FCC TEST REPORT (15.247)

REPORT NO.: RF950206H07
MODEL NO.: WA8011A-A
RECEIVED: Feb. 06, 2006
TESTED: Feb. 20 to March 3, 2006
ISSUED: March 3, 2006

APPLICANT: Microelectronics Technology Inc.

ADDRESS: 1, Innovation Road II,Hsinchu Science-based Industrial Park, Hsinchu, Taiwan, R.O.C.

ISSUED BY: Advance Data Technology Corporation

TEST LOCATION: No. 81-1, Lu Liao Keng, 9 Ling, Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien, Taiwan, R.O.C.

0536

No. 2177-01

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APPENDIX-A A-1

1. CERTIFICATION

PRODUCT:	A8 802.11ab/g AP BS/Bridge AC
BRAND NAME:	MTI, ALTAI, ASTRI
MODEL NO.:	WA8011A-A
TEST SAMPLE:	ENGINEERING SAMPLE
TESTED:	Feb. 20 to March 3, 2006
APPLICANT:	Microelectronics Technology Inc.
STANDARDS:	FCC Part 15, Subpart C (Section 15.247), ANSI C63.4-2003

The above equipment (Model: WA8011A-A) 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 : Carol Liao , **DATE:** March 3, 2006
(Carol Liao)

TECHNICAL ACCEPTANCE : Hank Chung , **DATE:** March 3, 2006
Responsible for RF
(Hank Chung)

APPROVED BY : , **DATE:** March 3, 2006
(May Chen, Deputy Manager)

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

For 802.11b & g, 2412~2462MHz Band

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 –0.69dB at 1.123MHz
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 –0.8dB at 2390.00MHz
15.247(e)	Power Spectral Density Limit: max. 8dBm	PASS	Meet the requirement of limit.
15.247(d)	Band Edge Measurement Limit: 20dB less than the peak value of fundamental frequency	PASS	Meet the requirement of limit.

For 802.11a, 5725~5850MHz Band

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 –0.76dB at 1.005MHz
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 –1.0dB at 11650.0MHz
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.

NOTE:

1. The EUT was operating in 2.412 ~ 2.462GHz, 5.250 ~ 5.350GHz and 5.725 ~ 5.850GHz frequencies band. This report was recorded the RF parameters including 2.412 ~ 2.462GHz and 5.725 ~ 5.850GHz. For the 5.250 ~ 5.350GHz RF parameters was recorded in another test report.

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	A8 802.11ab/g AP BS/Bridge AC
MODEL NO.	WA8011A-A
FCC ID	MAD-WA8011-A
POWER SUPPLY	Voltage/90-264 V AC, Power/58 W (RMS), Frequency/47-63 Hz
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: 2412 ~ 2462MHz 802.11a: 5.25 ~ 5.35GHz and 5.725 ~ 5.850GHz
NUMBER OF CHANNEL	802.11b & 802.11g: 11 802.11a: 9
CHANNEL SPACING	802.11b & 802.11g: 5MHz 802.11a: 20MHz for Normal mode
OUTPUT POWER	802.11b: 114.815mW 802.11g: 138.038mW 802.11a: 96.383mW
ANTENNA TYPE	Please see note 3 (on next page)

NOTE:

1. The EUT operates in both the 5GHz and 2.4GHz Bands and compatibility with 802.11a and 802.11b, 802.11g technology.
2. There are four sector antennas (receive and transmit) of the 2.4GHz Band, but only one of the sector antennas can act at the same time. The EUT can operate in 5GHz and 2.4GHz Bands at the same time. The equipment is professionally installed.
3. The EUT has three brand names which are identical to each other in all aspects except for the followings:

Brand Name	Model Name
MTI (Microelectronics Technology Inc.)	WA8011A-A
ALTAI (Altai Technologies Limited)	
ASTRI (Hong Kong Applied Science and Technology Research Institute Company Limited)	

4. The EUT can be equipped with following antennas:

For 2.4GHz						
No.	Model No.	Gain (dBi)	Cable Loss (dB)	Net Gain (dB)	Antenna Type	Antenna Connector
1-4	B8-R2-75mm	14.0	1.0	13.0	(H-Plane)Sectoredand	N-Female
For 5GHz						
No.	Model No.	Gain (dBi)	Cable Loss (dB)	Net Gain (dB)	Antenna Type	Antenna Connector
A	HG5310U	10.0	2.0	8.0	OMNI Dipole	N-Female
B	HG5808U	8.0	2.0	6.0	OMNI Dipole	N-Female
C	SA-A04-090250	18.0	2.0	16.0	Panel Directional	N-Jack

Note:

1. All of the above antennas are outdoor Antenna.
2. From above antennas, the different type of antennas was chosen for final test and its data were recorded in this report.
3. For 2.4GHz antennas, antenna 1, 2, 3 and 4 are the same type of antenna ((H-Plane)Sectoredand), we choose the worst antenna (decided by pretest) for final test. Antenna 1, the worst antenna, was selected as representative antenna for the test.
4. For 5GHz antenna, all of the antennas are different type or frequency band, was selected as all antenna for the test.
5. Antenna Model No. SA-A04-090250 can be used in point-to-point applications.

5. According to the RF ports assignment, connect RF cables with antenna according to the table below:

For 2.4GHz			
Antenna No.	Antenna Port	Port name	Port no.
No.1	1L	1A	8
	1R	1B	7
No.2	2L	2A	6
	2R	2B	5
No.3	3L	3A	4
	3R	3B	3
No.4	4L	4A	2
	4R	4B	1
For 5GHz			
Antenna No.	Antenna Port	Port name	Port no.
A, B, C	9	A	9

6. Frequency Range of each Antennas are as followings:

For 2.4GHz	
Antenna No.	Frequency Range
No. 1 ~ 4	2400MHz ~ 2483.5MHz
For 5GHz	
Antenna No.	Frequency Range
A	5.15GHz ~ 5.35GHz
B	5.725 GHz ~ 5.85GHz
C	5.25 GHz ~ 5.875

7. Maximum peak output power (Unit : dBm) :

No.	Model No. (Antenna)	Operating Frequency (MHz)		
		2412~2462	5250~5350	5725~5850
1-4	B8-R2-75mm	21.40	NA	NA
A	HG5310U	NA	19.84	NA
B	HG5808U	NA	NA	18.90
C	SA-A04-090250	NA	11.87	21.27

8. RF cable loss:

For 2.4GHz	
Cable No.	Cable Loss
No. 1 ~ 8	1dB (For 2400MHz ~ 2483.5MHz)
For 5GHz	
Cable No.	Cable Loss
No. 9	2dB (For 5.250GHz ~ 5.850GHz)

9. 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

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 (5725 ~ 5850MHz band): Five channels are provided to this EUT.

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

3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL:

EUT configure mode	Applicable to				Description
	PLC	RE<1G	RE≥1G	APCM	
-	X	X	X	X	NA

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

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.

Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11g	1 to 11	11	OFDM	BPSK	6
802.11a	1 to 5	5	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.

Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11g	1 to 11	11	OFDM	BPSK	6
802.11a	1 to 5	5	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.

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

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 an A8 802.11ab/g AP BS/Bridge AC. 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

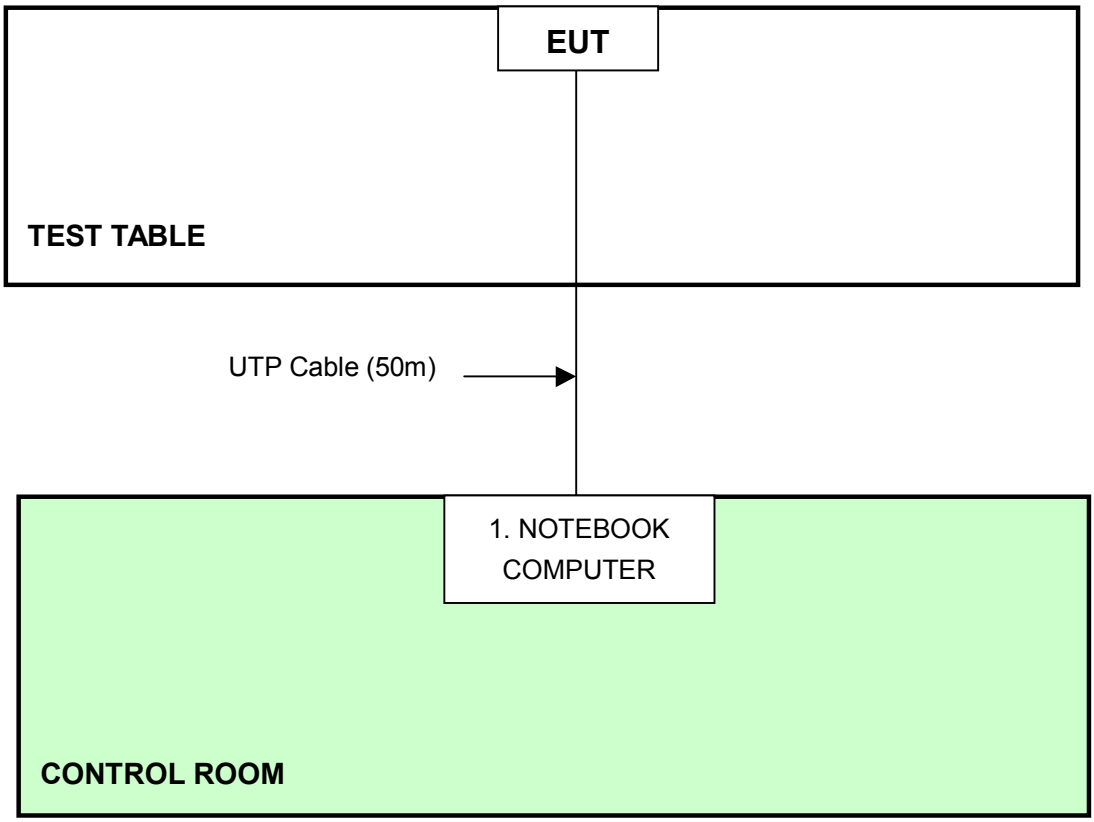
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP01L	TW-0791UH-12800-0CK-3735	FCC DoC

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

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

3.5 CONFIGURATION OF SYSTEM UNDER TEST



NOTE: 1. Support unit 1 was kept in the control room during the test.
2. Please refer to the photos of test configuration in Item 6 also.

4.TEST TYPES AND RESULTS (802.11b & g, 2400 ~ 2483.5MHz 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	ESCS 30	100375	Sep. 19, 2006
Line-Impedance Stabilization Network(for EUT)	ENV-216	100071	Nov. 10, 2006
ROHDE & SCHWARZ LISN	KNW-407	8/1395/12	Jul. 19, 2006
RF Signal Cable	RG233/U	Cable_CA_02	Dec. 10, 2006
Terminator(for KYORITSU)	50	2	Oct. 08, 2006
Software	ADT_Cond_V7.3.2	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 ADT Shielded Room No. B.
3 The VCCI Con B Registration No. is C-2193.
5 The measurement uncertainty is 2.26 dB, which is calculated as per the document CISPR 16-4 This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

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.

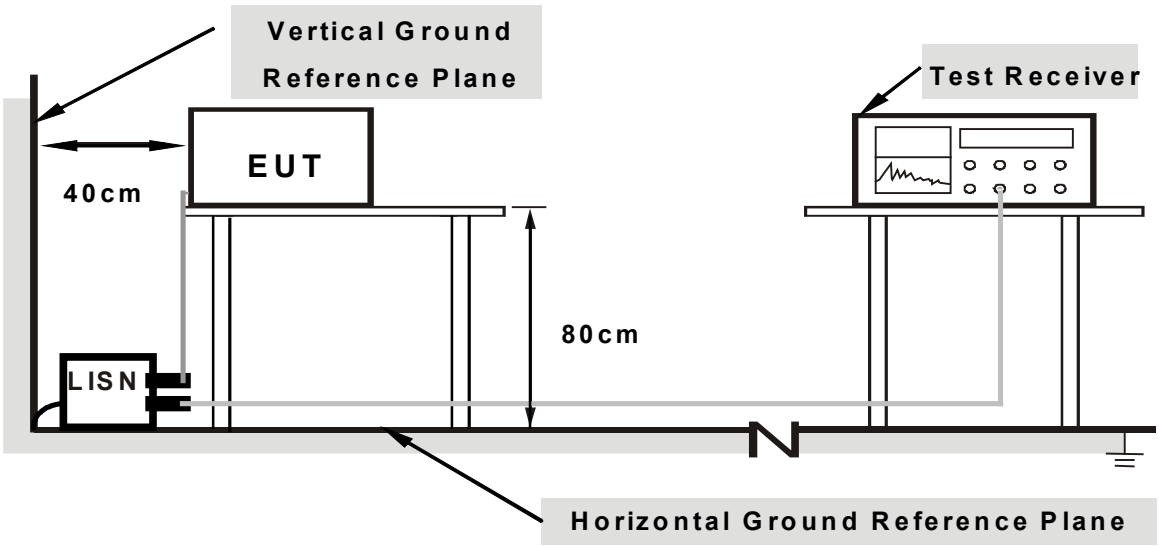
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

c. The frequency range from 150kHz to 30MHz was searched. Emission level 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 anther computer system to act as a communication partner and placed it outside of testing area.

c. The communication partner run test program “ART53 Build 5” to enable EUT under transmission/receiving condition continuously at specific channel frequency via UTP cable.

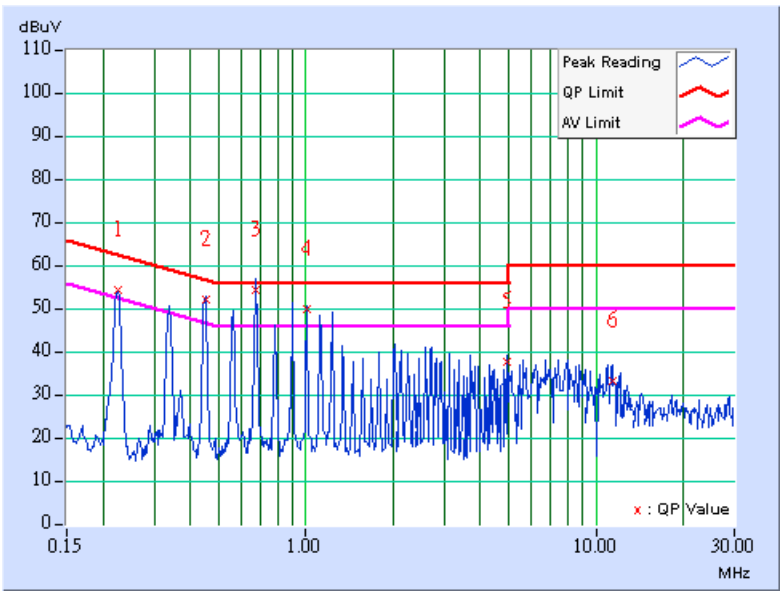
4.1.7 TEST RESULTS

Conducted Worst-Case Data

MODULATION TYPE	BPSK	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TRANSFER RATE**	6Mbps
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 973hPa	**PHASE**	Line (L)
TESTED BY	Rex Huang		

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.224	9.65	44.23	37.35	53.88	47.00	62.66	52.66	-8.78	-5.66
2	0.451	9.67	41.99	36.20	51.66	45.87	56.86	46.86	-5.20	-0.99
3	0.673	9.68	44.30	35.36	53.98	45.04	56.00	46.00	-2.02	-0.96
4	1.009	9.70	39.77	35.43	49.47	45.13	56.00	46.00	-6.53	-0.87
5	4.914	9.88	27.53	-	37.41	-	56.00	46.00	-18.59	-
6	11.457	10.09	23.13	-	33.22	-	60.00	50.00	-26.78	-

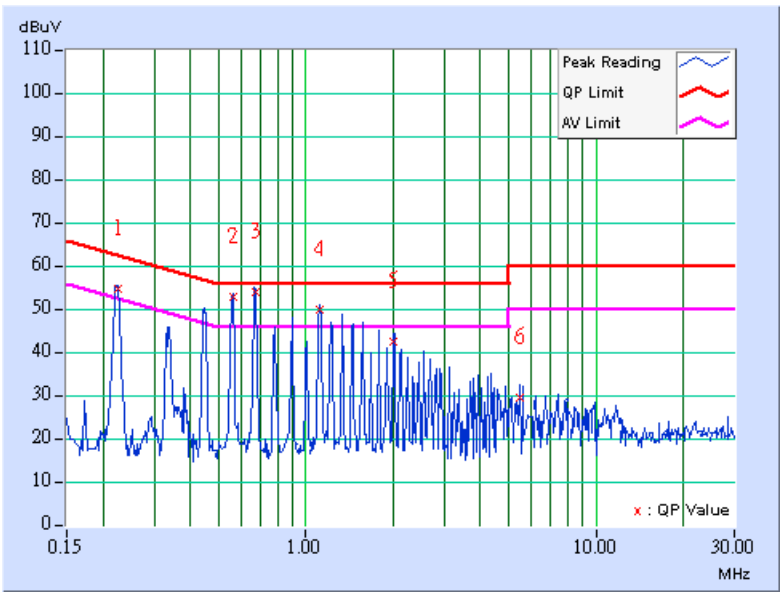
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



MODULATION TYPE	BPSK	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TRANSFER RATE**	6Mbps
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 973hPa	**PHASE**	Neutral (N)
TESTED BY	Rex Huang		

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.224	9.65	45.01	37.80	54.66	47.45	62.66	52.66	-8.00	-5.21
2	0.560	9.68	42.98	35.60	52.66	45.28	56.00	46.00	-3.34	-0.72
3	0.673	9.68	44.12	35.43	53.80	45.11	56.00	46.00	-2.20	-0.89
4	**1.123**	**9.71**	**40.17**	**35.60**	**49.88**	**45.31**	**56.00**	**46.00**	**-6.12**	**-0.69**
5	2.015	9.75	32.71	-	42.46	-	56.00	46.00	-13.54	-
6	5.477	9.90	19.63	-	29.53	-	60.00	50.00	-30.47	-

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
ADVANTEST Spectrum Analyzer	R3271A	85060311	July 07, 2006
HP Pre_Amplifier	8449B	3008A01922	Oct. 02, 2006
ROHDE & SCHWARZ Test Receiver	ESCS30	100287	Dec. 08, 2006
CHASE Broadband Antenna	VULB9168	138	Dec. 21, 2006
Schwarzbeck Horn_Antenna	BBHA9120	D124	Dec. 11, 2006
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA9170153	Jan. 05, 2007
SCHWARZBECK Biconical Antenna	VHBA9123	459	Jun. 26, 2006
SCHWARZBECK Periodic Antenna	UPA6108	1148	Jun. 26, 2006
RF Switches (ARNITSU)	CS-201	1565157	NA
RF CABLE (Chaintek) 1GHz-20GHz	SF102	22054-2	Nov. 16. 2006
RF Cable(RICHTEC)	9913-30M	STCCAB-30M-1GHz-021	Jul. 16, 2006
Software	ADT_Radiated_V 5.14	NA	NA
CHANCE MOST Antenna Tower	AT-100	0203	NA
CHANCE MOST Turn Table	TT-100	0203	NA

Note: 1. The calibration interval of the above test instruments is 12 months (36 months for Periodic Antenna)and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in ADT Open Site No. C.
4. The FCC Site Registration No. is 656396.
5. The VCCI Site Registration No. is R-1626.
6. The CANADA Site Registration No. is IC 4824-3.
7. The following table is for the measurement uncertainty, which is calculated as per the document CISPR 16-4. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Measurement	Value
Radiated emissions (30MHz-1GHz)	2.98 dB
Radiated emissions (1GHz ~18GHz)	2.21 dB
Radiated emissions (18GHz ~20GHz)	1.88 dB

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.

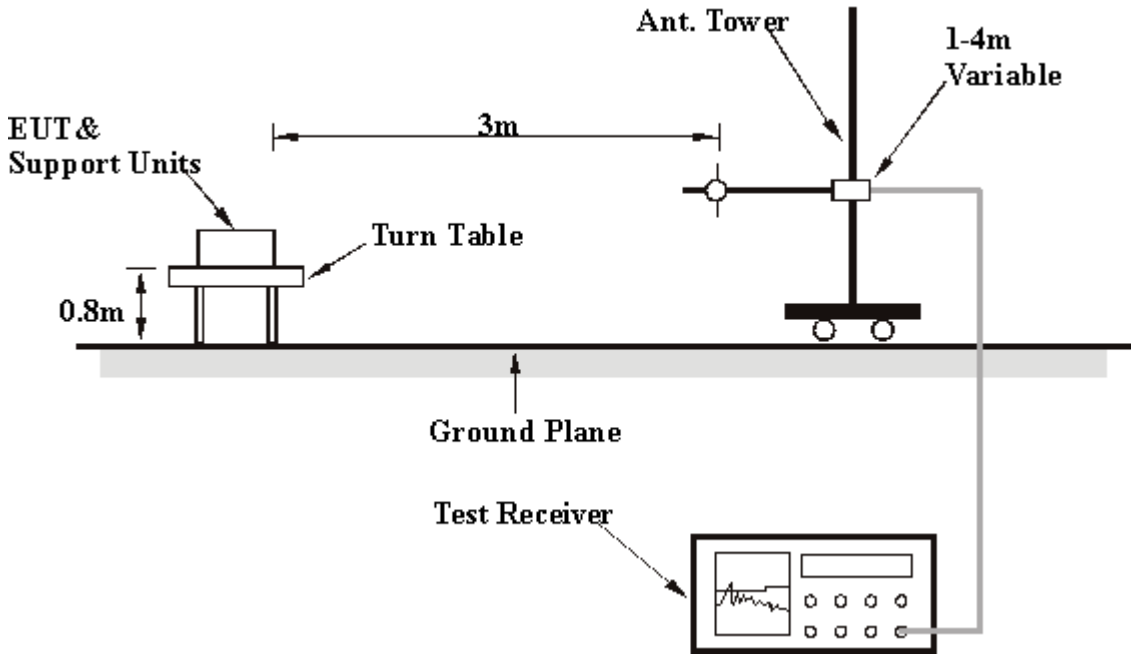
NOTE:

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

MODULATION TYPE	BPSK	**FREQUENCY RANGE**	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TRANSFER RATE**	6Mbps
ENVIRONMENTAL CONDITIONS	14deg. C, 70%RH, 973hPa	**DETECTOR FUNCTION**	Quasi-Peak
TESTED BY	Moris Lin		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	125.00	11.60 QP	43.50	-31.90	1.90 H	30	-0.60	12.20
2	250.00	15.60 QP	46.00	-30.40	2.00 H	33	1.80	13.80
3	325.00	14.60 QP	46.00	-31.40	1.50 H	120	-2.50	17.10
4	375.00	17.10 QP	46.00	-28.90	1.10 H	21	-1.10	18.20
5	500.00	16.20 QP	46.00	-29.80	1.10 H	230	-5.60	21.80
6	566.66	29.10 QP	46.00	-16.90	1.50 H	245	5.40	23.70
7	651.24	33.10 QP	46.00	-12.90	1.12 H	40	8.10	25.00

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	125.00	26.10 QP	43.50	-17.40	1.30 V	24	13.90	12.20
2	250.01	20.20 QP	46.00	-25.80	1.40 V	45	6.40	13.80
3	325.00	20.60 QP	46.00	-25.40	2.10 V	122	3.50	17.10
4	375.15	26.60 QP	46.00	-19.40	2.00 V	100	8.40	18.20
5	500.00	23.30 QP	46.00	-22.70	1.80 V	336	1.50	21.80
6	566.66	30.30 QP	46.00	-15.70	2.00 V	20	6.60	23.70
7	651.25	37.80 QP	46.00	-8.20	2.20 V	120	12.80	25.00

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

CHANNEL	Channel 1	**FREQUENCY RANGE**	1 ~ 25GHz
MODULATION TYPE	CCK	**TRANSFER RATE**	11Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 68%RH, 973hPa	**TESTED BY**	Wen Yu

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	2390.00	65.20 PK	74.00	-8.80	1.56 H	17	31.50	33.70
1	2390.00	52.10 AV	54.00	-1.90	1.56 H	17	18.40	33.70
2	*2412.00	120.30 PK			1.56 H	17	90.50	29.80
2	*2412.00	111.50 AV			1.56 H	17	81.70	29.80
3	2688.00	56.60 PK	100.30	-43.70	1.70 H	7	25.70	30.90
3	2688.00	55.30 AV	91.50	-36.20	1.70 H	7	24.40	30.90
4	4824.00	40.60 PK	74.00	-33.40	1.34 H	38	5.50	35.10
4	4824.00	29.50 AV	54.00	-24.50	1.34 H	38	-5.60	35.10
5	7236.00	46.00 PK	74.00	-28.00	1.41 H	21	5.50	40.50
5	7236.00	34.40 AV	54.00	-19.60	1.41 H	21	-6.10	40.50

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	2390.00	63.20 PK	74.00	-10.80	1.45 V	1	29.50	33.70
1	2390.00	50.70 AV	54.00	-3.30	1.45 V	1	17.00	33.70
2	*2412.00	118.30 PK			1.45 V	1	88.50	29.80
2	*2412.00	110.10 AV			1.45 V	1	80.30	29.80
3	2688.00	57.00 PK	98.30	-41.30	1.55 V	27	26.10	30.90
3	2688.00	55.40 AV	90.10	-34.70	1.55 V	27	24.50	30.90
4	4824.00	40.30 PK	74.00	-33.70	1.86 V	128	5.20	35.10
4	4824.00	29.00 AV	54.00	-25.00	1.86 V	128	-6.10	35.10
5	7236.00	45.70 PK	74.00	-28.30	1.59 V	288	5.20	40.50
5	7236.00	34.30 AV	54.00	-19.70	1.59 V	288	-6.20	40.50

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

CHANNEL	Channel 6	**FREQUENCY RANGE**	1 ~ 25GHz
MODULATION TYPE	CCK	**TRANSFER RATE**	11Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 68%RH, 973hPa	**TESTED BY**	Wen Yu

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	*2437.00	122.90 PK			1.62 H	21	93.00	29.90
1	*2437.00	114.10 AV			1.62 H	21	84.20	29.90
2	2688.00	59.70 PK	102.90	-43.20	1.70 H	10	28.80	30.90
2	2688.00	57.60 AV	94.10	-36.50	1.70 H	10	26.70	30.90
3	4874.00	42.00 PK	74.00	-32.00	1.36 H	33	6.70	35.30
3	4874.00	32.00 AV	54.00	-22.00	1.36 H	33	-3.30	35.30
4	7311.00	47.00 PK	74.00	-27.00	1.70 H	2	6.40	40.70
4	7311.00	35.20 AV	54.00	-18.80	1.70 H	2	-5.40	40.70

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	*2437.00	121.90 PK			1.42 V	356	92.00	29.90
1	*2437.00	113.20 AV			1.42 V	356	83.30	29.90
2	2688.00	60.10 PK	101.90	-41.80	1.62 V	26	29.20	30.90
2	2688.00	58.00 AV	93.20	-35.20	1.62 V	26	27.10	30.90
3	4874.00	41.80 PK	74.00	-32.20	1.58 V	14	6.50	35.30
3	4874.00	30.40 AV	54.00	-23.60	1.58 V	14	-4.90	35.30
4	7311.00	46.40 PK	74.00	-27.60	1.50 V	276	5.80	40.70
4	7311.00	35.10 AV	54.00	-18.90	1.50 V	276	-5.50	40.70

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

CHANNEL	Channel 11	**FREQUENCY RANGE**	1 ~ 25GHz
MODULATION TYPE	CCK	**TRANSFER RATE**	11Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 68%RH, 973hPa	**TESTED BY**	Wen Yu

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	*2462.00	119.30 PK			1.60 H	17	89.30	30.00
1	*2462.00	111.20 AV			1.60 H	17	81.20	30.00
2	2483.50	63.70 PK	74.00	-10.30	1.60 H	17	33.60	30.10
2	2483.50	51.20 AV	54.00	-2.80	1.60 H	17	21.10	30.10
3	2688.00	60.30 PK	99.30	-39.00	1.68 H	10	29.40	30.90
3	2688.00	58.60 AV	91.20	-32.60	1.68 H	10	27.70	30.90
4	4924.00	41.70 PK	74.00	-32.30	1.59 H	328	6.20	35.50
4	4924.00	30.40 AV	54.00	-23.60	1.59 H	328	-5.10	35.50
5	7386.00	46.90 PK	74.00	-27.10	1.78 H	0	6.10	40.80
5	7386.00	35.10 AV	54.00	-18.90	1.78 H	0	-5.70	40.80

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	*2462.00	118.00 PK			1.47 V	7	88.00	30.00
1	*2462.00	109.90 AV			1.47 V	7	79.90	30.00
2	2483.50	62.40 PK	74.00	-11.60	1.47 V	7	32.30	30.10
2	2483.50	49.90 AV	54.00	-4.10	1.47 V	7	19.80	30.10
3	2688.00	60.30 PK	98.00	-37.70	1.65 V	22	29.40	30.90
3	2688.00	58.70 AV	89.90	-31.20	1.65 V	22	27.80	30.90
4	4924.00	40.80 PK	74.00	-33.20	1.47 V	19	5.30	35.50
4	4924.00	29.20 AV	54.00	-24.80	1.47 V	19	-6.30	35.50
5	7386.00	46.30 PK	74.00	-27.70	1.46 V	298	5.50	40.80
5	7386.00	35.10 AV	54.00	-18.90	1.46 V	298	-5.70	40.80

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

CHANNEL	Channel 1	**FREQUENCY RANGE**	1 ~ 25GHz
MODULATION TYPE	BPSK	**TRANSFER RATE**	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 68%RH, 973hPa	**TESTED BY**	Wen Yu

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	2390.00	65.90 PK	74.00	-8.10	1.35 H	22	32.20	33.70
1	**2390.00**	**53.20 AV**	**54.00**	**-0.80**	**1.35 H**	**22**	**19.50**	**33.70**
2	*2412.00	109.90 PK			1.35 H	22	80.10	29.80
2	*2412.00	100.00 AV			1.35 H	22	70.20	29.80
3	2688.00	49.50 PK	89.90	-40.40	1.70 H	12	18.60	30.90
3	2688.00	47.20 AV	80.00	-32.80	1.70 H	12	16.30	30.90
4	4824.00	41.00 PK	74.00	-33.00	1.62 H	22	5.90	35.10
4	4824.00	29.20 AV	54.00	-24.80	1.62 H	22	-5.90	35.10
5	7236.00	47.20 PK	74.00	-26.80	1.47 H	315	6.70	40.50
5	7236.00	35.30 AV	54.00	-18.70	1.47 H	315	-5.20	40.50

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	2390.00	63.30 PK	74.00	-10.70	1.48 V	0	29.60	33.70
1	2390.00	51.40 AV	54.00	-2.60	1.48 V	0	17.70	33.70
2	*2412.00	107.30 PK			1.48 V	0	77.50	29.80
2	*2412.00	98.20 AV			1.48 V	0	68.40	29.80
3	2688.00	50.30 PK	87.30	-37.00	1.62 V	28	19.40	30.90
3	2688.00	47.60 AV	78.20	-30.60	1.62 V	28	16.70	30.90
4	4824.00	40.70 PK	74.00	-33.30	1.45 V	218	5.60	35.10
4	4824.00	29.00 AV	54.00	-25.00	1.45 V	218	-6.10	35.10
5	7236.00	46.70 PK	74.00	-27.30	1.23 V	69	6.20	40.50
5	7236.00	34.90 AV	54.00	-19.10	1.23 V	69	-5.60	40.50

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

CHANNEL	Channel 6	**FREQUENCY RANGE**	1 ~ 25GHz
MODULATION TYPE	BPSK	**TRANSFER RATE**	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 68%RH, 973hPa	**TESTED BY**	Wen Yu

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	*2437.00	120.20 PK			1.42 H	21	90.30	29.90
1	*2437.00	109.30 AV			1.42 H	21	79.40	29.90
2	2688.00	61.50 PK	100.20	-38.70	1.67 H	20	30.60	30.90
2	2688.00	58.80 AV	89.30	-30.50	1.67 H	20	27.90	30.90
3	4874.00	41.60 PK	74.00	-32.40	1.60 H	15	6.30	35.30
3	4874.00	29.70 AV	54.00	-24.30	1.60 H	15	-5.60	35.30
4	7311.00	47.70 PK	74.00	-26.30	1.56 H	329	7.10	40.70
4	7311.00	35.80 AV	54.00	-18.20	1.56 H	329	-4.80	40.70

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	*2437.00	118.30 PK			1.38 V	2	88.40	29.90
1	*2437.00	108.20 AV			1.38 V	2	78.30	29.90
2	2688.00	61.80 PK	98.30	-36.50	1.67 V	30	30.90	30.90
2	2688.00	59.20 AV	88.20	-29.00	1.67 V	30	28.30	30.90
3	4874.00	41.30 PK	74.00	-32.70	1.47 V	197	6.00	35.30
3	4874.00	29.40 AV	54.00	-24.60	1.47 V	197	-5.90	35.30
4	7311.00	47.20 PK	74.00	-26.80	1.19 V	82	6.60	40.70
4	7311.00	35.40 AV	54.00	-18.60	1.19 V	82	-5.20	40.70

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

CHANNEL	Channel 11	**FREQUENCY RANGE**	1 ~ 25GHz
MODULATION TYPE	BPSK	**TRANSFER RATE**	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 68%RH, 973hPa	**TESTED BY**	Wen Yu

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	*2462.00	111.20 PK			1.63 H	21	81.20	30.00
1	*2462.00	101.30 AV			1.63 H	21	71.30	30.00
2	2483.50	65.20 PK	74.00	-8.80	1.63 H	21	21.80	30.10
2	2483.50	51.90 AV	54.00	-2.10	1.63 H	21	35.10	30.10
3	2688.00	54.40 PK	91.20	-36.80	1.65 H	13	23.50	30.90
3	2688.00	52.70 AV	81.30	-28.60	1.65 H	13	21.80	30.90
4	4924.00	41.50 PK	74.00	-32.50	1.66 H	29	6.00	35.50
4	4924.00	29.70 AV	54.00	-24.30	1.66 H	29	-5.80	35.50
5	7386.00	47.60 PK	74.00	-26.40	1.48 H	320	6.80	40.80
5	7386.00	35.70 AV	54.00	-18.30	1.48 H	320	-5.10	40.80

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	*2462.00	109.90 PK			1.44 V	10	79.90	30.00
1	*2462.00	100.40 AV			1.44 V	10	70.40	30.00
2	2483.50	63.90 PK	74.00	-10.10	1.44 V	10	33.80	30.10
2	2483.50	51.00 AV	54.00	-3.00	1.44 V	10	20.90	30.10
3	2688.00	54.60 PK	89.90	-35.30	1.65 V	27	23.70	30.90
3	2688.00	53.00 AV	80.40	-27.40	1.65 V	27	22.10	30.90
4	4924.00	41.20 PK	74.00	-32.80	1.40 V	236	5.70	35.50
4	4924.00	29.50 AV	54.00	-24.50	1.40 V	236	-6.00	35.50
5	7386.00	47.30 PK	74.00	-26.70	1.28 V	79	6.50	40.80
5	7386.00	35.40 AV	54.00	-18.60	1.28 V	79	-5.40	40.80

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
R&S SPECTRUM ANALYZER	FSP40	100036	Nov. 23, 2006

NOTE:

1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

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

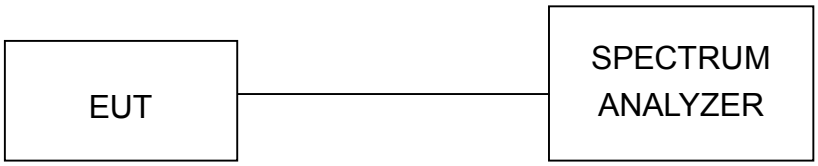
4.3.3 TEST PROCEDURE

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.

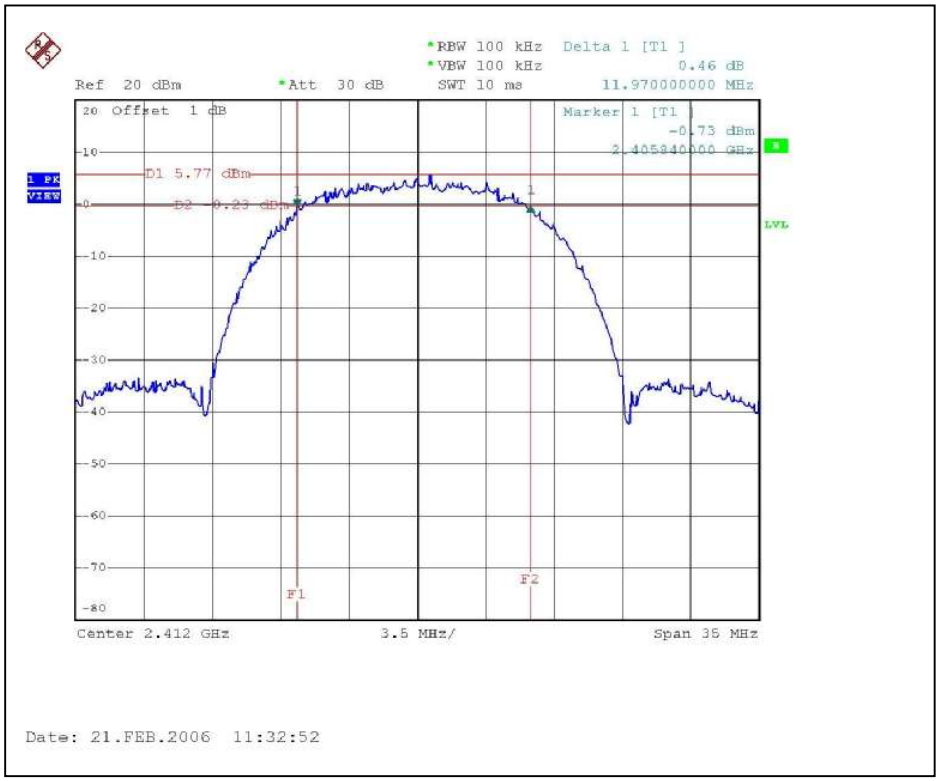
4.3.7 TEST RESULTS

802.11b DSSS modulation

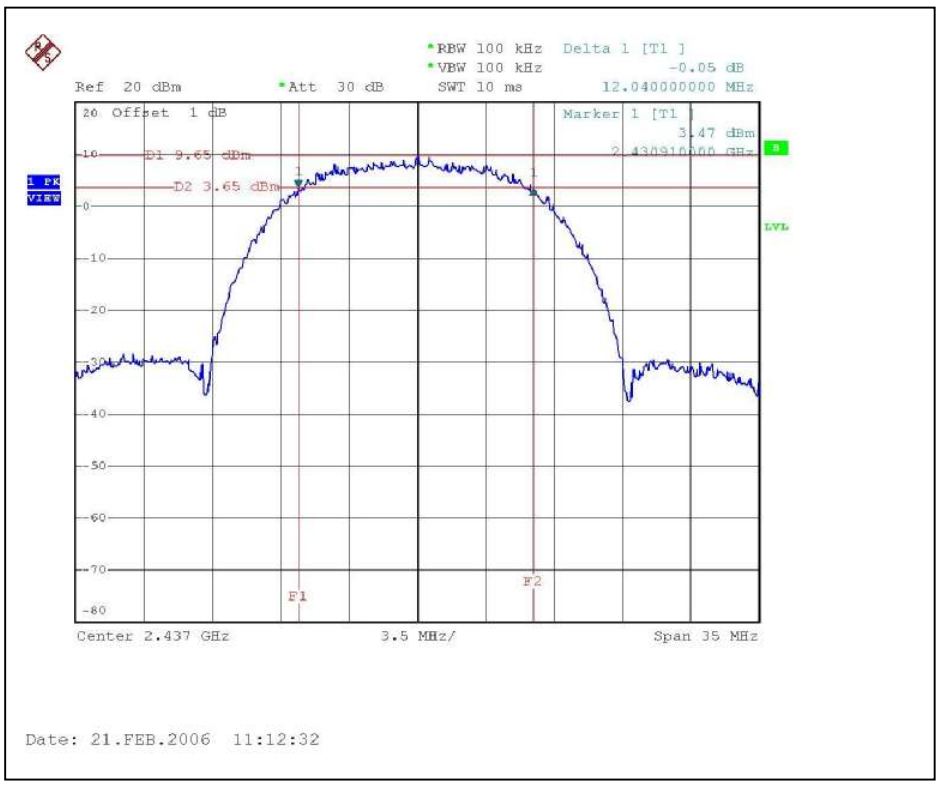
MODULATION TYPE	CCK	**TRANSFER RATE**	11Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	16deg. C, 62%RH, 973hPa
TESTED BY	Moris Lin		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	11.97	0.5	PASS
6	2437	12.04	0.5	PASS
11	2462	12.11	0.5	PASS

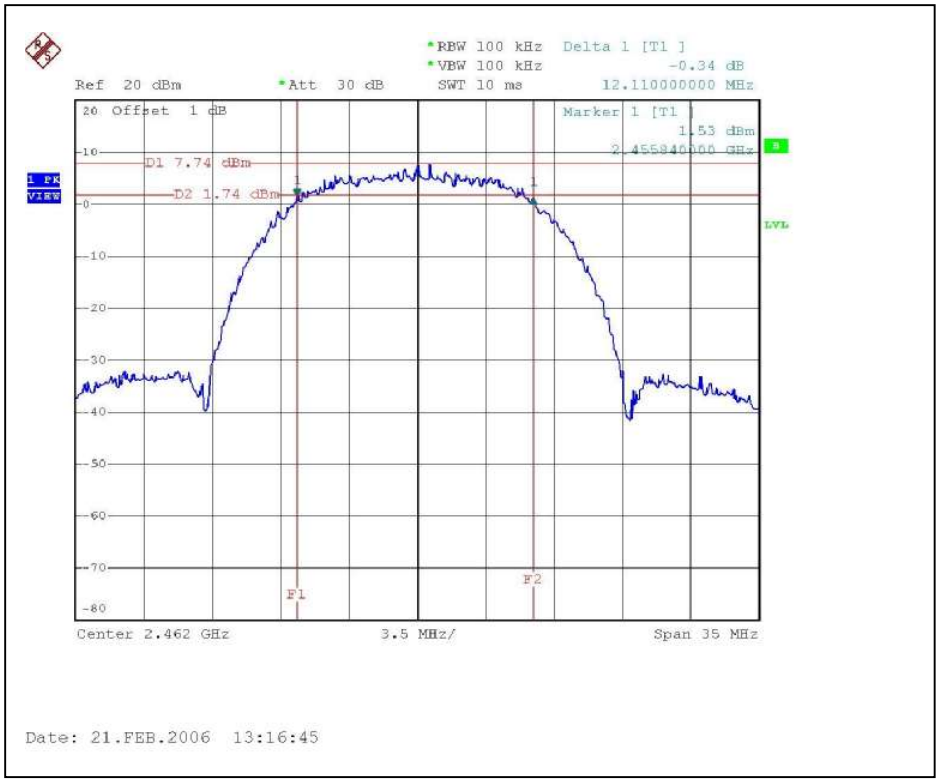
CH1


RBW 100 kHz
VBW 100 kHz
SWT 10 ms
Delta 1 [T1]
0.46 dB
11.970000000 MHz
Ref 20 dBm
Att 30 dB
Offset 1 dB
Marker 1 [T1]
-0.73 dBm
2.405840000 GHz
D1 5.77 dBm
D2 -0.23 dBm
1 PK VIEW
LVL
F1
F2
Center 2.412 GHz
3.5 MHz/
Span 35 MHz
Date: 21.FEB.2006 11:32:52

CH6


RBW 100 kHz
VBW 100 kHz
SWT 10 ms
Delta 1 [T1]
-0.05 dB
12.040000000 MHz
Ref 20 dBm
Att 30 dB
Offset 1 dB
Marker 1 [T1]
3.47 dBm
2.430910000 GHz
D1 9.65 dBm
D2 3.65 dBm
1 PK VIEW
LVL
F1
F2
Center 2.437 GHz
3.5 MHz/
Span 35 MHz
Date: 21.FEB.2006 11:12:32

CH11

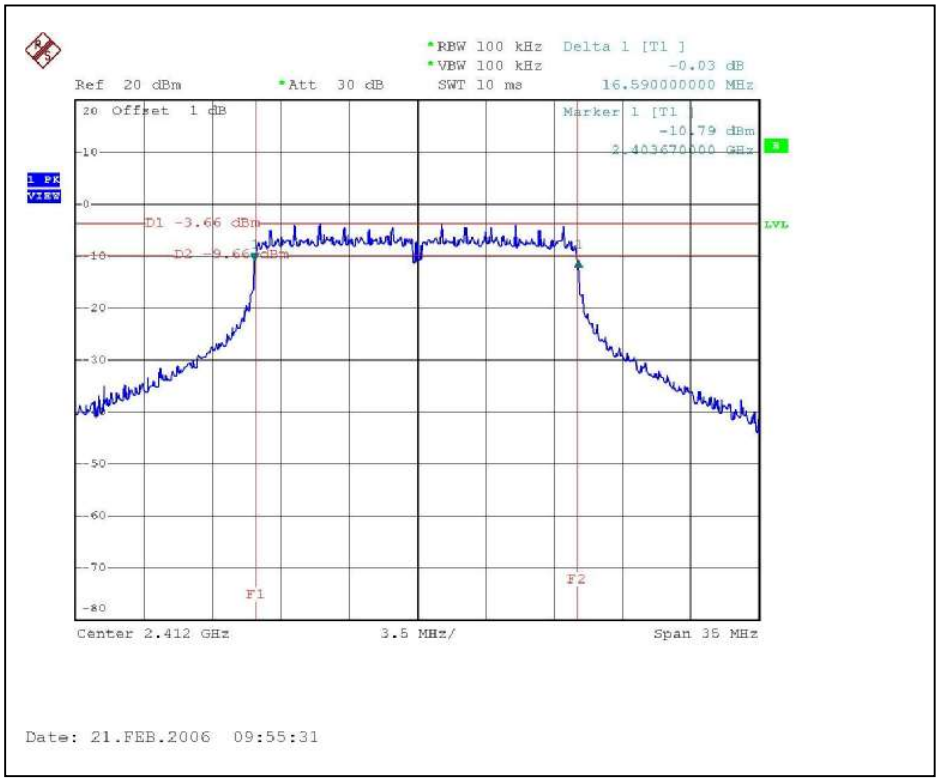

RBW 100 kHz
VBW 100 kHz
SWT 10 ms
Delta 1 [T1]
-0.34 dB
12.110000000 MHz
Ref 20 dBm
Att 30 dB
20 Offset 1 dB
Marker 1 [T1
1.53 dBm
2.455840000 GHz
D1 7.74 dBm
D2 1.74 dBm
1 PK
VIEW
LVL
F1
F2
Center 2.462 GHz
3.5 MHz/
Span 35 MHz
Date: 21.FEB.2006 13:16:45

802.11g OFDM modulation

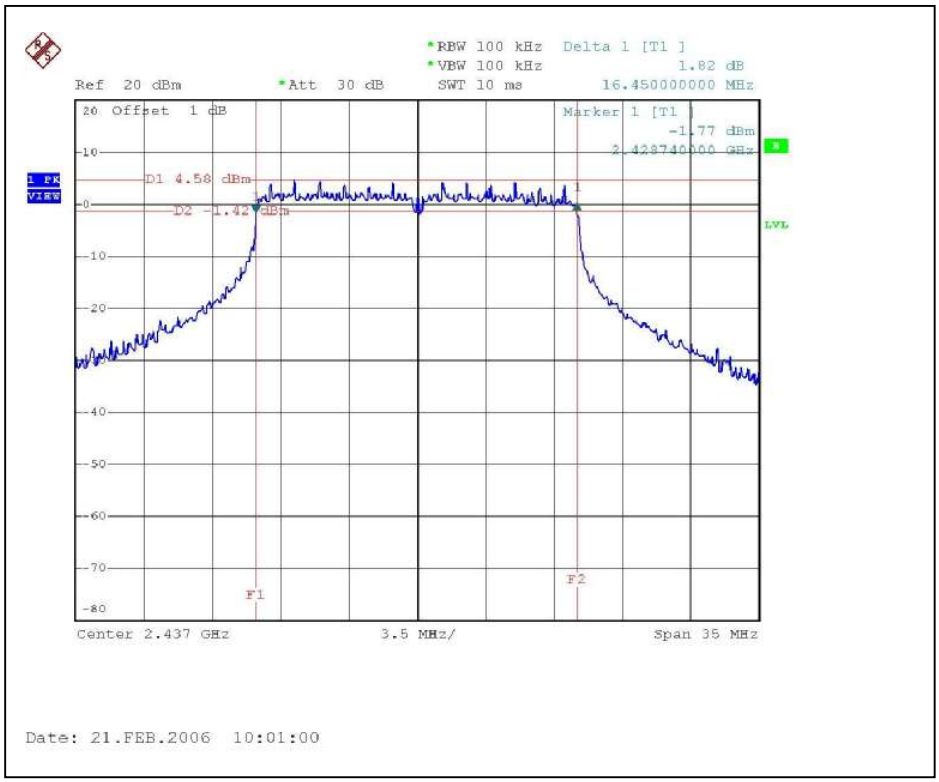
MODULATION TYPE	BPSK	**TRANSFER RATE**	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	16deg. C, 62%RH, 973hPa
TESTED BY	Moris Lin		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	16.59	0.5	PASS
6	2437	16.45	0.5	PASS
11	2462	16.45	0.5	PASS

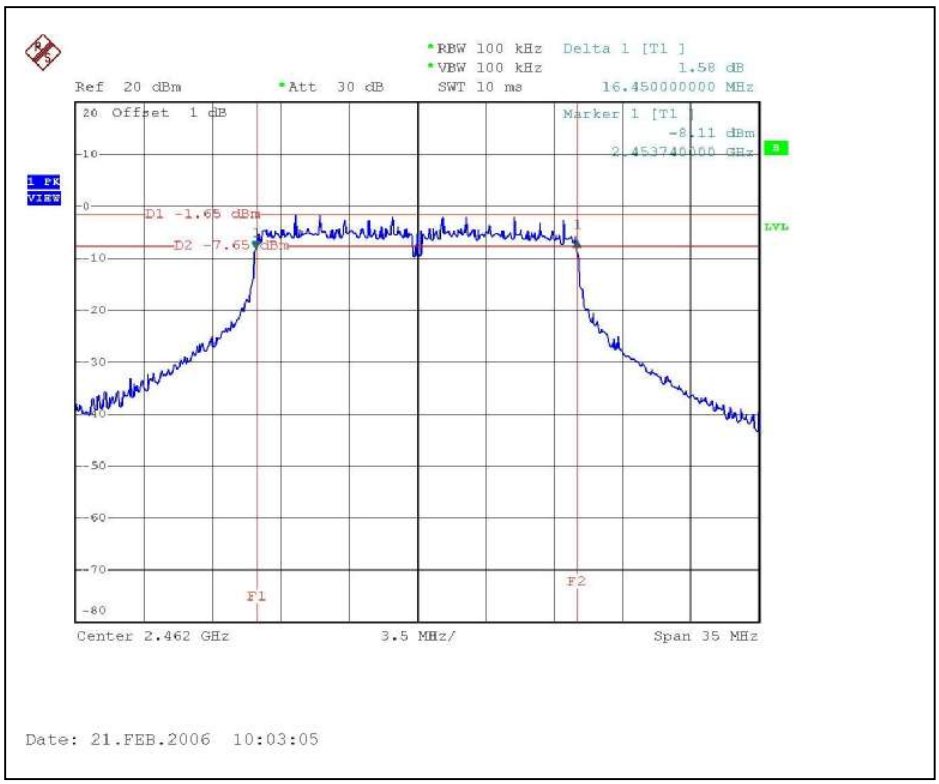
CH1


RBW 100 kHz
VBW 100 kHz
SWT 10 ms
Delta 1 [T1]
-0.03 dB
16.590000000 MHz
Ref 20 dBm
Att 30 dB
20 Offset 1 dB
Marker 1 [T1]
-10.79 dBm
2.403670000 GHz
1 PK VIEW
D1 -3.66 dBm
D2 -9.66 dBm
LVL
F1
F2
Center 2.412 GHz
3.5 MHz/
Span 35 MHz
Date: 21.FEB.2006 09:55:31

CH6


RBW 100 kHz
VBW 100 kHz
SWT 10 ms
Delta 1 [T1]
1.82 dB
16.450000000 MHz
Ref 20 dBm
Att 30 dB
20 Offset 1 dB
Marker 1 [T1]
-1.77 dBm
2.428740000 GHz
1 PK VIEW
D1 4.58 dBm
D2 -1.42 dBm
LVL
F1
F2
Center 2.437 GHz
3.5 MHz/
Span 35 MHz
Date: 21.FEB.2006 10:01:00

CH11


*RBW 100 kHz
Delta 1 [T1]
*VBW 100 kHz
1.58 dB
Ref 20 dBm
*Att 30 dB
SWT 10 ms
16.450000000 MHz
20 Offset 1 dB
Marker 1 [T1]
-8.11 dBm
2.453740000 GHz
1 PK
VIEW
D1 -1.65 dBm
D2 -7.65 dBm
LVL
F1
F2
Center 2.462 GHz
3.5 MHz/
Span 35 MHz
Date: 21.FEB.2006 10:03:05

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	FSP40	100036	Nov. 23, 2006
Agilent SIGNAL GENERATOR	E8257C	MY43320668	Dec. 07, 2006
TEKTRONIX OSCILLOSCOPE	TDS380	B016335	Jun. 22, 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.

4.4.3 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.

4.4.4 DEVIATION FROM TEST STANDARD

No deviation

4.4.5 TEST SETUP

4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6

4.4.7 TEST RESULTS

802.11b DSSS modulation

MODULATION TYPE	CCK	**TRANSFER RATE**	11Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	16deg. C, 62%RH, 973hPa
TESTED BY	Moris Lin		

Antenna (Gain : 14.0 dBi) +Cable loss (1dB)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	51.286	17.10	23	PASS
6	2437	114.815	20.60	23	PASS
11	2462	67.608	18.30	23	PASS

802.11g OFDM modulation

MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	16deg. C, 62%RH, 973hPa
TESTED BY	Moris Lin		

Antenna (Gain : 14.0 dBi) +Cable loss (1dB)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	14.125	11.50	23	PASS
6	2437	138.038	21.40	23	PASS
11	2462	27.542	14.40	23	PASS

4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP40	100036	Nov. 23, 2006

NOTE:

1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

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

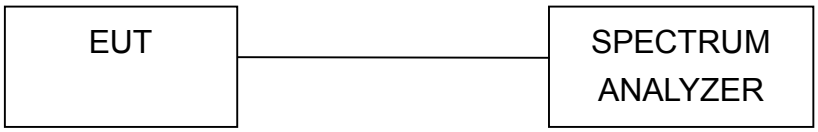
4.5.3 TEST PROCEDURE

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

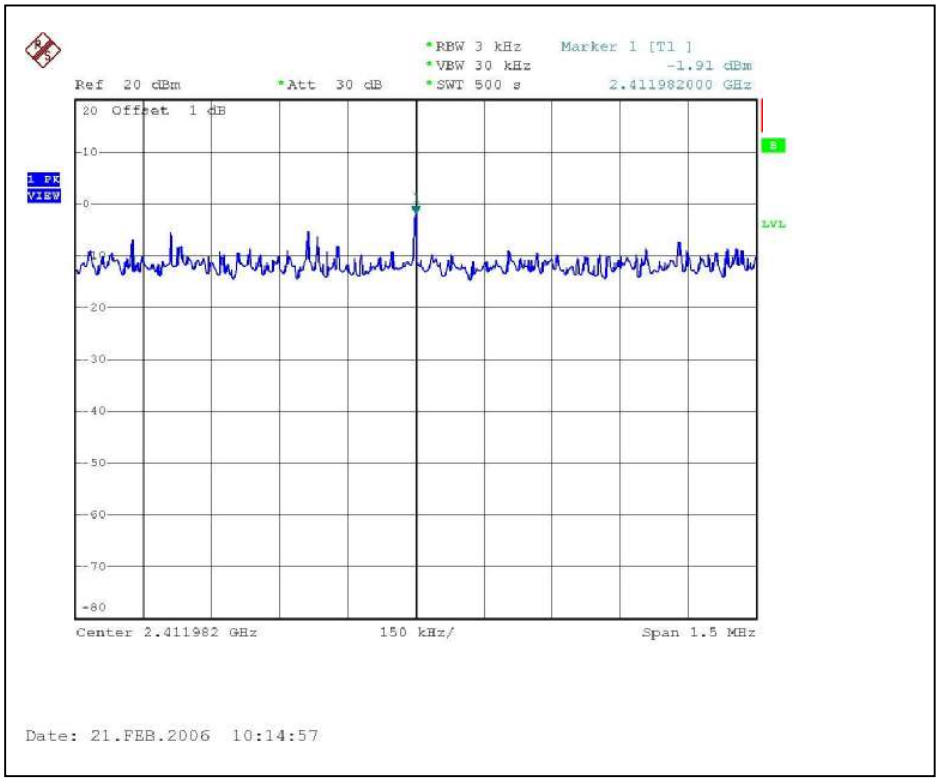
4.5.7 TEST RESULTS

802.11b DSSS modulation

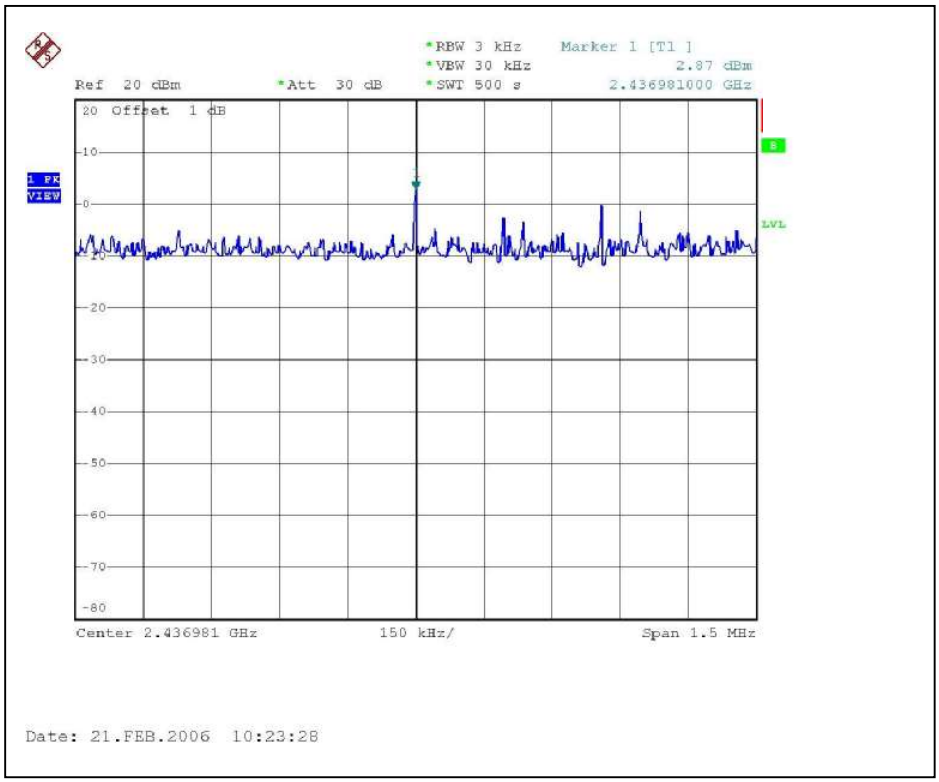
MODULATION TYPE	CCK	**TRANSFER RATE**	11Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	20deg.C, 50%RH, 973hPa
TESTED BY	Moris Lin		

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 KHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-1.91	8	PASS
6	2437	2.87	8	PASS
11	2462	-0.64	8	PASS

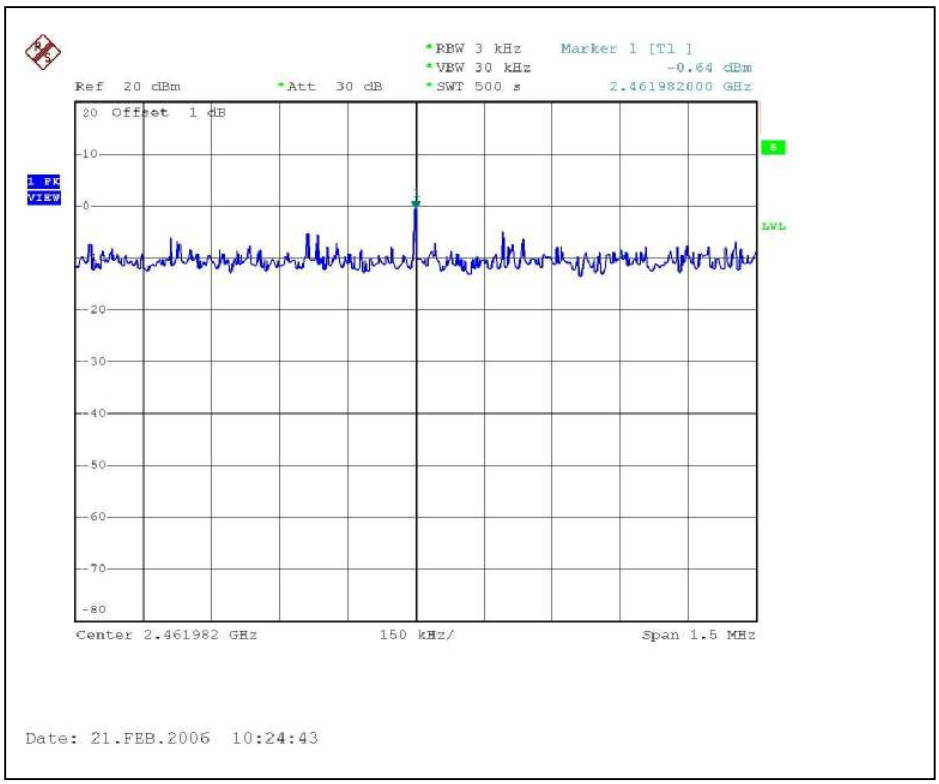
CH1


*RBW 3 kHz
Marker 1 [T1]
*VBW 30 kHz
-1.91 dBm
Ref 20 dBm
*Att 30 dB
*SWT 500 s
2.411982000 GHz
20 Offset 1 dB
1 PK VIEW
LVL
Center 2.411982 GHz
150 kHz/
Span 1.5 MHz
Date: 21.FEB.2006 10:14:57

CH6


*RBW 3 kHz
Marker 1 [T1]
*VBW 30 kHz
2.87 dBm
Ref 20 dBm
*Att 30 dB
*SWT 500 s
2.436981000 GHz
20 Offset 1 dB
1 PK VIEW
LVL
Center 2.436981 GHz
150 kHz/
Span 1.5 MHz
Date: 21.FEB.2006 10:23:28

CH11


*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-0.64 dBm
2.461982000 GHz
Ref 20 dBm
*Att 30 dB
20 Offset 1 dB
1 PK VIEW
LVL
Center 2.461982 GHz
150 kHz/
Span 1.5 MHz
Date: 21.FEB.2006 10:24:43

802.11g OFDM modulation

MODULATION TYPE	BPSK	**TRANSFER RATE**	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	20deg.C, 50%RH, 973hPa
TESTED BY	Moris Lin		

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 KHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-10.46	8	PASS
6	2437	-1.84	8	PASS
11	2462	-8.51	8	PASS

CH1


RBW 3 kHz
VBW 30 kHz
SWT 500 s
Marker 1 [T1]
-10.46 dBm
2.411982000 GHz
Ref 20 dBm
Att 30 dB
Offset 1 dB
1 PK VIEW
LVL
Center 2.411982 GHz
150 kHz/
Span 1.5 MHz
Date: 21.FEB.2006 10:10:32

CH6


RBW 3 kHz
VBW 30 kHz
SWT 500 s
Marker 1 [T1]
-1.84 dBm
2.436982000 GHz
Ref 20 dBm
Att 30 dB
Offset 1 dB
1 PK VIEW
LVL
Center 2.436982 GHz
150 kHz/
Span 1.5 MHz
Date: 21.FEB.2006 10:09:35

CH11


*RBW 3 kHz
Marker 1 [T1]
*VBW 30 kHz
-8.51 dBm
Ref 20 dBm
*Att 30 dB
*SWT 500 s
2.461982000 GHz
20 Offset 1 dB
1 PK VIEW
LVL
Center 2.461982 GHz
150 kHz/
Span 1.5 MHz
Date: 21.FEB.2006 10:05:46

4.6 BAND EDGES MEASUREMENT

4.6.1 LIMITS OF BAND EDGES MEASUREMENT

Below –20dB of the highest emission level of operating band (in 1MHz Resolution Bandwidth).

4.6.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP40	100036	Nov. 23, 2006

NOTE:

1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

2. 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 RBW spectrum analyzer to 1 MHz and set VBW spectrum analyzer to 10 Hz with suitable frequency span including 1 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 EUT OPERATING CONDITION

Same as Item 4.3.5

4.6.5 TEST RESULTS (DSSS)

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

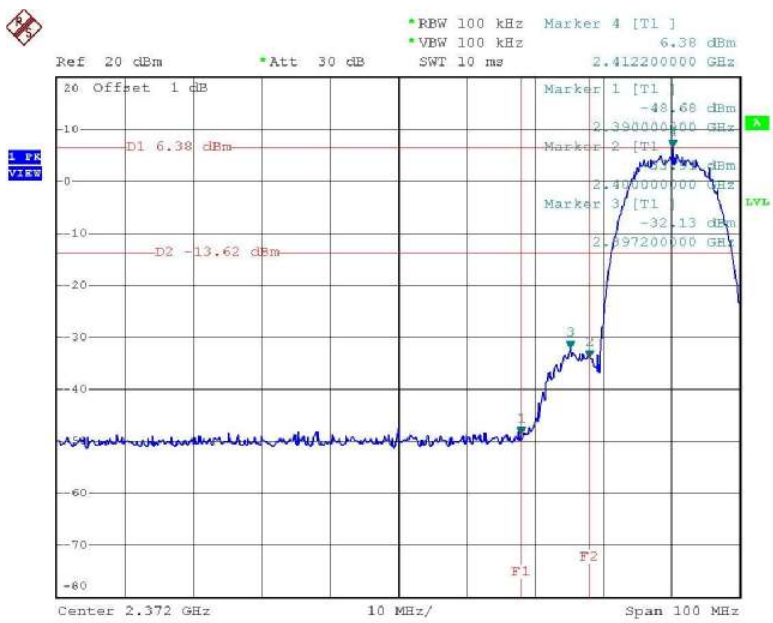
Note - The delta method is only used up to 2 MHz away from the restricted bandage, The radiated emissions which located in other restricted frequency band, the result, please refer to 4.2.

NOTE (Peak):
The band edge emission plot of DSSS technique on the following first page show 55.06dB delta 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 is 120.30dBuV/m, so the maximum field strength in restrict band is 120.30-55.06=65.24dBuV/m which is under 74 dBuV/m limit.

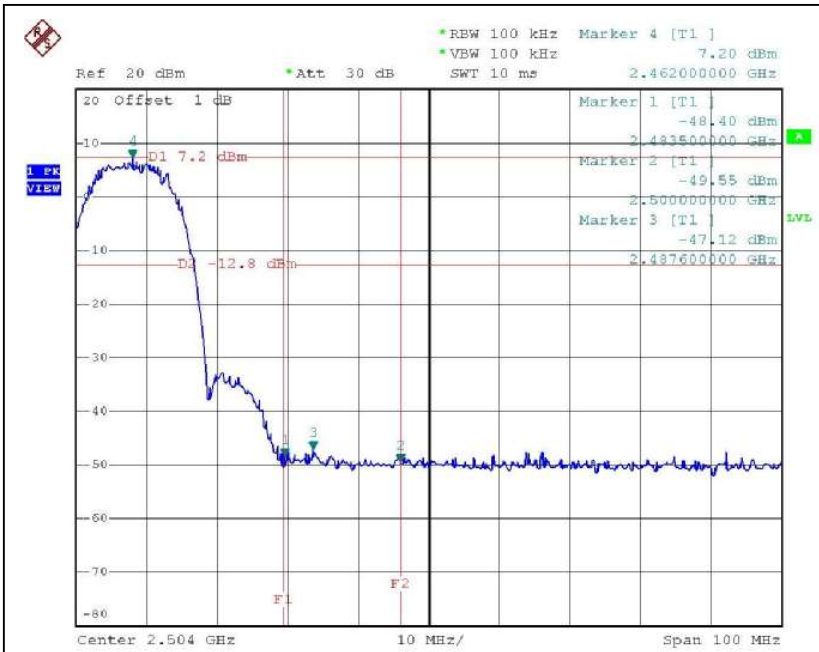
The band edge emission plot of DSSS technique on the following first page shows 55.6dB delta between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2 is 119.3dBuV/m, so the maximum field strength in restrict band is 119.3-55.6=63.7dBuV/m which is under 74 dBuV/m limit.

NOTE (Average):
The band edge emission plot of DSSS technique on the following second page shows 59.4dB delta 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 is 111.5dBuV/m, so the maximum field strength in restrict band is 111.5-59.4=52.1dBuV/m which is under 54 dBuV/m limit.

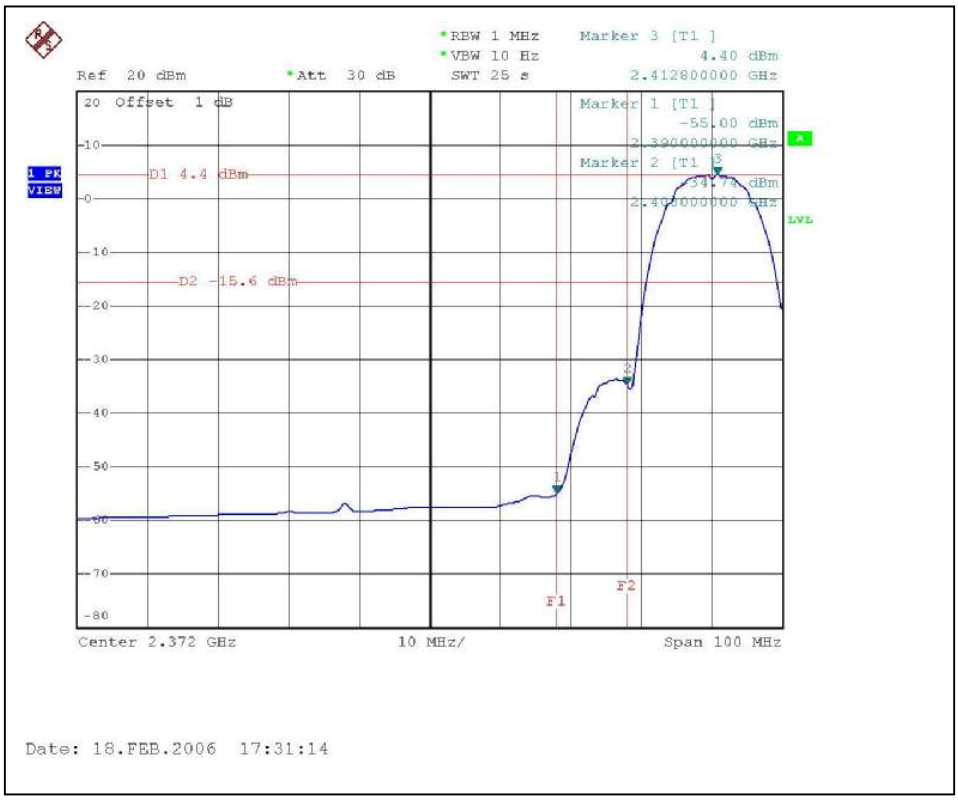
The band edge emission plot of DSSS technique on the following second page shows 59.98dB delta between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2 is 111.2dBuV/m, so the maximum field strength in restrict band is 111.2-59.98=51.22dBuV/m which is under 54 dBuV/m limit.

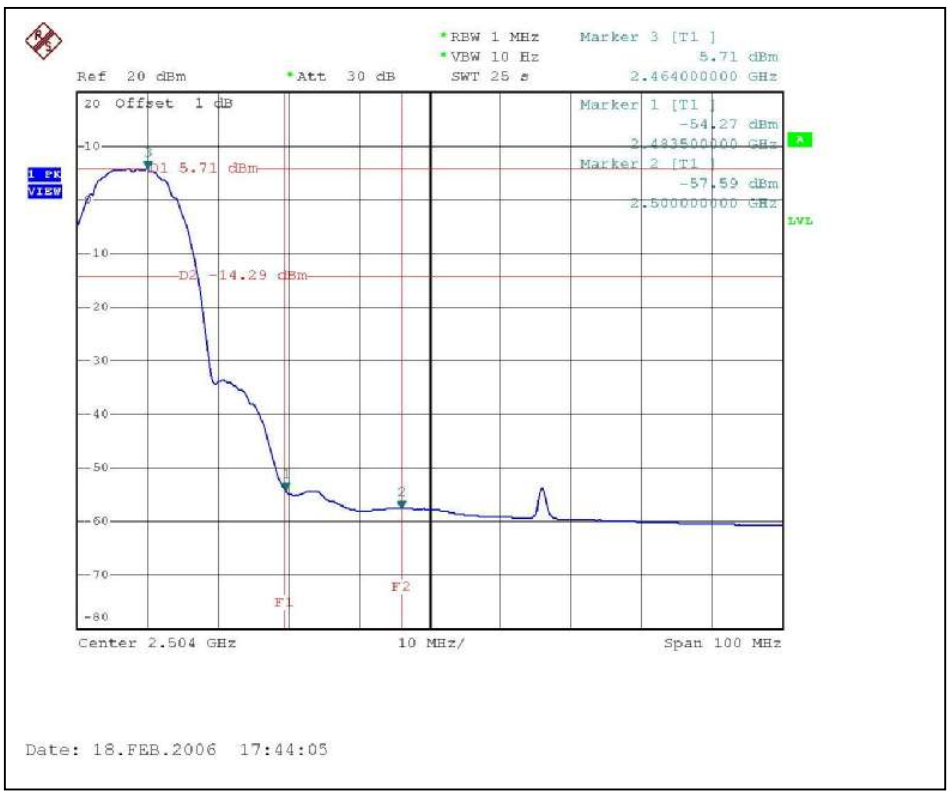


Date: 18.FEB.2006 17:35:55

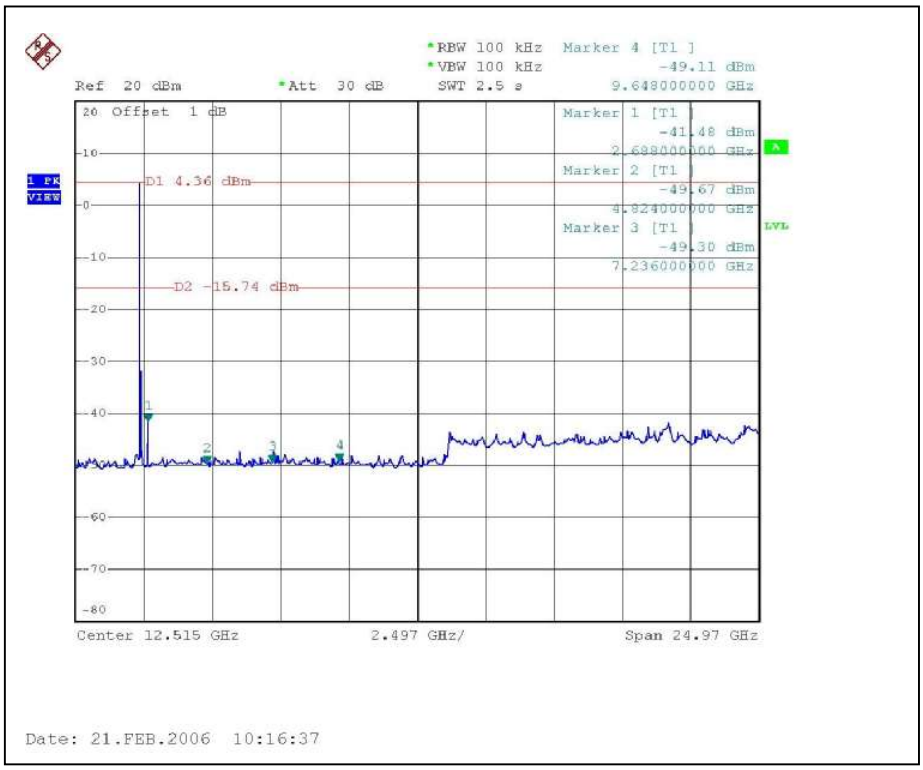


Date: 18.FEB.2006 17:45:12

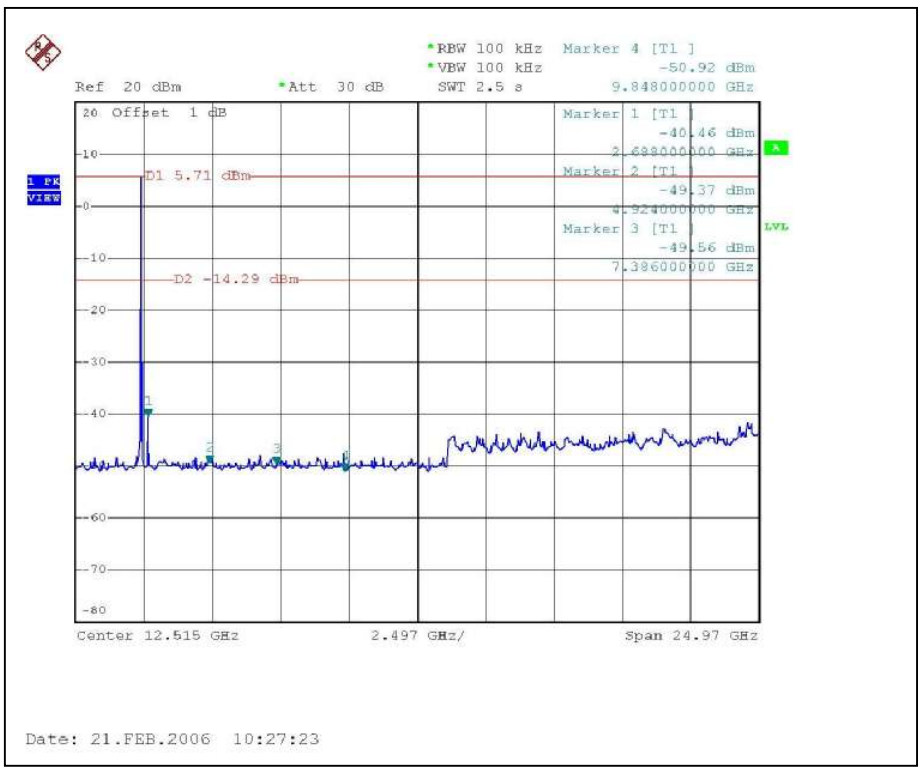

RBW 1 MHz
VBW 10 Hz
SWT 25 s
Marker 3 [T1]
4.40 dBm
2.412800000 GHz
Ref 20 dBm
Att 30 dB
20 Offset 1 dB
Marker 1 [T1]
-55.00 dBm
2.390000000 GHz
Marker 2 [T1]
2.400000000 GHz
D1 4.4 dBm
D2 -15.6 dBm
1 PK VIEW
LVL
F1
F2
Center 2.372 GHz
10 MHz/
Span 100 MHz
Date: 18.FEB.2006 17:31:14


RBW 1 MHz
VBW 10 Hz
SWT 25 s
Marker 3 [T1]
5.71 dBm
2.464000000 GHz
Ref 20 dBm
Att 30 dB
20 Offset 1 dB
Marker 1 [T1]
-54.27 dBm
2.483500000 GHz
Marker 2 [T1]
-57.59 dBm
2.500000000 GHz
D1 5.71 dBm
D2 -14.29 dBm
1 PK VIEW
LVL
F1
F2
Center 2.504 GHz
10 MHz/
Span 100 MHz
Date: 18.FEB.2006 17:44:05

CH 1


RBW 100 kHz
VBW 100 kHz
SWT 2.5 s
Marker 4 [T1]
-49.11 dBm
9.648000000 GHz
Ref 20 dBm
Att 30 dB
20 Offset 1 dB
Marker 1 [T1]
-41.48 dBm
2.688000000 GHz
Marker 2 [T1]
-49.67 dBm
4.824000000 GHz
Marker 3 [T1]
-49.30 dBm
7.236000000 GHz
D1 4.36 dBm
D2 -15.74 dBm
1 PK VIEW
LVL
Center 12.515 GHz
2.497 GHz/
Span 24.97 GHz
Date: 21.FEB.2006 10:16:37

CH 11


RBW 100 kHz
VBW 100 kHz
SWT 2.5 s
Marker 4 [T1]
-50.92 dBm
9.848000000 GHz
Ref 20 dBm
Att 30 dB
20 Offset 1 dB
Marker 1 [T1]
-40.46 dBm
2.688000000 GHz
Marker 2 [T1]
-49.37 dBm
4.924000000 GHz
Marker 3 [T1]
-49.56 dBm
7.386000000 GHz
D1 5.71 dBm
D2 -14.29 dBm
1 PK VIEW
LVL
Center 12.515 GHz
2.497 GHz/
Span 24.97 GHz
Date: 21.FEB.2006 10:27:23

4.6.6 TEST RESULTS (OFDM)

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

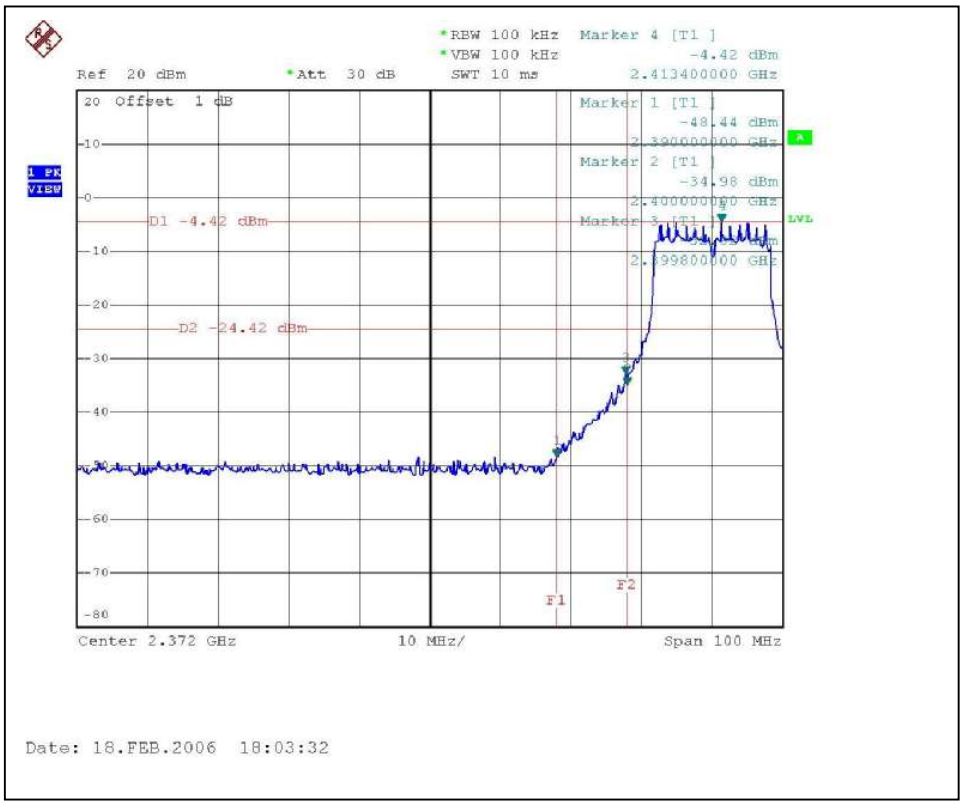
Note - The delta method is only used up to 2 MHz away from the restricted bandage, The radiated emissions which located in other restricted frequency band, the result, please refer to 4.2.

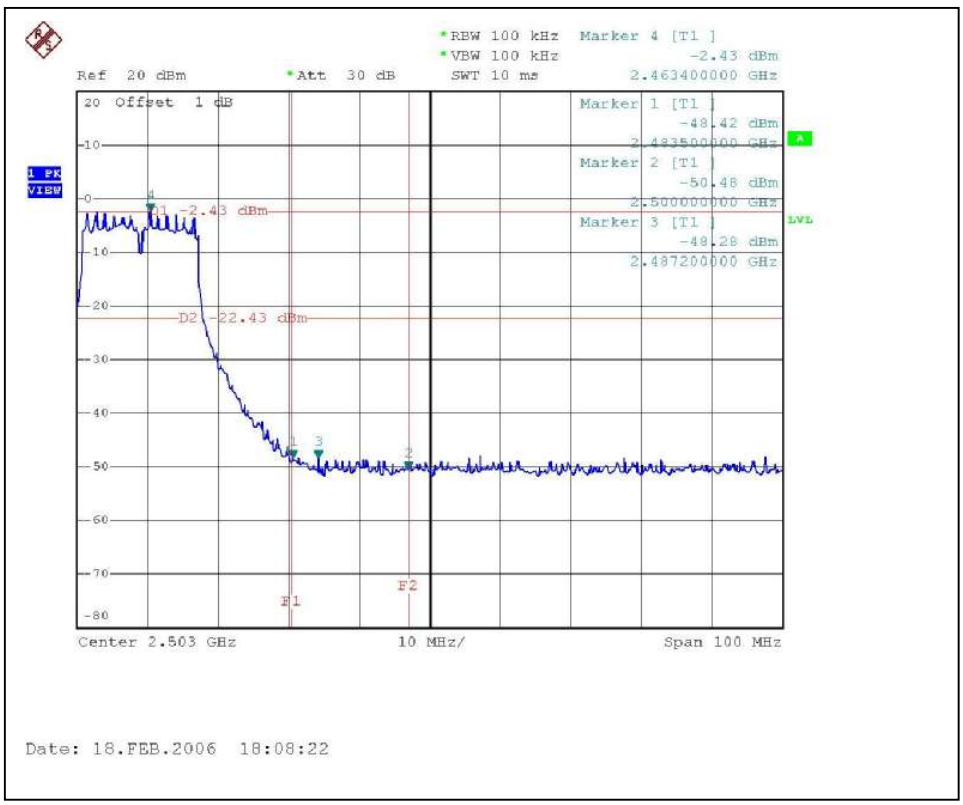
NOTE (Peak):
The band edge emission plot of OFDM technique on the following first page show 44.02dB delta between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2 is 109.9dBuV/m, so the maximum field strength in restrict band is 109.9-44.02=65.88dBuV/m which is under 74 dBuV/m limit.

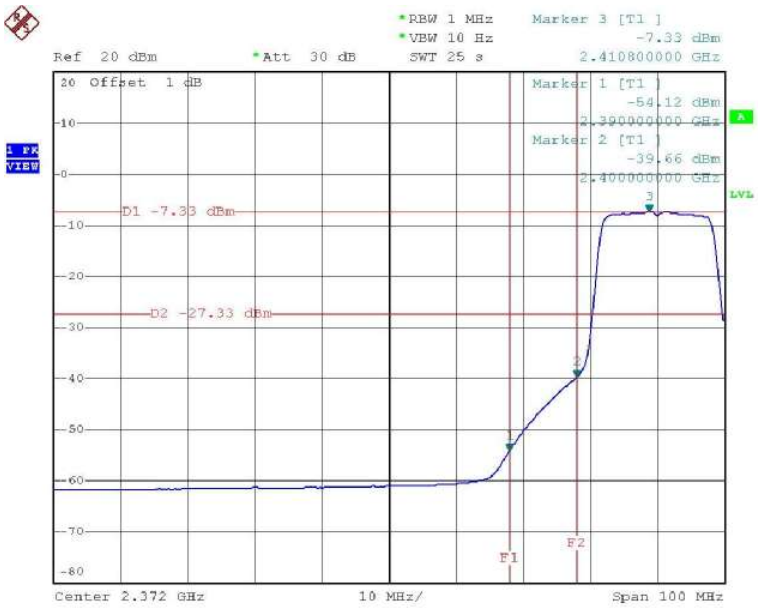
The band edge emission plot of OFDM technique on the following first page shows 45.99dB delta between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2 is 111.2dBuV/m, so the maximum field strength in restrict band is 111.2-45.99=65.21dBuV/m which is under 74 dBuV/m limit.

NOTE (Average):
The band edge emission plot of OFDM technique on the following second page shows 46.79dB delta 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 is 100.0dBuV/m, so the maximum field strength in restrict band is 100.0-46.79=53.21dBuV/m which is under 54 dBuV/m limit.

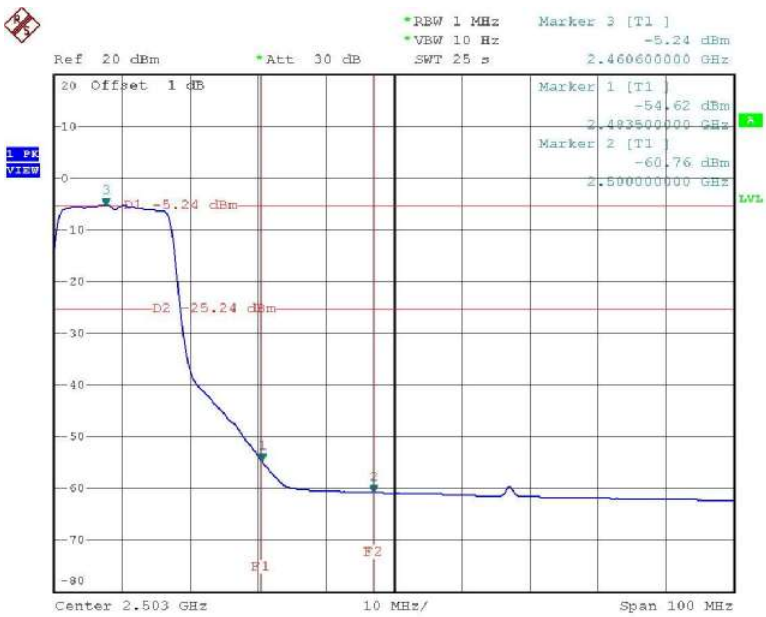
The band edge emission plot of OFDM technique on the following second page shows 49.38dB delta between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2 is 101.3dBuV/m, so the maximum field strength in restrict band is 101.3-49.38=51.92dBuV/m which is under 54 dBuV/m limit.


RBW 100 kHz
VBW 100 kHz
SWT 10 ms
Marker 4 [T1]
-4.42 dBm
2.413400000 GHz
Ref 20 dBm
Att 30 dB
20 Offset 1 dB
Marker 1 [T1]
-48.44 dBm
2.390000000 GHz
Marker 2 [T1]
-34.98 dBm
2.400000000 GHz
Marker 3 [T1]
2.399800000 GHz
D1 -4.42 dBm
D2 -24.42 dBm
F1
F2
Center 2.372 GHz
10 MHz/
Span 100 MHz
Date: 18.FEB.2006 18:03:32


RBW 100 kHz
VBW 100 kHz
SWT 10 ms
Marker 4 [T1]
-2.43 dBm
2.463400000 GHz
Ref 20 dBm
Att 30 dB
20 Offset 1 dB
Marker 1 [T1]
-48.42 dBm
2.483500000 GHz
Marker 2 [T1]
-50.48 dBm
2.500000000 GHz
Marker 3 [T1]
-48.28 dBm
2.487200000 GHz
D1 -2.43 dBm
D2 -22.43 dBm
F1
F2
Center 2.503 GHz
10 MHz/
Span 100 MHz
Date: 18.FEB.2006 18:08:22

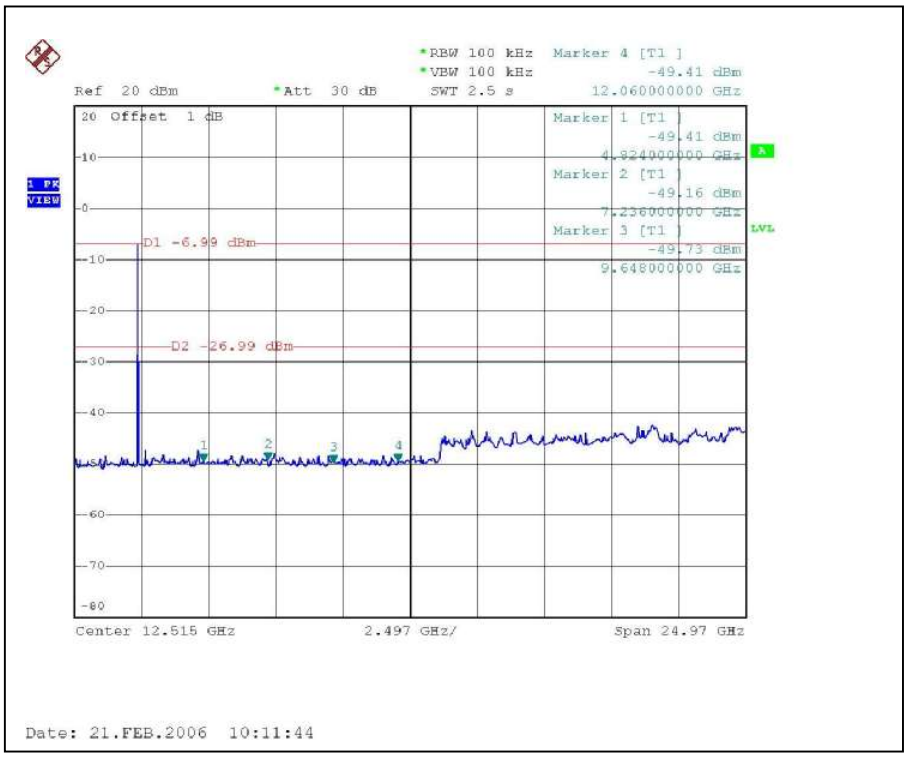


Date: 18.FEB.2006 18:02:42

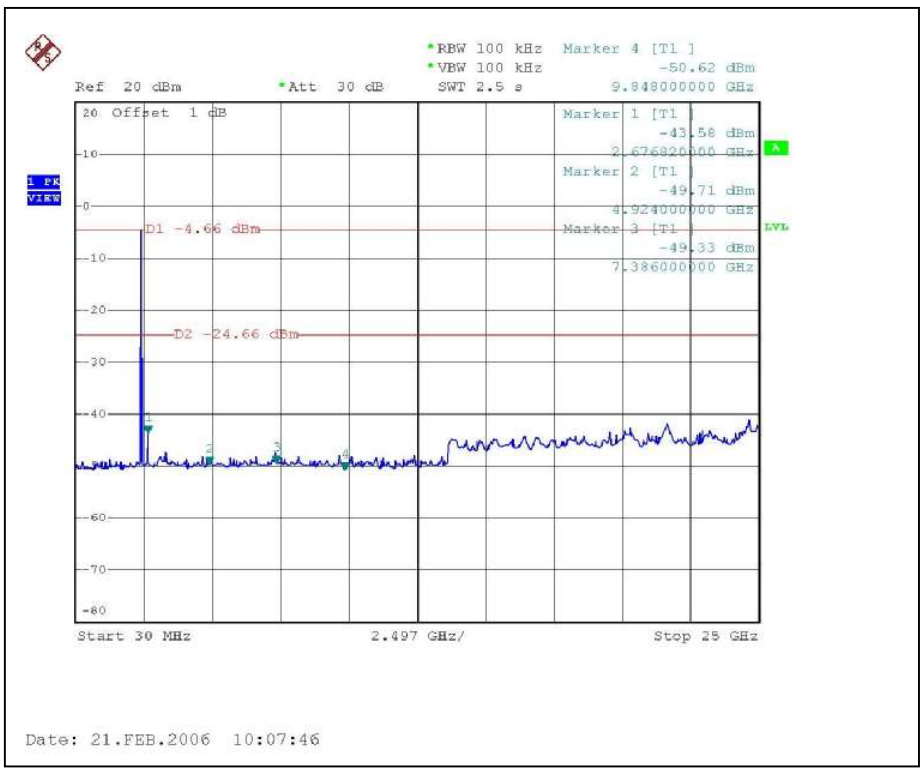


Date: 18.FEB.2006 18:07:21

CH 1


*RBW 100 kHz
*VBW 100 kHz
Ref 20 dBm
*Att 30 dB
SWT 2.5 s
Marker 4 [T1]
-49.41 dBm
12.060000000 GHz
20 Offset 1 dB
Marker 1 [T1]
-49.41 dBm
4.824000000 GHz
Marker 2 [T1]
-49.16 dBm
7.236000000 GHz
Marker 3 [T1]
-49.73 dBm
9.648000000 GHz
1 PK VIEW
D1 -6.99 dBm
D2 -26.99 dBm
Center 12.515 GHz
2.497 GHz/
Span 24.97 GHz
Date: 21.FEB.2006 10:11:44

CH 11


*RBW 100 kHz
*VBW 100 kHz
Ref 20 dBm
*Att 30 dB
SWT 2.5 s
Marker 4 [T1]
-50.62 dBm
9.848000000 GHz
20 Offset 1 dB
Marker 1 [T1]
-43.58 dBm
2.676820000 GHz
Marker 2 [T1]
-49.71 dBm
4.924000000 GHz
Marker 3 [T1]
-49.33 dBm
7.386000000 GHz
1 PK VIEW
D1 -4.66 dBm
D2 -24.66 dBm
Start 30 MHz
2.497 GHz/
Stop 25 GHz
Date: 21.FEB.2006 10:07:46

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 (H-Plane)Sectoredand antenna with N-Female connector. The maximum Gain of the antenna is 13dBi.

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	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

NOTE: 1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.
3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

5.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver	ESCS 30	100375	Sep. 19, 2006
Line-Impedance Stabilization Network(for EUT)	ENV-216	100071	Nov. 10, 2006
ROHDE & SCHWARZ LISN	KNW-407	8/1395/12	Jul. 19, 2006
RF Signal Cable	RG233/U	Cable_CA_02	Dec. 10, 2006
Terminator(for KYORITSU)	50	2	Oct. 08, 2006
Software	ADT_Cond_V7.3.2	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 ADT Shielded Room No. B.
3 The VCCI Con B Registration No. is C-2193.
5 The measurement uncertainty is 2.26 dB, which is calculated as per the document CISPR 16-4 This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

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

b. provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.

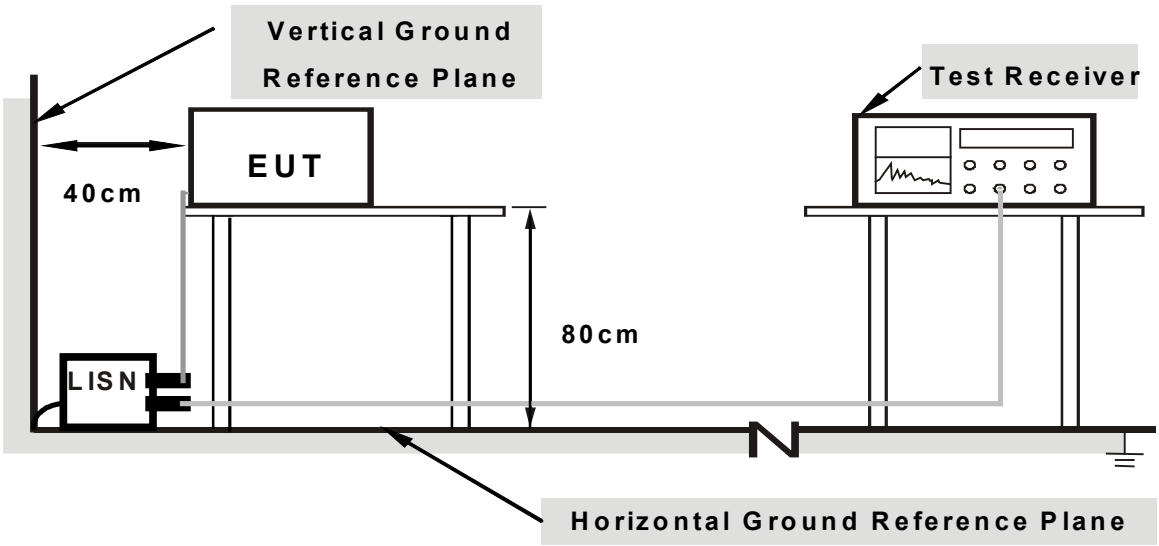
c. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

d. The frequency range from 150kHz to 30MHz was searched. Emission level 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

a. Placed the EUT on the testing table.

b. Prepared anther computer system to act as a communication partner and placed it outside of testing area.

c. The communication partner run test program “ART53 Build 5” to enable EUT under transmission/receiving condition continuously at specific channel frequency via UTP cable.

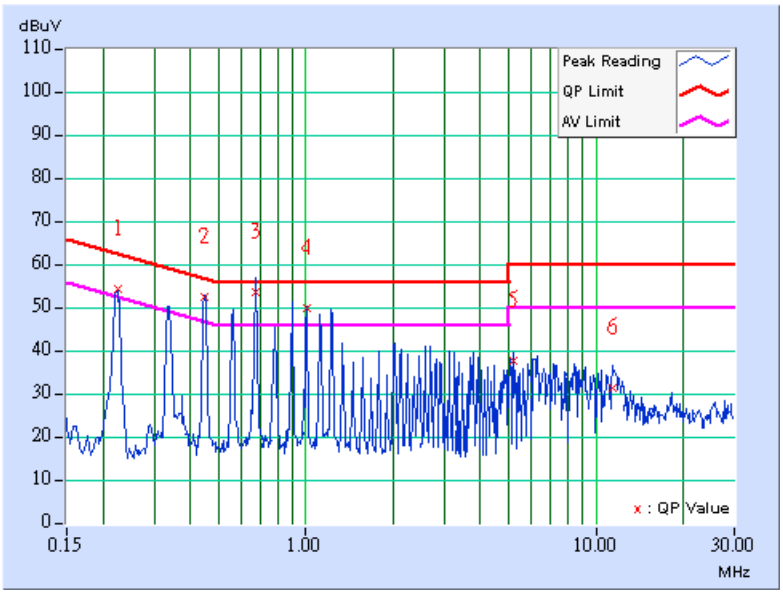
5.1.7 TEST RESULTS

Conducted Worst-Case Data

MODULATION TYPE	BPSK	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TRANSFER RATE**	6Mbps
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 973hPa	**PHASE**	Line (L)
TESTED BY	Rex Huang		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.224	9.65	44.18	37.35	53.83	47.00	62.66	52.66	-8.83	-5.66
2	0.447	9.67	42.32	36.40	51.99	46.07	56.93	46.93	-4.94	-0.86
3	0.672	9.68	43.50	35.40	53.18	45.08	56.00	46.00	-2.82	-0.92
4	**1.005**	**9.70**	**39.83**	**35.54**	**49.53**	**45.24**	**56.00**	**46.00**	**-6.47**	**-0.76**
5	5.168	9.89	27.66	-	37.55	-	60.00	50.00	-22.45	-
6	11.426	10.09	21.29	-	31.38	-	60.00	50.00	-28.62	-

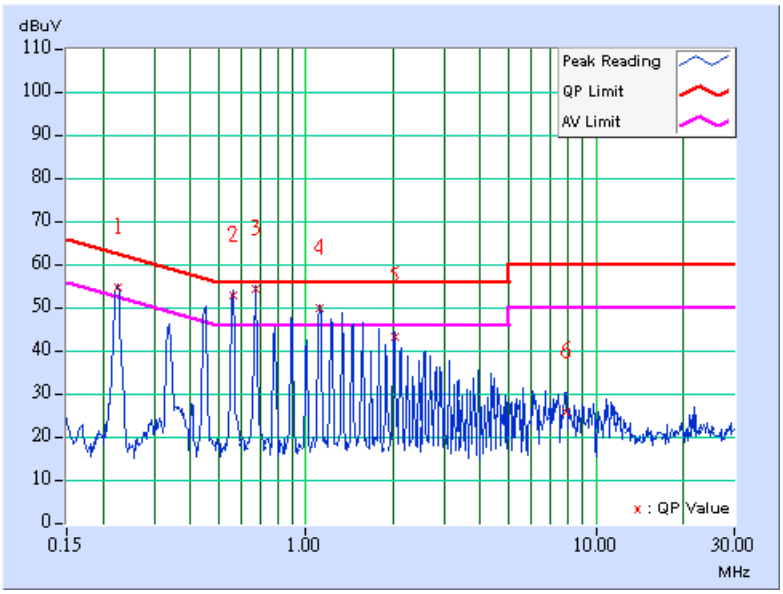
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



MODULATION TYPE	BPSK	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TRANSFER RATE**	6Mbps
ENVIRONMENTAL CONDITIONS	20deg. C, 60%RH, 973hPa	**PHASE**	Neutral (N)
TESTED BY	Rex Huang		

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.224	9.65	44.97	37.80	54.62	47.45	62.66	52.66	-8.04	-5.21
2	0.560	9.68	42.96	35.43	52.64	45.11	56.00	46.00	-3.36	-0.89
3	0.674	9.68	44.35	35.46	54.03	45.14	56.00	46.00	-1.97	-0.86
4	1.123	9.71	40.11	35.34	49.82	45.05	56.00	46.00	-6.18	-0.95
5	2.021	9.75	33.21	-	42.96	-	56.00	46.00	-13.04	-
6	7.949	9.98	16.04	-	26.02	-	60.00	50.00	-33.98	-

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
ADVANTEST Spectrum Analyzer	R3271A	85060311	July 07, 2006
HP Pre_Amplifier	8449B	3008A01922	Oct. 02, 2006
ROHDE & SCHWARZ Test Receiver	ESCS30	100287	Dec. 08, 2006
CHASE Broadband Antenna	VULB9168	138	Dec. 21, 2006
Schwarzbeck Horn_Antenna	BBHA9120	D124	Dec. 11, 2006
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA9170153	Jan. 05, 2007
SCHWARZBECK Biconical Antenna	VHBA9123	459	Jun. 26, 2006
SCHWARZBECK Periodic Antenna	UPA6108	1148	Jun. 26, 2006
RF Switches (ARNITSU)	CS-201	1565157	NA
RF CABLE (Chaintek) 1GHz-20GHz	SF102	22054-2	Nov. 16. 2006
RF Cable(RICHTEC)	9913-30M	STCCAB-30M-1GHz-021	Jul. 16, 2006
Software	ADT_Radiated_V 5.14	NA	NA
CHANCE MOST Antenna Tower	AT-100	0203	NA
CHANCE MOST Turn Table	TT-100	0203	NA

Note: 1. The calibration interval of the above test instruments is 12 months (36 months for Periodic Antenna)and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in ADT Open Site No. C.
4. The FCC Site Registration No. is 656396.
5. The VCCI Site Registration No. is R-1626.
6. The CANADA Site Registration No. is IC 4824-3.
7. The following table is for the measurement uncertainty, which is calculated as per the document CISPR 16-4. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Measurement	Value
Radiated emissions (30MHz-1GHz)	2.98 dB
Radiated emissions (1GHz ~18GHz)	2.21 dB
Radiated emissions (18GHz ~20GHz)	1.88 dB

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.

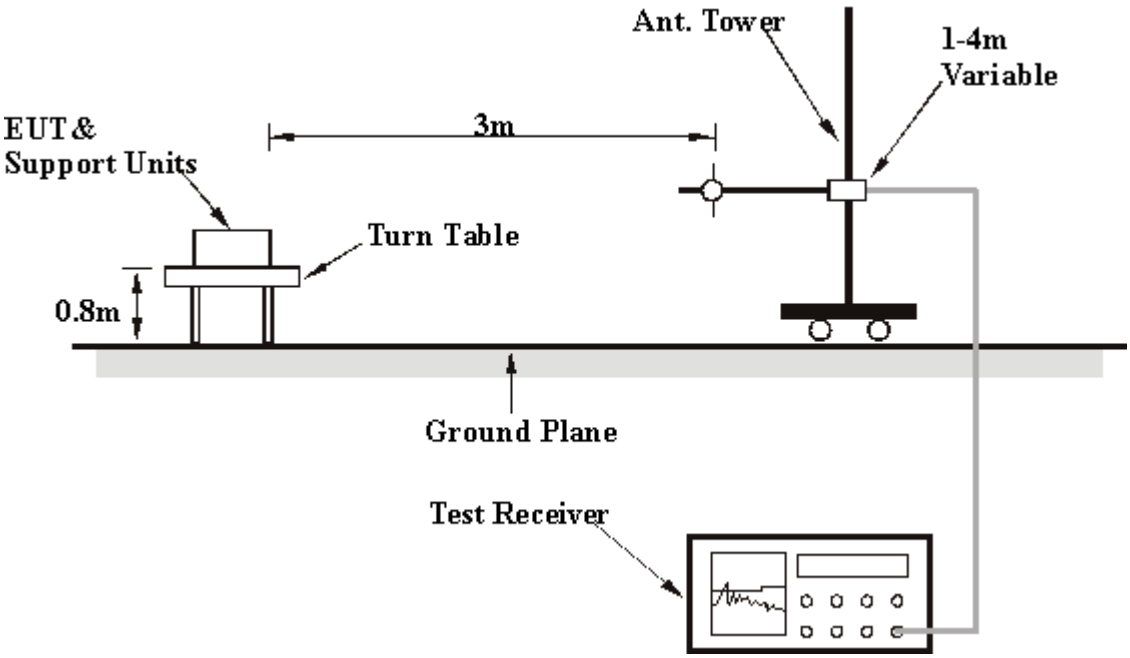
NOTE:

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 (ANTENNA B)

Below 1GHz Worst-Case Data

MODULATION TYPE	BPSK	**FREQUENCY RANGE**	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TRANSFER RATE**	6Mbps
ENVIRONMENTAL CONDITIONS	14deg. C, 70%RH, 973hPa	**DETECTOR FUNCTION**	Quasi-Peak
TESTED BY	Sky Liao		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	125.00	11.30 QP	43.50	-32.20	2.01 H	300	-0.90	12.20
2	250.00	15.20 QP	46.00	-30.80	1.69 H	1	1.40	13.80
3	305.45	28.90 QP	46.00	-17.10	1.28 H	43	12.00	16.90
4	390.03	28.20 QP	46.00	-17.80	1.13 H	274	9.50	18.70
5	566.66	29.90 QP	46.00	-16.10	1.47 H	219	6.30	23.70
6	651.25	32.50 QP	46.00	-13.50	1.09 H	1	7.40	25.00

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	125.00	19.40 QP	43.50	-24.10	1.05 V	327	7.20	12.20
2	250.01	18.90 QP	46.00	-27.10	1.24 V	1	5.10	13.80
3	305.45	34.50 QP	46.00	-11.50	1.85 V	21	17.60	16.90
4	390.02	32.90 QP	46.00	-13.10	1.58 V	340	14.20	18.70
5	566.66	29.10 QP	46.00	-16.90	1.84 V	343	5.40	23.70
6	651.25	35.90 QP	46.00	-10.10	2.08 V	34	10.90	25.00

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

CHANNEL	Channel 1	**FREQUENCY RANGE**	1 ~ 40 GHz
MODULATION TYPE	BPSK	**TRANSFER RATE**	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 68%RH, 973hPa	**TESTED BY**	Moris Lin

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	*5745.00	96.80 PK			1.53 H	256	60.40	36.40
1	*5745.00	88.30 AV			1.53 H	256	51.90	36.40
2	#11490.00	63.70 PK	74.00	-10.30	1.83 H	263	12.60	51.10
2	#11490.00	52.50 AV	54.00	-1.50	1.83 H	263	1.40	51.10

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	*5745.00	108.60 PK			1.85 V	264	72.20	36.40
1	*5745.00	99.60 AV			1.85 V	264	63.20	36.40
2	#11490.00	65.40 PK	74.00	-8.60	1.96 V	348	14.30	51.10
2	#11490.00	52.50 AV	54.00	-1.50	1.96 V	348	1.40	51.10

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

CHANNEL	Channel 3	**FREQUENCY RANGE**	1 ~ 40 GHz
MODULATION TYPE	BPSK	**TRANSFER RATE**	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 68%RH, 973hPa	**TESTED BY**	Moris Lin

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	*5785.00	97.10 PK			1.49 H	260	60.60	36.50
1	*5785.00	88.30 AV			1.49 H	260	51.80	36.50
2	#11570.00	62.90 PK	74.00	-11.10	1.81 H	258	12.00	50.90
2	#11570.00	50.80 AV	54.00	-3.20	1.81 H	258	-0.10	50.90

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5785.00	108.60 PK			1.84 V	268	72.10	36.50
1	*5785.00	99.60 AV			1.84 V	268	63.10	36.50
2	#11570.00	64.10 PK	74.00	-9.90	1.95 V	324	13.20	50.90
2	#11570.00	52.00 AV	54.00	-2.00	1.95 V	324	1.10	50.90

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

CHANNEL	Channel 5	**FREQUENCY RANGE**	1 ~ 40 GHz
MODULATION TYPE	BPSK	**TRANSFER RATE**	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 68%RH, 973hPa	**TESTED BY**	Moris Lin

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	*5825.00	96.80 PK			1.76 H	278	60.20	36.60
1	*5825.00	87.90 AV			1.76 H	278	51.30	36.60
2	#11650.00	65.10 PK	74.00	-8.90	1.68 H	278	14.50	50.60
2	#11650.00	52.20 AV	54.00	-1.80	1.68 H	278	1.60	50.60

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	*5825.00	109.00 PK			1.84 V	249	72.40	36.60
1	*5825.00	99.80 AV			1.84 V	249	63.20	36.60
2	#11650.00	61.90 PK	74.00	-12.10	1.97 V	352	11.30	50.60
2	#11650.00	49.80 AV	54.00	-4.20	1.97 V	352	-0.80	50.60

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

5.2.8 TEST RESULTS (ANTENNA C)

Below 1GHz Worst-Case Data

MODULATION TYPE	BPSK	**FREQUENCY RANGE**	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TRANSFER RATE**	6Mbps
ENVIRONMENTAL CONDITIONS	14deg. C, 70%RH, 973hPa	**DETECTOR FUNCTION**	Quasi-Peak
TESTED BY	Sky Liao		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	125.00	11.40 QP	43.50	-32.10	2.11 H	59	-0.80	12.20
2	250.00	16.10 QP	46.00	-29.90	1.91 H	21	2.30	13.80
3	305.45	28.80 QP	46.00	-17.20	1.28 H	230	11.90	16.90
4	390.03	28.00 QP	46.00	-18.00	1.19 H	21	9.30	18.70
5	566.66	26.30 QP	46.00	-19.70	1.09 H	1	2.60	23.70
6	651.25	32.40 QP	46.00	-13.60	1.09 H	307	7.40	25.00

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	125.00	21.20 QP	43.50	-22.30	1.12 V	21	9.00	12.20
2	250.00	18.80 QP	46.00	-27.20	1.21 V	108	5.00	13.80
3	300.00	19.80 QP	46.00	-26.20	1.47 V	21	2.90	16.80
4	390.02	33.60 QP	46.00	-12.40	1.39 V	1	14.90	18.70
5	566.66	31.10 QP	46.00	-14.90	1.97 V	21	7.40	23.70
6	651.25	35.10 QP	46.00	-10.90	1.99 V	1	10.10	25.00

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

CHANNEL	Channel 1	**FREQUENCY RANGE**	1 ~ 40 GHz
MODULATION TYPE	BPSK	**TRANSFER RATE**	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 68%RH, 973hPa	**TESTED BY**	Moris Lin

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	*5745.00	97.80 PK			1.45 H	356	61.40	36.40
1	*5745.00	88.90 AV			1.45 H	356	52.50	36.40
2	#11490.00	61.70 PK	74.00	-12.30	1.70 H	329	10.60	51.10
2	#11490.00	49.10 AV	54.00	-4.90	1.70 H	329	-2.00	51.10

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	*5745.00	116.50 PK			1.47 V	4	80.10	36.40
1	*5745.00	108.10 AV			1.47 V	4	71.70	36.40
2	#11490.00	65.50 PK	74.00	-8.50	1.46 V	343	14.40	51.10
2	#11490.00	52.40 AV	54.00	-1.60	1.46 V	343	1.30	51.10

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

CHANNEL	Channel 3	**FREQUENCY RANGE**	1 ~ 40 GHz
MODULATION TYPE	BPSK	**TRANSFER RATE**	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 68%RH, 973hPa	**TESTED BY**	Moris Lin

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	*5785.00	98.30 PK			1.47 H	357	61.80	36.50
1	*5785.00	90.30 AV			1.47 H	357	53.80	36.50
2	#11570.00	59.70 PK	74.00	-14.30	1.79 H	330	8.80	50.90
2	#11570.00	47.90 AV	54.00	-6.10	1.79 H	330	-3.00	50.90

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5785.00	117.20 PK			1.43 V	5	80.70	36.50
1	*5785.00	108.70 AV			1.43 V	5	72.20	36.50
2	#11570.00	66.00 PK	74.00	-8.00	1.53 V	302	15.10	50.90
2	#11570.00	52.80 AV	54.00	-1.20	1.53 V	302	1.90	50.90

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

CHANNEL	Channel 5	**FREQUENCY RANGE**	1 ~ 40 GHz
MODULATION TYPE	BPSK	**TRANSFER RATE**	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 68%RH, 973hPa	**TESTED BY**	Moris Lin

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	*5825.00	99.40 PK			1.61 H	357	62.80	36.60
1	*5825.00	91.40 AV			1.61 H	357	54.80	36.60
2	#11650.00	61.40 PK	74.00	-12.60	1.61 H	67	10.80	50.60
2	#11650.00	48.60 AV	54.00	-5.40	1.61 H	67	-2.00	50.60

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	*5825.00	118.40 PK			1.44 V	5	81.80	36.60
1	*5825.00	109.60 AV			1.44 V	5	73.00	36.60
2	#11650.00	66.40 PK	74.00	-7.60	1.49 V	23	15.80	50.60
2	**#11650.00**	**53.00 AV**	**54.00**	**-1.00**	**1.49 V**	**23**	**2.40**	**50.60**

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	FSP40	100036	Nov. 23, 2006

NOTE:

1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

2. 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.

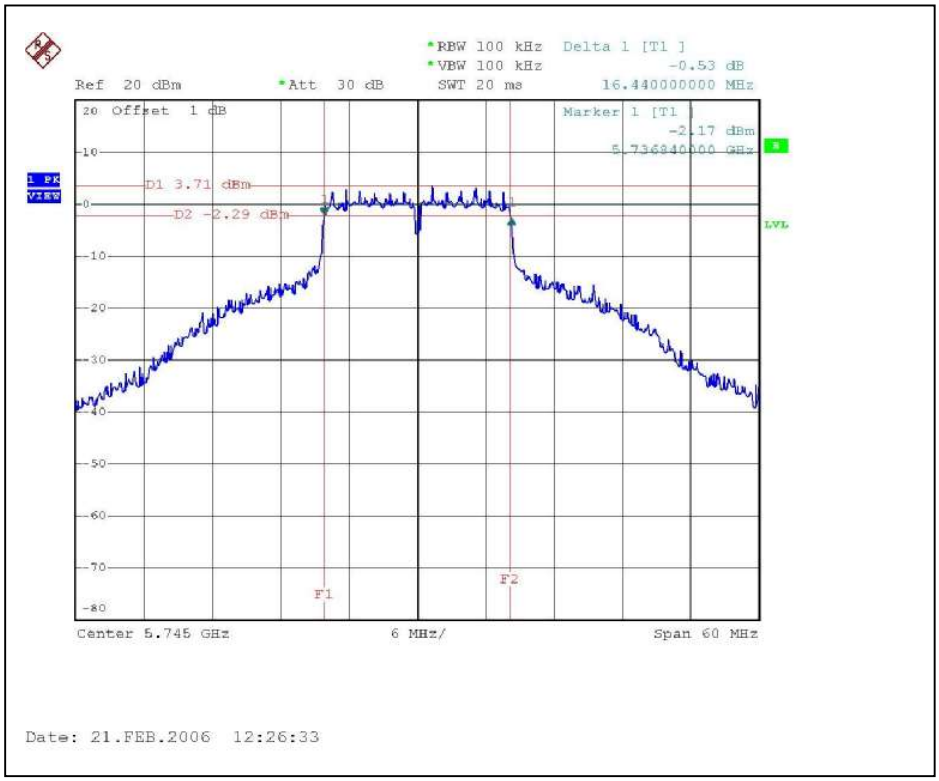
5.3.7 TEST RESULTS (ANTENNA B)

802.11a OFDM modulation

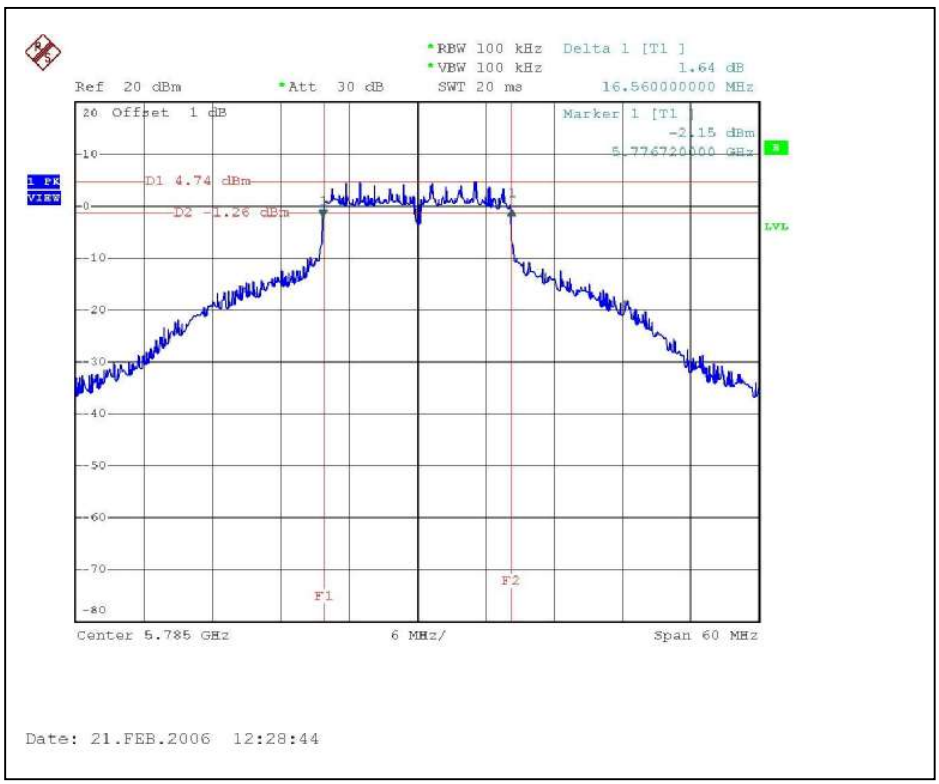
MODULATION TYPE	BPSK	**TRANSFER RATE**	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	23deg. C, 68%RH, 973hPa
TESTED BY	Moris Lin		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	5745	16.44	0.5	PASS
3	5785	16.56	0.5	PASS
5	5825	16.56	0.5	PASS

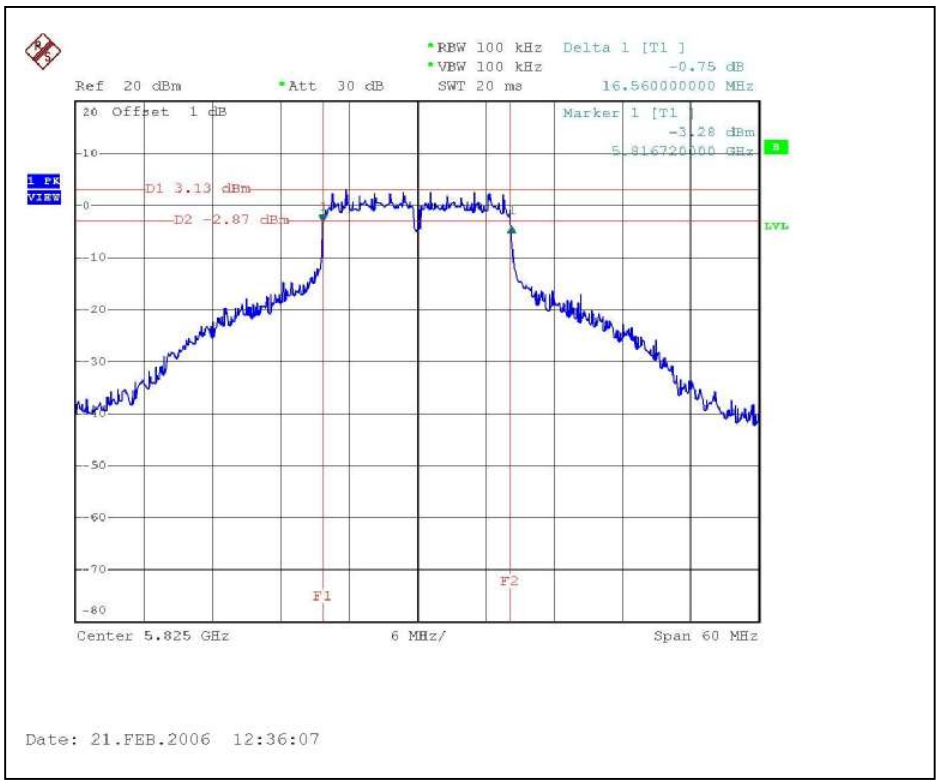
CH1


RBW 100 kHz
VBW 100 kHz
Delta 1 [T1]
-0.53 dB
16.440000000 MHz
Ref 20 dBm
Att 30 dB
SWT 20 ms
20 Offset 1 dB
Marker 1 [T1
-2.17 dBm
5.736840000 GHz
D1 3.71 dBm
D2 -2.29 dBm
1 PK VIEW
LVL
F1
F2
Center 5.745 GHz
6 MHz/
Span 60 MHz
Date: 21.FEB.2006 12:26:33

CH3


RBW 100 kHz
VBW 100 kHz
Delta 1 [T1]
1.64 dB
16.560000000 MHz
Ref 20 dBm
Att 30 dB
SWT 20 ms
20 Offset 1 dB
Marker 1 [T1
-2.15 dBm
5.776720000 GHz
D1 4.74 dBm
D2 -1.26 dBm
1 PK VIEW
LVL
F1
F2
Center 5.785 GHz
6 MHz/
Span 60 MHz
Date: 21.FEB.2006 12:28:44

CH5


RBW 100 kHz
VBW 100 kHz
SWT 20 ms
Delta 1 [T1]
-0.75 dB
16.560000000 MHz
Ref 20 dBm
Att 30 dB
20 Offset 1 dB
Marker 1 [T1
-3.28 dBm
5.816720000 GHz
D1 3.13 dBm
D2 -2.87 dBm
LVL
F1
F2
Center 5.825 GHz
6 MHz/
Span 60 MHz
Date: 21.FEB.2006 12:36:07

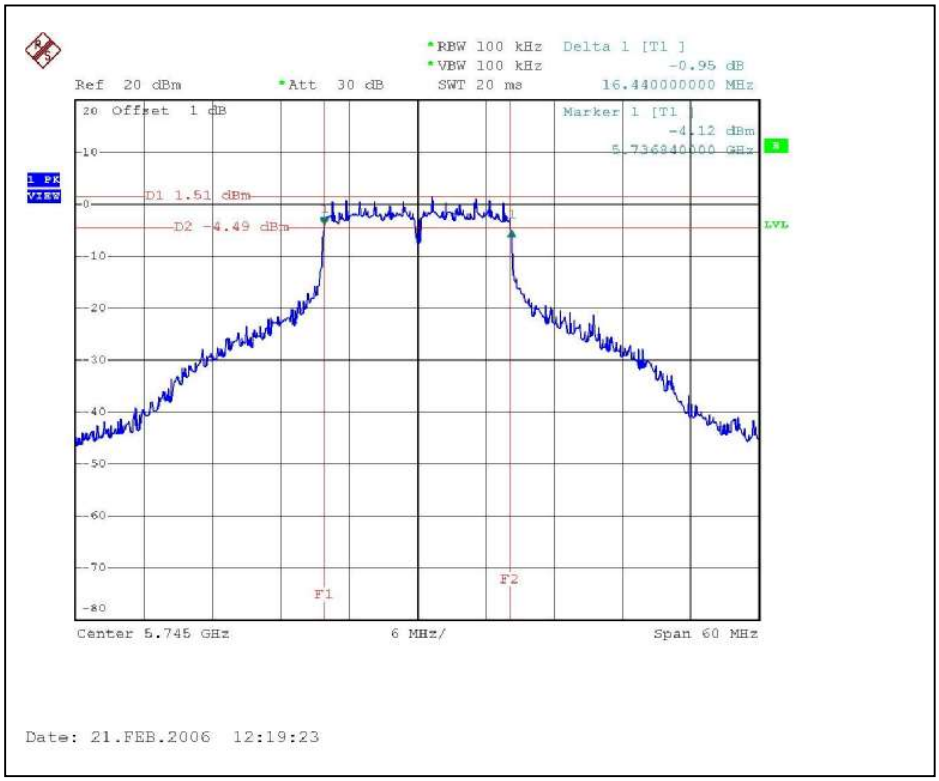
5.3.8 TEST RESULTS (ANTENNA C)

802.11a OFDM modulation

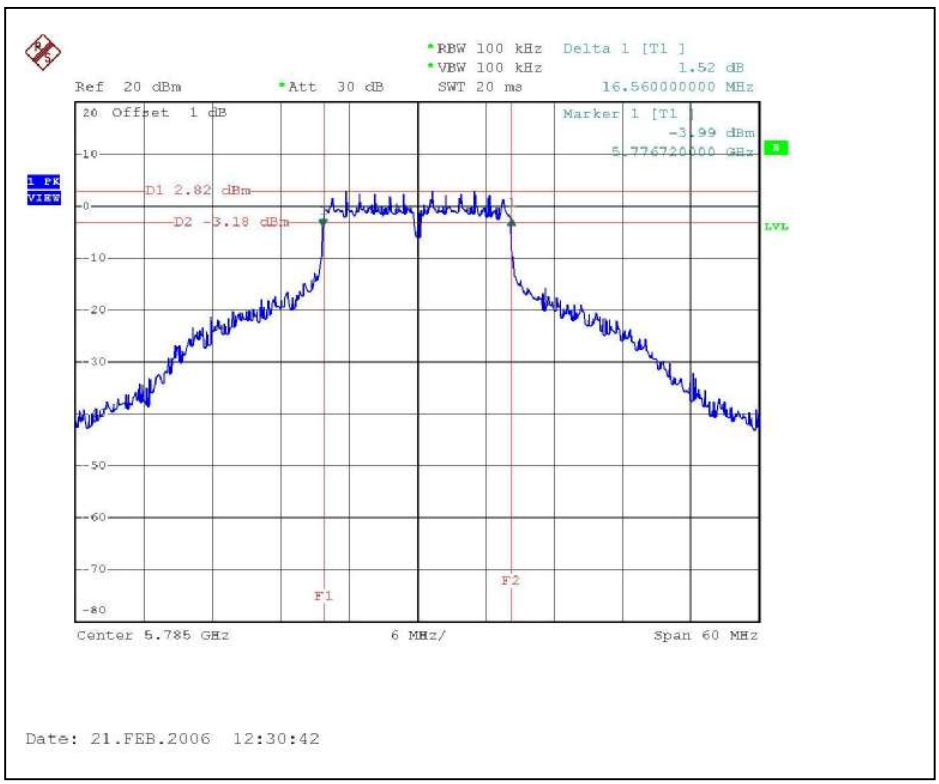
MODULATION TYPE	BPSK	**TRANSFER RATE**	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	23deg. C, 68%RH, 973hPa
TESTED BY	Moris Lin		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	5745	16.44	0.5	PASS
3	5785	16.56	0.5	PASS
5	5825	16.32	0.5	PASS

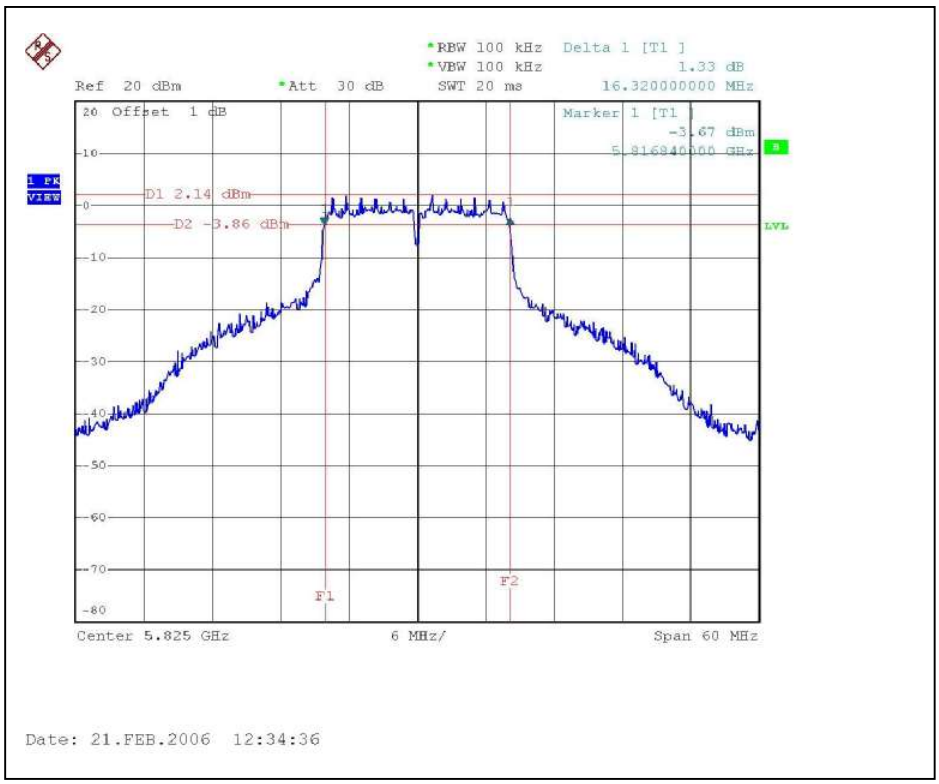
CH1


RBW 100 kHz
VBW 100 kHz
Delta 1 [T1]
-0.95 dB
16.440000000 MHz
Ref 20 dBm
Att 30 dB
SWT 20 ms
20 Offset 1 dB
Marker 1 [T1
-4.12 dBm
5.736840000 GHz
1 PK VIEW
D1 1.51 dBm
D2 -4.49 dBm
LVL
F1
F2
Center 5.745 GHz
6 MHz/
Span 60 MHz
Date: 21.FEB.2006 12:19:23

CH3


RBW 100 kHz
VBW 100 kHz
Delta 1 [T1]
1.52 dB
16.560000000 MHz
Ref 20 dBm
Att 30 dB
SWT 20 ms
20 Offset 1 dB
Marker 1 [T1
-3.99 dBm
5.776720000 GHz
1 PK VIEW
D1 2.82 dBm
D2 -3.18 dBm
LVL
F1
F2
Center 5.785 GHz
6 MHz/
Span 60 MHz
Date: 21.FEB.2006 12:30:42

CH5


RBW 100 kHz
VBW 100 kHz
SWT 20 ms
Delta 1 [T1]
1.33 dB
16.320000000 MHz
Ref 20 dBm
Att 30 dB
Offset 1 dB
Marker 1 [T1
-3.67 dBm
5.816840000 GHz
D1 2.14 dBm
D2 -3.86 dBm
LVL
F1
F2
Center 5.825 GHz
6 MHz/
Span 60 MHz
Date: 21.FEB.2006 12:34:36

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	FSP40	100036	Nov. 23, 2006
Agilent SIGNAL GENERATOR	E8257C	MY43320668	Dec. 07, 2006
TEKTRONIX OSCILLOSCOPE	TDS380	B016335	Jun. 22, 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 4.3.6

5.4.7 TEST RESULTS

802.11a OFDM modulation

MODULATION TYPE	BPSK	**TRANSFER RATE**	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	23deg. C, 68%RH, 973hPa
TESTED BY	Moris Lin		

Antenna 2 (Gain : 8.0 dBi) + Antenna Cable (2.0dB loss)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	5745	66.069	18.2	30	PASS
3	5785	77.625	18.9	30	PASS
5	5825	63.096	18.0	30	PASS

Antenna 3 (Gain : 18.0 dBi) + Antenna Cable (2.0dB loss)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	5745	50.119	17.0	30	PASS
3	5785	60.256	17.8	30	PASS
5	5825	133.968	21.27	30	PASS

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	FSP40	100036	Nov. 23, 2006

NOTE:

1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

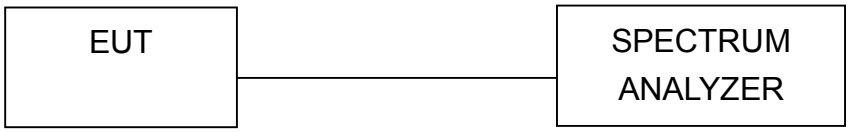
5.5.3 TEST PROCEDURE

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 4.3.6

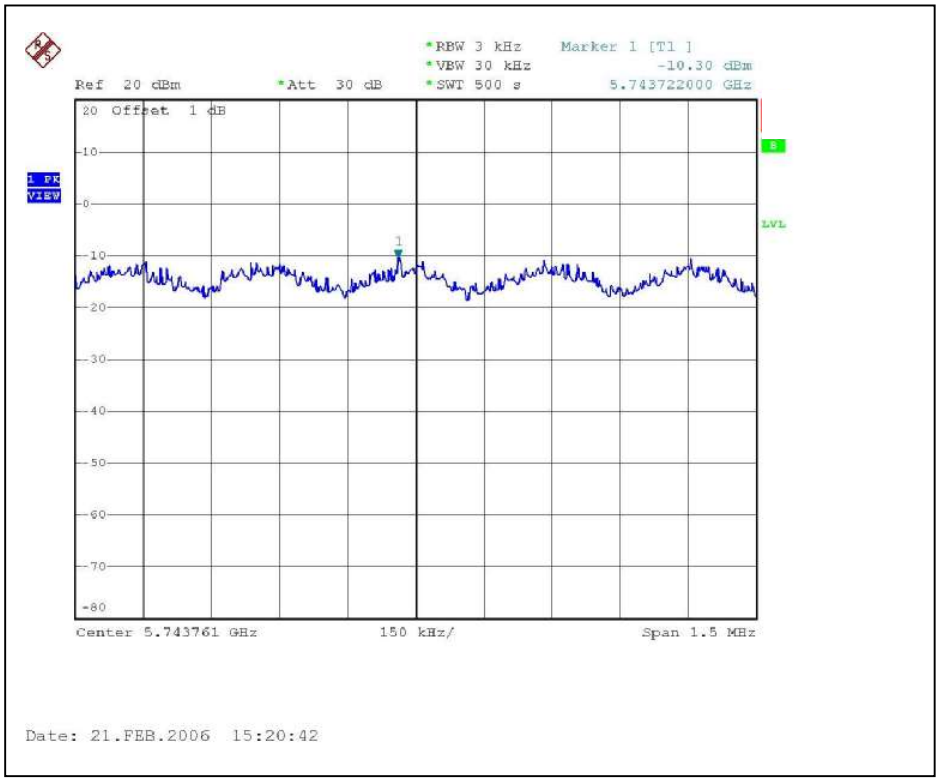
5.5.7 TEST RESULTS (ANTENNA B)

802.11a OFDM modulation

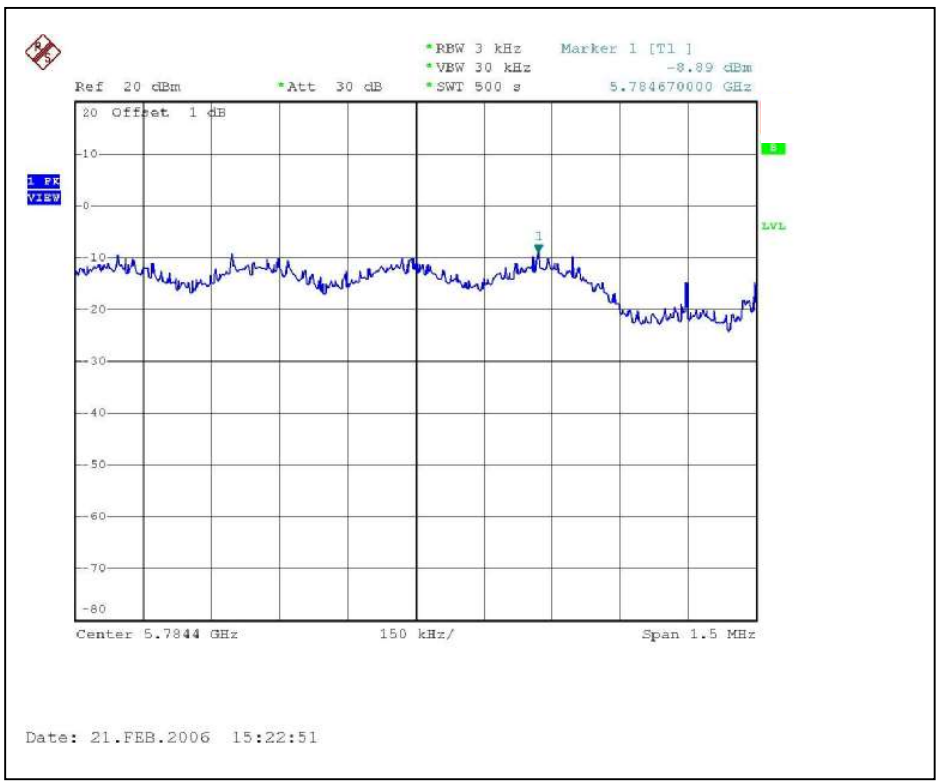
MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	23deg. C, 68%RH, 973hPa
TESTED BY	Moris Lin		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	5745	-10.30	8	PASS
3	5785	-8.89	8	PASS
5	5825	-10.23	8	PASS

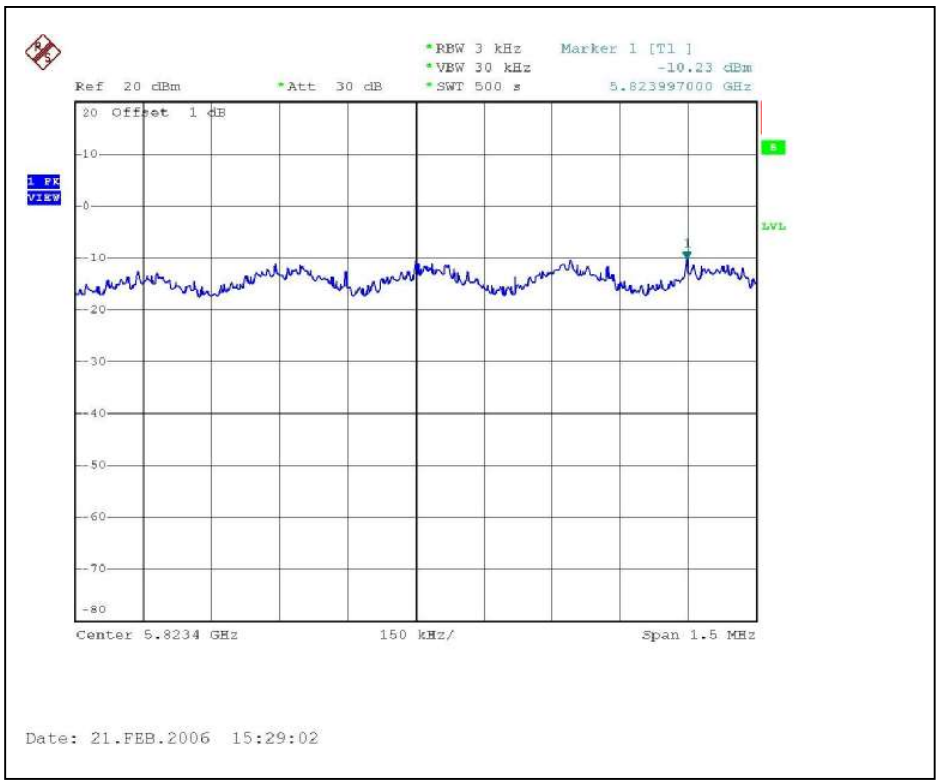
CH1


*RBW 3 kHz
Marker 1 [T1]
*VBW 30 kHz
-10.30 dBm
Ref 20 dBm
*Att 30 dB
*SWT 500 s
5.743722000 GHz
20 Offset 1 dB
1 PK VIEW
LVL
Center 5.743761 GHz
150 kHz/
Span 1.5 MHz
Date: 21.FEB.2006 15:20:42

CH3


*RBW 3 kHz
Marker 1 [T1]
*VBW 30 kHz
-8.89 dBm
Ref 20 dBm
*Att 30 dB
*SWT 500 s
5.784670000 GHz
20 Offset 1 dB
1 PK VIEW
LVL
Center 5.7844 GHz
150 kHz/
Span 1.5 MHz
Date: 21.FEB.2006 15:22:51

CH5


*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-10.23 dBm
5.823997000 GHz
Ref 20 dBm
*Att 30 dB
20 Offset 1 dB
1 PK VIEW
LVL
Center 5.8234 GHz
150 kHz/
Span 1.5 MHz
Date: 21.FEB.2006 15:29:02

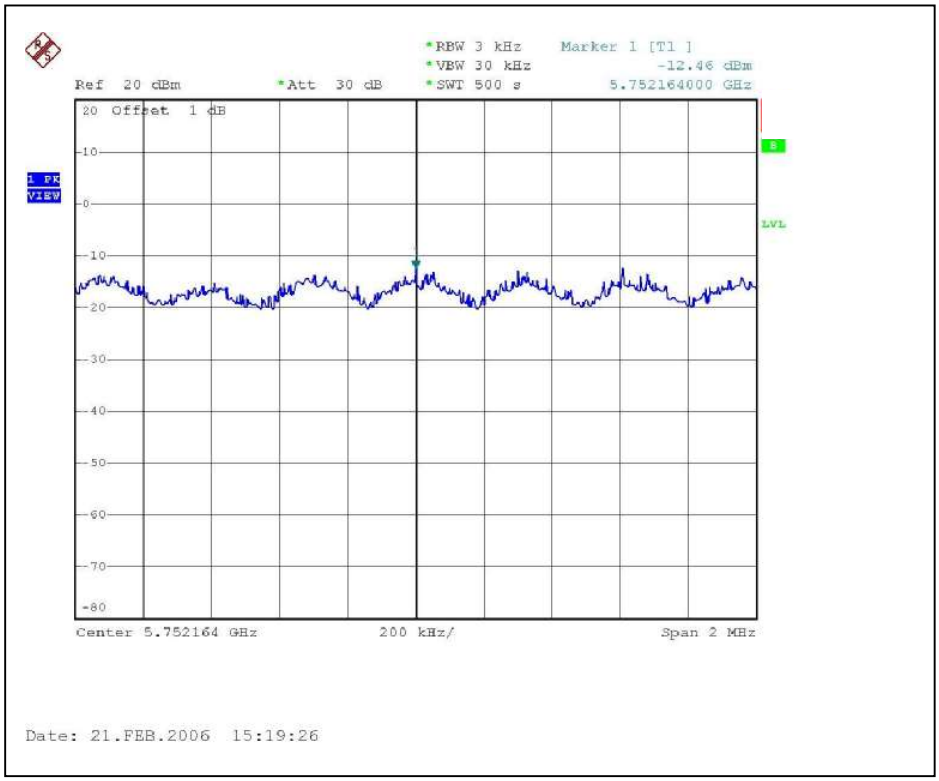
5.5.8 TEST RESULTS (ANTENNA C)

802.11a OFDM modulation

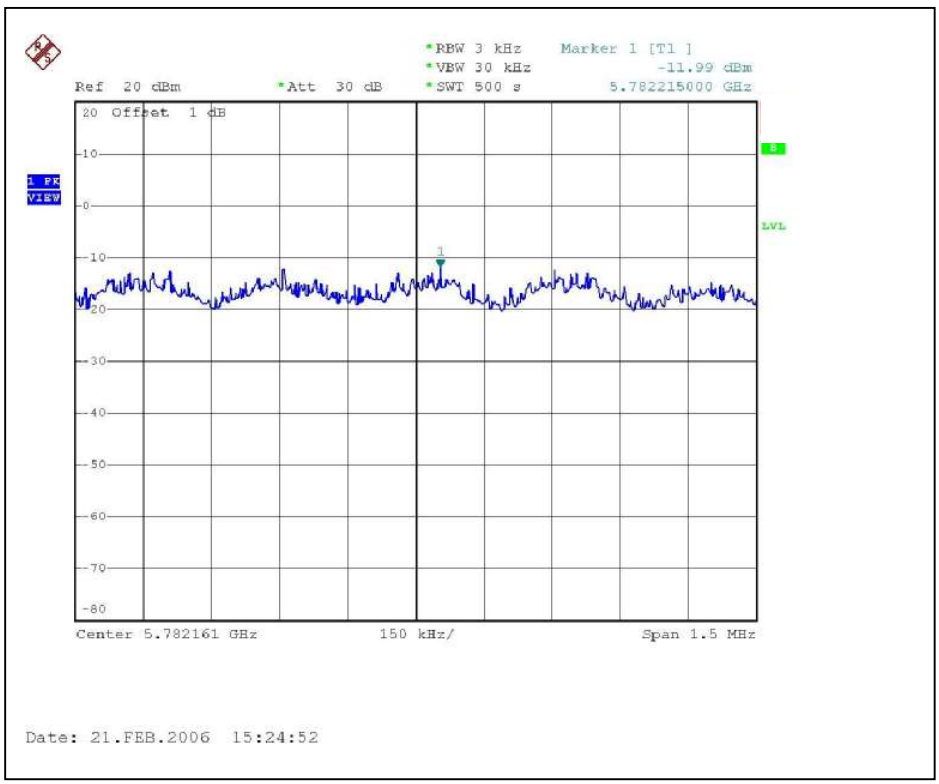
MODULATION TYPE	BPSK	**TRANSFER RATE**	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	23deg. C, 68%RH, 973hPa
TESTED BY	Moris Lin		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	5745	-12.46	8	PASS
3	5785	-11.99	8	PASS
5	5825	-11.08	8	PASS

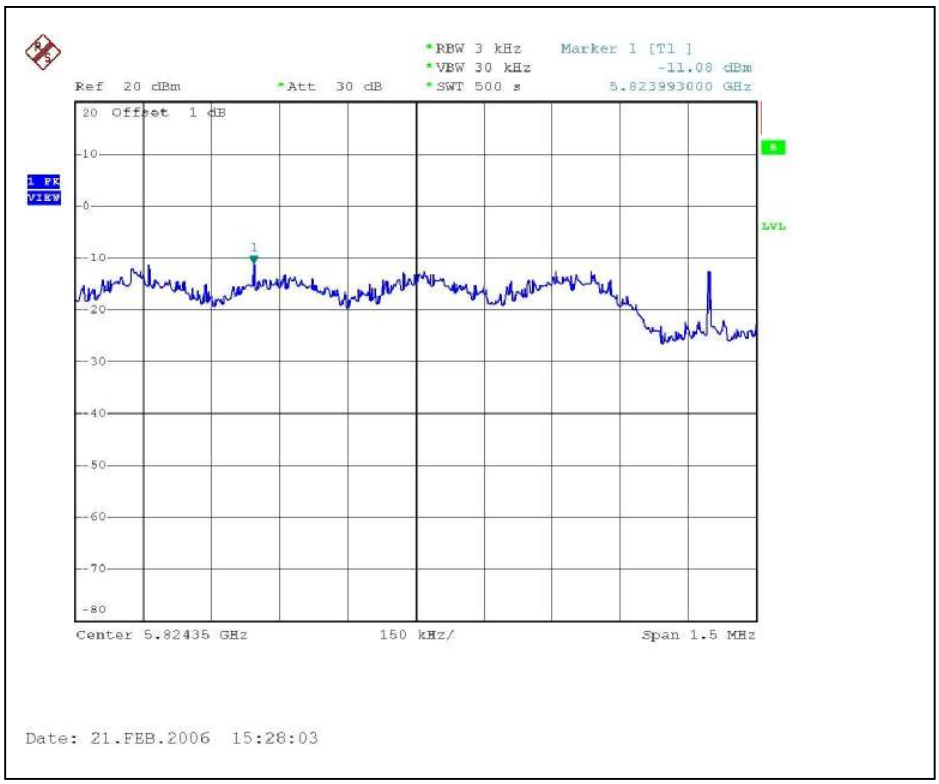
CH1


*RBW 3 kHz
Marker 1 [T1]
*VBW 30 kHz
-12.46 dBm
Ref 20 dBm
*Att 30 dB
*SWT 500 s
5.752164000 GHz
20 Offset 1 dB
1 PK VIEW
LVL
Center 5.752164 GHz
200 kHz/
Span 2 MHz
Date: 21.FEB.2006 15:19:26

CH3


*RBW 3 kHz
Marker 1 [T1]
*VBW 30 kHz
-11.99 dBm
Ref 20 dBm
*Att 30 dB
*SWT 500 s
5.782215000 GHz
20 Offset 1 dB
1 PK VIEW
LVL
Center 5.782161 GHz
150 kHz/
Span 1.5 MHz
Date: 21.FEB.2006 15:24:52

CH5


*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-11.08 dBm
5.823993000 GHz
Ref 20 dBm
*Att 30 dB
20 Offset 1 dB
1 PK VIEW
LVL
Center 5.82435 GHz
150 kHz/
Span 1.5 MHz
Date: 21.FEB.2006 15:28:03

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	FSP40	100036	Nov. 23, 2006

NOTE:

1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

2. 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

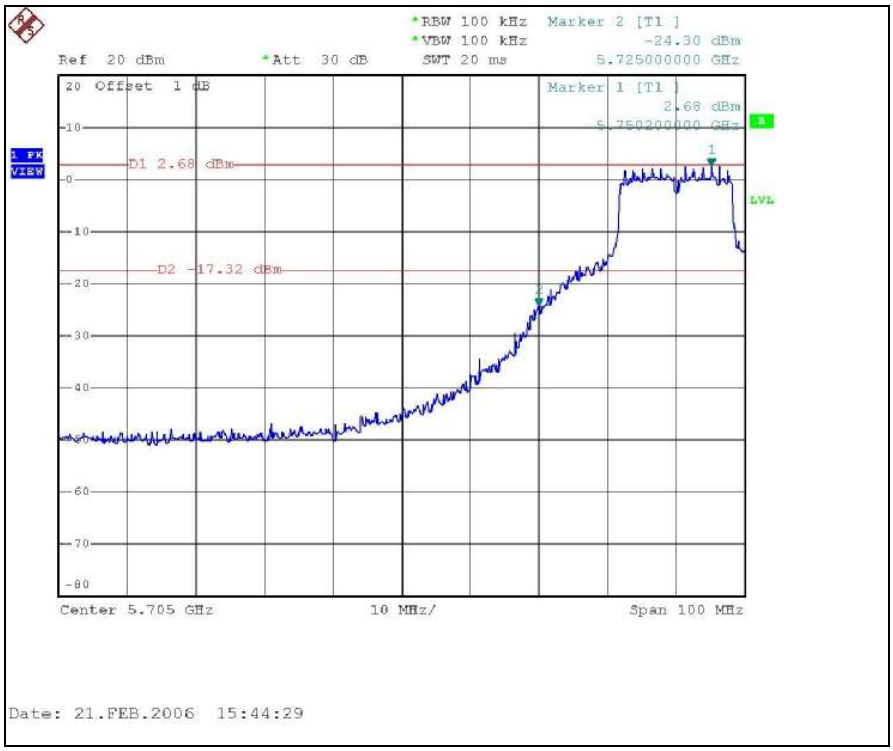
5.6.5 EUT OPERATING CONDITION

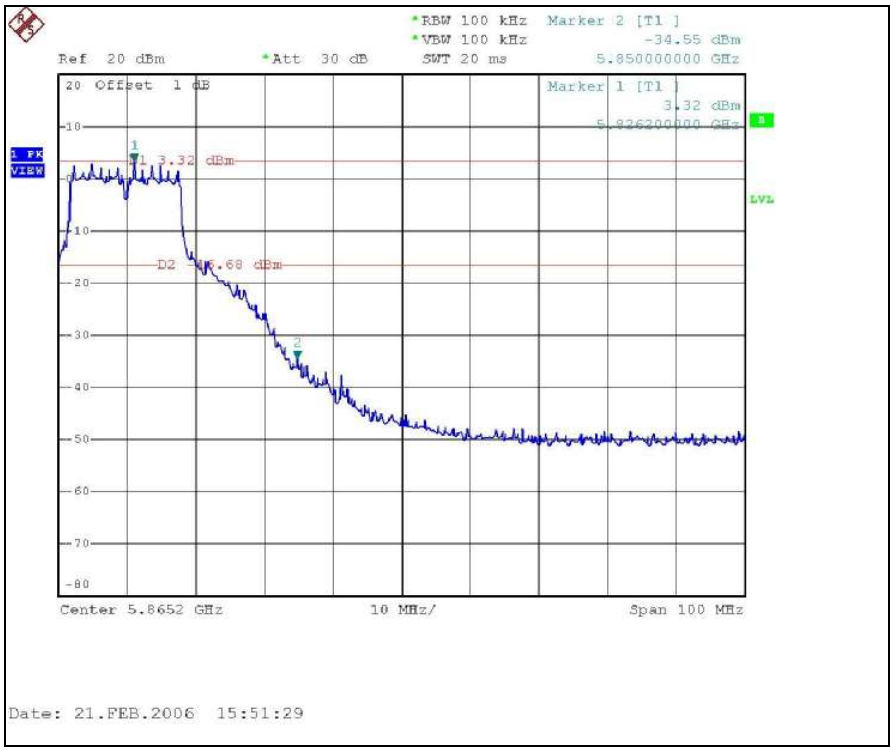
Same as Item 4.3.6

5.6.6 TEST RESULTS (ANTENNA B)

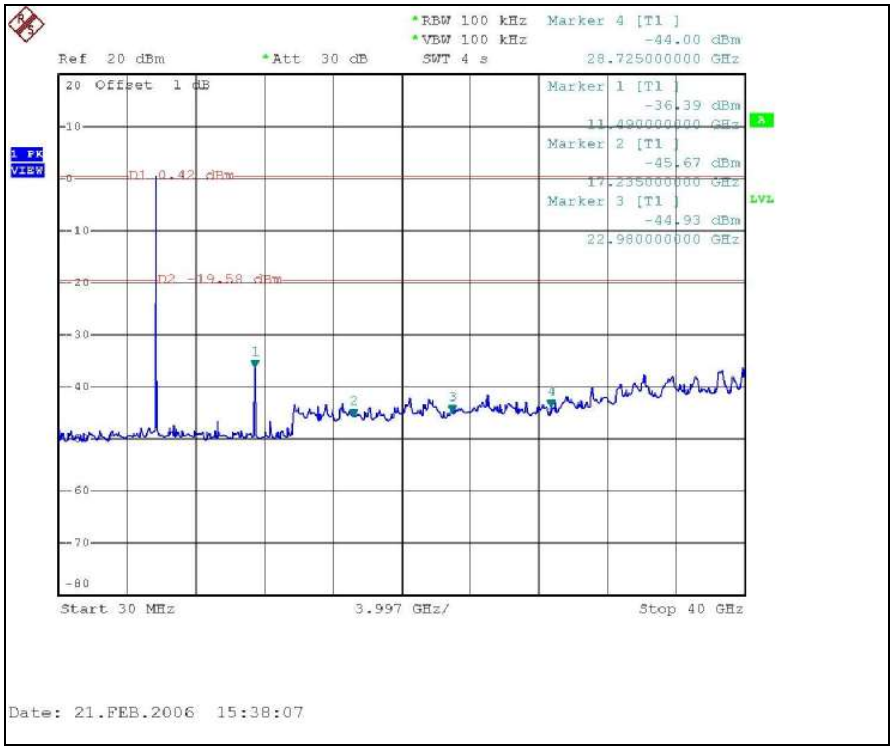
The spectrum plots are attached on the following pages. D2 line indicates the highest level, D1 line indicates the 20dB offset below D2. It shows compliance with the requirement in part 15.247(d).

802.11a OFDM modulation

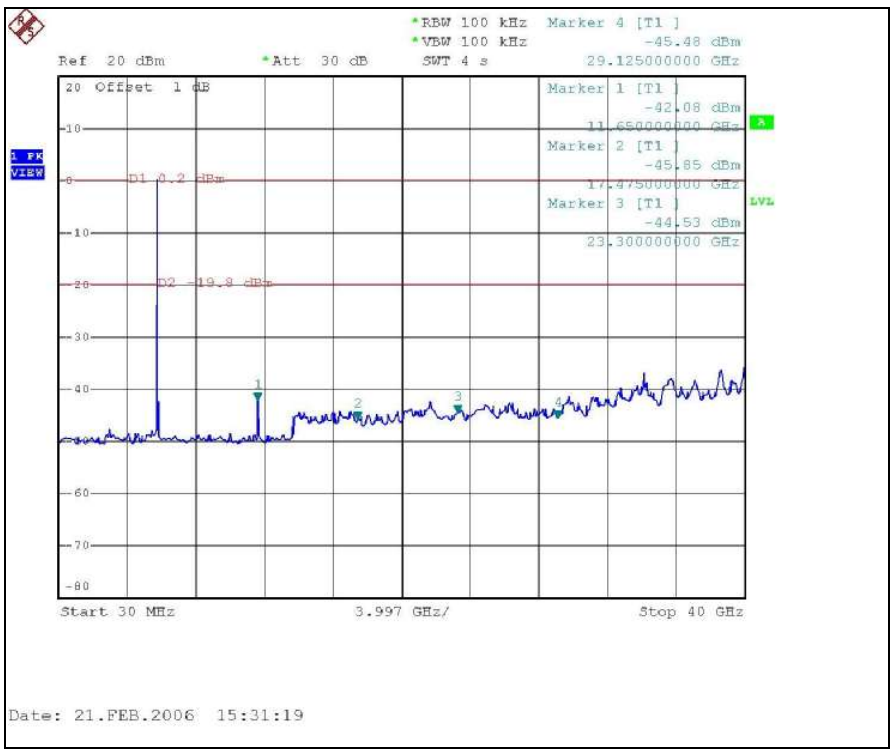




CH 1


*RBW 100 kHz
*VBW 100 kHz
Ref 20 dBm
*Att 30 dB
SWT 4 s
Marker 4 [T1]
-44.00 dBm
28.725000000 GHz
20 Offset 1 dB
Marker 1 [T1]
-36.39 dBm
11.490000000 GHz
Marker 2 [T1]
-45.67 dBm
17.235000000 GHz
Marker 3 [T1]
-44.93 dBm
22.980000000 GHz
D1 0.42 dBm
D2 -19.58 dBm
Start 30 MHz
3.997 GHz/
Stop 40 GHz
Date: 21.FEB.2006 15:38:07

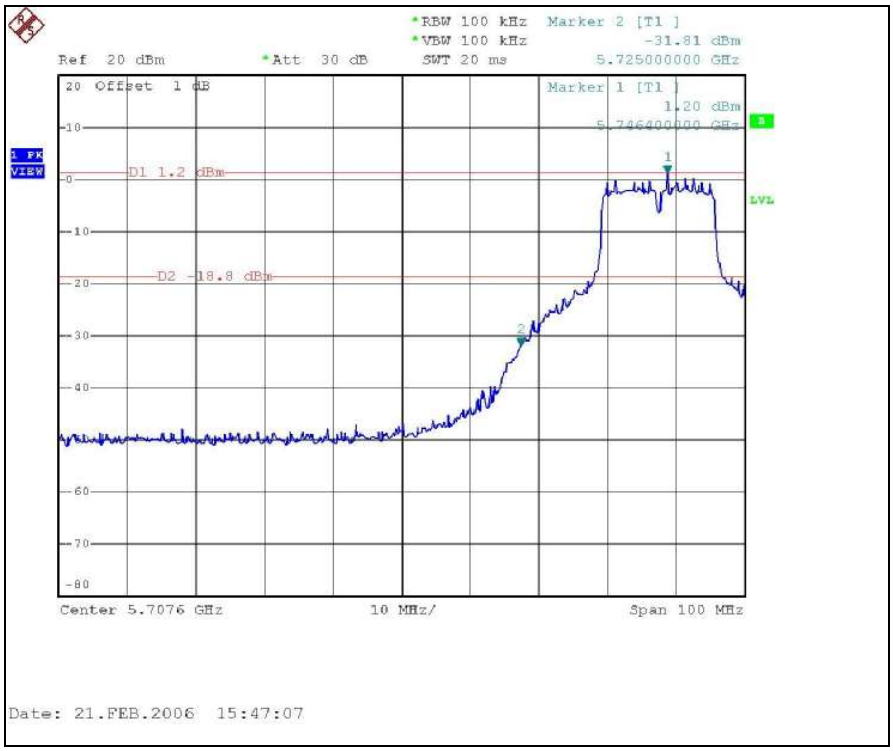
CH 3

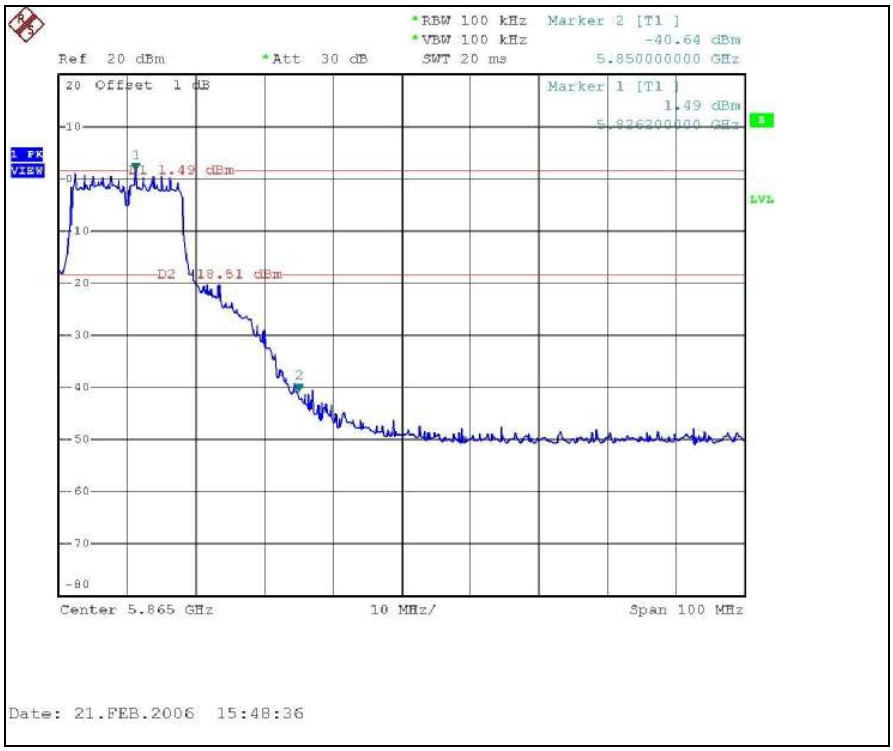

*RBW 100 kHz
*VBW 100 kHz
Ref 20 dBm
*Att 30 dB
SWT 4 s
Marker 4 [T1]
-45.48 dBm
29.125000000 GHz
20 Offset 1 dB
Marker 1 [T1]
-42.08 dBm
11.650000000 GHz
Marker 2 [T1]
-45.85 dBm
17.475000000 GHz
Marker 3 [T1]
-44.53 dBm
23.300000000 GHz
D1 0.2 dBm
D2 -19.8 dBm
Start 30 MHz
3.997 GHz/
Stop 40 GHz
Date: 21.FEB.2006 15:31:19

5.6.7 TEST RESULTS (ANTENNA C)

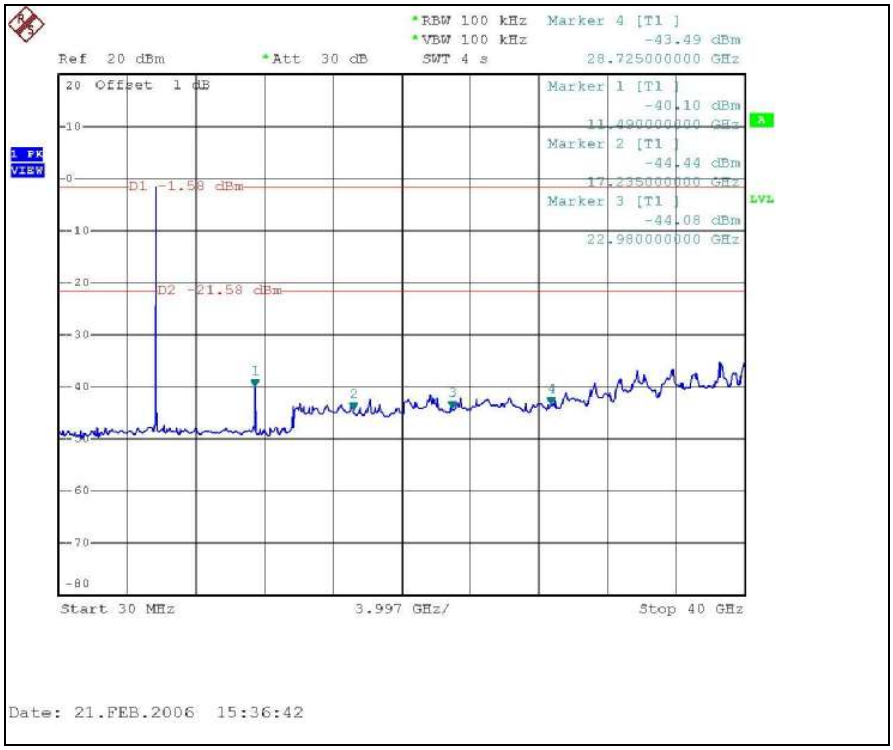
The spectrum plots are attached on the following pages. D2 line indicates the highest level, D1 line indicates the 20dB offset below D2. It shows compliance with the requirement in part 15.247(d).

802.11a OFDM modulation

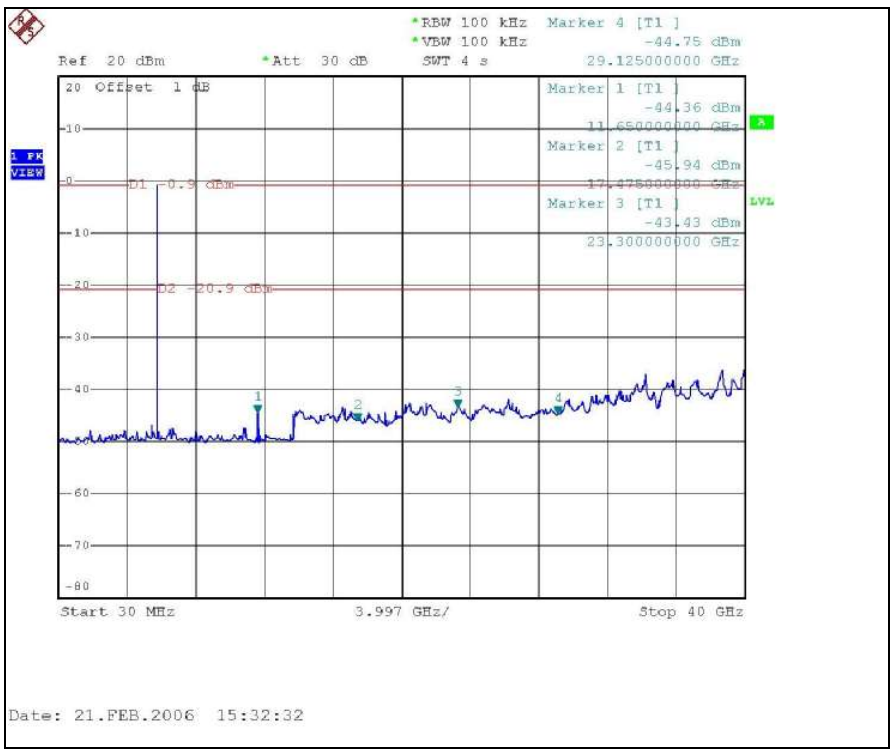




CH 1


RBW 100 kHz
VBW 100 kHz
SWT 4 s
Marker 4 [T1]
-43.49 dBm
28.725000000 GHz
Ref 20 dBm
Att 30 dB
20 Offset 1 dB
Marker 1 [T1]
-40.10 dBm
11.490000000 GHz
Marker 2 [T1]
-44.44 dBm
17.235000000 GHz
Marker 3 [T1]
-44.08 dBm
22.980000000 GHz
D1 -1.58 dBm
D2 -21.58 dBm
Start 30 MHz
3.997 GHz/
Stop 40 GHz
Date: 21.FEB.2006 15:36:42

CH 3


RBW 100 kHz
VBW 100 kHz
SWT 4 s
Marker 4 [T1]
-44.75 dBm
29.125000000 GHz
Ref 20 dBm
Att 30 dB
20 Offset 1 dB
Marker 1 [T1]
-44.36 dBm
11.650000000 GHz
Marker 2 [T1]
-45.94 dBm
17.475000000 GHz
Marker 3 [T1]
-43.43 dBm
23.300000000 GHz
D1 -0.9 dBm
D2 -20.9 dBm
Start 30 MHz
3.997 GHz/
Stop 40 GHz
Date: 21.FEB.2006 15:32:32

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 antennas used in this product are as following:

No.	Model No.	Gain (dBi)	Cable Loss (dB)	Antenna Type	Antenna Connector
1	HG5310U	10.0	2.0	OMNI Dipole	N-Female
2	HG5808U	8.0	2.0	OMNI Dipole	N-Female
3	SA-A04-090250	18.0	2.0	Panel Directional	N-Jack

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, 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

Web Site: www.adt.com.tw

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

APPENDIX-A

MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.