



FCC DoC TEST REPORT

REPORT NO. : FC130223E01

MODEL NO. : QCNFA222

RECEIVED : Feb. 23, 2013

TESTED : Mar. 14 to 19, 2013

ISSUED : July 08, 2013

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, R.O.C

TEST LOCATION (2): No. 49, Ln. 206, Wende Rd., Shangshan Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan, R.O.C

This report should not be used by the client to claim product certification, approval, or endorsement by TAF or any government agencies.



This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification



A D T

Table of Contents

RELEASE CONTROL RECORD.....	3
1 CERTIFICATION.....	4
2 SUMMARY OF TEST RESULTS.....	5
2.1 MEASUREMENT UNCERTAINTY.....	5
3 GENERAL INFORMATION	6
3.1 GENERAL DESCRIPTION OF EUT.....	6
3.2 ANTENNA SPECIFICATIONS.....	7
3.3 GENERAL DESCRIPTION OF TEST MODE	8
3.4 DESCRIPTION OF SUPPORT UNITS.....	9
3.5 CONFIGURATION OF SYSTEM UNDER TEST	10
4 EMISSION TEST.....	11
4.1 CONDUCTED EMISSION MEASUREMENT	11
4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT.....	11
4.1.2 TEST INSTRUMENTS	11
4.1.3 TEST PROCEDURE	12
4.1.4 DEVIATION FROM TEST STANDARD	12
4.1.5 TEST SETUP	12
4.1.6 EUT OPERATING CONDITIONS.....	13
4.1.7 TEST RESULTS.....	14
4.2 RADIATED EMISSION MEASUREMENT	16
4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT.....	16
4.2.2 TEST INSTRUMENTS	18
4.2.3 TEST PROCEDURE	19
4.2.4 DEVIATION FROM TEST STANDARD	19
4.2.5 TEST SETUP	20
4.2.6 EUT OPERATING CONDITIONS.....	20
4.2.7 TEST RESULTS.....	21
5 INFORMATION ON THE TESTING LABORATORIES	25
6 APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB	26



A D T

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
FC130223E01	Original release	July 08, 2013



A D T

1 CERTIFICATION

PRODUCT : PCIE 802.11a/b/g/n 2.4GHz/5GHz + USB BT 4.0 card
BRAND NAME : Qualcomm Atheros
MODEL NO. : QCNFA222
TEST SAMPLE : ENGINEERING SAMPLE
APPLICANT : Qualcomm Atheros, Inc.
TESTED : Mar. 14 to 19, 2013
STANDARDS : FCC Part 15, Subpart B, Class B
ICES-003: 2012 Issue 5, Class B
ANSI C63.4-2009

The above equipment (Model: QCNFA222) 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:** July 08, 2013
(Lori Chung, Specialist)

APPROVED BY : , **DATE:** July 08, 2013
(Ken Lu, Manager)

2 SUMMARY OF TEST RESULTS

Standard	Test Type	Result	Remarks
FCC Part 15 Subpart B, Class B	Conducted Test	PASS	Meets Class B Limit Minimum passing margin is -2.75 dB at 16.46484MHz
	Radiated Test	PASS	Meets Class B Limit Minimum passing margin is -2.28 dB at 524.99MHz

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
Conducted emissions	2.98 dB
Radiated emissions (30MHz-1GHz)	4.12 dB
Radiated emissions (1GHz-6GHz)	3.53 dB
Radiated emissions (6GHz-18GHz)	3.88 dB
Radiated emissions (18GHz-40GHz)	4.11 dB

The listed uncertainties are the worst case uncertainty for the entire range of measurement. Please note that the uncertainty values are provided for informational purposes only and are not used in determining the PASS/FAIL results.

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	PCIE 802.11a/b/g/n 2.4GHz/5GHz + USB BT 4.0 card
MODEL NO.	QCNFA222
POWER SUPPLY	DC 3.3V from host equipment
POWER CORD	NA
DATA CABLE	NA
ASSOCIATED DEVICES	NA

NOTE:

1. There are Bluetooth technology and WLAN technology used for the EUT.
2. The EUT is 2 * 2 MIMO without 802.11n beam forming function.

MODULATION MODE	TX/RX FUNCTION
802.11b	1TX/1RX or 2TX/2RX
802.11g	1TX/1RX or 2TX/2RX
802.11a	1TX/1RX or 2TX/2RX
802.11n (HT20)	1TX/1RX or 2TX/2RX
802.11n (HT40)	1TX/1RX or 2TX/2RX

3. For radiated test : The EUT was pre-tested under following test modes:

Pre-test Mode	Description
Mode A	2.4GHz + BT
Mode B	5GHz + BT

From the above pre-test modes, the worse radiated emission was found in **Mode B**. Therefore only the test data of the mode was recorded in this report.

4. 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 ANTENNA SPECIFICATIONS

The antenna provided to the EUT, please refer to the following table:

Brand	Model	Antenna Type	Peak gain with cable loss 2.4G(dBi)	Peak gain with cable loss 5G(dBi)	Cable Loss 2.4G(dB)	Cable Loss 5G(dB)	Connector Type	Cable Length (mm)
WNC	81.EBJ15.005	PIFA	3.62	Band 1&2: 3.08 Band 3: 4.76 Band 4: 4.76	1.15	Band1&2: 1.70 Band 3: 1.74 Band 4: 1.79	IPEX	300

Note: 1. Above antenna gains of antenna are Total (H+V).
2. All of antenna can be application for WLAN and Bluetooth.

3.3 GENERAL DESCRIPTION OF TEST MODE

1. The EUT is designed with power adapter of 100-240V, 50/60Hz. For radiated evaluation (30-1000MHz), 230V/50Hz (for EN 55022), 120V/ 60Hz (for FCC Part 15) and 110V/60Hz (for BSMI CNS 13438) had been covered during the pre-test. The worst radiated emission data (30-1000MHz) was founded at 230V/ 50Hz and recorded in the applied test report.
2. The EUT is tested under following test mode:

Test Mode	Description
Mode 1	5GHz + BT

3.4 DESCRIPTION OF SUPPORT UNITS

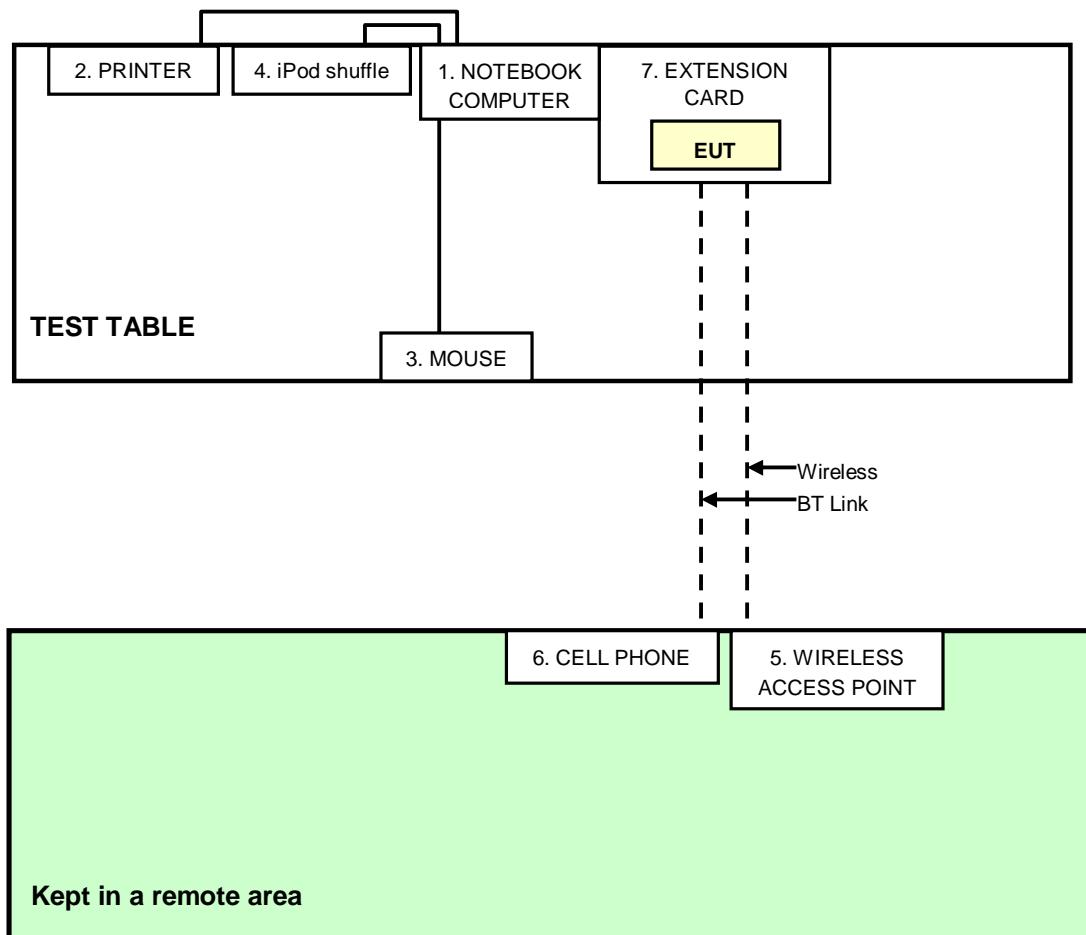
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Product	Brand	Model No.	Serial No.	FCC ID
1	NOTEBOOK COMPUTER	DELL	E6420	B92T3R1	FCC DoC
2	PRINTER	EPSON	LQ-300+II	G88Y074083	FCC DoC
3	MOUSE	DELL	MOC5UO	I1401LVG	FCC DoC
4	iPod shuffle	Apple	MD778TA/A	CC4JMA9KF4T1	NA
5	WIRELESS ACCESS POINT	Linksys	NA	NA	NA
6	CELL PHONE	SAMSUNG	S3	NA	NA
7	EXTENSION CARD	Qualcomm Atheros	NA	NA	NA

No.	Signal cable description
1	NA
2	USB cable (1.8m)
3	USB cable (1.8m)
4	USB cable (0.1m)
5	NA
6	NA
7	NA

Note: The power cords of the above support units were unshielded (1.8m).

3.5 CONFIGURATION OF SYSTEM UNDER TEST



4 EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

TEST STANDARD: FCC Part 15, Subpart B (Section: 15.107)

ICES-003:2012 Issue 5 (section: 6.1)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

NOTE: (1) The lower limit shall apply at the transition frequencies.

(2) The limit decreases linearly with the logarithm of the frequency in the range 0.15 to 0.50 MHz

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver	ESCS 30	100375	Mar. 11, 2013	Mar. 10, 2014
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK8127	8127-522	Sep. 06, 2012	Sep. 05, 2013
Line-Impedance Stabilization Network (for Peripheral)	ENV216	100072	June 08, 2012	June 07, 2013
RF Cable (JYEBAO)	5DFB	COCCAB-001	Aug. 28, 2012	Aug. 27, 2013
50 ohms Terminator	50	EMC-3	Sep. 25, 2012	Sep. 24, 2013
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 Shielded Room No. C.
3. The VCCI Con C Registration No. is C-3611.
4. Tested Date: Mar. 14, 2013

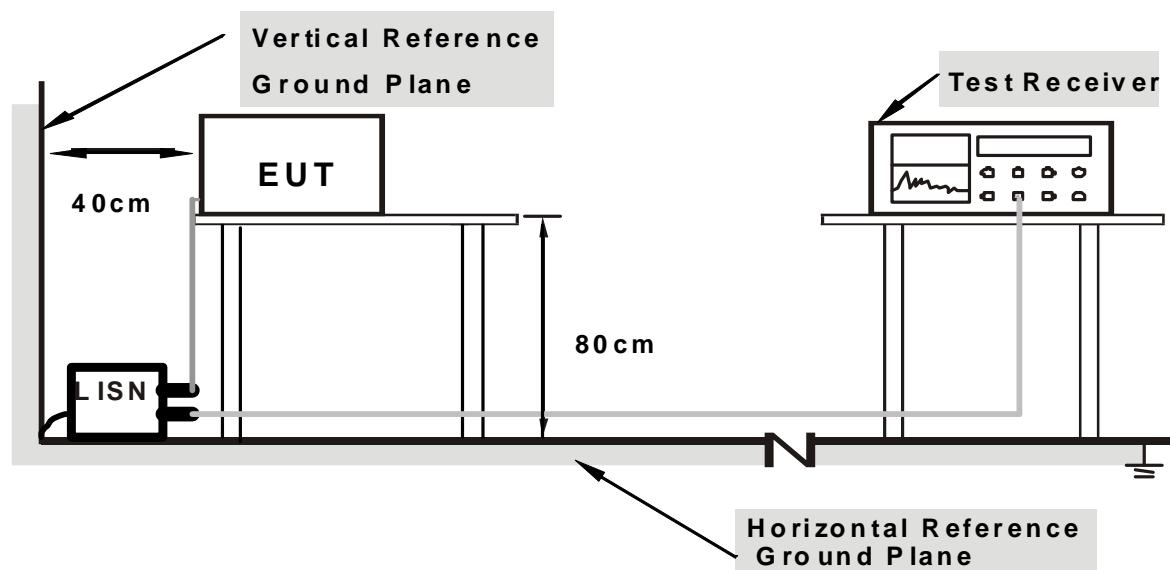
4.1.3 TEST PROCEDURE

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

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



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

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



A D T

4.1.6 EUT OPERATING CONDITIONS

1. Connect the EUT with the support unit 1 (NB) which is placed on a testing table.
2. Support unit 1 (NB) runs test program “ping.exe” to link with support unit 5 (WIRELESS ACCESS POINT) via EUT by wireless.
3. Support unit 1 (NB) runs test program “ping.exe” to link with support unit 6 (CELL PHONE) via EUT by BT Link.

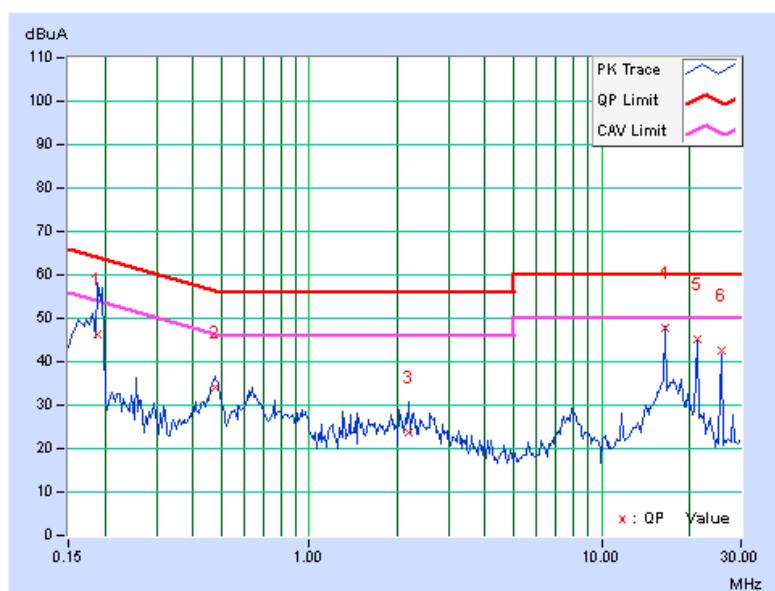
4.1.7 TEST RESULTS

TEST MODE	Mode 1	PHASE	Line (L)
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION & BANDWIDTH	Quasi-Peak (QP) / Average (AV), 9 kHz
ENVIRONMENTAL CONDITIONS	20 deg. C, 70 % RH	TESTED BY	Mike Hsieh

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	0.18906	0.12	46.04	21.53	46.16	21.65	64.08	54.08	-17.92	-32.43
2	0.47422	0.16	34.00	24.71	34.16	24.87	56.44	46.44	-22.28	-21.57
3	2.20313	0.23	23.42	16.61	23.65	16.84	56.00	46.00	-32.35	-29.16
4	16.46484	0.79	46.98	46.46	47.77	47.25	60.00	50.00	-12.23	-2.75
5	21.16797	0.95	44.30	44.00	45.25	44.95	60.00	50.00	-14.75	-5.05
6	25.87500	1.09	41.68	40.44	42.77	41.53	60.00	50.00	-17.23	-8.47

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.

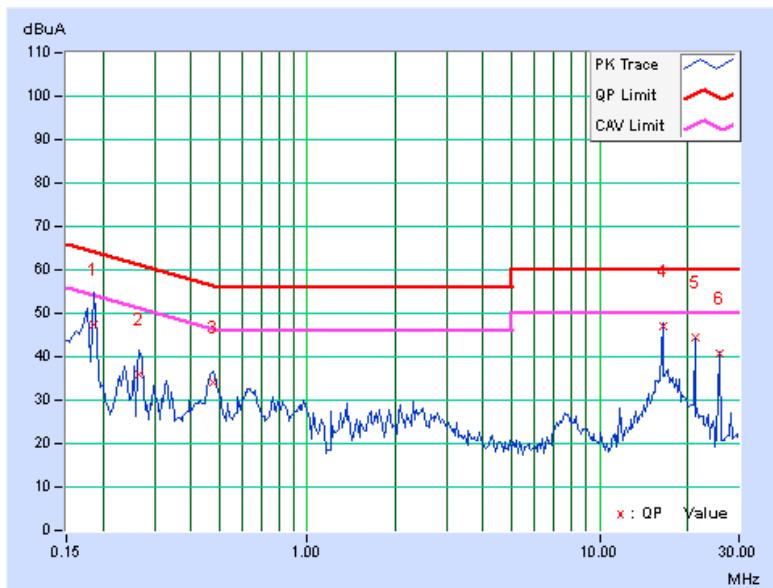


TEST MODE	Mode 1	PHASE	Neutral (N)
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION & BANDWIDTH	Quasi-Peak (QP) / Average (AV), 9 kHz
ENVIRONMENTAL CONDITIONS	20 deg. C, 70 % RH	TESTED BY	Mike Hsieh

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]	[dB (uV)]	[dB (uV)]	[dB (uV)]	[dB (uV)]	[dB (uV)]	[dB (uV)]	[dB (uV)]
1	0.18516	0.10	47.39	27.52	47.49	27.62	64.25	54.25	-16.77	-26.64
2	0.26719	0.12	35.65	19.60	35.77	19.72	61.20	51.20	-25.44	-31.49
3	0.47422	0.15	33.90	26.06	34.05	26.21	56.44	46.44	-22.39	-20.23
4	16.46484	0.54	46.66	46.07	47.20	46.61	60.00	50.00	-12.80	-3.39
5	21.16797	0.63	43.89	43.57	44.52	44.20	60.00	50.00	-15.48	-5.80
6	25.87109	0.74	40.01	39.57	40.75	40.31	60.00	50.00	-19.25	-9.69

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.





A D T

4.2 RADIATED EMISSION MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

**TEST STANDARD: FCC Part 15, Subpart B (section: 15.109)
ICES-003:2012 Issue 5 (section: 6.2)**

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

Radiated Emissions Limits at 10 meters (dB μ V/m)				
Frequencies (MHz)	FCC 15B / ICES-003, Class A	FCC 15B / ICES-003, Class B	CISPR 22, Class A	CISPR 22, Class B
30-88	39	29.5		
88-216	43.5	33.1	40	30
216-230		46.4		
230-960		35.6		
960-1000	49.5	43.5	47	37
1000-3000	Avg: 49.5	Avg: 43.5	Not defined	Not defined
Above 3000	Peak: 69.5	Peak: 63.5	Not defined	Not defined

Radiated Emissions Limits at 3 meters (dB μ V/m)				
Frequencies (MHz)	FCC 15B / ICES-003, Class A	FCC 15B / ICES-003, Class B	CISPR 22, Class A	CISPR 22, Class B
30-88	49.5	40		
88-216	54	43.5	50.5	40.5
216-230		56.9		
230-960		46		
960-1000	60	54	57.5	47.5
1000-3000	Avg: 60	Avg: 54	Avg: 56	Avg: 50
Above 3000	Peak: 80	Peak: 74	Peak: 76	Peak: 70
			Avg: 60	Avg: 54
			Peak: 80	Peak: 74

NOTE:

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



A D T

FREQUENCY RANGE OF RADIATED MEASUREMENT (For unintentional radiators)

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705-108	1000
108-500	2000
500-1000	5000
Above 1000	5th harmonic of the highest frequency or 40GHz, whichever is lower



A D T

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer Agilent	E9038A	MY50010125	Feb. 01, 2013	Jan. 31, 2014
	E9038A	MY50010132	Dec. 27, 2012	Dec. 26, 2013
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-01	Nov. 14, 2012	Nov. 13, 2013
	ZFL-1000VH2B	AMP-ZFL-02	Nov. 14, 2012	Nov. 13, 2013
Pre-Amplifier Mini-Circuits	ZVA-183-S+	AMP-ZVA-01	Nov. 14, 2012	Nov. 13, 2013
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 14, 2012	Nov. 13, 2013
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-359	Apr. 09, 2012	Apr. 08, 2013
	VULB 9168	9168-358	Apr. 06, 2012	Apr. 05, 2013
Spectrum Analyzer Agilent	E4446A	MY48250253	Aug. 28, 2012	Aug. 27, 2013
Horn Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 12, 2012	Oct. 11, 2013
Pre-Amplifier Agilent	8449B	3008A01975	Mar. 02, 2013	Mar. 01, 2014
Horn Antenna SCHWARZBECK	BBHA 9120	9120D-783	Sep. 20, 2012	Sep. 19, 2013
RF Cable	NA	RF104-110 RF104-206 RF104-209	Dec. 21, 2012	Dec. 20, 2013
RF Cable	8DFB	CHFCAB-001 CHFCAB-002 CHFCAB-003	Nov. 14, 2012	Nov. 13, 2013
Software	ADT_Radiated_V8.7.06	NA	NA	NA
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 test was performed in 10m Chamber No. F.
3. The FCC Site Registration No. is 928149.
4. The VCCI Site Registration No. is R-3252 & G-136.
5. The CANADA Site Registration No. is IC 7450H-1.
6. Tested Date: Mar. 14 to 19, 2013

4.2.3 TEST PROCEDURE

For below 1GHz test:

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at an accredited test facility. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 10 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 quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for quasi-peak detection (QP) at frequency below 1GHz.

For above 1GHz test:

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at an accredited 10 meters chamber room. 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 can be varied from one meter to four meters, the height of adjustment depends on the EUT height and the antenna 3dB beamwidth both, detect 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 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 and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz.

NOTE:

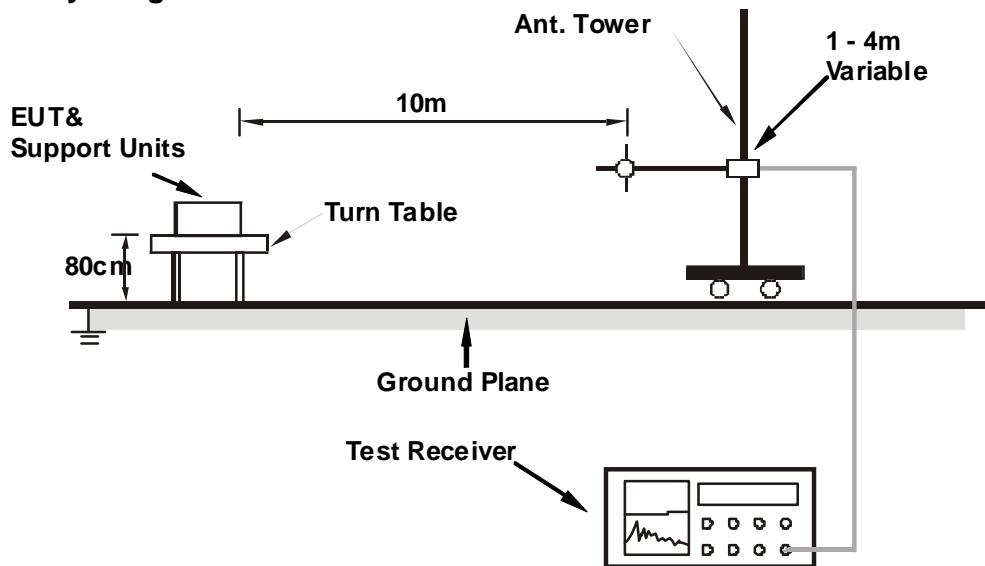
1. The resolution bandwidth is 1MHz and video bandwidth of test receiver/spectrum analyzer is 3MHz for Peak detection at frequency above 1GHz. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz for Average detection (AV) at frequency above 1GHz.
2. For measurement of frequency above 1000 MHz, the EUT was set 3 meters away from the interference-receiving antenna.

4.2.4 DEVIATION FROM TEST STANDARD

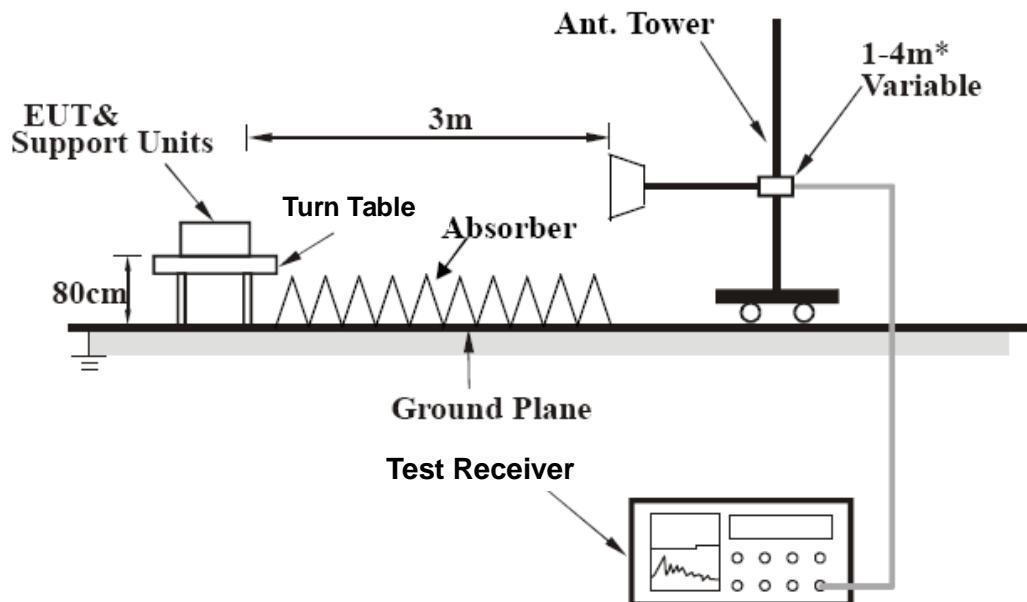
No deviation

4.2.5 TEST SETUP

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



* : depends on the EUT height and the antenna 3dB beamwidth both.

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

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6

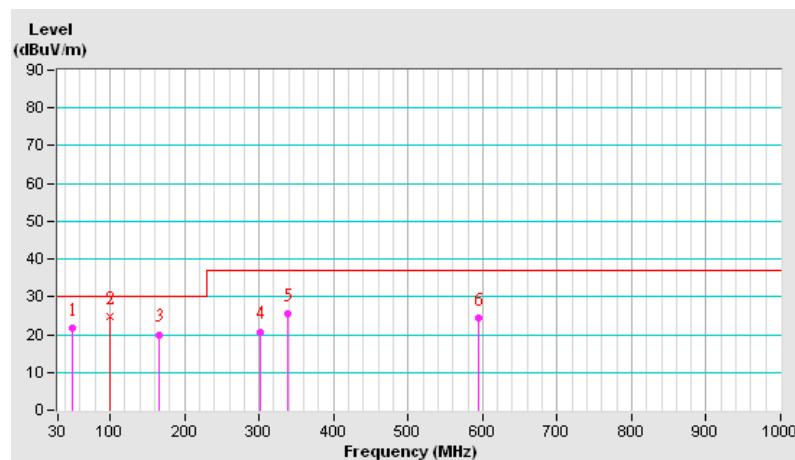
4.2.7 TEST RESULTS

TEST MODE	Mode 1	FREQUENCY RANGE	30-1000 MHz
ENVIRONMENTAL CONDITIONS	20 deg. C, 71 % RH	DETECTOR FUNCTION & BANDWIDTH	Quasi-Peak, 120kHz
TESTED BY	Jason Huang		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 10 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	49.40	21.74 QP	30.00	-8.26	4.00 H	26	34.71	-12.97
2	99.95	24.62 QP	30.00	-5.38	4.00 H	39	41.87	-17.25
3	166.53	19.99 QP	30.00	-10.01	4.00 H	34	33.07	-13.08
4	302.18	20.77 QP	37.00	-16.23	3.00 H	14	32.27	-11.50
5	339.33	25.51 QP	37.00	-11.49	3.00 H	14	35.95	-10.44
6	594.01	24.29 QP	37.00	-12.71	3.00 H	14	28.02	-3.73

REMARKS:

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

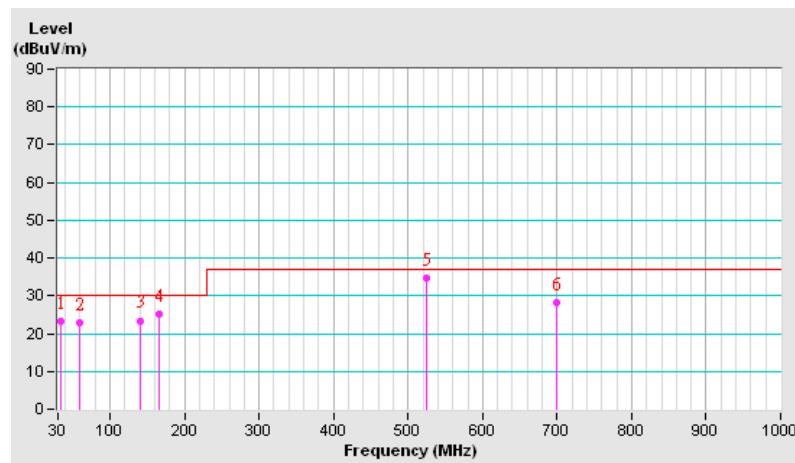


TEST MODE	Mode 1	FREQUENCY RANGE	30-1000 MHz
ENVIRONMENTAL CONDITIONS	20 deg. C, 71 % RH	DETECTOR FUNCTION & BANDWIDTH	Quasi-Peak, 120kHz
TESTED BY	Jason Huang		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 10 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	33.64	23.20 QP	30.00	-6.80	1.00 V	51	37.39	-14.19
2	58.81	22.99 QP	30.00	-7.01	3.00 V	65	36.67	-13.68
3	141.50	23.43 QP	30.00	-6.57	3.00 V	141	36.55	-13.12
4	166.04	25.11 QP	30.00	-4.89	1.00 V	83	38.16	-13.05
5	524.99	34.72 QP	37.00	-2.28	3.00 V	348	40.54	-5.82
6	700.03	28.08 QP	37.00	-8.92	3.00 V	285	30.55	-2.47

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) if use .
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.





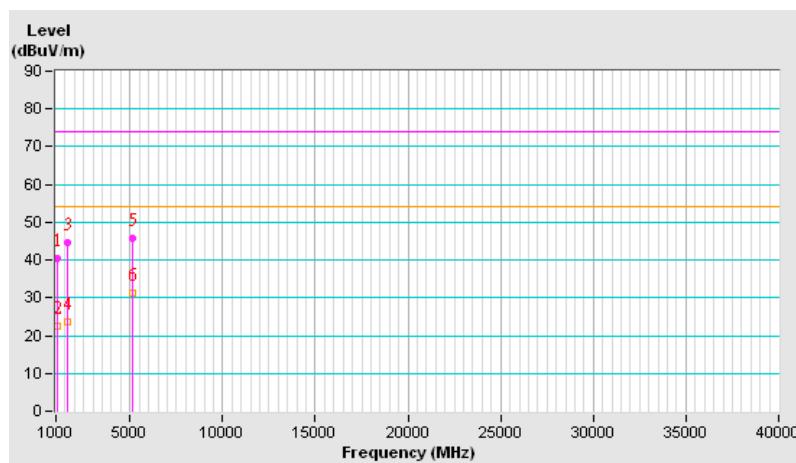
A D T

TEST MODE	Mode 1	FREQUENCY RANGE	1000-29500MHz
ENVIRONMENTAL CONDITIONS	21 deg. C, 73 % RH	DETECTOR FUNCTION & BANDWIDTH	Peak (PK) / Average (AV), 1MHz
TESTED BY	Eagle Chen		

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	1096.75	40.43 PK	74.00	-33.57	1.00 H	114	11.30	29.13
2	1096.75	22.57 AV	54.00	-31.43	1.00 H	114	-6.56	29.13
3	1622.75	44.57 PK	74.00	-29.43	1.00 H	325	13.43	31.14
4	1622.75	23.56 AV	54.00	-30.44	1.00 H	325	-7.58	31.14
5	5130.25	45.62 PK	74.00	-28.38	1.00 H	1	3.42	42.20
6	5130.25	31.19 AV	54.00	-22.81	1.00 H	1	-11.01	42.20

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) if use .
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.





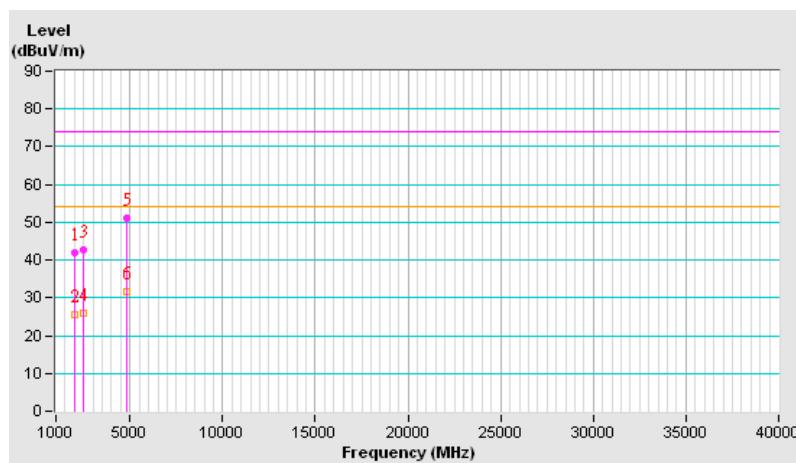
A D T

TEST MODE	Mode 1	FREQUENCY RANGE	1000-29500MHz
ENVIRONMENTAL CONDITIONS	21 deg. C, 73 % RH	DETECTOR FUNCTION & BANDWIDTH	Peak (PK) / Average (AV), 1MHz
TESTED BY	Eagle Chen		

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	1992.00	41.87 PK	74.00	-32.13	1.00 V	360	9.59	32.28
2	1992.00	25.58 AV	54.00	-28.42	1.00 V	360	-6.70	32.28
3	2510.25	42.61 PK	74.00	-31.39	1.00 V	12	8.00	34.61
4	2510.25	26.04 AV	54.00	-27.96	1.00 V	12	-8.57	34.61
5	4824.00	51.07 PK	74.00	-22.93	1.00 V	38	9.58	41.49
6	4824.00	31.77 AV	54.00	-22.23	1.00 V	38	-9.72	41.49

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) if use °
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.





A D T

5 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 Lab:

Tel: 886-3-5935343

Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety/Telecom Lab:

Tel: 886-3-3183232

Fax: 886-3-3270892

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.



A D T

6 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.

--- END ---