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# PP2190

MODEL: WM3B2200BG

Prepared for

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DATE: JANUARY 23, 2004

	REPORT BODY	APPENDICES					TOTAL
		A	***B***	***C***	***D***	***E***	
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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# PP2190 Model: WM3B2200BG S/N: N/A
Product Description:	The product is a wireless miniPCI card used for the Hewlett Packard Notebook Computer Series PP2190.
Modifications:	The EUT was not modified during the testing.
Manufacturer:	Hewlett Packard Company 20555 SH 249 Houston, Texas 77070
Test Dates:	December 16, 21, and 23, 2003; January 5 and 15, 2004.
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 **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
2	Spurious Radiated RF Emissions, 30 MHz – 1000 MHz	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 15.209
3	Spurious Radiated RF Emissions, 10 kHz – 30 MHz and 1000 MHz – 25000 MHz	Complies with the **Class 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# PP2190). 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 16, 2003.

2.5 Disposition of the Test Sample

The sample has not been returned to Hewlett Packard Company as of January 23, 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, Part 15 Subpart C	FCC Rules - Radio frequency devices (including digital devices) – Intentional Radiators
ANSI C63.4 2001	Methods of measurement of radio-noise emissions from low-voltage electrical and electronic equipment in the range of 9 kHz to 40 GHz
FCC Title 47, Part 15 Subpart B	FCC Rules - Radio frequency devices (including digital devices) – 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# PP2190) Model: WM3B2200BG was directly connected to the laptop's miniPCI port underneath. The laptop was also connected to the AC Adapter, printer, and modem via its power, parallel, and serial ports, respectively. 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 1.5 meter braid and foil shielded cable connecting the laptop to the modem. It has a D-9 pin metallic connector at the laptop end and a D-25 pin metallic connector at the modem end. The cable was bundled to a length of 1 meter. The shield of the cable was grounded to the chassis via the connectors.

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	**CNTWM3B2200BGA**
EUT Sub-Assemblies				
Auxiliary PIFA Antenna	WISTRON NeWeb CORPORATION	P/N: WN-S-1.13W-470MM(2-4-1)	N/A	**N/A**
Main PIFA Antenna	WISTRON NeWeb CORPORATION	P/N: WN-S-1.13B-500MM (2-4-1)	N/A	**N/A**
Host Equipment List				
AC ADAPTER FOR LAPTOP	COMPAQ COMPUTER CORP.	P/N: 159224-001	N/A	**N/A**
LAPTOP	COMPAQ COMPUTER CORPORATION	PC8165ZAA000	J3614PV045	**DoC**
MODEM	HAYES	231AA	A07031003840	**BFJ9D9231AA**
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 6, 2004	Jan. 6, 2005
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)

EQUIPMENT TYPE	MANU-FACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. DUE DATE
RF Peak Power Meter / Analyzer	Boonton Electronics Corp.	4500A	687	November 4, 2003	Nov. 4, 2004
Peak Power Sensor	Boonton Electronics Corp.	57318	2411	April 2, 2003	April 2, 2004
Horn Antenna	Antenna Research	DRG-118/A	1053	January 13, 2002	Jan. 13, 2004
Horn Antenna	Com Power	AH-118	71005	April 8, 2002	April 8, 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 2.8 dBi peak for the main antenna and 2.7 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# PP2190) 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# PP2190) 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

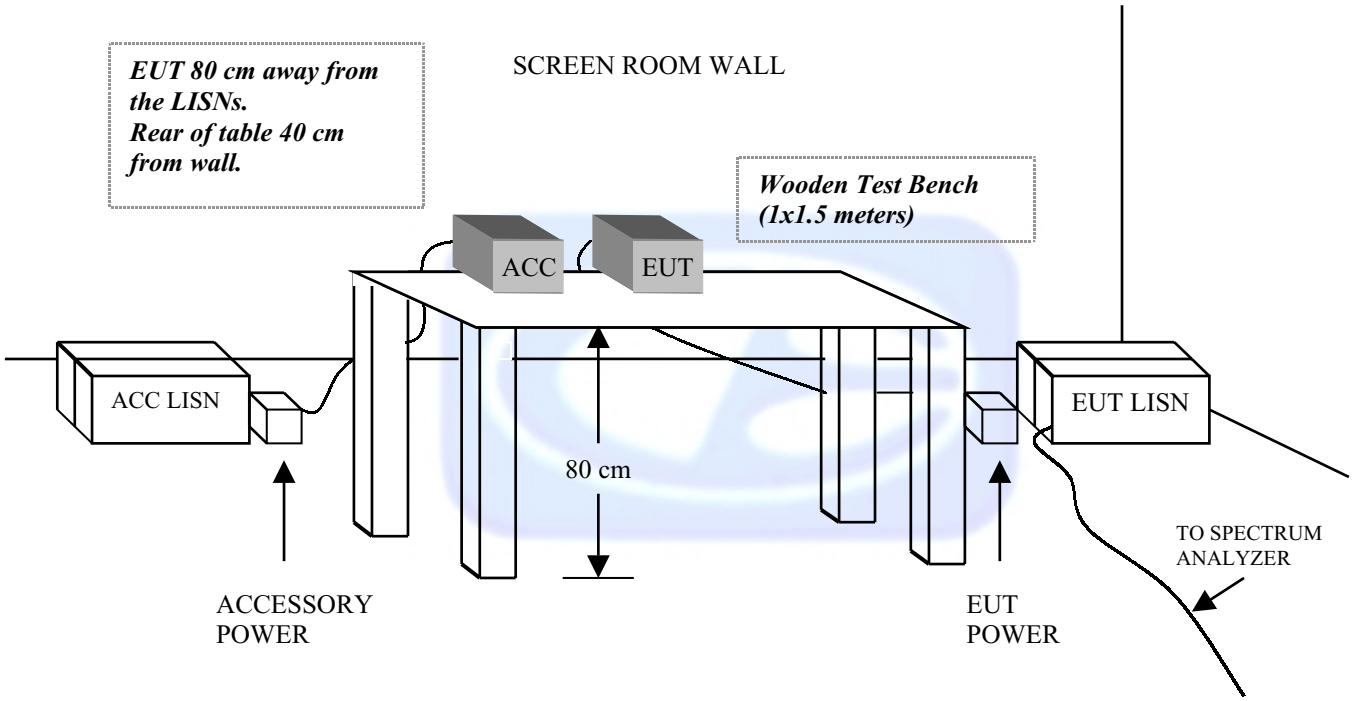
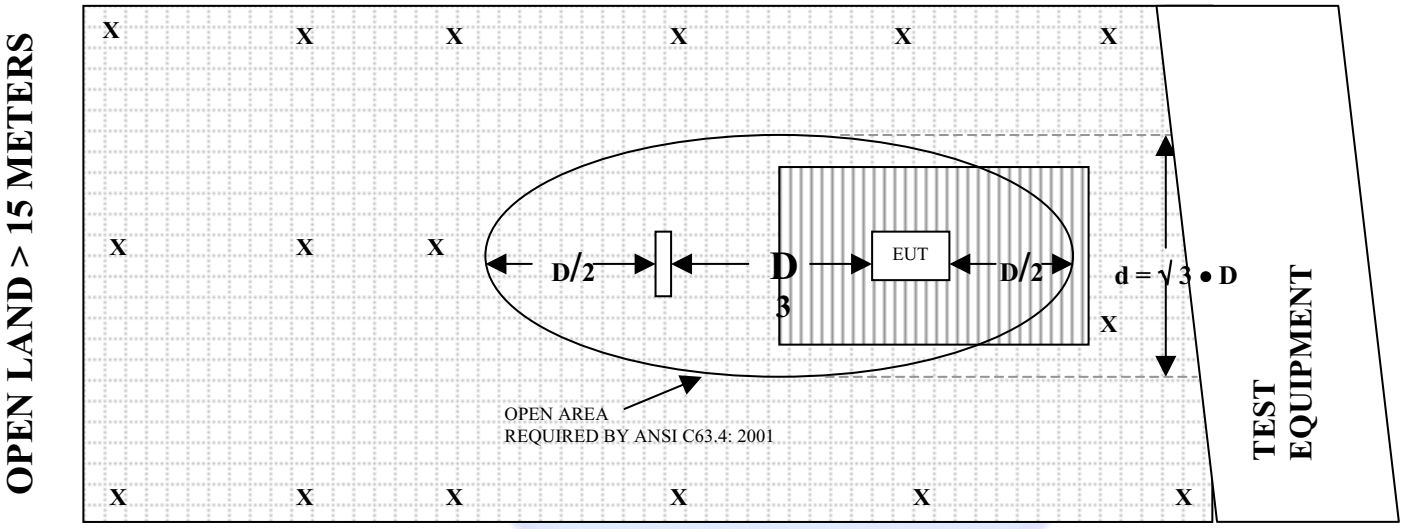


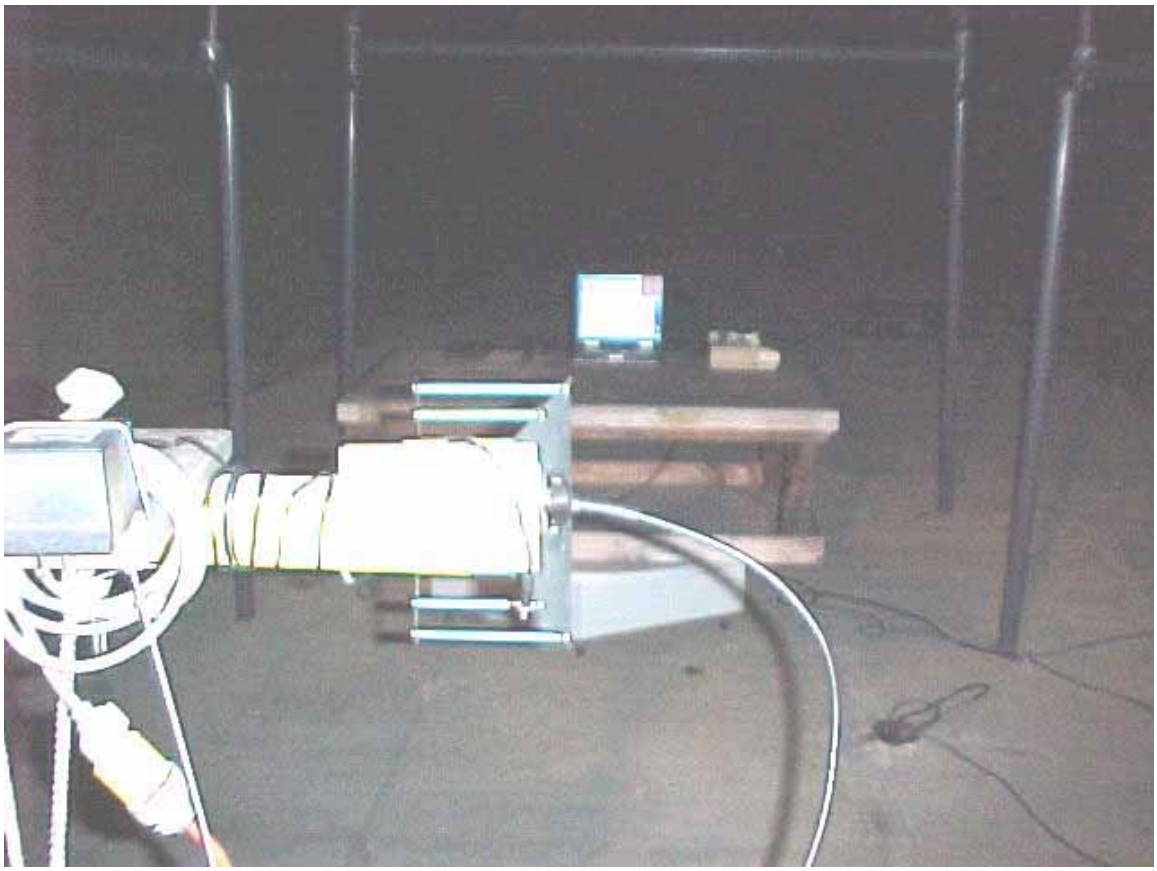
FIGURE 2: PLOT MAP AND LAYOUT OF 3 METER RADIATED SITE

OPEN LAND > 15 METERS



OPEN LAND > 15 METERS

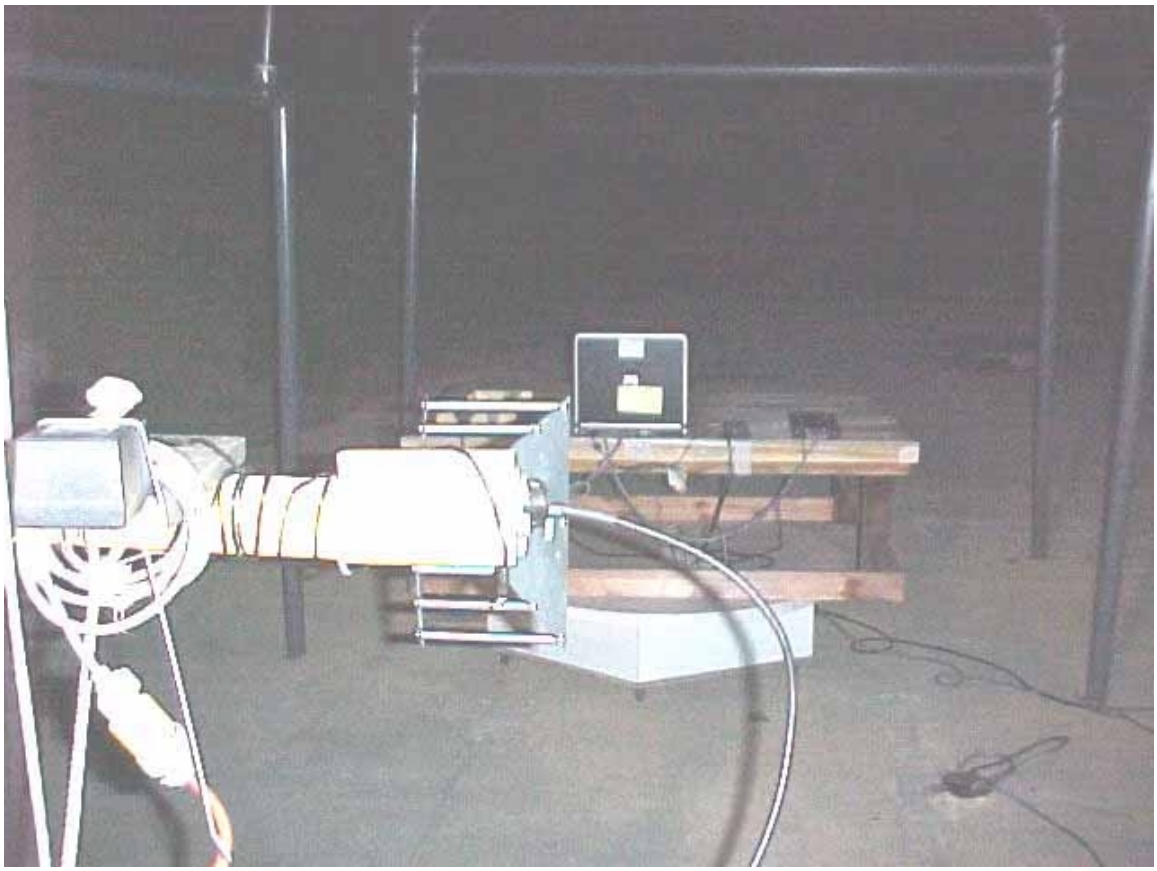
X = GROUND RODS	= GROUND SCREEN
D = TEST DISTANCE (meters)	= WOOD COVER



FRONT VIEW

HEWLETT PACKARD COMPANY
INTEL MINI PCI TYPE 802.11BG WIRELESS LAN ADAPTER
FOR USE IN THE HP AGENCY SERIES# PP2190
MODEL: WM3B2200BG
FCC SUBPART C - RADIATED EMISSIONS – 12-29-03 and 01-15-04

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



REAR VIEW

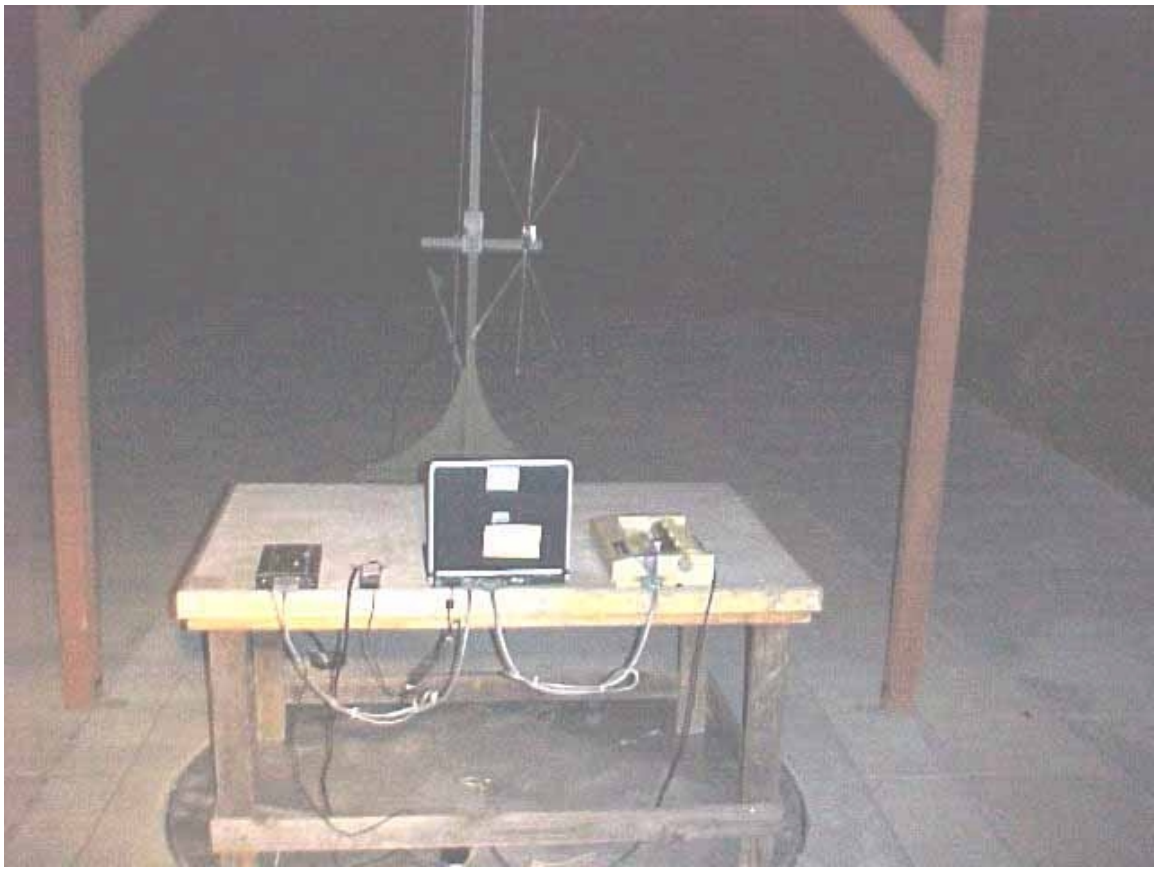
HEWLETT PACKARD COMPANY
INTEL MINI PCI TYPE 802.11BG WIRELESS LAN ADAPTER
FOR USE IN THE HP AGENCY SERIES# PP2190
MODEL: WM3B2200BG
FCC SUBPART C - RADIATED EMISSIONS – 12-29-03 and 01-15-04

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

FRONT VIEW

HEWLETT PACKARD COMPANY
INTEL MINI PCI TYPE 802.11BG WIRELESS LAN ADAPTER
FOR USE IN THE HP AGENCY SERIES# PP2190
MODEL: WM3B2200BG
FCC CLASS B - RADIATED EMISSIONS – 01-05-04

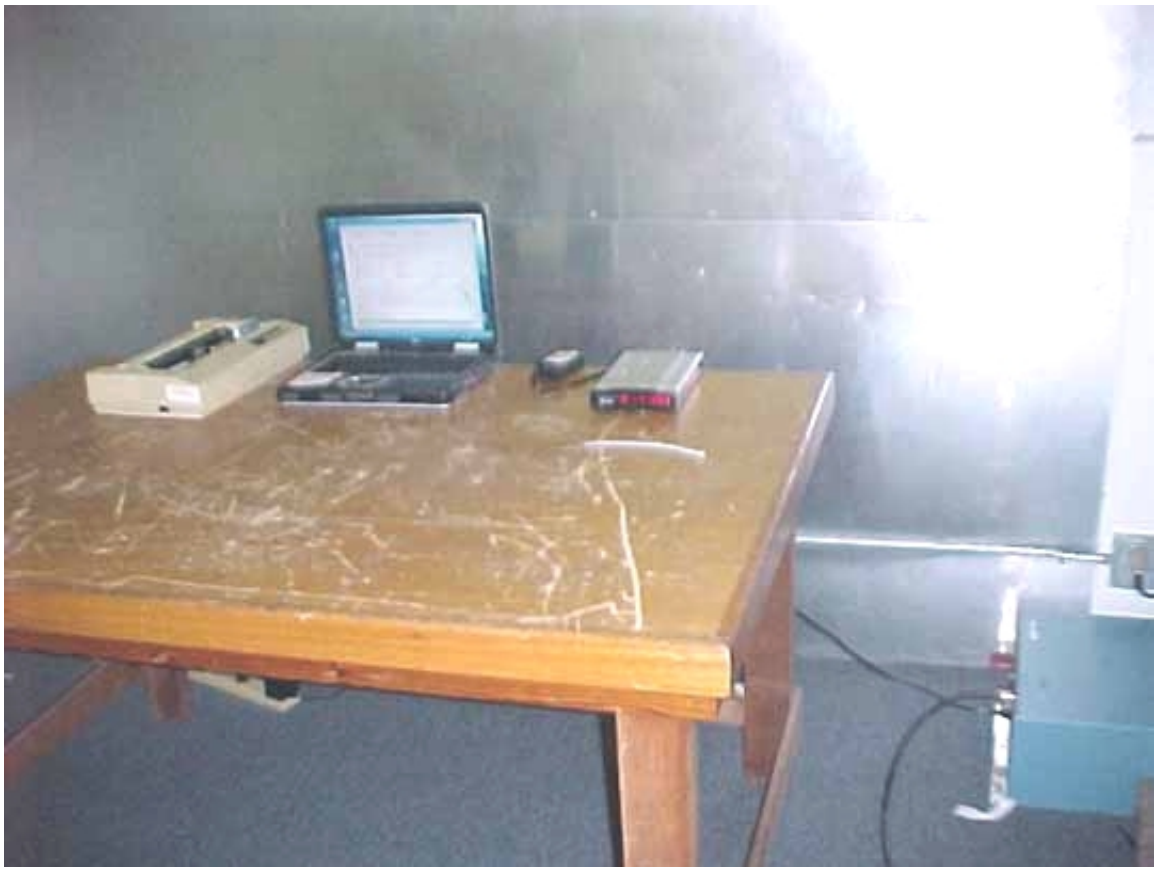
PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



REAR VIEW

HEWLETT PACKARD COMPANY
INTEL MINI PCI TYPE 802.11BG WIRELESS LAN ADAPTER
FOR USE IN THE HP AGENCY SERIES# PP2190
MODEL: WM3B2200BG
FCC CLASS B - RADIATED EMISSIONS – 01-05-04

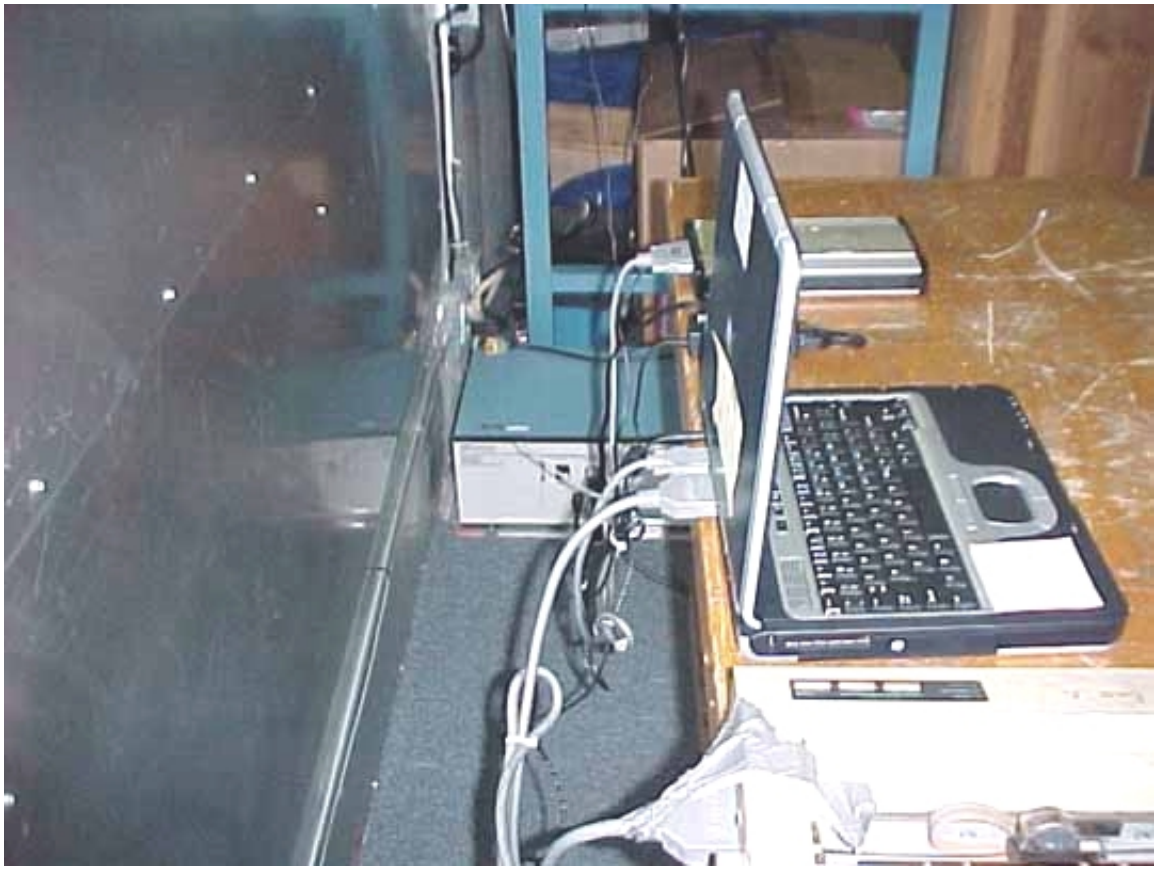
PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



FRONT VIEW

HEWLETT PACKARD COMPANY
INTEL MINI PCI TYPE 802.11BG WIRELESS LAN ADAPTER
FOR USE IN THE HP AGENCY SERIES# PP2190
MODEL: WM3B2200BG
FCC CLASS B - CONDUCTED EMISSIONS – 01-05-04

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



REAR VIEW

HEWLETT PACKARD COMPANY
INTEL MINI PCI TYPE 802.11BG WIRELESS LAN ADAPTER
FOR USE IN THE HP AGENCY SERIES# PP2190
MODEL: WM3B2200BG
FCC CLASS B - CONDUCTED EMISSIONS – 01-05-04

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

COM-POWER AB-100

BICONICAL ANTENNA

S/N: 1548

CALIBRATION DATE: OCTOBER 8, 2003

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
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 (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (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 6, 2004

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	37.8	300	37.6
40	37.5	350	37.5
50	37.7	400	37.5
60	37.5	450	37.0
70	37.5	500	37.1
80	37.5	550	37.3
90	37.5	600	37.1
100	37.5	650	37.4
125	37.8	700	37.1
150	37.5	750	37.1
175	37.5	800	36.8
200	37.6	850	36.2
225	37.6	900	35.3
250	37.5	950	35.9
275	37.6	1000	35.3

COM-POWER PA-122

MICROWAVE PREAMPLIFIER

S/N: 25195

CALIBRATION DATE: AUGUST 19, 2003

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
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

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
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 AH-118

HORN ANTENNA

S/N: 71005

CALIBRATION DATE: APRIL 8, 2002

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	25.4	9.5	38.8
1.5	28.2	10.0	39.8
2.0	31.0	10.5	41.2
2.5	31.6	11.0	39.7
3.0	32.2	11.5	44.7
3.5	32.6	12.0	45.5
4.0	33.6	12.5	42.6
4.5	35.2	13.0	40.1
5.0	35.5	13.5	40.0
5.5	36.7	14.0	41.1
6.0	35.8	14.5	43.3
6.5	36.5	15.0	47.0
7.0	38.7	15.5	45.7
7.5	40.9	16.0	44.2
8.0	40.3	16.5	47.0
8.5	40.4	17.0	45.4
9.0	40.0	17.5	48.0
		18.0	44.0

COM-POWER AH826

HORN ANTENNA

S/N: 0071957

CALIBRATION DATE: NOVEMBER 05, 2003

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
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

FREQUENCY (MHz)	MAGNETIC (dB/m)	ELECTRIC (dB/m)
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: 12/16/03
Lab: B
Tested By: Kyle Fujimoto

Configuration: Hewlett Packard Laptop Agency Series Number PP2190

Channel 1 - 802.11 b Mode GAIN: 30 OUTPUT 17.14 dBm
Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4824	49.17	V	74	-24.83	Peak	2.5	270	
4824	43.63	V	54	-10.37	Avg	2.5	270	
7236	45.97	V	74	-28.03	Peak	2	270	
7236	32.26	V	54	-21.74	Avg	2	270	
9648	63.92	V	--	--	Peak	1.75	180	Not in Restricted Band
9648	61.22	V	--	--	Avg	1.75	180	Not in Restricted Band
12060	57.11	V	74	-16.89	Peak	2.5	90	
12060	47.12	V	54	-6.88	Avg	2.5	90	
14472	56.53	V	74	-17.47	Peak	2	90	
14472	45.93	V	54	-8.07	Avg	2	90	
16884		V	--	--	Peak			No Emission
16884		V	--	--	Avg			Detected
19296	46.37	V	74	-27.63	Peak	2	90	
19296	32.7	V	54	-21.3	Avg	2	90	
21708		V	74	-74	Peak			No Emission
21708		V	54	-54	Avg			Detected
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: 12/16/03
Lab: B
Tested By: Kyle Fujimoto

Configuration: Hewlett Packard Laptop Agency Series Number PP2190

Channel 1 - 802.11 b Mode GAIN: 30 OUTPUT 17.14 dBm
Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4824	47.41	H	74	-26.59	Peak	2	315	
4824	41.93	H	54	-12.07	Avg	2	315	
7236	44.48	H	74	-29.52	Peak	2	225	
7236	30.74	H	54	-23.26	Avg	2	225	
9648	59.93	H	--	--	Peak	2.25	315	Not in Restricted Band
9648	56.38	H	--	--	Avg	2.25	315	Not in Restricted Band
12060	57.31	H	74	-16.69	Peak	2	0	
12060	46.67	H	54	-7.33	Avg	2	0	
14472	54.26	H	74	-19.74	Peak	2	135	
14472	41.59	H	54	-12.41	Avg	2	135	
16884		H	--	--	Peak			No Emission
16884		H	--	--	Avg			Detected
19296	46.31	H	74	-27.69	Peak	2	135	
19296	33.82	H	54	-20.18	Avg	2	135	
21708		H	74	-74	Peak			No Emission
21708		H	54	-54	Avg			Detected
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: 12/16/03
Lab: B
Tested By: Kyle Fujimoto

Configuration: Hewlett Packard Laptop Agency Series Number PP2190

Channel 6 - 802.11 b Mode GAIN: 30.5 OUTPUT 17.53 dBm
Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4874	48.79	V	74	-25.21	Peak	2	270	
4874	44.03	V	54	-9.97	Avg	2	270	
7311	46.31	V	74	-27.69	Peak	2	270	
7311	32.56	V	54	-21.44	Avg	2	270	
9748	68.07	V	--	--	Peak	2.25	180	Not in Restricted Band
9748	65.53	V	--	--	Avg	2.25	180	Not in Restricted Band
12185	57.79	V	74	-16.21	Peak	2.25	270	
12185	49.47	V	54	-4.53	Avg	2.25	270	
14622	55.51	V	--	--	Peak	2.5	45	Not in Restricted Band
14622	43.76	V	--	--	Avg	2.5	45	Not in Restricted Band
17059		V	--	--	Peak			No Emission
17059		V	--	--	Avg			Detected
19496	44.79	V	74	-29.21	Peak	2	90	
19496	33.63	V	54	-20.37	Avg	2	90	
21933		V	--	--	Peak			No Emission
21933		V	--	--	Avg			Detected
22001		V	74	-74	Peak			No Emission
22001		V	54	-54	Avg			Detected
24370		V	--	--	Peak			No Emission
24370		V	--	--	Avg			Detected

FCC 15.247
Intel Corporation
Intel Mini PCI Type 802.11BG Wireless LAN Adapter
Model: WM3B2200BG

Date: 12/16/03
Lab: B
Tested By: Kyle Fujimoto

Configuration: Hewlett Packard Laptop Agency Series Number PP2190

Channel 6 - 802.11 b Mode GAIN: 30.5 OUTPUT 17.53 dBm
Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4874	46.58	H	74	-27.42	Peak	2.25	315	
4874	39.56	H	54	-14.44	Avg	2.25	315	
7311	44.92	H	74	-29.08	Peak	1.75	225	
7311	31.87	H	54	-22.13	Avg	1.75	225	
9748	67.08	H	--	--	Peak	1.75	180	Not in Restricted Band
9748	64.46	H	--	--	Avg	1.75	180	Not in Restricted Band
12185	56.14	H	74	-17.86	Peak	2	90	
12185	45.31	H	54	-8.69	Avg	2	90	
14622	54.1	H	--	--	Peak	1.75	90	Not in Restricted Band
14622	40.56	H	--	--	Avg	1.75	90	Not in Restricted Band
17059		H	--	--	Peak			No Emission
17059		H	--	--	Avg			Detected
19496	44.61	H	74	-29.39	Peak	2	90	
19496	31.36	H	54	-22.64	Avg	2	90	
21933		H	--	--	Peak			No Emission
21933		H	--	--	Avg			Detected
22001		H	74	-74	Peak			No Emission
22001		H	54	-54	Avg			Detected
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: 12/16/03
Lab: B
Tested By: Kyle Fujimoto

Configuration: Hewlett Packard Laptop Agency Series Number PP2190

Channel 11 - 802.11 b Mode GAIN: 30.5 OUTPUT 17.59 dBm
Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4924	45.84	V	74	-28.16	Peak	2	315	
4924	39.29	V	54	-14.71	Avg	2	315	
7386	44.13	V	74	-29.87	Peak	2	270	
7386	30.28	V	54	-23.72	Avg	2	270	
9848	66.86	V	--	--	Peak	2.25	225	Not in Restricted Band
9848	64.22	V	--	--	Avg	2.25	225	Not in Restricted Band
12310	53.9	V	74	-20.1	Peak	2.25	90	
12310	43.96	V	54	-10.04	Avg	2.25	90	
14772	54.26	V	--	--	Peak	2	270	Not in Restricted Band
14772	40.42	V	--	--	Avg	2	270	Not in Restricted Band
17234		V	--	--	Peak			No Emission
17234		V	--	--	Avg			Detected
19696	45.58	V	74	-28.42	Peak	2.25	135	
19696	32.41	V	54	-21.59	Avg	2.25	135	
22158		V	74	-74	Peak			No Emission
22158		V	54	-54	Avg			Detected
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: 12/16/03
Lab: B
Tested By: Kyle Fujimoto

Configuration: Hewlett Packard Laptop Agency Series Number PP2190

Channel 11 - 802.11 b Mode GAIN: 30.5 OUTPUT 17.59 dBm
Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4924	44.59	H	74	-29.41	Peak	2.25	270	
4924	35.52	H	54	-18.48	Avg	2.25	270	
7386	44.39	H	74	-29.61	Peak	2	90	
7386	30.71	H	54	-23.29	Avg	2	90	
9848	64.48	H	--	--	Peak	1.75	180	Not in Restricted Band
9848	61.89	H	--	--	Avg	1.75	180	Not in Restricted Band
12310	54.03	H	74	-19.97	Peak	2	90	
12310	43.08	H	54	-10.92	Avg	2	90	
14772	53.66	H	--	--	Peak	2	180	Not in Restricted Band
14772	41.35	H	--	--	Avg	2	180	Not in Restricted Band
17234		H	--	--	Peak			No Emission
17234		H	--	--	Avg			Detected
19696	43.14	H	74	-30.86	Peak	2	90	
19696	29.77	H	54	-24.23	Avg	2	90	
22158		H	74	-74	Peak			No Emission
22158		H	54	-54	Avg			Detected
24620		H	--	--	Peak			No Emission
24620		H	--	--	Avg			Detected

FCC 15.247
Intel Corporation
Intel Mini PCI Type 802.11BG Wireless LAN Adapter
Model: WM3B2200BG

Date: 12/16/03
Lab: B
Tested By: Kyle Fujimoto

Configuration: Hewlett Packard Laptop Agency Series Number PP2190

Channel 1 - 802.11 b Mode GAIN: 30 OUTPUT 17.14 dBm
Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
3216	40.47	V	74	-33.53	Peak	2	315	Fundamental of LO for
3216	31.07	V	54	-22.93	Avg	2	315	Channel 1
6432	45.86	V	--	--	Peak	2.25	270	2nd Harmonic of LO for
6432	40.59	V	--	--	Avg	2.25	270	Channel 1
9648	63.92	V	--	--	Peak	1.5	180	3rd Harmonic of LO =
9648	61.22	V	--	--	Avg	1.5	180	4th Harmonic of Tx for Channel 1
12864	50.24	V	--	--	Peak	2.25	315	4th Harmonic of LO for
12864	37.68	V	--	--	Avg	2.25	315	Channel 1
3216	39.33	H	74	-34.67	Peak	2.25	180	Fundamental of LO for
3216	27.54	H	54	-26.46	Avg	2.25	180	Channel 1
6432	44.84	H	--	--	Peak	2.5	315	2nd Harmonic of LO for
6432	37.26	H	--	--	Avg	2.5	315	Channel 1
9648	59.93	H	--	--	Peak	2.25	315	3rd Harmonic of LO =
9648	56.38	H	--	--	Avg	2.25	315	4th Harmonic of Tx for Channel 1
12864	50.12	H	--	--	Peak	2	135	4th Harmonic of LO for
12864	36.73	H	--	--	Avg	2	135	Channel 1
								Only the Fundamental of the LO
								is in the Restricted Band

FCC 15.247

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

Date: 12/16/03
Lab: B
Tested By: Kyle Fujimoto

Configuration: Hewlett Packard Laptop Agency Series Number PP2190

Channel 6 - 802.11 b Mode GAIN: 30.5 OUTPUT 17.53 dBm
Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
3249.33	40.32	V	74	-33.68	Peak	2	315	Fundamental of LO for
3249.33	30.84	V	54	-23.16	Avg	2	315	Channel 6
6498.67	48.16	V	--	--	Peak	2.25	90	2nd Harmonic of LO for
6498.67	43.32	V	--	--	Avg	2.25	90	Channel 6
9748	68.07	V	--	--	Peak	2.25	180	3rd Harmonic of LO =
9748	65.53	V	--	--	Avg	2.25	180	4th Harmonic of Tx for Channel 6
12997.3	51.1	V	--	--	Peak	1.75	315	4th Harmonic of LO for
12997.3	37.77	V	--	--	Avg	1.75	315	Channel 6
3249.33	39.22	H	74	-34.78	Peak	2	225	Fundamental of LO for
3249.33	27.56	H	54	-26.44	Avg	2	225	Channel 6
6498.67	45.78	H	--	--	Peak	2	135	2nd Harmonic of LO for
6498.67	37.71	H	--	--	Avg	2	135	Channel 6
9748	67.08	H	--	--	Peak	1.75	180	3rd Harmonic of LO =
9748	64.46	H	--	--	Avg	1.75	180	4th Harmonic of Tx for Channel 6
12997.3	50.35	H	--	--	Peak	2	135	4th Harmonic of LO for
12997.3	37.25	H	--	--	Avg	2	135	Channel 6
								Only the Fundamental of the LO
								is in the Restricted Band

FCC 15.247
Intel Corporation
Intel Mini PCI Type 802.11BG Wireless LAN Adapter
Model: WM3B2200BG

Date: 12/16/03
Lab: B
Tested By: Kyle Fujimoto

Configuration: Hewlett Packard Laptop Agency Series Number PP2190

Channel 11 - 802.11 b Mode GAIN: 30.5 OUTPUT 17.59 dBm
Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
3282.67	42.21	V	74	-31.79	Peak	2.25	315	Fundamental of LO for
3282.67	33.82	V	54	-20.18	Avg	2.25	315	Channel 11
6565.33	46.71	V	--	--	Peak	2.5	270	2nd Harmonic of LO for
6565.33	40.47	V	--	--	Avg	2.5	270	Channel 11
9848	66.86	V	--	--	Peak	2.25	225	3rd Harmonic of LO =
9848	64.22	V	--	--	Avg	2.25	225	4th Harmonic of Tx for Channel 11
13130.7	50.57	V	--	--	Peak	1.75	315	4th Harmonic of LO for
13130.7	36.51	V	--	--	Avg	1.75	315	Channel 11
3282.67	40.81	H	74	-33.19	Peak	2.25	90	Fundamental of LO for
3282.67	29.18	H	54	-24.82	Avg	2.25	90	Channel 11
6565.33	44.65	H	--	--	Peak	2	0	2nd Harmonic of LO for
6565.33	37.18	H	--	--	Avg	2	0	Channel 11
9848	64.48	H	--	--	Peak	1.75	180	3rd Harmonic of LO =
9848	61.89	H	--	--	Avg	1.75	180	4th Harmonic of Tx for Channel 11
13130.7	51.19	H	--	--	Peak	1.75	135	4th Harmonic of LO for
13130.7	36.94	H	--	--	Avg	1.75	135	Channel 11
								Only the Fundamental of the LO
								is in the Restricted Band

FCC 15.247

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

Date: 12/16/03
Lab: B
Tested By: Kyle Fujimoto

Configuration: Hewlett Packard Laptop Agency Series Number PP2190

Channel 6 - 802.11 b Mode
Receive Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
3249.33	40.87	V	74	-33.13	Peak	2	315	Fundamental of LO for
3249.33	31.26	V	60	-28.74	Avg	2	315	Channel 6
6498.67	47.83	V	74	-26.17	Peak	2.25	90	2nd Harmonic of LO for
6498.67	43.19	V	60	-16.81	Avg	2.25	90	Channel 6
9748	49.21	V	74	-24.79	Peak	2.25	270	3rd Harmonic of LO for
9748	38.56	V	60	-21.44	Avg	2.25	270	Channel 6
12997.3	50.14	V	74	-23.86	Peak	2	315	4th Harmonic of LO for
12997.3	38.19	V	60	-21.81	Avg	2	315	Channel 6
3249.33	40.79	H	74	-33.21	Peak	2.25	135	Fundamental of LO for
3249.33	28.43	H	60	-31.57	Avg	2.25	135	Channel 6
6498.67	46.07	H	74	-27.93	Peak	2.25	225	2nd Harmonic of LO for
6498.67	38.74	H	60	-21.26	Avg	2.25	225	Channel 6
9748	49.31	H	74	-24.69	Peak	2	270	3rd Harmonic of LO for
9748	38.33	H	60	-21.67	Avg	2	270	Channel 6
12997.3	50.88	H	74	-23.12	Peak	2.25	315	4th Harmonic of LO for
12997.3	39.17	H	60	-20.83	Avg	2.25	315	Channel 6

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

Date: 12/16/03
Lab: B
Tested By: Kyle Fujimoto

Configuration: Hewlett Packard Laptop Agency Series Number PP2190

802.11 b Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2312	53.54	V	74	-20.46	Peak	1.75	270	100 MHz Below the Fundamental
2312	47.09	V	54	-6.91	Avg	1.75	270	of Channel 1
2512	50.13	V	74	-23.87	Peak	1.75	270	100 MHz Above the Fundamental
2512	37.9	V	54	-16.1	Avg	1.75	270	of Channel 1
2312	55.63	H	74	-18.37	Peak	2	225	100 MHz Below the Fundamental
2312	48.37	H	54	-5.63	Avg	2	225	of Channel 1
2512	49.47	H	74	-24.53	Peak	1.75	225	100 MHz Above the Fundamental
2512	37.92	H	54	-16.08	Avg	1.75	225	of Channel 1
2335.9	55.2	V	74	-18.8	Peak	1.75	270	101.1 MHz Below the Fundamental
2335.9	48.03	V	54	-5.97	Avg	1.75	270	of Channel 6
2538.5	50.07	V	74	-23.93	Peak	1.75	270	101.5 MHz Above the Fundamental
2538.5	39.72	V	54	-14.28	Avg	1.75	270	of Channel 6
2335.9	53.34	H	74	-20.66	Peak	2	180	101.1 MHz Below the Fundamental
2335.9	46.3	H	54	-7.7	Avg	2	180	of Channel 6
2538.5	50.47	H	74	-23.53	Peak	1.75	225	101.5 MHz Above the Fundamental
2538.5	39.57	H	54	-14.43	Avg	1.75	225	of Channel 6
2359	50.98	V	74	-23.02	Peak	2.25	225	103 MHz Below the Fundamental
2359	42.38	V	54	-11.62	Avg	2.25	225	of Channel 11
2565	45.7	V	74	-28.3	Peak	2.5	225	103 MHz Above the Fundamental
2565	33.79	V	54	-20.21	Avg	2.5	225	of Channel 11
2359	52.36	H	74	-21.64	Peak	1.75	180	103 MHz Below the Fundamental
2359	43.55	H	54	-10.45	Avg	1.75	180	of Channel 11
2565	47.27	H	74	-26.73	Peak	1.75	225	103 MHz Above the Fundamental
2565	34.94	H	74	-39.06	Peak	1.75	225	of Channel 11

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

Date: 12/21/03
Lab: B
Tested By: Ben Chavez

Configuration: Hewlett Packard Laptop Agency Series Number PP2190

Channel 1 - 802.11 g Mode GAIN: 24 OUTPUT 16.20 dBm
Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4824	42.74	V	74	-31.26	Peak	2	315	
4824	28.99	V	54	-25.01	Avg	2	315	
7236	44.1	V	74	-29.9	Peak	2	45	
7236	30.74	V	54	-23.26	Avg	2	45	
9648	53.29	V	--	--	Peak	2.5	315	Not in Restricted Band
9648	38.57	V	--	--	Avg	2.5	315	Not in Restricted Band
12060	54.75	V	74	-19.25	Peak	1.75	135	
12060	40.88	V	54	-13.12	Avg	1.75	135	
14472	53.58	V	74	-20.42	Peak	2	315	
14472	39.93	V	54	-14.07	Avg	2	315	
16884		V	--	--	Peak			No Emission
16884		V	--	--	Avg			Detected
19296	45.2	V	74	-28.8	Peak	2	135	
19296	31.33	V	54	-22.67	Avg	2	135	
21708		V	74	-74	Peak			No Emission
21708		V	54	-54	Avg			Detected
24120		V	--	--	Peak			No Emission
24120		V	--	--	Avg			Detected

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

Date: 12/21/03
Lab: B
Tested By: Ben Chavez

Configuration: Hewlett Packard Laptop Agency Series Number PP2190

Channel 1 - 802.11 g Mode GAIN: 24 OUTPUT 16.20 dBm
Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4824	42.57	H	74	-31.43	Peak	2	135	
4824	28.62	H	54	-25.38	Avg	2	135	
7236	44.82	H	74	-29.18	Peak	2	0	
7236	30.87	H	54	-23.13	Avg	2	0	
9648	52.33	H	--	--	Peak	2	315	Not in Restricted Band
9648	37.45	H	--	--	Avg	2	315	Not in Restricted Band
12060	54.98	H	74	-19.02	Peak	1.75	315	
12060	40.77	H	54	-13.23	Avg	1.75	315	
14472	53.79	H	74	-20.21	Peak	1.75	315	
14472	39.75	H	54	-14.25	Avg	1.75	315	
16884		H	--	--	Peak			No Emission
16884		H	--	--	Avg			Detected
19296	45.52	H	74	-28.48	Peak	2	180	
19296	31.49	H	54	-22.51	Avg	2	180	
21708		H	74	-74	Peak			No Emission
21708		H	54	-54	Avg			Detected
24120		H	--	--	Peak			No Emission
24120		H	--	--	Avg			Detected

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

Date: 12/21/03
Lab: B
Tested By: Ben Chavez

Configuration: Hewlett Packard Laptop Agency Series Number PP2190

Channel 6 - 802.11 g Mode GAIN: 24 OUTPUT 16.10 dBm
Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4874	42.16	V	74	-31.84	Peak	2	225	
4874	27.69	V	54	-26.31	Avg	2	225	
7311	45.82	V	74	-28.18	Peak	2	45	
7311	32.11	V	54	-21.89	Avg	2	45	
9748	54.58	V	--	--	Peak	2.25	225	Not in Restricted Band
9748	40.99	V	--	--	Avg	2.25	225	Not in Restricted Band
12185	52.69	V	74	-21.31	Peak	1.75	225	
12185	39.34	V	54	-14.66	Avg	1.75	225	
14622	52.4	V	--	--	Peak	2	45	Not in Restricted Band
14622	38.51	V	--	--	Avg	2	45	Not in Restricted Band
17059		V	--	--	Peak			No Emission
17059		V	--	--	Avg			Detected
19496	44.94	V	74	-29.06	Peak	2	180	
19496	30.8	V	54	-23.2	Avg	2	180	
21933		V	--	--	Peak			No Emission
21933		V	--	--	Avg			Detected
22001		V	74	-74	Peak			No Emission
22001		V	54	-54	Avg			Detected
24370		V	--	--	Peak			No Emission
24370		V	--	--	Avg			Detected

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

Date: 12/21/03
Lab: B
Tested By: Ben Chavez

Configuration: Hewlett Packard Laptop Agency Series Number PP2190

Channel 6 - 802.11 g Mode GAIN: 24 OUTPUT 16.10 dBm
Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4874	43.16	H	74	-30.84	Peak	2	180	
4874	27.84	H	54	-26.16	Avg	2	180	
7311	44.8	H	74	-29.2	Peak	2	0	
7311	31.21	H	54	-22.79	Avg	2	0	
9748	56.28	H	--	--	Peak	2	90	Not in Restricted Band
9748	40.33	H	--	--	Avg	2	90	Not in Restricted Band
12185	53.01	H	74	-20.99	Peak	2.25	180	
12185	38.99	H	54	-15.01	Avg	2.25	180	
14622	53.25	H	--	--	Peak	2	45	Not in Restricted Band
14622	38.78	H	--	--	Avg	2	45	Not in Restricted Band
17059		H	--	--	Peak			No Emission
17059		H	--	--	Avg			Detected
19496	43.84	H	74	-30.16	Peak	2	135	
19496	30.74	H	54	-23.26	Avg	2	135	
21933		H	--	--	Peak			No Emission
21933		H	--	--	Avg			Detected
22001		H	74	-74	Peak			No Emission
22001		H	54	-54	Avg			Detected
24370		H	--	--	Peak			No Emission
24370		H	--	--	Avg			Detected

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

Date: 12/21/03
Lab: B
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Configuration: Hewlett Packard Laptop Agency Series Number PP2190

Channel 11 - 802.11 g Mode GAIN: 24.5 OUTPUT 16.50 dBm
Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4924	41.4	V	74	-32.6	Peak	2	270	
4924	27.21	V	54	-26.79	Avg	2	270	
7386	43.53	V	74	-30.47	Peak	2.25	0	
7386	29.54	V	54	-24.46	Avg	2.25	0	
9848	58.23	V	--	--	Peak	2.25	180	Not in Restricted Band
9848	41.18	V	--	--	Avg	2.25	180	Not in Restricted Band
12310	50.96	V	74	-23.04	Peak	1.75	45	
12310	36.76	V	54	-17.24	Avg	1.75	45	
14772	53.23	V	--	--	Peak	1.75	180	Not in Restricted Band
14772	39.15	V	--	--	Avg	1.75	180	Not in Restricted Band
17234		V	--	--	Peak			No Emission
17234		V	--	--	Avg			Detected
19696	44.4	V	74	-29.6	Peak	2	270	
19696	30.84	V	54	-23.16	Avg	2	270	
22158		V	74	-74	Peak			No Emission
22158		V	54	-54	Avg			Detected
24620		V	--	--	Peak			No Emission
24620		V	--	--	Avg			Detected

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

Date: 12/21/03
Lab: B
Tested By: Ben Chavez

Configuration: Hewlett Packard Laptop Agency Series Number PP2190

Channel 11 - 802.11 g Mode GAIN: 24.5 OUTPUT 16.50 dBm
Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4924	41.44	H	74	-32.56	Peak	1.75	180	
4924	27.14	H	54	-26.86	Avg	1.75	180	
7386	43.56	H	74	-30.44	Peak	2	135	
7386	29.69	H	54	-24.31	Avg	2	135	
9848	51.68	H	--	--	Peak	2	90	Not in Restricted Band
9848	36.26	H	--	--	Avg	2	90	Not in Restricted Band
12310	50.66	H	74	-23.34	Peak	1.75	180	
12310	36.33	H	54	-17.67	Avg	1.75	180	
14772	52.97	H	--	--	Peak	2	225	Not in Restricted Band
14772	39.34	H	--	--	Avg	2	225	Not in Restricted Band
17234		H	--	--	Peak			No Emission
17234		H	--	--	Avg			Detected
19696	44.85	H	74	-29.15	Peak	2	180	
19696	30.84	H	54	-23.16	Avg	2	180	
22158		H	74	-74	Peak			No Emission
22158		H	54	-54	Avg			Detected
24620		H	--	--	Peak			No Emission
24620		H	--	--	Avg			Detected

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

Date: 12/21/03
Lab: B
Tested By: Ben Chavez

Configuration: Hewlett Packard Laptop Agency Series Number PP2190

Channel 1 - 802.11 g Mode GAIN: 24 OUTPUT 16.20 dBm
Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
3216	40.93	V	74	-33.07	Peak	2	315	Fundamental of LO for
3216	32.76	V	54	-21.24	Avg	2	315	Channel 1
6432	45.77	V	--	--	Peak	2.25	90	2nd Harmonic of LO for
6432	38.73	V	--	--	Avg	2.25	90	Channel 1
9648	53.29	V	--	--	Peak	2.5	315	3rd Harmonic of LO =
9648	38.57	V	--	--	Avg	2.5	315	4th Harmonic of Tx for Channel 1
12864	49.95	V	--	--	Peak	2.25	315	4th Harmonic of LO for
12864	37.01	V	--	--	Avg	2.25	315	Channel 1
3216	39.38	H	74	-34.62	Peak	2	225	Fundamental of LO for
3216	26.58	H	54	-27.42	Avg	2	225	Channel 1
6432	46.13	H	--	--	Peak	2.25	315	2nd Harmonic of LO for
6432	39.27	H	--	--	Avg	2.25	315	Channel 1
9648	52.33	H	--	--	Peak	2	315	3rd Harmonic of LO =
9648	37.45	H	--	--	Avg	2	315	4th Harmonic of Tx for Channel 1
12864	49.21	H	--	--	Peak	2.25	180	4th Harmonic of LO for
12864	35.64	H	--	--	Avg	2.25	180	Channel 1
								Only the Fundamental of the LO
								is in the Restricted Band

FCC 15.247

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

Date: 12/21/03
Lab: B
Tested By: Ben Chavez

Configuration: Hewlett Packard Laptop Agency Series Number PP2190

Channel 6 - 802.11 g Mode GAIN: 24 OUTPUT 16.10 dBm
Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
3249.33	41.37	V	74	-32.63	Peak	2	315	Fundamental of LO for
3249.33	33.18	V	54	-20.82	Avg	2	315	Channel 6
6498.67	48.48	V	--	--	Peak	2.5	135	2nd Harmonic of LO for
6498.67	43.25	V	--	--	Avg	2.5	135	Channel 6
9748	58.37	V	--	--	Peak	2.25	90	3rd Harmonic of LO =
9748	42.99	V	--	--	Avg	2.25	90	4th Harmonic of Tx for Channel 6
12997.3	51.61	V	--	--	Peak	2.25	0	4th Harmonic of LO for
12997.3	39.03	V	--	--	Avg	2.25	0	Channel 6
3249.33	39.46	H	74	-34.54	Peak	2	225	Fundamental of LO for
3249.33	27.9	H	54	-26.1	Avg	2	225	Channel 6
6498.67	45.46	H	--	--	Peak	2	135	2nd Harmonic of LO for
6498.67	37.75	H	--	--	Avg	2	135	Channel 6
9748	58.62	H	--	--	Peak	2.25	0	3rd Harmonic of LO =
9748	42.11	H	--	--	Avg	2.25	0	4th Harmonic of Tx for Channel 6
12997.3	51.02	H	--	--	Peak	2	270	4th Harmonic of LO for
12997.3	38.45	H	--	--	Avg	2	270	Channel 6
								Only the Fundamental of the LO
								is in the Restricted Band

FCC 15.247

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

Date: 12/21/03
Lab: B
Tested By: Ben Chavez

Configuration: Hewlett Packard Laptop Agency Series Number PP2190

Channel 11 - 802.11 g Mode GAIN: 24.5 OUTPUT 16.50 dBm
Transmit Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
3282.67	42.89	V	74	-31.11	Peak	1.75	90	Fundamental of LO for
3282.67	34.64	V	54	-19.36	Avg	1.75	90	Channel 11
6565.33	47.25	V	--	--	Peak	2.25	90	2nd Harmonic of LO for
6565.33	41.96	V	--	--	Avg	2.25	90	Channel 11
9848	58.08	V	--	--	Peak	2	180	3rd Harmonic of LO =
9848	43.79	V	--	--	Avg	2	180	4th Harmonic of Tx for Channel 11
13130.7	50.38	V	--	--	Peak	2	315	4th Harmonic of LO for
13130.7	38.06	V	--	--	Avg	2	315	Channel 11
3282.67	41.92	H	74	-32.08	Peak	1.75	180	Fundamental of LO for
3282.67	32.96	H	54	-21.04	Avg	1.75	180	Channel 11
6565.33	45.06	H	--	--	Peak	1.75	0	2nd Harmonic of LO for
6565.33	37.1	H	--	--	Avg	1.75	0	Channel 11
9848	58.18	H	--	--	Peak	1.75	180	3rd Harmonic of LO =
9848	41.36	H	--	--	Avg	1.75	180	4th Harmonic of Tx for Channel 11
13130.7	50.45	H	--	--	Peak	2	180	4th Harmonic of LO for
13130.7	37.44	H	--	--	Avg	2	180	Channel 11
								Only the Fundamental of the LO
								is in the Restricted Band

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

Date: 12/16/03
Lab: B
Tested By: Kyle Fujimoto

Configuration: Hewlett Packard Laptop Agency Series Number PP2190

Channel 6 - 802.11 g Mode
Receive Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
3249.33	40.17	V	74	-33.83	Peak	2	315	Fundamental of LO for
3249.33	32.04	V	60	-27.96	Avg	2	315	Channel 6
6498.67	47.37	V	74	-26.63	Peak	2.25	315	2nd Harmonic of LO for
6498.67	41.17	V	60	-18.83	Avg	2.25	315	Channel 6
9748	49.36	V	74	-24.64	Peak	2.25	0	3rd Harmonic of LO for
9748	39.26	V	60	-20.74	Avg	2.25	0	Channel 6
12997.3	53.68	V	74	-20.32	Peak	1.75	0	4th Harmonic of LO for
12997.3	39.74	V	60	-20.26	Avg	1.75	0	Channel 6
3249.33	38.67	H	74	-35.33	Peak	2	0	Fundamental of LO for
3249.33	28.67	H	60	-31.33	Avg	2	0	Channel 6
6498.67	45.91	H	74	-28.09	Peak	2	315	2nd Harmonic of LO for
6498.67	39.19	H	60	-20.81	Avg	2	315	Channel 6
9748	48.17	H	74	-25.83	Peak	2	0	3rd Harmonic of LO for
9748	36.75	H	60	-23.25	Avg	2	0	Channel 6
12997.3	54.63	H	74	-19.37	Peak	1.75	45	4th Harmonic of LO for
12997.3	39.74	H	60	-20.26	Avg	1.75	45	Channel 6

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

Date: 12/16/03
Lab: B
Tested By: Kyle Fujimoto

Configuration: Hewlett Packard Laptop Agency Series Number PPXXXX

802.11 g Mode

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2312	57.62	V	74	-16.38	Peak	1.75	270	100 MHz Below the Fundamental
2312	51.84	V	54	-2.16	Avg	1.75	270	of Channel 1
2512	51.94	V	74	-22.06	Peak	2.25	225	100 MHz Above the Fundamental
2512	43.81	V	54	-10.19	Avg	2.25	225	of Channel 1
2312	58.8	H	74	-15.2	Peak	2	225	100 MHz Below the Fundamental
2312	52.89	H	54	-1.11	Avg	2	225	of Channel 1
2512	52.08	H	74	-21.92	Peak	2	270	100 MHz Above the Fundamental
2512	44.33	H	54	-9.67	Avg	2	270	of Channel 1
2335.9	57.71	V	74	-16.29	Peak	1.75	270	101.1 MHz Below the Fundamental
2335.9	52.35	V	54	-1.65	Avg	1.75	270	of Channel 6
2538.5	51.68	V	74	-22.32	Peak	1.75	270	101.5 MHz Above the Fundamental
2538.5	44.22	V	54	-9.78	Avg	1.75	270	of Channel 6
2335.9	59.86	H	74	-14.14	Peak	2	225	101.1 MHz Below the Fundamental
2335.9	53.67	H	54	-0.33	Avg	2	225	of Channel 6
2538.5	51.97	H	74	-22.03	Peak	1.75	225	101.5 MHz Above the Fundamental
2538.5	45.1	H	54	-8.9	Avg	1.75	225	of Channel 6
2359	54.74	V	74	-19.26	Peak	1.75	225	103 MHz Below the Fundamental
2359	48.13	V	54	-5.87	Avg	1.75	225	of Channel 11
2565	47.98	V	74	-26.02	Peak	1.75	270	103 MHz Above the Fundamental
2565	38.08	V	54	-15.92	Avg	1.75	270	of Channel 11
2359	58.67	H	74	-15.33	Peak	2	225	103 MHz Below the Fundamental
2359	51.47	H	54	-2.53	Avg	2	225	of Channel 11
2565	48.91	H	74	-25.09	Peak	1.75	225	103 MHz Above the Fundamental
2565	38.03	H	54	-15.97	Avg	1.75	225	of Channel 11

COMPATIBLE ELECTRONICS

Test Location : Compatible Electronics — **Page** : 1/1
Customer : Intel Corporation — **Date** : 1/05/2004
Manufacturer : Intel Corporation — **Time** : 17:38:40
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: 30-1000 MHz
Horizontal and Vertical Polarizations

Tested by: Benigno Chavez

Pol	Freq	Rdng	Cable loss	Ant factor	Amp gain	Cor'd rdg = R	Limit = L	Delta R-L
	MHz	dBuV	dB	dB	dB	dBuV	dBuV/m	dB
1V	48.091	52.80	1.00	12.86	38.32	28.35	40.00	-11.65
2H	48.042	49.70	1.00	12.86	38.32	25.24	40.00	-14.76
3H	144.041	53.80	2.16	12.41	38.40	29.97	43.50	-13.53
4H	299.769	47.30	3.30	19.69	38.30	31.98	46.00	-14.02
5H	740.369	48.30	5.10	20.50	37.74	36.17	46.00	-9.83
6V	499.541	52.60	4.40	15.99	38.10	34.89	46.00	-11.11
7V	740.433	47.50	5.10	20.50	37.74	35.37	46.00	-10.63

FCC 15.247

Intel Corporation — Date: 12/16/03

Intel Mini PCI Type 802.11BG Wireless LAN Adapter — Lab: B

Model: WM3B2200BG — Tested By: Kyle Fujimoto

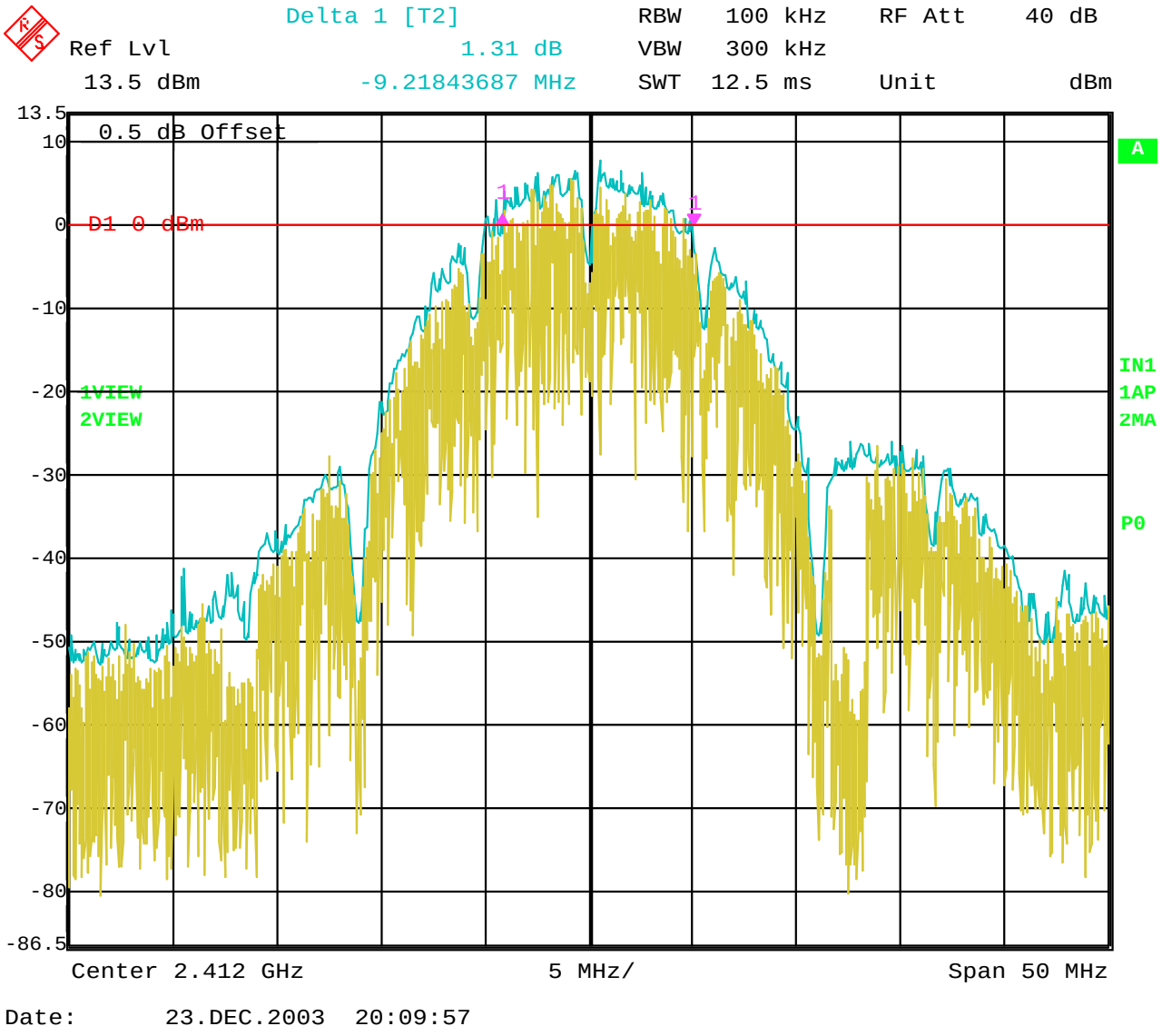
Configuration: Hewlett Packard Laptop Agency Series Number PP2190

Emissions from the Digital Portion -- 1 GHz to 25 GHz

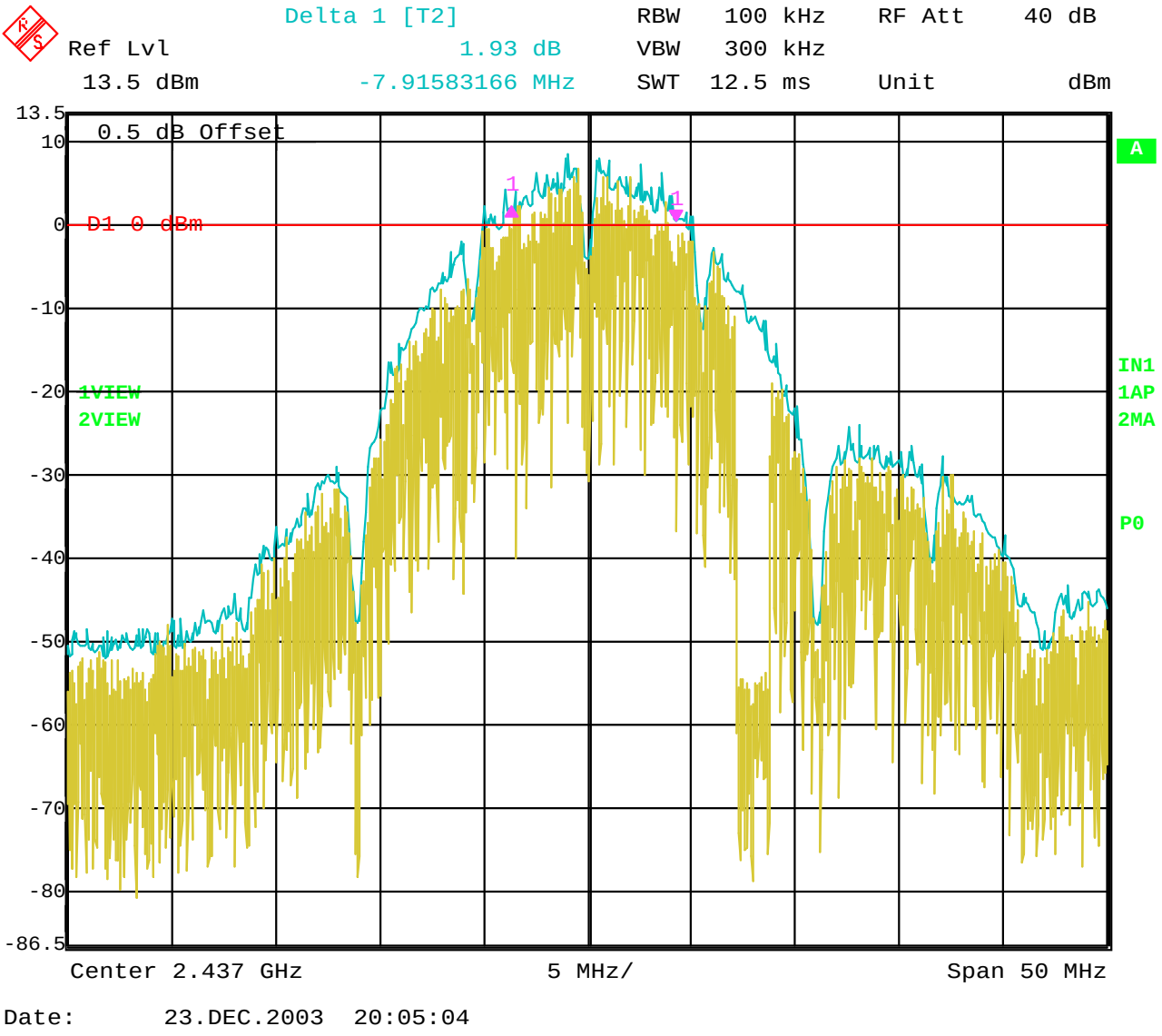
Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1469.5	41.05	H	74	-32.95	Peak	1.75	180	
1469.5	27.1	H	54	-26.9	Avg	1.75	180	
1527.7	52.1	H	74	-21.9	Peak	2	270	
1527.7	36.64	H	54	-17.36	Avg	2	270	
2004.5	43.34	H	74	-30.66	Peak	2.25	225	
2004.5	34.66	H	54	-19.34	Avg	2.25	225	
2871.7	52.72	H	74	-21.28	Peak	2	0	
2871.7	41.07	H	54	-12.93	Avg	2	0	
3134.5	44.8	H	74	-29.2	Peak	2	0	
3134.5	35.51	H	54	-18.49	Avg	2	0	
3296.4	58.34	H	74	-15.66	Peak	2.25	315	
3296.4	44.95	H	54	-9.05	Avg	2.25	315	
3883.7	63.62	H	74	-10.38	Peak	2	0	
3883.7	41.72	H	54	-12.28	Avg	2	0	
3297.3	57.86	V	74	-16.14	Peak	2	270	
3297.3	45.52	V	54	-8.48	Avg	2	270	
2871.8	55.96	V	74	-18.04	Peak	2	225	
2871.8	46.96	V	54	-7.04	Avg	2	225	
1527.1	52.51	V	74	-21.49	Peak	2	225	
1527.1	39.14	V	54	-14.86	Avg	2	225	

-6 dB BANDWIDTH

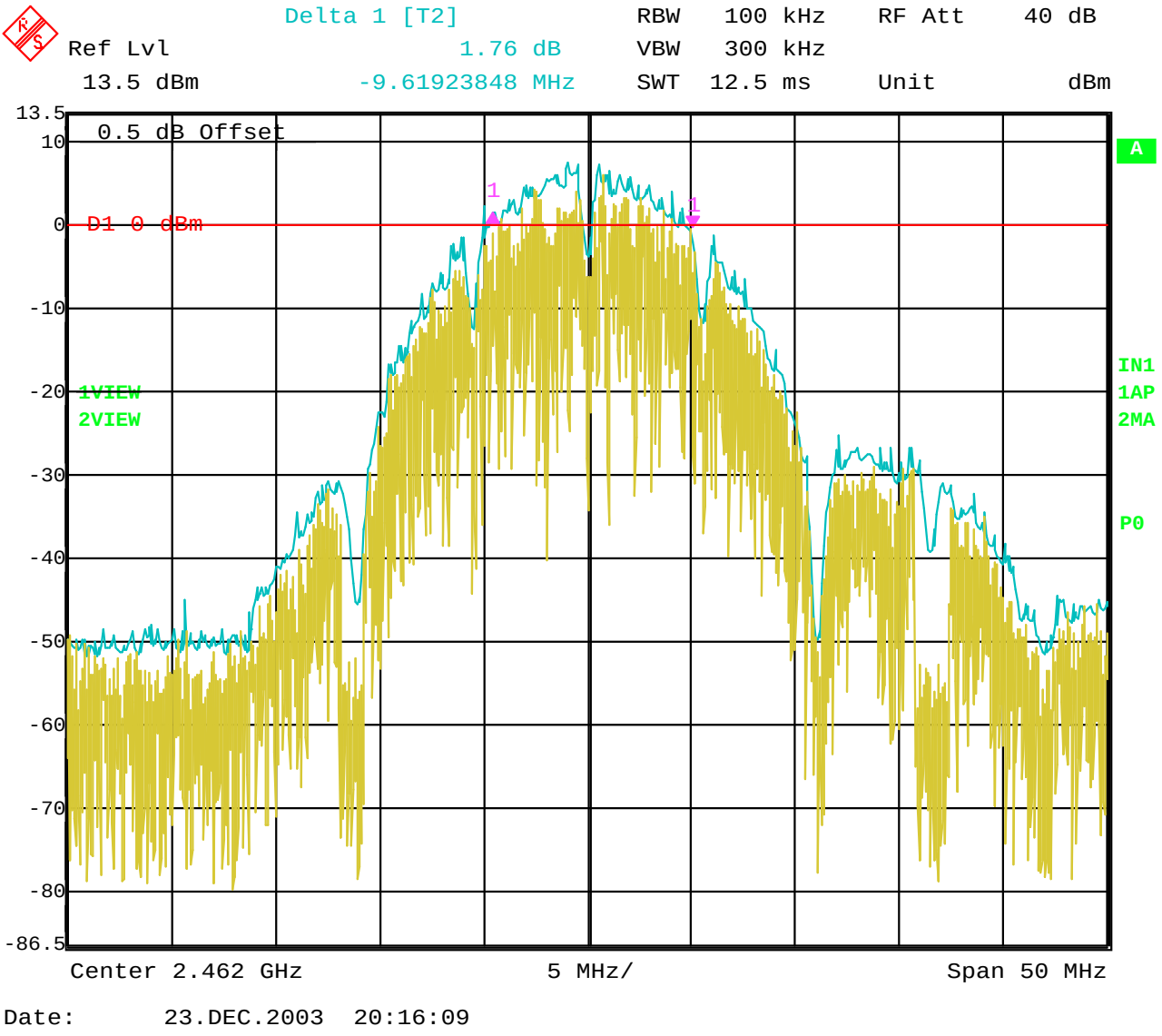
DATA SHEETS



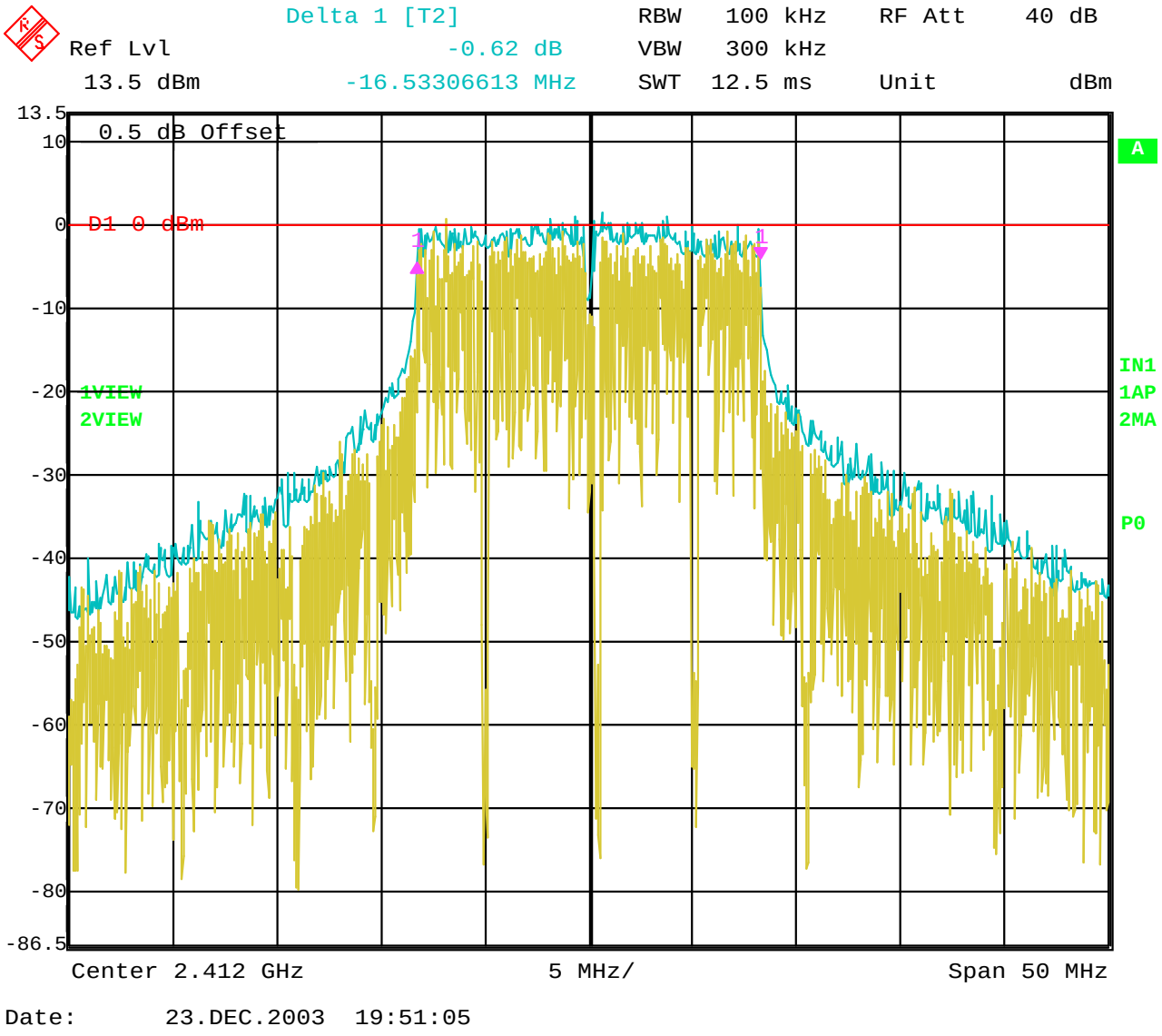
-6 dB Bandwidth – Channel 1 – 802.11 b Mode



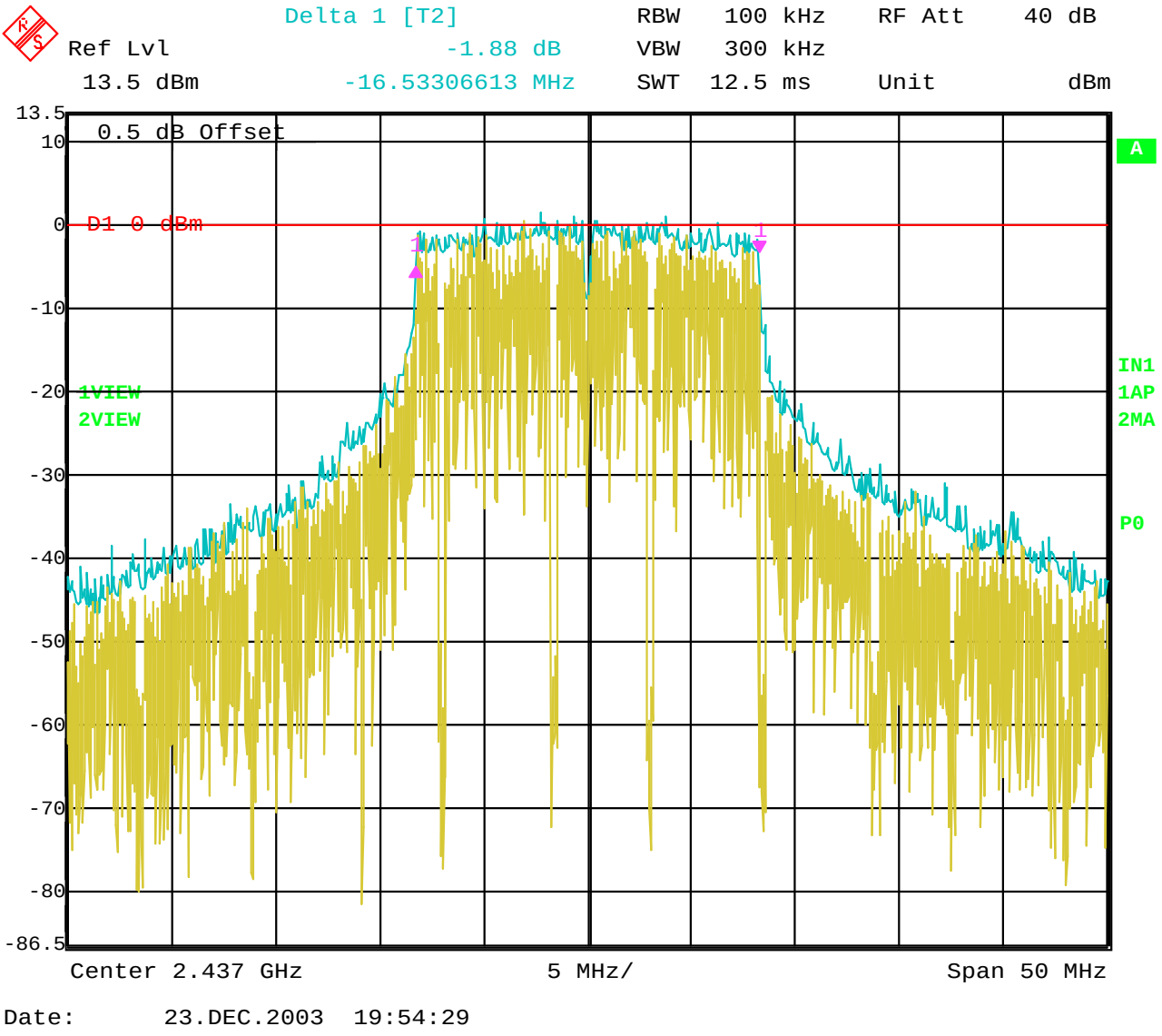
-6 dB Bandwidth – Channel 6 – 802.11 b Mode



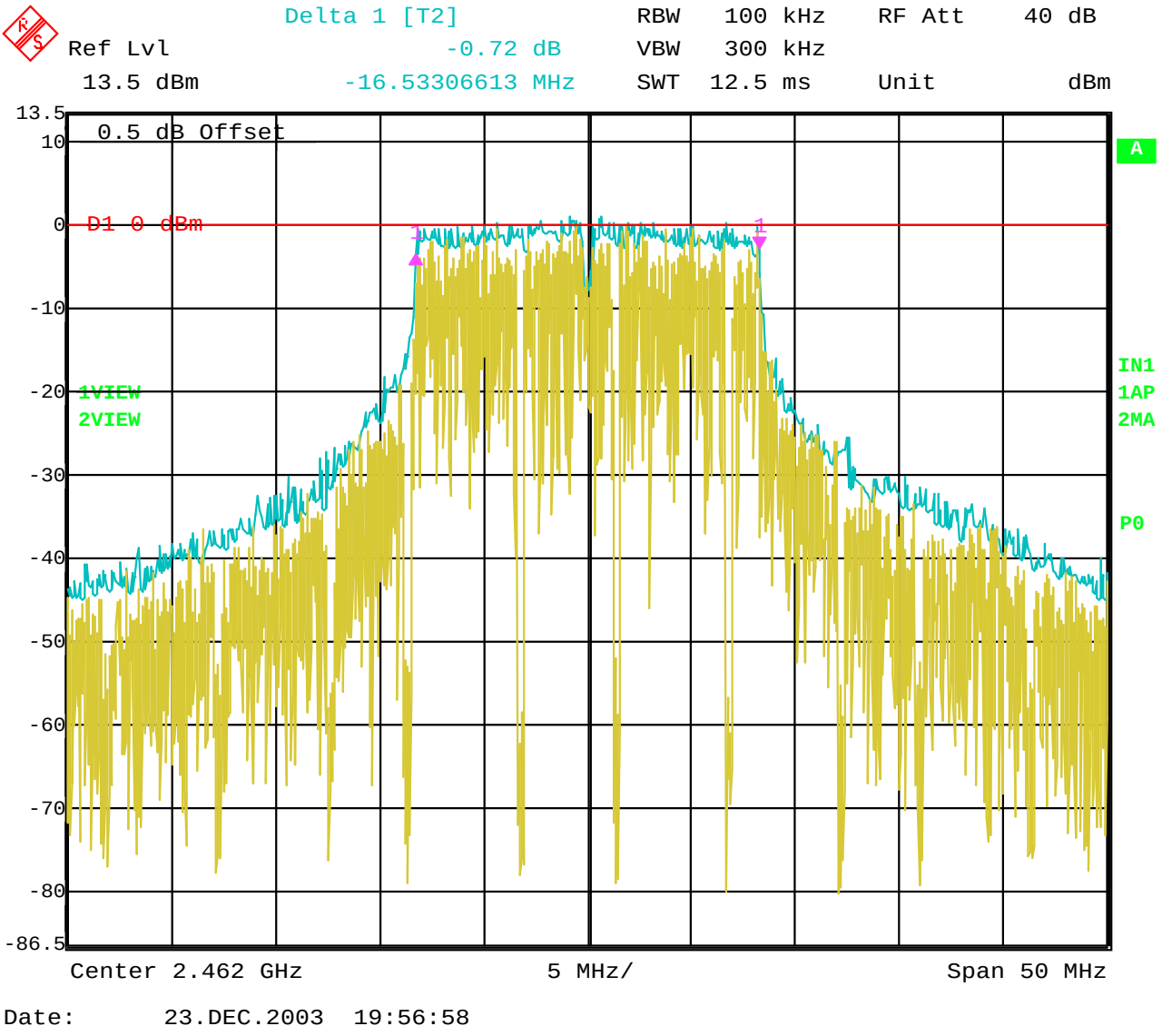
-6 dB Bandwidth – Channel 11 – 802.11 b Mode



-6 dB Bandwidth – Channel 1 – 802.11 g Mode



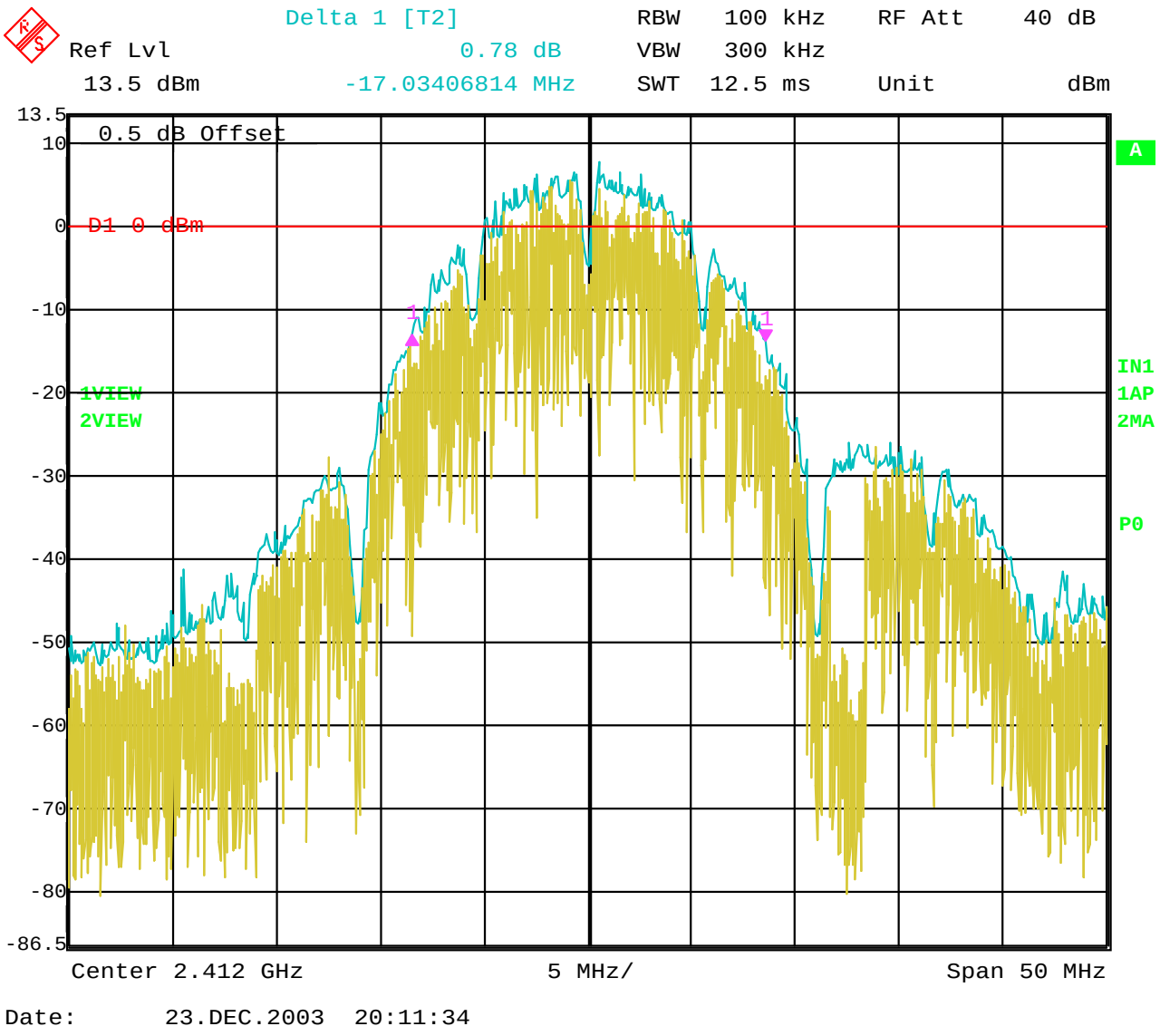
-6 dB Bandwidth – Channel 6 – 802.11 g Mode



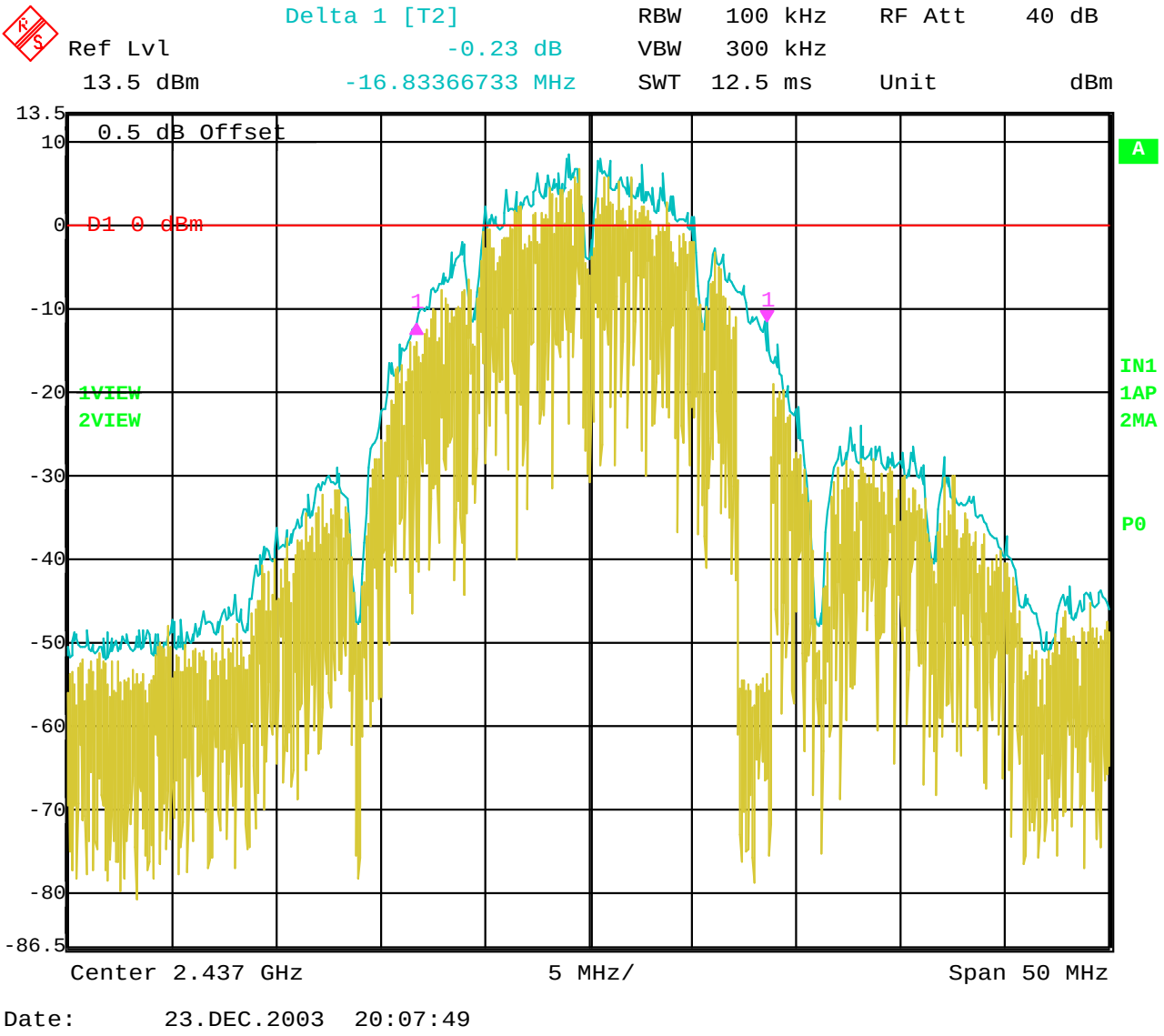
-6 dB Bandwidth – Channel 11 – 802.11 g Mode

-20 dB BANDWIDTH

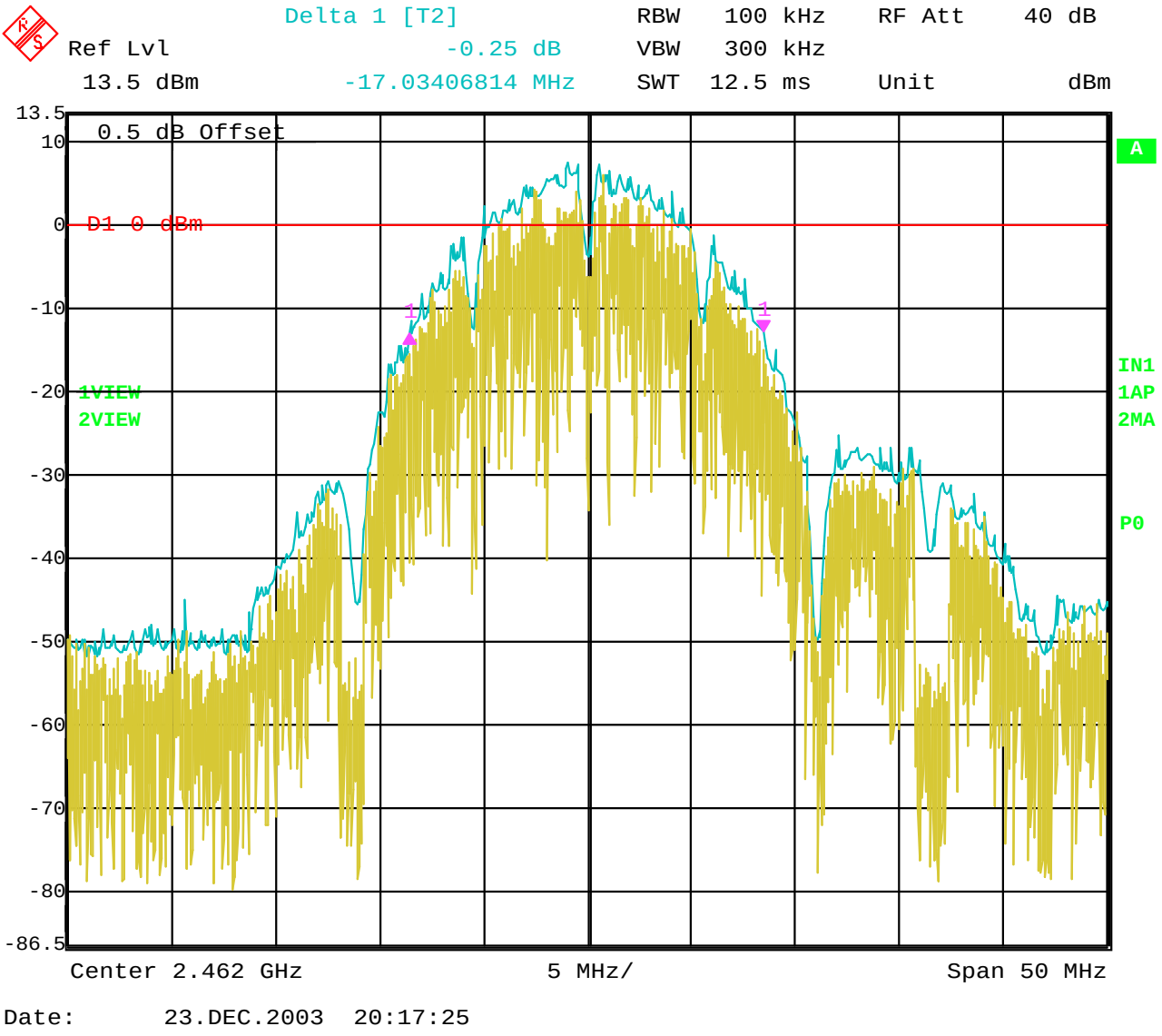
DATA SHEETS



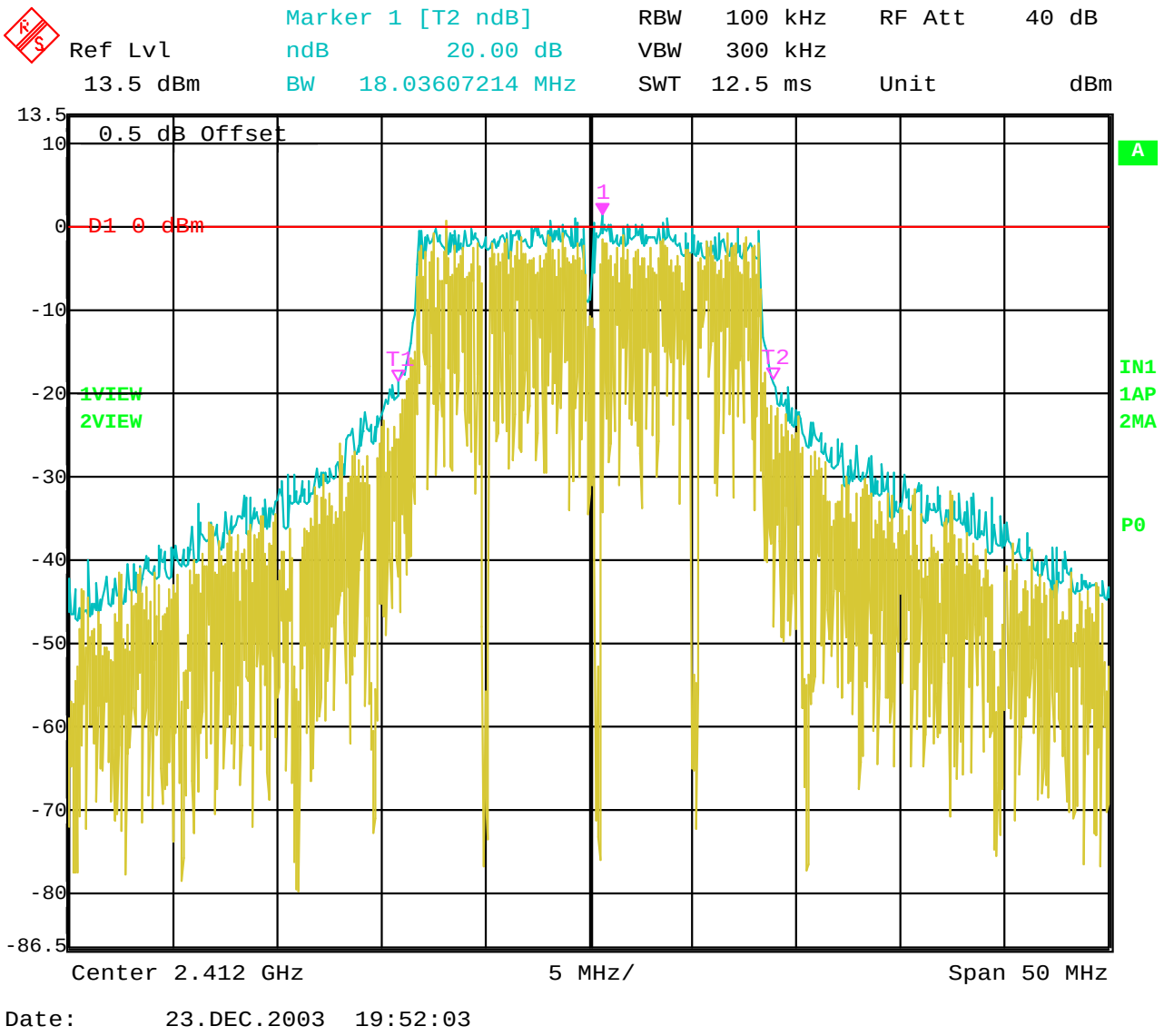
-20 dB Bandwidth – Channel 1 – 802.11 b Mode



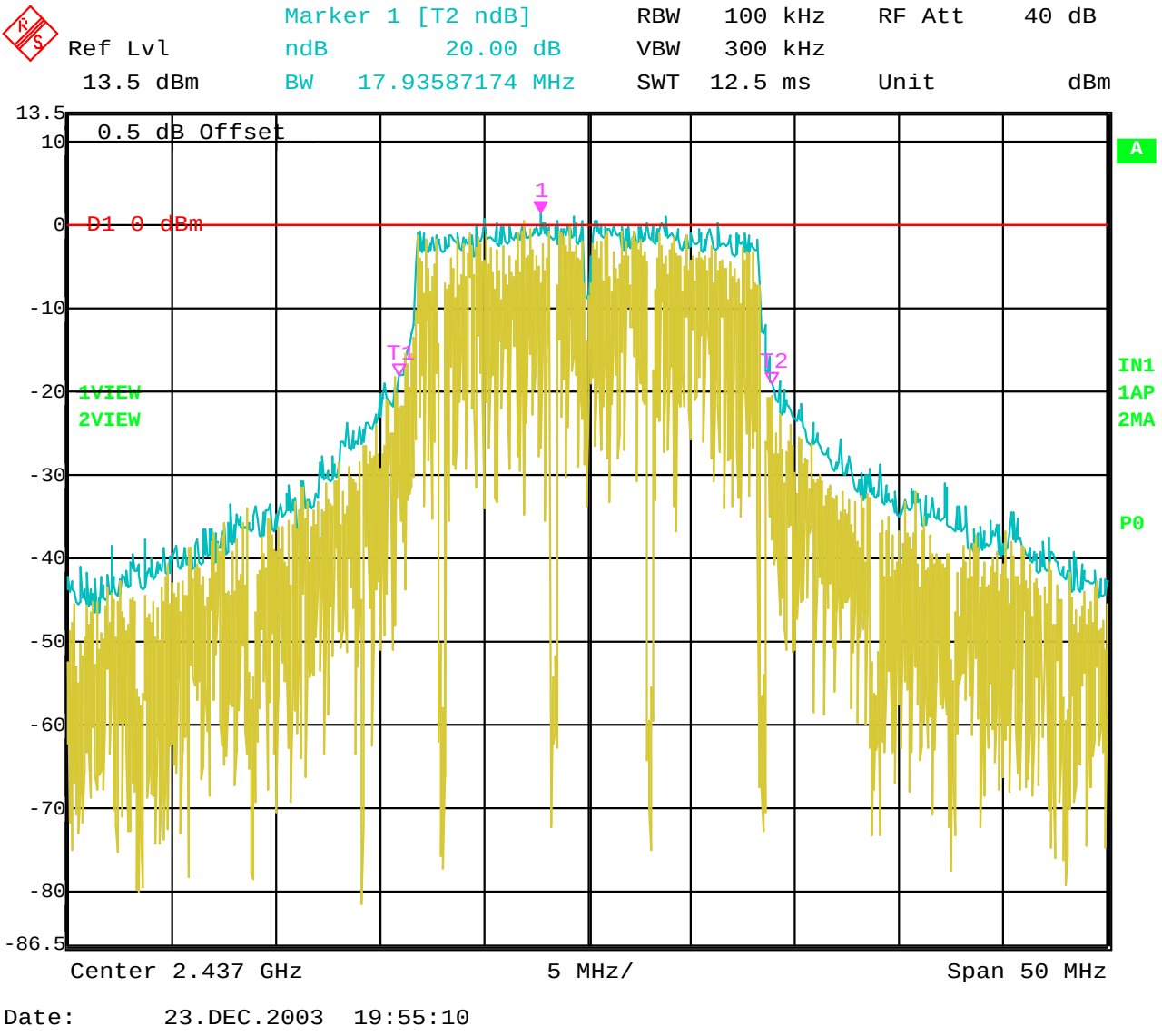
-20 dB Bandwidth – Channel 6 – 802.11 b Mode



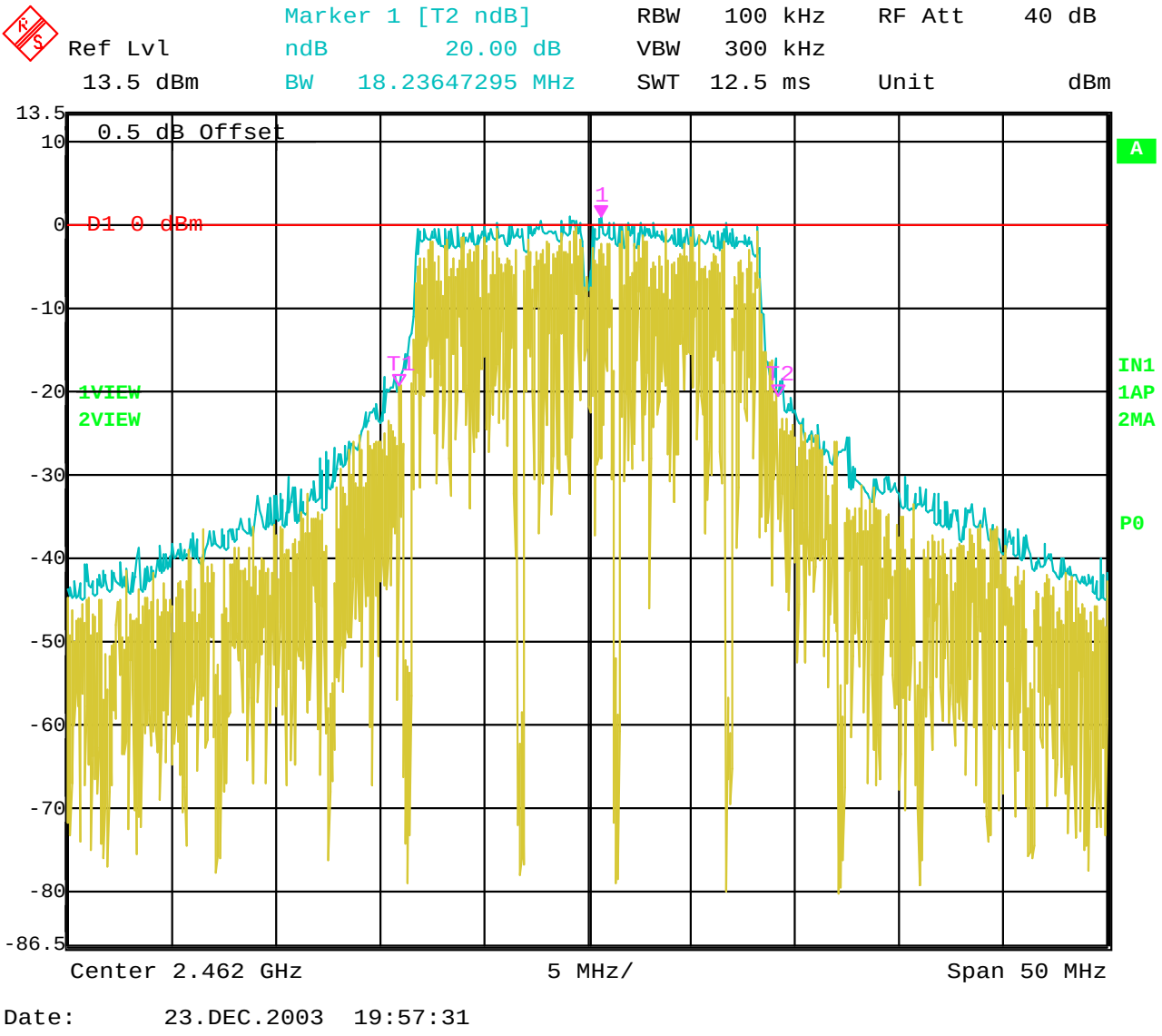
-20 dB Bandwidth – Channel 11 – 802.11 b Mode



-20 dB Bandwidth – Channel 1 – 802.11 g Mode



-20 dB Bandwidth – Channel 6 – 802.11 g Mode



-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 Laptop Agency Series Number PP2190

802.11 b Mode (Worst Case Rate is 1 Mbps)

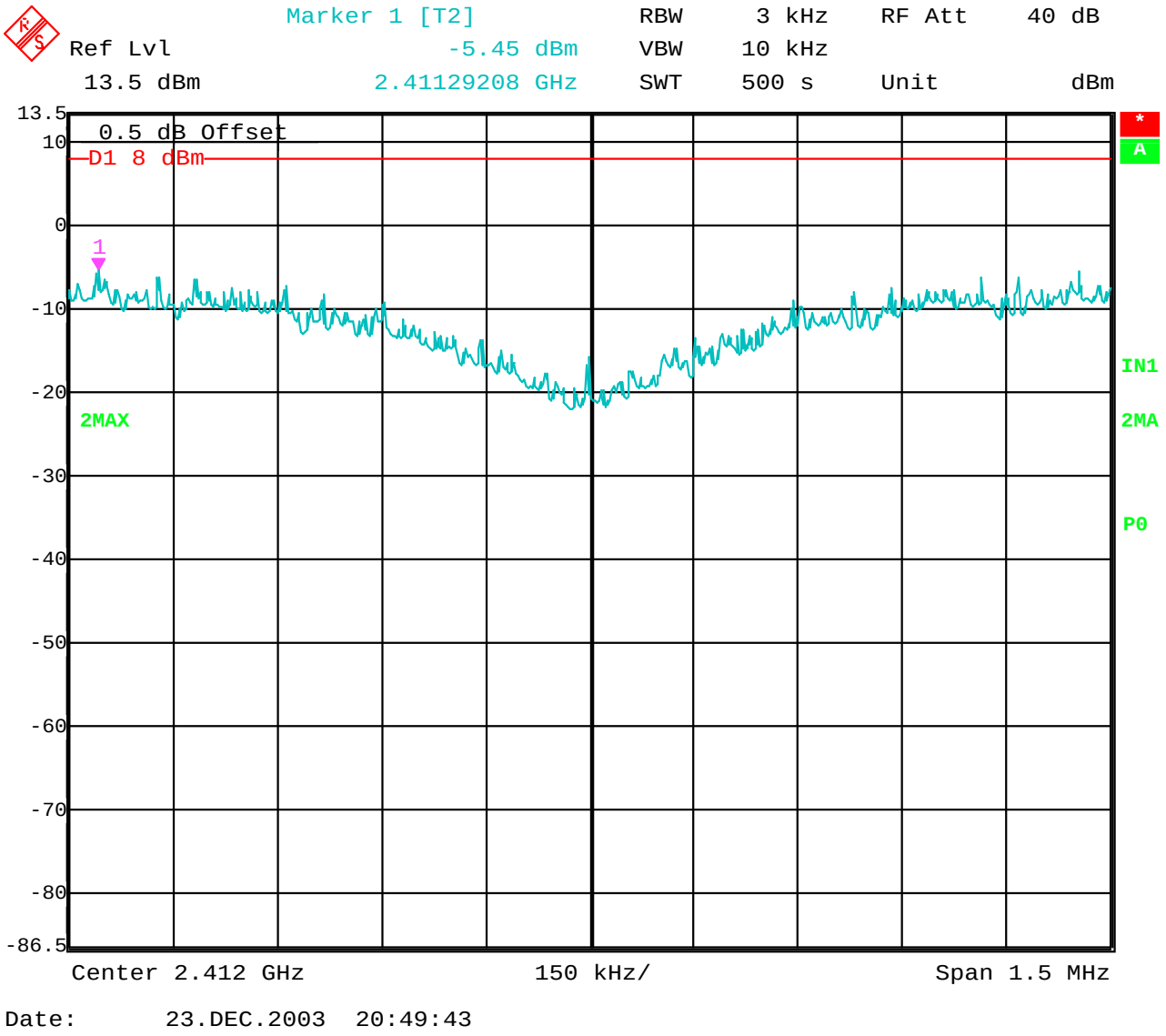
CHANNEL	GAIN	PEAK POWER OUTPUT (dBm)
1 (2412 MHz)	30	17.14
6 (2437 MHz)	30.5	17.53
11 (2462 MHz)	30.5	17.59

802.11 g Mode (Worst Case Rate is 6 Mbps)

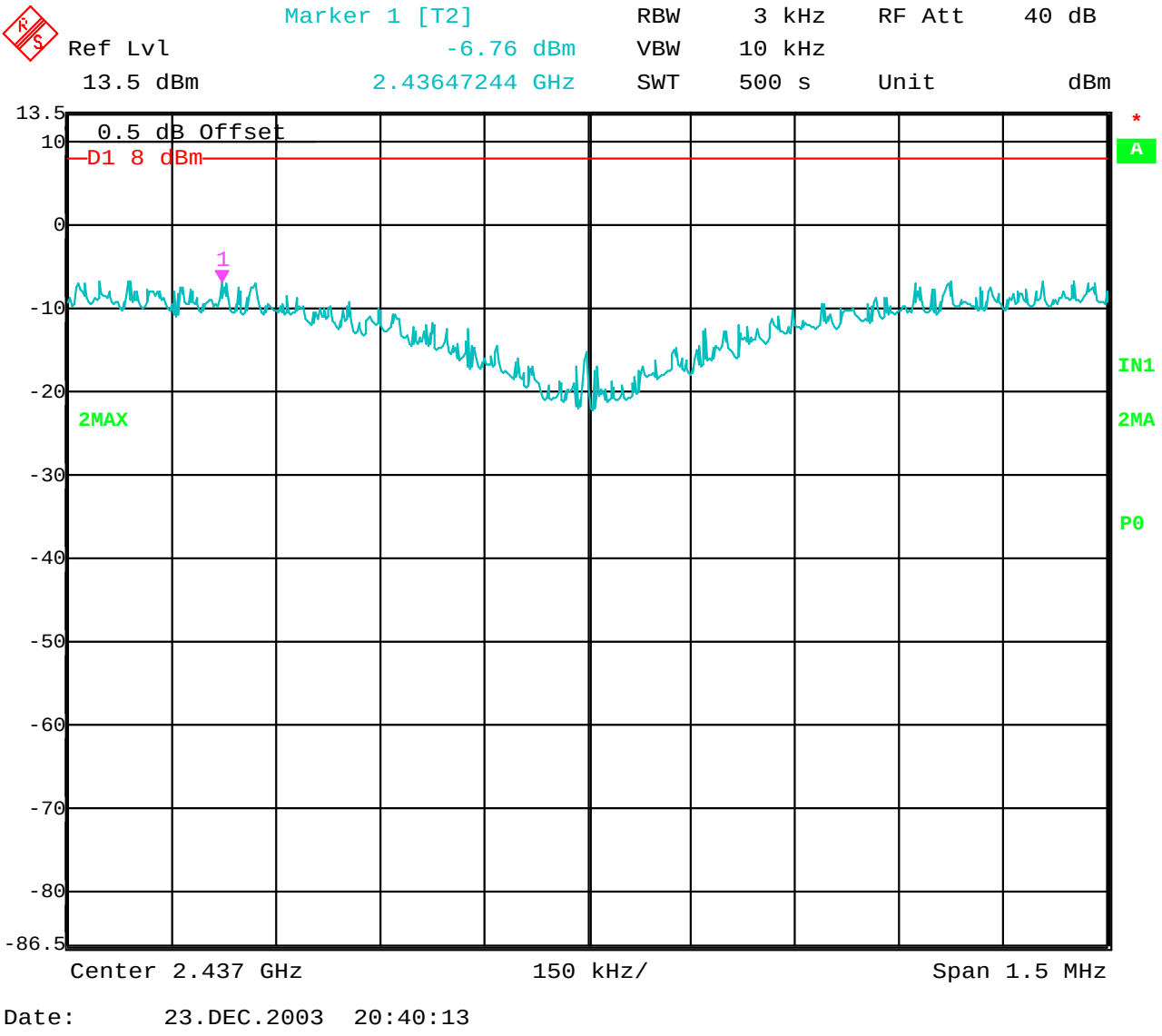
CHANNEL	GAIN	PEAK POWER OUTPUT (dBm)
1 (2412 MHz)	24	16.2
6 (2437 MHz)	24	16.1
11 (2462 MHz)	24.5	16.5

PEAK POWER SPECTRAL DENSITY

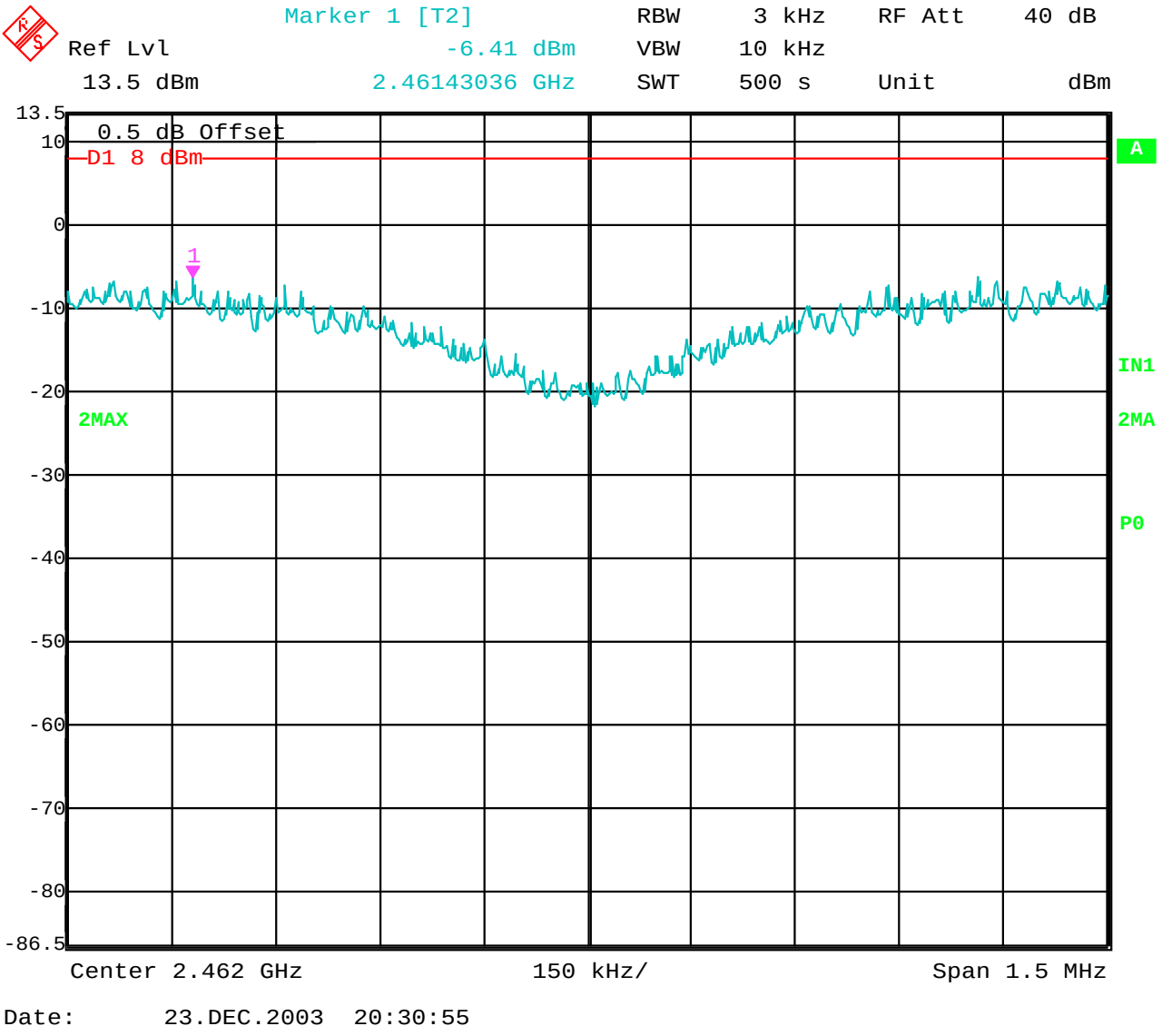
DATA SHEETS



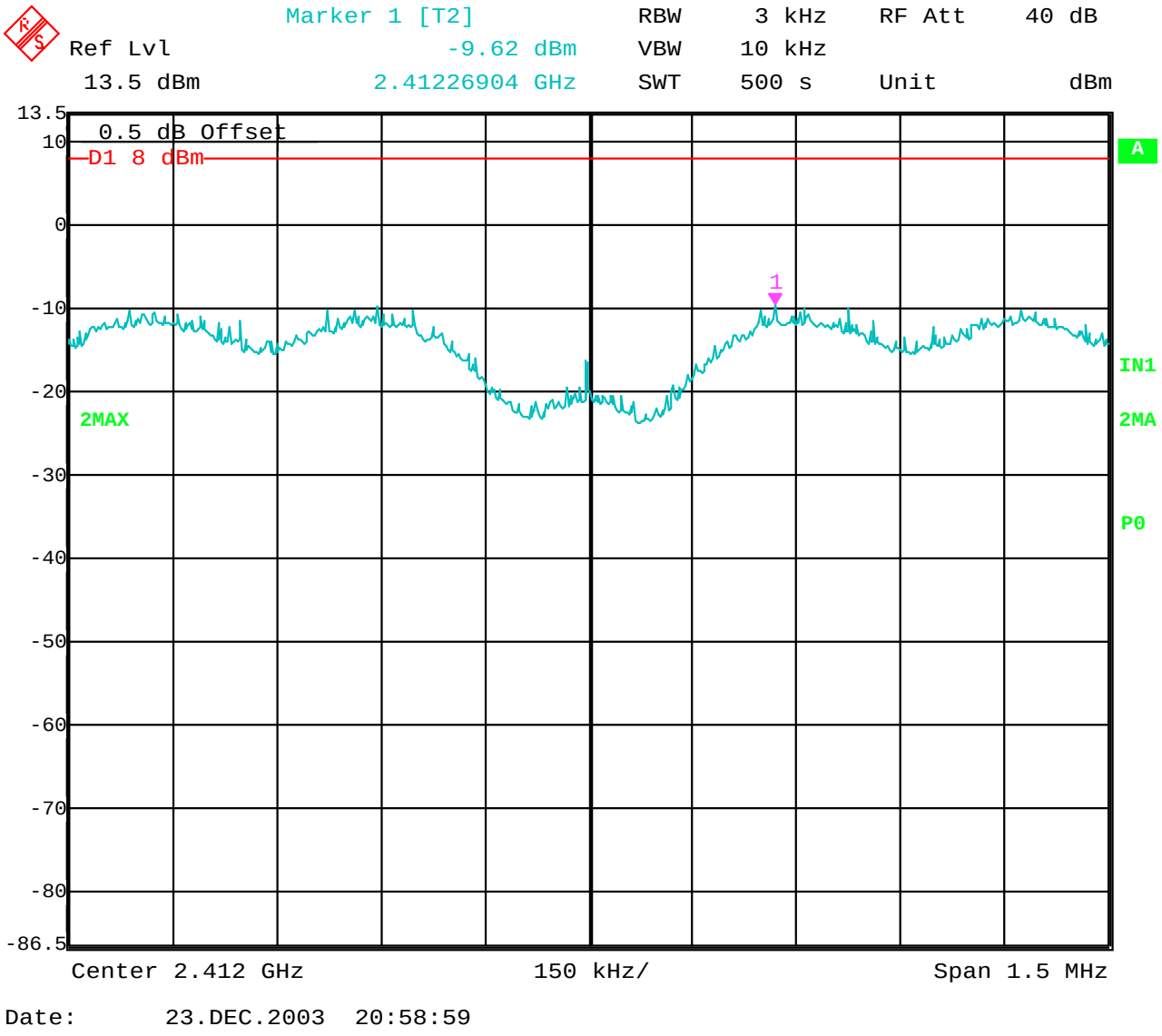
Spectral Density Output – Channel 1 – 802.11 b Mode



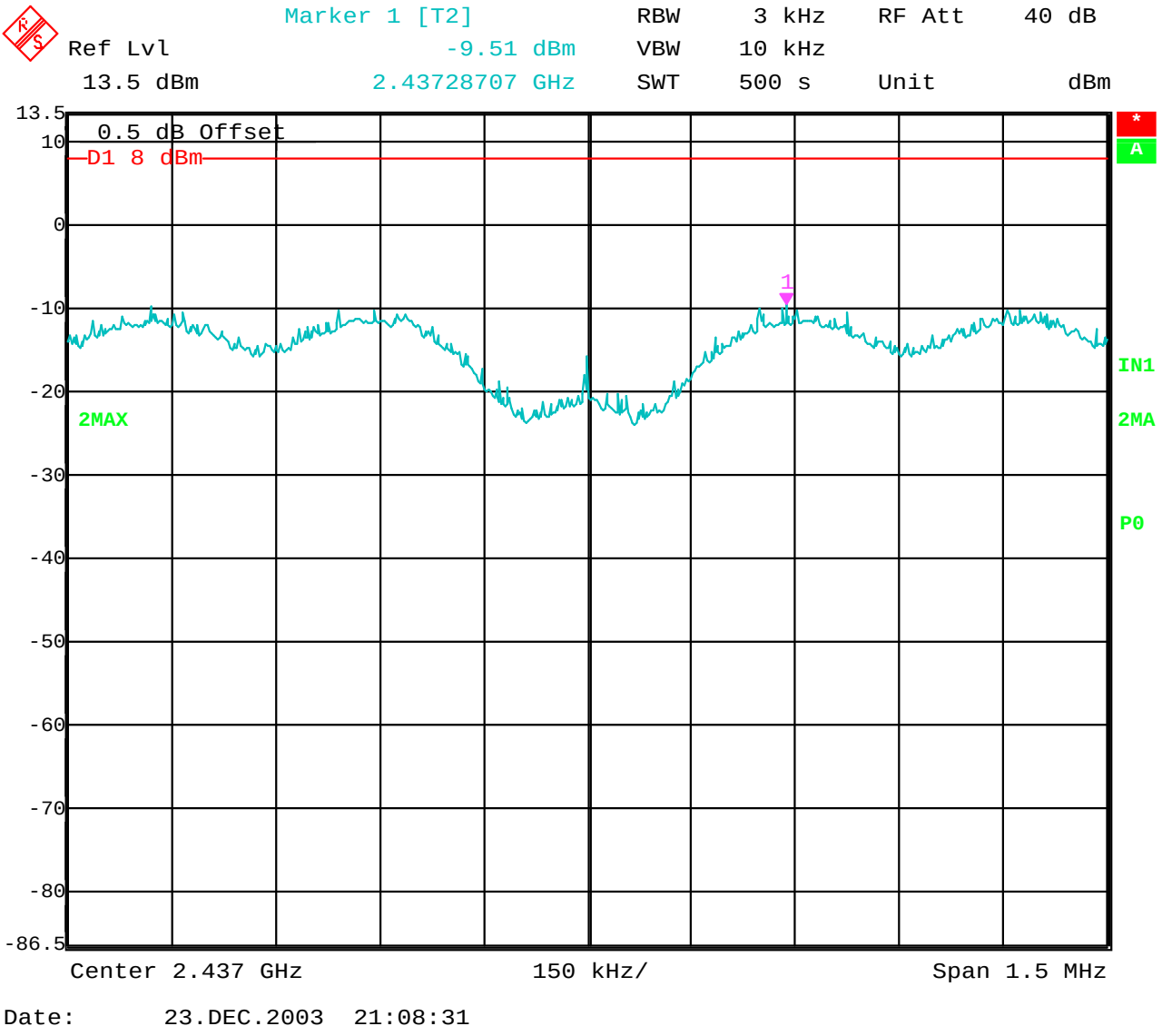
Spectral Density Output – Channel 6 – 802.11 b Mode



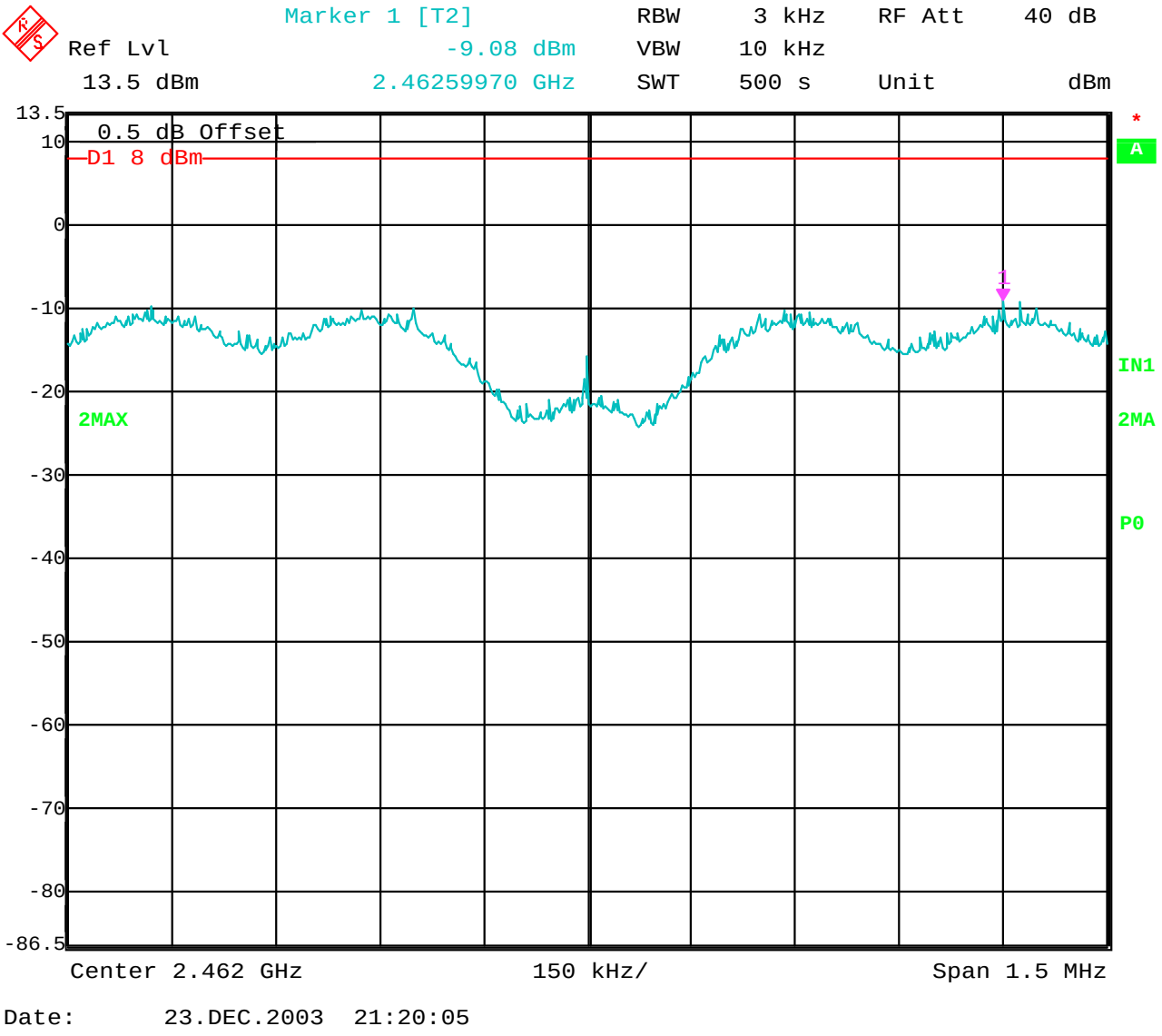
Spectral Density Output – Channel 11 – 802.11 b Mode



Spectral Density Output – Channel 1 – 802.11 g Mode



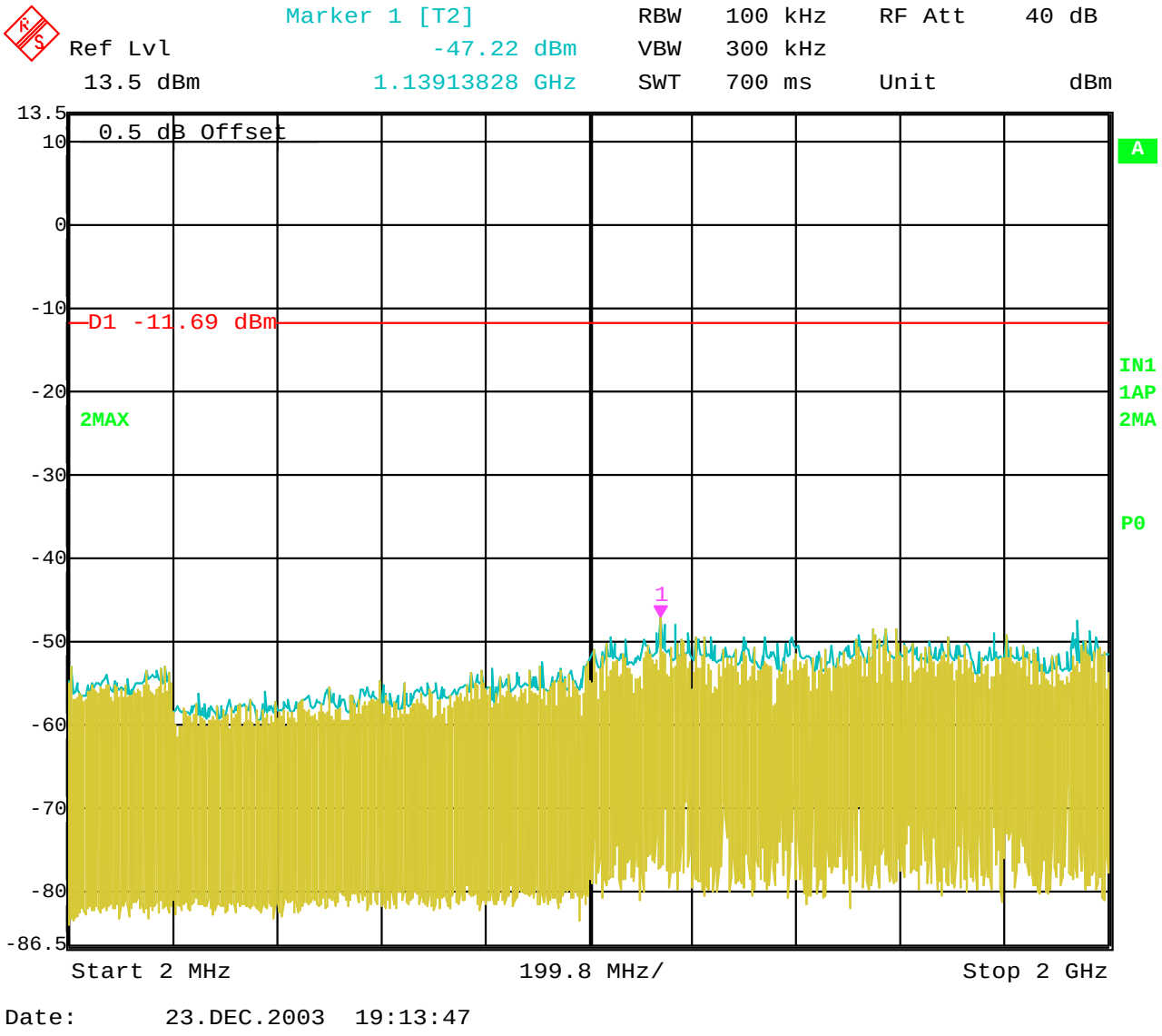
Spectral Density Output – Channel 6 – 802.11 g Mode



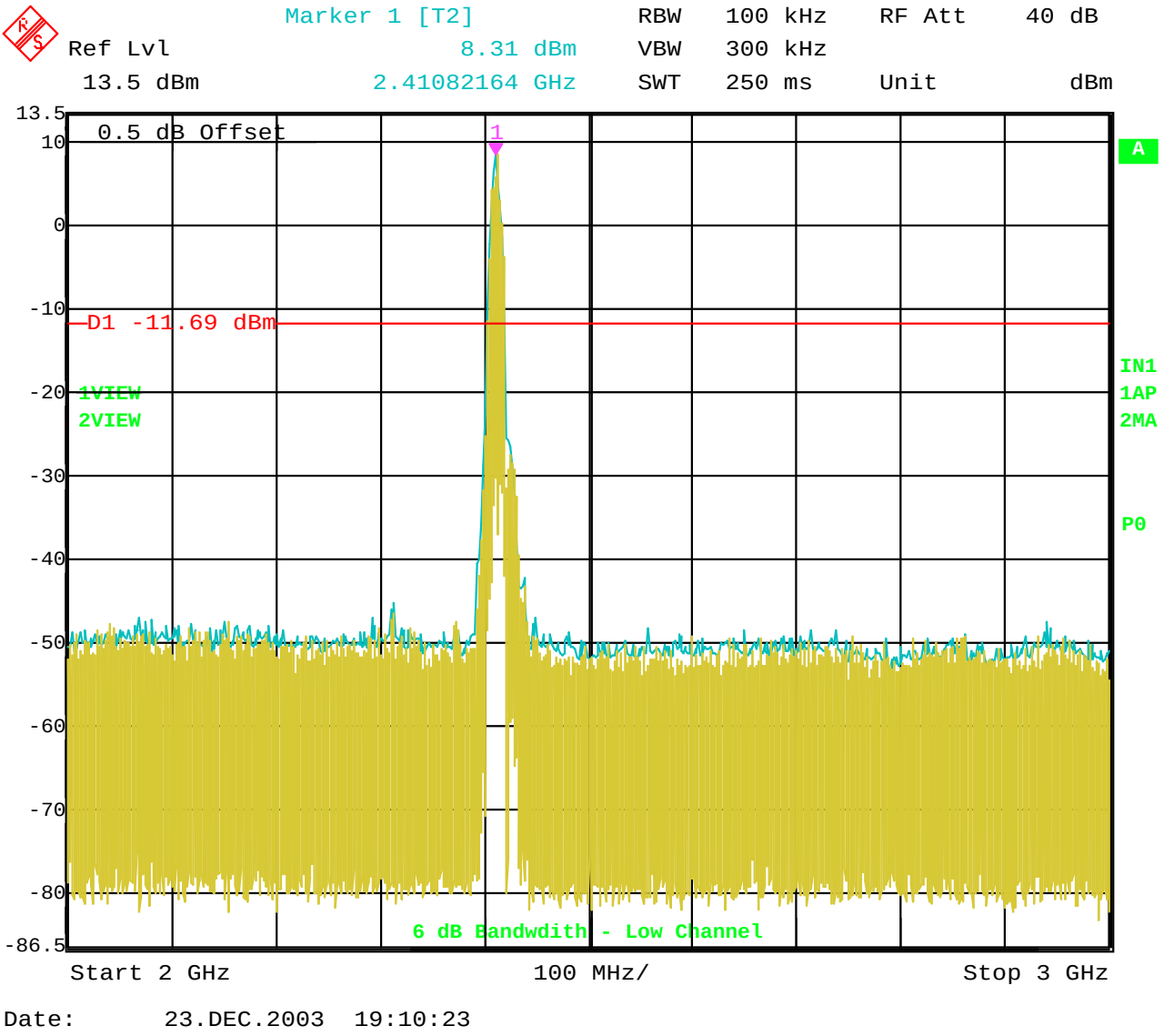
Spectral Density Output – Channel 11 – 802.11 g Mode

RF ANTENNA CONDUCTED

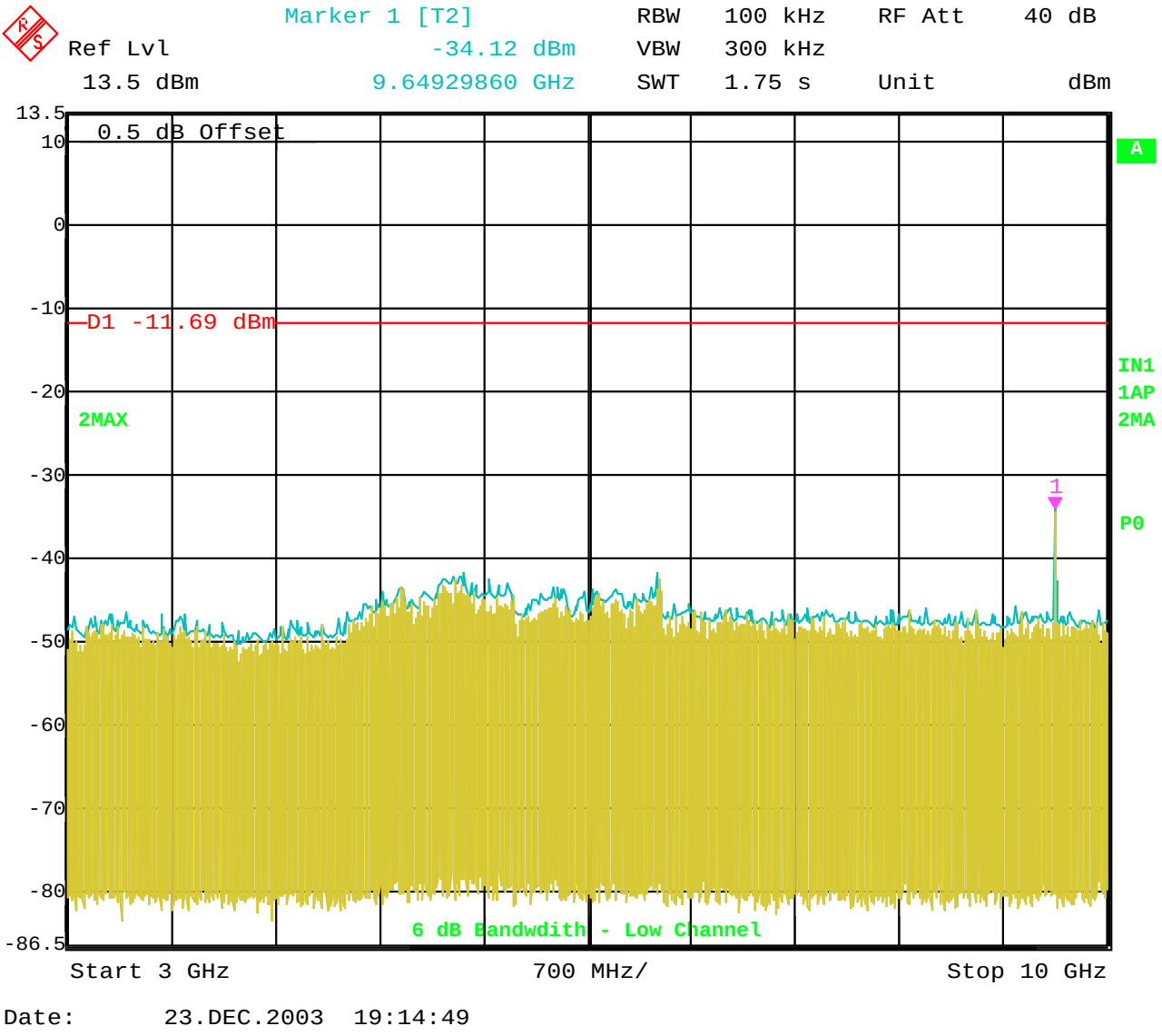
DATA SHEETS



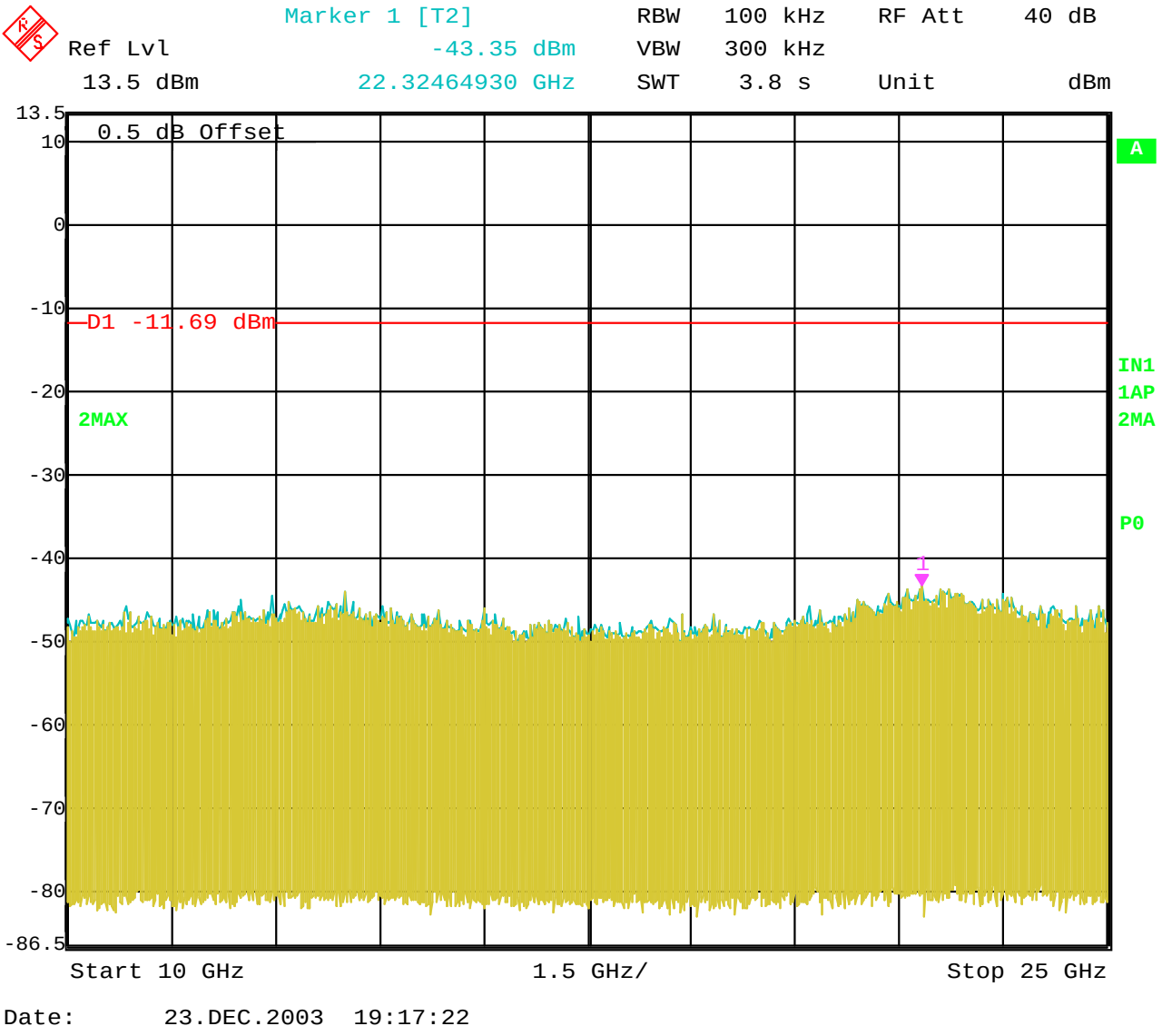
RF Antenna Conducted Test – Channel 1 – 802.11 b Mode – 2 MHz to 2 GHz



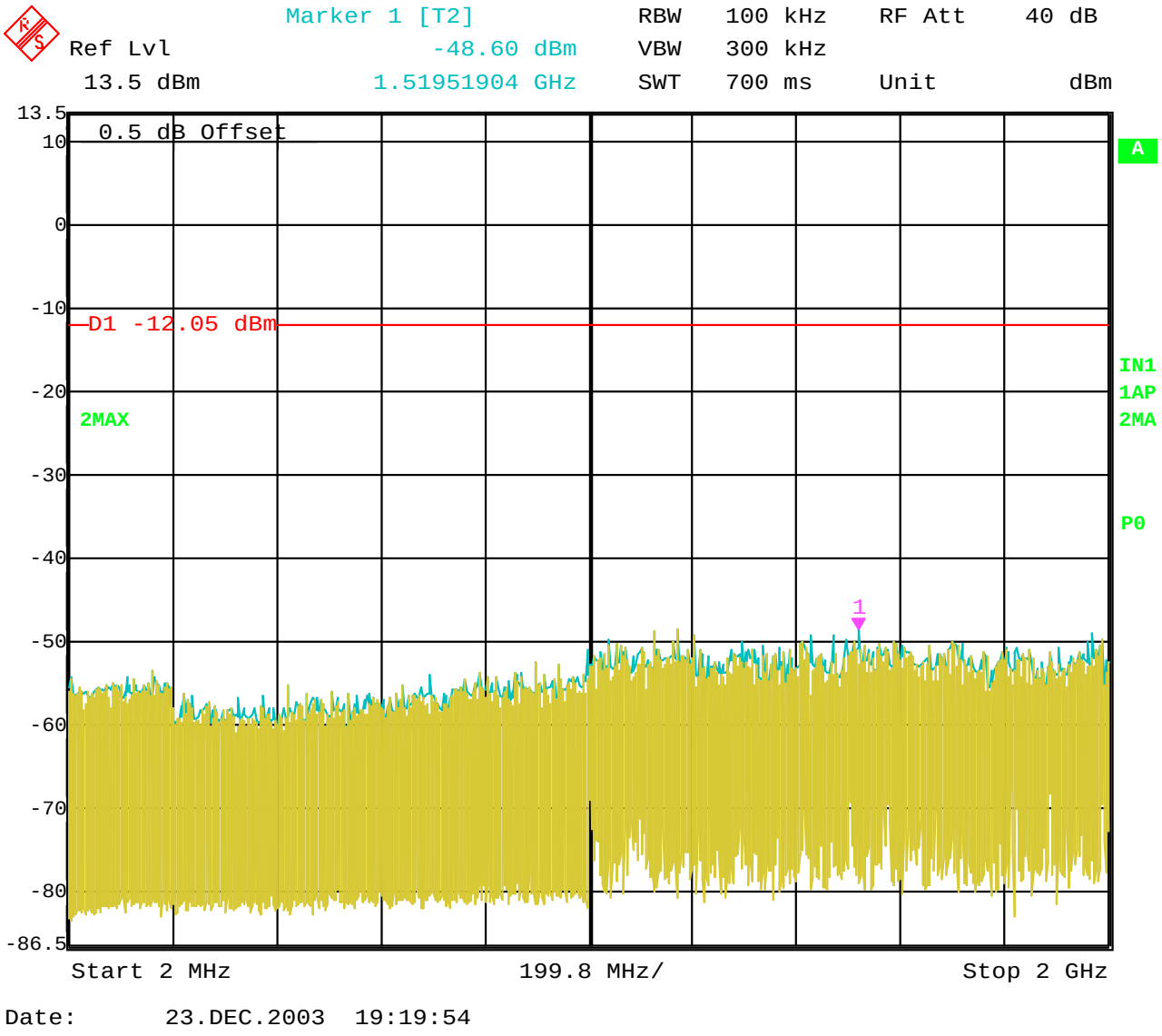
RF Antenna Conducted Test – Channel 1 – 802.11 b Mode – 2 GHz to 3 GHz



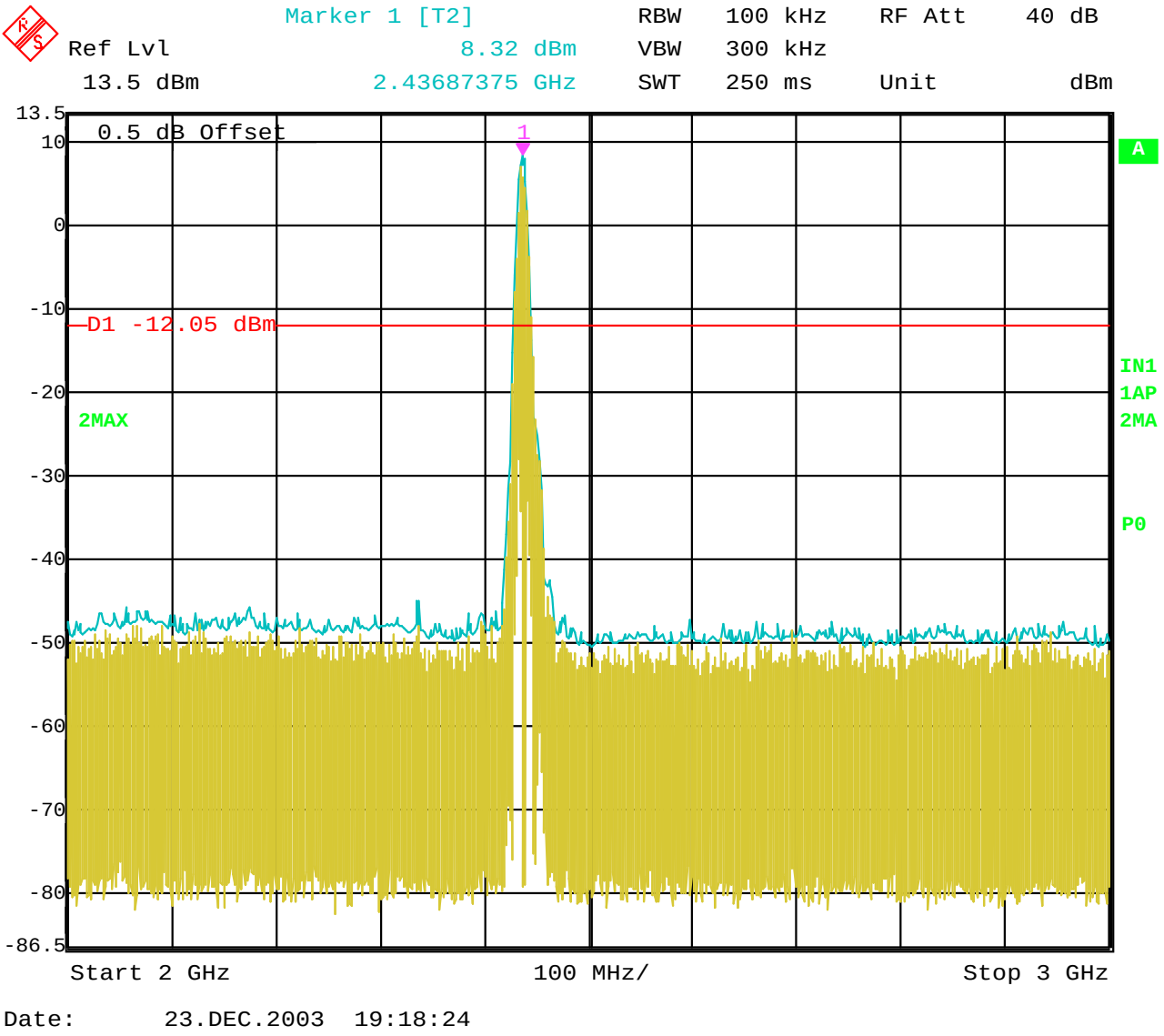
RF Antenna Conducted Test – Channel 1 – 802.11 b Mode – 3 GHz to 10 GHz



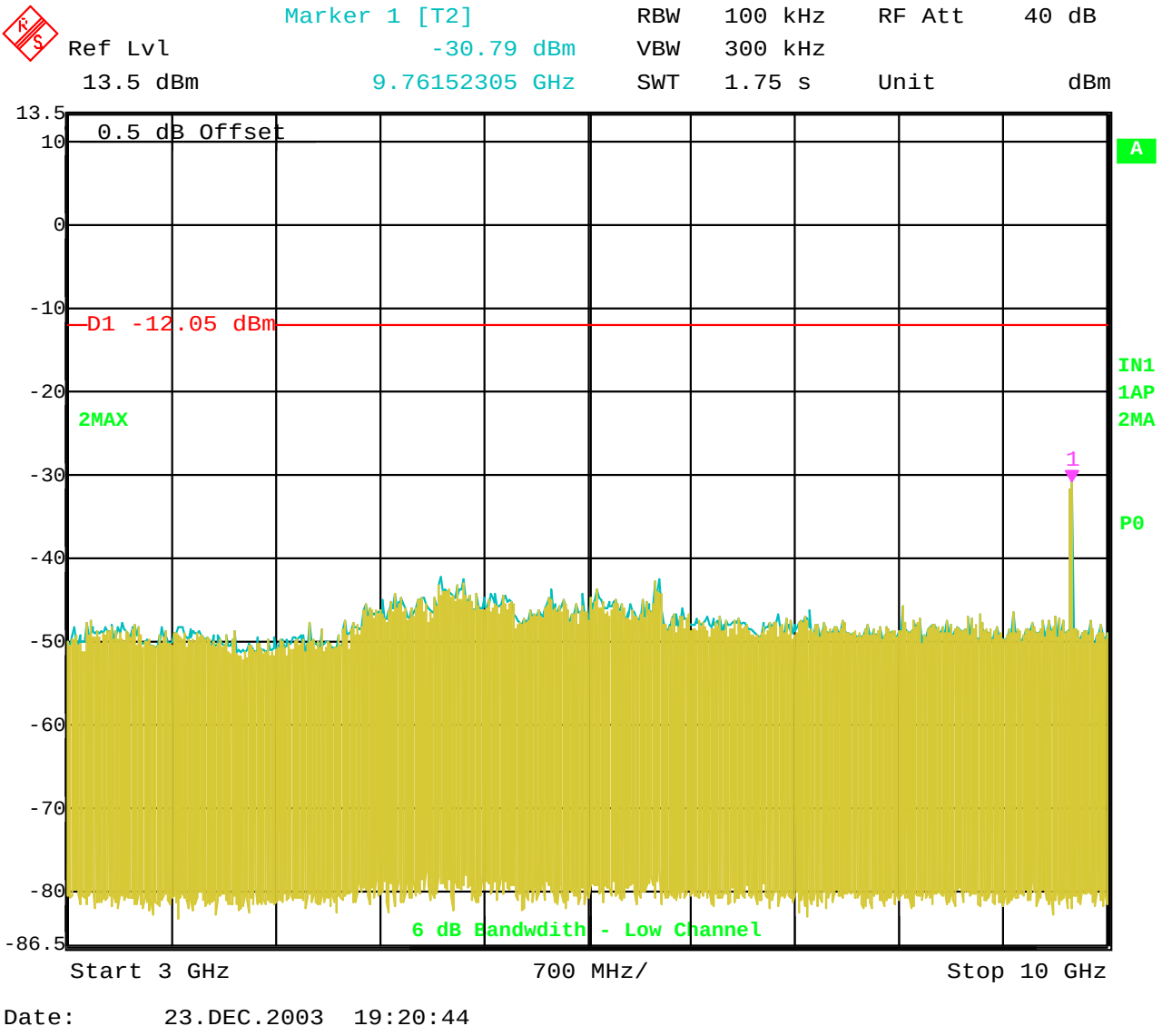
RF Antenna Conducted Test – Channel 1 – 802.11 b Mode – 10 GHz to 25 GHz



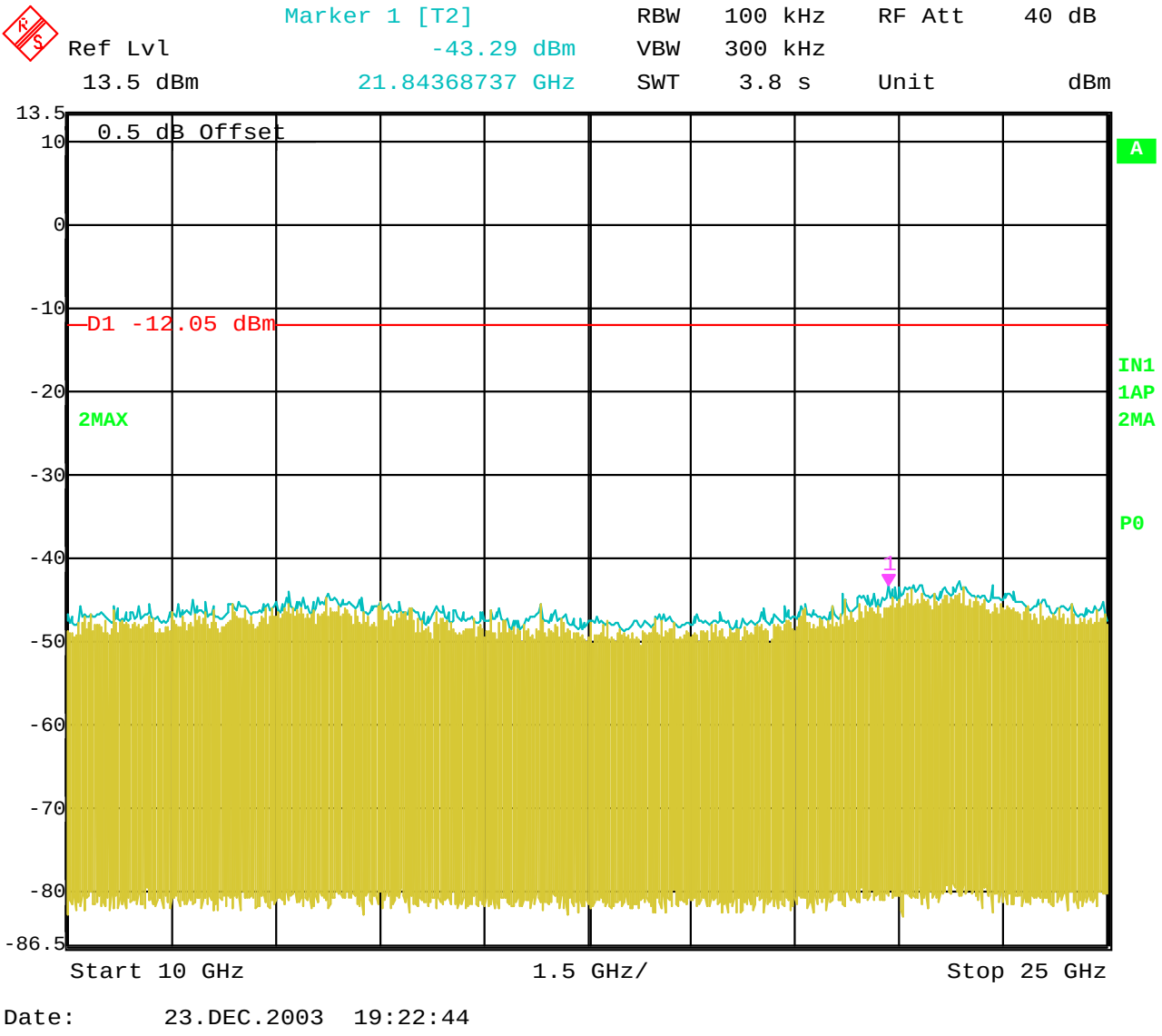
RF Antenna Conducted Test – Channel 6 – 802.11 b Mode – 2 MHz to 2 GHz



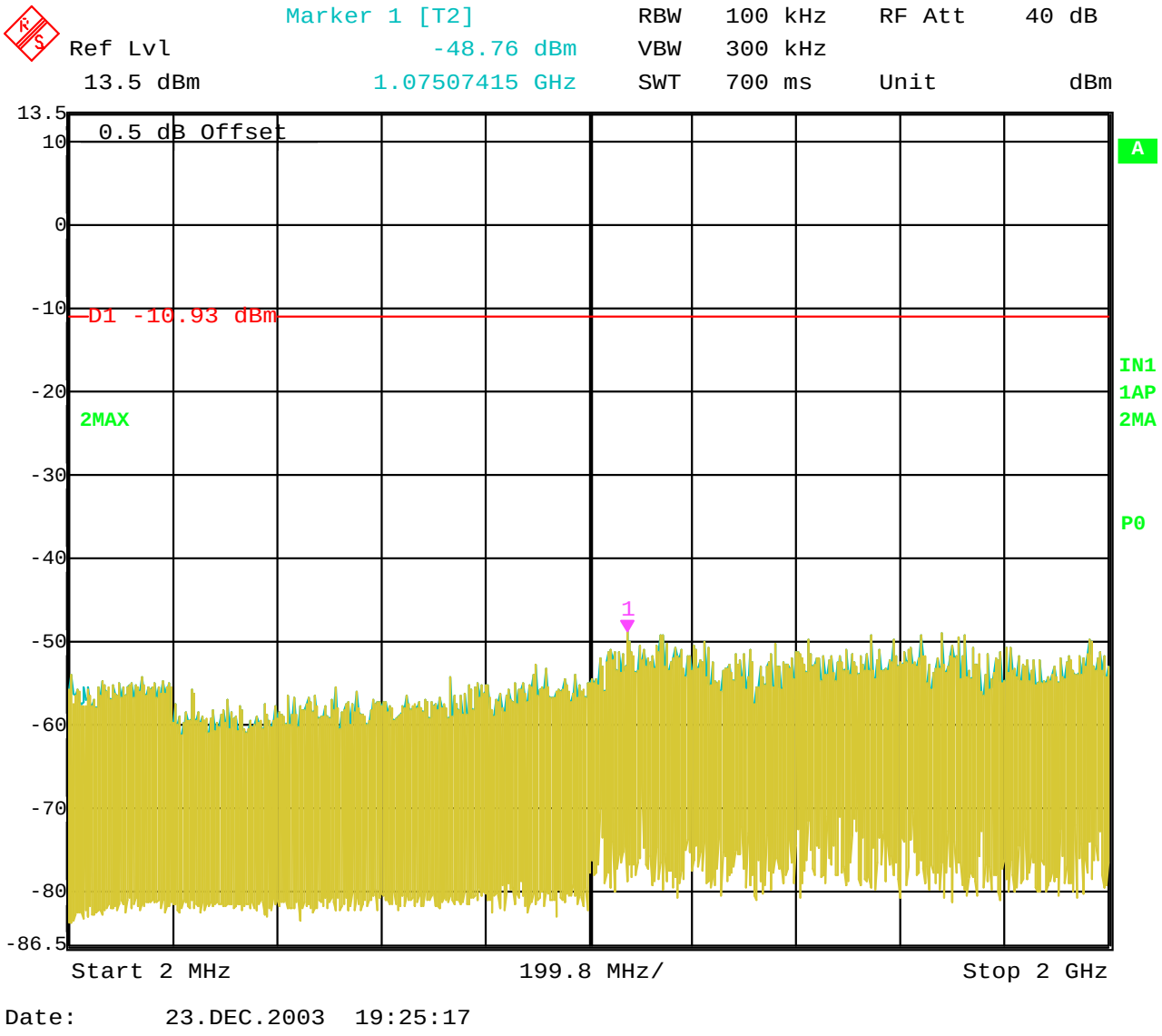
RF Antenna Conducted Test – Channel 6 – 802.11 b Mode – 2 GHz to 3GHz



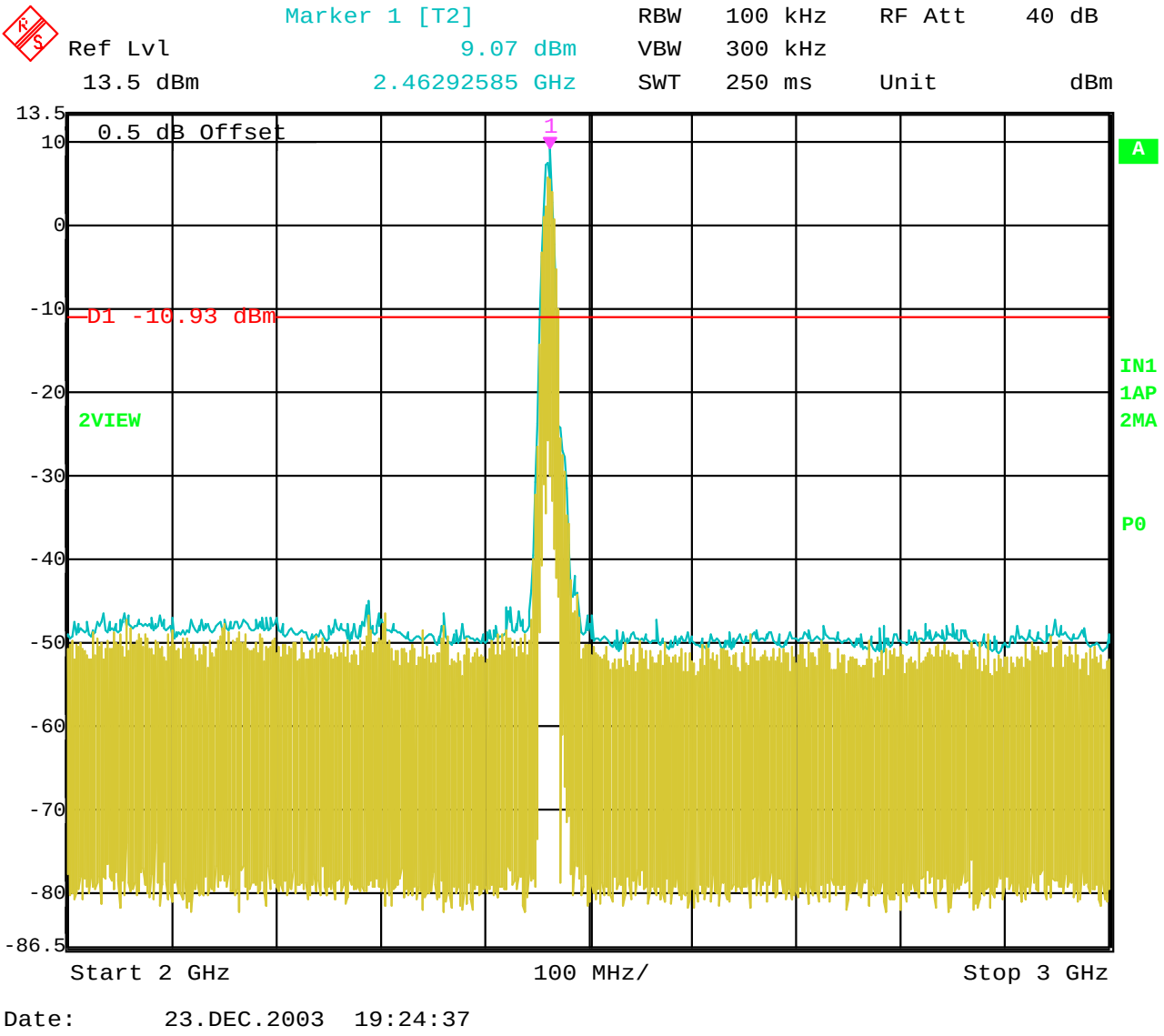
RF Antenna Conducted Test – Channel 6 – 802.11 b Mode – 3 GHz to 10 GHz



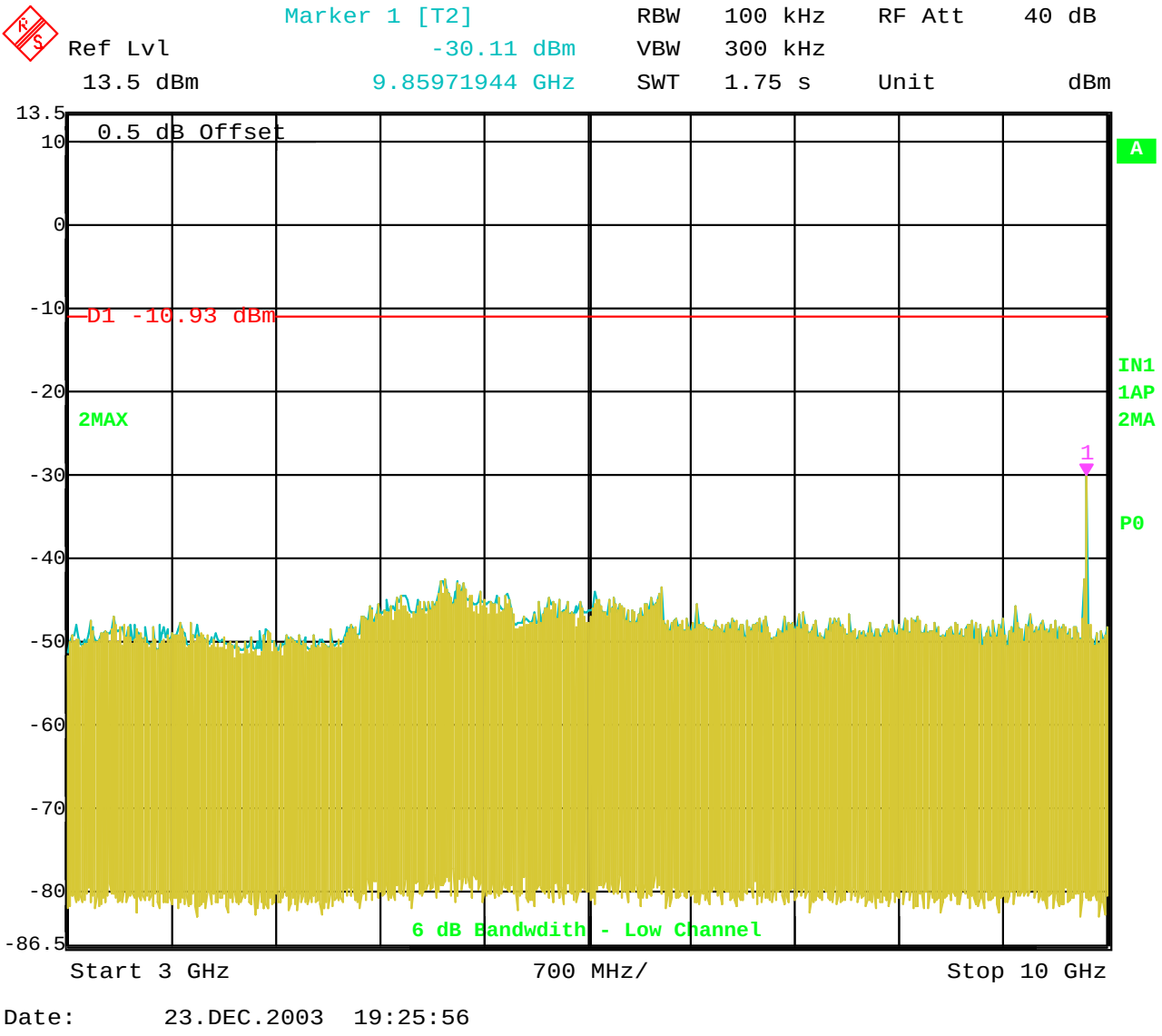
RF Antenna Conducted Test – Channel 6 – 802.11 b Mode – 10 GHz to 25 GHz



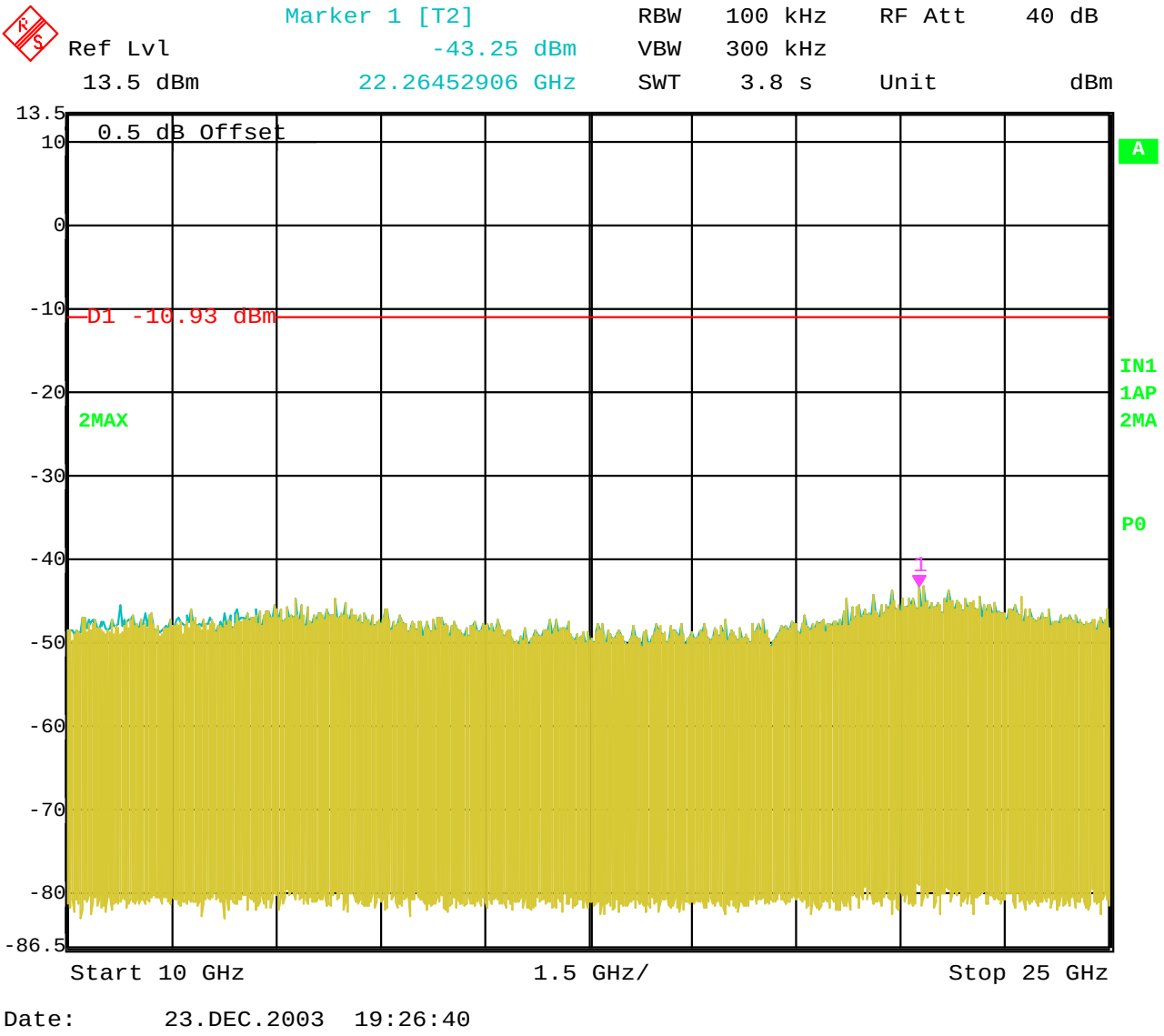
RF Antenna Conducted Test – Channel 1 – 802.11 b Mode – 2 MHz to 2GHz



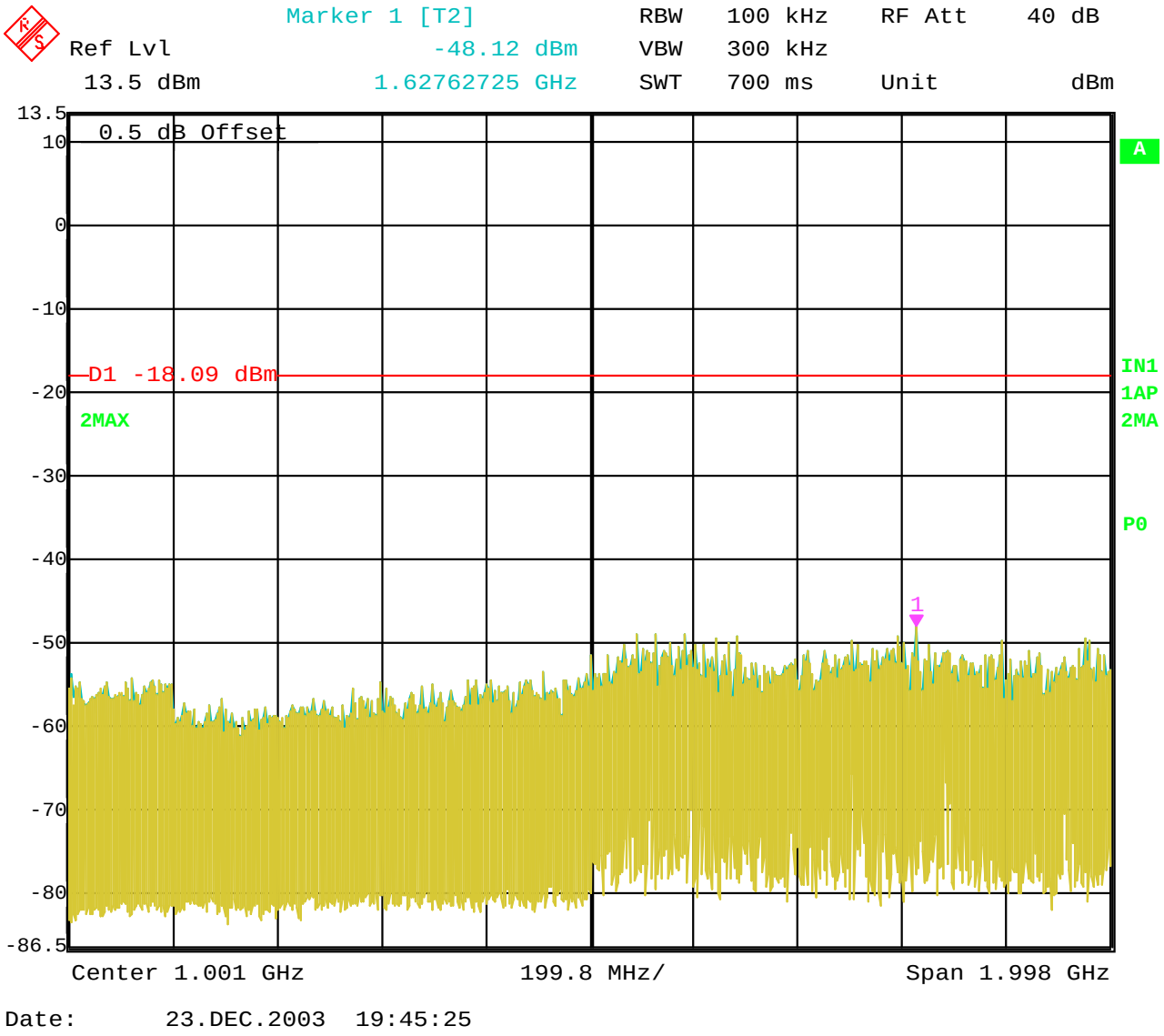
RF Antenna Conducted Test – Channel 11 – 802.11 b Mode – 2 GHz to 3 GHz



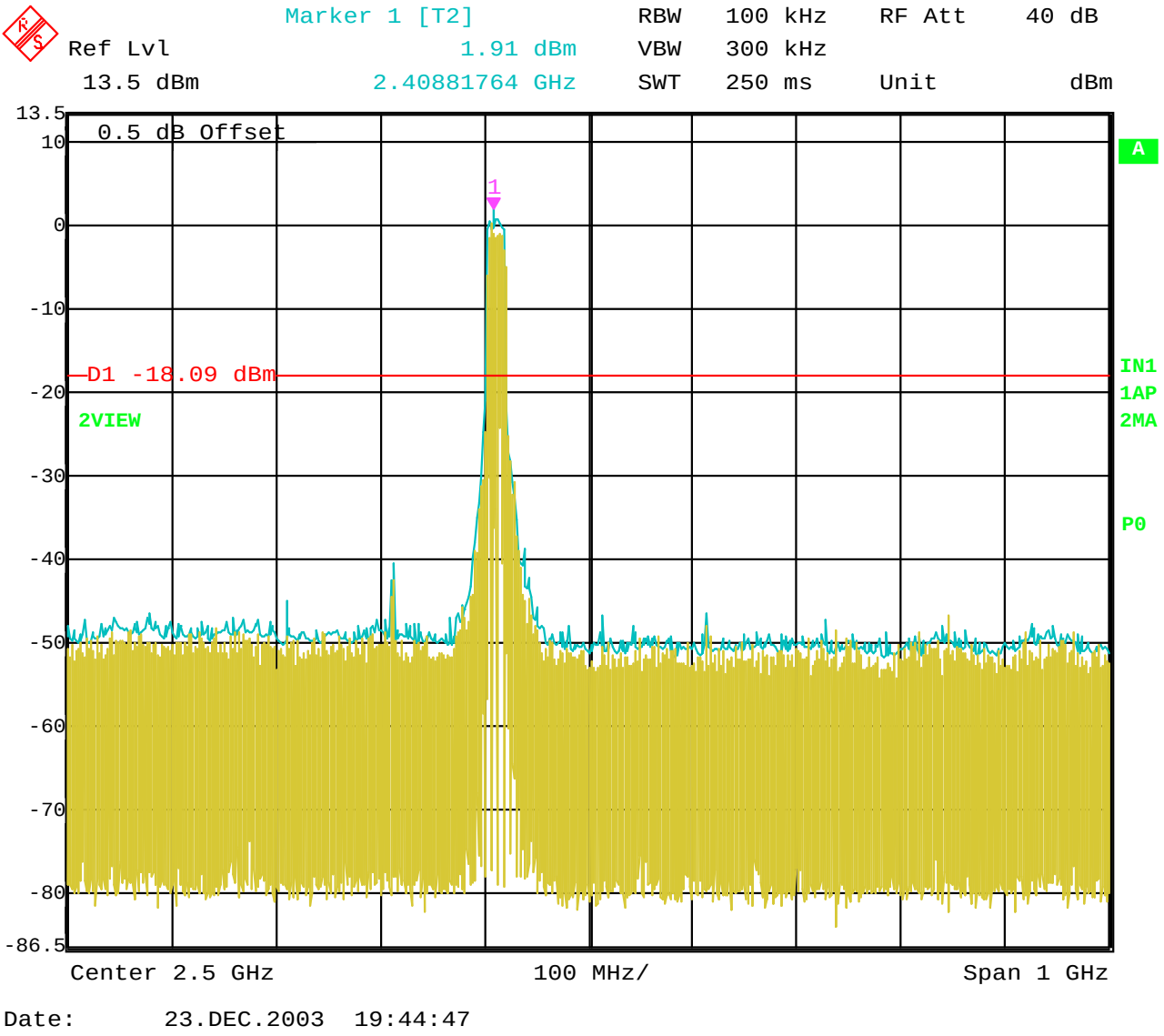
RF Antenna Conducted Test – Channel 11 – 802.11 b Mode – 3 GHz to 10 GHz



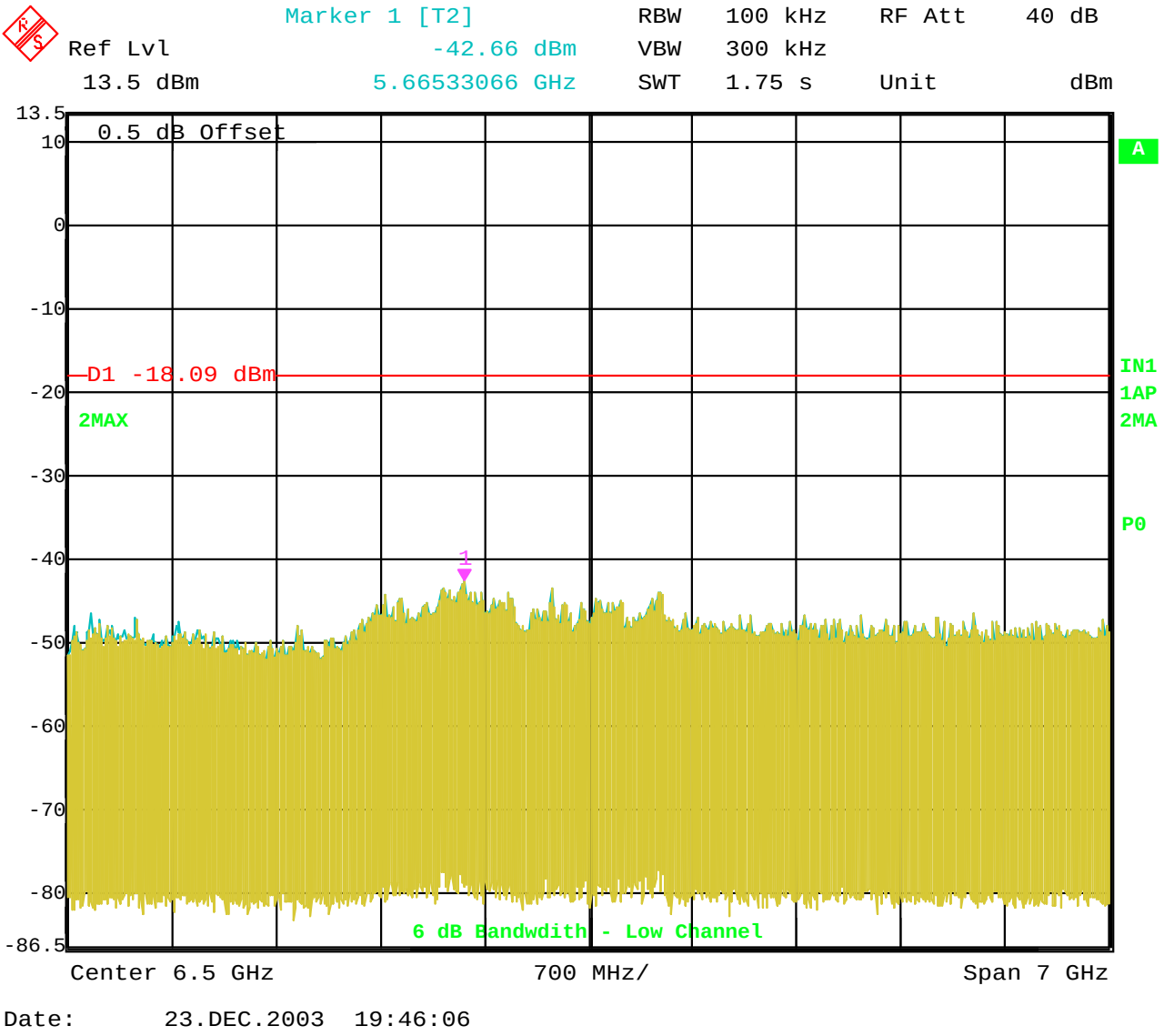
RF Antenna Conducted Test – Channel 11 – 802.11 b Mode – 10 GHz to 25 GHz



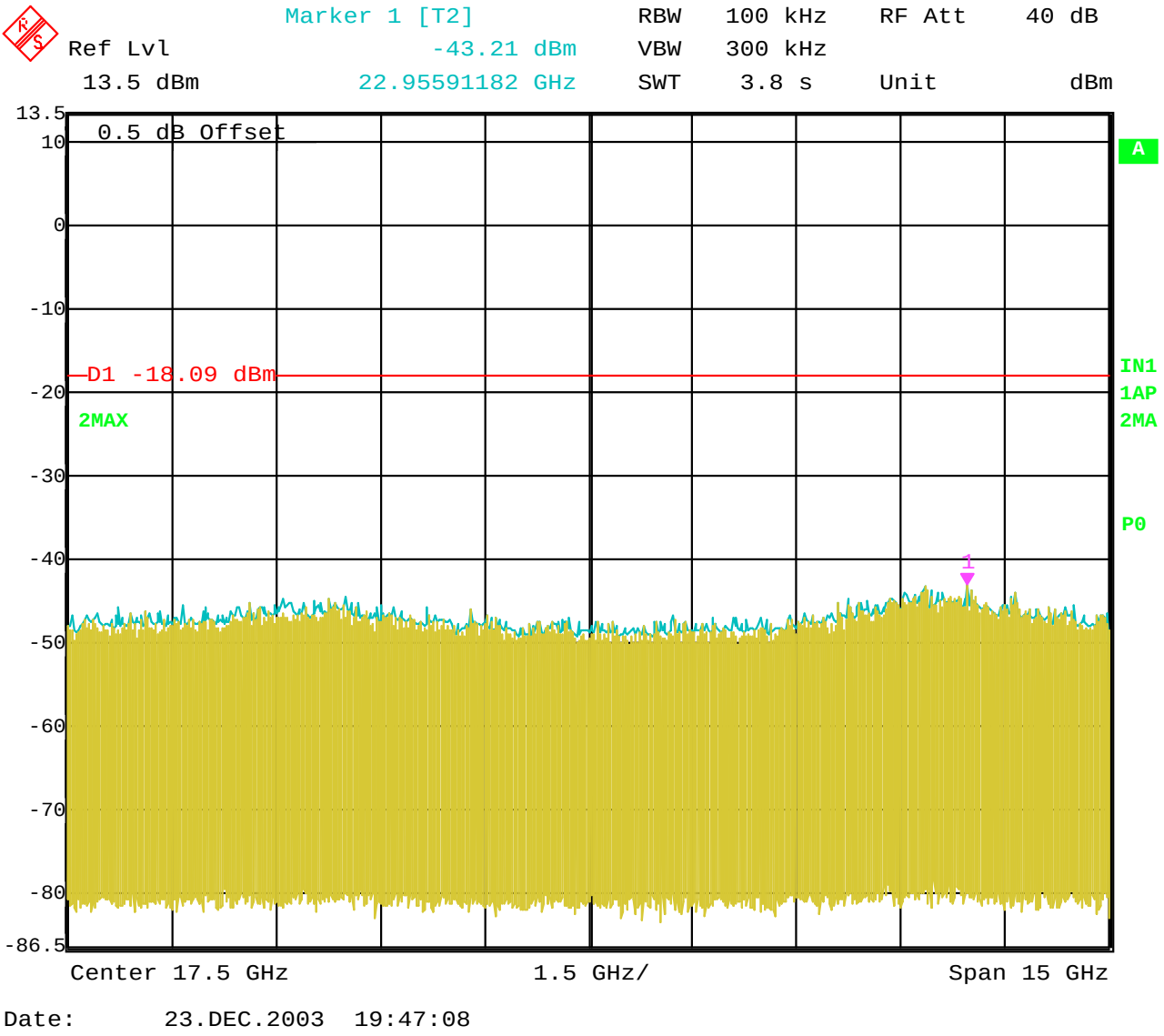
RF Antenna Conducted Test – Channel 1 – 802.11 g Mode – 2 MHz to 2 GHz



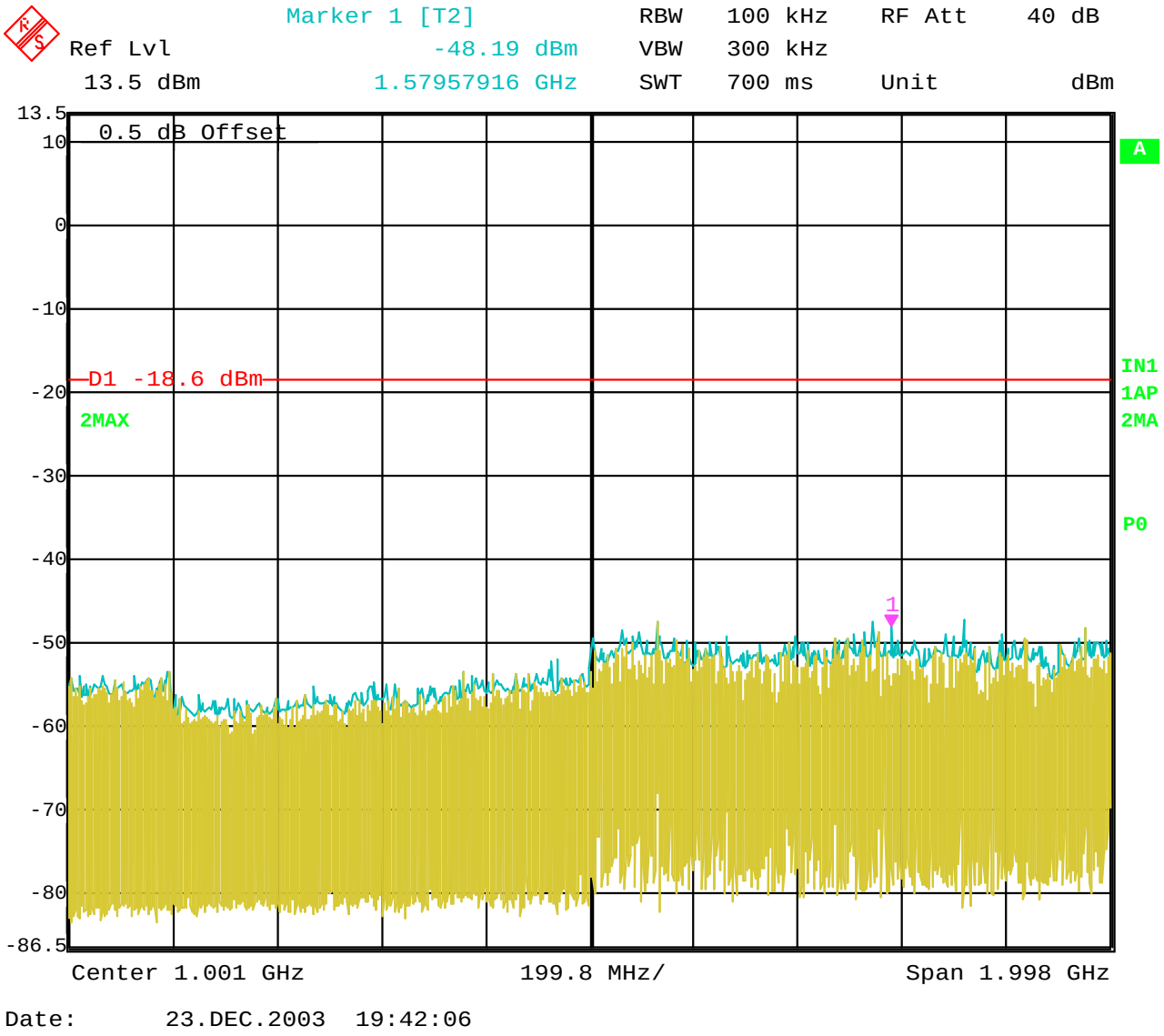
RF Antenna Conducted Test – Channel 1 – 802.11 g Mode – 2 GHz to 3 GHz



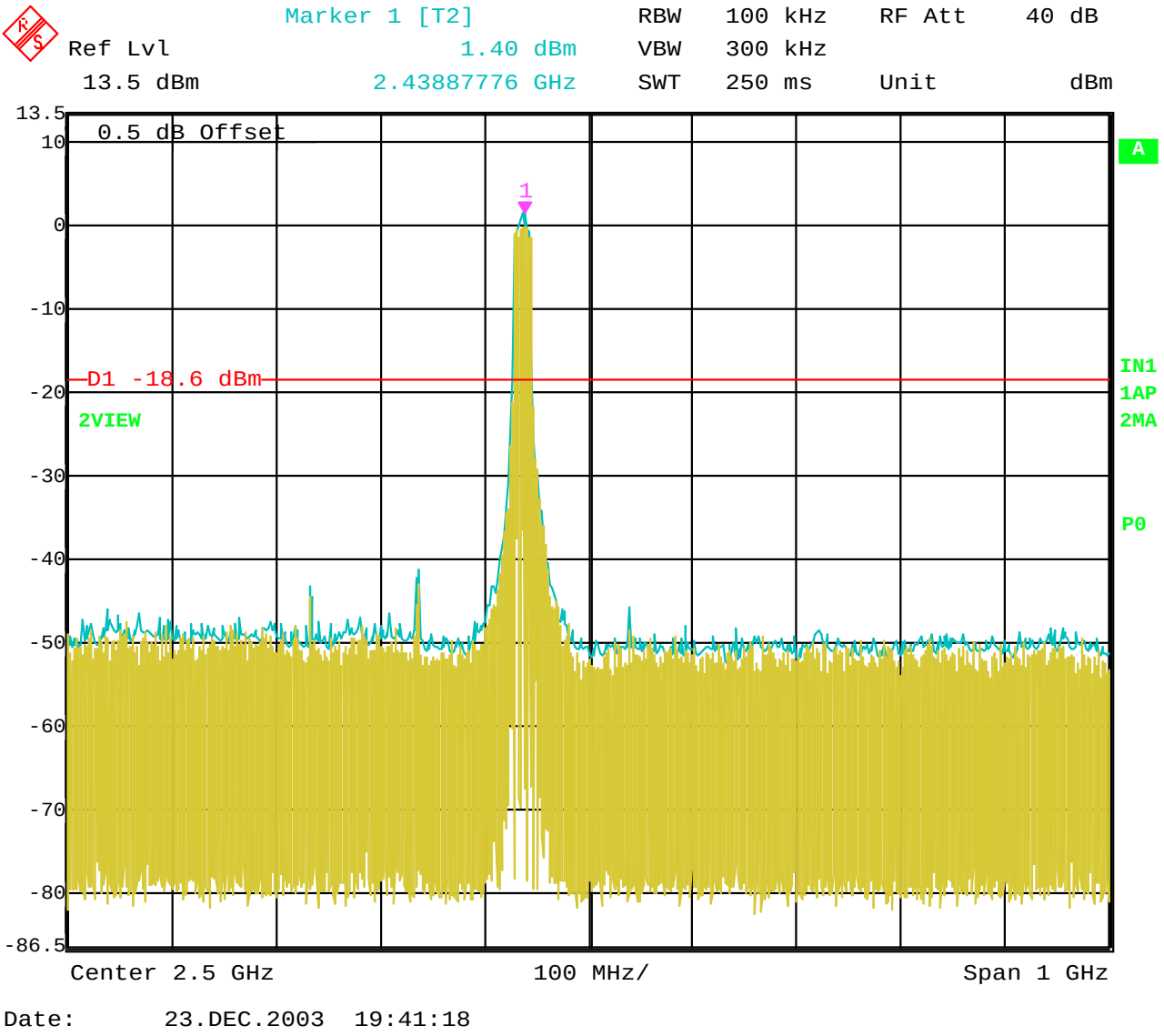
RF Antenna Conducted Test – Channel 1 – 802.11 g Mode – 3 GHz to 10 GHz



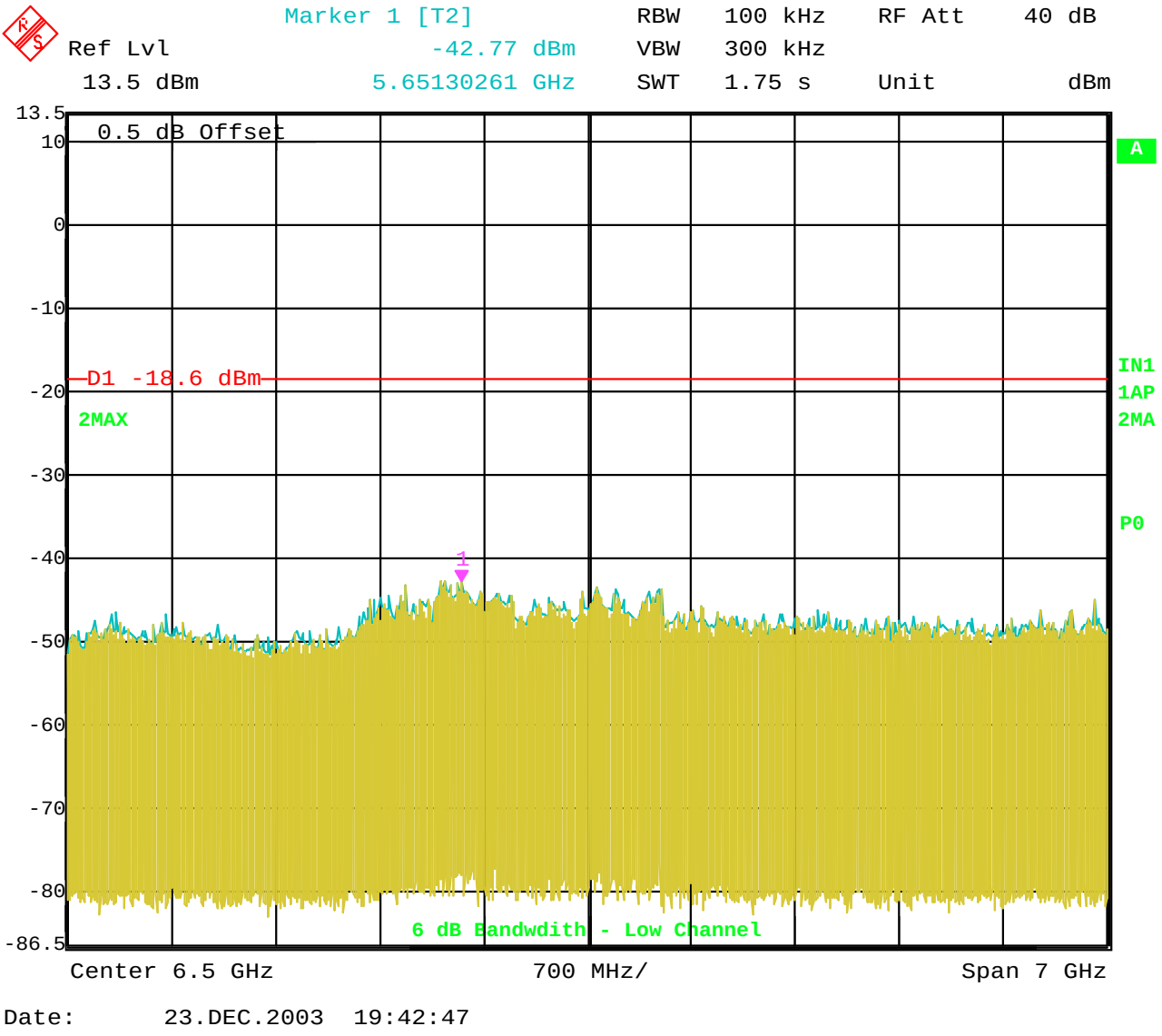
RF Antenna Conducted Test – Channel 1 – 802.11 g Mode – 10 GHz to 25 GHz



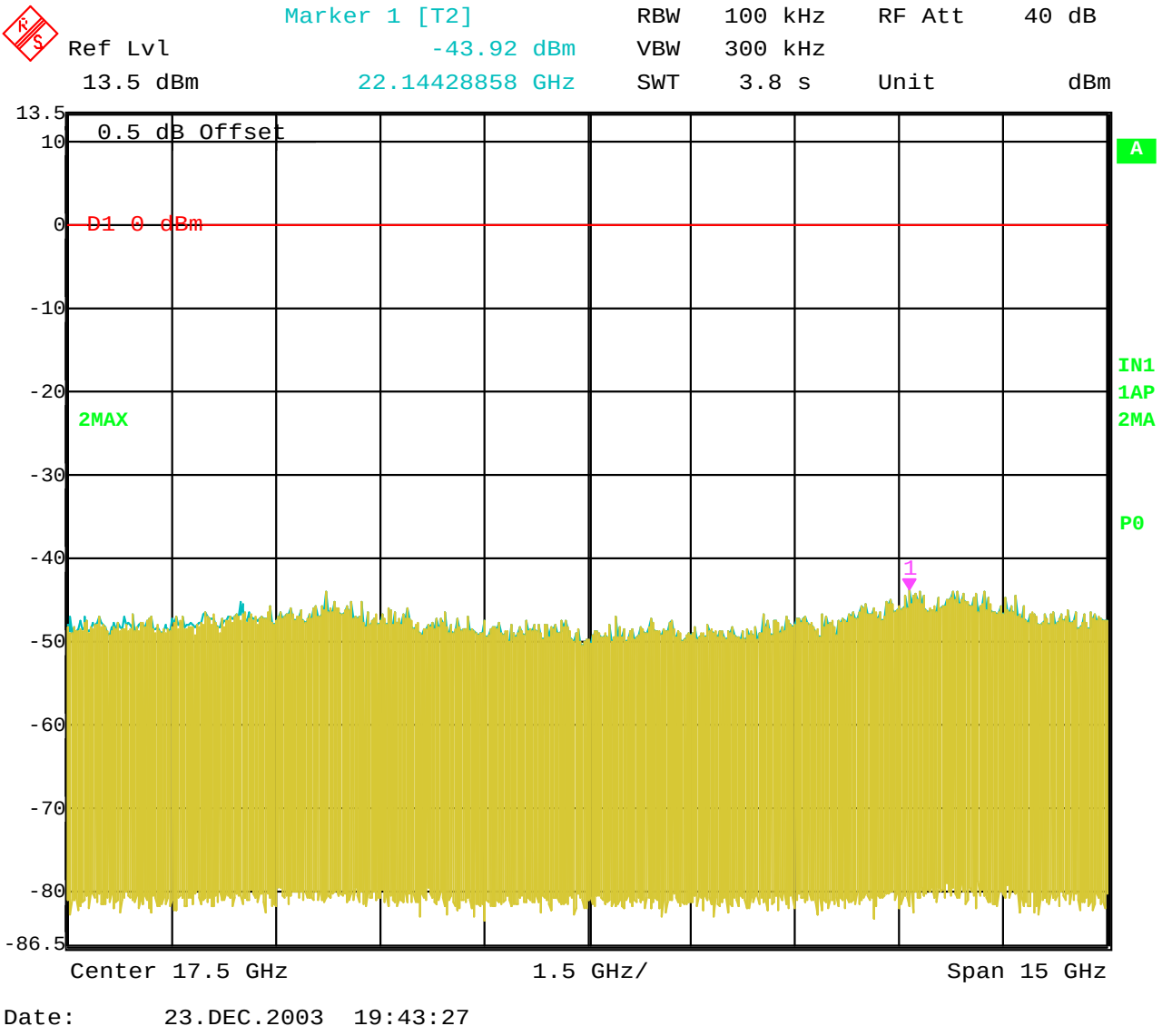
RF Antenna Conducted Test – Channel 6 – 802.11 g Mode – 2MHz to 2 GHz



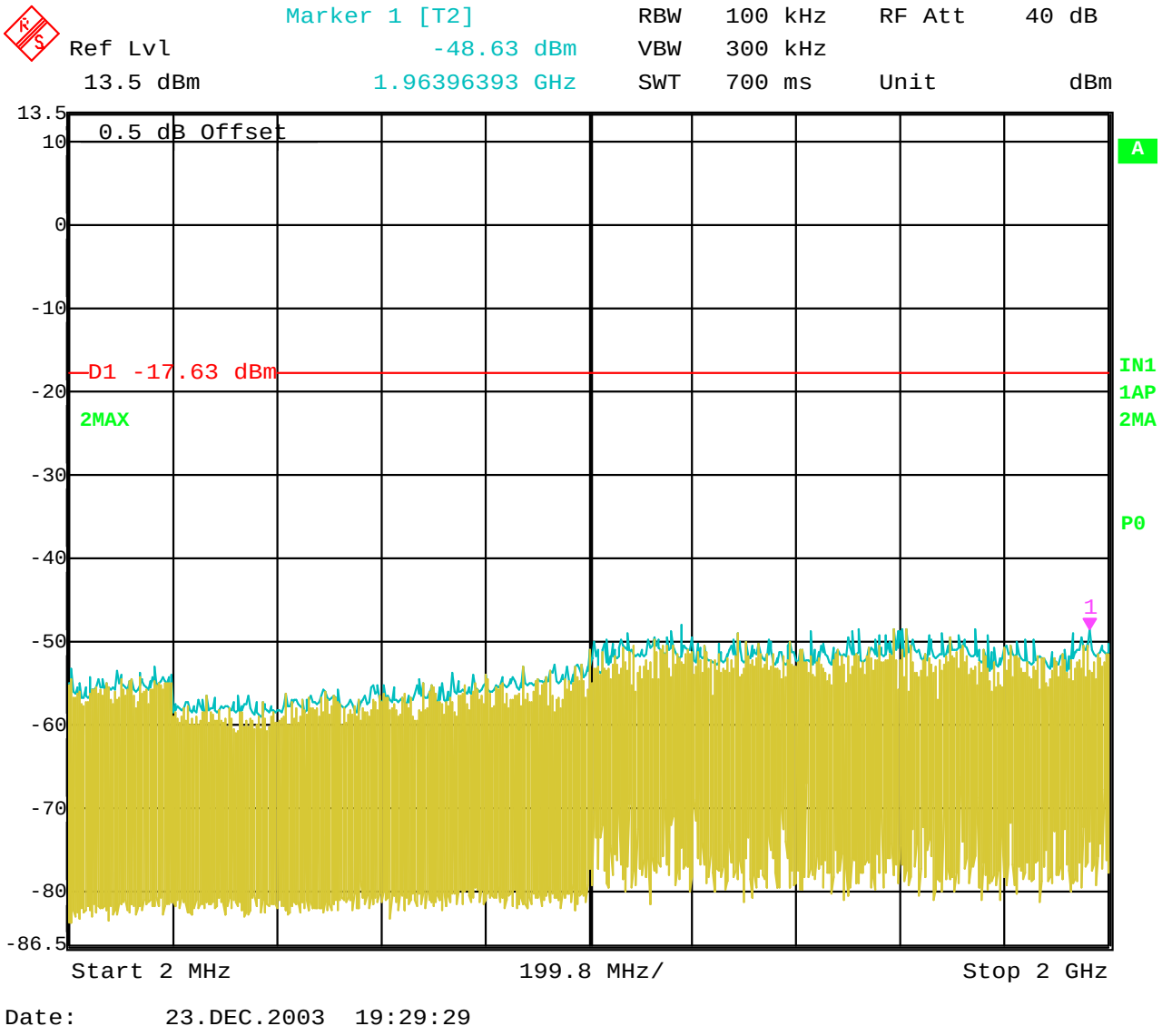
RF Antenna Conducted Test – Channel 6 – 802.11 g Mode – 2 GHz to 3 GHz



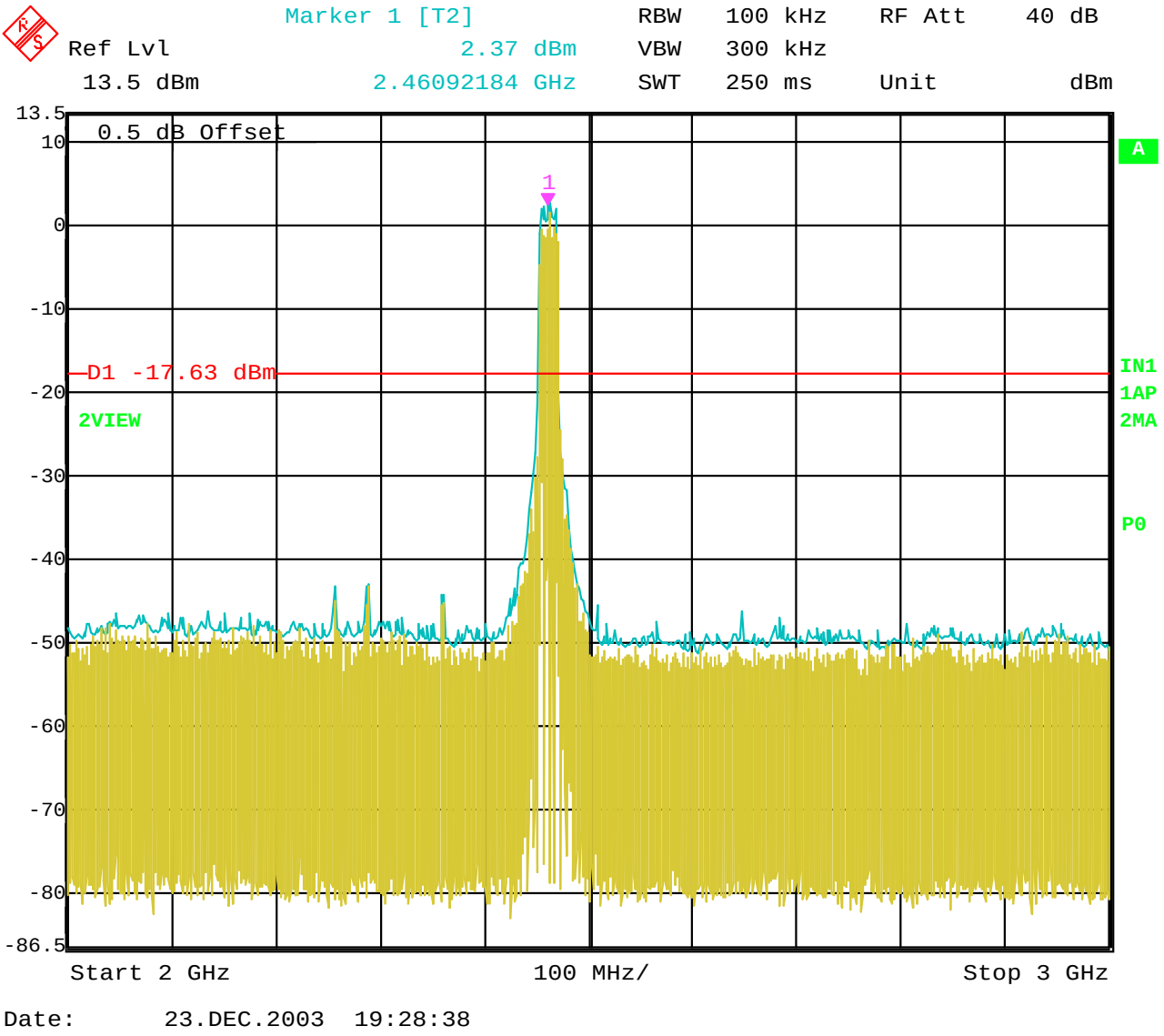
RF Antenna Conducted Test – Channel 6 – 802.11 g Mode – 3 GHz to 10 GHz



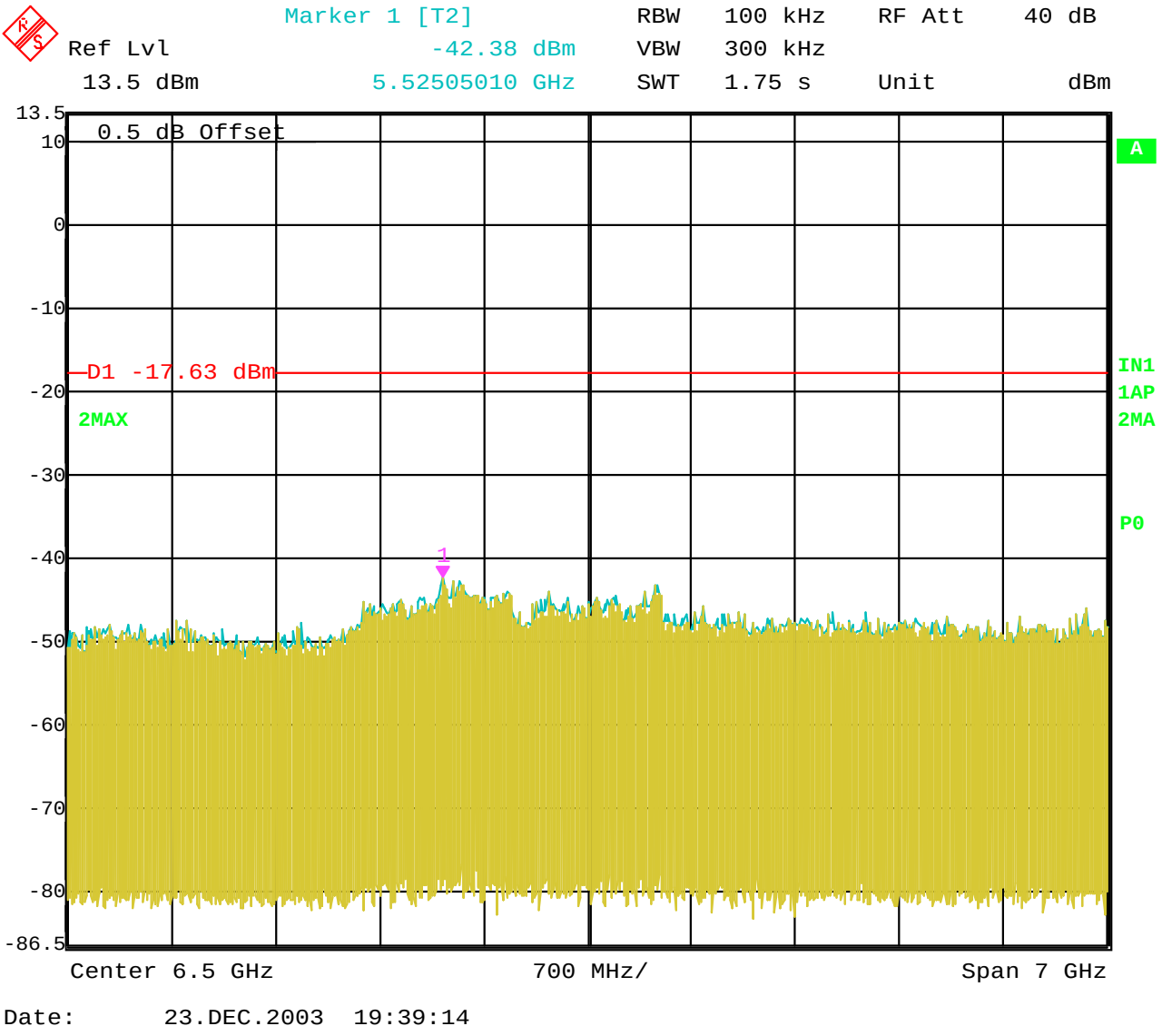
RF Antenna Conducted Test – Channel 6 – 802.11 g Mode – 10 GHz to 25 GHz



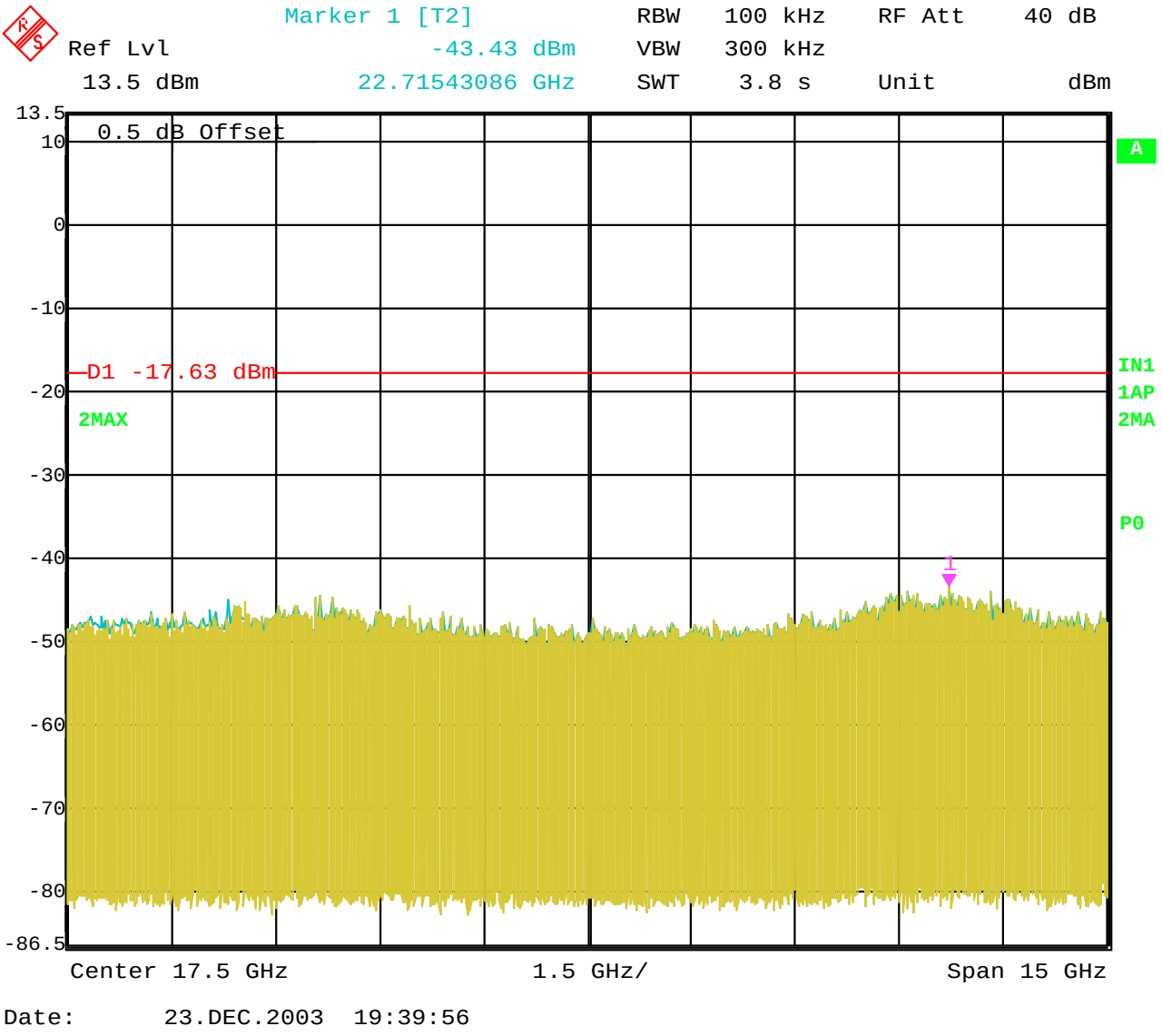
RF Antenna Conducted Test – Channel 11 – 802.11 g Mode – 2 MHz to 2 GHz



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



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



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

BAND EDGE

DATA SHEETS

FCC 15.247

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

Date: 1/15/04
Lab: B
Tested By: Kyle Fujimoto

Configuration: Hewlett Packard Laptop Agency Series Number PP2190

Channel 1 - 802.11 b Mode	GAIN:	30	OUTPUT	17.14 dBm
Channel 6 - 802.11 b Mode	GAIN:	30.5	OUTPUT	17.53 dBm
Channel 11 - 802.11 b Mode	GAIN:	30.5	OUTPUT	17.59 dBm

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2412	106.46	V	"--"	"--"	Peak	2.25	270	Fundamental of Channel 1
2412	100.05	V	"--"	"--"	Avg	2.25	270	at 3 Meters
2383.65	58.59	V	74	-15.41	Peak	2.25	270	**No Marker Delta Method**
2383.65	48.03	V	54	-5.97	Avg	2.25	270	**Required**
2437	106.22	V	"--"	"--"	Peak	2.25	270	Fundamental of Channel 6
2437	100.28	V	"--"	"--"	Avg	2.25	270	at 3 Meters
2462	107.81	V	"--"	"--"	Peak	2.25	270	Fundamental of Channel 11
2462	101.67	V	"--"	"--"	Avg	2.25	270	at 3 Meters
2491.28	58.33	V	74	-15.67	Peak	2.25	270	**No Marker Delta Method**
2491.28	49.58	V	54	-4.42	Avg	2.25	270	**Required**

FCC 15.247

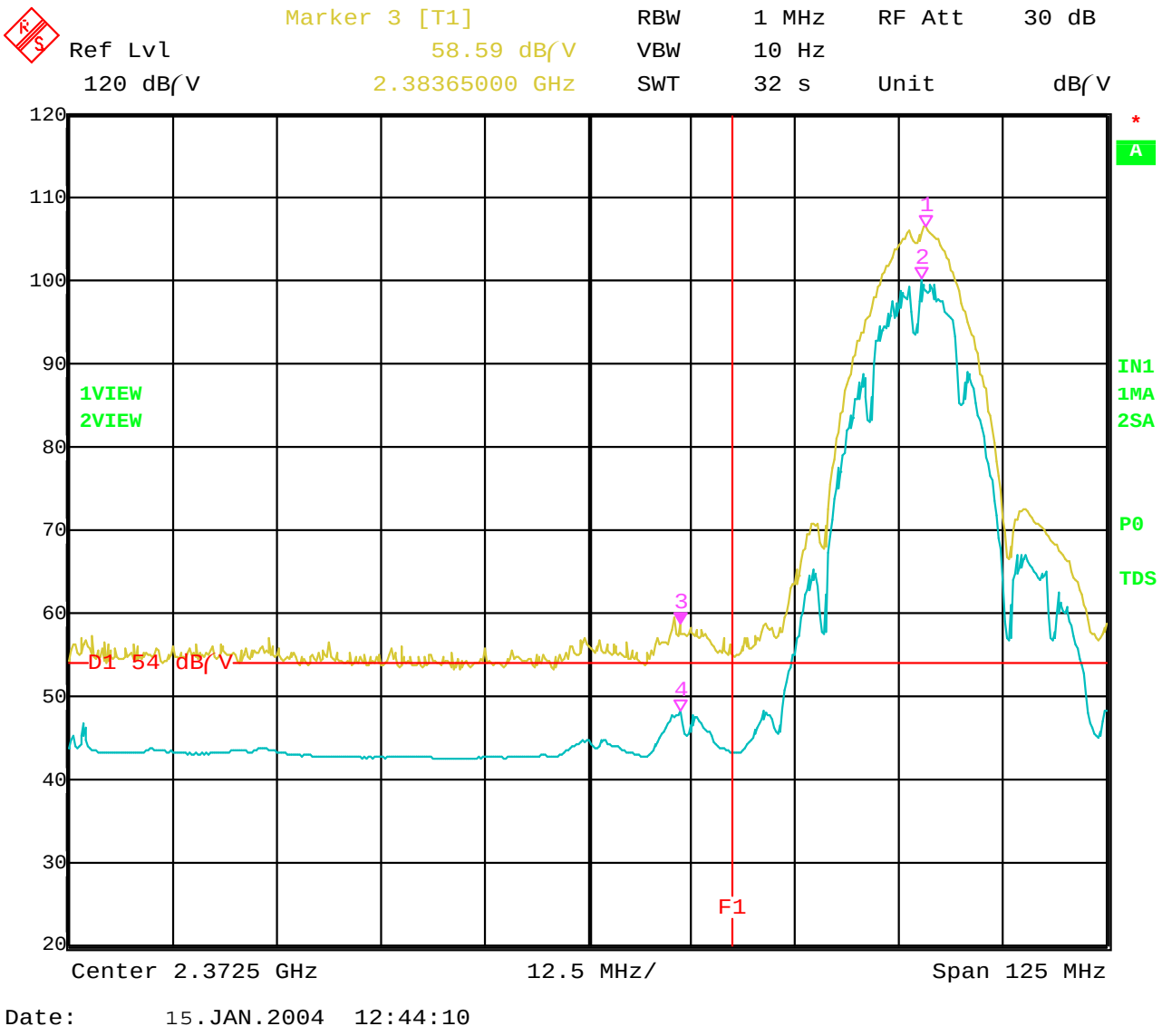
Intel Corporation
Intel Mini PCI Type 802.11BG Wireless LAN Adapter
Model: WM3B2200BG

Date: 1/15/04
Lab: B
Tested By: Kyle Fujimoto

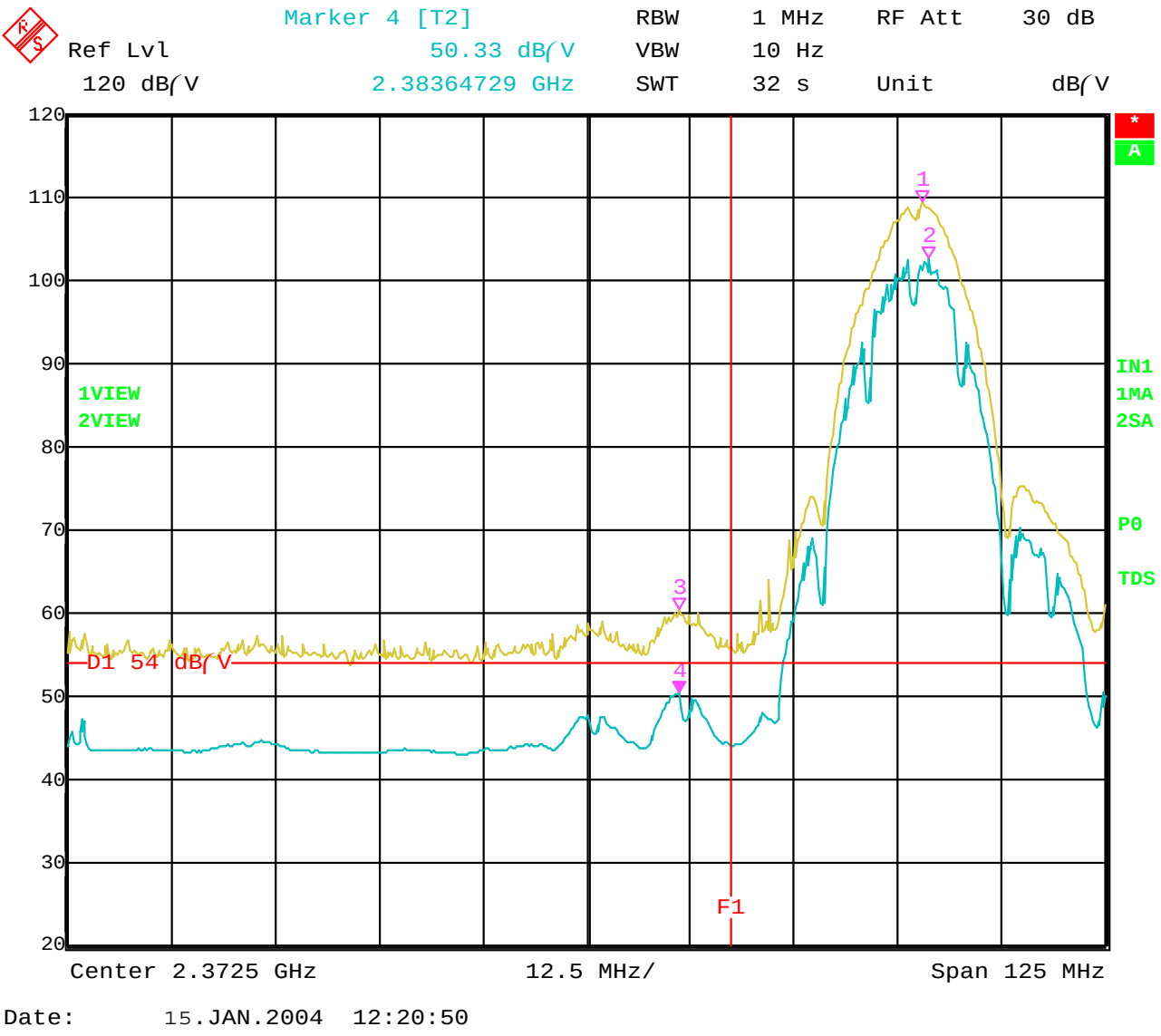
Configuration: Hewlett Packard Laptop Agency Series Number PP2190

Channel 1 - 802.11 b Mode	GAIN:	30	OUTPUT	17.14 dBm
Channel 6 - 802.11 b Mode	GAIN:	30.5	OUTPUT	17.53 dBm
Channel 11 - 802.11 b Mode	GAIN:	30.5	OUTPUT	17.59 dBm

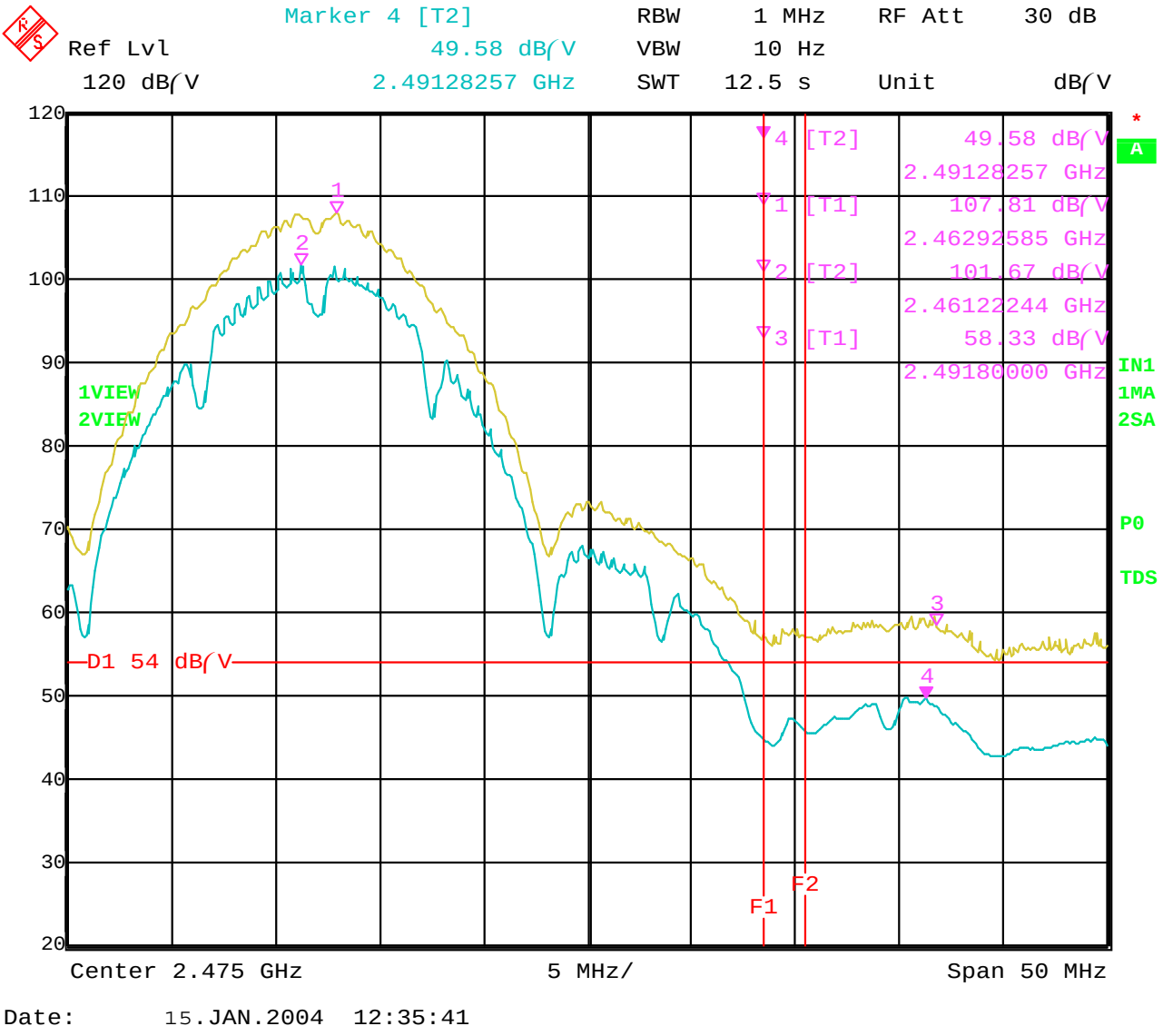
Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2412	109.26	H	"--"	"--"	Peak	1.5	225	Fundamental of Channel 1
2412	102.7	H	"--"	"--"	Avg	1.5	225	at 3 Meters
2383.74	60.31	H	74	-13.69	Peak	1.5	225	**No Marker Delta Method**
2383.74	50.33	H	54	-3.67	Avg	1.5	225	**Required**
2437	108.22	H	"--"	"--"	Peak	1.5	225	Fundamental of Channel 6
2437	102.26	H	"--"	"--"	Avg	1.5	225	at 3 Meters
2462	109.66	H	"--"	"--"	Peak	1.5	225	Fundamental of Channel 11
2462	103.58	H	"--"	"--"	Avg	1.5	225	at 3 Meters
2491.13	60.31	H	74	-13.69	Peak	1.5	225	**No Marker Delta Method**
2491.13	52.2	H	54	-1.8	Avg	1.5	225	**Required**



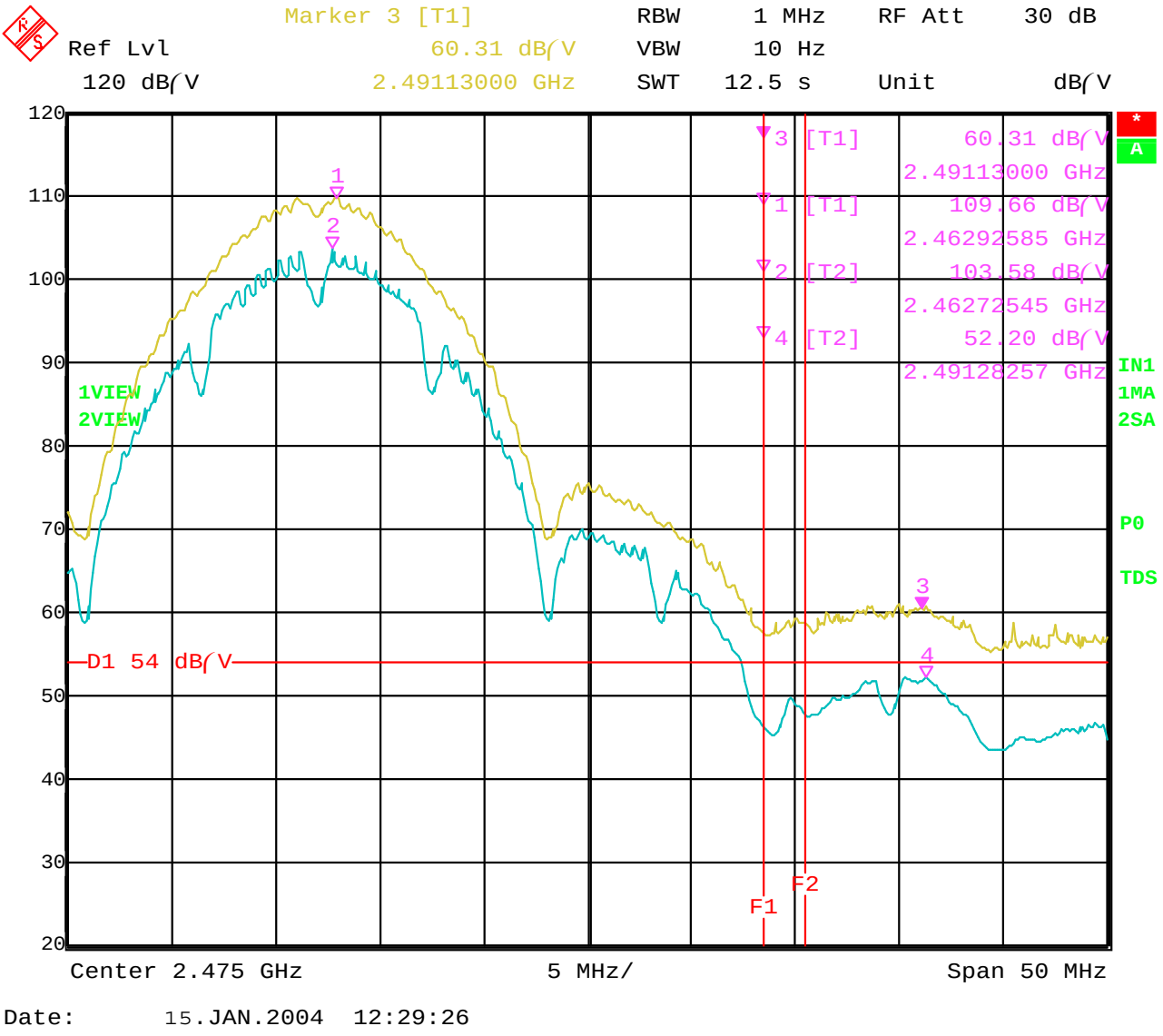
Radiated Band Edge – Channel 1 – Vertical Polarization – 802.11 b Mode



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



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



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: 1/15/04
Lab: B
Tested By: Kyle Fujimoto

Configuration: Hewlett Packard Laptop Agency Series Number PP2190

Channel 1 - 802.11 g Mode	GAIN:	24	OUTPUT	16.2 dBm
Channel 6 - 802.11 g Mode	GAIN:	24	OUTPUT	16.1 dBm
Channel 11 - 802.11 g Mode	GAIN:	24.5	OUTPUT	16.5 dBm

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2412	103.98	V	"--"	"--"	Peak	2.25	270	Fundamental of Channel 1
2412	90.21	V	"--"	"--"	Avg	2.25	270	at 3 Meters
2390	61.04	V	74	-12.96	Peak	2.25	270	**No** Marker Delta Method
2390	47.51	V	54	-6.49	Avg	2.25	270	Used
2437	104.87	V	"--"	"--"	Peak	2.25	270	Fundamental of Channel 6
2437	90.79	V	"--"	"--"	Avg	2.25	270	at 3 Meters
2462	104.96	V	"--"	"--"	Peak	2.25	270	Fundamental of Channel 11
2462	90.92	V	"--"	"--"	Avg	2.25	270	at 3 Meters
2483.5	66.66	V	74	-7.34	Peak	2.25	270	**No** Marker Delta Method
2483.5	50.46	V	54	-3.54	Avg	2.25	270	Used

FCC 15.247

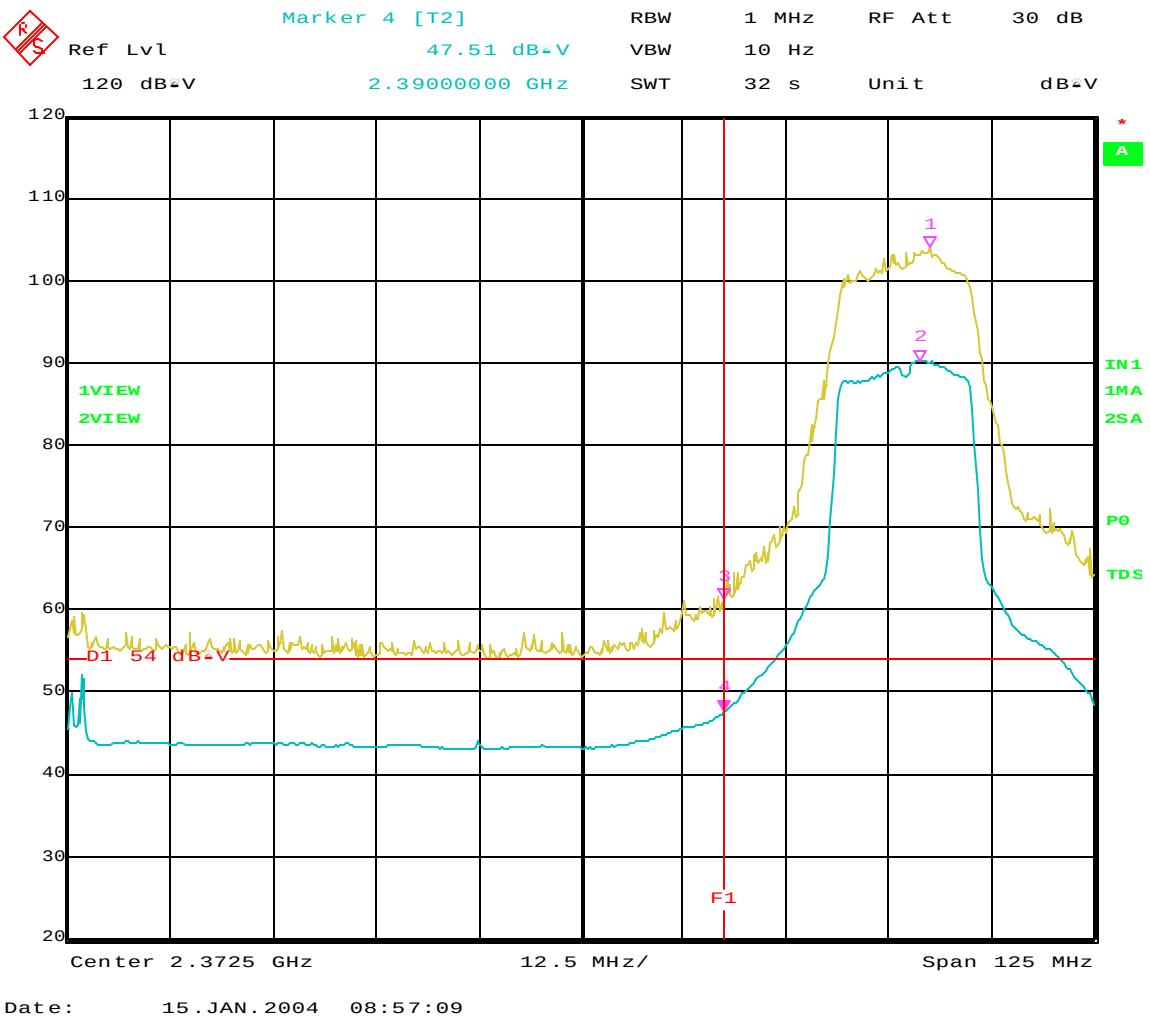
Intel Corporation
Intel Mini PCI Type 802.11BG Wireless LAN Adapter
Model: WM3B2200BG

Date: 1/15/04
Lab: B
Tested By: Kyle Fujimoto

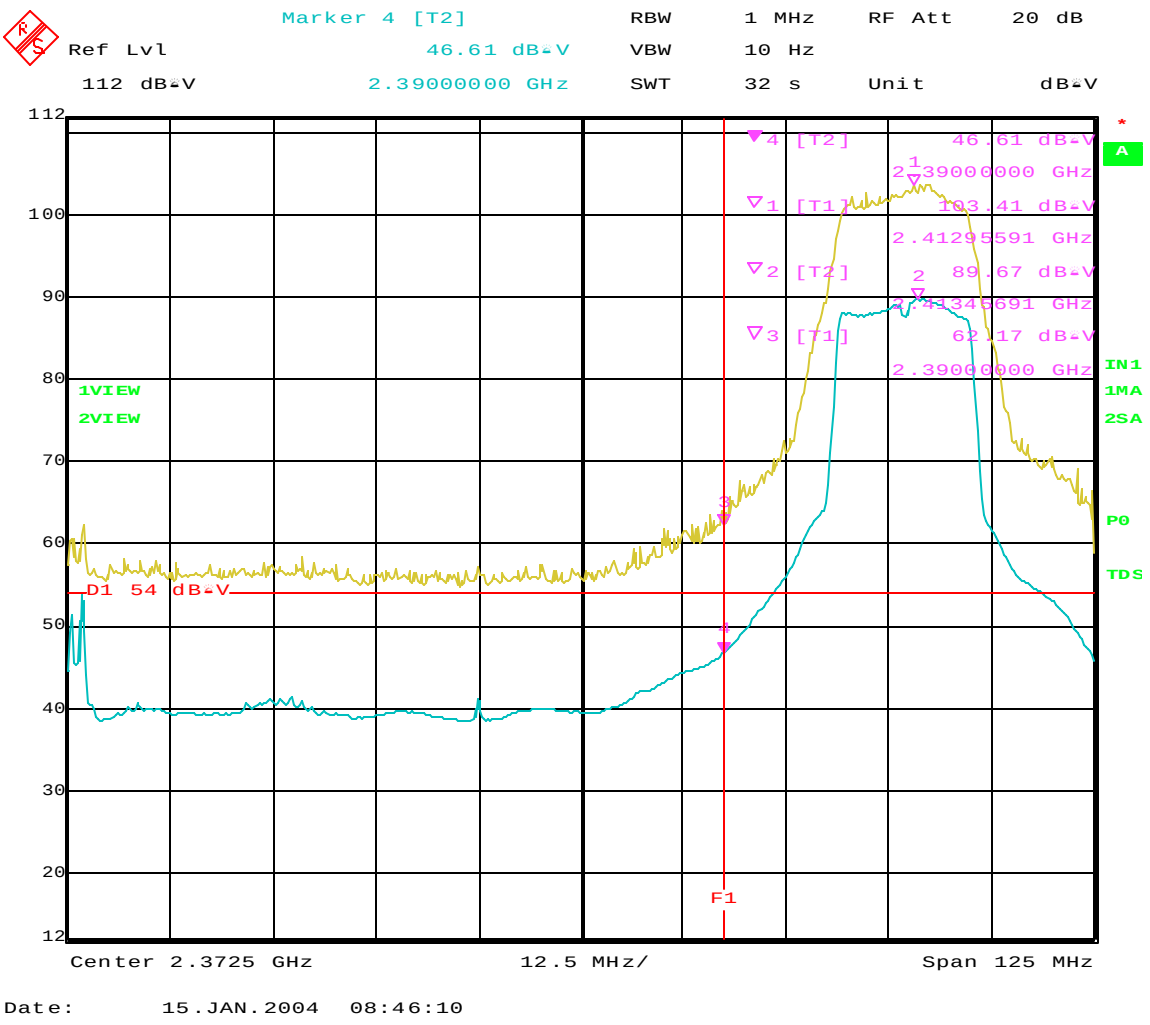
Configuration: Hewlett Packard Laptop Agency Series Number PP2190

Channel 1 - 802.11 g Mode	GAIN:	24	OUTPUT	16.2 dBm
Channel 6 - 802.11 g Mode	GAIN:	24	OUTPUT	16.1 dBm
Channel 11 - 802.11 g Mode	GAIN:	24.5	OUTPUT	16.5 dBm

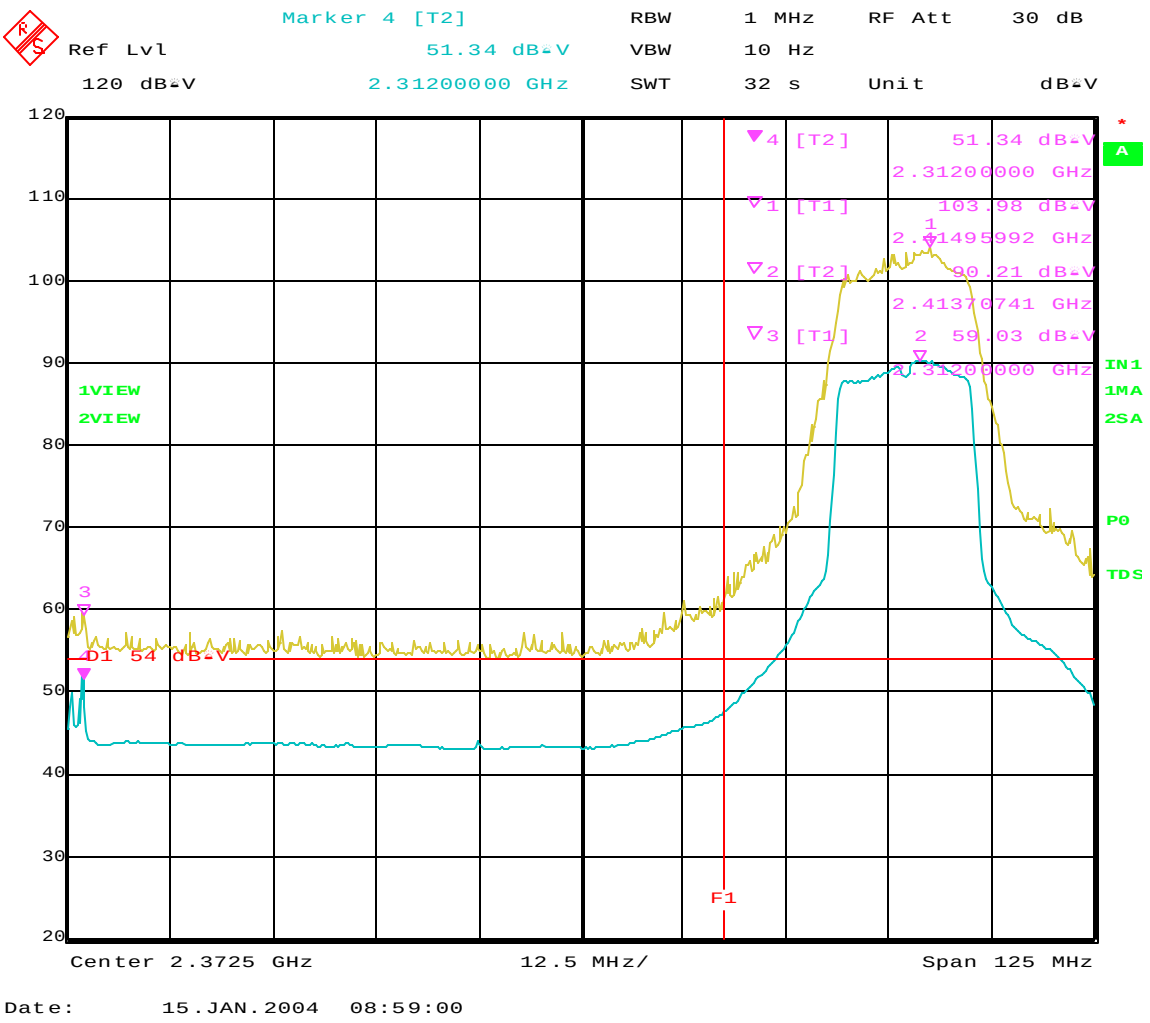
Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2412	103.41	H	"--"	"--"	Peak	2	315	Fundamental of Channel 1
2412	89.67	H	"--"	"--"	Avg	2	315	at 3 Meters
2390	62.17	H	74	-11.83	Peak	2	315	**No** Marker Delta Method
2390	46.61	H	54	-7.39	Avg	2	315	Used
2437	106.51	H	"--"	"--"	Peak	1.5	225	Fundamental of Channel 6
2437	91.74	H	"--"	"--"	Avg	1.5	225	at 3 Meters
2462	104.78	H	"--"	"--"	Peak	2	315	Fundamental of Channel 11
2462	90.88	H	"--"	"--"	Avg	2	315	at 3 Meters
2483.5	66.51	H	74	-7.49	Peak	2	315	**No** Marker Delta Method
2483.5	50.27	H	54	-3.73	Avg	2	315	Used



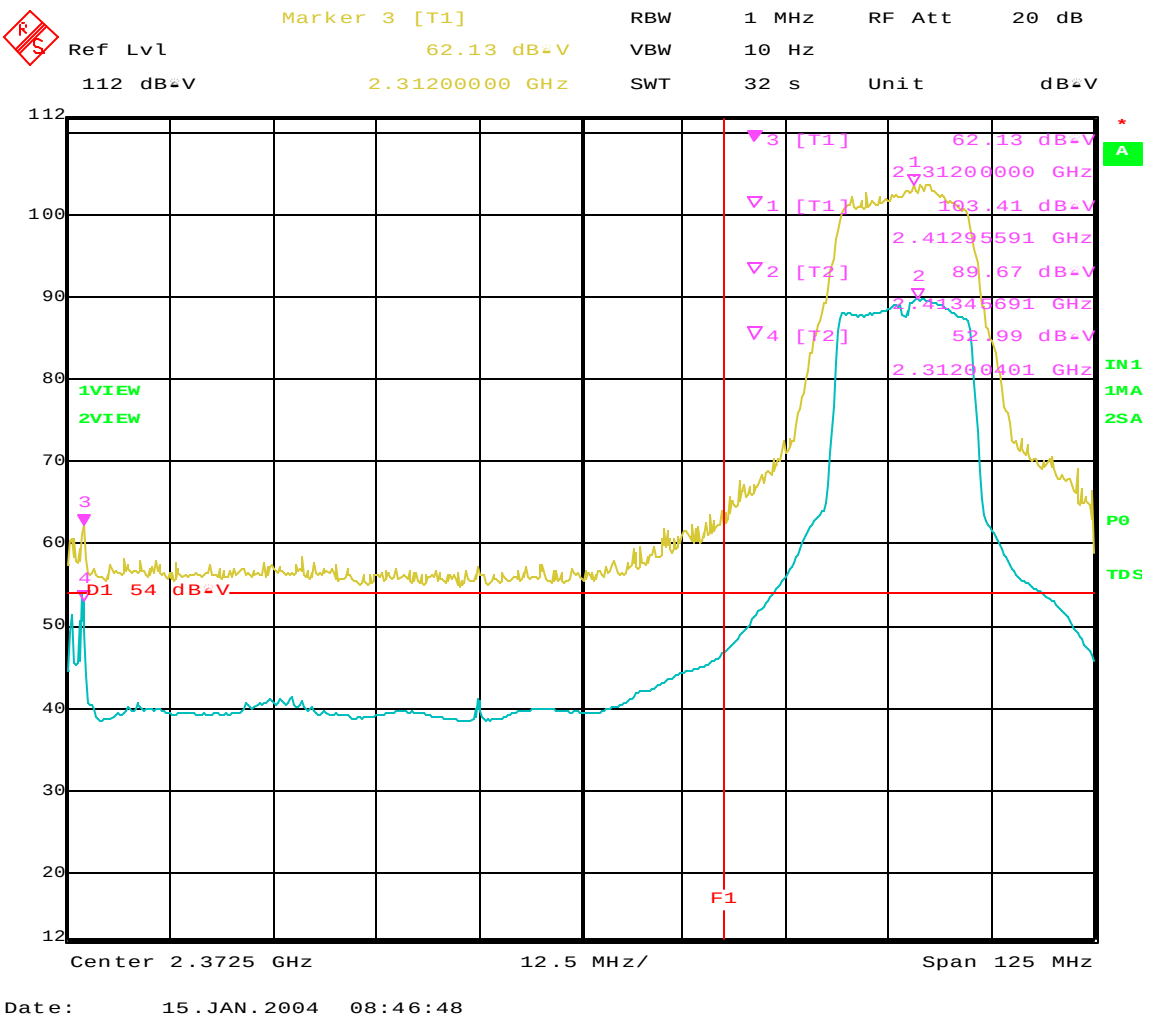
Radiated Band Edge – Channel 1 – Vertical Polarization – 802.11 g Mode



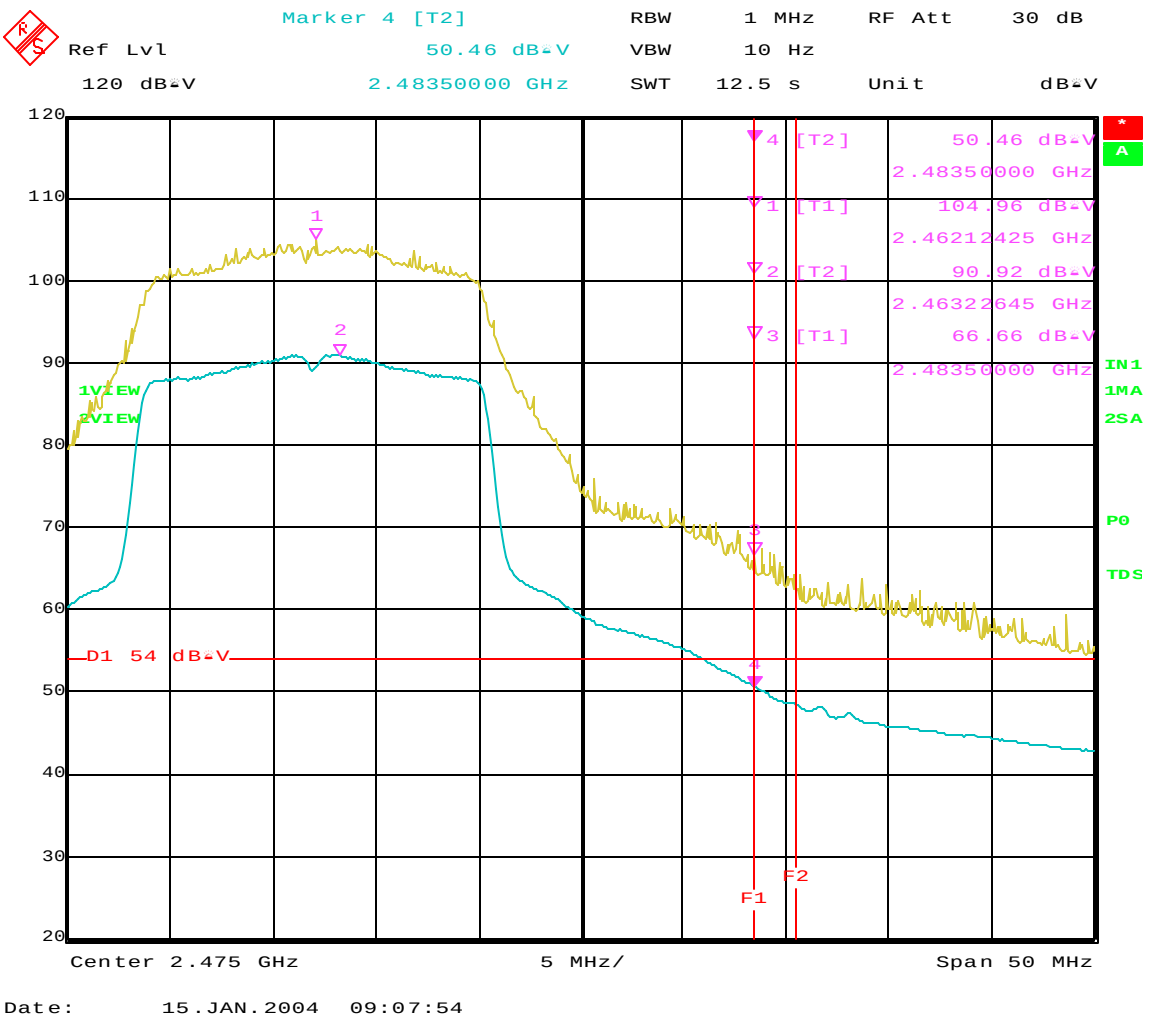
Radiated Band Edge – Channel 1 – Horizontal Polarization – 802.11 g Mode



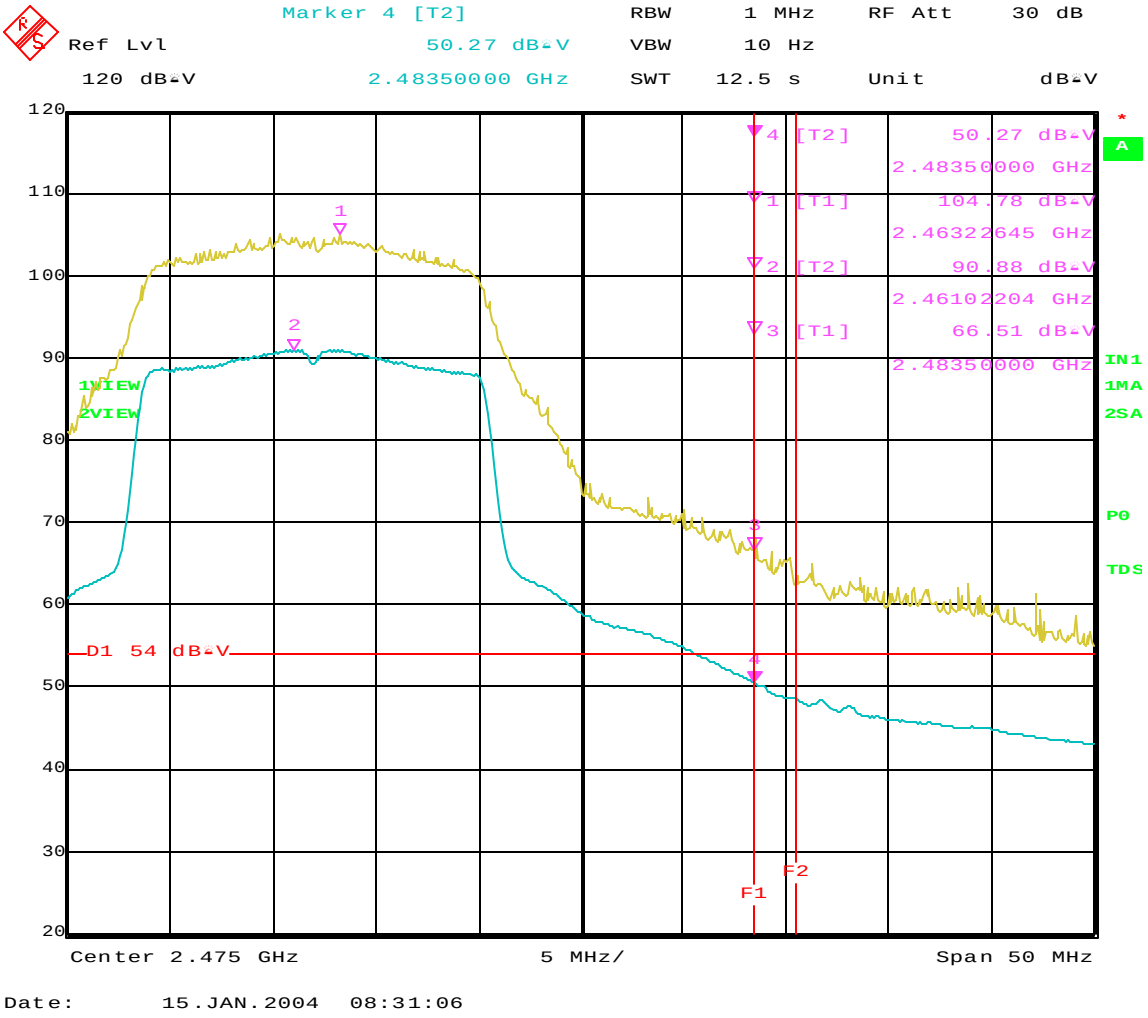
2312 MHz in Vertical Polarization for 802.11 g Mode – This is not part of the band edge but the 103 MHz spur away from the band edge. This reading was taken separate from the band edge.



2312 MHz in Horizontal Polarization for 802.11 g Mode – This is not part of the band edge but the 103 MHz spur away from the band edge. This reading was taken separate from the band edge.



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



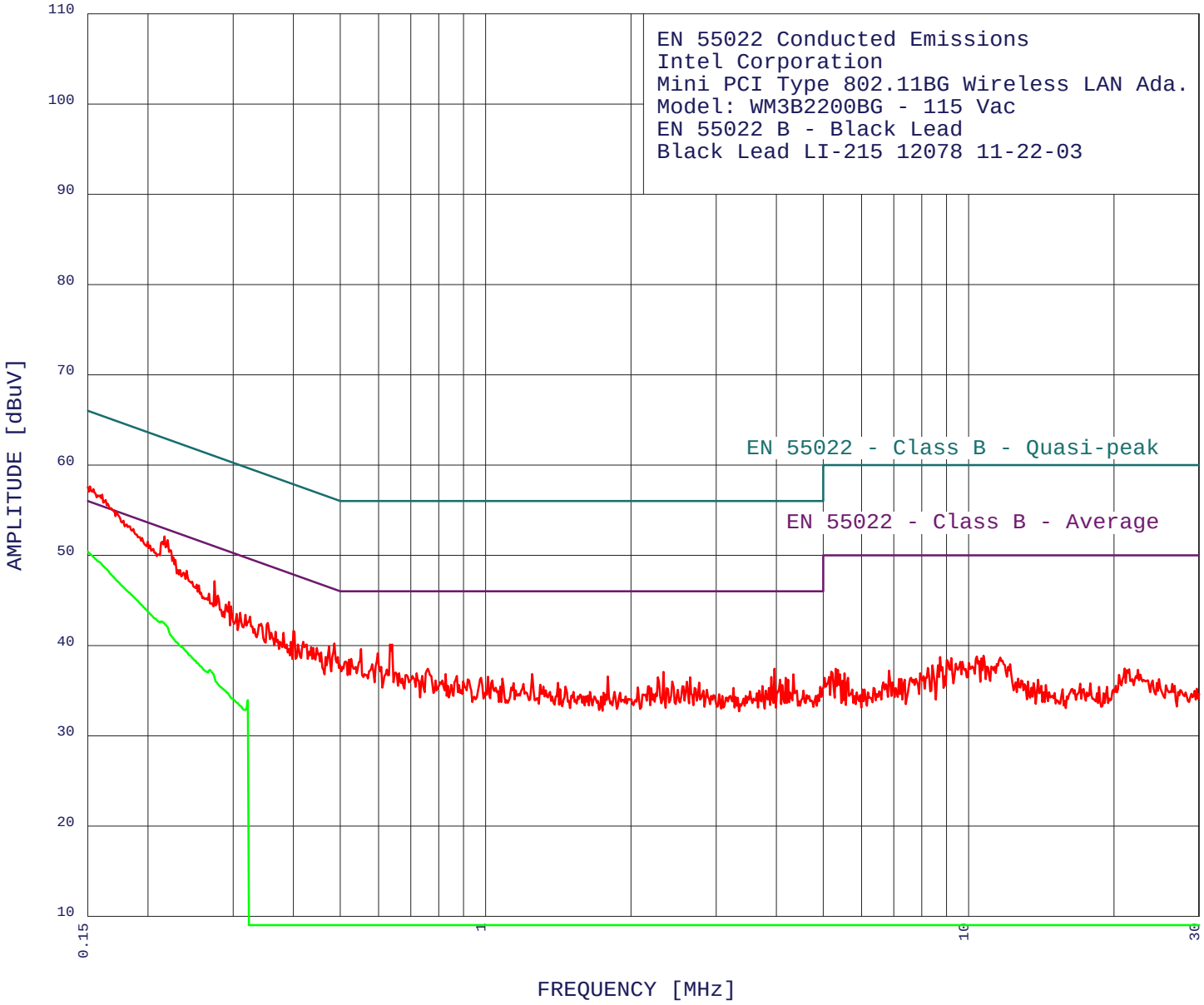
Radiated Band Edge – Channel 11 – Horizontal Polarization – 802.11 g Mode

CONDUCTED EMISSIONS

DATA SHEETS

EMISSION LEVEL [dBuV] PEAK 1/05/2004 16:30:18

Graph for Peak & Average



COMPATIBLE ELECTRONICS

COMPATIBLE ELECTRONICS

1/05/2004 16:30:18

EN 55022 Conducted Emissions
Intel Corporation
Intel Mini PCI Type 802.11BG Wireless LAN Adapter
Model: WM3B2200BG - 115 Vac
EN 55022 B - Black Lead
BlackLead LI-215 12078 11-22-03
TEST ENGINEER : Arnold Gaffud

---

42 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	0.150	57.53	56.00	1.53
2	0.216	52.08	52.96	-0.88**
3	0.275	47.13	50.98	-3.85**
4	0.279	45.53	50.85	-5.32**
5	0.294	44.82	50.41	-5.59**
6	0.641	40.12	46.00	-5.88
7	0.297	44.32	50.32	-6.01**
8	0.486	40.21	46.23	-6.02
9	0.400	41.61	47.86	-6.25
10	0.318	43.41	49.75	-6.34**
11	0.354	42.51	48.87	-6.36
12	0.310	43.61	49.97	-6.36**
13	0.325	43.21	49.57	-6.37
14	0.552	39.61	46.00	-6.39
15	0.474	39.91	46.45	-6.54
16	0.305	43.51	50.10	-6.59**
17	0.343	42.41	49.13	-6.73
18	0.381	41.41	48.25	-6.84
19	0.598	39.12	46.00	-6.88
20	0.419	40.41	47.46	-7.05
21	0.367	41.51	48.56	-7.06
22	0.447	39.71	46.93	-7.22
23	0.435	39.81	47.15	-7.34
24	0.440	39.71	47.06	-7.35
25	0.527	38.51	46.00	-7.49
26	0.396	40.41	47.95	-7.54
27	0.457	39.21	46.76	-7.55
28	0.409	40.11	47.68	-7.57
29	0.521	38.41	46.00	-7.59
30	0.513	38.21	46.00	-7.79
31	0.583	37.92	46.00	-8.08
32	0.759	37.42	46.00	-8.58
33	3.966	37.41	46.00	-8.59
34	2.334	37.08	46.00	-8.92
35	0.651	37.02	46.00	-8.98
36	0.720	36.92	46.00	-9.08
37	0.662	36.92	46.00	-9.08
38	1.249	36.84	46.00	-9.16
39	0.826	36.82	46.00	-9.18
40	4.339	36.81	46.00	-9.19
41	0.686	36.72	46.00	-9.28
42	30.000	34.63	50.00	-15.37

** Please See the Average Readings on the Next Page and on the Plot

COMPATIBLE ELECTRONICS

1/05/2004 16:30:18

EN 55022 Conducted Emissions
Intel Corporation
Intel Mini PCI Type 802.11BG Wireless LAN Adapter
Model: WM3B2200BG - 115 Vac
EN 55022 B - Black Lead
Black Lead LI-215 12078 11-22-03
TEST ENGINEER : Arnold Gaffud

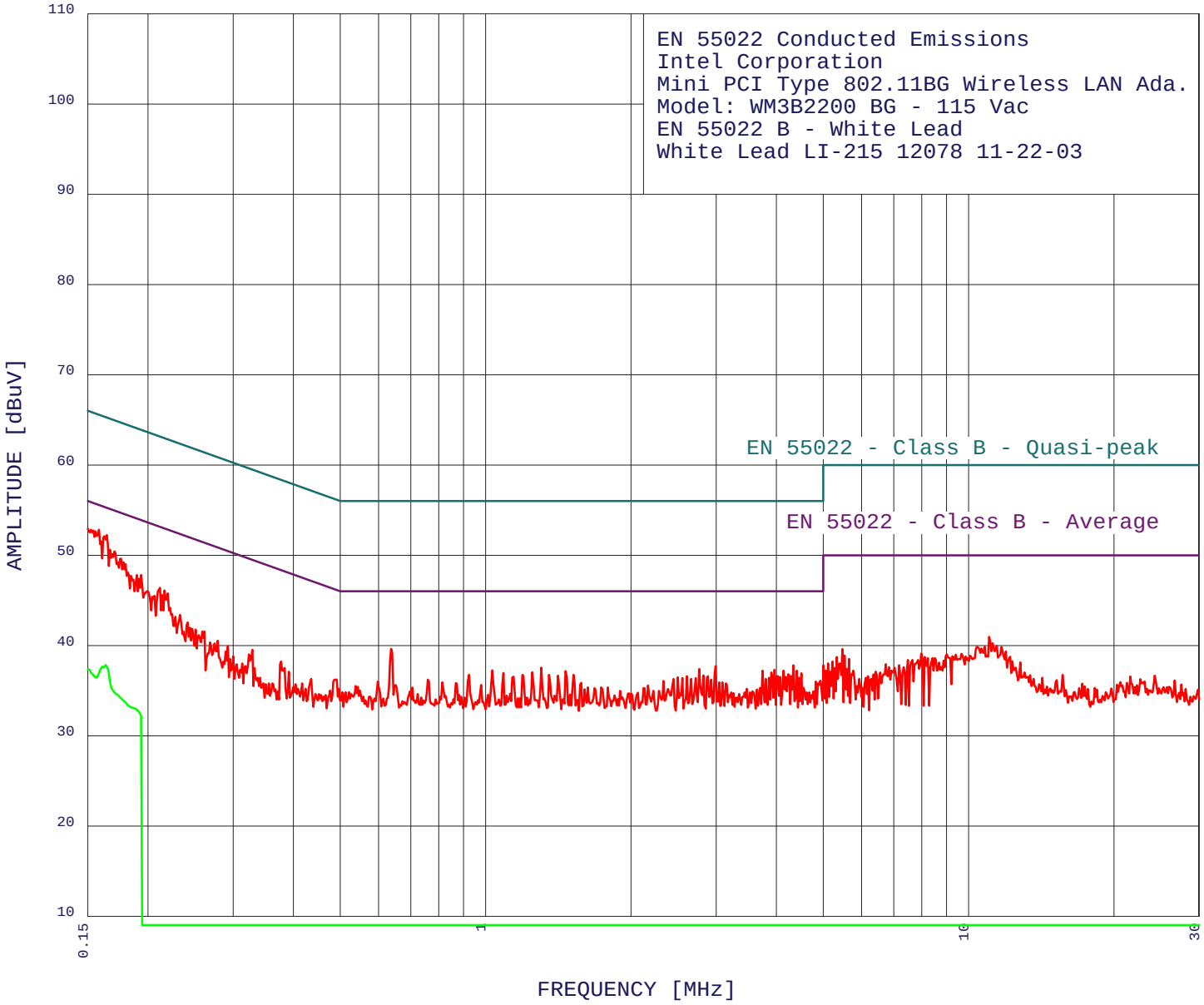
---

5 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	0.150	50.39	56.00	-5.61**
2	0.213	42.67	53.09	-10.42
3	0.269	37.29	51.15	-13.87
4	0.322	33.94	49.66	-15.73
5	30.000	0.00	50.00	-50.00

EMISSION LEVEL [dBuV] PEAK 1/05/2004 16:18:51

Graph for Peak & Average



COMPATIBLE ELECTRONICS

COMPATIBLE ELECTRONICS

1/05/2004 16:18:51

EN 55022 Conducted Emissions
Intel Corporation
Intel Mini PCI Type 802.11BG Wireless LAN Adapter
Model: WM3B2200BG - 115 Vac
EN 55022 B - White Lead
WhiteLead LI-215 12078 11-22-03
TEST ENGINEER : Arnold Gaffud

---

42 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	0.164	52.22	55.25	-3.03**
2	0.150	52.93	56.00	-3.07
3	0.167	50.62	55.11	-4.50**
4	0.194	47.80	53.88	-6.09**
5	0.189	47.80	54.06	-6.26**
6	0.637	39.62	46.00	-6.38
7	0.192	47.40	53.97	-6.57**
8	0.184	47.70	54.28	-6.58**
9	0.212	46.38	53.14	-6.76
10	0.216	46.08	52.96	-6.88
11	0.214	45.58	53.05	-7.47
12	0.206	45.49	53.35	-7.87
13	4.339	37.81	46.00	-8.19
14	2.995	37.70	46.00	-8.30
15	1.304	37.54	46.00	-8.46
16	2.766	37.39	46.00	-8.61
17	3.966	37.31	46.00	-8.69
18	1.032	37.23	46.00	-8.77
19	4.408	37.21	46.00	-8.79
20	4.137	37.21	46.00	-8.79
21	3.741	37.21	46.00	-8.79
22	1.464	37.15	46.00	-8.85
23	1.249	37.04	46.00	-8.96
24	0.233	43.37	52.34	-8.98
25	3.903	37.01	46.00	-8.99
26	11.027	40.96	50.00	-9.04
27	1.089	36.93	46.00	-9.07
28	4.504	36.91	46.00	-9.09
29	4.227	36.81	46.00	-9.19
30	1.520	36.75	46.00	-9.25
31	1.352	36.74	46.00	-9.26
32	1.191	36.74	46.00	-9.26
33	0.924	36.73	46.00	-9.27
34	2.826	36.69	46.00	-9.31
35	1.412	36.64	46.00	-9.36
36	4.294	36.61	46.00	-9.39
37	4.029	36.61	46.00	-9.39
38	2.885	36.60	46.00	-9.40
39	2.610	36.59	46.00	-9.41
40	1.142	36.53	46.00	-9.47
41	0.242	42.56	52.04	-9.48
42	30.000	34.03	50.00	-15.97

** Please See the Average Readings on the Next Page and on the Plot

COMPATIBLE ELECTRONICS

1/05/2004 16:18:51

EN 55022 Conducted Emissions
Intel Corporation
Intel Mini PCI Type 802.11BG Wireless LAN Adapter
Model: WM3B2200BG - 115 Vac
EN 55022 B - White Lead
WhiteLead LI-215 12078 11-22-03
TEST ENGINEER : Arnold Gaffud

---

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	0.163	37.82	55.29	-17.47
2	0.150	37.32	56.00	-18.68
3	30.000	0.00	50.00	-50.00