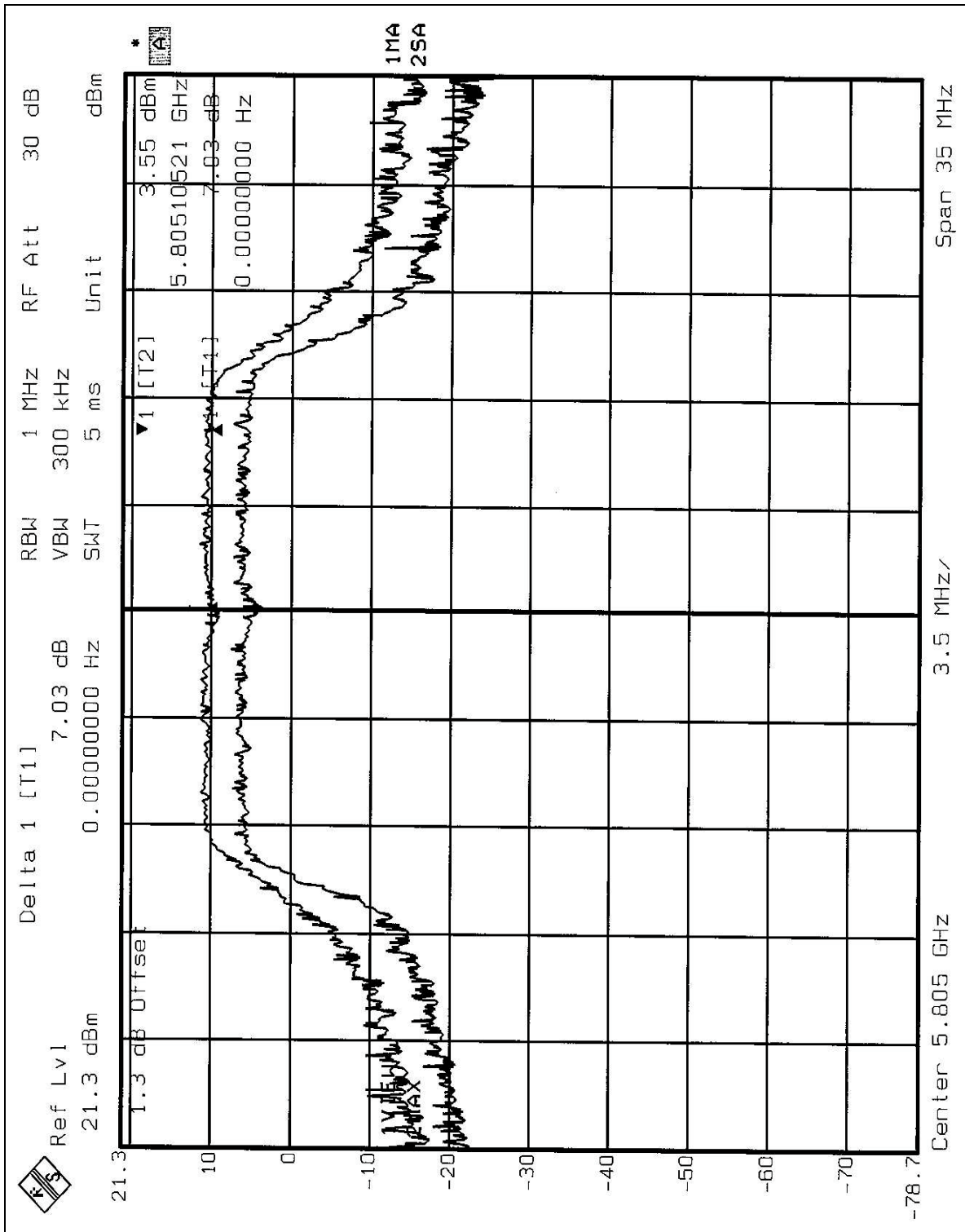


## CH12



## 5.5 PEAK POWER SPECTRAL DENSITY MEASUREMENT

### 5.5.1 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

### 5.5.2 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.

### 5.5.3 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.

### 5.5.4 DEVIATION FROM TEST STANDARD

No deviation

### 5.5.5 TEST SETUP



### 5.5.6 EUT OPERATING CONDITIONS

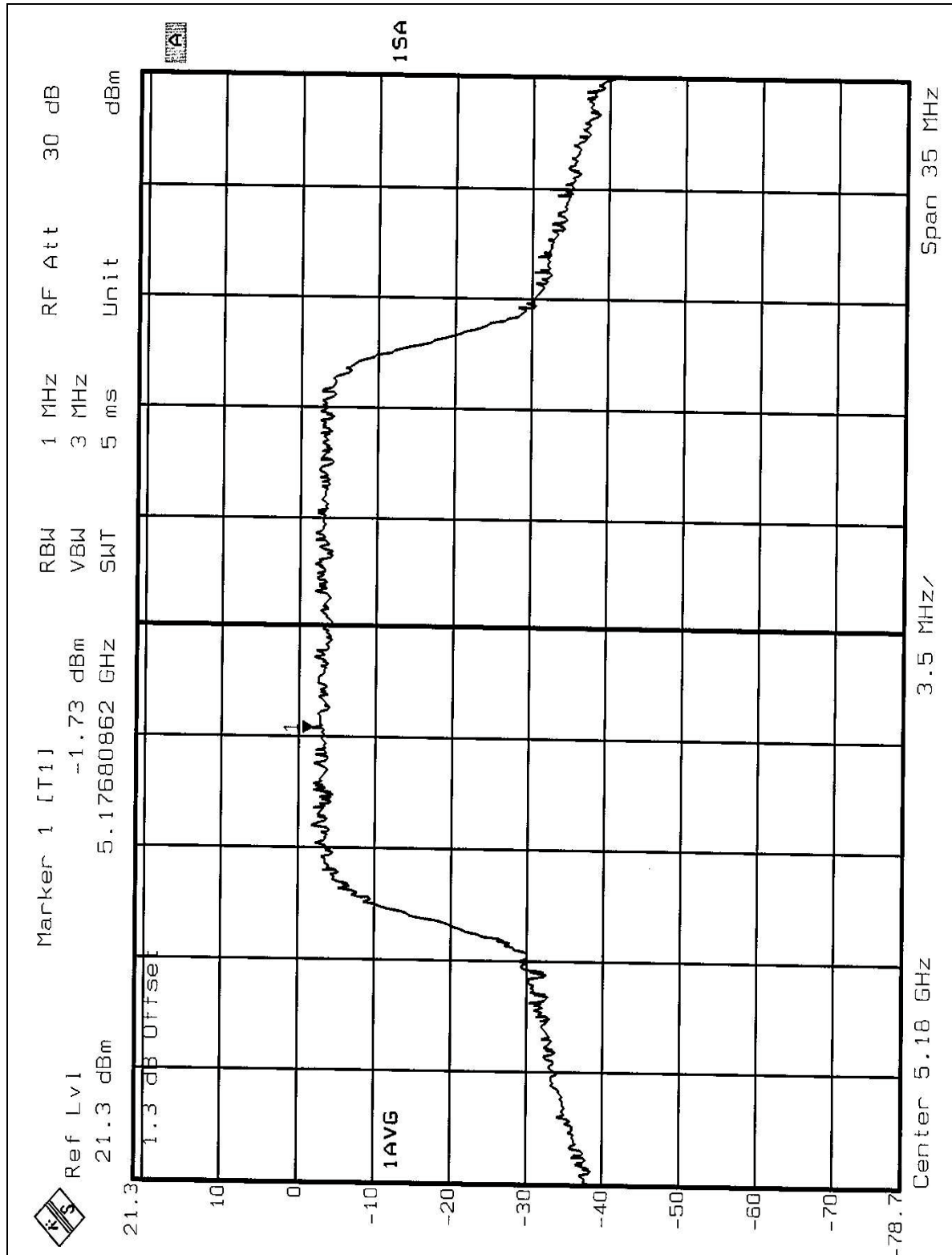
Same as 5.3.6

## 5.5.7 TEST RESULTS

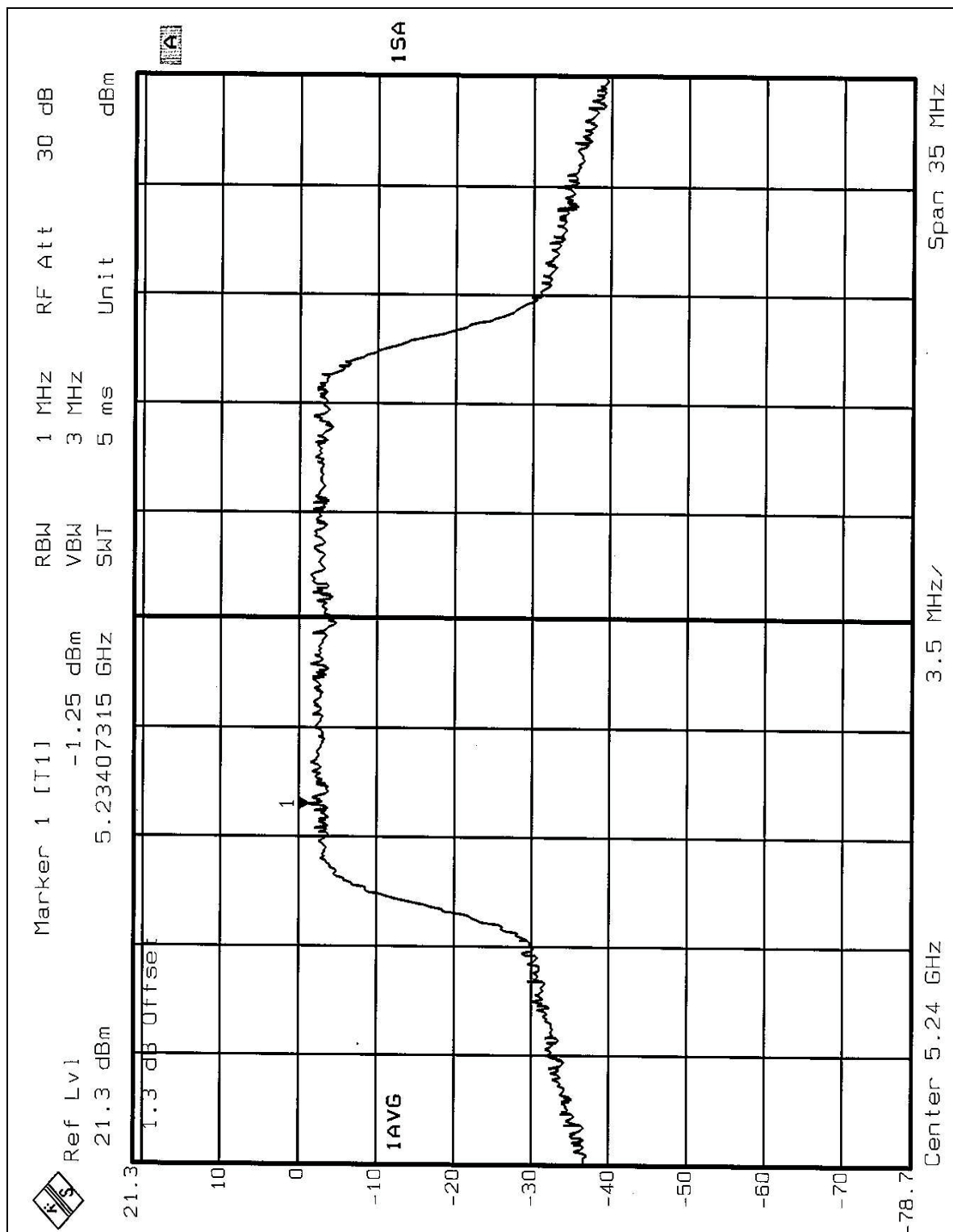
<b>EUT</b>	Mini- PCI CARD	<b>MODEL</b>	WLL4030
<b>ENVIRONMENTAL CONDITIONS</b>	26deg. C, 68%RH, 991hPa	<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz
<b>TESTED BY</b>	Ansen Lei		

<b>CHANNEL</b>	<b>CHANNEL FREQUENCY (MHz )</b>	<b>RF POWER LEVEL IN 1MHz BW (dBm)</b>	<b>MAXIMUM LIMIT (dBm)</b>	<b>PASS/FAIL</b>
1	5180	-1.73	4	PASS
4	5240	-1.25	4	PASS
5	5260	-0.14	11	PASS
8	5320	0.01	11	PASS
9	5745	1.91	17	PASS
12	5805	1.64	17	PASS

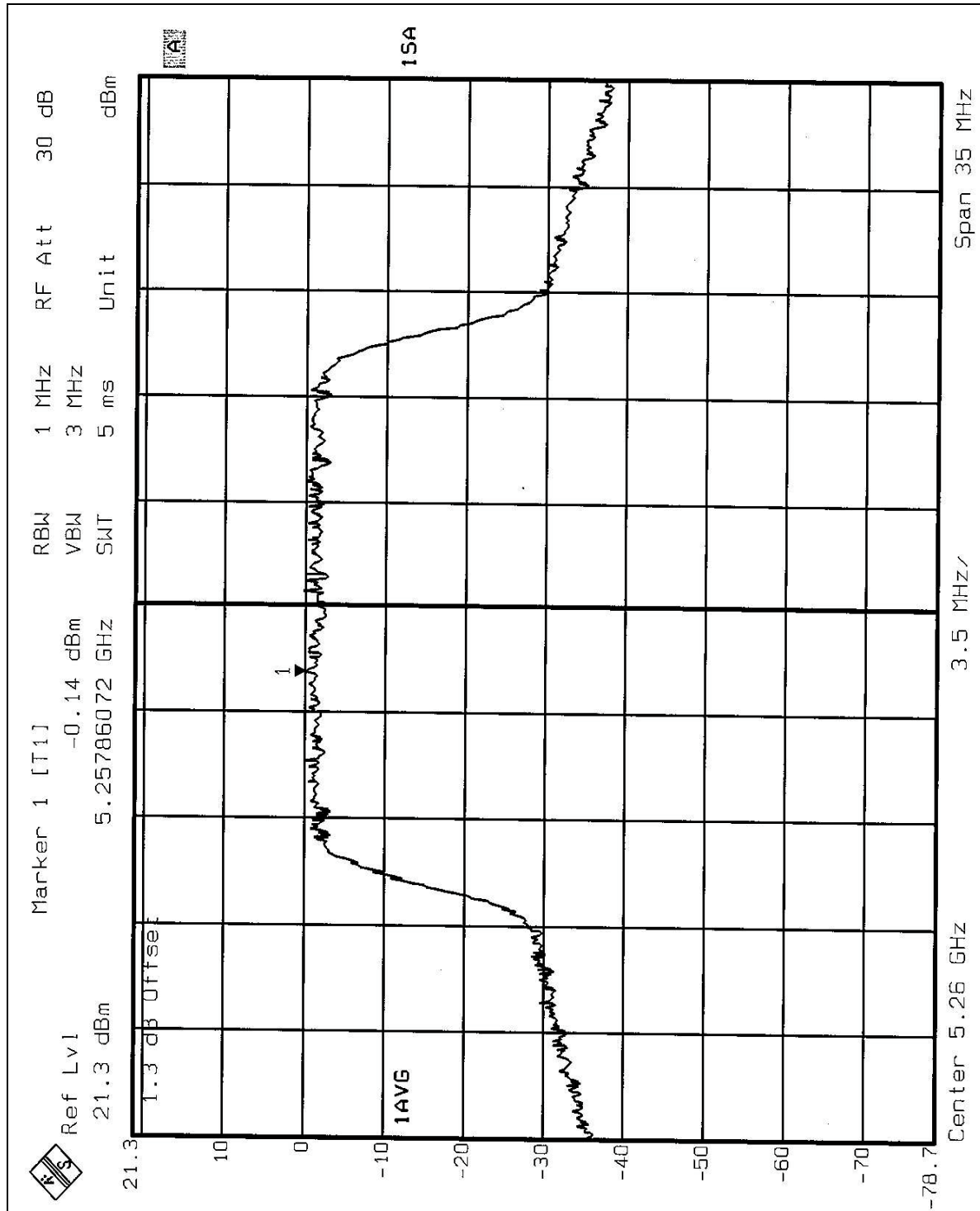
CH1



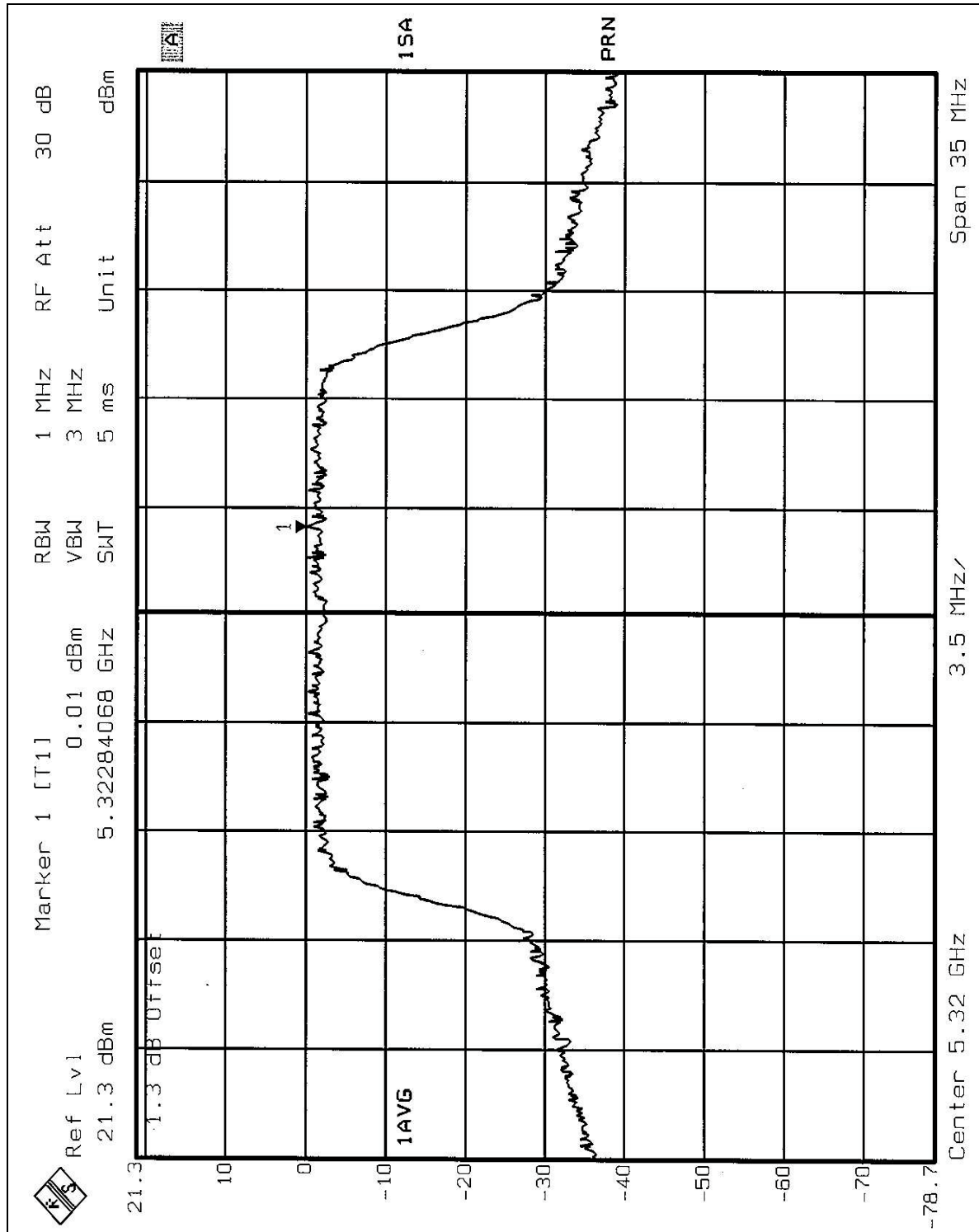
CH4



CH5

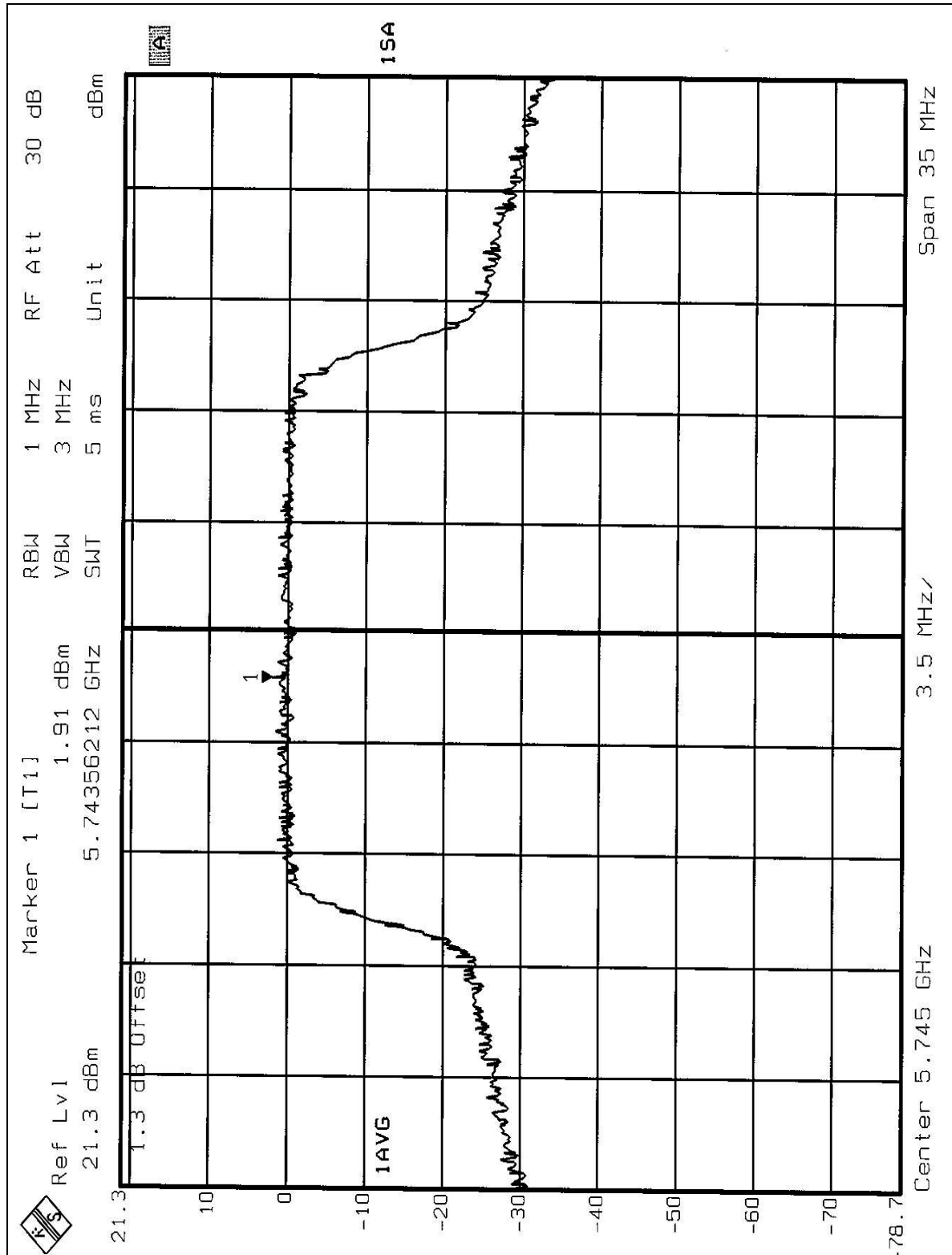


CH8

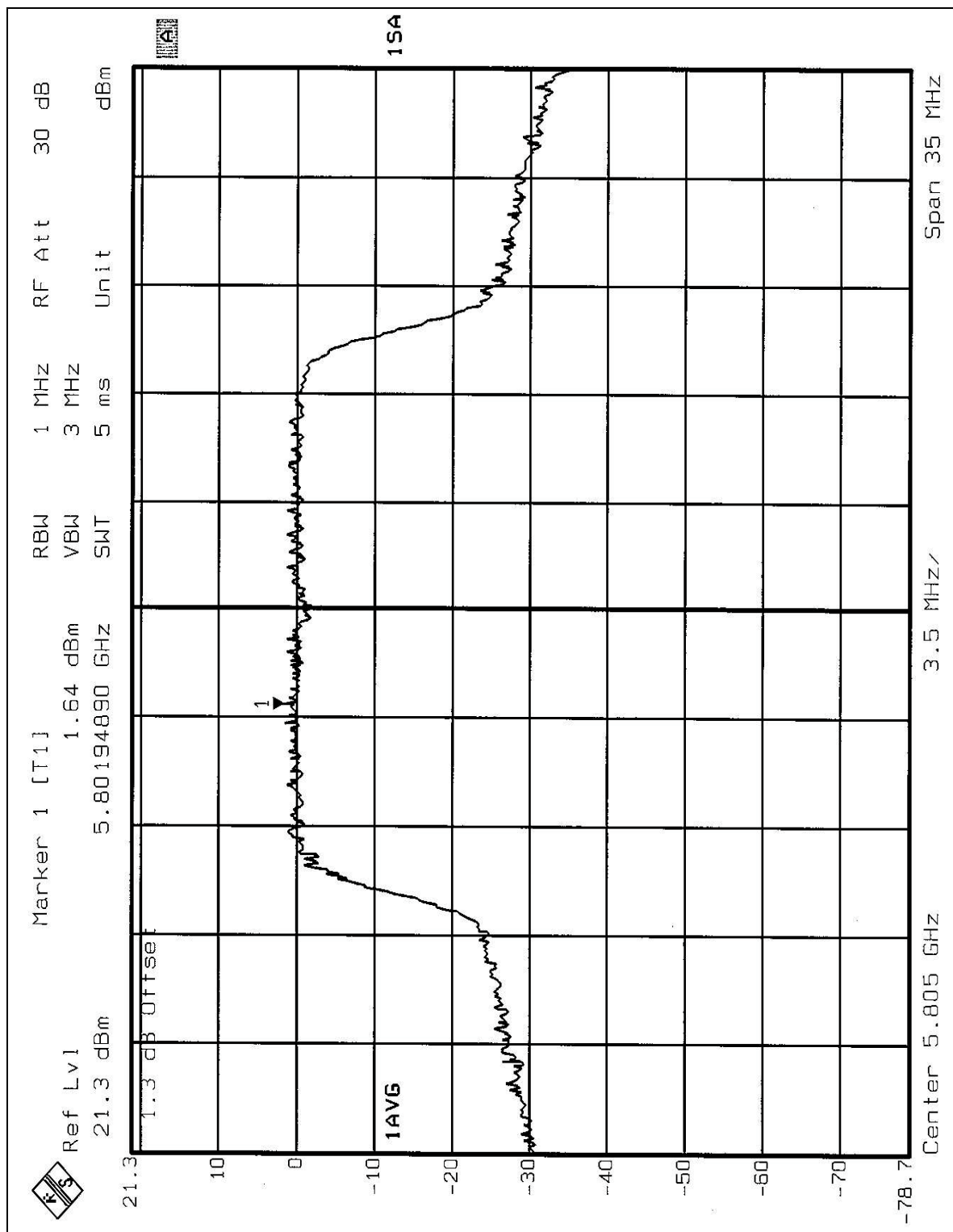




CH9



## CH12



## 5.6 FREQUENCY STABILITY

### 5.6.1 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.

### 5.6.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
ANRITSU SPECTRUM ANALYZER	MS2667C	M10281	Feb. 09, 2005
WIT STANDARD TEMPERATURE AND HUMIDITY CHAMBER	TH-4S-C	W981030	July 18, 2005

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

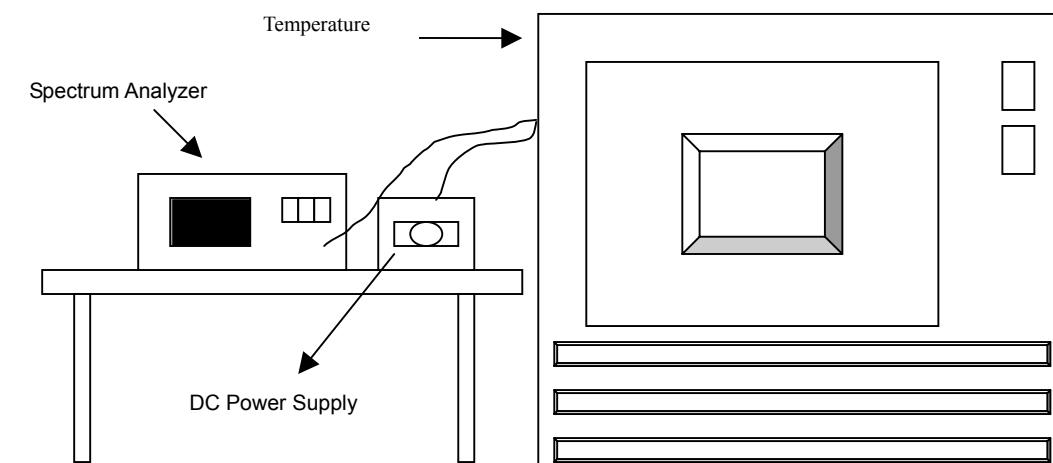
### 5.6.3 TEST PROCEDURE

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.

### 5.6.4 DEVIATION FROM TEST STANDARD

No deviation

### 5.6.5 TEST SETUP



### 5.6.6 EUT OPERATING CONDITION

Same as Item 4.1.6

## 5.6.7 TEST RESULTS

Operating frequency: 5320MHz				Limit : $\pm 0.01\%$			
Temp. (°C)	Power supply (VDC)	2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	126.5	5320.0708	0.0013308	5320.0708	0.0013308	5320.0712	0.0013383
	110.0	5320.0708	0.0013308	5320.0708	0.0013308	5320.0712	0.0013383
	93.5	5320.0708	0.0013308	5320.0708	0.0013308	5320.0712	0.0013383
40	126.5	5320.0422	0.0007932	5320.0424	0.0007970	5320.0426	0.0008008
	110.0	5320.0422	0.0007932	5320.0424	0.0007970	5320.0426	0.0008008
	93.5	5320.0422	0.0007932	5320.0424	0.0007970	5320.0426	0.0008008
30	126.5	5320.0242	0.0004549	5320.0242	0.0004549	5320.0242	0.0004549
	110.0	5320.0242	0.0004549	5320.0242	0.0004549	5320.0242	0.0004549
	93.5	5320.0242	0.0004549	5320.0242	0.0004549	5320.0242	0.0004549
20	126.5	5320.0142	0.0002669	5320.0142	0.0002669	5320.0142	0.0002669
	110.0	5320.0142	0.0002669	5320.0142	0.0002669	5320.0142	0.0002669
	93.5	5320.0142	0.0002669	5320.0142	0.0002669	5320.0142	0.0002669
10	126.5	5320.0130	0.0002444	5320.0130	0.0002444	5320.0130	0.0002444
	110.0	5320.0130	0.0002444	5320.0130	0.0002444	5320.0130	0.0002444
	93.5	5320.0130	0.0002444	5320.0130	0.0002444	5320.0130	0.0002444
0	126.5	5320.0062	0.0001165	5320.0062	0.0001165	5320.0062	0.0001165
	110.0	5320.0062	0.0001165	5320.0062	0.0001165	5320.0062	0.0001165
	93.5	5320.0062	0.0001165	5320.0062	0.0001165	5320.0062	0.0001165
-10	126.5	5320.0070	0.0001316	5320.0070	0.0001316	5320.0070	0.0001316
	110.0	5320.0070	0.0001316	5320.0070	0.0001316	5320.0070	0.0001316
	93.5	5320.0070	0.0001316	5320.0070	0.0001316	5320.0070	0.0001316
-20	126.5	5320.0096	0.0001805	5320.0096	0.0001805	5320.0096	0.0001805
	110.0	5320.0096	0.0001805	5320.0096	0.0001805	5320.0096	0.0001805
	93.5	5320.0096	0.0001805	5320.0096	0.0001805	5320.0096	0.0001805
-30	126.5	5320.0108	0.0002030	5320.0108	0.0002030	5320.0108	0.0002030
	110.0	5320.0108	0.0002030	5320.0108	0.0002030	5320.0108	0.0002030
	93.5	5320.0108	0.0002030	5320.0108	0.0002030	5320.0108	0.0002030



## 5.7 BAND EDGES MEASUREMENT

### 5.7.1 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.

### 5.7.2 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 was measured and recorded.

### 5.7.3 EUT OPERATING CONDITION

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

#### 5.7.4 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.

##### Test Mode 1

###### Channel 1 (5180MHz)

The band edge emission plot on the pages 148 shows 44.24dBc (Peak) / 51.22Bc (Average) between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 1 is 98.96dBuV/m, so the maximum field strength in restrict band is  $98.96-51.22=47.74$ dBuV/m which is under 54dBuV/m limit.

###### Channel 8 (5320MHz)

The band edge emission plot on the pages 149 shows 48.41dBc (Peak) / 52.86dBc (Average) 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 98.18dBuV/m, so the maximum field strength in restrict band is  $98.18-52.86=45.32$ dBuV/m which is under 54dBuV/m limit.

##### Test Mode 2

###### Channel 1 (5180MHz)

The band edge emission plot on the pages 148 shows 44.24dBc (Peak) / 51.22Bc (Average) 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 96.67dBuV/m, so the maximum field strength in restrict band is  $96.67-51.22=45.45$ dBuV/m which is under 54dBuV/m limit.

###### Channel 8 (5320MHz)

The band edge emission plot on the pages 149 shows 48.41dBc (Peak) / 52.86dBc (Average) 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 98.09dBuV/m, so the maximum field strength in restrict band is  $98.09-52.86=45.23$ dBuV/m which is under 54dBuV/m limit.



### Test Mode 3

#### Channel 1 (5180MHz)

The band edge emission plot on the pages 148 shows 44.24dBc (Peak) / 51.22Bc (Average) 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 97.80dBuV/m, so the maximum field strength in restrict band is  $97.80-51.22=46.58$ dBuV/m which is under 54dBuV/m limit.

#### Channel 8 (5320MHz)

The band edge emission plot on the pages 149 shows 48.41dBc (Peak) / 52.86dBc (Average) 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 97.40dBuV/m, so the maximum field strength in restrict band is  $97.40-52.86=44.54$ dBuV/m which is under 54dBuV/m limit.

### Test Mode 4

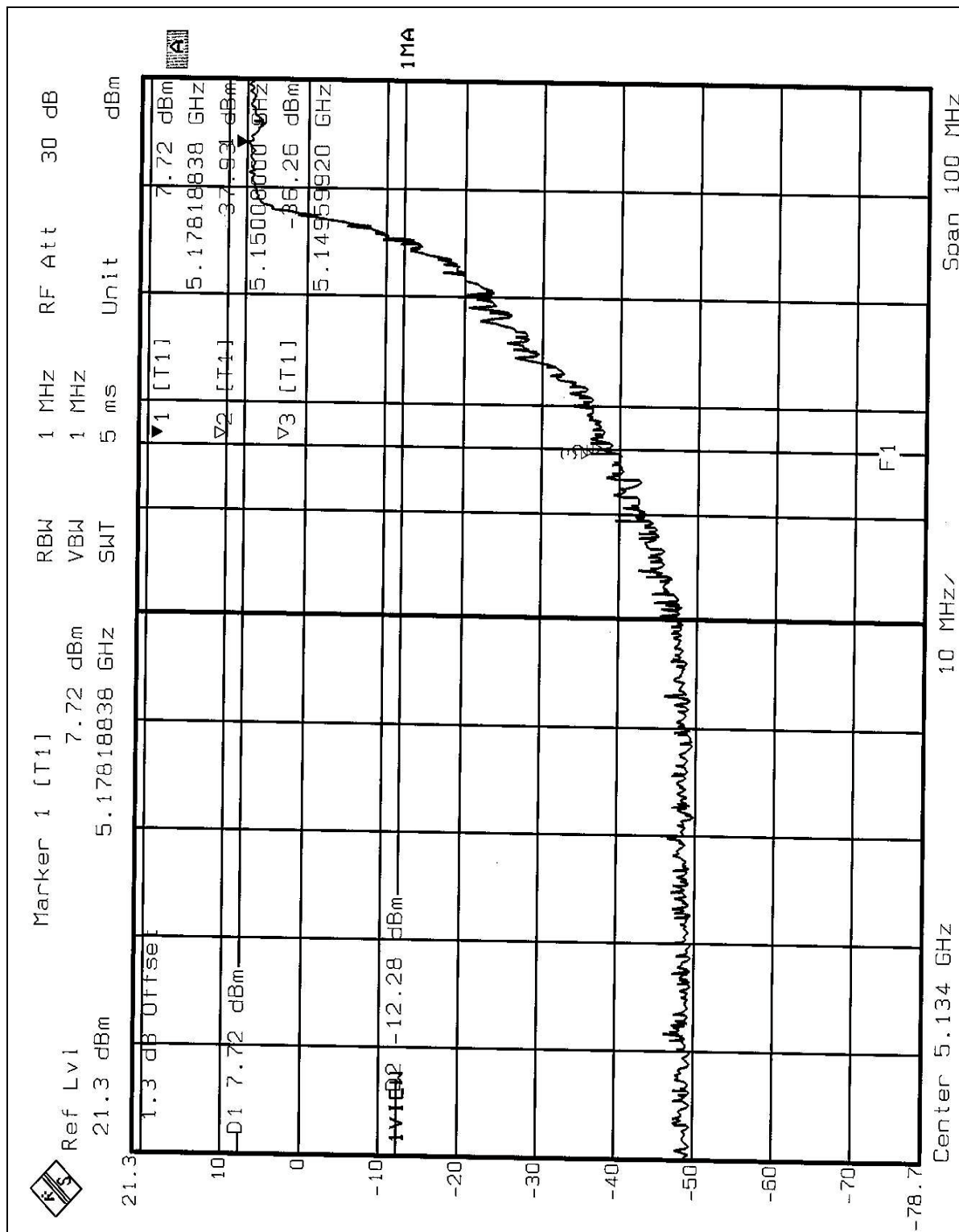
#### Channel 1 (5180MHz)

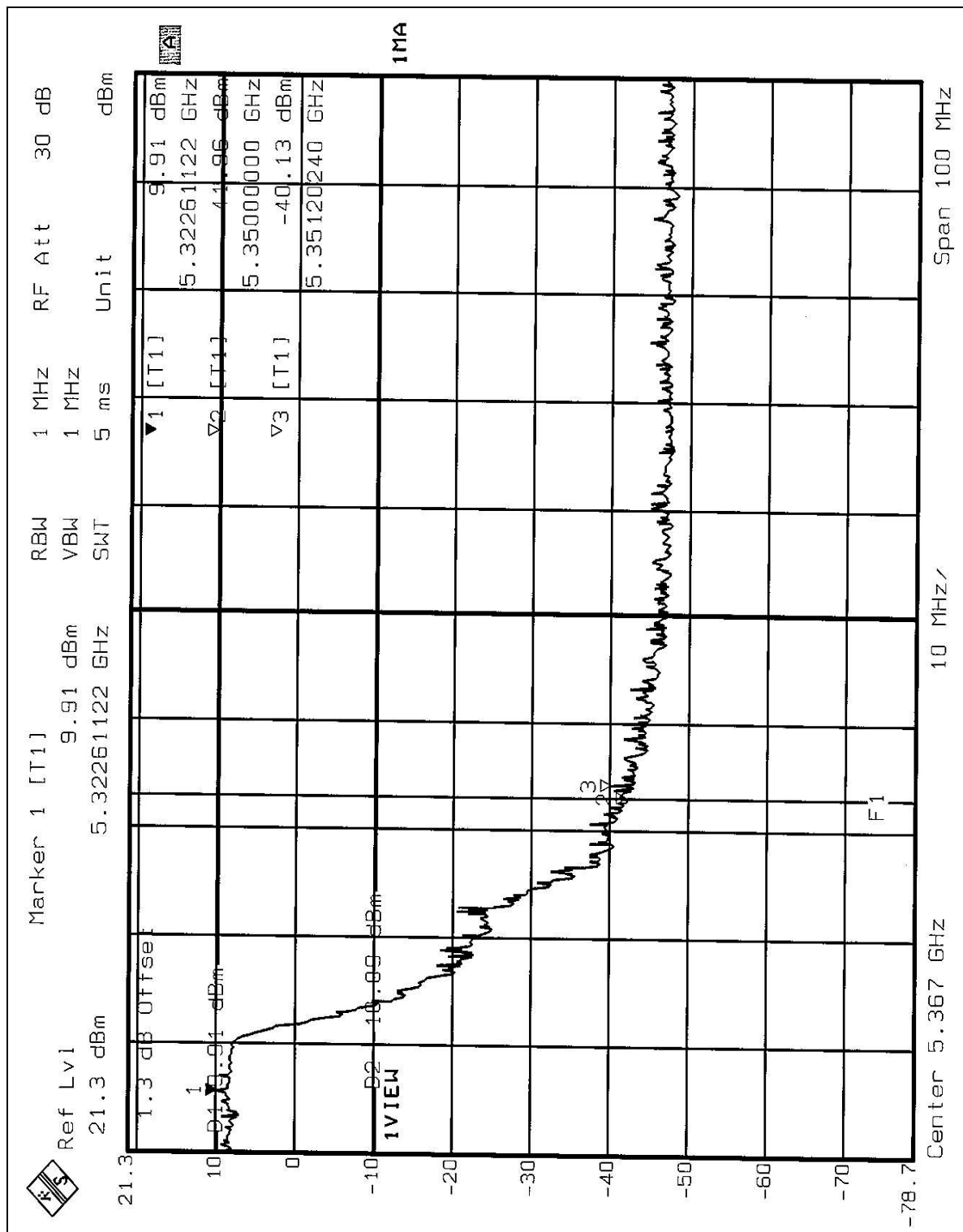
The band edge emission plot on the pages 148 shows 44.24dBc (Peak) / 51.22Bc (Average) between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 1 is 98.96dBuV/m, so the maximum field strength in restrict band is  $98.50-51.22=47.28$ dBuV/m which is under 54dBuV/m limit.

#### Channel 8 (5320MHz)

The band edge emission plot on the pages 149 shows 48.41dBc (Peak) / 52.86dBc (Average) 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 97.50dBuV/m, so the maximum field strength in restrict band is  $97.50-52.86=44.64$ dBuV/m which is under 54dBuV/m limit.









## **5.8 ANTENNA REQUIREMENT**

### **5.8.1 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.

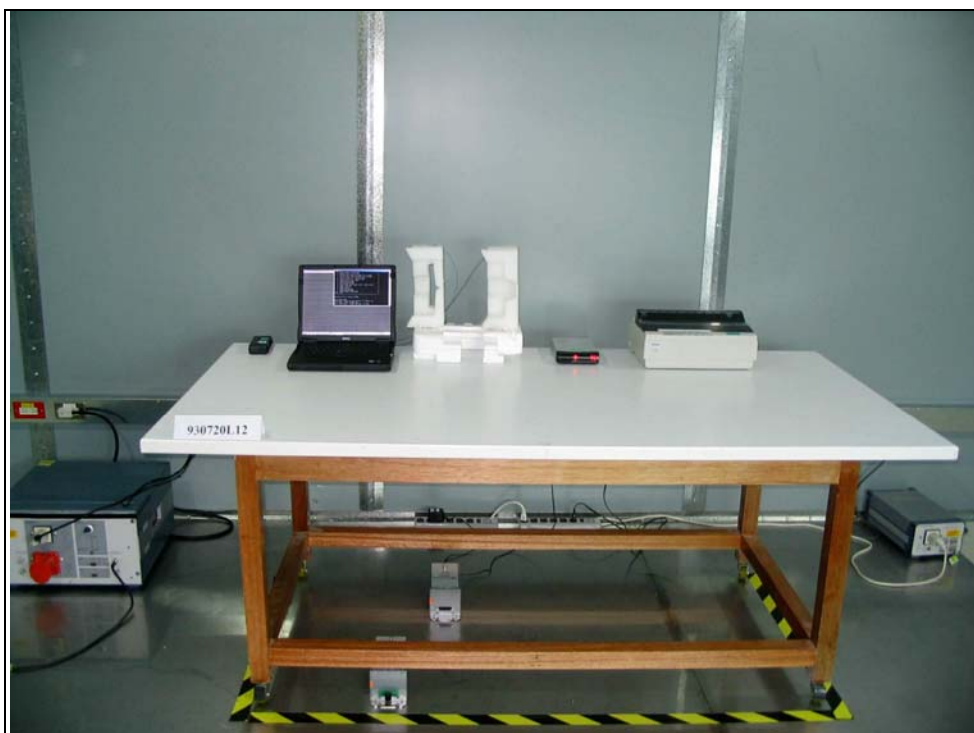
### **5.8.2 ANTENNA CONNECTED CONSTRUCTION**

The antenna used in this product are Inverted F and Monopole antenna with UFL connector. The maximum Gain of the antenna is 3.5dBi.

## 6. PHOTOGRAPHS OF THE TEST CONFIGURATION

### CONDUCTED EMISSION TEST

#### Test Mode 1





## Test Mode 2







### Test Mode 3







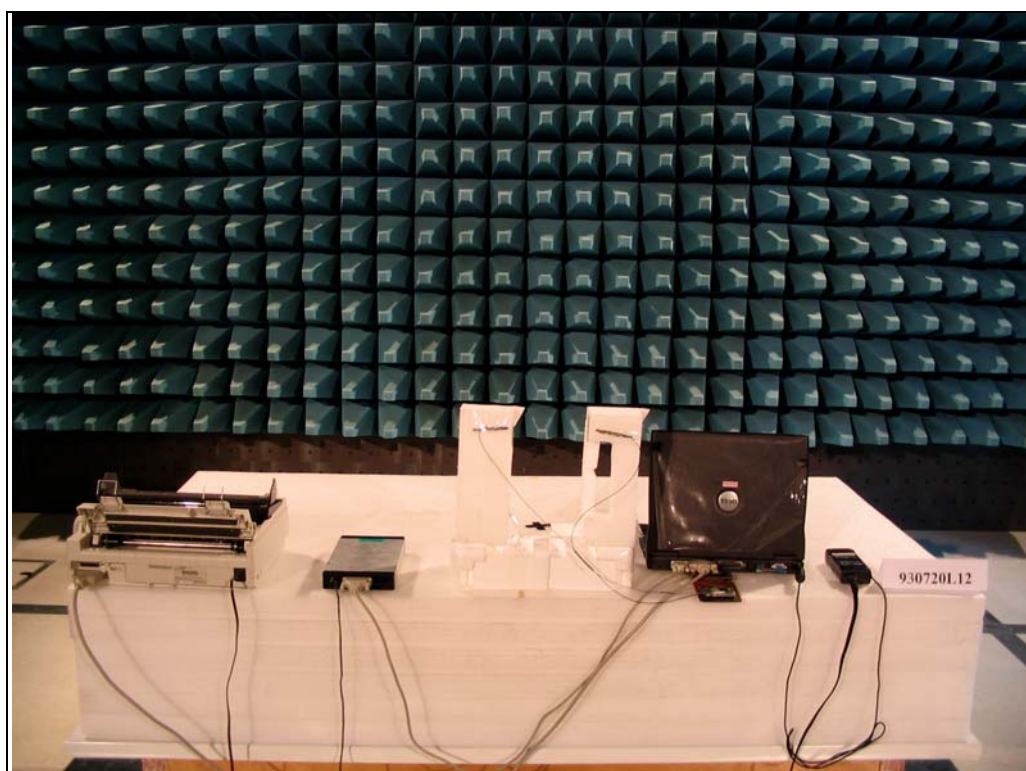
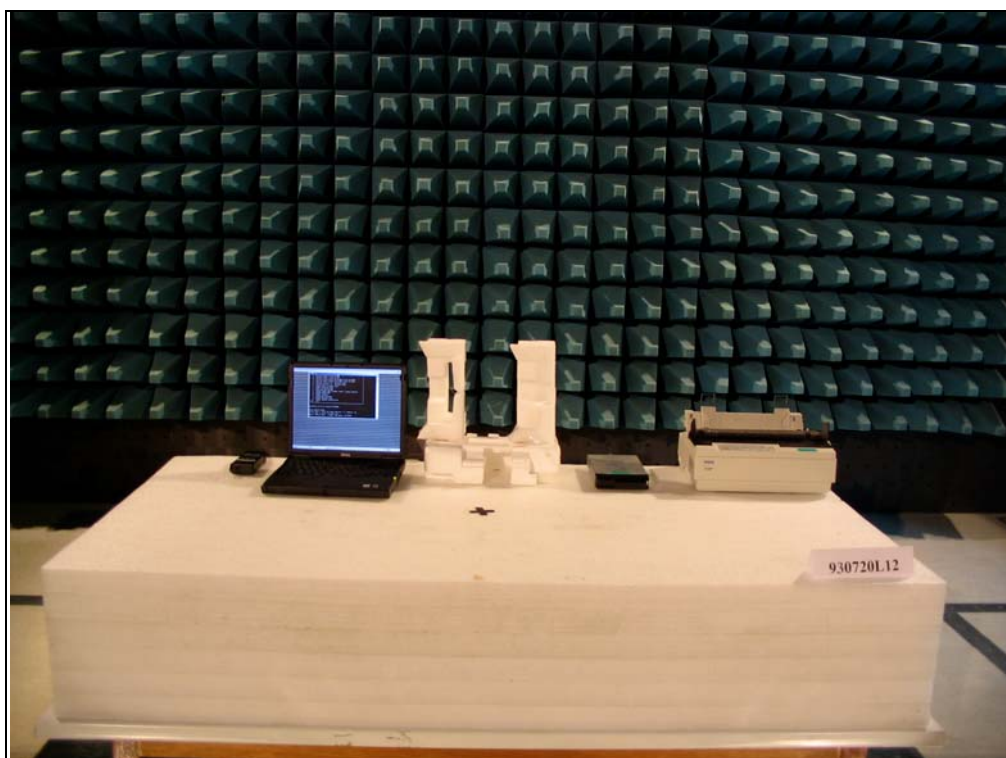
#### Test mode 4





## RADIATED EMISSION TEST

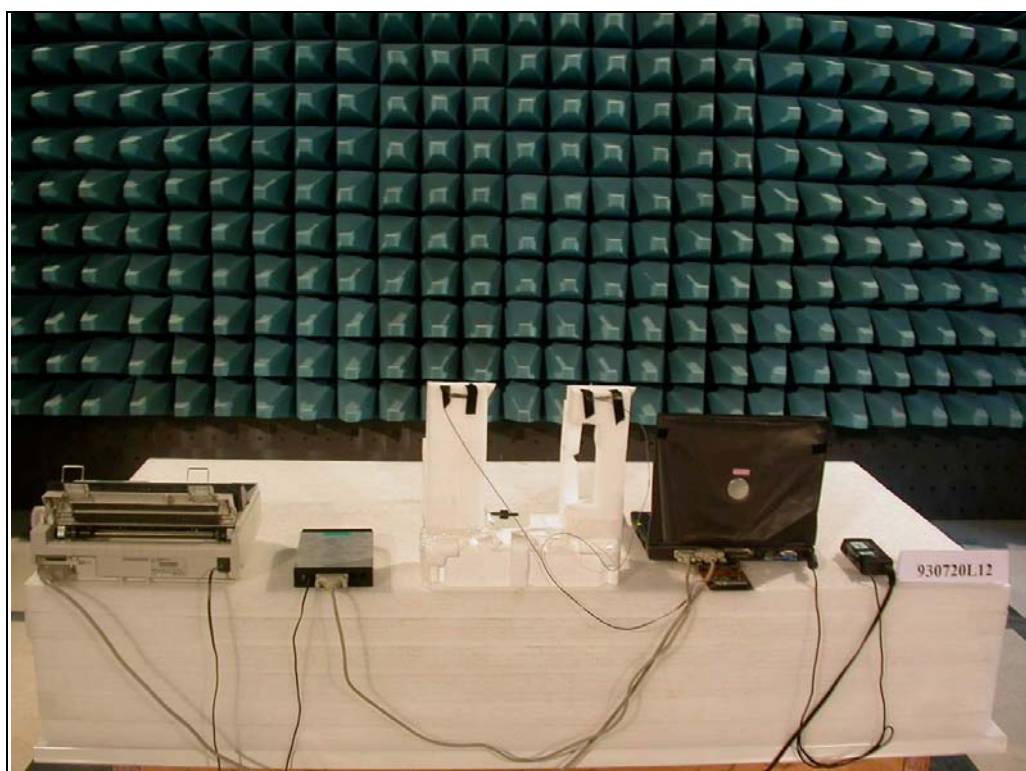
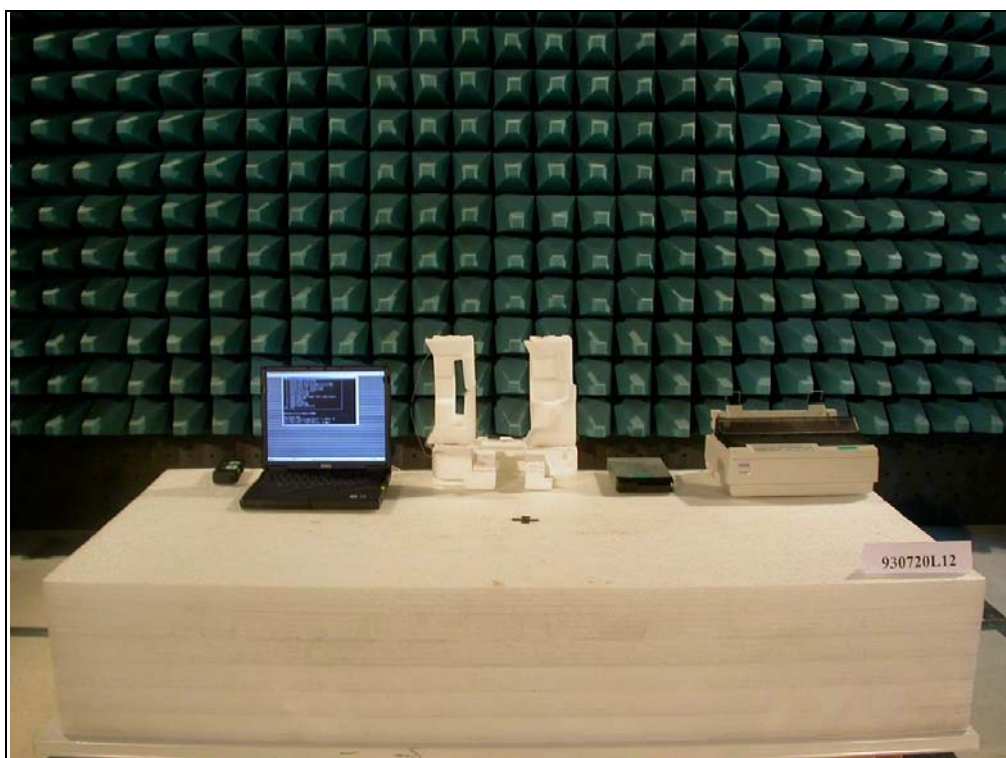
### Test mode 1







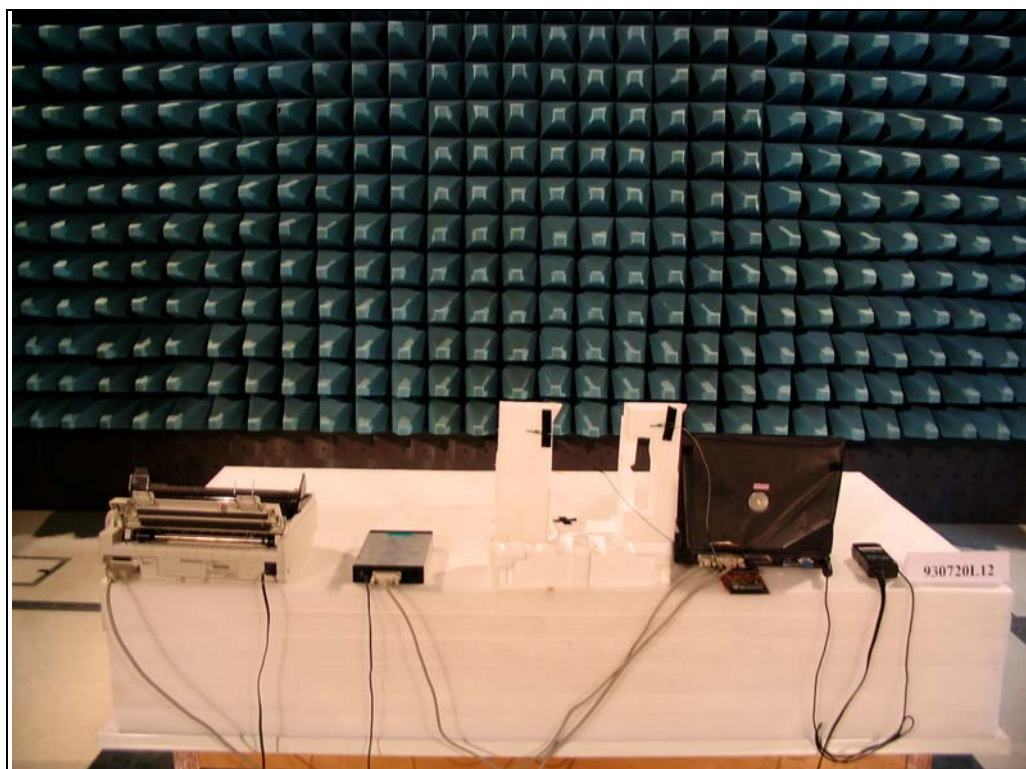
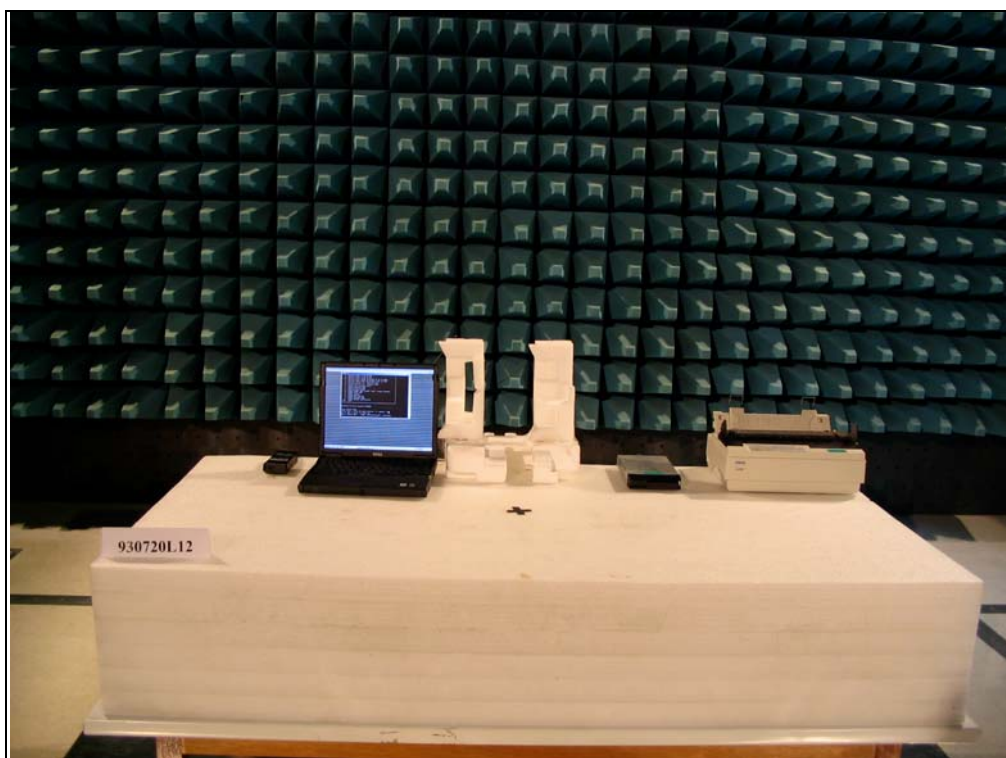
## Test mode 2







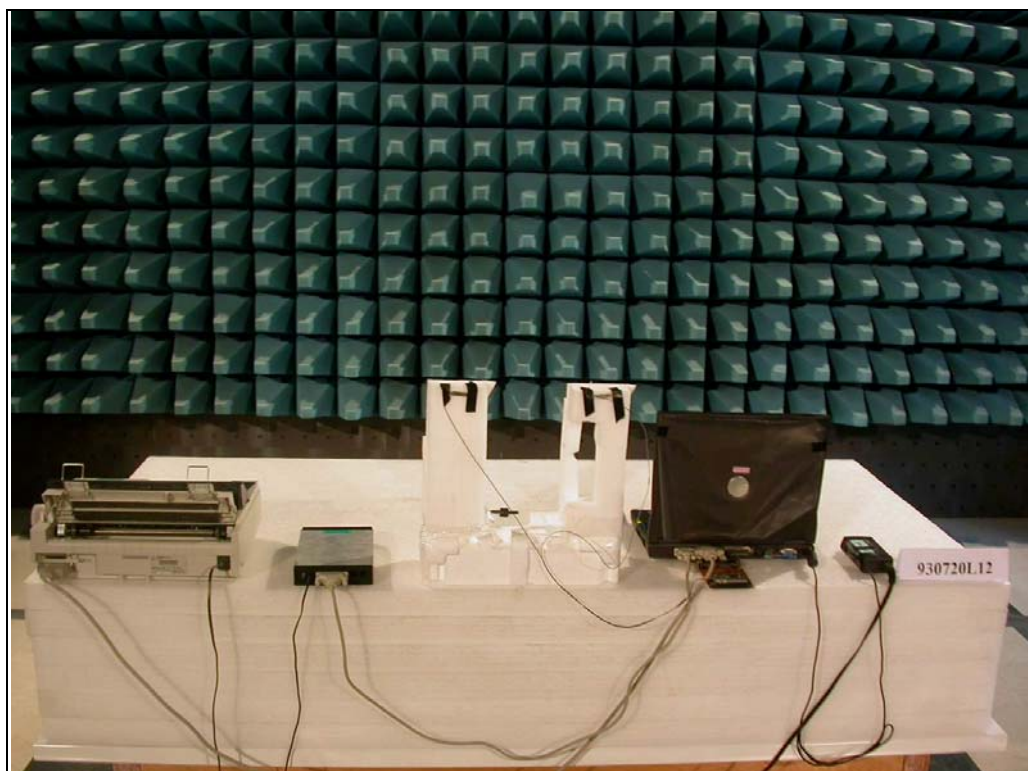
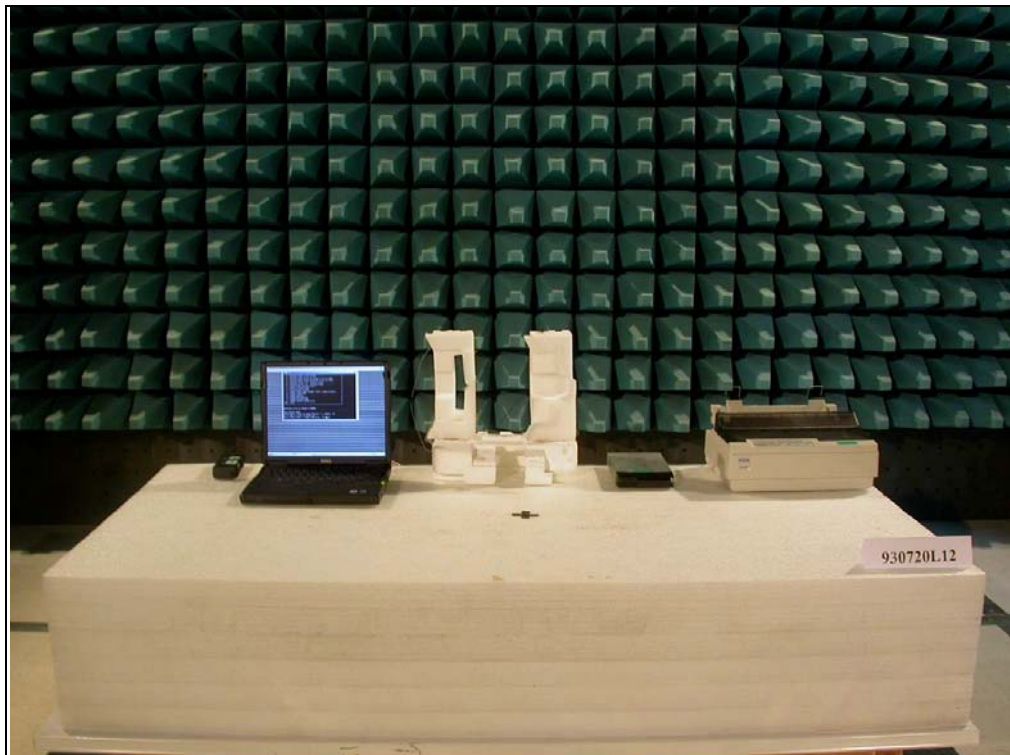
### Test mode 3







#### Test mode 4









## 7. 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, Guide 25 or EN 45001:

<b>USA</b>	FCC, NVLAP, UL , A2LA
<b>Germany</b>	TUV Rheinland
<b>Japan</b>	VCCI
<b>Norway</b>	NEMKO
<b>Canada</b>	INDUSTRY CANADA , CSA
<b>R.O.C.</b>	CNLA, BSMI, DGT
<b>Netherlands</b>	Telefication
<b>Singapore</b>	PSB , GOST-ASIA(MOU)
<b>Russia</b>	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](http://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

**Email:** [service@mail.adt.com.tw](mailto:service@mail.adt.com.tw)

**Web Site:** [www.adt.com.tw](http://www.adt.com.tw)

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

Report Format Version 1.5