

FCC TEST REPORT (15.407)

REPORT NO.: RF940510L04

MODEL NO.: 600L

RECEIVED: May 10, 2005

TESTED: May 20 ~ 21, 2005

ISSUED: May 24, 2005

APPLICANT: ELITEGROUP COMPUTER SYSTEMS CO., LTD.

ADDRESS: 2F. No. 240, Sec. 1, Nei Hu Road, Taipei, Taiwan
114, R.O.C

ISSUED BY: Advance Data Technology Corporation

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

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

This test report consists of 56 pages in total. It may be duplicated completely for legal use with the approval of the applicant. It should not be reproduced except in full, without the written approval of our laboratory. The client should not use it to claim product endorsement by CNLA, A2LA or any government agencies. The test results in the report only apply to the tested sample.



0528
ILAC MRA



No. 2177-01

Table of Contents

1.	CERTIFICATION	4
2.	SUMMARY OF TEST RESULTS	5
2.1	MEASUREMENT UNCERTAINTY	6
3.	GENERAL INFORMATION.....	7
3.1	GENERAL DESCRIPTION OF EUT	7
3.2	DESCRIPTION OF TEST MODES.....	8
3.2.1	CONFIGURATION OF SYSTEM UNDER TEST	9
3.2.2	TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL:	10
3.3	GENERAL DESCRIPTION OF APPLIED STANDARDS	12
3.4	DESCRIPTION OF SUPPORT UNITS	12
4.	TEST TYPES AND RESULTS (5150 ~ 5350MHz BAND)	13
4.1	CONDUCTED EMISSION MEASUREMENT	13
4.1.1	LIMITS OF CONDUCTED EMISSION MEASUREMENT.....	13
4.1.2	TEST INSTRUMENTS.....	13
4.1.3	TEST PROCEDURES	14
4.1.4	DEVIATION FROM TEST STANDARD	14
4.1.5	TEST SETUP	15
4.1.6	EUT OPERATING CONDITIONS	15
4.1.7	TEST RESULTS	15
4.2	RADIATED EMISSION MEASUREMENT	18
4.2.1	LIMITS OF RADIATED EMISSION MEASUREMENT.....	18
4.2.2	LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS.....	19
4.2.3	TEST INSTRUMENTS.....	20
4.2.4	TEST PROCEDURES	21
4.2.5	DEVIATION FROM TEST STANDARD	21
4.2.6	TEST SETUP	22
4.2.7	EUT OPERATING CONDITION	22
4.2.8	TEST RESULTS	23
4.3	PEAK TRANSMIT POWER MEASUREMENT	28
4.3.1	LIMITS OF PEAK TRANSMIT POWER MEASUREMENT.....	28
4.3.2	TEST INSTRUMENTS.....	28
4.3.3	TEST PROCEDURE.....	29
4.3.4	DEVIATION FROM TEST STANDARD	29
4.3.5	TEST SETUP	29
4.3.6	EUT OPERATING CONDITIONS	29
4.3.7	TEST RESULTS	30
4.4	PEAK POWER EXCURSION MEASUREMENT	35
4.4.1	LIMITS OF PEAK POWER EXCURSION MEASUREMENT.....	35

4.4.2	TEST INSTRUMENTS.....	35
4.4.3	TEST PROCEDURE.....	36
4.4.4	DEVIATION FROM TEST STANDARD	36
4.4.5	TEST SETUP	36
4.4.6	EUT OPERATING CONDITIONS	36
4.4.7	TEST RESULTS	37
4.5	PEAK POWER SPECTRAL DENSITY MEASUREMENT	40
4.5.1	LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT.....	40
4.5.2	TEST INSTRUMENTS.....	40
4.5.3	TEST PROCEDURES	41
4.5.4	DEVIATION FROM TEST STANDARD	41
4.5.5	TEST SETUP	41
4.5.6	EUT OPERATING CONDITIONS	41
4.5.7	TEST RESULTS	42
4.6	FREQUENCY STABILITY	45
4.6.1	LIMITS OF FREQUENCY STABILITY MEASUREMENT	45
4.6.2	TEST INSTRUMENTS.....	45
4.6.3	TEST PROCEDURE.....	45
4.6.4	DEVIATION FROM TEST STANDARD	45
4.6.5	TEST SETUP	46
4.6.6	EUT OPERATING CONDITION	46
4.6.7	TEST RESULTS	47
4.7	BAND EDGES MEASUREMENT	48
4.7.1	TEST INSTRUMENTS.....	48
4.7.2	TEST PROCEDURE.....	48
4.7.3	EUT OPERATING CONDITION	48
4.7.4	TEST RESULTS	48
4.8	ANTENNA REQUIREMENT	53
4.8.1	STANDARD APPLICABLE	53
4.8.2	ANTENNA CONNECTED CONSTRUCTION.....	53
5.	PHOTOGRAPHS OF THE TEST CONFIGURATION.....	54
6.	INFORMATION ON THE TESTING LABORATORIES	56

1. CERTIFICATION

PRODUCT: Notebook
BRAND NAME: ECS
MODEL NO.: 600L
TEST SAMPLE: ENGINEERING SAMPLE
TESTED: May 20 ~ 21, 2005
APPLICANT: ELITEGROUP COMPUTER SYSTEMS CO., LTD.
STANDARDS: FCC Part 15, Subpart E (Section 15.407)
ANSI C63.4-2003

The above equipment has been tested by **Advance Data Technology Corporation**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY : Jessie Wang, **DATE:** May 24, 2005
(Jessie Wang)

TECHNICAL ACCEPTANCE : Gary Chang, **DATE:** May 24, 2005
Responsible for RF (Gary Chang)

APPROVED BY : Cody Chang, **DATE:** May 24, 2005
(Cody Chang,
Deputy Manager)

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 15, Subpart 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 -14.71dB at 0.482MHz
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 -7.49dB at 206.89MHz
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.

2.1 MEASUREMENT UNCERTAINTY

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

Measurement	Frequency	Uncertainty
Conducted emissions	9kHz~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	3.55 dB
	200MHz ~1000MHz	3.58 dB
	1GHz ~ 18GHz	1.10 dB
	18GHz ~ 40GHz	0.91 dB

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	Notebook
MODEL NO.	600L
POWER SUPPLY	19Vdc from AC adapter
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: 5.15 ~ 5.35GHz and 5.725 ~ 5.850GHz
NUMBER OF CHANNEL	802.11b & 802.11g: 11 802.11a: 13
CHANNEL SPACING	802.11b & 802.11g: 5MHz 802.11a: 20MHz
OUTPUT POWER	802.11b: 53.088mW 802.11g: 35.156mW 802.11a: 37.411mW (5.150 ~ 5.350GHz Band) 802.11a: 40.087mW (5.725 ~ 5.850GHz Band)
DATA CABLE	NA
ANTENNA TYPE	PIFA antenna with -3.37dBi gain (for 2.4GHz) PIFA antenna with -4.39dBi gain (for 5.0GHz)
I/O PORTS	Refer to user's manual
ASSOCIATED DEVICES	NA

NOTE:

1. The EUT was tested with the following adapter.

BRAND	LITEON
MODEL	PA-1700-02
INPUT	100-240Vac, 50-60Hz, 1.8A
OUTPUT	19Vdc, 3.42A
POWER LINE	DC 1.6 m non-shielded cable with 1 core AC 1.6 m non-shielded cable without core

2. The EUT operates in both the 5GHz and 2.4GHz Bands and compatibility with 802.11a and 802.11b, 802.11g technology.
3. 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.

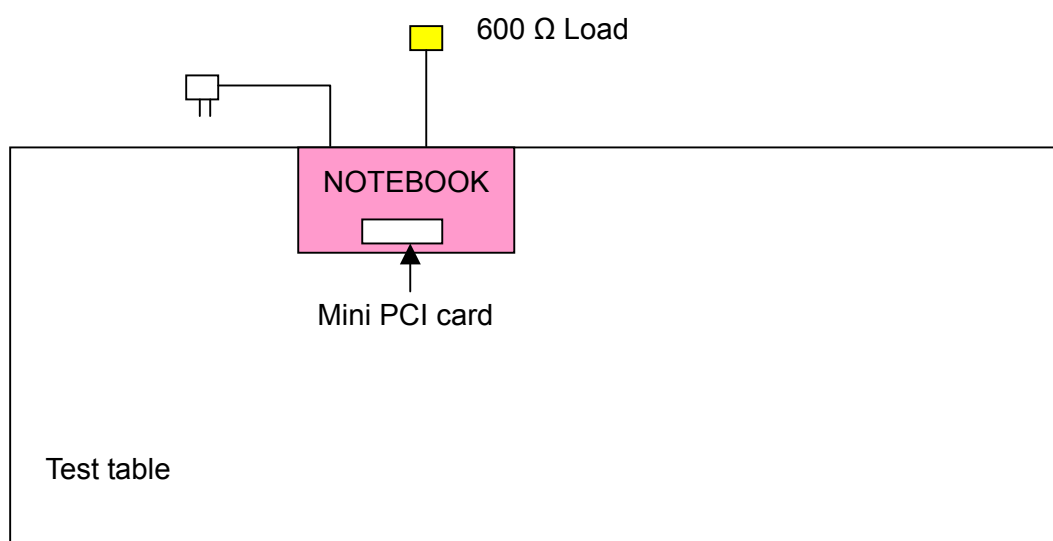
3.2 DESCRIPTION OF TEST MODES

Operated in 5150 ~ 5250MHz, 5250MHz ~ 5350MHz bands:

Eight channels are provided to this EUT.

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

3.2.1 CONFIGURATION OF SYSTEM UNDER TEST



3.2.2 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)
802.11a	1 to 8	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)
802.11a	1 to 8	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)
802.11a	1 to 8	1, 4, 5, 8	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)
802.11a	1 to 8	1, 8	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)
802.11a	1 to 8	1, 4, 5, 8	OFDM	BPSK	6

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is an Notebook. 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.

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	600Ω LOAD	NA	NA	NA	NA

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).

4. TEST TYPES AND RESULTS (5150 ~ 5350MHz 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	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

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

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS30	100291	Nov. 16, 2005
RF signal cable Woken	5D-FB	Cable-HYC01-01	Jan. 09, 2006
LISN ROHDE & SCHWARZ	ESH3-Z5	100312	Feb. 15, 2006
LISN ROHDE & SCHWARZ	ESH2-Z5	100104	Feb. 15, 2006
Software ADT	ADT_Cond_V3	NA	NA

- NOTE:**
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. The test was performed in HwaYa Shielded Room 1.
 3. The VCCI Site Registration No. is C-2040.



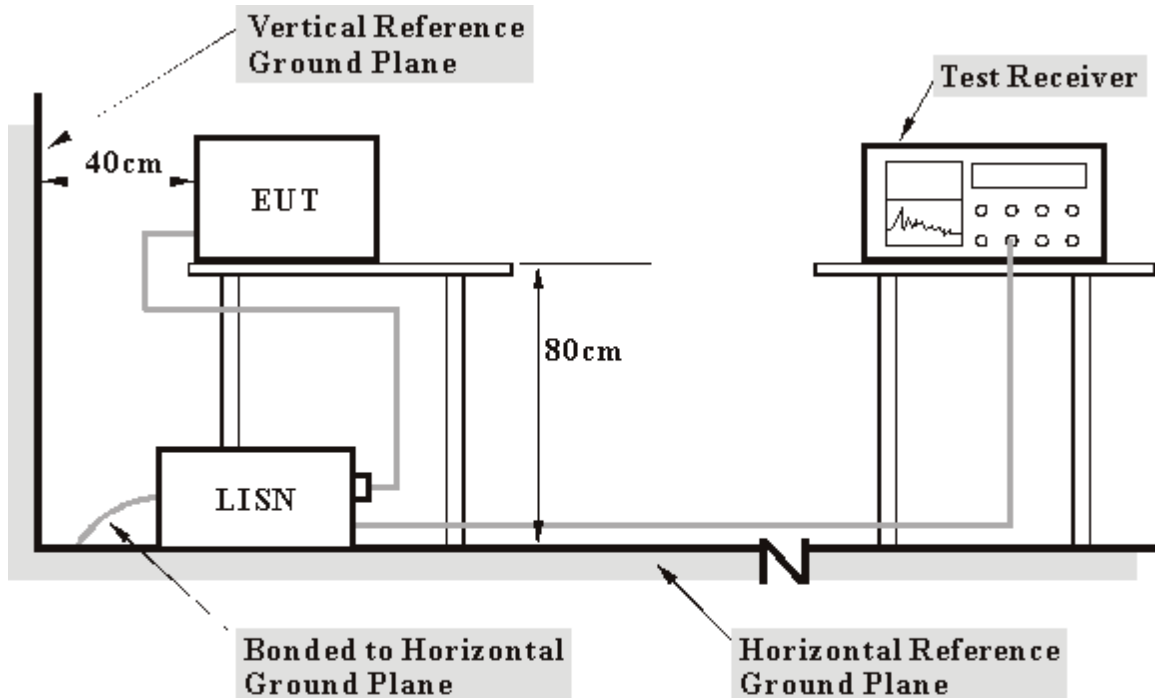
4.1.3 TEST PROCEDURES

- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



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

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

4.1.6 EUT OPERATING CONDITIONS

- a. Placed the EUT on a testing table.
- b. The EUT ran a test program (provided by manufacturer) to enable all functions under transmission/receiving condition continuously at specific channel frequency.
- c. The notebook system sent "H" messages to its screen.

4.1.7 TEST RESULTS

Conducted Worst-Case Data

EUT	Notebook	MEASUREMENT DETAIL	
MODEL	600L	PHASE	Line 1
CHANNEL	Channel 3	6dB BANDWIDTH	9 kHz
MODULATION TYPE	BPSK	ENVIRONMENTAL CONDITIONS	23deg. C, 65%RH, 991hPa
TRANSFER RATE	6Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Gary Chang		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.11	42.20	-	42.31	-	66.00	-	-23.69	-
2	0.482	0.13	41.47	41.01	41.60	41.14	56.30	46.30	-14.71	-5.17
3	0.826	0.20	38.88	38.30	39.08	38.50	56.00	46.00	-16.92	-7.50
4	1.172	0.24	36.24	38.30	36.48	34.51	56.00	46.00	-19.52	-11.49
5	1.586	0.25	34.96	-	35.21	-	56.00	-	-20.79	-
6	10.680	0.54	26.55	-	27.09	-	60.00	-	-32.91	-

REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.

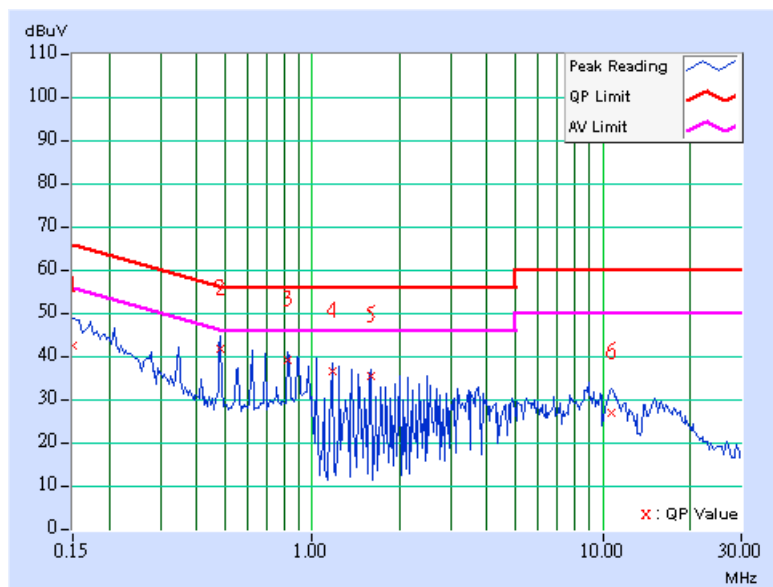
2. "-":N/A.

3. The emission levels of other frequencies were very low against the limit.

4. Margin value = Emission level - Limit value

5. Correction factor = Insertion loss + Cable loss

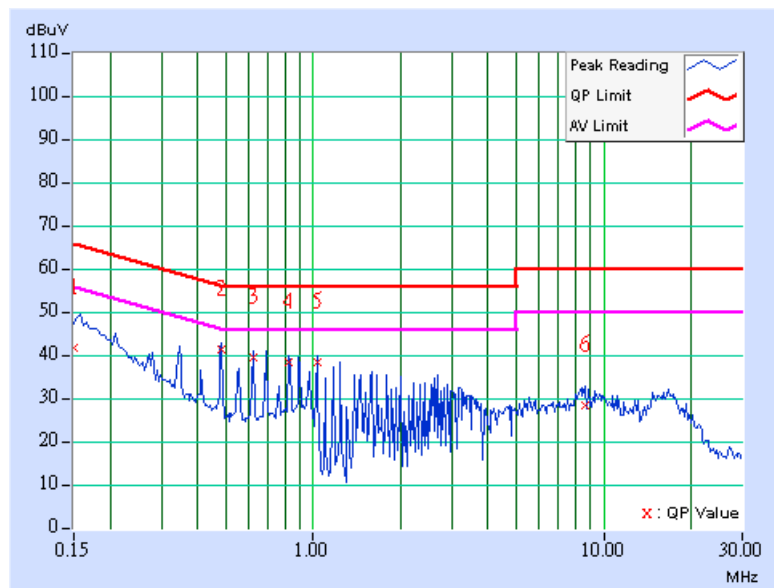
6. Emission Level = Correction Factor + Reading Value.



EUT	Notebook	MEASUREMENT DETAIL	
MODEL	600L	PHASE	Line 2
CHANNEL	Channel 3	6dB BANDWIDTH	9 kHz
MODULATION TYPE	BPSK	ENVIRONMENTAL CONDITIONS	23deg. C, 65%RH, 991hPa
TRANSFER RATE	6Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Gary Chang		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.11	41.37	-	41.48	-	66.00	-	-24.52	-
2	0.482	0.13	41.17	40.75	41.30	40.88	56.30	46.30	-15.01	-5.43
3	0.619	0.16	39.38	38.59	39.54	38.75	56.00	46.00	-16.46	-7.25
4	0.826	0.20	38.18	37.42	38.38	37.62	56.00	46.00	-17.62	-8.38
5	1.035	0.24	38.26	37.69	38.50	37.93	56.00	46.00	-17.50	-8.07
6	8.621	0.43	28.26	-	28.69	-	60.00	-	-31.31	-

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-":N/A.
 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

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



4.2.3 TEST INSTRUMENTS

Test Receiver ROHDE & SCHWARZ	ESI7	100033	Jun. 08, 2005
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100040	Jun. 03, 2005
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Jun. 01, 2005
HORN Antenna SCHWARZBECK	9120D	9120D-408	Jan. 17, 2006
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Jan. 23, 2006
Preamplifier Agilent	8447D	2944A10633	Nov. 09, 2005
Preamplifier Agilent	8449B	3008A01964	Nov. 06, 2005
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	218183/4	Jan. 26, 2006
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	218195/4	Jan. 26, 2006
Software ADT.	ADT_Radiated_V5.14	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA
Turn Table ADT.	TT100.	TT93021703	NA
Turn Table Controller ADT.	SC100.	SC93021703	NA

- NOTE:**
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. The test was performed in HwaYa Chamber 2.
 3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
 4. The IC Site Registration No. is IC4924-3.

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 chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

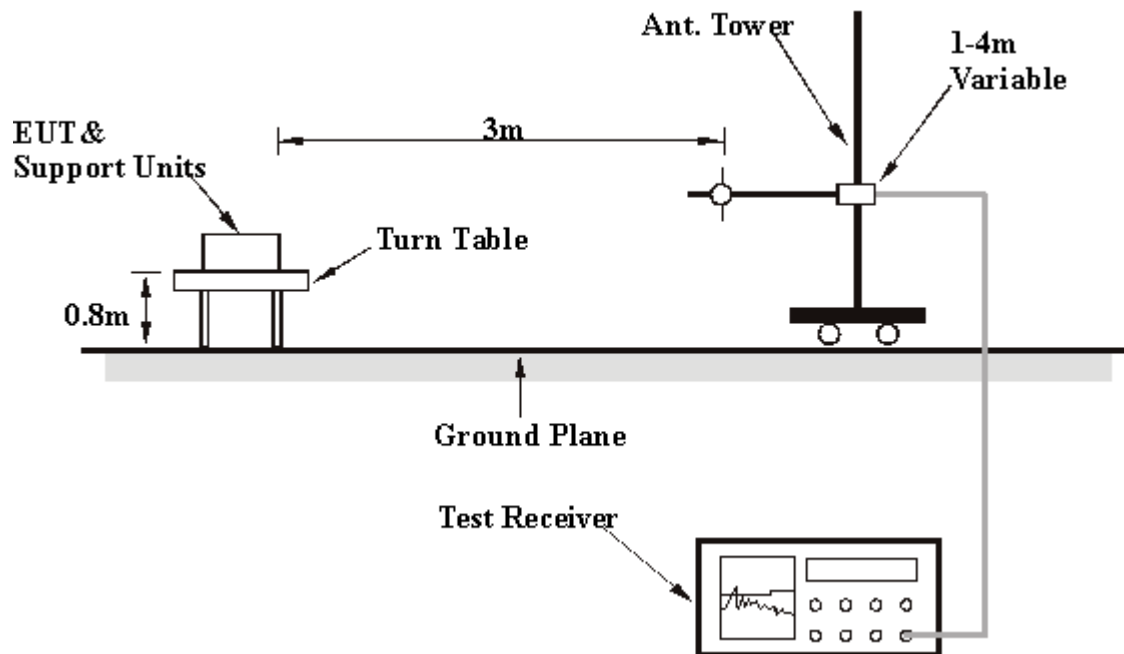
NOTE:

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

Below 1GHz Worst-Case Data

EUT	Notebook	MEASUREMENT DETAIL	
MODEL	600L	FREQUENCY RANGE	Below 1000MHz
CHANNEL	Channel 5	DETECTOR FUNCTION	Quasi-Peak
MODULATION TYPE	BPSK	ENVIRONMENTAL CONDITIONS	22deg. C, 70%RH, 991hPa
TRANSFER RATE	6Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Long Chen		

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	171.90	29.21 QP	43.50	-14.29	1.50 H	280	15.09	14.12
2	206.89	36.01 QP	43.50	-7.49	1.00 H	67	24.00	12.01
3	276.87	32.34 QP	46.00	-13.66	1.50 H	262	17.82	14.52
4	374.07	37.30 QP	46.00	-8.70	1.00 H	175	20.62	16.68
5	667.60	37.08 QP	46.00	-8.92	1.00 H	28	14.57	22.51
6	832.83	32.36 QP	46.00	-13.64	1.25 H	109	7.50	24.86

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	129.14	28.65 QP	43.50	-14.85	1.50 V	208	14.65	14.00
2	206.89	33.33 QP	43.50	-10.17	1.00 V	196	21.31	12.01
3	374.07	35.50 QP	46.00	-10.50	1.25 V	79	18.82	16.68
4	500.42	31.18 QP	46.00	-14.82	1.00 V	61	11.89	19.28
5	667.60	37.23 QP	46.00	-8.77	1.00 V	58	14.71	22.51
6	832.83	35.73 QP	46.00	-10.27	1.00 V	238	10.87	24.86

- 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

EUT	Notebook	MEASUREMENT DETAIL	
MODEL	600L	FREQUENCY RANGE	1 ~ 40 GHz
CHANNEL	Channel 1	DETECTOR FUNCTION	Peak(PK) Average (AV)
MODULATION TYPE	BPSK	ENVIRONMENTAL CONDITIONS	22deg. C, 70%RH, 991hPa
TRANSFER RATE	6Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Long Chen		

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	#5150.00	50.01 PK	74.00	-23.99	1.46 H	352	12.53	37.48
1	#5150.00	40.69 AV	54.00	-13.31	1.46 H	352	3.21	37.48
2	*5180.00	102.20 PK			1.46 H	352	64.70	37.50
2	*5180.00	92.88 AV			1.46 H	352	55.38	37.50
3	10360.00	56.19 PK	68.30	-12.11	1.12 H	56	8.61	47.58

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	#5150.00	50.93 PK	74.00	-23.07	1.17 V	6	13.45	37.48
1	#5150.00	41.60 AV	54.00	-12.40	1.17 V	6	4.12	37.48
2	*5180.00	103.12 PK			1.17 V	6	65.62	37.50
2	*5180.00	93.79 AV			1.17 V	6	56.29	37.50
3	10360.00	57.30 PK	68.30	-11.00	1.25 V	289	9.72	47.58

- 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.

EUT	Notebook	MEASUREMENT DETAIL	
MODEL	600L	FREQUENCY RANGE	1 ~ 40 GHz
CHANNEL	Channel 4	DETECTOR FUNCTION	Peak(PK) Average (AV)
MODULATION TYPE	BPSK	ENVIRONMENTAL CONDITIONS	22deg. C, 70%RH, 991hPa
TRANSFER RATE	6Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Long Chen		

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	*5240.00	102.22 PK			1.14 H	351	64.64	37.58
1	*5240.00	92.45 AV			1.14 H	351	54.87	37.58
2	10480.00	56.63 PK	68.30	-11.67	1.15 H	285	8.77	47.86

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	*5240.00	101.84 PK			1.00 V	8	64.26	37.58
1	*5240.00	92.63 AV			1.00 V	8	55.05	37.58
2	10480.00	58.23 PK	68.30	-10.07	1.15 V	57	10.37	47.86

- 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.

EUT	Notebook	MEASUREMENT DETAIL	
MODEL	600L	FREQUENCY RANGE	1 ~ 40 GHz
CHANNEL	Channel 5	DETECTOR FUNCTION	Peak(PK) Average (AV)
MODULATION TYPE	BPSK	ENVIRONMENTAL CONDITIONS	22deg. C, 70%RH, 991hPa
TRANSFER RATE	6Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Long Chen		

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	*5260.00	101.08 PK			1.26 H	351	63.48	37.60
1	*5260.00	91.70 AV			1.26 H	351	54.10	37.60
2	10520.00	57.34 PK	68.30	-10.96	1.36 H	357	9.42	47.92

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	*5260.00	101.88 PK			1.15 V	5	64.28	37.60
1	*5260.00	92.50 AV			1.15 V	5	54.90	37.60
2	10520.00	58.32 PK	68.30	-9.98	1.14 V	287	10.40	47.92

- 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.

EUT	Notebook	MEASUREMENT DETAIL	
MODEL	600L	FREQUENCY RANGE	1 ~ 40 GHz
CHANNEL	Channel 8	DETECTOR FUNCTION	Peak(PK) Average (AV)
MODULATION TYPE	BPSK	ENVIRONMENTAL CONDITIONS	22deg. C, 70%RH, 991hPa
TRANSFER RATE	6Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Long Chen		

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	*5320.00	100.48 PK			1.22 H	351	62.81	37.67
1	*5320.00	90.87 AV			1.22 H	351	53.20	37.67
2	#5350.00	48.59 PK	74.00	-25.41	1.22 H	351	10.92	37.67
2	#5350.00	38.98 AV	54.00	-15.02	1.22 H	351	1.31	37.67
3	#10640.00	57.47 PK	74.00	-16.53	1.02 H	216	9.53	47.93
3	#10640.00	44.72 AV	54.00	-9.28	1.02 H	216	-3.22	47.93

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	*5320.00	101.11 PK			1.04 V	4	63.44	37.67
1	*5320.00	91.64 AV			1.04 V	4	53.97	37.67
2	#5350.00	49.22 PK	74.00	-24.78	1.04 V	4	11.53	37.69
2	#5350.00	39.75 AV	54.00	-14.25	1.04 V	4	2.06	37.69
3	#10640.00	58.39 PK	74.00	-15.61	1.12 V	37	10.45	47.93
3	#10640.00	46.15 AV	54.00	-7.85	1.12 V	37	-1.79	47.93

- 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	FSEK30	100049	Aug. 12, 2005

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

4.3.3 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 3MHz.
4. Using the spectrum analyzer's channel power measurement function to measure the output power.

NOTE:

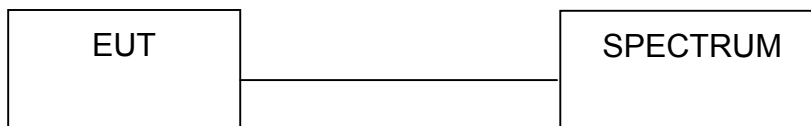
The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

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.

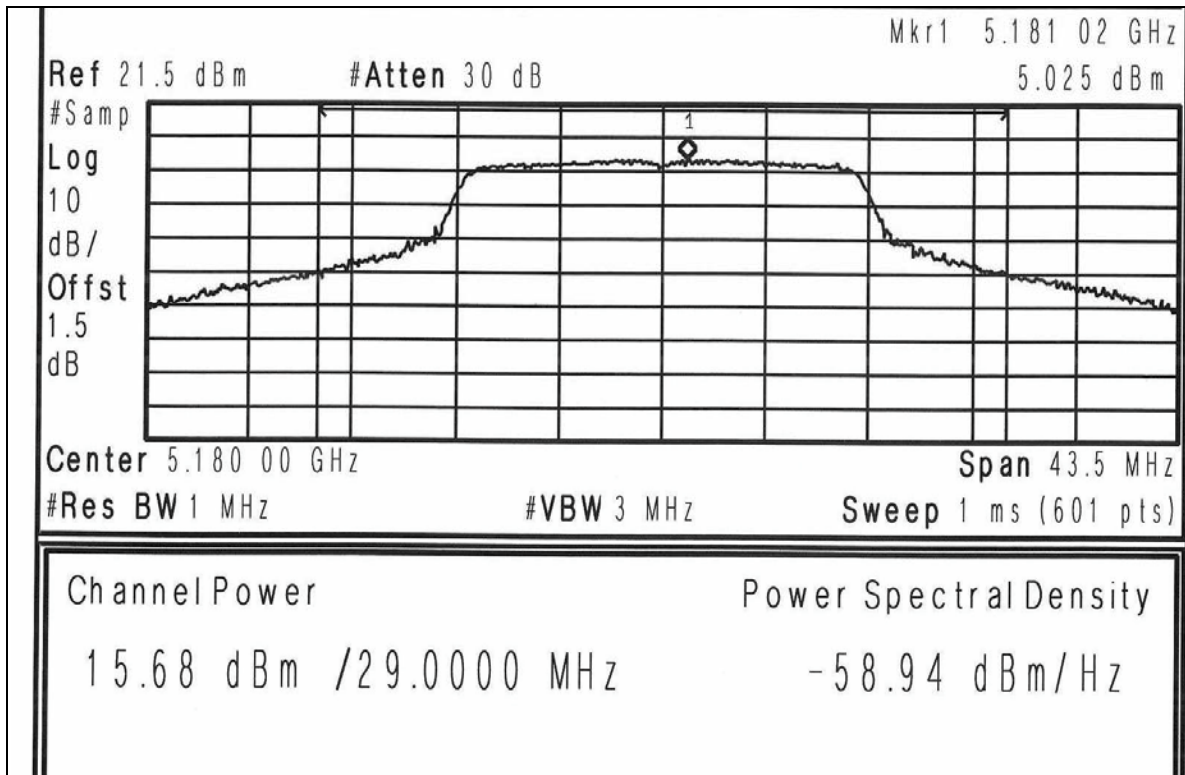
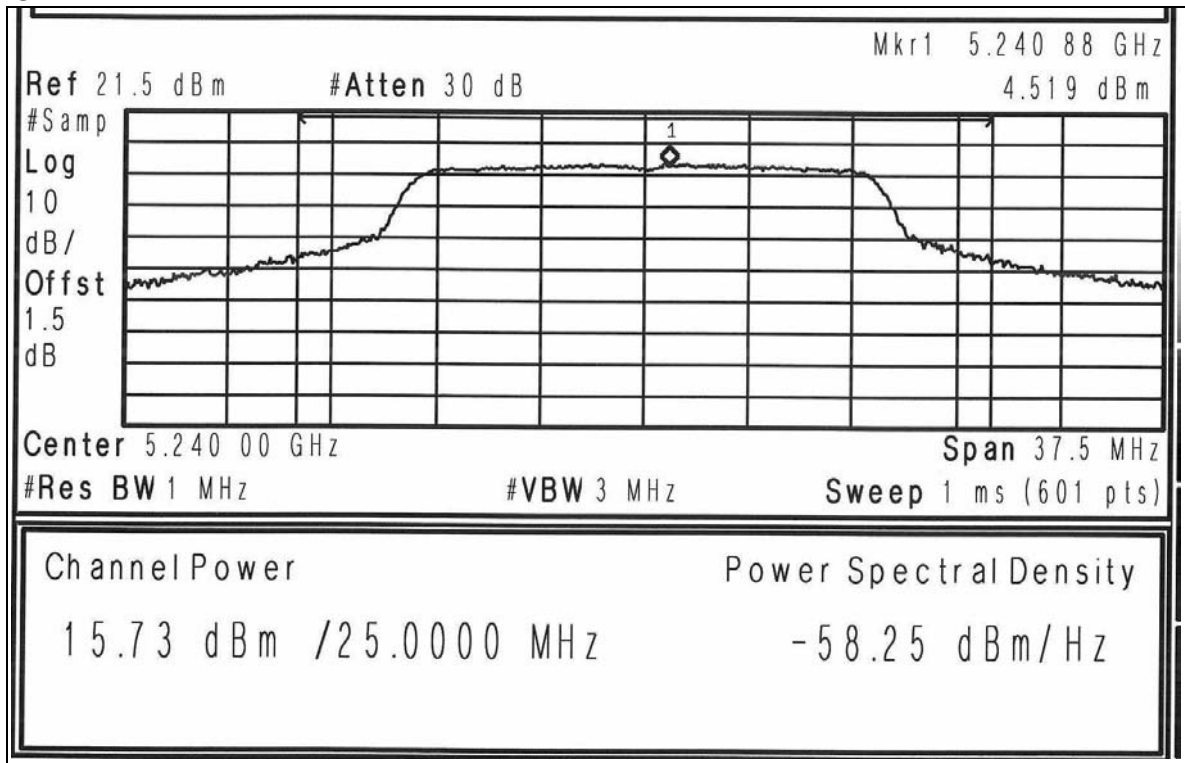
4.3.7 TEST RESULTS

802.11a OFDM modulation

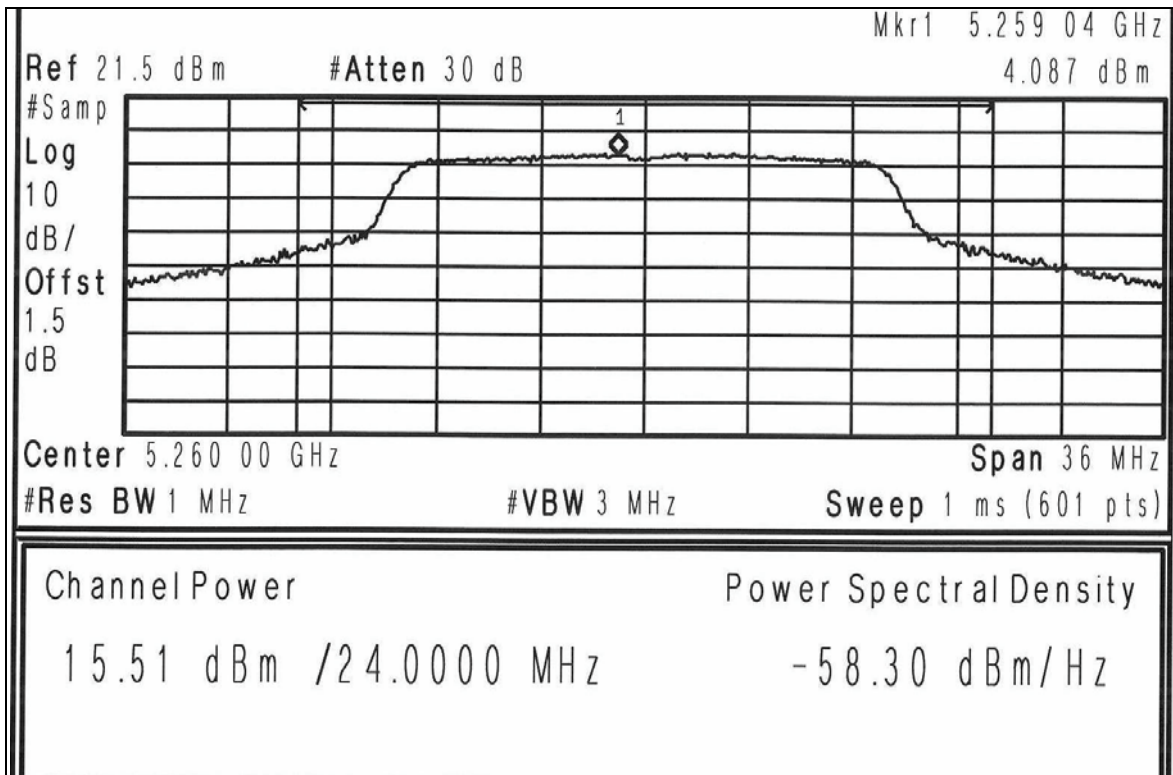
EUT	Notebook	MODEL	600L
MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	22deg.C, 55%RH, 991hPa
TESTED BY	Gary Chang		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	26dBc Occupied Bandwidth (MHz)	PASS/FAIL
1	5180	36.983	15.68	17.00	28.16	PASS
4	5240	37.411	15.73	17.00	24.40	PASS
5	5260	35.563	15.51	24.00	23.92	PASS
8	5320	33.497	15.25	24.00	23.60	PASS

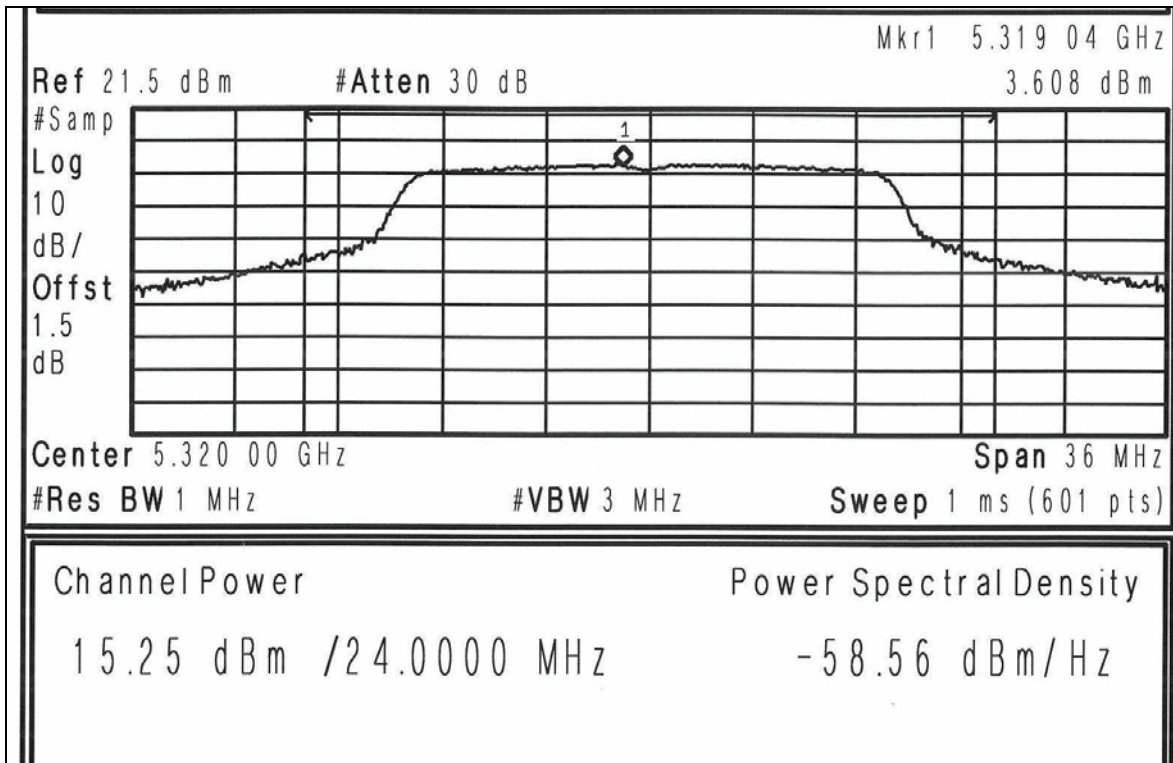
NOTE: The 26dBc Occupied Bandwidth plot, please refer to the following pages.

Peak Power Output:
CH1**CH4**

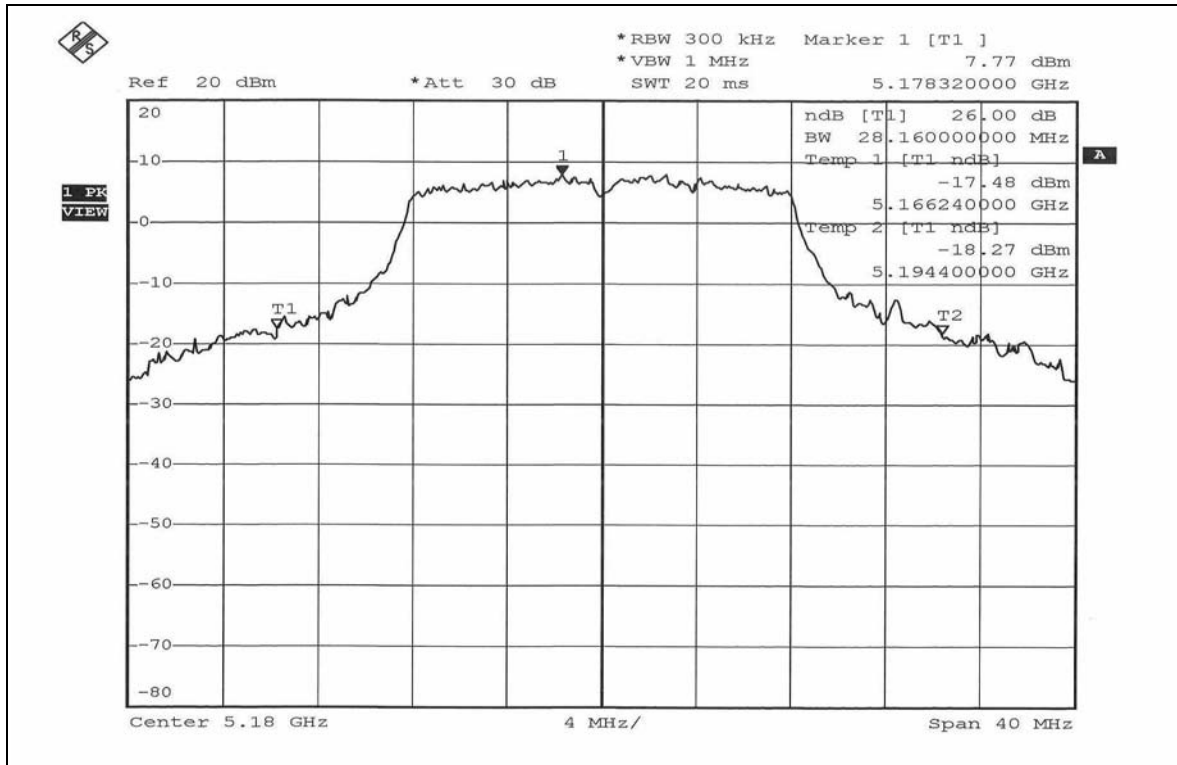
CH5



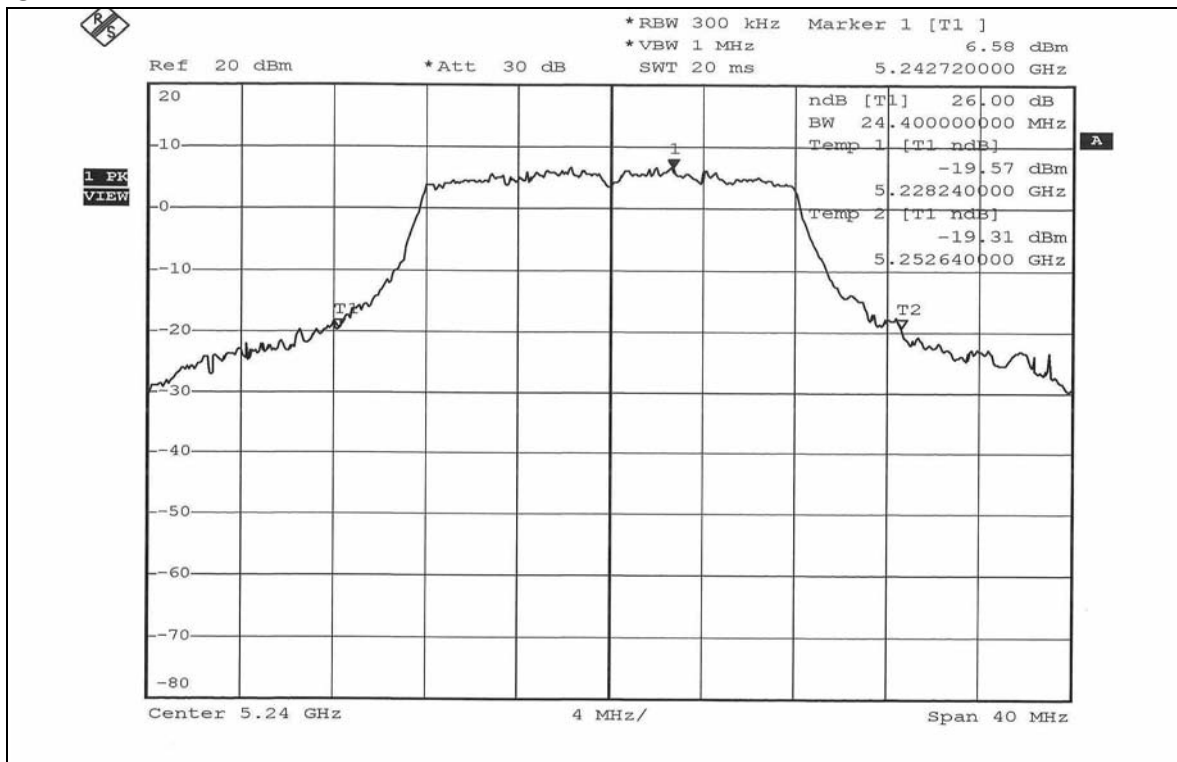
CH8



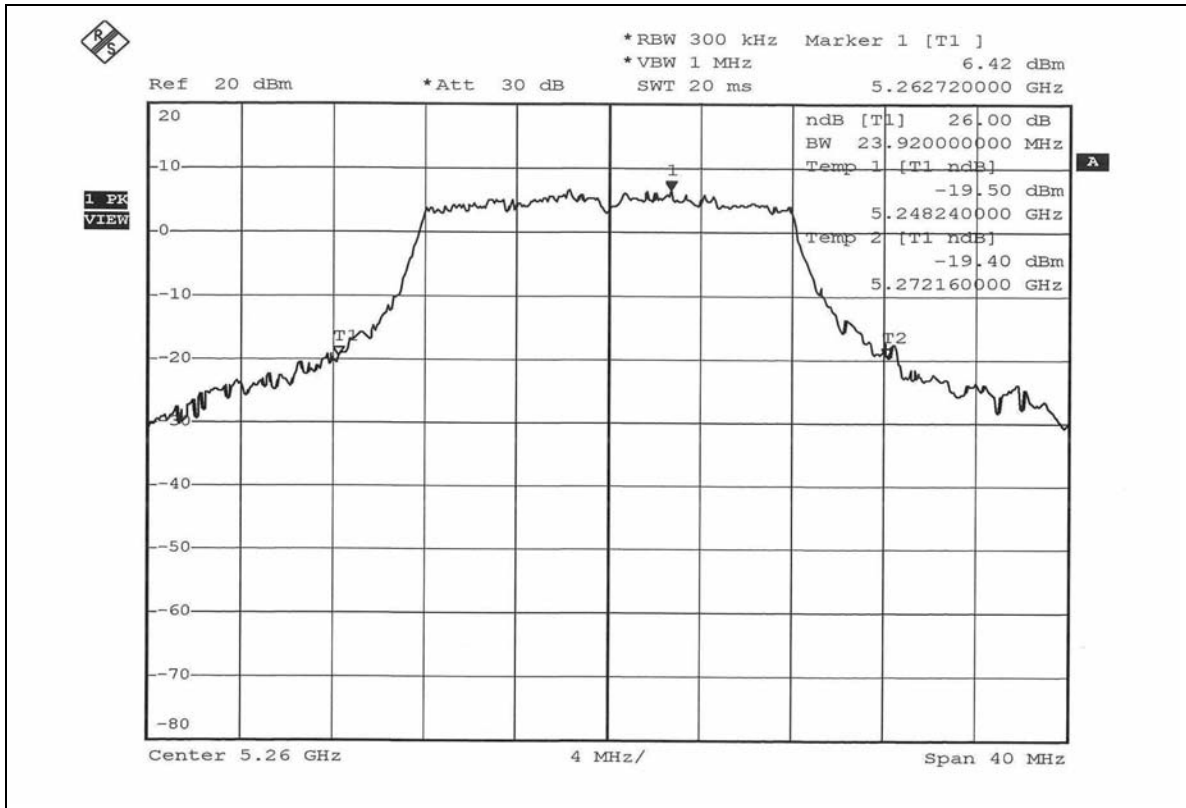
26dB Occupied Bandwidth: CH1



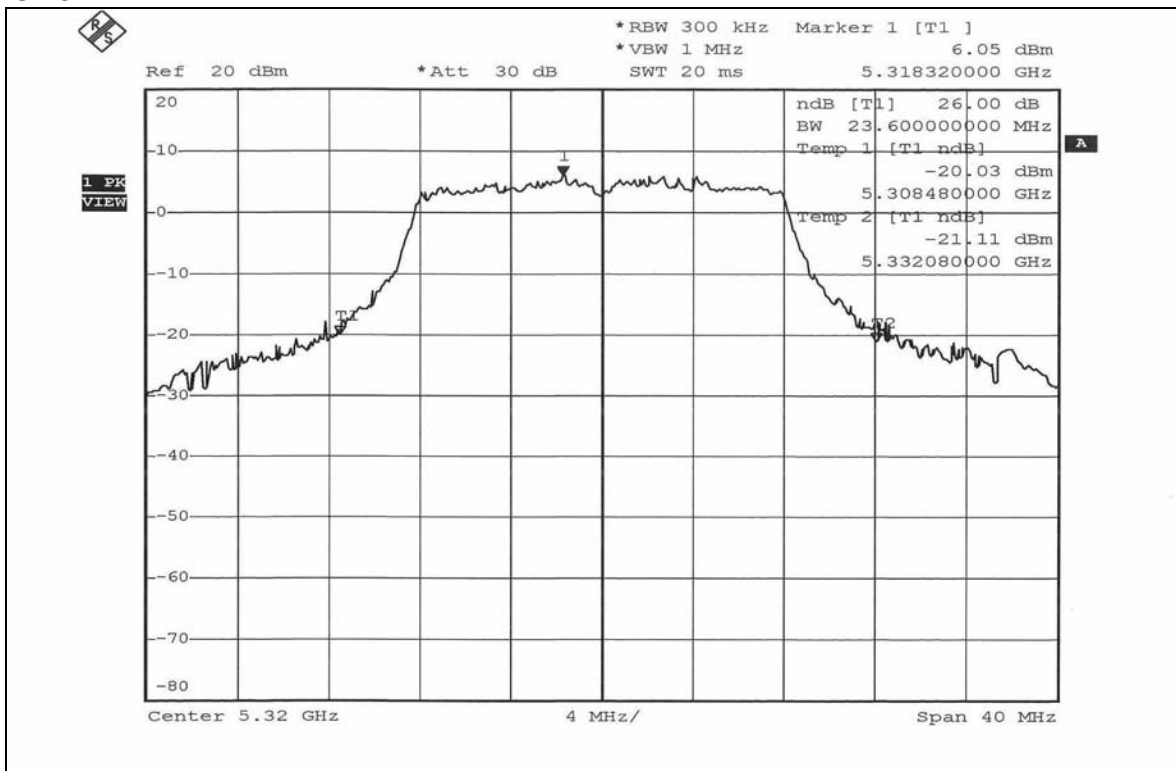
CH4



CH5



CH8



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
SPECTRUM ANALYZER	FSEK30	100049	Aug. 12, 2005

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

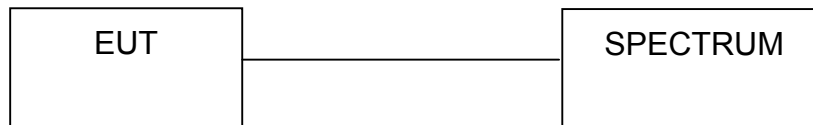
4.4.3 TEST PROCEDURE

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.

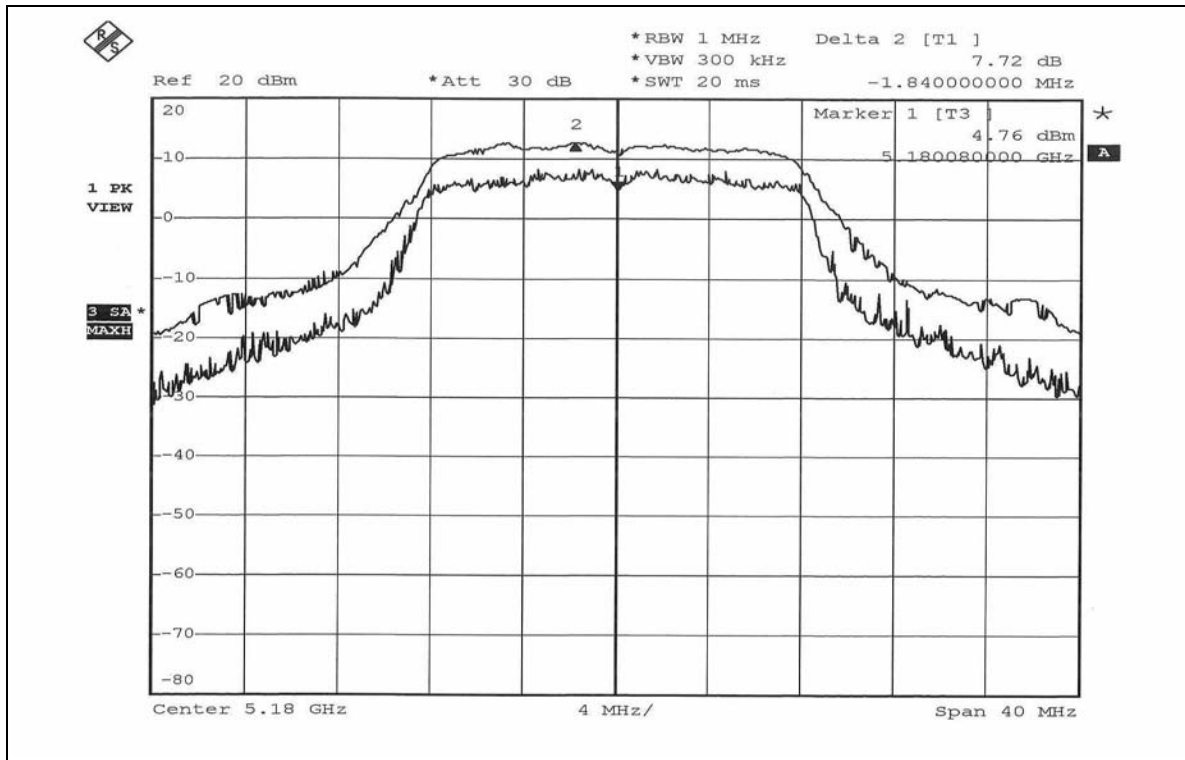
4.4.7 TEST RESULTS

802.11a OFDM modulation

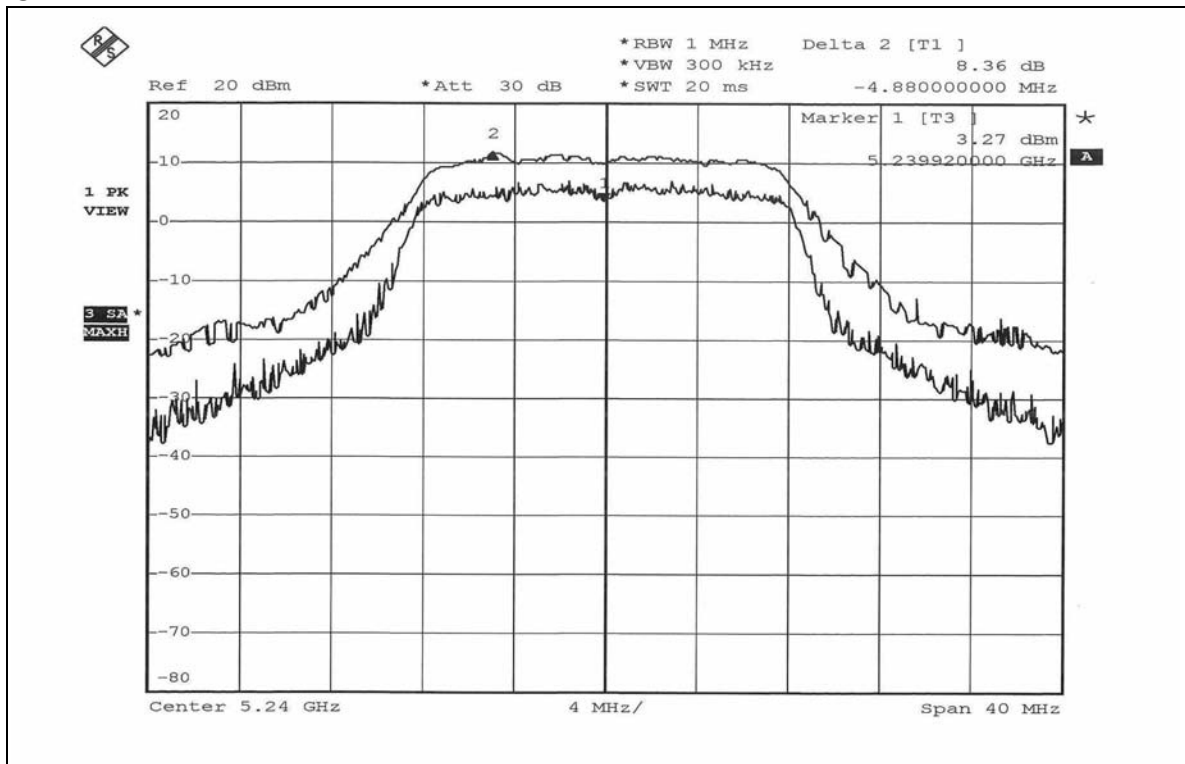
EUT	Notebook	MODEL	600L
MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	22deg.C, 55%RH, 991hPa
TESTED BY	Gary Chang		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)	PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
1	5180	7.72	13	PASS
4	5240	8.36	13	PASS
5	5260	7.45	13	PASS
8	5320	8.21	13	PASS

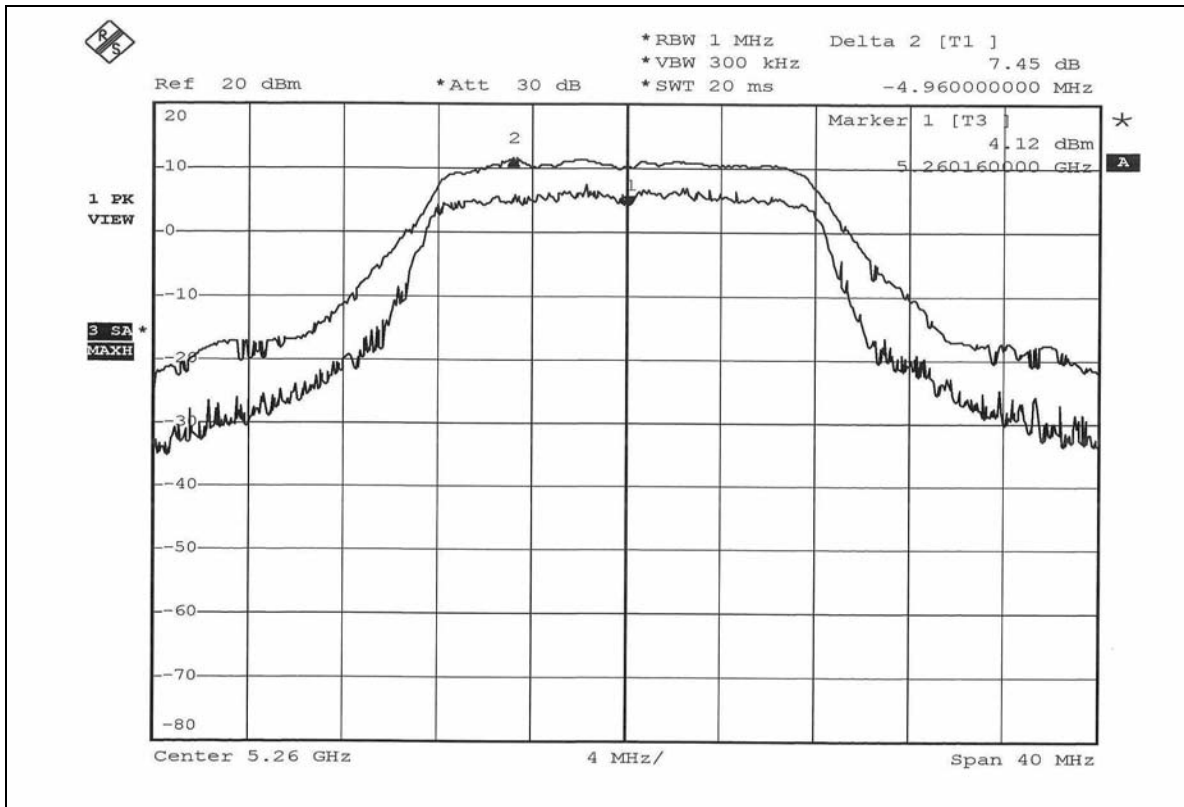
CH1



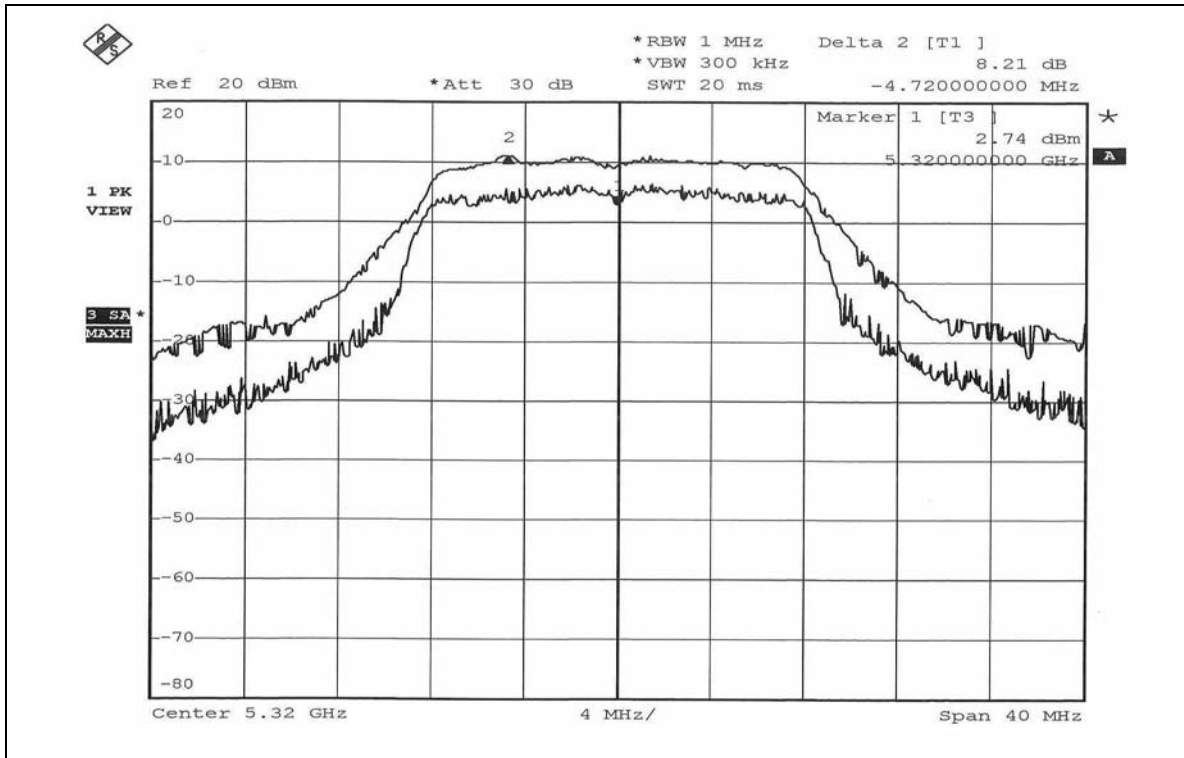
CH4



CH5



CH8



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
SPECTRUM ANALYZER	FSEK30	100049	Aug. 12, 2005

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

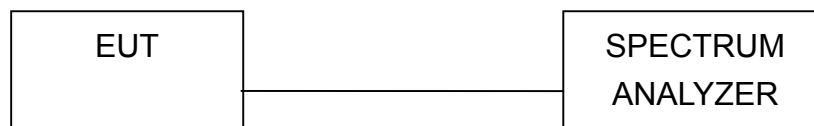
4.5.3 TEST PROCEDURES

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 5.3.6

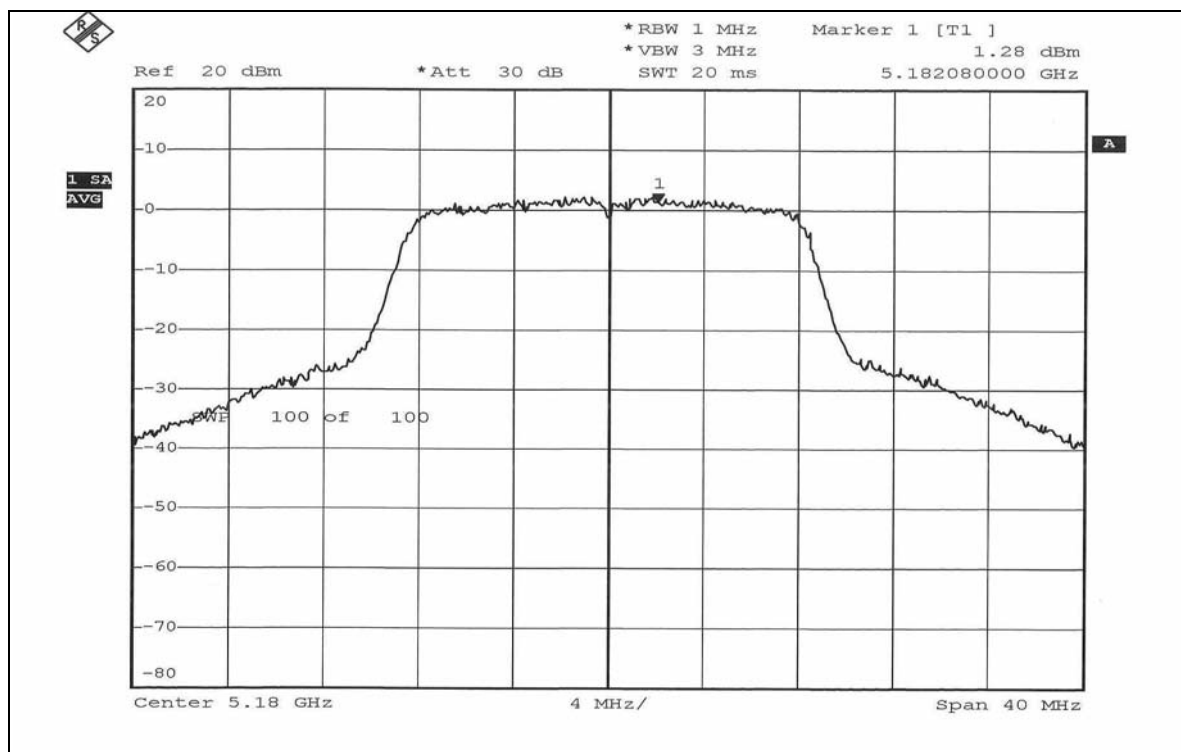
4.5.7 TEST RESULTS

802.11a OFDM modulation

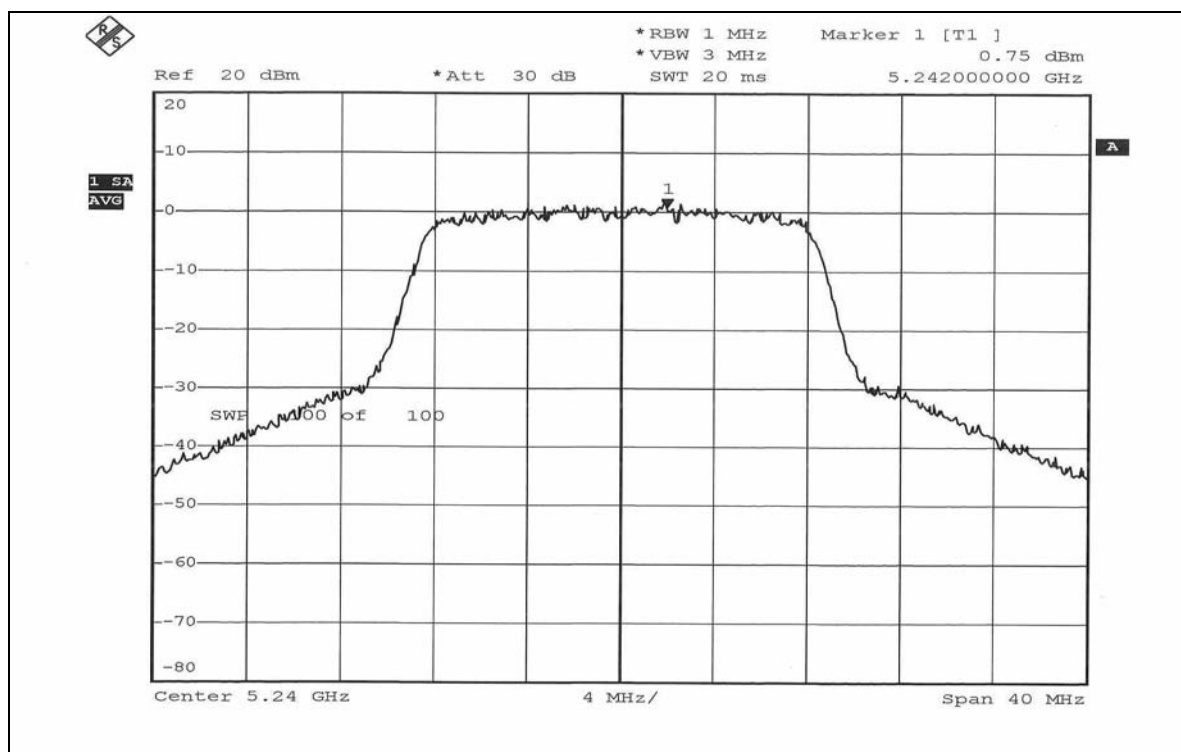
EUT	Notebook	MODEL	600L
MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	22deg.C, 55%RH, 991hPa
TESTED BY	Gary Chang		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 1MHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	5180	1.28	4	PASS
4	5240	0.75	4	PASS
5	5260	1.19	11	PASS
8	5320	0.05	11	PASS

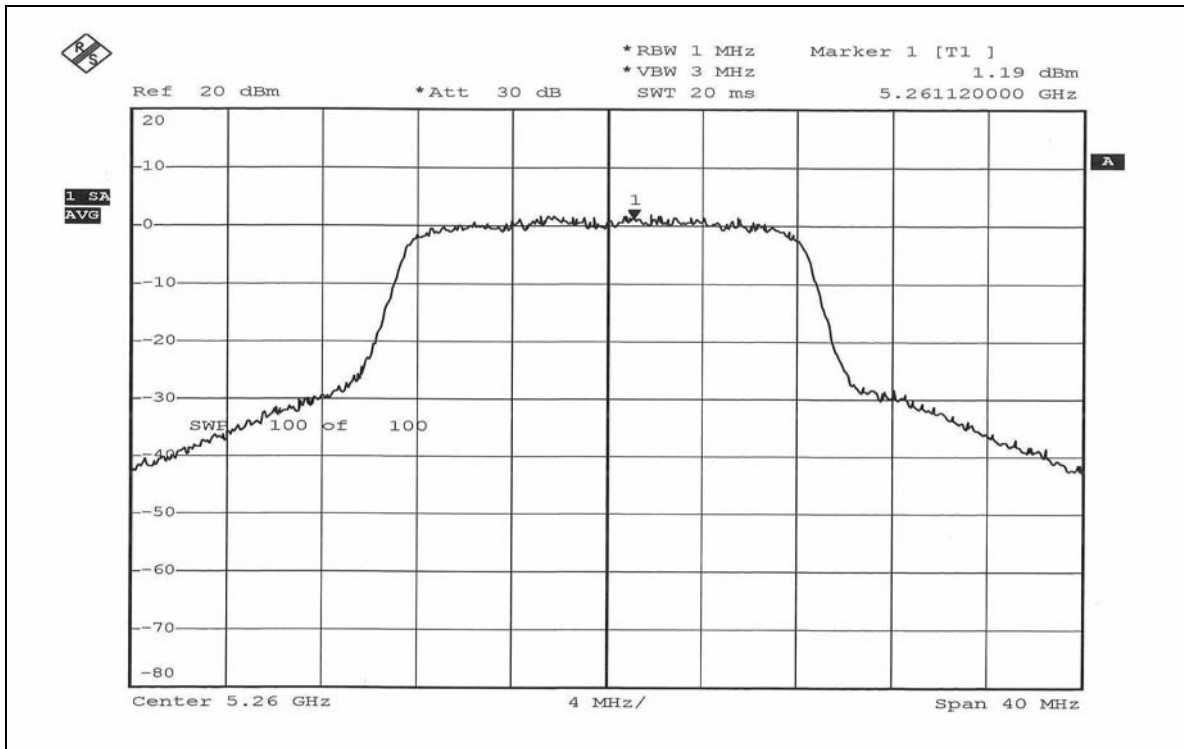
CH1



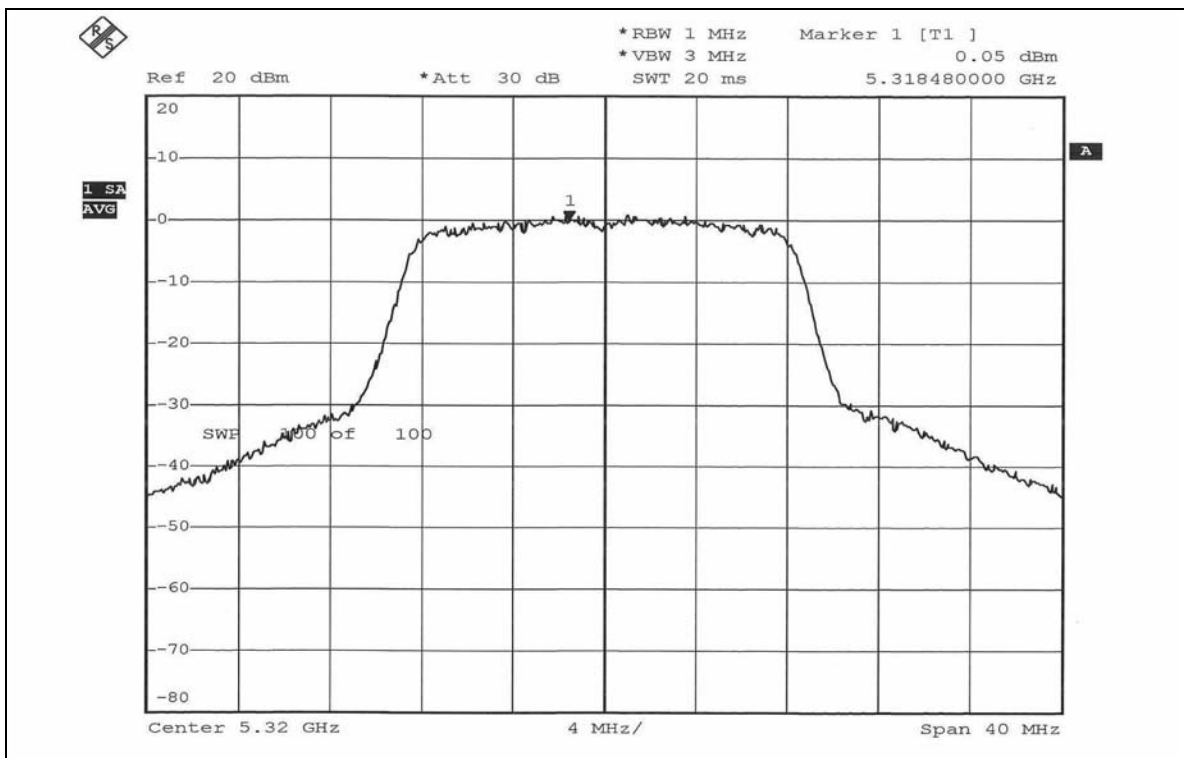
CH4



CH5



CH8





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
ANRITSU SPECTRUM ANALYZER	MS2667C	M10281	Aug. 12, 2005
WIT STANDARD TEMPERATURE AND HUMIDITY CHAMBER	TH-4S-C	W901030	Aug. 12, 2005

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

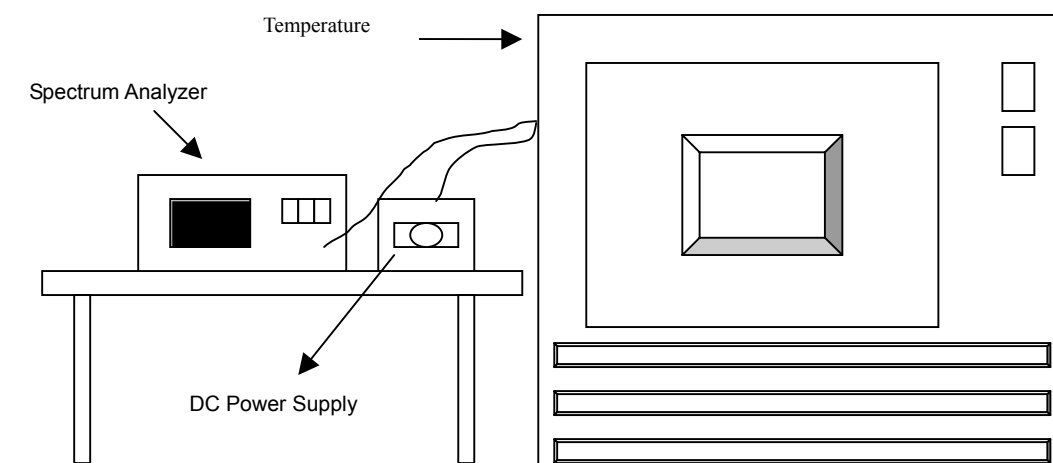
4.6.3 TEST PROCEDURE

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 : $\pm 0.015\%$			
Temp. (°C)	Power supply (Vac)	0 minute		2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	138	5320.0285	0.0005357	5320.0281	0.0005282	5320.0285	0.0005357	5320.0288	0.0005414
	120	5320.0284	0.0005338	5320.0286	0.0005376	5320.0286	0.0005376	5320.0286	0.0005376
	102	5320.0286	0.0005376	5320.0284	0.0005338	5320.0283	0.0005320	5320.0281	0.0005282
40	138	5320.0152	0.0002857	5320.0155	0.0002914	5320.0156	0.0002932	5320.0155	0.0002914
	120	5320.0154	0.0002895	5320.0154	0.0002895	5320.0158	0.0002970	5320.0157	0.0002951
	102	5320.0157	0.0002951	5320.0152	0.0002857	5320.0157	0.0002951	5320.0158	0.0002970
30	138	5319.9915	-0.0001598	5319.9916	-0.0001579	5319.9916	-0.0001579	5319.9920	-0.0001504
	120	5319.9916	-0.0001579	5319.9913	-0.0001635	5319.9918	-0.0001541	5319.9921	-0.0001485
	102	5319.9918	-0.0001541	5319.9919	-0.0001523	5319.9919	-0.0001523	5319.9919	-0.0001523
20	138	5319.9882	-0.0002218	5319.9883	-0.0002199	5319.9884	-0.0002180	5319.9885	-0.0002162
	120	5319.9881	-0.0002237	5319.9885	-0.0002162	5319.9886	-0.0002143	5319.9883	-0.0002199
	102	5319.9885	-0.0002162	5319.9882	-0.0002218	5319.9882	-0.0002218	5319.9882	-0.0002218
10	138	5319.9810	-0.0003571	5319.9814	-0.0003496	5319.9816	-0.0003459	5319.9815	-0.0003477
	120	5319.9815	-0.0003477	5319.9816	-0.0003459	5319.9815	-0.0003477	5319.9813	-0.0003515
	102	5319.9816	-0.0003459	5319.9811	-0.0003553	5319.9812	-0.0003534	5319.9815	-0.0003477
0	138	5319.9775	-0.0004229	5319.9772	-0.0004286	5319.9774	-0.0004248	5319.9772	-0.0004286
	120	5319.9772	-0.0004286	5319.9776	-0.0004211	5319.9772	-0.0004286	5319.9773	-0.0004267
	102	5319.9774	-0.0004248	5319.9775	-0.0004229	5319.9773	-0.0004267	5319.9774	-0.0004248
-10	138	5319.9725	-0.0005169	5319.9726	-0.0005150	5319.9725	-0.0005169	5319.9722	-0.0005226
	120	5319.9726	-0.0005150	5319.9725	-0.0005169	5319.9723	-0.0005207	5319.9725	-0.0005169
	102	5319.9728	-0.0005113	5319.9722	-0.0005226	5319.9727	-0.0005132	5319.9729	-0.0005094
-20	138	5319.9682	-0.0005977	5319.9684	-0.0005940	5319.9682	-0.0005977	5319.9688	-0.0005865
	120	5319.9681	-0.0005996	5319.9685	-0.0005921	5319.9685	-0.0005921	5319.9686	-0.0005902
	102	5319.9685	-0.0005921	5319.9683	-0.0005959	5319.9687	-0.0005883	5319.9682	-0.0005977
-30	138	5319.9611	-0.0007312	5319.9610	-0.0007331	5319.9615	-0.0007237	5319.9610	-0.0007331
	120	5319.9612	-0.0007293	5319.9612	-0.0007293	5319.9618	-0.0007180	5319.9611	-0.0007312
	102	5319.9613	-0.0007274	5319.9613	-0.0007274	5319.9619	-0.0007162	5319.9615	-0.0007237

4.7 BAND EDGES MEASUREMENT

4.7.1 TEST INSTRUMENTS

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

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

4.7.2 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low loss 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 were 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

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 field 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**Channel 1 (5180MHz)**

The band edge emission plot on the page 50 shows 45.17dBc 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 103.12dBuV/m (Peak), so the maximum field strength in restrict band is $103.12 - 45.17 = 57.95$ dBuV/m which is under 74dBuV/m limit.

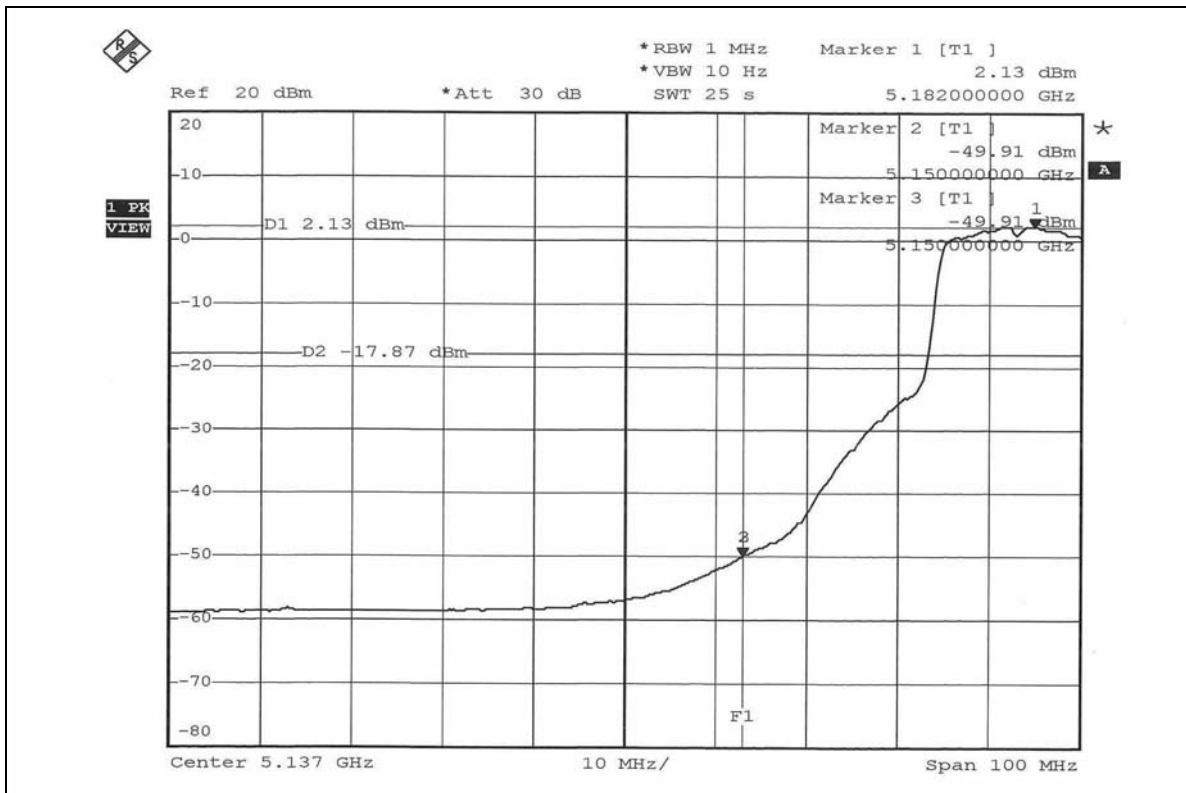
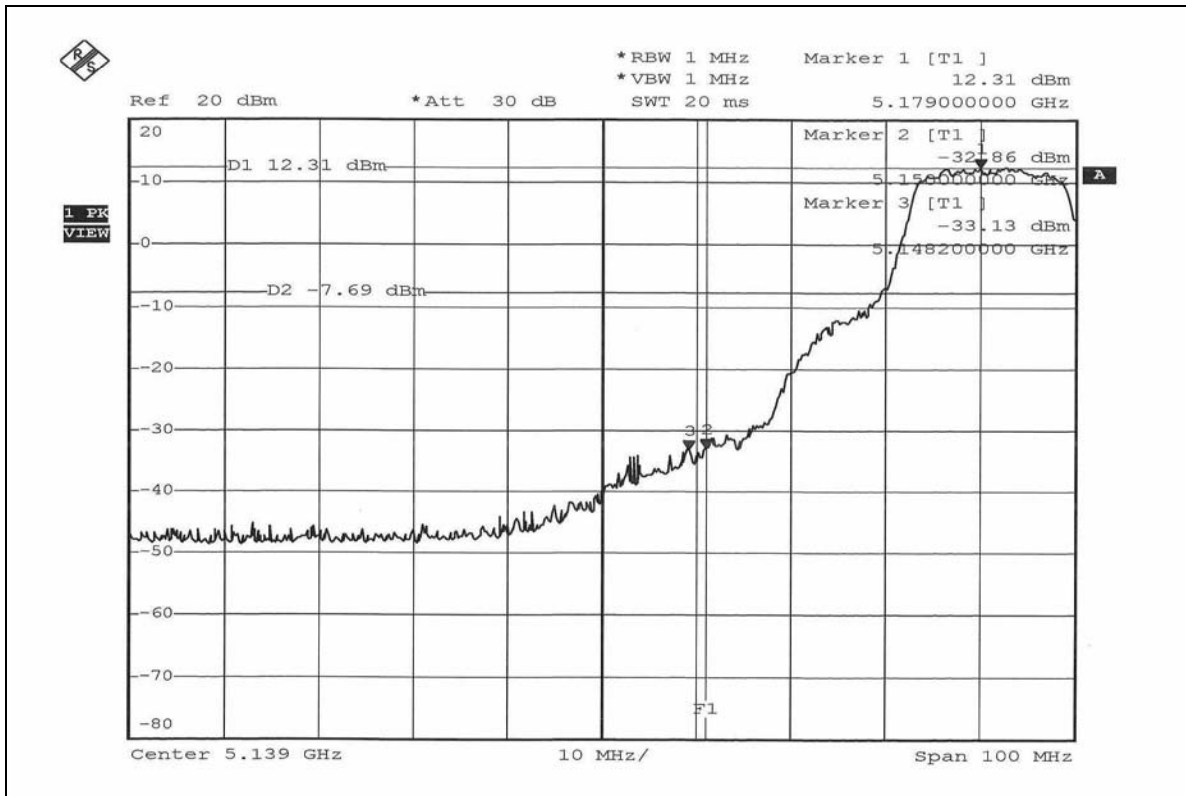
The band edge emission plot on the page 50 shows 52.04dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 1 is 93.79dBuV/m (Average), so the maximum field strength in restrict band is $93.79 - 52.04 = 41.75$ dBuV/m which is under 54dBuV/m limit.

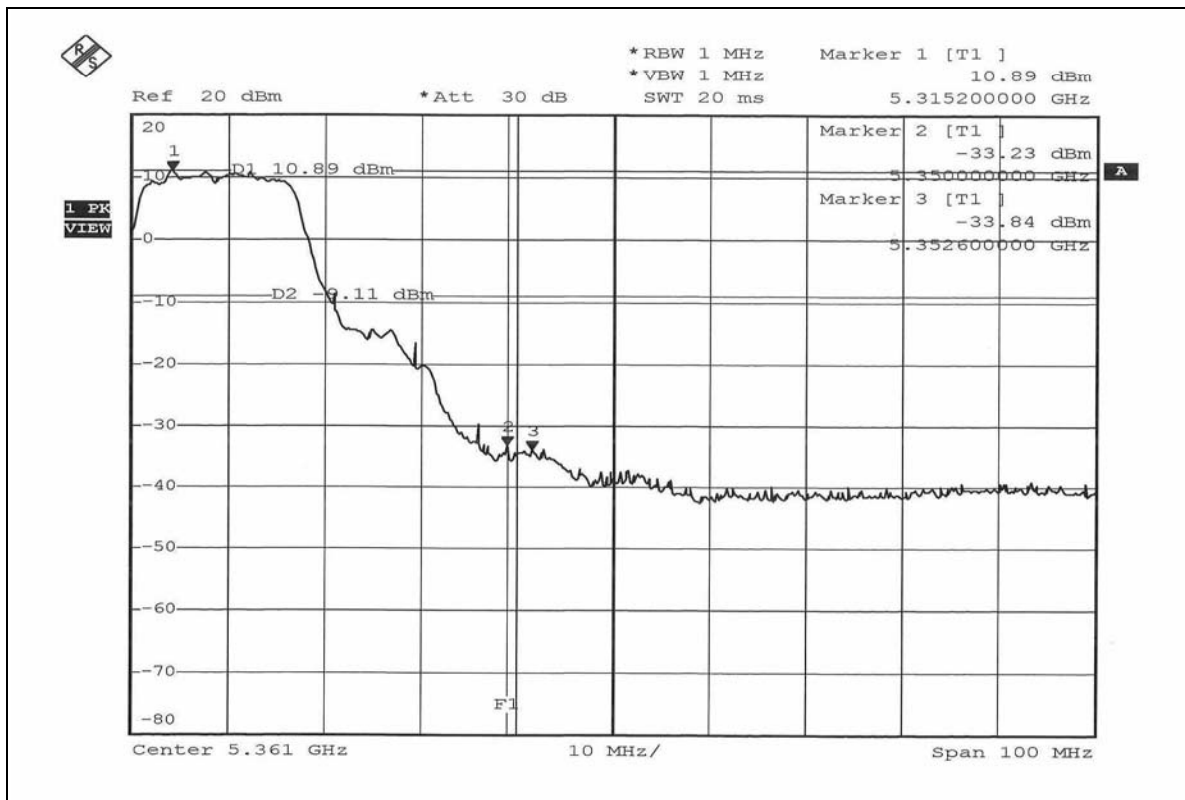
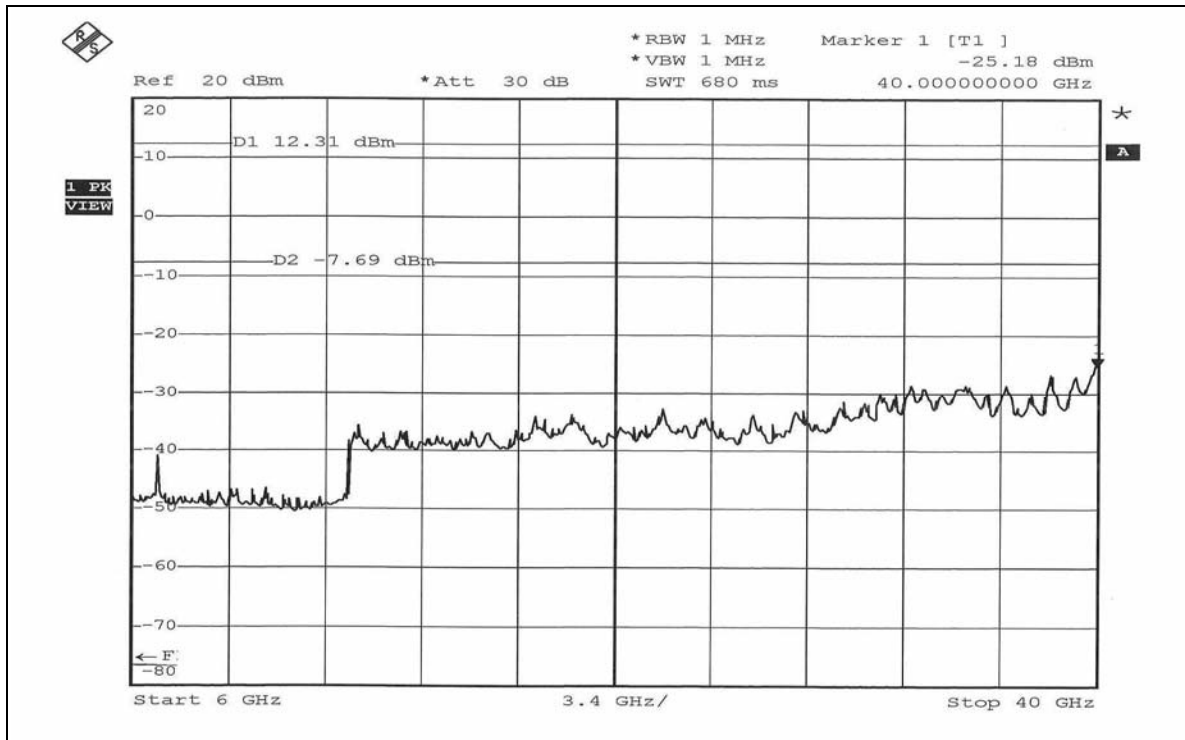
Channel 8 (5320MHz)

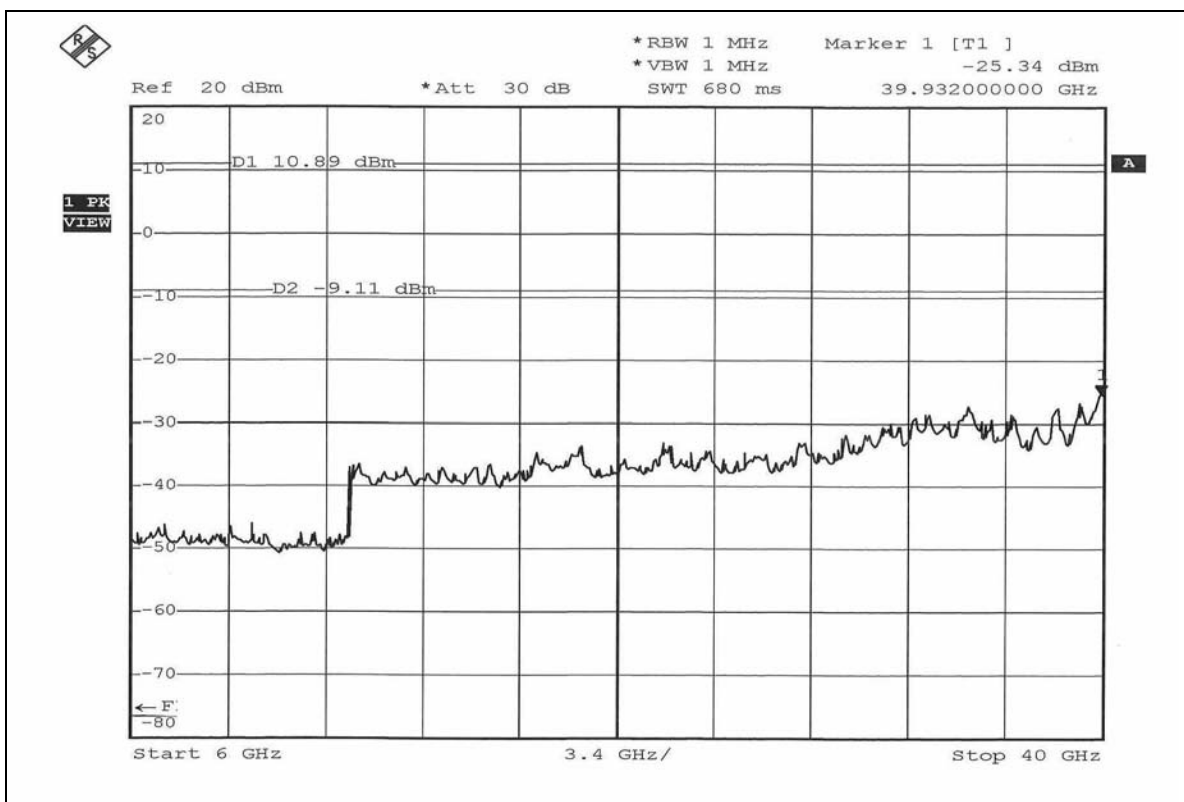
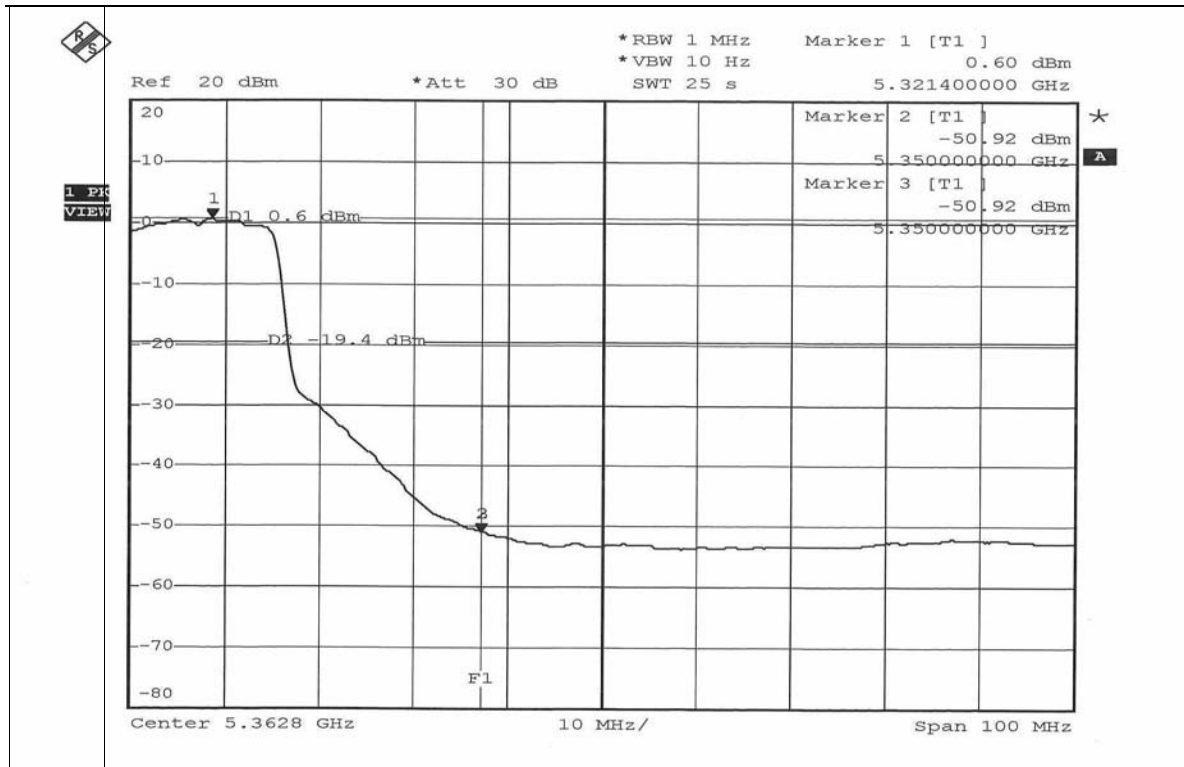
The band edge emission plot on the page 51 shows 44.12dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 8 is 101.11dBuV/m (Peak), so the maximum field strength in restrict band is $101.11 - 44.12 = 56.99$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot on the page 52 shows 51.52dBc 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 91.64dBuV/m (Average), so the maximum field strength in restrict band is $91.64 - 51.52 = 40.12$ dBuV/m which is under 54dBuV/m limit.

802.11a OFDM modulation









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

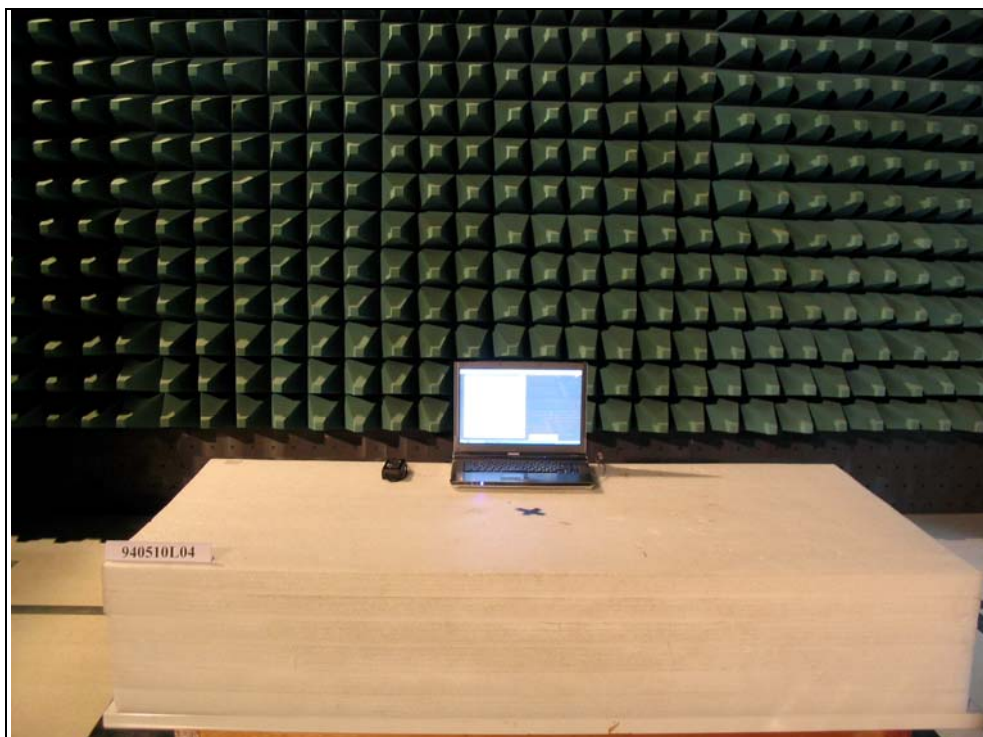
The antenna used in this product is PIFA antenna with UFL antenna connector. The maximum Gain of the antenna is -4.39dBi .

5. PHOTOGRAPHS OF THE TEST CONFIGURATION

CONDUCTED EMISSION TEST



RADIATED EMISSION TEST



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, NVLAP, UL, A2LA
Germany	TUV Rheinland
Japan	VCCI
Norway	NEMKO
Canada	INDUSTRY CANADA , CSA
R.O.C.	CNLA, BSMI, DGT
Netherlands	Telefication
Singapore	PSB , GOST-ASIA(MOU)
Russia	CERTIS(MOU)

Copies of accreditation certificates of our laboratories obtained from approval agencies can be downloaded from our web site:

www.adt.com.tw/index.5/phtml. If you have any comments, please feel free to contact us at the following:

Linko EMC/RF Lab:

Tel: 886-2-26052180

Fax: 886-2-26052943

Hsin Chu EMC/RF Lab:

Tel: 886-3-5935343

Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety Telecom Lab:

Tel: 886-3-3183232

Fax: 886-3-3185050

Linko RF Lab.

Tel: 886-3-3270910

Fax: 886-3-3270892

Web Site: www.adt.com.tw

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