

4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	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.

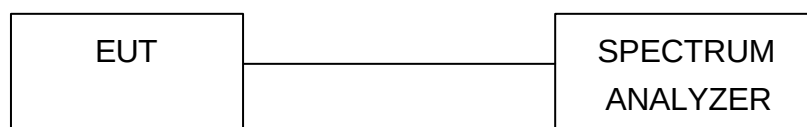
4.5.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3kHz RBW and 30kHz VBW, set sweep time = span/3kHz. The power spectral density was measured and recorded. The sweep time is allowed to be longer than span/3kHz for a full response of the mixer in the spectrum analyzer.

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6

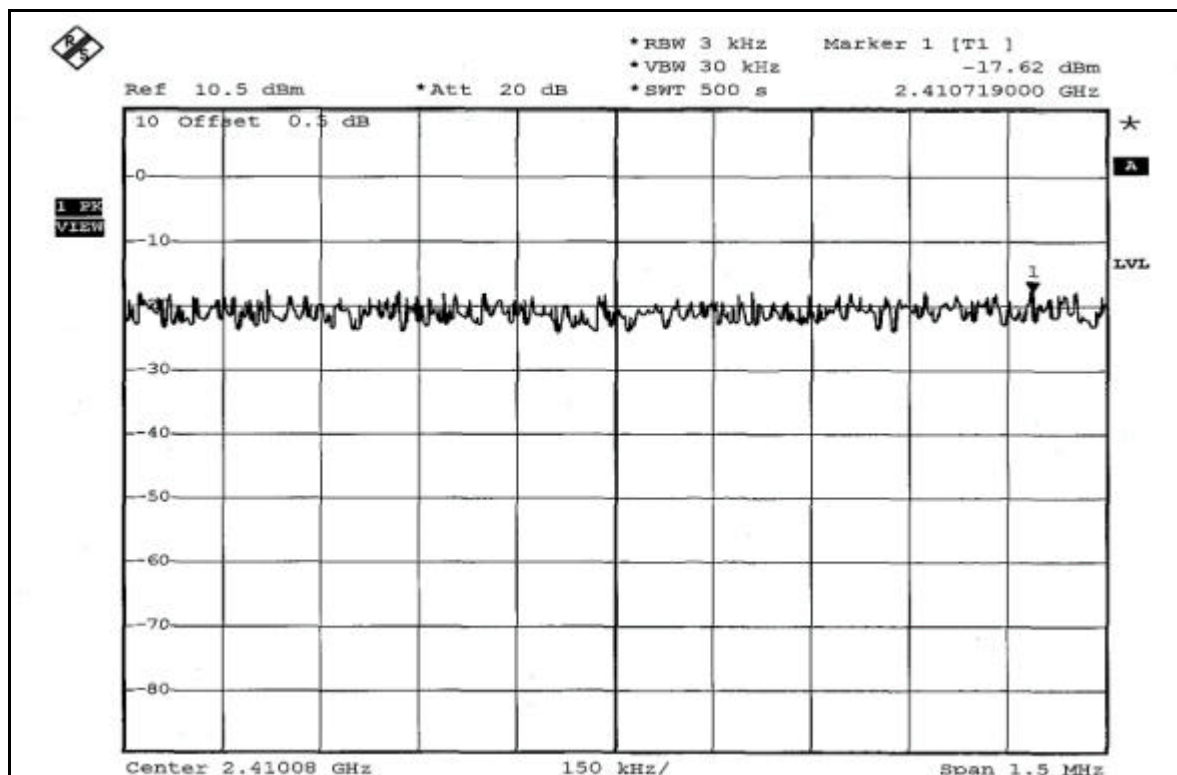
4.5.7 TEST RESULTS

802.11b DSSS modulation

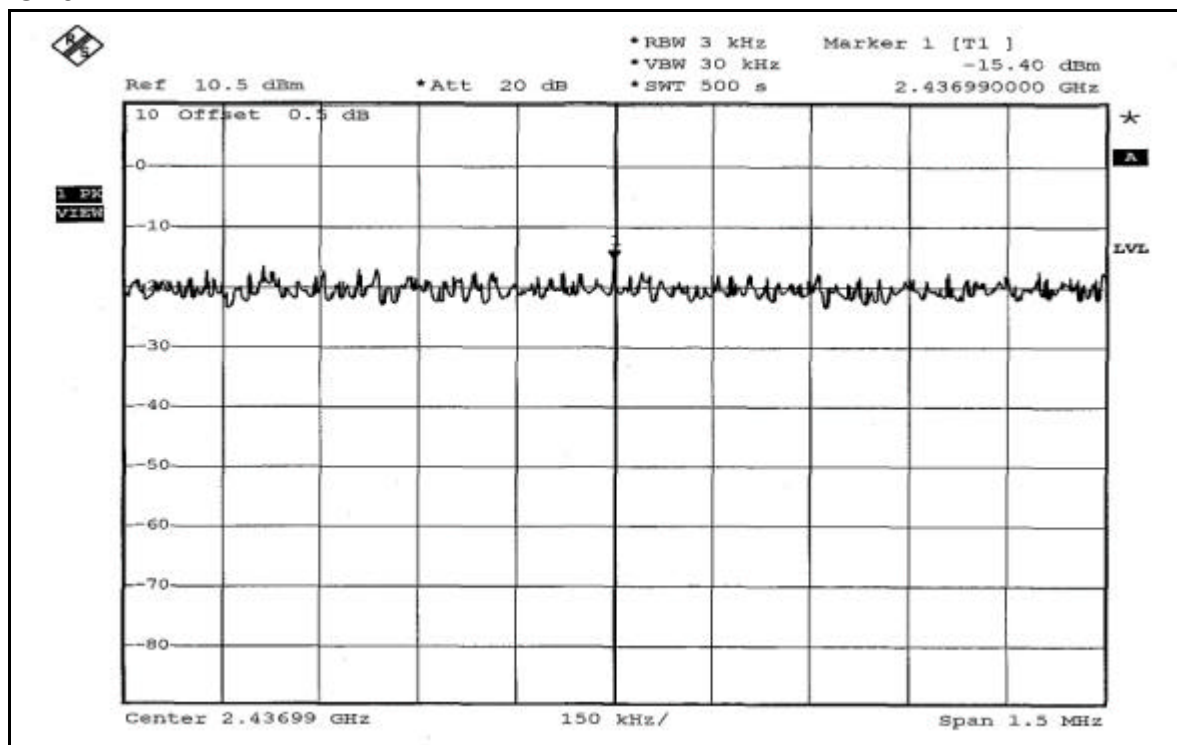
EUT	802.11a/b/g wireless sensor	MODEL	AM-5012-11AG
MODULATION TYPE	CCK	TRANSFER RATE	11Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	23deg.C, 51%RH, 991hPa
TESTED BY	Rush Kao		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-17.62	8	PASS
6	2437	-15.40	8	PASS
11	2462	-16.90	8	PASS

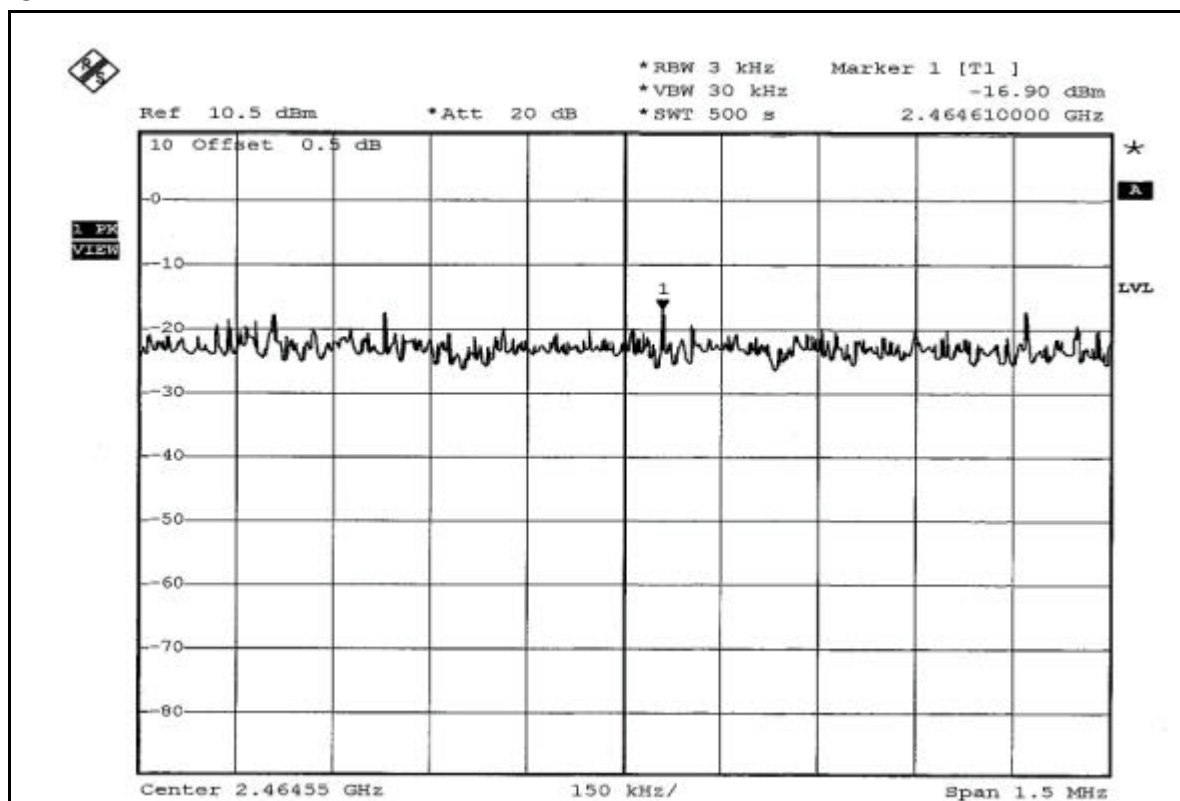
CH1



CH6



CH11

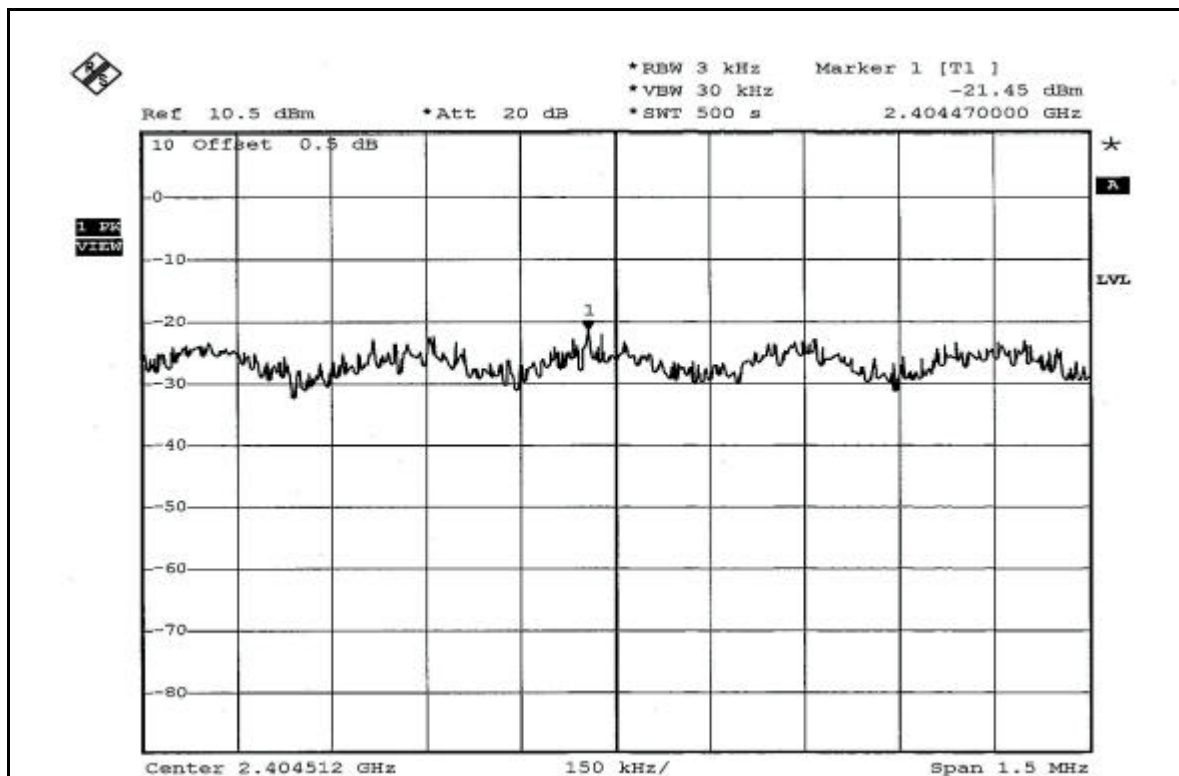


**802.11g OFDM modulation**

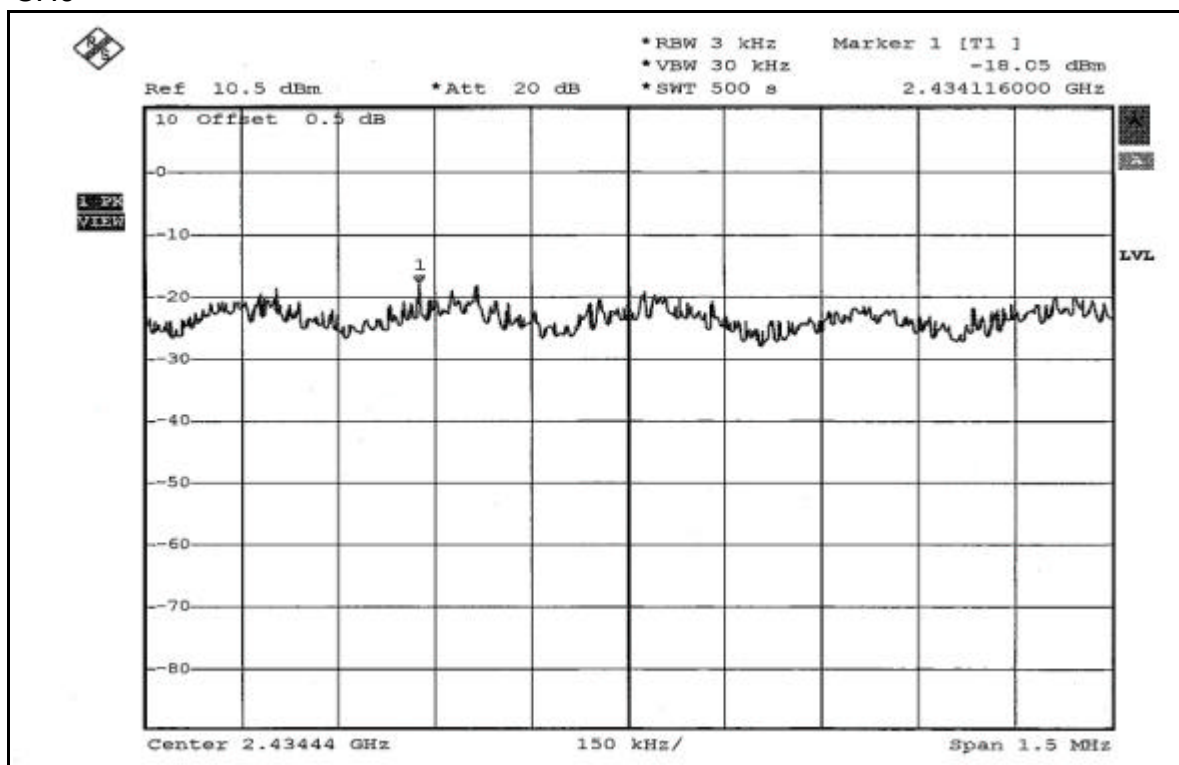
EUT	802.11a/b/g wireless sensor	MODEL	AM-5012-11AG
MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	23deg.C, 51%RH, 991hPa
TESTED BY	Rush Kao		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-21.45	8	PASS
6	2437	-18.05	8	PASS
11	2462	-22.42	8	PASS

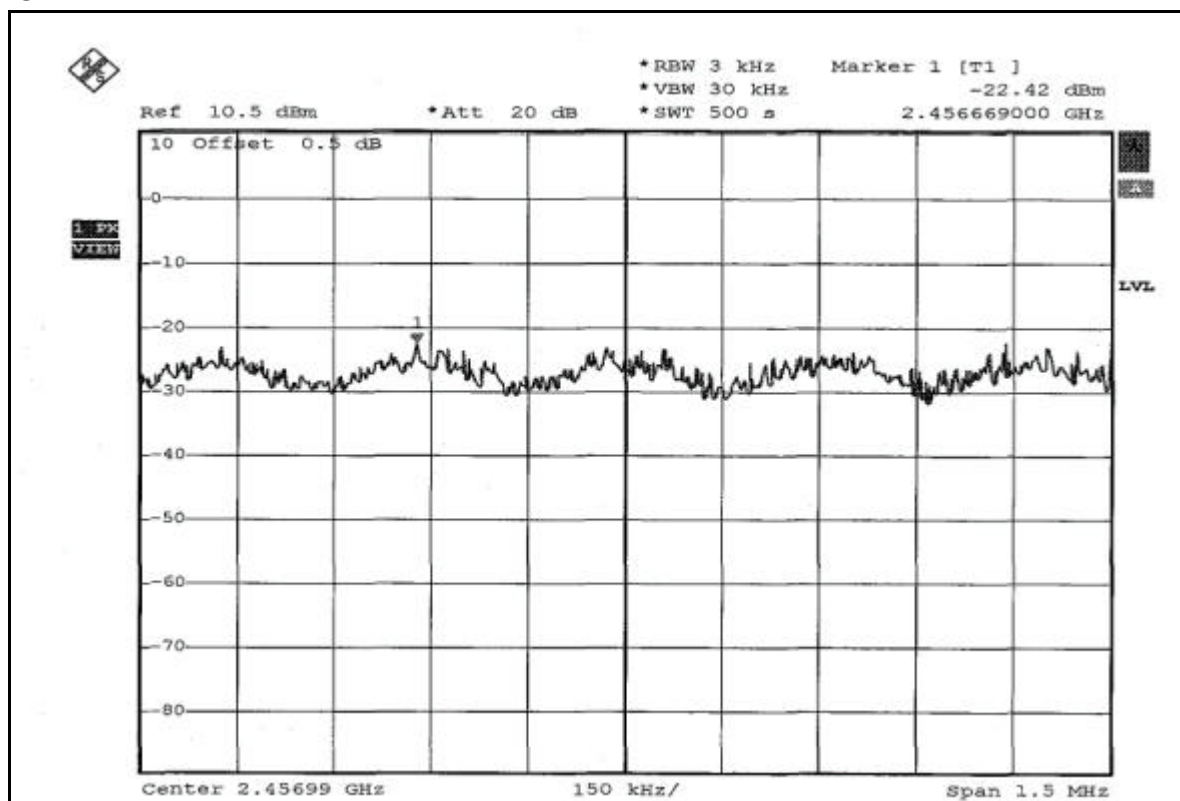
CH1



CH6



CH11



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
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.

4.6.3 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 100 MHz bandwidth from band edge. The band edges was measured and recorded.

The spectrum plots (Peak RBW=VBW=100kHz ; Average RBW=1MHz, VBW=10Hz) are attached on the following pages.

4.6.4 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. 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 on page 67 shows 50.03dBc between carrier maximum power and local maximum emission in restrict band (2.3680GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 108.17dBuV/m (Peak), so the maximum field strength in restrict band is $108.17 - 50.03 = 58.14$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot of on page 67 shows 52.96dBc between carrier maximum power and local maximum emission in restrict band (2.3680GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 100.60dBuV/m (Average), so the maximum field strength in restrict band is $100.60 - 52.96 = 47.64$ dBuV/m which is under 54dBuV/m limit.

NOTE 2: The band edge emission plot on page 68 shows 47.31dBc between carrier maximum power and local maximum emission in restrict band (2.4961GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 105.16dBuV/m (Peak), so the maximum field strength in restrict band is $105.16 - 47.31 = 57.85$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot on page 69 shows 51.37dBc between carrier maximum power and local maximum emission in restrict band (2.4959GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 97.94dBuV/m (Average), so the maximum field strength in restrict band is $97.94 - 51.37 = 46.57$ dBuV/m which is under 54dBuV/m limit.

**802.11g OFDM modulation**

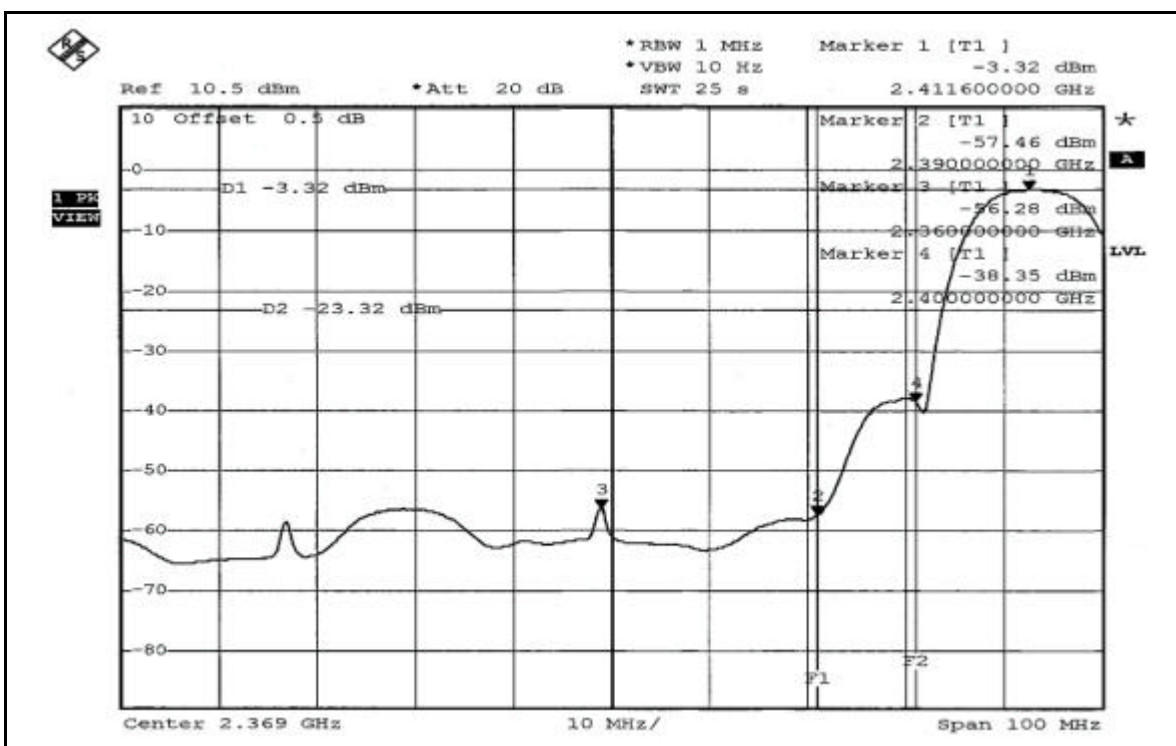
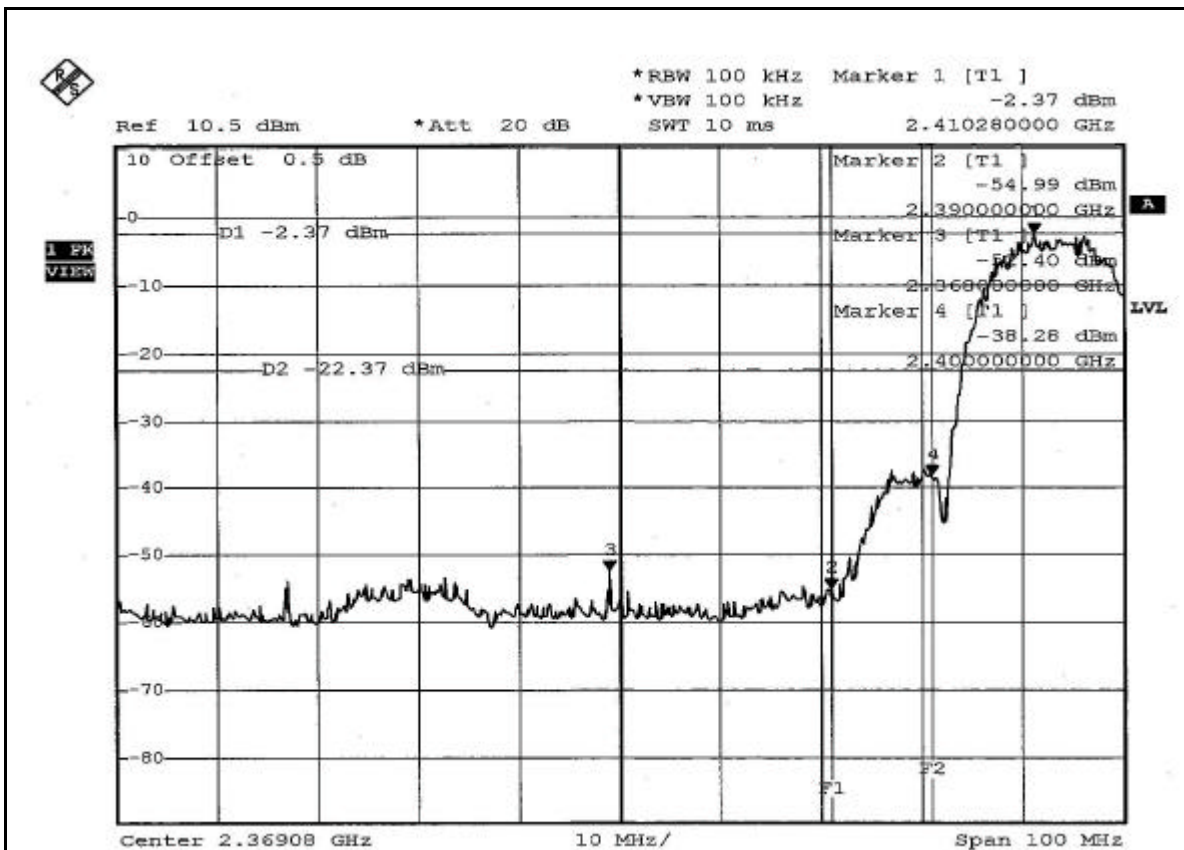
NOTE 1: The band edge emission plot on page 70 shows 40.59dBc between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 103.31dBuV/m (Peak), so the maximum field strength in restrict band is $103.31 - 40.59 = 62.72$ dBuV/m which is under 74dBuV/m limit.

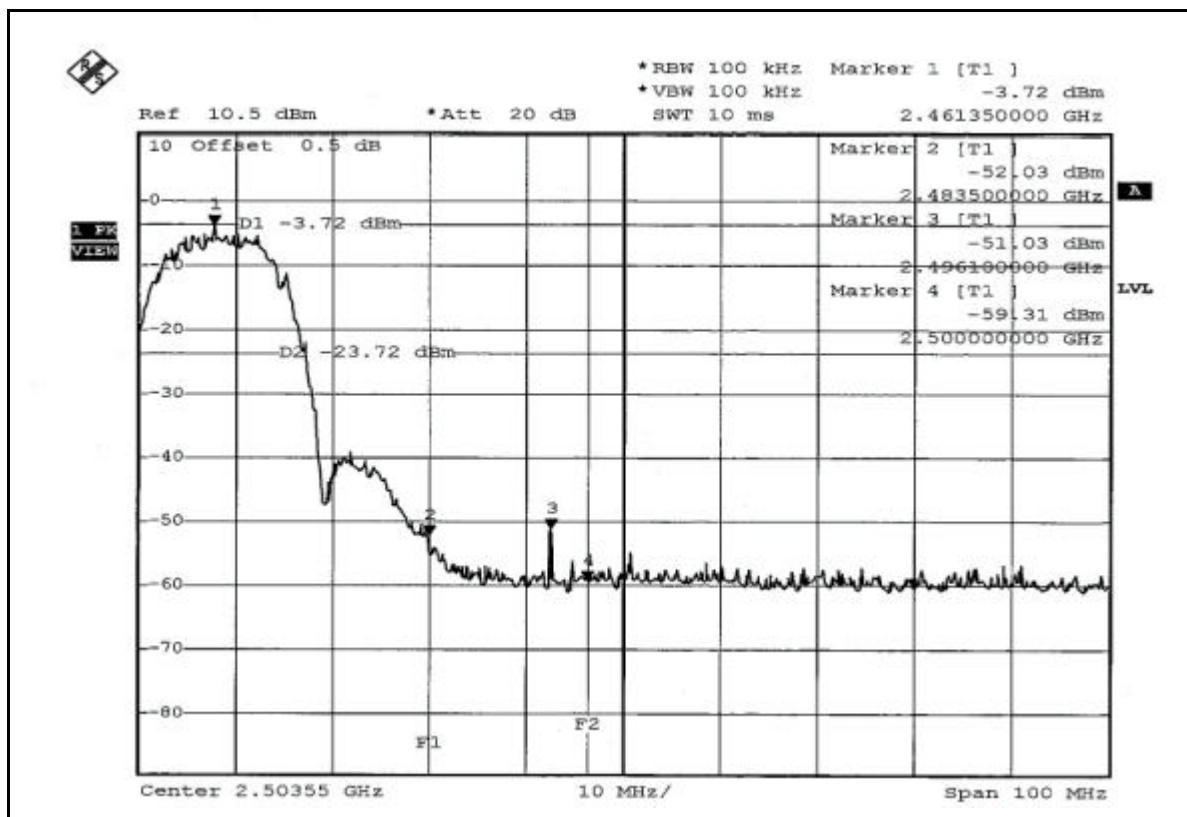
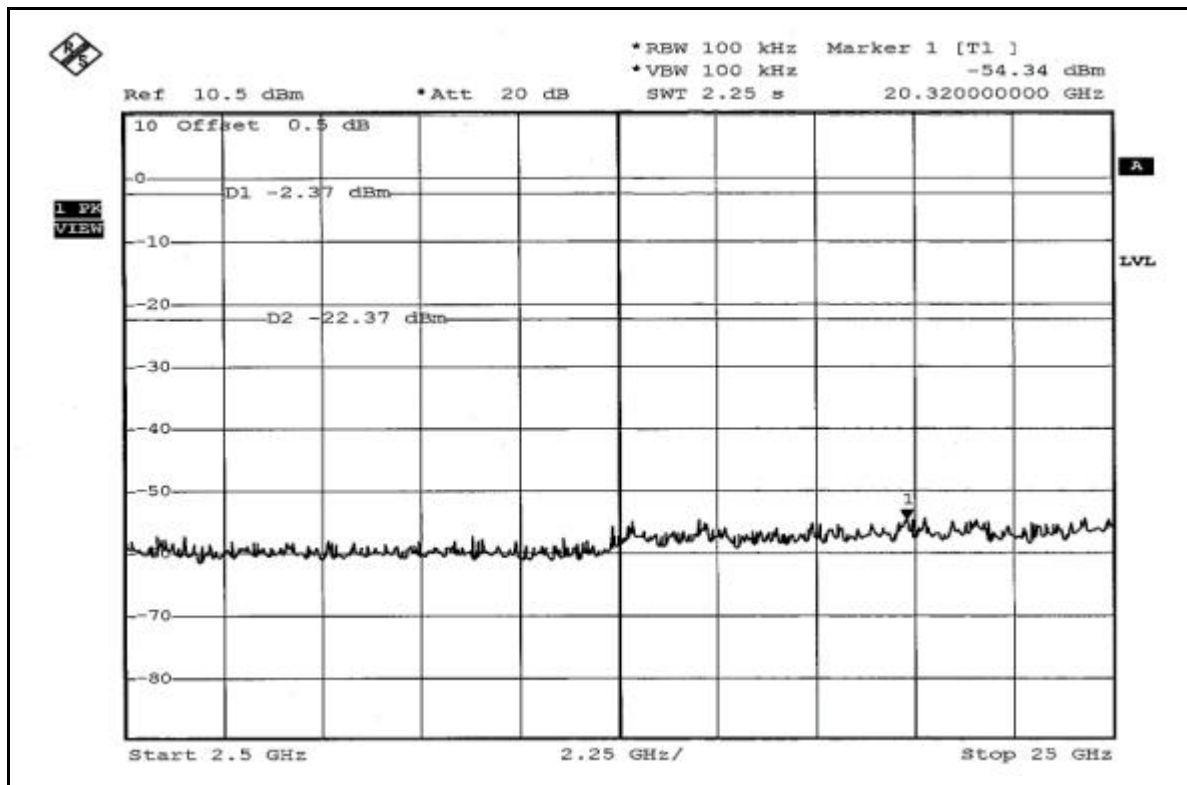
The band edge emission plot of on page 70 shows 43.60dBc between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 93.31dBuV/m (Average), so the maximum field strength in restrict band is $93.31 - 43.60 = 49.71$ dBuV/m which is under 54dBuV/m limit.

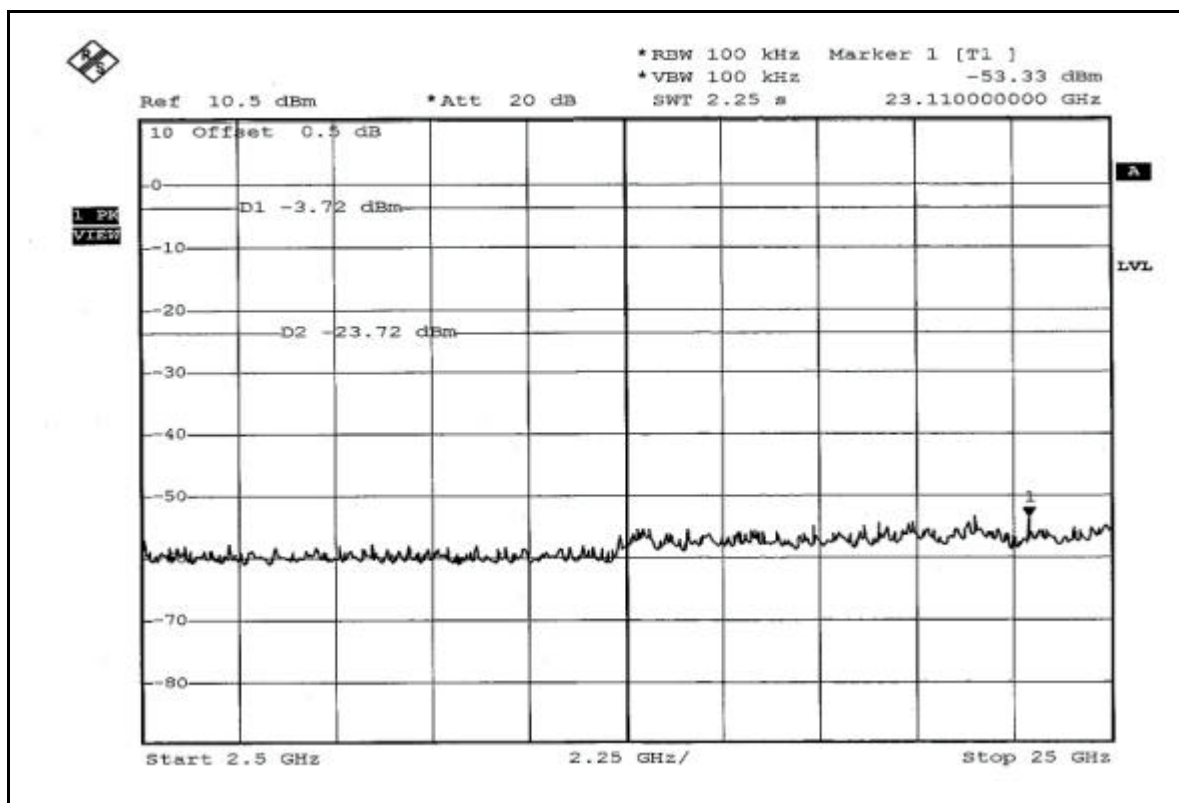
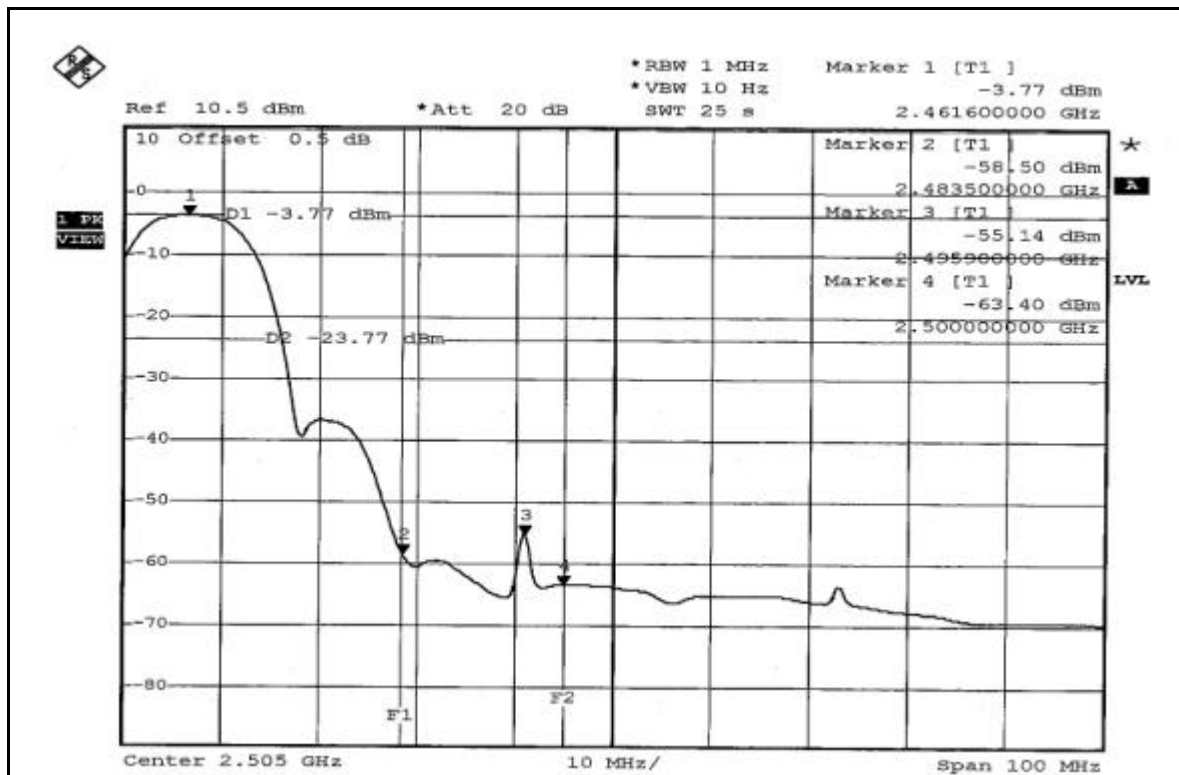
NOTE 2: The band edge emission plot on page 71 shows 38.15dBc between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 101.96dBuV/m (Peak), so the maximum field strength in restrict band is $101.96 - 38.15 = 63.81$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot on page 72 shows 43.37dBc 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 91.91dBuV/m (Average), so the maximum field strength in restrict band is $91.91 - 43.37 = 48.54$ dBuV/m which is under 54dBuV/m limit.

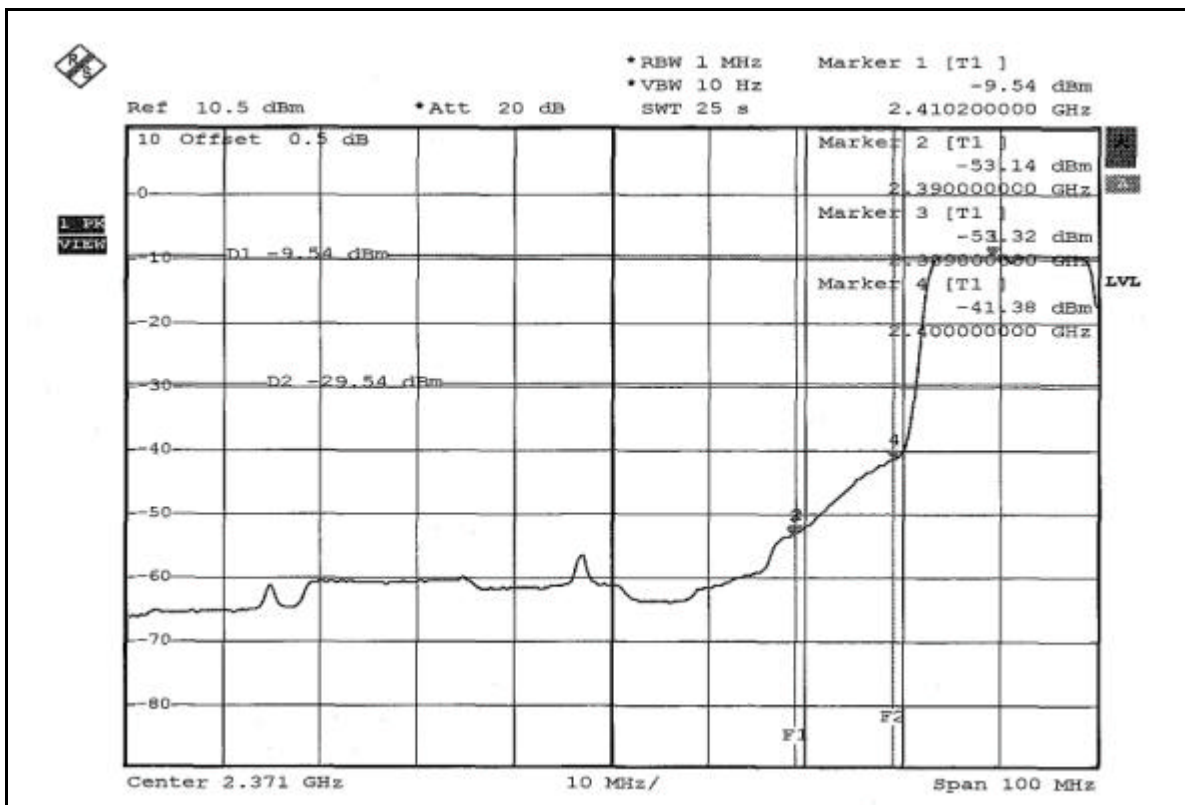
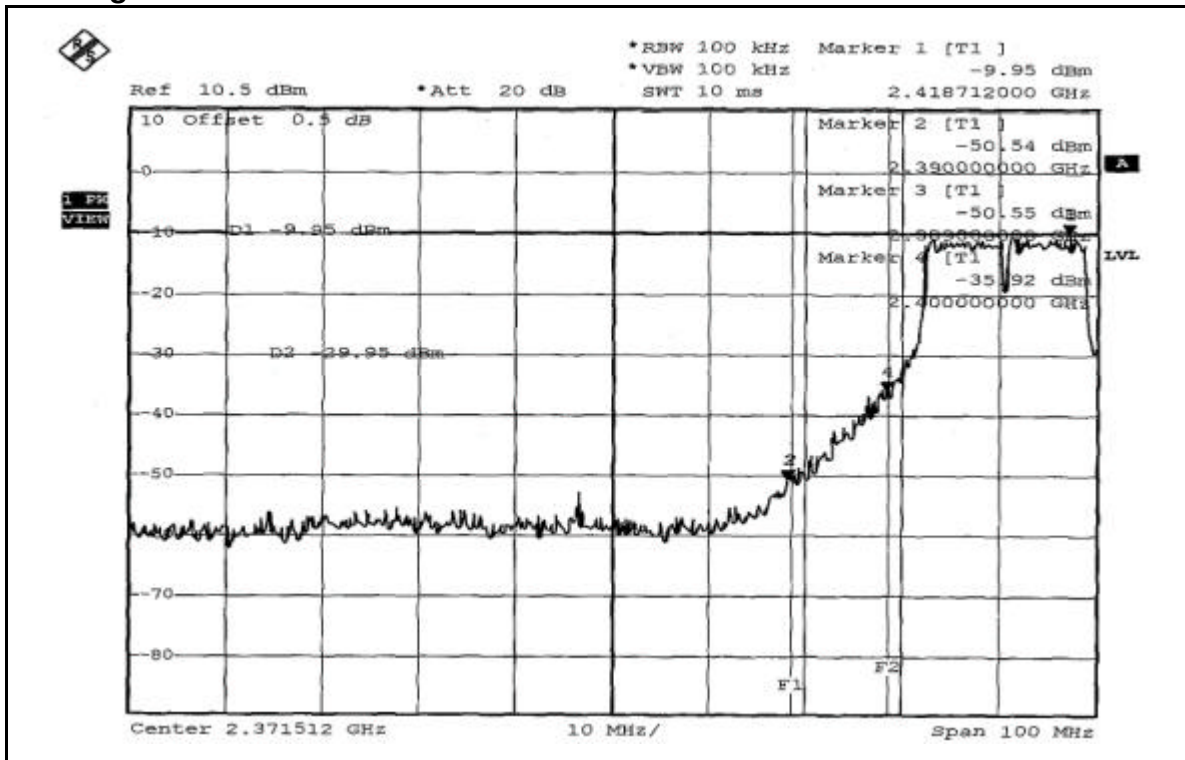
802.11b DSSS modulation

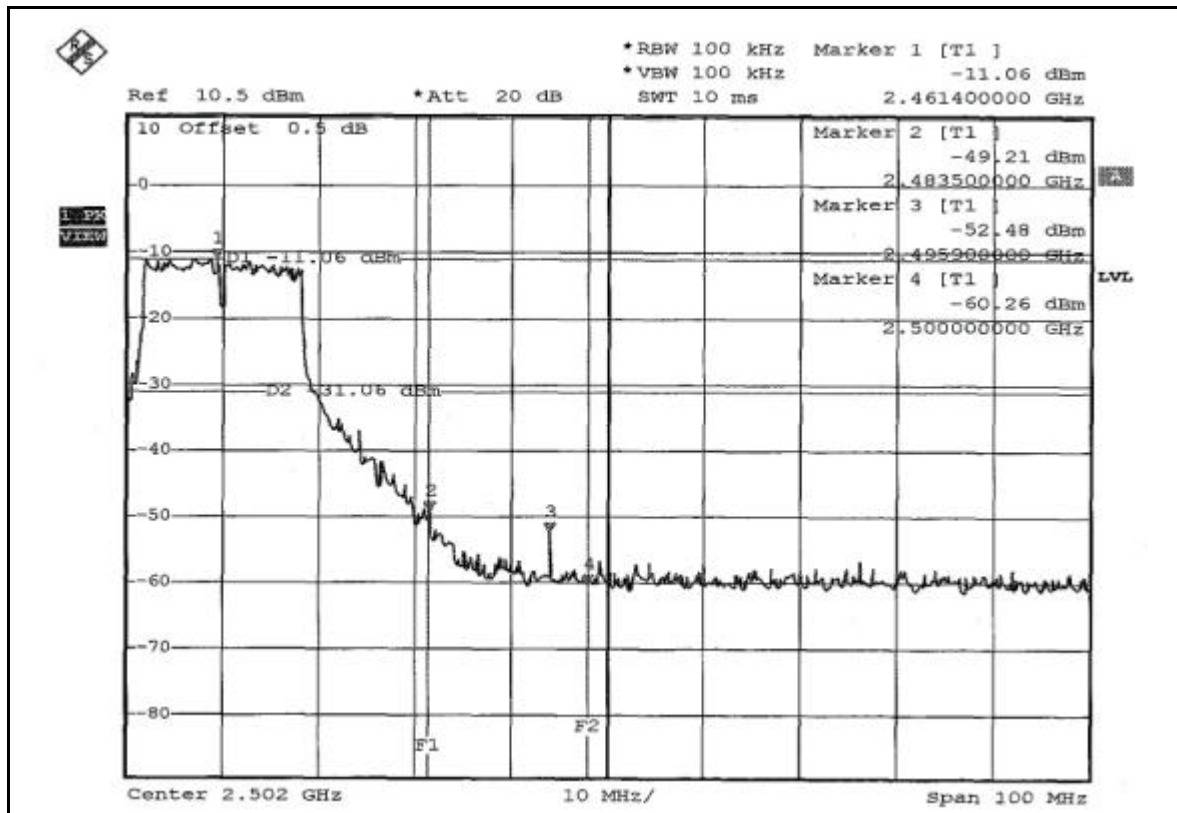
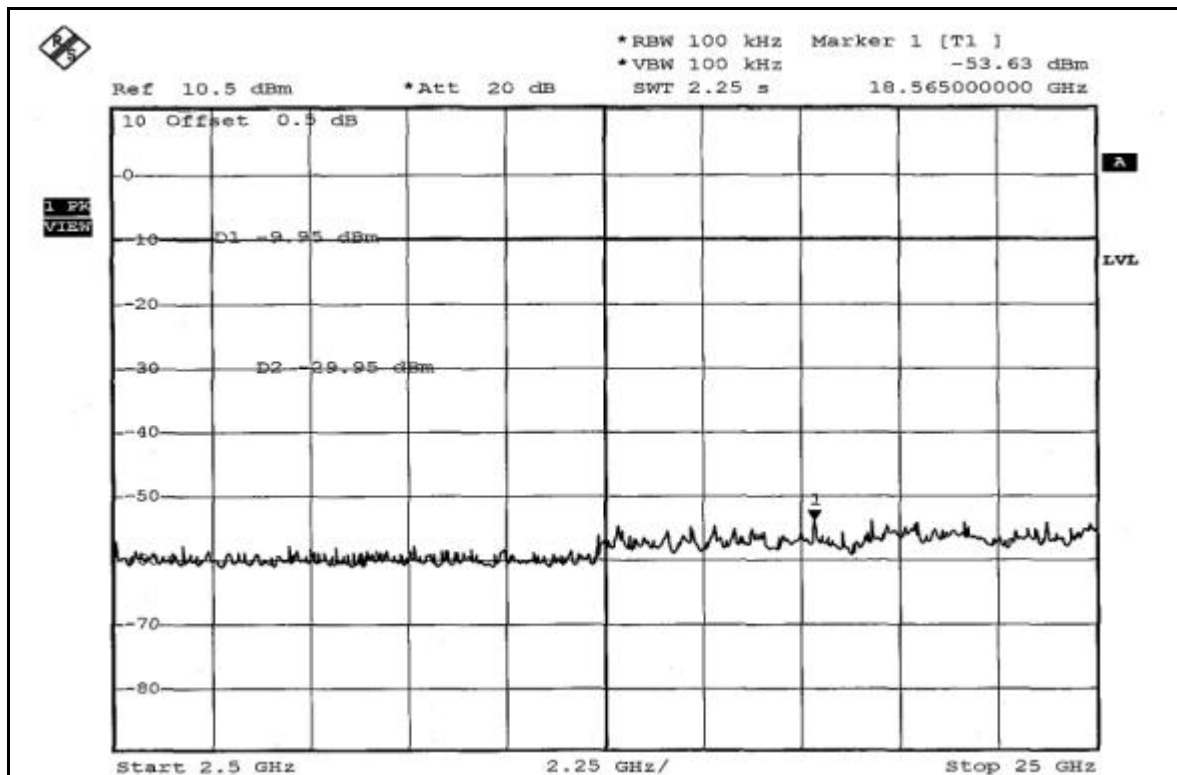


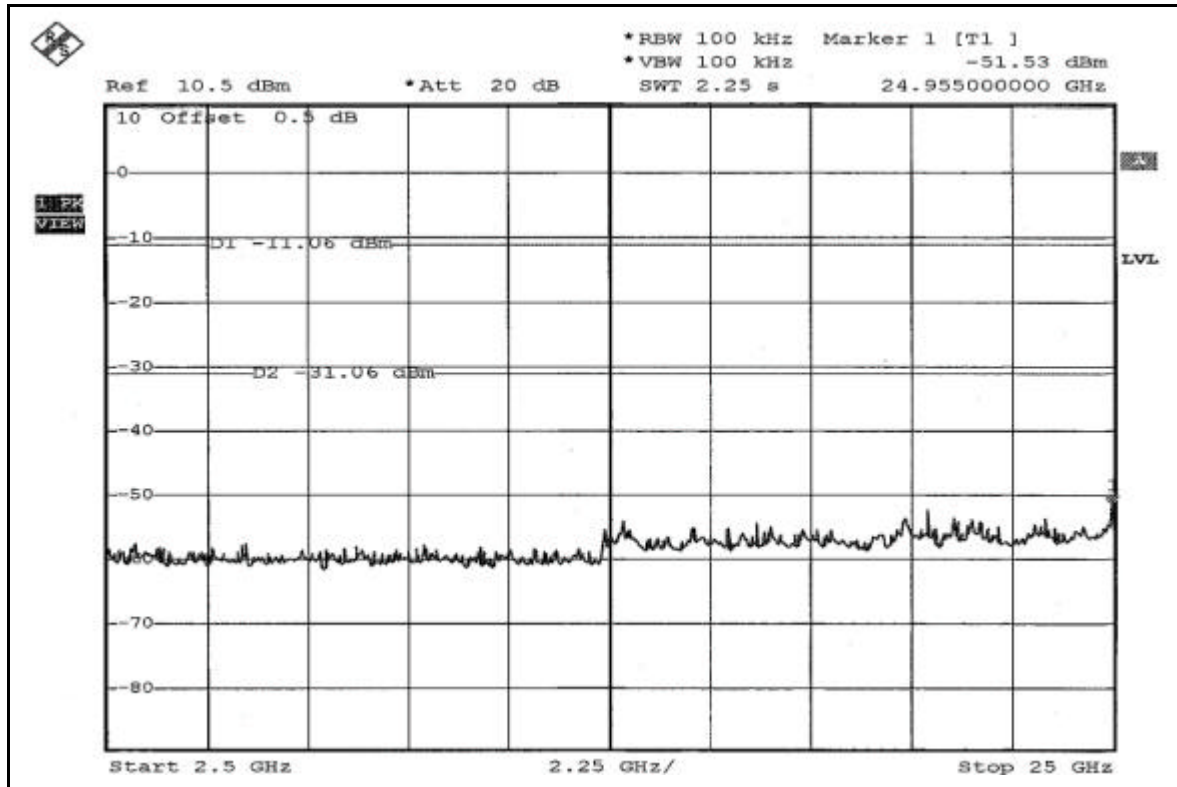
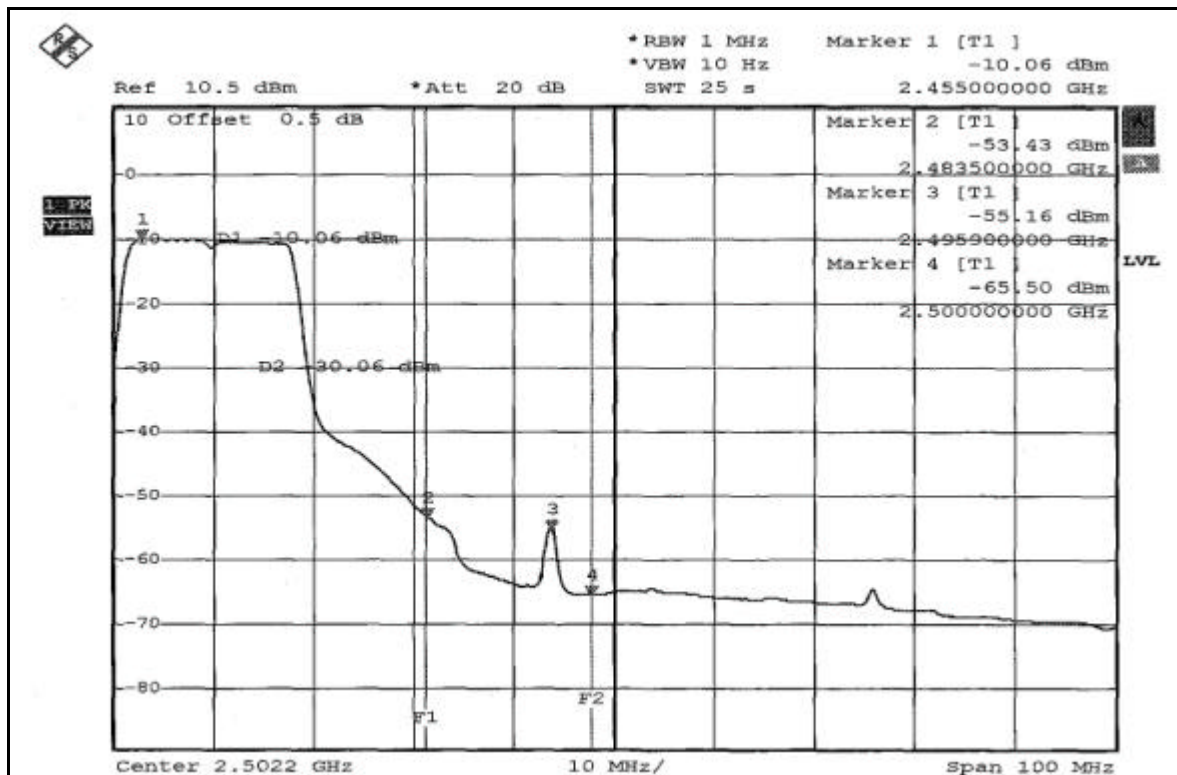




802.11g OFDM modulation









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.

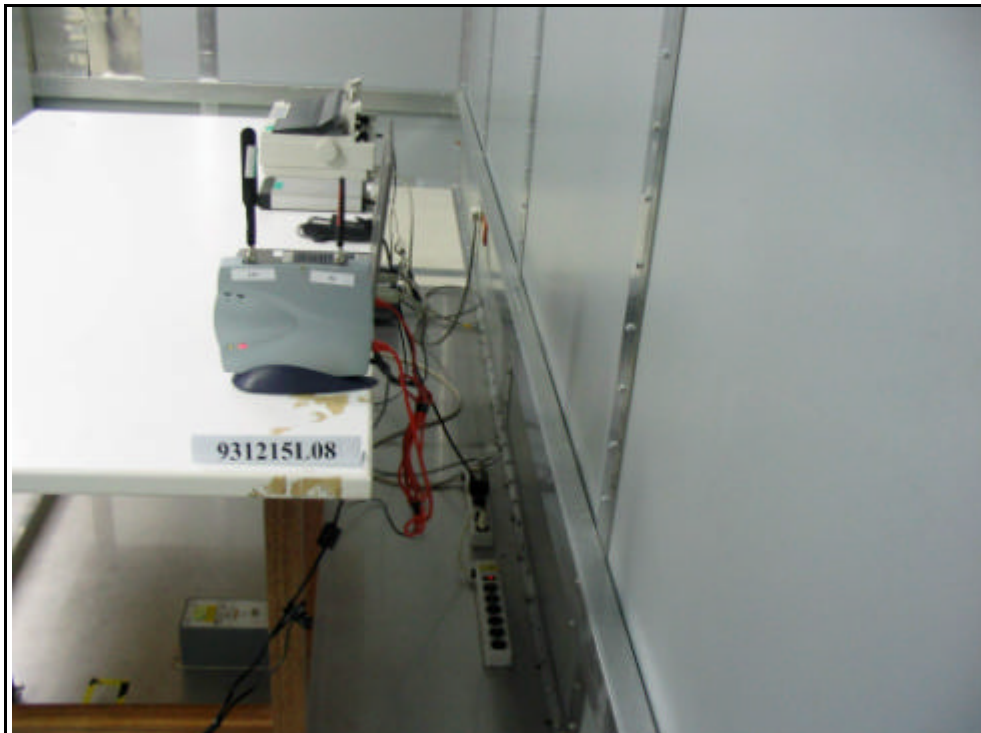
4.7.2 ANTENNA CONNECTED CONSTRUCTION

The antennas used in this product are Dipole and Patch antenna with UFL antenna connector. The maximum Gain of the antenna is 6dBi.

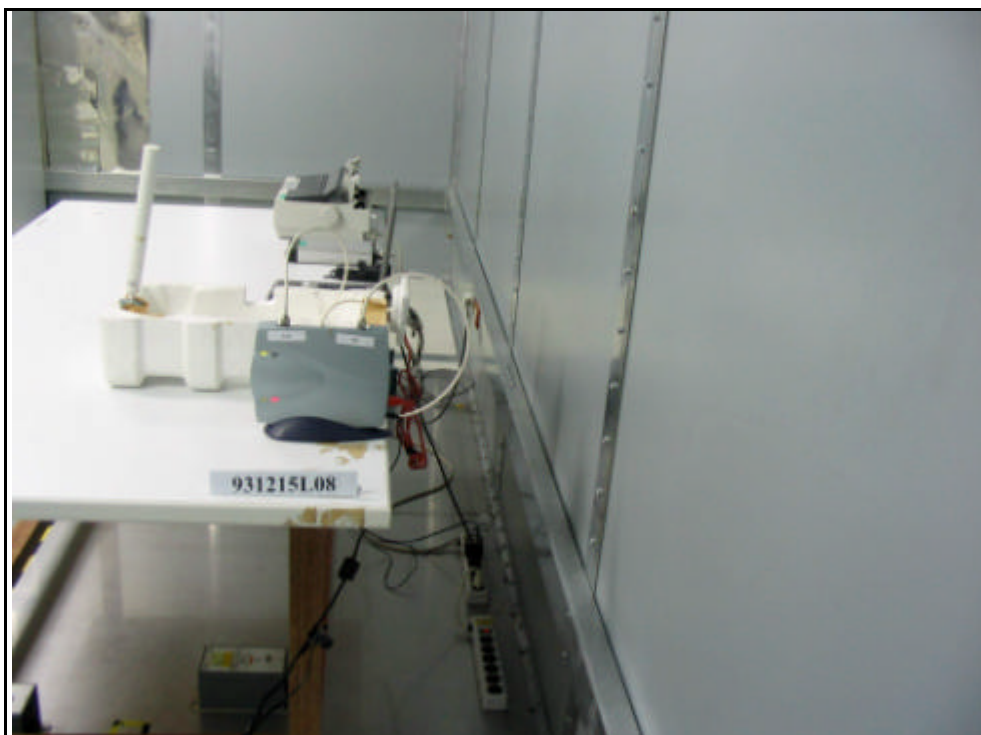
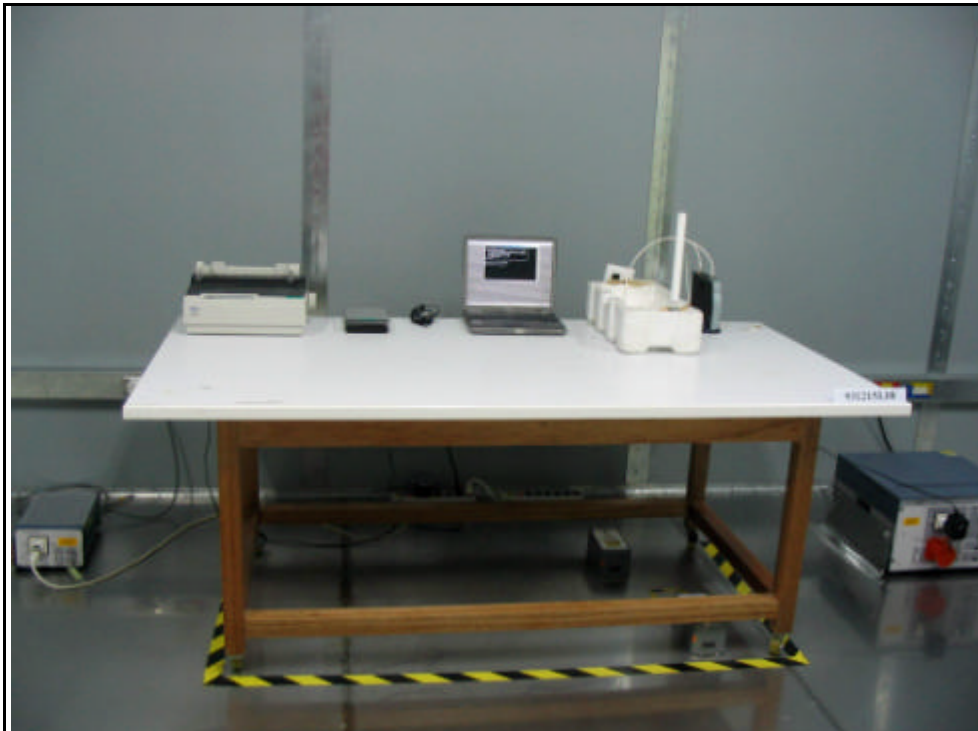
5. PHOTOGRAPHS OF THE TEST CONFIGURATION

CONDUCTED EMISSION TEST

Test Mode 1

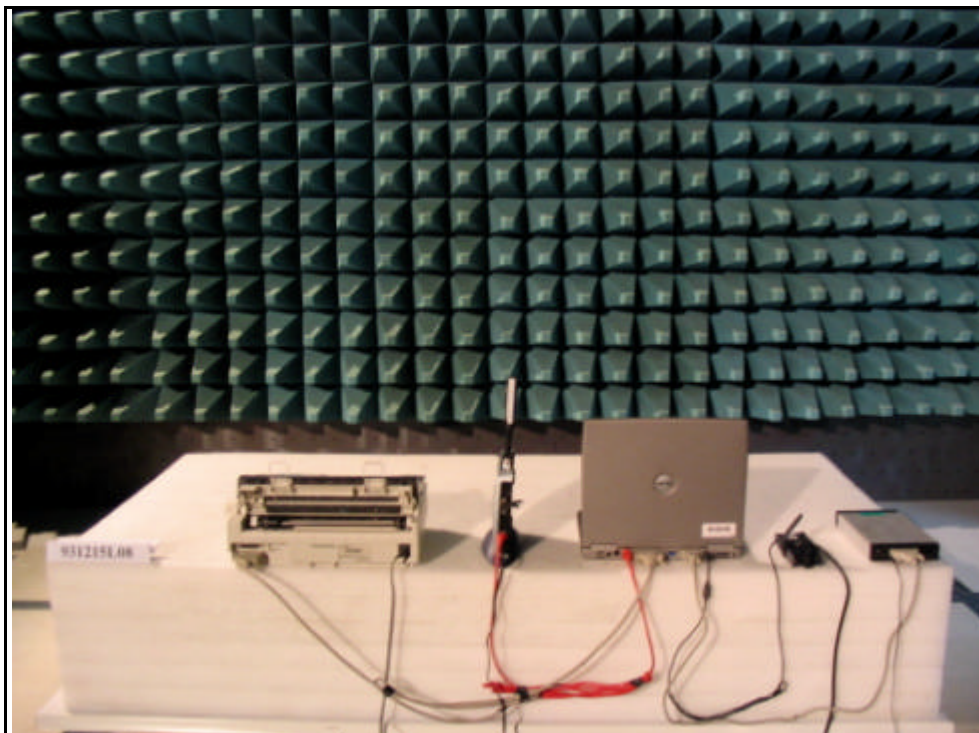
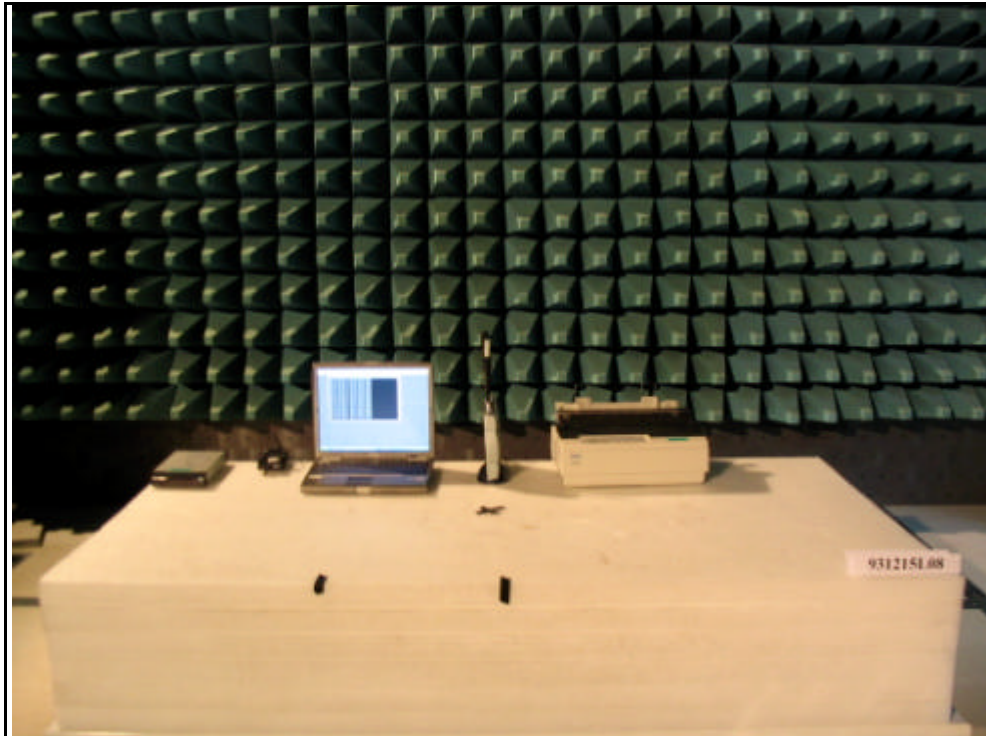


Test Mode 2

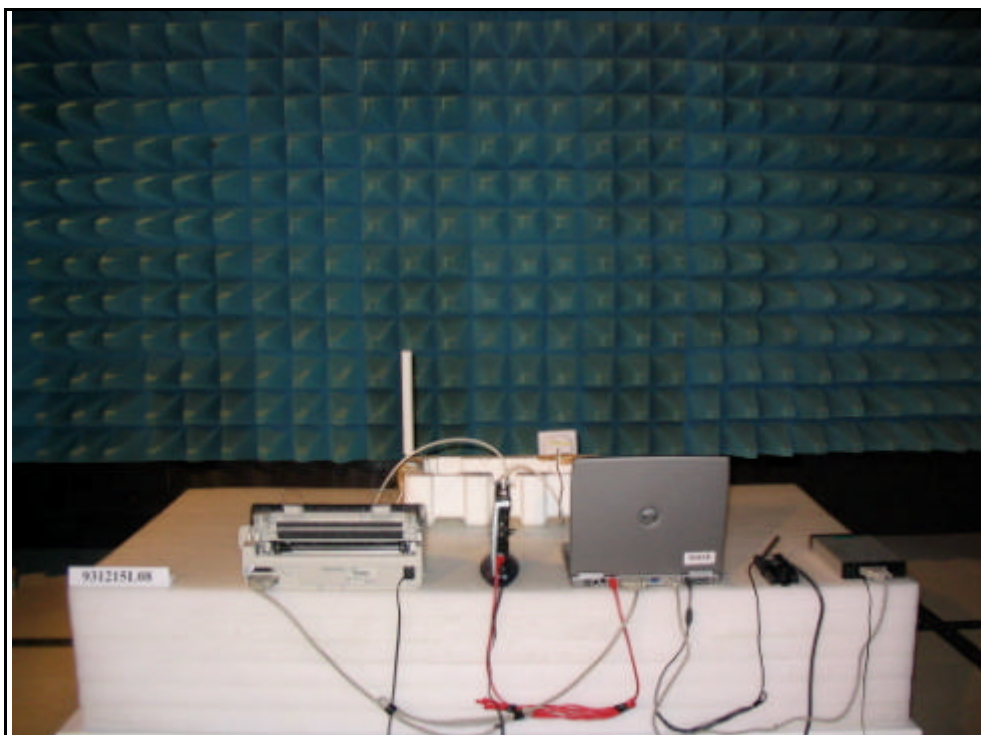
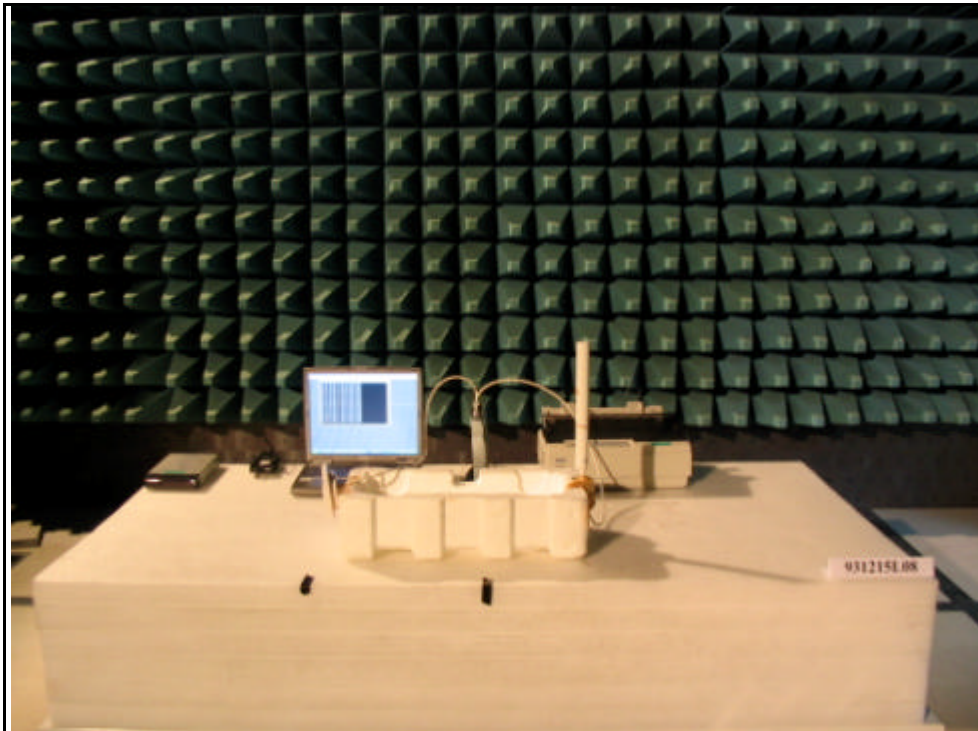


RADIATED EMISSION TEST

Test Mode 1



Test Mode 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, 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