

## 4.5 POWER SPECTRAL DENSITY MEASUREMENT

### 4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Limit of Power Spectral Density Measurement is 8dBm.

### 4.5.2 TEST INSTRUMENTS

| Description & Manufacturer    | Model No. | Serial No. | Calibrated Until |
|-------------------------------|-----------|------------|------------------|
| ROHDE & SCHWARZ TEST RECEIVER | ESMI      | 839379/002 | Aug. 04, 2001    |
| HP ATTENUATOR                 | 8496B     | 3247A18505 | Cal. on use      |
| HP PLOTTER                    | 7475A     | 2641V27755 | N/A              |

#### Notes:

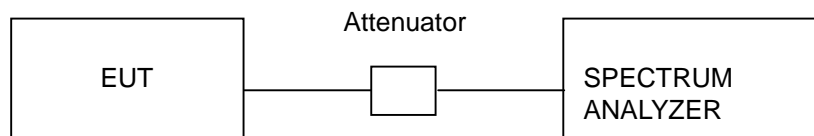
- 1.The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
- 2.The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to NML/ROC and NIST/USA.

#### 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 3 kHz RBW and 30 kHz VBW, set sweep time= $\text{span}/3\text{kHz}$ . The power spectral density was measured and recorded.

The sweep time is allowed to be longer than  $\text{span}/3\text{kHz}$  for a full response of the mixer in the spectrum analyzer.

#### 4.5.4 TEST SETUP



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

#### 4.5.5 EUT OPERATING CONDITION

The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

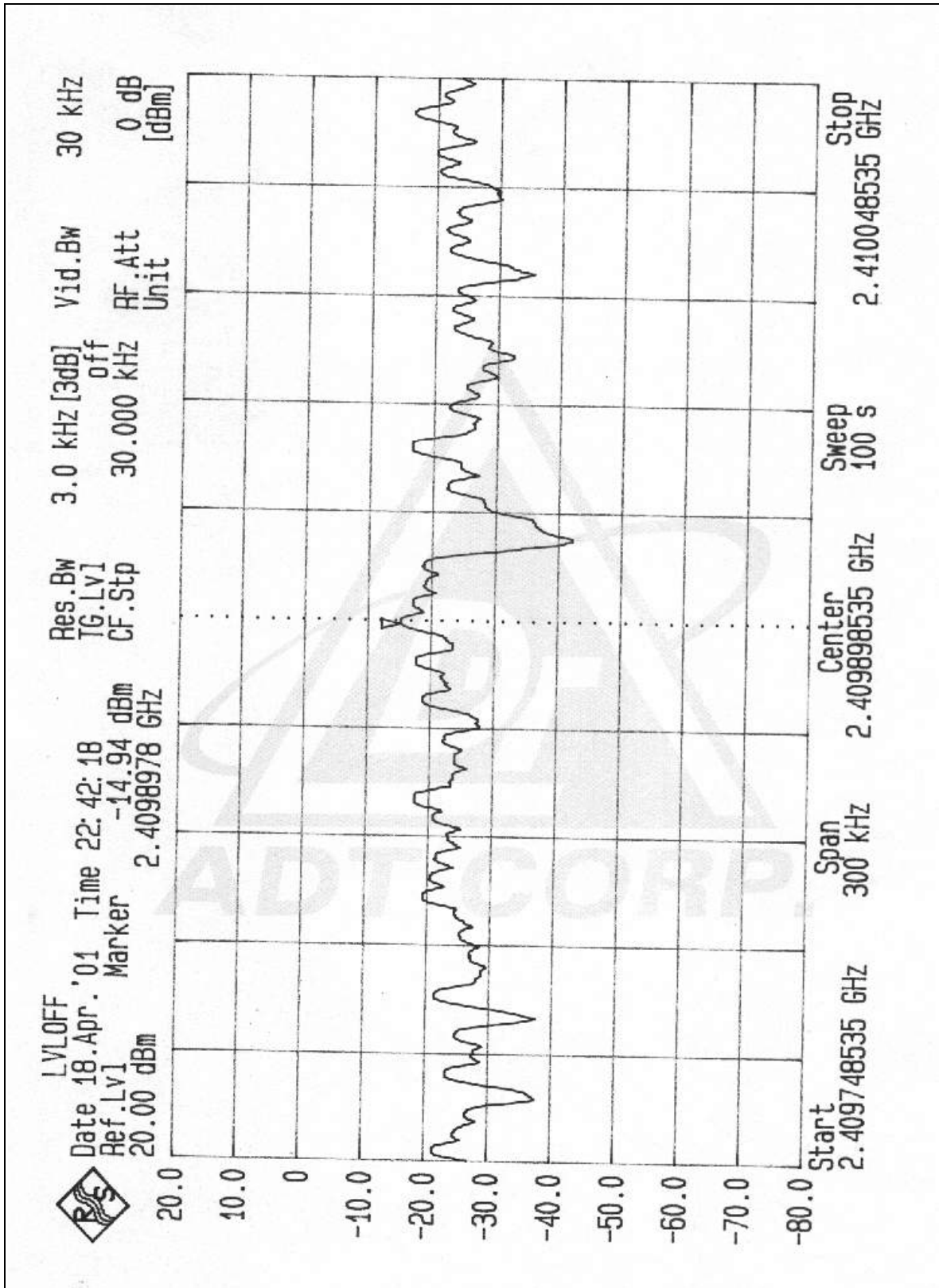
## 4.5.6 TEST RESULTS

|                                 |                      |                  |           |
|---------------------------------|----------------------|------------------|-----------|
| <b>EUT</b>                      | Wireless LAN PC Card | <b>Model</b>     | DW-650    |
| <b>Environmental Conditions</b> | 24°C , 60%RH         | <b>Tested By</b> | Steven Lu |

| CHANNEL NUMBER | CHANNEL FREQUENCY (MHz) | RF POWER LEVEL IN 3 KHz BW (dBm) | MAXIMUM LIMIT (dBm) | PASS/FAIL |
|----------------|-------------------------|----------------------------------|---------------------|-----------|
| 1              | 2412                    | -14.94                           | 8                   | PASS      |
| 6              | 2437                    | -14.20                           | 8                   | PASS      |
| 11             | 2462                    | -13.08                           | 8                   | PASS      |

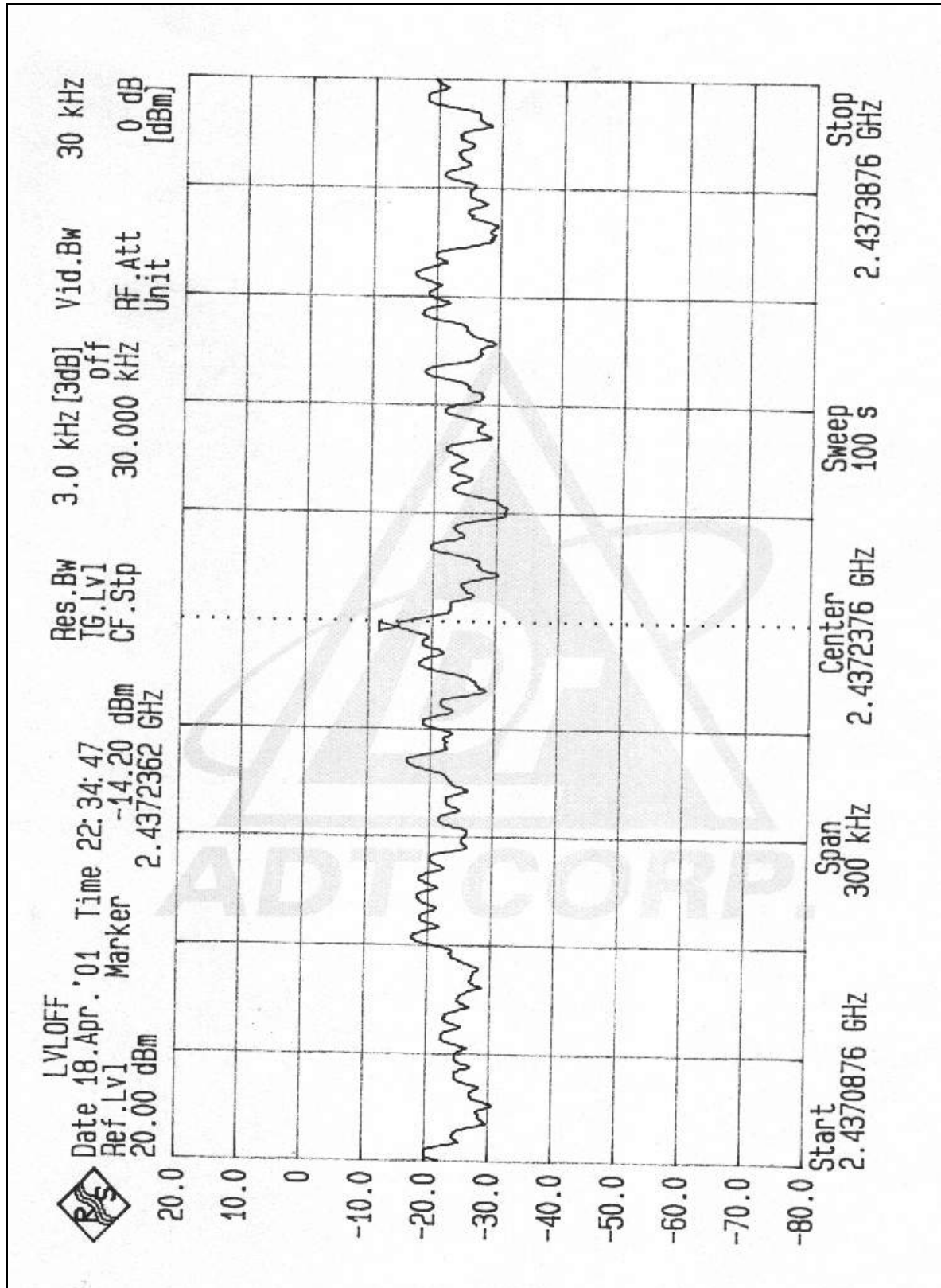


CHI



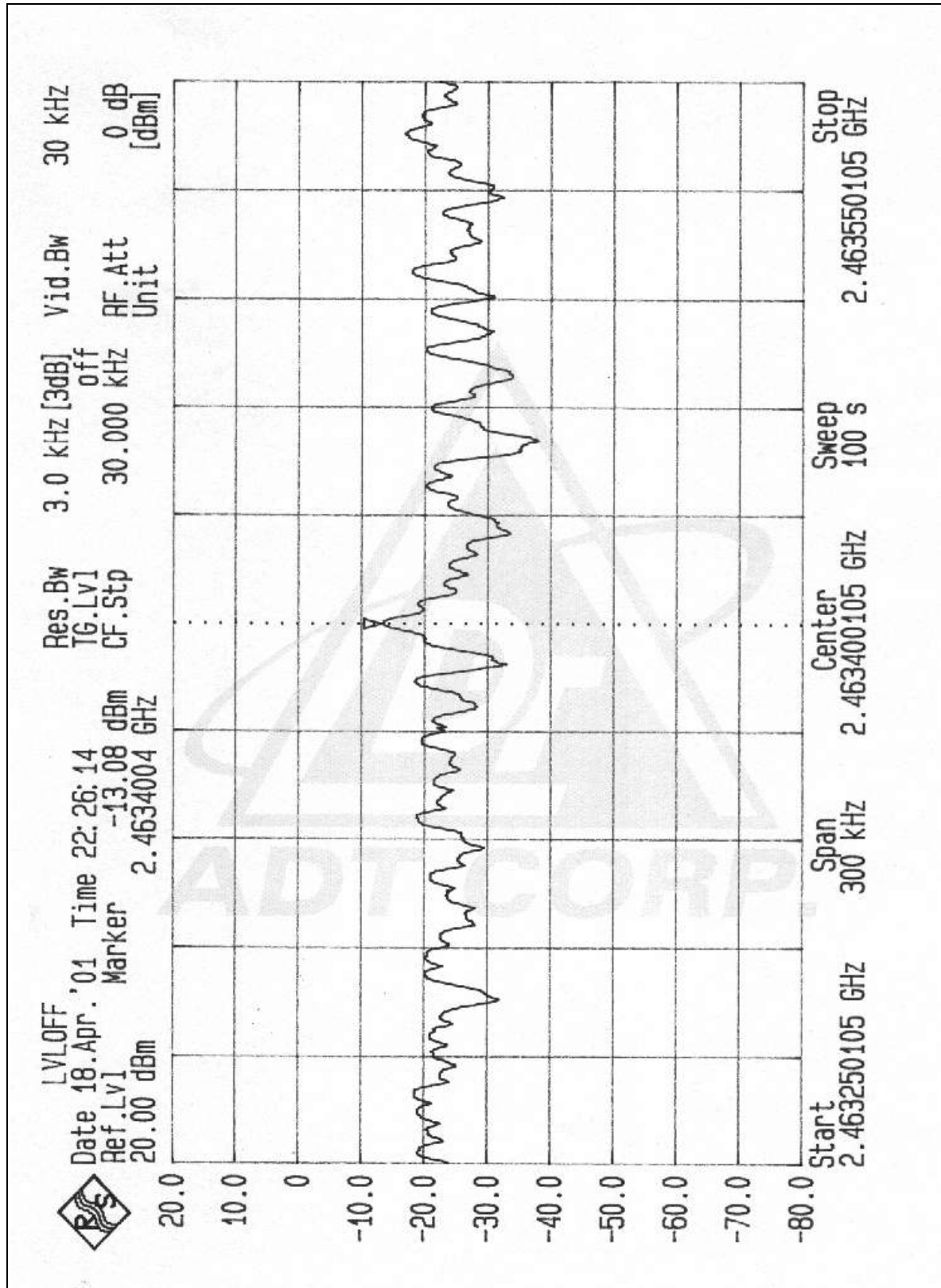


CH6





CH11



## 4.6 BAND EDGES MEASUREMENT

### 4.6.1 LIMITS OF BAND EDGES MEASUREMENT

Below  $-20\text{dB}$  of the highest emission level of operating band (in 100KHz RB).

### 4.6.2 TEST INSTRUMENTS

| Description & Manufacturer    | Model No. | Serial No.               | Calibrated Until |
|-------------------------------|-----------|--------------------------|------------------|
| ROHDE & SCHWARZ TEST RECEIVER | ESMI      | 848926/005<br>846839/018 | Dec 03, 2001     |
| HP ATTENUATOR                 | 8496B     | 3247A18505               | Cal. on use      |
| HP PLOTTER                    | 7475A     | 2641V27755               | N/A              |

Notes:

- 1.The measurement uncertainty is less than  $\pm 2.6\text{dB}$ , which is calculated as per the NAMAS document NIS81.
- 2.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 100 kHz with suitable frequency span including 100 kHz bandwidth from band edge. The band edges was measured and recorded.



#### 4.6.4 EUT OPERATING CONDITION

The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

#### 4.6.5 TEST RESULTS

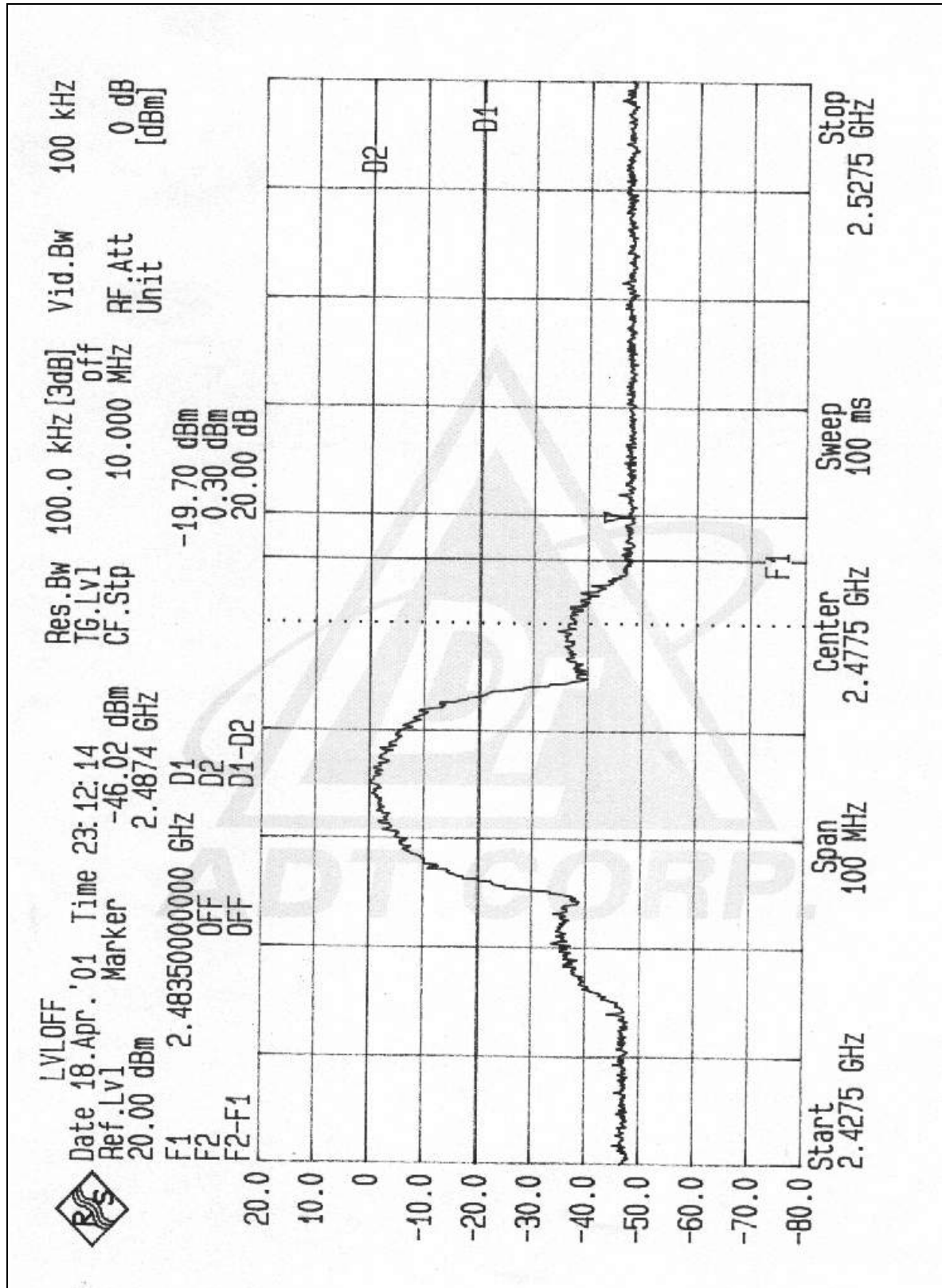
The spectrum plots are attached below. D2 line indicates the highest level, D1 line indicates the 20dB offset below D2. It shows compliance with the requirement in part 15.247(C).

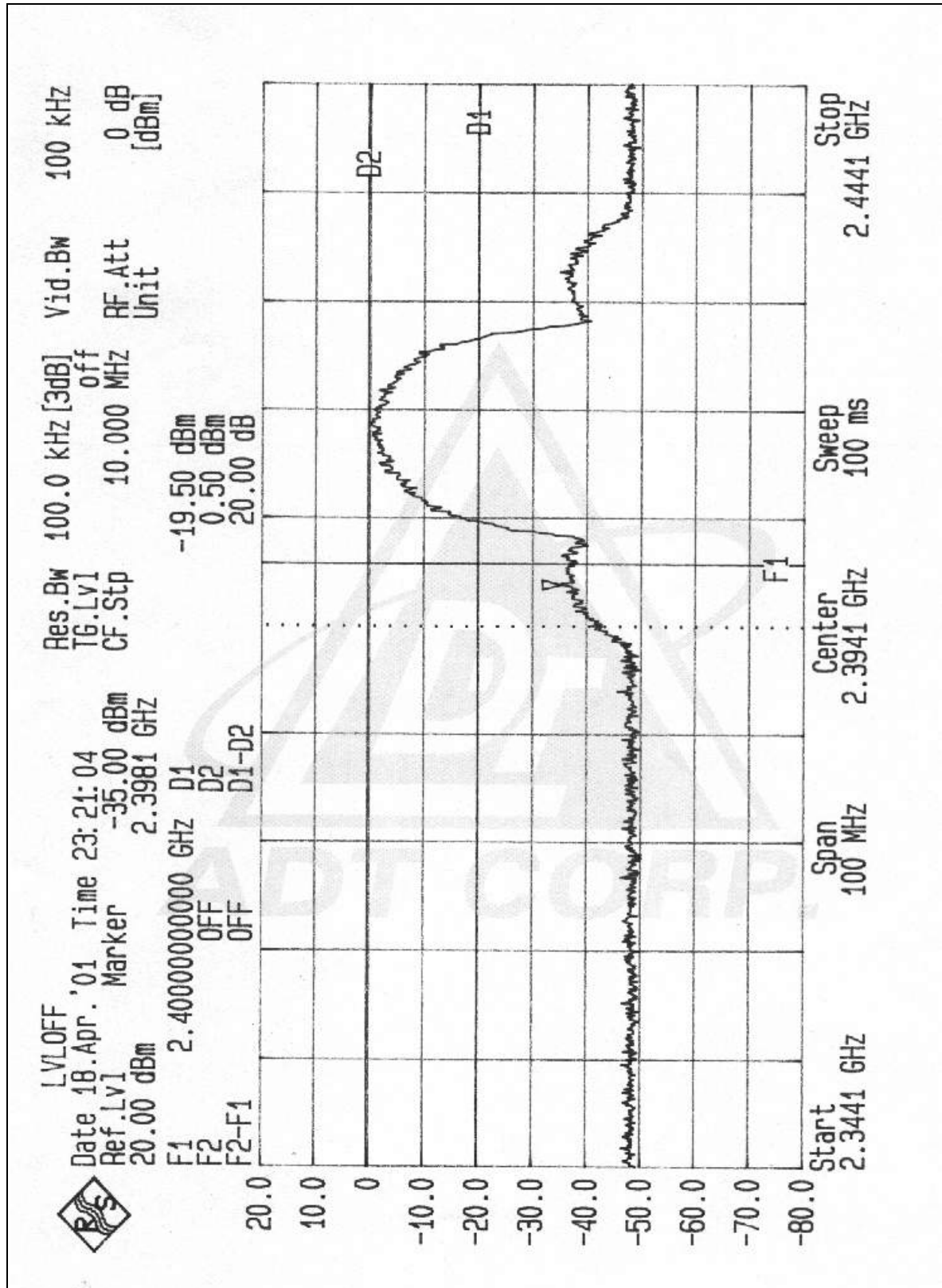




#### 4.6.6 NOTE ON BAND EDGE EMISSION

The band edge emission plot on page 43 shows 46.32dB delta between carrier maximum power and local maximum emission in restrict band (2.4834GHz). The emission of carrier strength list in table of page 24 is 97.4dB  $\mu$  V/m, so the maximum field strength in restrict band is  $97.4 - 46.32 = 51.08$  dB  $\mu$  V/m which is under 54 dB  $\mu$  V/m limit.







## **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 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### **4.7.2 ANTENNA CONNECTED CONSTRUCTION**

The antenna used in this product is Printed antenna. There is no antenna connector. And the maximum Gain of this antenna is only -1dBi.

## 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 and Safety consultation. Our laboratories are accredited by the following approval agencies according to ISO/IEC Guide 25 or EN 45001:

|                    |               |
|--------------------|---------------|
| <b>USA</b>         | FCC, NVLAP    |
| <b>Germany</b>     | TUV Rheinland |
| <b>Japan</b>       | VCCI          |
| <b>New Zealand</b> | RFS           |
| <b>Norway</b>      | NEMKO, DNV    |
| <b>U.K.</b>        | INCHCAPE      |
| <b>R.O.C.</b>      | BSMI          |

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).

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