

# FCC TEST REPORT

**REPORT NO. :** RF931116A05A

**MODEL NO. :** C-UR37

**RECEIVED :** Nov. 16, 2004

**TESTED :** Nov. 22 ~ Nov. 24, 2004

**APPLICANT :** Lite-On Technology Corporation

**ADDRESS :** 5F, 16, Sec 4, Nanking E. Road, Taipei, Taiwan,  
R.O.C.

**ISSUED BY :** Advance Data Technology Corporation

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**TEST LOCATION :** No. 19, Hwa Ya 2nd Rd., Wen Hwa Tsuen, Kwei  
Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C.

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## 1 CERTIFICATION

**PRODUCT :** Dongle  
**BRAND NAME :** LOGITECH  
**MODEL NO. :** C-UR37  
**APPLICANT :** Lite-On Technology Corporation  
**TESTED :** Nov. 22 ~ Nov. 24, 2004  
**TEST SAMPLE :** ENGINEERING SAMPLE  
**STANDARDS :** FCC Part 15, Subpart C (Section 15.247)  
ANSI C63.4:2003

The above equipment has been tested by **Advance Data Technology Corporation**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

**PREPARED BY :** Suntee Liu, **DATE:** Nov. 26, 2004  
( Suntee Liu )

**TECHNICAL**  
**ACCEPTANCE :** Gary Chang, **DATE:** Nov. 26, 2004  
Responsible for RF ( Gary Chang )

**APPROVED BY :** Cody Chang, **DATE:** Nov. 26, 2004  
( Cody Chang, Deputy Manager )

## 2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

| APPLIED STANDARD: FCC Part 15, Subpart C |                                                                                         |        |                                                                                  |
|------------------------------------------|-----------------------------------------------------------------------------------------|--------|----------------------------------------------------------------------------------|
| Standard Section                         | Test Type and Limit                                                                     | Result | REMARK                                                                           |
| 15.207                                   | AC Power Conducted Emission                                                             | PASS   | Meet the requirement of limit. Minimum passing margin is -6.92 dB at 0.623 MHz   |
| 15.247(a)(2)                             | Spectrum Bandwidth of a Direct Sequence Spread Spectrum System<br>Limit: min. 500kHz    | PASS   | Meet the requirement of limit.                                                   |
| 15.247(b)                                | Maximum Peak Output Power<br>Limit: max. 30dBm                                          | PASS   | Meet the requirement of limit.                                                   |
| 15.247(d)                                | Transmitter Radiated Emissions<br>Limit: Table 15.209                                   | PASS   | Meet the requirement of limit. Minimum passing margin is -3.86 dB at 7437.00 MHz |
| 15.247(e)                                | Power Spectral Density<br>Limit: max. 8dBm                                              | PASS   | Meet the requirement of limit.                                                   |
| 15.247(d)                                | Band Edge Measurement<br>Limit: 20 dB less than the peak value of fundamental frequency | PASS   | Meet the requirement of limit.                                                   |

### 2.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4:

| Measurement         | Frequency       | Uncertainty |
|---------------------|-----------------|-------------|
| Conducted emissions | 9kHz~30MHz      | 2.44 dB     |
| Radiated emissions  | 30MHz ~ 200MHz  | 3.63 dB     |
|                     | 200MHz ~1000MHz | 3.65 dB     |
|                     | 1GHz ~ 18GHz    | 2.20 dB     |
|                     | 18GHz ~ 40GHz   | 1.88 dB     |

### 3 GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

|                          |                                     |
|--------------------------|-------------------------------------|
| <b>PRODUCT</b>           | Dongle                              |
| <b>MODEL NO.</b>         | C-UR37                              |
| <b>POWER SUPPLY</b>      | 5Vdc from host equipment            |
| <b>MODULATION TYPE</b>   | GFSK                                |
| <b>RADIO TECHNOLOGY</b>  | DSSS                                |
| <b>FREQUENCY RANGE</b>   | 2.402GHz ~ 2.479GHz                 |
| <b>NUMBER OF CHANNEL</b> | 78                                  |
| <b>OUTPUT POWER</b>      | 1.03 mW                             |
| <b>ANTENNA TYPE</b>      | Printed antenna with -4.28 dBi gain |
| <b>DATA CABLE</b>        | NA                                  |
| <b>I/O PORTS</b>         | USB                                 |

**NOTE:**

1. The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

### 3.2 DESCRIPTION OF TEST MODES

78 channels are provided to this EUT.

| Channel | Freq.<br>(MHz) | Channel | Freq.<br>(MHz) | Channel | Freq.<br>(MHz) | Channel | Freq.<br>(MHz) |
|---------|----------------|---------|----------------|---------|----------------|---------|----------------|
| 0       | 2402           | 20      | 2422           | 40      | 2442           | 60      | 2462           |
| 1       | 2403           | 21      | 2423           | 41      | 2443           | 61      | 2463           |
| 2       | 2404           | 22      | 2424           | 42      | 2444           | 62      | 2464           |
| 3       | 2405           | 23      | 2425           | 43      | 2445           | 63      | 2465           |
| 4       | 2406           | 24      | 2426           | 44      | 2446           | 64      | 2466           |
| 5       | 2407           | 25      | 2427           | 45      | 2447           | 65      | 2467           |
| 6       | 2408           | 26      | 2428           | 46      | 2448           | 66      | 2468           |
| 7       | 2409           | 27      | 2429           | 47      | 2449           | 67      | 2469           |
| 8       | 2410           | 28      | 2430           | 48      | 2450           | 68      | 2470           |
| 9       | 2411           | 29      | 2431           | 49      | 2451           | 69      | 2471           |
| 10      | 2412           | 30      | 2431           | 50      | 2452           | 70      | 2472           |
| 11      | 2413           | 31      | 2433           | 51      | 2453           | 71      | 2473           |
| 12      | 2414           | 32      | 2434           | 52      | 2454           | 72      | 2474           |
| 13      | 2415           | 33      | 2435           | 53      | 2455           | 73      | 2475           |
| 14      | 2416           | 34      | 2436           | 54      | 2456           | 74      | 2476           |
| 15      | 2417           | 35      | 2437           | 55      | 2457           | 75      | 2477           |
| 16      | 2418           | 36      | 2438           | 56      | 2458           | 76      | 2478           |
| 17      | 2419           | 37      | 2439           | 57      | 2459           | 77      | 2479           |
| 18      | 2420           | 38      | 2440           | 58      | 2460           |         |                |
| 19      | 2421           | 39      | 2441           | 59      | 2461           |         |                |

**NOTE:**

1. For radiated emission below 1 GHz, the channel 0, 39, and 77 were pre-tested in chamber. The channel 0, the worst case one, was chosen for final test.
2. For conducted emission and radiated emission above 1 GHz, the channel 0, 39, and 77 were tested individually.



### **3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS**

The EUT is a Dongle. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

**FCC Part 15, Subpart C (15.247)**

**ANSI C63.4:2003**

All test items have been performed and recorded as per the above standards.

**NOTE:** The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class A. The test report has been issued separately.

### 3.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

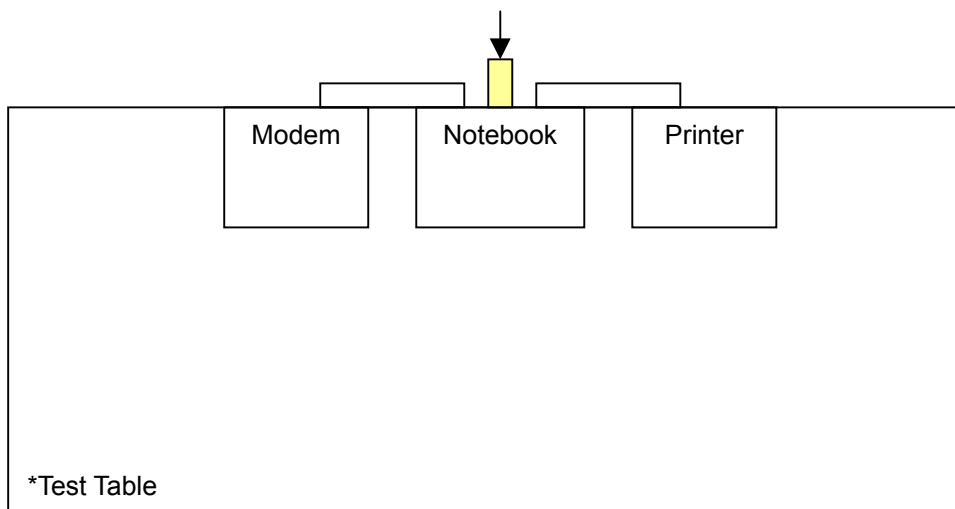
| NO. | PRODUCT           | BRAND | MODEL NO. | SERIAL NO.  | FCC ID           |
|-----|-------------------|-------|-----------|-------------|------------------|
| 1   | NOTEBOOK COMPUTER | DELL  | PP05L     | 12130898320 | E2K24CLNS        |
| 2   | PRINTER           | EPSON | LQ-300+   | DCGY054147  | FCC DoC Approved |
| 3   | MODEM             | ACEEX | 1414V/3   | 0401008269  | IFAXDM1414       |

| NO. | SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS |
|-----|-----------------------------------------------------|
| 1   | NA                                                  |
| 2   | 1.2 m shielded cable                                |
| 3   | 1.2 m shielded cable                                |

**NOTE:**

1. All power cords of the above support units are non shielded (1.8m).

### 3.5 CONFIGURATION OF SYSTEM UNDER TEST



## 4 TEST TYPES AND RESULTS

### 4.1 CONDUCTED EMISSION MEASUREMENT

#### 4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

| FREQUENCY OF EMISSION (MHz) | CONDUCTED LIMIT (dBμV) |          |
|-----------------------------|------------------------|----------|
|                             | Quasi-peak             | Average  |
| 0.15-0.5                    | 66 to 56               | 56 to 46 |
| 0.5-5                       | 56                     | 46       |
| 5-30                        | 60                     | 50       |

- NOTE:**
1. The lower limit shall apply at the transition frequencies.
  2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.
  3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

#### 4.1.2 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER       | MODEL NO.   | SERIAL NO.     | CALIBRATED UNTIL |
|----------------------------------|-------------|----------------|------------------|
| Test Receiver<br>ROHDE & SCHWARZ | ESCS30      | 100291         | Dec. 12, 2004    |
| RF signal cable<br>Woken         | 5D-FB       | Cable-HYC01-01 | Mar. 02, 2005    |
| LISN<br>ROHDE & SCHWARZ          | ESH3-Z5     | 100312         | Mar. 03, 2005    |
| LISN<br>ROHDE & SCHWARZ          | ESH2-Z5     | 100104         | Mar. 02, 2005    |
| Software<br>ADT                  | ADT_Cond_V3 | NA             | NA               |

- NOTE:**
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
  2. The test was performed in HwaYa Shielded Room 1.
  3. The VCCI Site Registration No. is C-2040.



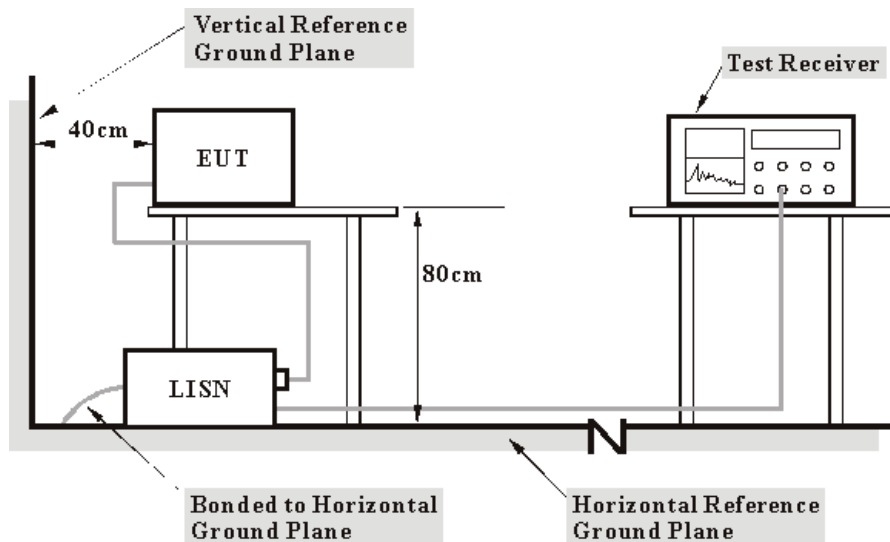
#### 4.1.3 TEST PROCEDURES

- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels (Limit -20dB) was not recorded.

#### 4.1.4 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.1.5 TEST SETUP



Note: 1. Support units were connected to second LISN.  
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

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

#### 4.1.6 EUT OPERATING CONDITIONS

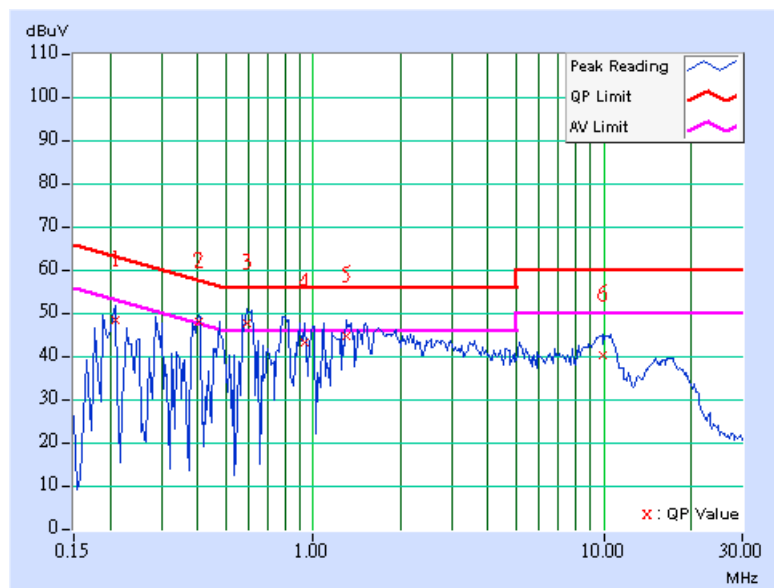
- Plugged the EUT into a notebook placed on the test table.
- Set the EUT under transmission mode.
- The notebook sent "H" message to the modem.
- The notebook sent "H" message to the printer and the printer printed them out.
- Repeated step c~d.

## 4.1.7 TEST RESULTS

|                                 |                            |                      |          |
|---------------------------------|----------------------------|----------------------|----------|
| <b>EUT</b>                      | Dongle                     | <b>MODEL</b>         | C-UR37   |
| <b>CHANNEL</b>                  | 0                          | <b>6dB BANDWIDTH</b> | 9 kHz    |
| <b>INPUT POWER (SYSTEM)</b>     | 120 Vac, 60 Hz             | <b>PHASE</b>         | Line (L) |
| <b>ENVIRONMENTAL CONDITIONS</b> | 24 deg. C, 64% RH, 991 hPa | <b>TESTED BY</b>     | Leo Hung |

| No | Freq.<br>[MHz] | Corr.<br>Factor<br>(dB) | Reading Value |       | Emission Level |       | Limit     |       | Margin |        |
|----|----------------|-------------------------|---------------|-------|----------------|-------|-----------|-------|--------|--------|
|    |                |                         | [dB (uV)]     |       | [dB (uV)]      |       | [dB (uV)] |       | (dB)   |        |
|    |                |                         | Q.P.          | AV.   | Q.P.           | AV.   | Q.P.      | AV.   | Q.P.   | AV.    |
| 1  | 0.209          | 0.12                    | 48.29         | -     | 48.41          | -     | 63.26     | 53.26 | -14.85 | -      |
| 2  | 0.404          | 0.13                    | 47.72         | 39.95 | 47.85          | 40.08 | 57.77     | 47.77 | -9.93  | -7.70  |
| 3  | 0.591          | 0.13                    | 47.45         | 34.72 | 47.58          | 34.85 | 56.00     | 46.00 | -8.42  | -11.15 |
| 4  | 0.939          | 0.15                    | 42.99         | -     | 43.14          | -     | 56.00     | 46.00 | -12.86 | -      |
| 5  | 1.297          | 0.15                    | 44.49         | -     | 44.64          | -     | 56.00     | 46.00 | -11.36 | -      |
| 6  | 9.938          | 0.30                    | 40.08         | -     | 40.38          | -     | 60.00     | 50.00 | -19.62 | -      |

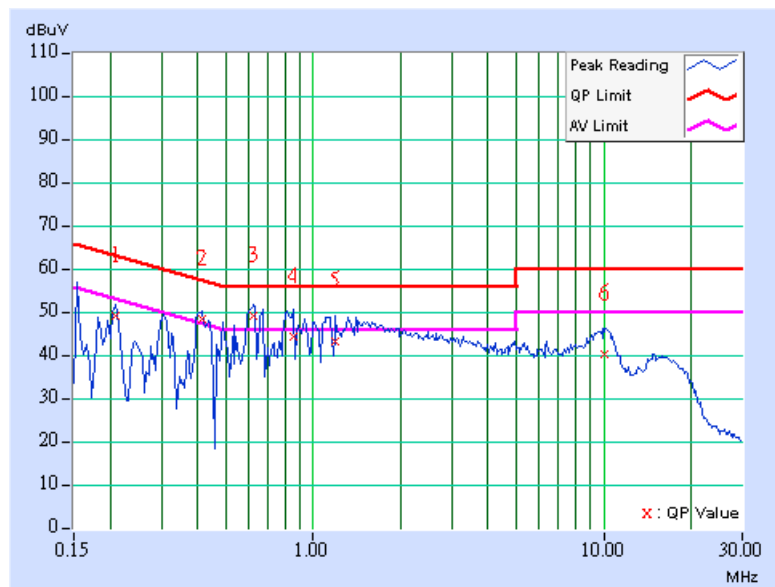
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value = Emission level - Limit value
  5. Correction factor = Insertion loss + Cable loss
  6. Emission Level = Correction Factor + Reading Value.



|                                 |                            |                      |             |
|---------------------------------|----------------------------|----------------------|-------------|
| <b>EUT</b>                      | Dongle                     | <b>MODEL</b>         | C-UR37      |
| <b>CHANNEL</b>                  | 0                          | <b>6dB BANDWIDTH</b> | 9 kHz       |
| <b>INPUT POWER (SYSTEM)</b>     | 120 Vac, 60 Hz             | <b>PHASE</b>         | Neutral (N) |
| <b>ENVIRONMENTAL CONDITIONS</b> | 24 deg. C, 64% RH, 991 hPa | <b>TESTED BY</b>     | Leo Hung    |

| No       | Freq.<br>[MHz] | Corr.<br>Factor<br>(dB) | Reading Value |              | Emission Level |              | Limit        |              | Margin       |              |
|----------|----------------|-------------------------|---------------|--------------|----------------|--------------|--------------|--------------|--------------|--------------|
|          |                |                         | [dB (uV)]     |              | [dB (uV)]      |              | [dB (uV)]    |              | (dB)         |              |
|          |                |                         | Q.P.          | AV.          | Q.P.           | AV.          | Q.P.         | AV.          | Q.P.         | AV.          |
| 1        | 0.209          | 0.11                    | 48.85         | -            | 48.96          | -            | 63.26        | 53.26        | -14.30       | -            |
| 2        | 0.416          | 0.12                    | 48.23         | 38.33        | 48.35          | 38.45        | 57.54        | 47.54        | -9.19        | -9.09        |
| <b>3</b> | <b>0.623</b>   | <b>0.12</b>             | <b>48.96</b>  | <b>37.47</b> | <b>49.08</b>   | <b>37.59</b> | <b>56.00</b> | <b>46.00</b> | <b>-6.92</b> | <b>-8.41</b> |
| 4        | 0.853          | 0.14                    | 44.28         | -            | 44.42          | -            | 56.00        | 46.00        | -11.58       | -            |
| 5        | 1.191          | 0.15                    | 43.16         | -            | 43.31          | -            | 56.00        | 46.00        | -12.69       | -            |
| 6        | 10.086         | 0.29                    | 40.10         | -            | 40.39          | -            | 60.00        | 50.00        | -19.61       | -            |

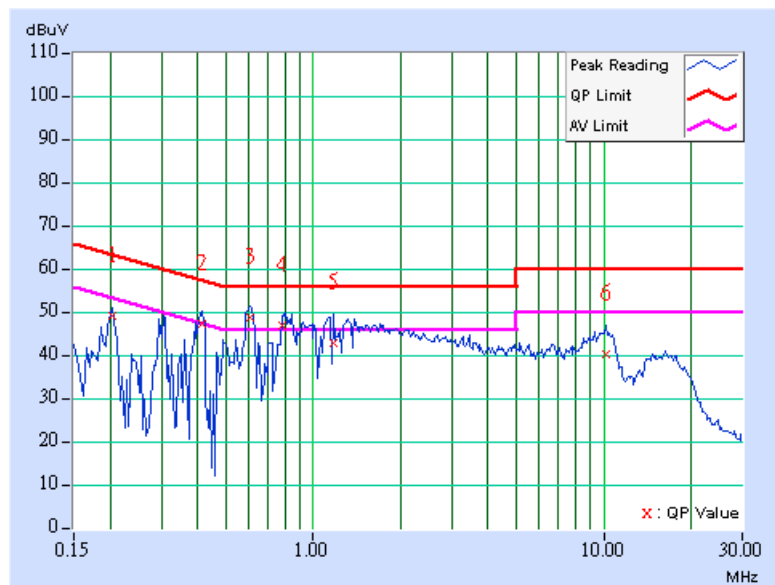
- REMARKS:**
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  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value = Emission level - Limit value
  5. Correction factor = Insertion loss + Cable loss
  6. Emission Level = Correction Factor + Reading Value.



|                                 |                            |                      |          |
|---------------------------------|----------------------------|----------------------|----------|
| <b>EUT</b>                      | Dongle                     | <b>MODEL</b>         | C-UR37   |
| <b>CHANNEL</b>                  | 39                         | <b>6dB BANDWIDTH</b> | 9 kHz    |
| <b>INPUT POWER (SYSTEM)</b>     | 120 Vac, 60 Hz             | <b>PHASE</b>         | Line (L) |
| <b>ENVIRONMENTAL CONDITIONS</b> | 24 deg. C, 64% RH, 991 hPa | <b>TESTED BY</b>     | Leo Hung |

| No | Freq.<br>[MHz] | Corr.<br>Factor<br>(dB) | Reading Value |       | Emission Level |       | Limit     |       | Margin |        |
|----|----------------|-------------------------|---------------|-------|----------------|-------|-----------|-------|--------|--------|
|    |                |                         | [dB (uV)]     |       | [dB (uV)]      |       | [dB (uV)] |       | (dB)   |        |
|    |                |                         | Q.P.          | AV.   | Q.P.           | AV.   | Q.P.      | AV.   | Q.P.   | AV.    |
| 1  | 0.205          | 0.12                    | 48.77         | -     | 48.89          | -     | 63.42     | 53.42 | -14.53 | -      |
| 2  | 0.416          | 0.13                    | 47.24         | -     | 47.37          | -     | 57.54     | 47.54 | -10.17 | -      |
| 3  | 0.607          | 0.13                    | 48.67         | 34.64 | 48.80          | 34.77 | 56.00     | 46.00 | -7.20  | -11.23 |
| 4  | 0.783          | 0.14                    | 46.76         | 33.64 | 46.90          | 33.78 | 56.00     | 46.00 | -9.10  | -12.22 |
| 5  | 1.176          | 0.15                    | 42.77         | -     | 42.92          | -     | 56.00     | 46.00 | -13.08 | -      |
| 6  | 10.168         | 0.32                    | 40.11         | -     | 40.43          | -     | 60.00     | 50.00 | -19.57 | -      |

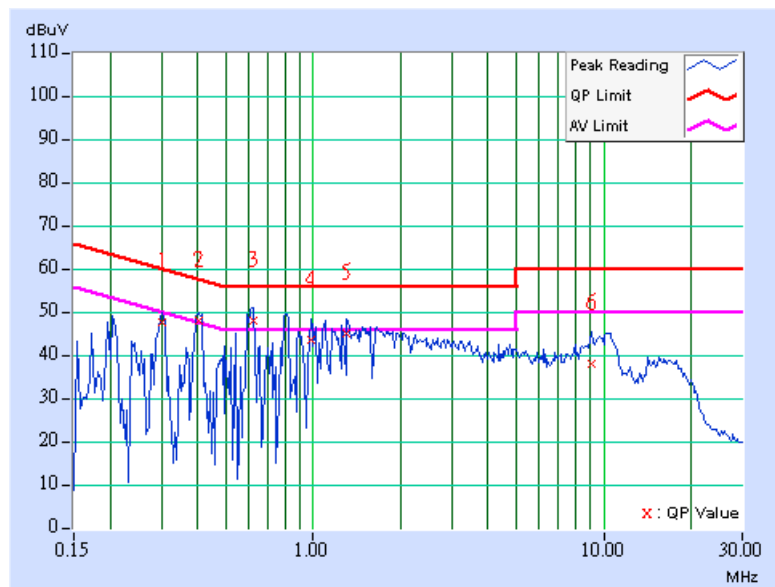
- REMARKS:**
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  6. Emission Level = Correction Factor + Reading Value.



|                                 |                            |                      |             |
|---------------------------------|----------------------------|----------------------|-------------|
| <b>EUT</b>                      | Dongle                     | <b>MODEL</b>         | C-UR37      |
| <b>CHANNEL</b>                  | 39                         | <b>6dB BANDWIDTH</b> | 9 kHz       |
| <b>INPUT POWER (SYSTEM)</b>     | 120 Vac, 60 Hz             | <b>PHASE</b>         | Neutral (N) |
| <b>ENVIRONMENTAL CONDITIONS</b> | 24 deg. C, 64% RH, 991 hPa | <b>TESTED BY</b>     | Leo Hung    |

| No | Freq.<br>[MHz] | Corr.<br>Factor<br>(dB) | Reading Value |       | Emission Level |       | Limit     |       | Margin |        |
|----|----------------|-------------------------|---------------|-------|----------------|-------|-----------|-------|--------|--------|
|    |                |                         | [dB (uV)]     |       | [dB (uV)]      |       | [dB (uV)] |       | (dB)   |        |
|    |                |                         | Q.P.          | AV.   | Q.P.           | AV.   | Q.P.      | AV.   | Q.P.   | AV.    |
| 1  | 0.302          | 0.11                    | 47.61         | -     | 47.72          | -     | 60.18     | 50.18 | -12.45 | -      |
| 2  | 0.404          | 0.12                    | 47.94         | 39.72 | 48.06          | 39.84 | 57.77     | 47.77 | -9.72  | -7.94  |
| 3  | 0.623          | 0.12                    | 47.92         | 33.35 | 48.04          | 33.47 | 56.00     | 46.00 | -7.96  | -12.53 |
| 4  | 0.978          | 0.15                    | 43.44         | -     | 43.59          | -     | 56.00     | 46.00 | -12.41 | -      |
| 5  | 1.309          | 0.15                    | 44.85         | -     | 45.00          | -     | 56.00     | 46.00 | -11.00 | -      |
| 6  | 9.070          | 0.28                    | 37.99         | -     | 38.27          | -     | 60.00     | 50.00 | -21.73 | -      |

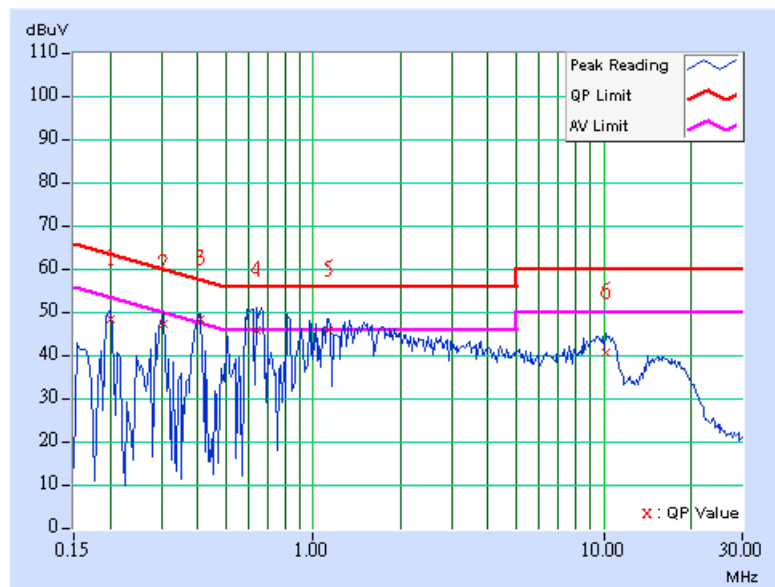
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value = Emission level - Limit value
  5. Correction factor = Insertion loss + Cable loss
  6. Emission Level = Correction Factor + Reading Value.



|                                 |                            |                      |          |
|---------------------------------|----------------------------|----------------------|----------|
| <b>EUT</b>                      | Dongle                     | <b>MODEL</b>         | C-UR37   |
| <b>CHANNEL</b>                  | 77                         | <b>6dB BANDWIDTH</b> | 9 kHz    |
| <b>INPUT POWER (SYSTEM)</b>     | 120 Vac, 60 Hz             | <b>PHASE</b>         | Line (L) |
| <b>ENVIRONMENTAL CONDITIONS</b> | 24 deg. C, 64% RH, 991 hPa | <b>TESTED BY</b>     | Leo Hung |

| No | Freq.<br>[MHz] | Corr.<br>Factor<br>(dB) | Reading Value |       | Emission Level |       | Limit     |       | Margin |       |
|----|----------------|-------------------------|---------------|-------|----------------|-------|-----------|-------|--------|-------|
|    |                |                         | [dB (uV)]     |       | [dB (uV)]      |       | [dB (uV)] |       | (dB)   |       |
|    |                |                         | Q.P.          | AV.   | Q.P.           | AV.   | Q.P.      | AV.   | Q.P.   | AV.   |
| 1  | 0.201          | 0.12                    | 48.18         | -     | 48.30          | -     | 63.58     | 53.58 | -15.28 | -     |
| 2  | 0.306          | 0.12                    | 47.24         | -     | 47.36          | -     | 60.07     | 50.07 | -12.71 | -     |
| 3  | 0.412          | 0.13                    | 48.03         | 39.25 | 48.16          | 39.38 | 57.61     | 47.61 | -9.46  | -8.24 |
| 4  | 0.642          | 0.13                    | 45.79         | -     | 45.92          | -     | 56.00     | 46.00 | -10.08 | -     |
| 5  | 1.125          | 0.15                    | 45.60         | -     | 45.75          | -     | 56.00     | 46.00 | -10.25 | -     |
| 6  | 10.184         | 0.32                    | 40.31         | -     | 40.63          | -     | 60.00     | 50.00 | -19.37 | -     |

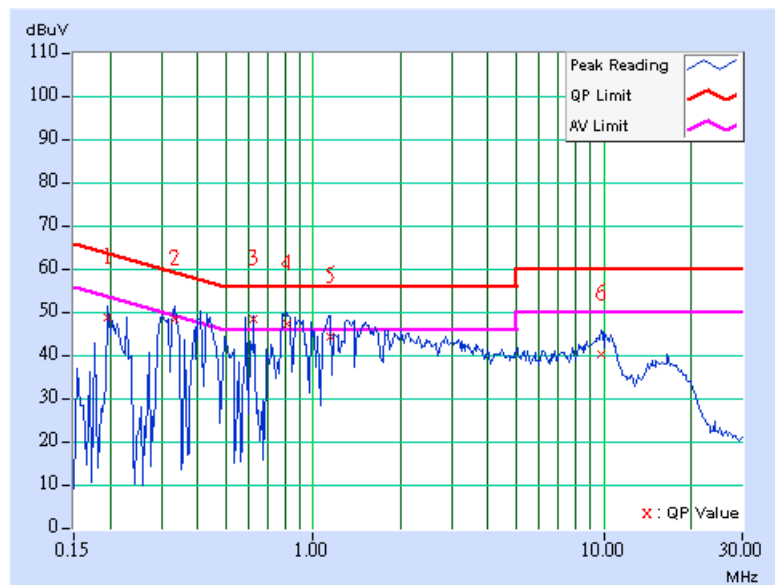
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value = Emission level - Limit value
  5. Correction factor = Insertion loss + Cable loss
  6. Emission Level = Correction Factor + Reading Value.



|                                 |                            |                      |             |
|---------------------------------|----------------------------|----------------------|-------------|
| <b>EUT</b>                      | Dongle                     | <b>MODEL</b>         | C-UR37      |
| <b>CHANNEL</b>                  | 77                         | <b>6dB BANDWIDTH</b> | 9 kHz       |
| <b>INPUT POWER (SYSTEM)</b>     | 120 Vac, 60 Hz             | <b>PHASE</b>         | Neutral (N) |
| <b>ENVIRONMENTAL CONDITIONS</b> | 24 deg. C, 64% RH, 991 hPa | <b>TESTED BY</b>     | Leo Hung    |

| No | Freq.<br>[MHz] | Corr.<br>Factor<br>(dB) | Reading Value |       | Emission Level |       | Limit     |       | Margin |        |
|----|----------------|-------------------------|---------------|-------|----------------|-------|-----------|-------|--------|--------|
|    |                |                         | [dB (uV)]     |       | [dB (uV)]      |       | [dB (uV)] |       | (dB)   |        |
|    |                |                         | Q.P.          | AV.   | Q.P.           | AV.   | Q.P.      | AV.   | Q.P.   | AV.    |
| 1  | 0.197          | 0.11                    | 48.65         | -     | 48.76          | -     | 63.74     | 53.74 | -14.98 | -      |
| 2  | 0.334          | 0.11                    | 48.06         | -     | 48.17          | -     | 59.36     | 49.36 | -11.19 | -      |
| 3  | 0.623          | 0.12                    | 48.39         | 35.31 | 48.51          | 35.43 | 56.00     | 46.00 | -7.49  | -10.57 |
| 4  | 0.814          | 0.13                    | 47.19         | 36.12 | 47.32          | 36.25 | 56.00     | 46.00 | -8.68  | -9.75  |
| 5  | 1.145          | 0.15                    | 44.03         | -     | 44.18          | -     | 56.00     | 46.00 | -11.82 | -      |
| 6  | 9.859          | 0.28                    | 40.01         | -     | 40.29          | -     | 60.00     | 50.00 | -19.71 | -      |

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value = Emission level - Limit value
  5. Correction factor = Insertion loss + Cable loss
  6. Emission Level = Correction Factor + Reading Value.



## 4.2 RADIATED EMISSION MEASUREMENT

### 4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

| Frequencies<br>(MHz) | Field strength<br>(microvolts/meter) | Measurement distance<br>(meters) |
|----------------------|--------------------------------------|----------------------------------|
| 0.009-0.490          | 2400/F(kHz)                          | 300                              |
| 0.490-1.705          | 24000/F(kHz)                         | 30                               |
| 1.705-30.0           | 30                                   | 30                               |
| 30-88                | 100                                  | 3                                |
| 88-216               | 150                                  | 3                                |
| 216-960              | 200                                  | 3                                |
| Above 960            | 500                                  | 3                                |

**NOTE:**

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

## 4.2.2 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER              | MODEL NO.          | SERIAL NO.   | CALIBRATED UNTIL |
|-----------------------------------------|--------------------|--------------|------------------|
| Test Receiver<br>ROHDE & SCHWARZ        | ESI7               | 838496/016   | Feb. 09, 2005    |
| Spectrum Analyzer<br>ROHDE & SCHWARZ    | FSP40              | 100041       | Dec. 15, 2004    |
| BILOG Antenna<br>SCHWARZBECK            | VULB9168           | 9168-155     | Feb. 03, 2005    |
| HORN Antenna<br>SCHWARZBECK             | BBHA 9120D         | 9120D-404    | Feb. 03, 2005    |
| HORN Antenna<br>SCHWARZBECK             | BBHA 9170          | BBHA 9170242 | Feb. 23, 2005    |
| Preamplifier<br>Agilent                 | 8447D              | 2944A10631   | Jan. 15, 2005    |
| Preamplifier<br>Agilent                 | 8449B              | 3008A01960   | Jan. 22, 2005    |
| RF signal cable<br>HUBER+SUHNNER        | SUCOFLEX 104       | 219272/4     | Mar. 04, 2005    |
| RF signal cable<br>HUBER+SUHNNER        | SUCOFLEX 104       | 219275/4     | Mar. 04, 2005    |
| Software<br>ADT.                        | ADT_Radiated_V5.14 | NA           | NA               |
| Antenna Tower<br>inn-co GmbH            | MA 4000            | 010303       | NA               |
| Antenna Tower Controller<br>inn-co GmbH | CO2000             | 019303       | NA               |
| Turn Table<br>ADT.                      | TT100.             | TT93021704   | NA               |
| Turn Table Controller<br>ADT.           | SC100.             | SC93021704   | NA               |

- NOTE:**
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
  2. The test was performed in HwaYa Chamber 3.
  3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
  4. The IC Site Registration No. is IC4924-4.

#### 4.2.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

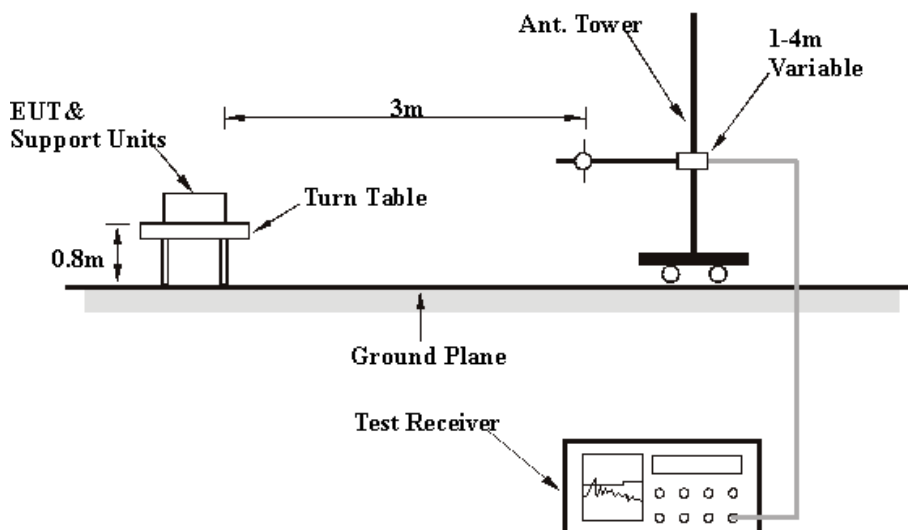
**NOTE:**

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz for Average detection (AV) at frequency above 1GHz.

#### 4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.2.5 TEST SETUP



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

#### 4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6.

## 4.2.7 TEST RESULTS

|                                 |                                |                          |                |
|---------------------------------|--------------------------------|--------------------------|----------------|
| <b>EUT</b>                      | Dongle                         | <b>MODEL</b>             | C-UR37         |
| <b>CHANNEL</b>                  | 0                              | <b>FREQUENCY RANGE</b>   | Below 1000 MHz |
| <b>INPUT POWER (SYSTEM)</b>     | 120 Vac, 60Hz                  | <b>DETECTOR FUNCTION</b> | Quasi-Peak     |
| <b>ENVIRONMENTAL CONDITIONS</b> | 25 deg. C, 65% RH ,<br>991 hPa | <b>TESTED BY</b>         | Rush Kao       |

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

| No. | Freq.<br>(MHz) | Emission<br>Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Antenna<br>Height<br>(m) | Table<br>Angle<br>(Degree) | Raw<br>Value<br>(dBuV) | Correction<br>Factor<br>(dB/m) |
|-----|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| 1   | 117.47         | 31.69 QP                      | 43.50             | -11.81         | 2.50 H                   | 76                         | 19.08                  | 12.61                          |
| 2   | 168.02         | 31.17 QP                      | 43.50             | -12.33         | 1.00 H                   | 310                        | 17.04                  | 14.12                          |
| 3   | 465.43         | 29.94 QP                      | 46.00             | -16.06         | 2.50 H                   | 253                        | 11.76                  | 18.18                          |
| 4   | 576.23         | 28.98 QP                      | 46.00             | -17.02         | 1.25 H                   | 7                          | 8.80                   | 20.18                          |
| 5   | 733.69         | 28.31 QP                      | 46.00             | -17.69         | 1.00 H                   | 358                        | 5.47                   | 22.84                          |
| 6   | 809.50         | 33.59 QP                      | 46.00             | -12.41         | 2.50 H                   | 226                        | 10.05                  | 23.55                          |

|                                 |                                |                          |                |
|---------------------------------|--------------------------------|--------------------------|----------------|
| <b>EUT</b>                      | Dongle                         | <b>MODEL</b>             | C-UR37         |
| <b>CHANNEL</b>                  | 0                              | <b>FREQUENCY RANGE</b>   | Below 1000 MHz |
| <b>INPUT POWER (SYSTEM)</b>     | 120 Vac, 60Hz                  | <b>DETECTOR FUNCTION</b> | Quasi-Peak     |
| <b>ENVIRONMENTAL CONDITIONS</b> | 25 deg. C, 65% RH ,<br>991 hPa | <b>TESTED BY</b>         | Rush Kao       |

| <b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b> |                |                               |                   |                |                          |                            |                        |                                |
|--------------------------------------------------------------|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| No.                                                          | Freq.<br>(MHz) | Emission<br>Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Antenna<br>Height<br>(m) | Table<br>Angle<br>(Degree) | Raw<br>Value<br>(dBuV) | Correction<br>Factor<br>(dB/m) |
| 1                                                            | 37.78          | 31.39 QP                      | 40.00             | -8.61          | 1.00 V                   | 28                         | 16.42                  | 14.96                          |
| 2                                                            | 125.25         | 33.71 QP                      | 43.50             | -9.79          | 1.25 V                   | 181                        | 20.44                  | 13.27                          |
| 3                                                            | 168.02         | 29.97 QP                      | 43.50             | -13.53         | 1.00 V                   | 268                        | 15.85                  | 14.12                          |
| 4                                                            | 399.34         | 31.67 QP                      | 46.00             | -14.33         | 1.75 V                   | 154                        | 14.96                  | 16.71                          |
| 5                                                            | 465.43         | 32.22 QP                      | 46.00             | -13.78         | 1.25 V                   | 145                        | 14.05                  | 18.18                          |
| 6                                                            | 593.73         | 32.93 QP                      | 46.00             | -13.07         | 1.00 V                   | 46                         | 12.27                  | 20.66                          |

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
  2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
  3. The other emission levels were very low against the limit.
  4. Margin value = Emission level – Limit value.

|                                 |                                |                          |                           |
|---------------------------------|--------------------------------|--------------------------|---------------------------|
| <b>EUT</b>                      | Dongle                         | <b>MODEL</b>             | C-UR37                    |
| <b>CHANNEL</b>                  | 0                              | <b>FREQUENCY RANGE</b>   | 1~25 GHz                  |
| <b>INPUT POWER (SYSTEM)</b>     | 120 Vac, 60 Hz                 | <b>DETECTOR FUNCTION</b> | Peak (PK)<br>Average (AV) |
| <b>ENVIRONMENTAL CONDITIONS</b> | 25 deg. C, 65% RH ,<br>991 hPa | <b>TESTED BY</b>         | Rush Kao                  |

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

| No. | Freq.<br>(MHz) | Emission<br>Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Antenna<br>Height<br>(m) | Table<br>Angle<br>(Degree) | Raw<br>Value<br>(dBuV) | Correction<br>Factor<br>(dB/m) |
|-----|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| 1   | *2402.00       | 93.82 PK                      |                   |                | 1.04 H                   | 281                        | 59.94                  | 33.88                          |
| 1   | *2402.00       | 92.71 AV                      |                   |                | 1.04 H                   | 281                        | 58.83                  | 33.88                          |
| 2   | 4804.00        | 58.07 PK                      | 74.00             | -15.93         | 1.02 H                   | 280                        | 17.42                  | 40.64                          |
| 2   | 4804.00        | 48.40 AV                      | 54.00             | -5.60          | 1.02 H                   | 280                        | 7.76                   | 40.64                          |
| 3   | 7206.00        | 61.56 PK                      | 74.00             | -12.44         | 1.02 H                   | 187                        | 13.80                  | 47.76                          |
| 3   | 7206.00        | 49.47 AV                      | 54.00             | -4.53          | 1.02 H                   | 187                        | 1.71                   | 47.76                          |

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

| No. | Freq.<br>(MHz) | Emission<br>Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Antenna<br>Height<br>(m) | Table<br>Angle<br>(Degree) | Raw<br>Value<br>(dBuV) | Correction<br>Factor<br>(dB/m) |
|-----|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| 1   | *2402.00       | 93.55 PK                      |                   |                | 1.00 V                   | 84                         | 59.67                  | 33.88                          |
| 1   | *2402.00       | 92.43 AV                      |                   |                | 1.00 V                   | 84                         | 58.55                  | 33.88                          |
| 2   | 4804.00        | 56.15 PK                      | 74.00             | -17.85         | 1.00 V                   | 94                         | 15.50                  | 40.64                          |
| 2   | 4804.00        | 46.11 AV                      | 54.00             | -7.89          | 1.00 V                   | 94                         | 5.47                   | 40.64                          |
| 3   | 7206.00        | 61.09 PK                      | 74.00             | -12.91         | 1.06 V                   | 344                        | 13.33                  | 47.76                          |
| 3   | 7206.00        | 49.24 AV                      | 54.00             | -4.76          | 1.06 V                   | 344                        | 1.48                   | 47.76                          |

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
  2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
  3. The other emission levels were very low against the limit.
  4. Margin value = Emission level – Limit value.

|                                 |                                |                          |                           |
|---------------------------------|--------------------------------|--------------------------|---------------------------|
| <b>EUT</b>                      | Dongle                         | <b>MODEL</b>             | C-UR37                    |
| <b>CHANNEL</b>                  | 39                             | <b>FREQUENCY RANGE</b>   | 1~25 GHz                  |
| <b>INPUT POWER (SYSTEM)</b>     | 120 Vac, 60 Hz                 | <b>DETECTOR FUNCTION</b> | Peak (PK)<br>Average (AV) |
| <b>ENVIRONMENTAL CONDITIONS</b> | 25 deg. C, 65% RH ,<br>991 hPa | <b>TESTED BY</b>         | Rush Kao                  |

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

| No. | Freq. (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Correction Factor (dB/m) |
|-----|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| 1   | *2441.00    | 92.38 PK                |                |             | 1.00 H             | 283                  | 58.32            | 34.06                    |
| 1   | *2441.00    | 91.02 AV                |                |             | 1.00 H             | 283                  | 56.96            | 34.06                    |
| 2   | 4882.00     | 55.77 PK                | 74.00          | -18.23      | 1.00 H             | 283                  | 15.07            | 40.70                    |
| 2   | 4882.00     | 45.61 AV                | 54.00          | -8.39       | 1.00 H             | 283                  | 4.91             | 40.70                    |
| 3   | 7323.00     | 61.59 PK                | 74.00          | -12.41      | 1.00 H             | 180                  | 13.53            | 48.06                    |
| 3   | 7323.00     | 49.42 AV                | 54.00          | -4.58       | 1.00 H             | 180                  | 1.36             | 48.06                    |

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

| No. | Freq. (MHz) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Antenna Height (m) | Table Angle (Degree) | Raw Value (dBuV) | Correction Factor (dB/m) |
|-----|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| 1   | *2441.00    | 92.10 PK                |                |             | 1.00 V             | 88                   | 58.04            | 34.06                    |
| 1   | *2441.00    | 90.80 AV                |                |             | 1.00 V             | 88                   | 56.74            | 34.06                    |
| 2   | 4882.00     | 55.77 PK                | 74.00          | -18.23      | 1.00 V             | 283                  | 15.07            | 40.70                    |
| 2   | 4882.00     | 45.57 AV                | 54.00          | -8.43       | 1.00 V             | 283                  | 4.87             | 40.70                    |
| 3   | 7323.00     | 61.59 PK                | 74.00          | -12.41      | 1.00 V             | 180                  | 13.53            | 48.06                    |
| 3   | 7323.00     | 49.38 AV                | 54.00          | -4.62       | 1.00 V             | 180                  | 1.32             | 48.06                    |

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
  2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
  3. The other emission levels were very low against the limit.
  4. Margin value = Emission level – Limit value.

|                                 |                                |                          |                           |
|---------------------------------|--------------------------------|--------------------------|---------------------------|
| <b>EUT</b>                      | Dongle                         | <b>MODEL</b>             | C-UR37                    |
| <b>CHANNEL</b>                  | 77                             | <b>FREQUENCY RANGE</b>   | 1~25 GHz                  |
| <b>INPUT POWER (SYSTEM)</b>     | 120 Vac, 60 Hz                 | <b>DETECTOR FUNCTION</b> | Peak (PK)<br>Average (AV) |
| <b>ENVIRONMENTAL CONDITIONS</b> | 25 deg. C, 65% RH ,<br>991 hPa | <b>TESTED BY</b>         | Rush Kao                  |

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

| No. | Freq.<br>(MHz) | Emission<br>Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Antenna<br>Height<br>(m) | Table<br>Angle<br>(Degree) | Raw<br>Value<br>(dBuV) | Correction<br>Factor<br>(dB/m) |
|-----|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| 1   | *2479.00       | 92.22 PK                      |                   |                | 1.00 H                   | 285                        | 57.98                  | 34.24                          |
| 1   | *2479.00       | 91.08 AV                      |                   |                | 1.00 H                   | 285                        | 56.84                  | 34.24                          |
| 2   | 4958.00        | 56.97 PK                      | 74.00             | -17.03         | 1.00 H                   | 284                        | 15.89                  | 41.08                          |
| 2   | 4958.00        | 46.35 AV                      | 54.00             | -7.65          | 1.00 H                   | 284                        | 5.27                   | 41.08                          |
| 3   | 7437.00        | 62.08 PK                      | 74.00             | -11.92         | 1.00 H                   | 200                        | 13.70                  | 48.38                          |
| 3   | 7437.00        | 49.88 AV                      | 54.00             | -4.12          | 1.00 H                   | 200                        | 1.50                   | 48.38                          |

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

| No. | Freq.<br>(MHz) | Emission<br>Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Antenna<br>Height<br>(m) | Table<br>Angle<br>(Degree) | Raw<br>Value<br>(dBuV) | Correction<br>Factor<br>(dB/m) |
|-----|----------------|-------------------------------|-------------------|----------------|--------------------------|----------------------------|------------------------|--------------------------------|
| 1   | *2479.00       | 91.17 PK                      |                   |                | 1.00 V                   | 93                         | 56.93                  | 34.24                          |
| 1   | *2479.00       | 90.20 AV                      |                   |                | 1.00 V                   | 93                         | 55.96                  | 34.24                          |
| 2   | 4958.00        | 56.35 PK                      | 74.00             | -17.65         | 1.00 V                   | 93                         | 15.27                  | 41.08                          |
| 2   | 4958.00        | 46.24 AV                      | 54.00             | -7.76          | 1.00 V                   | 93                         | 5.16                   | 41.08                          |
| 3   | 7437.00        | 62.38 PK                      | 74.00             | -11.62         | 1.00 V                   | 310                        | 14.00                  | 48.38                          |
| 3   | 7437.00        | 50.14 AV                      | 54.00             | -3.86          | 1.00 V                   | 310                        | 1.76                   | 48.38                          |

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
  2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
  3. The other emission levels were very low against the limit.
  4. Margin value = Emission level – Limit value.

### 4.3 6dB BANDWIDTH MEASUREMENT

#### 4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

#### 4.3.2 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.

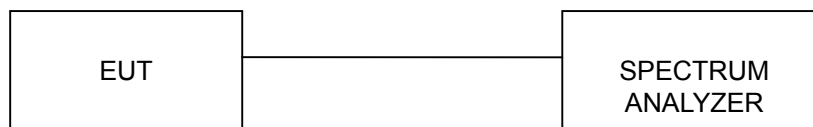
#### 4.3.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100kHz RBW and 100kHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

#### 4.3.4 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.3.5 TEST SETUP



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

#### 4.3.6 EUT OPERATING CONDITIONS

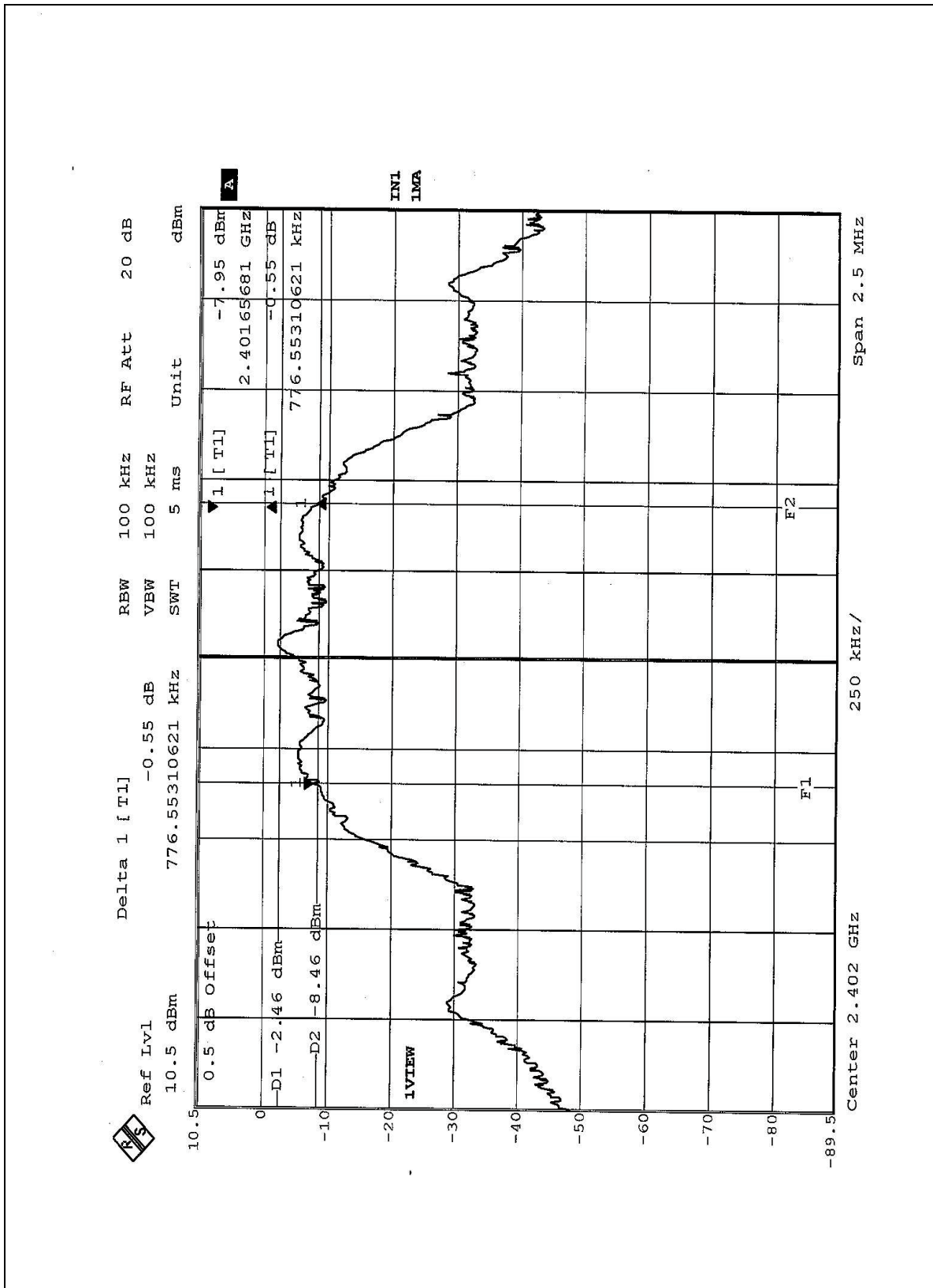
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

## 4.3.7 TEST RESULTS

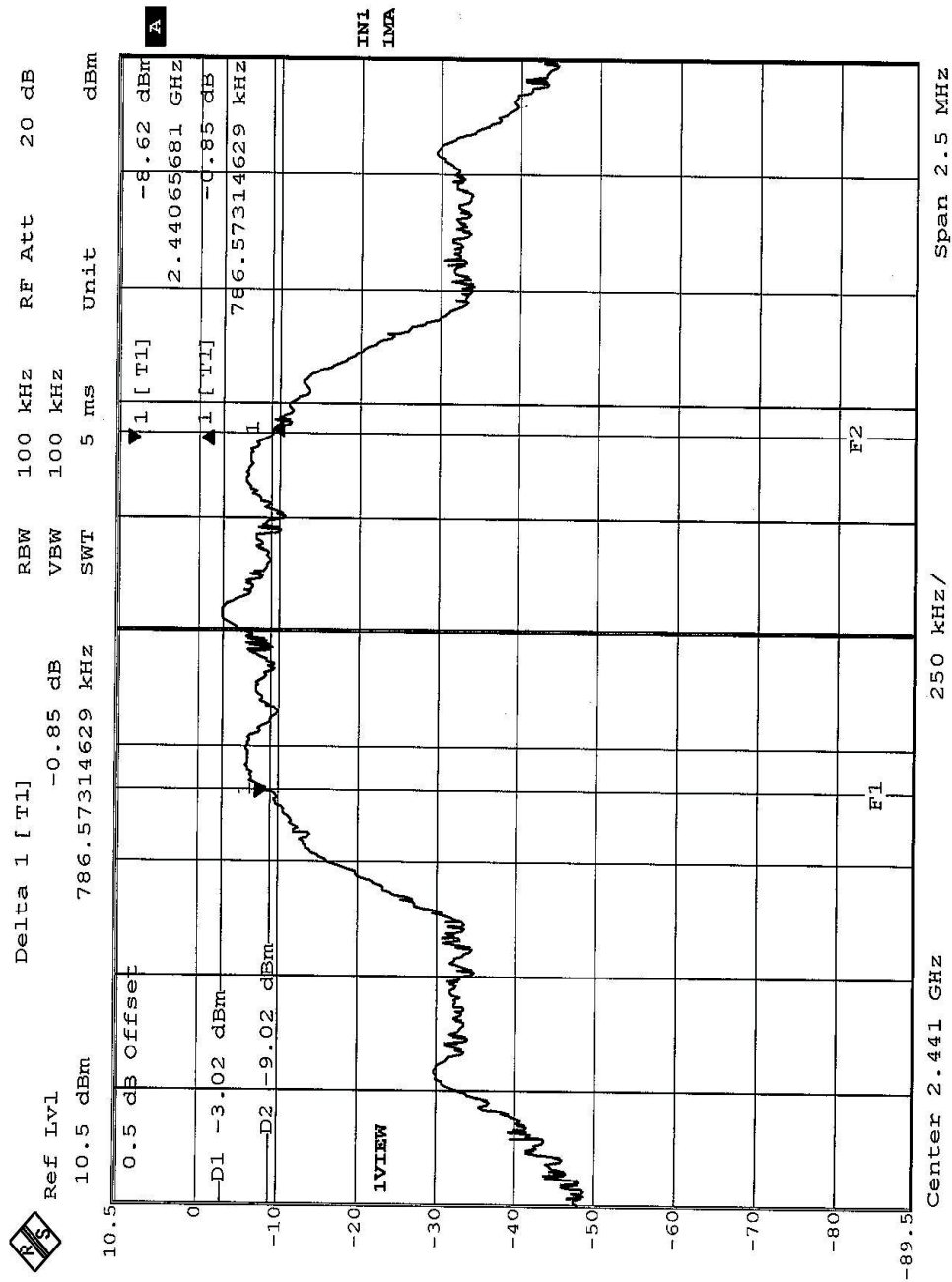
|                                 |                               |                             |                |
|---------------------------------|-------------------------------|-----------------------------|----------------|
| <b>EUT</b>                      | Dongle                        | <b>MODEL</b>                | C-UR37         |
| <b>ENVIRONMENTAL CONDITIONS</b> | 24 deg. C, 64% RH,<br>991 hPa | <b>INPUT POWER (SYSTEM)</b> | 120 Vac, 60 Hz |
| <b>TESTED BY</b>                | Leo Hung                      |                             |                |

| <b>CHANNEL</b> | <b>CHANNEL FREQUENCY (MHz)</b> | <b>6dB BANDWIDTH (MHz)</b> | <b>MINIMUM LIMIT (MHz)</b> | <b>PASS/FAIL</b> |
|----------------|--------------------------------|----------------------------|----------------------------|------------------|
| 0              | 2402                           | 0.78                       | 0.5                        | PASS             |
| 39             | 2441                           | 0.79                       | 0.5                        | PASS             |
| 77             | 2479                           | 0.78                       | 0.5                        | PASS             |

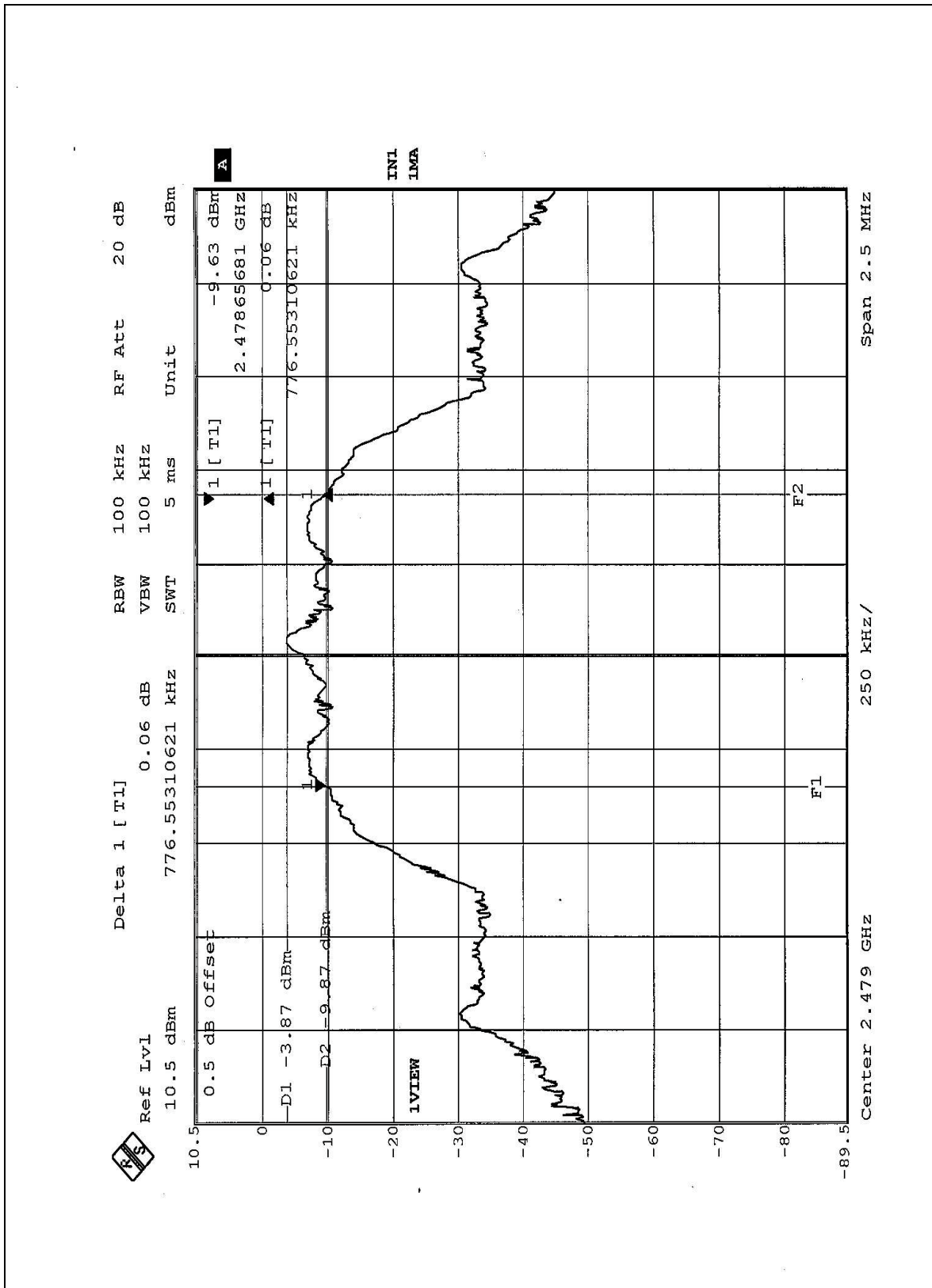
CH 0



CH 39



CH 77



#### 4.4 MAXIMUM PEAK OUTPUT POWER

##### 4.4.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Measurement is 30dBm.

##### 4.4.2 TEST INSTRUMENTS

| Description & Manufacturer | Model No. | Serial No. | Calibrated Until |
|----------------------------|-----------|------------|------------------|
| R&S SPECTRUM ANALYZER      | FSEK30    | 100049     | Aug. 12, 2005    |
| AGILENT SIGNAL GENERATOR   | E8257C    | MY43320668 | Dec. 31, 2004    |
| TEKTRONIX OSCILLOSCOPE     | TDS 220   | C019167    | Feb. 1, 2005     |
| NARDA DETECTOR             | 4503A     | FSCM99899  | NA               |

**NOTE:**

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

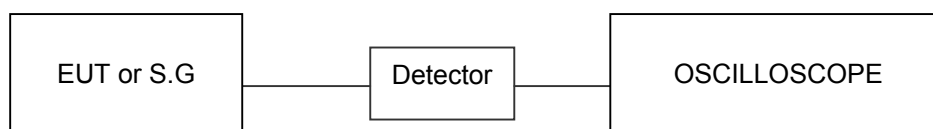
##### 4.4.3 TEST PROCEDURES

1. A detector was used on the output port of the EUT. An oscilloscope was used to read the response of the detector.
2. Replaced the EUT by the signal generator. The center frequency of the S.G. was adjusted to the center frequency of the measured channel.
3. Adjusted the power to have the same reading on oscilloscope. Record the power level.

#### 4.4.4 DEVIATION FROM TEST STANDARD

No deviation.

#### 4.4.5 TEST SETUP



#### 4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6.

## 4.4.7 TEST RESULTS

|                                 |                               |                             |                |
|---------------------------------|-------------------------------|-----------------------------|----------------|
| <b>EUT</b>                      | Dongle                        | <b>MODEL</b>                | C-UR37         |
| <b>ENVIRONMENTAL CONDITIONS</b> | 24 deg. C, 64% RH,<br>991 hPa | <b>INPUT POWER (SYSTEM)</b> | 120 Vac, 60 Hz |
| <b>TESTED BY</b>                | Leo Hung                      |                             |                |

| <b>CHANNEL</b> | <b>CHANNEL FREQUENCY (MHz)</b> | <b>PEAK POWER OUTPUT (mW)</b> | <b>PEAK POWER OUTPUT (dBm)</b> | <b>PEAK POWER LIMIT (dBm)</b> | <b>PASS/FAIL</b> |
|----------------|--------------------------------|-------------------------------|--------------------------------|-------------------------------|------------------|
| 0              | 2402                           | 1.033                         | 0.14                           | 30                            | PASS             |
| 39             | 2441                           | 0.895                         | -0.48                          | 30                            | PASS             |
| 77             | 2479                           | 0.746                         | -1.27                          | 30                            | PASS             |

## 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 |
|----------------------------|-----------|------------|------------------|
| 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 3 kHz RBW and 30 kHz VBW, set sweep time=span/3kHz.

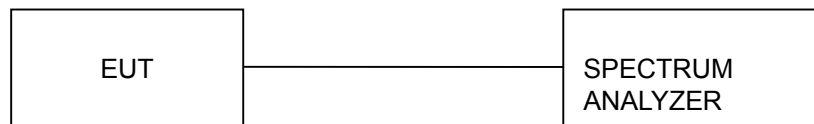
The power spectral density was measured and recorded.

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 CONDITIONS

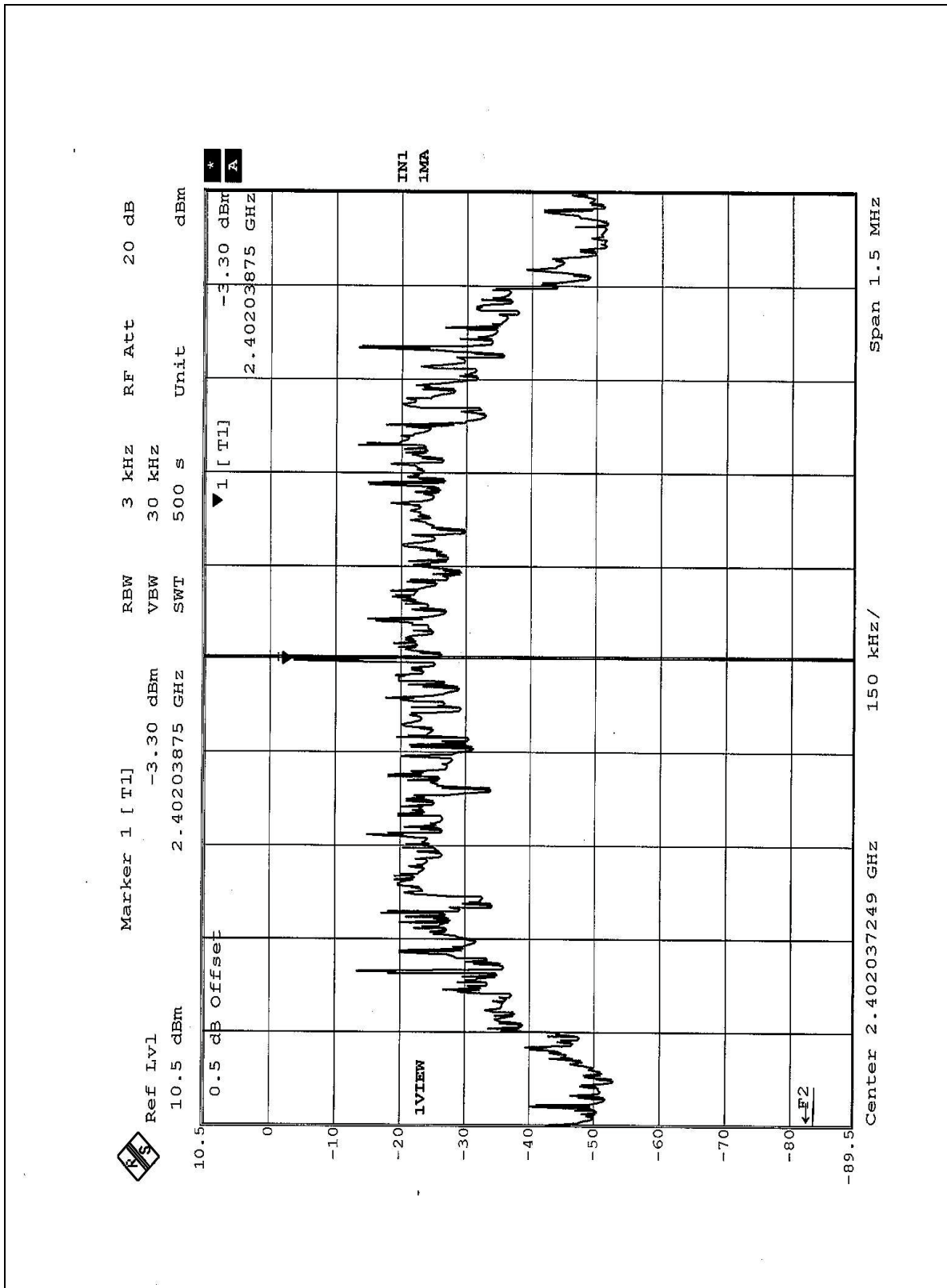
Same as 4.3.6.

## 4.5.7 TEST RESULTS

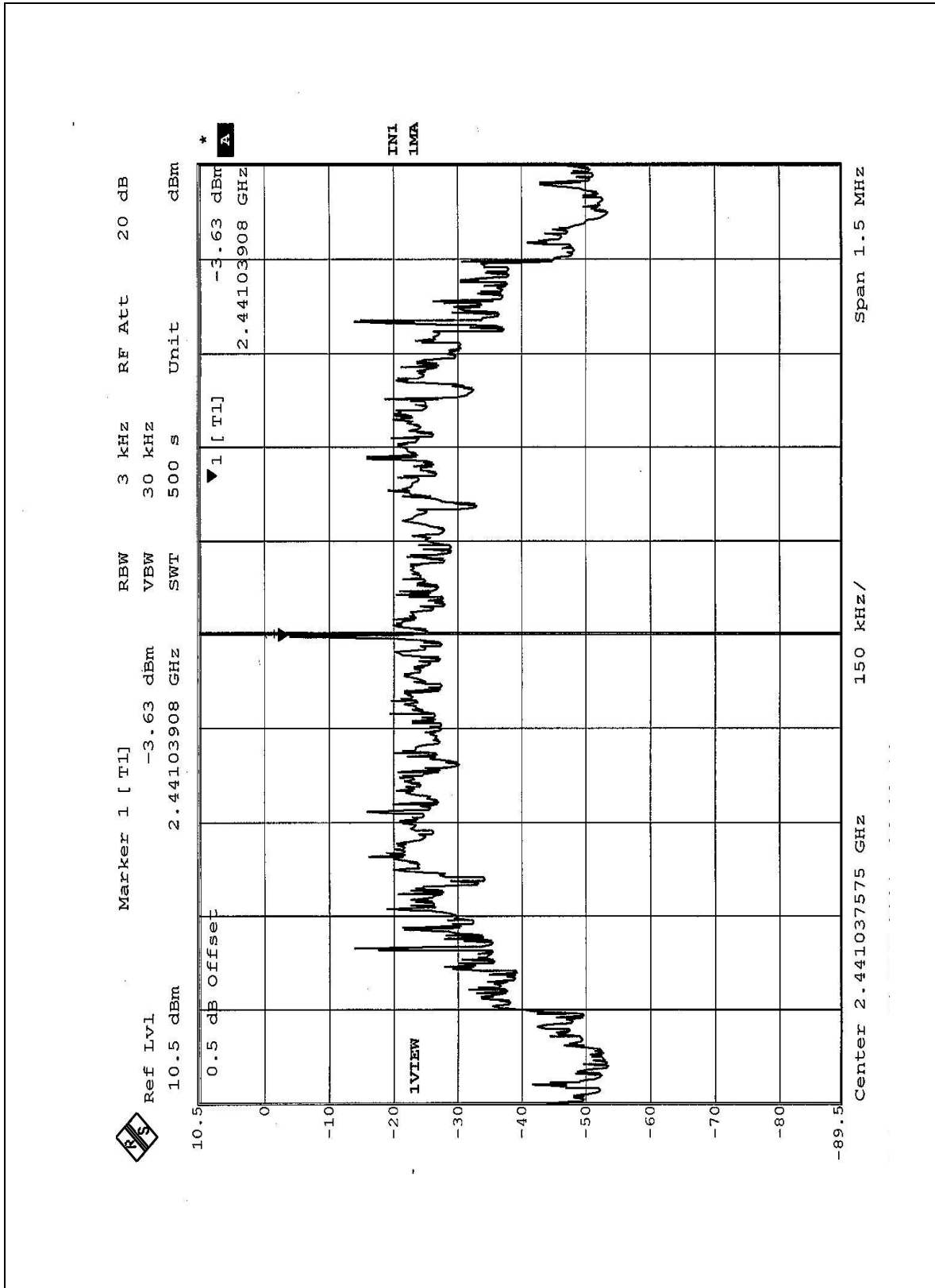
|                                 |                               |                             |                |
|---------------------------------|-------------------------------|-----------------------------|----------------|
| <b>EUT</b>                      | Dongle                        | <b>MODEL</b>                | C-UR37         |
| <b>ENVIRONMENTAL CONDITIONS</b> | 24 deg. C, 64% RH,<br>991 hPa | <b>INPUT POWER (SYSTEM)</b> | 120 Vac, 60 Hz |
| <b>TESTED BY</b>                | Leo Hung                      |                             |                |

| <b>CHANNEL NUMBER</b> | <b>CHANNEL FREQUENCY (MHz )</b> | <b>RF POWER LEVEL IN 3kHz BW (dBm)</b> | <b>MAXIMUM LIMIT (dBm)</b> | <b>PASS/FAIL</b> |
|-----------------------|---------------------------------|----------------------------------------|----------------------------|------------------|
| 0                     | 2402                            | -3.30                                  | 8                          | PASS             |
| 39                    | 2441                            | -3.63                                  | 8                          | PASS             |
| 77                    | 2479                            | -4.27                                  | 8                          | PASS             |

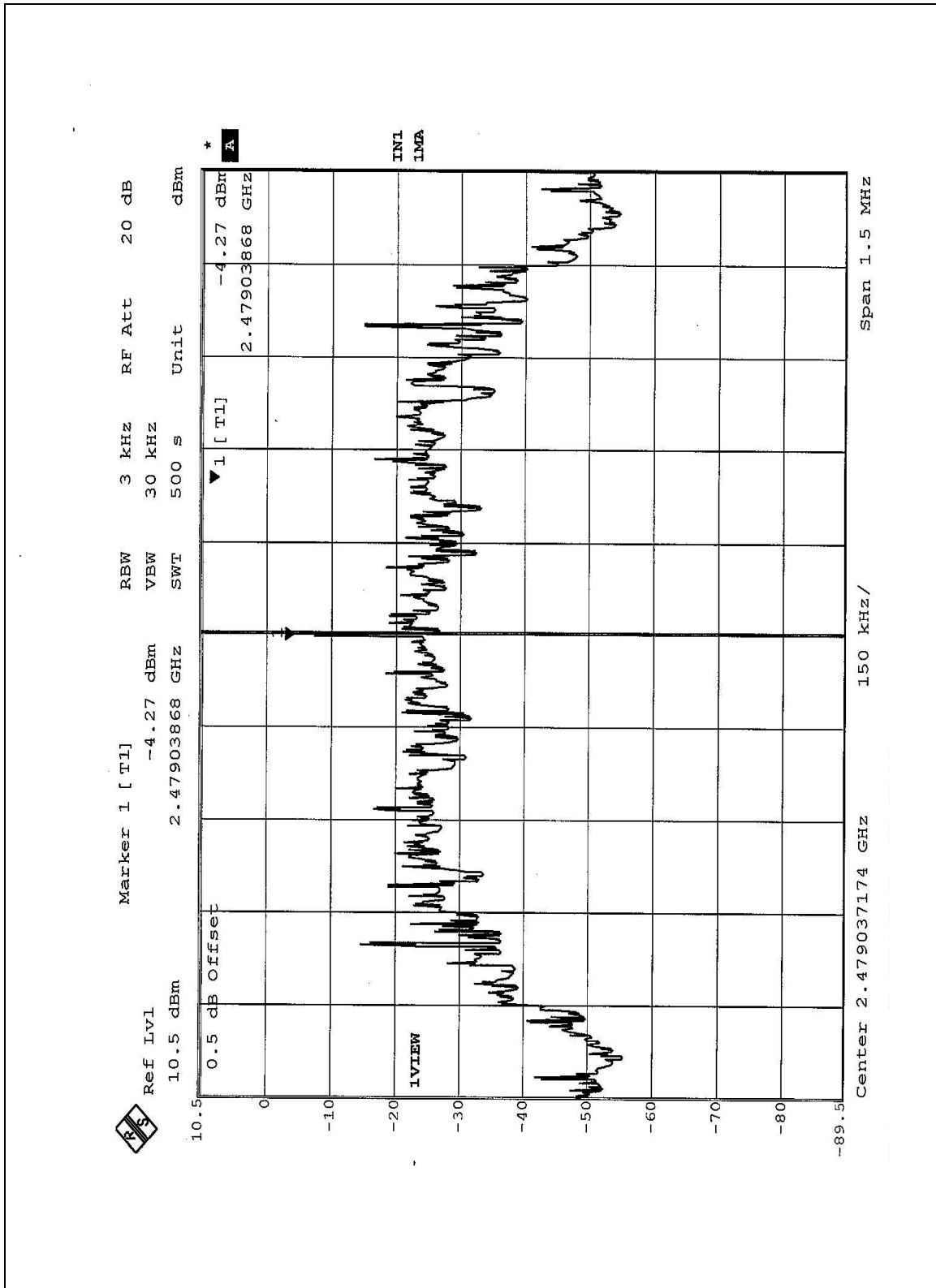
CH 0



CH 39



CH 77



## 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 loss cable. Set both RBW and VBW of spectrum analyzer to 100kHz with suitable frequency span including 100MHz bandwidth from band edge. The band edges were measured and recorded.

### 4.6.4 DEVIATION FROM TEST STANDARD

No deviation.

### 4.6.5 EUT OPERATING CONDITION

Same as Item 4.3.6.



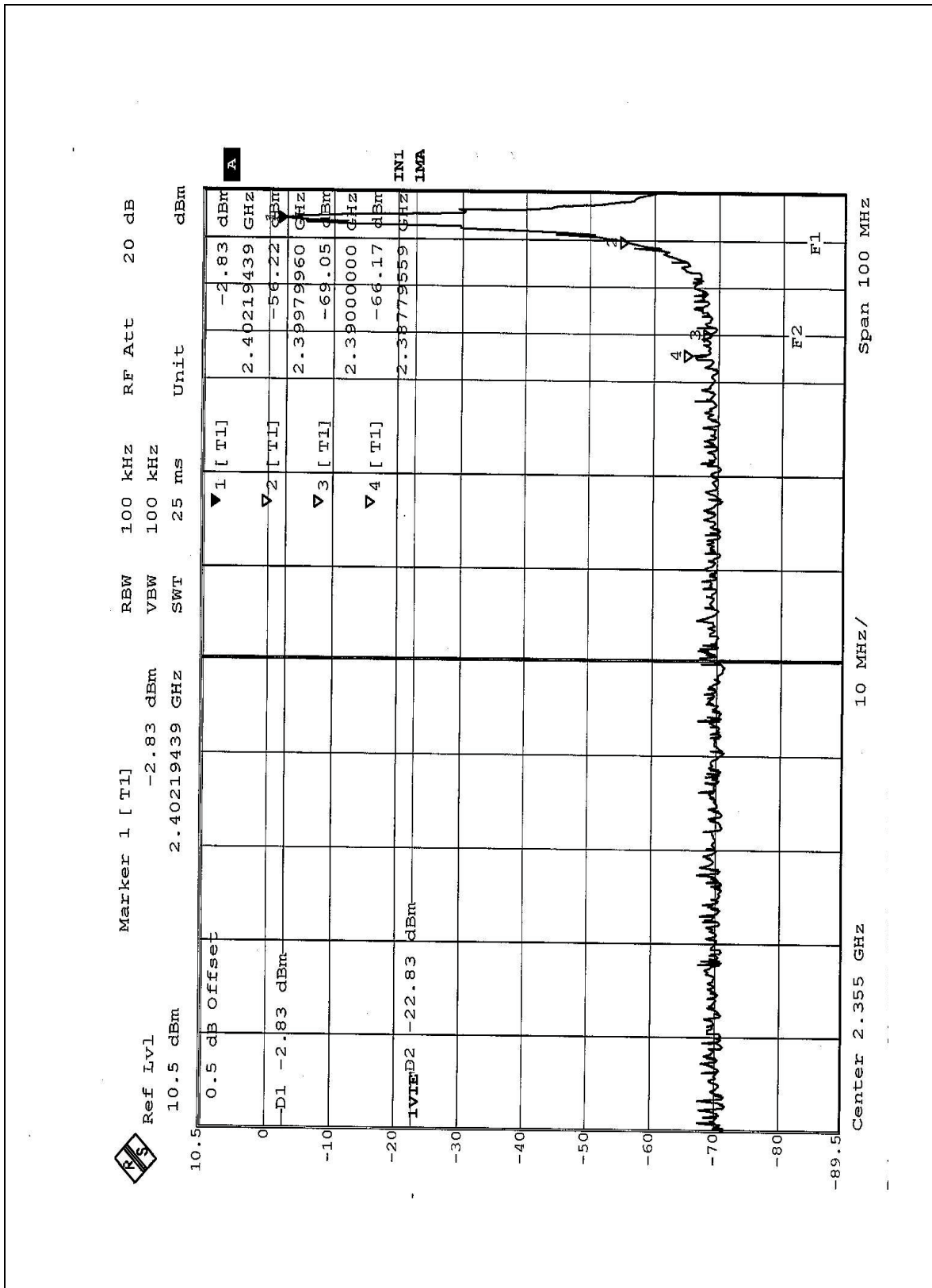
#### 4.6.6 TEST RESULTS

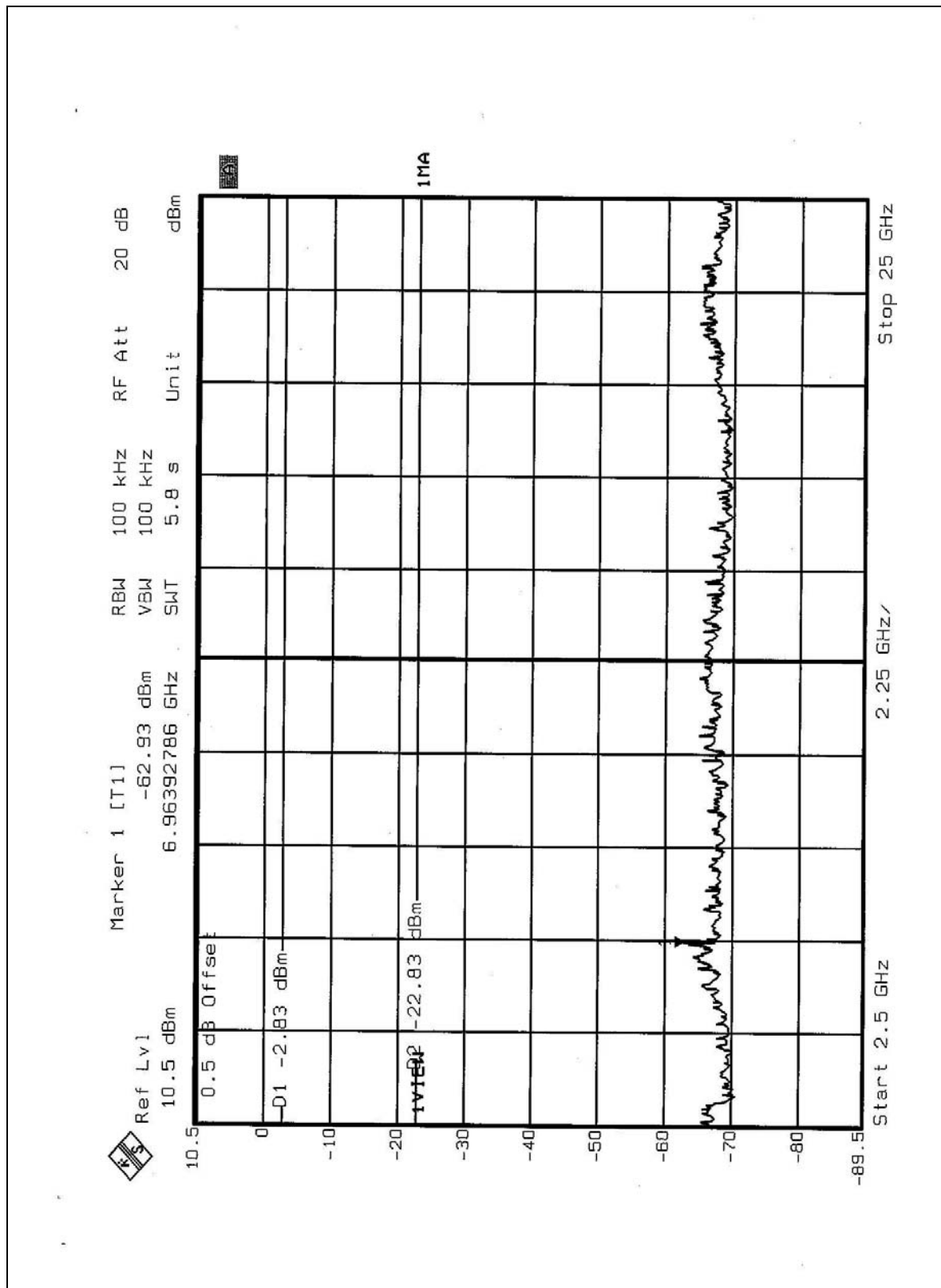
The spectrum plots are attached on the following 4 pages. D2 line indicates the highest level, D1 line indicates the 20dB offset below D2. It shows compliance with the requirement in part 15.247(d).

#### 4.6.7 TEST RESULTS

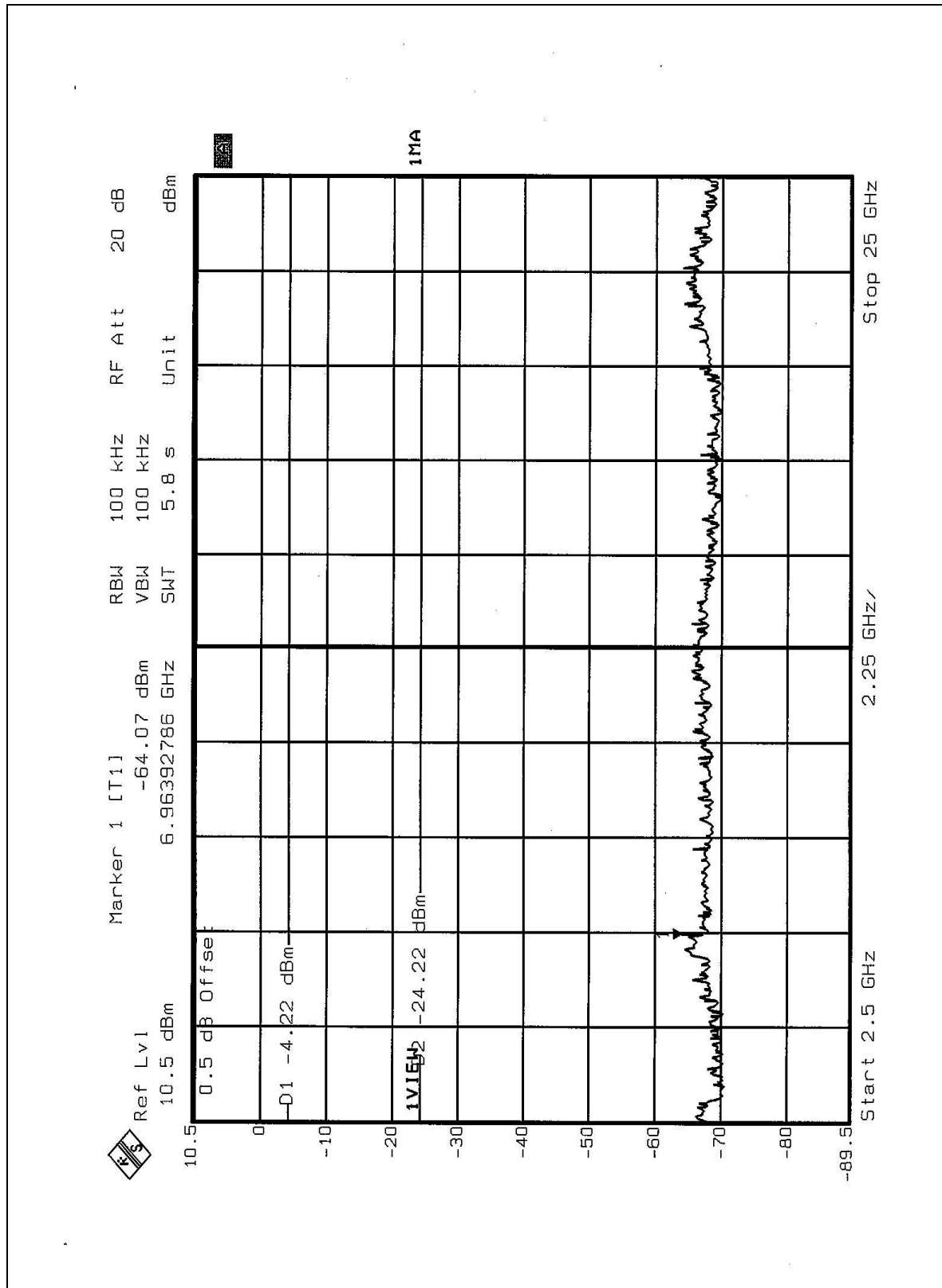
The band edge emission plot on the following 1~2 pages show 63.34dB delta between carrier maximum power and local maximum emission in restrict band (2.3878GHz). The emission of carrier strength list in the test result of channel 0 at the item 4.2.7 is 92.71dBuV/m, so the maximum field strength in restrict band is  $92.71 - 63.34 = 29.37$ dBuV/m which is under 54dBuV/m limit.

The band edge emission plot on the following 3~4 pages show 61.41dB delta 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 78 at the item 4.1.7 is 91.08dBuV/m, so the maximum field strength in restrict band is  $91.08 - 61.41 = 29.67$ dBuV/m which is under 54dBuV/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 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**

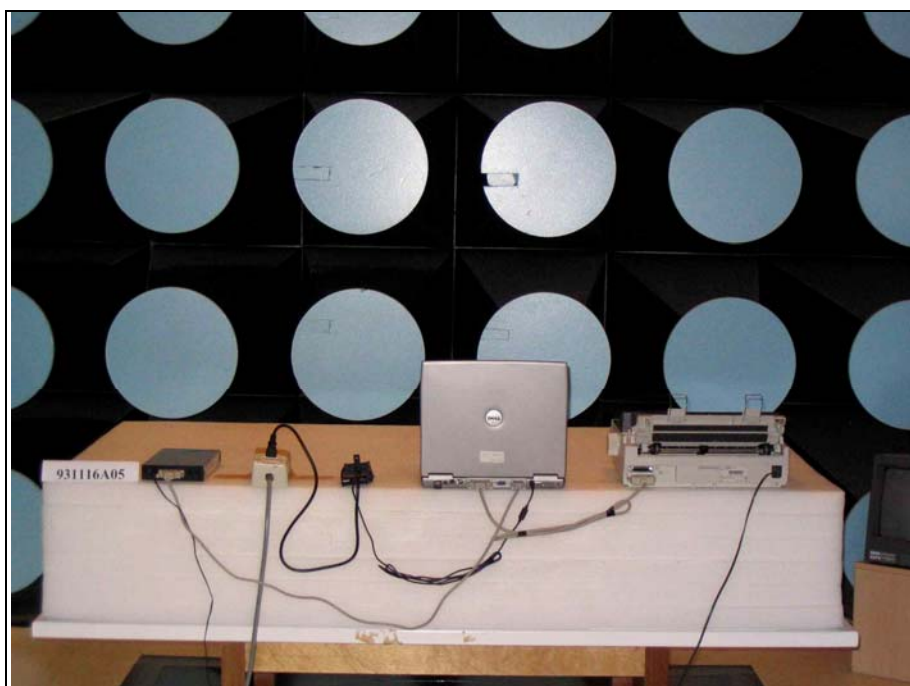
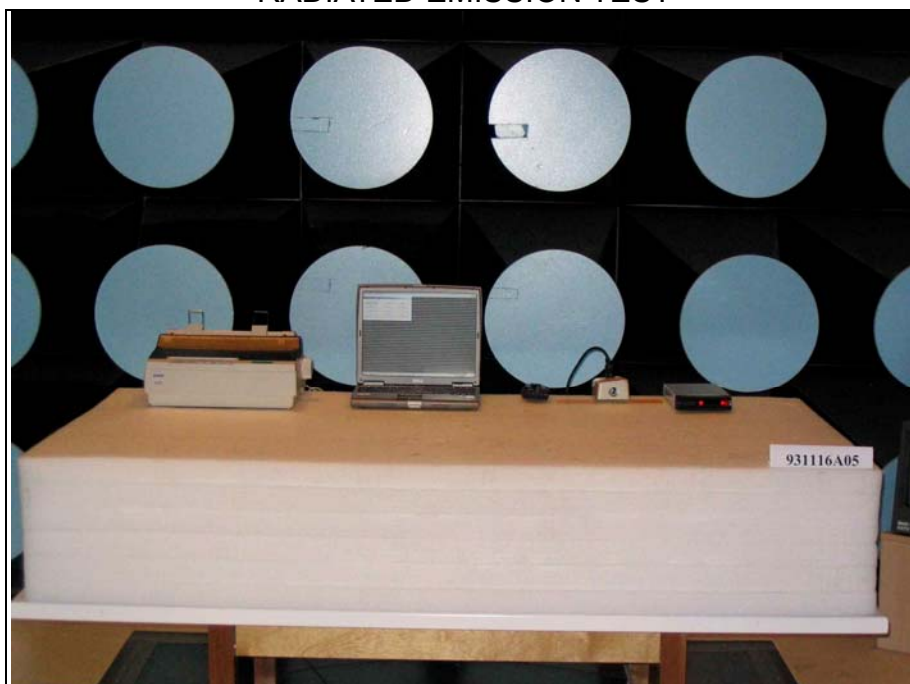
The antenna used in this product is printed antenna without connector and the maximum gain of this antenna is  $-4.28\text{dBi}$ .

## 5 PHOTOGRAPHS OF THE TEST CONFIGURATION

### CONDUCTED EMISSION TEST



## RADIATED EMISSION TEST



## 6 INFORMATION ON THE TESTING LABORATORIES

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| <b>Norway</b>      | NEMKO                 |
| <b>Canada</b>      | INDUSTRY CANADA , CSA |
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Fax: 886-2-26052943

**Hsin Chu EMC/RF Lab:**

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Fax: 886-3-5935342

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