FCC PART 15, SUBPART B and C
TEST REPORT

for

INTEL MINI PCI TYPE 802.11 B WIRELESS LAN ADAPTER FOR USE IN THE DELL AGENCY SERIES # PP07S

MODEL: WM3A2100

Prepared for

DELL COMPUTER CORPORATION
ONE DELL WAY
ROUND ROCK, TEXAS 78682

Prepared by:_____

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DATE: JULY 23, 2004

	REPORT BODY	APPENDICES					TOTAL
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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 802.11B Wireless LAN Adapter for use in the Dell Agency Series # PP07S Model: WM3A2100 S/N: N/A
Product Description:	The product is a wireless mini PCI card used for the Dell Notebook Computer Agency Series Number: PP07S.
Modifications:	The EUT was not modified during the testing.
Manufacturer:	Dell Computer Corporation One Dell Way Round Rock, Texas 78682
Test Dates:	June 3 and 4; July 22, 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 802.11B Wireless LAN Adapter (for use in the Dell Agency Series # PP07S). Model: WM3A2100. 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

Dell Computer Corporation

Jason Limoges Regulatory Engineer

Compatible Electronics, Inc.

Kyle Fujimoto Test Engineer
Michael Christensen Sr. Test Engineer

2.4 Date Test Sample was Received

The test sample was received on May 24, 2004.

2.5 Disposition of the Test Sample

The sample has not been returned to Dell Computer Corporation as of July 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 802.11B Wireless LAN Adapter (for use in the Dell Agency Series # PP07S) Model: WM3A2100 was directly connected to the laptop's miniPCI port underneath. The laptop was also connected to the AC Adapter via its power port. 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.

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 802.11B Wireless LAN Adapter (EUT)	INTEL CORPORATION	WM3A2100	N/A	**CNTWM3A2100A**
EUT Sub-Assemblies				
Auxiliary Duel Band Antenna	WISTRON NeWeb CORPORATION	P/N: 25.90157.001	N/A	**N/A**
Main Duel Band Antenna	WISTRON NeWeb CORPORATION	P/N: 25.90156.001	N/A	**N/A**
Auxiliary PIFA Antenna	HANNSTAR ELECTRONICS	P/N: WA00122	N/A	**N/A**
Main PIFA Antenna	HANNSTAR ELECTRONICS	P/N: WA00123	N/A	**N/A**
Host Equipment List				
AC ADAPTER FOR LAPTOP	DELL COMPUTER CORPORATION	P/N: 159224-001	N/A	**N/A**
LAPTOP	DELL COMPUTER CORPORATION	PC8165ZAA000	J3614PV045	**DoC**

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-01-30	1282	February 23, 2004	Feb. 23, 2005
Peak Power Sensor	Boonton Electronics Corp.	57318	3723	February 23, 2004	Feb. 23, 2005
Horn Antenna	Antenna Research	DRG-118/A	1053	January 16, 2004	Jan. 16, 2005
Microwave Preamplifier	Com Power	PA-122	25195	August 19, 2003	Aug. 19, 2004
Microwave Preamplifier	Com Power	PA-840	711013	March 12, 2004	March 12, 2005
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

For the Wistron NeWeb Corporation Antennas: The antenna has a worst case gain of –0.76 dBi peak for the main antenna and –1.05 dBi peak for the auxiliary antenna.

For the HannStar Electronics Antennas: The antenna has a worst case gain of 0.23 dBi peak for the main antenna and –0.08 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.

Note: for the spurious emissions that were 103 MHz away from the fundamental, the readings were taken at 1 meter with the 1 to 3 meter extrapolation being used.

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 802.11B Wireless LAN Adapter (for use in the Dell Agency Series # PP07S) Model: WM3A2100 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 802.11B Wireless LAN Adapter (for use in the Dell Agency Series # PP07S) Model: WM3A2100 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

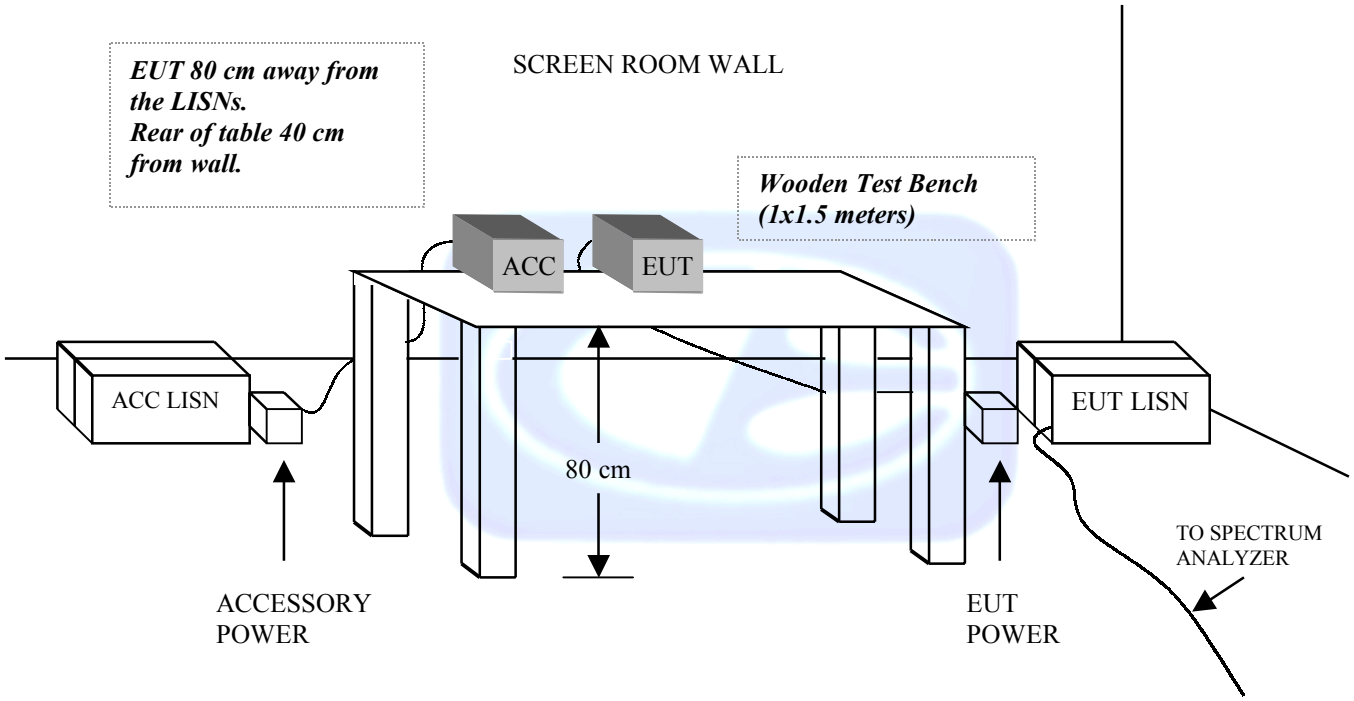
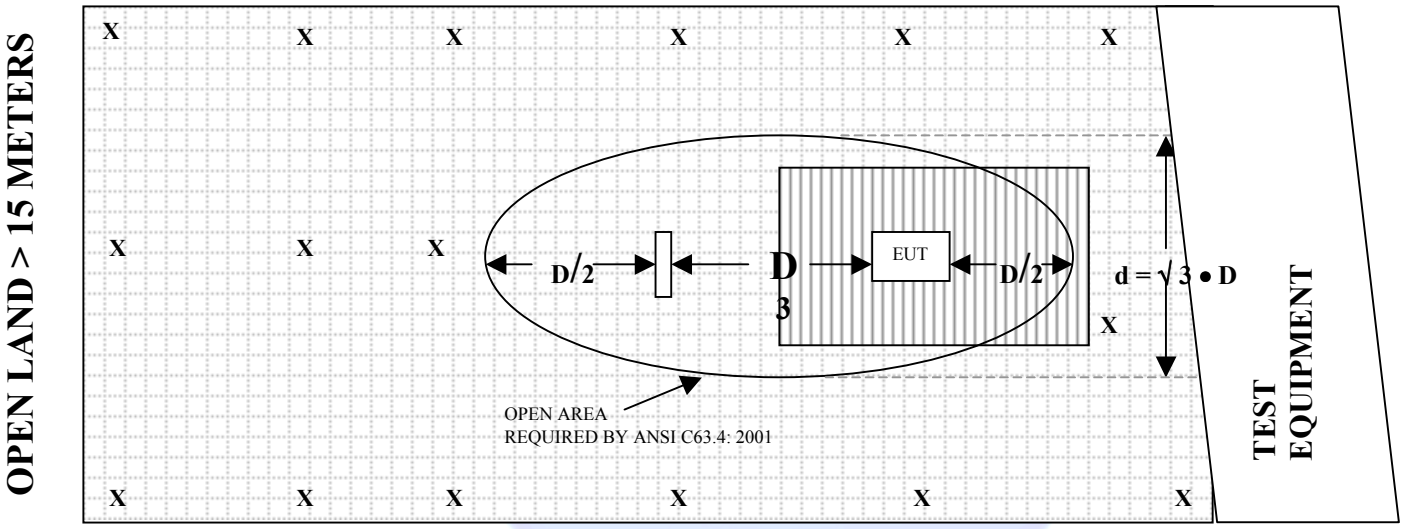


FIGURE 2: PLOT MAP AND LAYOUT OF 3 METER RADIATED SITE

OPEN LAND > 15 METERS



OPEN LAND > 15 METERS

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

FRONT VIEW

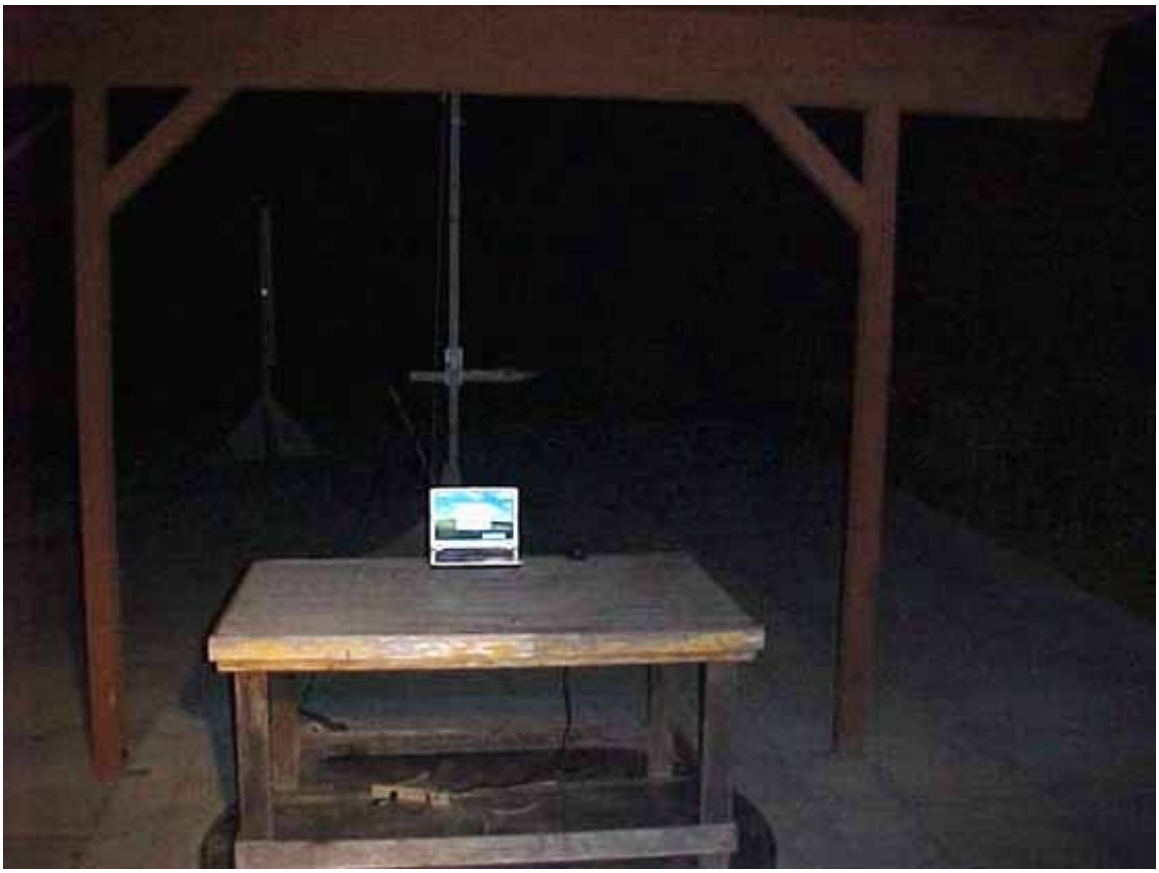
DELL COMPUTER CORPORATION
INTEL MINI PCI TYPE 802.11B WIRELESS LAN ADAPTER
FOR USE IN THE DELL AGENCY SERIES # PP07S
MODEL: WM3A2100
FCC SUBPART C - RADIATED EMISSIONS

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

REAR VIEW

DELL COMPUTER CORPORATION
INTEL MINI PCI TYPE 802.11B WIRELESS LAN ADAPTER
FOR USE IN THE DELL AGENCY SERIES # PP07S
MODEL: WM3A2100
FCC SUBPART C - RADIATED EMISSIONS

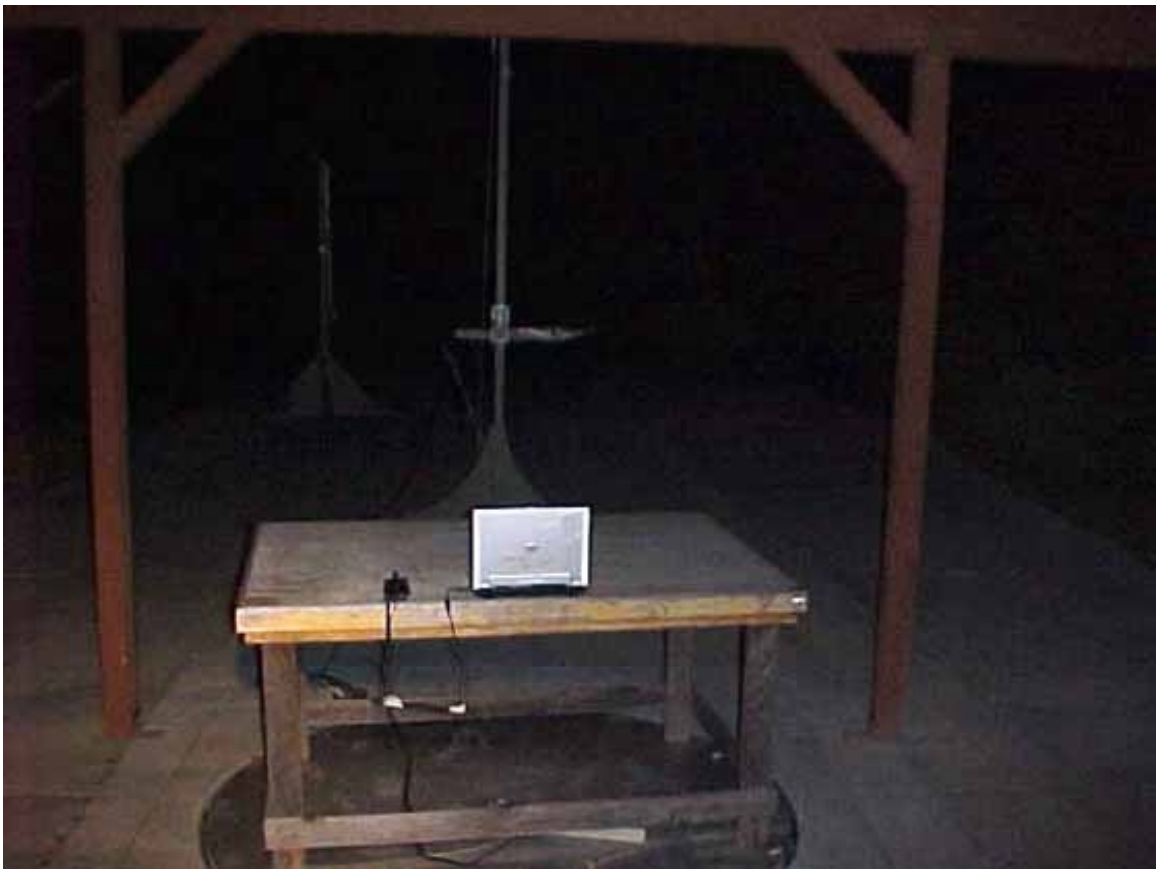
PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



FRONT VIEW

DELL COMPUTER CORPORATION
INTEL MINI PCI TYPE 802.11B WIRELESS LAN ADAPTER
FOR USE IN THE DELL AGENCY SERIES # PP07S
MODEL: WM3A2100
FCC CLASS B - RADIATED EMISSIONS

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



REAR VIEW

DELL COMPUTER CORPORATION
INTEL MINI PCI TYPE 802.11B WIRELESS LAN ADAPTER
FOR USE IN THE DELL AGENCY SERIES # PP07S
MODEL: WM3A2100
FCC CLASS B - RADIATED EMISSIONS

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

FRONT VIEW

DELL COMPUTER CORPORATION
INTEL MINI PCI TYPE 802.11B WIRELESS LAN ADAPTER
FOR USE IN THE DELL AGENCY SERIES # PP07S
MODEL: WM3A2100
FCC CLASS B - CONDUCTED EMISSIONS

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

REAR VIEW

DELL COMPUTER CORPORATION
INTEL MINI PCI TYPE 802.11B WIRELESS LAN ADAPTER
FOR USE IN THE DELL AGENCY SERIES # PP07S
MODEL: WM3A2100
FCC CLASS B - CONDUCTED EMISSIONS

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 12, 2004

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
18.0	26.733	29.0	27.265
18.5	25.961	29.5	27.143
19.0	25.489	30.0	27.185
19.5	25.099	30.5	28.096
20.0	24.523	31.0	27.159
20.5	24.313	31.5	29.062
21.0	23.889	32.0	27.125
21.5	23.689	32.5	26.897
22.0	23.761	33.0	27.088
22.5	24.025	33.5	26.841
23.0	24.140	34.0	26.460
23.5	24.826	34.5	26.436
24.0	25.165	35.0	25.817
24.5	25.740	35.5	24.731
25.0	26.227	36.0	24.645
25.5	26.531	36.5	25.647
26.0	27.029	37.0	25.486
26.5	26.964	37.5	26.113
27.0	26.806	38.0	25.873
27.5	24.348	39.5	23.901
28.0	26.654	39.0	22.795
28.5	27.169	39.5	21.300
		40.0	23.365

ANTENNA RESEARCH DRG-118/A

HORN ANTENNA

S/N: 1053

CALIBRATION DATE: JANUARY 16, 2004

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	24.4	9.5	38.6
1.5	25.2	10.0	38.7
2.0	28.2	10.5	39.0
2.5	28.5	11.0	38.9
3.0	30.1	11.5	41.3
3.5	31.0	12.0	40.5
4.0	31.2	12.5	40.0
4.5	31.9	13.0	40.2
5.0	33.2	13.5	40.5
5.5	33.7	14.0	41.6
6.0	34.3	14.5	44.8
6.5	35.0	15.0	41.4
7.0	36.7	15.5	39.2
7.5	37.3	16.0	39.4
8.0	37.1	16.5	40.9
8.5	37.3	17.0	42.6
9.0	37.7	17.5	45.1
		18.0	41.7

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 802.11 b Wireless LAN Adapter
Model: WM3A2100
Configuration: Dell Laptop Agency Series # PP07S

Date: 6/03/04
Lab: B
Tested By: Arnold Gaffud

Channel 1 - 802.11 b Mode **Transmit Mode - With Hannstar Antenna**

Gain : 10 Scale: 14 Bias: 29

(99%) Pk. Pwr.: 16.14 dBm (100%) Pk. Pwr.: 16.54 dBm Avg. Power: 13.79 dBm

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4824	43.62	V	74	-30.38	Peak	1.5	135	
4824	31.66	V	54	-22.34	Avg	1.5	135	
7236	46.04	V	74	-27.96	Peak	1.75	180	
7236	34.14	V	54	-19.86	Avg	1.75	180	
9648	48.14	V	--	--	Peak	1.75	135	Not in Restricted Band
9648	33.87	V	--	--	Avg	1.75	135	Not in Restricted Band
12060	54.56	V	74	-19.44	Peak	1.75	180	
12060	39.75	V	54	-14.25	Avg	1.75	180	
14472	52.97	V	74	-21.03	Peak	2	135	
14472	38.04	V	54	-15.96	Avg	2	135	
16884		V	--	--	Peak			No Emissions
16884		V	--	--	Avg			Detected
19296	47.11	V	74	-26.89	Peak	1.75	180	
19296	32.11	V	54	-21.89	Avg	1.75	180	
21708		V	--	--	Peak			No Emissions
21708		V	--	--	Avg			Detected
24120		V	--	--	Peak			No Emissions
24120		V	--	--	Avg			Detected

FCC 15.247

Intel Corporation
Intel Mini PCI Type 802.11 b Wireless LAN Adapter
Model: WM3A2100
Configuration: Dell Laptop Agency Series # PP07S

Date: 6/03/04
Lab: B
Tested By: Arnold Gaffud

Channel 1 - 802.11 b Mode **Transmit Mode - With Hannstar Antenna**

Gain : 10 Scale: 14 Bias: 29

(99%) Pk. Pwr.: 16.14 dBm (100%) Pk. Pwr.: 16.54 dBm Avg. Power: 13.79 dBm

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4824	42.34	H	74	-31.66	Peak	1.75	180	
4824	33.58	H	54	-20.42	Avg	1.75	180	
7236	46.71	H	74	-27.29	Peak	2	180	
7236	34.71	H	54	-19.29	Avg	2	180	
9648	47.91	H	--	--	Peak	1.75	180	Not in Restricted Band
9648	33.68	H	--	--	Avg	1.75	180	Not in Restricted Band
12060	54.15	H	74	-19.85	Peak	2	180	
12060	39.77	H	54	-14.23	Avg	2	180	
14472	52.46	H	74	-21.54	Peak	2	180	
14472	38.37	H	54	-15.63	Avg	2	180	
16884		H	--	--	Peak			No Emissions
16884		H	--	--	Avg			Detected
19296		H	74	-74	Peak			No Emissions
19296		H	54	-54	Avg			Detected
21708		H	--	--	Peak			No Emissions
21708		H	--	--	Avg			Detected
24120		H	--	--	Peak			No Emissions
24120		H	--	--	Avg			Detected

FCC 15.247

Intel Corporation
Intel Mini PCI Type 802.11 b Wireless LAN Adapter
Model: WM3A2100
Configuration: Dell Laptop Agency Series # PP07S

Date: 6/03/04
Lab: B
Tested By: Arnold Gaffud

Channel 6 - 802.11 b Mode **Transmit Mode - With Hannstar Antenna**

Gain : 10 Scale: 13 Bias: 29

(99%) Pk. Pwr.: 16.11 dBm (100%) Pk. Pwr.: 16.54 dBm Avg. Power: 13.74 dBm

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4874	42.38	V	74	-31.62	Peak	2	180	
4874	27.64	V	54	-26.36	Avg	2	180	
7311	46.09	V	74	-27.91	Peak	2	270	
7311	32.17	V	54	-21.83	Avg	2	270	
9748	48.84	V	--	--	Peak	1.75	180	Not in Restricted Band
9748	32.95	V	--	--	Avg	1.75	180	Not in Restricted Band
12185	53.72	V	74	-20.28	Peak	2	225	
12185	39	V	54	-15	Avg	2	225	
14622	54.01	V	--	--	Peak	2	180	Not in Restricted Band
14622	39.4	V	--	--	Avg	2	180	Not in Restricted Band
17059		V	--	--	Peak			No Emissions
17059		V	--	--	Avg			Detected
19496	46.5	V	74	-27.5	Peak	2	180	
19496	31.66	V	54	-22.34	Avg	2	180	
21933		V	--	--	Peak			No Emissions
21933		V	--	--	Avg			Detected
22001		V	74	-74	Peak			No Emissions
22001		V	54	-54	Avg			Detected
24370		V	--	--	Peak			No Emissions
24370		V	--	--	Avg			Detected

FCC 15.247

Intel Corporation
Intel Mini PCI Type 802.11 b Wireless LAN Adapter
Model: WM3A2100
Configuration: Dell Laptop Agency Series # PP07S

Date: 6/03/04
Lab: B
Tested By: Arnold Gaffud

Channel 6 - 802.11 b Mode **Transmit Mode - With Hannstar Antenna**

Gain : 10 Scale: 13 Bias: 29

(99%) Pk. Pwr.: 16.11 dBm (100%) Pk. Pwr.: 16.54 dBm Avg. Power: 13.74 dBm

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4874	41.63	H	74	-32.37	Peak	1.75	135	
4874	27.26	H	54	-26.74	Avg	1.75	135	
7311	45.55	H	74	-28.45	Peak	2	180	
7311	31.89	H	54	-22.11	Avg	2	180	
9748	47.72	H	--	--	Peak	2	180	Not in Restricted Band
9748	32.85	H	--	--	Avg	2	180	Not in Restricted Band
12185	53.53	H	74	-20.47	Peak	2	180	
12185	39.02	H	54	-14.98	Avg	2	180	
14622	53.63	H	--	--	Peak	2	180	Not in Restricted Band
14622	38.63	H	--	--	Avg	2	180	Not in Restricted Band
17059		H	--	--	Peak			No Emissions
17059		H	--	--	Avg			Detected
19496		H	74	-74	Peak			No Emissions
19496		H	54	-54	Avg			Detected
21933		H	--	--	Peak			No Emissions
21933		H	--	--	Avg			Detected
22001		H	74	-74	Peak			No Emissions
22001		H	54	-54	Avg			Detected
24370		H	--	--	Peak			No Emissions
24370		H	--	--	Avg			Detected

FCC 15.247

Intel Corporation
Intel Mini PCI Type 802.11 b Wireless LAN Adapter
Model: WM3A2100
Configuration: Dell Laptop Agency Series # PP07S

Date: 6/03/04
Lab: B
Tested By: Arnold Gaffud

Channel 11 - 802.11 b Mode **Transmit Mode - With Hannstar Antenna**

Gain : 10 Scale: 13 Bias: 29

(99%) Pk. Pwr.: 16.05 dBm (100%) Pk. Pwr.: 16.51 dBm Avg. Power: 13.69 dBm

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4924	42.79	V	74	-31.21	Peak	2.5	315	
4924	30.06	V	54	-23.94	Avg	2.5	315	
7386	44.36	V	74	-29.64	Peak	1.75	270	
7386	29.39	V	54	-24.61	Avg	1.75	270	
9848	46.84	V	--	--	Peak	2	225	Not in Restricted Band
9848	31.92	V	--	--	Avg	2	225	Not in Restricted Band
12310	50.89	V	74	-23.11	Peak	2	180	
12310	36.35	V	54	-17.65	Avg	2	180	
14772	54.32	V	--	--	Peak	2	180	Not in Restricted Band
14772	40.04	V	--	--	Avg	2	180	Not in Restricted Band
17234	52.45	V	--	--	Peak	2	180	
17234	37.86	V	--	--	Avg	2	180	
19696		V	74	-74	Peak			No Emissions
19696		V	54	-54	Avg			Detected
22158		V	74	-74	Peak			No Emissions
22158		V	54	-54	Avg			Detected
24620		V	--	--	Peak			No Emissions
24620		V	--	--	Avg			Detected

FCC 15.247

Intel Corporation
Intel Mini PCI Type 802.11 b Wireless LAN Adapter
Model: WM3A2100
Configuration: Dell Laptop Agency Series # PP07S

Date: 6/03/04
Lab: B
Tested By: Arnold Gaffud

Channel 11 - 802.11 b Mode **Transmit Mode - With Hannstar Antenna**

Gain : 10 Scale: 13 Bias: 29

(99%) Pk. Pwr.: 16.05 dBm (100%) Pk. Pwr.: 16.51 dBm Avg. Power: 13.69 dBm

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4924	42.15	H	74	-31.85	Peak	2	135	
4924	28.13	H	54	-25.87	Avg	2	135	
7386	44.22	H	74	-29.78	Peak	2	180	
7386	29.17	H	54	-24.83	Avg	2	180	
9848	46.91	H	--	--	Peak	2	225	Not in Restricted Band
9848	31.67	H	--	--	Avg	2	225	Not in Restricted Band
12310	50.95	H	74	-23.05	Peak	2	270	
12310	36.31	H	54	-17.69	Avg	2	270	
14772	54.03	H	--	--	Peak	2	180	Not in Restricted Band
14772	39.48	H	--	--	Avg	2	180	Not in Restricted Band
17234		H	--	--	Peak			No Emissions
17234		H	--	--	Avg			Detected
19696		H	74	-74	Peak			No Emissions
19696		H	54	-54	Avg			Detected
22158		H	74	-74	Peak			No Emissions
22158		H	54	-54	Avg			Detected
24620		H	--	--	Peak			No Emissions
24620		H	--	--	Avg			Detected

FCC 15.247
Intel Corporation
Intel Mini PCI Type 802.11 b Wireless LAN Adapter
Model: WM3A2100
Configuration: Dell Laptop Agency Series # PP07S

Date: 6/03/04
Lab: B
Tested By: Arnold Gaffud

802.11 b Mode - Transmit Mode - with Hannstar Antenna

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2312	39.46	V	74	-34.54	Peak	2	135	103 MHz Below the Fundamental
2312	24.91	V	54	-29.09	Avg	2	135	of Channel 1
2512	41.82	V	74	-32.18	Peak	2.25	135	103 MHz Above the Fundamental
2512	28.17	V	54	-25.83	Avg	2.25	135	of Channel 1
2312	40.63	H	74	-33.37	Peak	1.75	135	103 MHz Below the Fundamental
2312	26.52	H	54	-27.48	Avg	1.75	135	of Channel 1
2512	40.85	H	74	-33.15	Peak	1.75	135	103 MHz Above the Fundamental
2512	27.02	H	54	-26.98	Avg	1.75	135	of Channel 1
2336	41.27	V	74	-32.73	Peak	2	180	103 MHz Below the Fundamental
2336	32.66	V	54	-21.34	Avg	2	180	of Channel 6
2538.7	41.22	V	74	-32.78	Peak	2	135	103 MHz Above the Fundamental
2538.7	26.4	V	54	-27.6	Avg	2	135	of Channel 6
2336	43.56	H	74	-30.44	Peak	2.25	135	103 MHz Below the Fundamental
2336	29.53	H	54	-24.47	Avg	2.25	135	of Channel 6
2538.7	41.6	H	74	-32.4	Peak	1.75	135	103 MHz Above the Fundamental
2538.7	26.89	H	54	-27.11	Avg	1.75	135	of Channel 6
2360	41.68	V	74	-32.32	Peak	2	135	103 MHz Below the Fundamental
2360	27.27	V	54	-26.73	Avg	2	135	of Channel 11
2565	38.06	V	74	-35.94	Peak	1.75	180	103 MHz Above the Fundamental
2565	24.65	V	54	-29.35	Avg	1.75	180	of Channel 11
2360	41.24	H	74	-32.76	Peak	2	135	103 MHz Below the Fundamental
2360	26.39	H	54	-27.61	Avg	2	135	of Channel 11
2564	40.08	H	74	-33.92	Peak	2	135	103 MHz Above the Fundamental
2564	25.41	H	54	-28.59	Peak	2	135	of Channel 11

FCC 15.247

Intel Corporation
Intel Mini PCI Type 802.11 b Wireless LAN Adapter
Model: WM3A2100
Configuration: Dell Laptop Agency Series # PP07S

Date: 6/04/04
Lab: B
Tested By: Arnold Gaffud

Channel 1 - 802.11 b Mode **Transmit Mode - With Hannstar Antenna**

Gain : 10 Scale: 14 Bias: 29

(99%) Pk. Pwr.: 16.14 dBm (100%) Pk. Pwr.: 16.54 dBm Avg. Power: 13.79 dBm

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
3216	37.68	V	74	-36.32	Peak	2	135	Fundamental of LO for
3216	24.99	V	54	-29.01	Avg	2	135	Channel 1
6432	41.51	V	--	--	Peak	2	180	2nd Harmonic of LO for
6432	26.59	V	--	--	Avg	2	180	Channel 1
9648	48.64	V	--	--	Peak	1.75	180	3rd Harmonic of LO =
9648	33.37	V	--	--	Avg	1.75	180	4th Harmonic of Tx for Channel 1
12864	49.87	V	--	--	Peak	2	135	4th Harmonic of LO for
12864	35.19	V	--	--	Avg	2	135	Channel 1
3216	42.8	H	74	-31.2	Peak	2	135	Fundamental of LO for
3216	24.16	H	54	-29.84	Avg	2	135	Channel 1
6432	41.1	H	--	--	Peak	2	135	2nd Harmonic of LO for
6432	26.5	H	--	--	Avg	2	135	Channel 1
9648	48.44	H	--	--	Peak	1.75	270	3rd Harmonic of LO =
9648	33.65	H	--	--	Avg	1.75	270	4th Harmonic of Tx for Channel 1
12864	49.63	H	--	--	Peak	1.75	135	4th Harmonic of LO for
12864	35.15	H	--	--	Avg	1.75	135	Channel 1
								Only the Fundamental of the LO
								is in the Restricted Band

FCC 15.247

Intel Corporation
Intel Mini PCI Type 802.11 b Wireless LAN Adapter
Model: WM3A2100
Configuration: Dell Laptop Agency Series # PP07S

Date: 6/04/04
Lab: B
Tested By: Arnold Gaffud

Channel 6 - 802.11 b Mode **Transmit Mode - With Hannstar Antenna**

Gain : 10 Scale: 13 Bias: 29

(99%) Pk. Pwr.: 16.11 dBm (100%) Pk. Pwr.: 16.54 dBm Avg. Power: 13.74 dBm

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
3249.33	37.96	V	74	-36.04	Peak	2	45	Fundamental of LO for
3249.33	24.43	V	54	-29.57	Avg	2	45	Channel 6
6498.67	40.93	V	--	--	Peak	2	135	2nd Harmonic of LO for
6498.67	27.12	V	--	--	Avg	2	135	Channel 6
9748	48.44	V	--	--	Peak	2	180	3rd Harmonic of LO =
9748	33.2	V	--	--	Avg	2	180	4th Harmonic of Tx for Channel 6
12997.3	48.36	V	--	--	Peak	2	180	4th Harmonic of LO for
12997.3	35.43	V	--	--	Avg	2	180	Channel 6
3249.33	39.6	H	74	-34.4	Peak	2	45	Fundamental of LO for
3249.33	24.26	H	54	-29.74	Avg	2	45	Channel 6
6498.67	41.83	H	--	--	Peak	2	315	2nd Harmonic of LO for
6498.67	27.18	H	--	--	Avg	2	315	Channel 6
9748	47.6	H	--	--	Peak	2.25	45	3rd Harmonic of LO =
9748	33.15	H	--	--	Avg	2.25	45	4th Harmonic of Tx for Channel 6
12997.3	50.66	H	--	--	Peak	2	45	4th Harmonic of LO for
12997.3	35.34	H	--	--	Avg	2	45	of Channel 6
								Only the Fundamental of the LO
								is in the Restricted Band

FCC 15.247

Intel Corporation
Intel Mini PCI Type 802.11 b Wireless LAN Adapter
Model: WM3A2100
Configuration: Dell Laptop Agency Series # PP07S

Date: 6/04/04
Lab: B
Tested By: Arnold Gaffud

Channel 11 - 802.11 b Mode **Transmit Mode - With Hannstar Antenna**

Gain : 10 Scale: 13 Bias: 29

(99%) Pk. Pwr.: 16.05 dBm (100%) Pk. Pwr.: 16.51 dBm Avg. Power: 13.69 dBm

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
3282.67	38.52	V	74	-35.48	Peak	2	180	Fundamental of LO for
3282.67	24.76	V	54	-29.24	Avg	2	180	Channel 11
6565.33	41.15	V	--	--	Peak	2	180	2nd Harmonic of LO for
6565.33	26.93	V	--	--	Avg	2	180	Channel 11
9848	47.54	V	--	--	Peak	1.75	270	3rd Harmonic of LO =
9848	32.43	V	--	--	Avg	1.75	270	4th Harmonic of Tx for Channel 11
13130.7	51.06	V	--	--	Peak	1.75	90	4th Harmonic of LO for
13130.7	36.06	V	--	--	Avg	1.75	90	of Channel 11
3282.67	41.23	H	74	-32.77	Peak	2	135	Fundamental of LO for
3282.67	24.63	H	54	-29.37	Avg	2	135	Channel 11
6565.33	42.34	H	--	--	Peak	1.5	90	2nd Harmonic of LO for
6565.33	26.96	H	--	--	Avg	1.5	90	Channel 11
9848	47.56	H	--	--	Peak	2	180	3rd Harmonic of LO =
9848	32.79	H	--	--	Avg	2	180	4th Harmonic of Tx for Channel 11
13130.7	50.45	H	--	--	Peak	2	180	4th Harmonic of LO for
13130.7	36.2	H	--	--	Avg	2	180	of Channel 11
								Only the Fundamental of the LO
								is in the Restricted Band

FCC 15.247

Intel Corporation
Intel Mini PCI Type 802.11 b Wireless LAN Adapter
Model: WM3A2100
Configuration: Dell Laptop Agency Series # PP07S

Date: 6/04/04
Lab: B
Tested By: Arnold Gaffud

Channel 6 - 802.11 b Mode
Receive Mode - With Hannstar Antenna

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
3249.33	39.97	V	74	-34.03	Peak	2	90	Fundamental of LO for
3249.33	25.21	V	60	-34.79	Avg	2	90	Channel 6
6498.67	42.09	V	74	-31.91	Peak	2	270	2nd Harmonic of LO for
6498.67	27.42	V	60	-32.58	Avg	2	270	Channel 6
9748	48.08	V	74	-25.92	Peak	2	180	3rd Harmonic of LO for
9748	33.3	V	60	-26.7	Avg	2	180	Channel 6
3249.33	39.22	H	74	-34.78	Peak	2	180	Fundamental of LO for
3249.33	24.23	H	60	-35.77	Avg	2	180	Channel 6
6498.67	42.5	H	74	-31.5	Peak	2	135	2nd Harmonic of LO for
6498.67	27.46	H	60	-32.54	Avg	2	135	Channel 6
9748	48	H	74	-26	Peak	1.75	180	3rd Harmonic of LO for
9748	33.26	H	60	-26.74	Avg	1.75	180	Channel 6

FCC 15.247

Intel Corporation
Intel Mini PCI Type 802.11 b Wireless LAN Adapter
Model: WM3A2100
Configuration: Dell Laptop Agency Series # PP07S

Date: 7/22/04
Lab: B
Tested By: Ben Chavez

Channel 1 - 802.11 b Mode **Transmit Mode - with WNC Antenna**

Gn.: 10 Sca.: 14 Bias: 29 (99%)Pk. Pwr.: 16.14 dBm (100%)Pk. Pwr.: 16.54 dBm Avg. Pwr: 13.79 dBm

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4824	44.42	V	74	-29.58	Peak	2.25	90	
4824	36.25	V	54	-17.75	Avg	2.25	90	
7236	48.27	V	74	-25.73	Peak	2.47	315	
7236	38.7	V	54	-15.3	Avg	2.47	315	
9648	48.84	V	--	--	Peak	2.47	270	Not in Restricted Band
9648	34.14	V	--	--	Avg	2.47	270	Not in Restricted Band
12060	50.58	V	74	-23.42	Peak	2.47	315	
12060	38.24	V	54	-15.76	Avg	2.47	315	
14472	52.43	V	74	-21.57	Peak	2.47	135	
14472	38.92	V	54	-15.08	Avg	2.47	135	
16884		V	--	--	Peak			No Emissions
16884		V	--	--	Avg			Detected
19296	54.95	V	74	-19.05	Peak	2	180	
19296	41.54	V	54	-12.46	Avg	2	180	
21708		V	--	--	Peak			No Emissions
21708		V	--	--	Avg			Detected
24120		V	--	--	Peak			No Emissions
24120		V	--	--	Avg			Detected

FCC 15.247

Intel Corporation
Intel Mini PCI Type 802.11 b Wireless LAN Adapter
Model: WM3A2100
Configuration: Dell Laptop Agency Series # PP07S

Date: 7/22/04
Lab: B
Tested By: Ben Chavez

Channel 1 - 802.11 b Mode **Transmit Mode - with WNC Antenna**

Gn.: 10 Sca.: 14 Bias: 29 (99%)Pk. Pwr.: 16.14 dBm (100%)Pk. Pwr.: 16.54 dBm Avg. Pwr: 13.79 dBm

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4824	43.51	H	74	-30.49	Peak	2.47	225	
4824	34.17	H	54	-19.83	Avg	2.47	225	
7236	44.8	H	74	-29.2	Peak	2.04	270	
7236	31.47	H	54	-22.53	Avg	2.04	270	
9648	46.09	H	--	--	Peak	2.04	315	Not in Restricted Band
9648	33.57	H	--	--	Avg	2.04	315	Not in Restricted Band
12060	51.33	H	74	-22.67	Peak	2.04	0	
12060	37.71	H	54	-16.29	Avg	2.01	0	
14472	51.11	H	74	-22.89	Peak	2.04	180	
14472	38.64	H	54	-15.36	Avg	2.04	180	
16884		H	--	--	Peak			No Emissions
16884		H	--	--	Avg			Detected
19296	54.71	V	74	-19.29	Peak	1.75	225	
19296	41.53	V	54	-12.47	Avg	1.75	225	
21708		H	--	--	Peak			No Emissions
21708		H	--	--	Avg			Detected
24120		H	--	--	Peak			No Emissions
24120		H	--	--	Avg			Detected

FCC 15.247

Intel Corporation
Intel Mini PCI Type 802.11 b Wireless LAN Adapter
Model: WM3A2100
Configuration: Dell Laptop Agency Series # PP07S

Date: 7/22/04
Lab: B
Tested By: Ben Chavez

Channel 6 - 802.11 b Mode **Transmit Mode - with WNC Antenna**

Gn.: 10 Sca.: 13 Bias: 29 (99%)Pk. Pwr.: 16.11 dBm (100%)Pk. Pwr.: 16.54 dBm Avg. Pwr: 13.74 dBm

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4874	42.55	V	74	-31.45	Peak	2.21	270	
4874	32.55	V	54	-21.45	Avg	2.21	270	
7311	48.55	V	74	-25.45	Peak	2.2	270	
7311	38.28	V	54	-15.72	Avg	2.2	270	
9748	46.04	V	--	--	Peak	2.2	225	Not in Restricted Band
9748	33.26	V	--	--	Avg	2.2	225	Not in Restricted Band
12185	51.33	V	74	-22.67	Peak	2.2	225	
12185	37.98	V	54	-16.02	Avg	2.2	225	
14622	52.22	V	--	--	Peak	2.2	225	Not in Restricted Band
14622	39.92	V	--	--	Avg	2.2	225	Not in Restricted Band
17059		V	--	--	Peak			No Emissions
17059		V	--	--	Avg			Detected
19496	46.14	V	74	-27.86	Peak	1.75	180	
19496	31.97	V	54	-22.03	Avg	1.75	180	
21933		V	--	--	Peak			No Emissions
21933		V	--	--	Avg			Detected
22001		V	74	-74	Peak			No Emissions
22001		V	54	-54	Avg			Detected
24370		V	--	--	Peak			No Emissions
24370		V	--	--	Avg			Detected

FCC 15.247

Intel Corporation
Intel Mini PCI Type 802.11 b Wireless LAN Adapter
Model: WM3A2100
Configuration: Dell Laptop Agency Series # PP07S

Date: 7/22/04
Lab: B
Tested By: Ben Chavez

Channel 6 - 802.11 b Mode **Transmit Mode - with WNC Antenna**

Gn.: 10 Sca.: 13 Bias: 29 (99%)Pk. Pwr.: 16.11 dBm (100%)Pk. Pwr.: 16.54 dBm Avg. Pwr: 13.74 dBm

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4874	42.74	H	74	-31.26	Peak	2.79	180	
4874	31.76	H	54	-22.24	Avg	2.79	180	
7311	43.75	H	74	-30.25	Peak	2.79	270	
7311	30.83	H	54	-23.17	Avg	2.79	270	
9748	46.23	H	--	--	Peak	2.79	225	Not in Restricted Band
9748	33.49	H	--	--	Avg	2.79	225	Not in Restricted Band
12185	52.06	H	74	-21.94	Peak	2.76	135	
12185	37.45	H	54	-16.55	Avg	2.79	135	
14622	52.05	H	--	--	Peak	2.78	180	Not in Restricted Band
14622	39.09	H	--	--	Avg	2.78	180	Not in Restricted Band
17059		H	--	--	Peak			No Emissions
17059		H	--	--	Avg			Detected
19496	54.94	V	74	-19.06	Peak	2	180	
19496	41.36	V	54	-12.64	Avg	2	180	
21933		H	--	--	Peak			No Emissions
21933		H	--	--	Avg			Detected
22001		H	74	-74	Peak			No Emissions
22001		H	54	-54	Avg			Detected
24370		H	--	--	Peak			No Emissions
24370		H	--	--	Avg			Detected

FCC 15.247

Intel Corporation
Intel Mini PCI Type 802.11 b Wireless LAN Adapter
Model: WM3A2100
Configuration: Dell Laptop Agency Series # PP07S

Date: 7/22/04
Lab: B
Tested By: Ben Chavez

Channel 11 - 802.11 b Mode **Transmit Mode - with WNC Antenna**

Gn.: 10 Sca.: 13 Bias: 29 (99%)Pk. Pwr.: 16.05 dBm (100%)Pk. Pwr.: 16.51 dBm Avg. Pwr: 13.69 dBm

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4924	43.1	V	74	-30.9	Peak	2.32	225	
4924	33.21	V	54	-20.79	Avg	2.32	225	
7386	45.76	V	74	-28.24	Peak	2.53	270	
7386	34.69	V	54	-19.31	Avg	2.53	270	
9848	45	V	--	--	Peak	2.53	225	Not in Restricted Band
9848	32.79	V	--	--	Avg	2.53	225	Not in Restricted Band
12310	51	V	74	-23	Peak	2.53	180	
12310	36.45	V	54	-17.55	Avg	2.53	180	
14772	54.01	V	--	--	Peak	2.53	270	Not in Restricted Band
14772	39.54	V	--	--	Avg	2.53	270	Not in Restricted Band
17234	49.45	V	--	--	Peak	2.53	270	
17234	37.18	V	--	--	Avg	2.53	270	
19696	45.65	V	74	-28.35	Peak	2.25	180	
19696	32.16	V	54	-21.84	Avg	2.25	180	
22158		V	74	-74	Peak			No Emissions
22158		V	54	-54	Avg			Detected
24620		V	--	--	Peak			No Emissions
24620		V	--	--	Avg			Detected

FCC 15.247

Intel Corporation
Intel Mini PCI Type 802.11 b Wireless LAN Adapter
Model: WM3A2100
Configuration: Dell Laptop Agency Series # PP07S

Date: 7/22/04
Lab: B
Tested By: Ben Chavez

Channel 11 - 802.11 b Mode **Transmit Mode - with WNC Antenna**

Gn.: 10 Sca.: 13 Bias: 29 (99%)Pk. Pwr.: 16.05 dBm (100%)Pk. Pwr.: 16.51 dBm Avg. Pwr: 13.69 dBm

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4924	42.91	H	74	-31.09	Peak	2.34	180	
4924	30.87	H	54	-23.13	Avg	2.34	180	
7386	41.92	H	74	-32.08	Peak	2.07	270	
7386	29.1	H	54	-24.9	Avg	2.07	270	
9848	46.29	H	--	--	Peak	2.07	180	Not in Restricted Band
9848	32.82	H	--	--	Avg	2.07	180	Not in Restricted Band
12310	49.36	H	74	-24.64	Peak	2.07	270	
12310	36.65	H	54	-17.35	Avg	2.07	270	
14772	51.18	H	--	--	Peak	2.07	315	Not in Restricted Band
14772	38.56	H	--	--	Avg	2.07	315	Not in Restricted Band
17234	50.01	H	--	--	Peak	2.07	270	
17234	37.29	H	--	--	Avg	2.07	270	
19696	45.52	H	74	-28.48	Peak	1.75	225	
19696	32.14	H	54	-21.86	Avg	1.75	225	
22158		H	74	-74	Peak			No Emissions
22158		H	54	-54	Avg			Detected
24620		H	--	--	Peak			No Emissions
24620		H	--	--	Avg			Detected

FCC 15.247
Intel Corporation
Intel Mini PCI Type 802.11 b Wireless LAN Adapter
Model: WM3A2100
Configuration: Dell Laptop Agency Series # PP07S

Date: 7/22/04
Lab: B
Tested By: Ben Chavez

802.11 b Mode **Transmit Mode - with WNC Antenna**

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2312	38.1	V	74	-35.9	Peak	2.25	270	103 MHz Below the Fundamental
2312	26.29	V	54	-27.71	Avg	2.25	270	of Channel 1
2512	40.63	V	74	-33.37	Peak	2.25	270	103 MHz Above the Fundamental
2512	27.35	V	54	-26.65	Avg	2.25	270	of Channel 1
2312	39.8	H	74	-34.2	Peak	2.6	45	103 MHz Below the Fundamental
2312	25.51	H	54	-28.49	Avg	2.6	45	of Channel 1
2512	38.78	H	74	-35.22	Peak	2.6	225	103 MHz Above the Fundamental
2512	27.33	H	54	-26.67	Avg	2.6	225	of Channel 1
2336	40.74	V	74	-33.26	Peak	2.25	90	103 MHz Below the Fundamental
2336	27.91	V	54	-26.09	Avg	2.25	90	of Channel 6
2538.7	39.21	V	74	-34.79	Peak	2.25	90	103 MHz Above the Fundamental
2538.7	27.45	V	54	-26.55	Avg	2.25	90	of Channel 6
2336	42.46	H	74	-31.54	Peak	2.47	315	103 MHz Below the Fundamental
2336	30.57	H	54	-23.43	Avg	2.47	315	of Channel 6
2538.7	39.72	H	74	-34.28	Peak	2.47	315	103 MHz Above the Fundamental
2538.7	26.9	H	54	-27.1	Avg	2.47	315	of Channel 6
2360	39.53	V	74	-34.47	Peak	1.34	45	103 MHz Below the Fundamental
2360	26.4	V	54	-27.6	Avg	1.34	45	of Channel 11
2565	39.54	V	74	-34.46	Peak	1.34	45	103 MHz Above the Fundamental
2565	27.88	V	54	-26.12	Avg	1.34	45	of Channel 11
2360	39.3	H	74	-34.7	Peak	2.47	45	103 MHz Below the Fundamental
2360	26.12	H	54	-27.88	Avg	2.47	45	of Channel 11
2564	39.63	H	74	-34.37	Peak	2.47	180	103 MHz Above the Fundamental
2564	27.68	H	54	-26.32	Peak	2.47	180	of Channel 11

FCC 15.247

Intel Corporation
Intel Mini PCI Type 802.11 b Wireless LAN Adapter
Model: WM3A2100
Configuration: Dell Laptop Agency Series # PP07S

Date: 7/22/04
Lab: B
Tested By: Ben Chavez

Channel 1 - 802.11 b Mode **Transmit Mode - with WNC Antenna**

Gn.: 10 Sca.: 14 Bias: 29 (99%)Pk. Pwr.: 16.14 dBm (100%)Pk. Pwr.: 16.54 dBm Avg. Pwr: 13.79 dBm

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
3216	36.28	V	74	-37.72	Peak	2.56	315	Fundamental of LO for
3216	23.14	V	54	-30.86	Avg	2.56	315	Channel 1
6432	41.36	V	--	--	Peak	2.56	45	2nd Harmonic of LO for
6432	27.38	V	--	--	Avg	2.56	45	Channel 1
9648	45.24	V	--	--	Peak	2.56	225	3rd Harmonic of LO =
9648	33.86	V	--	--	Avg	2.56	225	4th Harmonic of Tx for Channel 1
12864	47.25	V	--	--	Peak	2.56	45	4th Harmonic of LO for
12864	34.65	V	--	--	Avg	2.56	45	Channel 1
3216	36.13	H	74	-37.87	Peak	2.04	45	Fundamental of LO for
3216	23.26	H	54	-30.74	Avg	2.04	45	Channel 1
6432	42.31	H	--	--	Peak	2.04	270	2nd Harmonic of LO for
6432	27.48	H	--	--	Avg	2.04	270	Channel 1
9648	47.16	H	--	--	Peak	2.04	270	3rd Harmonic of LO =
9648	33.5	H	--	--	Avg	2.04	270	4th Harmonic of Tx for Channel 1
12864	47.86	H	--	--	Peak	2.04	225	4th Harmonic of LO for
12864	34.69	H	--	--	Avg	2.04	225	Channel 1
								Only the Fundamental of the LO
								is in the Restricted Band

FCC 15.247

Intel Corporation
Intel Mini PCI Type 802.11 b Wireless LAN Adapter
Model: WM3A2100
Configuration: Dell Laptop Agency Series # PP07S

Date: 7/22/04
Lab: B
Tested By: Ben Chavez

Channel 6 - 802.11 b Mode **Transmit Mode - with WNC Antenna**

Gn.: 10 Sca.: 13 Bias: 29 (99%)Pk. Pwr.: 16.11 dBm (100%)Pk. Pwr.: 16.54 dBm Avg. Pwr: 13.74 dBm

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
3249.33	36.1	V	74	-37.9	Peak	2.56	315	Fundamental of LO for
3249.33	23.43	V	54	-30.57	Avg	2.56	315	Channel 6
6498.67	39.99	V	--	--	Peak	2.56	0	2nd Harmonic of LO for
6498.67	27.6	V	--	--	Avg	2.56	0	Channel 6
9748	46.59	V	--	--	Peak	2.56	270	3rd Harmonic of LO =
9748	33.21	V	--	--	Avg	2.56	270	4th Harmonic of Tx for Channel 6
12997.3	47.7	V	--	--	Peak	2.56	315	4th Harmonic of LO for
12997.3	35.23	V	--	--	Avg	2.56	315	Channel 6
3249.33	36.38	H	74	-37.62	Peak	2.04	0	Fundamental of LO for
3249.33	23.59	H	54	-30.41	Avg	2.04	0	Channel 6
6498.67	40.76	H	--	--	Peak	2.04	225	2nd Harmonic of LO for
6498.67	27.83	H	--	--	Avg	2.04	225	Channel 6
9748	48.5	H	--	--	Peak	2.04	270	3rd Harmonic of LO =
9748	33.26	H	--	--	Avg	2.04	270	4th Harmonic of Tx for Channel 6
12997.3	47.89	H	--	--	Peak	2.04	225	4th Harmonic of LO for
12997.3	35.34	H	--	--	Avg	2.04	225	of Channel 6
								Only the Fundamental of the LO
								is in the Restricted Band

FCC 15.247

Intel Corporation
Intel Mini PCI Type 802.11 b Wireless LAN Adapter
Model: WM3A2100
Configuration: Dell Laptop Agency Series # PP07S

Date: 7/22/04
Lab: B
Tested By: Ben Chavez

Channel 11 - 802.11 b Mode **Transmit Mode - with WNC Antenna**

Gn.: 10 Sca.: 13 Bias: 29 (99%)Pk. Pwr.: 16.05 dBm (100%)Pk. Pwr.: 16.51 dBm Avg. Pwr: 13.69 dBm

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
3282.67	37.28	V	74	-36.72	Peak	2	270	Fundamental of LO for
3282.67	24.41	V	54	-29.59	Avg	2	270	Channel 11
6565.33	41.09	V	--	--	Peak	2	180	2nd Harmonic of LO for
6565.33	27.67	V	--	--	Avg	2	180	Channel 11
9848	46.2	V	--	--	Peak	2	270	3rd Harmonic of LO =
9848	32.88	V	--	--	Avg	2	270	4th Harmonic of Tx for Channel 11
13130.7	50.67	V	--	--	Peak	2	270	4th Harmonic of LO for
13130.7	35.94	V	--	--	Avg	2	270	of Channel 11
3282.67	37.14	H	74	-36.86	Peak	2.04	270	Fundamental of LO for
3282.67	24.38	H	54	-29.62	Avg	2.04	270	Channel 11
6565.33	41.46	H	--	--	Peak	2.04	315	2nd Harmonic of LO for
6565.33	27.85	H	--	--	Avg	2.04	315	Channel 11
9848	45.25	H	--	--	Peak	2.04	270	3rd Harmonic of LO =
9848	32.69	H	--	--	Avg	2.04	270	4th Harmonic of Tx for Channel 11
13130.7	48.48	H	--	--	Peak	2.04	45	4th Harmonic of LO for
13130.7	36	H	--	--	Avg	2.04	45	of Channel 11
								Only the Fundamental of the LO
								is in the Restricted Band

FCC 15.247

Intel Corporation
Intel Mini PCI Type 802.11 b Wireless LAN Adapter
Model: WM3A2100
Configuration: Dell Laptop Agency Series # PP07S

Date: 7/22/04
Lab: B
Tested By: Ben Chavez

Channel 6 - 802.11 b Mode
Receive Mode - WNC Antenna

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
3249.33	39.52	V	74	-34.48	Peak	2	90	Fundamental of LO for
3249.33	24.65	V	60	-35.35	Avg	2	90	Channel 6
6498.67	41.52	V	74	-32.48	Peak	2	270	2nd Harmonic of LO for
6498.67	26.41	V	60	-33.59	Avg	2	270	Channel 6
9748	42.56	V	74	-31.44	Peak	2	180	3rd Harmonic of LO for
9748	31.52	V	60	-28.48	Avg	2	180	Channel 6
3249.33	40.56	H	74	-33.44	Peak	2	180	Fundamental of LO for
3249.33	26.33	H	60	-33.67	Avg	2	180	Channel 6
6498.67	43.6	H	74	-30.4	Peak	2	135	2nd Harmonic of LO for
6498.67	28.48	H	60	-31.52	Avg	2	135	Channel 6
9748	47.63	H	74	-26.37	Peak	1.75	180	3rd Harmonic of LO for
9748	33.01	H	60	-26.99	Avg	1.75	180	Channel 6

COMPATIBLE ELECTRONICS

Test Location : Compatible Electronics — **Page** : 1/1
Customer : INTEL CORPORATION — **Date** : 6/04/2004
Manufacturer : INTEL CORPORATION — **Time** : 22:53:34
Eut name : Mini PCI Type 802.11 B Wireless LAN Adapter — **Lab** : D
Model : WM3A2100 — **Test Distance** : 3.0 Meters
Serial # : P/N: 0U2027
Specification : FCC Class B
Distance correction factor (20 * log(test/spec)) : 0.00
Test Mode : TEST RANGE: 10 kHz to 1000 MHz
VERTICAL AND HORIZONTAL POLARIZATIONS
EUT CONTINUOUSLY TRANSMITTING (Hannstar Ant.) - WORST CASE MODE
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
1H	308.032	47.90	1.70	12.95	37.58	24.96	46.00	-21.04
2V	308.050	46.20	1.70	12.95	37.58	23.26	46.00	-22.74
3H	352.058	43.60	1.72	13.69	37.50	21.51	46.00	-24.49
4V	352.084	42.90	1.72	13.69	37.50	20.81	46.00	-25.19
5V	440.070	41.20	2.10	15.08	37.09	21.29	46.00	-24.71
6H	440.100	43.00	2.10	15.09	37.09	23.09	46.00	-22.91
7H	528.130	48.50	2.30	16.51	37.21	30.10	46.00	-15.90
8V	528.170	50.70	2.30	16.51	37.22	32.30	46.00	-13.70
9H	704.397	47.30	2.90	20.06	37.10	33.16	46.00	-12.84

FCC 15.247

Intel Corporation
Intel Mini PCI Type 802.11 b Wireless LAN Adapter
Model: WM3A2100
Configuration: Dell Laptop Agency Series # PP07S

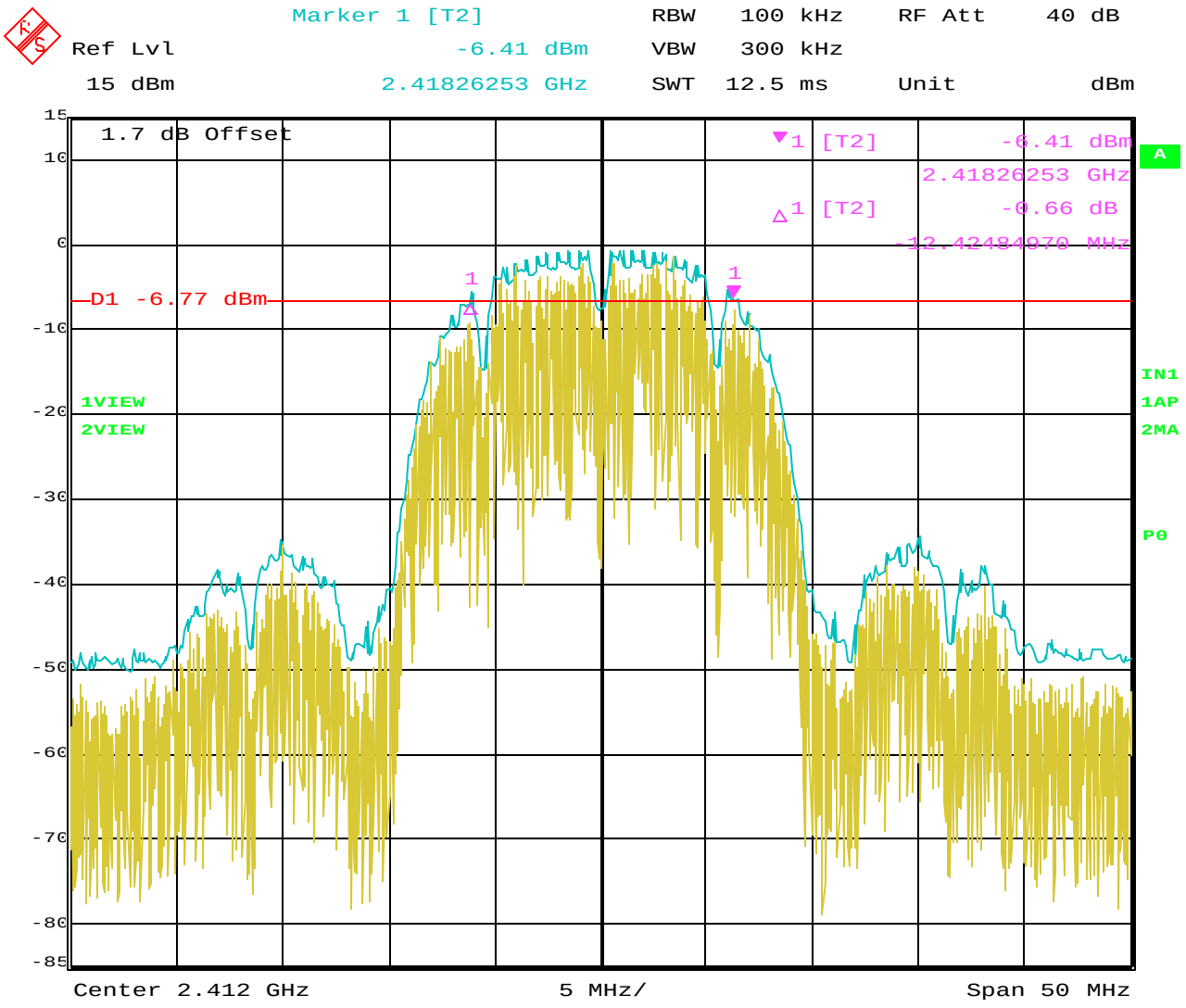
Date: 6/04/04
Lab: B
Tested By: Arnold Gaffud

Emissions from the Digital Portion -- 1 GHz to 40 GHz - Hannstar Antenna (worst case)

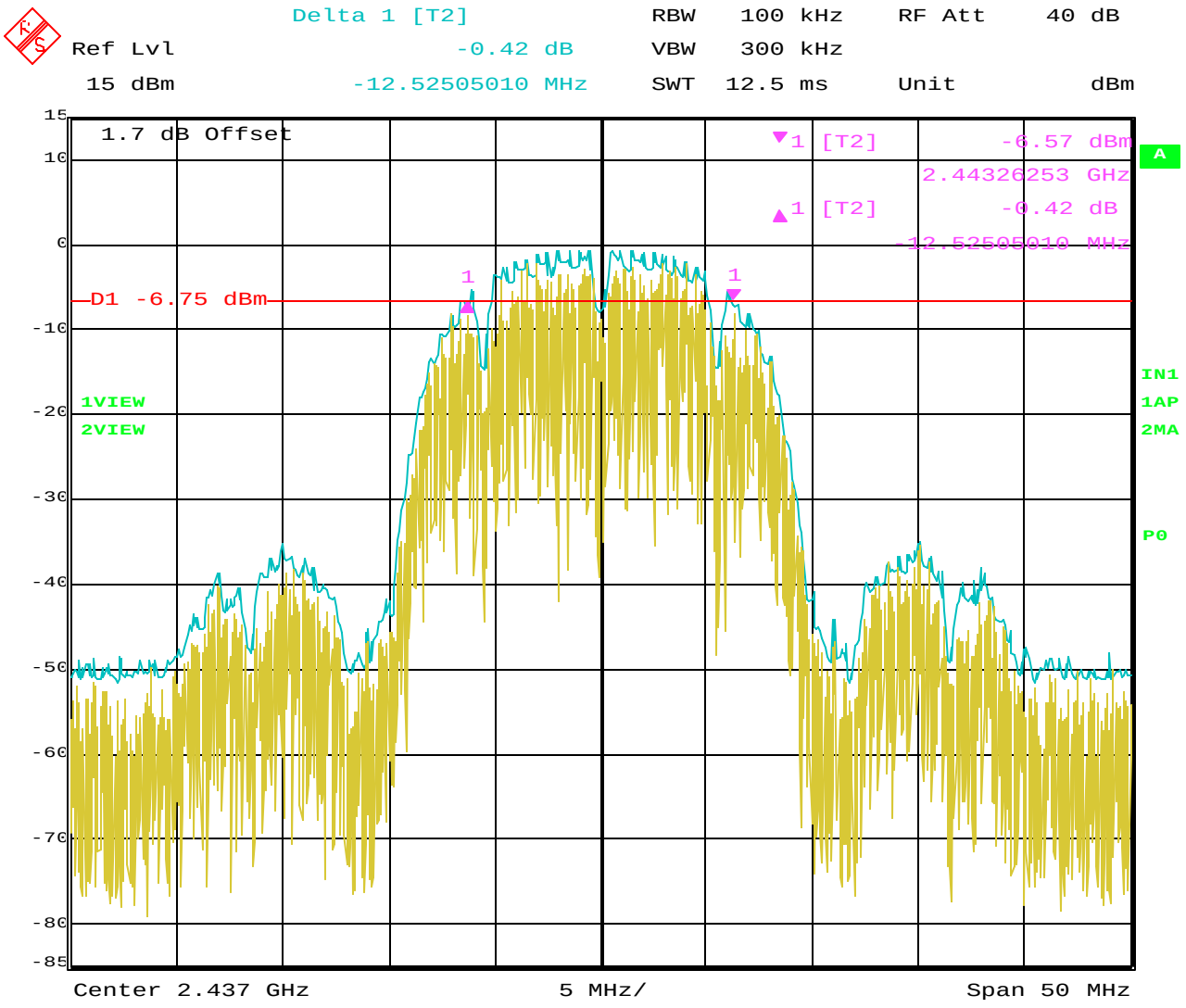
Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
1128	39.49	V	74	-34.51	Peak	2.25	0	Digital Stuff
1128	22.46	V	54	-31.54	Avg	2.25	0	Digital Stuff
1331.6	38.16	V	74	-35.84	Peak	2.25	0	Digital Stuff
1331.6	22.59	V	54	-31.41	Avg	2.25	0	Digital Stuff
1442.6	43.83	V	74	-30.17	Peak	2.5	45	Digital Stuff
1442.6	22.93	V	54	-31.07	Avg	2.5	45	Digital Stuff
1384.5	34.23	H	74	-39.77	Peak	1.75	180	Digital Stuff
1384.5	21.88	H	54	-32.12	Avg	1.75	180	Digital Stuff
1446.3	41.59	H	74	-32.41	Peak	2	135	Digital Stuff
1446.3	23.14	H	54	-30.86	Avg	2	135	Digital Stuff
1821.6	38.83	H	74	-35.17	Peak	2	180	Digital Stuff
1821.6	23.27	H	54	-30.73	Avg	2	180	Digital Stuff

-6 dB BANDWIDTH

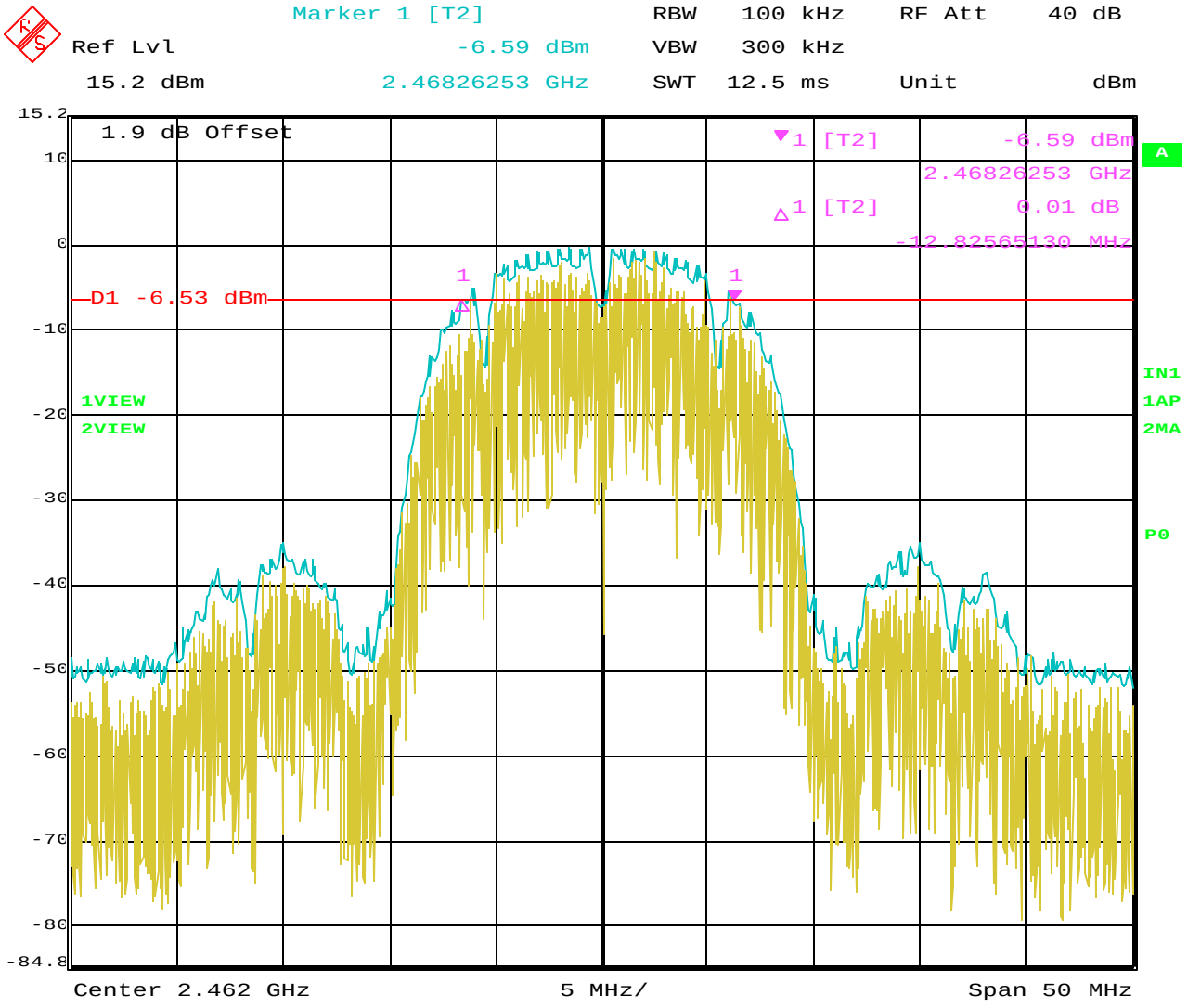
DATA SHEETS



-6 dB Bandwidth – Channel 1 – 802.11 b Mode



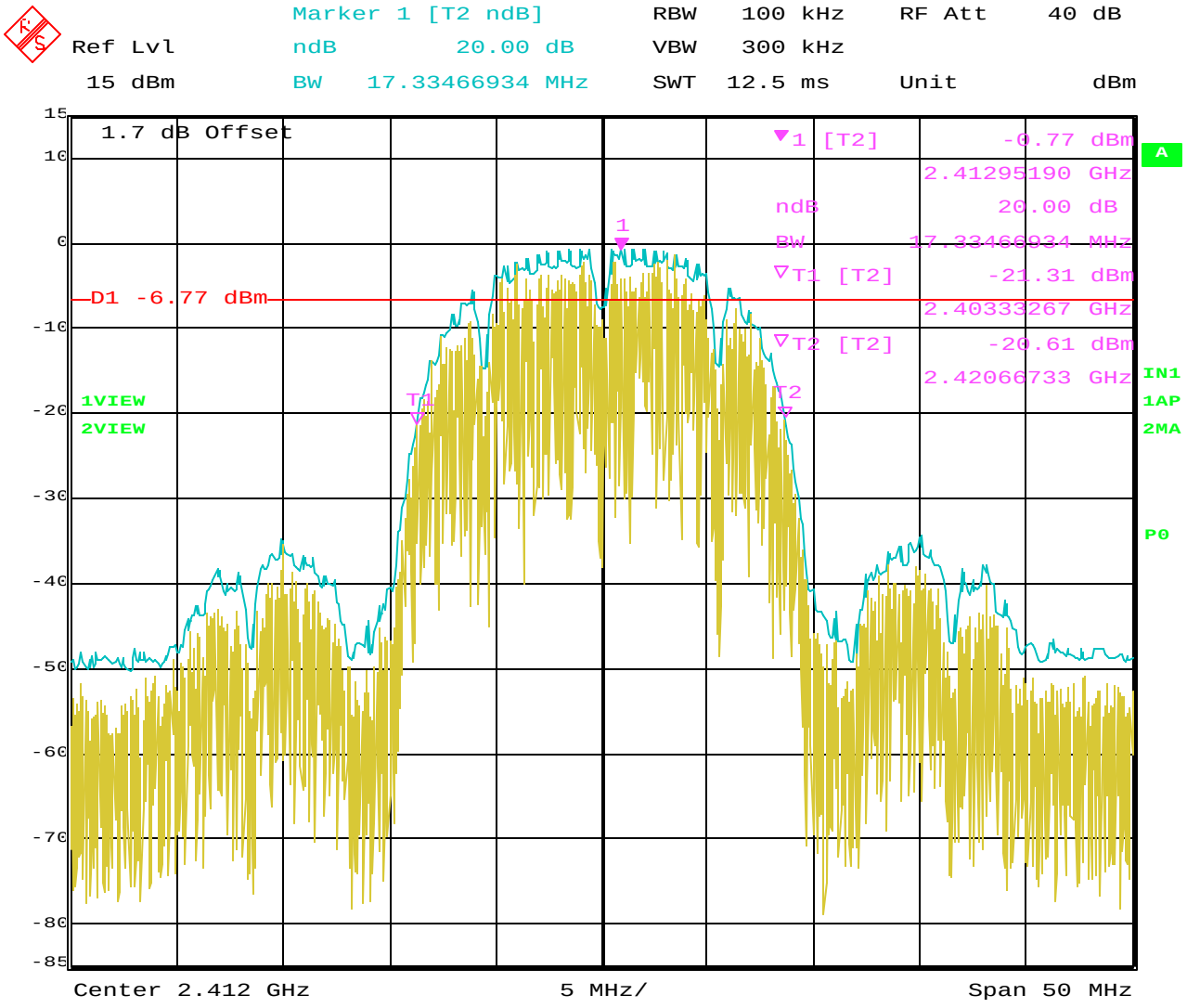
-6 dB Bandwidth – Channel 6 – 802.11 b Mode



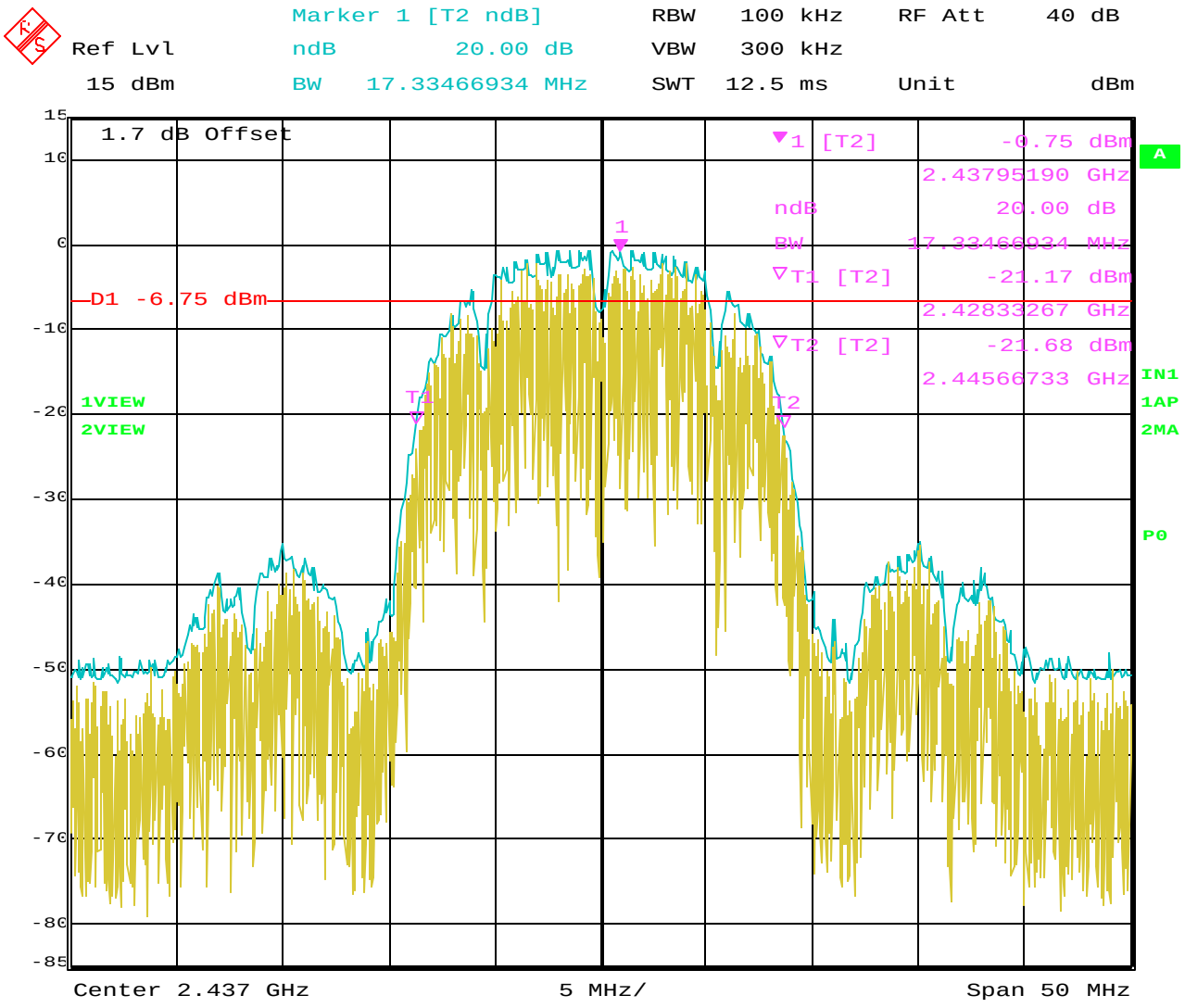
-6 dB Bandwidth – Channel 11 – 802.11 b Mode

-20 dB BANDWIDTH

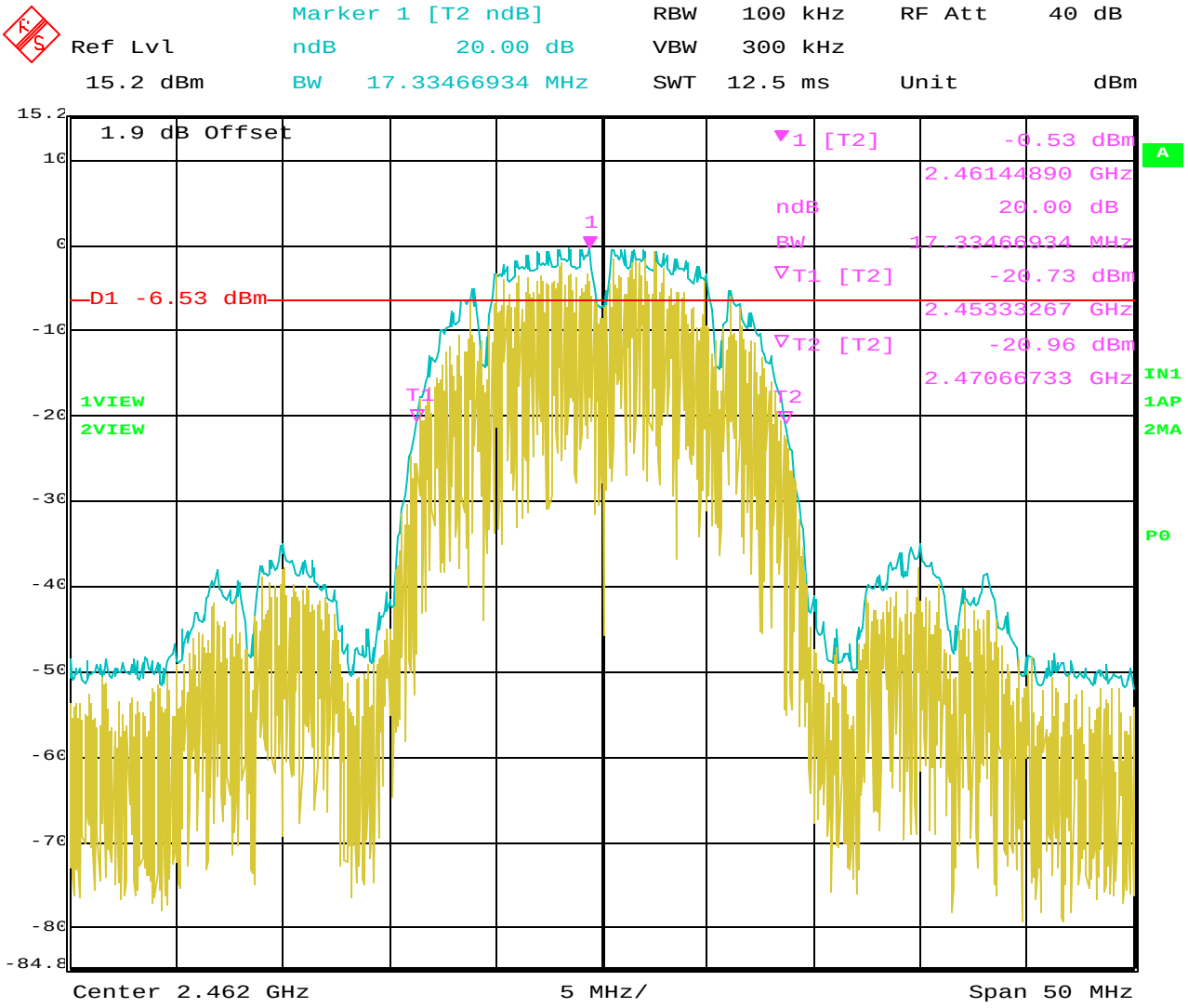
DATA SHEETS



-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

PEAK POWER OUTPUT

DATA SHEETS

PEAK OUTPUT POWER

Intel Corporation

Intel Mini PCI Type 802.11 B Wireless LAN Adapter

MODEL: WM3A2100

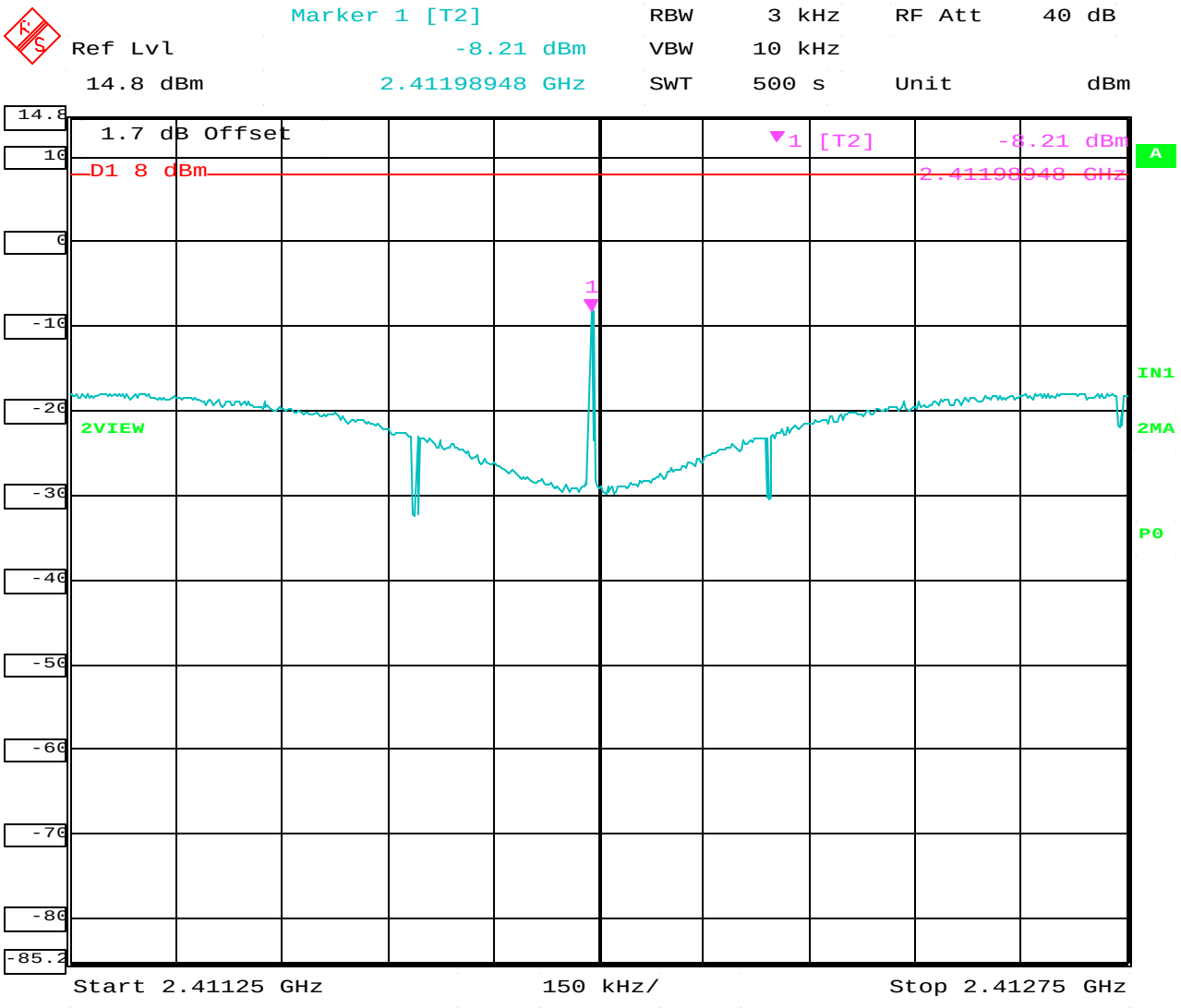
For use in the Dell Laptop Agency Series # PP07S

802.11 b Mode (Worst Case Rate is 1 Mbps)

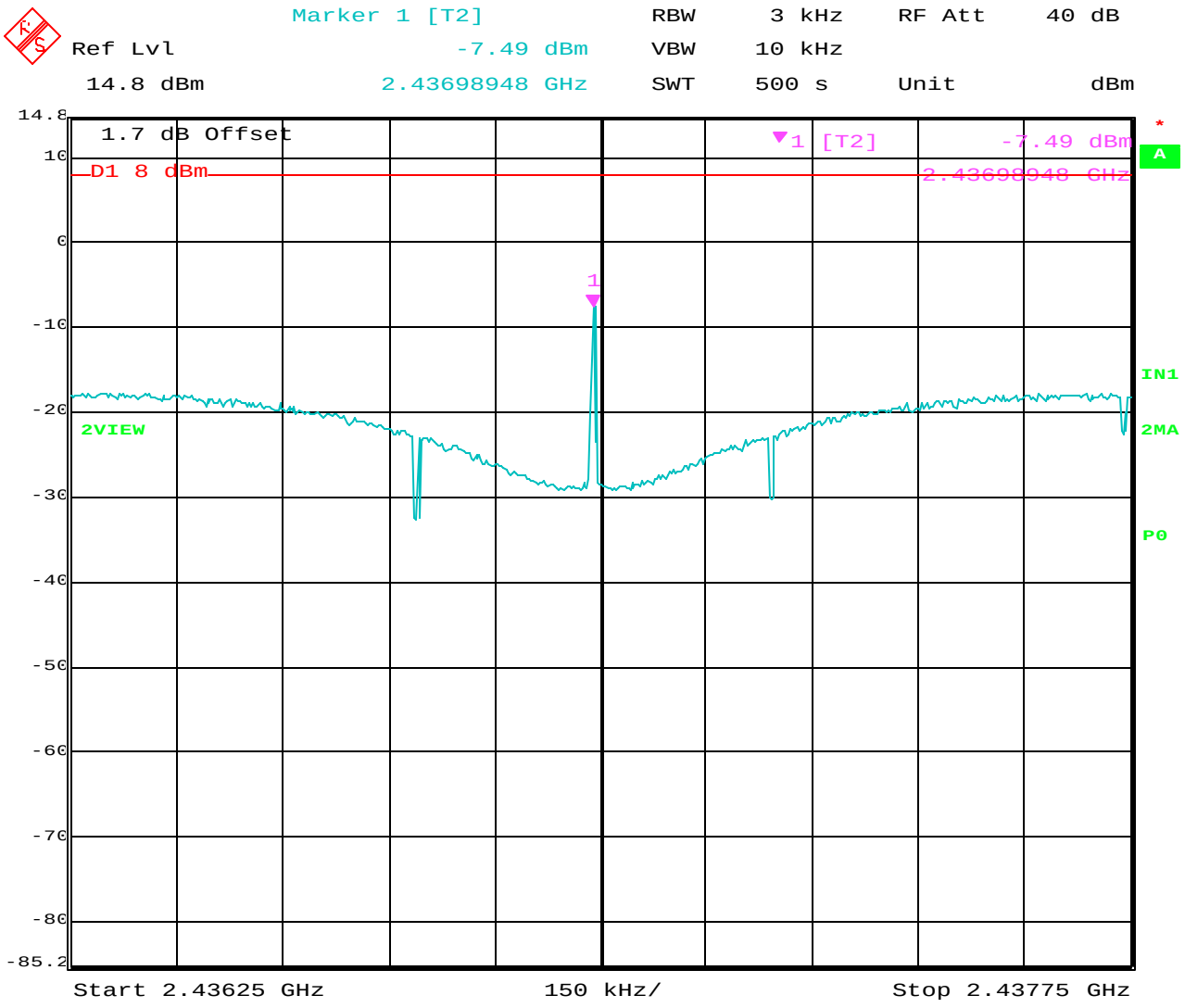
CHANNEL	GAIN	SCALE	BIAS	PEAK POWER OUTPUT (dBm)		Avg. Power (dBm)
				99%	100%	
1 (2412 MHz)	10	14	29	16.14	16.54	13.79
6 (2437 MHz)	10	13	29	16.11	16.54	13.74
11 (2462 MHz)	10	13	29	16.05	16.51	13.69

PEAK POWER SPECTRAL DENSITY

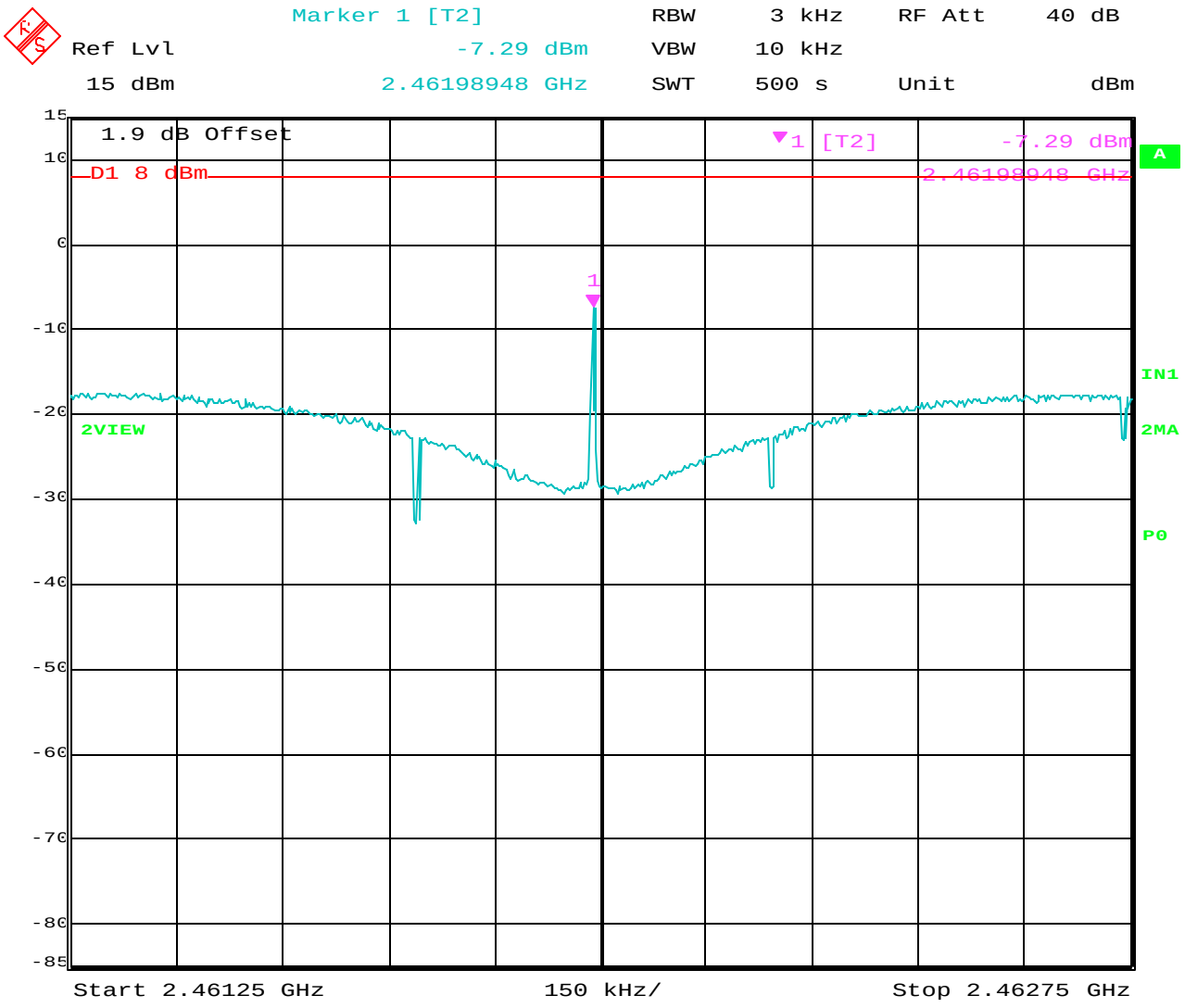
DATA SHEETS



Spectral Density Output – Channel 1 – 802.11 b Mode



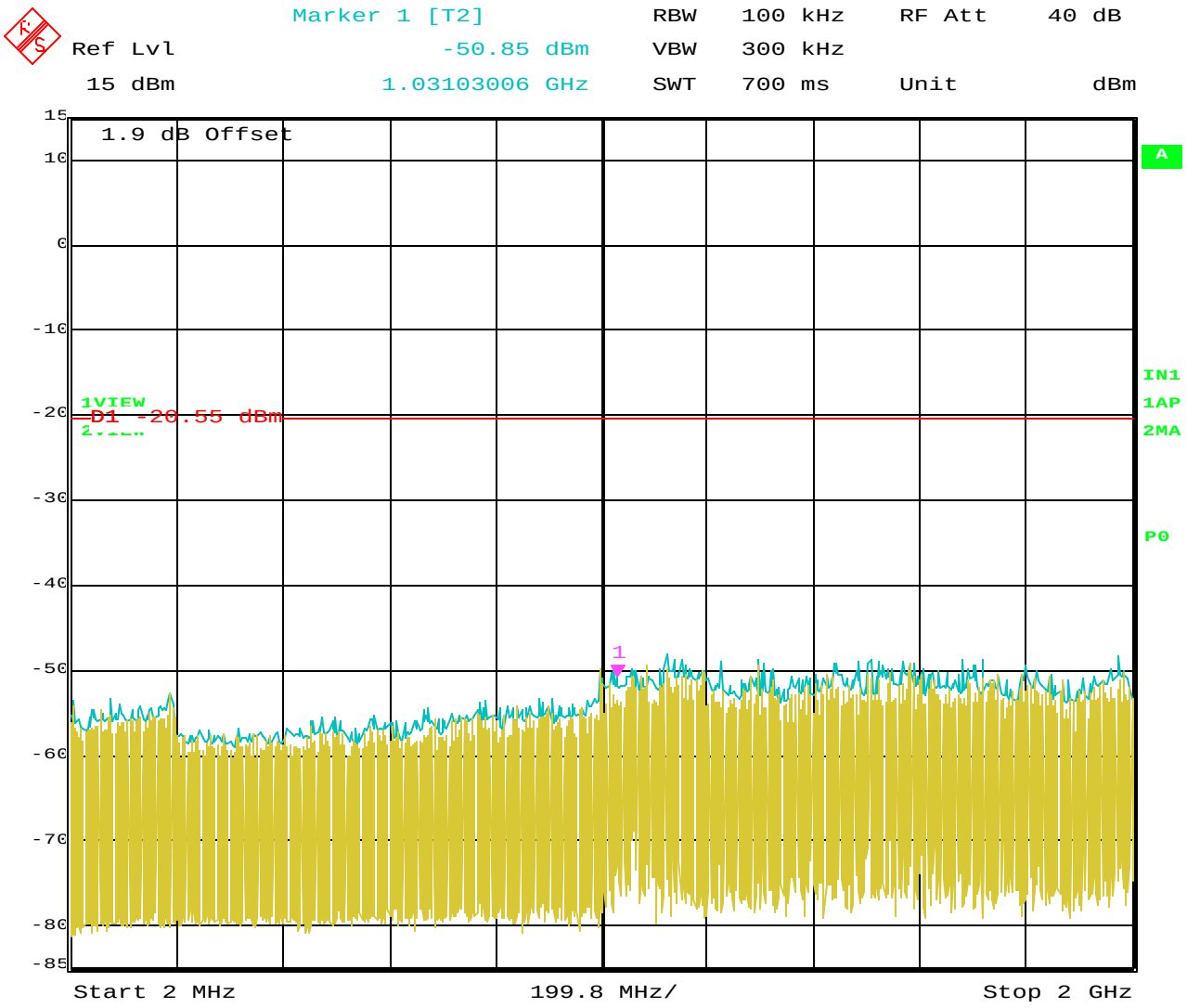
Spectral Density Output – Channel 6 – 802.11 b Mode



Spectral Density Output – Channel 11 – 802.11 b Mode

RF ANTENNA CONDUCTED

DATA SHEETS



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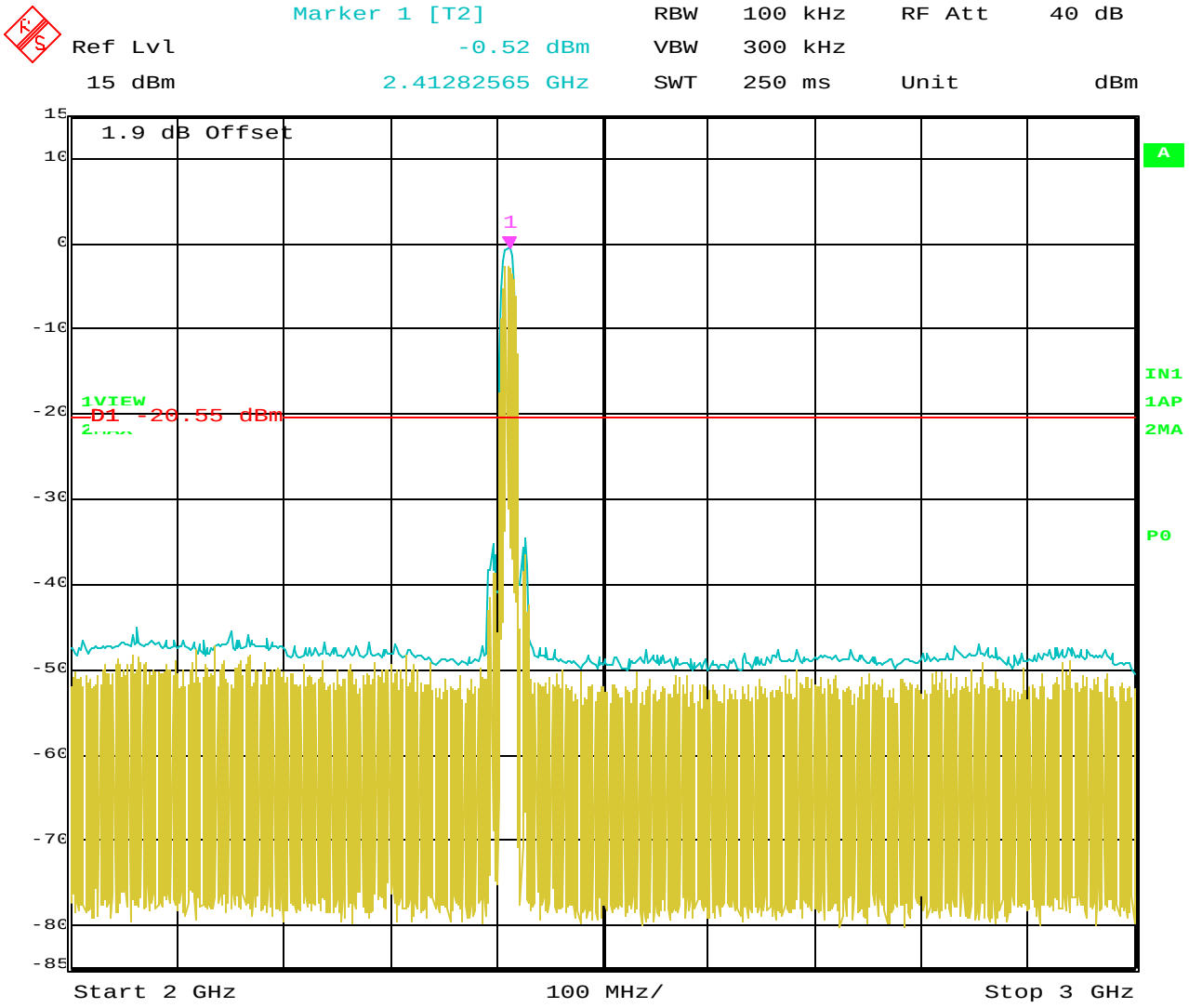
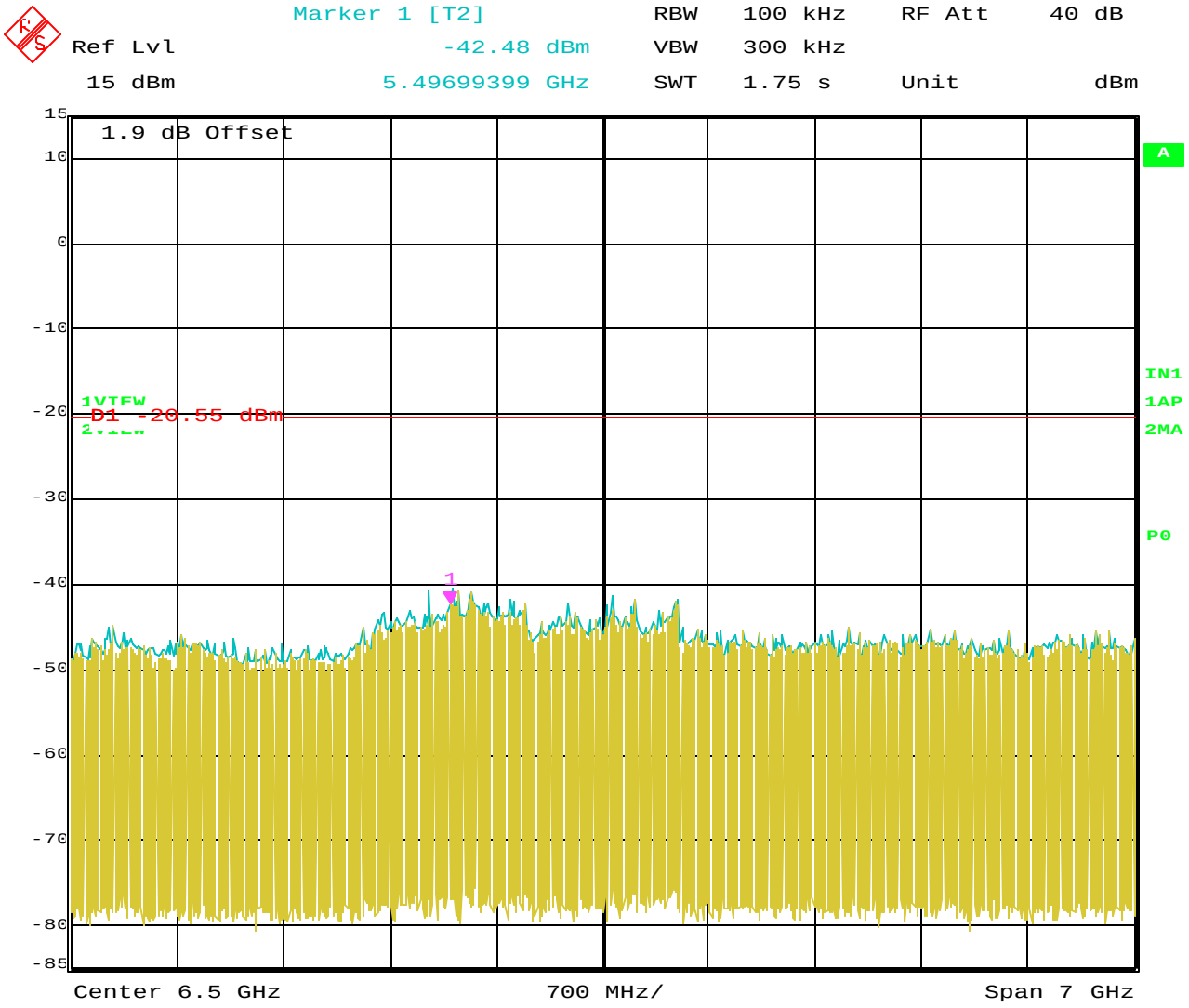
RF Antenna Conducted Test – Channel 1 – 802.11 b Mode – 2 MHz to 2 GHz

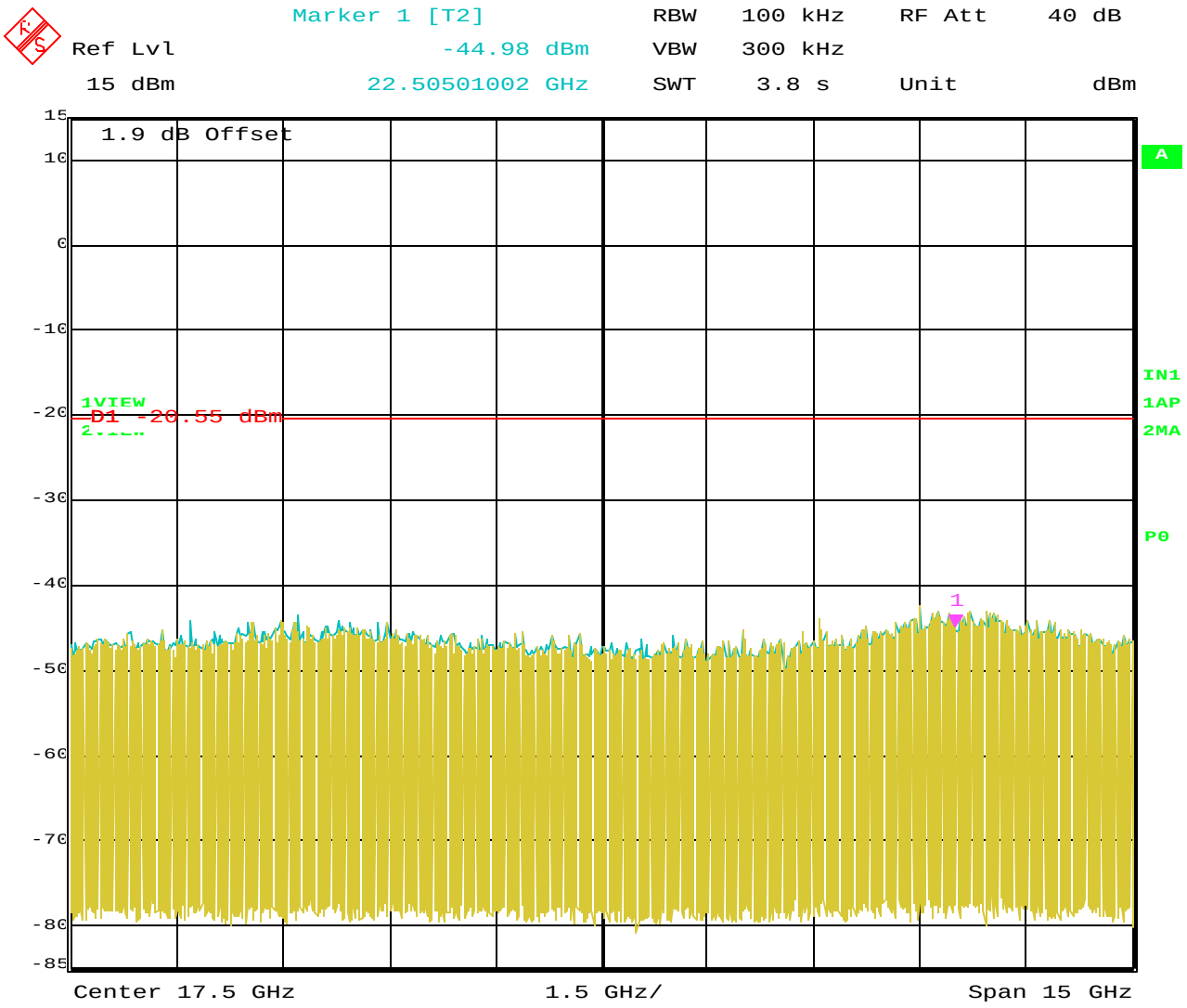


Date: 4.JUN.2004 17:06:45

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

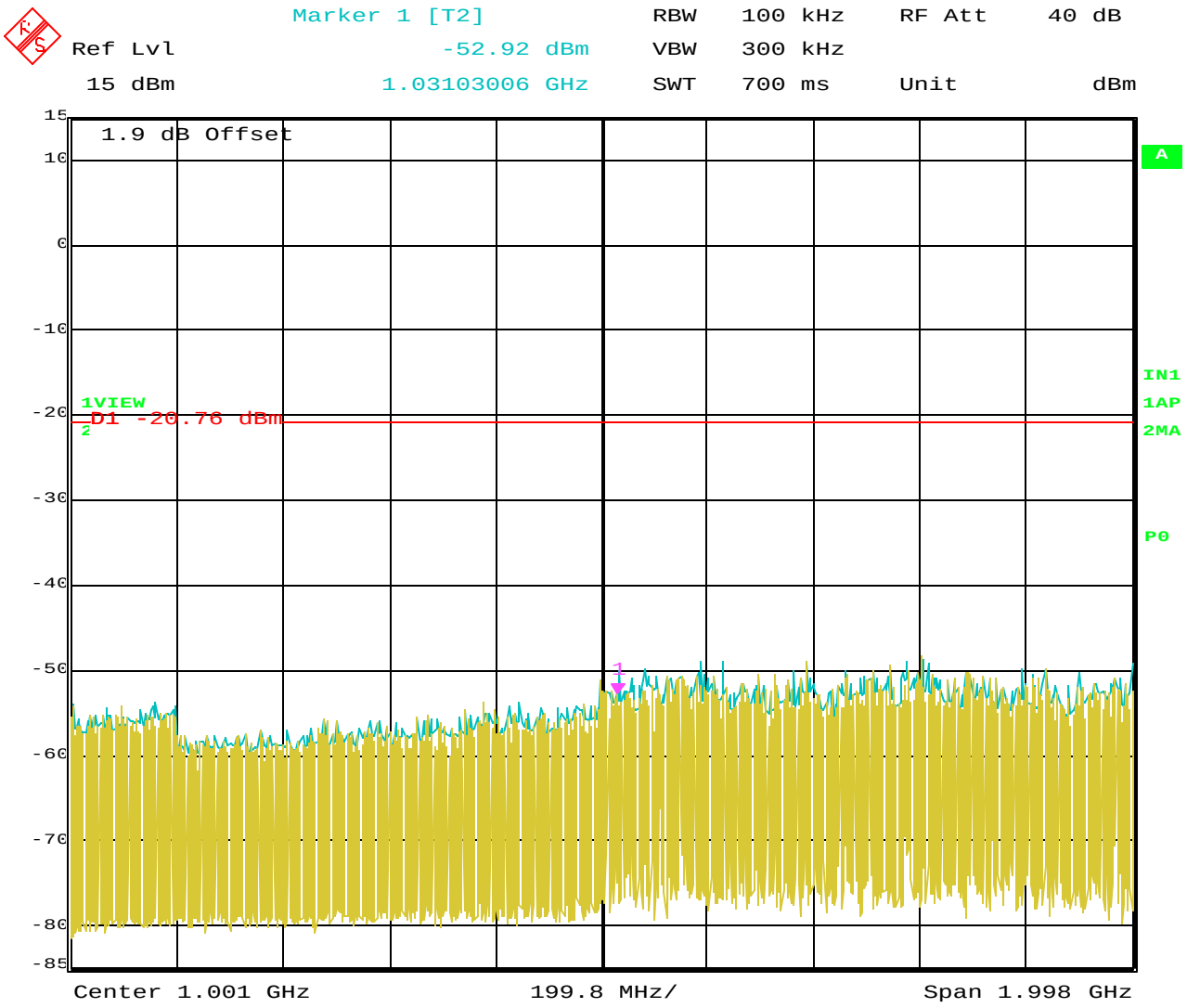


RF Antenna Conducted Test – Channel 1 – 802.11 b Mode – 3 GHz to 10 GHz

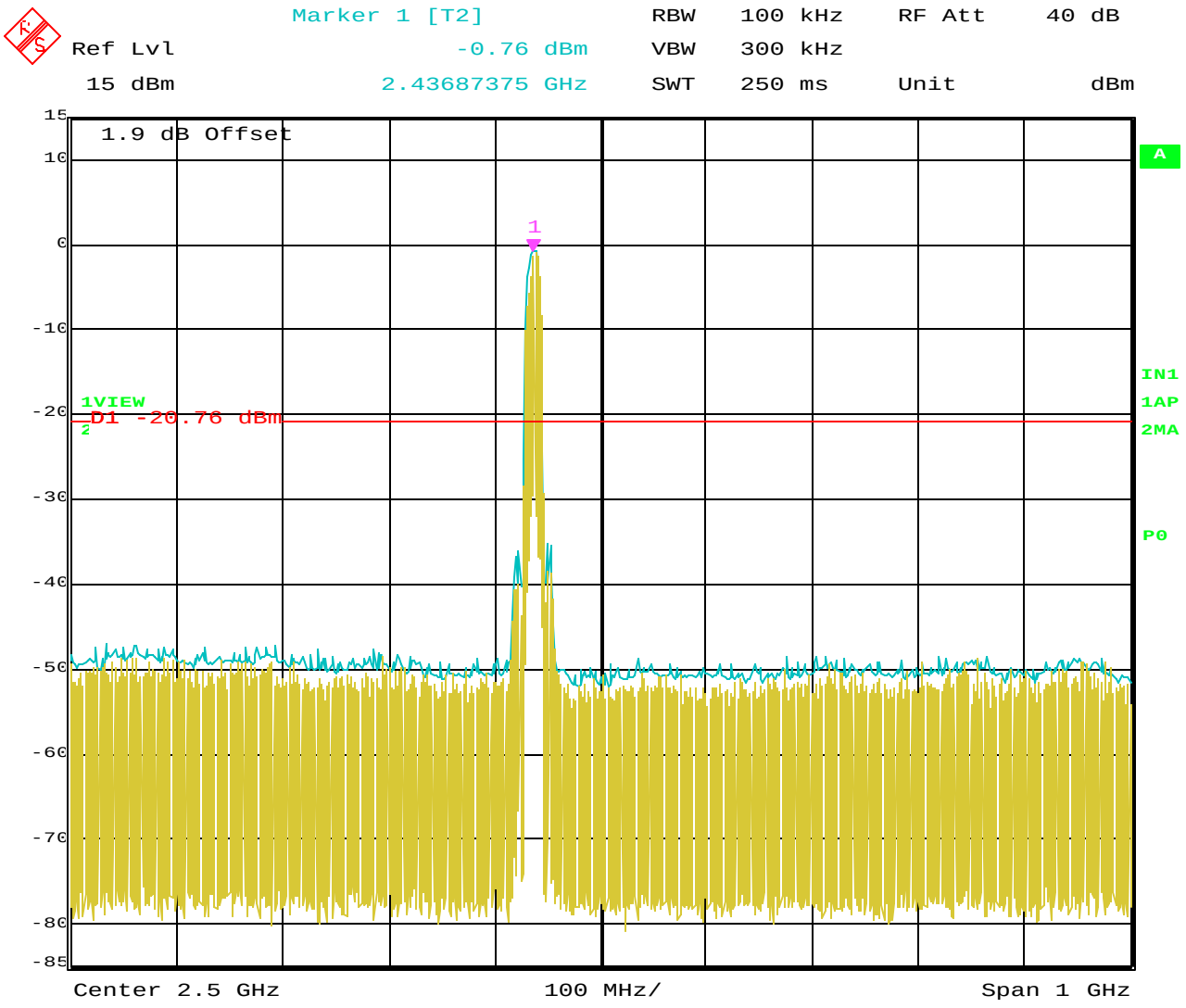


Date: 7.JUN.2004 08:33:39

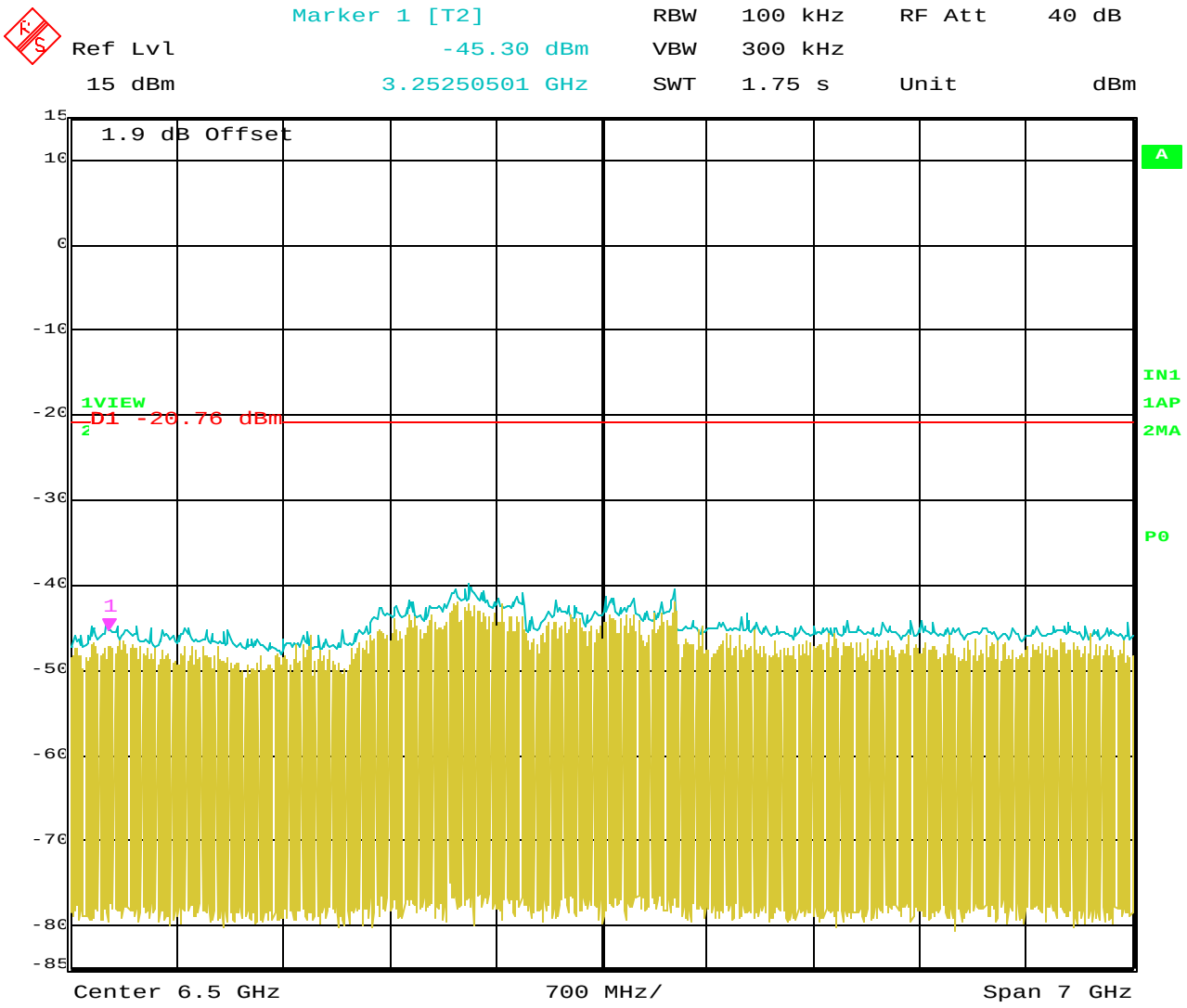
RF Antenna Conducted Test – Channel 1 – 802.11 b Mode – 10 GHz to 25 GHz



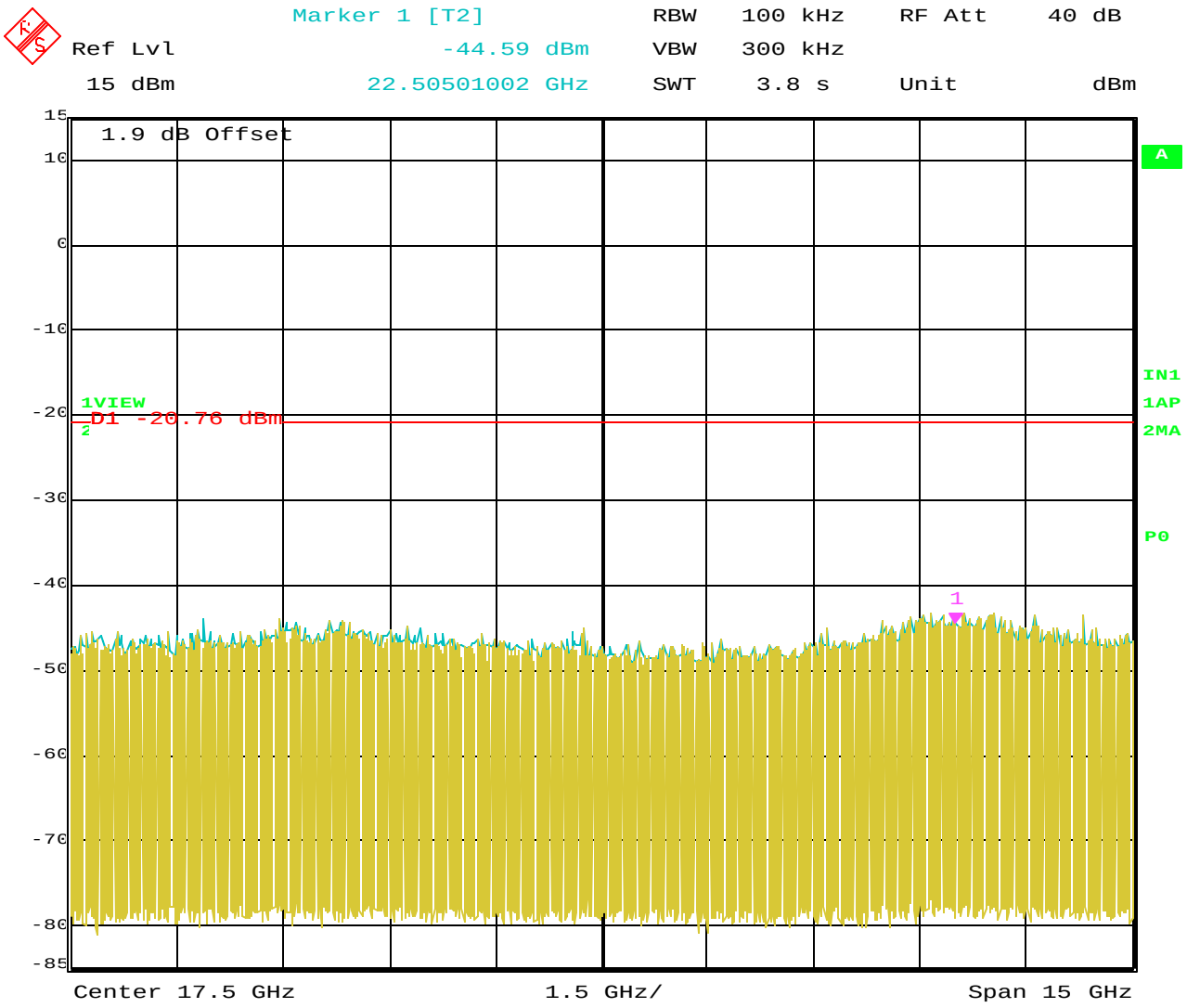
RF Antenna Conducted Test – Channel 6 – 802.11 b Mode – 2 MHz to 2 GHz



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



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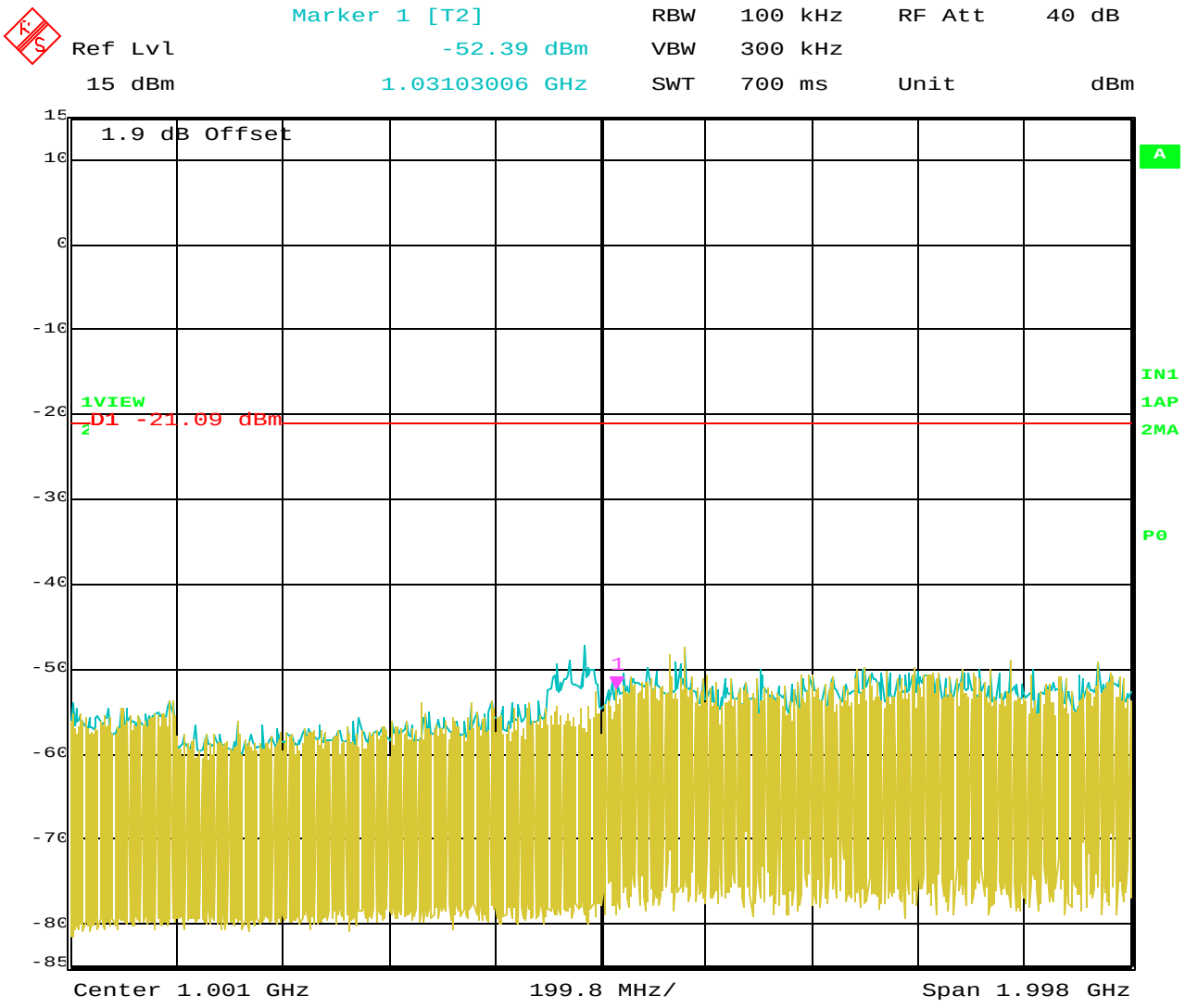
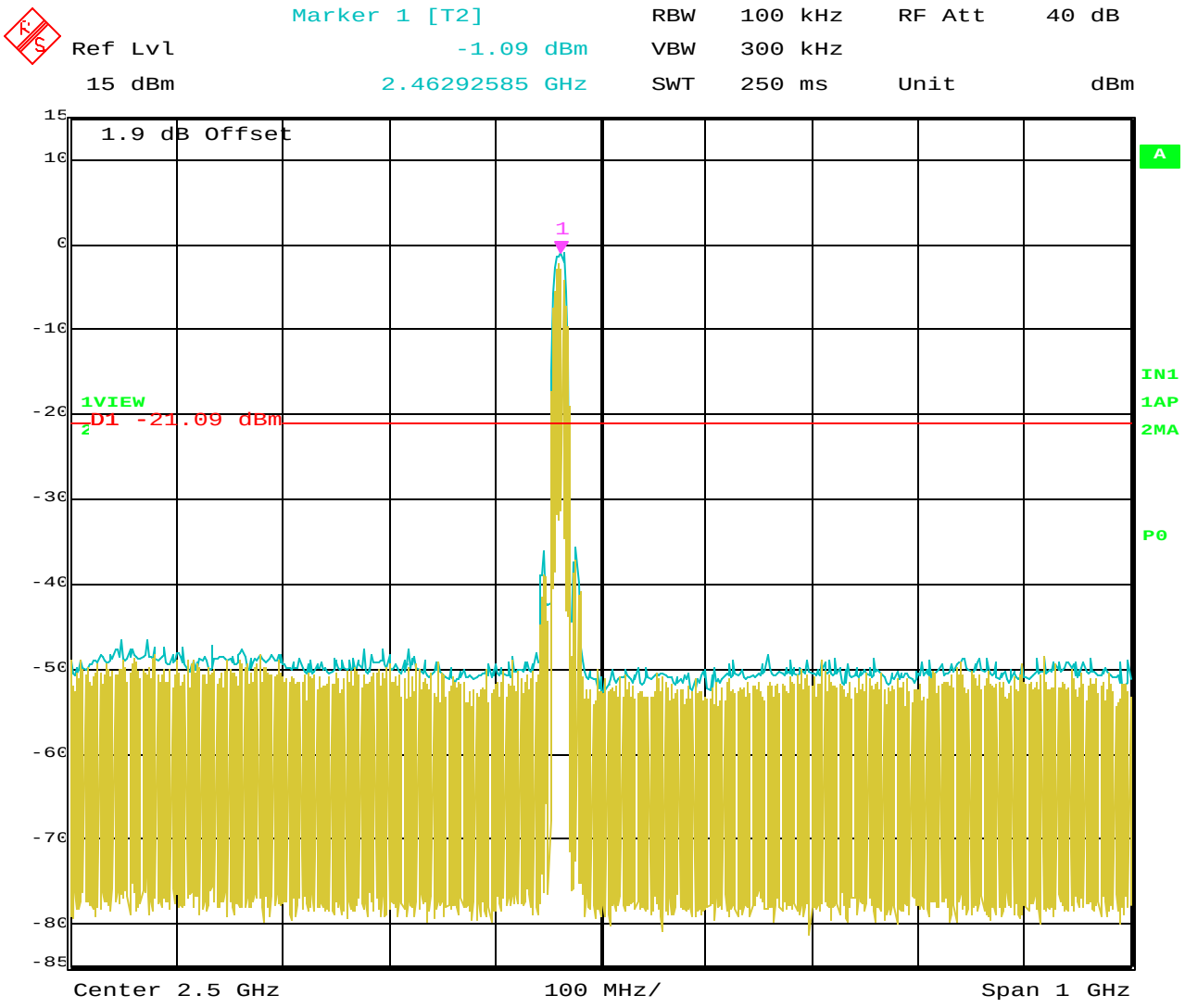
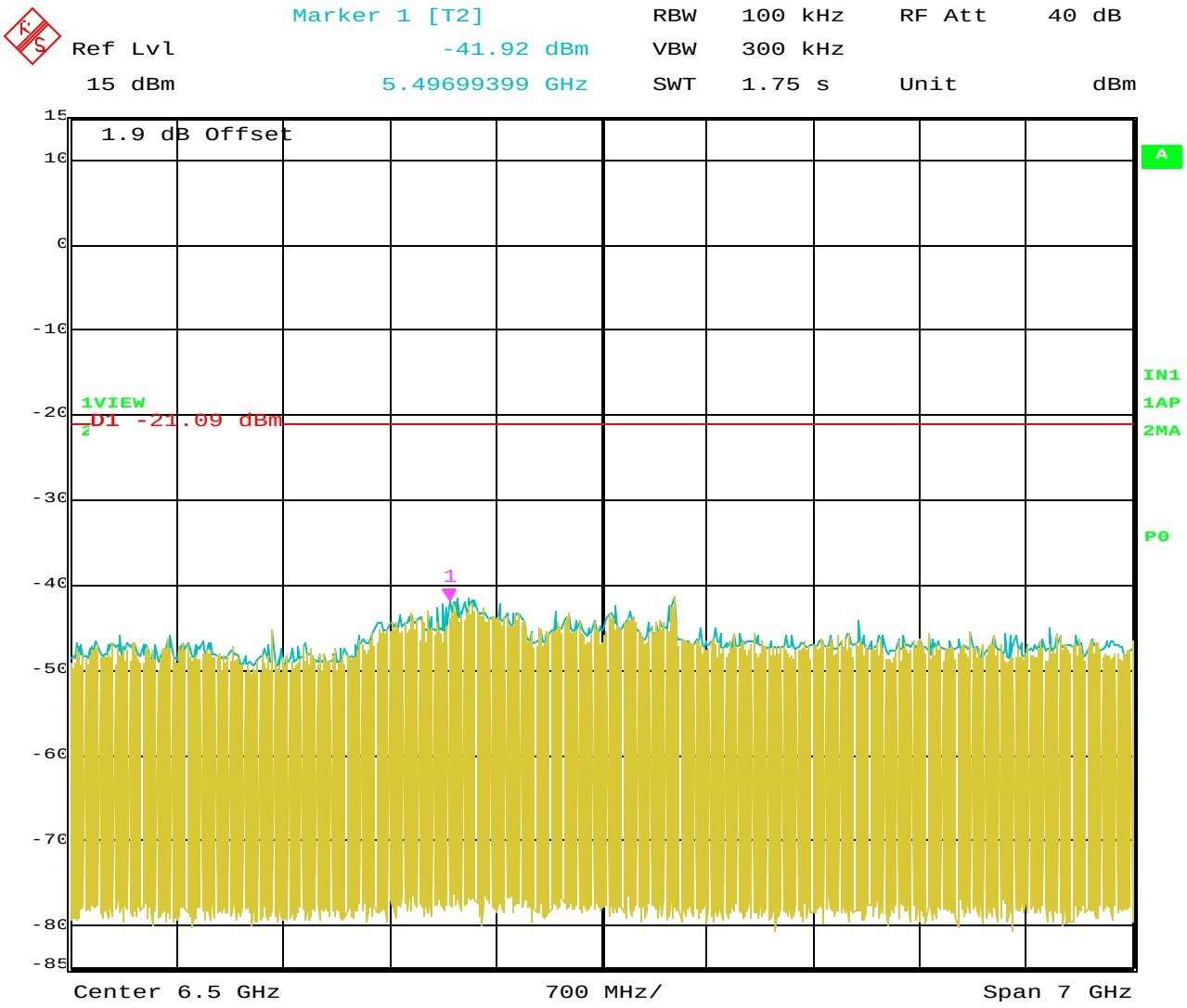
RF Antenna Conducted Test – Channel 6 – 802.11 b Mode – 10 GHz to 25 GHz



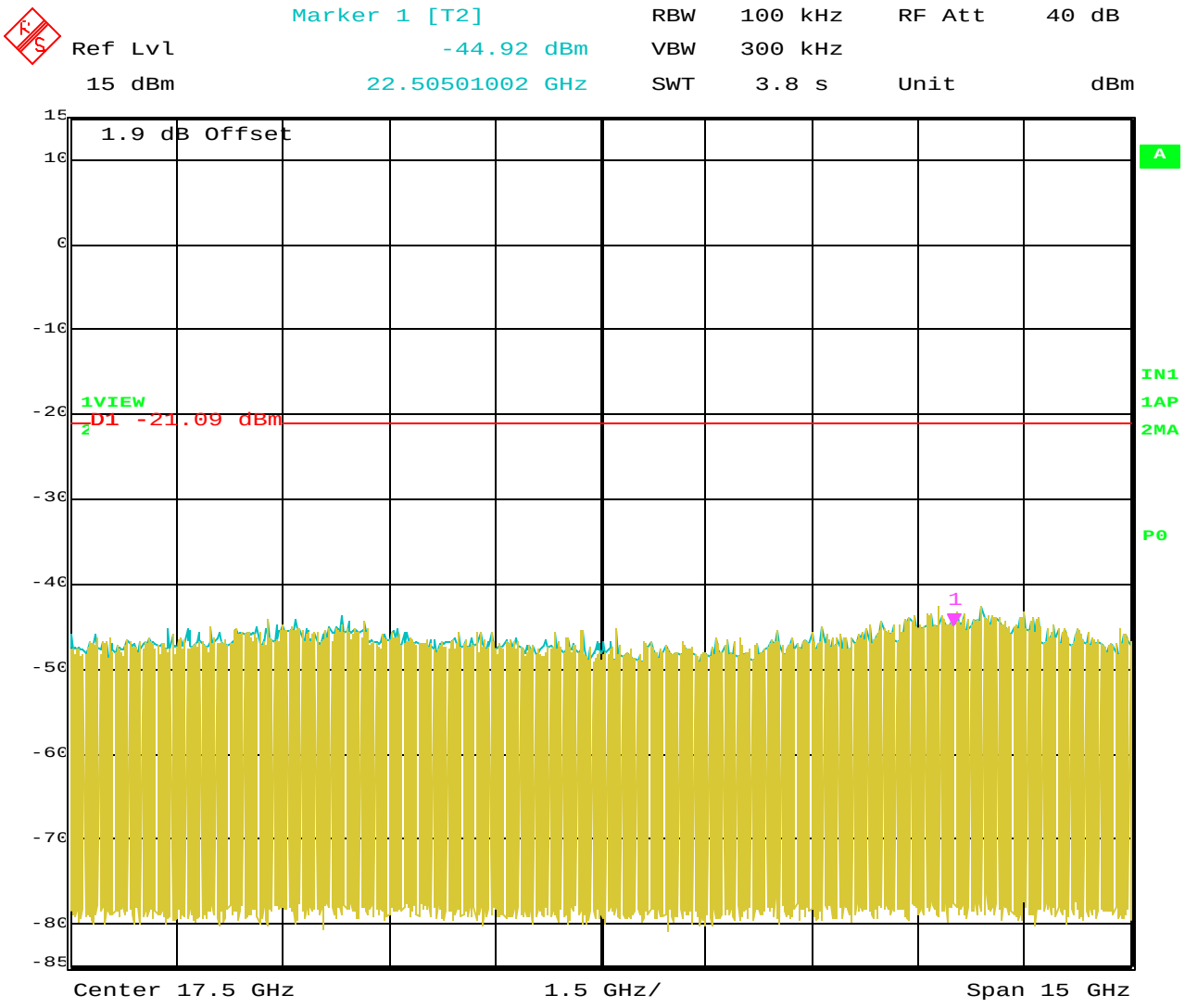
RF Antenna Conducted Test – Channel 11 – 802.11 b Mode – 2 MHz to 2GHz



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



Date: 7.JUN.2004 08:42:42

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

BAND EDGES

DATA SHEETS

FCC 15.247

Intel Corporation
Intel Mini PCI Type 802.11 b Wireless LAN Adapter
Model: WM3A2100
Configuration: Dell Laptop Agency Series # PP07S

Date: 6/03/04
Lab: B
Tested By: Arnold Gaffud

Channel 1 - 802.11 b Mode **Transmit Mode - With Hannstar Antenna**
Gain : 10 Scale: 14 Bias: 29
(99%) Pk. Pwr.: 16.14 dBm (100%) Pk. Pwr.: 16.54 dBm Avg. Power: 13.79 dBm

Channel 6 - 802.11 b Mode **Transmit Mode - With Hannstar Antenna**
Gain : 10 Scale: 13 Bias: 29
(99%) Pk. Pwr.: 16.11 dBm (100%) Pk. Pwr.: 16.54 dBm Avg. Power: 13.74 dBm

Channel 11 - 802.11 b Mode **Transmit Mode - With Hannstar Antenna**
Gain : 10 Scale: 13 Bias: 29
(99%) Pk. Pwr.: 16.05 dBm (100%) Pk. Pwr.: 16.51 dBm Avg. Power: 13.69 dBm

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2412	106.33	V	--	--	Peak	1.5	90	Fundamental of Channel 1
2412	95.35	V	--	--	Avg	1.5	90	@ 3 meters
2390	52.91	V	74	-21.09	Peak	1.5	90	
2390	41.58	V	54	-12.42	Avg	1.5	90	
2387.9	54.45	V	74	-19.55	Peak	1.5	90	
2387.9	41.12	V	54	-12.88	Avg	1.5	90	
2437	106.03	V	--	--	Peak	2.25	270	Fundamental of Channel 6
2437	95.43	V	--	--	Avg	2.25	270	@ 3 meters
2462	105.12	V	--	--	Peak	2.5	90	Fundamental of Channel 11
2462	94.4	V	--	--	Avg	2.5	90	@ 3 meters
2483.5	52.32	V	74	-21.68	Peak	2.5	90	
2483.5	40.8	V	54	-13.2	Avg	2.5	90	
2485.6	51.49	V	74	-22.51	Peak	2.5	90	
2485.6	40.37	V	54	-13.63	Avg	2.5	90	

FCC 15.247

Intel Corporation
Intel Mini PCI Type 802.11 b Wireless LAN Adapter
Model: WM3A2100
Configuration: Dell Laptop Agency Series # PP07S

Date: 6/03/04
Lab: B
Tested By: Arnold Gaffud

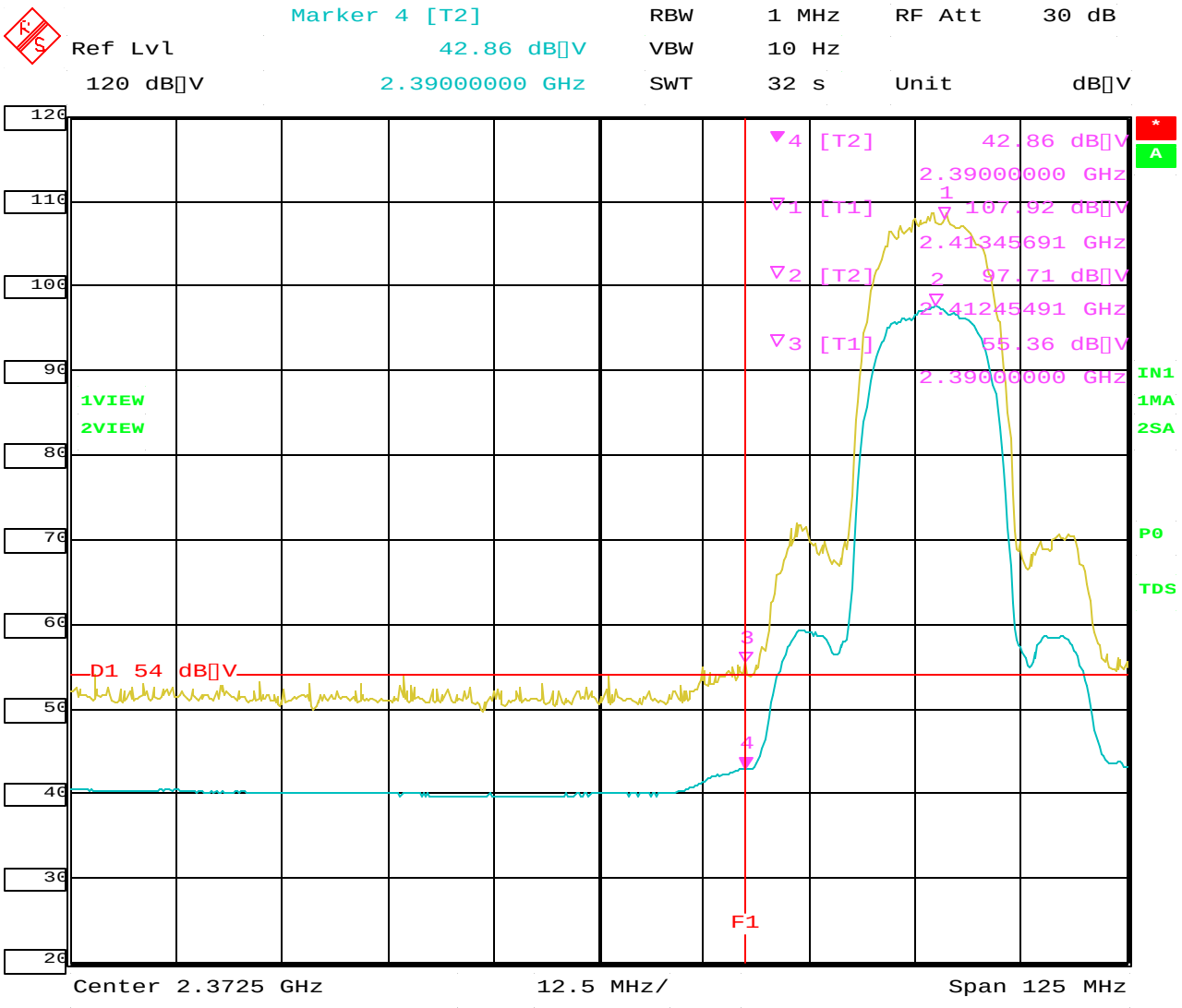
Channel 1 - 802.11 b Mode **Transmit Mode - With Hannstar Antenna**
Gain : 10 Scale: 14 Bias: 29
(99%) Pk. Pwr.: 16.14 dBm (100%) Pk. Pwr.: 16.54 dBm Avg. Power: 13.79 dBm

Channel 6 - 802.11 b Mode **Transmit Mode - With Hannstar Antenna**
Gain : 10 Scale: 13 Bias: 29
(99%) Pk. Pwr.: 16.11 dBm (100%) Pk. Pwr.: 16.54 dBm Avg. Power: 13.74 dBm

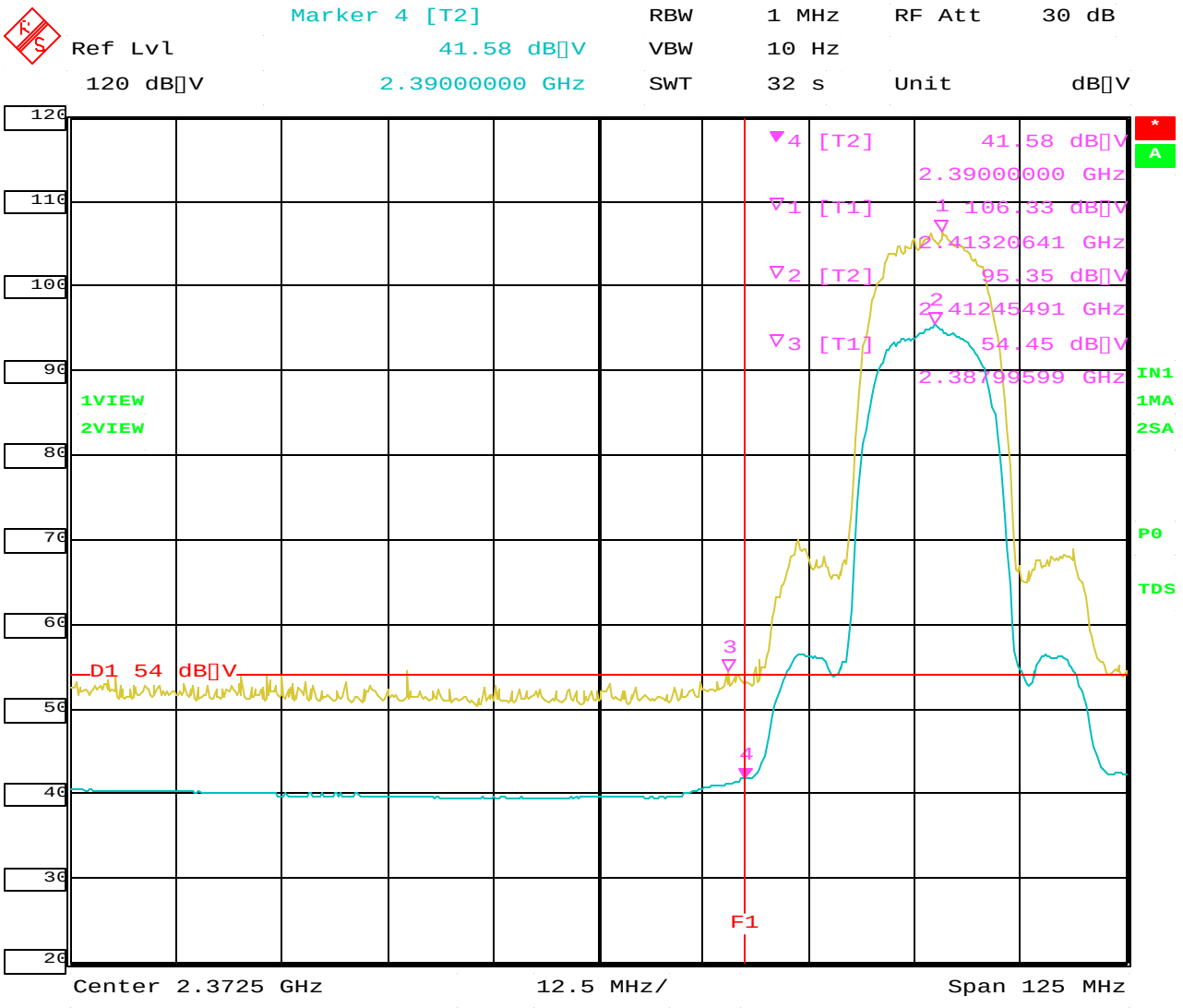
Channel 11 - 802.11 b Mode **Transmit Mode - With Hannstar Antenna**
Gain : 10 Scale: 13 Bias: 29
(99%) Pk. Pwr.: 16.05 dBm (100%) Pk. Pwr.: 16.51 dBm Avg. Power: 13.69 dBm

Freq. (MHz)		Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2412	107.92	H	--	--	Peak	1.5	135	Fundamental of Channel 1
2412	97.71	H	--	--	Avg	1.5	135	@ 3 meters
2390	55.36	H	74	-18.64	Peak	1.5	135	
2390	42.86	H	54	-11.14	Avg	1.5	135	
2437	108.57	H	--	--	Peak	1.5	135	Fundamental of Channel 6
2437	98.12	H	--	--	Avg	1.5	135	@ 3 meters
2462	110.13	H	--	--	Peak	2	135	Fundamental of Channel 11
2462	99.43	H	--	--	Avg	2	135	@ 3 meters
2484.9	56.88	H	74	-17.12	Peak	2	135	
2484.86	44.23	H	54	-9.77	Peak	2	135	
2488.8	53.66	H	74	-20.34	Peak	2	135	
2488.8	42.9	H	54	-11.1	Peak	2	135	

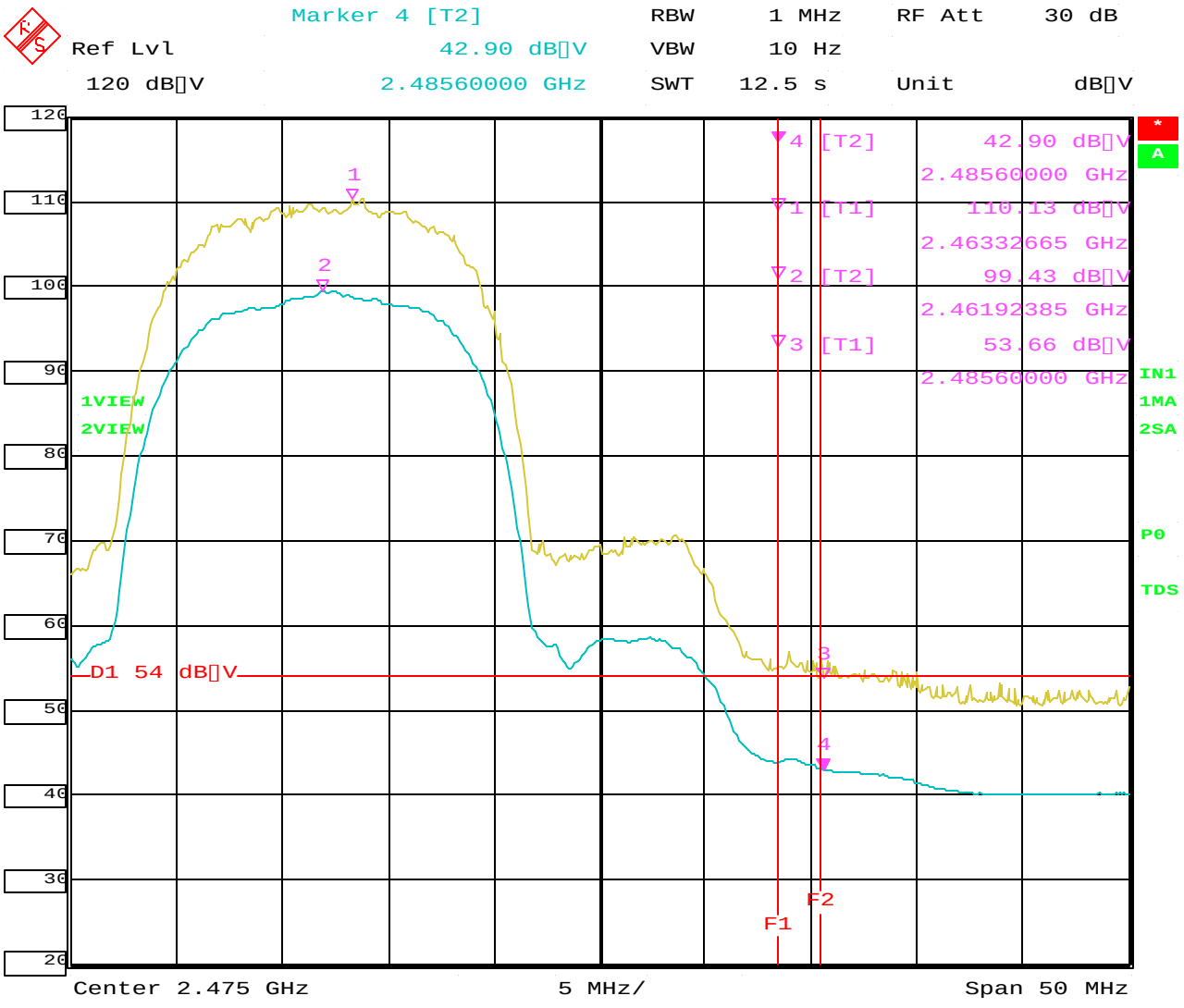
Ch.1 - Band Edge - Horizontal Polarization B-Mode Band Edge Plots - with Hannstar Antenna



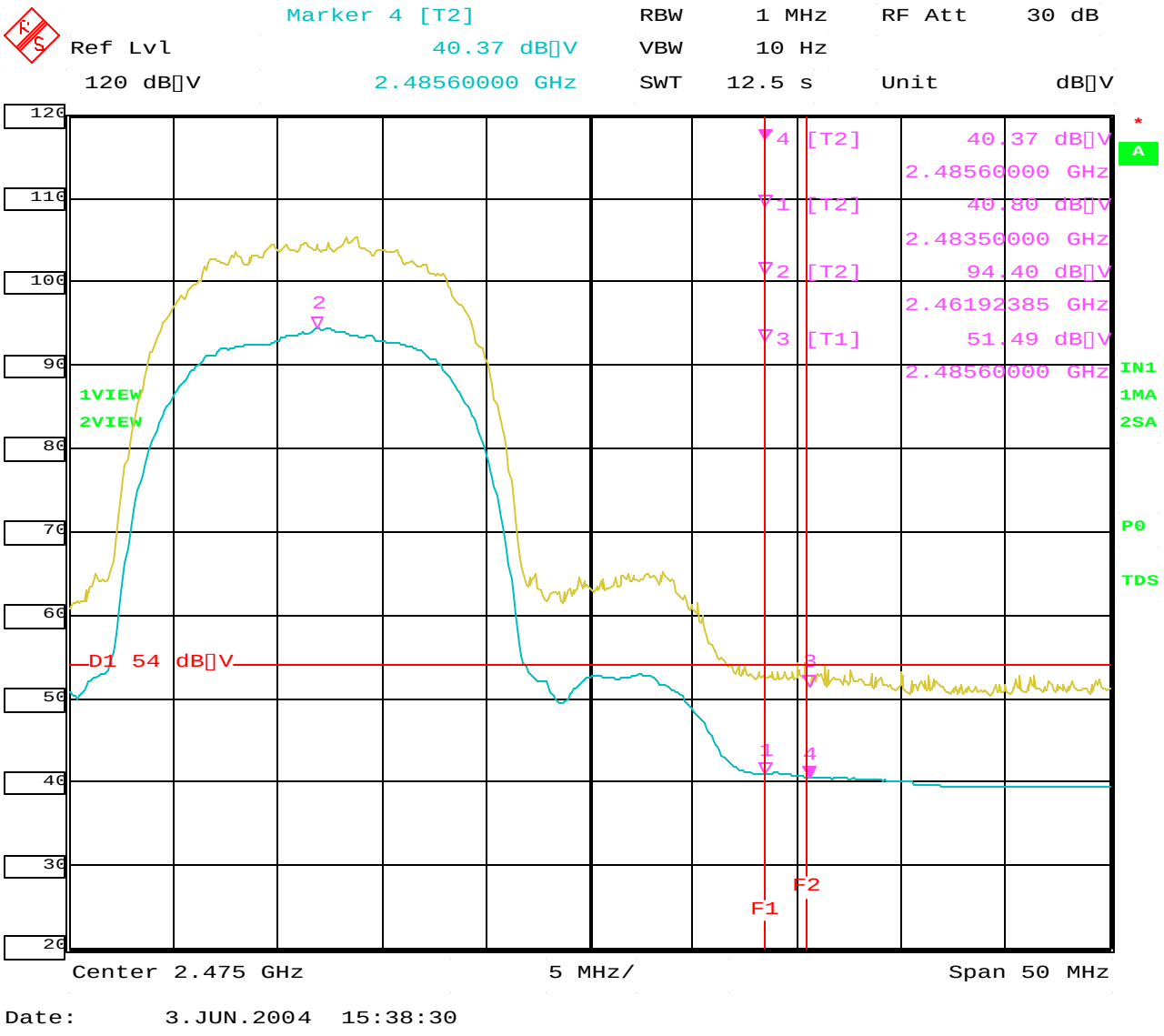
Ch.1 - Band Edge - Vertical Polarization - with Hannstar Antenna



Ch.11 - Band Edge - Horizontal Polarization - with Hannstar Antenna



Ch.11 - Band Edge - Vertical Polarization - with Hannstar Antenna



Date: 3.JUN.2004 15:38:30

FCC 15.247

Intel Corporation
Intel Mini PCI Type 802.11 b Wireless LAN Adapter
Model: WM3A2100
Configuration: Dell Laptop Agency Series # PP07S

Date: 7/22/04
Lab: B
Tested By: Ben Chavez

Channel 1 - 802.11 b Mode **Transmit Mode - with WNC Antenna**
Gn.: 10 Sca.: 14 Bias: 29 (99%)Pk. Pwr.: 16.14 dBm (100%)Pk. Pwr.: 16.54 dBm Avg. Pwr: 13.79 dBm

Channel 6 - 802.11 b Mode **Transmit Mode - with WNC Antenna**
Gn.: 10 Sca.: 13 Bias: 29 (99%)Pk. Pwr.: 16.11 dBm (100%)Pk. Pwr.: 16.54 dBm Avg. Pwr: 13.74 dBm

Channel 11 - 802.11 b Mode **Transmit Mode - with WNC Antenna**
Gn.: 10 Sca.: 13 Bias: 29 (99%)Pk. Pwr.: 16.05 dBm (100%)Pk. Pwr.: 16.51 dBm Avg. Pwr: 13.69 dBm

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2412	103.68	V	--	--	Peak	2.81	135	Fundamental of Channel 1
2412	99.93	V	--	--	Avg	2.81	135	@ 3 meters
2390	55.37	V	74	-18.63	Peak	2.81	135	
2390	44.58	V	54	-9.42	Avg	2.81	135	
2437	105.1	V	--	--	Peak	2.81	270	Fundamental of Channel 6
2437	101.21	V	--	--	Avg	2.81	270	@ 3 meters
2462	103.62	V	--	--	Peak	2.79	90	Fundamental of Channel 11
2462	98.79	V	--	--	Avg	2.79	90	@ 3 meters
2483.5	55.63	V	74	-18.37	Peak	2.79	90	
2483.5	47.6	V	54	-6.4	Avg	2.79	90	
2485.6	53.05	V	74	-20.95	Peak	2.79	90	
2485.6	41.94	V	54	-12.06	Avg	2.79	90	

FCC 15.247

Intel Corporation
Intel Mini PCI Type 802.11 b Wireless LAN Adapter
Model: WM3A2100
Configuration: Dell Laptop Agency Series # PP07S

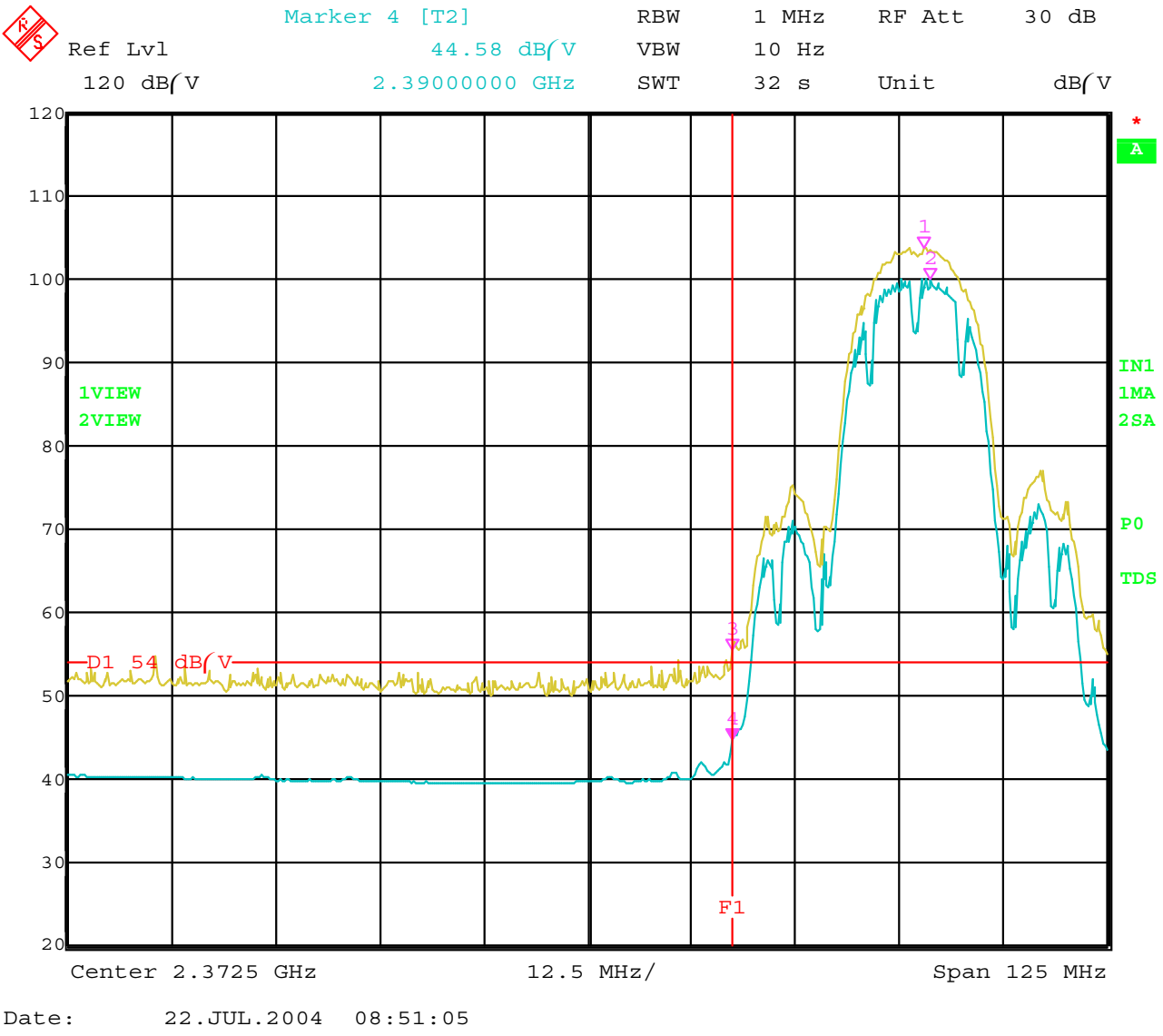
Date: 7/22/04
Lab: B
Tested By: Ben Chavez

Channel 1 - 802.11 b Mode **Transmit Mode - with WNC Antenna**
Gn.: 10 Sca.: 14 Bias: 29 (99%)Pk. Pwr.: 16.14 dBm (100%)Pk. Pwr.: 16.54 dBm Avg. Pwr: 13.79 dBm

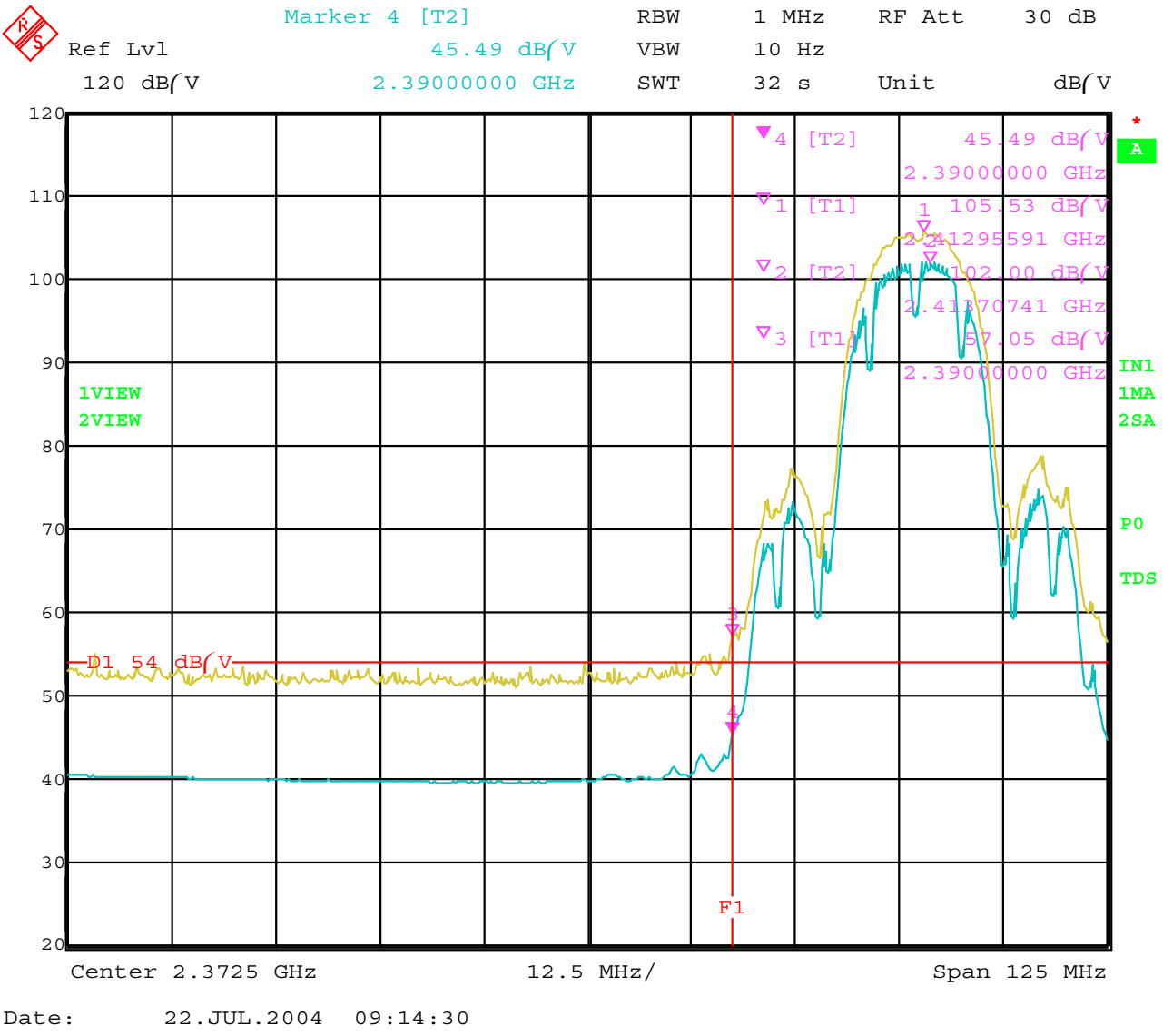
Channel 6 - 802.11 b Mode **Transmit Mode - with WNC Antenna**
Gn.: 10 Sca.: 13 Bias: 29 (99%)Pk. Pwr.: 16.11 dBm (100%)Pk. Pwr.: 16.54 dBm Avg. Pwr: 13.74 dBm

Channel 11 - 802.11 b Mode **Transmit Mode - with WNC Antenna**
Gn.: 10 Sca.: 13 Bias: 29 (99%)Pk. Pwr.: 16.05 dBm (100%)Pk. Pwr.: 16.51 dBm Avg. Pwr: 13.69 dBm

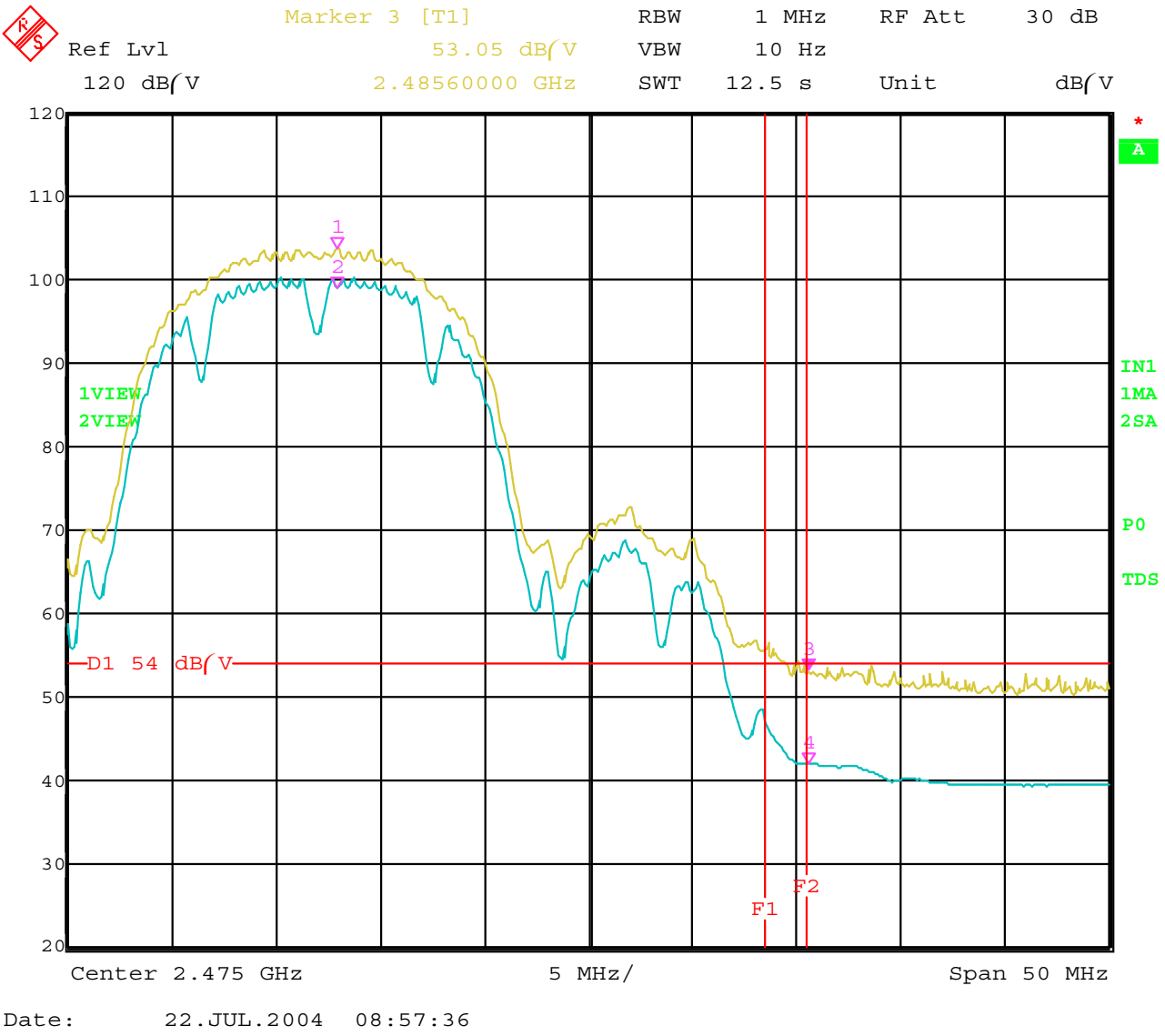
Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2412	105.53	H	--	--	Peak	1.58	180	Fundamental of Channel 1
2412	102	H	--	--	Avg	1.58	180	@ 3 meters
2390	57.05	H	74	-16.95	Peak	1.58	180	
2390	45.49	H	54	-8.51	Avg	1.58	180	
2437	106.27	H	--	--	Peak	1.27	225	Fundamental of Channel 6
2437	102.74	H	--	--	Avg	1.27	225	@ 3 meters
2462	104.75	H	--	--	Peak	2.71	225	Fundamental of Channel 11
2462	101.27	H	--	--	Avg	2.71	225	@ 3 meters
2483.5	56.48	H	74	-17.52	Peak	2.71	225	
2483.5	48.27	H	54	-5.73	Peak	2.71	225	



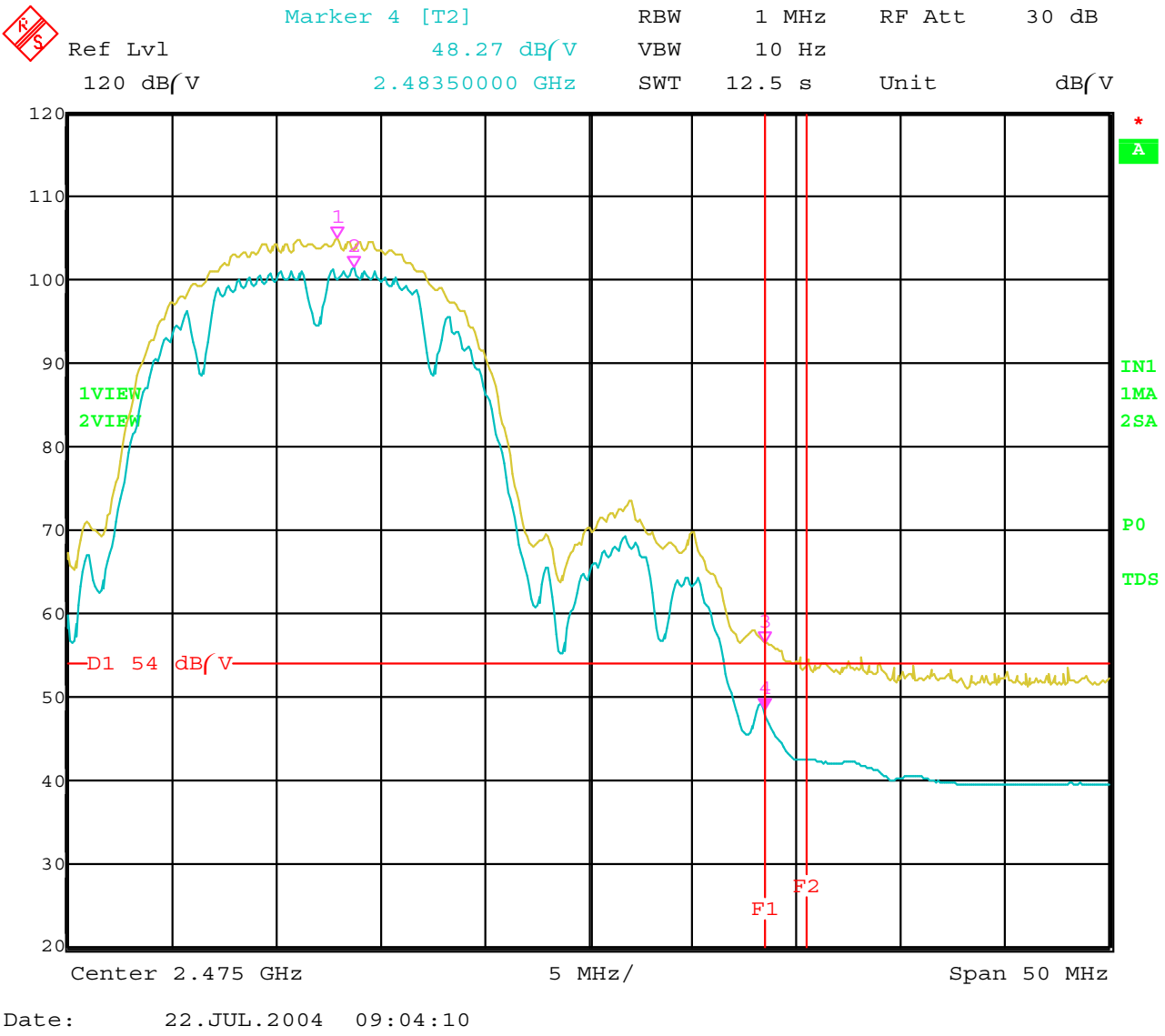
Band Edge – Channel 1 – Vertical :Polarization – 802.11 b Mode – WNC Antenna



Band Edge – Channel 1 – Horizontal Polarization – 802.11 b Mode – WNC Antenna



Band Edge – Channel 11 – Vertical Polarization – 802.11 b Mode – WNC Antenna



Band Edge – Channel 11 – Horizontal Polarization – 802.11 b Mode – WNC Antenna

CONDUCTED EMISSIONS

DATA SHEETS

EMISSION LEVEL [dBuV] PEAK
Graph for Peak & Average

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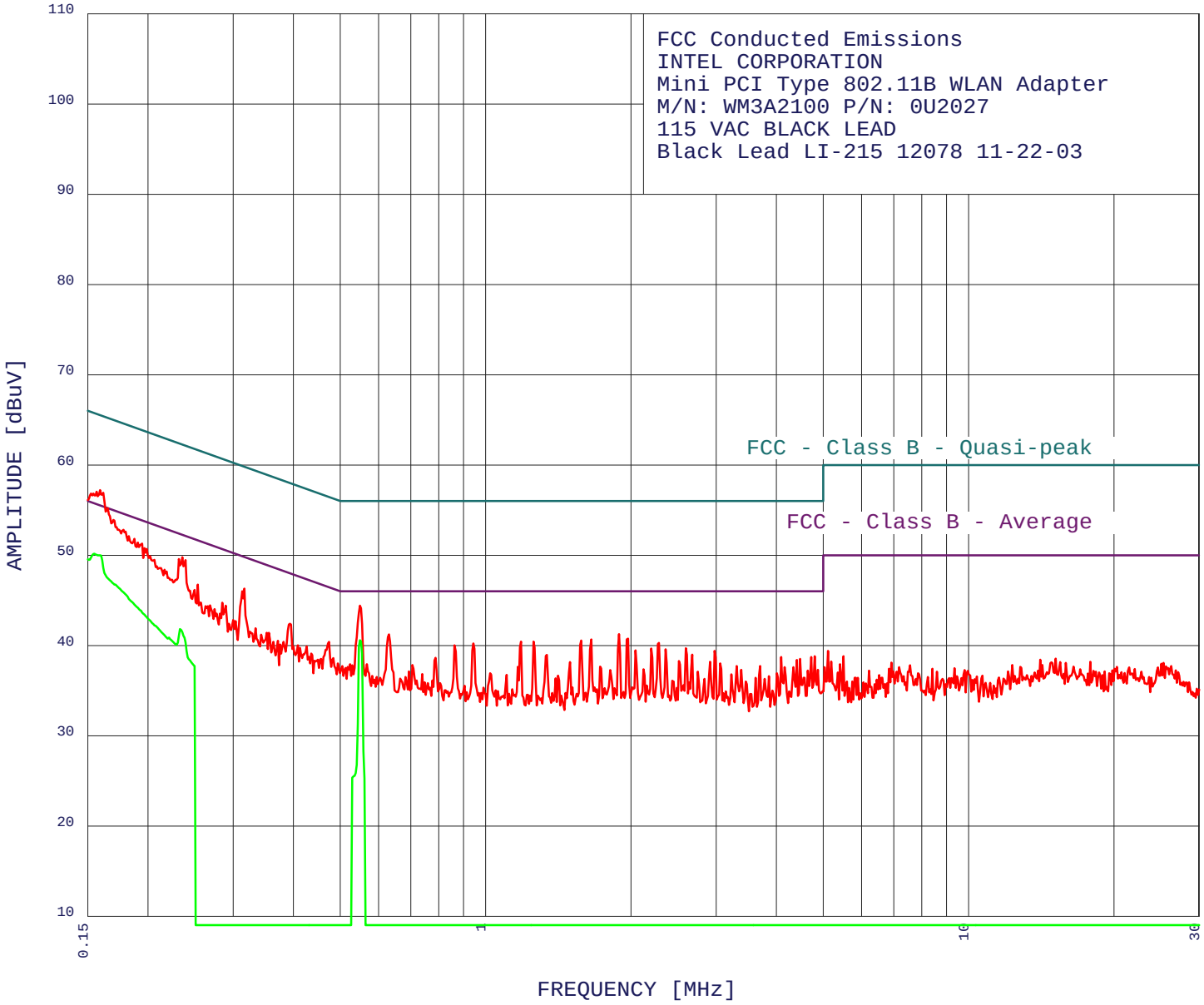

COMPATIBLE ELECTRONICS

COMPATIBLE ELECTRONICS

6/04/2004 19:59:29

FCC Conducted Emissions
INTEL CORPORATION
Mini PCI Type 802.11B WLAN Adapter
M/N: WM3A2100 P/N: 0U2027
115 VAC BLACK LEAD
Black Lead LI-215 12078 11-22-03
TEST ENGINEER : BENIGNO CHAVEZ

41 highest peaks above -50.00 dB of FCC - Class B - Average limit line
Peak criteria : 1.00 dB, Curve : Peak

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.159	57.22	55.51	1.71**
2	0.150	56.13	56.00	0.13
3	0.550	44.41	46.00	-1.59**
4	0.235	49.76	52.25	-2.49**
5	0.197	50.80	53.75	-2.96**
6	0.317	46.31	49.79	-3.49
7	1.889	41.26	46.00	-4.74
8	0.631	41.22	46.00	-4.78
9	0.254	46.75	51.64	-4.89
10	1.971	40.76	46.00	-5.24
11	1.654	40.65	46.00	-5.35
12	1.577	40.55	46.00	-5.45
13	1.256	40.44	46.00	-5.56
14	1.184	40.44	46.00	-5.56
15	0.393	42.41	47.99	-5.58
16	2.286	40.27	46.00	-5.73
17	0.944	40.23	46.00	-5.77
18	0.285	44.73	50.67	-5.95
19	0.862	40.02	46.00	-5.98
20	0.474	40.41	46.45	-6.04
21	2.596	39.69	46.00	-6.31
22	2.201	39.67	46.00	-6.33
23	2.358	39.58	46.00	-6.42
24	2.044	39.47	46.00	-6.53
25	2.979	39.40	46.00	-6.60
26	0.269	44.44	51.15	-6.72
27	0.275	44.03	50.98	-6.95
28	2.679	38.99	46.00	-7.01
29	1.338	38.94	46.00	-7.06
30	4.799	38.81	46.00	-7.19
31	4.722	38.71	46.00	-7.29
32	4.092	38.71	46.00	-7.29
33	0.788	38.62	46.00	-7.38
34	0.356	41.41	48.82	-7.41
35	0.426	39.91	47.33	-7.42
36	0.300	42.81	50.23	-7.42
37	0.334	41.91	49.35	-7.44
38	4.480	38.51	46.00	-7.49
39	0.352	41.41	48.91	-7.50
40	4.408	38.41	46.00	-7.59
41	0.484	38.61	46.27	-7.66

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

COMPATIBLE ELECTRONICS

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FCC Conducted Emissions
INTEL CORPORATION
Mini PCI Type 802.11B WLAN Adapter
M/N: WM3A2100 P/N: 0U2027
115 VAC BLACK LEAD
Black Lead LI-215 12078 11-22-03
TEST ENGINEER : BENIGNO CHAVEZ

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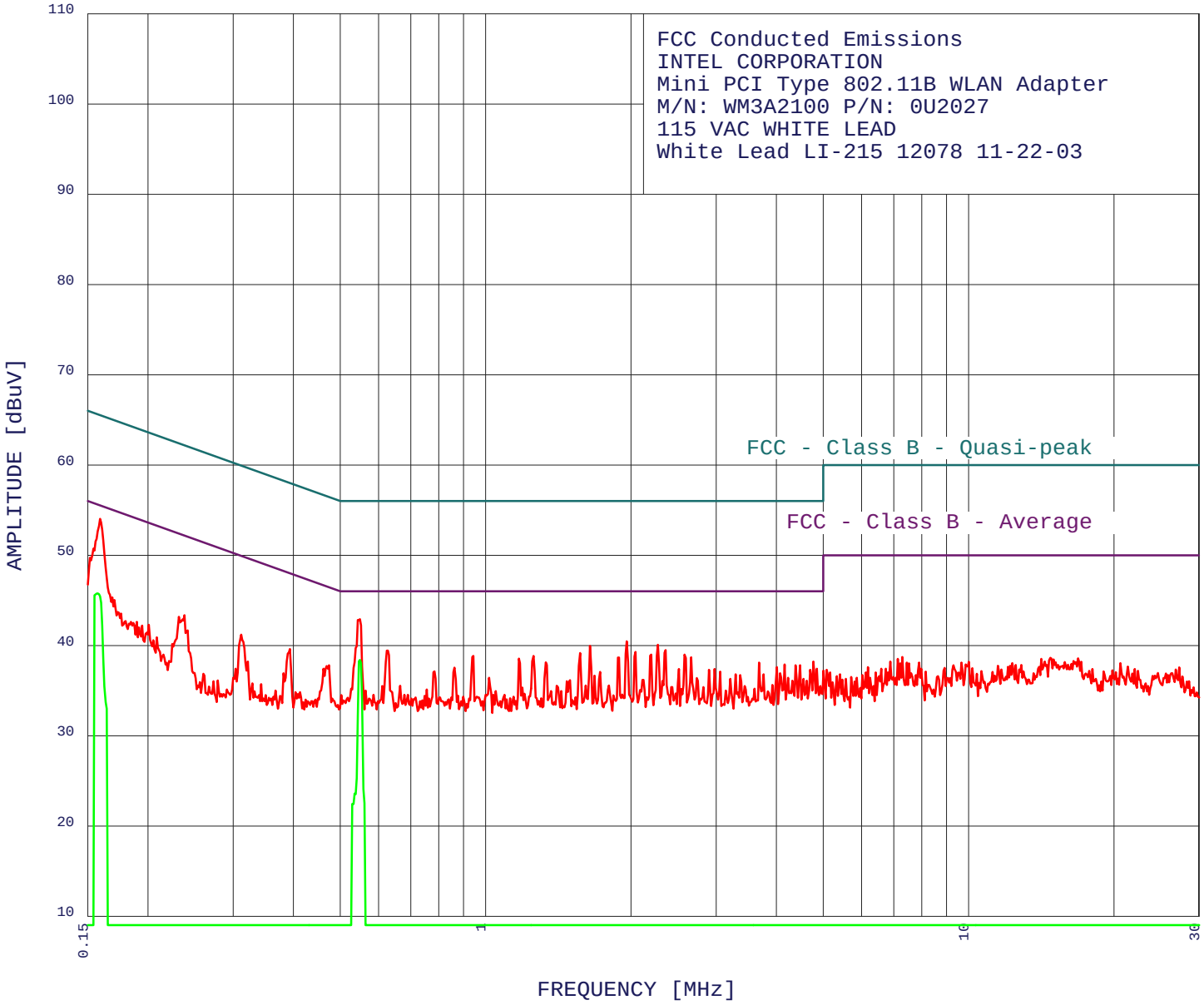
4 highest peaks above -50.00 dB of FCC - Class B - Average limit line
Peak criteria : 0.10 dB, Curve : Average

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.550	40.56	46.00	-5.44
2	0.155	50.15	55.73	-5.58
3	0.150	49.54	56.00	-6.46
4	0.233	41.81	52.34	-10.54

EMISSION LEVEL [dBuV] PEAK 6/04/2004 19:49:15

Graph for Peak & Average



COMPATIBLE ELECTRONICS

COMPATIBLE ELECTRONICS

6/04/2004 19:49:15

FCC Conducted Emissions
INTEL CORPORATION
Mini PCI Type 802.11B WLAN Adapter
M/N: WM3A2100 P/N: 0U2027
115 VAC WHITE LEAD
White Lead LI-215 12078 11-22-03
TEST ENGINEER : BENIGNO CHAVEZ

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40 highest peaks above -50.00 dB of FCC - Class B - Average limit line
Peak criteria : 1.00 dB, Curve : Peak

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.159	54.02	55.51	-1.49**
2	0.550	42.91	46.00	-3.09**
3	1.960	40.46	46.00	-5.54
4	2.274	40.07	46.00	-5.93
5	1.646	39.95	46.00	-6.05
6	2.358	39.48	46.00	-6.52
7	0.627	39.42	46.00	-6.58
8	2.044	39.27	46.00	-6.73
9	1.569	39.15	46.00	-6.85
10	2.582	38.98	46.00	-7.02
11	2.201	38.97	46.00	-7.03
12	1.256	38.84	46.00	-7.16
13	0.944	38.83	46.00	-7.17
14	2.665	38.69	46.00	-7.31
15	1.889	38.66	46.00	-7.34
16	1.172	38.54	46.00	-7.46
17	4.774	38.21	46.00	-7.79
18	1.331	38.14	46.00	-7.86
19	3.683	38.11	46.00	-7.89
20	4.159	37.91	46.00	-8.09
21	4.480	37.81	46.00	-8.19
22	4.384	37.81	46.00	-8.19
23	0.393	39.61	47.99	-8.38
24	4.008	37.61	46.00	-8.39
25	0.862	37.52	46.00	-8.48
26	4.851	37.41	46.00	-8.59
27	2.979	37.40	46.00	-8.60
28	2.514	37.38	46.00	-8.62
29	0.474	37.81	46.45	-8.64
30	4.696	37.31	46.00	-8.69
31	2.900	37.30	46.00	-8.70
32	0.312	41.21	49.92	-8.72
33	0.238	43.36	52.17	-8.80
34	0.783	37.12	46.00	-8.88
35	3.059	37.10	46.00	-8.90
36	1.726	37.05	46.00	-8.95
37	4.071	36.91	46.00	-9.09
38	3.761	36.81	46.00	-9.19
39	3.294	36.80	46.00	-9.20
40	3.365	36.71	46.00	-9.29

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

COMPATIBLE ELECTRONICS

6/04/2004 19:49:15

FCC Conducted Emissions
INTEL CORPORATION
Mini PCI Type 802.11B WLAN Adapter
M/N: WM3A2100BG P/N: 0U2027
115 VAC WHITE LEAD
WhiteLead LI-215 12078 11-22-0
TEST ENGINEER : BENIGNO CHAVEZ

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2 highest peaks above -50.00 dB of FCC - Class B - Average limit line
Peak criteria : 0.10 dB, Curve : Average

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.550	38.39	46.00	-7.61
2	0.157	45.77	55.60	-9.83
