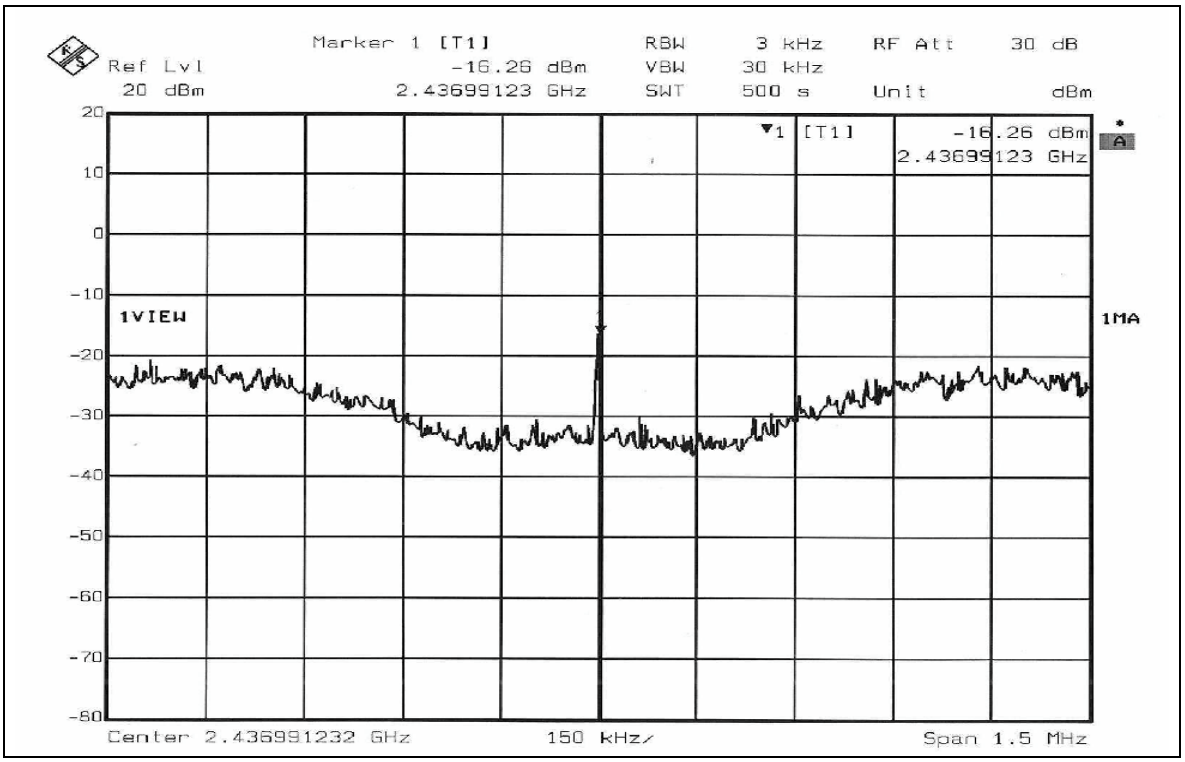
802.11g Turbo OFDM modulation

EUT	108Mbps 802.11g MIMO Wireless PC Card	**MODEL**	TEW-601PC
MODULATION TYPE	BPSK	**TRANSFER RATE**	12Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	27deg. 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	-16.26	8	PASS

*(The test data is in accordance with ADT Report No.: 940711L09.)

CH6


Marker 1 [T1]
RBW 3 kHz
RF Att 30 dB
Ref Lvl
-16.26 dBm
VBW 30 kHz
20 dBm
2.43699123 GHz
SWT 500 s
Unit dBm
1 [T1]
-16.26 dBm
2.43699123 GHz
1VIEW
1MA
Center 2.436991232 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. 12, 2005

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

4.6.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low lose cable. Set both RBW and VBW of spectrum analyzer to 100kHz with suitable frequency span including 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 18 images. D2 line indicates the highest level, and D1 line indicates the 20dB offset below D2. It shows compliance with the requirement in part 15.247(d).

802.11b DSSS modulation

NOTE 1:

The band edge emission plot of DSSS technique on page 65 shows 54.04dBc between carrier maximum power and local maximum emission in restrict band (2.3880GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 111.57dBuV/m (Peak), so the maximum field strength in restrict band is 111.57-54.04=57.53dBuV/m which is under 74dBuV/m limit.

The band edge emission plot of DSSS technique on page 65 shows 58.15dBc 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 103.52dBuV/m (Average), so the maximum field strength in restrict band is 103.52-58.15=45.37dBuV/m which is under 54dBuV/m limit.

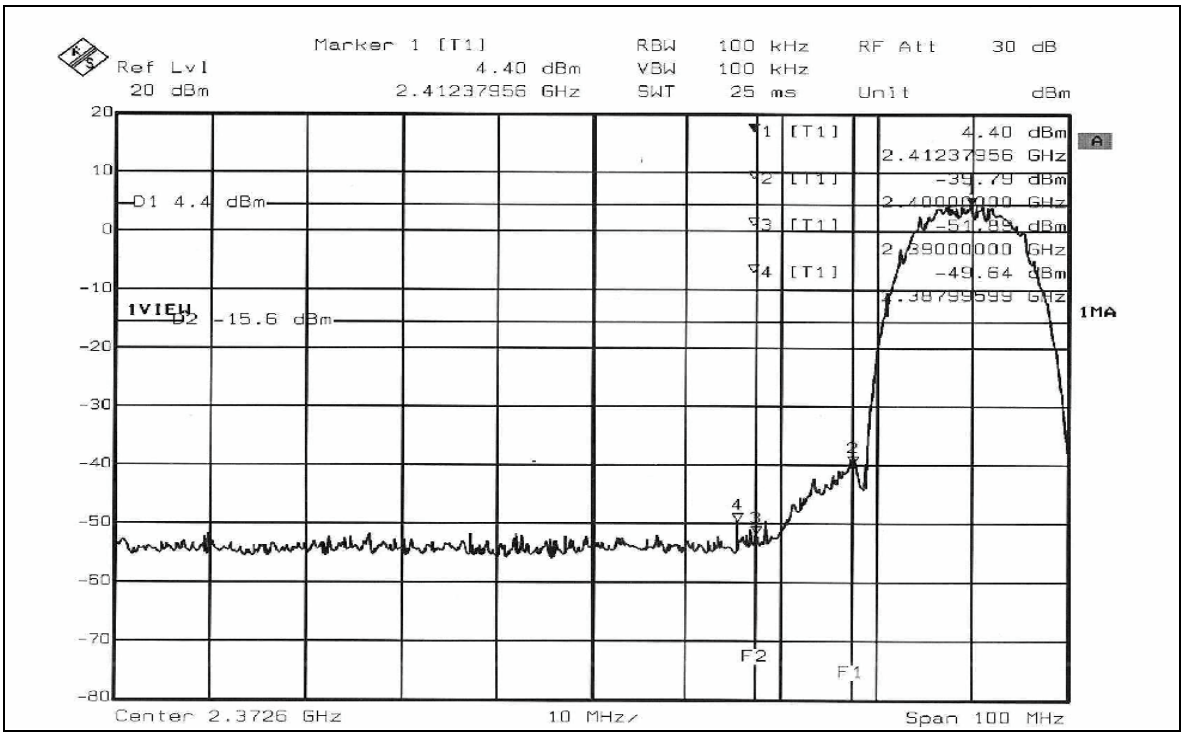
NOTE 2:

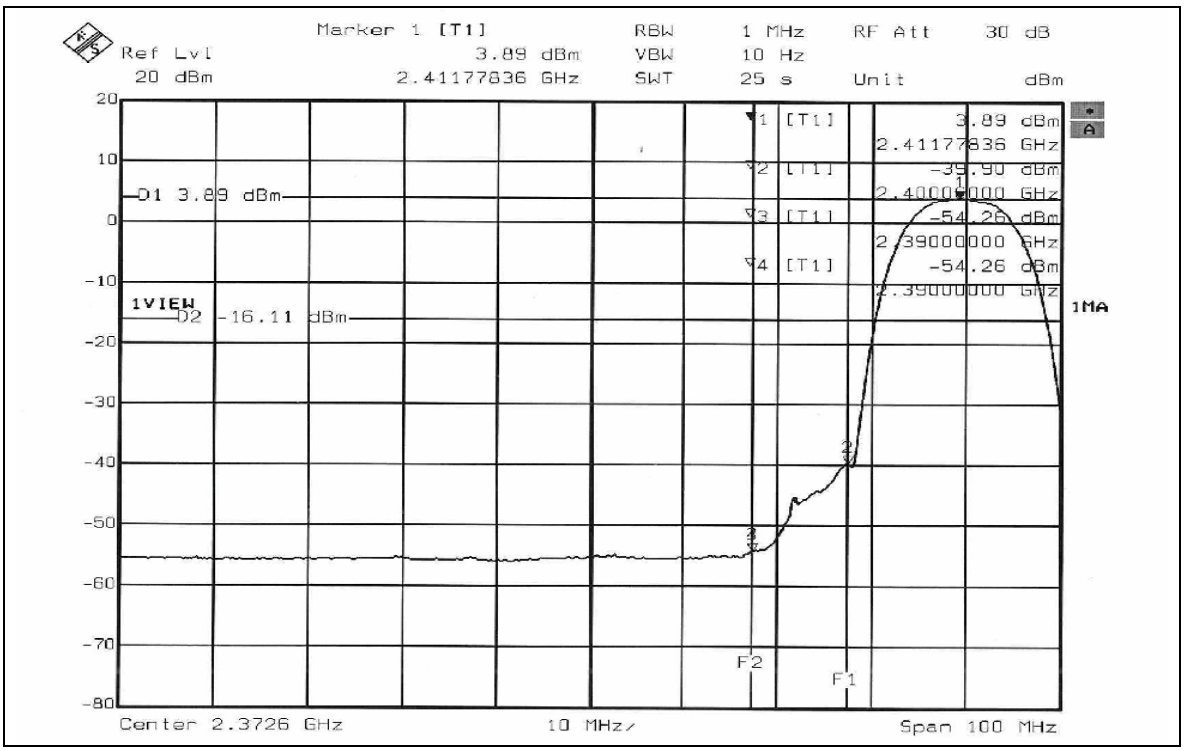
The band edge emission plot of DSSS technique on page 66 shows 57.61dBc between carrier maximum power and local maximum emission in restrict band (2.4863GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 112.47dBuV/m (Peak), so the maximum field strength in restrict band is 112.47-57.61=54.86dBuV/m which is under 74dBuV/m limit.

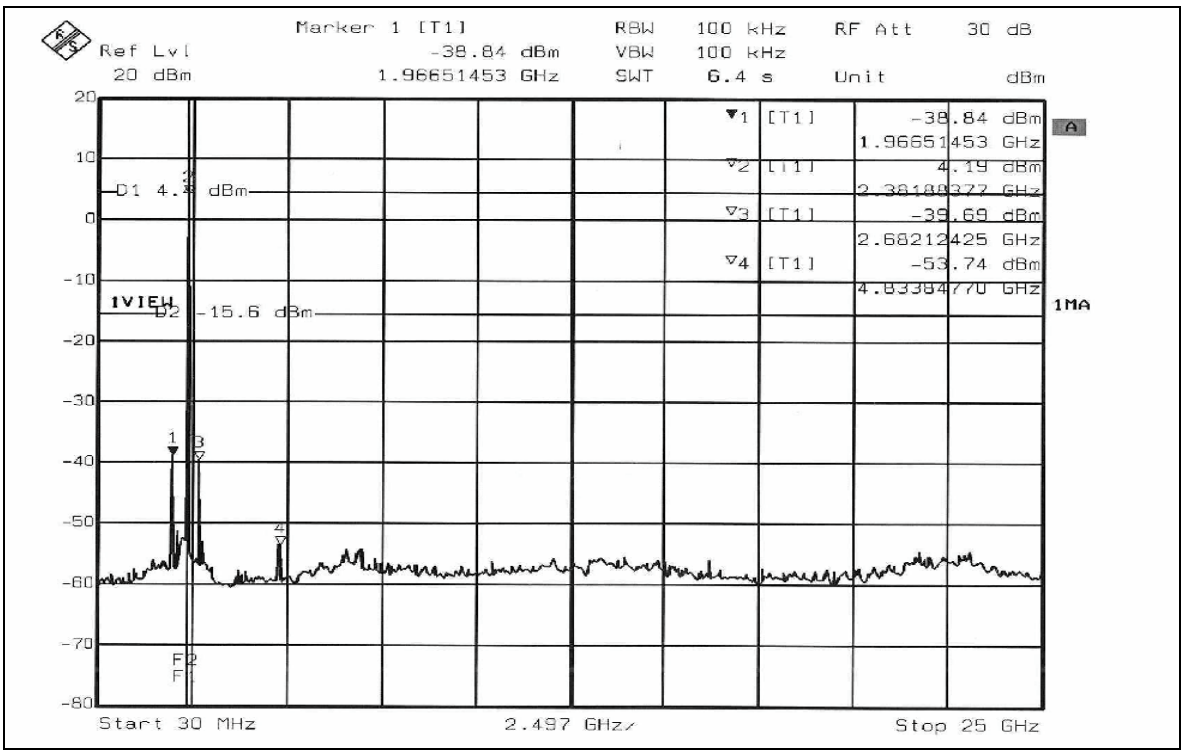
The band edge emission plot of DSSS technique on page 67 shows 60.51dBc between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 104.33dBuV/m (Average), so the maximum field strength in restrict band is 104.33-60.51=43.82dBuV/m which is under 54dBuV/m limit.

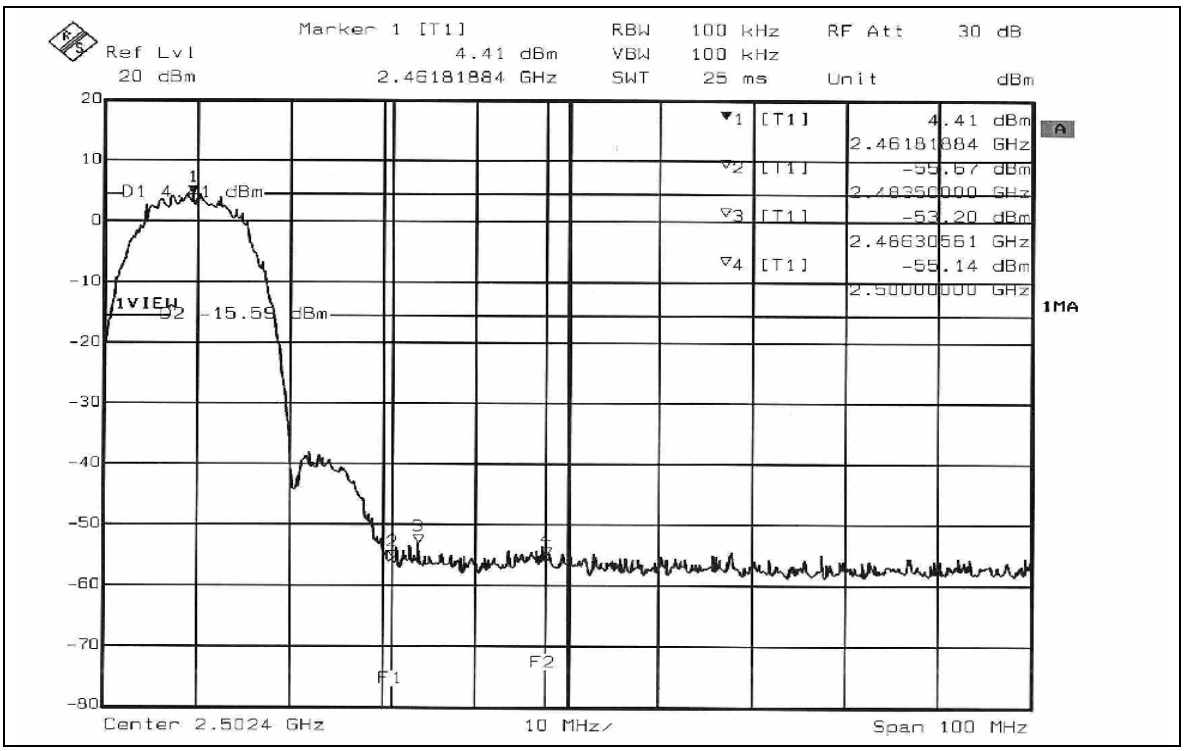
*(The test data is in accordance with ADT Report No.: 940711L09.)

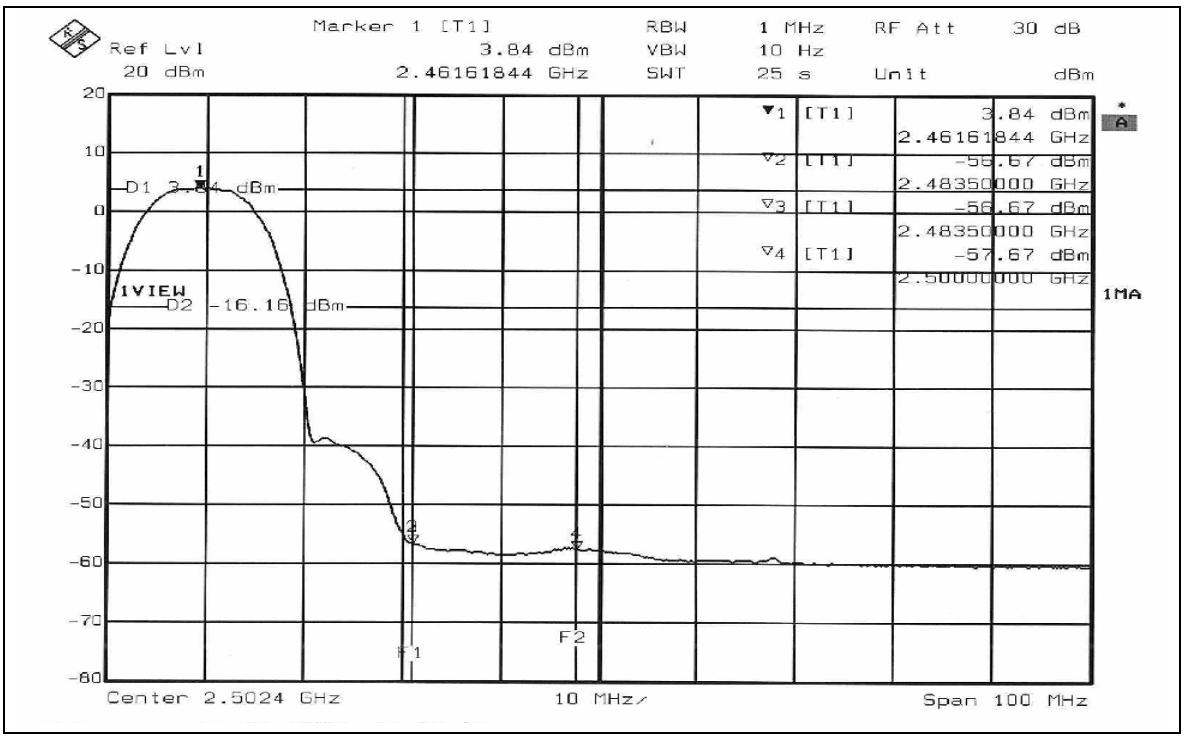
802.11b DSSS modulation

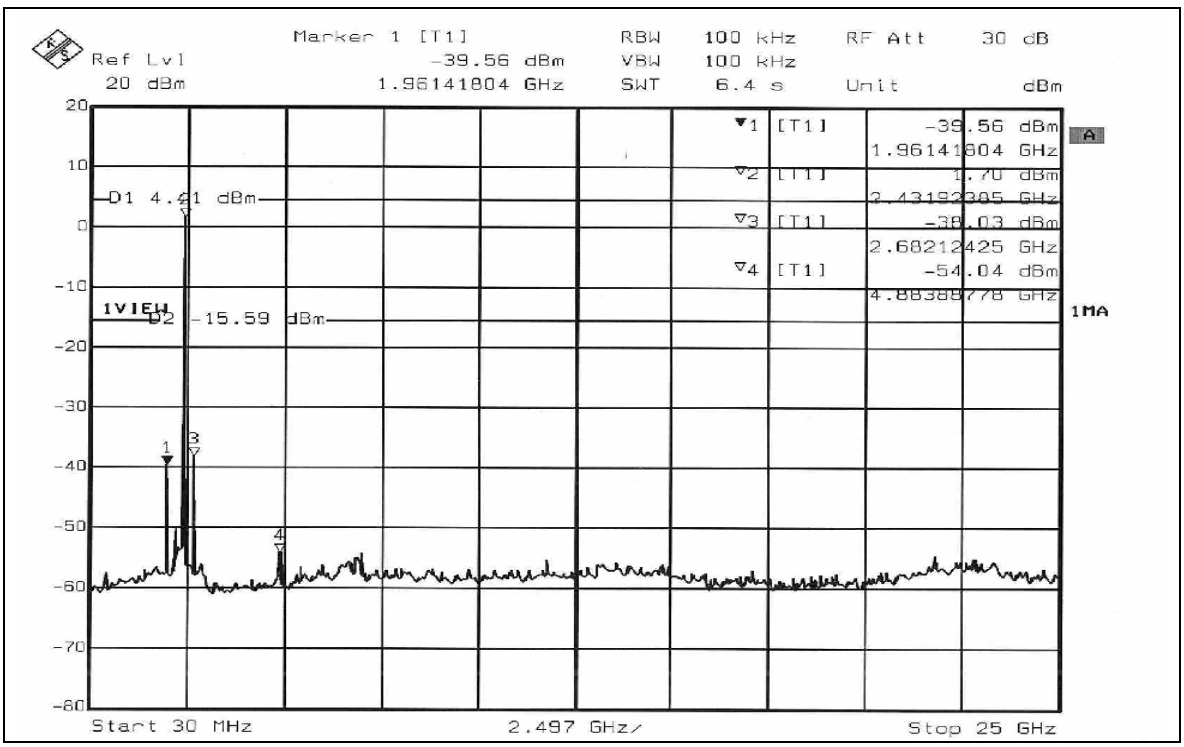





Marker 1 [T1]
RBW 100 kHz
RF Att 30 dB
Ref Lvl
-38.84 dBm
VBW 100 kHz
20 dBm
1.96651453 GHz
SWT 6.4 s
Unit dBm
▼1 [T1] -38.84 dBm
1.96651453 GHz
▽2 [T1] 4.19 dBm
2.38188377 GHz
▽3 [T1] -39.69 dBm
2.68212425 GHz
▽4 [T1] -53.74 dBm
4.83384770 GHz
D1 4.19 dBm
D2 -15.6 dBm
1VIEW
1MA
Start 30 MHz
2.497 GHz/
Stop 25 GHz


Marker 1 [T1]
RBW 100 kHz
RF Att 30 dB
Ref Lvl
4.41 dBm
VBW 100 kHz
20 dBm
2.46181884 GHz
SWT 25 ms
Unit dBm
▼1 [T1] 4.41 dBm
2.46181884 GHz
▽2 [T1] -55.67 dBm
2.48350000 GHz
▽3 [T1] -53.20 dBm
2.48630561 GHz
▽4 [T1] -55.14 dBm
2.50000000 GHz
D1 4.41 dBm
D2 -15.59 dBm
1VIEW
1MA
F1
F2
Center 2.5024 GHz
10 MHz/
Span 100 MHz


Marker 1 [T1]
RBW 1 MHz
RF Att 30 dB
Ref Lvl
3.84 dBm
VBW 10 Hz
20 dBm
2.46161844 GHz
SWT 25 s
Unit dBm
▼1 [T1] 3.84 dBm
2.46161844 GHz
▽2 [T1] -56.67 dBm
2.48350000 GHz
▽3 [T1] -56.67 dBm
2.48350000 GHz
▽4 [T1] -57.67 dBm
2.50000000 GHz
D1 3.84 dBm
1VIEW
D2 -16.16 dBm
1MA
F1
F2
Center 2.5024 GHz
10 MHz/
Span 100 MHz


Marker 1 [T1]
RBW 100 kHz
RF Att 30 dB
Ref Lvl
-39.56 dBm
VBW 100 kHz
20 dBm
1.96141804 GHz
SWT 6.4 s
Unit dBm
▼1 [T1] -39.56 dBm
1.96141804 GHz
▽2 [T1] 1.70 dBm
2.43192305 GHz
▽3 [T1] -38.03 dBm
2.68212425 GHz
▽4 [T1] -54.04 dBm
4.88388778 GHz
D1 4.61 dBm
1VIEW
D2 -15.59 dBm
1MA
Start 30 MHz
2.497 GHz/
Stop 25 GHz

802.11g OFDM modulation

NOTE 1:

The band edge emission plot of OFDM technique on page 69 shows 49.17dBc between carrier maximum power and local maximum emission in restrict band (2.3898GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 108.37dBuV/m (Peak), so the maximum field strength in restrict band is 108.37-49.17=59.20dBuV/m which is under 74dBuV/m limit.

The band edge emission plot of OFDM technique on page 69 shows 52.06dBc 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 97.96dBuV/m (Average), so the maximum field strength in restrict band is 97.96-52.06=45.90dBuV/m which is under 54dBuV/m limit.

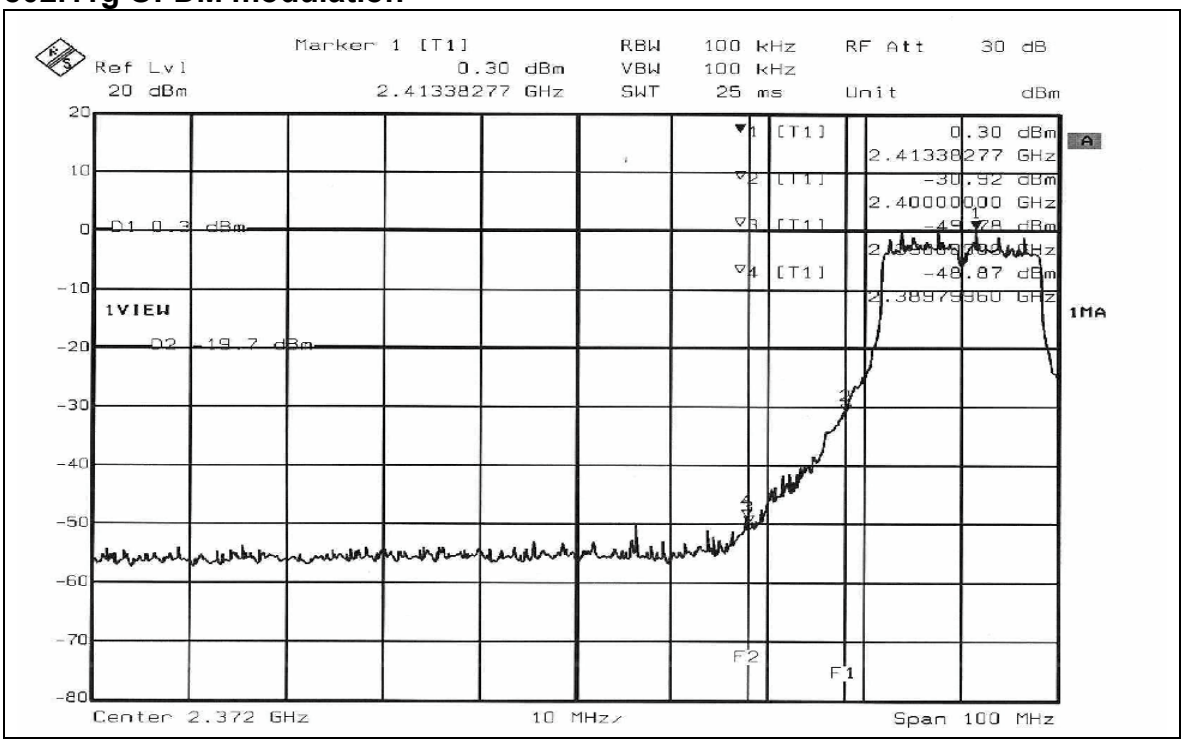
NOTE 2:

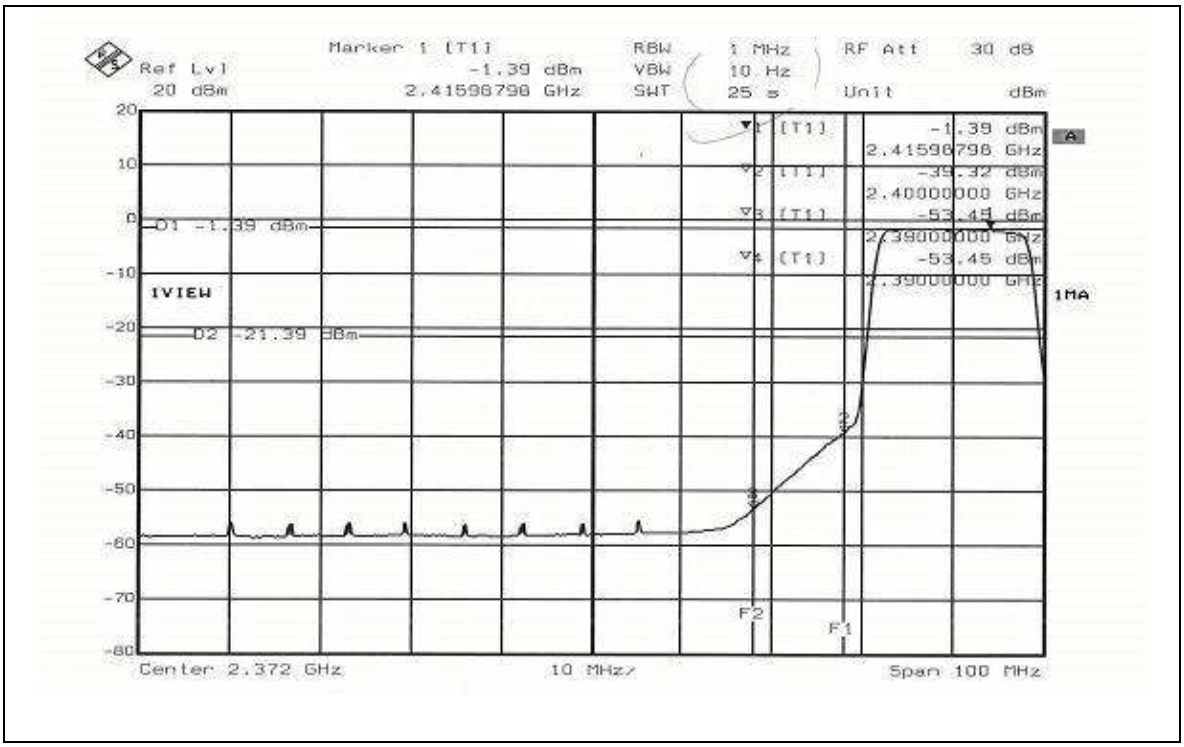
The band edge emission plot of OFDM technique on page 70 shows 48.84dBc between carrier maximum power and local maximum emission in restrict band (2.4839GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 109.55dBuV/m (Peak), so the maximum field strength in restrict band is 109.55-48.84=60.71dBuV/m which is under 74dBuV/m limit.

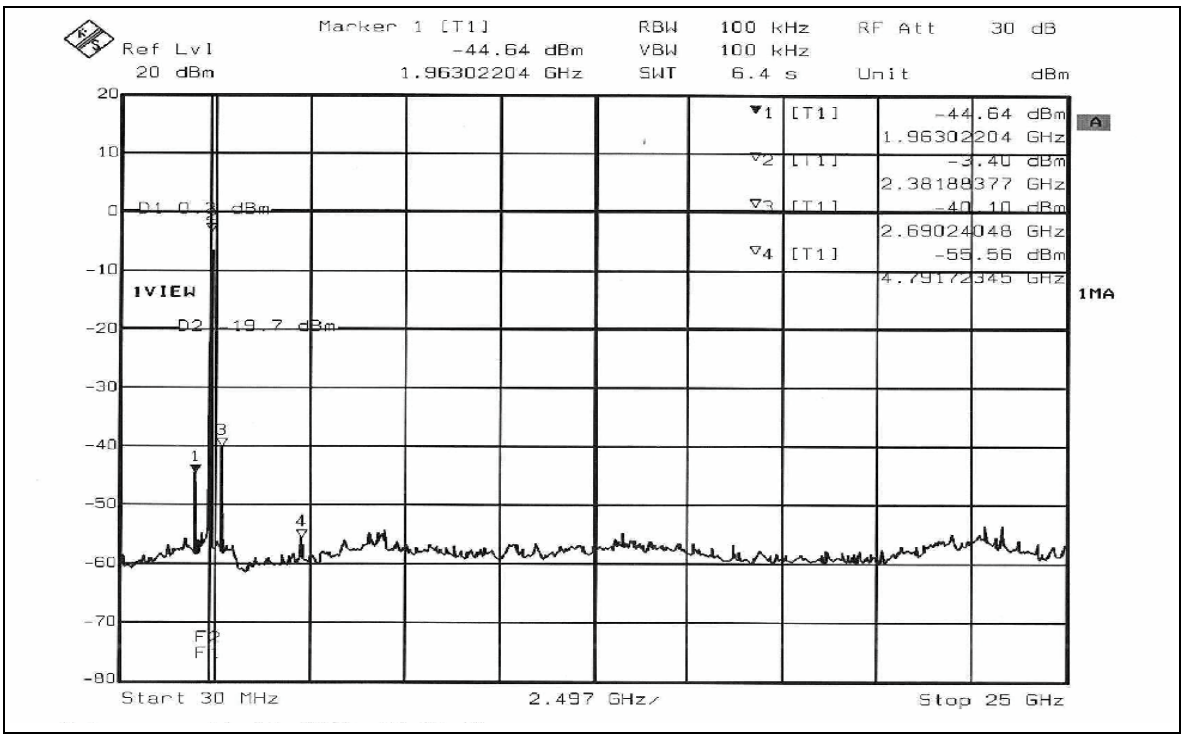
The band edge emission plot of OFDM technique on page 71 shows 50.99dBc between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 98.89dBuV/m (Average), so the maximum field strength in restrict band is 98.89-50.99=47.90dBuV/m which is under 54dBuV/m limit.

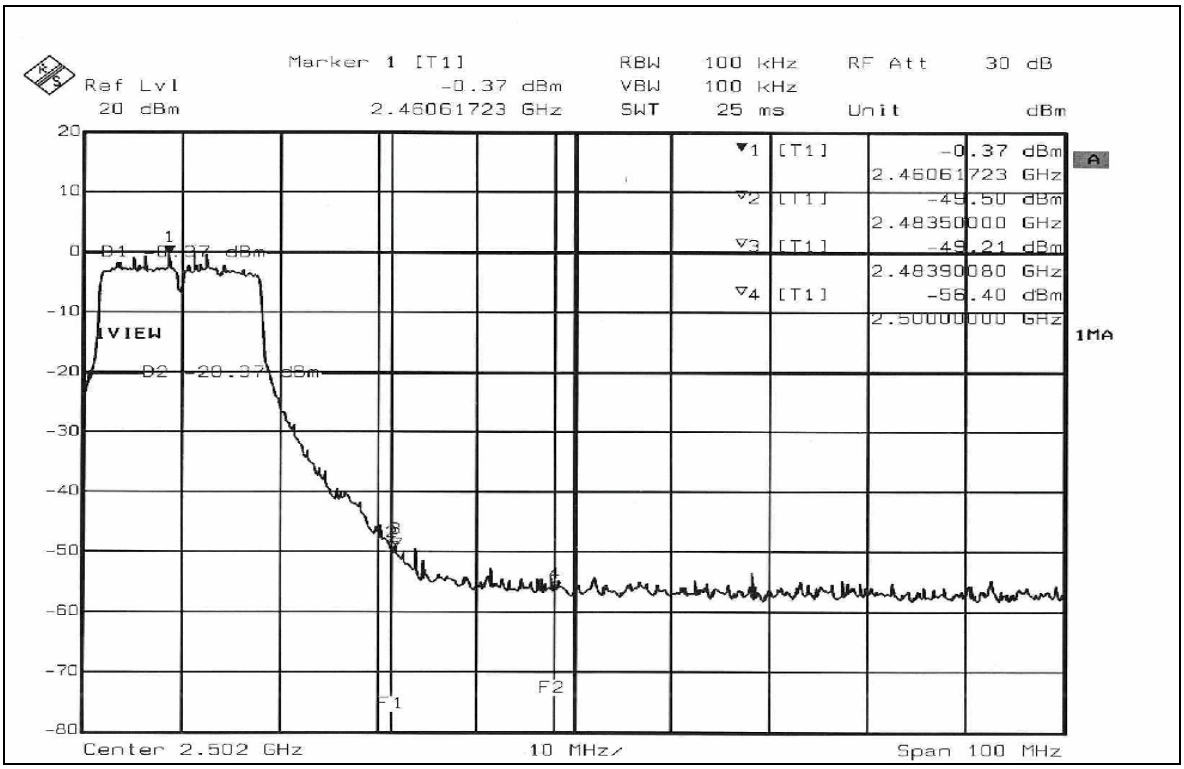
*(The test data is in accordance with ADT Report No.: 940711L09.)

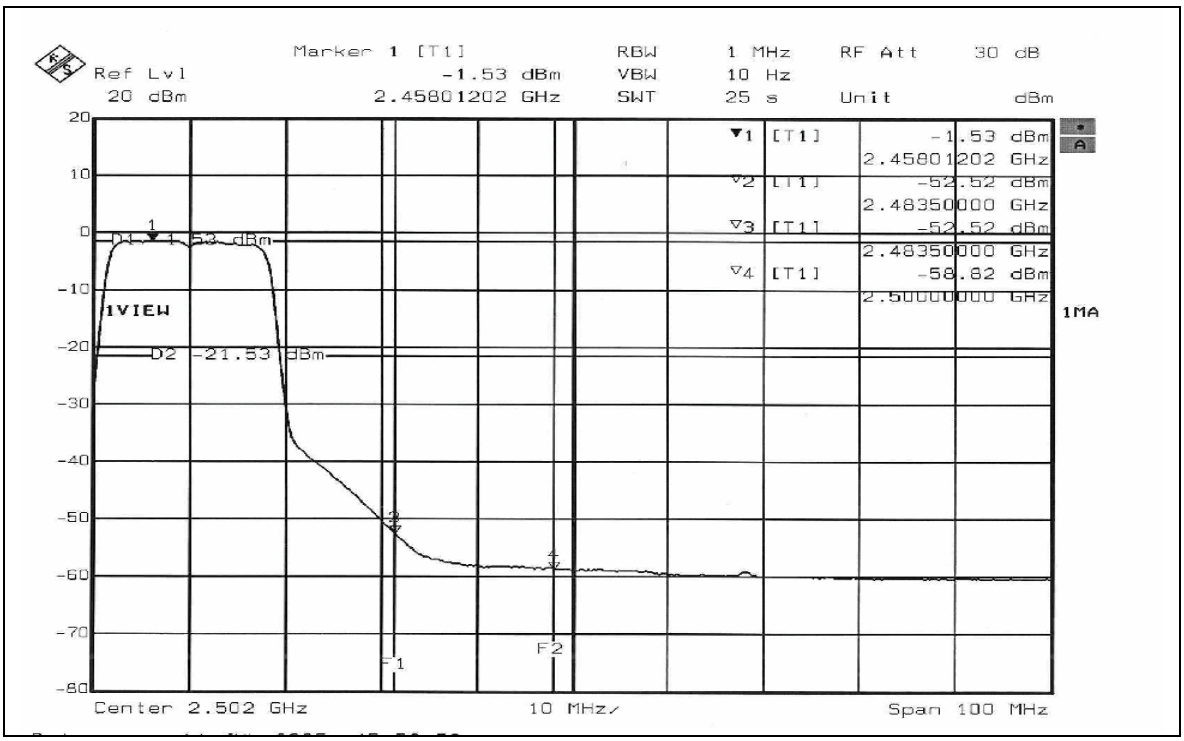
802.11g OFDM modulation

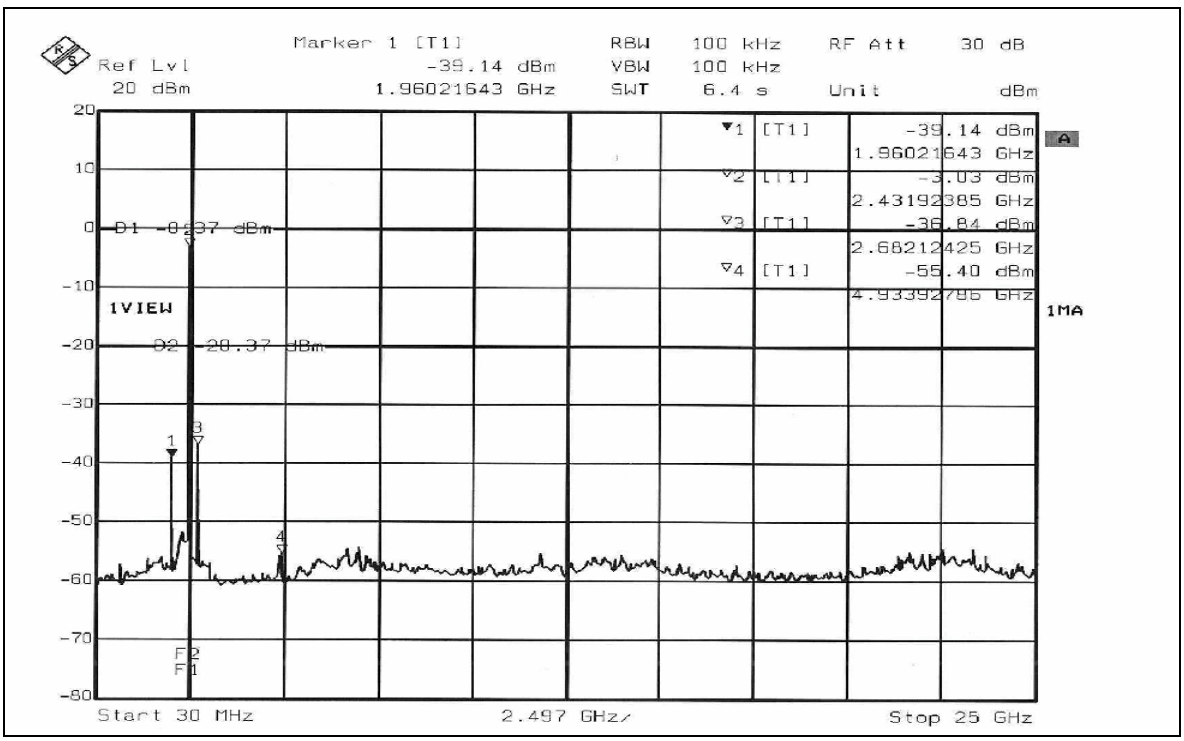





Marker 1 [T1]
RBW 100 kHz
RF Att 30 dB
Ref Lvl
-44.64 dBm
VBW 100 kHz
20 dBm
1.96302204 GHz
SWT 6.4 s
Unit dBm
▼1 [T1] -44.64 dBm
1.96302204 GHz
▽2 [T1] -3.40 dBm
2.38189377 GHz
▽3 [T1] -40.10 dBm
2.69024048 GHz
▽4 [T1] -55.56 dBm
4.79172345 GHz
1VIEW
D2 -19.7 dBm
1MA
Start 30 MHz
2.497 GHz/
Stop 25 GHz


Marker 1 [T1]
RBW 100 kHz
RF Att 30 dB
Ref Lvl
-0.37 dBm
VBW 100 kHz
20 dBm
2.46061723 GHz
SWT 25 ms
Unit dBm
▼1 [T1] -0.37 dBm
2.46061723 GHz
▽2 [T1] -49.50 dBm
2.48350000 GHz
▽3 [T1] -49.21 dBm
2.48390080 GHz
▽4 [T1] -56.40 dBm
2.50000000 GHz
1VIEW
D2 -20.37 dBm
1MA
F1
F2
Center 2.502 GHz
10 MHz/
Span 100 MHz


Marker 1 [T1]
RBW 1 MHz
RF Att 30 dB
Ref Lvl
-1.53 dBm
VBW 10 Hz
20 dBm
2.45801202 GHz
SWT 25 s
Unit dBm
▼1 [T1] -1.53 dBm
2.45801202 GHz
▽2 [T1] -52.52 dBm
2.48350000 GHz
▽3 [T1] -52.52 dBm
2.48350000 GHz
▽4 [T1] -58.82 dBm
2.50000000 GHz
D1 -1.53 dBm
1VIEW
D2 -21.53 dBm
1MA
F1
F2
Center 2.502 GHz
10 MHz/
Span 100 MHz


Marker 1 [T1]
RBW 100 kHz
RF Att 30 dB
Ref Lvl
-39.14 dBm
VBW 100 kHz
20 dBm
1.96021643 GHz
SWT 6.4 s
Unit dBm
▼1 [T1] -39.14 dBm
1.96021643 GHz
▽2 [T1] -3.03 dBm
2.43192385 GHz
▽3 [T1] -36.84 dBm
2.68212425 GHz
▽4 [T1] -55.40 dBm
4.93392786 GHz
D1 -0.37 dBm
1VIEW
D2 -20.37 dBm
1MA
F2
F1
Start 30 MHz
2.497 GHz/
Stop 25 GHz

802.11g Turbo OFDM modulation

NOTE 1:

The band edge emission plot of OFDM technique on page 73 shows 49.54dBc between carrier maximum power and local maximum emission in restrict band (2.3295GHz). The emission of carrier strength list in the test result of channel 6 at the item 4.2.7 is 101.94dBuV/m (Peak), so the maximum field strength in restrict band is 101.94-49.54=52.40dBuV/m which is under 74dBuV/m limit.

The band edge emission plot of OFDM technique on page 73 shows 49.84dBc 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 6 at the item 4.2.7 is 92.60dBuV/m (Average), so the maximum field strength in restrict band is 92.60-49.84=42.76dBuV/m which is under 54dBuV/m limit.

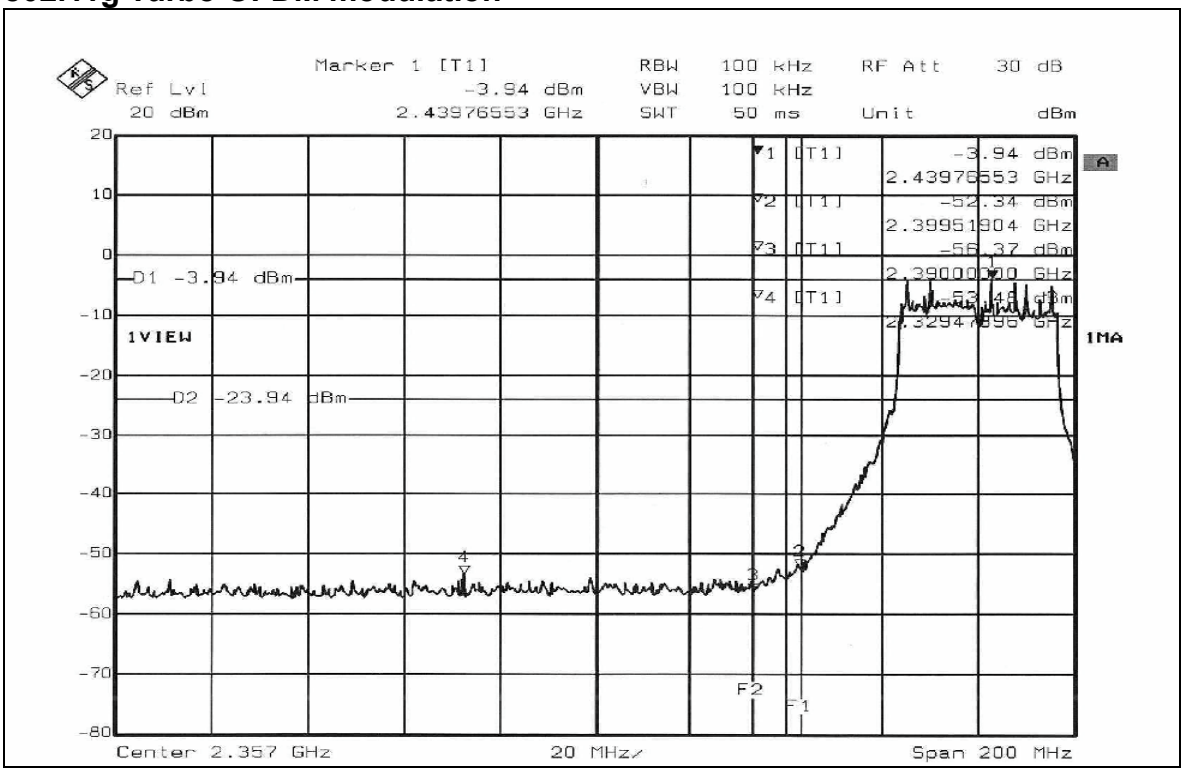
NOTE 2:

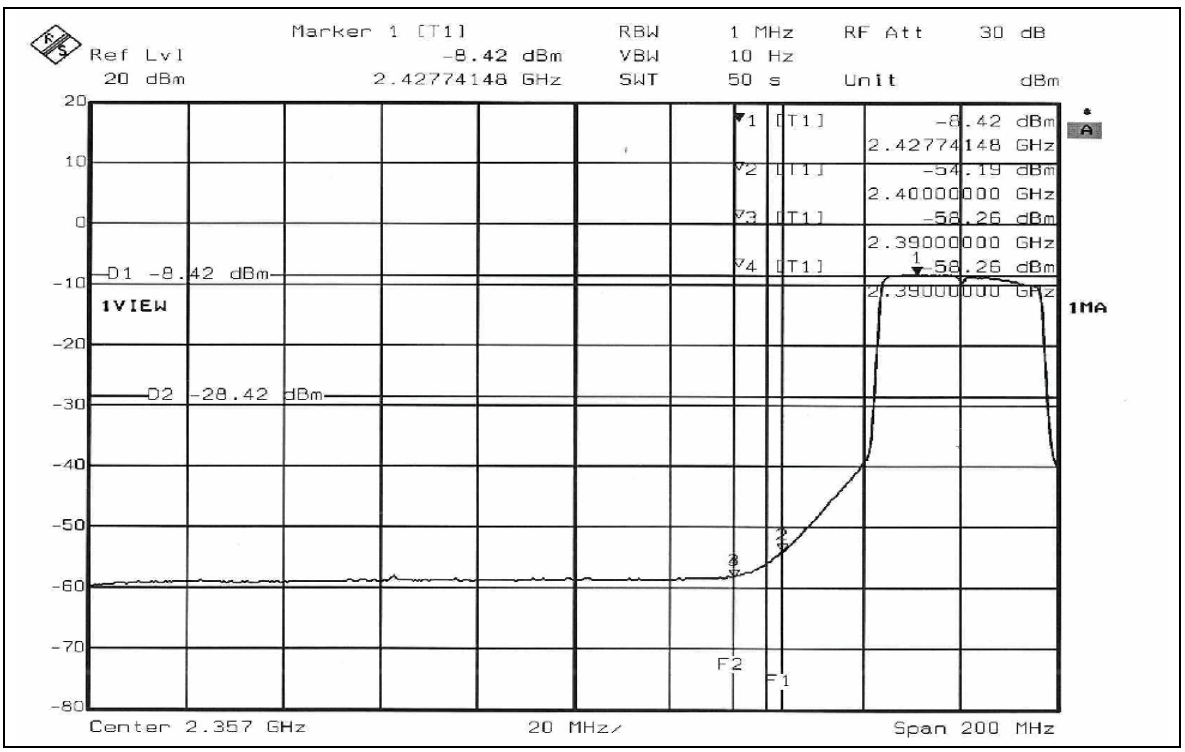
The band edge emission plot of OFDM technique on page 74 shows 50.60dBc between carrier maximum power and local maximum emission in restrict band (2.4871GHz). The emission of carrier strength list in the test result of channel 6 at the item 4.2.7 is 101.94dBuV/m (Peak), so the maximum field strength in restrict band is 101.94-50.60=51.34dBuV/m which is under 74dBuV/m limit.

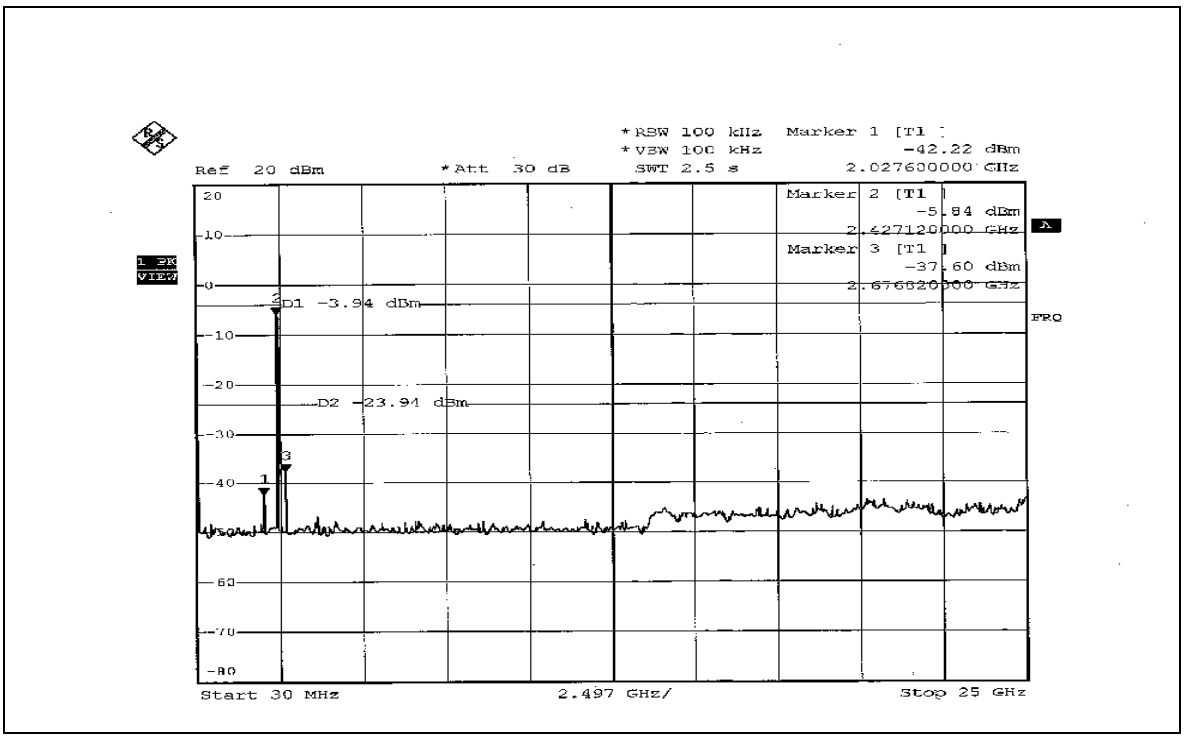
The band edge emission plot of OFDM technique on page 75 shows 51.33dBc between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 6 at the item 4.2.7 is 92.60dBuV/m (Average), so the maximum field strength in restrict band is 92.60-51.33=41.27dBuV/m which is under 54dBuV/m limit.

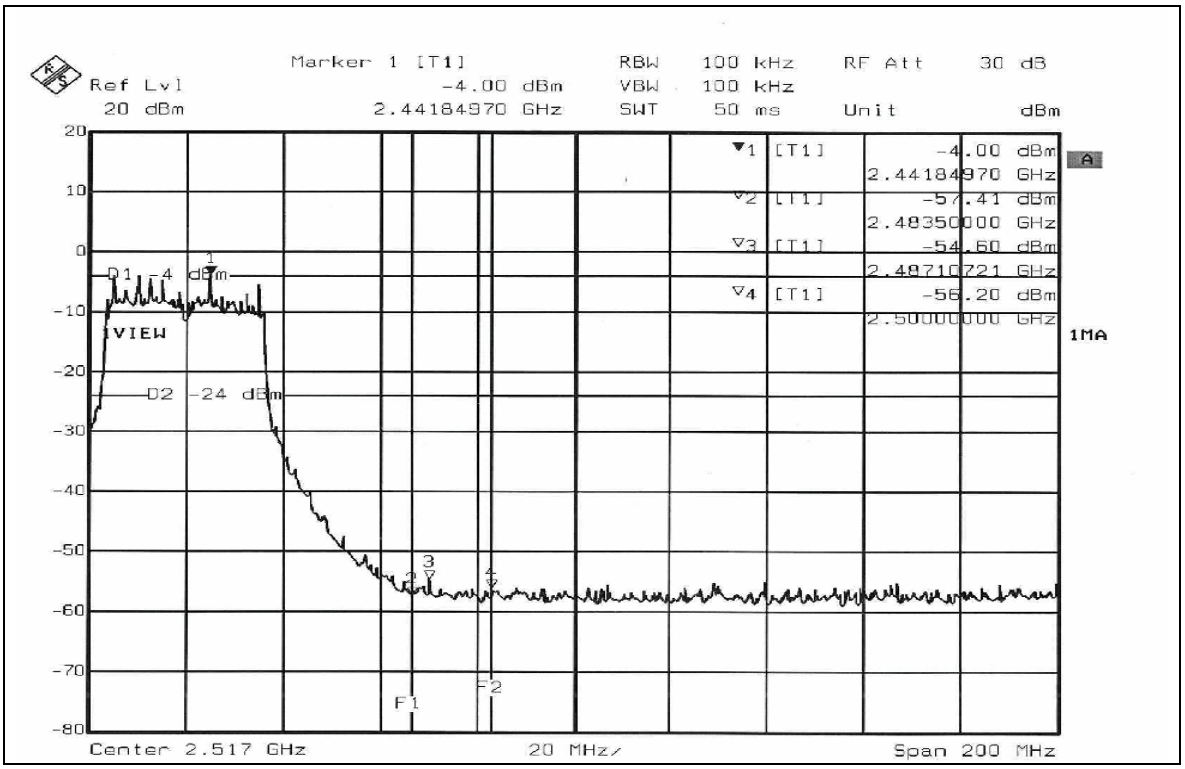
*(The test data is in accordance with ADT Report No.: 940711L09.)

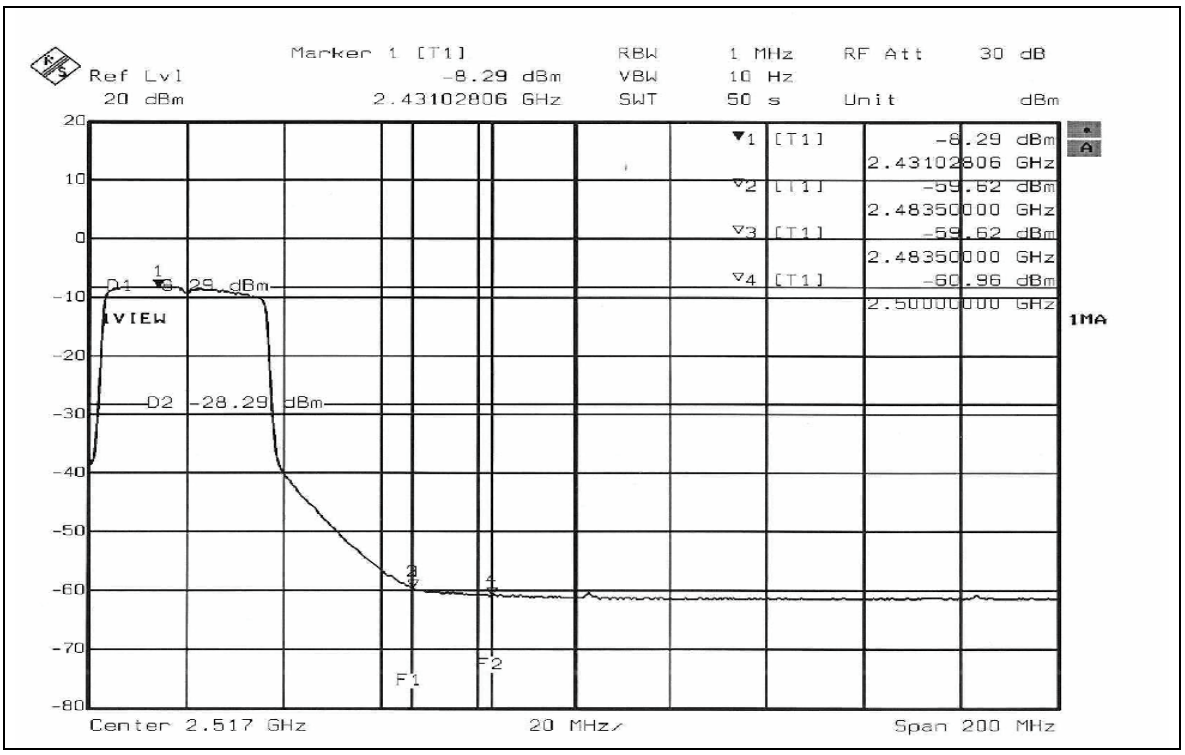
802.11g Turbo OFDM modulation

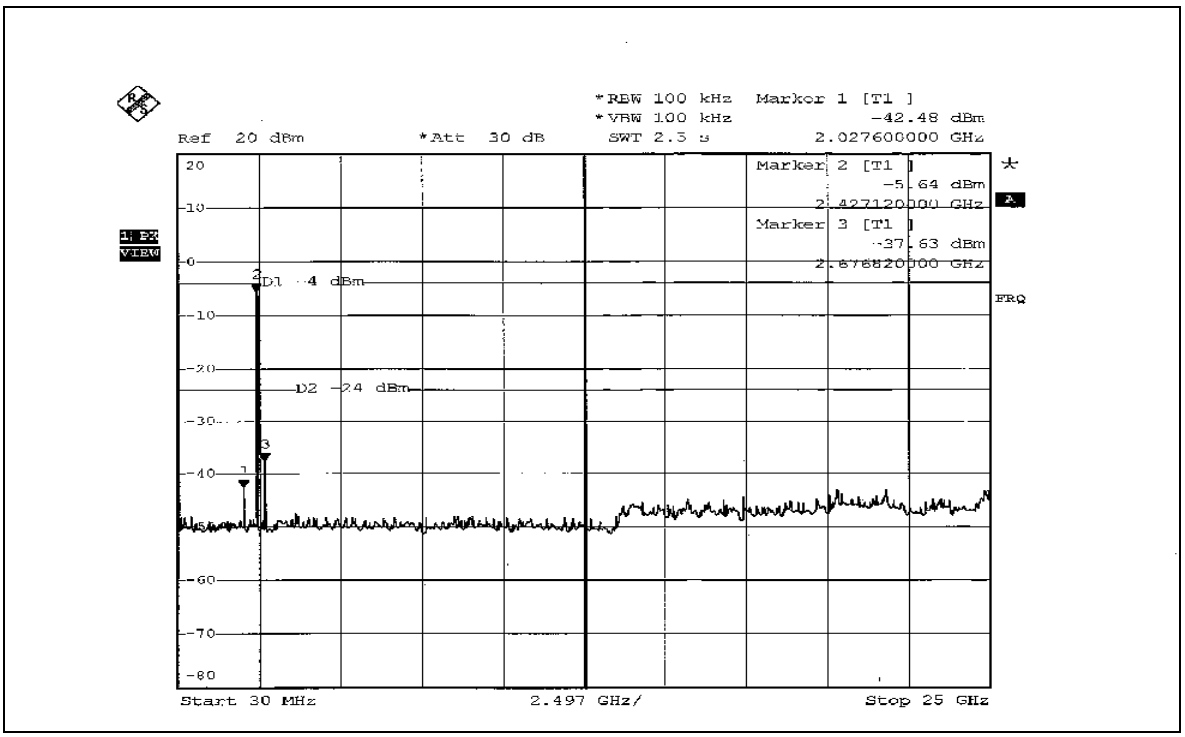





*RBW 100 kHz
*VBW 100 kHz
Ref 20 dBm
*Att 30 dB
SWT 2.5 s
Marker 1 [T1]
-42.22 dBm
2.027600000 GHz
Marker 2 [T1]
-5.84 dBm
2.427120000 GHz
Marker 3 [T1]
-37.60 dBm
2.676620000 GHz
D1 -3.94 dBm
D2 -23.94 dBm
1 PK
VIEW
FRQ
Start 30 MHz
2.497 GHz/
Stop 25 GHz


Marker 1 [T1]
Ref Lvl
20 dBm
-4.00 dBm
2.44184970 GHz
RBW 100 kHz
VBW 100 kHz
SWT 50 ms
RF Att 30 dB
Unit dBm
1 [T1] -4.00 dBm
2.44184970 GHz
2 [T1] -57.41 dBm
2.48350000 GHz
3 [T1] -54.60 dBm
2.48710721 GHz
4 [T1] -56.20 dBm
2.50000000 GHz
D1 -4 dBm
D2 -24 dBm
VIEW
1MA
F1
F2
Center 2.517 GHz
20 MHz/
Span 200 MHz


Marker 1 [T1]
RBW 1 MHz
RF Att 30 dB
Ref Lvl
-8.29 dBm
VBW 10 Hz
20 dBm
2.43102806 GHz
SWT 50 s
Unit dBm
▼1 [T1] -8.29 dBm
2.43102806 GHz
▽2 [T1] -59.62 dBm
2.48350000 GHz
▽3 [T1] -59.62 dBm
2.48350000 GHz
▽4 [T1] -60.96 dBm
2.50000000 GHz
D1 -8.29 dBm
D2 -28.29 dBm
VIEW
1MA
F1
F2
Center 2.517 GHz
20 MHz/
Span 200 MHz


*RBW 100 kHz
Marker 1 [T1]
*VBW 100 kHz
-42.48 dBm
Ref 20 dBm
*Att 30 dB
SWT 2.5 s
2.027600000 GHz
Marker 2 [T1]
-5.64 dBm
2.427120000 GHz
Marker 3 [T1]
-37.63 dBm
2.676820000 GHz
D1 -4 dBm
D2 -24 dBm
VIEW
FRQ
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.

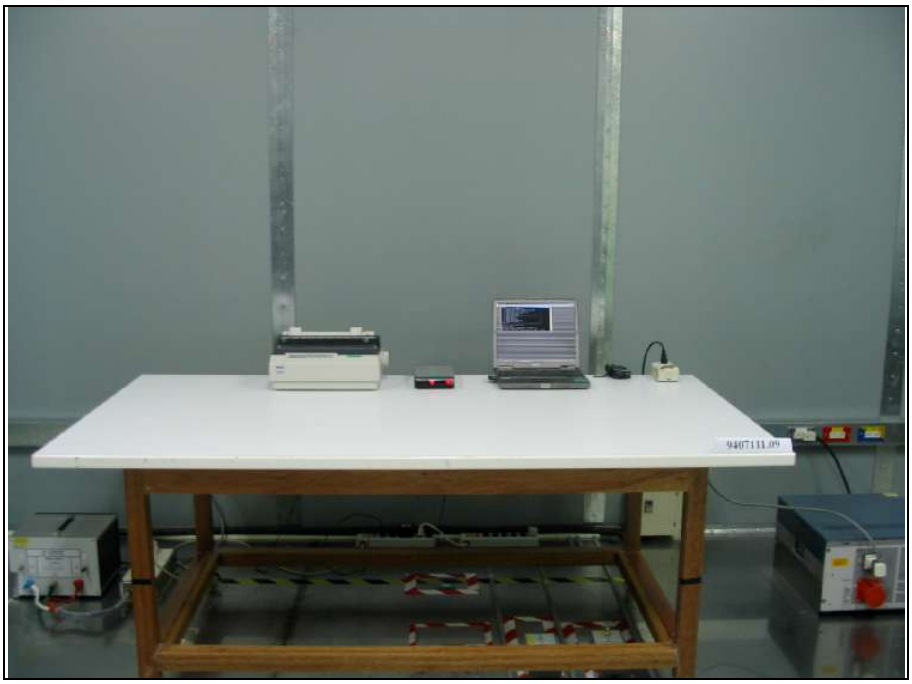
And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

4.7.2 ANTENNA CONNECTED CONSTRUCTION

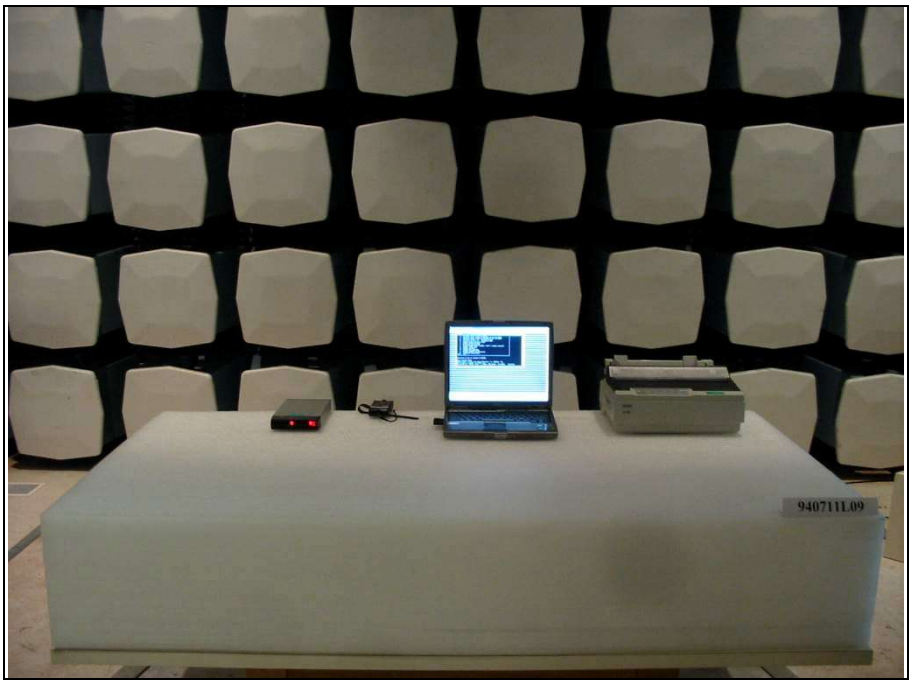
The antenna type used in this product is print antenna without antenna connector. The maximum Gain of the antenna is 0.42dBi.

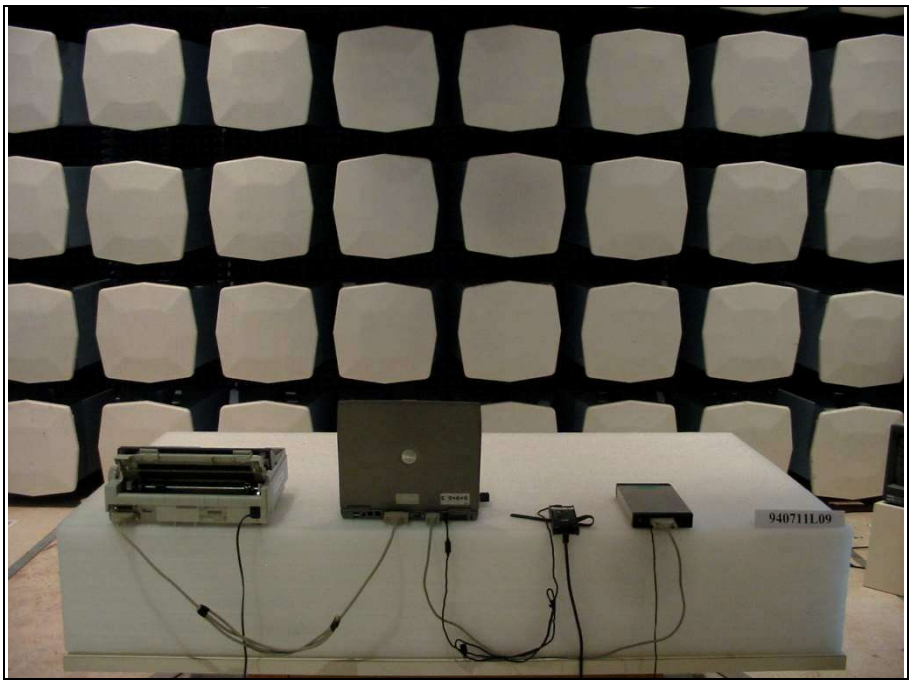
5 PHOTOGRAPHS OF THE TEST CONFIGURATION

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.