

FCC TEST REPORT

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MODEL NO. : F6D3230-4

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ISSUED : Dec. 16, 2004

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1. CERTIFICATION

PRODUCT: Dual-Band Wireless A+G Router
BRAND NAME: Belkin
MODEL NO.: F6D3230-4
APPLICANT: Delta Networks INC.
TEST ITEM: Engineering Sample
TESTED: Dec. 8 ~ Dec. 15, 2004
STANDARDS: FCC Part 15, Subpart C (Section 15.247),
Subpart E (Section 15.407)
ANSI C63.4:2003

The above equipment have been tested by **Advance Data Technology Corporation**, 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 : Suntee Liu , **DATE:** Dec. 16, 2004
(Suntee Liu)

TECHNICAL
ACCEPTANCE : Gary Chang , **DATE:** Dec. 16, 2004
Responsible for RF (Gary Chang)

APPROVED BY : Cody Chang , **DATE:** Dec. 16, 2004
(Cody Chang, Deputy Manager)

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

For Freq. 2.412 ~ 2.462GHz:

APPLIED STANDARD: FCC Part 15, Subpart C (Section 15.247)			
Standard Section	Test Type and Limit	Result	Remark
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -16.75dB at 2.566MHz
15.247(a)(2)	Spectrum Bandwidth of a Direct Sequence Spread Spectrum System Limit: min. 500kHz	PASS	Meet the requirement of limit.
15.247(b)	Maximum Peak Output Power Limit: max. 30dBm	PASS	Meet the requirement of limit.
15.247(d)	Radiated Emissions Limit: Table 15.209	PASS	Meet the requirement of limit. Minimum passing margin is -1.22dB at 2390.00MHz
15.247(e)	Power Spectral Density Limit: max. 8dBm	PASS	Meet the requirement of limit.
15.247(d)	Band Edge Measurement Limit: 20dB less than the peak value of fundamental frequency	PASS	Meet the requirement of limit.

For Freq. 5.15 ~ 5.35GHz:

APPLIED STANDARD: FCC Part 15, Subpart E (Section 15.407)			
Standard Section	Test Type	Result	Remark
15.407(b)(5)	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -16.25dB at 2.555MHz
15.407(b/1/2/3) (b)(5)	Electric Field Strength Spurious Emissions, 30MHz ~ 40000MHz	PASS	Meet the requirement of limit. Minimum passing margin is -1.02dB at 5150.00MHz
15.407(a/1/2/3)	Peak Transmit Power	PASS	Meet the requirement of limit.
15.407(a)(6)	Peak Power Excursion	PASS	Meet the requirement of limit.
15.407(a/1/2/3)	Peak Power Spectral Density	PASS	Meet the requirement of limit.
15.407(g)	Frequency Stability	PASS	Meet the requirement of limit.

For Freq. 5.725 ~ 5.850GHz :

APPLIED STANDARD: FCC Part 15, Subpart C (Section 15.247)			
Standard Section	Test Type and Limit	Result	Remark
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -16.25dB at 2.555MHz
15.247(a)(2)	Spectrum Bandwidth of a Direct Sequence Spread Spectrum System Limit: min. 500kHz	PASS	Meet the requirement of limit.
15.247(b)	Maximum Peak Output Power Limit: max. 30dBm	PASS	Meet the requirement of limit.
15.247(d)	Radiated Emissions Limit: Table 15.209	PASS	Meet the requirement of limit. Minimum passing margin is -1.10dB at 11520.00MHz
15.247(e)	Power Spectral Density Limit: max. 8dBm	PASS	Meet the requirement of limit.
15.247(d)	Band Edge Measurement Limit: 20dB less than the peak value of fundamental frequency	PASS	Meet the requirement of limit.

2.1 MEASUREMENT UNCERTAINTY

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

Measurement	Frequency	Uncertainty
Conducted emissions	9kHz~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	3.73 dB
	200MHz ~1000MHz	3.74 dB
	1GHz ~ 18GHz	2.20 dB
	18GHz ~ 40GHz	1.88 dB

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Dual-Band Wireless A+G Router
MODEL NO.	F6D3230-4
POWER SUPPLY	5Vdc from adapter
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
TRANSFER RATE	802.11b: 11/5.5/2/1Mbps 802.11g: 54/48/36/24/18/12/9/6Mbps 802.11a: 54/48/36/24/18/12/9/6Mbps (Turbo mode: up to 108Mbps)
FREQUENCY RANGE	802.11b & 802.11g: 2412 ~ 2462MHz 802.11a: 5150 ~ 5350MHz and 5725 ~ 5850MHz
NUMBER OF CHANNEL	802.11b & 802.11g: 11 for Normal mode / 1 for Turbo mode 802.11a: 13 for Normal mode / 5 for Turbo mode
CHANNEL SPACING	802.11b & 802.11g: 5MHz 802.11a: 20MHz for Normal mode / 40MHz for Turbo mode
OUTPUT POWER	802.11b: 63.973mW 802.11g: 63.826mW 802.11a: 20.464mW
ANTENNA TYPE	Dipole antenna with 2dBi gain for 2.4GHz band Dipole antenna with 3dBi gain for 5GHz band
DATA CABLE	NA
I/O PORTS	NA

NOTE:

1. The EUT operates in both the 5GHz and 2.4GHz Bands and compatibility with 802.11a and 802.11b, 802.11g technology.
2. This EUT is capable of providing data rates of up to 108Mbps in turbo mode depending upon reception quality.
3. The EUT was powered by the following adapter:

Brand	PSE
Model	DSA-0151F-05A
Input Rating	100-240Vac, 50-60Hz, 0.4A
Output Rating	5Vdc, 2.8A
Power Line	1.7m cable without core

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

3.2 DESCRIPTION OF TEST MODES

802.11b and 802.11g: 11 channels are provided to this EUT.

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

NOTE:

1. Below 1GHz, the channel 1, 6, and 11 were pre-tested in chamber. The channel 11 with OFDM technique, worst case one, was chosen for final test.
2. Above 1GHz, the channel 1, 6, and 11 were tested individually.
3. After pre-testing all data rates, we have chosen 11Mbps with DSSS technique, 6Mbps with OFDM technique for normal mode and 12Mbps with OFDM technique for turbo mode, as the worst cases for the test among other data rates.
4. For conducted emission test, we have chosen OFDM technique as the worst case after pre-testing in chamber.

1 channel is provided to this EUT for Turbo Mode.

Channel	Frequency
6	2437 MHz

NOTE: One turbo mode at frequency 2437MHz.

For 802.11a: 13 channels are provided to this EUT for Normal mode.

Channel	Frequency	Channel	Frequency
1	5180 MHz	8	5320 MHz
2	5200 MHz	9	5745 MHz
3	5220 MHz	10	5765 MHz
4	5240 MHz	11	5785 MHz
5	5260 MHz	12	5805 MHz
6	5280 MHz	13	5825 MHz
7	5300 MHz		

5 channels are provided to this EUT for Turbo Mode.

Channel	Frequency	Channel	Frequency
1	5210 MHz	4	5760 MHz
2	5250 MHz	5	5800 MHz
3	5290 MHz		

NOTE:

1. The EUT was tested in both normal mode (channel bandwidth of approximately 30MHz) and turbo mode (channel bandwidth of approximately 60MHz).
2. "Normal Mode" allows data rates of up to 54Mbps, and "Turbo Mode" allows data rates of up to 108Mbps. After pre-testing all data rates, we have chosen 6Mbps for normal mode and 12Mbps for turbo mode, as the worst cases for the test among other data rates.
3. Channel 1, 4, 5, 8, 9, 11 and 13 are the closest frequencies to the band edge, were chosen for final test of Normal Mode.
4. Channel 1 ~ 5 were chosen for final test of Turbo mode.
5. Below 1GHz test, the channel 1 ~ 13 were pre-tested in chamber and found the worst case for final test and recorded in the report.
6. For conducted emission test, we have chosen normal mode as the worst case after pre-testing in chamber.

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a Dual-Band Wireless A+G Router. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart C (15.247),

Subpart E (15.407)

ANSI C63.4:2003

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

NOTE: The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.



3.4 DESCRIPTION OF SUPPORT UNITS

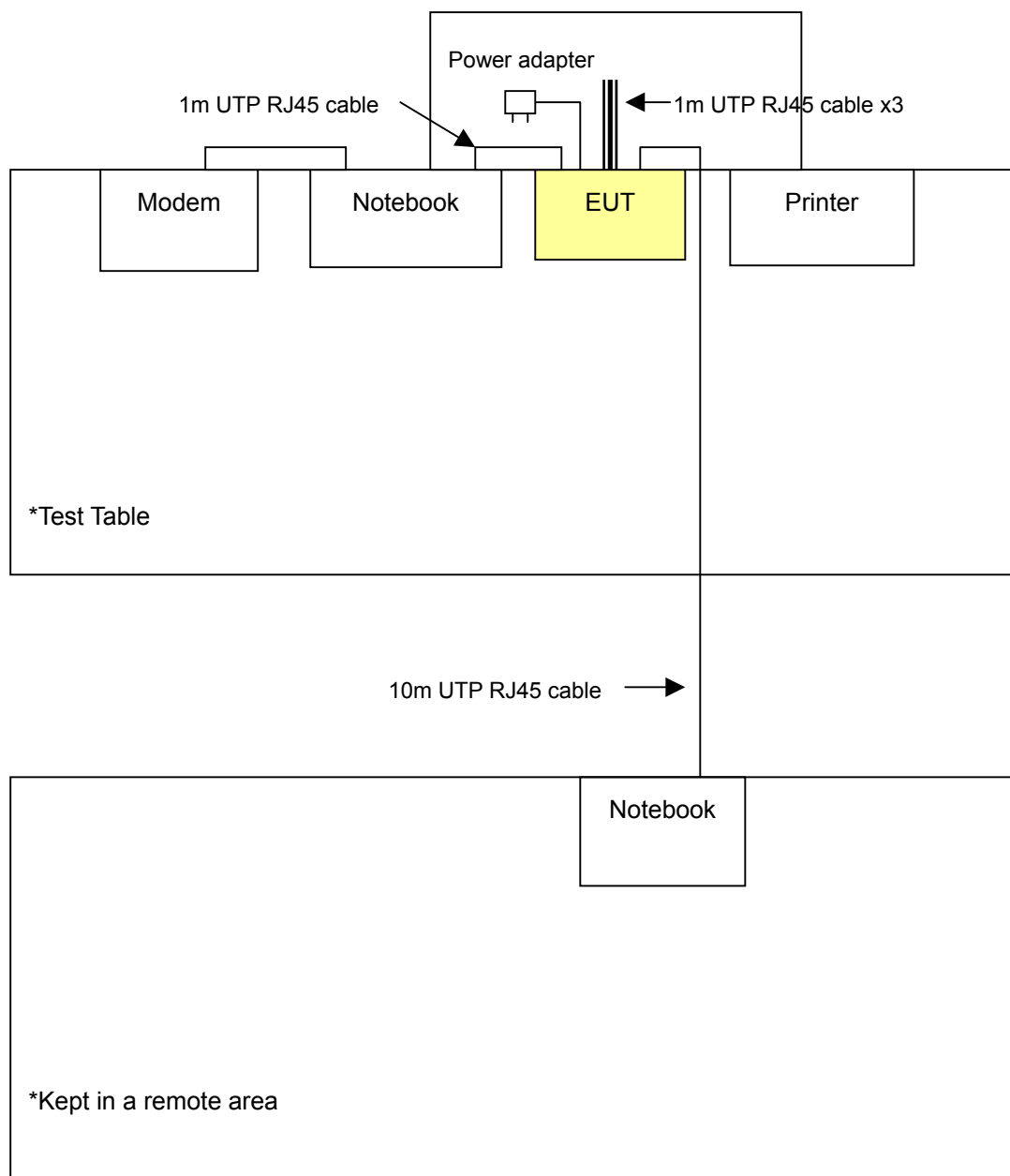
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP05L	9954115984	E2K24CLNS
2	LASER PRINTER	HP	HP LASERJET 1300	CNCM065417	NA
3	MODEM	ACEEX	1414V/3	0401008269	IFAXDM1414
4	NOTEBOOK COMPUTER	DELL	PP05L	33898721680	E2K24CLNS

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA
2	1.8m shielded cable
3	1.2m shielded cable
4	NA

NOTE: 1. All power cords of the above support units are non-shielded (1.8m).
2. Item 4 acted as a communication partner to transfer data.

3.5 CONFIGURATION OF SYSTEM UNDER TEST



4. TEST TYPES AND RESULTS (FOR PART 802.11b & 802.11g)

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	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 0.50 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.

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS30	100288	Nov. 06, 2005
RF signal cable Woken	5D-FB	Cable-HyC02-01	Mar. 07, 2005
LISN ROHDE & SCHWARZ	ESH2-Z5	100100	Mar. 10, 2005
LISN ROHDE & SCHWARZ	ESH3-Z5	100311	Mar. 04, 2005
Software ADT	ADT_Cond_V3	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.

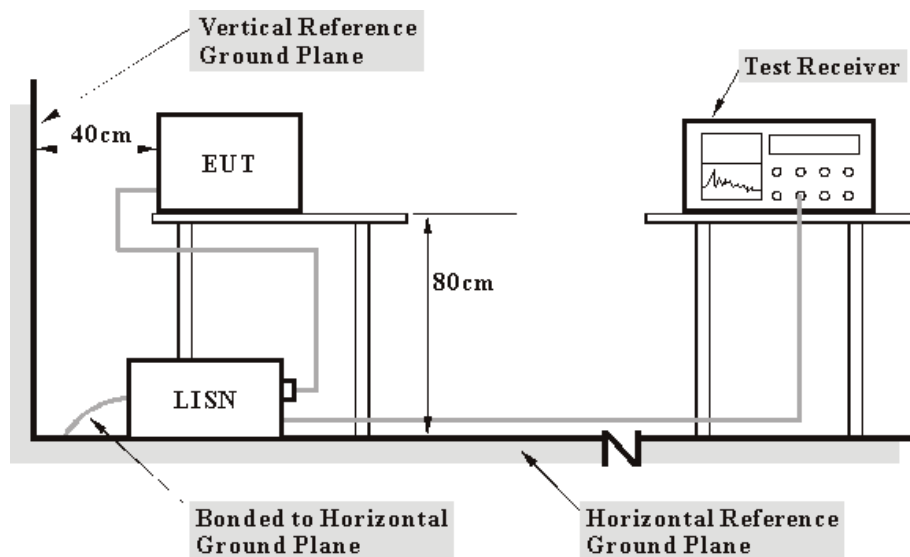
4.1.3 TEST PROCEDURES

- 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) was not recorded.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation.

4.1.5 TEST SETUP



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

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



4.1.6 EUT OPERATING CONDITIONS

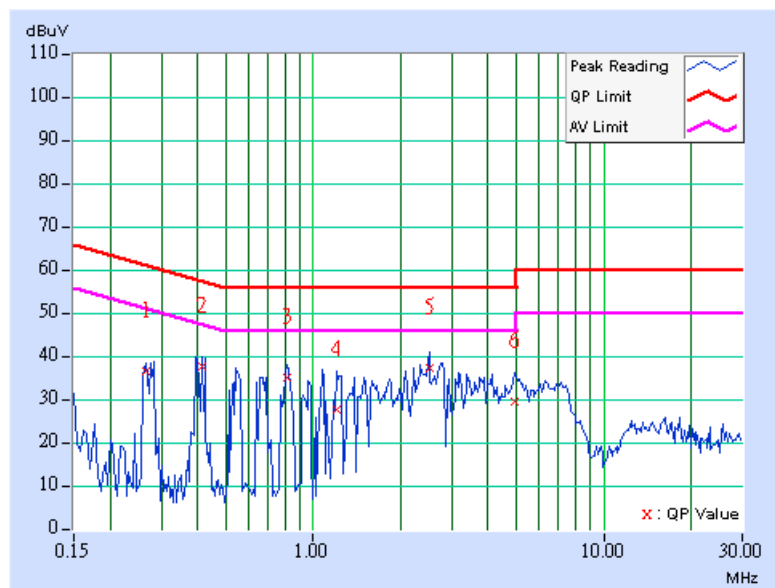
- a. The notebook sent data to the EUT by command "PING" via RJ45 cable.
- b. The notebook sent "H" to its screen and its screen displayed them.
- c. The notebook "H" messages to the modem.
- d. The notebook sent "H" messages to the printer and the printer printed them out.
- e. Prepared another notebook placed outside of testing area to act as a communication partner.
- f. The communication partner ran a test program (provided by manufacturer) to enable EUT under transmission/receiving condition continuously at specific channel frequency via RJ45 cable.
- g. The communication partner sent data to the EUT by command "PING".
- h. The EUT communicated data with the communication partner via wireless communication.
- i. Step b~d were repeated.

4.1.7 TEST RESULTS

EUT	Dual-Band Wireless A+G Router	MODEL	F6D3230-4
MODE	Channel 1	6dB BANDWIDTH	9kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	24 deg. C, 64% RH, 991 hPa	TESTED BY	Leo Hung

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.267	0.10	36.23	-	36.33	-	61.20	51.20	-24.87	-
2	0.416	0.12	37.26	-	37.38	-	57.54	47.54	-20.16	-
3	0.814	0.21	34.73	-	34.94	-	56.00	46.00	-21.06	-
4	1.203	0.25	27.44	-	27.69	-	56.00	46.00	-28.31	-
5	2.512	0.27	36.93	-	37.20	-	56.00	46.00	-18.80	-
6	4.961	0.35	29.37	-	29.72	-	56.00	46.00	-26.28	-

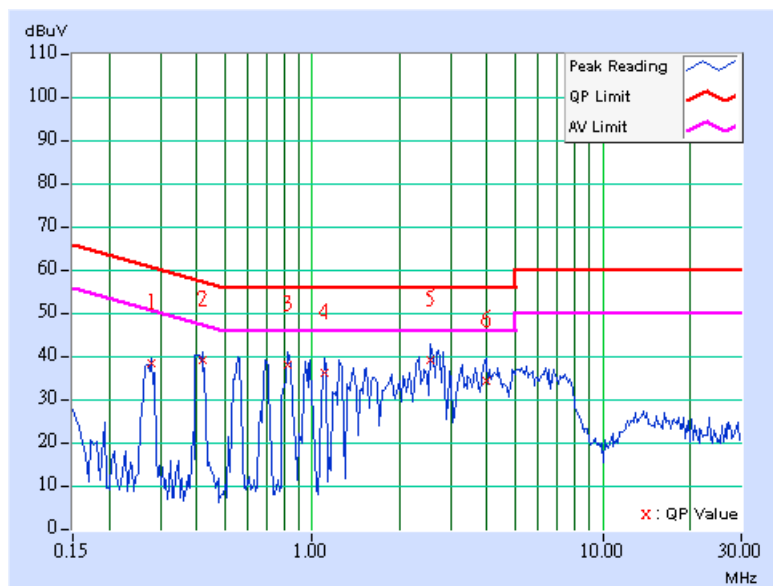
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	Dual-Band Wireless A+G Router	MODEL	F6D3230-4
MODE	Channel 1	6dB BANDWIDTH	9kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	24 deg. C, 64% RH, 991 hPa	TESTED BY	Leo Hung

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.279	0.11	38.30	-	38.41	-	60.85	50.85	-22.44	-
2	0.420	0.12	38.91	-	39.03	-	57.46	47.46	-18.43	-
3	0.822	0.20	37.92	-	38.12	-	56.00	46.00	-17.88	-
4	1.105	0.24	36.11	-	36.35	-	56.00	46.00	-19.65	-
5	2.566	0.27	38.98	-	39.25	-	56.00	46.00	-16.75	-
6	3.973	0.30	34.07	-	34.37	-	56.00	46.00	-21.63	-

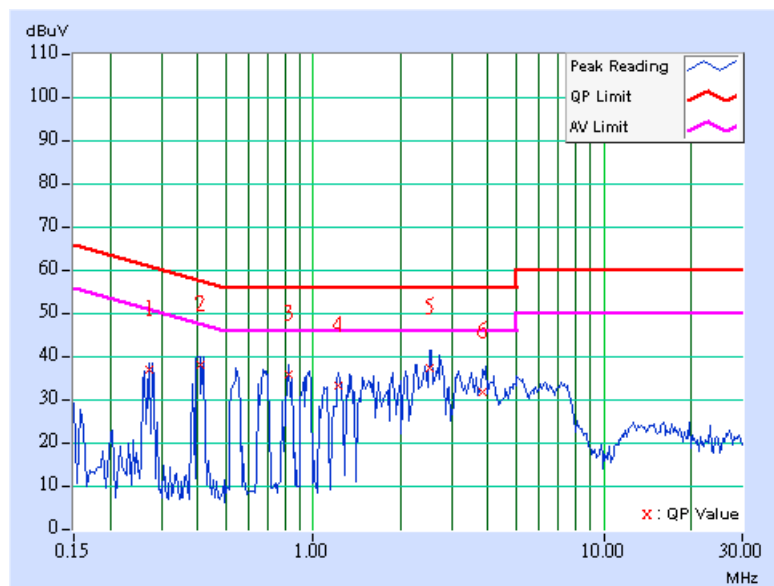
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT	Dual-Band Wireless A+G Router	MODEL	F6D3230-4
MODE	Channel 6	6dB BANDWIDTH	9kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	24 deg. C, 64% RH, 991 hPa	TESTED BY	Leo Hung

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.271	0.10	36.65	-	36.75	-	61.08	51.08	-24.33	-
2	0.408	0.12	37.86	-	37.98	-	57.69	47.69	-19.72	-
3	0.826	0.21	35.77	-	35.98	-	56.00	46.00	-20.02	-
4	1.227	0.25	33.14	-	33.39	-	56.00	46.00	-22.61	-
5	2.520	0.27	37.23	-	37.50	-	56.00	46.00	-18.50	-
6	3.809	0.31	31.42	-	31.73	-	56.00	46.00	-24.27	-

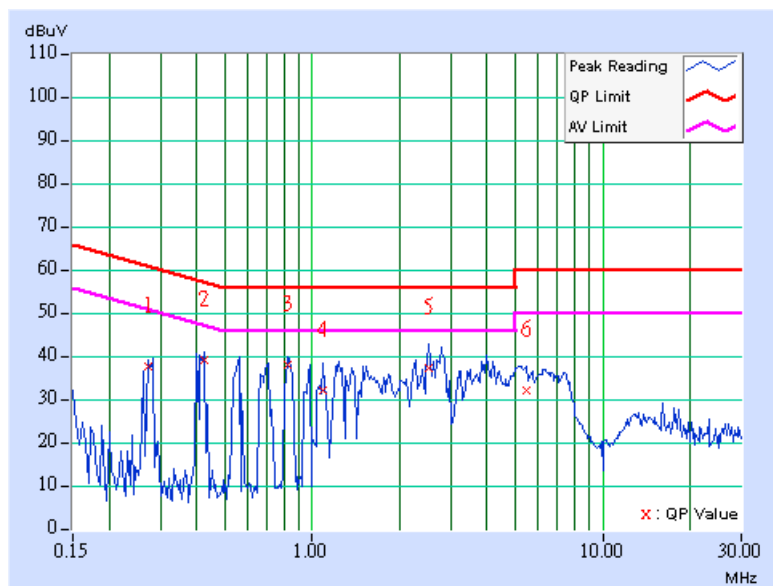
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT	Dual-Band Wireless A+G Router	MODEL	F6D3230-4
MODE	Channel 6	6dB BANDWIDTH	9kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	24 deg. C, 64% RH, 991 hPa	TESTED BY	Leo Hung

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.271	0.10	37.34	-	37.44	-	61.08	51.08	-23.64	-
2	0.423	0.12	38.82	-	38.94	-	57.38	47.38	-18.44	-
3	0.826	0.20	37.96	-	38.16	-	56.00	46.00	-17.84	-
4	1.090	0.24	31.95	-	32.19	-	56.00	46.00	-23.81	-
5	2.527	0.26	37.16	-	37.42	-	56.00	46.00	-18.58	-
6	5.457	0.36	31.91	-	32.27	-	60.00	50.00	-27.73	-

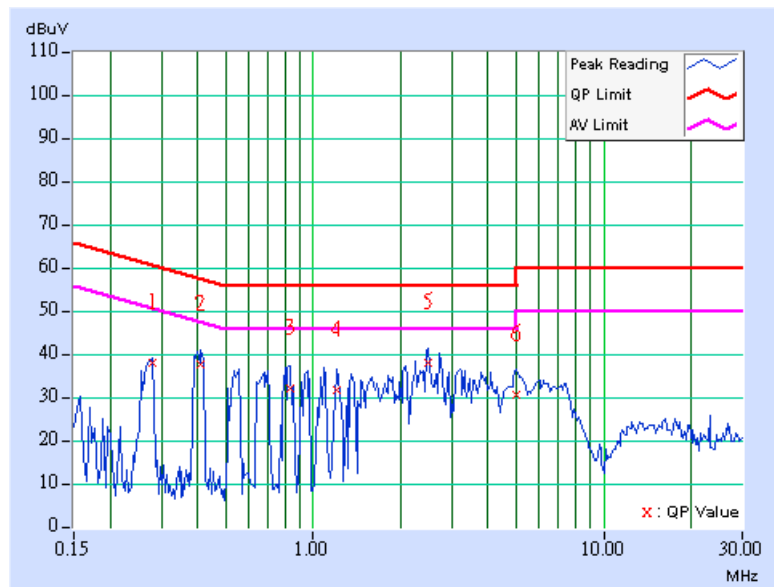
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT	Dual-Band Wireless A+G Router	MODEL	F6D3230-4
MODE	Channel 11	6dB BANDWIDTH	9kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	24 deg. C, 64% RH, 991 hPa	TESTED BY	Leo Hung

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.279	0.11	37.75	-	37.86	-	60.85	50.85	-22.99	-
2	0.412	0.12	37.34	-	37.46	-	57.61	47.61	-20.16	-
3	0.838	0.21	31.74	-	31.95	-	56.00	46.00	-24.05	-
4	1.211	0.25	31.63	-	31.88	-	56.00	46.00	-24.12	-
5	2.496	0.27	37.84	-	38.11	-	56.00	46.00	-17.89	-
6	5.000	0.36	30.51	-	30.87	-	56.00	46.00	-25.13	-

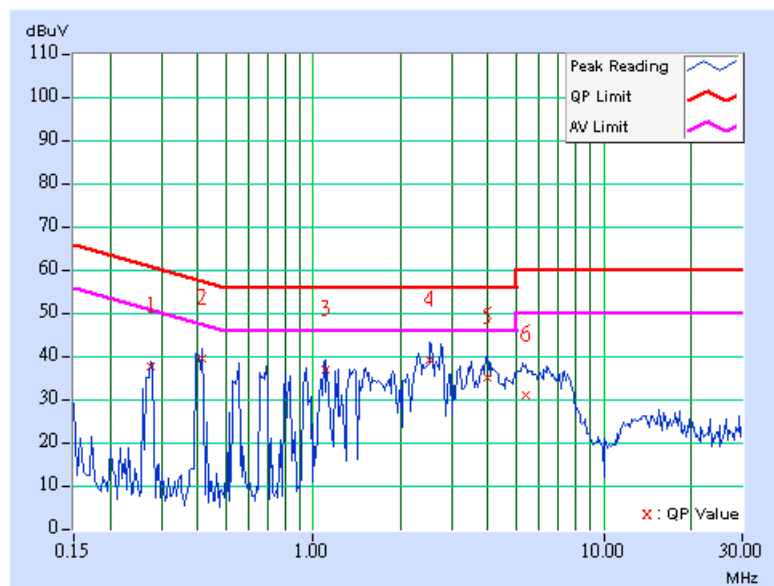
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT	Dual-Band Wireless A+G Router	MODEL	F6D3230-4
MODE	Channel 11	6dB BANDWIDTH	9kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	24 deg. C, 64% RH, 991 hPa	TESTED BY	Leo Hung

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.275	0.11	37.38	-	37.49	-	60.97	50.97	-23.48	-
2	0.416	0.12	39.38	-	39.50	-	57.54	47.54	-18.04	-
3	1.109	0.24	36.59	-	36.83	-	56.00	46.00	-19.17	-
4	2.531	0.26	38.93	-	39.19	-	56.00	46.00	-16.81	-
5	3.957	0.30	34.67	-	34.97	-	56.00	46.00	-21.03	-
6	5.375	0.36	30.91	-	31.27	-	60.00	50.00	-28.73	-

- 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.



4.2 RADIATED EMISSION MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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.



4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESIB7	100188	Jan. 13, 2005
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100039	Nov. 21, 2005
BILOG Antenna SCHWARZBECK	VULB9168	9168-157	Feb. 03, 2005
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-407	Feb. 03, 2005
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA 9170241	Feb. 23, 2005
Preamplifier Agilent	8449B	3008A01961	Nov. 09, 2005
Preamplifier Agilent	8447D	2944A10629	Nov. 09, 2005
RF signal cable HUBER+SUHNER	SUCOFLEX 104	218182/4	Mar. 04, 2005
RF signal cable HUBER+SUHNER	SUCOFLEX 104	218194/4	Mar. 04, 2005
Software ADT.	ADT_Radiated_V5.14	NA	NA
Antenna Tower ADT.	AT100	AT93021702	NA
Turn Table ADT.	TT100.	TT93021702	NA
Controller ADT.	SC100.	SC93021702	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 Chamber 1.
3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The IC Site Registration No. is IC4924-2.

4.2.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters semi-anechoic chamber. 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.

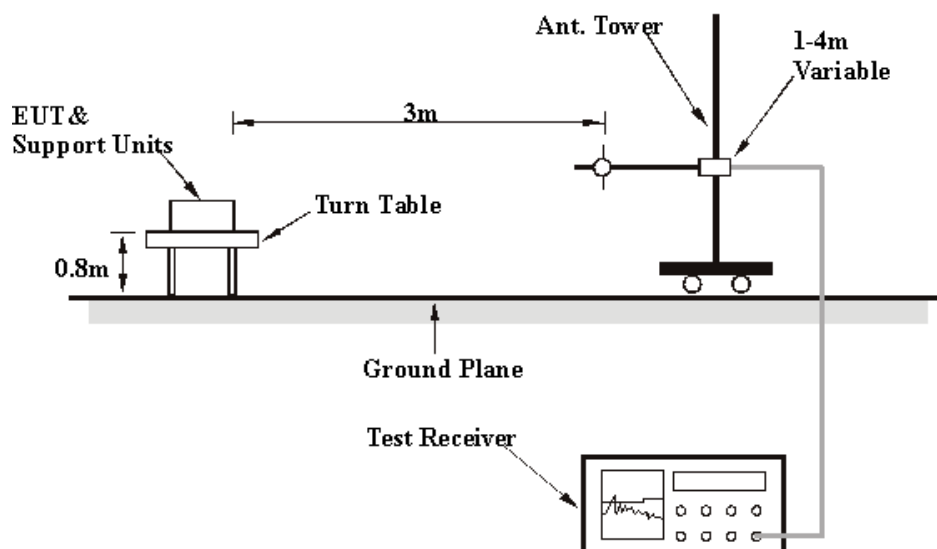
NOTE:

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 10 Hz for Average detection (AV) at frequency above 1GHz.

4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

4.2.5 TEST SETUP



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

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6.

4.2.7 TEST RESULTS

EUT	Dual-Band Wireless A+G Router	MODEL	F6D3230-4
CHANNEL	Channel 11	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	22 deg. C, 60% RH, 991 hPa	TESTED BY	Match Tsui

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	59.16	27.99 QP	40.00	-12.01	2.00 H	214	14.20	13.79
2	105.81	30.05 QP	43.50	-13.45	1.50 H	55	18.48	11.58
3	146.63	33.92 QP	43.50	-9.58	2.00 H	268	19.35	14.58
4	199.12	29.91 QP	43.50	-13.59	1.50 H	40	18.45	11.46
5	249.66	43.21 QP	46.00	-2.79	1.00 H	10	30.00	13.22
6	300.20	28.11 QP	46.00	-17.89	1.00 H	7	13.61	14.50
7	348.80	31.47 QP	46.00	-14.53	1.00 H	13	15.84	15.62
8	399.34	32.92 QP	46.00	-13.08	1.00 H	10	16.18	16.74
9	479.04	33.45 QP	46.00	-12.55	1.50 H	19	15.00	18.45
10	550.96	31.00 QP	46.00	-15.00	2.00 H	19	11.29	19.72
11	599.56	36.48 QP	46.00	-9.52	1.00 H	178	15.48	21.00
12	650.10	28.83 QP	46.00	-17.17	2.00 H	10	7.15	21.68
13	681.20	31.19 QP	46.00	-14.81	2.00 H	13	9.12	22.07
14	751.18	33.06 QP	46.00	-12.94	1.00 H	37	9.52	23.54
15	799.78	31.28 QP	46.00	-14.72	1.00 H	166	7.46	23.82
16	875.59	31.45 QP	46.00	-14.55	1.50 H	52	6.79	24.66

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

EUT	Dual-Band Wireless A+G Router	MODEL	F6D3230-4
CHANNEL	Channel 11	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	22 deg. C, 60% RH, 991 hPa	TESTED BY	Match Tsui

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	48.12	38.56 QP	40.00	-1.44	1.00 V	223	23.63	14.93
2	86.37	33.87 QP	40.00	-6.13	1.00 V	316	23.76	10.12
3	146.63	37.73 QP	43.50	-5.77	1.00 V	325	23.15	14.58
4	199.12	32.05 QP	43.50	-11.45	1.00 V	331	20.60	11.46
5	249.66	44.64 QP	46.00	-1.36	1.00 V	319	31.42	13.22
6	329.36	33.75 QP	46.00	-12.25	1.50 V	286	18.57	15.18
7	399.34	31.09 QP	46.00	-14.91	1.00 V	229	14.36	16.74
8	440.16	29.07 QP	46.00	-16.93	1.00 V	46	11.26	17.81
9	500.42	30.02 QP	46.00	-15.98	1.50 V	310	11.28	18.74
10	550.96	35.08 QP	46.00	-10.92	1.00 V	94	15.36	19.72
11	599.56	36.38 QP	46.00	-9.62	1.00 V	82	15.38	21.00
12	650.10	30.79 QP	46.00	-15.21	1.00 V	286	9.11	21.68
13	681.20	32.12 QP	46.00	-13.88	1.00 V	259	10.06	22.07
14	751.18	33.94 QP	46.00	-12.06	1.00 V	16	10.40	23.54
15	875.59	33.12 QP	46.00	-12.88	1.00 V	304	8.46	24.66
16	990.28	37.97 QP	54.00	-16.03	1.00 V	280	12.20	25.77

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

EUT	Dual-Band Wireless A+G Router	MODEL	F6D3230-4
CHANNEL	Channel 1	MODE	CCK
INPUT POWER (SYSTEM)	120Vac, 60Hz	FREQUENCY RANGE	1 ~ 25GHz
ENVIRONMENTAL CONDITIONS	25 deg. C, 60% RH, 991 hPa	DETECTOR FUNCTION	Peak(PK) Average (AV)
TESTED BY	Match Tsui		

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	2320.00	55.17 PK	74.00	-18.83	1.00 H	280	23.59	31.58
1	2320.00	43.62 AV	54.00	-10.38	1.00 H	280	12.04	31.58
2	2390.00	54.27 PK	74.00	-19.73	1.01 H	14	22.47	31.80
2	2390.00	46.28 AV	54.00	-7.72	1.01 H	14	14.48	31.80
3	*2412.00	111.28 PK			1.01 H	14	79.41	31.87
3	*2412.00	103.70 AV			1.01 H	14	71.83	31.87
4	7236.00	58.46 PK	74.00	-15.54	1.00 H	230	15.41	43.05
4	7236.00	47.38 AV	54.00	-6.62	1.00 H	230	4.33	43.05

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	2320.00	64.27 PK	74.00	-9.73	1.09 V	350	32.69	31.58
1	2320.00	52.59 AV	54.00	-1.41	1.09 V	350	21.01	31.58
2	2390.00	58.15 PK	74.00	-15.85	1.15 V	250	26.35	31.80
2	2390.00	50.08 AV	54.00	-3.92	1.15 V	250	18.28	31.80
3	*2412.00	115.80 PK			1.15 V	250	83.93	31.87
3	*2412.00	107.49 AV			1.15 V	250	75.62	31.87
4	7236.00	60.28 PK	74.00	-13.72	1.10 V	200	17.23	43.05
4	7236.00	49.15 AV	54.00	-4.85	1.10 V	200	6.10	43.05

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. “ * “: Fundamental frequency.

EUT	Dual-Band Wireless A+G Router	MODEL	F6D3230-4
CHANNEL	Channel 6	MODE	CCK
INPUT POWER (SYSTEM)	120Vac, 60Hz	FREQUENCY RANGE	1 ~ 25GHz
ENVIRONMENTAL CONDITIONS	25 deg. C, 60% RH, 991 hPa	DETECTOR FUNCTION	Peak(PK) Average (AV)
TESTED BY	Match Tsui		

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	2320.00	54.29 PK	74.00	-19.71	1.10 H	360	22.71	31.58
1	2320.00	39.54 AV	54.00	-14.46	1.10 H	360	7.96	31.58
2	*2437.00	107.38 PK			1.00 H	90	75.43	31.95
2	*2437.00	98.64 AV			1.00 H	90	66.69	31.95
3	7311.00	56.38 PK	74.00	-17.62	1.00 H	45	13.41	42.97
3	7311.00	44.57 AV	54.00	-9.43	1.00 H	45	1.60	42.97

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	2320.00	64.22 PK	74.00	-9.78	1.20 V	300	32.64	31.58
1	2320.00	48.37 AV	54.00	-5.63	1.20 V	300	16.79	31.58
2	*2437.00	115.28 PK			1.01 V	28	83.33	31.95
2	*2437.00	106.89 AV			1.01 V	28	74.94	31.95
3	7311.00	62.58 PK	74.00	-11.42	1.20 V	280	19.61	42.97
3	7311.00	52.68 AV	54.00	-1.32	1.20 V	280	9.71	42.97

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. “ * “: Fundamental frequency.

EUT	Dual-Band Wireless A+G Router	MODEL	F6D3230-4
CHANNEL	Channel 11	MODE	CCK
INPUT POWER (SYSTEM)	120Vac, 60Hz	FREQUENCY RANGE	1 ~ 25GHz
ENVIRONMENTAL CONDITIONS	25 deg. C, 60% RH, 991 hPa	DETECTOR FUNCTION	Peak(PK) Average (AV)
TESTED BY	Match Tsui		

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	2320.00	53.10 PK	74.00	-20.90	1.25 H	75	21.52	31.58
1	2320.00	41.25 AV	54.00	-12.75	1.25 H	75	9.67	31.58
2	*2462.00	107.80 PK			1.47 H	14	75.78	32.02
2	*2462.00	99.60 AV			1.47 H	14	67.58	32.02
3	2483.50	49.17 PK	74.00	-24.83	1.47 H	14	17.08	32.09
3	2483.50	41.28 AV	54.00	-12.72	1.47 H	14	9.19	32.09
4	7386.00	57.64 PK	74.00	-16.36	1.20 H	47	15.09	42.55
4	7386.00	45.27 AV	54.00	-8.73	1.20 H	47	2.72	42.55

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	2320.00	65.41 PK	74.00	-8.59	1.04 V	125	33.83	31.58
1	2320.00	52.60 AV	54.00	-1.40	1.04 V	125	21.02	31.58
2	*2462.00	117.14 PK			1.02 V	285	85.12	32.02
2	*2462.00	108.14 AV			1.02 V	285	76.12	32.02
3	2483.50	58.64 PK	74.00	-15.36	1.02 V	285	26.55	32.09
3	2483.50	50.34 AV	54.00	-3.66	1.02 V	285	18.25	32.09
4	7386.00	63.52 PK	74.00	-10.48	1.05 V	190	20.97	42.55
4	7386.00	52.49 AV	54.00	-1.51	1.05 V	190	9.94	42.55

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. “ * “: Fundamental frequency.

Normal mode

EUT	Dual-Band Wireless A+G Router	MODEL	F6D3230-4
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 60% RH, 991 hPa	MODE	OFDM
TESTED BY	Match Tsui		

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	2320.00	51.24 PK	74.00	-22.76	1.11 H	350	19.66	31.58
1	2320.00	39.50 AV	54.00	-14.50	1.11 H	350	7.92	31.58
2	2390.00	53.19 PK	74.00	-20.81	1.11 H	157	21.39	31.80
2	2390.00	42.54 AV	54.00	-11.46	1.11 H	157	10.74	31.80
3	*2412.00	102.41 PK			1.11 H	157	70.54	31.87
3	*2412.00	91.58 AV			1.11 H	157	59.71	31.87
4	7236.00	55.61 PK	74.00	-18.39	1.14 H	187	12.56	43.05
4	7236.00	42.57 AV	54.00	-11.43	1.14 H	187	-0.48	43.05

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	2320.00	60.25 PK	74.00	-13.75	1.14 V	20	28.67	31.58
1	2320.00	49.35 AV	54.00	-4.65	1.14 V	20	17.77	31.58
2	2390.00	63.10 PK	74.00	-10.90	1.00 V	45	31.30	31.80
2	2390.00	52.41 AV	54.00	-1.59	1.00 V	45	20.61	31.80
3	*2412.00	111.24 PK			1.00 V	45	79.37	31.87
3	*2412.00	101.30 AV			1.00 V	45	69.43	31.87
4	7236.00	59.41 PK	74.00	-14.59	1.20 V	290	16.36	43.05
4	7236.00	44.31 AV	54.00	-9.69	1.20 V	290	1.26	43.05

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. “ * “: Fundamental frequency.

EUT	Dual-Band Wireless A+G Router	MODEL	F6D3230-4
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 60% RH, 991 hPa	MODE	OFDM
TESTED BY	Match Tsui		

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	2320.00	55.21 PK	74.00	-18.79	1.00 H	140	23.63	31.58
1	2320.00	42.68 AV	54.00	-11.32	1.00 H	140	11.10	31.58
2	*2437.00	104.35 PK			1.11 H	350	72.40	31.95
2	*2437.00	93.57 AV			1.11 H	350	61.62	31.95
3	7311.00	59.64 PK	74.00	-14.36	1.15 H	200	16.67	42.97
3	7311.00	43.19 AV	54.00	-10.81	1.15 H	200	0.22	42.97

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	2320.00	63.21 PK	74.00	-10.79	1.20 V	189	31.63	31.58
1	2320.00	51.48 AV	54.00	-2.52	1.20 V	189	19.90	31.58
2	*2437.00	115.27 PK			1.28 V	260	83.32	31.95
2	*2437.00	104.53 AV			1.28 V	260	72.58	31.95
3	7311.00	66.52 PK	74.00	-7.48	1.20 V	140	23.55	42.97
3	7311.00	50.39 AV	54.00	-3.61	1.20 V	140	7.42	42.97

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. " * ": Fundamental frequency.

EUT	Dual-Band Wireless A+G Router	MODEL	F6D3230-4
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 60% RH, 991 hPa	MODE	OFDM
TESTED BY	Match Tsui		

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	2320.00	54.14 PK	74.00	-19.86	1.10 H	250	22.56	31.58
1	2320.00	42.58 AV	54.00	-11.42	1.10 H	250	11.00	31.58
2	*2462.00	103.50 PK			1.30 H	186	71.48	32.02
2	*2462.00	92.47 AV			1.30 H	186	60.45	32.02
3	2483.50	51.68 PK	74.00	-22.32	1.30 H	186	19.59	32.09
3	2483.50	40.59 AV	54.00	-13.41	1.30 H	186	8.50	32.09
4	7386.00	56.38 PK	74.00	-17.62	1.20 H	149	13.83	42.55
4	7386.00	41.59 AV	54.00	-12.41	1.20 H	149	-0.96	42.55

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	2320.00	63.21 PK	74.00	-10.79	1.00 V	159	31.63	31.58
1	2320.00	52.68 AV	54.00	-1.32	1.00 V	159	21.10	31.58
2	*2462.00	114.28 PK			1.06 V	159	82.26	32.02
2	*2462.00	103.59 AV			1.06 V	159	71.57	32.02
3	2483.50	62.35 PK	74.00	-11.65	1.06 V	159	30.26	32.09
3	2483.50	52.68 AV	54.00	-1.32	1.06 V	159	20.59	32.09
4	7386.00	60.52 PK	74.00	-13.48	1.20 V	200	17.97	42.55
4	7386.00	44.51 AV	54.00	-9.49	1.20 V	200	1.96	42.55

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. “ * “: Fundamental frequency.

Turbo mode

EUT	Dual-Band Wireless A+G Router	MODEL	F6D3230-4
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 60% RH, 991 hPa	MODE	OFDM
TESTED BY	Match Tsui		

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	2320.00	53.68 PK	74.00	-20.32	1.00 H	147	22.10	31.58
1	2320.00	41.59 AV	54.00	-12.41	1.00 H	147	10.01	31.58
2	2390.00	52.47 PK	74.00	-21.53	1.04 H	259	20.67	31.80
2	2390.00	42.59 AV	54.00	-11.41	1.04 H	259	10.79	31.80
3	*2437.00	101.28 PK			1.04 H	259	69.33	31.95
3	*2437.00	91.47 AV			1.04 H	259	59.52	31.95
4	2483.50	48.57 PK	74.00	-25.43	1.04 H	259	16.48	32.09
4	2483.50	38.69 AV	54.00	-15.31	1.04 H	259	6.60	32.09
5	7311.00	55.64 PK	74.00	-18.36	1.21 H	200	12.67	42.97
5	7311.00	44.58 AV	54.00	-9.42	1.21 H	200	1.61	42.97

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	2320.00	62.38 PK	74.00	-11.62	1.00 V	15	30.80	31.58
1	2320.00	49.28 AV	54.00	-4.72	1.00 V	15	17.70	31.58
2	2390.00	63.14 PK	74.00	-10.86	1.02 V	185	31.34	31.80
2	2390.00	52.78 AV	54.00	-1.22	1.02 V	185	20.98	31.80
3	*2437.00	110.14 PK			1.02 V	185	78.19	31.95
3	*2437.00	99.20 AV			1.02 V	185	67.25	31.95
4	2483.50	58.64 PK	74.00	-15.36	1.02 V	185	26.55	32.09
4	2483.50	49.58 AV	54.00	-4.42	1.02 V	185	17.49	32.09
5	7311.00	61.28 PK	74.00	-12.72	1.04 V	158	18.31	42.97
5	7311.00	47.59 AV	54.00	-6.41	1.04 V	158	4.62	42.97

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. " * ": Fundamental frequency.

4.3 6dB BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSEK 30	100049	Aug. 12, 2005

NOTE: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

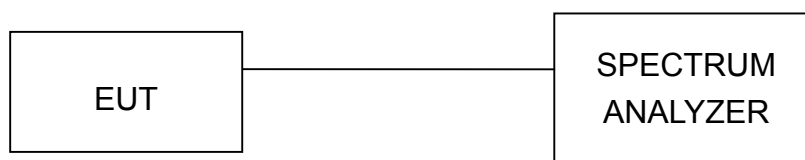
4.3.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100kHz RBW and 100kHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

4.3.4 DEVIATION FROM TEST STANDARD

No deviation.

4.3.5 TEST SETUP



4.3.6 EUT OPERATING CONDITIONS

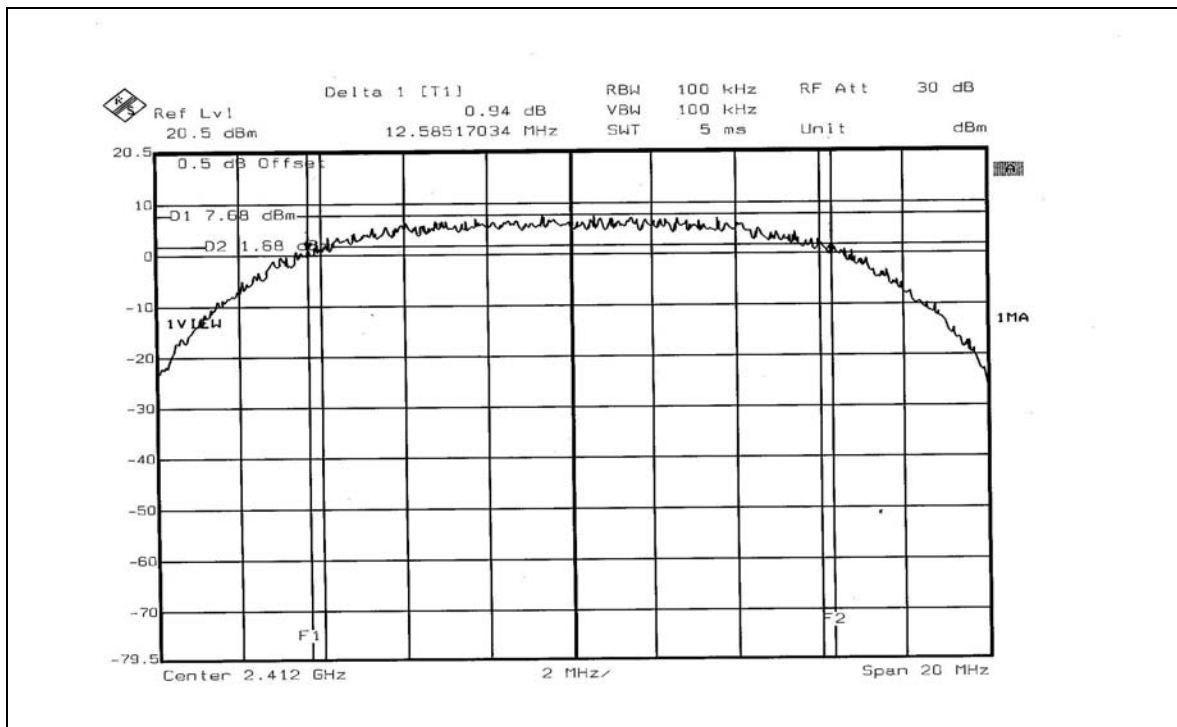
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 TEST RESULTS

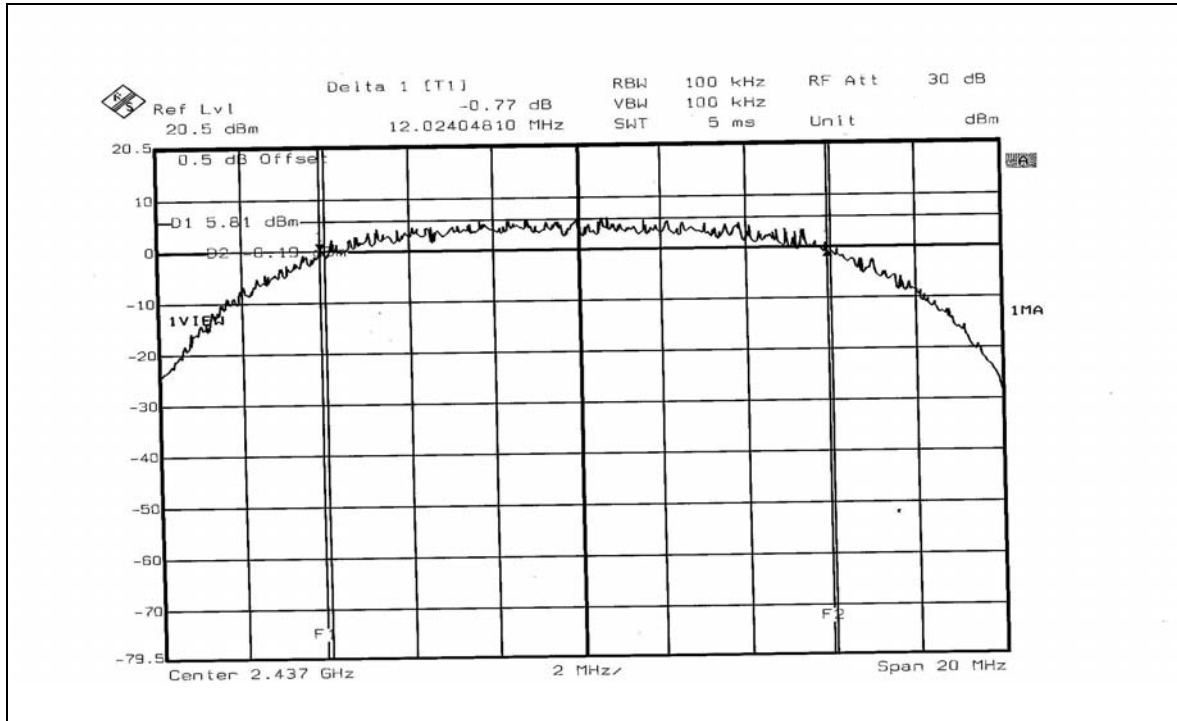
EUT	Dual-Band Wireless A+G Router	MODEL	F6D3230-4
MODE	CCK	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	24 deg. C, 64% RH, 991 hPa	TESTED BY	Leo Hung

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	12.59	0.5	PASS
6	2437	12.02	0.5	PASS
11	2462	11.98	0.5	PASS

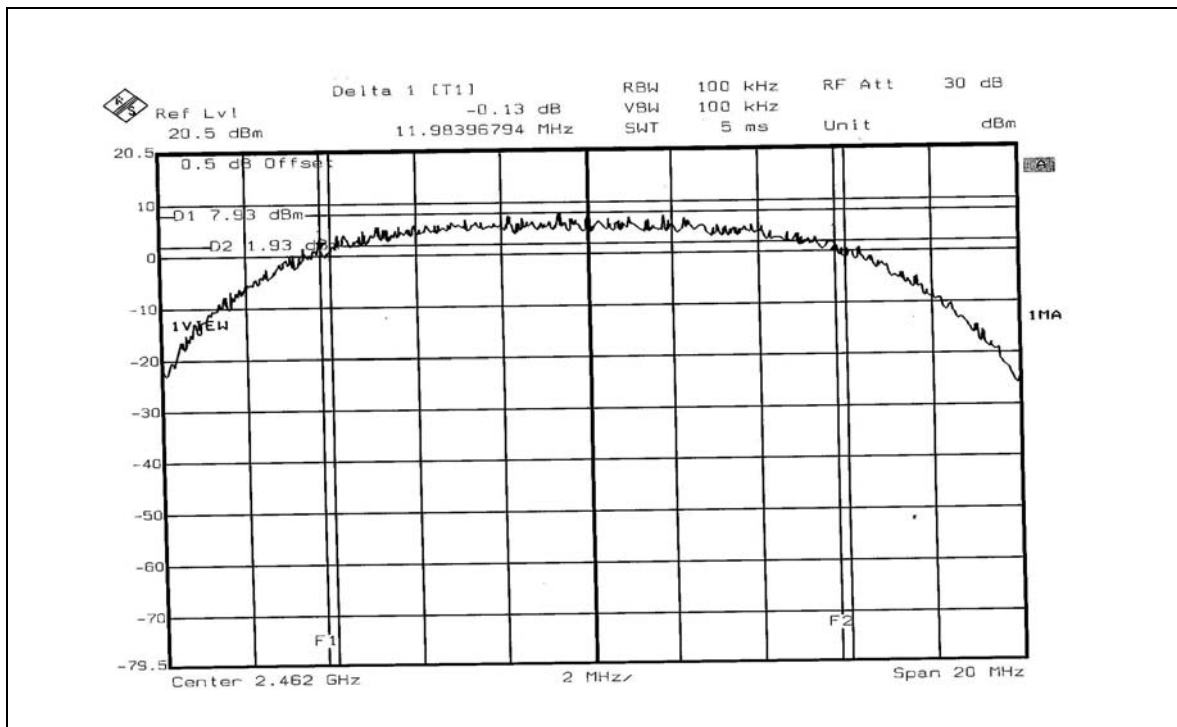
CH1



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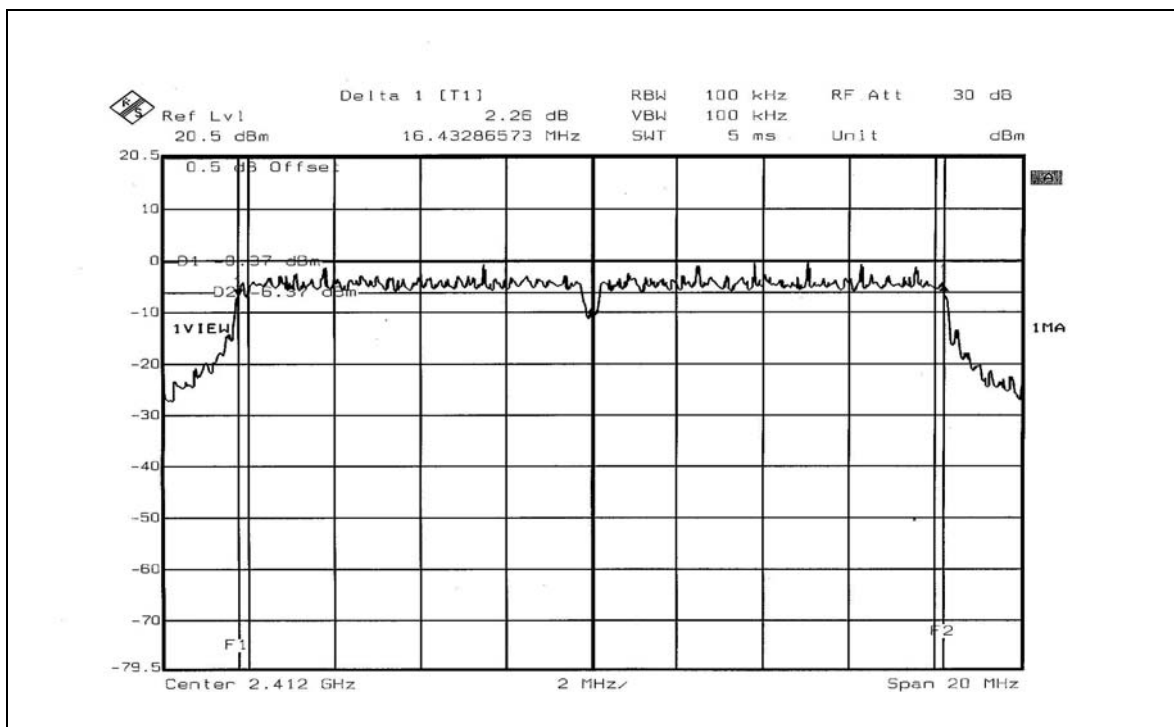


**Normal mode**

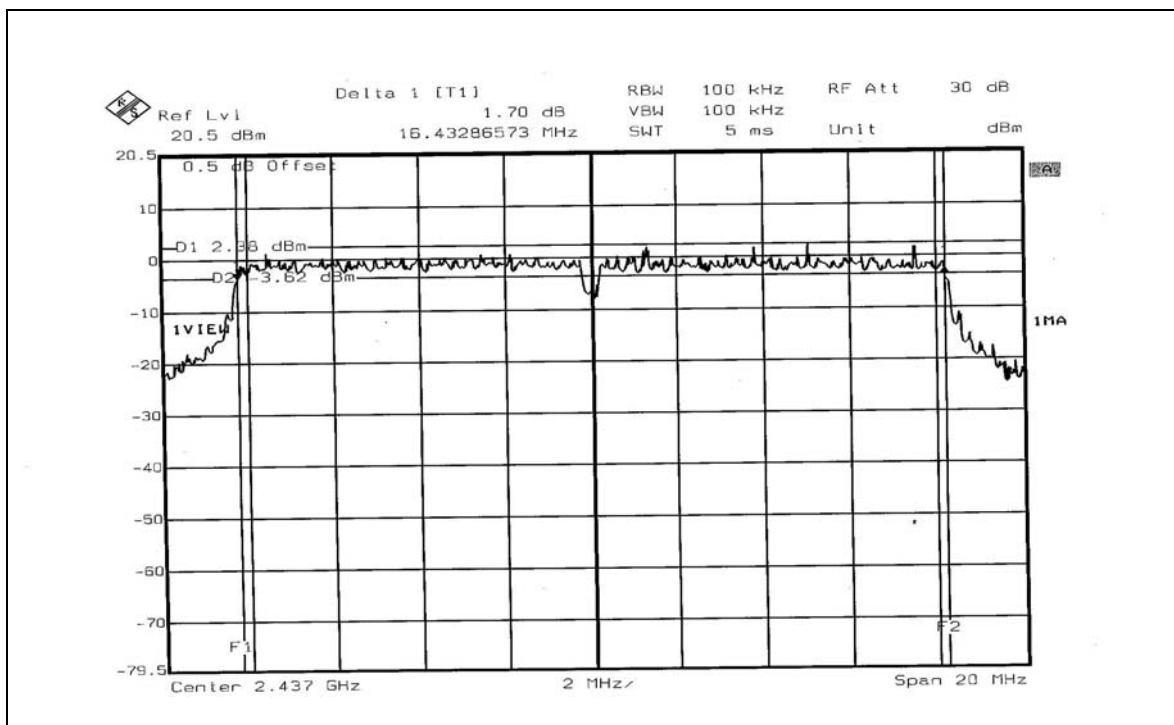
EUT	Dual-Band Wireless A+G Router	MODEL	F6D3230-4
MODE	OFDM	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	24 deg. C, 64% RH, 991 hPa	TESTED BY	Leo Hung

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	16.43	0.5	PASS
6	2437	16.43	0.5	PASS
11	2462	16.47	0.5	PASS

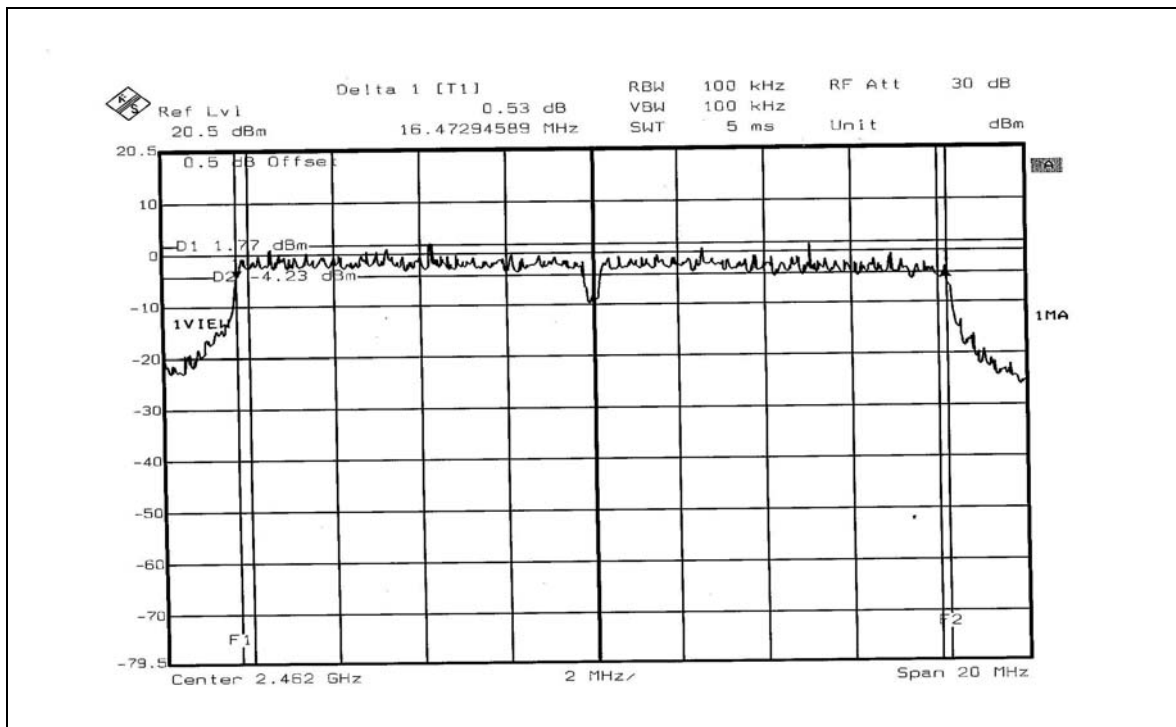
CH1



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**Turbo mode**

EUT	Dual-Band Wireless A+G Router	MODEL	F6D3230-4
MODE	OFDM	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	24 deg. C, 64% RH, 991 hPa	TESTED BY	Leo Hung

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
6	2437	32.63	0.5	PASS

Delta 1 [T1] 1.30 dB RBW 100 kHz RF Att 30 dB

Ref Lvl 20.5 dBm 32.62525050 MHz VBW 100 kHz Unit dBm

SWT 10 ms

0.5 dB Offset

D1 2.28 dBm

D2 1.30 dBm

1 [T1] 2.42060721 GHz

1SA

Center 2.437 GHz 4 MHz Span 40 MHz

4.4 MAXIMUM PEAK OUTPUT POWER

4.4.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Measurement is 30dBm.

4.4.2 INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSEK30	100049	Aug. 12, 2005
AGILENT SIGNAL GENERATOR	E8257C	MY43320668	Dec. 31, 2004
TEKTRONIX OSCILLOSCOPE	TDS 1012	C019167	Feb. 01, 2005
NARDA DETECTOR	4503A	FSCM99899	NA

NOTE:

The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA..

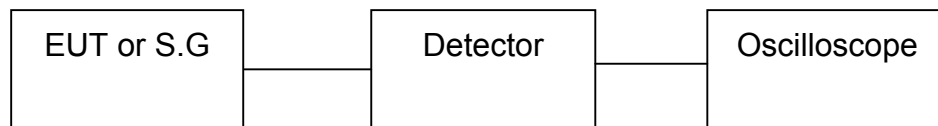
4.4.1 TEST PROCEDURES

1. A detector was used on the output port of the EUT. An oscilloscope was used to read the response of the detector.
2. Replaced the EUT by the signal generator . The center frequency of the S.G was adjusted to the center frequency of the measured channel.
3. Adjusted the power to have the same reading on oscilloscope. Record the power level.

4.4.2 DEVIATION FROM TEST STANDARD

No deviation

4.4.3 TEST SETUP



4.4.4 EUT OPERATING CONDITIONS

Same as Item 4.3.6.

4.4.3 TEST RESULTS

EUT	Dual-Band Wireless A+G Router	MODEL	F6D3230-4
ENVIRONMENTAL CONDITIONS	24 deg. C, 64% RH, 991 hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
MODE	CCK	TESTED BY	Leo Hung

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	63.973	18.06	30	PASS
6	2437	50.466	17.03	30	PASS
11	2462	63.387	18.02	30	PASS

Normal mode

EUT	Dual-Band Wireless A+G Router	MODEL	F6D3230-4
ENVIRONMENTAL CONDITIONS	24 deg. C, 64 % RH, 991 hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
MODE	OFDM	TESTED BY	Leo Hung

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	31.769	15.02	30	PASS
6	2437	63.826	18.05	30	PASS
11	2462	63.533	18.03	30	PASS

Turbo mode

EUT	Dual-Band Wireless A+G Router	MODEL	F6D3230-4
ENVIRONMENTAL CONDITIONS	24 deg. C, 64% RH, 991 hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
MODE	OFDM	TESTED BY	Leo Hung

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
6	2437	50.816	17.06	30	PASS

4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSEK30	100049	Aug. 12, 2005

NOTE:

The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

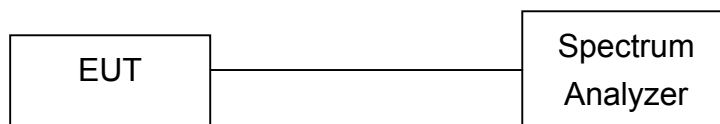
4.5.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3kHz RBW and 30kHz VBW, set sweep time = span/3kHz. The power spectral density was measured and recorded. The sweep time is allowed to be longer than span/3kHz for a full response of the mixer in the spectrum analyzer.

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITION

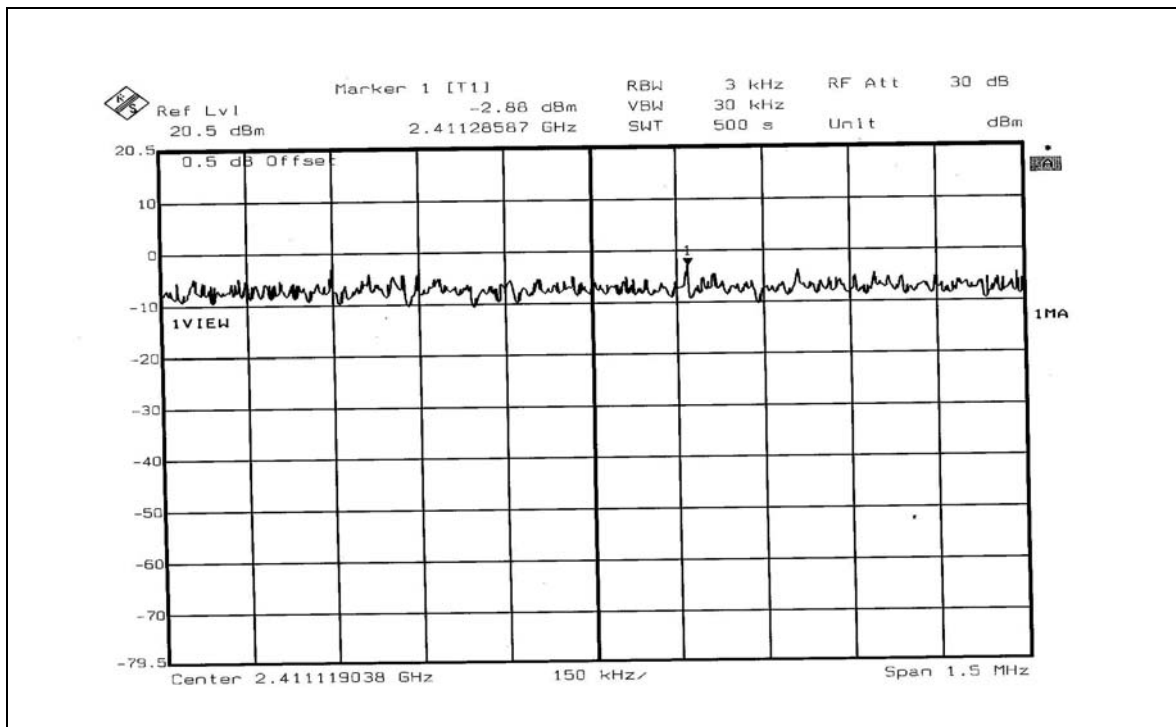
Same as Item 4.3.6.

4.5.7 TEST RESULTS

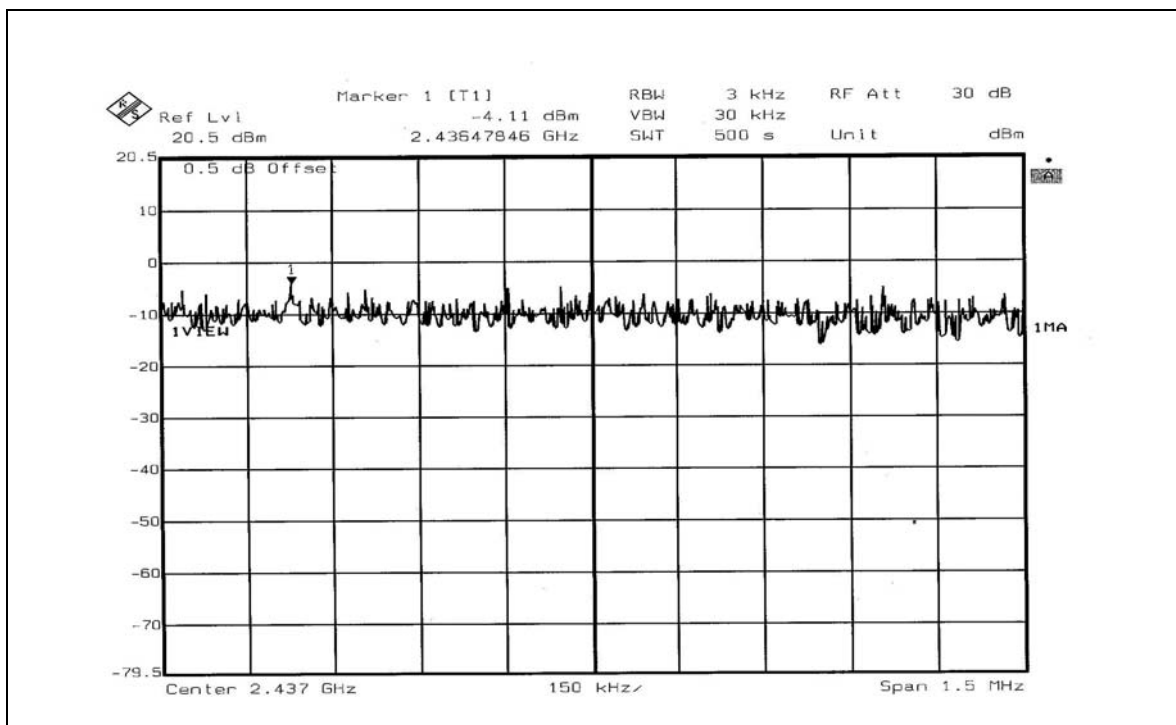
EUT	Dual-Band Wireless A+G Router	MODEL	F6D3230-4
ENVIRONMENTAL CONDITIONS	24 deg. C, 64% RH, 991 hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
MODE	CCK	TESTED BY	Leo Hung

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-2.88	8	PASS
6	2437	-4.11	8	PASS
11	2462	-2.69	8	PASS

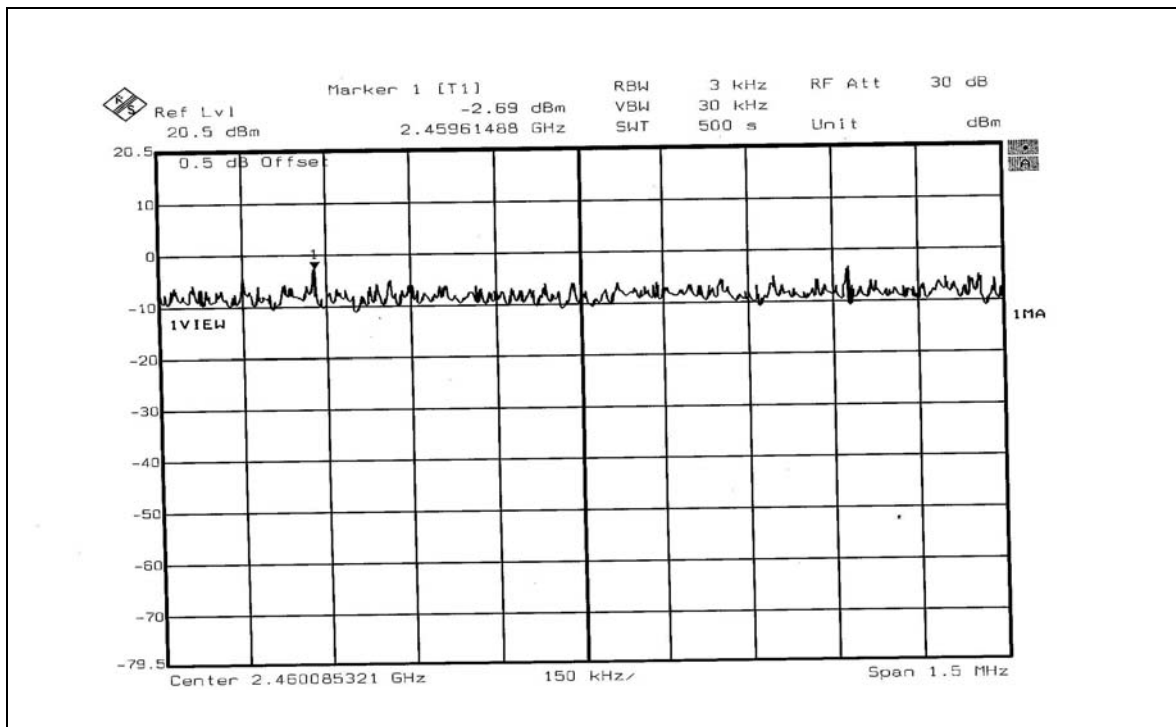
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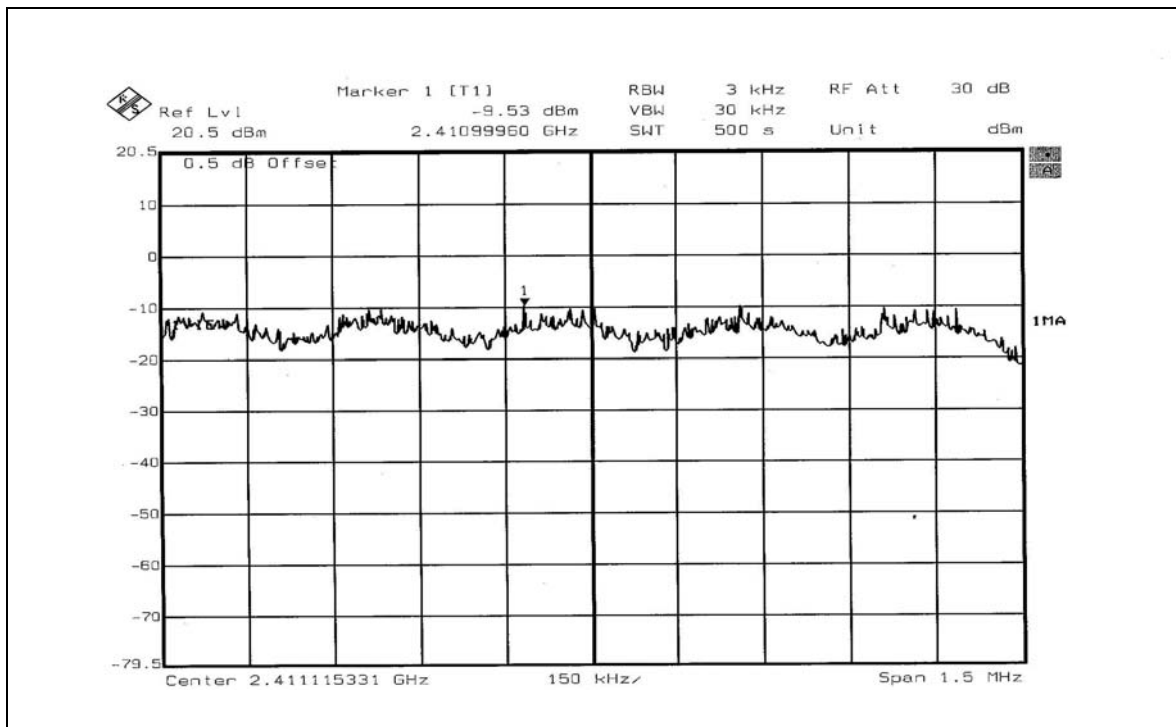


Normal mode

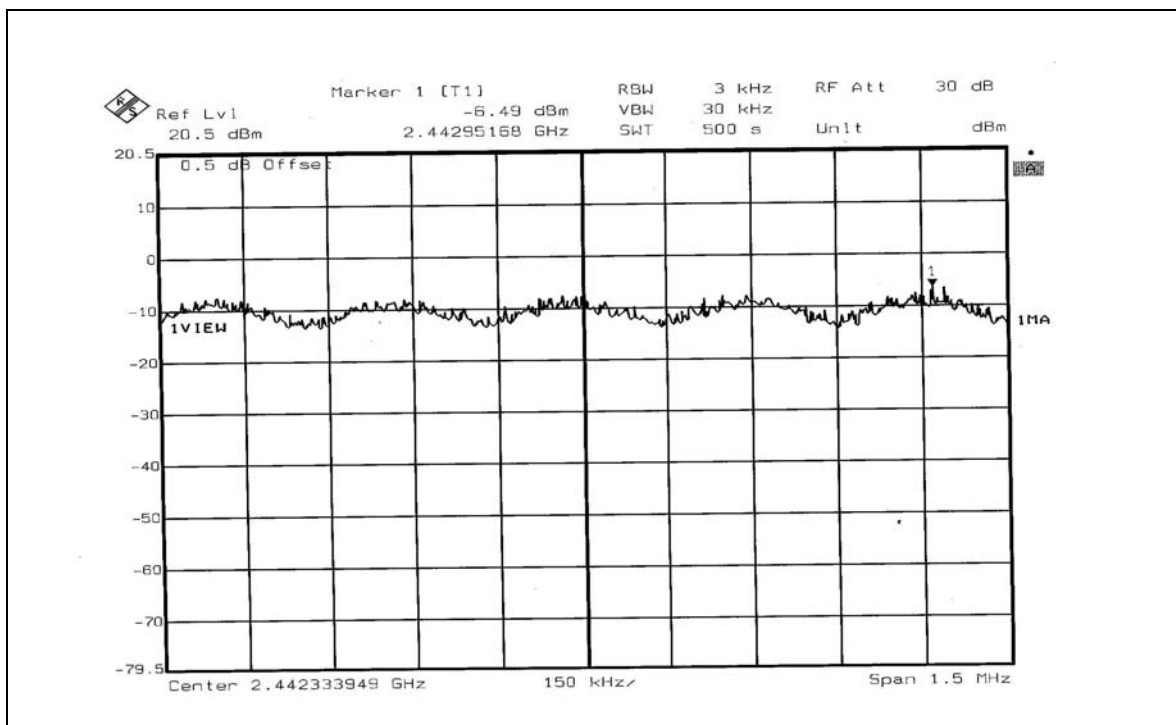
EUT	Dual-Band Wireless A+G Router	MODEL	F6D3230-4
ENVIRONMENTAL CONDITIONS	24 deg.C, 64% RH, 991 hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
MODE	OFDM	TESTED BY	Leo Hung

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-9.53	8	PASS
6	2437	-6.49	8	PASS
11	2462	-7.55	8	PASS

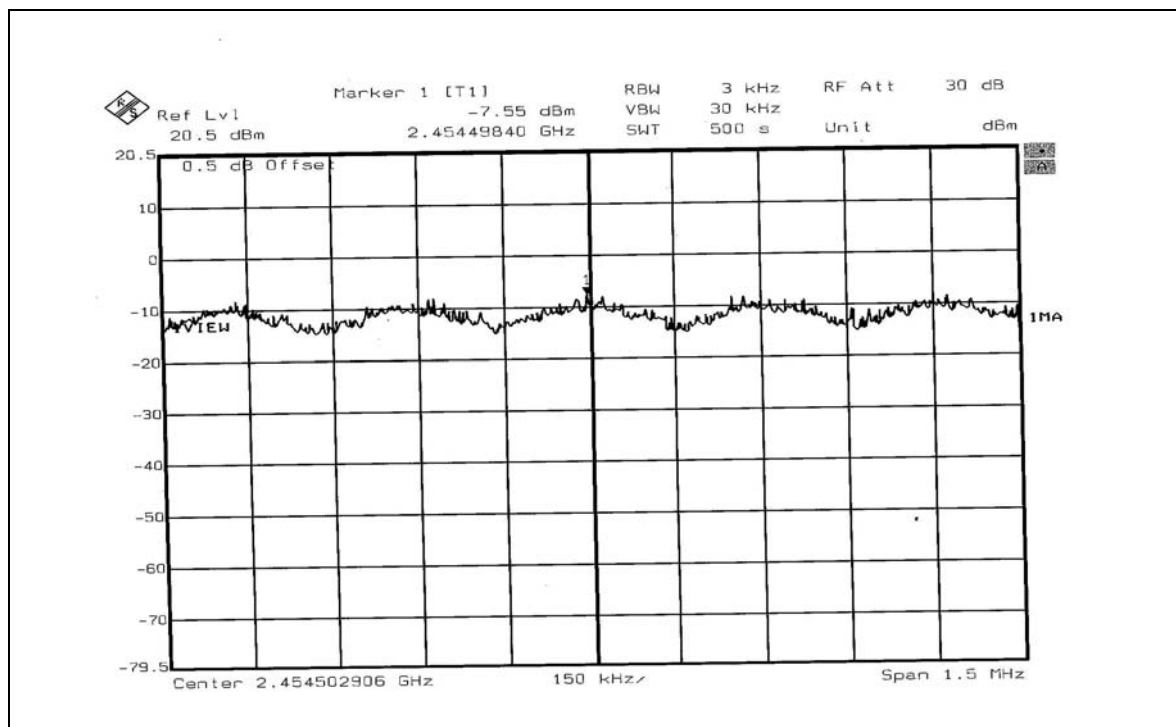
CH1



CH6



CH11



**Turbo mode**

EUT	Dual-Band Wireless A+G Router	MODEL	F6D3230-4
ENVIRONMENTAL CONDITIONS	24deg.C, 65%RH, 991 hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
MODE	OFDM	TESTED BY	Leo Hung

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
6	2437	-8.72	8	PASS

CH6

