



FCC TEST REPORT (15.407)

REPORT NO.: RF981105L04-1

MODEL NO.: MC75A6

RECEIVED: Nov. 05, 2009

TESTED: Nov. 06 ~ Nov. 18, 2009

ISSUED: Nov. 23, 2009

APPLICANT: Symbol Technologies, Inc.

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

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1. CERTIFICATION

PRODUCT: EDA (Enterprise Digital Assistant)
MODEL NO.: MC75A6
BRAND: Symbol
APPLICANT: Symbol Technologies, Inc.
TESTED: Nov. 06 ~ Nov. 18, 2009
TEST SAMPLE: ENGINEERING SAMPLE
STANDARDS: **FCC Part 15, Subpart E (Section 15.407)**
ANSI C63.4-2003

The above equipment (Model: MC75A6) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY : Peggy Chen , **DATE** : Nov. 23, 2009
Peggy Chen / Specialist

TECHNICAL ACCEPTANCE : Long Chen , **DATE** : Nov. 23, 2009
Responsible for RF Long Chen / Senior Engineer

APPROVED BY : Gary Chang , **DATE** : Nov. 23, 2009
Gary Chang / Assistant Manager

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

| APPLIED STANDARD: FCC PART 15, SUBPART E (SECTION 15.407) | | | |
|---|--|--------|--|
| STANDARD SECTION | TEST TYPE AND LIMIT | RESULT | REMARK |
| 15.407(b)(5) | AC Power Conducted Emission | PASS | Meet the requirement of limit. Minimum passing margin is -16.59dB at 0.154MHz. |
| 15.407(b/1/2/3) (b)(5) | Electric Field Strength Spurious Emissions, 30MHz ~ 40000MHz | PASS | Meet the requirement of limit. Minimum passing margin is -5.1dB at 5470.00MHz. |
| 15.407(a/1/2/3) | Peak Transmit Power | PASS | Meet the requirement of limit. |
| 15.407(a)(6) | Peak Power Excursion | PASS | Meet the requirement of limit. |
| 15.407(a/1/2/3) | Peak Power Spectral Density | PASS | Meet the requirement of limit. |
| 15.407(g) | Frequency Stability | PASS | Meet the requirement of limit. |
| 15.203 | Antenna Requirement | PASS | Antenna connector is IPEX not a standard connector. |

2.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

| MEASUREMENT | FREQUENCY | UNCERTAINTY |
|---------------------|------------------|-------------|
| Conducted emissions | 150kHz ~ 30MHz | 2.44dB |
| Radiated emissions | 30MHz ~ 200MHz | 2.93dB |
| | 200MHz ~ 1000MHz | 2.95dB |
| | 1GHz ~ 18GHz | 2.26dB |
| | 18GHz ~ 40GHz | 1.94dB |

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k = 2$.

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

| | |
|--------------------------------|--|
| EUT | EDA (Enterprise Digital Assistant) |
| MODEL NO. | MC75A6 |
| FCC ID | H9PMC75A6 |
| POWER SUPPLY | 3.7Vdc (Li-ion battery) 5.4Vdc (Adapter) |
| MODULATION TYPE | 64QAM, 16QAM, QPSK, BPSK |
| MODULATION TECHNOLOGY | OFDM |
| TRANSFER RATE | 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps |
| OPERATING FREQUENCY | 5180 ~ 5320MHz & 5500 ~ 5700MHz |
| NUMBER OF CHANNEL | 5180 ~ 5320MHz: 8 5500 ~ 5700MHz: 11 |
| OUTPUT POWER (AV POWER) | 11.2dBm (13.2mW) for 5180 ~ 5320MHz 12.3dBm (17.0mW) for 5500 ~ 5700MHz |
| ANTENNA TYPE | Refer to NOTE 4 as below |
| ANTENNA CONNECTOR | Refer to NOTE 4 as below |
| DATA CABLE | NA |
| I/O PORTS | Refer to user's manual |
| ACCESSORY DEVICES | Battery |

NOTE:

- The EUT is an EDA (Enterprise Digital Assistant). The functions of EUT listed as below:

| | TEST STANDARD | REFERENCE REPORT |
|---|--|------------------|
| WLAN 802.11b/g | FCC Part 15, Subpart C (Section 15.247) | RF981105L04 |
| WLAN 802.11a (5745~5825 MHz) | | |
| WLAN 802.11a (5180~5320MHz, 5500~5700MHz) | FCC Part 15, Subpart E (Section 15.407) | RF981105L04-1 |
| WLAN 802.11a (For DFS report) (5260~5320MHz, 5500~5700MHz) | FCC Part 15, Subpart E (Section 15.407) | RF981105L04-3 |
| BLUETOOTH | FCC Part 15, Subpart C (Section 15.247) | RF981105L04-2 |
| GSM 850 / WCDMA 850 | FCC Part 22 | RF981105L04-4 |
| GSM 1900 / WCDMA 1900 | FCC Part 24 | RF981105L04-5 |



2. The models identified as below are identical to each other except of the following options:

- Keypad: Numeric / QWERTY
- Barcode reader: 1D laser scanner / BB Imager

| BRAND | MODEL | DESCRIPTION |
|---------------|---------------|------------------------|
| Symbol | MC75A6 | HSDPA 1D Numeric |
| Symbol | MC75A6 | HSDPA BB QWERTY |

**the worst case had been marked by boldface.

3. The EUT uses the following Li-ion batteries:

| BATTERY 1 (1.5X) | |
|---------------------|-------------------------|
| BRAND: | MOTOROLA |
| PART NUMBER: | 82-71364-05 Rev D |
| RATING: | 3.7Vdc, 3600mAh, 13.3Wh |

| BATTERY 2 (2.5X) | |
|---------------------|-------------------------|
| BRAND: | MOTOROLA |
| PART NUMBER: | 82-71364-06 Rev C |
| RATING: | 3.7Vdc, 4800mAh, 17.7Wh |

*Battery 2 was chosen as the representative for testing.

4. The EUT used two antennas listed as below:

| ANTENNA ITEM | ANTENNA TYPE | ANTENNA CONNECTER | ANTENNA GAIN (dBi) | |
|--------------|-----------------|-------------------|--------------------|--------|
| | | | 2.4GHz | 5.0GHz |
| MAIN ANTENNA | inverted F | IPEX | -4.39 | 2.05 |
| AUX. ANTENNA | Planar inverted | IPEX | 2.31 | 3.29 |

**For final tested, Aux. antenna was chosen for tested and presented in the test report.

5. The following accessories are for optional units only.

| PRODUCT | BRAND | MODEL | DESCRIPTION |
|----------------------|----------|---------------|---|
| RS232 charging cable | Motorola | 25-102776-01R | 1.2m non-shielded cable with one core |
| USB charging cable | Motorola | 25-102775-01R | 1.5m shielded cable with one core |
| Headset | Motorola | 50-11300-050R | VR10 headset 0.8m non-shielded cable with one core |
| Power Supply Adaptor | Motorola | EADP-16BB A | I/P: 100-240Vac, 50-60Hz, 0.4A O/P: 5.4Vdc, 3A 1.8m non-shielded cable without core |

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

3.2 DESCRIPTION OF TEST MODES

Operated in 5180 ~ 5320MHz

8 channels are provided for 802.11a

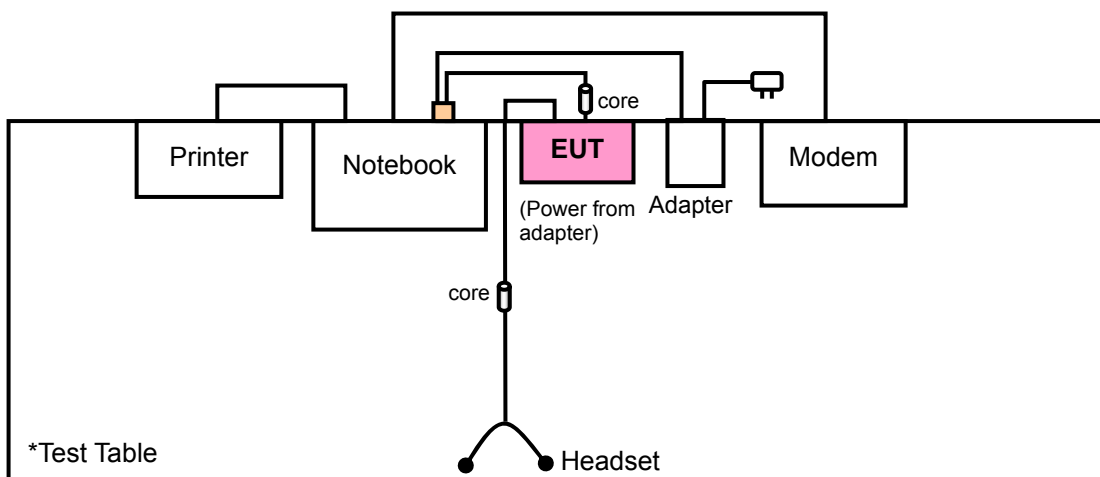
| CHANNEL | FREQUENCY | CHANNEL | FREQUENCY |
|---------|-----------|---------|-----------|
| 36 | 5180 MHz | 52 | 5260 MHz |
| 40 | 5200 MHz | 56 | 5280 MHz |
| 44 | 5220 MHz | 60 | 5300 MHz |
| 48 | 5240 MHz | 64 | 5320 MHz |

Operated in 5500 ~ 5700MHz

11 channels are provided for 802.11a

| CHANNEL | FREQUENCY | CHANNEL | FREQUENCY |
|---------|-----------|---------|-----------|
| 100 | 5500 MHz | 124 | 5620 MHz |
| 104 | 5520 MHz | 128 | 5640 MHz |
| 108 | 5540 MHz | 132 | 5660 MHz |
| 112 | 5560 MHz | 136 | 5680 MHz |
| 116 | 5580 MHz | 140 | 5700 MHz |
| 120 | 5600 MHz | | |

3.2.1 CONFIGURATION OF SYSTEM UNDER TEST



3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

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

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

RADIATED EMISSION TEST (ABOVE 1GHz):

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

| MODE | FREQ. BAND (MHz) | AVAILABLE CHANNEL | TESTED CHANNEL | MODULATION TECHNOLOGY | MODULATION TYPE | DATA RATE (Mbps) | AXIS |
|---------|------------------|-------------------|------------------------|-----------------------|-----------------|------------------|------|
| 802.11a | 5180-5320 | 36 to 64 | 36, 40, 48, 52, 60, 64 | OFDM | BPSK | 6.0 | Z |
| 802.11a | 5500-5700 | 100 to 140 | 100, 120, 140 | OFDM | BPSK | 6.0 | Z |

RADIATED EMISSION TEST (BELOW 1GHz):

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

| MODE | FREQ. BAND (MHz) | AVAILABLE CHANNEL | TESTED CHANNEL | MODULATION TECHNOLOGY | MODULATION TYPE | DATA RATE (Mbps) | AXIS |
|---------|------------------|-------------------|----------------|-----------------------|-----------------|------------------|------|
| 802.11a | 5180-5320 | 36 to 64 | 64 | OFDM | BPSK | 6.0 | Z |
| 802.11a | 5500-5700 | 100 to 140 | 100 | OFDM | BPSK | 6.0 | Z |

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 | FREQ. BAND (MHz) | AVAILABLE CHANNEL | TESTED CHANNEL | MODULATION TECHNOLOGY | MODULATION TYPE | DATA RATE (Mbps) |
|---------|------------------|-------------------|----------------|-----------------------|-----------------|------------------|
| 802.11a | 5180-5320 | 36 to 64 | 64 | OFDM | BPSK | 6.0 |
| 802.11a | 5500-5700 | 100 to 140 | 100 | OFDM | BPSK | 6.0 |



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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 | FREQ. BAND (MHz) | AVAILABLE CHANNEL | TESTED CHANNEL | MODULATION TECHNOLOGY | MODULATION TYPE | DATA RATE (Mbps) |
|---------|------------------|-------------------|----------------|-----------------------|-----------------|------------------|
| 802.11a | 5180-5320 | 36 to 64 | 36, 64 | OFDM | BPSK | 6.0 |
| 802.11a | 5500-5700 | 100 to 140 | 100, 140 | OFDM | BPSK | 6.0 |

ANTENNA PORT CONDUCTED MEASUREMENT:

- This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- 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 | FREQ. BAND (MHz) | AVAILABLE CHANNEL | TESTED CHANNEL | MODULATION TECHNOLOGY | MODULATION TYPE | DATA RATE (Mbps) |
|---------|------------------|-------------------|------------------------|-----------------------|-----------------|------------------|
| 802.11a | 5180-5320 | 36 to 64 | 36, 40, 48, 52, 60, 64 | OFDM | BPSK | 6.0 |
| 802.11a | 5500-5700 | 100 to 140 | 100, 120, 140 | OFDM | BPSK | 6.0 |

TEST CONDITION:

| APPLICABLE TO | ENVIRONMENTAL CONDITIONS | INPUT POWER (SYSTEM) | TESTED BY |
|---------------|---------------------------|----------------------|-----------|
| RE≥1G | 26deg. C, 65%RH, 1015 hPa | 120Vac, 60Hz | Brad Wu |
| RE<1G | 23deg. C, 66%RH, 1017 hPa | 120Vac, 60Hz | Lori Chiu |
| PLC | 25deg. C, 65%RH, 1017 hPa | 120Vac, 60Hz | Lori Chiu |
| APCM | 25deg. C, 63%RH, 1014 hPa | 120Vac, 60Hz | Brad Wu |



3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

FCC Part 15, Subpart E (15.407)
ANSI C63.4-2003

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

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

3.4 DESCRIPTION OF SUPPORT UNITS

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

| NO. | PRODUCT | BRAND | MODEL NO. | SERIAL NO. | FCC ID |
|-----|----------|-------|-----------|-------------|------------------|
| 1 | NOTEBOOK | DELL | PP05L | 12130898320 | E2K24CLNS |
| 2 | PRINTER | EPSON | LQ-300+ | DCGY054146 | FCC DoC Approved |
| 3 | MODEM | ACEEX | 1414V/3 | 0401008260 | IFAXDM1414 |

| NO. | SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS |
|-----|---|
| 1 | NA |
| 2 | 1.8m braid shielded wire, DB25 connector, w/o core. |
| 3 | 1.2m braid shielded wire, DB25 & DB9 connector, w/o core. |

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

4. TEST TYPES AND RESULTS

4.1 RADIATED EMISSION MEASUREMENT

4.1.1 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.

4.1.2 LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

| FREQUENCIES (MHz) | EIRP LIMIT (dBm) | EQUIVALENT FIELD STRENGTH AT 3m (dBµV/m) *NOTE |
|-------------------|------------------|--|
| | PK | PK |
| 5150 ~ 5350 | -27 | 68.3 |
| 5470 ~ 5725 | -27 | 68.3 |

NOTE:

The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

$$E = \frac{1000000\sqrt{30P}}{3} \mu\text{V/m, where P is the eirp (Watts).}$$

4.1.3 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | DATE OF CALIBRATION | DUE DATE OF CALIBRATION |
|---|------------------------------|-------------|---------------------|-------------------------|
| Test Receiver ROHDE & SCHWARZ | ESI7 | 100033 | Jul. 06, 2009 | Jul. 05, 2010 |
| Spectrum Analyzer ROHDE & SCHWARZ | FSP40 | 100076 | May 26, 2009 | May 25, 2010 |
| BILOG Antenna SCHWARZBECK | VULB9168 | 9168-160 | Apr. 27, 2009 | Apr. 26, 2010 |
| HORN Antenna SCHWARZBECK | 9120D | 9120D-209 | Jul. 01, 2009 | Jun. 30, 2010 |
| HORN Antenna SCHWARZBECK | BBHA 9170 | BBHA9170243 | Dec. 25, 2008 | Dec. 24, 2009 |
| Preamplifier Agilent | 8447D | 2944A10633 | Nov. 10, 2009 | Nov. 09, 2010 |
| Preamplifier Agilent | 8449B | 3008A01963 | Nov. 25, 2008 | Nov. 24, 2009 |
| RF signal cable HUBER+SUHNNER | SUCOFLEX 104 | 238141/4 | May 13, 2009 | May 12, 2010 |
| RF signal cable HUBER+SUHNNER | SUCOFLEX 104 | 12738/6 | May 13, 2009 | May 12, 2010 |
| Software ADT. | ADT_Radiated_ V7.6.15.9.2 | NA | NA | NA |
| Antenna Tower inn-co GmbH | MA 4000 | 013303 | NA | NA |
| Antenna Tower Controller inn-co GmbH | CO2000 | 017303 | NA | NA |
| Turn Table ADT. | TT100. | TT93021703 | NA | NA |
| Turn Table Controller ADT. | SC100. | SC93021703 | NA | NA |
| 26GHz ~ 40GHz Amplifier | EM26400 | 07026401 | Aug. 27, 2009 | Aug. 26, 2010 |

- NOTE:**
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. The test was performed in HwaYa Chamber 3.
 3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
 4. The FCC Site Registration No. is 988962.
 5. The IC Site Registration No. is IC 7450F-3.

4.1.4 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

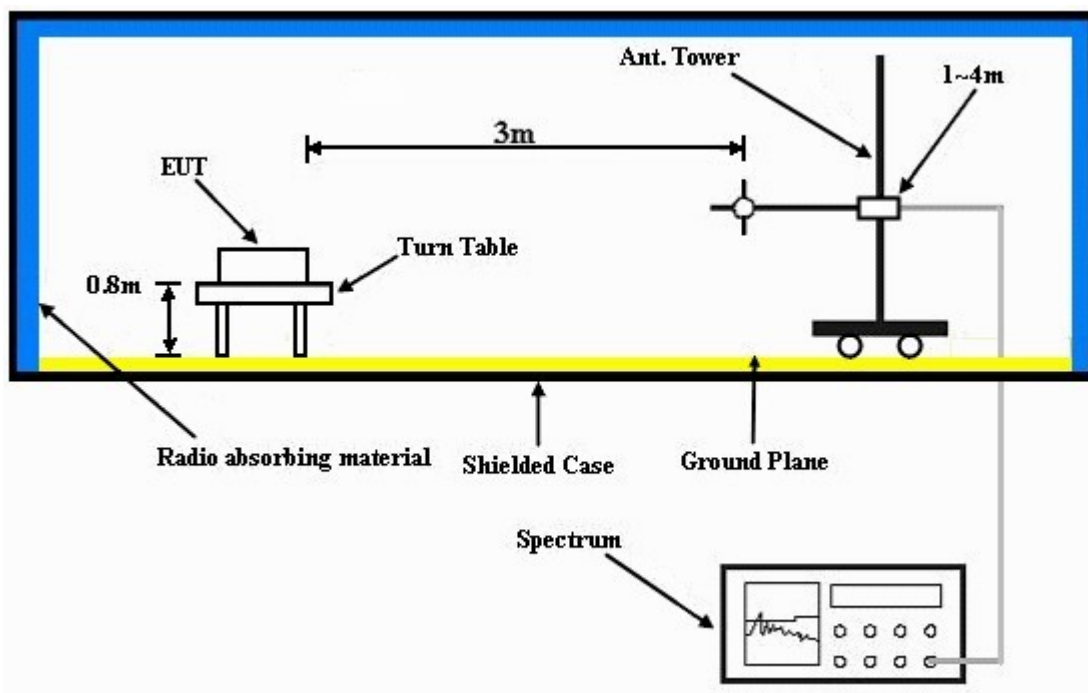
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.5 DEVIATION FROM TEST STANDARD

No deviation.

4.1.6 TEST SETUP



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

4.1.7 EUT OPERATING CONDITION

- Connected the EUT to a notebook via USB cable and placed on a testing table.
- The EUT runs a test program (provided by manufacture) to transmit at specific channel.
- The necessary accessories enable the system in full functions.



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4.1.8 TEST RESULTS

ABOVE 1GHz WORST-CASE DATA : 802.11a (Aux. antenna was chosen for tested)

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|-----------------------------|--------------------|---------------------------|
| CHANNEL | Channel 36 | FREQUENCY RANGE | 1 ~ 40GHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 23deg. C, 66%RH 1002 hPa | TESTED BY | Lori Chiu |

| 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 | 5150.00 | 58.5 PK | 74.0 | -15.5 | 1.05 H | 58 | 19.59 | 38.91 |
| 2 | 5150.00 | 37.8 AV | 54.0 | -16.2 | 1.05 H | 58 | -1.15 | 38.91 |
| 3 | *5180.00 | 102.5 PK | | | 1.01 H | 58 | 63.53 | 38.96 |
| 4 | *5180.00 | 91.1 AV | | | 1.01 H | 58 | 52.12 | 38.96 |
| 5 | #10360.00 | 58.8 PK | 68.3 | -9.5 | 1.11 H | 152 | 10.19 | 48.60 |
| 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 | 5150.00 | 62.4 PK | 74.0 | -11.6 | 1.10 V | 41 | 23.46 | 38.91 |
| 2 | 5150.00 | 40.3 AV | 54.0 | -13.8 | 1.10 V | 41 | 1.34 | 38.91 |
| 3 | *5180.00 | 103.3 PK | | | 1.10 V | 41 | 64.31 | 38.96 |
| 4 | *5180.00 | 92.2 AV | | | 1.10 V | 41 | 53.23 | 38.96 |
| 5 | #10360.00 | 58.7 PK | 68.3 | -9.6 | 1.01 V | 102 | 10.06 | 48.60 |

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



A D T

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|-----------------------------|--------------------|---------------------------|
| CHANNEL | Channel 40 | FREQUENCY RANGE | 1 ~ 40GHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 23deg. C, 66%RH 1002 hPa | TESTED BY | Lori Chiu |

| 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 | *5200.00 | 103.7 PK | | | 1.22 H | 205 | 64.67 | 38.99 |
| 2 | *5200.00 | 91.5 AV | | | 1.22 H | 205 | 52.49 | 38.99 |
| 3 | #10400.00 | 58.9 PK | 68.3 | -9.4 | 1.24 H | 5 | 10.23 | 48.63 |
| 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 | *5200.00 | 104.0 PK | | | 1.22 V | 100 | 65.01 | 38.99 |
| 2 | *5200.00 | 92.8 AV | | | 1.22 V | 100 | 53.77 | 38.99 |
| 3 | #10400.00 | 58.7 PK | 68.3 | -9.6 | 1.11 V | 144 | 10.10 | 48.63 |

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



A D T

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|-----------------------------|--------------------|---------------------------|
| CHANNEL | Channel 48 | FREQUENCY RANGE | 1 ~ 40GHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 23deg. C, 66%RH 1002 hPa | TESTED BY | Lori Chiu |

| 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 | *5240.00 | 103.7 PK | | | 1.22 H | 52 | 64.65 | 39.05 |
| 2 | *5240.00 | 91.3 AV | | | 1.22 H | 52 | 52.23 | 39.05 |
| 3 | #10480.00 | 59.2 PK | 68.3 | -9.1 | 1.06 H | 357 | 10.34 | 48.87 |
| 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 | *5240.00 | 104.1 PK | | | 1.19 V | 200 | 65.07 | 39.05 |
| 2 | *5240.00 | 92.8 AV | | | 1.19 V | 200 | 53.78 | 39.05 |
| 3 | #10480.00 | 58.9 PK | 68.3 | -9.4 | 1.36 V | 258 | 10.01 | 48.87 |

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



A D T

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|-----------------------------|--------------------|---------------------------|
| CHANNEL | Channel 52 | FREQUENCY RANGE | 1 ~ 40GHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 23deg. C, 66%RH 1002 hPa | TESTED BY | Lori Chiu |

| 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 | *5260.00 | 103.0 PK | | | 1.21 H | 156 | 63.88 | 39.09 |
| 2 | *5260.00 | 92.8 AV | | | 1.21 H | 156 | 53.67 | 39.09 |
| 3 | #10520.00 | 59.1 PK | 68.3 | -9.2 | 1.11 H | 156 | 10.15 | 48.98 |
| 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 | *5260.00 | 104.4 PK | | | 1.10 V | 151 | 65.27 | 39.09 |
| 2 | *5260.00 | 93.0 AV | | | 1.10 V | 151 | 53.93 | 39.09 |
| 3 | #10520.00 | 58.5 PK | 68.3 | -9.8 | 1.23 V | 9 | 9.56 | 48.98 |

- 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.
 6. “#”:The radiated frequency is out the restricted band.



A D T

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|-----------------------------|--------------------|---------------------------|
| CHANNEL | Channel 60 | FREQUENCY RANGE | 1 ~ 40GHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 23deg. C, 66%RH 1002 hPa | TESTED BY | Lori Chiu |

| 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 | *5300.00 | 104.3 PK | | | 1.32 H | 115 | 65.13 | 39.15 |
| 2 | *5300.00 | 92.6 AV | | | 1.32 H | 115 | 53.44 | 39.15 |
| 3 | 10600.00 | 58.8 PK | 74.0 | -15.2 | 1.27 H | 255 | 9.60 | 49.19 |
| 4 | 10600.00 | 46.2 AV | 54.0 | -7.8 | 1.27 H | 255 | -3.01 | 49.19 |
| 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 | *5300.00 | 105.1 PK | | | 1.15 V | 317 | 65.92 | 39.15 |
| 2 | *5300.00 | 93.8 AV | | | 1.15 V | 317 | 54.61 | 39.15 |
| 3 | 10600.00 | 59.0 PK | 74.0 | -15.0 | 1.21 V | 5 | 9.81 | 49.19 |
| 4 | 10600.00 | 46.3 AV | 54.0 | -7.7 | 1.21 V | 5 | -2.88 | 49.19 |

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



A D T

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|-----------------------------|--------------------|---------------------------|
| CHANNEL | Channel 64 | FREQUENCY RANGE | 1 ~ 40GHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 23deg. C, 66%RH 1002 hPa | TESTED BY | Lori Chiu |

| 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 | *5320.00 | 105.2 PK | | | 1.00 H | 97 | 65.98 | 39.18 |
| 2 | *5320.00 | 93.6 AV | | | 1.00 H | 97 | 54.40 | 39.18 |
| 3 | 5350.00 | 57.1 PK | 74.0 | -16.9 | 1.00 H | 97 | 17.86 | 39.22 |
| 4 | 5350.00 | 38.9 AV | 54.0 | -15.1 | 1.00 H | 97 | -0.35 | 39.22 |
| 5 | 10640.00 | 58.5 PK | 74.0 | -15.5 | 1.00 H | 261 | 9.21 | 49.25 |
| 6 | 10640.00 | 45.8 AV | 54.0 | -8.2 | 1.00 H | 261 | -3.43 | 49.25 |
| 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 | *5320.00 | 106.1 PK | | | 1.21 V | 196 | 66.94 | 39.18 |
| 2 | *5320.00 | 95.0 AV | | | 1.21 V | 196 | 55.82 | 39.18 |
| 3 | 5350.00 | 62.5 PK | 74.0 | -11.5 | 1.21 V | 196 | 23.27 | 39.22 |
| 4 | 5350.00 | 42.6 AV | 54.0 | -11.4 | 1.21 V | 196 | 3.35 | 39.22 |
| 5 | 10640.00 | 59.1 PK | 74.0 | -14.9 | 1.11 V | 159 | 9.83 | 49.25 |
| 6 | 10640.00 | 46.4 AV | 54.0 | -7.6 | 1.11 V | 159 | -2.86 | 49.25 |

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



A D T

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|-----------------------------|--------------------|---------------------------|
| CHANNEL | Channel 100 | FREQUENCY RANGE | 1 ~ 40GHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 23deg. C, 66%RH 1002 hPa | TESTED BY | Lori Chiu |

| 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 | 5460.00 | 58.6 PK | 74.0 | -15.4 | 1.01 H | 155 | 19.21 | 39.38 |
| 2 | 5460.00 | 41.4 AV | 54.0 | -12.6 | 1.01 H | 155 | 1.99 | 39.38 |
| 3 | #5470.00 | 62.8 PK | 68.3 | -5.5 | 1.01 H | 155 | 23.36 | 39.40 |
| 4 | *5500.00 | 104.9 PK | | | 1.01 H | 155 | 65.43 | 39.45 |
| 5 | *5500.00 | 93.6 AV | | | 1.01 H | 155 | 54.17 | 39.45 |
| 6 | 11000.00 | 58.5 PK | 74.0 | -15.5 | 1.21 H | 147 | 8.70 | 49.79 |
| 7 | 11000.00 | 46.3 AV | 54.0 | -7.7 | 1.21 H | 147 | -3.51 | 49.79 |

| 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 | 5460.00 | 60.0 PK | 74.0 | -14.0 | 1.14 V | 199 | 20.60 | 39.38 |
| 2 | 5460.00 | 43.2 AV | 54.0 | -10.8 | 1.14 V | 199 | 3.85 | 39.38 |
| 3 | #5470.00 | 63.2 PK | 68.3 | -5.1 | 1.14 V | 199 | 23.79 | 39.40 |
| 4 | *5500.00 | 105.3 PK | | | 1.02 V | 187 | 65.86 | 39.45 |
| 5 | *5500.00 | 93.6 AV | | | 1.02 V | 187 | 54.19 | 39.45 |
| 6 | 11000.00 | 61.2 PK | 74.0 | -12.8 | 1.11 V | 154 | 11.40 | 49.79 |
| 7 | 11000.00 | 47.6 AV | 54.0 | -6.4 | 1.11 V | 154 | -2.18 | 49.79 |

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



A D T

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|-----------------------------|--------------------|---------------------------|
| CHANNEL | Channel 120 | FREQUENCY RANGE | 1 ~ 40GHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 23deg. C, 66%RH 1002 hPa | TESTED BY | Lori Chiu |

| 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 | *5600.00 | 105.2 PK | | | 1.02 H | 22 | 65.59 | 39.62 |
| 2 | *5600.00 | 94.3 AV | | | 1.02 H | 22 | 54.71 | 39.62 |
| 3 | 11200.00 | 60.6 PK | 74.0 | -13.4 | 1.06 H | 264 | 10.51 | 50.08 |
| 4 | 11200.00 | 47.1 AV | 54.0 | -6.9 | 1.06 H | 264 | -2.95 | 50.08 |
| 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 | *5600.00 | 106.2 PK | | | 1.02 V | 168 | 66.53 | 39.62 |
| 2 | *5600.00 | 95.1 AV | | | 1.02 V | 168 | 55.46 | 39.62 |
| 3 | 11200.00 | 60.7 PK | 74.0 | -13.3 | 1.36 V | 290 | 10.64 | 50.08 |
| 4 | 11200.00 | 47.5 AV | 54.0 | -6.5 | 1.36 V | 290 | -2.59 | 50.08 |

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



A D T

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|-----------------------------|--------------------|---------------------------|
| CHANNEL | Channel 140 | FREQUENCY RANGE | 1 ~ 40GHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 23deg. C, 66%RH 1002 hPa | TESTED BY | Lori Chiu |

| 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 | *5700.00 | 101.0 PK | | | 1.12 H | 291 | 61.12 | 39.90 |
| 2 | *5700.00 | 90.3 AV | | | 1.12 H | 291 | 50.42 | 39.90 |
| 3 | #5725.00 | 61.9 PK | 68.3 | -6.4 | 1.09 H | 300 | 21.96 | 39.92 |
| 4 | 11400.00 | 60.4 PK | 74.0 | -13.6 | 1.33 H | 76 | 10.08 | 50.33 |
| 5 | 11400.00 | 46.3 AV | 54.0 | -7.8 | 1.33 H | 76 | -4.08 | 50.33 |
| 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 | *5700.00 | 102.2 PK | | | 1.06 V | 262 | 62.30 | 39.90 |
| 2 | *5700.00 | 91.1 AV | | | 1.06 V | 262 | 51.24 | 39.90 |
| 3 | #5725.00 | 62.2 PK | 68.3 | -6.1 | 1.06 V | 262 | 22.29 | 39.92 |
| 4 | 11400.00 | 60.3 PK | 74.0 | -13.7 | 1.26 V | 6 | 9.99 | 50.33 |
| 5 | 11400.00 | 46.4 AV | 54.0 | -7.7 | 1.26 V | 6 | -3.98 | 50.33 |

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

BELOW 1GHz WORST-CASE DATA :

802.11a (Frequency: 5180-5320MHz) (Aux. antenna was chosen for tested)

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|-----------------------------|--------------------|---------------|
| CHANNEL | Channel 64 | FREQUENCY RANGE | Below 1000MHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Quasi-Peak |
| ENVIRONMENTAL CONDITIONS | 26deg. C, 65%RH 1000 hPa | TESTED BY | Brad Wu |

| 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 | 134.89 | 29.5 QP | 43.5 | -14.0 | 2.00 H | 109 | 17.02 | 12.51 |
| 2 | 333.21 | 34.6 QP | 46.0 | -11.4 | 2.00 H | 124 | 19.42 | 15.20 |
| 3 | 463.48 | 31.0 QP | 46.0 | -15.0 | 2.00 H | 205 | 11.39 | 19.61 |
| 4 | 595.69 | 28.4 QP | 46.0 | -17.6 | 1.00 H | 82 | 6.05 | 22.32 |
| 5 | 733.73 | 28.7 QP | 46.0 | -17.3 | 1.50 H | 127 | 3.39 | 25.35 |
| 6 | 832.89 | 30.4 QP | 46.0 | -15.6 | 1.50 H | 130 | 3.83 | 26.62 |
| 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 | 41.57 | 32.0 QP | 40.0 | -8.0 | 1.00 V | 193 | 17.10 | 14.87 |
| 2 | 166.00 | 33.2 QP | 43.5 | -10.3 | 1.00 V | 10 | 19.27 | 13.95 |
| 3 | 333.21 | 33.6 QP | 46.0 | -12.4 | 1.50 V | 172 | 18.38 | 15.20 |
| 4 | 465.42 | 33.4 QP | 46.0 | -12.6 | 1.50 V | 25 | 13.77 | 19.65 |
| 5 | 733.73 | 30.1 QP | 46.0 | -15.9 | 1.50 V | 148 | 4.72 | 25.35 |
| 6 | 916.50 | 33.1 QP | 46.0 | -12.9 | 1.00 V | 100 | 4.94 | 28.12 |

- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.



A D T

802.11a (Frequency: 5500-5700MHz) (Aux. antenna was chosen for tested)

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|-----------------------------|--------------------|---------------|
| CHANNEL | Channel 100 | FREQUENCY RANGE | Below 1000MHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Quasi-Peak |
| ENVIRONMENTAL CONDITIONS | 26deg. C, 65%RH 1000 hPa | TESTED BY | Brad Wu |

| 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 | 166.00 | 30.6 QP | 43.5 | -12.9 | 1.50 H | 70 | 16.66 | 13.95 |
| 2 | 331.26 | 33.7 QP | 46.0 | -12.3 | 2.00 H | 121 | 18.61 | 15.11 |
| 3 | 465.42 | 31.9 QP | 46.0 | -14.1 | 2.00 H | 205 | 12.25 | 19.65 |
| 4 | 500.42 | 31.3 QP | 46.0 | -14.7 | 2.00 H | 34 | 10.90 | 20.44 |
| 5 | 599.58 | 29.4 QP | 46.0 | -16.6 | 1.00 H | 79 | 7.05 | 22.39 |
| 6 | 830.95 | 29.0 QP | 46.0 | -17.0 | 1.00 H | 238 | 2.43 | 26.58 |
| 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 | 55.18 | 31.3 QP | 40.0 | -8.7 | 1.00 V | 250 | 18.23 | 13.03 |
| 2 | 138.78 | 30.8 QP | 43.5 | -12.7 | 1.00 V | 298 | 17.92 | 12.82 |
| 3 | 331.26 | 32.3 QP | 46.0 | -13.7 | 1.50 V | 151 | 17.19 | 15.11 |
| 4 | 465.42 | 33.6 QP | 46.0 | -12.4 | 1.00 V | 10 | 13.92 | 19.65 |
| 5 | 733.73 | 30.4 QP | 46.0 | -15.6 | 1.50 V | 145 | 5.04 | 25.35 |
| 6 | 916.50 | 32.6 QP | 46.0 | -13.5 | 1.00 V | 178 | 4.43 | 28.12 |

- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.

4.2 CONDUCTED EMISSION MEASUREMENT

4.2.1 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 0.50MHz.
 3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

4.2.2 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | DATE OF CALIBRATION | DUE DATE OF CALIBRATION |
|----------------------------------|---------------------|----------------|---------------------|-------------------------|
| Test Receiver ROHDE & SCHWARZ | ESCS30 | 100289 | Dec. 17, 2008 | Dec. 16, 2009 |
| RF signal cable Woken | 5D-FB | Cable-HYC01-01 | Dec. 31, 2008 | Dec. 30, 2009 |
| LISN SCHWARZBECK | NNBL 8226-2 | 8226-142 | Jun. 03, 2009 | Jun. 02, 2010 |
| LISN ROHDE & SCHWARZ | ESH2-Z5 | 100104 | Dec. 04, 2008 | Dec. 03, 2009 |
| Software ADT | ADT_Cond_ V7.3.7 | NA | NA | NA |

- NOTE:**
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. The test was performed in HwaYa Shielded Room 1.
 3. The VCCI Site Registration No. is C-2040.

4.2.3 TEST PROCEDURES

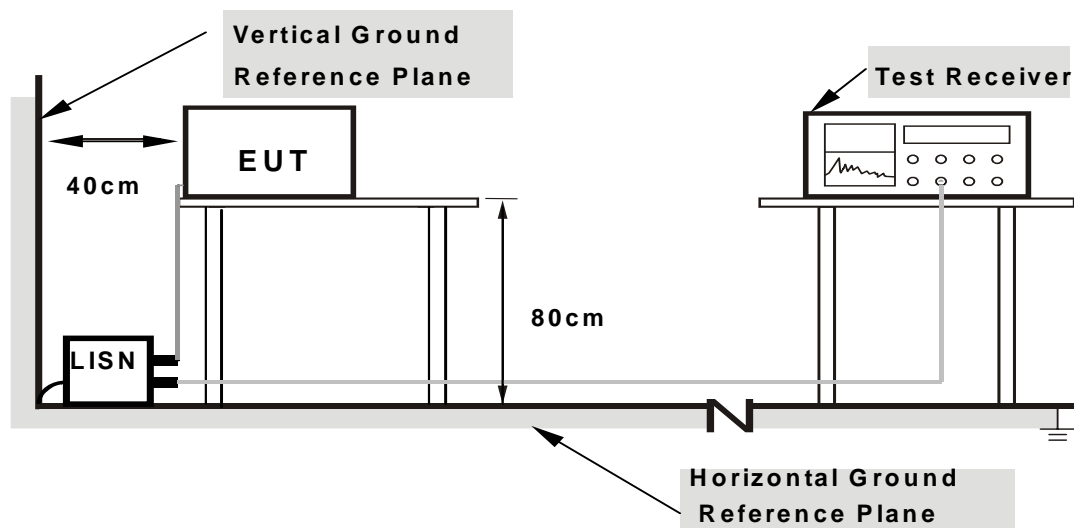
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

NOTE: All modes of operation were investigated and the worst-case emissions are reported.

4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

4.2.5 TEST SETUP



Note: 1. Support units were connected to second LISN.

2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

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

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6.

4.2.7 TEST RESULTS

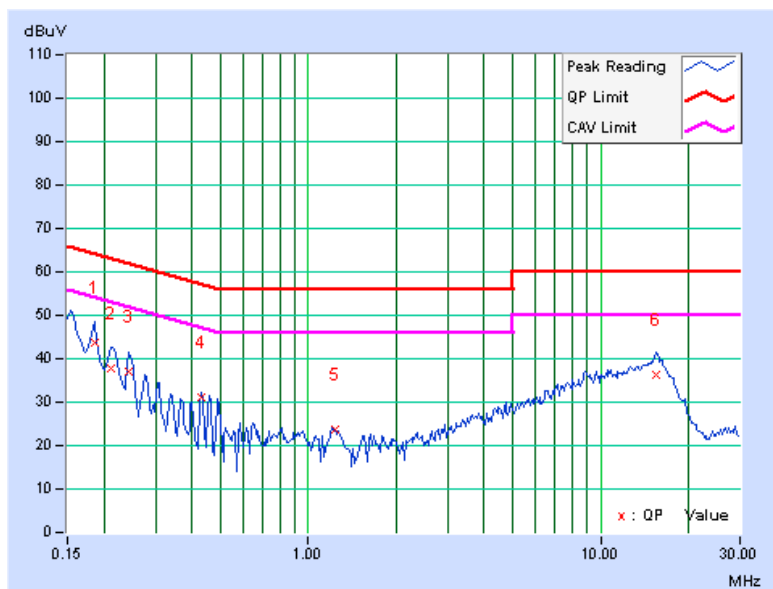
CONDUCTED WORST-CASE DATA :

802.11a (Frequency: 5180-5320MHz) (Aux. antenna was chosen for tested)

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

| 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 | 0.185 | 0.13 | 43.65 | - | 43.78 | - | 64.25 | 54.25 | -20.47 | - |
| 2 | 0.213 | 0.13 | 37.83 | - | 37.96 | - | 63.11 | 53.11 | -25.15 | - |
| 3 | 0.244 | 0.13 | 36.92 | - | 37.05 | - | 61.97 | 51.97 | -24.92 | - |
| 4 | 0.431 | 0.14 | 30.89 | - | 31.03 | - | 57.23 | 47.23 | -26.20 | - |
| 5 | 1.229 | 0.19 | 23.52 | - | 23.71 | - | 56.00 | 46.00 | -32.29 | - |
| 6 | 15.488 | 0.93 | 35.45 | - | 36.38 | - | 60.00 | 50.00 | -23.62 | - |

- 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.



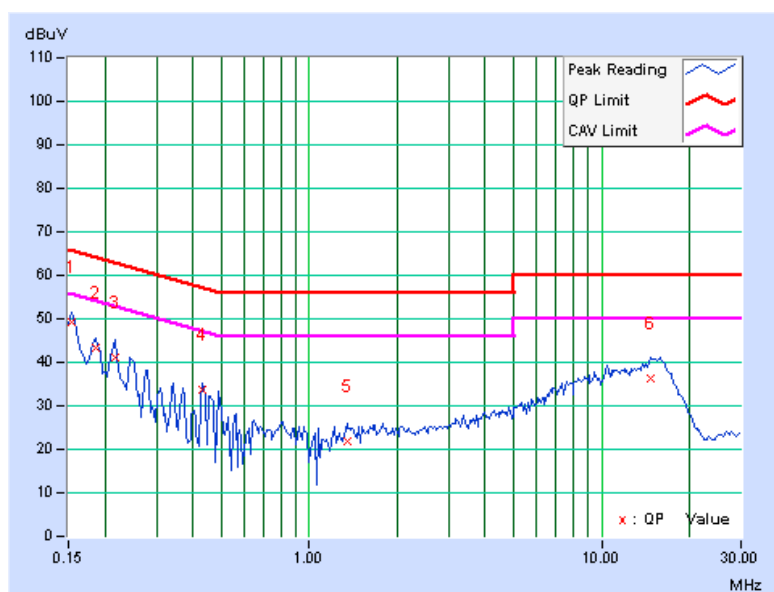


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| | | | |
|-------|--------|---------------|------|
| PHASE | Line 2 | 6dB BANDWIDTH | 9kHz |
|-------|--------|---------------|------|

| 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 | 0.154 | 0.14 | 49.06 | - | 49.20 | - | 65.79 | 55.79 | -16.59 | - |
| 2 | 0.185 | 0.15 | 43.33 | - | 43.48 | - | 64.25 | 54.25 | -20.77 | - |
| 3 | 0.216 | 0.15 | 41.07 | - | 41.22 | - | 62.96 | 52.96 | -21.73 | - |
| 4 | 0.431 | 0.16 | 33.43 | - | 33.59 | - | 57.23 | 47.23 | -23.64 | - |
| 5 | 1.352 | 0.22 | 21.75 | - | 21.97 | - | 56.00 | 46.00 | -34.03 | - |
| 6 | 14.641 | 0.81 | 35.37 | - | 36.18 | - | 60.00 | 50.00 | -23.82 | - |

- 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.





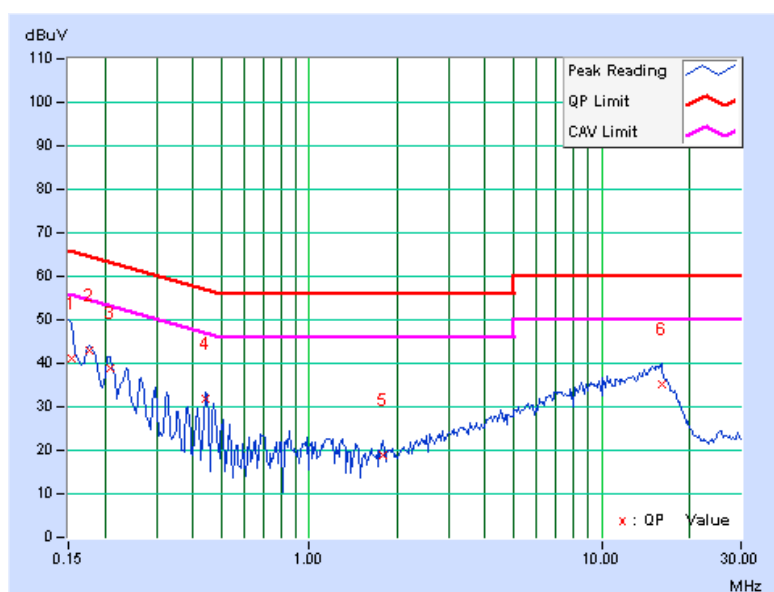
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802.11a (Frequency: 5500-5700MHz) (Aux. antenna was chosen for tested)

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

| 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 | 0.154 | 0.13 | 40.92 | - | 41.05 | - | 65.79 | 55.79 | -24.74 | - |
| 2 | 0.177 | 0.13 | 42.97 | - | 43.10 | - | 64.61 | 54.61 | -21.51 | - |
| 3 | 0.209 | 0.13 | 38.70 | - | 38.83 | - | 63.26 | 53.26 | -24.43 | - |
| 4 | 0.443 | 0.14 | 31.85 | - | 31.99 | - | 57.01 | 47.01 | -25.01 | - |
| 5 | 1.777 | 0.22 | 18.71 | - | 18.93 | - | 56.00 | 46.00 | -37.07 | - |
| 6 | 16.023 | 0.96 | 34.13 | - | 35.09 | - | 60.00 | 50.00 | -24.91 | - |

- 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.



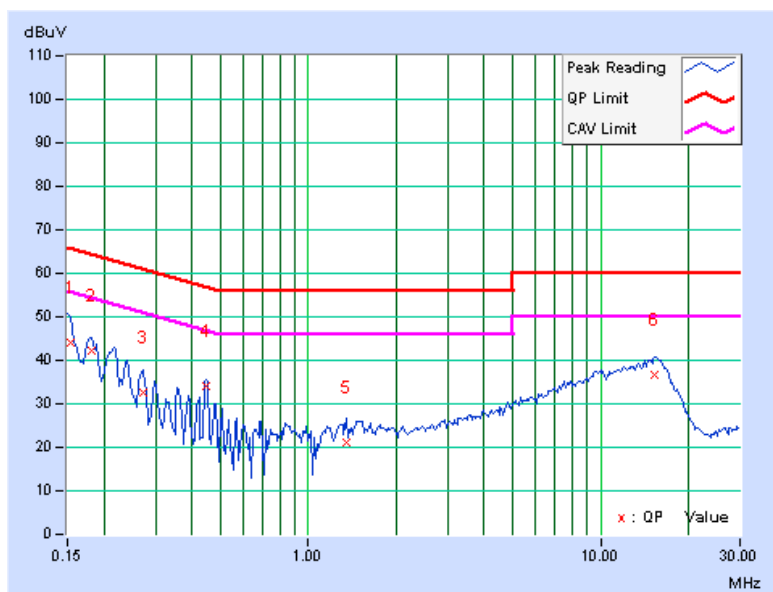


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| | | | |
|-------|--------|---------------|------|
| PHASE | Line 2 | 6dB BANDWIDTH | 9kHz |
|-------|--------|---------------|------|

| 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 | 0.154 | 0.14 | 43.90 | - | 44.04 | - | 65.79 | 55.79 | -21.75 | - |
| 2 | 0.181 | 0.15 | 42.21 | - | 42.36 | - | 64.43 | 54.43 | -22.07 | - |
| 3 | 0.271 | 0.15 | 32.32 | - | 32.47 | - | 61.08 | 51.08 | -28.61 | - |
| 4 | 0.447 | 0.16 | 33.97 | - | 34.13 | - | 56.93 | 46.93 | -22.80 | - |
| 5 | 1.344 | 0.22 | 21.03 | - | 21.25 | - | 56.00 | 46.00 | -34.75 | - |
| 6 | 15.359 | 0.83 | 35.92 | - | 36.75 | - | 60.00 | 50.00 | -23.25 | - |

- 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.





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4.3 MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT

4.3.1 LIMITS OF MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT

| FREQUENCY BAND | LIMIT |
|------------------|---|
| 5.150 ~ 5.250GHz | The lesser of 50mW (17dBm) or 4dBm + 10logB |
| 5.250 ~ 5.350GHz | The lesser of 250mW (24dBm) or 11dBm + 10logB |
| 5.470 ~ 5.725GHz | The lesser of 250mW (24dBm) or 11dBm + 10logB |

NOTE: Where B is the 26dB emission bandwidth in MHz.

4.3.2 TEST INSTRUMENTS

FOR POWER OUTPUT MEASUREMENT

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | DATE OF CALIBRATION | DUE DATE OF CALIBRATION |
|-----------------------------|-----------|------------|---------------------|-------------------------|
| High Speed Peak Power Meter | ML2495A | 0824012 | Aug. 10, 2009 | Aug. 09, 2010 |
| Power Sensor | MA2411B | 0738138 | Aug. 10, 2009 | Aug. 09, 2010 |

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. Measurement Bandwidth of ML2495A is 65MHz greater than 26dB bandwidth of emission.

FOR 26dB OCCUPIED BANDWIDTH

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | DATE OF CALIBRATION | DUE DATE OF CALIBRATION |
|----------------------------|-----------|------------|---------------------|-------------------------|
| SPECTRUM ANALYZER R&S | FSP40 | 100040 | Jul. 07, 2009 | Jul. 06, 2010 |

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

4.3.3 TEST PROCEDURES

FOR POWER OUTPUT MEASUREMENT

A power sensor was used on the output port of the EUT. A power meter was used to read the response of the power sensor. Record the power level.

FOR 26dB OCCUPIED BANDWIDTH

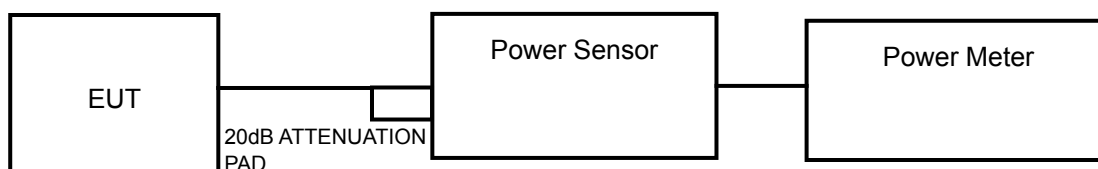
The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 300kHz RBW and 1MHz VBW. The 26dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 26dB.

4.3.4 DEVIATION FROM TEST STANDARD

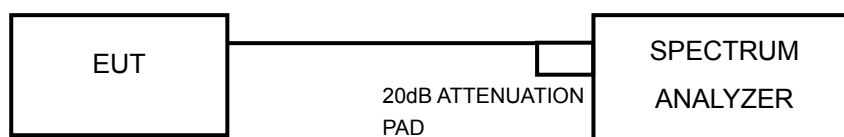
No deviation.

4.3.5 TEST SETUP

FOR POWER OUTPUT MEASUREMENT



FOR 26dB OCCUPIED BANDWIDTH



4.3.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

4.3.7 TEST RESULTS

POWER OUTPUT: 802.11a (Aux. antenna was chosen for tested)

| CHANNEL | CHANNEL FREQUENCY (MHz) | OUTPUT POWER (mW) | OUTPUT POWER (dBm) | POWER LIMIT (dBm) | PASS / FAIL |
|---------|-------------------------|-------------------|--------------------|-------------------|-------------|
| 36 | 5180 | 10.5 | 10.2 | 17 | PASS |
| 40 | 5200 | 10.7 | 10.3 | 17 | PASS |
| 48 | 5240 | 10.2 | 10.1 | 17 | PASS |
| 52 | 5260 | 10.7 | 10.3 | 24 | PASS |
| 60 | 5300 | 11.5 | 10.6 | 24 | PASS |
| 64 | 5320 | 13.2 | 11.2 | 24 | PASS |
| 100 | 5500 | 17.0 | 12.3 | 24 | PASS |
| 120 | 5600 | 12.9 | 11.1 | 24 | PASS |
| 140 | 5700 | 8.7 | 9.4 | 24 | PASS |

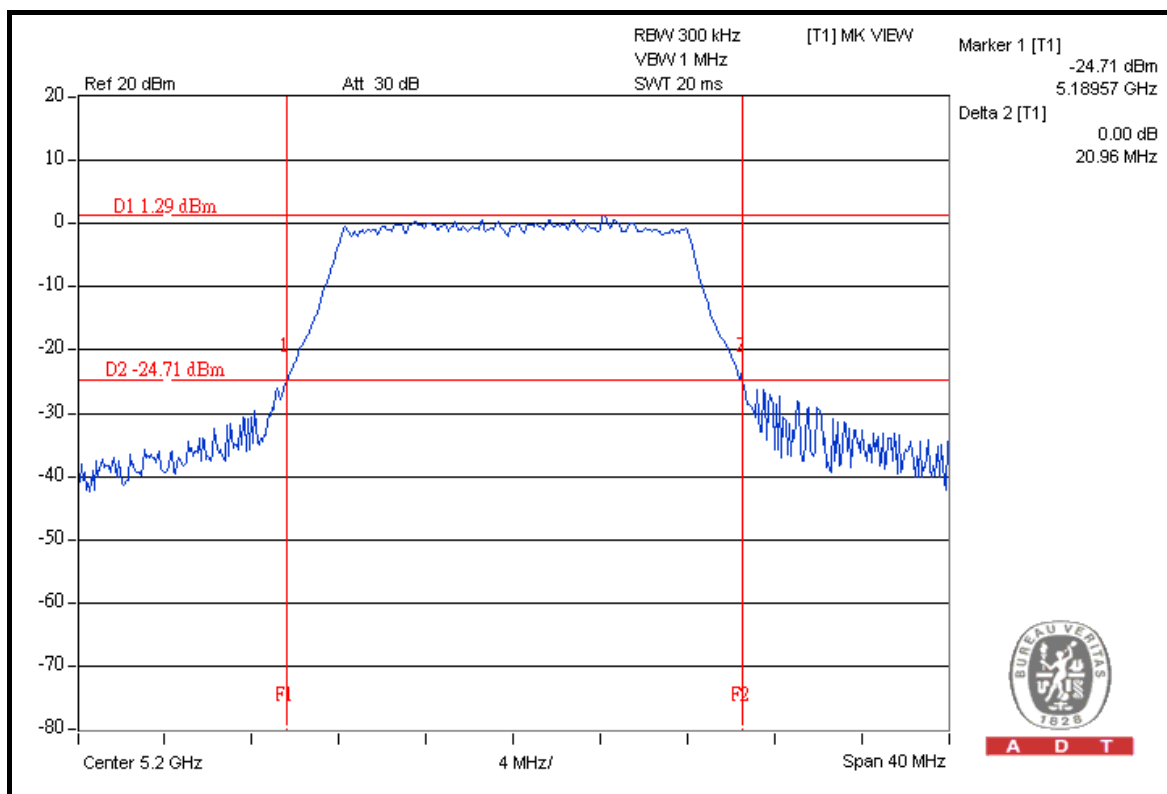


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26dB OCCUPIED BANDWIDTH: 802.11a (Aux. antenna was chosen for tested)

| CHANNEL | CHANNEL FREQUENCY (MHz) | 26dBc OCCUPIED BANDWIDTH (MHz) | PASS / FAIL |
|---------|-------------------------|--------------------------------|-------------|
| 36 | 5180 | 20.88 | PASS |
| 40 | 5200 | 20.96 | PASS |
| 48 | 5240 | 20.76 | PASS |
| 52 | 5260 | 20.86 | PASS |
| 60 | 5300 | 20.84 | PASS |
| 64 | 5320 | 20.89 | PASS |
| 100 | 5500 | 20.89 | PASS |
| 120 | 5600 | 20.89 | PASS |
| 140 | 5700 | 20.72 | PASS |

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4.4 PEAK POWER EXCURSION MEASUREMENT

4.4.1 LIMITS OF PEAK POWER EXCURSION MEASUREMENT

| FREQUENCY BAND | LIMIT |
|------------------|-------|
| 5.150 ~ 5.250GHz | 13dB |
| 5.250 ~ 5.350GHz | 13dB |
| 5.470 ~ 5.725GHz | 13dB |

4.4.2 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | DATE OF CALIBRATION | DUE DATE OF CALIBRATION |
|----------------------------|-----------|------------|---------------------|-------------------------|
| SPECTRUM ANALYZER R&S | FSP40 | 100040 | Jul. 07, 2009 | Jul. 06, 2010 |

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

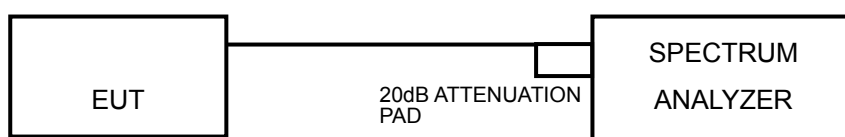
4.4.3 TEST PROCEDURE

- a. The transmitter output was connected to the spectrum analyzer.
- b. Set the spectrum bandwidth span to view the entire spectrum.
- c. Using peak detector and Max-hold function for Trace 1 (RB = 1MHz, VB = 3MHz) and 2 (RB = 1MHz, VB = 300 kHz).
- d. The differences between Trace1 and Trace 2 in any 1MHz band at f1 to f2 range were recorded and showed to another trace.

4.4.4 DEVIATION FROM TEST STANDARD

No deviation.

4.4.5 TEST SETUP



4.4.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.



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4.4.7 TEST RESULTS

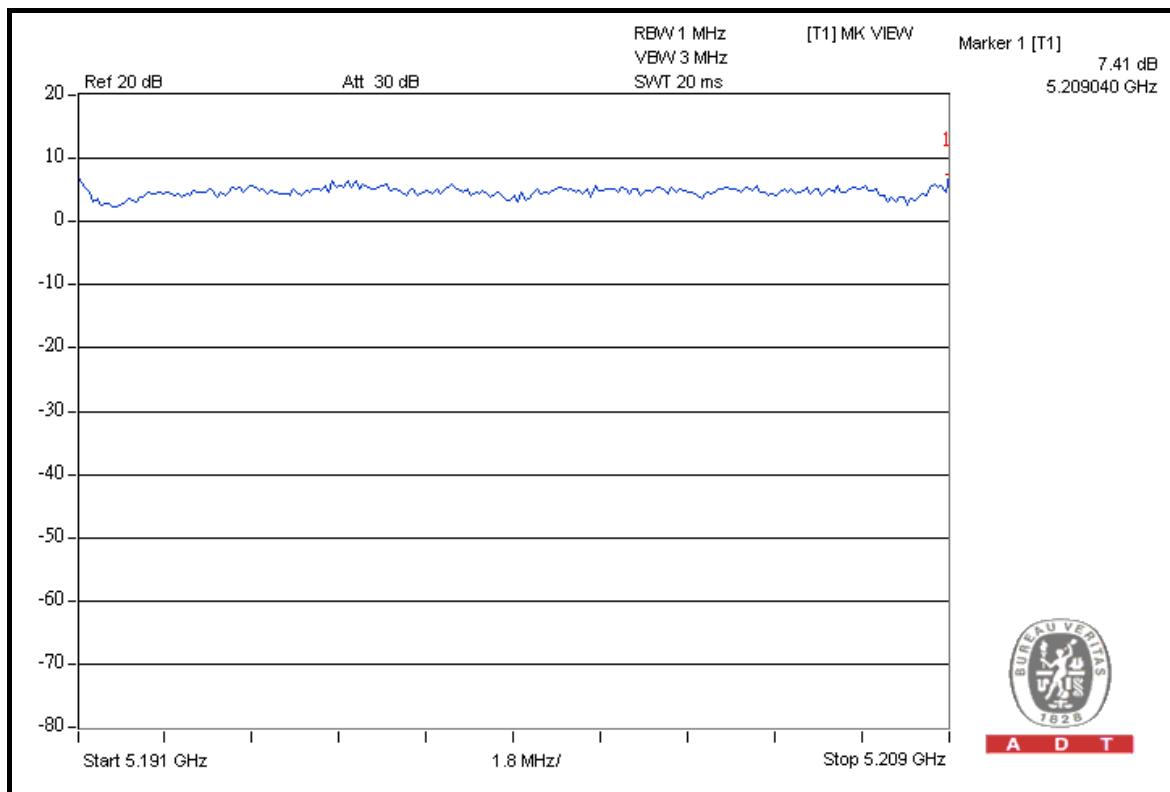
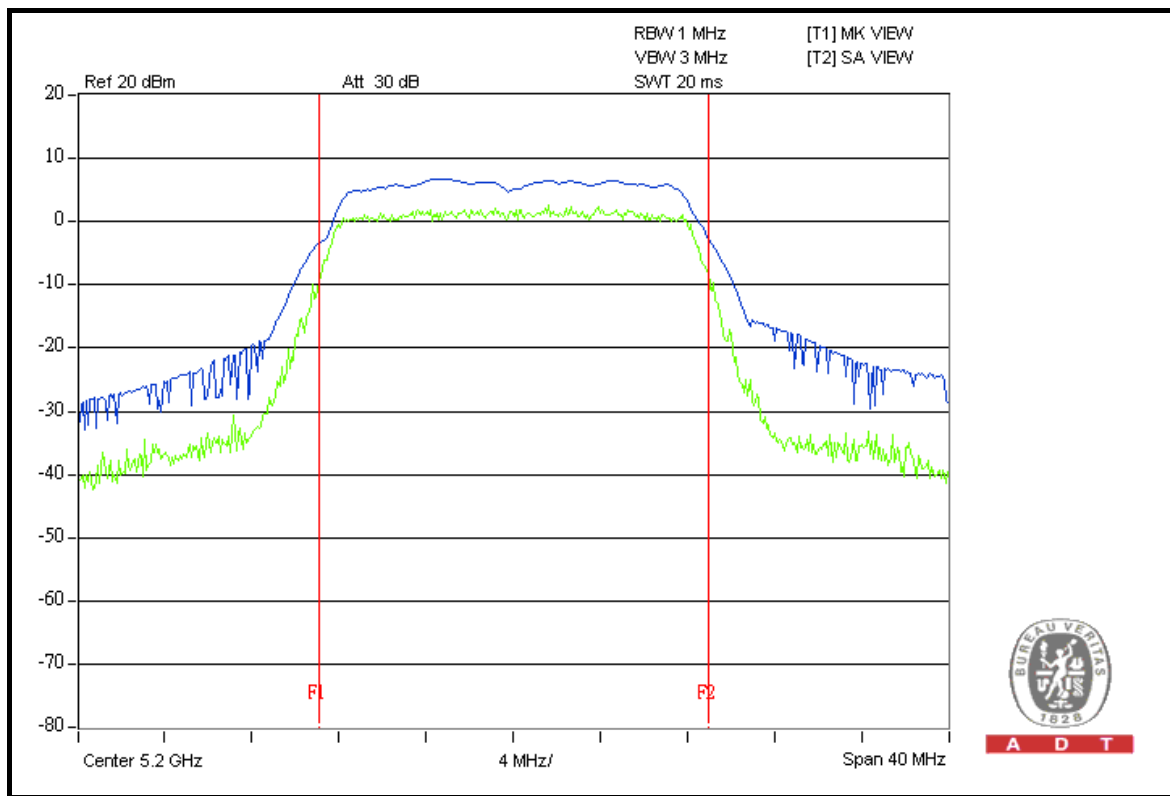
802.11a (Aux. antenna was chosen for tested)

| CHANNEL | CHANNEL FREQUENCY (MHz) | PEAK POWER EXCURSION (dB) | PEAK TO AVERAGE EXCURSION LIMIT (dB) | PASS/FAIL |
|---------|-------------------------|---------------------------|--------------------------------------|-----------|
| 36 | 5180 | 6.3 | 13 | PASS |
| 40 | 5200 | 7.4 | 13 | PASS |
| 48 | 5240 | 7.3 | 13 | PASS |
| 52 | 5260 | 7.4 | 13 | PASS |
| 60 | 5300 | 7.1 | 13 | PASS |
| 64 | 5320 | 6.4 | 13 | PASS |
| 100 | 5500 | 6.3 | 13 | PASS |
| 120 | 5600 | 7.0 | 13 | PASS |
| 140 | 5700 | 6.4 | 13 | PASS |



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4.5 PEAK POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT

| FREQUENCY BAND | LIMIT |
|------------------|-------|
| 5.150 ~ 5.250GHz | 4dBm |
| 5.250 ~ 5.350GHz | 11dBm |
| 5.470 ~ 5.725GHz | 11dBm |

4.5.2 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | DATE OF CALIBRATION | DUE DATE OF CALIBRATION |
|----------------------------|-----------|------------|---------------------|-------------------------|
| SPECTRUM ANALYZER R&S | FSP40 | 100040 | Jul. 07, 2009 | Jul. 06, 2010 |

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

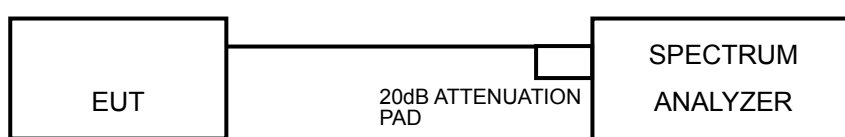
4.5.3 TEST PROCEDURES

- a. The transmitter output was connected to the spectrum analyzer.
- b. Set RBW = 1MHz, VBW = 3MHz. The PPSD is the highest level found across the emission in any 1MHz band.

4.5.4 DEVIATION FROM TEST STANDARD

No deviation.

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITIONS

Same as 5.3.6.



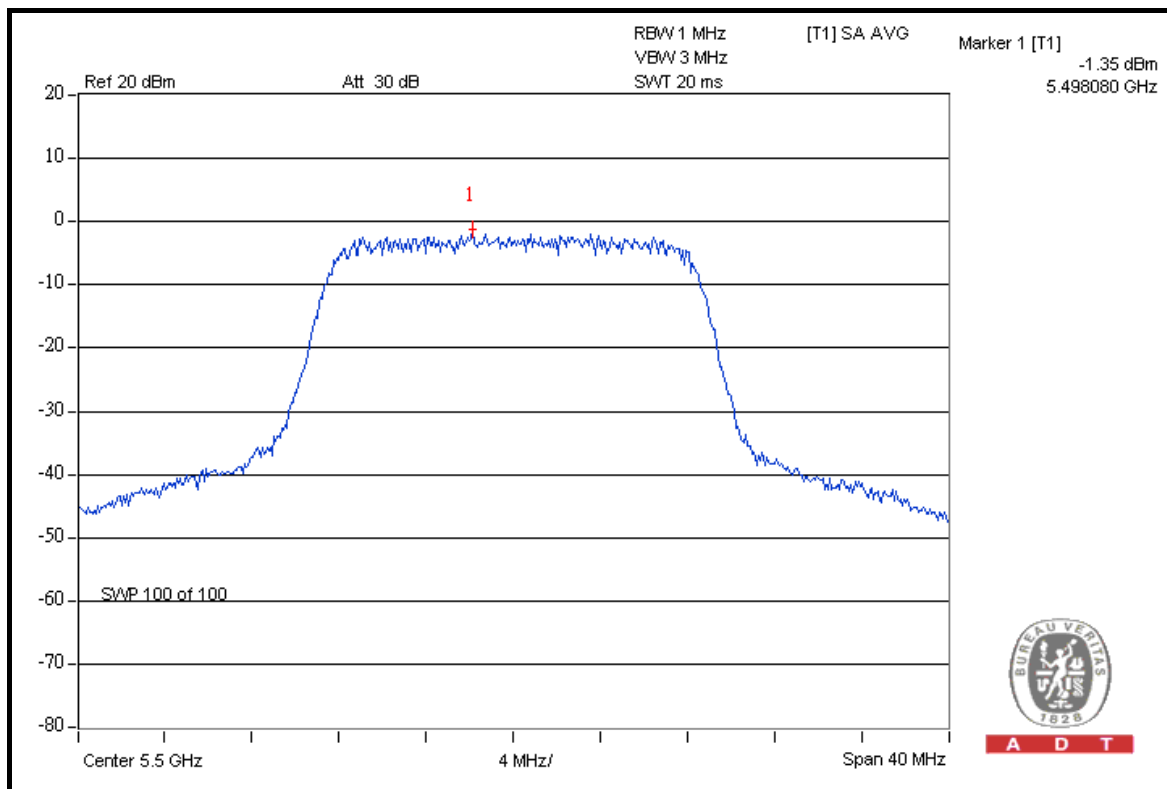
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4.5.7 TEST RESULTS

802.11a (Aux. antenna was chosen for tested)

| CHANNEL | CHANNEL FREQUENCY (MHz) | RF POWER LEVEL IN 1MHz BW (dBm) | MAXIMUM LIMIT (dBm) | PASS / FAIL |
|---------|--------------------------|---------------------------------|---------------------|-------------|
| 36 | 5180 | -3.5 | 4 | PASS |
| 40 | 5200 | -3.4 | 4 | PASS |
| 48 | 5240 | -3.4 | 4 | PASS |
| 52 | 5260 | -3.7 | 11 | PASS |
| 60 | 5300 | -3.2 | 11 | PASS |
| 64 | 5320 | -2.5 | 11 | PASS |
| 100 | 5500 | -1.4 | 11 | PASS |
| 120 | 5600 | -2.2 | 11 | PASS |
| 140 | 5700 | -4.4 | 11 | PASS |

CH 100



4.6 FREQUENCY STABILITY

4.6.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

The frequency tolerance of the carrier signal shall be maintained within the band of operation frequency over a temperature variation of –30 degrees to 50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.

4.6.2 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | DATE OF CALIBRATION | DUE DATE OF CALIBRATION |
|---|-----------|------------|---------------------|-------------------------|
| SPECTRUM ANALYZER R&S | FSP40 | 100040 | Jul. 07, 2009 | Jul. 06, 2010 |
| WIT STANDARD TEMPERATURE AND HUMIDITY CHAMBER | TH-4S-C | W981030 | Jun. 24, 2009 | Jun. 23, 2010 |

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

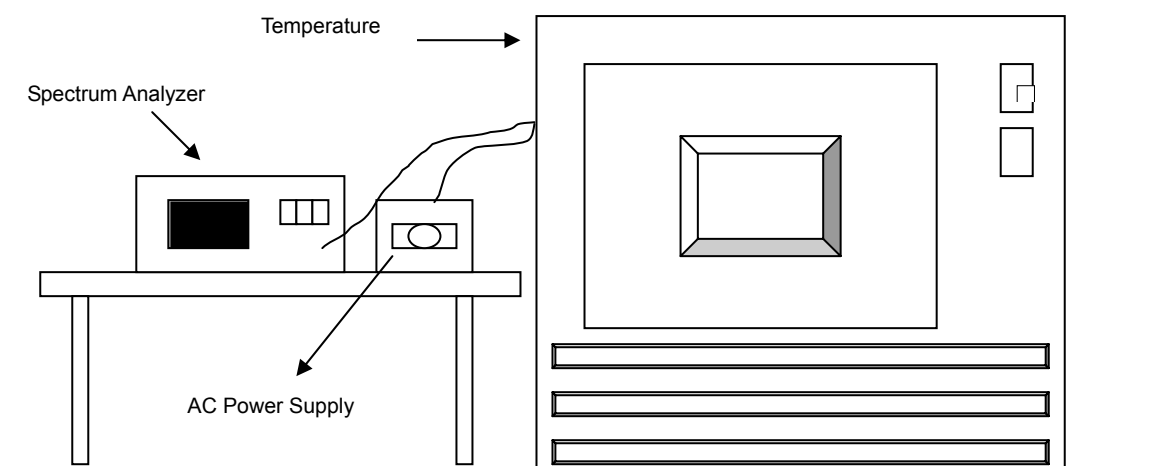
4.6.3 TEST PROCEDURE

- a. The EUT was placed inside the environmental test chamber and powered by nominal DC voltage.
- b. Turn the EUT on and couple its output to a spectrum analyzer.
- c. Turn the EUT off and set the chamber to the highest temperature specified.
- d. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
- e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
- f. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation.

4.6.5 TEST SETUP



4.6.6 EUT OPERATING CONDITION

Same as Item 4.1.7.



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4.6.7 TEST RESULTS

| FREQUENCY STABILITY VERSUS TEMP. | | | | | | | | | |
|----------------------------------|--------------------|--------------------|-----------------|--------------------|-----------------|--------------------|-----------------|--------------------|-----------------|
| OPERATING FREQUENCY: 5320MHz | | | | | | | | | |
| TEMP. (°C) | POWER SUPPLY (Vdc) | 0 MINUTE | | 2 MINUTE | | 5 MINUTE | | 10 MINUTE | |
| | | Measured Frequency | Frequency Drift | Measured Frequency | Frequency Drift | Measured Frequency | Frequency Drift | Measured Frequency | Frequency Drift |
| | | (MHz) | ppm | (MHz) | ppm | (MHz) | ppm | (MHz) | ppm |
| 55 | 3.7 | 5319.997363 | -0.496 | 5319.997548 | -0.461 | 5319.997149 | -0.536 | 5319.997369 | -0.495 |
| 50 | 3.7 | 5319.997077 | -0.549 | 5319.997300 | -0.508 | 5319.997099 | -0.545 | 5319.996889 | -0.585 |
| 40 | 3.7 | 5319.996582 | -0.642 | 5319.996488 | -0.660 | 5319.996829 | -0.596 | 5319.996728 | -0.615 |
| 30 | 3.7 | 5319.996459 | -0.666 | 5319.996574 | -0.644 | 5319.996834 | -0.595 | 5319.996492 | -0.659 |
| 20 | 3.7 | 5319.996949 | -0.573 | 5319.996935 | -0.576 | 5319.997061 | -0.552 | 5319.996904 | -0.582 |
| 10 | 3.7 | 5319.996284 | -0.698 | 5319.996488 | -0.660 | 5319.996267 | -0.702 | 5319.996656 | -0.629 |
| 0 | 3.7 | 5319.996806 | -0.600 | 5319.996712 | -0.618 | 5319.996679 | -0.624 | 5319.997298 | -0.508 |
| -10 | 3.7 | 5319.996728 | -0.615 | 5319.996977 | -0.568 | 5319.996776 | -0.606 | 5319.997278 | -0.512 |
| -20 | 3.7 | 5319.997316 | -0.505 | 5319.997545 | -0.461 | 5319.997842 | -0.406 | 5319.997651 | -0.442 |

| FREQUENCY STABILITY VERSUS VOLTAGE | | | | | | | | | |
|------------------------------------|--------------------|--------------------|-----------------|--------------------|-----------------|--------------------|-----------------|--------------------|-----------------|
| OPERATING FREQUENCY: 5320MHz | | | | | | | | | |
| TEMP. (°C) | POWER SUPPLY (Vac) | 0 MINUTE | | 2 MINUTE | | 5 MINUTE | | 10 MINUTE | |
| | | Measured Frequency | Frequency Drift | Measured Frequency | Frequency Drift | Measured Frequency | Frequency Drift | Measured Frequency | Frequency Drift |
| | | (MHz) | ppm | (MHz) | ppm | (MHz) | ppm | (MHz) | ppm |
| 20 | 3.300 | 5319.997244 | -0.518 | 5319.997244 | -0.518 | 5319.997244 | -0.518 | 5319.997244 | -0.518 |
| | 3.700 | 5319.996949 | -0.573 | 5319.996935 | -0.576 | 5319.997061 | -0.552 | 5319.996904 | -0.582 |
| | 4.255 | 5319.996722 | -0.616 | 5319.996722 | -0.616 | 5319.996722 | -0.616 | 5319.996722 | -0.616 |

4.7 BAND EDGES MEASUREMENT

4.7.1 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | DATE OF CALIBRATION | DUE DATE OF CALIBRATION |
|----------------------------|-----------|------------|---------------------|-------------------------|
| SPECTRUM ANALYZER R&S | FSP40 | 100040 | Jul. 07, 2009 | Jul. 06, 2010 |

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

4.7.2 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 1MHz and 3MHz with suitable frequency span including 100MHz bandwidth from band edge. The band edges was measured and recorded.

4.7.3 EUT OPERATING CONDITION

The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

4.7.4 TEST RESULTS

For signals in the restricted bands above and below the 5.18 to 5.32GHz and 5.50 to 5.70GHz allocated band a measurement was made of the amplitude of the spurious emissions with respect to the intentional signals. The relative amplitude, in dBc, was applied to the average and peak filed strength of the intentional signal made on the OATS to calculate the field strength of the unintentional signals.

The spectrum plots (Peak RBW = 1MHz, VBW = 3MHz) are attached on the following pages.

FOR 5180-5320MHz BAND: 802.11a (Aux. antenna was chosen for tested)

RESTRICT BAND (4500 ~ 5150 MHz)

| FREQUENCY (MHz) | FUNDAMENTAL EMISSION (dBuV/m) | DELTA (dB) | MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m) | LIMIT (dBuV/m) |
|-----------------|-------------------------------|------------|--|----------------|
| 5180.00 (PK) | 103.3 | 43.76 | 59.54 | 74.00 |
| 5180.00 (AV) | 92.2 | 50.00 | 42.20 | 54.00 |

RESTRICT BAND (5350 ~ 5460 MHz)

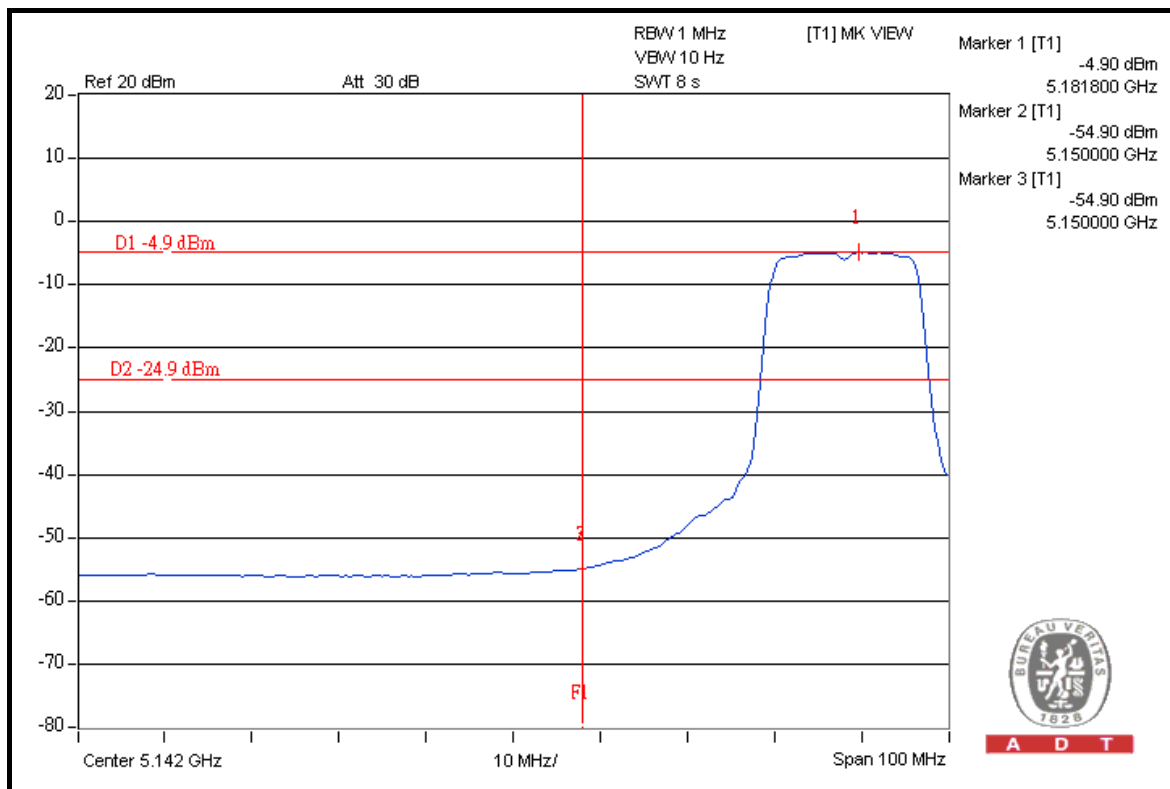
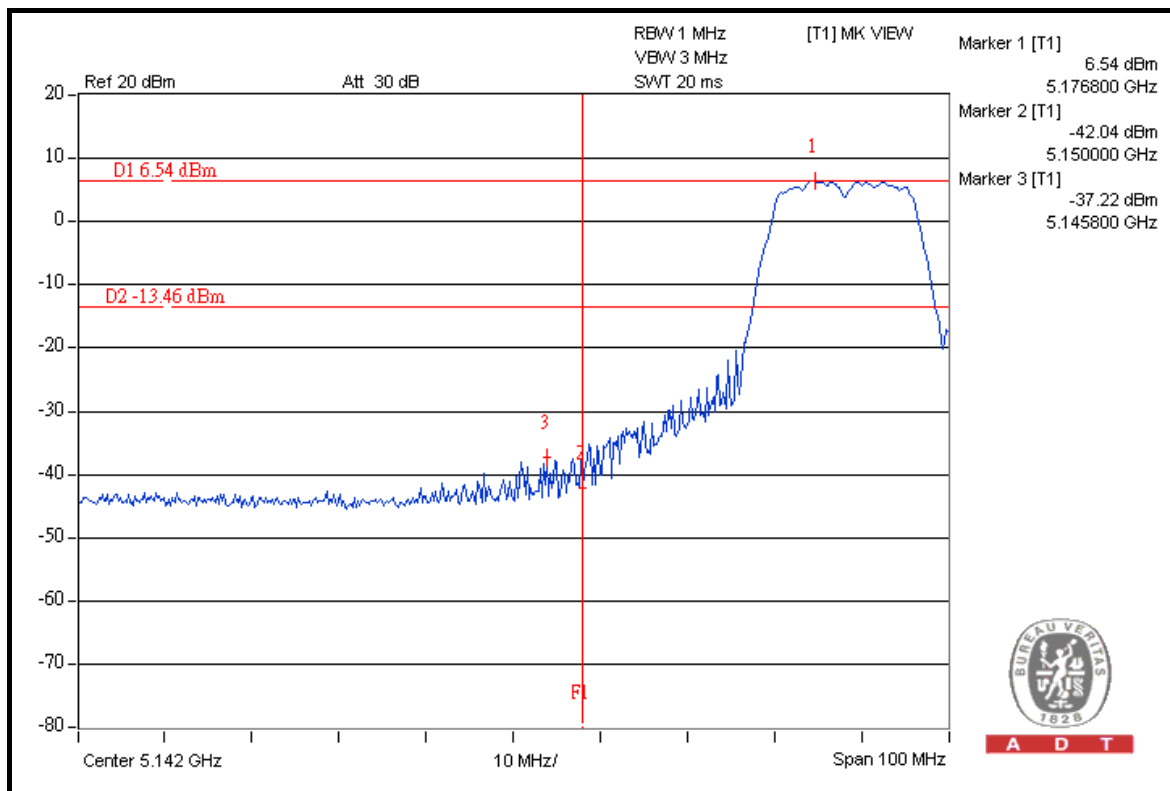
| FREQUENCY (MHz) | FUNDAMENTAL EMISSION (dBuV/m) | DELTA (dB) | MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m) | LIMIT (dBuV/m) |
|-----------------|-------------------------------|------------|--|----------------|
| 5320.00 (PK) | 106.1 | 42.63 | 63.47 | 74.00 |
| 5320.00 (AV) | 95.0 | 49.43 | 45.57 | 54.00 |

NOTE:

1. Delta = Amplitude between the peak of the fundamental and the peak of the band edge emission. Please check following 3 pages.
2. Maximum field strength in restrict band = Fundamental emission – Delta.

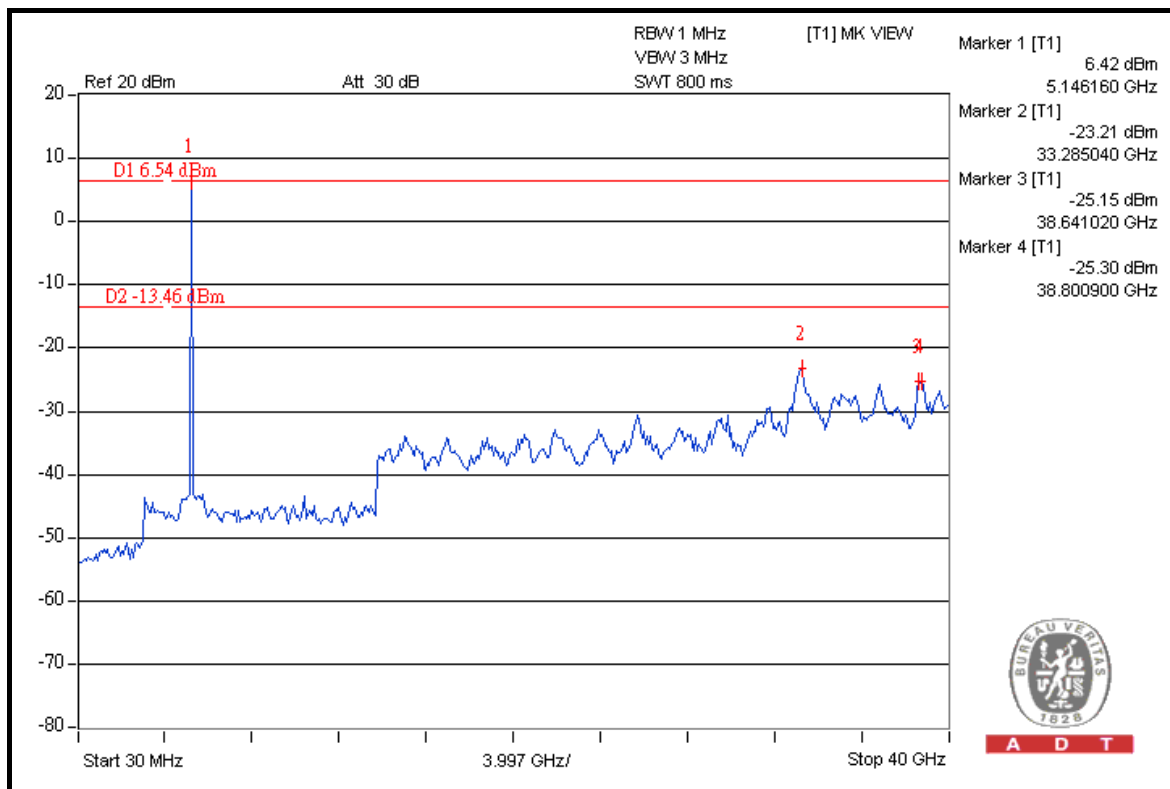


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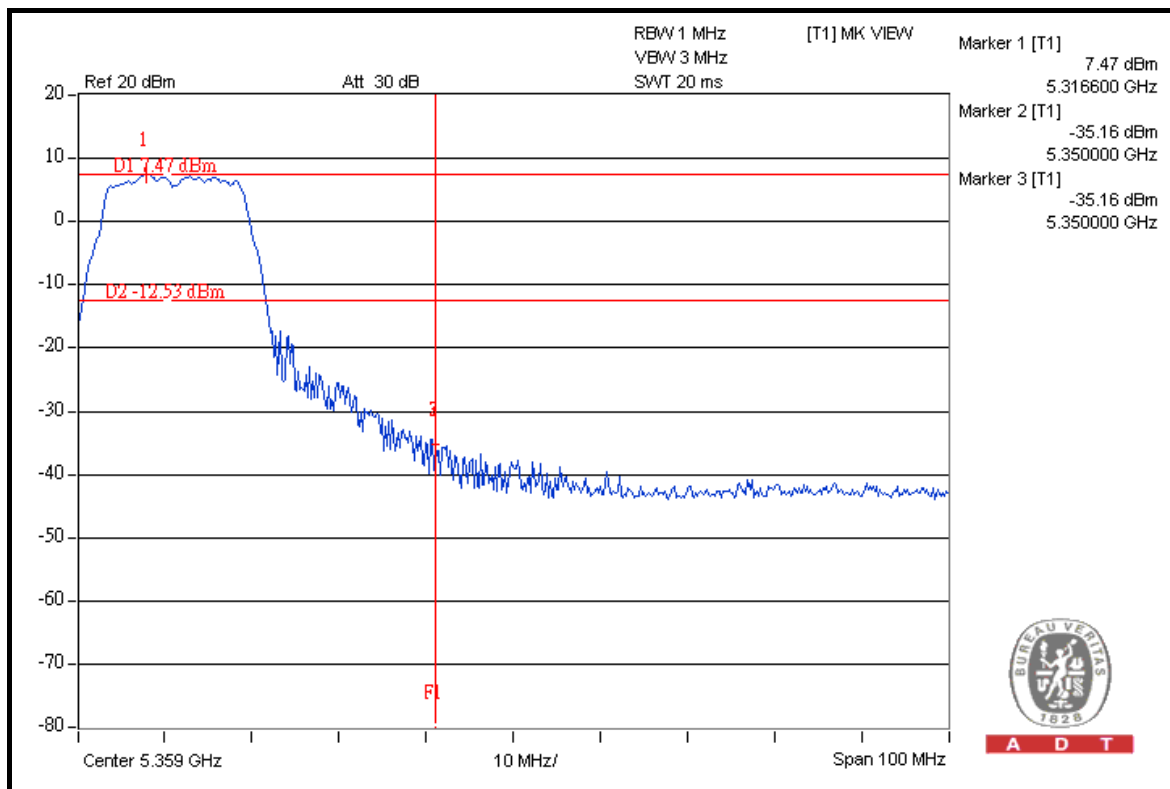




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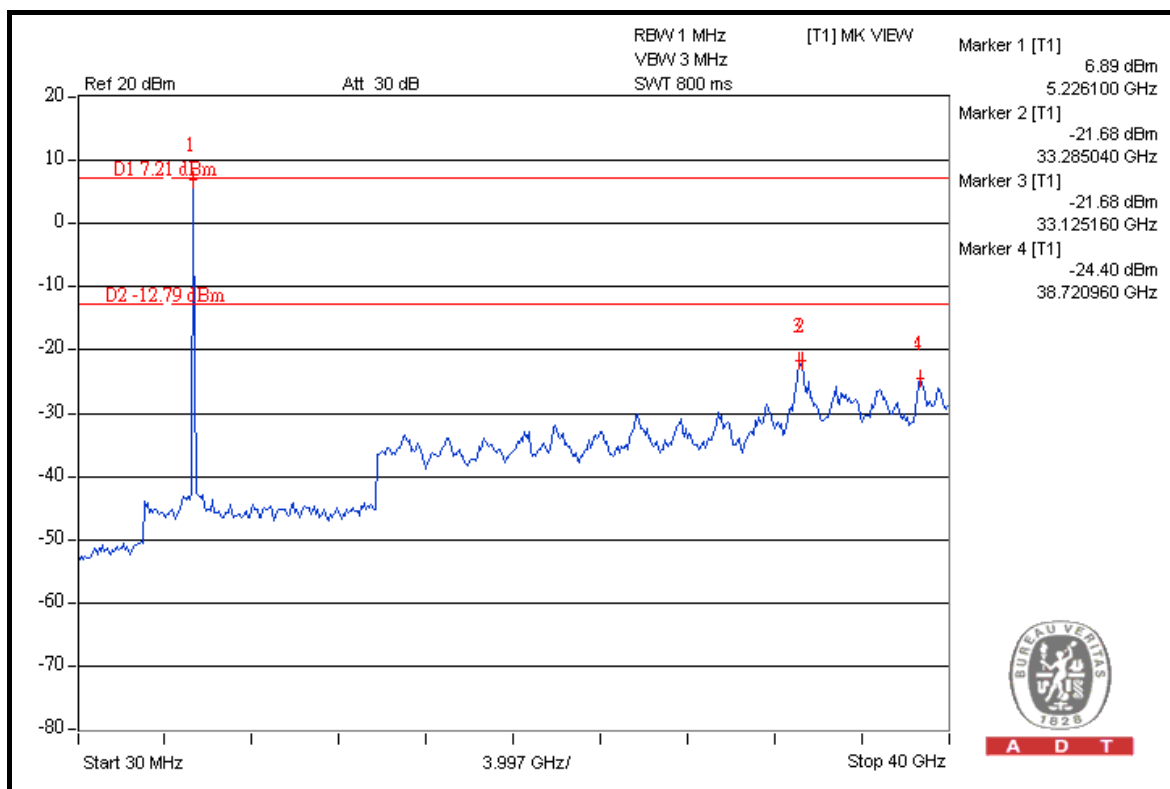
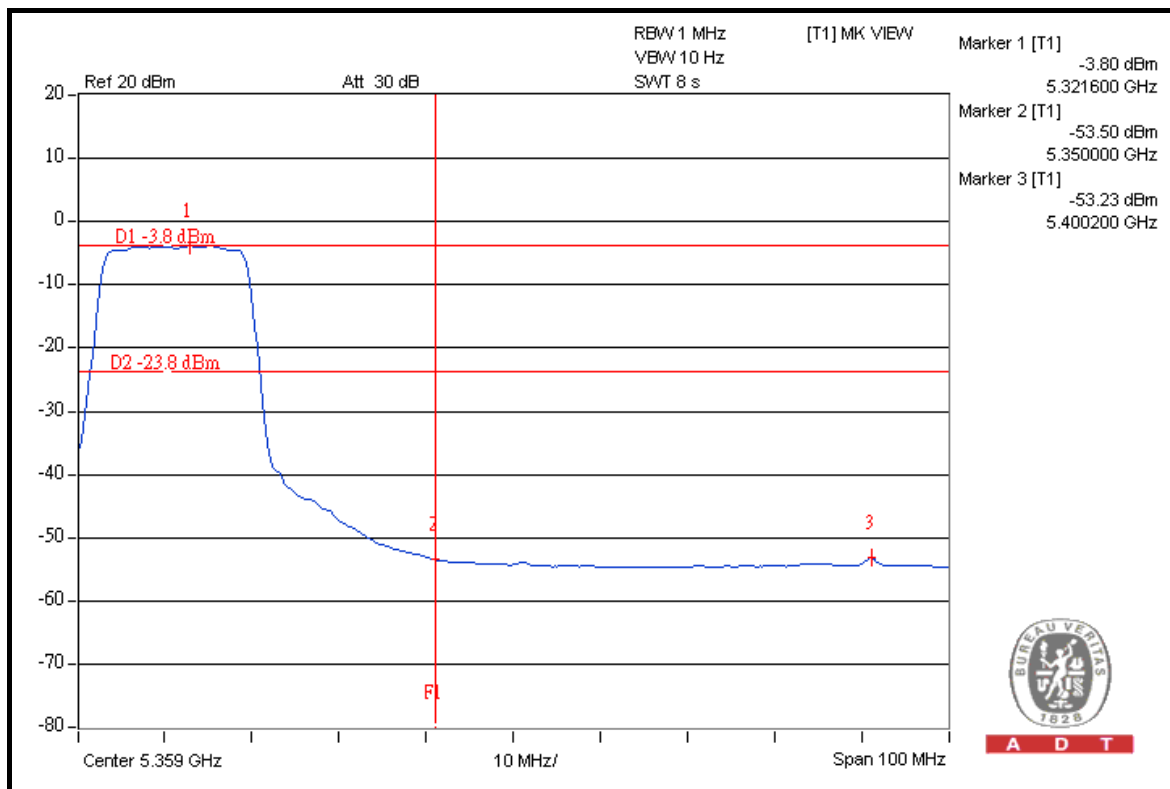
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FOR 5500-5700MHz BAND: 802.11a (Aux. antenna was chosen for tested)

5500MHz

RESTRICT BAND (5350 ~ 5460 MHz)

| FREQUENCY (MHz) | FUNDAMENTAL EMISSION (dBuV/m) | DELTA (dB) | MAXIMUM FIELD STRENGTH IN RESTRICT BAND (dBuV/m) | LIMIT (dBuV/m) |
|-----------------|-------------------------------|------------|--|----------------|
| 5500.00 (PK) | 105.3 | 45.39 | 59.91 | 74.00 |
| 5500.00 (AV) | 93.6 | 49.49 | 44.41 | 54.00 |

FREQUENCY BAND (5460 ~ 5470 MHz)

| FREQUENCY (MHz) | FUNDAMENTAL EMISSION (dBuV/m) | DELTA (dB) | MAXIMUM FIELD STRENGTH (dBuV/m) | LIMIT (dBuV/m) |
|-----------------|-------------------------------|------------|---------------------------------|----------------|
| 5500.00 (PK) | 105.3 | 41.56 | 63.74 | 68.30 |

5700MHz

ABOVE 5725 MHz

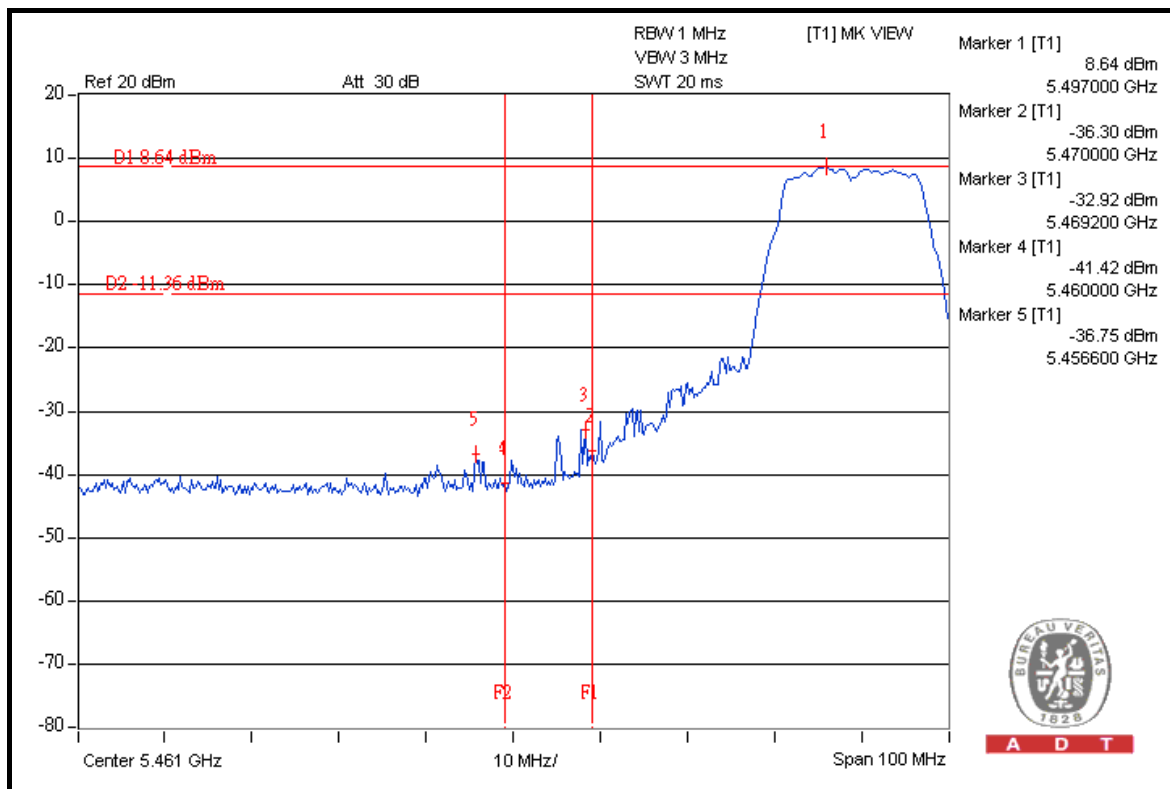
| FREQUENCY (MHz) | FUNDAMENTAL EMISSION (dBuV/m) | DELTA (dB) | MAXIMUM FIELD STRENGTH (dBuV/m) | LIMIT (dBuV/m) |
|-----------------|-------------------------------|------------|---------------------------------|----------------|
| 5700.00 (PK) | 102.2 | 37.61 | 64.59 | 68.30 |

NOTE:

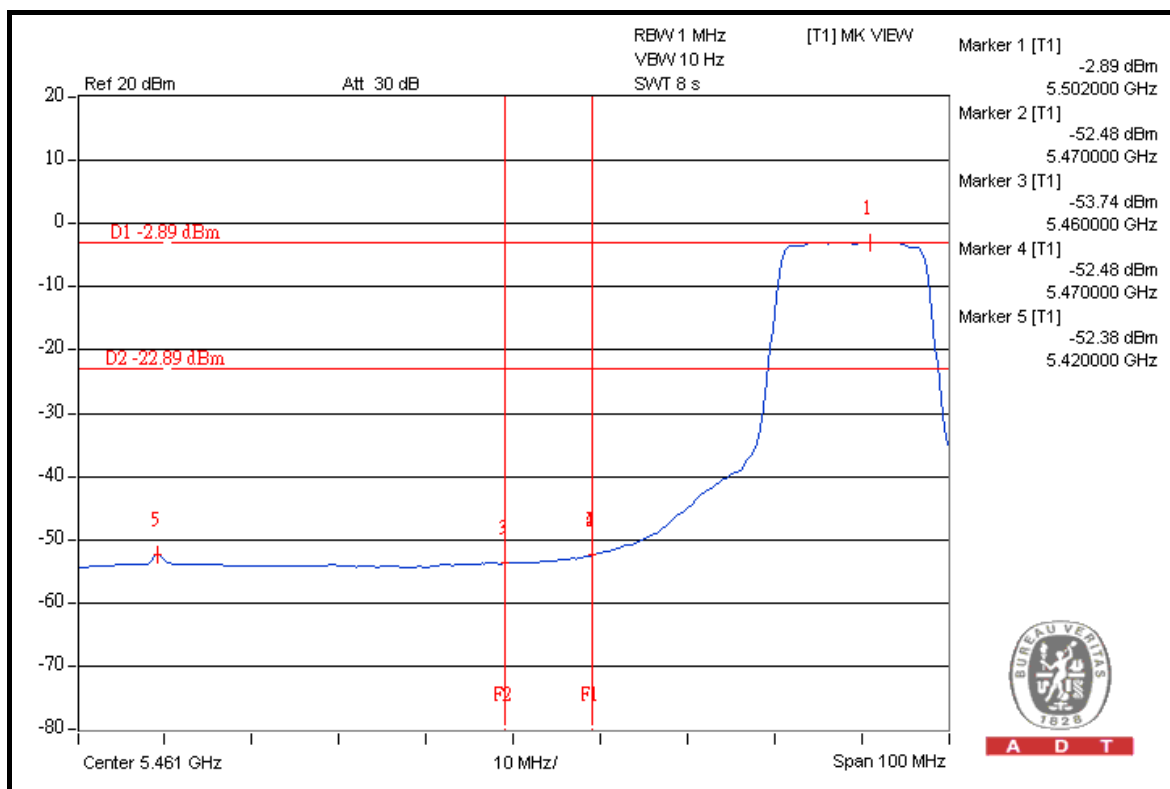
- Delta = Amplitude between the peak of the fundamental and the peak of the band edge emission. Please check following 3 pages.
- Maximum field strength in restrict band = Fundamental emission – Delta.



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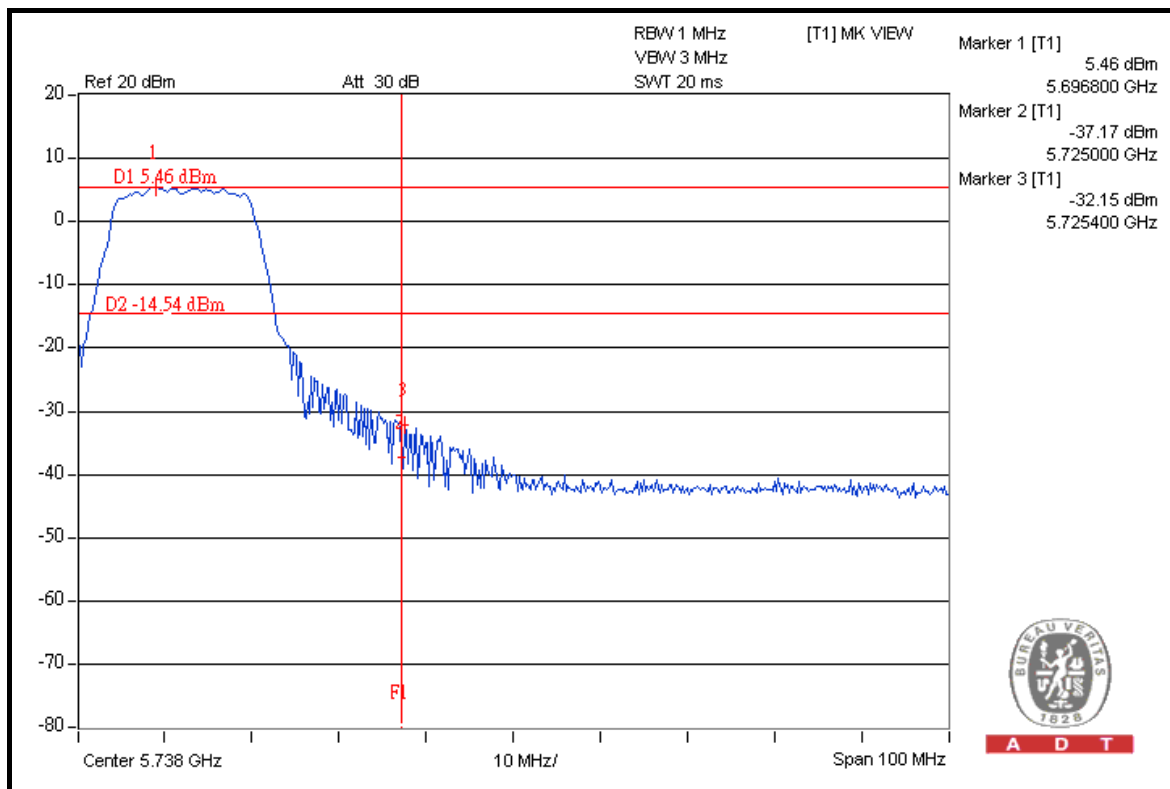
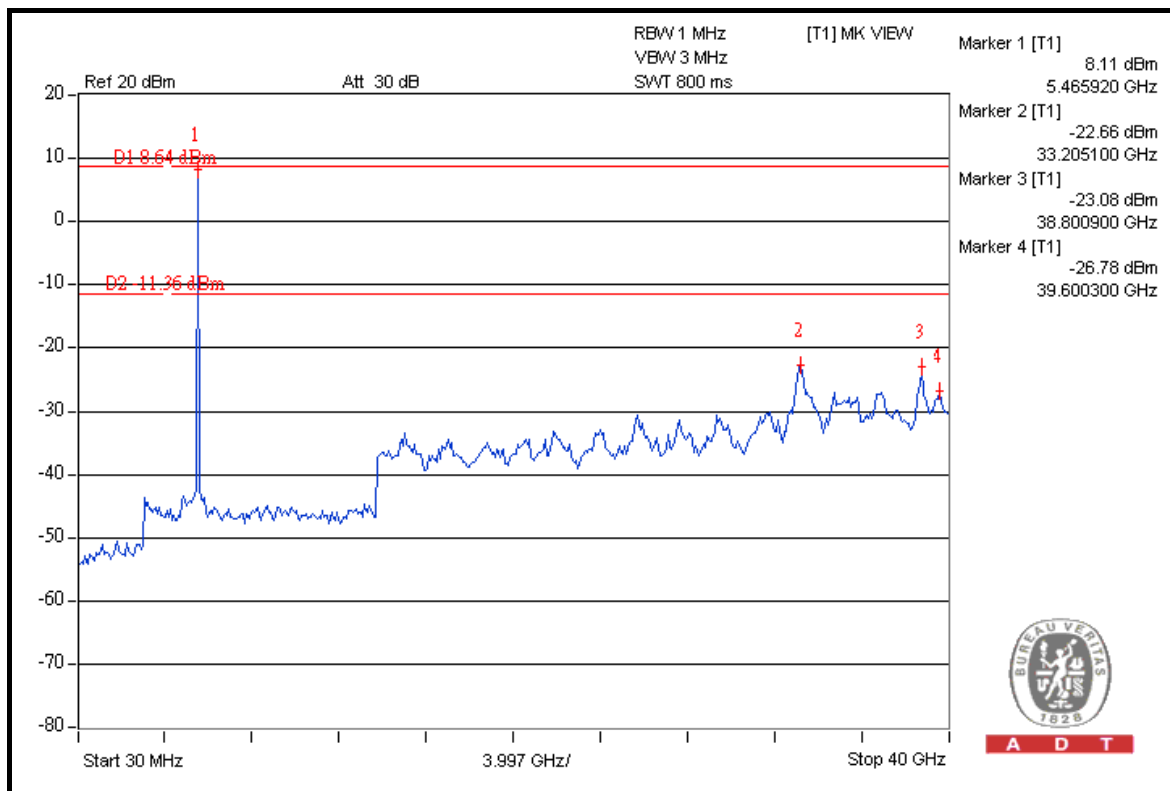
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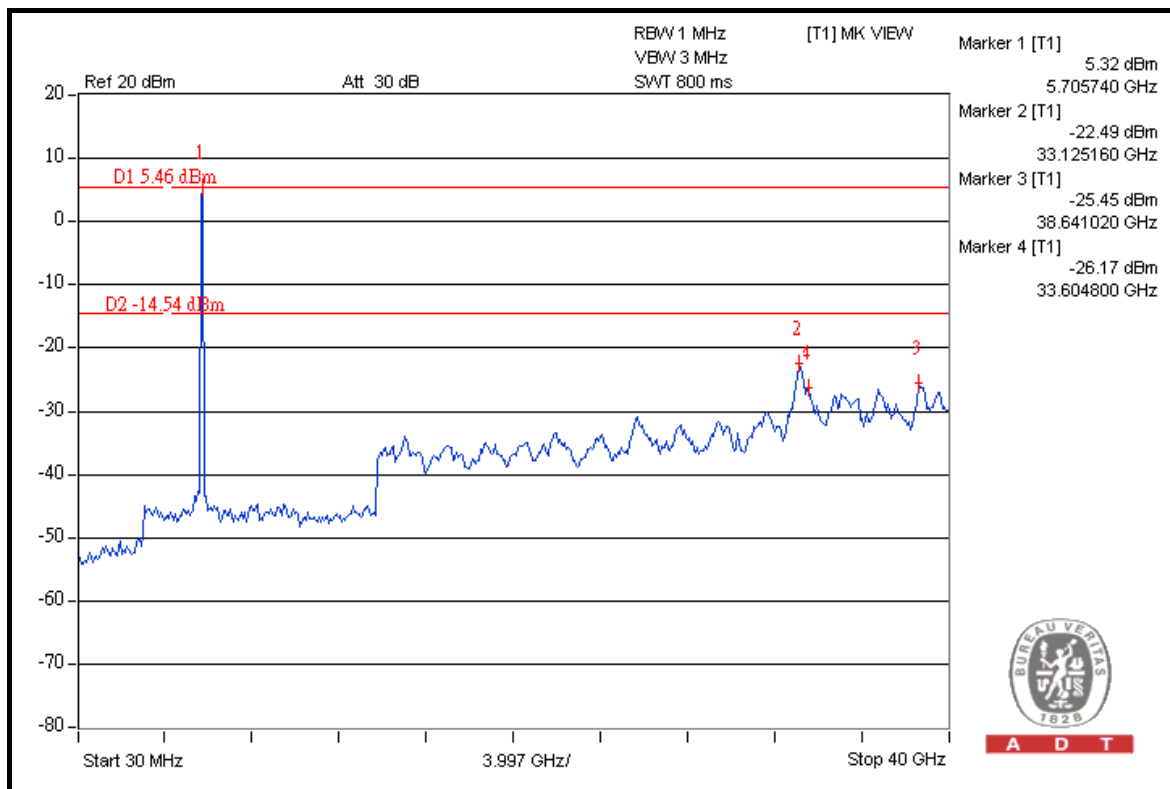
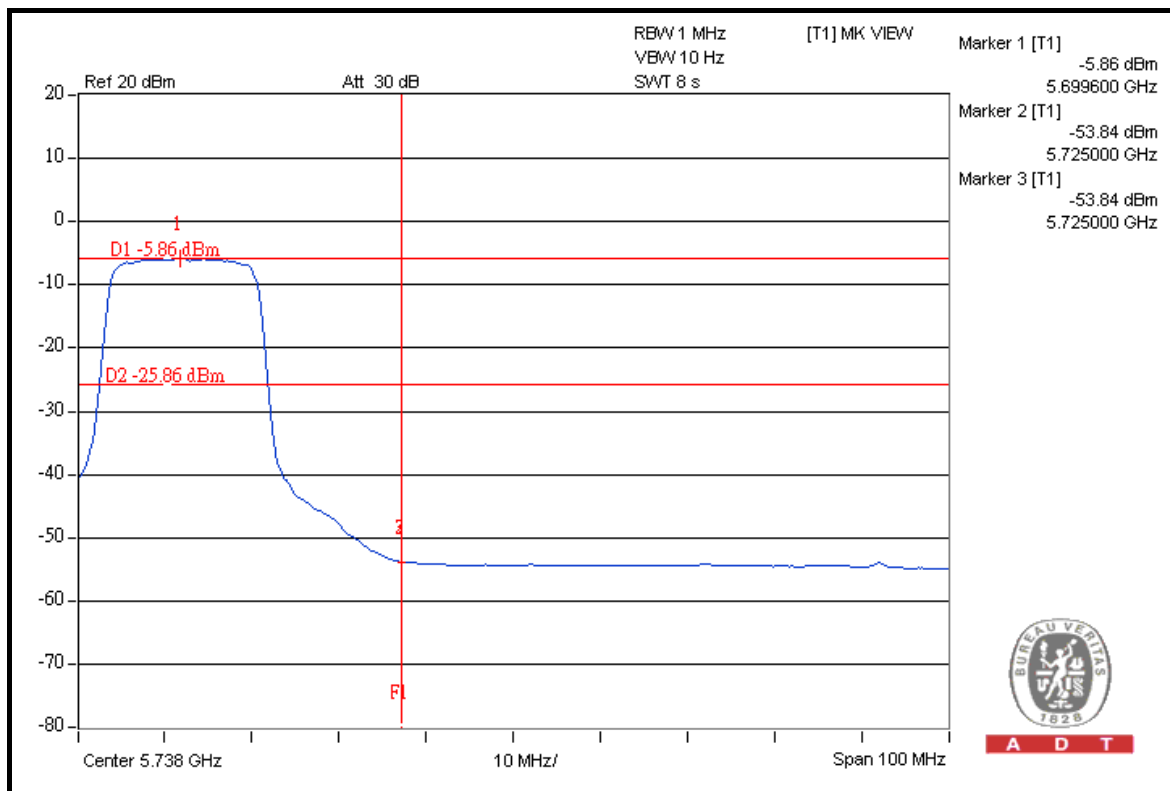


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5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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

6. INFORMATION ON THE TESTING LABORATORIES

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

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

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

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

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

Hsin Chu EMC/RF Lab:
Tel: 886-3-5935343
Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety Telecom Lab:
Tel: 886-3-3183232
Fax: 886-3-3185050

Web Site: www.adt.com.tw

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

7. APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

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

---END---