

*FCC PART 15, SUBPART B and C  
TEST REPORT**for*

INTEL MINI PCI TYPE 802.11 BG  
WIRELESS LAN ADAPTER  
FOR USE IN THE HP AGENCY SERIES# PP2080 (LAPTOP TYPE)  
MODEL: WM3B2200BG

Prepared for

HEWLETT PACKARD COMPANY  
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HOUSTON, TEXAS 77070

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DATE: JANUARY 5, 2004

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## GENERAL REPORT SUMMARY

This electromagnetic emission test report is generated by Compatible Electronics Inc., which is an independent testing and consulting firm. The test report is based on testing performed by Compatible Electronics personnel according to the measurement procedures described in the test specifications given below and in the "Test Procedures" section of this report.

The measurement data and conclusions appearing herein relate only to the sample tested and this report may not be reproduced without the written permission of Compatible Electronics, unless done so in full.

This report must not be used to claim product endorsement by NVLAP, NIST, or any other agency of the U.S. Government.

Device Tested: Intel Mini PCI Type 802.11BG Wireless LAN Adapter  
for use in the HP Agency Series# PP2080 (Laptop Type)  
Model: WM3B2200BG  
S/N: N/A

Product Description: The product is a wireless miniPCI card used for the Hewlett Packard Notebook Computer Series PP2080.

Modifications: The EUT was not modified during the testing.

Manufacturer: Hewlett Packard Company  
20555 SH 249  
Houston, Texas 77070

Test Dates: December 10 and 11, 2003.

Test Specifications: EMI requirements  
Limits: **Class B** of CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.207, 15.209, and 15.247

Test Procedure: ANSI C63.4: 2001

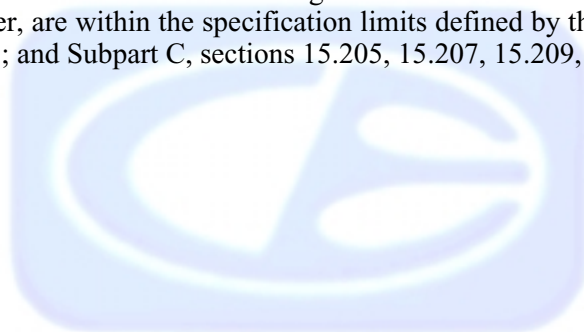
Test Deviations: The test procedure was not deviated from during the testing.

## SUMMARY OF TEST RESULTS

| TEST | DESCRIPTION                                                                                             | RESULTS                                                                                                                                         |
|------|---------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | Conducted RF Emissions, 150 kHz – 30 MHz                                                                | Complies with the <b>Class B</b> limits of CFR Title 47, Part 15, Subpart B; and the limits of CFR Title 47, Part 15, Subpart C, section 15.207 |
| 2    | Spurious Radiated RF Emissions, 30 MHz – 1000 MHz                                                       | Complies with the <b>Class B</b> limits of CFR Title 47, Part 15, Subpart B; and the limits of CFR Title 47, Part 15, Subpart C, section 15.209 |
| 3    | Spurious Radiated RF Emissions, 10 kHz – 30 MHz and 1000 MHz – 25000 MHz                                | Complies with the <b>Class B</b> limits of CFR Title 47, Part 15, Subpart B; and CFR Title 47, Part 15, Subpart C, section 15.247(c)            |
| 4    | Fundamental and Emissions produced by the intentional radiator in non-restricted bands, 10 kHz – 25 GHz | Complies with the relevant requirements of CFR Title 47, Part 15, Subpart C, section 15.247(c)                                                  |
| 5    | Emissions produced by the intentional radiator in restricted bands, 10 kHz – 25 GHz                     | Complies with the relevant requirements of CFR Title 47, Part 15, Subpart C, section 15.205, 15.209(a), and section 15.247 (c)                  |
| 6    | 6 dB Bandwidth                                                                                          | Complies with the relevant requirements of CFR Title 47, Part 15, Subpart C, section 15.247(a)(2)                                               |
| 7    | Peak Power Output                                                                                       | Complies with the relevant requirements of CFR Title 47, Part 15, Subpart C, section 15.247(b)(3)                                               |
| 8    | RF Conducted Antenna Test                                                                               | Complies with the relevant requirements of CFR Title 47, Part 15, Subpart C, section 15.247(c)                                                  |
| 9    | Peak Power Spectral Density Conducted from the Intentional Radiator to the Antenna Port                 | Complies with the relevant requirements of CFR Title 47, Part 15, Subpart C, section 15.247 (d)                                                 |

## 1. PURPOSE

This document is a qualification test report based on the Electromagnetic Interference (EMI) tests performed on the Intel Mini PCI Type 802.11BG Wireless LAN Adapter (for use in the HP Agency Series# PP 2080 [Laptop Type]). Model: WM3B2200BG. The EMI measurements were performed according to the measurement procedure described in ANSI C63.4: 2001. The tests were performed in order to determine whether the electromagnetic emissions from the equipment under test, referred to as EUT hereafter, are within the specification limits defined by the **Class B** limits of CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.207, 15.209, and 15.247.



## **2. ADMINISTRATIVE DATA**

### **2.1 Location of Testing**

The EMI tests of the testing described herein were performed at the test facility of Compatible Electronics at the following location:

114 Olinda Drive, Brea, California 92823

### **2.2 Traceability Statement**

The calibration certificates of all test equipment used during the test are on file at the location of the test. The calibration is traceable to the National Institute of Standards and Technology (NIST).

### **2.3 Cognizant Personnel**

Hewlett Packard Company

David Wissel                      PSG Global Business Units – Mobile Computing

Compatible Electronics, Inc.

Kyle Fujimoto                      Test Engineer  
Scott McCutchan                      Lab Manager, Brea Division

### **2.4 Date Test Sample was Received**

The test sample was received on December 10, 2003.

### **2.5 Disposition of the Test Sample**

The sample has not been returned to Hewlett Packard Company as of January 5, 2004.

### **2.6 Abbreviations and Acronyms**

The following abbreviations and acronyms may be used in this document.

|      |                                      |
|------|--------------------------------------|
| RF   | Radio Frequency                      |
| EMI  | Electromagnetic Interference         |
| EUT  | Equipment Under Test                 |
| P/N  | Part Number                          |
| S/N  | Serial Number                        |
| HP   | Hewlett Packard                      |
| ITE  | Information Technology Equipment     |
| CML  | Corrected Meter Limit                |
| LISN | Line Impedance Stabilization Network |

### 3. APPLICABLE DOCUMENTS

The following documents are referenced or used in the preparation of this EMI Test Report.

| SPEC                                  | TITLE                                                                                                                                   |
|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| FCC Title 47,<br>Part 15<br>Subpart C | FCC Rules - Radio frequency devices (including digital devices) –<br>Intentional Radiators                                              |
| ANSI C63.4<br>2001                    | Methods of measurement of radio-noise emissions from low-voltage<br>electrical and electronic equipment in the range of 9 kHz to 40 GHz |
| FCC Title 47,<br>Part 15<br>Subpart B | FCC Rules - Radio frequency devices (including digital devices) –<br>Unintentional Radiators                                            |

#### **4. DESCRIPTION OF TEST CONFIGURATION**

##### **4.1 Description of Test Configuration - EMI**

Setup and operation of the equipment under test.

Specifics of the EUT and Peripherals Tested

The Intel Mini PCI Type 802.11BG Wireless LAN Adapter (for use in the HP Agency Series# PP2080 [Laptop Type]) Model: WM3B2200BG was directly connected to the laptop's miniPCI port underneath. The laptop was also connected to the AC Adapter, printer, and joystick via its power, parallel, and USB ports. The EUT was continuously transmitting and receiving. The commands for the EUT were programmed using the special test software provided.

Note: For all tests, the main antenna port was tested, with the auxiliary antenna port being spot checked to insure the readings were not higher.

The final radiated as well as the conducted data was taken in the mode above. Please see Appendix E for the data sheets.

#### **4.1.1 Cable Construction and Termination**

- Cable 1** This is a 1.75 meter unshielded cable connecting the laptop to the AC Adapter. It has a 1/8 inch power connector at the laptop end and is hard wired into the laptop. The cable was bundled to a length of 1.1 meters.
- Cable 2** This is a 1.5 meter braid and foil shielded cable connecting the laptop to the printer. It has a D-25 pin metallic connector at the laptop end and a Centronics type metallic connector at the printer end. The cable was bundled to a length of 80 centimeters. The shield of the cable was grounded to the chassis via the connectors.
- Cable 3** This is a 10 centimeter foil shielded cable connecting the laptop to the D-15 serial adapter. It has a USB connector at the laptop end and a female D-15 connector at the other end. The shield of the cable was grounded to the chassis via the connectors.
- Cable 4** This is a 1.9 meter foil shielded cable connecting the joystick to the D-15 serial adapter. It has a male D-15 connector at D-15 serial adapter end and is hard wired into the joystick. The shield of the cable was grounded to the chassis via the connector at the D-15 serial adapter end.

**5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT****5.1 EUT and Accessory List**

| EQUIPMENT                                               | MANUFACTURER                | MODEL NUMBER             | SERIAL NUMBER  | FCC ID        |
|---------------------------------------------------------|-----------------------------|--------------------------|----------------|---------------|
| Equipment Name                                          |                             |                          |                |               |
| Intel Mini PCI Type 802.11BG Wireless LAN Adapter (EUT) | INTEL CORPORATION           | WM3B2200BG               | N/A            | CNTWM3B2200BG |
| EUT Sub-Assemblies                                      |                             |                          |                |               |
| Auxiliary Triple Band Antenna                           | WISTRON NeWeb CORPORATION   | P/N: 81.EB215.002        | N/A            | N/A           |
| Main Triple Band Antenna                                | WISTRON NeWeb CORPORATION   | P/N: 81.EB215.002        | N/A            | N/A           |
| Host Equipment List                                     |                             |                          |                |               |
| AC ADAPTER FOR LAPTOP                                   | COMPAQ COMPUTER CORP.       | P/N: 239427-001          | 3108554804     | N/A           |
| LAPTOP                                                  | COMPAQ COMPUTER CORPORATION | BCL31001005              | CAT000109161   | DoC           |
| JOYSTICK                                                | MICROSOFT                   | SIDEWINDER PRECISION PRO | P/N: X03-57540 | DoC           |
| PRINTER                                                 | CITIZEN                     | LSP-10                   | 1184398-72     | DLK66TLSP-10  |

## 5.2 EMI Test Equipment

| EQUIPMENT TYPE                         | MANU-FACTURER          | MODEL NUMBER | SERIAL NUMBER | CAL. DATE         | CAL. DUE DATE |
|----------------------------------------|------------------------|--------------|---------------|-------------------|---------------|
| Radiate Emissions Data Capture Program | Compatible Electronics | 2.0          | N/A           | N/A               | N/A           |
| Conducted Emissions Program            | Compatible Electronics | 2.3 (SR19)   | N/A           | N/A               | N/A           |
| Spectrum Analyzer – Main Section       | Hewlett Packard        | 8566B        | 3638A08767    | June 25, 2003     | June 25, 2004 |
| Spectrum Analyzer – Display Section    | Hewlett Packard        | 85662A       | 3701A22262    | June 25, 2003     | June 25, 2004 |
| Quasi-Peak Adapter                     | Hewlett Packard        | 85650A       | 2811A01363    | June 24, 2003     | June 24, 2004 |
| EMI Test Receiver                      | Rohde & Schwarz        | ESIB40       | 100172        | July 22, 2003     | July 22, 2004 |
| RF Attenuator                          | Weinschel Corp.        | 2            | BJ6396        | August 7, 2003    | Aug. 7, 2004  |
| LISN                                   | Com Power              | LI-215       | 12078         | November 22, 2003 | Nov. 22, 2004 |
| LISN                                   | Com Power              | LI-215       | 12082         | November 22, 2003 | Nov. 22, 2004 |
| Preamplifier                           | Com Power              | PA-102       | 1017          | January 2, 2003   | Jan. 2, 2004  |
| Biconical Antenna                      | Com Power              | AB-100       | 1548          | October 8, 2003   | Oct. 8, 2004  |
| Log Periodic Antenna                   | Com Power              | AL-100       | 16089         | October 8, 2003   | Oct. 8, 2004  |
| Antenna Mast                           | Com Power              | AM-100       | N/A           | N/A               | N/A           |
| Turntable                              | Com Power              | TT-100       | N/A           | N/A               | N/A           |
| Computer                               | Hewlett Packard        | 4530         | US91912319    | N/A               | N/A           |
| Monitor                                | Hewlett Packard        | D5258A       | TW74500641    | N/A               | N/A           |
| Loop Antenna                           | Com Power              | AL-130       | 17070         | June 19, 2002     | June 19, 2004 |

**5.3 EMI Test Equipment (Continued)**

| <b>EQUIPMENT TYPE</b>  | <b>MANU-FACTURER</b> | <b>MODEL NUMBER</b> | <b>SERIAL NUMBER</b> | <b>CAL. DATE</b> | <b>CAL. DUE DATE</b> |
|------------------------|----------------------|---------------------|----------------------|------------------|----------------------|
| Power Meter            | Hewlett Packard      | 436A                | 2236A15362           | June 20, 2003    | June 20, 2004        |
| Power Sensor           | Hewlett Packard      | 8482H               | GG00000006           | June 20, 2003    | June 20, 2004        |
| Horn Antenna           | Antenna Research     | DRG-118/A           | 1053                 | January 13, 2002 | Jan. 13, 2004        |
| Microwave Preamplifier | Com Power            | PA-122              | 25195                | August 19, 2003  | Aug. 19, 2004        |
| Microwave Preamplifier | Com Power            | PA-840              | 711013               | March 6, 2002    | March 6, 2004        |
| Horn Antenna           | Com Power            | AH826               | 0071957              | November 5, 2003 | Nov. 5, 2004         |

## **6. TEST SITE DESCRIPTION**

### **6.1 Test Facility Description**

Please refer to section 2.1 and 7.1 of this report for EMI test location.

### **6.2 EUT Mounting, Bonding and Grounding**

The EUT was mounted on a 1.0 by 1.5 meter non-conductive table 0.8 meters above the ground plane.

The EUT was not grounded.

## 7. CHARACTERISTICS OF THE TRANSMITTER

### 7.1 Antenna Gain

The antenna has a worst case gain of 2.87 dBi peak for the main antenna and 3.49 dBi peak for the auxiliary antenna.



## 8. TEST PROCEDURES

The following sections describe the test methods and the specifications for the tests. Test results are also included in this section.

### 8.1 RF Emissions

#### 8.1.1 Conducted Emissions Test

The spectrum analyzer was used as a measuring meter. The data was collected with the spectrum analyzer in the peak detect mode with the "Max Hold" feature activated. The quasi-peak was used only where indicated in the data sheets. A 10 dB attenuation pad was used for the protection of the spectrum analyzer input stage, and the offset was adjusted accordingly to read the actual data measured. The LISN output was measured using the spectrum analyzer. The output of the second LISN was terminated by a 50 ohm termination. The effective measurement bandwidth used for this test was 9 kHz.

Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The EUT was powered through the LISN, which was bonded to the ground plane. The LISN power was filtered and the filter was bonded to the ground plane. The EUT was set up with the minimum distances from any conductive surfaces as specified in ANSI C63.4: 2001. The excess power cord was wrapped in a figure eight pattern to form a bundle not exceeding 0.4 meters in length.

The conducted emissions from the EUT were maximized for operating mode as well as cable placement. The final data was collected under program control by the Compatible Electronics conducted emissions software in several overlapping sweeps by running the spectrum analyzer at a minimum scan rate of 10 seconds per octave. The final qualification data is located in Appendix E.

#### Test Results:

The EUT complies with the **Class B** limits of CFR Title 47, Part 15, Subpart B; and the limits of CFR Title 47, Part 15, Subpart C, Section 15.207 for conducted emissions.

### 8.1.2 Radiated Emissions (Spurious and Harmonics) Test

The EMI Receiver was used as a measuring meter along with the quasi-peak adapter. Amplifiers were used to increase the sensitivity of the instrument. The Com Power Preamplifier Model: PA-102 was used for frequencies from 30 MHz to 1 GHz, the Com-Power Microwave Preamplifier Model: PA-122 was used for frequencies from 1 GHz to 18 GHz, and the Com Power Microwave Preamplifier Model: PA-840 was used for frequencies from 18 GHz to 25 GHz. The spectrum analyzer was used in the peak detect mode with the "Max Hold" feature activated. In this mode, the EMI Receiver records the highest measured reading over all the sweeps.

The quasi-peak adapter was used only for those readings which are marked accordingly on the data sheets.

The frequencies above 1 GHz were averaged using the EMI Receiver's average detector.

The measurement bandwidths and transducers used for the radiated emissions test were:

| FREQUENCY RANGE   | EFFECTIVE MEASUREMENT BANDWIDTH | TRANSDUCER           |
|-------------------|---------------------------------|----------------------|
| 10 kHz to 150 kHz | 200 Hz                          | Active Loop Antenna  |
| 150 kHz to 30 MHz | 9 kHz                           | Active Loop Antenna  |
| 30 MHz to 300 MHz | 120 kHz                         | Biconical Antenna    |
| 300 MHz to 1 GHz  | 120 kHz                         | Log Periodic Antenna |
| 1 GHz to 25 GHz   | 1 MHz                           | Horn Antenna         |

The open field test site of Compatible Electronics, Inc. was used for radiated emission testing. This test site is set up according to ANSI C63.4: 2001. Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The turntable supporting the EUT is remote controlled using a motor. The turntable permits EUT rotation of 360 degrees in order to maximize emissions. Also, the antenna mast allows height variation of the antenna from 1 meter to 4 meters. Data was collected in the worst case (highest emission) configuration of the EUT by the Radiated Emission Manual Test software. At each reading, the EUT was rotated 360 degrees and the antenna height was varied from 1 to 4 meters (for E field radiated field strength). The gunsight method was used when measuring with the horn antenna in order to ensure accurate results.

**Radiated Emissions (Spurious and Harmonics) Test (con't)**

The presence of ambient signals was verified by turning the EUT off. In case an ambient signal was detected, the measurement bandwidth was reduced temporarily and verification was made that an additional adjacent peak did not exist. This ensures that the ambient signal does not hide any emissions from the EUT. The EUT was tested at a 3 meter test distance to obtain final data.



## 8.2 6 dB and 20 dB Bandwidth

The 6 dB and 20 dB bandwidths were measured using the EMI Receiver. The bandwidth was measured using a direct connection from the RF out on the EUT. The resolution bandwidth was 100 kHz and the video bandwidth was 300 kHz.

### Test Results:

The EUT complies with the relevant requirements of CFR Title 47, Part 15, Subpart C section 15.247 (a)(2).

## 8.3 Peak Output Power

The Peak Output Power was measured using the power meter and power sensor. The EUT was directly connected to the power sensor, which was directly connected to the power meter. The Peak Output Power was then measured

### Test Results:

The EUT complies with the relevant requirements of CFR Title 47, Part 15, Subpart C section 15.247 (b)(3).

## 8.4 RF Antenna Conducted Test

The RF antenna conducted test was performed using the EMI Receiver. The RF antenna conducted test was measured using a direct connection from the RF out on the EUT into the input of the analyzer. The resolution bandwidth was 100 kHz, and the video bandwidth 300 kHz. The spans were wide enough to include all the harmonics and emissions that were produced by the intentional radiator.

### Test Results:

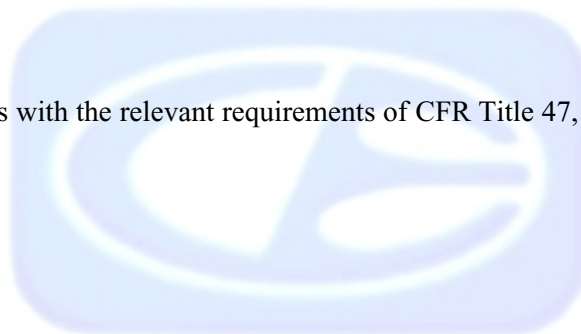
The EUT complies with the relevant requirements of CFR Title 47, Part 15, Subpart C section 15.247 (c).

## 8.5 Spectral Density Output

The spectral density output was measured using the EMI Receiver. The spectral density output was measured using a direct connection from the RF out on the EUT into the input of the EMI Receiver. The resolution bandwidth was 3 kHz, and the video bandwidth was 10 kHz. The highest 1.5 MHz of the signal was used as the frequency span with the sweep rate being 1 second for every 3 kHz of span.

### Test Results:

The EUT complies with the relevant requirements of CFR Title 47, Part 15, Subpart C section 15.247 (d).



## 8.6 RF Band Edges

The RF band edges were measured at the start of the restricted bands (2390 MHz and 2483.5 MHz). The readings taken were also averaged by the EMI Receiver. Data sheets are included in Appendix E, which compares the reading from the EMI Receiver to the spec limit.

Readings that were taken using the Marker Delta Method were derived as follows:

1. Set the EUT to transmit on the highest operating frequency near the edge of the restricted band. Set the EMI Receiver sweep to the edge of the restricted band and set the span wide enough to encompass the fundamental signal and the edge of the restricted band.
2. Make a radiated emissions measurement of the fundamental at 3 meters on the OATS. Maximize the level of the emission. Using MAX HOLD and Peak Search, record the highest peak and average level. (Peak: RBW = VBW = 1 MHz; AVG: RBW = 1 MHz, VBW = 10 Hz)
3. Connect a coax cable to the antenna output of the EUT and measure directly to the EMI Receiver. Use the same center frequency and span settings that were used for steps #1 and #2. Reduce the RBW to 100 kHz (this has been specified for band edge 2.4 GHz 15.247, Note: this is about 1% and 1% would probably suffice for most measurements.) Set the VBW = 1 MHz for peak, 10 Hz for AVG (identical to previous readings). Using MAX HOLD, then "Peak Search" and "Marker Delta" determine the "delta dB" from the peak of the fundamental to the maximum level within the restricted band. This dBc level is the "Delta dB" reading.
4. If the maximum level within the restricted band is within two standard BW (where a "standard" bandwidth is the bandwidth specified by ANSI C63.4: 2001 for the frequency being measured, or 1 MHz for > 1GHz) of the edge of the restricted band, measure the amount that the level of the fundamental dropped when the RBW was changed from 1 MHz to the RBW used in step 2.
5. Calculate the PEAK and Average level within the restricted band in dBuV/m using the equations below:

For readings within two standard bandwidths of the band edge:

Restricted band level (Peak) = Peak reference level – delta dB – BW delta dB (step #4)

Restricted band level (AVG) = Average reference level – delta dB – BW delta dB (step #4)

For readings that are outside the two standard bandwidths of the band edge:

Restricted band level (Peak) = Peak reference level – delta dB

Restricted band level (AVG) = AVG reference level – delta dB

### Test Results:

The EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart C section 15.247 (c). The RF power at the restricted bands closest to the band edges at 2390 MHz and 2483.5 MHz meet the limits of section 15.209. Please see the data sheets located in Appendix E.

## 9. CONCLUSIONS

The Intel Mini PCI Type 802.11BG Wireless LAN Adapter (for use in the HP Agency Series# PP2080 [Laptop Type]) Model: WM3B2200BG meets all of the specification limits defined in FCC Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.207, 15.209, and 15.247.





**APPENDIX A**

***LABORATORY RECOGNITIONS***

## ***LABORATORY RECOGNITIONS***

### **Compatible Electronics has the following agency accreditations:**

National Voluntary Laboratory Accreditation Program - Lab Code: 200528-0

Voluntary Control Council for Interference - Registration Numbers: R-983, C-1026, R-984 and C-1027

Bureau of Standards and Metrology Inspection - Reference Number: SL2-IN-E-1031

Conformity Assessment Body for the EMC Directive Under the US/EU MRA Appointed by NIST

### **Compatible Electronics is recognized or on file with the following agencies:**

Federal Communications Commission

Industry Canada

Radio-Frequency Technologies (Competent Body)



**APPENDIX B**

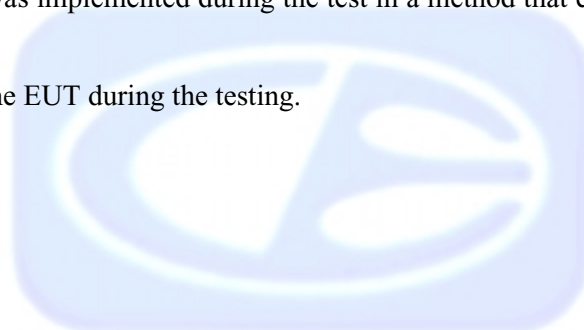
***MODIFICATIONS TO THE EUT***

## MODIFICATIONS TO THE EUT

The modifications listed below were made to the EUT to pass FCC Subpart B and Subpart C specifications.

All the rework described below was implemented during the test in a method that could be reproduced in all the units by the manufacturer.

No modifications were made to the EUT during the testing.





**APPENDIX C**

***ADDITIONAL MODELS COVERED  
UNDER THIS REPORT***

## **ADDITIONAL MODELS COVERED UNDER THIS REPORT**

### **USED FOR THE PRIMARY TEST**

Intel Mini PCI Type 802.11BG Wireless LAN Adapter (for use in  
the HP Agency Series# PP2080 [Laptop Type])  
Model: WM3B2200BG  
S/N: N/A

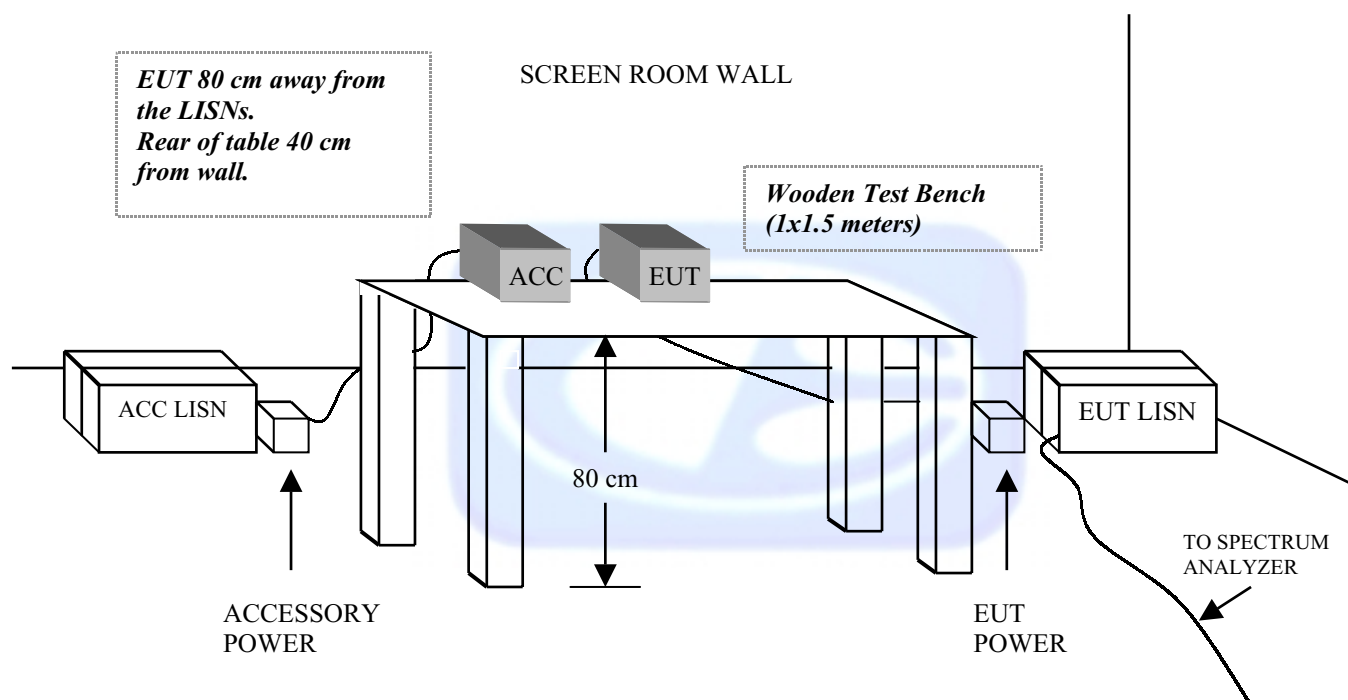
There were no additional models covered under this report.





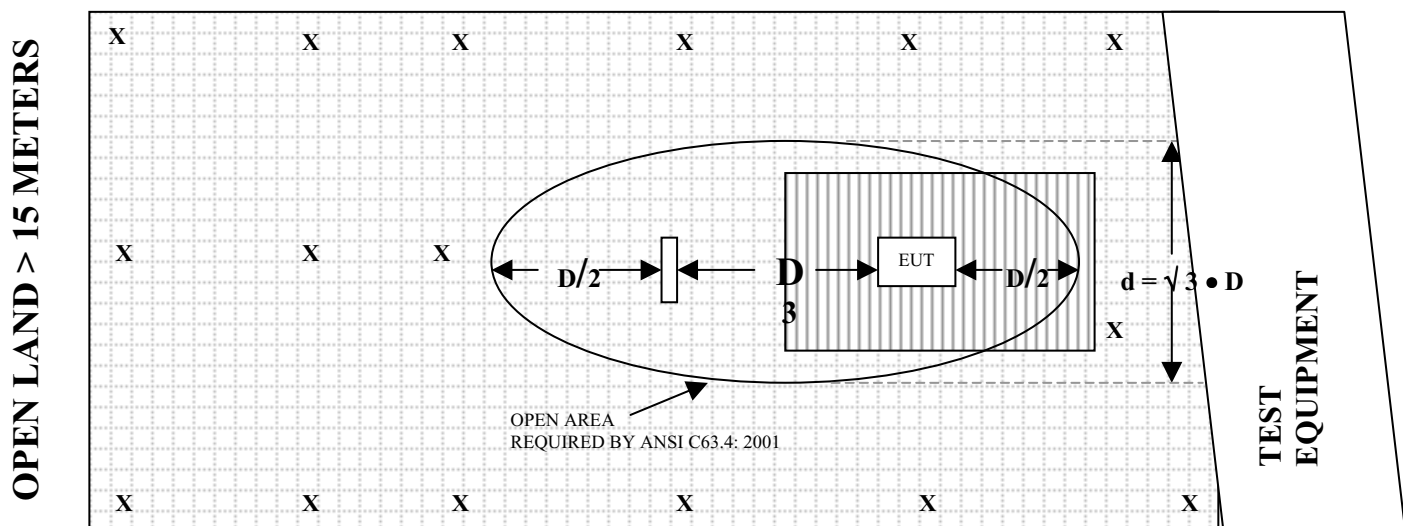
**APPENDIX D**

***DIAGRAMS, CHARTS, AND PHOTOS***

**FIGURE 1: CONDUCTED EMISSIONS TEST SETUP**

## FIGURE 2: PLOT MAP AND LAYOUT OF 3 METER RADIATED SITE

### OPEN LAND > 15 METERS



### OPEN LAND > 15 METERS

|   |                          |  |                 |
|---|--------------------------|--|-----------------|
| X | = GROUND RODS            |  | = GROUND SCREEN |
| D | = TEST DISTANCE (meters) |  | = WOOD COVER    |

**FRONT VIEW**

HEWLETT PACKARD COMPANY  
INTEL MINI PCI TYPE 802.11BG WIRELESS LAN ADAPTER  
FOR USE IN THE HP AGENCY SERIES# PP2080 (LAPTOP TYPE)  
MODEL: WM3B2200BG  
FCC SUBPART C - RADIATED EMISSIONS – 12-10-03

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION  
FOR MAXIMUM EMISSIONS**

Brea Division  
114 Olinda Drive  
Brea, CA 92823  
(714) 579-0500

Agoura Division  
2337 Troutdale Drive  
Agoura, CA 91301  
(818) 597-0600

Silverado Division  
19121 El Toro Road  
Silverado, CA 92676  
(949) 589-0700

Lake Forest Division  
20621 Pascal Way  
Lake Forest, CA 92630  
(949) 587-0400

**REAR VIEW**

HEWLETT PACKARD COMPANY  
INTEL MINI PCI TYPE 802.11BG WIRELESS LAN ADAPTER  
FOR USE IN THE HP AGENCY SERIES# PP2080 (LAPTOP TYPE)  
MODEL: WM3B2200BG  
FCC SUBPART C - RADIATED EMISSIONS – 12-10-03

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**FRONT VIEW**

HEWLETT PACKARD COMPANY  
INTEL MINI PCI TYPE 802.11BG WIRELESS LAN ADAPTER  
FOR USE IN THE HP AGENCY SERIES# PP2080 (LAPTOP TYPE)  
MODEL: WM3B2200BG  
FCC CLASS B - RADIATED EMISSIONS – 12-11-03

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**REAR VIEW**

HEWLETT PACKARD COMPANY  
INTEL MINI PCI TYPE 802.11BG WIRELESS LAN ADAPTER  
FOR USE IN THE HP AGENCY SERIES# PP2080 (LAPTOP TYPE)  
MODEL: WM3B2200BG  
FCC CLASS B - RADIATED EMISSIONS – 12-11-03

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**FRONT VIEW**

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INTEL MINI PCI TYPE 802.11BG WIRELESS LAN ADAPTER  
FOR USE IN THE HP AGENCY SERIES# PP2080 (LAPTOP TYPE)  
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FCC CLASS B - CONDUCTED EMISSIONS – 12-11-03

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INTEL MINI PCI TYPE 802.11BG WIRELESS LAN ADAPTER  
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MODEL: WM3B2200BG  
FCC CLASS B - CONDUCTED EMISSIONS – 12-11-03

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Lake Forest, CA 92630  
(949) 587-0400

**COM-POWER AB-100****BICONICAL ANTENNA****S/N: 1548****CALIBRATION DATE: OCTOBER 8, 2003**

| <b>FREQUENCY<br/>(MHz)</b> | <b>FACTOR<br/>(dB)</b> | <b>FREQUENCY<br/>(MHz)</b> | <b>FACTOR<br/>(dB)</b> |
|----------------------------|------------------------|----------------------------|------------------------|
| 30                         | 13.1                   | 120                        | 9.9                    |
| 35                         | 12.9                   | 125                        | 11.4                   |
| 40                         | 14.6                   | 140                        | 12.0                   |
| 45                         | 12.8                   | 150                        | 13.0                   |
| 50                         | 12.9                   | 160                        | 13.9                   |
| 60                         | 9.3                    | 175                        | 14.2                   |
| 70                         | 8.2                    | 180                        | 14.3                   |
| 80                         | 8.0                    | 200                        | 14.9                   |
| 90                         | 8.1                    | 250                        | 16.6                   |
| 100                        | 8.8                    | 300                        | 19.7                   |

COM-POWER AL-100

LOG PERIODIC ANTENNA

S/N: 16089

CALIBRATION DATE: OCTOBER 8, 2003

| FREQUENCY<br>(MHz) | FACTOR<br>(dB) | FREQUENCY<br>(MHz) | FACTOR<br>(dB) |
|--------------------|----------------|--------------------|----------------|
| 300                | 12.8           | 700                | 20.0           |
| 400                | 14.4           | 800                | 21.2           |
| 500                | 16.0           | 900                | 20.8           |
| 600                | 17.7           | 1000               | 21.7           |

**COM-POWER PA-102****PREAMPLIFIER**

S/N: 1017

CALIBRATION DATE: JANUARY 2, 2003

| <b>FREQUENCY<br/>(MHz)</b> | <b>FACTOR<br/>(dB)</b> | <b>FREQUENCY<br/>(MHz)</b> | <b>FACTOR<br/>(dB)</b> |
|----------------------------|------------------------|----------------------------|------------------------|
| 30                         | 38.4                   | 300                        | 38.3                   |
| 40                         | 38.4                   | 350                        | 38.3                   |
| 50                         | 38.3                   | 400                        | 38.3                   |
| 60                         | 38.4                   | 450                        | 37.9                   |
| 70                         | 38.4                   | 500                        | 38.1                   |
| 80                         | 38.4                   | 550                        | 38.2                   |
| 90                         | 38.4                   | 600                        | 38.1                   |
| 100                        | 38.3                   | 650                        | 37.9                   |
| 125                        | 38.4                   | 700                        | 37.9                   |
| 150                        | 38.4                   | 750                        | 37.7                   |
| 175                        | 38.2                   | 800                        | 37.4                   |
| 200                        | 38.4                   | 850                        | 37.6                   |
| 225                        | 38.2                   | 900                        | 37.4                   |
| 250                        | 38.3                   | 950                        | 36.7                   |
| 275                        | 38.5                   | 1000                       | 37.0                   |

**COM-POWER PA-122****MICROWAVE PREAMPLIFIER**

S/N: 25195

CALIBRATION DATE: AUGUST 19, 2003

| <b>FREQUENCY<br/>(GHz)</b> | <b>FACTOR<br/>(dB)</b> | <b>FREQUENCY<br/>(GHz)</b> | <b>FACTOR<br/>(dB)</b> |
|----------------------------|------------------------|----------------------------|------------------------|
| 1.0                        | 30.8                   | 6.0                        | 33.3                   |
| 1.1                        | 30.9                   | 6.5                        | 32.7                   |
| 1.2                        | 30.9                   | 7.0                        | 31.8                   |
| 1.3                        | 30.4                   | 7.5                        | 31.6                   |
| 1.4                        | 30.7                   | 8.0                        | 30.3                   |
| 1.5                        | 31.0                   | 8.5                        | 29.0                   |
| 1.6                        | 31.2                   | 9.0                        | 29.0                   |
| 1.7                        | 30.3                   | 9.5                        | 29.5                   |
| 1.8                        | 28.9                   | 10.0                       | 30.9                   |
| 1.9                        | 31.2                   | 11.0                       | 30.2                   |
| 2.0                        | 30.9                   | 12.0                       | 28.7                   |
| 2.5                        | 30.4                   | 13.0                       | 30.3                   |
| 3.0                        | 31.7                   | 14.0                       | 28.7                   |
| 3.5                        | 32.6                   | 15.0                       | 29.5                   |
| 4.0                        | 32.6                   | 16.0                       | 31.1                   |
| 4.5                        | 32.2                   | 17.0                       | 30.1                   |
| 5.0                        | 31.1                   | 18.0                       | 28.6                   |
| 5.5                        | 30.6                   |                            |                        |

**COM-POWER PA-840****MICROWAVE PREAMPLIFIER**

S/N: 711013

CALIBRATION DATE: MARCH 06, 2002

| FREQUENCY (GHz) | FACTOR (dB) | FREQUENCY (GHz) | FACTOR (dB) |
|-----------------|-------------|-----------------|-------------|
| 18.0            | 26.4        | 30.0            | 27.6        |
| 19.0            | 25.4        | 31.0            | 27.3        |
| 20.0            | 24.5        | 32.0            | 26.9        |
| 21.0            | 23.9        | 33.0            | 26.7        |
| 22.0            | 24.0        | 34.0            | 27.0        |
| 23.0            | 24.4        | 35.0            | 25.9        |
| 24.0            | 25.2        | 36.0            | 25.5        |
| 25.0            | 26.1        | 37.0            | 26.2        |
| 26.0            | 26.6        | 38.0            | 25.6        |
| 27.0            | 27.2        | 39.0            | 23.4        |
| 28.0            | 27.4        | 40.0            | 24.3        |
| 29.0            | 27.5        |                 |             |

**ANTENNA RESEARCH DRG-118/A****HORN ANTENNA****S/N: 1053****CALIBRATION DATE: JANUARY 13, 2002**

| <b>FREQUENCY (GHz)</b> | <b>FACTOR<br/>(dB)</b> | <b>FREQUENCY (GHz)</b> | <b>FACTOR<br/>(dB)</b> |
|------------------------|------------------------|------------------------|------------------------|
| 1.0                    | 25.5                   | 9.5                    | 39.1                   |
| 1.5                    | 26.6                   | 10.0                   | 39.7                   |
| 2.0                    | 29.4                   | 10.5                   | 40.9                   |
| 2.5                    | 30.4                   | 11.0                   | 40.7                   |
| 3.0                    | 31.2                   | 11.5                   | 42.4                   |
| 3.5                    | 32.3                   | 12.0                   | 42.6                   |
| 4.0                    | 32.9                   | 12.5                   | 42.4                   |
| 4.5                    | 33.0                   | 13.0                   | 41.5                   |
| 5.0                    | 34.8                   | 13.5                   | 41.0                   |
| 5.5                    | 35.2                   | 14.0                   | 40.5                   |
| 6.0                    | 36.4                   | 14.5                   | 43.6                   |
| 6.5                    | 36.6                   | 15.0                   | 43.7                   |
| 7.0                    | 38.8                   | 15.5                   | 43.3                   |
| 7.5                    | 38.8                   | 16.0                   | 42.8                   |
| 8.0                    | 38.0                   | 16.5                   | 43.0                   |
| 8.5                    | 38.1                   | 17.0                   | 42.7                   |
| 9.0                    | 39.9                   | 17.5                   | 44.0                   |
|                        |                        | 18.0                   | 41.8                   |

**COM-POWER AH826****HORN ANTENNA****S/N: 0071957****CALIBRATION DATE: NOVEMBER 05, 2003**

| <b>FREQUENCY (GHz)</b> | <b>FACTOR (dB)</b> | <b>FREQUENCY (GHz)</b> | <b>FACTOR (dB)</b> |
|------------------------|--------------------|------------------------|--------------------|
| 18.0                   | 32.3               | 22.5                   | 32.9               |
| 18.5                   | 32.9               | 23.0                   | 33.0               |
| 19.0                   | 32.7               | 23.5                   | 33.6               |
| 19.5                   | 32.6               | 24.0                   | 33.6               |
| 20.0                   | 32.7               | 24.5                   | 33.5               |
| 20.5                   | 33.0               | 25.0                   | 33.5               |
| 21.0                   | 33.0               | 25.5                   | 33.7               |
| 21.5                   | 33.2               | 26.0                   | 34.1               |
| 22.0                   | 32.9               | 26.5                   | 34.5               |
|                        |                    |                        |                    |

**COM-POWER AL-130****LOOP ANTENNA**

S/N: 17070

CALIBRATION DATE: JUNE 19, 2002

| <b>FREQUENCY<br/>(MHz)</b> | <b>MAGNETIC<br/>(dB/m)</b> | <b>ELECTRIC<br/>(dB/m)</b> |
|----------------------------|----------------------------|----------------------------|
| 0.009                      | -40.4                      | 11.1                       |
| 0.01                       | -40.3                      | 11.2                       |
| 0.02                       | -41.2                      | 10.3                       |
| 0.05                       | -41.6                      | 9.9                        |
| 0.07                       | -41.4                      | 10.1                       |
| 0.1                        | -41.7                      | 9.8                        |
| 0.2                        | -44.0                      | 7.5                        |
| 0.3                        | -41.6                      | 9.9                        |
| 0.5                        | -41.3                      | 10.2                       |
| 0.7                        | -41.4                      | 10.1                       |
| 1                          | -40.9                      | 10.6                       |
| 2                          | -40.6                      | 10.9                       |
| 3                          | -40.5                      | 11.0                       |
| 4                          | -40.8                      | 10.7                       |
| 5                          | -40.2                      | 11.3                       |
| 10                         | -40.7                      | 10.8                       |
| 15                         | -41.4                      | 10.1                       |
| 20                         | -41.6                      | 9.9                        |
| 25                         | -41.7                      | 9.8                        |
| 30                         | -42.9                      | 8.6                        |



**APPENDIX E**

***DATA SHEETS***



***RADIATED EMISSIONS***

***DATA SHEETS***

**FCC 15.247**

Intel Corporation  
 Intel Mini PCI Type 802.11BG Wireless LAN Adapter  
 Model: WM3B2200BG

Date: 12/10/03  
 Lab: B  
 Tested By: Kyle Fujimoto

Configuration: HP Laptop Agency Series# PP2080

**Channel 1 - 802.11 b Mode**  
**Transmit Mode**

GAIN: 31 OUTPUT 17.38 dBm

| Freq.<br>(MHz) | Level<br>(dBuV) | Pol (v/h) | Limit | Margin | Peak /<br>QP /<br>Avg | Ant.<br>Height<br>(m) | Table<br>Angle<br>(deg) | Comments               |
|----------------|-----------------|-----------|-------|--------|-----------------------|-----------------------|-------------------------|------------------------|
| 4824           | 51.48           | V         | 74    | -22.52 | Peak                  | 2                     | 270                     |                        |
| 4824           | 48.27           | V         | 54    | -5.73  | Avg                   | 2                     | 270                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 7236           | 48.96           | V         | 74    | -25.04 | Peak                  | 2                     | 270                     |                        |
| 7236           | 40.15           | V         | 54    | -13.85 | Avg                   | 2                     | 270                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 9648           | 62.4            | V         | --    | --     | Peak                  | 2                     | 270                     | Not in Restricted Band |
| 9648           | 60.44           | V         | --    | --     | Avg                   | 2                     | 270                     | Not in Restricted Band |
|                |                 |           |       |        |                       |                       |                         |                        |
| 12310          | 57.04           | V         | 74    | -16.96 | Peak                  | 2                     | 270                     |                        |
| 12310          | 40.35           | V         | 54    | -13.65 | Avg                   | 2                     | 270                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 14472          | 55.89           | V         | 74    | -18.11 | Peak                  | 2                     | 0                       |                        |
| 14472          | 40              | V         | 54    | -14    | Avg                   | 2                     | 0                       |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 16884          | 46.24           | V         | --    | --     | Peak                  | 2                     | 0                       | Not in Restricted Band |
| 16884          | 33.05           | V         | --    | --     | Avg                   | 2                     | 0                       | Not in Restricted Band |
|                |                 |           |       |        |                       |                       |                         |                        |
| 19296          | 45.87           | V         | 74    | -28.13 | Peak                  | 2                     | 270                     |                        |
| 19296          | 31              | V         | 54    | -23    | Avg                   | 2                     | 270                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 21708          | 48.38           | V         | --    | --     | Peak                  | 2                     | 180                     | Not in Restricted Band |
| 21708          | 34              | V         | --    | --     | Avg                   | 2                     | 180                     | Not in Restricted Band |
|                |                 |           |       |        |                       |                       |                         |                        |
| 24120          |                 | V         | --    | --     | Peak                  |                       |                         | No Emission            |
| 24120          |                 | V         | --    | --     | Avg                   |                       |                         | Detected               |
|                |                 |           |       |        |                       |                       |                         |                        |

**FCC 15.247**

Intel Corporation  
 Intel Mini PCI Type 802.11BG Wireless LAN Adapter  
 Model: WM3B2200BG

Date: 12/10/03  
 Lab: B  
 Tested By: Kyle Fujimoto

Configuration: HP Laptop Agency Series# PP2080

**Channel 1 - 802.11 b Mode**  
**Transmit Mode**

GAIN: 31 OUTPUT 17.38 dBm

| Freq.<br>(MHz) | Level<br>(dBuV) | Pol (v/h) | Limit | Margin | Peak /<br>QP /<br>Avg | Ant.<br>Height<br>(m) | Table<br>Angle<br>(deg) | Comments               |
|----------------|-----------------|-----------|-------|--------|-----------------------|-----------------------|-------------------------|------------------------|
| 4824           | 49.45           | H         | 74    | -24.55 | Peak                  | 2                     | 270                     |                        |
| 4824           | 45.1            | H         | 54    | -8.9   | Avg                   | 2                     | 270                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 7236           | 43.7            | H         | 74    | -30.3  | Peak                  | 2                     | 225                     |                        |
| 7236           | 31.77           | H         | 54    | -22.23 | Avg                   | 2                     | 225                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 9648           | 61              | H         | --    | --     | Peak                  | 1.75                  | 225                     | Not in Restricted Band |
| 9648           | 58.26           | H         | --    | --     | Avg                   | 1.75                  | 225                     | Not in Restricted Band |
|                |                 |           |       |        |                       |                       |                         |                        |
| 12060          | 57.13           | H         | 74    | -16.87 | Peak                  | 1.75                  | 315                     |                        |
| 12060          | 43.38           | H         | 54    | -10.62 | Avg                   | 1.75                  | 315                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 14472          | 54.78           | H         | 74    | -19.22 | Peak                  | 2                     | 45                      |                        |
| 14472          | 41.19           | H         | 54    | -12.81 | Avg                   | 2                     | 45                      |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 16884          |                 | H         | --    | --     | Peak                  |                       |                         | No Emission            |
| 16884          |                 | H         | --    | --     | Avg                   |                       |                         | Detected               |
|                |                 |           |       |        |                       |                       |                         |                        |
| 19296          | 44.22           | H         | 74    | -29.78 | Peak                  | 2                     | 270                     |                        |
| 19296          | 31.26           | H         | 54    | -22.74 | Avg                   | 2                     | 270                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 21708          | 46.21           | H         | 74    | -27.79 | Peak                  | 2                     | 270                     |                        |
| 21708          | 34              | H         | 54    | -20    | Avg                   | 2                     | 270                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 24120          |                 | H         | --    | --     | Peak                  |                       |                         | No Emission            |
| 24120          |                 | H         | --    | --     | Avg                   |                       |                         | Detected               |
|                |                 |           |       |        |                       |                       |                         |                        |

**FCC 15.247**

Intel Corporation  
 Intel Mini PCI Type 802.11BG Wireless LAN Adapter  
 Model: WM3B2200BG

Date: 12/10/03  
 Lab: B  
 Tested By: Kyle Fujimoto

Configuration: HP Laptop Agency Series# PP2080

**Channel 6 - 802.11 b Mode**  
**Transmit Mode**

GAIN: 31.5 OUTPUT 17.48 dBm

| Freq.<br>(MHz) | Level<br>(dBuV) | Pol (v/h) | Limit | Margin | Peak /<br>QP /<br>Avg | Ant.<br>Height<br>(m) | Table<br>Angle<br>(deg) | Comments               |
|----------------|-----------------|-----------|-------|--------|-----------------------|-----------------------|-------------------------|------------------------|
| 4874           | 50.61           | V         | 74    | -23.39 | Peak                  | 2                     | 225                     |                        |
| 4874           | 47.68           | V         | 54    | -6.32  | Avg                   | 2                     | 225                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 7311           | 48.28           | V         | 74    | -25.72 | Peak                  | 2                     | 45                      |                        |
| 7311           | 36.42           | V         | 54    | -17.58 | Avg                   | 2                     | 45                      |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 9748           | 60.61           | V         | --    | --     | Peak                  | 2                     | 270                     | Not in Restricted Band |
| 9748           | 57.82           | V         | --    | --     | Avg                   | 2                     | 270                     | Not in Restricted Band |
|                |                 |           |       |        |                       |                       |                         |                        |
| 12185          | 55.33           | V         | 74    | -18.67 | Peak                  | 2                     | 270                     |                        |
| 12185          | 42.18           | V         | 54    | -11.82 | Avg                   | 2                     | 270                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 14622          | 51.96           | V         | --    | --     | Peak                  | 2                     | 315                     | Not in Restricted Band |
| 14622          | 39.79           | V         | --    | --     | Avg                   | 2                     | 315                     | Not in Restricted Band |
|                |                 |           |       |        |                       |                       |                         |                        |
| 17059          | 47.05           | V         | --    | --     | Peak                  | 2                     | 315                     | Not in Restricted Band |
| 17059          | 32.87           | V         | --    | --     | Avg                   | 2                     | 315                     | Not in Restricted Band |
|                |                 |           |       |        |                       |                       |                         |                        |
| 19496          | 42.57           | V         | 74    | -31.43 | Peak                  | 1.75                  | 315                     |                        |
| 19496          | 30.35           | V         | 54    | -23.65 | Avg                   | 1.75                  | 315                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 21933          | 50.18           | V         | --    | --     | Peak                  | 1.5                   | 315                     | Not in Restricted Band |
| 21933          | 35.32           | V         | --    | --     | Avg                   | 1.5                   | 315                     | Not in Restricted Band |
|                |                 |           |       |        |                       |                       |                         |                        |
| 22001          | 47.53           | V         | 74    | -26.47 | Peak                  | 1.5                   | 315                     |                        |
| 22001          | 34.9            | V         | 54    | -19.1  | Avg                   | 1.5                   | 315                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 24370          |                 | V         | --    | --     | Peak                  | 1.75                  | 0                       | No Emission            |
| 24370          |                 | V         | --    | --     | Avg                   | 1.75                  | 0                       | Detected               |
|                |                 |           |       |        |                       |                       |                         |                        |

**FCC 15.247**

Intel Corporation  
 Intel Mini PCI Type 802.11BG Wireless LAN Adapter  
 Model: WM3B2200BG

Date: 12/10/03  
 Lab: B  
 Tested By: Kyle Fujimoto

Configuration: HP Laptop Agency Series# PP2080

**Channel 6 - 802.11 b Mode**  
**Transmit Mode**

GAIN: 31.5 OUTPUT 17.48 dBm

| Freq.<br>(MHz) | Level<br>(dBuV) | Pol (v/h) | Limit | Margin | Peak /<br>QP /<br>Avg | Ant.<br>Height<br>(m) | Table<br>Angle<br>(deg) | Comments               |
|----------------|-----------------|-----------|-------|--------|-----------------------|-----------------------|-------------------------|------------------------|
| 4874           | 46.51           | H         | 74    | -27.49 | Peak                  | 1.5                   | 45                      |                        |
| 4874           | 40.94           | H         | 54    | -13.06 | Avg                   | 1.5                   | 45                      |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 7311           | 47.09           | H         | 74    | -26.91 | Peak                  | 1.5                   | 0                       |                        |
| 7311           | 32.61           | H         | 54    | -21.39 | Avg                   | 1.5                   | 0                       |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 9748           | 61.74           | H         | --    | --     | Peak                  | 1.5                   | 315                     | Not in Restricted Band |
| 9748           | 59.22           | H         | --    | --     | Avg                   | 1.5                   | 315                     | Not in Restricted Band |
|                |                 |           |       |        |                       |                       |                         |                        |
| 12185          | 56.19           | H         | 74    | -17.81 | Peak                  | 1.5                   | 315                     |                        |
| 12185          | 43.1            | H         | 54    | -10.9  | Avg                   | 1.5                   | 315                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 14622          | 55.03           | H         | --    | --     | Peak                  | 1.5                   | 315                     | Not in Restricted Band |
| 14622          | 40.8            | H         | --    | --     | Avg                   | 1.5                   | 315                     | Not in Restricted Band |
|                |                 |           |       |        |                       |                       |                         |                        |
| 17059          | 43.63           | H         | --    | --     | Peak                  | 1.5                   | 315                     | Not in Restricted Band |
| 17059          | 30.02           | H         | --    | --     | Avg                   | 1.5                   | 315                     | Not in Restricted Band |
|                |                 |           |       |        |                       |                       |                         |                        |
| 19496          | 45.46           | H         | 74    | -28.54 | Peak                  | 1.5                   | 315                     |                        |
| 19496          | 30.39           | H         | 54    | -23.61 | Avg                   | 1.5                   | 315                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 21933          | 47.14           | H         | --    | --     | Peak                  | 2                     | 270                     | Not in Restricted Band |
| 21933          | 35.32           | H         | --    | --     | Avg                   | 2                     | 270                     | Not in Restricted Band |
|                |                 |           |       |        |                       |                       |                         |                        |
| 22001          | 47.55           | H         | 74    | -26.45 | Peak                  | 2                     | 270                     |                        |
| 22001          | 34.94           | H         | 54    | -19.06 | Avg                   | 2                     | 270                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 24370          |                 | H         | --    | --     | Peak                  |                       |                         | No Emission            |
| 24370          |                 | H         | --    | --     | Avg                   |                       |                         | Detected               |
|                |                 |           |       |        |                       |                       |                         |                        |

**FCC 15.247**

Intel Corporation  
 Intel Mini PCI Type 802.11BG Wireless LAN Adapter  
 Model: WM3B2200BG

Date: 12/10/03  
 Lab: B  
 Tested By: Kyle Fujimoto

Configuration: HP Laptop Agency Series# PP2080

**Channel 11 - 802.11 b Mode**  
**Transmit Mode**

GAIN: 32 OUTPUT 17.08 dBm

| Freq.<br>(MHz) | Level<br>(dBuV) | Pol (v/h) | Limit | Margin | Peak /<br>QP /<br>Avg | Ant.<br>Height<br>(m) | Table<br>Angle<br>(deg) | Comments               |
|----------------|-----------------|-----------|-------|--------|-----------------------|-----------------------|-------------------------|------------------------|
| 4924           | 48.89           | V         | 74    | -25.11 | Peak                  | 2                     | 225                     |                        |
| 4924           | 43.13           | V         | 54    | -10.87 | Avg                   | 2                     | 225                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 7386           | 45.68           | V         | 74    | -28.32 | Peak                  | 1.5                   | 225                     |                        |
| 7386           | 29.51           | V         | 54    | -24.49 | Avg                   | 1.5                   | 225                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 9848           | 60.79           | V         | --    | --     | Peak                  | 2                     | 315                     | Not in Restricted Band |
| 9848           | 58.3            | V         | --    | --     | Avg                   | 2                     | 315                     | Not in Restricted Band |
|                |                 |           |       |        |                       |                       |                         |                        |
| 12310          | 53.94           | V         | 74    | -20.06 | Peak                  | 2                     | 225                     |                        |
| 12310          | 42.73           | V         | 54    | -11.27 | Avg                   | 2                     | 225                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 14772          | 55.46           | V         | --    | --     | Peak                  | 1.75                  | 315                     | Not in Restricted Band |
| 14772          | 39.66           | V         | --    | --     | Avg                   | 1.75                  | 315                     | Not in Restricted Band |
|                |                 |           |       |        |                       |                       |                         |                        |
| 17234          | 45.02           | V         | --    | --     | Peak                  | 1.75                  | 270                     | Not in Restricted Band |
| 17234          | 30.74           | V         | --    | --     | Avg                   | 1.75                  | 270                     | Not in Restricted Band |
|                |                 |           |       |        |                       |                       |                         |                        |
| 19696          | 43.06           | V         | 74    | -30.94 | Peak                  | 2                     | 180                     |                        |
| 19696          | 30.56           | V         | 54    | -23.44 | Avg                   | 2                     | 180                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 22158          | 49.54           | V         | 74    | -24.46 | Peak                  | 2                     | 270                     |                        |
| 22158          | 34.99           | V         | 54    | -19.01 | Avg                   | 2                     | 270                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 24620          |                 | V         | --    | --     | Peak                  |                       |                         | No Emission            |
| 24620          |                 | V         | --    | --     | Avg                   |                       |                         | Detected               |
|                |                 |           |       |        |                       |                       |                         |                        |

**FCC 15.247**

Intel Corporation  
 Intel Mini PCI Type 802.11BG Wireless LAN Adapter  
 Model: WM3B2200BG

Date: 12/10/03  
 Lab: B  
 Tested By: Kyle Fujimoto

Configuration: HP Laptop Agency Series# PP2080

**Channel 11 - 802.11 b Mode**  
**Transmit Mode**

GAIN: 32 OUTPUT 17.08 dBm

| Freq.<br>(MHz) | Level<br>(dBuV) | Pol (v/h) | Limit | Margin | Peak /<br>QP /<br>Avg | Ant.<br>Height<br>(m) | Table<br>Angle<br>(deg) | Comments               |
|----------------|-----------------|-----------|-------|--------|-----------------------|-----------------------|-------------------------|------------------------|
| 4924           | 48.61           | H         | 74    | -25.39 | Peak                  | 1.5                   | 225                     |                        |
| 4924           | 43.27           | H         | 54    | -10.73 | Avg                   | 1.5                   | 225                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 7386           | 44.8            | H         | 74    | -29.2  | Peak                  | 1.75                  | 225                     |                        |
| 7386           | 30.46           | H         | 54    | -23.54 | Avg                   | 1.75                  | 225                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 9848           | 62.13           | H         | --    | --     | Peak                  | 1.5                   | 225                     | Not in Restricted Band |
| 9848           | 59.28           | H         | --    | --     | Avg                   | 1.5                   | 225                     | Not in Restricted Band |
|                |                 |           |       |        |                       |                       |                         |                        |
| 12310          | 54.16           | H         | 74    | -19.84 | Peak                  | 1.5                   | 0                       |                        |
| 12310          | 41.64           | H         | 54    | -12.36 | Avg                   | 1.5                   | 0                       |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 14772          | 53.48           | H         | --    | --     | Peak                  | 1.5                   | 315                     | Not in Restricted Band |
| 14772          | 39.82           | H         | --    | --     | Avg                   | 1.5                   | 315                     | Not in Restricted Band |
|                |                 |           |       |        |                       |                       |                         |                        |
| 17234          | 41.74           | H         | --    | --     | Peak                  | 1.5                   | 315                     | Not in Restricted Band |
| 17234          | 27.09           | H         | --    | --     | Avg                   | 1.5                   | 315                     | Not in Restricted Band |
|                |                 |           |       |        |                       |                       |                         |                        |
| 19696          | 45.02           | H         | 74    | -28.98 | Peak                  | 2                     | 270                     |                        |
| 19696          | 30.57           | H         | 54    | -23.43 | Avg                   | 2                     | 270                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 22158          | 47.38           | H         | 74    | -26.62 | Peak                  | 2                     | 180                     |                        |
| 22158          | 35.01           | H         | 54    | -18.99 | Avg                   | 2                     | 180                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 24620          |                 | H         | --    | --     | Peak                  |                       |                         | No Emission            |
| 24620          |                 | H         | --    | --     | Avg                   |                       |                         | Detected               |
|                |                 |           |       |        |                       |                       |                         |                        |

Intel Corporation  
Intel Mini PCI Type 802.11BG Wireless LAN Adapter  
Model: WM3B2200BG

Configuration: HP Laptop Agency Series# PP2080

GAIN: 31 OUTPUT 17.38 dBm

[illegible]

Intel Corporation  
Intel Mini PCI Type 802.11BG Wireless LAN Adapter  
Model: WM3B2200BG

Configuration: HP Laptop Agency Series# PP2080

GAIN: 31.5 OUTPUT 17.48 dBm

[illegible]

Intel Corporation  
Intel Mini PCI Type 802.11BG Wireless LAN Adapter  
Model: WM3B2200BG

Configuration: HP Laptop Agency Series# PP2080

GAIN: 32 OUTPUT 17.08 dBm

[illegible]

Intel Corporation  
Intel Mini PCI Type 802.11BG Wireless LAN Adapter  
Model: WM3B2200BG

Configuration: HP Laptop Agency Series# PP2080

[illegible]

Intel Corporation  
Intel Mini PCI Type 802.11BG Wireless LAN Adapter  
Model: WM3B2200BG

Configuration: HP Laptop Agency Series# PP2080

[illegible]

Intel Corporation  
Intel Mini PCI Type 802.11BG Wireless LAN Adapter  
Model: WM3B2200BG

Configuration: HP Laptop Agency Series# PP2080

[illegible]

**FCC 15.247**

Intel Corporation  
 Intel Mini PCI Type 802.11BG Wireless LAN Adapter  
 Model: WM3B2200BG

Date: 12/10/03  
 Lab: B  
 Tested By: Kyle Fujimoto

Configuration: HP Laptop Agency Series# PP2080

**802.11 b Mode**

| Freq. (MHz) | Level (dBuV) | Pol (v/h) | Limit | Margin | Peak / QP / Avg | Ant. Height (m) | Table Angle (deg) | Comments                        |
|-------------|--------------|-----------|-------|--------|-----------------|-----------------|-------------------|---------------------------------|
| 2312        | 53.56        | V         | 74    | -20.44 | Peak            | 2               | 180               | 100 MHz Below the Fundamental   |
| 2312        | 48.41        | V         | 54    | -5.59  | Avg             | 2               | 180               | of Channel 1                    |
| 2512        | 51.11        | V         | 74    | -22.89 | Peak            | 2               | 270               | 100 MHz Above the Fundamental   |
| 2512        | 42.06        | V         | 54    | -11.94 | Avg             | 2               | 270               | of Channel 1                    |
| 2312        | 50.46        | H         | 74    | -23.54 | Peak            | 2               | 270               | 100 MHz Below the Fundamental   |
| 2312        | 44.28        | H         | 54    | -9.72  | Avg             | 2               | 270               | of Channel 1                    |
| 2512        | 45.58        | H         | 74    | -28.42 | Peak            | 2               | 180               | 100 MHz Above the Fundamental   |
| 2512        | 36.69        | H         | 54    | -17.31 | Avg             | 2               | 180               | of Channel 1                    |
| 2335.9      | 53.33        | V         | 74    | -20.67 | Peak            | 2               | 270               | 101.1 MHz Below the Fundamental |
| 2335.9      | 47.28        | V         | 54    | -6.72  | Avg             | 2               | 270               | of Channel 6                    |
| 2538.5      | 48.65        | V         | 74    | -25.35 | Peak            | 2               | 270               | 101.5 MHz Above the Fundamental |
| 2538.5      | 38.24        | V         | 54    | -15.76 | Avg             | 2               | 270               | of Channel 6                    |
| 2335.9      | 53.09        | H         | 74    | -20.91 | Peak            | 2               | 45                | 101.1 MHz Below the Fundamental |
| 2335.9      | 47.03        | H         | 54    | -6.97  | Avg             | 2               | 45                | of Channel 6                    |
| 2538.5      | 46.18        | H         | 74    | -27.82 | Peak            | 2               | 180               | 101.5 MHz Above the Fundamental |
| 2538.5      | 34.59        | H         | 54    | -19.41 | Avg             | 2               | 180               | of Channel 6                    |
| 2359        | 50.4         | V         | 74    | -23.6  | Peak            | 2               | 180               | 103 MHz Below the Fundamental   |
| 2359        | 42.9         | V         | 54    | -11.1  | Avg             | 2               | 180               | of Channel 11                   |
| 2565        | 42.72        | V         | 74    | -31.28 | Peak            | 2               | 0                 | 103 MHz Above the Fundamental   |
| 2565        | 30.69        | V         | 54    | -23.31 | Avg             | 2               | 0                 | of Channel 11                   |
| 2359        | 51.1         | H         | 74    | -22.9  | Peak            | 2               | 45                | 103 MHz Below the Fundamental   |
| 2359        | 43.87        | H         | 54    | -10.13 | Avg             | 2               | 45                | of Channel 11                   |
| 2565        | 44.29        | H         | 74    | -29.71 | Peak            | 2               | 0                 | 103 MHz Above the Fundamental   |
| 2565        | 30.15        | H         | 74    | -43.85 | Peak            | 2               | 0                 | of Channel 11                   |

**FCC 15.247**

Intel Corporation

Intel Mini PCI Type 802.11BG Wireless LAN Adapter

Model: WM3B2200BG

Date: 12/10/03

Lab: B

Tested By: Kyle Fujimoto

Configuration: HP Laptop Agency Series# PP2080

**Channel 1 - 802.11 g Mode**

GAIN: 29.5 OUTPUT 15.88 dBm

**Transmit Mode**

| Freq.<br>(MHz) | Level<br>(dBuV) | Pol (v/h) | Limit | Margin | Peak /<br>QP /<br>Avg | Ant.<br>Height<br>(m) | Table<br>Angle<br>(deg) | Comments               |
|----------------|-----------------|-----------|-------|--------|-----------------------|-----------------------|-------------------------|------------------------|
| 4824           | 42.56           | V         | 74    | -31.44 | Peak                  | 2                     | 270                     |                        |
| 4824           | 27.37           | V         | 54    | -26.63 | Avg                   | 2                     | 270                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 7236           | 42.63           | V         | 74    | -31.37 | Peak                  | 2                     | 270                     |                        |
| 7236           | 30.18           | V         | 54    | -23.82 | Avg                   | 2                     | 270                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 9648           | 54.83           | V         | --    | --     | Peak                  | 2                     | 270                     | Not in Restricted Band |
| 9648           | 45.01           | V         | --    | --     | Avg                   | 2                     | 270                     | Not in Restricted Band |
|                |                 |           |       |        |                       |                       |                         |                        |
| 12060          | 52.6            | V         | 74    | -21.4  | Peak                  | 2                     | 270                     |                        |
| 12060          | 40.06           | V         | 54    | -13.94 | Avg                   | 2                     | 270                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 14472          | 55.23           | V         | 74    | -18.77 | Peak                  | 2                     | 0                       |                        |
| 14472          | 39.89           | V         | 54    | -14.11 | Avg                   | 2                     | 0                       |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 16884          | 45.08           | V         | --    | --     | Peak                  | 2                     | 0                       | Not in Restricted Band |
| 16884          | 32.6            | V         | --    | --     | Avg                   | 2                     | 0                       | Not in Restricted Band |
|                |                 |           |       |        |                       |                       |                         |                        |
| 19296          | 44.01           | V         | 74    | -29.99 | Peak                  | 2                     | 270                     |                        |
| 19296          | 30.93           | V         | 54    | -23.07 | Avg                   | 2                     | 270                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 21708          | 45.69           | V         | --    | --     | Peak                  | 2                     | 225                     | Not in Restricted Band |
| 21708          | 34              | V         | --    | --     | Avg                   | 2                     | 225                     | For Tx Mode Only!      |
|                |                 |           |       |        |                       |                       |                         |                        |
| 24120          |                 | V         | --    | --     | Peak                  |                       |                         | No Emission            |
| 24120          |                 | V         | --    | --     | Avg                   |                       |                         | Detected               |
|                |                 |           |       |        |                       |                       |                         |                        |

**FCC 15.247**

Intel Corporation  
 Intel Mini PCI Type 802.11BG Wireless LAN Adapter  
 Model: WM3B2200BG

Date: 12/10/03  
 Lab: B  
 Tested By: Kyle Fujimoto

Configuration: HP Laptop Agency Series# PP2080

**Channel 1 - 802.11 g Mode**  
**Transmit Mode**

GAIN: 29.5 OUTPUT 15.88 dBm

| Freq.<br>(MHz) | Level<br>(dBuV) | Pol (v/h) | Limit | Margin | Peak /<br>QP /<br>Avg | Ant.<br>Height<br>(m) | Table<br>Angle<br>(deg) | Comments               |
|----------------|-----------------|-----------|-------|--------|-----------------------|-----------------------|-------------------------|------------------------|
| 4824           | 39.63           | H         | 74    | -34.37 | Peak                  | 2                     | 270                     |                        |
| 4824           | 27.55           | H         | 54    | -26.45 | Avg                   | 2                     | 270                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 7236           | 43.04           | H         | 74    | -30.96 | Peak                  | 2                     | 225                     |                        |
| 7236           | 30.06           | H         | 54    | -23.94 | Avg                   | 2                     | 225                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 9648           | 51.91           | H         | --    | --     | Peak                  | 1.75                  | 225                     | Not in Restricted Band |
| 9648           | 43.58           | H         | --    | --     | Avg                   | 1.75                  | 225                     | Not in Restricted Band |
|                |                 |           |       |        |                       |                       |                         |                        |
| 12060          | 52.66           | H         | 74    | -21.34 | Peak                  | 1.75                  | 315                     |                        |
| 12060          | 39.56           | H         | 54    | -14.44 | Avg                   | 1.75                  | 315                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 14472          | 53.05           | H         | 74    | -20.95 | Peak                  | 2                     | 45                      |                        |
| 14472          | 39.99           | H         | 54    | -14.01 | Avg                   | 2                     | 45                      |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 16884          | 45.4            | H         | --    | --     | Peak                  | 2                     | 180                     | Not in Restricted Band |
| 16884          | 32.5            | H         | --    | --     | Avg                   | 2                     | 180                     | Not in Restricted Band |
|                |                 |           |       |        |                       |                       |                         |                        |
| 19296          | 44.7            | H         | 74    | -29.3  | Peak                  | 2                     | 270                     |                        |
| 19296          | 30.93           | H         | 54    | -23.07 | Avg                   | 2                     | 270                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 21708          | 46.9            | H         | 74    | -27.1  | Peak                  | 2                     | 180                     |                        |
| 21708          | 34.14           | H         | 54    | -19.86 | Avg                   | 2                     | 180                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 24120          |                 | H         | --    | --     | Peak                  |                       |                         | No Emission            |
| 24120          |                 | H         | --    | --     | Avg                   |                       |                         | Detected               |
|                |                 |           |       |        |                       |                       |                         |                        |

**FCC 15.247**

Intel Corporation  
 Intel Mini PCI Type 802.11BG Wireless LAN Adapter  
 Model: WM3B2200BG

Date: 12/10/03  
 Lab: B  
 Tested By: Kyle Fujimoto

Configuration: HP Laptop Agency Series# PP2080

**Channel 6 - 802.11 g Mode**  
**Transmit Mode**

GAIN: 30 OUTPUT 15.95 dBm

| Freq.<br>(MHz) | Level<br>(dBuV) | Pol (v/h) | Limit | Margin | Peak /<br>QP /<br>Avg | Ant.<br>Height<br>(m) | Table<br>Angle<br>(deg) | Comments               |
|----------------|-----------------|-----------|-------|--------|-----------------------|-----------------------|-------------------------|------------------------|
| 4874           | 41.97           | V         | 74    | -32.03 | Peak                  | 2                     | 225                     |                        |
| 4874           | 27.37           | V         | 54    | -26.63 | Avg                   | 2                     | 225                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 7311           | 44.39           | V         | 74    | -29.61 | Peak                  | 2                     | 45                      |                        |
| 7311           | 31.35           | V         | 54    | -22.65 | Avg                   | 2                     | 45                      |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 9748           | 54.69           | V         | --    | --     | Peak                  | 2                     | 270                     | Not in Restricted Band |
| 9748           | 47.27           | V         | --    | --     | Avg                   | 2                     | 270                     | Not in Restricted Band |
|                |                 |           |       |        |                       |                       |                         |                        |
| 12185          | 54.38           | V         | 74    | -19.62 | Peak                  | 2                     | 270                     |                        |
| 12185          | 39.1            | V         | 54    | -14.9  | Avg                   | 2                     | 270                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 14622          | 54.83           | V         | --    | --     | Peak                  | 2                     | 315                     | Not in Restricted Band |
| 14622          | 39.1            | V         | --    | --     | Avg                   | 2                     | 315                     | Not in Restricted Band |
|                |                 |           |       |        |                       |                       |                         |                        |
| 17059          | 44.95           | V         | --    | --     | Peak                  | 2                     | 315                     | Not in Restricted Band |
| 17059          | 32.68           | V         | --    | --     | Avg                   | 2                     | 315                     | Not in Restricted Band |
|                |                 |           |       |        |                       |                       |                         |                        |
| 19496          | 43.29           | V         | 74    | -30.71 | Peak                  | 1.75                  | 315                     |                        |
| 19496          | 30.42           | V         | 54    | -23.58 | Avg                   | 1.75                  | 315                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 21933          | 47.1            | V         | --    | --     | Peak                  | 1.5                   | 315                     | Not in Restricted Band |
| 21933          | 35.3            | V         | --    | --     | Avg                   | 1.5                   | 315                     | Not in Restricted Band |
|                |                 |           |       |        |                       |                       |                         |                        |
| 22001          | 46.62           | V         | 74    | -27.38 | Peak                  | 1.5                   | 315                     |                        |
| 22001          | 34.85           | V         | 54    | -19.15 | Avg                   | 1.5                   | 315                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 24370          |                 | V         | --    | --     | Peak                  | 1.75                  | 0                       | No Emission            |
| 24370          |                 | V         | --    | --     | Avg                   | 1.75                  | 0                       | Detected               |
|                |                 |           |       |        |                       |                       |                         |                        |

**FCC 15.247**

Intel Corporation  
 Intel Mini PCI Type 802.11BG Wireless LAN Adapter  
 Model: WM3B2200BG

Date: 12/10/03  
 Lab: B  
 Tested By: Kyle Fujimoto

Configuration: HP Laptop Agency Series# PP2080

**Channel 6 - 802.11 g Mode**  
**Transmit Mode**

GAIN: 30 OUTPUT 15.95 dBm

| Freq.<br>(MHz) | Level<br>(dBuV) | Pol (v/h) | Limit | Margin | Peak /<br>QP /<br>Avg | Ant.<br>Height<br>(m) | Table<br>Angle<br>(deg) | Comments               |
|----------------|-----------------|-----------|-------|--------|-----------------------|-----------------------|-------------------------|------------------------|
| 4874           | 39.11           | H         | 74    | -34.89 | Peak                  | 1.5                   | 45                      |                        |
| 4874           | 27.28           | H         | 54    | -26.72 | Avg                   | 1.5                   | 45                      |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 7311           | 44.86           | H         | 74    | -29.14 | Peak                  | 1.5                   | 0                       |                        |
| 7311           | 31.36           | H         | 54    | -22.64 | Avg                   | 1.5                   | 0                       |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 9748           | 52.12           | H         | --    | --     | Peak                  | 1.5                   | 315                     | Not in Restricted Band |
| 9748           | 41.69           | H         | --    | --     | Avg                   | 1.5                   | 315                     | Not in Restricted Band |
|                |                 |           |       |        |                       |                       |                         |                        |
| 12185          | 50.99           | H         | 74    | -23.01 | Peak                  | 1.5                   | 315                     |                        |
| 12185          | 38.6            | H         | 54    | -15.4  | Avg                   | 1.5                   | 315                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 14622          | 54.52           | H         | --    | --     | Peak                  | 1.5                   | 315                     | Not in Restricted Band |
| 14622          | 39.1            | H         | --    | --     | Avg                   | 1.5                   | 315                     | Not in Restricted Band |
|                |                 |           |       |        |                       |                       |                         |                        |
| 17059          | 44.75           | H         | --    | --     | Peak                  | 1.5                   | 315                     | Not in Restricted Band |
| 17059          | 32.71           | H         | --    | --     | Avg                   | 1.5                   | 315                     | Not in Restricted Band |
|                |                 |           |       |        |                       |                       |                         |                        |
| 19496          | 42.77           | H         | 74    | -31.23 | Peak                  | 1.5                   | 315                     |                        |
| 19496          | 30.43           | H         | 54    | -23.57 | Avg                   | 1.5                   | 315                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 21933          | 47.74           | H         | --    | --     | Peak                  | 2                     | 180                     | Not in Restricted Band |
| 21933          | 34.68           | H         | --    | --     | Avg                   | 2                     | 180                     | Not in Restricted Band |
|                |                 |           |       |        |                       |                       |                         |                        |
| 22001          | 48.94           | H         | 74    | -25.06 | Peak                  | 2                     | 180                     |                        |
| 22001          | 34.91           | H         | 54    | -19.09 | Avg                   | 2                     | 180                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 24370          |                 | H         | --    | --     | Peak                  |                       |                         | No Emission            |
| 24370          |                 | H         | --    | --     | Avg                   |                       |                         | Detected               |
|                |                 |           |       |        |                       |                       |                         |                        |

**FCC 15.247**

Intel Corporation  
 Intel Mini PCI Type 802.11BG Wireless LAN Adapter  
 Model: WM3B2200BG

Date: 12/10/03  
 Lab: B  
 Tested By: Kyle Fujimoto

Configuration: HP Laptop Agency Series# PP2080

**Channel 11 - 802.11 g Mode**  
**Transmit Mode**

GAIN: 30.5 OUTPUT 16.02 dBm

| Freq.<br>(MHz) | Level<br>(dBuV) | Pol (v/h) | Limit | Margin | Peak /<br>QP /<br>Avg | Ant.<br>Height<br>(m) | Table<br>Angle<br>(deg) | Comments               |
|----------------|-----------------|-----------|-------|--------|-----------------------|-----------------------|-------------------------|------------------------|
| 4924           | 42.01           | V         | 74    | -31.99 | Peak                  | 2                     | 225                     |                        |
| 4924           | 27.25           | V         | 54    | -26.75 | Avg                   | 2                     | 225                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 7386           | 44.1            | V         | 74    | -29.9  | Peak                  | 1.5                   | 225                     |                        |
| 7386           | 29.29           | V         | 54    | -24.71 | Avg                   | 1.5                   | 225                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 9848           | 52.93           | V         | --    | --     | Peak                  | 2                     | 315                     | Not in Restricted Band |
| 9848           | 44.01           | V         | --    | --     | Avg                   | 2                     | 315                     | Not in Restricted Band |
|                |                 |           |       |        |                       |                       |                         |                        |
| 12310          | 49.62           | V         | 74    | -24.38 | Peak                  | 2                     | 225                     |                        |
| 12310          | 37.85           | V         | 54    | -16.15 | Avg                   | 2                     | 225                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 14772          | 55.06           | V         | --    | --     | Peak                  | 1.75                  | 315                     | Not in Restricted Band |
| 14772          | 39.96           | V         | --    | --     | Avg                   | 1.75                  | 315                     | Not in Restricted Band |
|                |                 |           |       |        |                       |                       |                         |                        |
| 17234          | 44.98           | V         | --    | --     | Peak                  | 1.75                  | 270                     | Not in Restricted Band |
| 17234          | 31.03           | V         | --    | --     | Avg                   | 1.75                  | 270                     | Not in Restricted Band |
|                |                 |           |       |        |                       |                       |                         |                        |
| 19696          | 43.78           | V         | 74    | -30.22 | Peak                  | 2                     | 180                     |                        |
| 19696          | 30.52           | V         | 54    | -23.48 | Avg                   | 2                     | 180                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 22158          | 49.72           | V         | 74    | -24.28 | Peak                  | 2                     | 135                     |                        |
| 22158          | 35.06           | V         | 54    | -18.94 | Avg                   | 2                     | 135                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 24620          |                 | V         | --    | --     | Peak                  |                       |                         | No Emission            |
| 24620          |                 | V         | --    | --     | Avg                   |                       |                         | Detected               |
|                |                 |           |       |        |                       |                       |                         |                        |

**FCC 15.247**

Intel Corporation  
 Intel Mini PCI Type 802.11BG Wireless LAN Adapter  
 Model: WM3B2200BG

Date: 12/10/03  
 Lab: B  
 Tested By: Kyle Fujimoto

Configuration: HP Laptop Agency Series# PP2080

**Channel 11 - 802.11 g Mode**  
**Transmit Mode**

GAIN: 30.5 OUTPUT 16.02 dBm

| Freq.<br>(MHz) | Level<br>(dBuV) | Pol (v/h) | Limit | Margin | Peak /<br>QP /<br>Avg | Ant.<br>Height<br>(m) | Table<br>Angle<br>(deg) | Comments               |
|----------------|-----------------|-----------|-------|--------|-----------------------|-----------------------|-------------------------|------------------------|
| 4924           | 42.25           | H         | 74    | -31.75 | Peak                  | 1.5                   | 225                     |                        |
| 4924           | 27.46           | H         | 54    | -26.54 | Avg                   | 1.5                   | 225                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 7386           | 41.88           | H         | 74    | -32.12 | Peak                  | 1.75                  | 225                     |                        |
| 7386           | 29.79           | H         | 54    | -24.21 | Avg                   | 1.75                  | 225                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 9848           | 53.73           | H         | --    | --     | Peak                  | 1.5                   | 225                     | Not in Restricted Band |
| 9848           | 38.93           | H         | --    | --     | Avg                   | 1.5                   | 225                     | Not in Restricted Band |
|                |                 |           |       |        |                       |                       |                         |                        |
| 12310          | 48.86           | H         | 74    | -25.14 | Peak                  | 1.5                   | 0                       |                        |
| 12310          | 36.19           | H         | 54    | -17.81 | Avg                   | 1.5                   | 0                       |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 14772          | 54.67           | H         | --    | --     | Peak                  | 1.5                   | 315                     | Not in Restricted Band |
| 14772          | 39.41           | H         | --    | --     | Avg                   | 1.5                   | 315                     | Not in Restricted Band |
|                |                 |           |       |        |                       |                       |                         |                        |
| 17234          | 47.85           | H         | --    | --     | Peak                  | 1.5                   | 315                     | Not in Restricted Band |
| 17234          | 33.28           | H         | --    | --     | Avg                   | 1.5                   | 315                     | Not in Restricted Band |
|                |                 |           |       |        |                       |                       |                         |                        |
| 19696          | 45.01           | H         | 74    | -28.99 | Peak                  | 2                     | 270                     |                        |
| 19696          | 30.44           | H         | 54    | -23.56 | Avg                   | 2                     | 270                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 22158          | 46.96           | H         | 74    | -27.04 | Peak                  | 2                     | 270                     |                        |
| 22158          | 35.02           | H         | 54    | -18.98 | Avg                   | 2                     | 270                     |                        |
|                |                 |           |       |        |                       |                       |                         |                        |
| 24620          |                 | H         | --    | --     | Peak                  |                       |                         | No Emission            |
| 24620          |                 | H         | --    | --     | Avg                   |                       |                         | Detected               |
|                |                 |           |       |        |                       |                       |                         |                        |

Intel Corporation  
Intel Mini PCI Type 802.11BG Wireless LAN Adapter  
Model: WM3B2200BG

Configuration: HP Laptop Agency Series# PP2080

GAIN: 29.5      OUTPUT 15.88 dBm

[illegible]

Intel Corporation  
Intel Mini PCI Type 802.11BG Wireless LAN Adapter  
Model: WM3B2200BG

Date: 12/10/03  
Lab: B  
Tested By: Kyle Fujimoto

Configuration: HP Laptop Agency Series# PP2080

GAIN: 30 OUTPUT 15.95 dBm

[illegible]

Intel Corporation  
Intel Mini PCI Type 802.11BG Wireless LAN Adapter  
Model: WM3B2200BG

Configuration: HP Laptop Agency Series# PP2080

GAIN: 30.5 OUTPUT 16.02 dBm

[illegible]

Intel Corporation  
Intel Mini PCI Type 802.11BG Wireless LAN Adapter  
Model: WM3B2200BG

Date: 12/10/03  
Lab: B  
Tested By: Kyle Fujimoto

Configuration: HP Laptop Agency Series# PP2080

**Channel 1 - 802.11 g Mode**  
**Receive Mode**

[illegible]

Intel Corporation  
Intel Mini PCI Type 802.11BG Wireless LAN Adapter  
Model: WM3B2200BG

Configuration: HP Laptop Agency Series# PP2080

[illegible]

Intel Corporation  
Intel Mini PCI Type 802.11BG Wireless LAN Adapter  
Model: WM3B2200BG

Configuration: HP Laptop Agency Series# PP2080

[illegible]

**FCC 15.247**

Intel Corporation  
 Intel Mini PCI Type 802.11BG Wireless LAN Adapter  
 Model: WM3B2200BG

Date: 12/10/03  
 Lab: B  
 Tested By: Kyle Fujimoto

Configuration: HP Laptop Agency Series# PP2080

**802.11 g Mode**

| Freq. (MHz) | Level (dBuV) | Pol (v/h) | Limit | Margin | Peak / QP / Avg | Ant. Height (m) | Table Angle (deg) | Comments                        |
|-------------|--------------|-----------|-------|--------|-----------------|-----------------|-------------------|---------------------------------|
| 2312        | 57.27        | V         | 74    | -16.73 | Peak            | 2               | 45                | 100 MHz Below the Fundamental   |
| 2312        | 50.99        | V         | 54    | -3.01  | Avg             | 2               | 45                | of Channel 1                    |
| 2512        | 52.43        | V         | 74    | -21.57 | Peak            | 2               | 45                | 100 MHz Above the Fundamental   |
| 2512        | 42.75        | V         | 54    | -11.25 | Avg             | 2               | 45                | of Channel 1                    |
| 2312        | 51.39        | H         | 74    | -22.61 | Peak            | 2               | 135               | 100 MHz Below the Fundamental   |
| 2312        | 43.01        | H         | 54    | -10.99 | Avg             | 2               | 135               | of Channel 1                    |
| 2512        | 49.13        | H         | 74    | -24.87 | Peak            | 2               | 225               | 100 MHz Above the Fundamental   |
| 2512        | 37.86        | H         | 54    | -16.14 | Avg             | 2               | 225               | of Channel 1                    |
| 2335.9      | 59.16        | V         | 74    | -14.84 | Peak            | 2               | 45                | 101.1 MHz Below the Fundamental |
| 2335.9      | 51.29        | V         | 54    | -2.71  | Avg             | 2               | 45                | of Channel 6                    |
| 2538.5      | 51.58        | V         | 74    | -22.42 | Peak            | 2               | 45                | 101.5 MHz Above the Fundamental |
| 2538.5      | 41.9         | V         | 54    | -12.1  | Avg             | 2               | 45                | of Channel 6                    |
| 2335.9      | 56.38        | H         | 74    | -17.62 | Peak            | 2               | 180               | 101.1 MHz Below the Fundamental |
| 2335.9      | 49.15        | H         | 54    | -4.85  | Avg             | 2               | 180               | of Channel 6                    |
| 2538.5      | 49.59        | H         | 74    | -24.41 | Peak            | 2               | 180               | 101.5 MHz Above the Fundamental |
| 2538.5      | 39.93        | H         | 54    | -14.07 | Avg             | 2               | 180               | of Channel 6                    |
| 2359        | 56.84        | V         | 74    | -17.16 | Peak            | 2               | 45                | 103 MHz Below the Fundamental   |
| 2359        | 48.36        | V         | 54    | -5.64  | Avg             | 2               | 45                | of Channel 11                   |
| 2565        | 49.36        | V         | 74    | -24.64 | Peak            | 2               | 45                | 103 MHz Above the Fundamental   |
| 2565        | 37.6         | V         | 54    | -16.4  | Avg             | 2               | 45                | of Channel 11                   |
| 2359        | 53.68        | H         | 74    | -20.32 | Peak            | 2               | 45                | 103 MHz Below the Fundamental   |
| 2359        | 45.1         | H         | 54    | -8.9   | Avg             | 2               | 45                | of Channel 11                   |
| 2565        | 47.75        | H         | 74    | -26.25 | Peak            | 2               | 45                | 103 MHz Above the Fundamental   |
| 2565        | 35.02        | H         | 74    | -38.98 | Peak            | 2               | 45                | of Channel 11                   |

**Test Location** : Compatible Electronics **Page** : 1/1  
**Customer** : Intel Corporation **Date** : 12/11/2003  
**Manufacturer** : Intel Corporation **Time** : 19:32:07  
**Eut name** : Mini PCI Type 802.11BG Wireless LAN Adapter **Lab** : D  
**Model** : WM3B2200BG **Test Distance** : 3.0 Meters  
**Serial #** :  
**Specification** : FCC Class B  
**Distance correction factor (20 \* log(test/spec))** : 0.00  
**Test Mode** : test Range: 10 kHz - 300 MHz  
Horizontal and Vertical Polarizations

Tested by: Benigno Chavez

| Pol | Freq<br>MHz | Rdng<br>dBuV | Cable<br>loss<br>dB | Ant<br>factor<br>dB | Amp<br>gain<br>dB | Cor'd<br>rdg = R<br>dBuV | Limit<br>= L<br>dBuV/m | Delta<br>R-L<br>dB |
|-----|-------------|--------------|---------------------|---------------------|-------------------|--------------------------|------------------------|--------------------|
| 1H  | 84.492      | 53.40        | 1.70                | 8.05                | 38.40             | 24.75                    | 40.00                  | -15.25             |
| 2H  | 126.709     | 48.20        | 2.01                | 11.47               | 38.40             | 23.29                    | 43.50                  | -20.21             |
| 3H  | 168.906     | 49.20        | 2.51                | 14.08               | 38.25             | 27.54                    | 43.50                  | -15.96             |
| 4H  | 147.495     | 55.40        | 2.18                | 12.76               | 38.40             | 31.94                    | 43.50                  | -11.56             |
| 5H  | 156.646     | 54.80        | 2.31                | 13.60               | 38.34             | 32.37                    | 43.50                  | -11.13             |
| 6H  | 157.629     | 53.40        | 2.33                | 13.69               | 38.34             | 31.08                    | 43.50                  | -12.42             |
| 7H  | 160.239     | 55.90        | 2.37                | 13.90               | 38.31             | 33.86                    | 43.50                  | -9.64              |
| 8H  | 172.132     | 55.70        | 2.56                | 14.14               | 38.22             | 34.18                    | 43.50                  | -9.32              |
| 9H  | 172.931     | 51.10        | 2.57                | 14.16               | 38.22             | 29.61                    | 43.50                  | -13.89             |
| 10H | 186.026     | 52.40        | 2.55                | 14.49               | 38.29             | 31.15                    | 43.50                  | -12.35             |
| 11H | 196.674     | 54.00        | 2.51                | 14.80               | 38.37             | 32.94                    | 43.50                  | -10.56             |
| 12H | 247.740     | 54.80        | 2.97                | 16.53               | 38.29             | 36.01                    | 46.00                  | -9.99              |
| 13H | 264.063     | 51.80        | 3.06                | 17.53               | 38.41             | 33.97                    | 46.00                  | -12.03             |
| 14H | 270.244     | 50.40        | 3.08                | 17.92               | 38.46             | 32.94                    | 46.00                  | -13.06             |
| 15H | 292.748     | 50.40        | 3.24                | 19.28               | 38.36             | 34.57                    | 46.00                  | -11.43             |
| 16V | 84.509      | 51.70        | 1.70                | 8.05                | 38.40             | 23.05                    | 40.00                  | -16.95             |
| 17V | 126.649     | 55.30        | 2.01                | 11.47               | 38.40             | 30.38                    | 43.50                  | -13.12             |
| 18V | 147.516     | 53.50        | 2.18                | 12.76               | 38.40             | 30.04                    | 43.50                  | -13.46             |
| 19V | 172.141     | 50.10        | 2.56                | 14.14               | 38.22             | 28.58                    | 43.50                  | -14.92             |
| 20V | 212.759     | 52.70        | 2.61                | 15.37               | 38.29             | 32.38                    | 43.50                  | -11.12             |
| 21V | 213.427     | 52.50        | 2.61                | 15.40               | 38.29             | 32.22                    | 43.50                  | -11.28             |
| 22V | 233.411     | 52.90        | 2.80                | 16.08               | 38.23             | 33.55                    | 46.00                  | -12.45             |
| 23V | 292.736     | 44.90        | 3.24                | 19.28               | 38.36             | 29.07                    | 46.00                  | -16.93             |

**Test Location** : Compatible Electronics **Page** : 1/1  
**Customer** : Intel Corporation **Date** : 12/11/2003  
**Manufacturer** : Intel Corporation **Time** : 20:41:57  
**Eut name** : Mini PCI Type 802.11BG Wireless LAN Adapter **Lab** : D  
**Model** : WM3B2200BG **Test Distance** : 3.0 Meters  
**Serial #** :  
**Specification** : FCC Class B  
**Distance correction factor (20 \* log(test/spec))** : 0.00  
**Test Mode** : test Range: 300-1000 MHz  
Horizontal and Vertical Polarizations

Tested by: Benigno Chavez

| Pol | Freq<br>MHz | Rdng<br>dBuV | Cable<br>loss<br>dB | Ant<br>factor<br>dB | Amp<br>gain<br>dB | Cor'd<br>rdg = R<br>dBuV | Limit<br>= L<br>dBuV/m | Delta<br>R-L<br>dB |
|-----|-------------|--------------|---------------------|---------------------|-------------------|--------------------------|------------------------|--------------------|
| 1H  | 300.034     | 55.10        | 3.30                | 12.80               | 38.30             | 32.90                    | 46.00                  | -13.10             |
| 2H  | 306.679     | 53.10        | 3.34                | 12.92               | 38.30             | 31.07                    | 46.00                  | -14.93             |
| 3H  | 427.765     | 55.80        | 3.91                | 14.88               | 38.07             | 36.52                    | 46.00                  | -9.48              |
| 4H  | 456.109     | 53.30        | 4.05                | 15.34               | 37.93             | 34.77                    | 46.00                  | -11.23             |
| 5H  | 466.650     | 56.60        | 4.14                | 15.51               | 37.97             | 38.27                    | 46.00                  | -7.73              |
| 6H  | 468.160     | 51.60        | 4.15                | 15.53               | 37.98             | 33.30                    | 46.00                  | -12.70             |
| 7H  | 480.155     | 51.40        | 4.25                | 15.71               | 38.02             | 33.33                    | 46.00                  | -12.67             |
| 8H  | 517.865     | 52.40        | 4.40                | 16.33               | 38.14             | 34.99                    | 46.00                  | -11.01             |
| 9V  | 300.034     | 57.00        | 3.30                | 12.80               | 38.30             | 34.80                    | 46.00                  | -11.20             |
| 10V | 427.772     | 49.30        | 3.91                | 14.88               | 38.07             | 30.02                    | 46.00                  | -15.98             |
| 11V | 456.157     | 46.80        | 4.05                | 15.34               | 37.93             | 28.27                    | 46.00                  | -17.73             |
| 12V | 466.704     | 51.10        | 4.14                | 15.51               | 37.97             | 32.78                    | 46.00                  | -13.22             |
| 13V | 468.145     | 46.90        | 4.15                | 15.53               | 37.98             | 28.60                    | 46.00                  | -17.40             |
| 14V | 480.131     | 46.00        | 4.25                | 15.71               | 38.02             | 27.93                    | 46.00                  | -18.07             |
| 15V | 528.144     | 52.70        | 4.40                | 16.51               | 38.16             | 35.45                    | 46.00                  | -10.55             |

Intel Corporation  
Intel Mini PCI Type 802.11BG Wireless LAN Adapter  
Model: WM3B2200BG

Configuration: HP Laptop Agency Series# PP2080

[illegible]

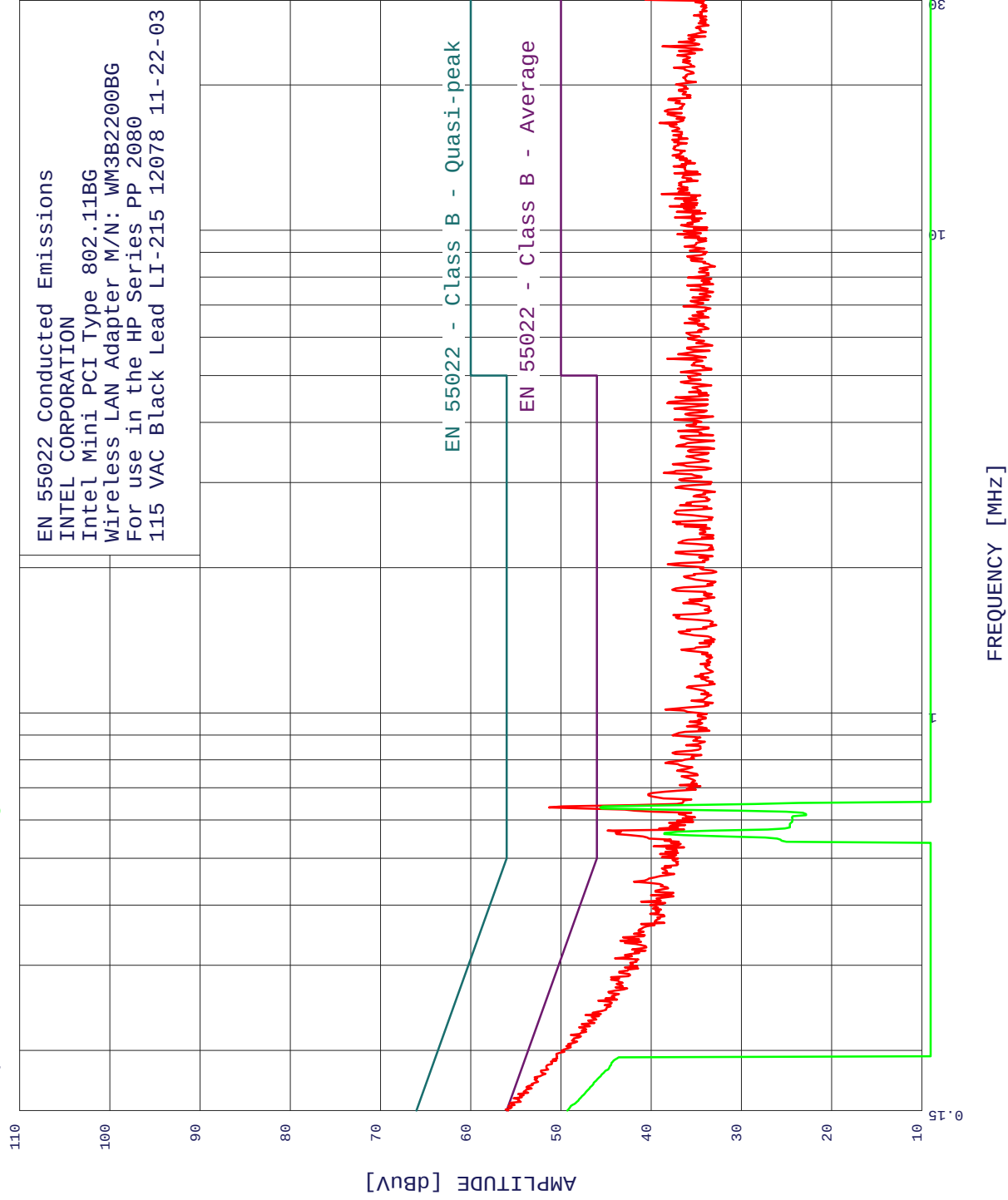


***CONDUCTED EMISSIONS***

***DATA SHEETS***

EMISSION LEVEL [dBuV] PEAK  
Graph for Peak & Average

12/11/2003 17:43:19



12/11/2003

17:43:19

EN 55022 Conducted Emissions  
 INTEL CORPORATION  
 Intel Mini PCI Type 802.11BG Wireless LAN Adapter  
 M/N: WM3B2200BG  
 For use in the HP Series PP 2080  
 115 VAC - Black Lead LI-215 12078 11-22-03  
 TEST ENGINEER : BENIGNO CHAVEZ

-----  
 40 highest peaks above -50.00 dB of EN 55022 - Class B - Average limit line

Peak criteria : 1.00 dB, Curve : Peak

| Peak# | Freq(MHz) | Amp(dBuV) | Limit(dB) | Delta(dB) |
|-------|-----------|-----------|-----------|-----------|
| 1     | 0.637     | 51.32     | 46.00     | 5.32**1   |
| 2     | 0.570     | 44.81     | 46.00     | -1.19**1  |
| 3     | 0.215     | 48.88     | 53.00     | -4.12     |
| 4     | 0.237     | 47.26     | 52.21     | -4.95     |
| 5     | 0.447     | 41.91     | 46.93     | -5.02     |
| 6     | 0.679     | 40.32     | 46.00     | -5.68     |
| 7     | 0.254     | 45.85     | 51.64     | -5.79     |
| 8     | 0.338     | 43.41     | 49.26     | -5.86     |
| 9     | 0.310     | 44.01     | 49.97     | -5.96     |
| 10    | 0.343     | 43.11     | 49.13     | -6.03     |
| 11    | 0.530     | 39.71     | 46.00     | -6.29     |
| 12    | 0.280     | 44.43     | 50.81     | -6.38     |
| 13    | 0.334     | 42.91     | 49.35     | -6.44     |
| 14    | 0.256     | 45.05     | 51.55     | -6.50     |
| 15    | 0.265     | 44.74     | 51.29     | -6.55     |
| 16    | 0.406     | 41.11     | 47.72     | -6.61     |
| 17    | 0.577     | 39.11     | 46.00     | -6.89**   |
| 18    | 0.510     | 39.01     | 46.00     | -6.99     |
| 19    | 0.290     | 43.52     | 50.54     | -7.02     |
| 20    | 0.348     | 41.91     | 49.00     | -7.09     |
| 21    | 0.502     | 38.81     | 46.00     | -7.19     |
| 22    | 3.141     | 38.60     | 46.00     | -7.40     |
| 23    | 0.297     | 42.92     | 50.32     | -7.41     |
| 24    | 0.419     | 40.01     | 47.46     | -7.45     |
| 25    | 0.365     | 41.11     | 48.61     | -7.50     |
| 26    | 0.324     | 42.11     | 49.62     | -7.51     |
| 27    | 1.016     | 38.43     | 46.00     | -7.57     |
| 28    | 0.788     | 38.42     | 46.00     | -7.58     |
| 29    | 0.516     | 38.41     | 46.00     | -7.59     |
| 30    | 0.476     | 38.81     | 46.40     | -7.59     |
| 31    | 0.524     | 38.31     | 46.00     | -7.69     |
| 32    | 0.400     | 40.11     | 47.86     | -7.75     |
| 33    | 0.428     | 39.51     | 47.28     | -7.77     |
| 34    | 4.384     | 38.21     | 46.00     | -7.79     |
| 35    | 2.034     | 38.17     | 46.00     | -7.83     |
| 36    | 0.592     | 38.02     | 46.00     | -7.98**   |
| 37    | 0.383     | 40.11     | 48.21     | -8.10     |
| 38    | 1.800     | 37.66     | 46.00     | -8.34     |
| 39    | 0.899     | 37.63     | 46.00     | -8.37     |
| 40    | 0.826     | 37.62     | 46.00     | -8.38     |

-----  
 1 AM radio station - not EUT noise

12/11/2003

17:43:19

## EN 55022 Conducted Emissions

INTEL CORPORATION

Intel Mini PCI Type 802.11BG Wireless LAN Adapter

M/N: WM3B2200BG

For use in the HP Series PP 2080

115 VAC - Black Lead LI-215 12078 11-22-03

TEST ENGINEER : BENIGNO CHAVEZ

-----  
2 highest peaks above -50.00 dB of EN 55022 - Class B - Average limit line

Peak criteria : 0.10 dB, Curve : Average

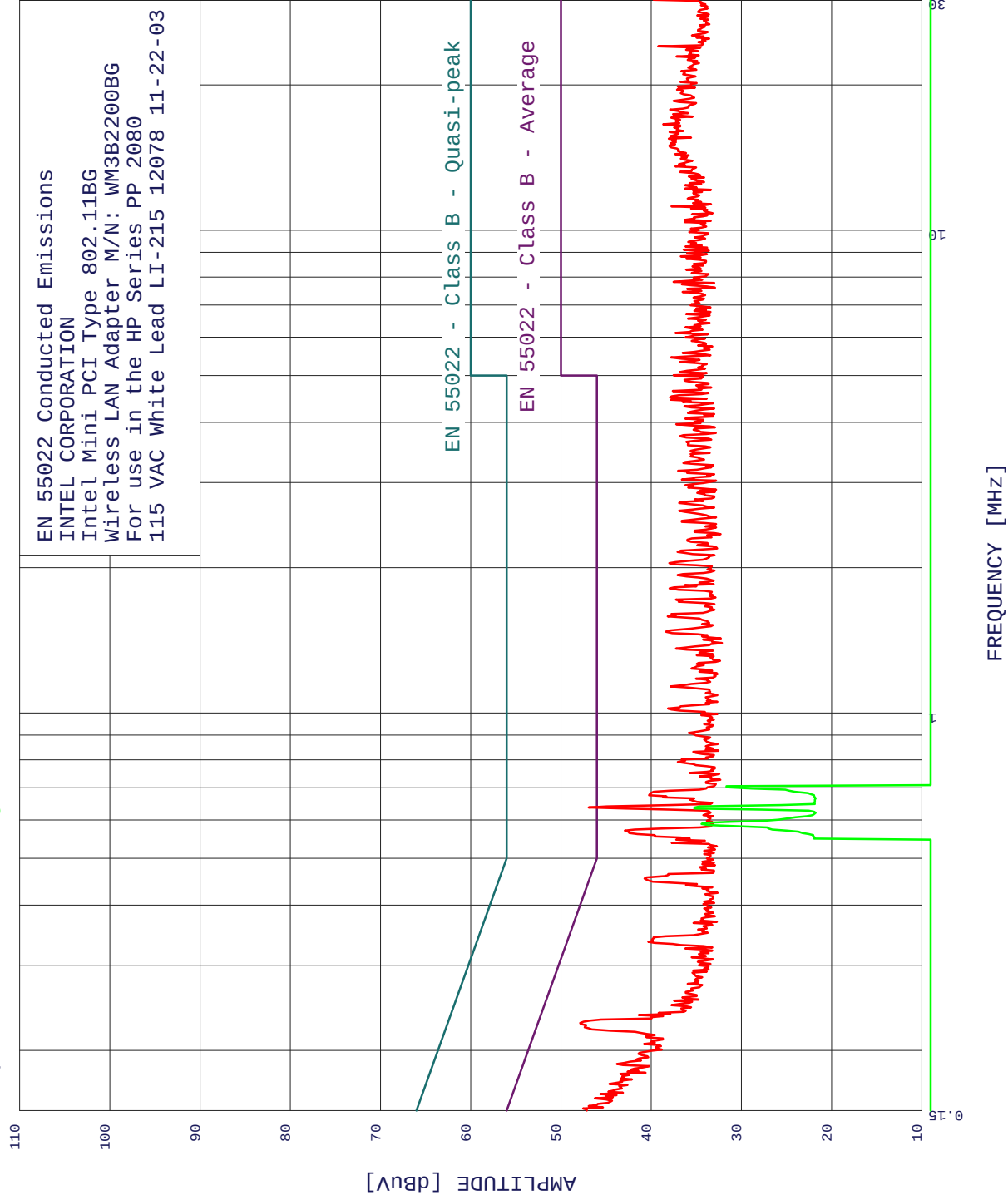
| Peak# | Freq(MHz) | Amp(dBuV) | Limit(dB) | Delta(dB) |   |
|-------|-----------|-----------|-----------|-----------|---|
| 1     | 0.637     | 45.61     | 46.00     | -0.39     | 1 |
| 2     | 0.561     | 38.54     | 46.00     | -7.46     | 1 |

  
-----

1 AM radio station - not EUT noise

EMISSION LEVEL [dBuV] PEAK  
Graph for Peak & Average

12/11/2003 18:14:37



12/11/2003

18:14:37

EN 55022 Conducted Emissions  
 INTEL CORPORATION  
 Intel Mini PCI Type 802.11BG Wireless LAN Adapter  
 M/N: WM3B2200BG  
 For use in the HP Series PP 2080  
 115 VAC - White Lead LI-215 12078 11-22-03  
 TEST ENGINEER : BENIGNO CHAVEZ

-----  
 40 highest peaks above -50.00 dB of EN 55022 - Class B - Average limit line

Peak criteria : 1.00 dB, Curve : Peak

| Peak# | Freq(MHz) | Amp(dBuV) | Limit(dB) | Delta(dB) |
|-------|-----------|-----------|-----------|-----------|
| 1     | 0.637     | 46.92     | 46.00     | 0.92**1   |
| 2     | 0.570     | 42.91     | 46.00     | -3.09**1  |
| 3     | 0.228     | 47.87     | 52.52     | -4.65     |
| 4     | 0.676     | 40.22     | 46.00     | -5.78**   |
| 5     | 0.454     | 40.71     | 46.80     | -6.09     |
| 6     | 1.472     | 38.35     | 46.00     | -7.65     |
| 7     | 1.586     | 38.15     | 46.00     | -7.85     |
| 8     | 1.021     | 38.13     | 46.00     | -7.87     |
| 9     | 2.044     | 37.97     | 46.00     | -8.03     |
| 10    | 1.810     | 37.96     | 46.00     | -8.04     |
| 11    | 4.504     | 37.91     | 46.00     | -8.09     |
| 12    | 1.136     | 37.83     | 46.00     | -8.17     |
| 13    | 4.456     | 37.81     | 46.00     | -8.19     |
| 14    | 0.538     | 37.71     | 46.00     | -8.29     |
| 15    | 4.648     | 37.61     | 46.00     | -8.39     |
| 16    | 1.717     | 37.25     | 46.00     | -8.75     |
| 17    | 1.359     | 37.24     | 46.00     | -8.76     |
| 18    | 0.547     | 37.21     | 46.00     | -8.79     |
| 19    | 3.966     | 37.21     | 46.00     | -8.79     |
| 20    | 0.153     | 46.93     | 55.82     | -8.89     |
| 21    | 2.156     | 37.07     | 46.00     | -8.93     |
| 22    | 1.929     | 37.06     | 46.00     | -8.94     |
| 23    | 0.792     | 37.02     | 46.00     | -8.98     |
| 24    | 3.175     | 37.00     | 46.00     | -9.00     |
| 25    | 0.336     | 40.31     | 49.31     | -9.00     |
| 26    | 2.722     | 36.89     | 46.00     | -9.11     |
| 27    | 2.624     | 36.89     | 46.00     | -9.11     |
| 28    | 3.741     | 36.81     | 46.00     | -9.19     |
| 29    | 0.159     | 46.22     | 55.51     | -9.29     |
| 30    | 3.043     | 36.60     | 46.00     | -9.40     |
| 31    | 2.501     | 36.58     | 46.00     | -9.42     |
| 32    | 3.294     | 36.40     | 46.00     | -9.60     |
| 33    | 4.902     | 36.31     | 46.00     | -9.69     |
| 34    | 4.316     | 36.31     | 46.00     | -9.69     |
| 35    | 0.162     | 45.62     | 55.34     | -9.72     |
| 36    | 1.840     | 36.26     | 46.00     | -9.74     |
| 37    | 4.071     | 36.21     | 46.00     | -9.79     |
| 38    | 2.963     | 36.20     | 46.00     | -9.80     |
| 39    | 3.644     | 36.11     | 46.00     | -9.89     |
| 40    | 2.286     | 35.97     | 46.00     | -10.03    |

-----

1 AM radio station - not EUT noise

12/11/2003

18:14:37

EN 55022 Conducted Emissions

INTEL CORPORATION

Intel Mini PCI Type 802.11BG Wireless LAN Adapter

M/N: WM3B2200BG

For use in the HP Series PP 2080

115 VAC - White Lead LI-215 12078 11-22-03

TEST ENGINEER : BENIGNO CHAVEZ

-----  
3 highest peaks above -50.00 dB of EN 55022 - Class B - Average limit line

Peak criteria : 0.10 dB, Curve : Average

| Peak# | Freq(MHz) | Amp(dBuV) | Limit(dB) | Delta(dB) |   |
|-------|-----------|-----------|-----------|-----------|---|
| 1     | 0.634     | 35.20     | 46.00     | -10.80    | 1 |
| 2     | 0.589     | 34.42     | 46.00     | -11.58    | 1 |
| 3     | 0.705     | 31.65     | 46.00     | -14.35    |   |

  
-----

1 AM radio station - not EUT noise



***-6 dB BANDWIDTH***

***DATA SHEETS***



Ref Lvl  
10 dBm

Delta 1 [T2]

0.19 dB

-8.81763527 MHz

RBW 100 kHz

VBW 300 kHz

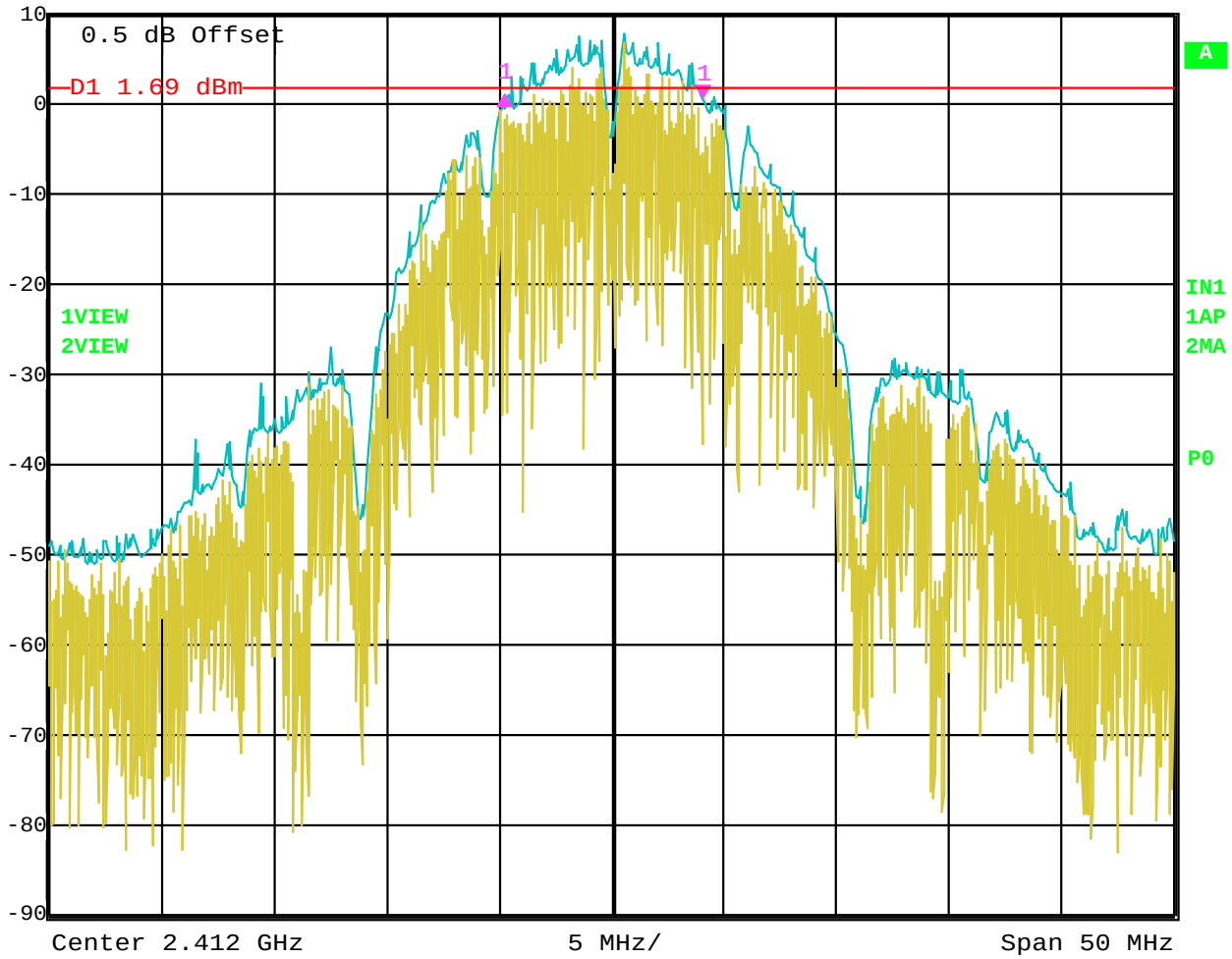
SWT 12.5 ms

RF Att

40 dB

Unit

dBm

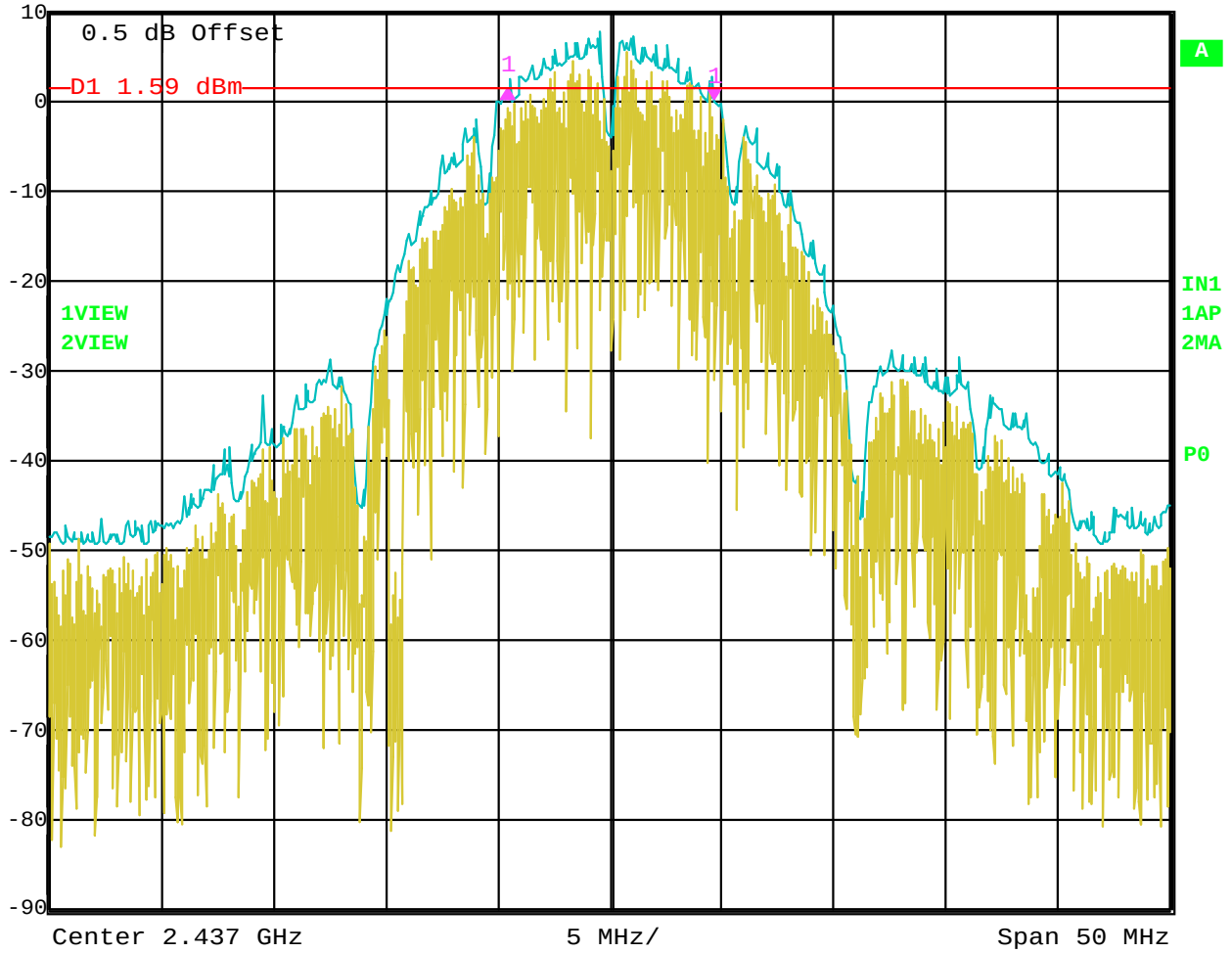


Date: 11.DEC.2003 09:38:57

-6 dB Bandwidth – Channel 1 – 802.11 b Mode



|         |                 |     |         |        |       |
|---------|-----------------|-----|---------|--------|-------|
| Ref Lvl | Delta 1 [T2]    | RBW | 100 kHz | RF Att | 40 dB |
| 10 dBm  | 1.34 dB         | VBW | 300 kHz |        |       |
|         | -9.21843687 MHz | SWT | 12.5 ms | Unit   | dBm   |

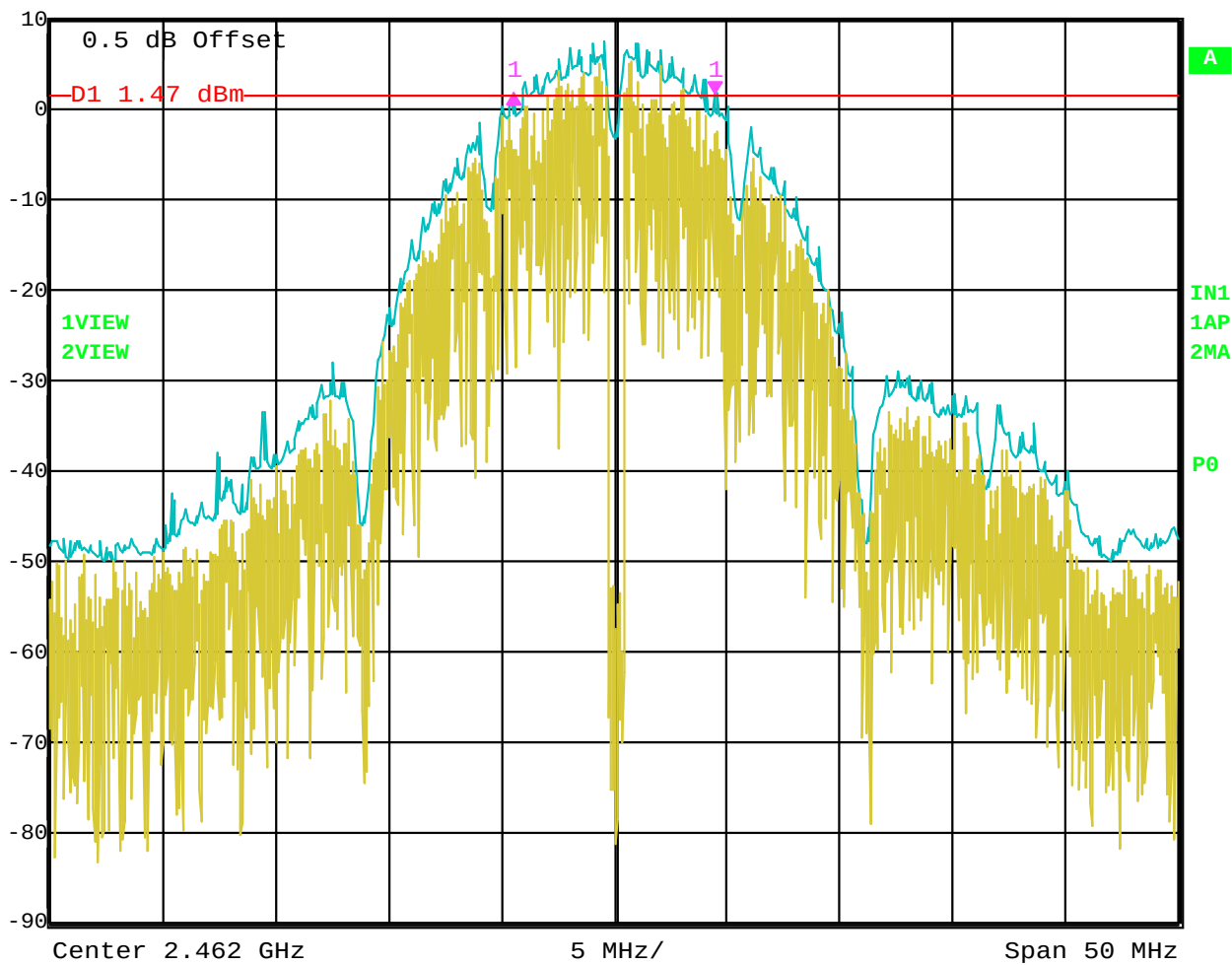


Date: 11.DEC.2003 09:41:57

-6 dB Bandwidth – Channel 6 – 802.11 b Mode



|         |                 |     |         |        |       |
|---------|-----------------|-----|---------|--------|-------|
| Ref Lvl | Delta 1 [T2]    | RBW | 100 kHz | RF Att | 40 dB |
| 10 dBm  | -0.00 dB        | VBW | 300 kHz |        |       |
|         | -8.91783567 MHz | SWT | 12.5 ms | Unit   | dBm   |

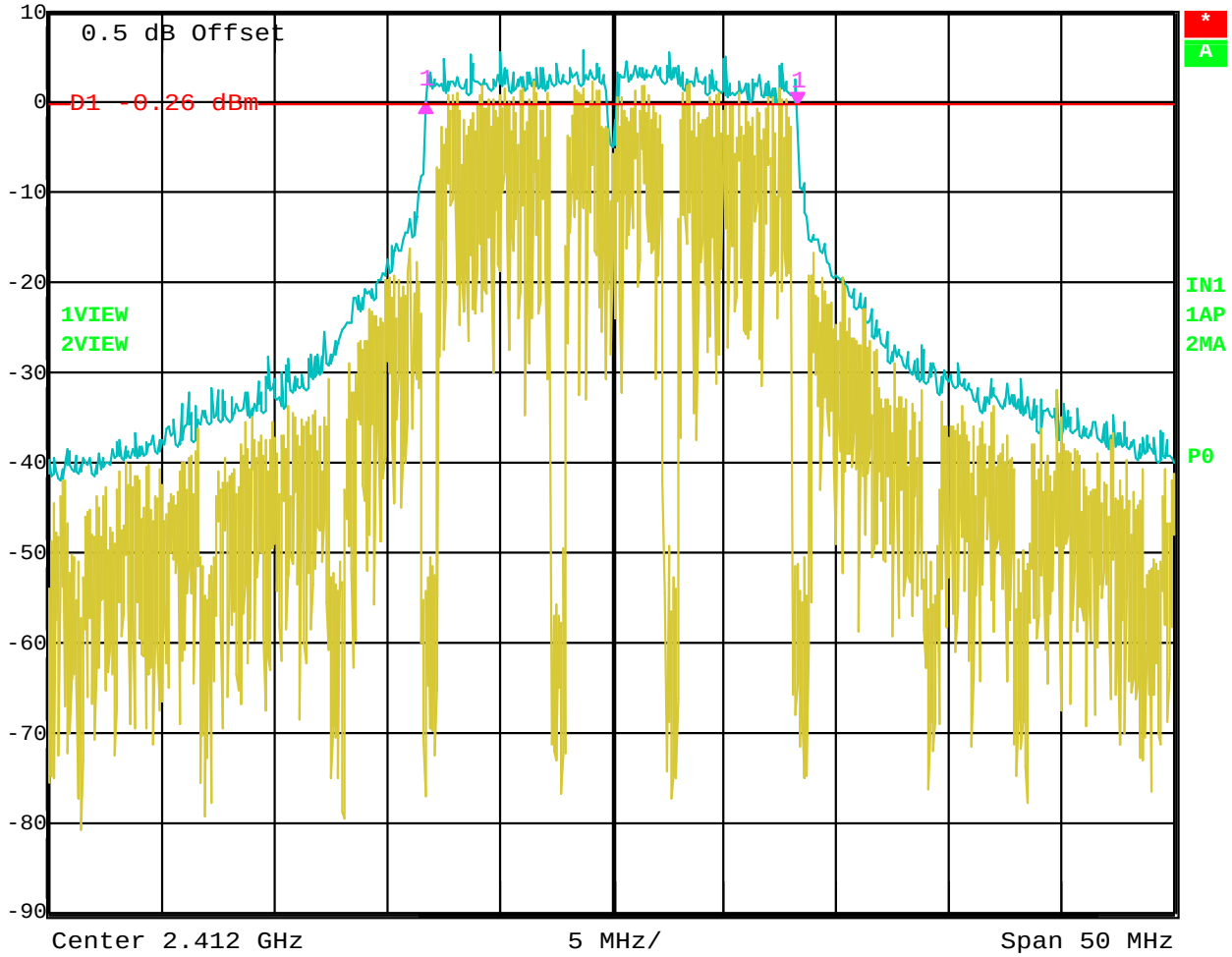


Date: 11.DEC.2003 09:45:50

-6 dB Bandwidth – Channel 11 – 802.11 b Mode



Delta 1 [T2] RBW 100 kHz RF Att 40 dB  
Ref Lvl 0.23 dB VBW 300 kHz  
10 dBm -16.53306613 MHz SWT 12.5 ms Unit dBm

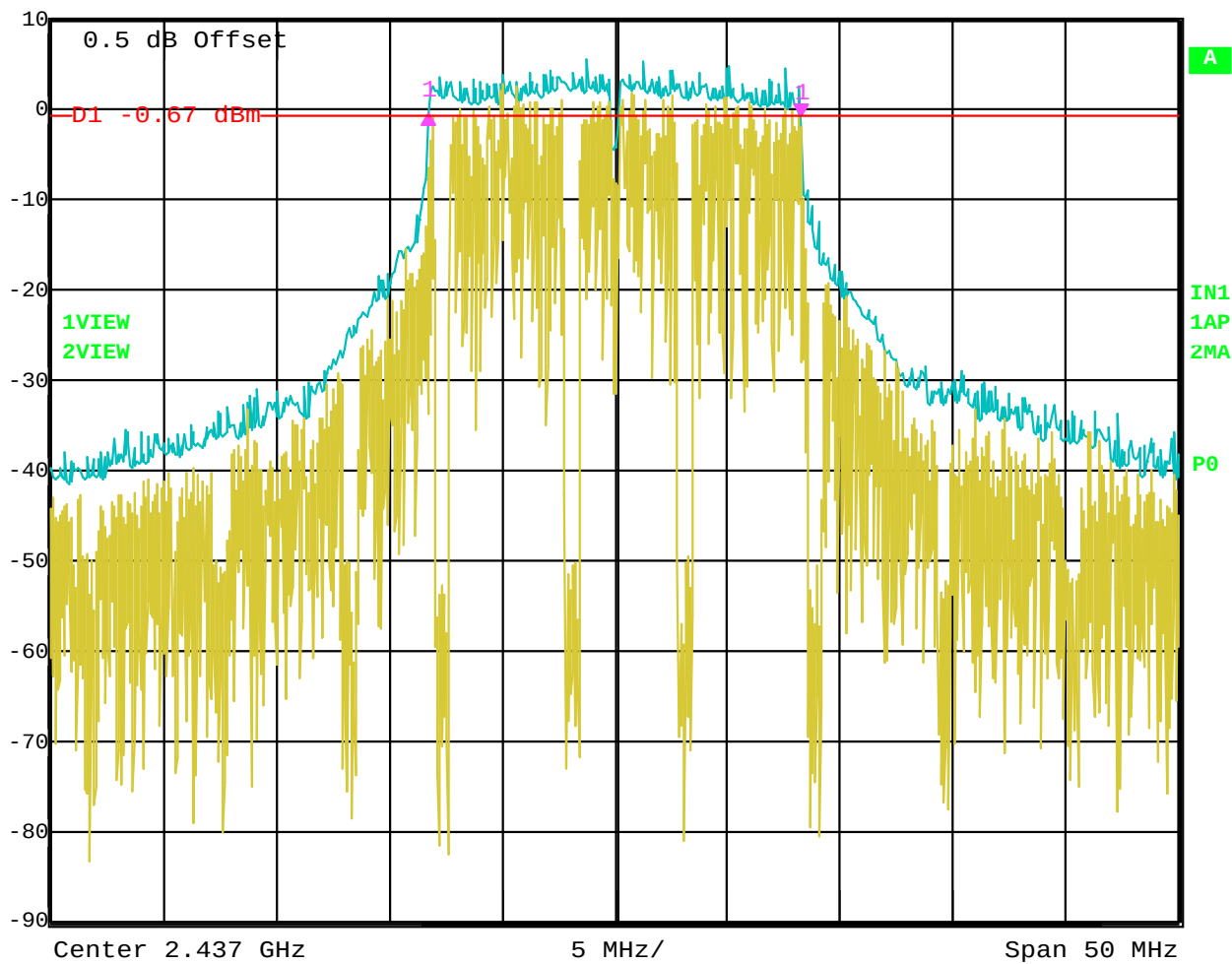


Date: 11.DEC.2003 11:15:13

-6 dB Bandwidth – Channel 1 – 802.11 g Mode



|         |                  |     |         |        |       |
|---------|------------------|-----|---------|--------|-------|
| Ref Lvl | Delta 1 [T2]     | RBW | 100 kHz | RF Att | 40 dB |
| 10 dBm  | 0.26 dB          | VBW | 300 kHz |        |       |
|         | -16.53306613 MHz | SWT | 12.5 ms | Unit   | dBm   |

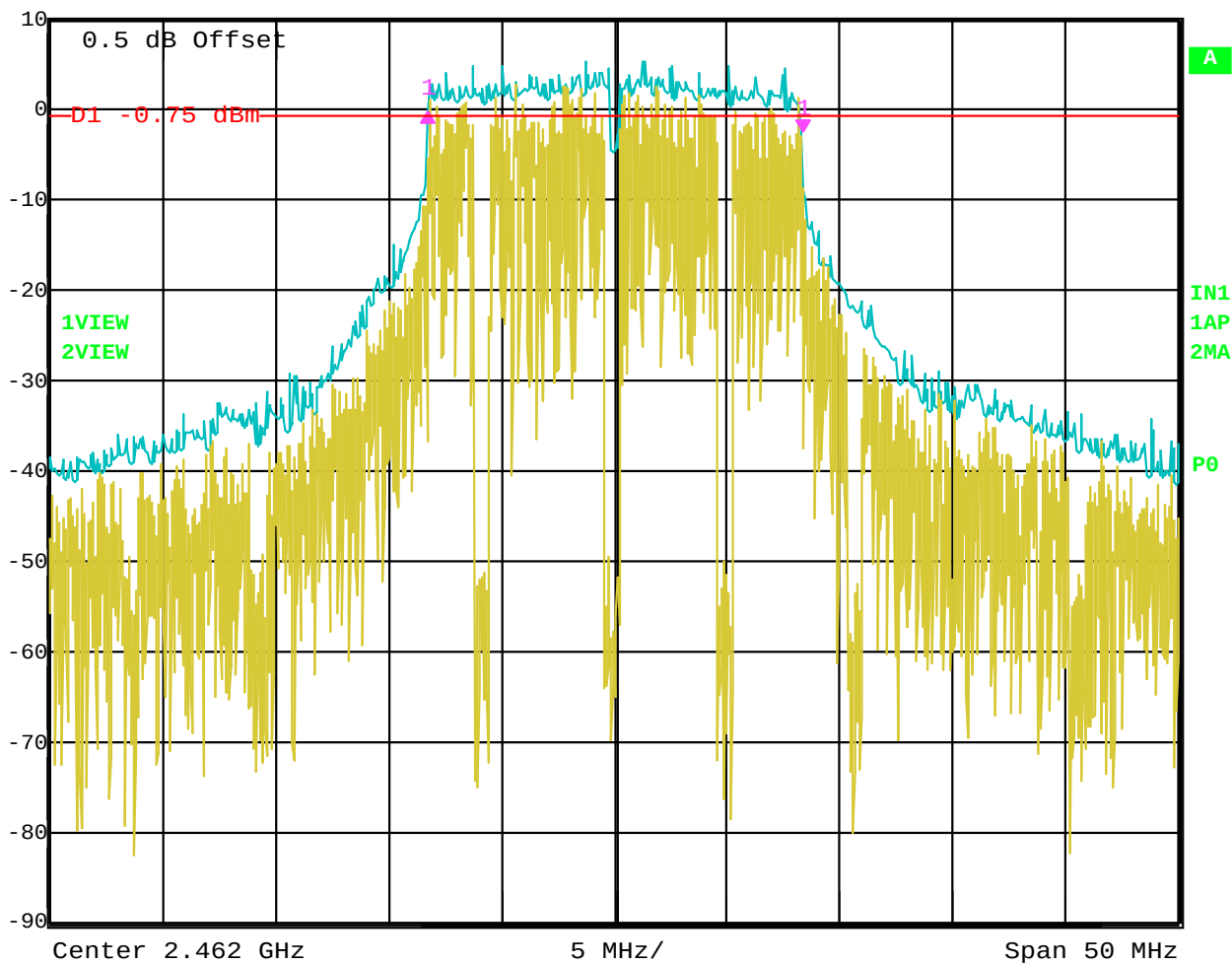


Date: 11.DEC.2003 11:18:51

-6 dB Bandwidth – Channel 6 – 802.11 g Mode



|         |                  |     |         |        |       |
|---------|------------------|-----|---------|--------|-------|
| Ref Lvl | Delta 1 [T2]     | RBW | 100 kHz | RF Att | 40 dB |
| 10 dBm  | 2.30 dB          | VBW | 300 kHz |        |       |
|         | -16.63326653 MHz | SWT | 12.5 ms | Unit   | dBm   |



Date: 11.DEC.2003 11:20:00

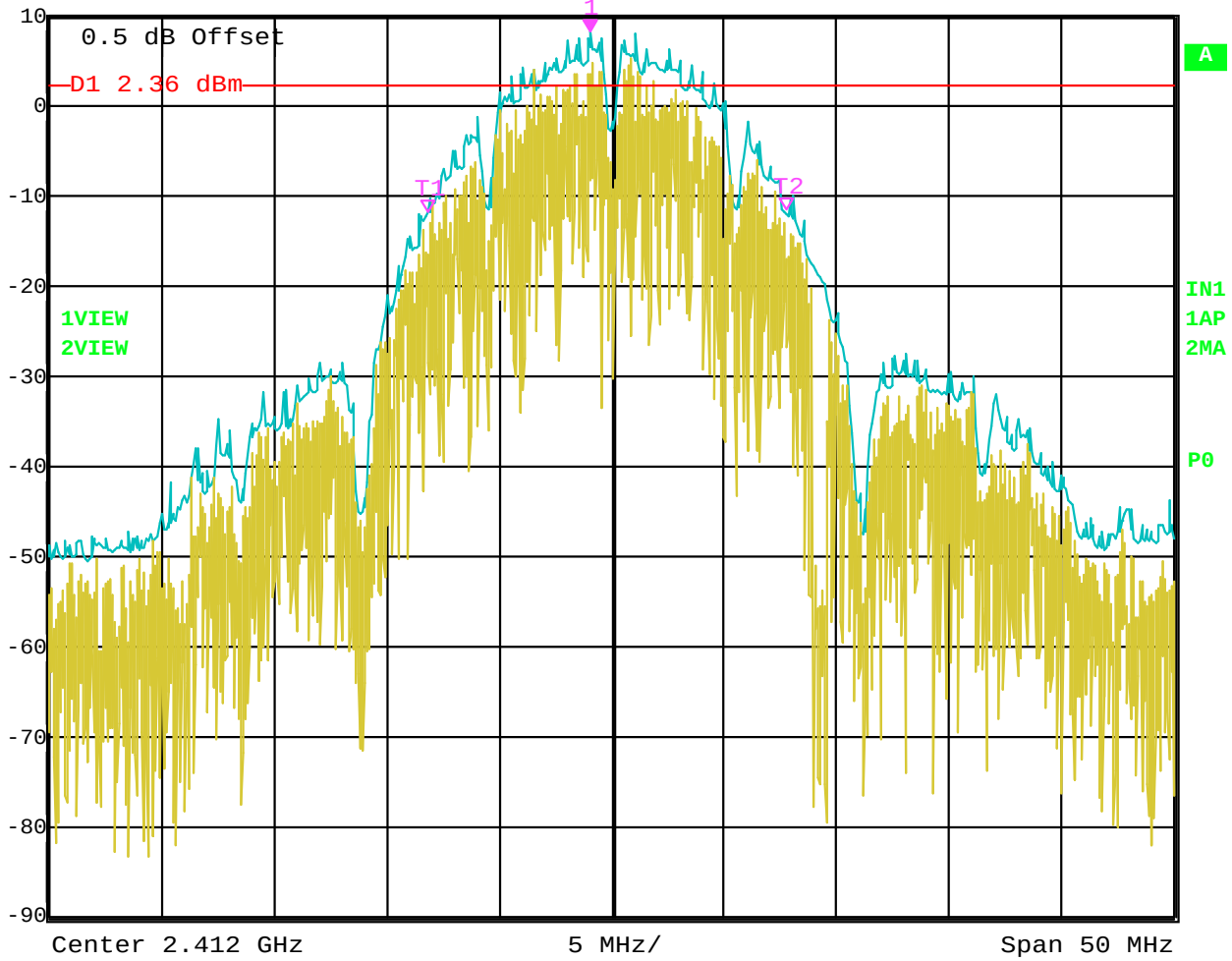
-6 dB Bandwidth – Channel 11 – 802.11 g Mode

***-20 dB BANDWIDTH***

***DATA SHEETS***



|         |                    |     |         |        |       |
|---------|--------------------|-----|---------|--------|-------|
| Ref Lvl | Marker 1 [T2 ndB]  | RBW | 100 kHz | RF Att | 40 dB |
| 10 dBm  | ndB 20.00 dB       | VBW | 300 kHz |        |       |
|         | BW 15.93186373 MHz | SWT | 12.5 ms | Unit   | dBm   |

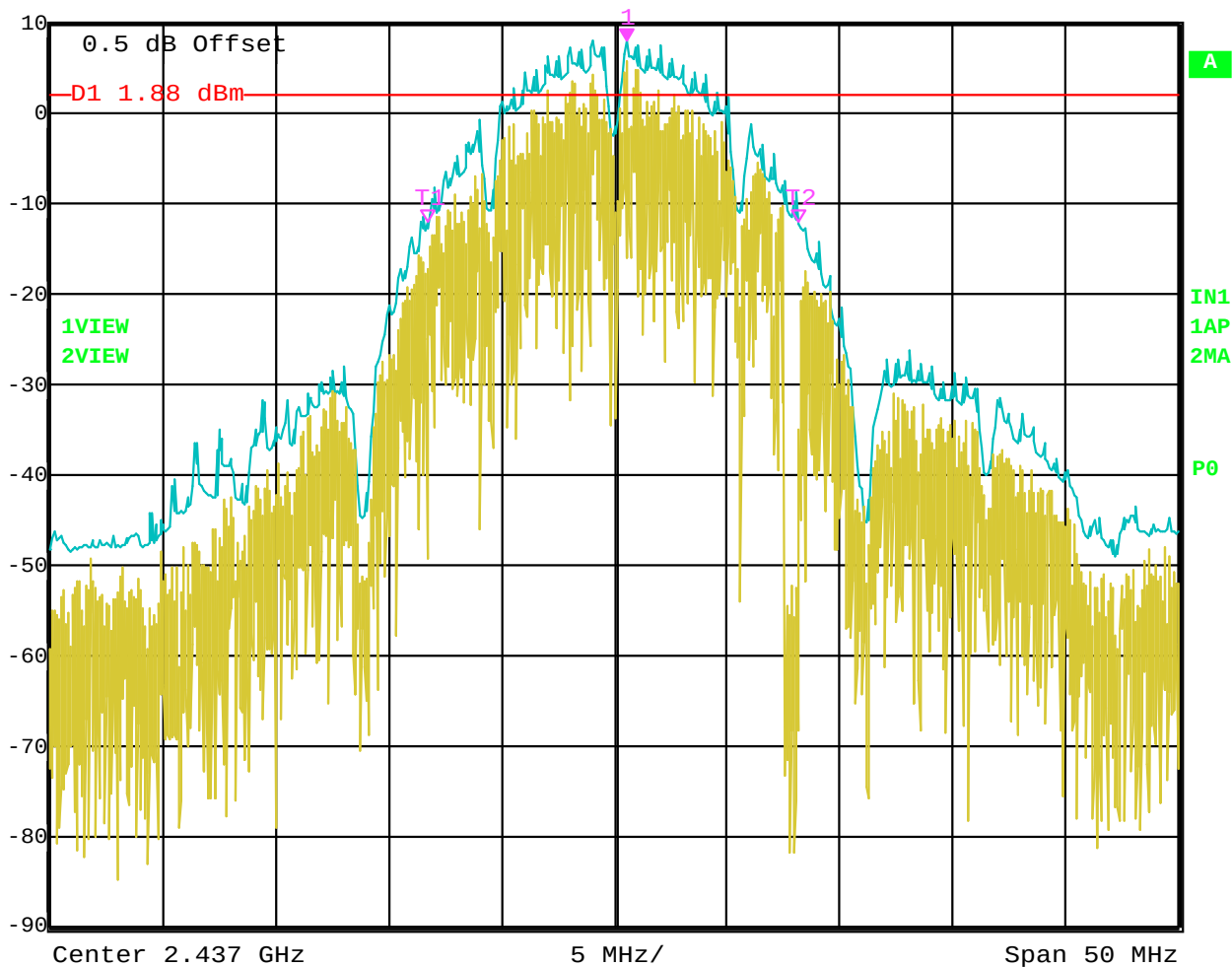


Date: 11.DEC.2003 09:28:56

-20 dB Bandwidth – Channel 1 – 802.11 b Mode



|         |                    |     |         |        |       |
|---------|--------------------|-----|---------|--------|-------|
| Ref Lvl | Marker 1 [T2 ndB]  | RBW | 100 kHz | RF Att | 40 dB |
| 10 dBm  | ndB 20.00 dB       | VBW | 300 kHz |        |       |
|         | BW 16.43286573 MHz | SWT | 12.5 ms | Unit   | dBm   |

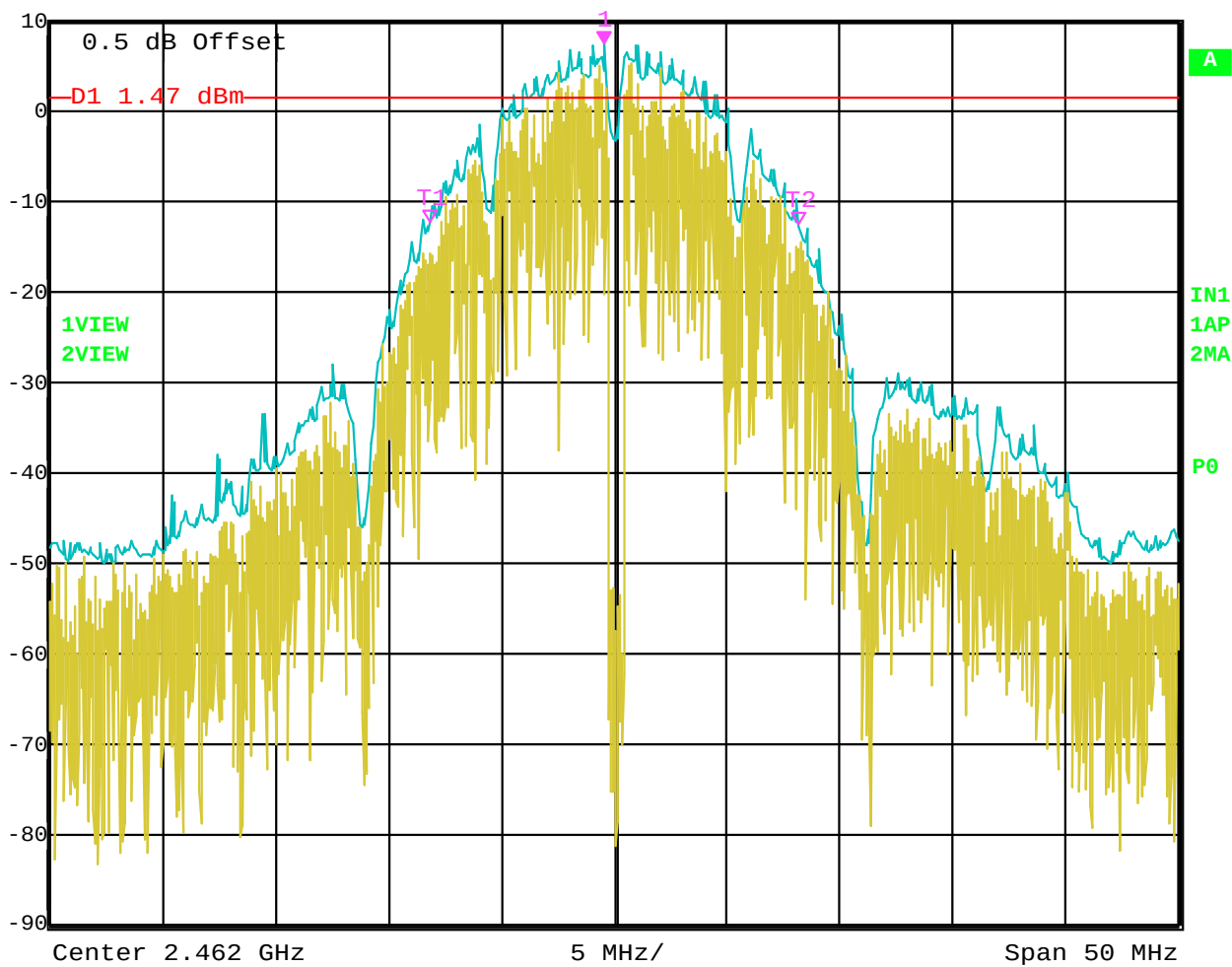


Date: 11.DEC.2003 09:34:26

-20 dB Bandwidth – Channel 6 – 802.11 b Mode



|         |                    |     |         |        |       |
|---------|--------------------|-----|---------|--------|-------|
| Ref Lvl | Marker 1 [T2 ndB]  | RBW | 100 kHz | RF Att | 40 dB |
| 10 dBm  | ndB 20.00 dB       | VBW | 300 kHz |        |       |
|         | BW 16.33266533 MHz | SWT | 12.5 ms | Unit   | dBm   |



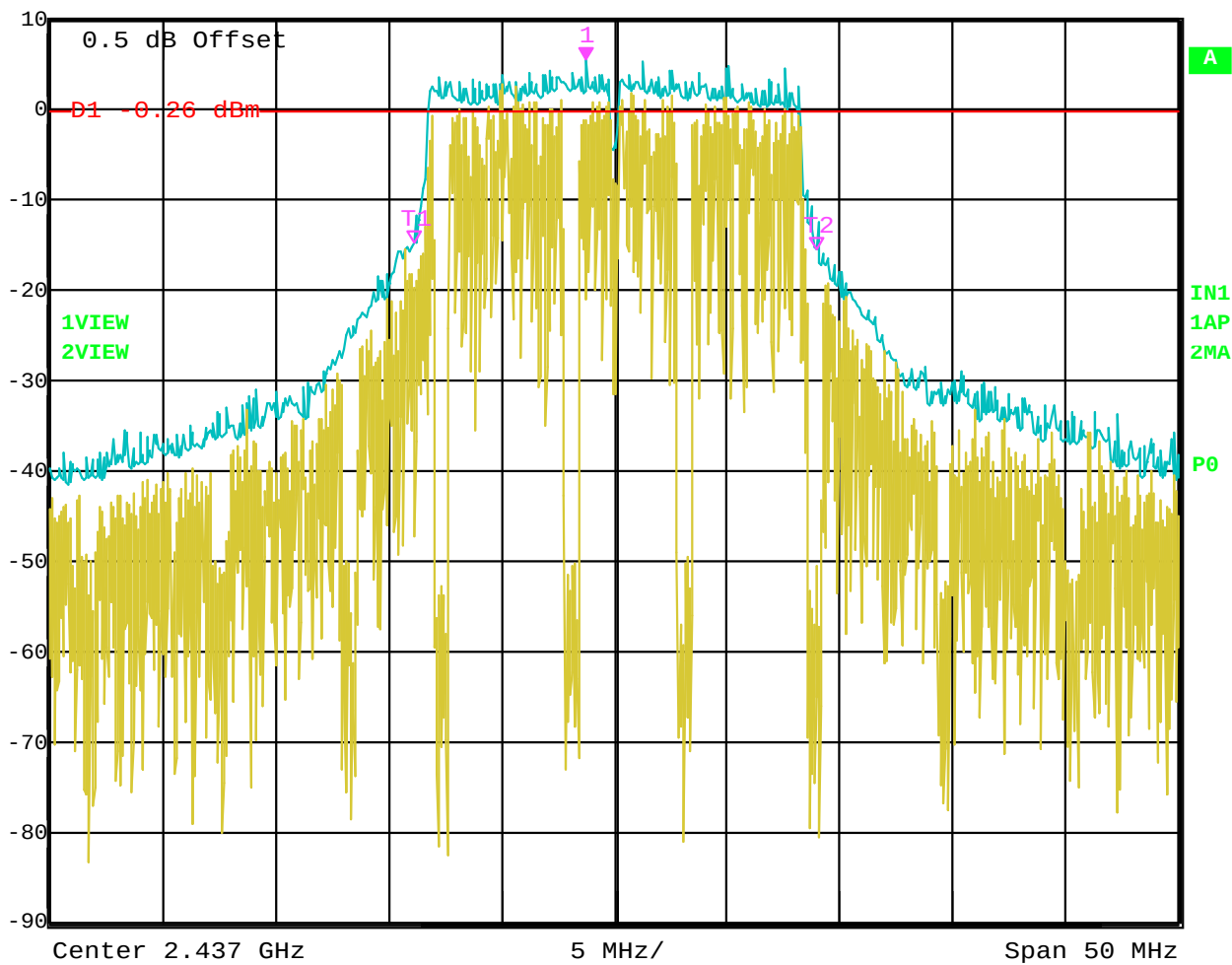
Date: 11.DEC.2003 09:46:25

-20 dB Bandwidth – Channel 11 – 802.11 b Mode

-20 dB Bandwidth – Channel 1 – 802.11 g Mode



Ref Lvl 10 dBm  
Marker 1 [T2 ndB] 20.00 dB  
BW 17.83567134 MHz  
RBW 100 kHz  
RF Att 40 dB  
VBW 300 kHz  
SWT 12.5 ms  
Unit dBm

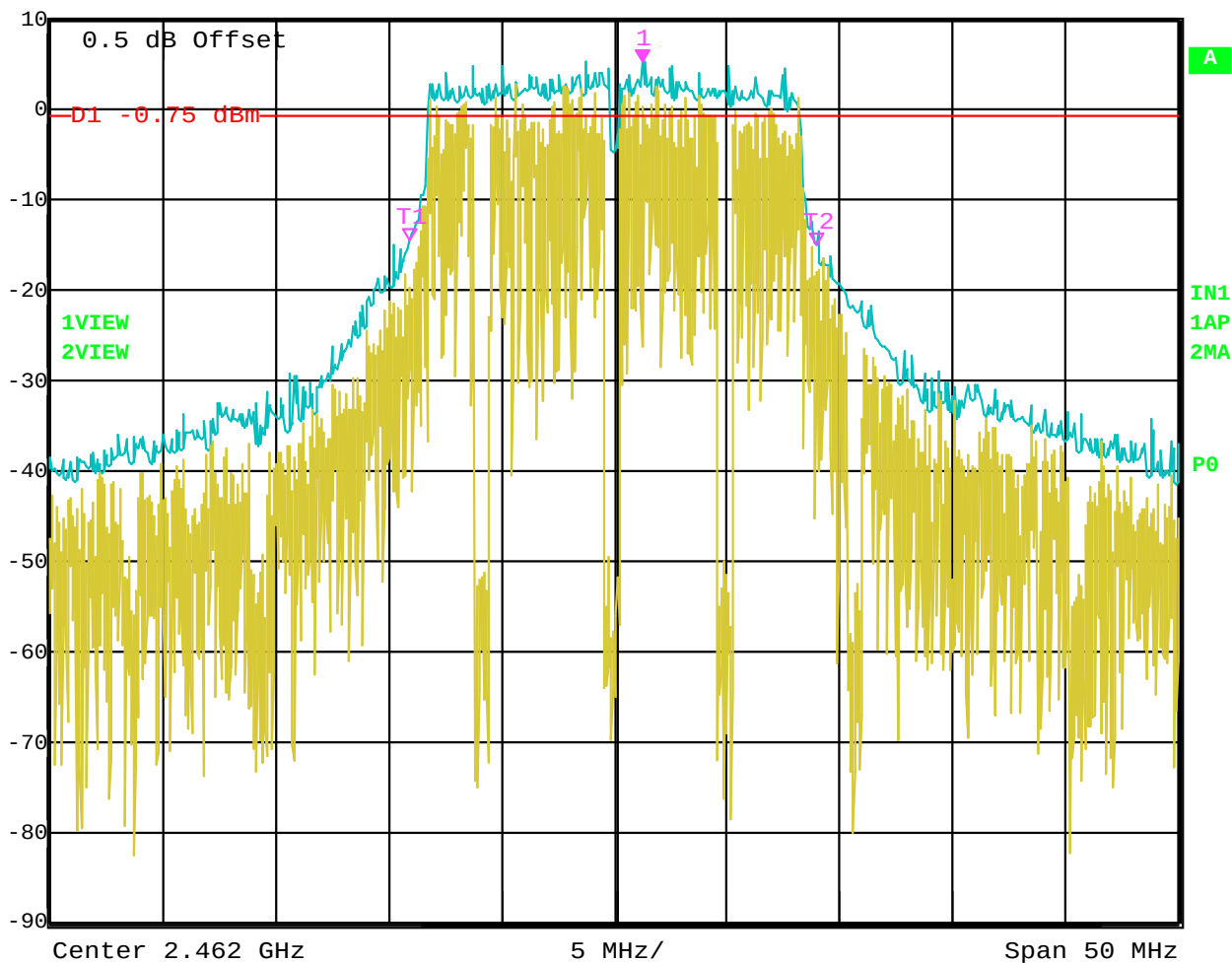


Date: 11.DEC.2003 11:17:54

-20 dB Bandwidth – Channel 6 – 802.11 g Mode



|         |                    |     |         |        |       |
|---------|--------------------|-----|---------|--------|-------|
| Ref Lvl | Marker 1 [T2 ndB]  | RBW | 100 kHz | RF Att | 40 dB |
| 10 dBm  | ndB 20.00 dB       | VBW | 300 kHz |        |       |
|         | BW 18.03607214 MHz | SWT | 12.5 ms | Unit   | dBm   |



Date: 11.DEC.2003 11:20:34

-20 dB Bandwidth – Channel 11 – 802.11 g Mode



***PEAK POWER OUTPUT***

***DATA SHEETS***

## PEAK OUTPUT POWER

Intel Corporation

Intel Mini PCI Type 802.11BG Wireless LAN Adapter

MODEL: WM3B2200BG

For use in the HP Agency Series# PP 2080 (Laptop Type)

802.11 b Mode (Worst Case Rate is 1 Mbps)

| CHANNEL       | GAIN | PEAK POWER<br>OUTPUT (dBm) |
|---------------|------|----------------------------|
| 1 (2412 MHz)  | 31.0 | 17.38                      |
| 6 (2437 MHz)  | 31.5 | 17.48                      |
| 11 (2462 MHz) | 32.0 | 17.08                      |

802.11 g Mode (Worst Case Rate is 6 Mbps)

| CHANNEL       | GAIN | PEAK POWER<br>OUTPUT (dBm) |
|---------------|------|----------------------------|
| 1 (2412 MHz)  | 29.5 | 15.88                      |
| 6 (2437 MHz)  | 30.0 | 15.95                      |
| 11 (2462 MHz) | 30.5 | 16.02                      |

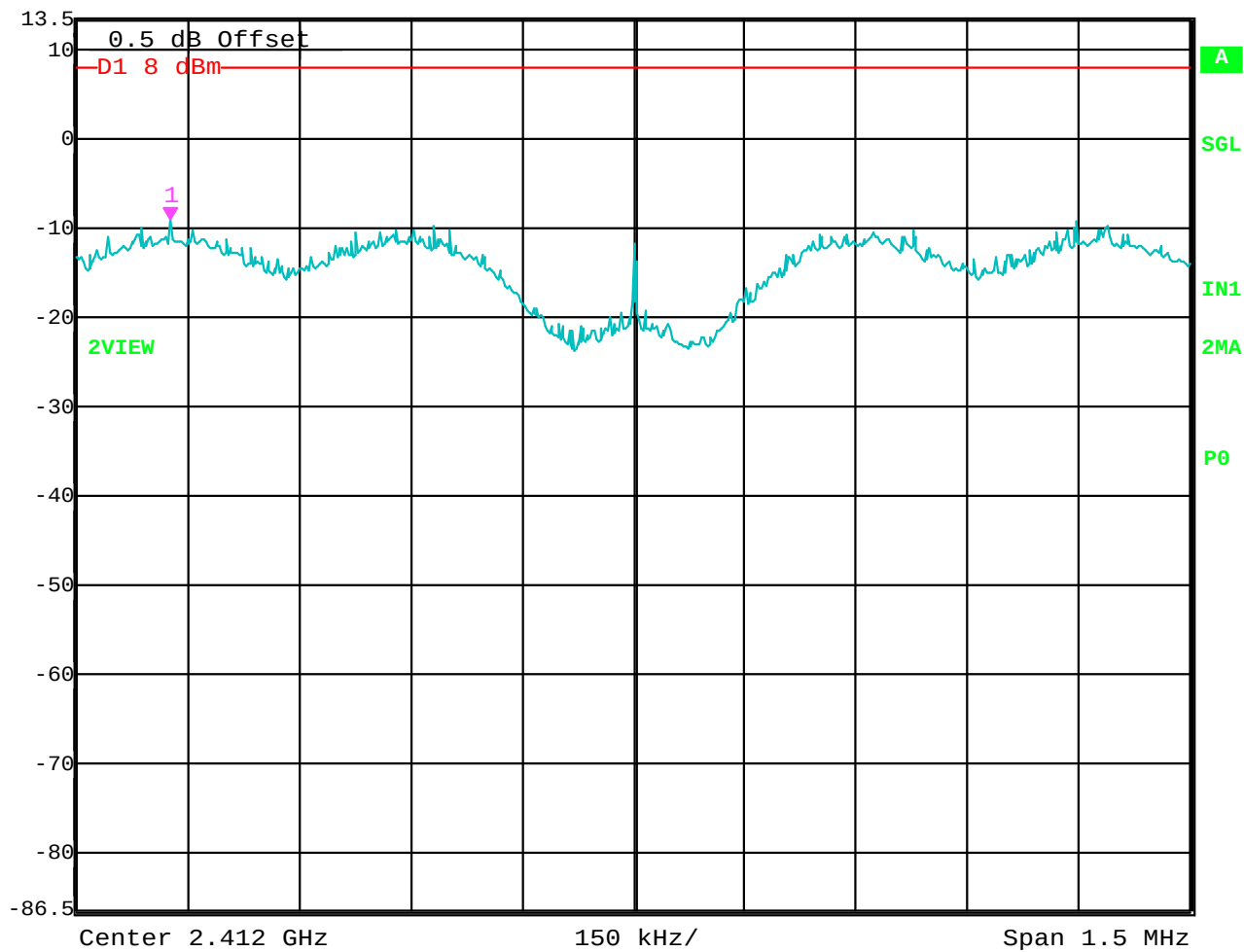


***PEAK POWER SPECTRAL DENSITY***

***DATA SHEETS***



Ref Lvl 13.5 dBm  
Marker 1 [T2] -9.04 dBm  
2.41137625 GHz  
RBW 3 kHz  
VBW 10 kHz  
SWT 500 s  
RF Att 40 dB  
Unit dBm

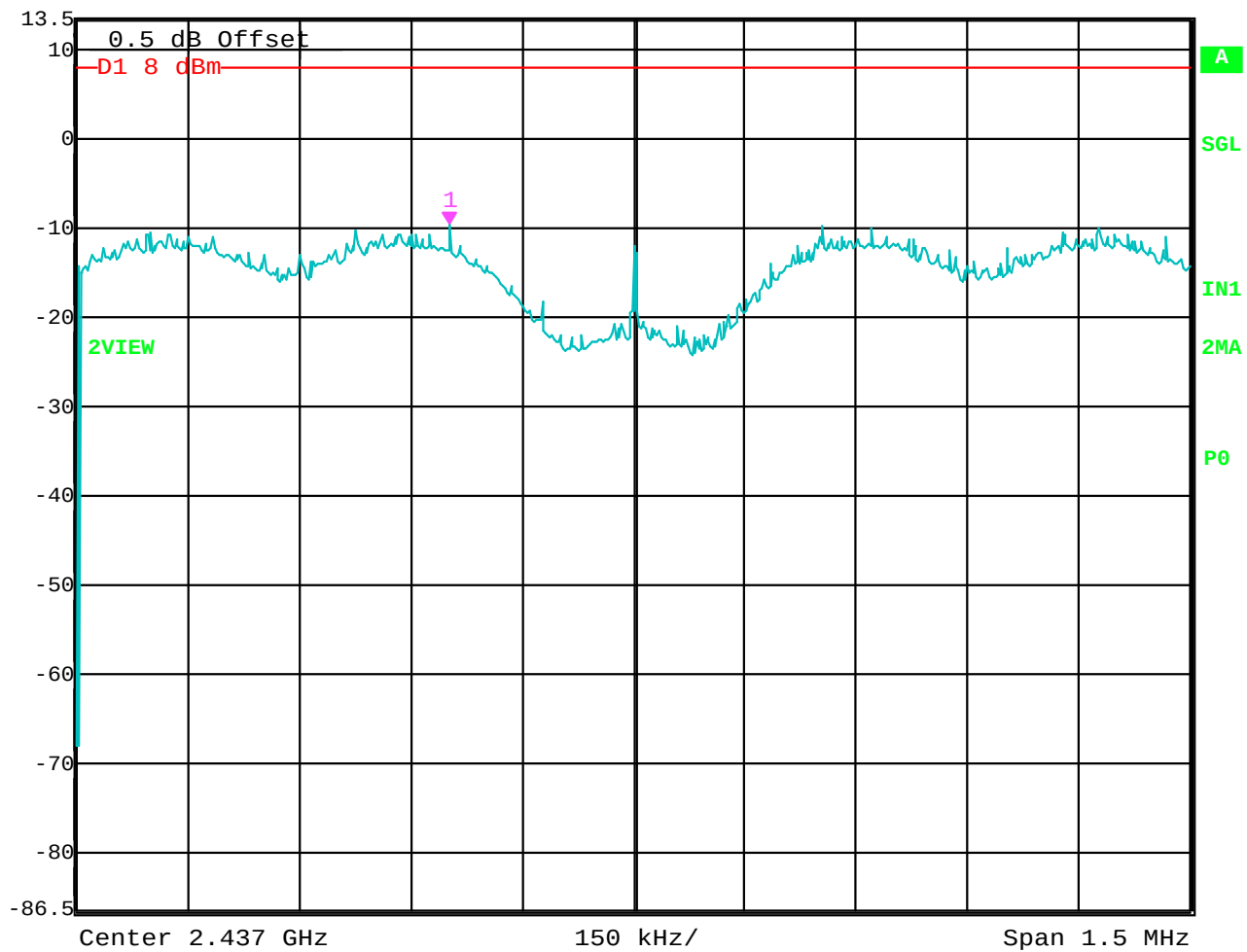


Date: 11.DEC.2003 15:51:08

Spectral Density Output – Channel 1 – 802.11 b Mode



Ref Lvl 13.5 dBm      Marker 1 [T2] -9.71 dBm      RBW 3 kHz      RF Att 40 dB  
2.43675200 GHz      VBW 10 kHz      Unit dBm  
SWT 500 s

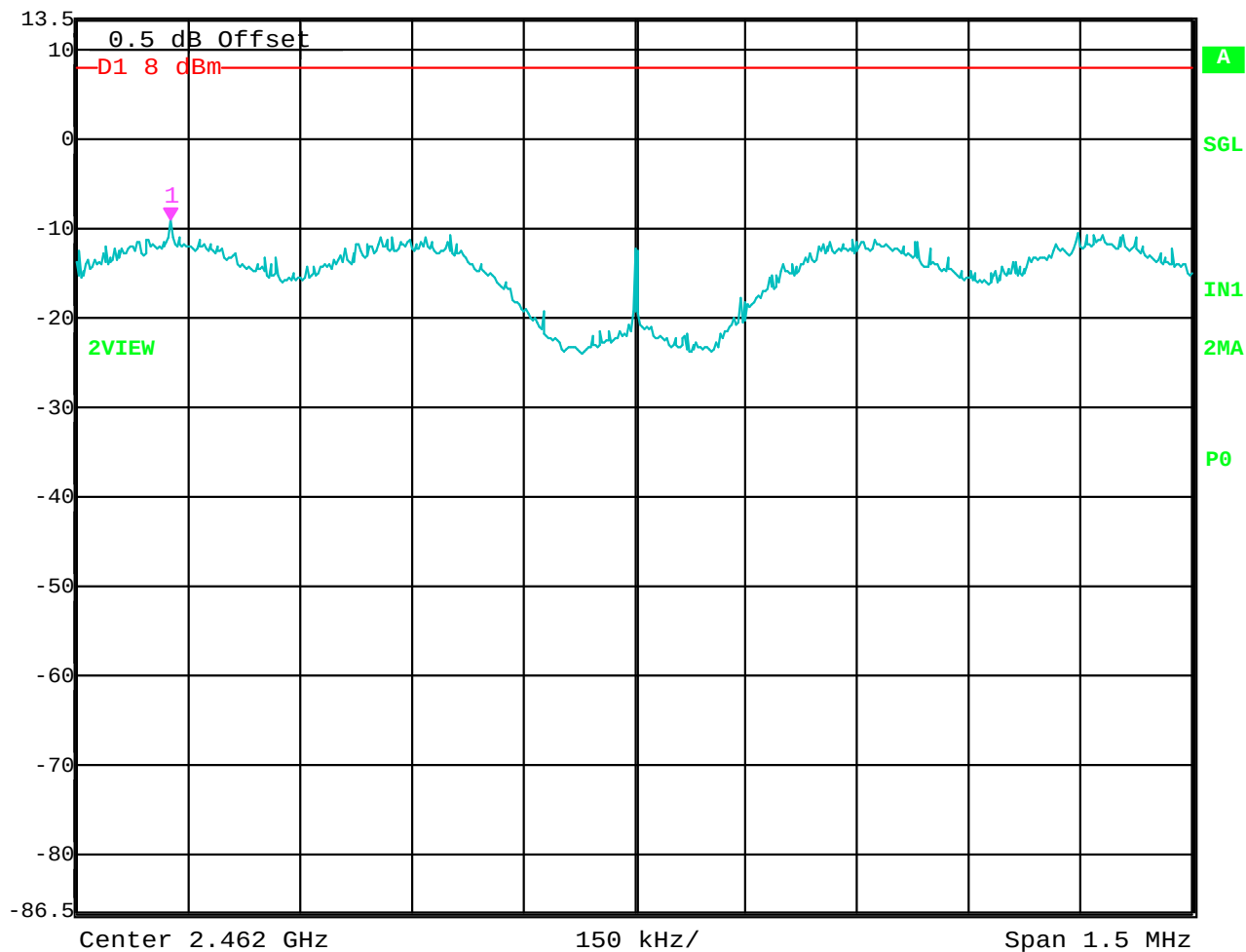


Date: 11.DEC.2003 15:22:57

Spectral Density Output – Channel 6 – 802.11 b Mode



Ref Lvl 13.5 dBm  
Marker 1 [T2] -9.18 dBm  
2.46137625 GHz  
RBW 3 kHz  
VBW 10 kHz  
SWT 500 s  
RF Att 40 dB  
Unit dBm

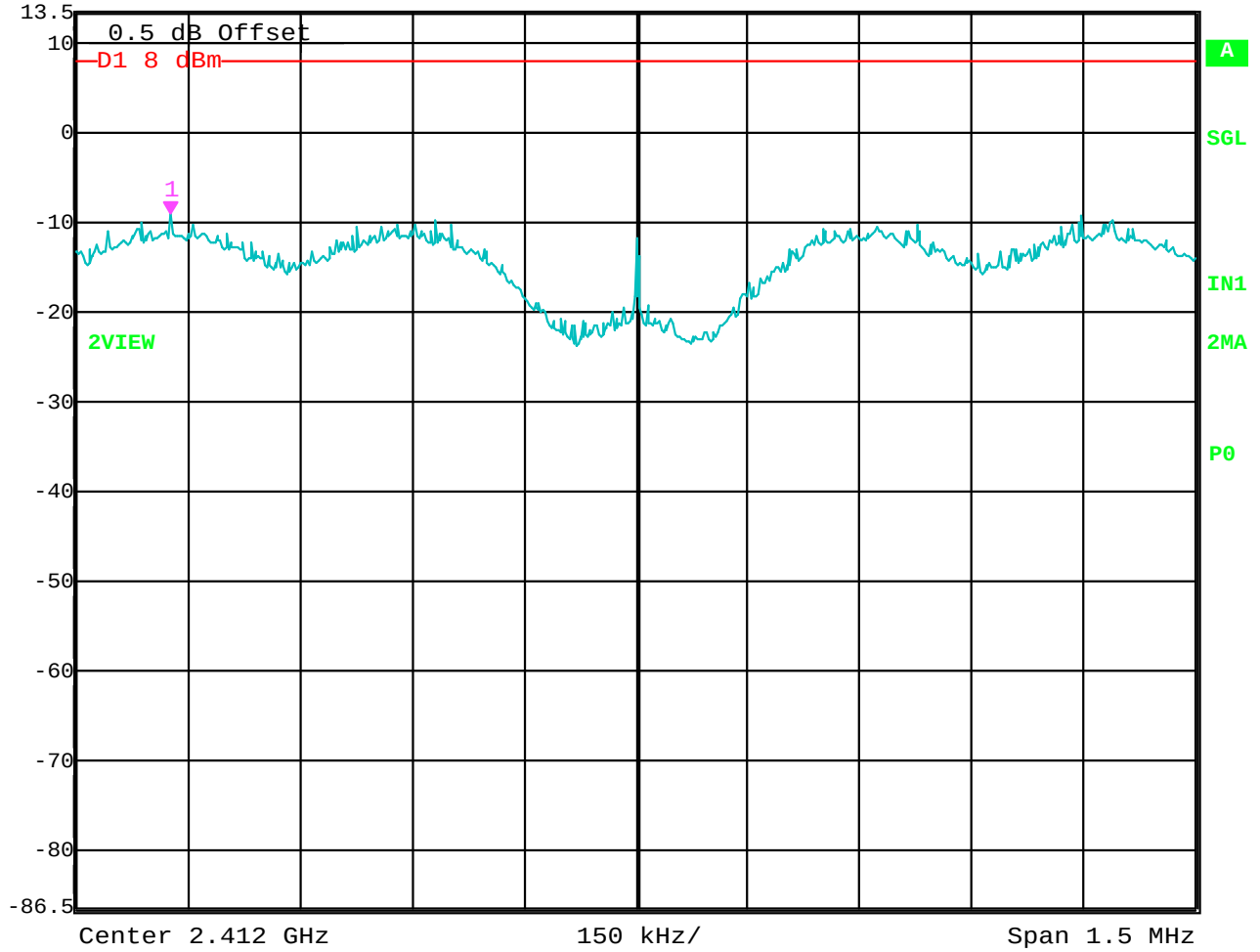


Date: 11.DEC.2003 15:13:52

Spectral Density Output – Channel 11 – 802.11 b Mode



Ref Lvl 13.5 dBm      Marker 1 [T2] -9.04 dBm      RBW 3 kHz      RF Att 40 dB  
2.41137625 GHz      VBW 10 kHz      Unit dBm  
SWT 500 s

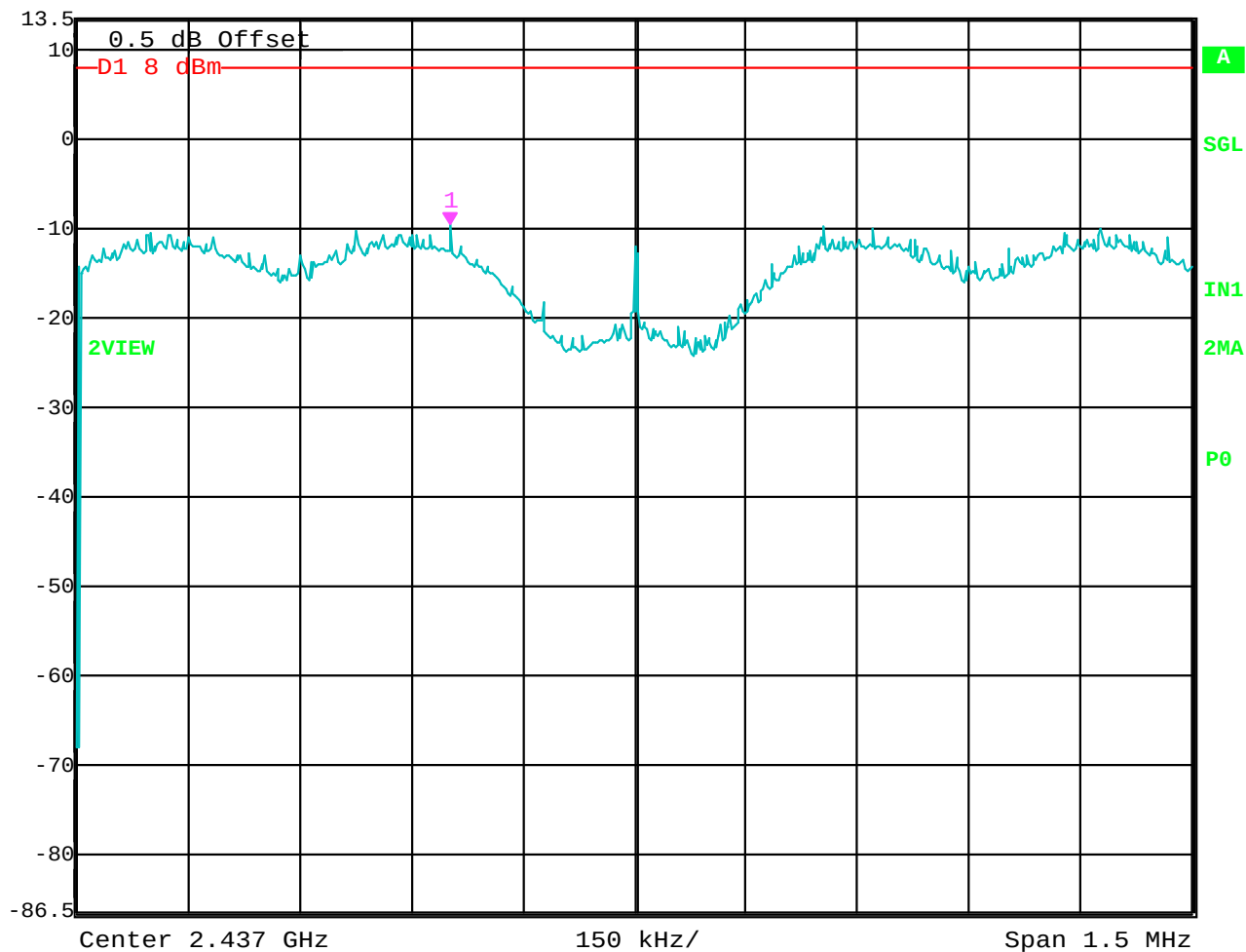


Date: 11.DEC.2003 15:51:08

Spectral Density Output – Channel 1 – 802.11 g Mode



Ref Lvl 13.5 dBm      Marker 1 [T2] -9.71 dBm      RBW 3 kHz      RF Att 40 dB  
2.43675200 GHz      VBW 10 kHz      Unit dBm  
SWT 500 s



Date: 11.DEC.2003 15:22:57

Spectral Density Output – Channel 6 – 802.11 g Mode



Marker 1 [T2]

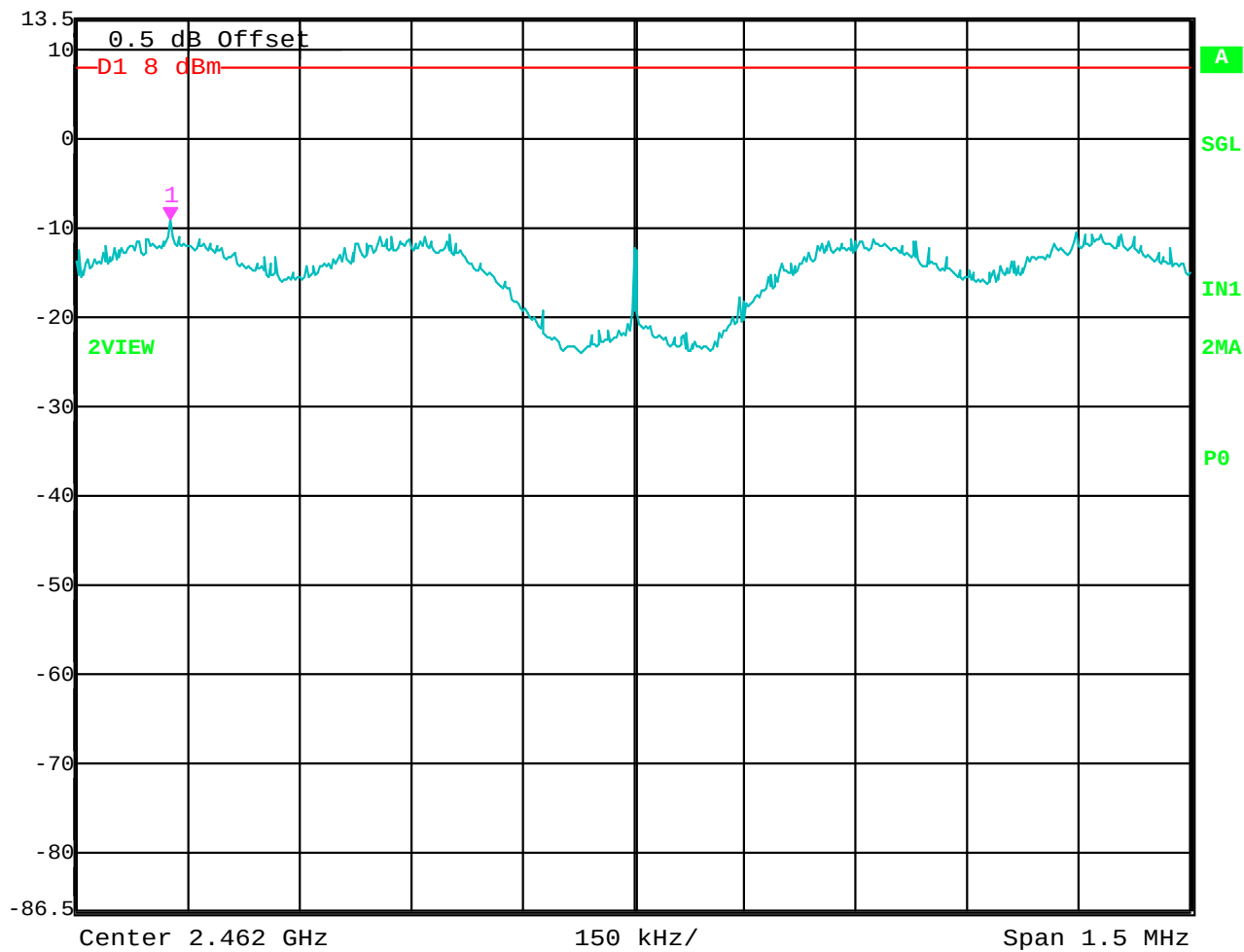
RBW 3 kHz RF Att 40 dB

Ref Lvl -9.18 dBm

VBW 10 kHz

13.5 dBm 2.46137625 GHz

SWT 500 s Unit dBm



Date: 11.DEC.2003 15:13:52

Spectral Density Output – Channel 11 – 802.11 g Mode



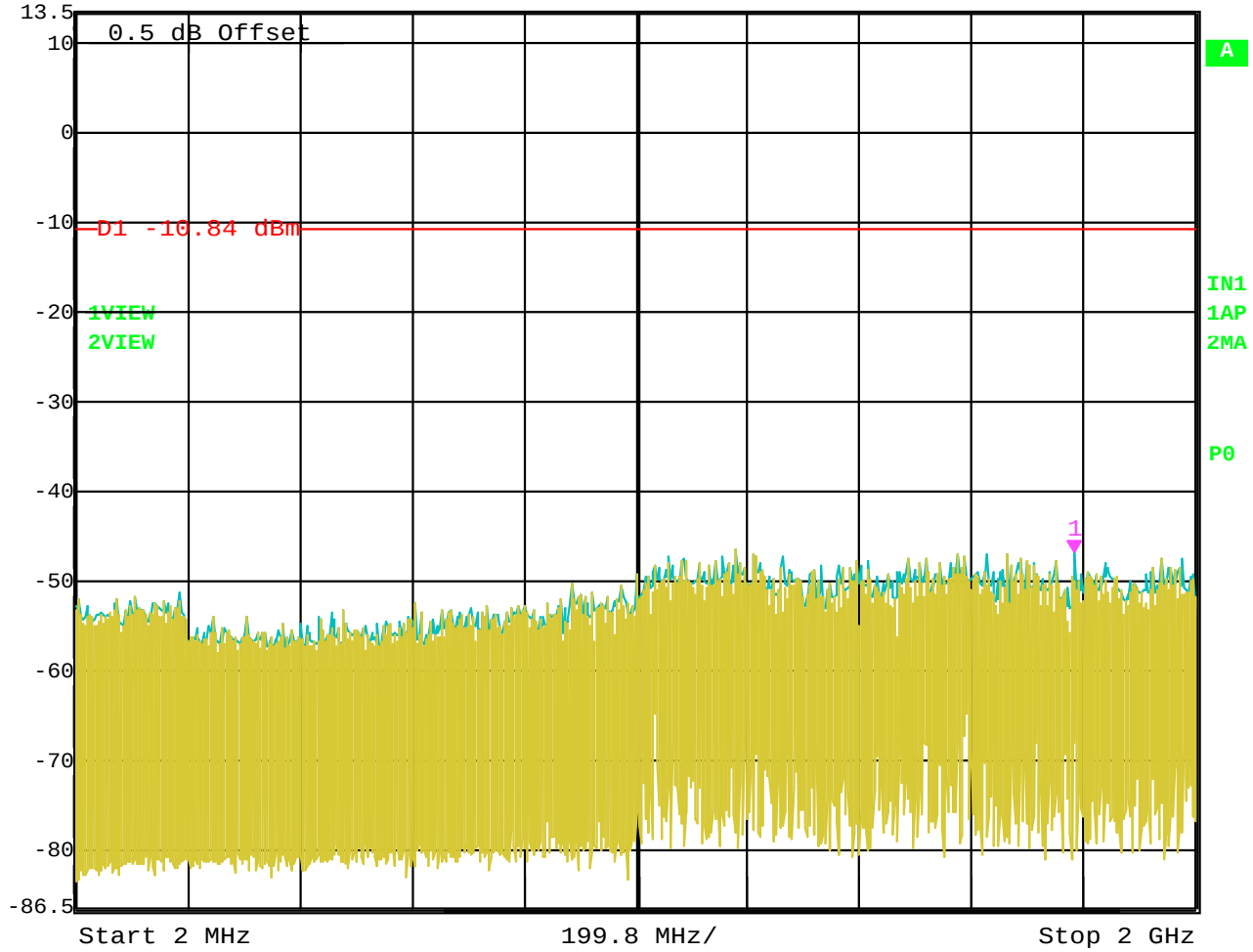
***RF ANTENNA CONDUCTED***  
***DATA SHEETS***



Ref Lvl  
13.5 dBm

Marker 1 [T2]  
-46.99 dBm  
1.78378357 GHz

RBW 100 kHz RF Att 40 dB  
VBW 300 kHz  
SWT 700 ms Unit dBm

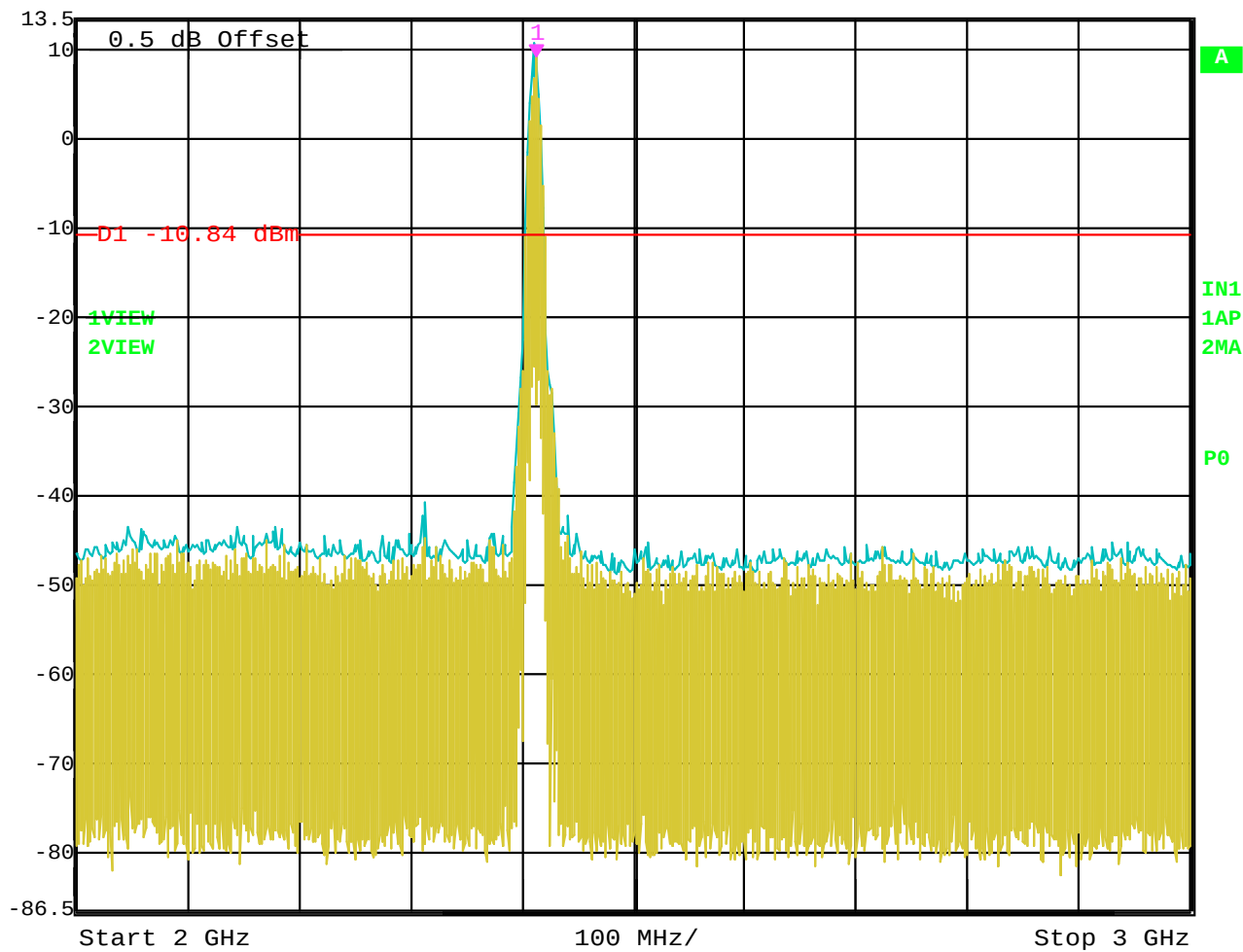


Date: 11.DEC.2003 11:46:43

RF Antenna Conducted Test – Channel 1 – 802.11 b Mode – 2 MHz to 2 GHz



Ref Lvl 13.5 dBm  
Marker 1 [T2] 9.16 dBm  
2.41200000 GHz  
RBW 100 kHz RF Att 40 dB  
VBW 300 kHz  
SWT 250 ms Unit dBm

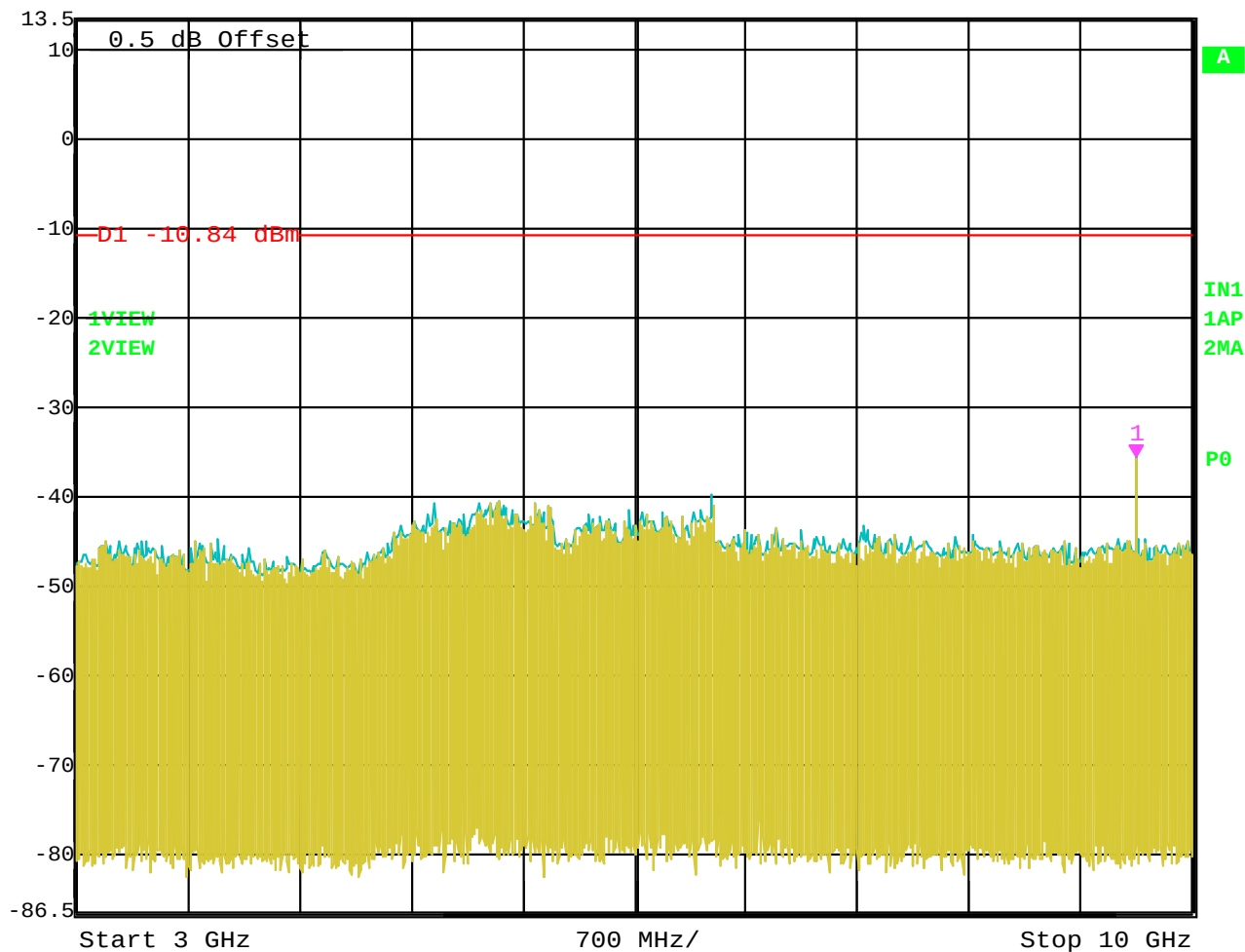


Date: 11.DEC.2003 11:46:04

RF Antenna Conducted Test – Channel 1 – 802.11 b Mode – 2 GHz to 3 GHz



Ref Lvl 13.5 dBm  
Marker 1 [T2] -35.69 dBm  
9.64929860 GHz  
RBW 100 kHz RF Att 40 dB  
VBW 300 kHz  
SWT 1.75 s Unit dBm

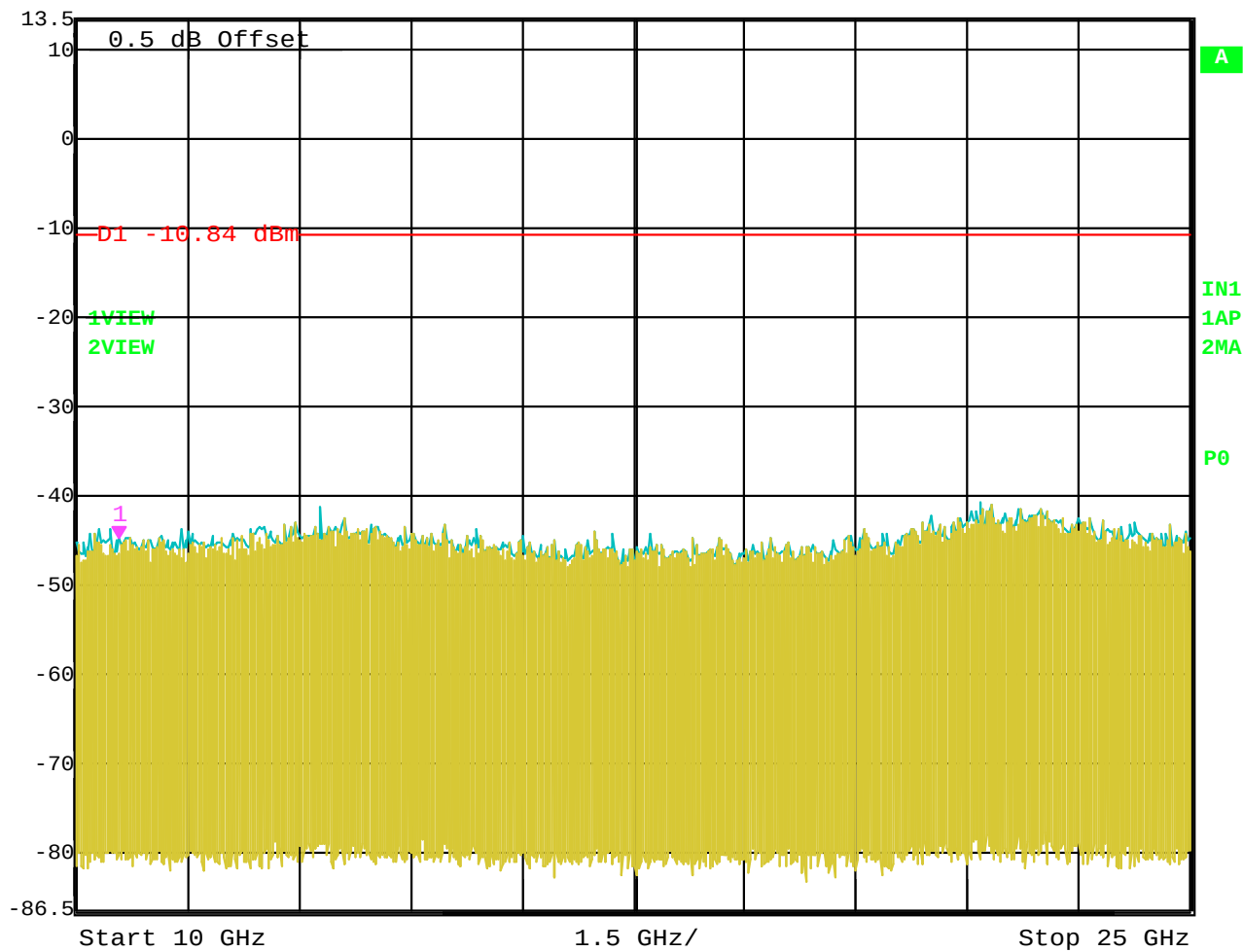


Date: 11.DEC.2003 11:47:22

RF Antenna Conducted Test – Channel 1 – 802.11 b Mode – 3 GHz to 10 GHz



Ref Lvl 13.5 dBm  
Marker 1 [T2] -44.92 dBm  
10.57114228 GHz  
RBW 100 kHz RF Att 40 dB  
VBW 300 kHz  
SWT 3.8 s Unit dBm

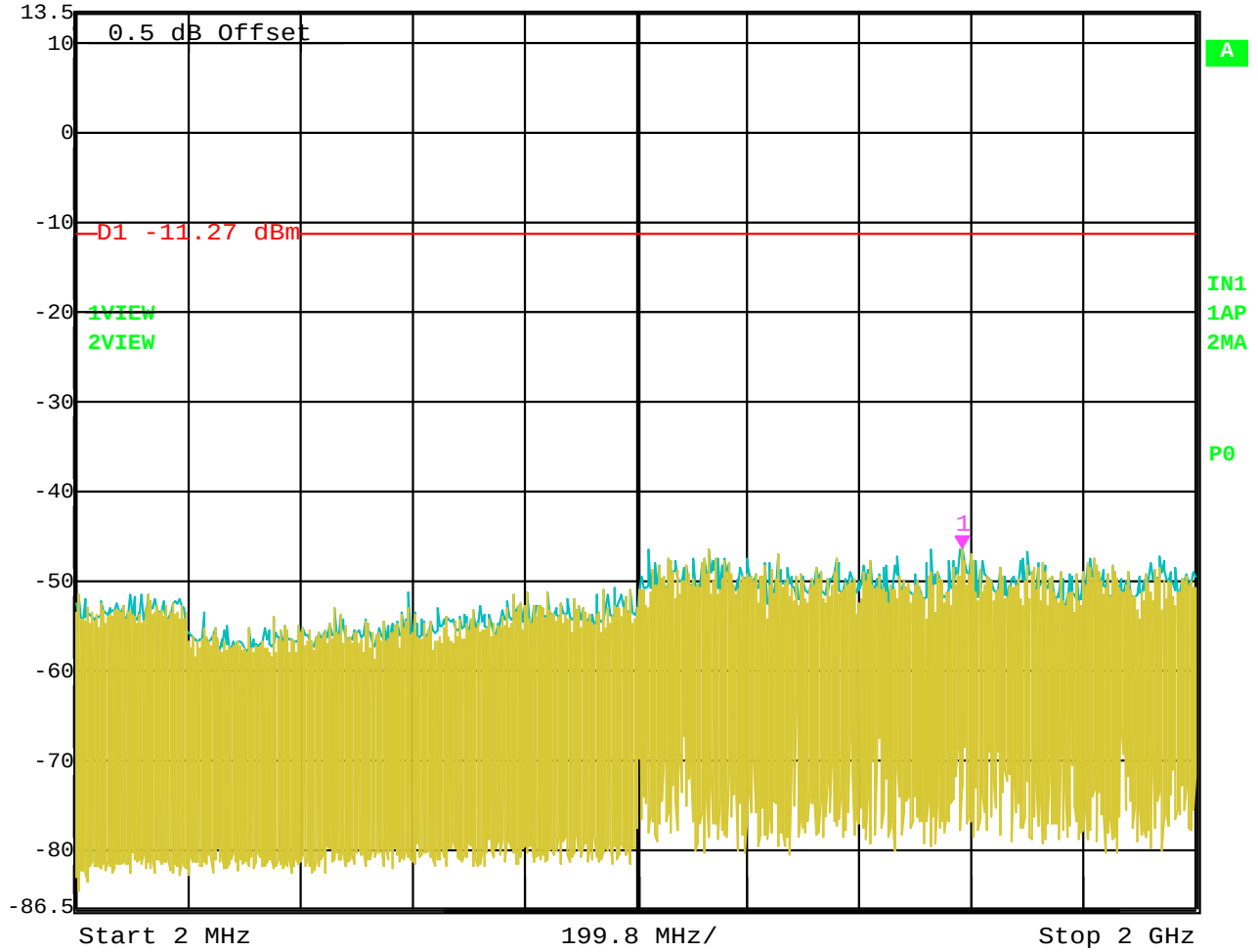


Date: 11.DEC.2003 11:48:15

RF Antenna Conducted Test – Channel 1 – 802.11 b Mode – 10 GHz to 25 GHz



Ref Lvl 13.5 dBm  
Marker 1 [T2] -46.48 dBm  
1.58358317 GHz  
RBW 100 kHz RF Att 40 dB  
VBW 300 kHz  
SWT 700 ms Unit dBm

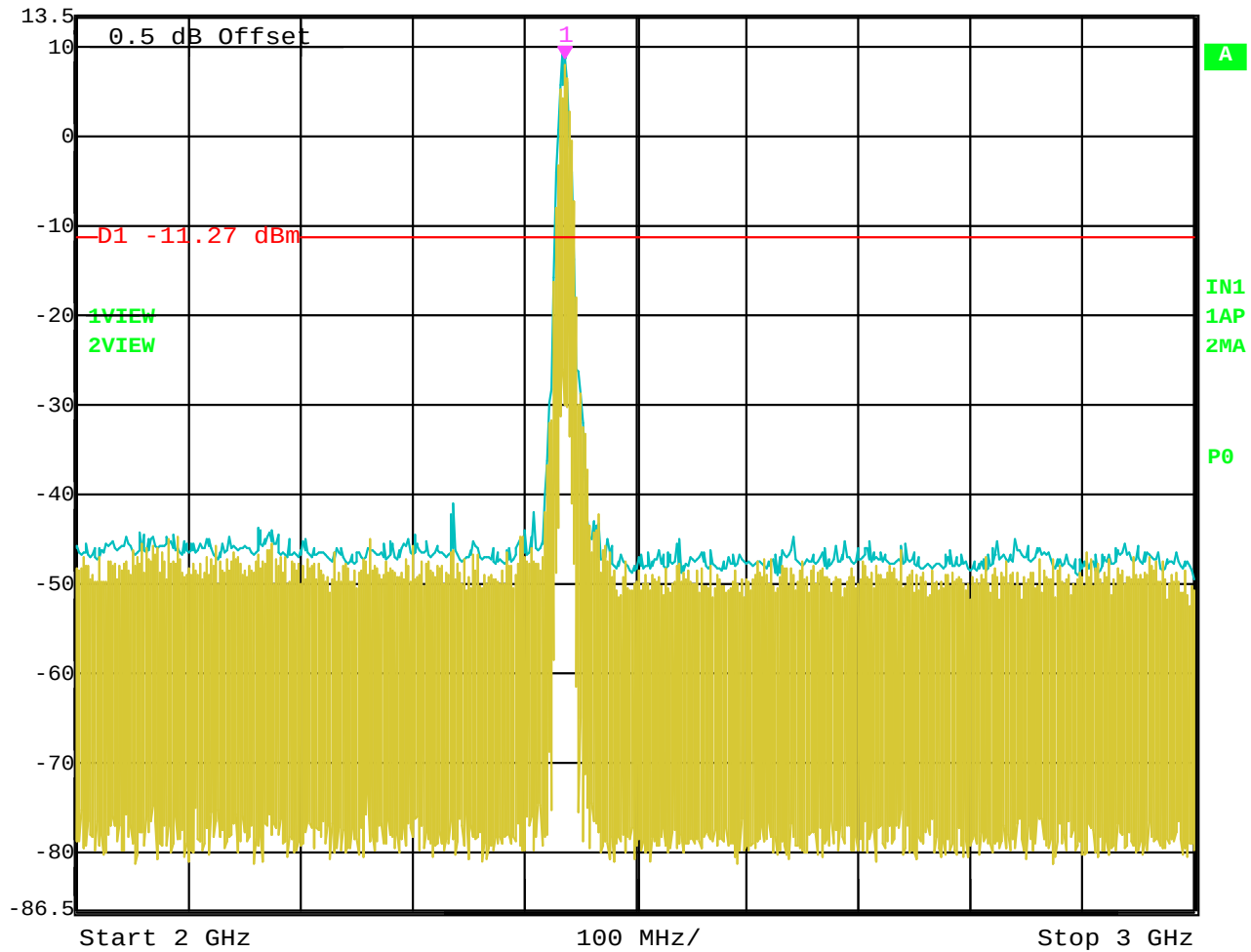


Date: 11.DEC.2003 11:56:08

RF Antenna Conducted Test – Channel 6 – 802.11 b Mode – 2 MHz to 2 GHz



Ref Lvl 13.5 dBm  
Marker 1 [T2] 8.73 dBm  
2.43700000 GHz  
RBW 100 kHz RF Att 40 dB  
VBW 300 kHz  
SWT 250 ms Unit dBm

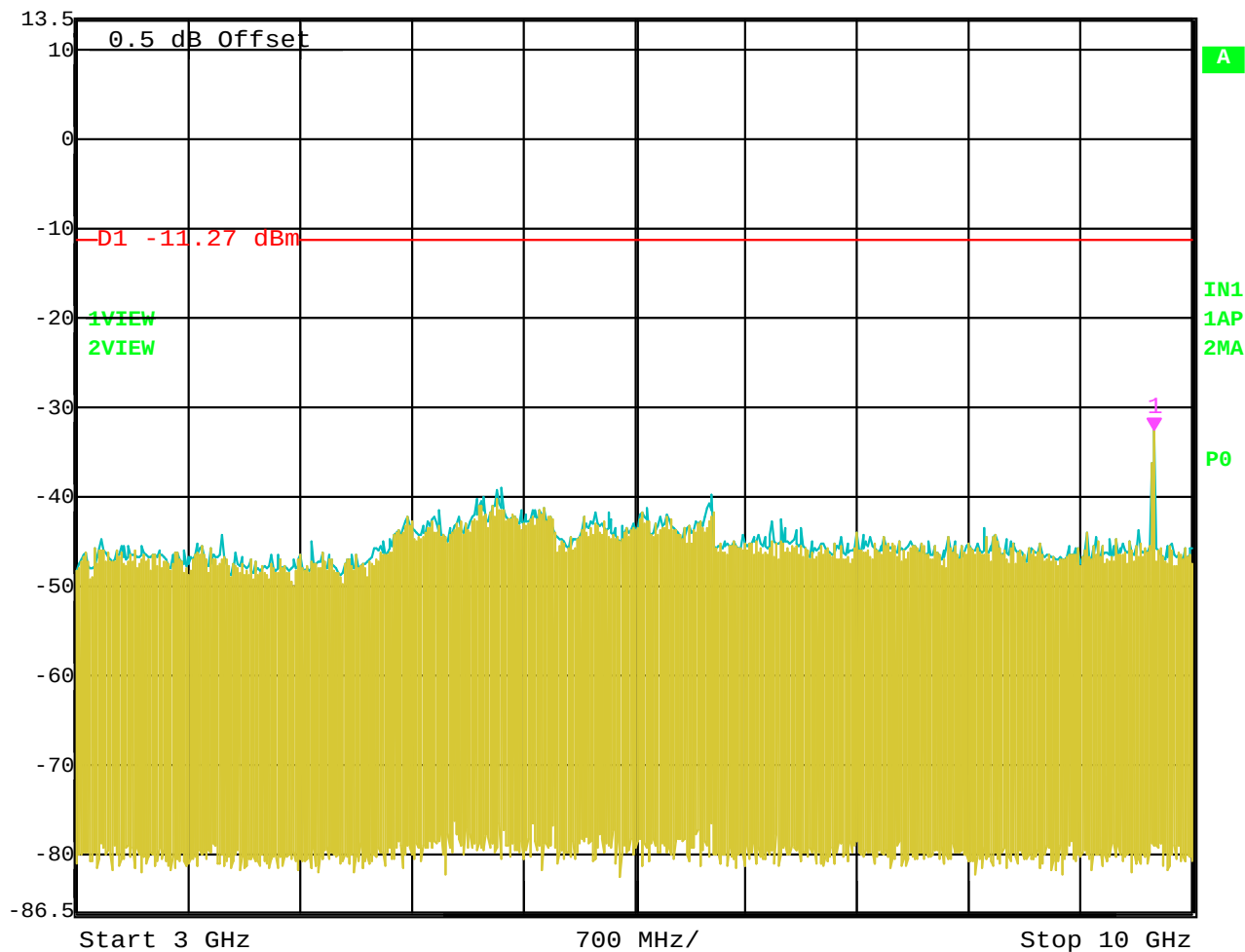


Date: 11.DEC.2003 11:53:49

RF Antenna Conducted Test – Channel 6 – 802.11 b Mode – 2 GHz to 3 GHz



Ref Lvl 13.5 dBm  
Marker 1 [T2] -32.59 dBm  
9.76152305 GHz  
RBW 100 kHz RF Att 40 dB  
VBW 300 kHz  
SWT 1.75 s Unit dBm

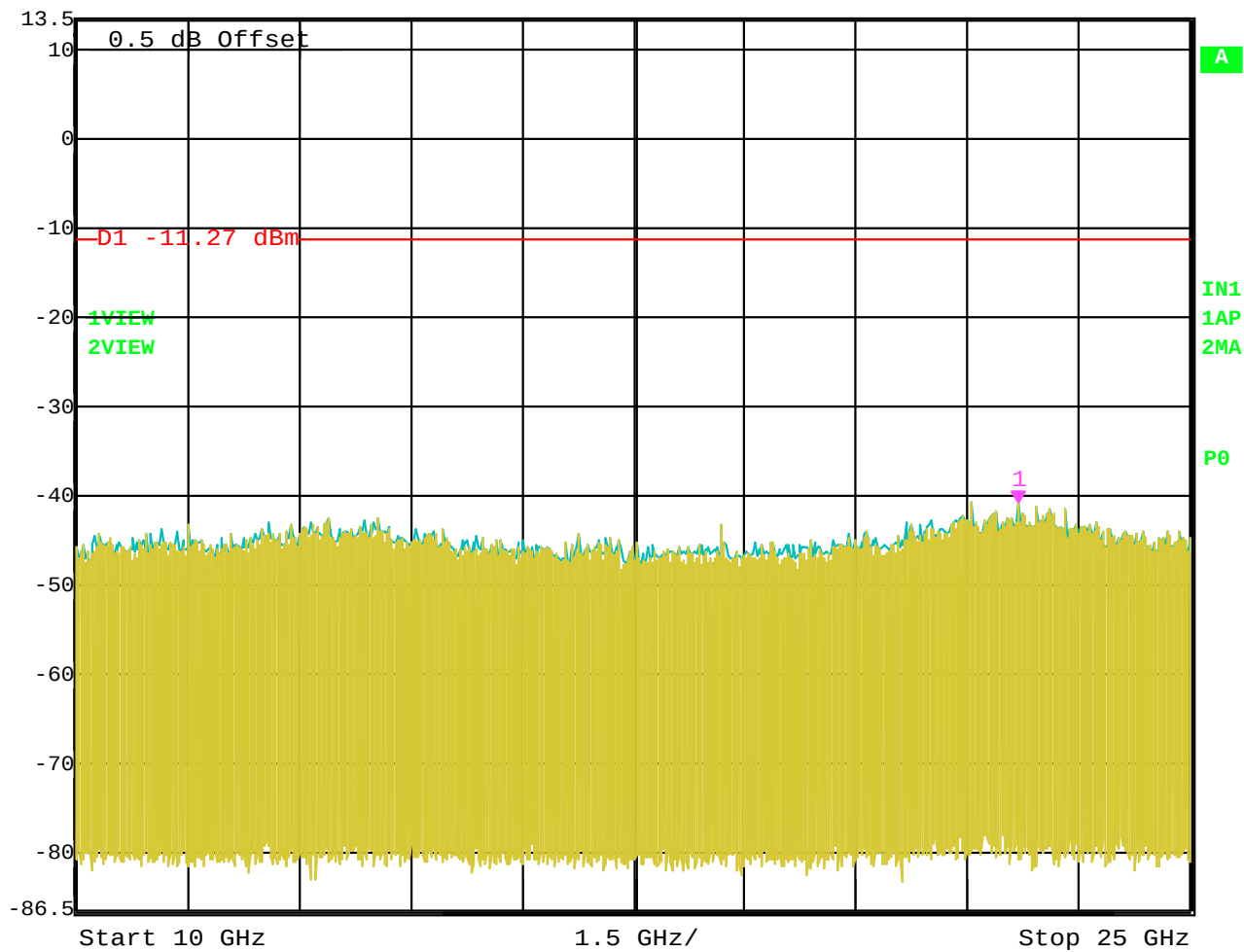


Date: 11.DEC.2003 11:56:46

RF Antenna Conducted Test – Channel 6 – 802.11 b Mode – 3 GHz to 10 GHz



Ref Lvl 13.5 dBm      Marker 1 [T2] -40.85 dBm      RBW 100 kHz      RF Att 40 dB  
22.68537074 GHz      VBW 300 kHz      Unit dBm  
SWT 3.8 s

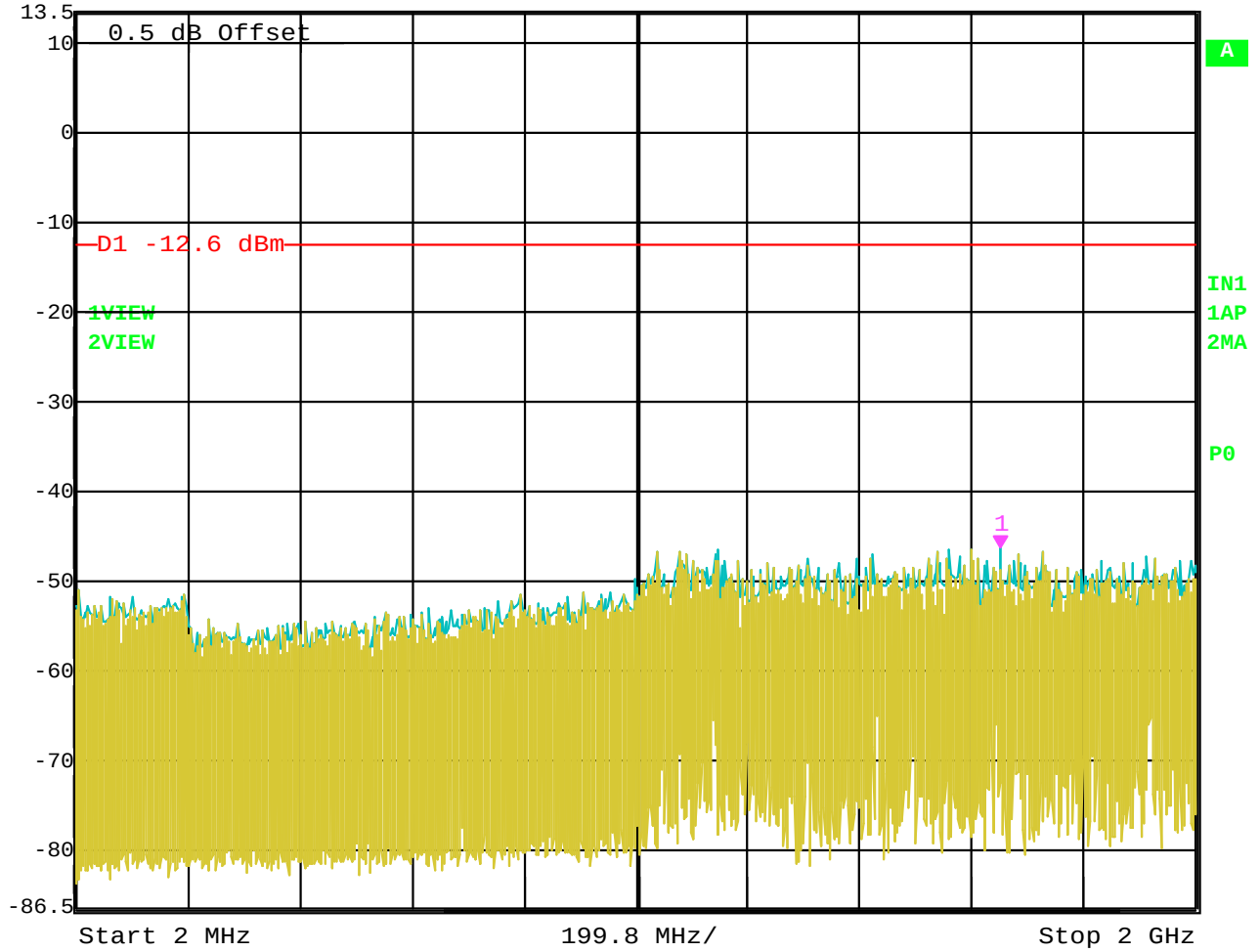


Date: 11.DEC.2003 11:57:27

RF Antenna Conducted Test – Channel 6 – 802.11 b Mode – 10 GHz to 25 GHz



Ref Lvl 13.5 dBm  
Marker 1 [T2] -46.35 dBm  
1.65165130 GHz  
RBW 100 kHz RF Att 40 dB  
VBW 300 kHz  
SWT 700 ms Unit dBm

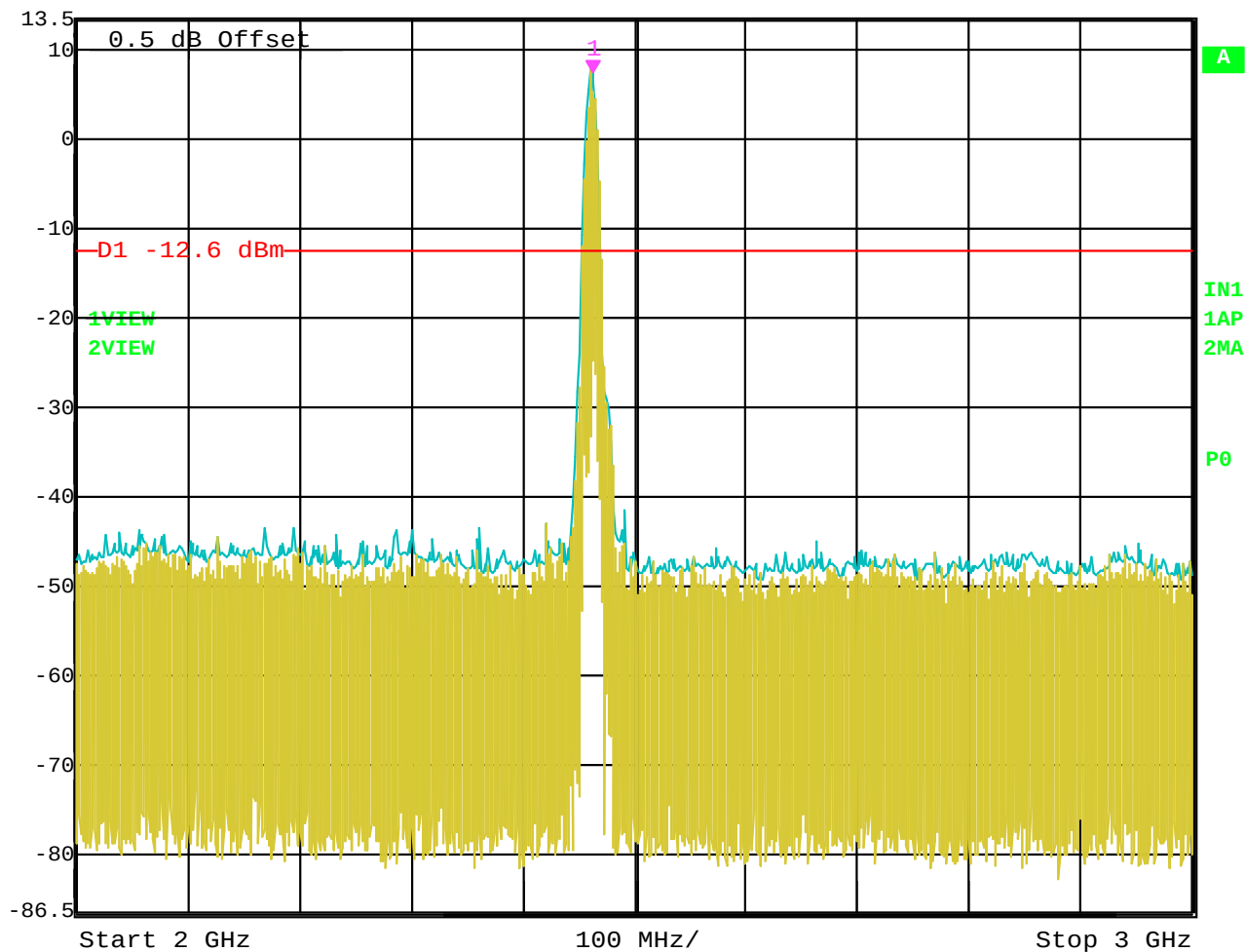


Date: 11.DEC.2003 12:04:53

RF Antenna Conducted Test – Channel 11 – 802.11 b Mode – 2 MHz to 2 GHz



Marker 1 [T2] RBW 100 kHz RF Att 40 dB  
Ref Lvl 7.40 dBm VBW 300 kHz  
13.5 dBm 2.46200000 GHz SWT 250 ms Unit dBm

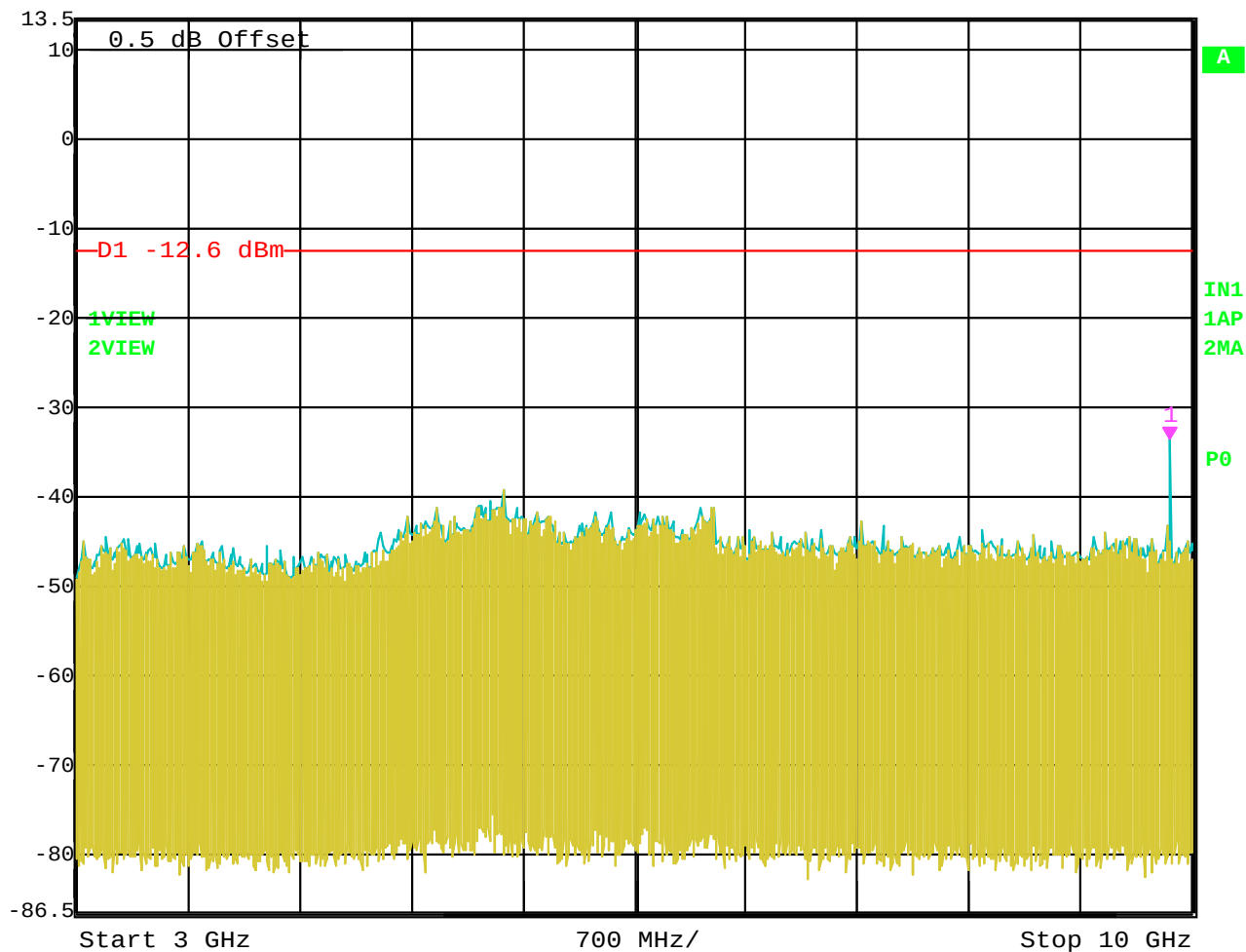


Date: 11.DEC.2003 12:04:18

RF Antenna Conducted Test – Channel 11 – 802.11 b Mode – 2 GHz to 3 GHz



Ref Lvl 13.5 dBm  
Marker 1 [T2] -33.75 dBm  
9.85971944 GHz  
RBW 100 kHz  
RF Att 40 dB  
VBW 300 kHz  
SWT 1.75 s  
Unit dBm

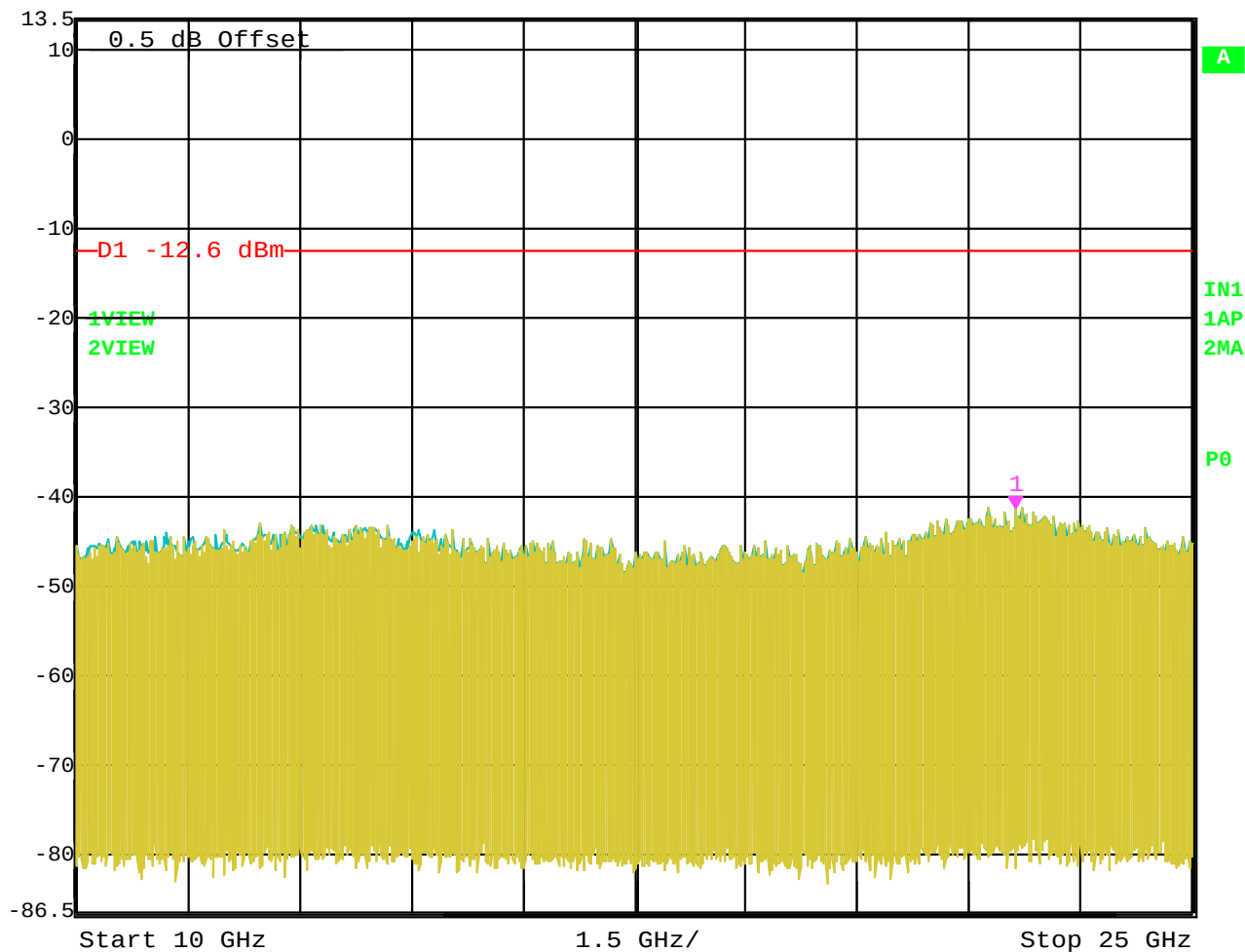


Date: 11.DEC.2003 12:05:28

RF Antenna Conducted Test – Channel 11 – 802.11 b Mode – 3 GHz to 10 GHz



Ref Lvl 13.5 dBm  
Marker 1 [T2] -41.32 dBm  
22.62525050 GHz  
RBW 100 kHz RF Att 40 dB  
VBW 300 kHz  
SWT 3.8 s Unit dBm



Date: 11.DEC.2003 12:06:12

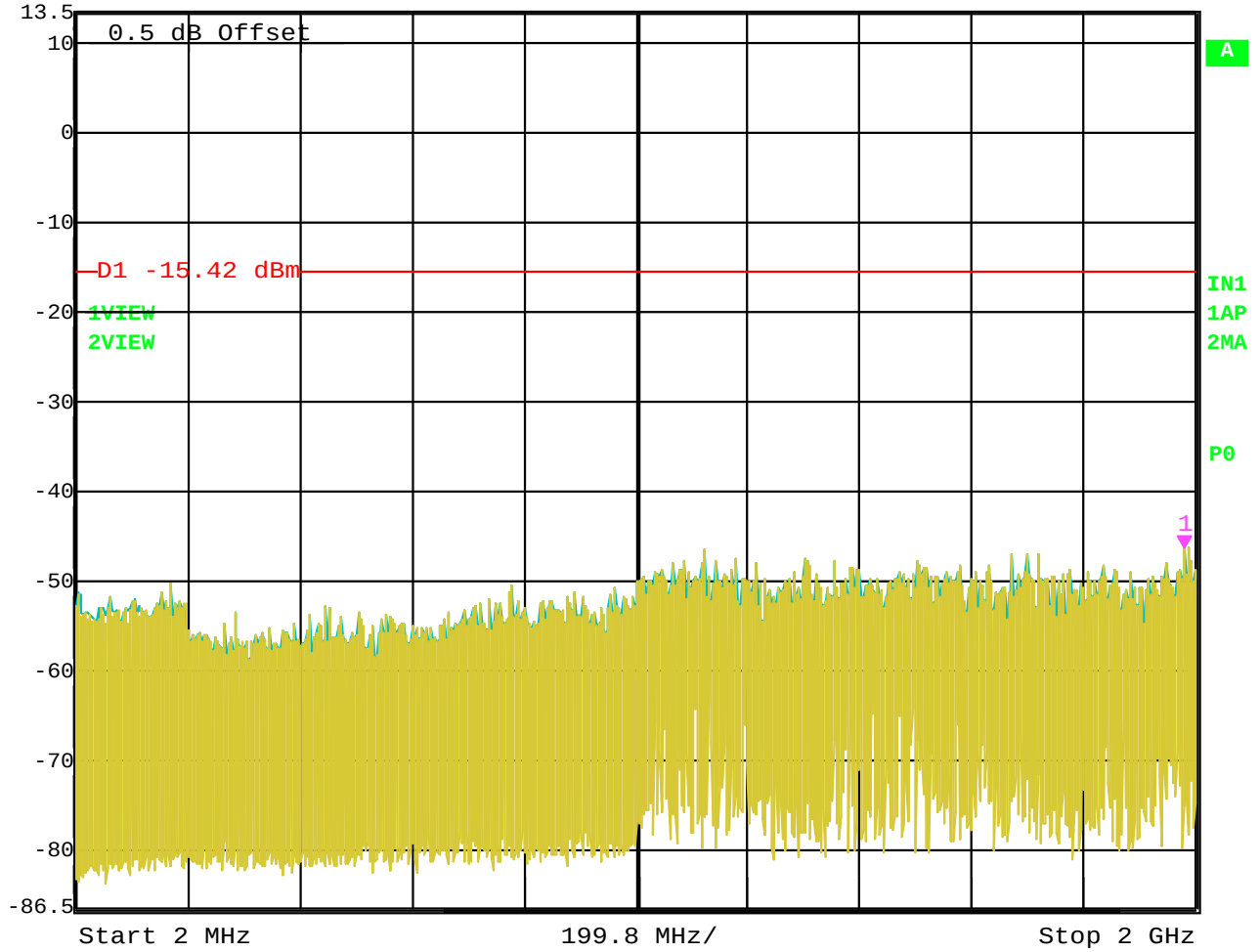
RF Antenna Conducted Test – Channel 11 – 802.11 b Mode – 10 GHz to 25 GHz



Ref Lvl  
13.5 dBm

Marker 1 [T2]  
-46.48 dBm  
1.97997996 GHz

RBW 100 kHz RF Att 40 dB  
VBW 300 kHz  
SWT 700 ms Unit dBm

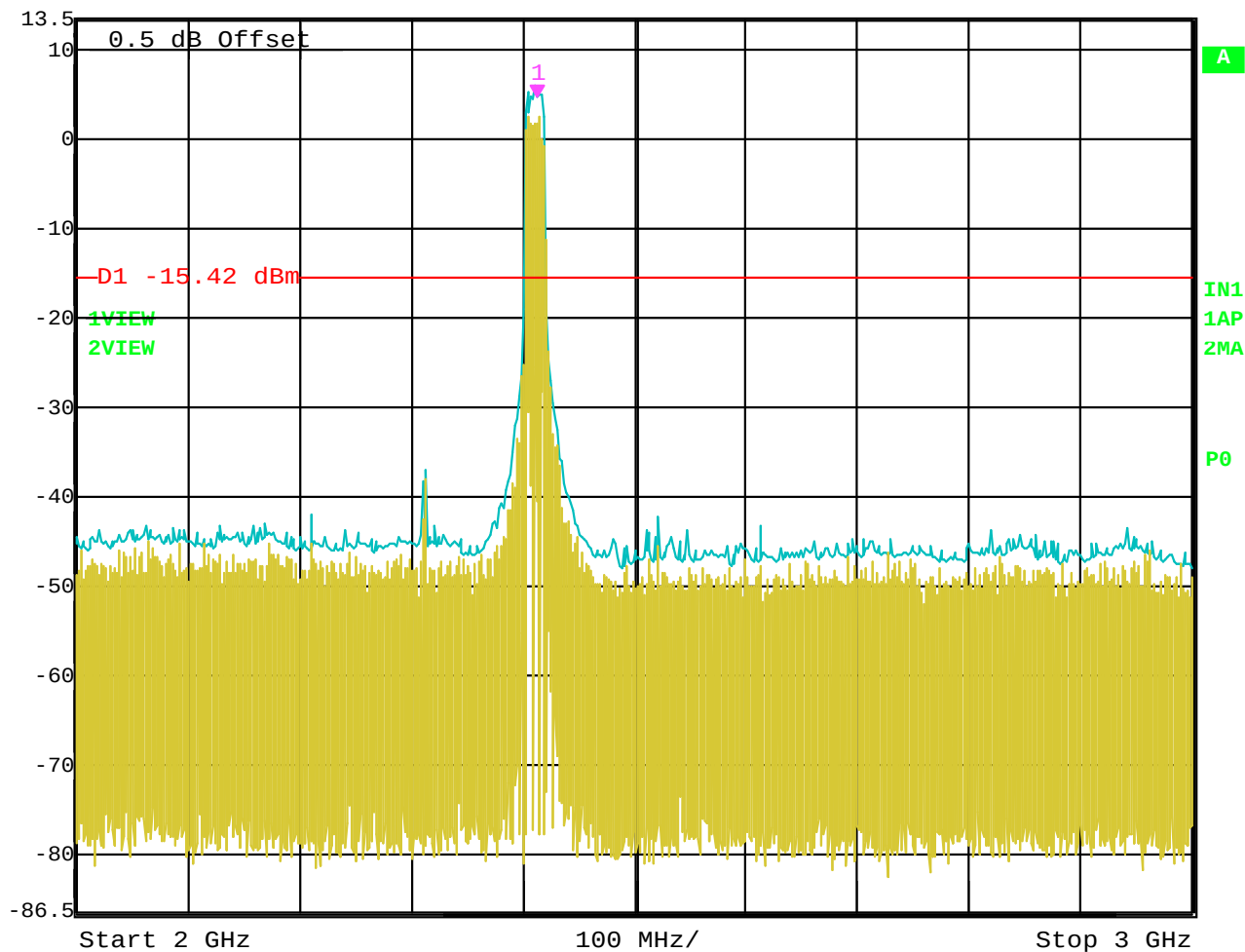


Date: 11.DEC.2003 12:58:23

RF Antenna Conducted – Channel 1 – 802.11 g Mode – 2 MHz to 2 GHz



Ref Lvl 13.5 dBm  
Marker 1 [T2] 4.58 dBm  
2.41200000 GHz  
RBW 100 kHz RF Att 40 dB  
VBW 300 kHz  
SWT 250 ms Unit dBm



Date: 11.DEC.2003 12:57:20

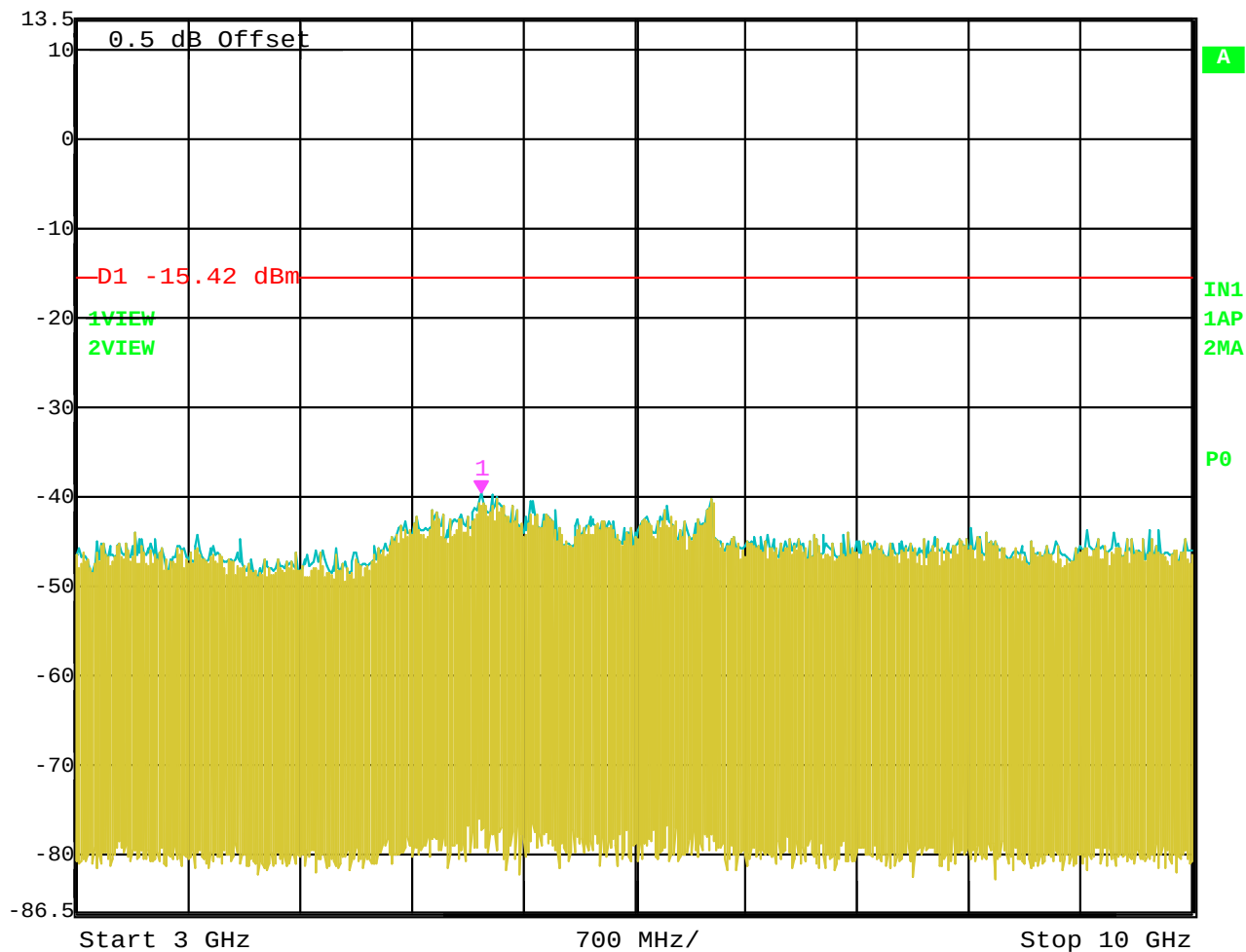
RF Antenna Conducted Test – Channel 1 – 802.11 g Mode – 2 GHz to 3 GHz



Ref Lvl  
13.5 dBm

Marker 1 [T2]  
-39.73 dBm  
5.53907816 GHz

RBW 100 kHz RF Att 40 dB  
VBW 300 kHz  
SWT 1.75 s Unit dBm



Date: 11.DEC.2003 12:59:10

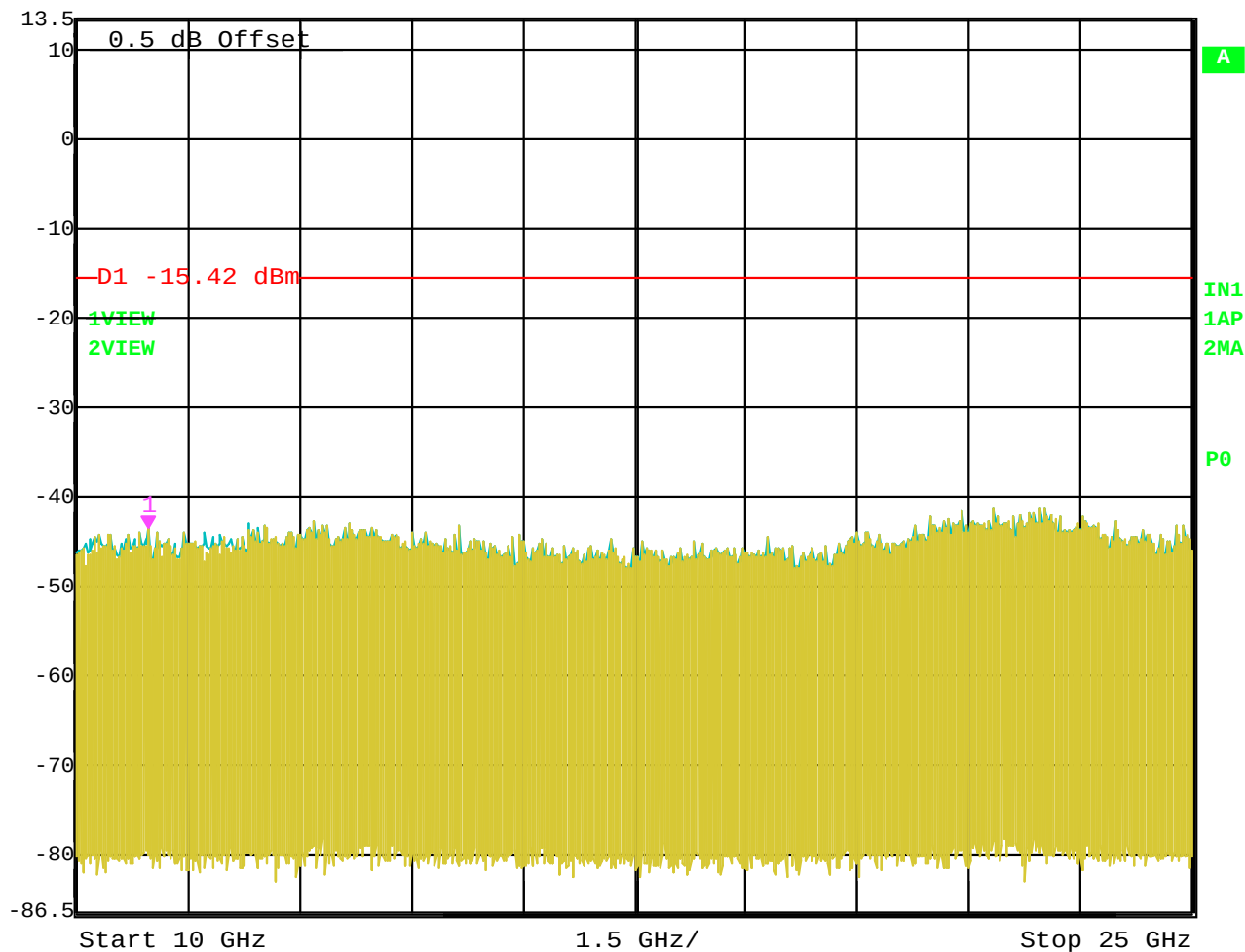
RF Antenna Conducted Test – Channel 1 – 802.11 g Mode – 3 GHz to 10 GHz



Ref Lvl  
13.5 dBm

Marker 1 [T2]  
-43.64 dBm  
10.96192385 GHz

RBW 100 kHz RF Att 40 dB  
VBW 300 kHz  
SWT 3.8 s Unit dBm

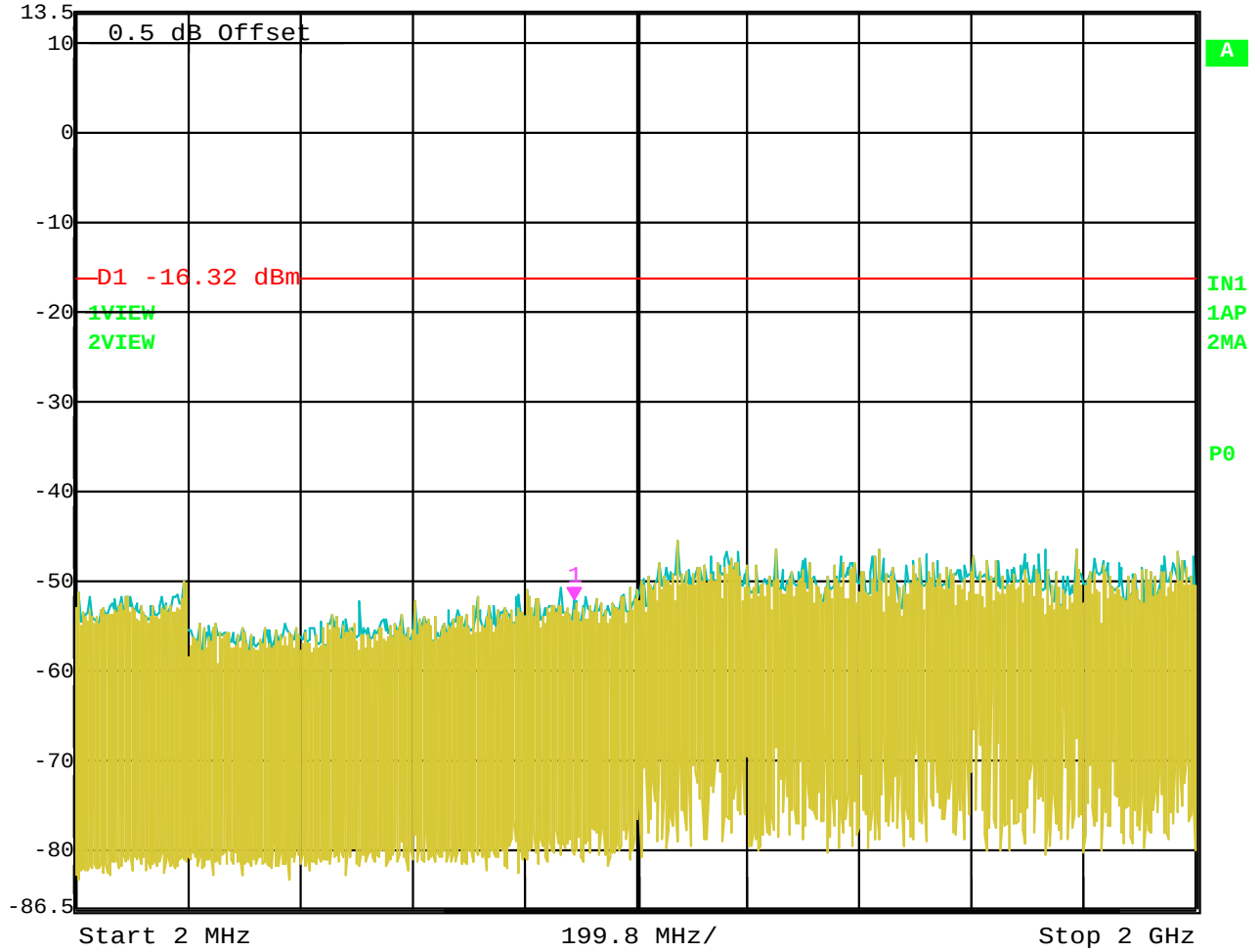


Date: 11.DEC.2003 12:59:58

RF Antenna Conducted Test – Channel 1 – 802.11 g Mode – 10 GHz to 25 GHz



Ref Lvl 13.5 dBm  
Marker 1 [T2] -52.13 dBm  
890.88977956 MHz  
RBW 100 kHz RF Att 40 dB  
VBW 300 kHz  
SWT 700 ms Unit dBm

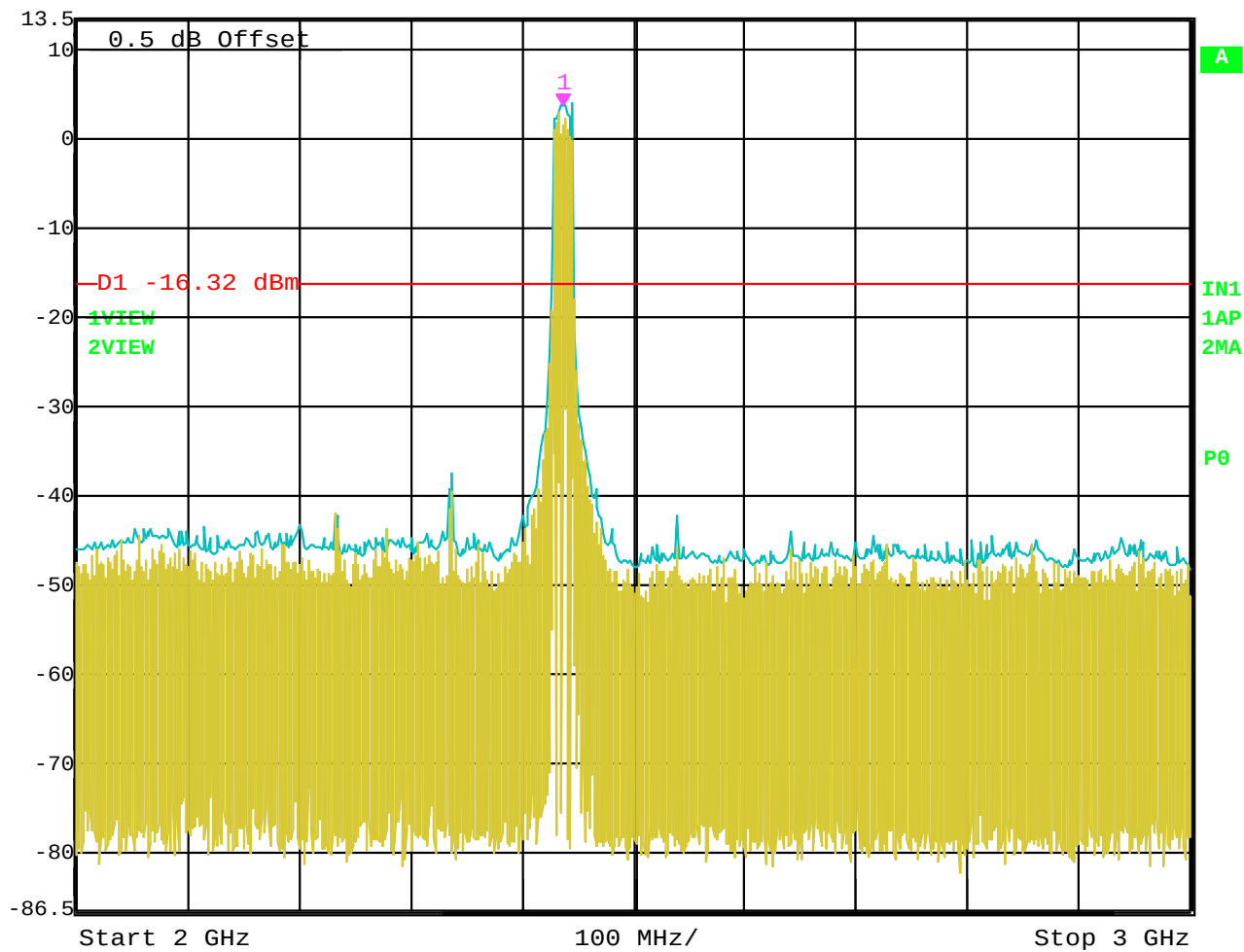


Date: 11.DEC.2003 13:08:05

RF Antenna Conducted Test i Channel 6 i 802.11 g Mode i 2 MHz to 2 GHz



Marker 1 [T2] RBW 100 kHz RF Att 40 dB  
Ref Lvl 3.68 dBm VBW 300 kHz  
13.5 dBm 2.43700000 GHz SWT 250 ms Unit dBm

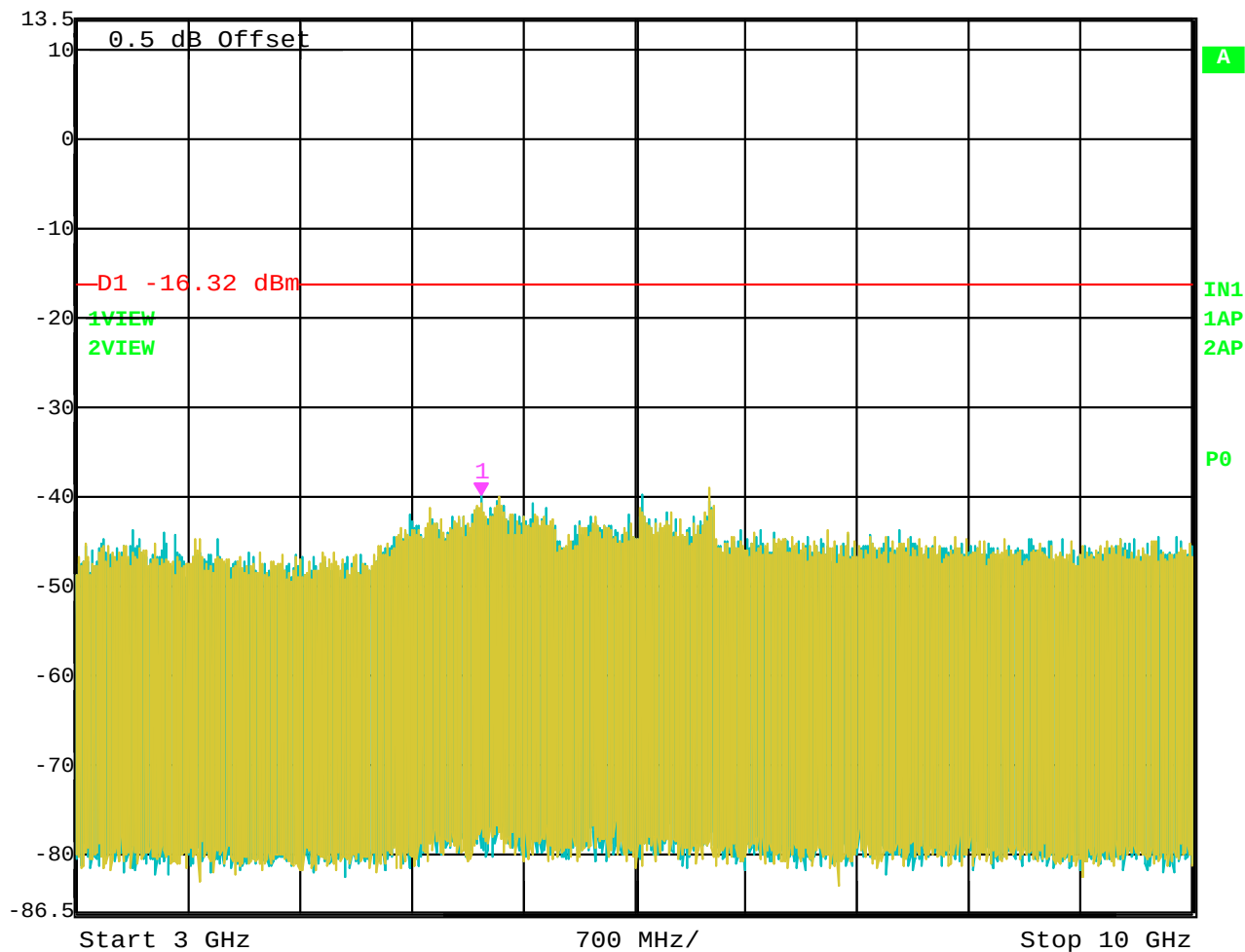


Date: 11.DEC.2003 13:07:19

RF Antenna Conducted Test i Channel 6 i 802.11 g Mode i 2 GHz to 3 GHz



Ref Lvl 13.5 dBm  
Marker 1 [T2] -39.92 dBm  
5.53907816 GHz  
RBW 100 kHz  
RF Att 40 dB  
VBW 300 kHz  
SWT 1.75 s  
Unit dBm



Date: 11.DEC.2003 13:09:21

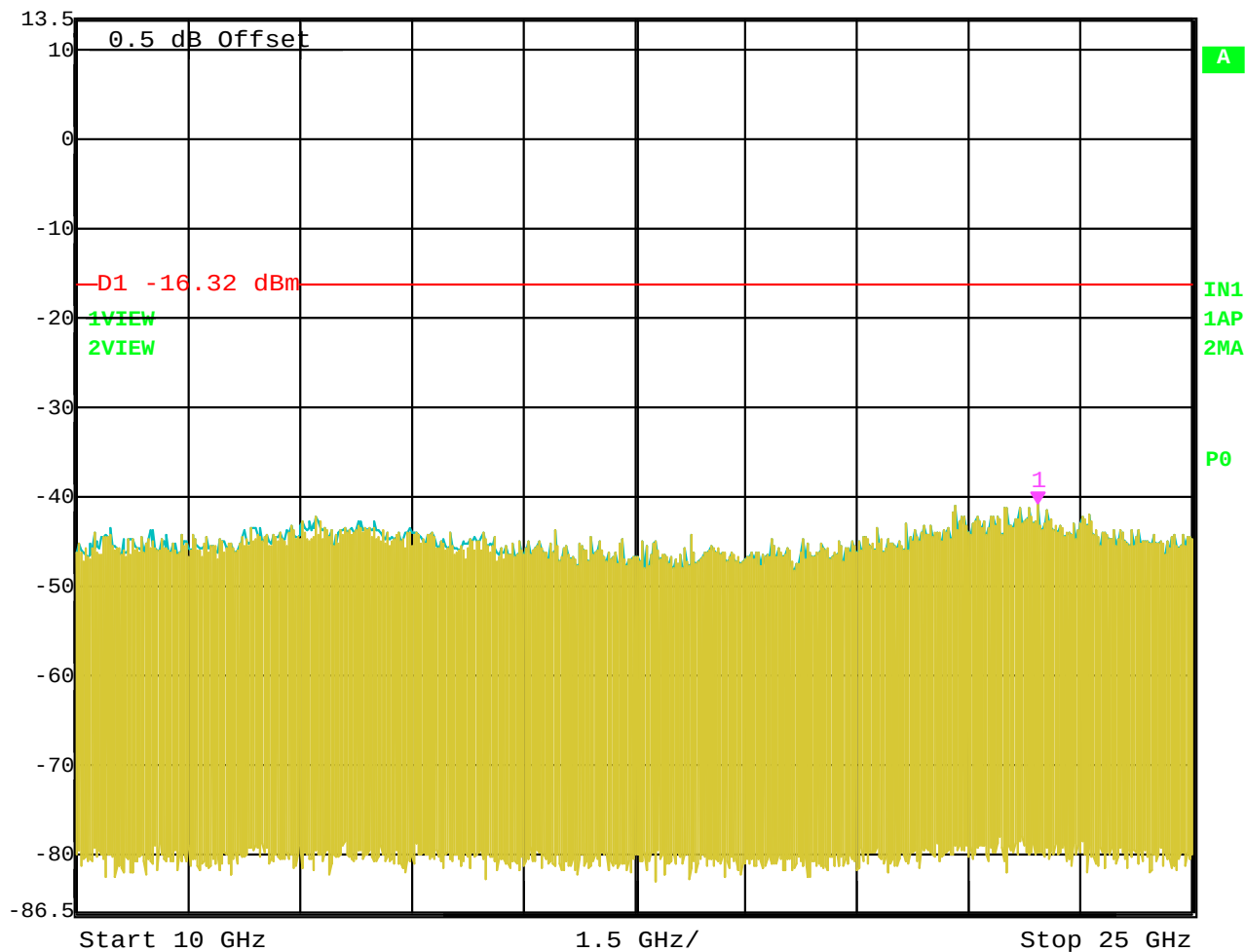
RF Antenna Conducted Test i Channel 6 i 802.11 g Mode i 3 GHz to 10 GHz



Ref Lvl  
13.5 dBm

Marker 1 [T2]  
-40.89 dBm  
22.92585170 GHz

RBW 100 kHz RF Att 40 dB  
VBW 300 kHz  
SWT 3.8 s Unit dBm



Date: 11.DEC.2003 13:10:05

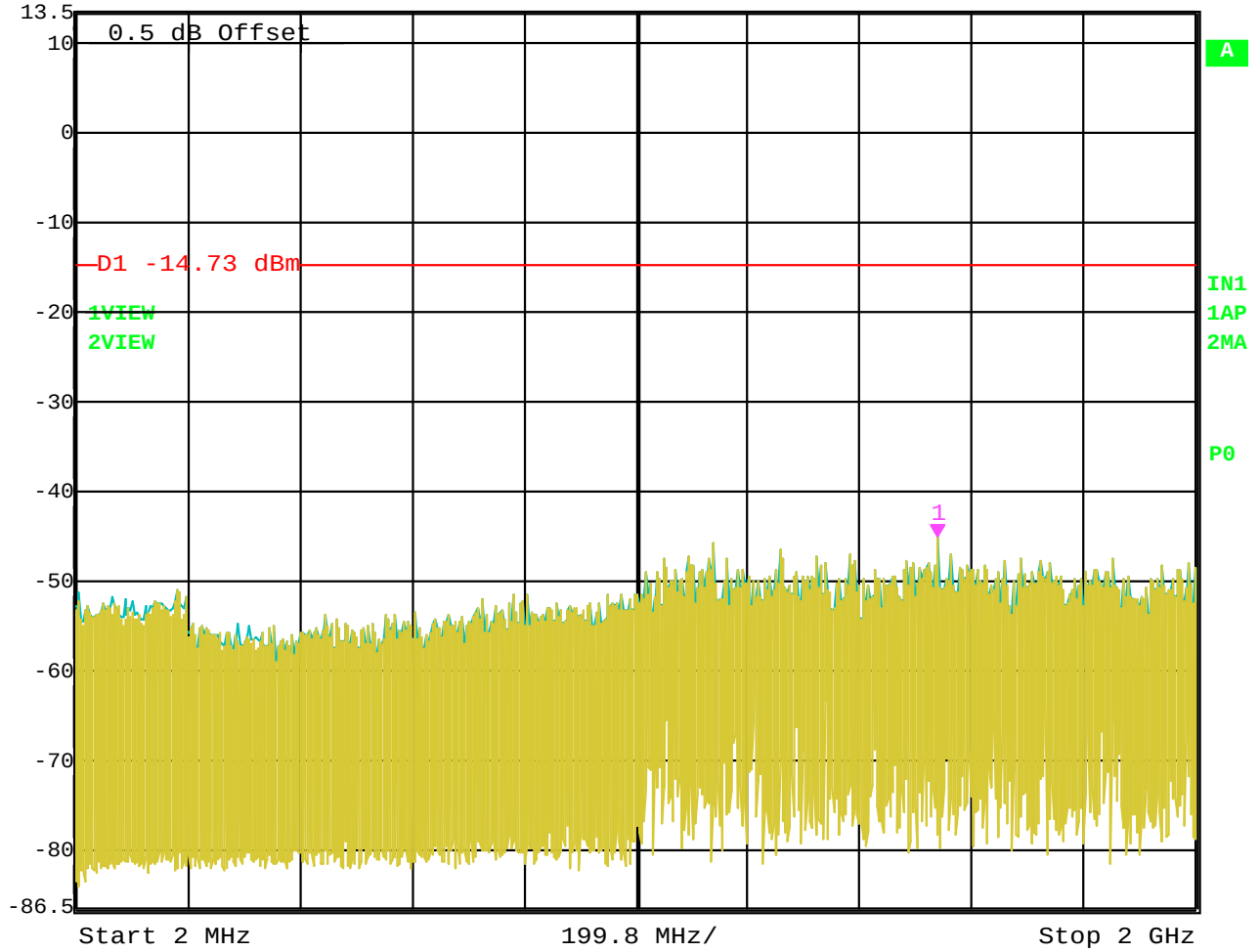
RF Antenna Conducted Test i Channel 6 i 802.11 g Mode i 10 GHz to 25 GHz



Ref Lvl  
13.5 dBm

Marker 1 [T2]  
-45.07 dBm  
1.53953908 GHz

RBW 100 kHz RF Att 40 dB  
VBW 300 kHz  
SWT 700 ms Unit dBm

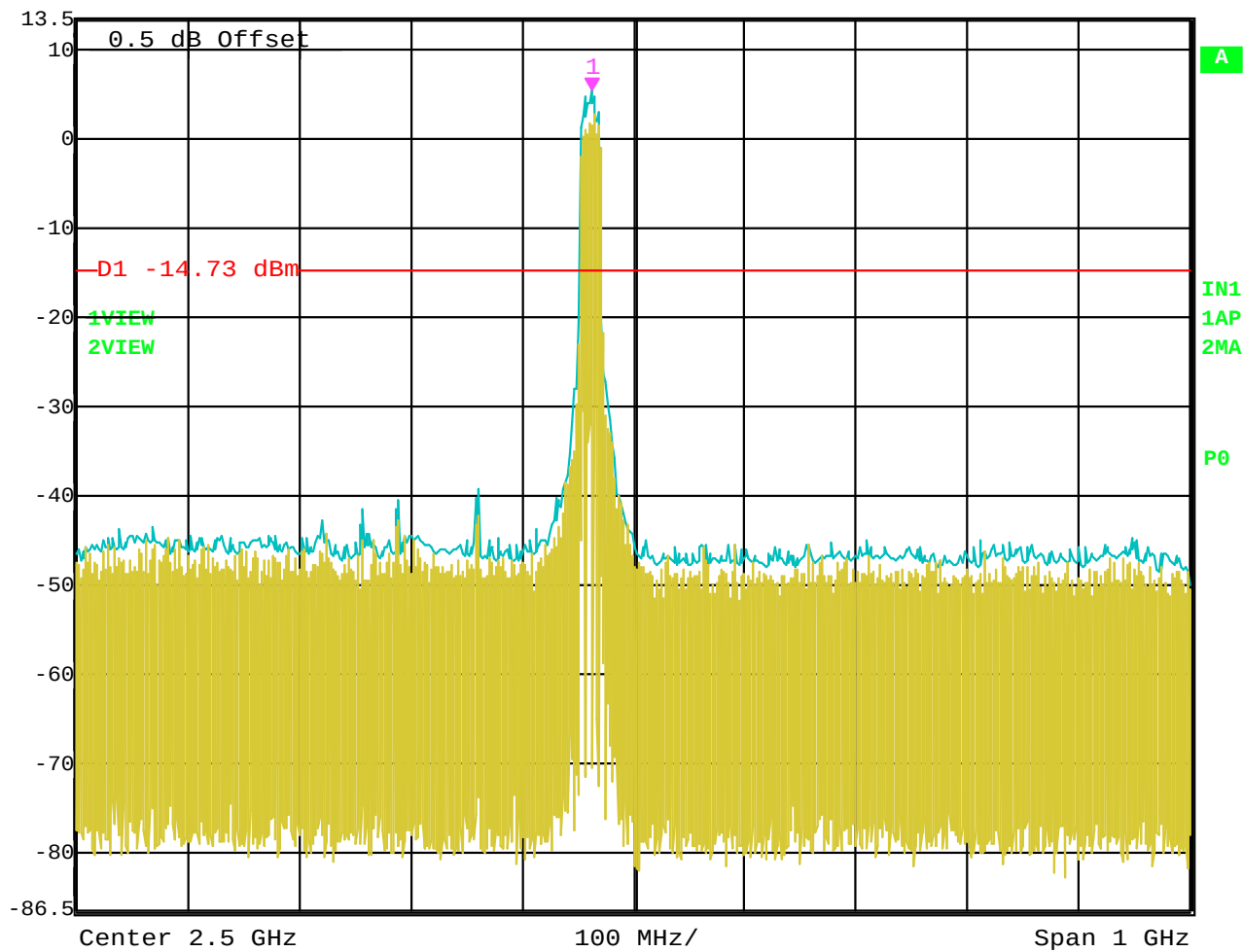


Date: 11.DEC.2003 15:00:32

RF Antenna Conducted Test – Channel 11 – 802.11 g Mode – 2 MHz to 2 GHz



Ref Lvl 13.5 dBm  
Marker 1 [T2] 5.27 dBm  
2.46200000 GHz  
RBW 100 kHz RF Att 40 dB  
VBW 300 kHz  
SWT 250 ms Unit dBm

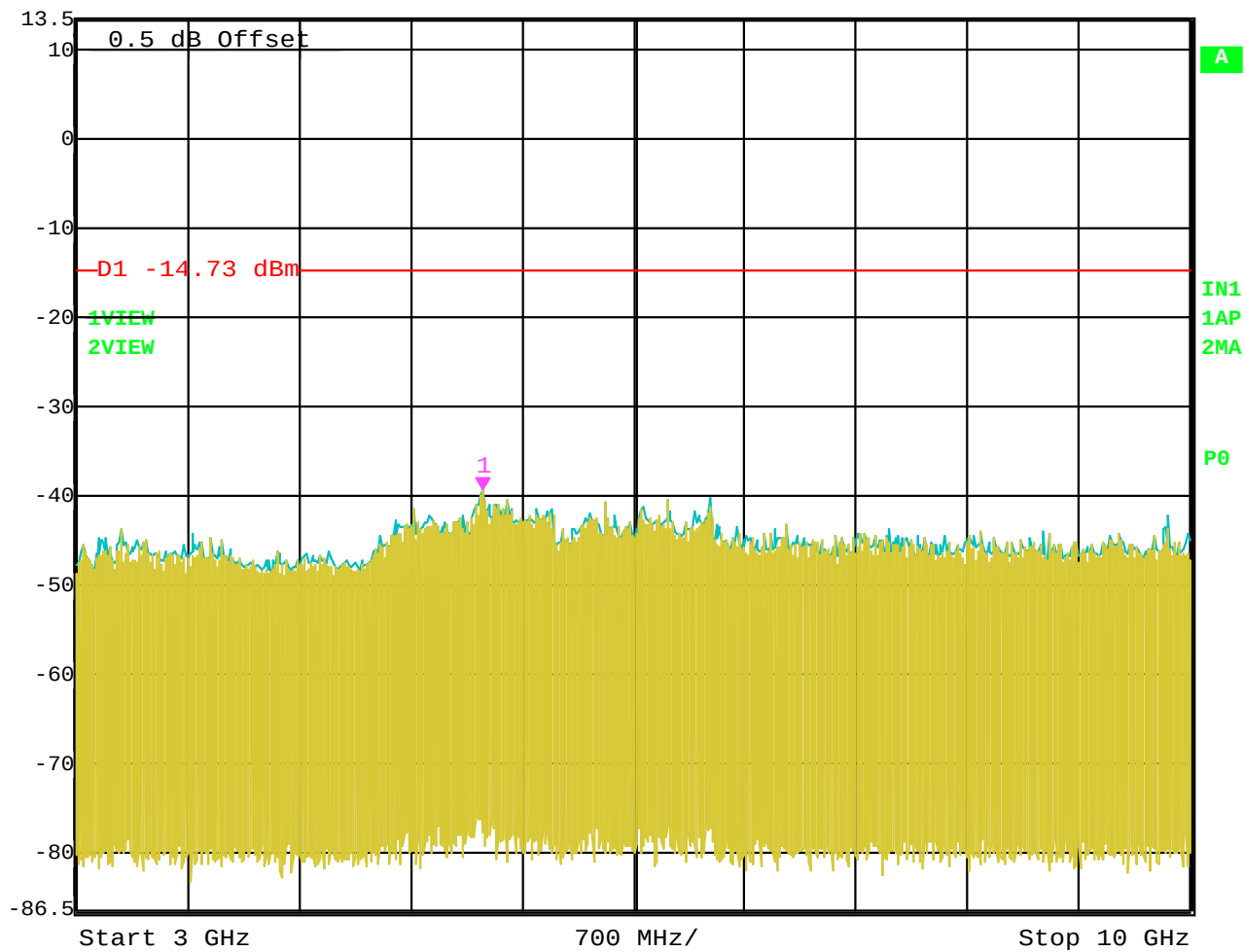


Date: 11.DEC.2003 14:59:45

RF Antenna Conducted Test – Channel 11 – 802.11 g Mode – 2 GHz to 3 GHz



Ref Lvl 13.5 dBm  
Marker 1 [T2] -39.28 dBm  
5.55310621 GHz  
RBW 100 kHz  
VBW 300 kHz  
SWT 1.75 s  
RF Att 40 dB  
Unit dBm

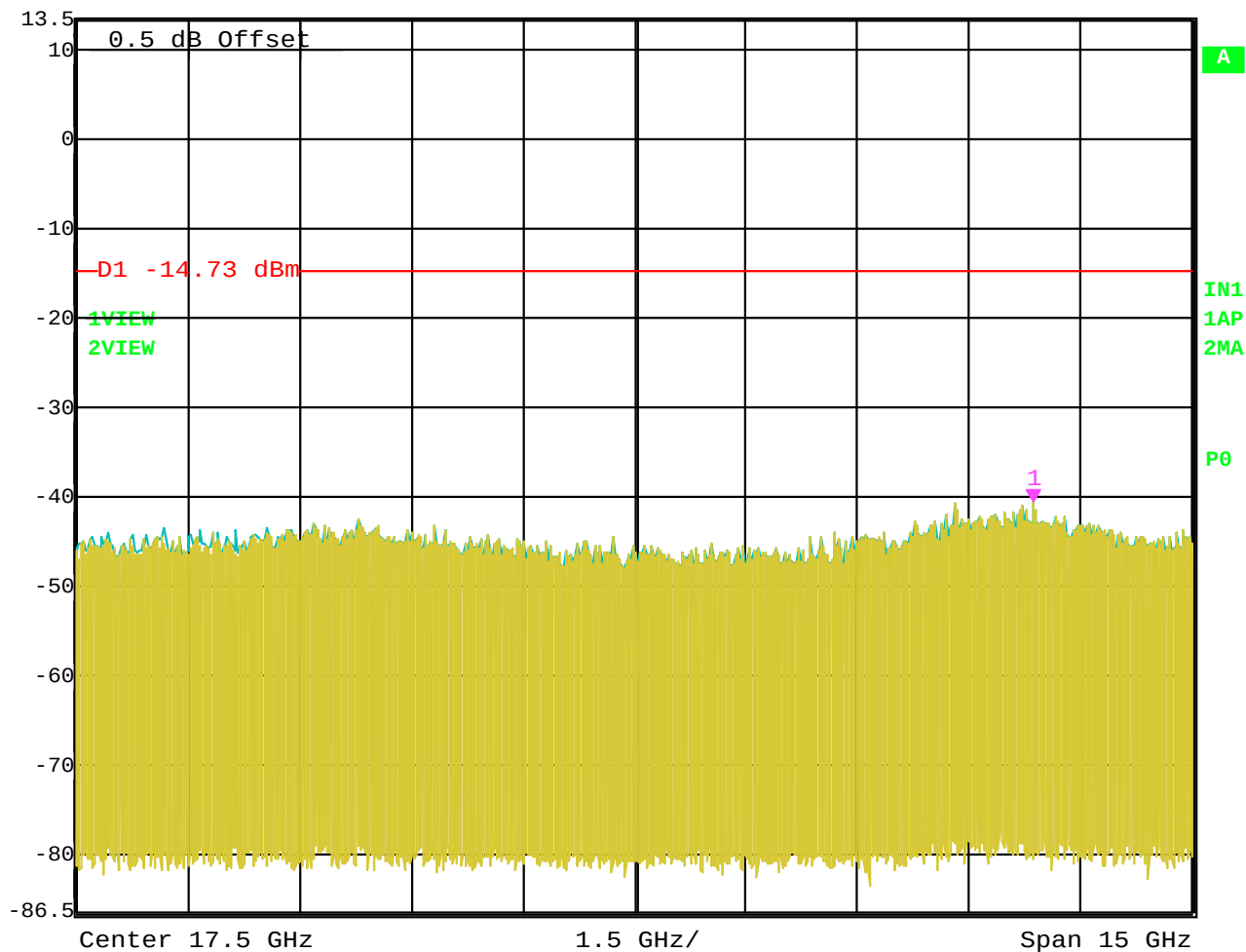


Date: 11.DEC.2003 15:02:10

RF Antenna Conducted Test – Channel 11 – 802.11 g Mode – 3 GHz to 10 GHz

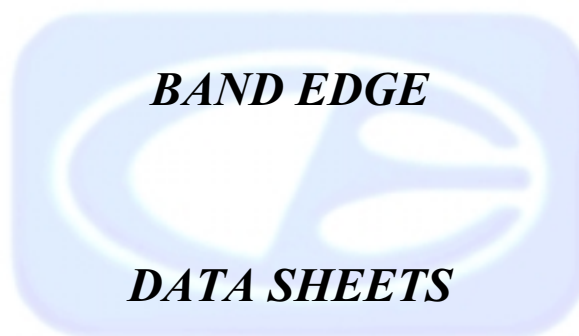


Ref Lvl 13.5 dBm  
Marker 1 [T2] -40.57 dBm  
22.86573146 GHz  
RBW 100 kHz RF Att 40 dB  
VBW 300 kHz  
SWT 3.8 s Unit dBm



Date: 11.DEC.2003 15:02:45

RF Antenna Conducted Test – Channel 11 – 802.11 g Mode – 10 GHz to 25 GHz



**FCC 15.247**

Intel Corporation  
 Intel Mini PCI Type 802.11BG Wireless LAN Adapter  
 Model: WM3B2200BG

Date: 12/10/03  
 Lab: B  
 Tested By: Kyle Fujimoto

Configuration: HP Laptop Agency Series# PP2080

|                                   |       |      |        |           |
|-----------------------------------|-------|------|--------|-----------|
| <b>Channel 1 - 802.11 b Mode</b>  | GAIN: | 31   | OUTPUT | 17.38 dBm |
| <b>Channel 6 - 802.11 b Mode</b>  | GAIN: | 31.5 | OUTPUT | 17.48 dBm |
| <b>Channel 11 - 802.11 b Mode</b> | GAIN: | 32   | OUTPUT | 17.08 dBm |

| Freq.<br>(MHz) | Level<br>(dBuV) | Pol (v/h) | Limit | Margin | Peak /<br>QP /<br>Avg | Ant.<br>Height<br>(m) | Table<br>Angle<br>(deg) | Comments                                 |
|----------------|-----------------|-----------|-------|--------|-----------------------|-----------------------|-------------------------|------------------------------------------|
| 2412           | 106.59          | V         | "--"  | "--"   | Peak                  | 1.5                   | 90                      | Fundamental of Channel 1<br>at 3 Meters  |
| 2412           | 101.85          | V         | "--"  | "--"   | Avg                   | 1.5                   | 90                      |                                          |
| 2390           | 55.02           | V         | 74    | -18.98 | Peak                  | 1.5                   | 90                      |                                          |
| 2390           | 42.44           | V         | 54    | -11.56 | Avg                   | 1.5                   | 90                      |                                          |
| 2311.84        | 58.38           | V         | 74    | -15.62 | Peak                  | 1.5                   | 90                      |                                          |
| 2311.84        | 48.27           | V         | 54    | -5.73  | Avg                   | 1.5                   | 90                      |                                          |
| 2437           | 107.79          | V         | "--"  | "--"   | Peak                  | 1.5                   | 90                      | Fundamental of Channel 6<br>at 3 Meters  |
| 2437           | 102.95          | V         | "--"  | "--"   | Avg                   | 1.5                   | 90                      |                                          |
| 2462           | 106.83          | V         | "--"  | "--"   | Peak                  | 1.5                   | 90                      | Fundamental of Channel 11<br>at 3 Meters |
| 2462           | 102.18          | V         | "--"  | "--"   | Avg                   | 1.5                   | 90                      |                                          |
| 2483.5         | 55.6            | V         | 74    | -18.4  | Peak                  | 1.5                   | 90                      |                                          |
| 2483.5         | 44.85           | V         | 54    | -9.15  | Avg                   | 1.5                   | 90                      |                                          |
| 2484.8         | 55.64           | V         | 74    | -18.36 | Peak                  | 1.5                   | 90                      |                                          |
| 2491.3         | 47.55           | V         | 54    | -6.45  | Avg                   | 1.5                   | 90                      |                                          |

**FCC 15.247**

Intel Corporation  
 Intel Mini PCI Type 802.11BG Wireless LAN Adapter  
 Model: WM3B2200BG

Date: 12/10/03  
 Lab: B  
 Tested By: Kyle Fujimoto

Configuration: HP Laptop Agency Series# PP2080

**Channel 1 - 802.11 b Mode** GAIN: 31 OUTPUT 17.38 dBm

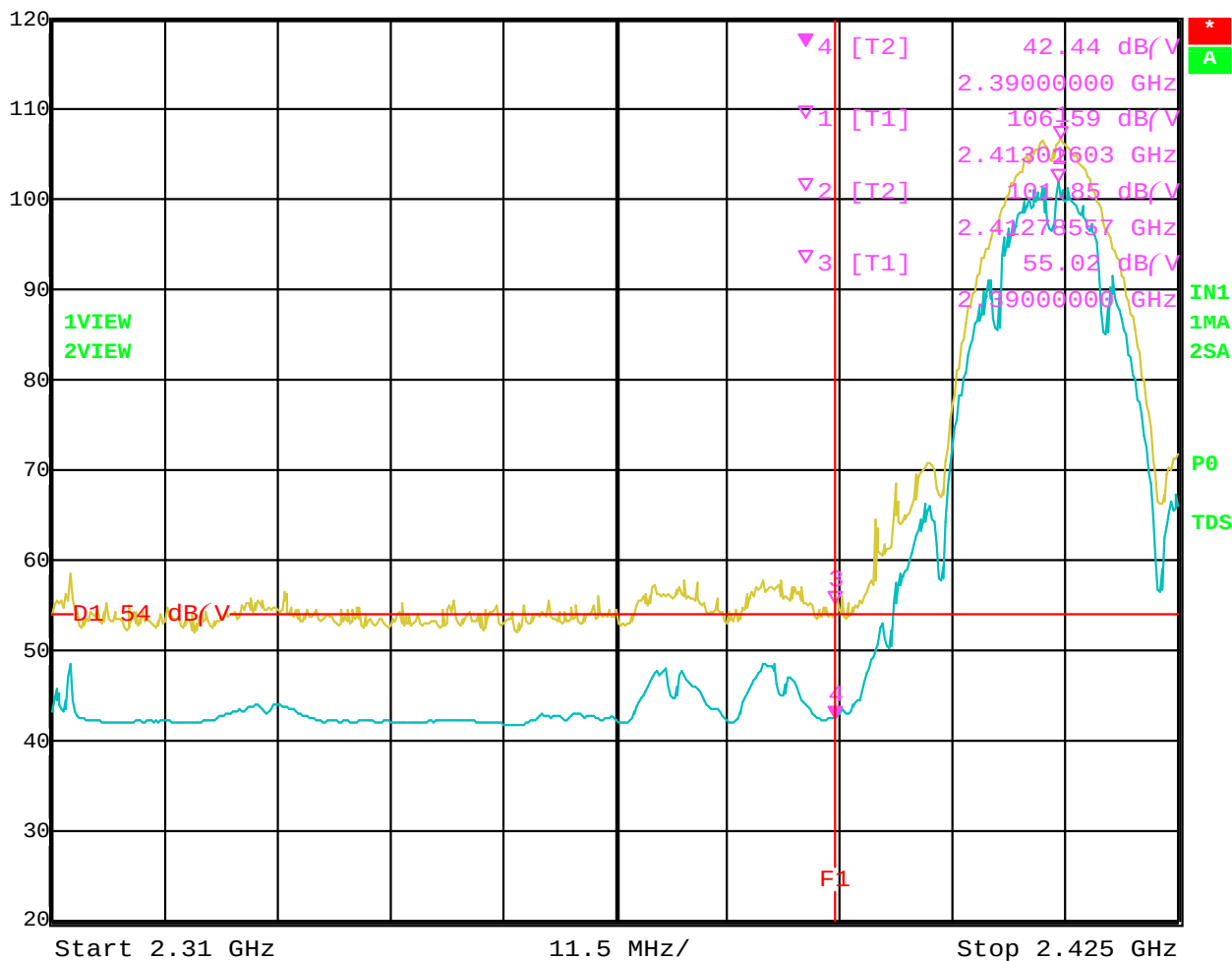
**Channel 6 - 802.11 b Mode** GAIN: 31.5 OUTPUT 17.48 dBm

**Channel 11 - 802.11 b Mode** GAIN: 32 OUTPUT 17.08 dBm

| Freq.<br>(MHz) | Level<br>(dBuV) | Pol (v/h) | Limit | Margin | Peak /<br>QP /<br>Avg | Ant.<br>Height<br>(m) | Table<br>Angle<br>(deg) | Comments                  |
|----------------|-----------------|-----------|-------|--------|-----------------------|-----------------------|-------------------------|---------------------------|
| 2412           | 104.12          | H         | "--"  | "--"   | Peak                  | 1.25                  | 0                       | Fundamental of Channel 1  |
| 2412           | 99.21           | H         | "--"  | "--"   | Avg                   | 1.25                  | 0                       | at 3 Meters               |
| 2390           | 53              | H         | 74    | -21    | Peak                  | 1.25                  | 0                       |                           |
| 2390           | 41.57           | H         | 54    | -12.43 | Avg                   | 1.25                  | 0                       |                           |
| 2383.5         | 56.88           | H         | 74    | -17.12 | Peak                  | 1.25                  | 0                       |                           |
| 2383.5         | 46.03           | H         | 54    | -7.97  | Avg                   | 1.25                  | 0                       |                           |
| 2437           | 103.55          | H         | "--"  | "--"   | Peak                  | 1.5                   | 90                      | Fundamental of Channel 6  |
| 2437           | 98.66           | H         | "--"  | "--"   | Avg                   | 1.5                   | 90                      | at 3 Meters               |
| 2462           | 103.14          | H         | "--"  | "--"   | Peak                  | 1.25                  | 0                       | Fundamental of Channel 11 |
| 2462           | 98.56           | H         | "--"  | "--"   | Avg                   | 1.25                  | 0                       | at 3 Meters               |
| 2483.5         | 53.14           | H         | 74    | -20.86 | Peak                  | 1.25                  | 0                       |                           |
| 2483.5         | 42.7            | H         | 54    | -11.3  | Avg                   | 1.25                  | 0                       |                           |
| 2491.32        | 55.3            | H         | 74    | -18.7  | Peak                  | 1.25                  | 0                       |                           |
| 2491.32        | 44.82           | H         | 54    | -9.18  | Avg                   | 1.25                  | 0                       |                           |



Ref Lvl 120 dB/V  
Marker 4 [T2] 42.44 dB/V  
2.39000000 GHz  
RBW 1 MHz  
VBW 10 Hz  
SWT 29 s  
RF Att 30 dB  
Unit dB/V

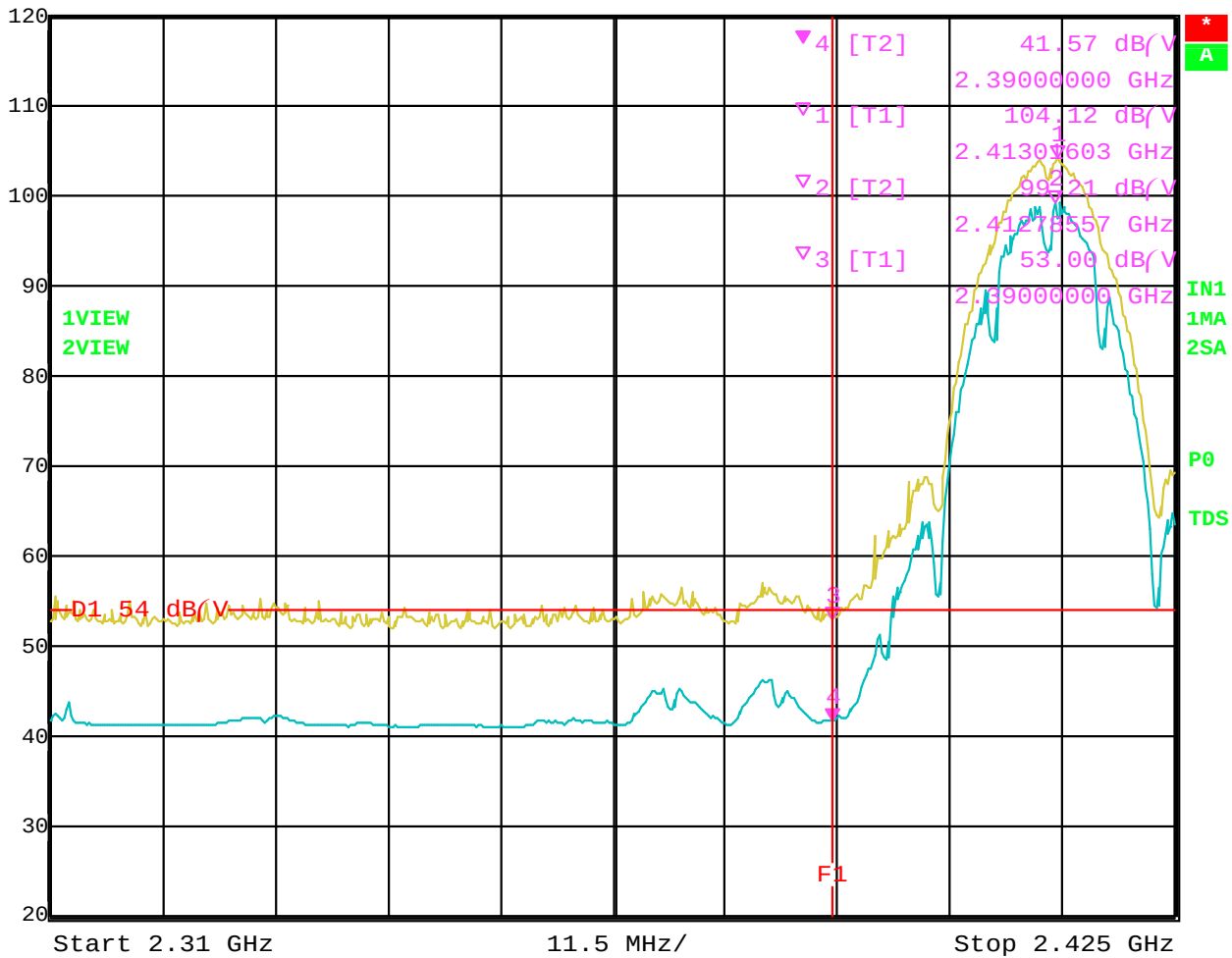


Date: 10.DEC.2003 13:31:37

Radiated Band Edge – Channel 1 – Vertical Polarization – 802.11 b Mode



Ref Lvl 120 dB/V  
Marker 4 [T2] 41.57 dB/V  
2.39000000 GHz  
RBW 1 MHz  
VBW 10 Hz  
SWT 29 s  
RF Att 30 dB  
Unit dB/V

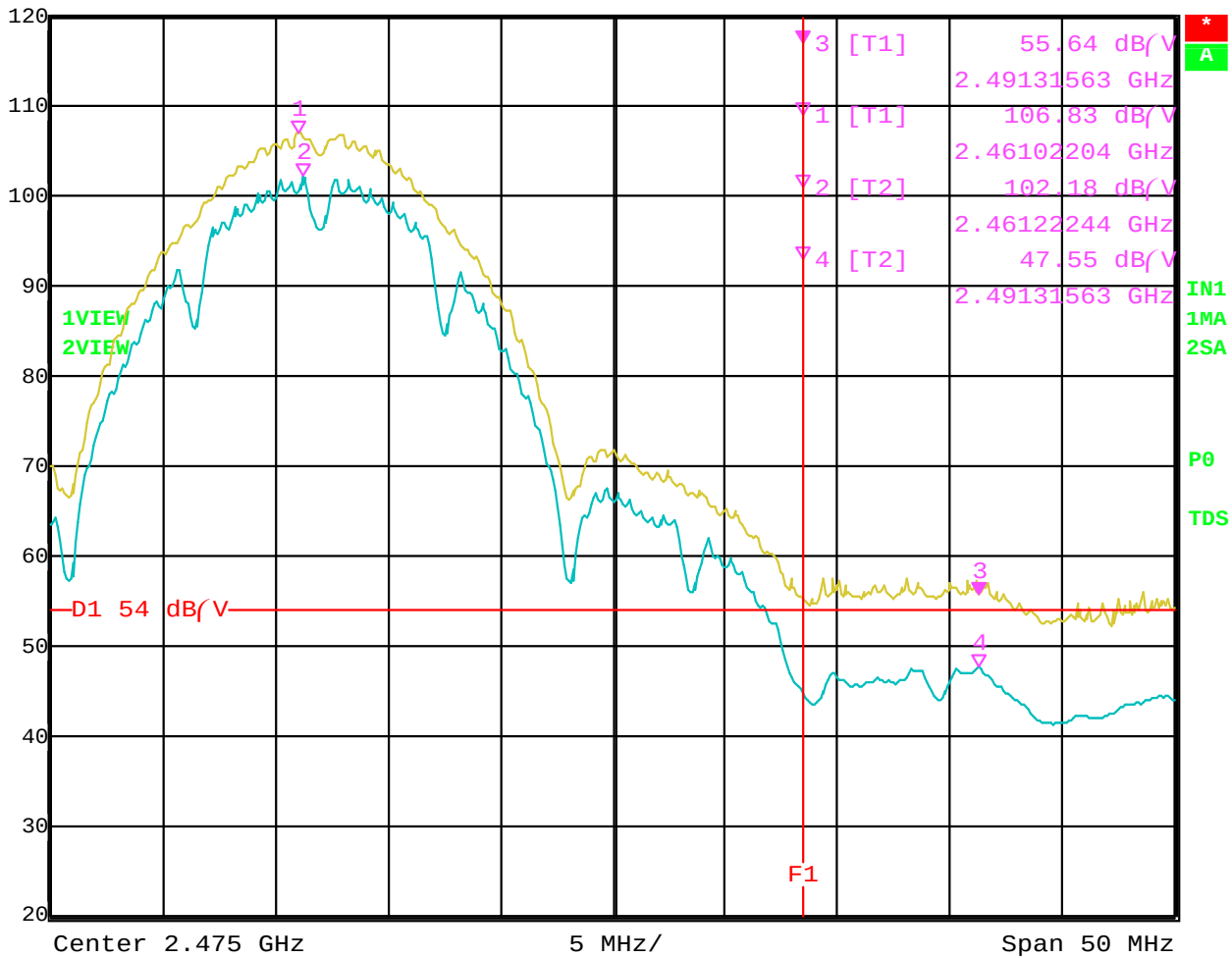


Date: 10.DEC.2003 13:59:36

Radiated Band Edge – Channel 1 – Horizontal Polarization – 802.11 b Mode



Ref Lvl 120 dB/V  
Marker 3 [T1] 55.64 dB/V  
2.49131563 GHz  
RBW 1 MHz RF Att 30 dB  
VBW 10 Hz  
SWT 12.5 s Unit dB/V

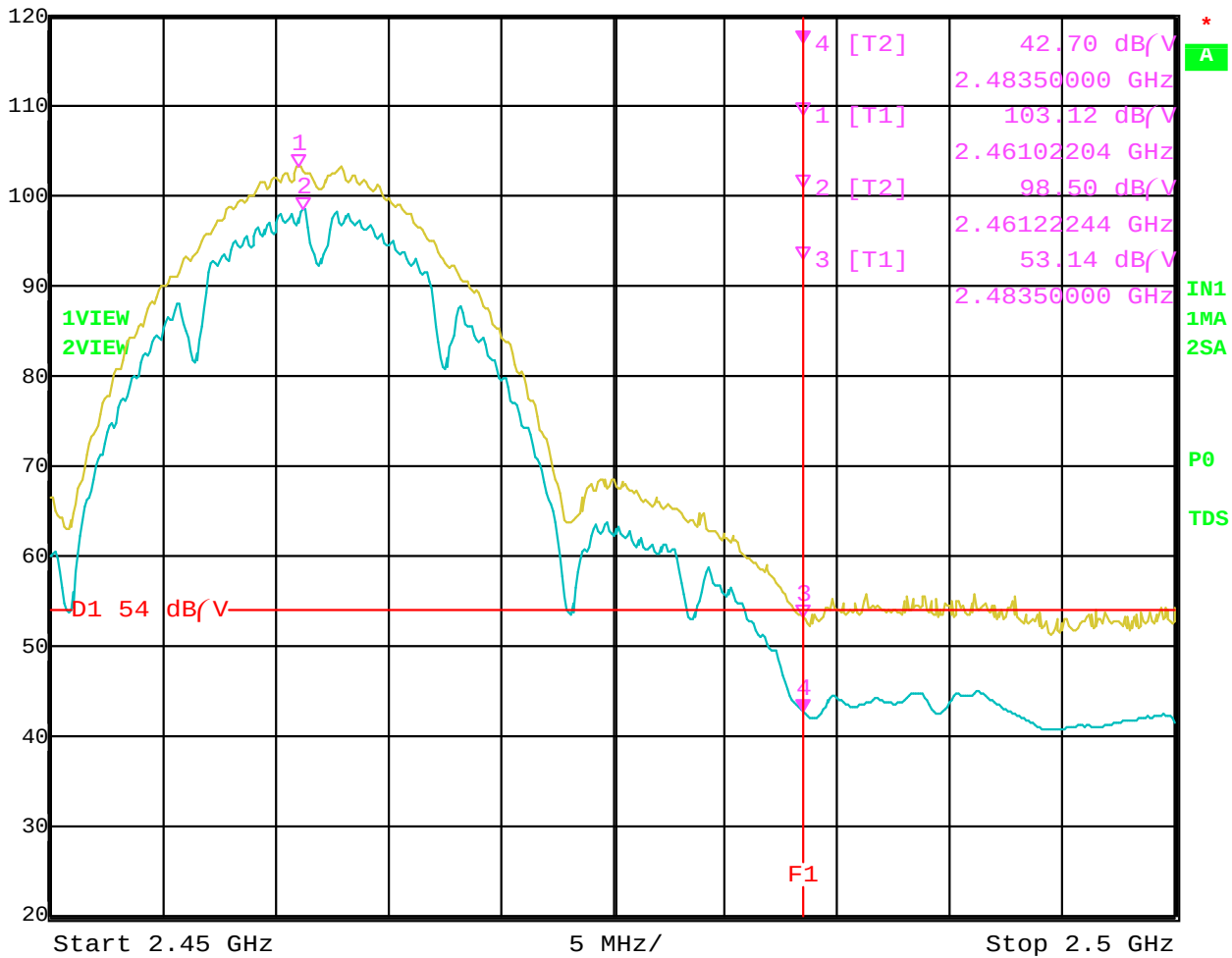


Date: 10.DEC.2003 13:38:40

Radiated Band Edge – Channel 11 – Vertical Polarization – 802.11 b Mode



Ref Lvl 120 dB/V  
Marker 4 [T2] 42.70 dB/V  
2.48350000 GHz  
RBW 1 MHz  
VBW 10 Hz  
SWT 12.5 s  
RF Att 30 dB  
Unit dB/V



Date: 10.DEC.2003 13:53:00

Radiated Band Edge – Channel 11 – Horizontal Polarization – 802.11 b Mode

**FCC 15.247**

Intel Corporation  
 Intel Mini PCI Type 802.11BG Wireless LAN Adapter  
 Model: WM3B2200BG

Date: 1/07/04  
 Lab: B  
 Tested By: Ben Chavez

Configuration: HP Laptop Agency Series# PP2080

**Channel 1 - 802.11 g Mode** GAIN: 29.5 OUTPUT 15.88 dBm

**Channel 6 - 802.11 g Mode** GAIN: 30 OUTPUT 15.95 dBm

**Channel 11 - 802.11 g Mode** GAIN: 30.5 OUTPUT 16.02 dBm

| Freq.<br>(MHz) | Level<br>(dBuV) | Pol (v/h) | Limit | Margin | Peak /<br>QP /<br>Avg | Ant.<br>Height<br>(m) | Table<br>Angle<br>(deg) | Comments                                 |
|----------------|-----------------|-----------|-------|--------|-----------------------|-----------------------|-------------------------|------------------------------------------|
| 2412           | 109.03          | V         | "--"  | "--"   | Peak                  | 2.25                  | 45                      | Fundamental of Channel 1                 |
| 2412           | 95.3            | V         | "--"  | "--"   | Avg                   | 2.25                  | 45                      | at 3 Meters                              |
|                |                 |           |       |        |                       |                       |                         |                                          |
| 2390           | 69.06           | V         | 74    | -4.94  | Peak                  | 2.25                  | 45                      |                                          |
| 2390           | 53.01           | V         | 54    | -0.99  | Avg                   | 2.25                  | 45                      |                                          |
|                |                 |           |       |        |                       |                       |                         |                                          |
| 2437           | 108.59          | V         |       |        | Peak                  | 2                     | 45                      | Fundamental of Channel 6                 |
| 2437           | 94.69           | V         |       |        | Avg                   | 2                     | 45                      | at 3 Meters                              |
|                |                 |           |       |        |                       |                       |                         |                                          |
| 2462           | 107.15          | V         | "--"  | "--"   | Peak                  | 2                     | 45                      | Fundamental of Channel 11                |
| 2462           | 94.46           | V         | "--"  | "--"   | Avg                   | 2                     | 45                      | at 3 Meters                              |
|                |                 |           |       |        |                       |                       |                         |                                          |
| 2483.5         | 60.15           | V         | 74    | -13.85 | Peak                  |                       |                         | <b>With Marker Delta Method<br/>Used</b> |
| 2483.5         | 46.44           | V         | 54    | -7.56  | Avg                   |                       |                         |                                          |
|                |                 |           |       |        |                       |                       |                         |                                          |
| 2485.6         | 68.79           | V         | 74    | -5.21  | Peak                  | 2                     | 45                      |                                          |
| 2485.6         | 53.98           | V         | 54    | -0.02  | Avg                   | 2                     | 45                      |                                          |
|                |                 |           |       |        |                       |                       |                         |                                          |
|                |                 |           |       |        |                       |                       |                         |                                          |
|                |                 |           |       |        |                       |                       |                         |                                          |
|                |                 |           |       |        |                       |                       |                         |                                          |

**FCC 15.247**

Intel Corporation  
Intel Mini PCI Type 802.11BG Wireless LAN Adapter  
Model: WM3B2200BG

Date: 1/07/04  
Lab: B  
Tested By: Ben Chavez

Configuration: HP Laptop Agency Series# PP2080

**Channel 1 - 802.11 g Mode** GAIN: 29.5 OUTPUT 15.88 dBm

**Channel 6 - 802.11 g Mode** GAIN: 30 OUTPUT 15.95 dBm

**Channel 11 - 802.11 g Mode** GAIN: 30.5 OUTPUT 16.02 dBm

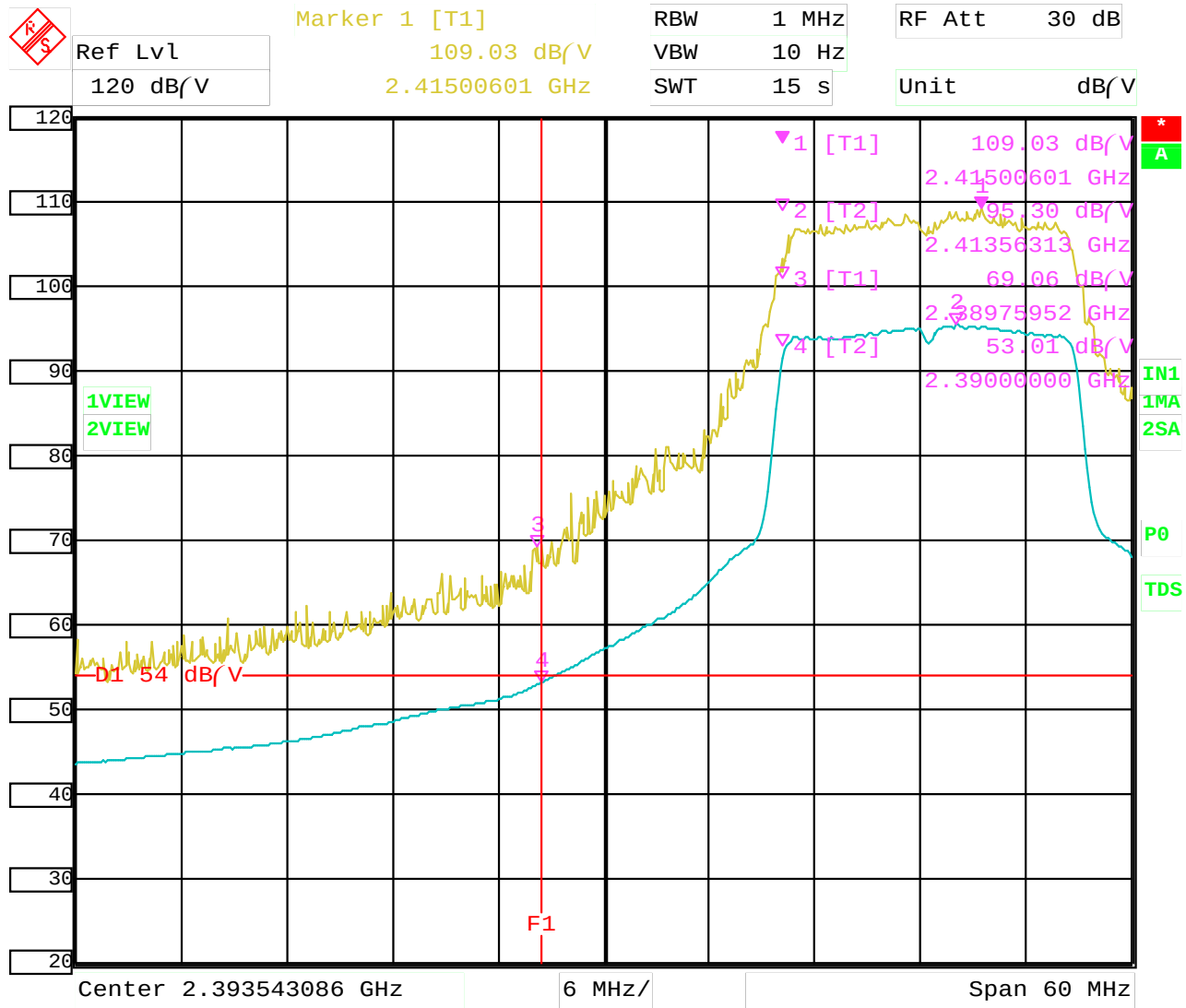
| Freq.<br>(MHz) | Level<br>(dBuV) | Pol (v/h) | Limit | Margin | Peak /<br>QP /<br>Avg | Ant.<br>Height<br>(m) | Table<br>Angle<br>(deg) | Comments                                 |
|----------------|-----------------|-----------|-------|--------|-----------------------|-----------------------|-------------------------|------------------------------------------|
| 2412           | 107.05          | H         | "--"  | "--"   | Peak                  | 1.75                  | 180                     | Fundamental of Channel 1                 |
| 2412           | 93.46           | H         | "--"  | "--"   | Avg                   | 1.75                  | 180                     | at 3 Meters                              |
|                |                 |           |       |        |                       |                       |                         |                                          |
| 2390           | 69.63           | H         | 74    | -4.37  | Peak                  | 1.75                  | 180                     |                                          |
| 2390           | 52.34           | H         | 54    | -1.66  | Avg                   | 1.75                  | 180                     |                                          |
|                |                 |           |       |        |                       |                       |                         |                                          |
| 2437           | 107.06          | H         |       |        | Peak                  | 1.75                  | 180                     | Fundamental of Channel 6                 |
| 2437           | 93.6            | H         |       |        | Avg                   | 1.75                  | 180                     | at 3 Meters                              |
|                |                 |           |       |        |                       |                       |                         |                                          |
| 2462           | 106.35          | H         | "--"  | "--"   | Peak                  | 2.25                  | 45                      | Fundamental of Channel 11                |
| 2462           | 92.61           | H         | "--"  | "--"   | Avg                   | 2.25                  | 45                      | at 3 Meters                              |
|                |                 |           |       |        |                       |                       |                         |                                          |
| 2483.5         | 59.35           | H         | 74    | -14.65 | Peak                  |                       |                         | <b>With Marker Delta Method<br/>Used</b> |
| 2483.5         | 44.59           | H         | 54    | -9.41  | Avg                   |                       |                         |                                          |
|                |                 |           |       |        |                       |                       |                         |                                          |
| 2485.6         | 68.75           | H         | 74    | -5.25  | Peak                  | 2.25                  | 45                      |                                          |
| 2485.6         | 52.61           | H         | 54    | -1.39  | Avg                   | 2.25                  | 45                      |                                          |
|                |                 |           |       |        |                       |                       |                         |                                          |
|                |                 |           |       |        |                       |                       |                         |                                          |
|                |                 |           |       |        |                       |                       |                         |                                          |
|                |                 |           |       |        |                       |                       |                         |                                          |

Intel Corporation  
Intel Mini PCI Type 802.11BG Wireless LAN Adapter  
Model: WM3B2200BG

Configuration: HP Laptop Agency Series# PP2080

[illegible]

**Note: The readings below the \*\*\* Only Used From 2483.5 to 2485.5 MHz \*\*\* section represents step #4 of the marker-delta method per section 8.6 of this test report**



Date: 7. JAN. 2004 22:07:30

The figure shows a spectrum analyzer display with the following parameters and data:

- Top Panel:**
  - Marker 1 [T1]: 107.05 dB/V, 2.41692986 GHz
  - RBW: 1 MHz, VBW: 10 Hz, SWT: 15 s
  - RF Att: 30 dB
  - Unit: dB/V
- Left Panel:**
  - Ref Lvl: 120 dB/V
  - 1VIEW, 2VIEW (toggle buttons)
- Right Panel:**
  - IN1, 1MA, 2SA (toggle buttons)
  - P0, TDS (toggle buttons)
- Main Display:**
  - Center: 2.393543086 GHz, Span: 60 MHz, Resolution: 6 MHz
  - Yellow Trace (T1): Shows a signal with a peak at 107.05 dB/V at 2.41692986 GHz.
  - Cyan Trace (T2): Shows a signal with a peak at 93.46 dB/V at 2.41392985 GHz.
  - Red Line (F1): Vertical line at 2.41692986 GHz.
  - Red Line (D1): Horizontal line at 54 dB/V.
- Bottom Panel:**
  - Date: 7. JAN. 2004 22:03:02