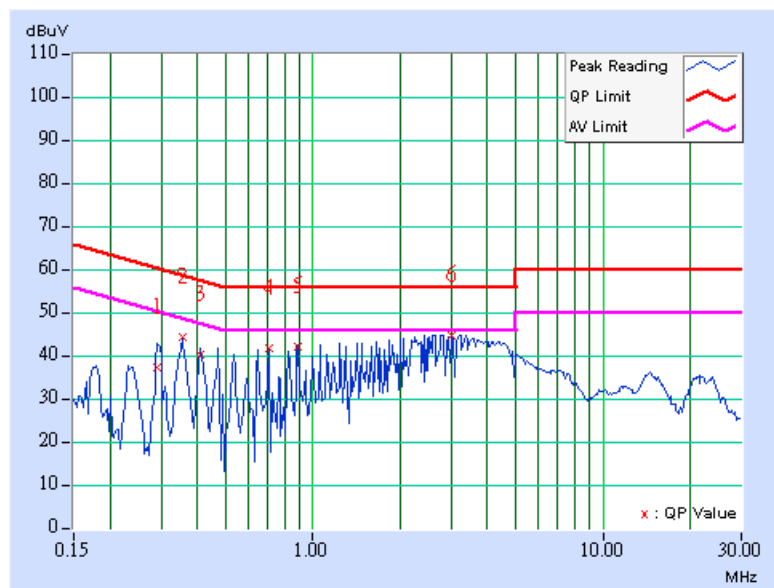




| | | | |
|---------------------------------|-----------------------------|----------------------|--------------|
| EUT | Notebook PC | MODEL NO. | R15D |
| CHANNEL | 11 | 6dB BANDWIDTH | 9kHz |
| MODULATION TYPE | BPSK | TRANSFER RATE | 6Mbps |
| INPUT POWER (SYSTEM) | 120Vac, 60Hz | PHASE | Line (L) |
| ENVIRONMENTAL CONDITIONS | 20 deg. C, 60% RH, 1004 hPa | TESTED BY | Jamison Chan |

| No | Freq. [MHz] | Corr. Factor (dB) | Reading Value | | Emission Level | | Limit | | Margin | |
|----|----------------|-------------------------|---------------|-----|----------------|-----|-----------|-------|--------|-----|
| | | | [dB (uV)] | | [dB (uV)] | | [dB (uV)] | | (dB) | |
| | | | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.291 | 0.20 | 37.29 | - | 37.49 | - | 60.50 | 50.50 | -23.01 | - |
| 2 | 0.354 | 0.20 | 44.06 | - | 44.26 | - | 58.87 | 48.87 | -14.61 | - |
| 3 | 0.411 | 0.20 | 40.30 | - | 40.50 | - | 57.63 | 47.63 | -17.13 | - |
| 4 | 0.708 | 0.20 | 41.66 | - | 41.86 | - | 56.00 | 46.00 | -14.14 | - |
| 5 | 0.885 | 0.20 | 42.14 | - | 42.34 | - | 56.00 | 46.00 | -13.66 | - |
| 6 | 3.003 | 0.25 | 44.60 | - | 44.85 | - | 56.00 | 46.00 | -11.15 | - |

- 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.

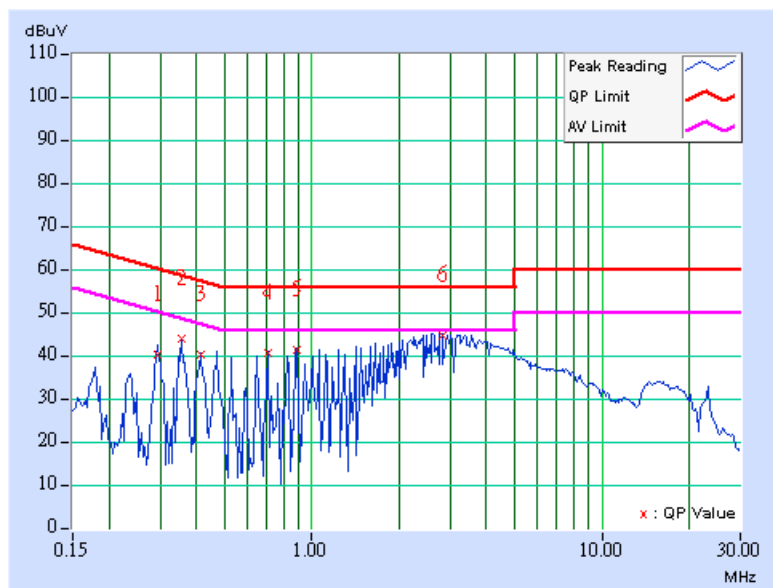




| | | | |
|---------------------------------|-----------------------------|----------------------|--------------|
| EUT | Notebook PC | MODEL NO. | R15D |
| CHANNEL | 11 | 6dB BANDWIDTH | 9kHz |
| MODULATION TYPE | BPSK | TRANSFER RATE | 6Mbps |
| INPUT POWER (SYSTEM) | 120Vac, 60Hz | PHASE | Neutral (N) |
| ENVIRONMENTAL CONDITIONS | 20 deg. C, 60% RH, 1004 hPa | TESTED BY | Jamison Chan |

| 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 | 0.294 | 0.20 | 39.95 | - | 40.15 | - | 60.41 |
| 2 | 0.354 | 0.20 | 43.64 | - | 43.84 | - | 58.87 | 48.87 | -15.03 | - |
| 3 | 0.414 | 0.20 | 40.22 | - | 40.42 | - | 57.57 | 47.57 | -17.15 | - |
| 4 | 0.708 | 0.20 | 40.53 | - | 40.73 | - | 56.00 | 46.00 | -15.27 | - |
| 5 | 0.885 | 0.20 | 41.18 | - | 41.38 | - | 56.00 | 46.00 | -14.62 | - |
| 6 | 2.826 | 0.30 | 44.55 | - | 44.85 | - | 56.00 | 46.00 | -11.15 | - |

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





4.2 RADIATED EMISSION MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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

| Frequencies (MHz) | Field strength (microvolts/meter) | Measurement distance (meters) |
|-------------------|-----------------------------------|-------------------------------|
| 0.009-0.490 | 2400/F(kHz) | 300 |
| 0.490-1.705 | 24000/F(kHz) | 30 |
| 1.705-30.0 | 30 | 30 |
| 30-88 | 100 | 3 |
| 88-216 | 150 | 3 |
| 216-960 | 200 | 3 |
| Above 960 | 500 | 3 |

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.



4.2.2 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED UNTIL |
|------------------------------------|--------------------------|--------------------------|------------------|
| HP Spectrum Analyzer | 8590L | 3544A01176 | May. 31, 2005 |
| HP Preamplifier | 8447D | 2944A08485 | Apr. 26, 2005 |
| HP Preamplifier | 8449B | 3008A01924 | Sep. 19, 2005 |
| HP Preamplifier | 8449B | 3008A01638 | Sep. 30, 2005 |
| SCHAFFNER TEST RECEIVER | SCR 3501 | 408 | Jan. 03, 2006 |
| ROHDE & SCHWARZ TEST RECEIVER | ESMI | 839013/007 839379/002 | Feb. 03, 2006 |
| SCHWARZBECK Tunable Dipole Antenna | VHA 9103 | NA | Oct. 29, 2005 |
| SCHWARZBECK Tunable Dipole Antenna | UHA 9105 | 977 | |
| CHASE BILOG Antenna | CBL6112A | 2221 | Oct 19, 2005 |
| EMCO Horn Antenna | 3115 | 6714 | Oct. 28, 2005 |
| EMCO Horn Antenna | 3115 | 9312-4192 | Feb. 28, 2006 |
| EMCO Turn Table | 1060 | 1115 | NA |
| CHANCE Tower | CM-AT40 | CM-A010 | NA |
| Software | ADT_Radiate d_V7.5.14 | NA | NA |
| ADT RF Switches | EM-H-01-1 | 1002 | Dec. 02, 2005 |
| TIMES RF cable | LMR-600 | CABLE-ST5-01 | Dec. 02, 2005 |

- 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 and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
 3. The test was performed in ADT Open Site No. 5.
 4. The VCCI Site Registration No. R-1039.



4.2.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 10 meters 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 10 dB 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 10 dB margin would be re-tested one by one using the quasi-peak method or average method as specified and then reported in Data sheet peak mode and QP mode.

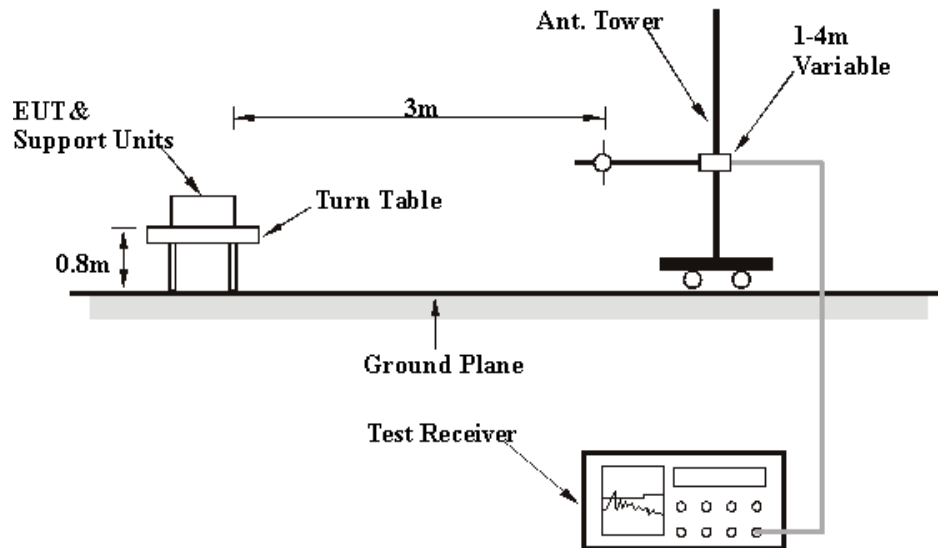
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 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 4.1.6.



4.2.7 TEST RESULTS

Below 1GHz Worst Case Data

| | | | |
|---------------------------------|-----------------------------|--------------------------|---------------|
| EUT | Notebook PC | MODEL NO. | R15D |
| CHANNEL | 11 | FREQUENCY RANGE | Below 1000MHz |
| MODULATION TYPE | BPSK | TRANSFER RATE | 6Mbps |
| INPUT POWER (SYSTEM) | 120Vac, 60Hz | DETECTOR FUNCTION | Quasi-Peak |
| ENVIRONMENTAL CONDITIONS | 20 deg. C, 60% RH, 1002 hPa | TESTED BY | Jamison Chan |

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 | 195.23 | 38.37 QP | 43.50 | -5.13 | 2.00 H | 67 | 28.18 | 10.19 |
| 2 | 228.28 | 41.45 QP | 46.00 | -4.55 | 2.00 H | 70 | 29.40 | 12.05 |
| 3 | 259.38 | 40.19 QP | 46.00 | -5.81 | 2.00 H | 58 | 25.61 | 14.58 |
| 4 | 391.56 | 41.81 QP | 46.00 | -4.19 | 1.00 H | 265 | 23.73 | 18.08 |
| 5 | 455.71 | 40.00 QP | 46.00 | -6.00 | 1.88 H | 205 | 20.84 | 19.16 |
| 6 | 521.80 | 39.88 QP | 46.00 | -6.12 | 2.00 H | 64 | 19.21 | 20.67 |
| 7 | 585.95 | 43.09 QP | 46.00 | -2.91 | 3.00 H | 145 | 20.99 | 22.10 |
| 8 | 681.20 | 40.56 QP | 46.00 | -5.44 | 1.02 H | 190 | 17.36 | 23.20 |
| 9 | 716.19 | 41.39 QP | 46.00 | -4.61 | 1.11 H | 283 | 17.78 | 23.61 |
| 10 | 813.39 | 41.92 QP | 46.00 | -4.08 | 2.01 H | 205 | 17.52 | 24.40 |

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 | 53.33 | 35.88 QP | 40.00 | -4.12 | 1.12 V | 223 | 27.09 | 8.79 |
| 2 | 142.75 | 36.98 QP | 43.50 | -6.52 | 1.98 V | 25 | 25.40 | 11.58 |
| 3 | 222.44 | 42.81 QP | 46.00 | -3.19 | 1.03 V | 187 | 31.12 | 11.69 |
| 4 | 253.55 | 41.68 QP | 46.00 | -4.32 | 1.00 V | 187 | 27.83 | 13.85 |
| 5 | 444.05 | 40.06 QP | 46.00 | -5.94 | 2.00 V | 289 | 21.11 | 18.95 |
| 6 | 455.71 | 42.49 QP | 46.00 | -3.51 | 1.00 V | 4 | 23.33 | 19.16 |
| 7 | 585.95 | 41.36 QP | 46.00 | -4.64 | 1.03 V | 145 | 19.26 | 22.10 |
| 8 | 652.04 | 42.34 QP | 46.00 | -3.66 | 1.00 V | 4 | 19.49 | 22.85 |
| 9 | 716.19 | 42.74 QP | 46.00 | -3.26 | 1.00 V | 49 | 19.13 | 23.61 |
| 10 | 871.70 | 41.26 QP | 46.00 | -4.74 | 1.15 V | 214 | 16.30 | 24.96 |

- 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.

802.11b DSSS modulation

| | | | |
|---------------------------------|--------------------------------|--------------------------|--------------------------|
| EUT | Notebook PC | MODEL NO. | R15D |
| CHANNEL | 1 | FREQUENCY RANGE | 1 ~ 25GHz |
| MODULATION TYPE | CCK | TRANSFER RATE | 11Mbps |
| INPUT POWER (SYSTEM) | 120Vac, 60Hz | DETECTOR FUNCTION | Peak(PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 20 deg. C, 60% RH, 1009 hPa | TESTED BY | Jamison Chan |

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 | 44.43 PK | 74.00 | -29.57 | 1.10 H | 58 | 13.33 | 31.10 |
| 1 | 2390.00 | 36.84 AV | 54.00 | -17.16 | 1.10 H | 58 | 5.74 | 31.10 |
| 2 | *2412.00 | 108.01 PK | | | 1.10 H | 58 | 76.85 | 31.16 |
| 2 | *2412.00 | 100.42 AV | | | 1.10 H | 58 | 69.26 | 31.16 |
| 3 | 4824.00 | 46.22 PK | 74.00 | -27.78 | 1.05 H | 12 | 9.08 | 37.14 |
| 3 | 4824.00 | 34.08 AV | 54.00 | -19.92 | 1.05 H | 12 | -3.06 | 37.14 |

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 | 2390.00 | 42.81 PK | 74.00 | -31.19 | 1.00 V | 233 | 10.05 | 32.76 |
| 1 | 2390.00 | 34.19 AV | 54.00 | -19.81 | 1.00 V | 233 | 1.43 | 32.76 |
| 2 | *2412.00 | 106.39 PK | | | 1.00 V | 233 | 73.56 | 32.83 |
| 2 | *2412.00 | 97.77 AV | | | 1.00 V | 233 | 64.94 | 32.83 |
| 3 | 4824.00 | 47.54 PK | 74.00 | -26.46 | 1.00 V | 115 | 8.93 | 38.61 |
| 3 | 4824.00 | 35.04 AV | 54.00 | -18.96 | 1.00 V | 115 | -3.57 | 38.61 |

- 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.



| | | | |
|---------------------------------|--------------------------------|--------------------------|--------------------------|
| EUT | Notebook PC | MODEL NO. | R15D |
| CHANNEL | 6 | FREQUENCY RANGE | 1 ~ 25GHz |
| MODULATION TYPE | CCK | TRANSFER RATE | 11Mbps |
| INPUT POWER (SYSTEM) | 120Vac, 60Hz | DETECTOR FUNCTION | Peak(PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 20 deg. C, 60% RH, 1009 hPa | TESTED BY | Jamison Chan |

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 | 108.23 PK | | | 1.09 H | 56 | 77.00 | 31.23 |
| 1 | *2437.00 | 100.70 AV | | | 1.09 H | 56 | 69.47 | 31.23 |
| 2 | 4874.00 | 46.80 PK | 74.00 | -27.20 | 1.21 H | 69 | 9.51 | 37.28 |
| 2 | 4874.00 | 34.43 AV | 54.00 | -19.57 | 1.21 H | 69 | -2.86 | 37.28 |

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 | 106.38 PK | | | 1.00 V | 248 | 73.48 | 32.90 |
| 1 | *2437.00 | 98.94 AV | | | 1.00 V | 248 | 66.04 | 32.90 |
| 2 | 4874.00 | 47.37 PK | 74.00 | -26.63 | 1.00 V | 261 | 8.63 | 38.73 |
| 2 | 4874.00 | 36.31 AV | 54.00 | -17.69 | 1.00 V | 261 | -2.43 | 38.73 |

- 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.



| | | | |
|---------------------------------|--------------------------------|--------------------------|--------------------------|
| EUT | Notebook PC | MODEL NO. | R15D |
| CHANNEL | 11 | FREQUENCY RANGE | 1 ~ 25GHz |
| MODULATION TYPE | CCK | TRANSFER RATE | 11Mbps |
| INPUT POWER (SYSTEM) | 120Vac, 60Hz | DETECTOR FUNCTION | Peak(PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 20 deg. C, 60% RH, 1009 hPa | TESTED BY | Jamison Chan |

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 | 109.37 PK | | | 1.10 H | 115 | 78.08 | 31.29 |
| 1 | *2462.00 | 101.86 AV | | | 1.10 H | 115 | 70.57 | 31.29 |
| 2 | 2483.50 | 45.54 PK | 74.00 | -28.46 | 1.10 H | 115 | 14.19 | 31.35 |
| 2 | 2483.50 | 38.03 AV | 54.00 | -15.97 | 1.10 H | 115 | 6.68 | 31.35 |
| 3 | 4924.00 | 47.01 PK | 74.00 | -26.99 | 1.11 H | 112 | 9.58 | 37.43 |
| 3 | 4924.00 | 35.10 AV | 54.00 | -18.90 | 1.11 H | 112 | -2.33 | 37.43 |

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 | 108.89 PK | | | 1.03 V | 106 | 75.91 | 32.98 |
| 1 | *2462.00 | 101.39 AV | | | 1.03 V | 106 | 68.41 | 32.98 |
| 2 | 2483.50 | 45.06 PK | 74.00 | -28.94 | 1.03 V | 106 | 12.02 | 33.04 |
| 2 | 2483.50 | 37.56 AV | 54.00 | -16.44 | 1.03 V | 106 | 4.52 | 33.04 |
| 3 | 4924.00 | 48.34 PK | 74.00 | -25.66 | 1.03 V | 211 | 9.48 | 38.86 |
| 3 | 4924.00 | 36.37 AV | 54.00 | -17.63 | 1.03 V | 211 | -2.49 | 38.86 |

- 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.



802.11g OFDM modulation

| | | | |
|---------------------------------|--------------------------------|--------------------------|--------------------------|
| EUT | Notebook PC | MODEL NO. | R15D |
| CHANNEL | 1 | FREQUENCY RANGE | 1 ~ 25GHz |
| MODULATION TYPE | BPSK | TRANSFER RATE | 6Mbps |
| INPUT POWER (SYSTEM) | 120Vac, 60Hz | DETECTOR FUNCTION | Peak(PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 20 deg. C, 60% RH, 1009 hPa | TESTED BY | Jamison Chan |

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 | 54.66 PK | 74.00 | -19.34 | 1.16 H | 108 | 22.79 | 31.87 |
| 1 | 2390.00 | 43.81 AV | 54.00 | -10.19 | 1.16 H | 108 | 11.94 | 31.87 |
| 2 | *2412.00 | 104.48 PK | | | 1.16 H | 108 | 72.52 | 31.96 |
| 2 | *2412.00 | 93.63 AV | | | 1.16 H | 108 | 61.67 | 31.96 |
| 3 | 4824.00 | 48.28 PK | 74.00 | -25.72 | 1.02 H | 155 | 37.83 | 10.45 |

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 | 54.39 PK | 74.00 | -19.61 | 1.03 V | 243 | 22.52 | 31.87 |
| 1 | 2390.00 | 43.06 AV | 54.00 | -10.94 | 1.03 V | 243 | 11.19 | 31.87 |
| 2 | *2412.00 | 104.21 PK | | | 1.03 V | 243 | 70.46 | 31.96 |
| 2 | *2412.00 | 92.88 AV | | | 1.03 V | 243 | 59.44 | 31.96 |
| 3 | 4824.00 | 48.12 PK | 74.00 | -25.88 | 1.00 V | 358 | 10.29 | 37.83 |

- 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.



| | | | |
|---------------------------------|--------------------------------|--------------------------|--------------------------|
| EUT | Notebook PC | MODEL NO. | R15D |
| CHANNEL | 6 | FREQUENCY RANGE | 1 ~ 25GHz |
| MODULATION TYPE | BPSK | TRANSFER RATE | 6Mbps |
| INPUT POWER (SYSTEM) | 120Vac, 60Hz | DETECTOR FUNCTION | Peak(PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 20 deg. C, 60% RH, 1009 hPa | TESTED BY | Jamison Chan |

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 | 104.15 PK | | | 1.15 H | 116 | 72.09 | 32.06 |
| 1 | *2437.00 | 94.99 AV | | | 1.15 H | 116 | 62.93 | 32.06 |
| 2 | 4874.00 | 46.65 PK | 74.00 | -27.35 | 1.08 H | 58 | 8.67 | 37.98 |

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 | 102.51 PK | | | 1.00 V | 251 | 70.45 | 32.06 |
| 1 | *2437.00 | 93.20 AV | | | 1.00 V | 251 | 61.14 | 32.06 |
| 2 | 4874.00 | 47.50 PK | 74.00 | -26.50 | 1.06 V | 259 | 9.52 | 37.98 |

- 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.



| | | | |
|---------------------------------|--------------------------------|--------------------------|--------------------------|
| EUT | Notebook PC | MODEL NO. | R15D |
| CHANNEL | 11 | FREQUENCY RANGE | 1 ~ 25GHz |
| MODULATION TYPE | BPSK | TRANSFER RATE | 6Mbps |
| INPUT POWER (SYSTEM) | 120Vac, 60Hz | DETECTOR FUNCTION | Peak(PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 20 deg. C, 60% RH, 1009 hPa | TESTED BY | Jamison Chan |

| 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 | 104.24 PK | | | 1.09 H | 122 | 72.08 | 32.16 |
| 1 | *2462.00 | 96.10 AV | | | 1.09 H | 122 | 63.94 | 32.16 |
| 2 | 2486.70 | 51.38 PK | 74.00 | -22.62 | 1.09 H | 122 | 19.12 | 32.26 |
| 2 | 2486.70 | 43.95 AV | 54.00 | -10.05 | 1.09 H | 122 | 11.69 | 32.26 |
| 3 | 4924.00 | 47.38 PK | 74.00 | -26.62 | 1.06 H | 255 | 9.24 | 38.14 |

| 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 | *2462.00 | 102.04 PK | | | 1.22 V | 247 | 69.88 | 32.16 |
| 1 | *2462.00 | 94.93 AV | | | 1.22 V | 247 | 62.77 | 32.16 |
| 2 | 2486.70 | 49.83 PK | 74.00 | -24.17 | 1.22 V | 247 | 17.58 | 32.25 |
| 2 | 2486.70 | 42.72 AV | 54.00 | -11.28 | 1.22 V | 247 | 10.47 | 32.25 |
| 3 | 4924.00 | 48.19 PK | 74.00 | -25.81 | 1.01 V | 232 | 10.05 | 38.14 |

- 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.

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 Until |
|----------------------------|-----------|------------|------------------|
| SPECTRUM ANALYZER | FSP 40 | 100036 | Mar 18. 2006 |

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

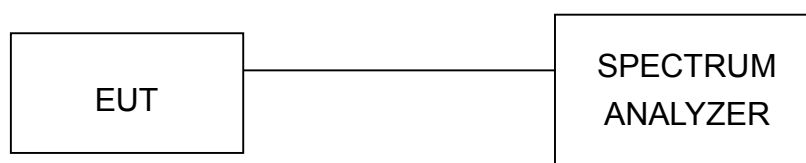
4.3.3 TEST PROCEDURE

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.



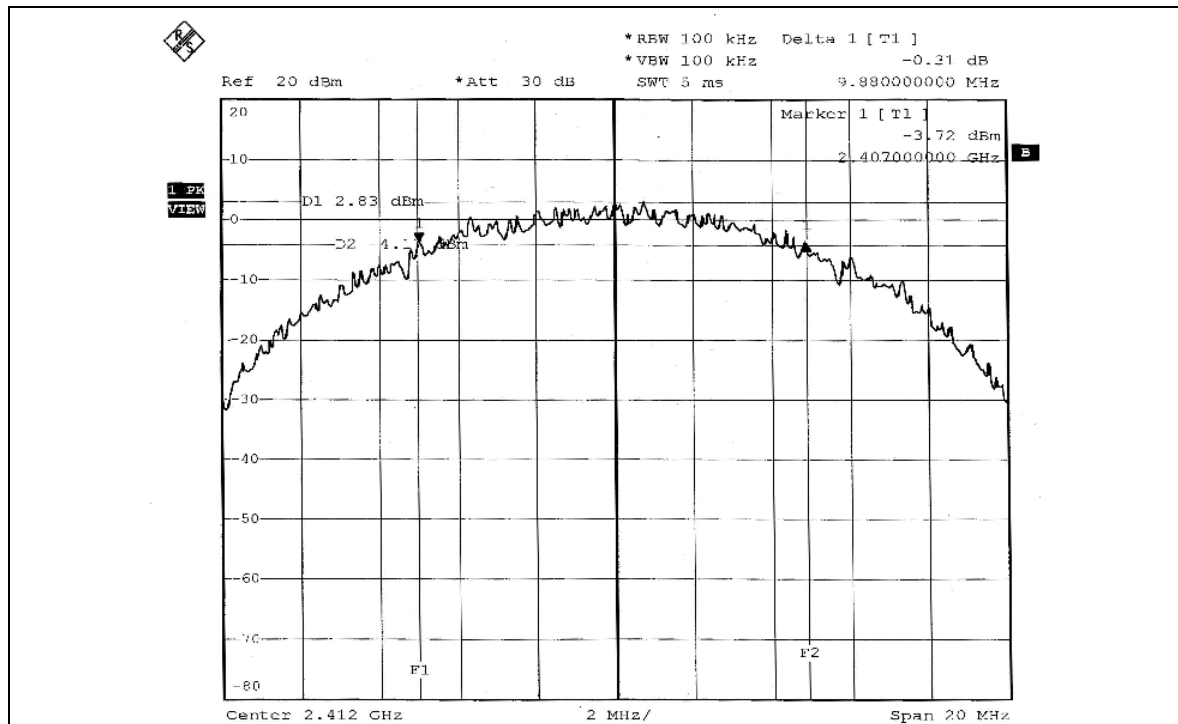
4.3.7 TEST RESULTS

802.11b DSSS modulation

| | | | |
|---------------------------------|-----------------------------|-----------------------------|---------------|
| EUT | Notebook PC | MODEL | R15D |
| MODULATION TYPE | CCK | TRANSFER RATE | 11Mbps |
| ENVIRONMENTAL CONDITIONS | 20 deg. C, 60% RH, 1004 hPa | INPUT POWER (SYSTEM) | 120Vac, 60 Hz |
| TESTED BY | Jamison Chan | | |

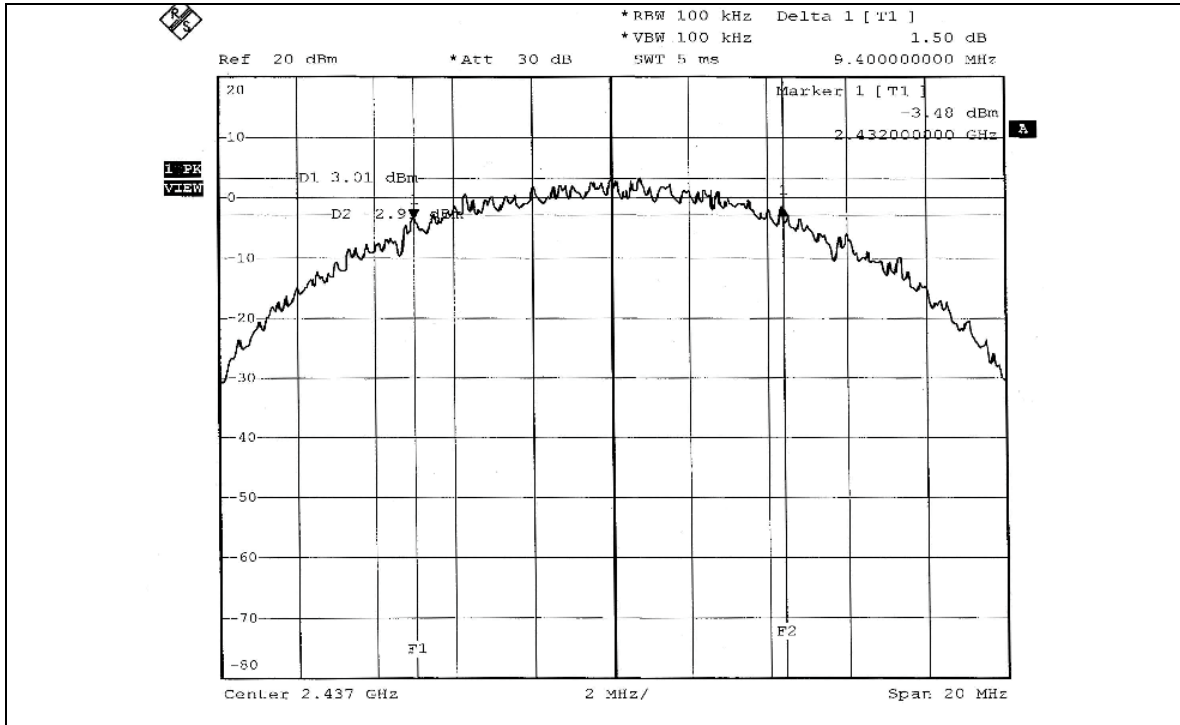
| CHANNEL | CHANNEL FREQUENCY (MHz) | 6dB BANDWIDTH (MHz) | MINIMUM LIMIT (MHz) | PASS/FAIL |
|---------|-------------------------|---------------------|---------------------|-----------|
| 1 | 2412 | 9.88 | 0.5 | PASS |
| 6 | 2437 | 9.40 | 0.5 | PASS |
| 11 | 2462 | 9.56 | 0.5 | PASS |

CH1

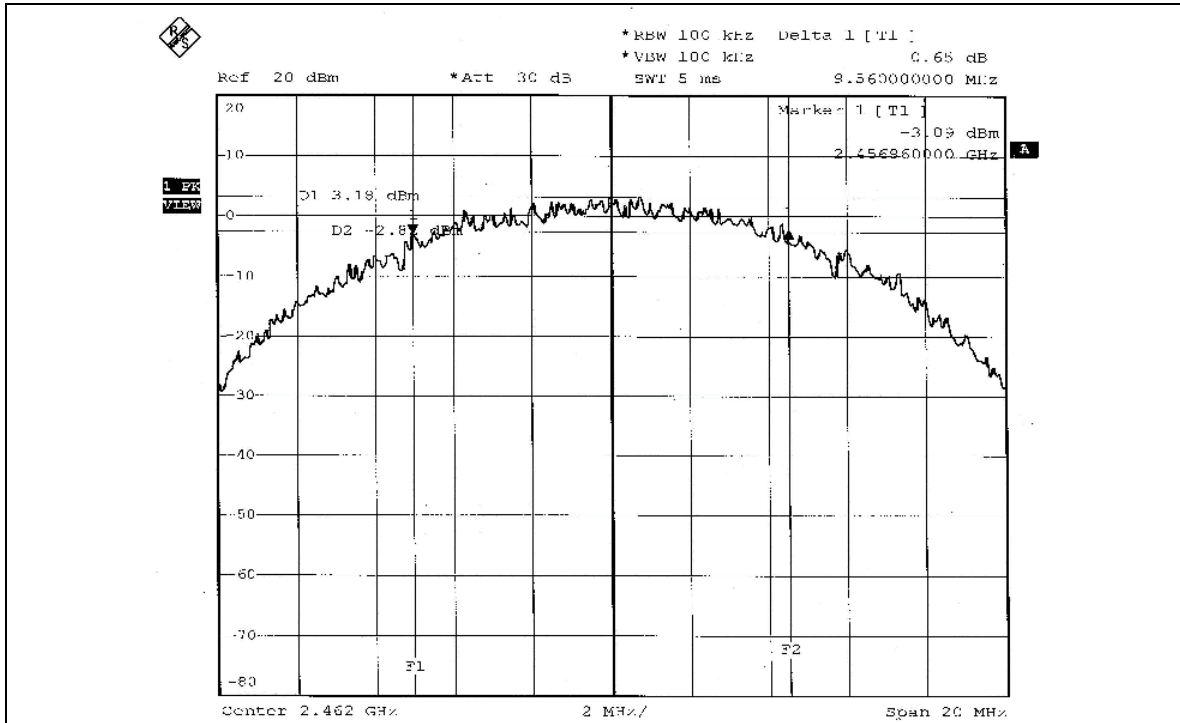




CH6



CH11



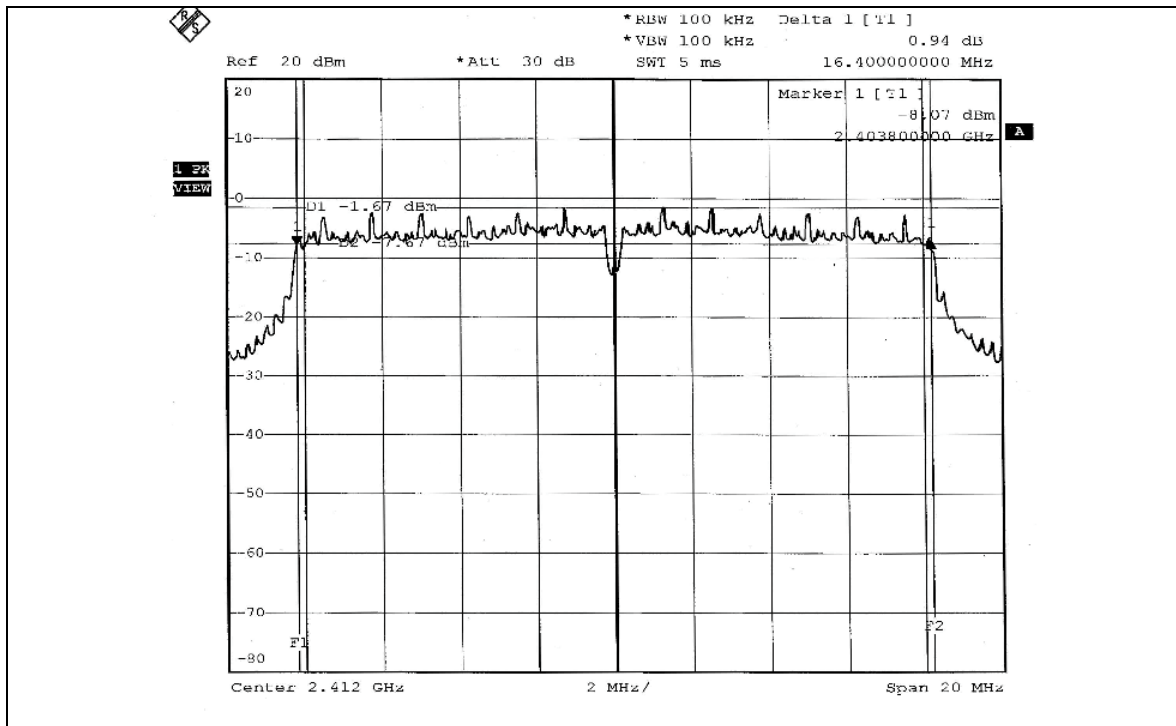


802.11g OFDM modulation

| | | | |
|---------------------------------|-----------------------------|-----------------------------|---------------|
| EUT | Notebook PC | MODEL | R15D |
| MODULATION TYPE | BPSK | TRANSFER RATE | 6Mbps |
| ENVIRONMENTAL CONDITIONS | 20 deg. C, 60% RH, 1004 hPa | INPUT POWER (SYSTEM) | 120Vac, 60 Hz |
| TESTED BY | Jamison Chan | | |

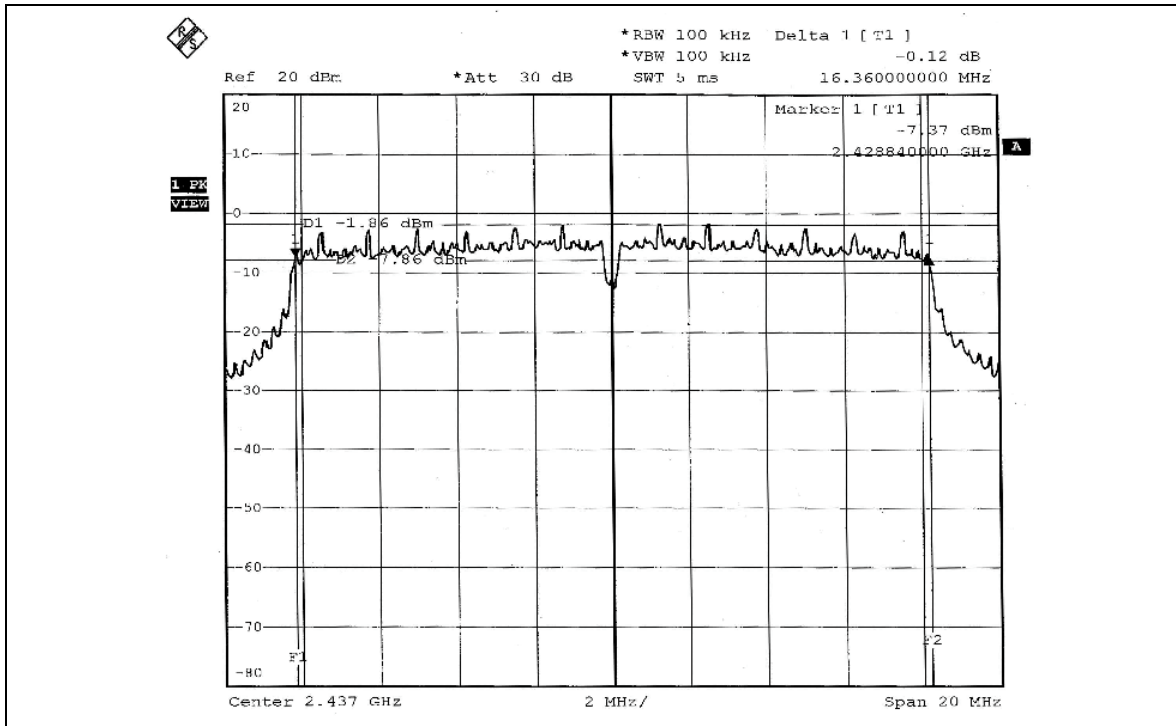
| CHANNEL | CHANNEL FREQUENCY (MHz) | 6dB BANDWIDTH (MHz) | MINIMUM LIMIT (MHz) | PASS/FAIL |
|---------|-------------------------|---------------------|---------------------|-----------|
| 1 | 2412 | 16.40 | 0.5 | PASS |
| 6 | 2437 | 16.36 | 0.5 | PASS |
| 11 | 2462 | 15.12 | 0.5 | PASS |

CH1

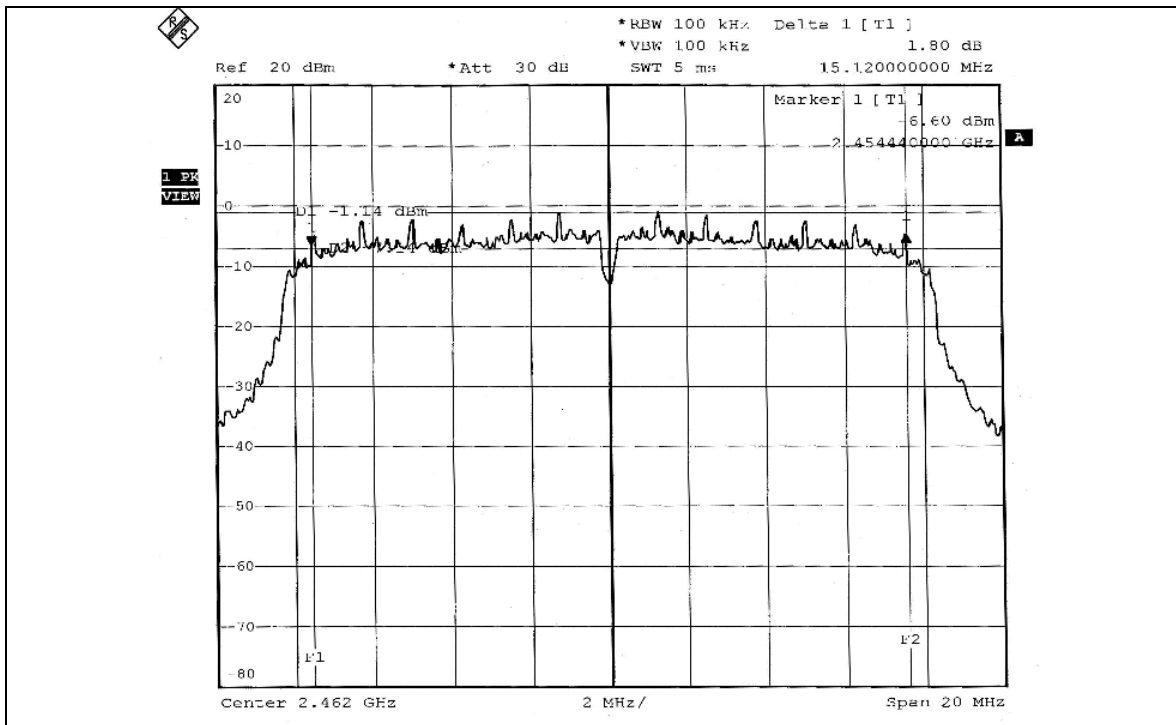




CH6



CH11





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 Until |
|--------------------------------------|-----------|------------|------------------|
| ROHDE & SCHWARZ Spectrum Analyzer | FSP 40 | 100036 | Mar 18. 2006 |
| ROHDE & SCHWARZ Signal Generator | SMR40 | 100231 | Mar. 17. 2006 |
| Tektronix Oscilloscope | TDS1012 | C019167 | Feb. 01. 2006 |
| Narda Detector | 4503A | FSCM99899 | NA |

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

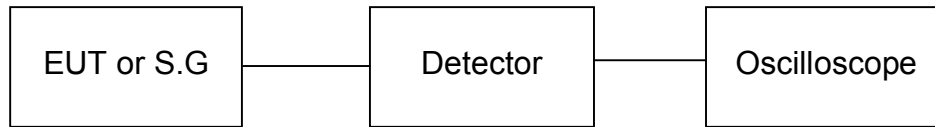
4.4.3 TEST PROCEDURES

1. A detector was used on the output port of the EUT. An oscilloscope was used to read the response of the detector.
2. Replaced the EUT by the signal generator . The center frequency of the S.G was adjusted to the center frequency of the measured channel.
3. Adjusted the power to have the same reading on oscilloscope. 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

| | | | |
|---------------------------------|--------------------------------|-----------------------------|--------------|
| EUT | Notebook PC | MODEL | R15D |
| MODULATION TYPE | CCK | TRANSFER RATE | 11Mbps |
| ENVIRONMENTAL CONDITIONS | 20 deg. C, 60% RH, 1004 hPa | INPUT POWER (SYSTEM) | 120Vac, 60Hz |
| TESTED BY | Jamison Chan | | |

| CHANNEL | CHANNEL FREQUENCY (MHz) | PEAK POWER OUTPUT (mW) | PEAK POWER OUTPUT (dBm) | PEAK POWER LIMIT (dBm) | PASS/FAIL |
|---------|-------------------------|------------------------|-------------------------|------------------------|-----------|
| 1 | 2412 | 40.365 | 16.06 | 30 | PASS |
| 6 | 2437 | 39.537 | 15.97 | 30 | PASS |
| 11 | 2462 | 39.994 | 16.02 | 30 | PASS |

802.11g OFDM modulation

| | | | |
|---------------------------------|--------------------------------|-----------------------------|--------------|
| EUT | Notebook PC | MODEL | R15D |
| MODULATION TYPE | BPSK | TRANSFER RATE | 6Mbps |
| ENVIRONMENTAL CONDITIONS | 20 deg. C, 60% RH, 1004 hPa | INPUT POWER (SYSTEM) | 120Vac, 60Hz |
| TESTED BY | Jamison Chan | | |

| CHANNEL | CHANNEL FREQUENCY (MHz) | PEAK POWER OUTPUT (mW) | PEAK POWER OUTPUT (dBm) | PEAK POWER LIMIT (dBm) | PASS/FAIL |
|---------|-------------------------|------------------------|-------------------------|------------------------|-----------|
| 1 | 2412 | 25.119 | 14.00 | 30 | PASS |
| 6 | 2437 | 25.235 | 14.02 | 30 | PASS |
| 11 | 2462 | 25.293 | 14.03 | 30 | PASS |

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 Until |
|----------------------------|-----------|------------|------------------|
| SPECTRUM ANALYZER | FSP 40 | 100036 | Mar 18. 2006 |

NOTE:

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

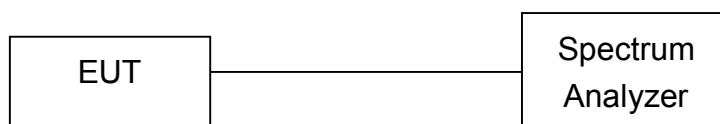
4.5.3 TEST PROCEDURE

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.



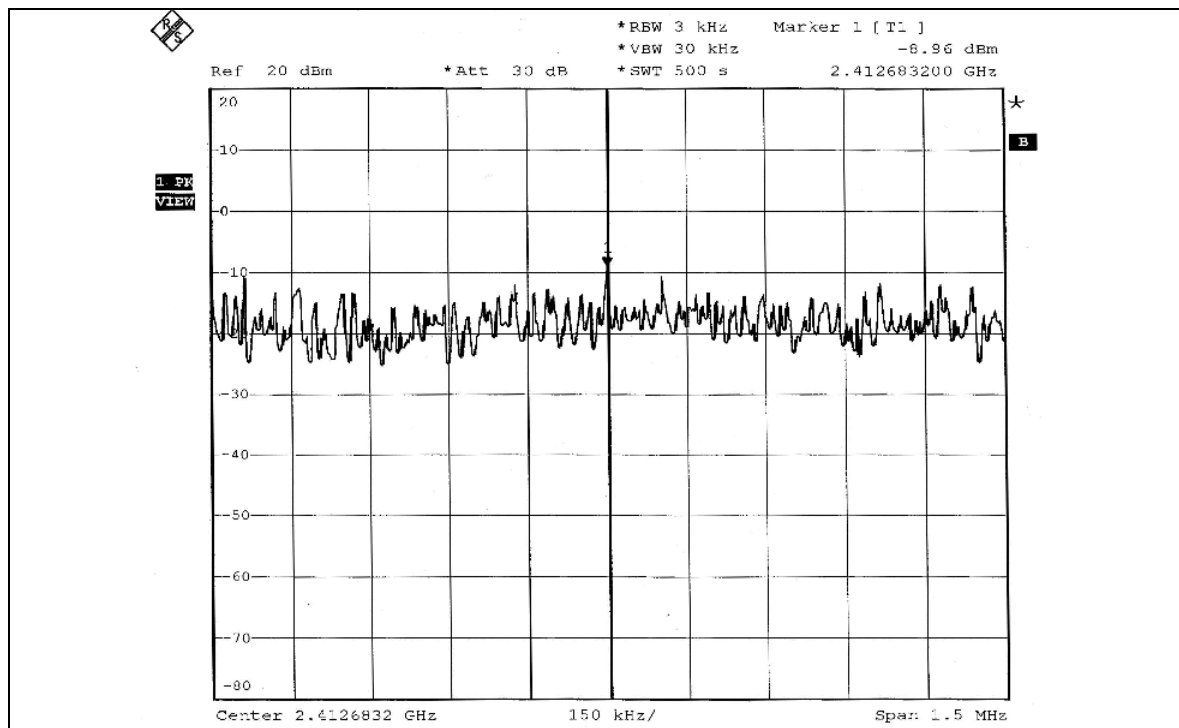
4.5.7 TEST RESULTS

802.11b DSSS modulation

| | | | |
|---------------------------------|-----------------------------|-----------------------------|--------------|
| EUT | Notebook PC | MODEL | R15D |
| MODULATION TYPE | CCK | TRANSFER RATE | 11Mbps |
| ENVIRONMENTAL CONDITIONS | 20 deg. C, 60% RH, 1004 hPa | INPUT POWER (SYSTEM) | 120Vac, 60Hz |
| TESTED BY | Jamison Chan | | |

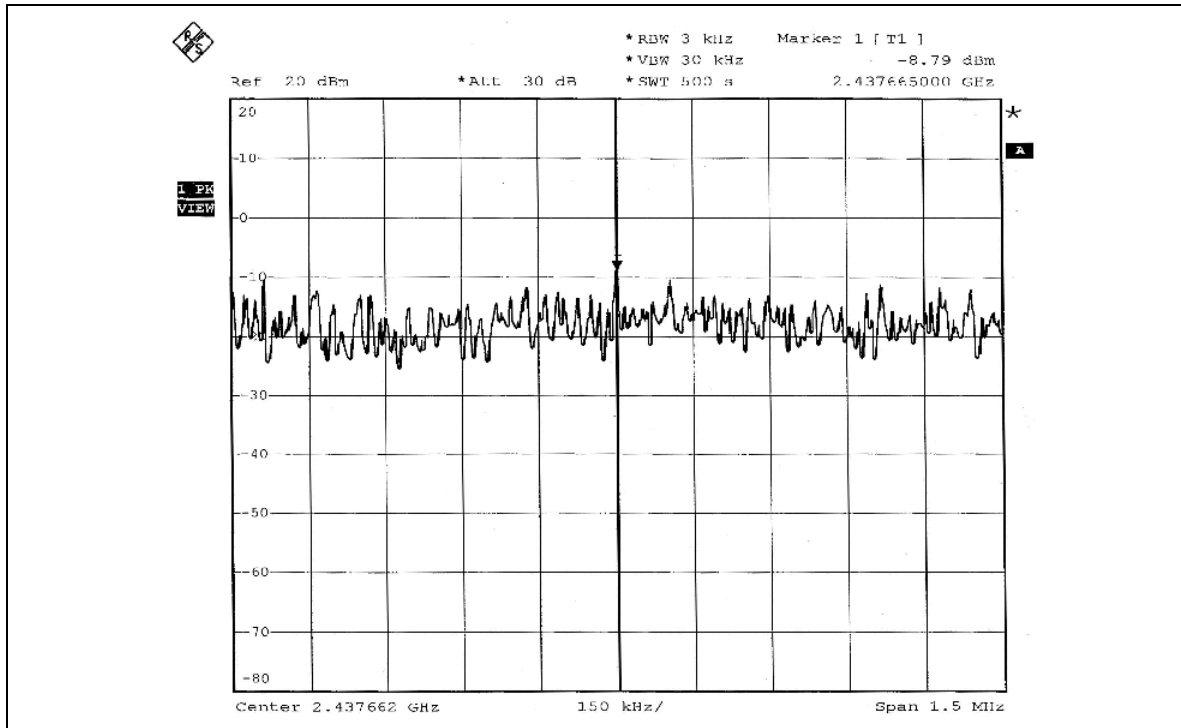
| CHANNEL | CHANNEL FREQUENCY (MHz) | RF POWER LEVEL IN 3kHz BW (dBm) | MAXIMUM LIMIT (dBm) | PASS/FAIL |
|---------|-------------------------|---------------------------------|---------------------|-----------|
| 1 | 2412 | -8.96 | 8 | PASS |
| 6 | 2437 | -8.79 | 8 | PASS |
| 11 | 2462 | -8.87 | 8 | PASS |

CH1

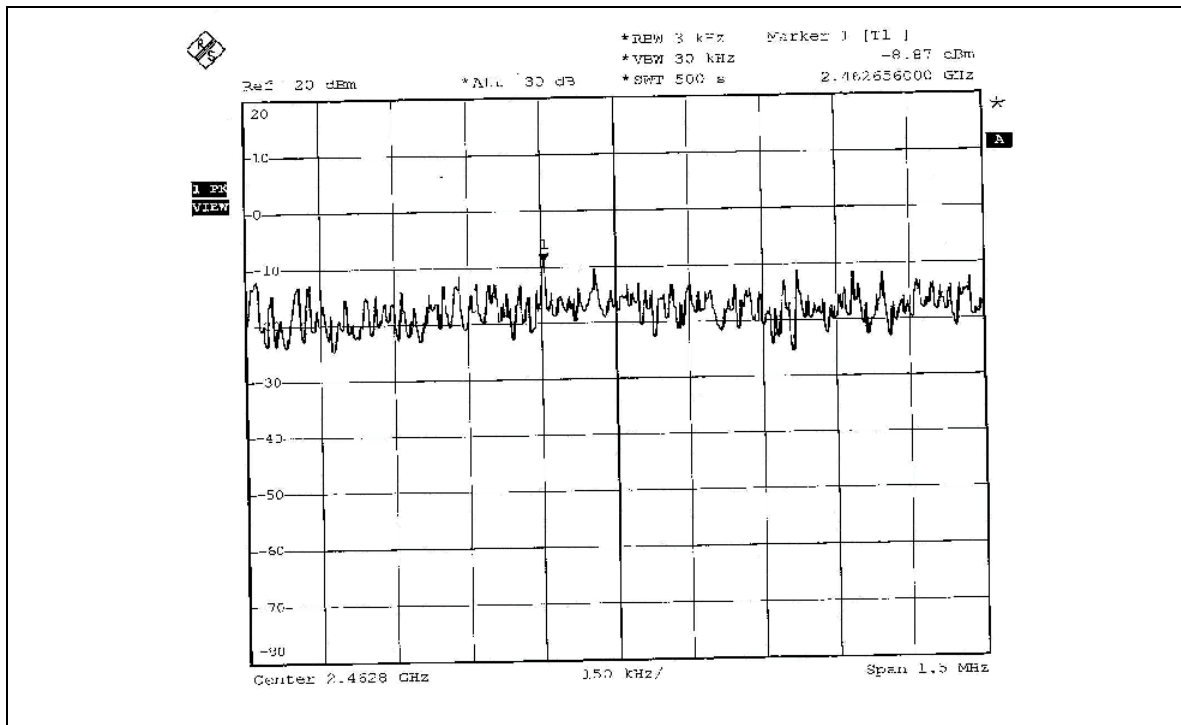




CH6



CH11



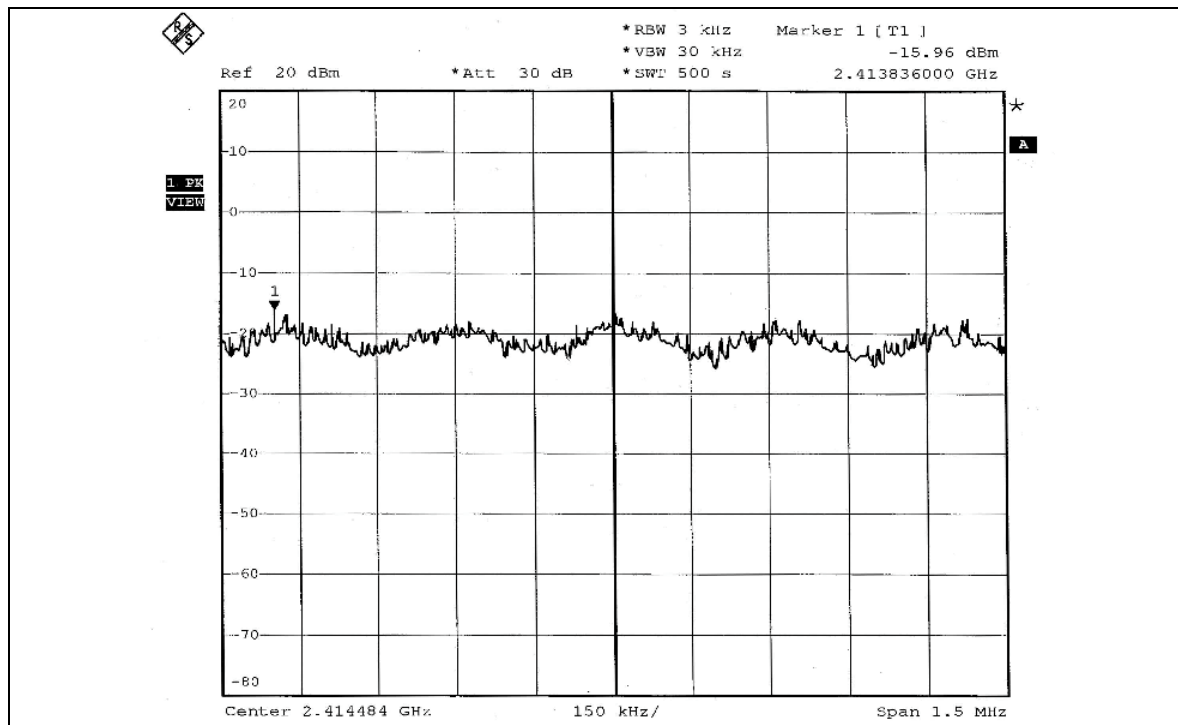


802.11g OFDM modulation

| | | | |
|---------------------------------|--------------------------------|-----------------------------|--------------|
| EUT | Notebook PC | MODEL | R15D |
| MODULATION TYPE | BPSK | TRANSFER RATE | 6Mbps |
| ENVIRONMENTAL CONDITIONS | 20 deg. C, 60% RH, 1004 hPa | INPUT POWER (SYSTEM) | 120Vac, 60Hz |
| TESTED BY | Jamison Chan | | |

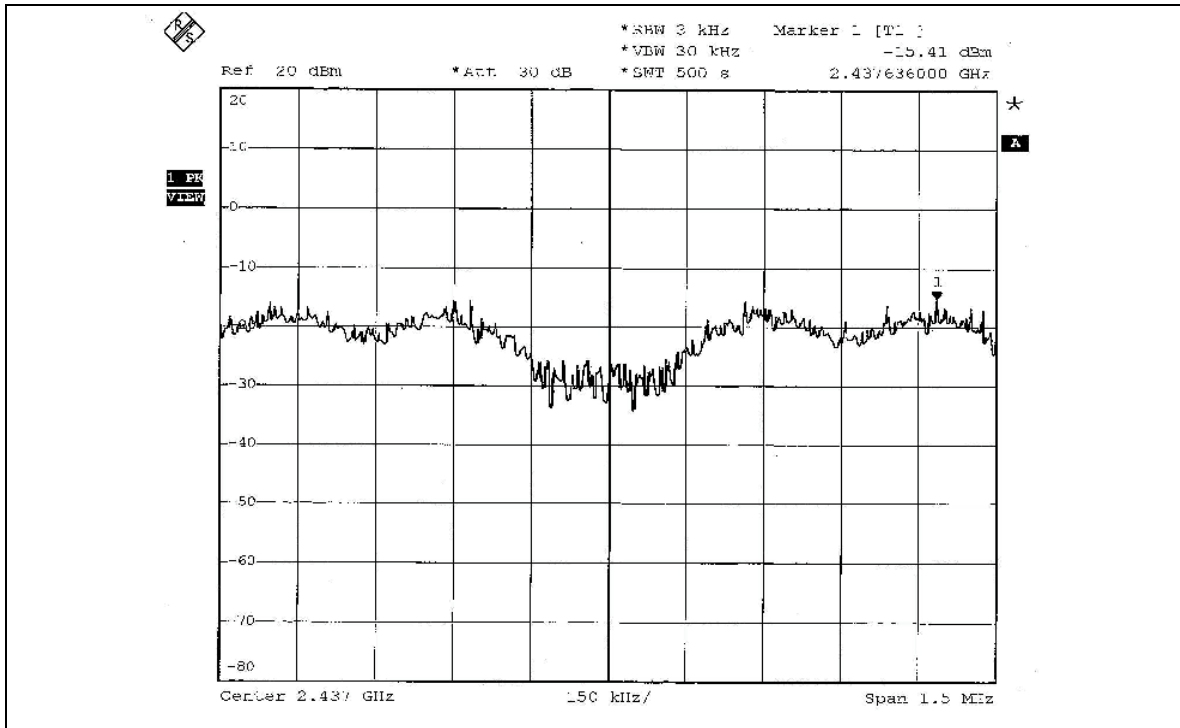
| CHANNEL | CHANNEL FREQUENCY (MHz) | RF POWER LEVEL IN 3kHz BW (dBm) | MAXIMUM LIMIT (dBm) | PASS/FAIL |
|---------|-------------------------|---------------------------------|---------------------|-----------|
| 1 | 2412 | -15.96 | 8 | PASS |
| 6 | 2437 | -15.41 | 8 | PASS |
| 11 | 2462 | -15.72 | 8 | PASS |

CH1

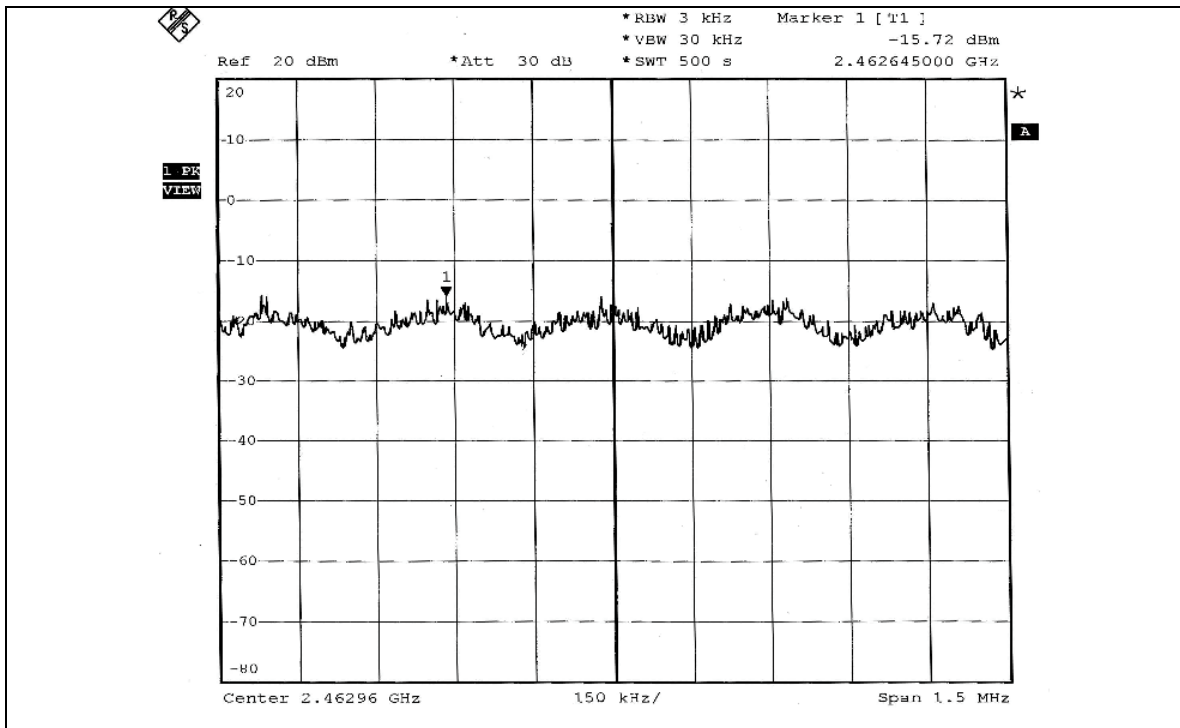




CH6



CH11





4.6 BAND EDGES MEASUREMENT

4.6.1 LIMITS OF BAND EDGES 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 Until |
|----------------------------|-----------|------------|------------------|
| SPECTRUM ANALYZER | FSP 40 | 100036 | Mar 18. 2006 |

NOTE: 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 lose cable. Set both RBW and VBW of spectrum analyzer to 100kHz with suitable frequency span including 100 MHz bandwidth from band edge. The band edges was measured and recorded.

The spectrum plots (Peak RBW=VBW=100kHz ; Average RBW=1MHz, VBW=10Hz) 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 12 images. D2 line indicates the highest level, and D1 line indicates the 20dB offset below D2. It shows compliance with the requirement in part 15.247(d).

802.11b DSSS modulation

NOTE 1: The band edge emission plot on page 49 shows 52.26dBc between carrier maximum power and local maximum emission in restrict band (2.3886GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 108.01dBuV/m (Peak), so the maximum field strength in restrict band is $108.01 - 52.26 = 55.75$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot on page 49 shows 62.12dBc between carrier maximum power and local maximum emission in restrict band (2.3600GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 100.42dBuV/m (Average), so the maximum field strength in restrict band is $100.42 - 62.12 = 38.3$ dBuV/m which is under 54dBuV/m limit.

NOTE 2: The band edge emission plot on page 50 shows 51.27dBc between carrier maximum power and local maximum emission in restrict band (2.4871GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 109.37dBuV/m (Peak), so the maximum field strength in restrict band is $109.37 - 51.27 = 58.10$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot on page 51 shows 62.24dBc between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 101.86dBuV/m (Average), so the maximum field strength in restrict band is $101.86 - 62.24 = 39.62$ dBuV/m which is under 54dBuV/m limit.



802.11g OFDM modulation

NOTE 1: The band edge emission plot on page 52 shows 46.61dBc delta between carrier maximum power and local maximum emission in restrict band (2.3896GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 104.48dBuV/m (Peak), so the maximum field strength in restrict band is $104.48 - 46.61 = 57.87$ dBuV/m which is under 74dBuV/m limit.

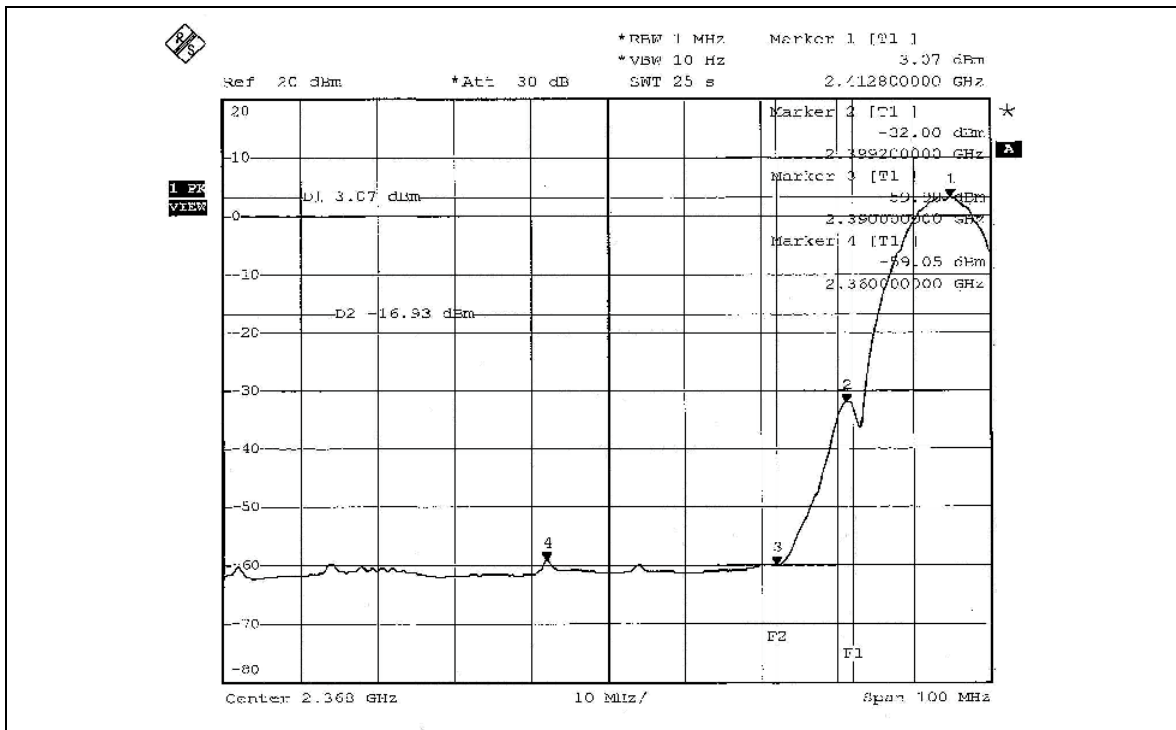
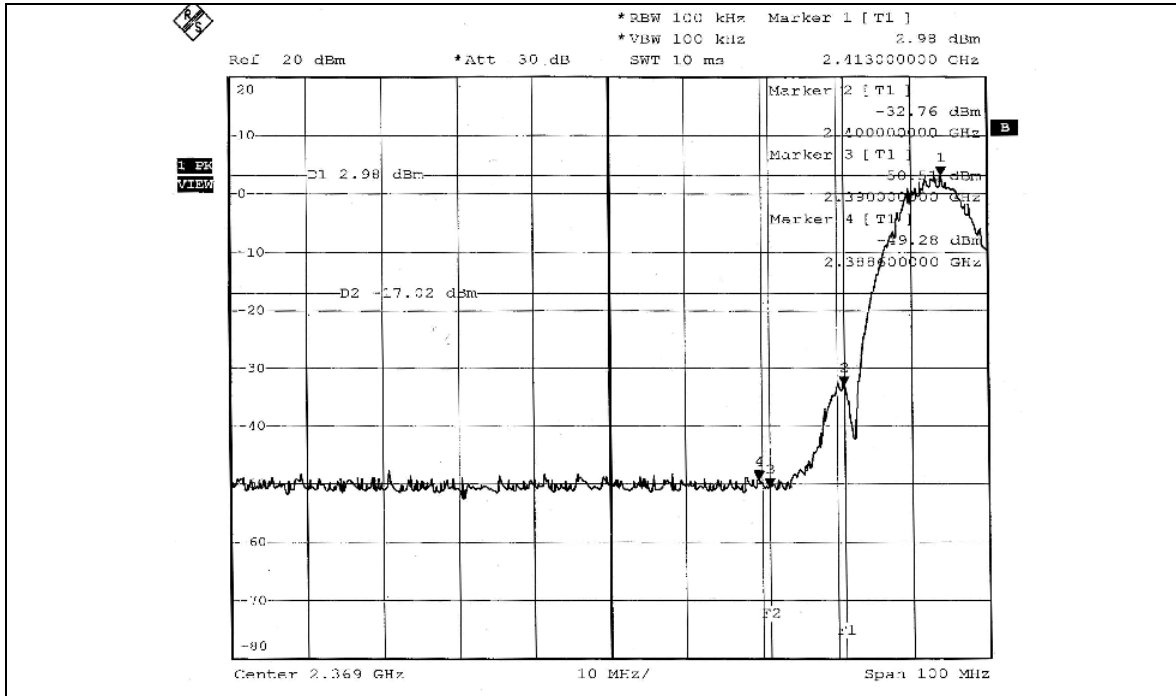
The band edge emission plot on page 52 shows 50.22dBc delta between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 93.63dBuV/m (Average), so the maximum field strength in restrict band is $93.63 - 50.22 = 43.41$ dBuV/m which is under 54dBuV/m limit.

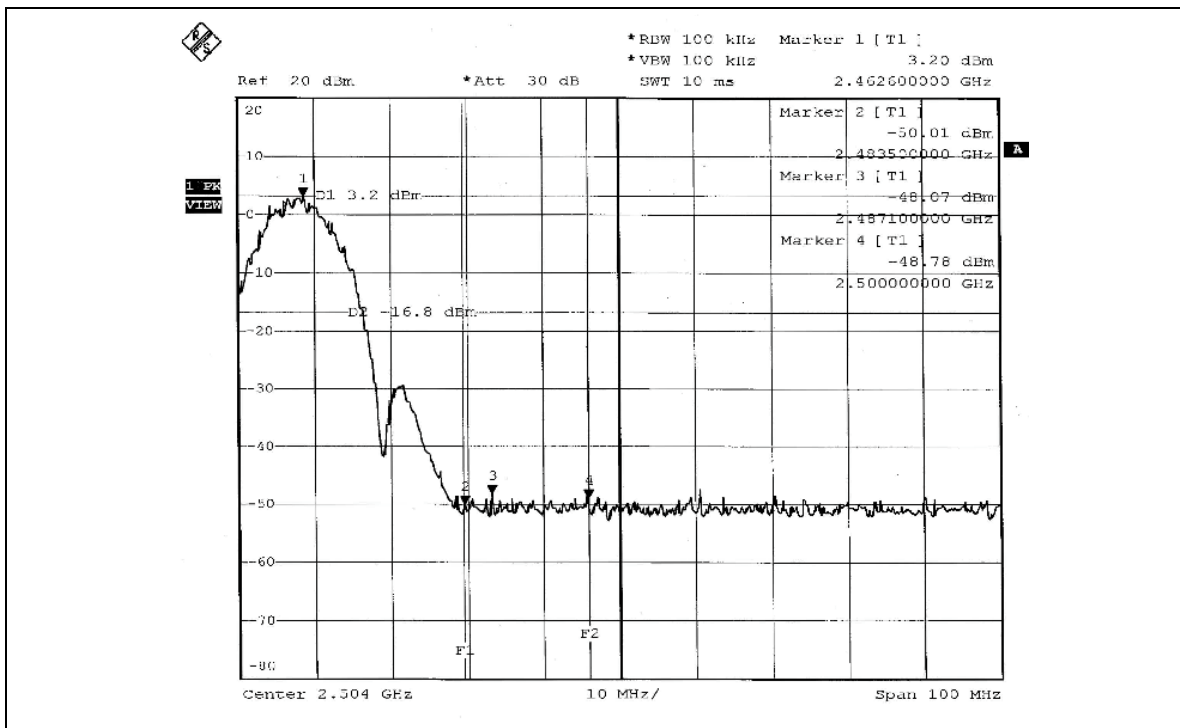
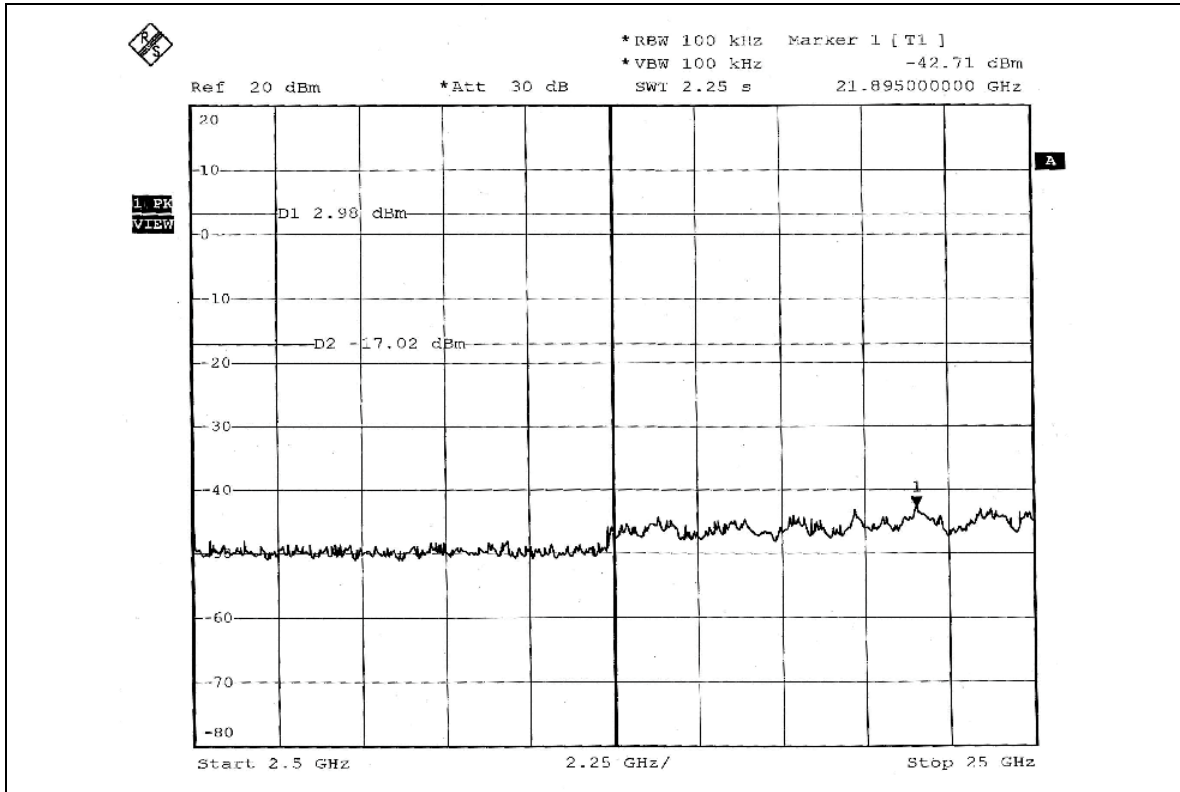
NOTE 2: The band edge emission plot on page 53 shows 45.21dBc delta between carrier maximum power and local maximum emission in restrict band (2.4865GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 104.24dBuV/m (Peak), so the maximum field strength in restrict band is $104.24 - 45.21 = 59.03$ dBuV/m which is under 74dBuV/m limit.

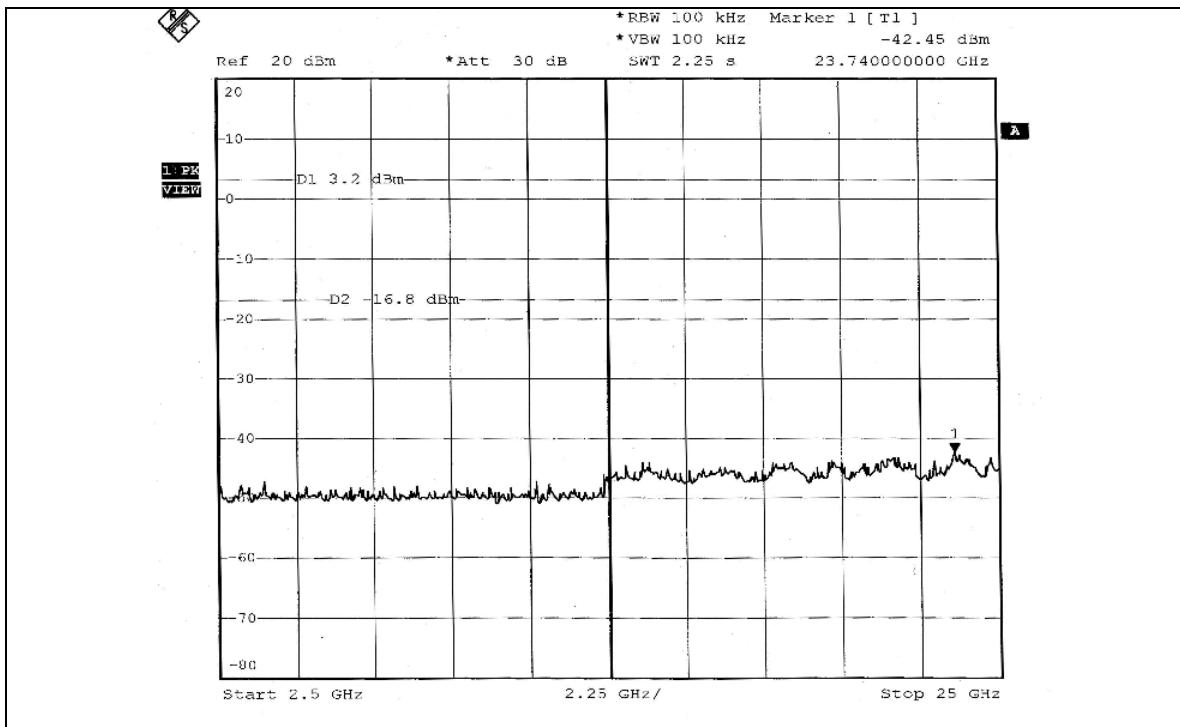
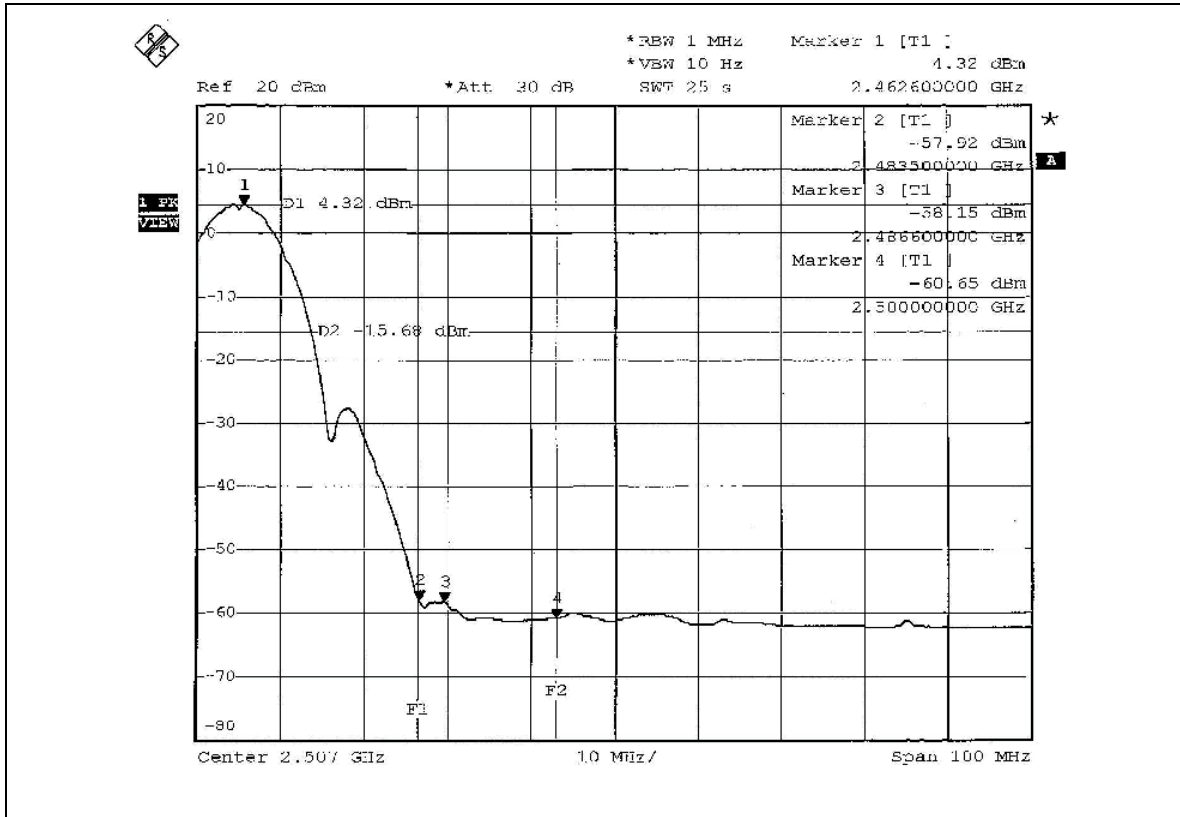
The band edge emission plot on page 54 shows 51.28dBc delta between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 96.10dBuV/m (Average), so the maximum field strength in restrict band is $96.10 - 51.28 = 44.82$ dBuV/m which is under 54dBuV/m limit.



802.11b DSSS modulation

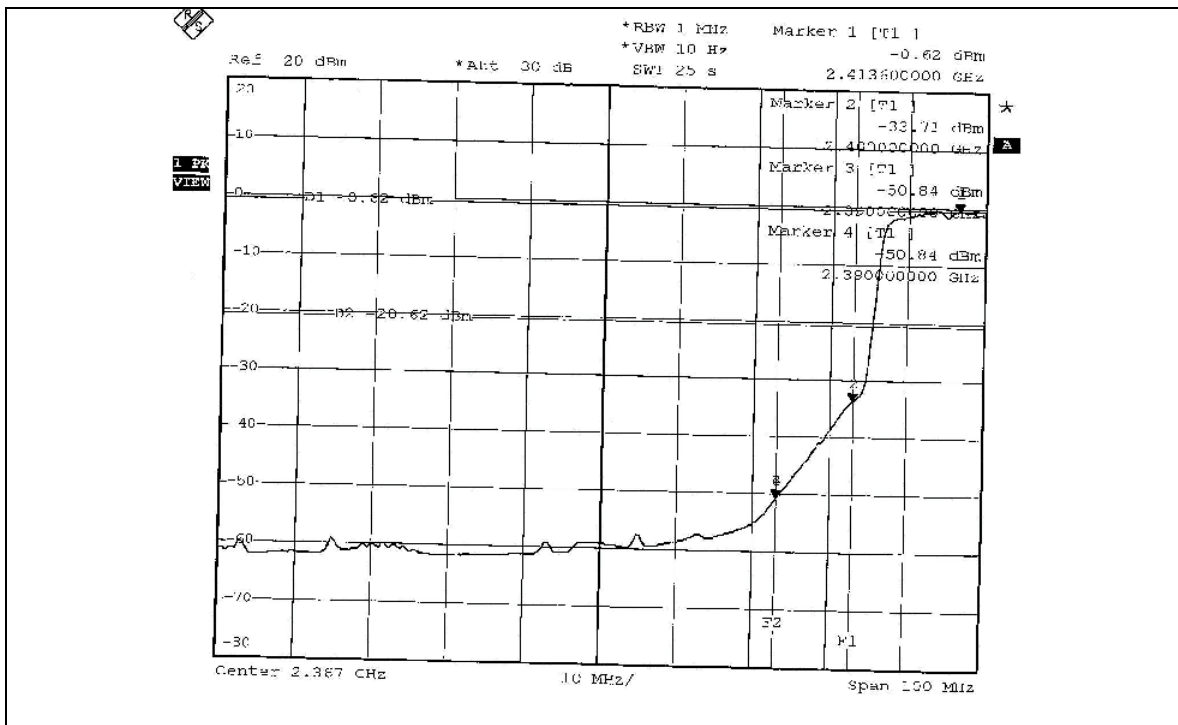
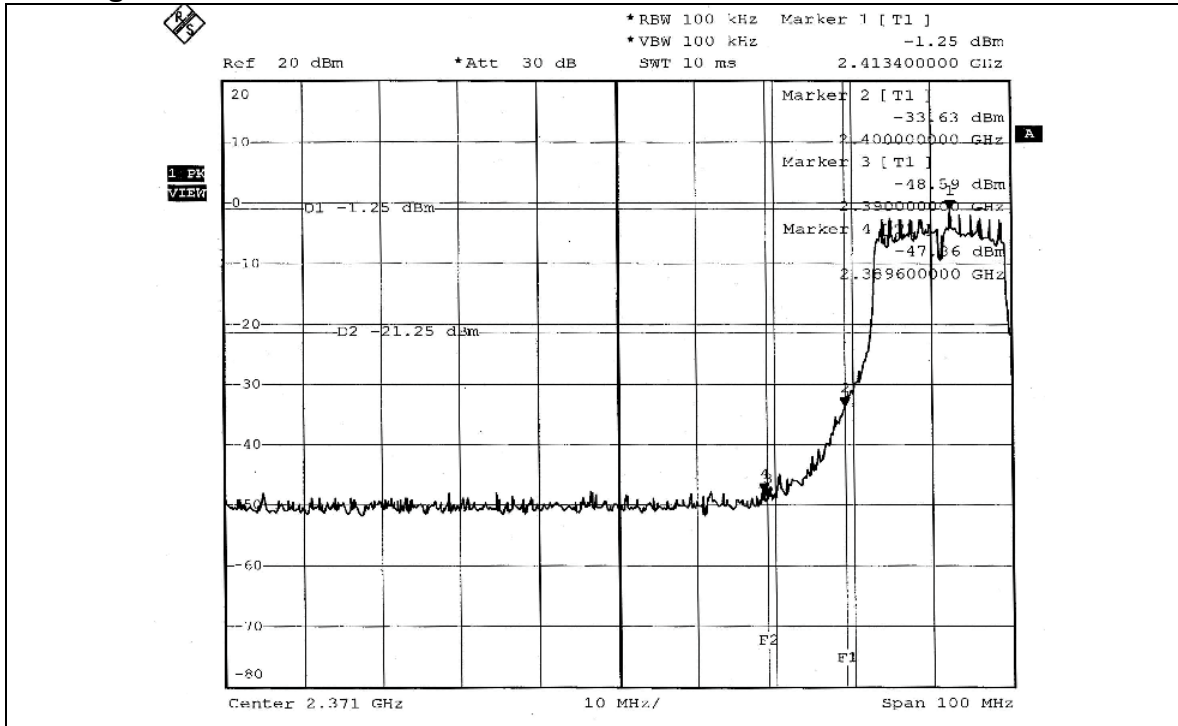


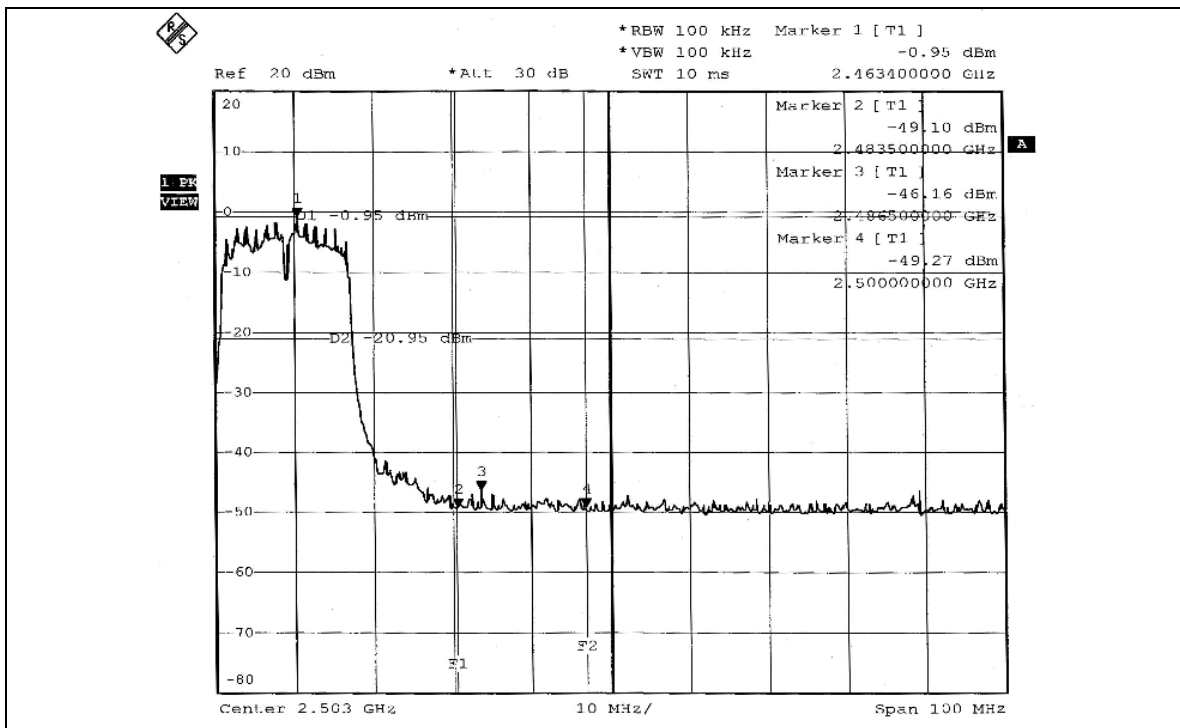
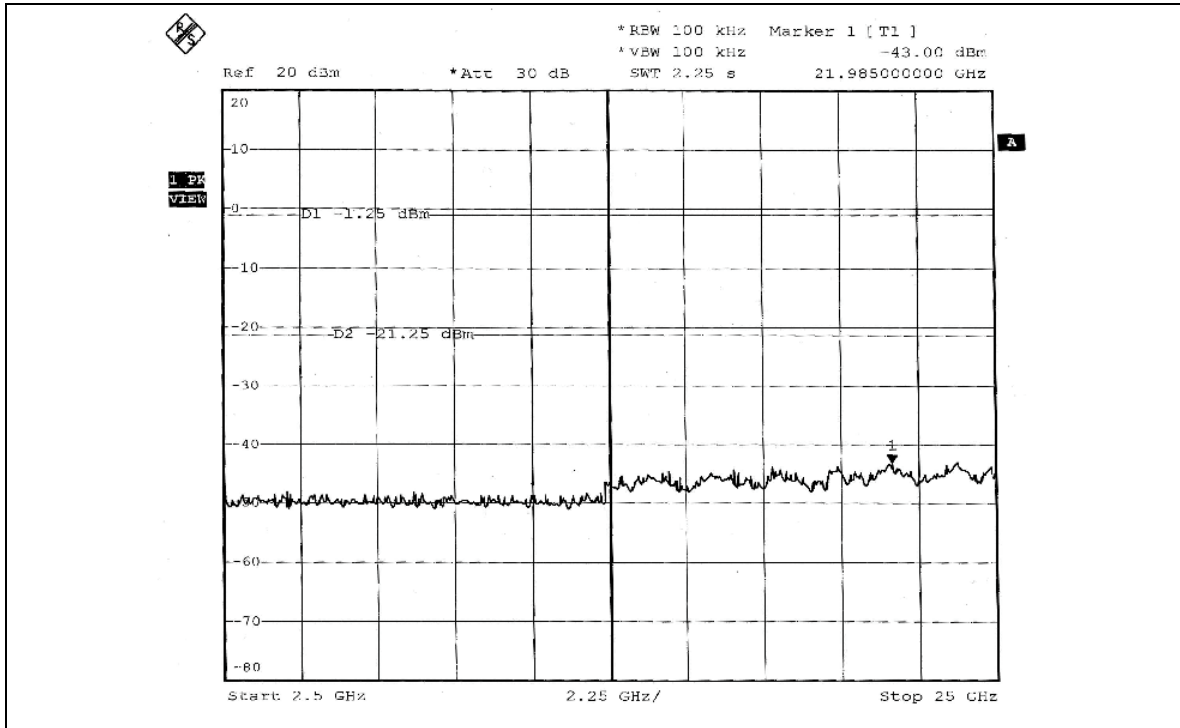


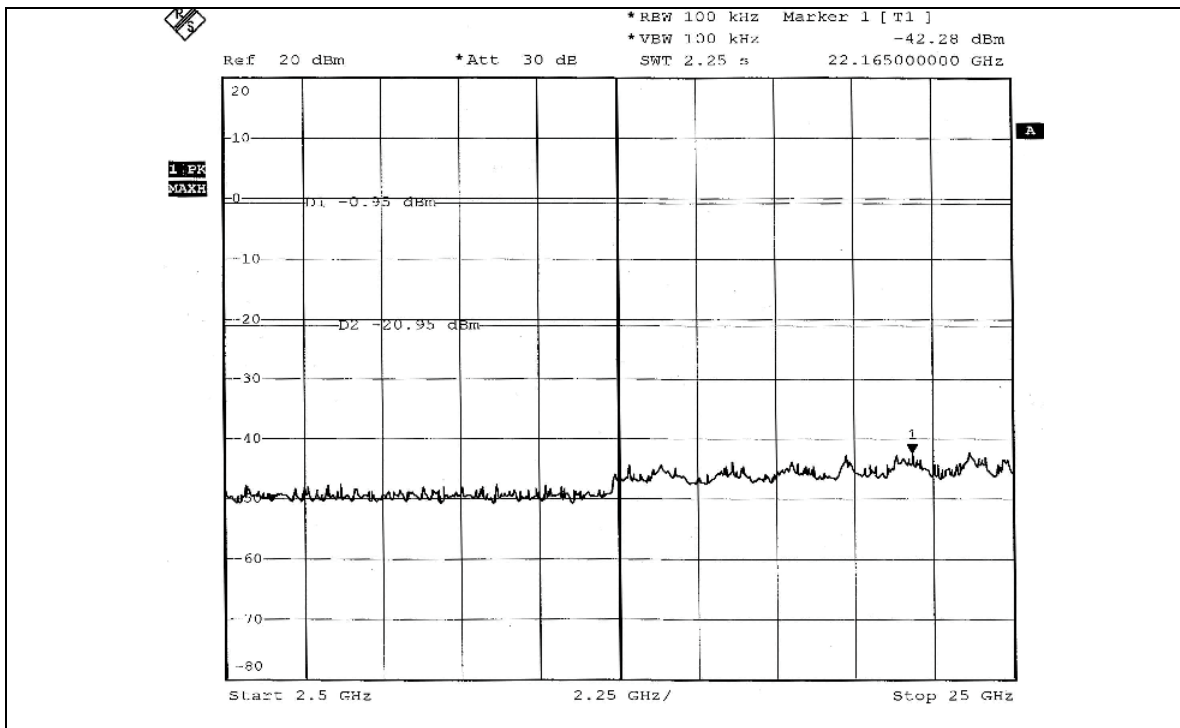
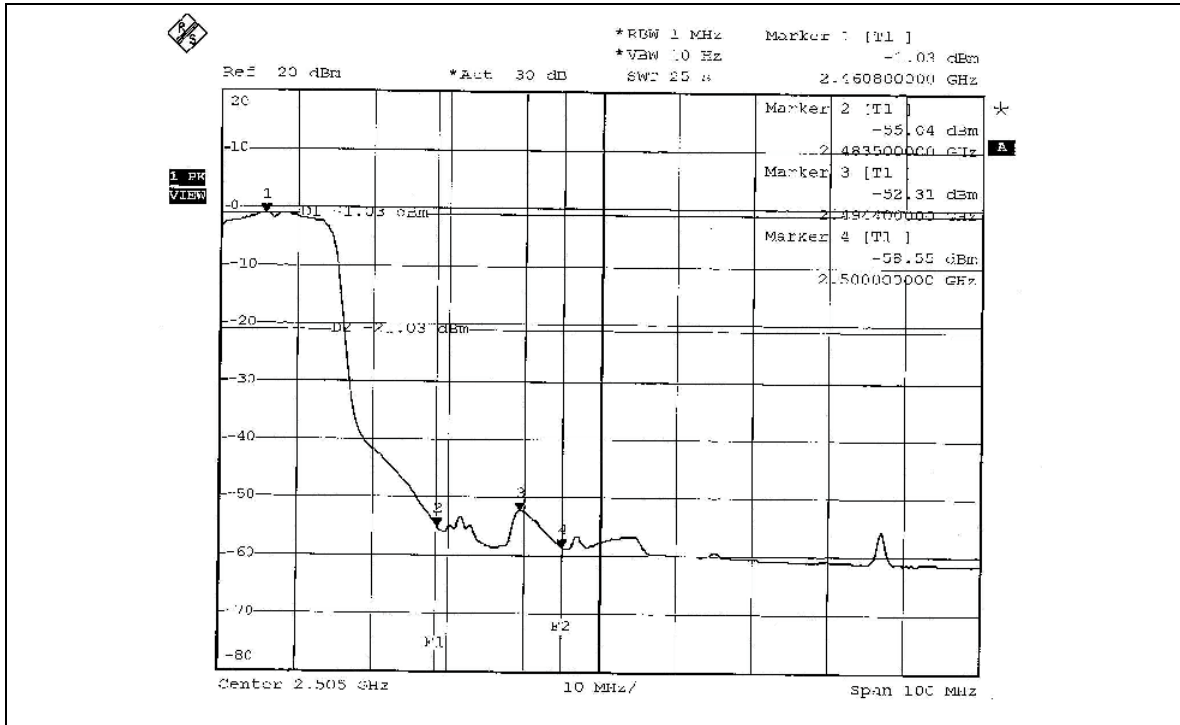




802.11g OFDM modulation









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

The antenna used in this product is PIFA antenna with UFL connector. The maximum Gain of the antenna is 2.27dBi.



5. TEST TYPES AND RESULTS (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 UNTIL |
|--|-----------------|--------------|------------------|
| ROHDE & SCHWARZ Test Receiver | ESHS 30 | 828765/002 | July 4, 2005 |
| ROHDE & SCHWARZ Artificial Mains Network (for EUT) | ESH3-Z5 | 835239/001 | Mar. 31, 2005 |
| LISN With Adapter (for EUT) | AD10 | C09Ada-001 | Mar. 31, 2005 |
| ROHDE & SCHWARZ Artificial Mains Network (for peripherals) | ESH3-Z5 | 835239/002 | Apr. 18, 2005 |
| ROHDE & SCHWARZ 4-wire ISN | ENY41 | 935154/007 | Apr. 20, 2005 |
| ROHDE & SCHWARZ 2-wire ISN | ENY22 | 833823/026 | Apr. 20, 2005 |
| Software | ADT_Cond_V7.3.2 | NA | NA |
| Software | ADT_ISN_V7.3.2 | NA | NA |
| RF cable (JYEBAO) | 5D-FB | Cable-C09.01 | May 9, 2005 |
| SUHNTER Terminator (For ROHDE & SCHWARZ LISN) | 65BNC-5001 | E1-010789 | May 17, 2005 |

- 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. “*”: These equipment are used for conducted telecom port test only (if tested).
 3. The test was performed in ADT Shielded Room No. 9.
 4. The VCCI Site Registration No. C-1312.



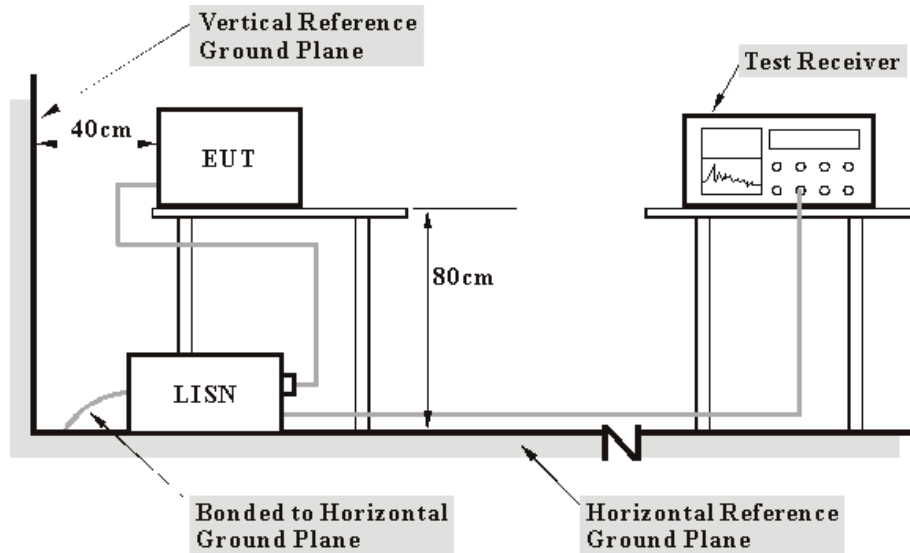
5.1.3 TEST PROCEDURES

- 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) was 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) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

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

5.1.6 EUT OPERATING CONDITIONS

Same as 4.1.6



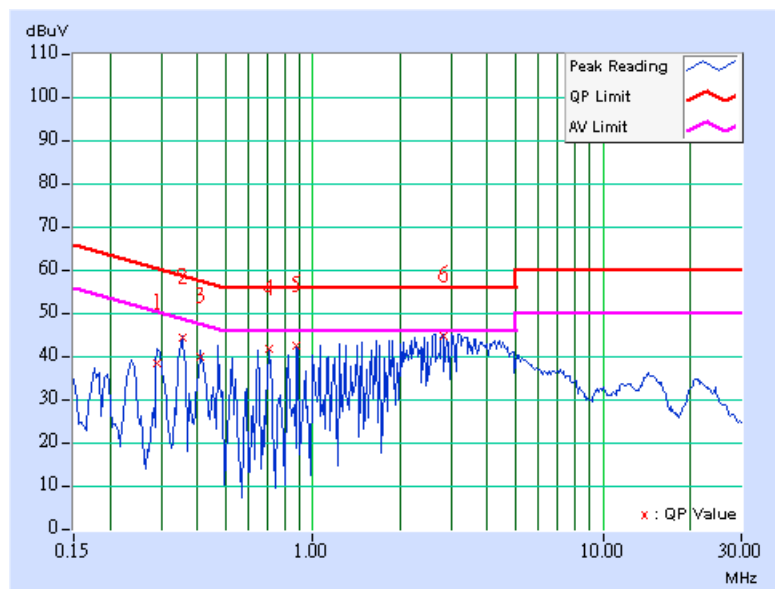
5.1.7 TEST RESULTS

Conducted Worst Case Data

| | | | |
|---------------------------------|-----------------------------|----------------------|--------------|
| EUT | Notebook PC | MODEL NO. | R15D |
| CHANNEL | 3 | 6dB BANDWIDTH | 9kHz |
| MODULATION TYPE | BPSK | TRANSFER RATE | 6Mbps |
| INPUT POWER (SYSTEM) | 120Vac, 60Hz | PHASE | Line (L) |
| ENVIRONMENTAL CONDITIONS | 20 deg. C, 60% RH, 1004 hPa | TESTED BY | Jamison Chan |

| No | Freq. [MHz] | Corr. Factor (dB) | Reading Value | | Emission Level | | Limit | | Margin | |
|----------|----------------|-------------------------|---------------|-----|----------------|-----|--------------|--------------|---------------|-----|
| | | | [dB (uV)] | | [dB (uV)] | | [dB (uV)] | | (dB) | |
| | | | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.291 | 0.20 | 38.45 | - | 38.65 | - | 60.50 | 50.50 | -21.85 | - |
| 2 | 0.354 | 0.20 | 44.20 | - | 44.40 | - | 58.87 | 48.87 | -14.47 | - |
| 3 | 0.411 | 0.20 | 39.78 | - | 39.98 | - | 57.63 | 47.63 | -17.65 | - |
| 4 | 0.708 | 0.20 | 41.78 | - | 41.98 | - | 56.00 | 46.00 | -14.02 | - |
| 5 | 0.882 | 0.20 | 42.44 | - | 42.64 | - | 56.00 | 46.00 | -13.36 | - |
| 6 | 2.826 | 0.24 | 44.71 | - | 44.95 | - | 56.00 | 46.00 | -11.05 | - |

- 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.

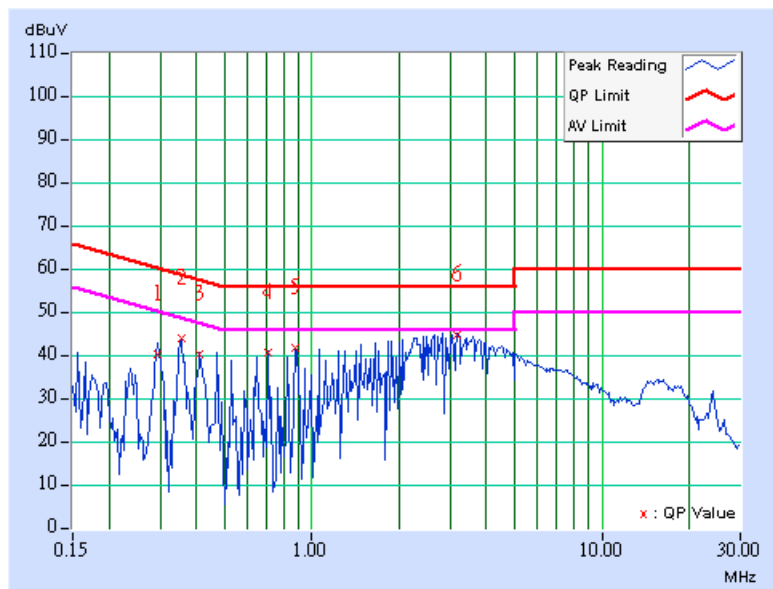




| | | | |
|---------------------------------|-----------------------------|----------------------|--------------|
| EUT | Notebook PC | MODEL NO. | R15D |
| CHANNEL | 3 | 6dB BANDWIDTH | 9kHz |
| MODULATION TYPE | BPSK | TRANSFER RATE | 6Mbps |
| INPUT POWER (SYSTEM) | 120Vac, 60Hz | PHASE | Neutral (N) |
| ENVIRONMENTAL CONDITIONS | 20 deg. C, 60% RH, 1004 hPa | TESTED BY | Jamison Chan |

| 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 | 0.294 | 0.20 | 40.13 | - | 40.33 | - | 60.41 |
| 2 | 0.354 | 0.20 | 43.86 | - | 44.06 | - | 58.87 | 48.87 | -14.81 | - |
| 3 | 0.411 | 0.20 | 40.18 | - | 40.38 | - | 57.63 | 47.63 | -17.25 | - |
| 4 | 0.708 | 0.20 | 40.55 | - | 40.75 | - | 56.00 | 46.00 | -15.25 | - |
| 5 | 0.882 | 0.20 | 41.48 | - | 41.68 | - | 56.00 | 46.00 | -14.32 | - |
| 6 | 3.180 | 0.30 | 44.46 | - | 44.76 | - | 56.00 | 46.00 | -11.24 | - |

- 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.



5.2.2 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED UNTIL |
|---------------------------------------|--------------------------|--------------------------|------------------|
| HP Spectrum Analyzer | 8590L | 3544A01176 | May. 31, 2005 |
| HP Preamplifier | 8447D | 2944A08485 | Apr. 26, 2005 |
| * HP Preamplifier | 8449B | 3008A01924 | Sep. 19, 2005 |
| * HP Preamplifier | 8449B | 3008A01638 | Sep. 30, 2005 |
| *SCHAFFNER TEST RECEIVER | SCR 3501 | 408 | Jan. 03, 2006 |
| * ROHDE & SCHWARZ TEST RECEIVER | ESMI | 839013/007 839379/002 | Feb. 03, 2006 |
| SCHWARZBECK Tunable Dipole Antenna | VHA 9103 | NA | Oct. 29, 2005 |
| SCHWARZBECK Tunable Dipole Antenna | UHA 9105 | 977 | |
| * CHASE BILOG Antenna | CBL6112A | 2221 | Oct 19, 2005 |
| * EMCO Horn Antenna | 3115 | 6714 | Oct. 28, 2005 |
| * EMCO Horn Antenna | 3115 | 9312-4192 | Feb. 28, 2006 |
| * EMCO Turn Table | 1060 | 1115 | NA |
| * CHANCE Tower | CM-AT40 | CM-A010 | NA |
| * Software | ADT_Radiate d_V7.5.14 | NA | NA |
| * ADT RF Switches | EM-H-01-1 | 1002 | Dec. 02, 2005 |
| * TIMES RF cable | LMR-600 | CABLE-ST5-01 | Dec. 02, 2005 |

- 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. "*" = These equipment are used for the final measurement.
 3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
 4. The test was performed in ADT Open Site No. 5.
 5. The VCCI Site Registration No. R-1039.



5.2.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 10 meters 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.

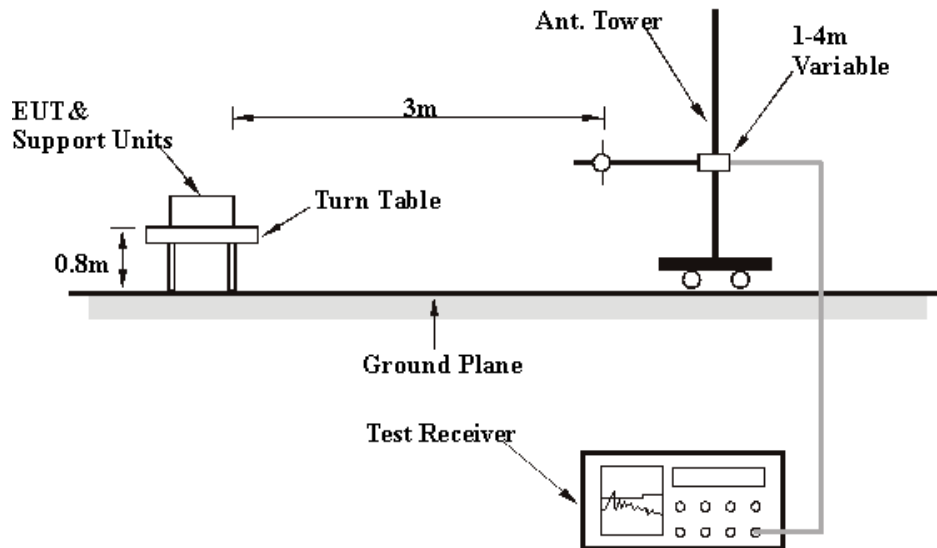
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 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 4.1.6.



5.2.7 TEST RESULTS

Below 1GHz Worst Case Data

| | | | |
|---------------------------------|-----------------------------|--------------------------|---------------|
| EUT | Notebook PC | MODEL NO. | R15D |
| CHANNEL | 3 | FREQUENCY RANGE | Below 1000MHz |
| MODULATION TYPE | BPSK | TRANSFER RATE | 6Mbps |
| INPUT POWER (SYSTEM) | 120Vac, 60Hz | DETECTOR FUNCTION | Quasi-Peak |
| ENVIRONMENTAL CONDITIONS | 20 deg. C, 60% RH, 1002 hPa | TESTED BY | Jamison Chan |

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 | 195.23 | 35.89 QP | 43.50 | -7.61 | 3.00 H | 259 | 24.23 | 11.66 |
| 2 | 228.28 | 40.18 QP | 46.00 | -5.82 | 2.00 H | 106 | 27.94 | 12.23 |
| 3 | 259.38 | 37.39 QP | 46.00 | -8.61 | 1.00 H | 271 | 24.15 | 13.24 |
| 4 | 652.04 | 38.03 QP | 46.00 | -7.97 | 3.00 H | 4 | 16.54 | 21.49 |
| 5 | 716.19 | 39.61 QP | 46.00 | -6.39 | 3.00 H | 310 | 17.20 | 22.41 |
| 6 | 838.66 | 40.16 QP | 46.00 | -5.84 | 1.00 H | 142 | 16.36 | 23.81 |

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 | 195.23 | 37.12 QP | 43.50 | -6.38 | 3.00 V | 220 | 25.46 | 11.66 |
| 2 | 228.28 | 42.16 QP | 46.00 | -3.84 | 1.00 V | 169 | 29.93 | 12.23 |
| 3 | 260.58 | 42.55 QP | 46.00 | -3.45 | 1.99 V | 92 | 29.28 | 13.27 |
| 4 | 391.56 | 34.64 QP | 46.00 | -11.36 | 2.00 V | 148 | 18.11 | 16.53 |
| 5 | 652.04 | 36.68 QP | 46.00 | -9.32 | 3.00 V | 34 | 15.19 | 21.49 |
| 6 | 716.19 | 37.82 QP | 46.00 | -8.18 | 2.00 V | 178 | 15.41 | 22.41 |

- 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.

**802.11a OFDM modulation**

| | | | |
|---------------------------------|--------------------------------|--------------------------|--------------------------|
| EUT | Notebook PC | MODEL NO. | R15D |
| CHANNEL | 1 | FREQUENCY RANGE | 1 ~ 40GHz |
| MODULATION TYPE | BPSK | TRANSFER RATE | 6Mbps |
| INPUT POWER (SYSTEM) | 120Vac, 60Hz | DETECTOR FUNCTION | Peak(PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 21 deg. C, 61% RH, 1004 hPa | TESTED BY | Jamison Chan |

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

| No. | Freq. (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Correction Factor (dB/m) |
|-----|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| 1 | *5745.00 | 102.46 PK | | | 1.76 H | 339 | 62.98 | 39.48 |
| 1 | *5745.00 | 89.97 AV | | | 1.76 H | 339 | 50.49 | 39.48 |
| 2 | #11490.00 | 56.52 PK | 74.00 | -17.48 | 1.25 H | 177 | 5.81 | 50.71 |
| 2 | #11490.00 | 47.29 AV | 54.00 | -6.71 | 1.25 H | 177 | -3.42 | 50.71 |

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

| No. | Freq. (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Correction Factor (dB/m) |
|-----|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| 1 | *5745.00 | 97.24 PK | | | 1.00 V | 334 | 57.76 | 39.48 |
| 1 | *5745.00 | 86.35 AV | | | 1.00 V | 334 | 46.87 | 39.48 |
| 2 | #11490.00 | 57.85 PK | 74.00 | -16.15 | 1.01 V | 286 | 7.14 | 50.71 |
| 2 | #11490.00 | 47.94 AV | 54.00 | -6.06 | 1.01 V | 286 | -2.77 | 50.71 |

- 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 falling in the restricted band.
 7. The limit value is defined as per 15.247



| | | | |
|---------------------------------|--------------------------------|--------------------------|--------------------------|
| EUT | Notebook PC | MODEL NO. | R15D |
| CHANNEL | 3 | FREQUENCY RANGE | 1 ~ 40GHz |
| MODULATION TYPE | BPSK | TRANSFER RATE | 6Mbps |
| INPUT POWER (SYSTEM) | 120Vac, 60Hz | DETECTOR FUNCTION | Peak(PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 21 deg. C, 61% RH, 1004 hPa | TESTED BY | Jamison Chan |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M | | | | | | | | |
|---|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| No. | Freq. (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Correction Factor (dB/m) |
| 1 | *5785.00 | 101.96 PK | | | 1.77 H | 22 | 62.41 | 39.55 |
| 1 | *5785.00 | 89.77 AV | | | 1.77 H | 22 | 50.22 | 39.55 |
| 2 | #11570.00 | 56.95 PK | 74.00 | -17.05 | 1.85 H | 23 | 6.30 | 50.65 |
| 2 | #11570.00 | 46.24 AV | 54.00 | -7.76 | 1.85 H | 23 | -4.41 | 50.65 |

| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | | | | | | |
|---|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| No. | Freq. (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Correction Factor (dB/m) |
| 1 | *5785.00 | 99.09 PK | | | 1.00 V | 360 | 59.54 | 39.55 |
| 1 | *5785.00 | 86.89 AV | | | 1.00 V | 360 | 47.34 | 39.55 |
| 2 | #11570.00 | 58.00 PK | 74.00 | -16.00 | 1.12 V | 251 | 7.35 | 50.65 |
| 2 | #11570.00 | 47.73 AV | 54.00 | -6.27 | 1.12 V | 251 | -2.92 | 50.65 |

- 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 falling in the restricted band.
 7. The limit value is defined as per 15.247



| | | | |
|---------------------------------|--------------------------------|--------------------------|--------------------------|
| EUT | Notebook PC | MODEL NO. | R15D |
| CHANNEL | 5 | FREQUENCY RANGE | 1 ~ 40GHz |
| MODULATION TYPE | BPSK | TRANSFER RATE | 6Mbps |
| INPUT POWER (SYSTEM) | 120Vac, 60Hz | DETECTOR FUNCTION | Peak(PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 21 deg. C, 61% RH, 1004 hPa | TESTED BY | Jamison Chan |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M | | | | | | | | |
|--|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| No. | Freq. (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Correction Factor (dB/m) |
| 1 | *5825.00 | 102.94 PK | | | 1.64 H | 360 | 63.36 | 39.58 |
| 1 | *5825.00 | 91.39 AV | | | 1.64 H | 360 | 51.81 | 39.58 |
| 2 | #11650.00 | 56.84 PK | 74.00 | -17.16 | 1.55 H | 288 | 6.25 | 50.59 |
| 2 | #11650.00 | 46.91 AV | 54.00 | -7.09 | 1.55 H | 288 | -3.68 | 50.59 |

| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | | | | | | |
|--|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| No. | Freq. (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Correction Factor (dB/m) |
| 1 | *5825.00 | 100.64 PK | | | 1.00 V | 14 | 61.06 | 39.58 |
| 1 | *5825.00 | 90.55 AV | | | 1.00 V | 14 | 50.97 | 39.58 |
| 2 | #11650.00 | 57.70 PK | 74.00 | -16.30 | 1.05 V | 212 | 7.11 | 50.59 |
| 2 | #11650.00 | 47.65 AV | 54.00 | -6.35 | 1.05 V | 212 | -2.94 | 50.59 |

- 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 falling in the restricted band.
 7. The limit value is defined as per 15.247

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 Until |
|----------------------------|-----------|------------|------------------|
| SPECTRUM ANALYZER | FSP 40 | 100036 | Mar 18. 2006 |

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

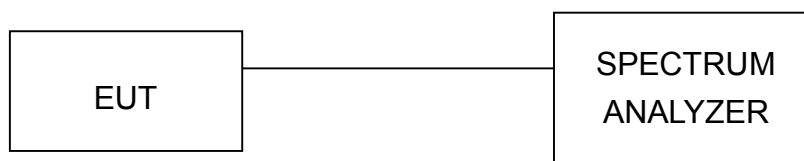
5.3.3 TEST PROCEDURE

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.



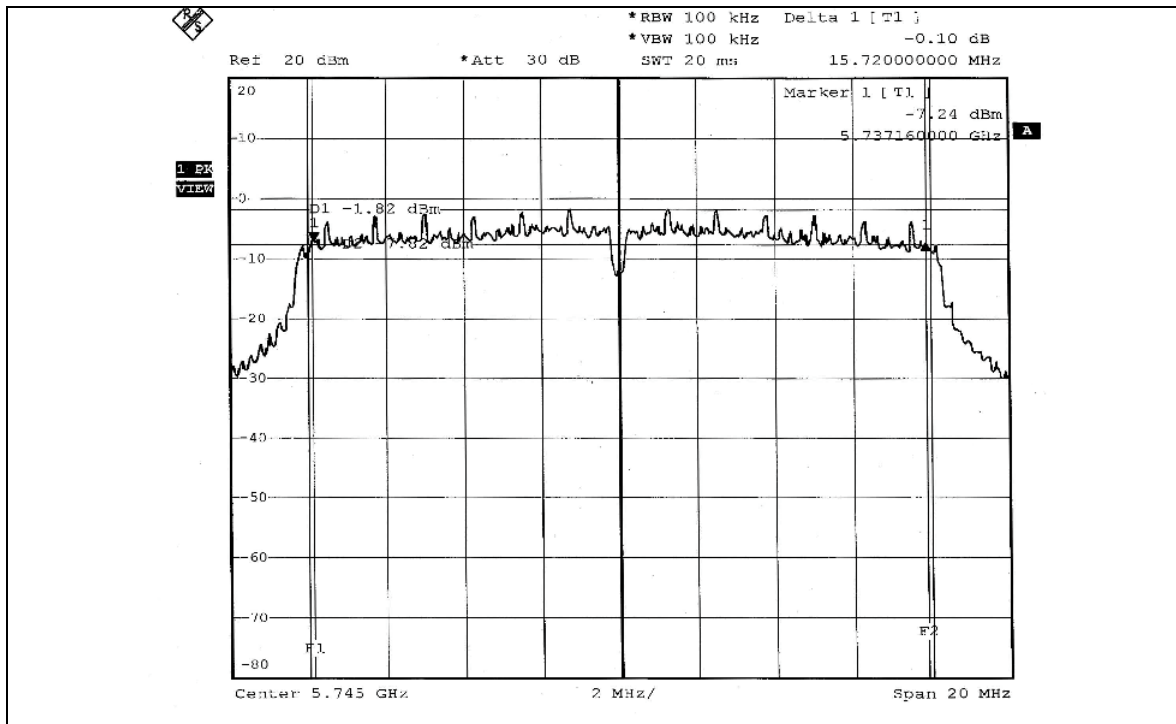
5.3.7 TEST RESULTS

802.11a OFDM modulation

| | | | |
|---------------------------------|-----------------------------|-----------------------------|---------------|
| EUT | Notebook PC | MODEL | R15D |
| MODULATION TYPE | BPSK | TRANSFER RATE | 6Mbps |
| ENVIRONMENTAL CONDITIONS | 20 deg. C, 60% RH, 1004 hPa | INPUT POWER (SYSTEM) | 120Vac, 60 Hz |
| TESTED BY | Jamison Chan | | |

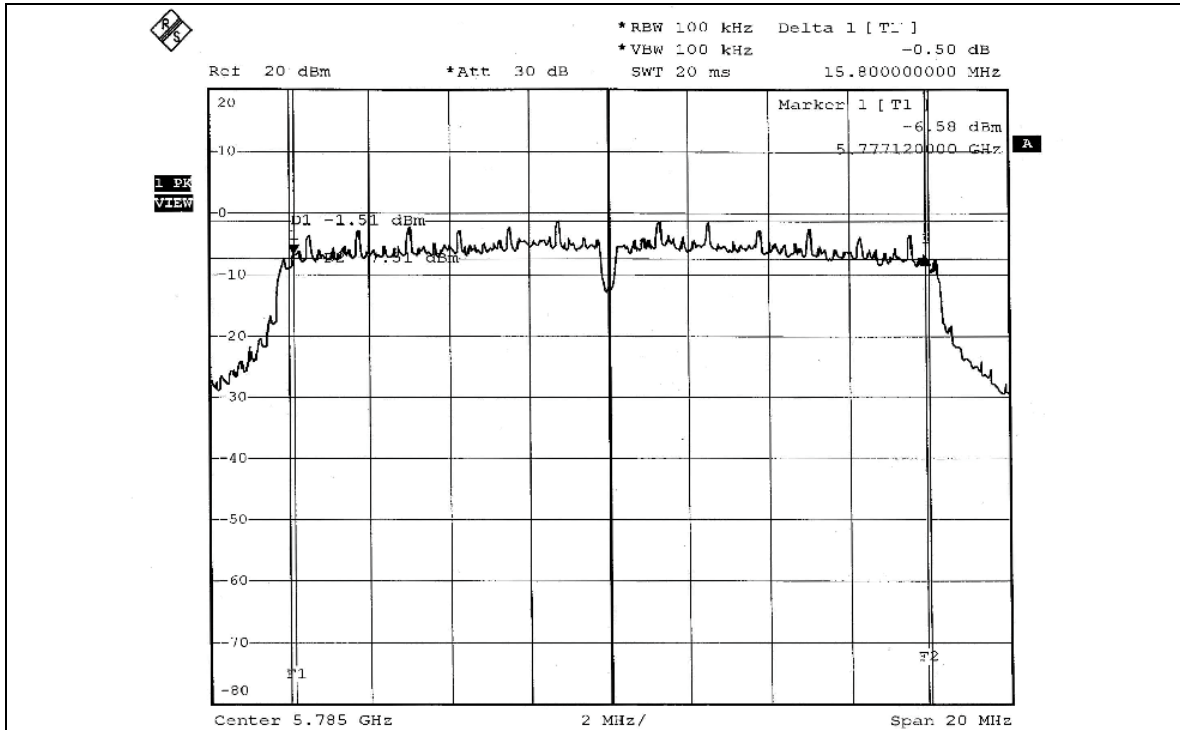
| CHANNEL | CHANNEL FREQUENCY (MHz) | 6dB BANDWIDTH (MHz) | MINIMUM LIMIT (MHz) | PASS/FAIL |
|---------|-------------------------|---------------------|---------------------|-----------|
| 1 | 5745 | 15.72 | 0.5 | PASS |
| 3 | 5785 | 15.80 | 0.5 | PASS |
| 5 | 5825 | 16.04 | 0.5 | PASS |

CH1

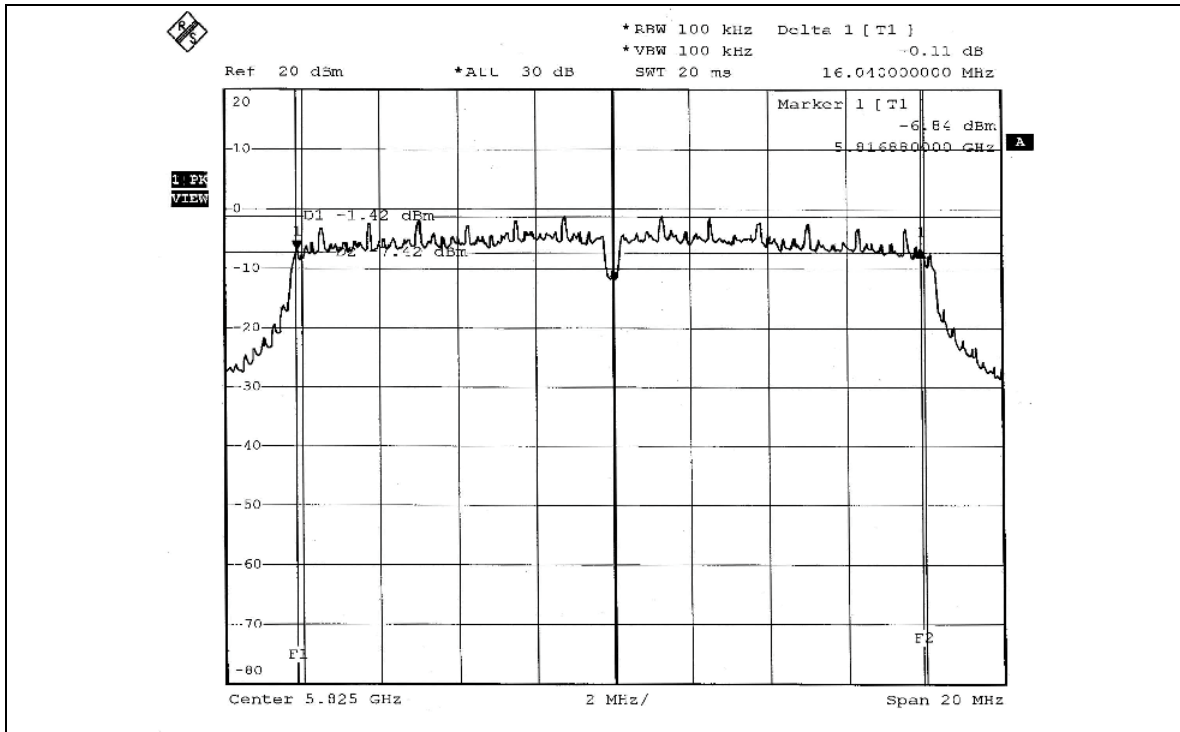




CH3



CH5



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 Until |
|--------------------------------------|-----------|------------|------------------|
| ROHDE & SCHWARZ Spectrum Analyzer | FSP 40 | 100036 | Mar 18. 2006 |
| ROHDE & SCHWARZ Signal Generator | SMR40 | 100231 | Mar. 17. 2006 |
| Tektronix Oscilloscope | TDS1012 | C019167 | Feb. 01. 2006 |
| Narda Detector | 4503A | FSCM99899 | NA |

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

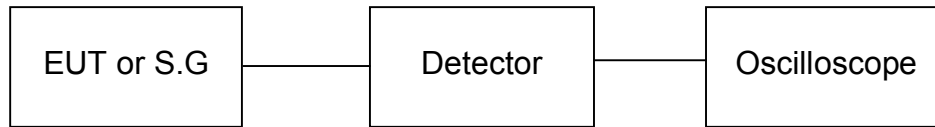
5.4.3 TEST PROCEDURES

1. A detector was used on the output port of the EUT. An oscilloscope was used to read the response of the detector.
2. Replaced the EUT by the signal generator . The center frequency of the S.G was adjusted to the center frequency of the measured channel.
3. Adjusted the power to have the same reading on oscilloscope. 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 5.3.6.

5.4.7 TEST RESULTS

802.11a OFDM modulation

| | | | |
|---------------------------------|--------------------------------|-----------------------------|--------------|
| EUT | Notebook PC | MODEL | R15D |
| MODULATION TYPE | BPSK | TRANSFER RATE | 6Mbps |
| ENVIRONMENTAL CONDITIONS | 20 deg. C, 60% RH, 1004 hPa | INPUT POWER (SYSTEM) | 120Vac, 60Hz |
| TESTED BY | Jamison Chan | | |

| CHANNEL | CHANNEL FREQUENCY (MHz) | PEAK POWER OUTPUT (mW) | PEAK POWER OUTPUT (dBm) | PEAK POWER LIMIT (dBm) | PASS/FAIL |
|---------|-------------------------|------------------------|-------------------------|------------------------|-----------|
| 1 | 5745 | 25.003 | 13.98 | 30 | PASS |
| 3 | 5785 | 24.946 | 13.97 | 30 | PASS |
| 5 | 5825 | 24.889 | 13.96 | 30 | PASS |



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 Until |
|----------------------------|-----------|------------|------------------|
| SPECTRUM ANALYZER | FSP 40 | 100036 | Mar 18. 2006 |

NOTE:

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

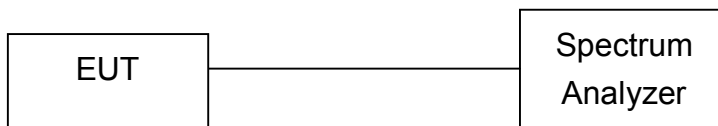
5.5.3 TEST PROCEDURE

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 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.

5.5.4 DEVIATION FROM TEST STANDARD

No deviation

5.5.5 TEST SETUP



5.5.6 EUT OPERATING CONDITION

Same as Item 5.3.6.



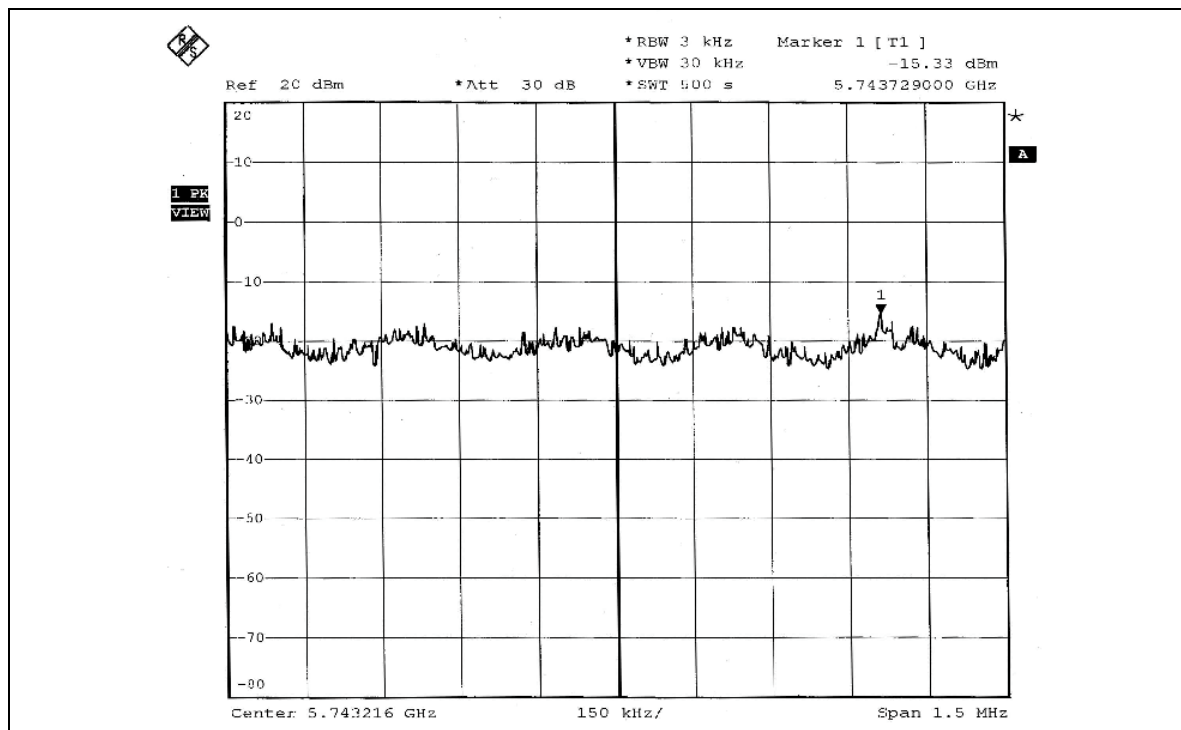
5.5.7 TEST RESULTS

802.11a OFDM modulation

| | | | |
|---------------------------------|-----------------------------|-----------------------------|--------------|
| EUT | Notebook PC | MODEL | R15D |
| MODULATION TYPE | BPSK | TRANSFER RATE | 6Mbps |
| ENVIRONMENTAL CONDITIONS | 20 deg. C, 60% RH, 1004 hPa | INPUT POWER (SYSTEM) | 120Vac, 60Hz |
| TESTED BY | Jamison Chan | | |

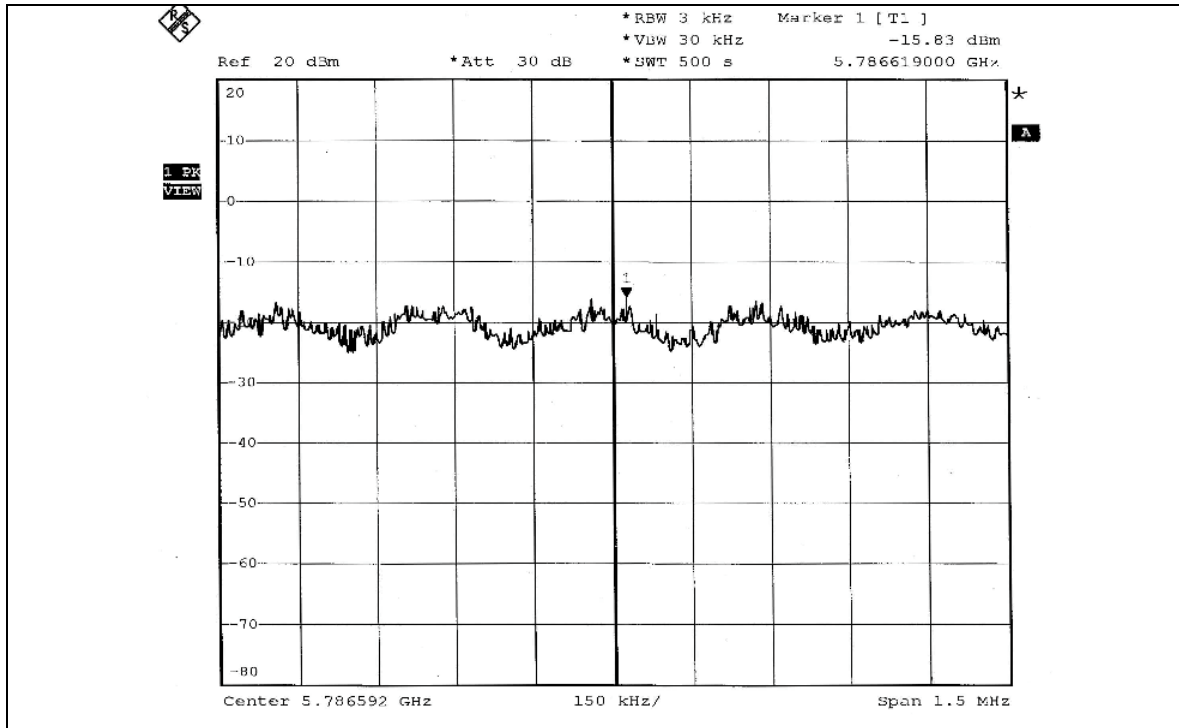
| CHANNEL | CHANNEL FREQUENCY (MHz) | RF POWER LEVEL IN 3kHz BW (dBm) | MAXIMUM LIMIT (dBm) | PASS/FAIL |
|---------|-------------------------|---------------------------------|---------------------|-----------|
| 1 | 5745 | -15.33 | 8 | PASS |
| 3 | 5785 | -15.83 | 8 | PASS |
| 5 | 5825 | -15.29 | 8 | PASS |

CH1

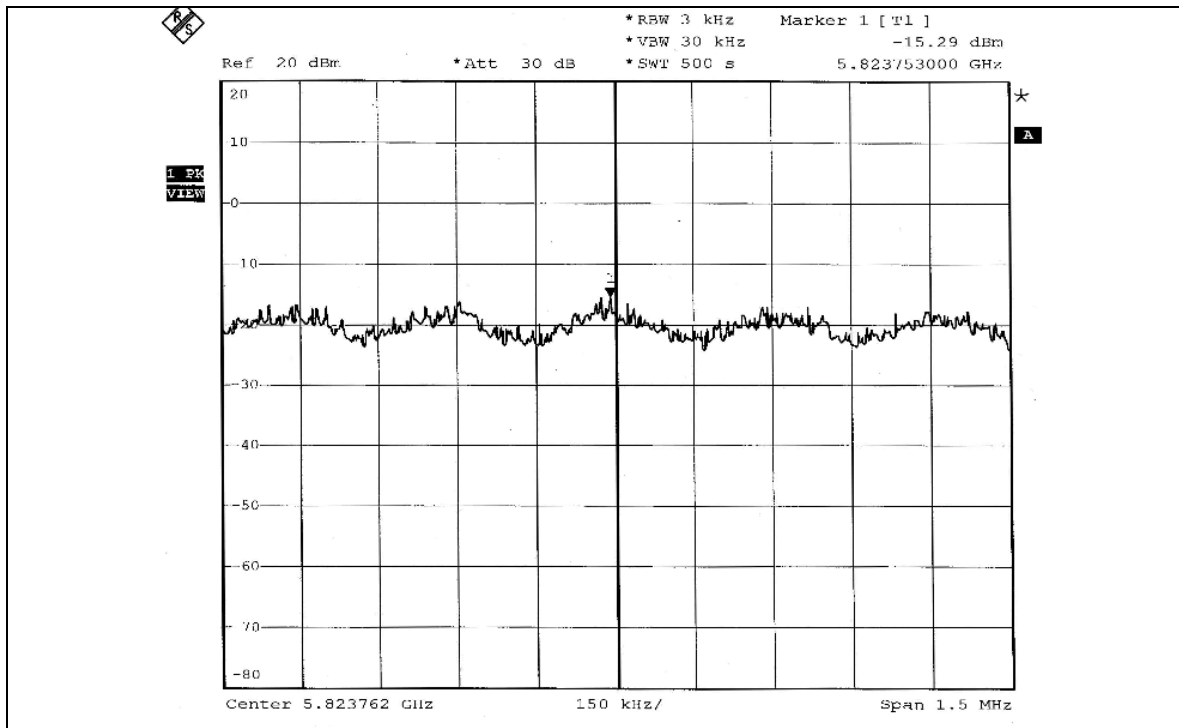




CH3



CH5





5.6 BAND EDGES MEASUREMENT

5.6.1 LIMITS OF BAND EDGES 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 Until |
|----------------------------|-----------|------------|------------------|
| SPECTRUM ANALYZER | FSP 40 | 100036 | Mar 18. 2006 |

NOTE: 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 lose cable. Set both RBW and VBW 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

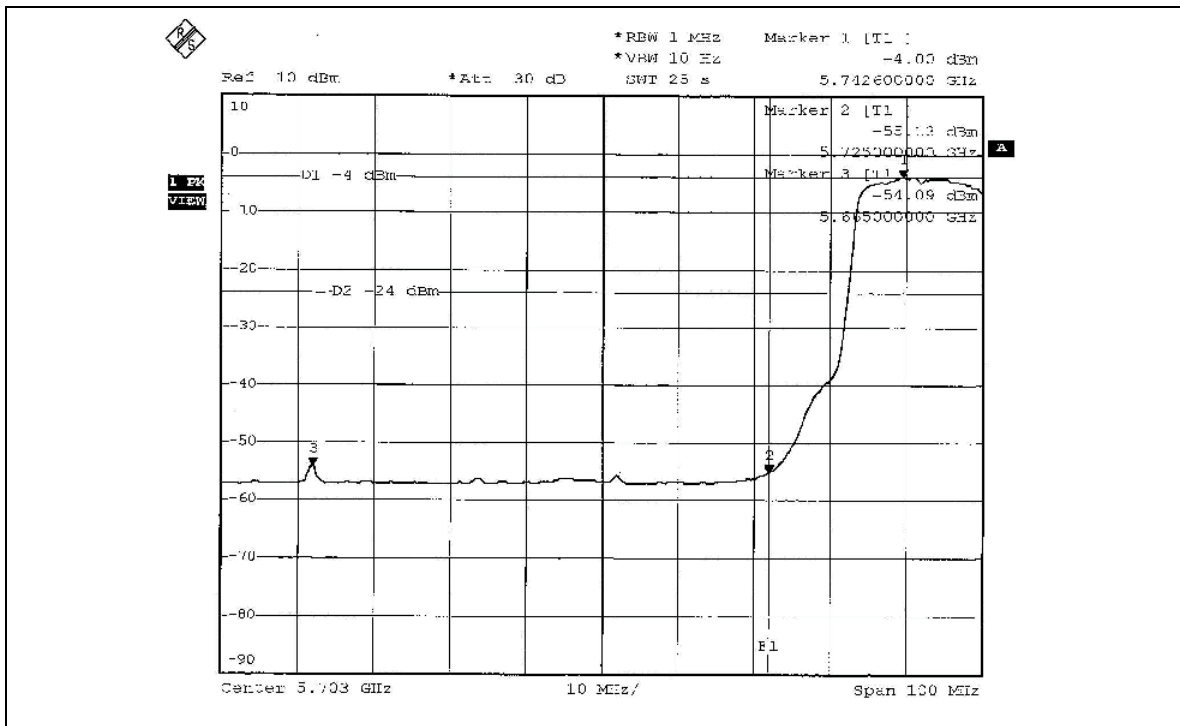
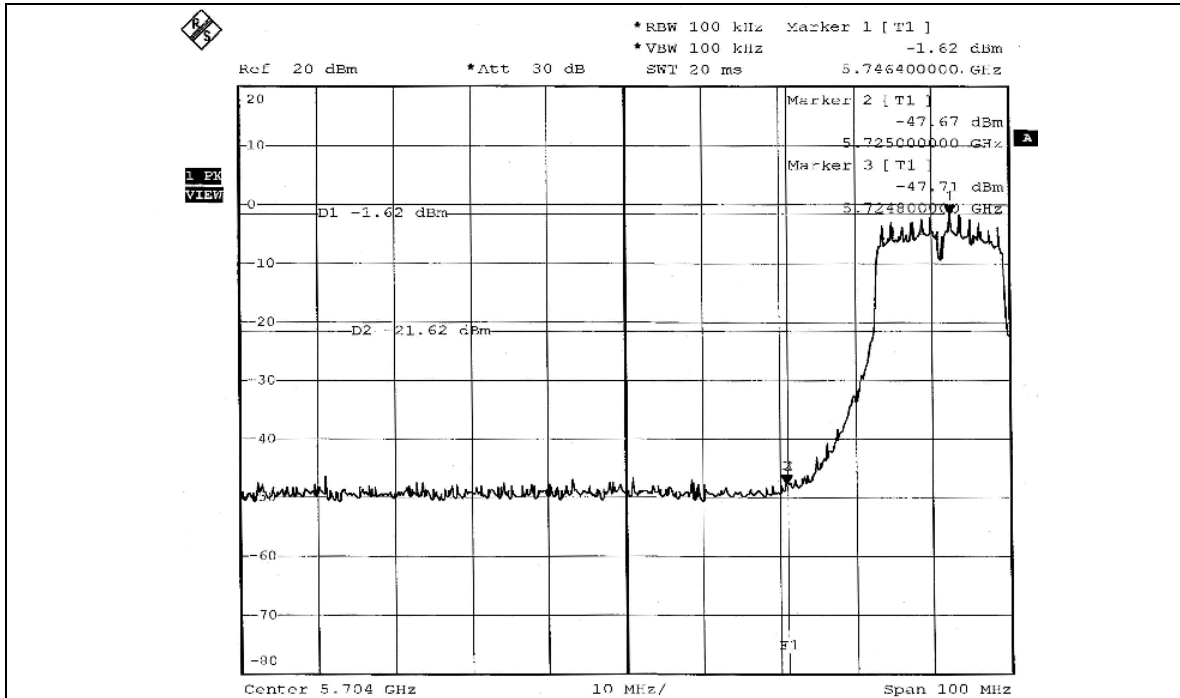
Same as Item 5.3.6.

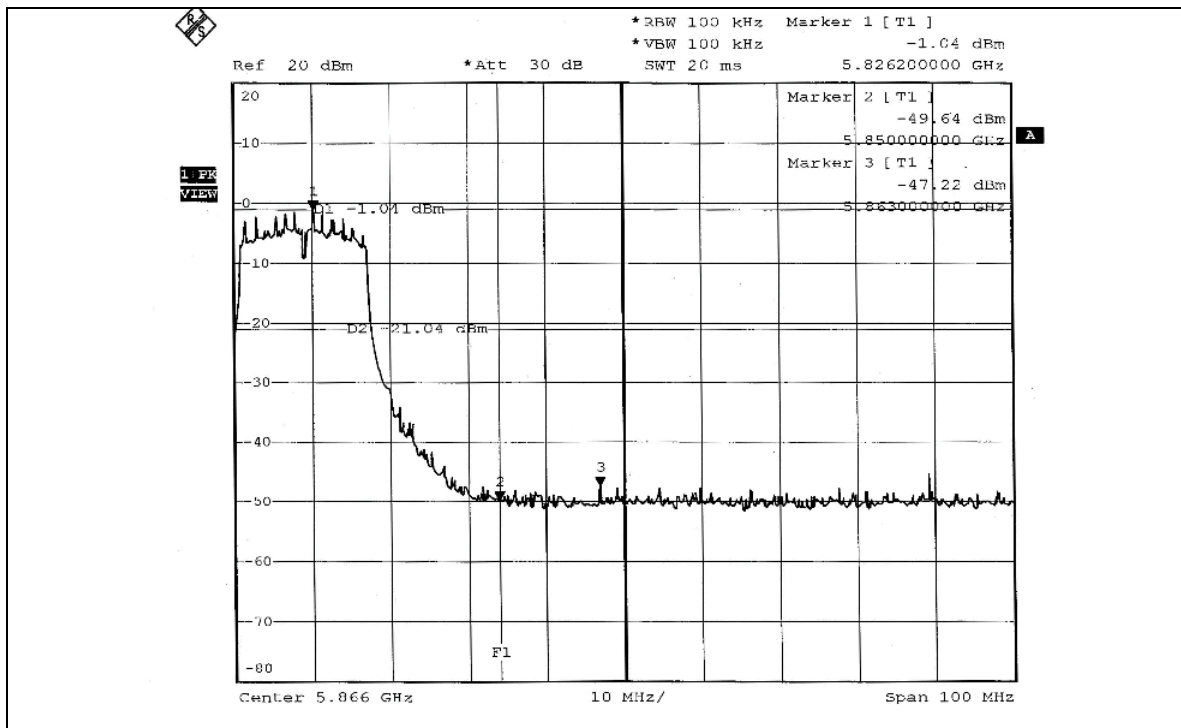
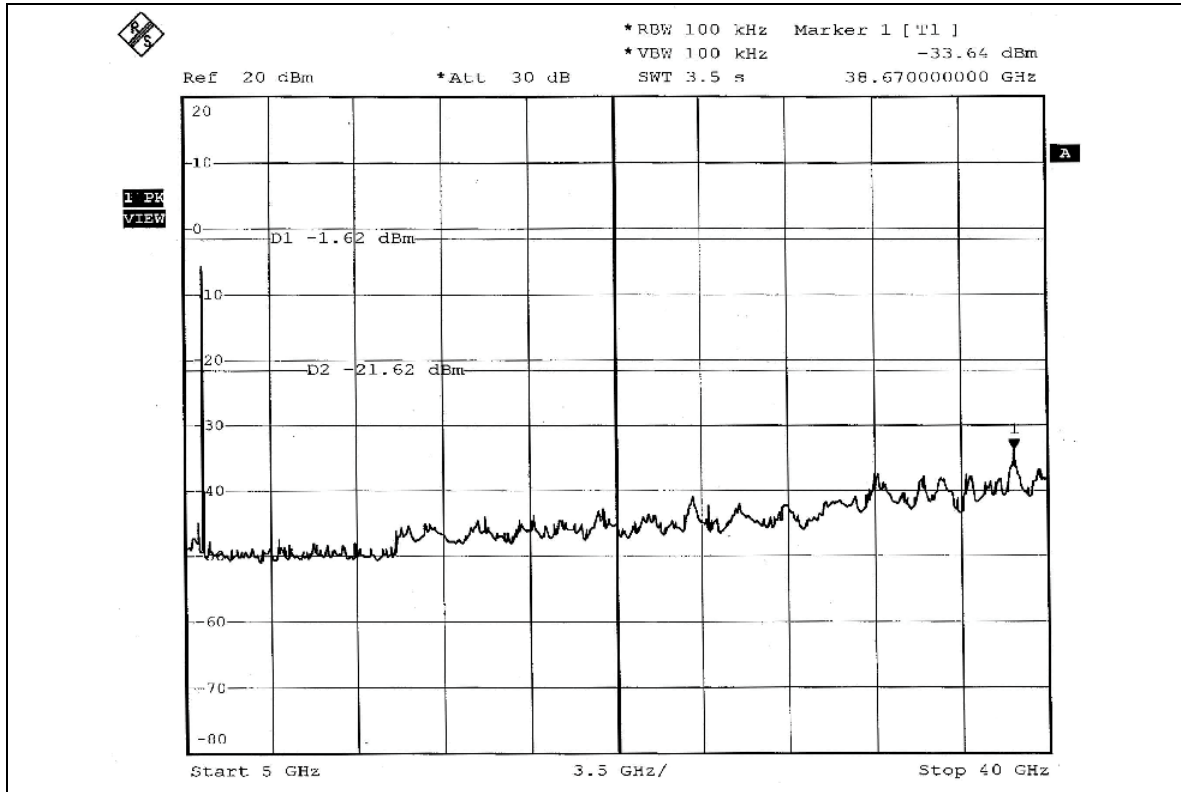
5.6.6 TEST RESULTS

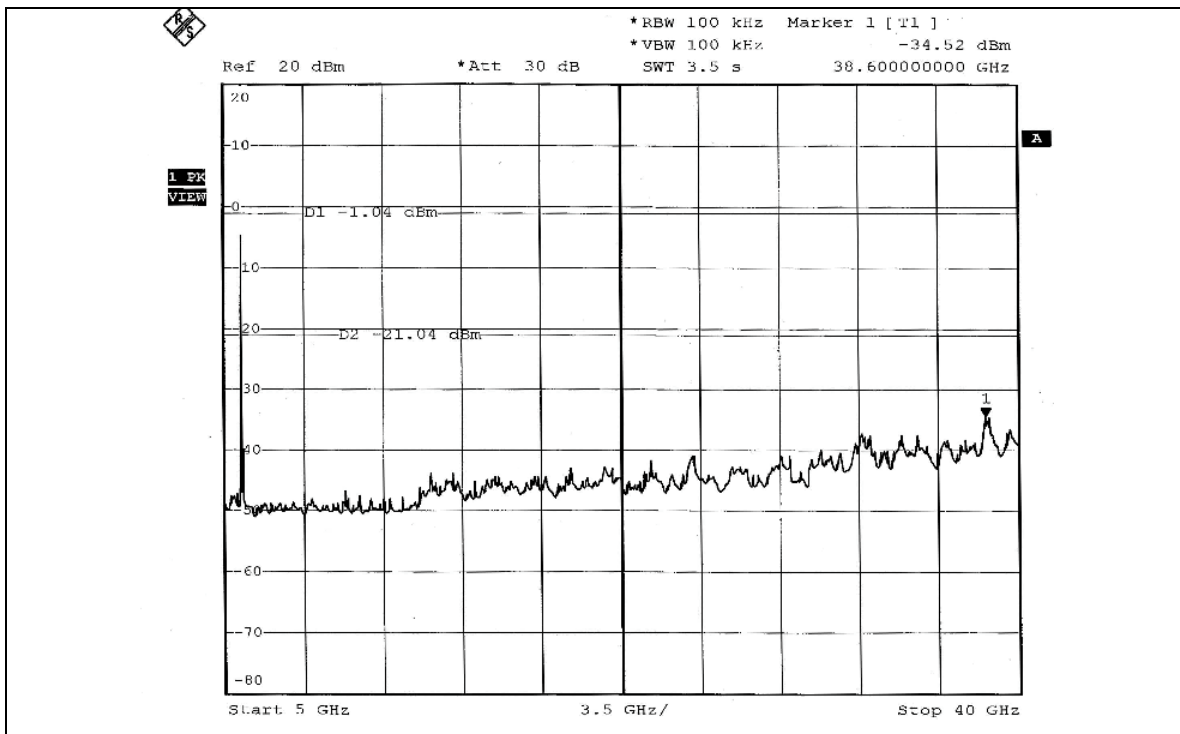
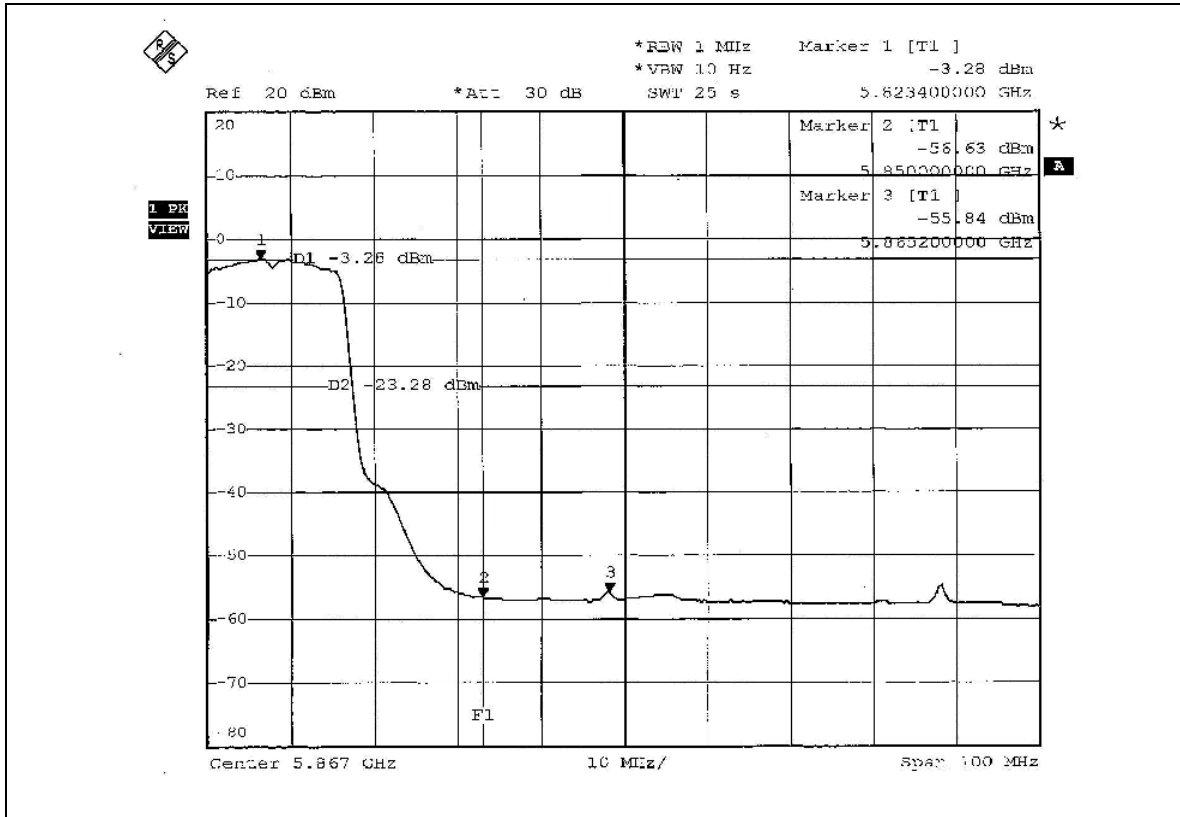
The spectrum plots are attached on the following 6 images. D2 line indicates the highest level, and D1 line indicates the 20dB offset below D2. It shows compliance with the requirement in part 15.247(d).



802.11a OFDM modulation









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

The antenna used in this product is PIFA antenna with UFL connector. The maximum Gain of the antenna is -1.31dBi .

6. PHOTOGRAPHS OF THE TEST CONFIGURATION

CONDUCTED EMISSION TEST



RADIATED EMISSION TEST





7. INFORMATION ON THE TESTING LABORATORIES

We, ADT Corp., 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, UL, A2LA |
| Germany | TUV Rheinland |
| Japan | VCCI |
| Norway | NEMKO |
| Canada | INDUSTRY CANADA , CSA |
| R.O.C. | CNLA, BSMI, DGT |
| Netherlands | Telefication |
| Singapore | PSB , 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

Email: service@adt.com.tw

Web Site: www.adt.com.tw

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