Supplemental “Transmit Simultaneously” Test Report

REPORT NO.: RF980406H01B
MODEL NO.: AP-7131N
RECEIVED: Sep. 18, 2009
TESTED: Sep. 18 to 28, 2009
ISSUED: Oct. 06, 2009

APPLICANT: Motorola Inc.

ADDRESS: One Symbol Plaza Holtsville, NY11742 USA

ISSUED BY: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
LAB LOCATION: No. 81-1, Lu Liao Keng, 9 Ling, Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien, Taiwan, R.O.C.

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1. CERTIFICATION

PRODUCT :	11n Access-Point
BRAND NAME :	Motorola
MODEL NO. :	AP-7131N
TESTED:	Sep. 18 to 28, 2009
APPLICANT :	Motorola Inc.
TEST ITEM:	R&D SAMPLE
STANDARDS :	47 CFR FCC Part 15, Subpart C ANSI C63.4-2003

PREPARED BY : _____ , **DATE:** Oct. 06, 2009
(Midoli Peng, Specialist)

TECHNICAL ACCEPTANCE : _____ , **DATE:** Oct. 06, 2009
Responsible for RF
(Hank Chung, Deputy Manager)

APPROVED BY : _____ , **DATE:** Oct. 06, 2009
(May Chen, Deputy Manager)

Note:

Per a request of the FCC, the access point radio was tested for radiated emissions in restricted bands while transmitting on both 2.4 GHz and 5 GHz at simultaneously.

2. MAXIMUM EIRP POWER MEASUREMENT WHEN TRANSMIT SIMULTANEOUSLY

2.1.1. LIMITS OF MAXIMUM EIRP POWER MEASUREMENT WHEN TRANSMIT SIMULTANEOUSLY

FREQUENCY BAND	EIRP LIMIT
2400~2483.5MHz and 5725~5850MHz	36 dBm
5150~5250MHz	23 dBm
5250~5350MHz and 5470~5725MHz	30 dBm

2.1.2. EIRP POWER CALCULATION METHOD

1. Conducted power of radio 1 and radio 2 and radio 3 separately list in Part 15.247 and 15.407 reports.
2. The radio 1 or radio 2 will transmit simultaneously with radio 3 when radio 3 detects signals.
3. Radio 1 and radio 2 will reduce 1dB automatically from maximum power when radio 3 detect signals and transmit signals.
4. Evaluate total EIRP power of radios when transmit simultaneously on the same or different channels within one band.
5. Evaluation of EIRP:

1.) The transmit power and antenna gain in dB scale is converted to linear scale for each antenna.

2.) The EIRP in linear scale is calculated as: transmit power * antenna gain for each antenna.

3.) The EIRP of all radio X and radio Y anntenas are summed together in linear scale.

4.) The EIRP in linear of radio X and Y is then converted back to dB.

2.1.3. TEST RESULTS – 2.4GHz

INPUT POWER	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	26deg.C, 13%RH, 972hPa
TESTED BY	Wen Yu		

Radio card 1

CHANNEL	CHANNEL FREQUENCY (MHz)	Max. EIRP POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
Ch 6 <2.4 GHz Draft 802.11n (20MHz)>	2437	34.178	36	PASS

Radio card 3

CHANNEL	CHANNEL FREQUENCY (MHz)	Max. EIRP POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
Ch 6 <2.4 GHz 11b>	2437	27.56	36	PASS

Radio card 1 + Radio card 3

Max. EIRP POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
35.043	36	PASS

2.1.4. TEST RESULTS –5GHz

INPUT POWER	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	26deg.C, 13%RH, 972hPa
TESTED BY	Wen Yu		

Radio card 2

CHANNEL	CHANNEL FREQUENCY (MHz)	Max. EIRP POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
Ch 1 <5 GHz<15E> Draft 802.11n (40MHz)>	5190	21.524	23	PASS
Ch 1 <5 GHz<15C> 11a>	5745	34.815	36	PASS

Radio card 3

CHANNEL	CHANNEL FREQUENCY (MHz)	Max. EIRP POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
Ch 4 <5 GHz<15E> 11a>	5240	13.93	23	PASS
Ch 1 <5 GHz<15C> 11a>	5745	28.98	36	PASS

Radio card 2 + Radio card 3

Max. EIRP POWER (dBm)	PEAK POWER LIMIT (dBm)	PASS / FAIL
22.221	23	PASS
35.822	36	PASS

3. DUAL XMIT, CONDUCTED EMISSION MEASUREMENT

2.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	Quasi-peak	Average
0.15-0.5 0.5-5 5-30	66 to 56 56 60	56 to 46 46 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 0.50 MHz.
3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver	ESCS 30	100375	Mar. 23, 2009	Mar. 22, 2010
Line-Impedance Stabilization Network (for Peripheral)	ENV-216	100071	Nov. 26, 2008	Nov. 25, 2009
Line-Impedance Stabilization Network (for EUT)	ESH3-Z5	848773/004	Nov. 05, 2008	Nov. 04, 2009
RF Cable (JYEBAO)	5DFB	COBCAB-001	Aug. 14, 2009	Aug. 13, 2010
50 ohms Terminator	50	3	Nov. 05, 2008	Nov. 04, 2009
Software	BV ADT_Cond_V7.3.7	NA	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. B.
3 The VCCI Con B Registration No. is C-2193.

2.3 TEST PROCEDURES

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.

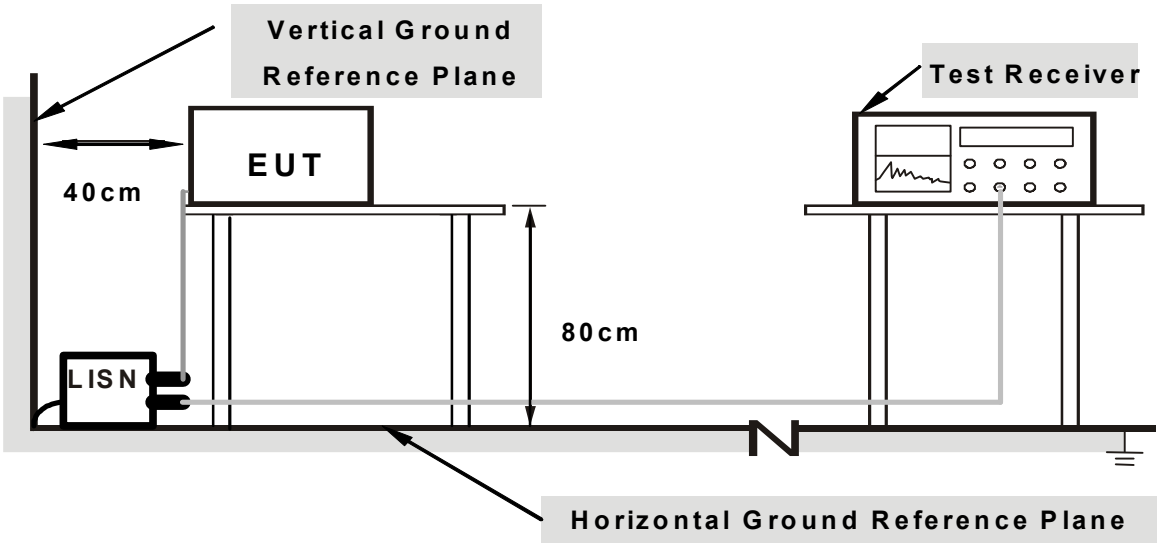
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) were not recorded.

2.4 DEVIATION FROM TEST STANDARD

No deviation

2.5 TEST SETUP



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

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

2.5 EUT OPERATING CONDITIONS

a. Placed the EUT on the testing table.

b. Prepared other computer systems to act as a communication partner and placed them outside of testing area.

c. The communication partner run test program “AR5088nx MB82” to enable EUT under transmission/receiving condition continuously at specific channel frequency via UTP cables.

Note:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

Mode 1 : 11b, 2412MHz <radio card 1> + 11a, 5825MHz<radio card 2> + 11a, 5320MHz <radio card 3>					
Mode 1	**Available Channel**	**Tested Channel**	**Modulation Technology**	**Modulation Type**	**Data Rate (Mbps)**
802.11b<Radio 1>	1 to 11	1	DSSS	DBPSK	1
802.11a<Radio 2>	1 to 5	5	OFDM	BPSK	6
802.11a<Radio 3>	1 to 19	8	OFDM	BPSK	6

Mode 2 : 11b, 2412MHz <radio card 1> + 5 GHz Draft 802.11n (40MHz), 5590MHz<radio card 2> + 11b, 2412MHz <radio card 3>					
Mode 2	**Available Channel**	**Tested Channel**	**Modulation Technology**	**Modulation Type**	**Data Rate (Mbps)**
802.11b<Radio 1>	1 to 11	1	DSSS	DBPSK	1
For 5 GHz Draft 802.11n (40MHz) <Radio 2>	1 to 9	7	OFDM	BPSK	13.5
802.11b<Radio 3>	1 to 11	1	DSSS	DBPSK	1

Mode 3 : 11b, 2412MHz <radio card 1> + 5 GHz Draft 802.11n (40MHz), 5590MHz<radio card 2> + 11a, 5825MHz <radio card 3>					
Mode 3	**Available Channel**	**Tested Channel**	**Modulation Technology**	**Modulation Type**	**Data Rate (Mbps)**
802.11b<Radio1>	1 to 11	1	DSSS	DBPSK	1
For 5 GHz Draft 802.11n (40MHz) <Radio 2>	1 to 9	7	OFDM	BPSK	13.5
802.11a<Radio 3>	1 to 5	5	OFDM	BPSK	6

Mode 4 : 11b, 2412MHz <radio card 1> + 5 GHz Draft 802.11n (40MHz), 5590MHz<radio card 2> + 11a, 5320MHz <radio card 3>					
Mode 4	**Available Channel**	**Tested Channel**	**Modulation Technology**	**Modulation Type**	**Data Rate (Mbps)**
802.11b<Radio1>	1 to 11	1	DSSS	DBPSK	1
For 5 GHz Draft 802.11n (40MHz) <Radio 2>	1 to 9	7	OFDM	BPSK	13.5
802.11a<Radio 3>	1 to 19	8	OFDM	BPSK	6

☒ The EUT was Pre-tested as the following test modes:

Test Mode	Description
Mode 1	With Adapter
Mode 2	With POE

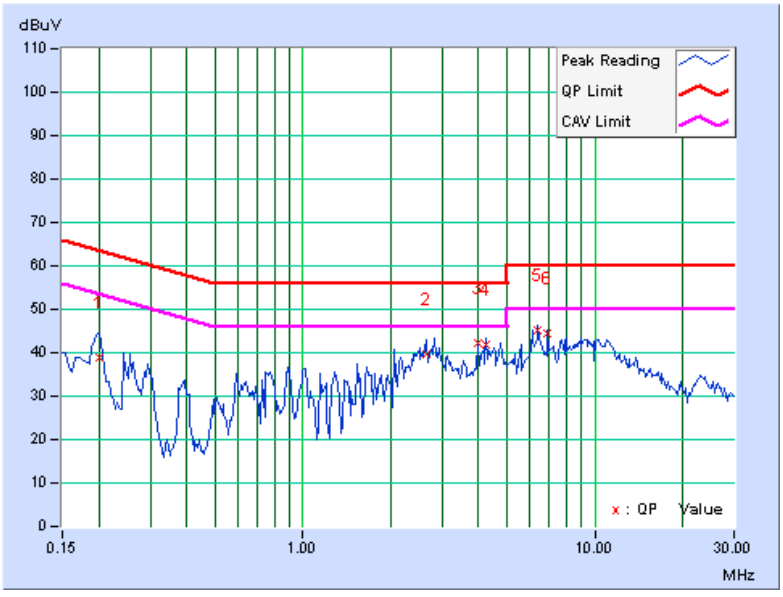
Mode 2, the worse case one, was chosen for final test.

2.6 TEST RESULTS (Mode 1)

TEST MODE	Dual transmission 11b, 2412MHz <radio card 1> + 11a, 5825MHz<radio card 2> + 11a, 5320MHz <radio card 3>		
6dB BANDWIDTH	9 kHz	**PHASE**	Line (L)
INPUT POWER	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	25deg. C, 63%RH, 961hPa
TESTED BY	Eagle Chen		

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		**Factor**	**[dB (uV)]**		**[dB (uV)]**		**[dB (uV)]**		**(dB)**	
	[MHz]	**(dB)**	**Q.P.**	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**
1	0.201	0.22	38.61	-	38.83	-	63.58	53.58	-24.75	-
2	2.652	0.47	39.24	-	39.71	-	56.00	46.00	-16.29	-
+3	3.980	0.58	41.64	-	42.22	-	56.00	46.00	-13.78	-
4	4.250	0.59	41.28	-	41.87	-	56.00	46.00	-14.13	-
5	6.371	0.63	44.55	-	45.18	-	60.00	50.00	-14.82	-
6	6.902	0.64	43.68	-	44.32	-	60.00	50.00	-15.68	-

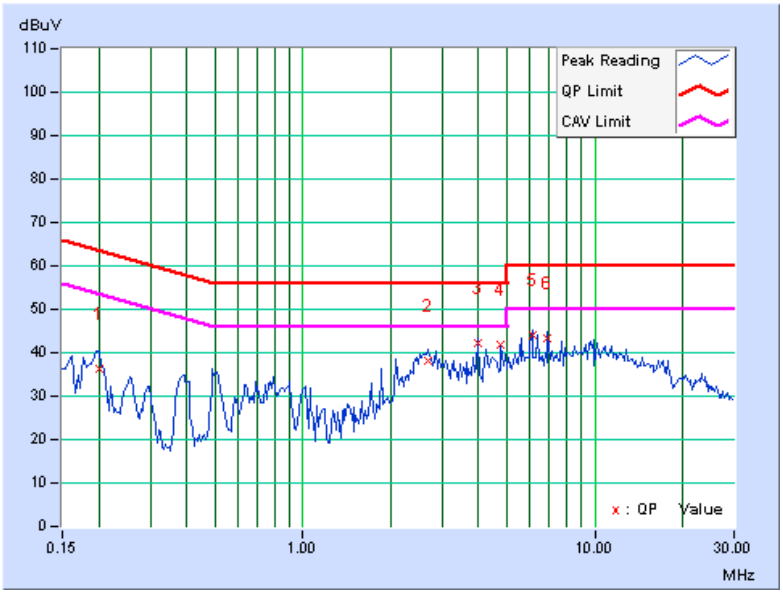
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



TEST MODE	Dual transmission 11b, 2412MHz <radio card 1> + 11a, 5825MHz<radio card 2> + 11a, 5320MHz <radio card 3>		
6dB BANDWIDTH	9 kHz	**PHASE**	Neutral (N)
INPUT POWER	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	25deg. C, 63%RH, 961hPa
TESTED BY	Eagle Chen		

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		**Factor**	**[dB (uV)]**		**[dB (uV)]**		**[dB (uV)]**		**(dB)**	
	[MHz]	**(dB)**	**Q.P.**	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**
1	0.201	0.15	35.98	-	36.13	-	63.58	53.58	-27.45	-
2	2.676	0.39	37.73	-	38.12	-	56.00	46.00	-17.88	-
+3	3.980	0.51	41.72	-	42.23	-	56.00	46.00	-13.77	-
4	4.777	0.52	41.45	-	41.97	-	56.00	46.00	-14.03	-
5	6.105	0.53	43.58	-	44.11	-	60.00	50.00	-15.89	-
6	6.902	0.54	42.97	-	43.51	-	60.00	50.00	-16.49	-

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

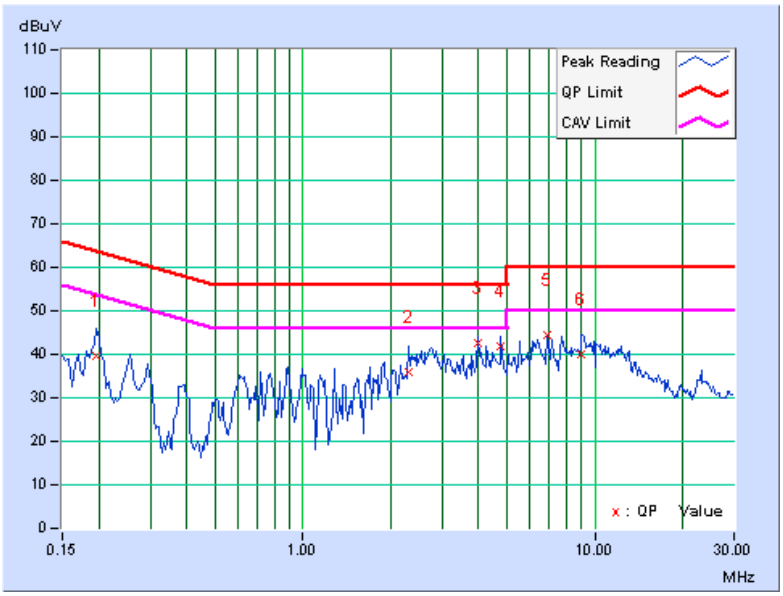


2.7 TEST RESULTS (Mode 2)

TEST MODE	Dual transmission 11b, 2412MHz <radio card 1> + 5 GHz Draft 802.11n (40MHz), 5590MHz<radio card 2> + 11b, 2412MHz <radio card 3>		
6dB BANDWIDTH	9 kHz	**PHASE**	Line (L)
INPUT POWER	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	25deg. C, 63%RH, 961hPa
TESTED BY	Eagle Chen		

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		**Factor**	**[dB (uV)]**		**[dB (uV)]**		**[dB (uV)]**		**(dB)**	
	[MHz]	**(dB)**	**Q.P.**	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**
1	0.197	0.22	39.44	-	39.66	-	63.74	53.74	-24.08	-
2	2.297	0.44	35.63	-	36.07	-	56.00	46.00	-19.93	-
+3	3.984	0.58	41.85	-	42.43	-	56.00	46.00	-13.57	-
4	4.781	0.60	41.36	-	41.96	-	56.00	46.00	-14.04	-
5	6.902	0.64	43.74	-	44.38	-	60.00	50.00	-15.62	-
6	9.023	0.69	39.25	-	39.94	-	60.00	50.00	-20.06	-

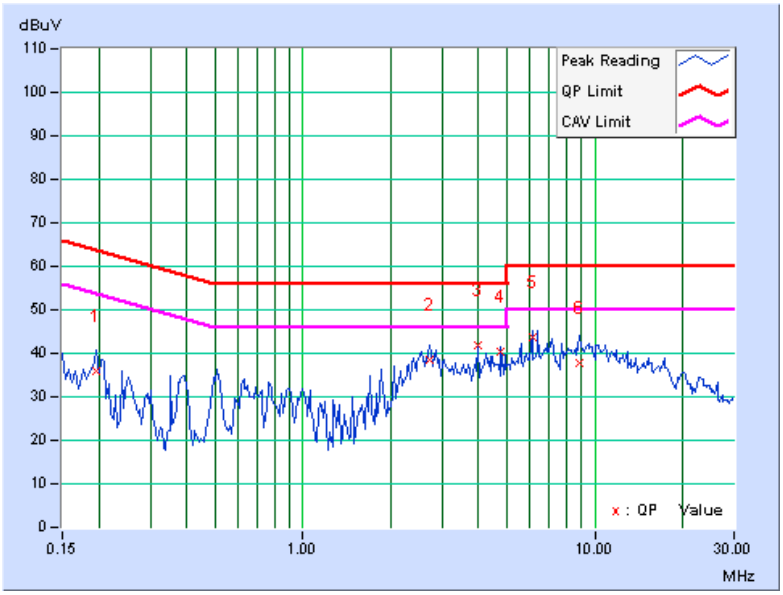
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



TEST MODE	Dual transmission 11b, 2412MHz <radio card 1> + 5 GHz Draft 802.11n (40MHz), 5590MHz<radio card 2> + 11b, 2412MHz <radio card 3>		
6dB BANDWIDTH	9 kHz	**PHASE**	Neutral (N)
INPUT POWER	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	25deg. C, 63%RH, 961hPa
TESTED BY	Eagle Chen		

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		**Factor**	**[dB (uV)]**		**[dB (uV)]**		**[dB (uV)]**		**(dB)**	
	[MHz]	**(dB)**	**Q.P.**	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**
1	0.197	0.15	35.66	-	35.81	-	63.74	53.74	-27.93	-
2	2.707	0.39	38.28	-	38.67	-	56.00	46.00	-17.33	-
+3	3.980	0.51	41.45	-	41.96	-	56.00	46.00	-14.04	-
4	4.781	0.52	39.72	-	40.24	-	56.00	46.00	-15.76	-
5	6.109	0.53	43.35	-	43.88	-	60.00	50.00	-16.12	-
6	8.883	0.56	37.24	-	37.80	-	60.00	50.00	-22.20	-

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

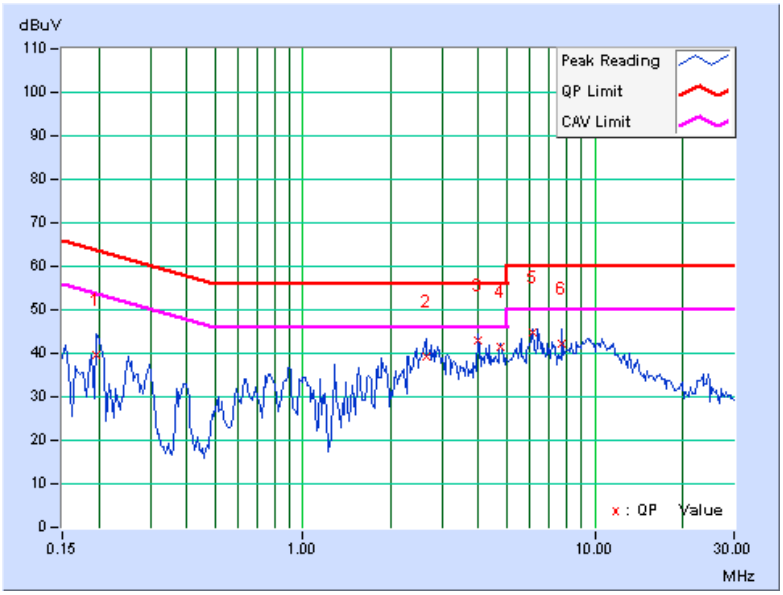


22.7 TEST RESULTS (Mode 3)

TEST MODE	Dual transmission 11b, 2412MHz <radio card 1> + 5 GHz Draft 802.11n (40MHz), 5590MHz<radio card 2> + 11a, 5825MHz <radio card 3>		
6dB BANDWIDTH	9 kHz	**PHASE**	Line (L)
INPUT POWER	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	25deg. C, 63%RH, 961hPa
TESTED BY	Eagle Chen		

	Freq.	**Corr.**	**Reading Value**		**Emission Level**		**Limit**		**Margin**	
No		**Factor**	**[dB (uV)]**		**[dB (uV)]**		**[dB (uV)]**		**(dB)**	
	[MHz]	**(dB)**	**Q.P.**	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**
1	0.197	0.22	39.44	-	39.66	-	63.74	53.74	-24.08	-
2	2.633	0.46	38.89	-	39.35	-	56.00	46.00	-16.65	-
+3	3.984	0.58	42.21	-	42.79	-	56.00	46.00	-13.21	-
4	4.781	0.60	40.78	-	41.38	-	56.00	46.00	-14.62	-
5	6.105	0.63	44.23	-	44.86	-	60.00	50.00	-15.14	-
6	7.699	0.66	41.55	-	42.21	-	60.00	50.00	-17.79	-

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



TEST MODE	Dual transmission 11b, 2412MHz <radio card 1> + 5 GHz Draft 802.11n (40MHz), 5590MHz<radio card 2> + 11a, 5825MHz <radio card 3>		
6dB BANDWIDTH	9 kHz	**PHASE**	Neutral (N)
INPUT POWER	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	25deg. C, 63%RH, 961hPa
TESTED BY	Eagle Chen		

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		**Factor**	**[dB (uV)]**		**[dB (uV)]**		**[dB (uV)]**		**(dB)**	
	[MHz]	**(dB)**	**Q.P.**	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**
1	0.197	0.15	35.68	-	35.83	-	63.74	53.74	-27.91	-
2	2.707	0.39	38.31	-	38.70	-	56.00	46.00	-17.30	-
+3	3.980	0.51	41.57	-	42.08	-	56.00	46.00	-13.92	-
4	4.781	0.52	39.77	-	40.29	-	56.00	46.00	-15.71	-
5	6.109	0.53	43.34	-	43.87	-	60.00	50.00	-16.13	-
6	8.883	0.56	37.25	-	37.81	-	60.00	50.00	-22.19	-

REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
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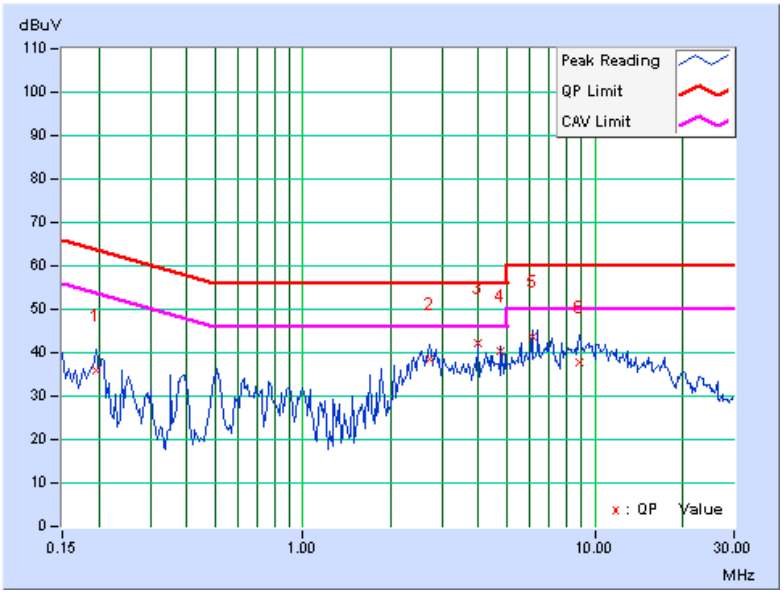
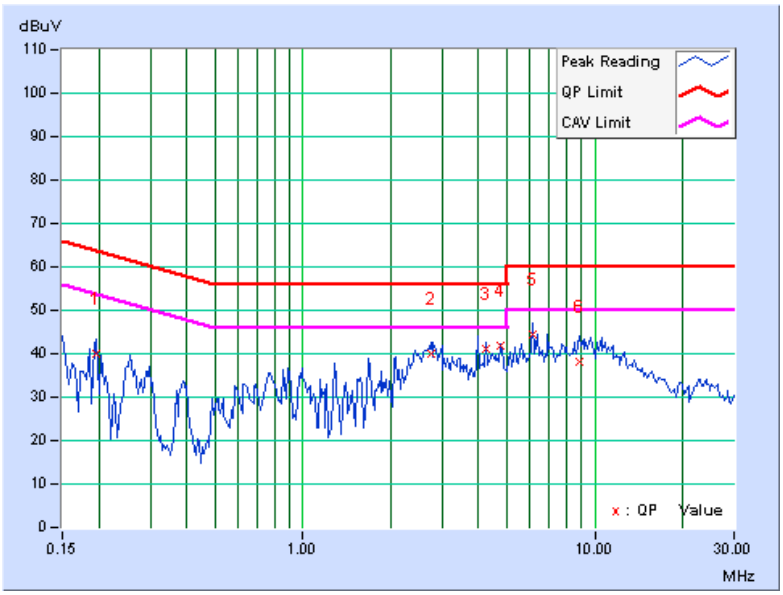


2.10 TEST RESULTS (Mode 4)

TEST MODE	Dual transmission 11b, 2412MHz <radio card 1> + 5 GHz Draft 802.11n (40MHz), 5590MHz<radio card 2> + 11a, 5320MHz <radio card 3>		
6dB BANDWIDTH	9 kHz	**PHASE**	Line (L)
INPUT POWER	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	25deg. C, 63%RH, 961hPa
TESTED BY	Eagle Chen		

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		**Factor**	**[dB (uV)]**		**[dB (uV)]**		**[dB (uV)]**		**(dB)**	
	[MHz]	**(dB)**	**Q.P.**	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**
1	0.197	0.22	39.77	-	39.99	-	63.74	53.74	-23.75	-
2	2.746	0.47	39.38	-	39.85	-	56.00	46.00	-16.15	-
3	4.250	0.59	40.58	-	41.17	-	56.00	46.00	-14.83	-
+4	4.777	0.60	41.24	-	41.84	-	56.00	46.00	-14.16	-
5	6.105	0.63	43.66	-	44.29	-	60.00	50.00	-15.71	-
6	8.840	0.68	37.57	-	38.25	-	60.00	50.00	-21.75	-

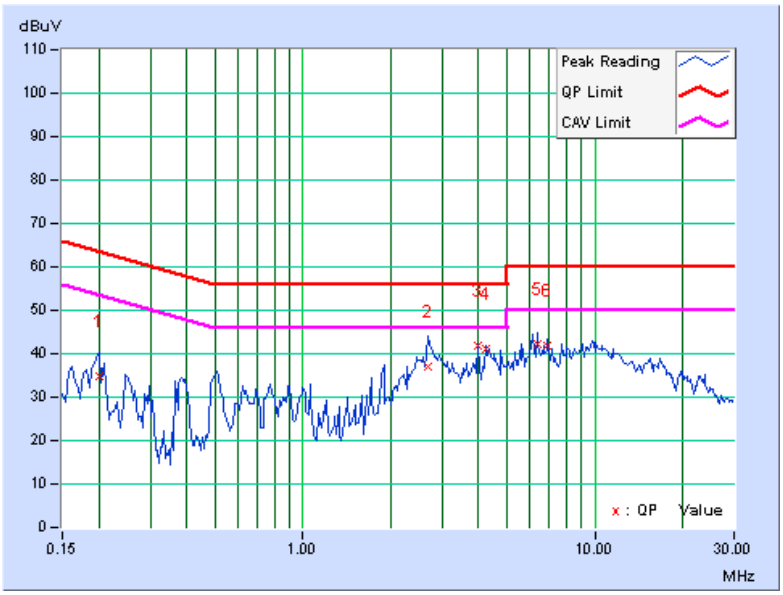
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



TEST MODE	Dual transmission 11b, 2412MHz <radio card 1> + 5 GHz Draft 802.11n (40MHz), 5590MHz<radio card 2> + 11a, 5320MHz <radio card 3>		
6dB BANDWIDTH	9 kHz	**PHASE**	Neutral (N)
INPUT POWER	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	25deg. C, 63%RH, 961hPa
TESTED BY	Eagle Chen		

	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
No		**Factor**	**[dB (uV)]**		**[dB (uV)]**		**[dB (uV)]**		**(dB)**	
	[MHz]	**(dB)**	**Q.P.**	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**
1	0.201	0.15	34.75	-	34.90	-	63.58	53.58	-28.68	-
2	2.684	0.39	36.69	-	37.08	-	56.00	46.00	-18.92	-
+3	3.980	0.51	41.25	-	41.76	-	56.00	46.00	-14.24	-
4	4.250	0.51	40.74	-	41.25	-	56.00	46.00	-14.75	-
5	6.367	0.53	41.82	-	42.35	-	60.00	50.00	-17.65	-
6	6.898	0.54	41.24	-	41.78	-	60.00	50.00	-18.22	-

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



4. DUAL XMIT, RADIATED EMISSION MEASUREMENT

3.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Field strength limits are at the distance of 3 meters, emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

Frequencies (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

NOTE:

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

3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
ROHDE & SCHWARZ Spectrum Analyzer	FSP40	100036	Dec. 9, 2008	Dec. 8, 2009
HP Pre_Amplifier	8449B	3008A01923	Nov. 10, 2008	Nov. 9, 2009
ROHDE & SCHWARZ Test Receiver	ESCS30	847124/029	Aug. 28, 2009	Aug. 28, 2010
SCHWARZBECK TRILOG Broadband Antenna	VULB 9168	138	April 29, 2009	April 28, 2010
Schwarzbeck Horn_Antenna	BBHA9120	D124	Dec. 09, 2008	Dec. 08, 2009
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA9170153	Jan. 22, 2009	Jan. 21, 2010
R&S Loop Antenna	HFH2-Z2	100070	Jan. 14, 2008	Jan. 13, 2010
RF Switches	EMH-011	08009	Oct. 07, 2008	Oct. 06, 2009
RF CABLE (Chaintek)	Sucoflex 106	28077	Aug. 14, 2009	Aug. 13, 2010
RF Cable	8DFB	STCCAB-30M-1GHz	Oct. 07, 2008	Oct. 06, 2009
Software	ADT_Radiated_V7.6.15.9.2	NA	NA	NA
CT Antenna Tower & Turn Table	NA	NA	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, HP preamplifier (model: 8449B) and Spectrum Analyzer (model: FSP40) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in Open Site No. C.
4. The FCC Site Registration No. is 656396.
5. The VCCI Site Registration No. is R-1626.
6. The CANADA Site Registration No. is IC 7450G-3.

3.3 TEST PROCEDURES

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

f. If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using the quasi-peak method or average method as specified and then reported in Data sheet peak mode and QP mode.

g. The emissions up to 40 GHz were examined. Those emission falling within a restricted band were evaluated against the “restricted band emission limit” (54 dBμV / 74 dBμV).

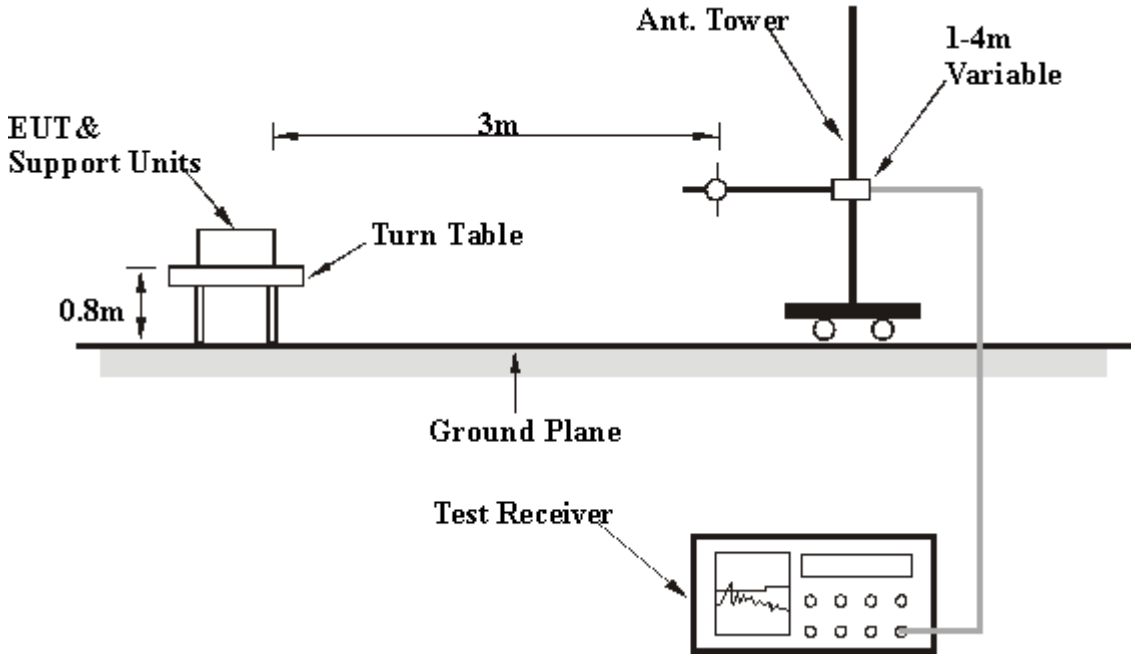
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 300 Hz for Average detection (AV) at frequency above 1GHz.

3.4 DEVIATION FROM TEST STANDARD

No deviation

3.5 TEST SETUP



3.6 EUT OPERATING CONDITIONS

a. Placed the EUT on the testing table.

b. Prepared other computer systems to act as a communication partner and placed them outside of testing area.

c. The communication partner run test program “AR5088nx MB82” to enable EUT under transmission/receiving condition continuously at specific channel frequency via UTP cables.

Note:
The access point was tested for out of band radiated emissions. These frequencies and power levels were chosen because these frequencies produced the worst case radiated emissions during the radiated emissions in restricted bands test performed previously. The unit was set to transmit at the same power level as was used in the initial radiated emissions tests and was transmitting at the same data rate. (Please refer to RF980406H01B test report).
The harmonic of the fundamental signals were recerded in this report.
The antennas tested in this product are as following:

For 2.4GHz <Radio card 1 >						
No	**Brand**	**Model**	**Antenna Type**	**Gain (dBi)**	**Cable Loss(dB) (External only, if any)**	**Net Gain (dB)**
1	Symbol	ML-2499-BYGA2-01R	YAGI	14.2	0.3	13.9
For 5GHz <Radio card 2 >						
No	**Brand**	**Model**	**Antenna Type**	**Gain (dBi)**	**Cable Loss(dB) (External only, if any)**	**Net Gain (dB)**
11	Motolora	ML-5299-BYGA15-012	YAGI	14.5	N/A	14.5
For 5GHz <Radio card 3 >						
No	**Brand**	**Model**	**Antenna Type**	**Gain (dBi)**	**Cable Loss(dB) (External only, if any)**	**Net Gain (dB)**
12	WHA YU	M25.90002.S01	Dipole	3.03 <2.4GHz> / 4.06 <5GHz>	N/A	3.03 <2.4GHz> / 4.06 <5GHz>

☒ 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 and the EUT was Pre-tested as the following test modes:.

Mode 1 : 2.4 GHz Draft 802.11n (20MHz), 2437MHz < Radio card 1> + 11a, 5825MHz< Radio card 2> + 11a, 5320MHz < Radio card 3>

Mode 1	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
For 2.4 GHz Draft 802.11n (20MHz) < Radio 1>	1 to 11	6	OFDM	BPSK	6.5
802.11a <Radio 2>	1 to 5	5	OFDM	BPSK	6
802.11b<Radio 3>	1 to 19	8	OFDM	BPSK	6

Mode 2 : 2.4 GHz Draft 802.11n (20MHz), 2437MHz < Radio card 1> + 5 GHz Draft 802.11n (40MHz), 5590MHz < Radio 2> + 11b, 2462MHz < Radio card 3>

Mode 2	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
For 2.4 GHz Draft 802.11n (20MHz) < Radio 1>	1 to 11	6	OFDM	BPSK	6.5
For 5 GHz Draft 802.11n (40MHz) < Radio 2>	1 to 9	7	OFDM	BPSK	13.5
802.11b <Radio 3>	1 to 11	11	DSSS	DBPSK	1

Mode 3 : 2.4 GHz Draft 802.11n (20MHz), 2437MHz < Radio card 1> + 5 GHz Draft 802.11n (40MHz), 5590MHz < Radio 2> + 11a, 5745MHz < Radio card 3>

Mode3	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
For 2.4 GHz Draft 802.11n (20MHz) < Radio 1>	1 to 11	6	OFDM	BPSK	6.5
For 5 GHz Draft 802.11n (40MHz) < Radio 2>	1 to 9	7	OFDM	BPSK	13.5
802.11a<Radio 3>	1 to 5	1	OFDM	BPSK	6

Mode 4 : 2.4 GHz Draft 802.11n (20MHz), 2437MHz < Radio card 1> + 5 GHz Draft 802.11n (40MHz), 5590MHz < Radio 2> + 11a, 5320MHz < Radio card 3>

Mode3	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
For 2.4 GHz Draft 802.11n (20MHz) < Radio 1>	1 to 11	6	OFDM	BPSK	6.5
For 5 GHz Draft 802.11n (40MHz) < Radio 2>	1 to 9	7	OFDM	BPSK	13.5
802.11a<Radio 3>	1 to 19	8	OFDM	BPSK	6

☒ The EUT was Pre-tested as the following test modes:

Test Mode	Description
Mode 1	With Adapter
Mode 2	With POE

Mode 2, the worse case one, was chosen for final test.

3.7 TEST RESULTS (MODE 1)

TEST MODE	Dual transmission 2.4 GHz Draft 802.11n (20MHz), 2437MHz < Radio card 1> + 11a, 5825MHz< Radio card 2> + 11a, 5320MHz < Radio card 3>		
FREQUENCY RANGE	30MHz~1000MHz	**DETECTOR FUNCTION & BANDWIDTH**	Peak (PK) Average (AV) 1 MHz
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	30deg. C, 55%RH, 965 hPa
TESTED BY	Frank Liu		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	125.00	31.28 QP	43.50	-12.22	1.55 H	329	18.21	13.07
2	250.00	36.85 QP	46.00	-9.15	1.17 H	277	22.60	14.25
3	375.00	38.86 QP	46.00	-7.14	1.09 H	343	20.05	18.81
4	650.00	43.87 QP	46.00	-2.13	1.05 H	238	18.34	25.53
5	750.00	35.98 QP	46.00	-10.02	1.06 H	268	9.07	26.91
6	875.00	37.96 QP	46.00	-8.04	1.06 H	138	8.67	29.29
7	1000.00	39.69 QP	54.00	-14.31	1.08 H	172	8.95	30.74
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	57.21	32.95 QP	40.00	-7.05	1.00 V	267	19.26	13.69
2	125.00	29.99 QP	43.50	-13.51	1.00 V	168	16.92	13.07
3	250.00	28.86 QP	46.00	-17.14	1.00 V	58	14.61	14.25
4	375.00	39.53 QP	46.00	-6.47	1.07 V	237	20.72	18.81
5	600.00	37.86 QP	46.00	-8.14	1.00 V	259	12.82	25.04
6	650.00	39.88 QP	46.00	-6.12	1.00 V	237	14.35	25.53

NOTE:

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

TEST MODE	Dual transmission 2.4 GHz Draft 802.11n (20MHz), 2437MHz < Radio card 1> + 11a, 5825MHz< Radio card 2> + 11a, 5320MHz < Radio card 3>		
FREQUENCY RANGE	1GHz~40GHz	**DETECTOR FUNCTION & BANDWIDTH**	Peak (PK) Average (AV) 1 MHz
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	28deg. C, 64%RH, 965 hPa
TESTED BY	Frank Liu		

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	4874.00	52.13 PK	74.00	-21.87	1.24 H	257	16.58	35.55
2	4874.00	41.21 AV	54.00	-12.79	1.24 H	257	5.66	35.55
3	10640.00	55.69 PK	74.00	-18.31	1.32 H	217	9.23	46.46
4	10640.00	44.57 AV	54.00	-9.43	1.32 H	217	-1.89	46.46
5	11650.00	54.97 PK	74.00	-19.03	1.08 H	54	8.07	46.90
6	11650.00	43.36 AV	54.00	-10.64	1.08 H	54	-3.54	46.90
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	4874.00	54.53 PK	74.00	-19.47	1.05 V	165	18.98	35.55
2	4874.00	42.36 AV	54.00	-11.64	1.05 V	165	6.81	35.55
3	10640.00	56.97 PK	74.00	-17.03	1.06 V	354	10.51	46.46
4	10640.00	45.93 AV	54.00	-8.07	1.06 V	354	-0.53	46.46
5	11650.00	56.23 PK	74.00	-17.77	1.12 V	251	9.33	46.90
6	11650.00	44.86 AV	54.00	-9.14	1.12 V	251	-2.04	46.90

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

3.7 TEST RESULTS (MODE 2)

TEST MODE	Dual transmission 2.4 GHz Draft 802.11n (20MHz), 2437MHz < Radio card 1> + 5 GHz Draft 802.11n (40MHz), 5590MHz < Radio 2> + 11b, 2462MHz < Radio card 3>		
FREQUENCY RANGE	30MHz~1000MHz	**DETECTOR FUNCTION & BANDWIDTH**	Peak (PK) Average (AV) 1 MHz
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	30deg. C, 55%RH, 965 hPa
TESTED BY	Frank Liu		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	125.00	27.76 QP	43.50	-15.74	1.43 H	39	14.70	13.07
2	250.00	34.87 QP	46.00	-11.13	1.23 H	268	20.62	14.25
3	375.00	38.73 QP	46.00	-7.27	1.04 H	302	19.92	18.81
4	650.00	43.58 QP	46.00	-2.42	1.09 H	243	18.05	25.53
5	750.00	35.89 QP	46.00	-10.11	1.07 H	216	8.98	26.91
6	875.00	37.85 QP	46.00	-8.15	1.05 H	148	8.56	29.29
7	1000.00	38.95 QP	54.00	-15.05	1.04 H	164	8.21	30.74
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	57.21	33.74 QP	40.00	-6.26	1.00 V	282	20.05	13.69
2	125.00	30.53 QP	43.50	-12.97	1.00 V	172	17.46	13.07
3	250.00	28.82 QP	46.00	-17.18	1.00 V	72	14.57	14.25
4	375.00	39.83 QP	46.00	-6.17	1.07 V	258	21.02	18.81
5	600.00	37.53 QP	46.00	-8.47	1.00 V	251	12.49	25.04
6	650.00	39.53 QP	46.00	-6.47	1.00 V	287	14.00	25.53

NOTE:

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

TEST MODE	Dual transmission 2.4 GHz Draft 802.11n (20MHz), 2437MHz < Radio card 1> + 5 GHz Draft 802.11n (40MHz), 5590MHz < Radio 2> + 11b, 2462MHz < Radio card 3>		
FREQUENCY RANGE	1GHz~40GHz	**DETECTOR FUNCTION & BANDWIDTH**	Peak (PK) Average (AV) 1 MHz
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	25deg. C, 66%RH, 965 hPa
TESTED BY	Frank Liu		

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	4874.00	53.06 PK	74.00	-20.94	1.24 H	185	17.51	35.55
2	4874.00	41.57 AV	54.00	-12.43	1.24 H	185	6.02	35.55
3	4924.00	53.14 PK	74.00	-20.86	1.36 H	229	17.51	35.63
4	4924.00	43.14 AV	54.00	-10.86	1.36 H	229	7.51	35.63
5	11180.00	54.36 PK	74.00	-19.64	1.06 H	271	7.19	47.17
6	11180.00	43.64 AV	54.00	-10.36	1.06 H	271	-3.53	47.17
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4874.00	55.36 PK	74.00	-18.64	1.14 V	215	19.81	35.55
2	4874.00	42.98 AV	54.00	-11.02	1.14 V	215	7.43	35.55
3	4924.00	55.76 PK	74.00	-18.24	1.06 V	247	20.13	35.63
4	4924.00	43.14 AV	54.00	-10.86	1.06 V	247	7.51	35.63
5	11180.00	56.87 PK	74.00	-17.13	1.36 V	264	9.70	47.17
6	11180.00	45.02 AV	54.00	-8.98	1.36 V	264	-2.15	47.17

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

3.7 TEST RESULTS (MODE 3)

TEST MODE	Dual transmission 2.4 GHz Draft 802.11n (20MHz), 2437MHz < Radio card 1> + 5 GHz Draft 802.11n (40MHz), 5590MHz < Radio 2> + 11a, 5745MHz < Radio card 3>		
FREQUENCY RANGE	30MHz~1000MHz	**DETECTOR FUNCTION & BANDWIDTH**	Peak (PK) Average (AV) 1 MHz
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	30deg. C, 55%RH, 965 hPa
TESTED BY	Frank Liu		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	125.00	27.95 QP	43.50	-15.55	1.41 H	46	14.88	13.07
2	250.00	34.98 QP	46.00	-11.02	1.21 H	276	20.73	14.25
3	375.00	38.75 QP	46.00	-7.25	1.07 H	305	19.94	18.81
4	650.00	43.87 QP	46.00	-2.13	1.01 H	257	18.34	25.53
5	750.00	36.74 QP	46.00	-9.26	1.08 H	224	9.83	26.91
6	875.00	37.46 QP	46.00	-8.54	1.08 H	141	8.17	29.29
7	1000.00	39.46 QP	54.00	-14.54	1.05 H	167	8.72	30.74
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	57.21	33.45 QP	40.00	-6.55	1.00 V	263	19.76	13.69
2	125.00	30.54 QP	43.50	-12.96	1.00 V	97	17.47	13.07
3	250.00	29.12 QP	46.00	-16.88	1.00 V	79	14.87	14.25
4	375.00	39.45 QP	46.00	-6.55	1.05 V	285	20.64	18.81
5	600.00	38.21 QP	46.00	-7.79	1.00 V	246	13.17	25.04
6	650.00	39.54 QP	46.00	-6.46	1.00 V	275	14.01	25.53

NOTE:

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

TEST MODE	Dual transmission 2.4 GHz Draft 802.11n (20MHz), 2437MHz < Radio card 1> + 5 GHz Draft 802.11n (40MHz), 5590MHz < Radio 2> + 11a, 5745MHz < Radio card 3>		
FREQUENCY RANGE	1GHz~40GHz	**DETECTOR FUNCTION & BANDWIDTH**	Peak (PK) Average (AV) 1 MHz
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	25deg. C, 66%RH, 965 hPa
TESTED BY	Frank Liu		

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	4874.00	52.87 PK	74.00	-21.13	1.33 H	224	17.32	35.55
2	4874.00	40.09 AV	54.00	-13.91	1.33 H	224	4.54	35.55
3	11180.00	54.13 PK	74.00	-19.87	1.15 H	247	6.96	47.17
4	11180.00	43.05 AV	54.00	-10.95	1.15 H	247	-4.12	47.17
5	11490.00	54.36 PK	74.00	-19.64	1.09 H	231	7.33	47.03
6	11490.00	43.21 AV	54.00	-10.79	1.09 H	231	-3.82	47.03
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	4874.00	55.19 PK	74.00	-18.81	1.08 V	218	19.64	35.55
2	4874.00	42.36 AV	54.00	-11.64	1.08 V	218	6.81	35.55
3	11180.00	56.75 PK	74.00	-17.25	1.15 V	254	9.58	47.17
4	11180.00	44.93 AV	54.00	-9.07	1.15 V	254	-2.24	47.17
5	11490.00	56.32 PK	74.00	-17.68	1.00 V	335	9.29	47.03
6	11490.00	45.03 AV	54.00	-8.97	1.00 V	335	-2.00	47.03

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

3.7 TEST RESULTS (MODE 4)

TEST MODE	Dual transmission 2.4 GHz Draft 802.11n (20MHz), 2437MHz < Radio card 1> + 5 GHz Draft 802.11n (40MHz), 5590MHz < Radio 2> + 11a, 5320MHz < Radio card 3>		
FREQUENCY RANGE	30MHz~1000MHz	**DETECTOR FUNCTION & BANDWIDTH**	Peak (PK) Average (AV) 1 MHz
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	25deg. C, 72%RH, 965 hPa
TESTED BY	Frank Liu		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	125.00	27.73 QP	43.50	-15.77	1.21 H	158	14.66	13.07
2	250.00	34.85 QP	46.00	-11.15	1.25 H	273	20.60	14.25
3	375.00	38.76 QP	46.00	-7.24	1.28 H	248	19.95	18.81
4	650.00	43.83 QP	46.00	-2.17	1.28 H	246	18.30	25.53
5	750.00	35.95 QP	46.00	-10.05	1.07 H	251	9.04	26.91
6	875.00	37.35 QP	46.00	-8.65	1.00 H	121	8.06	29.29
7	1000.00	38.85 QP	54.00	-15.15	1.08 H	146	8.11	30.74
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	57.21	33.68 QP	40.00	-6.32	1.00 V	245	19.99	13.69
2	125.00	30.75 QP	43.50	-12.75	1.00 V	105	17.68	13.07
3	250.00	29.38 QP	46.00	-16.62	1.00 V	81	15.13	14.25
4	375.00	39.38 QP	46.00	-6.62	1.05 V	275	20.57	18.81
5	600.00	38.58 QP	46.00	-7.42	1.00 V	253	13.54	25.04
6	650.00	39.75 QP	46.00	-6.25	1.00 V	282	14.22	25.53

NOTE:

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

TEST MODE	Dual transmission 2.4 GHz Draft 802.11n (20MHz), 2437MHz < Radio card 1> + 5 GHz Draft 802.11n (40MHz), 5590MHz < Radio 2> + 11a, 5320MHz < Radio card 3>		
FREQUENCY RANGE	1GHz~40GHz	**DETECTOR FUNCTION & BANDWIDTH**	Peak (PK) Average (AV) 1 MHz
INPUT POWER	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	28deg. C, 64%RH, 965 hPa
TESTED BY	Frank Liu		

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	4874.00	53.04 PK	74.00	-20.96	1.02 H	25	17.49	35.55
2	4874.00	40.36 AV	54.00	-13.64	1.02 H	25	4.81	35.55
3	10640.00	52.19 PK	74.00	-21.81	1.06 H	126	5.73	46.46
4	10640.00	41.37 AV	54.00	-12.63	1.06 H	126	-5.09	46.46
5	11180.00	54.72 PK	74.00	-19.28	1.00 H	174	7.55	47.17
6	11180.00	43.14 AV	54.00	-10.86	1.00 H	174	-4.03	47.17
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4874.00	55.21 PK	74.00	-18.79	1.06 V	211	19.66	35.55
2	4874.00	42.56 AV	54.00	-11.44	1.06 V	211	7.01	35.55
3	10640.00	56.13 PK	74.00	-17.87	1.09 V	241	9.67	46.46
4	10640.00	44.41 AV	54.00	-9.59	1.09 V	241	-2.05	46.46
5	11180.00	56.85 PK	74.00	-17.15	1.12 V	84	9.68	47.17
6	11180.00	45.03 AV	54.00	-8.97	1.12 V	84	-2.14	47.17

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

4. 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 by the following approval agencies according to ISO/IEC 17025:

USA	FCC, NVLAP
Germany	TUV Rheinland
Japan	VCCI
Norway	NEMKO
Canada	INDUSTRY CANADA, CSA
R.O.C.	TAF, BSMI, NCC
Netherlands	Telefication
Singapore	GOST-ASIA (MOU)
Russia	CERTIS (MOU)

Copies of accreditation certificates of our laboratories obtained from approval agencies can be downloaded from our web site: www.adt.com.tw/index.5/phtml. 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:
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Hwa Ya EMC/RF/Safety Telecom Lab:
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Web Site: www.adt.com.tw

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