

Class II Permissive Change
TEST REPORT

For

Intel(R) PRO/Wireless LAN 3A Mini PCI Adapter
Model Number: WM3A2100

*MEASUREMENTS PERFORMED IN ACCORDANCE WITH THE
FOLLOWING EMISSIONS STANDARD*

47 CFR Part 15, Subpart C (Section 15.247)

Test Method:

ANSI C63.4: 1992 American National Standard for Methods of Measurement of Radio-Noise Emissions from
Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz



CERTIFICATE NUMBER: 1111.01

To view a copy of the Scope of Accreditation visit www.A2LA2.net

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Test Report #: **INTEL-030219F**
Test Date: February 19-March 7, 2003

	REPORT BODY	APPENDICES <i>I</i>	TOTAL
PAGES	19	57	76

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FCC ID: E2K24CLNS

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1.0 CERTIFICATION OF TEST DATA

Aegis Labs, Inc. operates as both a Nevada and California Corporation with no organizational or financial relationship with any company, institution, or private individual.

Testing and engineering functions provided by Aegis Labs are furnished through the use of part-time, full-time or consulting engineers with the appropriate qualifications to carry out their duties. The intended purpose of this test report is to describe the measurement procedure and to determine whether the equipment under test "EUT" complies with both the conducted and radiated limits. Limits for emissions testing are described under 47 CFR Part 15, Subpart C (Section 15.247).

The data, data evaluation and equipment configuration represented herein are a true and accurate representation of the Equipment Under Test (EUT) under the requirements specified in the emissions standard as described below. The test results contained in this report are only representative of the test sample tested as described in Section 2.0 of this report.

The test results provided within this report, indicate that the information technology equipment has been found to be in **COMPLIANCE** with the test specifications based upon the following RF compliance standards:

Pass/Fail determination is based upon the nominal values of the test data.

EMISSIONS STANDARDS	DESCRIPTION	TEST RESULTS
FCC 47 CFR, Part 15.207	Conducted Emissions At AC Mains Port	PASSED
CISPR22 Class B Limits	Radiated Emissions (30-1000 MHz)	PASSED
FCC 47 CFR, Part 15.247(c), 15.209	Radiated Emissions (1-26.5 GHz)	PASSED
FCC 47 CFR, Part 15.247(a)(2)	Occupied Bandwidth Measurement	PASSED
FCC 47 CFR, Part 15.247(b)	Maximum Peak Output Power Measurement	PASSED
FCC 47 CFR, Part 15.247(d)	Spectral Power Density Measurement	PASSED
FCC 47 CFR, Part 15.247(c)	Spurious Emissions Measurement At The Antenna Terminal	PASSED
FCC 47 CFR, Part 15.247(c)	Band Edge Measurement At The Antenna Terminal	PASSED

Prepared By:



03/13/03

Rick Candelas
Staff Engineer
Aegis Labs, Inc.

Date:

Report Approved By:



03/13/03

Steve J. Kuiper
Q/A Manager
Aegis Labs, Inc.

Date:

2.0 ADMINISTRATIVE DATA AND TEST DESCRIPTION

DEVICE TESTED: Trade Name: Intel(R) PRO/Wireless LAN 3A Mini PCI Adapter
Model Number: WM3A2100
Serial Number: MY-09Y200-43950-321-012B
FCC ID: E2K24CLNS

TEST DATE(S): February 19-March 7, 2003
DATE EUT RECEIVED: February 19, 2003

ORIGIN OF TEST

SAMPLE(S): Production

RESPONSIBLE PARTY: Dell Computer Corporation
One Dell Way
Round Rock, TX 78682

CLIENT CONTACT: Mr. Jason Limoges
MANUFACTURER: Dell Computer Corporation

TEST LOCATION: Aegis Labs, Inc.
32231 Trabuco Creek Road
Trabuco Canyon, CA 92678
Conducted Site #2
Radiated Site #2

A2LA CERTIFICATE: 1111.01, Valid until February 28, 2004

PURPOSE OF TEST: To demonstrate compliance with the relevant standards described in Section 1.0 of this report.

TEST(S) PERFORMED: Refer to Table in Section 1 of this report.

All calibration vendors were responsible for certifying Aegis Labs, Inc. test equipment as per the manufacturer's specifications and that the equipment is calibrated using instruments and standards where the accuracy is traceable to the National Institute of Standards and Technology (NIST). Calibration of all test equipment conforms to ANSI/NCSL Z540-1 and ISO 10012-1 and/or ISO/IEC Guide 17025 compliance (Additionally, other pertinent test equipment will carry MIL-STD-45662A). All calibration documents are on file with Aegis Labs, Inc., with copies provided upon request.

3.0 DESCRIPTION OF EUT

3.1 EUT Description

Equipment Under Test (EUT)	
Trade Name:	Intel(R) PRO/Wireless LAN 3A Mini PCI Adapter
Model Number:	WM3A2100
Frequency Range:	2.412 – 2.462 GHz
Type of Transmission:	Direct Sequence Spread Spectrum
Transfer Rate:	1/2/5.5/11 Mbps
Number of Channels:	11
Modulation Type:	DBPSK, DQPSK, CCK
Antenna Type:	Wistron NeWeb Corp. Triple-Band PIFA Antenna Type & Hitachi Monopole Antenna Type
Antenna Gain (See Note 2):	Triple-Band PIFA = 2.39dBi (gain) – 1.03dB (cable loss) = 1.36dBi Monopole = 1.10dBi – (0.90dB) cable loss = 0.20dBi
Transmit Output Power:	16 dBm (Typical) Please see Appendix I (Data Sheets) for actual output power.
Power Supply:	3.3VDC from computer MPCPI slot.
Number of External Test Ports Exercised:	2 Antenna Ports (1 Main & 1 Auxiliary)

The Intel(R) PRO/Wireless LAN 3A Mini PCI Adapter is an embedded 2.4 GHz Wireless Local Area Network Mini-PCI adapter. The Mini-PCI Type 3A form factor is designed for notebook computer systems where overall thickness must be kept to an absolute minimum. It is capable of a data rate of up to 11 Mbps at 2.4 GHz. Please refer to Section 3.2 of this report for a further description of the configuration tested.

This report is submitted as a Class II Permissive Change for the currently certified Dell Latitude laptop computer, FCC ID Number: E2K24CNLS with a Bluetooth module installed, FCC ID: IXMUB22111S. Two sets of antenna types were tested (Triple-Band PIFA and monopole antenna types).

NOTE 1: For a more detailed description, please refer to the manufacture's specifications or User's Manual.

NOTE 2: The EUT was tested separately with two different sets of antennas (Triple-Band PIFA and Monopole). (Refer to each antenna specifications for a further description of the antennas).

3.1.1 Channel Number and Frequencies

Eleven channels are provided for the EUT.

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

3.2 EUT Configuration

The EUT was set-up according to the ANSI C63.4: 1992 guidelines for emissions testing. For emissions testing the EUT (Intel(R) PRO/Wireless LAN 3A Mini PCI Adapter, Model Number: WM3A2100) had a loaded antenna connected to both its main and auxiliary ports. All the appropriate test ports were exercised during both the pre-qualification and final evaluation scans.

The EUT was tested in two different configurations.

- 1) With Triple-Band Antennas
- 2) With Monopole Antennas.

For both configurations the EUT was tested installed in the Mini-PCI slot of the Dell host computer. The EUT was then connected to a set of antennas via its main and auxiliary Hirose U.FL-R-SMT ports. Data for both sets of antennas can be found in Appendix I.

The Dell host computer was connected to a Hayes modem, Canon printer, and NEC monitor via its serial, parallel, and video ports respectively.

The low (channel 1), middle (channel 6), and high (channel 11) were tested. The EUT was transmitting and receiving on a continuous basis.

The final data was taken in this mode of operation. The external cables were bundled and routed as shown in the photographs in Appendix I (Data Sheets).

This report documents the emissions of the WLAN radio module when installed in a Dell host computer with a Bluetooth module installed. The Bluetooth module was not re-tested, since the transmitting antennas of both the WLAN and Bluetooth modules are approximately 20cm apart (Refer to the antenna photographs exhibit). The Bluetooth transmitter module has been certified with respect to FCC Part 15 Subpart C requirements (FCC ID: IXMUB22111S).

3.3 EUT and Sub-Assemblies List

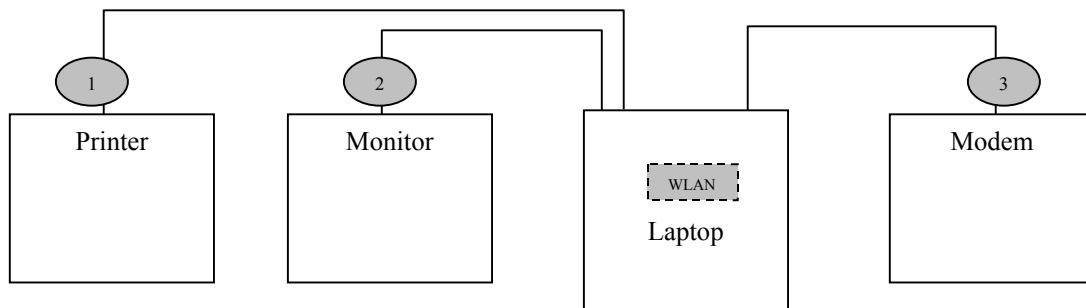
EUT and Sub-Assemblies List			
Manufacturer	Equipment Name	Model Number	Serial Number
Intel Corporation	Intel(R) PRO/Wireless LAN 3A Mini PCI Adapter	WM3A2100	MY-09Y200-43950-321-012B
Sub-Assemblies			
Wistron NeWeb Corporation	Triple-Band Antenna	CA9-C	None
Hitachi	Monopole Antenna	HFT04-DL01-Main/Aux	None

3.4 Accessory / Host Equipment List

Accessory / Host Equipment List			
Manufacturer	Equipment Name	Model Number	Serial Number
Host Laptop Computer	Dell	Latitude	221131
AC Adapter	Dell	PA-1650-050	CN-054092-48010-29B-00B9
Monitor	NEC	JC-1575VMA	2Y785821
Printer	Canon	BJC-4200	MT1-18
Modem	Hayes	5362US	A02153623145

NOTE: All the power cords of the above support equipment are standard non-shielded, 1.8 meters long.

3.5 Cabling Diagram and Description



- Cable 1: This is a 6-foot braid and foil shielded round cable connecting the Dell host computer to the Canon printer. It has a metallic DB-25 type connector at the computer end and a metallic 36-pin centronics type connector at the printer end. The cable is bundled to a length of one meter and the shield of the cable is grounded to the chassis of both devices via the connector shells.
- Cable 2: This is a 6-foot braid and foil shielded round cable connecting the host Dell laptop computer with the NEC monitor. It has metallic DB-15 type connector at the computer end and is hardwired to the monitor. The cable is bundled to a length of one meter and the shield of the cable is grounded to the chassis of both devices via the connector shells.
- Cable 3: This is a 6-foot braid and foil shielded round cable connecting the Dell host computer to the Hayes modem. It has a metallic DB-9 type connector at the computer end and a metallic DB-25 type connector at the modem end. The cable is bundled to a length of one meter and the shield of the cable is grounded to the chassis of both devices via the connector shells.

4.0 TEST EQUIPMENT AND TEST SETUPS

The test equipment settings and functions are selected using the guidance of ANSI C63.4-1992. All test equipment setups and operations during conducted and radiated emissions testing are in accordance with this reference document.

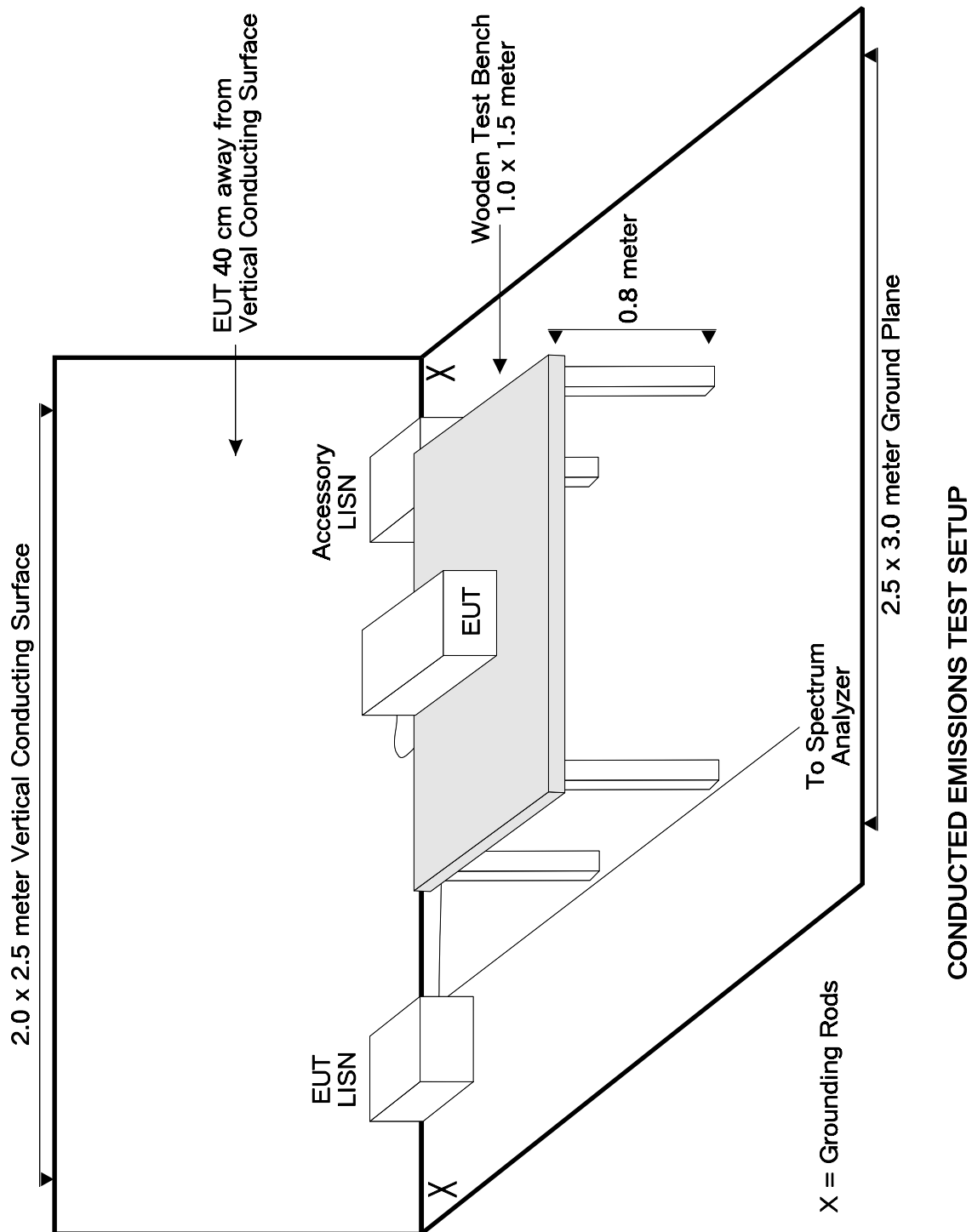
4.1 Conducted Emissions At AC Mains Port

During conducted emissions measurements, a spectrum analyzer was used as the measuring instrument along with a preselector and quasi-peak detector. A 10 dB attenuation pad was used for the protection of the spectrum analyzer input stage. The conducted emissions from the EUT in the frequency range from 150 kHz to 30 MHz were captured for graphical display through the use of automated LABVIEW EMI measurement software. All graphical readings were measured in the “Peak” mode only to reduce testing time. Upon completion of the graphical scan, the test lab personnel performed the conducted measurement scan manually using the spectrum analyzer front panel keys. All peak measurements coming within 3 dB of the limit line were “Averaged” and/or “Quasi-Peaked” and denoted appropriately in the EXCEL spreadsheet.

The Equipment Under Test (EUT) was configured as a system with peripherals connected, so that at least one interface port of each type is connected to one external peripheral when tested for conducted emissions according to ANSI C63.4: 1992. The EUT was tested in a tabletop configuration.

The six highest emission readings for Line 1 and Line 2 are highlighted on the data sheets in Appendix I. The graphical scans only reflect peak readings while the tabulated data sheets reflect peak, average, and/or quasi-peak readings which ever applies.

4.1.1 Conducted Emissions At AC Mains Port – Test Setup



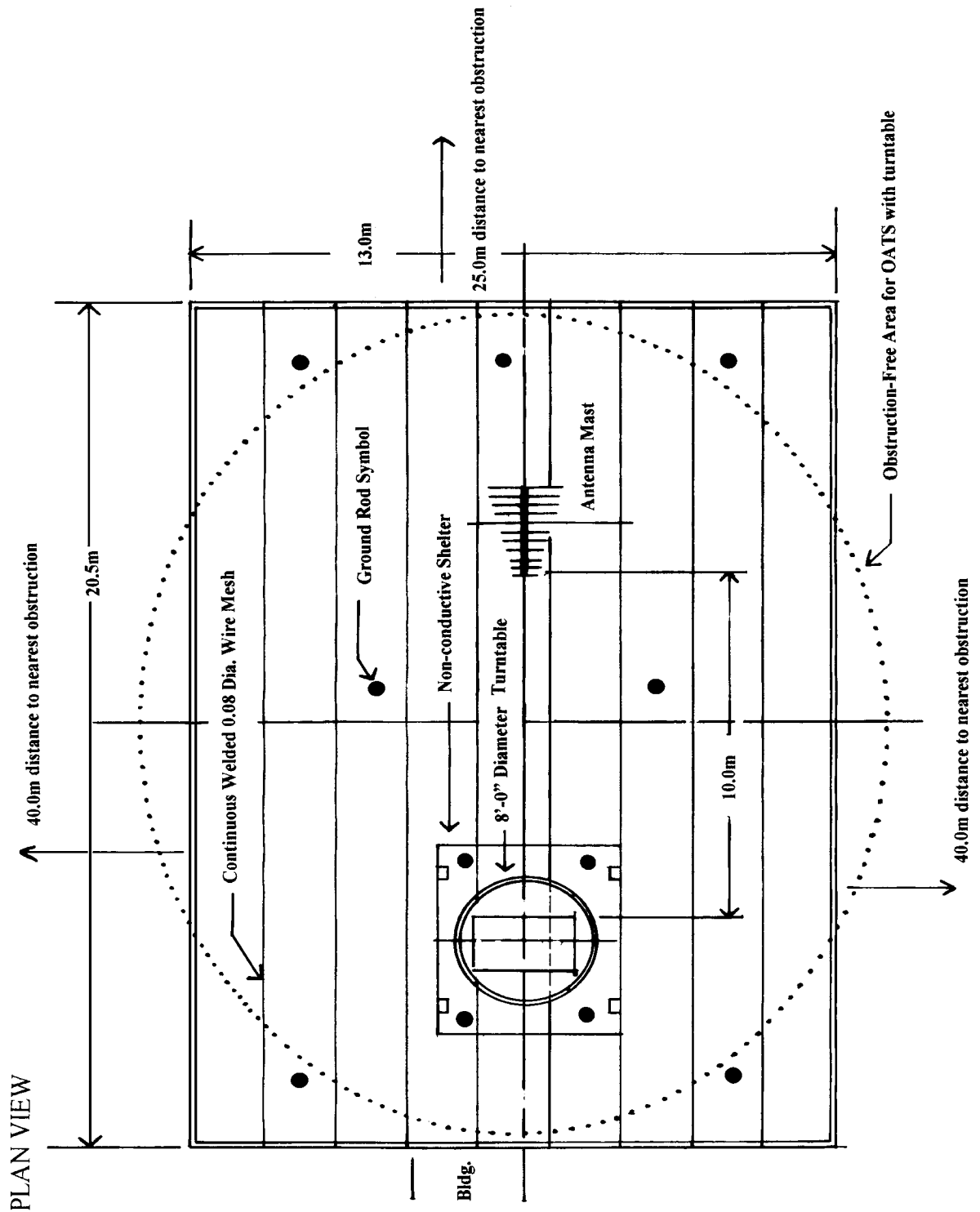
4.2 Spurious Radiated Emissions

A spectrum analyzer was used as the measuring instrumentation along with a preselector and quasi-peak-detector. The pre-amplifiers were used to increase the sensitivity of the instrument. The spectrum analyzer was used in the peak detector mode with the “max-hold” feature activated and in Positive Peak mode. In this mode, the spectrum analyzer records the highest measured reading over all the sweeps. The quasi-peak detector was used only for those readings, which are marked accordingly in the data sheet. The effective measurement bandwidth used for the radiated emissions test was 120 kHz for (30 MHz- 1000 MHz). The spectrum analyzer operated such that the modulation of the signal was filtered out to set the analyzer in linear mode. For testing beyond 1000 MHz a spectrum analyzer capable of taking reading above 1000 MHz was connected to the high frequency amplifier, where these measurement readings were taken with the transducer placed at a 3-meter test distance from the EUT.

The Open Area Test Sites (OATS) was used for radiated emission testing. These test sites are designed according to ANSI C63.4: 1992 and ANSI C63.7: 1992 guidelines. The Measurements were conducted in accordance with ANSI C63.4: 1992 and ANSI C63.7: 1992 requirements.

Broadband biconical, log periodic, and horn antennas were used as transducers during the measurement reading phase. The frequency spans were wide (30 MHz-88 MHz, 88 MHz-216 MHz, 216 MHz- 300 MHz, and 300 MHz- 1000 MHz). After 1000 MHz the horn antenna was used to measure emissions. The six highest emission readings in both horizontal and vertical polarities are highlighted on the data sheets in Appendix I.

4.2.1 Spurious Radiated Emissions – Test Setup

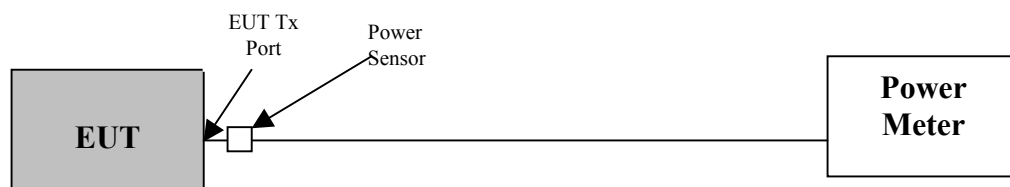


4.3 Maximum Peak Output Power Measurement

A power meter along with a power sensor was used to measure the maximum peak output power. The low (channel 1), middle (channel 6), and high (channel 11) were measured as well as data rates 1, 5.5, and 11 Mbps.

The EUT maximum peak output power is less than 1 Watt. Please refer to Appendix I for the data sheets.

4.3.1 Maximum Peak Output Power Measurement – Test Setup

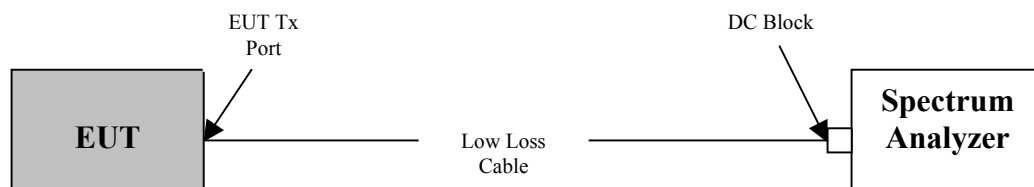


4.4 Occupied Bandwidth Measurement

A spectrum analyzer was used to measure the occupied bandwidth. The bandwidth was measured using a direct connection from the RF output port of the EUT to the spectrum analyzer using a low loss cable and a DC block. The resolution bandwidth was 100 kHz and the video bandwidth was 300 kHz.

The EUT bandwidth is at least 500 kHz. Please refer to Appendix I for graphical plots.

4.4.1 Occupied Bandwidth Measurement – Test Setup

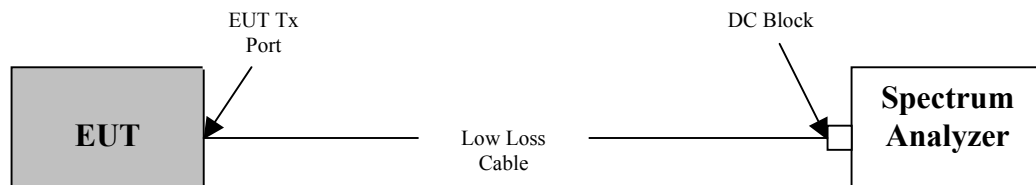


4.5 Spectral Power Density Measurement

A spectrum analyzer was used to measure the spectral power density. It was measured using a direct connection from the RF output port of the EUT to the spectrum analyzer using a low loss cable and a DC block. The resolution bandwidth was 3 kHz and the video bandwidth was 10 kHz. The highest 4.5 MHz of the signal was used as the frequency span with the sweep rate being 1 second for every 3 kHz of span.

The EUT spectral power density does not exceed 8 dBm in any 3 kHz band. Please refer to Appendix I for graphical plots.

4.5.1 Spectral Power Density Measurement – Test Setup

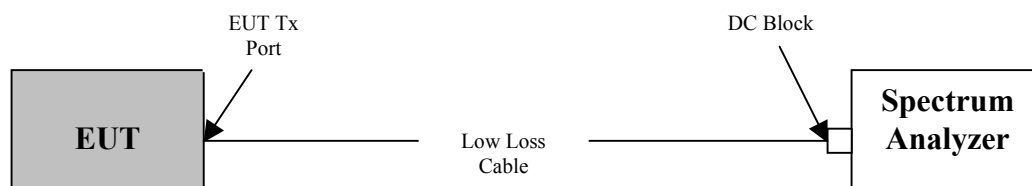


4.6 Spurious Emissions Measurement At The Antenna Terminal

A spectrum analyzer was used to measure the spurious emissions at the antenna terminal. It was measured using a direct connection from the RF output port of the EUT to the spectrum analyzer using a low loss cable and a DC block. The resolution bandwidth was 100 kHz and the video bandwidth was 300 kHz. The spans were wide enough to include all the harmonics and emissions that were produced by the intentional radiator.

The EUT RF power that is produced in any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator is at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power. Please refer to Appendix I for graphical plots.

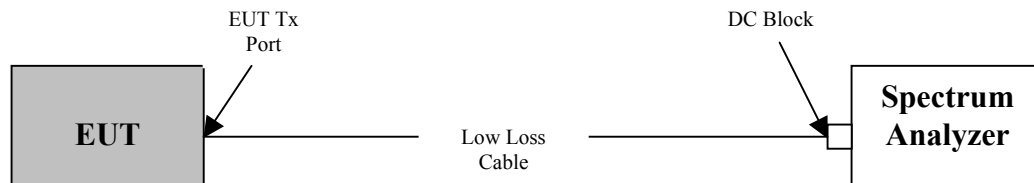
4.6.1 Spurious Emissions Measurement At The Antenna Terminal – Test Setup



4.7 Band Edge Measurement At The Antenna Terminal

A spectrum analyzer was used to measure the band edge measurements at the antenna terminal with the EUT transmitting at 2412 MHz (channel 1) and 2462 MHz (channel 11). It was measured using a direct connection from the RF output port of the EUT to the spectrum analyzer using a low loss cable and a DC block. The resolution bandwidth was 1 MHz and the video bandwidth was 1 MHz. It was verified that the band edge measurements were not above the limit in the restricted bands below 2390 MHz and above 2483.5 MHz. Please refer to Appendix I for graphical plots.

4.7.1 Band Edge Measurement At The Antenna Terminal – Test Setup



5.0 MODIFICATIONS AND RECOMMENDATIONS

There were no modifications done to the EUT.

APPENDIX I

DATA SHEETS

CONDUCTED EMISSIONS AT AC MAINS PORT

CLIENT:	Dell Computer Corporation	DATE:	02/20/03
EUT:	Intel(R) PRO/Wireless LAN 3A Mini PCI Adapter	PROJECT NUMBER:	INTEL-030219-55
MODEL NUMBER:	WM3A2100	TEST ENGINEER:	Rick Candelas
SERIAL NUMBER:	MY-09Y200-43950-321-012B	SITE #:	2
CONFIGURATION:	Installed in Dell laptop computer with Wistron NeWeb Corporation Triple Band Antennas	TEMPERATURE:	17 C
		HUMIDITY:	50% RH
		TIME:	10:00 PM

Standard:	FCC CFR 47, Part 15.207
Description:	AC Power Conducted Emissions
Results:	Passes FCC Limits

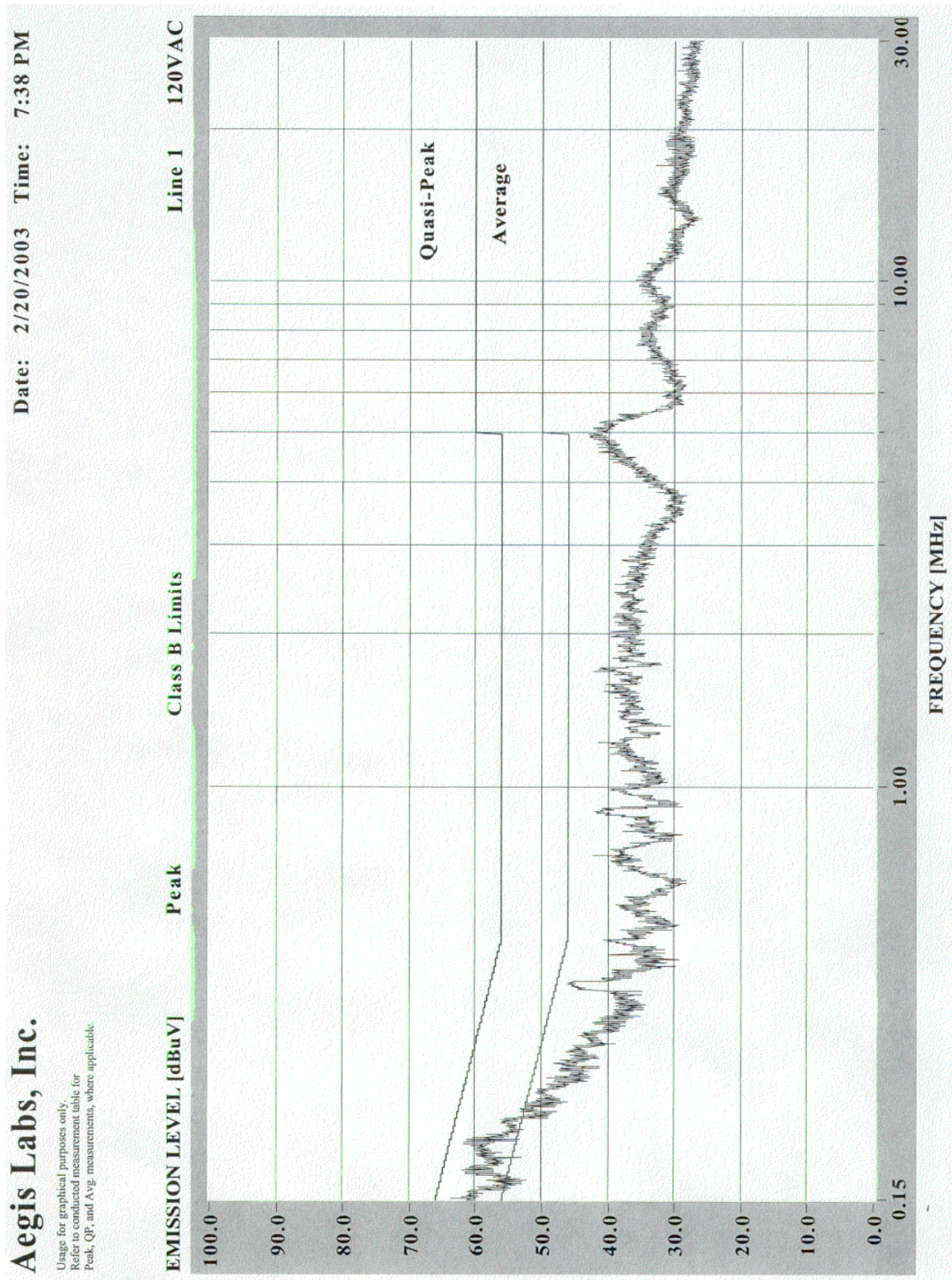
NOTE: During preliminary scans, there wasn't any difference which channel, data rate, or which set of antennas were used with the EUT, therefore only Channel 1 at a data rate of 1 Mbps with the Wistron NeWeb Corporation Triple Band Antennas were used for final testing.

CONDUCTED EMISSIONS AT AC MAINS PORT (Continued)

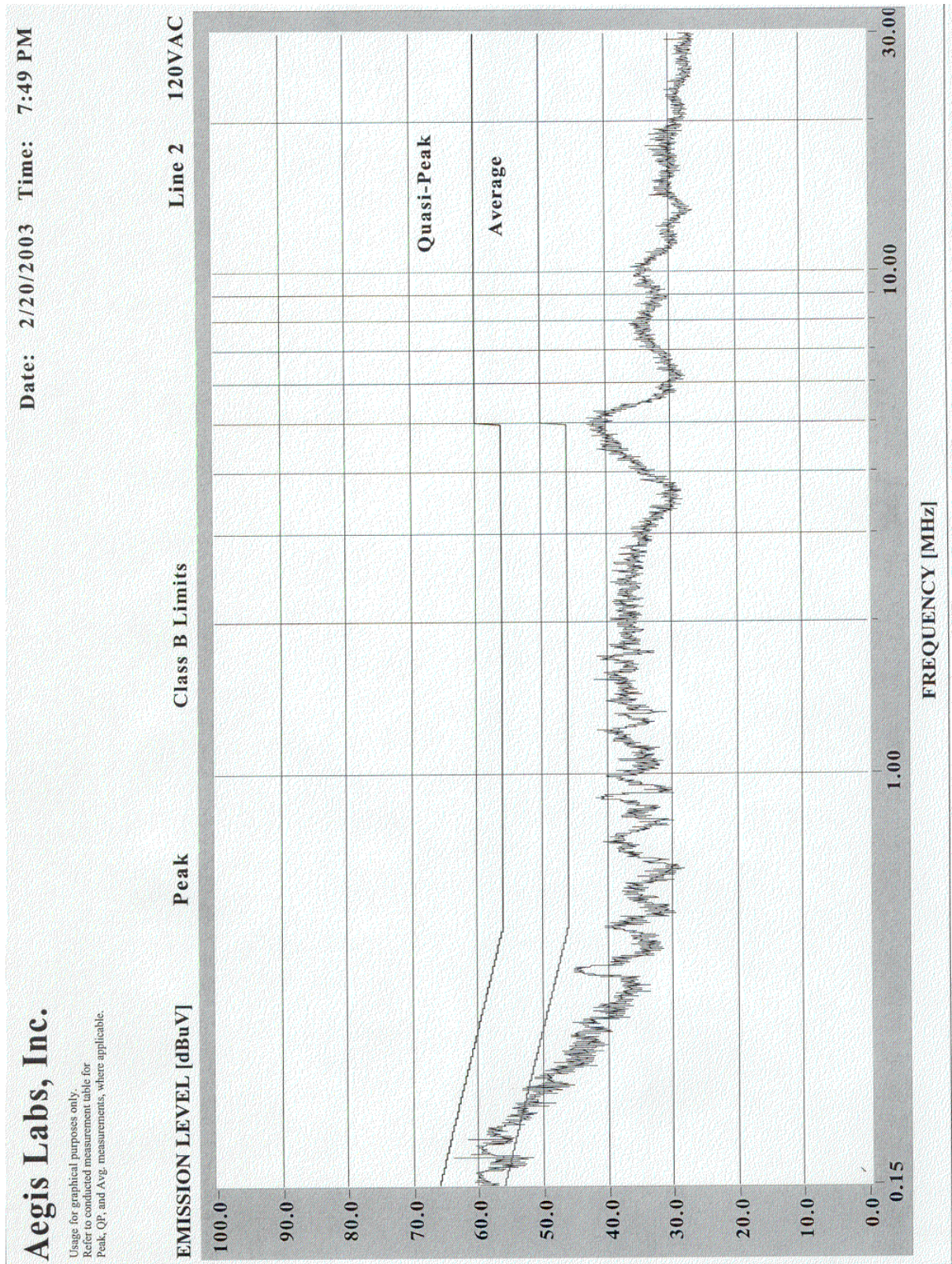
FCC CLASS B CONDUCTED EMISSIONS – LINE 1						
<i>Freq. (MHz)</i>	<i>Meter Reading (dBuV)</i>	<i>Detector (PK/QP/AV)</i>	<i>Average Limit (dBuV)</i>	<i>Average Delta(dB)</i>	<i>Quasi-Peak Limit (dBuV)</i>	<i>Quasi-Peak Delta(dB)</i>
0.1521	62.00	PK	55.94	6.06	65.94	-3.94
0.1521	42.51	AV	55.94	-13.43	65.94	-23.43
0.1761	62.80	PK	55.25	7.55	65.25	-2.45
0.1761	41.58	AV	55.25	-13.67	65.25	-23.67
0.1884	59.90	PK	54.90	5.00	64.90	-5.00
0.1884	41.62	AV	54.90	-13.28	64.90	-23.28
0.2151	55.20	PK	54.14	1.06	64.14	-8.94
0.2151	35.21	AV	54.14	-18.93	64.14	-28.93
0.4041	46.80	PK	48.74	-1.94	58.74	-11.94
0.4041	32.47	AV	48.74	-16.27	58.74	-26.27
5.0600	42.70	PK	50.00	-7.30	60.00	-17.30

FCC CLASS B CONDUCTED EMISSIONS – LINE 2						
<i>Freq. (MHz)</i>	<i>Meter Reading (dBuV)</i>	<i>Detector (PK/QP/AV)</i>	<i>Average Limit (dBuV)</i>	<i>Average Delta(dB)</i>	<i>Quasi-Peak Limit (dBuV)</i>	<i>Quasi-Peak Delta(dB)</i>
0.1518	61.00	PK	55.95	5.05	65.95	-4.95
0.1518	43.12	AV	55.95	-12.83	65.95	-22.83
0.1701	60.40	PK	55.43	4.97	65.43	-5.03
0.1701	42.57	AV	55.43	-12.86	65.43	-22.86
0.1881	60.50	PK	54.91	5.59	64.91	-4.41
0.1881	41.87	AV	54.91	-13.04	64.91	-23.04
0.2025	59.10	PK	54.50	4.60	64.50	-5.40
0.2025	39.45	AV	54.50	-15.05	64.50	-25.05
0.4044	46.00	PK	48.73	-2.73	58.73	-12.73
0.4044	31.54	AV	48.73	-17.19	58.73	-27.19
4.8000	43.00	PK	46.00	-3.00	56.00	-13.00

CONDUCTED EMISSIONS AT AC MAINS PORT (Continued)



CONDUCTED EMISSIONS AT AC MAINS PORT (Continued)

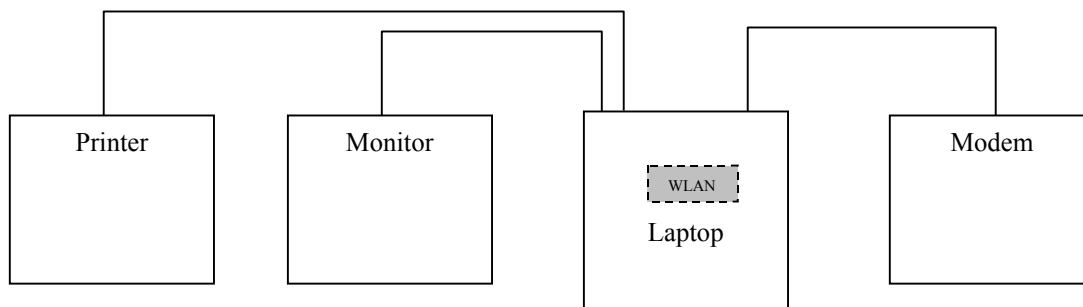


CONDUCTED EMISSIONS AT AC MAINS PORT (Continued)

TEST EQUIPMENT USED					
Equipment Name	Manufacturer	Model Number	Serial Number	Calibration Due Date	Calibration Cycle
Spectrum Analyzer - RF Section	Hewlett Packard	8568B	2634A03093	11/27/03	1 Year
Spectrum Analyzer - Display Section	Hewlett Packard	85662A	1833A00389	11/27/03	1 Year
Quasi-Peak Adapter	Hewlett Packard	85650A	2043A00220	11/28/03	1 Year
RF Preselector	Hewlett Packard	85685A	2620A000281	05/10/03	1 Year
Attenuator - 5W-10dB	Pasternack	PE7014-10	N/A	11/03/03	1 Year
LISN (EUT)	EMCO	3825/2	9108-1848	01/24/04	1 Year
LISN (Access)	Com-Power	LI-200	12019	01/25/04	1 Year
LISN (Access)	Com-Power	LI-200	12018	01/25/04	1 Year
Temperature/Humidity Monitor	Dickson	TH550	7255185	01/18/03	1 Year

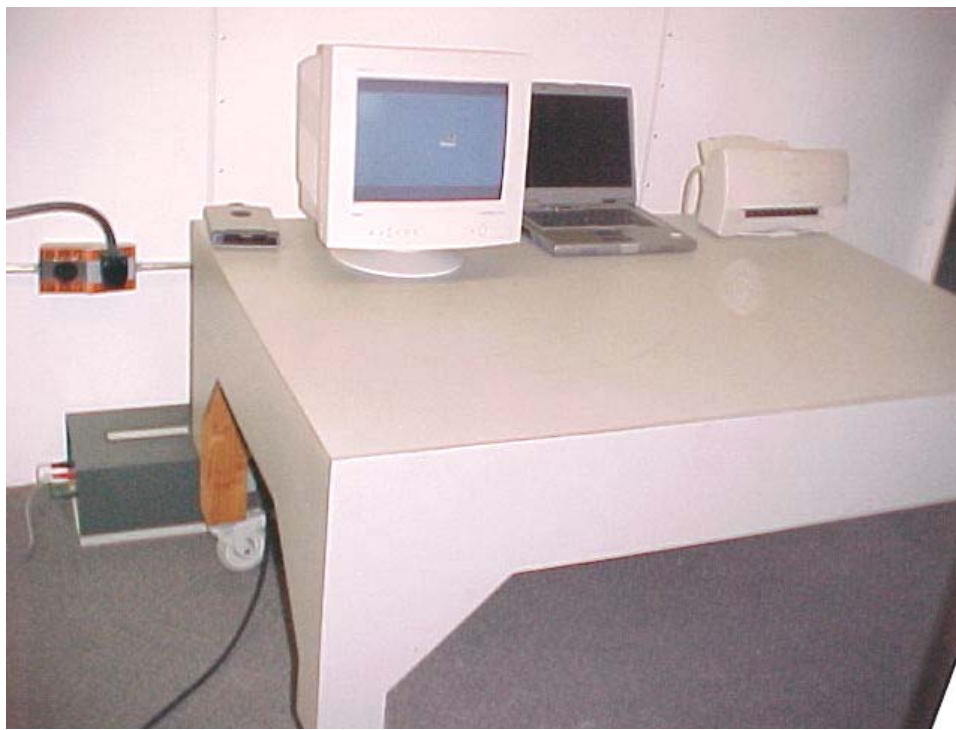
ACCESSORIES EQUIPMENT			
Equipment Name	Manufacturer	Model Number	Serial Number
Host Laptop Computer	Dell	Latitude	221131
AC Adapter	Dell	PA-1650-050	CN-054092-48010-29B-00B9
Monitor	NEC	JC-1575VMA	2Y785821
Printer	Canon	BJC-4200	MT1-18
Modem	Hayes	5362US	A02153623145

BLOCK DIAGRAM



CONDUCTED EMISSIONS AT AC MAINS PORT (Continued)

PHOTOGRAPHS



SPURIOUS RADIATED EMISSIONS

CLIENT:	Dell Computer Corporation	DATE:	02/20/03
EUT:	Intel(R) PRO/Wireless LAN 3A Mini PCI Adapter	PROJECT NUMBER:	INTEL-030219-44
MODEL NUMBER:	WM3A2100	TEST ENGINEER:	Rick Candelas
SERIAL NUMBER:	MY-09Y200-43950-321-012B	SITE #:	2
CONFIGURATION:	Installed in Dell laptop computer with Wistron NeWeb Corporation Triple Band Antennas	TEMPERATURE:	18 C
		HUMIDITY:	47% RH
		TIME:	5:00 PM

Standard:	CISPR22 Class B Limits
Description:	Spurious Emissions Measurements - Radiated
Results:	-1.98 dB (QP) margin @ 576.02 MHz (Horizontal Polarity)

NOTE: During preliminary scans, there wasn't any difference which channel, data rate, or which set of antennas were used with the EUT, therefore only Channel 1 at a data rate of 1 Mbps with the Wistron NeWeb Corporation Triple Band Antennas were used for final testing.

SPURIOUS RADIATED EMISSIONS (Continued)

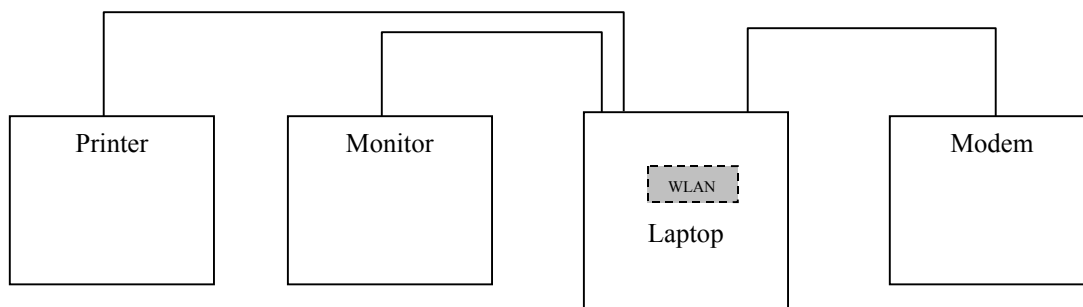
Horizontal Open Field Maximized Data								
<i>Freq. (MHz)</i>	<i>Meter Reading (dBuV)</i>	<i>Antenna Height (cm)</i>	<i>Azimuth (degrees)</i>	<i>Quasi pk or AVG (dBuV)</i>		<i>Corrected Reading (dBuV)</i>	<i>Limits (dBuV)</i>	<i>Diff (dB) +=FAIL</i>
60.09	35.70	250	135			10.88	30.00	-19.12
100.10	39.50	400	90			16.90	30.00	-13.10
120.11	47.60	400	90	42.10	Q	22.92	30.00	-7.08
130.14	43.40	400	90			25.29	30.00	-4.71
150.12	39.70	400	135			22.60	30.00	-7.40
302.65	35.20	300	180			17.79	37.00	-19.21
309.91	38.30	250	180			21.82	37.00	-15.18
320.07	42.10	250	0			26.91	37.00	-10.09
336.06	40.40	250	0			25.03	37.00	-11.97
352.07	37.80	250	0			21.46	37.00	-15.54
368.10	39.30	250	225			23.30	37.00	-13.70
384.06	39.40	250	45			23.60	37.00	-13.40
432.03	47.70	250	90			33.11	37.00	-3.89
450.13	44.50	300	45			30.38	37.00	-6.62
480.04	39.90	200	180			26.91	37.00	-10.09
500.04	39.70	250	0			27.24	37.00	-9.76
528.03	45.40	200	180			33.65	37.00	-3.35
576.02	46.50	150	90	46.23	Q	35.02	37.00	-1.98
624.03	39.60	150	90			29.54	37.00	-7.46
Vertical Open Field Maximized Data								
<i>Freq. (MHz)</i>	<i>Meter Reading (dBuV)</i>	<i>Antenna Height (cm)</i>	<i>Azimuth (degrees)</i>	<i>Quasi pk or AVG (dBuV)</i>		<i>Corrected Reading (dBuV)</i>	<i>Limits (dBuV)</i>	<i>Diff (dB) +=FAIL</i>
60.09	53.20	100	270	49.25	Q	24.73	30.00	-5.27
64.07	49.40	100	90			24.17	30.00	-5.83
80.10	44.90	100	90			19.02	30.00	-10.98
100.11	46.90	100	180			23.70	30.00	-6.30
120.13	53.20	100	90	48.66	Q	27.98	30.00	-2.02
128.15	42.40	100	90			22.42	30.00	-7.58
130.13	49.00	100	90	45.12	Q	25.32	30.00	-4.68
304.07	41.30	100	0			24.07	37.00	-12.93
309.90	39.30	100	0			22.82	37.00	-14.18
320.08	42.10	100	0			26.91	37.00	-10.09
336.09	42.80	100	0			27.43	37.00	-9.57
352.07	41.30	100	45			24.96	37.00	-12.04
368.11	42.00	100	0			26.01	37.00	-10.99
384.10	39.70	100	0			23.90	37.00	-13.10
400.11	38.10	100	90			22.38	37.00	-14.62
432.01	45.60	100	90			31.01	37.00	-5.99
450.13	41.60	100	90			27.48	37.00	-9.52
480.04	36.90	100	225			23.91	37.00	-13.09
528.03	45.10	100	0			33.35	37.00	-3.65
576.03	43.30	100	90			32.09	37.00	-4.91
624.01	36.80	100	90			26.74	37.00	-10.26

SPURIOUS RADIATED EMISSIONS (Continued)

TEST EQUIPMENT USED					
Equipment Name	Manufacturer	Model Number	Serial Number	Calibration Due Date	Calibration Cycle
Spectrum Analyzer - RF Section	Hewlett Packard	8568B	2634A03093	11/27/03	1 Year
Spectrum Analyzer - Display Section	Hewlett Packard	85662A	1833A00389	11/27/03	1 Year
Quasi-Peak Adapter	Hewlett Packard	85650A	2043A00220	11/28/03	1 Year
RF Preselector	Hewlett Packard	85685A	2620A000281	05/10/03	1 Year
Preamplifier	Com-Power	PA-102	1438	04/29/03	1 Year
Antenna - Biconical	EMCO	3110	9108-1421	02/11/04	1 Year
Antenna - Log Periodic	Electro-Metrics	EM-6950	1	09/12/03	1 Year
Temperature/Humidity Monitor	Dickson	TH550	7255185	01/18/04	1 Year

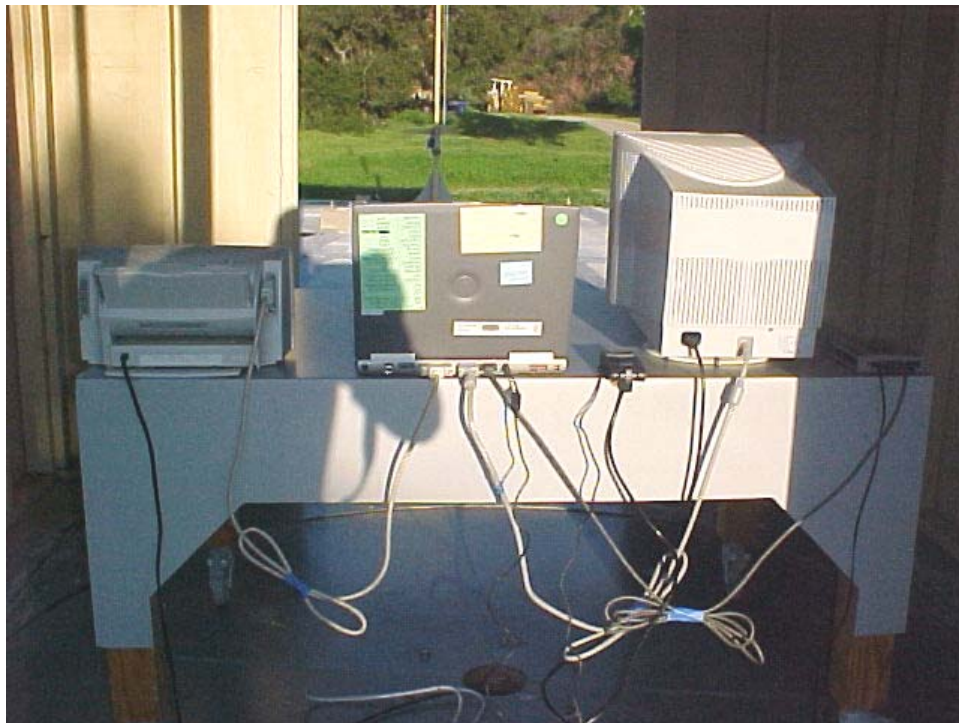
EUT ACCESSORIES			
Equipment Name	Manufacturer	Model Number	Serial Number
Laptop	Dell	Latitude	221131
AC Adapter	Dell	PA-1650-050	CN-054092-48010-29B-00B9
Monitor	NEC	JC-1575VMA	2Y785821
Printer	Canon	BJC-4200	MT1-18
Modem	Hayes	5362US	A02153623145

BLOCK DIAGRAM



SPURIOUS RADIATED EMISSIONS (Continued)

PHOTOGRAPHS



SPURIOUS RADIATED EMISSIONS (Continued)

CLIENT:	Dell Computer Corporation	DATE:	02/19/03
EUT:	Intel(R) PRO/Wireless LAN 3A Mini PCI Adapter	PROJECT NUMBER:	INTEL-030219
MODEL NUMBER:	WM3A2100	TEST ENGINEER:	Rick Candelas
SERIAL NUMBER:	MY-09Y200-43950-321-012B	SITE #:	2
CONFIGUARTION:	Installed in Dell laptop computer.	TEMPERATURE:	15 C
		HUMIDITY:	69% RH
		TIME:	10:00 AMM

Standard:	FCC CFR 47, Part 15, 15.247(c), 15.209
Description:	Spurious Emissions Measurements - Radiated
Results:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator is at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

SPURIOUS RADIATED EMISSIONS (Continued)

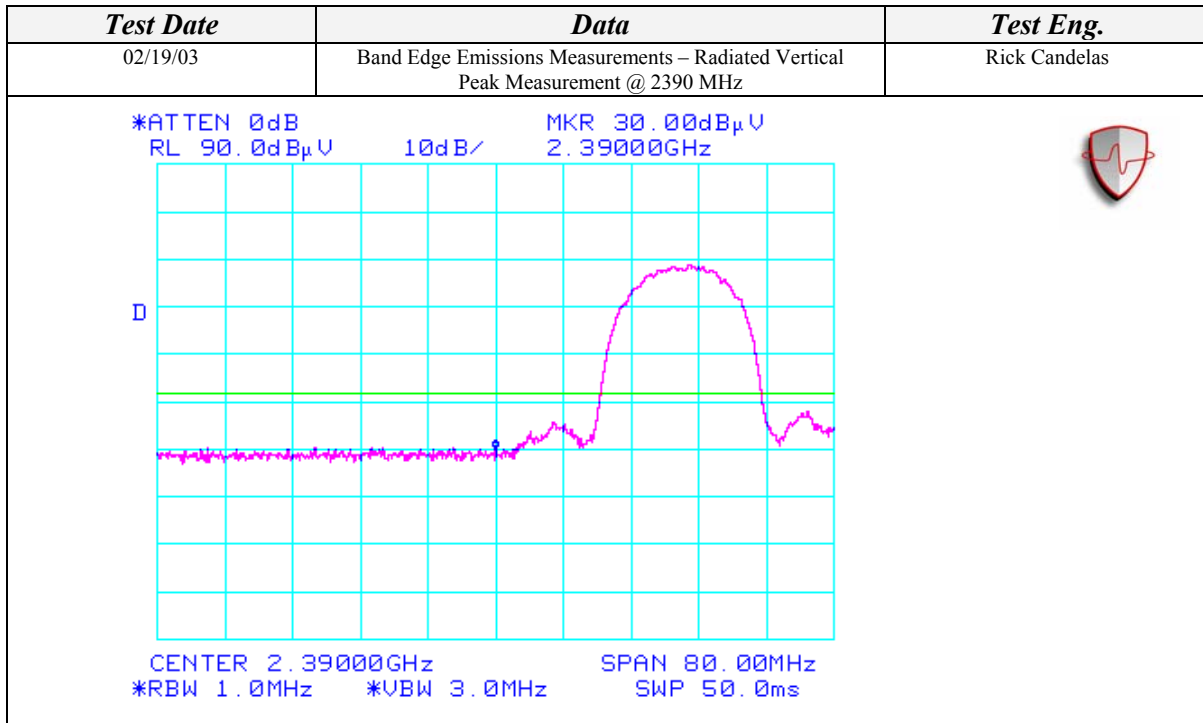
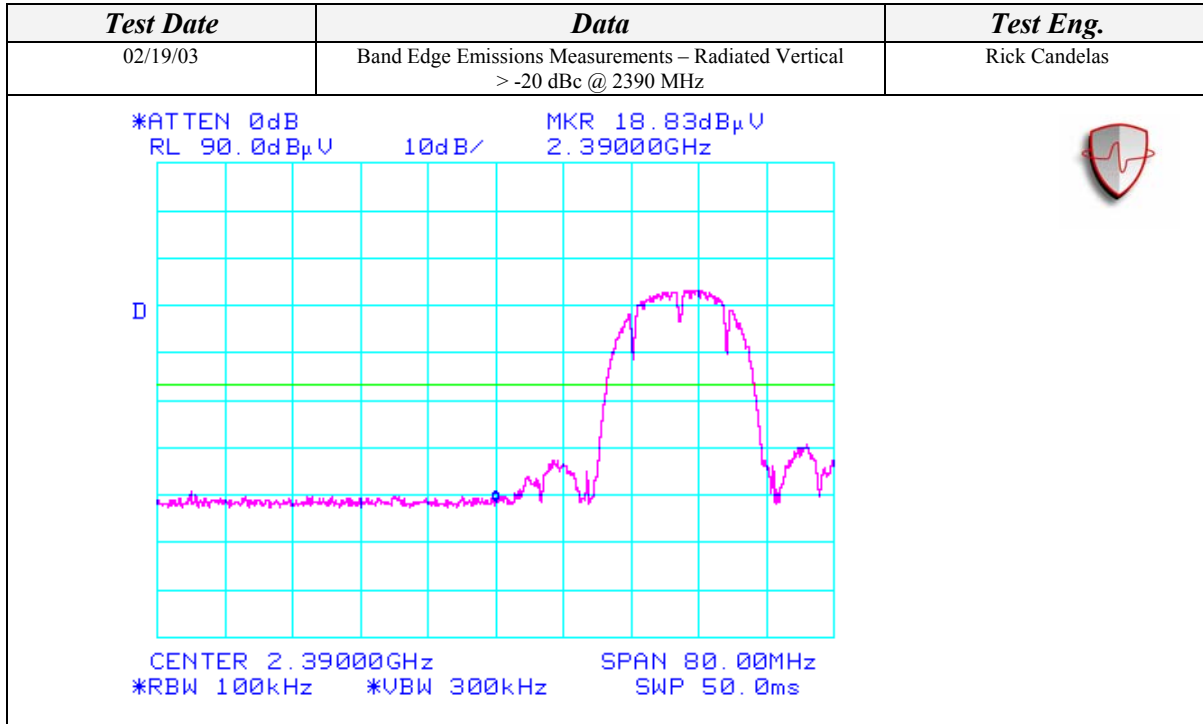
*Fundamental and Band Edge Measurements at Channels 1, 6, & 11
Using Wistron NeWeb Corporation Triple-Band Antennas
Aegis Labs, Inc. File #: INTEL-030219-02*

Horizontal Open Field Maximized Data								
<i>Freq. (MHz)</i>	<i>Meter Reading (dBuV)</i>	<i>Antenna Height (cm)</i>	<i>Azimuth (degrees)</i>	<i>Quasi pk or AVG (dBuV)</i>		<i>Corrected Reading (dBuV)</i>	<i>Limits (dBuV)</i>	<i>Diff (dB) +=FAIL</i>
2411.02	71.00	100	225			103.21		
2389.73	30.83	100	225			62.94	74.00	-11.06
2389.20				17.00	A	49.11	54.00	-4.89
2436.02	70.00	100	225			102.32		
2461.02	69.00	100	225			101.43		
2483.50	30.17	100	225			62.70	74.00	-11.30
2483.50				18.00	A	50.53	54.00	-3.47

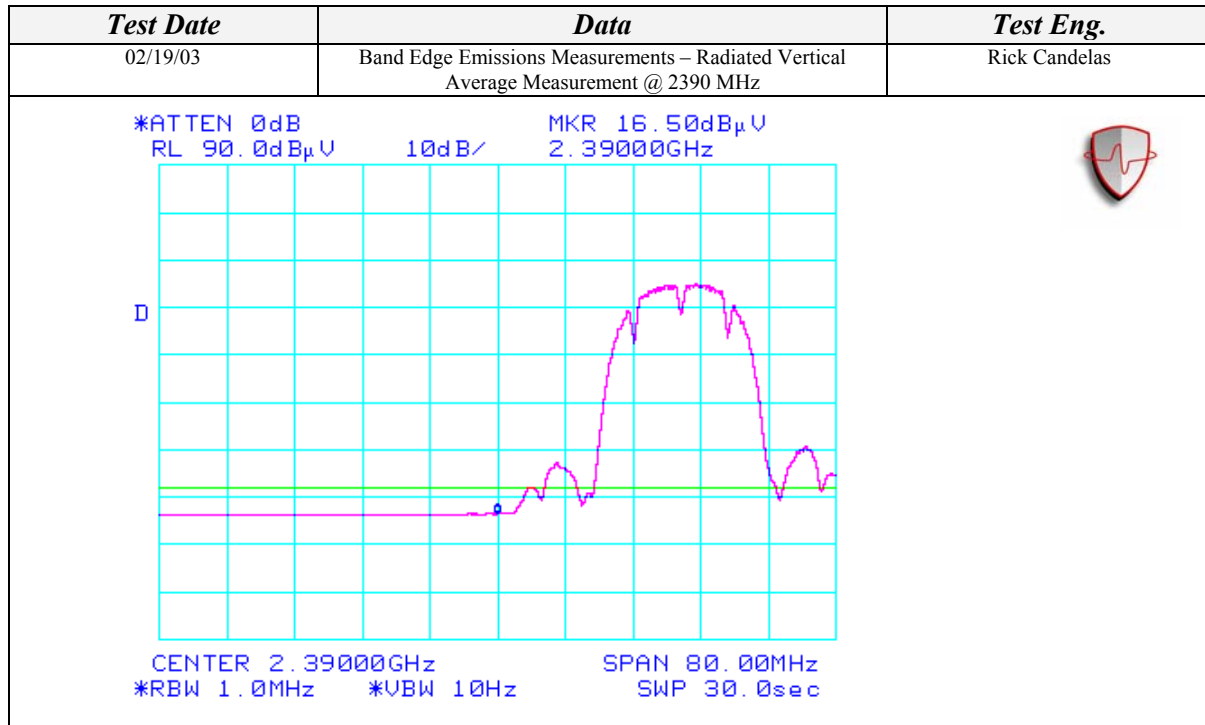
Vertical Open Field Maximized Data								
Freq. (MHz)	Meter Reading (dBuV)	Antenna Height (cm)	Azimuth (degrees)	Quasi pk or AVG (dBuV)		Corrected Reading (dBuV)	Limits (dBuV)	Diff (dB) +=FAIL
2412.89	68.33	100	45			100.75		
2390.00	30.00	100	45			62.32	74.00	-11.68
2390.00				16.50	A	48.82	54.00	-5.18
2436.01	69.67	100	45			102.19		
2461.05	68.67	100	45			101.30		
2483.50	30.33	100	45			63.06	74.00	-10.94
2483.50				17.50	A	50.23	54.00	-3.77

SPURIOUS RADIATED EMISSIONS (Continued)

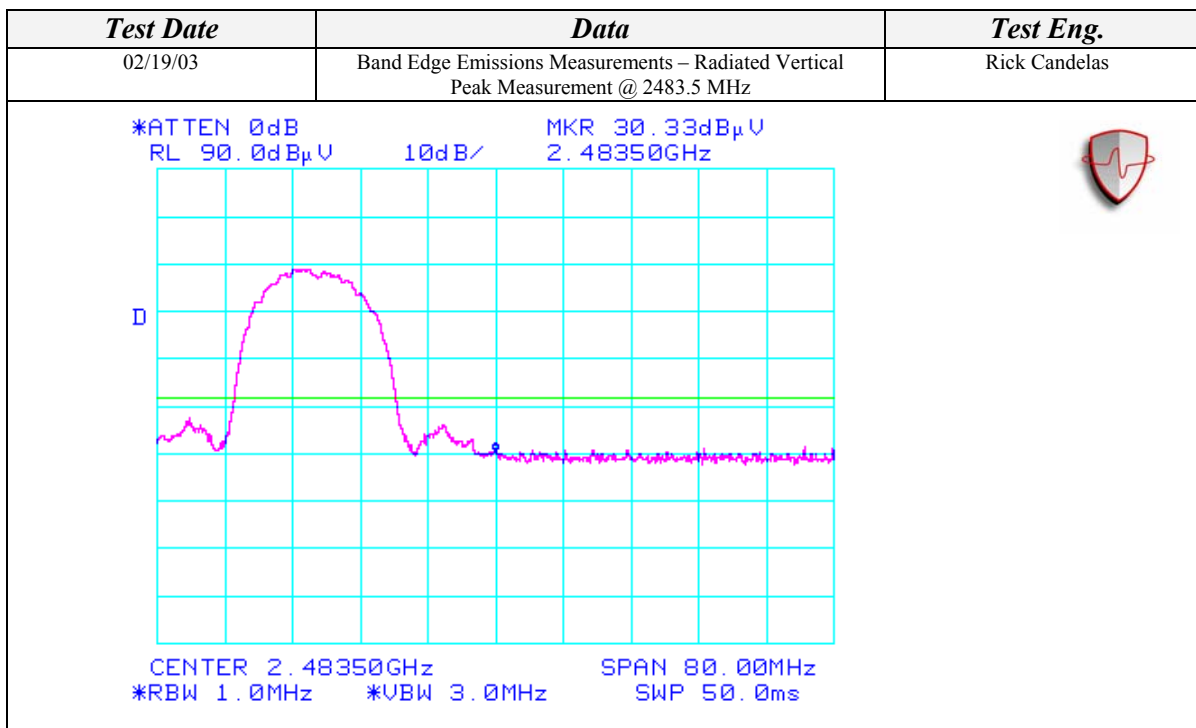
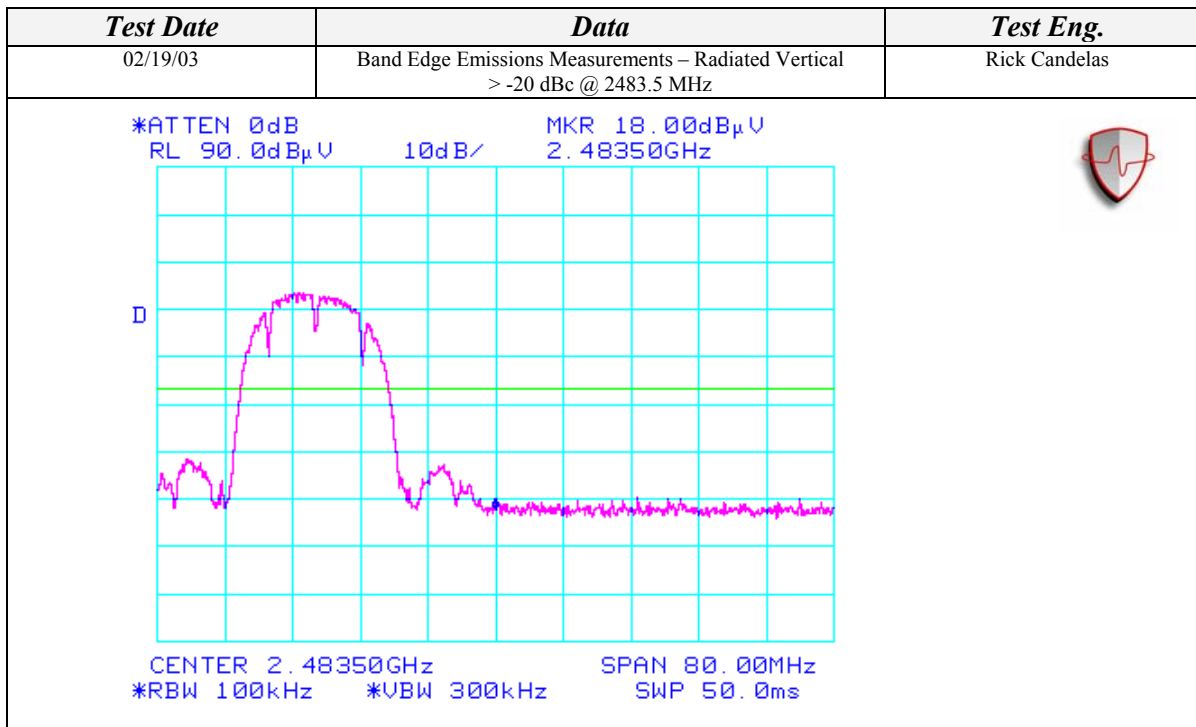
Band Edge Measurement Plots at Channels 1 & 11



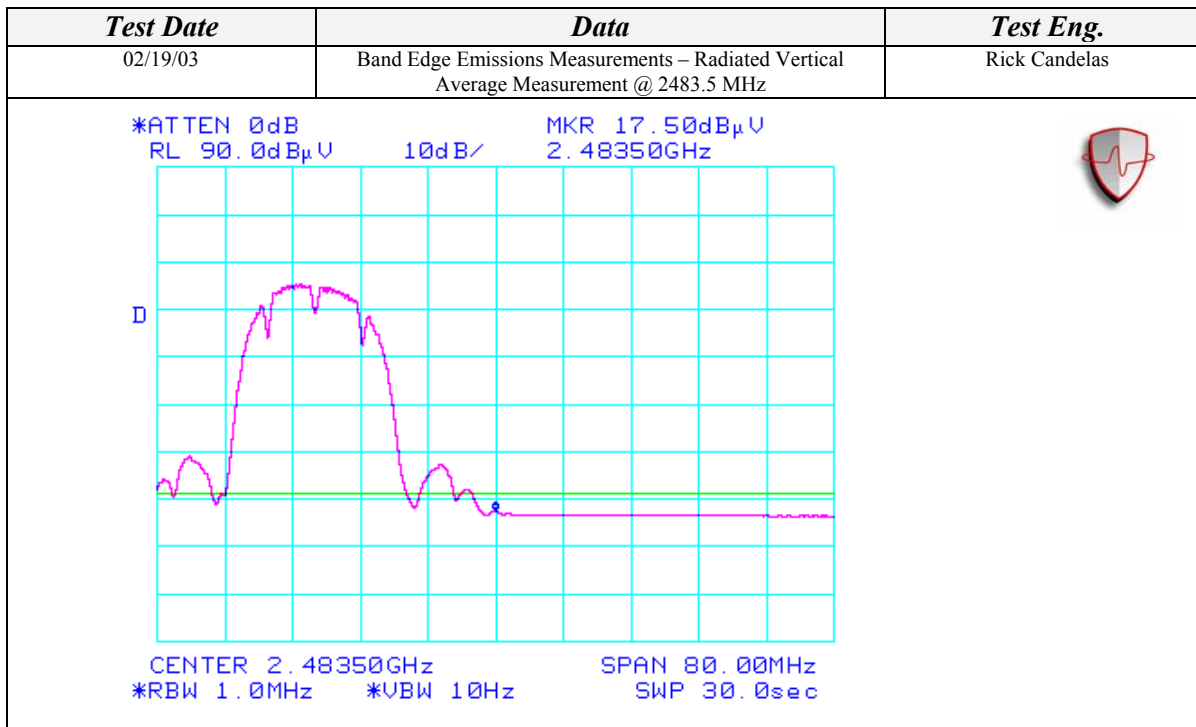
SPURIOUS RADIATED EMISSIONS (Continued)



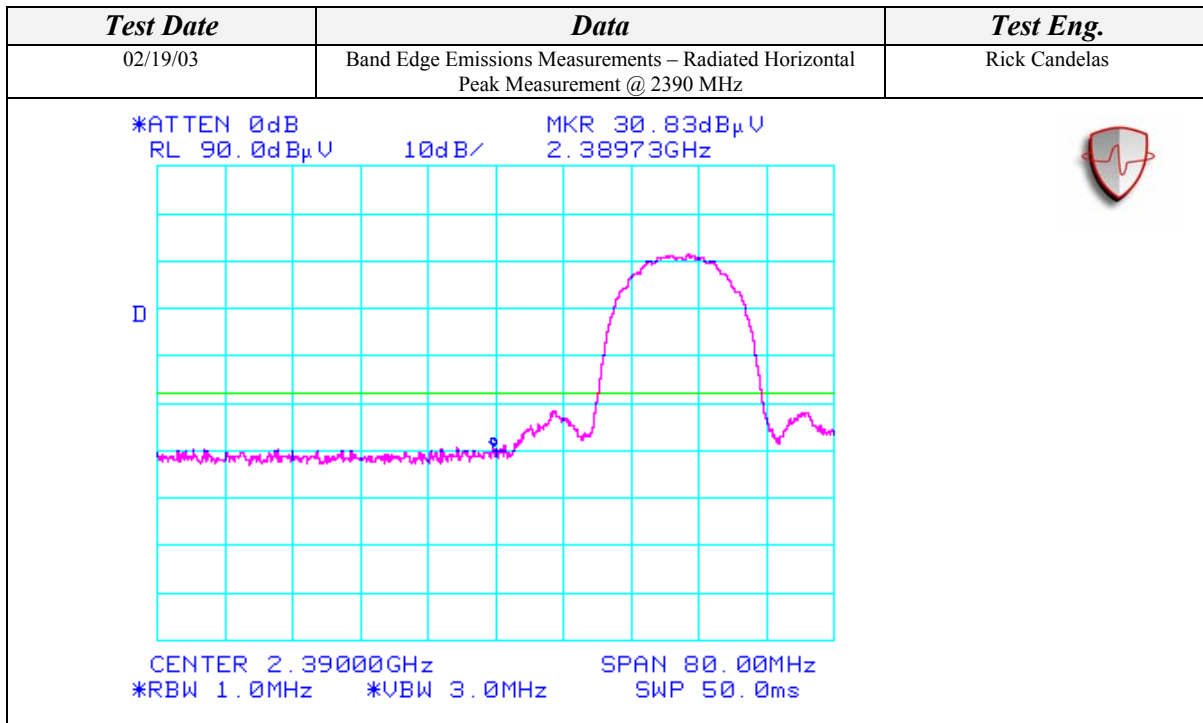
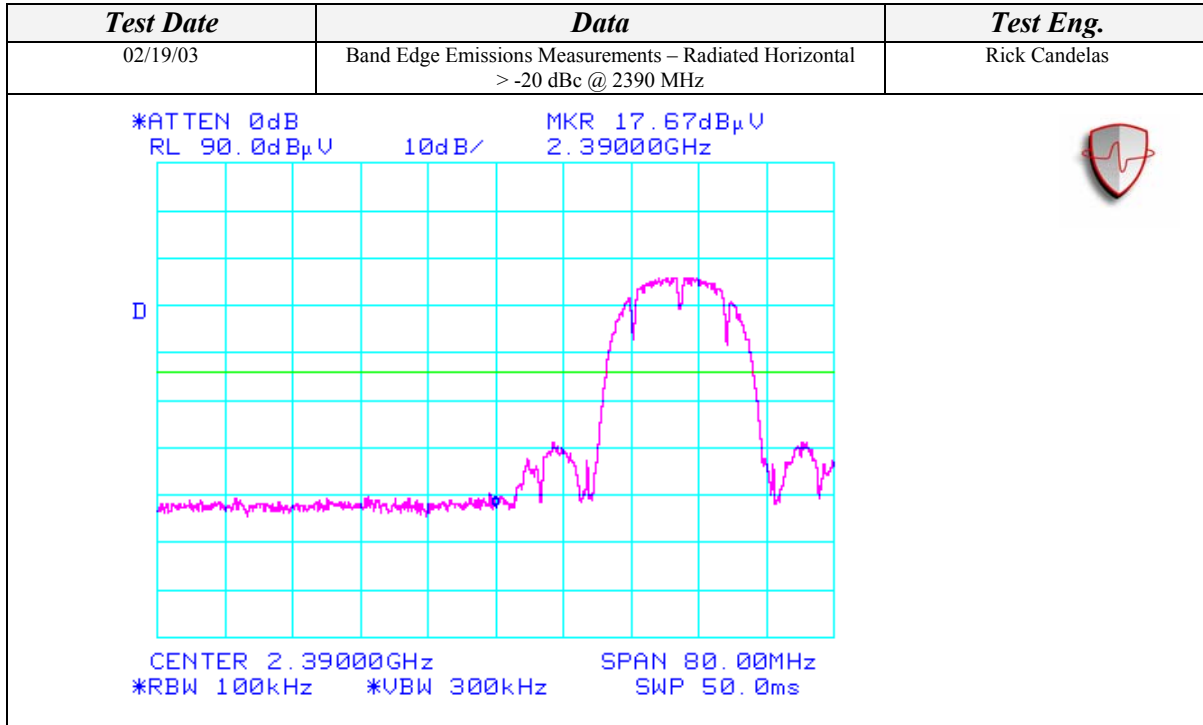
SPURIOUS RADIATED EMISSIONS (Continued)



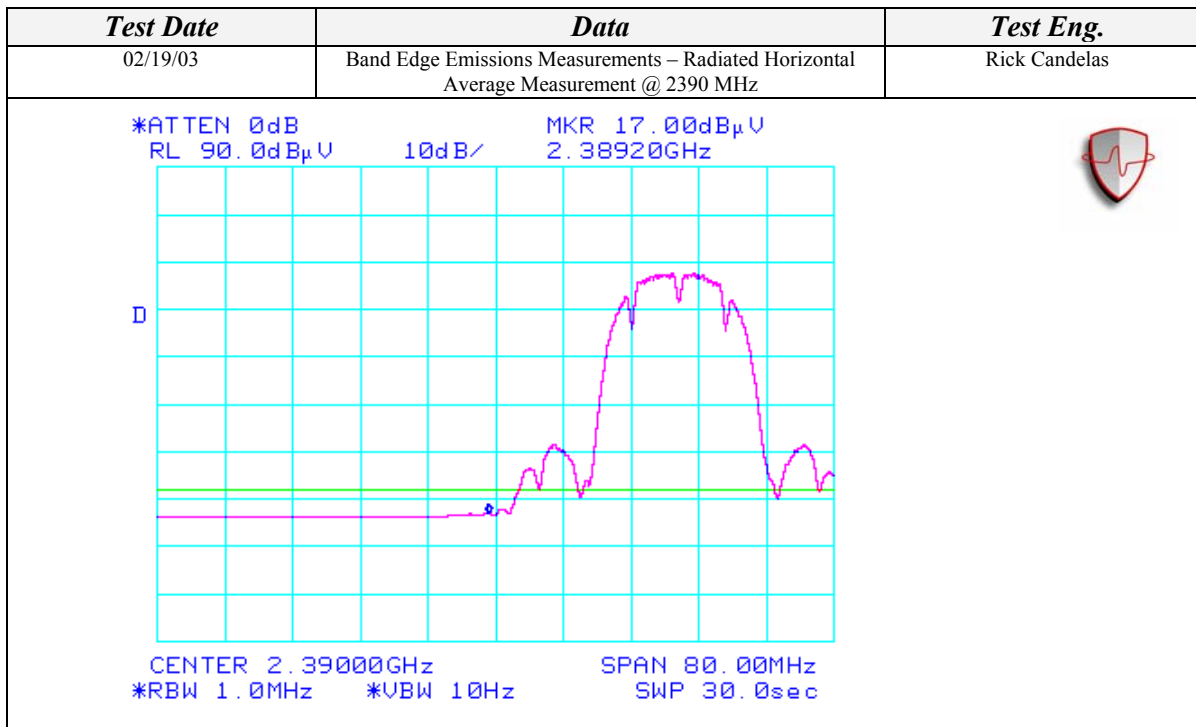
SPURIOUS RADIATED EMISSIONS (Continued)



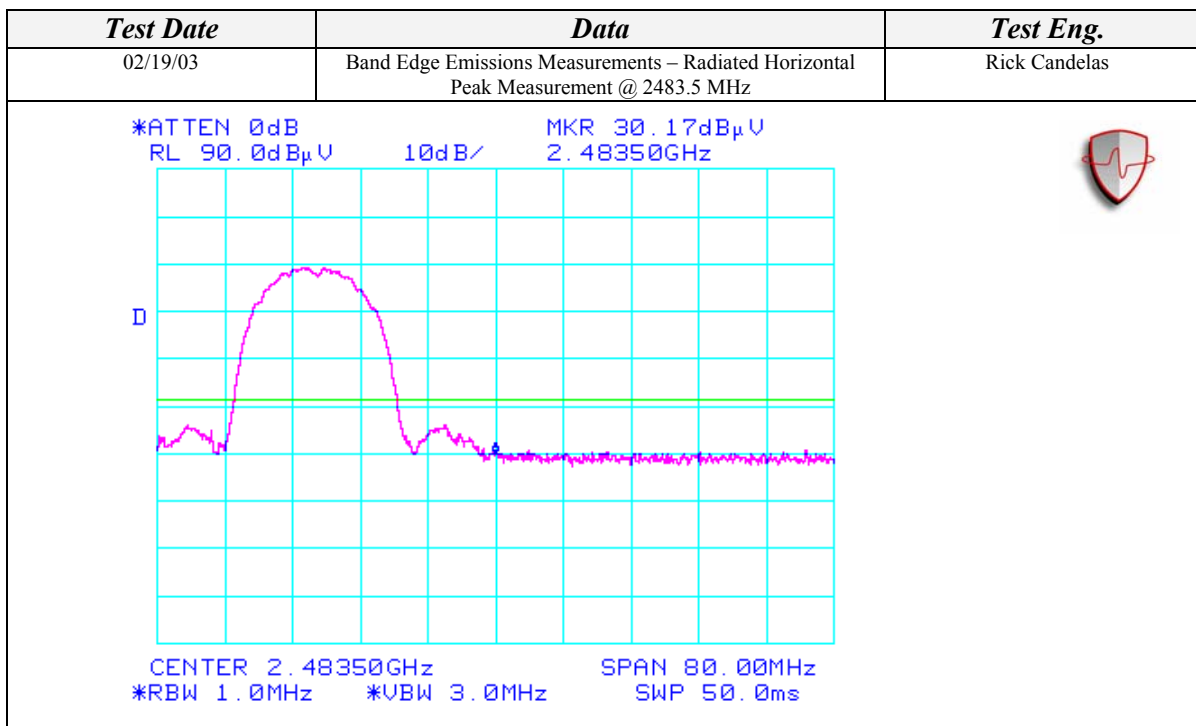
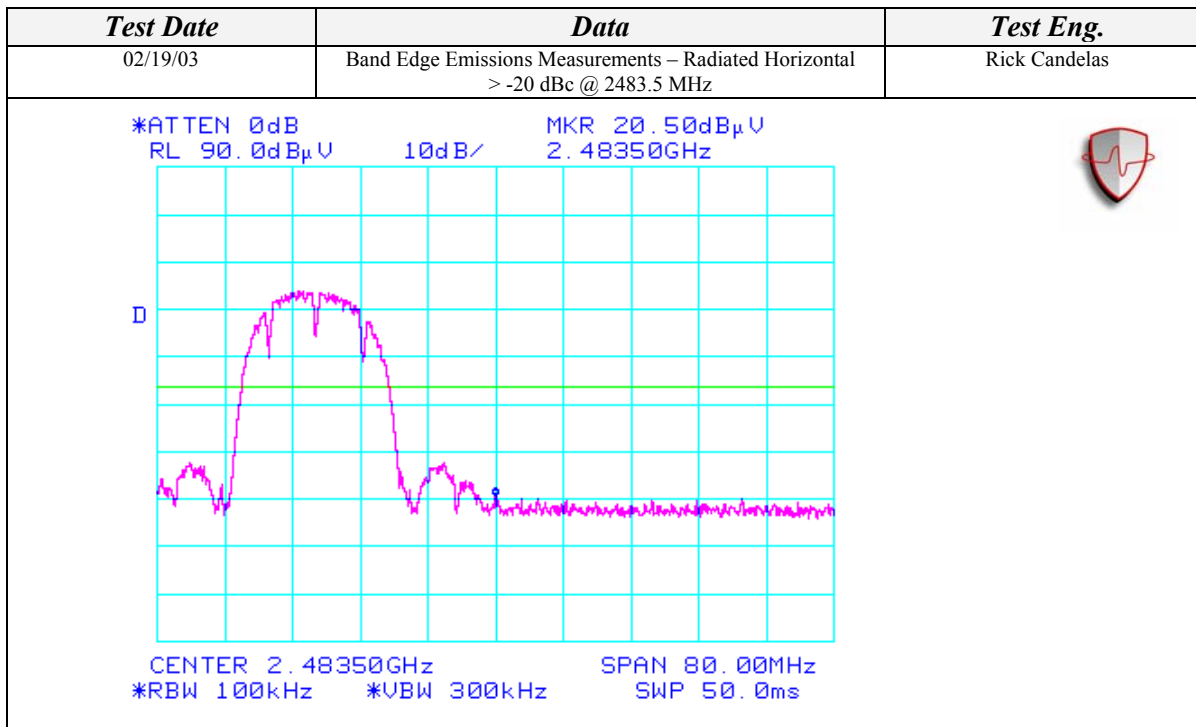
SPURIOUS RADIATED EMISSIONS (Continued)



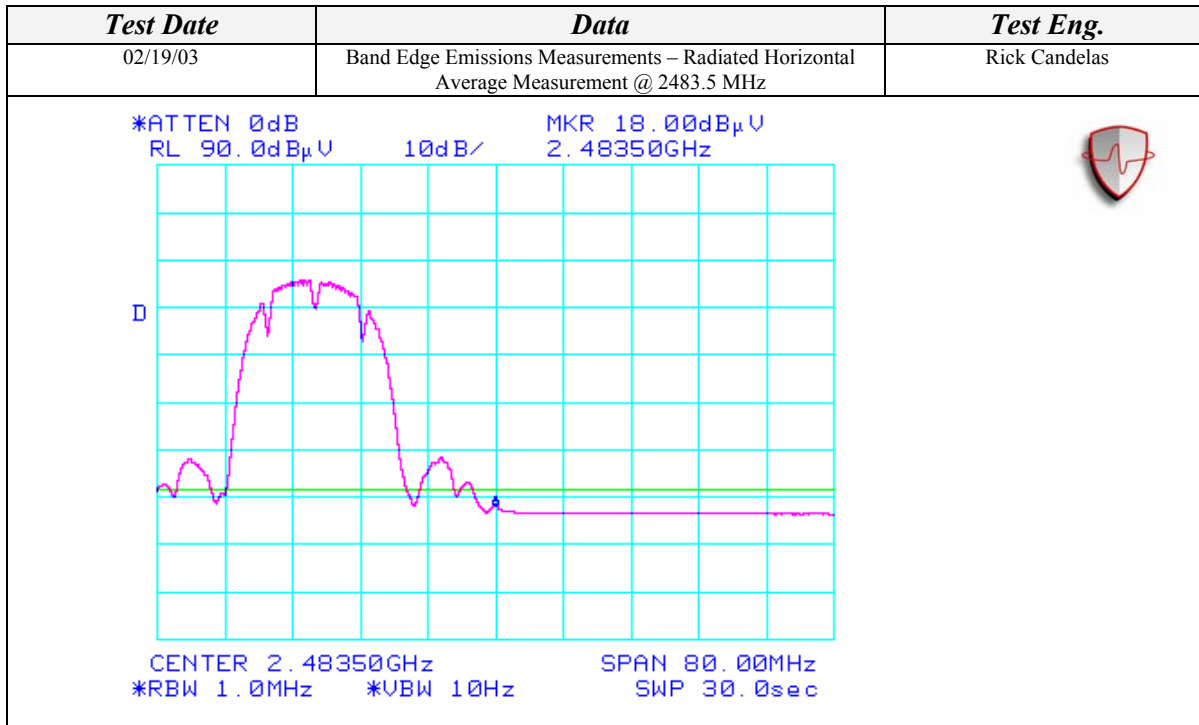
SPURIOUS RADIATED EMISSIONS (Continued)



SPURIOUS RADIATED EMISSIONS (Continued)



SPURIOUS RADIATED EMISSIONS (Continued)



SPURIOUS RADIATED EMISSIONS (Continued)

*Harmonic Measurements at Channels 1, 6, & 11@ 1Mbps Data Rate
Using Wistron NeWeb Corporation Triple-Band Antennas
Aegis Labs, Inc. File #: INTEL-030219-17*

Horizontal Open Field Maximized Data								
<i>Freq. (MHz)</i>	<i>Meter Reading (dBuV)</i>	<i>Antenna Height (cm)</i>	<i>Azimuth (degrees)</i>	<i>Quasi pk or AVG (dBuV)</i>		<i>Corrected Reading (dBuV)</i>	<i>Limits (dBuV)</i>	<i>Diff (dB) +=FAIL</i>
4824.13	42.33	100	180			44.33	74.00	-29.67
4824.13				29.97	A	31.97	54.00	-22.03
7235.71	42.50	100	180			47.92	74.00	-26.08
7235.71				34.65	A	40.07	54.00	-13.93
9648.46	44.67	100	180			51.79	83.21	-31.42
4873.59	41.33	100	180			43.50	74.00	-30.50
4873.59				28.67	A	30.84	54.00	-23.16
7310.95	42.33	100	225			47.63	74.00	-26.37
7310.95				29.43	A	34.73	54.00	-19.27
9747.55	44.50	100	225			51.89	82.32	-30.43
2423.99	41.33	100	225			37.06	74.00	-36.94
2423.99				29.11	A	24.84	54.00	-29.16
7386.11	43.33	100	225			48.51	74.00	-25.49
7386.11				29.83	A	35.01	54.00	-18.99
9848.03	45.00	100	225			52.67	81.43	-28.76

Vertical Open Field Maximized Data								
<i>Freq. (MHz)</i>	<i>Meter Reading (dBuV)</i>	<i>Antenna Height (cm)</i>	<i>Azimuth (degrees)</i>	<i>Quasi pk or AVG (dBuV)</i>		<i>Corrected Reading (dBuV)</i>	<i>Limits (dBuV)</i>	<i>Diff (dB) +=FAIL</i>
4824.10	43.17	100	225			45.14	74.00	-28.86
4824.10				31.62	A	33.59	54.00	-20.41
7235.98	42.67	100	225			47.99	74.00	-26.01
7235.98				29.87	A	35.19	54.00	-18.81
9647.75	44.83	100	225			52.00	80.75	-28.75
4874.01	42.17	100	225			44.29	74.00	-29.71
4874.01				30.44	A	32.56	54.00	-21.44
7310.65	42.33	100	225			47.56	74.00	-26.44
7310.65				29.25	A	34.48	54.00	-19.52
9747.58	44.67	100	180			52.16	82.19	-30.03
4924.04	41.67	100	225			43.94	74.00	-30.06
4924.04				29.50	A	31.77	54.00	-22.23
7385.96	42.67	100	180			47.81	74.00	-26.19
7395.96				29.98	A	35.10	54.00	-18.90
9848.44	45.00	100	0			52.82	81.30	-28.48

SPURIOUS RADIATED EMISSIONS (Continued)

*Spurious Emissions Measurements on Ch. 1 @ 1Mbps Data Rate
Using Wistron NeWeb Corporation Triple-Band Antennas
Aegis Labs, Inc. File #: INTEL-030219-18*

Horizontal Open Field Maximized Data								
<i>Freq. (MHz)</i>	<i>Meter Reading (dBuV)</i>	<i>Antenna Height (cm)</i>	<i>Azimuth (degrees)</i>	<i>Quasi pk or AVG (dBuV)</i>		<i>Corrected Reading (dBuV)</i>	<i>Limits (dBuV)</i>	<i>Diff (dB) +=FAIL</i>
1000.00	54.17	100	0			43.38	74.00	-30.62
1000.00				39.29	A	28.50	54.00	-25.50
1198.87	54.17	100	315			44.69	74.00	-29.31
1198.87				35.19	A	25.71	54.00	-28.29
1545.02	53.83	100	270			46.08	74.00	-27.92
1545.02				42.80	A	35.05	54.00	-18.95

Vertical Open Field Maximized Data								
<i>Freq. (MHz)</i>	<i>Meter Reading (dBuV)</i>	<i>Antenna Height (cm)</i>	<i>Azimuth (degrees)</i>	<i>Quasi pk or AVG (dBuV)</i>		<i>Corrected Reading (dBuV)</i>	<i>Limits (dBuV)</i>	<i>Diff (dB) +=FAIL</i>
1009.18	58.50	200	45			47.91	74.00	-26.09
1009.18				40.32	A	29.73	54.00	-24.27
1198.71	53.83	100	90			44.41	74.00	-29.59
1198.71				38.36	A	28.94	54.00	-25.06
1542.77	56.00	125	45			48.26	74.00	-25.74
1542.77				44.75	A	37.01	54.00	-16.99
1653.57	55.17	150	45			48.13		48.13

SPURIOUS RADIATED EMISSIONS (Continued)

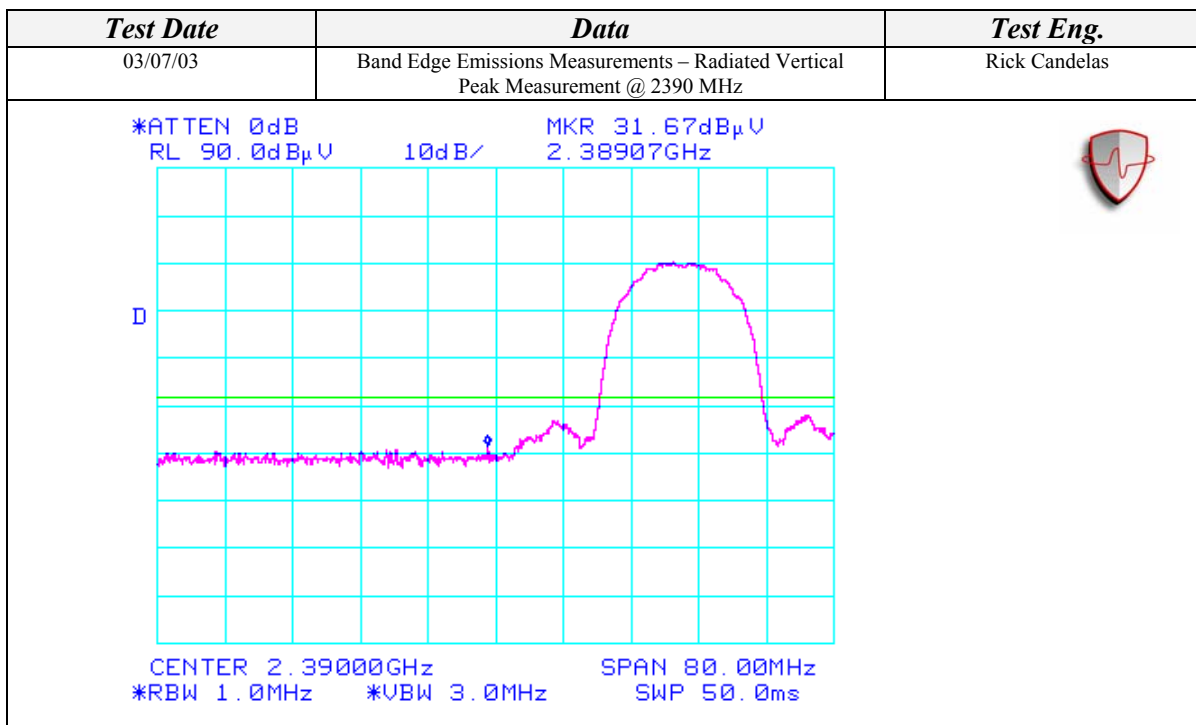
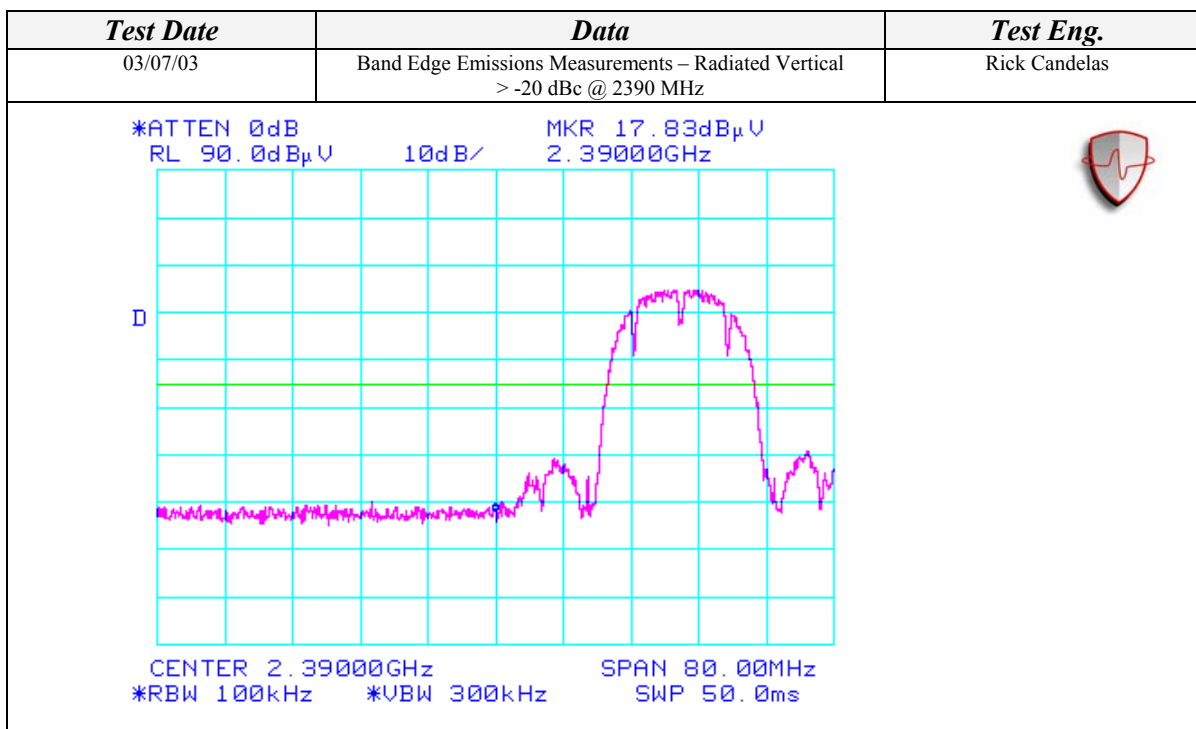
*Fundamental and Band Edge Measurements at Channels 1, 6, & 11
Using Hitachi Monopole Antennas
Aegis Labs, Inc. File #: INTEL-030219-57*

Horizontal Open Field Maximized Data								
<i>Freq. (MHz)</i>	<i>Meter Reading (dBuV)</i>	<i>Antenna Height (cm)</i>	<i>Azimuth (degrees)</i>	<i>Quasi pk or AVG (dBuV)</i>		<i>Corrected Reading (dBuV)</i>	<i>Limits (dBuV)</i>	<i>Diff (dB) +=FAIL</i>
2411.07	70.83	125	225			103.04		
2389.20	30.00	125	225			62.11	74.00	-11.89
2389.20				17.00	A	49.11	54.00	-4.89
2436.25	70.67	125	225			102.99		
2461.37	68.33	125	225			100.76		
2483.50	29.17	125	225			61.70	74.00	-12.30
2483.50				16.83	A	49.36	54.00	-4.64

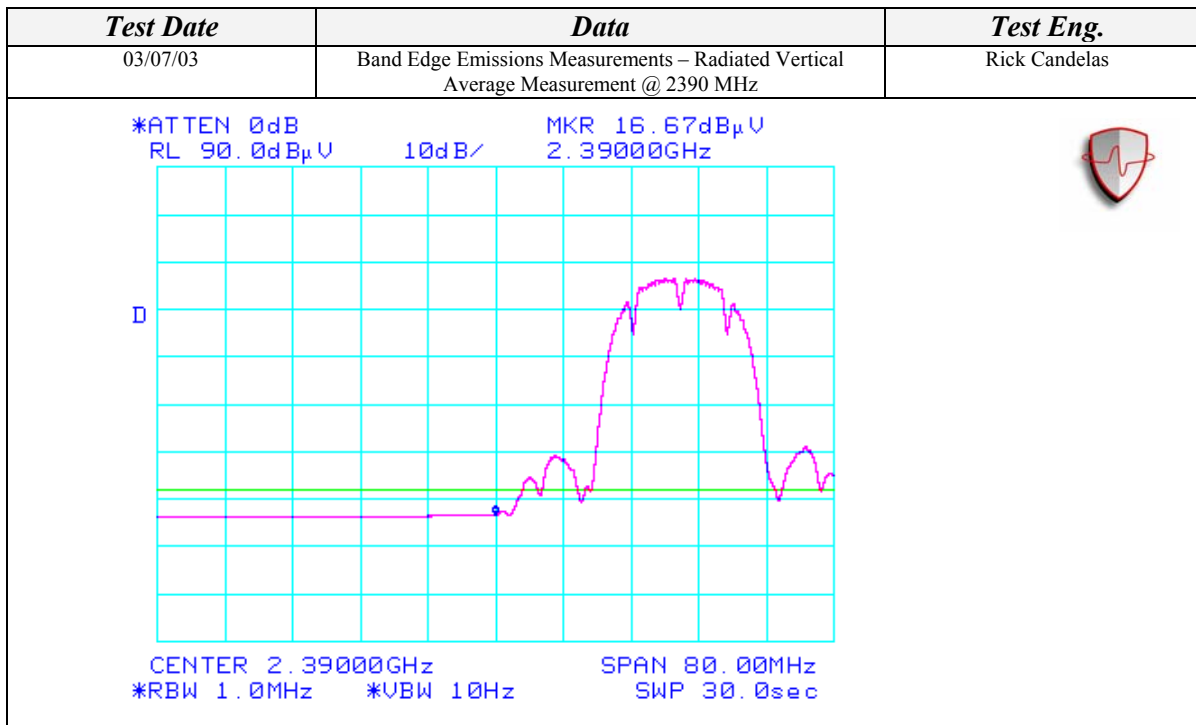
Vertical Open Field Maximized Data								
<i>Freq. (MHz)</i>	<i>Meter Reading (dBuV)</i>	<i>Antenna Height (cm)</i>	<i>Azimuth (degrees)</i>	<i>Quasi pk or AVG (dBuV)</i>		<i>Corrected Reading (dBuV)</i>	<i>Limits (dBuV)</i>	<i>Diff (dB) +=FAIL</i>
2411.08	69.50	100	225			101.91		
2389.07	31.67	100	225			63.98	74.00	-10.02
2390.00				16.67	A	48.99	54.00	-5.01
2436.25	71.50	100	225			104.02		
2461.37	70.50	100	225			103.13		
2483.50	30.17	100	225			62.90	74.00	-11.10
2483.50				18.83	A	51.56	54.00	-2.44

SPURIOUS RADIATED EMISSIONS (Continued)

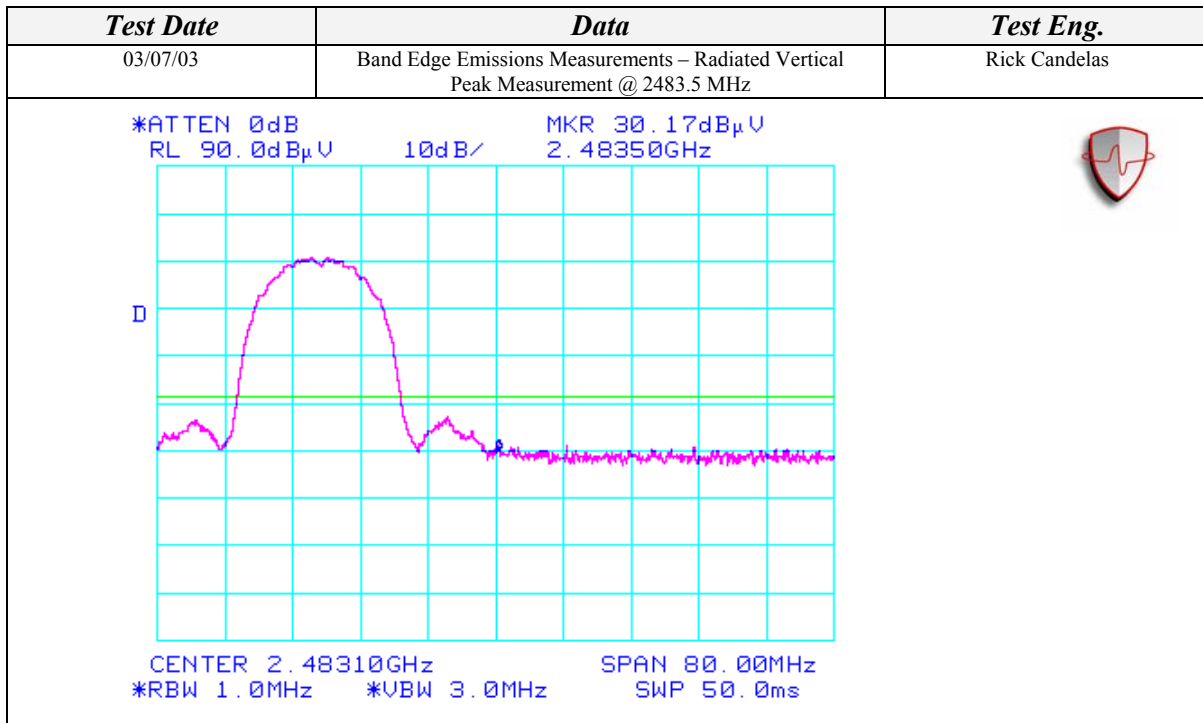
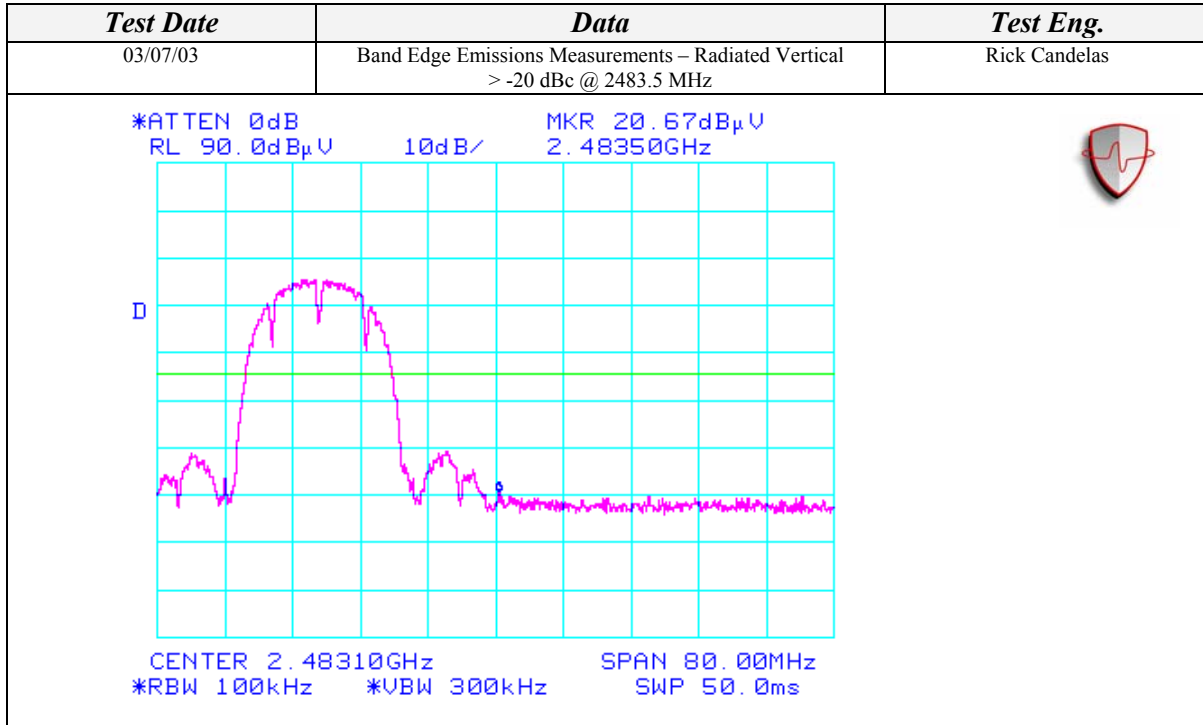
Band Edge Measurement Plots at Channels 1 & 11



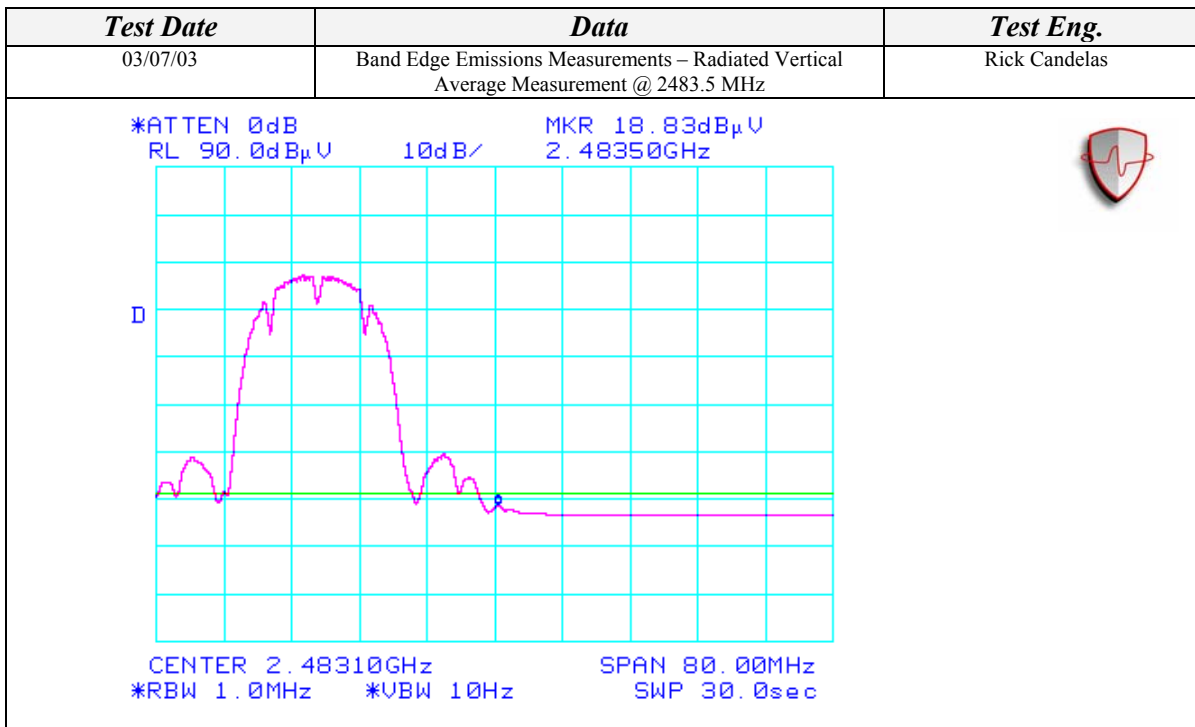
SPURIOUS RADIATED EMISSIONS (Continued)



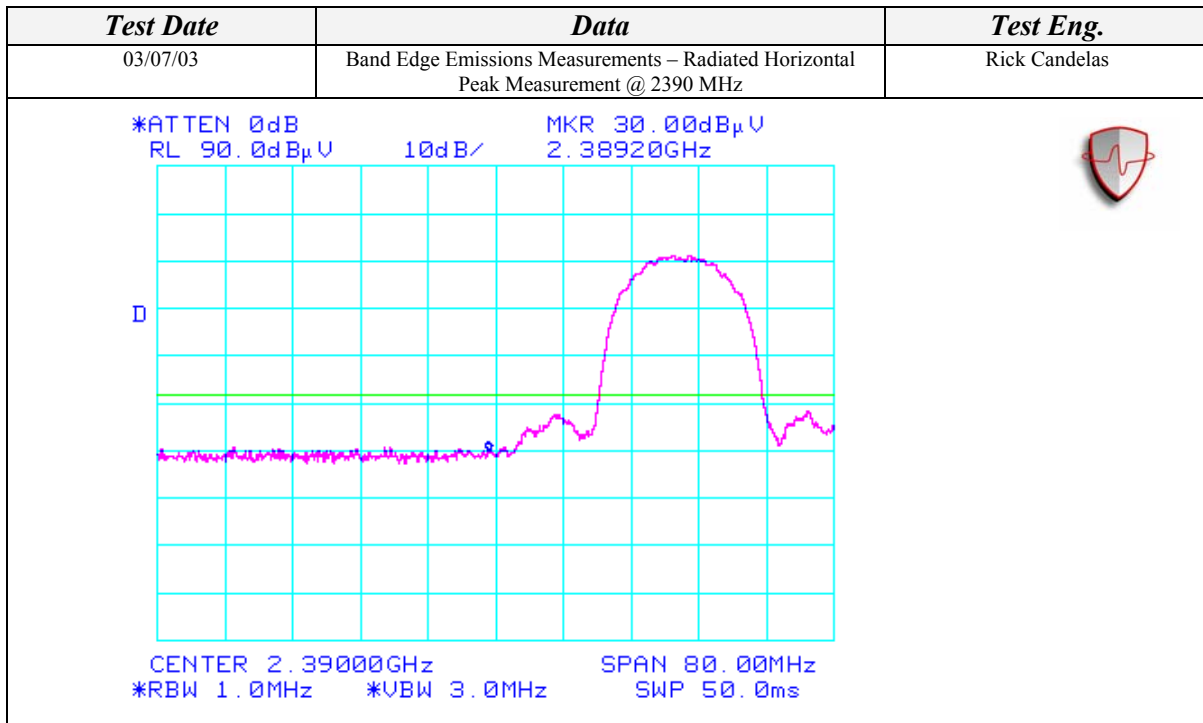
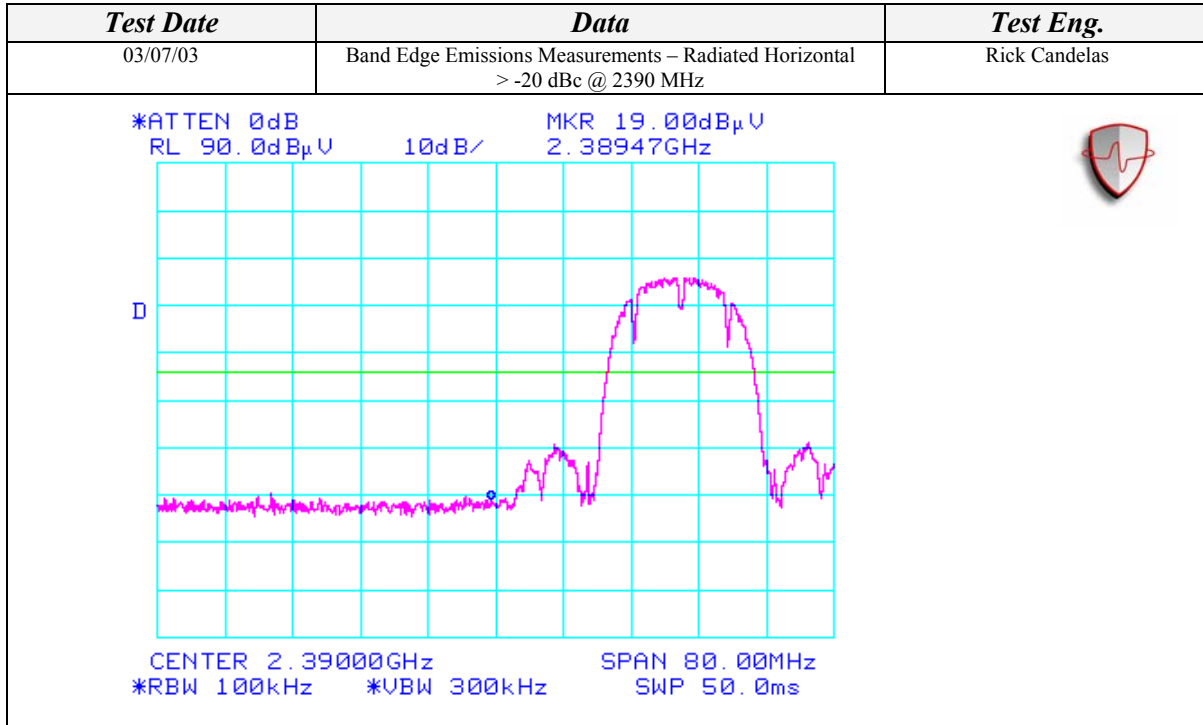
SPURIOUS RADIATED EMISSIONS (Continued)



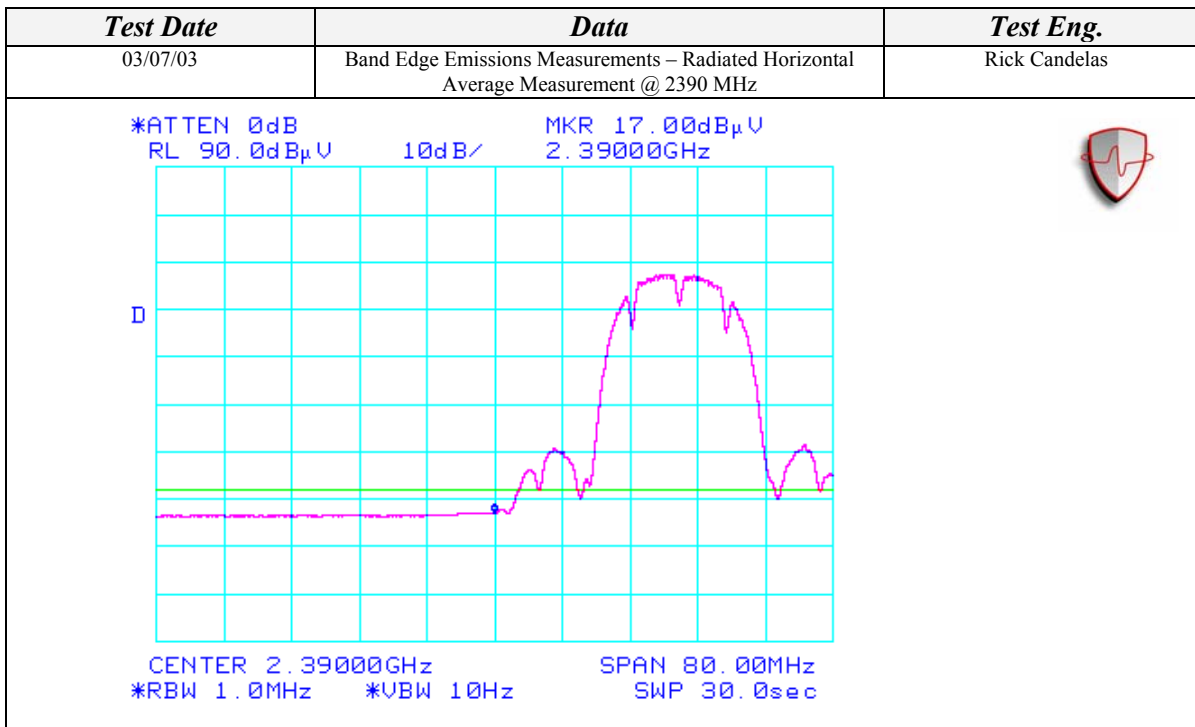
SPURIOUS RADIATED EMISSIONS (Continued)



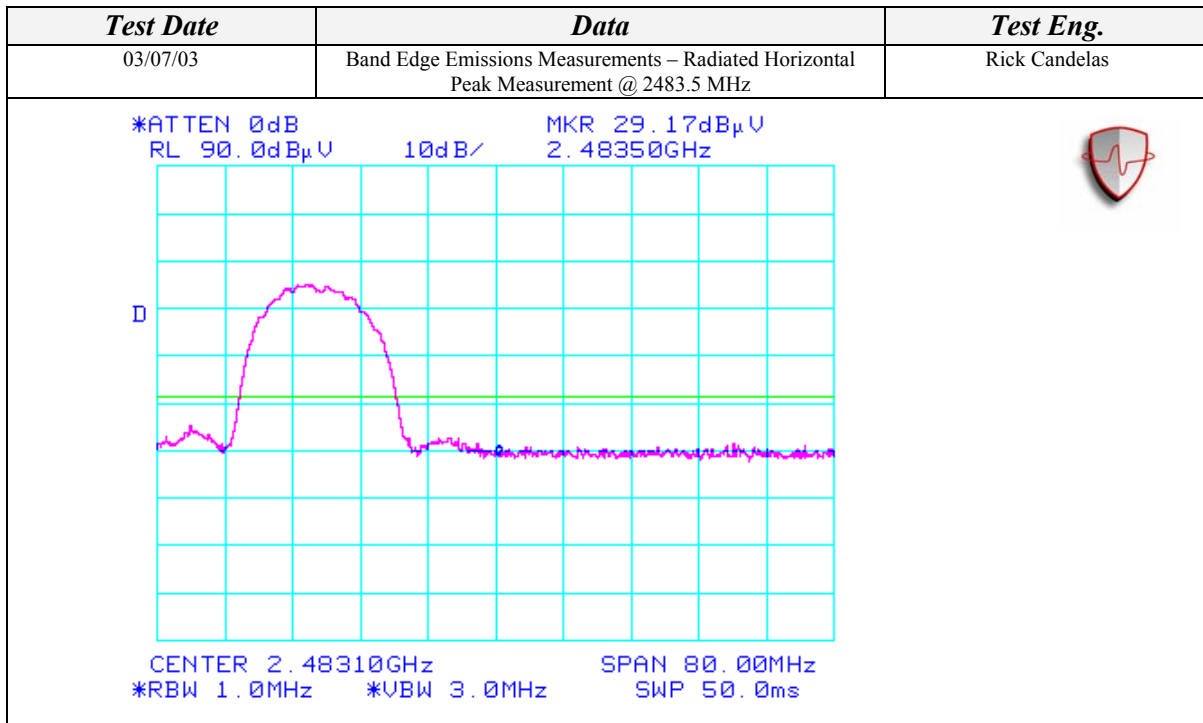
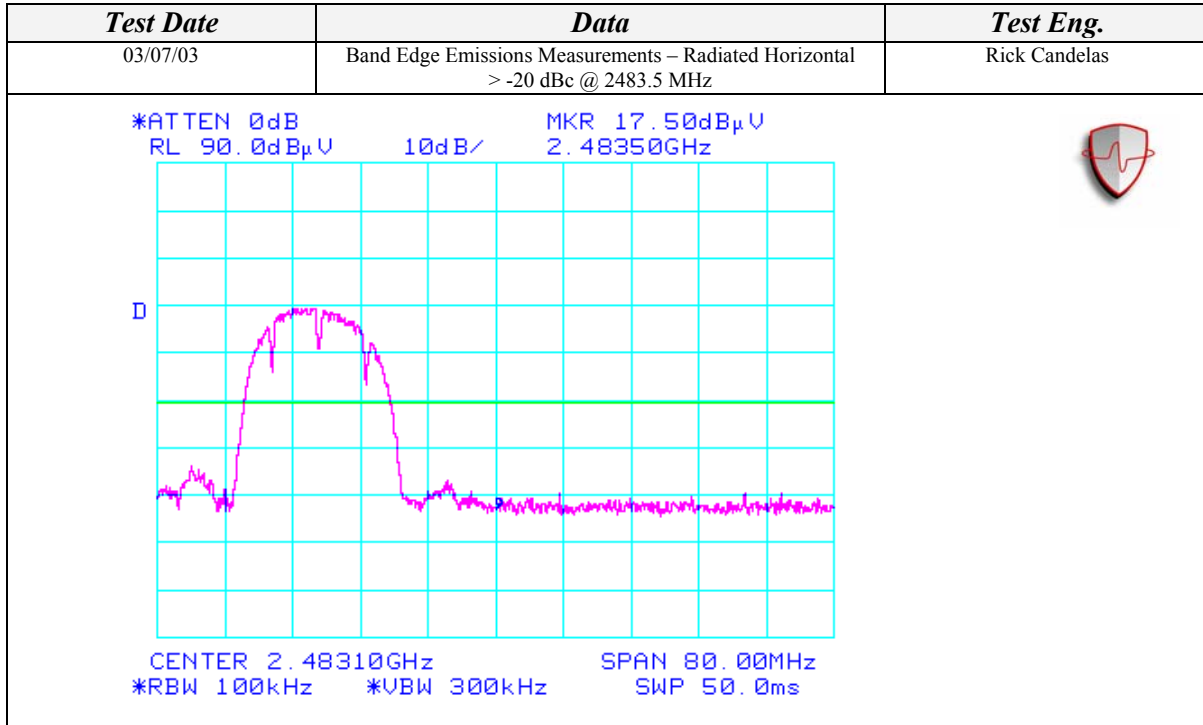
SPURIOUS RADIATED EMISSIONS (Continued)



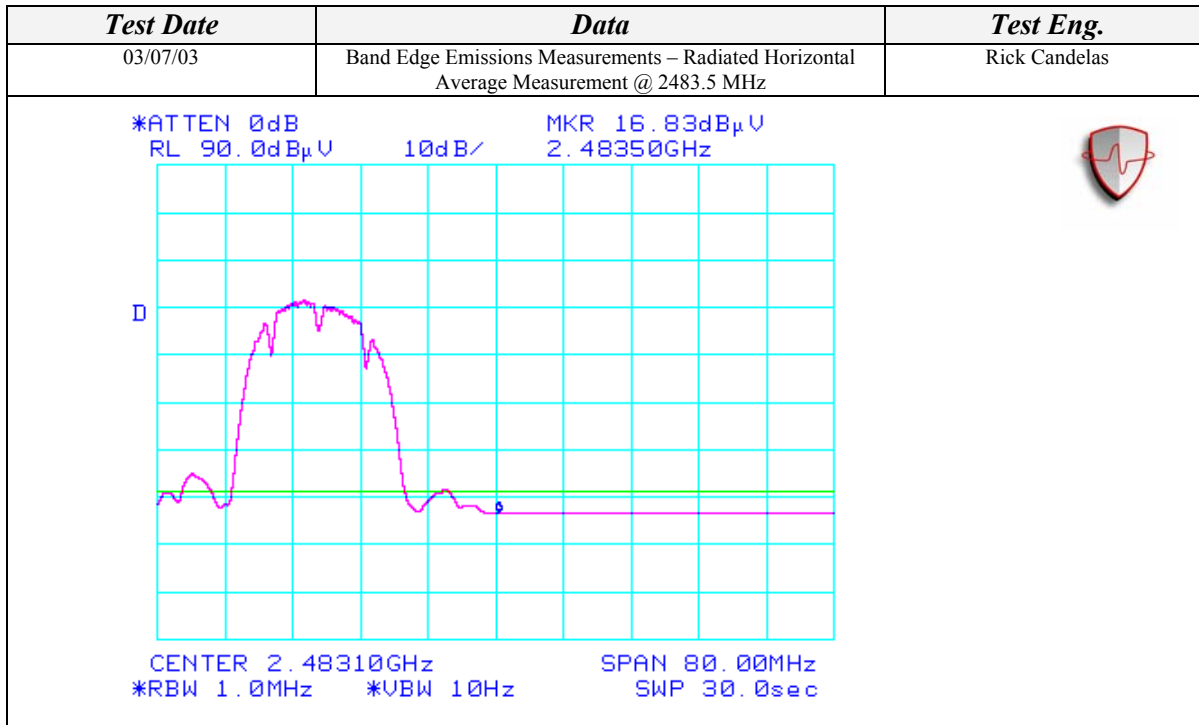
SPURIOUS RADIATED EMISSIONS (Continued)



SPURIOUS RADIATED EMISSIONS (Continued)



SPURIOUS RADIATED EMISSIONS (Continued)



SPURIOUS RADIATED EMISSIONS (Continued)

*Harmonic Measurements at Channels 1, 6, & 11@ 1Mbps Data Rate
Using Hitachi Monopole Antennas
Aegis Labs, Inc. File #: INTEL-030219-58*

Horizontal Open Field Maximized Data								
<i>Freq. (MHz)</i>	<i>Meter Reading (dBuV)</i>	<i>Antenna Height (cm)</i>	<i>Azimuth (degrees)</i>	<i>Quasi pk or AVG (dBuV)</i>		<i>Corrected Reading (dBuV)</i>	<i>Limits (dBuV)</i>	<i>Diff (dB) +=FAIL</i>
4823.55	42.50	100	135			44.50	74.00	-29.50
4823.55				29.77	A	31.77	54.00	-22.23
7236.25	42.83	100	135			48.25	74.00	-25.75
7236.25				30.00	A	35.42	54.00	-18.58
9648.31	44.83	100	180			51.95	83.04	-31.09
4873.91	41.00	100	180			43.17	74.00	-30.83
4873.91				28.52	A	30.69	54.00	-23.31
7311.30	43.00	100	180			48.30	74.00	-25.70
7311.30				29.93	A	35.23	54.00	-18.77
9747.72	45.50	100	180			52.89	82.99	-30.10
4923.68	41.17	100	180			43.51	74.00	-30.49
4923.68				29.08	A	31.42	54.00	-22.58
7385.83	43.83	100	180			49.01	74.00	-24.99
7385.83				30.80	A	35.98	54.00	-18.02
9847.97	45.67	100	180			53.34	80.76	-27.42

Vertical Open Field Maximized Data								
<i>Freq. (MHz)</i>	<i>Meter Reading (dBuV)</i>	<i>Antenna Height (cm)</i>	<i>Azimuth (degrees)</i>	<i>Quasi pk or AVG (dBuV)</i>		<i>Corrected Reading (dBuV)</i>	<i>Limits (dBuV)</i>	<i>Diff (dB) +=FAIL</i>
4824.04	42.67	100	90			44.64	74.00	-29.36
4824.04				30.98	A	32.95	54.00	-21.05
7236.29	42.83	100	135			48.15	74.00	-25.85
7236.29				30.10	A	35.42	54.00	-18.58
9648.10	44.83	100	135			52.00	81.91	-29.91
4874.06	41.33	100	180			43.45	74.00	-30.55
4874.06				29.29	A	31.41	54.00	-22.59
7310.89	42.50	100	180			47.73	74.00	-26.27
7310.89				29.87	A	35.10	54.00	-18.90
9748.45	45.33	100	180			52.83	84.02	-31.19
4924.22	41.33	100	225			43.60	74.00	-30.40
4924.22				29.11	A	31.38	54.00	-22.62
7386.20	43.17	100	225			48.31	74.00	-25.69
7386.20				30.38	A	35.52	54.00	-18.48
9848.20	45.17	100	135			52.98	83.13	-30.15

SPURIOUS RADIATED EMISSIONS (Continued)

*Spurious Emissions Measurements on Ch. 1 @ 1Mbps Data Rate
Using Hitachi Monopole Antennas
Aegis Labs, Inc. File #: INTEL-030219-59*

Horizontal Open Field Maximized Data								
<i>Freq. (MHz)</i>	<i>Meter Reading (dBuV)</i>	<i>Antenna Height (cm)</i>	<i>Azimuth (degrees)</i>	<i>Quasi pk or AVG (dBuV)</i>		<i>Corrected Reading (dBuV)</i>	<i>Limits (dBuV)</i>	<i>Diff (dB) +=FAIL</i>
1000.48	58.33	100	135			47.55	74.00	-26.45
1000.48				40.71	A	29.93	54.00	-24.07
1215.11	52.17	100	135			42.71	74.00	-31.29
1215.11				36.05	A	26.59	54.00	-27.41
1554.60	51.67	125	180			43.92	74.00	-30.08
1554.60				35.55	A	27.80	54.00	-26.20

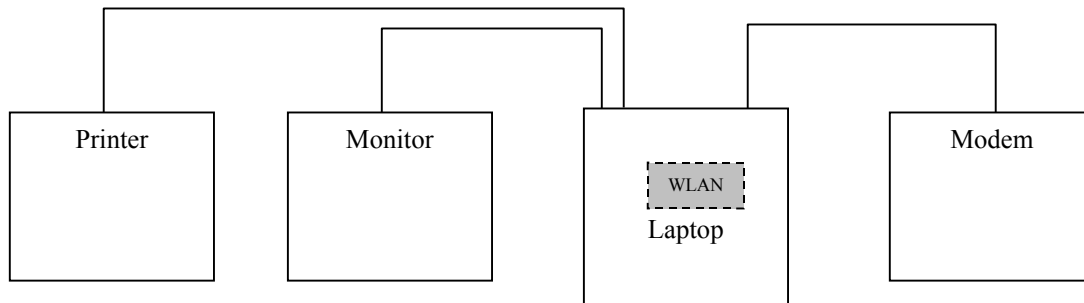
Vertical Open Field Maximized Data								
<i>Freq. (MHz)</i>	<i>Meter Reading (dBuV)</i>	<i>Antenna Height (cm)</i>	<i>Azimuth (degrees)</i>	<i>Quasi pk or AVG (dBuV)</i>		<i>Corrected Reading (dBuV)</i>	<i>Limits (dBuV)</i>	<i>Diff (dB) +=FAIL</i>
1010.51	59.83	125	135			49.26	74.00	-24.74
1010.51				42.12	A	31.55	54.00	-22.45
1215.44	52.33	100	0			42.93	74.00	-31.07
1215.44				35.59	A	26.19	54.00	-27.81
1544.11	59.00	100	125			51.26	74.00	-22.74
1544.11				48.56	A	40.82	54.00	-13.18
1650.37	54.00	100	180			46.97		46.97

SPURIOUS RADIATED EMISSIONS (Continued)

TEST EQUIPMENT USED					
Equipment Name	Manufacturer	Model Number	Serial Number	Calibration Due Date	Calibration Cycle
Spectrum Analyzer	Agilent	8564EC	4046A00387	02/28/04	2 Years
Preamplifier	Agilent	8449B	3008A01573	04/29/03	1 Year
Antenna - Horn	EMCO	3115	2230	09/14/03	1 Year
Temperature/Humidity Monitor	Dickson	TH550	7255185	01/08/03	1 Year

EUT ACCESSORIES			
Equipment Name	Manufacturer	Model Number	Serial Number
Laptop	Dell	Latitude	31011
AC Adapter	Dell	AA22850	B637 3Y 0006 0AB
Monitor	NEC	JC-1575VMA	2Y785821
Printer	Canon	BJC-4200	MT1-18
Modem	Hayes	5362US	A02153623145

BLOCK DIAGRAM



RADI SPURIOUS RADIATED EMISSIONS (Continued)

PHOTOGRAPHS



MAXIMUM PEAK OUTPUT POWER MEASUREMENT

CLIENT:	Dell Computer Corporation	DATE:	02/19/03
EUT:	Intel(R) PRO/Wireless LAN 3A Mini PCI Adapter	PROJECT NUMBER:	INTEL-030219-01
MODEL NUMBER:	WM3A2100	TEST ENGINEER:	Rick Candelas
SERIAL NUMBER:	MY-09Y200-43950-321-012B	SITE #:	2
CONFIGUARTION:	Installed in Dell laptop computer.	TEMPERATURE:	15 C
		HUMIDITY:	67% RH
		TIME:	9:00 AM

Standard:	FCC CFR 47, Part 15, 15.247(b)
Description:	Peak Output Power – Conducted
Results:	Maximum Peak Output Power is less than 1 W. 47.86 mW @ Channel 11 at a data rate of 1 Mbps

Frequency (MHz)	Rate (Mbps)	Power (dBm)	Cable Factor (dB)	Power Corrected (dBm)	Power (mW)
2412.00	1	16.51	0.15	16.66	46.34
2412.00	5.5	16.13	0.15	16.28	42.46
2412.00	11	16.08	0.15	16.23	41.98
2437.00	1	16.57	0.15	16.72	46.99
2437.00	5.5	16.11	0.15	16.26	42.27
2437.00	11	15.97	0.15	16.12	40.93
2462.00	1	16.65	0.15	16.80	47.86
2462.00	5.5	16.17	0.15	16.32	42.85
2462.00	11	16.10	0.15	16.25	42.17

NOTE: Using CRTU Ver. 1.0.0.1000 software provided by Intel Corporation to set power limits.

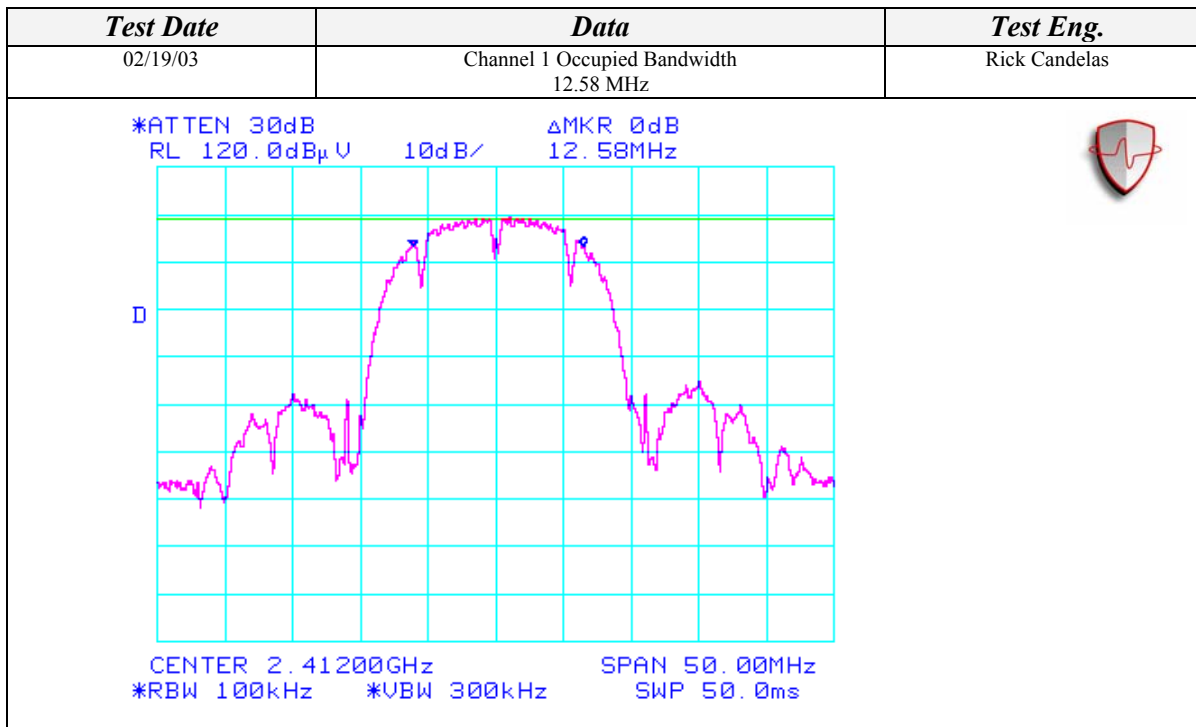
OCCUPIED BANDWIDTH MEASUREMENT

CLIENT:	Dell Computer Corporation	DATE:	02/19/03
EUT:	Intel(R) PRO/Wireless LAN 3A Mini PCI Adapter	PROJECT NUMBER:	INTEL-030219
MODEL NUMBER:	WM3A2100	TEST ENGINEER:	Rick Candelas
SERIAL NUMBER:	MY-09Y200-43950-321-012B	SITE #:	2
CONFIGURATION:	Installed in Dell laptop computer.	TEMPERATURE:	24 C
		HUMIDITY:	50% RH
		TIME:	1:00 PM

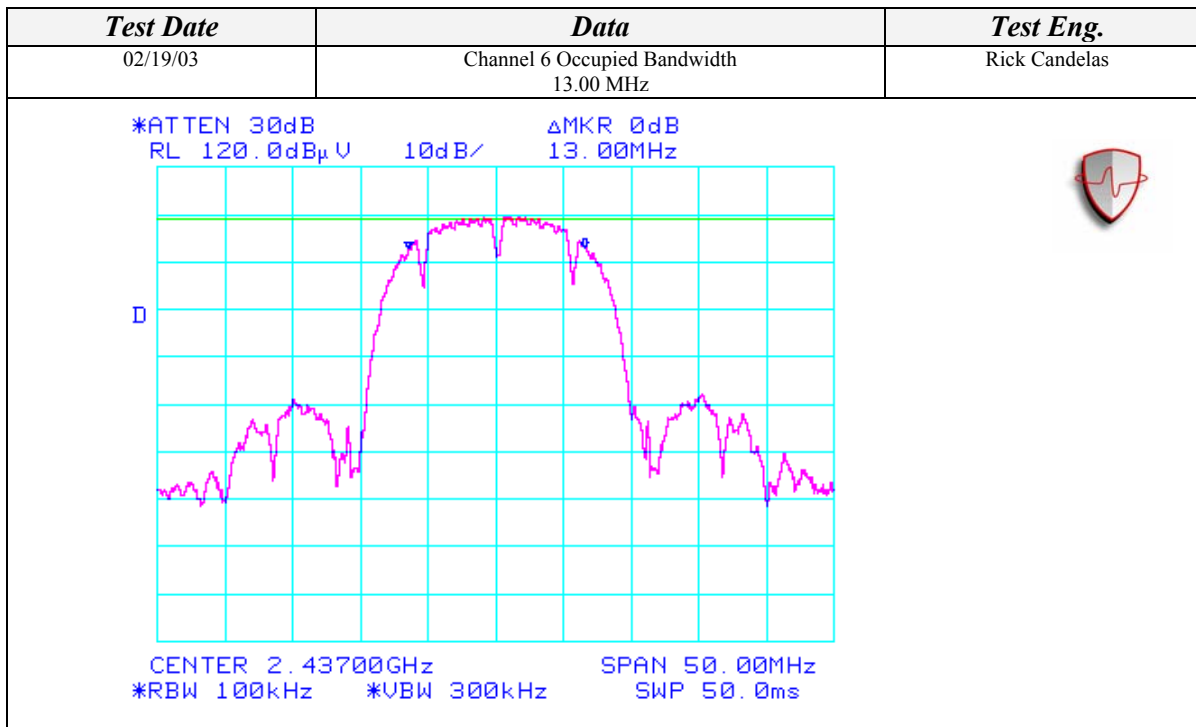
Standard:	FCC CFR 47, Part 15, 15.247(a)(2)
Description:	Occupied Bandwidth Measurement
Results:	6dB bandwidth is at least 500 kHz.

TEST RESULTS SUMMARY	
Data	Result
Channel 1 Occupied Bandwidth	12.58 MHz 6 dB Bandwidth
Channel 6 Occupied Bandwidth	13.00 MHz 6 dB Bandwidth
Channel 11 Occupied Bandwidth	13.00 MHz 6dB Bandwidth

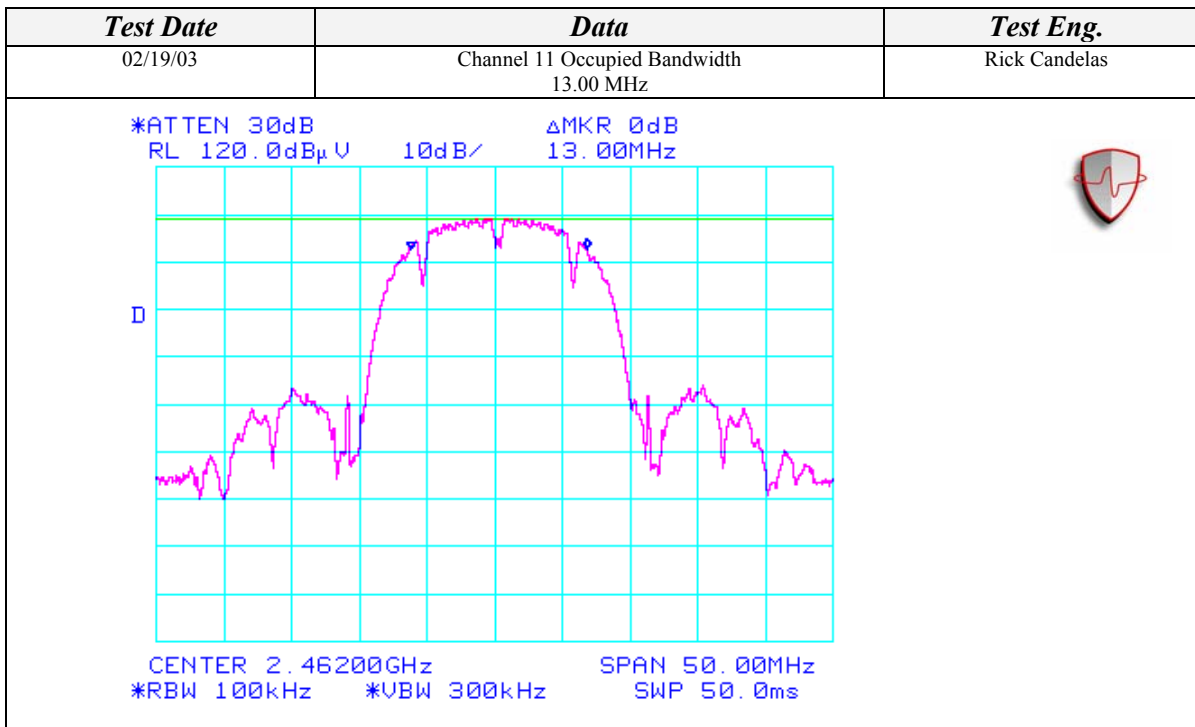
OCCUPIED BANDWIDTH MEASUREMENT (Continued)



OCCUPIED BANDWIDTH MEASUREMENT (Continued)



OCCUPIED BANDWIDTH MEASUREMENT (Continued)



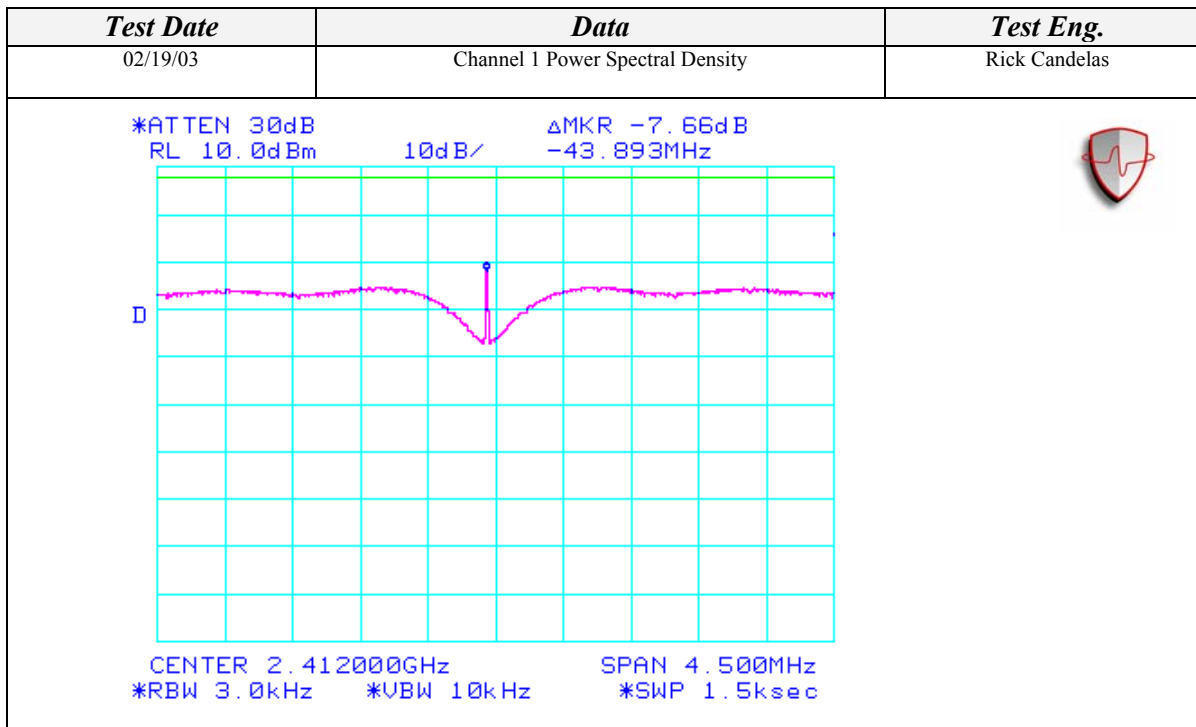
SPECTRAL POWER DENSITY MEASUREMENT

CLIENT:	Dell Computer Corporation	DATE:	02/19/03
EUT:	Intel(R) PRO/Wireless LAN 3A Mini PCI Adapter	PROJECT NUMBER:	INTEL-030219
MODEL NUMBER:	WM3A2100	TEST ENGINEER:	Rick Candelas
SERIAL NUMBER:	MY-09Y200-43950-321-012B	SITE #:	2
CONFIGURATION:	Installed in Dell laptop computer.	TEMPERATURE:	25 C
		HUMIDITY:	50% RH
		TIME:	2:00 PM

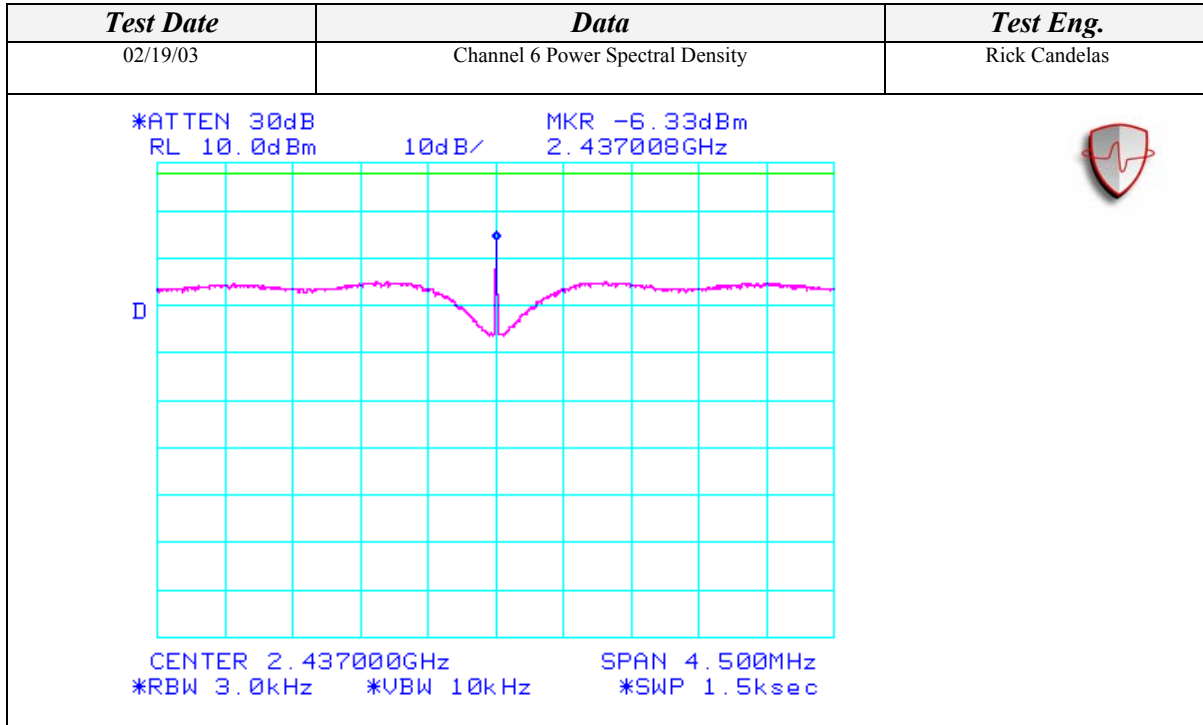
Standard:	FCC CFR 47, Part 15, 15.247(D)
Description:	Power Spectral Density Measurement
Results:	Transmitted power density averaged over any 1 second interval is not greater than 8 dBm in any 3 kHz bandwidth within these bands

TEST RESULTS SUMMARY	
Data	Result
Channel 1 Power Spectral Density	-7.66 dBm – Pass
Channel 6 Power Spectral Density	-6.33 dBm – Pass
Channel 11 Power Spectral Density	-12.67 dBm - Pass

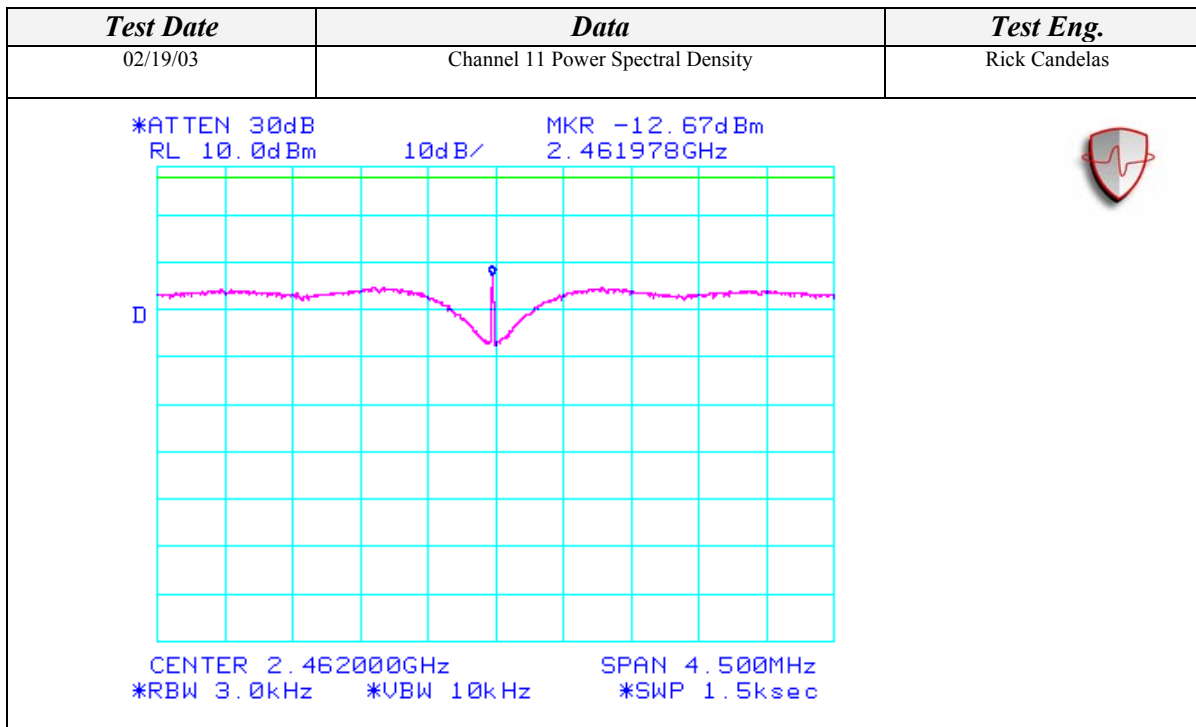
SPECTRAL POWER DENSITY MEASUREMENT (Continued)



SPECTRAL POWER DENSITY MEASUREMENT (Continued)



SPECTRAL POWER DENSITY MEASUREMENT (Continued)



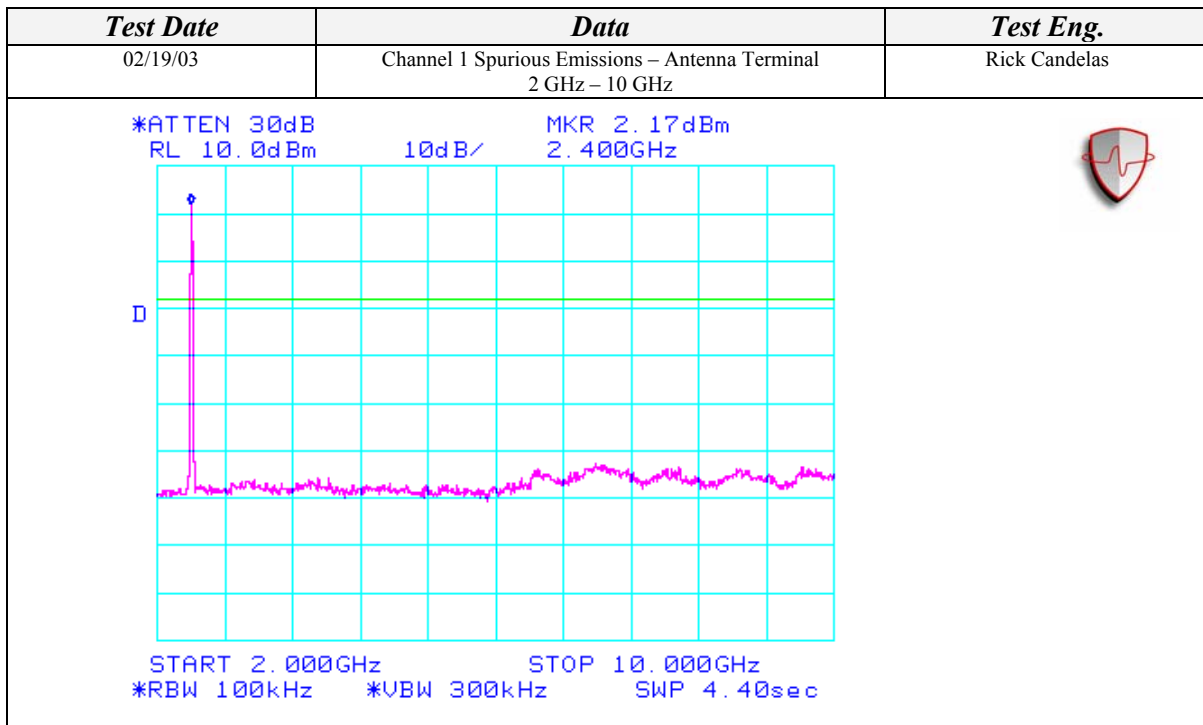
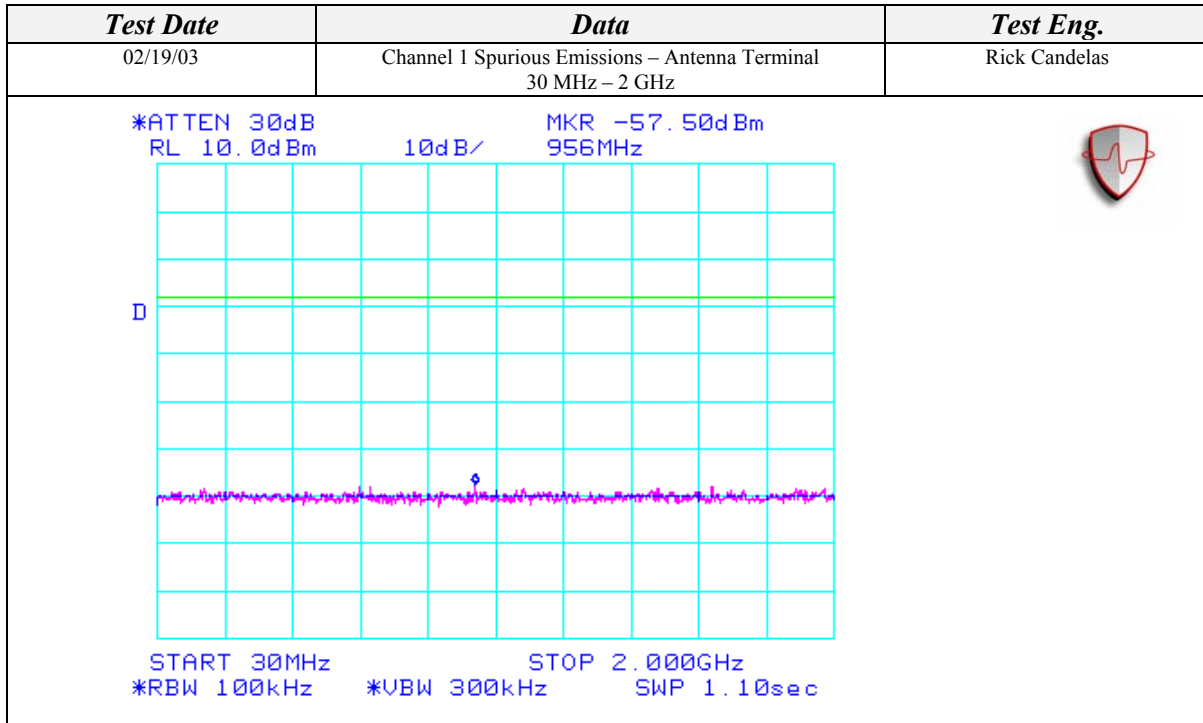
SPURIOUS EMISSIONS MEASUREMENT AT THE ANTENNA TERMINAL

CLIENT:	Dell Computer Corporation	DATE:	02/19/03
EUT:	Intel(R) PRO/Wireless LAN 3A Mini PCI Adapter	PROJECT NUMBER:	INTEL-030219
MODEL NUMBER:	WM3A2100	TEST ENGINEER:	Rick Candelas
SERIAL NUMBER:	MY-09Y200-43950-321-012B	SITE #:	2
CONFIGURATION:	Installed in Dell Laptop Computer.	TEMPERATURE:	20 C
		HUMIDITY:	50% RH
		TIME:	3:00 PM

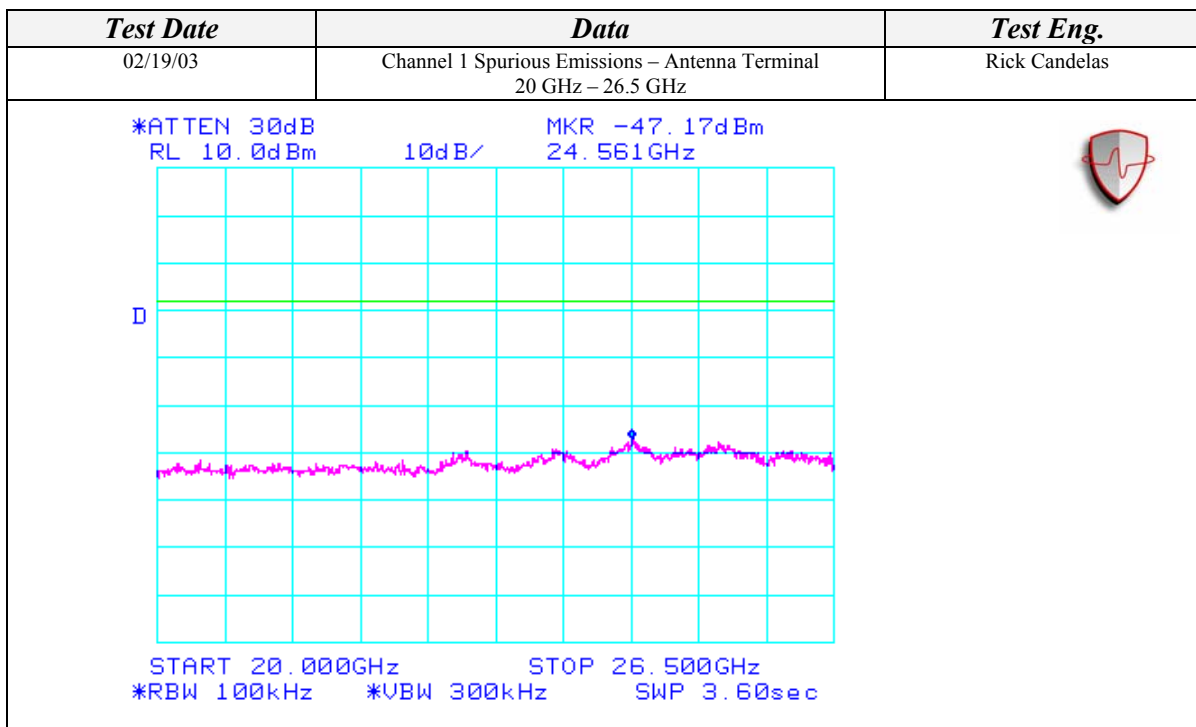
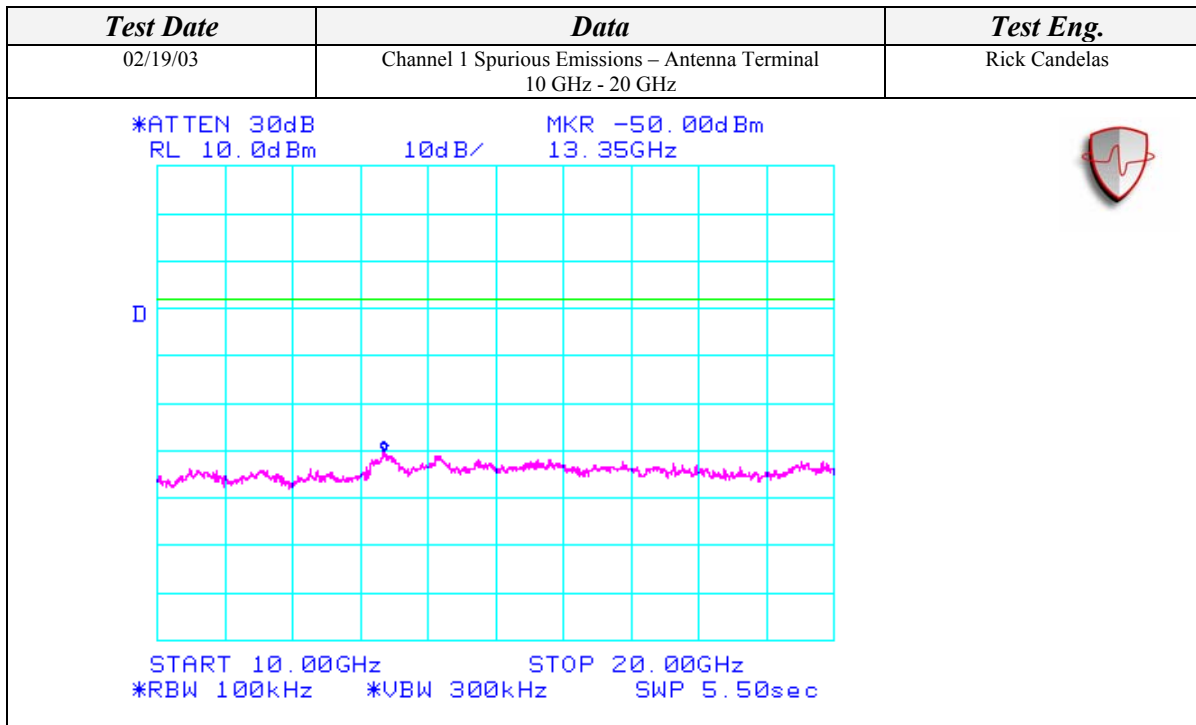
Standard:	FCC CFR 47, Part 15, 15.247(c)
Description:	Conducted Spurious Emissions
Results:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

TEST RESULTS SUMMARY	
Data	Result
Channel 1 Spurious Emissions – Antenna Terminal - 30MHz – 2GHz	Max Spur Signal @ -57.50 dBm – Pass
Channel 1 Spurious Emissions – Antenna Terminal - 2GHz – 10GHz	Max Spur Signal @ -56.00 dBm – Pass
Channel 1 Spurious Emissions – Antenna Terminal - 10GHz – 20GHz	Max Spur Signal @ -50.00 dBm – Pass
Channel 1 Spurious Emissions – Antenna Terminal - 20GHz – 26.5GHz	Max Spur Signal @ -47.17 dBm – Pass
Channel 6 Spurious Emissions – Antenna Terminal - 30MHz – 2GHz	Max Spur Signal @ -57.33 dBm – Pass
Channel 6 Spurious Emissions – Antenna Terminal - 2GHz – 10GHz	Max Spur Signal @ -57.00 dBm – Pass
Channel 6 Spurious Emissions – Antenna Terminal - 10GHz – 20GHz	Max Spur Signal @ -50.50 dBm – Pass
Channel 6 Spurious Emissions – Antenna Terminal - 20GHz – 26.5GHz	Max Spur Signal @ -47.50 dBm – Pass
Channel 11 Spurious Emissions – Antenna Terminal - 30MHz – 2GHz	Max Spur Signal @ -57.83 dBm – Pass
Channel 11 Spurious Emissions – Antenna Terminal - 2GHz – 10GHz	Max Spur Signal @ -56.00 dBm – Pass
Channel 11 Spurious Emissions – Antenna Terminal - 10GHz – 20GHz	Max Spur Signal @ -50.33 dBm – Pass
Channel 11 Spurious Emissions – Antenna Terminal - 20GHz – 26.5GHz	Max Spur Signal @ -47.00 dBm – Pass

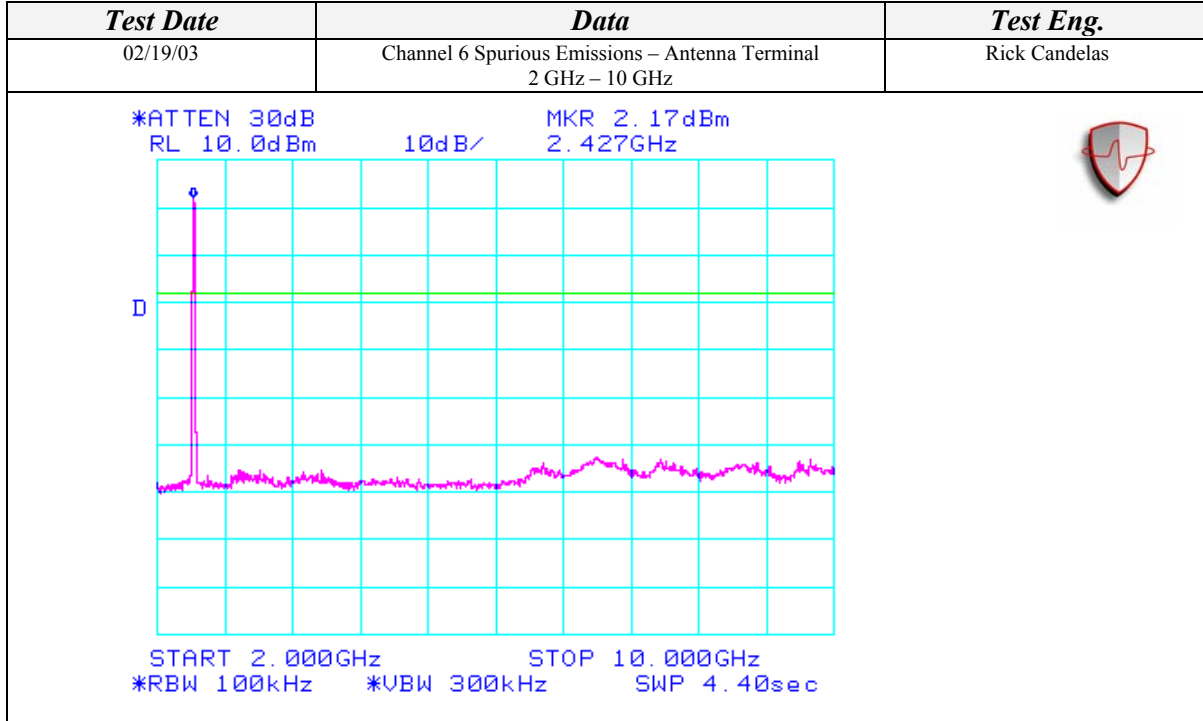
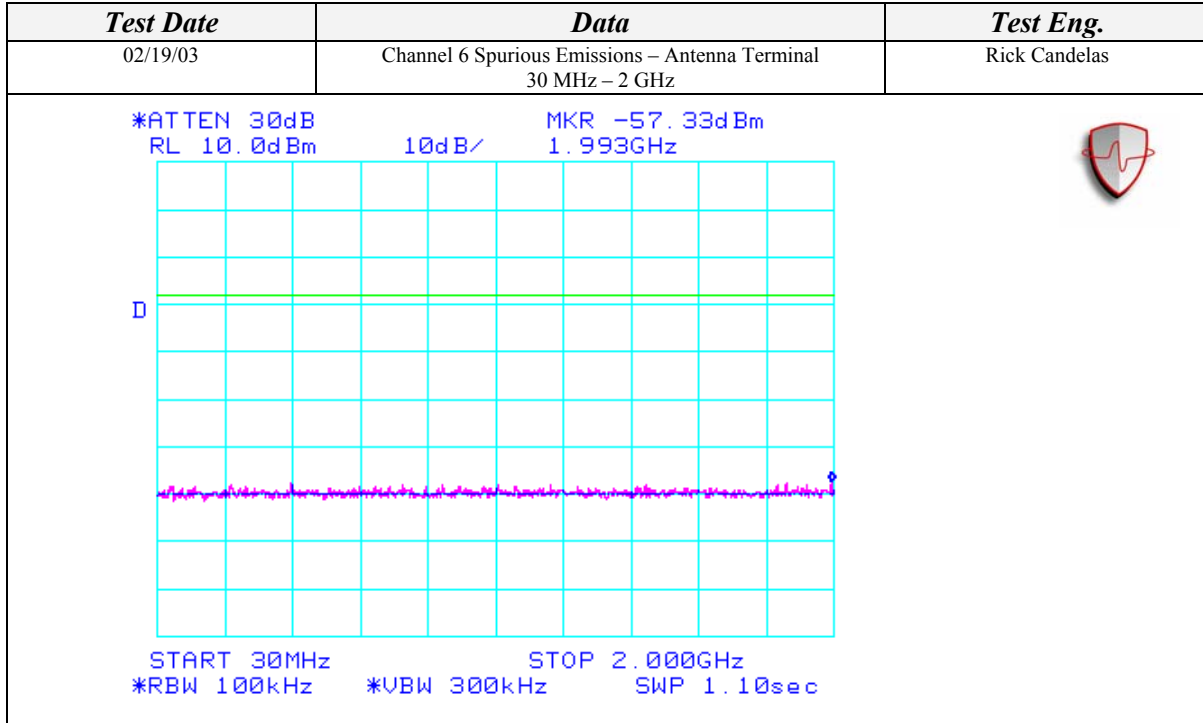
SPURIOUS EMISSIONS MEASUREMENT AT THE ANTENNA TERMINAL (Continued)



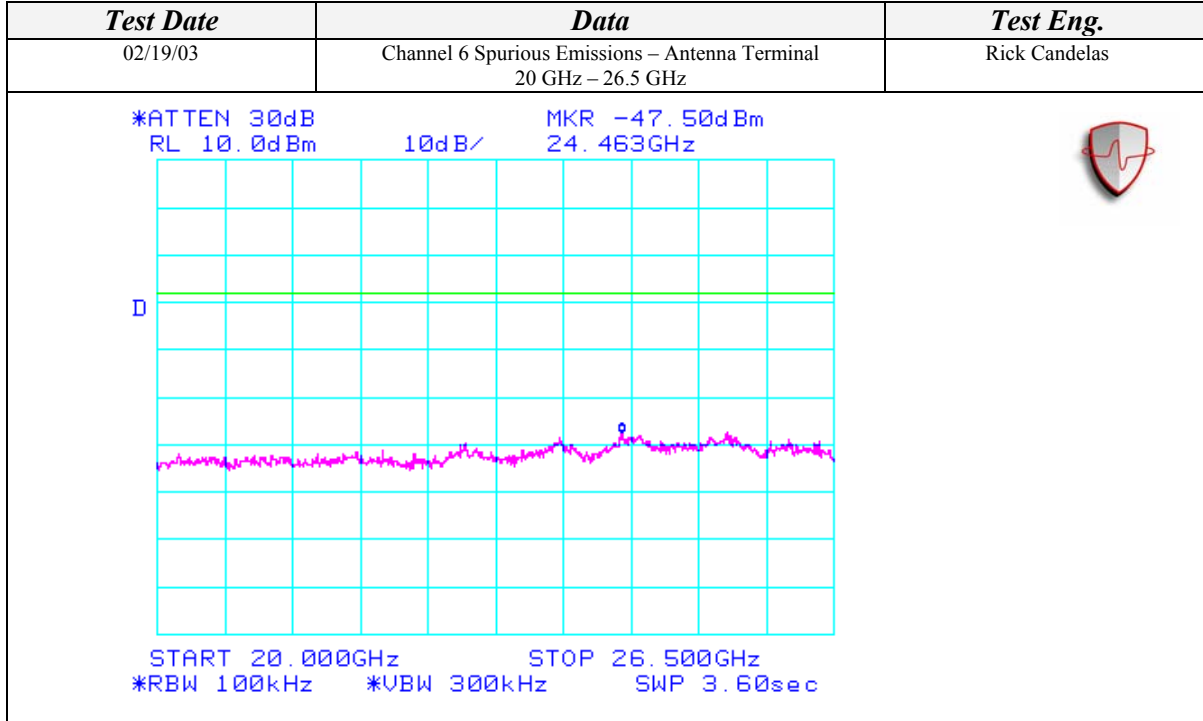
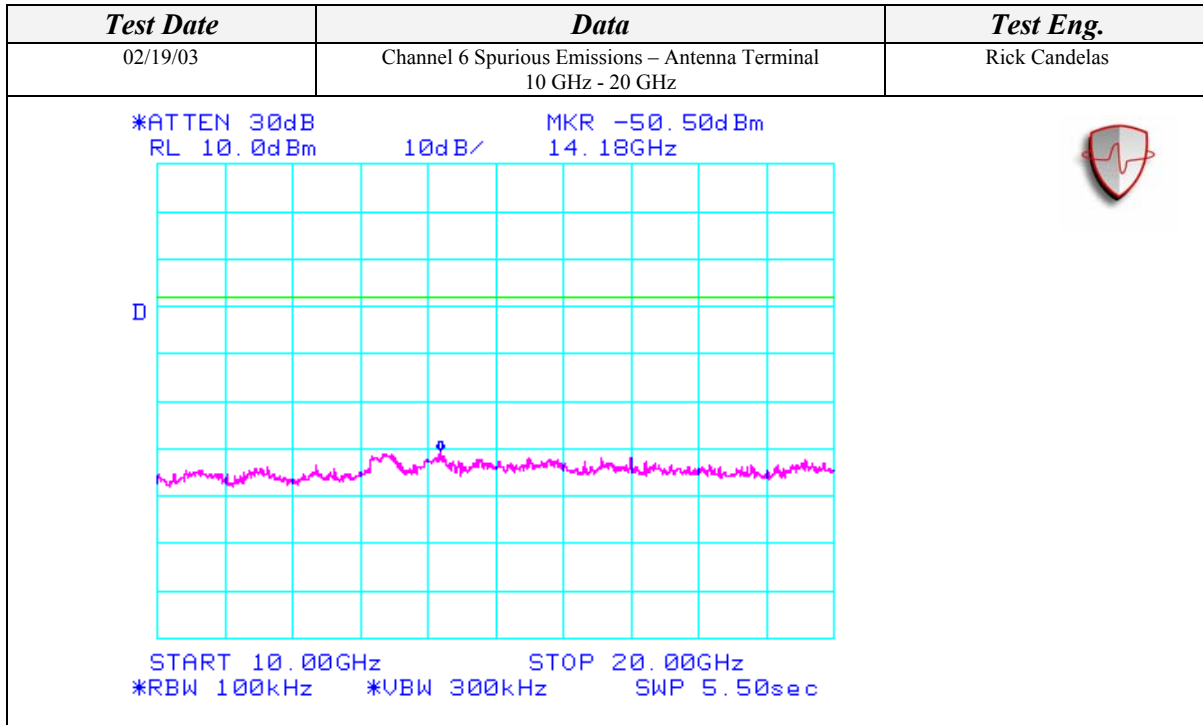
SPURIOUS EMISSIONS MEASUREMENT AT THE ANTENNA TERMINAL (Continued)



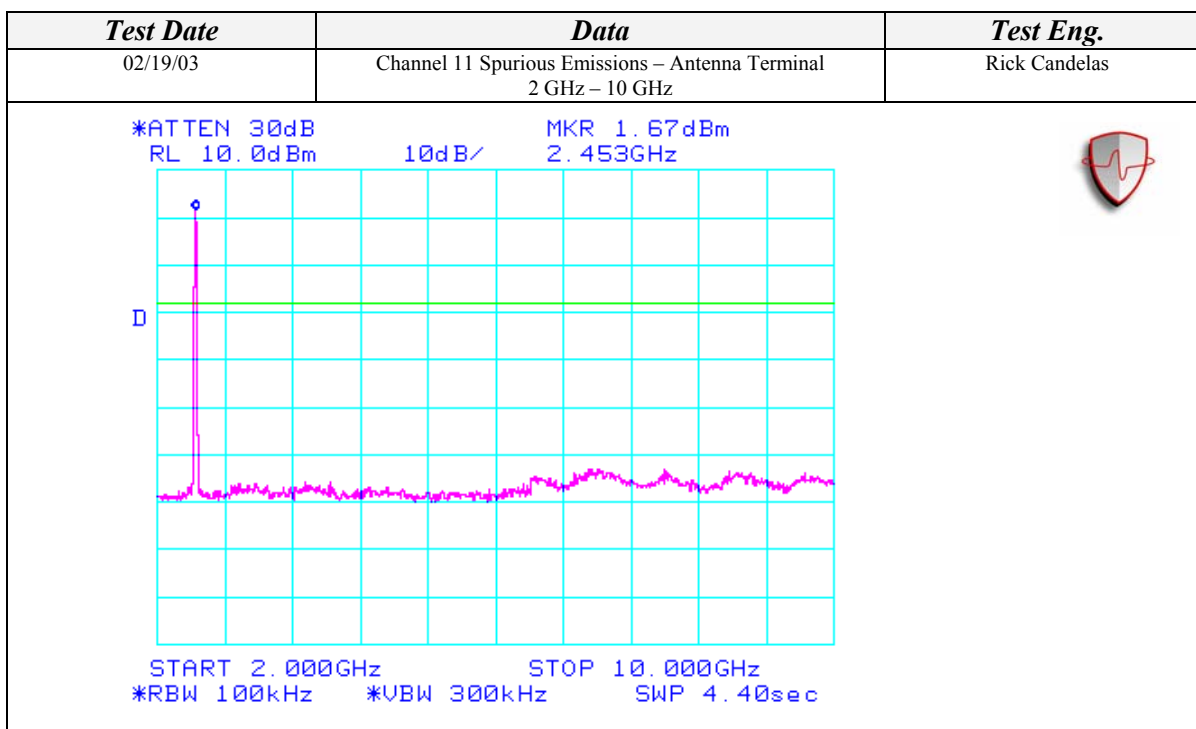
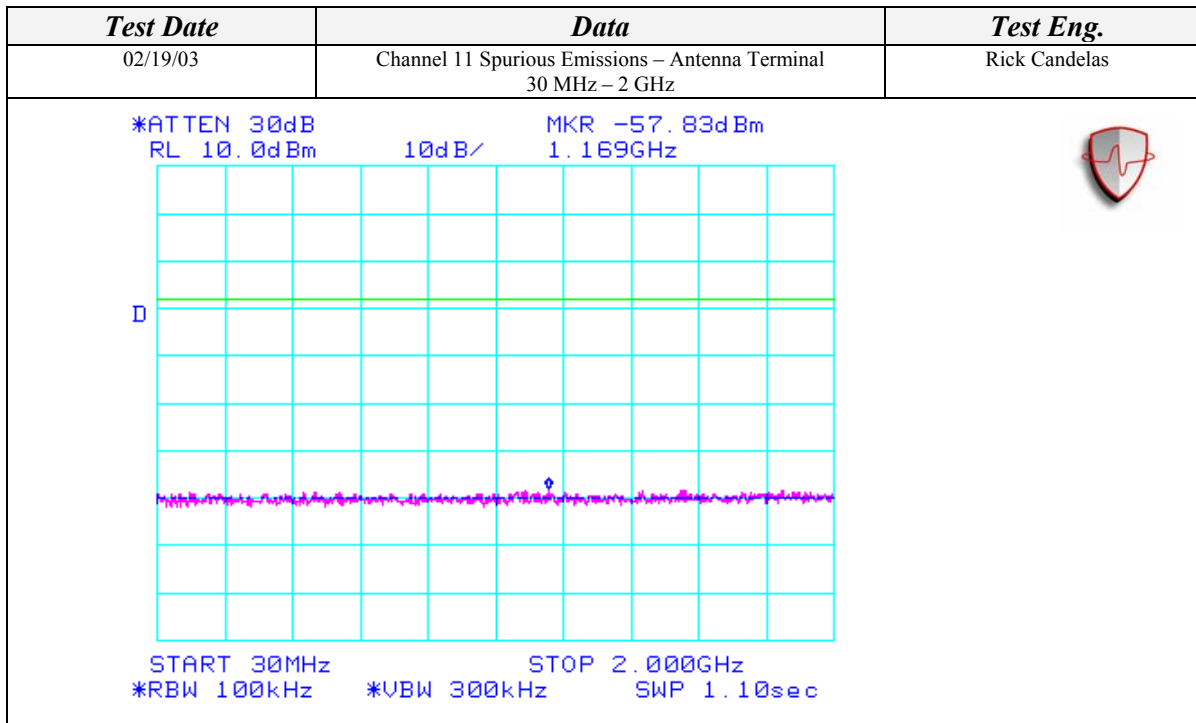
SPURIOUS EMISSIONS MEASUREMENT AT THE ANTENNA TERMINAL (Continued)



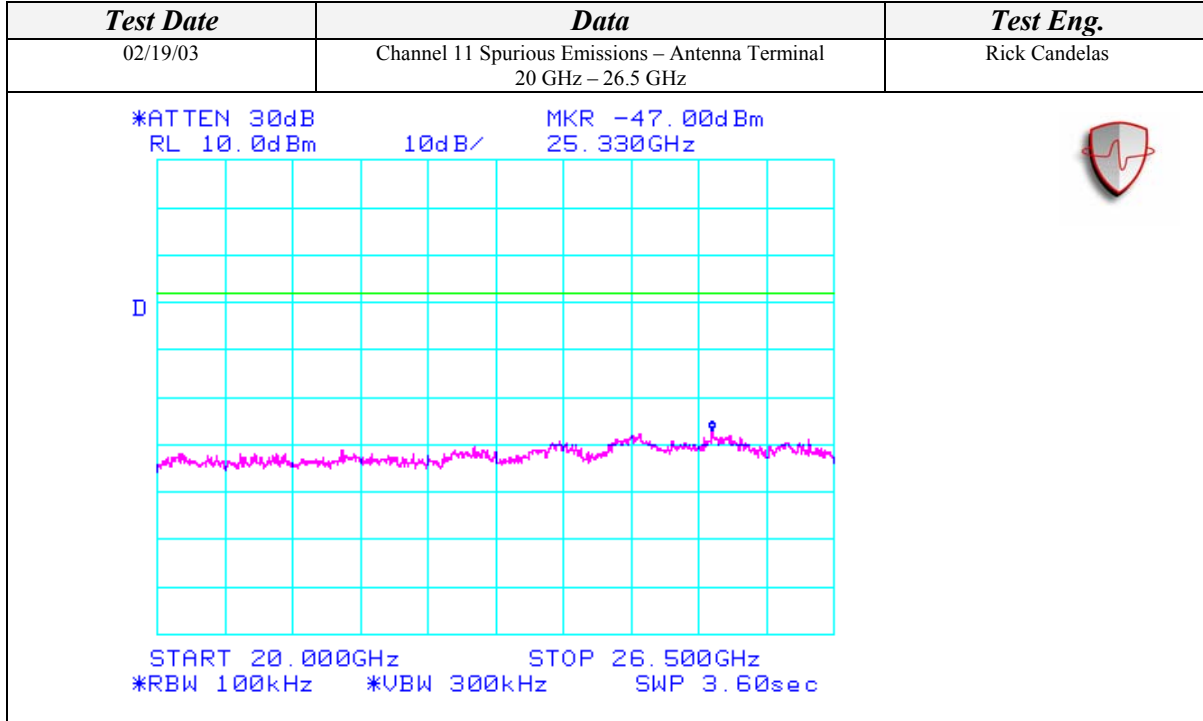
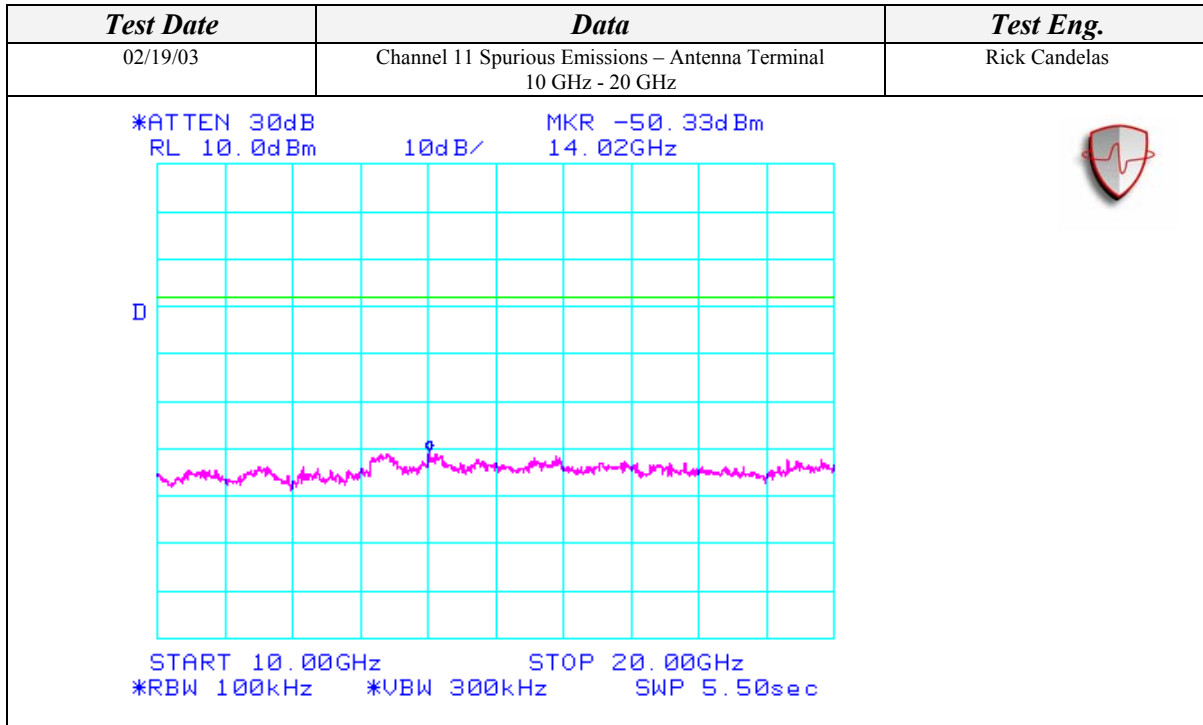
SPURIOUS EMISSIONS MEASUREMENT AT THE ANTENNA TERMINAL (Continued)



SPURIOUS EMISSIONS MEASUREMENT AT THE ANTENNA TERMINAL (Continued)



SPURIOUS EMISSIONS MEASUREMENT AT THE ANTENNA TERMINAL (Continued)



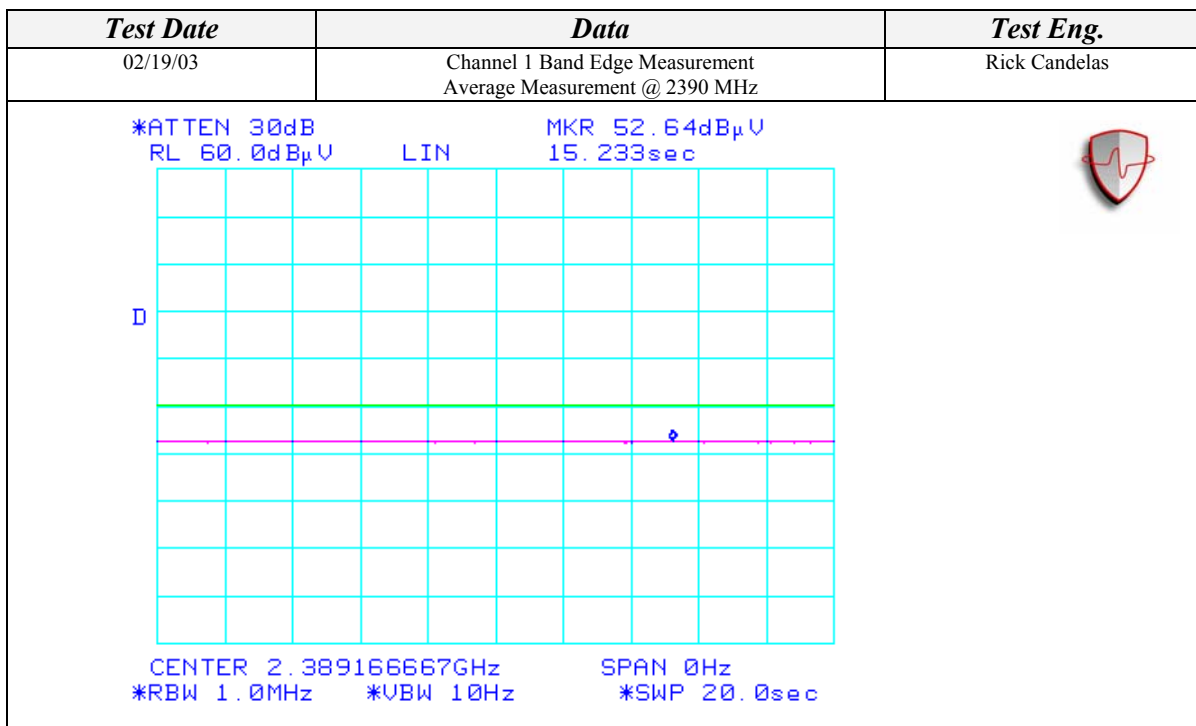
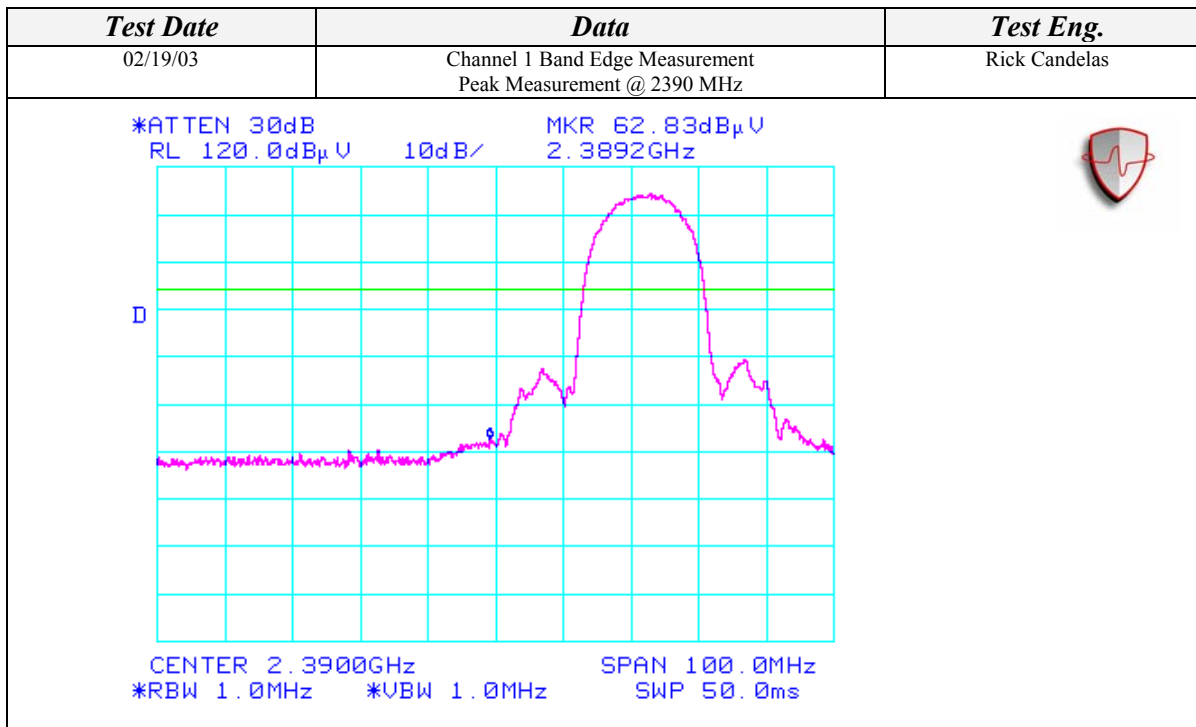
BAND EDGE EMISSIONS MEASUREMENT AT THE ANTENNA TERMINAL

CLIENT:	Dell Computer Corporation	DATE:	02/19/03
EUT:	Intel(R) PRO/Wireless LAN 3A Mini PCI Adapter	PROJECT NUMBER:	INTEL-030219
MODEL NUMBER:	WM3A2100	TEST ENGINEER:	Rick Candelas
SERIAL NUMBER:	MY-09Y200-43950-321-012B	SITE #:	2
CONFIGURATION:	Installed in Dell Laptop Computer.	TEMPERATURE:	25 C
		HUMIDITY:	35% RH
		TIME:	4:00 PM

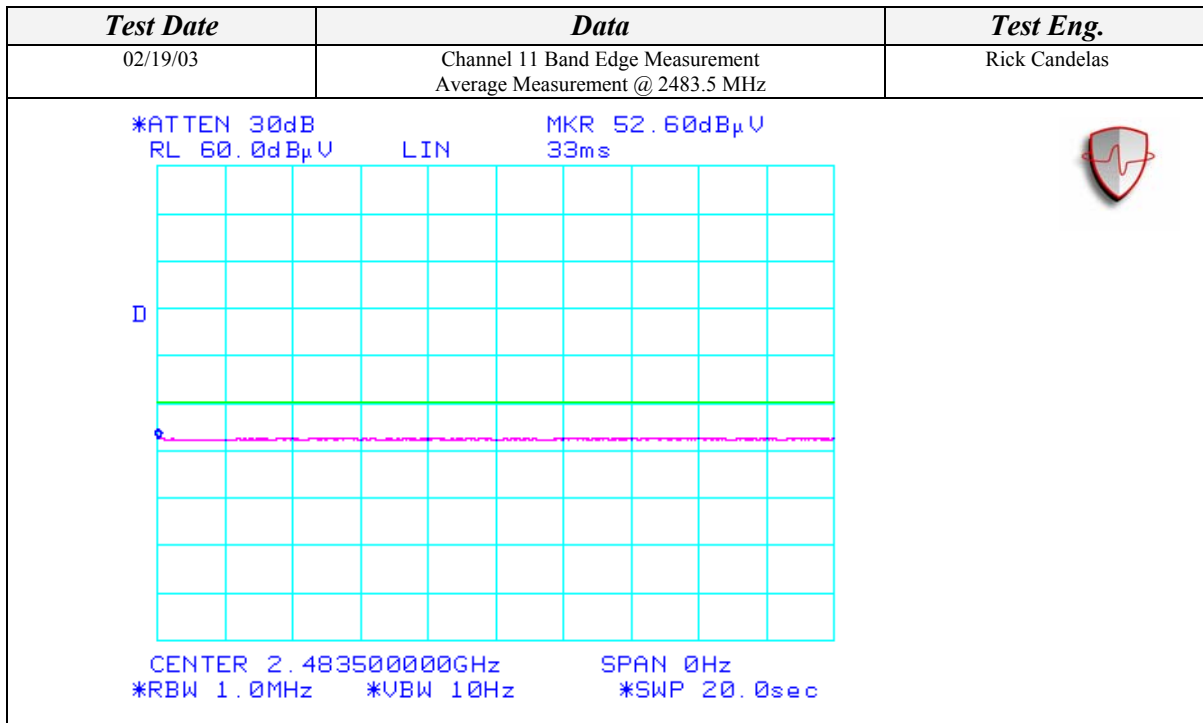
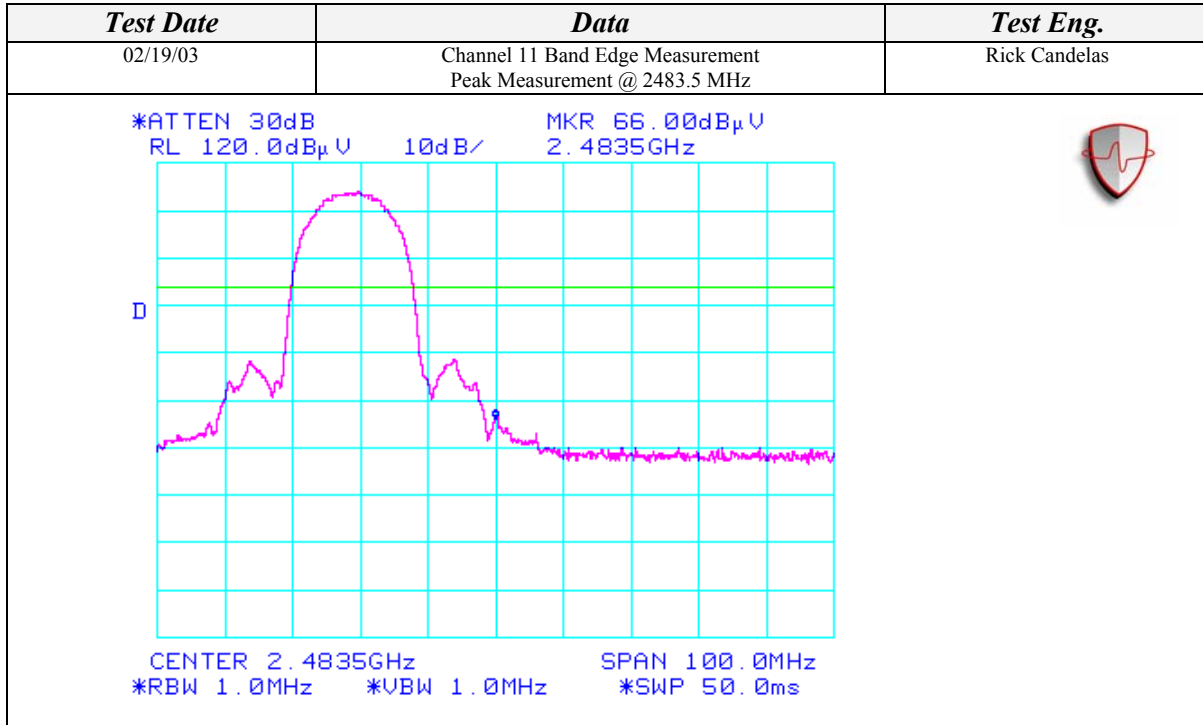
Standard:	FCC CFR 47, Part 15, 15.247(c)
Description:	Conducted Band Edge Emissions
Results:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

TEST RESULTS SUMMARY	
Data	Result
Channel 1 Band Edge Measurement Peak Measurement @ 2390 MHz	>20 dBc – Pass
Channel 1 Band Edge Measurement Average Measurement @ 2390 MHz	52.64 dBuV - Pass
Channel 11 Band Edge Measurement Peak Measurement @ 2483.5 MHz	>20 dBc – Pass
Channel 11 Band Edge Measurement Average Measurement @ 2483.5 MHz	52.60 dBuV - Pass

CONDUCTED BAND EDGE EMISSIONS MEASUREMENT (Continued)



CONDUCTED BAND EDGE EMISSIONS MEASUREMENT (Continued)

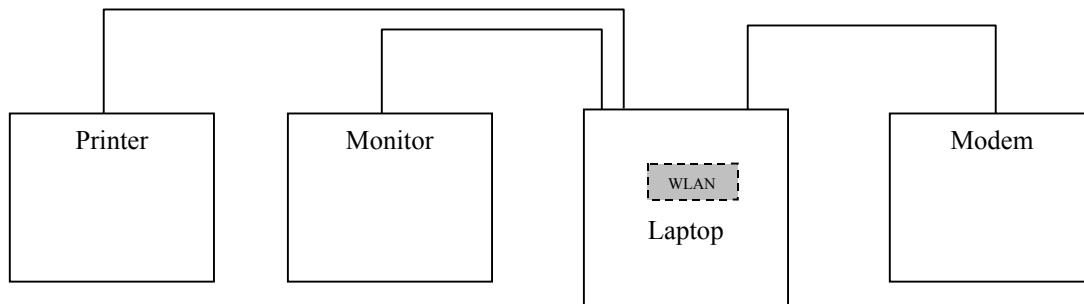


ALL CONDUCTED MEASUREMENTS SETUP

TEST EQUIPMENT USED					
Equipment Name	Manufacturer	Model Number	Serial Number	Calibration Due Date	Calibration Cycle
Spectrum Analyzer	Agilent	8564EC	4046A00387	02/28/04	2 Years
DC Block	Inmet	8039	N/A	N/A	N/A
Power Meter	Rohde & Schwarz	NRVS	DE30863	11/24/03	1 Year
Power Sensor	Leistungsmesskoph	NRV-Z5	844855/012	11/24/03	1 Year
Temperature / Humidity Monitor	Dickson	TH550	7255185	01/08/04	1 Year

EUT ACCESSORIES			
Equipment Name	Manufacturer	Model Number	Serial Number
Laptop	Dell	Latitude	221131
AC Adapter	Dell	PA-1650-050	CN-054092-48010-29B-00B9
Monitor	NEC	JC-1575VMA	2Y785821
Printer	Canon	BJC-4200	MT1-18
Modem	Hayes	5362US	A02153623145

BLOCK DIAGRAM



ALL CONDUCTED MEASUREMENTS SETUP (Continued)

PHOTOGRAPHS

