# FCC TEST REPORT

**REPORT NO.:** RF920804R01B
**MODEL NO.:** APL13-02C
**RECEIVED:** Apr. 29, 2004
**TESTED:** May 19, 2004

**APPLICANT:** Sonicwall Inc.

**ADDRESS:** 1143 Borregas Ave., Sunnyvale, CA 94089, USA

**ISSUED BY:** Advance Data Technology Corporation

**LAB 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 :** | SonicPoint |
| **MODEL NO. :** | APL13-02C |
| **BRAND NAME :** | SONICWALL |
| **APPLICANT :** | Sonicwall Inc. |
| **TESTED:** | May 19, 2004 |
| **TEST ITEM:** | ENGINEERING SAMPLE |
| **STANDARDS :** | FCC Part 15, Subpart C (Section 15.247), Subpart E (Section 15.407), ANSI C63.4-2001 |

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:** Windy Chou , **DATE:** May 24, 2004

Windy Chou

**APPROVED BY:** , **DATE:** May 24, 2004

Cody Chang / Supervisor

# 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<br>Minimum passing margin is -1.54dB<br>at 0.489MHz |
| 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(c) | Radiated Emissions<br>Limit: Table 15.209 | PASS | Meet the requirement of limit<br>Minimum passing margin is –1.96dB at 440.00 MHz |
| 15.247(d) | Power Spectral Density<br>Limit: max. 8dBm | PASS | Meet the requirement of limit |
| 15.247(c) | Band Edge Measurement<br>Limit: 20dB less than the peak value of fundamental frequency | PASS | Meet the requirement of limit |

**NOTE:** The information of measurement uncertainty is available upon the customer's request.

| APPLIED STANDARD: FC Part 15, Subpart E | | | |
|---|---|---|---|
| **Standard Section** | **Test Type** | **Result** | **REMARK** |
| 15.407(b)(5) | AC Power Conducted Emission | PASS | Meet the requirement of limit<br>Minimum passing margin is –1.63dB at 0.998MHz |
| 15.407(b/1/2/3)(b)(5) | Electric Field Strength Spurious Emissions, 30 MHz – 40000 MHz | PASS | Meet the requirement of limit<br>Minimum passing margin is –1.96dB at 440.00 MHz |
| 15.407(a/1/2/3) | Peak Transmit Power | PASS | Meet the requirement of limit |
| 15.407(a)(6) | Peak Power Excursion | PASS | Meet the requirement of limit |
| 15.407(a/1/2/3) | Peak Power Spectral Density | PASS | Meet the requirement of limit |
| 15.407(g) | Frequency Stability | PASS | Meet the requirement of limit |

**NOTE:** The information of measurement uncertainty is available upon the customer's request.

# 3. GENERAL INFORMATION

## 3.1 GENERAL DESCRIPTION OF EUT

| | |
|---|---|
| **PRODUCT** | SonicPoint |
| **MODEL NO.** | APL13-02C |
| **POWER SUPPLY** | 12Vdc from Adapter |
| **MODULATION** | BPSK, QPSK, CCK, 16QAM, 64QAM |
| **TRANSFER RATE** | 802.11b and draft 802.11g:<br>1/2/5.5/6/9/11/12/18/24/36/48/54Mbps<br>802.11a:6 to 54Mbps (Turbo mode: up to 108Mbps *see note 1) |
| **FREQUENCY RANGE** | 802.11b and draft 802.11g: 2400MHz ~ 2483.5MHz<br>802.11a: 5.15GHz ~ 5.35GHz, 5.725GHz ~ 5.825GHz |
| **NUMBER OF CHANNEL** | 802.11b & 802.11g: 11 for Normal mode / 1 for Turbo mode<br>802.11a: 12 for Normal mode / 5 for Turbo mode |
| **CHANNEL SPACING** | 802.11b and draft 802.11g: 5MHz<br>802.11a: 20MHz for Normal mode / 40MHz for Turbo mode |
| **OUTPUT POWER** | 802.11b: 19.89dBm / draft 802.11g: 19.86dBm<br>802.11a: 19.81dBm |
| **DATA CABLE** | NA |
| **ANTENNA TYPE** | Dipole antenna |
| **ANTENNA GAIN** | 802.11b: 4dBi<br>802.11a: 5dBi |
| **I/O PORTS** | RJ45 |
| **ASSOCIATED DEVICES** | NA |

**NOTE**:

1. The EUT operates in both the 5GHz and 2.4GHz Bands and compatibility with 802.11a and 802.11b, 802.11g technology.
2. This EUT is capable of providing data rates of up to 108Mbps in Turbo Mode depending upon reception quality.

3. The EUT was operated with following AC Adapter.

| | |
|---|---|
| **Brand Name:** | FAIRWAY |
| **Model No.:** | VE20-120 |
| **Input power :** | 100-240Vac, 50-60Hz |
| **Output power :** | 12Vdc, 1.66A |

4. 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

For spurious emissions below 1000MHz, there are two test results were presented in the test report. One is EUT powered by AC Adapter and the other is EUT powered by POE.

For 802.11b & 802.11g: Eleven channels are provided to this EUT.

| Channel | Frequency | Channel | Frequency |
|---|---|---|---|
| 1 | 2412 MHz | 7 | 2442 MHz |
| 2 | 2417 MHz | 8 | 2447 MHz |
| 3 | 2422 MHz | 9 | 2452 MHz |
| 4 | 2427 MHz | 10 | 2457 MHz |
| 5 | 2432 MHz | 11 | 2462 MHz |
| 6 | 2437 MHz | | |

**NOTE:**

1. We pre-tested in both situations of transmit simultaneous and non-simultaneous of spurious emissions, and found the antenna transmit simultaneous was the worst case, and record in this test report.
2. Below 1 GHz, the channel 1, 6, and 11 were pre-tested in chamber. The channel 11, worst case one, was chosen for final test.
3. Above 1 GHz, the channel 1, 6, and 11 were tested individually.
4. From our experience, transfer rate, 11Mbps with CCK technique and 6Mbps with OFDM technique, the worst case, were chosen for final test.

One channel is provided to this EUT for Turbo Mode.

| Channel | Frequency |
|---|---|
| 6 | 2437 MHz |

**NOTE:** One turbo mode at frequency 2437MHz.

For 802.11a: Twelve channels are provided to this EUT for Normal mode.

| Channel | Frequency | Channel | Frequency |
|---|---|---|---|
| 1 | 5180 MHz | 7 | 5300 MHz |
| 2 | 5200 MHz | 8 | 5320 MHz |
| 3 | 5220 MHz | 9 | 5745MHz |
| 4 | 5240 MHz | 10 | 5765MHz |
| 5 | 5260 MHz | 11 | 5785MHz |
| 6 | 5280 MHz | 12 | 5805MHz |

Five channels are provided to this EUT for Turbo Mode.

| Channel | Frequency | Channel | Frequency |
|---|---|---|---|
| 1 | 5210 MHz | 4 | 5760MHz |
| 2 | 5250 MHz | 5 | 5800MHz |
| 3 | 5290 MHz | | |

**NOTE:**

1. The EUT was tested in both normal mode (channel bandwidth of approximately 30MHz) and turbo mode (channel bandwidth of approximately 60MHz).
2. “Normal Mode” allows data rates of up to 54Mbps. The device was, therefore, tested in Normal mode at the data rate that produced the highest output power for normal mode (6Mbps).
3. “Turbo Mode” allows data rates of up to 108Mbps. At data rates higher than 12Mbps the PA gain is reduced to improve signal fidelity. The device was, therefore, tested in turbo mode at the data rate that produced the highest output power for turbo mode (12Mbps).
4. Channel 1, 4, 5, 8, 9 and 12 are the closest frequencies to the band edge, were chosen for final test of Normal Mode.
5. Channel 1 ~ 5 were chosen for final test of turbo mode.

## 3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

**FCC Part 15, Subpart C. (15.247),**
**Subpart E (15.407). ANSI C63.4 : 2001**

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 47CFR Part 15, Subpart B, Class B (DoC). 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 | Dell | PP01L | TW-09C748-12800-193-C800 | FCC DoC Approved |
| 2 | FAST ETHERNET PC CARD | D-Link | DFE-680TXD | RE1A044413 | MQ4FE2K5MX |
| 3 | POE | NA | SAQ06L48-V | NA | NA |

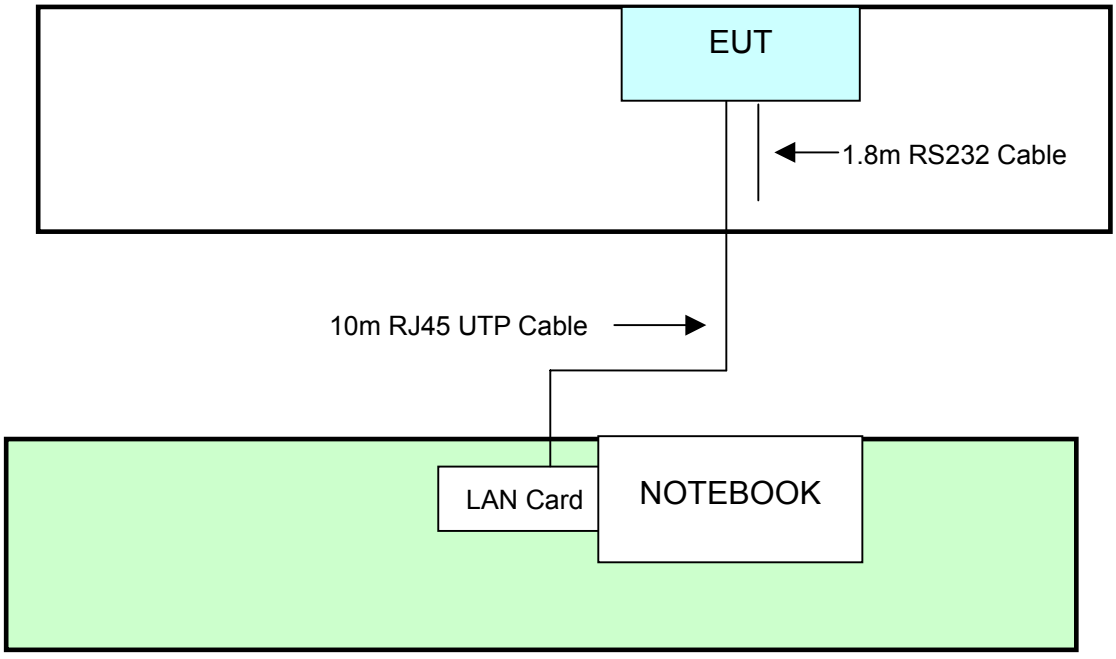
| NO. | SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS |
|---|---|
| 1 | NA |
| 2 | NA |
| 3 | NA |

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

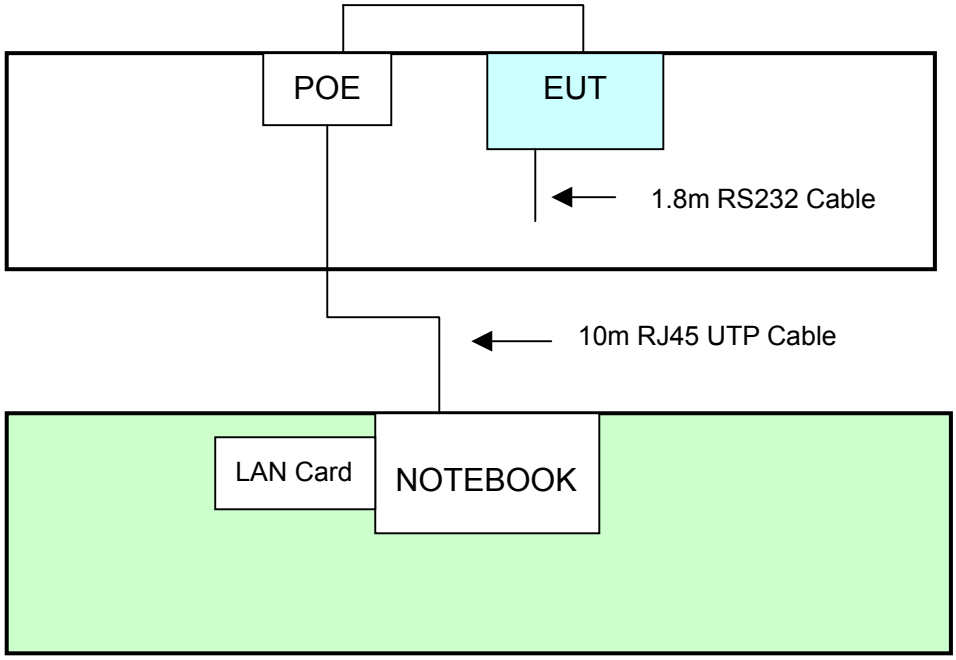
**NOTE 2:** Item 2 act as a communication partner to transfer data.

## 3.5 CONFIGURATION OF SYSTEM UNDER TEST

**For power supply by Adapter**



## For power supply by POE



# 4.TEST TYPES AND RESULTS (FOR PART 802.11b & draft 802.11g)

## 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<br>0.5-5<br>5-30 | 66 to 56<br>56<br>60 | 56 to 46<br>46<br>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 | 847265/023 | Oct. 22, 2004 |
| LISN<br>ROHDE & SCHWARZ | ESH3-Z5 | 100220 | Dec. 10, 2004 |
| 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.Hwa Ya Global Certification Office

### 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.

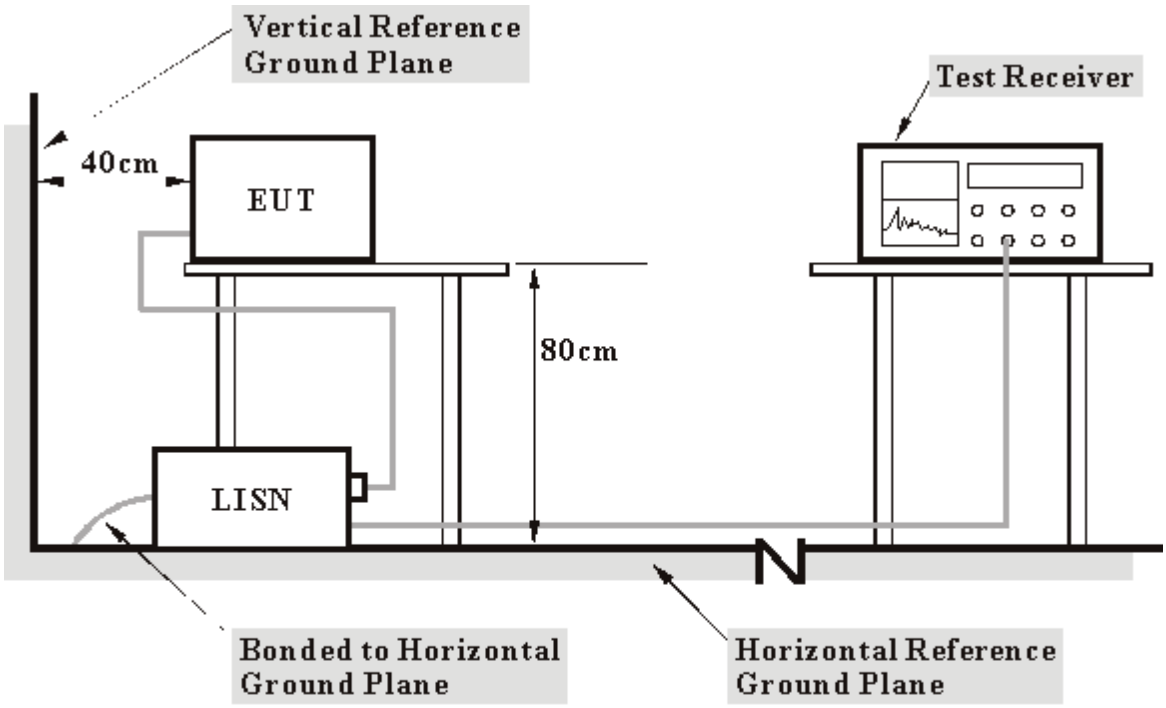
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

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

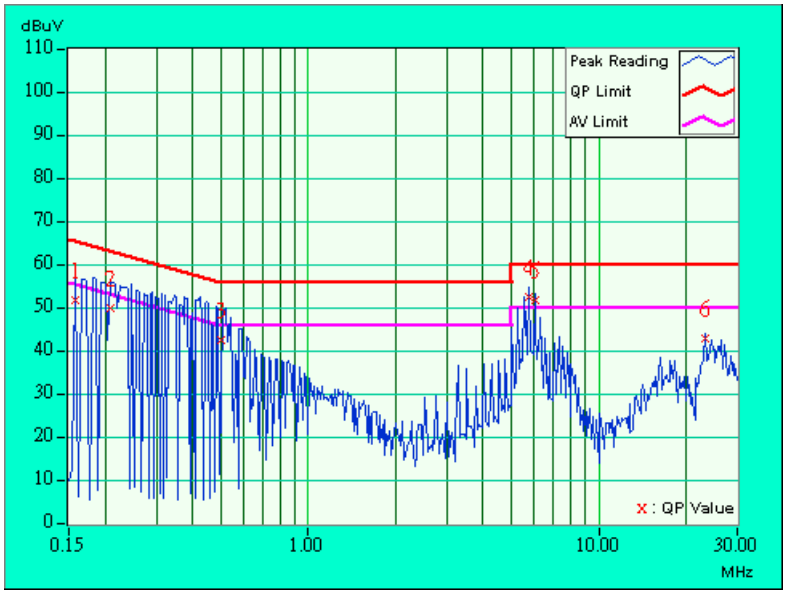
a. Placed the EUT on the testing table.
b. Prepared another computer system to act as a communication partner and placed it outside of testing area.
c. The communication partner run a test program (provided by Manufacturer) to enable EUT under transmission/receiving condition continuously at specific channel frequency via an RJ 45 cable and wireless.
d. The communication partner sent data to EUT by command "PING".

## 4.1.7 TEST RESULTS

| EUT | SonicPoint | MODEL | APL13-02C |
|---|---|---|---|
| MODE | Channel 1 | 6dB BANDWIDTH | 9 kHz |
| INPUT POWER (SYSTEM) | 120Vac, 60Hz | PHASE | Line (L) |
| ENVIRONMENTAL CONDITIONS | 25deg. C, 65%RH, 991 hPa | TESTED BY: Jamison Chan | |

| No | Freq. | Corr. Factor | Reading Value [dB (uV)] | | Emission Level [dB (uV)] | | Limit [dB (uV)] | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.158 | 0.06 | 50.97 | - | 51.03 | - | 65.58 | 55.58 | -14.55 | - |
| 2 | 0.209 | 0.06 | 49.37 | - | 49.43 | - | 63.26 | 53.26 | -13.83 | - |
| 3 | 0.500 | 0.08 | 41.62 | - | 41.70 | - | 56.00 | 46.00 | -14.31 | - |
| 4 | 5.785 | 0.28 | 51.88 | 45.85 | 52.16 | 46.13 | 60.00 | 50.00 | -7.84 | -3.87 |
| 5 | 6.039 | 0.29 | 51.06 | 47.69 | 51.35 | 47.98 | 60.00 | 50.00 | -8.65 | -2.02 |
| 6 | 23.129 | 0.80 | 42.22 | - | 43.02 | - | 60.00 | 50.00 | -16.98 | - |

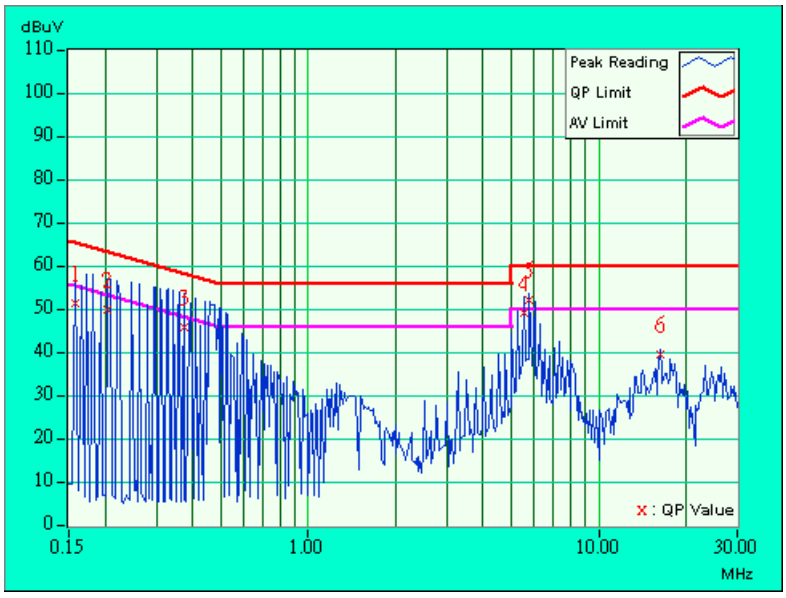
**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value =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



| EUT | SonicPoint | MODEL | APL13-02C |
|---|---|---|---|
| MODE | Channel 1 | 6dB BANDWIDTH | 9 kHz |
| INPUT POWER (SYSTEM) | 120Vac, 60Hz | PHASE | Neutral (N) |
| ENVIRONMENTAL CONDITIONS | 25deg. C, 65%RH, 991 hPa | TESTED BY: Jamison Chan | |

| No | Freq. | Corr. Factor | Reading Value [dB (uV)] | | Emission Level [dB (uV)] | | Limit [dB (uV)] | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.158 | 0.05 | 51.14 | - | 51.19 | - | 65.58 | 55.58 | -14.39 | - |
| 2 | 0.205 | 0.05 | 49.41 | - | 49.46 | - | 63.42 | 53.42 | -13.96 | - |
| 3 | 0.373 | 0.05 | 45.29 | - | 45.34 | - | 58.44 | 48.44 | -13.10 | - |
| 4 | 5.535 | 0.25 | 48.88 | - | 49.13 | - | 60.00 | 50.00 | -10.87 | - |
| 5 | 5.781 | 0.26 | 51.62 | 45.90 | 51.88 | 46.16 | 60.00 | 50.00 | -8.12 | -3.84 |
| 6 | 16.230 | 0.49 | 39.06 | - | 39.55 | - | 60.00 | 50.00 | -20.45 | - |

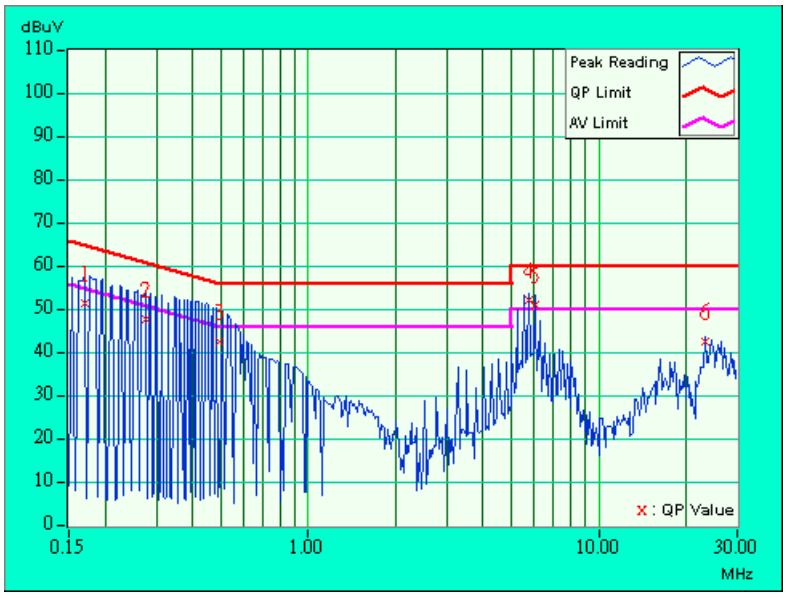
**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value =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



| EUT | SonicPoint | MODEL | APL13-02C |
|---|---|---|---|
| MODE | Channel 6 | 6dB BANDWIDTH | 9 kHz |
| INPUT POWER (SYSTEM) | 120Vac, 60Hz | PHASE | Line (L) |
| ENVIRONMENTAL CONDITIONS | 25deg. C, 65%RH, 991 hPa | TESTED BY: Jamison Chan | |

| No | Freq. | Corr. Factor | Reading Value [dB (uV)] | | Emission Level [dB (uV)] | | Limit [dB (uV)] | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.170 | 0.06 | 50.54 | - | 50.60 | - | 64.98 | 54.98 | -14.39 | - |
| 2 | 0.275 | 0.06 | 46.88 | - | 46.94 | - | 60.97 | 50.97 | -14.03 | - |
| 3 | 0.498 | 0.08 | 41.62 | - | 41.70 | - | 56.04 | 46.04 | -14.34 | - |
| 4 | 5.785 | 0.28 | 51.32 | 45.28 | 51.60 | 45.56 | 60.00 | 50.00 | -8.40 | -4.44 |
| 5 | 6.039 | 0.29 | 50.37 | 47.09 | 50.66 | 47.38 | 60.00 | 50.00 | -9.34 | -2.62 |
| 6 | 23.129 | 0.80 | 41.93 | - | 42.73 | - | 60.00 | 50.00 | -17.27 | - |

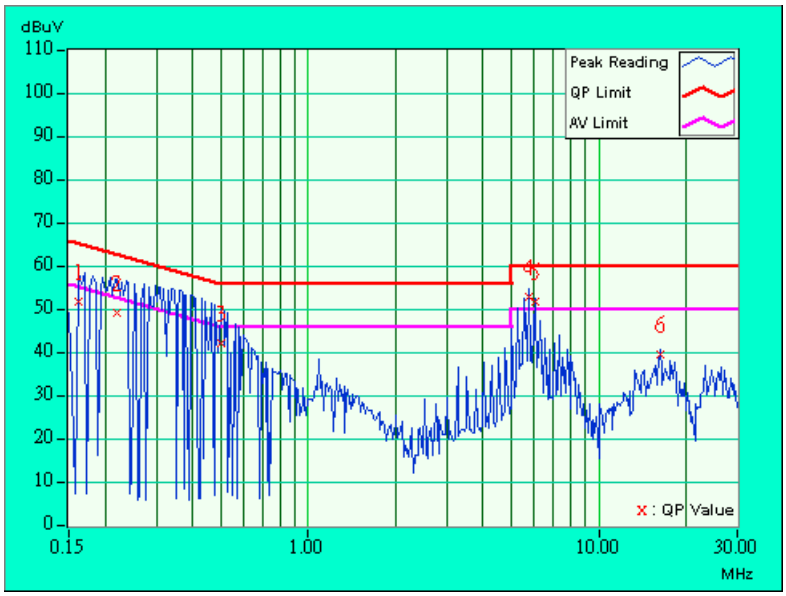
**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value =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



| | | | |
|---|---|---|---|
| **EUT** | SonicPoint | **MODEL** | APL13-02C |
| **MODE** | Channel 6 | **6dB BANDWIDTH** | 9 kHz |
| **INPUT POWER (SYSTEM)** | 120Vac, 60Hz | **PHASE** | Neutral (N) |
| **ENVIRONMENTAL CONDITIONS** | 25deg. C, 65%RH, 991 hPa | **TESTED BY**: Jamison Chan | |

| No | Freq. | Corr. Factor | Reading Value [dB (uV)] | | Emission Level [dB (uV)] | | Limit [dB (uV)] | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.162 | 0.05 | 51.18 | - | 51.23 | - | 65.38 | 55.38 | -14.15 | - |
| 2 | 0.220 | 0.05 | 48.94 | - | 48.99 | - | 62.81 | 52.81 | -13.82 | - |
| 3 | 0.502 | 0.07 | 41.68 | - | 41.75 | - | 56.00 | 46.00 | -14.25 | - |
| 4 | 5.785 | 0.26 | 52.55 | 45.85 | 52.81 | 46.11 | 60.00 | 50.00 | -7.19 | -3.89 |
| 5 | 6.039 | 0.27 | 51.18 | 47.86 | 51.45 | 48.13 | 60.00 | 50.00 | -8.55 | -1.87 |
| 6 | 16.230 | 0.49 | 39.12 | - | 39.61 | - | 60.00 | 50.00 | -20.39 | - |

**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.



| | | | |
|---|---|---|---|
| **EUT** | SonicPoint | **MODEL** | APL13-02C |
| **MODE** | Channel 11 | **6dB BANDWIDTH** | 9 kHz |
| **INPUT POWER (SYSTEM)** | 120Vac, 60Hz | **PHASE** | Line (L) |
| **ENVIRONMENTAL CONDITIONS** | 25deg. C, 65%RH, 991 hPa | **TESTED BY**: Jamison Chan | |

| No | Freq. | Corr. Factor | Reading Value [dB (uV)] | | Emission Level [dB (uV)] | | Limit [dB (uV)] | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.177 | 0.06 | 50.24 | - | 50.30 | - | 64.61 | 54.61 | -14.31 | - |
| 2 | 0.267 | 0.06 | 47.07 | - | 47.13 | - | 61.20 | 51.20 | -14.07 | - |
| 3 | 0.505 | 0.08 | 41.15 | - | 41.23 | - | 56.00 | 46.00 | -14.77 | - |
| 4 | 5.535 | 0.27 | 49.20 | - | 49.47 | - | 60.00 | 50.00 | -10.53 | - |
| 5 | 5.781 | 0.28 | 51.72 | 45.00 | 52.00 | 45.28 | 60.00 | 50.00 | -8.00 | -4.72 |
| 6 | 23.129 | 0.80 | 42.20 | - | 43.00 | - | 60.00 | 50.00 | -17.00 | - |

**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
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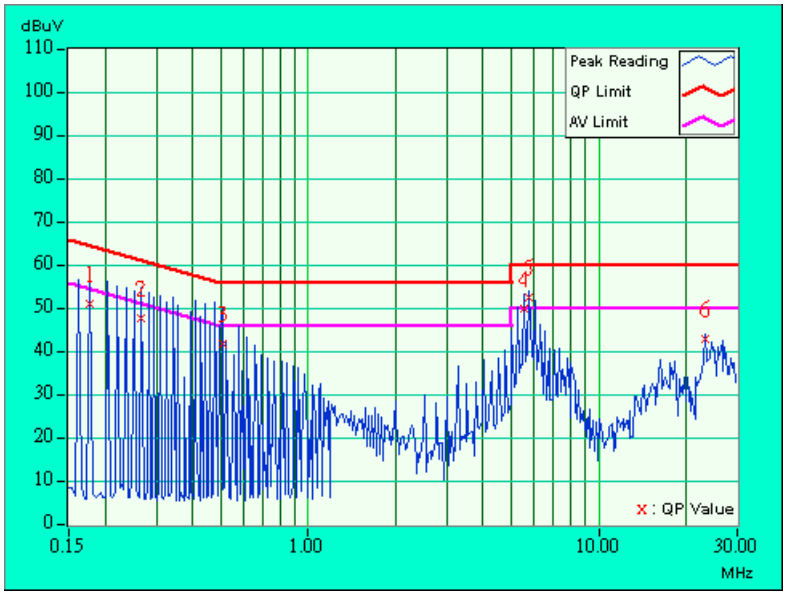
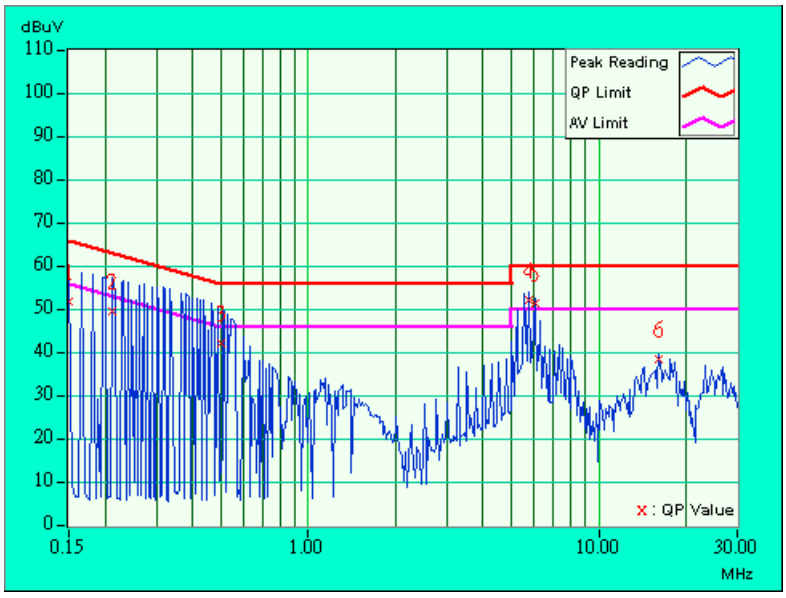
6. Emission Level = Correction Factor + Reading Value.



| EUT | SonicPoint | MODEL | APL13-02C |
|---|---|---|---|
| MODE | Channel 11 | 6dB BANDWIDTH | 9 kHz |
| INPUT POWER (SYSTEM) | 120Vac, 60Hz | PHASE | Neutral (N) |
| ENVIRONMENTAL CONDITIONS | 25deg. C, 65%RH, 991 hPa | TESTED BY: Jamison Chan | |

| No | Freq. | Corr. Factor | Reading Value [dB (uV)] | | Emission Level [dB (uV)] | | Limit [dB (uV)] | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.150 | 0.05 | 51.27 | - | 51.32 | - | 66.00 | 56.00 | -14.68 | - |
| 2 | 0.213 | 0.05 | 49.17 | - | 49.22 | - | 63.11 | 53.11 | -13.89 | - |
| 3 | 0.501 | 0.07 | 41.60 | - | 41.67 | - | 56.00 | 46.00 | -14.33 | - |
| 4 | 5.785 | 0.26 | 51.78 | 45.58 | 52.04 | 45.84 | 60.00 | 50.00 | -7.96 | -4.16 |
| 5 | 6.039 | 0.27 | 51.12 | 47.94 | 51.39 | 48.21 | 60.00 | 50.00 | -8.61 | -1.79 |
| 6 | 16.168 | 0.49 | 38.14 | - | 38.63 | - | 60.00 | 50.00 | -21.37 | - |

**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.



## 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 (MHz) | Field strength (microvolts/meter) | Measurement distance (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 ROHDE & SCHWARZ | ESI7 | 100033 | May 28, 2004 |
| Spectrum Analyzer ROHDE & SCHWARZ | FSP40 | 100040 | Dec. 15, 2004 |
| BILOG Antenna SCHWARZBECK | VULB9168 | 9168-153 | Feb. 03, 2005 |
| HORN Antenna SCHWARZBECK | 9120D | 9120D-408 | Feb. 03, 2005 |
| HORN Antenna SCHWARZBECK | BBHA 9170 | BBHA 9170243 | Feb. 23, 2005 |
| Preamplifier Agilent | 8447D | 2944A10633 | Jan. 15, 2005 |
| Preamplifier Agilent | 8449B | 3008A01964 | Jan. 27, 2005 |
| RF signal cable HUBER+SUHNNER | SUCOFLEX 104 | 218183/4 | Mar. 05, 2005 |
| RF signal cable HUBER+SUHNNER | SUCOFLEX 104 | 218195/4 | Mar. 05, 2005 |
| Software ADT. | ADT_Radiated_V5.14 | NA | NA |
| Antenna Tower inn-co GmbH | MA 4000 | 013303 | NA |
| Antenna Tower Controller inn-co GmbH | CO2000 | 017303 | NA |
| Turn Table ADT. | TT100. | TT93021703 | NA |
| Turn Table Controller ADT. | SC100. | SC93021703 | 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 2.

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 IC4924-3.

### 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 10 meter open area test site. 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 the quasi-peak method or average method as specified and then reported in Data sheet peak mode and QP mode.

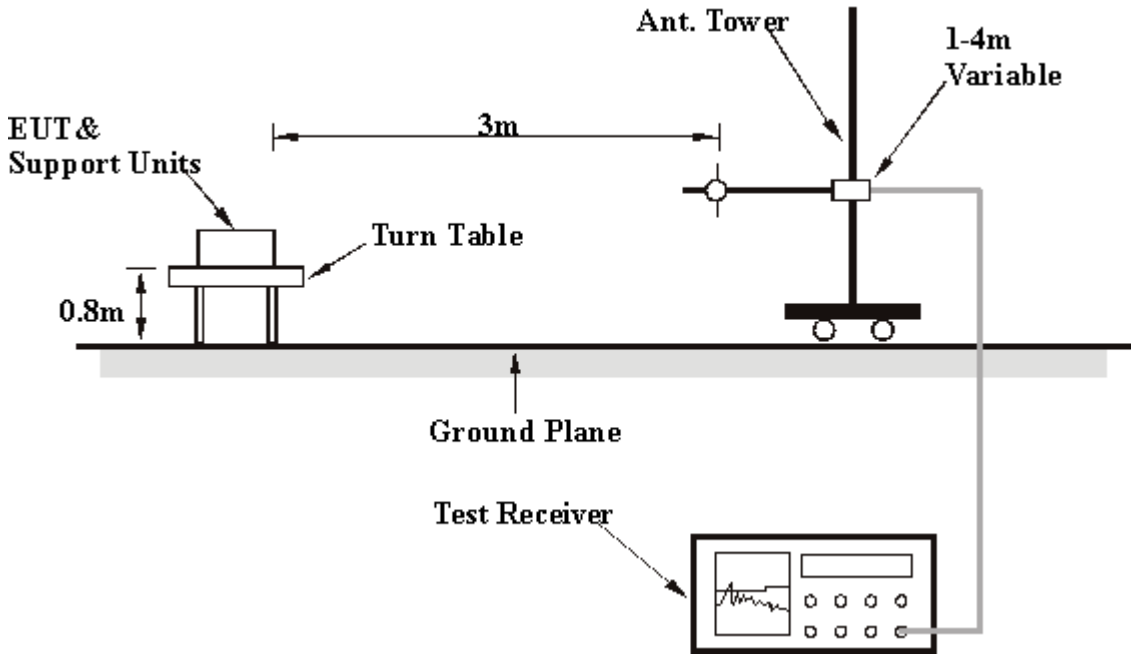
**NOTE:**

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection (PK) 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

| | | | |
|---|---|---|---|
| **EUT** | SonicPoint | **MODEL** | APL13-02C |
| **MODE** | Channel 11,<br>**EUT powered by AC Adapter** | **FREQUENCY RANGE** | Below 1000 MHz |
| **INPUT POWER (SYSTEM)** | 120Vac, 60Hz | **DETECTOR FUNCTION** | Quasi-Peak |
| **ENVIRONMENTAL CONDITIONS** | 30deg. C, 65%RH,<br>991 hPa | **TESTED BY** | Vincent Yang |

| 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 | 42.40 | 28.62 QP | 40.00 | -11.38 | 1.00 H | 357 | 16.67 | 11.95 |
| 2 | 125.00 | 33.49 QP | 43.50 | -10.01 | 1.65 H | 209 | 20.93 | 12.56 |
| 3 | 151.00 | 34.99 QP | 43.50 | -8.51 | 2.04 H | 73 | 23.87 | 11.12 |
| 4 | 220.01 | 41.22 QP | 46.00 | -4.78 | 2.37 H | 256 | 29.69 | 11.53 |
| 5 | 225.50 | 35.21 QP | 46.00 | -10.79 | 1.48 H | 357 | 23.34 | 11.87 |
| 6 | 240.40 | 38.43 QP | 46.00 | -7.57 | 1.76 H | 156 | 25.65 | 12.78 |
| 7 | 250.60 | 36.06 QP | 46.00 | -9.94 | 2.29 H | 176 | 22.61 | 13.45 |
| 8 | 330.01 | 36.36 QP | 46.00 | -9.64 | 1.39 H | 90 | 20.45 | 15.91 |
| 9 | 350.50 | 36.05 QP | 46.00 | -9.95 | 1.00 H | 355 | 19.80 | 16.25 |
| 10 | 360.50 | 41.21 QP | 46.00 | -4.79 | 1.00 H | 106 | 24.59 | 16.62 |
| 11 | 375.50 | 35.88 QP | 46.00 | -10.12 | 1.00 H | 151 | 18.71 | 17.17 |
| 12 | 440.00 | 41.16 QP | 46.00 | -4.84 | 1.00 H | 338 | 22.76 | 18.40 |
| 13 | 490.00 | 36.29 QP | 46.00 | -9.71 | 1.00 H | 259 | 16.66 | 19.63 |
| 14 | 549.98 | 39.85 QP | 46.00 | -6.15 | 2.10 H | 225 | 19.31 | 20.54 |
| 15 | 660.02 | 30.05 QP | 46.00 | -15.95 | 1.00 H | 86 | 7.98 | 22.07 |
| 16 | 770.00 | 30.29 QP | 46.00 | -15.71 | 1.94 H | 17 | 6.97 | 23.32 |

**REMARKS**:
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
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.
5. The limit value is defined as per 15.247

| EUT | SonicPoint | MODEL | APL13-02C |
|---|---|---|---|
| MODE | Channel 11,<br>**EUT powered by AC Adapter** | FREQUENCY RANGE | Below 1000 MHz |
| INPUT POWER (SYSTEM) | 120Vac, 60Hz | DETECTOR FUNCTION | Quasi-Peak |
| ENVIRONMENTAL CONDITIONS | 30deg. C, 65%RH,<br>991 hPa | TESTED BY | Vincent Yang |

| 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 | 57.73 | 34.20 QP | 40.00 | -5.80 | 1.34 V | 79 | 25.59 | 8.61 |
| 2 | 139.70 | 34.35 QP | 43.50 | -9.15 | 1.00 V | 14 | 22.33 | 12.02 |
| 3 | 175.48 | 33.20 QP | 43.50 | -10.30 | 1.00 V | 316 | 23.09 | 10.11 |
| 4 | 220.01 | 40.33 QP | 46.00 | -5.67 | 1.34 V | 13 | 28.80 | 11.53 |
| 5 | 240.00 | 36.38 QP | 46.00 | -9.62 | 1.75 V | 210 | 23.62 | 12.76 |
| 6 | 250.00 | 40.56 QP | 46.00 | -5.44 | 1.26 V | 216 | 27.19 | 13.37 |
| 7 | 361.00 | 39.78 QP | 46.00 | -6.22 | 1.73 V | 181 | 23.14 | 16.64 |
| 8 | 440.01 | 39.57 QP | 46.00 | -6.43 | 1.43 V | 55 | 21.17 | 18.40 |
| 9 | 550.01 | 41.44 QP | 46.00 | -4.56 | 1.27 V | 218 | 20.90 | 20.54 |
| 10 | 660.00 | 31.86 QP | 46.00 | -14.14 | 1.00 V | 111 | 9.79 | 22.07 |
| 11 | 770.01 | 32.03 QP | 46.00 | -13.97 | 2.11 V | 256 | 8.71 | 23.32 |
| 12 | 879.98 | 34.73 QP | 46.00 | -11.27 | 1.74 V | 39 | 10.61 | 24.12 |
| 13 | 990.00 | 36.89 QP | 54.00 | -17.11 | 1.99 V | 359 | 11.95 | 24.94 |

**REMARKS**:
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
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.
5. The limit value is defined as per 15.247

| | | | |
|---|---|---|---|
| **EUT** | SonicPoint | **MODEL** | APL13-02C |
| **MODE** | Channel 11,<br>**EUT powered by POE** | **FREQUENCY RANGE** | Below 1000 MHz |
| **INPUT POWER (SYSTEM)** | 120Vac, 60Hz | **DETECTOR FUNCTION** | Quasi-Peak |
| **ENVIRONMENTAL CONDITIONS** | 30deg. C, 65%RH,<br>991 hPa | **TESTED BY** | Vincent Yang |

**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 | 58.75 | 32.25 QP | 40.00 | -7.75 | 1.00 H | 357 | 23.66 | 8.59 |
| 2 | 220.00 | 42.74 QP | 46.00 | -3.26 | 2.29 H | 192 | 31.21 | 11.53 |
| 3 | 240.20 | 37.84 QP | 46.00 | -8.16 | 1.49 H | 314 | 25.07 | 12.77 |
| 4 | 250.10 | 43.22 QP | 46.00 | -2.78 | 1.74 H | 60 | 29.84 | 13.38 |
| 5 | 300.30 | 34.09 QP | 46.00 | -11.91 | 1.49 H | 339 | 18.67 | 15.42 |
| 6 | 325.20 | 34.16 QP | 46.00 | -11.84 | 1.00 H | 262 | 18.33 | 15.83 |
| 7 | 330.00 | 39.77 QP | 46.00 | -6.23 | 1.32 H | 228 | 23.86 | 15.91 |
| 8 | 350.40 | 35.23 QP | 46.00 | -10.77 | 1.00 H | 357 | 18.99 | 16.24 |
| 9 | 360.40 | 42.17 QP | 46.00 | -3.83 | 1.23 H | 234 | 25.56 | 16.61 |
| 10 | 375.30 | 34.11 QP | 46.00 | -11.89 | 1.00 H | 357 | 16.94 | 17.17 |
| **11** | **440.00** | **44.04 QP** | **46.00** | **-1.96** | **1.00 H** | **139** | **25.64** | **18.40** |
| 12 | 550.00 | 43.14 QP | 46.00 | -2.86 | 1.93 H | 146 | 22.60 | 20.54 |
| 13 | 770.00 | 30.95 QP | 46.00 | -15.05 | 1.57 H | 51 | 7.63 | 23.32 |

**REMARKS**:
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
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.
5. The limit value is defined as per 15.247

| EUT | SonicPoint | MODEL | APL13-02C |
|---|---|---|---|
| MODE | Channel 11,<br>**EUT powered by POE** | FREQUENCY RANGE | Below 1000 MHz |
| INPUT POWER (SYSTEM) | 120Vac, 60Hz | DETECTOR FUNCTION | Quasi-Peak |
| ENVIRONMENTAL CONDITIONS | 30deg. C, 65%RH,<br>991 hPa | TESTED BY | Vincent Yang |

| 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 | 75.13 | 26.71 QP | 40.00 | -13.29 | 1.26 V | 45 | 19.54 | 7.17 |
| 2 | 125.50 | 38.67 QP | 43.50 | -4.83 | 1.00 V | 195 | 26.13 | 12.54 |
| 3 | 140.40 | 29.25 QP | 43.50 | -14.25 | 1.00 V | 128 | 17.27 | 11.98 |
| 4 | 150.40 | 37.22 QP | 43.50 | -6.28 | 1.00 V | 349 | 26.05 | 11.17 |
| 5 | 220.00 | 42.21 QP | 46.00 | -3.79 | 1.00 V | 57 | 30.68 | 11.53 |
| 6 | 240.20 | 36.81 QP | 46.00 | -9.19 | 1.48 V | 14 | 24.04 | 12.77 |
| 7 | 250.40 | 39.64 QP | 46.00 | -6.36 | 1.00 V | 357 | 26.21 | 13.43 |
| 8 | 424.00 | 38.48 QP | 46.00 | -7.52 | 1.49 V | 222 | 20.21 | 18.27 |
| 9 | 440.00 | 34.09 QP | 46.00 | -11.91 | 1.71 V | 357 | 15.69 | 18.40 |
| 10 | 464.00 | 37.95 QP | 46.00 | -8.05 | 1.49 V | 15 | 19.07 | 18.88 |
| 11 | 549.99 | 42.62 QP | 46.00 | -3.38 | 1.97 V | 230 | 22.08 | 20.54 |
| 12 | 598.00 | 43.02 QP | 46.00 | -2.98 | 1.49 V | 308 | 21.31 | 21.71 |
| 13 | 660.00 | 31.95 QP | 46.00 | -14.05 | 1.00 V | 115 | 9.88 | 22.07 |
| 14 | 770.01 | 34.12 QP | 46.00 | -11.88 | 1.08 V | 346 | 10.80 | 23.32 |

**REMARKS**:
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
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.
5. The limit value is defined as per 15.247

**FOR CCK**

| | | | |
|---|---|---|---|
| **EUT** | SonicPoint | **MODEL** | APL13-02C |
| **MODE** | Channel 1 | **FREQUENCY RANGE** | Above 1000 MHz |
| **INPUT POWER (SYSTEM)** | 120Vac, 60Hz | **DETECTOR FUNCTION** | Peak(PK)<br>Average (AV) |
| **ENVIRONMENTAL CONDITIONS** | 30deg. C, 60%RH, 991 hPa | **TESTED BY** | Hardaway Lee |

**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 | *2412.00 | 102.2 PK | | | 1.40 H | 148 | 72.50 | 29.70 |
| 1 | *2412.00 | 94.8 AV | | | 1.40 H | 148 | 65.10 | 29.70 |
| 2 | 4824.00 | 48.4 PK | 74.00 | -25.60 | 1.68 H | 129 | 13.20 | 35.30 |

**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 | 2390.00 | 56.3 PK | 74.00 | -17.70 | 1.51 V | 182 | 26.70 | 29.60 |
| 1 | 2390.00 | 48.3 AV | 54.00 | -5.70 | 1.51 V | 182 | 18.70 | 29.60 |
| 2 | *2412.00 | 112.4 PK | | | 1.51 V | 182 | 82.80 | 29.70 |
| 2 | *2412.00 | 104.4 AV | | | 1.51 V | 182 | 74.80 | 29.70 |
| 3 | 4824.00 | 52.0 PK | 74.00 | -22.00 | 1.25 V | 48 | 16.70 | 35.30 |
| 3 | 4824.00 | 37.8 AV | 54.00 | -16.20 | 1.25 V | 48 | 2.60 | 35.30 |
| 4 | 9648.00 | 56.4 PK | 74.00 | -17.60 | 1.40 V | 148 | 12.90 | 43.60 |
| 4 | 9648.00 | 44.1 AV | 54.00 | -9.90 | 1.40 V | 148 | 0.60 | 43.60 |

**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.
5. " * " : Fundamental frequency

| EUT | SonicPoint | MODEL | APL13-02C |
|---|---|---|---|
| MODE | Channel 6 | FREQUENCY RANGE | Above 1000 MHz |
| INPUT POWER (SYSTEM) | 120Vac, 60Hz | DETECTOR FUNCTION | Peak(PK)<br>Average (AV) |
| ENVIRONMENTAL CONDITIONS | 30deg. C, 60%RH, 991 hPa | TESTED BY | Hardaway Lee |

| 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 | *2437.00 | 104.5 PK | | | 1.18 H | 215 | 74.70 | 29.70 |
| 1 | *2437.00 | 97.1 AV | | | 1.18 H | 215 | 67.30 | 29.70 |
| 2 | 4874.00 | 51.0 PK | 74.00 | -23.00 | 2.03 H | 154 | 15.50 | 35.50 |
| 2 | 4874.00 | 36.9 AV | 54.00 | -17.10 | 2.03 H | 154 | 1.40 | 35.50 |

| 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 | *2437.00 | 109.9 PK | | | 2.11 V | 123 | 80.20 | 29.70 |
| 1 | *2437.00 | 102.1 AV | | | 2.11 V | 123 | 72.30 | 29.70 |
| 2 | 4874.00 | 52.9 PK | 74.00 | -21.10 | 1.08 V | 69 | 17.40 | 35.50 |
| 2 | 4874.00 | 38.4 AV | 54.00 | -15.60 | 1.08 V | 69 | 2.90 | 35.50 |
| 3 | 9748.00 | 55.9 PK | 74.00 | -18.10 | 1.71 V | 207 | 12.20 | 43.70 |
| 3 | 9748.00 | 44.7 AV | 54.00 | -9.30 | 1.71 V | 207 | 1.00 | 43.70 |

**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.
5. " * " : Fundamental frequency

| EUT | SonicPoint | MODEL | APL13-02C |
|---|---|---|---|
| MODE | Channel 11 | FREQUENCY RANGE | Above 1000 MHz |
| INPUT POWER (SYSTEM) | 120Vac, 60Hz | DETECTOR FUNCTION | Peak(PK)<br>Average (AV) |
| ENVIRONMENTAL CONDITIONS | 30deg. C, 60%RH, 991 hPa | TESTED BY | Hardaway Lee |

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

| 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 | *2462.00 | 100.9 PK | | | 1.46 H | 125 | 71.10 | 29.80 |
| 1 | *2462.00 | 93.6 AV | | | 1.46 H | 125 | 63.70 | 29.80 |
| 2 | 4924.00 | 52.4 PK | 74.00 | -21.60 | 1.53 H | 125 | 16.70 | 35.70 |
| 2 | 4924.00 | 36.2 AV | 54.00 | -17.80 | 1.53 H | 125 | 0.50 | 35.70 |

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

| 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 | *2462.00 | 109.8 PK | | | 2.05 V | 42 | 80.00 | 29.80 |
| 1 | *2462.00 | 101.5 AV | | | 2.05 V | 42 | 71.70 | 29.80 |
| 2 | 2483.50 | 57.1 PK | 74.00 | -16.90 | 2.05 V | 42 | 27.20 | 29.90 |
| 2 | 2483.50 | 46.2 AV | 54.00 | -7.80 | 2.05 V | 42 | 16.30 | 29.90 |
| 3 | 4924.00 | 51.8 PK | 74.00 | -22.20 | 1.64 V | 25 | 16.10 | 35.70 |
| 4 | 9847.00 | 54.6 PK | 74.00 | -19.40 | 1.22 V | 142 | 10.80 | 43.80 |
| 4 | 9847.00 | 43.8 AV | 54.00 | -10.20 | 1.22 V | 142 | 0.10 | 43.80 |

**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.
5. " * " : Fundamental frequency

**FOR OFDM**

| | | | |
|---|---|---|---|
| **EUT** | SonicPoint | **MODEL** | APL13-02C |
| **MODE** | Channel 1<br>**Normal Mode** | **FREQUENCY RANGE** | Above 1000 MHz |
| **INPUT POWER (SYSTEM)** | 120Vac, 60Hz | **DETECTOR FUNCTION** | Peak(PK)<br>Average (AV) |
| **ENVIRONMENTAL CONDITIONS** | 30deg. C, 60%RH, 991 hPa | **TESTED BY** | Hardaway Lee |

**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 | *2412.00 | 95.1 PK | | | 1.58 H | 165 | 65.40 | 29.70 |
| 1 | *2412.00 | 86.2 AV | | | 1.58 H | 165 | 56.50 | 29.70 |
| 2 | 4824.00 | 45.3 PK | 74.00 | -28.70 | 1.17 H | 133 | 10.00 | 35.30 |

**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 | 2390.00 | 60.1 PK | 74.00 | -13.90 | 1.59 V | 33 | 30.50 | 29.60 |
| 1 | 2390.00 | 49.9 AV | 54.00 | -4.10 | 1.59 V | 33 | 20.30 | 29.60 |
| 2 | *2412.00 | 108.8 PK | | | 1.59 V | 33 | 79.10 | 29.70 |
| 2 | *2412.00 | 98.6 AV | | | 1.59 V | 33 | 68.90 | 29.70 |
| 3 | 4824.00 | 46.4 PK | 74.00 | -27.60 | 1.60 V | 133 | 11.20 | 35.30 |

**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.
5. " * " : Fundamental frequency

| | | | |
|---|---|---|---|
| **EUT** | SonicPoint | **MODEL** | APL13-02C |
| **MODE** | Channel 6<br>**Normal Mode** | **FREQUENCY RANGE** | Above 1000 MHz |
| **INPUT POWER (SYSTEM)** | 120Vac, 60Hz | **DETECTOR FUNCTION** | Peak(PK)<br>Average (AV) |
| **ENVIRONMENTAL CONDITIONS** | 30deg. C, 60%RH, 991 hPa | **TESTED BY** | Hardaway Lee |

**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 | *2437.00 | 94.6 PK | | | 1.24 H | 44 | 64.90 | 29.70 |
| 1 | *2437.00 | 85.9 AV | | | 1.24 H | 44 | 56.20 | 29.70 |
| 2 | 4874.00 | 45.6 PK | 74.00 | -28.40 | 1.64 H | 239 | 10.10 | 35.50 |

**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 | *2437.00 | 107.6 PK | | | 1.15 V | 233 | 77.90 | 29.70 |
| 1 | *2437.00 | 96.2 AV | | | 1.15 V | 233 | 66.50 | 29.70 |
| 2 | 4874.00 | 46.9 PK | 74.00 | -27.10 | 1.64 V | 39 | 11.40 | 35.50 |

**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.
5. " * " : Fundamental frequency

| | | | |
|---|---|---|---|
| **EUT** | SonicPoint | **MODEL** | APL13-02C |
| **MODE** | Channel 11<br>**Normal Mode** | **FREQUENCY RANGE** | Above 1000 MHz |
| **INPUT POWER (SYSTEM)** | 120Vac, 60Hz | **DETECTOR FUNCTION** | Peak(PK)<br>Average (AV) |
| **ENVIRONMENTAL CONDITIONS** | 30deg. C, 60%RH, 991 hPa | **TESTED BY** | Hardaway Lee |

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

| 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 | *2462.00 | 93.5 PK | | | 1.87 H | 33 | 63.70 | 29.80 |
| 1 | *2462.00 | 85.6 AV | | | 1.87 H | 33 | 55.80 | 29.80 |
| 2 | 4924.00 | 45.3 PK | 74.00 | -28.70 | 1.16 H | 124 | 9.60 | 35.70 |

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

| 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 | *2462.00 | 106.3 PK | | | 1.73 V | 165 | 76.50 | 29.80 |
| 1 | *2462.00 | 95.0 AV | | | 1.73 V | 165 | 65.20 | 29.80 |
| 2 | 4924.00 | 47.2 PK | 74.00 | -26.80 | 1.16 V | 24 | 11.50 | 35.70 |

**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.
5. " * " : Fundamental frequency

| EUT | SonicPoint | MODEL | APL13-02C |
|---|---|---|---|
| MODE | Channel 6<br>**Turbo Mode** | FREQUENCY RANGE | Above 1000 MHz |
| INPUT POWER (SYSTEM) | 120Vac, 60Hz | DETECTOR FUNCTION | Peak(PK)<br>Average (AV) |
| ENVIRONMENTAL CONDITIONS | 30deg. C, 60%RH, 991 hPa | TESTED BY | Hardaway Lee |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3M | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 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 | *2437.00 | 92.20 PK | | | 1.51 H | 182 | 62.40 | 29.70 |
| 1 | *2437.00 | 83.20 AV | | | 1.51 H | 182 | 53.50 | 29.70 |
| 2 | 4872.00 | 44.60 PK | 74.00 | -29.40 | 1.95 H | 33 | 9.10 | 35.50 |

| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3M | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 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 | 2390.00 | 52.40 PK | 74.00 | -21.60 | 1.00 V | 100 | 22.80 | 29.60 |
| 1 | 2390.00 | 39.70 AV | 54.00 | -14.30 | 1.00 V | 100 | 10.10 | 29.60 |
| 2 | *2437.00 | 105.30 PK | | | 1.00 V | 100 | 75.60 | 29.70 |
| 2 | *2437.00 | 92.60 AV | | | 1.00 V | 100 | 62.90 | 29.70 |
| 3 | 2483.50 | 54.30 PK | 74.00 | -19.70 | 1.00 V | 100 | 24.40 | 29.90 |
| 3 | 2483.50 | 41.60 AV | 54.00 | -12.40 | 1.00 V | 100 | 11.70 | 29.90 |
| 4 | 4872.00 | 45.70 PK | 74.00 | -28.30 | 1.42 V | 242 | 10.30 | 35.50 |

**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.
5. " * " : Fundamental frequency

## 4.3 6dB BANDWIDTH MEASUREMENT

### 4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

### 4.3.2 TEST INSTRUMENTS

| Description & Manufacturer | Model No. | Serial No. | Calibrated Until |
|---|---|---|---|
| SPECTRUM ANALYZER | FSEK30 | 100049 | Aug. 12, 2004 |

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

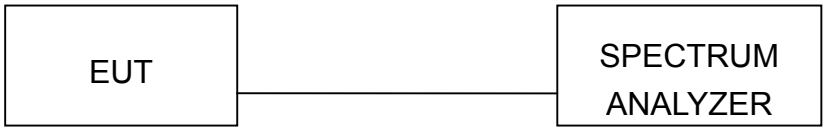
### 4.3.3 TEST PROCEDURE

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 6 dB.

### 4.3.4 DEVIATION FROM TEST STANDARD

No deviation

### 4.3.5 TEST SETUP




### 4.3.6 EUT OPERATING CONDITIONS

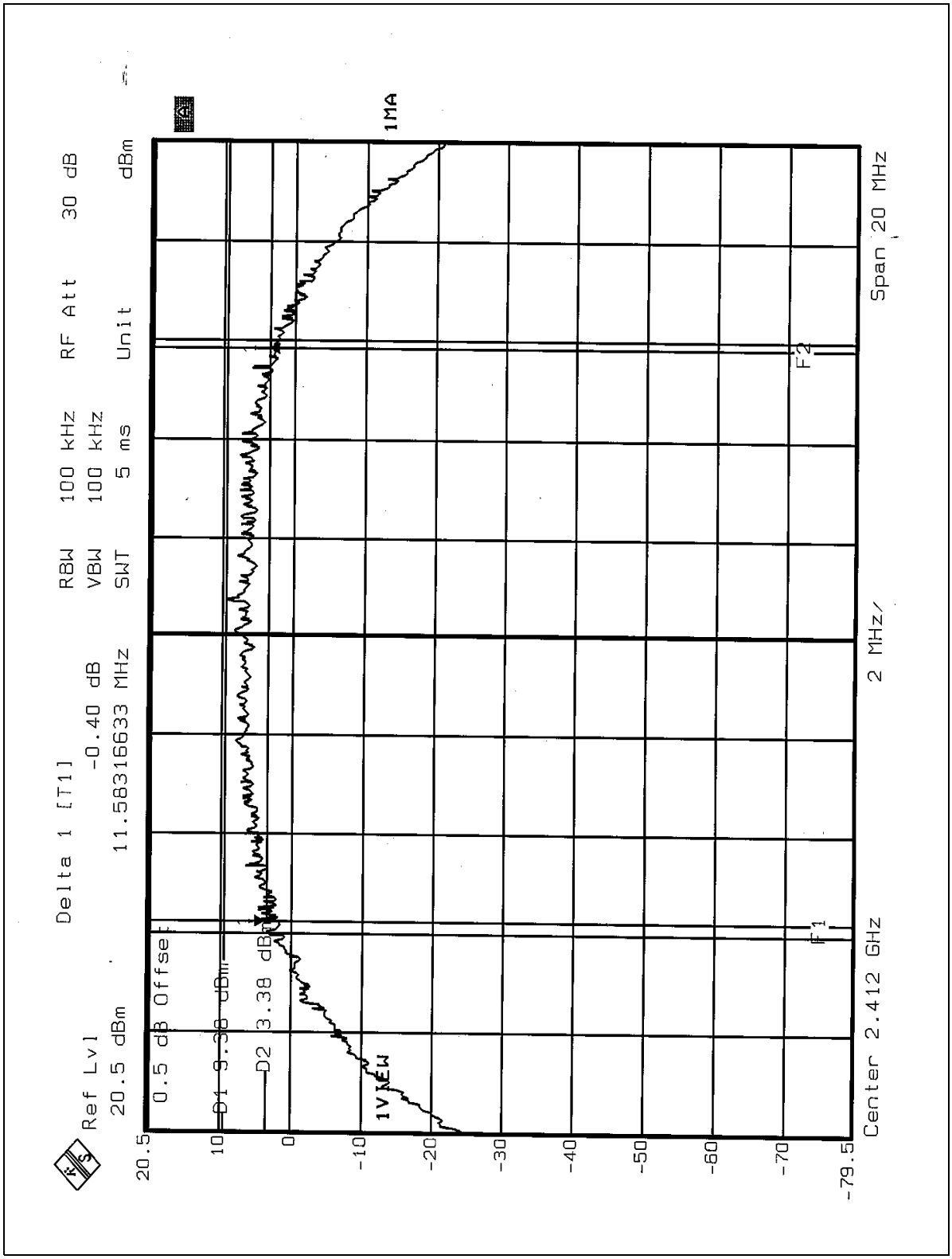
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

## 4.3.7 TEST RESULTS

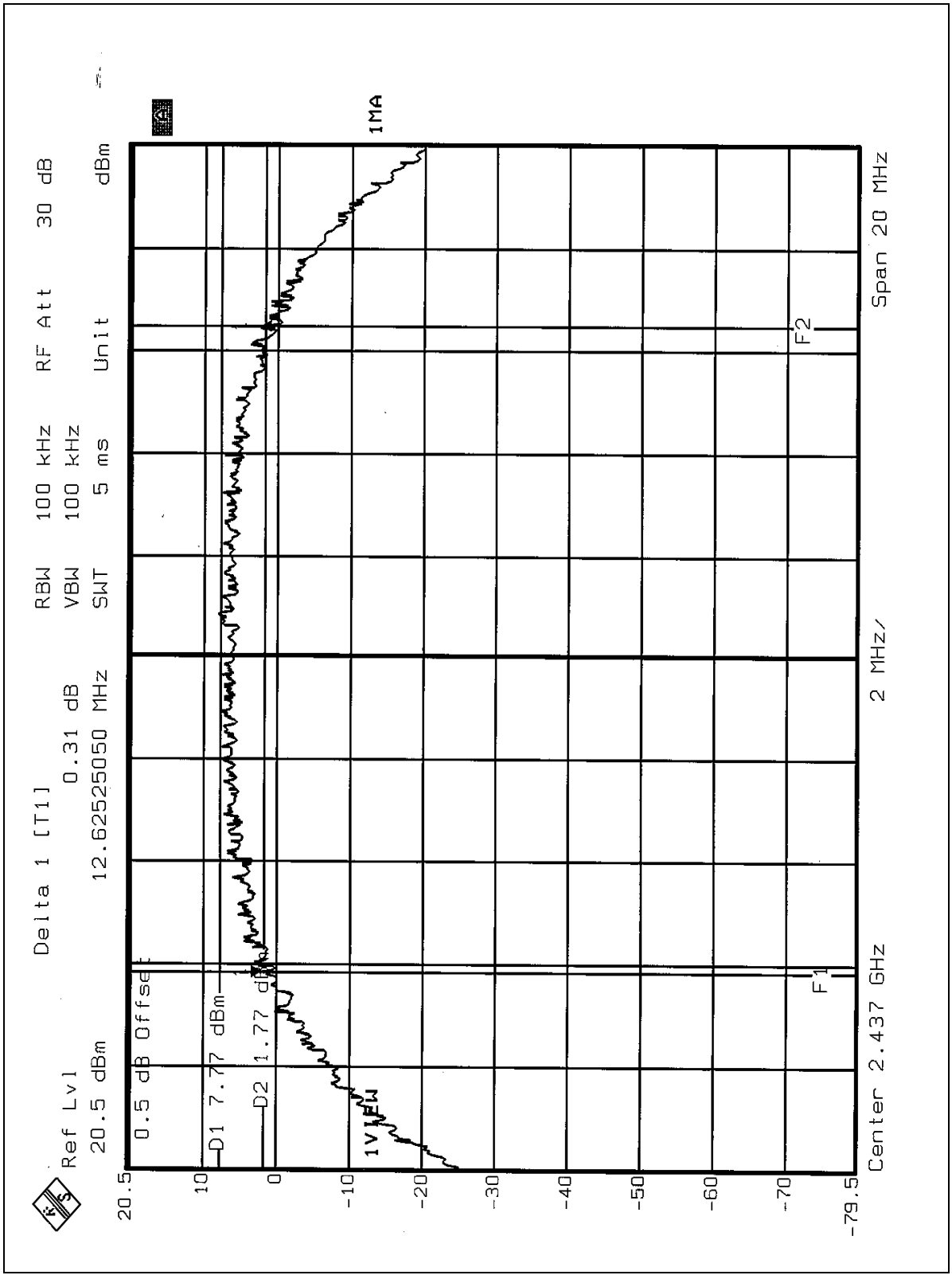
| EUT | SonicPoint | MODEL | APL13-02C |
|---|---|---|---|
| INPUT POWER (SYSTEM) | 120Vac, 60Hz | ENVIRONMENTAL CONDITIONS | 26deg. C, 63%RH, 991 hPa |
| TEST MODE | CCK | TESTED BY | Ansen Lei |

| CHANNEL | CHANNEL FREQUENCY (MHz) | 6dB BANDWIDTH (MHz) | MINIMUM LIMIT (MHz) | PASS/FAIL |
|---|---|---|---|---|
| 1 | 2412 | 11.58 | 0.5 | PASS |
| 6 | 2437 | 12.63 | 0.5 | PASS |
| 11 | 2462 | 11.46 | 0.5 | PASS |

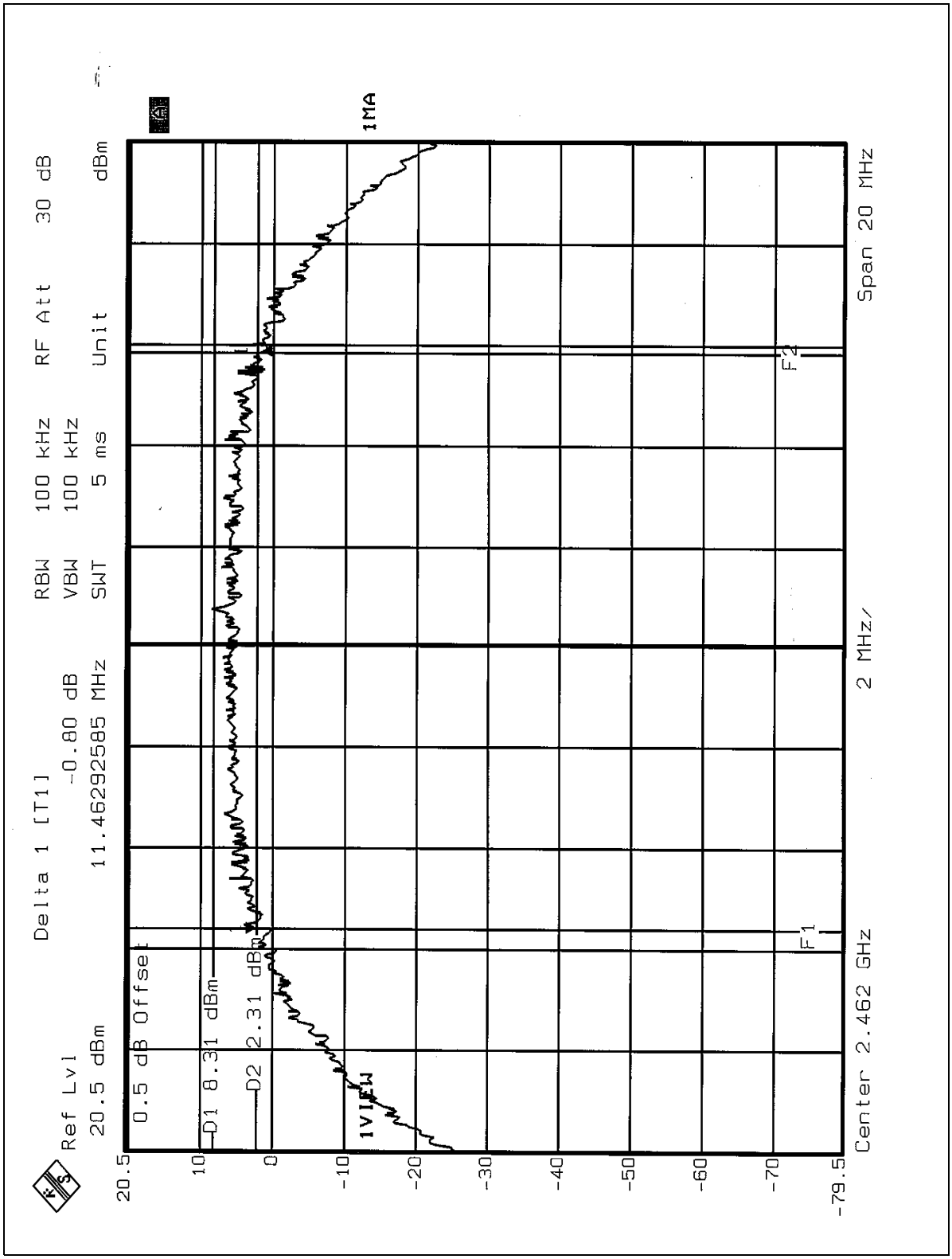
CH1


Ref Lvl
20.5 dBm
0.5 dB Offset
D1 3.38 dBm
D2 3.38 dB
Delta 1 [T1]
-0.40 dB
11.58316633 MHz
RBW 100 kHz
VBW 100 kHz
SWT 5 ms
RF Att 30 dB
Unit dBm
1MA
1VIEW
F1
F2
Center 2.412 GHz
2 MHz/
Span 20 MHz
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5

CH6


Delta 1 [T1]
0.31 dB
12.6252050 MHz
RBW 100 kHz
VBW 100 kHz
SWT 5 ms
RF Att 30 dB
Unit dBm
Ref Lvl
20.5 dBm
0.5 dB Offset
D1 7.77 dBm
D2 1.77 dB
1MA
1VIEW
F1
F2
Center 2.437 GHz
2 MHz/
Span 20 MHz
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5

CH11

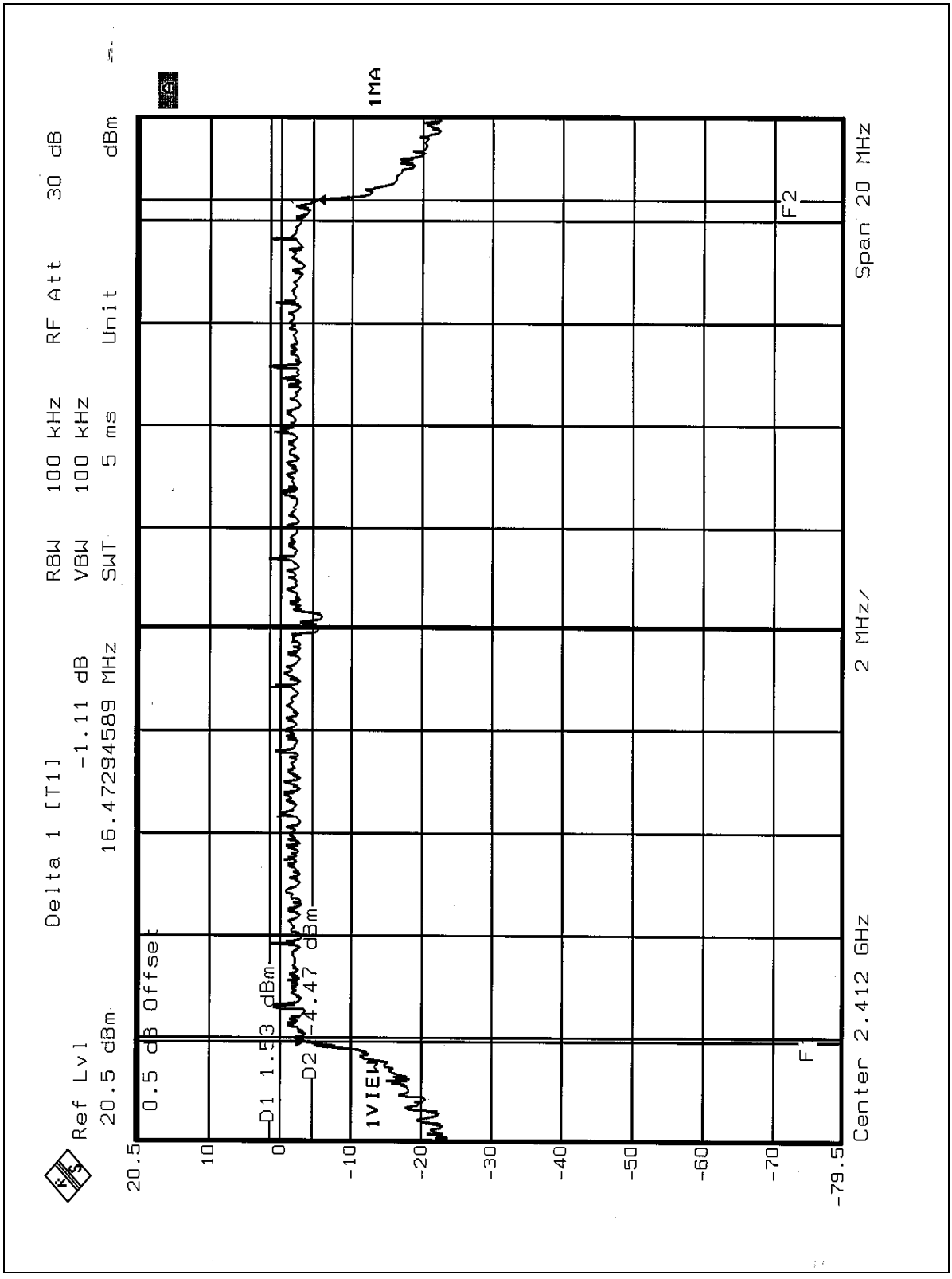

Ref Lvl
20.5 dBm
0.5 dB Offset
D1 8.31 dBm
D2 2.31 dB
Delta 1 [T1]
-0.80 dB
11.46292585 MHz
RBW 100 kHz
VBW 100 kHz
SWT 5 ms
RF Att 30 dB
Unit dBm
1MA
1VIEW
F1
F2
Center 2.462 GHz
2 MHz/
Span 20 MHz
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5

| EUT | SonicPoint | MODEL | APL13-02C |
|---|---|---|---|
| INPUT POWER (SYSTEM) | 120Vac, 60Hz | ENVIRONMENTAL CONDITIONS | 26deg. C, 63%RH, 991 hPa |
| TEST MODE | OFDM | TESTED BY | Ansen Lei |

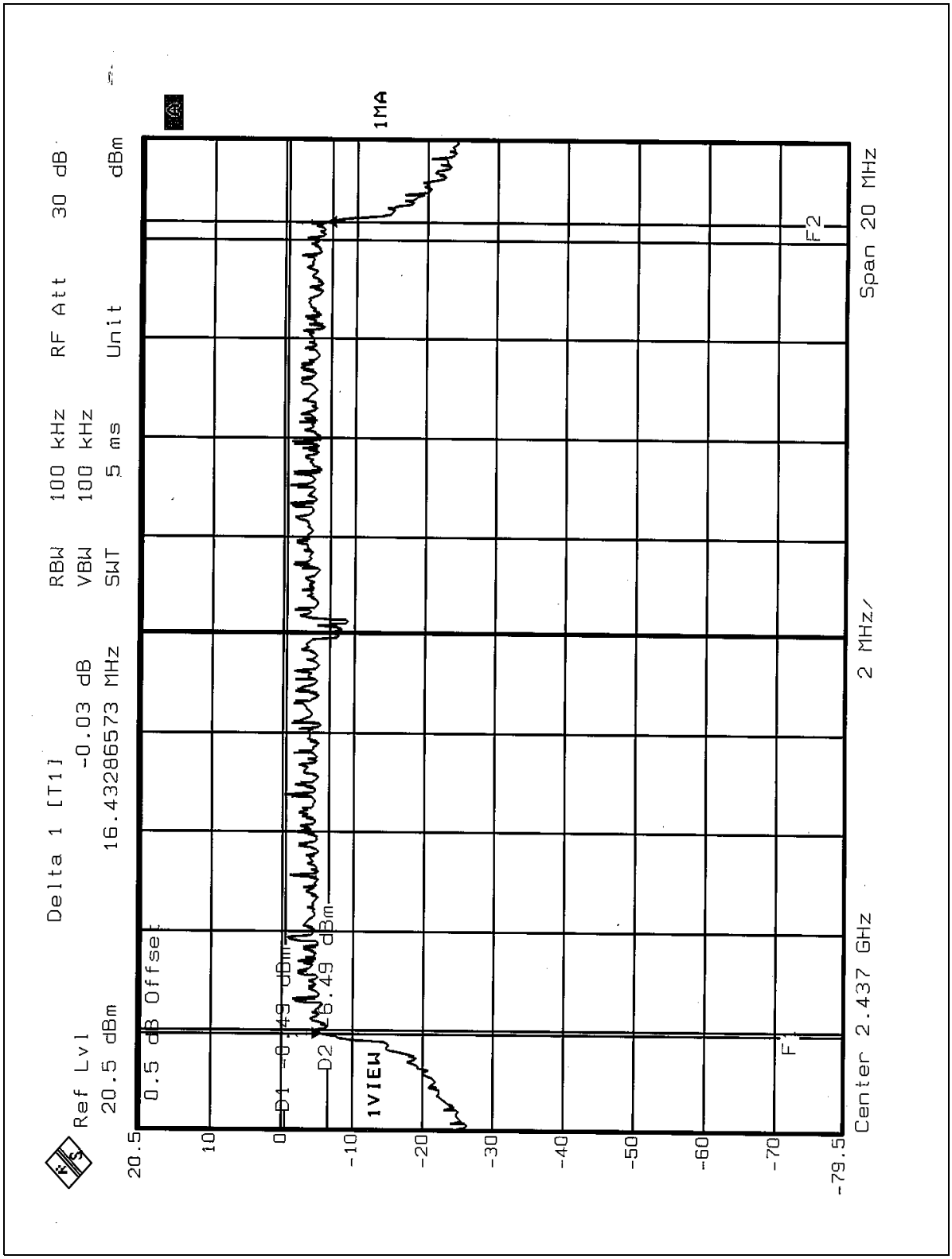
| CHANNEL | CHANNEL FREQUENCY (MHz) | 6dB BANDWIDTH (MHz) | MINIMUM LIMIT (MHz) | PASS/FAIL |
|---|---|---|---|---|
| 1 | 2412 | 16.47 | 0.5 | PASS |
| 6 | 2437 | 16.43 | 0.5 | PASS |
| 11 | 2462 | 16.35 | 0.5 | PASS |
| 6 (Turbo) | 2437 | 31.52 | 0.5 | PASS |

## Normal Mode

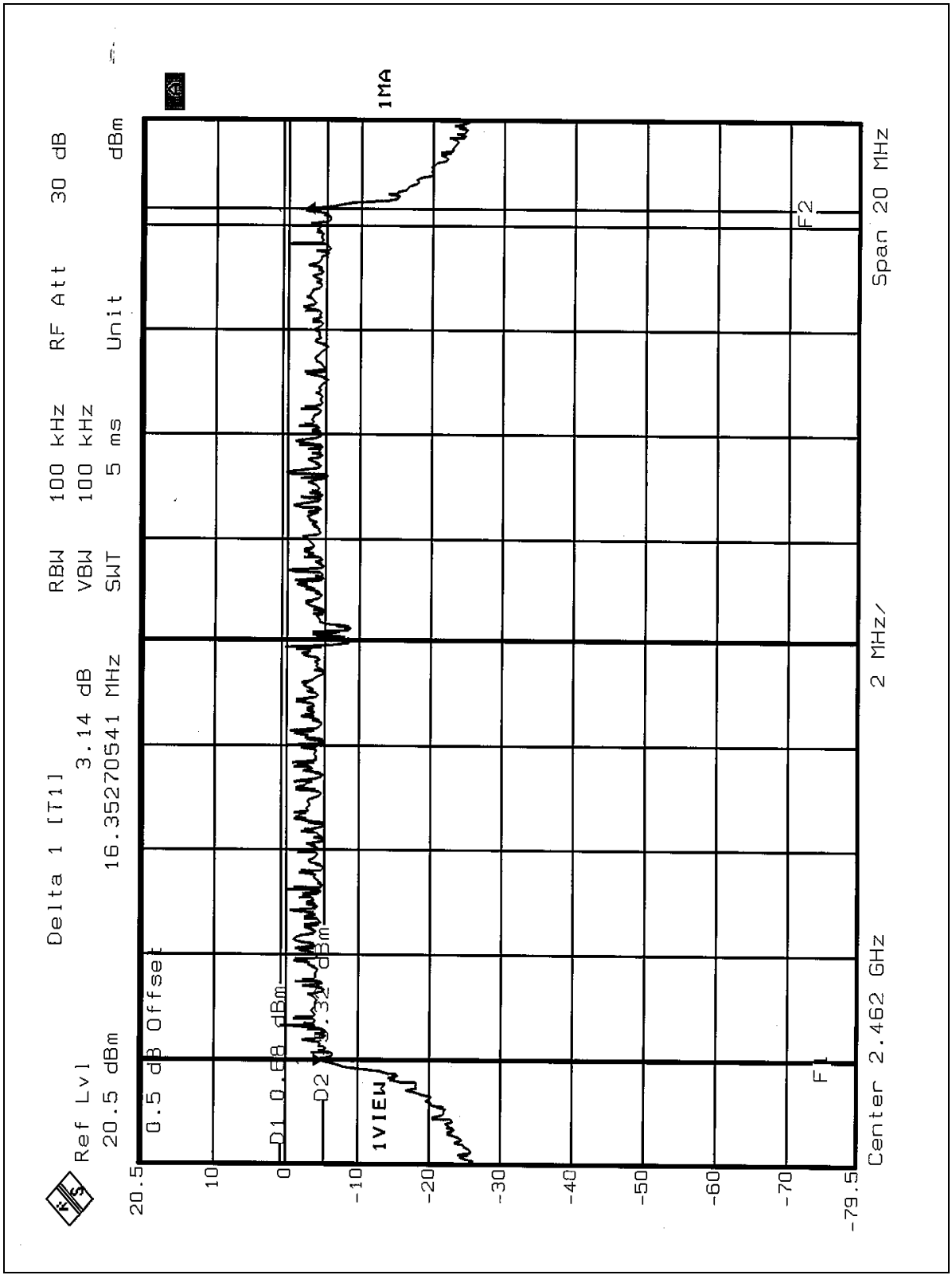
CH1



CH6

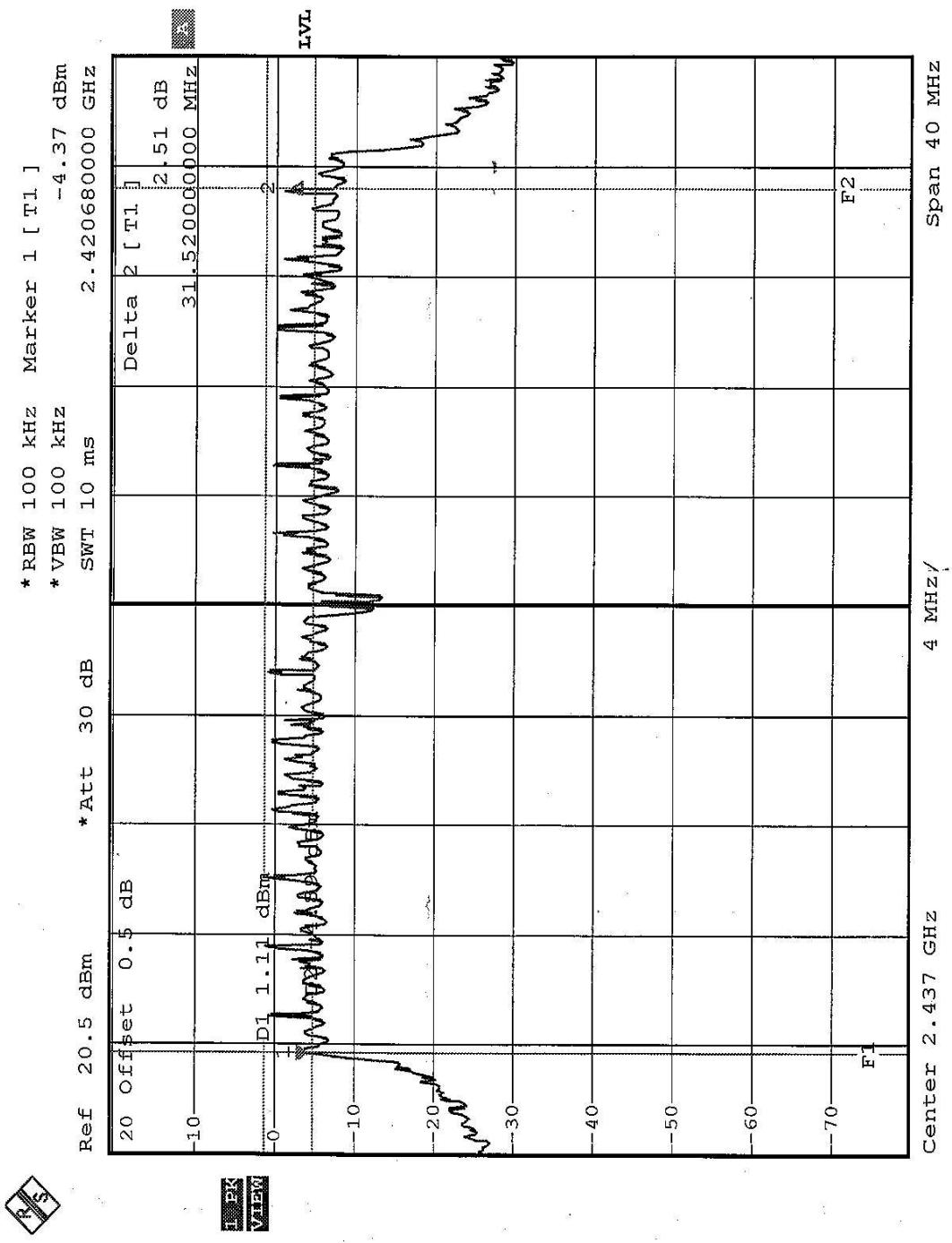

Delta 1 [T1]
-0.03 dB
16.43286573 MHz
RBW 100 kHz
VBW 100 kHz
SWT 5 ms
RF Att 30 dB
Unit dBm
Ref Lvl
20.5 dBm
0.5 dB Offset
D1 -0.49 dBm
D2 -8.49 dBm
1VIEW
1MA
F1
F2
Center 2.437 GHz
2 MHz/
Span 20 MHz
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5

CH11


Ref Lvl
20.5 dBm
0.5 dB Offset
Delta 1 [T1]
3.14 dB
16.35270541 MHz
RBW 100 kHz
VBW 100 kHz
SWT 5 ms
RF Att 30 dB
Unit dBm
1MA
1VIEW
D1 0.68 dBm
D2 3.32 dBm
F1
F2
Center 2.462 GHz
2 MHz/
Span 20 MHz
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5

## Turbo Mode

CH6



## 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 INSTRUMENTS

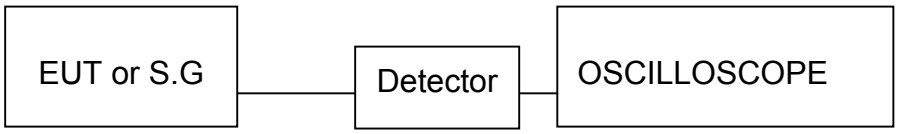
| Description & Manufacturer | Model No. | Serial No. | Calibrated Until |
|---|---|---|---|
| R&S SPECTRUM ANALYZER | FSEK30 | 100049 | Aug. 12, 2004 |
| R&S SIGNAL GENERATOR | SMP04 | 100011 | May 28, 2004 |
| TEKTRONIX OSCILLOSCOPE | TDS 1012 | C019167 | Feb. 01, 2005 |
| NARDA DETECTOR | 4503A | 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 TEST SETUP




### 4.4.5 EUT OPERATING CONDITIONS

Same as Item 4.3.6

## 4.4.6 TEST RESULTS

| EUT | SonicPoint | MODEL | APL13-02C |
|---|---|---|---|
| INPUT POWER (SYSTEM) | 120Vac, 60Hz | ENVIRONMENTAL CONDITIONS | 26deg. C, 63%RH, 991 hPa |
| TEST MODE | CCK | TESTED BY | Ansen Lei |

| CHANNEL | CHANNEL FREQUENCY (MHz) | PEAK POWER OUTPUT (dBm) | PEAK POWER LIMIT (dBm) | PASS/FAIL |
|---|---|---|---|---|
| 1 | 2412 | 19.89 | 30 | PASS |
| 6 | 2437 | 19.51 | 30 | PASS |
| 11 | 2462 | 19.83 | 30 | PASS |

| EUT | SonicPoint | MODEL | APL13-02C |
|---|---|---|---|
| INPUT POWER (SYSTEM) | 120Vac, 60Hz | ENVIRONMENTAL CONDITIONS | 26deg. C, 63%RH, 991 hPa |
| TEST MODE | OFDM | TESTED BY | Ansen Lei |

| CHANNEL | CHANNEL FREQUENCY (MHz) | PEAK POWER OUTPUT (dBm) | PEAK POWER LIMIT (dBm) | PASS/FAIL |
|---|---|---|---|---|
| 1 | 2412 | 19.86 | 30 | PASS |
| 6 | 2437 | 19.12 | 30 | PASS |
| 11 | 2462 | 19.01 | 30 | PASS |
| 6 (Turbo) | 2437 | 17.36 | 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, 2004 |

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

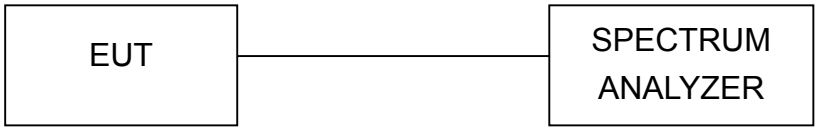
### 4.5.3 TEST PROCEDURE

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/3 kHz. The power spectral density was measured and recorded.
The sweep time is allowed to be longer than span/3 kHz 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

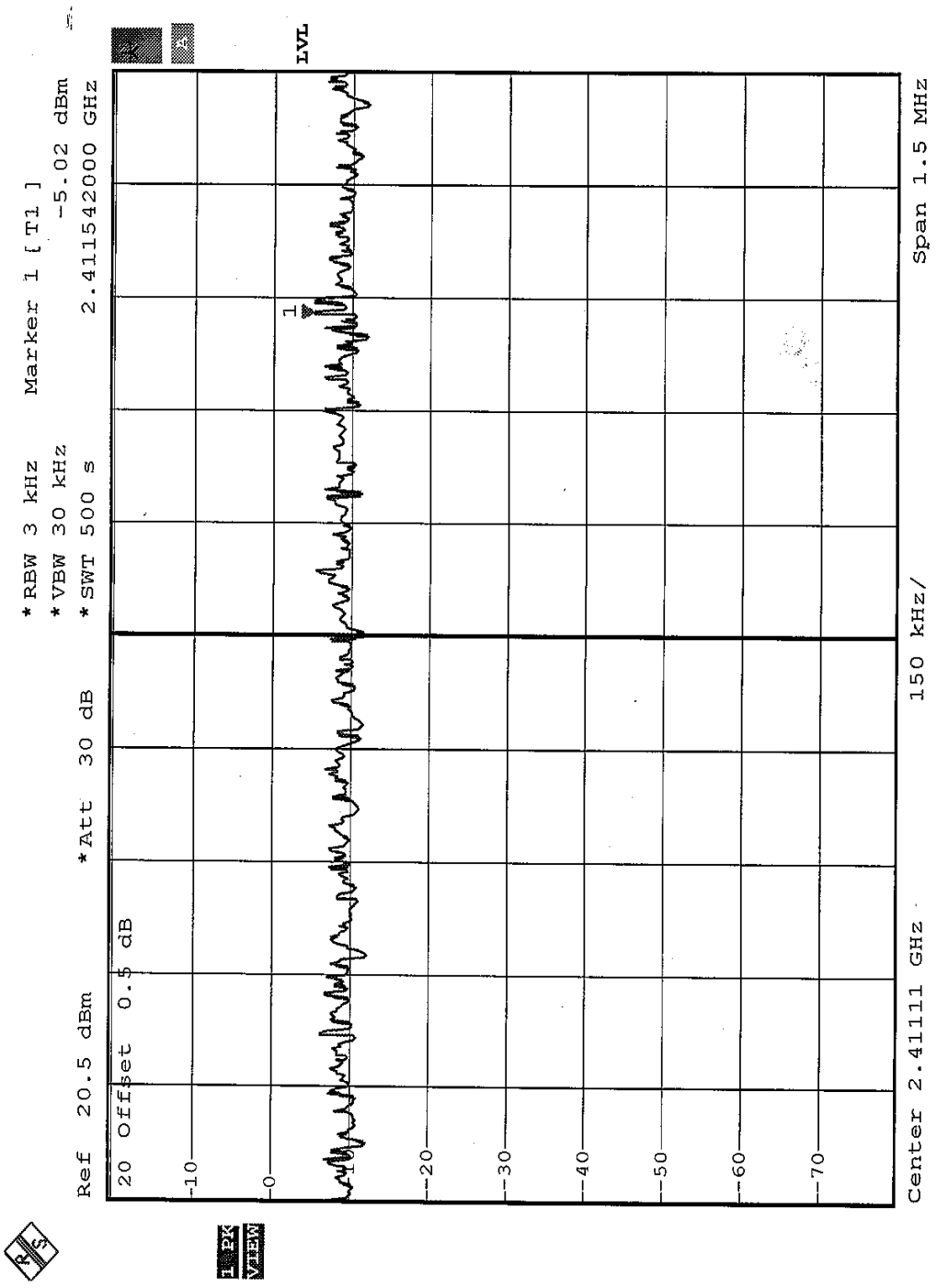
Same as Item 4.3.6

## 4.5.7 TEST RESULTS

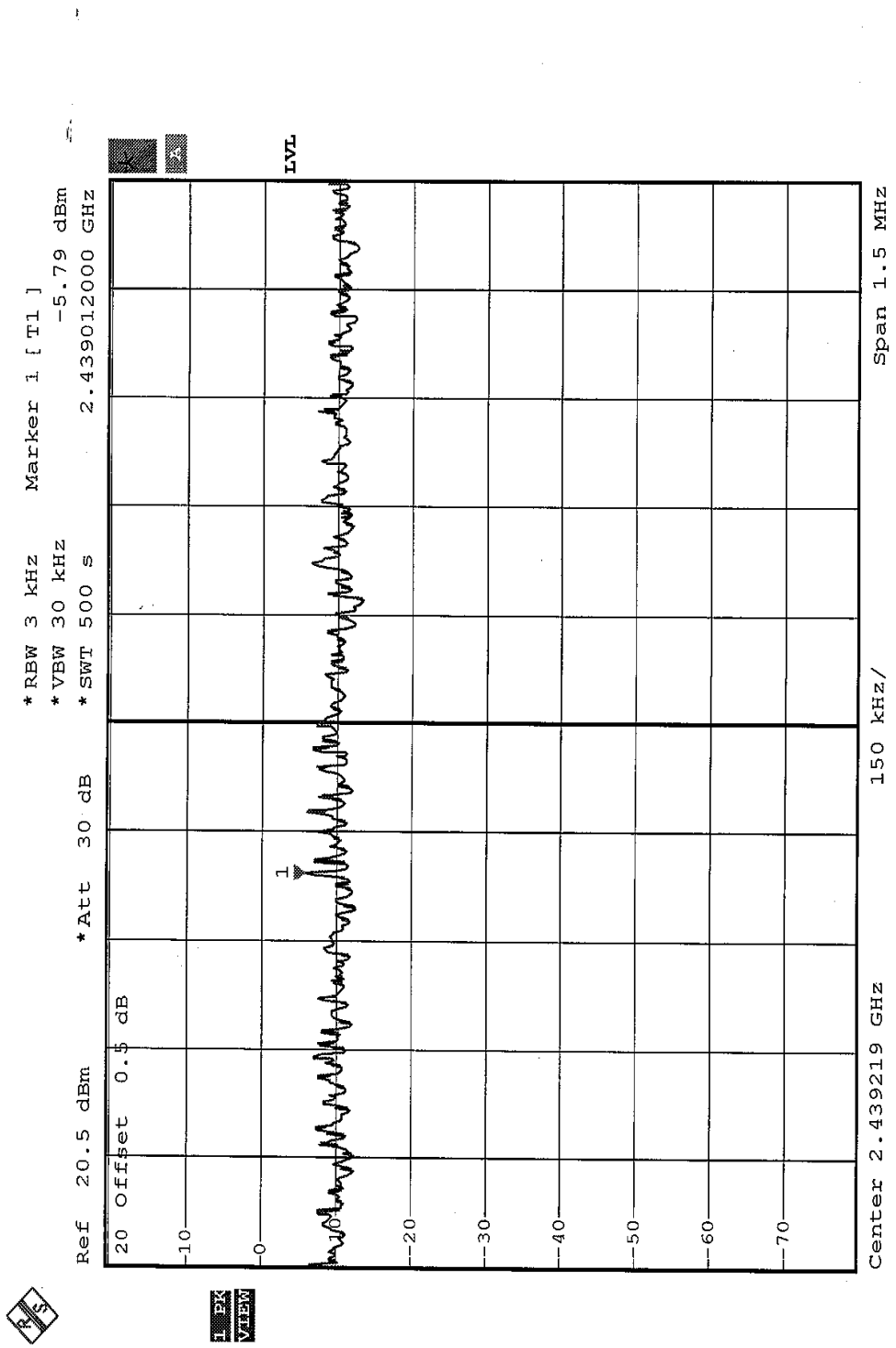
| EUT | SonicPoint | MODEL | APL13-02C |
|---|---|---|---|
| INPUT POWER (SYSTEM) | 120Vac, 60Hz | ENVIRONMENTAL CONDITIONS | 26deg. C, 63%RH, 965 hPa |
| TEST MODE | CCK | TESTED BY | Ansen Lei |

| CHANNEL NUMBER | CHANNEL FREQUENCY (MHz ) | RF POWER LEVEL IN 3 kHz BW (dBm) | MAXIMUM LIMIT (dBm) | PASS/FAIL |
|---|---|---|---|---|
| 1 | 2412 | -5.02 | 8 | PASS |
| 6 | 2437 | -5.79 | 8 | PASS |
| 11 | 2462 | -4.61 | 8 | PASS |

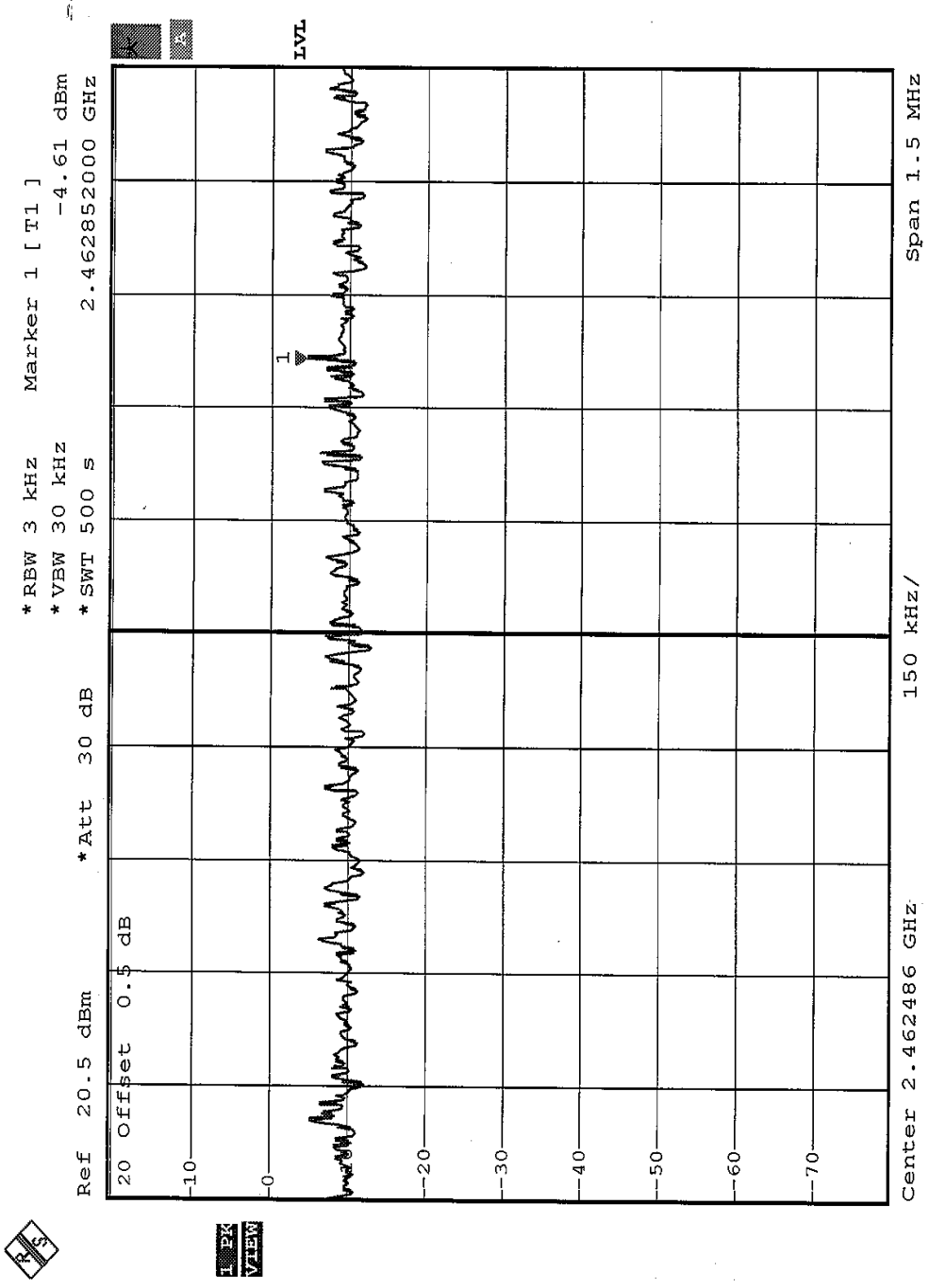
CH1


Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1 ]
-5.02 dBm
2.411542000 GHz
1 PK
MEAS
LVL
Center 2.41111 GHz
150 kHz/
Span 1.5 MHz

CH6


Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1 ]
-5.79 dBm
2.439012000 GHz
1 PK
VIEW
Center 2.439219 GHz
150 kHz/
Span 1.5 MHz

CH11

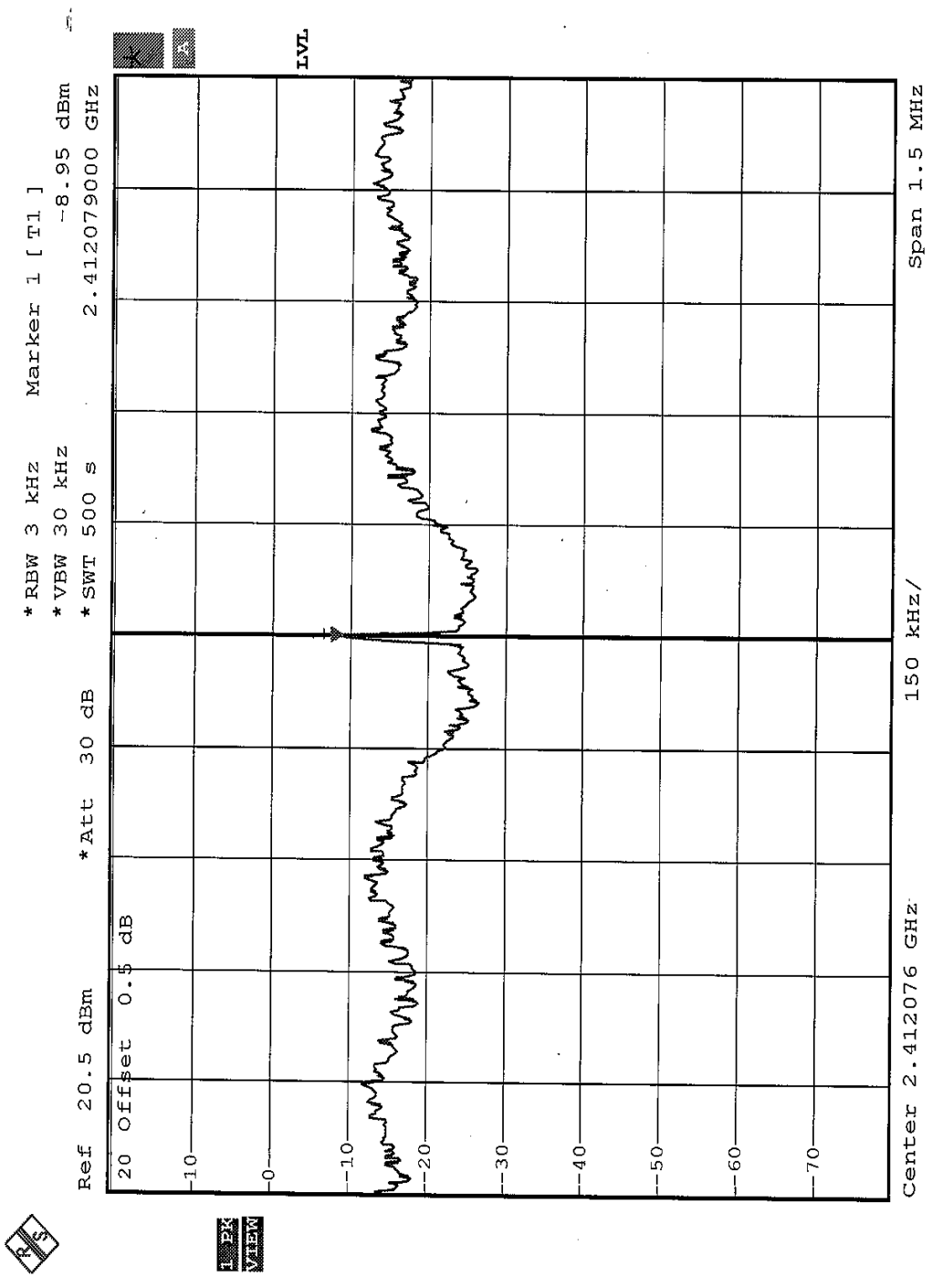

Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1 ]
-4.61 dBm
2.46285200 GHz
LVL
Center 2.462486 GHz
150 kHz/
Span 1.5 MHz
1 PK
VIEW

| EUT | SonicPoint | MODEL | APL13-02C |
|---|---|---|---|
| INPUT POWER (SYSTEM) | 120Vac, 60Hz | ENVIRONMENTAL CONDITIONS | 26deg. C, 63%RH, 991 hPa |
| TEST MODE | OFDM | TESTED BY | Ansen Lei |

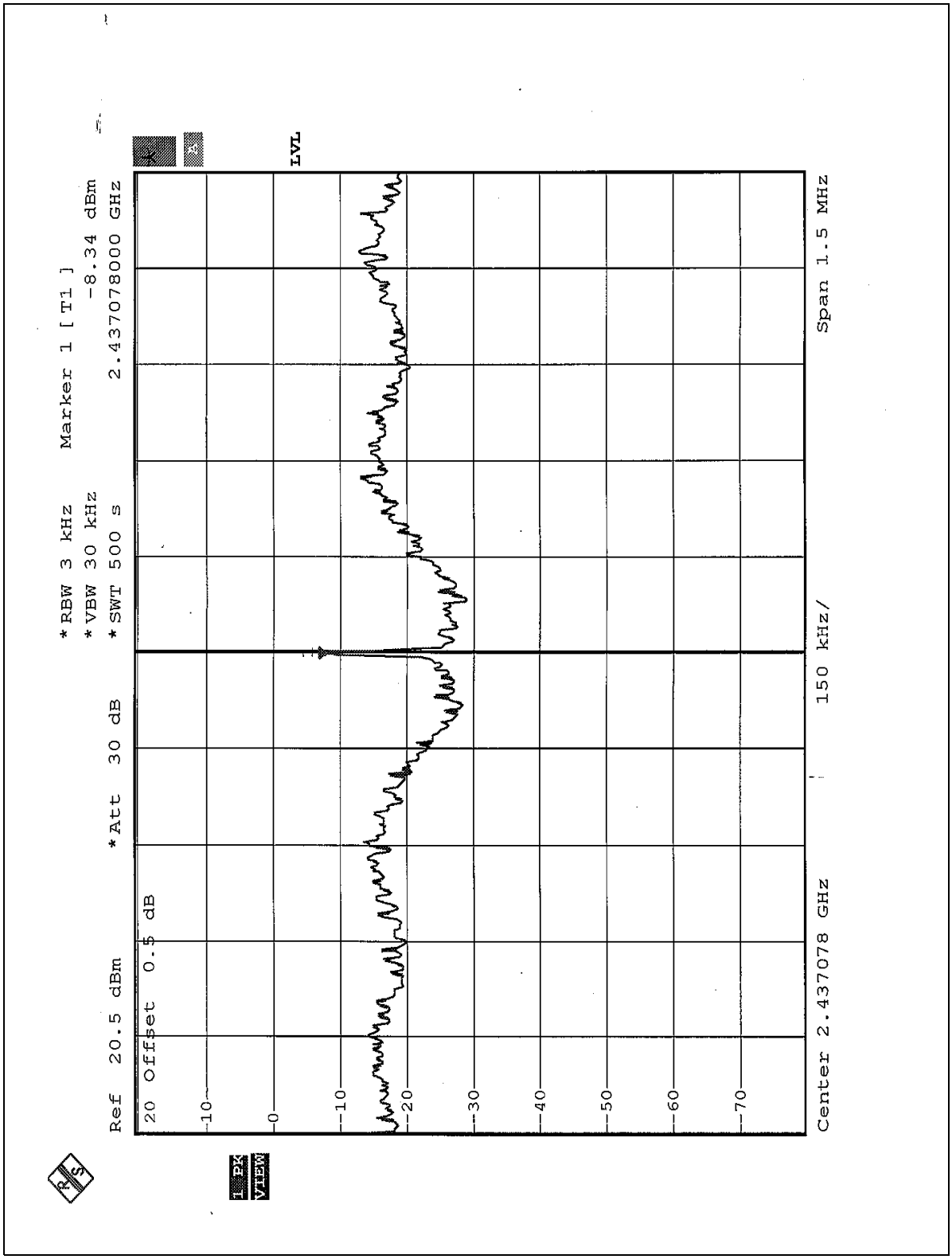
| CHANNEL NUMBER | CHANNEL FREQUENCY (MHz ) | RF POWER LEVEL IN 3 kHz BW (dBm) | MAXIMUM LIMIT (dBm) | PASS/FAIL |
|---|---|---|---|---|
| 1 | 2412 | -8.95 | 8 | PASS |
| 6 | 2437 | -8.34 | 8 | PASS |
| 11 | 2462 | -9.90 | 8 | PASS |
| 6 (Trubo) | 2437 | -10.73 | 8 | PASS |

## Normal Mode

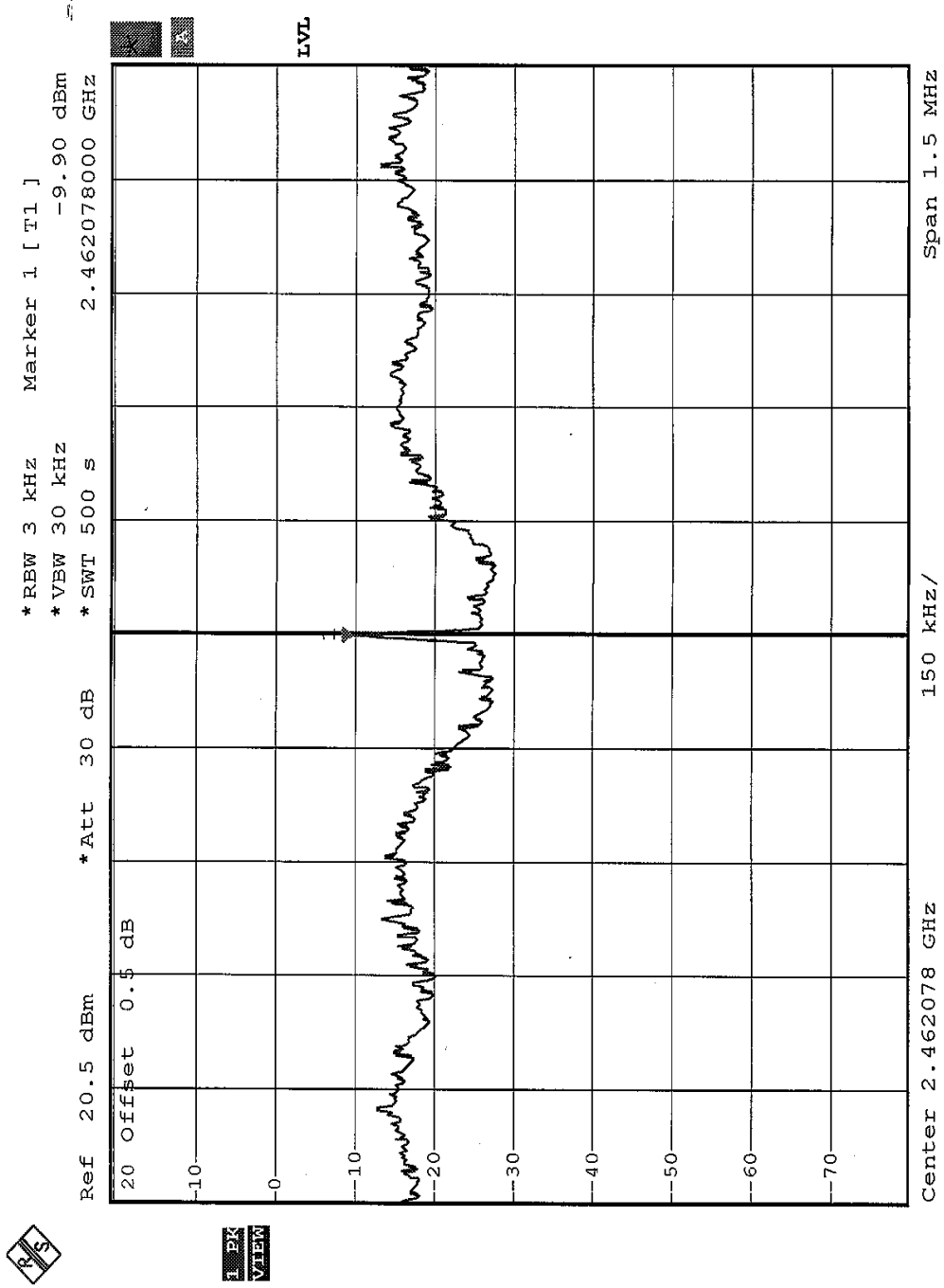
CH1



CH6

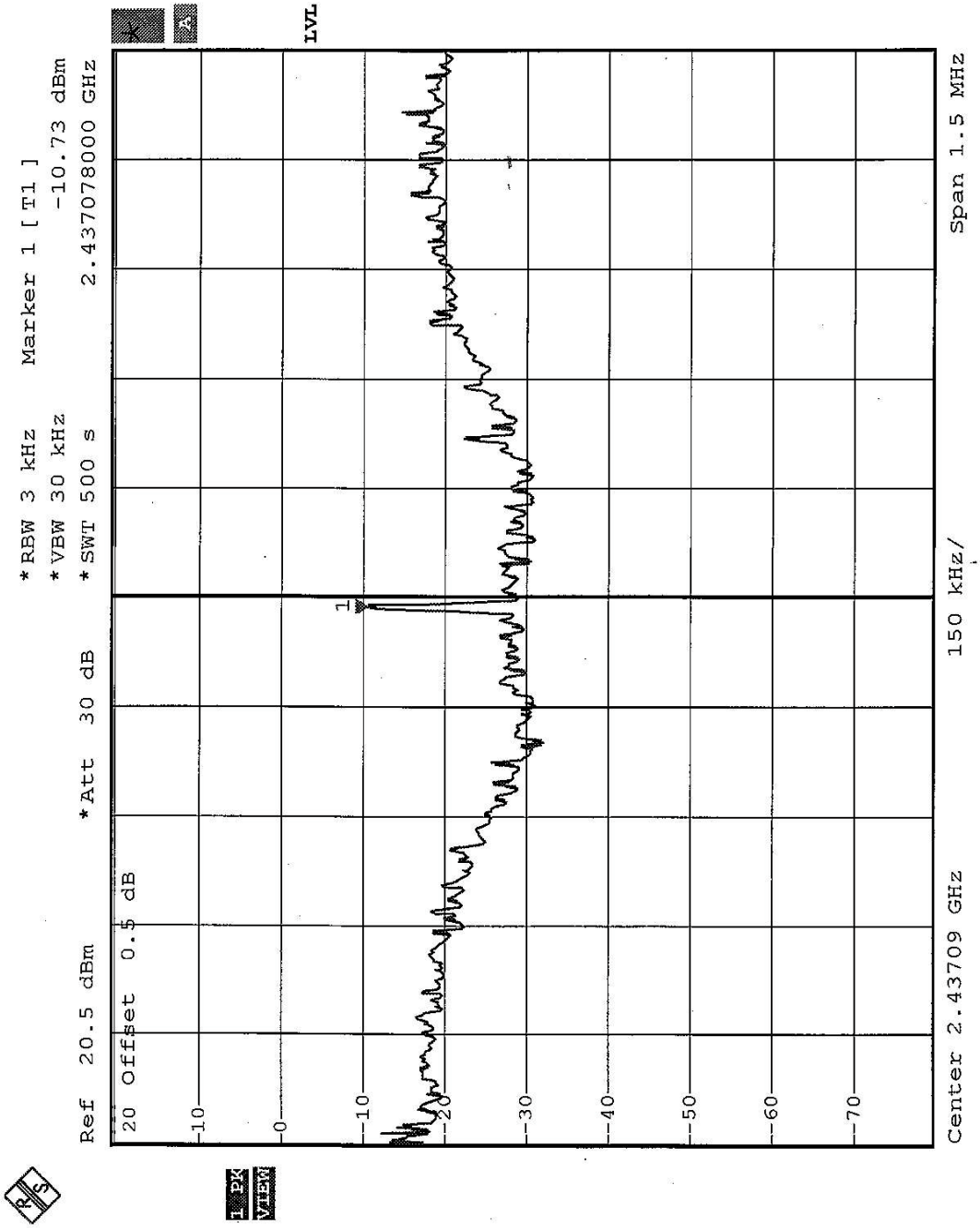

Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1 ]
-8.34 dBm
2.437078000 GHz
Center 2.437078 GHz
150 kHz/
Span 1.5 MHz
1 PK
VIEW

CH11


RBW 3 kHz
VBW 30 kHz
SWT 500 s
Marker 1 [T1 ]
-9.90 dBm
2.462078000 GHz
Ref 20.5 dBm
Offset 0.5 dB
Att 30 dB
LVL
Center 2.462078 GHz
150 kHz/
Span 1.5 MHz
1 PK
VIEW

## Turbo Mode

CH6



## 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, 2004 |

**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 100 kHz with suitable frequency span including 100 MHz bandwidth from band edge. The band edges was 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 8 pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D2. It shows compliance with the requirement in part 15.247(C).

**NOTE1:** The band edge emission plot of CCK technique on the following 67 shows 51.05dB delta between carrier maximum power and local maximum emission in restrict band (2.3891GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 104.4dBuV/m, so the maximum field strength in restrict band is 104.4-51.05=53.35dBuV/m which is under 54dBuV/m limit.

**NOTE2:** The band edge emission plot of CCK technique on the following 69 shows 55.05dB delta between carrier maximum power and local maximum emission in restrict band (2.4867GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 101.5dBuV/m, so the maximum field strength in restrict band is 101.5-55.05=46.45dBuV/m which is under 54dBuV/m limit.

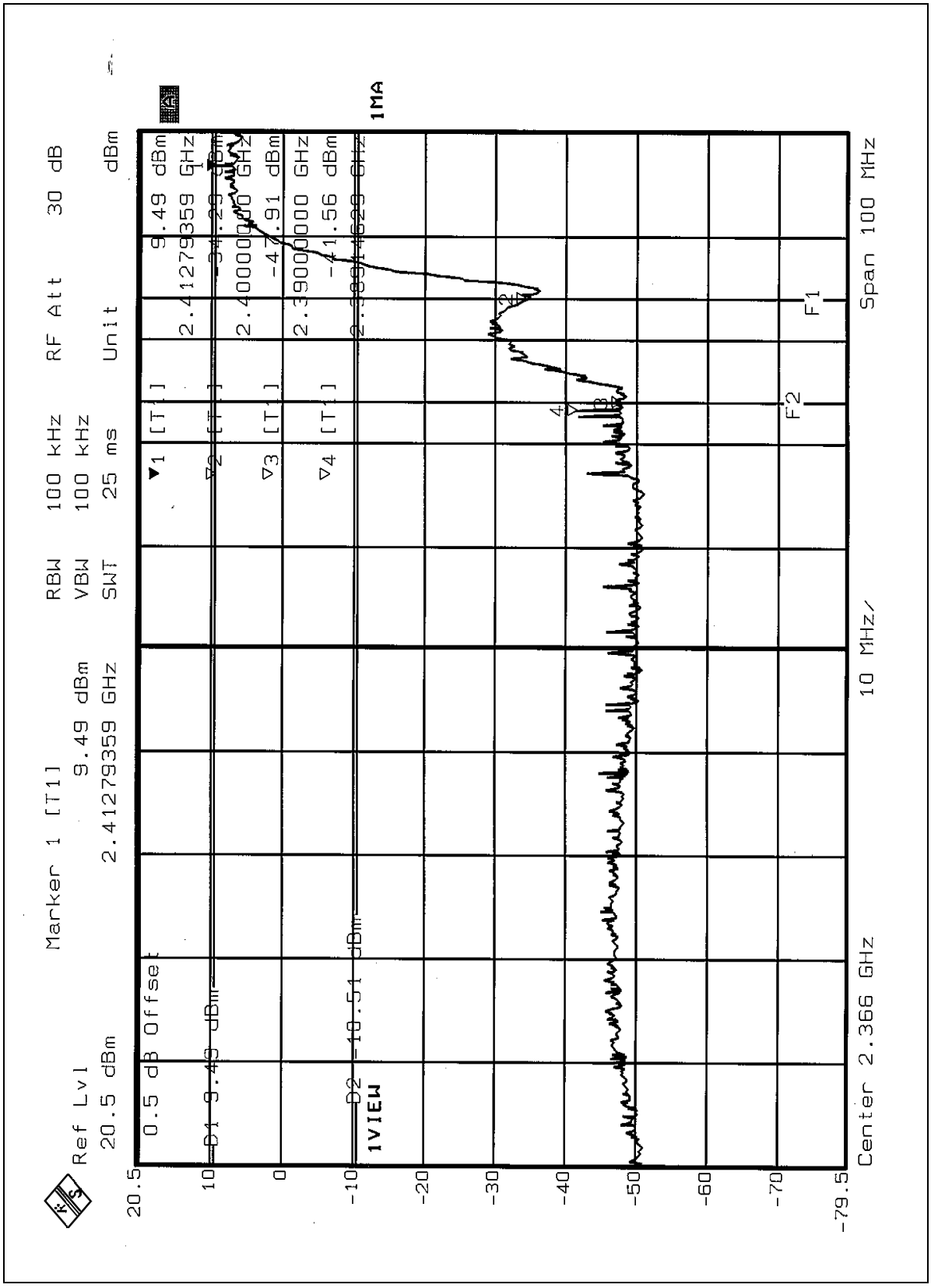
**NOTE3:** The band edge emission plot of OFDM technique on the following 71 shows 44.73dB delta between carrier maximum power and local maximum emission in restrict band (2.3881GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 98.6dBuV/m, so the maximum field strength in restrict band is 98.6-44.73=53.87dBuV/m which is under 54dBuV/m limit.

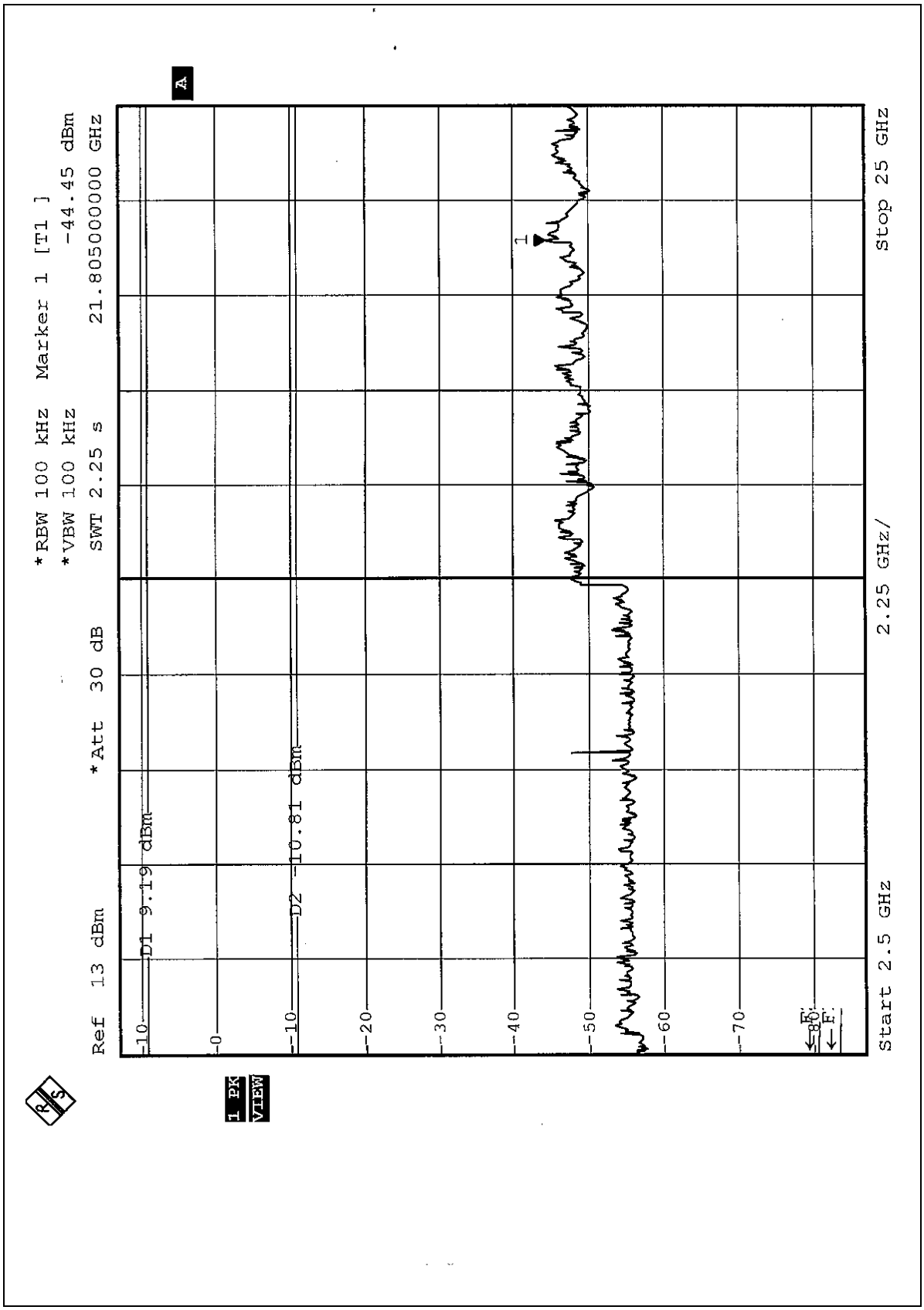
**NOTE4:** The band edge emission plot of OFDM technique on the following 73 shows 44.13dB delta between carrier maximum power and local maximum emission in restrict band (2.4873GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 95.0dBuV/m, so the maximum field strength in restrict band is 95.0-44.73=50.27dBuV/m which is under 54dBuV/m limit.

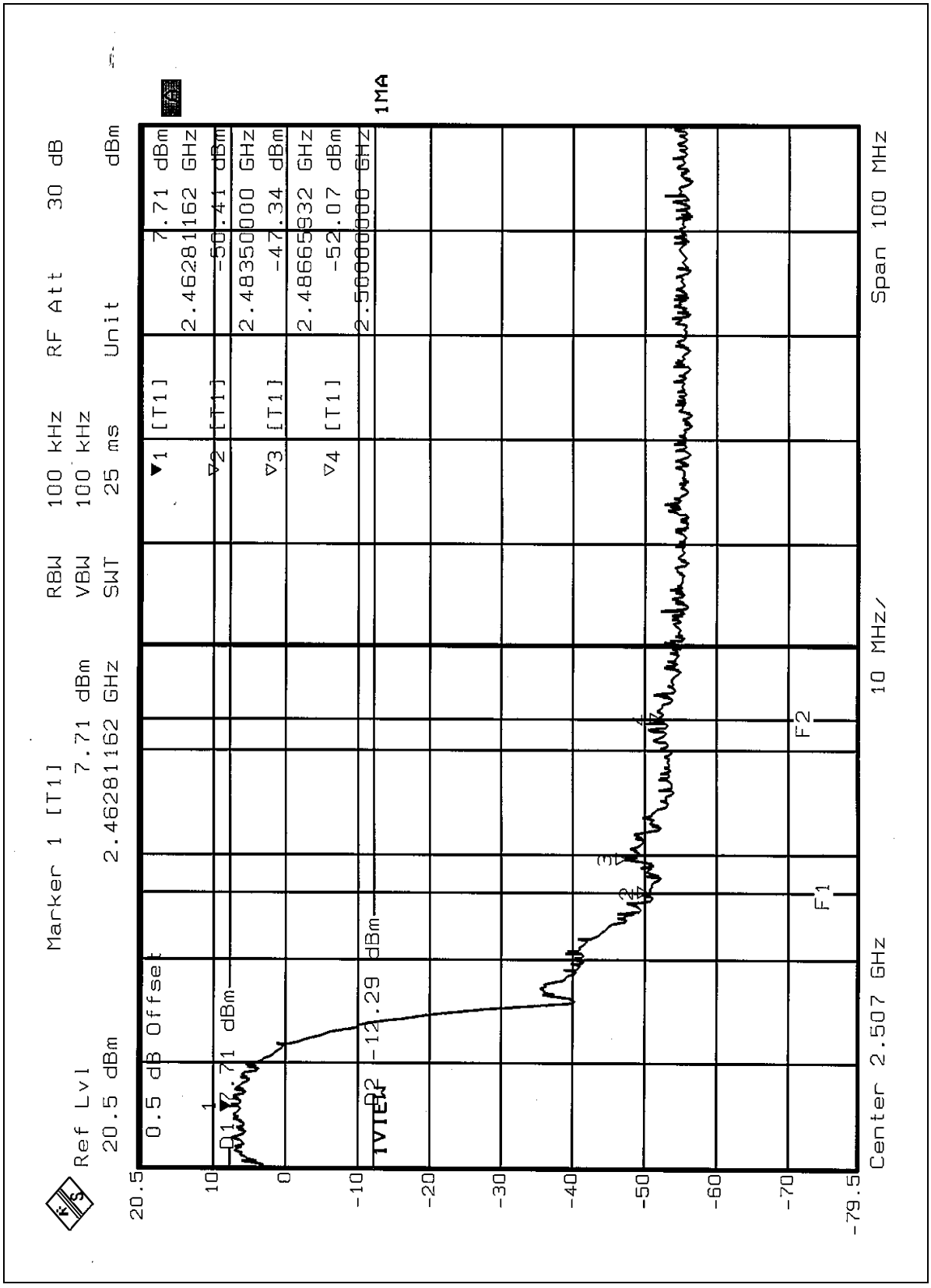
**NOTE 5:** The band edge emission plot of OFDM technique with Turbo mode on page 75 shows 46.96dB delta between carrier maximum power and local maximum emission in restrict band (2.3560GHz). The emission of carrier strength list in the test result of channel 6 at the item 4.2.7 is 83.20dBuV/m, so the maximum field strength in restrict band is 83.20-46.96=36.24dBuV/m which is under 54dBuV/m limit.

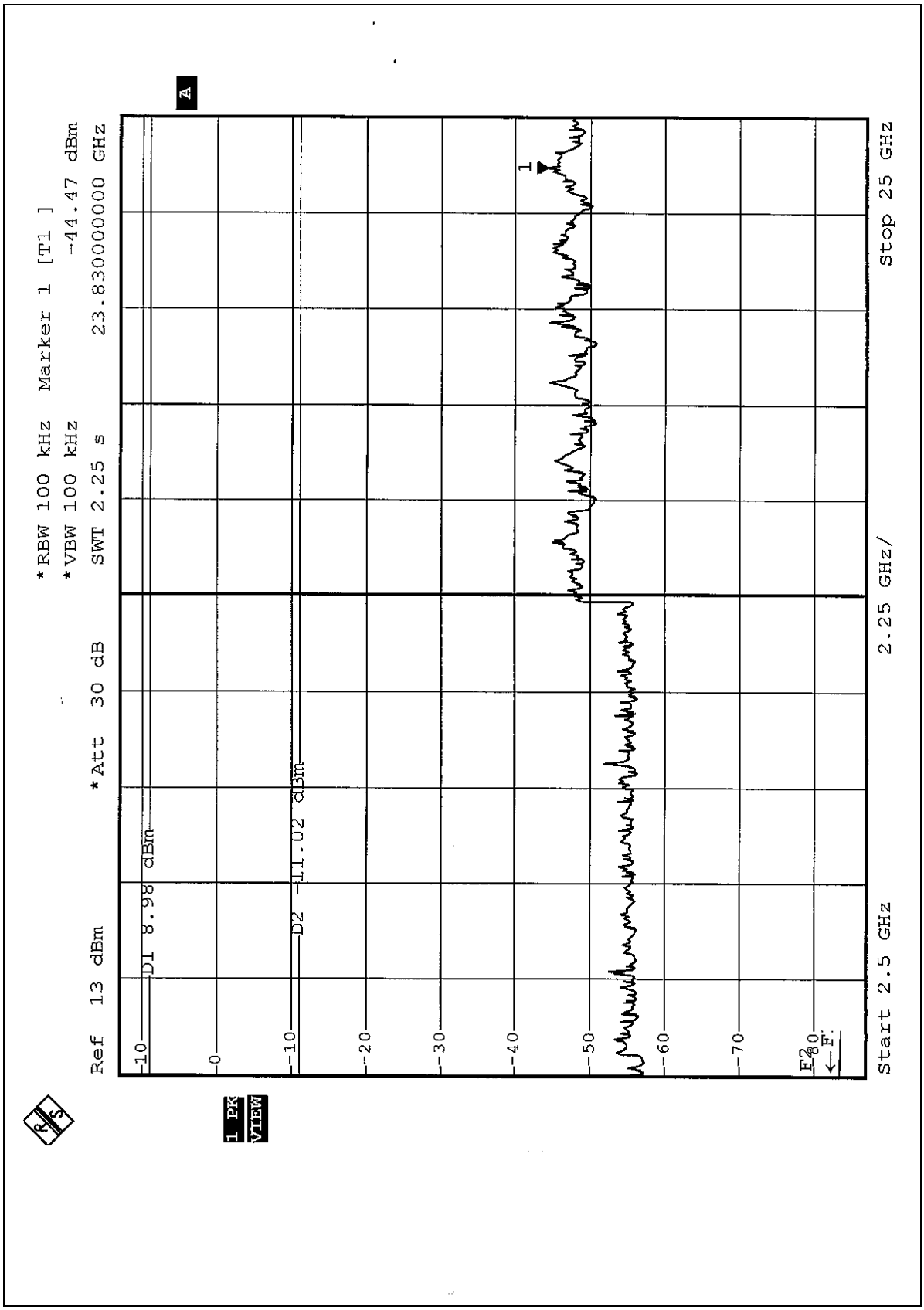
**NOTE 6:** The band edge emission plot of OFDM technique with Turbo mode on page 76 shows 48.03dB delta between carrier maximum power and local maximum emission in restrict band (2.4944GHz). The emission of carrier strength list in the test result of channel 6 at the item 4.2.7 is 92.60dBuV/m, so the maximum field strength in restrict band is 92.60-48.03=44.57dBuV/m which is under 54dBuV/m limit.

## For CCK

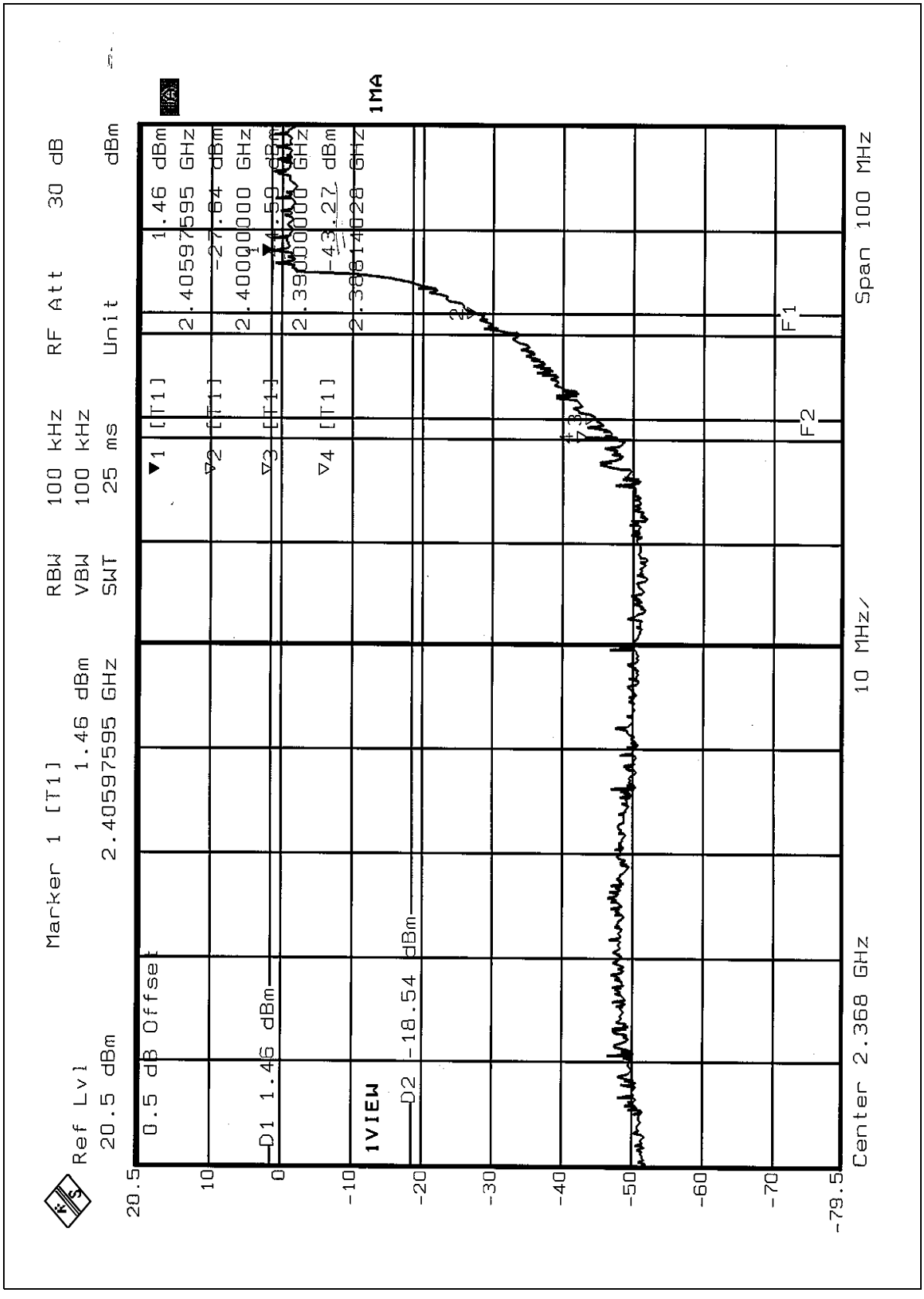

Ref Lvl
20.5 dBm
0.5 dB Offset
D1 9.49 dBm
1VIEW
D2 -10.51 dBm
Marker 1 [T1]
9.49 dBm
2.41279359 GHz
RBW 100 kHz
VBW 100 kHz
SWT 25 ms
RF Att 30 dB
Unit dBm
1MA
Center 2.366 GHz
10 MHz/
Span 100 MHz
F1
F2

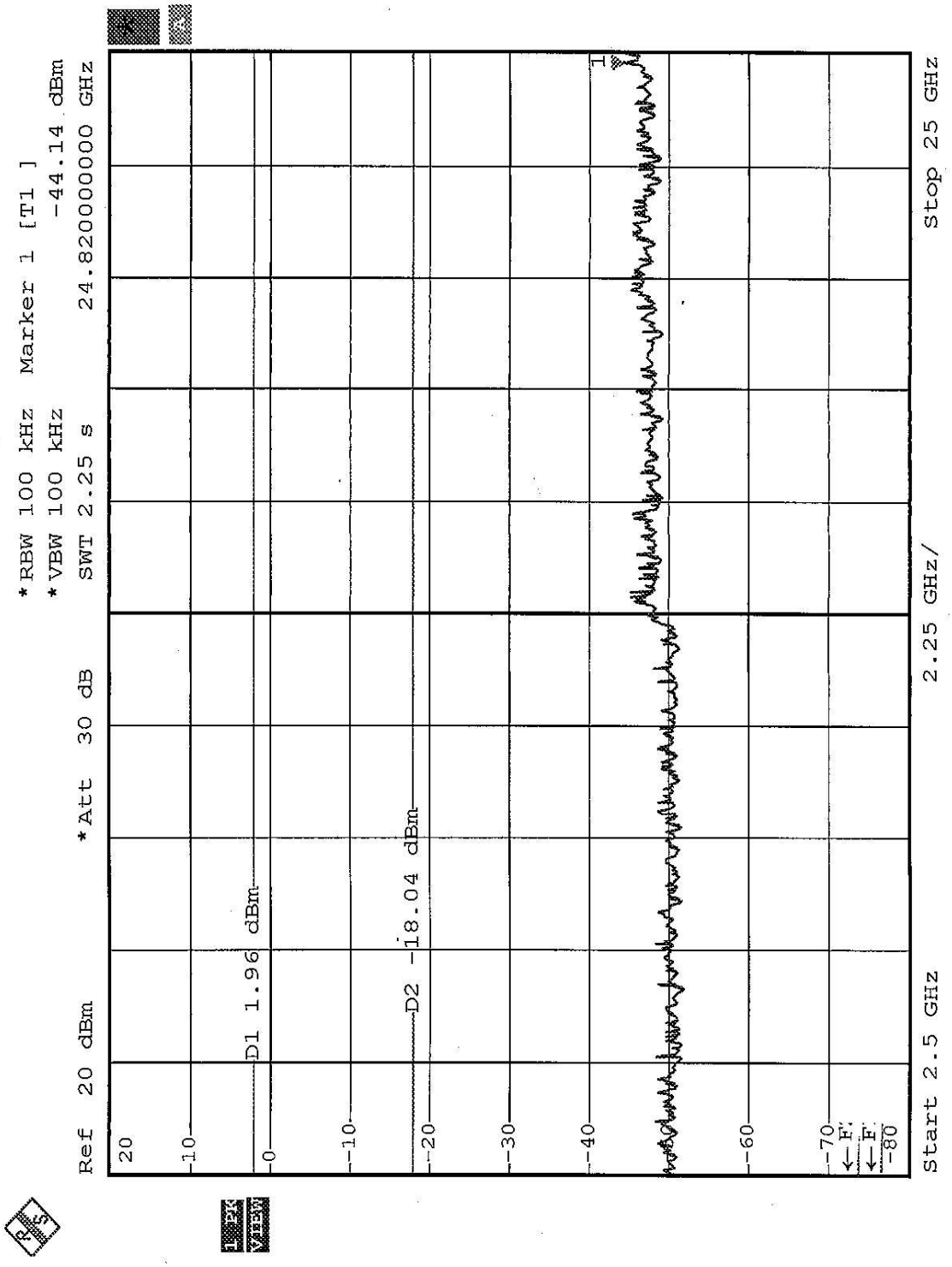

A
*RBW 100 kHz
*VBW 100 kHz
SWT 2.25 s
Marker 1 [T1 ]
-44.45 dBm
21.80500000 GHz
Ref 13 dBm
*Att 30 dB
D1 9.19 dBm
D2 -10.81 dBm
Start 2.5 GHz
2.25 GHz/
Stop 25 GHz
1 PK
VIEW

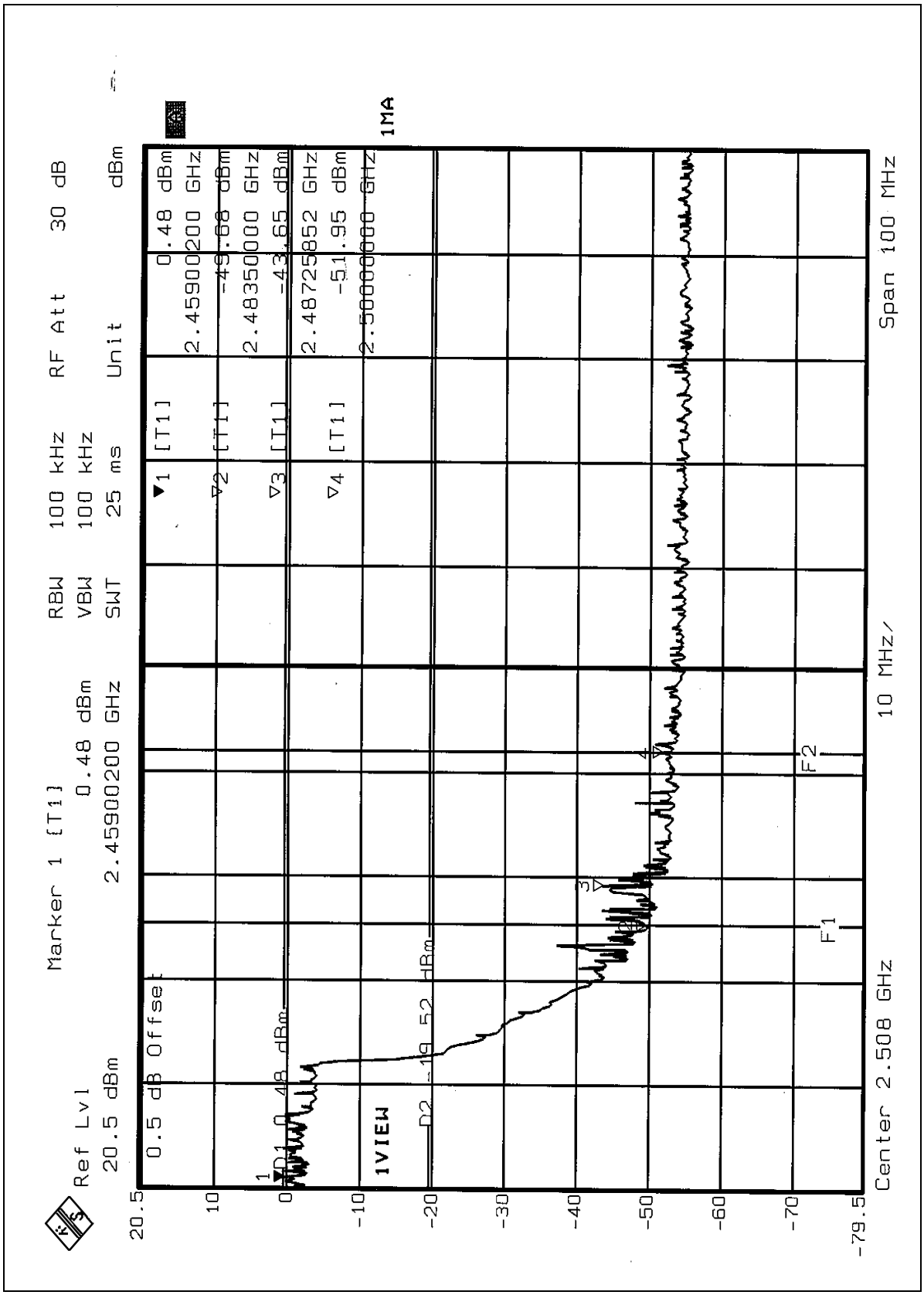

Marker 1 [T1]
7.71 dBm
2.46281162 GHz
RBW 100 kHz
VBW 100 kHz
SWT 25 ms
RF Att 30 dB
Unit dBm
Ref Lvl
20.5 dBm
0.5 dB Offset
1MA
1 [T1] 7.71 dBm 2.46281162 GHz
2 [T1] -50.41 dBm 2.48350000 GHz
3 [T1] -47.34 dBm 2.48665832 GHz
4 [T1] -52.07 dBm 2.50000000 GHz
D1 7.71 dBm
D2 -12.29 dBm
1VIEW
F1
F2
Center 2.507 GHz
10 MHz/
Span 100 MHz
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5

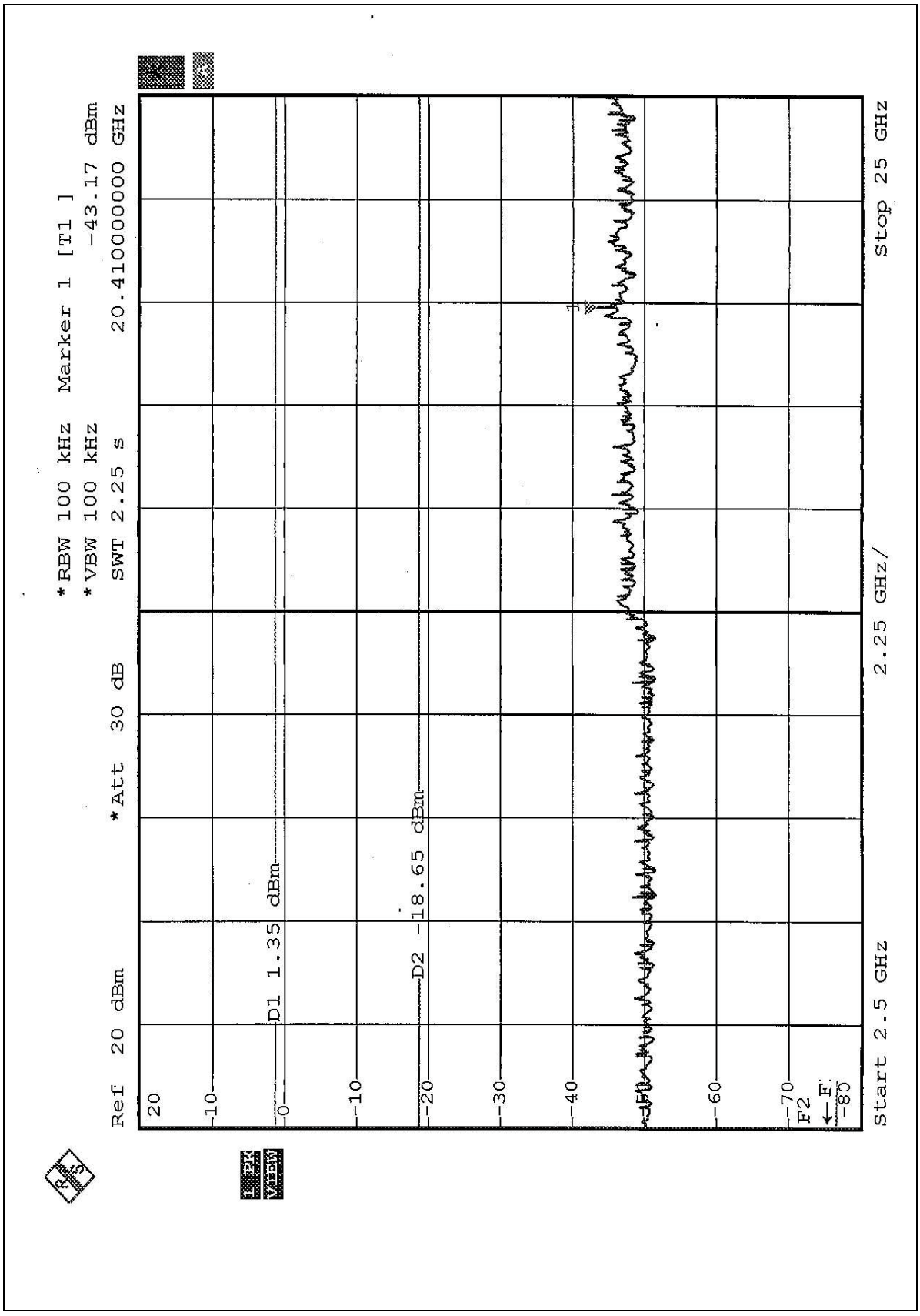

A
*RBW 100 kHz
*VBW 100 kHz
SWT 2.25 s
Marker 1 [T1 ]
-44.47 dBm
23.830000000 GHz
Ref 13 dBm
*Att 30 dB
D1 8.98 dBm
D2 -11.02 dBm
Start 2.5 GHz
2.25 GHz/
Stop 25 GHz
1 PK
VIEW

## For OFDM (Normal Mode)

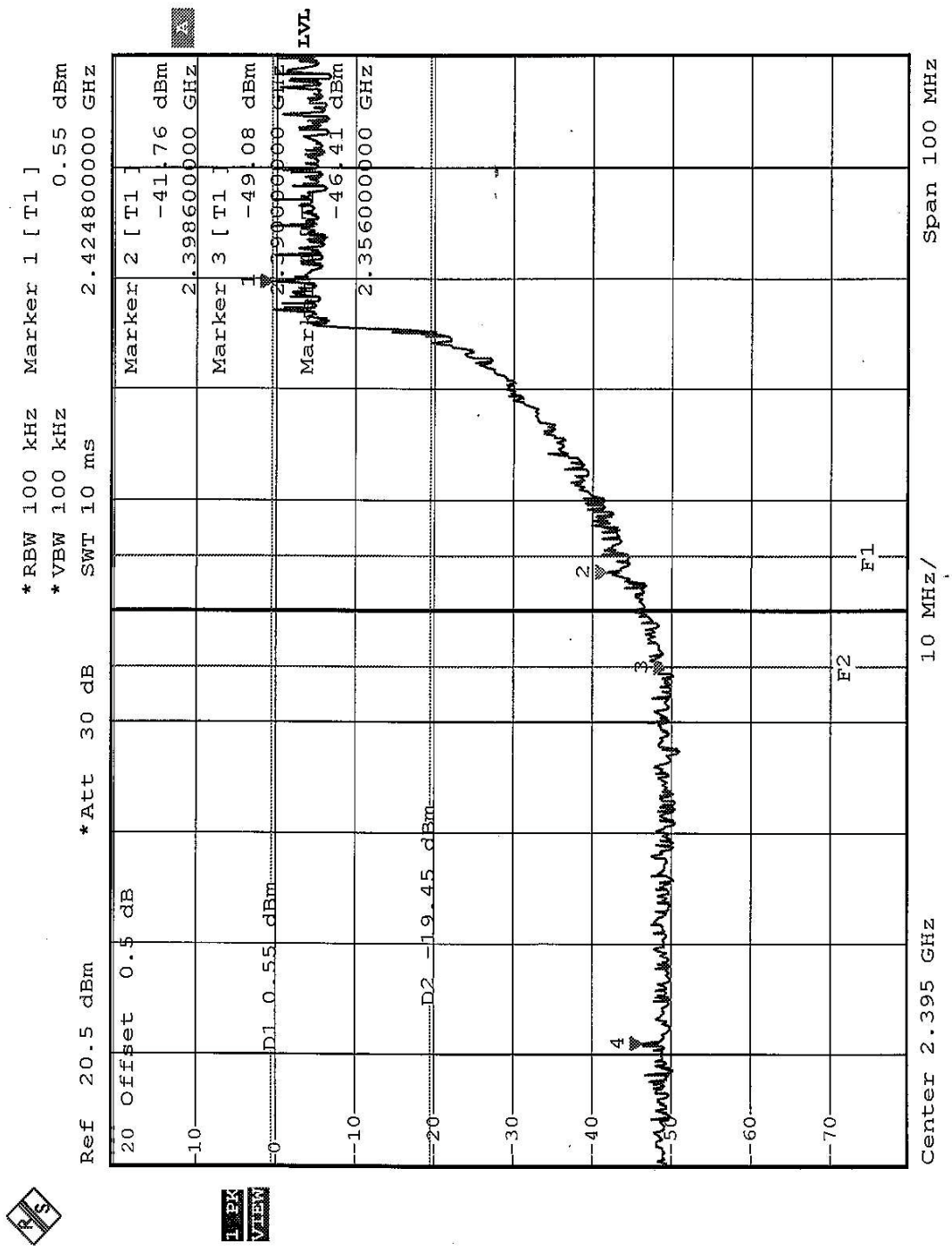


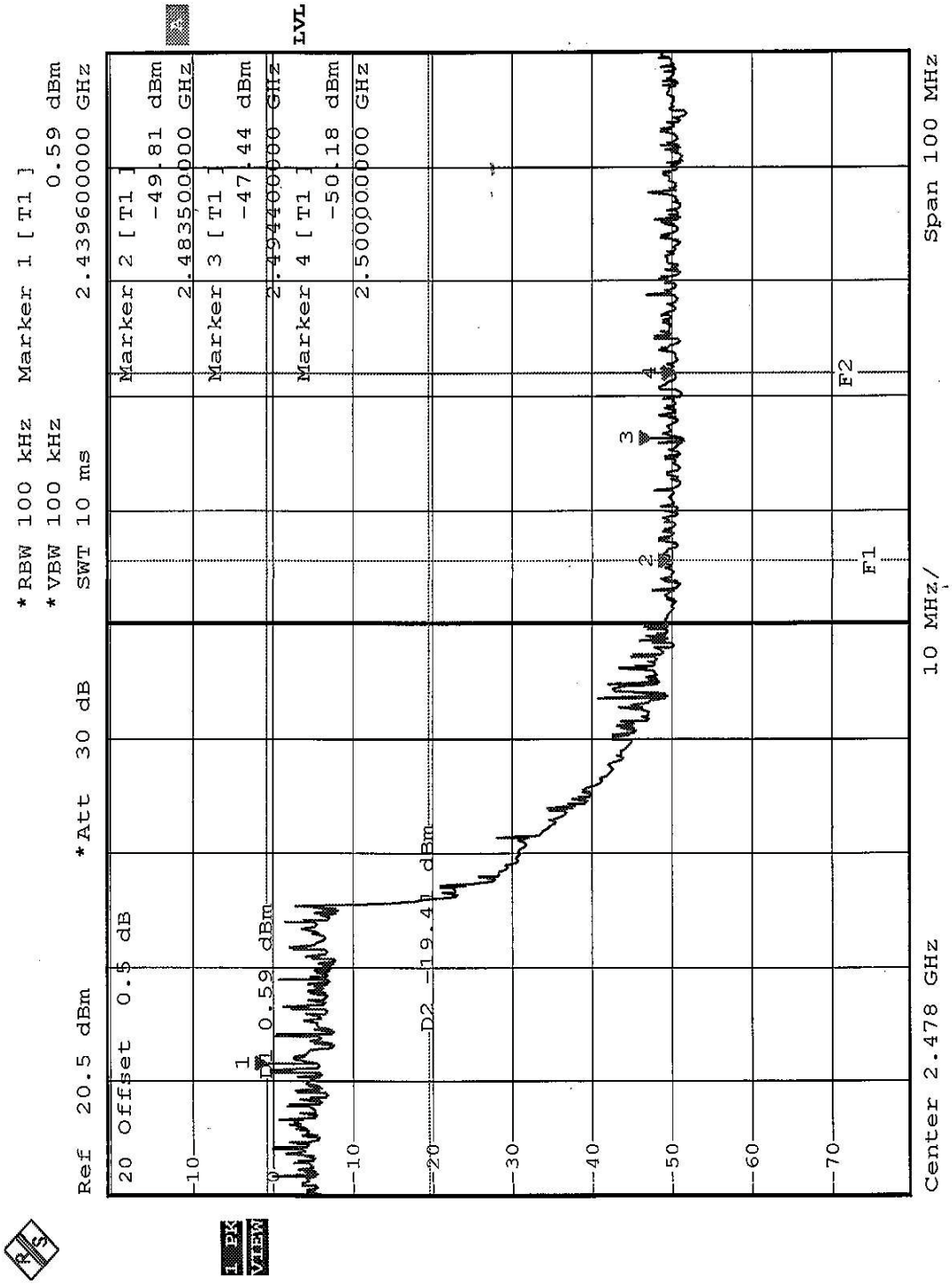

RBW 100 kHz
VBW 100 kHz
SWT 2.25 s
Marker 1 [T1 ]
-44.14 dBm
24.820000000 GHz
Ref 20 dBm
Att 30 dB
D1 1.96 dBm
D2 -18.04 dBm
Start 2.5 GHz
2.25 GHz/
Stop 25 GHz


Marker 1 [T1]
0.48 dBm
2.4590200 GHz
RBW 100 kHz
VBW 100 kHz
SWT 25 ms
RF Att 30 dB
Unit dBm
Ref Lvl
20.5 dBm
0.5 dB Offset
1 [T1] 0.48 dBm 2.4590200 GHz
2 [T1] -49.68 dBm 2.4835000 GHz
3 [T1] -43.65 dBm 2.4872852 GHz
4 [T1] -51.95 dBm 2.5000000 GHz
1MA
1VIEW
D1 0.48 dBm
D2 -19.52 dBm
F1
F2
Center 2.508 GHz
10 MHz/
Span 100 MHz
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5


Ref 20 dBm
*Att 30 dB
*VBW 100 kHz
SWT 2.25 s
*RBW 100 kHz
Marker 1 [T1 ]
-43.17 dBm
20.41000000 GHz
D1 1.35 dBm
D2 -18.65 dBm
Start 2.5 GHz
2.25 GHz/
Stop 25 GHz
F2
F

## For OFDM (Turbo Mode)




Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 10 ms
Marker 1 [T1 ]
0.59 dBm
2.43960000 GHz
Marker 2 [T1 ]
-49.81 dBm
2.48350000 GHz
Marker 3 [T1 ]
-47.44 dBm
2.49440000 GHz
Marker 4 [T1 ]
-50.18 dBm
2.50000000 GHz
LVL
D2 -19.41 dBm
F1
F2
Center 2.478 GHz
10 MHz/
Span 100 MHz
1 PK
VIEW

## 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 maximum Gain antenna used in this product is Dipole antenna without antenna connector. And the maximum Gain of these antennas is 4 dBi.

# 5. TEST TYPES AND RESULTS (FOR PART 802.11a)

## 5.1 CONDUCTED EMISSION MEASUREMENT

### 5.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

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

### 5.1.2 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 | 847265/023 | Oct. 22, 2004 |
| LISN<br>ROHDE & SCHWARZ | ESH3-Z5 | 100220 | Dec. 10, 2004 |
| 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.Hwa Ya Global Certification Office

### 5.1.3 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.

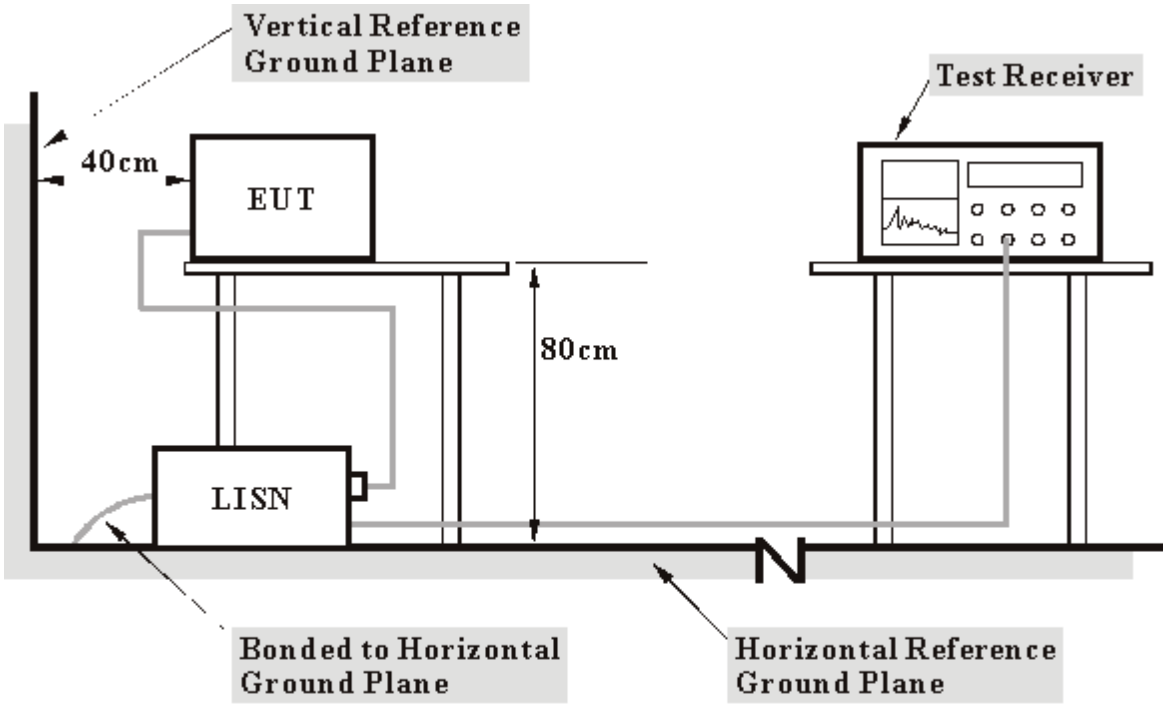
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels (Limit –20dB) was not recorded.

### 5.1.4 DEVIATION FROM TEST STANDARD

No deviation

### 5.1.5 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.

### 5.1.6 EUT OPERATING CONDITIONS

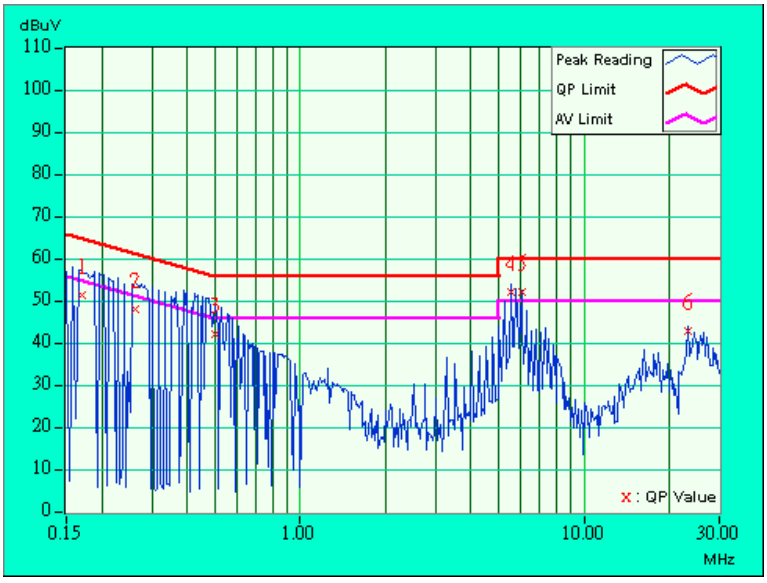
Same as 4.1.6

## 5.1.7 TEST RESULTS

| | | | |
|---|---|---|---|
| **EUT** | SonicPoint | **MODEL** | APL13-02C |
| | | **6dB BANDWIDTH** | 9 kHz |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **PHASE** | Line (L) |
| **ENVIRONMENTAL CONDITIONS** | 25deg. C, 65RH, 991 hPa | **TESTED BY** | Jamison Chan |

| No | Freq. | Corr. Factor | Reading Value [dB (uV)] | | Emission Level [dB (uV)] | | Limit [dB (uV)] | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.170 | 0.06 | 50.60 | - | 50.66 | - | 64.98 | 54.98 | -14.33 | - |
| 2 | 0.263 | 0.06 | 47.31 | - | 47.37 | - | 61.33 | 51.33 | -13.96 | - |
| 3 | 0.501 | 0.08 | 41.52 | - | 41.60 | - | 56.00 | 46.00 | -14.40 | - |
| 4 | 5.535 | 0.27 | 51.56 | 46.15 | 51.83 | 46.42 | 60.00 | 50.00 | -8.17 | -3.58 |
| 5 | 6.039 | 0.29 | 51.42 | 47.43 | 51.71 | 47.72 | 60.00 | 50.00 | -8.29 | -2.28 |
| 6 | 23.129 | 0.80 | 42.04 | - | 42.84 | - | 60.00 | 50.00 | -17.16 | - |

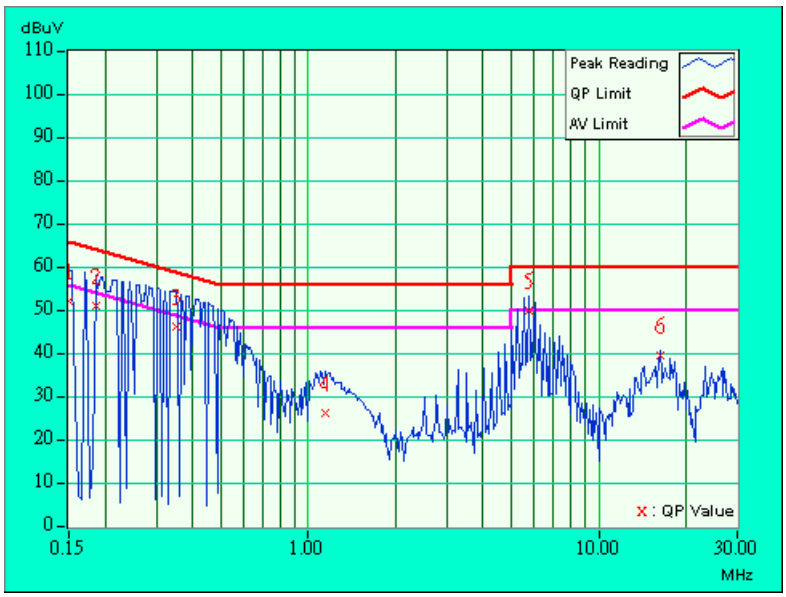
**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value =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



| | | | |
|---|---|---|---|
| **EUT** | SonicPoint | **MODEL** | APL13-02C |
| | | **6dB BANDWIDTH** | 9 kHz |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **PHASE** | Neutral (N) |
| **ENVIRONMENTAL CONDITIONS** | 25deg. C, 65RH, 991 hPa | **TESTED BY** | Jamison Chan |

| No | Freq. | Corr. Factor | Reading Value [dB (uV)] | | Emission Level [dB (uV)] | | Limit [dB (uV)] | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.150 | 0.05 | 51.68 | - | 51.73 | - | 66.00 | 56.00 | -14.27 | - |
| 2 | 0.185 | 0.05 | 50.44 | - | 50.49 | - | 64.25 | 54.25 | -13.76 | - |
| 3 | 0.353 | 0.05 | 45.89 | - | 45.94 | - | 58.89 | 48.89 | -12.95 | - |
| 4 | 1.141 | 0.16 | 25.79 | - | 25.95 | - | 56.00 | 46.00 | -30.05 | - |
| 5 | 5.781 | 0.26 | 49.33 | - | 49.59 | - | 60.00 | 50.00 | -10.41 | - |
| 6 | 16.230 | 0.49 | 39.07 | - | 39.56 | - | 60.00 | 50.00 | -20.44 | - |

**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.



## 5.2 RADIATED EMISSION MEASUREMENT

### 5.2.1 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 (MHz) | Field strength (microvolts/meter) | Measurement distance (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.

## 5.2.2 LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

| Frequencies (MHz) | EIRP Limit (dBm) | Equivalent Field Strength at 3m (dBμV/m) *note 3 |
|---|---|---|
| 5150~5250 | -27 | 68.3 |
| 5250~5350 | -27 | 68.3 |
| 5725~5825 | -27 *note 1 | 68.3 |
| | -17 *note 2 | 78.3 |

**NOTE**:

1. For frequencies 10MHz or greater above or below the band edge.
2. All emissions within the frequency range from the band edge to 10MHz above or below the band edge.
3. The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength

$$E=\frac{1000000\sqrt{30P}}{3} \quad \mu V/m, \quad \text{where P is the eirp (Watts)}$$

### 5.2.3 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED UNTIL |
|---|---|---|---|
| Test Receiver ROHDE & SCHWARZ | ESI7 | 100033 | May 28, 2004 |
| Spectrum Analyzer ROHDE & SCHWARZ | FSP40 | 100040 | Dec. 15, 2004 |
| BILOG Antenna SCHWARZBECK | VULB9168 | 9168-153 | Feb. 03, 2005 |
| HORN Antenna SCHWARZBECK | 9120D | 9120D-408 | Feb. 03, 2005 |
| HORN Antenna SCHWARZBECK | BBHA 9170 | BBHA 9170243 | Feb. 23, 2005 |
| Preamplifier Agilent | 8447D | 2944A10633 | Jan. 15, 2005 |
| Preamplifier Agilent | 8449B | 3008A01964 | Jan. 27, 2005 |
| RF signal cable HUBER+SUHNNER | SUCOFLEX 104 | 218183/4 | Mar. 05, 2005 |
| RF signal cable HUBER+SUHNNER | SUCOFLEX 104 | 218195/4 | Mar. 05, 2005 |
| Software ADT. | ADT_Radiated_V5.14 | NA | NA |
| Antenna Tower inn-co GmbH | MA 4000 | 013303 | NA |
| Antenna Tower Controller inn-co GmbH | CO2000 | 017303 | NA |
| Turn Table ADT. | TT100. | TT93021703 | NA |
| Turn Table Controller ADT. | SC100. | SC93021703 | 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 2.

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 IC4924-3.

## 5.2.4 TEST PROCEDURES

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter open area test site. 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 10dB 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 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

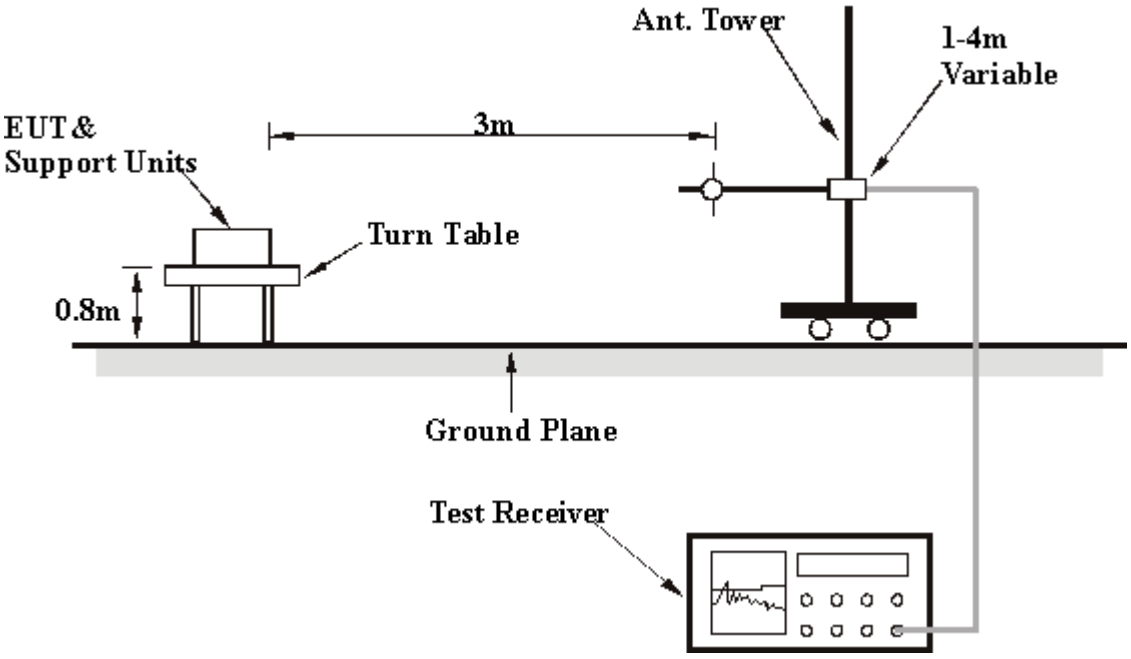
**NOTE:**

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.

## 5.2.5 DEVIATION FROM TEST STANDARD

No deviation

## 5.2.6 TEST SETUP




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

## 5.2.7 EUT OPERATING CONDITIONS

Same as 4.1.6

## 5.2.8 TEST RESULTS

| | | | |
|---|---|---|---|
| **EUT** | SonicPoint | **MODEL** | APL13-02C |
| **MODE** | Channel 11,<br>**EUT powered by AC Adapter** | **FREQUENCY RANGE** | Below 1000 MHz |
| **INPUT POWER (SYSTEM)** | 120Vac, 60Hz | **DETECTOR FUNCTION** | Quasi-Peak |
| **ENVIRONMENTAL CONDITIONS** | 30deg. C, 65%RH,<br>991 hPa | **TESTED BY** | Vincent Yang |

| 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 | 42.40 | 28.62 QP | 40.00 | -11.38 | 1.00 H | 357 | 16.67 | 11.95 |
| 2 | 125.00 | 33.49 QP | 43.50 | -10.01 | 1.65 H | 209 | 20.93 | 12.56 |
| 3 | 151.00 | 34.99 QP | 43.50 | -8.51 | 2.04 H | 73 | 23.87 | 11.12 |
| 4 | 220.01 | 41.22 QP | 46.00 | -4.78 | 2.37 H | 256 | 29.69 | 11.53 |
| 5 | 225.50 | 35.21 QP | 46.00 | -10.79 | 1.48 H | 357 | 23.34 | 11.87 |
| 6 | 240.40 | 38.43 QP | 46.00 | -7.57 | 1.76 H | 156 | 25.65 | 12.78 |
| 7 | 250.60 | 36.06 QP | 46.00 | -9.94 | 2.29 H | 176 | 22.61 | 13.45 |
| 8 | 330.01 | 36.36 QP | 46.00 | -9.64 | 1.39 H | 90 | 20.45 | 15.91 |
| 9 | 350.50 | 36.05 QP | 46.00 | -9.95 | 1.00 H | 355 | 19.80 | 16.25 |
| 10 | 360.50 | 41.21 QP | 46.00 | -4.79 | 1.00 H | 106 | 24.59 | 16.62 |
| 11 | 375.50 | 35.88 QP | 46.00 | -10.12 | 1.00 H | 151 | 18.71 | 17.17 |
| 12 | 440.00 | 41.16 QP | 46.00 | -4.84 | 1.00 H | 338 | 22.76 | 18.40 |
| 13 | 490.00 | 36.29 QP | 46.00 | -9.71 | 1.00 H | 259 | 16.66 | 19.63 |
| 14 | 549.98 | 39.85 QP | 46.00 | -6.15 | 2.10 H | 225 | 19.31 | 20.54 |
| 15 | 660.02 | 30.05 QP | 46.00 | -15.95 | 1.00 H | 86 | 7.98 | 22.07 |
| 16 | 770.00 | 30.29 QP | 46.00 | -15.71 | 1.94 H | 17 | 6.97 | 23.32 |

**REMARKS**:
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
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.
5. The limit value is defined as per 15.247

| EUT | SonicPoint | MODEL | APL13-02C |
|---|---|---|---|
| MODE | Channel 11,<br>**EUT powered by AC Adapter** | FREQUENCY RANGE | Below 1000 MHz |
| INPUT POWER (SYSTEM) | 120Vac, 60Hz | DETECTOR FUNCTION | Quasi-Peak |
| ENVIRONMENTAL CONDITIONS | 30deg. C, 65%RH,<br>991 hPa | TESTED BY | Vincent Yang |

**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 | 57.73 | 34.20 QP | 40.00 | -5.80 | 1.34 V | 79 | 25.59 | 8.61 |
| 2 | 139.70 | 34.35 QP | 43.50 | -9.15 | 1.00 V | 14 | 22.33 | 12.02 |
| 3 | 175.48 | 33.20 QP | 43.50 | -10.30 | 1.00 V | 316 | 23.09 | 10.11 |
| 4 | 220.01 | 40.33 QP | 46.00 | -5.67 | 1.34 V | 13 | 28.80 | 11.53 |
| 5 | 240.00 | 36.38 QP | 46.00 | -9.62 | 1.75 V | 210 | 23.62 | 12.76 |
| 6 | 250.00 | 40.56 QP | 46.00 | -5.44 | 1.26 V | 216 | 27.19 | 13.37 |
| 7 | 361.00 | 39.78 QP | 46.00 | -6.22 | 1.73 V | 181 | 23.14 | 16.64 |
| 8 | 440.01 | 39.57 QP | 46.00 | -6.43 | 1.43 V | 55 | 21.17 | 18.40 |
| 9 | 550.01 | 41.44 QP | 46.00 | -4.56 | 1.27 V | 218 | 20.90 | 20.54 |
| 10 | 660.00 | 31.86 QP | 46.00 | -14.14 | 1.00 V | 111 | 9.79 | 22.07 |
| 11 | 770.01 | 32.03 QP | 46.00 | -13.97 | 2.11 V | 256 | 8.71 | 23.32 |
| 12 | 879.98 | 34.73 QP | 46.00 | -11.27 | 1.74 V | 39 | 10.61 | 24.12 |
| 13 | 990.00 | 36.89 QP | 54.00 | -17.11 | 1.99 V | 359 | 11.95 | 24.94 |

**REMARKS**:
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
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.
5. The limit value is defined as per 15.247

| | | | |
|---|---|---|---|
| **EUT** | SonicPoint | **MODEL** | APL13-02C |
| **MODE** | Channel 11,<br>**EUT powered by POE** | **FREQUENCY RANGE** | Below 1000 MHz |
| **INPUT POWER (SYSTEM)** | 120Vac, 60Hz | **DETECTOR FUNCTION** | Quasi-Peak |
| **ENVIRONMENTAL CONDITIONS** | 30deg. C, 65%RH,<br>991 hPa | **TESTED BY** | Vincent Yang |

**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 | 58.75 | 32.25 QP | 40.00 | -7.75 | 1.00 H | 357 | 23.66 | 8.59 |
| 2 | 220.00 | 42.74 QP | 46.00 | -3.26 | 2.29 H | 192 | 31.21 | 11.53 |
| 3 | 240.20 | 37.84 QP | 46.00 | -8.16 | 1.49 H | 314 | 25.07 | 12.77 |
| 4 | 250.10 | 43.22 QP | 46.00 | -2.78 | 1.74 H | 60 | 29.84 | 13.38 |
| 5 | 300.30 | 34.09 QP | 46.00 | -11.91 | 1.49 H | 339 | 18.67 | 15.42 |
| 6 | 325.20 | 34.16 QP | 46.00 | -11.84 | 1.00 H | 262 | 18.33 | 15.83 |
| 7 | 330.00 | 39.77 QP | 46.00 | -6.23 | 1.32 H | 228 | 23.86 | 15.91 |
| 8 | 350.40 | 35.23 QP | 46.00 | -10.77 | 1.00 H | 357 | 18.99 | 16.24 |
| 9 | 360.40 | 42.17 QP | 46.00 | -3.83 | 1.23 H | 234 | 25.56 | 16.61 |
| 10 | 375.30 | 34.11 QP | 46.00 | -11.89 | 1.00 H | 357 | 16.94 | 17.17 |
| **11** | **440.00** | **44.04 QP** | **46.00** | **-1.96** | **1.00 H** | **139** | **25.64** | **18.40** |
| 12 | 550.00 | 43.14 QP | 46.00 | -2.86 | 1.93 H | 146 | 22.60 | 20.54 |
| 13 | 770.00 | 30.95 QP | 46.00 | -15.05 | 1.57 H | 51 | 7.63 | 23.32 |

**REMARKS**:
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
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.
5. The limit value is defined as per 15.247

| | | | |
|---|---|---|---|
| **EUT** | SonicPoint | **MODEL** | APL13-02C |
| **MODE** | Channel 11,<br>**EUT powered by POE** | **FREQUENCY RANGE** | Below 1000 MHz |
| **INPUT POWER (SYSTEM)** | 120Vac, 60Hz | **DETECTOR FUNCTION** | Quasi-Peak |
| **ENVIRONMENTAL CONDITIONS** | 30deg. C, 65%RH,<br>991 hPa | **TESTED BY** | Vincent Yang |

**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 | 75.13 | 26.71 QP | 40.00 | -13.29 | 1.26 V | 45 | 19.54 | 7.17 |
| 2 | 125.50 | 38.67 QP | 43.50 | -4.83 | 1.00 V | 195 | 26.13 | 12.54 |
| 3 | 140.40 | 29.25 QP | 43.50 | -14.25 | 1.00 V | 128 | 17.27 | 11.98 |
| 4 | 150.40 | 37.22 QP | 43.50 | -6.28 | 1.00 V | 349 | 26.05 | 11.17 |
| 5 | 220.00 | 42.21 QP | 46.00 | -3.79 | 1.00 V | 57 | 30.68 | 11.53 |
| 6 | 240.20 | 36.81 QP | 46.00 | -9.19 | 1.48 V | 14 | 24.04 | 12.77 |
| 7 | 250.40 | 39.64 QP | 46.00 | -6.36 | 1.00 V | 357 | 26.21 | 13.43 |
| 8 | 424.00 | 38.48 QP | 46.00 | -7.52 | 1.49 V | 222 | 20.21 | 18.27 |
| 9 | 440.00 | 34.09 QP | 46.00 | -11.91 | 1.71 V | 357 | 15.69 | 18.40 |
| 10 | 464.00 | 37.95 QP | 46.00 | -8.05 | 1.49 V | 15 | 19.07 | 18.88 |
| 11 | 549.99 | 42.62 QP | 46.00 | -3.38 | 1.97 V | 230 | 22.08 | 20.54 |
| 12 | 598.00 | 43.02 QP | 46.00 | -2.98 | 1.49 V | 308 | 21.31 | 21.71 |
| 13 | 660.00 | 31.95 QP | 46.00 | -14.05 | 1.00 V | 115 | 9.88 | 22.07 |
| 14 | 770.01 | 34.12 QP | 46.00 | -11.88 | 1.08 V | 346 | 10.80 | 23.32 |

**REMARKS**:
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
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.
5. The limit value is defined as per 15.247

| | | | |
|---|---|---|---|
| **EUT** | SonicPoint | **MODEL** | APL13-02C |
| **MODE** | Normal Mode | **CHANNEL** | 1 |
| **FREQUENCY RANGE** | Above 1000 MHz | **DETECTOR FUNCTION** | Peak(PK)<br>Average (AV) |
| **ENVIRONMENTAL CONDITIONS** | 30 deg. C, 60%RH, 991 hPa | **INPUT POWER (SYSTEM)** | 120Vac, 60Hz |
| **TESTED BY** | Hardaway Lee | | |

**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 | *5180.00 | 98.0 PK | | | 2.04 H | 200 | 61.80 | 36.20 |
| 1 | *5180.00 | 88.2 AV | | | 2.04 H | 200 | 52.00 | 36.20 |
| 2 | 10358.00 | 55.1 PK | 68.30 | -13.20 | 1.00 H | 122 | 10.60 | 44.50 |

**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 | #5150.00 | 57.2 PK | 74.00 | -16.80 | 1.77 V | 81 | 21.00 | 36.20 |
| 1 | #5150.00 | 46.9 AV | 54.00 | -7.10 | 1.77 V | 81 | 10.70 | 36.20 |
| 2 | *5180.00 | 108.6 PK | | | 1.77 V | 81 | 72.40 | 36.20 |
| 2 | *5180.00 | 98.3 AV | | | 1.77 V | 81 | 62.10 | 36.20 |
| 3 | 10358.00 | 54.6 PK | 68.30 | -13.70 | 1.59 V | 181 | 10.20 | 44.50 |

**REMARKS:**

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
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.
5. "*" : Fundamental frequency
6. "# " : The radiated frequency falling in the restricted band.

| | | | |
|---|---|---|---|
| **EUT** | SonicPoint | **MODEL** | APL13-02C |
| **MODE** | Normal Mode | **CHANNEL** | 4 |
| **FREQUENCY RANGE** | Above 1000 MHz | **DETECTOR FUNCTION** | Peak(PK)<br>Average (AV) |
| **ENVIRONMENTAL CONDITIONS** | 30 deg. C, 60%RH, 991 hPa | **INPUT POWER (SYSTEM)** | 120Vac, 60Hz |
| **TESTED BY** | Hardaway Lee | | |

**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 | *5240.00 | 99.4 PK | | | 2.05 H | 233 | 63.10 | 36.30 |
| 1 | *5240.00 | 89.7 AV | | | 2.05 H | 233 | 53.30 | 36.30 |
| 2 | 10479.00 | 53.5 PK | 68.30 | -14.80 | 1.70 H | 44 | 8.80 | 44.70 |

**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 | *5240.00 | 109.1 PK | | | 1.28 V | 23 | 72.80 | 36.30 |
| 1 | *5240.00 | 99.5 AV | | | 1.28 V | 23 | 63.10 | 36.30 |
| 2 | 10479.00 | 48.3 PK | 68.30 | -20.00 | 1.40 V | 244 | 3.60 | 44.70 |

**REMARKS:**

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
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.
5. “*” : Fundamental frequency

| EUT | SonicPoint | MODEL | APL13-02C |
|---|---|---|---|
| MODE | Normal Mode | CHANNEL | 5 |
| FREQUENCY RANGE | Above 1000 MHz | DETECTOR FUNCTION | Peak(PK)<br>Average (AV) |
| ENVIRONMENTAL CONDITIONS | 30 deg. C, 60%RH,<br>991 hPa | INPUT POWER (SYSTEM) | 120Vac, 60Hz |
| TESTED BY | Hardaway Lee | | |

**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 | *5260.00 | 97.0 PK | | | 2.17 H | 199 | 60.60 | 36.40 |
| 1 | *5260.00 | 88.0 AV | | | 2.17 H | 199 | 51.60 | 36.40 |
| 2 | 10521.00 | 49.2 PK | 68.30 | -19.10 | 1.77 H | 224 | 4.40 | 44.80 |

**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 | *5260.00 | 109.2 PK | | | 1.29 V | 223 | 72.90 | 36.40 |
| 1 | *5260.00 | 99.6 AV | | | 1.29 V | 223 | 63.20 | 36.40 |
| 2 | 10521.00 | 50.3 PK | 68.30 | -18.00 | 1.16 V | 24 | 5.50 | 44.80 |

**REMARKS:**

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
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.
5. “*” : Fundamental frequency

| EUT | SonicPoint | MODEL | APL13-02C |
|---|---|---|---|
| MODE | Normal Mode | CHANNEL | 8 |
| FREQUENCY RANGE | Above 1000 MHz | DETECTOR FUNCTION | Peak(PK)<br>Average (AV) |
| ENVIRONMENTAL CONDITIONS | 30 deg. C, 60%RH,<br>991 hPa | INPUT POWER (SYSTEM) | 120Vac, 60Hz |
| TESTED BY | Hardaway Lee | | |

**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 | *5320.00 | 98.1 PK | | | 1.81 H | 110 | 61.60 | 36.40 |
| 1 | *5320.00 | 88.1 AV | | | 1.81 H | 110 | 51.60 | 36.40 |
| 2 | #10641.00 | 57.0 PK | 74.00 | -17.00 | 1.42 H | 97 | 12.00 | 45.10 |
| 2 | #10641.00 | 46.3 AV | 54.00 | -7.70 | 1.42 H | 97 | 1.20 | 45.10 |

**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 | *5320.00 | 108.7 PK | | | 1.21 V | 234 | 72.30 | 36.40 |
| 1 | *5320.00 | 98.7 AV | | | 1.21 V | 234 | 62.20 | 36.40 |
| 2 | #5350.00 | 52.2 PK | 74.00 | -21.80 | 1.00 V | 185 | 15.70 | 36.50 |
| 2 | #5350.00 | 42.2 AV | 54.00 | -11.80 | 1.00 V | 185 | 5.70 | 36.50 |
| 3 | #10641.00 | 59.0 PK | 74.00 | -15.00 | 1.46 V | 211 | 14.00 | 45.10 |
| 3 | #10641.00 | 45.9 AV | 54.00 | -8.10 | 1.46 V | 211 | 0.80 | 45.10 |

**REMARKS:**

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
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.
5. "*" : Fundamental frequency
6. "# " : The radiated frequency falling in the restricted band.

| | | | |
|---|---|---|---|
| **EUT** | SonicPoint | **MODEL** | APL13-02C |
| **MODE** | Normal Mode | **CHANNEL** | 9 |
| **FREQUENCY RANGE** | Above 1000 MHz | **DETECTOR FUNCTION** | Peak(PK)<br>Average (AV) |
| **ENVIRONMENTAL CONDITIONS** | 30 deg. C, 60%RH,<br>991 hPa | **INPUT POWER (SYSTEM)** | 120Vac, 60Hz |
| **TESTED BY** | Hardaway Lee | | |

**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 | 5715.00 | 60.8 PK | 68.30 | -7.50 | 2.00 H | 105 | 23.70 | 37.10 |
| 2 | 5725.00 | 72.2 PK | 78.30 | -6.10 | 2.00 H | 105 | 35.10 | 37.10 |
| 3 | *5745.00 | 94.7 PK | | | 2.00 H | 105 | 57.60 | 37.10 |
| 3 | *5745.00 | 84.2 AV | | | 2.00 H | 105 | 47.10 | 37.10 |
| 4 | #11488.00 | 59.0 PK | 74.00 | -15.00 | 1.33 H | 166 | 13.20 | 45.80 |
| 4 | #11488.00 | 45.7 AV | 54.00 | -8.30 | 1.33 H | 166 | 0.00 | 45.80 |

**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 | 5715.00 | 60.5 PK | 68.30 | -7.80 | 1.35 V | 18 | 23.40 | 37.10 |
| 2 | 5725.00 | 71.8 PK | 78.30 | -6.50 | 1.35 V | 18 | 34.70 | 37.10 |
| 3 | *5745.00 | 108.0 PK | | | 1.35 V | 18 | 70.90 | 37.10 |
| 3 | *5745.00 | 98.6 AV | | | 1.35 V | 18 | 61.50 | 37.10 |
| 4 | #11488.00 | 60.8 PK | 74.00 | -13.20 | 2.07 V | 66 | 15.00 | 45.80 |
| 4 | #11488.00 | 45.9 AV | 54.00 | -8.10 | 2.07 V | 66 | 0.20 | 45.80 |

**REMARKS:**

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
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.
5. “*” : Fundamental frequency
6. “# “ : The radiated frequency falling in the restricted band.

| EUT | SonicPoint | MODEL | APL13-02C |
|---|---|---|---|
| MODE | Normal Mode | CHANNEL | 12 |
| FREQUENCY RANGE | Above 1000 MHz | DETECTOR FUNCTION | Peak(PK)<br>Average (AV) |
| ENVIRONMENTAL CONDITIONS | 30 deg. C, 60%RH,<br>991 hPa | INPUT POWER (SYSTEM) | 120Vac, 60Hz |
| TESTED BY | Hardaway Lee | | |

**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 | *5805.00 | 97.4 PK | | | 1.17 H | 131 | 60.10 | 37.20 |
| 1 | *5805.00 | 87.1 AV | | | 1.17 H | 131 | 49.90 | 37.20 |
| 2 | #11612.00 | 57.7 PK | 74.00 | -16.30 | 1.33 H | 207 | 12.00 | 45.60 |
| 2 | #11612.00 | 45.7 AV | 54.00 | -8.30 | 1.33 H | 207 | 0.00 | 45.60 |

**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 | *5805.00 | 104.6 PK | | | 2.02 V | 31 | 67.40 | 37.20 |
| 1 | *5805.00 | 94.5 AV | | | 2.02 V | 31 | 57.30 | 37.20 |
| 2 | 5823.00 | 61.2 PK | 78.30 | -17.10 | 2.02 V | 31 | 23.90 | 37.30 |
| 3 | 5825.00 | 67.7 PK | 78.3 | -10.60 | 2.02 V | 31 | 30.40 | 37.30 |
| 4 | #11612.00 | 60.9 PK | 74.00 | -13.10 | 1.33 V | 207 | 15.30 | 45.60 |
| 4 | #11612.00 | 46.1 AV | 54.00 | -7.90 | 1.33 V | 207 | 0.50 | 45.60 |

**REMARKS:**

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
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.
5. "*" : Fundamental frequency
6. "# " : The radiated frequency falling in the restricted band.

| EUT | SonicPoint | MODEL | APL13-02C |
|---|---|---|---|
| MODE | Turbo Mode | CHANNEL | 1 |
| FREQUENCY RANGE | Above 1000 MHz | DETECTOR FUNCTION | Peak(PK)<br>Average (AV) |
| ENVIRONMENTAL CONDITIONS | 30 deg. C, 60%RH, 991 hPa | INPUT POWER (SYSTEM) | 120Vac, 60Hz |
| TESTED BY | Hardaway Lee | | |

**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 | *5210.00 | 96.0 PK | | | 2.16 H | 111 | 59.80 | 36.30 |
| 1 | *5210.00 | 86.3 AV | | | 2.16 H | 111 | 50.00 | 36.30 |
| 2 | 10420.00 | 54.9 PK | 68.30 | -13.40 | 1.36 H | 130 | 10.30 | 44.60 |

**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 | #5150.00 | 56.5 PK | 74.00 | -17.50 | 1.31 V | 99 | 20.30 | 36.20 |
| 1 | #5150.00 | 46.3 AV | 54.00 | -7.70 | 1.31 V | 99 | 10.10 | 36.20 |
| 2 | *5210.00 | 106.6 PK | | | 1.31 V | 99 | 70.30 | 36.30 |
| 2 | *5210.00 | 96.4 AV | | | 1.31 V | 99 | 60.10 | 36.30 |
| 3 | 10420.00 | 58.7 PK | 68.30 | -9.60 | 1.41 V | 30 | 14.10 | 44.60 |

**REMARKS:**

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
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.
5. “*” : Fundamental frequency
6. “# “ : The radiated frequency falling in the restricted band.

| | | | |
|---|---|---|---|
| **EUT** | SonicPoint | **MODEL** | APL13-02C |
| **MODE** | Turbo Mode | **CHANNEL** | 2 |
| **FREQUENCY RANGE** | Above 1000 MHz | **DETECTOR FUNCTION** | Peak(PK)<br>Average (AV) |
| **ENVIRONMENTAL CONDITIONS** | 30 deg. C, 60%RH, 991 hPa | **INPUT POWER (SYSTEM)** | 120Vac, 60Hz |
| **TESTED BY** | Hardaway Lee | | |

**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 | *5250.00 | 96.7 PK | | | 2.16 H | 22 | 60.40 | 36.30 |
| 1 | *5250.00 | 86.8 AV | | | 2.16 H | 22 | 50.40 | 36.30 |
| 2 | 10500.00 | 53.2 PK | 68.30 | -15.10 | 2.22 H | 122 | 8.50 | 44.70 |

**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 | *5250.00 | 106.0 PK | | | 1.52 V | 299 | 69.60 | 36.30 |
| 1 | *5250.00 | 95.9 AV | | | 1.52 V | 299 | 59.60 | 36.30 |
| 2 | 10500.00 | 55.4 PK | 68.30 | -12.90 | 2.10 V | 99 | 10.70 | 44.70 |

**REMARKS:**

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
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.
5. “*” : Fundamental frequency

| | | | |
|---|---|---|---|
| **EUT** | SonicPoint | **MODEL** | APL13-02C |
| **MODE** | Turbo Mode | **CHANNEL** | 3 |
| **FREQUENCY RANGE** | Above 1000 MHz | **DETECTOR FUNCTION** | Peak(PK)<br>Average (AV) |
| **ENVIRONMENTAL CONDITIONS** | 30 deg. C, 60%RH, 991 hPa | **INPUT POWER (SYSTEM)** | 120Vac, 60Hz |
| **TESTED BY** | Hardaway Lee | | |

| 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 | *5290.00 | 96.2 PK | | | 1.24 H | 225 | 59.80 | 36.40 |
| 1 | *5290.00 | 86.4 AV | | | 1.24 H | 225 | 50.00 | 36.40 |
| 2 | 10579.00 | 55.9 PK | 68.30 | -12.40 | 1.54 H | 3 | 11.00 | 44.90 |

| 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 | *5290.00 | 106.8 PK | | | 1.32 V | 105 | 70.40 | 36.40 |
| 1 | *5290.00 | 96.6 AV | | | 1.32 V | 105 | 60.20 | 36.40 |
| 2 | #5350.00 | 53.4 PK | 74.00 | -20.60 | 1.32 V | 105 | 17.00 | 36.50 |
| 2 | #5350.00 | 43.2 AV | 54.00 | -10.80 | 1.32 V | 105 | 6.80 | 36.50 |
| 3 | 10579.00 | 57.9 PK | 68.30 | -10.40 | 1.24 V | 225 | 13.00 | 44.90 |

**REMARKS:**

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
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.
5. "*" : Fundamental frequency
6. "# " : The radiated frequency falling in the restricted band.

| EUT | SonicPoint | MODEL | APL13-02C |
|---|---|---|---|
| MODE | Turbo Mode | CHANNEL | 4 |
| FREQUENCY RANGE | Above 1000 MHz | DETECTOR FUNCTION | Peak(PK)<br>Average (AV) |
| ENVIRONMENTAL CONDITIONS | 30 deg. C, 60%RH, 991 hPa | INPUT POWER (SYSTEM) | 120Vac, 60Hz |
| TESTED BY | Hardaway Lee | | |

**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 | *5760.00 | 94.8 PK | | | 1.54 H | 15 | 57.70 | 37.20 |
| 1 | *5760.00 | 85.7 AV | | | 1.54 H | 15 | 48.50 | 37.20 |
| 2 | #11512.00 | 57.6 PK | 74.00 | -16.40 | 1.45 H | 315 | 11.90 | 45.70 |
| 2 | #11512.00 | 46.9 AV | 54.00 | -7.10 | 1.45 H | 315 | 1.20 | 45.70 |

**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 | 5715.00 | 61.2 PK | 68.30 | -7.10 | 1.22 V | 13 | 24.10 | 37.10 |
| 2 | 5725.00 | 71.0 PK | 78.30 | -7.30 | 1.22 V | 13 | 34.00 | 37.10 |
| 3 | *5760.00 | 105.4 PK | | | 1.22 V | 13 | 68.30 | 37.20 |
| 3 | *5760.00 | 95.5 AV | | | 1.22 V | 13 | 58.40 | 37.20 |
| 4 | #11512.00 | 59.8 PK | 74.00 | -14.20 | 1.22 V | 13 | 14.10 | 45.70 |
| 4 | #11512.00 | 47.0 AV | 54.00 | -7.00 | 1.22 V | 13 | 1.30 | 45.70 |

**REMARKS:**

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
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.
5. “*” : Fundamental frequency
6. “# “ : The radiated frequency falling in the restricted band.

| EUT | SonicPoint | MODEL | APL13-02C |
|---|---|---|---|
| MODE | Turbo Mode | CHANNEL | 5 |
| FREQUENCY RANGE | Above 1000 MHz | DETECTOR FUNCTION | Peak(PK)<br>Average (AV) |
| ENVIRONMENTAL CONDITIONS | 30 deg. C, 60%RH, 991 hPa | INPUT POWER (SYSTEM) | 120Vac, 60Hz |
| TESTED BY | Hardaway Lee | | |

**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 | *5800.00 | 95.2 PK | | | 1.54 H | 277 | 58.00 | 37.20 |
| 1 | *5800.00 | 85.9 AV | | | 1.54 H | 277 | 48.70 | 37.20 |
| 2 | #11597.00 | 55.8 PK | 74.00 | -18.20 | 1.59 H | 33 | 10.10 | 45.70 |
| 2 | #11597.00 | 36.4 AV | 54.00 | -17.60 | 1.59 H | 33 | -9.30 | 45.70 |

**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 | *5800.00 | 103.6 PK | | | 1.45 V | 315 | 66.30 | 37.20 |
| 1 | *5800.00 | 93.7 AV | | | 1.45 V | 315 | 56.50 | 37.20 |
| 2 | 5825.00 | 76.3 PK | 78.30 | -2.00 | 1.45 V | 315 | 39.00 | 37.30 |
| 3 | 5835.00 | 64.2 PK | 68.30 | -4.10 | 1.45 V | 315 | 26.90 | 37.30 |
| 4 | #11597.00 | 57.1 PK | 74.00 | -16.90 | 1.39 V | 77 | 11.40 | 45.70 |
| 4 | #11597.00 | 35.9 AV | 54.00 | -18.10 | 1.39 V | 77 | -9.80 | 45.70 |

**REMARKS:**

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
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.
5. “*” : Fundamental frequency
6. “# “ : The radiated frequency falling in the restricted band.

## 5.3 PEAK TRANSMIT POWER MEASUREMENT

### 5.3.1 LIMITS OF PEAK TRANSMIT POWER MEASUREMENT

| Frequency Band | Limit |
|---|---|
| 5.15 – 5.25 GHz | The lesser of 50mW (17dBm) or 4dBm + 10logB |
| 5.25 – 5.35 GHz | The lesser of 250mW (24dBm) or 11dBm + 10logB |
| 5.725 – 5.825 GHz | The lesser of 1W (30dBm) or 17dBm + 10logB |

**Note:** Where B is the 26dB emission bandwidth in MHz.

### 5.3.2 TEST INSTRUMENTS

| Description & Manufacturer | Model No. | Serial No. | Calibrated Until |
|---|---|---|---|
| SPECTRUM ANALYZER | FSEK30 | 100049 | Aug. 12, 2004 |

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

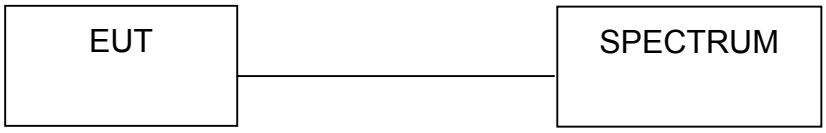
### 5.3.3 TEST PROCEDURE

1. The transmitter output was connected to the spectrum analyzer.
2. Set span to encompass the entire emission bandwidth of the signal.
3. Set RBW to 1MHz, VBW to 300kHz.
4. Using the spectrum analyzer's channel power measurement function to measure the output power.

### 5.3.4 DEVIATION FROM TEST STANDARD

No deviation

### 5.3.5 TEST SETUP




### 5.3.6 EUT OPERATING CONDITIONS

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

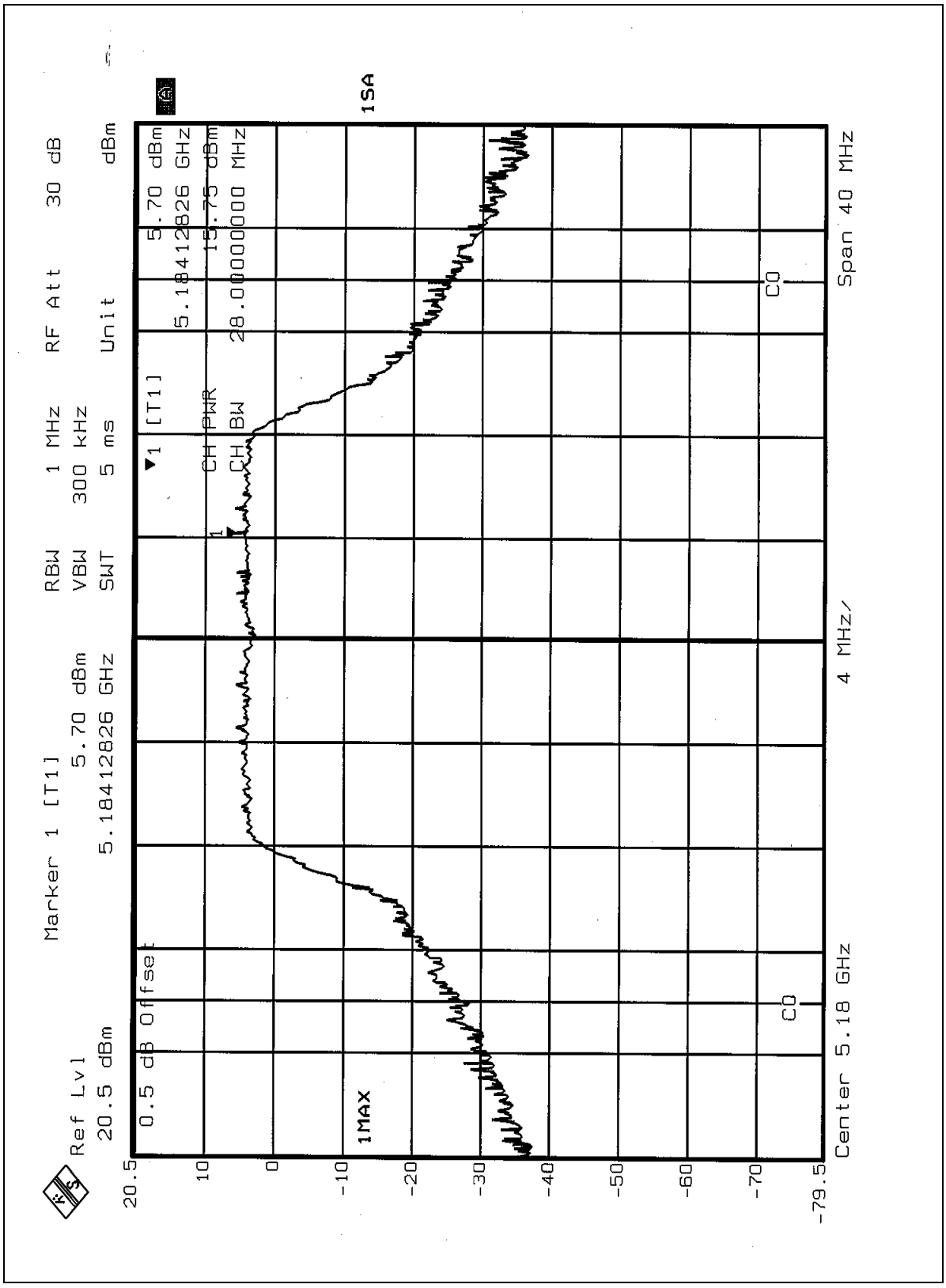
## 5.3.7 TEST RESULTS

| | | | |
|---|---|---|---|
| **EUT** | SonicPoint | **MODEL** | APL13-02C |
| **MODE** | Normal | **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz |
| **ENVIRONMENTAL CONDITIONS** | 26 deg. C, 65%RH, 991 hPa | **TESTED BY** | Ansen Lei |

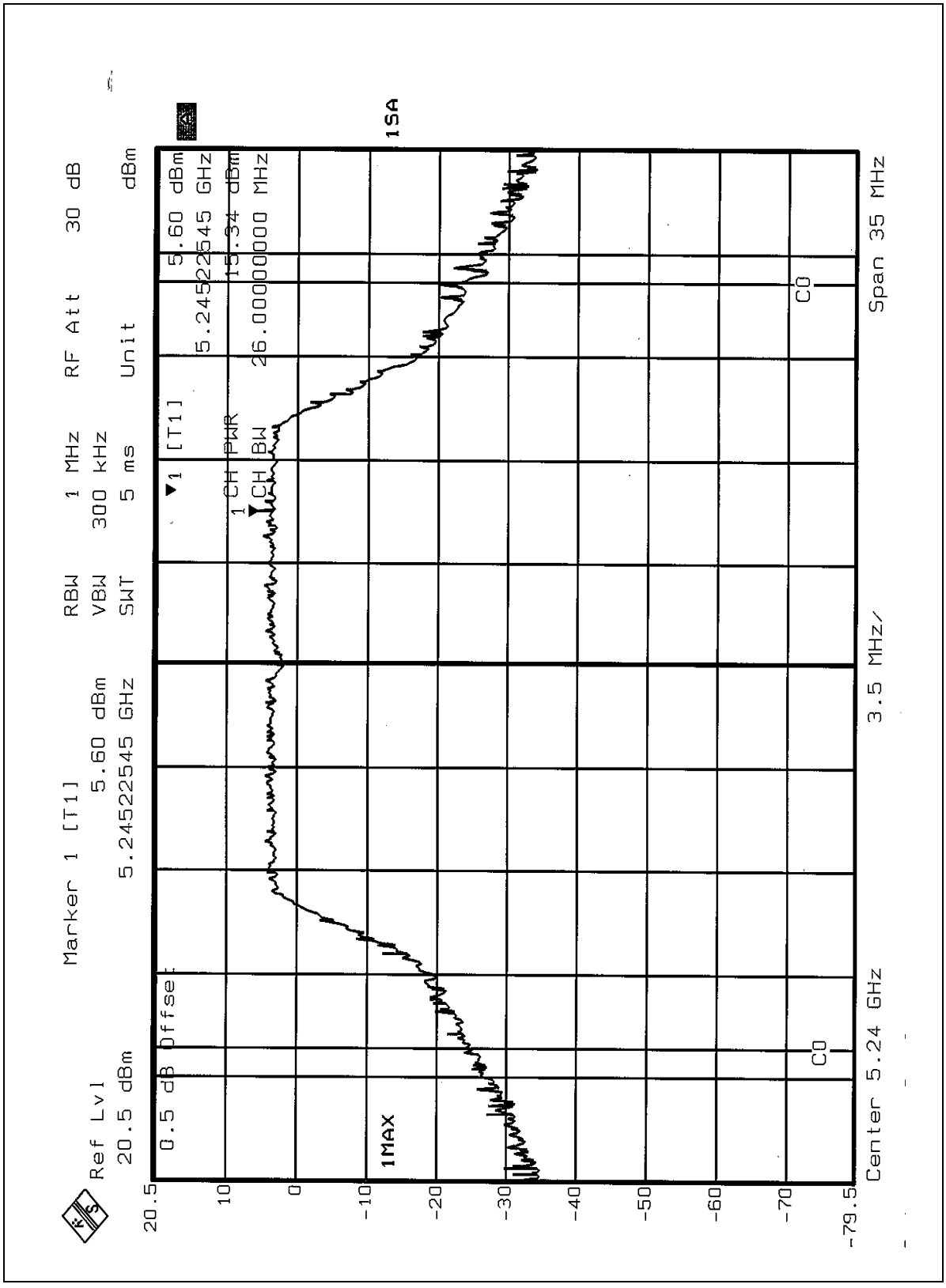
| CHANNEL | CHANNEL FREQUENCY (MHz) | PEAK POWER OUTPUT (dBm) | PEAK POWER LIMIT (dBm) | 26dBc Occupied Bandwidth (MHz) | PASS/FAIL |
|---|---|---|---|---|---|
| 1 | 5180 | 15.75 | 17 | 24.62 | PASS |
| 4 | 5240 | 15.34 | 17 | 25.46 | PASS |
| 5 | 5260 | 19.81 | 24 | 24.76 | PASS |
| 8 | 5320 | 19.37 | 24 | 33.60 | PASS |
| 9 | 5745 | 19.06 | 30 | 27.64 | PASS |
| 12 | 5805 | 19.22 | 30 | 28.76 | PASS |

**NOTE:** The 26dBc Occupied Bandwidth plot, please refer to the following pages.

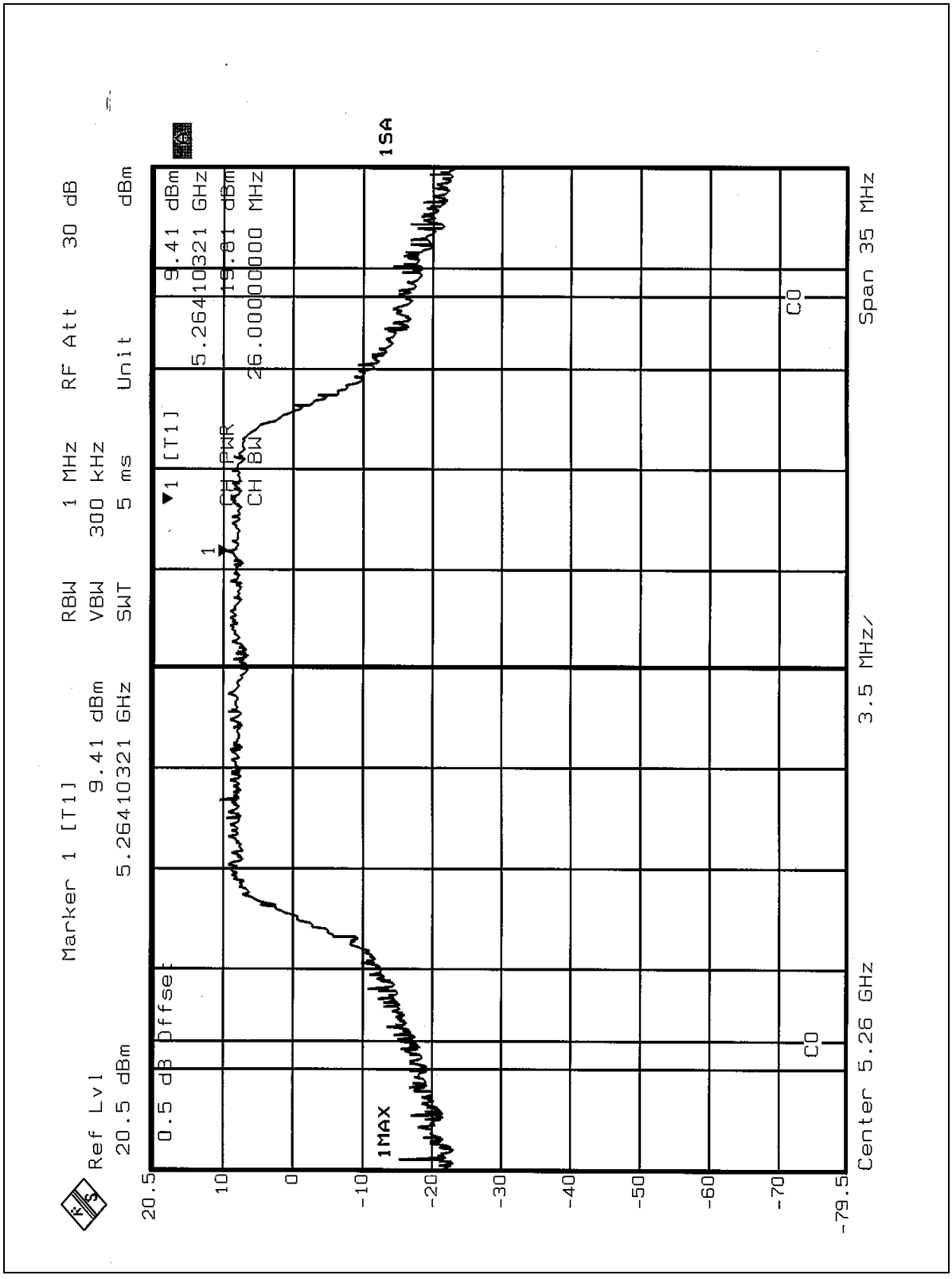
**Peak Power Output:**
CHANNEL 1



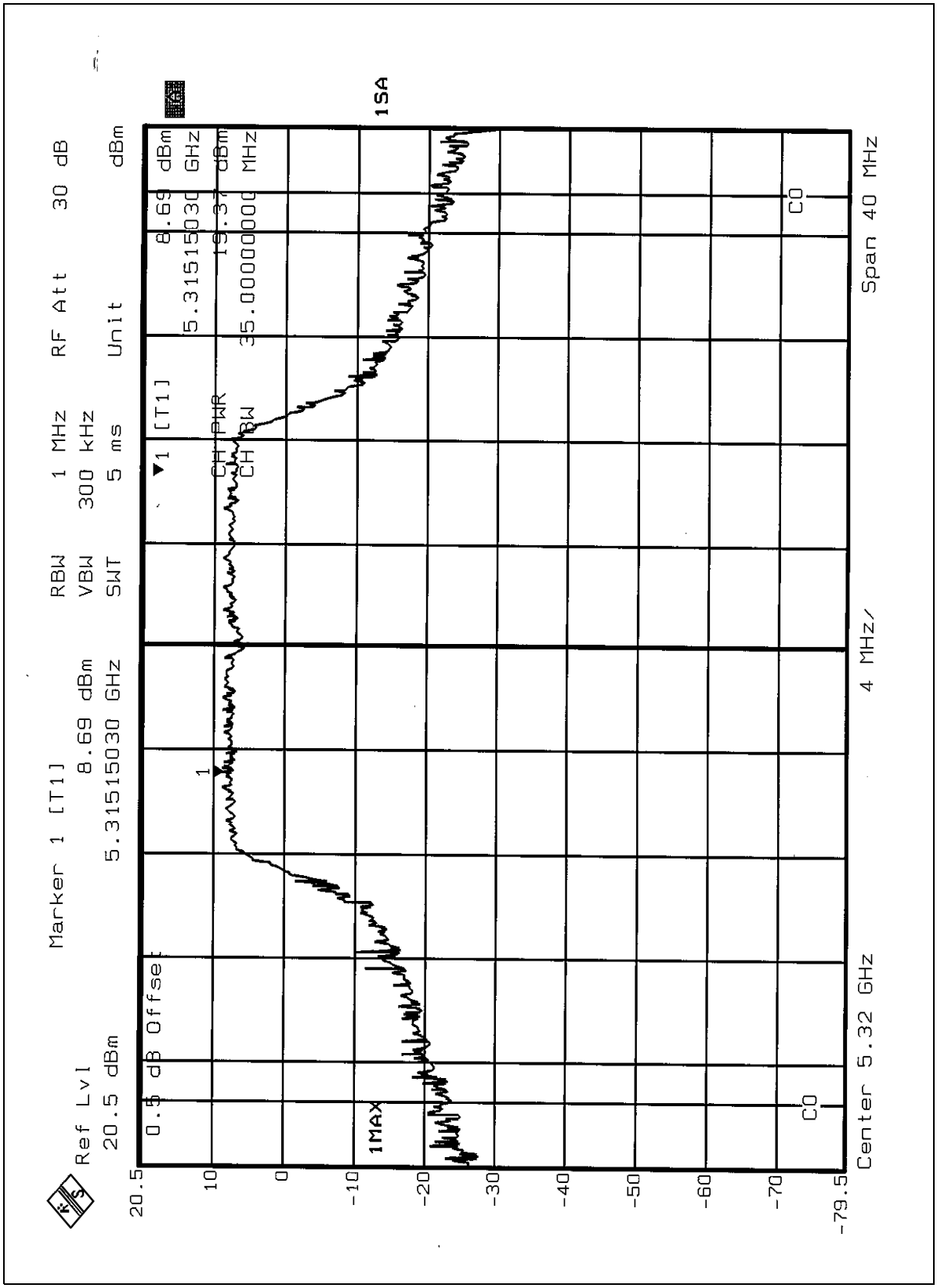
CHANNEL 4


Marker 1 [T1]
5.60 dBm
5.24522545 GHz
Ref Lvl
20.5 dBm
0.5 dB Offset
RBW 1 MHz
VBW 300 kHz
SWT 5 ms
RF Att 30 dB
Unit dBm
1SA
1MAX
1 CH PWR
1 CH BW
5.60 dBm
5.24522545 GHz
15.34 dBm
26.000000000 MHz
Center 5.24 GHz
3.5 MHz/
Span 35 MHz
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5

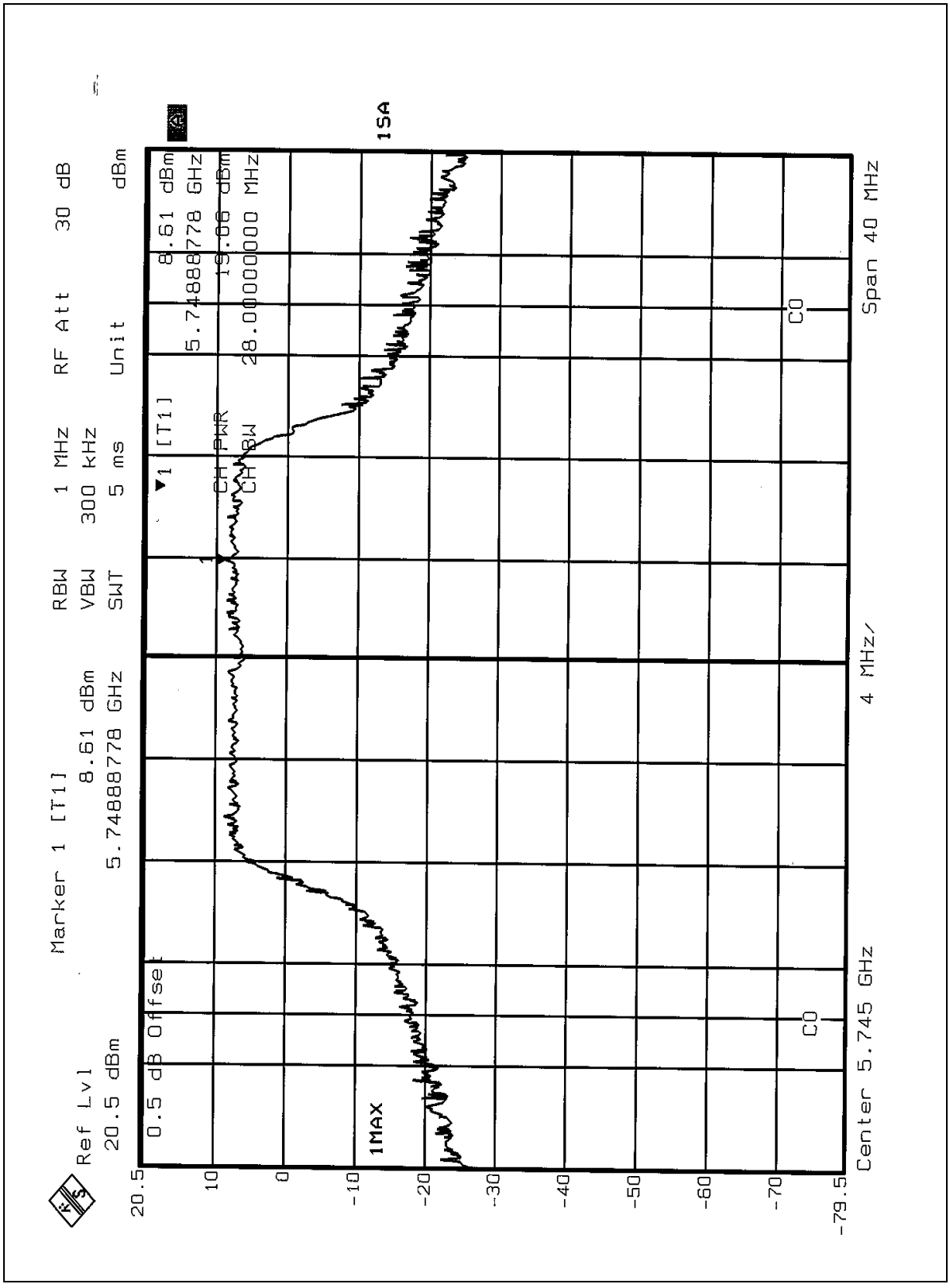
CHANNEL 5


Marker 1 [T1]
9.41 dBm
5.26410321 GHz
Ref Lvl
20.5 dBm
0.5 dB Offset
RBW 1 MHz
VBW 300 kHz
SWT 5 ms
RF Att 30 dB
Unit dBm
1 [T1]
CH PWR
CH BW
9.41 dBm
5.26410321 GHz
19.81 dBm
26.000000000 MHz
1SA
1MAX
Center 5.26 GHz
3.5 MHz/
Span 35 MHz
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5

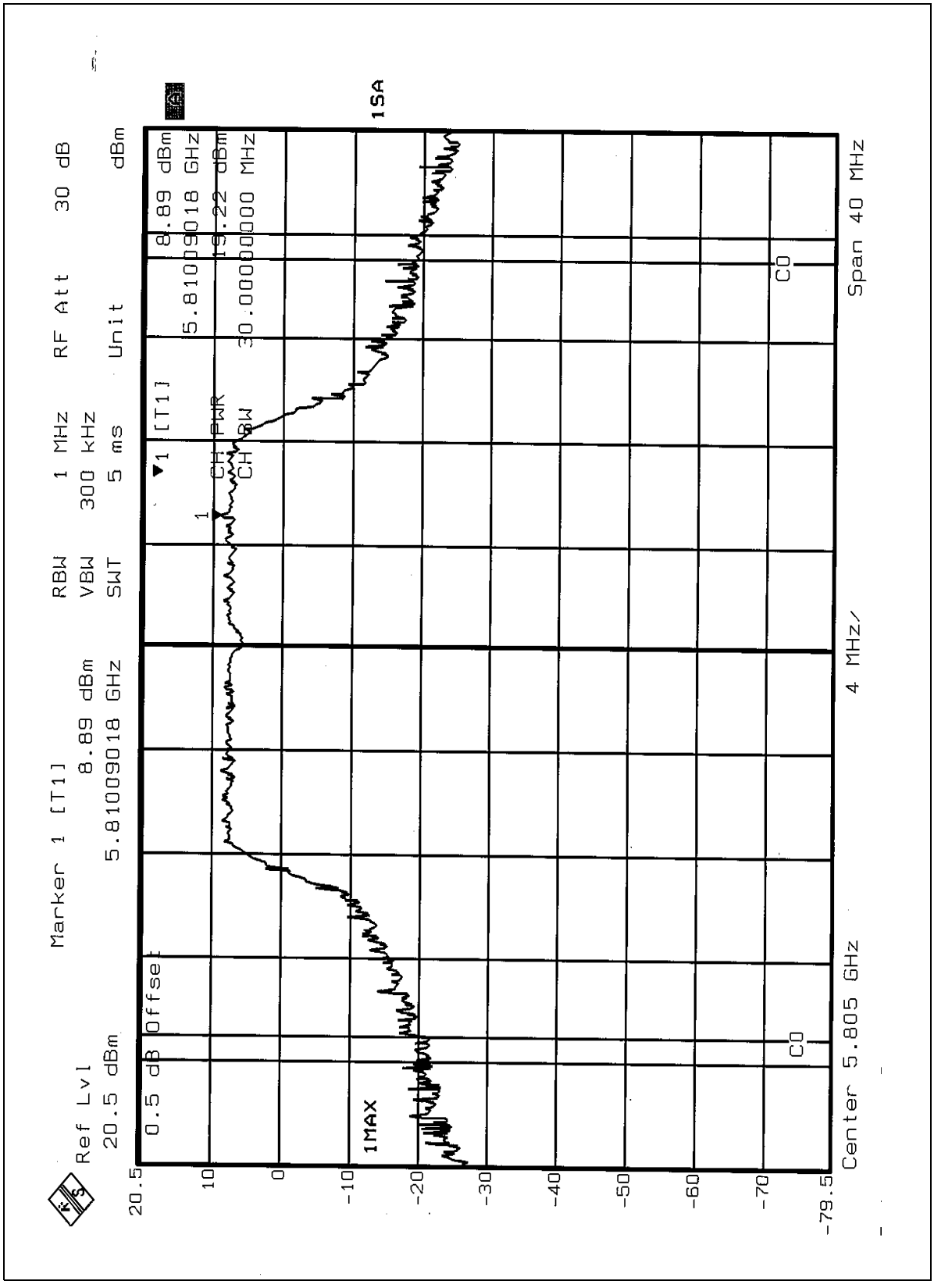
CHANNEL 8


Marker 1 [T1]
8.69 dBm
5.315150300 GHz
Ref Lvl
20.5 dBm
0.5 dB Offset
RBW 1 MHz
VBW 300 kHz
SWT 5 ms
RF Att 30 dB
Unit dBm
CH PWR
CH BW
Center 5.32 GHz
4 MHz/
Span 40 MHz
1MAX
1SA

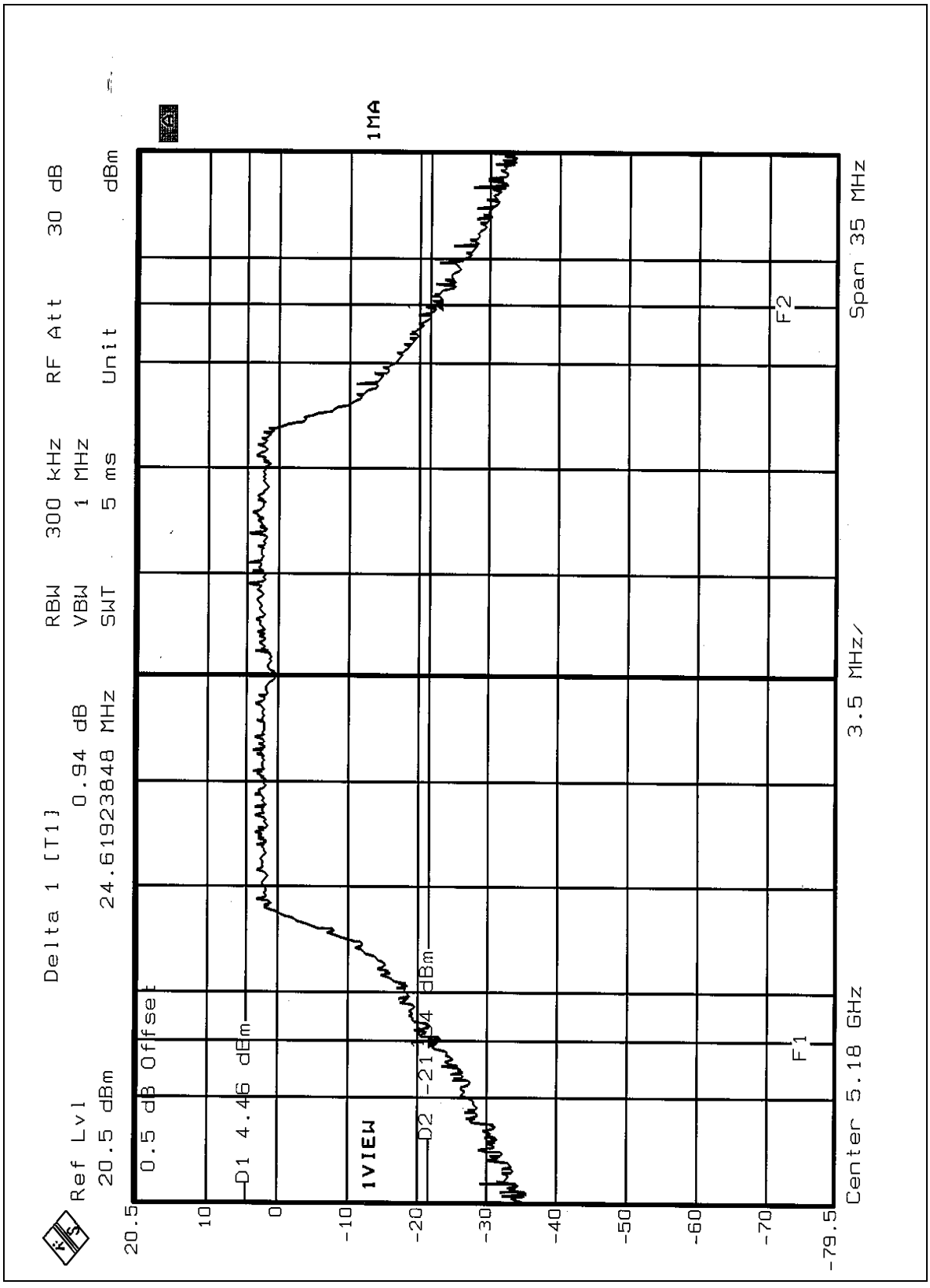
CHANNEL 9


Marker 1 [T1]
8.61 dBm
5.74888778 GHz
RBW 1 MHz
VBW 300 kHz
SWT 5 ms
RF Att 30 dB
Unit dBm
Ref Lvl
20.5 dBm
0.5 dB Offset
1MAX
1SA
CH PWR
8.61 dBm
5.74888778 GHz
CH BW
19.06 dBm
28.00000000 MHz
Center 5.745 GHz
4 MHz/
Span 40 MHz
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5

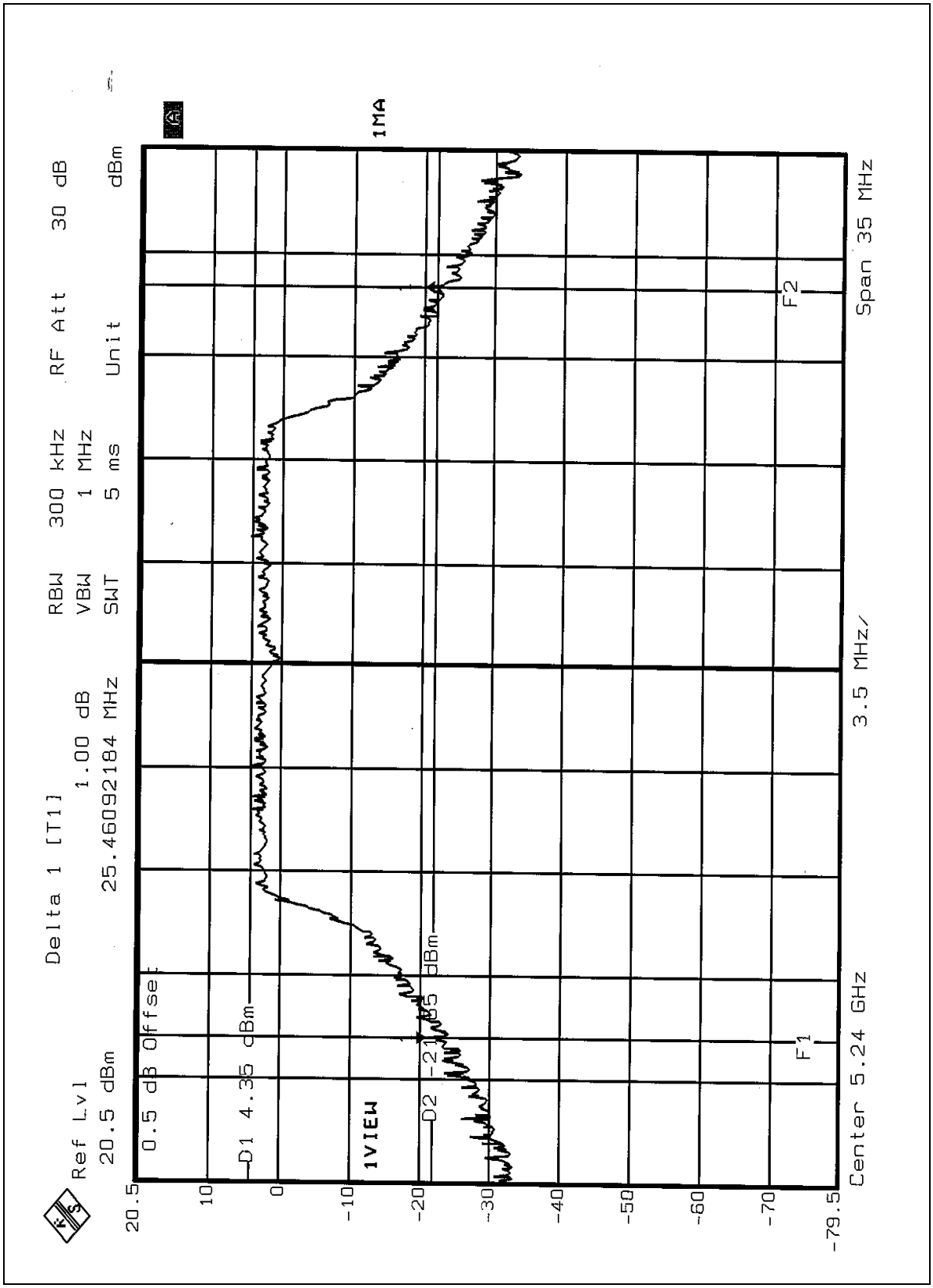
CHANNEL 12


Marker 1 [T1]
8.89 dBm
5.81009018 GHz
Ref Lvl
20.5 dBm
0.5 dB Offset
RBW 1 MHz
VBW 300 kHz
SWT 5 ms
RF Att 30 dB
Unit dBm
1 [T1]
8.89 dBm
5.81009018 GHz
CH PWR 19.22 dBm
CH BW 30.000000000 MHz
1SA
1MAX
Center 5.805 GHz
4 MHz/
Span 40 MHz
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5

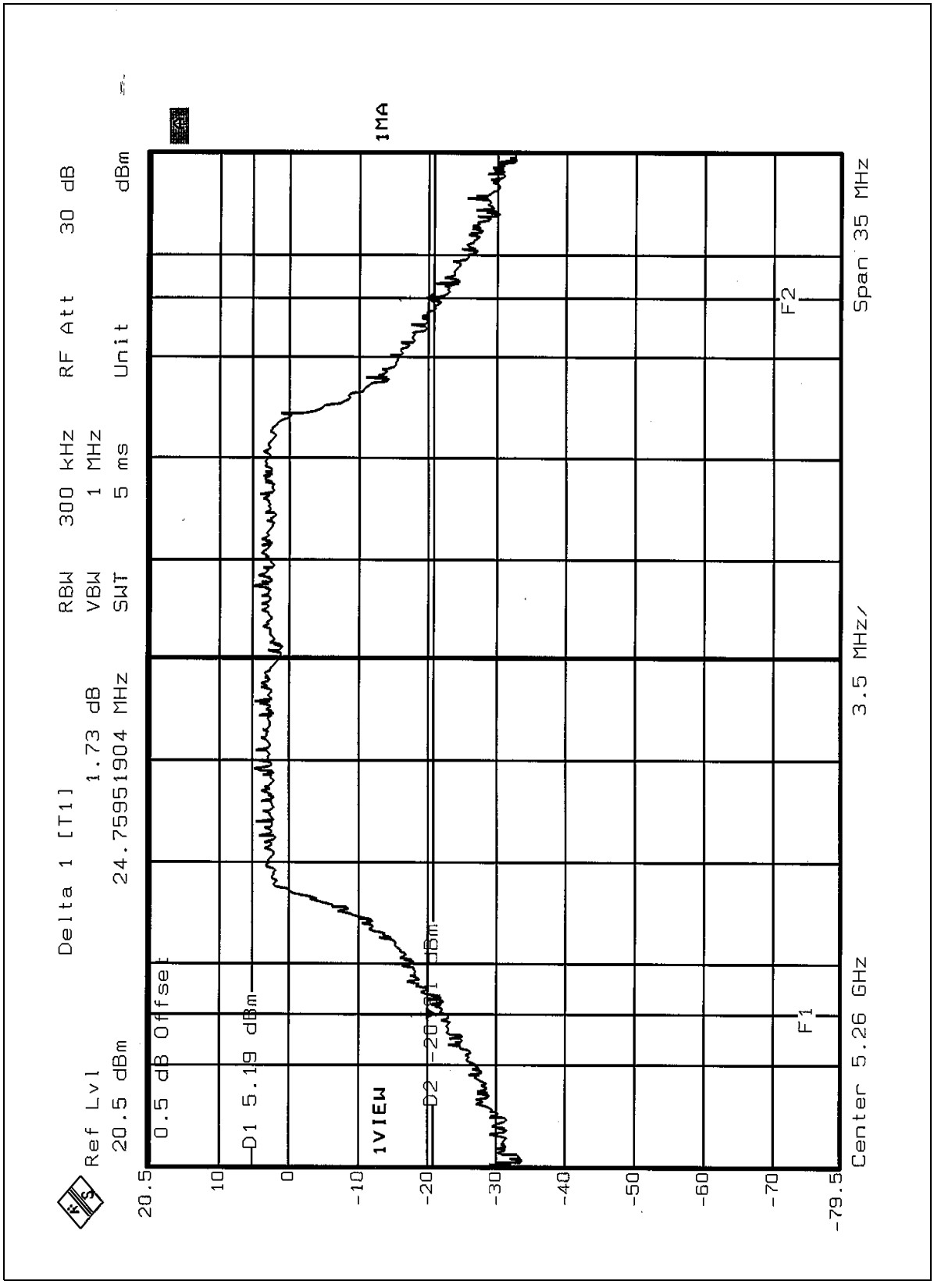
**26dBc Occupied Bandwidth:**
CHANNEL 1



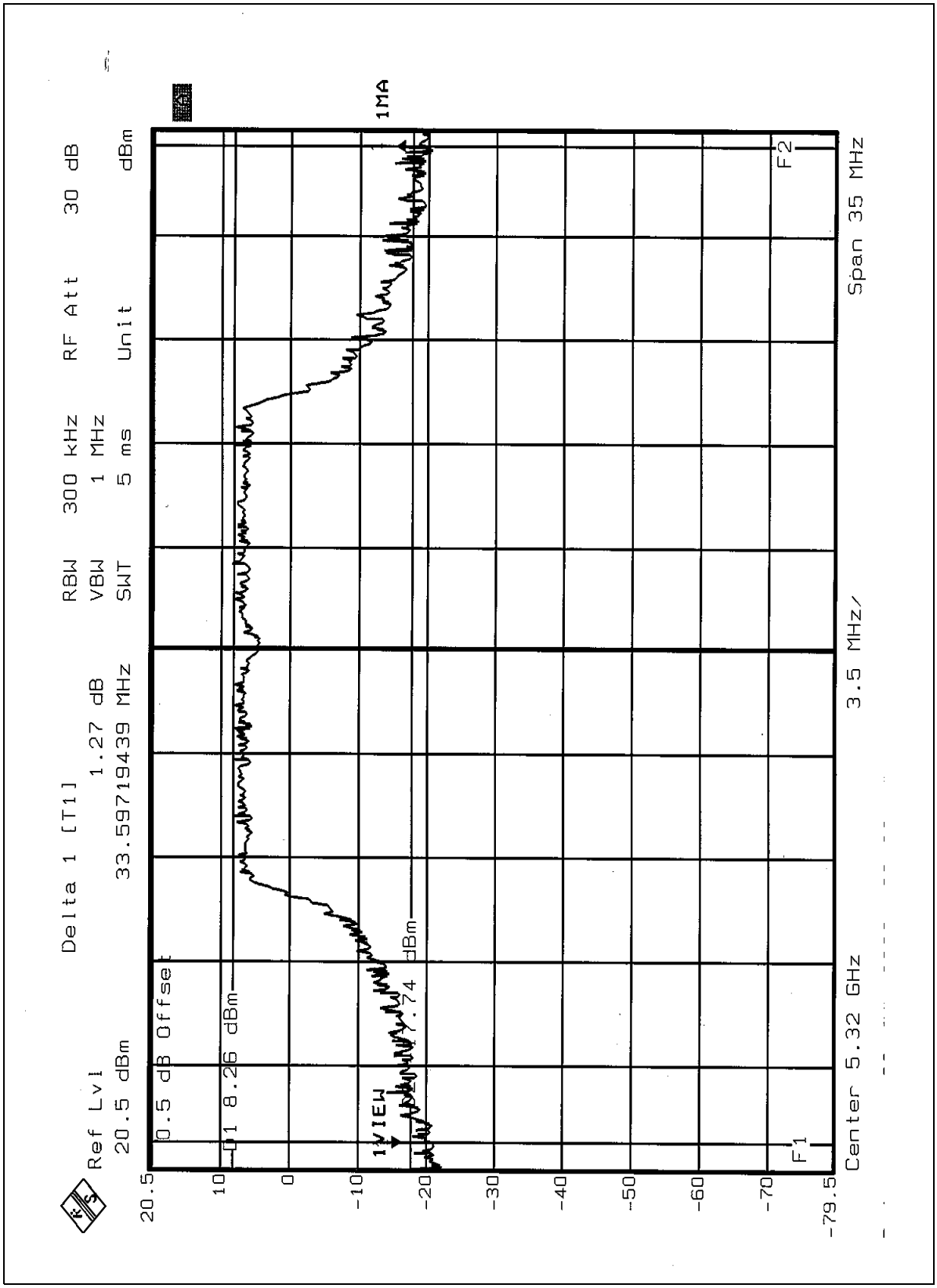
CHANNEL 4


Ref Lvl
20.5 dBm
0.5 dB Offset
Delta 1 [T1]
1.00 dB
25.46092184 MHz
RBW 300 kHz
VBW 1 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
1MA
1VIEW
D1 4.35 dBm
D2 -21.65 dBm
F1
F2
Center 5.24 GHz
3.5 MHz/
Span 35 MHz
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5

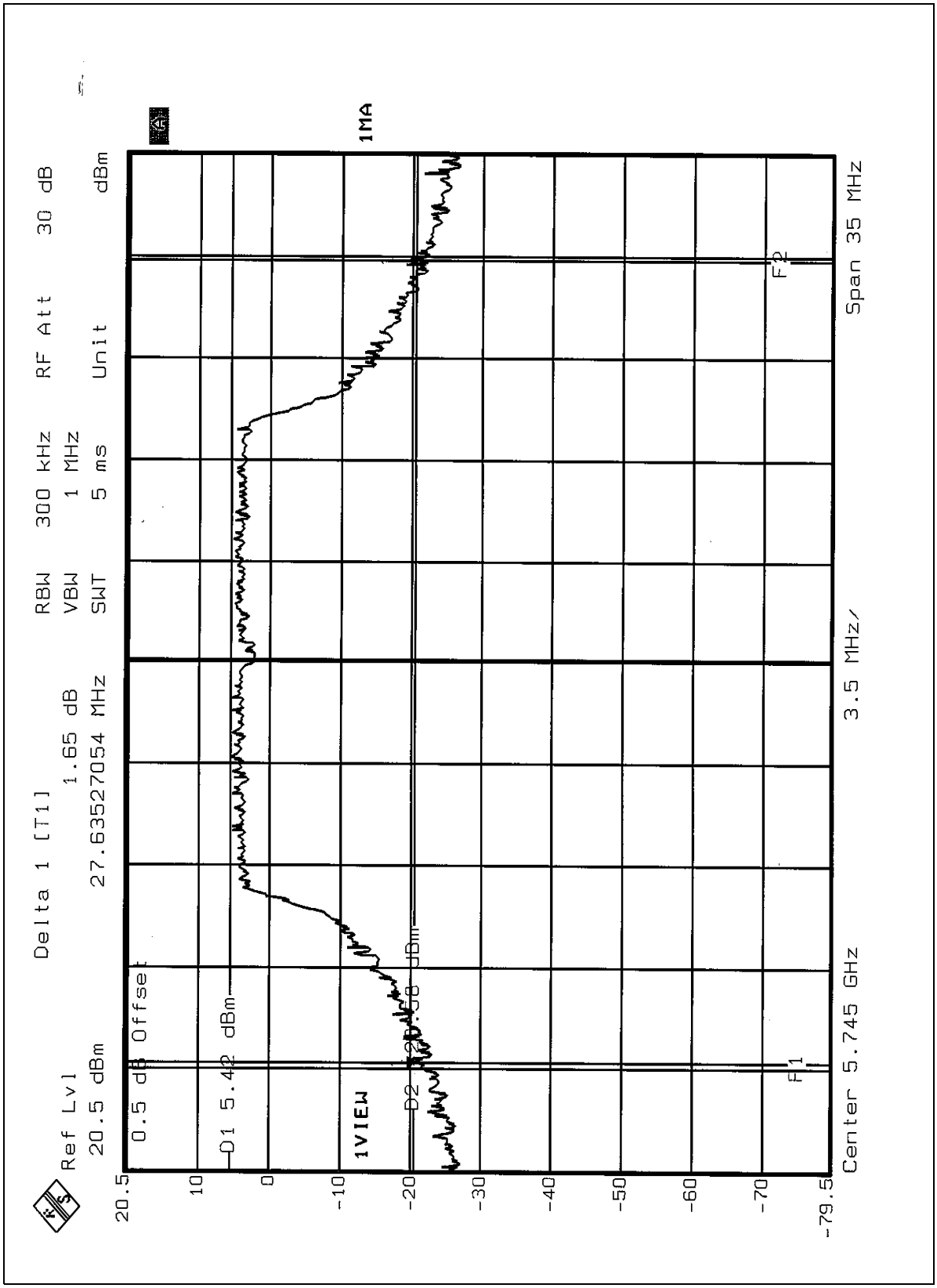
CHANNEL 5


Ref Lvl
20.5 dBm
0.5 dB Offset
Delta 1 [T1]
1.73 dB
24.75951904 MHz
RBW 300 kHz
VBW 1 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
1MA
D1 5.19 dBm
D2 -20.81 dBm
1VIEW
F1
F2
Center 5.26 GHz
3.5 MHz/
Span 35 MHz
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5

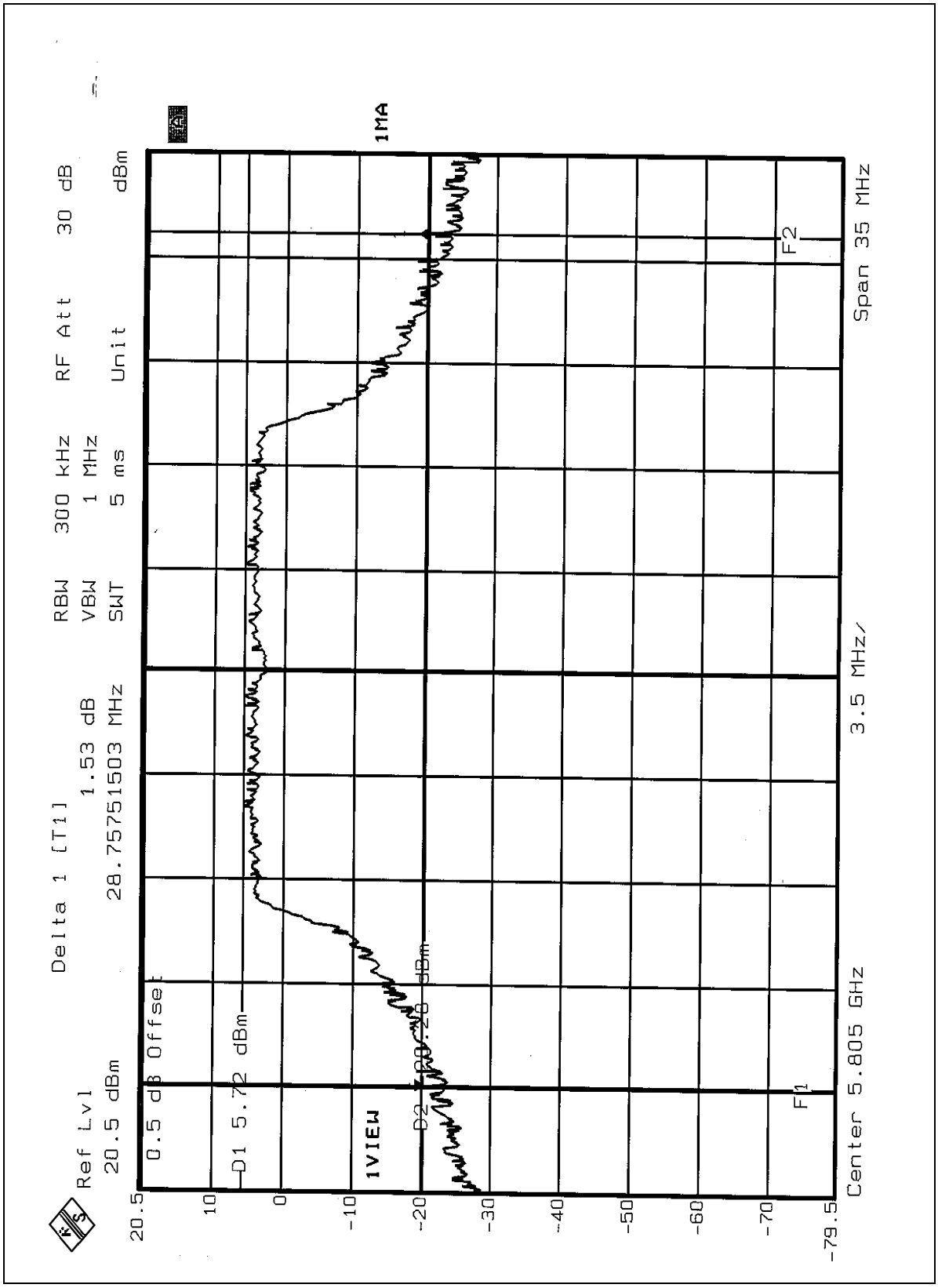
CHANNEL 8


Delta 1 [T1]
1.27 dB
33.59719439 MHz
RBW 300 kHz
VBW 1 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
Ref Lvl
20.5 dBm
0.5 dB Offset
D1 8.26 dBm
1VIEW
7.74 dBm
1MA
F2
F1
Span 35 MHz
3.5 MHz/
Center 5.32 GHz
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5

CHANNEL 9


Ref Lvl
20.5 dBm
0.5 dB Offset
D1 5.42 dBm
Delta 1 [T1]
1.65 dB
27.63527054 MHz
RBW 300 kHz
VBW 1 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
1MA
1VIEW
D2 -20.38 dBm
F1
F2
Center 5.745 GHz
3.5 MHz/
Span 35 MHz
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5

CHANNEL 12

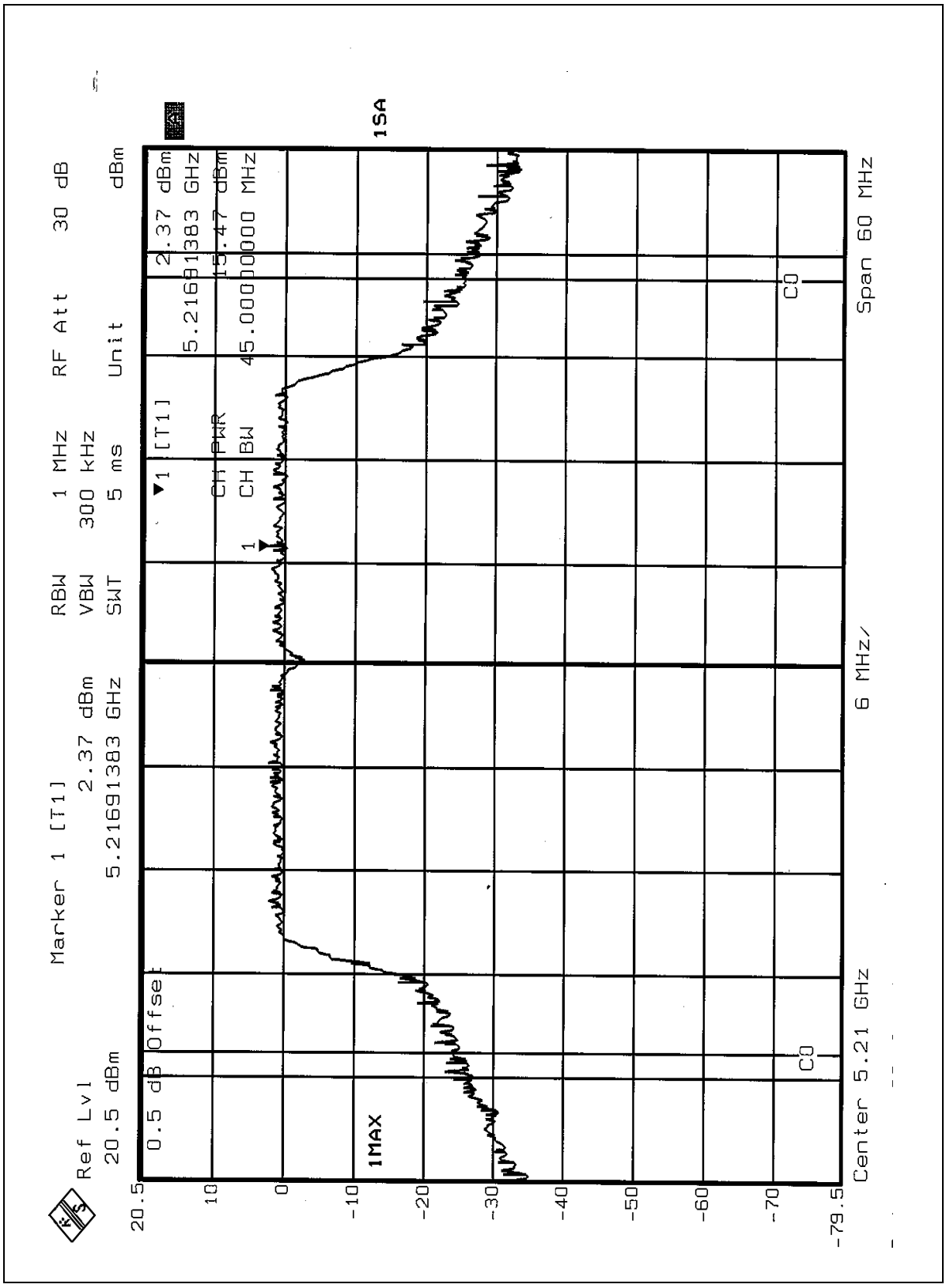

Ref Lvl
20.5 dBm
0.5 dB Offset
Delta 1 [T1]
1.53 dB
28.75751503 MHz
RBW 300 kHz
VBW 1 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
1MA
1VIEW
D1 5.72 dBm
F1
F2
Center 5.805 GHz
3.5 MHz/
Span 35 MHz
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5

| | | | |
|---|---|---|---|
| **EUT** | SonicPoint | **MODEL** | APL13-02C |
| **MODE** | Turbo | **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz |
| **ENVIRONMENTAL CONDITIONS** | 26deg. C, 65%RH, 991 hPa | **TESTED BY** | Ansen Lei |

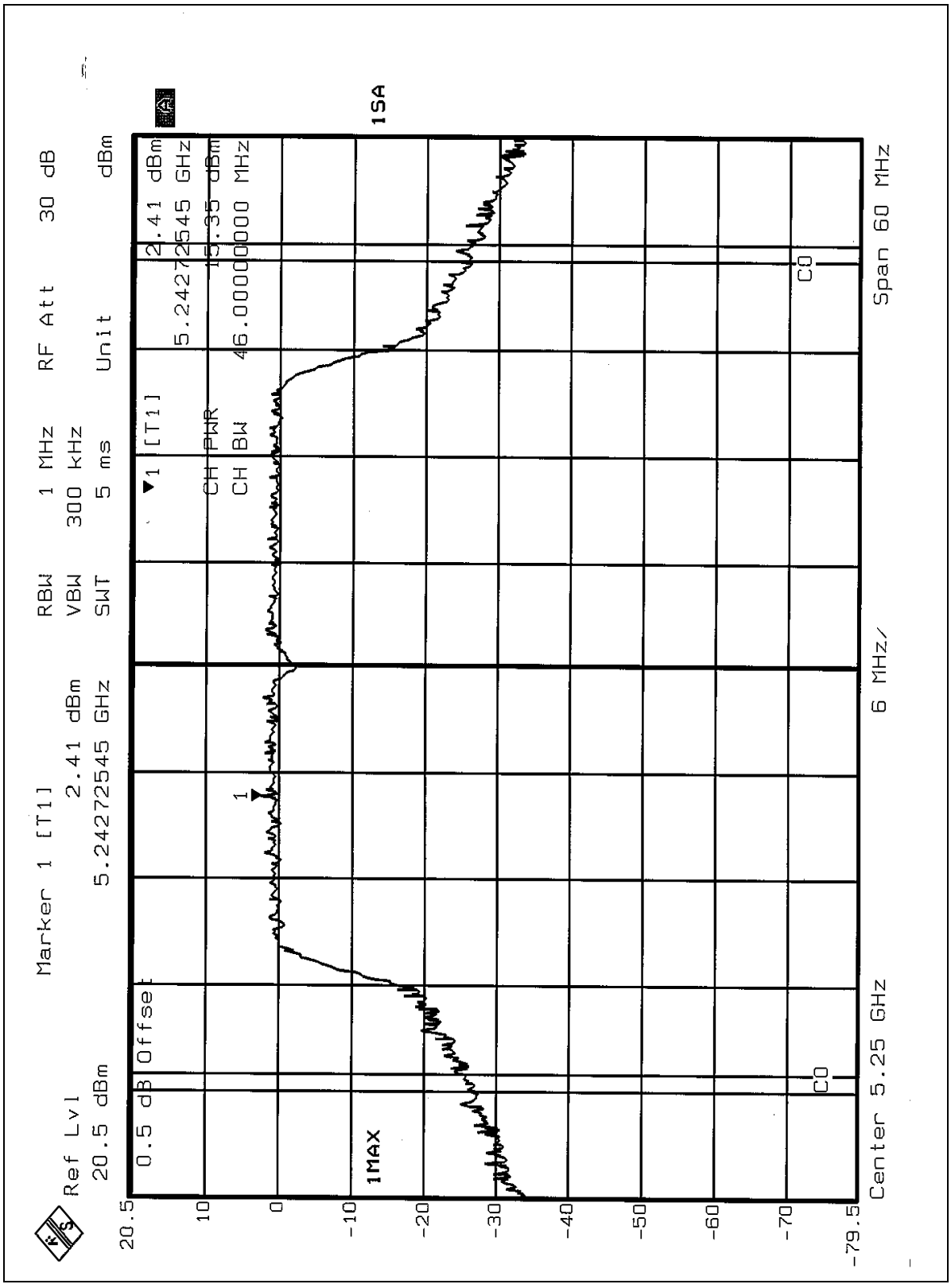
| CHANNEL | CHANNEL FREQUENCY (MHz) | PEAK POWER OUTPUT (dBm) | PEAK POWER LIMIT (dBm) | 26dBc Occupied Bandwidth (MHz) | PASS/FAIL |
|---|---|---|---|---|---|
| 1 | 5210 | 15.47 | 17 | 42.81 | PASS |
| 2 | 5250 | 15.35 | 17 | 45.45 | PASS |
| 3 | 5290 | 16.07 | 24 | 45.69 | PASS |
| 4 | 5760 | 14.89 | 30 | 45.93 | PASS |
| 5 | 5800 | 14.35 | 30 | 46.29 | PASS |

**NOTE:** The 26dBc Occupied Bandwidth plot, please refer to the following pages.

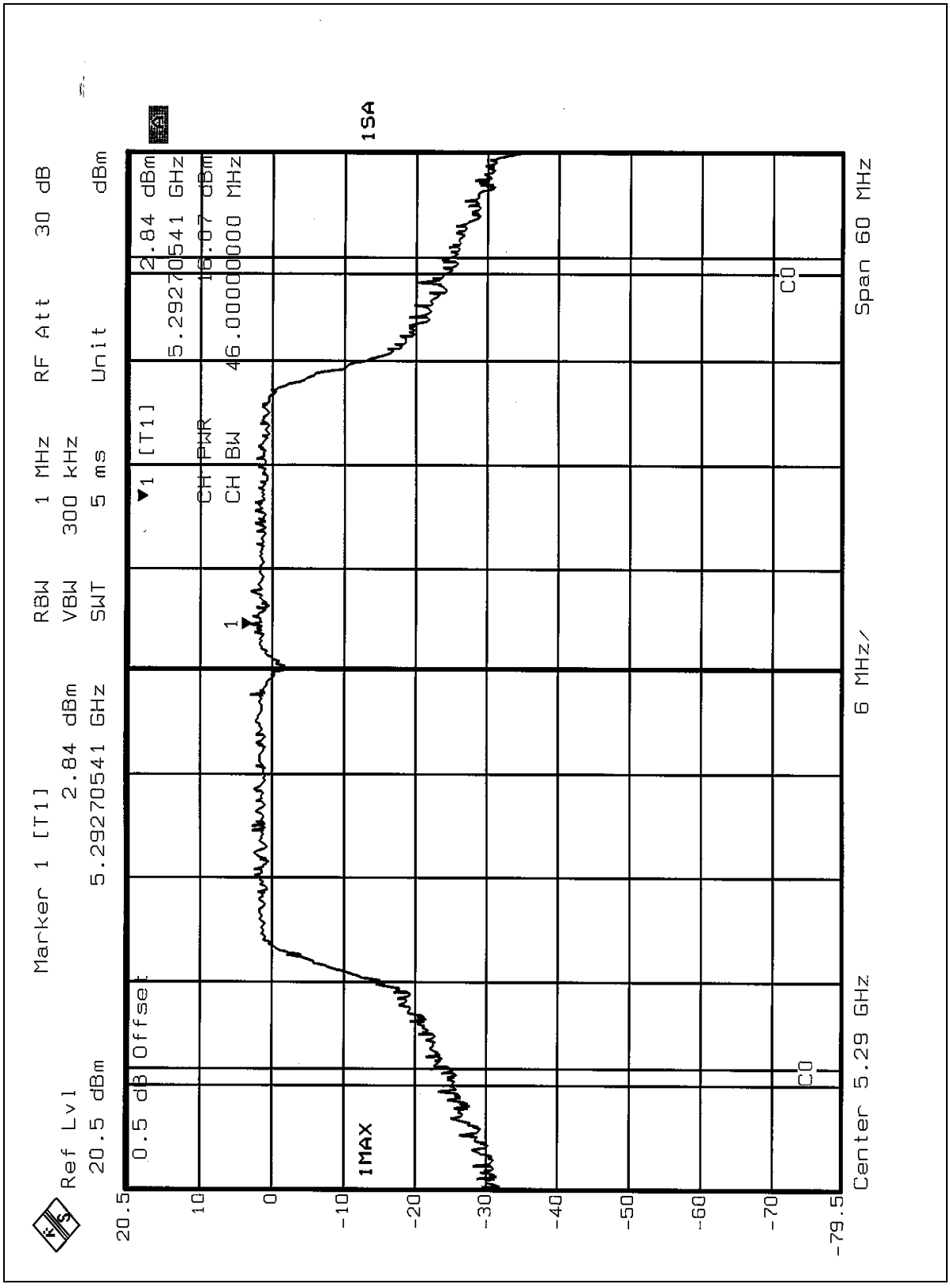
**Peak Power Output:**
CHANNEL 1



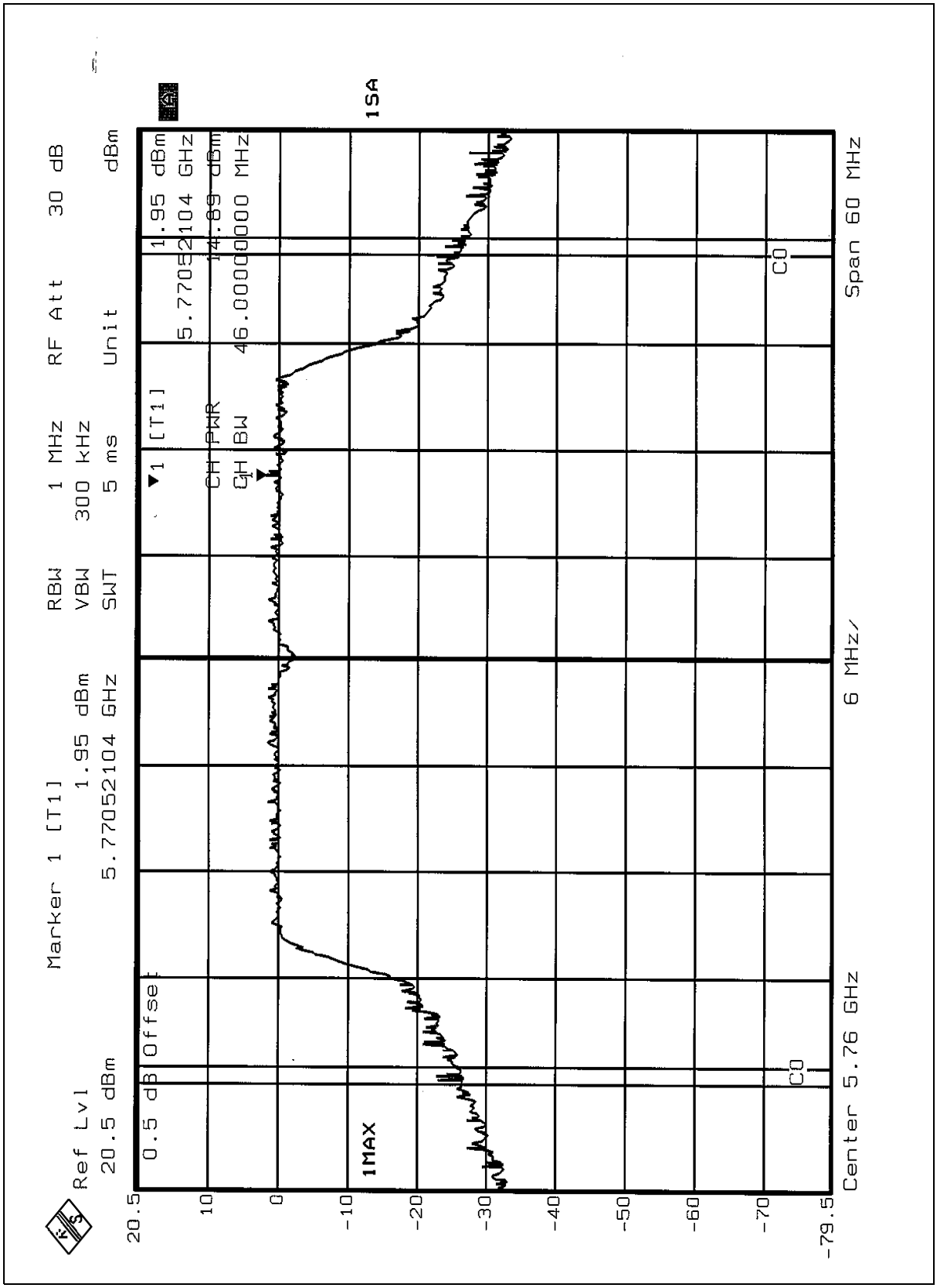
CHANNEL 2


Marker 1 [T1]
2.41 dBm
5.24272545 GHz
Ref Lvl
20.5 dBm
0.5 dB Offset
RBW 1 MHz
VBW 300 kHz
SWT 5 ms
RF Att 30 dB
Unit dBm
1 [T1]
CH PWR 2.41 dBm
CH BW 5.24272545 GHz
46.000000000 MHz
15.35 dBm
1SA
1MAX
Center 5.25 GHz
6 MHz/
Span 60 MHz
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5

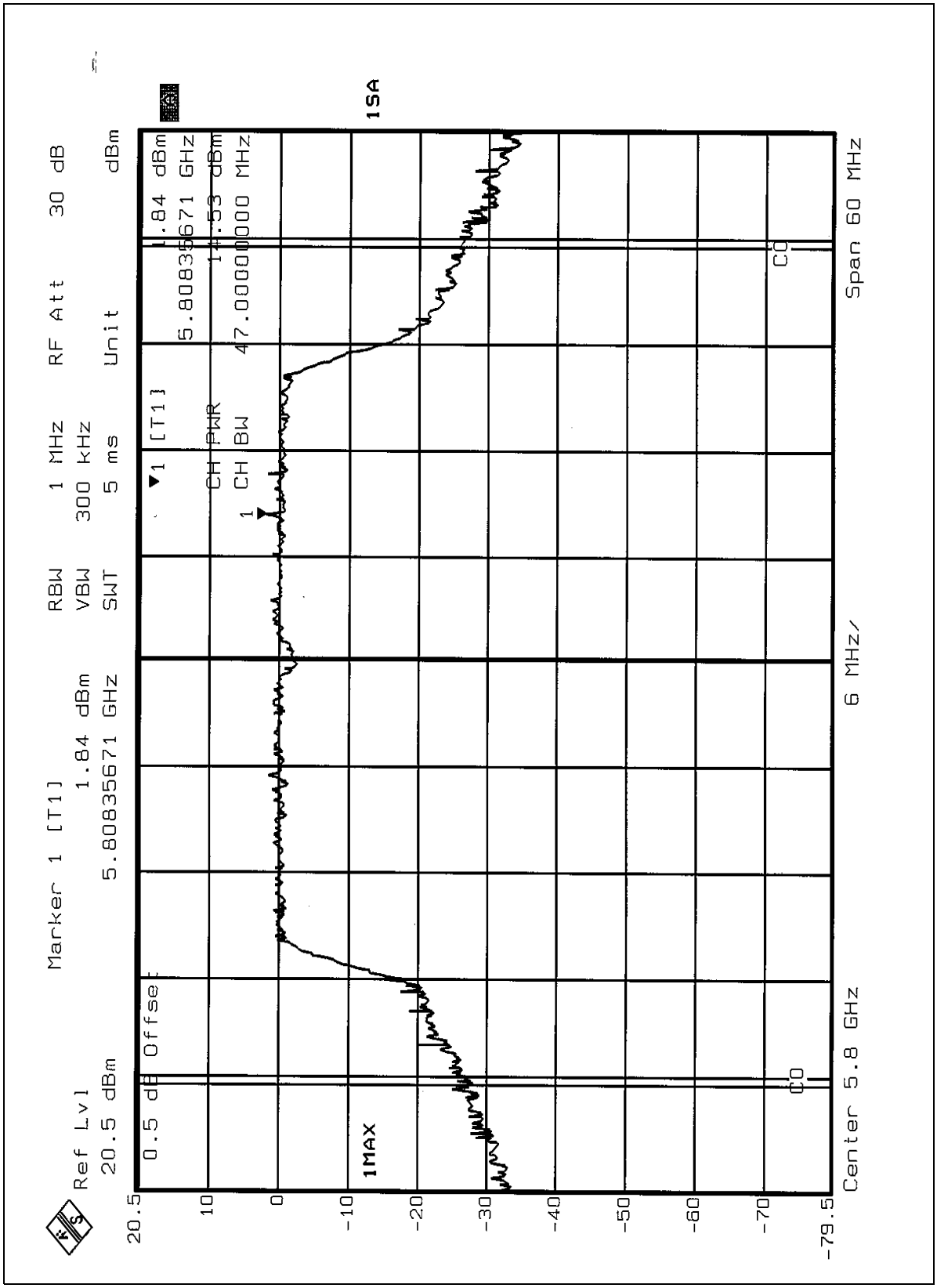
CHANNEL 3


Marker 1 [T1]
2.84 dBm
5.29270541 GHz
RBW 1 MHz
VBW 300 kHz
SWT 5 ms
RF Att 30 dB
Unit dBm
Ref Lvl
20.5 dBm
0.5 dB Offset
1MAX
1SA
[T1]
CH PWR 16.07 dBm
CH BW 46.000000000 MHz
2.84 dBm
5.29270541 GHz
Center 5.29 GHz
6 MHz/
Span 60 MHz
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5

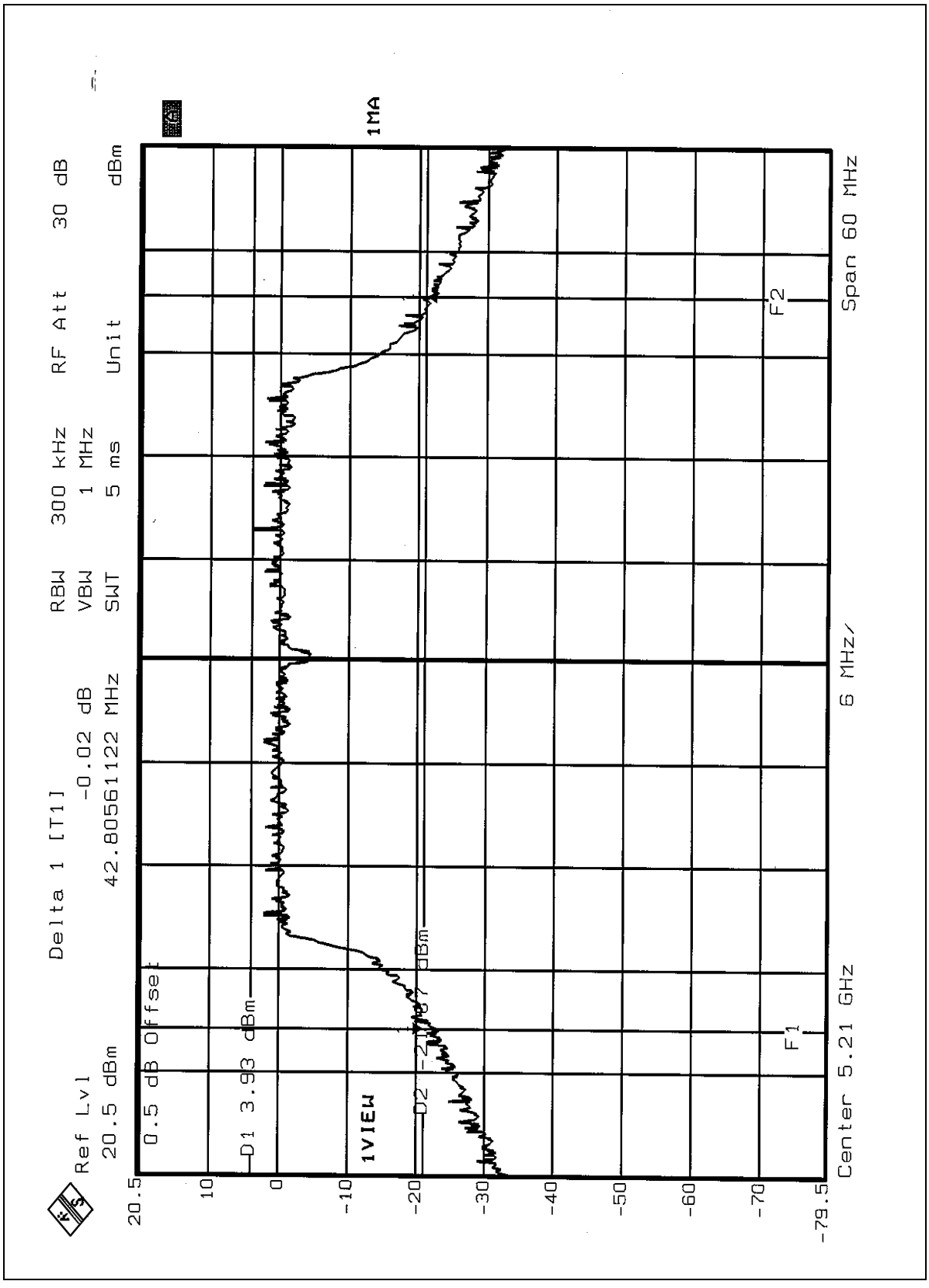
CHANNEL 4


Ref Lvl
20.5 dBm
0.5 dB Offset
Marker 1 [T1]
1.95 dBm
5.77052104 GHz
RBW 1 MHz
VBW 300 kHz
SWT 5 ms
RF Att 30 dB
Unit dBm
1SA
1MAX
1 [T1]
CH PWR 1.95 dBm
CH BW 5.77052104 GHz
14.89 dBm
46.0000000 MHz
Center 5.76 GHz
6 MHz/
Span 60 MHz
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5

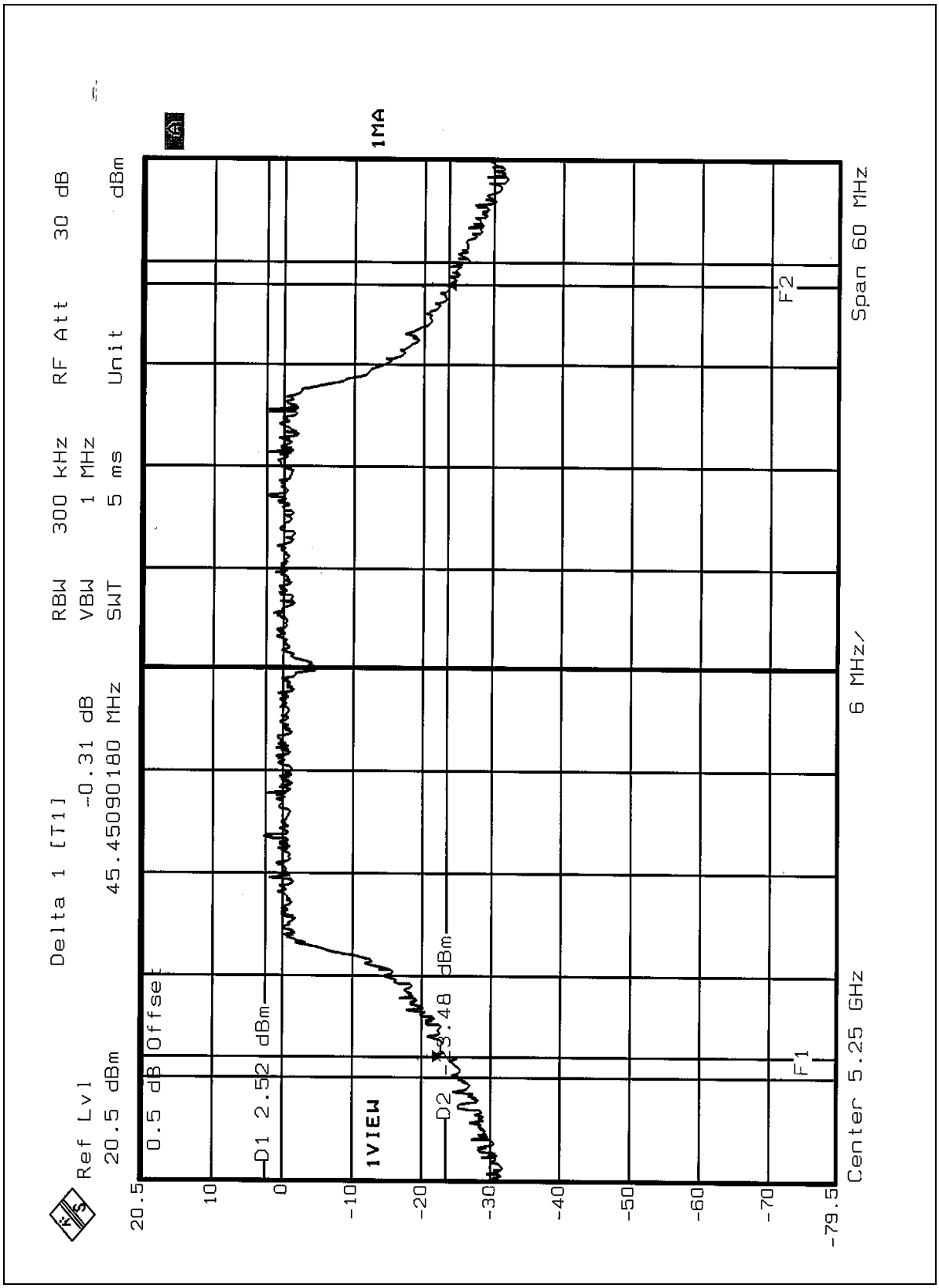
CHANNEL 5


Marker 1 [T1]
1.84 dBm
5.80835671 GHz
RBW 1 MHz
VBW 300 kHz
SWT 5 ms
RF Att 30 dB
Unit dBm
Ref Lvl
20.5 dBm
0.5 dB Offset
1MAX
1SA
CH PWR
1 CH BW
Center 5.8 GHz
6 MHz/
Span 60 MHz

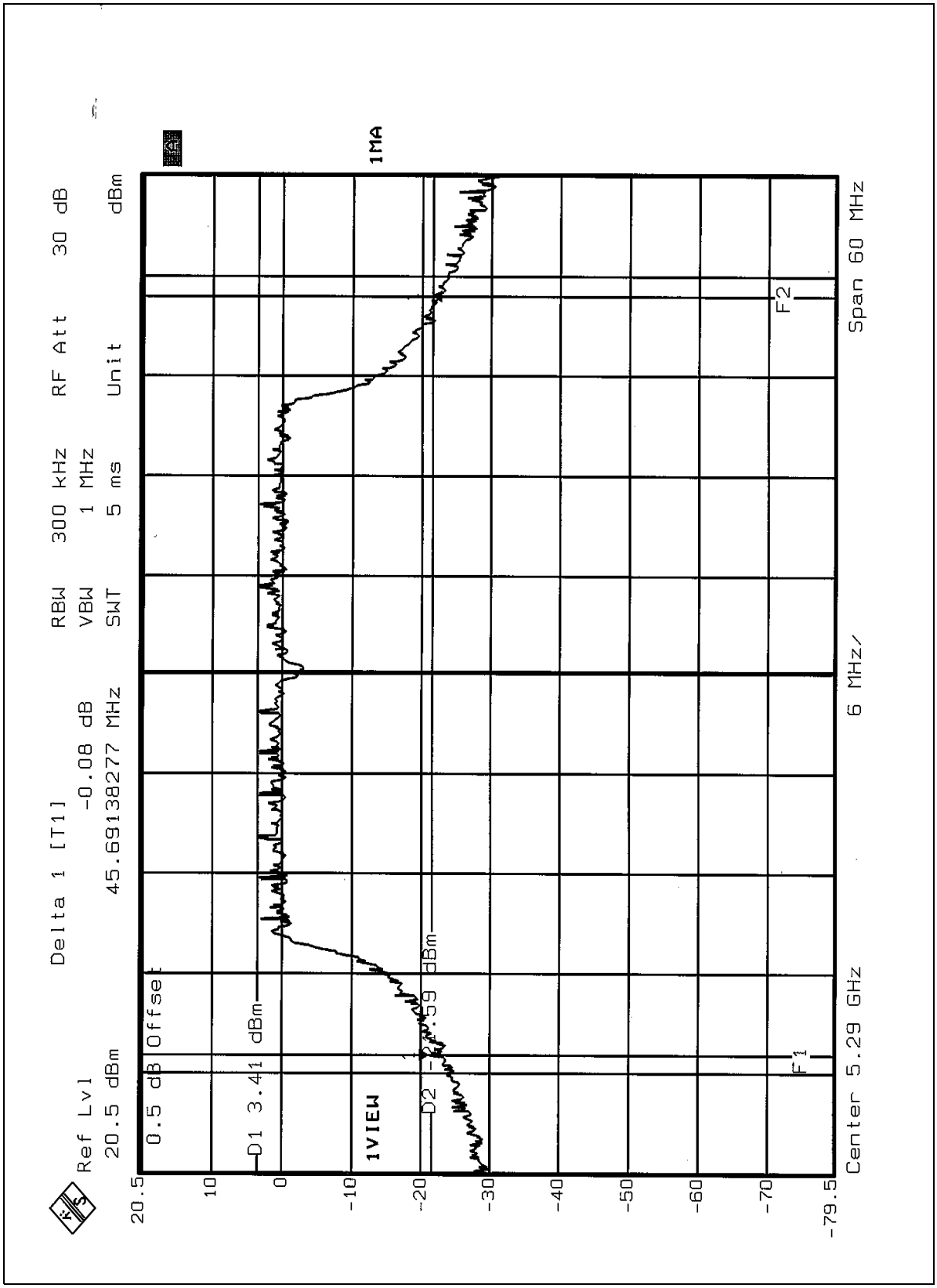
**26dBc Occupied Bandwidth:**
CHANNEL 1



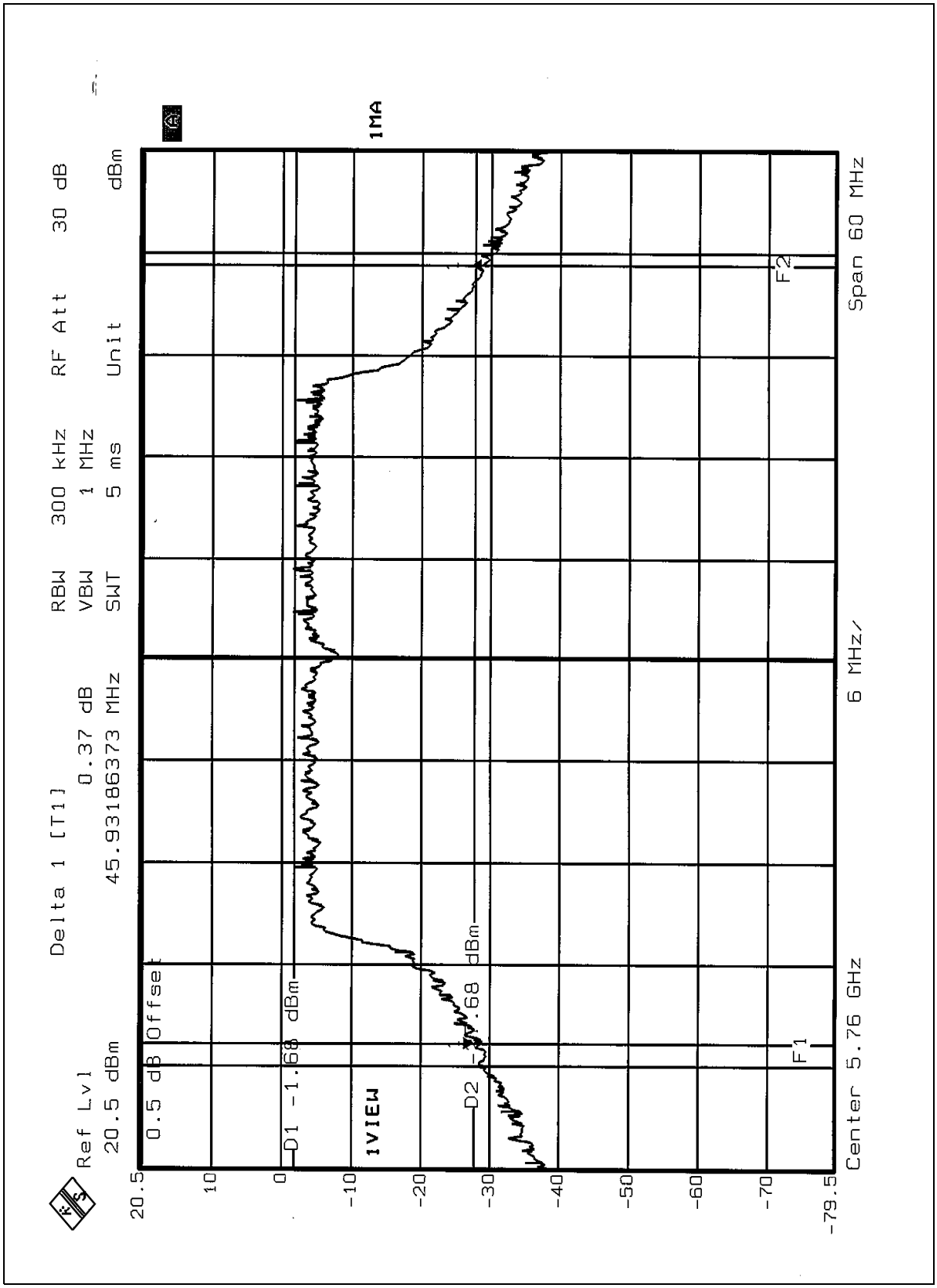
CHANNEL 2


Ref Lvl
20.5 dBm
0.5 dB Offset
Delta 1 [T1]
-0.31 dB
45.450901800 MHz
RBW 300 kHz
VBW 1 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
1MA
1VIEW
D1 2.52 dBm
D2 -3.48 dBm
F1
F2
Center 5.25 GHz
6 MHz/
Span 60 MHz
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5

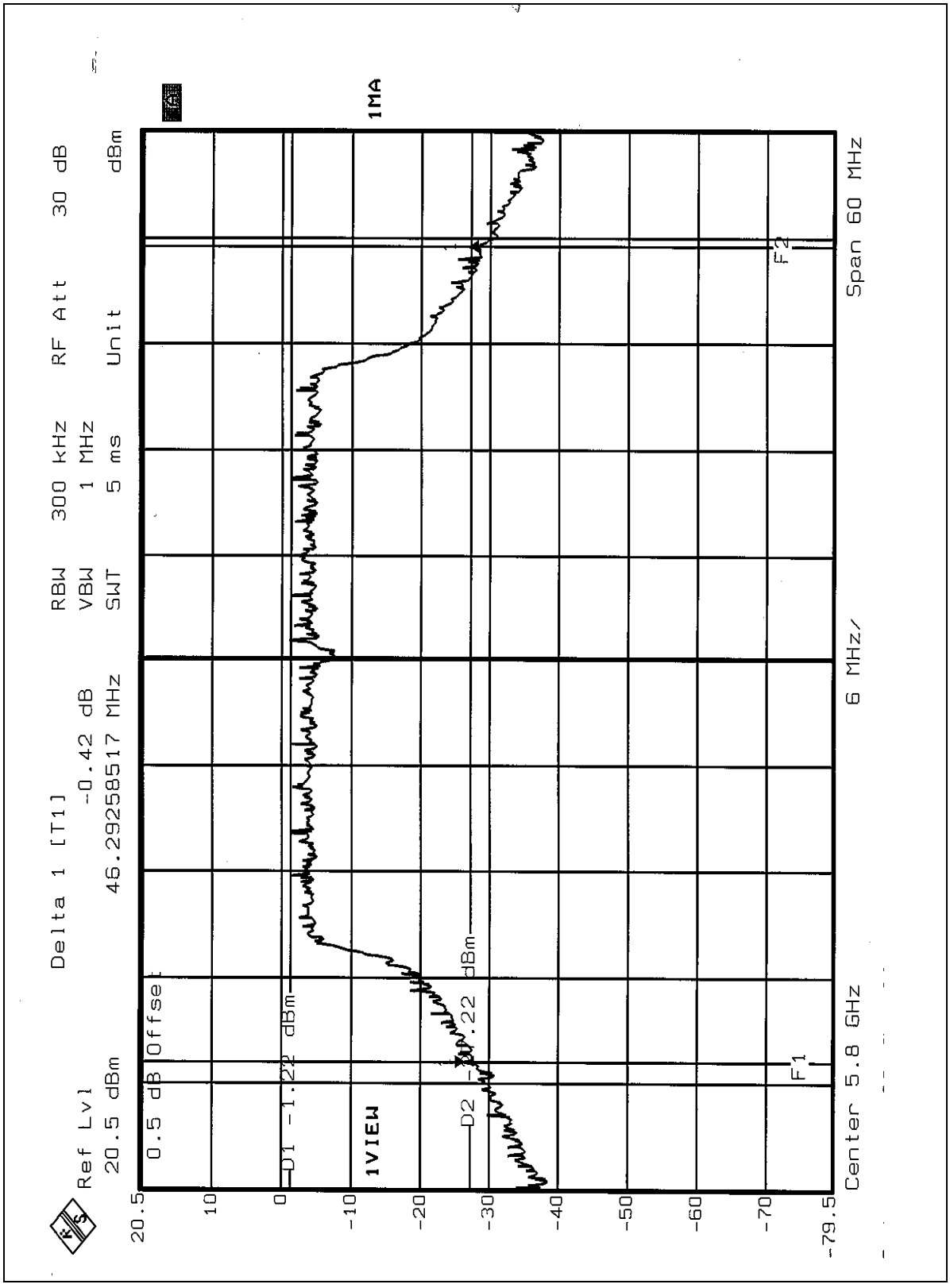
CHANNEL 3


Delta 1 [T1]
-0.08 dB
45.69138277 MHz
RBW 300 kHz
VBW 1 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
Ref Lvl
20.5 dBm
0.5 dB Offset
D1 3.41 dBm
D2 -2.59 dBm
1VIEW
1MA
F1
F2
Center 5.29 GHz
6 MHz/
Span 60 MHz
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5

CHANNEL 4


Delta 1 [T1]
0.37 dB
45.93186373 MHz
RBW 300 kHz
VBW 1 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
Ref Lvl
20.5 dBm
0.5 dB Offset
1MA
1VIEW
D1 -1.68 dBm
D2 -7.68 dBm
F1
F2
Center 5.76 GHz
6 MHz/
Span 60 MHz
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5

CHANNEL 5


Delta 1 [T1]
-0.42 dB
46.29258517 MHz
RBW 300 kHz
VBW 1 MHz
SWT 5 ms
RF Att 30 dB
Unit dBm
Ref Lvl
20.5 dBm
0.5 dB Offset
1MA
1VIEW
D1 -1.22 dBm
D2 -7.22 dBm
F1
F2
Center 5.8 GHz
6 MHz/
Span 60 MHz
20.5
10
0
-10
-20
-30
-40
-50
-60
-70
-79.5

## 5.4 PEAK POWER EXCURSION MEASUREMENT

### 5.4.1 LIMITS OF PEAK POWER EXCURSION MEASUREMENT

| Frequency Band | Limit |
|---|---|
| 5.15 – 5.25 GHz | 13dB |
| 5.25 – 5.35 GHz | 13dB |
| 5.725 – 5.825 GHz | 13dB |

### 5.4.2 TEST INSTRUMENTS

| Description & Manufacturer | Model No. | Serial No. | Calibrated Until |
|---|---|---|---|
| ROHDE&SCHWARZ SPECTRUM ANALYZER | FSEK30 | 100049 | Aug. 12, 2004 |

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

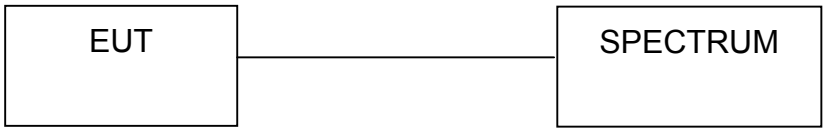
### 5.4.3 TEST PROCEDURE

1. The transmitter output was connected to the spectrum analyzer.
2. Set the spectrum bandwidth span to view the entire spectrum.
3. Using peak detector and Max-hold function for Trace 1 (RB=1MHz, VB=3MHz) and 2 (RB=1MHz, VB=300KHz).
4. The largest difference between Trace 1 and Trace 2 in any 1MHz band on any frequency was recorded.

### 5.4.4 DEVIATION FROM TEST STANDARD

No deviation

### 5.4.5 TEST SETUP




### 5.4.6 EUT OPERATING CONDITIONS

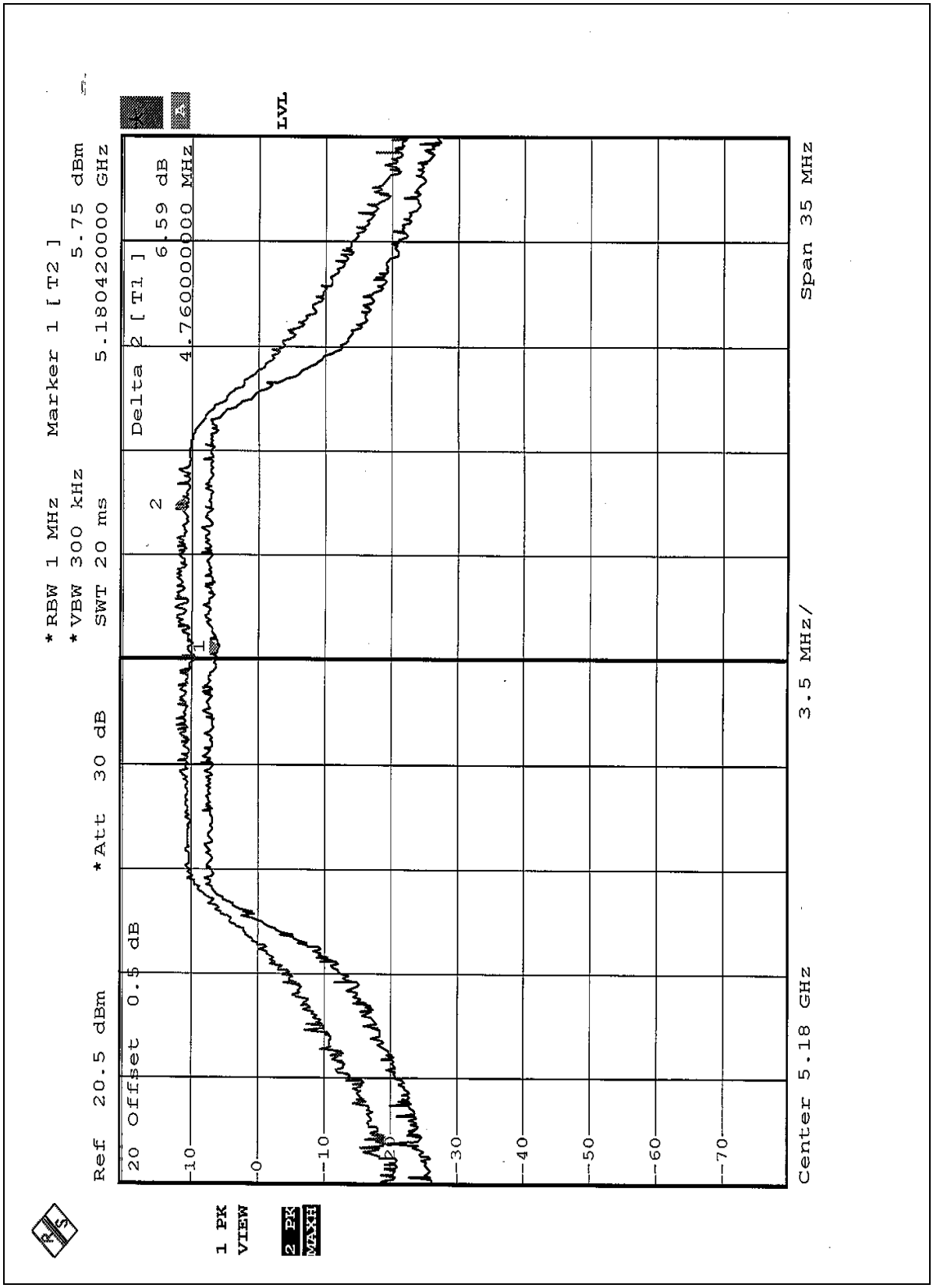
The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

## 5.4.7 TEST RESULTS

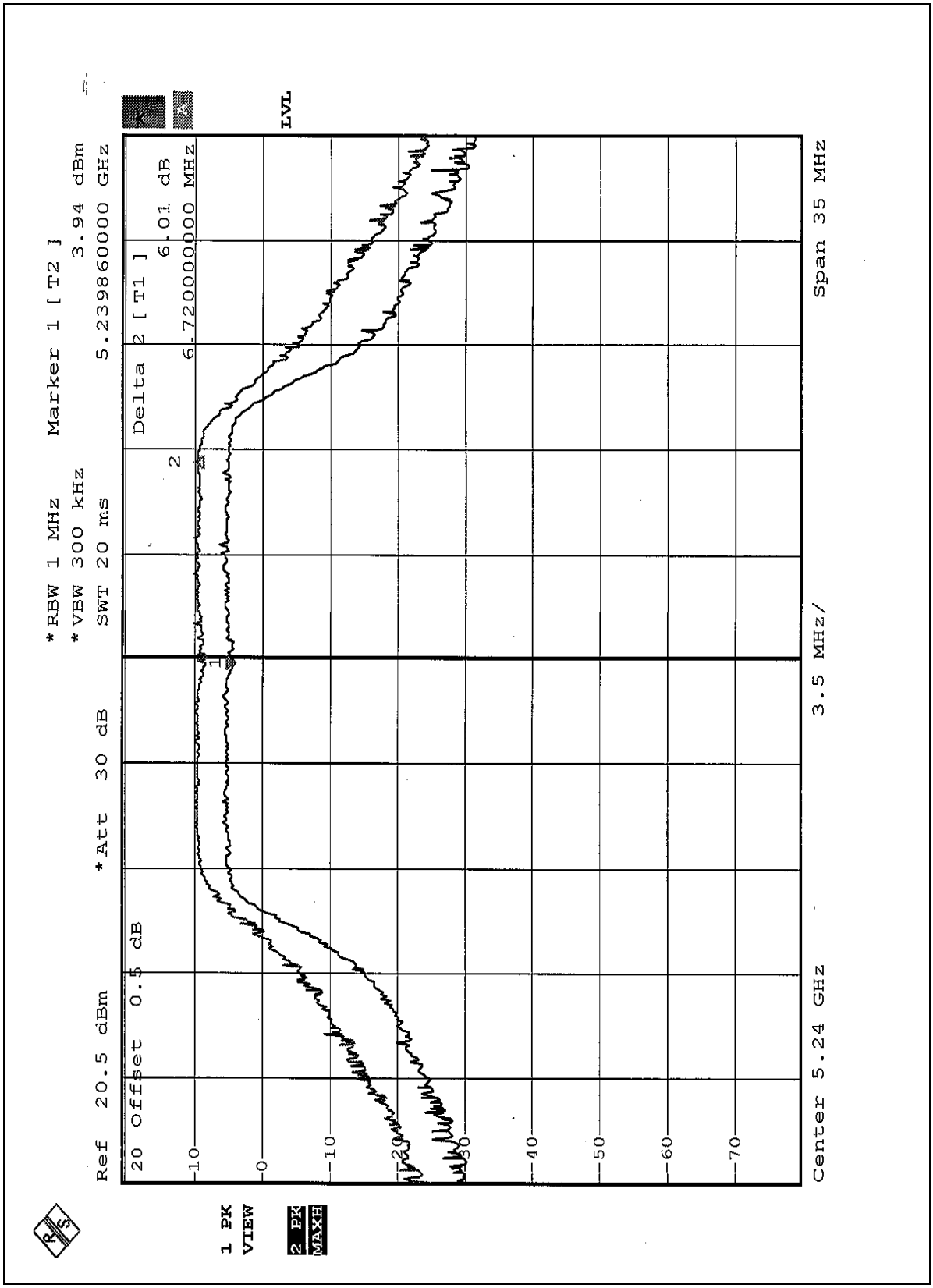
| | | | |
|---|---|---|---|
| **EUT** | SonicPoint | **MODEL** | APL13-02C |
| **MODE** | Normal | **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz |
| **ENVIRONMENTAL CONDITIONS** | 26deg. C, 65%RH, 991 hPa | **TESTED BY** | Ansen Lei |

| CHANNEL | CHANNEL FREQUENCY (MHz) | PEAK POWER EXCURSION (dB) | PEAK to AVERAGE EXCURSION LIMIT (dB) | PASS/FAIL |
|---|---|---|---|---|
| 1 | 5180 | 6.59 | 13 | PASS |
| 4 | 5240 | 6.01 | 13 | PASS |
| 5 | 5260 | 7.17 | 13 | PASS |
| 8 | 5320 | 7.28 | 13 | PASS |
| 9 | 5745 | 5.86 | 13 | PASS |
| 12 | 5805 | 6.95 | 13 | PASS |

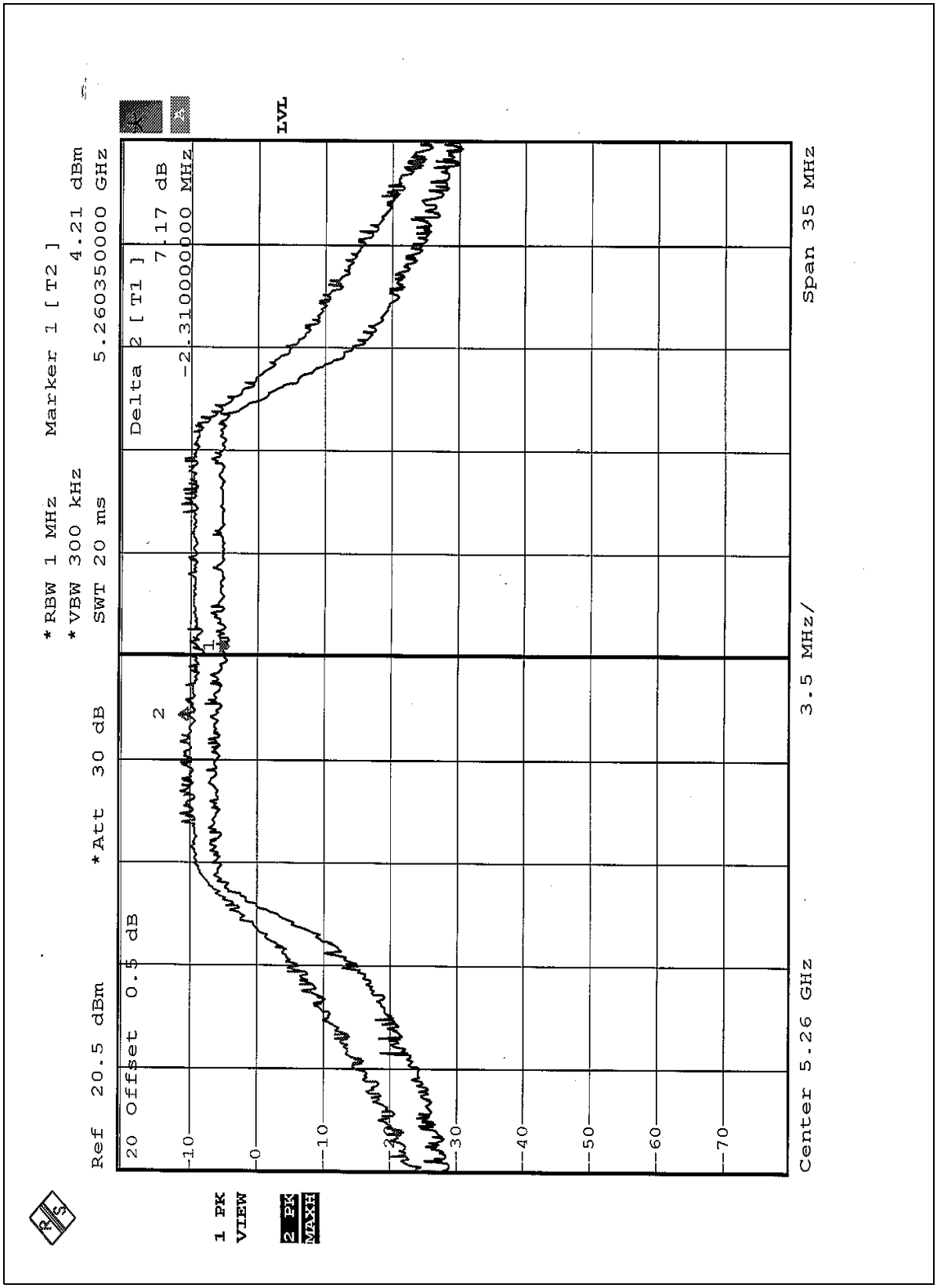
CHANNEL 1


Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
*RBW 1 MHz
*VBW 300 kHz
SWT 20 ms
Marker 1 [T2 ]
5.75 dBm
5.180420000 GHz
Delta 2 [T1 ]
6.59 dB
4.760000000 MHz
LVL
Center 5.18 GHz
3.5 MHz/
Span 35 MHz
1 PK VIEW
2 PK MAXH

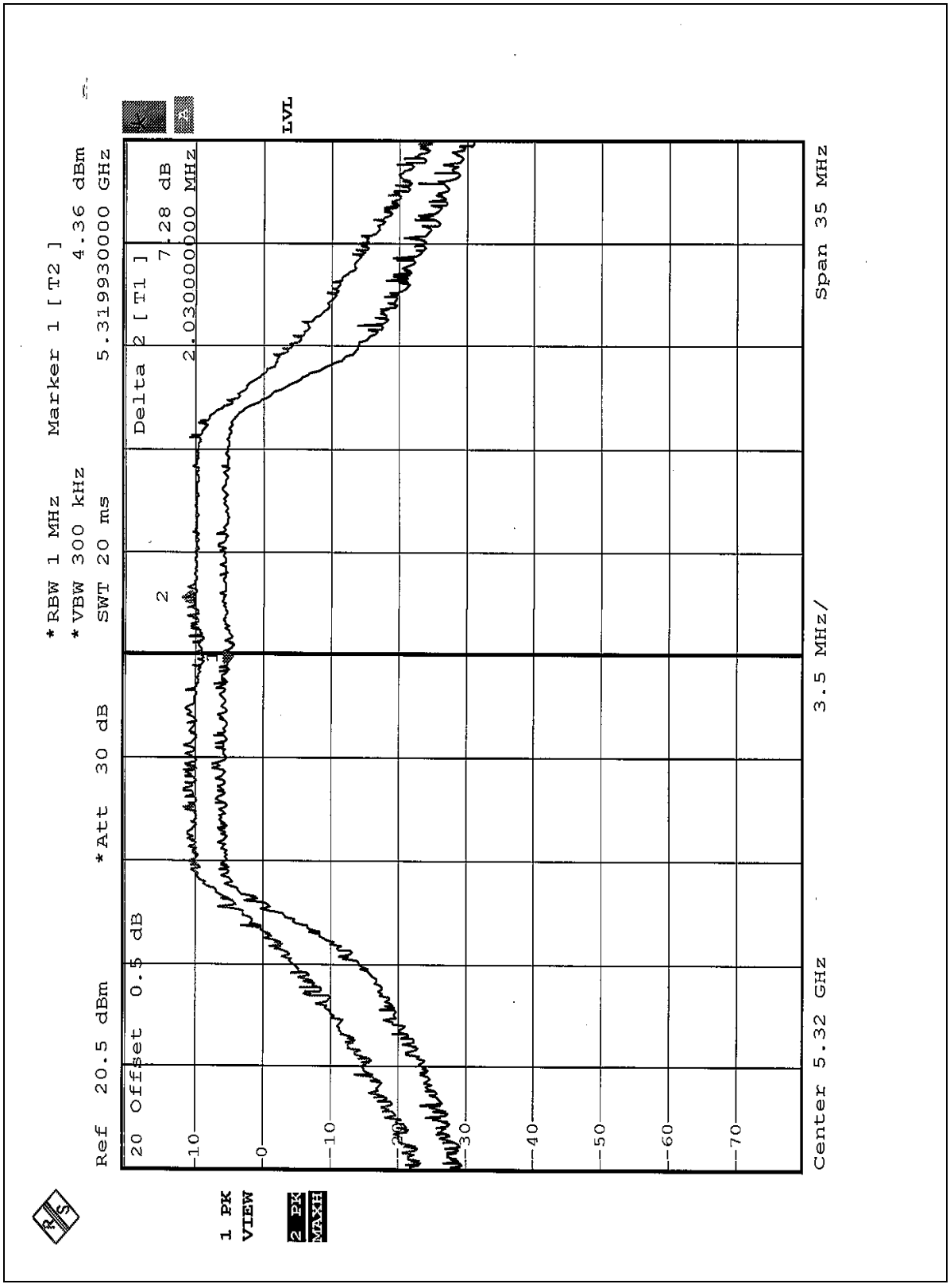
CHANNEL 4


Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
*RBW 1 MHz
*VBW 300 kHz
SWT 20 ms
Marker 1 [T2]
3.94 dBm
5.239860000 GHz
Delta 2 [T1]
6.01 dB
6.720000000 MHz
LVL
Center 5.24 GHz
3.5 MHz/
Span 35 MHz
1 PK VIEW
2 PK MAXH

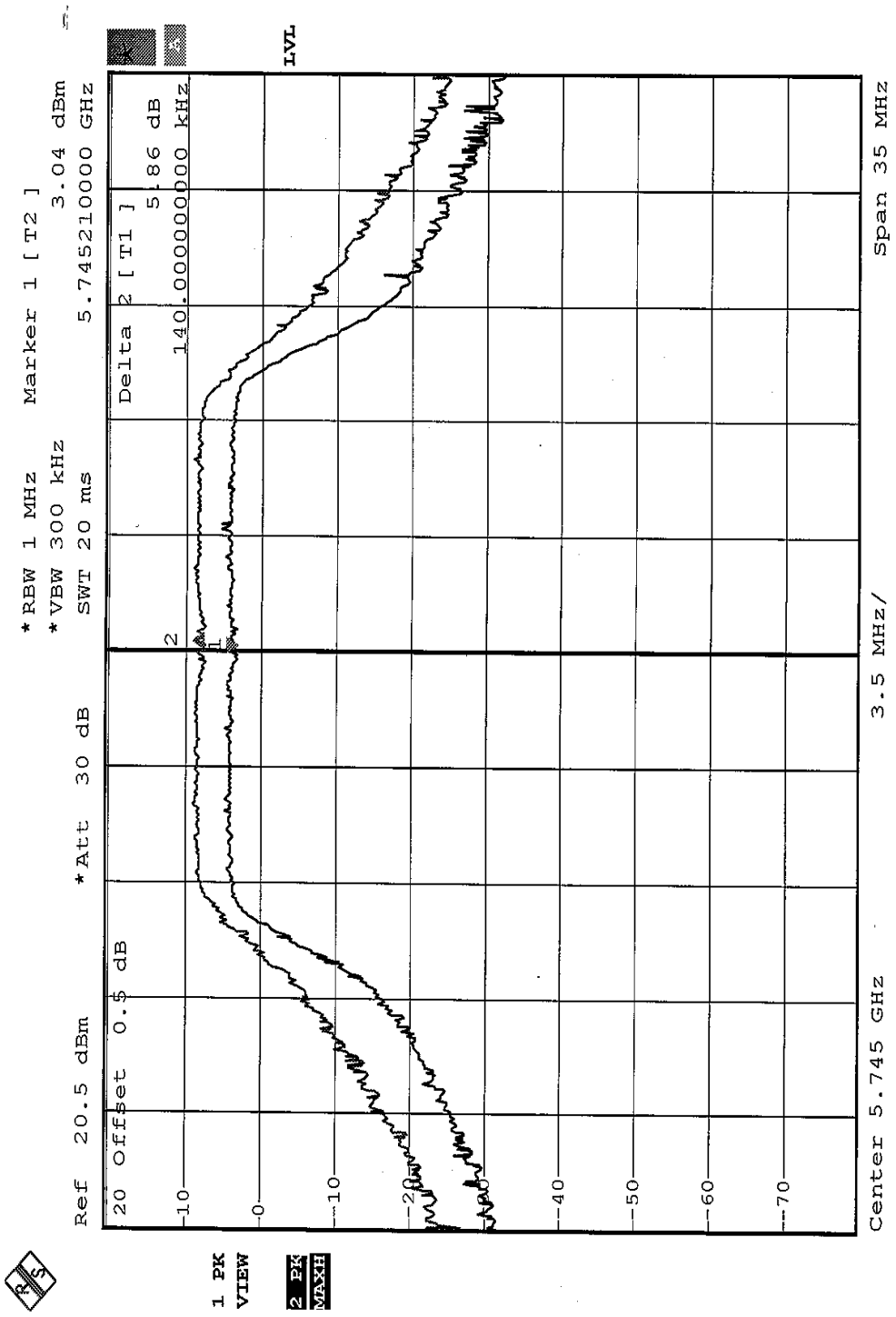
CHANNEL 5


RBW 1 MHz
VBW 300 kHz
SWT 20 ms
Marker 1 [T2 ]
4.21 dBm
5.260350000 GHz
Delta 2 [T1 ]
7.17 dB
-2.310000000 MHz
Ref 20.5 dBm
Offset 0.5 dB
Att 30 dB
Center 5.26 GHz
3.5 MHz/
Span 35 MHz
1 PK VIEW
2 PK MAXH

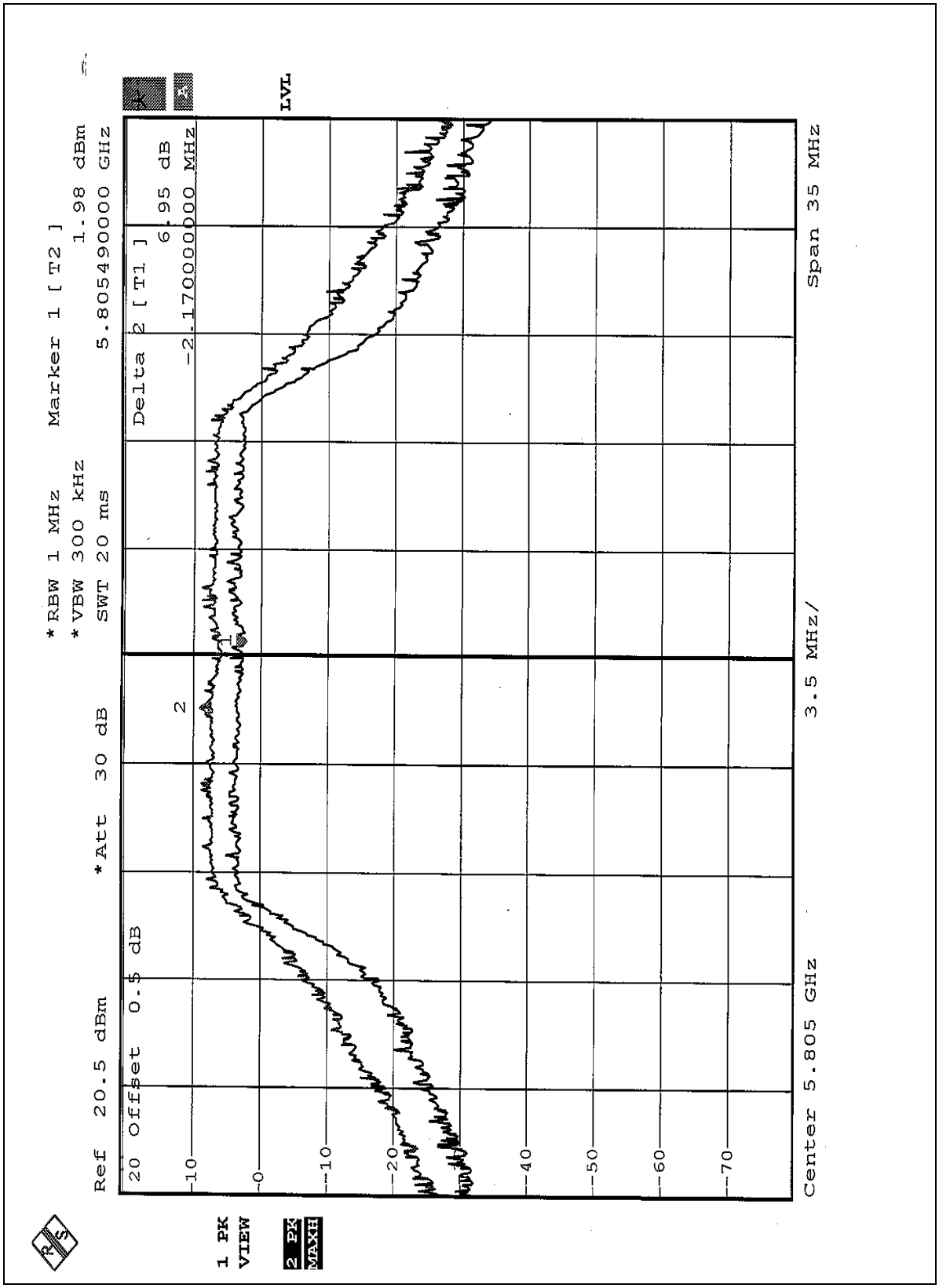
CHANNEL 8


RBW 1 MHz
VBW 300 kHz
SWT 20 ms
Marker 1 [T2 ]
4.36 dBm
5.319930000 GHz
Delta 2 [T1 ]
7.28 dB
2.030000000 MHz
Ref 20.5 dBm
20 Offset 0.5 dB
Att 30 dB
LVL
1 PK VIEW
2 PK MAXH
Center 5.32 GHz
3.5 MHz/
Span 35 MHz

CHANNEL 9


Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
*RBW 1 MHz
*VBW 300 kHz
SWT 20 ms
Marker 1 [T2 ]
3.04 dBm
5.745210000 GHz
Delta 2 [T1 ]
5.86 dB
140.000000000 kHz
LVL
Center 5.745 GHz
3.5 MHz/
Span 35 MHz
1 PK VIEW
2 PK MAXH

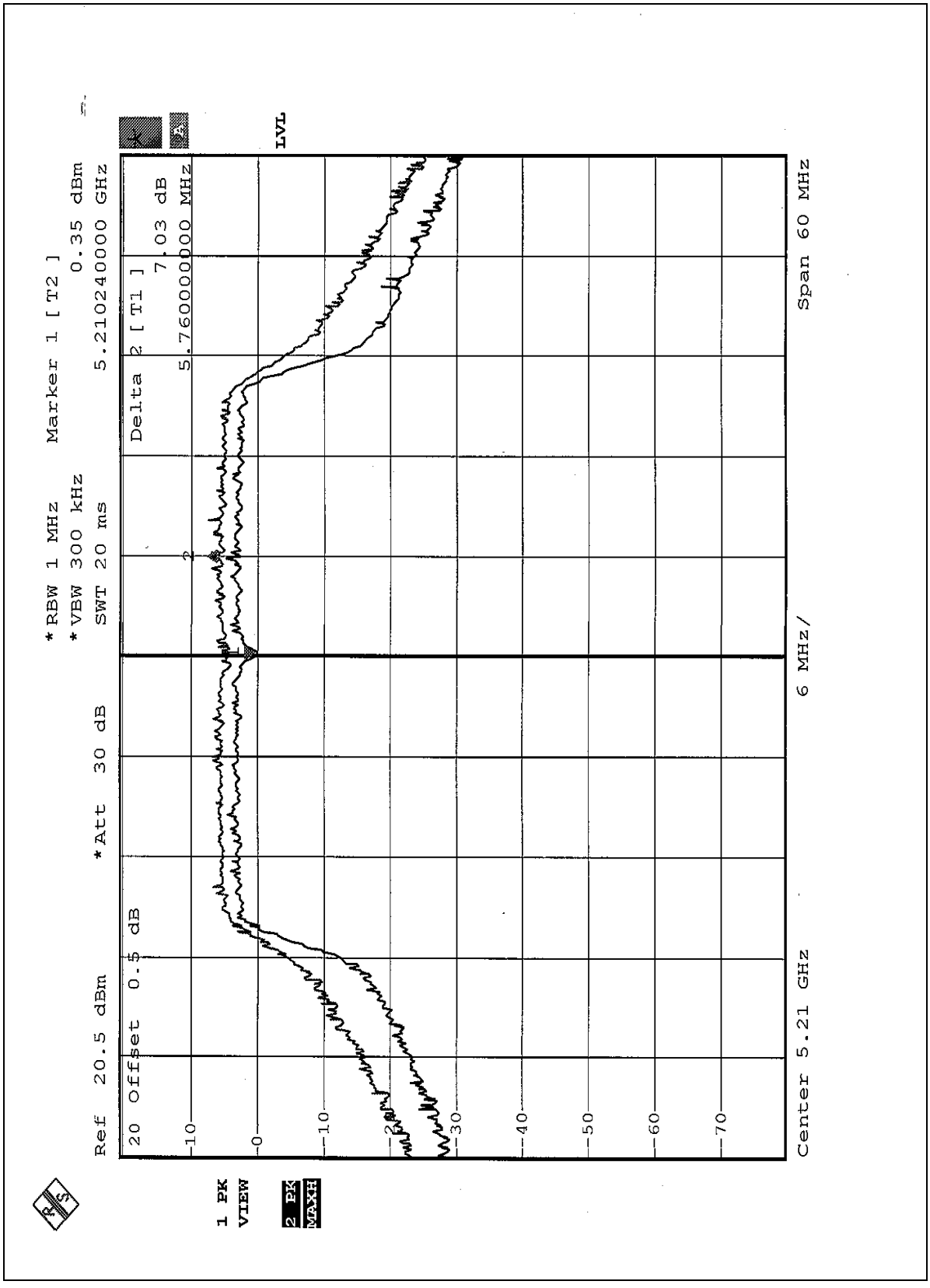
CHANNEL 12


Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
*RBW 1 MHz
*VBW 300 kHz
SWT 20 ms
Marker 1 [T2 ]
1.98 dBm
5.805490000 GHz
Delta 2 [T1 ]
6.95 dB
-2.170000000 MHz
LVL
Center 5.805 GHz
3.5 MHz/
Span 35 MHz
1 PK VIEW
2 PK MAXH

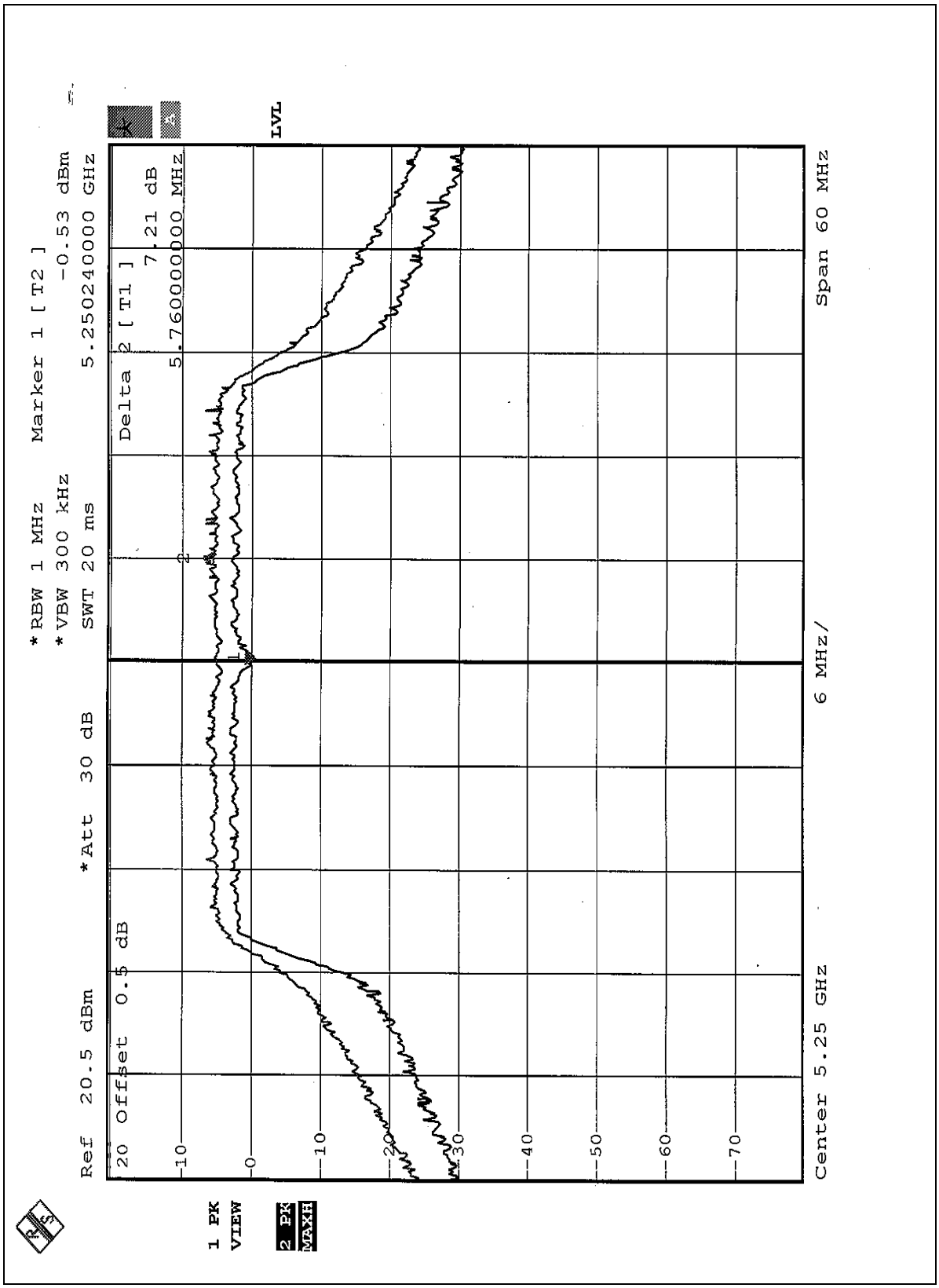
| | | | |
|---|---|---|---|
| **EUT** | SonicPoint | **MODEL** | APL13-02C |
| **MODE** | Turbo | **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz |
| **ENVIRONMENTAL CONDITIONS** | 26deg. C, 65%RH, 991 hPa | **TESTED BY** | Ansen Lei |

| CHANNEL | CHANNEL FREQUENCY (MHz) | PEAK POWER EXCURSION (dB) | PEAK to AVERAGE EXCURSION LIMIT (dB) | PASS/FAIL |
|---|---|---|---|---|
| 1 | 5210 | 7.03 | 13 | PASS |
| 2 | 5250 | 7.21 | 13 | PASS |
| 3 | 5290 | 7.13 | 13 | PASS |
| 4 | 5760 | 6.79 | 13 | PASS |
| 5 | 5800 | 7.24 | 13 | PASS |

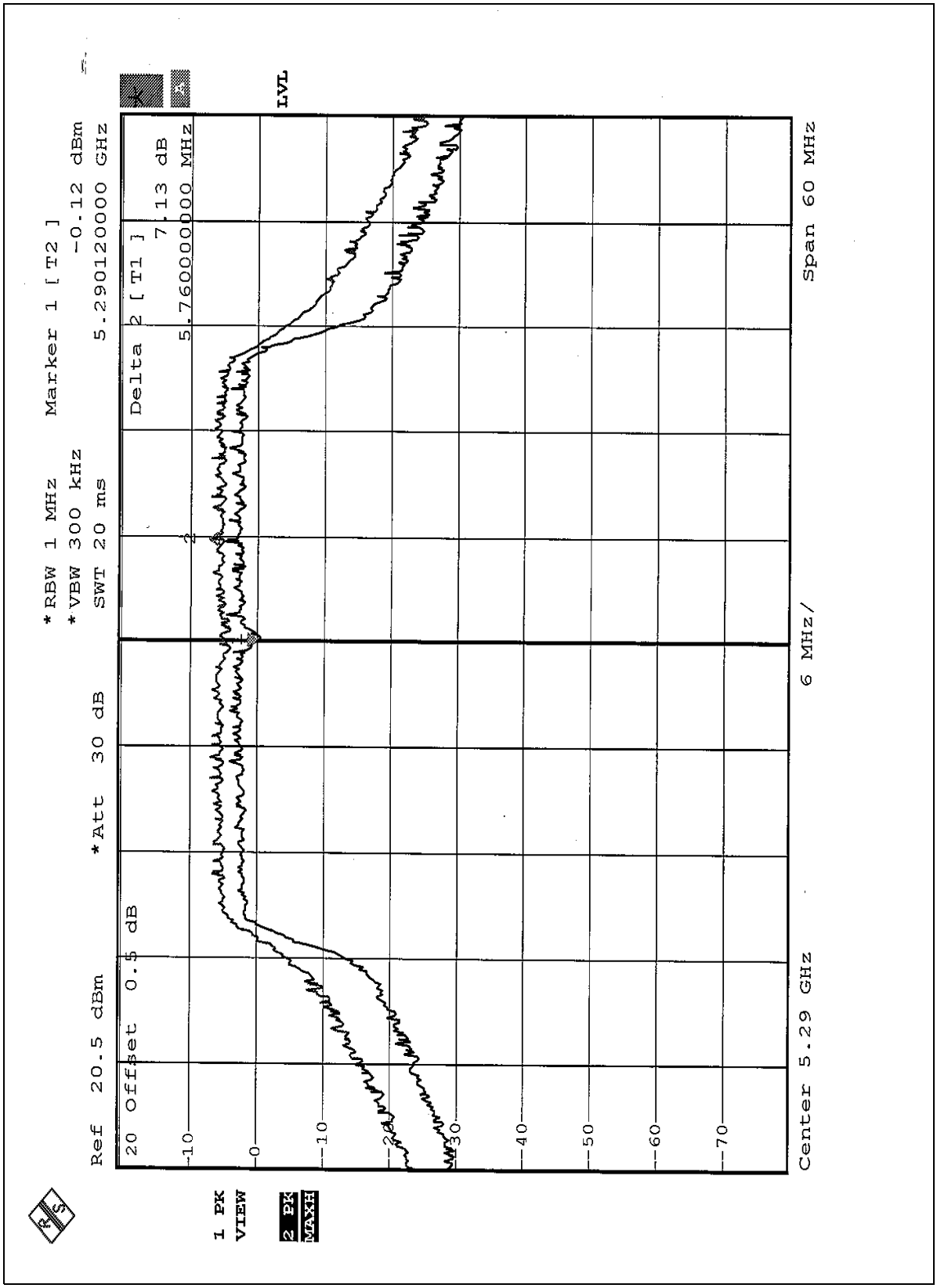
CHANNEL 1


Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
*RBW 1 MHz
*VBW 300 kHz
SWT 20 ms
Marker 1 [T2 ]
0.35 dBm
5.210240000 GHz
Delta 2 [T1 ]
7.03 dB
5.760000000 MHz
LVL
Center 5.21 GHz
6 MHz/
Span 60 MHz
1 PK VIEW
2 PK MAXH

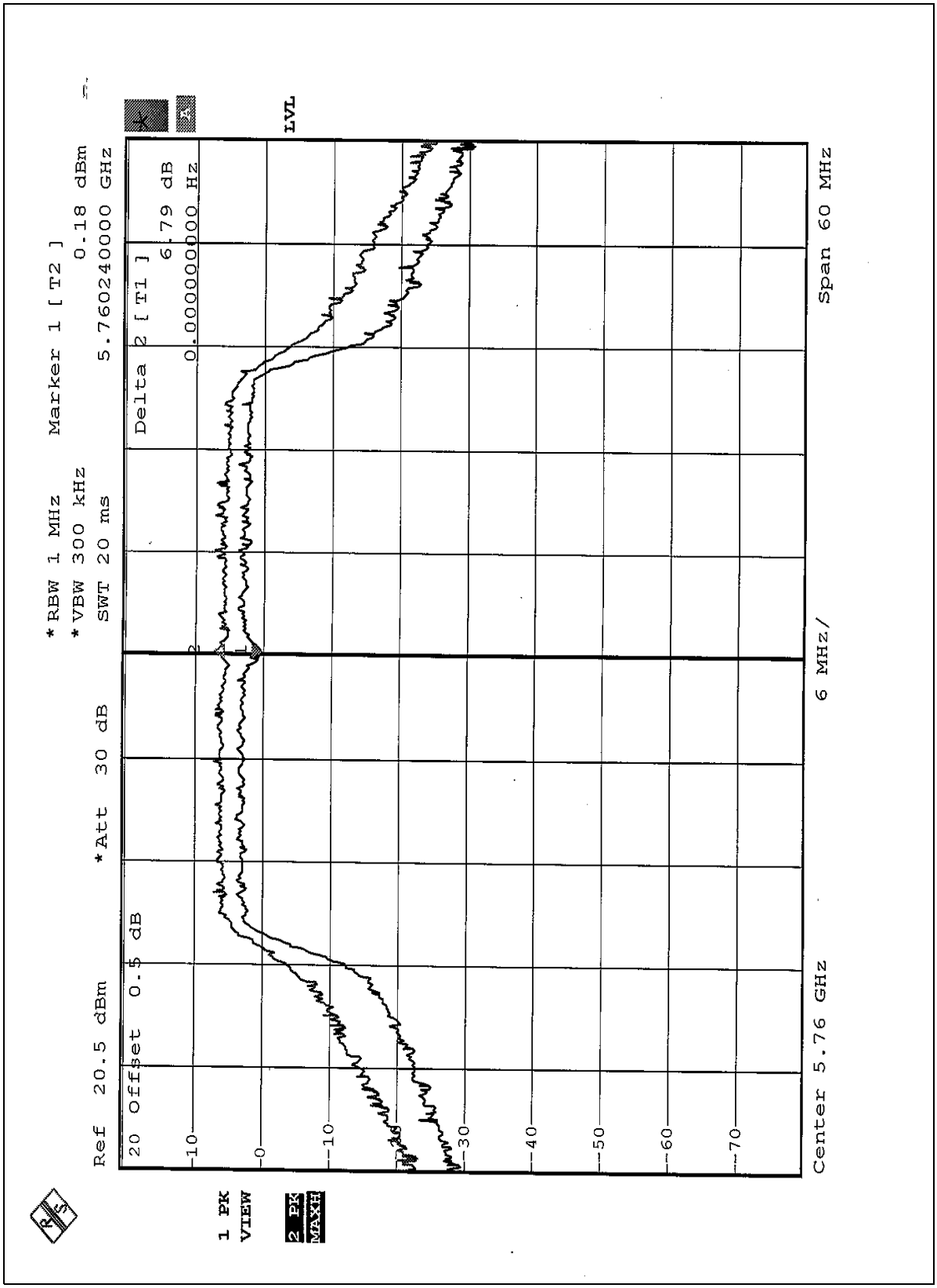
CHANNEL 2


*RBW 1 MHz
*VBW 300 kHz
SWT 20 ms
Marker 1 [T2 ]
-0.53 dBm
5.250240000 GHz
Delta 2 [T1 ]
7.21 dB
5.760000000 MHz
LVL
Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
Center 5.25 GHz
6 MHz/
Span 60 MHz
1 PK VIEW
2 PK MAXH

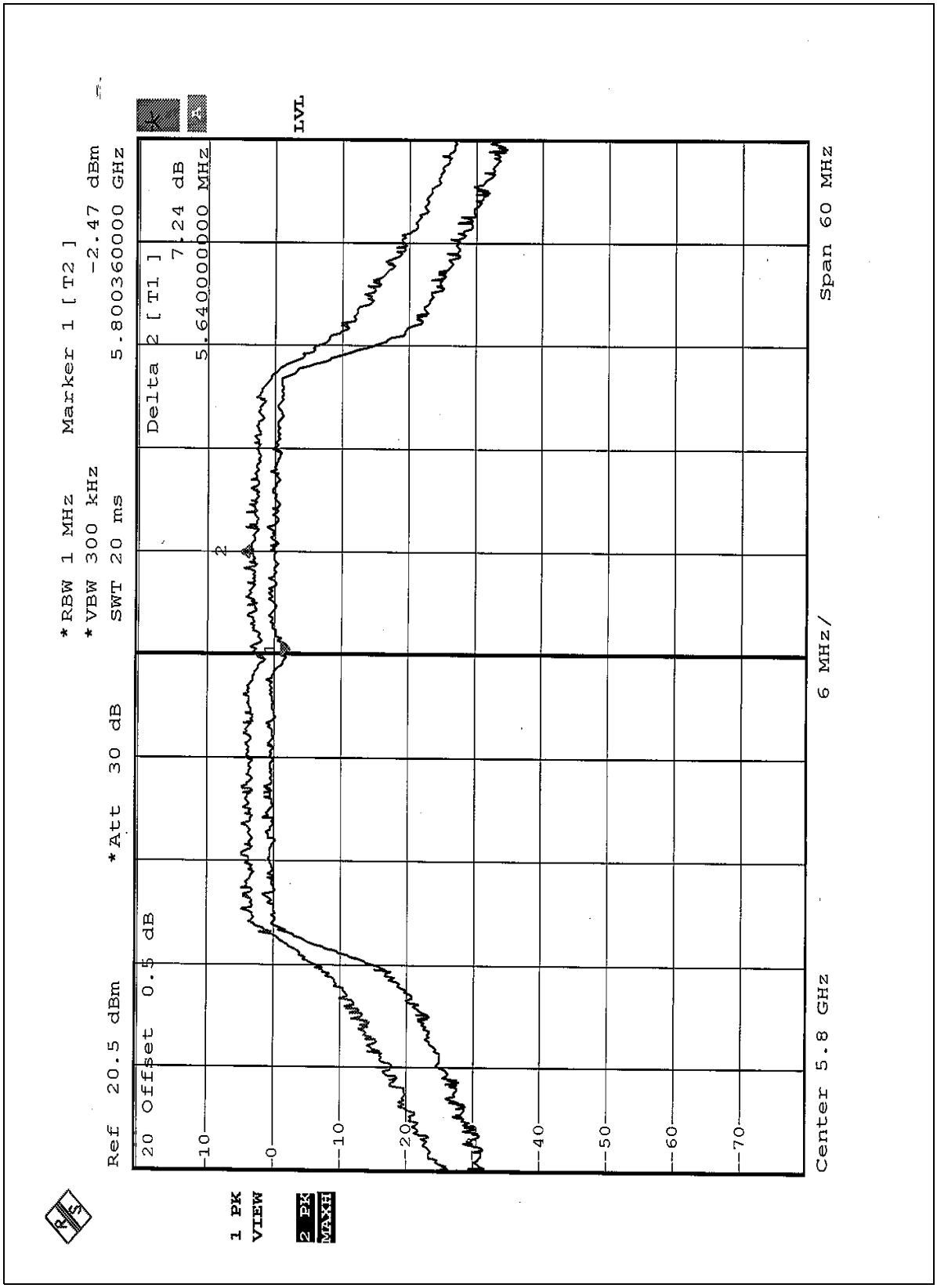
CHANNEL 3


*RBW 1 MHz
*VBW 300 kHz
SWT 20 ms
Marker 1 [T2 ]
-0.12 dBm
5.290120000 GHz
Delta 2 [T1 ]
7.13 dB
5.760000000 MHz
LVL
Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
Center 5.29 GHz
6 MHz/
Span 60 MHz
1 PK VIEW
2 PK MAXH

CHANNEL 4


RBW 1 MHz
VBW 300 kHz
SWT 20 ms
Marker 1 [T2 ]
0.18 dBm
5.760240000 GHz
Delta 2 [T1 ]
6.79 dB
0.000000000 Hz
Ref 20.5 dBm
20 Offset 0.5 dB
Att 30 dB
Center 5.76 GHz
6 MHz/
Span 60 MHz
1 PK VIEW
2 PK MAXH

CHANNEL 5


Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
*RBW 1 MHz
*VBW 300 kHz
SWT 20 ms
Marker 1 [T2 ]
-2.47 dBm
5.800360000 GHz
Delta 2 [T1 ]
7.24 dB
5.640000000 MHz
LVL
Center 5.8 GHz
6 MHz/
Span 60 MHz
1 PK VIEW
2 PK MAXH

## 5.5 PEAK POWER SPECTRAL DENSITY MEASUREMENT

### 5.5.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT

| Frequency Band | Limit |
|---|---|
| 5.15 – 5.25 GHz | 4dBm |
| 5.25 – 5.35 GHz | 11dBm |
| 5.725 – 5.825 GHz | 17dBm |

### 5.5.2 TEST INSTRUMENTS

| Description & Manufacturer | Model No. | Serial No. | Calibrated Until |
|---|---|---|---|
| ROHDE&SCHWARZ SPECTRUM ANALYZER | FSEK30 | 100049 | Aug. 12, 2004 |

**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

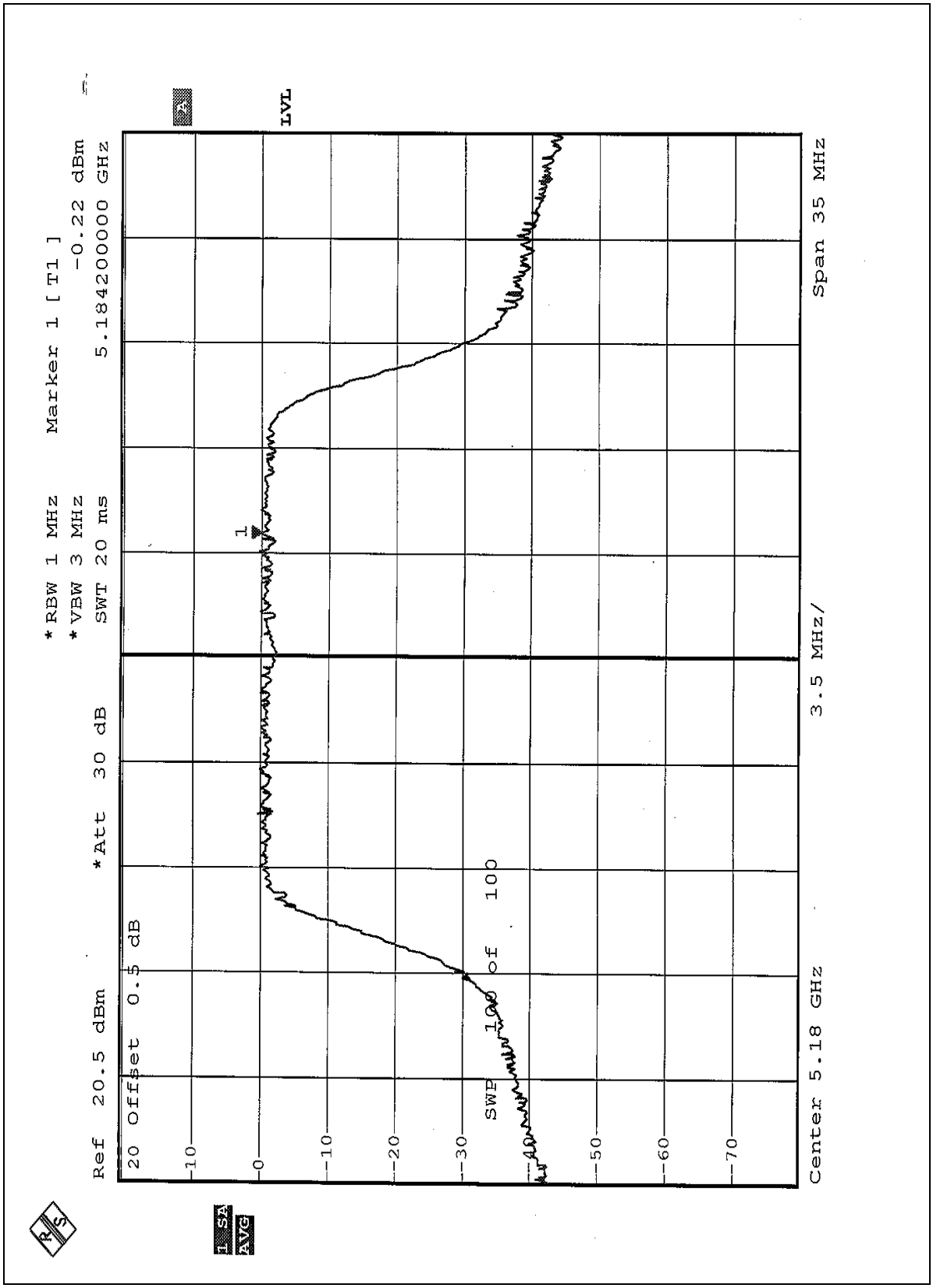
Same as 5.3.6

## 5.5.7 TEST RESULTS

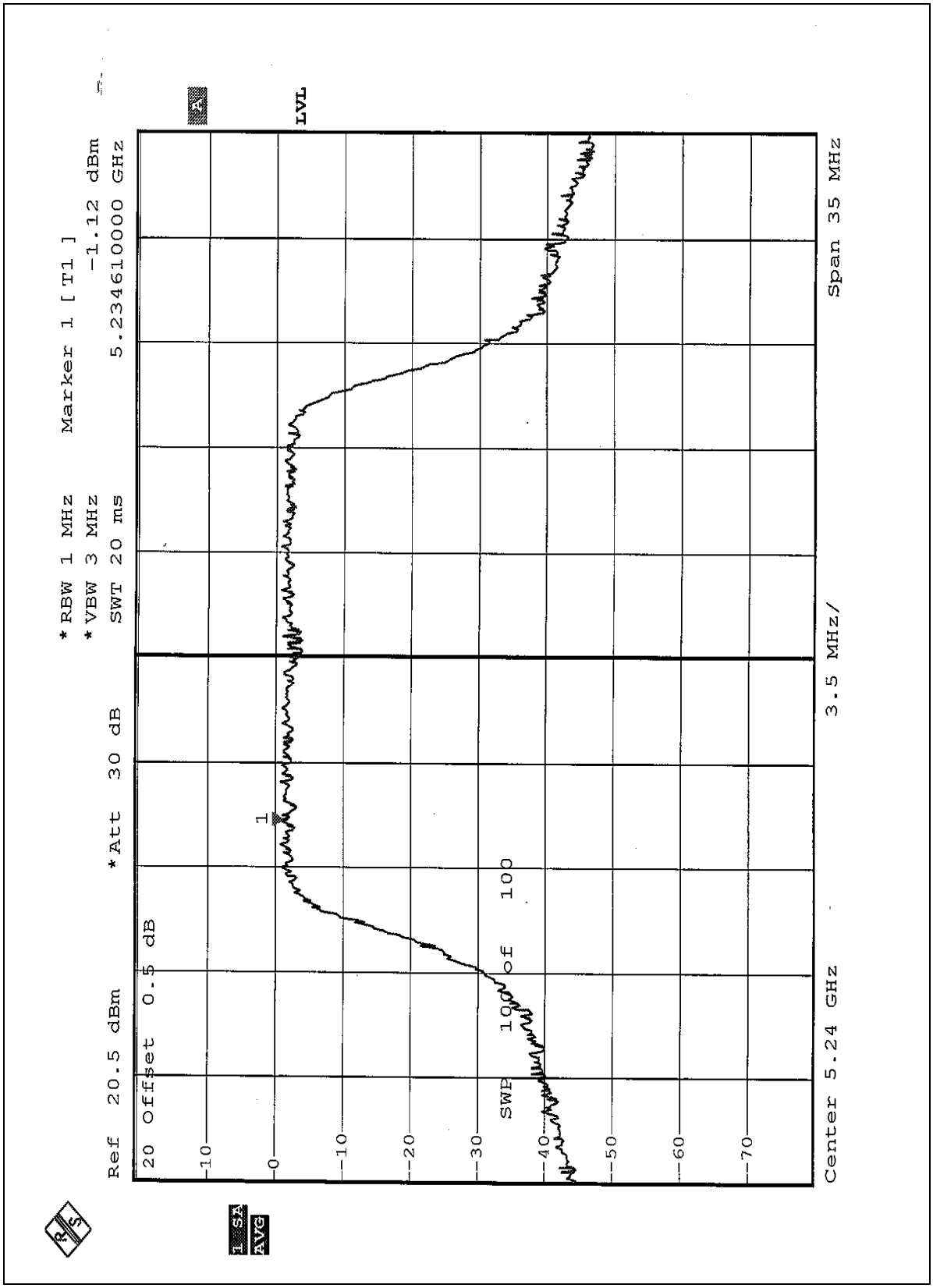
| | | | |
|---|---|---|---|
| **EUT** | SonicPoint | **MODEL** | APL13-02C |
| **MODE** | Normal | **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz |
| **ENVIRONMENTAL CONDITIONS** | 26 deg. C, 65%RH, 991 hPa | **TESTED BY** | Ansen Lie |

| CHANNEL NUMBER | CHANNEL FREQUENCY (MHz ) | RF POWER LEVEL IN 1 MHz BW (dBm) | MAXIMUM LIMIT (dBm) | PASS/FAIL |
|---|---|---|---|---|
| 1 | 5180 | -0.22 | 4 | PASS |
| 4 | 5240 | -1.12 | 4 | PASS |
| 5 | 5260 | -0.69 | 11 | PASS |
| 8 | 5320 | -0.94 | 11 | PASS |
| 9 | 5745 | -1.83 | 17 | PASS |
| 12 | 5805 | -2.52 | 17 | PASS |

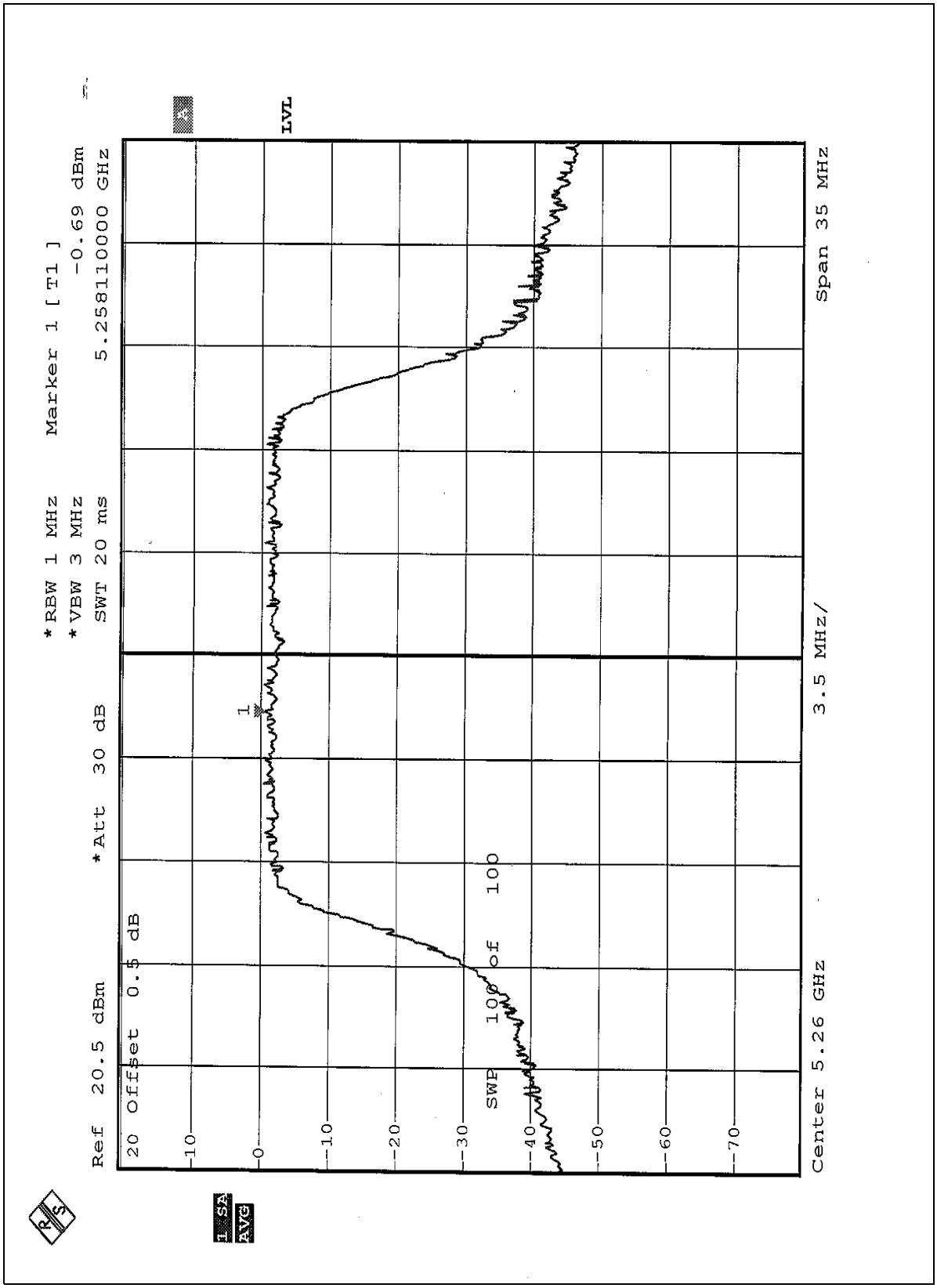
CHANNEL 1


Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
*RBW 1 MHz
*VBW 3 MHz
SWT 20 ms
Marker 1 [T1 ]
-0.22 dBm
5.18420000 GHz
1 SA
AVG
SWP 100 of 100
Center 5.18 GHz
3.5 MHz/
Span 35 MHz

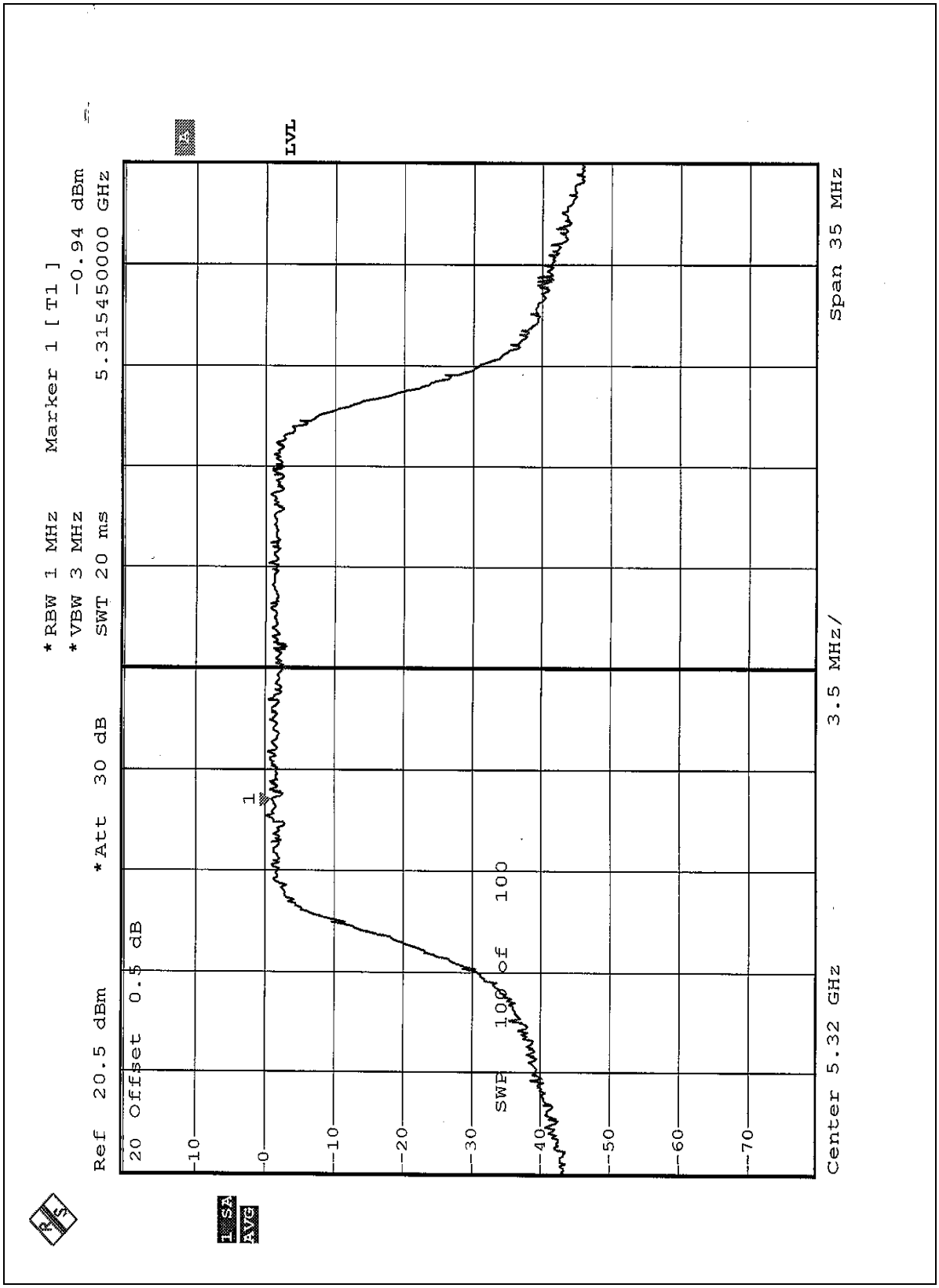
CHANNEL 4


Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
*VBW 3 MHz
SWT 20 ms
*RBW 1 MHz
Marker 1 [T1 ]
-1.12 dBm
5.23461000 GHz
LVL
SWP 10 of 100
Center 5.24 GHz
3.5 MHz/
Span 35 MHz
1 SA
AVG

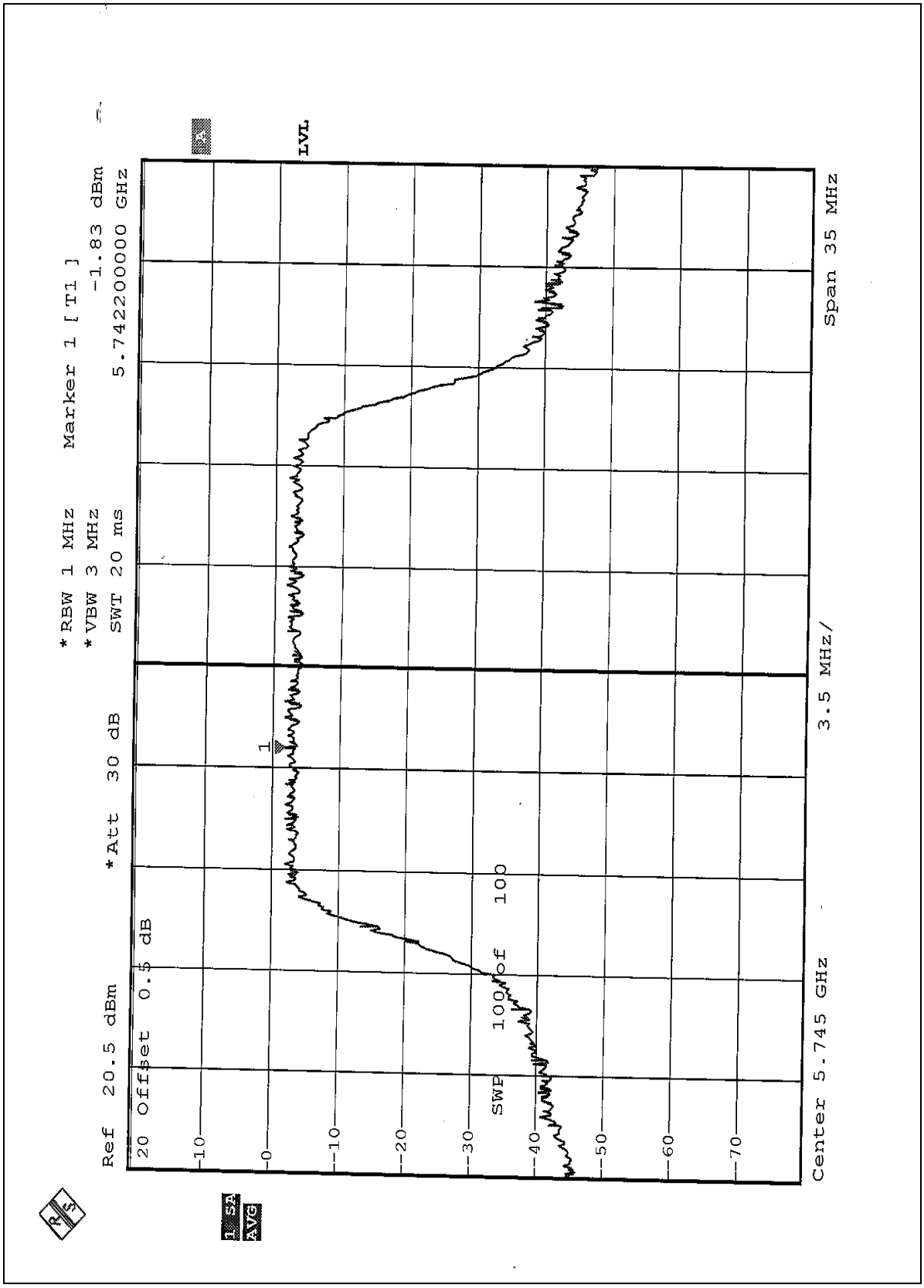
CHANNEL 5


Marker 1 [T1 ]
-0.69 dBm
5.25811000 GHz
*RBW 1 MHz
*VBW 3 MHz
SWT 20 ms
*Att 30 dB
Offset 0.5 dB
Ref 20.5 dBm
Center 5.26 GHz
3.5 MHz/
Span 35 MHz
SWP 100 of 100
1 Sa
Avg

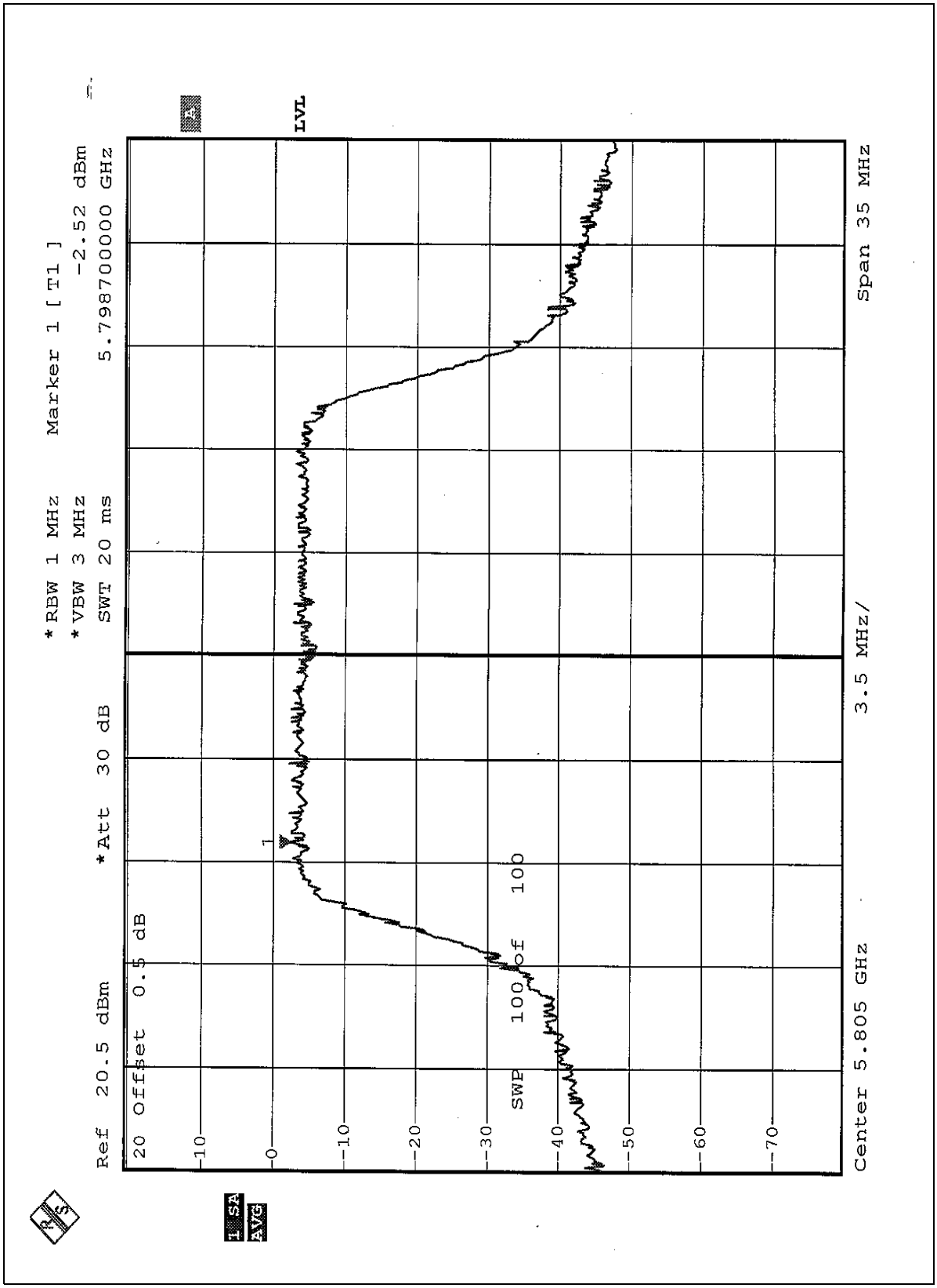
CHANNEL 8


Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
*RBW 1 MHz
*VBW 3 MHz
SWT 20 ms
Marker 1 [T1 ]
-0.94 dBm
5.315450000 GHz
1 SA
AVG
SWP 100 of 100
Center 5.32 GHz
3.5 MHz/
Span 35 MHz

CHANNEL 9


Marker 1 [T1 ]
-1.83 dBm
5.742200000 GHz
*RBW 1 MHz
*VBW 3 MHz
SWT 20 ms
*Att 30 dB
Offset 0.5 dB
Ref 20.5 dBm
Center 5.745 GHz
3.5 MHz/
Span 35 MHz
SWP 100.0 of 100
1 SA
AVG

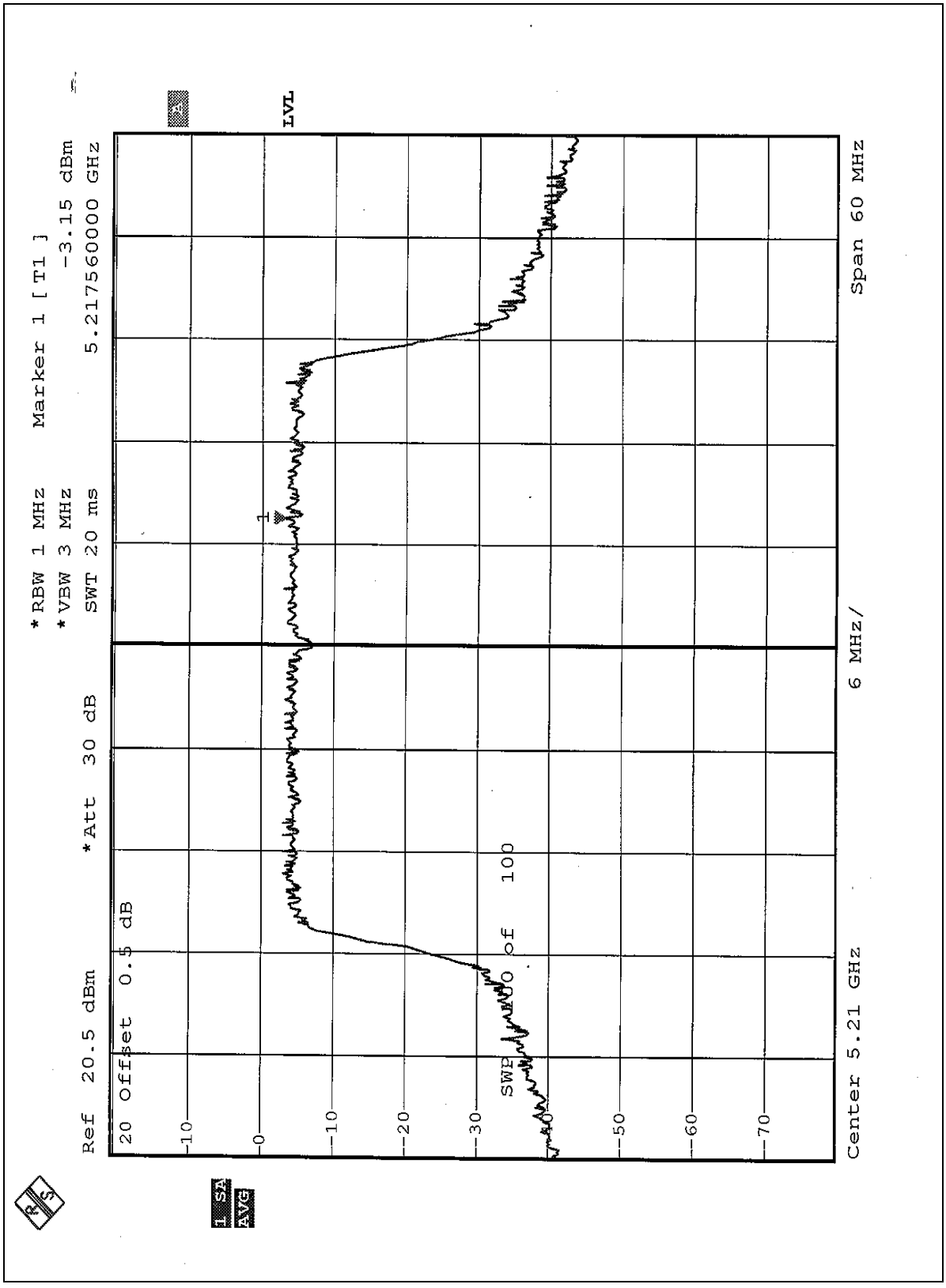
CHANNEL 12


Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
*RBW 1 MHz
*VBW 3 MHz
SWT 20 ms
Marker 1 [T1 ]
-2.52 dBm
5.798700000 GHz
SWP 100 of 100
Center 5.805 GHz
3.5 MHz/
Span 35 MHz
1 SA
AVG

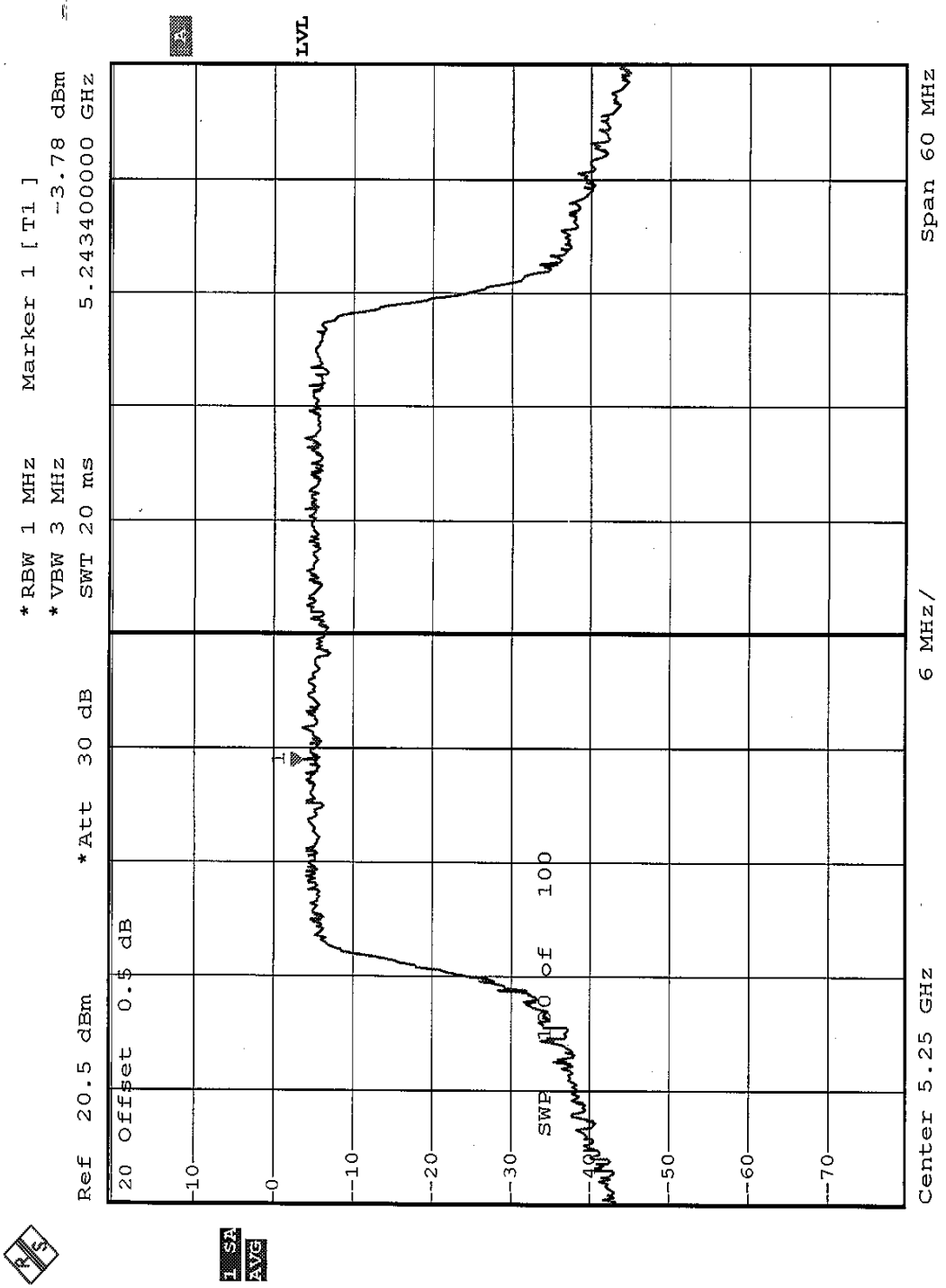
| | | | |
|---|---|---|---|
| **EUT** | SonicPoint | **MODEL** | APL13-02C |
| **MODE** | Turbo | **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz |
| **ENVIRONMENTAL CONDITIONS** | 26d eg. C, 65%RH, 991 hPa | **TESTED BY** | Ansen Lei |

| CHANNEL NUMBER | CHANNEL FREQUENCY (MHz ) | RF POWER LEVEL IN 1 MHz BW (dBm) | MAXIMUM LIMIT (dBm) | PASS/FAIL |
|---|---|---|---|---|
| 1 | 5210 | -3.15 | 4 | PASS |
| 2 | 5250 | -3.78 | 4 | PASS |
| 3 | 5290 | -3.87 | 11 | PASS |
| 4 | 5760 | -2.91 | 17 | PASS |
| 5 | 5800 | -5.34 | 17 | PASS |

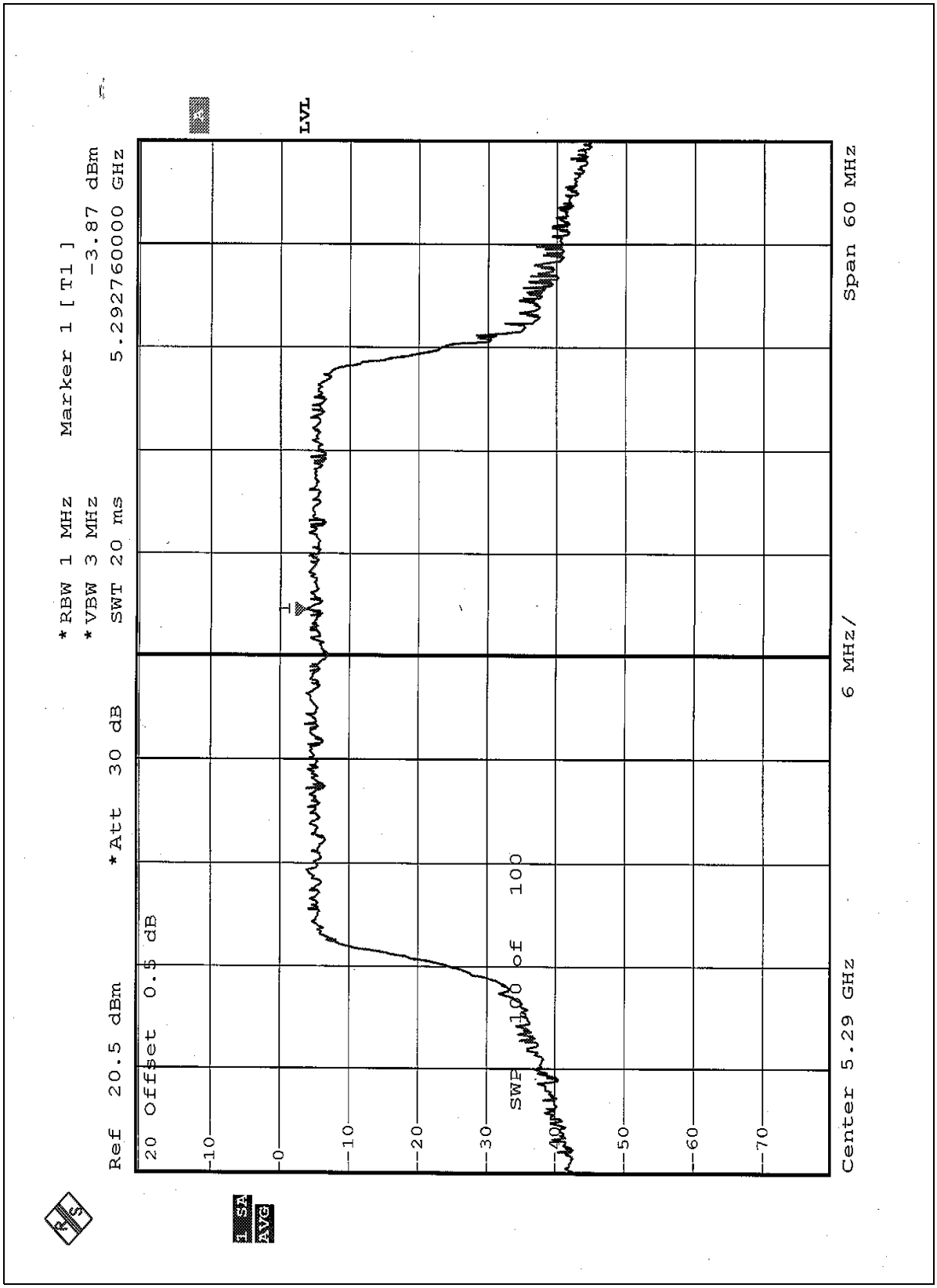
CHANNEL 1


Marker 1 [T1 ]
-3.15 dBm
5.217560000 GHz
*RBW 1 MHz
*VBW 3 MHz
SWT 20 ms
*Att 30 dB
Ref 20.5 dBm
20 Offset 0.5 dB
SWP 100.0 of 100
Center 5.21 GHz
6 MHz/
Span 60 MHz
LVL
1 SA AVG

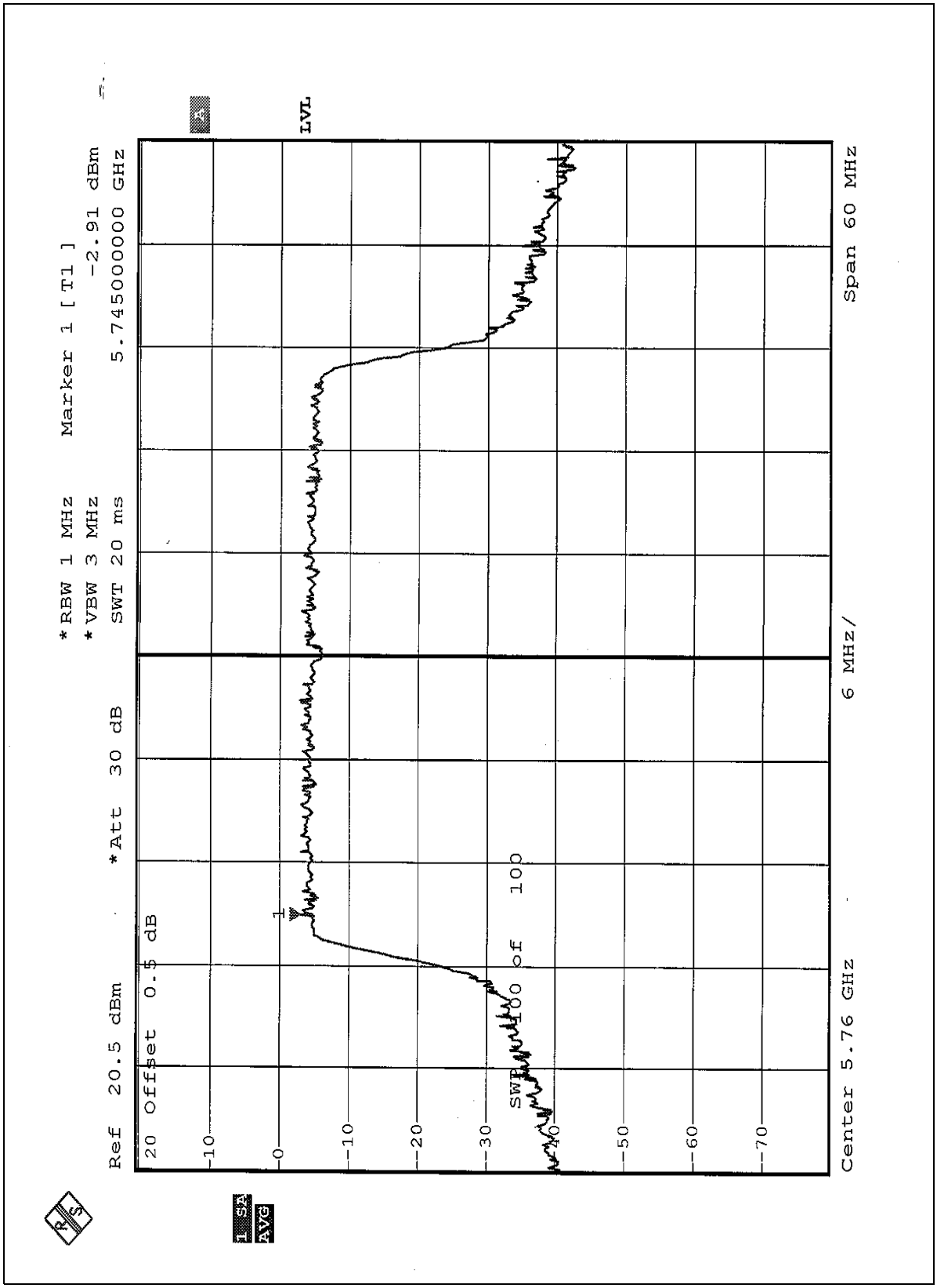
CHANNEL 2


Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
*RBW 1 MHz
*VBW 3 MHz
SWT 20 ms
Marker 1 [T1 ]
-3.78 dBm
5.243400000 GHz
LVL
SWP
Hold of 100
Center 5.25 GHz
6 MHz/
Span 60 MHz
1 SA
AVG

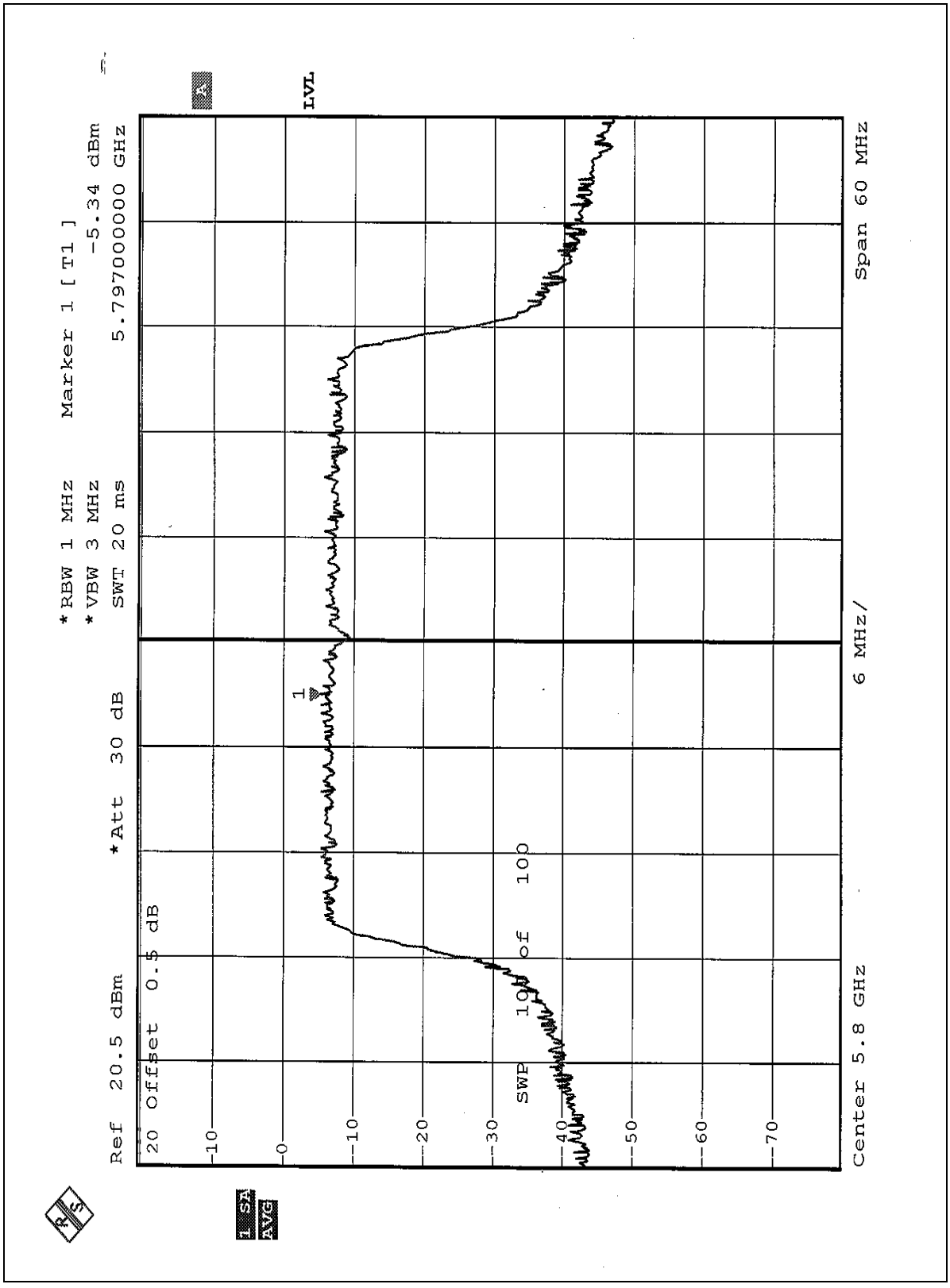
CHANNEL 3


Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
*RBW 1 MHz
*VBW 3 MHz
SWT 20 ms
Marker 1 [T1 ]
-3.87 dBm
5.292760000 GHz
LVL
Center 5.29 GHz
6 MHz/
Span 60 MHz
SWP 10.0 of 100
1 SA
AVG

CHANNEL 4


Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
*RBW 1 MHz
*VBW 3 MHz
SWT 20 ms
Marker 1 [T1 ]
-2.91 dBm
5.745000000 GHz
Center 5.76 GHz
6 MHz/
Span 60 MHz
SWP 100 of 100
1 SA
AVG

CHANNEL 5


Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
*RBW 1 MHz
*VBW 3 MHz
SWT 20 ms
Marker 1 [T1 ]
-5.34 dBm
5.797000000 GHz
LVL
SWP 10 of 100
Center 5.8 GHz
6 MHz/
Span 60 MHz
1 SA
AVG

## 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 | Aug. 12, 2004 |
| WIT STANDARD TEMPERATURE AND HUMIDITY CHAMBER | TH-4S-C | W901030 | Aug. 12, 2004 |

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

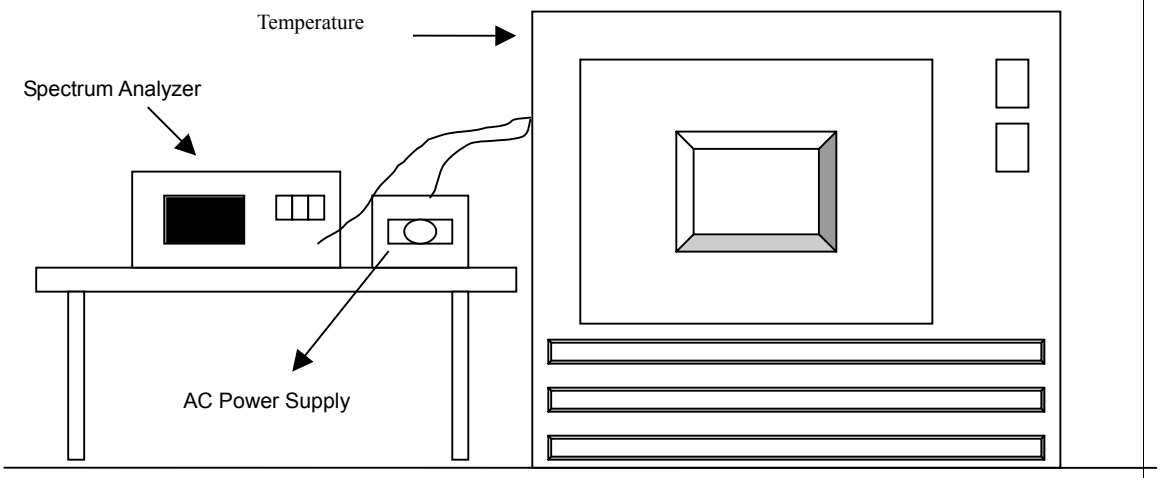
### 5.6.3 TEST PROCEDURE

1. The EUT was placed inside the environmental test chamber and powered by nominal AC 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 : ± 0.02% | | | |
|---|---|---|---|---|---|---|---|
| Temp. (℃) | Power supply (VDC) | 2 minute | | 5 minute | | 10 minute | |
| | | (MHz) | (%) | (MHz) | (%) | (MHz) | (%) |
| 50 | 93.5 | 5319.9994 | -0.0000113 | 5320.0009 | 0.0000169 | 5320.0019 | 0.0000357 |
| | 110 | 5319.9992 | -0.0000150 | 5320.0006 | 0.0000113 | 5320.0018 | 0.0000338 |
| | 126.5 | 5319.9996 | -0.0000075 | 5320.0007 | 0.0000132 | 5320.0021 | 0.0000395 |
| 40 | 93.5 | 5319.9778 | -0.0004173 | 5319.9788 | -0.0003985 | 5319.9796 | -0.0003835 |
| | 110 | 5319.9776 | -0.0004211 | 5319.9786 | -0.0004023 | 5319.9792 | -0.0003910 |
| | 126.5 | 5319.9777 | -0.0004192 | 5319.9789 | -0.0003966 | 5319.9794 | -0.0003872 |
| 30 | 93.5 | 5319.9667 | -0.0006259 | 5319.9668 | -0.0006241 | 5319.9668 | -0.0006241 |
| | 110 | 5319.9666 | -0.0006278 | 5319.9667 | -0.0006259 | 5319.9669 | -0.0006222 |
| | 126.5 | 5319.9668 | -0.0006241 | 5319.9667 | -0.0006259 | 5319.9669 | -0.0006222 |
| 20 | 93.5 | 5319.9630 | -0.0006955 | 5319.9630 | -0.0006955 | 5319.9627 | -0.0007011 |
| | 110 | 5319.9630 | -0.0006955 | 5319.9631 | -0.0006936 | 5319.9626 | -0.0007030 |
| | 126.5 | 5319.9631 | -0.0006936 | 5319.9629 | -0.0006974 | 5319.9628 | -0.0006992 |
| 10 | 93.5 | 5319.9596 | -0.0007594 | 5319.9590 | -0.0007707 | 5319.9592 | -0.0007669 |
| | 110 | 5319.9596 | -0.0007594 | 5319.9592 | -0.0007669 | 5319.9590 | -0.0007707 |
| | 126.5 | 5319.9595 | -0.0007613 | 5319.9591 | -0.0007688 | 5319.9593 | -0.0007650 |
| 0 | 93.5 | 5319.9585 | -0.0007801 | 5319.9588 | -0.0007744 | 5319.9588 | -0.0007744 |
| | 110 | 5319.9586 | -0.0007782 | 5319.9588 | -0.0007744 | 5319.9587 | -0.0007763 |
| | 126.5 | 5319.9586 | -0.0007782 | 5319.9587 | -0.0007763 | 5319.9589 | -0.0007726 |
| -10 | 93.5 | 5319.9630 | -0.0006955 | 5319.9632 | -0.0006917 | 5319.9637 | -0.0006823 |
| | 110 | 5319.9632 | -0.0006917 | 5319.9634 | -0.0006880 | 5319.9636 | -0.0006842 |
| | 126.5 | 5319.9633 | -0.0006898 | 5319.9634 | -0.0006880 | 5319.9634 | -0.0006880 |
| -20 | 93.5 | 5319.9715 | -0.0005357 | 5319.9717 | -0.0005320 | 5319.9719 | -0.0005282 |
| | 110 | 5319.9716 | -0.0005338 | 5319.9717 | -0.0005320 | 5319.9718 | -0.0005301 |
| | 126.5 | 5319.9716 | -0.0005338 | 5319.9718 | -0.0005301 | 5319.9718 | -0.0005301 |
| -30 | 93.5 | 5319.9772 | -0.0004286 | 5319.9779 | -0.0004154 | 5319.9778 | -0.0004173 |
| | 110 | 5319.9774 | -0.0004248 | 5319.9778 | -0.0004173 | 5319.9779 | -0.0004154 |
| | 126.5 | 5319.9776 | -0.0004211 | 5319.9778 | -0.0004173 | 5319.9779 | -0.0004154 |

## 5.7 BAND EDGES MEASUREMENT

### 5.7.1 TEST INSTRUMENTS

| Description & Manufacturer | Model No. | Serial No. | Calibrated Until |
|---|---|---|---|
| SPECTRUM ANALYZER | FSEK30 | 100049 | Aug. 12, 2004 |

**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 lose cable. Set RBW of spectrum analyzer to 1MHz and VBW of spectrum analyzer to 300Hz 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.

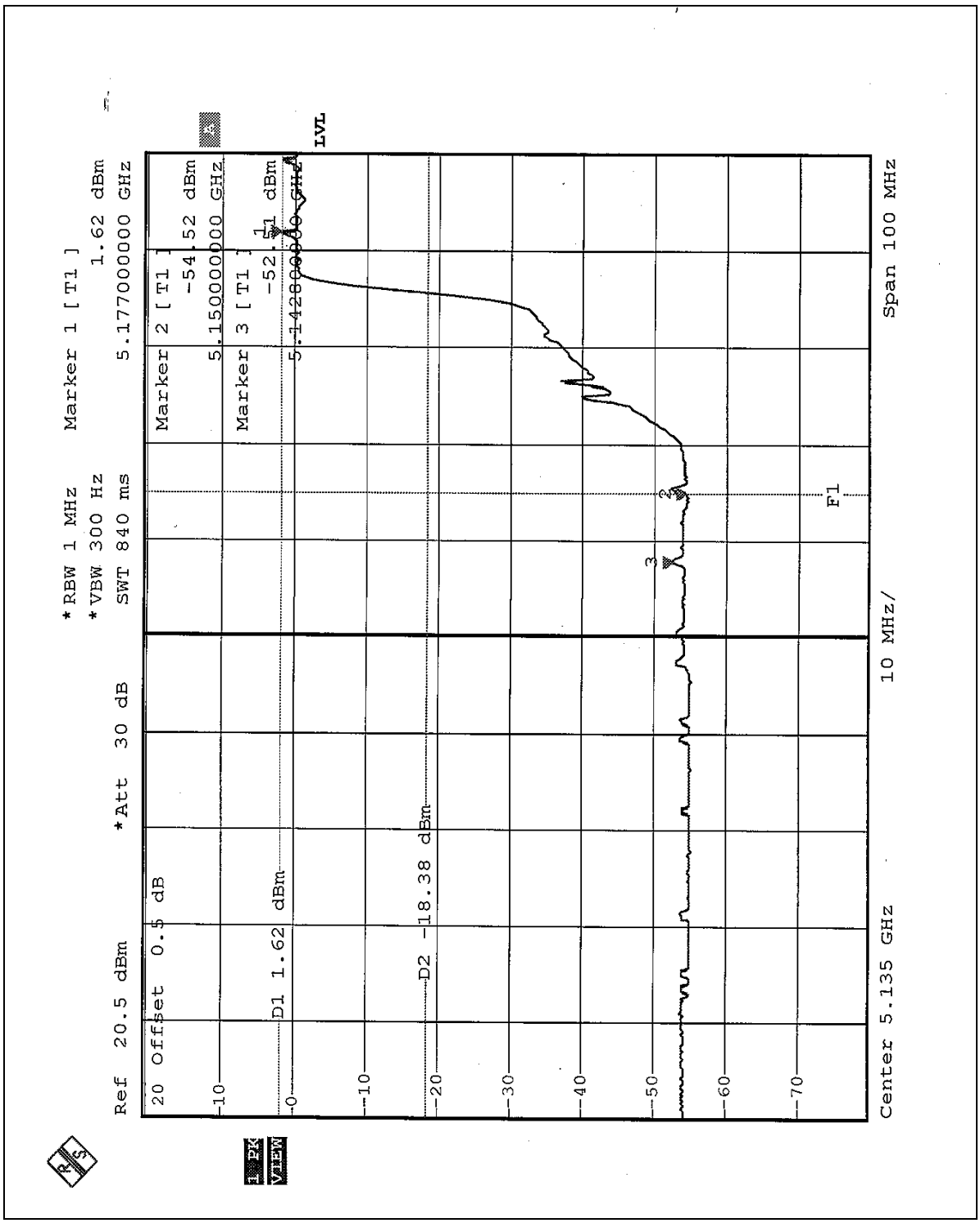
### 5.7.4 TEST RESULTS

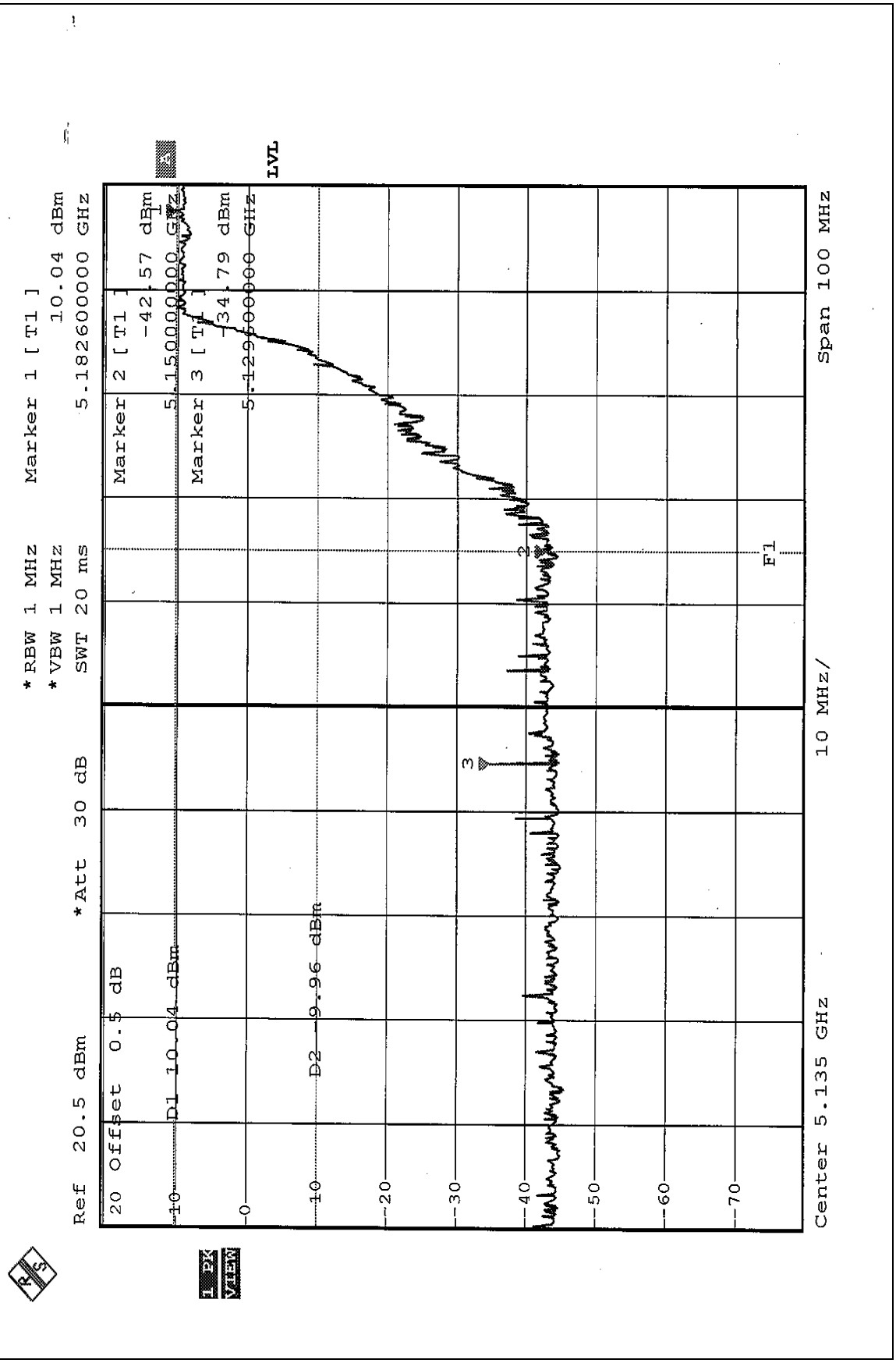
For signals in the restricted bands above and below the 5.15 to 5.35GHz allocated band a measurement was made of the amplitude of the spurious emissions with respect to the intentional signals. The relative amplitude, in dBc, was applied to the average and peak filed strength of the intentional signal made on the OATS to calculate the field strength of the unintentional signals.

The spectrum plots (Average RBW=1MHz, VBW=300Hz) are attached on the following 4 pages.

## Normal Mode: Channel 1 (5180 MHz)

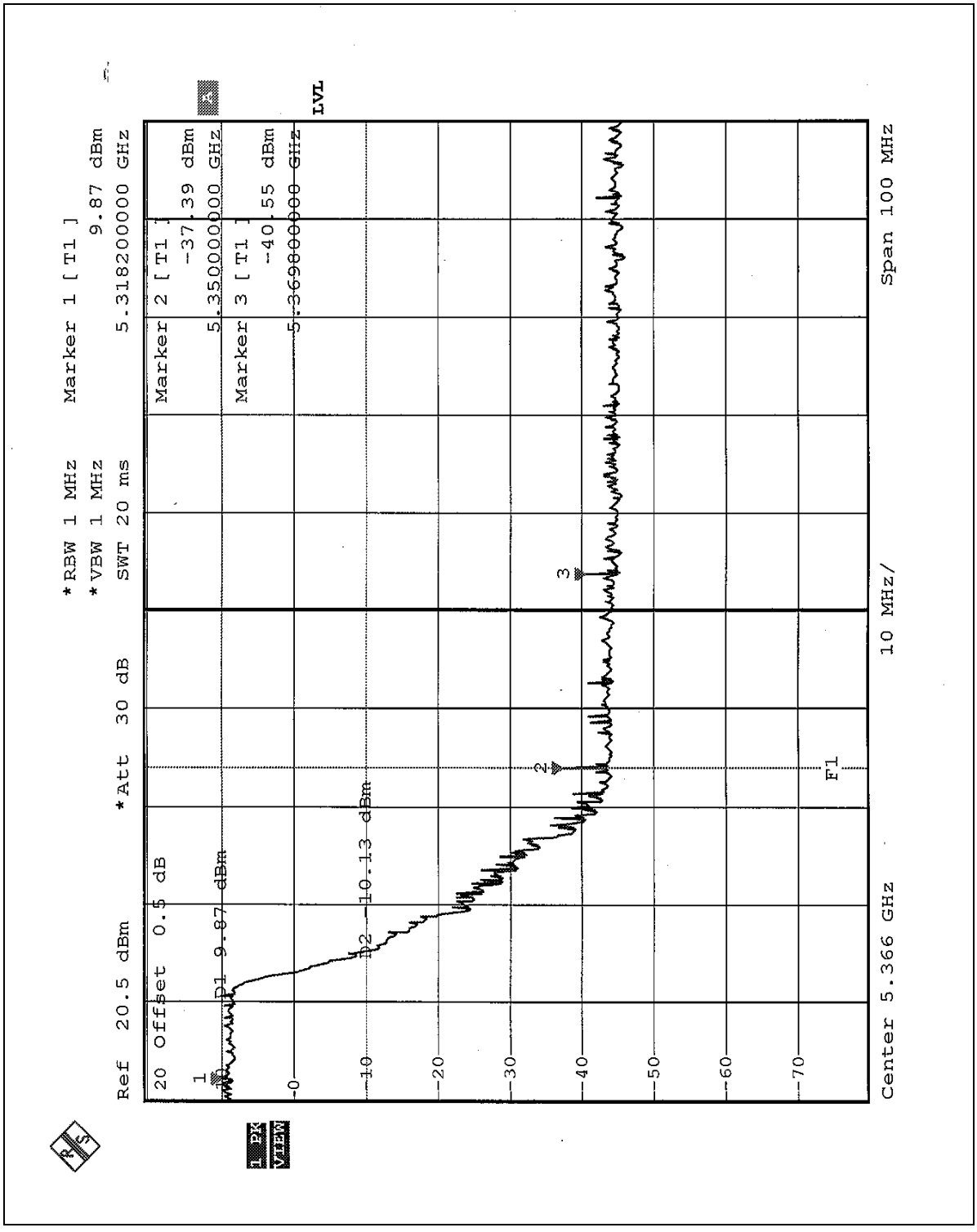
The band edge emission plot on the following page shows 54.13dBc (Average) between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 1 (normal mode) is 98.3dBuV/m, so the maximum field strength in restrict band is 98.3-54.13=44.17dBuV/m which is under 54dBuV/m limit.

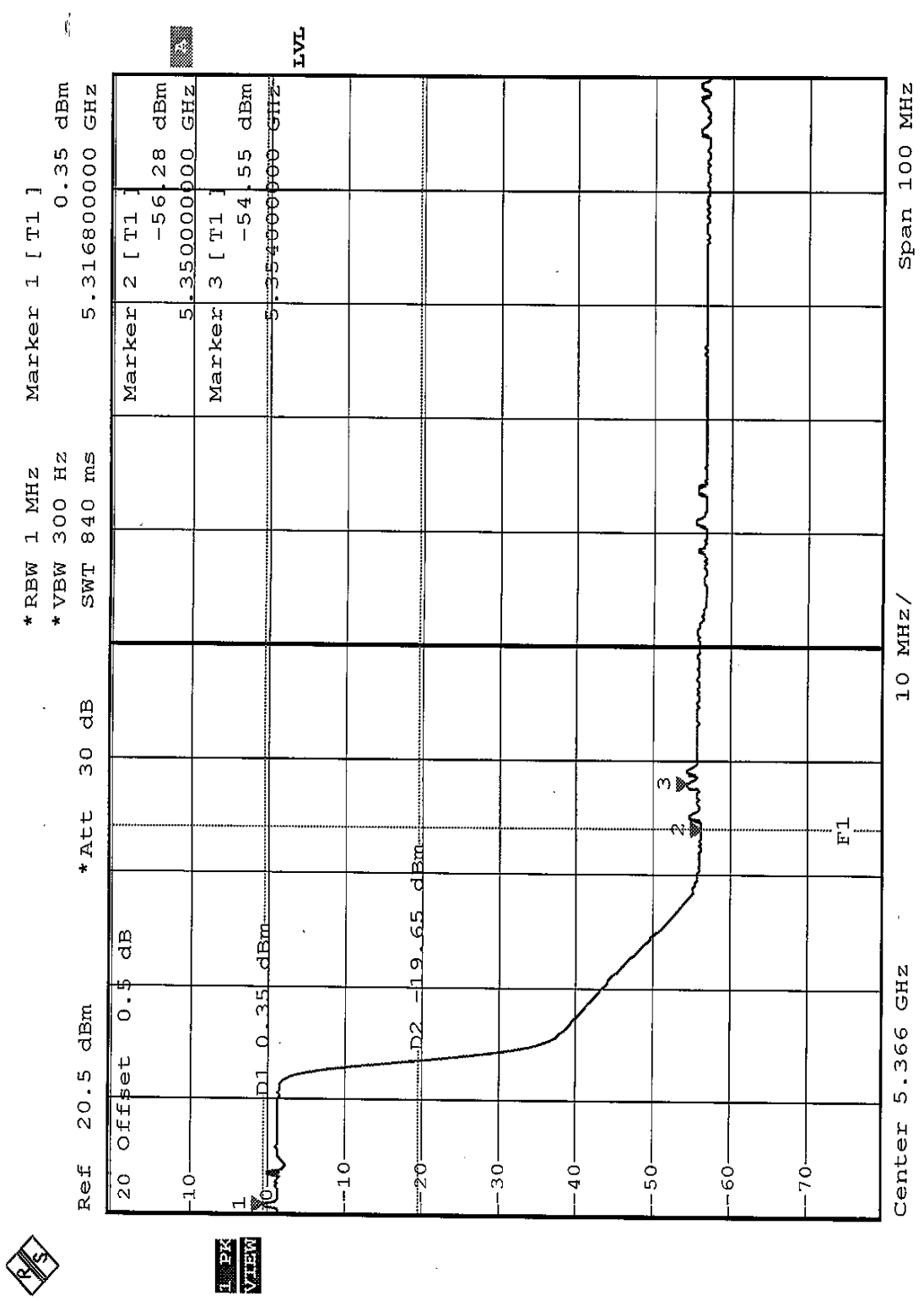



Ref 20.5 dBm
20 Offset 0.5 dB
D1 10.04 dBm
*Att 30 dB
*VBW 1 MHz
SWT 20 ms
*RBW 1 MHz
Marker 1 [T1 ]
10.04 dBm
5.182600000 GHz
Marker 2 [T1 ]
-42.57 dBm
5.150000000 GHz
Marker 3 [T1 ]
-34.79 dBm
5.129000000 GHz
D2 -9.96 dBm
LVL
Center 5.135 GHz
10 MHz/
Span 100 MHz
1 PK
VIEW

## Normal Mode: Channel 8 (5320 MHz)

The band edge emission plot on the following page shows 50.42dBc (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 (normal mode) is 98.7dBuV/m, so the maximum field strength in restrict band is 98.7-50.42=48.28dBuV/m which is under 54dBuV/m limit.




RBW 1 MHz
VBW 300 Hz
SWT 840 ms
Marker 1 [T1 ]
0.35 dBm
5.316800000 GHz
Marker 2 [T1 ]
-56.28 dBm
5.350000000 GHz
Marker 3 [T1 ]
-54.55 dBm
5.354000000 GHz
LVL
Ref 20.5 dBm
20 Offset 0.5 dB
Att 30 dB
D1 0.35 dBm
D2 -19.65 dBm
F1
Center 5.366 GHz
10 MHz/
Span 100 MHz
1 PK
VIEW

## 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

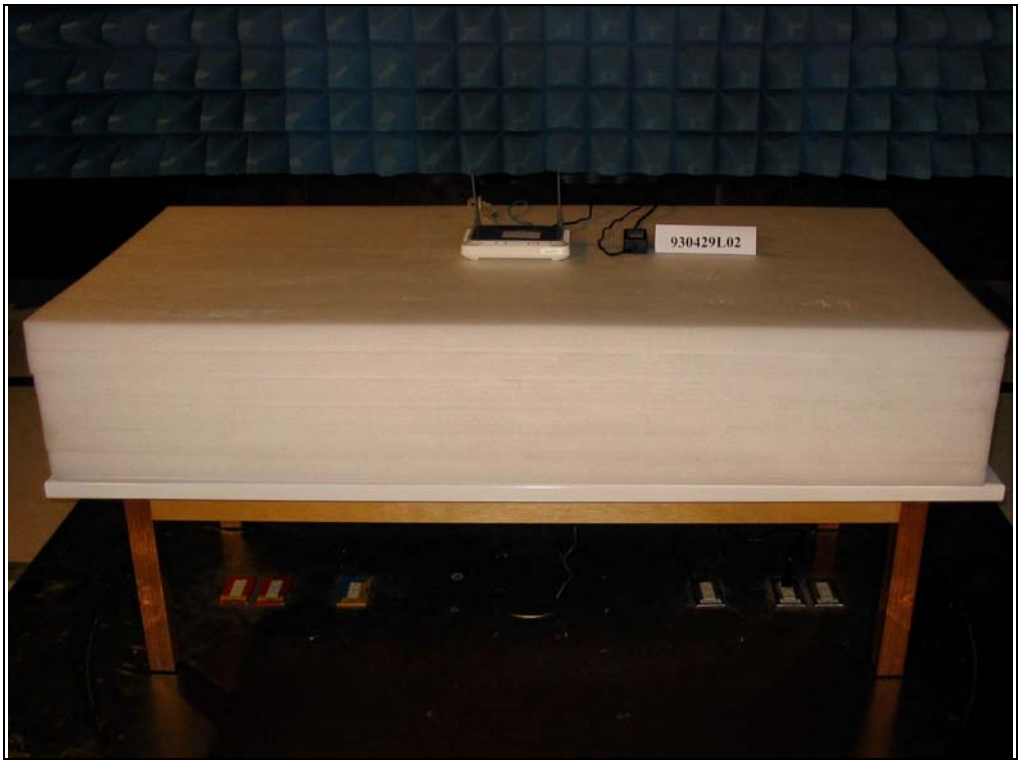
The maximum Gain antenna used in this product is Dipole antenna without antenna connector. And the maximum Gain of these antennas is 5dBi.

# 6. PHOTOGRAPHS OF THE TEST CONFIGURATION

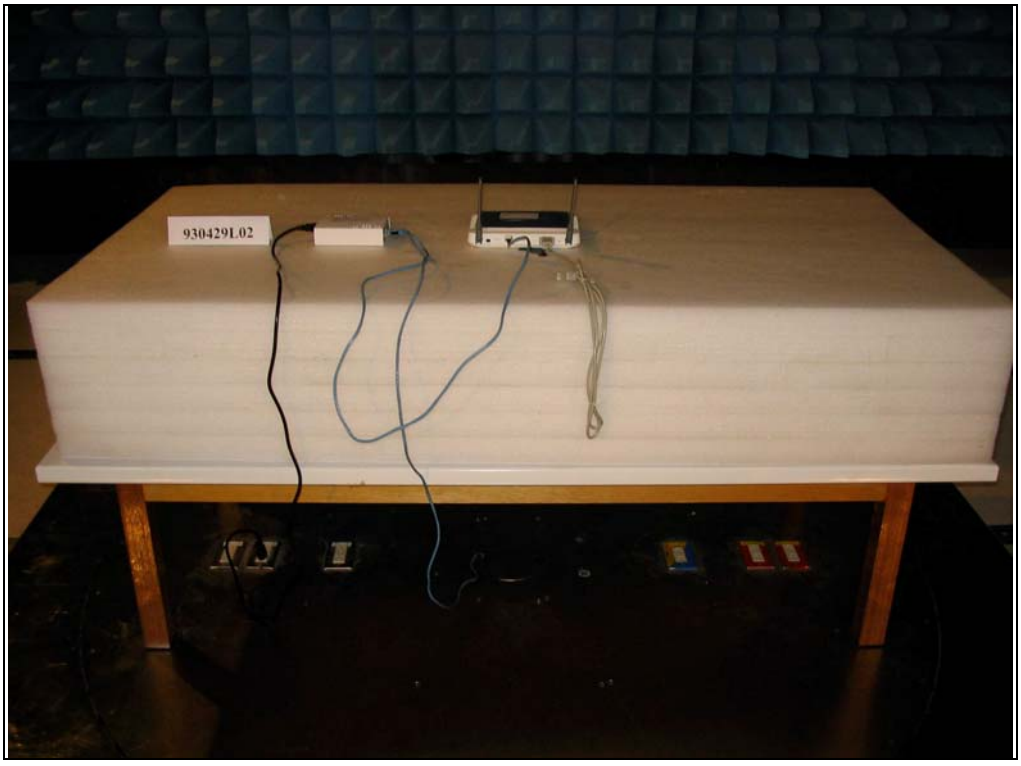
CONDUCTED EMISSION TEST


RADIATED EMISSION TEST

(EUT powered by AC Adapter)




(EUT powered by POE)

# 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:

| | |
|---|---|
| **USA** | FCC, NVLAP, UL |
| **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

**Email**: service@mail.adt.com.tw
**Web Site**: www.adt.com.tw

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

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