Partial FCC Test Report

Report No.:	RF150724C30-2
FCC ID:	PPD-QCNFA344AH
Test Model:	QCNFA344A
Received Date:	Jul. 24, 2015
Test Date:	Aug. 04, 2015 ~ Aug. 09, 2015
Issued Date:	Sep. 30, 2015
Applicant:	Qualcomm Atheros, Inc.
Address:	1700 Technology Drive, San Jose, CA 95110
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan (R.O.C)
Test Location (1):	No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C.
Test Location (2):	No.215, Sec. 3, Beixin Rd., Xindian Dist., New Taipei City 231, Taiwan, R.O.C

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Release Control Record

Issue No.	Description	Date Issued
RF150724C30-2	Original Release	Sep. 30, 2015

1 Certificate of Conformity

Product:	Module
Brand:	Qualcomm
Test Model:	QCNFA344A
Sample Status:	Identical Prototype
Applicant:	Qualcomm Atheros, Inc.
Test Date:	Aug. 04, 2015 ~ Aug. 09, 2015
Standards:	47 CFR FCC Part 15, Subpart C (Section 15.247) ANSI C63.10:2013

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

Prepared by : _____ , **Date:** Sep. 30, 2015

Ivonne Wu / Supervisor

Approved by : _____ , **Date:** Sep. 30, 2015

Kay Wu / Supervisor

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (SECTION 15.247)			
FCC Clause	Test Item	Result	Remarks
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -19.67 dB at 0.19297 MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -1.00 dB at 2390.00 MHz.
15.247(d)	Antenna Port Emission	N/A	Refer to Note
15.247(a)(2)	6dB bandwidth	N/A	Refer to Note
15.247(b)	Conducted power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	N/A	Refer to Note
15.203	Antenna Requirement	N/A	Refer to Note

NOTE: Only test item of Conducted power, AC Power Conducted Emission, and Radiated Emissions tests were performed for this report. Other test data please refer to module report no.: RF150107E06B.

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT:
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.

Measurement	Frequency	Expended Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.44 dB
Radiated Emissions up to 1 GHz	30MHz ~ 200MHz	2.0153 dB
	200MHz ~1000MHz	2.0224 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	1.0121 dB
	18GHz ~ 40GHz	1.1508 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Module
Brand	Qualcomm
Test Model	QCNFA344A
Status of EUT	Identical Prototype
Power Supply Rating	19.5Vdc (adapter) 11.1Vdc (Li-ion battery)
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: 11.0 / 5.5 / 2.0 / 1.0 Mbps 802.11g: 54.0 / 48.0 / 36.0 / 24.0 / 18.0 / 12.0 / 9.0 / 6.0 Mbps 802.11n: up to MCS7
Operating Frequency	2412 ~ 2462MHz
Number of Channel	11 for 802.11b, 802.11g, 802.11n (20MHz) 7 for 802.11n (40MHz)
Antenna Type	Refer to Note as below
Antenna Connector	N/A
Accessory Device	Refer to Note as below
Data Cable Supplied	Refer to Note as below

Note:

1. The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and two receivers.

Modulation Mode	TX Function
802.11b	1TX
802.11g	1TX
802.11n (20MHz)	2TX
802.11n (40MHz)	2TX

2. The EUT is allocated in specific End-product. Please refer to below table for the details.

Host Type	Host Brand	Host Model
Portable Computer	DELL	P68G

3. The antenna information is listed as below.

Antenna Type	Manufacturer	Parts Number	Antenna Gain (dBi)	
			2.4GHz	5GHz
PIFA	Yageo Corporation	Main Antenna: ANTA0DQ10382WLAN1（DQ610382W00） Aux. Antenna: ANTA0DQ10382WLAN1（DQ610382W00）	Main: -0.89 Aux.: 0.51	Main: 2.13 Aux.: 1.42

4. The host (P68G) contains following accessory devices.

Product	Brand	Model	Description
Adapter	DELL	LA65NS2-01	I/P: 100-240Vac, 50/60Hz, 1.6A O/P: 19.5Vdc, 3.34A 1.8m non-shielded cable w/o core
Battery	DELL	D2VF9	11.1Vdc, 43Wh
WLAN Module	Qualcomm Atheros	QCNFA344A	--

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

3.2 Description of Test Modes

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

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	7	2442
2	2417	8	2447
3	2422	9	2452
4	2427	10	2457
5	2432	11	2462
6	2437		

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

Channel	Frequency	Channel	Frequency
3	2422	7	2442
4	2427	8	2447
5	2432	9	2452
6	2437		

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable To				Description
	RE≥1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

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

Radiated Emission Test (Above 1GHz):

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

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
-	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
-	802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	MCS0
-	802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	MCS0

Radiated Emission Test (Below 1GHz):

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

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	802.11g	1 to 11	11	OFDM	BPSK	6.0

Power Line Conducted Emission Test:

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

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	802.11g	1 to 11	11	OFDM	BPSK	6.0

Antenna Port Conducted Measurement:

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

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
-	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
-	802.11n (20MHz)	1 to 11	1, 6, 11	OFDM	BPSK	MCS0
-	802.11n (40MHz)	3 to 9	3, 6, 9	OFDM	BPSK	MCS0

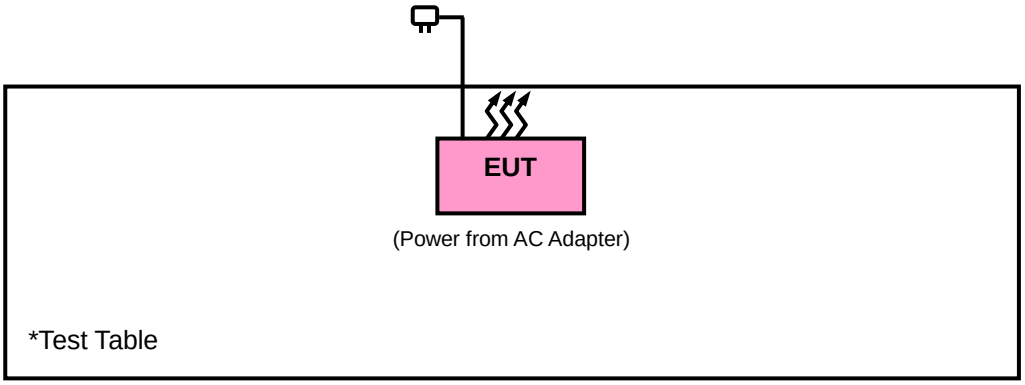
Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested by
RE≥1G	25deg. C, 65%RH	120Vac, 60Hz	Charles Hsiao
RE<1G	25deg. C, 65%RH	120Vac, 60Hz	Charles Hsiao
PLC	25deg. C, 65%RH	120Vac, 60Hz	Toby Tian
APCM	25deg. C, 65%RH	19.5Vdc	Howard Kao

3.3 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units.

3.3.1 Configuration of System under Test



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 (15.247)
558074 D01 DTS Meas Guidance v03r03
662911 D01 Multiple Transmitter Output v02r01
ANSI C63.10-2013

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

NOTE: The EUT has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

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

4.1.2 Test Instruments

Description & Manaufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Spectrum Analyzer Agilent Technologies	N9038A	MY52260177	May 19, 2015	May 18, 2016
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Dec. 10, 2014	Dec. 09, 2015
BILOG Antenna SCHWARZBECK	VULB9168	9168-472	Feb. 04, 2015	Feb. 04, 2016
HORN Antenna ETS-Lindgren	3117	00143293	Jan. 05, 2015	Jan. 04, 2016
Bluetooth Tester	CBT	100980	Apr. 27, 2015	Apr. 26, 2017
Agilent Communications Tester-Wireless	8960 Series 10	MY53201073	Jul. 03, 2015	Jul. 02, 2017
Preamplifier Agilent	310N	187226	Jun. 29, 2015	Jun. 28, 2016
Preamplifier Agilent	83017A	MY39501357	Jun. 29, 2015	Jun. 28, 2016
Power Meter Anritsu	ML2495A	1232002	Sep. 17, 2014	Sep. 16, 2015
Power Sensor Anritsu	MA2411B	1207325	Sep. 17, 2014	Sep. 16, 2015
RF signal cable ETS-LINDGREN	5D-FB	Cable-CH1-01(RFC-SMS-100-SMS-120+RFC-SMS-100-SMS-400)	Jun. 27, 2015	Jun. 26, 2016
RF signal cable ETS-LINDGREN	8D-FB	Cable-CH1-02(RFC-SMS-100-SMS-24)	Jun. 27, 2015	Jun. 26, 2016
Software BV ADT	E3 8.130425b	NA	NA	NA
Antenna Tower MF	NA	NA	NA	NA
Turn Table MF	NA	NA	NA	NA
Antenna Tower &Turn Table Controller MF	MF-7802	NA	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 / 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HsinTien Chamber 1.
3. The horn antenna and preamplifier (model: 83017A) are used only for the measurement of emission frequency above 1GHz if tested.
4. The FCC Site Registration No. is 149147.
5. The IC Site Registration No. is IC7450I-1.

4.1.3 Test Procedures

a. The EUT was placed on the top of a rotating table 0.8 meters (for below 1GHz) / 1.5 meters (for above 1GHz) 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:

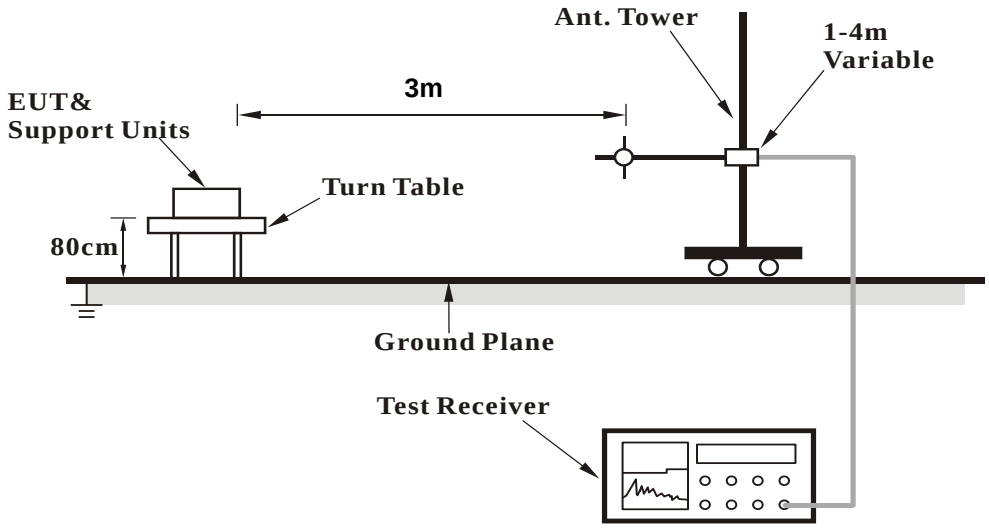
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1 GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz 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/duty cycle)).
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10 Hz (Duty cycle ≥ 98%) for Average detection (AV) at frequency above 1 GHz.
5. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

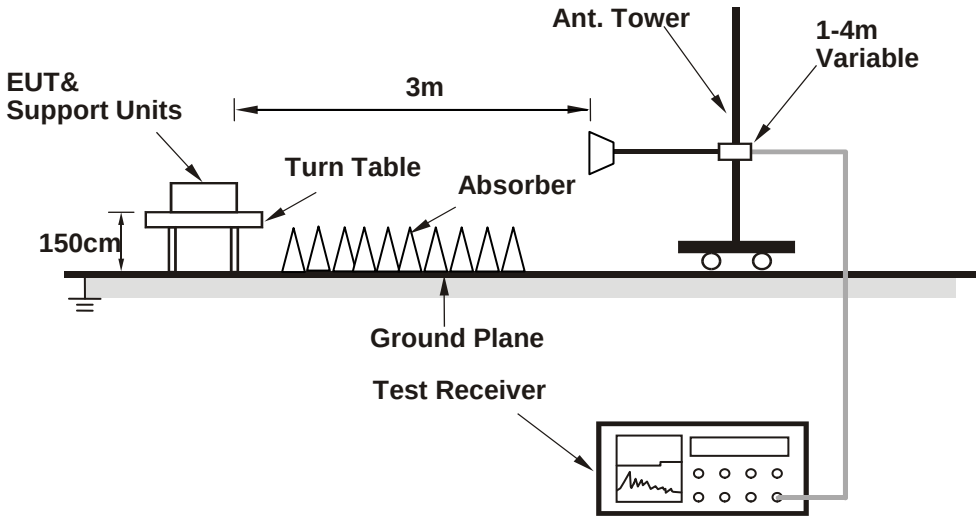
No deviation.

4.1.5 Test Set Up

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



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

4.1.6 EUT Operating Conditions

a. Placed the EUT on a testing table.
b. Use the software to control the EUT under transmission condition continuously at specific channel frequency.

4.1.7 Test Results

Above 1GHz Data：

<1TX_Chain B>

802.11b

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2372	43.01	41.35	54	-10.99	31.78	5.37	35.49	368	286	Average
2372	56.25	54.59	74	-17.75	31.78	5.37	35.49	368	286	Peak
2412	106.18	104.41			31.81	5.43	35.47	368	286	Average
2412	109.09	107.32			31.81	5.43	35.47	368	286	Peak
2498	41.3	39.28	54	-12.7	31.9	5.53	35.41	368	286	Average
2498	56.65	54.63	74	-17.35	31.9	5.53	35.41	368	286	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	46.12	44.39	54	-7.88	31.8	5.4	35.47	268	352	Average
2390	59.7	57.97	74	-14.3	31.8	5.4	35.47	268	352	Peak
2412	111.48	109.71			31.81	5.43	35.47	268	352	Average
2412	114.11	112.34			31.81	5.43	35.47	268	352	Peak
2486	41	39.01	54	-13	31.88	5.53	35.42	268	352	Average
2486	58.09	56.1	74	-15.91	31.88	5.53	35.42	268	352	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 2412MHz: Fundamental frequency.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Charles Hsiao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2364	40.77	39.14	54	-13.23	31.76	5.37	35.5	293	286	Average
2364	55.72	54.09	74	-18.28	31.76	5.37	35.5	293	286	Peak
2437	107	105.15			31.85	5.46	35.46	293	286	Average
2437	109.56	107.71			31.85	5.46	35.46	293	286	Peak
2498	42.08	40.06	54	-11.92	31.9	5.53	35.41	293	286	Average
2498	56.08	54.06	74	-17.92	31.9	5.53	35.41	293	286	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2382	43.74	42.05	54	-10.26	31.78	5.4	35.49	261	350	Average
2382	56.62	54.93	74	-17.38	31.78	5.4	35.49	261	350	Peak
2437	112.41	110.56			31.85	5.46	35.46	261	350	Average
2437	114.91	113.06			31.85	5.46	35.46	261	350	Peak
2486	45.85	43.86	54	-8.15	31.88	5.53	35.42	261	350	Average
2486	57.94	55.95	74	-16.06	31.88	5.53	35.42	261	350	Peak
4874	47.92	39.73	54	-6.08	33.98	8.27	34.06	102	108	Average
4874	52.42	44.23	74	-21.58	33.98	8.27	34.06	102	108	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 2437MHz: Fundamental frequency.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Charles Hsiao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2342	39.64	38.07	54	-14.36	31.74	5.33	35.5	286	293	Average
2342	55.55	53.98	74	-18.45	31.74	5.33	35.5	286	293	Peak
2462	107.05	105.12			31.87	5.5	35.44	286	293	Average
2462	109.68	107.75			31.87	5.5	35.44	286	293	Peak
2496	42.89	40.87	54	-11.11	31.9	5.53	35.41	286	293	Average
2496	56.3	54.28	74	-17.7	31.9	5.53	35.41	286	293	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2342	40.36	38.79	54	-13.64	31.74	5.33	35.5	257	350	Average
2342	56.06	54.49	74	-17.94	31.74	5.33	35.5	257	350	Peak
2462	111.83	109.9			31.87	5.5	35.44	257	350	Average
2462	114.47	112.54			31.87	5.5	35.44	257	350	Peak
2484	46.71	44.75	54	-7.29	31.88	5.5	35.42	257	350	Average
2484	60.63	58.67	74	-13.37	31.88	5.5	35.42	257	350	Peak
4924	46.62	38.37	54	-7.38	33.99	8.28	34.02	100	112	Average
4924	52.15	43.9	74	-21.85	33.99	8.28	34.02	100	112	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 2462MHz: Fundamental frequency.

802.11g

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	45.9	44.17	54	-8.1	31.8	5.4	35.47	368	286	Average
2390	58.35	56.62	74	-15.65	31.8	5.4	35.47	368	286	Peak
2412	99.46	97.69			31.81	5.43	35.47	368	286	Average
2412	107.56	105.79			31.81	5.43	35.47	368	286	Peak
2492	41.19	39.17	54	-12.81	31.9	5.53	35.41	368	286	Average
2492	56.43	54.41	74	-17.57	31.9	5.53	35.41	368	286	Peak
4824	43.65	35.52	54	-10.35	33.97	8.26	34.1	100	130	Average
4824	54.34	46.21	74	-19.66	33.97	8.26	34.1	100	130	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	51.46	49.73	54	-2.54	31.8	5.4	35.47	268	352	Average
2390	62.73	61	74	-11.27	31.8	5.4	35.47	268	352	Peak
2412	104.15	102.38			31.81	5.43	35.47	268	352	Average
2412	112.59	110.82			31.81	5.43	35.47	268	352	Peak
2486	42.28	40.29	54	-11.72	31.88	5.53	35.42	268	352	Average
2486	56.78	54.79	74	-17.22	31.88	5.53	35.42	268	352	Peak
4824	45.45	37.32	54	-8.55	33.97	8.26	34.1	103	3	Average
4824	56.48	48.35	74	-17.52	33.97	8.26	34.1	103	3	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 2412MHz: Fundamental frequency.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Charles Hsiao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2360	41.7	40.07	54	-12.3	31.76	5.37	35.5	293	286	Average
2360	55.96	54.33	74	-18.04	31.76	5.37	35.5	293	286	Peak
2437	100.34	98.49			31.85	5.46	35.46	293	286	Average
2437	108.04	106.19			31.85	5.46	35.46	293	286	Peak
2488	43.08	41.07	54	-10.92	31.9	5.53	35.42	293	286	Average
2488	56.05	54.04	74	-17.95	31.9	5.53	35.42	293	286	Peak
4874	47.11	38.92	54	-6.89	33.98	8.27	34.06	102	109	Average
4874	58.89	50.7	74	-15.11	33.98	8.27	34.06	102	109	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	44.58	42.85	54	-9.42	31.8	5.4	35.47	261	350	Average
2390	56.7	54.97	74	-17.3	31.8	5.4	35.47	261	350	Peak
2437	104.98	103.13			31.85	5.46	35.46	261	350	Average
2437	113.39	111.54			31.85	5.46	35.46	261	350	Peak
2486	47.11	45.12	54	-6.89	31.88	5.53	35.42	261	350	Average
2486	58.44	56.45	74	-15.56	31.88	5.53	35.42	261	350	Peak
4874	48.74	40.55	54	-5.26	33.98	8.27	34.06	102	3	Average
4874	59.44	51.25	74	-14.56	33.98	8.27	34.06	102	3	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 2437MHz: Fundamental frequency.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Charles Hsiao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2368	40.57	38.93	54	-13.43	31.76	5.37	35.49	286	293	Average
2368	55.33	53.69	74	-18.67	31.76	5.37	35.49	286	293	Peak
2462	100.01	98.08			31.87	5.5	35.44	286	293	Average
2462	107.8	105.87			31.87	5.5	35.44	286	293	Peak
2484	48.07	46.11	54	-5.93	31.88	5.5	35.42	286	293	Average
2484	60.51	58.55	74	-13.49	31.88	5.5	35.42	286	293	Peak
4924	44.17	35.92	54	-9.83	33.99	8.28	34.02	114	238	Average
4924	54.68	46.43	74	-19.32	33.99	8.28	34.02	114	238	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2382	41.59	39.9	54	-12.41	31.78	5.4	35.49	257	350	Average
2382	56.88	55.19	74	-17.12	31.78	5.4	35.49	257	350	Peak
2462	104.6	102.67			31.87	5.5	35.44	257	350	Average
2462	112.4	110.47			31.87	5.5	35.44	257	350	Peak
2484	51.91	49.95	54	-2.09	31.88	5.5	35.42	257	350	Average
2484	64.23	62.27	74	-9.77	31.88	5.5	35.42	257	350	Peak
4924	48.99	40.74	54	-5.01	33.99	8.28	34.02	101	2	Average
4924	59.77	51.52	74	-14.23	33.99	8.28	34.02	101	2	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 2462MHz: Fundamental frequency.

802.11n (20MHz)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	46.26	44.53	54	-7.74	31.8	5.4	35.47	368	286	Average
2390	57.59	55.86	74	-16.41	31.8	5.4	35.47	368	286	Peak
2412	98.55	96.78			31.81	5.43	35.47	368	286	Average
2412	106.25	104.48			31.81	5.43	35.47	368	286	Peak
2494	41.16	39.14	54	-12.84	31.9	5.53	35.41	368	286	Average
2494	55.3	53.28	74	-18.7	31.9	5.53	35.41	368	286	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	51.79	50.06	54	-2.21	31.8	5.4	35.47	268	352	Average
2390	63.42	61.69	74	-10.58	31.8	5.4	35.47	268	352	Peak
2412	104.23	102.46			31.81	5.43	35.47	268	352	Average
2412	111.98	110.21			31.81	5.43	35.47	268	352	Peak
2492	42.19	40.17	54	-11.81	31.9	5.53	35.41	268	352	Average
2492	55.51	53.49	74	-18.49	31.9	5.53	35.41	268	352	Peak
4824	43.33	35.2	54	-10.67	33.97	8.26	34.1	103	115	Average
4824	54.57	46.44	74	-19.43	33.97	8.26	34.1	103	115	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 2412MHz: Fundamental frequency.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Charles Hsiao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	41.62	39.89	54	-12.38	31.8	5.4	35.47	293	286	Average
2390	56.41	54.68	74	-17.59	31.8	5.4	35.47	293	286	Peak
2437	99.91	98.06			31.85	5.46	35.46	293	286	Average
2437	108.13	106.28			31.85	5.46	35.46	293	286	Peak
2484	42.87	40.91	54	-11.13	31.88	5.5	35.42	293	286	Average
2484	57.45	55.49	74	-16.55	31.88	5.5	35.42	293	286	Peak
4874	46.54	38.35	54	-7.46	33.98	8.27	34.06	102	107	Average
4874	58.11	49.92	74	-15.89	33.98	8.27	34.06	102	107	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	44.86	43.13	54	-9.14	31.8	5.4	35.47	261	350	Average
2390	56.75	55.02	74	-17.25	31.8	5.4	35.47	261	350	Peak
2437	105.47	103.62			31.85	5.46	35.46	261	350	Average
2437	113.79	111.94			31.85	5.46	35.46	261	350	Peak
2486	46.97	44.98	54	-7.03	31.88	5.53	35.42	261	350	Average
2486	58.64	56.65	74	-15.36	31.88	5.53	35.42	261	350	Peak
4874	48.46	40.27	54	-5.54	33.98	8.27	34.06	102	3	Average
4874	59.14	50.95	74	-14.86	33.98	8.27	34.06	102	3	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 2437MHz: Fundamental frequency.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Charles Hsiao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2388	40.72	39.01	54	-13.28	31.8	5.4	35.49	286	293	Average
2388	55.53	53.82	74	-18.47	31.8	5.4	35.49	286	293	Peak
2462	97.13	95.2			31.87	5.5	35.44	286	293	Average
2462	105.23	103.3			31.87	5.5	35.44	286	293	Peak
2486	44.85	42.86	54	-9.15	31.88	5.53	35.42	286	293	Average
2486	57.45	55.46	74	-16.55	31.88	5.53	35.42	286	293	Peak
4924	40.54	32.29	54	-13.46	33.99	8.28	34.02	114	239	Average
4924	50.44	42.19	74	-23.56	33.99	8.28	34.02	114	239	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2356	41.49	39.86	54	-12.51	31.76	5.37	35.5	257	350	Average
2356	56.21	54.58	74	-17.79	31.76	5.37	35.5	257	350	Peak
2462	101.75	99.82			31.87	5.5	35.44	257	350	Average
2462	110	108.07			31.87	5.5	35.44	257	350	Peak
2484	49.07	47.11	54	-4.93	31.88	5.5	35.42	257	350	Average
2484	62.4	60.44	74	-11.6	31.88	5.5	35.42	257	350	Peak
4924	44.84	36.59	54	-9.16	33.99	8.28	34.02	101	2	Average
4924	54.97	46.72	74	-19.03	33.99	8.28	34.02	101	2	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 2462MHz: Fundamental frequency.

802.11n (40MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 3	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Charles Hsiao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	45.1	43.37	54	-8.9	31.8	5.4	35.47	368	295	Average
2390	60.89	59.16	74	-13.11	31.8	5.4	35.47	368	295	Peak
2422	94.93	93.13			31.83	5.43	35.46	368	295	Average
2422	102.63	100.83			31.83	5.43	35.46	368	295	Peak
2496	42.11	40.09	54	-11.89	31.9	5.53	35.41	368	295	Average
2496	57.01	54.99	74	-16.99	31.9	5.53	35.41	368	295	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2378	50.41	48.75	54	-3.59	31.78	5.37	35.49	268	352	Average
2378	66.29	64.63	74	-7.71	31.78	5.37	35.49	268	352	Peak
2422	98.97	97.17			31.83	5.43	35.46	268	352	Average
2422	107.07	105.27			31.83	5.43	35.46	268	352	Peak
2486	44.35	42.36	54	-9.65	31.88	5.53	35.42	268	352	Average
2486	57.12	55.13	74	-16.88	31.88	5.53	35.42	268	352	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 2422MHz: Fundamental frequency.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Charles Hsiao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	45.35	43.62	54	-8.65	31.8	5.4	35.47	293	286	Average
2390	56.6	54.87	74	-17.4	31.8	5.4	35.47	293	286	Peak
2437	99.74	97.89			31.85	5.46	35.46	293	286	Average
2437	107.84	105.99			31.85	5.46	35.46	293	286	Peak
2484	46.35	44.39	54	-7.65	31.88	5.5	35.42	293	286	Average
2484	62.53	60.57	74	-11.47	31.88	5.5	35.42	293	286	Peak
4874	42.09	33.9	54	-11.91	33.98	8.27	34.06	100	130	Average
4874	51.4	43.21	74	-22.6	33.98	8.27	34.06	100	130	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2386	50.62	48.91	54	-3.38	31.8	5.4	35.49	261	350	Average
2386	66.73	65.02	74	-7.27	31.8	5.4	35.49	261	350	Peak
2437	104.81	102.96			31.85	5.46	35.46	261	350	Average
2437	112.55	110.7			31.85	5.46	35.46	261	350	Peak
2484	50.99	49.03	54	-3.01	31.88	5.5	35.42	261	350	Average
2484	66.23	64.27	74	-7.77	31.88	5.5	35.42	261	350	Peak
4874	45.79	37.6	54	-8.21	33.98	8.27	34.06	102	3	Average
4874	53.4	45.21	74	-20.6	33.98	8.27	34.06	102	3	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 2437MHz: Fundamental frequency.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 9	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Charles Hsiao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2354	46.47	44.88	54	-7.53	31.76	5.33	35.5	286	293	Average
2354	55.57	53.98	74	-18.43	31.76	5.33	35.5	286	293	Peak
2452	92.38	90.51			31.85	5.46	35.44	286	293	Average
2452	100.03	98.16			31.85	5.46	35.44	286	293	Peak
2484	49.26	47.3	54	-4.74	31.88	5.5	35.42	286	293	Average
2484	57.35	55.39	74	-16.65	31.88	5.5	35.42	286	293	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2360	43.19	41.56	54	-10.81	31.76	5.37	35.5	257	350	Average
2360	58.77	57.14	74	-15.23	31.76	5.37	35.5	257	350	Peak
2452	97.89	96.02			31.85	5.46	35.44	257	350	Average
2452	105.46	103.59			31.85	5.46	35.44	257	350	Peak
2492	49.83	47.81	54	-4.17	31.9	5.53	35.41	257	350	Average
2492	62.15	60.13	74	-11.85	31.9	5.53	35.41	257	350	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 2452MHz: Fundamental frequency.

<2TX>

802.11n (20MHz)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	48.7	46.97	54	-5.3	31.8	5.4	35.47	307	307	Average
2390	60.53	58.8	74	-13.47	31.8	5.4	35.47	307	307	Peak
2412	98.95	97.18			31.81	5.43	35.47	307	305	Average
2412	107.24	105.47			31.81	5.43	35.47	307	305	Peak
2492	41.83	39.81	54	-12.17	31.9	5.53	35.41	307	305	Average
2492	57.73	55.71	74	-16.27	31.9	5.53	35.41	307	305	Peak
4824	41.33	33.2	54	-12.67	33.97	8.26	34.1	100	130	Average
4824	51.9	43.77	74	-22.1	33.97	8.26	34.1	100	130	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	53	51.27	54	-1	31.8	5.4	35.47	273	356	Average
2390	65.21	63.48	74	-8.79	31.8	5.4	35.47	273	356	Peak
2412	104.76	102.99			31.81	5.43	35.47	298	356	Average
2412	112.64	110.87			31.81	5.43	35.47	298	356	Peak
2494	42.83	40.81	54	-11.17	31.9	5.53	35.41	298	356	Average
2494	58.21	56.19	74	-15.79	31.9	5.53	35.41	298	356	Peak
4824	44.83	36.7	54	-9.17	33.97	8.26	34.1	105	266	Average
4824	53.87	45.74	74	-20.13	33.97	8.26	34.1	105	266	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 2412MHz: Fundamental frequency.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Charles Hsiao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2372	41.75	40.09	54	-12.25	31.78	5.37	35.49	332	305	Average
2372	57.15	55.49	74	-16.85	31.78	5.37	35.49	332	305	Peak
2437	103.21	101.36			31.85	5.46	35.46	332	305	Average
2437	111.09	109.24			31.85	5.46	35.46	332	305	Peak
2484	41.98	40.02	54	-12.02	31.88	5.5	35.42	332	305	Average
2484	58.11	56.15	74	-15.89	31.88	5.5	35.42	332	305	Peak
4874	46.18	37.99	54	-7.82	33.98	8.27	34.06	125	114	Average
4874	56.5	48.31	74	-17.5	33.98	8.27	34.06	125	114	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	48.48	46.75	54	-5.52	31.8	5.4	35.47	276	356	Average
2390	60.45	58.72	74	-13.55	31.8	5.4	35.47	276	356	Peak
2437	108.01	106.16			31.85	5.46	35.46	298	356	Average
2437	116.1	114.25			31.85	5.46	35.46	298	356	Peak
2486	48.31	46.32	54	-5.69	31.88	5.53	35.42	286	356	Average
2486	60.11	58.12	74	-13.89	31.88	5.53	35.42	286	356	Peak
4874	49.18	40.99	54	-4.82	33.98	8.27	34.06	104	246	Average
4874	58.48	50.29	74	-15.52	33.98	8.27	34.06	104	246	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 2437MHz: Fundamental frequency.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Charles Hsiao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2358	40.83	39.2	54	-13.17	31.76	5.37	35.5	296	305	Average
2358	57.42	55.79	74	-16.58	31.76	5.37	35.5	296	305	Peak
2462	98.76	96.83			31.87	5.5	35.44	296	305	Average
2462	106.81	104.88			31.87	5.5	35.44	296	305	Peak
2484	48.88	46.92	54	-5.12	31.88	5.5	35.42	315	305	Average
2484	61.96	60	74	-12.04	31.88	5.5	35.42	315	305	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2380	43.15	41.49	54	-10.85	31.78	5.37	35.49	292	348	Average
2380	57.91	56.25	74	-16.09	31.78	5.37	35.49	292	348	Peak
2462	103.56	101.63			31.87	5.5	35.44	292	348	Average
2462	111.12	109.19			31.87	5.5	35.44	292	348	Peak
2484	52.98	51.02	54	-1.02	31.88	5.5	35.42	286	349	Average
2484	66.68	64.72	74	-7.32	31.88	5.5	35.42	286	349	Peak
4924	41.44	33.19	54	-12.56	33.99	8.28	34.02	100	96	Average
4924	50.89	42.64	74	-23.11	33.99	8.28	34.02	100	96	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 2462MHz: Fundamental frequency.

802.11n (40MHz)

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 3	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Charles Hsiao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	49.34	47.61	54	-4.66	31.8	5.4	35.47	306	304	Average
2390	68.99	67.26	74	-5.01	31.8	5.4	35.47	306	304	Peak
2422	96.36	94.56			31.83	5.43	35.46	301	305	Average
2422	104.53	102.73			31.83	5.43	35.46	301	305	Peak
2488	42.73	40.72	54	-11.27	31.9	5.53	35.42	301	305	Average
2488	57.37	55.36	74	-16.63	31.9	5.53	35.42	301	305	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2384	52.8	51.11	54	-1.2	31.78	5.4	35.49	303	356	Average
2384	72.73	71.04	74	-1.27	31.78	5.4	35.49	303	356	Peak
2422	101.66	99.86			31.83	5.43	35.46	298	356	Average
2422	109.49	107.69			31.83	5.43	35.46	298	356	Peak
2494	45.03	43.01	54	-8.97	31.9	5.53	35.41	298	356	Average
2494	59.9	57.88	74	-14.1	31.9	5.53	35.41	298	356	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 2422MHz: Fundamental frequency.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 6	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Charles Hsiao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	48.2	46.47	54	-5.8	31.8	5.4	35.47	309	306	Average
2390	68.43	66.7	74	-5.57	31.8	5.4	35.47	309	306	Peak
2437	99.51	97.66			31.85	5.46	35.46	300	306	Average
2437	107.91	106.06			31.85	5.46	35.46	300	306	Peak
2484	50.43	48.47	54	-3.57	31.88	5.5	35.42	290	306	Average
2484	66.72	64.76	74	-7.28	31.88	5.5	35.42	290	306	Peak
4874	42.19	34	54	-11.81	33.98	8.27	34.06	125	111	Average
4874	52.23	44.04	74	-21.77	33.98	8.27	34.06	125	111	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390	52.7	50.97	54	-1.3	31.8	5.4	35.47	304	359	Average
2390	72.63	70.9	74	-1.37	31.8	5.4	35.47	304	359	Peak
2437	105.41	103.56			31.85	5.46	35.46	297	356	Average
2437	112.93	111.08			31.85	5.46	35.46	297	356	Peak
2484	52.96	51	54	-1.04	31.88	5.5	35.42	284	356	Average
2484	68.95	66.99	74	-5.05	31.88	5.5	35.42	284	356	Peak
4874	45.18	36.99	54	-8.82	33.98	8.27	34.06	104	246	Average
4874	54.19	46	74	-19.81	33.98	8.27	34.06	104	246	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 2437MHz: Fundamental frequency.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 9	FREQUENCY RANGE	1GHz ~ 25GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Charles Hsiao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2374	41.75	40.09	54	-12.25	31.78	5.37	35.49	295	309	Average
2374	57.8	56.14	74	-16.2	31.78	5.37	35.49	295	309	Peak
2452	94.81	92.94			31.85	5.46	35.44	295	309	Average
2452	102.54	100.67			31.85	5.46	35.44	295	309	Peak
2484	48.21	46.25	54	-5.79	31.88	5.5	35.42	291	309	Average
2484	66.41	64.45	74	-7.59	31.88	5.5	35.42	291	309	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2386	48.35	46.64	54	-5.65	31.8	5.4	35.49	303	355	Average
2386	65.71	64	74	-8.29	31.8	5.4	35.49	303	355	Peak
2452	98.61	96.74			31.85	5.46	35.44	291	354	Average
2452	107.08	105.21			31.85	5.46	35.44	291	354	Peak
2488	50.99	48.98	54	-3.01	31.9	5.53	35.42	258	354	Average
2488	68.15	66.14	74	-5.85	31.9	5.53	35.42	258	354	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 2452MHz: Fundamental frequency.

9kHz ~ 30MHz DATA:

The amplitude of spurious emissions attenuated more than 20dB below the permissible value is not required to be report.

30MHz ~ 1GHz WORST-CASE DATA:

<1TX_Chain B>

802.11g

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 11	FREQUENCY RANGE	30MHz ~ 1GHz
INPUT POWER	120Vac, 60 Hz	DETECTOR FUNCTION	Peak (PK) Quasi-peak (QP)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH	TESTED BY	Charles Hsiao

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
123.96	20.19	42.15	43.5	-23.31	8.9	1.38	32.24	155	75	Peak
193.35	27.65	47.74	43.5	-15.85	10.57	1.61	32.27	137	225	Peak
256.8	33.5	50.45	46	-12.5	13.21	1.94	32.1	125	186	Peak
386.8	32.63	45.27	46	-13.37	17.2	2.34	32.18	146	238	Peak
598.9	32.56	40.78	46	-13.44	21.1	2.87	32.19	143	307	Peak
905.5	33.73	36.4	46	-12.27	25.24	3.53	31.44	153	188	Peak
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB/m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
30	25.35	39.08	40	-14.65	17.8	0.74	32.27	143	80	Peak
192.81	23.93	44.08	43.5	-19.57	10.51	1.61	32.27	129	98	Peak
256.8	30.81	47.76	46	-15.19	13.21	1.94	32.1	144	104	Peak
360.2	34.29	47.77	46	-11.71	16.36	2.26	32.1	149	254	Peak
598.2	38.34	46.68	46	-7.66	20.98	2.87	32.19	122	349	Peak
996.5	44.94	45.53	54	-9.06	26.04	3.72	30.35	145	306	Peak

REMARKS:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value

4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

Note: 1.The lower limit shall apply at the transition frequencies.

2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.2.2 Test Instruments

Description & Manaufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver ROHDE & SCHWARZ	ESCS 30	100288	Apr. 27, 2015	Apr. 26, 2016
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond2-01	Dec. 26, 2014	Dec. 25, 2015
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Dec. 30, 2014	Dec. 29, 2015
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100312	Jul. 21, 2015	Jul. 20, 2016
Software ADT	BV ADT_Cond_ V7.3.7.3	NA	NA	NA

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

4.2.3 Test Procedures

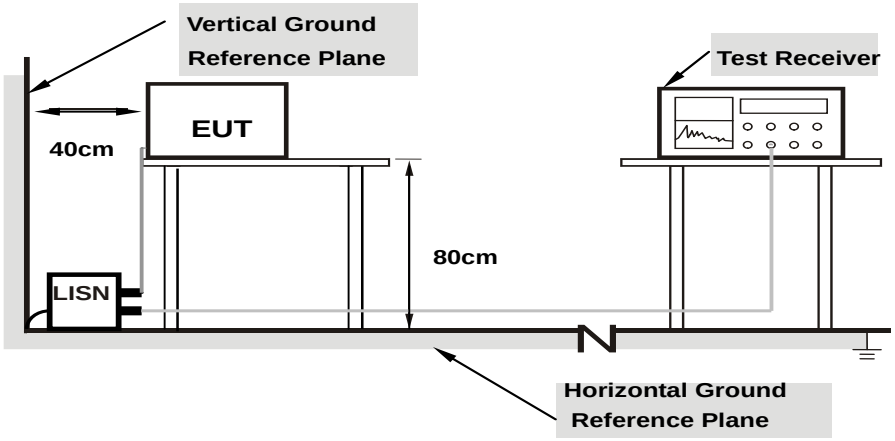
a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm / 50uH of coupling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

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

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



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

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

4.2.6 EUT Operating Conditions

Same as 4.1.6.

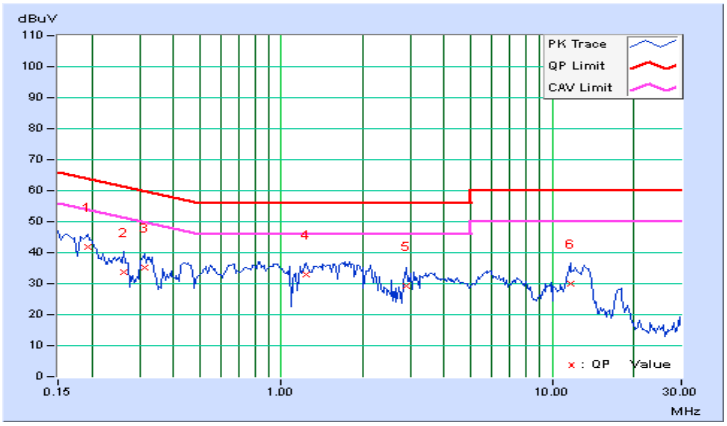
4.2.7 Test Results

Frequency Range	150kHz ~ 30MHz	Detector Function	Quasi-Peak (QP) / Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	25℃, 65%RH
Tested by	Toby Tian	Test Date	2015/8/4

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.19297	0.17	41.55	34.07	41.72	34.24	63.91	53.91	-22.19	-19.67
2	0.26328	0.17	33.58	27.38	33.75	27.55	61.33	51.33	-27.57	-23.77
3	0.31406	0.18	35.04	27.52	35.22	27.70	59.86	49.86	-24.65	-22.17
4	1.23438	0.24	32.86	22.57	33.10	22.81	56.00	46.00	-22.90	-23.19
5	2.91406	0.31	29.04	17.10	29.35	17.41	56.00	46.00	-26.65	-28.59
6	11.66406	0.48	29.53	24.09	30.01	24.57	60.00	50.00	-29.99	-25.43

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

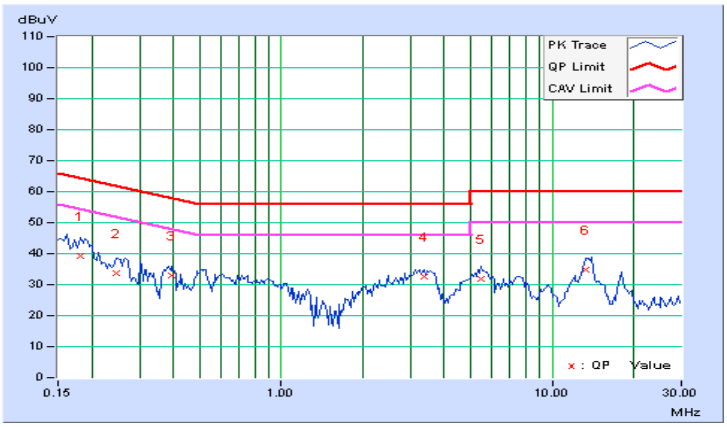


Frequency Range	150kHz ~ 30MHz	Detector Function	Quasi-Peak (QP) / Average (AV)
Input Power	120Vac, 60Hz	Environmental Conditions	25℃, 65%RH
Tested by	Toby Tian	Test Date	2015/8/4

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.18125	0.18	39.12	23.72	39.30	23.90	64.43	54.43	-25.13	-30.53
2	0.24766	0.18	33.68	25.04	33.86	25.22	61.84	51.84	-27.97	-26.61
3	0.39609	0.20	32.74	20.18	32.94	20.38	57.93	47.93	-25.00	-27.56
4	3.38672	0.35	32.09	23.79	32.44	24.14	56.00	46.00	-23.56	-21.86
5	5.49219	0.42	31.44	24.56	31.86	24.98	60.00	50.00	-28.14	-25.02
6	13.37500	0.61	34.38	29.57	34.99	30.18	60.00	50.00	-25.01	-19.82

Remarks:

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



4.3 Conducted Output Power Measurement

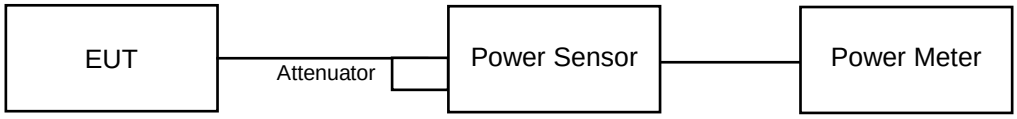
4.3.1 Limits of Conducted Output Power Measurement

For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)
Per KDB 662911 D01 Multiple Transmitter Output Method of conducted output power measurement on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for NANT ≤ 4;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any NANT;
Array Gain = 5 log(NANT/NSS) dB or 3 dB, whichever is less for 20-MHz channel widths with NANT ≥ 5.

For power measurements on all other devices: Array Gain = 10 log(NANT/NSS) dB.

4.3.2 Test Setup



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedures

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

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

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

4.3.7 Test Results

<PEAK POWER>

<1TX_Chain B>

802.11b

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	130.32	21.15	30	Pass
6	2437	133.35	21.25	30	Pass
11	2462	135.83	21.33	30	Pass

802.11g

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	169.04	22.28	30	Pass
6	2437	223.87	23.5	30	Pass
11	2462	173.38	22.39	30	Pass

802.11n (20MHz)

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	159.22	22.02	30	Pass
6	2437	249.46	23.97	30	Pass
11	2462	126.18	21.01	30	Pass

802.11n (40MHz)

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
3	2422	67.76	18.31	30	Pass
6	2437	225.94	23.54	30	Pass
9	2452	43.85	16.42	30	Pass

<2TX>

802.11n (20MHz)

Channel	Frequency (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	20.50	20.41	222.102	23.47	30	Pass
6	2437	23.74	23.56	463.578	26.66	30	Pass
11	2462	19.95	19.93	197.256	22.95	30	Pass

802.11n (40MHz)

Channel	Frequency (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	17.57	18.12	122.011	20.86	30	Pass
6	2437	21.99	22.03	317.713	25.02	30	Pass
9	2452	16.49	15.71	81.805	19.13	30	Pass

<AVERAGE POWER FOR REFERENCE>

<1TX_Chain B>

802.11b

Channel	Frequency (MHz)	Average Power (dBm)
1	2412	18.88
6	2437	18.94
11	2462	18.99

802.11g

Channel	Frequency (MHz)	Average Power (dBm)
1	2412	16.44
6	2437	17.89
11	2462	16.43

802.11n (20MHz)

Channel	Frequency (MHz)	Average Power (dBm)
1	2412	15.45
6	2437	17.99
11	2462	14.43

802.11n (40MHz)

Channel	Frequency (MHz)	Average Power (dBm)
3	2422	11.41
6	2437	16.97
9	2452	9.48

<2TX>

802.11n (20MHz)

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (dBm)
		Chain 0	Chain 1	
1	2412	14.02	13.93	16.99
6	2437	17.95	17.83	20.90
11	2462	13.51	13.34	16.44

802.11n (40MHz)

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (dBm)
		Chain 0	Chain 1	
3	2422	10.94	10.63	13.80
6	2437	15.37	15.47	18.43
9	2452	9.75	9.01	12.41

5 Pictures of Test Arrangements

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

Appendix – Information on the Testing Laboratories

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

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

Linko EMC/RF Lab
Tel: 886-2-26052180
Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab
Tel: 886-3-5935343
Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety 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.

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