

FCC TEST REPORT (WLAN-15.247)

REPORT NO.: RF140212E04J

MODEL NO.: AR5B22-SB

FCC ID: PPD-AR5B22SB

IC: 4104A-AR5B22SB

RECEIVED: Oct. 24, 2014

TESTED: Oct. 24 to Nov. 12, 2014

ISSUED: Nov. 19, 2014

APPLICANT: Qualcomm Atheros, Inc.

ADDRESS: 1700 Technology Drive, San Jose, CA 95110

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

LAB ADDRESS : No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen,
Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan,
R.O.C.

TEST LOCATION (1): No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen,
Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan,
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TEST LOCATION (2): No. 49, Ln. 206, Wende Rd., Shangshan Tsuen, Chiung
Lin Hsiang, Hsin Chu Hsien 307, Taiwan, R.O.C.

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RELEASE CONTROL RECORD

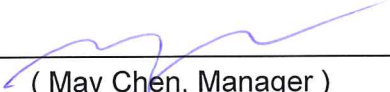
ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF140212E04J	Original release	Nov. 19, 2014

1. CERTIFICATION

PRODUCT: PCIE 802.11b/g/n 2.4GHz + USB BT 4.0 card
BRAND NAME: Atheros
MODEL NO.: AR5B22-SB
TEST SAMPLE: R&D SAMPLE
APPLICANT: Qualcomm Atheros, Inc.
TESTED: Oct. 24 to Nov. 12, 2014
STANDARDS: FCC Part 15, Subpart C (Section 15.247)
ANSI C63.10-2009
Canada RSS-210 Issue 8 (2010-12)
Canada RSS-Gen Issue 3 (2010-12)

The above equipment (Model: AR5B22-SB) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and was in 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:** Nov. 19, 2014
(Lori Chung, Specialist)

Approved By :  , **Date:** Nov. 19, 2014
(May Chen, Manager)

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247) ; RSS-210; RSS-Gen				
STANDARD SECTION		TEST TYPE	RESULT	REMARK
FCC Part 15	RSS-Gen			
15.247(d) 15.209	RSS-210 A8.5	Radiated Emissions & Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -0.4dB at 2390.00MHz & 2483.50MHz
15.247(b)	RSS-210 A8.2 (4)	Conducted power	PASS	Meet the requirement of limit.

2.1 MEASUREMENT UNCERTAINTY

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

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

Measurement	Value
Radiated emissions (30MHz-1GHz)	5.37 dB
Radiated emissions (1GHz -6GHz)	3.65 dB
Radiated emissions (6GHz -18GHz)	3.88 dB
Radiated emissions (18GHz -40GHz)	4.11 dB

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	PCIE 802.11b/g/n 2.4GHz + USB BT 4.0 card
MODEL NO.	AR5B22-SB
POWER SUPPLY	DC 3.3V from host equipment
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b: up to 11Mbps 802.11g: up to 54Mbps 802.11n : up to 300Mbps
OPERATING FREQUENCY	2.412 ~ 2.462GHz
NUMBER OF CHANNEL	11 for 802.11b, 802.11g, 802.11n (HT20) 7 for 802.11n (HT40)
MAXIMUM OUTPUT POWER	802.11b: 162.706mW 802.11g: 474.242mW 802.11n (HT20): 462.174mW 802.11n (HT40): 302.172mW
ANTENNA TYPE	See item 3.2
DATA CABLE	NA
I/O PORTS	NA
ASSOCIATED DEVICES	NA

NOTE:

1. This report is prepared for FCC Class II change. The difference compared with the Report No.: RF110907E02A R1 design is as the following:

- ◆ Miner Layout change.
- ◆ Schematic change for digital part.
- ◆ Add 1 new antenna (No. 3) as following table:

Original							
No.	Brand	Model	Antenna Type	Connector	Antenna Gain (dBi) <included cable loss>	Cable Loss(dB)	Cable Length(mm)
1&2	WNC	81.EBJ15.005	PIFA	IPEX	3.62	1.15	300
Newly							
No.	Brand	Model	Antenna Type	Connector	Antenna Gain (dBi) <included cable loss>	Cable Loss(dB)	Cable Length(mm)
3	INPAQ	WA-F-LBLB-04-028	PIFA	IPEX	2.38 (Main) 2.30 (Aux)	-0.47	143

2. According to above conditions, only radiated emission / conducted output power need to be performed. And all data was verified to meet the requirements.

3. The device has three configurations (working mode)

- a. WLAN only (2x2 MIMO)
- b. BT+WLAN (2x2 MIMO) with reduced power on WLAN
- c. BT+WLAN (1x1 mode on b/g only, chain 0 is used for BT and chain 1 is used for WLAN)

4. The EUT incorporates a MIMO function without beamforming.

MODULATION MODE	DATA RATE (MCS)	TX/RX FUNCTION	
802.11b	1 ~ 11Mbps	1TX (fix on chain 1) / 2TX	2RX
802.11g	6 ~ 54Mbps	1TX (fix on chain 1) / 2TX	2RX
802.11n (HT20)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
802.11n (HT40)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX

5. In original report, the EUT was pre-tested under the following modes:

Test Mode	Data rate
Mode A	400ns GI
Mode B	800ns GI

From the above modes, the worst case was found in **Mode B**. Therefore only the test data of the mode was recorded in this report.

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

3.2 DESCRIPTION OF ANTENNA

The antennas provided to this EUT, please refer to the following table:

No.	Brand	Model	Antenna Type	Connector	Antenna Gain (dBi) <included cable loss>	Cable Loss(dB)	Cable Length(mm)
1&2	WNC	81.EBJ15.005	PIFA	IPEX	3.62	1.15	300
3	INPAQ	WA-F-LBLB-04-028	PIFA	IPEX	2.38 (Main) 2.30 (Aux)	-0.47	143

Note: Above antenna gains of antenna are Total (H+V).

3.3 DESCRIPTION OF TEST MODES

11 channels are provided for 802.11b, 802.11g, 802.11n (HT20):

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 (HT40):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
3	2422MHz	7	2442MHz
4	2427MHz	8	2447MHz
5	2432MHz	9	2452MHz
6	2437MHz		

3.3.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

EUT CONFIGURE MODE	APPLICABLE TO			DESCRIPTION
	SE < 1G	SE ≥ 1G	APCM	
-	√	√	√	-

Where **RE < 1G**: Radiated Emission below 1GHz **RE ≥ 1G**: Radiated Emission above 1GHz

APCM: Antenna Port Conducted Measurement

NOTE: In original report, the EUT's antenna had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane**.

RADIATED EMISSION TEST (BELOW 1 GHz):

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	DATA RATE (Mbps)
802.11g	1 to 11	6	OFDM	6

RADIATED EMISSION TEST (ABOVE 1 GHz):

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	DATA RATE (Mbps)
802.11g	1 to 11	1, 6, 11	OFDM	6

ANTENNA PORT CONDUCTED MEASUREMENT:

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	1
802.11g	1 to 11	1, 6, 11	OFDM	6
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	6.5
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	13.5

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
RE<1G	26deg. C, 68%RH	120Vac, 60Hz	Robert Cheng
RE≥1G	24deg. C, 71%RH	120Vac, 60Hz	Robert Cheng
APCM	25deg. C, 60%RH	120Vac, 60Hz	Robert Cheng

3.4 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 (Section 15.247)

558074 D01 DTS Meas Guidance v03r01

662911 D01 Multiple Transmitter Output v02r01

ANSI C63.10-2009

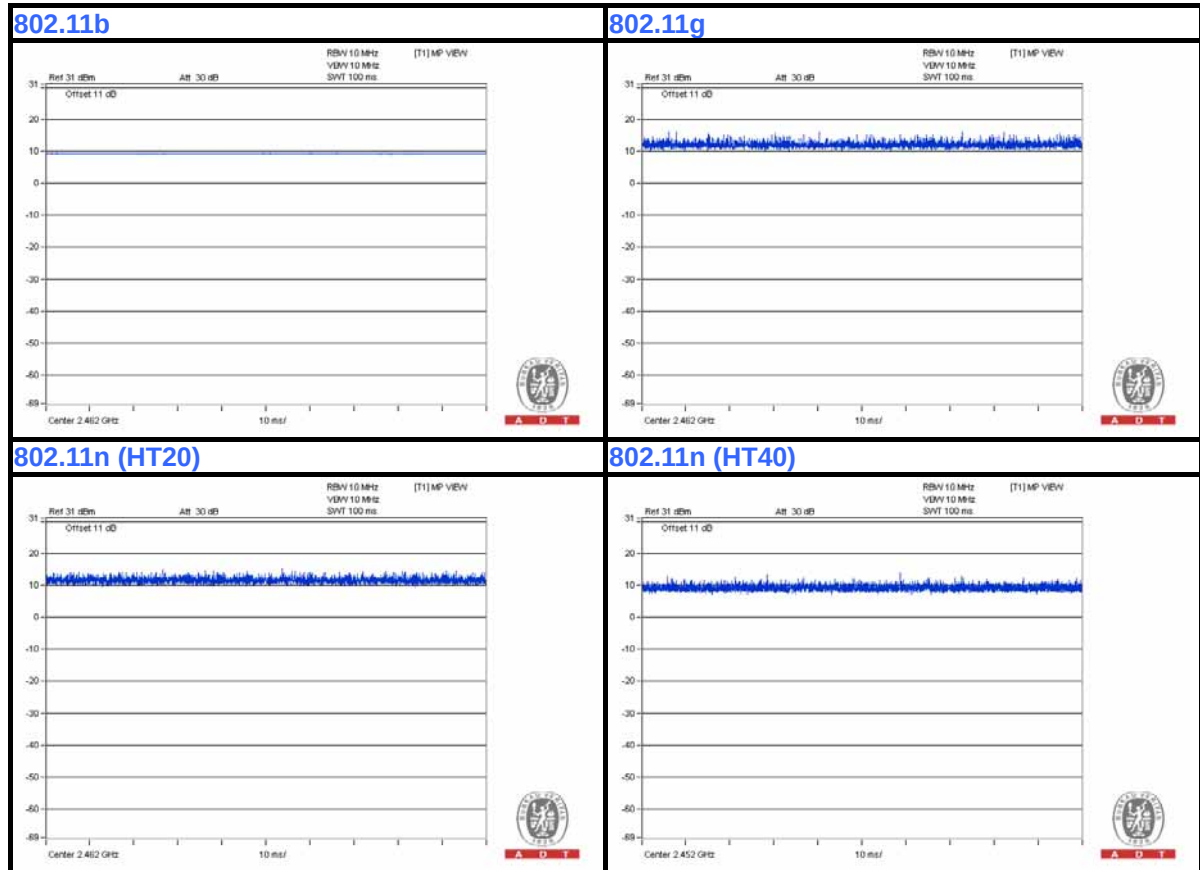
Canada RSS-210 Issue 8 (2010-12)

Canada RSS-Gen Issue 3 (2010-12)

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

3.5 DUTY CYCLE OF TEST SIGNAL

Duty cycle of test signal is 100 %, duty factor is not required.



3.6 DESCRIPTION OF SUPPORT UNITS

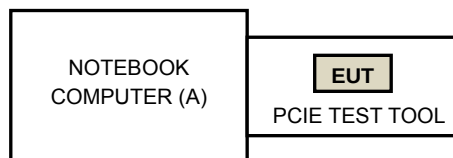
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Product	Brand	Model No.	Serial No.	FCC ID	Remark
A	PERSONAL COMPUTER	DELL	E5430	GM1SKV1	FCC DoC	Provided by Lab
B	PCIE TEST TOOL	AzureWave	NA	NA	NA	Supplied by client

NOTE:

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

3.7 CONFIGURATION OF SYSTEM UNDER TEST



4. TEST TYPES AND RESULTS

4.1 CONDUCTED OUTPUT POWER MEASUREMENT

4.1.1 LIMITS OF MAXIMUM OUTPUT POWER MEASUREMENT

For systems using digital modulation in the 2400–2483.5 MHz band: 1 Watt (30dBm)

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Power Meter Anritsu	ML2495A	1014008	Apr. 30, 2014	Apr. 29, 2015
Power Sensor Anritsu	MA2411B	0917122	Apr. 30, 2014	Apr. 29, 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. Tested date :Oct. 24, 2014

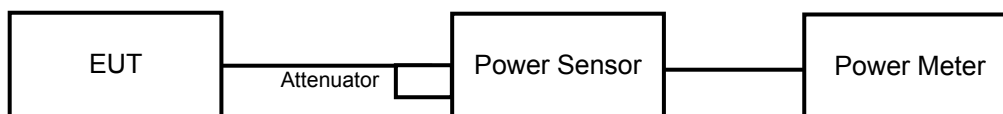
4.1.3 TEST PROCEDURES

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

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



4.1.6 EUT OPERATING CONDITIONS

The software (art2gui.exe [Ver_3_11_3]) provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.1.7 TEST RESULTS

FOR PEAK POWER

Single chain - 802.11b

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	97.949	19.91	30	PASS
6	2437	136.144	21.34	30	PASS
11	2462	125.026	20.97	30	PASS

Single chain - 802.11g

CHANNEL	FREQUENCY (MHz)	PEAK POWER (mW)	PEAK POWER (dBm)	LIMIT (dBm)	PASS/FAIL
1	2412	346.737	25.40	30	PASS
6	2437	474.242	26.76	30	PASS
11	2462	323.594	25.10	30	PASS

Multiple chain - 802.11b

CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	19.32	18.82	161.715	22.09	30	PASS
6	2437	19.28	18.92	162.706	22.11	30	PASS
11	2462	18.56	18.73	146.424	21.66	30	PASS

Multiple chain - 802.11g

CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	22.73	21.83	339.904	25.31	30	PASS
6	2437	23.78	23.62	468.925	26.71	30	PASS
11	2462	22.16	21.65	310.655	24.92	30	PASS

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
1	2412	22.81	21.22	323.419	25.10	30	PASS
6	2437	24.06	23.17	462.174	26.65	30	PASS
11	2462	20.65	21.78	266.806	24.26	30	PASS

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)	LIMIT (dBm)	PASS / FAIL
		CHAIN 0	CHAIN 1				
3	2422	17.32	18.42	123.453	20.92	30	PASS
6	2437	22.21	21.33	302.172	24.80	30	PASS
9	2452	20.29	20.16	210.658	23.24	30	PASS

FOR AVERAGE POWER

Single chain - 802.11b

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	61.376	17.88
6	2437	89.743	19.53
11	2462	78.886	18.97

Single chain - 802.11g

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)
1	2412	37.154	15.70
6	2437	95.719	19.81
11	2462	37.154	15.70

Multiple chain - 802.11b

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
1	2412	16.85	16.53	93.395	19.70
6	2437	16.65	16.57	91.632	19.62
11	2462	16.75	16.52	92.190	19.65

Multiple chain - 802.11g

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
1	2412	13.23	12.35	38.217	15.82
6	2437	17.13	16.41	95.394	19.80
11	2462	12.59	12.31	35.177	15.46

802.11n (HT20)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
1	2412	13.43	12.74	40.822	16.11
6	2437	16.72	16.35	90.141	19.55
11	2462	12.04	11.56	30.318	14.82

802.11n (HT40)

CHANNEL	FREQUENCY (MHz)	AVERAGE POWER (dBm)		TOTAL POWER (mW)	TOTAL POWER (dBm)
		CHAIN 0	CHAIN 1		
3	2422	8.91	9.34	16.370	12.14
6	2437	13.70	13.77	47.265	16.75
9	2452	11.75	11.11	27.874	14.45

4.2 RADIATED EMISSION AND BANDEDGE MEASUREMENT

4.2.1 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. Other emissions shall be at least 20dB below the highest level of the desired power:

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.



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4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY51210105	July 21, 2014	July 20, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 13, 2013	Nov. 12, 2014
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Feb. 26, 2014	Feb. 25, 2015
RF Cable	NA	CHGCAB_001	Oct. 04, 2014	Oct. 03, 2015
Horn_Antenna AISI	AIH.8018	0000320091110	Aug. 27, 2014	Aug. 26, 2015
Pre-Amplifier Agilent	8449B	3008A02578	June 24, 2014	June 23, 2015
RF Cable	NA	131205 131214 SNMY23684/4	Jan. 17, 2014	Jan. 16, 2015
Spectrum Analyzer R&S	FSV40	100964	July 05, 2014	July 04, 2015
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 13, 2013	Nov. 12, 2014
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Aug. 26, 2014	Aug. 25, 2015
RF Cable	NA	RF104-121 RF104-204	Dec. 12, 2013	Dec. 11, 2014
Antenna Tower & Turn Table CT	NA	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in 966 Chamber No. G.
4. The FCC Site Registration No. is 966073.
5. The VCCI Site Registration No. is G-137.
6. The CANADA Site Registration No. is IC 7450H-2.
7. Tested Date: Nov. 12, 2014

4.2.3 TEST PROCEDURES

- 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:

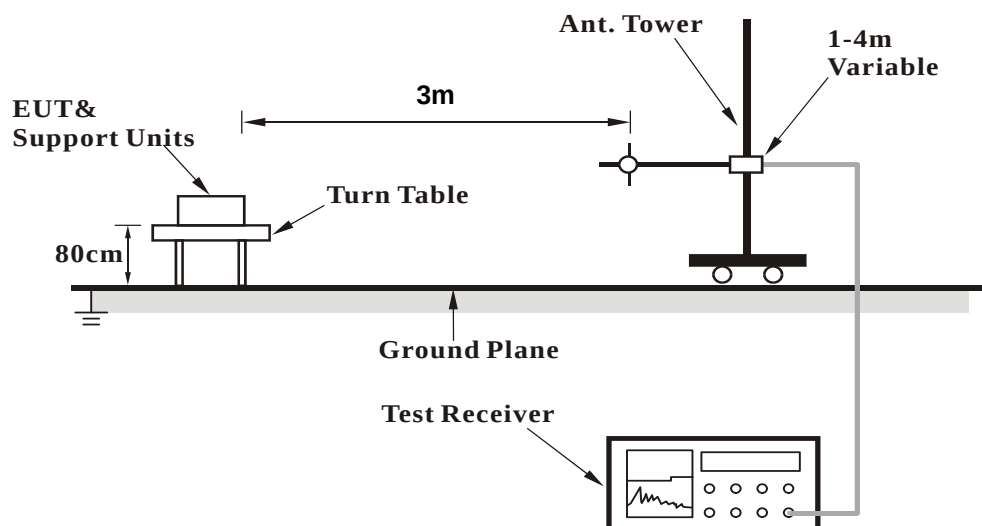
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

4.2.4 DEVIATION FROM TEST STANDARD

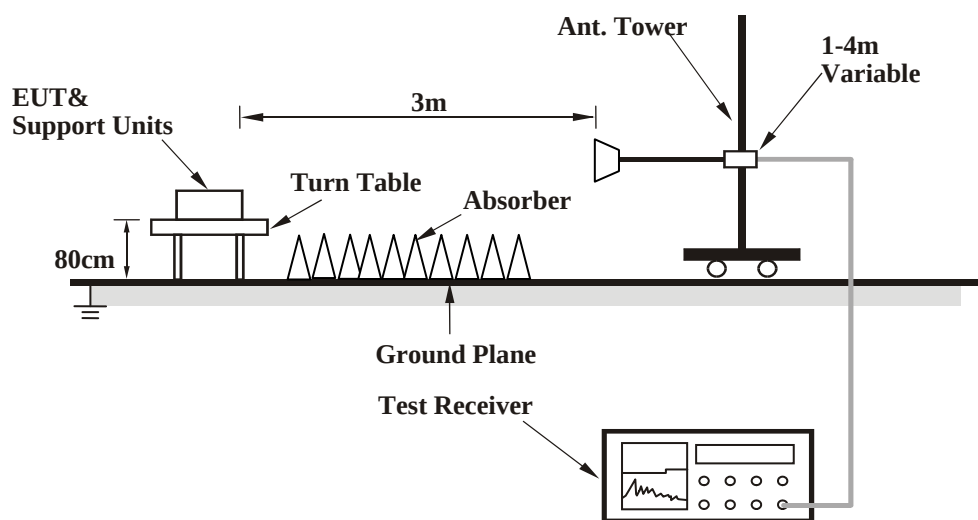
No deviation

4.2.5 TEST SETUP

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



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

4.2.6 EUT OPERATING CONDITIONS

1. Connect the EUT with the support unit 1 (Notebook Computer) which is placed on a testing table.
2. The communication partner run test program “art2gui.exe [Ver_3_11_3]” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

4.2.7 TEST RESULTS

BELOW 1GHz WORST-CASE DATA

802.11g

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	Below 1GHz		

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	240.01	38.4 QP	46.0	-7.6	1.34 H	301	53.28	-14.91
2	498.65	40.3 QP	46.0	-5.7	1.24 H	301	47.68	-7.36
3	698.20	41.2 QP	46.0	-4.8	1.45 H	301	44.59	-3.35
4	760.30	42.0 QP	46.0	-4.0	1.77 H	175	43.58	-1.54
5	851.25	42.4 QP	46.0	-3.6	2.01 H	304	42.98	-0.56
6	961.23	40.0 QP	54.0	-14.0	1.24 H	154	38.71	1.30
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	31.99	34.4 QP	40.0	-5.6	1.50 V	0	49.06	-14.66
2	166.29	35.5 QP	43.5	-8.0	1.00 V	290	49.18	-13.68
3	299.32	42.1 QP	46.0	-3.9	1.50 V	196	54.65	-12.51
4	497.88	39.4 QP	46.0	-6.6	1.50 V	250	46.79	-7.35
5	707.30	39.4 QP	46.0	-6.6	1.00 V	292	42.69	-3.27
6	833.01	41.6 QP	46.0	-4.4	1.00 V	248	42.30	-0.69

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) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value



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ABOVE 1GHz DATA

802.11b

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	60.0 PK	74.0	-14.0	1.36 H	279	62.47	-2.47
2	2390.00	53.3 AV	54.0	-0.7	1.36 H	279	55.77	-2.47
3	*2412.00	112.1 PK			1.36 H	279	114.47	-2.37
4	*2412.00	109.7 AV			1.36 H	279	112.07	-2.37
5	4824.00	55.7 PK	74.0	-18.3	1.05 H	57	49.99	5.71
6	4824.00	52.5 AV	54.0	-1.5	1.05 H	57	46.79	5.71

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	58.2 PK	74.0	-15.8	1.49 V	239	60.67	-2.47
2	2390.00	49.2 AV	54.0	-4.8	1.49 V	239	51.67	-2.47
3	*2412.00	109.8 PK			1.49 V	239	112.17	-2.37
4	*2412.00	107.7 AV			1.49 V	239	110.07	-2.37
5	4824.00	54.0 PK	74.0	-20.0	1.02 V	253	48.29	5.71
6	4824.00	51.4 AV	54.0	-2.6	1.02 V	253	45.69	5.71

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier 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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CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	58.3 PK	74.0	-15.7	1.12 H	203	60.77	-2.47
2	2390.00	50.1 AV	54.0	-3.9	1.12 H	203	52.57	-2.47
3	*2437.00	113.1 PK			1.12 H	203	115.35	-2.25
4	*2437.00	111.2 AV			1.12 H	203	113.45	-2.25
5	2483.50	60.3 PK	74.0	-13.7	1.12 H	203	62.33	-2.03
6	2483.50	51.2 AV	54.0	-2.8	1.12 H	203	53.23	-2.03
7	4874.00	55.6 PK	74.0	-18.4	1.04 H	80	49.70	5.90
8	4874.00	52.2 AV	54.0	-1.8	1.04 H	80	46.30	5.90
9	7311.00	52.3 PK	74.0	-21.7	1.54 H	115	39.13	13.17
10	7311.00	43.7 AV	54.0	-10.3	1.54 H	115	30.53	13.17

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	54.0 PK	74.0	-20.0	1.42 V	62	56.47	-2.47
2	2390.00	43.2 AV	54.0	-10.8	1.42 V	62	45.67	-2.47
3	*2437.00	111.9 PK			1.42 V	62	114.15	-2.25
4	*2437.00	109.8 AV			1.42 V	62	112.05	-2.25
5	2483.50	59.4 PK	74.0	-14.6	1.42 V	62	61.43	-2.03
6	2483.50	50.2 AV	54.0	-3.8	1.42 V	62	52.23	-2.03
7	4874.00	54.8 PK	74.0	-19.2	1.05 V	156	48.90	5.90
8	4874.00	51.1 AV	54.0	-2.9	1.05 V	156	45.20	5.90
9	7311.00	55.3 PK	74.0	-18.7	1.00 V	32	42.13	13.17
10	7311.00	47.0 AV	54.0	-7.0	1.00 V	32	33.83	13.17

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) – Pre-Amplifier 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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CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	110.6 PK			1.23 H	83	112.74	-2.14
2	*2462.00	108.7 AV			1.23 H	83	110.84	-2.14
3	2483.50	59.9 PK	74.0	-14.1	1.23 H	83	61.93	-2.03
4	2483.50	51.9 AV	54.0	-2.1	1.23 H	83	53.93	-2.03
5	4924.00	55.3 PK	74.0	-18.7	1.00 H	71	49.19	6.11
6	4924.00	52.1 AV	54.0	-1.9	1.00 H	71	45.99	6.11
7	7386.00	52.0 PK	74.0	-22.0	1.49 H	100	38.82	13.18
8	7386.00	43.4 AV	54.0	-10.6	1.49 H	100	30.22	13.18

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	109.5 PK			1.00 V	227	111.64	-2.14
2	*2462.00	107.0 AV			1.00 V	227	109.14	-2.14
3	2483.50	58.1 PK	74.0	-15.9	1.00 V	227	60.13	-2.03
4	2483.50	47.1 AV	54.0	-6.9	1.00 V	227	49.13	-2.03
5	4924.00	55.1 PK	74.0	-18.9	1.07 V	153	48.99	6.11
6	4924.00	51.3 AV	54.0	-2.7	1.07 V	153	45.19	6.11
7	7386.00	55.8 PK	74.0	-18.2	1.01 V	29	42.62	13.18
8	7386.00	47.2 AV	54.0	-6.8	1.01 V	29	34.02	13.18

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) – Pre-Amplifier 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

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	69.3 PK	74.0	-4.7	1.01 H	120	71.77	-2.47
2	2390.00	53.6 AV	54.0	-0.4	1.01 H	120	56.07	-2.47
3	*2412.00	106.4 PK			1.01 H	120	108.77	-2.37
4	*2412.00	95.7 AV			1.01 H	120	98.07	-2.37
5	4824.00	52.0 PK	74.0	-22.0	1.00 H	74	46.29	5.71
6	4824.00	44.6 AV	54.0	-9.4	1.00 H	74	38.89	5.71
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	69.4 PK	74.0	-4.6	1.09 V	161	71.87	-2.47
2	2390.00	53.2 AV	54.0	-0.8	1.09 V	161	55.67	-2.47
3	*2412.00	105.1 PK			1.09 V	161	107.47	-2.37
4	*2412.00	93.5 AV			1.09 V	161	95.87	-2.37
5	4824.00	51.9 PK	74.0	-22.1	1.09 V	77	46.19	5.71
6	4824.00	46.0 AV	54.0	-8.0	1.09 V	77	40.29	5.71

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier 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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CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	70.4 PK	74.0	-3.6	1.19 H	132	72.87	-2.47
2	2390.00	49.9 AV	54.0	-4.1	1.19 H	132	52.37	-2.47
3	*2437.00	110.1 PK			1.19 H	132	112.35	-2.25
4	*2437.00	99.8 AV			1.19 H	132	102.05	-2.25
5	2483.50	69.0 PK	74.0	-5.0	1.19 H	132	71.03	-2.03
6	2483.50	48.3 AV	54.0	-5.7	1.19 H	132	50.33	-2.03
7	4874.00	51.8 PK	74.0	-22.2	1.05 H	73	45.90	5.90
8	4874.00	45.7 AV	54.0	-8.3	1.05 H	73	39.80	5.90
9	7311.00	52.4 PK	74.0	-21.6	1.56 H	122	39.23	13.17
10	7311.00	44.2 AV	54.0	-9.8	1.56 H	122	31.03	13.17

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	64.4 PK	74.0	-9.6	1.07 V	152	66.87	-2.47
2	2390.00	49.3 AV	54.0	-4.7	1.07 V	152	51.77	-2.47
3	*2437.00	108.2 PK			1.07 V	152	110.45	-2.25
4	*2437.00	97.3 AV			1.07 V	152	99.55	-2.25
5	2483.50	70.0 PK	74.0	-4.0	1.07 V	152	72.03	-2.03
6	2483.50	48.5 AV	54.0	-5.5	1.07 V	152	50.53	-2.03
7	4874.00	51.8 PK	74.0	-22.2	1.10 V	86	45.90	5.90
8	4874.00	45.7 AV	54.0	-8.3	1.10 V	86	39.80	5.90
9	7311.00	52.1 PK	74.0	-21.9	1.62 V	114	38.93	13.17
10	7311.00	43.6 AV	54.0	-10.4	1.62 V	114	30.43	13.17

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) – Pre-Amplifier 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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CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	104.9 PK			1.27 H	325	107.04	-2.14
2	*2462.00	95.0 AV			1.27 H	325	97.14	-2.14
3	2483.50	73.2 PK	74.0	-0.8	1.27 H	325	75.23	-2.03
4	2483.50	53.6 AV	54.0	-0.4	1.27 H	325	55.63	-2.03
5	4924.00	51.8 PK	74.0	-22.2	1.00 H	80	45.69	6.11
6	4924.00	44.6 AV	54.0	-9.4	1.00 H	80	38.49	6.11
7	7386.00	50.9 PK	74.0	-23.1	1.57 H	116	37.72	13.18
8	7386.00	43.2 AV	54.0	-10.8	1.57 H	116	30.02	13.18

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	105.4 PK			1.64 V	85	107.54	-2.14
2	*2462.00	94.4 AV			1.64 V	85	96.54	-2.14
3	2483.50	72.9 PK	74.0	-1.1	1.64 V	85	74.93	-2.03
4	2483.50	53.1 AV	54.0	-0.9	1.64 V	85	55.13	-2.03
5	4924.00	51.3 PK	74.0	-22.7	1.11 V	62	45.19	6.11
6	4924.00	45.7 AV	54.0	-8.3	1.11 V	62	39.59	6.11
7	7386.00	52.5 PK	74.0	-21.5	1.55 V	102	39.32	13.18
8	7386.00	44.2 AV	54.0	-9.8	1.55 V	102	31.02	13.18

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) – Pre-Amplifier 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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802.11n (HT20)

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	69.2 PK	74.0	-4.8	1.08 H	332	71.67	-2.47
2	2390.00	53.6 AV	54.0	-0.4	1.08 H	332	56.07	-2.47
3	*2412.00	106.4 PK			1.08 H	332	108.77	-2.37
4	*2412.00	95.3 AV			1.08 H	332	97.67	-2.37
5	4824.00	52.3 PK	74.0	-21.7	1.00 H	79	46.59	5.71
6	4824.00	44.8 AV	54.0	-9.2	1.00 H	79	39.09	5.71
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	57.3 PK	74.0	-16.7	1.13 V	267	59.77	-2.47
2	2390.00	41.1 AV	54.0	-12.9	1.13 V	267	43.57	-2.47
3	*2412.00	101.3 PK			1.13 V	267	103.67	-2.37
4	*2412.00	91.2 AV			1.13 V	267	93.57	-2.37
5	4824.00	52.0 PK	74.0	-22.0	1.10 V	71	46.29	5.71
6	4824.00	46.2 AV	54.0	-7.8	1.10 V	71	40.49	5.71

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier 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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CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	70.6 PK	74.0	-3.4	1.21 H	138	73.07	-2.47
2	2390.00	50.1 AV	54.0	-3.9	1.21 H	138	52.57	-2.47
3	*2437.00	110.0 PK			1.21 H	138	112.25	-2.25
4	*2437.00	99.4 AV			1.21 H	138	101.65	-2.25
5	2483.50	69.3 PK	74.0	-4.7	1.21 H	138	71.33	-2.03
6	2483.50	48.6 AV	54.0	-5.4	1.21 H	138	50.63	-2.03
7	4874.00	51.8 PK	74.0	-22.2	1.07 H	70	45.90	5.90
8	4874.00	45.9 AV	54.0	-8.1	1.07 H	70	40.00	5.90
9	7311.00	52.3 PK	74.0	-21.7	1.56 H	112	39.13	13.17
10	7311.00	43.8 AV	54.0	-10.2	1.56 H	112	30.63	13.17

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	63.7 PK	74.0	-10.3	1.34 V	190	66.17	-2.47
2	2390.00	48.9 AV	54.0	-5.1	1.34 V	190	51.37	-2.47
3	*2437.00	108.6 PK			1.34 V	190	110.85	-2.25
4	*2437.00	97.7 AV			1.34 V	190	99.95	-2.25
5	2483.50	70.1 PK	74.0	-3.9	1.34 V	190	72.13	-2.03
6	2483.50	48.7 AV	54.0	-5.3	1.34 V	190	50.73	-2.03
7	4874.00	52.2 PK	74.0	-21.8	1.10 V	42	46.30	5.90
8	4874.00	48.0 AV	54.0	-6.0	1.10 V	42	42.10	5.90
9	7311.00	51.8 PK	74.0	-22.2	1.10 V	34	38.63	13.17
10	7311.00	46.5 AV	54.0	-7.5	1.10 V	34	33.33	13.17

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) – Pre-Amplifier 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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CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	104.9 PK			1.25 H	316	107.04	-2.14
2	*2462.00	93.9 AV			1.25 H	316	96.04	-2.14
3	2483.50	73.6 PK	74.0	-0.4	1.25 H	316	75.63	-2.03
4	2483.50	53.4 AV	54.0	-0.6	1.25 H	316	55.43	-2.03
5	4924.00	52.0 PK	74.0	-22.0	1.00 H	71	45.89	6.11
6	4924.00	44.5 AV	54.0	-9.5	1.00 H	71	38.39	6.11
7	7386.00	51.7 PK	74.0	-22.3	1.60 H	131	38.52	13.18
8	7386.00	43.4 AV	54.0	-10.6	1.60 H	131	30.22	13.18

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			1.64 V	70	105.64	-2.14
2	*2462.00	92.4 AV			1.64 V	70	94.54	-2.14
3	2483.50	72.3 PK	74.0	-1.7	1.64 V	70	74.33	-2.03
4	2483.50	52.9 AV	54.0	-1.1	1.64 V	70	54.93	-2.03
5	4924.00	52.0 PK	74.0	-22.0	1.12 V	79	45.89	6.11
6	4924.00	46.2 AV	54.0	-7.8	1.12 V	79	40.09	6.11
7	7386.00	52.4 PK	74.0	-21.6	1.57 V	120	39.22	13.18
8	7386.00	44.2 AV	54.0	-9.8	1.57 V	120	31.02	13.18

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) – Pre-Amplifier 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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802.11n (HT40)

CHANNEL	TX Channel 3	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	68.1 PK	74.0	-5.9	1.04 H	321	70.57	-2.47
2	2390.00	53.2 AV	54.0	-0.8	1.04 H	321	55.67	-2.47
3	*2422.00	100.1 PK			1.04 H	321	102.42	-2.32
4	*2422.00	89.1 AV			1.04 H	321	91.42	-2.32
5	4844.00	46.8 PK	74.0	-27.2	1.05 H	53	41.02	5.78
6	4844.00	36.4 AV	54.0	-17.6	1.05 H	53	30.62	5.78
7	7266.00	50.8 PK	74.0	-23.2	1.00 H	147	37.60	13.20
8	7266.00	40.2 AV	54.0	-13.8	1.00 H	147	27.00	13.20
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	2390.00	61.1 PK	74.0	-12.9	1.12 V	250	63.57	-2.47
2	2390.00	45.8 AV	54.0	-8.2	1.12 V	250	48.27	-2.47
3	*2422.00	94.7 PK			1.12 V	250	97.02	-2.32
4	*2422.00	84.9 AV			1.12 V	250	87.22	-2.32
5	4844.00	46.8 PK	74.0	-27.2	1.02 V	76	41.02	5.78
6	4844.00	36.1 AV	54.0	-17.9	1.02 V	76	30.32	5.78
7	7266.00	50.0 PK	74.0	-24.0	1.02 V	65	36.80	13.20
8	7266.00	38.9 AV	54.0	-15.1	1.02 V	65	25.70	13.20

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) – Pre-Amplifier 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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CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	72.0 PK	74.0	-2.0	1.04 H	321	74.47	-2.47
2	2390.00	53.1 AV	54.0	-0.9	1.04 H	321	55.57	-2.47
3	*2437.00	104.1 PK			1.04 H	321	106.35	-2.25
4	*2437.00	93.2 AV			1.04 H	321	95.45	-2.25
5	2483.50	72.7 PK	74.0	-1.3	1.04 H	321	74.73	-2.03
6	2483.50	53.5 AV	54.0	-0.5	1.04 H	321	55.53	-2.03
7	4874.00	46.9 PK	74.0	-27.1	1.01 H	59	41.00	5.90
8	4874.00	36.0 AV	54.0	-18.0	1.01 H	59	30.10	5.90
9	7311.00	50.2 PK	74.0	-23.8	1.04 H	151	37.03	13.17
10	7311.00	39.8 AV	54.0	-14.2	1.04 H	151	26.63	13.17

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	69.6 PK	74.0	-4.4	1.18 V	137	72.07	-2.47
2	2390.00	50.6 AV	54.0	-3.4	1.18 V	137	53.07	-2.47
3	*2437.00	99.8 PK			1.18 V	137	102.05	-2.25
4	*2437.00	89.1 AV			1.18 V	137	91.35	-2.25
5	2483.50	65.0 PK	74.0	-9.0	1.18 V	137	67.03	-2.03
6	2483.50	49.9 AV	54.0	-4.1	1.18 V	137	51.93	-2.03
7	4874.00	46.4 PK	74.0	-27.6	1.06 V	48	40.50	5.90
8	4874.00	36.2 AV	54.0	-17.8	1.06 V	48	30.30	5.90
9	7311.00	49.5 PK	74.0	-24.5	1.06 V	85	36.33	13.17
10	7311.00	38.5 AV	54.0	-15.5	1.06 V	85	25.33	13.17

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) – Pre-Amplifier 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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CHANNEL	TX Channel 9	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

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	102.1 PK			1.27 H	127	104.28	-2.18
2	*2452.00	91.4 AV			1.27 H	127	93.58	-2.18
3	2483.50	72.7 PK	74.0	-1.3	1.27 H	127	74.73	-2.03
4	2483.50	53.5 AV	54.0	-0.5	1.27 H	127	55.53	-2.03
5	4904.00	47.3 PK	74.0	-26.7	1.05 H	59	41.28	6.02
6	4904.00	36.4 AV	54.0	-17.6	1.05 H	59	30.38	6.02
7	7356.00	50.4 PK	74.0	-23.6	1.00 H	153	37.22	13.18
8	7356.00	39.9 AV	54.0	-14.1	1.00 H	153	26.72	13.18
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	101.2 PK			1.12 V	157	103.38	-2.18
2	*2452.00	91.1 AV			1.12 V	157	93.28	-2.18
3	2483.50	68.9 PK	74.0	-5.1	1.12 V	157	70.93	-2.03
4	2483.50	49.9 AV	54.0	-4.1	1.12 V	157	51.93	-2.03
5	4904.00	45.5 PK	74.0	-28.5	1.08 V	62	39.48	6.02
6	4904.00	35.3 AV	54.0	-18.7	1.08 V	62	29.28	6.02
7	7356.00	49.8 PK	74.0	-24.2	1.04 V	85	36.62	13.18
8	7356.00	38.9 AV	54.0	-15.1	1.04 V	85	25.72	13.18

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) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

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.

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

Linko EMC/RF Lab:

Tel: 886-2-26052180

Fax: 886-2-26052943

Hsin Chu EMC/RF/Telecom Lab:

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Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

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 modifications were made to the EUT by the lab during the test.

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