

Sierra Wireless Inc.
Emissions Testing Performed on the
CDPD Modem
Model: MP210V
FCC Part 15 Subpart B Class B
& FCC Part 22

Date of Test: December 16 - 17, 1999

Job # J99032362
Report # J99032362a

Total No. of Pages Contained in this Report: 8 + data pages

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Report No. J990032362a

Report is issued to the named APPLICANT and is VALID ONLY for the equipment identified hereon for use under the rules and regulations listed below.

Equipment Under Test: CDPD Modem
Trade Name: Sierra Wireless
Model No.: MP210V
Serial No.: 206-00094808


Applicant: Sierra Wireless Inc.
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Applicable Regulation: FCC Part 15, Subpart B, and
FCC Part 22


Equipment Class: Class B

Date of Test: December 16 - 17, 1999

We attest to the accuracy of this report:



Xi-ming Yang
Test Engineer



David Chernomordik, Ph.D.
Engineering Manager

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1.0 Introduction

This report is designed to show compliance with the following FCC regulations:

- Part 22 sections 2.993 Field Strength of Spurious Radiation
- Part 15, Subpart B Rules for an unintentional radiator

The test procedures, as described in American National Standards Institute C63.4-1992, were employed. A description of the product and operating configuration, the various provisions of the rules, the methods for determining compliance, and a detailed summary of the results are included within this test report.

2.0 Description of Equipment

The Sierra Wireless Inc. Model Mp210V is a CDPD wireless cellular modem. A version of the sample was received on December 16, 1999 in good condition.

3.0 Test Summary

Test results are given in full in section 5.

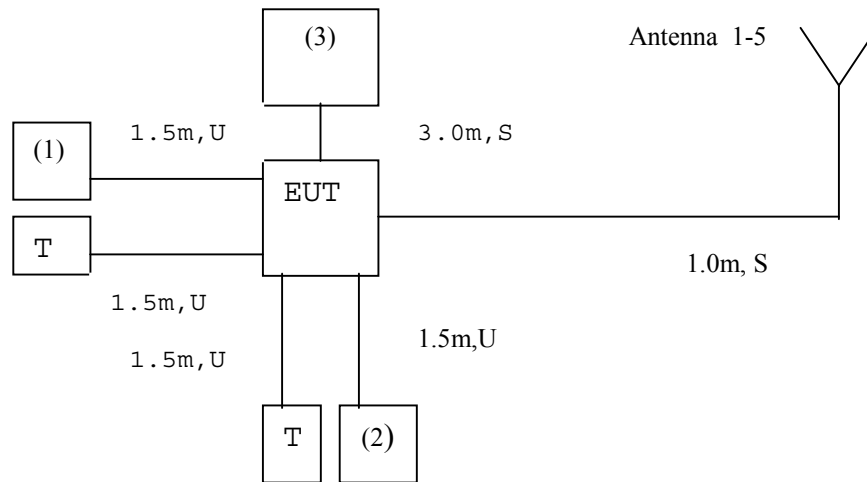
Summary of Test Results		
FCC Rule	Description	Test Results
2.993	Field Strength of Spurious Radiation	Pass
15.109	Field Strength of Spurious Radiation	Pass

4.0 System Test Configuration

4.1 Support Equipment

Item #	Description	Model No.	Serial No.	FCC ID
1	IBM Computer	ThinkPad	N/A	JRUANB-5
2	GW DC Power Supply	GPR-6030	N/A	N/A
3	Trimble Antenna GPS	28367-00	21D70081	NA

4.2 Block Diagram of Test Setup



S: Shielded
 U: Unshielded

4.3 Justification

The system was configured for testing in a typical fashion (as a customer would normally use it).

4.4 Software Exercise Program

No special software was used during the tests.

4.5 Mode of Operation During Test

Transmitting full power (4W).

4.6 Modifications Required for Compliance

The following modifications were installed during compliance testing in order to bring the product into compliance (Please note that this list does not include changes made specifically by Sierra Wireless Inc. prior to compliance testing):

No modifications were installed by Intertek Testing Services.

5.0 **Field Strength of Spurious Radiation**, FCC § 2.993, §15.109

5.1 Test Procedure

The test was performed on an Open Site. An antenna was connected to the EUT. The EUT was placed on a wooden turntable. The support equipment was placed on the ground plane. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization, as well as EUT azimuth, were varied in order to identify the maximum level of emissions from the EUT. The frequency range up to tenth harmonic of the fundamental frequency was investigated. Test was performed at 3 fundamental frequencies: 824.01 MHz, 836.41 MHz and 848.95 MHz.

The spurious harmonic attenuation was calculated as the difference between Field Strength (E) in dB(uV/m) at the fundamental frequency and at the spurious emission frequency. The Field Strength at fundamental frequency was measured by an antenna on an open site.

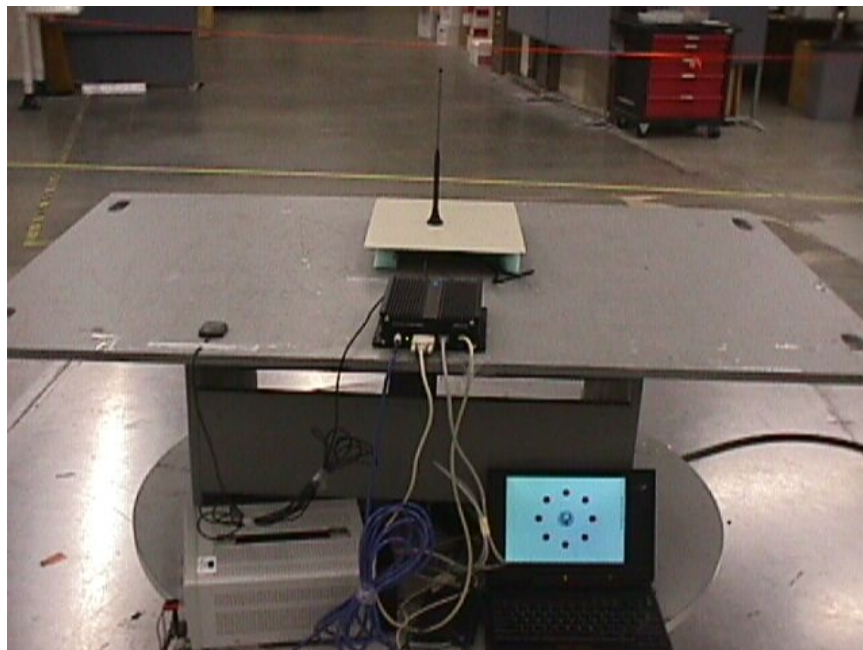
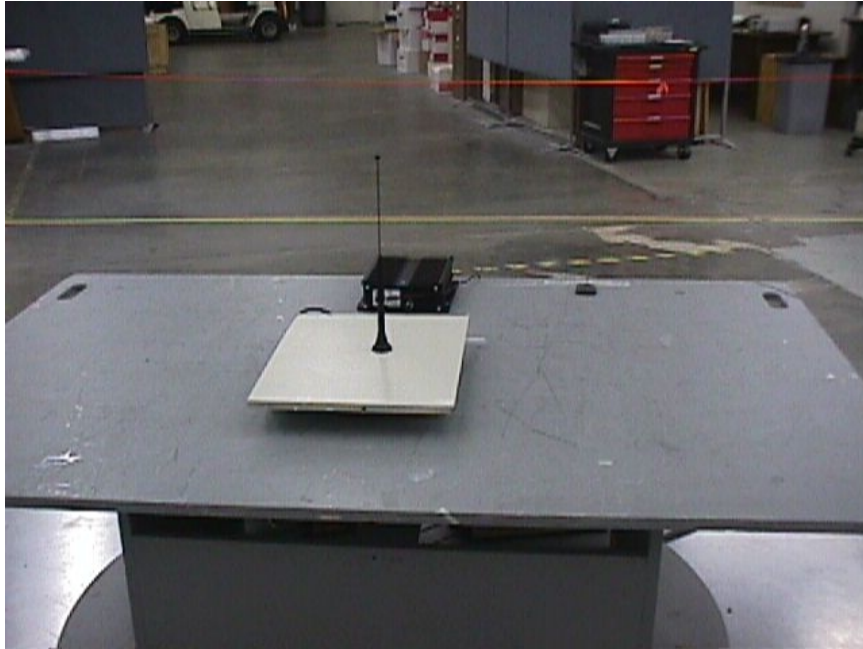
Additionally, FCC Part 15 subpart B (unintentional radiators) radiated emission test was performed in the frequency range from 30 MHz to 1000 MHz.

5.2 Test Results

Please refer to the attached data sheets.

The EUT passed the test.

5.3 Configuration Photographs – Radiated Emissions



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1365 Adams Court, Menlo Park, CA 94025

Sierra Wireless Inc., CDPD Modem

Date of Test: December 16 -17, 1999

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7.0 Test Equipment

7.1 Equipment List

All test sites are FCC listed, IC accepted, and NVLAP accredited.

Industry Canada identifier number	IC 2059
NVLAP Lab Code	200201-0

Instruments used for emission compliance tests described in this report are listed below:

TEST EQUIPMENT FOR EMISSION TESTING						
EQUIPMENT	MFG.	MODEL	SERIAL NUMBER	CAL. INTERVAL (Months)	CAL. DUE DATE (m/d/y)	USED
Spectrum Analyzer w/85650 QP Adaptor	Hewlett Packard	8566B	2416A00317 2043A00251	6	12/30/99	X
Bi-Log Antenna	EMCO	3143	9509-1160	12	4/7/00	X
Horn Antenna	EMCO	3115	8812-3049	12	1/6/00	X
Pre-Amplifier	Hewlett Packard	8447D	2648A04700	12	12/4/00	X
Pre-Amplifier	CDI	P1000	N/A	12	05/21/00	X

8.0 Miscellaneous Information or Other Comments

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1365 Adams Court, Menlo Park, CA 94025

Sierra Wireless Inc., CDPD Modem

Date of Test: December 16 -17, 1999

None.

8.0 **Miscellaneous Information or Other Comments**

None.

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Radiated Emissions Test Data

Company:	Sierra Wireless, Inc.	Model #:	MP210V	Standard_	FCC § 15.209
EUT:		S/N #:	206-00094808	Limits	3
Project #:	J99032362	Test Date:	December 16, 1999	Test Distance_	3 meters
Test Mode:	Rx	Engineer:	Xi-Ming Y.	Duty Relaxation	0 dB

	Antenna Used			Pre-Amp Used			Cable Used			Transducer Used
Number:	11	8	6	5	10	13	0	0	1	0
Model:	LPB-2520A	EMCO 3115	EMCO 3146	CDI_P950	AFT18855	ACO/400	None	None	Site 1	None

Frequency	Reading	Detector	Ant	Amp.	Ant. Pol.	Ant. Factor	Pre-Amp	Insert. Loss	D. C. F.	Net	Limit @3m	Margin
MHz	dB(μV)	P/A/Q	#	#	H/V	dB(1/m)	dB	dB	dB	dB(μV/m)	dB(μV/m)	dB
111.40	40.0	Peak	11	5	V	12.5	19.0	0.9	0.0	34.4	43.5	-9.1
132.62	43.0	Peak	11	5	V	12.8	19.1	1.0	0.0	37.7	43.5	-5.8
176.95	43.0	Peak	11	5	V	10.4	18.9	1.2	0.0	35.7	43.5	-7.8
221.17	40.0	Peak	11	5	V	11.5	18.5	1.3	0.0	34.3	46.0	-11.7
265.42	42.0	Peak	11	5	V	13.2	18.2	1.6	0.0	38.6	46.0	-7.4
309.67	43.0	Peak	11	5	H	13.8	17.9	1.7	0.0	40.6	46.0	-5.4
331.50	35.0	Peak	11	5	V	14.6	17.9	1.7	0.0	33.4	46.0	-12.6
353.90	40.0	Peak	11	5	H	15.0	17.4	2.2	0.0	39.8	46.0	-6.2
465.43	34.0	Peak	11	5	H	17.3	16.5	2.0	0.0	36.8	46.0	-9.2

Notes:	a) D.C.F.:Distance Correction Factor
	b) Insert. Loss (dB) = Cable A + Cable B + Cable C .
	c) Net (dB) = Reading + Antenna Factor - Pre-amp + Insert. Loss. - Transducer Loss - Duty Relaxation (transmitter only).
	d) Negative signs (-) in Margin column signify levels below the limits.
	e) All other emissions not reported are below the equipment noise floor which is at least 20 dB below the limits.

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Radiated Emissions Test Data

Company:	Sierra Wireless, Inc.				Model #:	MP210V		Req.	FCC 2.993
EUT:					S/N or FCC #:	206-00094808		Test Dist.	3 meters
Project #:	J9903236				Test Date:	Dec 16, 1999		TP	4.00 Watt
Test Mode:	2 Tx @ 824.01MHz				Engineer:	Xi Ming Y.		Min. Attn.	49.02 dBc

	Antenna Used			Pre-Amp Used			Cable Used			Transducer Used
Number:	11	8	21	10	8	13	0	0	12	0
Model:	LPB-2520A	EMCO 3115	3160-9	AFT18855	CDI_P1000	ACO/400	None	None	Gn_M+L	None

Frequency	Reading	Detector	Ant #	Amp #	Ant. Pol.	Ant. Factor	Pre-Amp	Insert. Loss	Net	ERP	Attn.	Margin
MHz	dB(μV)	P/A/Q	#	#	H/V	dB(1/m)	dB	dB	dB(μV/m)	mW	dBc	dB
824.01	111.3	Ave.	11	0	V	21.4	0.0	2.7	135.4	6.34E+03	0.0	N/A
1648.02	71.8	Ave.	8	8	V	27.2	29.5	3.5	73.0	3.65E-03	62.4	-13.4
2472.03	51.9	Ave.	8	8	V	29.6	28.5	4.5	57.5	1.03E-04	77.9	-28.9
3296.04	47.0	Ave.	8	8	V	31.8	27.9	5.5	56.4	7.99E-05	79.0	-30.0
4120.05	50.4	Ave.	8	8	V	34.2	27.9	5.9	62.6	3.33E-04	72.8	-23.8
4944.06	36.3	Ave.	8	8	V	33.5	28.1	6.4	48.1	1.18E-05	87.3	-38.3
5768.07	57.6	Ave.	8	8	V	36.2	28.3	7.2	72.7	3.41E-03	62.7	-13.7
6592.08	36.4	Ave.	8	8	V	37.6	28.0	8.0	54.0	4.59E-05	81.4	-32.4
7416.09	40.7	Ave.	8	8	V	38.0	28.0	8.2	58.9	1.42E-04	76.5	-27.5
8240.10	33.8	Ave.	8	8	V	38.7	27.2	9.1	54.4	5.04E-05	81.0	-32.0

Notes:	a) O.C.F.:Other Correction Factor
	b) Insert. Loss = Cable A + Cable B + Cable C + Transducer.
	c) Net = Reading + Antenna Factor - Pre-Amp + Insert. Loss.
	d) Attn. = Field Strength (Fundamental) - Field Strength (Harmonics).
	e) Negative signs (-) in Margin column signify levels below the limits.

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Radiated Emissions Test Data

Company:	Sierra Wireless, Inc.			Model #:	MP210V		Req.	FCC 2.993
EUT:				S/N or FCC #:	206-00094808		Test Dist.	3 meters
Project #:	J99032362			Test Date:	Dec 16, 1999		TP	4.00 Watt
Test Mode:	Tx @ 836.41			Engineer:	Xi Ming Y.		Min. Attn.	49.02 dBc

	Antenna Used			Pre-Amp Used			Cable Used			Transducer Used
Number:	11	8	21	0	8	13	0	0	1	0
Model:	LPB-2520A	EMCO 3115	3160-9	AFT18855	CDI_P1000	ACO/400	None	None	Site 1	None

Frequency	Reading	Detector	Ant #	Amp #	Ant. Pol.	Ant. Factor	Pre-Amp	Insert. Loss	Net	ERP	Attn.	Margin
MHz	dB(μV)	P/A/Q	#	#	H/V	dB(1/m)	dB	dB	dB(μV/m)	mW	dBc	dB
836.41	111.3	Ave.	11	0	V	21.6	0.0	2.7	135.6	6.64E+03	0.0	N/A
1672.84	62.9	Ave.	8	8	V	27.2	29.5	3.5	64.1	4.70E-04	71.5	-22.5
2509.28	48.4	Ave.	8	8	V	30.6	28.5	5.0	55.5	6.49E-05	80.1	-31.1
3345.69	43.2	Ave.	8	8	V	31.8	27.9	5.5	52.6	3.33E-05	83.0	-34.0
4182.13	37.8	Ave.	8	8	H	32.9	27.9	5.9	48.7	1.36E-05	86.9	-37.9
5018.59	33.4	Ave.	8	8	V	34.9	28.3	6.8	46.8	8.76E-06	88.8	-39.8
5855.00	31.6	Ave.	8	8	V	36.2	28.3	7.2	46.7	8.56E-06	88.9	-39.9
6691.45	36.4	Ave.	8	8	V	37.6	28.0	8.0	54.0	4.59E-05	81.6	-32.6
7527.86	33.0	Ave.	8	8	V	37.8	28.0	8.7	51.5	2.58E-05	84.1	-35.1
8364.27	33.6	Ave.	8	8	V	38.7	27.2	9.1	54.2	4.81E-05	81.4	-32.4

Notes:	a) O.C.F.:Other Correction Factor
	b) Insert. Loss = Cable A + Cable B + Cable C + Transducer.
	c) Net = Reading + Antenna Factor - Pre-Amp + Insert. Loss.
	d) Attn. = Field Strength (Fundamental) - Field Strength (Harmonics).
	e) Negative signs (-) in Margin column signify levels below the limits.

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Radiated Emissions Test Data

Company:	Sierra Wireless, Inc.				Model #:	MP210V		Req.	FCC 2.993
EUT:					S/N or FCC #:	206-00094808		Test Dist.	3 meters
Project #:	J9903236				Test Date:	Dec 16, 1999		TP	4.00 Watt
Test Mode:	2 Tx @ 849MHz				Engineer:	Xi Ming Y.		Min. Attn.	49.02 dBc

	Antenna Used			Pre-Amp Used			Cable Used			Transducer Used
Number:	11	8	21	0	8	13	0	0	1	0
Model:	LPB-2520A	EMCO 3115	3160-9	None	CDI_P1000	ACO/400	None	None	Site 1	None

Frequency	Reading	Detector	Ant #	Amp #	Ant. Pol.	Ant. Factor	Pre-Amp	Insert. Loss	Net	ERP	Attn.	Margin
MHz	dB(μV)	P/A/Q	#	#	H/V	dB(1/m)	dB	dB	dB(μV/m)	mW	dBc	dB
848.95	111.3	Ave.	11	0	V	21.4	0.0	2.7	135.4	6.34E+03	0.0	N/A
1697.92	62.0	Ave.	8	8	V	27.2	29.5	3.5	63.2	3.82E-04	72.2	-23.2
2546.89	52.3	Ave.	8	8	V	30.6	28.5	5.0	59.4	1.59E-04	76.0	-27.0
3395.84	45.8	Ave.	8	8	V	31.8	27.9	5.5	55.2	6.06E-05	80.2	-31.2
4244.82	40.4	Ave.	8	8	H	32.9	27.9	5.9	51.3	2.47E-05	84.1	-35.1
5093.78	40.1	Ave.	8	8	V	34.9	28.3	6.8	53.5	4.10E-05	81.9	-32.9
5942.77	39.7	Ave.	8	8	V	36.2	28.3	7.2	54.8	5.52E-05	80.6	-31.6
6791.92	39.9	Ave.	8	8	V	37.6	28.0	8.0	57.5	1.03E-04	77.9	-28.9
7640.72	37.5	Ave.	8	8	V	37.8	27.8	8.7	56.2	7.63E-05	79.2	-30.2
8489.75	33.6	Ave.	8	8	V	38.7	27.1	9.1	54.3	4.92E-05	81.1	-32.1

Notes:	a) O.C.F.:Other Correction Factor
	b) Insert. Loss = Cable A + Cable B + Cable C + Transducer.
	c) Net = Reading + Antenna Factor - Pre-Amp + Insert. Loss.
	d) Attn. = Field Strength (Fundamental) - Field Strength (Harmonics).
	e) Negative signs (-) in Margin column signify levels below the limits.