FCC TEST REPORT (15.247)

REPORT NO.: RF940418L08
MODEL NO.: P-780
(refer to page 8 for other model)
RECEIVED: Apr. 06, 2004
TESTED: Apr. 06 ~ Apr. 22, 2005
ISSUED: Apr. 26, 2005

APPLICANT: Gemtek Technology Co., Ltd.

ADDRESS: No.1, Jen Ai Road, Hsinchu Industrial Park, Hukou Hsinchu, Taiwan, R.O.C. 303

ISSUED BY: Advance Data Technology Corporation

LAB ADDRESS: No. 47, 14th Ling, Chia Pau Tsuen, Lin Kou Hsiang 244, Taipei Hsien, Taiwan, R.O.C.

TEST LOCATION: No. 19, Hwa Ya 2nd Rd., Wen Hwa Tsuen, Kwei Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C.

0528
ILAC MRA

No. 2177-01

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1. CERTIFICATION

PRODUCT:	Dual Band Outdoor Access Point (refer to page 8 for other product)
BRAND NAME:	Gemtek Systems
MODEL NO.:	P-780 (refer to page 8 for other model)
APPLICANT:	Gemtek Technology Co., Ltd.
TEST SAMPLE:	Engineering Sample
TESTED:	Apr. 06 ~ Apr. 22, 2005
STANDARDS:	FCC Part 15, Subpart C (Section 15.247), ANSI C63.4-2003

The above equipment has 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 : Windy Chou , **DATE:** Apr. 26, 2005
(Windy Chou)

TECHNICAL ACCEPTANCE : Gary Chang , **DATE:** Apr. 26, 2005
Responsible for RF (Gary Chang)

APPROVED BY : , **DATE:** Apr. 26, 2005
(Cody Chang, Deputy Manager)

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

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 –9.73dB at 0.408MHz
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 -1.05dB at 43.61MHz
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	3.63 dB
	200MHz ~1000MHz	3.65 dB
	1GHz ~ 18GHz	2.20 dB
	18GHz ~ 40GHz	1.88 dB

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	Dual Band Outdoor Access Point
MODEL NO.	P-780
POWER SUPPLY	48.0Vdc from POE
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	DSSS, 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
FREQUENCY RANGE	802.11b & 802.11g: 2.412 ~ 2.462GHz 802.11a: 5.150 ~ 5.350GHz and 5.725 ~ 5.850GHz
NUMBER OF CHANNEL	802.11b & 802.11g: 11 802.11a: 13
CHANNEL SPACING	802.11b & 802.11g: 5MHz 802.11a: 20MHz
OUTPUT POWER	28.576mW for 802.11b 42.364mW for 802.11g 14.521mW for 5.150 ~ 5.350GHz 25.410mW for 5.725 ~ 5.850GHz
ANTENNA TYPE	Refer to NOTE 5 below
DATA CABLE	1.8m antenna cable without core
I/O PORTS	RJ45
ASSOCIATED DEVICES	NA

NOTE:

1. The POE is for support unit only.
2. The models as below are identical to each except other except for their model name and product name due to marketing requirement.

Model name	Product name
P-780	Dual Band Outdoor Access Point
P-785	Hotspot-in-a-Box

*The EUT was designed with two radio cards.

3. The EUT operates in both the 5GHz and 2.4GHz Bands and compatibility with 802.11a and 802.11b, 802.11g technology.
4. There are two 11a/g/b mini PCI card in the EUT. Both of them have the function of transmitting simultaneously.

5. There are three combinations of antenna type provided to this EUT. Please refer to following table.

No.	Model	Antenna type	Gain (dBi)	
			2.4GHz	5GHz
1	A-807	Omni dual band	4.5	7
2	A-308	Omni single band	8	-
3	A-408	Omni single band	-	8

6. 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

Test Mode

Operated in 2400 ~ 2483.5MHz band:

For 802.11b/g: Eleven 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		

Operated in 5725 ~ 5850MHz band:

For 802.11a: Five channels are provided to this EUT.

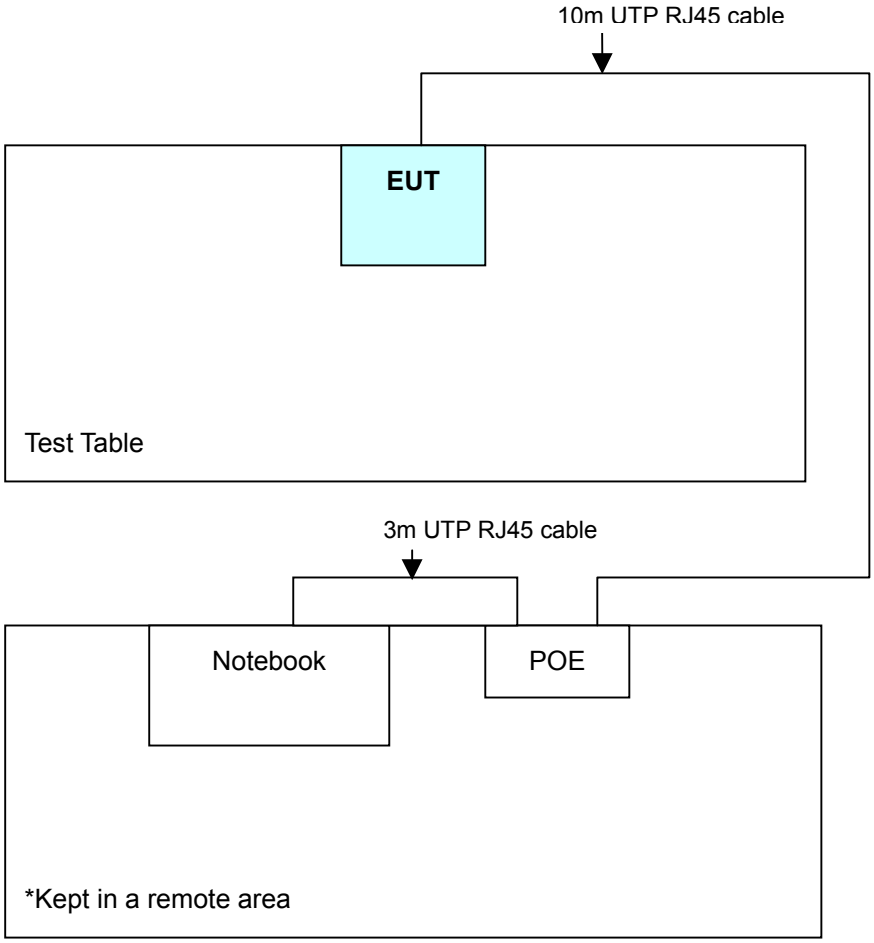
Channel	Frequency	Channel	Frequency
1	5745 MHZ	4	5805 MHz
2	5765 MHz	5	5825 MHz
3	5785 MHz		

Operated in 5150 ~ 5250MHz, 5250MHz ~ 5350MHz and 5725 ~ 5850MHz bands:

For 802.11a: Twelve channels are provided to this EUT.

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

3.2.1 CONFIGURATION OF SYSTEM UNDER TEST



3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

Normal Test Mode:

EUT configure mode	Applicable to				Description
	PLC	RE<1G	RE≥1G	APCM	
1	Note 1	x	x	Note 2	A-807 antenna with 4.5dBi gain (for 2.4GHz dual band)
2	Note 1	x	x	Note 2	A-308 antenna with 8dBi gain (for 2.4GHz single band)
3	Note 1	x	x	Note 2	A-807 antenna with 7dBi gain (for 5GHz dual band)
4	Note 1	x	x	Note 2	A-408 antenna with 8dBi gain (for 5GHz single band)

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

Note 1: Pre-scan shown antenna has no effect for Conducted Emission test.
Note 2: Conducted RF measurement is independent of antenna.

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)
2	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
4	802.11a	1 to 5	3	OFDM	BPSK	6

Radiated Emission Test (Below 1 GHz):

☒ 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)
1, 2	802.11g	1 to 11	11	OFDM	BPSK	6
3, 4	802.11a	1 to 5	3	OFDM	BPSK	6

Radiated Emission Test (Above 1 GHz):

☒ 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)
1, 2	802.11b	1 to 11	1, 6, 11	DSSS	CCK	11
1, 2	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
3, 4	802.11a	1 to 5	1, 3, 5	OFDM	BPSK	6

Bandedge Measurement:

☒ 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	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11b	1 to 11	1, 11	DSSS	CCK	11
802.11g	1 to 11	1, 11	OFDM	BPSK	6
802.11a	1 to 5	1, 5	OFDM	BPSK	6

Antenna Port Conducted Measurement:

☒ 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	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	CCK	11
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
802.11a	1 to 5	1, 3, 5	OFDM	BPSK	6

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a Dual Band Outdoor Access Point. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart C. (15.247)
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	12130898320	E2K24CLNS
2	POE	Gemtek Systems	PW130RB4800 N52	NA	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA
2	NA

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

4. TEST TYPES AND RESULTS

(802.11b & g 2412~2462MHz Band)

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 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.

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS30	100291	Nov. 16, 2005
RF signal cable Woken	5D-FB	Cable-HYC01-01	Jan. 09, 2006
LISN ROHDE & SCHWARZ	ESH3-Z5	100312	Feb. 15, 2006
LISN ROHDE & SCHWARZ	ESH2-Z5	100104	Feb. 15, 2006
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 1.

3. The VCCI Site Registration No. is C-2040.

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.

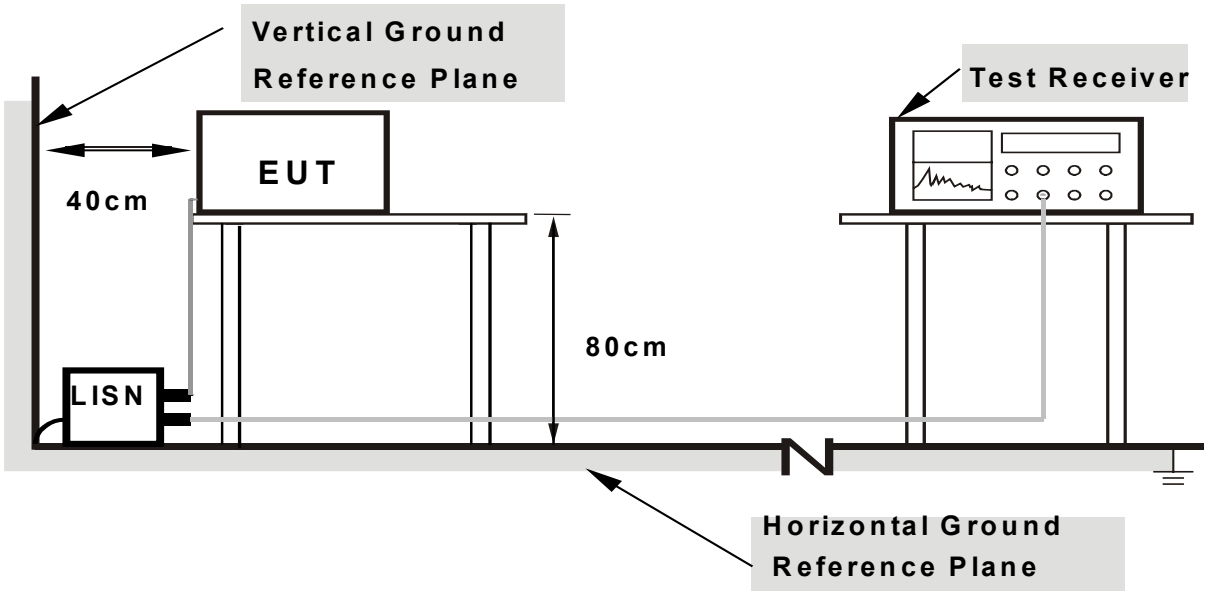
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

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) 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.

4.1.6 EUT OPERATING CONDITIONS

a. Placed the EUT on the testing table.
b. Prepared another notebook system to act as a communication partner and placed it outside of testing area.
c. The communication partner run a test program (provided by manufacturer) to enable EUT under transmission/receiving condition continuously at specific channel frequency via an RJ45 cable.

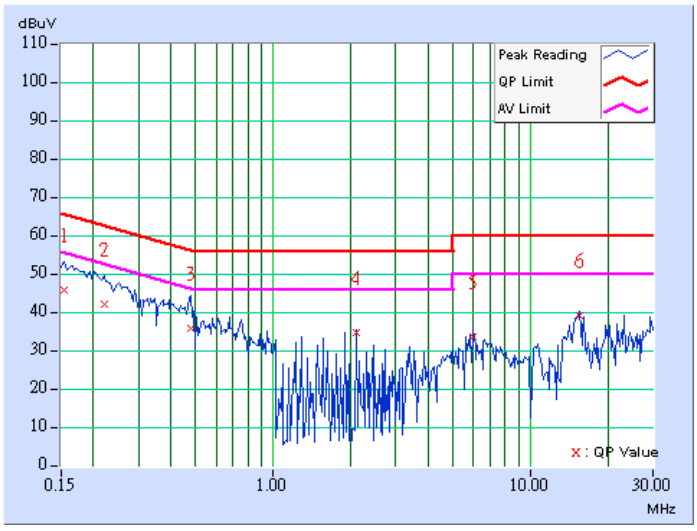
4.1.7 TEST RESULTS

Conducted Worst-Case Data

EUT	Dual Band Outdoor Access Point	MEASUREMENT DETAIL	
MODEL	P-780	PHASE	Line 1
CHANNEL	Channel 1	6dB BANDWIDTH	9 kHz
MODULATION TYPE	BPSK	ENVIRONMENTAL CONDITIONS	23deg. C, 65%RH, 991hPa
TRANSFER RATE	6Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Gary Chang		

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.154	0.11	45.18	-	45.29	-	65.79	55.79	-20.50	-
2	0.220	0.11	41.56	-	41.67	-	62.81	52.81	-21.14	-
3	0.478	0.13	35.27	-	35.40	-	56.37	46.37	-20.97	-
4	2.102	0.27	34.31	-	34.58	-	56.00	46.00	-21.42	-
5	5.973	0.44	33.04	-	33.48	-	60.00	50.00	-26.52	-
6	15.617	0.61	38.83	-	39.44	-	60.00	50.00	-20.56	-

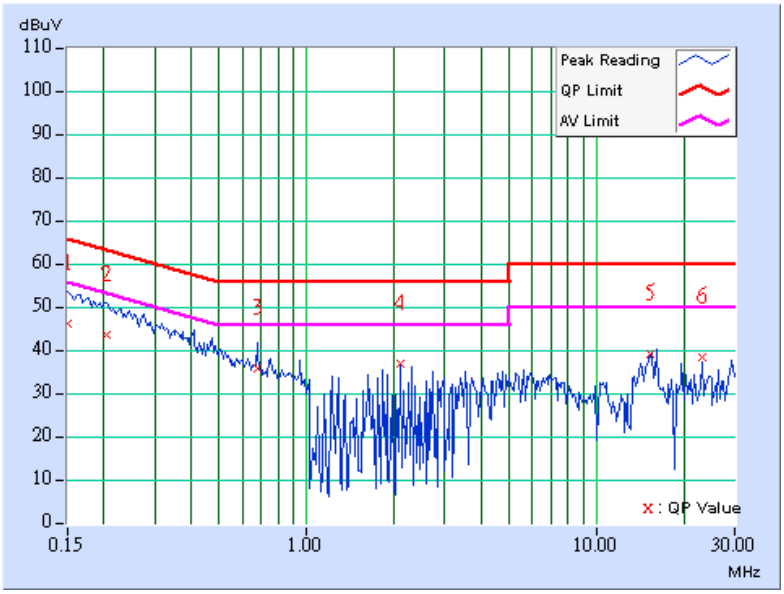
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	Dual Band Outdoor Access Point	MEASUREMENT DETAIL	
MODEL	P-780	PHASE	Line 2
CHANNEL	Channel 1	6dB BANDWIDTH	9 kHz
MODULATION TYPE	BPSK	ENVIRONMENTAL CONDITIONS	23deg. C, 65%RH, 991hPa
TRANSFER RATE	6Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Gary Chang		

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.11	45.50	-	45.61	-	66.00	56.00	-20.39	-
2	0.205	0.11	42.84	-	42.95	-	63.42	53.42	-20.47	-
3	0.677	0.17	35.05	-	35.22	-	56.00	46.00	-20.78	-
4	2.105	0.27	36.41	34.28	36.68	34.55	56.00	46.00	-19.32	-11.45
5	15.254	0.46	38.39	-	38.85	-	60.00	50.00	-21.15	-
6	23.129	0.81	37.60	-	38.41	-	60.00	50.00	-21.59	-

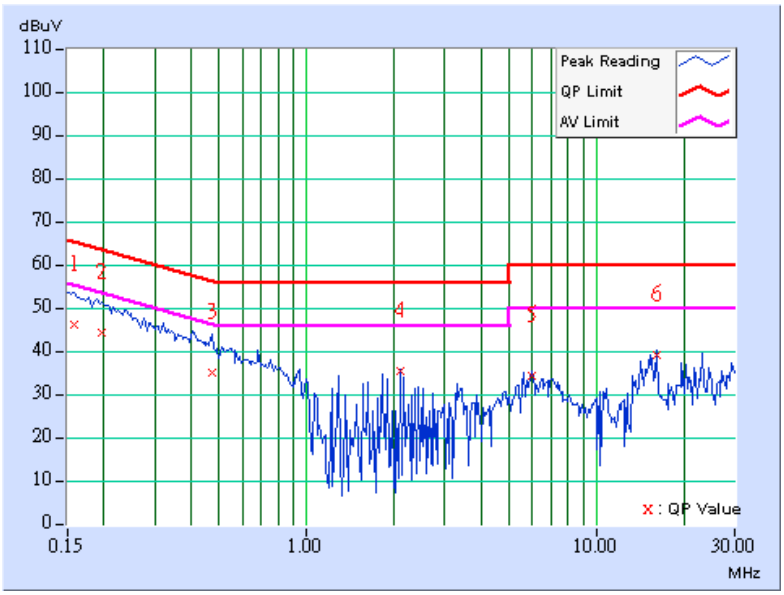
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	Dual Band Outdoor Access Point	MEASUREMENT DETAIL	
MODEL	P-780	PHASE	Line 1
CHANNEL	Channel 6	6dB BANDWIDTH	9 kHz
MODULATION TYPE	BPSK	ENVIRONMENTAL CONDITIONS	23deg. C, 65%RH, 991hPa
TRANSFER RATE	6Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Gary Chang		

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.158	0.11	45.65	19.50	45.76	19.61	65.58	55.58	-19.82	-35.97
2	0.197	0.11	43.81	23.46	43.92	23.57	63.74	53.74	-19.82	-30.17
3	0.470	0.13	34.58	-	34.71	-	56.51	46.51	-21.80	-
4	2.102	0.27	34.72	-	34.99	-	56.00	46.00	-21.01	-
5	5.969	0.44	33.65	-	34.09	-	60.00	50.00	-25.91	-
6	16.227	0.67	38.58	-	39.25	-	60.00	50.00	-20.75	-

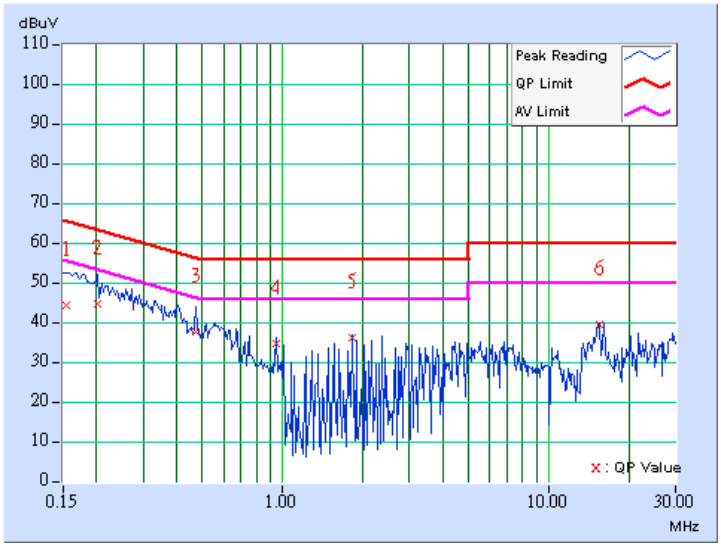
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	Dual Band Outdoor Access Point	MEASUREMENT DETAIL	
MODEL	P-780	PHASE	Line 2
CHANNEL	Channel 6	6dB BANDWIDTH	9 kHz
MODULATION TYPE	BPSK	ENVIRONMENTAL CONDITIONS	23deg. C, 65%RH, 991hPa
TRANSFER RATE	6Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Gary Chang		

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.154	0.11	43.84	-	43.95	-	65.79	55.79	-21.84	-
2	0.201	0.11	44.17	32.80	44.28	32.91	63.58	53.58	-19.30	-20.67
3	0.474	0.13	37.38	35.70	37.51	35.83	56.44	46.44	-18.93	-10.61
4	0.951	0.23	34.45	-	34.68	-	56.00	46.00	-21.32	-
5	1.832	0.26	35.80	-	36.06	-	56.00	46.00	-19.94	-
6	15.617	0.48	39.12	-	39.60	-	60.00	50.00	-20.40	-

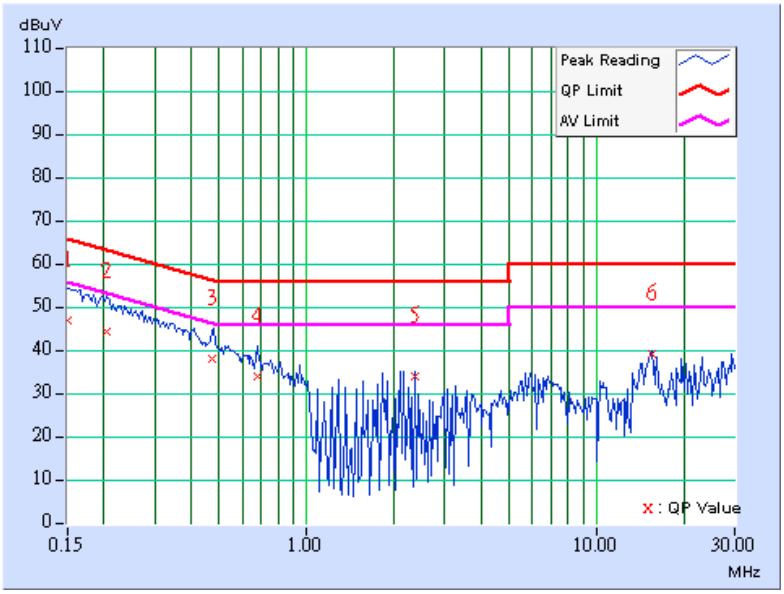
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	Dual Band Outdoor Access Point	MEASUREMENT DETAIL	
MODEL	P-780	PHASE	Line 1
CHANNEL	Channel 11	6dB BANDWIDTH	9 kHz
MODULATION TYPE	BPSK	ENVIRONMENTAL CONDITIONS	23deg. C, 65%RH, 991hPa
TRANSFER RATE	6Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Gary Chang		

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.11	46.34	20.38	46.45	20.49	66.00	56.00	-19.55	-35.51
2	0.205	0.11	43.86	31.64	43.97	31.75	63.42	53.42	-19.45	-21.67
3	0.474	0.13	37.49	35.85	37.62	35.98	56.44	46.44	-18.82	-10.46
4	0.677	0.17	33.48	-	33.65	-	56.00	46.00	-22.35	-
5	2.375	0.28	33.46	-	33.74	-	56.00	46.00	-22.26	-
6	15.617	0.61	38.68	-	39.29	-	60.00	50.00	-20.71	-

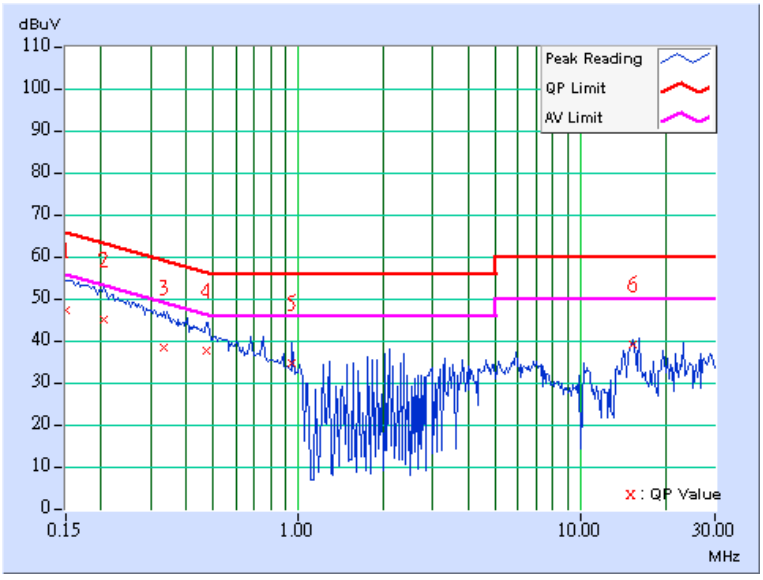
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	Dual Band Outdoor Access Point	MEASUREMENT DETAIL	
MODEL	P-780	PHASE	Line 2
CHANNEL	Channel 11	6dB BANDWIDTH	9 kHz
MODULATION TYPE	BPSK	ENVIRONMENTAL CONDITIONS	23deg. C, 65%RH, 991hPa
TRANSFER RATE	6Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Gary Chang		

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.11	47.05	20.60	47.16	20.71	66.00	56.00	-18.84	-35.29
2	0.205	0.11	44.89	33.05	45.00	33.16	63.42	53.42	-18.42	-20.26
3	0.334	0.11	38.13	-	38.24	-	59.36	49.36	-21.12	-
4	0.474	0.13	37.46	35.66	37.59	35.79	56.44	46.44	-18.85	-10.65
5	0.951	0.23	34.41	-	34.64	-	56.00	46.00	-21.36	-
6	15.434	0.47	38.96	-	39.43	-	60.00	50.00	-20.57	-

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	ESI7	838496/016	Jan. 07, 2006
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100041	Nov. 29, 2005
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Jan. 22, 2006
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-404	Jan. 05, 2006
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA 9170242	Jan. 23, 2006
Preamplifier Agilent	8447D	2944A10631	Nov. 17, 2005
Preamplifier Agilent	8449B	3008A01960	Nov. 14, 2005
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	219272/4	Jan. 26, 2006
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	219275/4	Jan. 26, 2006
Software ADT.	ADT_Radiated_V5.14	NA	NA
Antenna Tower inn-co GmbH	MA 4000	010303	NA
Antenna Tower Controller inn-co GmbH	CO2000	019303	NA
Turn Table ADT.	TT100.	TT93021704	NA
Turn Table Controller ADT.	SC100.	SC93021704	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 3.
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 IC4924-4.

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 meter semi- anechoic. 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.

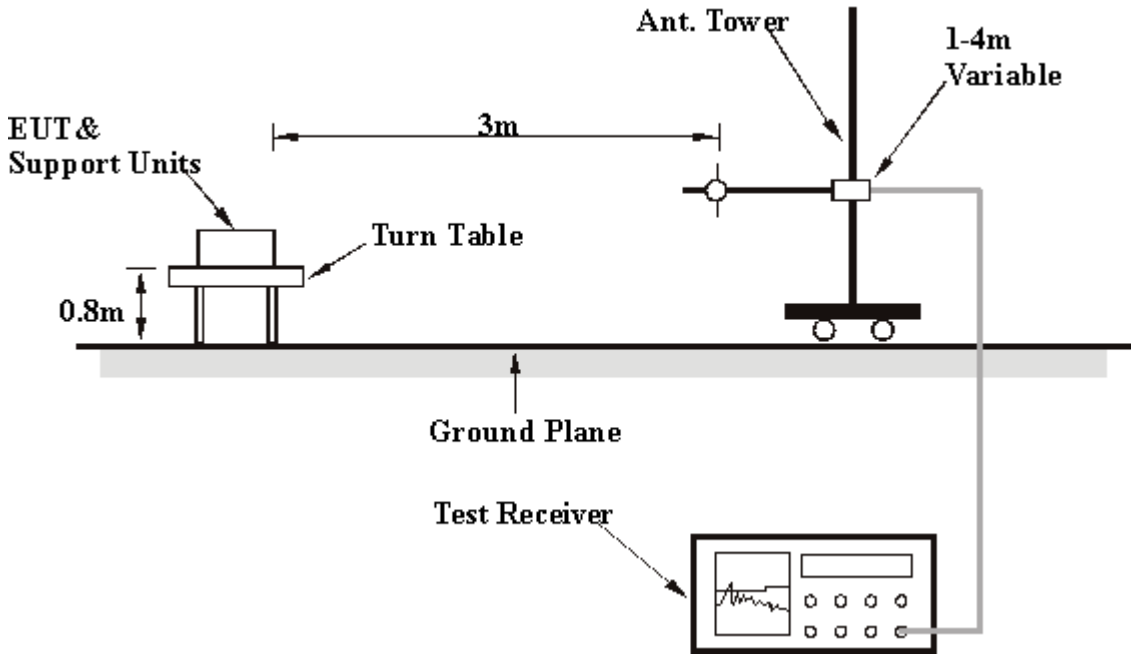
NOTE:

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

Below 1GHz Worst-Case Data for A-807 antenna with 4.5dBi gain

EUT	Dual Band Outdoor Access Point	**MEASUREMENT DETAIL**	
MODEL	P-780	**FREQUENCY RANGE**	Below 1000MHz
CHANNEL	Channel 11	**DETECTOR FUNCTION**	Quasi-Peak
MODULATION TYPE	BPSK	**ENVIRONMENTAL CONDITIONS**	21deg. C, 64%RH, 991hPa
TRANSFER RATE	6Mbps	**INPUT POWER (SYSTEM)**	120Vac, 60 Hz
TEST MODE	**1**	**TESTED BY**	Brad Wu

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	309.92	43.69 QP	46.00	-2.31	1.00 H	214	29.06	14.63
2	354.63	35.84 QP	46.00	-10.16	1.00 H	211	20.21	15.63
3	533.47	37.68 QP	46.00	-8.32	2.00 H	295	18.51	19.17
4	667.60	38.66 QP	46.00	-7.34	1.00 H	202	16.99	21.66
5	733.69	44.80 QP	46.00	-1.20	1.00 H	211	21.96	22.84
6	778.40	44.81 QP	46.00	-1.19	1.00 H	205	21.45	23.36

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	43.61	38.93 QP	40.00	-1.07	1.00 V	340	23.54	15.39
2	309.92	40.98 QP	46.00	-5.02	1.00 V	148	26.35	14.63
3	399.34	38.00 QP	46.00	-8.00	1.00 V	322	21.28	16.71
4	533.47	44.53 QP	46.00	-1.47	1.00 V	196	25.37	19.17
5	578.18	38.47 QP	46.00	-7.53	1.00 V	328	18.24	20.23
6	778.40	39.54 QP	46.00	-6.46	1.00 V	169	16.17	23.36

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

Below 1GHz Worst-Case Data for A-308 antenna with 8dBi gain

EUT	Dual Band Outdoor Access Point	MEASUREMENT DETAIL	
MODEL	P-780	FREQUENCY RANGE	Below 1000MHz
CHANNEL	Channel 11	DETECTOR FUNCTION	Quasi-Peak
MODULATION TYPE	BPSK	ENVIRONMENTAL CONDITIONS	23deg. C, 65%RH, 991hPa
TRANSFER RATE	6Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TEST MODE	2	TESTED BY	Brad Wu

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	424.61	40.45 QP	46.00	-5.55	2.00 H	40	23.09	17.36
2	533.47	44.12 QP	46.00	-1.88	1.50 H	37	24.95	19.17
3	578.18	39.36 QP	46.00	-6.64	1.25 H	202	19.13	20.23
4	667.60	38.45 QP	46.00	-7.55	1.00 H	184	16.79	21.66
5	733.69	41.29 QP	46.00	-4.71	1.00 H	250	18.45	22.84
6	778.40	41.67 QP	46.00	-4.33	1.00 H	205	18.31	23.36

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	61.10	34.90 QP	40.00	-5.10	1.00 V	283	21.41	13.49
2	133.03	34.17 QP	43.50	-9.33	1.00 V	256	20.28	13.89
3	333.25	41.64 QP	46.00	-4.36	1.00 V	109	26.49	15.15
4	554.85	44.27 QP	46.00	-1.73	1.00 V	343	24.68	19.59
5	757.01	39.05 QP	46.00	-6.95	1.00 V	184	15.77	23.27
6	799.78	42.08 QP	46.00	-3.92	1.00 V	181	18.62	23.46

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

802.11b DSSS modulation for A-807 antenna with 4.5dBi gain

EUT	Dual Band Outdoor Access Point	MEASUREMENT DETAIL	
MODEL	P-780	FREQUENCY RANGE	1 ~ 25GHz
CHANNEL	Channel 1	DETECTOR FUNCTION	Peak(PK) Average (AV)
MODULATION TYPE	CCK	ENVIRONMENTAL CONDITIONS	21deg. C, 64%RH, 991hPa
TRANSFER RATE	11Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TEST MODE	1	TESTED BY	Brad Wu

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	2292.00	45.23 PK	74.00	-28.77	1.15 H	214	13.73	31.50
1	2292.00	41.26 AV	54.00	-12.74	1.15 H	214	9.76	31.50
2	2390.00	46.16 PK	74.00	-27.84	2.13 H	273	14.29	31.87
2	2390.00	42.24 AV	54.00	-11.76	2.13 H	273	10.37	31.87
3	*2412.00	102.00 PK			2.13 H	273	70.04	31.96
3	*2412.00	98.08 AV			2.13 H	273	66.12	31.96
4	4824.00	49.28 PK	74.00	-24.72	1.07 H	211	11.45	37.83

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	2292.00	48.51 PK	74.00	-25.49	1.06 V	125	17.01	31.50
1	2292.00	43.77 AV	54.00	-10.23	1.06 V	125	12.27	31.50
2	2390.00	53.12 PK	74.00	-20.88	1.21 V	336	21.25	31.87
2	2390.00	49.29 AV	54.00	-4.71	1.21 V	336	17.42	31.87
3	*2412.00	108.96 PK			1.21 V	336	77.00	31.96
3	*2412.00	105.13 AV			1.21 V	336	73.17	31.96
4	4824.00	51.13 PK	74.00	-22.87	1.12 V	256	13.30	37.83
4	4824.00	38.19 AV	54.00	-15.81	1.12 V	256	0.36	37.83

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. The limit value is defined as per 15.247
6. " * " : Fundamental frequency

EUT	Dual Band Outdoor Access Point	MEASUREMENT DETAIL	
MODEL	P-780	FREQUENCY RANGE	1 ~ 25GHz
CHANNEL	Channel 6	DETECTOR FUNCTION	Peak(PK) Average (AV)
MODULATION TYPE	CCK	ENVIRONMENTAL CONDITIONS	21deg. C, 64%RH, 991hPa
TRANSFER RATE	11Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TEST MODE	1	TESTED BY	Brad Wu

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	2268.00	50.23 PK	74.00	-23.77	1.15 H	160	18.83	31.40
1	2268.00	46.38 AV	54.00	-7.62	1.15 H	160	14.98	31.40
2	*2437.00	103.54 PK			1.72 H	288	71.48	32.06
2	*2437.00	99.18 AV			1.72 H	288	67.12	32.06
3	4874.00	50.68 PK	74.00	-23.32	1.34 H	198	12.70	37.98
3	4874.00	37.59 AV	54.00	-16.41	1.34 H	198	-0.39	37.98

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	2268.00	47.53 PK	74.00	-26.47	1.28 V	253	16.13	31.40
2	*2437.00	108.58 PK			1.13 V	354	76.52	32.06
2	*2437.00	104.89 AV			1.13 V	354	72.83	32.06
3	4874.00	50.16 PK	74.00	-23.84	1.12 V	190	12.18	37.98
3	4874.00	36.27 AV	54.00	-17.73	1.12 V	190	-1.71	37.98

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. The limit value is defined as per 15.247
6. " * " : Fundamental frequency

EUT	Dual Band Outdoor Access Point	MEASUREMENT DETAIL	
MODEL	P-780	FREQUENCY RANGE	1 ~ 25GHz
CHANNEL	Channel 11	DETECTOR FUNCTION	Peak(PK) Average (AV)
MODULATION TYPE	CCK	ENVIRONMENTAL CONDITIONS	21deg. C, 64%RH, 991hPa
TRANSFER RATE	11Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TEST MODE	1	TESTED BY	Brad Wu

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	2242.00	49.88 PK	74.00	-24.12	1.11 H	183	18.58	31.30
2	*2462.00	103.35 PK			1.87 H	116	71.19	32.16
2	*2462.00	99.41 AV			1.87 H	116	67.25	32.16
3	2483.50	44.58 PK	74.00	-29.42	1.87 H	116	12.34	32.24
3	2483.50	40.64 AV	54.00	-13.36	1.87 H	116	8.40	32.24
4	4924.00	48.79 PK	74.00	-25.21	1.15 H	198	10.65	38.14

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	2242.00	51.69 PK	74.00	-22.31	1.14 V	99	20.39	31.30
1	2242.00	45.88 AV	54.00	-8.12	1.14 V	99	14.58	31.30
2	*2462.00	108.13 PK			1.20 V	1	75.97	32.16
2	*2462.00	104.25 AV			1.20 V	1	72.09	32.16
3	2483.50	49.36 PK	74.00	-24.64	1.20 V	1	17.12	32.24
3	2483.50	45.48 AV	54.00	-8.52	1.20 V	1	13.24	32.24
4	4924.00	49.11 PK	74.00	-24.89	1.36 V	251	10.97	38.14
4	4924.00	37.28 AV	54.00	-16.72	1.36 V	251	-0.86	38.14

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. The limit value is defined as per 15.247
6. " * " : Fundamental frequency

802.11b DSSS modulation for A-308 antenna with 8dBi gain

EUT	Dual Band Outdoor Access Point	MEASUREMENT DETAIL	
MODEL	P-780	FREQUENCY RANGE	1 ~ 25GHz
CHANNEL	Channel 1	DETECTOR FUNCTION	Peak(PK) Average (AV)
MODULATION TYPE	CCK	ENVIRONMENTAL CONDITIONS	21deg. C, 64%RH, 991hPa
TRANSFER RATE	11Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TEST MODE	2	TESTED BY	Brad Wu

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	2292.00	45.16 PK	74.00	-28.84	1.15 H	246	13.66	31.50
1	2292.00	40.38 AV	54.00	-13.62	1.15 H	246	8.88	31.50
2	2390.00	36.42 PK	74.00	-37.58	1.26 H	250	4.55	31.87
2	2390.00	32.02 AV	54.00	-21.98	1.26 H	250	0.15	31.87
3	*2412.00	92.26 PK			1.26 H	250	60.30	31.96
3	*2412.00	87.86 AV			1.26 H	250	55.90	31.96
4	4824.00	49.16 PK	74.00	-24.84	1.04 H	168	11.33	37.83
4	4824.00	36.20 AV	54.00	-17.80	1.04 H	168	-1.63	37.83

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	2292.00	47.29 PK	74.00	-26.71	1.04 V	94	15.79	31.50
1	2292.00	42.41 AV	54.00	-11.59	1.04 V	94	10.91	31.50
2	2390.00	55.67 PK	74.00	-18.33	1.19 V	216	23.80	31.87
2	2390.00	51.95 AV	54.00	-2.05	1.19 V	216	20.08	31.87
3	*2412.00	111.01 PK			1.19 V	216	79.05	31.96
3	*2412.00	107.29 AV			1.19 V	216	75.33	31.96
4	4824.00	50.14 PK	74.00	-23.86	1.05 V	196	12.31	37.83
4	4824.00	37.02 AV	54.00	-16.98	1.05 V	196	-0.81	37.83

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. The limit value is defined as per 15.247
6. " * " : Fundamental frequency

EUT	Dual Band Outdoor Access Point	MEASUREMENT DETAIL	
MODEL	P-780	FREQUENCY RANGE	1 ~ 25GHz
CHANNEL	Channel 6	DETECTOR FUNCTION	Peak(PK) Average (AV)
MODULATION TYPE	CCK	ENVIRONMENTAL CONDITIONS	21deg. C, 64%RH, 991hPa
TRANSFER RATE	11Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TEST MODE	2	TESTED BY	Brad Wu

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	2268.00	49.18 PK	74.00	-24.82	1.10 H	143	17.78	31.40
2	*2437.00	90.98 PK			1.40 H	126	58.92	32.06
2	*2437.00	87.03 AV			1.40 H	126	54.97	32.06
3	4874.00	50.16 PK	74.00	-23.84	1.24 H	213	12.18	37.98
3	4874.00	37.11 AV	54.00	-16.89	1.24 H	213	-0.87	37.98

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	2268.00	52.16 PK	74.00	-21.84	1.14 V	192	20.76	31.40
1	2268.00	48.67 AV	54.00	-5.33	1.14 V	192	17.27	31.40
2	*2437.00	111.98 PK			1.00 V	318	79.92	32.06
2	*2437.00	108.08 AV			1.00 V	318	76.02	32.06
3	4874.00	51.23 PK	74.00	-22.77	1.04 V	215	13.25	37.98
3	4874.00	37.88 AV	54.00	-16.12	1.04 V	215	-0.10	37.98

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. The limit value is defined as per 15.247
6. " * " : Fundamental frequency

EUT	Dual Band Outdoor Access Point	MEASUREMENT DETAIL	
MODEL	P-780	FREQUENCY RANGE	1 ~ 25GHz
CHANNEL	Channel 11	DETECTOR FUNCTION	Peak(PK) Average (AV)
MODULATION TYPE	CCK	ENVIRONMENTAL CONDITIONS	21deg. C, 64%RH, 991hPa
TRANSFER RATE	11Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TEST MODE	2	TESTED BY	Brad Wu

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	2242.00	50.14 PK	74.00	-23.86	1.14 H	162	18.84	31.30
1	2242.00	44.18 AV	54.00	-9.82	1.14 H	162	12.88	31.30
2	*2462.00	90.69 PK			1.21 H	238	58.53	32.16
2	*2462.00	86.89 AV			1.21 H	238	54.73	32.16
3	2483.50	31.92 PK	74.00	-42.08	1.21 H	238	-0.32	32.24
4	4924.00	47.68 PK	74.00	-26.32	1.04 H	211	9.54	38.14

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	2242.00	52.63 PK	74.00	-21.37	1.02 V	112	21.33	31.30
1	2242.00	46.57 AV	54.00	-7.43	1.02 V	112	15.27	31.30
2	*2462.00	111.31 PK			1.17 V	194	79.15	32.16
2	*2462.00	107.39 AV			1.17 V	194	75.23	32.16
3	2483.50	52.54 PK	74.00	-21.46	1.17 V	194	20.30	32.24
3	2483.50	48.62 AV	54.00	-5.38	1.17 V	194	16.38	32.24
4	4924.00	49.36 PK	74.00	-24.64	1.07 V	158	11.22	38.14
4	4924.00	36.31 AV	54.00	-17.69	1.07 V	158	-1.83	38.14

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. The limit value is defined as per 15.247
6. " * " : Fundamental frequency

802.11g OFDM modulation for A-807 antenna with 4.5dBi gain

EUT	Dual Band Outdoor Access Point	MEASUREMENT DETAIL	
MODEL	P-780	FREQUENCY RANGE	1 ~ 25GHz
CHANNEL	Channel 1	DETECTOR FUNCTION	Peak(PK) Average (AV)
MODULATION TYPE	BPSK	ENVIRONMENTAL CONDITIONS	21deg. C, 64%RH, 991hPa
TRANSFER RATE	6Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TEST MODE	1	TESTED BY	Brad Wu

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	2292.00	50.16 PK	74.00	-23.84	1.57 H	213	18.66	31.50
1	2292.00	42.35 AV	54.00	-11.65	1.57 H	213	10.85	31.50
2	2390.00	53.89 PK	74.00	-20.11	1.65 H	99	22.02	31.87
2	2390.00	43.43 AV	54.00	-10.57	1.65 H	99	11.56	31.87
3	*2412.00	101.06 PK			1.65 H	99	69.10	31.96
3	*2412.00	90.60 AV			1.65 H	99	58.64	31.96
4	4824.00	49.16 PK	74.00	-24.84	1.01 H	195	11.33	37.83

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	2292.00	59.16 PK	74.00	-14.84	1.55 V	9	27.66	31.50
1	2292.00	51.38 AV	54.00	-2.62	1.55 V	9	19.88	31.50
2	2390.00	59.24 PK	74.00	-14.76	1.17 V	2	27.37	31.87
2	2390.00	48.77 AV	54.00	-5.23	1.17 V	2	16.90	31.87
3	*2412.00	106.41 PK			1.17 V	2	74.45	31.96
3	*2412.00	95.94 AV			1.17 V	2	63.98	31.96
4	4824.00	49.16 PK	74.00	-24.84	1.09 V	227	11.33	37.83
4	4824.00	36.57 AV	54.00	-17.43	1.09 V	227	-1.26	37.83

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. The limit value is defined as per 15.247
6. " * " : Fundamental frequency

EUT	Dual Band Outdoor Access Point	MEASUREMENT DETAIL	
MODEL	P-780	FREQUENCY RANGE	1 ~ 25GHz
CHANNEL	Channel 6	DETECTOR FUNCTION	Peak(PK) Average (AV)
MODULATION TYPE	BPSK	ENVIRONMENTAL CONDITIONS	21deg. C, 64%RH, 991hPa
TRANSFER RATE	6Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TEST MODE	1	TESTED BY	Brad Wu

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	2268.00	51.43 PK	74.00	-22.57	1.09 H	58	20.03	31.40
1	2268.00	46.88 AV	54.00	-7.12	1.09 H	58	15.48	31.40
2	*2437.00	102.37 PK			1.75 H	291	70.31	32.06
2	*2437.00	91.59 AV			1.75 H	291	59.53	32.06
3	4874.00	49.25 PK	74.00	-24.75	1.04 H	166	11.27	37.98
3	4874.00	36.77 AV	54.00	-17.23	1.04 H	166	-1.21	37.98

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	2268.00	52.19 PK	74.00	-21.81	1.14 V	196	20.79	31.40
1	2268.00	47.83 AV	54.00	-6.17	1.14 V	196	16.43	31.40
2	*2437.00	106.28 PK			1.13 V	354	74.22	32.06
2	*2437.00	95.69 AV			1.13 V	354	63.63	32.06
3	4874.00	49.26 PK	74.00	-24.74	1.13 V	97	11.28	37.98

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. The limit value is defined as per 15.247
6. " * " : Fundamental frequency

EUT	Dual Band Outdoor Access Point	MEASUREMENT DETAIL	
MODEL	P-780	FREQUENCY RANGE	1 ~ 25GHz
CHANNEL	Channel 11	DETECTOR FUNCTION	Peak(PK) Average (AV)
MODULATION TYPE	BPSK	ENVIRONMENTAL CONDITIONS	21deg. C, 64%RH, 991hPa
TRANSFER RATE	6Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TEST MODE	1	TESTED BY	Brad Wu

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	2242.00	49.88 PK	74.00	-24.12	1.24 H	336	18.58	31.30
2	*2462.00	100.29 PK			2.00 H	276	68.13	32.16
2	*2462.00	89.85 AV			2.00 H	276	57.69	32.16
3	2483.50	52.40 PK	74.00	-21.60	2.00 H	276	20.16	32.24
3	2483.50	41.96 AV	54.00	-12.04	2.00 H	276	9.72	32.24
4	4924.00	48.57 PK	74.00	-25.43	1.52 H	163	10.43	38.14

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	2242.00	52.16 PK	74.00	-21.84	1.07 V	215	20.86	31.30
1	2242.00	46.28 AV	54.00	-7.72	1.07 V	215	14.98	31.30
2	*2462.00	106.39 PK			1.14 V	5	74.23	32.16
2	*2462.00	95.89 AV			1.14 V	5	63.73	32.16
3	2483.50	58.50 PK	74.00	-15.50	1.14 V	5	26.26	32.24
3	2483.50	48.00 AV	54.00	-6.00	1.14 V	5	15.76	32.24
4	4924.00	49.56 PK	74.00	-24.44	1.14 V	211	11.42	38.14

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. The limit value is defined as per 15.247
6. " * " : Fundamental frequency

802.11g OFDM modulation for A-308 antenna with 8dBi gain

EUT	Dual Band Outdoor Access Point	MEASUREMENT DETAIL	
MODEL	P-780	FREQUENCY RANGE	1 ~ 25GHz
CHANNEL	Channel 1	DETECTOR FUNCTION	Peak(PK) Average (AV)
MODULATION TYPE	BPSK	ENVIRONMENTAL CONDITIONS	21deg. C, 64%RH, 991hPa
TRANSFER RATE	6Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TEST MODE	2	TESTED BY	Brad Wu

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	2292.00	52.31 PK	74.00	-21.69	1.09 H	156	20.81	31.50
1	2292.00	44.25 AV	54.00	-9.75	1.09 H	156	12.75	31.50
2	2390.00	49.46 PK	74.00	-24.54	1.11 H	218	17.59	31.87
2	2390.00	38.97 AV	54.00	-15.03	1.11 H	218	7.10	31.87
3	*2412.00	96.63 PK			1.11 H	218	64.67	31.96
3	*2412.00	86.14 AV			1.11 H	218	54.18	31.96
4	4824.00	49.61 PK	74.00	-24.39	1.07 H	211	11.78	37.83
4	4824.00	37.01 AV	54.00	-16.99	1.07 H	211	-0.82	37.83

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	2292.00	60.44 PK	74.00	-13.56	1.63 V	347	28.94	31.50
1	2292.00	52.24 AV	54.00	-1.76	1.63 V	347	20.74	31.50
2	2390.00	62.08 PK	74.00	-11.92	1.12 V	263	30.21	31.87
2	2390.00	52.29 AV	54.00	-1.71	1.12 V	263	20.42	31.87
3	*2412.00	109.25 PK			1.12 V	263	77.29	31.96
3	*2412.00	99.46 AV			1.12 V	263	67.50	31.96
4	4824.00	49.43 PK	74.00	-24.57	1.05 V	211	11.60	37.83
4	4824.00	36.78 AV	54.00	-17.22	1.05 V	211	-1.05	37.83

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. The limit value is defined as per 15.247
6. " * " : Fundamental frequency

EUT	Dual Band Outdoor Access Point	MEASUREMENT DETAIL	
MODEL	P-780	FREQUENCY RANGE	1 ~ 25GHz
CHANNEL	Channel 6	DETECTOR FUNCTION	Peak(PK) Average (AV)
MODULATION TYPE	BPSK	ENVIRONMENTAL CONDITIONS	21deg. C, 64%RH, 991hPa
TRANSFER RATE	6Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TEST MODE	2	TESTED BY	Brad Wu

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	2268.00	51.24 PK	74.00	-22.76	1.04 H	21	19.84	31.40
1	2268.00	47.19 AV	54.00	-6.81	1.04 H	21	15.79	31.40
2	*2437.00	94.76 PK			1.07 H	217	62.70	32.06
2	*2437.00	84.94 AV			1.07 H	217	52.88	32.06
3	4874.00	48.56 PK	74.00	-25.44	1.09 H	156	10.58	37.98
3	4874.00	35.91 AV	54.00	-18.09	1.09 H	156	-2.07	37.98

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	2268.00	54.77 PK	74.00	-19.23	1.05 V	308	23.37	31.40
1	2268.00	50.08 AV	54.00	-3.92	1.05 V	308	18.68	31.40
2	*2437.00	110.04 PK			1.29 V	221	77.98	32.06
2	*2437.00	99.83 AV			1.29 V	221	67.77	32.06
3	4874.00	50.16 PK	74.00	-23.84	1.05 V	221	12.18	37.98
3	4874.00	37.29 AV	54.00	-16.71	1.05 V	221	-0.69	37.98

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. The limit value is defined as per 15.247
6. " * " : Fundamental frequency

EUT	Dual Band Outdoor Access Point	MEASUREMENT DETAIL	
MODEL	P-780	FREQUENCY RANGE	1 ~ 25GHz
CHANNEL	Channel 11	DETECTOR FUNCTION	Peak(PK) Average (AV)
MODULATION TYPE	BPSK	ENVIRONMENTAL CONDITIONS	21deg. C, 64%RH, 991hPa
TRANSFER RATE	6Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TEST MODE	2	TESTED BY	Brad Wu

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	2242.00	51.26 PK	74.00	-22.74	1.06 H	215	19.96	31.30
1	2242.00	45.47 AV	54.00	-8.53	1.06 H	215	14.17	31.30
2	*2462.00	95.04 PK			1.06 H	215	62.88	32.16
2	*2462.00	85.75 AV			1.06 H	215	53.59	32.16
3	2483.50	47.15 PK	74.00	-26.85	1.06 H	215	14.91	32.24
3	2483.50	37.86 AV	54.00	-16.14	1.06 H	215	5.62	32.24
4	4924.00	48.26 PK	74.00	-25.74	1.14 H	218	10.12	38.14
4	4924.00	36.55 AV	54.00	-17.45	1.14 H	218	-1.59	38.14

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	2242.00	55.14 PK	74.00	-18.86	1.39 V	244	23.84	31.30
1	2242.00	49.48 AV	54.00	-4.52	1.39 V	244	18.18	31.30
2	*2462.00	109.97 PK			1.14 V	287	77.81	32.16
2	*2462.00	100.11 AV			1.14 V	287	67.95	32.16
3	2483.50	62.08 PK	74.00	-11.92	1.14 V	287	29.84	32.24
3	2483.50	52.22 AV	54.00	-1.78	1.14 V	287	19.98	32.24
4	4924.00	50.84 PK	74.00	-23.16	1.09 V	165	12.70	38.14
4	4924.00	38.45 AV	54.00	-15.55	1.09 V	165	0.31	38.14

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. The limit value is defined as per 15.247
6. " * " : 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.

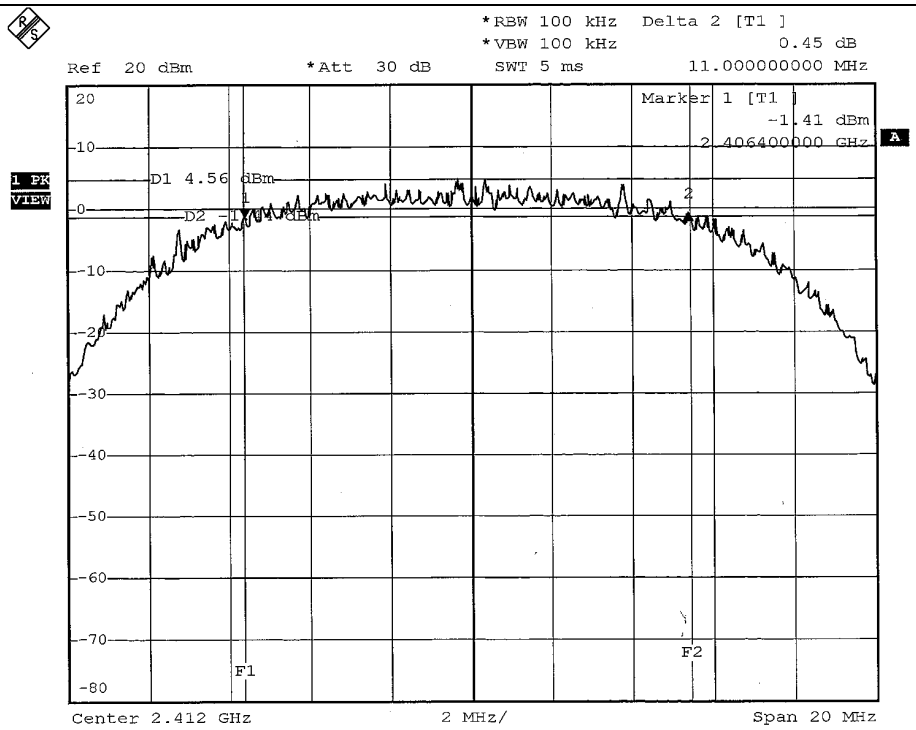
4.3.7 TEST RESULTS

802.11b DSSS modulation

EUT	Dual Band Outdoor Access Point	MODEL	P-780
MODULATION TYPE	CCK	TRANSFER RATE	11Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	24deg.C, 57%RH, 991hPa
TESTED BY	Gary Chang		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	11.00	0.5	PASS
6	2437	11.20	0.5	PASS
11	2462	11.24	0.5	PASS

CH 1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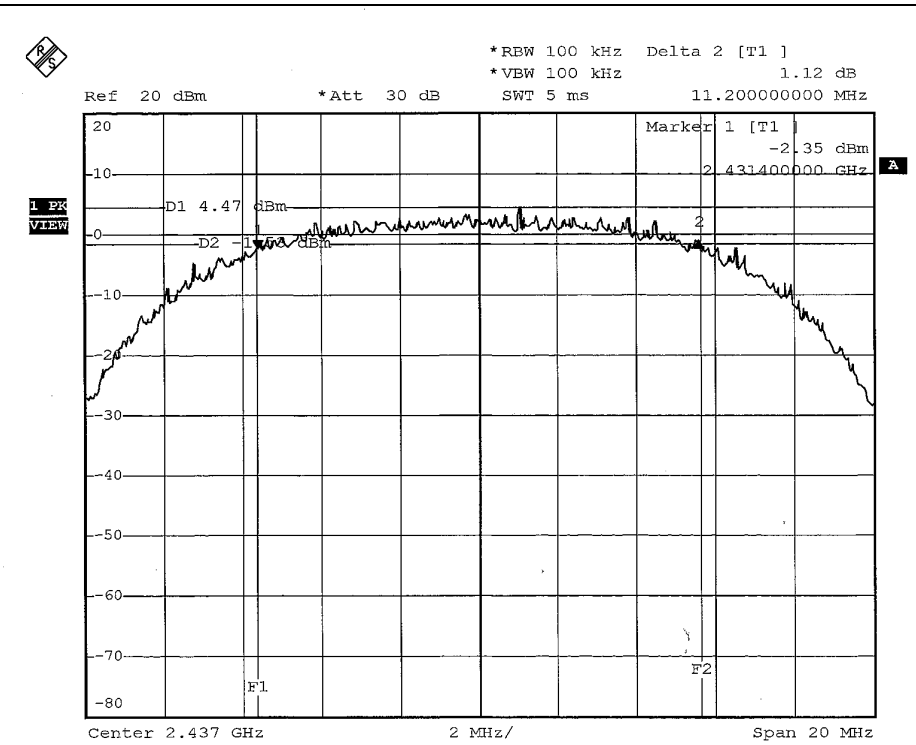
Delta 2 [T1]
*VBW 100 kHz
0.45 dB
Ref 20 dBm
*Att 30 dB
SWT 5 ms
11.000000000 MHz
Marker 1 [T1]
-1.41 dBm
2.406400000 GHz
1 PK VIEW
D1 4.56 dBm
D2 -1.41 dBm
F1
F2
Center 2.412 GHz
2 MHz/
Span 20 MHz

CH 6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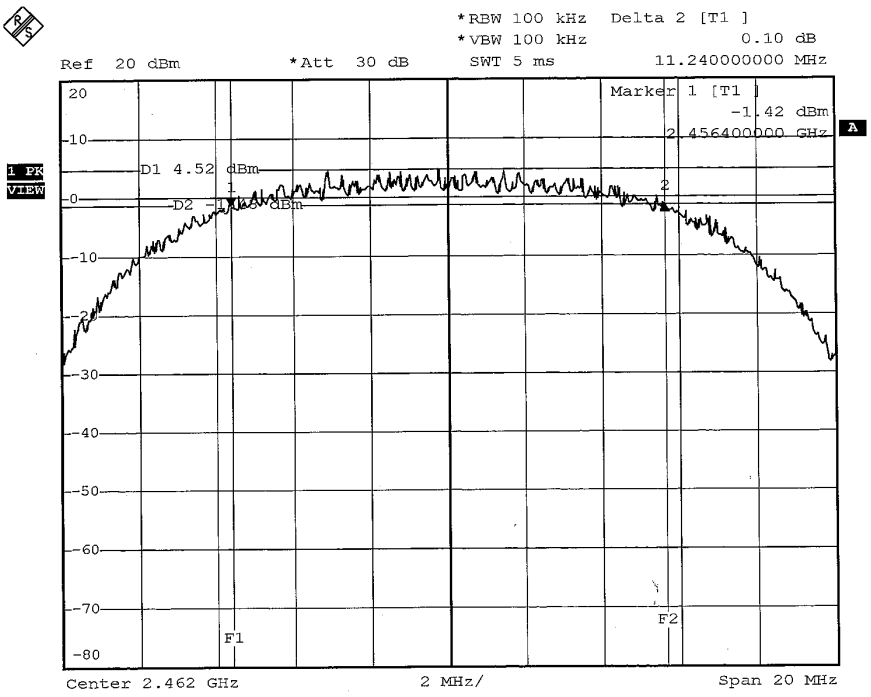
Delta 2 [T1]
*VBW 100 kHz
1.12 dB
Ref 20 dBm
*Att 30 dB
SWT 5 ms
11.200000000 MHz
Marker 1 [T1]
-2.35 dBm
2.431400000 GHz
1 PK VIEW
D1 4.47 dBm
D2 -1.41 dBm
F1
F2
Center 2.437 GHz
2 MHz/
Span 20 MHz

CH 11

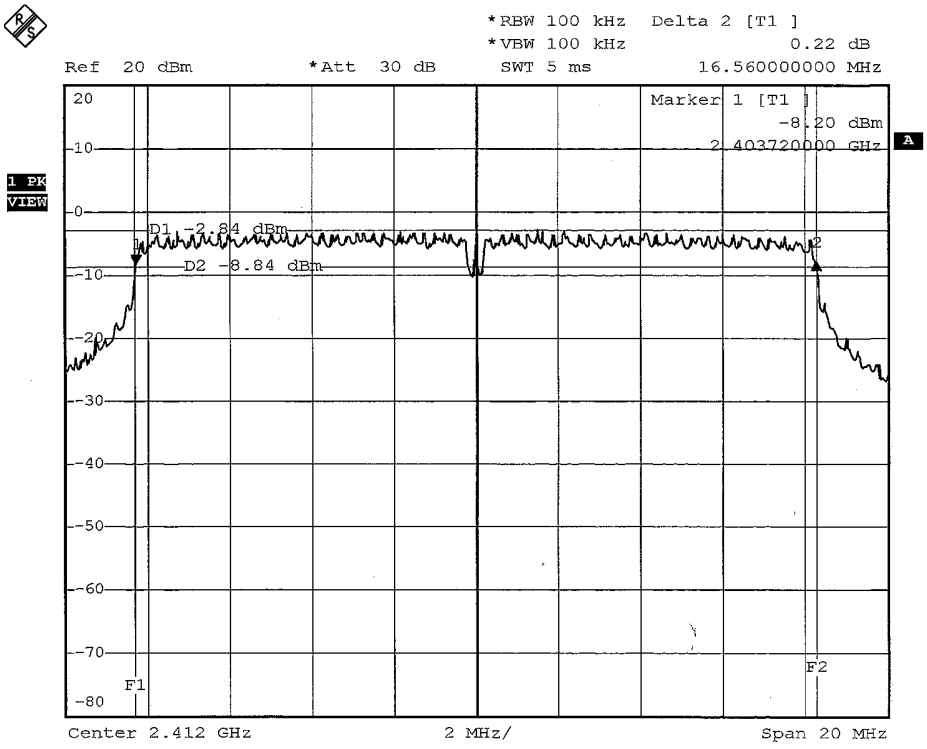

*RBW 100 kHz
*VBW 100 kHz
SWT 5 ms
Delta 2 [T1]
0.10 dB
11.240000000 MHz
Ref 20 dBm
*Att 30 dB
Marker 1 [T1]
-1.42 dBm
2.456400000 GHz
1 PK
VIEW
D1 4.52 dBm
D2 -1.46 dBm
F1
F2
Center 2.462 GHz
2 MHz/
Span 20 MHz

802.11g OFDM modulation

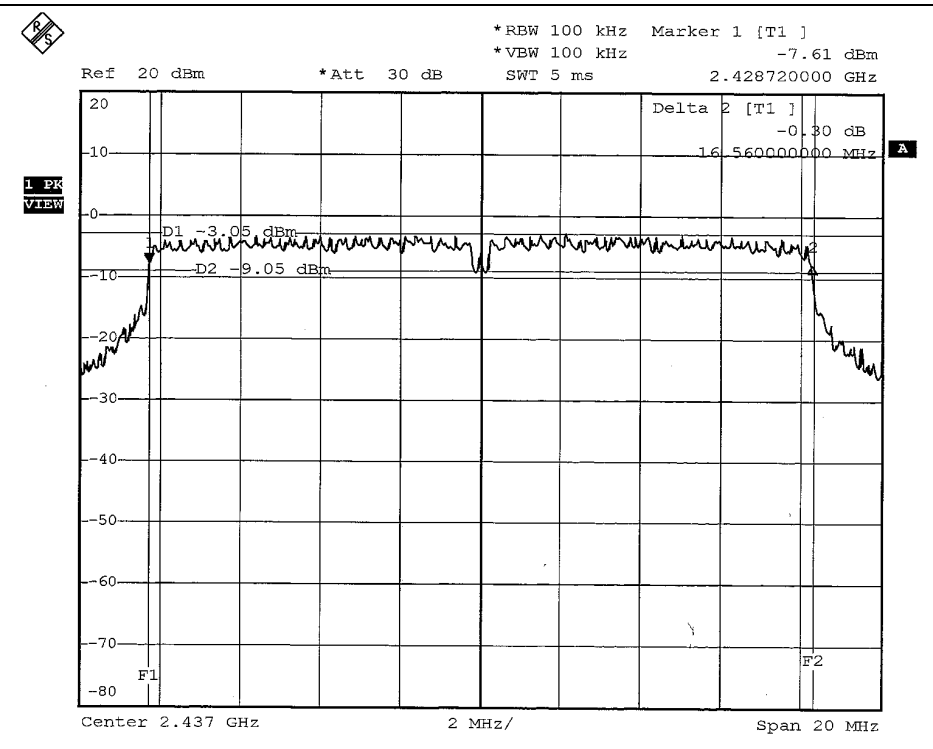
EUT	Dual Band Outdoor Access Point	**MODEL**	P-780
MODULATION TYPE	BPSK	**TRANSFER RATE**	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	24deg.C, 57%RH, 991hPa
TESTED BY	Gary Chang		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	16.56	0.5	PASS
6	2437	16.56	0.5	PASS
11	2462	16.56	0.5	PASS

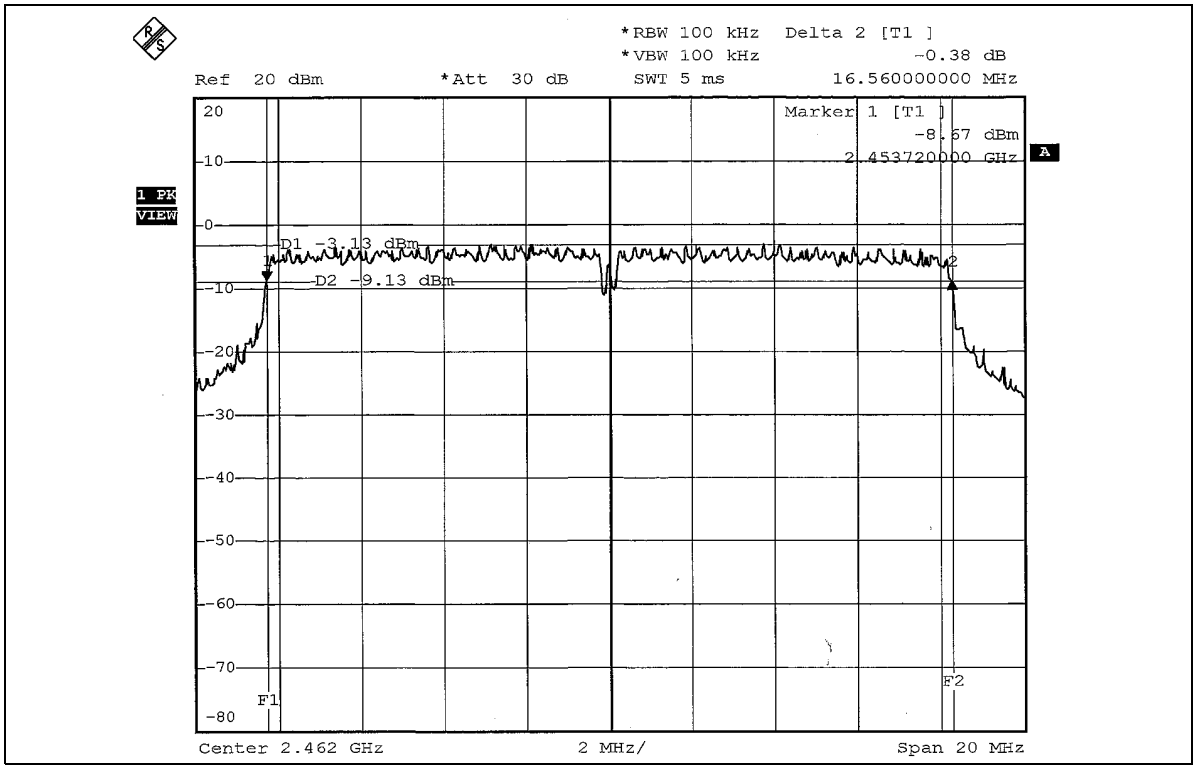
CH 1


*RBW 100 kHz
*VBW 100 kHz
SWT 5 ms
Delta 2 [T1]
0.22 dB
16.560000000 MHz
Ref 20 dBm
*Att 30 dB
Marker 1 [T1]
-8.20 dBm
2.403720000 GHz
1 PK
VIEW
D1 -2.84 dBm
D2 -8.84 dBm
F1
F2
Center 2.412 GHz
2 MHz/
Span 20 MHz

CH 6


*RBW 100 kHz
*VBW 100 kHz
SWT 5 ms
Marker 1 [T1]
-7.61 dBm
2.428720000 GHz
Ref 20 dBm
*Att 30 dB
Delta 2 [T1]
-0.30 dB
16.560000000 MHz
1 PK
VIEW
D1 -3.05 dBm
D2 -9.05 dBm
F1
F2
Center 2.437 GHz
2 MHz/
Span 20 MHz

CH 11


*RBW 100 kHz
*VBW 100 kHz
Delta 2 [T1]
-0.38 dB
Ref 20 dBm
*Att 30 dB
SWT 5 ms
16.560000000 MHz
Marker 1 [T1]
-8.57 dBm
2.453720000 GHz
1 PK
VIEW
A
D1 -3.13 dBm
D2 -9.13 dBm
F1
F2
Center 2.462 GHz
2 MHz/
Span 20 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, 2005
TEKTRONIX OSCILLOSCOPE	TDS 1012	C019167	Feb. 01, 2006
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

802.11b DSSS modulation

EUT	Dual Band Outdoor Access Point	**MODEL**	P-780
MODULATION TYPE	CCK	**TRANSFER RATE**	11Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	24deg.C, 57%RH, 991hPa
TESTED BY	Gary Chang		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	28.314	14.52	28	PASS
6	2437	28.576	14.56	28	PASS
11	2462	28.249	14.51	28	PASS

Note: According to 15.247(b) (4), the maximum antenna gain 8dBi is higher than 6dBi, so limit of peak power shall be reduced by 2dBi.

802.11g OFDM modulation

EUT	Dual Band Outdoor Access Point	**MODEL**	P-780
MODULATION TYPE	BPSK	**TRANSFER RATE**	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	24deg.C, 57%RH, 991hPa
TESTED BY	Gary Chang		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	41.687	16.20	28	PASS
6	2437	42.170	16.25	28	PASS
11	2462	42.364	16.27	28	PASS

Note: According to 15.247(b) (4), the maximum antenna gain 8dBi is higher than 6dBi, so limit of peak power shall be reduced by 2dBi.

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.

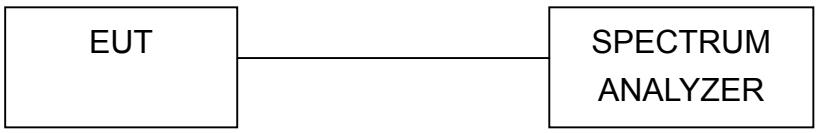
4.5.3 TEST PROCEDURE

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

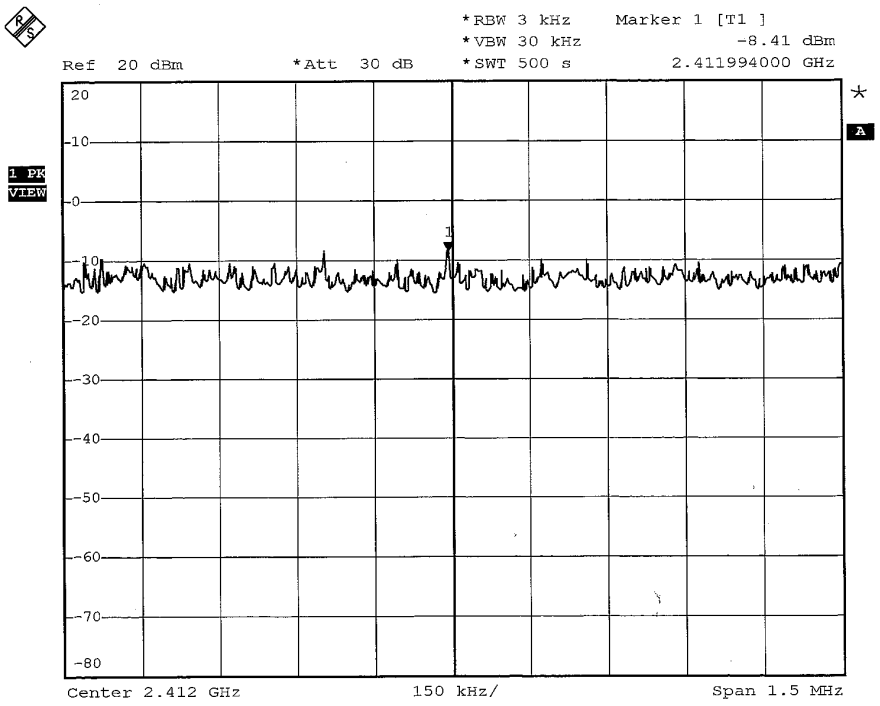
4.5.7 TEST RESULTS

802.11b DSSS modulation

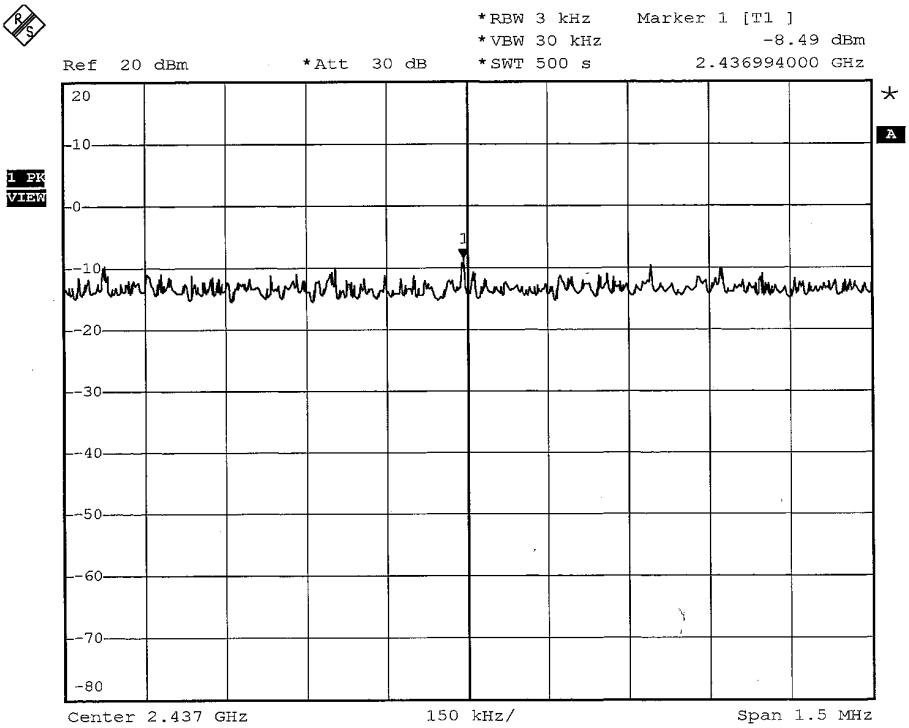
EUT	Dual Band Outdoor Access Point	**MODEL**	P-780
MODULATION TYPE	CCK	**TRANSFER RATE**	11Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	24deg.C, 57%RH, 991hPa
TESTED BY	Gary Chang		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-8.41	8	PASS
6	2437	-8.49	8	PASS
11	2462	-8.35	8	PASS

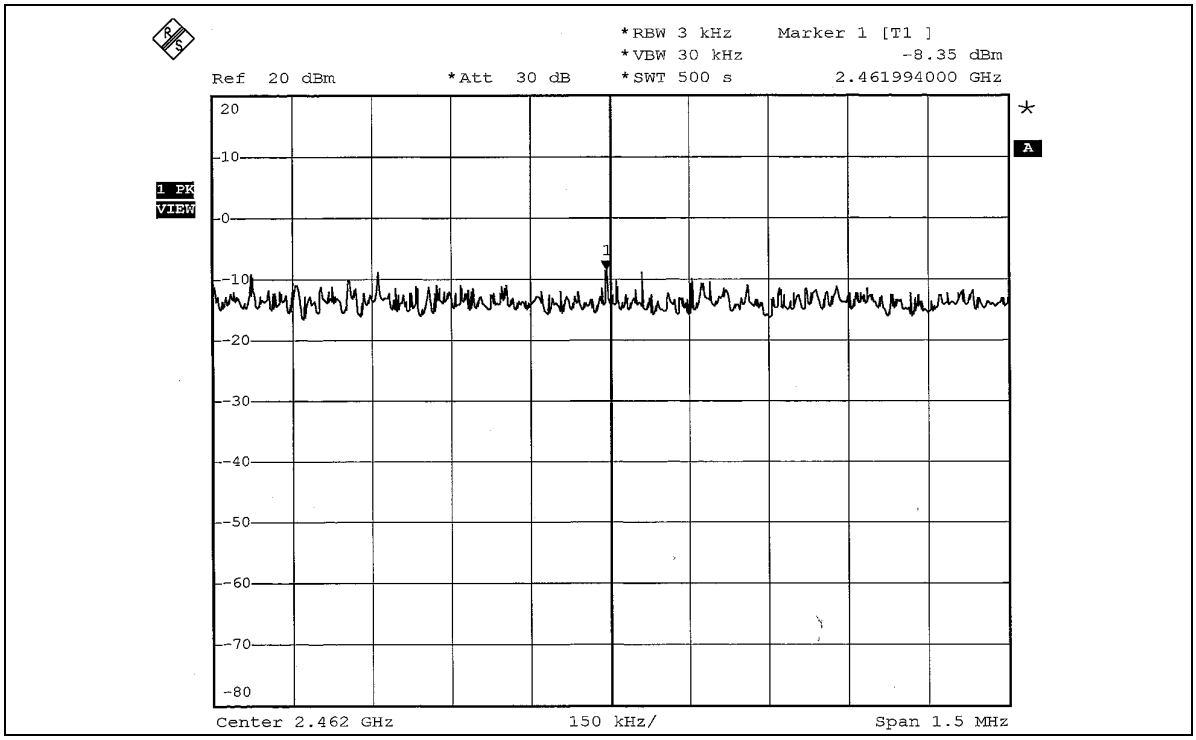
CH 1


*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-8.41 dBm
2.411994000 GHz
Ref 20 dBm
*Att 30 dB
1 PK
VIEW
A
20
-10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.412 GHz
150 kHz/
Span 1.5 MHz

CH 6


*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-8.49 dBm
2.436994000 GHz
Ref 20 dBm
*Att 30 dB
1 PK
VIEW
A
20
-10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.437 GHz
150 kHz/
Span 1.5 MHz

CH 11

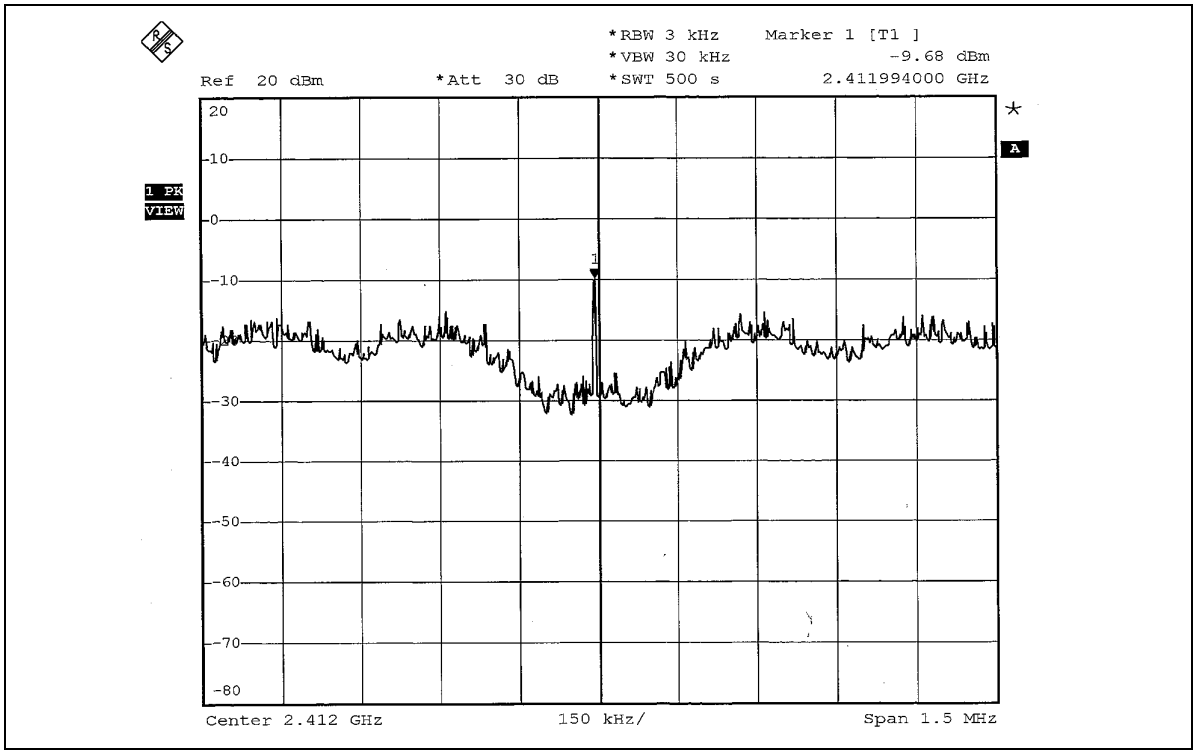

*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-8.35 dBm
2.461994000 GHz
Ref 20 dBm
*Att 30 dB
1 PK
VIEW
A
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.462 GHz
150 kHz/
Span 1.5 MHz

802.11g OFDM modulation

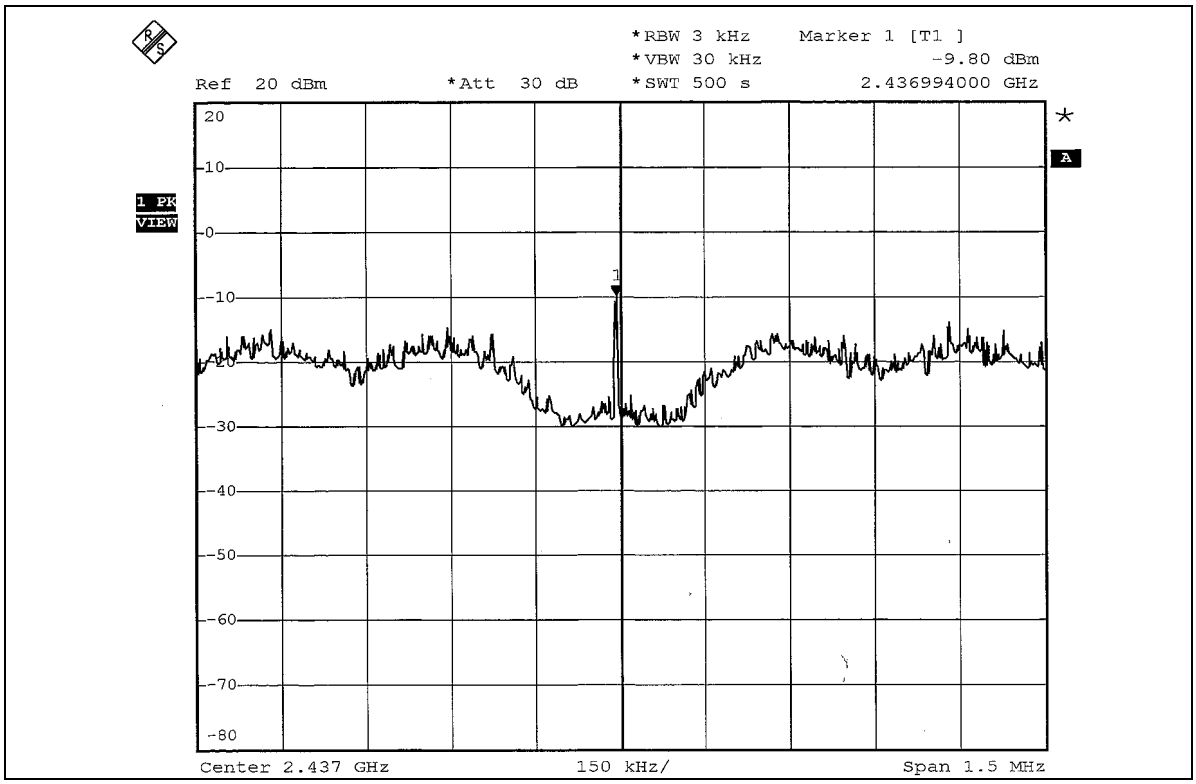
EUT	Dual Band Outdoor Access Point	**MODEL**	P-780
MODULATION TYPE	BPSK	**TRANSFER RATE**	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	24deg.C, 57%RH, 991hPa
TESTED BY	Gary Chang		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-9.68	8	PASS
6	2437	-9.80	8	PASS
11	2462	-9.51	8	PASS

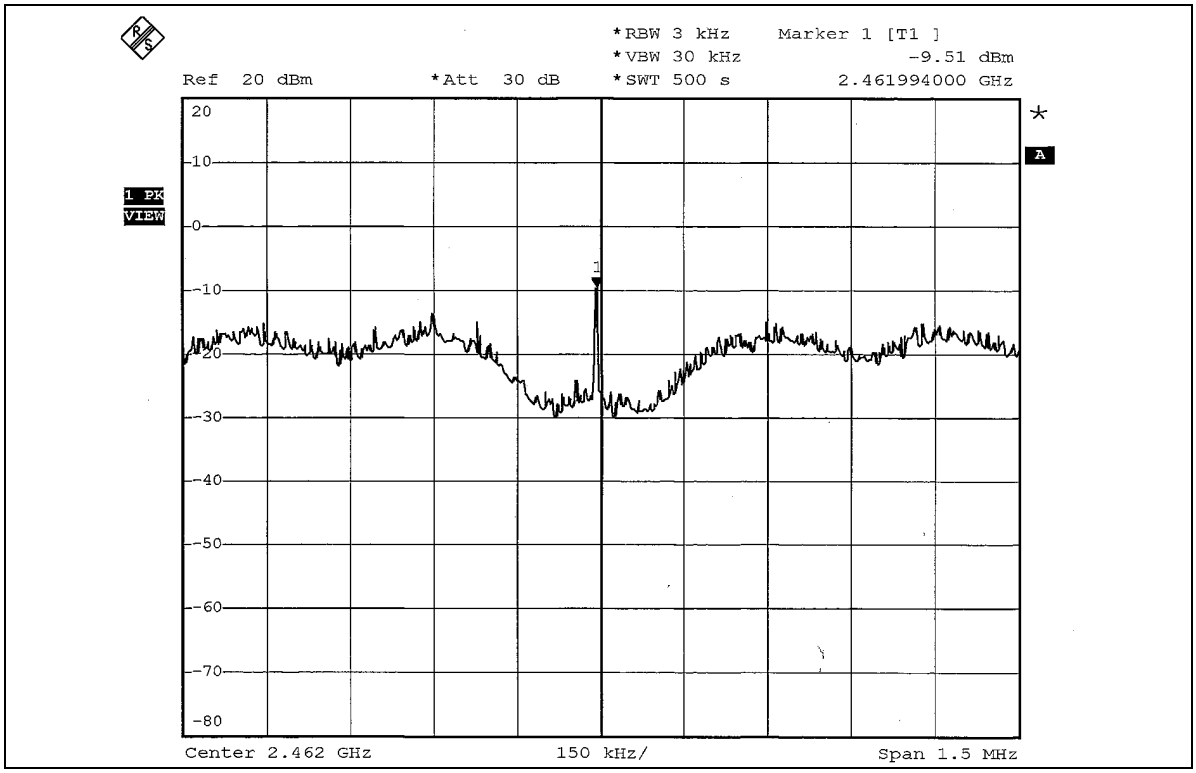
CH 1


*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-9.68 dBm
2.411994000 GHz
Ref 20 dBm
*Att 30 dB
1 PK
VIEW
A
20
-10
0
-10
-30
-40
-50
-60
-70
-80
Center 2.412 GHz
150 kHz/
Span 1.5 MHz

CH 6


*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-9.80 dBm
2.436994000 GHz
Ref 20 dBm
*Att 30 dB
1 PK
VIEW
A
20
-10
0
-10
-30
-40
-50
-60
-70
-80
Center 2.437 GHz
150 kHz/
Span 1.5 MHz

CH 11


*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-9.51 dBm
2.461994000 GHz
Ref 20 dBm
*Att 30 dB
1 PK
VIEW
A
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.462 GHz
150 kHz/
Span 1.5 MHz

4.6 BAND EDGES MEASUREMENT

4.6.1 LIMITS OF BAND EDGES MEASUREMENT

Below –20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

4.6.2 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.

4.6.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low lose cable. Set both RBW and VBW of spectrum analyzer to 100kHz with suitable frequency span including 100 MHz bandwidth from band edge. The band edges was measured and recorded.

The spectrum plots (Peak RBW=VBW=100kHz ; Average RBW=1MHz, VBW=10Hz) are attached on the following pages.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 EUT OPERATING CONDITION

Same as Item 4.3.6

4.6.6 TEST RESULTS

The spectrum plots are attached on the following 12 images. D2 line indicates the highest level, and D1 line indicates the 20dB offset below D2. It shows compliance with the requirement in part 15.247(d).

802.11b DSSS modulation

For A-807 antenna with 4.5dBi gain

NOTE 1: The band edge emission plot on page 70 shows 51.63dBc between carrier maximum power and local maximum emission in restrict band (2.3600GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 108.96dBuV/m (Peak), so the maximum field strength in restrict band is 108.96-51.63=57.33dBuV/m which is under 74dBuV/m limit.

The band edge emission plot of on page 70 shows 56.76dBc between carrier maximum power and local maximum emission in restrict band (2.3600GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 105.13dBuV/m (Average), so the maximum field strength in restrict band is 105.13-56.76=48.37dBuV/m which is under 54dBuV/m limit.

NOTE 2: The band edge emission plot on page 71 shows 53.10dBc between carrier maximum power and local maximum emission in restrict band (2.4900GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 111.13dBuV/m (Peak), so the maximum field strength in restrict band is 111.13-53.10=58.03dBuV/m which is under 74dBuV/m limit.

The band edge emission plot on page 72 shows 56.28dBc between carrier maximum power and local maximum emission in restrict band (2.4874GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 107.25dBuV/m (Average), so the maximum field strength in restrict band is 107.25-56.28=50.97dBuV/m which is under 54dBuV/m limit.

For A-308 antenna with 8dBi gain

NOTE 1: The band edge emission plot on page 70 shows 51.63dBc between carrier maximum power and local maximum emission in restrict band (2.3600GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 111.01dBuV/m (Peak), so the maximum field strength in restrict band is 111.01-51.63=59.38dBuV/m which is under 74dBuV/m limit.

The band edge emission plot of on page 70shows 56.76dBc between carrier maximum power and local maximum emission in restrict band (2.3600GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 107.29dBuV/m (Average), so the maximum field strength in restrict band is 107.29-56.76=50.53dBuV/m which is under 54dBuV/m limit.

NOTE 2: The band edge emission plot on page 71 shows 53.10dBc between carrier maximum power and local maximum emission in restrict band (2.4900GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 111.31dBuV/m (Peak), so the maximum field strength in restrict band is 111.31-53.10=58.21dBuV/m which is under 74dBuV/m limit.

The band edge emission plot on page 72 shows 56.28dBc between carrier maximum power and local maximum emission in restrict band (2.4874GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 107.39dBuV/m (Average), so the maximum field strength in restrict band is 107.39-56.28=51.11dBuV/m which is under 54dBuV/m limit.

802.11g OFDM modulation

For A-807 antenna with 4.5dBi gain

NOTE 1: The band edge emission plot on page 73 shows 42.35dBc between carrier maximum power and local maximum emission in restrict band (2.3892GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 106.41dBuV/m (Peak), so the maximum field strength in restrict band is 106.41-42.35=64.06dBuV/m which is under 74dBuV/m limit.

The band edge emission plot of on page 73 shows 47.24dBc between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 95.94dBuV/m (Average), so the maximum field strength in restrict band is 95.94-47.24=48.70dBuV/m which is under 54dBuV/m limit.

NOTE 2: The band edge emission plot on page 74 shows 44.06dBc between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 106.39dBuV/m (Peak), so the maximum field strength in restrict band is 106.39-44.06=62.33dBuV/m which is under 74dBuV/m limit.

The band edge emission plot on page 75 shows 48.91dBc between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 95.89dBuV/m (Average), so the maximum field strength in restrict band is 95.89-48.91=46.98dBuV/m which is under 54dBuV/m limit.

For A-308 antenna with 8dBi gain

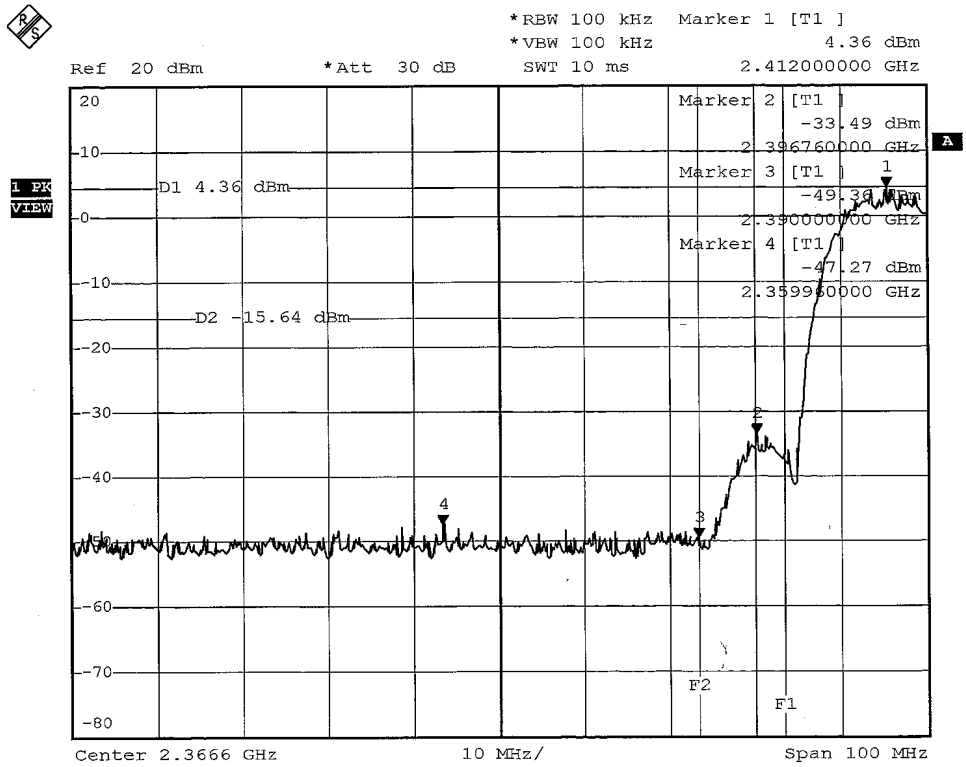
NOTE 1: The band edge emission plot on page 73 shows 42.35dBc between carrier maximum power and local maximum emission in restrict band (2.3892GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 109.25dBuV/m (Peak), so the maximum field strength in restrict band is 109.25-42.35=66.90dBuV/m which is under 74dBuV/m limit.

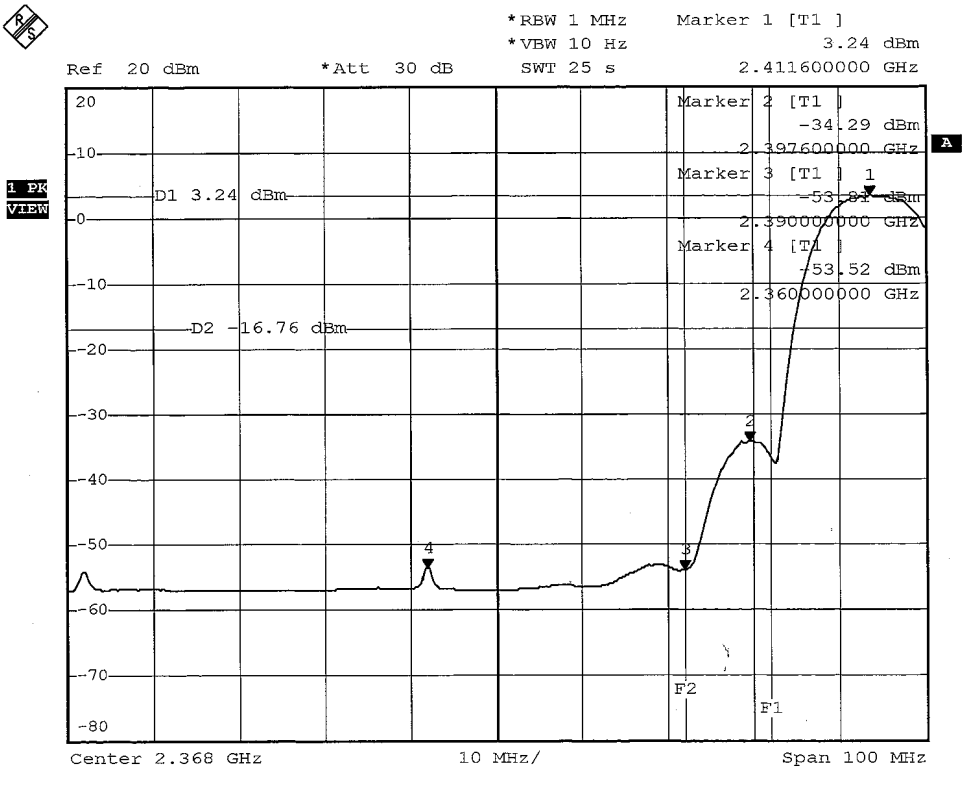
The band edge emission plot of on page 73 shows 47.24dBc between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 99.46dBuV/m (Average), so the maximum field strength in restrict band is 99.46-47.24=52.22dBuV/m which is under 54dBuV/m limit.

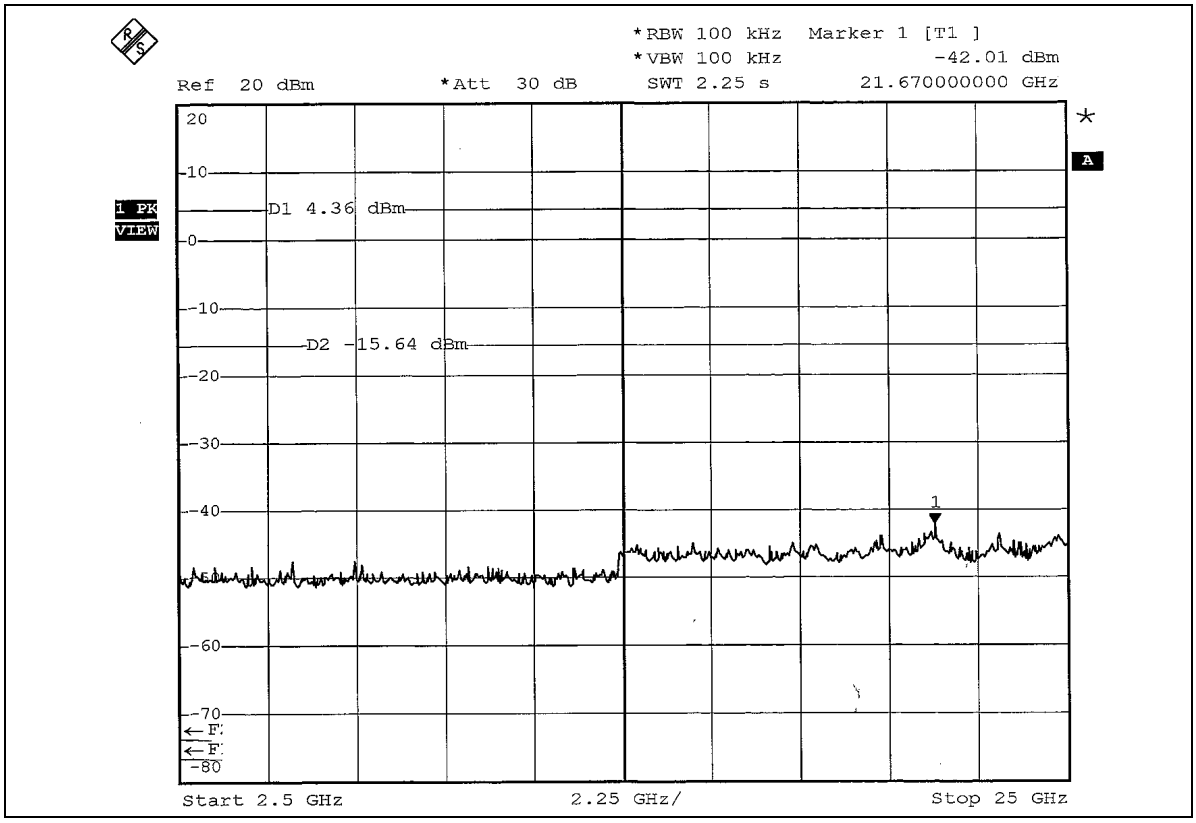
NOTE 2: The band edge emission plot on page 74 shows 44.06dBc between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 109.97dBuV/m (Peak), so the maximum field strength in restrict band is 109.97-44.06=65.91dBuV/m which is under 74dBuV/m limit.

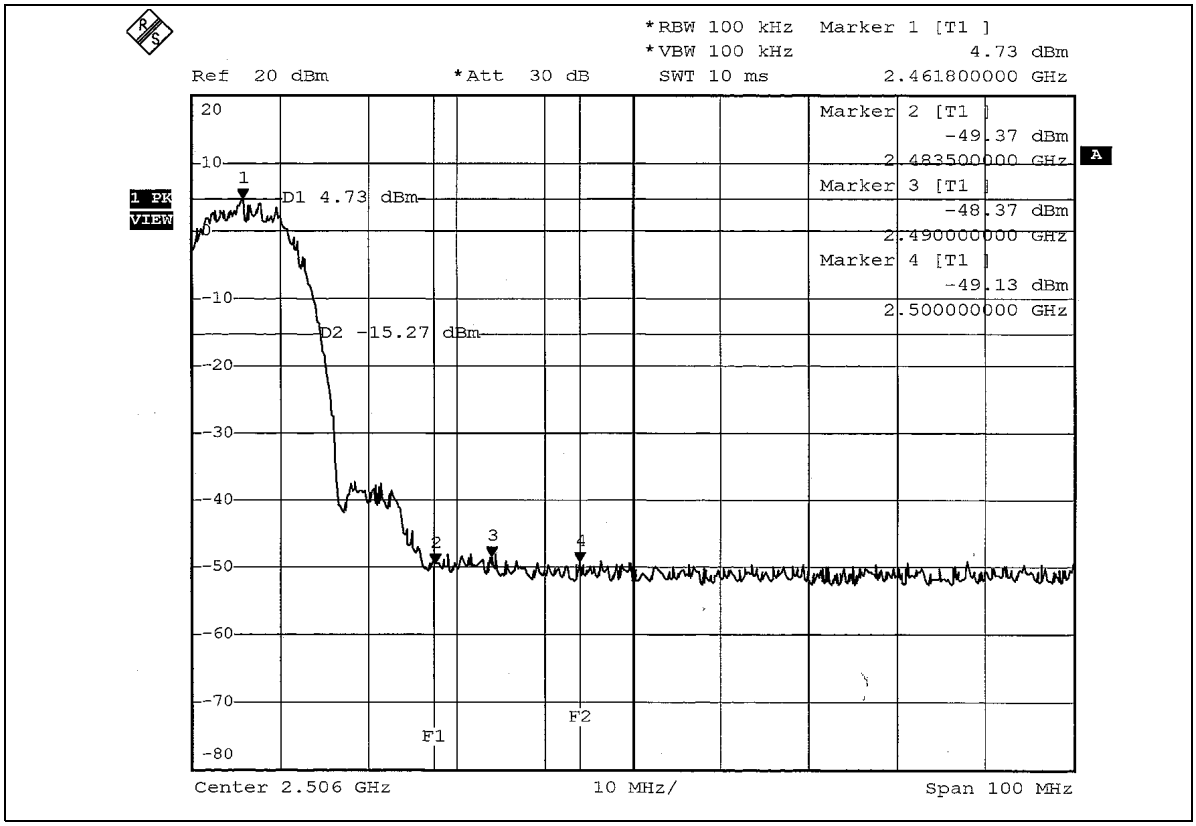
The band edge emission plot on page 75 shows 48.91dBc between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 100.11dBuV/m (Average), so the maximum field strength in restrict band is 100.11-48.91=51.20dBuV/m which is under 54dBuV/m limit.

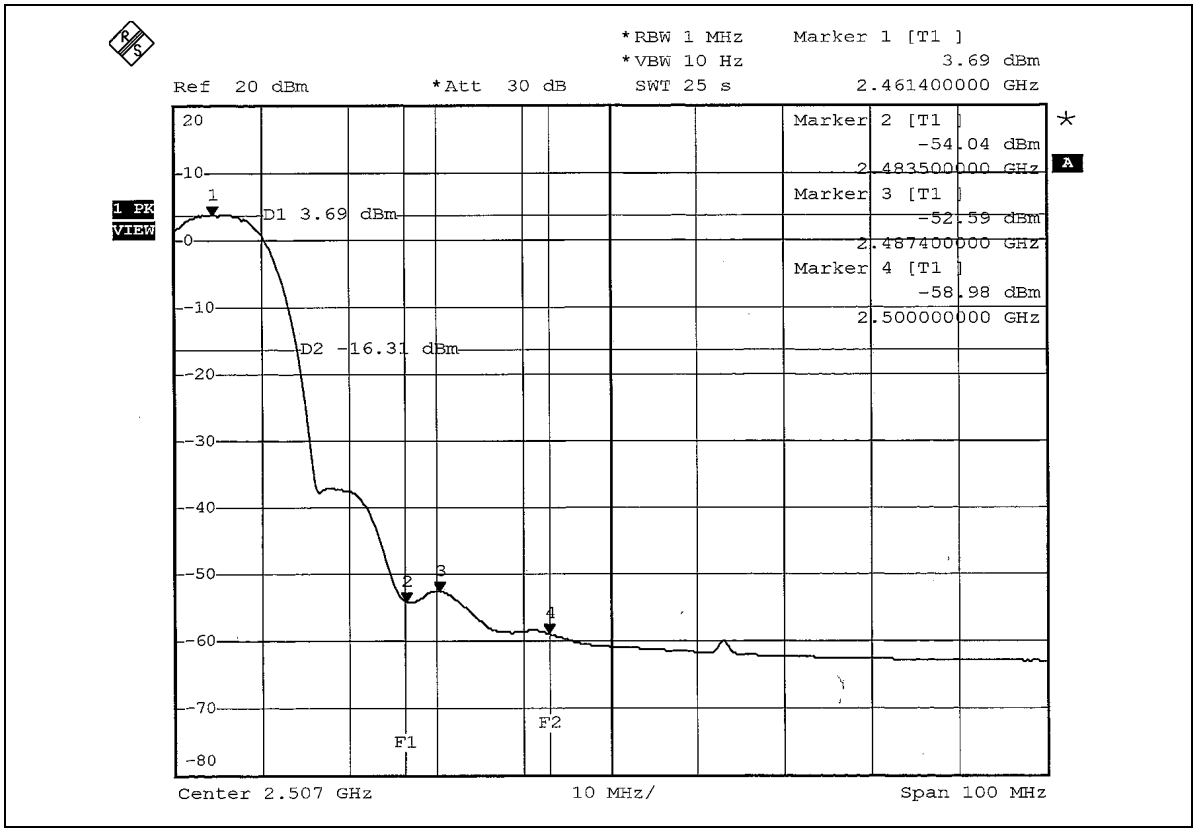
802.11b DSSS modulation

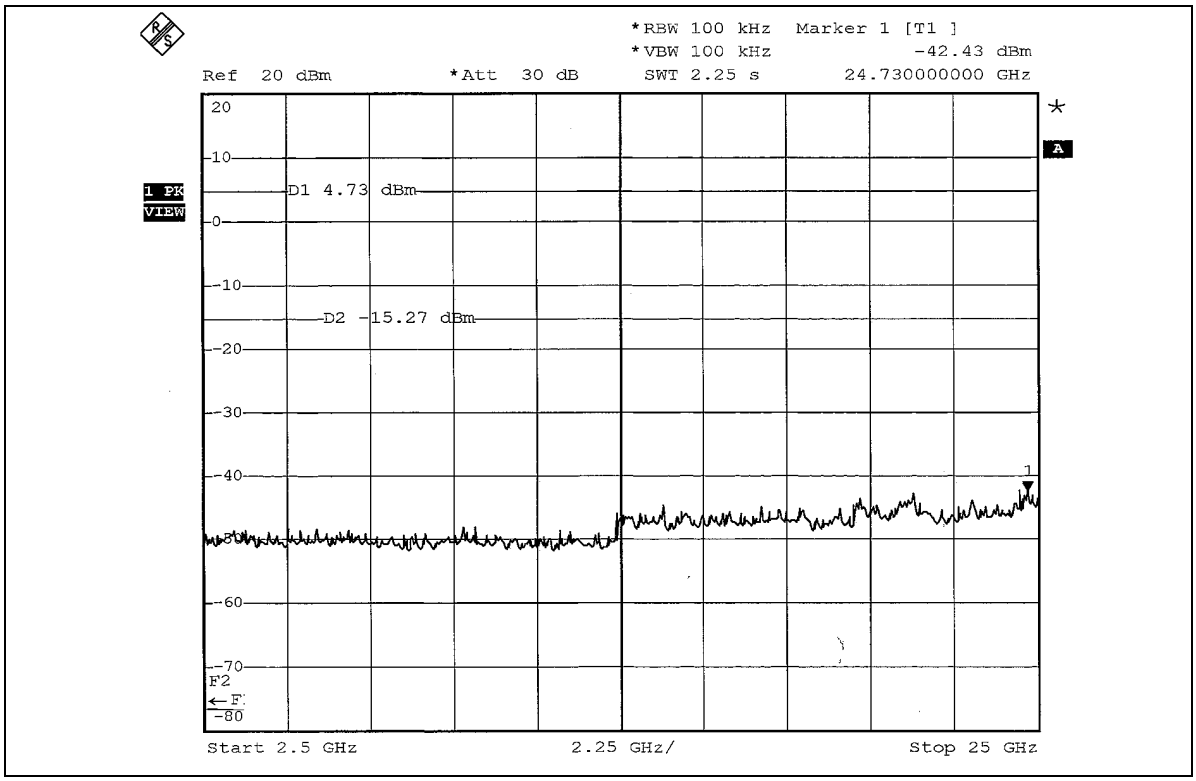




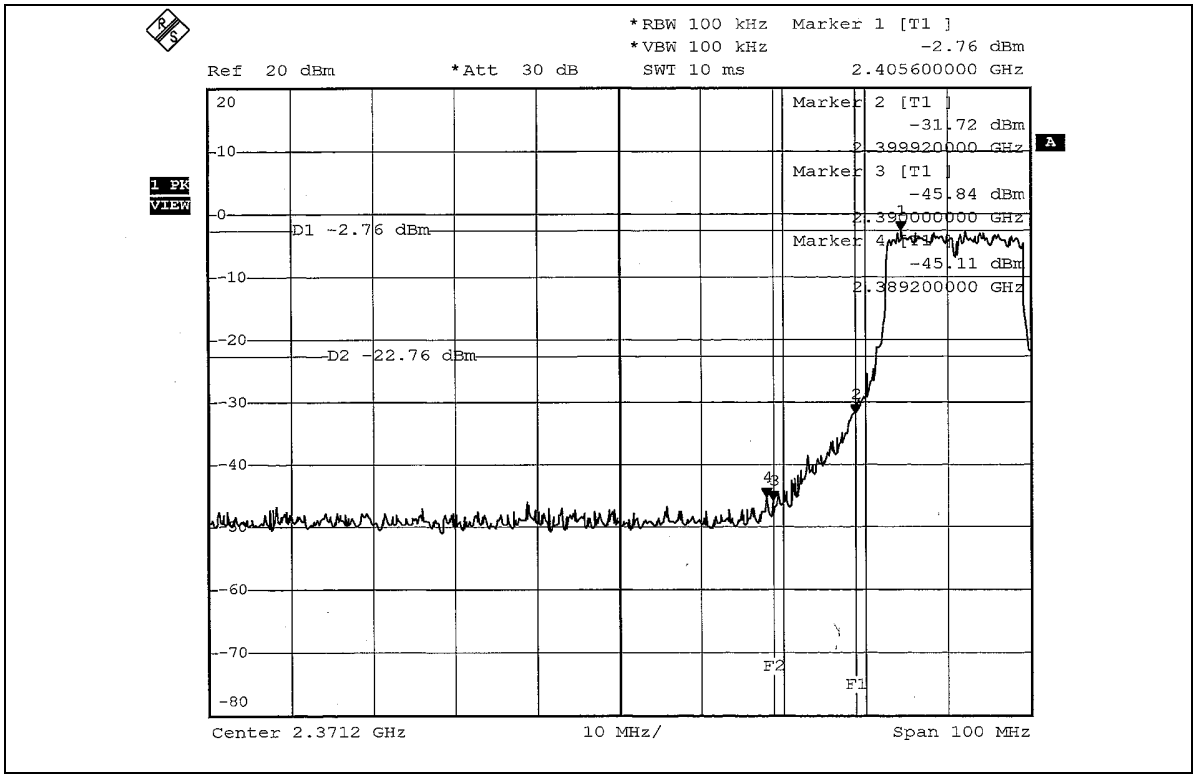

*RBW 100 kHz
*VBW 100 kHz
Marker 1 [T1]
-42.01 dBm
21.670000000 GHz
Ref 20 dBm
*Att 30 dB
SWT 2.25 s
D1 4.36 dBm
D2 -15.64 dBm
1 PK
VIEW
A
Start 2.5 GHz
2.25 GHz/
Stop 25 GHz

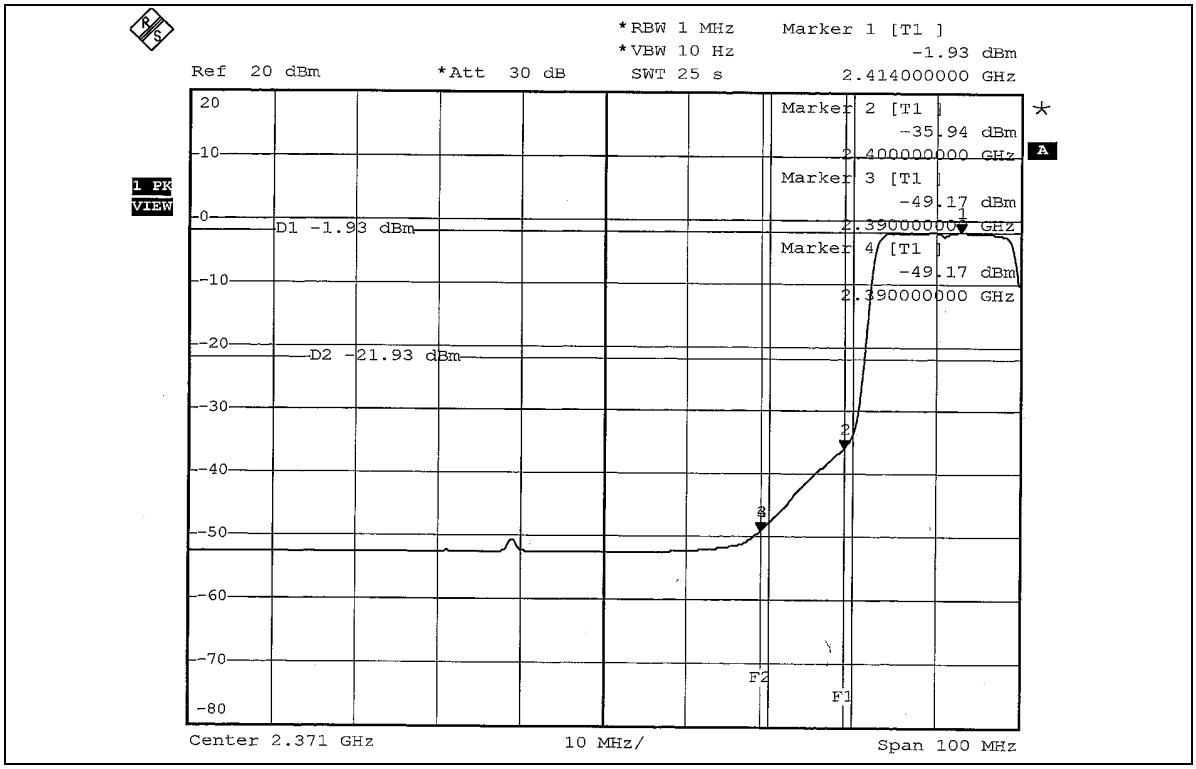

*RBW 100 kHz
*VBW 100 kHz
Marker 1 [T1]
4.73 dBm
2.461800000 GHz
Ref 20 dBm
*Att 30 dB
SWT 10 ms
Marker 2 [T1]
-49.37 dBm
2.483500000 GHz
Marker 3 [T1]
-48.37 dBm
2.490000000 GHz
Marker 4 [T1]
-49.13 dBm
2.500000000 GHz
D1 4.73 dBm
D2 -15.27 dBm
1 PK
VIEW
A
F1
F2
Center 2.506 GHz
10 MHz/
Span 100 MHz

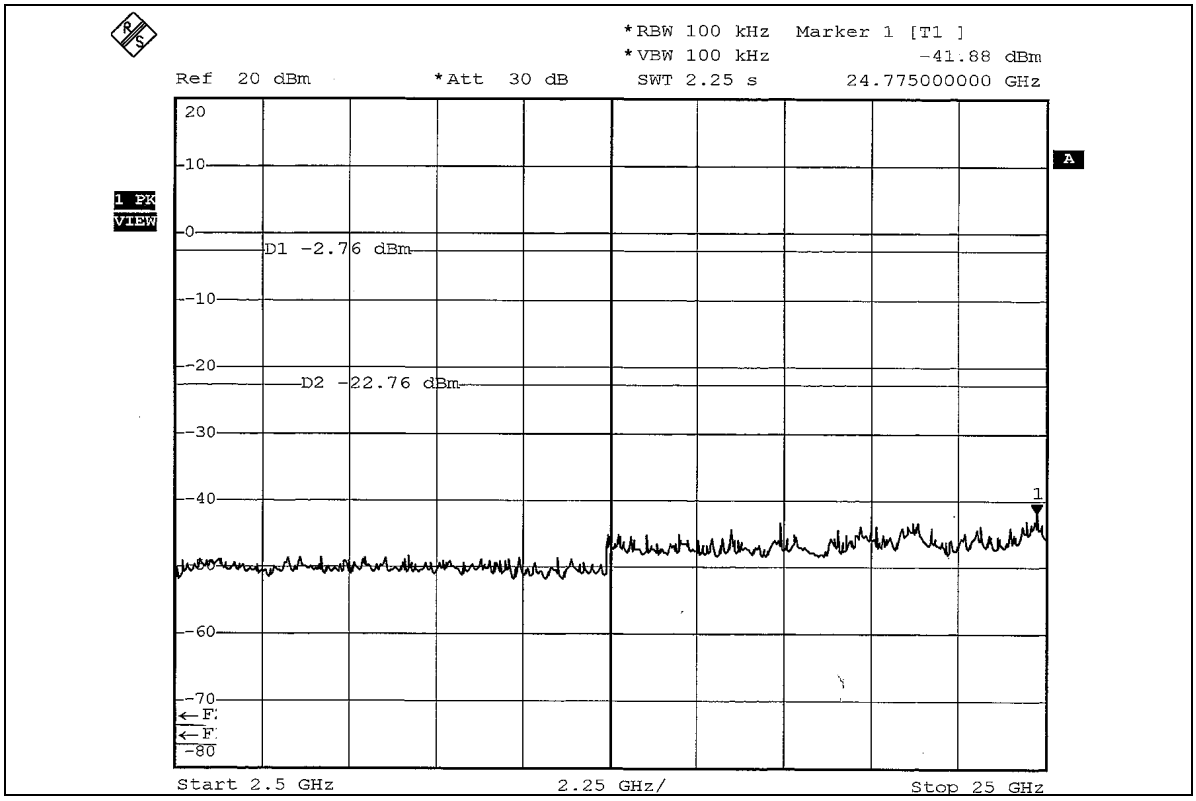

*RBW 1 MHz
*VBW 10 Hz
SWT 25 s
Marker 1 [T1]
3.69 dBm
2.461400000 GHz
Ref 20 dBm
*Att 30 dB
Marker 2 [T1]
-54.04 dBm
2.483500000 GHz
Marker 3 [T1]
-52.59 dBm
2.487400000 GHz
Marker 4 [T1]
-58.98 dBm
2.500000000 GHz
1 PK
VIEW
D1 3.69 dBm
D2 -16.31 dBm
F1
F2
Center 2.507 GHz
10 MHz/
Span 100 MHz

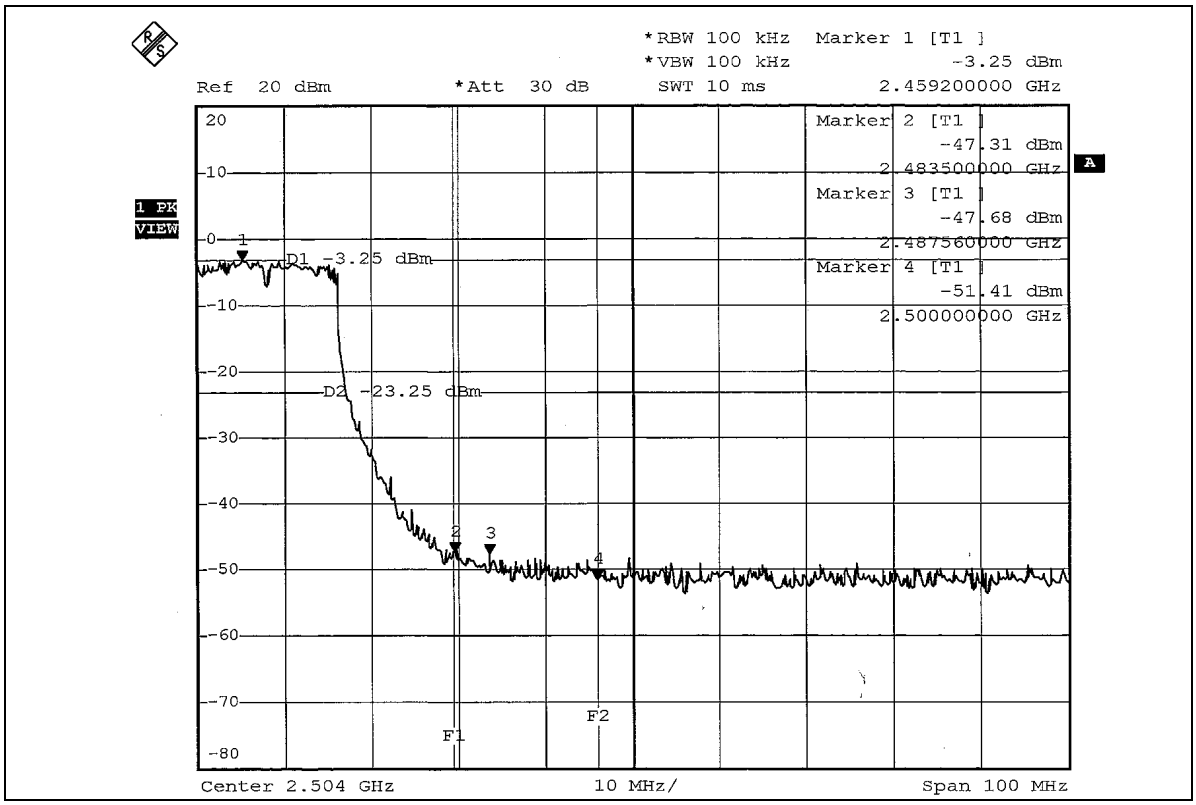

*RBW 100 kHz
*VBW 100 kHz
SWT 2.25 s
Marker 1 [T1]
-42.43 dBm
24.730000000 GHz
Ref 20 dBm
*Att 30 dB
1 PK
VIEW
D1 4.73 dBm
D2 -15.27 dBm
F2
Start 2.5 GHz
2.25 GHz/
Stop 25 GHz

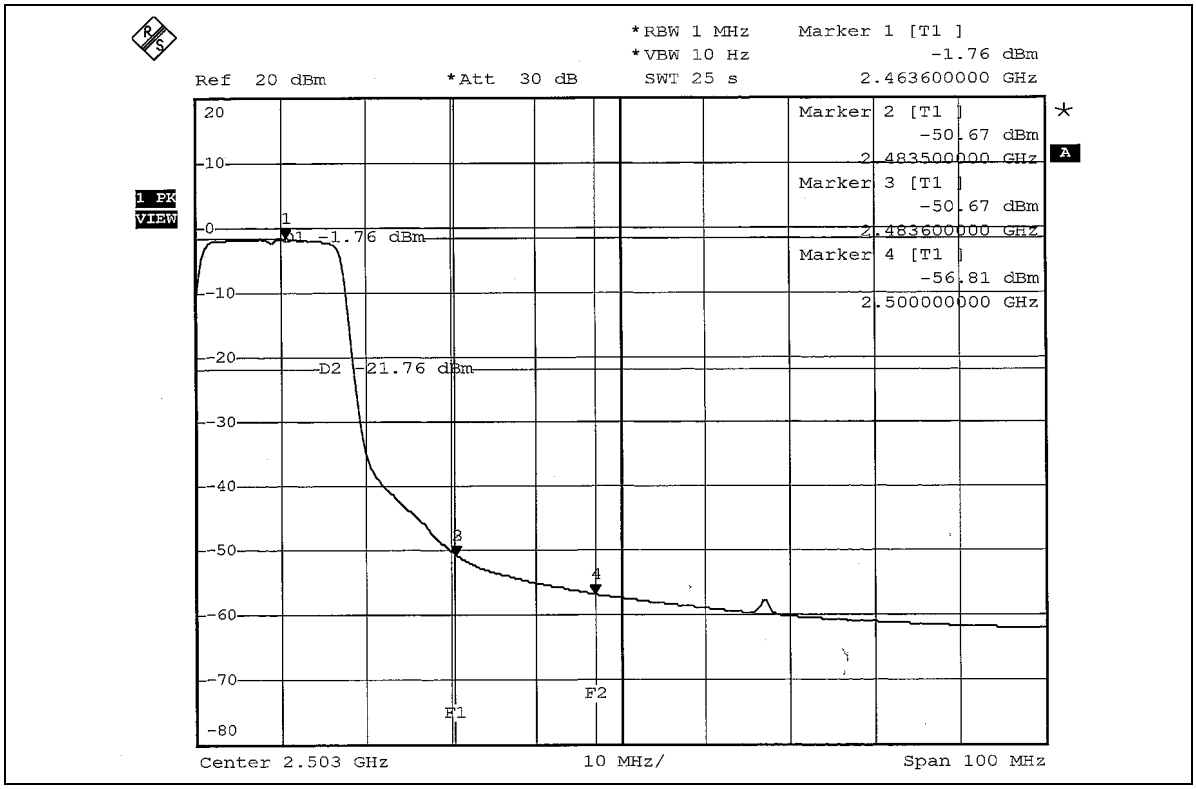
802.11g OFDM modulation

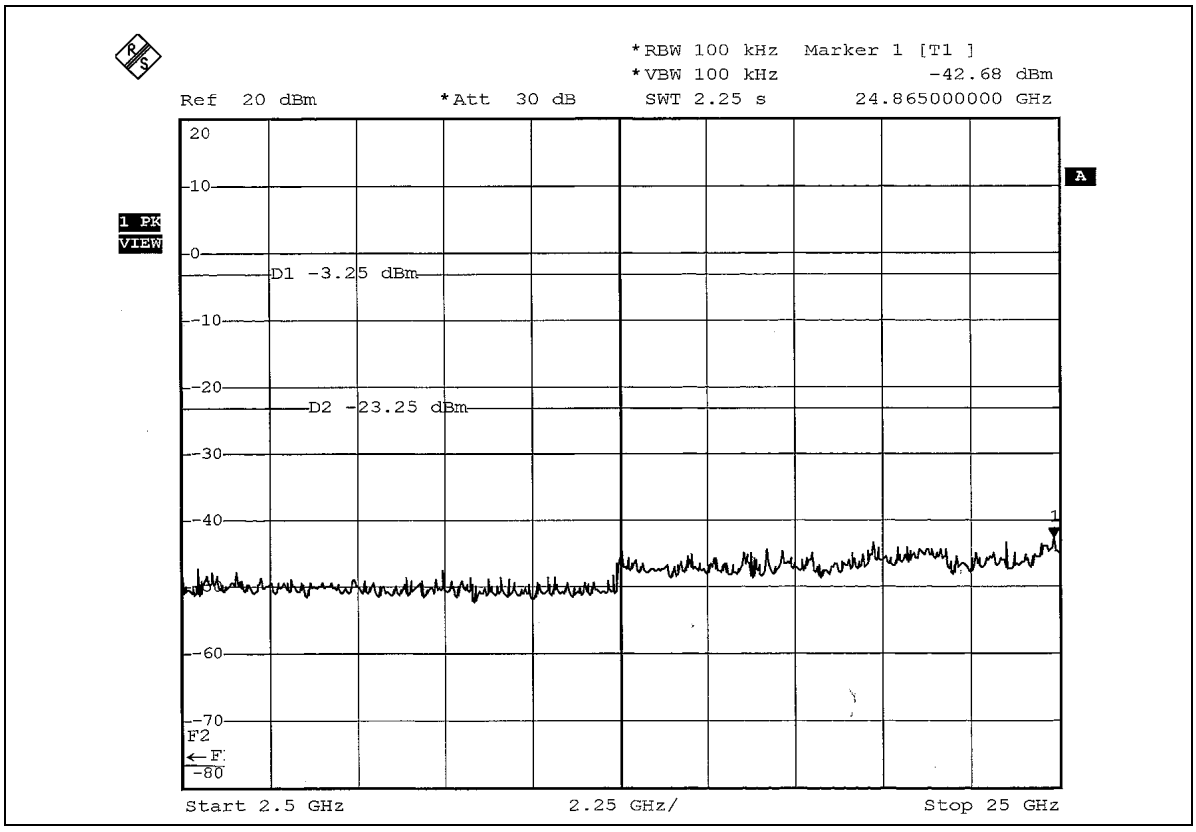





*RBW 100 kHz
*VBW 100 kHz
Marker 1 [T1]
-41.88 dBm
24.775000000 GHz
Ref 20 dBm
*Att 30 dB
SWT 2.25 s
1 PK
VIEW
D1 -2.76 dBm
D2 -22.76 dBm
Start 2.5 GHz
2.25 GHz/
Stop 25 GHz


*RBW 100 kHz
*VBW 100 kHz
Marker 1 [T1]
-3.25 dBm
2.459200000 GHz
Ref 20 dBm
*Att 30 dB
SWT 10 ms
Marker 2 [T1]
-47.31 dBm
2.483500000 GHz
Marker 3 [T1]
-47.68 dBm
2.487560000 GHz
Marker 4 [T1]
-51.41 dBm
2.500000000 GHz
1 PK
VIEW
D1 -3.25 dBm
D2 -23.25 dBm
F1
F2
Center 2.504 GHz
10 MHz/
Span 100 MHz


*RBW 1 MHz
*VBW 10 Hz
Ref 20 dBm
*Att 30 dB
SWT 25 s
Marker 1 [T1]
-1.76 dBm
2.463600000 GHz
Marker 2 [T1]
-50.67 dBm
2.483500000 GHz
Marker 3 [T1]
-50.67 dBm
2.483600000 GHz
Marker 4 [T1]
-56.81 dBm
2.500000000 GHz
1 PK
VIEW
D1 -1.76 dBm
D2 -21.76 dBm
F1
F2
Center 2.503 GHz
10 MHz/
Span 100 MHz


*RBW 100 kHz
*VBW 100 kHz
Ref 20 dBm
*Att 30 dB
SWT 2.25 s
Marker 1 [T1]
-42.68 dBm
24.865000000 GHz
1 PK
VIEW
D1 -3.25 dBm
D2 -23.25 dBm
F2
Start 2.5 GHz
2.25 GHz/
Stop 25 GHz

4.7 ANTENNA REQUIREMENT

4.7.1 STANDARD APPLICABLE

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

4.7.2 ANTENNA CONNECTED CONSTRUCTION

The antenna used in this product is Omni antenna with N-type connector. The maximum Gain of the antenna is 8.0dBi.

5. TEST TYPES AND RESULTS (802.11a 5725~5850MHz Band)

5.1 CONDUCTED EMISSION MEASUREMENT

5.1.1 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.
1. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.
2. 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.

5.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS30	100291	Nov. 16, 2005
RF signal cable Woken	5D-FB	Cable-HYC01-01	Jan. 09, 2006
LISN ROHDE & SCHWARZ	ESH3-Z5	100312	Feb. 15, 2006
LISN ROHDE & SCHWARZ	ESH2-Z5	100104	Feb. 15, 2006
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 1.

3. The VCCI Site Registration No. is C-2040.

5.1.3 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.

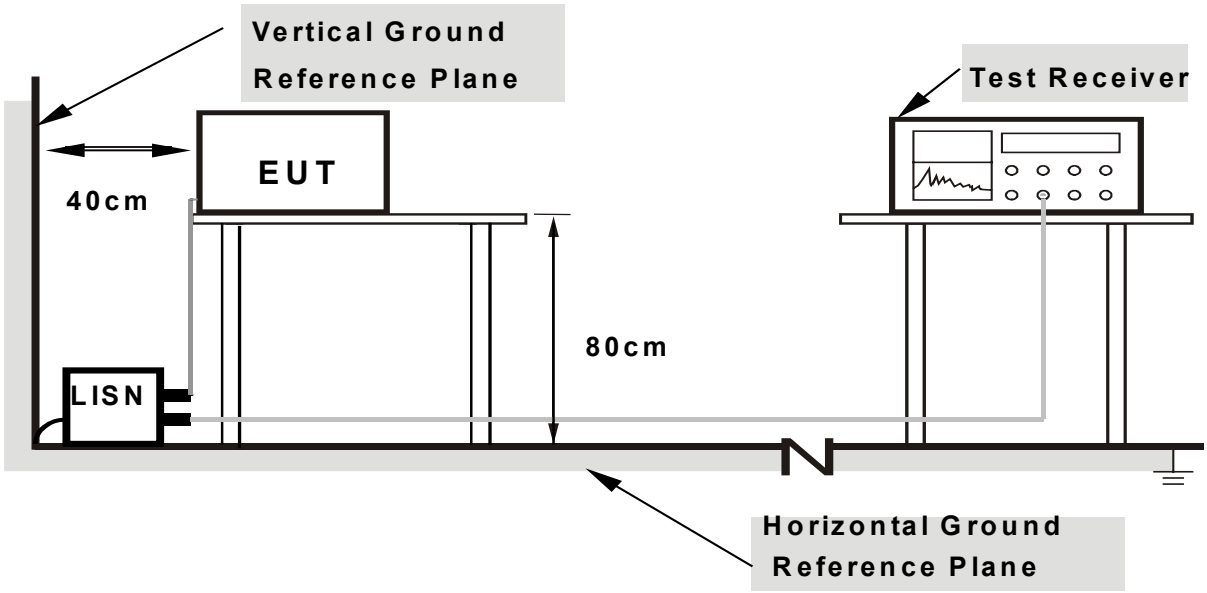
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

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

5.1.4 DEVIATION FROM TEST STANDARD

No deviation

5.1.5 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.

5.1.6 EUT OPERATING CONDITIONS

Same as 4.1.6

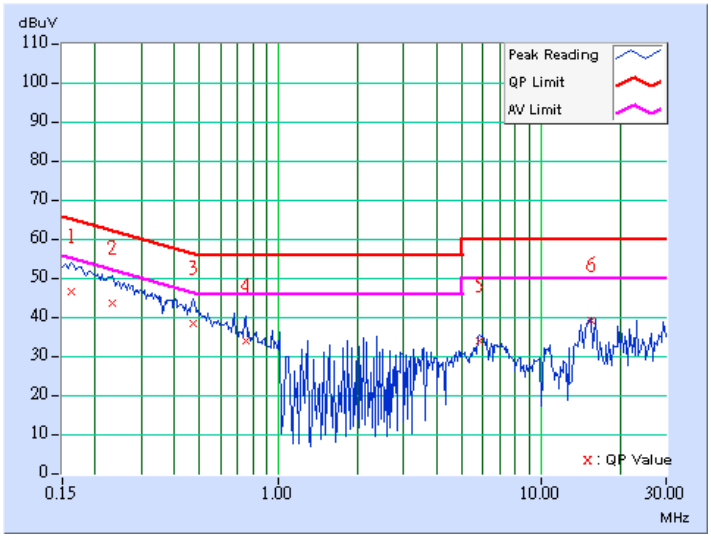
5.1.7 TEST RESULTS

Conducted Worst-Case Data

EUT	Dual Band Outdoor Access Point	MEASUREMENT DETAIL	
MODEL	P-780	PHASE	Line 1
CHANNEL	Channel 5	6dB BANDWIDTH	9 kHz
MODULATION TYPE	BPSK	ENVIRONMENTAL CONDITIONS	23deg. C, 65%RH, 991hPa
TRANSFER RATE	6Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Gary Chang		

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.162	0.11	45.97	19.19	46.08	19.30	65.38	55.38	-19.30	-36.08
2	0.232	0.11	43.17	15.79	43.28	15.90	62.38	52.38	-19.10	-36.48
3	0.474	0.13	37.78	35.91	37.91	34.65	56.44	46.44	-18.53	-10.40
4	0.748	0.19	33.30	-	33.49	-	56.00	46.00	-22.51	-
5	5.836	0.44	33.51	-	33.95	-	60.00	50.00	-26.05	-
6	15.617	0.61	38.79	-	39.40	-	60.00	50.00	-20.60	-

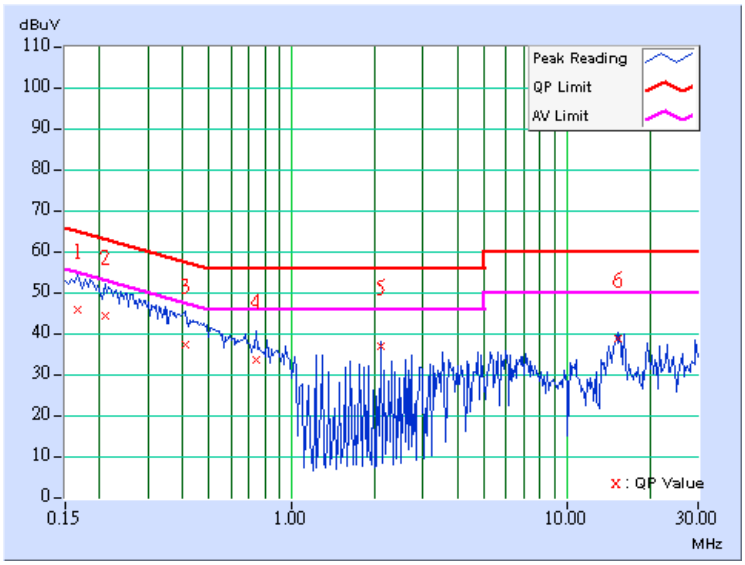
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	Dual Band Outdoor Access Point	MEASUREMENT DETAIL	
MODEL	P-780	PHASE	Line 2
CHANNEL	Channel 5	6dB BANDWIDTH	9 kHz
MODULATION TYPE	BPSK	ENVIRONMENTAL CONDITIONS	23deg. C, 65%RH, 991hPa
TRANSFER RATE	6Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Gary Chang		

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.166	0.11	45.59	20.06	45.70	20.17	65.18	55.18	-19.48	-35.01
2	0.209	0.11	43.92	27.06	44.03	27.17	63.26	53.26	-19.23	-26.09
3	0.408	0.11	37.01	-	37.12	-	57.69	47.69	-20.57	-
4	0.744	0.18	33.42	-	33.60	-	56.00	46.00	-22.40	-
5	2.102	0.27	36.64	34.55	36.91	34.82	56.00	46.00	-19.09	-11.18
6	15.254	0.46	38.34	-	38.80	-	60.00	50.00	-21.20	-

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.



5.2 RADIATED EMISSION MEASUREMENT

5.2.1 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.

5.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESI7	838496/016	Jan. 07, 2006
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100041	Nov. 29, 2005
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Jan. 22, 2006
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-404	Jan. 05, 2006
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA 9170242	Jan. 23, 2006
Preamplifier Agilent	8447D	2944A10631	Nov. 17, 2005
Preamplifier Agilent	8449B	3008A01960	Nov. 14, 2005
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	219272/4	Jan. 26, 2006
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	219275/4	Jan. 26, 2006
Software ADT.	ADT_Radiated_V5.14	NA	NA
Antenna Tower inn-co GmbH	MA 4000	010303	NA
Antenna Tower Controller inn-co GmbH	CO2000	019303	NA
Turn Table ADT.	TT100.	TT93021704	NA
Turn Table Controller ADT.	SC100.	SC93021704	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 3.
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 IC4924-4.

5.2.3 TEST PROCEDURES

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. 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 10dB 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 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

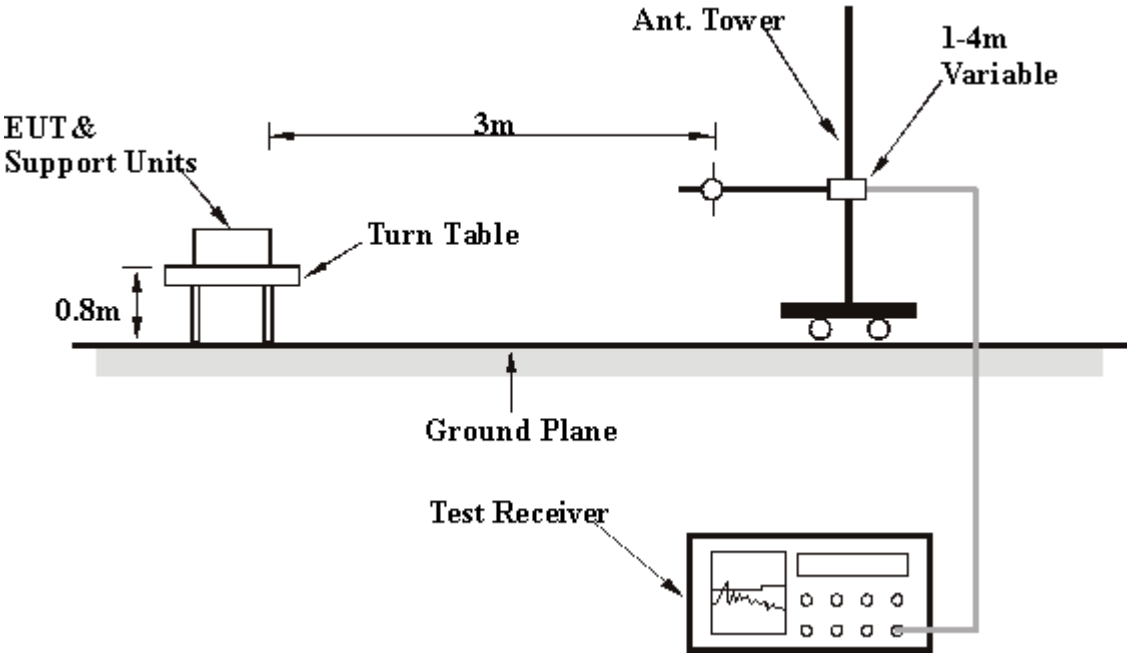
NOTE:

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

5.2.4 DEVIATION FROM TEST STANDARD

No deviation

5.2.5 TEST SETUP



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

5.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6

5.2.7 TEST RESULTS

Below 1GHz Worst-Case Data for A-807 antenna with 7dBi gain

EUT	Dual Band Outdoor Access Point	**MEASUREMENT DETAIL**	
MODEL	P-780	**FREQUENCY RANGE**	Below 1000MHz
CHANNEL	Channel 3	**DETECTOR FUNCTION**	Quasi-Peak
MODULATION TYPE	BPSK	**ENVIRONMENTAL CONDITIONS**	21deg. C, 64%RH, 991hPa
TRANSFER RATE	6Mbps	**INPUT POWER (SYSTEM)**	120Vac, 60 Hz
TEST MODE	**3**	**TESTED BY**	Brad Wu

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	288.54	39.48 QP	46.00	-6.52	1.00 H	211	25.25	14.23
2	333.25	43.11 QP	46.00	-2.89	1.00 H	208	27.96	15.15
3	533.47	37.99 QP	46.00	-8.01	3.00 H	286	18.82	19.17
4	733.69	44.61 QP	46.00	-1.39	1.00 H	208	21.77	22.84
5	778.40	44.70 QP	46.00	-1.30	1.00 H	196	21.34	23.36
6	823.11	35.21 QP	46.00	-10.79	1.00 H	196	11.55	23.67

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	**43.61**	**38.95 QP**	**40.00**	**-1.05**	**1.00 V**	**325**	**23.56**	**15.39**
2	309.92	39.63 QP	46.00	-6.37	1.00 V	157	25.00	14.63
3	533.47	43.95 QP	46.00	-2.05	1.00 V	199	24.78	19.17
4	578.18	38.33 QP	46.00	-7.67	1.00 V	1	18.09	20.23
5	733.69	37.40 QP	46.00	-8.60	1.00 V	184	14.57	22.84
6	778.40	39.40 QP	46.00	-6.60	1.00 V	169	16.03	23.36

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

Below 1GHz Worst-Case Data for A-408 antenna with 8dBi gain

EUT	Dual Band Outdoor Access Point	**MEASUREMENT DETAIL**	
MODEL	P-780	**FREQUENCY RANGE**	Below 1000MHz
CHANNEL	Channel 3	**DETECTOR FUNCTION**	Quasi-Peak
MODULATION TYPE	BPSK	**ENVIRONMENTAL CONDITIONS**	23deg. C, 65%RH, 991hPa
TRANSFER RATE	6Mbps	**INPUT POWER (SYSTEM)**	120Vac, 60 Hz
TEST MODE	**4**	**TESTED BY**	Brad Wu

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	138.86	39.84 QP	43.50	-3.66	2.00 H	22	25.49	14.35
2	309.92	44.73 QP	46.00	-1.27	1.00 H	220	30.10	14.63
3	533.47	40.83 QP	46.00	-5.17	1.00 H	154	21.67	19.17
4	667.60	39.35 QP	46.00	-6.65	1.00 H	217	17.69	21.66
5	733.69	44.68 QP	46.00	-1.32	1.00 H	223	21.84	22.84
6	778.40	44.37 QP	46.00	-1.63	1.00 H	223	21.01	23.36

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	59.16	34.82 QP	40.00	-5.18	1.00 V	298	21.13	13.69
2	134.97	40.48 QP	43.50	-3.02	1.00 V	49	26.43	14.04
3	309.92	40.33 QP	46.00	-5.67	1.00 V	151	25.70	14.63
4	533.47	44.78 QP	46.00	-1.22	1.00 V	352	25.61	19.17
5	578.18	40.13 QP	46.00	-5.87	1.00 V	337	19.90	20.23
6	778.40	40.78 QP	46.00	-5.22	1.00 V	40	17.41	23.36

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

802.11a OFDM modulation for A-807 antenna with 7dBi gain

EUT	Dual Band Outdoor Access Point	MEASUREMENT DETAIL	
MODEL	P-780	FREQUENCY RANGE	1 ~ 40 GHz
CHANNEL	Channel 1	DETECTOR FUNCTION	Peak(PK) Average (AV)
MODULATION TYPE	BPSK	ENVIRONMENTAL CONDITIONS	21deg. C, 64%RH, 991hPa
TRANSFER RATE	6Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TEST MODE	3	TESTED BY	Gary Chang

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	#1108.00	48.69 PK	74.00	-25.31	1.24 H	256	20.99	27.70
2	*5745.00	98.16 PK			1.00 H	310	58.68	39.48
2	*5745.00	87.80 AV			1.00 H	310	48.32	39.48
3	#11490.00	60.23 PK	74.00	-13.77	1.41 H	195	9.52	50.71
3	#11490.00	48.66 AV	54.00	-5.34	1.41 H	195	-2.05	50.71

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	#1108.00	51.23 PK	74.00	-22.77	1.07 V	244	23.53	27.70
1	#1108.00	47.10 AV	54.00	-6.90	1.07 V	244	19.40	27.70
2	*5745.00	110.76 PK			1.07 V	314	71.28	39.48
2	*5745.00	100.10 AV			1.07 V	314	60.62	39.48
3	#11490.00	61.42 PK	74.00	-12.58	1.11 V	162	10.71	50.71
3	#11490.00	50.03 AV	54.00	-3.97	1.11 V	162	-0.68	50.71

NOTE:
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
6. "#"The radiated frequency falling in the restricted band.
7. The limit value is defined as per 15.247

EUT	Dual Band Outdoor Access Point	MEASUREMENT DETAIL	
MODEL	P-780	FREQUENCY RANGE	1 ~ 40 GHz
CHANNEL	Channel 3	DETECTOR FUNCTION	Peak(PK) Average (AV)
MODULATION TYPE	BPSK	ENVIRONMENTAL CONDITIONS	21deg. C, 64%RH, 991hPa
TRANSFER RATE	6Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TEST MODE	3	TESTED BY	Gary Chang

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	#1108.00	49.22 PK	74.00	-24.78	1.42 H	246	21.52	27.70
2	*5785.00	98.15 PK			1.00 H	305	58.60	39.55
2	*5785.00	87.42 AV			1.00 H	305	47.87	39.55
3	#11570.00	58.84 PK	74.00	-15.16	1.38 H	251	8.19	50.65
3	#11570.00	47.36 AV	54.00	-6.64	1.38 H	251	-3.29	50.65

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	#1108.00	49.76 PK	74.00	-24.24	1.39 V	225	22.06	27.70
2	*5785.00	110.82 PK			1.03 V	276	71.27	39.55
2	*5785.00	100.70 AV			1.03 V	276	61.15	39.55
3	#11570.00	60.94 PK	74.00	-13.06	1.19 V	254	10.29	50.65
3	#11570.00	48.77 AV	54.00	-5.23	1.19 V	254	-1.88	50.65

NOTE:
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
6. "#"The radiated frequency falling in the restricted band.
7. The limit value is defined as per 15.247

EUT	Dual Band Outdoor Access Point	MEASUREMENT DETAIL	
MODEL	P-780	FREQUENCY RANGE	1 ~ 40 GHz
CHANNEL	Channel 5	DETECTOR FUNCTION	Peak(PK) Average (AV)
MODULATION TYPE	BPSK	ENVIRONMENTAL CONDITIONS	21deg. C, 64%RH, 991hPa
TRANSFER RATE	6Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TEST MODE	3	TESTED BY	Gary Chang

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	#1108.00	48.26 PK	74.00	-25.74	1.46 H	211	20.56	27.70
2	*5805.00	99.12 PK			1.00 H	304	59.55	39.57
2	*5805.00	88.41 AV			1.00 H	304	48.84	39.57
3	#11610.00	60.19 PK	74.00	-13.81	1.23 H	214	9.58	50.61
3	#11610.00	48.88 AV	54.00	-5.12	1.23 H	214	-1.73	50.61

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	#1108.00	49.73 PK	74.00	-24.27	1.24 V	210	22.03	27.70
2	*5805.00	111.02 PK			1.04 V	281	71.45	39.57
2	*5805.00	100.67 AV			1.04 V	281	61.10	39.57
3	#11610.00	61.52 PK	74.00	-12.48	1.24 V	167	10.91	50.61
3	#11610.00	49.73 AV	54.00	-4.27	1.24 V	167	-0.88	50.61

NOTE:
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
6. "#"The radiated frequency falling in the restricted band.
7. The limit value is defined as per 15.247

802.11a OFDM modulation for A-408 antenna with 8dBi gain

EUT	Dual Band Outdoor Access Point	MEASUREMENT DETAIL	
MODEL	P-780	FREQUENCY RANGE	1 ~ 40 GHz
CHANNEL	Channel 1	DETECTOR FUNCTION	Peak(PK) Average (AV)
MODULATION TYPE	BPSK	ENVIRONMENTAL CONDITIONS	21deg. C, 64%RH, 991hPa
TRANSFER RATE	6Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TEST MODE	**4**	TESTED BY	Gary Chang

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	#1108.00	49.16 PK	74.00	-24.84	1.28 H	332	21.46	27.70
2	*5745.00	93.97 PK			1.78 H	175	54.49	39.48
2	*5745.00	83.45 AV			1.78 H	175	43.97	39.48
3	#11490.00	59.18 PK	74.00	-14.82	1.46 H	93	8.47	50.71
3	#11490.00	47.36 AV	54.00	-6.64	1.46 H	93	-3.35	50.71

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	#1108.00	50.86 PK	74.00	-23.14	1.09 V	246	23.16	27.70
1	#1108.00	46.91 AV	54.00	-7.09	1.09 V	246	19.21	27.70
2	*5745.00	111.15 PK			1.13 V	292	71.67	39.48
2	*5745.00	100.43 AV			1.13 V	292	60.95	39.48
3	#11490.00	61.08 PK	74.00	-12.92	1.06 V	156	10.37	50.71
3	#11490.00	49.39 AV	54.00	-4.61	1.06 V	156	-1.32	50.71

NOTE:
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
6. "#"The radiated frequency falling in the restricted band.
7. The limit value is defined as per 15.247

EUT	Dual Band Outdoor Access Point	MEASUREMENT DETAIL	
MODEL	P-780	FREQUENCY RANGE	1 ~ 40 GHz
CHANNEL	Channel 3	DETECTOR FUNCTION	Peak(PK) Average (AV)
MODULATION TYPE	BPSK	ENVIRONMENTAL CONDITIONS	21deg. C, 64%RH, 991hPa
TRANSFER RATE	6Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TEST MODE	**4**	TESTED BY	Gary Chang

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	#1108.00	48.52 PK	74.00	-25.48	1.22 H	300	20.82	27.70
2	*5785.00	92.43 PK			1.88 H	175	52.88	39.55
2	*5785.00	82.24 AV			1.88 H	175	42.69	39.55
3	#11570.00	58.16 PK	74.00	-15.84	1.52 H	231	7.51	50.65
3	#11570.00	46.79 AV	54.00	-7.21	1.52 H	231	-3.86	50.65

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	#1108.00	49.18 PK	74.00	-24.82	1.58 V	146	21.48	27.70
2	*5785.00	111.35 PK			1.22 V	295	71.80	39.55
2	*5785.00	101.23 AV			1.22 V	295	61.68	39.55
3	#11570.00	60.28 PK	74.00	-13.72	1.24 V	352	9.63	50.65
3	#11570.00	48.23 AV	54.00	-5.77	1.24 V	352	-2.42	50.65

NOTE: 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
6. "#"The radiated frequency falling in the restricted band.
7. The limit value is defined as per 15.247

EUT	Dual Band Outdoor Access Point	MEASUREMENT DETAIL	
MODEL	P-780	FREQUENCY RANGE	1 ~ 40 GHz
CHANNEL	Channel 5	DETECTOR FUNCTION	Peak(PK) Average (AV)
MODULATION TYPE	BPSK	ENVIRONMENTAL CONDITIONS	21deg. C, 64%RH, 991hPa
TRANSFER RATE	6Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TEST MODE	**4**	TESTED BY	Gary Chang

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	#1108.00	47.56 PK	74.00	-26.44	1.56 H	164	19.86	27.70
2	*5805.00	92.87 PK			1.82 H	177	53.30	39.57
2	*5805.00	82.76 AV			1.82 H	177	43.19	39.57
3	#11610.00	59.87 PK	74.00	-14.13	1.19 H	167	9.26	50.61
3	#11610.00	48.16 AV	54.00	-5.84	1.19 H	167	-2.45	50.61

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	#1108.00	48.87 PK	74.00	-25.13	1.28 V	227	21.17	27.70
2	*5805.00	111.26 PK			1.00 V	295	71.69	39.57
2	*5805.00	101.13 AV			1.00 V	295	61.56	39.57
3	#11610.00	60.58 PK	74.00	-13.42	1.14 V	215	9.97	50.61
3	#11610.00	48.76 AV	54.00	-5.24	1.14 V	215	-1.85	50.61

NOTE:
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
6. "#"The radiated frequency falling in the restricted band.
7. The limit value is defined as per 15.247

5.3 6dB BANDWIDTH MEASUREMENT

5.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

5.3.2 TEST INSTRUMENTS

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

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

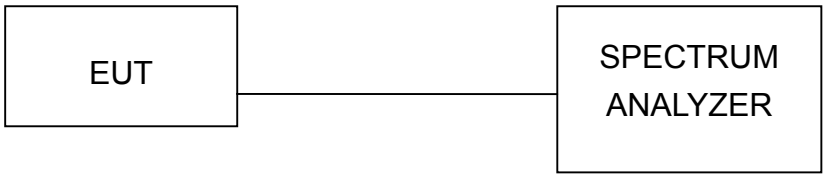
5.3.3 TEST PROCEDURE

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.

5.3.4 DEVIATION FROM TEST STANDARD

No deviation

5.3.5 TEST SETUP



5.3.6 EUT OPERATING CONDITIONS

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

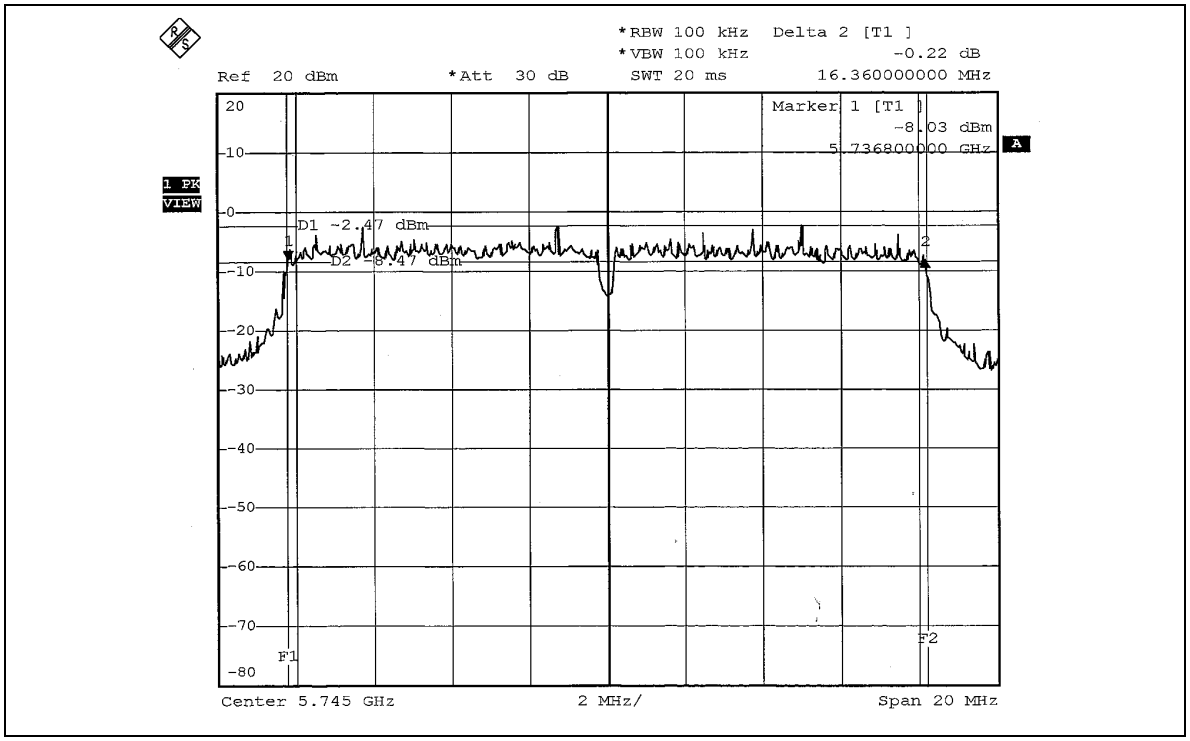
5.3.7 TEST RESULTS

802.11a OFDM modulation

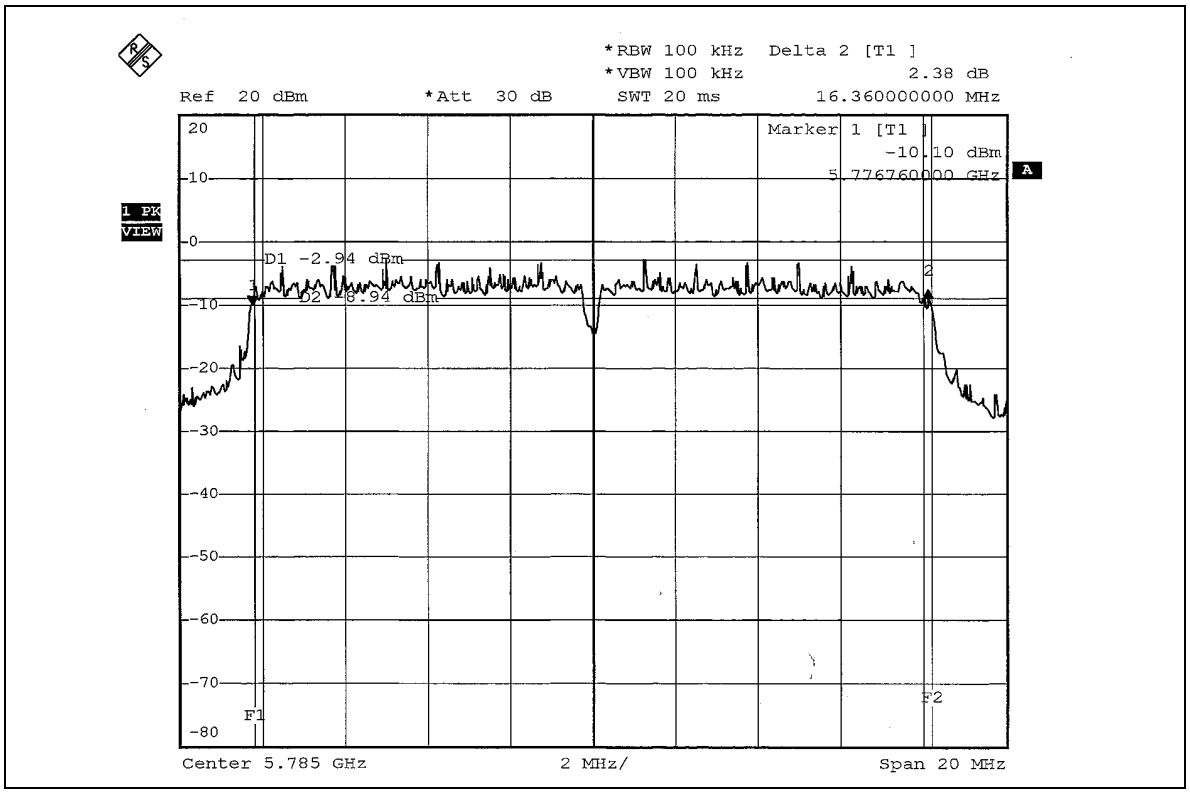
EUT	Dual Band Outdoor Access Point	**MODEL**	P-780
MODULATION TYPE	BPSK	**TRANSFER RATE**	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	24deg.C, 57%RH, 991hPa
TESTED BY	Gary Chang		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	5745	16.36	0.5	PASS
3	5785	16.36	0.5	PASS
5	5825	16.40	0.5	PASS

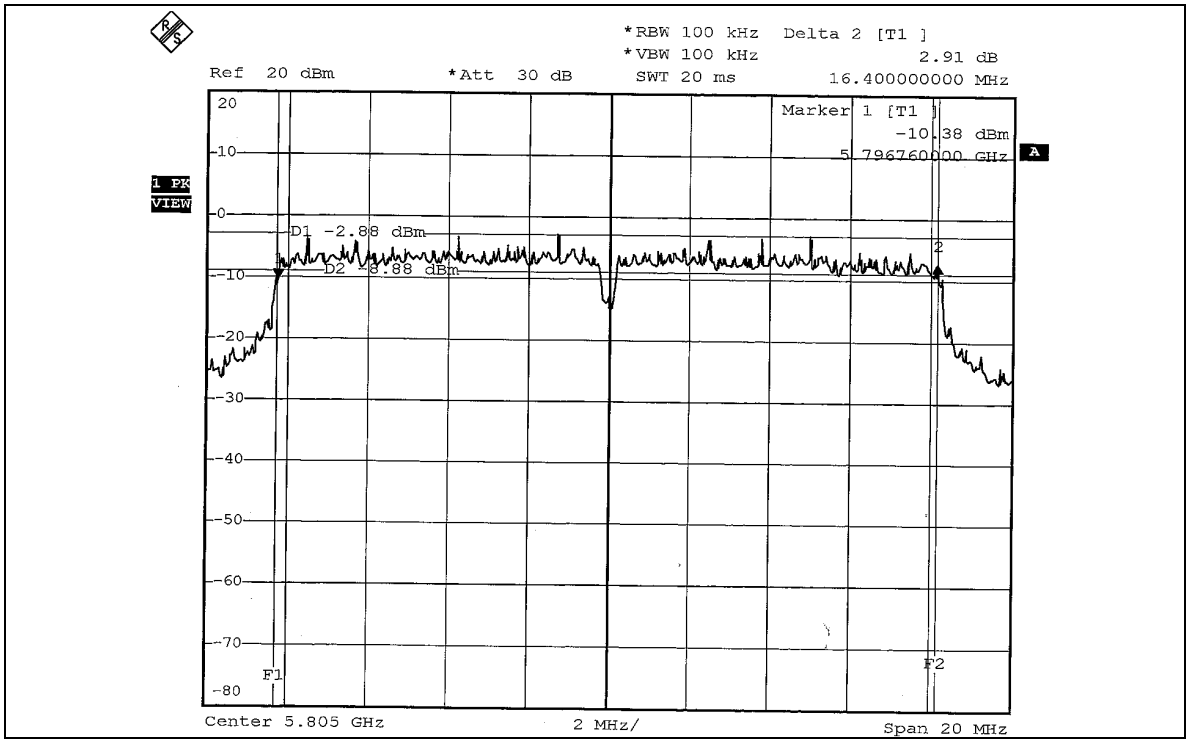
CH 1


*RBW 100 kHz
Delta 2 [T1]
*VBW 100 kHz
-0.22 dB
Ref 20 dBm
*Att 30 dB
SWT 20 ms
16.360000000 MHz
Marker 1 [T1]
-8.03 dBm
5.736800000 GHz
1 PK
VIEW
D1 -2.47 dBm
D2 -8.47 dBm
F1
F2
Center 5.745 GHz
2 MHz/
Span 20 MHz

CH 3


*RBW 100 kHz
Delta 2 [T1]
*VBW 100 kHz
2.38 dB
Ref 20 dBm
*Att 30 dB
SWT 20 ms
16.360000000 MHz
Marker 1 [T1]
-10.10 dBm
5.776760000 GHz
1 PK
VIEW
D1 -2.94 dBm
D2 -8.94 dBm
F1
F2
Center 5.785 GHz
2 MHz/
Span 20 MHz

CH 5


*RBW 100 kHz
*VBW 100 kHz
SWT 20 ms
Delta 2 [T1]
2.91 dB
16.400000000 MHz
Ref 20 dBm
*Att 30 dB
Marker 1 [T1]
-10.38 dBm
5.796760000 GHz
1 PK
VIEW
D1 -2.88 dBm
D2 -8.88 dBm
F1
F2
Center 5.805 GHz
2 MHz/
Span 20 MHz

5.4 MAXIMUM PEAK OUTPUT POWER

5.4.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Measurement is 30dBm.

5.4.2 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, 2005
TEKTRONIX OSCILLOSCOPE	TDS 1012	C019167	Feb. 01, 2006
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..

5.4.3 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.

5.4.4 DEVIATION FROM TEST STANDARD

No deviation

5.4.5 TEST SETUP

5.4.6 EUT OPERATING CONDITIONS

Same as Item 5.9.6

5.4.7 TEST RESULTS

802.11a OFDM modulation

EUT	Dual Band Outdoor Access Point	**MODEL**	P-780
MODULATION TYPE	BPSK	**TRANSFER RATE**	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	24deg.C, 57%RH, 991hPa
TESTED BY	Gary Chang		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	5745	25.235	14.02	28	PASS
3	5785	25.410	14.05	28	PASS
5	5825	25.293	14.03	28	PASS

Note: According to 15.247(b) (4), the maximum antenna gain 8dBi is higher than 6dBi, so limit of peak power shall be reduced by 2dBi.

5.5 POWER SPECTRAL DENSITY MEASUREMENT

5.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

5.5.2 TEST INSTRUMENTS

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

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

5.5.3 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 3 kHz RBW and 30 kHz VBW, set sweep time = span/3 kHz. The power spectral density was measured and recorded.
The sweep time is allowed to be longer than span/3 kHz for a full response of the mixer in the spectrum analyzer.

5.5.4 DEVIATION FROM TEST STANDARD

No deviation

5.5.5 TEST SETUP

5.5.6 EUT OPERATING CONDITION

Same as Item 5.9.6

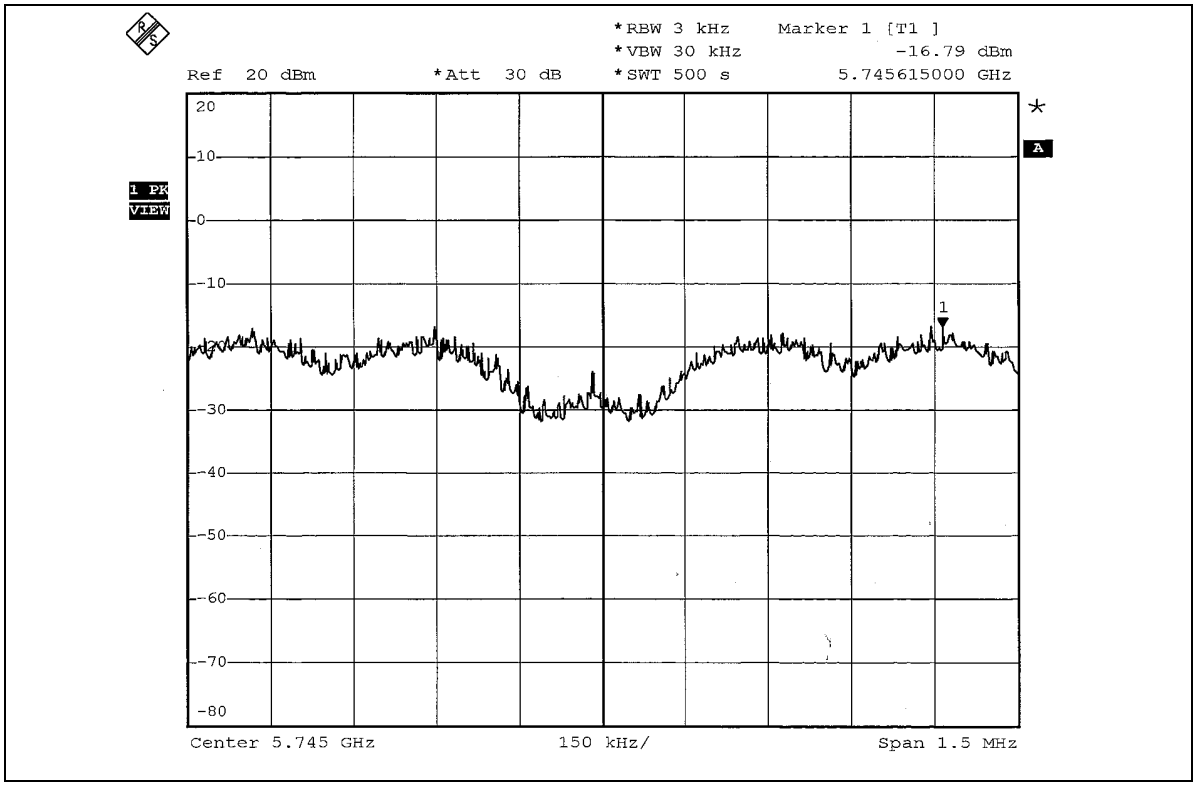
5.5.7 TEST RESULTS

802.11a OFDM modulation

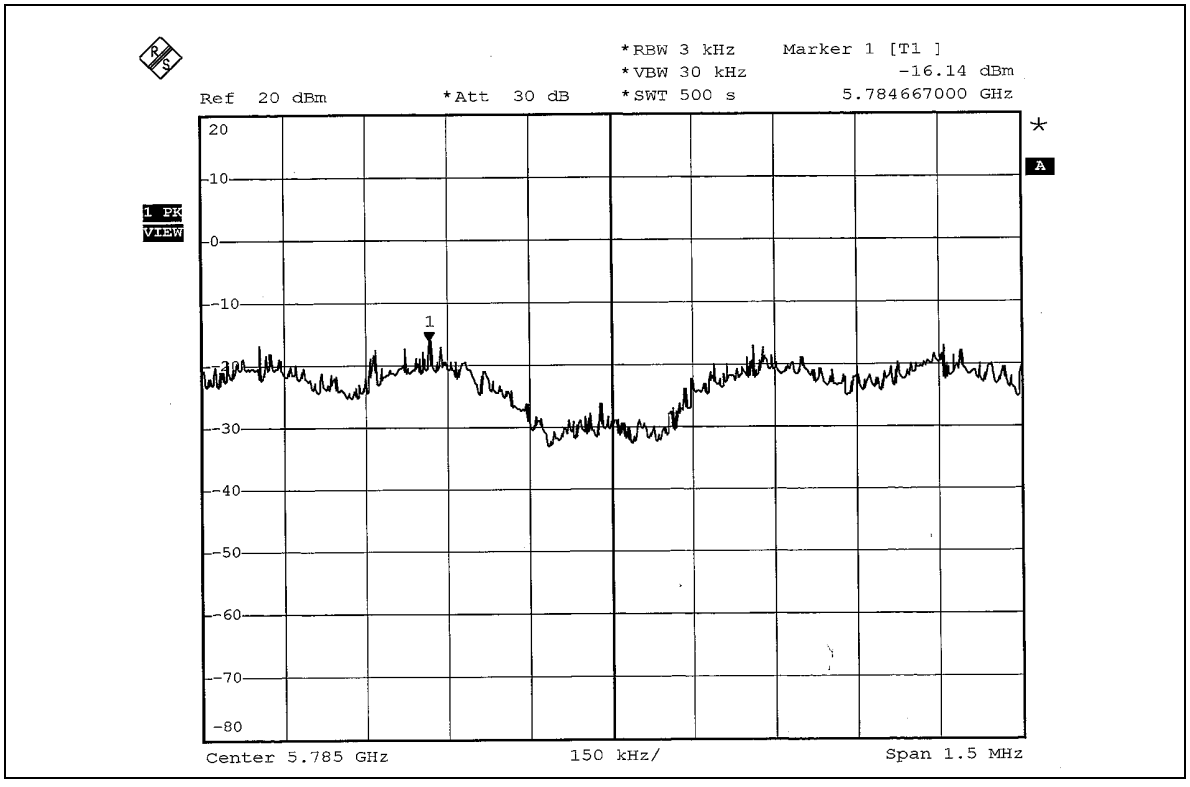
EUT	Dual Band Outdoor Access Point	**MODEL**	P-780
MODULATION TYPE	BPSK	**TRANSFER RATE**	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	24deg.C, 57%RH, 991hPa
TESTED BY	Gary Chang		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	5745	-16.79	8	PASS
3	5785	-16.14	8	PASS
5	5825	-16.78	8	PASS

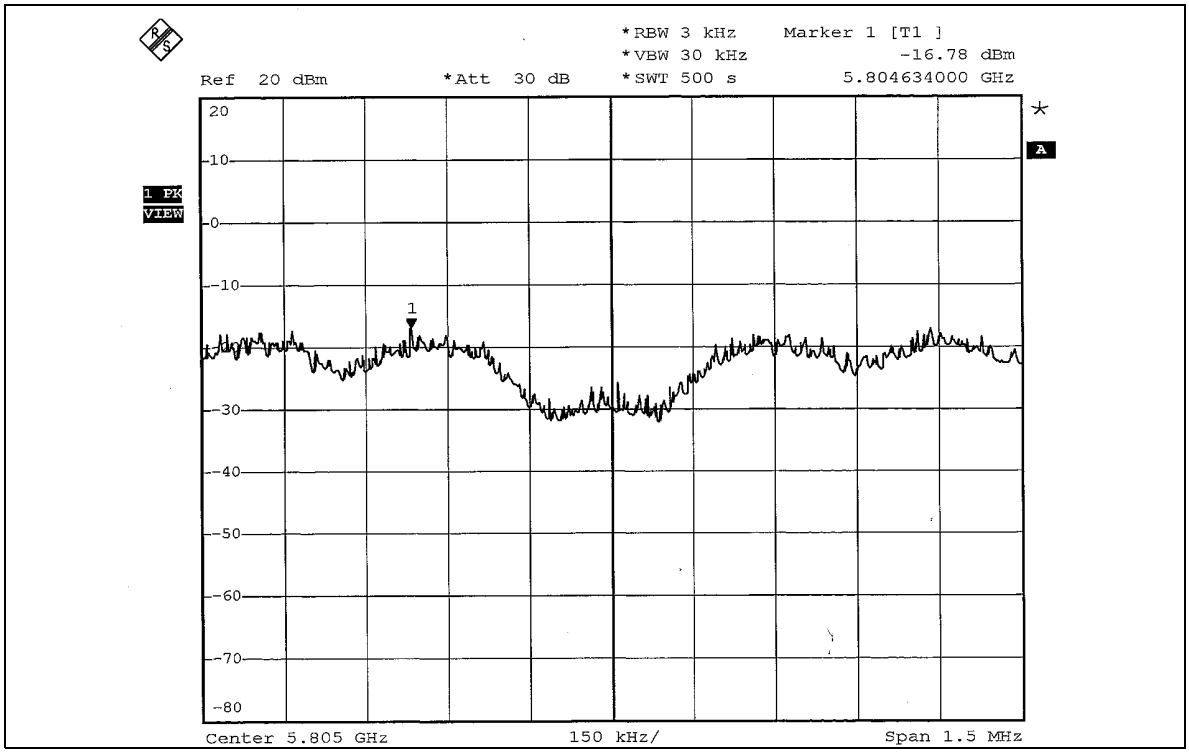
CH 1


*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-16.79 dBm
5.745615000 GHz
Ref 20 dBm
*Att 30 dB
1 PK VIEW
A
20
-10
0
-10
-30
-40
-50
-60
-70
-80
Center 5.745 GHz
150 kHz/
Span 1.5 MHz

CH 3


*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-16.14 dBm
5.784667000 GHz
Ref 20 dBm
*Att 30 dB
1 PK VIEW
A
20
-10
0
-10
-30
-40
-50
-60
-70
-80
Center 5.785 GHz
150 kHz/
Span 1.5 MHz

CH 5


*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-16.78 dBm
5.804634000 GHz
Ref 20 dBm
*Att 30 dB
1 PK
VIEW
A
20
-10
0
-10
-30
-40
-50
-60
-70
-80
1
Center 5.805 GHz
150 kHz/
Span 1.5 MHz

5.6 BAND EDGES MEASUREMENT

5.6.1 LIMITS OF BAND EDGES MEASUREMENT

Below –20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

5.6.2 TEST INSTRUMENTS

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

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

5.6.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low lose cable. Set both RBW and VBW of spectrum analyzer to 100 kHz with suitable frequency span including 100 MHz bandwidth from band edge. The band edges was measured and recorded.

5.6.4 DEVIATION FROM TEST STANDARD

No deviation

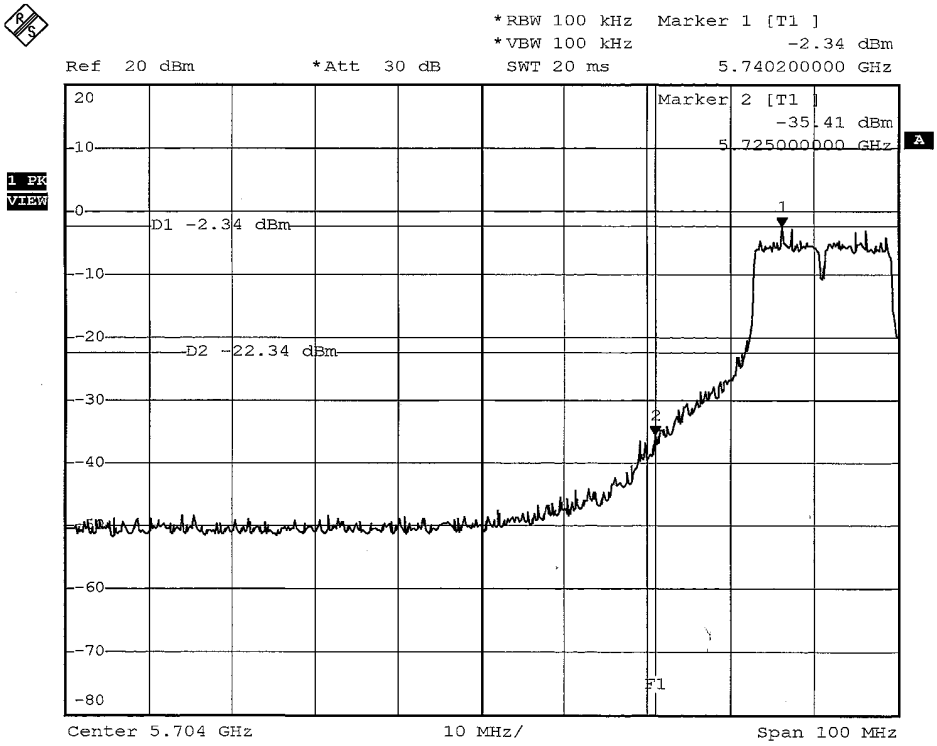
5.6.5 EUT OPERATING CONDITION

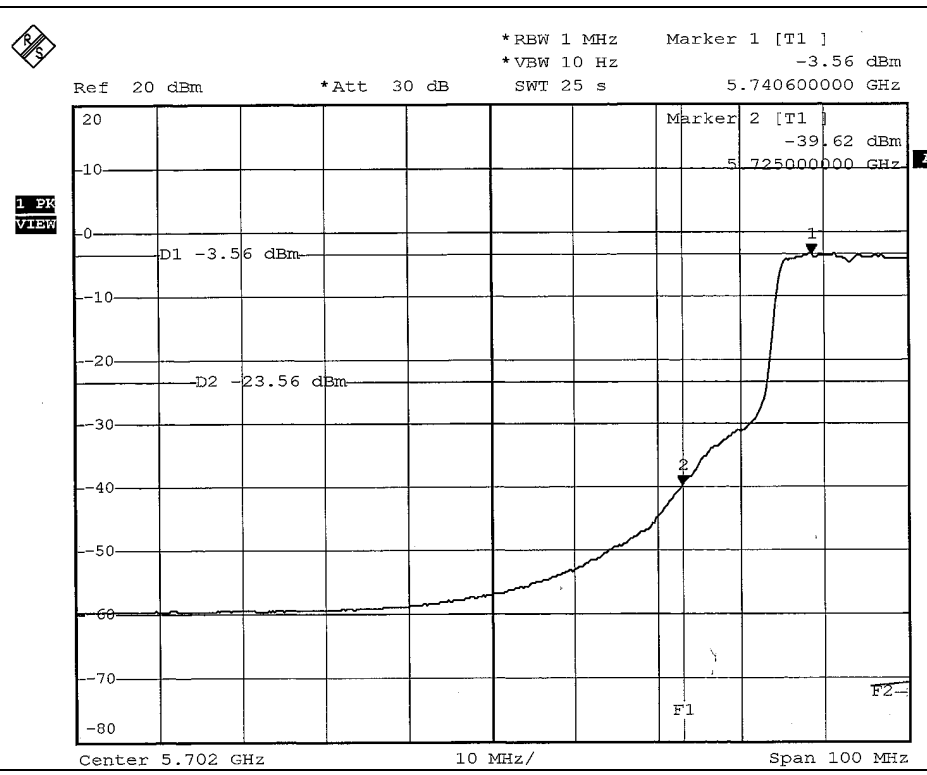
Same as Item 5.9.6

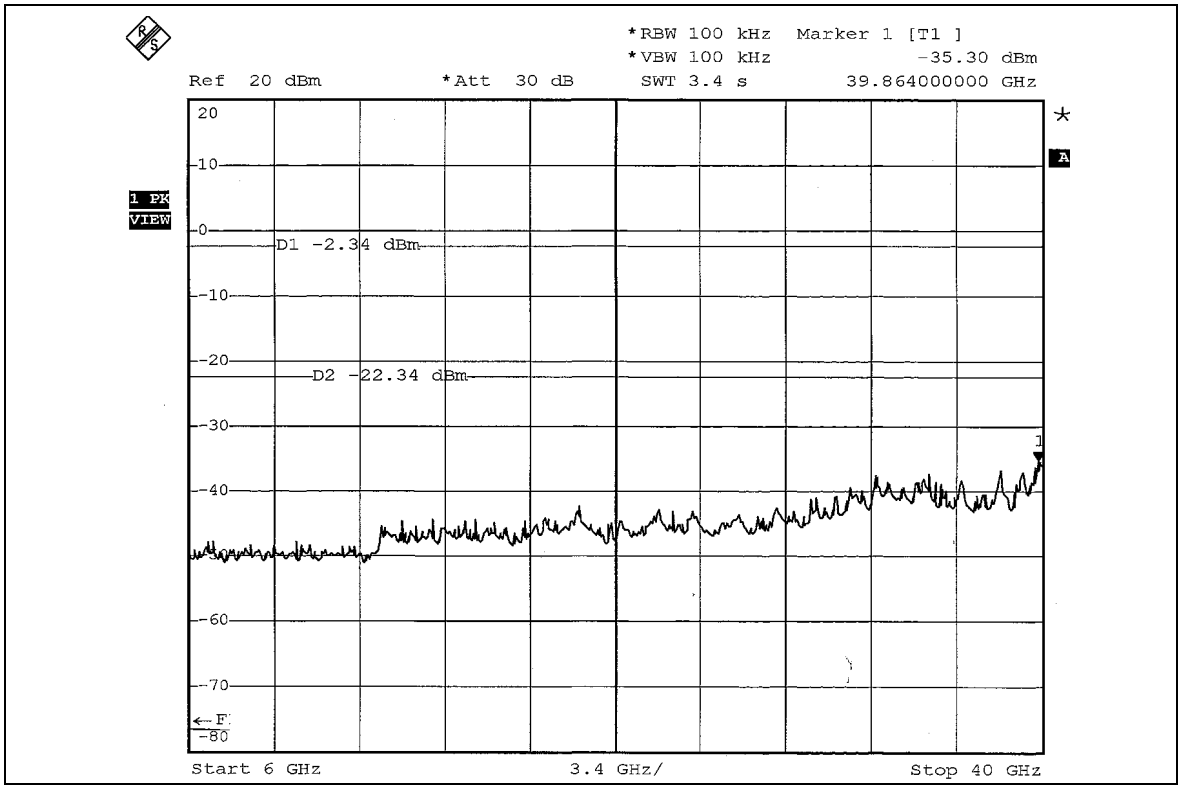
5.6.6 TEST RESULTS

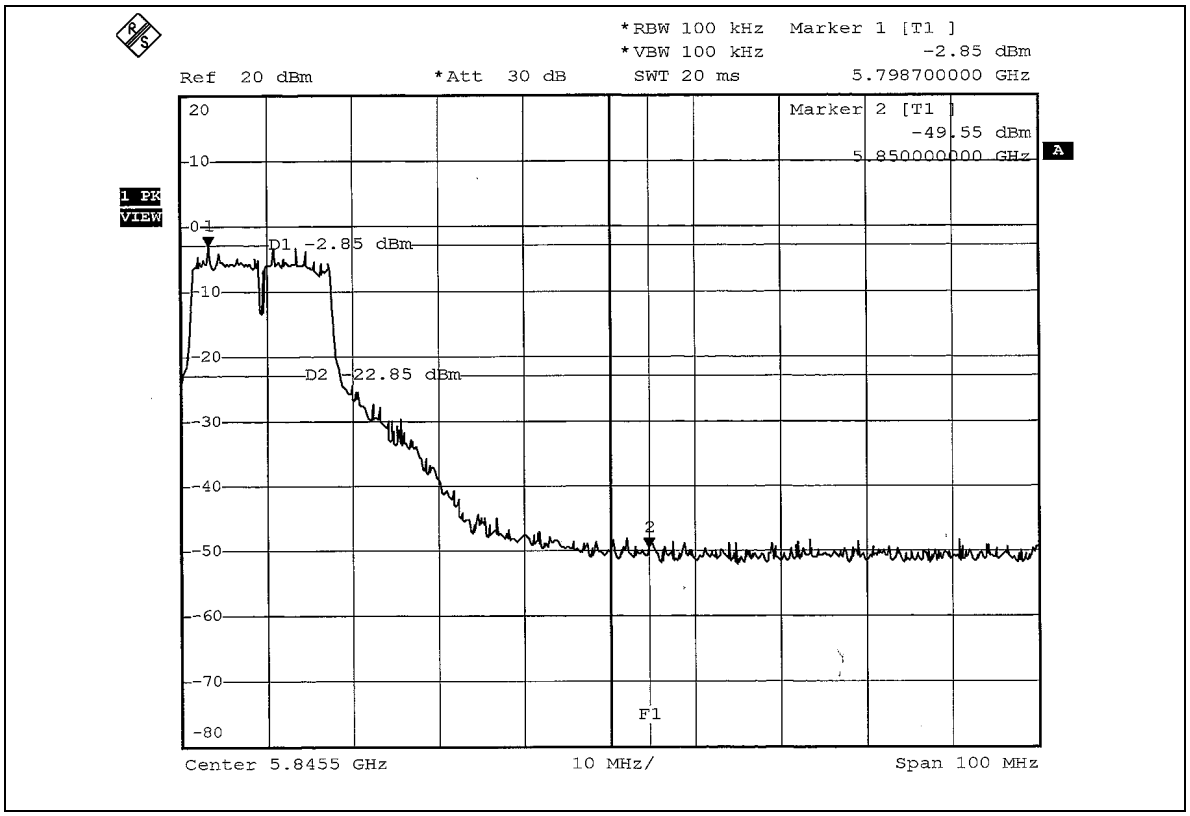
The spectrum plots are attached on the following pages. D2 line indicates the highest level, D1 line indicates the 20dB offset below D2. It shows compliance with the requirement in part 15.247(d).

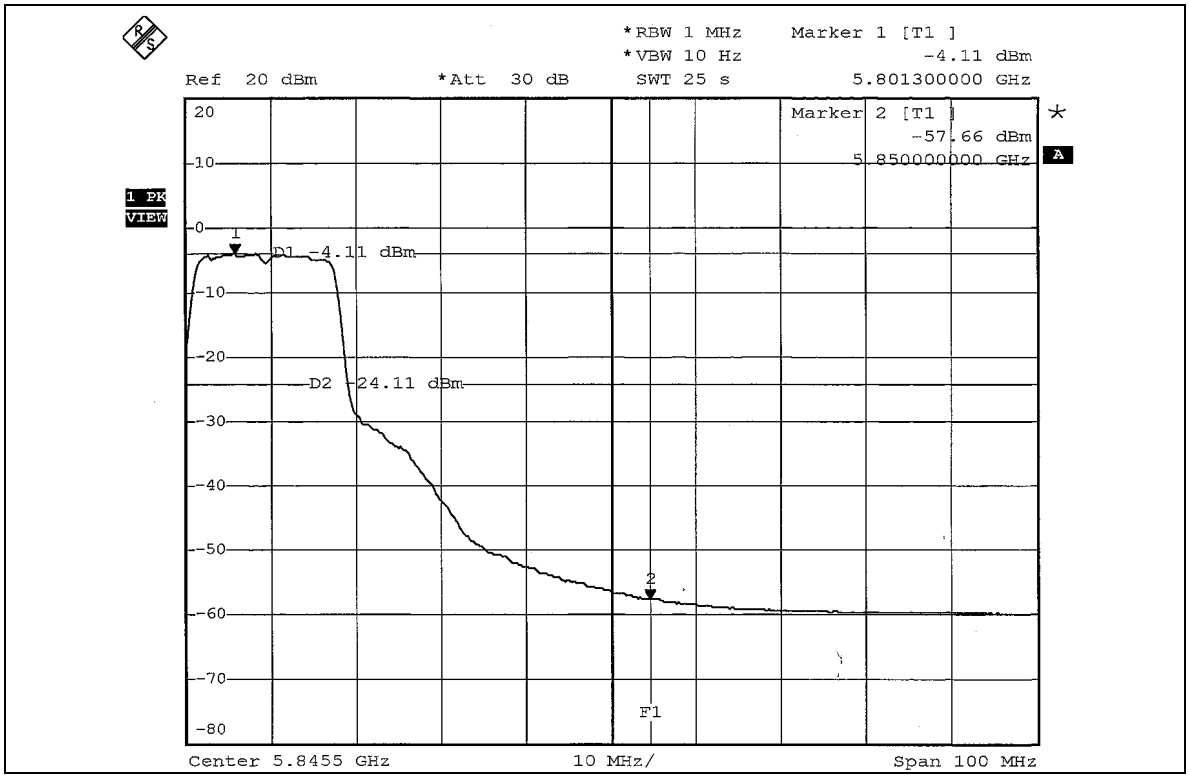
802.11a OFDM modulation

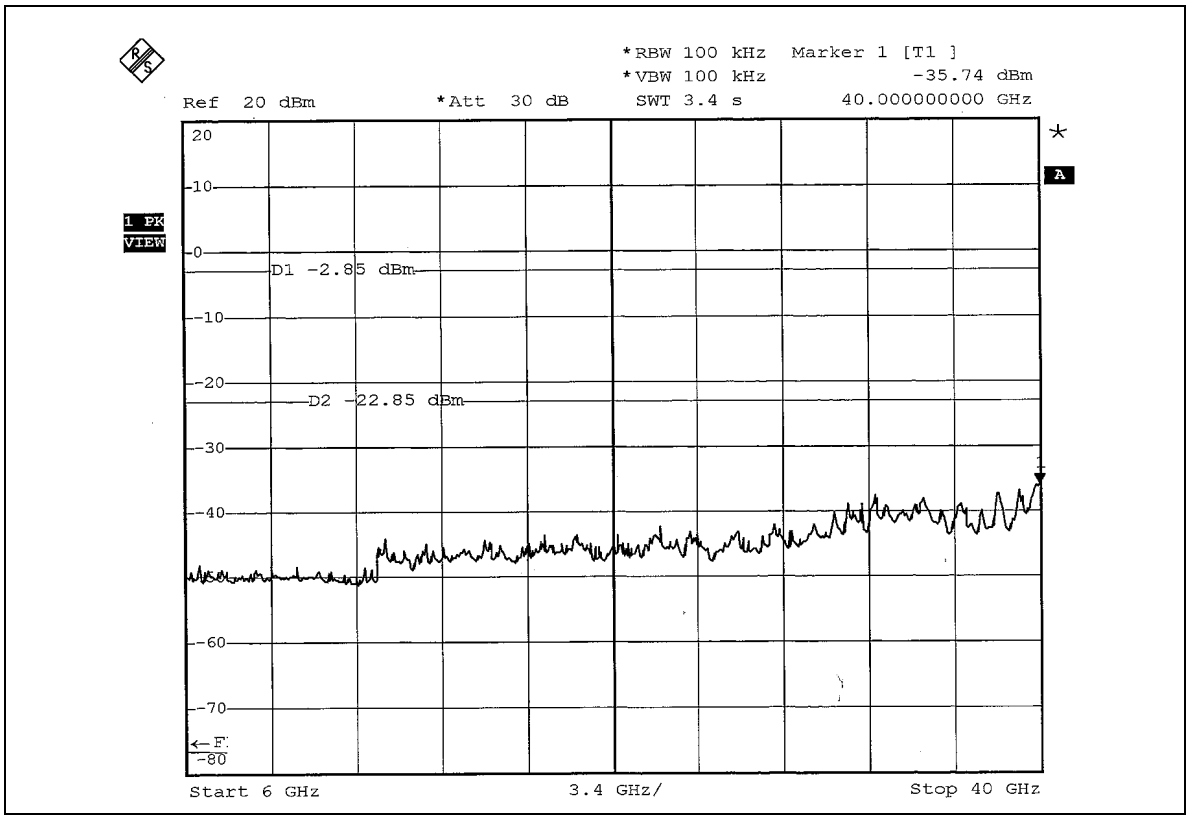





*RBW 100 kHz
*VBW 100 kHz
Marker 1 [T1]
-35.30 dBm
Ref 20 dBm
*Att 30 dB
SWT 3.4 s
39.864000000 GHz
1 PK
VIEW
D1 -2.34 dBm
D2 -22.34 dBm
Start 6 GHz
3.4 GHz/
Stop 40 GHz


*RBW 100 kHz
*VBW 100 kHz
Marker 1 [T1]
-2.85 dBm
Ref 20 dBm
*Att 30 dB
SWT 20 ms
5.798700000 GHz
Marker 2 [T1]
-49.55 dBm
5.850000000 GHz
1 PK
VIEW
D1 -2.85 dBm
D2 -22.85 dBm
F1
Center 5.8455 GHz
10 MHz/
Span 100 MHz


*RBW 1 MHz
*VBW 10 Hz
SWT 25 s
Marker 1 [T1]
-4.11 dBm
5.801300000 GHz
Ref 20 dBm
*Att 30 dB
Marker 2 [T1]
-57.66 dBm
5.850000000 GHz
1 PK
VIEW
D1 -4.11 dBm
D2 -24.11 dBm
F1
Center 5.8455 GHz
10 MHz/
Span 100 MHz


*RBW 100 kHz
*VBW 100 kHz
SWT 3.4 s
Marker 1 [T1]
-35.74 dBm
40.000000000 GHz
Ref 20 dBm
*Att 30 dB
1 PK
VIEW
D1 -2.85 dBm
D2 -22.85 dBm
Start 6 GHz
3.4 GHz/
Stop 40 GHz

5.7 ANTENNA REQUIREMENT

5.7.1 STANDARD APPLICABLE

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.
And according to FCC 47 CFR Section 15.247(a), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

5.7.2 ANTENNA CONNECTED CONSTRUCTION

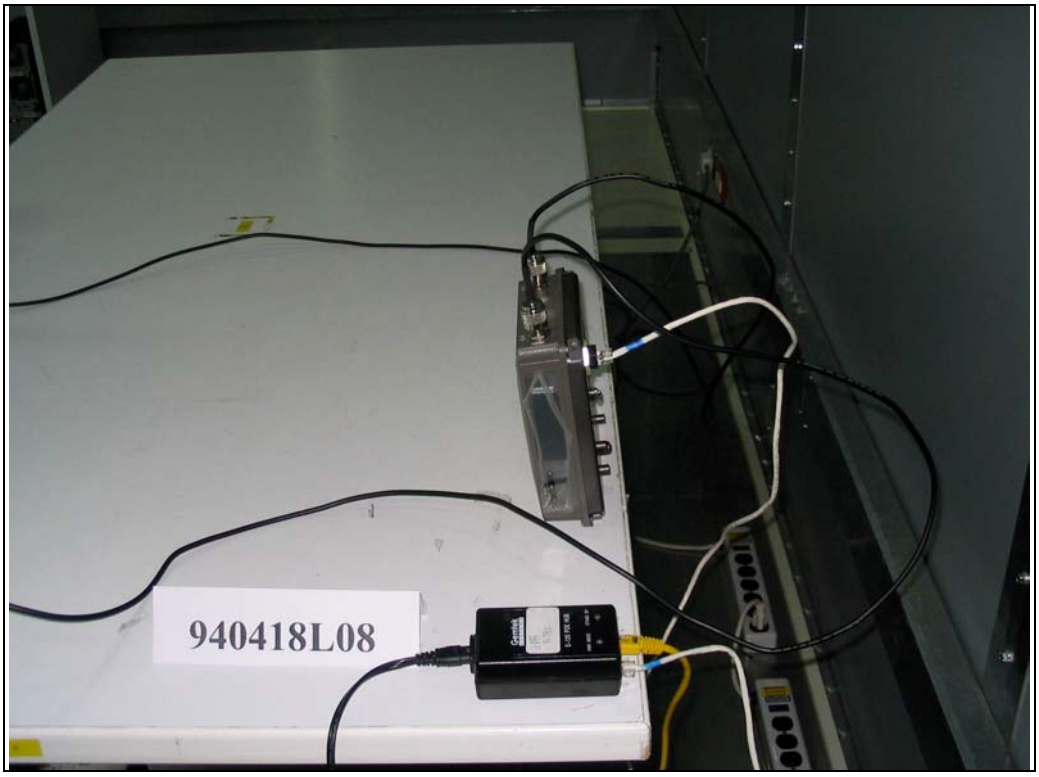
The antenna used in this product is Omni antenna with N-type connector. The maximum Gain of the antenna is 8.0dBi.

6. PHOTOGRAPHS OF THE TEST CONFIGURATION

CONDUCTED EMISSION TEST

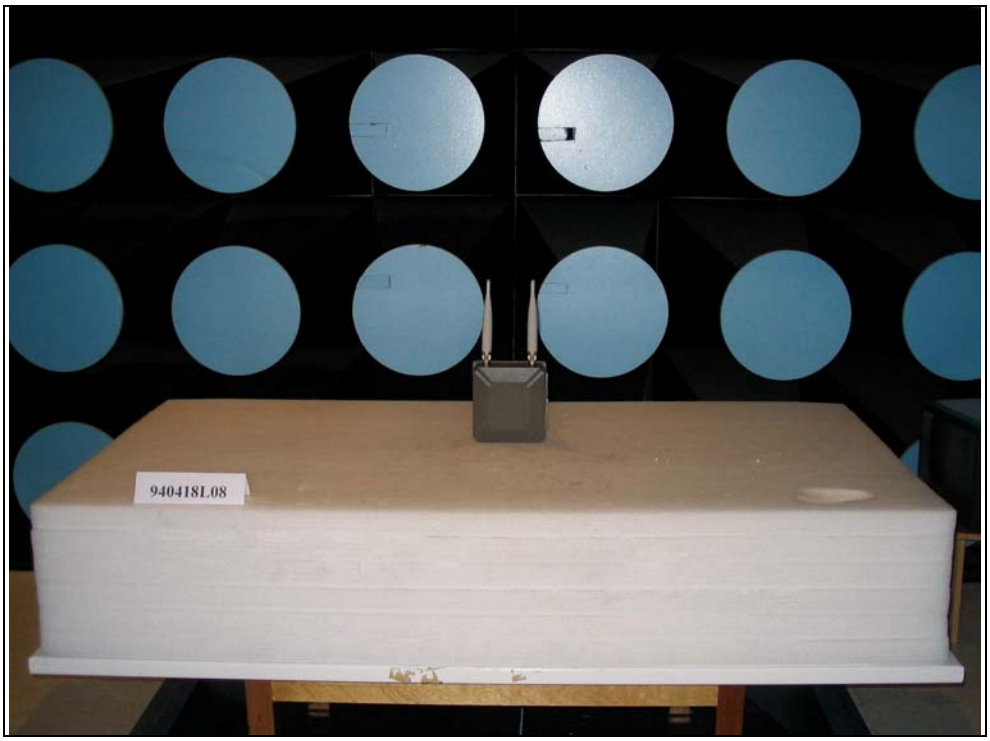
For Dual Band Antenna (A-807)

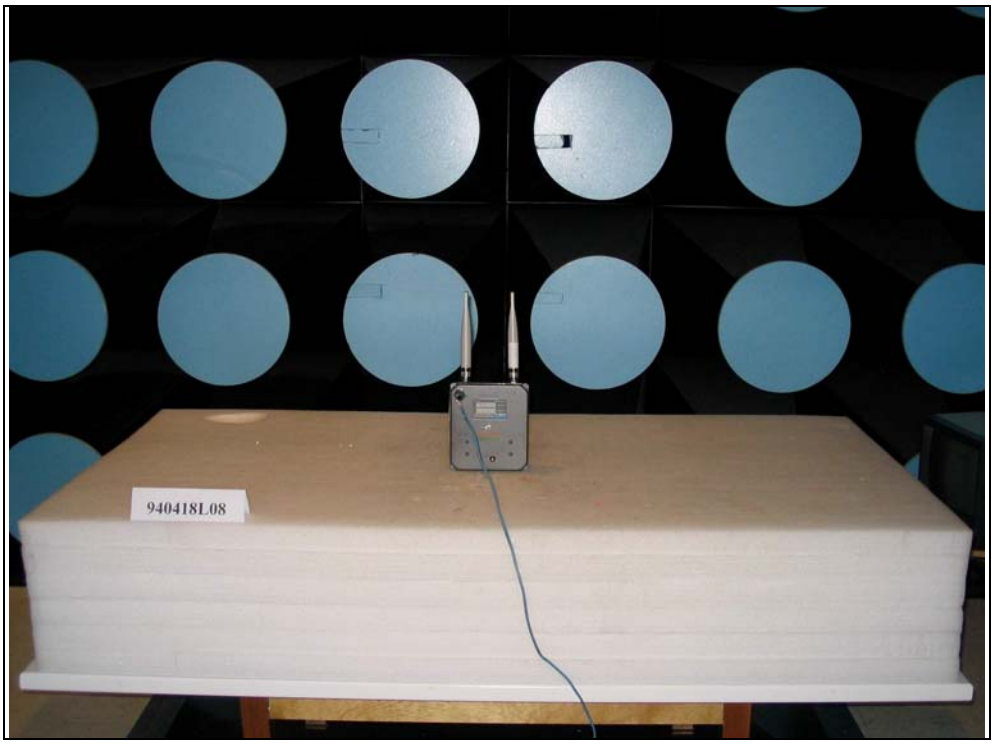
For Single Band Antenna (A-308, A-408)



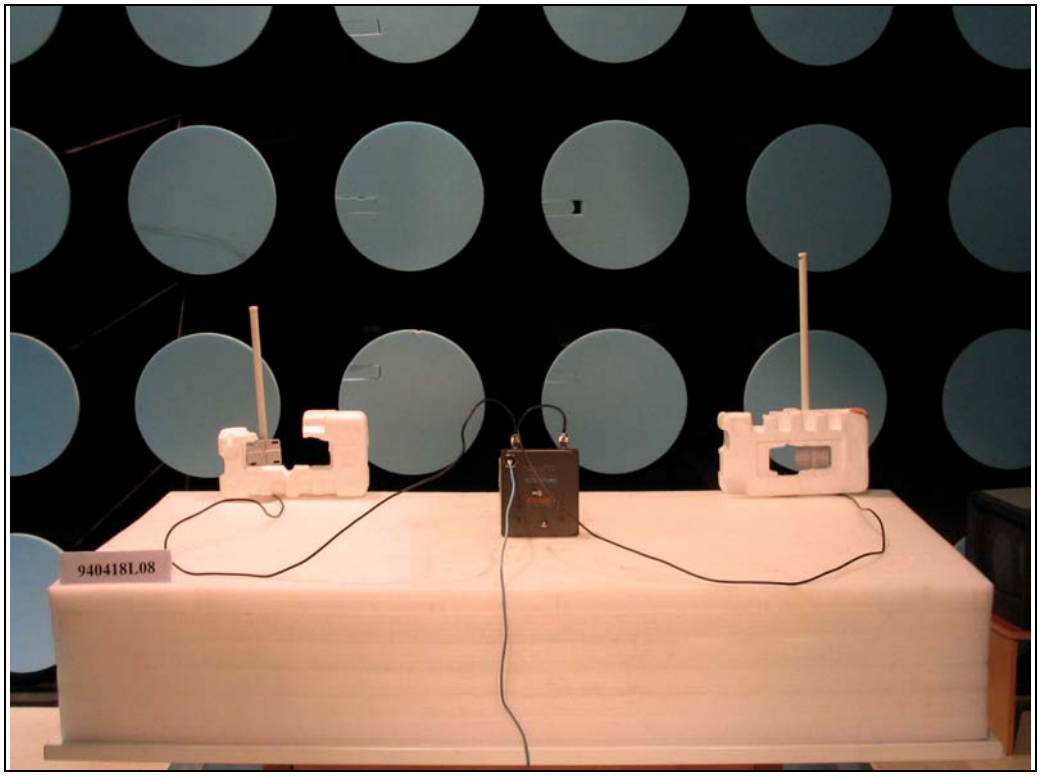
RADIATED EMISSION TEST

For Dual Band Antenna (A-807)





For Single Band Antenna (A-308, A-408)



7. INFORMATION ON THE TESTING LABORATORIES

We, ADT Corp., 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, UL, A2LA
Germany	TUV Rheinland
Japan	VCCI
Norway	NEMKO
Canada	INDUSTRY CANADA , CSA
R.O.C.	CNLA, BSMI, DGT
Netherlands	Telefication
Singapore	PSB , 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:
Tel: 886-3-5935343
Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety Telecom Lab:
Tel: 886-3-3183232
Fax: 886-3-3185050

Linko RF Lab.
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Fax: 886-3-3270892

Web Site: www.adt.com.tw

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