

FCC Test Report

Report No.: RF130709C02E

FCC ID: RYK-WPEA252NI

Test Model: WPEA-252NI

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Test Date: Jul. 11 ~ Jul. 12, 2013
Apr. 21 ~ Apr. 24, 2015

Issued Date: Apr. 28, 2015

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Release Control Record

| Issue No. | Description | Date Issued |
|--------------|-------------------|---------------|
| RF130709C02E | Original release. | Apr. 28, 2015 |

1 Certificate of Conformity

Product: 802.11abgn Mini PCIe module

Brand: SparkLAN

Test Model: WPEA-252NI


Sample Status: Engineering sample

Applicant: SparkLAN Communications, Inc.

Test Date: Jul. 11 ~ Jul. 12, 2013
Apr. 21 ~ Apr. 24, 2015

Standard: 47 CFR FCC Part 15, Subpart E (Section 15.407)
ANSI C63.10:2009

The above equipment 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 :  , **Date:** Apr. 28, 2015
Pettie Chen / Senior Specialist

Approved by :  , **Date:** Apr. 28, 2015
Ken Liu / Senior Manager

2 Summary of Test Results

| 47 CFR FCC Part 15, Subpart E (SECTION 15.407) | | | |
|------------------------------------------------|--------------------------------------------|--------|------------------------------------------------------------------------------------------|
| FCC Clause | Test Item | Result | Remarks |
| 15.407(b)(6) | AC Power Conducted Emissions | PASS | Meet the requirement of limit. Minimum passing margin is -15.22dB at 0.29844MHz. |
| 15.407(b)(1/2/3/4/6) | Radiated Emissions & Band Edge Measurement | PASS | Meet the requirement of limit. Minimum passing margin is -1.5dB at 5350.00 & 5470.00MHz. |
| 15.407(a)(1/2/3) | Max Average Transmit Power | PASS | Meet the requirement of limit. |
| 15.407(a)(1/2/3) | Peak Power Spectral Density | PASS | Meet the requirement of limit. |
| 15.407(e) | 6dB bandwidth | PASS | Meet the requirement of limit. (U-NII-3 Band only) |
| 15.407(g) | Frequency Stability | PASS | Meet the requirement of limit. |
| 15.203 | Antenna Requirement | PASS | Antenna connector is RP-SMA Plug 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 | Expanded Uncertainty (k=2) (\pm) |
|---------------------------------------------------------|------------------|--------------------------------------|
| Conducted Emissions at mains ports | 150kHz ~ 30MHz | 2.44 dB |
| Radiated Emissions up to 1 GHz | 30MHz ~ 200MHz | 3.34 dB |
| | 200MHz ~ 1000MHz | 3.35 dB |
| For 5180 ~ 5240MHz, 5260 ~ 5320MHz, 5500 ~ 5700MHz Band | | |
| Radiated Emissions above 1 GHz | 1GHz ~ 18GHz | 2.26 dB |
| | 18GHz ~ 40GHz | 1.94 dB |
| For 5745 ~ 5825MHz Band | | |
| Radiated Emissions above 1 GHz | 1GHz ~ 18GHz | 2.29 dB |
| | 18GHz ~ 40GHz | 2.29 dB |

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

| | |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product | 802.11abgn Mini PCIe module |
| Brand | SparkLAN |
| Test Model | WPEA-252NI |
| Status of EUT | Engineering sample |
| Power Supply Rating | 3Vdc from host equipment |
| Modulation Type | 64QAM, 16QAM, QPSK, BPSK |
| Modulation Technology | OFDM |
| Transfer Rate | 802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to 300.0Mbps |
| Operating Frequency | 5180 ~ 5240MHz, 5260 ~ 5320MHz, 5500 ~ 5700MHz & 5745 ~ 5825MHz |
| Number of Channel | 5180 ~ 5240MHz: 4 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40) 5260 ~ 5320MHz: 4 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40) 5500 ~ 5700MHz: 11 for 802.11a, 802.11n (HT20) 5 for 802.11n (HT40) 5745 ~ 5825MHz: 5 for 802.11a, 802.11n (HT20) 2 for 802.11n (HT40) |
| Output Power | 5180 ~ 5240MHz: 30.660mW 5260 ~ 5320MHz: 30.876mW 5500 ~ 5700MHz: 30.045mW 5745 ~ 5825MHz: 28.798mW |
| Antenna Type | Dipole antenna with 5dBi gain |
| Antenna Connector | RP-SMA Plug |
| Accessory Device | NA |
| Data Cable Supplied | NA |

Note:

1. This report is issued as a supplementary report to BV ADT report no. RF130709C02-1. The difference compared with original report is updating standard to new rule version, therefore all test items except AC Power Conducted Emissions and the Radiated Emissions (Frequency range below 1GHz) of 5745 ~ 5825MHz were re-tested in this report and the other tests data was kept in this report.
2. The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and two receivers. The EUT has diversity function for 802.11a/b/g. The chain 0 and chain 1 of 802.11a/b/g have been pre-tested, and the chain 0 was the worst for final test.

| MODULATION MODE | TX FUNCTION |
|-----------------|-------------|
| 802.11b | 1TX |
| 802.11g | 1TX |
| 802.11a | 1TX |
| 802.11n (HT20) | 2TX |
| 802.11n (HT40) | 2TX |

3. The EUT uses the following support unit.

| PRODUCT | BRAND | MODEL | SPEC. |
|----------------|-------|---------|-----------------------------------|
| Dipole Antenna | LTC | GEC6200 | 2.4G & 5G (dual band) |
| RF cable | NA | NA | 0.15m shielded cable without core |

4. The above EUT information is 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

FOR 5180 ~ 5240MHz

4 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

| Channel | Frequency | Channel | Frequency |
|---------|-----------|---------|-----------|
| 36 | 5180 MHz | 44 | 5220 MHz |
| 40 | 5200 MHz | 48 | 5240 MHz |

2 channels are provided for 802.11n (HT40), 802.11ac (40MHz):

| Channel | Frequency | Channel | Frequency |
|---------|-----------|---------|-----------|
| 38 | 5190 MHz | 46 | 5230 MHz |

1 channel is provided for 802.11ac (VHT80):

| Channel | Frequency |
|---------|-----------|
| 42 | 5210MHz |

FOR 5260 ~ 5320MHz

4 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

| Channel | Frequency | Channel | Frequency |
|---------|-----------|---------|-----------|
| 52 | 5260 MHz | 60 | 5300 MHz |
| 56 | 5280 MHz | 64 | 5320 MHz |

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

| Channel | Frequency | Channel | Frequency |
|---------|-----------|---------|-----------|
| 54 | 5270 MHz | 62 | 5310 MHz |

1 channel is provided for 802.11ac (VHT80):

| Channel | Frequency |
|---------|-----------|
| 58 | 5290MHz |

FOR 5500 ~ 5700MHz

11 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

| 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 | | |

5 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

| Channel | Frequency | Channel | Frequency |
|---------|-----------|---------|-----------|
| 102 | 5510 MHz | 126 | 5630 MHz |
| 110 | 5550 MHz | 134 | 5670 MHz |
| 118 | 5590 MHz | | |

2 channels are provided for 802.11ac (VHT80):

| Channel | Frequency | Channel | Frequency |
|---------|-----------|---------|-----------|
| 106 | 5530MHz | 122 | 5610 MHz |

FOR 5745 ~ 5825MHz:

5 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

| Channel | Frequency | Channel | Frequency |
|---------|-----------|---------|-----------|
| 149 | 5745MHz | 161 | 5805MHz |
| 153 | 5765MHz | 165 | 5825MHz |
| 157 | 5785MHz | | |

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

| Channel | Frequency | Channel | Frequency |
|---------|-----------|---------|-----------|
| 151 | 5755MHz | 159 | 5795MHz |

1 channel is provided for 802.11ac (VHT80):

| Channel | Frequency |
|---------|-----------|
| 155 | 5775MHz |

3.2.1 Test Mode Applicability and Tested Channel Detail

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

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

NOTE:

1. The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Z-plane**.

Radiated Emission Test (Above 1GHz):

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

| EUT CONFIGURE MODE | MODE | FREQ. BAND (MHz) | AVAILABLE CHANNEL | TESTED CHANNEL | MODULATION TECHNOLOGY | MODULATION TYPE | DATA RATE (Mbps) |
|--------------------|----------------|------------------|-------------------|----------------|-----------------------|-----------------|------------------|
| - | 802.11a | 5180-5240 | 36 to 48 | 36, 40, 48 | OFDM | BPSK | 6.0 |
| - | 802.11n (HT20) | | 36 to 48 | 36, 40, 48 | OFDM | BPSK | 7.2 |
| - | 802.11n (HT40) | | 38 to 46 | 38, 46 | OFDM | BPSK | 15.0 |
| - | 802.11a | 5260-5320 | 52 to 64 | 52, 60, 64 | OFDM | BPSK | 6.0 |
| - | 802.11n (HT20) | | 52 to 64 | 52, 60, 64 | OFDM | BPSK | 7.2 |
| - | 802.11n (HT40) | | 54 to 62 | 54, 62 | OFDM | BPSK | 15.0 |
| - | 802.11a | 5500-5700 | 100 to 140 | 100, 116, 140 | OFDM | BPSK | 6.0 |
| - | 802.11n (HT20) | | 100 to 140 | 100, 116, 140 | OFDM | BPSK | 7.2 |
| - | 802.11n (HT40) | | 102 to 134 | 102, 110, 134 | OFDM | BPSK | 15.0 |
| - | 802.11a | 5745-5825 | 149 to 165 | 149, 157, 165 | OFDM | BPSK | 6.0 |
| - | 802.11n (HT20) | | 149 to 165 | 149, 157, 165 | OFDM | BPSK | 7.2 |
| - | 802.11n (HT40) | | 151 to 159 | 151, 159 | OFDM | BPSK | 15.0 |

Radiated Emission Test (Below 1GHz):

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

| EUT CONFIGURE MODE | MODE | FREQ. BAND (MHz) | AVAILABLE CHANNEL | TESTED CHANNEL | MODULATION TECHNOLOGY | MODULATION TYPE | DATA RATE (Mbps) |
|--------------------|----------------|------------------|-------------------|----------------|-----------------------|-----------------|------------------|
| - | 802.11n (HT20) | 5180-5320 | 36 to 64 | 60 | OFDM | BPSK | 7.2 |
| - | 802.11n (HT20) | 5500-5700 | 100 to 140 | 140 | OFDM | BPSK | 7.2 |
| - | 802.11n (HT20) | 5745-5825 | 149 to 165 | 149 | OFDM | BPSK | 7.2 |

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.

| EUT CONFIGURE MODE | MODE | FREQ. BAND (MHz) | AVAILABLE CHANNEL | TESTED CHANNEL | MODULATION TECHNOLOGY | MODULATION TYPE | DATA RATE (Mbps) |
|--------------------|----------------|------------------|-------------------|----------------|-----------------------|-----------------|------------------|
| - | 802.11n (HT20) | 5180-5320 | 36 to 64 | 60 | OFDM | BPSK | 7.2 |
| - | 802.11n (HT20) | 5500-5700 | 100 to 140 | 140 | OFDM | BPSK | 7.2 |
| - | 802.11n (HT20) | 5745-5825 | 149 to 165 | 149 | OFDM | BPSK | 7.2 |

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.

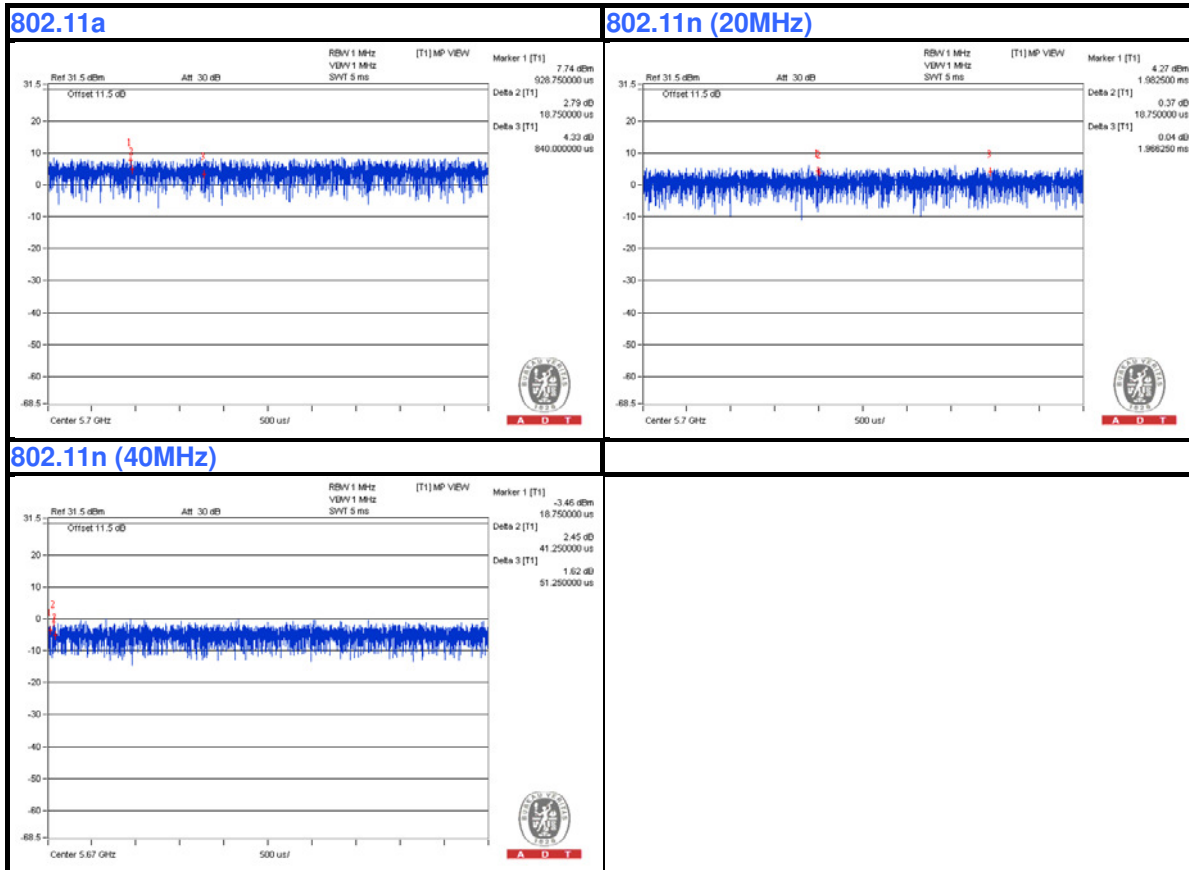
| EUT CONFIGURE MODE | MODE | FREQ. BAND (MHz) | AVAILABLE CHANNEL | TESTED CHANNEL | MODULATION TECHNOLOGY | MODULATION TYPE | DATA RATE (Mbps) |
|--------------------|----------------|------------------|-------------------|----------------|-----------------------|-----------------|------------------|
| - | 802.11a | 5180-5240 | 36 to 48 | 36, 40, 48 | OFDM | BPSK | 6.0 |
| - | 802.11n (HT20) | | 36 to 48 | 36, 40, 48 | OFDM | BPSK | 7.2 |
| - | 802.11n (HT40) | | 38 to 46 | 38, 46 | OFDM | BPSK | 15.0 |
| - | 802.11a | 5260-5320 | 52 to 64 | 52, 60, 64 | OFDM | BPSK | 6.0 |
| - | 802.11n (HT20) | | 52 to 64 | 52, 60, 64 | OFDM | BPSK | 7.2 |
| - | 802.11n (HT40) | | 54 to 62 | 54, 62 | OFDM | BPSK | 15.0 |
| - | 802.11a | 5500-5700 | 100 to 140 | 100, 116, 140 | OFDM | BPSK | 6.0 |
| - | 802.11n (HT20) | | 100 to 140 | 100, 116, 140 | OFDM | BPSK | 7.2 |
| - | 802.11n (HT40) | | 102 to 134 | 102, 110, 134 | OFDM | BPSK | 15.0 |
| - | 802.11a | 5745-5825 | 149 to 165 | 149, 157, 165 | OFDM | BPSK | 6.0 |
| - | 802.11n (HT20) | | 149 to 165 | 149, 157, 165 | OFDM | BPSK | 7.2 |
| - | 802.11n (HT40) | | 151 to 159 | 151, 159 | OFDM | BPSK | 15.0 |

Test Condition:

| APPLICABLE TO | ENVIRONMENTAL CONDITIONS | INPUT POWER | TESTED BY |
|-----------------------|--------------------------|--------------|-----------|
| RE _≥ 1G | 25deg. C, 65%RH | 120Vac, 60Hz | Ted Chang |
| RE _{<} 1G | 25deg. C, 65%RH | 120Vac, 60Hz | Ted Chang |
| PLC | 22deg. C, 65%RH | 120Vac, 60Hz | Brad Tung |
| APCM | 25deg. C, 65%RH | 120Vac, 60Hz | Nick Chen |

3.3 Duty Cycle of Test Signal

For 5180 ~ 5240MHz, 5260 ~ 5320MHz, 5500 ~ 5700MHz MHz
 Duty cycle of test signal is > 98 %, duty factor is not required.



For 5745 ~ 5825MHz

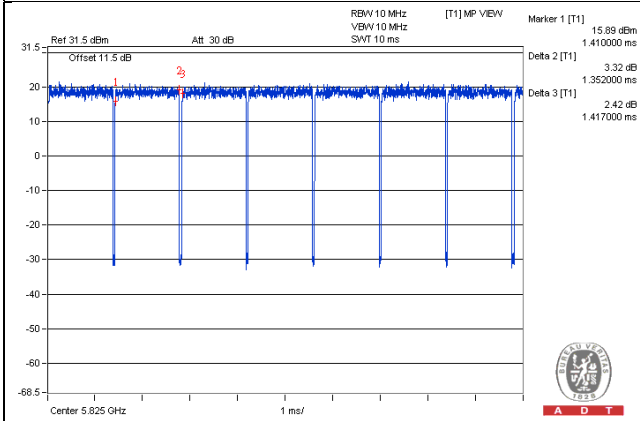
Duty cycle of test signal is < 98 %, duty factor is required

802.11a: Duty cycle = $1.352/1.417 = 0.954$, Duty factor = $10 * \log(1/0.954) = 0.20$

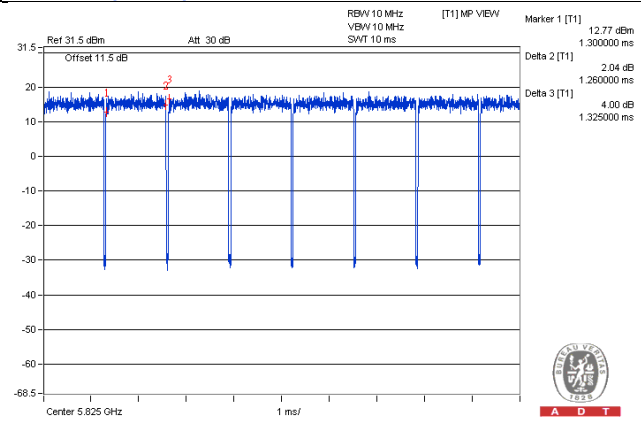
802.11n (HT20): Duty cycle = $1.26/1.325 = 0.951$, Duty factor = $10 * \log(1/0.951) = 0.22$

802.11n (HT40): Duty cycle = $0.619/0.667 = 0.928$, Duty factor = $10 * \log(1/0.928) = 0.32$

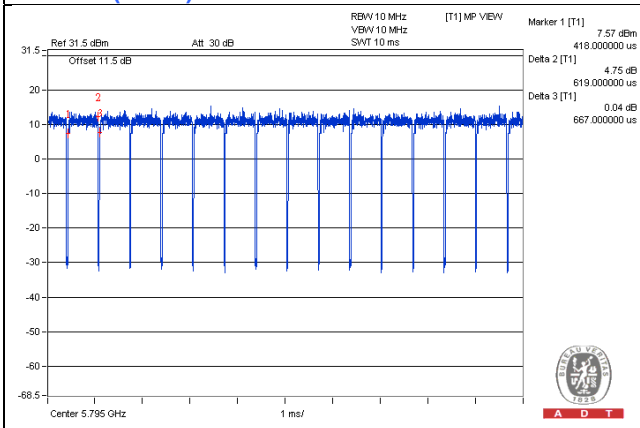
802.11a



802.11n (HT20)



802.11n (HT40)



3.4 Description of Support Units

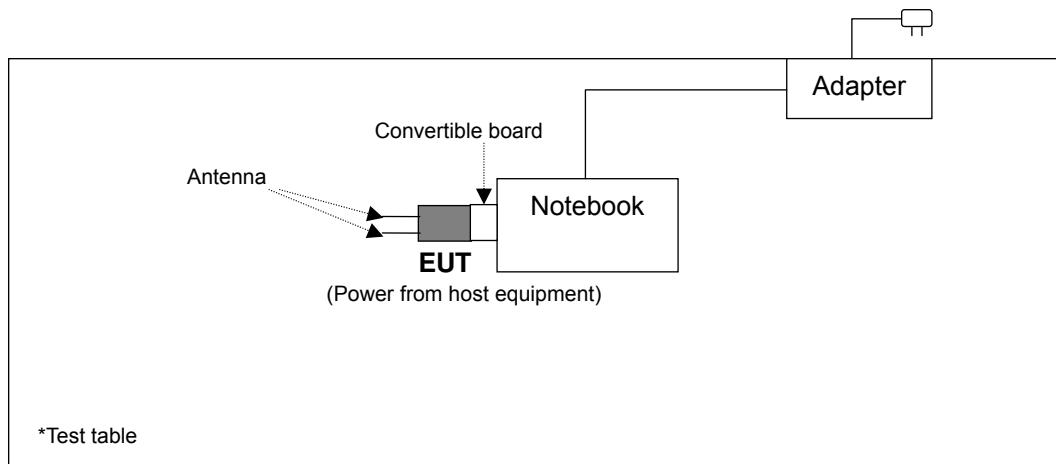
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

| ID | Product | Brand | Model No. | Serial No. | FCC ID | Remarks |
|----|-------------------|-------|-----------|------------------------------|--------------|---------|
| A. | Notebook | DELL | D531 | CN-0XM006-48643-81 U-2610 | QDS-BRCM1020 | - |
| B. | Convertible Board | NA | NA | NA | NA | - |

Note:

1. All power cords of the above support units are non-shielded (1.8m).
2. Item 1 acted as a communication partner to transfer data.
3. Item 2 was provided by the manufacturer.

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standard

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)
789033 D02 General UNII Test Procedure New Rules v01
662911 D01 Multiple Transmitter Output v02r01
 ANSI C63.10-2009

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

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

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table.

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

NOTE:

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

LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

| APPLICABLE TO | LIMIT | |
|------------------------------------------------------|------------------------------------------------------------------|------------------------------------------------------------------|
| 789033 D02 General UNII Test Procedure New Rules v01 | FIELD STRENGTH AT 3m | |
| | PK:74 (dBuV/m) | AV:54 (dBuV/m) |
| APPLICABLE TO | EIRP LIMIT | EQUIVALENT FIELD STRENGTH AT 3m |
| 15.407(b)(1) | PK:-27 (dBm/MHz) | PK:68.2(dBuV/m) |
| 15.407(b)(2) | | |
| 15.407(b)(3) | | |
| 15.407(b)(4) | PK:-27 (dBm/MHz) ^{*1} PK:-17 (dBm/MHz) ^{*2} | PK: 68.2(dBuV/m) ^{*1} PK:78.2 (dBuV/m) ^{*2} |

NOTE: ^{*1} beyond 10MHz of the band edge ^{*2} within 10 MHz of band edge

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

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

4.1.2 Test Instruments

For Tested Date: Jul. 11 ~ Jul. 12, 2013

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | DATE OF CALIBRATION | DUE DATE OF CALIBRATION |
|-----------------------------------------------------|------------------------------|----------------------|---------------------|-------------------------|
| Test Receiver ROHDE & SCHWARZ | ESIB7 | 100212 | Aug. 06, 2012 | Aug. 05, 2013 |
| Spectrum Analyzer ROHDE & SCHWARZ | FSP40 | 100039 | Jan. 31, 2013 | Jan. 30, 2014 |
| BILOG Antenna SCHWARZBECK | VULB9168 | 9168-160 | Mar. 20, 2013 | Mar. 19, 2014 |
| HORN Antenna SCHWARZBECK | 9120D | 209 | Sep. 03, 2012 | Sep. 02, 2013 |
| HORN Antenna SCHWARZBECK | BBHA 9120D | 9120D-404 | Dec. 22, 2012 | Dec. 21, 2013 |
| Preamplifier Agilent | 8447D | 2944A10633 | Oct. 25, 2012 | Oct. 24, 2013 |
| Preamplifier Agilent | 8449B | 3008A01964 | Oct. 25, 2012 | Oct. 24, 2013 |
| RF signal cable HUBER+SUHNNER | SUCOFLEX 104 | 250723/4 | Aug. 28, 2012 | Aug. 27, 2013 |
| RF signal cable HUBER+SUHNNER | SUCOFLEX 106 | 12738/6+309224/ 4 | Aug. 28, 2012 | Aug. 27, 2013 |
| Software BV ADT | ADT_Radiated_ V7.6.15.9.4 | 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 BV ADT | TT100 | TT93021703 | NA | NA |
| Turn Table Controller BV ADT | SC100 | SC93021703 | NA | NA |
| 26GHz ~ 40GHz Amplifier | EM26400 | 815221 | Oct. 25, 2012 | Oct. 24, 2013 |
| High Speed Peak Power Meter | ML2495A | 0824012 | Aug. 22, 2012 | Aug. 21, 2013 |
| Power Sensor | MA2411B | 0738171 | Jul. 30, 2012 | Jul. 29, 2013 |
| WIT Standard Temperature And Humidity Chamber | TH-4S-C | W981030 | Jun. 10, 2013 | Jun. 09, 2014 |

- 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.



A D T

For Tested Date: Apr. 21 ~ Apr. 24, 2015

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | DATE OF CALIBRATION | DUE DATE OF CALIBRATION |
|-----------------------------------------------------|------------------------------|-------------|---------------------|-------------------------|
| Test Receiver ROHDE & SCHWARZ | ESCI | 100424 | Oct. 06, 2014 | Oct. 05, 2015 |
| Spectrum Analyzer ROHDE & SCHWARZ | FSP40 | 100040 | Jul. 25, 2014 | Jul. 24, 2015 |
| BILOG Antenna SCHWARZBECK | VULB9168 | 9168-155 | Feb. 06, 2015 | Feb. 05, 2016 |
| HORN Antenna SCHWARZBECK | BBHA 9120D | 9120D-1170 | Feb. 05, 2015 | Feb. 04, 2016 |
| HORN Antenna SCHWARZBECK | BBHA 9170 | BBHA9170241 | Feb. 09, 2015 | Feb. 08, 2016 |
| Preamplifier Agilent | 8449B | 3008A01960 | Aug. 09, 2014 | Aug. 08, 2015 |
| Preamplifier Agilent | 8447D | 2944A10631 | Aug. 09, 2014 | Aug. 08, 2015 |
| RF signal cable HUBER+SUHNNER | SUCOFLEX 104 | 309220/4 | Aug. 09, 2014 | Aug. 08, 2015 |
| RF signal cable HUBER+SUHNNER | SUCOFLEX 104 | 250724/4 | Aug. 09, 2014 | Aug. 08, 2015 |
| RF signal cable HUBER+SUHNNER | SUCOFLEX 104 | 295012/4 | Aug. 09, 2014 | Aug. 08, 2015 |
| Software BV ADT | ADT_Radiated_ V7.6.15.9.4 | NA | NA | NA |
| Antenna Tower inn-co GmbH | MA 4000 | 010303 | NA | NA |
| Antenna Tower Controller BV ADT | AT100 | AT93021703 | NA | NA |
| Turn Table BV ADT | TT100. | TT93021703 | NA | NA |
| Turn Table Controller BV ADT | SC100. | SC93021703 | NA | NA |
| 26GHz ~ 40GHz Amplifier | EM26400 | 815221 | Oct. 18, 2014 | Oct. 17, 2015 |
| High Speed Peak Power Meter | ML2495A | 0824011 | Jul. 26, 2014 | Jul. 25, 2015 |
| Power Sensor | MA2411B | 0738171 | Jul. 26, 2014 | Jul. 25, 2015 |
| WIT Standard Temperature And Humidity Chamber | TH-4S-C | W981030 | Jun. 09, 2014 | Jun. 08, 2015 |

- NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 4.
4. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
5. The FCC Site Registration No. is 460141.
6. The IC Site Registration No. is IC7450F-4.

4.1.3 Test Procedure

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. 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 height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

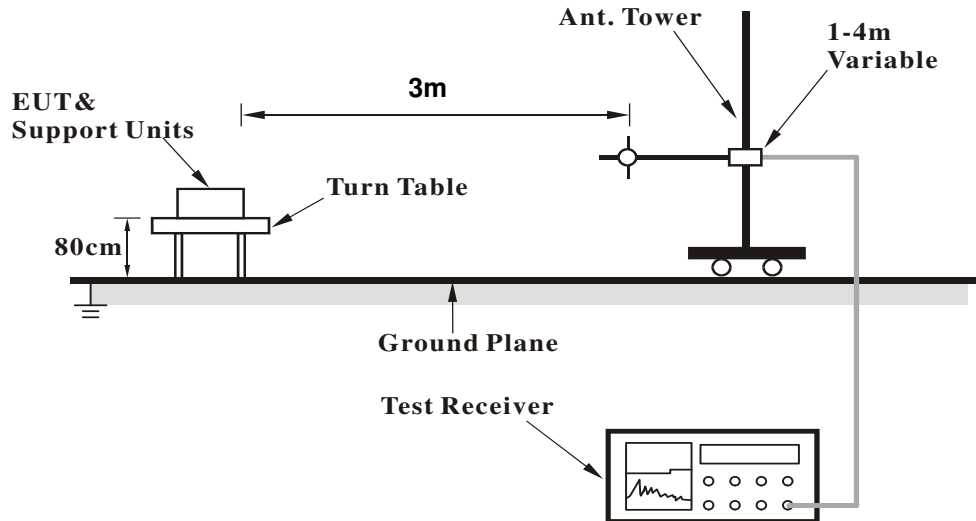
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average (Duty cycle < 98%) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor ($10 \log(1/\text{duty cycle})$).
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.
5. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

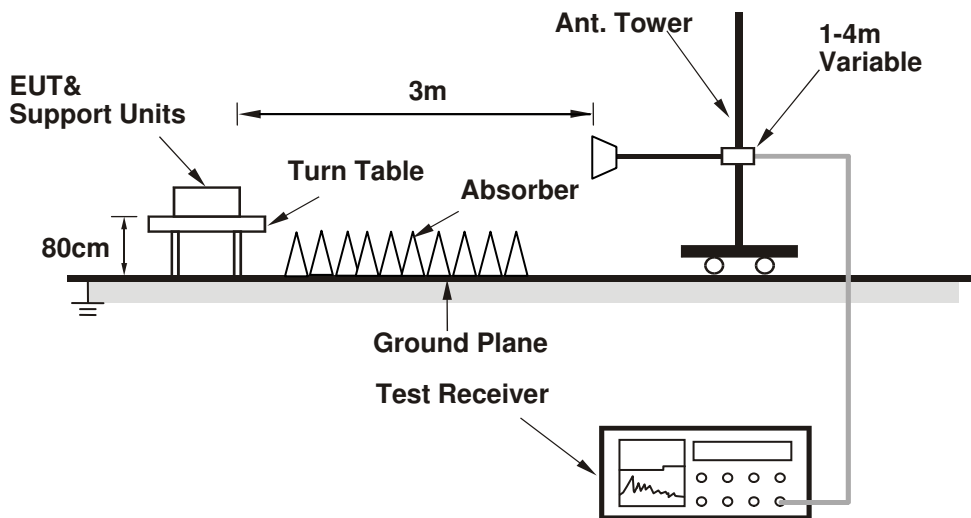
No deviation.

4.1.5 Test Setup

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



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

4.1.6 EUT Operating Conditions

- a. Plugged the EUT into a notebook through a convertible board and placed on a test table.
- b. The notebook ran a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.

4.1.7 Test Results
ABOVE 1GHz DATA :
802.11a

| 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 | 24deg. C, 65%RH | TESTED BY | Ted Chang |

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 | 59.0 PK | 74.0 | -15.0 | 1.27 H | 190 | 55.20 | 3.80 |
| 2 | 5150.00 | 43.2 AV | 54.0 | -10.8 | 1.27 H | 190 | 39.40 | 3.80 |
| 3 | *5180.00 | 99.6 PK | | | 1.21 H | 192 | 61.80 | 37.80 |
| 4 | *5180.00 | 89.0 AV | | | 1.21 H | 192 | 51.20 | 37.80 |
| 5 | #10360.00 | 56.6 PK | 74.0 | -17.4 | 1.00 H | 200 | 42.10 | 14.50 |
| 6 | #10360.00 | 42.6 AV | 54.0 | -11.4 | 1.00 H | 200 | 28.10 | 14.50 |

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

| NO. | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
|-----|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| 1 | 5150.00 | 60.0 PK | 74.0 | -14.0 | 1.00 V | 25 | 56.20 | 3.80 |
| 2 | 5150.00 | 44.8 AV | 54.0 | -9.2 | 1.00 V | 25 | 41.00 | 3.80 |
| 3 | *5180.00 | 110.9 PK | | | 1.00 V | 27 | 73.10 | 37.80 |
| 4 | *5180.00 | 100.3 AV | | | 1.00 V | 27 | 62.50 | 37.80 |
| 5 | #10360.00 | 57.9 PK | 74.0 | -16.1 | 1.00 V | 50 | 43.40 | 14.50 |
| 6 | #10360.00 | 44.2 AV | 54.0 | -9.8 | 1.00 V | 50 | 29.70 | 14.50 |

REMARKS:

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

| 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 | 24deg. C, 65%RH | TESTED BY | Ted Chang |

| 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 | 99.0 PK | | | 1.19 H | 190 | 61.20 | 37.80 |
| 2 | *5200.00 | 88.8 AV | | | 1.19 H | 190 | 51.00 | 37.80 |
| 3 | #10400.00 | 57.0 PK | 74.0 | -17.0 | 1.00 H | 205 | 42.30 | 14.70 |
| 4 | #10400.00 | 43.2 AV | 54.0 | -10.8 | 1.00 H | 205 | 28.50 | 14.70 |

| 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 | 110.9 PK | | | 1.00 V | 30 | 73.10 | 37.80 |
| 2 | *5200.00 | 100.2 AV | | | 1.00 V | 30 | 62.40 | 37.80 |
| 3 | #10400.00 | 58.2 PK | 74.0 | -15.8 | 1.00 V | 58 | 43.50 | 14.70 |
| 4 | #10400.00 | 44.8 AV | 54.0 | -9.2 | 1.00 V | 58 | 30.10 | 14.70 |

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 of the restricted band.

| 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 | 24deg. C, 65%RH | TESTED BY | Ted Chang |

| 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 | 100.0 PK | | | 1.40 H | 219 | 62.20 | 37.80 |
| 2 | *5240.00 | 89.1 AV | | | 1.40 H | 219 | 51.30 | 37.80 |
| 3 | 5350.00 | 58.4 PK | 74.0 | -15.6 | 1.38 H | 217 | 54.10 | 4.30 |
| 4 | 5350.00 | 42.8 AV | 54.0 | -11.2 | 1.38 H | 217 | 38.50 | 4.30 |
| 5 | #10480.00 | 56.6 PK | 74.0 | -17.4 | 1.00 H | 201 | 41.60 | 15.00 |
| 6 | #10480.00 | 42.8 AV | 54.0 | -11.2 | 1.00 H | 201 | 27.80 | 15.00 |

| 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 | 111.2 PK | | | 1.00 V | 148 | 73.40 | 37.80 |
| 2 | *5240.00 | 100.5 AV | | | 1.00 V | 148 | 62.70 | 37.80 |
| 3 | 5350.00 | 59.5 PK | 74.0 | -14.5 | 1.00 V | 143 | 55.20 | 4.30 |
| 4 | 5350.00 | 43.5 AV | 54.0 | -10.5 | 1.00 V | 143 | 39.20 | 4.30 |
| 5 | #10480.00 | 58.1 PK | 74.0 | -15.9 | 1.00 V | 56 | 43.10 | 15.00 |
| 6 | #10480.00 | 44.0 AV | 54.0 | -10.0 | 1.00 V | 56 | 29.00 | 15.00 |

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 of the restricted band.

| 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 | 25deg. C, 71%RH | TESTED BY | Ted Chang |

| 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 | 58.3 PK | 74.0 | -15.7 | 1.26 H | 219 | 54.50 | 3.80 |
| 2 | 5150.00 | 42.2 AV | 54.0 | -11.8 | 1.26 H | 219 | 38.40 | 3.80 |
| 3 | *5260.00 | 100.5 PK | | | 1.24 H | 211 | 62.60 | 37.90 |
| 4 | *5260.00 | 89.6 AV | | | 1.24 H | 211 | 51.70 | 37.90 |
| 5 | #10520.00 | 57.1 PK | 74.0 | -16.9 | 1.00 H | 205 | 42.10 | 15.00 |
| 6 | #10520.00 | 42.9 AV | 54.0 | -11.1 | 1.00 H | 205 | 27.90 | 15.00 |
| 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 | 59.4 PK | 74.0 | -14.6 | 1.00 V | 172 | 55.60 | 3.80 |
| 2 | 5150.00 | 43.9 AV | 54.0 | -10.1 | 1.00 V | 172 | 40.10 | 3.80 |
| 3 | *5260.00 | 111.7 PK | | | 1.00 V | 176 | 73.80 | 37.90 |
| 4 | *5260.00 | 100.8 AV | | | 1.00 V | 176 | 62.90 | 37.90 |
| 5 | #10520.00 | 58.3 PK | 74.0 | -15.7 | 1.00 V | 52 | 43.30 | 15.00 |
| 6 | #10520.00 | 44.5 AV | 54.0 | -9.5 | 1.00 V | 52 | 29.50 | 15.00 |

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 of the restricted band.

| 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 | 24deg. C, 65%RH | TESTED BY | Ted Chang |

| 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 | 101.0 PK | | | 1.00 H | 218 | 63.10 | 37.90 |
| 2 | *5300.00 | 89.6 AV | | | 1.00 H | 218 | 51.70 | 37.90 |
| 3 | 10600.00 | 57.7 PK | 74.0 | -16.3 | 1.00 H | 208 | 42.50 | 15.20 |
| 4 | 10600.00 | 43.5 AV | 54.0 | -10.5 | 1.00 H | 208 | 28.30 | 15.20 |
| 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 | 111.7 PK | | | 1.00 V | 146 | 73.80 | 37.90 |
| 2 | *5300.00 | 101.0 AV | | | 1.00 V | 146 | 63.10 | 37.90 |
| 3 | 10600.00 | 58.9 PK | 74.0 | -15.1 | 1.00 V | 50 | 43.70 | 15.20 |
| 4 | 10600.00 | 45.0 AV | 54.0 | -9.0 | 1.00 V | 50 | 29.80 | 15.20 |

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 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 | 25deg. C, 71%RH | TESTED BY | Ted Chang |

| 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 | 101.3 PK | | | 1.00 H | 211 | 63.30 | 38.00 |
| 2 | *5320.00 | 90.6 AV | | | 1.00 H | 211 | 52.60 | 38.00 |
| 3 | 5350.00 | 60.4 PK | 74.0 | -13.6 | 1.00 H | 210 | 56.10 | 4.30 |
| 4 | 5350.00 | 44.5 AV | 54.0 | -9.5 | 1.00 H | 210 | 40.20 | 4.30 |
| 5 | 10640.00 | 57.2 PK | 74.0 | -16.8 | 1.00 H | 200 | 41.90 | 15.30 |
| 6 | 10640.00 | 43.2 AV | 54.0 | -10.8 | 1.00 H | 200 | 27.90 | 15.30 |
| 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 | 110.9 PK | | | 1.00 V | 150 | 72.90 | 38.00 |
| 2 | *5320.00 | 100.8 AV | | | 1.00 V | 150 | 62.80 | 38.00 |
| 3 | 5350.00 | 62.2 PK | 74.0 | -11.8 | 1.00 V | 151 | 57.90 | 4.30 |
| 4 | 5350.00 | 46.0 AV | 54.0 | -8.0 | 1.00 V | 151 | 41.70 | 4.30 |
| 5 | 10640.00 | 58.4 PK | 74.0 | -15.6 | 1.00 V | 51 | 43.10 | 15.30 |
| 6 | 10640.00 | 44.8 AV | 54.0 | -9.2 | 1.00 V | 51 | 29.50 | 15.30 |

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 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 | 25deg. C, 71%RH | TESTED BY | Ted Chang |

| 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 | 57.5 PK | 74.0 | -16.5 | 1.02 H | 176 | 53.00 | 4.50 |
| 2 | 5460.00 | 43.9 AV | 54.0 | -10.1 | 1.02 H | 176 | 39.40 | 4.50 |
| 3 | #5470.00 | 60.5 PK | 74.0 | -13.5 | 1.02 H | 176 | 56.10 | 4.40 |
| 4 | #5470.00 | 46.5 AV | 54.0 | -7.5 | 1.02 H | 176 | 42.10 | 4.40 |
| 5 | *5500.00 | 100.3 PK | | | 1.02 H | 178 | 62.00 | 38.30 |
| 6 | *5500.00 | 89.1 AV | | | 1.02 H | 178 | 50.80 | 38.30 |
| 7 | 11000.00 | 57.6 PK | 74.0 | -16.4 | 1.00 H | 208 | 41.60 | 16.00 |
| 8 | 11000.00 | 42.5 AV | 54.0 | -11.5 | 1.00 H | 208 | 26.50 | 16.00 |

| 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 | 58.7 PK | 74.0 | -15.3 | 1.08 V | 138 | 54.20 | 4.50 |
| 2 | 5460.00 | 45.4 AV | 54.0 | -8.6 | 1.08 V | 138 | 40.90 | 4.50 |
| 3 | #5470.00 | 61.4 PK | 74.0 | -12.6 | 1.08 V | 138 | 57.00 | 4.40 |
| 4 | #5470.00 | 47.0 AV | 54.0 | -7.0 | 1.08 V | 138 | 42.60 | 4.40 |
| 5 | *5500.00 | 111.8 PK | | | 1.06 V | 138 | 73.50 | 38.30 |
| 6 | *5500.00 | 100.8 AV | | | 1.06 V | 138 | 62.50 | 38.30 |
| 7 | 11000.00 | 58.8 PK | 74.0 | -15.2 | 1.00 V | 210 | 42.80 | 16.00 |
| 8 | 11000.00 | 44.1 AV | 54.0 | -9.9 | 1.00 V | 210 | 28.10 | 16.00 |

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 of the restricted band.

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|-----------------|--------------------|---------------------------|
| CHANNEL | Channel 116 | FREQUENCY RANGE | 1 ~ 40GHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 25deg. C, 71%RH | TESTED BY | Ted Chang |

| 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 | *5580.00 | 100.8 PK | | | 1.00 H | 197 | 62.40 | 38.40 |
| 2 | *5580.00 | 89.6 AV | | | 1.00 H | 197 | 51.20 | 38.40 |
| 3 | 11160.00 | 58.2 PK | 74.0 | -15.8 | 1.00 H | 201 | 42.20 | 16.00 |
| 4 | 11160.00 | 43.1 AV | 54.0 | -10.9 | 1.00 H | 201 | 27.10 | 16.00 |
| 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 | *5580.00 | 111.8 PK | | | 1.12 V | 177 | 73.40 | 38.40 |
| 2 | *5580.00 | 100.8 AV | | | 1.12 V | 177 | 62.40 | 38.40 |
| 3 | 11160.00 | 59.3 PK | 74.0 | -14.7 | 1.00 V | 214 | 43.30 | 16.00 |
| 4 | 11160.00 | 44.7 AV | 54.0 | -9.3 | 1.00 V | 214 | 28.70 | 16.00 |

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 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 | 25deg. C, 65%RH | TESTED BY | Ted Chang |

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 | 102.9 PK | | | 1.13 H | 196 | 64.30 | 38.60 |
| 2 | *5700.00 | 91.6 AV | | | 1.13 H | 196 | 53.00 | 38.60 |
| 3 | #5725.00 | 57.0 PK | 74.0 | -17.0 | 1.10 H | 186 | 52.20 | 4.80 |
| 4 | #5725.00 | 46.0 AV | 54.0 | -8.0 | 1.10 H | 186 | 41.20 | 4.80 |
| 5 | 11400.00 | 61.8 PK | 74.0 | -12.2 | 1.54 H | 118 | 45.90 | 15.90 |
| 6 | 11400.00 | 46.7 AV | 54.0 | -7.3 | 1.54 H | 118 | 30.80 | 15.90 |

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

| NO. | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
|-----|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| 1 | *5700.00 | 110.9 PK | | | 1.00 V | 181 | 72.30 | 38.60 |
| 2 | *5700.00 | 100.1 AV | | | 1.00 V | 181 | 61.50 | 38.60 |
| 3 | #5725.00 | 64.8 PK | 74.0 | -9.2 | 1.00 V | 181 | 60.00 | 4.80 |
| 4 | #5725.00 | 50.0 AV | 54.0 | -4.0 | 1.00 V | 181 | 45.20 | 4.80 |
| 5 | 11400.00 | 62.9 PK | 74.0 | -11.1 | 1.54 V | 187 | 47.00 | 15.90 |
| 6 | 11400.00 | 48.7 AV | 54.0 | -5.3 | 1.54 V | 187 | 32.80 | 15.90 |

REMARKS:

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

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|-----------------|--------------------|---------------------------|
| CHANNEL | Channel 149 | FREQUENCY RANGE | 1 ~ 40GHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 25deg. C, 65%RH | TESTED BY | Chris Lin |

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 | #5714.00 | 57.3 PK | 74.0 | -16.7 | 1.08 H | 350 | 51.00 | 6.30 |
| 2 | #5714.00 | 44.0 AV | 54.0 | -10.0 | 1.08 H | 350 | 37.70 | 6.30 |
| 3 | #5722.00 | 57.6 PK | 78.2 | -20.6 | 1.10 H | 330 | 51.30 | 6.30 |
| 4 | #5725.00 | 52.3 PK | 78.2 | -25.9 | 1.04 H | 324 | 46.00 | 6.30 |
| 5 | *5745.00 | 97.3 PK | | | 1.50 H | 99 | 57.00 | 40.30 |
| 6 | *5745.00 | 86.5 AV | | | 1.50 H | 99 | 46.20 | 40.30 |
| 7 | 11490.00 | 58.2 PK | 74.0 | -15.8 | 1.55 H | 223 | 41.00 | 17.20 |
| 8 | 11490.00 | 45.0 AV | 54.0 | -9.0 | 1.55 H | 223 | 27.80 | 17.20 |

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 | #5714.00 | 60.0 PK | 74.0 | -14.0 | 1.02 V | 330 | 53.70 | 6.30 |
| 2 | #5714.00 | 46.6 AV | 54.0 | -7.4 | 1.02 V | 330 | 40.30 | 6.30 |
| 3 | #5722.00 | 68.3 PK | 78.2 | -9.9 | 1.08 V | 340 | 62.00 | 6.30 |
| 4 | #5725.00 | 61.8 PK | 78.2 | -16.4 | 1.08 V | 325 | 55.50 | 6.30 |
| 5 | *5745.00 | 109.8 PK | | | 1.00 V | 335 | 69.50 | 40.30 |
| 6 | *5745.00 | 99.2 AV | | | 1.00 V | 335 | 58.90 | 40.30 |
| 7 | 11490.00 | 59.1 PK | 74.0 | -14.9 | 1.18 V | 54 | 41.90 | 17.20 |
| 8 | 11490.00 | 45.1 AV | 54.0 | -8.9 | 1.18 V | 54 | 27.90 | 17.20 |

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 of the restricted band.

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

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 | 97.9 PK | | | 1.00 H | 326 | 57.50 | 40.40 |
| 2 | *5785.00 | 87.3 AV | | | 1.00 H | 326 | 46.90 | 40.40 |
| 3 | 11570.00 | 57.6 PK | 74.0 | -16.4 | 1.56 H | 98 | 40.30 | 17.30 |
| 4 | 11570.00 | 44.7 AV | 54.0 | -9.3 | 1.56 H | 98 | 27.40 | 17.30 |

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 | 108.9 PK | | | 1.00 V | 19 | 68.50 | 40.40 |
| 2 | *5785.00 | 98.6 AV | | | 1.00 V | 19 | 58.20 | 40.40 |
| 3 | 11570.00 | 59.2 PK | 74.0 | -14.8 | 1.55 V | 223 | 41.90 | 17.30 |
| 4 | 11570.00 | 45.2 AV | 54.0 | -8.8 | 1.55 V | 223 | 27.90 | 17.30 |

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 of the restricted band.

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|---------------------------------|-----------------|--------------------------|---------------------------|
| CHANNEL | Channel 165 | FREQUENCY RANGE | 1 ~ 40GHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 25deg. C, 65%RH | TESTED BY | Chris Lin |

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 | 97.6 PK | | | 1.00 H | 322 | 57.10 | 40.50 |
| 2 | *5825.00 | 87.9 AV | | | 1.00 H | 322 | 47.40 | 40.50 |
| 3 | #5850.00 | 43.6 PK | 78.2 | -34.6 | 1.11 H | 304 | 37.00 | 6.60 |
| 4 | #5853.00 | 56.7 PK | 78.2 | -21.5 | 1.08 H | 74 | 50.10 | 6.60 |
| 5 | #5861.00 | 57.2 PK | 74.0 | -16.8 | 1.02 H | 333 | 50.60 | 6.60 |
| 6 | #5861.00 | 44.0 AV | 54.0 | -10.0 | 1.02 H | 333 | 37.40 | 6.60 |
| 7 | 11650.00 | 57.9 PK | 74.0 | -16.1 | 1.55 H | 201 | 40.20 | 17.70 |
| 8 | 11650.00 | 45.6 AV | 54.0 | -8.4 | 1.55 H | 201 | 27.90 | 17.70 |

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 | 109.4 PK | | | 1.03 V | 0 | 68.90 | 40.50 |
| 2 | *5825.00 | 98.7 AV | | | 1.03 V | 0 | 58.20 | 40.50 |
| 3 | #5850.00 | 52.5 PK | 78.2 | -25.7 | 1.55 V | 230 | 45.90 | 6.60 |
| 4 | #5853.00 | 59.4 PK | 78.2 | -18.8 | 1.10 V | 16 | 52.80 | 6.60 |
| 5 | #5861.00 | 57.9 PK | 74.0 | -16.1 | 1.10 V | 10 | 51.30 | 6.60 |
| 6 | #5861.00 | 45.6 AV | 54.0 | -8.4 | 1.10 V | 10 | 39.00 | 6.60 |
| 7 | 11650.00 | 58.9 PK | 74.0 | -15.1 | 1.55 V | 203 | 41.20 | 17.70 |
| 8 | 11650.00 | 45.2 AV | 54.0 | -8.8 | 1.55 V | 203 | 27.50 | 17.70 |

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 of the restricted band.

802.11n (HT20)

| 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 | 25deg. C, 65%RH | TESTED BY | Ted Chang |

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 | 59.4 PK | 74.0 | -14.6 | 1.02 H | 147 | 55.60 | 3.80 |
| 2 | 5150.00 | 44.0 AV | 54.0 | -10.0 | 1.02 H | 147 | 40.20 | 3.80 |
| 3 | *5180.00 | 98.0 PK | | | 1.00 H | 160 | 60.20 | 37.80 |
| 4 | *5180.00 | 87.7 AV | | | 1.00 H | 160 | 49.90 | 37.80 |
| 5 | #10360.00 | 59.4 PK | 74.0 | -14.6 | 1.62 H | 188 | 44.90 | 14.50 |
| 6 | #10360.00 | 46.0 AV | 54.0 | -8.0 | 1.62 H | 188 | 31.50 | 14.50 |

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

| NO. | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
|-----|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| 1 | 5150.00 | 57.9 PK | 74.0 | -16.1 | 1.13 V | 170 | 54.10 | 3.80 |
| 2 | 5150.00 | 43.2 AV | 54.0 | -10.8 | 1.13 V | 170 | 39.40 | 3.80 |
| 3 | *5180.00 | 111.5 PK | | | 1.13 V | 174 | 73.70 | 37.80 |
| 4 | *5180.00 | 101.2 AV | | | 1.13 V | 174 | 63.40 | 37.80 |
| 5 | #10360.00 | 63.4 PK | 74.0 | -10.6 | 1.04 V | 184 | 48.90 | 14.50 |
| 6 | #10360.00 | 47.4 AV | 54.0 | -6.6 | 1.04 V | 184 | 32.90 | 14.50 |

REMARKS:

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

| 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 | 25deg. C, 65%RH | TESTED BY | Ted Chang |

| 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 | 99.6 PK | | | 1.24 H | 290 | 61.80 | 37.80 |
| 2 | *5200.00 | 89.1 AV | | | 1.24 H | 290 | 51.30 | 37.80 |
| 3 | #10400.00 | 59.3 PK | 74.0 | -14.7 | 1.62 H | 307 | 44.60 | 14.70 |
| 4 | #10400.00 | 45.6 AV | 54.0 | -8.4 | 1.62 H | 307 | 30.90 | 14.70 |

| 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 | 111.9 PK | | | 1.00 V | 0 | 74.10 | 37.80 |
| 2 | *5200.00 | 102.0 AV | | | 1.00 V | 0 | 64.20 | 37.80 |
| 3 | #10400.00 | 63.5 PK | 74.0 | -10.5 | 1.49 V | 301 | 48.80 | 14.70 |
| 4 | #10400.00 | 47.6 AV | 54.0 | -6.4 | 1.49 V | 301 | 32.90 | 14.70 |

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 of the restricted band.

| 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 | 25deg. C, 65%RH | TESTED BY | Ted Chang |

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 | 98.4 PK | | | 1.00 H | 126 | 60.60 | 37.80 |
| 2 | *5240.00 | 88.2 AV | | | 1.00 H | 126 | 50.40 | 37.80 |
| 3 | 5350.00 | 59.5 PK | 74.0 | -14.5 | 1.00 H | 130 | 55.20 | 4.30 |
| 4 | 5350.00 | 47.0 AV | 54.0 | -7.0 | 1.00 H | 130 | 42.70 | 4.30 |
| 5 | #10480.00 | 60.8 PK | 74.0 | -13.2 | 1.59 H | 354 | 45.80 | 15.00 |
| 6 | #10480.00 | 46.5 AV | 54.0 | -7.5 | 1.59 H | 354 | 31.50 | 15.00 |

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 | 111.7 PK | | | 1.00 V | 2 | 73.90 | 37.80 |
| 2 | *5240.00 | 101.5 AV | | | 1.00 V | 2 | 63.70 | 37.80 |
| 3 | 5350.00 | 61.0 PK | 74.0 | -13.0 | 1.07 V | 154 | 56.70 | 4.30 |
| 4 | 5350.00 | 47.9 AV | 54.0 | -6.1 | 1.07 V | 154 | 43.60 | 4.30 |
| 5 | #10480.00 | 63.2 PK | 74.0 | -10.8 | 1.95 V | 182 | 48.20 | 15.00 |
| 6 | #10480.00 | 47.7 AV | 54.0 | -6.3 | 1.95 V | 182 | 32.70 | 15.00 |

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 of the restricted band.

| 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 | 25deg. C, 65%RH | TESTED BY | Ted Chang |

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 | 58.6 PK | 74.0 | -15.4 | 1.06 H | 320 | 54.80 | 3.80 |
| 2 | 5150.00 | 46.0 AV | 54.0 | -8.0 | 1.06 H | 320 | 42.20 | 3.80 |
| 3 | *5260.00 | 98.8 PK | | | 1.00 H | 217 | 60.90 | 37.90 |
| 4 | *5260.00 | 88.1 AV | | | 1.00 H | 217 | 50.20 | 37.90 |
| 5 | #10520.00 | 59.9 PK | 74.0 | -14.1 | 1.93 H | 187 | 44.90 | 15.00 |
| 6 | #10520.00 | 46.8 AV | 54.0 | -7.2 | 1.93 H | 187 | 31.80 | 15.00 |

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 | 61.3 PK | 74.0 | -12.7 | 1.00 V | 184 | 57.50 | 3.80 |
| 2 | 5150.00 | 47.4 AV | 54.0 | -6.6 | 1.00 V | 184 | 43.60 | 3.80 |
| 3 | *5260.00 | 112.6 PK | | | 1.00 V | 174 | 74.70 | 37.90 |
| 4 | *5260.00 | 102.7 AV | | | 1.00 V | 174 | 64.80 | 37.90 |
| 5 | #10520.00 | 64.8 PK | 74.0 | -9.2 | 1.84 V | 269 | 49.80 | 15.00 |
| 6 | #10520.00 | 48.0 AV | 54.0 | -6.0 | 1.84 V | 269 | 33.00 | 15.00 |

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 of the restricted band.

| 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 | 25deg. C, 65%RH | TESTED BY | Ted Chang |

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 | 98.6 PK | | | 1.00 H | 217 | 60.70 | 37.90 |
| 2 | *5300.00 | 88.7 AV | | | 1.00 H | 217 | 50.80 | 37.90 |
| 3 | 10600.00 | 60.7 PK | 74.0 | -13.3 | 1.61 H | 204 | 45.50 | 15.20 |
| 4 | 10600.00 | 46.7 AV | 54.0 | -7.3 | 1.61 H | 204 | 31.50 | 15.20 |

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 | 111.9 PK | | | 1.00 V | 0 | 74.00 | 37.90 |
| 2 | *5300.00 | 101.8 AV | | | 1.00 V | 0 | 63.90 | 37.90 |
| 3 | 10600.00 | 65.0 PK | 74.0 | -9.0 | 1.63 V | 204 | 49.80 | 15.20 |
| 4 | 10600.00 | 49.1 AV | 54.0 | -4.9 | 1.63 V | 204 | 33.90 | 15.20 |

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 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 | 25deg. C, 65%RH | TESTED BY | Ted Chang |

| 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 | 98.1 PK | | | 1.23 H | 217 | 60.10 | 38.00 |
| 2 | *5320.00 | 87.6 AV | | | 1.23 H | 217 | 49.60 | 38.00 |
| 3 | 5350.00 | 59.0 PK | 74.0 | -15.0 | 1.03 H | 62 | 54.70 | 4.30 |
| 4 | 5350.00 | 45.9 AV | 54.0 | -8.1 | 1.03 H | 62 | 41.60 | 4.30 |
| 5 | 10640.00 | 61.1 PK | 74.0 | -12.9 | 1.25 H | 254 | 45.80 | 15.30 |
| 6 | 10640.00 | 46.8 AV | 54.0 | -7.2 | 1.25 H | 254 | 31.50 | 15.30 |

| 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 | 112.5 PK | | | 1.00 V | 174 | 74.50 | 38.00 |
| 2 | *5320.00 | 101.8 AV | | | 1.00 V | 174 | 63.80 | 38.00 |
| 3 | 5350.00 | 57.1 PK | 74.0 | -16.9 | 1.10 V | 0 | 52.80 | 4.30 |
| 4 | 5350.00 | 48.1 AV | 54.0 | -5.9 | 1.10 V | 0 | 43.80 | 4.30 |
| 5 | 10640.00 | 64.8 PK | 74.0 | -9.2 | 1.22 V | 248 | 49.50 | 15.30 |
| 6 | 10640.00 | 48.3 AV | 54.0 | -5.7 | 1.22 V | 248 | 33.00 | 15.30 |

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 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 | 25deg. C, 65%RH | TESTED BY | Ted Chang |

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 | 55.7 PK | 74.0 | -18.3 | 1.24 H | 221 | 51.20 | 4.50 |
| 2 | 5460.00 | 42.7 AV | 54.0 | -11.3 | 1.24 H | 221 | 38.20 | 4.50 |
| 3 | #5470.00 | 57.9 PK | 74.0 | -16.1 | 1.32 H | 251 | 53.50 | 4.40 |
| 4 | #5470.00 | 43.8 AV | 54.0 | -10.2 | 1.32 H | 251 | 39.40 | 4.40 |
| 5 | *5500.00 | 97.6 PK | | | 1.00 H | 215 | 59.30 | 38.30 |
| 6 | *5500.00 | 87.3 AV | | | 1.00 H | 215 | 49.00 | 38.30 |
| 7 | 11000.00 | 60.8 PK | 74.0 | -13.2 | 1.24 H | 259 | 44.80 | 16.00 |
| 8 | 11000.00 | 46.8 AV | 54.0 | -7.2 | 1.24 H | 259 | 30.80 | 16.00 |

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 | 54.4 PK | 74.0 | -19.6 | 1.00 V | 2 | 49.90 | 4.50 |
| 2 | 5460.00 | 42.7 AV | 54.0 | -11.3 | 1.00 V | 2 | 38.20 | 4.50 |
| 3 | #5470.00 | 59.8 PK | 74.0 | -14.2 | 1.00 V | 8 | 55.40 | 4.40 |
| 4 | #5470.00 | 46.4 AV | 54.0 | -7.6 | 1.00 V | 8 | 42.00 | 4.40 |
| 5 | *5500.00 | 112.0 PK | | | 1.11 V | 179 | 73.70 | 38.30 |
| 6 | *5500.00 | 101.7 AV | | | 1.11 V | 179 | 63.40 | 38.30 |
| 7 | 11000.00 | 65.2 PK | 74.0 | -8.8 | 1.69 V | 321 | 49.20 | 16.00 |
| 8 | 11000.00 | 49.7 AV | 54.0 | -4.3 | 1.69 V | 321 | 33.70 | 16.00 |

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 of the restricted band.

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|-----------------|--------------------|---------------------------|
| CHANNEL | Channel 116 | FREQUENCY RANGE | 1 ~ 40GHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 25deg. C, 65%RH | TESTED BY | Ted Chang |

| 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 | *5580.00 | 98.7 PK | | | 1.00 H | 163 | 60.30 | 38.40 |
| 2 | *5580.00 | 88.5 AV | | | 1.00 H | 163 | 50.10 | 38.40 |
| 3 | 11160.00 | 61.4 PK | 74.0 | -12.6 | 1.00 H | 61 | 45.40 | 16.00 |
| 4 | 11160.00 | 47.5 AV | 54.0 | -6.5 | 1.00 H | 61 | 31.50 | 16.00 |

| 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 | *5580.00 | 112.3 PK | | | 1.46 V | 349 | 73.90 | 38.40 |
| 2 | *5580.00 | 102.2 AV | | | 1.46 V | 349 | 63.80 | 38.40 |
| 3 | 11160.00 | 64.5 PK | 74.0 | -9.5 | 1.00 V | 214 | 48.50 | 16.00 |
| 4 | 11160.00 | 48.9 AV | 54.0 | -5.1 | 1.00 V | 214 | 32.90 | 16.00 |

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 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 | 25deg. C, 65%RH | TESTED BY | Ted Chang |

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 | 98.1 PK | | | 1.00 H | 174 | 59.50 | 38.60 |
| 2 | *5700.00 | 87.8 AV | | | 1.00 H | 174 | 49.20 | 38.60 |
| 3 | #5725.00 | 59.6 PK | 74.0 | -14.4 | 1.54 H | 255 | 54.80 | 4.80 |
| 4 | #5725.00 | 47.4 AV | 54.0 | -6.6 | 1.54 H | 255 | 42.60 | 4.80 |
| 5 | 11400.00 | 61.0 PK | 74.0 | -13.0 | 1.62 H | 51 | 45.10 | 15.90 |
| 6 | 11400.00 | 47.4 AV | 54.0 | -6.6 | 1.62 H | 51 | 31.50 | 15.90 |

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

| NO. | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
|-----|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| 1 | *5700.00 | 112.1 PK | | | 1.00 V | 182 | 73.50 | 38.60 |
| 2 | *5700.00 | 102.1 AV | | | 1.00 V | 182 | 63.50 | 38.60 |
| 3 | #5725.00 | 67.1 PK | 74.0 | -6.9 | 1.24 V | 158 | 62.30 | 4.80 |
| 4 | #5725.00 | 51.1 AV | 54.0 | -2.9 | 1.24 V | 158 | 46.30 | 4.80 |
| 5 | 11400.00 | 64.2 PK | 74.0 | -9.8 | 1.57 V | 64 | 48.30 | 15.90 |
| 6 | 11400.00 | 49.7 AV | 54.0 | -4.3 | 1.57 V | 64 | 33.80 | 15.90 |

REMARKS:

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

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|-----------------|--------------------|---------------------------|
| CHANNEL | Channel 149 | FREQUENCY RANGE | 1 ~ 40GHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 25deg. C, 65%RH | TESTED BY | Chris Lin |

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 | #5714.00 | 57.9 PK | 74.0 | -16.1 | 1.55 H | 120 | 51.60 | 6.30 |
| 2 | #5714.00 | 44.2 AV | 54.0 | -9.8 | 1.55 H | 120 | 37.90 | 6.30 |
| 3 | #5722.00 | 58.2 PK | 78.2 | -20.0 | 1.05 H | 130 | 51.90 | 6.30 |
| 4 | #5725.00 | 53.2 PK | 78.2 | -25.0 | 1.19 H | 134 | 46.90 | 6.30 |
| 5 | *5745.00 | 97.2 PK | | | 1.00 H | 110 | 56.90 | 40.30 |
| 6 | *5745.00 | 87.4 AV | | | 1.00 H | 110 | 47.10 | 40.30 |
| 7 | 11490.00 | 58.2 PK | 74.0 | -15.8 | 1.39 H | 87 | 41.00 | 17.20 |
| 8 | 11490.00 | 45.0 AV | 54.0 | -9.0 | 1.39 H | 87 | 27.80 | 17.20 |

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 | #5714.00 | 58.9 PK | 74.0 | -15.1 | 1.30 V | 335 | 52.60 | 6.30 |
| 2 | #5714.00 | 46.8 AV | 54.0 | -7.2 | 1.30 V | 335 | 40.50 | 6.30 |
| 3 | #5722.00 | 65.3 PK | 78.2 | -12.9 | 1.30 V | 320 | 59.00 | 6.30 |
| 4 | #5725.00 | 61.0 PK | 78.2 | -17.2 | 1.17 V | 318 | 54.70 | 6.30 |
| 5 | *5745.00 | 109.2 PK | | | 1.25 V | 332 | 68.90 | 40.30 |
| 6 | *5745.00 | 100.2 AV | | | 1.25 V | 332 | 59.90 | 40.30 |
| 7 | 11490.00 | 58.7 PK | 74.0 | -15.3 | 1.55 V | 223 | 41.50 | 17.20 |
| 8 | 11490.00 | 45.1 AV | 54.0 | -8.9 | 1.55 V | 223 | 27.90 | 17.20 |

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 of the restricted band.

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

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 | 96.8 PK | | | 1.00 H | 330 | 56.40 | 40.40 |
| 2 | *5785.00 | 86.5 AV | | | 1.00 H | 330 | 46.10 | 40.40 |
| 3 | 11570.00 | 57.8 PK | 74.0 | -16.2 | 1.36 H | 98 | 40.50 | 17.30 |
| 4 | 11570.00 | 45.2 AV | 54.0 | -8.8 | 1.36 H | 98 | 27.90 | 17.30 |

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 | 109.2 PK | | | 1.00 V | 153 | 68.80 | 40.40 |
| 2 | *5785.00 | 99.4 AV | | | 1.00 V | 153 | 59.00 | 40.40 |
| 3 | 11570.00 | 58.9 PK | 74.0 | -15.1 | 1.56 V | 302 | 41.60 | 17.30 |
| 4 | 11570.00 | 45.2 AV | 54.0 | -8.8 | 1.56 V | 302 | 27.90 | 17.30 |

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 of the restricted band.

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|---------------------------------|-----------------|--------------------------|---------------------------|
| CHANNEL | Channel 165 | FREQUENCY RANGE | 1 ~ 40GHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 25deg. C, 65%RH | TESTED BY | Chris Lin |

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 | 96.6 PK | | | 1.00 H | 322 | 56.10 | 40.50 |
| 2 | *5825.00 | 87.0 AV | | | 1.00 H | 322 | 46.50 | 40.50 |
| 3 | #5850.00 | 46.5 PK | 78.2 | -31.7 | 1.18 H | 317 | 39.90 | 6.60 |
| 4 | #5853.00 | 57.0 PK | 78.2 | -21.2 | 1.11 H | 340 | 50.40 | 6.60 |
| 5 | #5861.00 | 57.3 PK | 74.0 | -16.7 | 1.01 H | 330 | 50.70 | 6.60 |
| 6 | #5861.00 | 45.6 AV | 54.0 | -8.4 | 1.01 H | 330 | 39.00 | 6.60 |
| 7 | 11650.00 | 58.2 PK | 74.0 | -15.8 | 1.56 H | 20 | 40.50 | 17.70 |
| 8 | 11650.00 | 45.3 AV | 54.0 | -8.7 | 1.56 H | 20 | 27.60 | 17.70 |

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 | 109.7 PK | | | 1.30 V | 46 | 69.20 | 40.50 |
| 2 | *5825.00 | 99.0 AV | | | 1.30 V | 46 | 58.50 | 40.50 |
| 3 | #5850.00 | 53.5 PK | 78.2 | -24.7 | 1.50 V | 60 | 46.90 | 6.60 |
| 4 | #5853.00 | 59.1 PK | 78.2 | -19.1 | 1.17 V | 51 | 52.50 | 6.60 |
| 5 | #5861.00 | 59.6 PK | 74.0 | -14.4 | 1.35 V | 50 | 53.00 | 6.60 |
| 6 | #5861.00 | 47.1 AV | 54.0 | -6.9 | 1.35 V | 50 | 40.50 | 6.60 |
| 7 | 11650.00 | 59.2 PK | 74.0 | -14.8 | 1.36 V | 98 | 41.50 | 17.70 |
| 8 | 11650.00 | 45.7 AV | 54.0 | -8.3 | 1.36 V | 98 | 28.00 | 17.70 |

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 of the restricted band.

802.11n (HT40)

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|-----------------|--------------------|---------------------------|
| CHANNEL | Channel 38 | FREQUENCY RANGE | 1 ~ 40GHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 25deg. C, 65%RH | TESTED BY | Ted Chang |

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 | 66.0 PK | 74.0 | -8.0 | 1.32 H | 158 | 62.20 | 3.80 |
| 2 | 5150.00 | 48.7 AV | 54.0 | -5.3 | 1.32 H | 158 | 44.90 | 3.80 |
| 3 | *5190.00 | 94.3 PK | | | 1.00 H | 127 | 56.50 | 37.80 |
| 4 | *5190.00 | 83.9 AV | | | 1.00 H | 127 | 46.10 | 37.80 |
| 5 | #10380.00 | 60.2 PK | 74.0 | -13.8 | 1.90 H | 100 | 45.50 | 14.70 |
| 6 | #10380.00 | 46.2 AV | 54.0 | -7.8 | 1.90 H | 100 | 31.50 | 14.70 |

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 | 70.2 PK | 74.0 | -3.8 | 1.00 V | 178 | 66.40 | 3.80 |
| 2 | 5150.00 | 51.2 AV | 54.0 | -2.8 | 1.00 V | 178 | 47.40 | 3.80 |
| 3 | *5190.00 | 96.8 PK | | | 1.00 V | 147 | 59.00 | 37.80 |
| 4 | *5190.00 | 96.6 AV | | | 1.00 V | 147 | 58.80 | 37.80 |
| 5 | #10380.00 | 62.3 PK | 74.0 | -11.7 | 1.54 V | 187 | 47.60 | 14.70 |
| 6 | #10380.00 | 47.9 AV | 54.0 | -6.1 | 1.54 V | 187 | 33.20 | 14.70 |

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 of the restricted band.

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|-----------------|--------------------|---------------------------|
| CHANNEL | Channel 46 | FREQUENCY RANGE | 1 ~ 40GHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 25deg. C, 65%RH | TESTED BY | Ted Chang |

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 | *5230.00 | 59.3 PK | | | 1.34 H | 162 | 55.30 | 4.00 |
| 2 | *5230.00 | 49.2 AV | | | 1.34 H | 162 | 45.20 | 4.00 |
| 3 | 5350.00 | 57.5 PK | 74.0 | -16.5 | 1.69 H | 162 | 53.20 | 4.30 |
| 4 | 5350.00 | 45.0 AV | 54.0 | -9.0 | 1.69 H | 162 | 40.70 | 4.30 |
| 5 | #10460.00 | 60.7 PK | 74.0 | -13.3 | 1.08 H | 210 | 45.80 | 14.90 |
| 6 | #10460.00 | 45.8 AV | 54.0 | -8.2 | 1.08 H | 210 | 30.90 | 14.90 |

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

| NO. | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
|-----|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| 1 | *5230.00 | 107.4 PK | | | 1.00 V | 175 | 69.60 | 37.80 |
| 2 | *5230.00 | 97.5 AV | | | 1.00 V | 175 | 59.70 | 37.80 |
| 3 | 5350.00 | 60.8 PK | 74.0 | -13.2 | 1.25 V | 160 | 56.50 | 4.30 |
| 4 | 5350.00 | 47.0 AV | 54.0 | -7.0 | 1.25 V | 160 | 42.70 | 4.30 |
| 5 | #10460.00 | 62.5 PK | 74.0 | -11.5 | 1.00 V | 247 | 47.60 | 14.90 |
| 6 | #10460.00 | 48.1 AV | 54.0 | -5.9 | 1.00 V | 247 | 33.20 | 14.90 |

REMARKS:

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

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|-----------------|--------------------|---------------------------|
| CHANNEL | Channel 54 | FREQUENCY RANGE | 1 ~ 40GHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 25deg. C, 65%RH | TESTED BY | Ted Chang |

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 | 57.5 PK | 74.0 | -16.5 | 1.00 H | 214 | 53.70 | 3.80 |
| 2 | 5150.00 | 45.3 AV | 54.0 | -8.7 | 1.00 H | 214 | 41.50 | 3.80 |
| 3 | *5270.00 | 94.8 PK | | | 1.64 H | 221 | 56.90 | 37.90 |
| 4 | *5270.00 | 84.5 AV | | | 1.64 H | 221 | 46.60 | 37.90 |
| 5 | #10540.00 | 60.2 PK | 74.0 | -13.8 | 1.54 H | 118 | 45.20 | 15.00 |
| 6 | #10540.00 | 45.6 AV | 54.0 | -8.4 | 1.54 H | 118 | 30.60 | 15.00 |

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 | 57.0 PK | 74.0 | -17.0 | 1.00 V | 214 | 53.20 | 3.80 |
| 2 | 5150.00 | 46.5 AV | 54.0 | -7.5 | 1.00 V | 214 | 42.70 | 3.80 |
| 3 | *5270.00 | 108.4 PK | | | 1.00 V | 179 | 70.50 | 37.90 |
| 4 | *5270.00 | 97.6 AV | | | 1.00 V | 179 | 59.70 | 37.90 |
| 5 | #10540.00 | 63.5 PK | 74.0 | -10.5 | 1.35 V | 184 | 48.50 | 15.00 |
| 6 | #10540.00 | 47.5 AV | 54.0 | -6.5 | 1.35 V | 184 | 32.50 | 15.00 |

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 of the restricted band.

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|-----------------|--------------------|---------------------------|
| CHANNEL | Channel 62 | FREQUENCY RANGE | 1 ~ 40GHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 25deg. C, 65%RH | TESTED BY | Ted Chang |

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 | *5310.00 | 95.0 PK | | | 1.35 H | 215 | 57.10 | 37.90 |
| 2 | *5310.00 | 84.7 AV | | | 1.35 H | 215 | 46.80 | 37.90 |
| 3 | 5350.00 | 66.9 PK | 74.0 | -7.1 | 1.22 H | 140 | 62.60 | 4.30 |
| 4 | 5350.00 | 51.9 AV | 54.0 | -2.1 | 1.22 H | 140 | 47.60 | 4.30 |
| 5 | 10620.00 | 60.8 PK | 74.0 | -13.2 | 1.89 H | 360 | 45.50 | 15.30 |
| 6 | 10620.00 | 45.8 AV | 54.0 | -8.2 | 1.89 H | 360 | 30.50 | 15.30 |

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 | *5310.00 | 105.5 PK | | | 1.11 V | 13 | 67.60 | 37.90 |
| 2 | *5310.00 | 95.7 AV | | | 1.11 V | 13 | 57.80 | 37.90 |
| 3 | 5350.00 | 68.5 PK | 74.0 | -5.5 | 1.10 V | 143 | 64.20 | 4.30 |
| 4 | 5350.00 | 52.5 AV | 54.0 | -1.5 | 1.10 V | 143 | 48.20 | 4.30 |
| 5 | 10620.00 | 64.0 PK | 74.0 | -10.0 | 1.59 V | 351 | 48.70 | 15.30 |
| 6 | 10620.00 | 48.9 AV | 54.0 | -5.1 | 1.59 V | 351 | 33.60 | 15.30 |

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 TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|-----------------|--------------------|---------------------------|
| CHANNEL | Channel 102 | FREQUENCY RANGE | 1 ~ 40GHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 25deg. C, 65%RH | TESTED BY | Ted Chang |

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 | 55.7 PK | 74.0 | -18.3 | 1.00 H | 154 | 51.20 | 4.50 |
| 2 | 5460.00 | 41.9 AV | 54.0 | -12.1 | 1.00 H | 154 | 37.40 | 4.50 |
| 3 | #5470.00 | 58.1 PK | 74.0 | -15.9 | 1.04 H | 154 | 53.70 | 4.40 |
| 4 | #5470.00 | 44.7 AV | 54.0 | -9.3 | 1.04 H | 154 | 40.30 | 4.40 |
| 5 | *5510.00 | 94.8 PK | | | 1.00 H | 221 | 56.50 | 38.30 |
| 6 | *5510.00 | 84.1 AV | | | 1.00 H | 221 | 45.80 | 38.30 |
| 7 | 11020.00 | 61.6 PK | 74.0 | -12.4 | 1.04 H | 184 | 45.60 | 16.00 |
| 8 | 11020.00 | 46.5 AV | 54.0 | -7.5 | 1.04 H | 184 | 30.50 | 16.00 |

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 | 58.9 PK | 74.0 | -15.1 | 1.15 V | 29 | 54.40 | 4.50 |
| 2 | 5460.00 | 42.5 AV | 54.0 | -11.5 | 1.15 V | 29 | 38.00 | 4.50 |
| 3 | #5470.00 | 69.9 PK | 74.0 | -4.1 | 1.15 V | 29 | 65.50 | 4.40 |
| 4 | #5470.00 | 52.5 AV | 54.0 | -1.5 | 1.15 V | 29 | 48.10 | 4.40 |
| 5 | *5510.00 | 108.7 PK | | | 1.05 V | 347 | 70.40 | 38.30 |
| 6 | *5510.00 | 98.1 AV | | | 1.05 V | 347 | 59.80 | 38.30 |
| 7 | 11020.00 | 64.2 PK | 74.0 | -9.8 | 1.59 V | 235 | 48.20 | 16.00 |
| 8 | 11020.00 | 48.7 AV | 54.0 | -5.3 | 1.59 V | 235 | 32.70 | 16.00 |

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 of the restricted band.



| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|-----------------|--------------------|---------------------------|
| CHANNEL | Channel 110 | FREQUENCY RANGE | 1 ~ 40GHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 25deg. C, 65%RH | TESTED BY | Ted Chang |

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 | *5550.00 | 94.7 PK | | | 1.00 H | 223 | 56.30 | 38.40 |
| 2 | *5550.00 | 84.0 AV | | | 1.00 H | 223 | 45.60 | 38.40 |
| 3 | 11100.00 | 64.6 PK | 74.0 | -9.4 | 1.47 H | 258 | 48.60 | 16.00 |
| 4 | 11100.00 | 46.5 AV | 54.0 | -7.5 | 1.47 H | 258 | 30.50 | 16.00 |

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 | *5550.00 | 108.1 PK | | | 1.33 V | 174 | 69.70 | 38.40 |
| 2 | *5550.00 | 97.7 AV | | | 1.33 V | 174 | 59.30 | 38.40 |
| 3 | 11100.00 | 63.8 PK | 74.0 | -10.2 | 1.53 V | 214 | 47.80 | 16.00 |
| 4 | 11100.00 | 49.6 AV | 54.0 | -4.4 | 1.53 V | 214 | 33.60 | 16.00 |

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 TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|-----------------|--------------------|---------------------------|
| CHANNEL | Channel 134 | FREQUENCY RANGE | 1 ~ 40GHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 25deg. C, 65%RH | TESTED BY | Ted Chang |

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 | *5670.00 | 93.9 PK | | | 1.00 H | 147 | 55.30 | 38.60 |
| 2 | *5670.00 | 83.8 AV | | | 1.00 H | 147 | 45.20 | 38.60 |
| 3 | #5725.00 | 57.3 PK | 74.0 | -16.7 | 1.04 H | 154 | 18.60 | 38.70 |
| 4 | #5725.00 | 44.3 AV | 54.0 | -9.7 | 1.04 H | 154 | 5.60 | 38.70 |
| 5 | 11340.00 | 62.3 PK | 74.0 | -11.7 | 1.00 H | 241 | 46.50 | 15.80 |
| 6 | 11340.00 | 47.3 AV | 54.0 | -6.7 | 1.00 H | 241 | 31.50 | 15.80 |

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 | *5670.00 | 107.7 PK | | | 1.21 V | 350 | 69.10 | 38.60 |
| 2 | *5670.00 | 97.2 AV | | | 1.21 V | 350 | 58.60 | 38.60 |
| 3 | #5725.00 | 60.1 PK | 74.0 | -13.9 | 1.09 V | 309 | 55.30 | 4.80 |
| 4 | #5725.00 | 46.4 AV | 54.0 | -7.6 | 1.09 V | 309 | 41.60 | 4.80 |
| 5 | 11340.00 | 63.6 PK | 74.0 | -10.4 | 1.00 V | 125 | 47.80 | 15.80 |
| 6 | 11340.00 | 49.2 AV | 54.0 | -4.8 | 1.00 V | 125 | 33.40 | 15.80 |

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 of the restricted band.

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|-----------------|--------------------|---------------------------|
| CHANNEL | Channel 151 | FREQUENCY RANGE | 1 ~ 40GHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 25deg. C, 65%RH | TESTED BY | Chris Lin |

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 | #5714.00 | 48.2 PK | 74.0 | -25.8 | 1.25 H | 78 | 41.90 | 6.30 |
| 2 | #5714.00 | 45.3 AV | 54.0 | -8.7 | 1.25 H | 78 | 39.00 | 6.30 |
| 3 | #5722.00 | 59.3 PK | 78.2 | -18.9 | 1.55 H | 201 | 53.00 | 6.30 |
| 4 | #5725.00 | 50.9 PK | 78.2 | -27.3 | 1.30 H | 98 | 44.60 | 6.30 |
| 5 | *5755.00 | 91.2 PK | | | 1.19 H | 324 | 50.90 | 40.30 |
| 6 | *5755.00 | 81.1 AV | | | 1.19 H | 324 | 40.80 | 40.30 |
| 7 | 11510.00 | 57.3 PK | 74.0 | -16.7 | 1.39 H | 87 | 40.20 | 17.10 |
| 8 | 11510.00 | 44.5 AV | 54.0 | -9.5 | 1.39 H | 87 | 27.40 | 17.10 |

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 | #5714.00 | 64.2 PK | 74.0 | -9.8 | 1.10 V | 45 | 57.90 | 6.30 |
| 2 | #5714.00 | 49.3 AV | 54.0 | -4.7 | 1.10 V | 45 | 43.00 | 6.30 |
| 3 | #5722.00 | 71.6 PK | 78.2 | -6.6 | 1.10 V | 49 | 65.30 | 6.30 |
| 4 | #5725.00 | 61.2 PK | 78.2 | -17.0 | 1.33 V | 105 | 54.90 | 6.30 |
| 5 | *5755.00 | 105.4 PK | | | 1.01 V | 39 | 65.10 | 40.30 |
| 6 | *5755.00 | 96.1 AV | | | 1.01 V | 39 | 55.80 | 40.30 |
| 7 | 11510.00 | 60.0 PK | 74.0 | -14.0 | 1.36 V | 97 | 42.90 | 17.10 |
| 8 | 11510.00 | 45.1 AV | 54.0 | -8.9 | 1.36 V | 97 | 28.00 | 17.10 |

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 of the restricted band.

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|---------------------------------|-----------------|--------------------------|---------------------------|
| CHANNEL | Channel 159 | FREQUENCY RANGE | 1 ~ 40GHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Peak (PK) Average (AV) |
| ENVIRONMENTAL CONDITIONS | 25deg. C, 65%RH | TESTED BY | Chris Lin |

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 | *5795.00 | 93.1 PK | | | 1.00 H | 321 | 52.70 | 40.40 |
| 2 | *5795.00 | 82.7 AV | | | 1.00 H | 321 | 42.30 | 40.40 |
| 3 | #5850.00 | 43.5 PK | 78.2 | -34.7 | 1.39 H | 229 | 36.90 | 6.60 |
| 4 | #5853.00 | 47.8 PK | 78.2 | -30.4 | 1.08 H | 74 | 41.20 | 6.60 |
| 5 | #5861.00 | 57.2 PK | 74.0 | -16.8 | 1.10 H | 330 | 50.60 | 6.60 |
| 6 | #5861.00 | 44.5 AV | 54.0 | -9.5 | 1.10 H | 330 | 37.90 | 6.60 |
| 7 | 11590.00 | 58.7 PK | 74.0 | -15.3 | 1.32 H | 85 | 41.50 | 17.20 |
| 8 | 11590.00 | 44.2 AV | 54.0 | -9.8 | 1.32 H | 85 | 27.00 | 17.20 |

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 | *5795.00 | 106.2 PK | | | 1.30 V | 330 | 65.80 | 40.40 |
| 2 | *5795.00 | 95.4 AV | | | 1.30 V | 330 | 55.00 | 40.40 |
| 3 | #5850.00 | 53.5 PK | 78.2 | -24.7 | 1.28 V | 310 | 46.90 | 6.60 |
| 4 | #5853.00 | 47.3 PK | 78.2 | -30.9 | 1.20 V | 310 | 40.70 | 6.60 |
| 5 | #5861.00 | 58.5 PK | 74.0 | -15.5 | 1.35 V | 320 | 51.90 | 6.60 |
| 6 | #5861.00 | 46.5 AV | 54.0 | -7.5 | 1.35 V | 320 | 39.90 | 6.60 |
| 7 | 11590.00 | 58.2 PK | 74.0 | -15.8 | 1.33 V | 54 | 41.00 | 17.20 |
| 8 | 11590.00 | 44.6 AV | 54.0 | -9.4 | 1.33 V | 54 | 27.40 | 17.20 |

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 of the restricted band.

BELOW 1GHz WORST-CASE DATA :
802.11n (HT20)

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|---------------------------------|-----------------|--------------------------|---------------|
| CHANNEL | Channel 60 | FREQUENCY RANGE | Below 1000MHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Quasi-Peak |
| ENVIRONMENTAL CONDITIONS | 25deg. C, 65%RH | TESTED BY | Ted Chang |

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 | 57.12 | 26.1 QP | 40.0 | -13.9 | 1.24 H | 305 | 40.70 | -14.60 |
| 2 | 99.89 | 30.1 QP | 43.5 | -13.4 | 1.00 H | 208 | 48.50 | -18.40 |
| 3 | 199.05 | 38.0 QP | 43.5 | -5.5 | 1.24 H | 29 | 54.60 | -16.60 |
| 4 | 265.16 | 40.3 QP | 46.0 | -5.7 | 1.00 H | 96 | 53.80 | -13.50 |
| 5 | 500.42 | 26.9 QP | 46.0 | -19.1 | 1.50 H | 231 | 35.20 | -8.30 |
| 6 | 599.58 | 32.1 QP | 46.0 | -13.9 | 1.00 H | 119 | 38.30 | -6.20 |

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 | 57.12 | 28.0 QP | 40.0 | -12.0 | 1.00 V | 352 | 42.60 | -14.60 |
| 2 | 99.89 | 31.8 QP | 43.5 | -11.7 | 1.99 V | 145 | 50.20 | -18.40 |
| 3 | 199.05 | 28.6 QP | 43.5 | -14.9 | 1.00 V | 318 | 45.20 | -16.60 |
| 4 | 298.21 | 27.2 QP | 46.0 | -18.8 | 1.50 V | 125 | 39.50 | -12.30 |
| 5 | 498.47 | 36.8 QP | 46.0 | -9.2 | 1.00 V | 127 | 45.10 | -8.30 |
| 6 | 599.58 | 28.6 QP | 46.0 | -17.4 | 1.24 V | 249 | 34.80 | -6.20 |

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

| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|-----------------|--------------------|---------------|
| CHANNEL | Channel 140 | FREQUENCY RANGE | Below 1000MHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Quasi-Peak |
| ENVIRONMENTAL CONDITIONS | 25deg. C, 65%RH | TESTED BY | Ted Chang |

| 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 | 57.12 | 26.7 QP | 40.0 | -13.3 | 1.00 H | 18 | 41.30 | -14.60 |
| 2 | 97.95 | 29.5 QP | 43.5 | -14.0 | 1.99 H | 212 | 48.30 | -18.80 |
| 3 | 166.00 | 35.4 QP | 43.5 | -8.1 | 1.00 H | 54 | 49.70 | -14.30 |
| 4 | 199.05 | 38.0 QP | 43.5 | -5.5 | 1.24 H | 27 | 54.60 | -16.60 |
| 5 | 265.16 | 40.7 QP | 46.0 | -5.3 | 1.50 H | 96 | 54.20 | -13.50 |
| 6 | 498.47 | 28.5 QP | 46.0 | -17.5 | 1.00 H | 229 | 36.80 | -8.30 |

| 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 | 99.89 | 31.5 QP | 43.5 | -12.0 | 1.99 V | 174 | 49.90 | -18.40 |
| 2 | 199.05 | 28.2 QP | 43.5 | -15.3 | 1.00 V | 311 | 44.80 | -16.60 |
| 3 | 265.16 | 27.4 QP | 46.0 | -18.6 | 1.24 V | 6 | 40.90 | -13.50 |
| 4 | 500.42 | 37.3 QP | 46.0 | -8.7 | 1.24 V | 124 | 45.60 | -8.30 |
| 5 | 599.58 | 28.5 QP | 46.0 | -17.5 | 1.00 V | 126 | 34.70 | -6.20 |
| 6 | 809.56 | 26.1 QP | 46.0 | -19.9 | 1.00 V | 319 | 28.20 | -2.10 |

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



| EUT TEST CONDITION | | MEASUREMENT DETAIL | |
|--------------------------|-----------------|--------------------|---------------|
| CHANNEL | Channel 149 | FREQUENCY RANGE | Below 1000MHz |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | DETECTOR FUNCTION | Quasi-Peak |
| ENVIRONMENTAL CONDITIONS | 25deg. C, 65%RH | TESTED BY | Ted Chang |

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 | 99.89 | 29.5 QP | 43.5 | -14.0 | 1.24 H | 211 | 47.90 | -18.40 |
| 2 | 166.00 | 35.2 QP | 43.5 | -8.3 | 1.00 H | 68 | 49.50 | -14.30 |
| 3 | 199.05 | 37.7 QP | 43.5 | -5.8 | 1.50 H | 39 | 54.30 | -16.60 |
| 4 | 265.16 | 40.0 QP | 46.0 | -6.0 | 1.50 H | 110 | 53.50 | -13.50 |
| 5 | 500.42 | 27.6 QP | 46.0 | -18.4 | 1.00 H | 234 | 35.90 | -8.30 |
| 6 | 599.58 | 33.4 QP | 46.0 | -12.6 | 1.00 H | 117 | 39.60 | -6.20 |

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 | 99.89 | 31.6 QP | 43.5 | -11.9 | 1.50 V | 157 | 50.00 | -18.40 |
| 2 | 199.05 | 28.5 QP | 43.5 | -15.0 | 1.24 V | 348 | 45.10 | -16.60 |
| 3 | 265.16 | 27.5 QP | 46.0 | -18.5 | 1.00 V | 13 | 41.00 | -13.50 |
| 4 | 498.47 | 36.8 QP | 46.0 | -9.2 | 1.99 V | 125 | 45.10 | -8.30 |
| 5 | 599.58 | 26.7 QP | 46.0 | -19.3 | 1.00 V | 115 | 32.90 | -6.20 |
| 6 | 794.01 | 26.5 QP | 46.0 | -19.5 | 1.00 V | 306 | 28.90 | -2.40 |

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 (MHz) | Conducted Limit (dBuV) | |
|-----------------|------------------------|---------|
| | Quasi-peak | Average |
| 0.15 - 0.5 | 66 - 56 | 56 - 46 |
| 0.50 - 5.0 | 56 | 46 |
| 5.0 - 30.0 | 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.

4.2.2 Test Instruments

For Tested Date: Jul. 11 ~ Jul. 12, 2013

| Description & Manufacturer | Model No. | Serial No. | Date Of Calibration | Due Date Of Calibration |
|-----------------------------------------|--------------------------|----------------|---------------------|-------------------------|
| Test Receiver ROHDE & SCHWARZ | ESCS30 | 100288 | Nov. 09, 2012 | Nov. 08, 2013 |
| RF signal cable Woken | 5D-FB | Cable-HYCO2-01 | Dec. 28, 2012 | Dec. 27, 2013 |
| LISN ROHDE & SCHWARZ (EUT) | ESH2-Z5 | 100100 | Dec. 21, 2012 | Dec. 20, 2013 |
| LISN ROHDE & SCHWARZ (Peripheral) | ESH3-Z5 | 100312 | Jul. 02, 2013 | Jul. 01, 2014 |
| Software ADT | BV ADT_Cond_ V7.3.7.3 | NA | NA | NA |

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The test was performed in HwaYa Shielded Room 1.

3. The VCCI Site Registration No. is C-2040.

4.2.3 Test Procedure

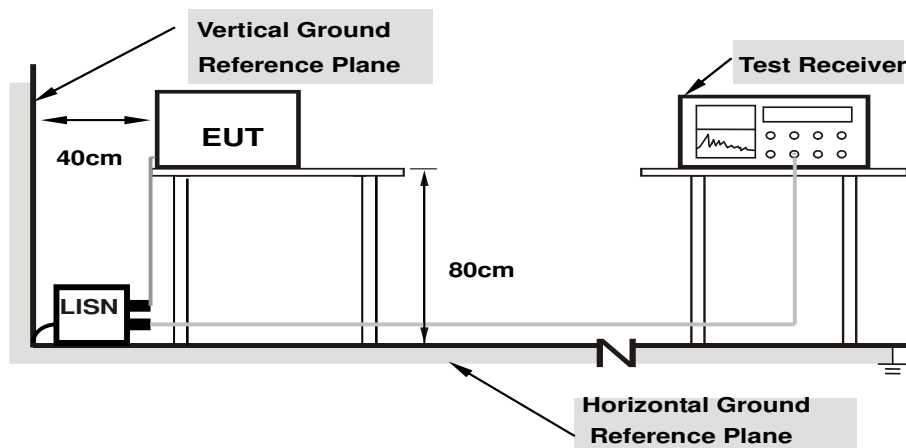
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

NOTE: The resolution bandwidth and video bandwidth of test receiver is 9kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15MHz-30MHz.

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



- Note:**
- Support units were connected to second LISN.
 - 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

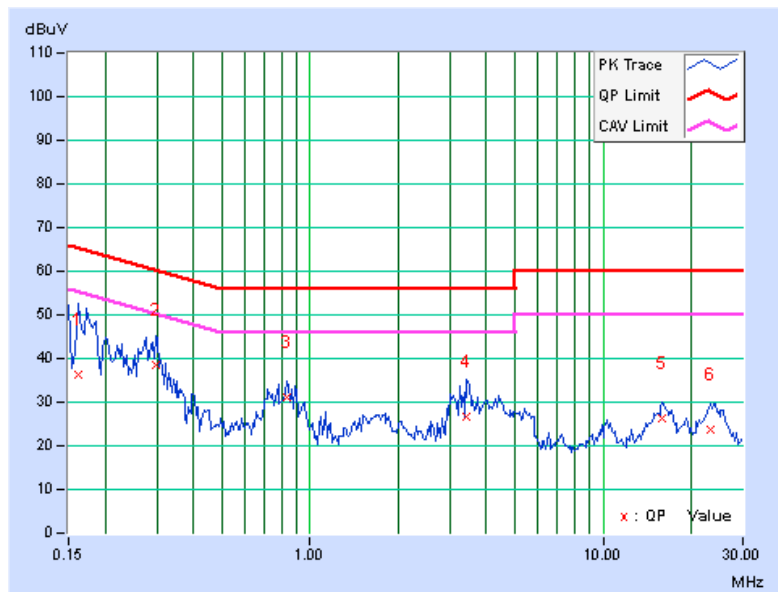
802.11n (HT20)

| | | | |
|----------------|------------|----------------------|------|
| PHASE | Line 1 | 6dB BANDWIDTH | 9kHz |
| CHANNEL | Channel 60 | | |

| 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 | 0.16172 | 0.17 | 36.01 | 19.26 | 36.18 | 19.43 | 65.38 | 55.38 | -29.19 | -35.94 |
| 2 | 0.29844 | 0.19 | 38.44 | 26.53 | 38.63 | 26.72 | 60.29 | 50.29 | -21.66 | -23.57 |
| 3 | 0.83750 | 0.25 | 30.94 | 26.26 | 31.19 | 26.51 | 56.00 | 46.00 | -24.81 | -19.49 |
| 4 | 3.41797 | 0.34 | 26.24 | 14.15 | 26.58 | 14.49 | 56.00 | 46.00 | -29.42 | -31.51 |
| 5 | 15.94141 | 0.55 | 25.62 | 20.38 | 26.17 | 20.93 | 60.00 | 50.00 | -33.83 | -29.07 |
| 6 | 23.23047 | 0.61 | 23.11 | 17.85 | 23.72 | 18.46 | 60.00 | 50.00 | -36.28 | -31.54 |

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

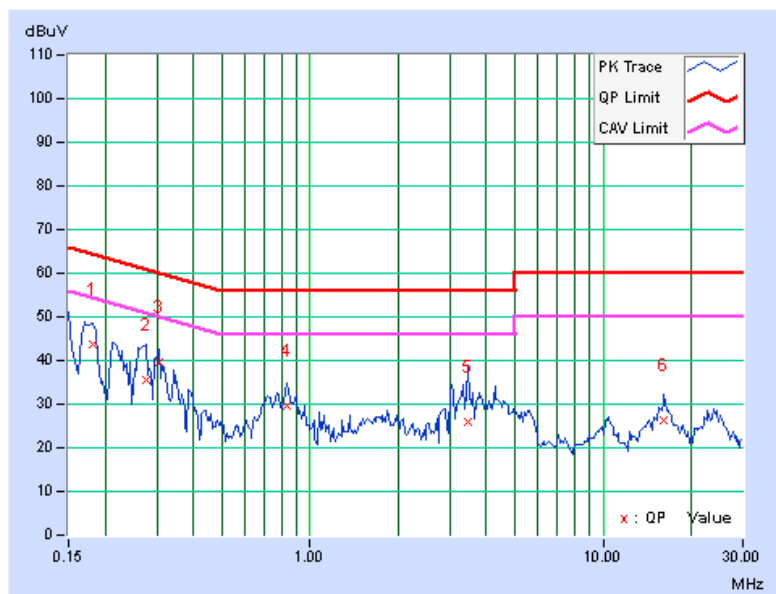


| | | | |
|----------------|------------|----------------------|------|
| PHASE | Line 2 | 6dB BANDWIDTH | 9kHz |
| CHANNEL | Channel 60 | | |

| 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 | 0.18125 | 0.18 | 43.45 | 28.77 | 43.63 | 28.95 | 64.43 | 54.43 | -20.80 | -25.48 |
| 2 | 0.27500 | 0.21 | 35.35 | 24.53 | 35.56 | 24.74 | 60.97 | 50.97 | -25.41 | -26.23 |
| 3 | 0.30625 | 0.22 | 39.47 | 31.35 | 39.69 | 31.57 | 60.07 | 50.07 | -20.38 | -18.50 |
| 4 | 0.83359 | 0.24 | 29.44 | 23.84 | 29.68 | 24.08 | 56.00 | 46.00 | -26.32 | -21.92 |
| 5 | 3.45313 | 0.36 | 25.50 | 13.88 | 25.86 | 14.24 | 56.00 | 46.00 | -30.14 | -31.76 |
| 6 | 16.12500 | 0.63 | 25.84 | 20.68 | 26.47 | 21.31 | 60.00 | 50.00 | -33.53 | -28.69 |

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

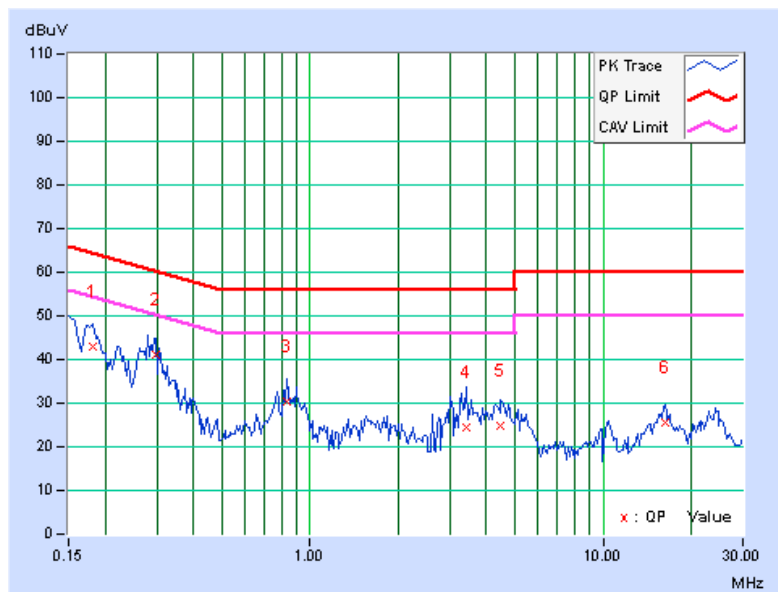


| | | | |
|----------------|-------------|----------------------|------|
| PHASE | Line 1 | 6dB BANDWIDTH | 9kHz |
| CHANNEL | Channel 140 | | |

| 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 | 0.18125 | 0.17 | 42.76 | 29.88 | 42.93 | 30.05 | 64.43 | 54.43 | -21.50 | -24.38 |
| 2 | 0.29844 | 0.19 | 40.98 | 30.90 | 41.17 | 31.09 | 60.29 | 50.29 | -19.12 | -19.20 |
| 3 | 0.83359 | 0.25 | 30.17 | 24.74 | 30.42 | 24.99 | 56.00 | 46.00 | -25.58 | -21.01 |
| 4 | 3.43359 | 0.34 | 24.01 | 11.79 | 24.35 | 12.13 | 56.00 | 46.00 | -31.65 | -33.87 |
| 5 | 4.47266 | 0.37 | 24.49 | 13.42 | 24.86 | 13.79 | 56.00 | 46.00 | -31.14 | -32.21 |
| 6 | 16.25391 | 0.56 | 25.03 | 19.44 | 25.59 | 20.00 | 60.00 | 50.00 | -34.41 | -30.00 |

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

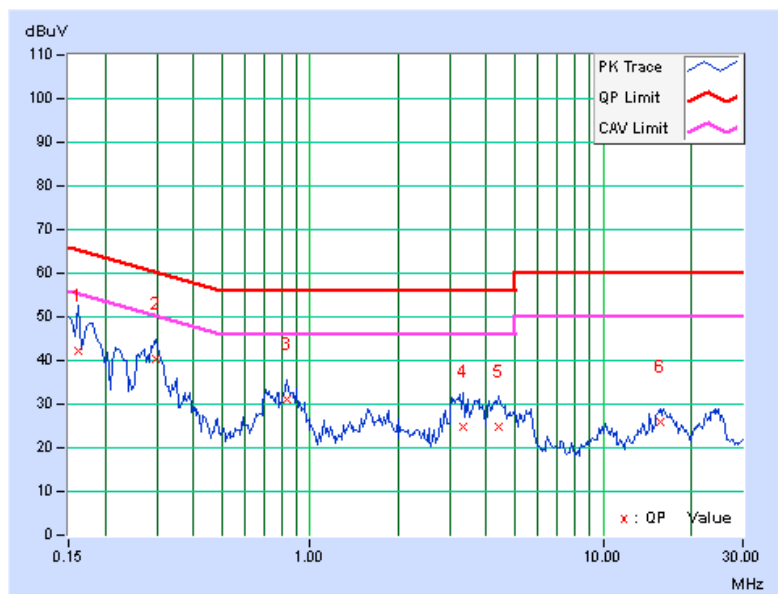


| | | | |
|----------------|-------------|----------------------|------|
| PHASE | Line 2 | 6dB BANDWIDTH | 9kHz |
| CHANNEL | Channel 140 | | |

| 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 | 0.16172 | 0.18 | 42.16 | 23.14 | 42.34 | 23.32 | 65.38 | 55.38 | -23.03 | -32.05 |
| 2 | 0.29844 | 0.21 | 40.18 | 31.05 | 40.39 | 31.26 | 60.29 | 50.29 | -19.89 | -19.02 |
| 3 | 0.83359 | 0.24 | 31.01 | 25.15 | 31.25 | 25.39 | 56.00 | 46.00 | -24.75 | -20.61 |
| 4 | 3.33984 | 0.35 | 24.51 | 12.26 | 24.86 | 12.61 | 56.00 | 46.00 | -31.14 | -33.39 |
| 5 | 4.40234 | 0.40 | 24.53 | 13.44 | 24.93 | 13.84 | 56.00 | 46.00 | -31.07 | -32.16 |
| 6 | 15.66406 | 0.62 | 25.31 | 20.36 | 25.93 | 20.98 | 60.00 | 50.00 | -34.07 | -29.02 |

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

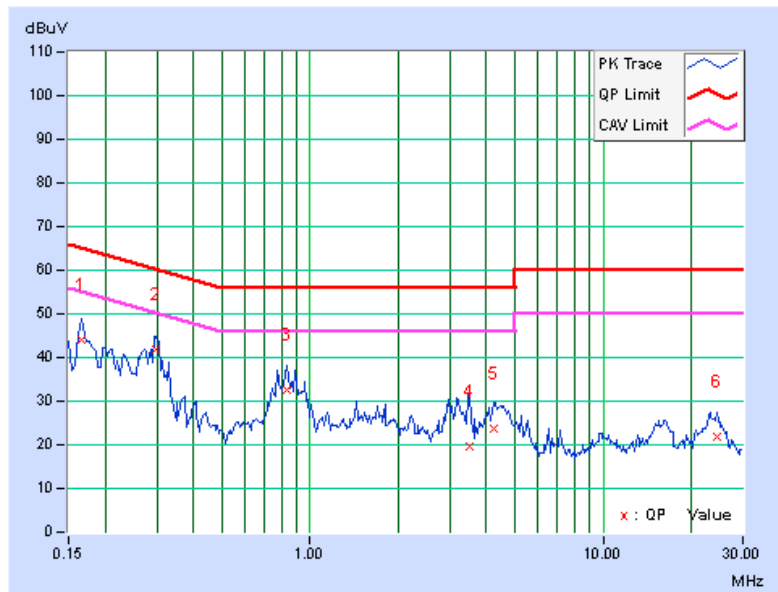


| | | | |
|----------------|-------------|----------------------|------|
| PHASE | Line 1 | 6dB BANDWIDTH | 9kHz |
| CHANNEL | Channel 149 | | |

| 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 | 0.16562 | 0.17 | 43.89 | 35.01 | 44.06 | 35.18 | 65.18 |
| 2 | 0.29844 | 0.19 | 41.76 | 34.26 | 41.95 | 34.45 | 60.29 | 50.29 | -18.34 | -15.84 |
| 3 | 0.83359 | 0.25 | 32.31 | 26.35 | 32.56 | 26.60 | 56.00 | 46.00 | -23.44 | -19.40 |
| 4 | 3.48828 | 0.35 | 19.13 | 10.25 | 19.48 | 10.60 | 56.00 | 46.00 | -36.52 | -35.40 |
| 5 | 4.25781 | 0.37 | 23.22 | 11.89 | 23.59 | 12.26 | 56.00 | 46.00 | -32.41 | -33.74 |
| 6 | 24.55859 | 0.60 | 21.39 | 15.62 | 21.99 | 16.22 | 60.00 | 50.00 | -38.01 | -33.78 |

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

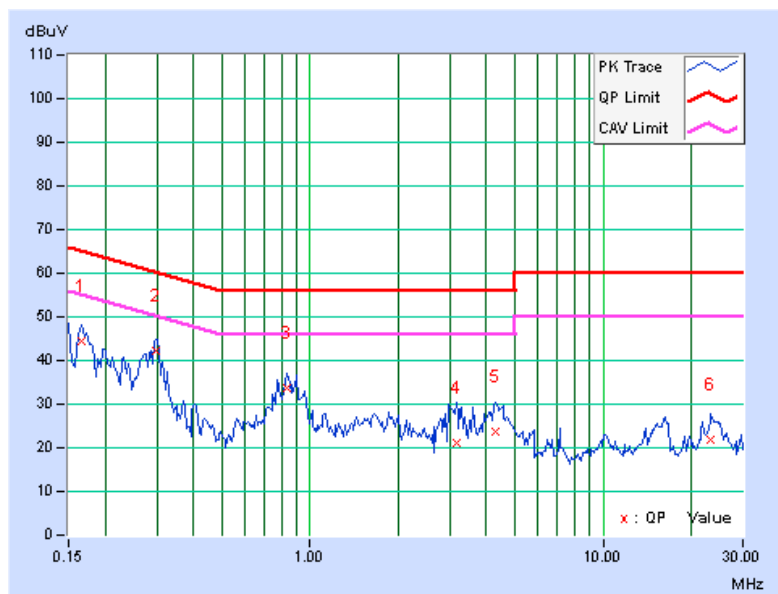


| | | | |
|----------------|-------------|----------------------|------|
| PHASE | Line 2 | 6dB BANDWIDTH | 9kHz |
| CHANNEL | Channel 149 | | |

| 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 | 0.16562 | 0.18 | 44.29 | 35.23 | 44.47 | 35.41 | 65.18 | 55.18 | -20.70 | -19.76 |
| 2 | 0.29844 | 0.21 | 42.11 | 34.85 | 42.32 | 35.06 | 60.29 | 50.29 | -17.96 | -15.22 |
| 3 | 0.83359 | 0.24 | 33.41 | 27.54 | 33.65 | 27.78 | 56.00 | 46.00 | -22.35 | -18.22 |
| 4 | 3.14844 | 0.34 | 20.85 | 8.26 | 21.19 | 8.60 | 56.00 | 46.00 | -34.81 | -37.40 |
| 5 | 4.28125 | 0.39 | 23.37 | 12.33 | 23.76 | 12.72 | 56.00 | 46.00 | -32.24 | -33.28 |
| 6 | 23.40234 | 0.70 | 21.13 | 15.61 | 21.83 | 16.31 | 60.00 | 50.00 | -38.17 | -33.69 |

REMARKS:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



4.3 Transmit Power Measurement

4.3.1 Limits of Transmit Power Measurement

| Operation Band | EUT Category | | LIMIT |
|----------------|--------------|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| U-NII-1 | | Outdoor Access Point | 1 Watt (30 dBm) (Max. e.i.r.p \leq 125mW(21 dBm) at any elevation angle above 30 degrees as measured from the horizon) |
| | | Fixed point-to-point Access Point | 1 Watt (30 dBm) |
| | √ | Indoor Access Point | 1 Watt (30 dBm) |
| | | Mobile and Portable client device | 250mW (24 dBm) |
| U-NII-2A | | √ | 250mW (24 dBm) or 11 dBm+10 log B* |
| U-NII-2C | | √ | 250mW (24 dBm) or 11 dBm+10 log B* |
| U-NII-3 | | √ | 1 Watt (30 dBm) |

*B is the 26 dB emission bandwidth in megahertz

Per KDB 662911 Method of conducted output power measurement on IEEE 802.11 devices,

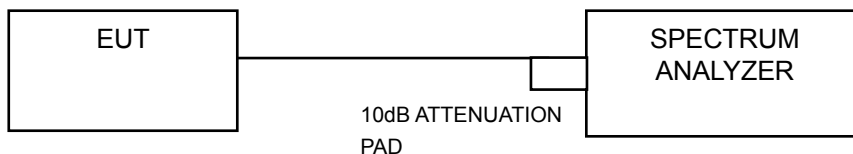
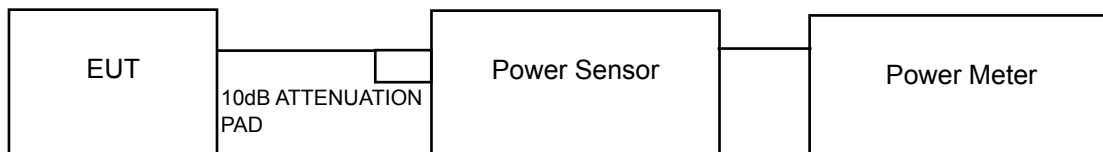
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT} ;

Array Gain = $5 \log(N_{ANT}/N_{SS})$ dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{ANT} \geq 5$.

For power measurements on all other devices: Array Gain = $10 \log(N_{ANT}/N_{SS})$ dB.

4.3.2 Test Setup



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

FOR AVERAGE POWER MEASUREMENT

Method PM is used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

4.3.5 Deviation from Test Standard

No deviation.

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 Result

POWER OUTPUT:

802.11a

| Channel | Frequency (MHz) | Maximum Conducted Power (mW) | Maximum Conducted Power (dBm) | Power Limit (dBm) | Pass / Fail |
|---------|-----------------|------------------------------|-------------------------------|-------------------|-------------|
| 36 | 5180 | 25.003 | 13.98 | 30 | Pass |
| 40 | 5200 | 22.131 | 13.45 | 30 | Pass |
| 48 | 5240 | 23.768 | 13.76 | 30 | Pass |
| 52 | 5260 | 23.227 | 13.66 | 24 | Pass |
| 60 | 5300 | 24.774 | 13.94 | 24 | Pass |
| 64 | 5320 | 24.266 | 13.85 | 24 | Pass |
| 100 | 5500 | 24.604 | 13.91 | 24 | Pass |
| 116 | 5580 | 22.387 | 13.50 | 24 | Pass |
| 140 | 5700 | 24.547 | 13.90 | 24 | Pass |
| 149 | 5745 | 24.491 | 13.89 | 30 | Pass |
| 157 | 5785 | 23.878 | 13.78 | 30 | Pass |
| 165 | 5825 | 23.550 | 13.72 | 30 | Pass |

NOTE:

For U-NII-2A, U-NII-2C Band:

1. $11\text{dBm} + 10\log(22.18) = 24.46\text{ dBm} > 24\text{dBm}$.
2. $11\text{dBm} + 10\log(21.81) = 24.39\text{ dBm} > 24\text{dBm}$.
3. $11\text{dBm} + 10\log(21.33) = 24.29\text{ dBm} > 24\text{dBm}$.
4. $11\text{dBm} + 10\log(21.69) = 24.36\text{ dBm} > 24\text{dBm}$.
5. $11\text{dBm} + 10\log(22.27) = 24.48\text{ dBm} > 24\text{dBm}$.
6. $11\text{dBm} + 10\log(20.76) = 24.17\text{ dBm} > 24\text{dBm}$.

802.11n (HT20)

| Channel | Frequency (MHz) | Maximum Conducted Power (dBm) | | Maximum Conducted Power (mW) | Maximum Conducted Power (dBm) | Power Limit (dBm) | Pass / Fail |
|---------|-----------------|-------------------------------|---------|------------------------------|-------------------------------|-------------------|-------------|
| | | Chain 0 | Chain 1 | | | | |
| 36 | 5180 | 11.21 | 11.82 | 28.418 | 14.54 | 30 | Pass |
| 40 | 5200 | 11.80 | 11.91 | 30.660 | 14.87 | 30 | Pass |
| 48 | 5240 | 11.53 | 12.00 | 30.072 | 14.78 | 30 | Pass |
| 52 | 5260 | 11.77 | 11.74 | 29.959 | 14.77 | 24 | Pass |
| 60 | 5300 | 11.80 | 11.97 | 30.876 | 14.90 | 24 | Pass |
| 64 | 5320 | 11.83 | 11.88 | 30.658 | 14.87 | 24 | Pass |
| 100 | 5500 | 11.53 | 11.83 | 29.464 | 14.69 | 24 | Pass |
| 116 | 5580 | 11.47 | 11.94 | 29.659 | 14.72 | 24 | Pass |
| 140 | 5700 | 11.62 | 11.91 | 30.045 | 14.78 | 24 | Pass |
| 149 | 5745 | 11.41 | 11.75 | 28.798 | 14.59 | 30 | Pass |
| 157 | 5785 | 10.11 | 11.82 | 25.462 | 14.06 | 30 | Pass |
| 165 | 5825 | 11.32 | 11.36 | 27.229 | 14.35 | 30 | Pass |

NOTE:

For U-NII-2A, U-NII-2C Band:

Chain 0

1. $11\text{dBm} + 10\log(21.88) = 24.40\text{ dBm} > 24\text{dBm}$.
2. $11\text{dBm} + 10\log(22.44) = 24.51\text{ dBm} > 24\text{dBm}$.
3. $11\text{dBm} + 10\log(21.84) = 24.39\text{ dBm} > 24\text{dBm}$.
4. $11\text{dBm} + 10\log(22.45) = 24.51\text{ dBm} > 24\text{dBm}$.
5. $11\text{dBm} + 10\log(21.62) = 24.35\text{ dBm} > 24\text{dBm}$.
6. $11\text{dBm} + 10\log(21.83) = 24.39\text{ dBm} > 24\text{dBm}$.

Chain 1

1. $11\text{dBm} + 10\log(21.99) = 24.42\text{ dBm} > 24\text{dBm}$.
2. $11\text{dBm} + 10\log(22.62) = 24.54\text{ dBm} > 24\text{dBm}$.
3. $11\text{dBm} + 10\log(21.48) = 24.32\text{ dBm} > 24\text{dBm}$.
4. $11\text{dBm} + 10\log(22.22) = 24.47\text{ dBm} > 24\text{dBm}$.
5. $11\text{dBm} + 10\log(21.54) = 24.33\text{ dBm} > 24\text{dBm}$.
6. $11\text{dBm} + 10\log(21.36) = 24.30\text{ dBm} > 24\text{dBm}$.

802.11n (HT40)

| Channel | Frequency (MHz) | Maximum Conducted Power (dBm) | | Maximum Conducted Power (mW) | Maximum Conducted Power (dBm) | Power Limit (dBm) | Pass / Fail |
|---------|-----------------|-------------------------------|---------|------------------------------|-------------------------------|-------------------|-------------|
| | | Chain 0 | Chain 1 | | | | |
| 38 | 5190 | 10.43 | 10.65 | 22.655 | 13.55 | 30 | Pass |
| 46 | 5230 | 10.64 | 10.82 | 23.666 | 13.74 | 30 | Pass |
| 54 | 5270 | 10.71 | 10.55 | 23.126 | 13.64 | 24 | Pass |
| 62 | 5310 | 10.69 | 10.59 | 23.177 | 13.65 | 24 | Pass |
| 102 | 5510 | 10.35 | 10.29 | 21.530 | 13.33 | 24 | Pass |
| 110 | 5550 | 10.46 | 11.00 | 23.706 | 13.75 | 24 | Pass |
| 134 | 5670 | 10.20 | 10.90 | 22.774 | 13.57 | 24 | Pass |
| 151 | 5755 | 10.68 | 11.36 | 25.372 | 14.04 | 30 | Pass |
| 159 | 5795 | 10.13 | 11.79 | 25.405 | 14.05 | 30 | Pass |

NOTE:
For U-NII-2A, U-NII-2C Band:
Chain 0

1. $11\text{dBm} + 10\log(49.84) = 27.98\text{ dBm} > 24\text{dBm}$.
2. $11\text{dBm} + 10\log(49.54) = 27.95\text{ dBm} > 24\text{dBm}$.
3. $11\text{dBm} + 10\log(49.10) = 27.91\text{ dBm} > 24\text{dBm}$.
4. $11\text{dBm} + 10\log(49.88) = 27.98\text{ dBm} > 24\text{dBm}$.
5. $11\text{dBm} + 10\log(48.21) = 27.83\text{ dBm} > 24\text{dBm}$.

Chain 1

1. $11\text{dBm} + 10\log(47.29) = 27.75\text{ dBm} > 24\text{dBm}$.
2. $11\text{dBm} + 10\log(48.11) = 27.82\text{ dBm} > 24\text{dBm}$.
3. $11\text{dBm} + 10\log(47.38) = 27.76\text{ dBm} > 24\text{dBm}$.
4. $11\text{dBm} + 10\log(48.07) = 27.82\text{ dBm} > 24\text{dBm}$.
5. $11\text{dBm} + 10\log(48.07) = 27.82\text{ dBm} > 24\text{dBm}$.

26dB BANDWIDTH:
802.11a

| Channel | Frequency (MHz) | 26dBc Bandwidth (MHz) | Pass / Fail |
|---------|-----------------|-----------------------|-------------|
| 36 | 5180 | 21.67 | Pass |
| 40 | 5200 | 21.24 | Pass |
| 48 | 5240 | 21.52 | Pass |
| 52 | 5260 | 22.18 | Pass |
| 60 | 5300 | 21.81 | Pass |
| 64 | 5320 | 21.33 | Pass |
| 100 | 5500 | 21.69 | Pass |
| 116 | 5580 | 22.27 | Pass |
| 140 | 5700 | 20.76 | Pass |

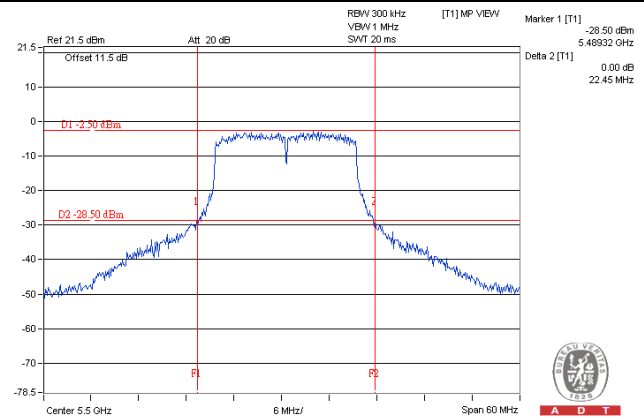
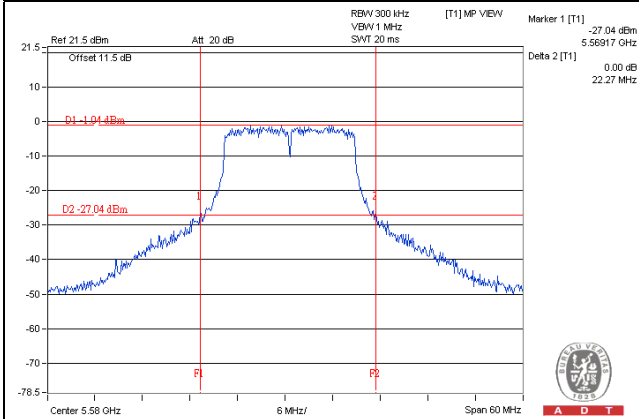
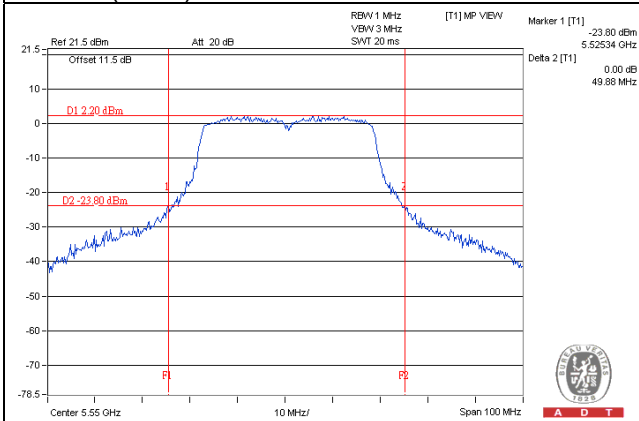
802.11n (HT20)

| Channel | Frequency (MHz) | 26dBc Bandwidth (MHz) | | Pass / Fail |
|---------|-----------------|-----------------------|---------|-------------|
| | | Chain 0 | Chain 1 | |
| 36 | 5180 | 21.77 | 21.87 | Pass |
| 40 | 5200 | 21.84 | 21.36 | Pass |
| 48 | 5240 | 21.86 | 21.26 | Pass |
| 52 | 5260 | 21.88 | 21.99 | Pass |
| 60 | 5300 | 22.44 | 22.62 | Pass |
| 64 | 5320 | 21.84 | 21.48 | Pass |
| 100 | 5500 | 22.45 | 22.22 | Pass |
| 116 | 5580 | 21.62 | 21.54 | Pass |
| 140 | 5700 | 21.83 | 21.36 | Pass |

802.11n (HT40)

| Channel | Frequency (MHz) | 26dBc Bandwidth (MHz) | | Pass / Fail |
|---------|-----------------|-----------------------|---------|-------------|
| | | Chain 0 | Chain 1 | |
| 38 | 5190 | 47.83 | 47.97 | Pass |
| 46 | 5230 | 47.96 | 47.99 | Pass |
| 54 | 5270 | 49.84 | 47.29 | Pass |
| 62 | 5310 | 49.54 | 48.11 | Pass |
| 102 | 5510 | 49.10 | 47.38 | Pass |
| 110 | 5550 | 49.88 | 48.07 | Pass |
| 134 | 5670 | 48.21 | 48.07 | Pass |

Spectrum Plot of Worst Value

802.11a**802.11n (HT20)****802.11n (HT40)**

EUT MAXIMUM CONDUCTED POWER**802.11a**

| Frequency Band (MHz) | Max. Power | |
|----------------------|-------------------|--------------------|
| | Output Power (mW) | Output Power (dBm) |
| 5250~5350 | 24.774 | 13.94 |
| 5470~5725 | 24.604 | 13.91 |

NOTE: Manufacturer provides Transmit Power Control description to meet this requirement.

802.11n (HT20)

| Frequency Band (MHz) | Max. Power | |
|----------------------|-------------------|--------------------|
| | Output Power (mW) | Output Power (dBm) |
| 5250~5350 | 30.876 | 14.90 |
| 5470~5725 | 30.045 | 14.78 |

NOTE: Manufacturer provides Transmit Power Control description to meet this requirement.

802.11n (HT40)

| Frequency Band (MHz) | Max. Power | |
|----------------------|-------------------|--------------------|
| | Output Power (mW) | Output Power (dBm) |
| 5250~5350 | 23.177 | 13.65 |
| 5470~5725 | 23.706 | 13.75 |

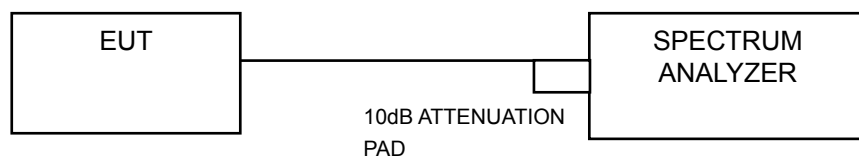
NOTE: Manufacturer provides Transmit Power Control description to meet this requirement.

4.4 Peak Power Spectral Density Measurement

4.4.1 Limits of Peak Power Spectral Density Measurement

| Operation Band | EUT Category | | LIMIT |
|----------------|--------------|-----------------------------------|---------------|
| U-NII-1 | | Outdoor Access Point | 17dBm/ MHz |
| | | Fixed point-to-point Access Point | |
| | √ | Indoor Access Point | |
| | | Mobile and Portable client device | 11dBm/ MHz |
| U-NII-2A | | √ | 11dBm/ MHz |
| U-NII-2C | | √ | 11dBm/ MHz |
| U-NII-3 | | √ | 30dBm/ 500kHz |

4.4.2 Test Setup



4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.4 Test Procedure

For U-NII-1, U-NII-2A, U-NII-2C band:

Using method SA-1

- 1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
- 2) Set RBW = 30 kHz, Set VBW ≥ 1 MHz, Detector = RMS
- 3) Set Channel power measure = 1MHz
- 4) Sweep time = auto, trigger set to “free run”.
- 5) Trace average at least 100 traces in power averaging mode.
- 6) Record the max value

For U-NII-3 band:

- 1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
- 2) Set RBW = 500 kHz, Set VBW ≥ 3 RBW, Detector = RMS
- 3) Sweep time = auto, trigger set to “free run”.
- 4) Trace average at least 100 traces in power averaging mode.
- 5) Record the max value and add 10 log (1/duty cycle)
- 6) Scale the observed power level to an equivalent value in 500 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where $BWCF = 10\log(500\text{ kHz}/300\text{kHz})$



4.4.5 Deviation from Test Standard

No deviation.

4.4.6 EUT Operating Condition

Same as Item 4.3.6.



4.4.7 Test Results

For U-NII-1, U-NII-2A, U-NII-2C Band

802.11a

| Channel | Frequency (MHz) | PSD (dBm) | Maximum Limit (dBm) | Pass / Fail |
|---------|-----------------|-----------|---------------------|-------------|
| 36 | 5180 | 1.45 | 17 | Pass |
| 40 | 5200 | 0.93 | 17 | Pass |
| 48 | 5240 | 1.36 | 17 | Pass |
| 52 | 5260 | 1.14 | 11 | Pass |
| 60 | 5300 | 1.22 | 11 | Pass |
| 64 | 5320 | 0.96 | 11 | Pass |
| 100 | 5500 | 1.02 | 11 | Pass |
| 116 | 5580 | 0.65 | 11 | Pass |
| 140 | 5700 | 1.23 | 11 | Pass |

802.11n (HT20)

| Channel | Frequency (MHz) | PSD (dBm) | | Total Power Density (dBm) | Maximum Limit (dBm) | Pass / Fail |
|---------|-----------------|-----------|---------|---------------------------|---------------------|-------------|
| | | Chain 0 | Chain 1 | | | |
| 36 | 5180 | -1.79 | -0.46 | 1.94 | 14.99 | Pass |
| 40 | 5200 | -1.67 | -0.64 | 1.89 | 14.99 | Pass |
| 48 | 5240 | -1.28 | -1.38 | 1.68 | 14.99 | Pass |
| 52 | 5260 | -1.77 | -1.61 | 1.32 | 8.99 | Pass |
| 60 | 5300 | -1.63 | -1.59 | 1.40 | 8.99 | Pass |
| 64 | 5320 | -0.82 | -1.02 | 2.09 | 8.99 | Pass |
| 100 | 5500 | -1.15 | -1.85 | 1.52 | 8.99 | Pass |
| 116 | 5580 | -1.47 | -1.32 | 1.62 | 8.99 | Pass |
| 140 | 5700 | -1.03 | -1.20 | 1.90 | 8.99 | Pass |

NOTE: 1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

2. For 5180~5240MHz:

Directional gain = $5\text{dBi} + 10\log(2) = 8.01\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $17 - (8.01 - 6) = 14.99\text{dBm}$.

For 5260~5700MHz:

Directional gain = $5\text{dBi} + 10\log(2) = 8.01\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $11 - (8.01 - 6) = 8.99\text{dBm}$.

802.11n (HT40)

| Channel | Frequency (MHz) | PSD (dBm) | | Total Power Density (dBm) | Maximum Limit (dBm) | Pass / Fail |
|---------|-----------------|-----------|---------|---------------------------|---------------------|-------------|
| | | Chain 0 | Chain 1 | | | |
| 38 | 5190 | -5.68 | -5.35 | -2.50 | 14.99 | Pass |
| 46 | 5230 | -4.52 | -5.46 | -1.95 | 14.99 | Pass |
| 54 | 5270 | -4.38 | -5.47 | -1.88 | 8.99 | Pass |
| 62 | 5310 | -5.71 | -5.77 | -2.73 | 8.99 | Pass |
| 102 | 5510 | -5.85 | -5.95 | -2.89 | 8.99 | Pass |
| 110 | 5550 | -5.71 | -5.91 | -2.80 | 8.99 | Pass |
| 134 | 5670 | -5.93 | -5.68 | -2.79 | 8.99 | Pass |

NOTE: 1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.

2. For 5180~5240MHz:

Directional gain = $5\text{dBi} + 10\log(2) = 8.01\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $17 - (8.01 - 6) = 14.99\text{dBm}$.

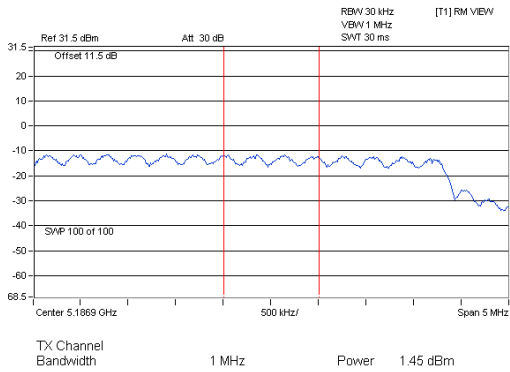
For 5260~5700MHz:

Directional gain = $5\text{dBi} + 10\log(2) = 8.01\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $11 - (8.01 - 6) = 8.99\text{dBm}$.

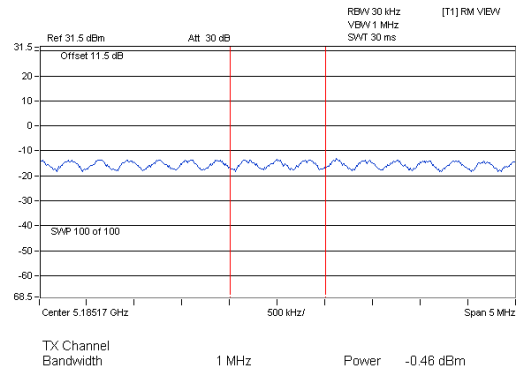
Spectrum Plot of Worst Value

802.11a

802.11n (HT20)

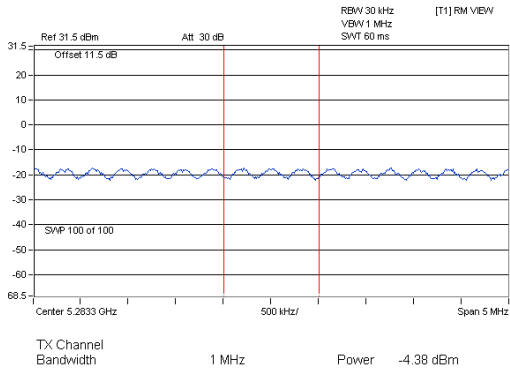


A D T



A D T

802.11n (HT40)



A D T

For U-NII-3 Band

802.11a

| Channel | Freq. (MHz) | PSD (dBm/300kHz) | PSD (dBm/500kHz) | Duty Factor | Total PSD (dBm/500kHz) | Limit (dBm/500kHz) | Pass / Fail |
|---------|-------------|------------------|------------------|-------------|------------------------|--------------------|-------------|
| 149 | 5745 | -6.36 | -4.14 | 0.20 | -3.94 | 30 | Pass |
| 157 | 5785 | -6.22 | -4.00 | 0.20 | -3.80 | 30 | Pass |
| 165 | 5825 | -6.27 | -4.05 | 0.20 | -3.85 | 30 | Pass |

802.11n (HT20)

| TX chain | Chan. | Freq. (MHz) | PSD (dBm /300kHz) | PSD (dBm /500kHz) | 10 log (N=2) dB | Duty Factor | Total PSD (dBm /500kHz) | Limit (dBm /500kHz) | Pass /Fail |
|----------|-------|-------------|-------------------|-------------------|-----------------|-------------|-------------------------|---------------------|------------|
| 0 | 149 | 5745 | -9.97 | -7.75 | 3.01 | 0.22 | -4.52 | 27.99 | Pass |
| | 157 | 5785 | -10.75 | -8.53 | 3.01 | 0.22 | -5.30 | 27.99 | Pass |
| | 165 | 5825 | -9.39 | -7.17 | 3.01 | 0.22 | -3.94 | 27.99 | Pass |
| 1 | 149 | 5745 | -8.95 | -6.73 | 3.01 | 0.22 | -3.50 | 27.99 | Pass |
| | 157 | 5785 | -8.99 | -6.77 | 3.01 | 0.22 | -3.54 | 27.99 | Pass |
| | 165 | 5825 | -8.82 | -6.60 | 3.01 | 0.22 | -3.37 | 27.99 | Pass |

*Directional gain = 5dBi + 10log(2) = 8.01dBi > 6dBi, so the power density limit shall be reduced to 30-(8.01-6) = 27.99dBm.

802.11n (HT40)

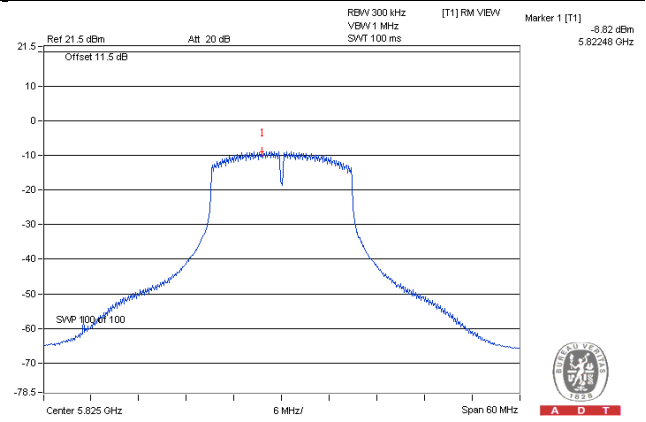
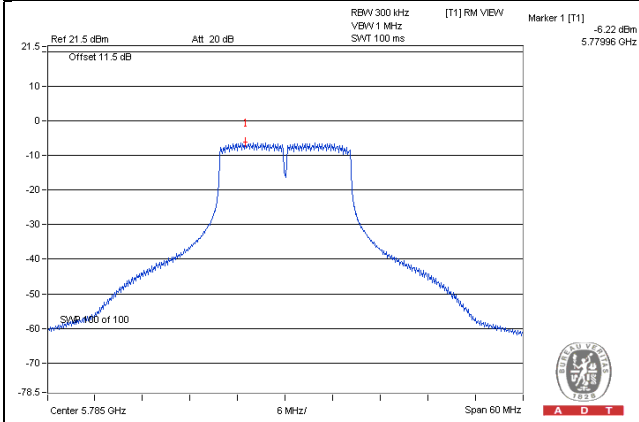
| TX chain | Chan. | Freq. (MHz) | PSD (dBm /300kHz) | PSD (dBm /500kHz) | 10 log (N=2) dB | Duty Factor | Total PSD (dBm /500kHz) | Limit (dBm /500kHz) | Pass /Fail |
|----------|-------|-------------|-------------------|-------------------|-----------------|-------------|-------------------------|---------------------|------------|
| 0 | 151 | 5755 | -13.73 | -11.51 | 3.01 | 0.32 | -8.18 | 27.99 | Pass |
| | 159 | 5795 | -14.27 | -12.05 | 3.01 | 0.32 | -8.72 | 27.99 | Pass |
| 1 | 151 | 5755 | -12.55 | -10.33 | 3.01 | 0.32 | -7.00 | 27.99 | Pass |
| | 159 | 5795 | -12.02 | -9.80 | 3.01 | 0.32 | -6.47 | 27.99 | Pass |

*Directional gain = 5dBi + 10log(2) = 8.01dBi > 6dBi, so the power density limit shall be reduced to 30-(8.01-6) = 27.99dBm.

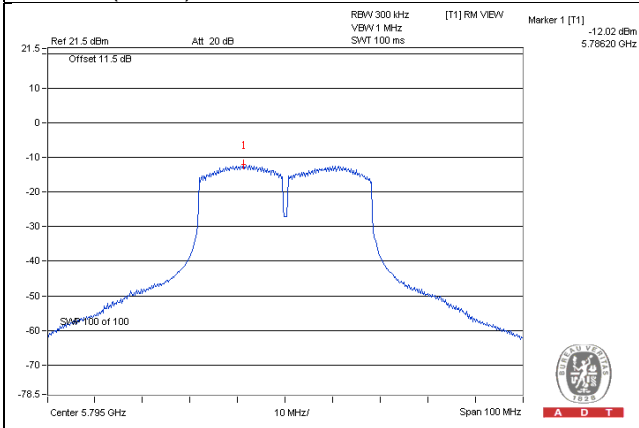
Spectrum Plot of Worst Value

802.11a

802.11n (HT20)



802.11n (HT40)

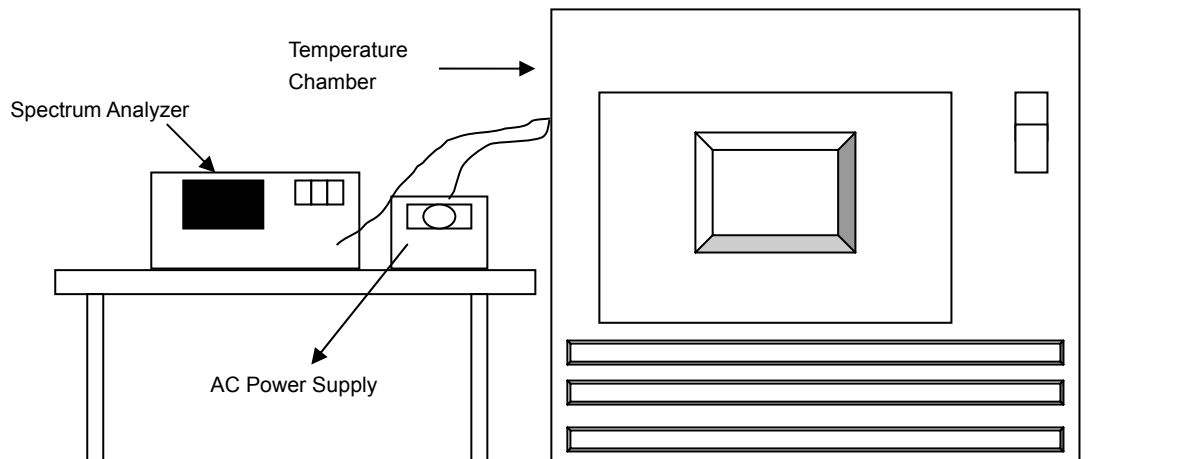


4.5 Frequency Stability

4.5.1 Limits of Frequency Stability Measurement

The frequency of the carrier signal shall be maintained within band of operation

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedure

- The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.
- Turn the EUT on and couple its output to a spectrum analyzer.
- Turn the EUT off and set the chamber to the highest temperature specified.
- 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.
- Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
- 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.

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

Set the EUT transmit at un-modulation mode to test frequency stability.

4.5.7 Test Results

| FREQUENCY STABILITY VERSUS TEMP. | | | | | | | | | |
|-----------------------------------------|-----------------------------------|-----------------------------------------|------------------------------------|-----------------------------------------|------------------------------------|-----------------------------------------|------------------------------------|-----------------------------------------|------------------------------------|
| OPERATING FREQUENCY: 5320MHz | | | | | | | | | |
| TEMP. (°C) | POWER SUPPLY (Vac) | 0 MINUTE | | 2 MINUTE | | 5 MINUTE | | 10 MINUTE | |
| | | Measured Frequency (MHz) | Frequency Drift (%) | Measured Frequency (MHz) | Frequency Drift (%) | Measured Frequency (MHz) | Frequency Drift (%) | Measured Frequency (MHz) | Frequency Drift (%) |
| 50 | 120 | 5320.0212 | 0.00040 | 5320.0244 | 0.00046 | 5320.0250 | 0.00047 | 5320.0247 | 0.00046 |
| 40 | 120 | 5320.0209 | 0.00039 | 5320.0174 | 0.00033 | 5320.0170 | 0.00032 | 5320.0216 | 0.00041 |
| 30 | 120 | 5320.0129 | 0.00024 | 5320.0130 | 0.00024 | 5320.0195 | 0.00037 | 5320.0131 | 0.00025 |
| 20 | 120 | 5320.0166 | 0.00031 | 5320.0109 | 0.00020 | 5320.0162 | 0.00030 | 5320.0167 | 0.00031 |
| 10 | 120 | 5319.9763 | -0.00045 | 5319.9752 | -0.00047 | 5319.9786 | -0.00040 | 5319.9753 | -0.00046 |
| 0 | 120 | 5320.0072 | 0.00014 | 5320.0168 | 0.00032 | 5320.0076 | 0.00014 | 5320.0122 | 0.00023 |
| -10 | 120 | 5320.0127 | 0.00024 | 5320.0100 | 0.00019 | 5320.0089 | 0.00017 | 5320.0145 | 0.00027 |
| -20 | 120 | 5319.9751 | -0.00047 | 5319.9779 | -0.00042 | 5319.9796 | -0.00038 | 5319.9777 | -0.00042 |
| -30 | 120 | 5320.0168 | 0.00032 | 5320.0131 | 0.00025 | 5320.0091 | 0.00017 | 5320.0150 | 0.00028 |

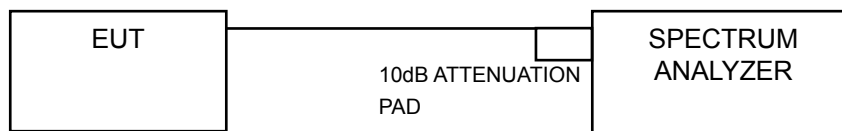
| FREQUENCY STABILITY VERSUS TEMP. | | | | | | | | | |
|-----------------------------------------|-----------------------------------|-----------------------------------------|------------------------------------|-----------------------------------------|------------------------------------|-----------------------------------------|------------------------------------|-----------------------------------------|------------------------------------|
| OPERATING FREQUENCY: 5320MHz | | | | | | | | | |
| TEMP. (°C) | POWER SUPPLY (Vac) | 0 MINUTE | | 2 MINUTE | | 5 MINUTE | | 10 MINUTE | |
| | | Measured Frequency (MHz) | Frequency Drift (%) | Measured Frequency (MHz) | Frequency Drift (%) | Measured Frequency (MHz) | Frequency Drift (%) | Measured Frequency (MHz) | Frequency Drift (%) |
| 20 | 138 | 5320.0171 | 0.00032 | 5320.0115 | 0.00022 | 5320.0152 | 0.00029 | 5320.0165 | 0.00031 |
| | 120 | 5320.0166 | 0.00031 | 5320.0109 | 0.00020 | 5320.0162 | 0.00030 | 5320.0167 | 0.00031 |
| | 102 | 5320.0171 | 0.00032 | 5320.0119 | 0.00022 | 5320.016 | 0.00030 | 5320.0171 | 0.00032 |

4.6 6dB Bandwidth Measurement

4.6.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedure

MEASUREMENT PROCEDURE REF

- Set resolution bandwidth (RBW) = 100kHz
- Set the video bandwidth (VBW) $\geq 3 \times$ RBW, Detector = Peak.
- Trace mode = max hold.
- Sweep = auto couple.
- Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

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

4.6.7 Test Results

802.11a

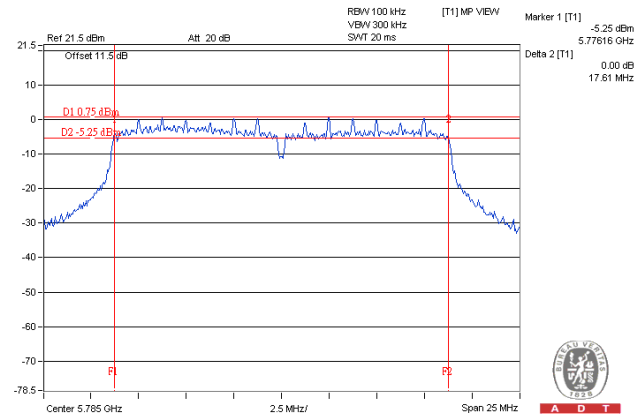
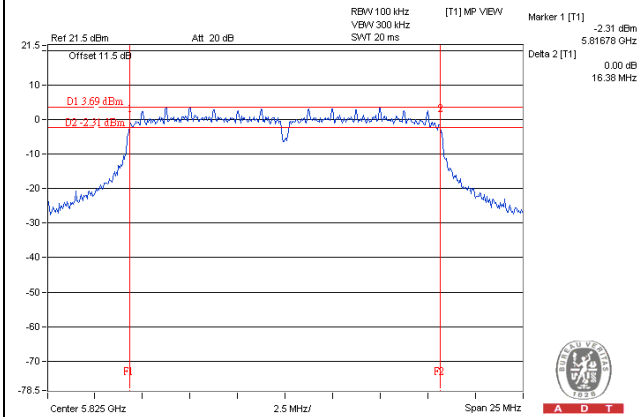
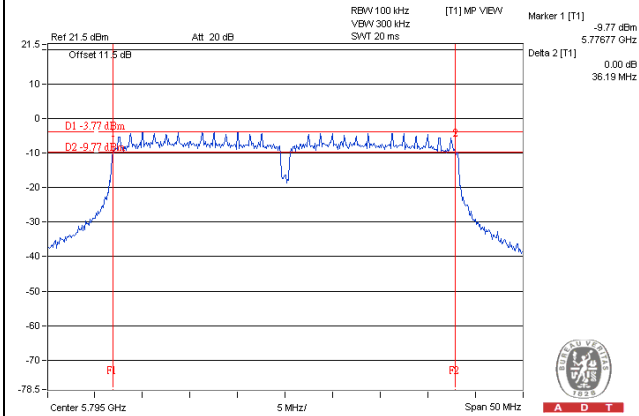
| Channel | Frequency (MHz) | 6dB Bandwidth (MHz) | Minimum Limit (MHz) | Pass / Fail |
|---------|-----------------|---------------------|---------------------|-------------|
| 149 | 5745 | 16.37 | 0.5 | Pass |
| 157 | 5785 | 16.38 | 0.5 | Pass |
| 165 | 5825 | 16.38 | 0.5 | Pass |

802.11n (HT20)

| Channel | Frequency (MHz) | 6dB Bandwidth (MHz) | | Minimum Limit (MHz) | Pass / Fail |
|---------|-----------------|---------------------|---------|---------------------|-------------|
| | | Chain 0 | Chain 1 | | |
| 149 | 5745 | 17.35 | 16.33 | 0.5 | Pass |
| 157 | 5785 | 17.32 | 17.61 | 0.5 | Pass |
| 165 | 5825 | 17.35 | 15.18 | 0.5 | Pass |

802.11n (HT40)

| Channel | Frequency (MHz) | 6dB Bandwidth (MHz) | | Minimum Limit (MHz) | Pass / Fail |
|---------|-----------------|---------------------|---------|---------------------|-------------|
| | | Chain 0 | Chain 1 | | |
| 151 | 5755 | 36.14 | 36.15 | 0.5 | Pass |
| 159 | 5795 | 36.19 | 35.61 | 0.5 | Pass |

Spectrum Plot of Worst Value**802.11a****802.11n (HT20)****802.11n (HT40)**



5 Pictures of Test Arrangements

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

Appendix – Information on the Testing Laboratories

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

If you have any comments, please feel free to contact us at the following:

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

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