FCC TEST REPORT (15.407)

REPORT NO.: RF950707H06
MODEL NO.: WMP-D18
RECEIVED: July 07, 2006
TESTED: July 07, 2006
ISSUED: July 14, 2006

APPLICANT: Alpha Networks Inc.

ADDRESS: No.8 Li-shing 7th Rd., Science-based Industrial Partk, 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

Table of Contents

1. CERTIFICATION

PRODUCT:	IEEE 802.11a MiniPCI Card
BRAND NAME:	Alpha
MODEL NO.:	WMP-D18
TEST SAMPLE:	ENGINEERING SAMPLE
TESTED:	July 07, 2006
APPLICANT:	Alpha Networks Inc.
STANDARDS:	FCC Part 15, Subpart E (Section 15.407) ANSI C63.4-2003

The above equipment (Model: WMP-D18) 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 : _____ , **DATE:** July 14, 2006
(Midoli Peng)

TECHNICAL ACCEPTANCE : _____ , **DATE:** July 14, 2006
Responsible for RF
(Hank Chung)

APPROVED BY : _____ , **DATE:** July 14, 2006
(May Chen, Deputy Manager)

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 15, Subpart E (Section 15.407)			
Standard Section	**Test Type**	**Result**	**Remark**
15.407(b)(5)	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is –20.08dB at 0.177MHz
15.407(b/1/2/3)(b)(5)	Electric Field Strength Spurious Emissions, 30MHz ~ 40000MHz	PASS	Meet the requirement of limit. Minimum passing margin is –1.9dB at 5350.0MHz
15.407(a/1/2/3)	Peak Transmit Power	PASS	Meet the requirement of limit.
15.407(a)(6)	Peak Power Excursion	PASS	Meet the requirement of limit.
15.407(a/1/2/3)	Peak Power Spectral Density	PASS	Meet the requirement of limit.
15.407(g)	Frequency Stability	PASS	Meet the requirement of limit.

NOTE:

1. The EUT was operating in 5.150 ~ 5.350GHz and 5.725 ~ 5.850GHz frequencies band. This report was recorded the RF parameters including 5.150 ~ 5.350GHz. For the 5.725 ~ 5.850GHz RF parameters was recorded in another test report.

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	IEEE 802.11a MiniPCI Card
MODEL NO.	WMP-D18
FCC ID	RRKWMPD18
POWER SUPPLY	DC 3.3V from host equipment
MODULATION TYPE	64QAM, 16QAM, QPSK, BPSK for OFDM
MODULATION TECHNOLOGY	OFDM
TRANSFER RATE	802.11a: 54/48/36/24/18/12/9/6Mbps (Turbo mode: up to 108Mbps *see Note 1)
FREQUENCY RANGE	802.11a: 5.15 ~ 5.35GHz and 5.725 ~ 5.850GHz
NUMBER OF CHANNEL	802.11a: 13 (5 for 802.11a Turbo mode)
CHANNEL SPACING	802.11a: 20MHz for Normal mode
OUTPUT POWER	Please see note 4 (on next page)
DATA CABLE	NA
ANTENNA TYPE	Please see note 2 (on next page)
I/O PORTS	NA
ASSOCIATED DEVICES	NA

NOTE:

1. This EUT is capable of providing data rates of up to 108 Mbps in 802.11a Turbo mode depending upon reception quality.
2. There are two antennas provided to this EUT, please refer to the following table:

No.	Model No.	Gain (dBi)	Cable Loss (dB)	Net Gain (dB)	Antenna Type	Connector
1	SAA04-220080	5	1.8	3.2	Dipole	RP-N plug
2	ANT70-1800	18	2.96	15.04	Panel	N Jack

Note:
1. The antenna 2 is outdoor Antenna it can only be used in point-to-point applications.

3. Frequency Range of each Antennas are as followings:

Antenna No.	Frequency Range
No. 1	5.15GHz~5.35GHz and 5.725GHz ~ 5.850GHz
No. 2	5.25GHz~5.35GHz and 5.725GHz ~ 5.850GHz

4. Peak output power (Unit : mW) :

No.	Model No. (Antenna)	Operating Frequency (MHz)		
		5150~5250	5250~5350	5725~5850
1	SAA04-220080	48.641	153.109	141.254
2	ANT70-1800	NA	14.791	141.254

5. 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 5150MHz ~ 5350MHz bands:

Eight channels are provided to this EUT for normal mode.

Channel	Frequency
1	5180 MHz
2	5200 MHz
3	5220 MHz
4	5240 MHz
5	5260 MHz
6	5280 MHz
7	5300 MHz
8	5320 MHz

Three channels are provided to this EUT for turbo mode.

Channel	Frequency
1	5210 MHz
2	5250 MHz
3	5290 MHz

3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL:

EUT configure mode	Applicable to				Description
	PLC	RE<1G	RE≥1G	APCM	
-	√	√	√	√	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)
802.11a	1 to 8	8	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)
802.11a	1 to 8	8	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)
802.11a (Antenna 1)	1 to 8	1, 4, 5, 8	OFDM	BPSK	6
802.11a Turbo (Antenna 1)	1 to 3	1, 2, 3	OFDM	BPSK	12
802.11a (Antenna 2)	5 to 8	5, 7, 8	OFDM	BPSK	6
802.11a Turbo (Antenna 2)	3	3	OFDM	BPSK	12

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)
802.11a (Antenna 1)	1 to 8	1, 8	OFDM	BPSK	6
802.11a Turbo (Antenna 1)	1 to 3	1, 3	OFDM	BPSK	12
802.11a (Antenna 2)	5 to 8	5, 8	OFDM	BPSK	6
802.11a Turbo (Antenna 2)	3	3	OFDM	BPSK	12

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)
802.11a (Antenna 1)	1 to 8	1, 4, 5, 8	OFDM	BPSK	6
802.11a Turbo (Antenna 1)	1 to 3	1, 2, 3	OFDM	BPSK	12
802.11a (Antenna 2)	5 to 8	5, 7, 8	OFDM	BPSK	6
802.11a Turbo (Antenna 2)	3	3	OFDM	BPSK	12

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is an IEEE 802.11a MiniPCI Card. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart E (15.407)

ANSI C63.4-2003

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

3.4 DESCRIPTION OF SUPPORT UNITS

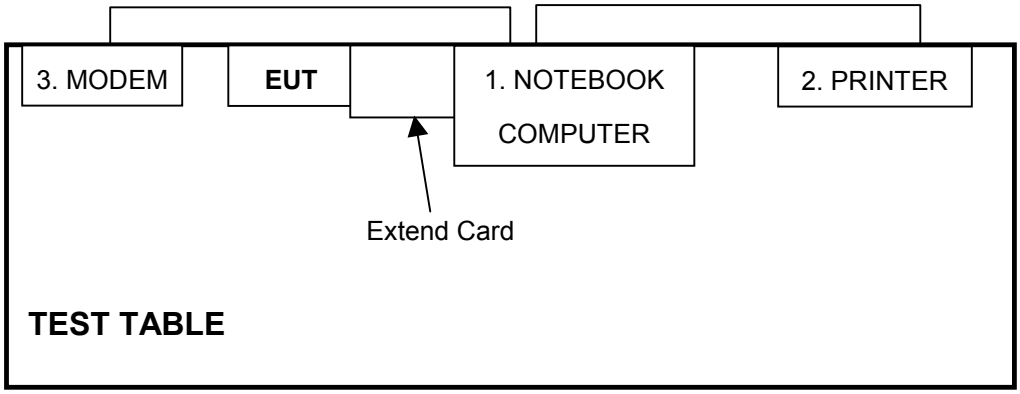
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Product	Brand	Model No.	Serial No.	FCC ID
1	NOTEBOOK COMPUTER	Dell	PP01L	TW-09c748-12800-165-3171	DoC
2	PRINTER	EPSON	LQ-300+	DCGY047261	B94C2642X
3	MODEM	ACEEX	1414	0206026775	IFAXDM1414
4	Extend Card	ADT	NA	NA	NA

No.	Signal cable description
1	NA
2	1.8m braid shielded wire, terminated with DB25 and Centronics connector via metallic frame, w/o core
3	1.3 m braid shielded wire, terminated with DB25 and DB9 connector via metallic frame, w/o core.
4	NA

Note: 1. All power cords of the above support units are unshielded (1.8m).

3.5 CONFIGURATION OF SYSTEM UNDER TEST



NOTE: 1. Please refer to the photos of test configuration in Item 5 also.

4. TEST TYPES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

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

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver	ESCS 30	847124/029	Dec. 15, 2006
Line-Impedance Stabilization Network(for EUT)	ENV-216	100071	Nov. 10, 2006
Line-Impedance Stabilization Network(for Peripheral)	KNW-407	8/1395/12	Jul. 19, 2006
RF Cable (JETBAO)	RG233/U	Cable_CB_01	Dec. 09, 2006
Terminator	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.

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.

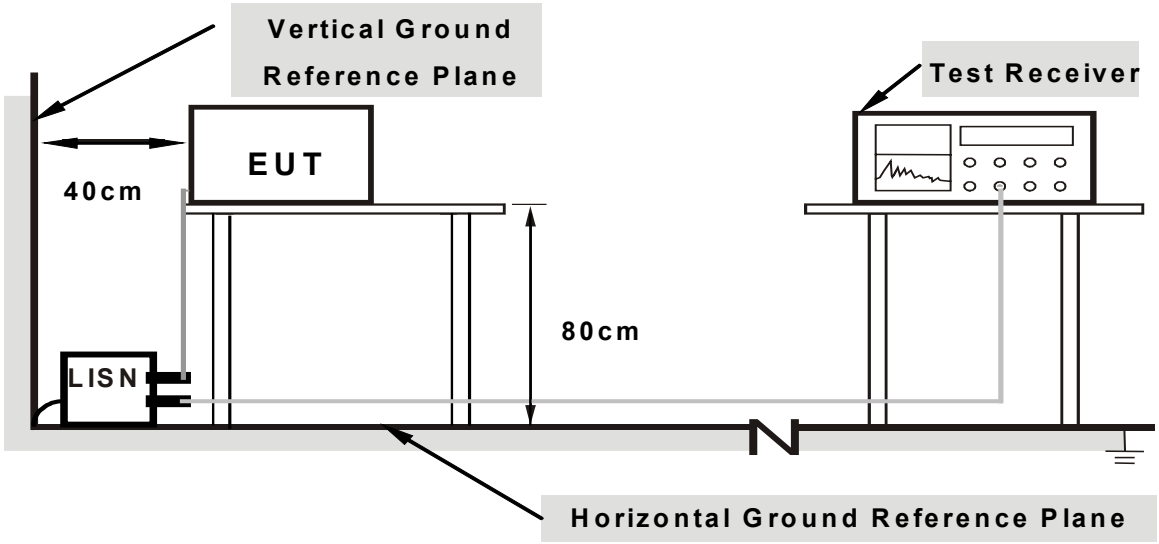
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

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. Plug the EUT into test board and placed on the testing table.

b. The support unit 1 (Notebook computer) ran a test program “ART52 build58” to enable EUT under transmission condition continuously at specific channel frequency.

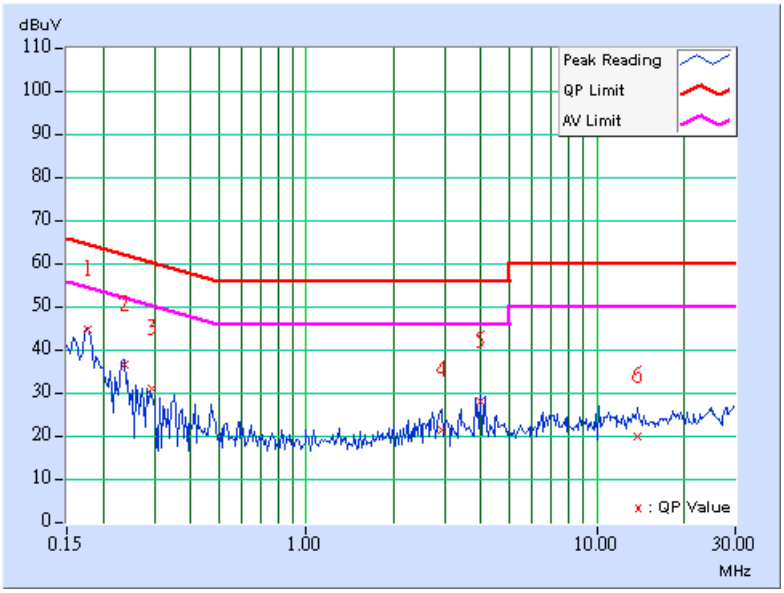
4.1.7 TEST RESULTS

Conducted Worst-Case Data

MODE	Channel 8	**6dB BANDWIDTH**	9 kHz
MODULATION TYPE	BPSK	**TRANSFER RATE**	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**PHASE**	Line (L)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 955hPa	**TESTED BY**	Eric Lee

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	0.177	9.60	34.87	-	44.47	-	64.61	54.61	-20.14	-
2	0.236	9.60	26.47	-	36.07	-	62.24	52.24	-26.17	-
3	0.294	9.60	21.08	-	30.68	-	60.41	50.41	-29.73	-
4	2.935	9.70	11.41	-	21.11	-	56.00	46.00	-34.89	-
5	3.996	9.70	18.23	-	27.93	-	56.00	46.00	-28.07	-
6	13.867	10.05	10.03	-	20.08	-	60.00	50.00	-39.92	-

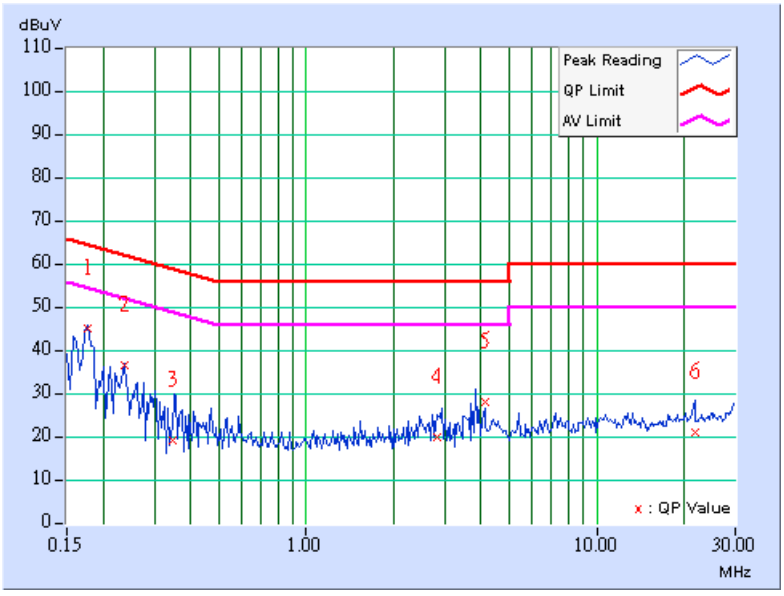
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



MODE	Channel 8	**6dB BANDWIDTH**	9 kHz
MODULATION TYPE	BPSK	**TRANSFER RATE**	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**PHASE**	Neutral (N)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 955hPa	**TESTED BY**	Eric Lee

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	**0.177**	**9.60**	**34.93**	**-**	**44.53**	**-**	**64.61**	**54.61**	**-20.08**	**-**
2	0.236	9.60	26.51	-	36.11	-	62.24	52.24	-26.13	-
3	0.345	9.60	9.30	-	18.90	-	59.07	49.07	-40.17	-
4	2.818	9.70	9.92	-	19.62	-	56.00	46.00	-36.38	-
5	4.113	9.70	17.96	-	27.66	-	56.00	46.00	-28.34	-
6	21.711	10.10	10.97	-	21.07	-	60.00	50.00	-38.93	-

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 LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

Frequencies (MHz)	EIRP Limit (dBm)	Equivalent Field Strength at 3m (dBμV/m) *note 3
5150~5250	-27	68.3
5250~5350	-27	68.3
5725~5825	-27 *note 1	68.3
	-17 *note 2	78.3

NOTE:

1. For frequencies 10MHz or greater above or below the band edge.
2. All emissions within the frequency range from the band edge to 10MHz above or below the band edge.
3. The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength

$$E=\frac{1000000\sqrt{30P}}{3}$$ μV/m, where P is the eirp (Watts)

4.2.3 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
ADVANTEST Spectrum Analyzer	R3271A	85060311	July 07, 2007
HP Pre_Amplifier	8449B	3008A01922	Oct. 02, 2006
ROHDE & SCHWARZ Test Receiver	ESCS30	100375	Sep. 19, 2006
CHASE Broadband Antenna	VULB9168	138	Dec. 11, 2006
Schwarzbeck Horn_Antenna	BBHA9120	D124	Dec. 27, 2006
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA9170153	Jan. 05, 2007
SCHWARZBECK Biconical Antenna	VHBA9123	459	Jun. 08, 2009
SCHWARZBECK Periodic Antenna	UPA6108	1148	Jun. 08, 2009
R&S Loop Antenna	HFH2-Z2	881058/15	Nov. 29, 2007
RF Switches (ARNITSU)	CS-201	1565157	NA
RF CABLE (Chaintek)	SF102	22054-2	Nov. 16. 2006
RF Cable(RICHTEC)	9913-30M N-N Cable	STCCAB-30M-1GHz	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 Biconical and Periodic Antenna)and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, HP preamplifier (model: 8449B) and Spectrum Analyzer (model: R3271A) 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 4824A-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 ~40GHz)	1.88 dB

4.2.4 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.

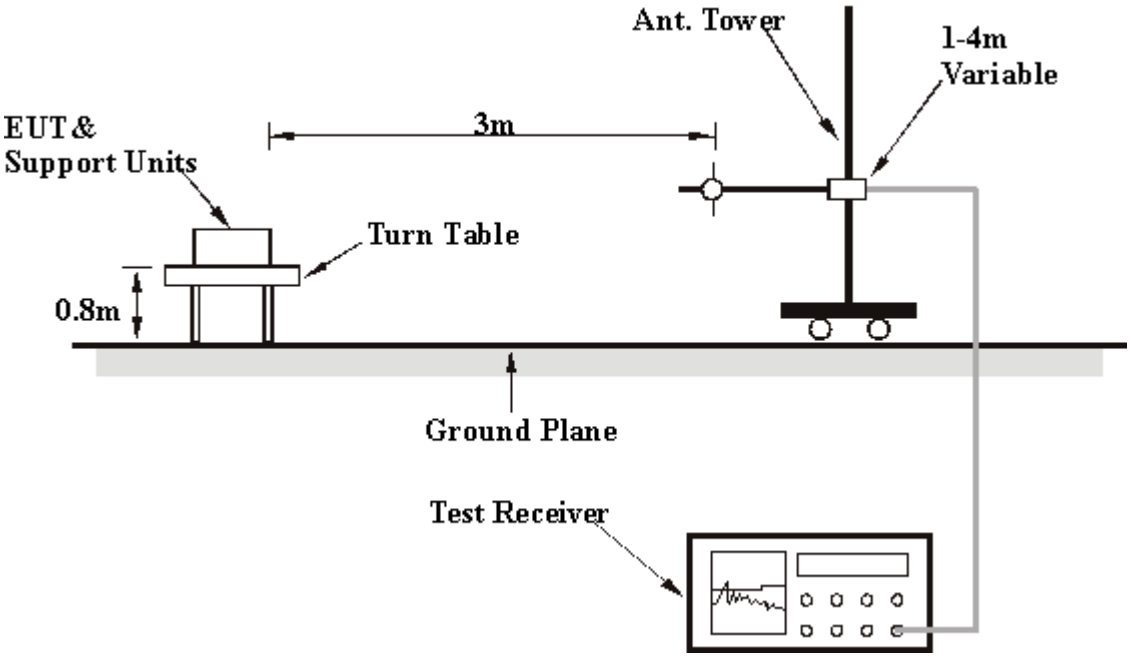
NOTE:

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.

4.2.5 DEVIATION FROM TEST STANDARD

No deviation

4.2.6 TEST SETUP



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

4.2.7 EUT OPERATING CONDITION

Same as 4.1.6

4.2.8 TEST RESULTS –ANTENNA 1

Below 1GHz Worst-Case Data

MODE	Channel 8	**FREQUENCY RANGE**	Below 1000MHz
MODULATION TYPE	BPSK	**TRANSFER RATE**	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Quasi-Peak
ENVIRONMENTAL CONDITIONS	27deg. C, 53%RH, 955hPa	**TESTED BY**	Rex Huang

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	133.87	34.30 QP	43.50	-9.20	2.31 H	82	21.40	12.90
2	200.85	36.60 QP	43.50	-6.90	2.27 H	96	25.00	11.60
3	233.64	40.20 QP	46.00	-5.80	1.82 H	117	27.10	13.10
4	300.27	37.90 QP	46.00	-8.10	1.84 H	234	21.10	16.80
5	400.30	34.70 QP	46.00	-11.30	1.31 H	209	15.70	19.00
6	466.38	29.00 QP	46.00	-17.00	1.06 H	315	8.10	20.90

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	133.43	33.70 QP	43.50	-9.80	1.41 V	27	20.80	12.90
2	200.23	37.20 QP	43.50	-6.30	1.06 V	314	25.60	11.60
3	233.47	36.80 QP	46.00	-9.20	1.00 V	293	23.70	13.10
4	300.06	32.30 QP	46.00	-13.70	1.00 V	216	15.50	16.80
5	400.88	30.70 QP	46.00	-15.30	1.00 V	71	11.70	19.00
6	466.86	30.60 QP	46.00	-15.40	1.00 V	149	9.70	20.90

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

MODE	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, 70%RH, 955hPa	**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	3453.30	46.70 PK	68.30	-21.60	1.75 H	225	14.20	32.60
2	#5144.00	49.30 PK	74.00	-24.70	1.23 H	123	13.60	35.70
2	#5144.00	37.30 AV	54.00	-16.70	1.23 H	123	1.60	35.70
3	#5150.00	47.50 PK	74.00	-26.50	1.23 H	123	11.80	35.70
3	#5150.00	33.50 AV	54.00	-20.50	1.23 H	123	-2.20	35.70
4	*5180.00	100.70 PK			1.23 H	123	65.00	35.70
4	*5180.00	90.50 AV			1.23 H	123	54.80	35.70
5	10360.00	57.90 PK	68.30	-10.40	1.38 H	348	13.40	44.40

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	3453.30	48.80 PK	68.30	-19.50	1.38 V	137	16.30	32.60
2	#5144.00	61.90 PK	74.00	-12.10	1.35 V	21	26.20	35.70
2	#5144.00	49.70 AV	54.00	-4.30	1.35 V	21	14.00	35.70
3	#5150.00	60.10 PK	74.00	-13.90	1.35 V	21	24.40	35.70
3	#5150.00	45.90 AV	54.00	-8.10	1.35 V	21	10.20	35.70
4	*5180.00	113.30 PK			1.35 V	21	77.60	35.70
4	*5180.00	102.90 AV			1.35 V	21	67.20	35.70
5	10360.00	63.00 PK	68.30	-5.30	1.57 V	30	18.50	44.40

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.

MODE	Channel 4	**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, 70%RH, 955hPa	**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	3493.30	46.90 PK	68.30	-21.40	1.74 H	232	14.30	32.70
2	*5240.00	100.80 PK			1.23 H	135	65.10	35.70
2	*5240.00	90.50 AV			1.23 H	135	54.80	35.70
3	10480.00	57.70 PK	68.30	-10.60	1.50 H	313	12.80	44.80

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	3493.30	48.90 PK	68.30	-19.40	1.39 V	133	16.30	32.70
2	*5240.00	111.60 PK			1.32 V	12	75.90	35.70
2	*5240.00	101.70 AV			1.32 V	12	66.00	35.70
3	10480.00	62.10 PK	68.30	-6.20	1.49 V	39	17.20	44.80

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.

MODE	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, 70%RH, 955hPa	**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	3506.60	48.10 PK	68.30	-20.20	1.00 H	47	15.40	32.70
2	*5260.00	102.80 PK			1.22 H	321	67.10	35.70
2	*5260.00	92.30 AV			1.22 H	321	56.60	35.70
3	10520.00	60.90 PK	68.30	-7.40	1.08 H	18	15.80	45.10

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	3506.60	48.90 PK	68.30	-19.40	1.00 V	334	16.20	32.70
2	*5260.00	117.10 PK			1.21 V	5	81.40	35.70
2	*5260.00	106.80 AV			1.21 V	5	71.10	35.70
3	10520.00	56.40 PK	68.30	-11.90	1.63 V	44	11.30	45.10

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.

MODE	Channel 8	**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, 70%RH, 955hPa	**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	3546.60	46.50 PK	68.30	-21.80	1.92 H	268	13.80	32.70
2	*5320.00	100.00 PK			1.16 H	4	64.30	35.70
2	*5320.00	89.80 AV			1.16 H	4	54.10	35.70
3	#5350.00	55.30 PK	74.00	-18.70	1.16 H	4	19.60	35.70
3	#5350.00	38.00 AV	54.00	-16.00	1.16 H	4	2.30	35.70
4	#10640.00	59.40 PK	74.00	-14.60	1.18 H	17	13.10	46.20
4	#10640.00	44.90 AV	54.00	-9.10	1.18 H	17	-1.40	46.20

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	3546.60	48.00 PK	68.30	-20.30	1.00 V	338	15.30	32.70
2	*5320.00	113.50 PK			1.27 V	356	77.80	35.70
2	*5320.00	103.10 AV			1.27 V	356	67.40	35.70
3	#5350.00	68.80 PK	74.00	-5.20	1.27 V	356	33.10	35.70
3	#5350.00	51.30 AV	54.00	-2.70	1.27 V	356	15.60	35.70
4	#10640.00	65.60 PK	74.00	-8.40	1.47 V	50	19.30	46.20
4	#10640.00	50.60 AV	54.00	-3.40	1.47 V	50	4.30	46.20

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.

802.11a Turbo OFDM modulation

CHANNEL	Channel 1	**FREQUENCY RANGE**	1 ~ 40 GHz
MODULATION TYPE	BPSK	**TRANSFER RATE**	12Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 70%RH, 966hPa	**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	3473.30	47.90 PK	68.30	-20.40	1.77 H	14	15.30	32.60
2	#5120.00	42.60 PK	74.00	-31.40	1.30 H	130	6.90	35.70
2	#5120.00	32.70 AV	54.00	-21.30	1.30 H	130	-3.00	35.70
3	#5150.00	43.10 PK	74.00	-30.90	1.30 H	130	7.40	35.70
3	#5150.00	31.60 AV	54.00	-22.40	1.30 H	130	-4.10	35.70
4	*5210.00	96.40 PK			1.30 H	130	60.70	35.70
4	*5210.00	86.30 AV			1.30 H	130	50.60	35.70
5	10420.00	54.50 PK	68.30	-13.80	1.50 H	319	9.90	44.60

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	3473.30	48.30 PK	68.30	-20.00	1.37 V	125	15.70	32.60
2	#5120.00	53.80 PK	74.00	-20.20	1.42 V	350	18.10	35.70
2	#5120.00	44.60 AV	54.00	-9.40	1.42 V	350	8.90	35.70
3	#5150.00	54.30 PK	74.00	-19.70	1.42 V	350	18.60	35.70
3	#5150.00	43.50 AV	54.00	-10.50	1.42 V	350	7.80	35.70
4	*5210.00	107.60 PK			1.42 V	350	71.90	35.70
4	*5210.00	98.20 AV			1.42 V	350	62.50	35.70
5	10420.00	54.40 PK	68.30	-13.90	1.51 V	38	9.80	44.60

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.

CHANNEL	Channel 2	**FREQUENCY RANGE**	1 ~ 40 GHz
MODULATION TYPE	BPSK	**TRANSFER RATE**	12Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 70%RH, 966hPa	**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	3500.00	47.40 PK	68.30	-20.90	1.75 H	10	14.70	32.70
2	*5250.00	96.20 PK			1.31 H	127	60.50	35.70
2	*5250.00	86.10 AV			1.31 H	127	50.40	35.70
3	10500.00	54.80 PK	68.30	-13.50	1.48 H	321	9.90	44.90

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	3500.00	48.60 PK	68.30	-19.70	1.34 V	125	15.90	32.70
2	*5250.00	107.60 PK			1.44 V	355	71.90	35.70
2	*5250.00	97.90 AV			1.44 V	355	62.20	35.70
3	10500.00	54.80 PK	68.30	-13.50	1.50 V	41	9.90	44.90

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.

CHANNEL	Channel 3	**FREQUENCY RANGE**	1 ~ 40 GHz
MODULATION TYPE	BPSK	**TRANSFER RATE**	12Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 70%RH, 966hPa	**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	3526.60	46.50 PK	68.30	-21.80	1.22 H	337	13.80	32.70
2	*5290.00	99.10 PK			1.51 H	61	63.40	35.70
2	*5290.00	89.50 AV			1.51 H	61	53.80	35.70
3	#5350.00	56.10 PK	74.00	-17.90	1.51 H	61	20.40	35.70
3	#5350.00	39.40 AV	54.00	-14.60	1.51 H	61	3.70	35.70
4	#5440.00	45.00 PK	74.00	-29.00	1.51 H	61	9.30	35.70
4	#5440.00	33.50 AV	54.00	-20.50	1.51 H	61	-2.20	35.70
5	10580.00	56.50 PK	68.30	-11.80	1.26 H	344	10.90	45.70

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	3526.60	47.70 PK	68.30	-20.60	1.00 V	339	15.00	32.70
2	*5290.00	111.40 PK			1.20 V	348	75.70	35.70
2	*5290.00	102.20 AV			1.20 V	348	66.50	35.70
3	#5350.00	68.40 PK	74.00	-5.60	1.20 V	348	32.70	35.70
3	**#5350.00**	**52.10 AV**	**54.00**	**-1.90**	**1.20 V**	**348**	**16.40**	**35.70**
4	#5440.00	57.30 PK	74.00	-16.70	1.20 V	348	21.60	35.70
4	#5440.00	46.20 AV	54.00	-7.80	1.20 V	348	10.50	35.70
5	10580.00	56.40 PK	68.30	-11.90	1.11 V	12	10.80	45.70

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.

4.2.9 TEST RESULTS –ANTENNA 2

Below 1GHz Worst-Case Data

MODE	Channel 8	**FREQUENCY RANGE**	Below 1000MHz
MODULATION TYPE	BPSK	**TRANSFER RATE**	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Quasi-Peak
ENVIRONMENTAL CONDITIONS	27deg. C, 53%RH, 955hPa	**TESTED BY**	Rex Huang

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	133.82	33.10 QP	43.50	-10.40	2.34 H	179	20.20	12.90
2	200.68	35.70 QP	43.50	-7.80	2.15 H	314	24.10	11.60
3	233.80	39.80 QP	46.00	-6.20	1.88 H	297	26.70	13.10
4	300.53	38.60 QP	46.00	-7.40	1.65 H	113	21.80	16.80
5	400.70	34.30 QP	46.00	-11.70	1.23 H	109	15.30	19.00
6	466.78	30.20 QP	46.00	-15.80	1.12 H	76	9.30	20.90

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	133.67	32.90 QP	43.50	-10.60	1.00 V	297	20.00	12.90
2	200.37	37.50 QP	43.50	-6.00	1.00 V	323	25.90	11.60
3	233.75	37.70 QP	46.00	-8.30	1.00 V	162	24.60	13.10
4	300.62	32.50 QP	46.00	-13.50	1.00 V	173	15.70	16.80
5	400.63	32.90 QP	46.00	-13.10	1.00 V	94	13.90	19.00
6	466.54	30.80 QP	46.00	-15.20	1.17 V	316	9.90	20.90

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

MODE	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, 70%RH, 955hPa	**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	3506.60	46.20 PK	68.30	-22.10	1.82 H	117	13.50	32.70
2	*5260.00	96.10 PK			1.00 H	48	60.40	35.70
2	*5260.00	85.50 AV			1.00 H	48	49.80	35.70
3	10520.00	56.20 PK	68.30	-12.10	1.32 H	332	11.10	45.10

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	3506.60	47.90 PK	68.30	-20.40	1.53 V	142	15.20	32.70
2	*5260.00	113.40 PK			1.00 V	1	77.70	35.70
2	*5260.00	103.00 AV			1.00 V	1	67.30	35.70
3	10520.00	58.10 PK	68.30	-10.20	1.51 V	74	13.00	45.10

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.

MODE	Channel 7	**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, 70%RH, 955hPa	**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	3533.30	46.10 PK	68.30	-22.20	1.81 H	124	13.40	32.70
2	*5300.00	94.80 PK			1.00 H	44	59.10	35.70
2	*5300.00	84.40 AV			1.00 H	44	48.70	35.70
3	#10600.00	56.80 PK	74.00	-17.20	1.33 H	339	11.00	45.90
3	#10600.00	43.40 AV	54.00	-10.60	1.33 H	339	-2.40	45.90

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	3533.30	47.80 PK	68.30	-20.50	1.53 V	251	15.10	32.70
2	*5300.00	113.10 PK			1.00 V	1	77.40	35.70
2	*5300.00	103.10 AV			1.00 V	1	67.40	35.70
3	#10600.00	58.80 PK	74.00	-15.20	1.52 V	73	13.00	45.90
3	#10600.00	45.10 AV	54.00	-8.90	1.52 V	73	-0.70	45.90

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.

MODE	Channel 8	**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, 70%RH, 955hPa	**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	3546.60	48.30 PK	68.30	-20.00	1.81 H	46	15.60	32.70
2	*5320.00	95.20 PK			1.00 H	51	59.50	35.70
2	*5320.00	84.60 AV			1.00 H	51	48.90	35.70
3	#5350.00	43.30 PK	74.00	-30.70	1.00 H	51	7.60	35.70
3	#5350.00	31.10 AV	54.00	-22.90	1.00 H	51	-4.60	35.70
4	#10640.00	57.40 PK	74.00	-16.60	1.40 H	331	11.10	46.20
4	#10640.00	44.00 AV	54.00	-10.00	1.40 H	331	-2.30	46.20

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	3546.60	48.10 PK	68.30	-20.20	1.53 V	241	15.40	32.70
1	3546.60	42.90 AV	54.00	-11.10	1.53 V	241	10.20	32.70
2	*5320.00	113.90 PK			1.00 V	1	78.20	35.70
2	*5320.00	103.90 AV			1.00 V	1	68.20	35.70
3	#5350.00	62.00 PK	74.00	-12.00	1.00 V	1	26.30	35.70
3	#5350.00	50.40 AV	54.00	-3.60	1.00 V	1	14.70	35.70
4	#10640.00	58.90 PK	74.00	-15.10	1.55 V	69	12.60	46.20
4	#10640.00	45.10 AV	54.00	-8.90	1.55 V	69	-1.20	46.20

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.

802.11a Turbo OFDM modulation

CHANNEL	Channel 3	**FREQUENCY RANGE**	1 ~ 40 GHz
MODULATION TYPE	BPSK	**TRANSFER RATE**	12Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 70%RH, 966hPa	**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	3526.60	45.60 PK	68.30	-22.70	1.00 H	46	12.90	32.70
2	*5290.00	92.50 PK			1.00 H	46	56.80	35.70
2	*5290.00	83.20 AV			1.00 H	46	47.50	35.70
3	#5350.00	43.40 PK	74.00	-30.60	1.00 H	46	7.70	35.70
3	#5350.00	33.00 AV	54.00	-21.00	1.00 H	46	-2.70	35.70
4	10580.00	56.90 PK	68.30	-11.40	1.35 H	312	11.30	45.70

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	3526.60	48.30 PK	68.30	-20.00	1.00 V	6	15.60	32.70
2	*5290.00	110.60 PK			1.00 V	1	74.90	35.70
2	*5290.00	99.90 AV			1.00 V	1	64.20	35.70
3	#5350.00	61.50 PK	74.00	-12.50	1.00 V	1	25.80	35.70
3	#5350.00	49.70 AV	54.00	-4.30	1.00 V	1	14.00	35.70
4	10580.00	57.40 PK	68.30	-10.90	1.26 V	251	11.80	45.70

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.

4.3 PEAK TRANSMIT POWER MEASUREMENT

4.3.1 LIMITS OF PEAK TRANSMIT POWER MEASUREMENT

Frequency Band	Limit
5.15 – 5.25GHz	The lesser of 50mW (17dBm) or 4dBm + 10logB
5.25 – 5.35GHz	The lesser of 250mW (24dBm) or 11dBm + 10logB
5.725 – 5.825GHz	The lesser of 1W (30dBm) or 17dBm + 10logB

NOTE: Where B is the 26dB emission bandwidth in 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

1. The transmitter output was connected to the spectrum analyzer.
2. Set span to encompass the entire emission bandwidth of the signal.
3. Set RBW to 1MHz, VBW to 300kHz.
4. Using the spectrum analyzer's channel power measurement function to measure the output power.

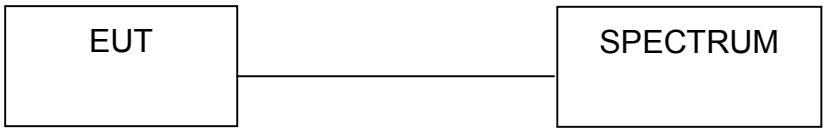
NOTE:
The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

The transmitter output operates continuously therefore Method # 1 is used.

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 specific channel frequencies individually.

4.3.7 TEST RESULTS-ANTENNA 1

802.11a OFDM modulation

MODULATION TYPE	BPSK	**TRANSFER RATE**	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	24deg.C, 62%RH, 955hPa
TESTED BY	Wen Yu		

Antenna 1 (Gain : 5 dBi) +Cable loss (1.8dB)

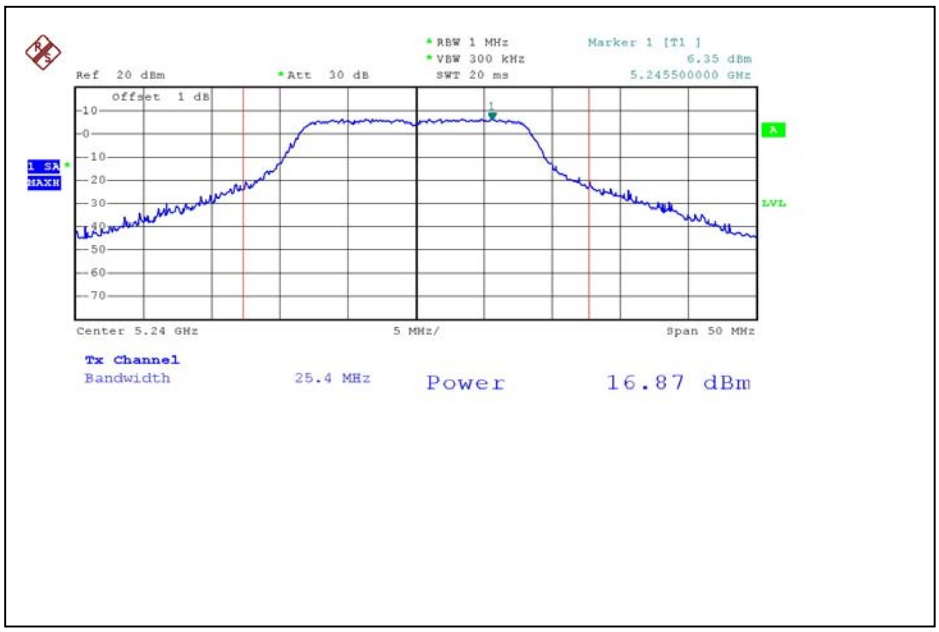
CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	26dBc Occupied Bandwidth (MHz)	PASS/FAIL
1	5180	16.52	17	25.6	PASS
4	5240	16.87	17	25.4	PASS
5	5260	21.85	24	37.3	PASS
8	5320	20.28	24	38.3	PASS

NOTE: The 26dBc Occupied Bandwidth plot, please refer to the following pages.

Peak Power Output:

CH1

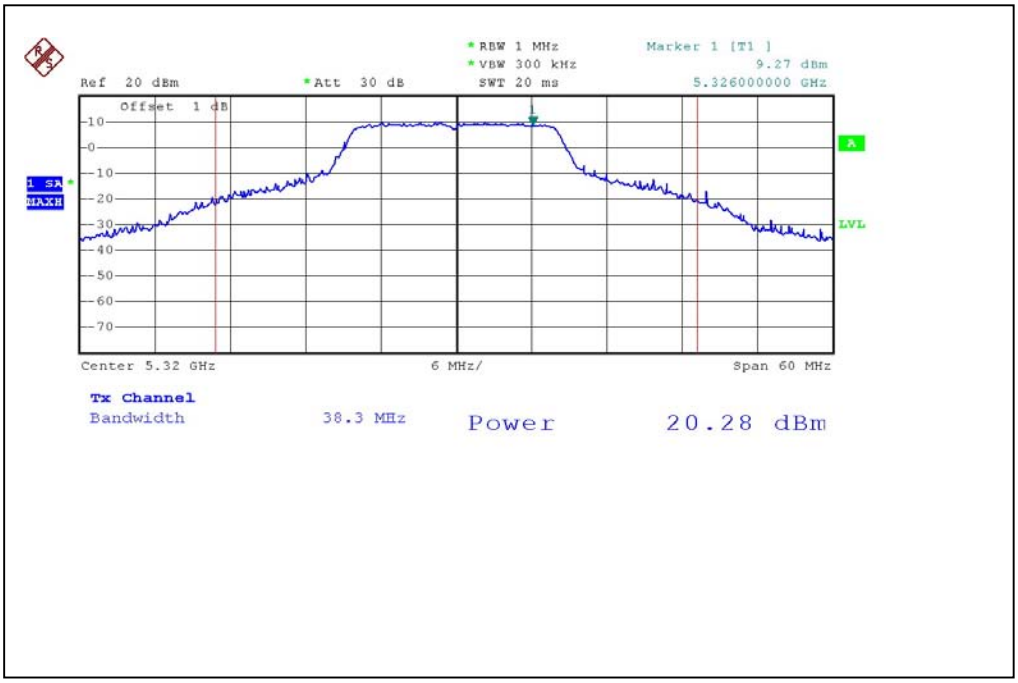
CH4



CH5

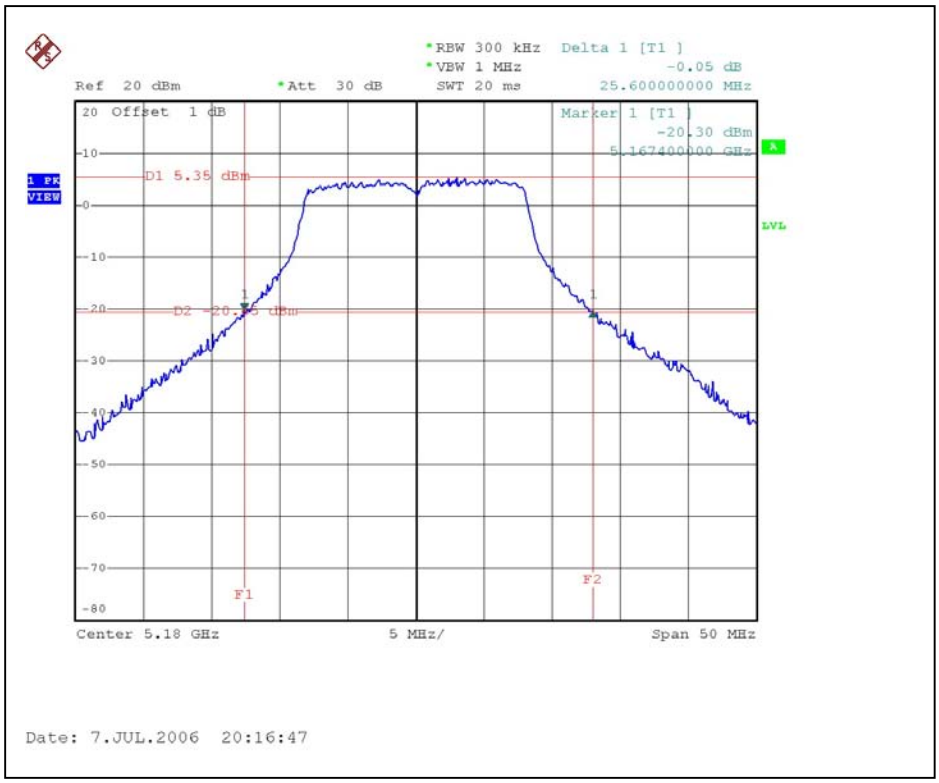

RBW 1 MHz
VBW 300 kHz
SWT 20 ms
Marker 1 [T1]
10.94 dBm
5.257120000 GHz
Ref 20 dBm
Att 30 dB
Offset 1 dB
1 SA
MAXH
A
LVL
Center 5.26 GHz
6 MHz/
Span 60 MHz
Tx Channel
Bandwidth
37.3 MHz
Power
21.85 dBm

CH8

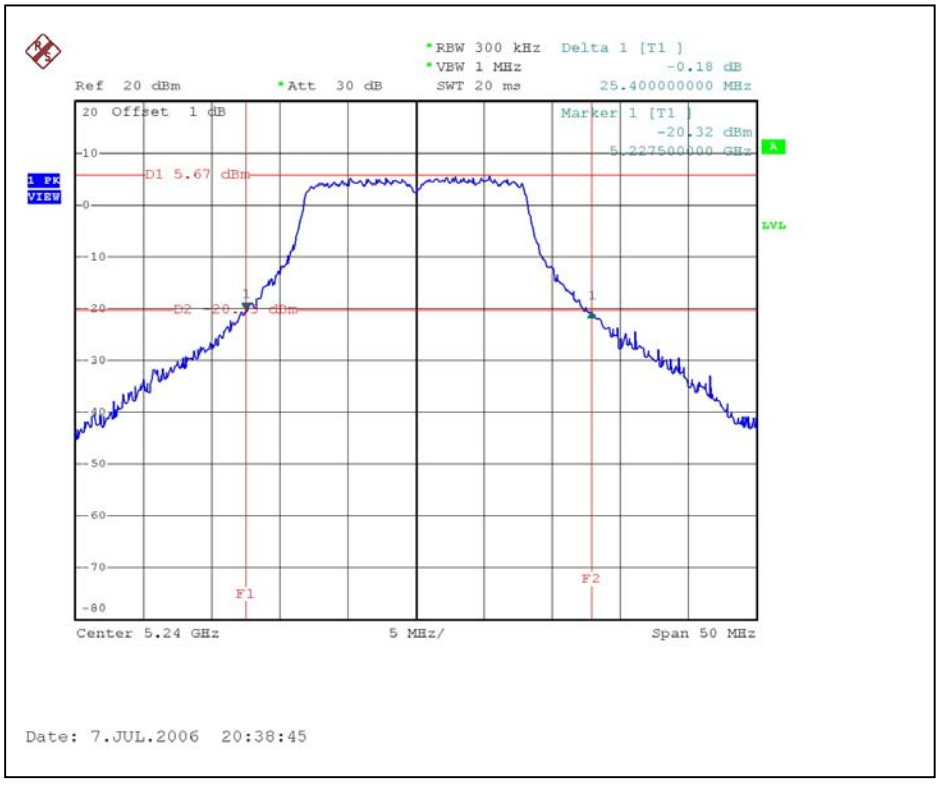

RBW 1 MHz
VBW 300 kHz
SWT 20 ms
Marker 1 [T1]
9.27 dBm
5.326000000 GHz
Ref 20 dBm
Att 30 dB
Offset 1 dB
1 SA
MAXH
A
LVL
Center 5.32 GHz
6 MHz/
Span 60 MHz
Tx Channel
Bandwidth
38.3 MHz
Power
20.28 dBm

26dB Occupied Bandwidth:

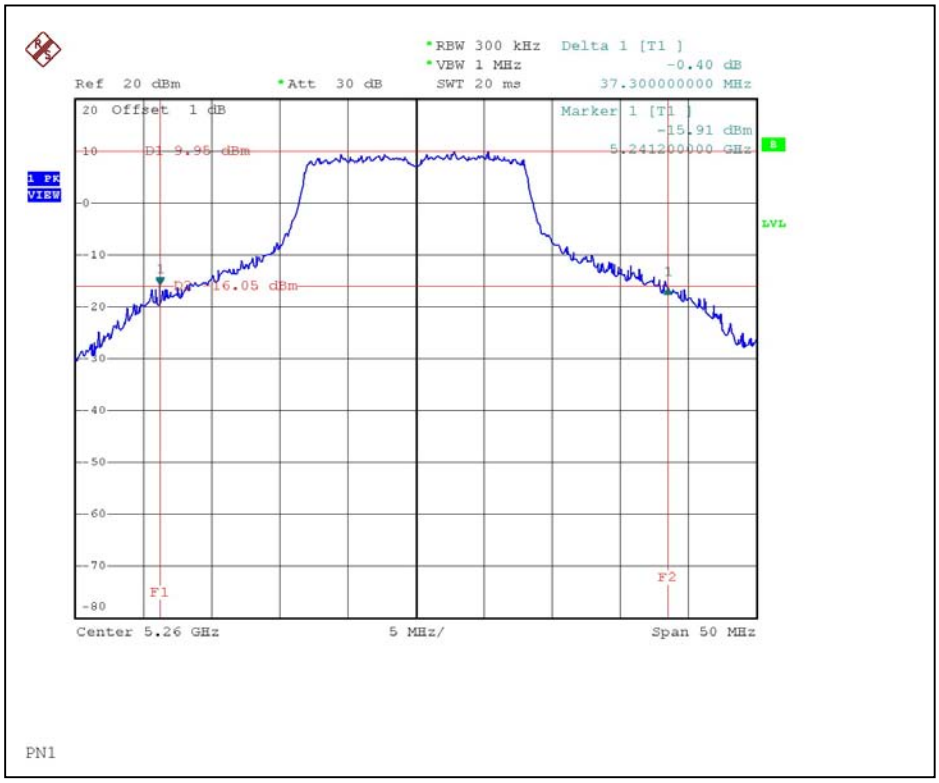
CH1



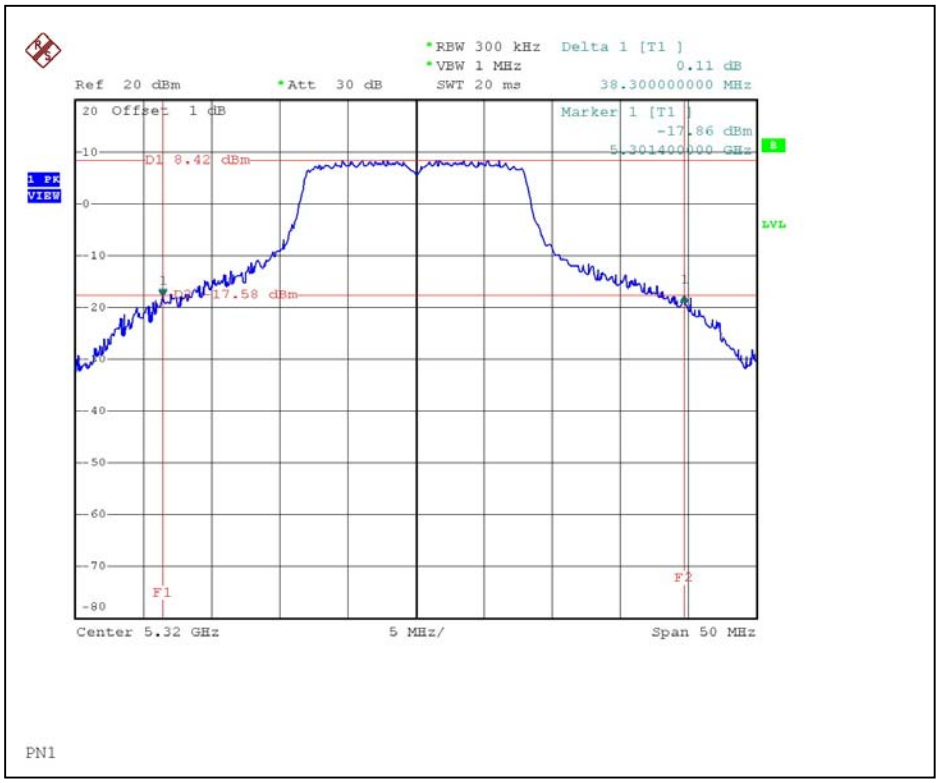
CH4



CH5


RBW 300 kHz
VBW 1 MHz
SWT 20 ms
Delta 1 [T1]
-0.40 dB
37.300000000 MHz
Ref 20 dBm
Att 30 dB
20 Offset 1 dB
Marker 1 [T1]
-15.91 dBm
5.241200000 GHz
D1 9.95 dBm
D2 -16.05 dBm
1 PK VIEW
LVL
F1
F2
Center 5.26 GHz
5 MHz/
Span 50 MHz
PN1

CH8


RBW 300 kHz
VBW 1 MHz
SWT 20 ms
Delta 1 [T1]
0.11 dB
38.300000000 MHz
Ref 20 dBm
Att 30 dB
20 Offset 1 dB
Marker 1 [T1]
-17.86 dBm
5.301400000 GHz
D1 8.42 dBm
D2 -17.58 dBm
1 PK VIEW
LVL
F1
F2
Center 5.32 GHz
5 MHz/
Span 50 MHz
PN1

802.11a Turbo OFDM modulation

MODULATION TYPE	BPSK	TRANSFER RATE	12Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	24deg.C, 62%RH, 966hPa
TESTED BY	Wen Yu		

Antenna 1 (Gain : 5 dBi) +Cable loss (1.8dB)

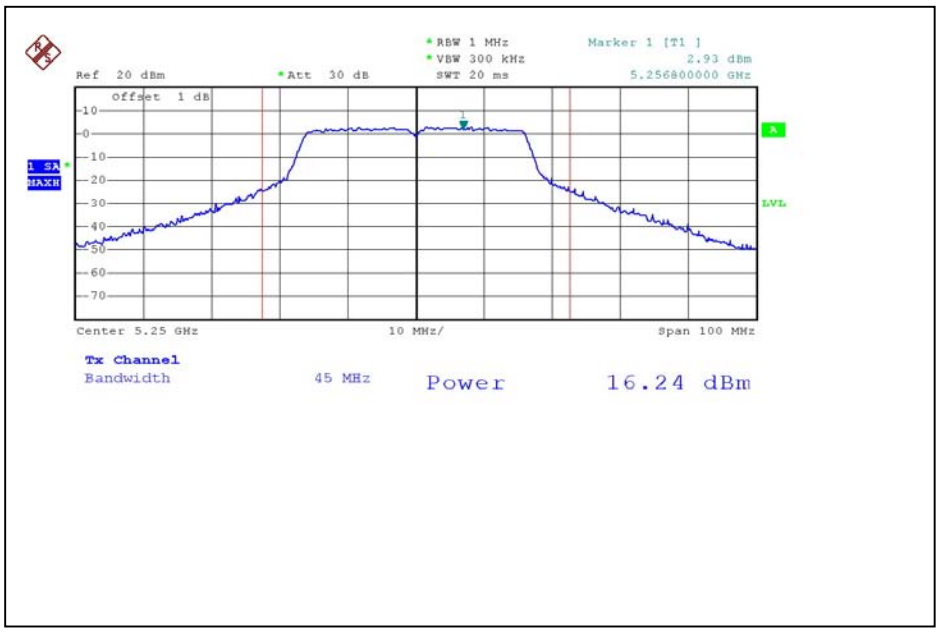
CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	26dBc Occupied Bandwidth (MHz)	PASS/FAIL
1	5210	16.35	17	45.8	PASS
2	5250	16.24	17	45.0	PASS
3	5290	21.09	24	70.2	PASS

NOTE: The 26dBc Occupied Bandwidth plot, please refer to the following pages.

Peak Power Output:

CH1

CH2

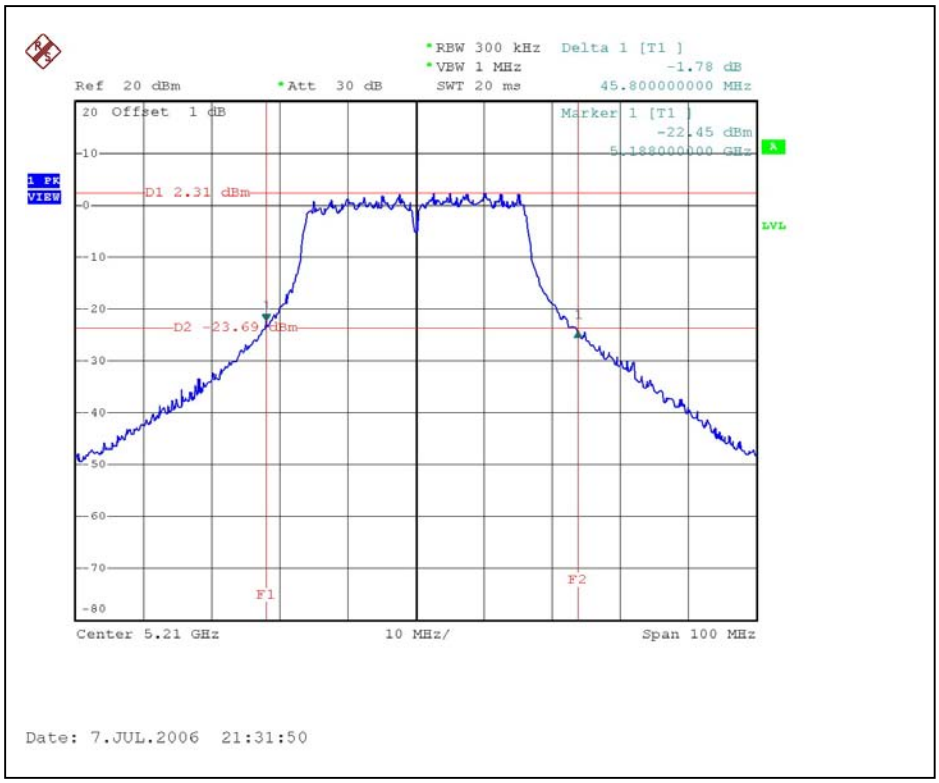


CH3

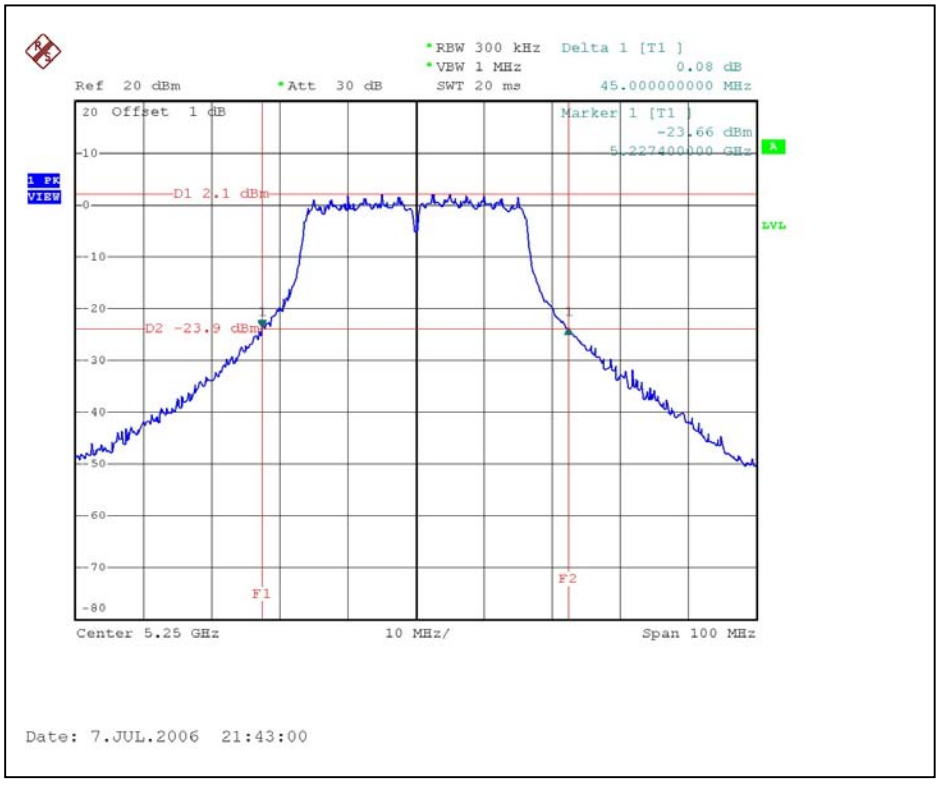

RBW 1 MHz
VBW 300 kHz
SWT 20 ms
Marker 1 [T1]
7.60 dBm
5.297920000 GHz
Ref 20 dBm
Att 30 dB
Offset 1 dB
10
0
10
20
30
40
50
60
70
1 SA
MAXH
A
LVL
Center 5.29 GHz
12 MHz/
Span 120 MHz
Tx Channel
Bandwidth
70.2 MHz
Power
21.09 dBm

26dB Occupied Bandwidth:

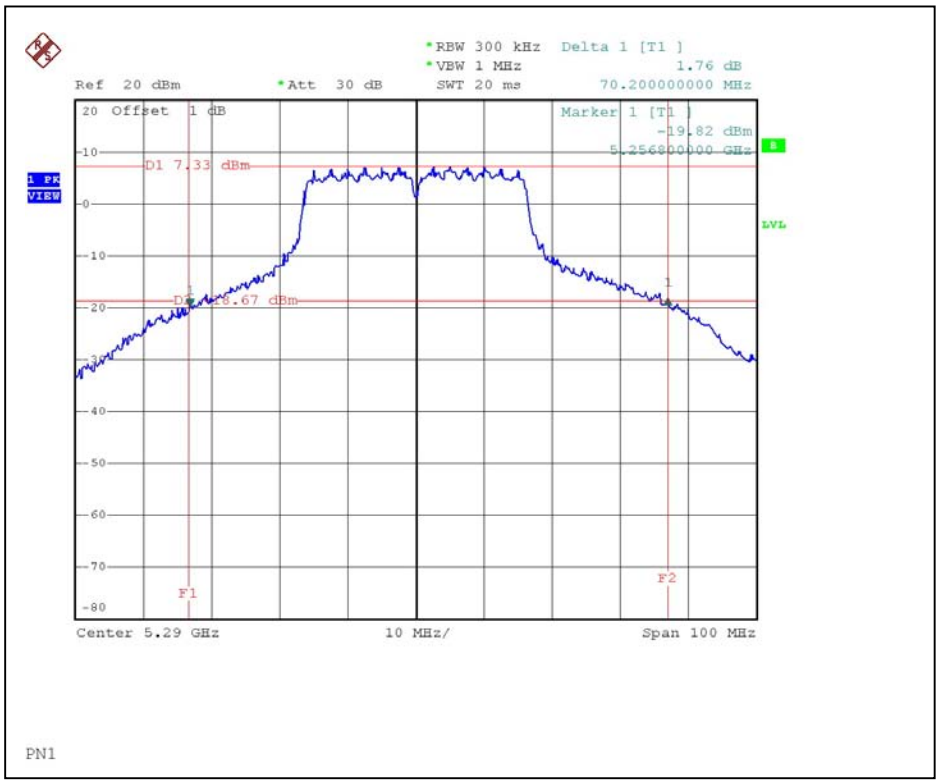
CH1



CH2



CH3


*RBW 300 kHz
Delta 1 [T1]
*VBW 1 MHz
1.76 dB
Ref 20 dBm
*Att 30 dB
SWT 20 ms
70.200000000 MHz
20 Offset 1 dB
Marker 1 [T1]
-19.82 dBm
5.256800000 GHz
D1 7.33 dBm
1 PK VIEW
LVL
D2 -26.67 dBm
F1
F2
Center 5.29 GHz
10 MHz/
Span 100 MHz
PN1

4.3.8 TEST RESULTS-ANTENNA 2

802.11a OFDM modulation

MODULATION TYPE	BPSK	**TRANSFER RATE**	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	24deg.C, 62%RH, 955hPa
TESTED BY	Wen Yu		

Antenna 2 (Gain : 18 dBi) +Cable loss (2.96dB)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	26dBc Occupied Bandwidth (MHz)	PASS/FAIL
5	5260	11.53	14.96	24.99	PASS
7	5300	11.40	14.96	24.78	PASS
8	5320	11.70	14.96	25.27	PASS

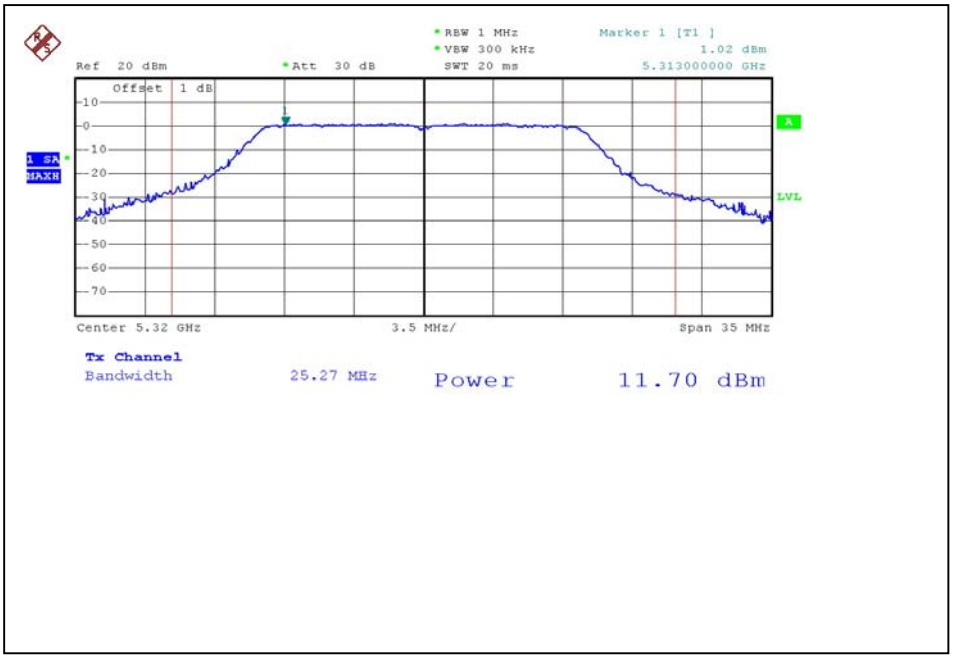
NOTE: The 26dBc Occupied Bandwidth plot, please refer to the following pages.

Peak Power Output:

CH5

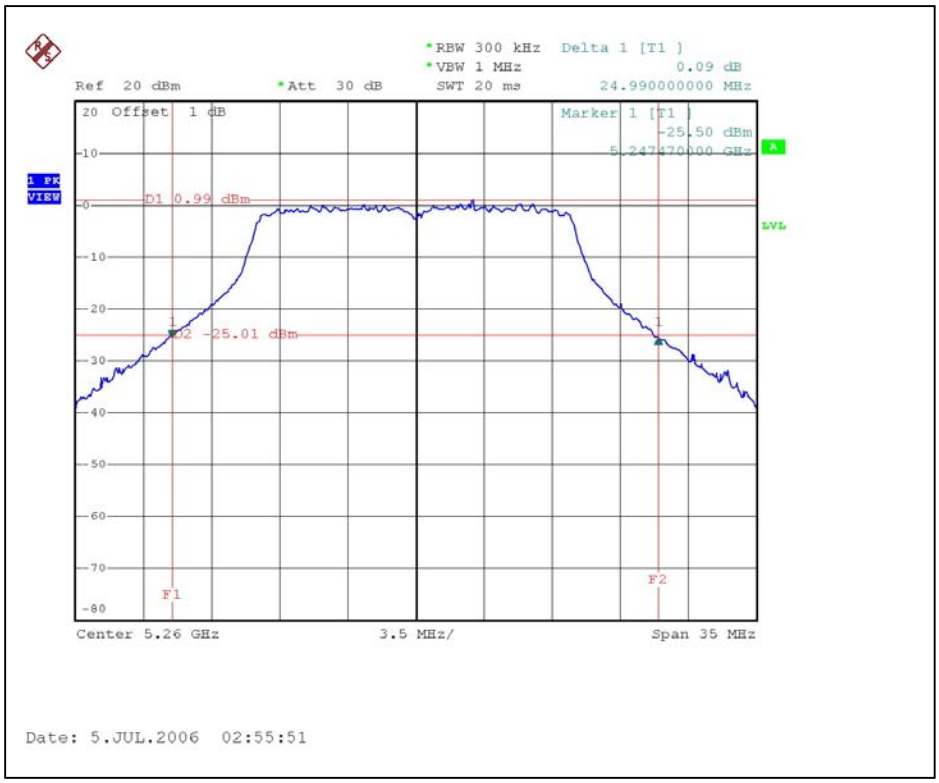
CH7

CH8

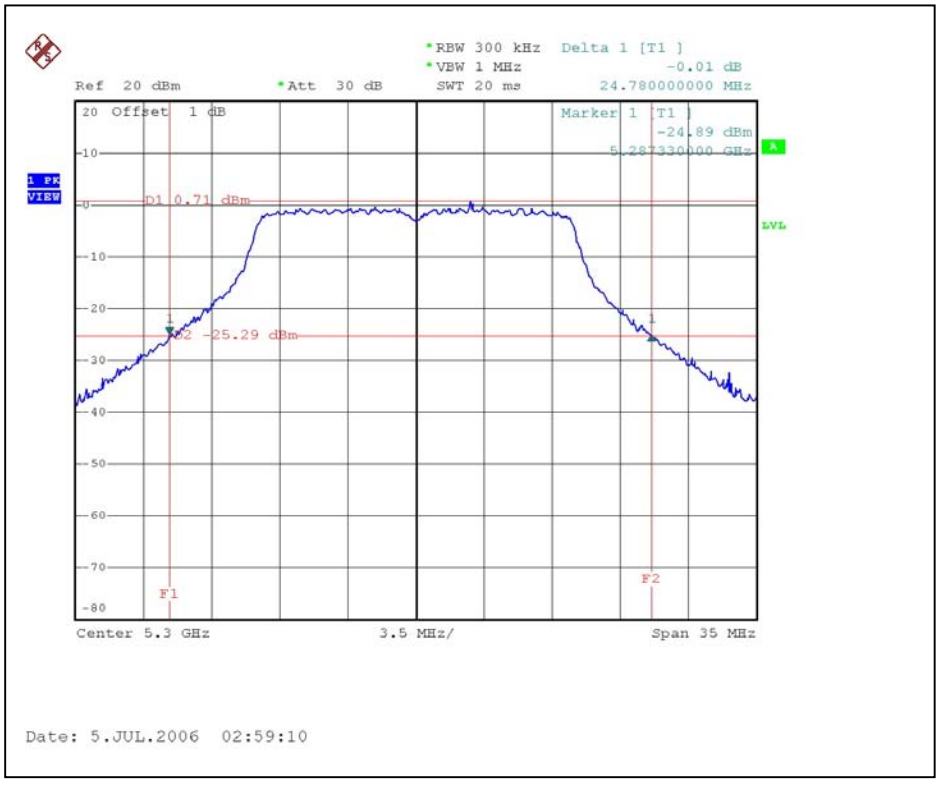

RBW 1 MHz
VBW 300 kHz
SWT 20 ms
Marker 1 [T1]
1.02 dBm
5.313000000 GHz
Ref 20 dBm
Att 30 dB
Offset 1 dB
10
0
-10
-20
-30
-40
-50
-60
-70
A
LVL
Center 5.32 GHz
3.5 MHz/
Span 35 MHz
Tx Channel
Bandwidth
25.27 MHz
Power
11.70 dBm

26dB Occupied Bandwidth:

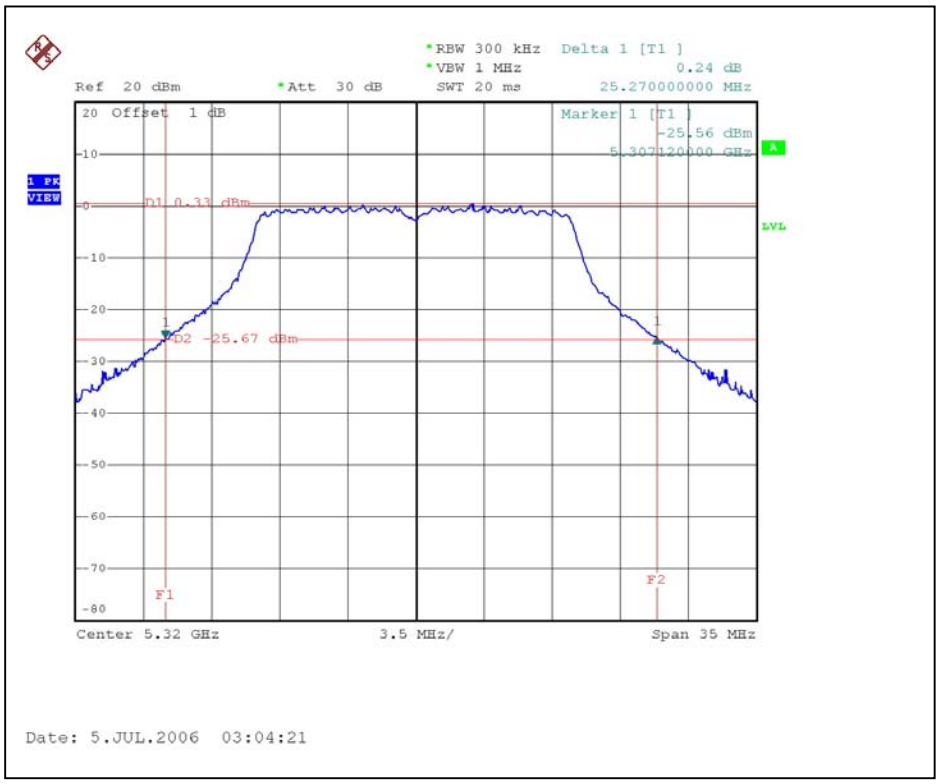
CH5



CH7



CH8


RBW 300 kHz
VBW 1 MHz
SWT 20 ms
Delta 1 [T1]
0.24 dB
25.270000000 MHz
Ref 20 dBm
Att 30 dB
20 Offset 1 dB
Marker 1 [T1]
-25.56 dBm
5.307120000 GHz
1 PK
VIEW
D1 0.33 dBm
D2 -25.67 dBm
LVL
F1
F2
Center 5.32 GHz
3.5 MHz/
Span 35 MHz
Date: 5.JUL.2006 03:04:21

802.11a Turbo OFDM modulation

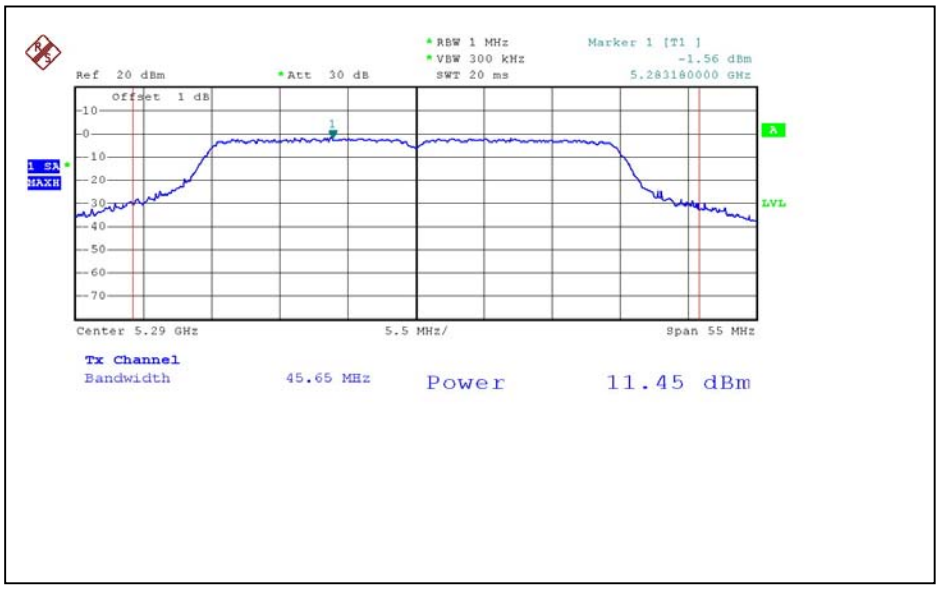
MODULATION TYPE	BPSK	**TRANSFER RATE**	12Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	24deg.C, 62%RH, 966hPa
TESTED BY	Wen Yu		

Antenna 2 (Gain : 18dBi) +Cable loss (2.96dB)

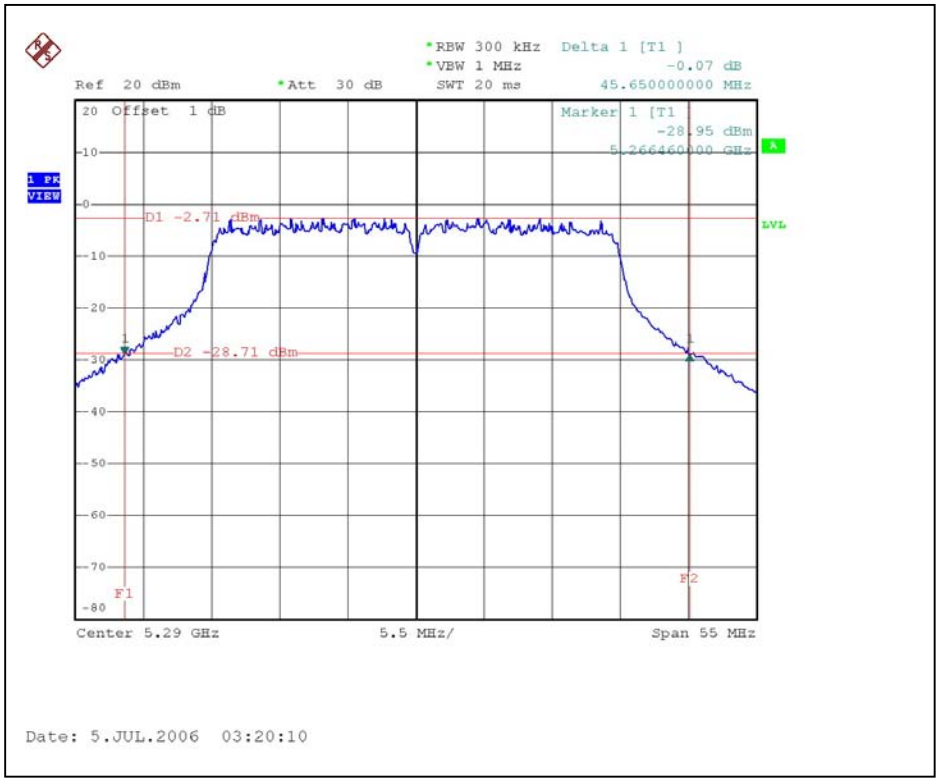
CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	26dBc Occupied Bandwidth (MHz)	PASS/FAIL
3	5290	11.45	14.96	45.65	PASS

NOTE: The 26dBc Occupied Bandwidth plot, please refer to the following pages.

Peak Power Output:
CH3



26dB Occupied Bandwidth:
CH3



4.4 PEAK POWER EXCURSION MEASUREMENT

4.4.1 LIMITS OF PEAK POWER EXCURSION MEASUREMENT

Frequency Band	Limit
5.15 – 5.25 GHz	13dB
5.25 – 5.35 GHz	13dB
5.725 – 5.825 GHz	13dB

4.4.2 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.

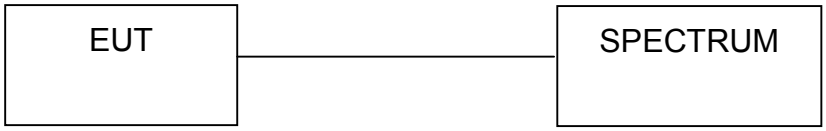
4.4.3 TEST PROCEDURE

1. The transmitter output was connected to the spectrum analyzer.
2. Set the spectrum bandwidth span to view the entire spectrum.
3. Using peak detector and Max-hold function for Trace 1 (RB=1MHz, VB=3MHz) and 2 (RB=1MHz, VB=300KHz).
4. The largest difference between Trace 1 and Trace 2 in any 1MHz band on any frequency was recorded.

4.4.4 DEVIATION FROM TEST STANDARD

No deviation

4.4.5 TEST SETUP



4.4.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

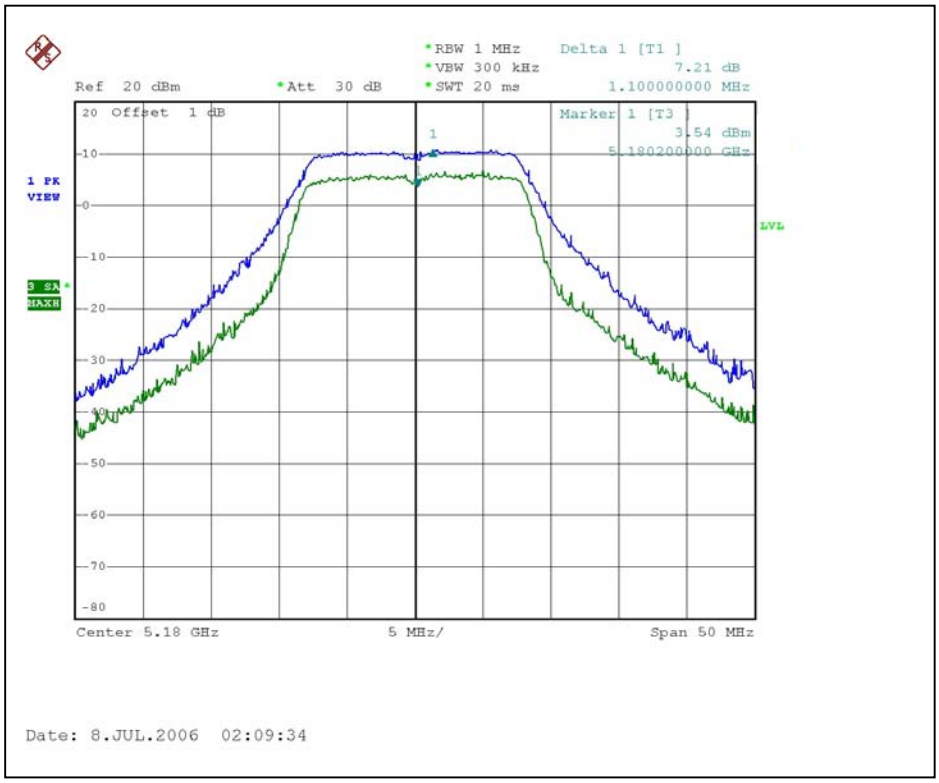
4.4.7 TEST RESULTS –ANTENNA 1

802.11a OFDM modulation

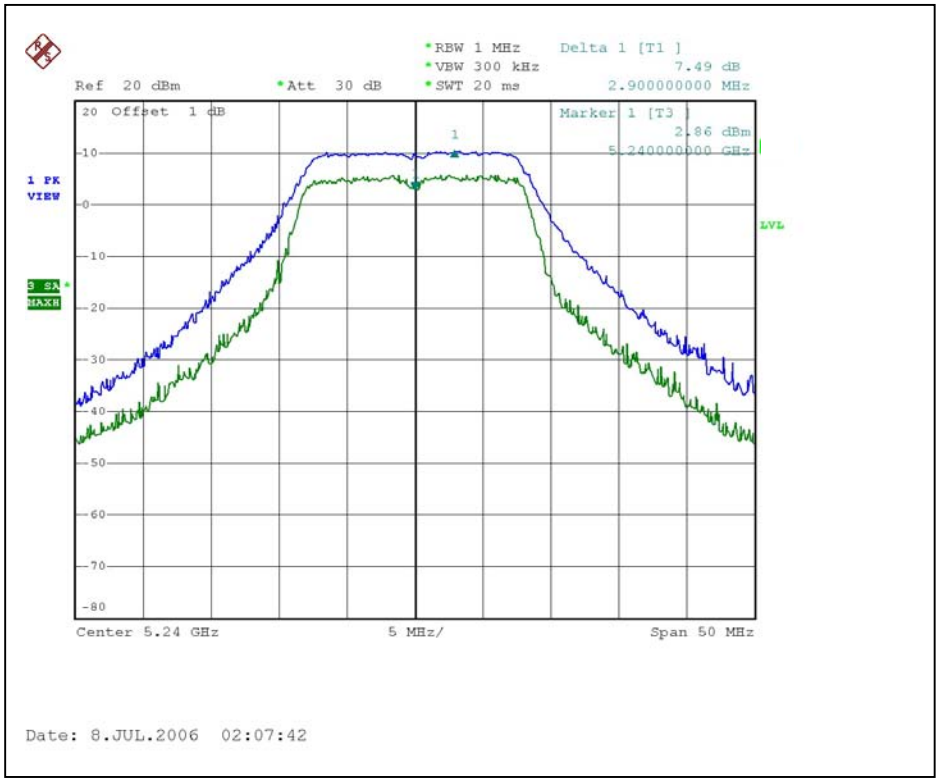
MODULATION TYPE	BPSK	**TRANSFER RATE**	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	24deg.C, 62%RH, 955hPa
TESTED BY	Wen Yu		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)	PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
1	5180	7.21	13	PASS
4	5240	7.49	13	PASS
5	5260	7.95	13	PASS
8	5320	7.21	13	PASS

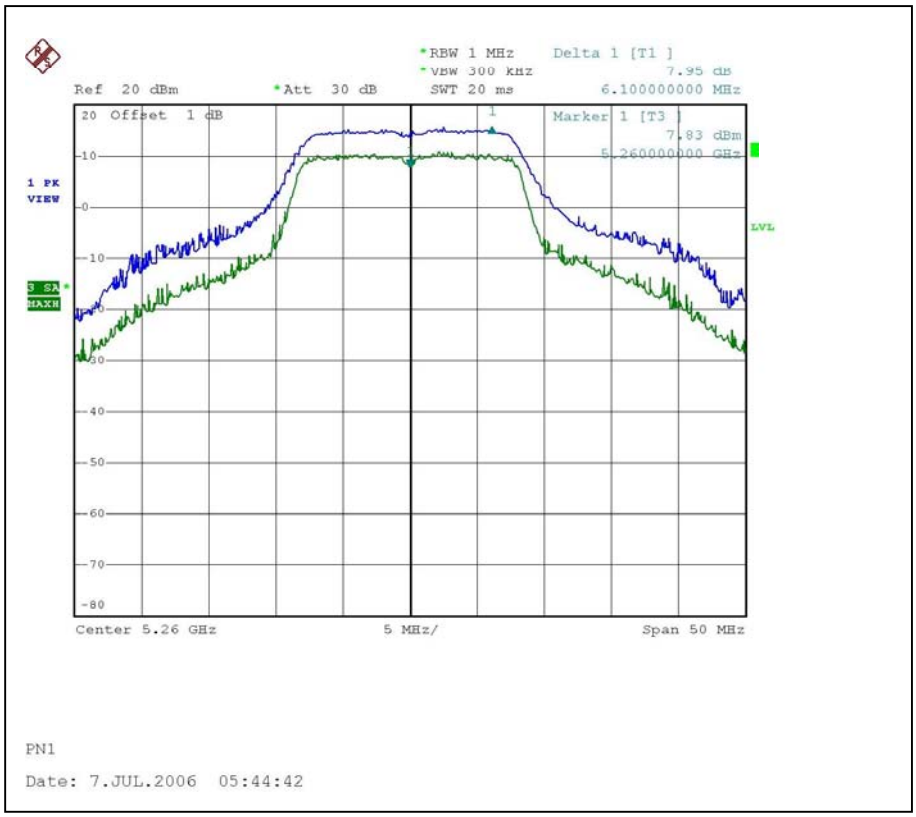
CH1


RBW 1 MHz
VBW 300 kHz
SWT 20 ms
Delta 1 [T1]
7.21 dB
1.100000000 MHz
Ref 20 dBm
Att 30 dB
Offset 1 dB
Marker 1 [T3]
3.54 dBm
5.180200000 GHz
1 PK
VIEW
LVL
Center 5.18 GHz
5 MHz/
Span 50 MHz
Date: 8.JUL.2006 02:09:34

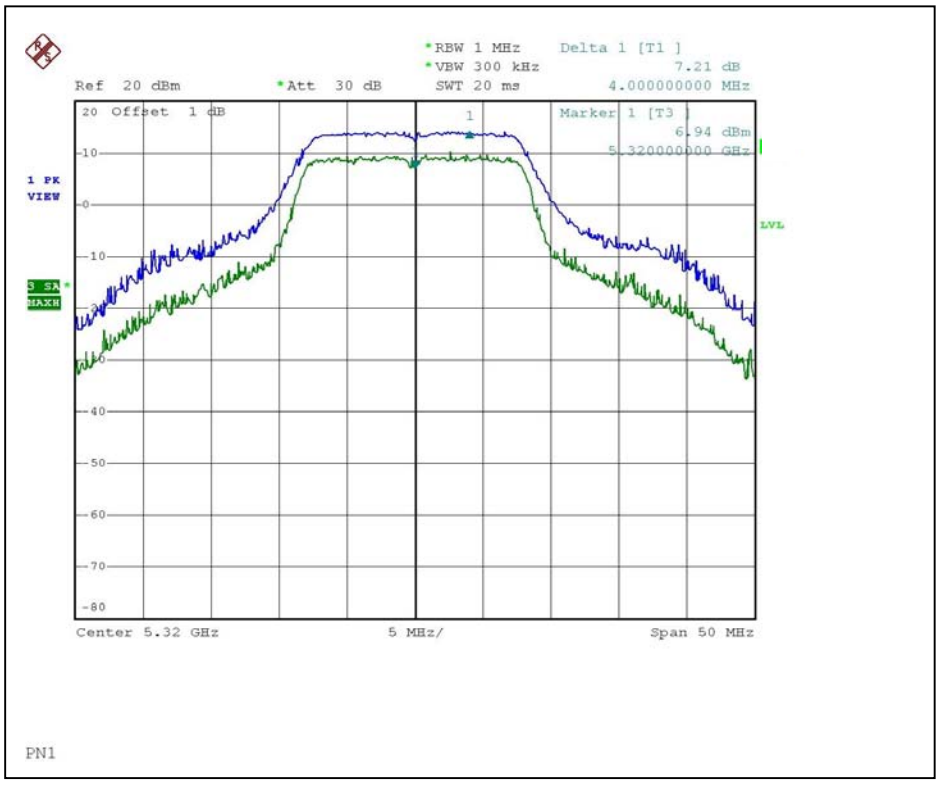
CH4


RBW 1 MHz
VBW 300 kHz
SWT 20 ms
Delta 1 [T1]
7.49 dB
2.900000000 MHz
Ref 20 dBm
Att 30 dB
Offset 1 dB
Marker 1 [T3]
2.86 dBm
5.240000000 GHz
1 PK
VIEW
LVL
Center 5.24 GHz
5 MHz/
Span 50 MHz
Date: 8.JUL.2006 02:07:42

CH5


RBW 1 MHz
VBW 300 kHz
SWT 20 ms
Delta 1 [T1]
7.95 dB
6.100000000 MHz
Ref 20 dBm
Att 30 dB
20 Offset 1 dB
Marker 1 [T3]
7.83 dBm
5.260000000 GHz
1 PK
VIEW
LVL
Center 5.26 GHz
5 MHz/
Span 50 MHz
PN1
Date: 7.JUL.2006 05:44:42

CH8

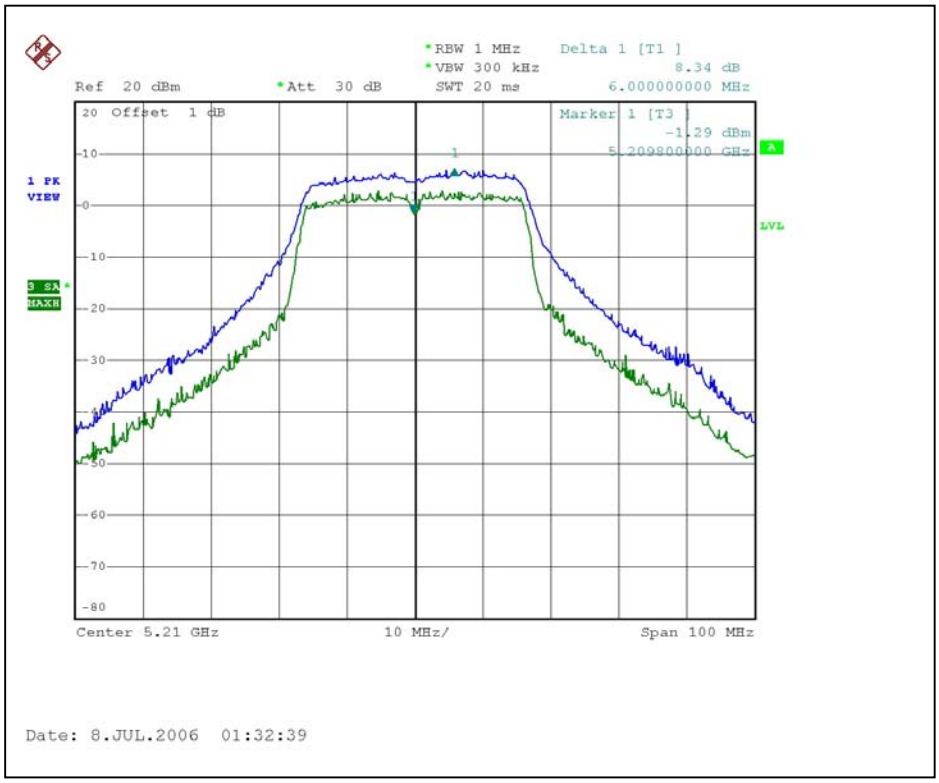

RBW 1 MHz
VBW 300 kHz
SWT 20 ms
Delta 1 [T1]
7.21 dB
4.000000000 MHz
Ref 20 dBm
Att 30 dB
20 Offset 1 dB
Marker 1 [T3]
6.94 dBm
5.320000000 GHz
1 PK
VIEW
LVL
Center 5.32 GHz
5 MHz/
Span 50 MHz
PN1

802.11a Turbo OFDM modulation

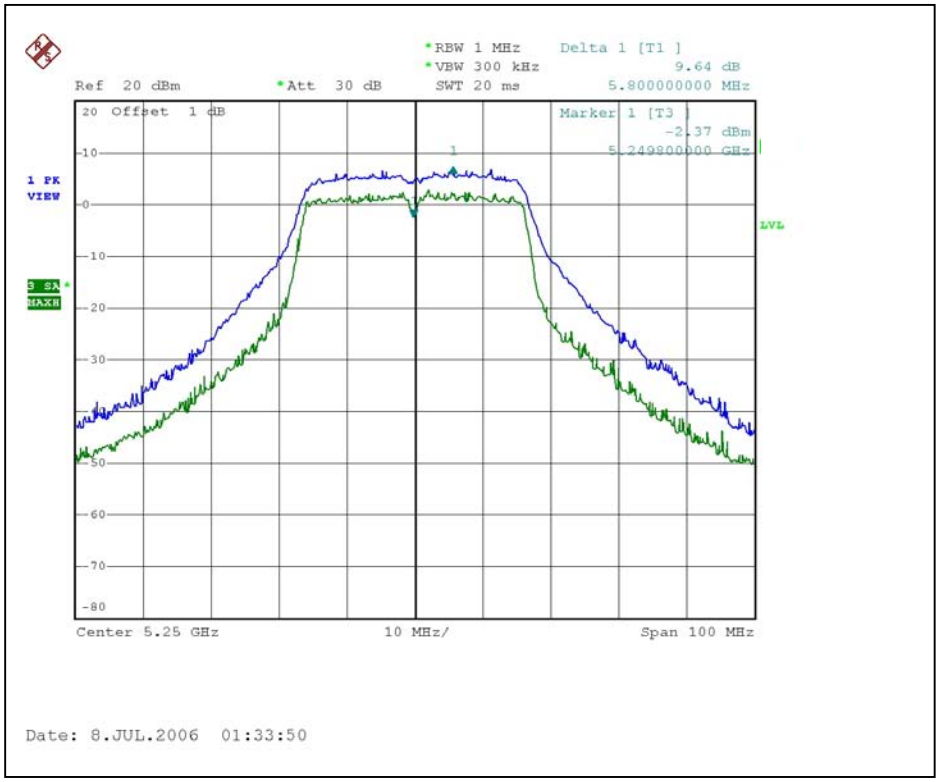
MODULATION TYPE	BPSK	TRANSFER RATE	12Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	24deg.C, 62%RH, 955hPa
TESTED BY	Wen Yu		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)	PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
1	5210	8.34	13	PASS
2	5250	9.64	13	PASS
3	5290	6.40	13	PASS

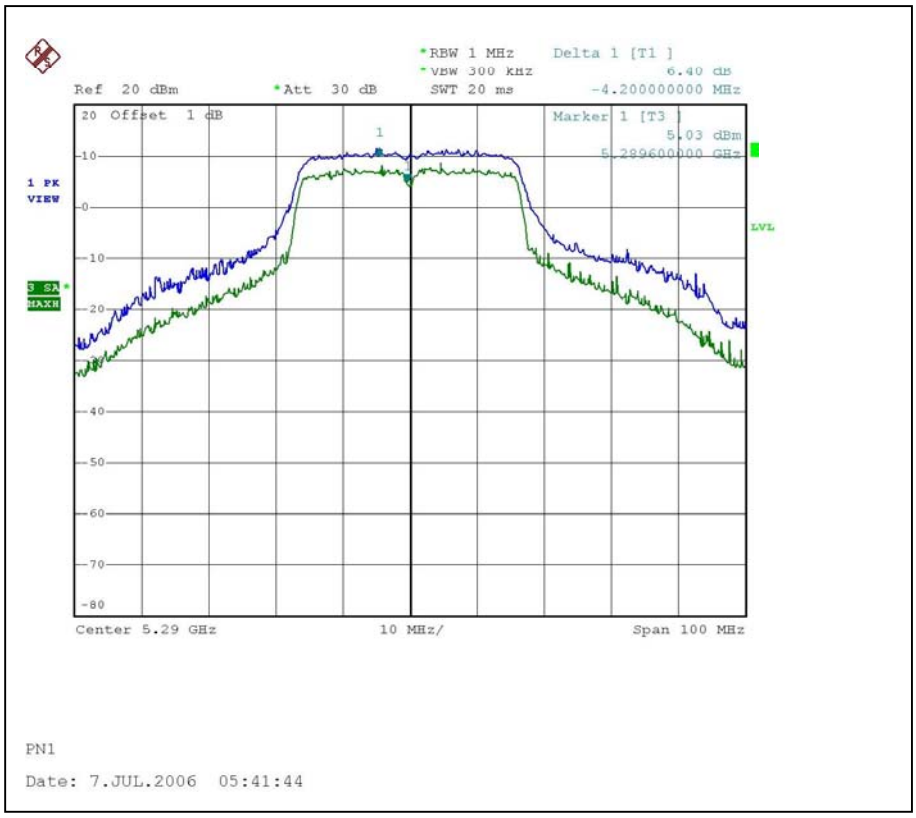
CH1


RBW 1 MHz
VBW 300 kHz
SWT 20 ms
Delta 1 [T1]
8.34 dB
6.000000000 MHz
Ref 20 dBm
Att 30 dB
20 Offset 1 dB
Marker 1 [T3]
-1.29 dBm
5.209800000 GHz
1 PK
VIEW
LVL
Center 5.21 GHz
10 MHz/
Span 100 MHz
Date: 8.JUL.2006 01:32:39

CH2


RBW 1 MHz
VBW 300 kHz
SWT 20 ms
Delta 1 [T1]
9.64 dB
5.800000000 MHz
Ref 20 dBm
Att 30 dB
20 Offset 1 dB
Marker 1 [T3]
-2.37 dBm
5.249800000 GHz
1 PK
VIEW
LVL
Center 5.25 GHz
10 MHz/
Span 100 MHz
Date: 8.JUL.2006 01:33:50

CH3


*RBW 1 MHz
Delta 1 [T1]
*VBW 300 kHz
6.40 dB
Ref 20 dBm
*Att 30 dB
SWT 20 ms
-4.200000000 MHz
20 Offset 1 dB
Marker 1 [T3]
5.03 dBm
5.289600000 GHz
1 PK
VIEW
LVL
3 SA
MAXH
Center 5.29 GHz
10 MHz/
Span 100 MHz
PN1
Date: 7.JUL.2006 05:41:44

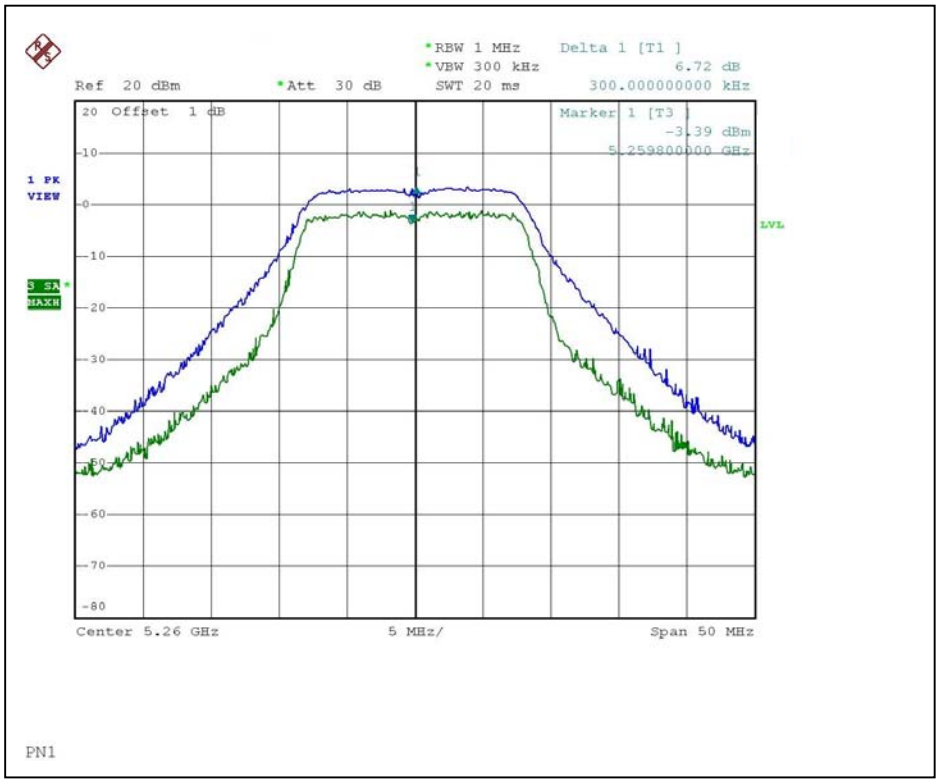
4.4.8 TEST RESULTS –ANTENNA 2

802.11a OFDM modulation

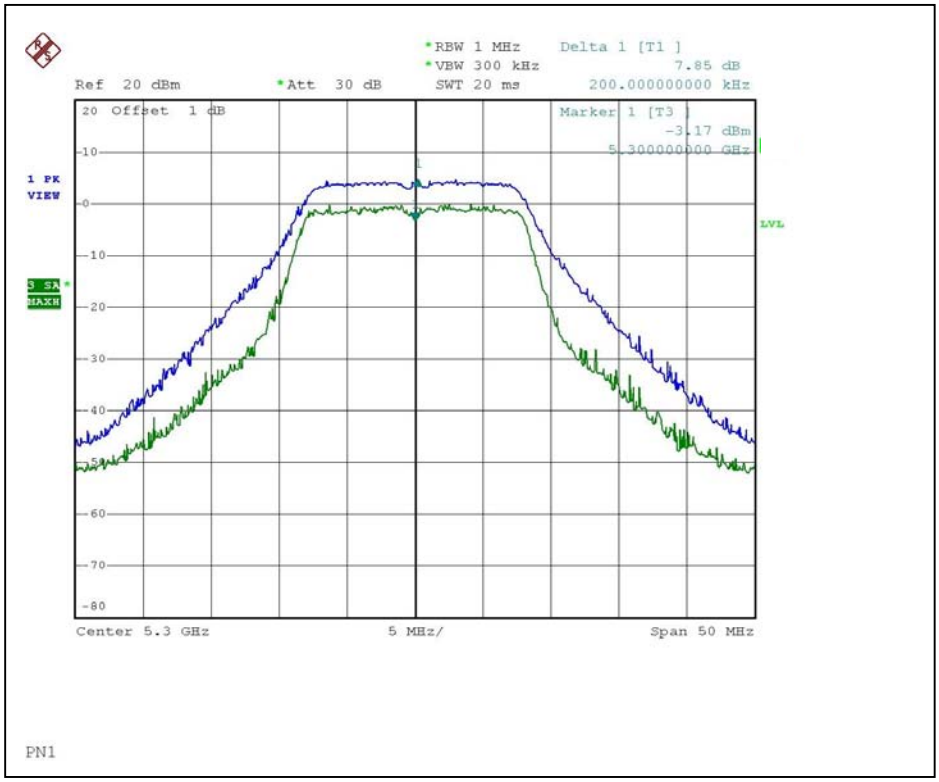
MODULATION TYPE	BPSK	**TRANSFER RATE**	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	24deg.C, 62%RH, 955hPa
TESTED BY	Wen Yu		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)	PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
5	5260	6.72	13	PASS
7	5300	7.85	13	PASS
8	5320	5.75	13	PASS

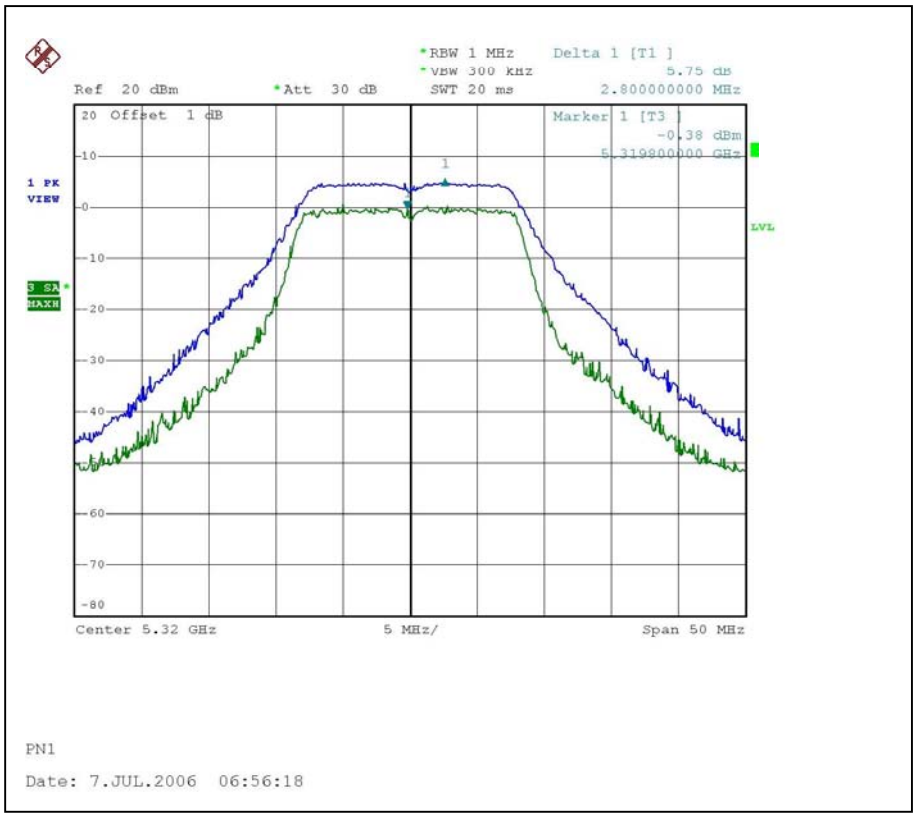
CH5


RBW 1 MHz
VBW 300 kHz
SWT 20 ms
Delta 1 [T1]
6.72 dB
300.000000000 kHz
Ref 20 dBm
Att 30 dB
20 Offset 1 dB
Marker 1 [T3]
-3.39 dBm
5.259800000 GHz
1 PK
VIEW
LVL
Center 5.26 GHz
5 MHz/
Span 50 MHz
PN1

CH7


RBW 1 MHz
VBW 300 kHz
SWT 20 ms
Delta 1 [T1]
7.85 dB
200.000000000 kHz
Ref 20 dBm
Att 30 dB
20 Offset 1 dB
Marker 1 [T3]
-3.17 dBm
5.300000000 GHz
1 PK
VIEW
LVL
Center 5.3 GHz
5 MHz/
Span 50 MHz
PN1

CH8

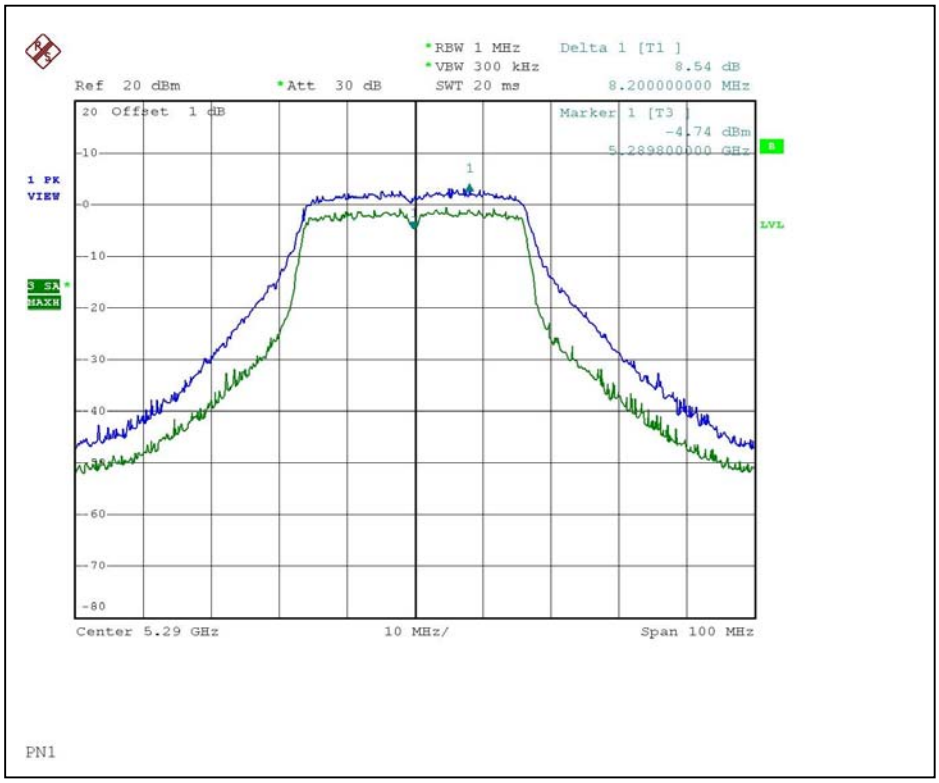

RBW 1 MHz
VBW 300 kHz
SWT 20 ms
Delta 1 [T1]
5.75 dB
2.800000000 MHz
Ref 20 dBm
Att 30 dB
20 Offset 1 dB
Marker 1 [T3]
-0.38 dBm
5.319800000 GHz
1 PK
VIEW
LVL
Center 5.32 GHz
5 MHz/
Span 50 MHz
PN1
Date: 7.JUL.2006 06:56:18

802.11a Turbo OFDM modulation

MODULATION TYPE	BPSK	TRANSFER RATE	12Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	24deg.C, 62%RH, 955hPa
TESTED BY	Wen Yu		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)	PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
3	5290	8.54	13	PASS

CH3


*RBW 1 MHz
*VBW 300 kHz
SWT 20 ms
Delta 1 [T1]
8.54 dB
8.200000000 MHz
Ref 20 dBm
*Att 30 dB
20 Offset 1 dB
Marker 1 [T3]
-4.74 dBm
5.289800000 GHz
1 PK
VIEW
LVL
-10
-0
-10
-20
-30
-40
-60
-70
-80
Center 5.29 GHz
10 MHz/
Span 100 MHz
PN1

4.5 PEAK POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT

Frequency Band	Limit
5.15 ~ 5.25GHz	4dBm
5.25 ~ 5.35GHz	11dBm
5.725 ~ 5.825GHz	17dBm

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.

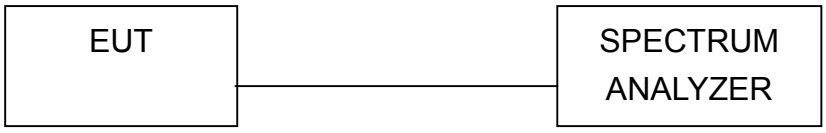
4.5.3 TEST PROCEDURES

1. The transmitter output was connected to the spectrum analyzer.
2. Set RBW=1MHz, VBW=3MHz. The PPSD is the highest level found across the emission in any 1MHz band.

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITIONS

Same as 4.3.6

4.5.7 TEST RESULTS-ANTENNA 1

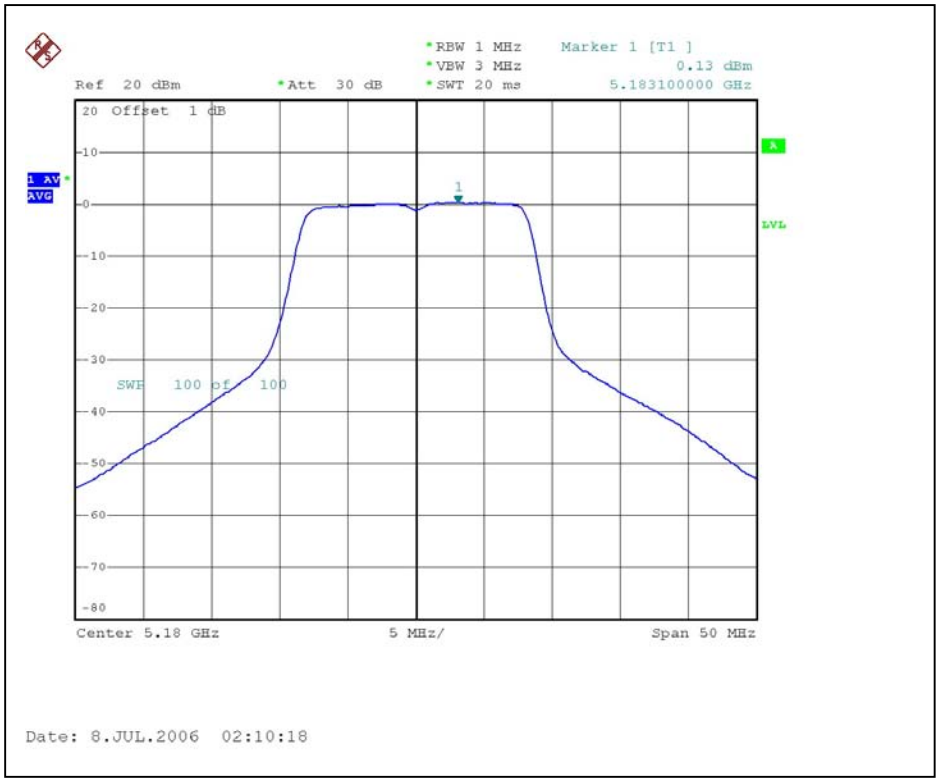
802.11a OFDM modulation

MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	24deg.C, 62%RH, 955hPa
TESTED BY	Wen Yu		

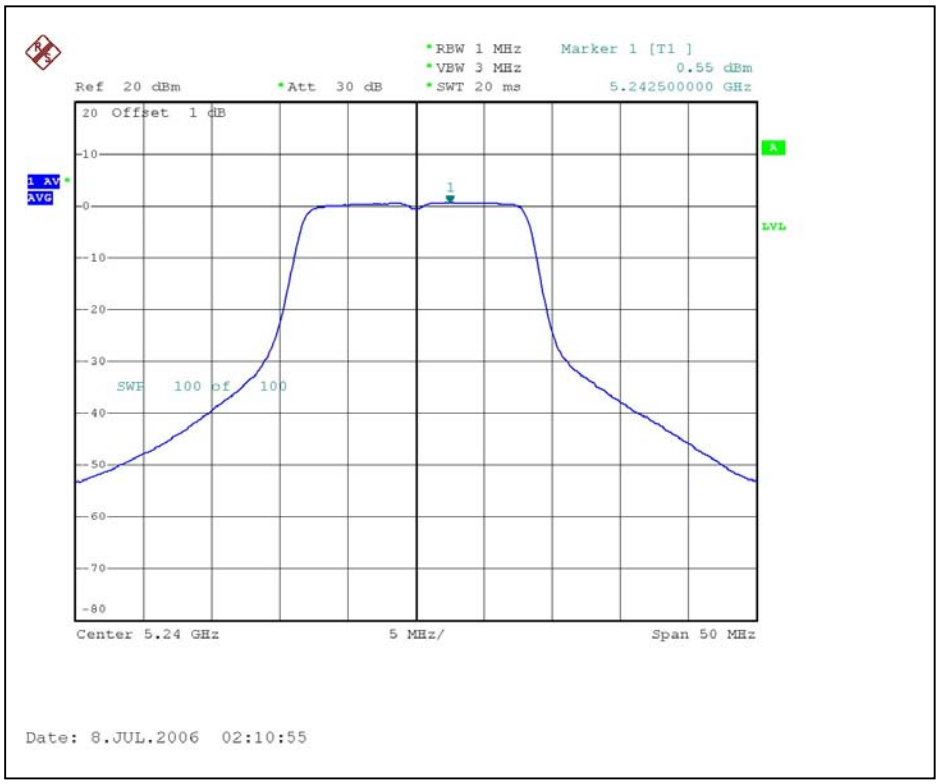
Antenna 1 (Gain : 5 dBi) +Cable loss (1.8dB)

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 1MHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	5180	0.13	4	PASS
4	5240	0.55	4	PASS
5	5260	4.94	11	PASS
8	5320	3.85	11	PASS

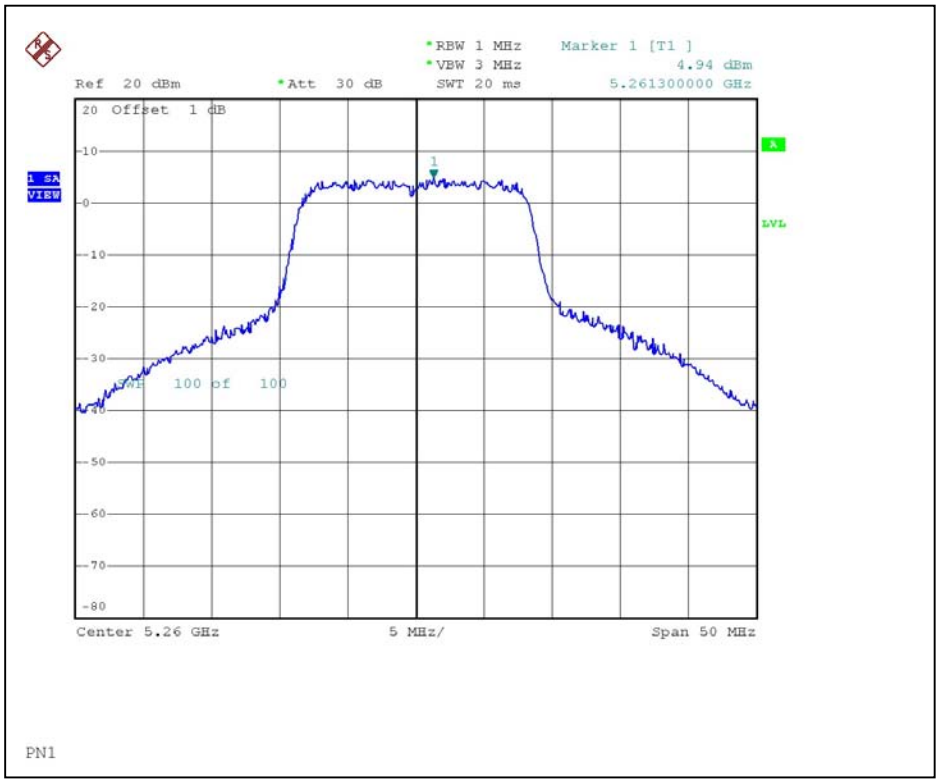
CH1


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
Marker 1 [T1]
0.13 dBm
5.183100000 GHz
Ref 20 dBm
Att 30 dB
20 Offset 1 dB
1 AV
AVG
SWP 100 of 100
LVL
Center 5.18 GHz
5 MHz/
Span 50 MHz
Date: 8.JUL.2006 02:10:18

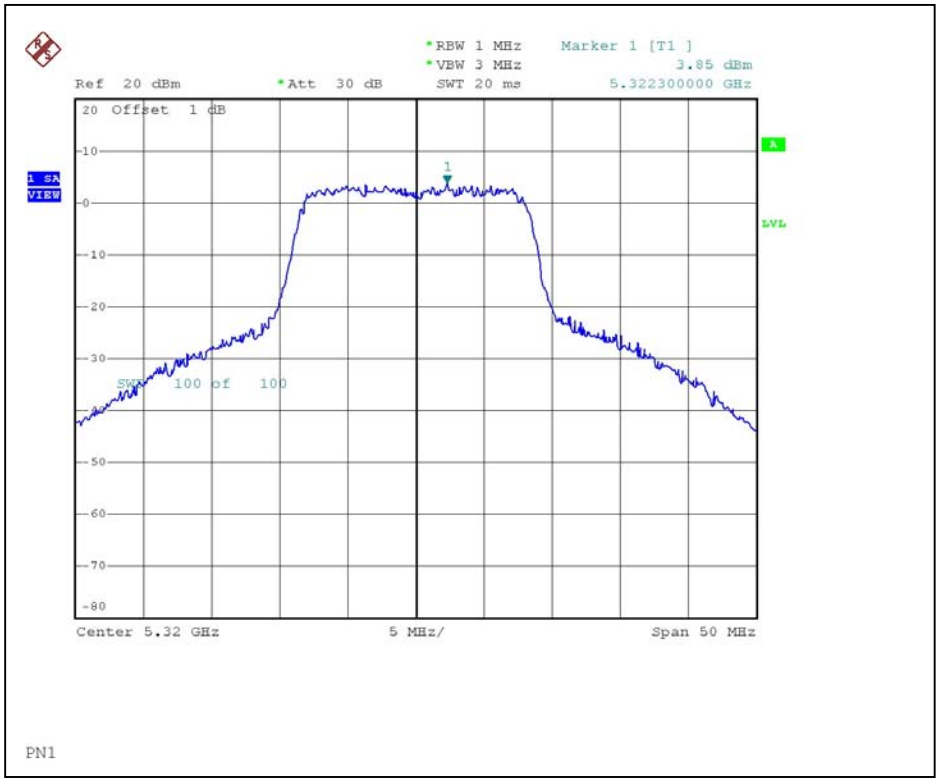
CH4


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
Marker 1 [T1]
0.55 dBm
5.242500000 GHz
Ref 20 dBm
Att 30 dB
20 Offset 1 dB
1 AV
AVG
SWP 100 of 100
LVL
Center 5.24 GHz
5 MHz/
Span 50 MHz
Date: 8.JUL.2006 02:10:55

CH5


*RBW 1 MHz
*VBW 3 MHz
Marker 1 [T1]
4.94 dBm
5.261300000 GHz
Ref 20 dBm
*Att 30 dB
SWT 20 ms
20 Offset 1 dB
1 SA VIEW
A
LVL
SWP 100 of 100
Center 5.26 GHz
5 MHz/
Span 50 MHz
PN1

CH8


*RBW 1 MHz
*VBW 3 MHz
Marker 1 [T1]
3.85 dBm
5.322300000 GHz
Ref 20 dBm
*Att 30 dB
SWT 20 ms
20 Offset 1 dB
1 SA VIEW
A
LVL
SWP 100 of 100
Center 5.32 GHz
5 MHz/
Span 50 MHz
PN1

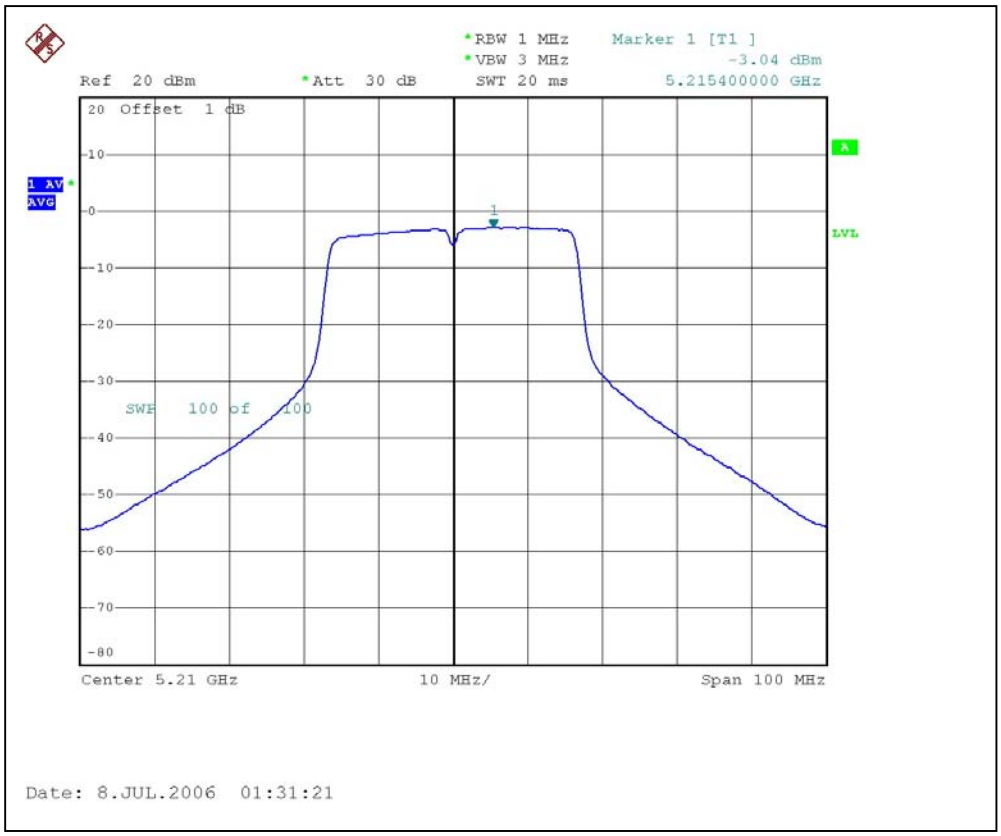
802.11a Turbo OFDM modulation

MODULATION TYPE	BPSK	TRANSFER RATE	12Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	24deg.C, 62%RH, 966hPa
TESTED BY	Wen Yu		

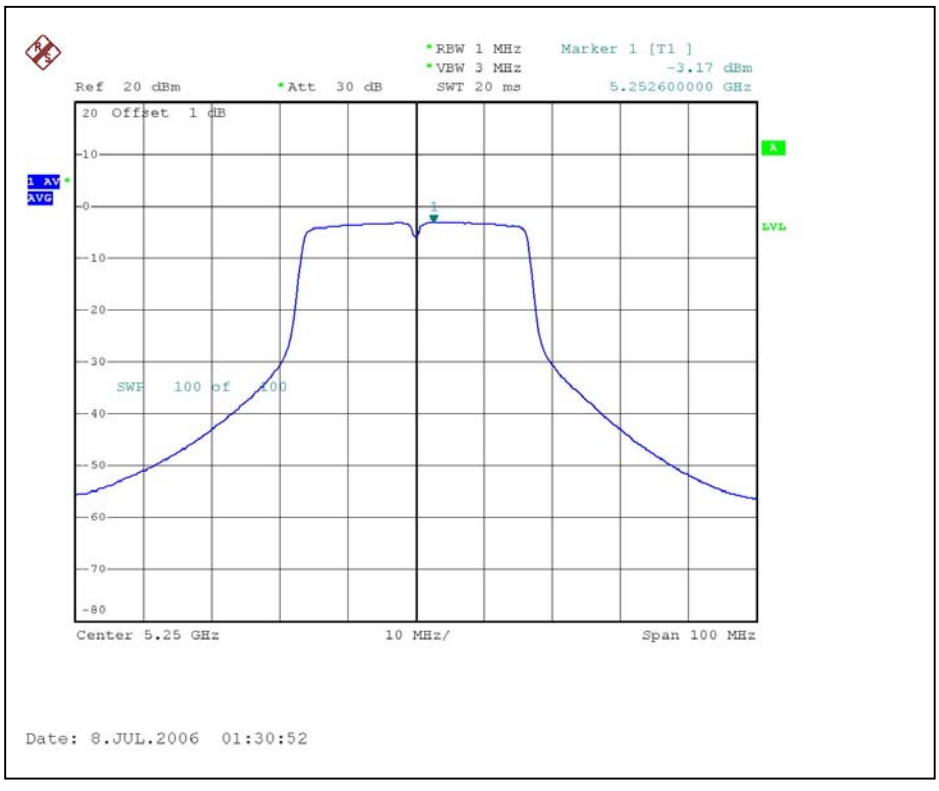
Antenna 1 (Gain : 5 dBi) +Cable loss (1.8dB)

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 1MHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	5210	-3.04	4	PASS
2	5250	-3.17	4	PASS
3	5290	0.79	11	PASS

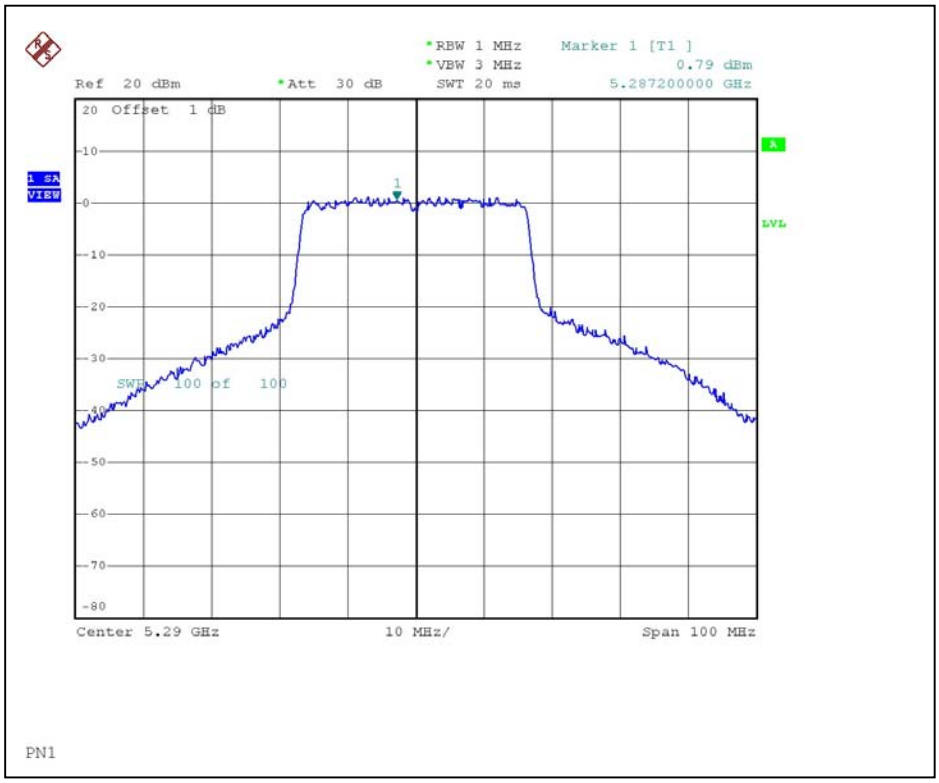
CH1


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
Marker 1 [T1]
-3.04 dBm
5.215400000 GHz
Ref 20 dBm
Att 30 dB
20 Offset 1 dB
1 AV
AVG
A
LVL
SWP 100 of 100
Center 5.21 GHz
10 MHz/
Span 100 MHz
Date: 8.JUL.2006 01:31:21

CH2


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
Marker 1 [T1]
-3.17 dBm
5.252600000 GHz
Ref 20 dBm
Att 30 dB
20 Offset 1 dB
1 AV
AVG
A
LVL
SWP 100 of 100
Center 5.25 GHz
10 MHz/
Span 100 MHz
Date: 8.JUL.2006 01:30:52

CH3


*RBW 1 MHz
*VBW 3 MHz
SWT 20 ms
Marker 1 [T1]
0.79 dBm
5.287200000 GHz
Ref 20 dBm
*Att 30 dB
20 Offset 1 dB
1 SA VIEW
A
LVL
SWP 100 of 100
Center 5.29 GHz
10 MHz/
Span 100 MHz
PN1

4.5.8 TEST RESULTS-ANTENNA 2

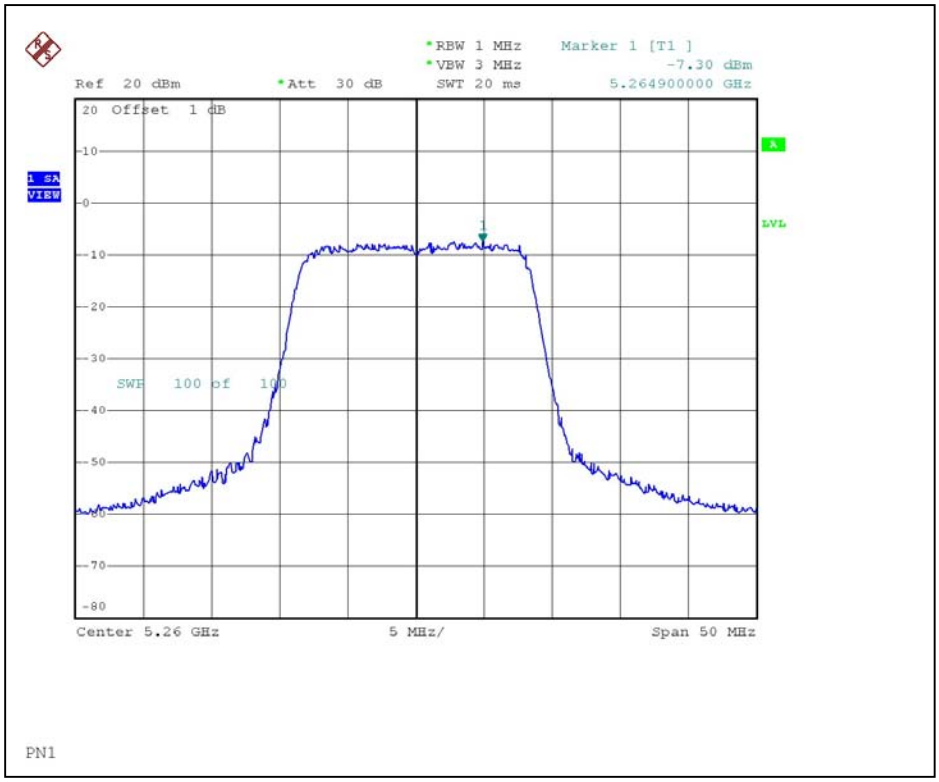
802.11a OFDM modulation

MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	24deg.C, 62%RH, 955hPa
TESTED BY	Wen Yu		

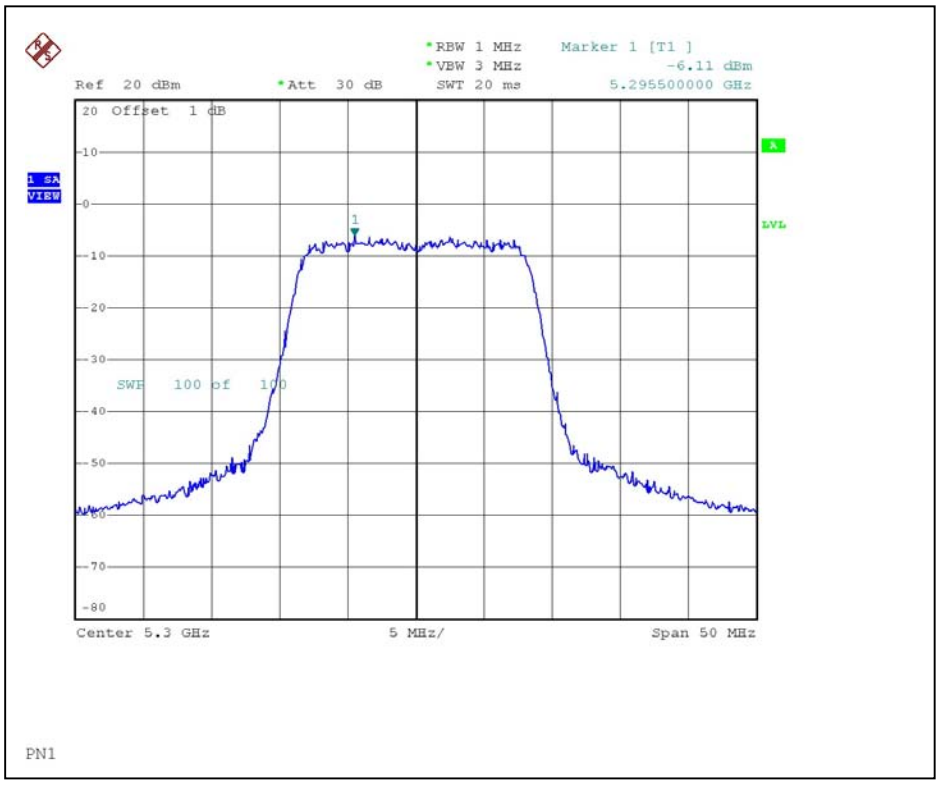
Antenna 2 (Gain : 18 dBi) +Cable loss (2.96dB)

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 1MHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
5	5260	-7.30	1.96	PASS
7	5300	-6.11	1.96	PASS
8	5320	-5.96	1.96	PASS

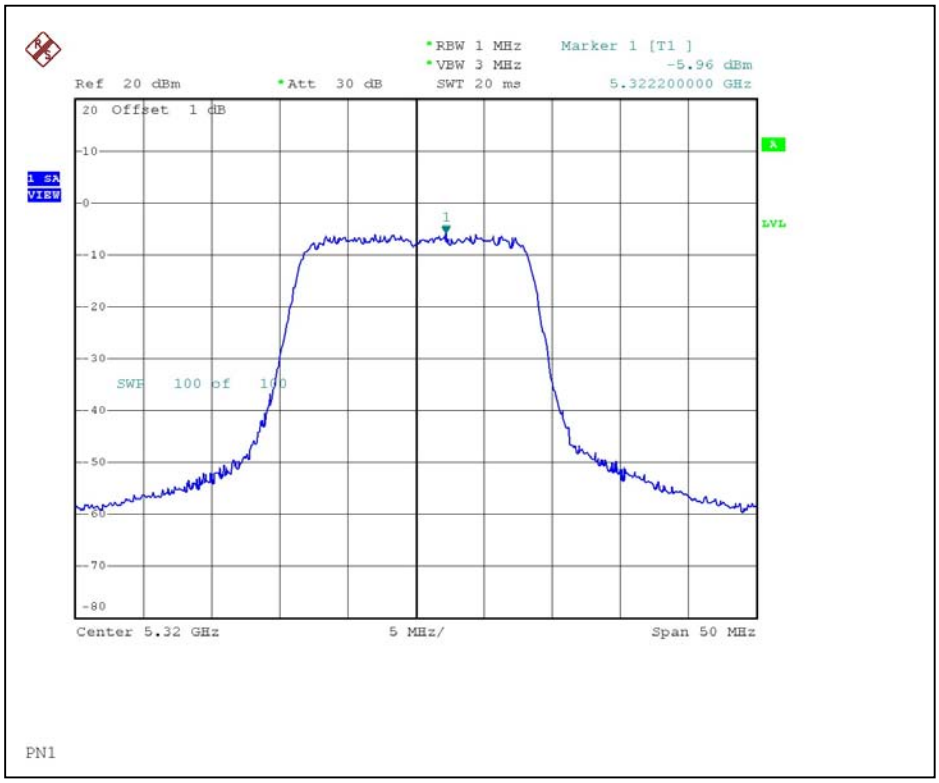
CH5


*RBW 1 MHz
Marker 1 [T1]
*VBW 3 MHz
-7.30 dBm
Ref 20 dBm
*Att 30 dB
SWT 20 ms
5.264900000 GHz
20 Offset 1 dB
1 SA VIEW
A
LVL
SWP 100 of 100
Center 5.26 GHz
5 MHz/
Span 50 MHz
PN1

CH7


*RBW 1 MHz
Marker 1 [T1]
*VBW 3 MHz
-6.11 dBm
Ref 20 dBm
*Att 30 dB
SWT 20 ms
5.295500000 GHz
20 Offset 1 dB
1 SA VIEW
A
LVL
SWP 100 of 100
Center 5.3 GHz
5 MHz/
Span 50 MHz
PN1

CH8


*RBW 1 MHz
*VBW 3 MHz
Marker 1 [T1]
-5.96 dBm
5.322200000 GHz
Ref 20 dBm
*Att 30 dB
SWT 20 ms
20 Offset 1 dB
1 SA VIEW
A
LVL
SWP 100 of 100
Center 5.32 GHz
5 MHz/
Span 50 MHz
PN1

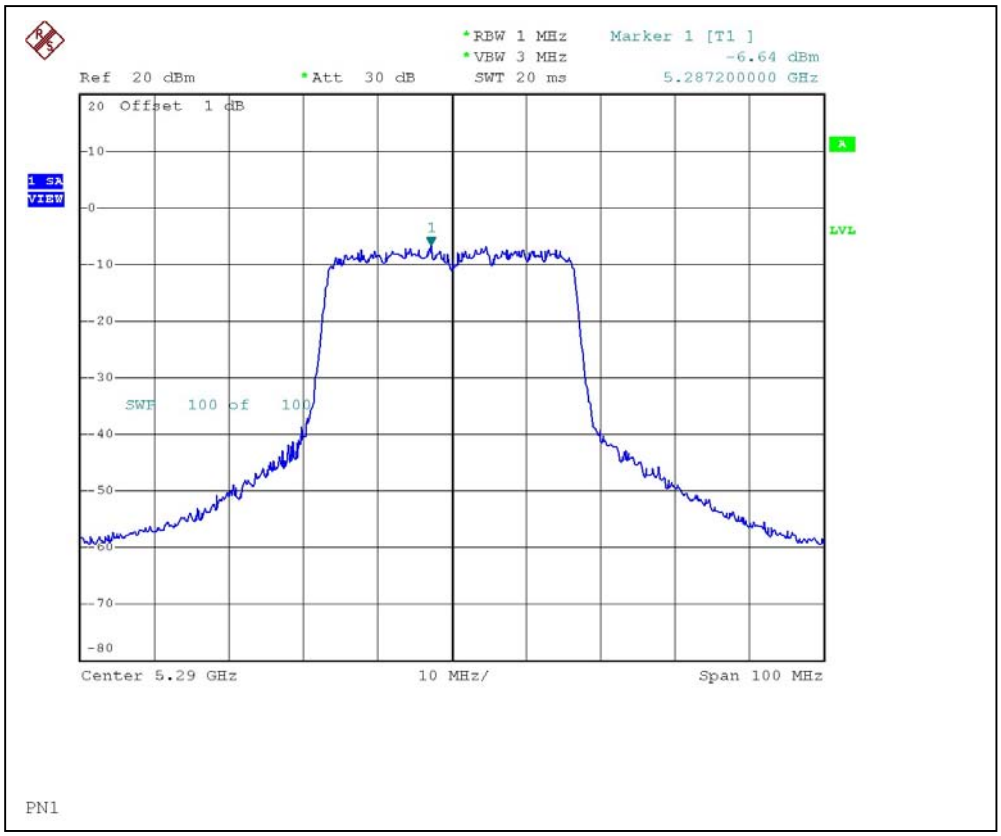
802.11a Turbo OFDM modulation

MODULATION TYPE	BPSK	TRANSFER RATE	12Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	24deg.C, 62%RH, 966hPa
TESTED BY	Wen Yu		

Antenna 2 (Gain : 18 dBi) +Cable loss (2.96dB)

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 1MHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
3	5290	-6.64	1.96	PASS

CH3


RBW 1 MHz
VBW 3 MHz
SWT 20 ms
Marker 1 [T1]
-6.64 dBm
5.287200000 GHz
Ref 20 dBm
Att 30 dB
Offset 1 dB
SWP 100 of 100
Center 5.29 GHz
10 MHz/
Span 100 MHz
PN1

4.6 FREQUENCY STABILITY

4.6.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

The frequency tolerance of the carrier signal shall be maintained within +/- 0.02% of the operating frequency over a temperature variation of –30 degrees to 50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.

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.

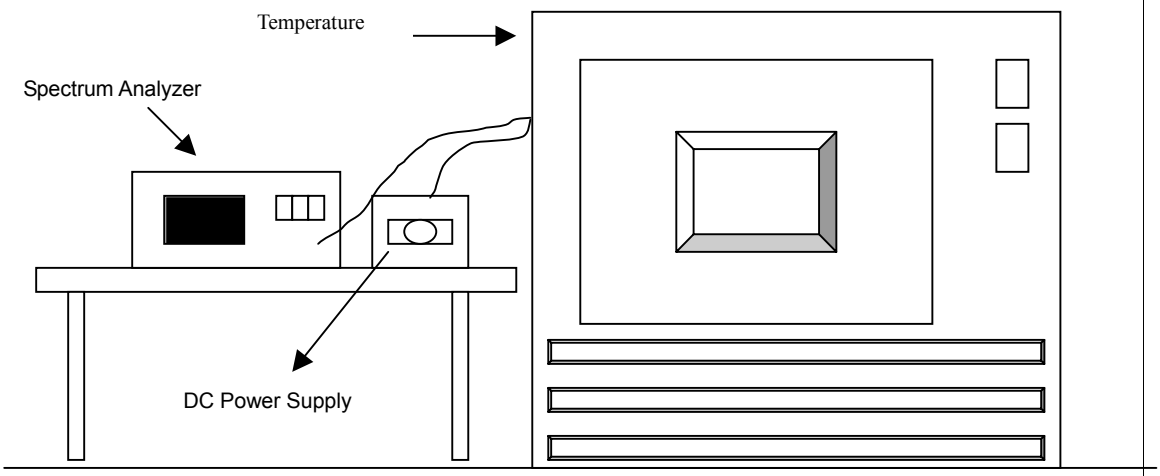
4.6.3 TEST PROCEDURE

1. The EUT was placed inside the environmental test chamber and powered by nominal DC voltage.
2. Turn the EUT on and couple its output to a spectrum analyzer.
3. Turn the EUT off and set the chamber to the highest temperature specified.
4. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
5. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
6. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 TEST SETUP



4.6.6 EUT OPERATING CONDITION

The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

4.6.7 TEST RESULTS

Operating frequency: 5320MHz						Limit : ± 0.02%	
Temp. (℃)	Power supply (VAC)	2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	126.5	5319.9896	0.000195	5319.9988	0.000023	5319.9981	0.000036
	110	5319.9897	0.000194	5319.9988	0.000023	5319.9983	0.000032
	93.5	5319.9996	0.000008	5319.9991	0.000017	5319.9980	0.000038
40	126.5	5320.0379	0.000712	5320.0379	0.000712	5320.0376	0.000707
	110	5320.0379	0.000712	5320.0378	0.000711	5320.0376	0.000707
	93.5	5320.0381	0.000716	5320.0376	0.000707	5320.0376	0.000707
30	126.5	5319.9937	0.000118	5319.9931	0.000130	5319.9925	0.000141
	110	5319.9937	0.000118	5319.9933	0.000126	5319.9926	0.000139
	93.5	5319.9937	0.000118	5319.9931	0.000130	5319.9924	0.000143
20	126.5	5320.0245	0.000461	5320.0192	0.000361	5320.0188	0.000353
	110	5320.0245	0.000461	5320.0222	0.000417	5320.0198	0.000372
	93.5	5320.0225	0.000423	5320.0192	0.000361	5320.0188	0.000353
10	126.5	5320.0086	0.000162	5320.008	0.000150	5320.0073	0.000137
	110	5320.0087	0.000164	5320.0084	0.000158	5320.0077	0.000145
	93.5	5320.0086	0.000162	5320.008	0.000150	5320.0073	0.000137
0	126.5	5320.0139	0.000261	5320.0134	0.000252	5320.0127	0.000239
	110	5320.0139	0.000261	5320.0134	0.000252	5320.0129	0.000242
	93.5	5320.0139	0.000261	5320.0133	0.000250	5320.0126	0.000237
-10	126.5	5320.0131	0.000246	5320.0123	0.000231	5320.0116	0.000218
	110	5320.0131	0.000246	5320.0125	0.000235	5320.0119	0.000224
	93.5	5320.0131	0.000246	5320.0123	0.000231	5320.0116	0.000218
-20	126.5	5320.0321	0.000603	5320.0302	0.000568	5320.0278	0.000523
	110	5320.0319	0.000600	5320.0322	0.000605	5320.0298	0.000560
	93.5	5320.0319	0.000600	5320.0292	0.000549	5320.0278	0.000523
-30	126.5	5320.0315	0.000592	5320.0262	0.000492	5320.0218	0.000410
	110	5320.0315	0.000592	5320.0292	0.000549	5320.0248	0.000466
	93.5	5320.0315	0.000592	5320.0252	0.000474	5320.0228	0.000429

4.7 BAND EDGES MEASUREMENT

4.7.1 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.

4.7.2 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 1MHz with suitable frequency span including 100 MHz bandwidth from band edge. The band edges was measured and recorded.

4.7.3 EUT OPERATING CONDITION

The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

4.7.4 TEST RESULTS –ANTENNA 1

For signals in the restricted bands above and below the 5.15 to 5.35GHz allocated band a measurement was made of the amplitude of the spurious emissions with respect to the intentional signals. The relative amplitude, in dBc, was applied to the average and peak filed strength of the intentional signal made on the OATS to calculate the field strength of the unintentional signals.

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

802.11a OFDM modulation

NOTE (Peak):

The band edge emission plot on the following first page shows 53.18dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 1 is 113.3dBuV/m (Peak), so the maximum field strength in restrict band is 113.3-53.18=60.12dBuV/m which is under 74dBuV/m limit.

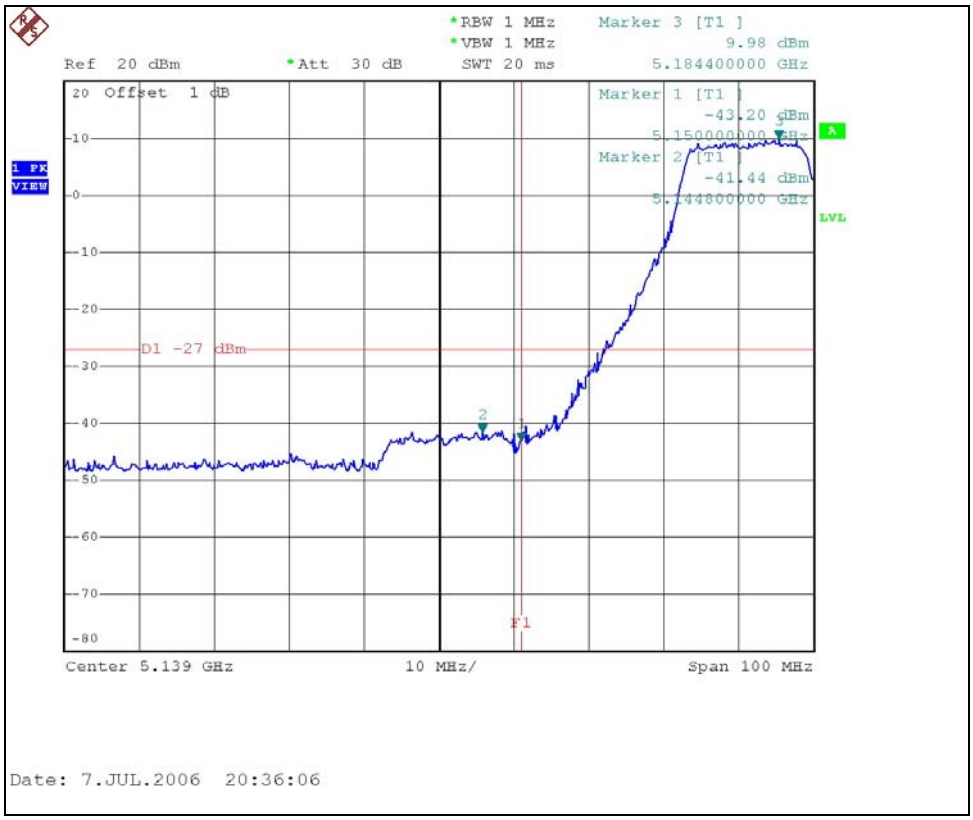
The band edge emission plot on the following first page shows 44.66dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 8 is 113.5dBuV/m (Peak), so the maximum field strength in restrict band is 113.5-44.66=68.84dBuV/m which is under 74dBuV/m limit.

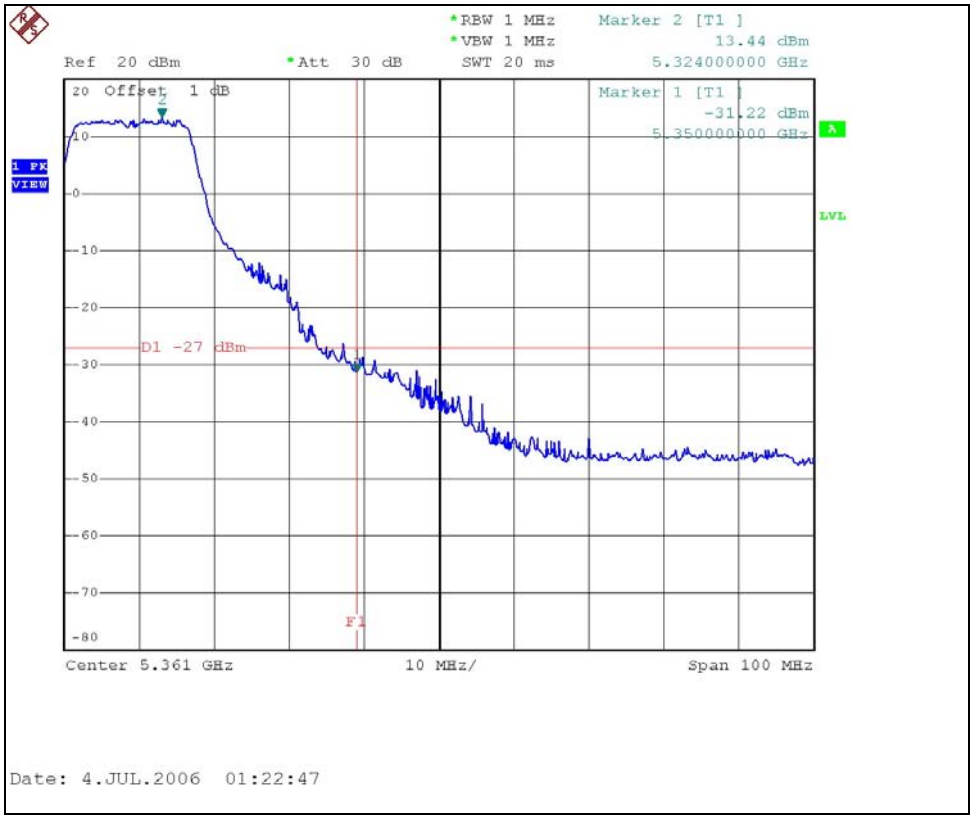
NOTE (Average):

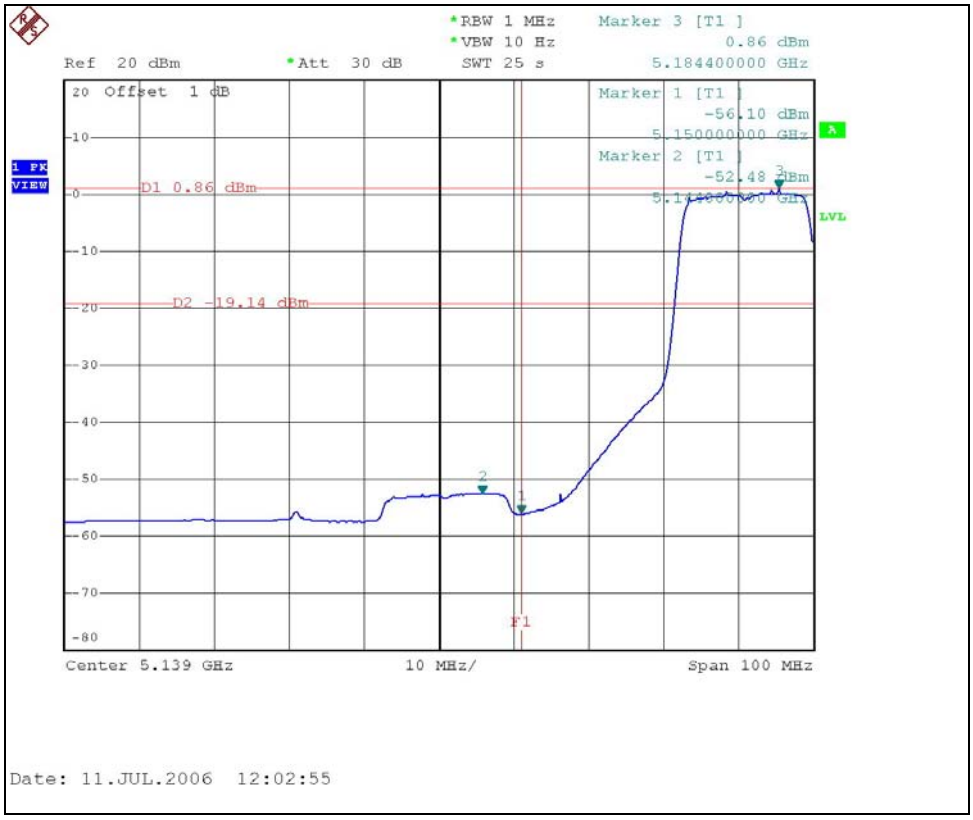
The band edge emission plot on the following second page shows 56.96dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 1 is 102.9dBuV/m (Average), so the maximum field strength in restrict band is 102.9-56.96=45.94dBuV/m which is under 54dBuV/m limit.

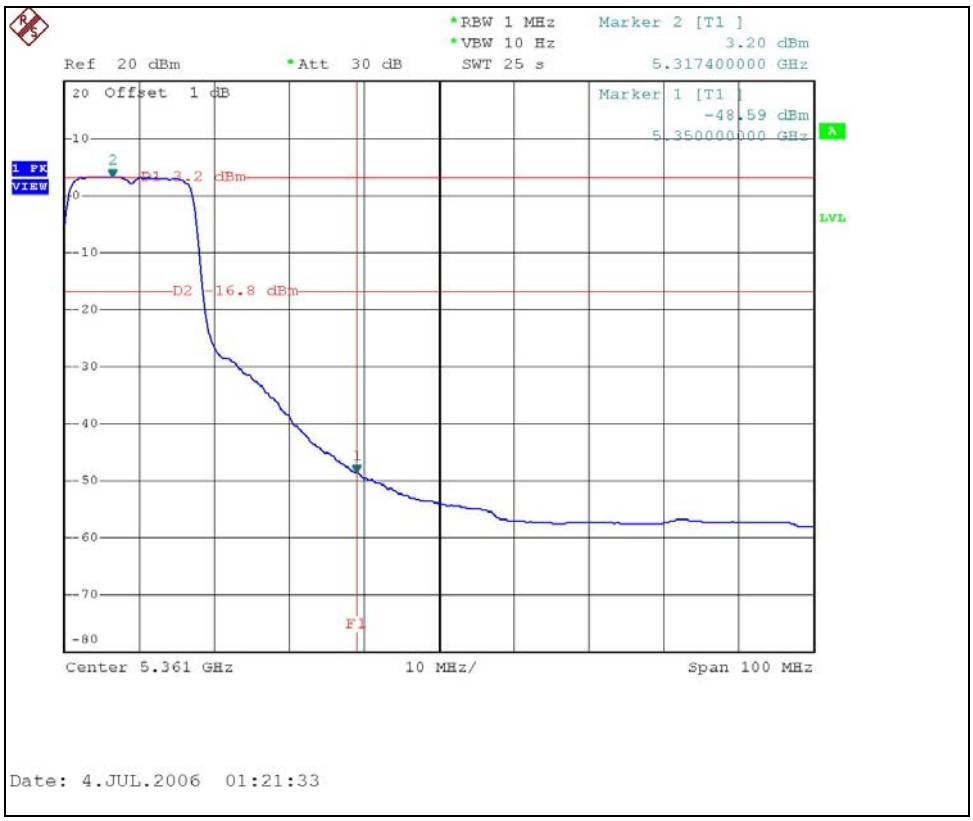
The band edge emission plot on the following second page shows 51.79dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 8 is 103.1dBuV/m (Average), so the maximum field strength in restrict band is 103.1-51.79=51.31dBuV/m which is under 54dBuV/m limit.

802.11a OFDM modulation

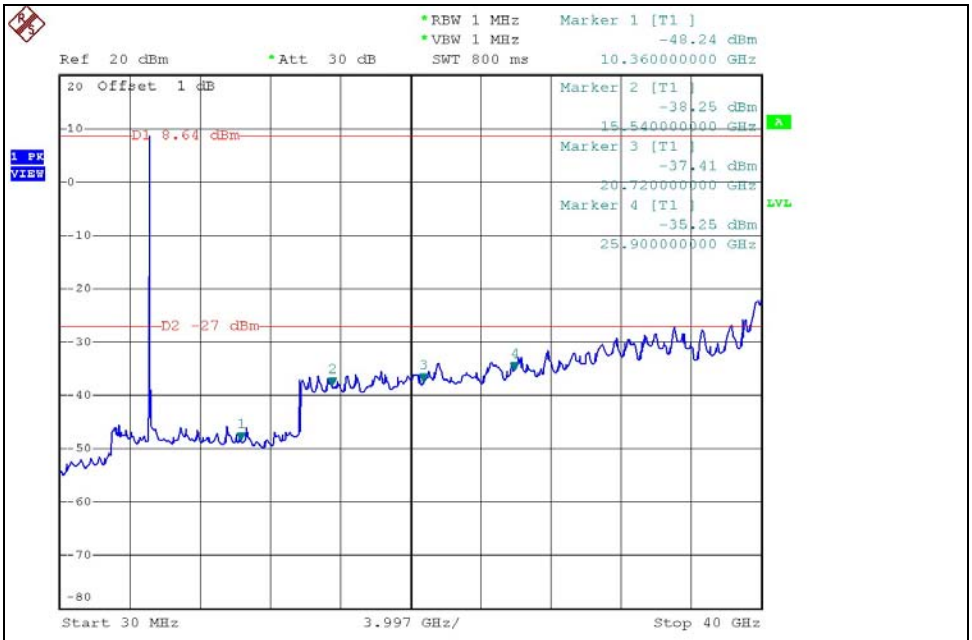




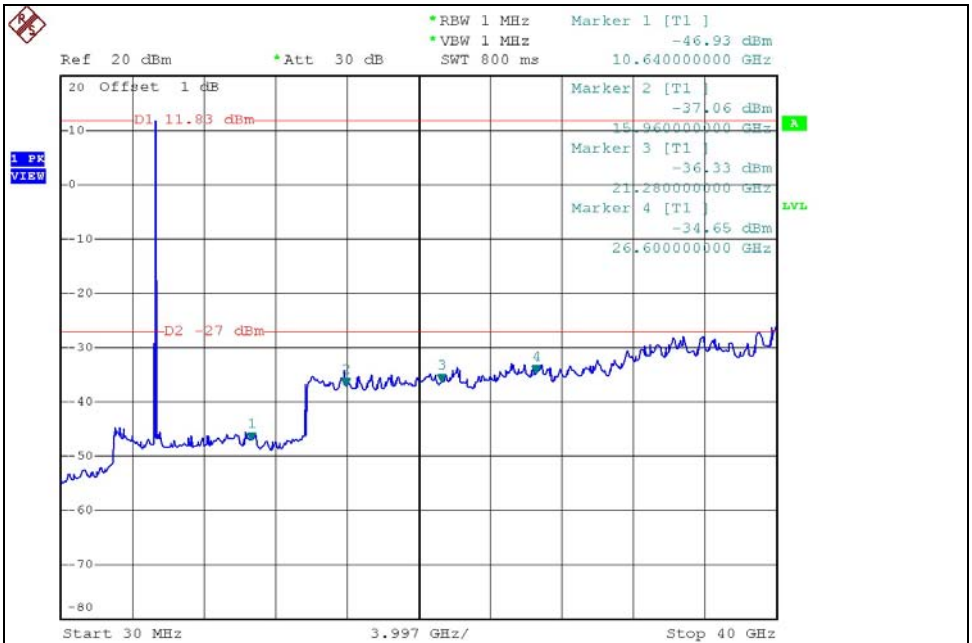

RBW 1 MHz
VBW 10 Hz
Marker 3 [T1]
0.86 dBm
Ref 20 dBm
Att 30 dB
SWT 25 s
5.184400000 GHz
20 Offset 1 dB
Marker 1 [T1]
-56.10 dBm
5.150000000 GHz
Marker 2 [T1]
-52.48 dBm
D1 0.86 dBm
D2 -19.14 dBm
1 PK VIEW
LVL
Center 5.139 GHz
10 MHz/
Span 100 MHz
Date: 11.JUL.2006 12:02:55


RBW 1 MHz
VBW 10 Hz
Marker 2 [T1]
3.20 dBm
Ref 20 dBm
Att 30 dB
SWT 25 s
5.317400000 GHz
20 Offset 1 dB
Marker 1 [T1]
-48.59 dBm
5.350000000 GHz
D1 3.2 dBm
D2 -16.8 dBm
1 PK VIEW
LVL
Center 5.361 GHz
10 MHz/
Span 100 MHz
Date: 4.JUL.2006 01:21:33

CH 1


RBW 1 MHz
VBW 1 MHz
SWT 800 ms
Marker 1 [T1]
-48.24 dBm
10.360000000 GHz
Ref 20 dBm
Att 30 dB
20 Offset 1 dB
D1 8.64 dBm
D2 -27 dBm
Marker 2 [T1]
-38.25 dBm
15.540000000 GHz
Marker 3 [T1]
-37.41 dBm
20.720000000 GHz
Marker 4 [T1]
-35.25 dBm
25.900000000 GHz
1 PK VIEW
LVL
Start 30 MHz
3.997 GHz/
Stop 40 GHz
Date: 8.JUL.2006 01:56:25

CH 8


RBW 1 MHz
VBW 1 MHz
SWT 800 ms
Marker 1 [T1]
-46.93 dBm
10.640000000 GHz
Ref 20 dBm
Att 30 dB
20 Offset 1 dB
D1 11.83 dBm
D2 -27 dBm
Marker 2 [T1]
-37.06 dBm
15.960000000 GHz
Marker 3 [T1]
-36.33 dBm
21.280000000 GHz
Marker 4 [T1]
-34.65 dBm
26.600000000 GHz
1 PK VIEW
LVL
Start 30 MHz
3.997 GHz/
Stop 40 GHz
PN1
Date: 10.JUL.2006 09:13:16

802.11a Turbo OFDM modulation

NOTE (Peak):

The band edge emission plot on the following first page shows 53.33dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 1 is 107.6dBuV/m (Peak), so the maximum field strength in restrict band is 107.6-53.33=54.27dBuV/m which is under 74dBuV/m limit.

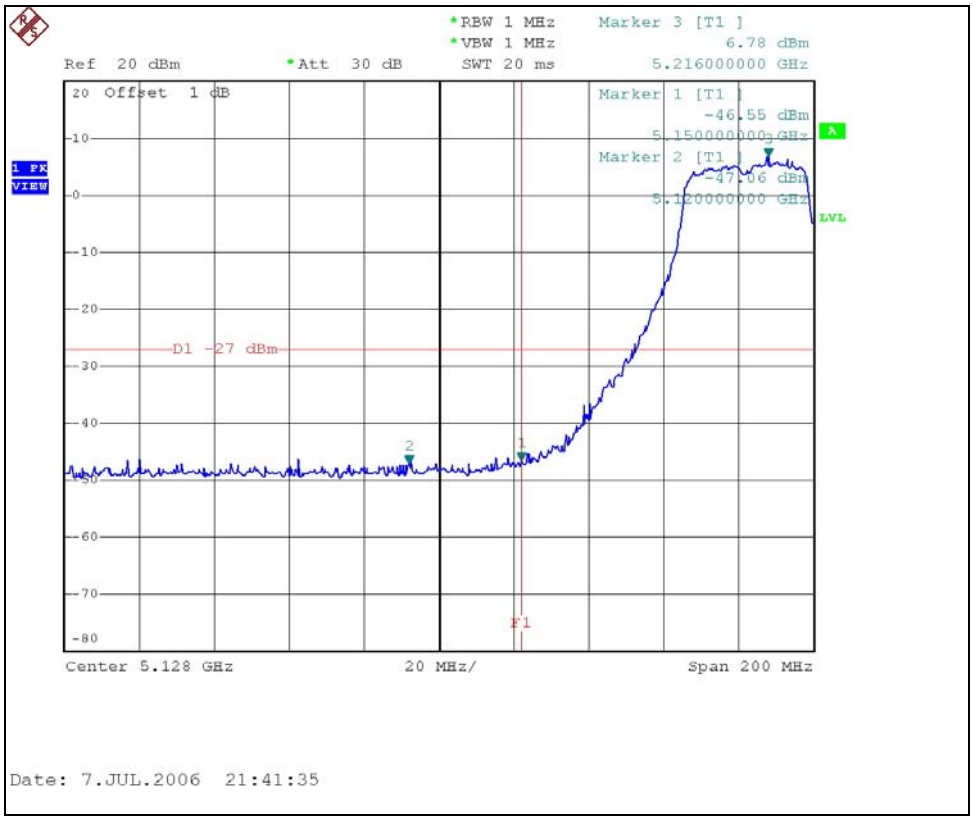
The band edge emission plot on the following first page shows 43.01dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 3 is 111.4dBuV/m (Peak), so the maximum field strength in restrict band is 111.4-43.01=68.39dBuV/m which is under 74dBuV/m limit.

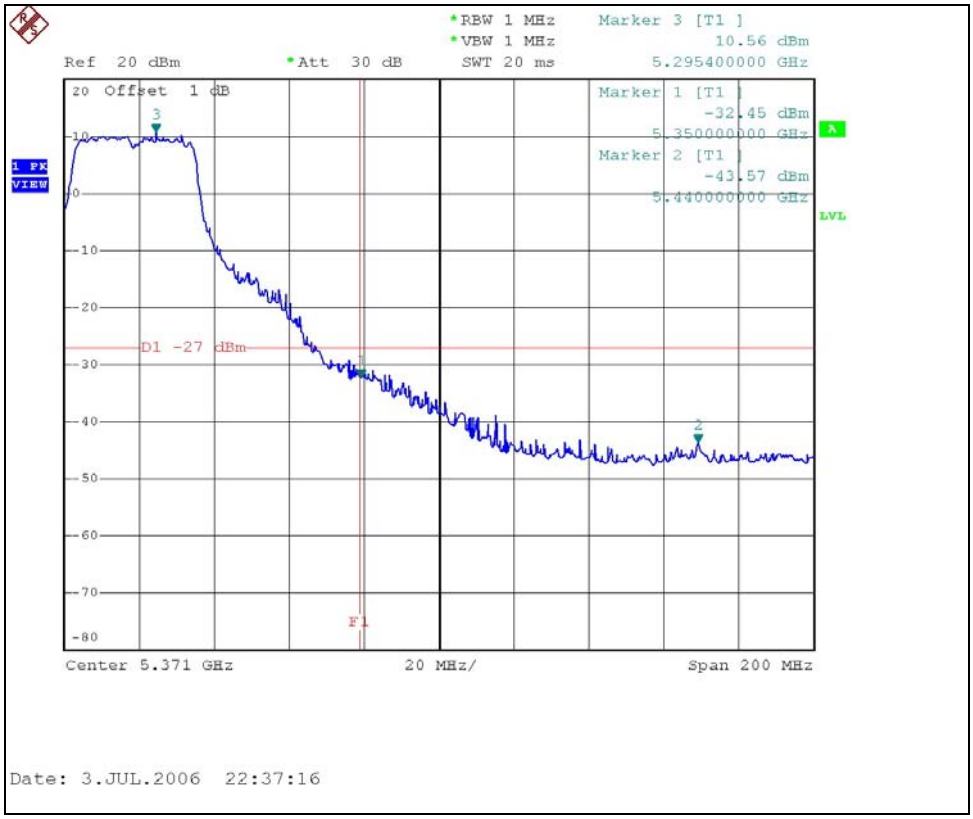
NOTE (Average):

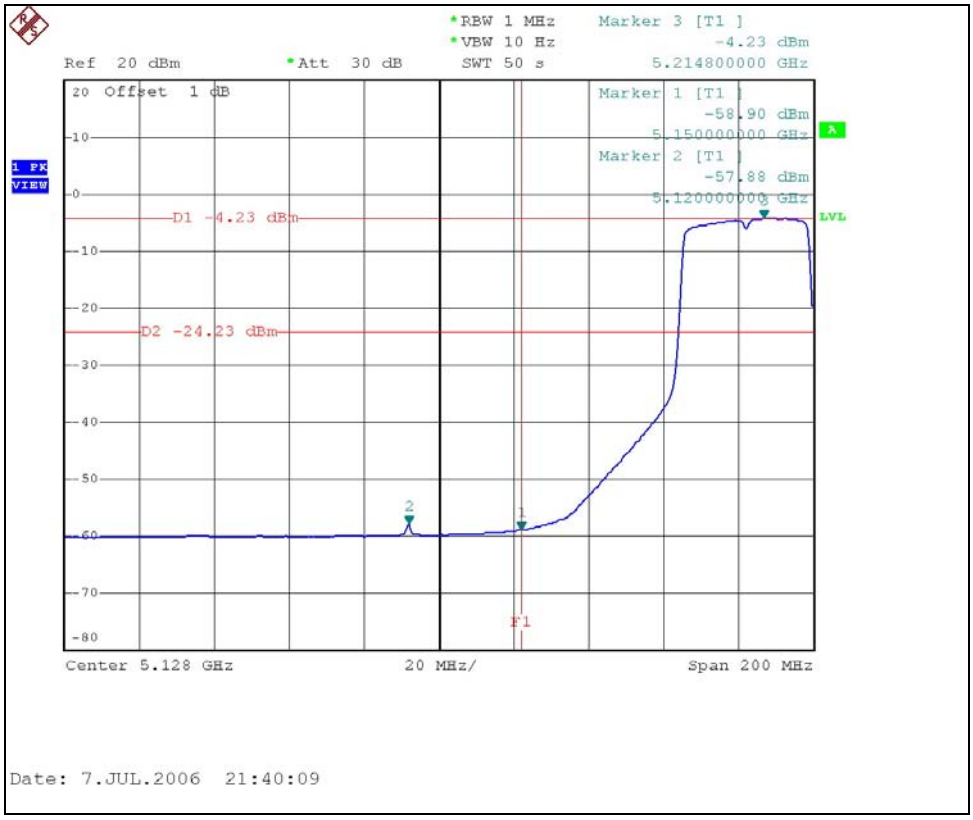
The band edge emission plot on the following second page shows 54.67dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 1 is 98.20dBuV/m (Average), so the maximum field strength in restrict band is 98.20-54.67=43.53dBuV/m which is under 54dBuV/m limit.

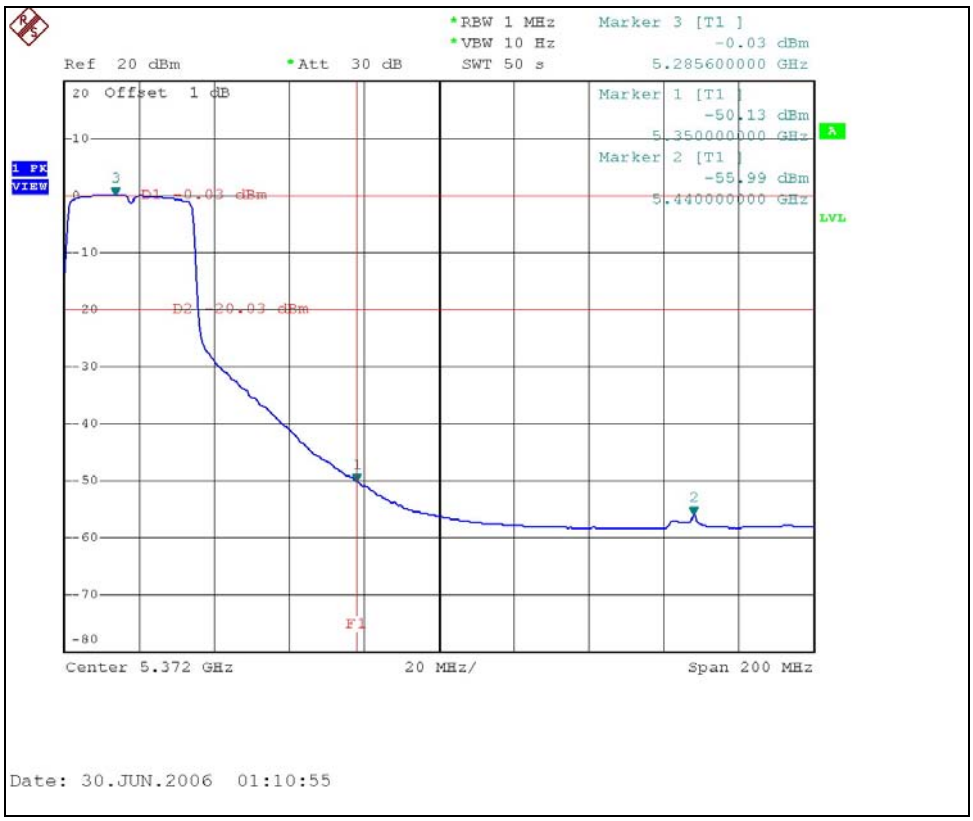
The band edge emission plot on the following second page shows 50.10dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 3 is 102.2dBuV/m (Average), so the maximum field strength in restrict band is 102.2-50.10=52.10dBuV/m which is under 54dBuV/m limit.

802.11a Turbo OFDM modulation

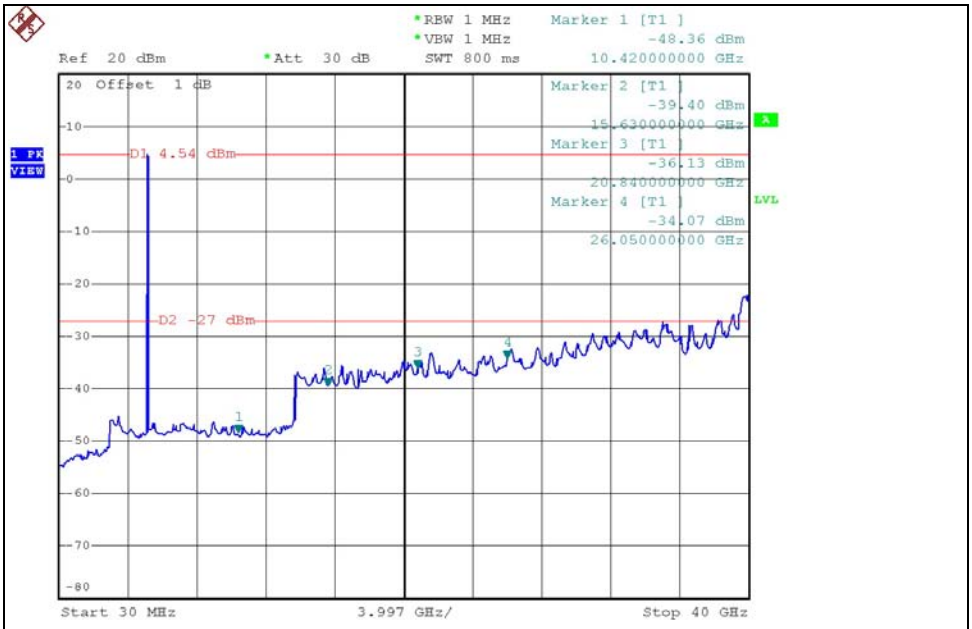




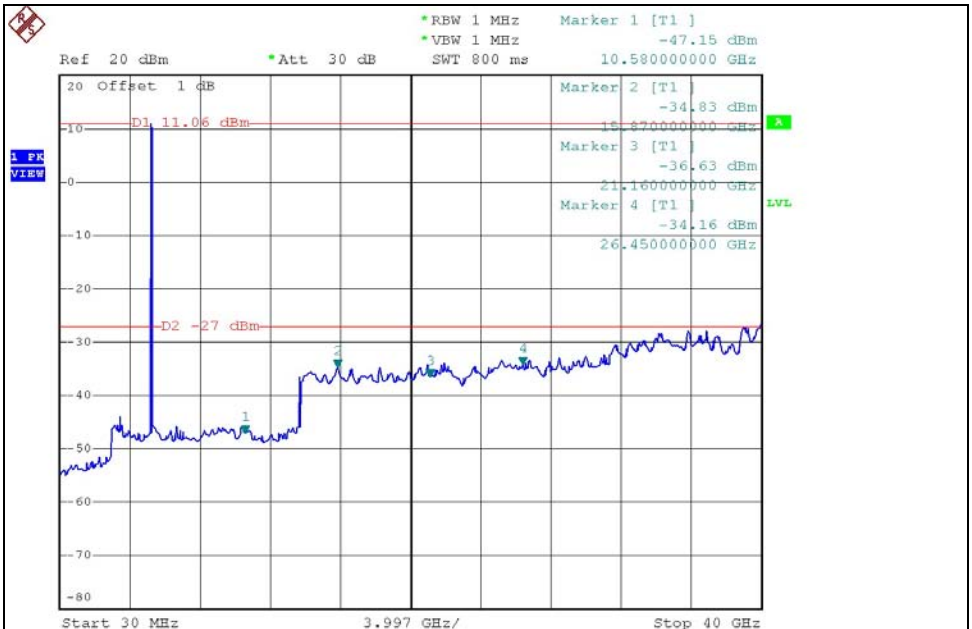

RBW 1 MHz
VBW 10 Hz
SWT 50 s
Marker 3 [T1]
-4.23 dBm
5.214800000 GHz
Ref 20 dBm
Att 30 dB
20 Offset 1 dB
Marker 1 [T1]
-58.90 dBm
5.150000000 GHz
Marker 2 [T1]
-57.88 dBm
5.120000000 GHz
D1 -4.23 dBm
D2 -24.23 dBm
LVL
1 PK VIEW
Center 5.128 GHz
20 MHz/
Span 200 MHz
Date: 7.JUL.2006 21:40:09


RBW 1 MHz
VBW 10 Hz
SWT 50 s
Marker 3 [T1]
-0.03 dBm
5.285600000 GHz
Ref 20 dBm
Att 30 dB
20 Offset 1 dB
Marker 1 [T1]
-50.13 dBm
5.350000000 GHz
Marker 2 [T1]
-55.99 dBm
5.440000000 GHz
D1 -0.03 dBm
D2 -20.03 dBm
LVL
1 PK VIEW
Center 5.372 GHz
20 MHz/
Span 200 MHz
Date: 30.JUN.2006 01:10:55

CH 1


RBW 1 MHz
VBW 1 MHz
Ref 20 dBm
Att 30 dB
SWT 800 ms
Marker 1 [T1]
-48.36 dBm
10.420000000 GHz
Marker 2 [T1]
-39.40 dBm
15.630000000 GHz
Marker 3 [T1]
-36.13 dBm
20.840000000 GHz
Marker 4 [T1]
-34.07 dBm
26.050000000 GHz
20 Offset 1 dB
D1 4.54 dBm
D2 -27 dBm
Start 30 MHz
3.997 GHz/
Stop 40 GHz
Date: 8.JUL.2006 01:54:19

CH 3


RBW 1 MHz
VBW 1 MHz
Ref 20 dBm
Att 30 dB
SWT 800 ms
Marker 1 [T1]
-47.15 dBm
10.580000000 GHz
Marker 2 [T1]
-34.83 dBm
Marker 3 [T1]
-36.63 dBm
21.160000000 GHz
Marker 4 [T1]
-34.16 dBm
26.450000000 GHz
20 Offset 1 dB
D1 11.06 dBm
D2 -27 dBm
Start 30 MHz
3.997 GHz/
Stop 40 GHz
PN1
Date: 10.JUL.2006 09:20:10

4.7.5 TEST RESULTS –ANTENNA 2

For signals in the restricted bands above and below the 5.15 ~ 5.35GHz allocated band a measurement was made of the amplitude of the spurious emissions with respect to the intentional signals. The relative amplitude, in dBc, was applied to the average and peak filed strength of the intentional signal made on the OATS to calculate the field strength of the unintentional signals.

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

802.11a OFDM modulation

NOTE (Peak):

The band edge emission plot on the following first page shows 52.26dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 8 is 113.4dBuV/m (Peak), so the maximum field strength in restrict band is 113.4-52.26=61.14dBuV/m which is under 74dBuV/m limit.

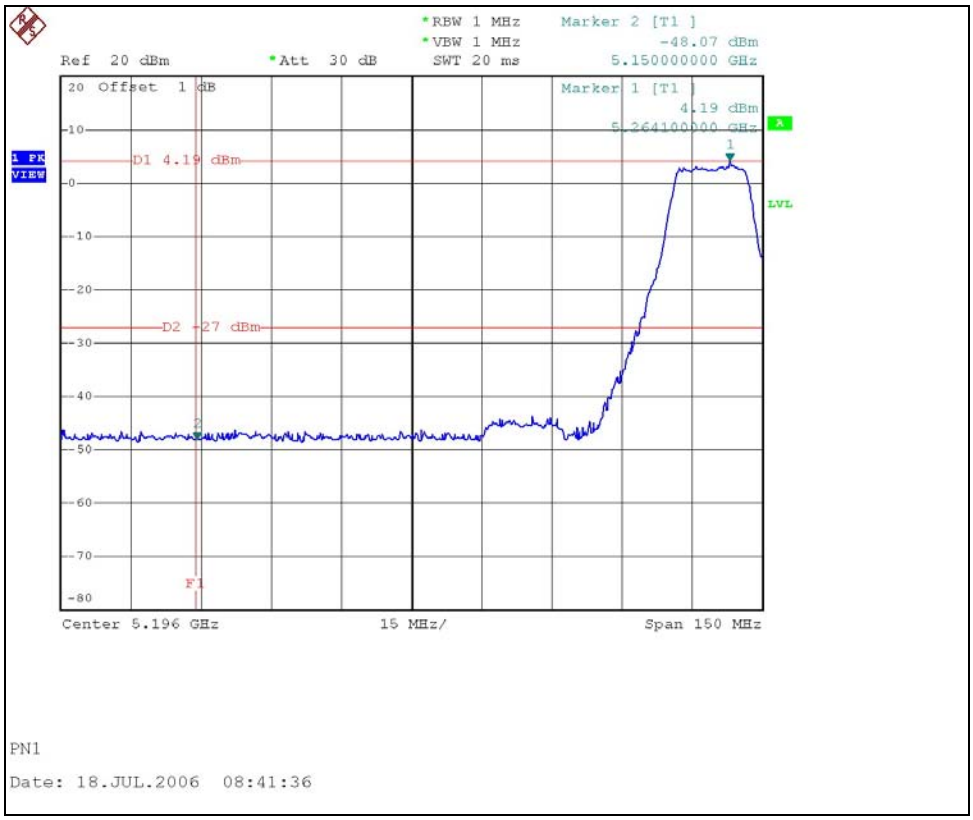
The band edge emission plot on the following first page shows 51.93dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 8 is 113.9dBuV/m (Peak), so the maximum field strength in restrict band is 113.9-51.93=61.97dBuV/m which is under 74dBuV/m limit.

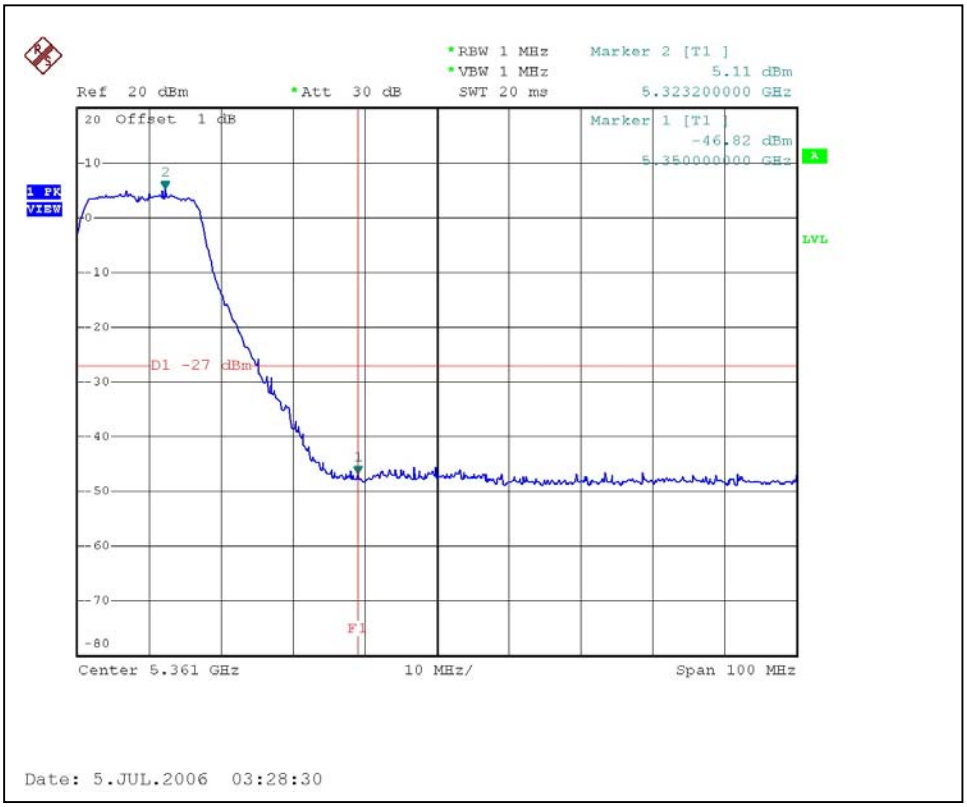
NOTE (Average):

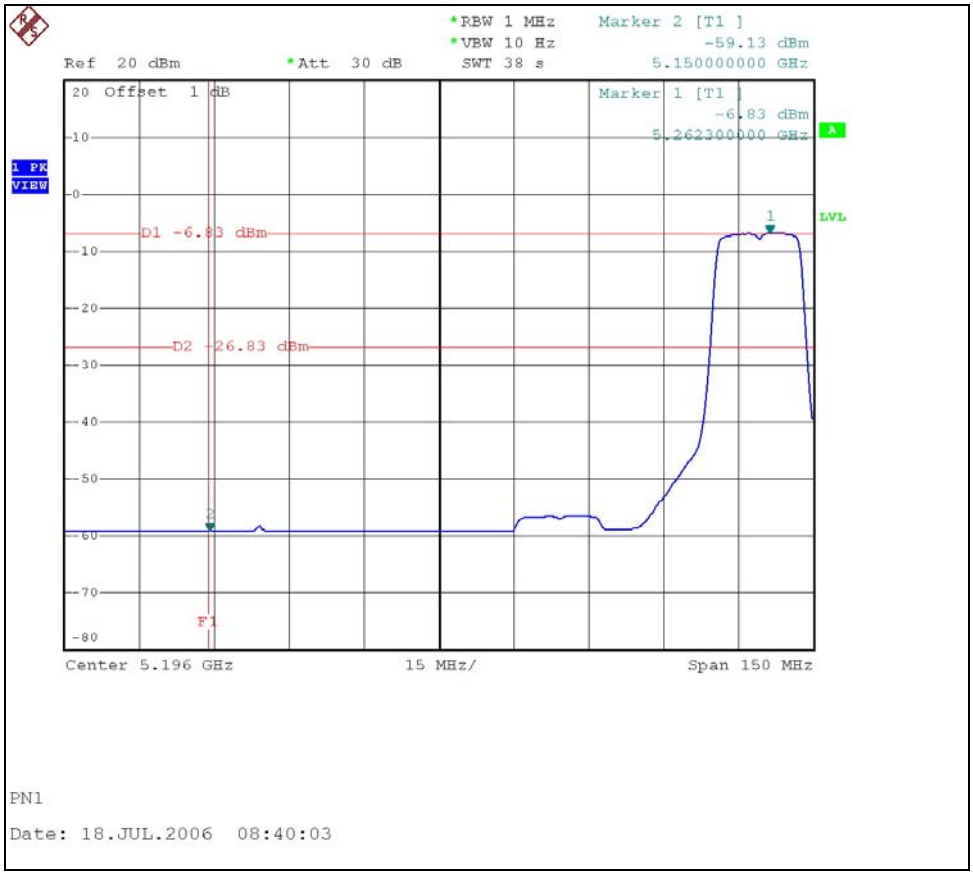
The band edge emission plot on the following second page shows 52.30dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 8 is 103.0dBuV/m (Average), so the maximum field strength in restrict band is 103.0-52.30=50.70dBuV/m which is under 54dBuV/m limit.

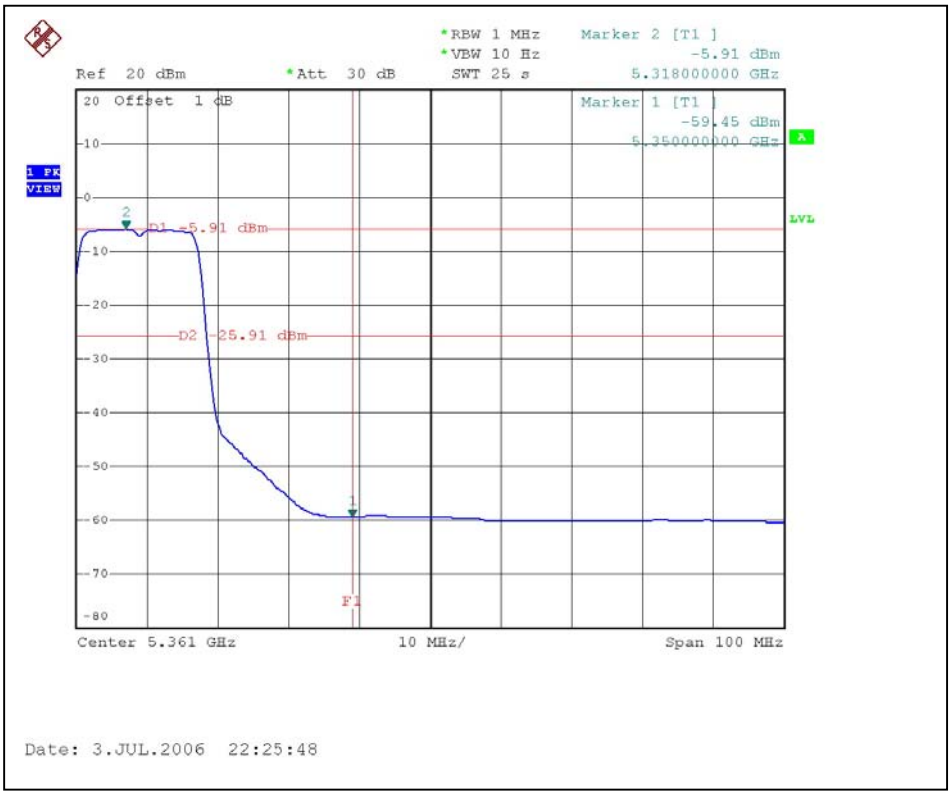
The band edge emission plot on the following second page shows 53.54dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 8 is 103.9dBuV/m (Average), so the maximum field strength in restrict band is 103.9-53.54=50.36dBuV/m which is under 54dBuV/m limit.

802.11a OFDM modulation

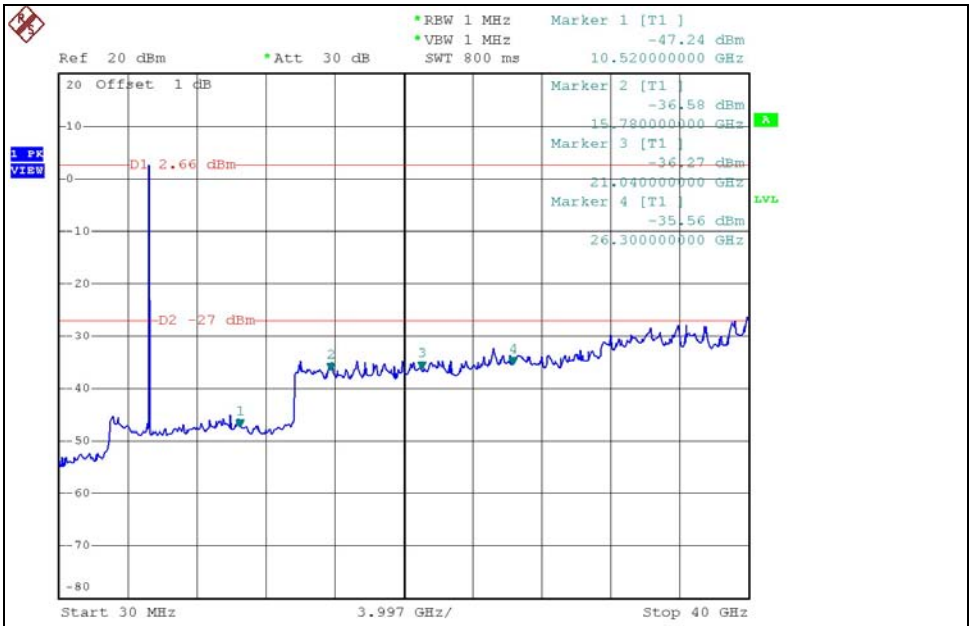





*RBW 1 MHz
*VBW 10 Hz
SWT 38 s
Marker 2 [T1]
-59.13 dBm
5.150000000 GHz
Ref 20 dBm
*Att 30 dB
20 Offset 1 dB
Marker 1 [T1]
-6.83 dBm
5.262300000 GHz
1 PK VIEW
A
LVL
D1 -6.83 dBm
D2 -26.83 dBm
F1
Center 5.196 GHz
15 MHz/
Span 150 MHz
PN1
Date: 18.JUL.2006 08:40:03


*RBW 1 MHz
*VBW 10 Hz
SWT 25 s
Marker 2 [T1]
-5.91 dBm
5.318000000 GHz
Ref 20 dBm
*Att 30 dB
20 Offset 1 dB
Marker 1 [T1]
-59.45 dBm
5.350000000 GHz
1 PK VIEW
A
LVL
D1 -5.91 dBm
D2 -25.91 dBm
F1
Center 5.361 GHz
10 MHz/
Span 100 MHz
Date: 3.JUL.2006 22:25:48

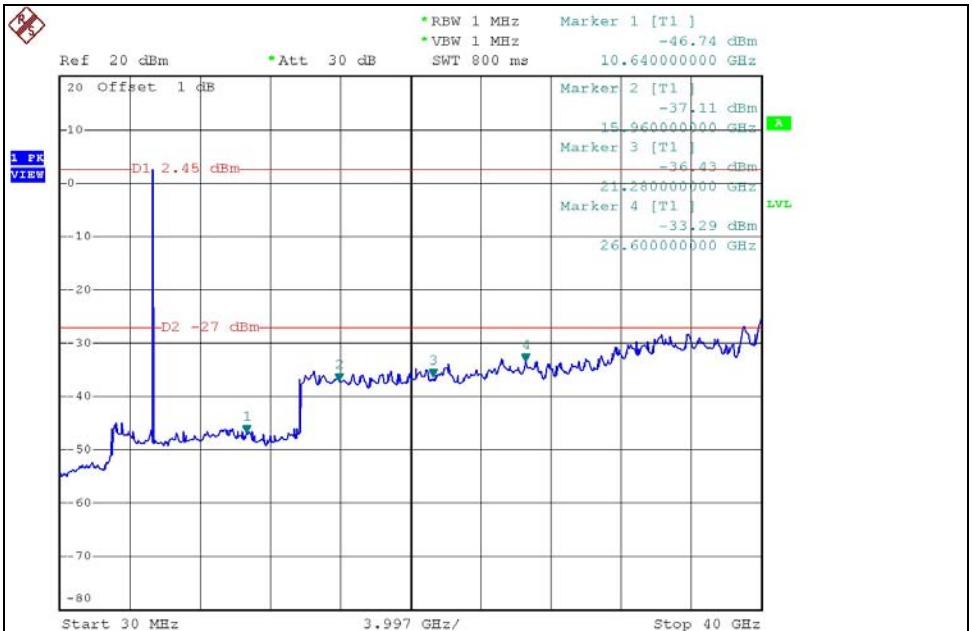
CH 5



PN1

Date: 10.JUL.2006 09:17:43

CH 8



PN1

Date: 10.JUL.2006 09:13:54

802.11a Turbo OFDM modulation

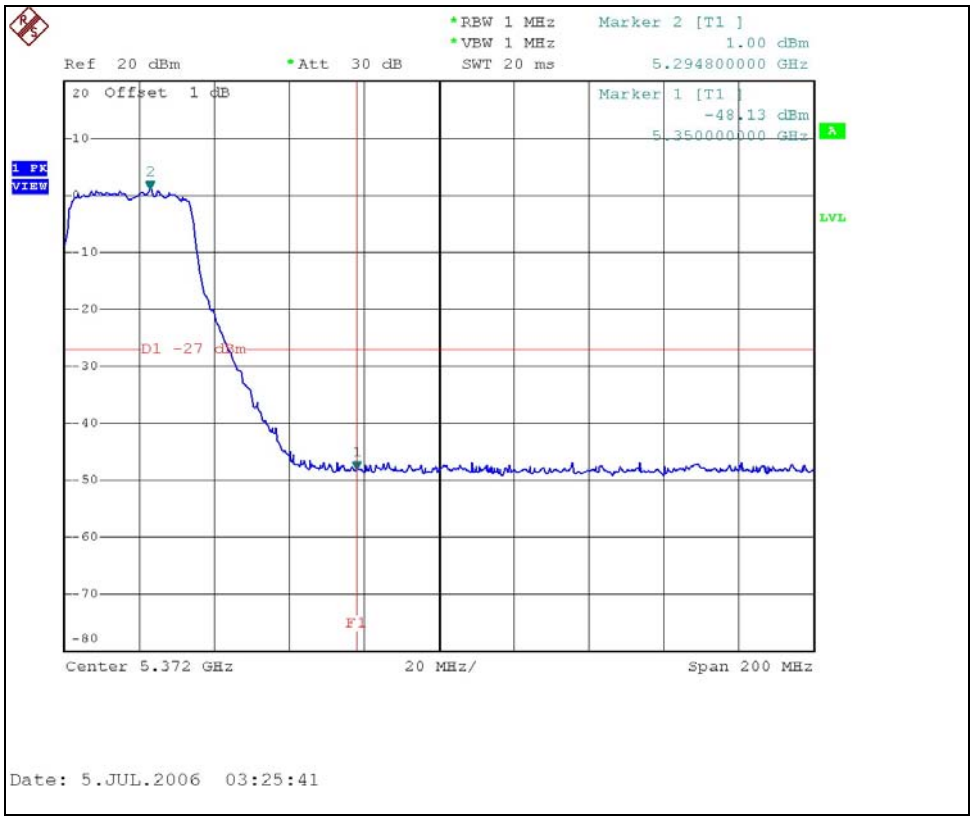
NOTE (Peak):

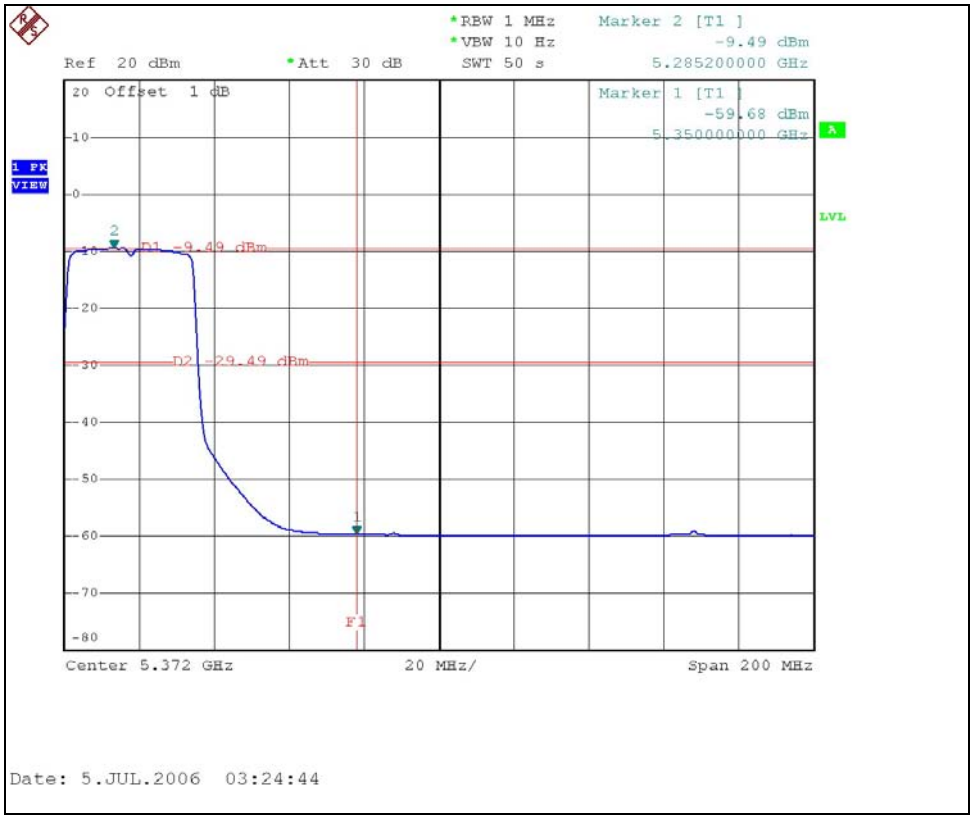
The band edge emission plot on the following first page shows 49.13dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 3 is 110.6dBuV/m (Peak), so the maximum field strength in restrict band is 110.6-49.13=61.47dBuV/m which is under 74dBuV/m limit.

NOTE (Average):

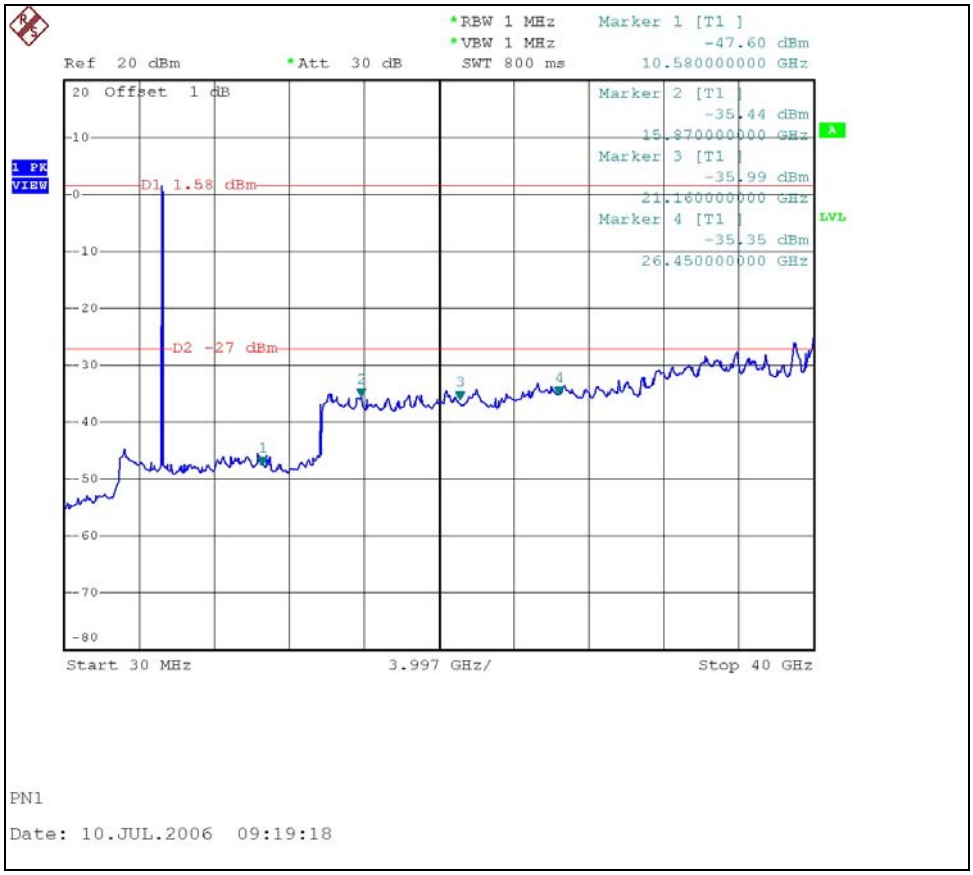
The band edge emission plot on the following second page shows 50.19dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 3 is 99.9dBuV/m (Average), so the maximum field strength in restrict band is 99.9-50.19=49.71dBuV/m which is under 54dBuV/m limit.

802.11a Turbo OFDM modulation




RBW 1 MHz
VBW 10 Hz
SWT 50 s
Marker 2 [T1]
-9.49 dBm
5.285200000 GHz
Ref 20 dBm
Att 30 dB
Offset 1 dB
Marker 1 [T1]
-59.68 dBm
5.350000000 GHz
1 PK VIEW
LVL
D1 -9.49 dBm
D2 -29.49 dBm
Center 5.372 GHz
20 MHz/
Span 200 MHz
Date: 5.JUL.2006 03:24:44

CH 3


*RBW 1 MHz
*VBW 1 MHz
SWT 800 ms
Marker 1 [T1]
-47.60 dBm
10.580000000 GHz
Ref 20 dBm
*Att 30 dB
20 Offset 1 dB
Marker 2 [T1]
-35.44 dBm
15.870000000 GHz
Marker 3 [T1]
-35.99 dBm
21.160000000 GHz
Marker 4 [T1]
-35.35 dBm
26.450000000 GHz
1 PK VIEW
D1 1.58 dBm
D2 -27 dBm
A
LVL
Start 30 MHz
3.997 GHz/
Stop 40 GHz
PN1
Date: 10.JUL.2006 09:19:18

4.8 ANTENNA REQUIREMENT

4.8.1 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 15.407(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.

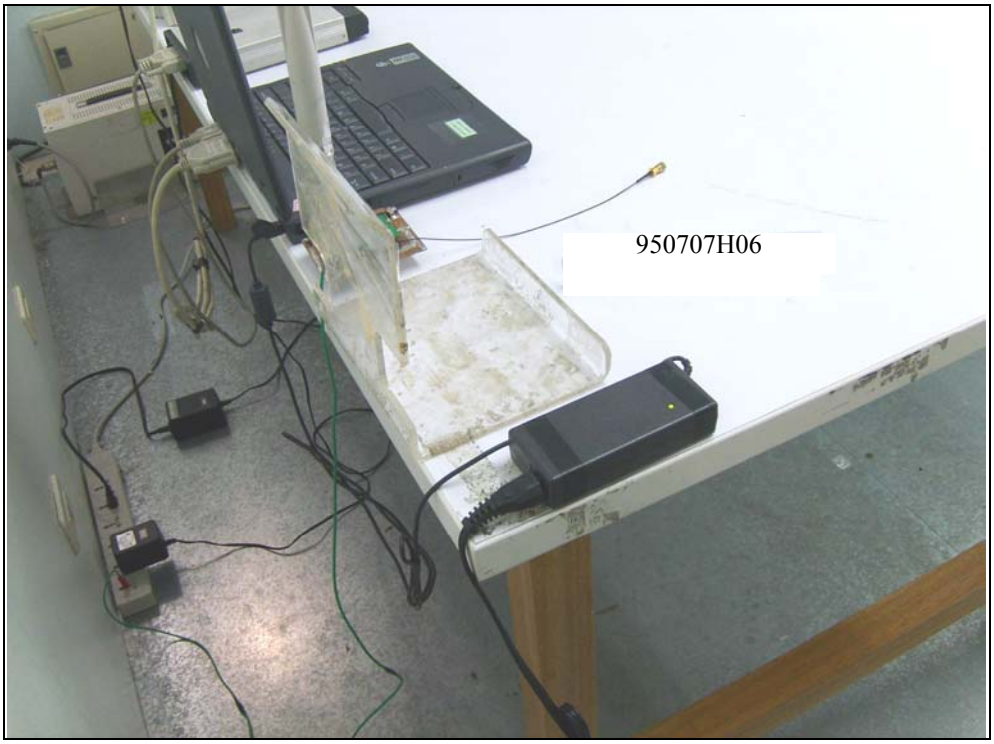
4.8.2 ANTENNA CONNECTED CONSTRUCTION

The antennas used in this product are as following:

No.	Model No.	Gain (dBi)	Cable Loss (dB)	Net Gain (dB)	Antenna Type	Connector
1	SAA04-220080	5	1.8	3.2	Dipole	RP-N plug
2	ANT70-1800	18	2.96	15.04	Panel	N Jack

5. PHOTOGRAPHS OF THE TEST CONFIGURATION

CONDUCTED EMISSION TEST



RADIATED EMISSION TEST (With Antenna 1)

RADIATED EMISSION TEST (With Antenna 2)

6. 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.