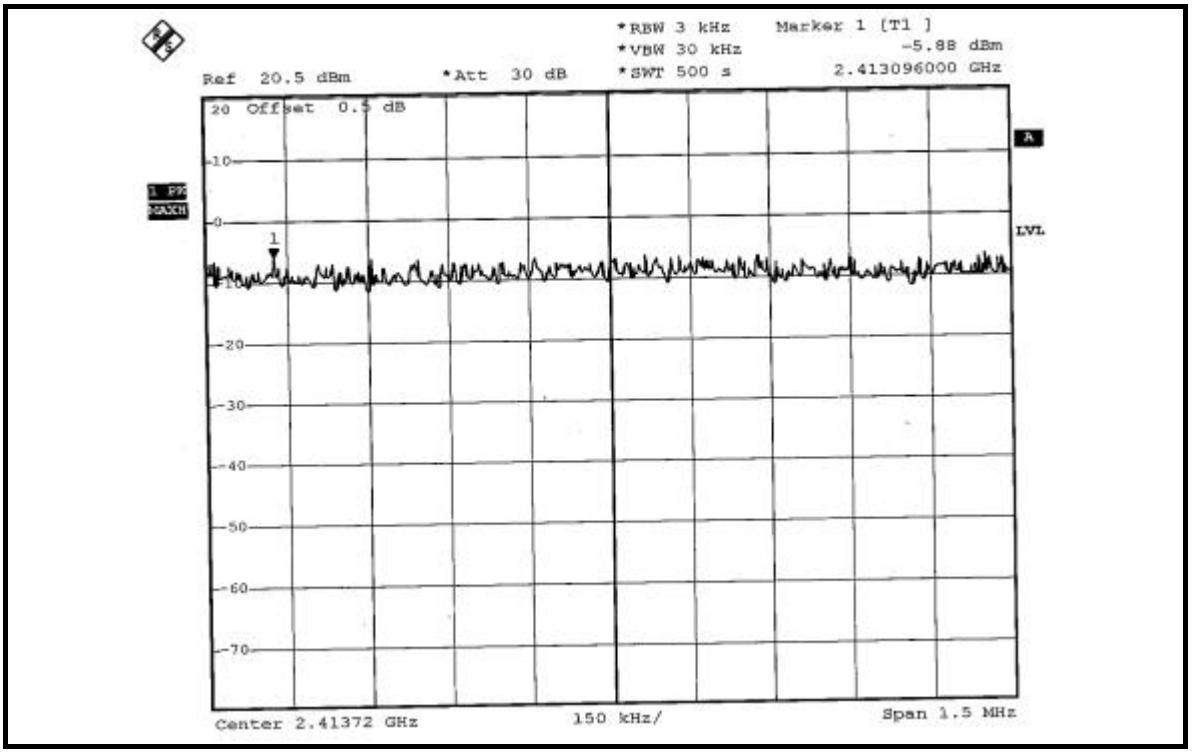
4.5.7 TEST RESULTS

802.11b DSSS MODULATION

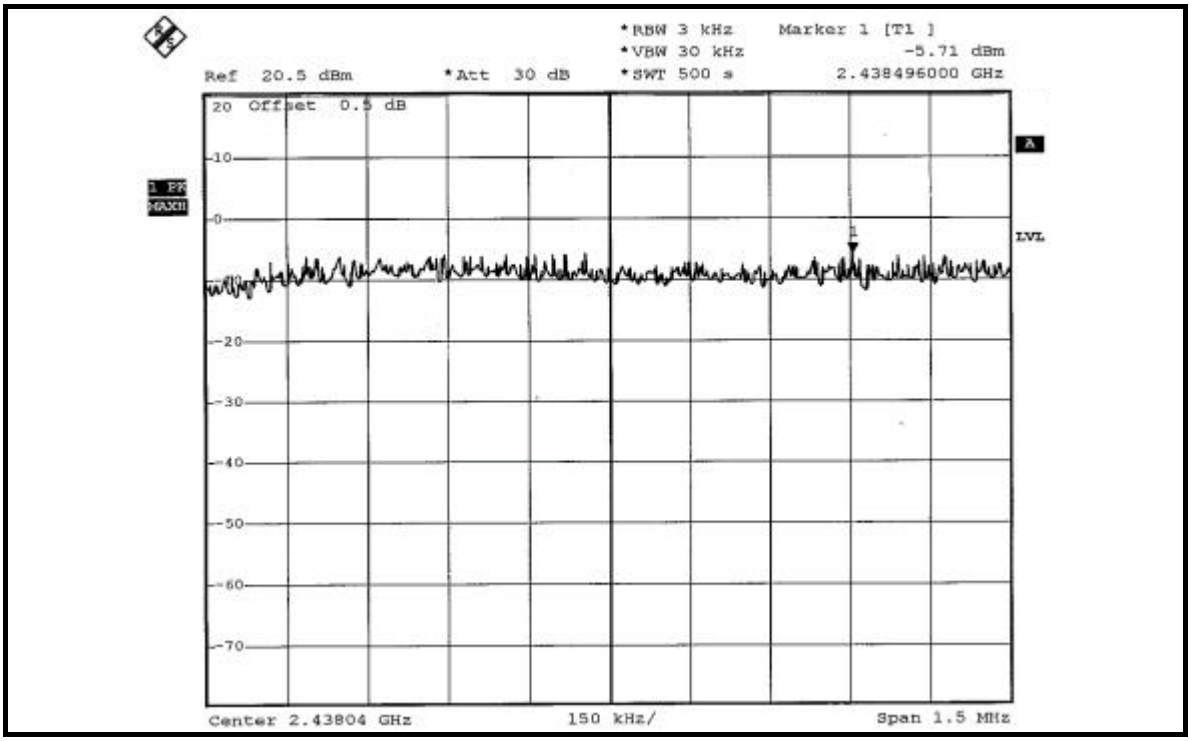
MODULATION TYPE	BPSK	**TRANSFER RATE**	1Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	22deg.C, 63%RH, 991hPa
TESTED BY	Long Chen		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-5.88	8	PASS
6	2437	-5.71	8	PASS
11	2462	-5.66	8	PASS

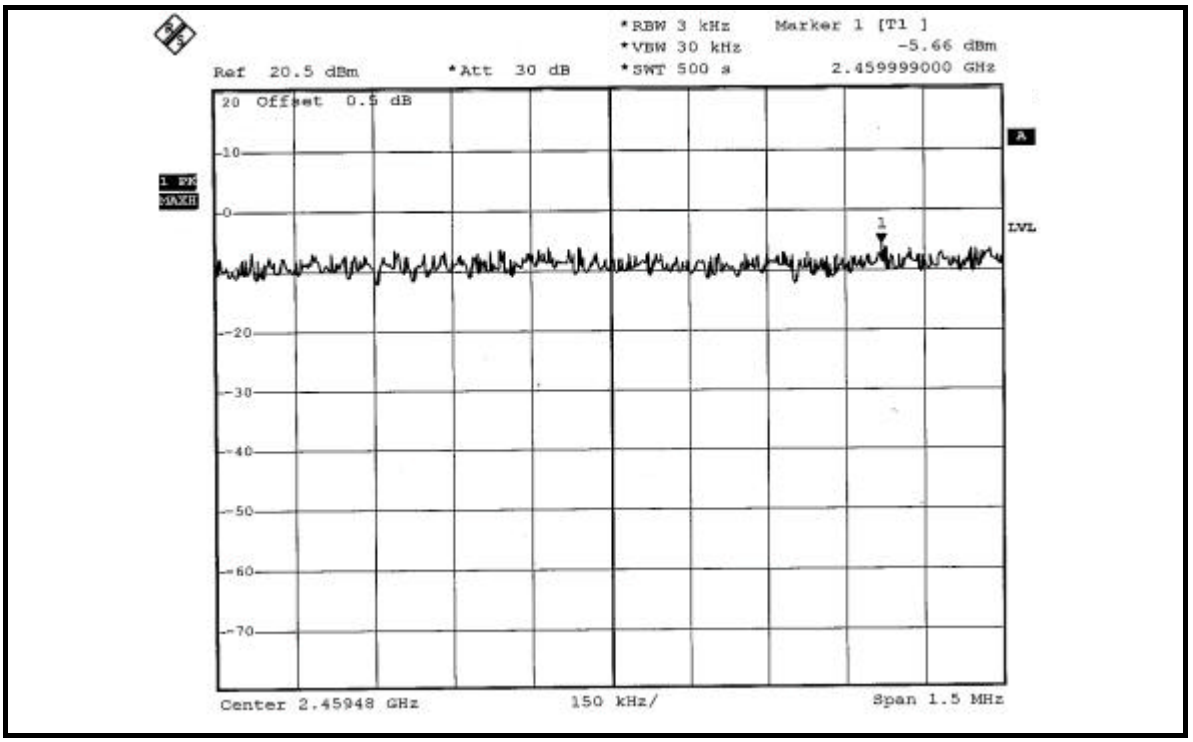
CH1


*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-5.88 dBm
2.413096000 GHz
Ref 20.5 dBm
*Att 30 dB
20 Offset 0.5 dB
1 PK MAXH
A
LVL
10
0
-10
-20
-30
-40
-50
-60
-70
Center 2.41372 GHz
150 kHz/
Span 1.5 MHz

CH6


*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-5.71 dBm
2.438496000 GHz
Ref 20.5 dBm
*Att 30 dB
20 Offset 0.5 dB
1 PK MAXH
A
LVL
10
0
-10
-20
-30
-40
-50
-60
-70
Center 2.43804 GHz
150 kHz/
Span 1.5 MHz

CH11

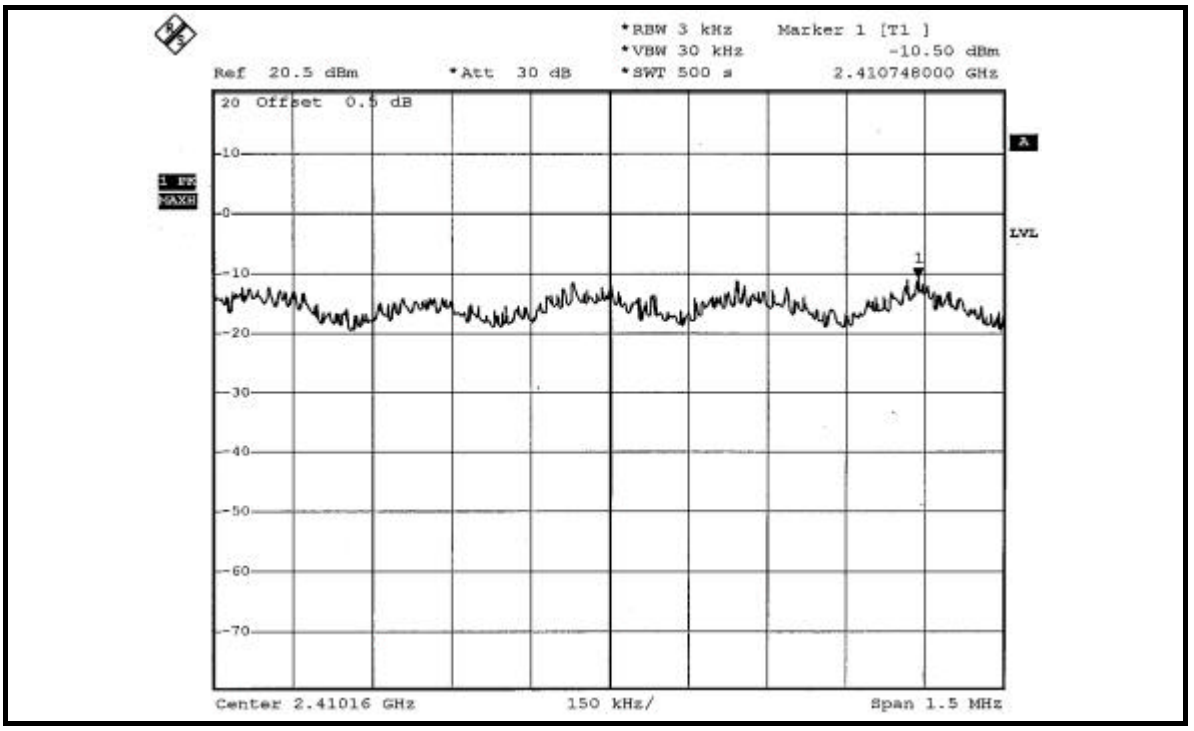

*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-5.66 dBm
2.459999000 GHz
Ref 20.5 dBm
*Att 30 dB
20 Offset 0.5 dB
10
0
-10
-20
-30
-40
-50
-60
-70
1 PK
MAXH
A
LVL
1
Center 2.45948 GHz
150 kHz/
Span 1.5 MHz

802.11g OFDM NORMAL MODULATION

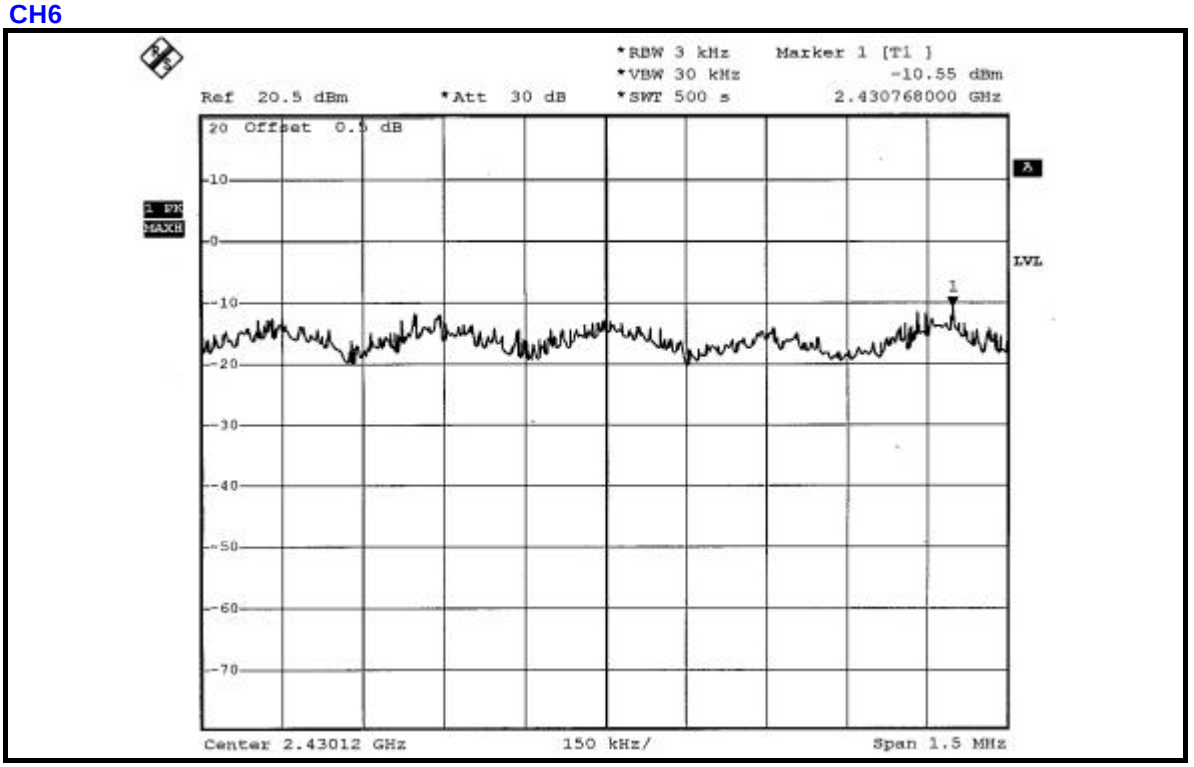
MODULATION TYPE	BPSK	**TRANSFER RATE**	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	22deg.C, 63%RH, 991hPa
TESTED BY	Long Chen		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-10.50	8	PASS
6	2437	-10.55	8	PASS
11	2462	-10.73	8	PASS

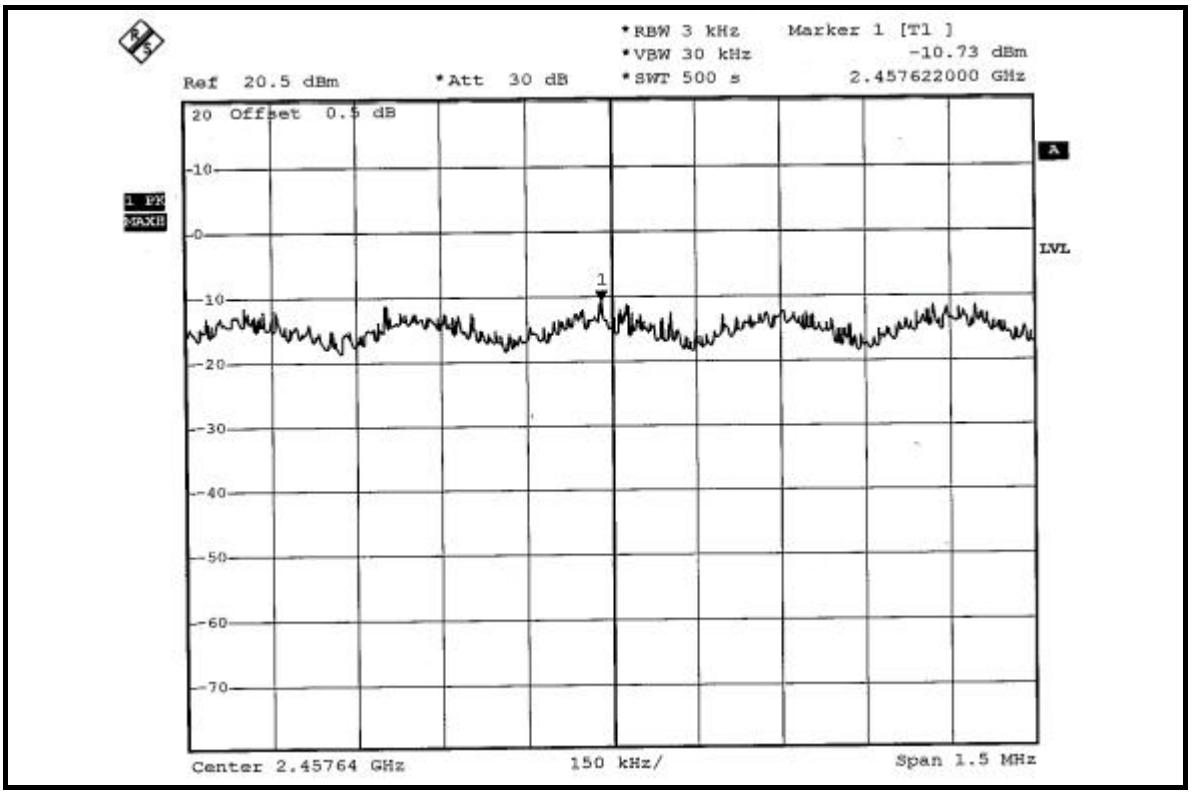
CH1


*RBW 3 kHz
Marker 1 [T1]
*VBW 30 kHz
-10.50 dBm
Ref 20.5 dBm
*Att 30 dB
*SWT 500 s
2.410748000 GHz
20 Offset 0.5 dB
10
0
-10
-20
-30
-40
-50
-60
-70
1 PK
MAXH
A
LVL
1
Center 2.41016 GHz
150 kHz/
Span 1.5 MHz

CH6


*RBW 3 kHz
Marker 1 [T1]
*VBW 30 kHz
-10.55 dBm
Ref 20.5 dBm
*Att 30 dB
*SWT 500 s
2.430768000 GHz
20 Offset 0.5 dB
10
0
-10
-20
-30
-40
-50
-60
-70
1 PK
MAXH
A
LVL
1
Center 2.43012 GHz
150 kHz/
Span 1.5 MHz

CH11

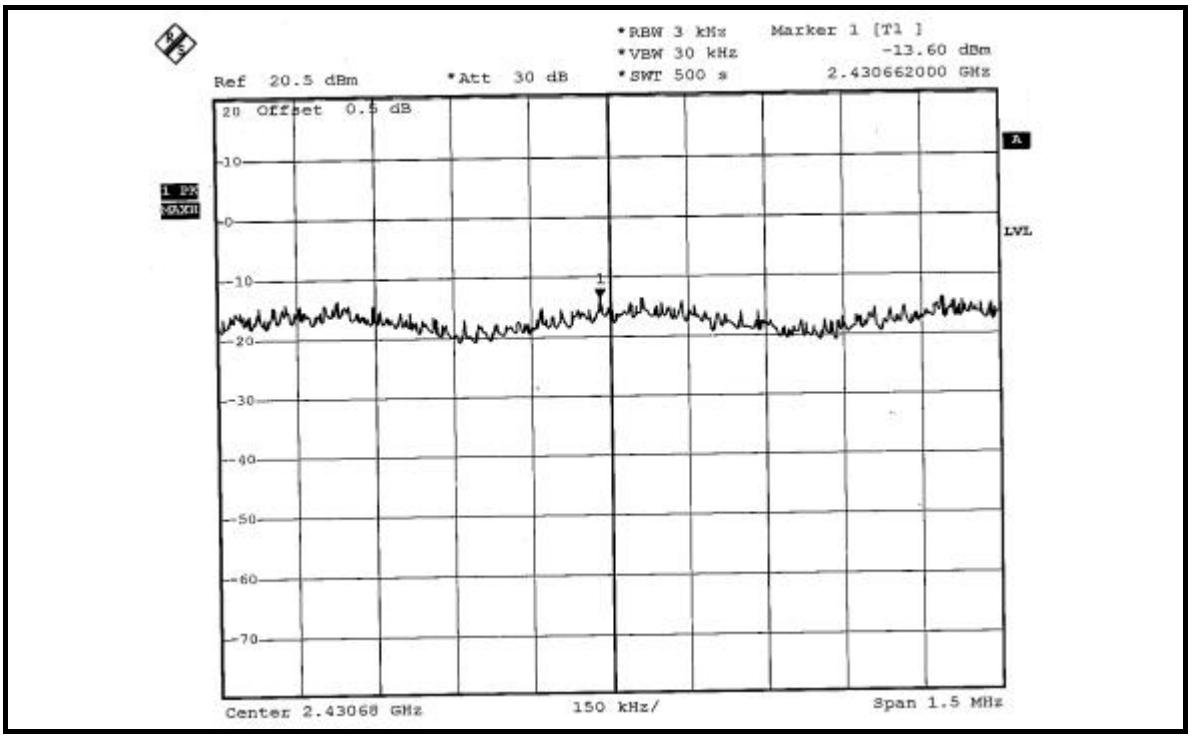

*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-10.73 dBm
2.457622000 GHz
Ref 20.5 dBm
*Att 30 dB
20 Offset 0.5 dB
1 PK
MAXH
A
LVL
10
0
-10
-20
-30
-40
-50
-60
-70
1
Center 2.45764 GHz
150 kHz/
Span 1.5 MHz

802.11g OFDM TURBO MODULATION

MODULATION TYPE	BPSK	**TRANSFER RATE**	12Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	22deg.C, 63%RH, 991hPa
TESTED BY	Long Chen		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
6	2437	-13.60	8	PASS

CH6


*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-13.60 dBm
2.430662000 GHz
Ref 20.5 dBm
*Att 30 dB
20 Offset 0.5 dB
10
0
-10
-20
-30
-40
-50
-60
-70
1 PK
MAXH
A
LVL
Center 2.43068 GHz
150 kHz/
Span 1.5 MHz

4.6 BAND EDGES MEASUREMENT

4.6.1 LIMITS OF BAND EDGES MEASUREMENT

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

4.6.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
SPECTRUM ANALYZER	FSEK30	100049	Aug. 14, 2006

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

4.6.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low lose cable. Set both RBW and VBW of spectrum analyzer to 100kHz with suitable frequency span including 100MHz bandwidth from band edge. The band edges was measured and recorded. The spectrum plots (Peak RBW=VBW=100kHz; Average RBW=1MHz, VBW=10Hz) are attached on the following pages.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 EUT OPERATING CONDITION

Same as Item 4.3.6

4.6.6 TEST RESULTS

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

802.11b DSSS MODULATION

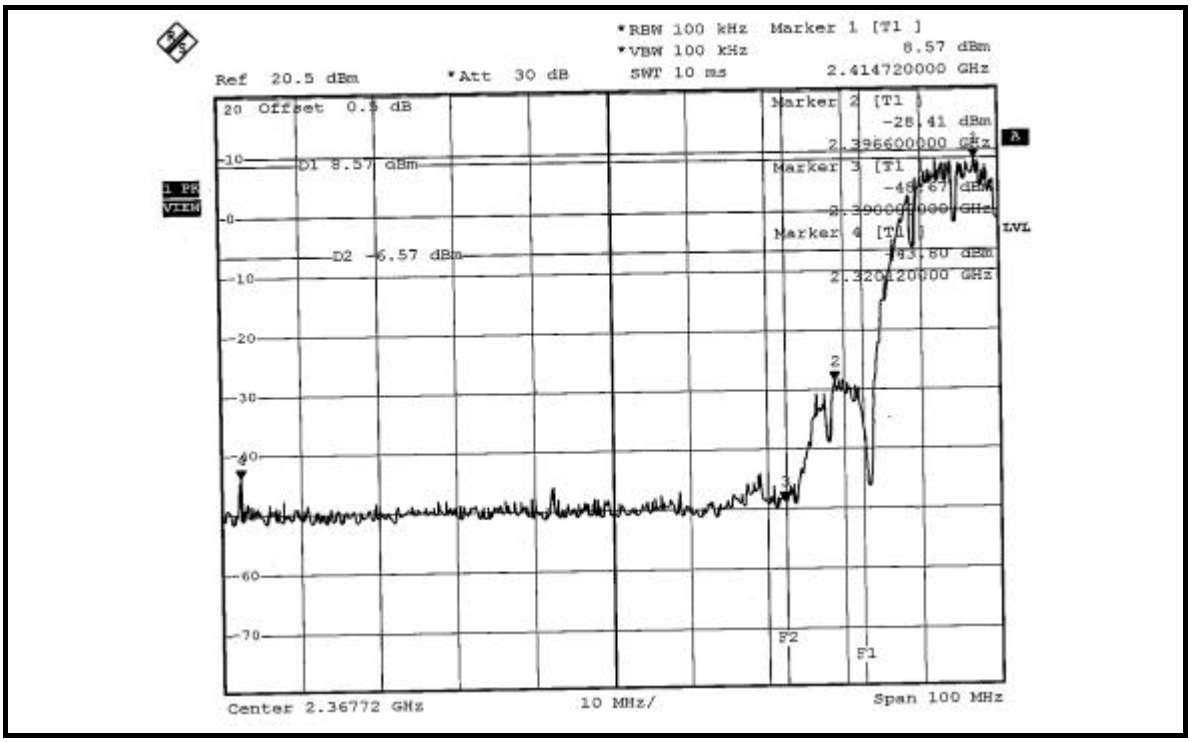
NOTE 1: The band edge emission plot of DSSS technique on the next page shows 52.37dBc between carrier maximum power and local maximum emission in restrict band (2.3201GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 112.70dBuV/m (Peak), so the maximum field strength in restrict band is 112.70-52.37=60.33dBuV/m which is under 74dBuV/m limit.

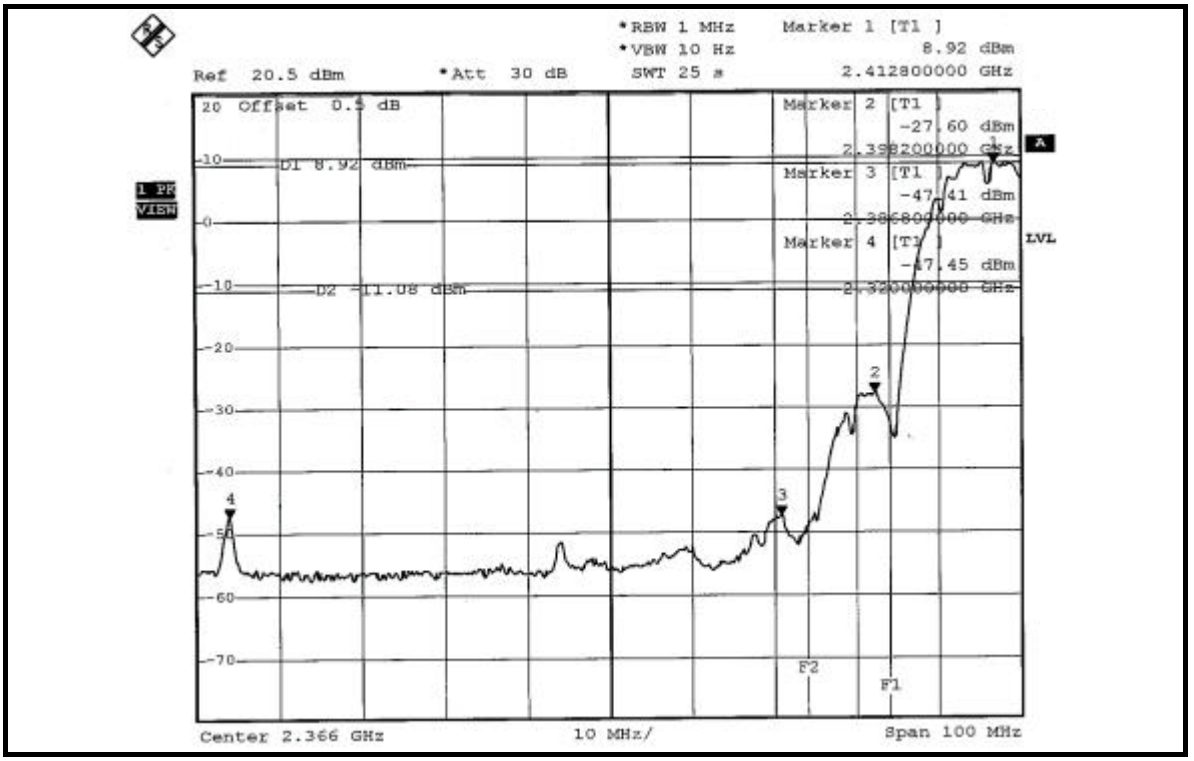
The band edge emission plot of DSSS technique on the next page shows 56.33dBc between carrier maximum power and local maximum emission in restrict band (2.3868GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 108.20dBuV/m (Average), so the maximum field strength in restrict band is 108.20-56.33=51.87dBuV/m which is under 54dBuV/m limit.

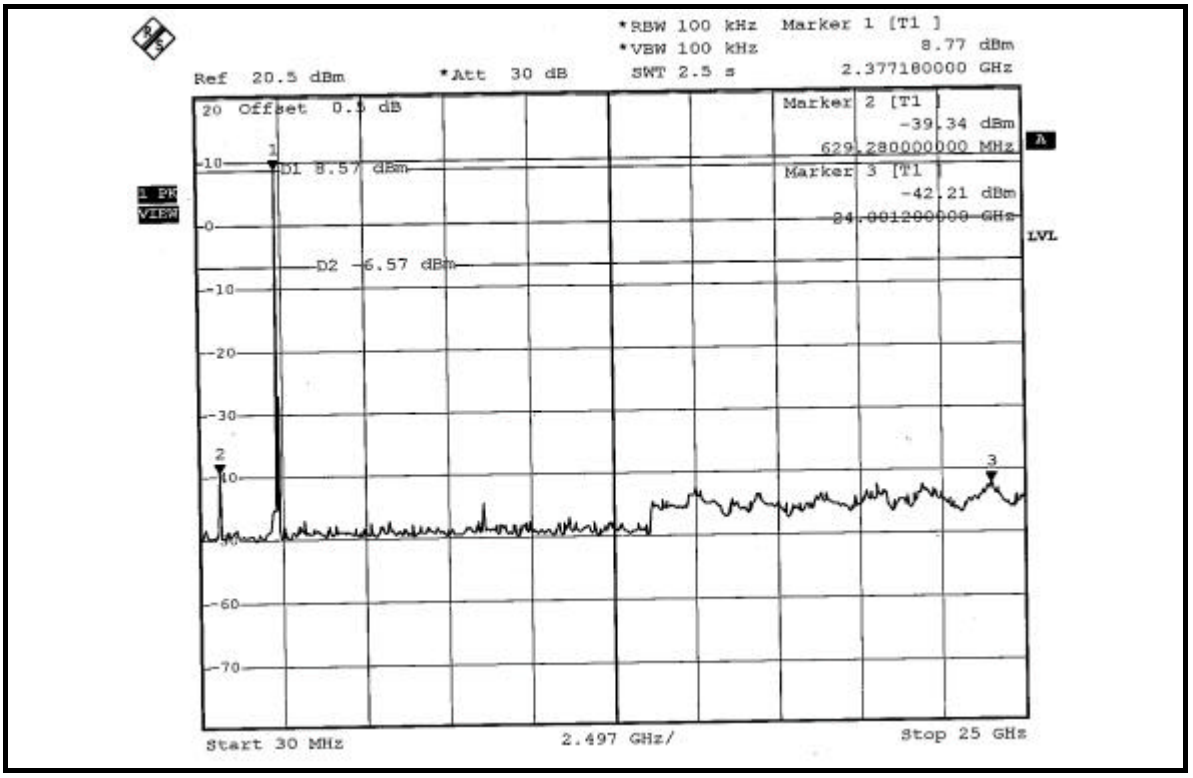
NOTE 2: The band edge emission plot of DSSS technique on the second page shows 55.22dBc between carrier maximum power and local maximum emission in restrict band (2.4989GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 112.14dBuV/m (Peak), so the maximum field strength in restrict band is 112.14-55.22=56.92dBuV/m which is under 74dBuV/m limit.

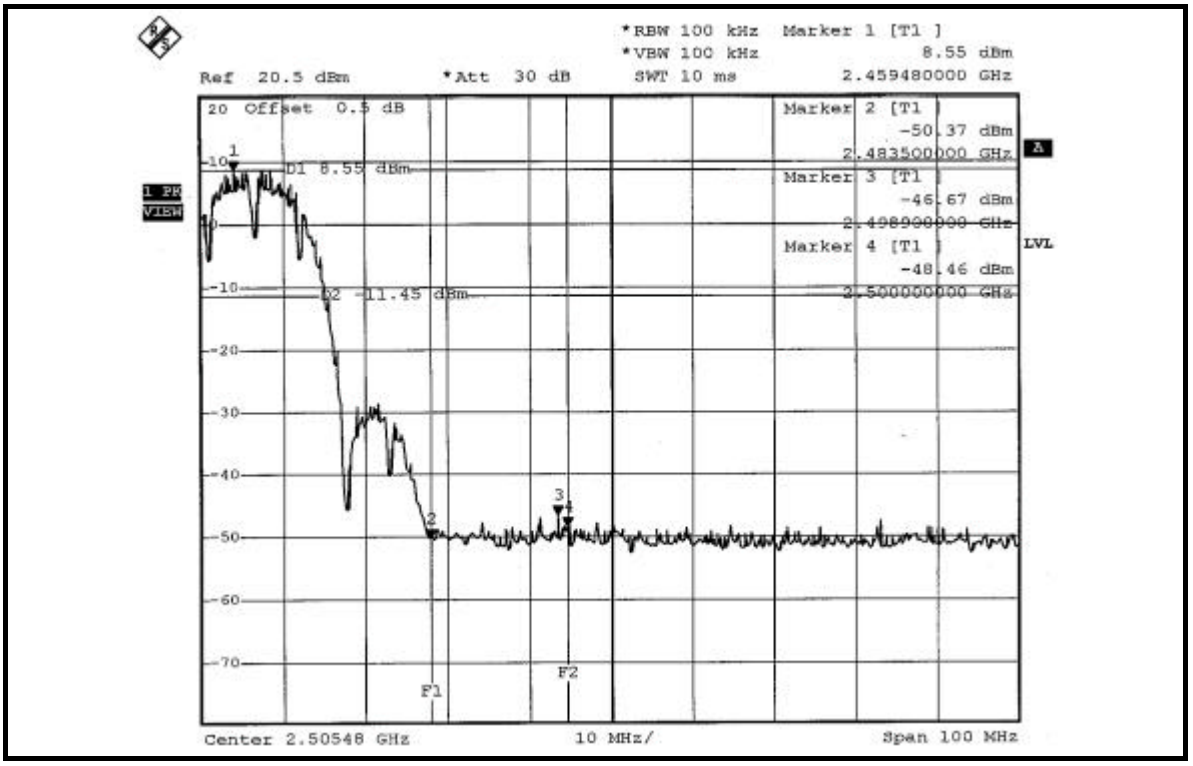
The band edge emission plot of DSSS technique on the third page shows 60.99dBc between carrier maximum power and local maximum emission in restrict band (2.4989GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 108.85dBuV/m (Average), so the maximum field strength in restrict band is 108.85-60.99=47.86dBuV/m which is under 54dBuV/m limit.

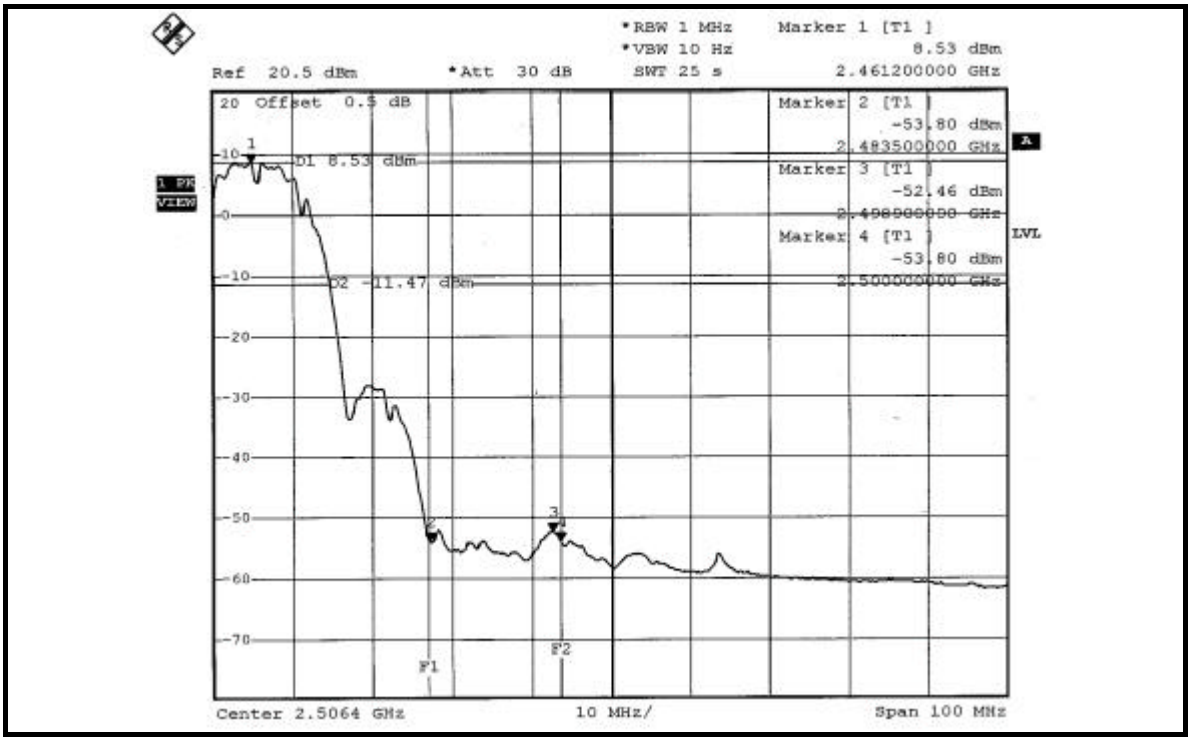
802.11b DSSS MODULATION

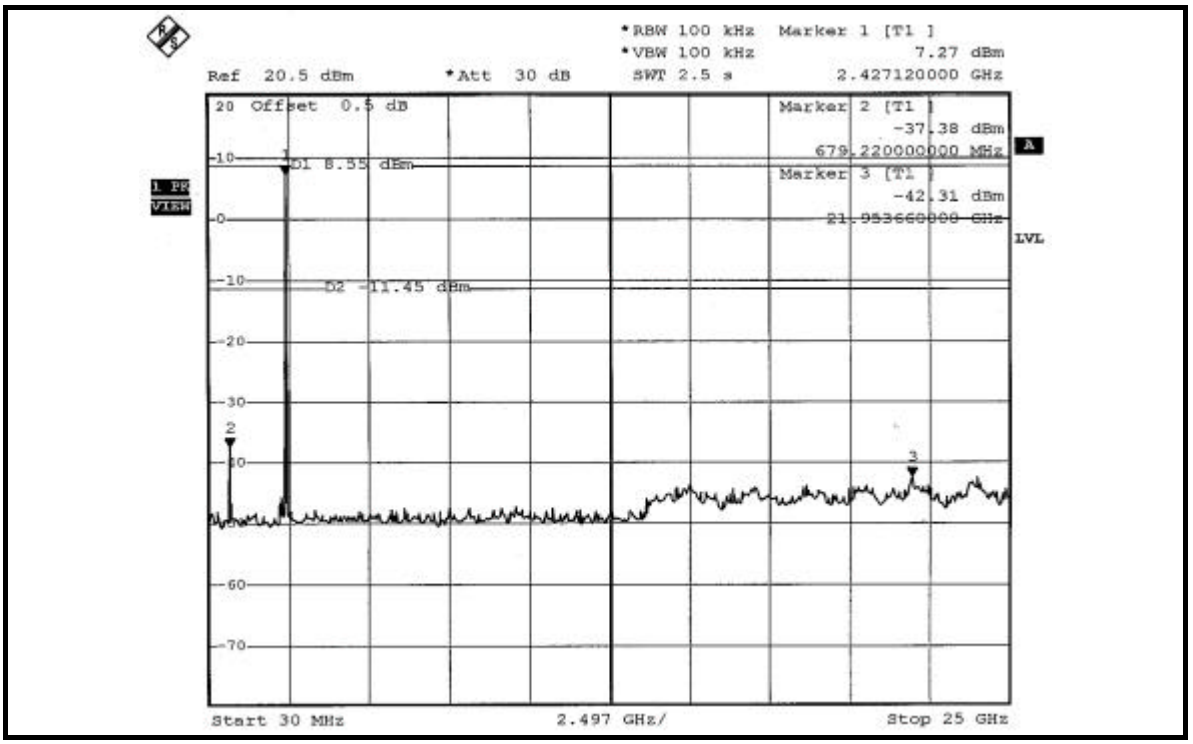





*RBW 100 kHz
*VBW 100 kHz
SWT 2.5 s
Marker 1 [T1]
8.77 dBm
2.377180000 GHz
Ref 20.5 dBm
*Att 30 dB
20 Offset 0.5 dB
Marker 2 [T1]
-39.34 dBm
629.280000000 MHz
Marker 3 [T1]
-42.21 dBm
24.001200000 GHz
D1 8.57 dBm
D2 -6.57 dBm
1 PR
VBW
A
LVL
Start 30 MHz
2.497 GHz/
Stop 25 GHz


*RBW 100 kHz
*VBW 100 kHz
SWT 10 ms
Marker 1 [T1]
8.55 dBm
2.459480000 GHz
Ref 20.5 dBm
*Att 30 dB
20 Offset 0.5 dB
Marker 2 [T1]
-50.37 dBm
2.483500000 GHz
Marker 3 [T1]
-46.67 dBm
2.498900000 GHz
Marker 4 [T1]
-48.46 dBm
2.500000000 GHz
D1 8.55 dBm
D2 -11.45 dBm
1 PR
VBW
A
LVL
F1
F2
Center 2.50548 GHz
10 MHz/
Span 100 MHz


*RBW 1 MHz
*VBW 10 Hz
SWT 25 s
Marker 1 [T1]
8.53 dBm
2.461200000 GHz
Ref 20.5 dBm
*Att 30 dB
20 Offset 0.5 dB
Marker 2 [T1]
-53.80 dBm
2.483500000 GHz
Marker 3 [T1]
-52.46 dBm
2.498000000 GHz
Marker 4 [T1]
-53.80 dBm
2.500000000 GHz
D1 8.53 dBm
D2 -11.47 dBm
1 PK VIEW
A
LVL
F1
F2
Center 2.5064 GHz
10 MHz/
Span 100 MHz


*RBW 100 kHz
*VBW 100 kHz
SWT 2.5 s
Marker 1 [T1]
7.27 dBm
2.427120000 GHz
Ref 20.5 dBm
*Att 30 dB
20 Offset 0.5 dB
Marker 2 [T1]
-37.38 dBm
679.220000000 MHz
Marker 3 [T1]
-42.31 dBm
21.953660000 GHz
D1 8.55 dBm
D2 -11.45 dBm
1 PK VIEW
A
LVL
Start 30 MHz
2.497 GHz/
Stop 25 GHz

802.11g OFDM NORMAL MODULATION

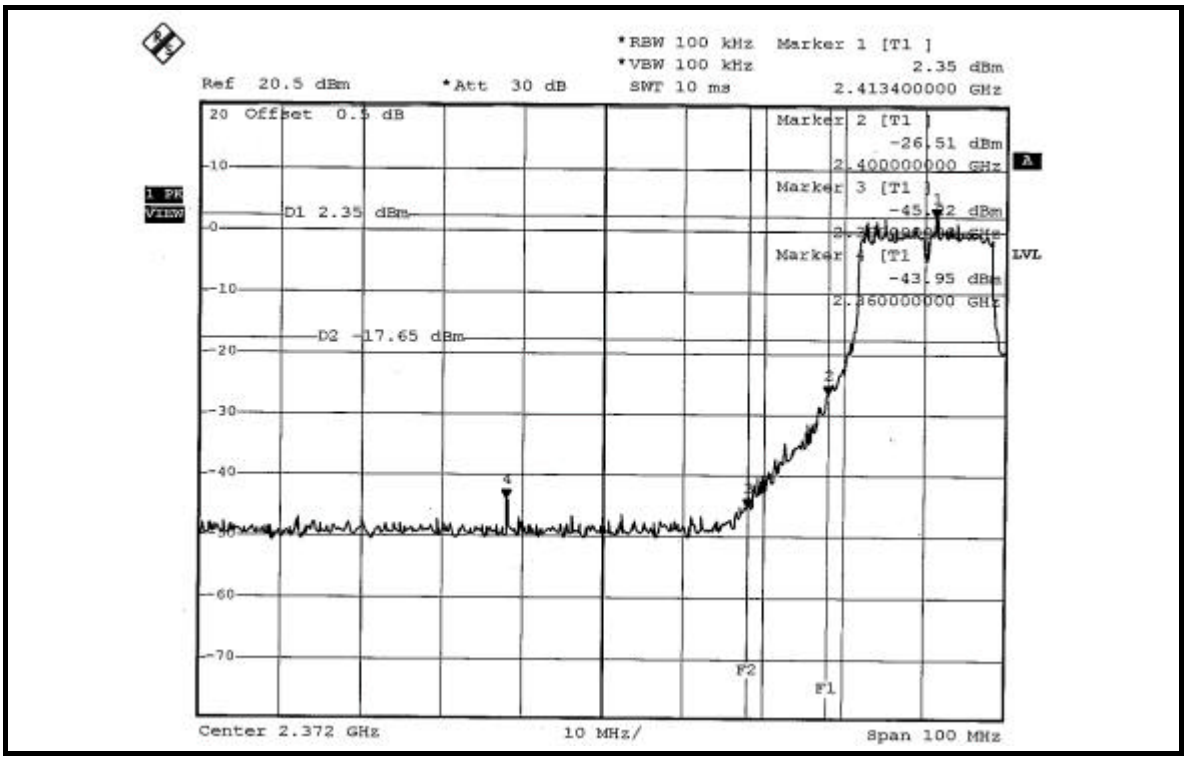
NOTE 1: The band edge emission plot of OFDM technique on the next page shows 46.50dBc between carrier maximum power and local maximum emission in restrict band (2.3600GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 111.02dBuV/m (Peak), so the maximum field strength in restrict band is 111.02-46.50=64.52dBuV/m which is under 74dBuV/m limit.

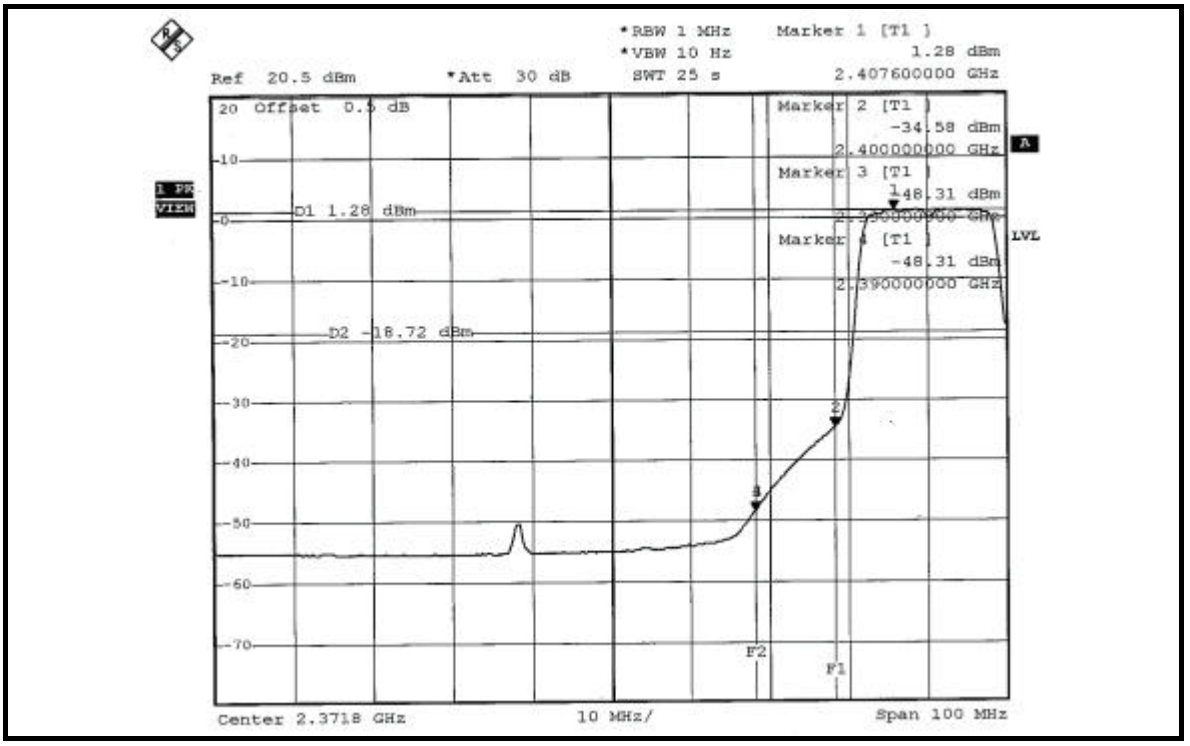
The band edge emission plot of OFDM technique on the next page shows 49.59dBc between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 101.62dBuV/m (Average), so the maximum field strength in restrict band is 101.62-49.59=52.03dBuV/m which is under 54dBuV/m limit.

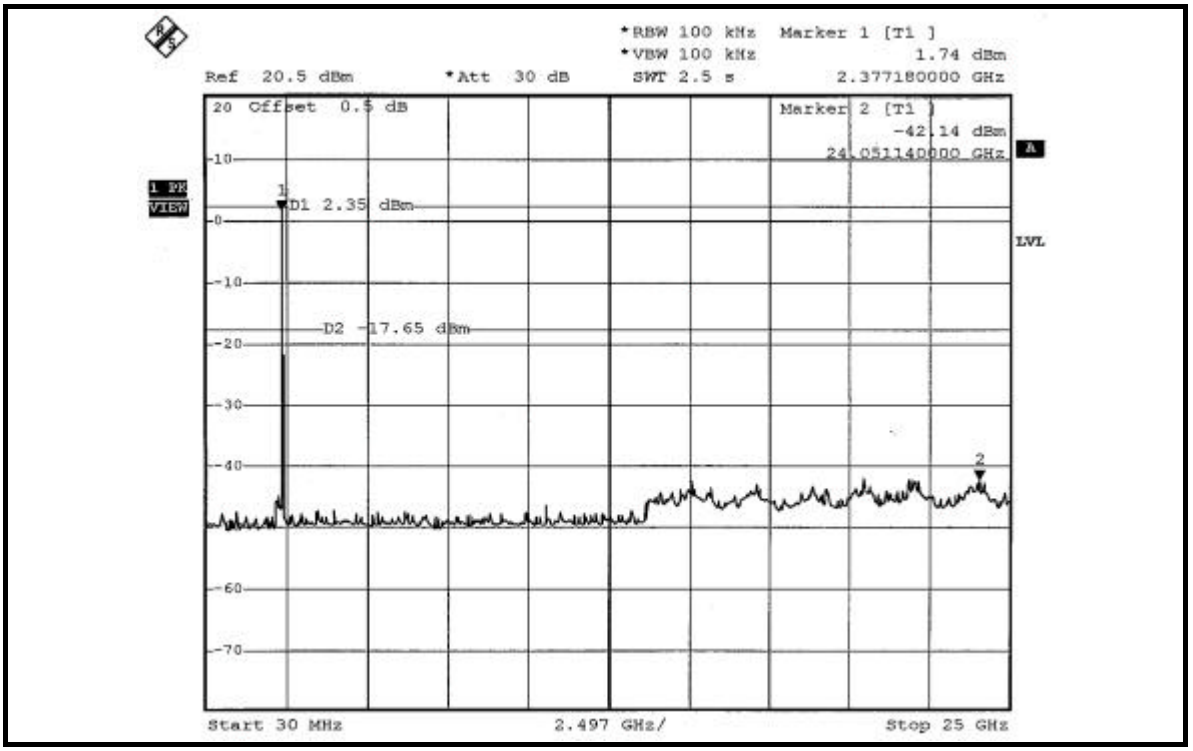
NOTE 2: The band edge emission plot of OFDM technique on the second page shows 48.27dBc between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 110.97dBuV/m (Peak), so the maximum field strength in restrict band is 110.97-48.27=62.70dBuV/m which is under 74dBuV/m limit.

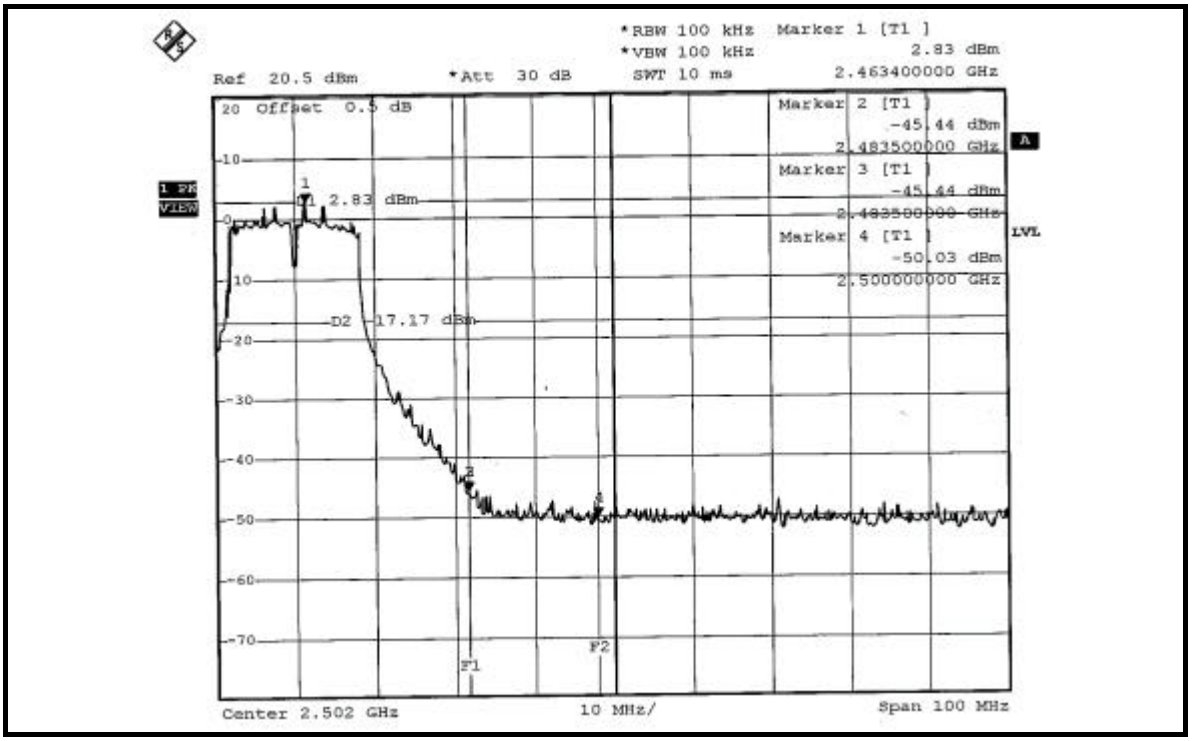
The band edge emission plot of OFDM technique on the third page shows 49.04dBc between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 101.60dBuV/m (Average), so the maximum field strength in restrict band is 101.60-49.04=52.56dBuV/m which is under 54dBuV/m limit.

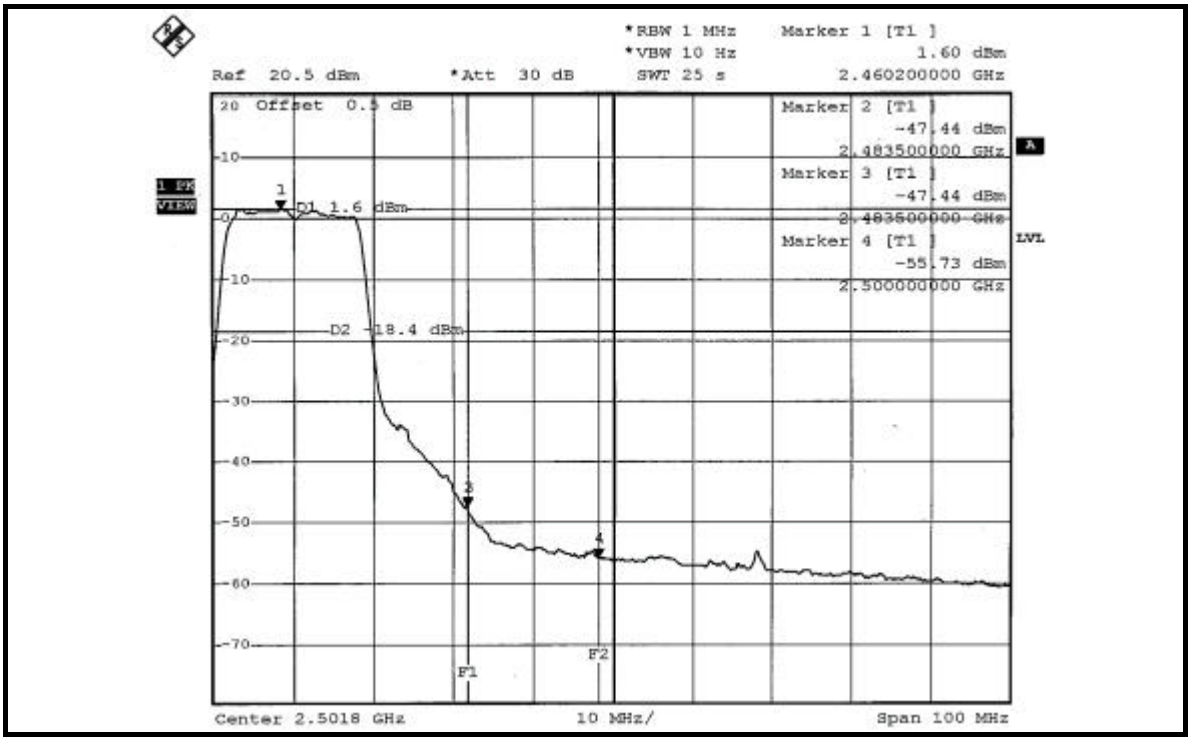
802.11g OFDM NORMAL MODULATION

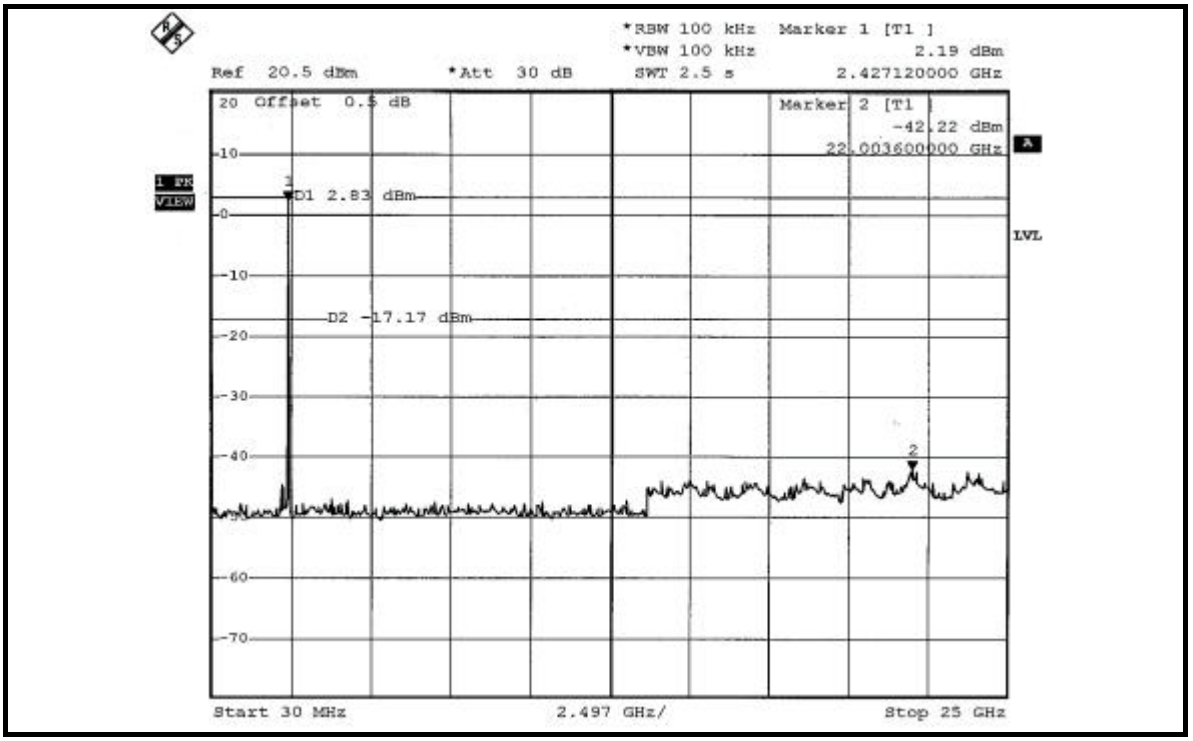





*RBW 100 kHz
*VBW 100 kHz
Ref 20.5 dBm
*Att 30 dB
SWT 2.5 s
Marker 1 [T1]
1.74 dBm
2.377180000 GHz
20 Offset 0.5 dB
Marker 2 [T1]
-42.14 dBm
24.051140000 GHz
1 PK VIEW
D1 2.35 dBm
D2 -17.65 dBm
LVL
Start 30 MHz
2.497 GHz/
Stop 25 GHz


*RBW 100 kHz
*VBW 100 kHz
Ref 20.5 dBm
*Att 30 dB
SWT 10 ms
Marker 1 [T1]
2.83 dBm
2.463400000 GHz
20 Offset 0.5 dB
Marker 2 [T1]
-45.44 dBm
2.483500000 GHz
Marker 3 [T1]
-45.44 dBm
2.483500000 GHz
Marker 4 [T1]
-50.03 dBm
2.500000000 GHz
1 PK VIEW
D1 2.83 dBm
D2 -17.17 dBm
LVL
F1
F2
Center 2.502 GHz
10 MHz/
Span 100 MHz


*RBW 1 MHz
*VBW 10 Hz
SWT 25 s
Marker 1 [T1]
1.60 dBm
2.460200000 GHz
Ref 20.5 dBm
*Att 30 dB
20 Offset 0.5 dB
Marker 2 [T1]
-47.44 dBm
2.483500000 GHz
Marker 3 [T1]
-47.44 dBm
2.483500000 GHz
Marker 4 [T1]
-55.73 dBm
2.500000000 GHz
D1 1.6 dBm
D2 -18.4 dBm
F1
F2
LVL
Center 2.5018 GHz
10 MHz/
Span 100 MHz


*RBW 100 kHz
*VBW 100 kHz
SWT 2.5 s
Marker 1 [T1]
2.19 dBm
2.427120000 GHz
Ref 20.5 dBm
*Att 30 dB
20 Offset 0.5 dB
Marker 2 [T1]
-42.22 dBm
22.003600000 GHz
D1 2.83 dBm
D2 -17.17 dBm
LVL
Start 30 MHz
2.497 GHz/
Stop 25 GHz

802.11g OFDM TURBO MODULATION

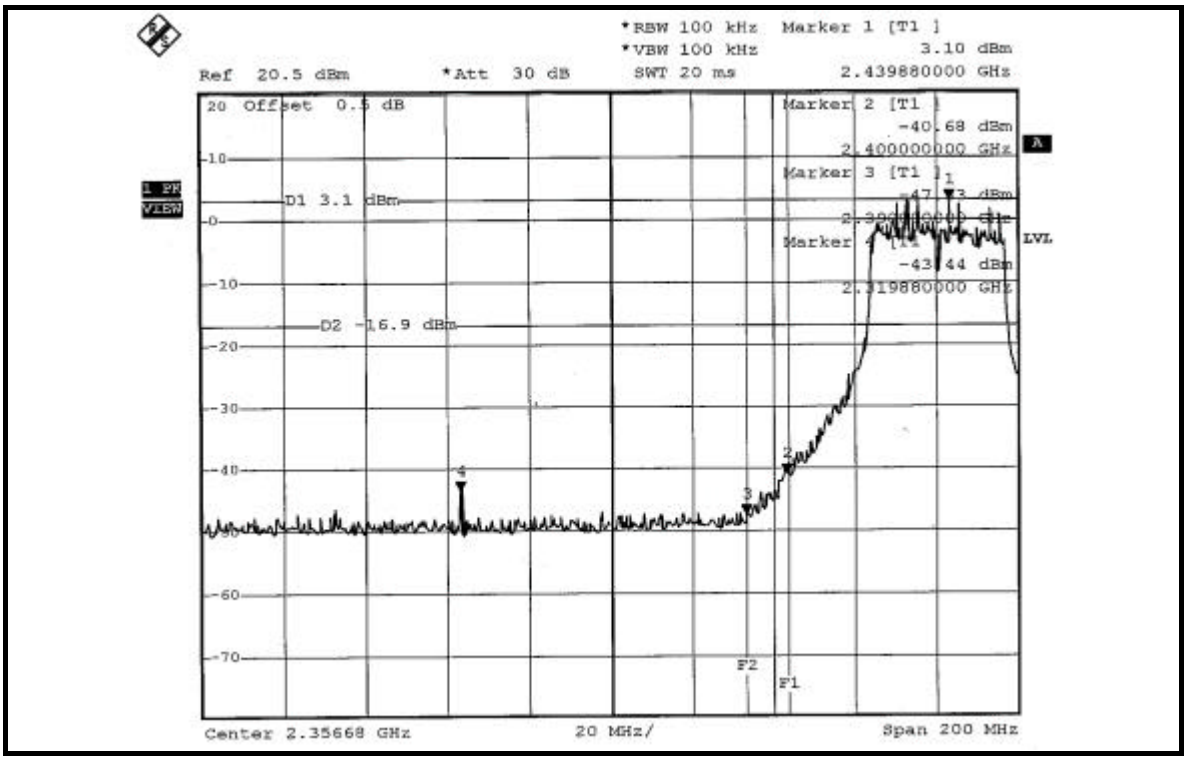
NOTE 1: The band edge emission plot of OFDM technique on the next page shows 46.54dBc between carrier maximum power and local maximum emission in restrict band (2.3199GHz). The emission of carrier strength list in the test result of channel 6 at the item 4.2.7 is 107.31dBuV/m (Peak), so the maximum field strength in restrict band is 107.31-46.54=60.77dBuV/m which is under 74dBuV/m limit.

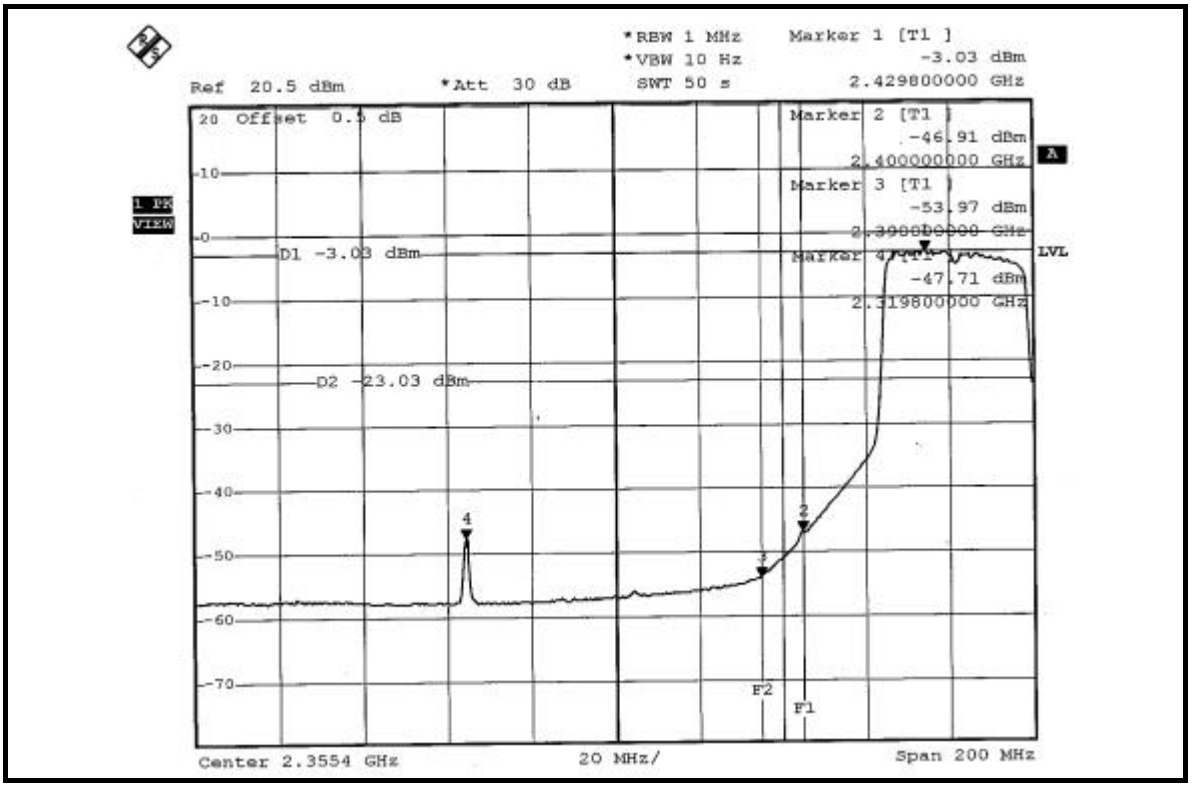
The band edge emission plot of OFDM technique on the next page shows 44.68dBc between carrier maximum power and local maximum emission in restrict band (2.3198GHz). The emission of carrier strength list in the test result of channel 6 at the item 4.2.7 is 97.34dBuV/m (Average), so the maximum field strength in restrict band is 97.34-44.68=52.66dBuV/m which is under 54dBuV/m limit.

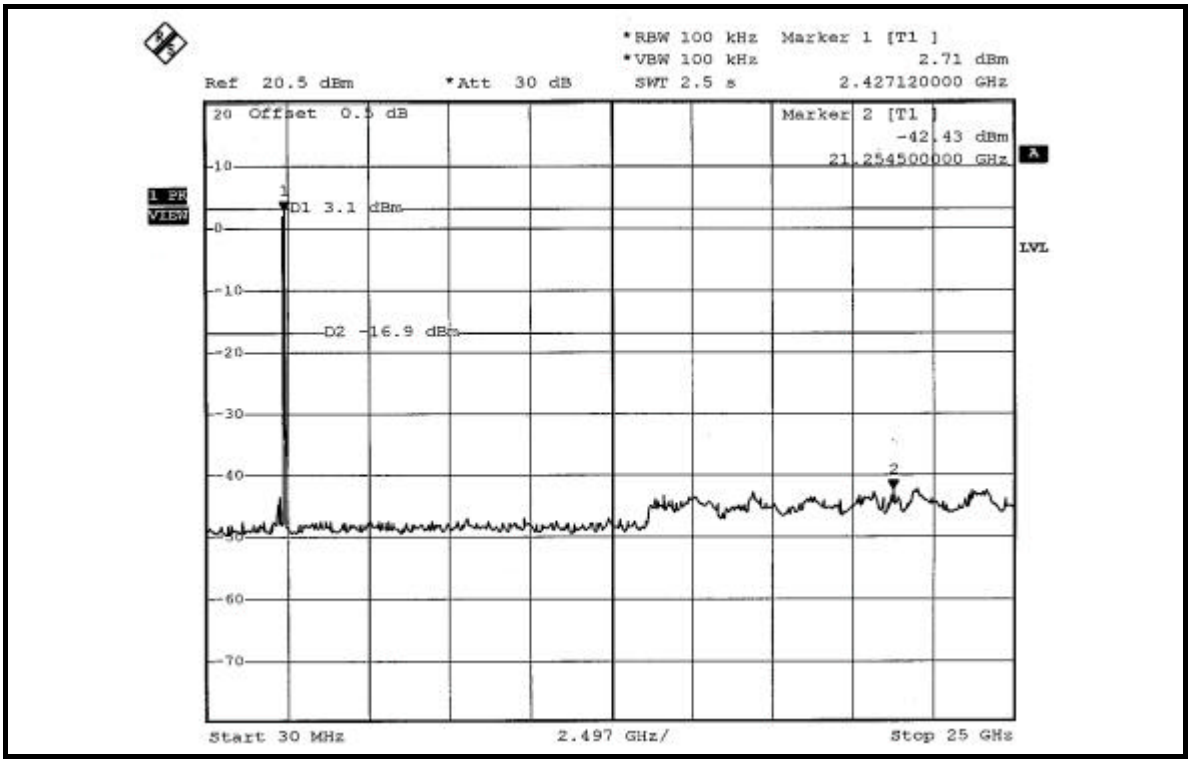
NOTE 2: The band edge emission plot of OFDM technique on the second page shows 49.69dBc between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 6 at the item 4.2.7 is 107.31dBuV/m (Peak), so the maximum field strength in restrict band is 107.31-49.69=57.62dBuV/m which is under 74dBuV/m limit.

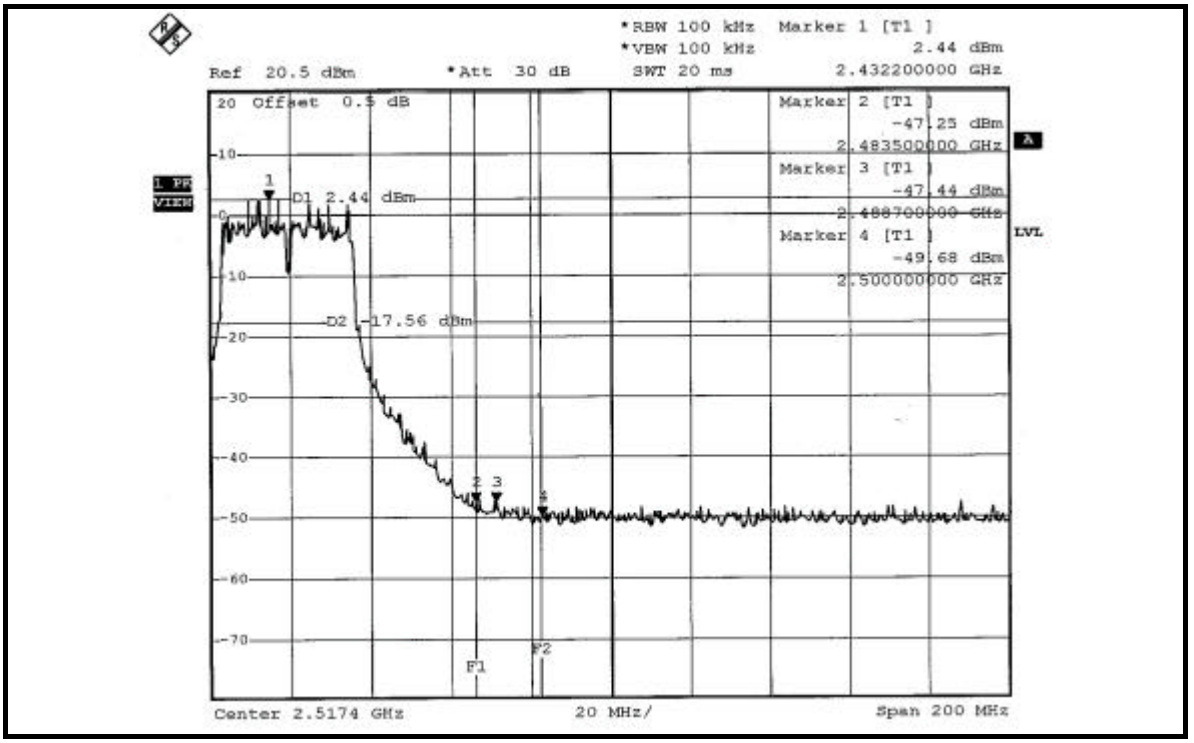
The band edge emission plot of OFDM technique on the third page shows 52.61dBc between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 6 at the item 4.2.7 is 97.34dBuV/m (Average), so the maximum field strength in restrict band is 97.34-52.61=44.73dBuV/m which is under 54dBuV/m limit.

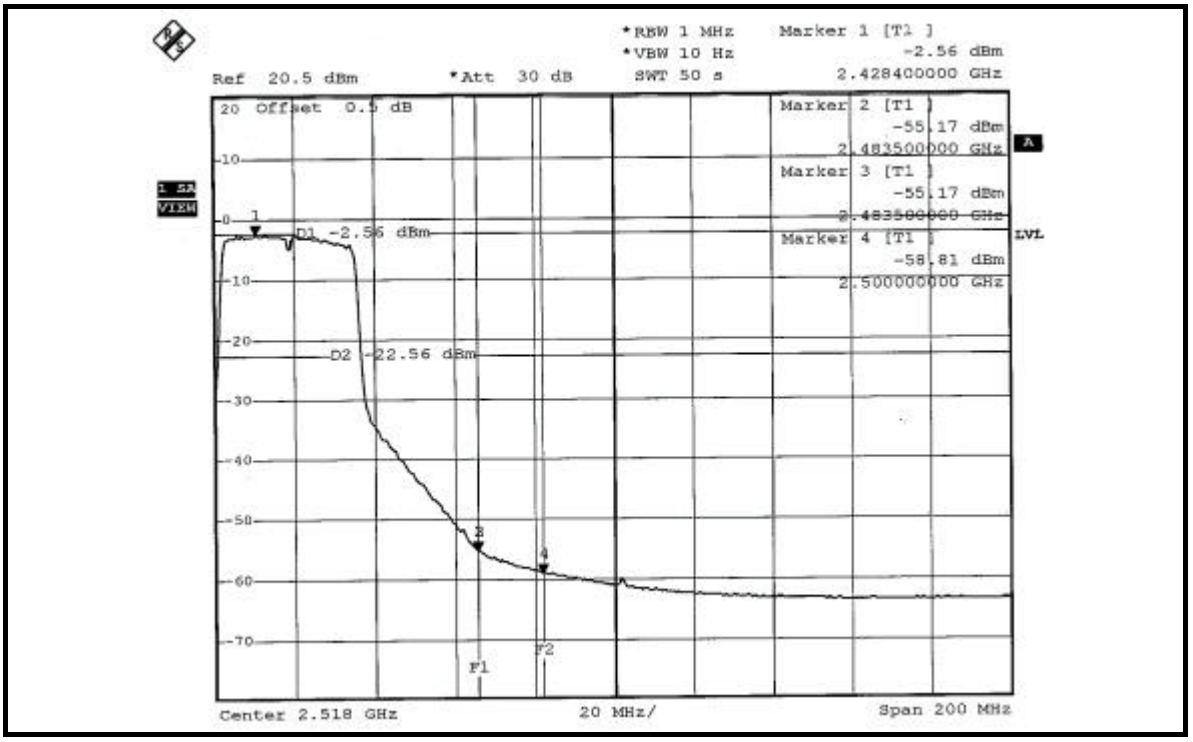
802.11g OFDM TURBO MODULATION

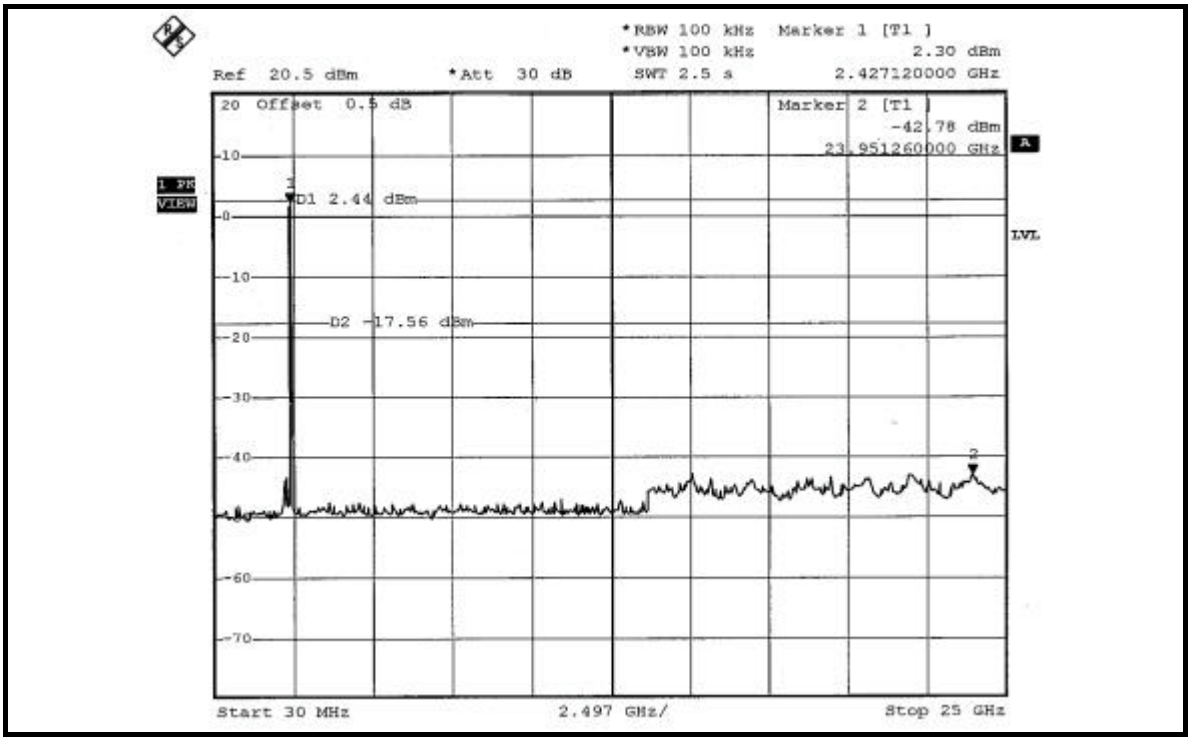





*RBW 100 kHz
*VBW 100 kHz
Ref 20.5 dBm
*Att 30 dB
SWT 2.5 s
Marker 1 [T1]
2.71 dBm
2.427120000 GHz
20 Offset 0.5 dB
Marker 2 [T1]
-42.43 dBm
21.254500000 GHz
1 PK
VIEW
D1 3.1 dBm
D2 -16.9 dBm
LVL
Start 30 MHz
2.497 GHz/
Stop 25 GHz


*RBW 100 kHz
*VBW 100 kHz
Ref 20.5 dBm
*Att 30 dB
SWT 20 ms
Marker 1 [T1]
2.44 dBm
2.432200000 GHz
20 Offset 0.5 dB
Marker 2 [T1]
-47.25 dBm
2.483500000 GHz
Marker 3 [T1]
-47.44 dBm
2.488700000 GHz
Marker 4 [T1]
-49.68 dBm
2.500000000 GHz
1 PK
VIEW
D1 2.44 dBm
D2 -17.56 dBm
LVL
F1
F2
Center 2.5174 GHz
20 MHz/
Span 200 MHz


*RBW 1 MHz
*VBW 10 Hz
SWT 50 s
Marker 1 [T1]
-2.56 dBm
2.428400000 GHz
Ref 20.5 dBm
*Att 30 dB
20 Offset 0.5 dB
Marker 2 [T1]
-55.17 dBm
2.483500000 GHz
Marker 3 [T1]
-55.17 dBm
2.483500000 GHz
Marker 4 [T1]
-58.81 dBm
2.500000000 GHz
D1 -2.56 dBm
D2 -22.56 dBm
F1
F2
LVL
Center 2.518 GHz
20 MHz/
Span 200 MHz


*RBW 100 kHz
*VBW 100 kHz
SWT 2.5 s
Marker 1 [T1]
2.30 dBm
2.427120000 GHz
Ref 20.5 dBm
*Att 30 dB
20 Offset 0.5 dB
Marker 2 [T1]
-42.78 dBm
23.951260000 GHz
D1 2.44 dBm
D2 -17.56 dBm
LVL
Start 30 MHz
2.497 GHz/
Stop 25 GHz

4.7 ANTENNA REQUIREMENT

4.7.1 STANDARD APPLICABLE

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

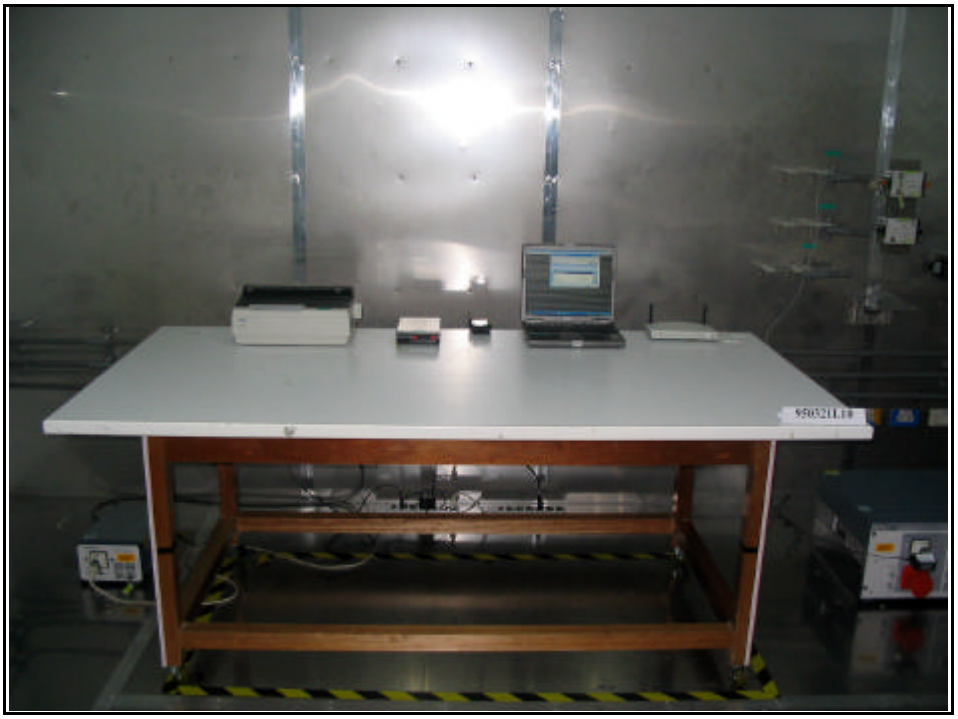
And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

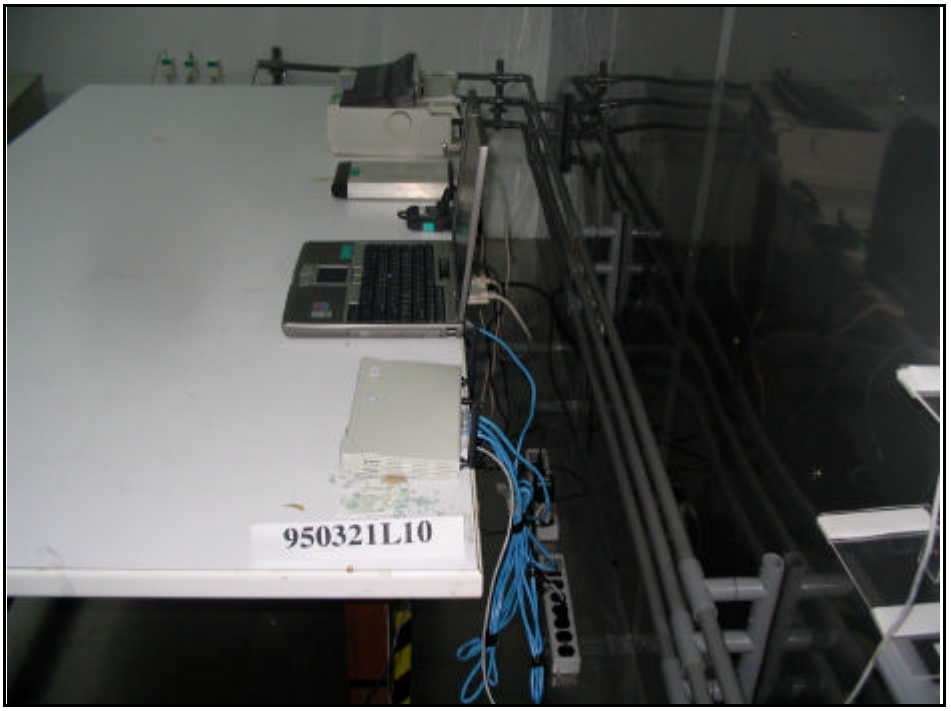
4.7.2 ANTENNA CONNECTED CONSTRUCTION

The antenna used in this product is Dipole antenna without connector. The maximum Gain of the antenna is 2.71dBi.

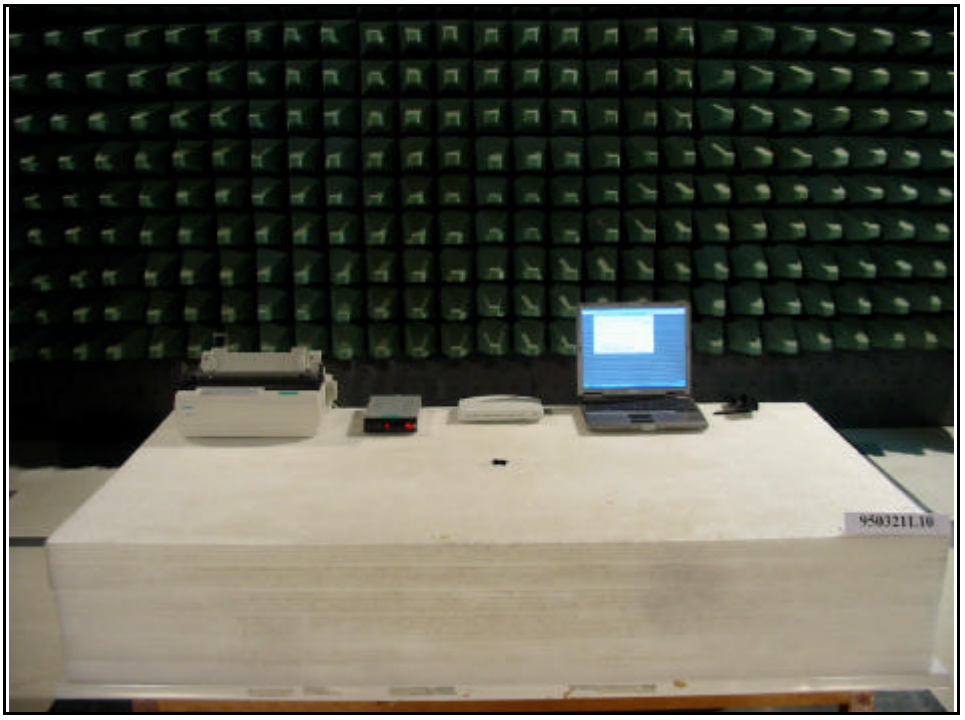
5 PHOTOGRAPHS OF THE TEST CONFIGURATION

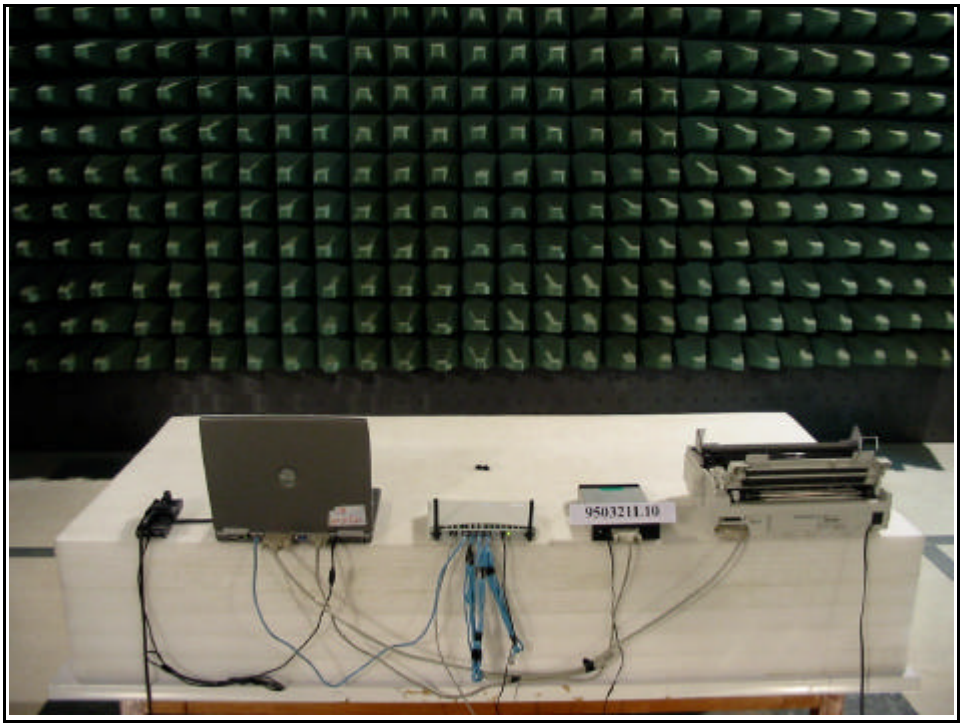
CONDUCTED EMISSION TEST





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, 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.

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.