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# FCC TEST REPORT

**REPORT NO.:** RF990421C09

**MODEL NO.:** AR5B95

**RECEIVED:** Apr. 21, 2010

**TESTED:** Apr. 28 ~ May 01, 2010

**ISSUED:** May 05, 2010

**APPLICANT:** Atheros Communications, Inc.

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**ISSUED BY:** Bureau Veritas Consumer Products Services  
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## 1. CERTIFICATION

**PRODUCT:** 802.11n 1x1 PCIe Minicard transceiver

**MODEL:** AR5B95

**BRAND:** Atheros

**APPLICANT:** Atheros Communications, Inc.

**TEST SAMPLE:** ENGINEERING SAMPLE

**TESTED:** Apr. 28 ~ May 01, 2010

**STANDARDS:** FCC Part 15, Subpart C (Section 15.247)

ANSI C63.4-2003

The above equipment (Model: AR5B95) 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** : Andrea Hsia , **DATE:** May 05, 2010  
Andrea Hsia / Specialist

**TECHNICAL ACCEPTANCE** : Long Chen , **DATE:** May 05, 2010  
Responsible for RF Long Chen / Senior Engineer

**APPROVED BY** : Gary Chang , **DATE:** May 05, 2010  
Gary Chang / Assistant Manager

**NOTE:** Test items for conducted emission and radiated emission test were performed for this addendum. Other testing data refer to original report.



## 2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

<b>APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)</b>			
<b>STANDARD SECTION</b>	<b>TEST TYPE AND LIMIT</b>	<b>RESULT</b>	<b>REMARK</b>
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -9.49dB at 0.197MHz.
15.247(a)(2)	Spectrum Bandwidth of a Direct Sequence Spread Spectrum System Limit: min. 500kHz	NA	Refer to Note below
15.247(b)	Maximum Output Power Limit: max. 30dBm	NA	Refer to Note below
15.247(d)	Radiated Emissions Limit: Table 15.209	PASS	Meet the requirement of limit. Minimum passing margin is -1.0dB at 2483.0 & 2390.00MHz
15.247(e)	Power Spectral Density Limit: max. 8dBm	NA	Refer to Note below
15.247(d)	Band Edge Measurement Limit: 20dB less than the peak value of fundamental frequency	NA	Refer to Note below
15.203	Antenna Requirement	PASS	Antenna connector is U.FL-R-SMT not a standard connector.

**NOTE:** Test items for conducted emission and radiated emission test were performed for this addendum. Other testing data refer to original report.

### 2.1 MEASUREMENT UNCERTAINTY

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

<b>MEASUREMENT</b>	<b>FREQUENCY</b>	<b>UNCERTAINTY</b>
Conducted emissions	150kHz~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	2.93 dB
	200MHz ~1000MHz	2.95 dB
	1GHz ~ 18GHz	2.26 dB
	18GHz ~ 40GHz	1.94 dB

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



### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

<b>EUT</b>	802.11n 1x1 PCIe Minicard transceiver
<b>MODEL NO.</b>	AR5B95
<b>FCC ID</b>	PPD-AR5B95-F
<b>POWER SUPPLY</b>	3.3Vdc
<b>MODULATION TYPE</b>	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
<b>MODULATION TECHNOLOGY</b>	DSSS, OFDM
<b>TRANSFER RATE</b>	802.11b: 11/5.5/2/1Mbps 802.11g: 54/48/36/24/18/12/9/6Mbps 802.11n: up to 150Mbps
<b>OPERATING FREQUENCY</b>	2412 ~ 2462MHz
<b>NUMBER OF CHANNEL</b>	11 for 802.11b, 802.11g, 802.11n (20MHz) 7 for 802.11n (40MHz)
<b>ANTENNA TYPE</b>	PIFA antenna with -3.47dBi gain (Main antenna) PIFA antenna with -3.98dBi gain (Aux. antenna)
<b>ANTENNA CONNECTOR</b>	U.FL-R-SMT
<b>I/O PORTS</b>	NA
<b>DATA CABLE</b>	NA
<b>ACCESSORY DEVICES</b>	NA

**NOTE:**

- This report is prepared for FCC class II permissive change. The differences compared with original report are changing the antenna and adding the platform. Therefore, test items for AC power conducted emission and radiated emission test were performed for this addendum.
- The EUT were operated with following platforms:

BRAND	MODEL	REMARK
FUJITSU	PH520yxxx (y="/" or blank, x=0~9, A~Z or blank)	CPU model is AMD
FUJITSU	PH530yxxx (y="/" or blank, x=0~9, A~Z or blank)	CPU model is Intel

- The EUT provides one completed transmitter and two receivers.

MODULATION MODE	TX FUNCTION
802.11b	1TX
802.11g	1TX
802.11n (20MHz)	1TX
802.11n (40MHz)	1TX

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

### 3.2 DESCRIPTION OF TEST MODES

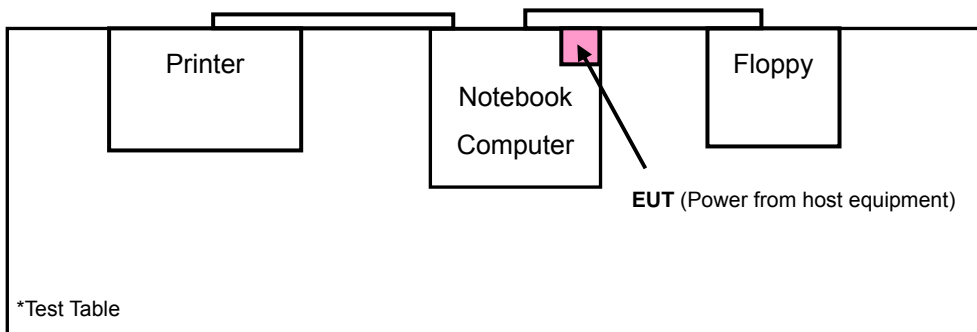
11 channels are provided for 802.11b, 802.11g and 802.11n (20MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	2412MHz	7	2442MHz
2	2417MHz	8	2447MHz
3	2422MHz	9	2452MHz
4	2427MHz	10	2457MHz
5	2432MHz	11	2462MHz
6	2437MHz		

7 channels are provided for 802.11n (40MHz):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	2422MHz	5	2442MHz
2	2427MHz	6	2447MHz
3	2432MHz	7	2452MHz
4	2437MHz		

#### 3.2.1 CONFIGURATION OF SYSTEM UNDER TEST





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### 3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO			DESCRIPTION
	RE $\geq$ 1G	RE<1G	PLC	
A	√	√	√	EUT with Platform: PH520
B	-	√	√	EUT with Platform: PH530

Where **RE $\geq$ 1G**: Radiated Emission above 1GHz  
**RE<1G**: Radiated Emission below 1GHz  
**PLC**: Power Line Conducted Emission  
**NOTE**: "-" means no effect.

#### **RADIATED EMISSION TEST (ABOVE 1GHz):**

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
A	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
A	802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
A	802.11n (40MHz)	1 to 7	1, 4, 7	OFDM	BPSK	13.5

#### **RADIATED EMISSION TEST (BELOW 1GHz):**

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A & B	802.11g	1 to 11	6	OFDM	BPSK	6.0

#### **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	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A & B	802.11g	1 to 11	6	OFDM	BPSK	6.0



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**TEST CONDITION:**

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE $\geq$ 1G	23deg. C, 70%RH, 1020 hPa	120Vac, 60Hz	Lori Chiu
RE<1G	23deg. C, 70%RH, 1020 hPa	120Vac, 60Hz	Lori Chiu
PLC	22deg. C, 66%RH, 1008 hPa	120Vac, 60Hz	Dean Wang





### 3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

#### FCC Part 15, Subpart C (15.247)

#### ANSI C63.4-2003

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

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

### 3.4 DESCRIPTION OF SUPPORT UNITS

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

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	PRINTER	hp	hp-1015	Q2462A -CNFG149502	NA
2	FLOPPY	SONY	MPF82E	50010254	FCC DoC Approved
3	NOTEBOOK COMPUTER	FUJITSU	PH520	NA	NA
4	NOTEBOOK COMPUTER	FUJITSU	PH530	NA	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	10m UTP RJ45 cable.
2	0.6m shielded USB cable
3	10m UTP RJ45 cable.
4	10m UTP RJ45 cable.

**NOTE:** 1. All power cords of the above support units are non shielded (1.8m).  
2. Items 1~2 acted as communication partners to transfer data.  
3. Item 3 ~ 4 were supplied from client.



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## 4. TEST TYPES AND RESULTS

### 4.1 RADIATED EMISSION MEASUREMENT

#### 4.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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

FREQUENCIES (MHz)	FIELD STRENGTH (microvolts/meter)	MEASUREMENT DISTANCE (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

**NOTE:**

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



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#### 4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESIB7	100212	May 25, 2009	May 24, 2010
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100040	Jul. 07, 2009	Jul. 06, 2010
BILOG Antenna SCHWARZBECK	VULB9168	9168-156	Apr. 30, 2010	Apr. 29, 2011
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-563	Aug. 10, 2009	Aug. 09, 2010
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170242	Dec. 25, 2009	Dec. 24, 2010
Preamplifier Agilent	8449B	3008A01910	Sep. 11, 2009	Sep. 10, 2010
Preamplifier Agilent	8447D	2944A10638	Dec. 21, 2009	Dec. 20, 2010
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	218190/4 231241/4	May 13, 2009	May 12, 2010
RF signal cable Worken	8D-FB	Cable-HYCH9-01	Aug. 17, 2009	Aug. 16, 2010
Software	ADT_Radiated_ V7.6.15.9.2	NA	NA	NA
Antenna Tower EMCO	2070/2080	512.835.4684	NA	NA
Turn Table EMCO	2087-2.03	NA	NA	NA
Antenna Tower & Turn Table Controller EMCO	2090	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 Chamber 9.
  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 460141.
  5. The IC Site Registration No. is IC 7450F-4.



#### 4.1.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

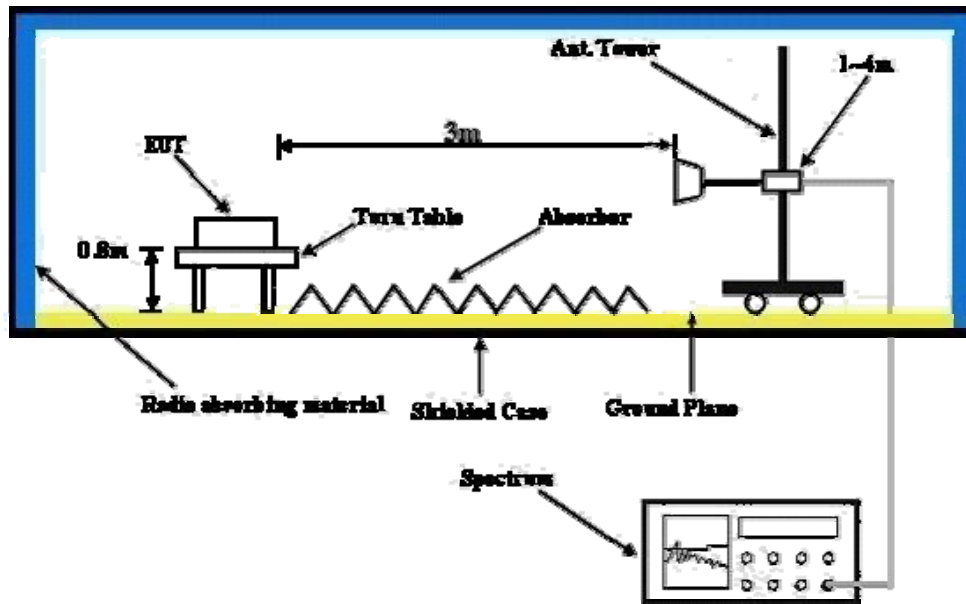
**NOTE:**

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

#### 4.1.4 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.1.5 TEST SETUP



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

#### 4.1.6 EUT OPERATING CONDITIONS

- Connected the EUT to notebook and placed on a testing table.
- The notebook ran a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.



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### 4.1.7 TEST RESULTS

#### 802.11b

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH 1020 hPa	TESTED BY	Lori Chiu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	56.5 PK	74.0	-17.5	1.12 H	75	24.20	32.30
2	2390.00	45.3 AV	54.0	-8.7	1.12 H	75	13.00	32.30
3	*2412.00	102.0 PK			1.12 H	75	69.60	32.40
4	*2412.00	97.1 AV			1.12 H	75	64.70	32.40
5	4824.00	47.9 PK	74.0	-26.1	1.20 H	85	9.50	38.40
6	4824.00	37.8 AV	54.0	-16.2	1.20 H	85	-0.60	38.40
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	56.8 PK	74.0	-17.2	1.64 V	114	24.50	32.30
2	2390.00	45.4 AV	54.0	-8.6	1.64 V	114	13.10	32.30
3	*2412.00	102.7 PK			1.64 V	114	70.30	32.40
4	*2412.00	98.0 AV			1.64 V	114	65.60	32.40
5	4824.00	50.1 PK	74.0	-23.9	1.07 V	25	11.70	38.40
6	4824.00	39.2 AV	54.0	-14.8	1.07 V	25	0.80	38.40

- 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.
  5. “ \* ”: Fundamental frequency.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH 1020 hPa	TESTED BY	Lori Chiu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	102.1 PK			1.11 H	16	69.70	32.40
2	*2437.00	97.2 AV			1.11 H	16	64.80	32.40
3	4874.00	51.0 PK	74.0	-23.0	1.22 H	86	12.50	38.50
4	4874.00	45.4 AV	54.0	-8.6	1.22 H	86	6.90	38.50

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	*2437.00	103.0 PK			1.00 V	108	70.60	32.40
2	*2437.00	98.2 AV			1.00 V	108	65.80	32.40
3	4874.00	51.8 PK	74.0	-22.2	1.28 V	310	13.30	38.50
4	4874.00	46.3 AV	54.0	-7.7	1.28 V	310	7.80	38.50

- 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.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH 1020 hPa	TESTED BY	Lori Chiu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	102.4 PK			1.10 H	77	69.90	32.50
2	*2462.00	97.9 AV			1.10 H	77	65.40	32.50
3	2483.50	56.9 PK	74.0	-17.1	1.10 H	77	24.30	32.60
4	2483.50	45.7 AV	54.0	-8.3	1.10 H	77	13.10	32.60
5	4924.00	48.2 PK	74.0	-25.8	1.01 H	19	9.60	38.60
6	4924.00	38.0 AV	54.0	-16.0	1.01 H	19	-0.60	38.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	103.5 PK			1.59 V	120	71.00	32.50
2	*2462.00	99.6 AV			1.59 V	120	67.10	32.50
3	2483.50	57.3 PK	74.0	-16.7	1.59 V	120	24.70	32.60
4	2483.50	45.9 AV	54.0	-8.1	1.59 V	120	13.30	32.60
5	4924.00	50.5 PK	74.0	-23.5	1.40 V	319	11.90	38.60
6	4924.00	40.6 AV	54.0	-13.4	1.40 V	319	2.00	38.60

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





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802.11g

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH 1020 hPa	TESTED BY	Lori Chiu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	67.1 PK	74.0	-6.9	1.09 H	128	34.80	32.30
2	2390.00	50.8 AV	54.0	-3.2	1.09 H	128	18.50	32.30
3	*2412.00	101.7 PK			1.10 H	128	69.30	32.40
4	*2412.00	90.1 AV			1.10 H	128	57.70	32.40
5	4824.00	46.2 PK	74.0	-27.8	1.05 H	115	7.80	38.40
6	4824.00	33.2 AV	54.0	-20.8	1.05 H	115	-5.20	38.40
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	68.4 PK	74.0	-5.6	1.18 V	288	36.10	32.30
2	2390.00	51.9 AV	54.0	-2.1	1.18 V	288	19.60	32.30
3	*2412.00	102.8 PK			1.13 V	287	70.40	32.40
4	*2412.00	91.5 AV			1.13 V	287	59.10	32.40
5	4824.00	47.3 PK	74.0	-26.7	1.00 V	159	8.90	38.40
6	4824.00	34.0 AV	54.0	-20.0	1.00 V	159	-4.40	38.40

- 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.
  5. “ \* “: Fundamental frequency.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH 1020 hPa	TESTED BY	Lori Chiu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	105.6 PK			1.14 H	123	73.20	32.40
2	*2437.00	94.3 AV			1.14 H	123	61.90	32.40
3	4874.00	48.2 PK	74.0	-25.8	1.06 H	344	9.70	38.50
4	4874.00	35.3 AV	54.0	-18.7	1.06 H	344	-3.20	38.50
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	*2437.00	106.5 PK			1.12 V	264	74.10	32.40
2	*2437.00	95.0 AV			1.12 V	264	62.60	32.40
3	4874.00	48.9 PK	74.0	-25.1	1.20 V	160	10.40	38.50
4	4874.00	35.5 AV	54.0	-18.5	1.20 V	160	-3.00	38.50

- 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.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH 1020 hPa	TESTED BY	Lori Chiu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	101.9 PK			1.11 H	130	69.40	32.50
2	*2462.00	90.3 AV			1.11 H	130	57.80	32.50
3	2483.50	66.0 PK	74.0	-8.0	1.11 H	130	33.40	32.60
4	2483.50	51.1 AV	54.0	-2.9	1.11 H	130	18.50	32.60
5	4924.00	47.2 PK	74.0	-26.8	1.04 H	156	8.60	38.60
6	4924.00	34.0 AV	54.0	-20.0	1.04 H	156	-4.60	38.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	102.9 PK			1.12 V	261	70.40	32.50
2	*2462.00	91.7 AV			1.12 V	261	59.20	32.50
3	2483.50	66.2 PK	74.0	-7.8	1.11 V	261	33.60	32.60
4	2483.50	51.5 AV	54.0	-2.5	1.11 V	261	18.90	32.60
5	4924.00	47.8 PK	74.0	-26.2	1.00 V	166	9.20	38.60
6	4924.00	34.2 AV	54.0	-19.8	1.00 V	166	-4.40	38.60

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



A D T

802.11n (20MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH 1020 hPa	TESTED BY	Lori Chiu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	65.3 PK	74.0	-8.7	1.00 H	106	33.00	32.30
2	2390.00	50.4 AV	54.0	-3.6	1.00 H	106	18.10	32.30
3	*2412.00	100.1 PK			1.00 H	106	67.70	32.40
4	*2412.00	88.7 AV			1.00 H	106	56.30	32.40
5	4824.00	47.3 PK	74.0	-26.7	1.37 H	61	8.90	38.40
6	4824.00	34.1 AV	54.0	-19.9	1.37 H	61	-4.30	38.40
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	66.1 PK	74.0	-7.9	1.16 V	260	33.80	32.30
2	2390.00	51.1 AV	54.0	-2.9	1.16 V	260	18.80	32.30
3	*2412.00	101.5 PK			1.16 V	260	69.10	32.40
4	*2412.00	89.5 AV			1.16 V	260	57.10	32.40
5	4824.00	47.6 PK	74.0	-26.4	1.03 V	255	9.20	38.40
6	4824.00	34.5 AV	54.0	-19.5	1.03 V	255	-3.90	38.40

- 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.
  5. “ \* “: Fundamental frequency.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH 1020 hPa	TESTED BY	Lori Chiu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	105.2 PK			1.00 H	66	72.80	32.40
2	*2437.00	94.1 AV			1.00 H	66	61.70	32.40
3	4874.00	48.3 PK	74.0	-25.7	1.01 H	279	9.80	38.50
4	4874.00	35.1 AV	54.0	-18.9	1.01 H	279	-3.40	38.50

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	*2437.00	106.2 PK			1.16 V	357	73.80	32.40
2	*2437.00	94.6 AV			1.16 V	357	62.20	32.40
3	4874.00	48.7 PK	74.0	-25.3	1.25 V	200	10.20	38.50
4	4874.00	35.9 AV	54.0	-18.1	1.25 V	200	-2.60	38.50

- 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.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH 1020 hPa	TESTED BY	Lori Chiu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	100.6 PK			1.33 H	14	68.10	32.50
2	*2462.00	89.7 AV			1.33 H	14	57.20	32.50
3	2483.50	64.6 PK	74.0	-9.4	1.33 H	14	32.00	32.60
4	2483.50	50.9 AV	54.0	-3.1	1.33 H	14	18.30	32.60
5	4924.00	47.5 PK	74.0	-26.5	1.00 H	9	8.90	38.60
6	4924.00	33.7 AV	54.0	-20.3	1.00 H	9	-4.90	38.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	101.7 PK			1.24 V	155	69.20	32.50
2	*2462.00	90.1 AV			1.24 V	155	57.60	32.50
3	2483.50	65.8 PK	74.0	-8.2	1.24 V	155	33.20	32.60
4	2483.50	51.1 AV	54.0	-2.9	1.24 V	155	18.50	32.60
5	4924.00	47.9 PK	74.0	-26.1	1.06 V	300	9.30	38.60
6	4924.00	34.1 AV	54.0	-19.9	1.06 V	300	-4.50	38.60

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



A D T

802.11n (40MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH 1020 hPa	TESTED BY	Lori Chiu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	69.7 PK	74.0	-4.3	1.19 H	100	37.40	32.30
2	2390.00	53.0 AV	54.0	-1.0	1.19 H	100	20.70	32.30
3	*2422.00	95.0 PK			1.18 H	103	62.60	32.40
4	*2422.00	83.0 AV			1.18 H	103	50.60	32.40
5	4844.00	48.3 PK	74.0	-25.7	1.01 H	214	9.90	38.40
6	4844.00	34.0 AV	54.0	-20.0	1.01 H	214	-4.40	38.40
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	70.2 PK	74.0	-3.8	1.13 V	76	37.90	32.30
2	2390.00	53.0 AV	54.0	-1.0	1.13 V	76	20.70	32.30
3	*2422.00	96.0 PK			1.01 V	155	63.60	32.40
4	*2422.00	83.8 AV			1.01 V	155	51.40	32.40
5	4844.00	48.9 PK	74.0	-25.1	1.00 V	2	10.50	38.40
6	4844.00	34.8 AV	54.0	-19.2	1.00 V	2	-3.60	38.40

- 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.
  5. “ \* “: Fundamental frequency.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 4	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH 1020 hPa	TESTED BY	Lori Chiu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	72.5 PK	74.0	-1.5	1.10 H	101	40.20	32.30
2	2390.00	52.8 AV	54.0	-1.2	1.10 H	101	20.50	32.30
3	*2437.00	99.7 PK			1.10 H	101	67.30	32.40
4	*2437.00	86.5 AV			1.10 H	101	54.10	32.40
5	2483.50	72.7 PK	74.0	-1.3	1.10 H	101	40.10	32.60
6	2483.50	52.8 AV	54.0	-1.2	1.10 H	101	20.20	32.60
7	4874.00	50.7 PK	74.0	-23.3	1.20 H	157	12.20	38.50
8	4874.00	36.1 AV	54.0	-17.9	1.20 H	157	-2.40	38.50
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	2390.00	72.8 PK	74.0	-1.2	1.08 V	73	40.50	32.30
2	2390.00	53.0 AV	54.0	-1.0	1.08 V	73	20.70	32.30
3	*2437.00	100.0 PK			1.08 V	73	67.60	32.40
4	*2437.00	87.6 AV			1.08 V	73	55.20	32.40
5	2483.50	72.9 PK	74.0	-1.1	1.08 V	73	40.30	32.60
6	2483.50	53.0 AV	54.0	-1.0	1.08 V	73	20.40	32.60
7	4874.00	51.6 PK	74.0	-22.4	1.05 V	110	13.10	38.50
8	4874.00	36.4 AV	54.0	-17.6	1.05 V	110	-2.10	38.50

- 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.





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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 7	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH 1020 hPa	TESTED BY	Lori Chiu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	95.6 PK			1.20 H	100	63.10	32.50
2	*2452.00	83.4 AV			1.20 H	100	50.90	32.50
3	2483.50	65.2 PK	74.0	-8.8	1.20 H	100	32.60	32.60
4	2483.50	51.9 AV	54.0	-2.1	1.20 H	100	19.30	32.60
5	4904.00	49.0 PK	74.0	-25.0	1.13 H	262	10.50	38.50
6	4904.00	35.1 AV	54.0	-18.9	1.13 H	262	-3.40	38.50
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	*2452.00	96.3 PK			1.02 V	160	63.80	32.50
2	*2452.00	84.0 AV			1.02 V	160	51.50	32.50
3	2483.50	65.5 PK	74.0	-8.5	1.13 V	260	32.90	32.60
4	2483.50	52.1 AV	54.0	-1.9	1.13 V	260	19.50	32.60
5	4904.00	49.3 PK	74.0	-24.7	1.48 V	246	10.80	38.50
6	4904.00	35.4 AV	54.0	-18.6	1.48 V	246	-3.10	38.50

- 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.



A D T

**BELOW 1GHz WORST-CASE DATA : 802.11g**

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH 1020 hPa	TEST MODE	A
TESTED BY	Lori Chiu		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	467.36	36.3 QP	46.0	-9.7	1.75 H	169	18.03	18.25
2	601.52	39.9 QP	46.0	-6.1	1.25 H	133	17.97	21.93
3	760.95	38.0 QP	46.0	-8.0	1.00 H	259	13.74	24.25
4	801.78	38.8 QP	46.0	-7.2	1.00 H	139	13.49	25.34
5	860.11	38.7 QP	46.0	-7.3	1.50 H	265	12.93	25.73
6	949.55	37.3 QP	46.0	-8.7	2.00 H	43	10.78	26.49
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	45.45	32.3 QP	40.0	-7.7	1.00 V	64	19.67	12.59
2	62.95	32.6 QP	40.0	-7.5	1.25 V	142	19.70	12.85
3	601.52	37.4 QP	46.0	-8.6	1.50 V	169	15.50	21.93
4	760.95	38.4 QP	46.0	-7.6	1.50 V	136	14.11	24.25
5	827.06	39.8 QP	46.0	-6.3	1.50 V	193	14.26	25.49
6	869.83	38.4 QP	46.0	-7.6	1.25 V	190	12.53	25.83
7	935.94	39.2 QP	46.0	-6.8	1.00 V	172	12.82	26.39

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



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH 1020 hPa	TEST MODE	B
TESTED BY	Lori Chiu		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	125.17	30.1 QP	43.5	-13.4	1.75 H	274	18.11	11.96
2	169.89	31.9 QP	43.5	-11.6	1.25 H	124	18.95	12.96
3	206.83	29.2 QP	43.5	-14.3	1.00 H	238	18.28	10.90
4	251.55	33.0 QP	46.0	-13.0	1.25 H	223	20.14	12.86
5	296.27	37.5 QP	46.0	-8.5	1.00 H	283	23.92	13.61
6	838.72	33.9 QP	46.0	-12.1	1.00 H	28	8.34	25.57
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	30.00	24.4 QP	40.0	-15.6	1.00 V	262	12.15	12.28
2	134.89	28.5 QP	43.5	-15.0	1.25 V	283	16.19	12.34
3	189.33	33.3 QP	43.5	-10.2	1.25 V	340	21.86	11.45
4	284.60	31.4 QP	46.0	-14.6	1.50 V	232	17.96	13.41
5	838.72	33.4 QP	46.0	-12.6	1.00 V	10	7.79	25.57
6	957.33	33.1 QP	46.0	-12.9	1.00 V	190	6.53	26.53

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



## 4.2 CONDUCTED EMISSION MEASUREMENT

### 4.2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB $\mu$ V)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56	56 to 46
0.5 ~ 5	56	46
5 ~ 30	60	50

- NOTE:** 1. The lower limit shall apply at the transition frequencies.  
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.  
3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

### 4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Test Receiver ROHDE & SCHWARZ	ESCS30	100288	Sep. 24, 2009	Sep. 23, 2010
RF signal cable Woken	5D-FB	Cable-HYCO2-01	Dec. 31, 2009	Dec. 30, 2010
LISN ROHDE & SCHWARZ	ESH2-Z5	100100	Aug. 24, 2009	Aug. 23, 2010
LISN ROHDE & SCHWARZ	ESH3-Z5	100311	Jul. 29, 2009	Jul. 28, 2010
Software ADT	ADT_Cond_ V7.3.7	NA	NA	NA

- NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.  
2. The test was performed in HwaYa Shielded Room 2.  
3. The VCCI Site Registration No. is C-2047.



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#### 4.2.3 TEST PROCEDURES

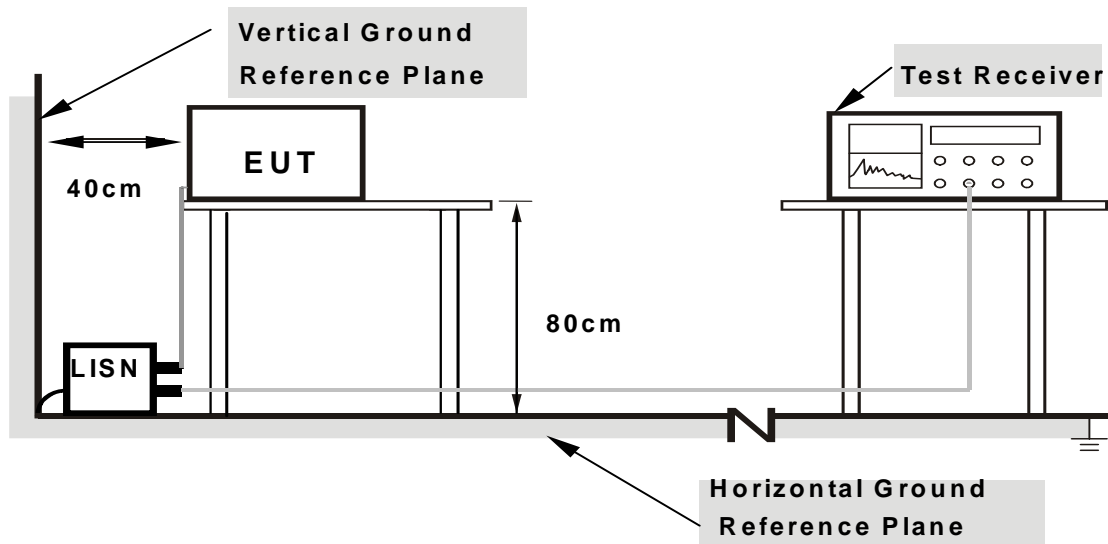
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling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

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

#### 4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.2.5 TEST SETUP



- Note:**
1. Support units were connected to second LISN.
  2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

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

#### 4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6.

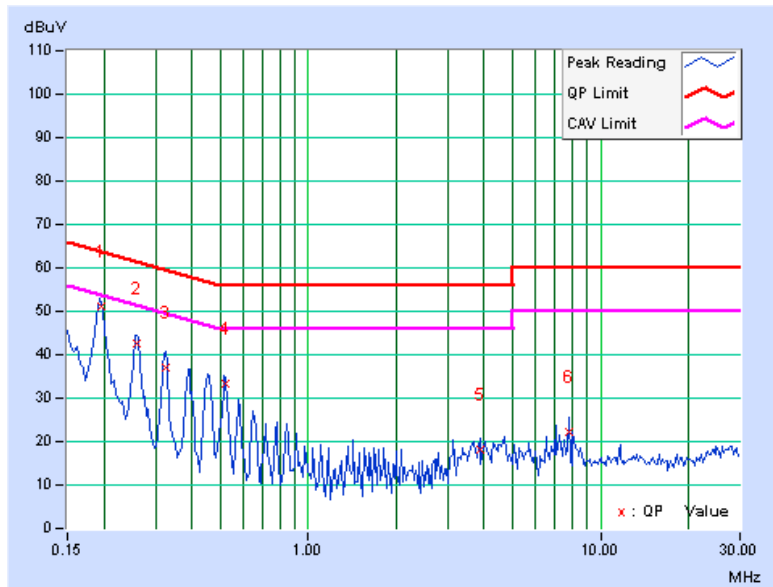
### 4.2.7 TEST RESULTS

**CONDUCTED WORST-CASE DATA : 802.11g**

<b>PHASE</b>	Line 1	<b>6dB BANDWIDTH</b>	9kHz
<b>TEST MODE</b>	A		

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	0.196	0.16	50.88	-	51.04	-	63.80	53.80	-12.76	-
2	0.261	0.17	42.31	-	42.48	-	61.41	51.41	-18.93	-
3	0.326	0.17	36.89	-	37.06	-	59.56	49.56	-22.50	-
4	0.521	0.19	33.25	-	33.44	-	56.00	46.00	-22.56	-
5	3.895	0.35	17.97	-	18.32	-	56.00	46.00	-37.68	-
6	7.792	0.35	21.87	-	22.22	-	60.00	50.00	-37.78	-

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



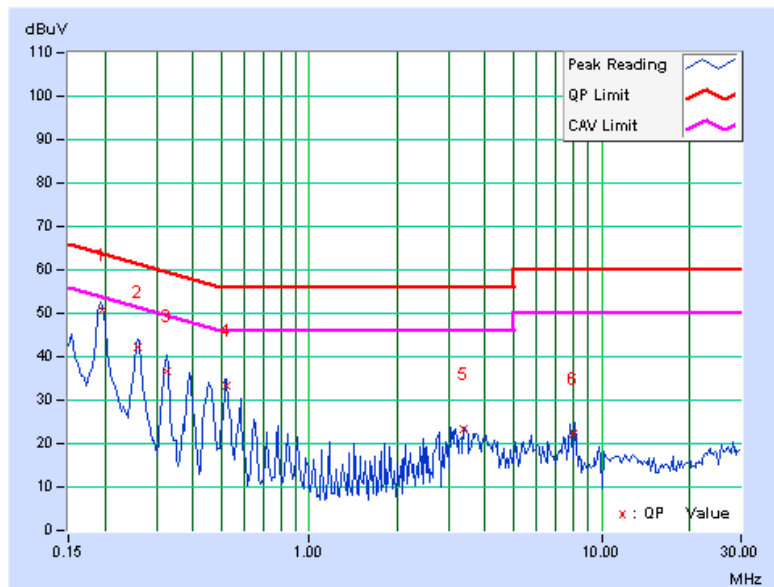


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PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	A		

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.196	0.16	50.56	-	50.72	-	63.80	53.80	-13.08	-
2	0.261	0.17	42.07	-	42.24	-	61.41	51.41	-19.17	-
3	0.326	0.17	36.53	-	36.70	-	59.56	49.56	-22.86	-
4	0.521	0.19	33.25	-	33.44	-	56.00	46.00	-22.56	-
5	3.377	0.34	22.83	-	23.17	-	56.00	46.00	-32.83	-
6	8.053	0.35	21.91	-	22.26	-	60.00	50.00	-37.74	-

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

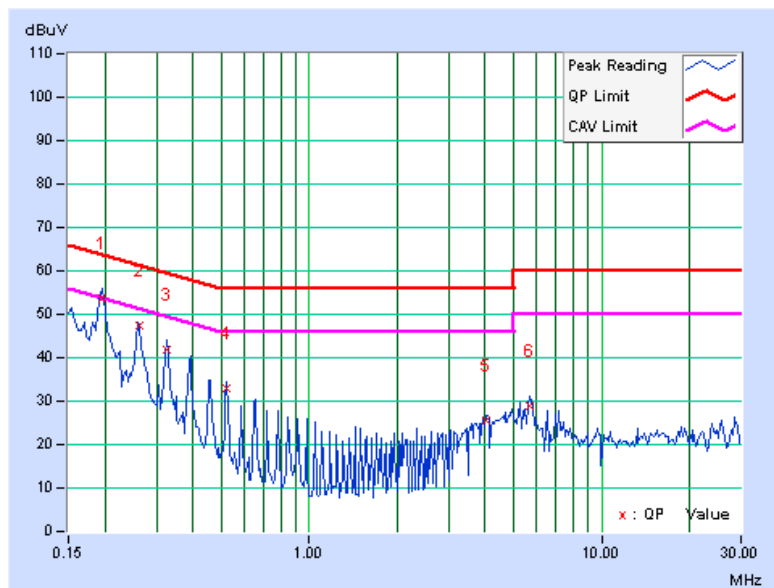




<b>PHASE</b>	Line 1	<b>6dB BANDWIDTH</b>	9kHz
<b>TEST MODE</b>	B		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.197	0.16	53.70	43.35	53.86	43.51	63.74	53.74	-9.88	-10.23
2	0.262	0.17	47.16	-	47.33	-	61.37	51.37	-14.04	-
3	0.327	0.17	41.56	-	41.73	-	59.53	49.53	-17.79	-
4	0.521	0.19	32.82	-	33.01	-	56.00	46.00	-22.99	-
5	4.047	0.35	25.22	-	25.57	-	56.00	46.00	-30.43	-
6	5.680	0.35	28.60	-	28.95	-	60.00	50.00	-31.05	-

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



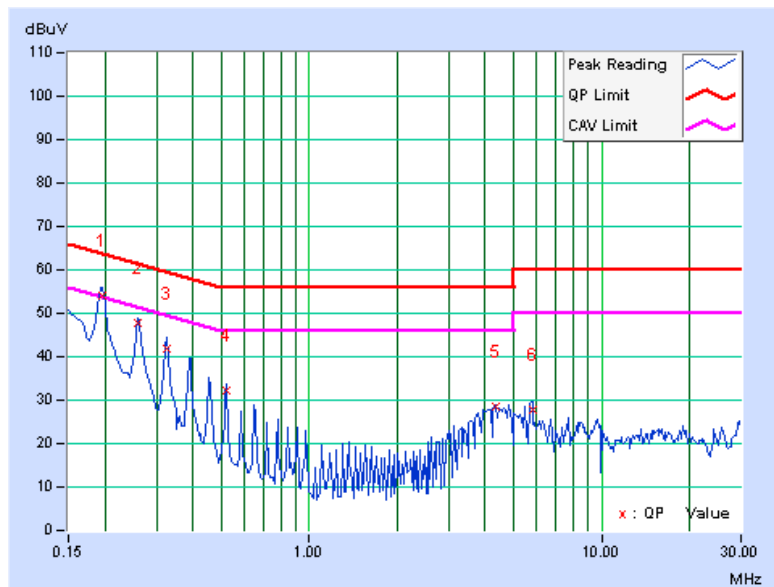


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PHASE	Line 2	6dB BANDWIDTH	9kHz
TEST MODE	B		

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.197	0.13	54.12	43.71	54.25	43.84	63.74	53.74	-9.49	-9.90
2	0.261	0.14	47.56	-	47.70	-	61.41	51.41	-13.71	-
3	0.327	0.15	41.86	-	42.01	-	59.53	49.53	-17.52	-
4	0.521	0.17	32.14	-	32.31	-	56.00	46.00	-23.69	-
5	4.368	0.36	28.00	-	28.36	-	56.00	46.00	-27.64	-
6	5.804	0.38	27.36	-	27.74	-	60.00	50.00	-32.26	-

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





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## 5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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



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## 6. INFORMATION ON THE TESTING LABORATORIES

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

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

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

**Linko EMC/RF Lab:**

Tel: 886-2-26052180

Fax: 886-2-26051924

**Hsin Chu EMC/RF Lab:**

Tel: 886-3-5935343

Fax: 886-3-5935342

**Hwa Ya EMC/RF/Safety/TPCI Lab:**

Tel: 886-3-3183232

Fax: 886-3-3185050

**Web Site:** [www.adt.com.tw](http://www.adt.com.tw)

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



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

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

**---END---**