FCC DoC TEST REPORT

REPORT NO. :	FC131022E03
MODEL NO. :	QCASP141
RECEIVED :	Oct. 22, 2013
TESTED :	Jan. 22 to 27, 2014
ISSUED :	Feb. 06, 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, 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.

Table of Contents

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
FC131022E03	Original release	Feb. 06, 2014

1 CERTIFICATION

PRODUCT :	1x1 802.11b/g/n module
BRAND NAME :	Qualcomm Atheros
MODEL NO. :	QCASP141
TEST SAMPLE :	R&D SAMPLE
APPLICANT :	Qualcomm Atheros, Inc.
TESTED :	Jan. 22 to 27, 2014
STANDARDS :	FCC Part 15, Subpart B, Class B ICES-003: 2012 Issue 5, Class B ANSI C63.4-2009

The above equipment (Model: QCASP141) 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:** *Feb. 06, 2014*
(Elsie Hsu, Specialist)

APPROVED BY : _____ , **DATE:** *Feb. 06, 2014*
(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 -13.08 dB at 0.16172MHz
ICES-003: 2012 Issue 5, Class B	Radiated Test	**PASS**	Meets Class B Limit Minimum passing margin is -1.95 dB at 166.09 MHz

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)	4.25 dB
Radiated emissions (1GHz-6GHz)	3.65 dB
Radiated emissions (6GHz-18GHz)	3.50 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	1x1 802.11b/g/n module
MODEL NO.	QCASP141
POWER SUPPLY	DC 3.3V from host equipment
POWER CORD	NA
DATA CABLE	NA
ASSOCIATED DEVICES	NA

NOTE:

1. The EUT is a 2.4GHz WLAN device.
2. The modular has two variant designs as following table:

Variant No.	Description	Remark
SKU #1	Thin	Total 26 pins are pulled out on thin module.
SKU #2	SP141	Total 27 pins are pulled out on SP141.

Note: 1. The pin, EXT_ANT for external antenna which is on SP141 module is deleted on thin module.
2. From the above variant designs, the spurious emission worst case was found in **SKU #1**. Therefore only the test data of the mode was recorded in this report.

3. The EUT incorporates a SISO function.

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

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

3.2 ANTENNA SPECIFICATIONS

The declared antenna gain is 3.62dBi, this antenna gain was used for conducted spurious calculations.

3.3 GENERAL DESCRIPTION OF TEST MODE

The EUT is tested under following test mode:

Test Mode	Variant No.	Description
Mode 1	SKU #1	Thin

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	Remark
A.	EUT	Qualcomm Atheros	QCASP141	NA	FCC DoC Approved	-
B.	NOTEBOOK COMPUTER	DELL	E6420	H62T3R1	FCC DoC	Provided by Lab
C.	iPod shuffle	Apple	MD778TA/A	CC4JMFL0F4T1	NA	Provided by Lab
D.	Matrix Printer	EPSON	LQ-300+II	G88Y074083	FCC DoC	Provided by Lab
E.	MOUSE	DELL	MOC5UO	I1401LVG	FCC DoC	Provided by Lab
F.	USB TEST TOOL	NA	NA	NA	NA	Supplied by client
G.	2.4G WiFi AP	Cisco	NA	NA	NA	Provided by Lab

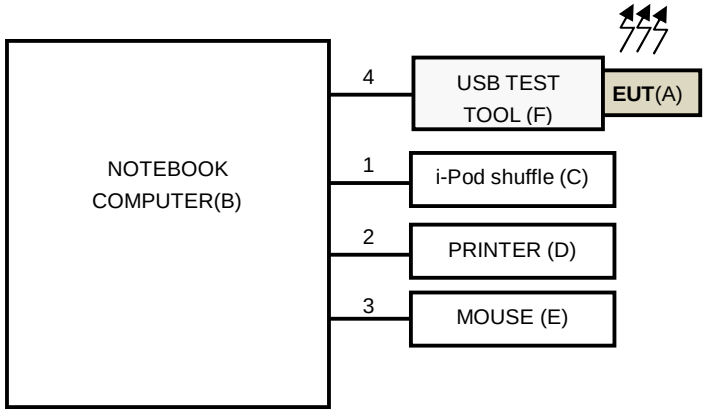
NOTE:

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

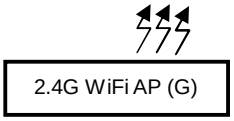
No.	Cable	Qty.	Length (m)	Shielded (Yes/ No)	Cores (Number)	Remark
1.	USB	1	0.1	Y	0	Provided by Lab
2.	USB	1	1.8	Y	0	Provided by Lab
3.	USB	1	1.8	Y	0	Provided by Lab
4.	USB	1	1	Y	0	Provided by Lab

3.5 CONFIGURATION OF SYSTEM UNDER TEST

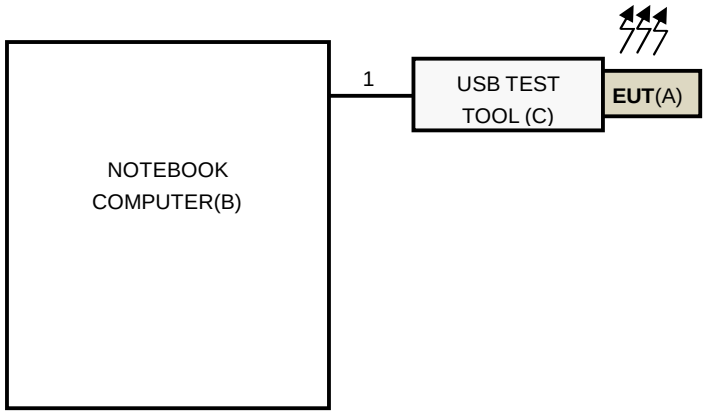
For Conducted / Radiated test:



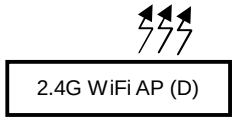
Remote site



For Immunity test:



Remote site



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 ROHDE & SCHWARZ	ESCS 30	100287	Feb. 28, 2013	Feb. 27, 2014
Line-Impedance Stabilization Network (for EUT) ROHDE & SCHWARZ	NSLK-8127	5127-523	Oct. 02, 2013	Oct. 01, 2014
Line-Impedance Stabilization Network (for Peripheral) ROHDE & SCHWARZ	ENV216	100071	Nov. 13, 2013	Nov. 12, 2014
RF Cable (JYEBAO)	5DFB	COACAB-001	May 27, 2013	May 26, 2014
50 ohms Terminator	50	3	Oct. 17, 2013	Oct. 16, 2014
50 ohms Terminator	N/A	EMC-04	Oct. 17, 2013	Oct. 16, 2014
Software ADT	BV ADT_Cond_V7.3.7 .3	NA	NA	NA

Note:
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. A.
3 The VCCI Con A Registration No. is C-817.
4. Tested Date: Jan. 27, 2014

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.

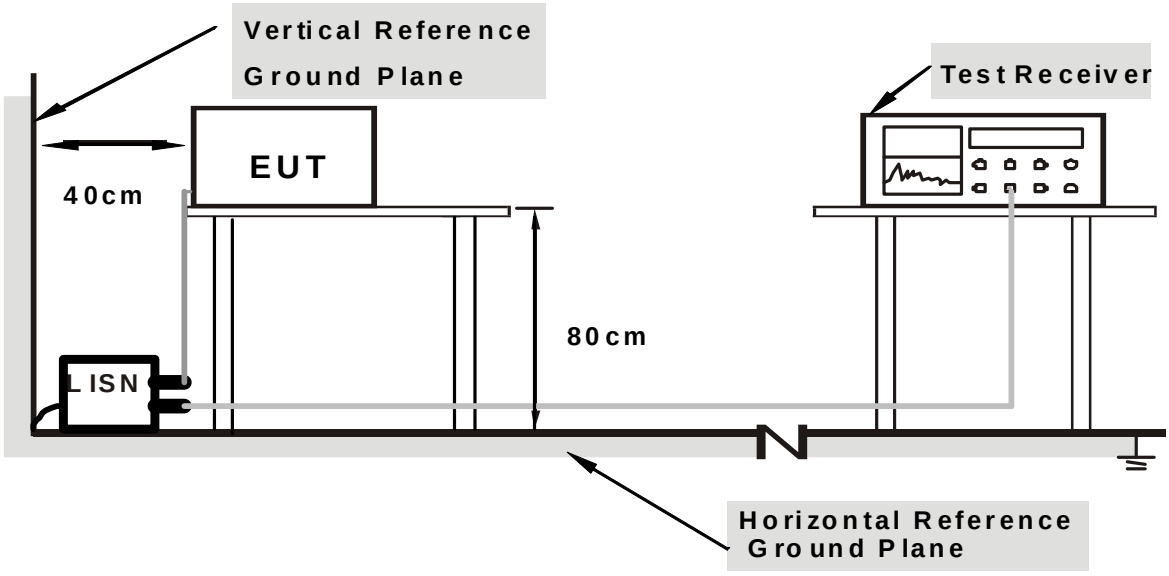
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

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.

4.1.6 EUT OPERATING CONDITIONS

1. Connect the EUT with the support unit B (NB) which is placed on a testing table.
2. Support unit B (NB) runs test program “ping.exe” to link with support unit G (2.4G WiFi AP) via EUT by wireless.
3. Support unit B (NB) scrolls "H" patterns on its screen

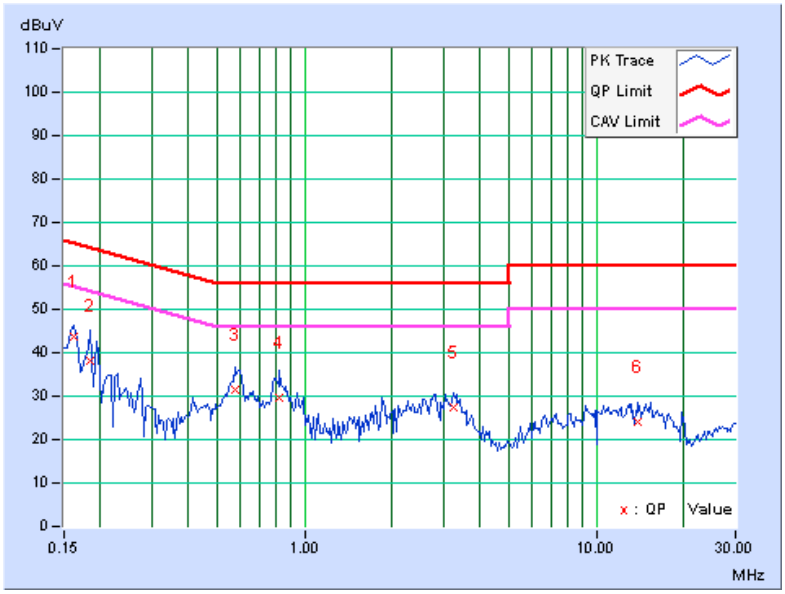
4.1.7 TEST RESULTS

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	25 deg. C, 67 % RH	TESTED BY	Jason Huang

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16172	0.05	43.50	41.82	43.55	41.87	65.38	55.38	-21.82	-13.50
2	0.18516	0.06	38.00	30.38	38.06	30.44	64.25	54.25	-26.19	-23.81
3	0.57578	0.12	31.18	23.17	31.30	23.29	56.00	46.00	-24.70	-22.71
4	0.81797	0.12	29.58	19.62	29.70	19.74	56.00	46.00	-26.30	-26.26
5	3.23828	0.28	27.06	22.10	27.34	22.38	56.00	46.00	-28.66	-23.62
6	13.94141	0.60	23.55	18.80	24.15	19.40	60.00	50.00	-35.85	-30.60

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

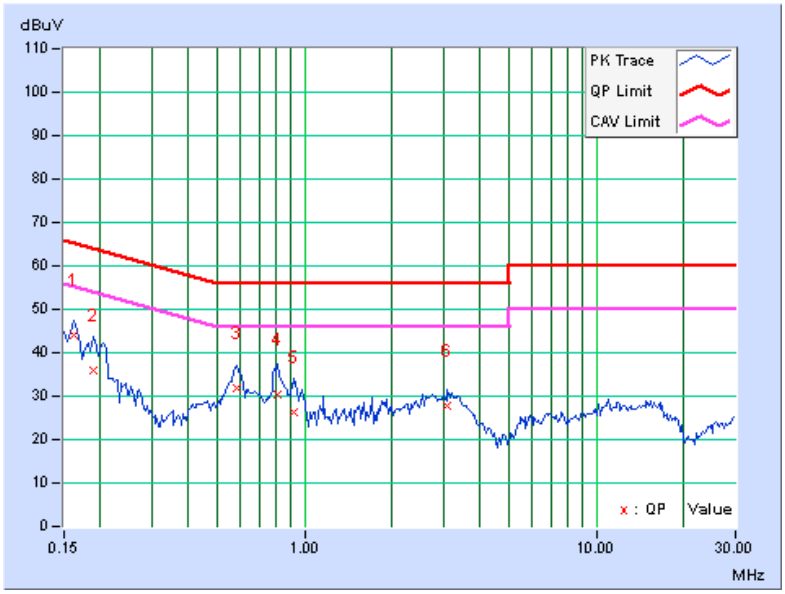


TEST MODE	Mode 1	**PHASE**	Neutral (N)
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION & BANDWIDTH**	Quasi-Peak (QP) / Average (AV), 9 kHz
ENVIRONMENTAL CONDITIONS	25 deg. C, 67 % RH	**TESTED BY**	Jason Huang

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	**0.16172**	**0.05**	**43.92**	**42.25**	**43.97**	**42.30**	**65.38**	**55.38**	**-21.41**	**-13.08**
2	0.18906	0.05	35.72	21.68	35.77	21.73	64.08	54.08	-28.31	-32.35
3	0.58359	0.12	31.84	24.30	31.96	24.42	56.00	46.00	-24.04	-21.58
4	0.81016	0.13	30.08	22.42	30.21	22.55	56.00	46.00	-25.79	-23.45
5	0.91563	0.14	26.23	18.20	26.37	18.34	56.00	46.00	-29.63	-27.66
6	3.09375	0.22	27.43	22.01	27.65	22.23	56.00	46.00	-28.35	-23.77

REMARKS:

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



4.2 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 (dBμV/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	40	30
88-216	43.5	33.1		
216-230	46.4	35.6		
230-960			47	37
960-1000	49.5	43.5		
1000-3000	Avg: 49.5 Peak: 69.5	Avg: 43.5 Peak: 63.5	Not defined	Not defined
Above 3000			Not defined	Not defined

Radiated Emissions Limits at 3 meters (dBμV/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	50.5	40.5
88-216	54	43.5		
216-230	56.9	46		
230-960			57.5	47.5
960-1000	60	54		
1000-3000	Avg: 60 Peak: 80	Avg: 54 Peak: 74	Avg: 56 Peak: 76	Avg: 50 Peak: 70
Above 3000			Avg: 60 Peak: 80	Avg: 54 Peak: 74

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

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

4.2.2 TEST INSTRUMENTS

For below 1GHz test

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Analyzer Spectrum ADVANTEST	U3751	160200410	Sep. 05, 2013	Sep. 04, 2014
Test Receiver ROHDE & SCHWARZ	ESCS 30	100027	May 14, 2013	May 13, 2014
Broadband Antenna SCHWARZBECK	VULB-9168	263	Mar. 26, 2013	Mar. 25, 2014
RF Switches	EM-H-01-1	1009	July 02, 2013	July 01, 2014
RF Cable (COMMATE/PEWC)	8D	STACAB-002	July 02, 2013	July 01, 2014
Software ADT	ADT_Radiated_ V7.6.15.9.4	NA	NA	NA
Antenna Tower & Turn Table CT	TT100	ADT01	NA	NA
CORCOM AC Filter	MRI2030	107/108	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 Open Site No. A.
3 The VCCI Site Registration No. is R-782.
4. The FCC Site Registration No. is 91097.
5 The CANADA Site Registration No. is IC 7450G-1.
6 Tested Date: Jan. 22, 2014

For above 1GHz test

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer Agilent	N9038A	MY51210202	Dec. 11, 2013	Dec. 10, 2014
	E9038A	MY50010132	Dec. 11, 2013	Dec. 10, 2014
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-01	Nov. 13, 2013	Nov. 12, 2014
	ZFL-1000VH2B	AMP-ZFL-02	Nov. 13, 2013	Nov. 12, 2014
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-359	Mar. 22, 2013	Mar. 21, 2014
	VULB 9168	9168-358	Mar. 20, 2013	Mar. 19, 2014
RF Cable	8DFB	CHFCAB-001 CHFCAB-002 CHFCAB-003	Oct. 04, 2013	Oct. 03, 2014
Pre-Amplifier Agilent	8449B	3008A01975	Mar. 02, 2013	Mar. 01, 2014
Horn Antenna SCHWARZBECK	BBHA 9120	9120D-783	Sep. 26, 2013	Sep. 25, 2014
RF Cable	NA	RF104-110 RF104-206 RF104-209	Dec. 12, 2013	Dec.11, 2014
Spectrum Analyzer Agilent	E4446A	MY48250253	Aug. 28, 2013	Aug. 27, 2014
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 13, 2013	Nov. 12, 2014
Horn Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 08, 2013	Oct. 07, 2014
Software	ADT_Radiated_V8.7.07	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: Jan. 23, 2014

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 test facility. 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:

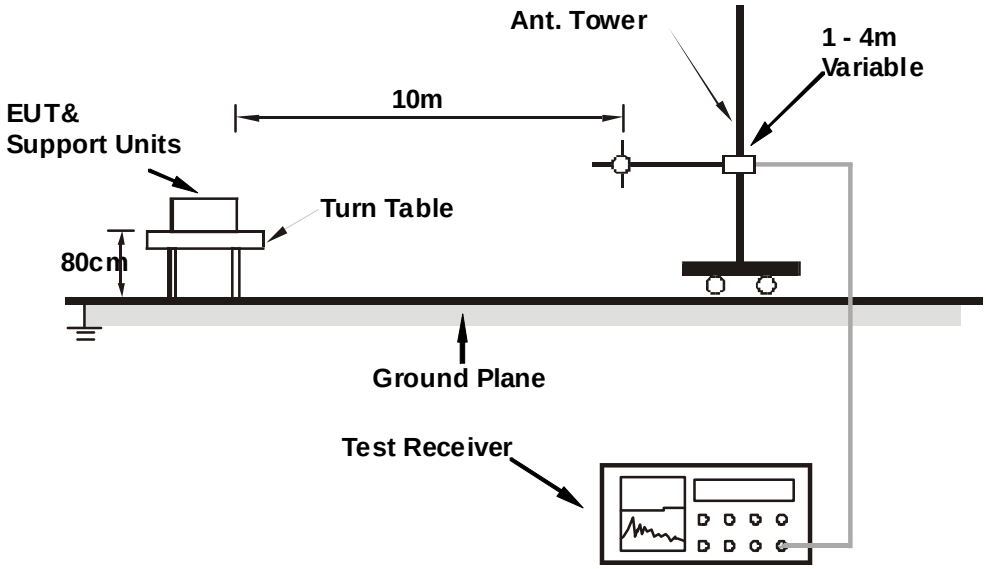
1. The resolution bandwidth is 1MHz and video bandwidth of test receiver/spectrum analyzer is 3MHz for Peak detection at frequency above 1GHz. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz for Average detection (AV) at frequency above 1GHz.

4.2.4 DEVIATION FROM TEST STANDARD

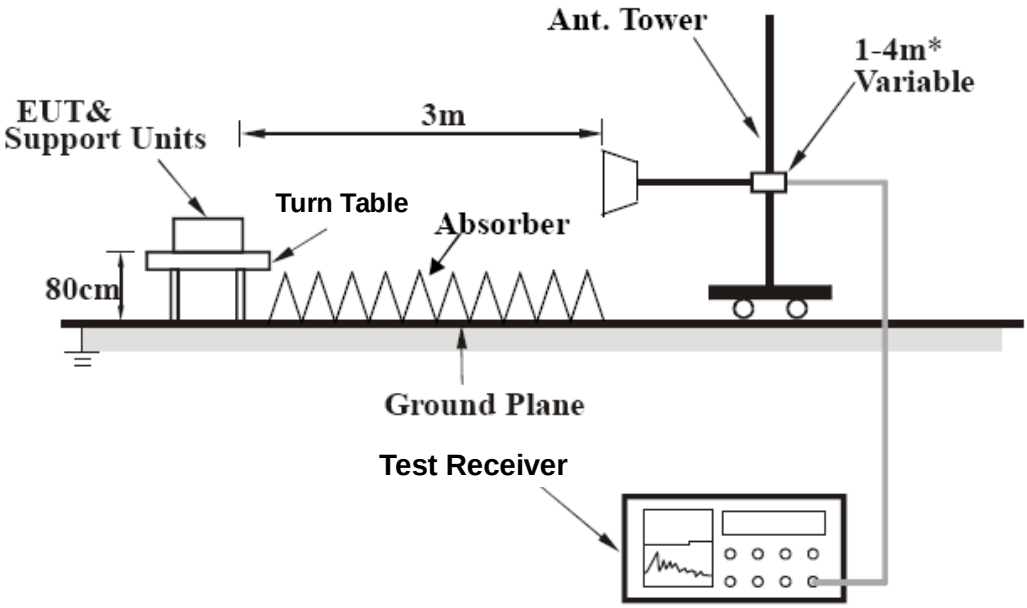
No deviation

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

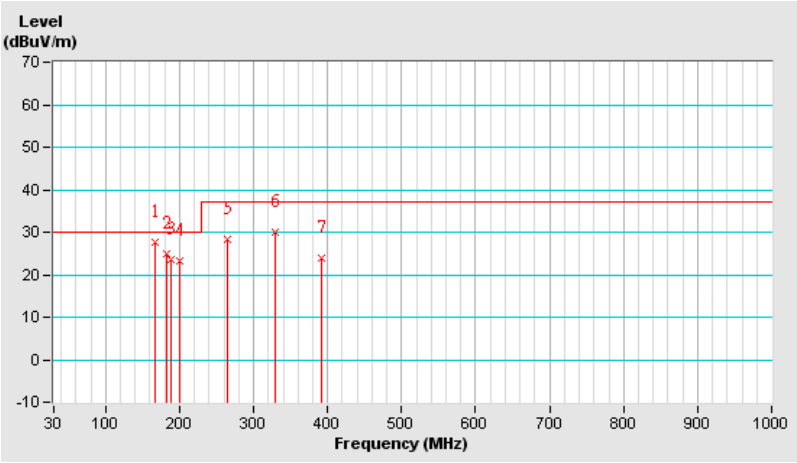
4.2.7 TEST RESULTS

TEST MODE	Mode 1	FREQUENCY RANGE	30-1000 MHz
INPUT POWER	DC 3.3V	DETECTOR FUNCTION & BANDWIDTH	Quasi-Peak, 120kHz
ENVIRONMENTAL CONDITIONS	20 deg. C, 74 % RH	TESTED BY	Scott Chen

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	166.09	27.76 QP	30.00	-2.24	4.00 H	139	11.99	15.77
2	181.60	24.84 QP	30.00	-5.16	4.00 H	10	10.78	14.06
3	189.04	23.65 QP	30.00	-6.35	4.00 H	316	10.66	12.99
4	200.88	23.08 QP	30.00	-6.92	4.00 H	216	10.37	12.71
5	264.30	28.35 QP	37.00	-8.65	4.00 H	0	12.72	15.63
6	329.61	30.12 QP	37.00	-6.88	2.99 H	264	12.24	17.88
7	390.85	24.01 QP	37.00	-12.99	2.99 H	260	4.81	19.20

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

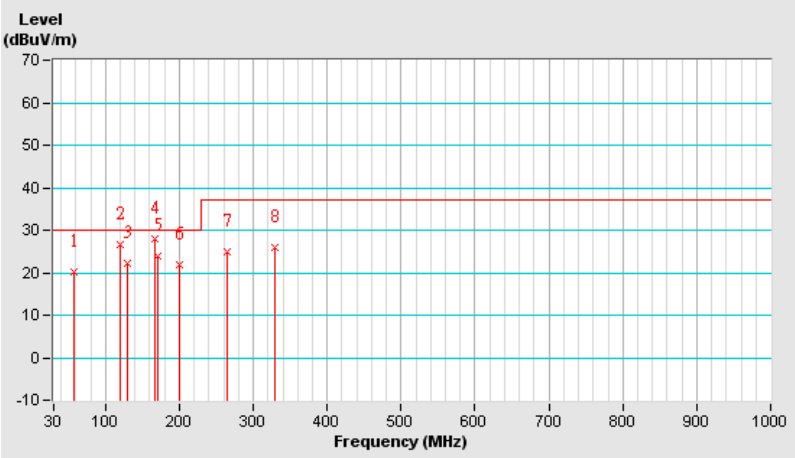


TEST MODE	Mode 1	**FREQUENCY RANGE**	30-1000 MHz
INPUT POWER	DC 3.3V	**DETECTOR FUNCTION & BANDWIDTH**	Quasi-Peak, 120kHz
ENVIRONMENTAL CONDITIONS	20 deg. C, 74 % RH	**TESTED BY**	Scott Chen

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	57.05	20.02 QP	30.00	-9.98	1.00 V	170	4.98	15.04
2	120.00	26.53 QP	30.00	-3.47	1.00 V	172	12.99	13.54
3	129.37	22.36 QP	30.00	-7.64	1.00 V	43	7.48	14.88
4	**166.09**	**28.05 QP**	**30.00**	**-1.95**	**1.00 V**	**258**	**12.28**	**15.77**
5	171.37	23.94 QP	30.00	-6.06	1.00 V	137	7.95	15.99
6	200.23	21.90 QP	30.00	-8.10	1.00 V	253	9.23	12.67
7	264.10	24.95 QP	37.00	-12.05	1.00 V	194	9.33	15.62
8	329.73	25.95 QP	37.00	-11.05	1.00 V	0	8.07	17.88

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

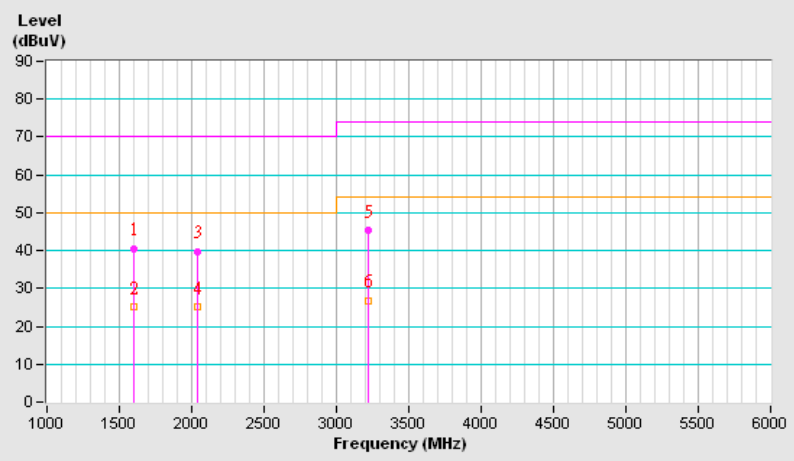


TEST MODE	Mode 1	**FREQUENCY RANGE**	1000-12500 MHz
INPUT POWER	DC 3.3V	**DETECTOR FUNCTION & BANDWIDTH**	Peak (PK) / Average (AV), 1MHz
ENVIRONMENTAL CONDITIONS	21 deg. C, 64 % RH	**TESTED BY**	Eagle Chen

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	1595.00	40.60 PK	70.00	-29.40	1.00 H	282	44.18	-3.58
2	1595.00	25.08 AV	50.00	-24.92	1.00 H	282	28.66	-3.58
3	2044.00	39.83 PK	70.00	-30.17	1.00 H	337	41.29	-1.46
4	2044.00	25.01 AV	50.00	-24.99	1.00 H	337	26.47	-1.46
5	3222.50	45.32 PK	74.00	-28.68	1.00 H	185	42.93	2.39
6	3222.50	26.85 AV	54.00	-27.15	1.00 H	185	24.46	2.39

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

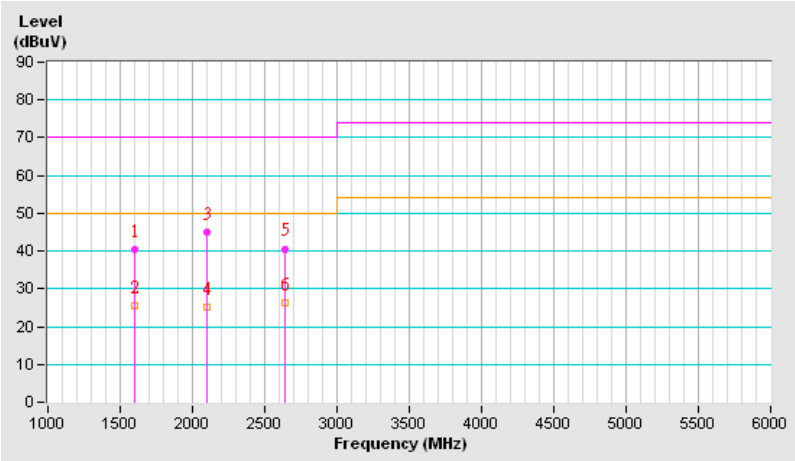


TEST MODE	Mode 1	**FREQUENCY RANGE**	1000-12500 MHz
INPUT POWER	DC 3.3V	**DETECTOR FUNCTION & BANDWIDTH**	Peak (PK) / Average (AV), 1MHz
ENVIRONMENTAL CONDITIONS	21 deg. C, 64 % RH	**TESTED BY**	Eagle Chen

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	1596.50	40.38 PK	70.00	-29.62	1.00 V	347	43.96	-3.58
2	1596.50	25.54 AV	50.00	-24.46	1.00 V	347	29.12	-3.58
3	2102.75	45.04 PK	70.00	-24.96	1.00 V	169	46.25	-1.21
4	2102.75	25.30 AV	50.00	-24.70	1.00 V	169	26.51	-1.21
5	2638.00	40.58 PK	70.00	-29.42	1.00 V	192	39.54	1.04
6	2638.00	26.23 AV	50.00	-23.77	1.00 V	192	25.19	1.04

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 PHOTOGRAPHS OF THE TEST CONFIGURATION

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

6 INFORMATION ON THE TESTING LABORATORIES

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

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.

--- END ---