



**SPREAD SPECTRUM CERTIFICATION TEST REPORT
FOR THE
INROAD INQUIRE, INQUIRE
FCC PART 15.247
COMPLIANCE**

DATE OF ISSUE: OCTOBER 8, 1998

PREPARED FOR:

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W.O. No: 69477

Report No: FC98-023

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Date of test: September 9 - 11, 1998

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ADMINISTRATIVE INFORMATION

DATE OF TEST:

September 9 - 11, 1998

PURPOSE OF TEST:

To demonstrate the compliance of the Inroad Inquire, Inquire, with the FCC requirements for Part 15.247 devices.

MANUFACTURER:

Solelectron Washington, Inc.
8600 Soper Hill Road, Suite A
Everett, WA 98205-1256

OWNER

Inroad, Inc.
2025 First Avenue
Market Place Tower, Suit 1250
Seattle, WA 98121

REPRESENTATIVE:

Brent LaPorte
Stratos Product Development Group
2025 1st Ave, Market Place Tower PH-B
Seattle, WA 98121

TEST LOCATION:

CKC Laboratories, Inc.
22105 Wilson River Hwy
Tillamook, OR 97141

TEST PERSONNEL:

Steve Behm

TEST METHOD:

ANSI C63.4 1992

FREQUENCY RANGE TESTED:

30 MHz - 24 GHz

EQUIPMENT UNDER TEST:

Network Computer

Manuf: Inroad Inc.
Model: Inquire
Serial: none

SUMMARY OF RESULTS

The Inroad, Inc., Inroad Inquire, Inquire, was tested in accordance with FCC Part 15.247 for compliance with the transmitter characteristics requirements of the FCC Rules.

As received, the above equipment was found to be fully compliant with the limits of FCC Part 15.247.

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

Wearable network computer with remote control and headset.

OPERATING FREQUENCY

Operating frequency 2.4 GHz – 2.483 GHz.

MEASUREMENT UNCERTAINTY

Associated with data in this report is a ± 4 dB measurement uncertainty.

PERIPHERAL DEVICES

The EUT was tested with the following peripheral devices:

Computer

Manuf: Micron
Model: Transport Xpe
Serial: 922527-0001
FCC ID: JBQM1000APC

Access point

Manuf: Proxim
Model: 7520
Serial: NONE
FCC ID: IMKAT2-1020

Ethernet Hub

Manuf: SMC
Model: EtherEZ hub 3605T
Serial: none
FCC ID: HEDEH20485S

REPORT OF MEASUREMENTS

The following Tables report the highest emissions levels recorded during the tests performed on the Inroad Inquire, Inquire. The data sheets from which these tables were compiled are contained in Appendix B.

Table 1: Six Highest Radiated Spurious Emission Levels									
FREQUENCY MHz	METER READING dB μ V	CORRECTION FACTORS				CORRECTED READING dB μ V/m	SPEC LIMIT dB μ V/m	MARGIN dB	NOTES
		Ant dB	Amp DB	Cable dB	Dist dB				
166.200	47.9	14.6	-27.5	2.8		37.8	43.5	-5.7	VQ
192.962	45.5	16.8	-27.4	3.2		38.1	43.5	-5.4	VQ
322.080	39.6	20.8	-27.1	4.8		38.1	46.0	-7.9	HQ
323.498	40.1	20.7	-27.1	4.9		38.6	46.0	-7.4	VQ
449.860	43.3	17.1	-28.0	5.6		38.0	46.0	-8.0	HQ
450.799	46.5	17.1	-28.0	5.6		41.2	46.0	-4.8	VQ

Test Method: ANSI C63.4 1992
 Spec Limit : FCC 15.247(c)
 Test Distance: 3 Meters

NOTES: H = Horizontal Polarization
 V = Vertical Polarization
 N = No Polarization
 D = Dipole Reading
 Q = Quasi Peak Reading
 A = Average Reading

COMMENTS: The EUT is configured according to ANSI C63.4. The above table was composed from tests with the EUT configured as follows:

- 1) The RF transmitter internal to the unit is turned on for this portion of the test. The device is exercising a rapid data transfer application.
- 2) The EUT is operating on channel one (lowest channel). The EUT is exercised by a rapid data transfer application. The EUT is tested on its back, side, and upright.
- 3) The EUT is operating on channel forty (middle channel). The EUT is exercised by a rapid data transfer application. The EUT is tested on its back, side, and upright.
- 4) The EUT is operating on channel eighty (high channel). The EUT is exercised by a rapid data transfer application. The EUT is tested on its back, side, and upright.

Table 2: Six Highest Conducted Spurious Emission Levels									
FREQUENCY MHz	METER READING dB μ V	CORRECTION FACTORS				CORRECTED READING dB μ V	SPEC LIMIT dB μ V	MARGIN dB	NOTES
		Lisn dB	dB	dB	dB				
4881.62600	44.7	0.5				45.2	54.0	-8.8	NA
7205.95500	38.8	2.2				41.0	54.0	-13.0	NA
7322.65000	50.4	0.0				50.4	54.0	-3.6	NA
7442.90000	42.2	0.4				42.6	54.0	-11.4	NA
9762.70000	42.7	1.5				44.2	54.0	-9.8	NA
9923.70000	36.3	0.0				41.7	54.0	-12.3	NA

Test Method: ANSI C63.4 1992
 Spec Limit : FCC Part 15.247(c)
 Test Distance: No Distance

NOTES: Q = Quasi Peak Reading
 A = Average Reading
 B = Black Lead
 W = White Lead
 NA = None

COMMENTS: The EUT is configured according to ANSI C63.4. The above table was composed from tests with the EUT configured as follows:

- 1) The EUT is operating on channel one (low channel). The EUT is exercised by a rapid data transfer application. The EUT is being tested by conducted spurious from the antenna port directly to the spectrum analyzer.
- 2) The EUT is operating on channel forty (middle channel). The EUT is exercised by a rapid data transfer application. The EUT is being tested by conducted spurious from the antenna port directly to the spectrum analyzer.
- 3) The EUT is operating on channel eighty (high channel). The EUT is exercised by a rapid data transfer application. The EUT is being tested by conducted spurious from the antenna port directly to the spectrum analyzer.

FCC Part FCC Part 15.247(a)(1)(ii) Occupied Bandwidth Plot

FCC Part FCC Part 15.247(a)(1)(ii) Occupied Bandwidth Plot

FCC Part FCC Part 15.247(a)(1)(ii) Occupied Bandwidth Plot

FCC Part FCC Part 15.247(b)(1) RF Power Output Plot

FCC Part FCC Part 15.247(b)(1) RF Power Output Plot

FCC Part FCC Part 15.247(b)(1) RF Power Output Plot

FCC Part FCC Part 15.247(a)(1)(ii) > 75 channels Frequency Hopping Mode

TABLE A
LIST OF TEST EQUIPMENT

1. EMI Receiver System, Hewlett Packard, Model No. 8574A, S/N 3010A01076.
2. Preamp, Hewlett Packard, Model No. 8447D, S/N 2727A05392.
3. Preamp, Hewlett Packard, Model No. 83017A, S/N 3123A00283.
4. Biconical Antenna, A & H Systems, Model No. SAS-200/540, S/N 359.
5. Log Periodic Antenna, A & H Systems, Model No. SAS200/510, S/N 464.
6. Horn Antenna, EMCO, Model No. 3115, S/N 3413.
7. Spectrum Analyzer, Hewlett Packard, Model No. HP 8596E, S/N 3346A0209.
8. Preamp, Hewlett Packard, Model No. 8447D, S/N 2727A05444.
9. Quasi-Peak Adapter, Hewlett Packard, Model No. 85650A, S/N 2043A00104.
10. Biconical Antenna, Schwartzbeck, Model No. BBA9106, S/N D6901.
11. Log Periodic Antenna, A. & H. Systems, Model No. SAS200/510, S/N 463.
12. Test software, EMI Test 2.91.

EUT SETUP

The equipment under test (EUT) and the peripherals listed were setup in a manner that represented their normal use. Any special conditions required for the EUT to operate normally are identified in the comments that accompany the tables contained in report of measurements. Additionally, a complete description of all the ports and I/O cables is included on the information sheets contained in Appendix A.

During radiated emissions testing, the EUT was mounted on a nonconductive, rotating table 80 cm above the conductive grid. The nonconductive table dimensions were 1 meter by 1.5 meters. This configuration is typical for radiated emissions testing of table top devices.

I/O cables were connected to the EUT and peripherals in the manner required for normal operation of the system. Excess cabling was bundled in the center in a serpentine fashion using 30-40 centimeter lengths.

TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed in Table A were used to collect the radiated emissions data for the Inroad Inquire, Inquire. For radiated measurements below 300 MHz, the biconical antenna was used. For frequencies from 300 to 1000 MHz, the log periodic antenna was used. For frequencies above 1000 MHz, the horn antenna was used. All antennas were located at a distance of from the edge of the EUT.

The HP spectrum analyzer was used for all measurements. Table B shows the analyzer bandwidth settings that were used in designated frequency bands. During radiated testing, the measurements were made with 0 dB of attenuation, a reference level of 97 dB μ V, and a vertical scale of 10 dB per division.

TABLE B : ANALYZER BANDWIDTH SETTINGS PER FREQUENCY RANGE

TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz
RADIATED EMISSIONS	1000 MHz	24 GHz	1 MHz

SPECTRUM ANALYZER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in Tables 1 and 2 indicate the type of detector function used to obtain the given readings. Unless otherwise noted, all readings were made in the "Peak" mode. Whenever a "Quasi-Peak" or "Average" reading is listed as one of the six highest readings, this is indicated as a "Q" or an "A" in Table 1 or Table 2. The following paragraphs describe in more detail the detector functions and when they were used to obtain the emissions data for the Inroad Inquire, Inquire.

Peak

In this mode, the Spectrum Analyzer or test engineer recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature of the analyzer called "peak hold," the analyzer had the ability to measure transients or low duty cycle transient emission peak levels. In this mode the analyzer made a slow scan across the frequency band selected and measured the peak emission value found at each frequency across the band.

Quasi-Peak

When the true peak values exceeded or were within 2 dB of the specification limit, quasi-peak measurements were taken using the HP 85650A Quasi-Peak Adapter for the HP 8568B Spectrum Analyzer. The detailed procedure for making quasi peak measurements contained in the HP Quasi-Peak Adapter manual were followed.

Average

When the frequencies exceed 1 GHz, average measurements may be made using the spectrum analyzer. To make these measurements, the test engineer reduces the video bandwidth on the analyzer until the modulation of the signal is filtered out. At this point the analyzer is set into the linear mode and the scan time is reduced.

TEST METHODS

The radiated emissions data of the Inroad Inquire, Inquire, was taken with the HP Spectrum Analyzer. Incorporating the applicable correction factors for distance, antenna, cable loss and amplifier gain, the data was reduced as shown in the "Sample Calculations". The corrected data was then compared to the FCC Part 15.247 emissions limits to determine compliance.

Preliminary and final measurements were taken in order to better ensure that all emissions from the EUT were found and maximized.

Radiated Emissions Testing

During the preliminary radiated scan, the EUT was powered up and operating in its defined FCC test mode with the I/O cables and line cords facing the antenna. The frequency range of 30 MHz - 88 MHz was then scanned with the biconical antenna located about 1.5 meter above the ground plane in the vertical configuration. During this scan, the turntable was rotated and all peaks which were at or near the limit were recorded. The frequency range of 100 - 300 MHz was scanned with the biconical antenna in the same manner, and the peaks recorded. Lastly, a scan of the FM band from 88 - 110 MHz was made, using a reduced resolution bandwidth and a reduced frequency span. The biconical antenna was changed to the horizontal polarity and the above steps were repeated. After changing to the log periodic antenna in the horizontal configuration, the frequency range of 300 - 1000 MHz was scanned. The log periodic antenna was changed to the vertical polarity and the frequency range of 300 - 1000 MHz was again scanned. For frequencies above 1000 MHz the horn antenna was used. Care was taken to ensure that no frequencies were missed within the FM and TV bands. An analysis was performed to determine if the signals that were at or near the limit were caused by an ambient transmission. If unable to determine by analysis, the equipment was powered down to make the final determination if the EUT was the source of the emission.

For the final radiated scan, the equipment was again positioned with its I/O and power cables facing the antenna. A thorough scan of all frequencies was manually made using a small frequency span, rotating the turntable as needed. Comparison with the previously recorded measurements was then made.

Using the peak readings from both scans as a guide, the test engineer then maximized the readings with respect to the table rotation, antenna height and configuration of the peripherals and cables. Maximizing of the cables was achieved by monitoring the spectrum analyzer on a closed circuit television monitor while the EUT cables were being moved and rearranged on the EUT table for maximum emissions. Photographs showing the final worst case configuration of the EUT are contained in Appendix A.

RF Antenna Conducted Emissions Testing

For measuring the signal strength on the RF output port of the EUT, the spectrum analyzer was connected directly to the RF output port via a cable. The sweep time of the analyzer was adjusted so that the spectrum analyzer readings were always in a calibrated range. All readings within 20 dB of the limit were recorded.

Power Output

Frequency of Transmitter: 2.4 GHz

The RF conducted test, was measured using a direct connection between the antenna port of the transmitter and the spectrum analyzer. The resolution bandwidth was adjusted to greater than the 6 dB bandwidth of the emissions.

Frequency	Measurement in dBm	Measurement in mW
2.441 GHz	17.0	50.12mW

The limit used was determined by the method stated in FCC Part 15.247(b)(1).

SAMPLE CALCULATIONS

The basic spectrum analyzer reading was converted using correction factors as shown in the emissions readings in Tables 1 & 2. For radiated emissions in dB μ V/m, the spectrum analyzer reading in dB μ V was corrected by using the following formula:

$$\begin{aligned}
 & \text{Meter reading (dB}\mu\text{V)} \\
 & + \text{Antenna Factor (dB)} \\
 & + \text{Cable Loss (dB)} \\
 & - \text{Distance Correction (dB)} \\
 & - \text{Pre-amplifier Gain (dB)} \\
 \\
 & = \text{Corrected Reading(dB}\mu\text{V/m)}
 \end{aligned}$$

This reading was then compared to the applicable specification limit to determine compliance. For conducted emissions, no correction factors were needed when 50 μ H LISN's were used. A typical data sheet will display the following in column format:

#	3.95 5.85G 8.2-1 12.4-	Freq MHz	Rdng dB μ V	Cbl-2/ Cable	Amp-B/ Hi-Fr	Bicon Ant.	Log Ant.	Dist	Corr dB μ V/m	Spec	Margin	Polar
---	---------------------------	-------------	--------------------	-----------------	-----------------	---------------	-------------	------	----------------------	------	--------	-------

means reading number

Freq MHz is the frequency in MHz of the obtained reading.

Rdng dB μ V is the reading obtained on the spectrum analyzer in dB μ V.

Amp-B/Hi Fr is short for the preamplifier factor or gain in dB.

Bicon Ant. is the biconical antenna factor in dB.

Horn is the horn antenna factor in dB.

Log Ant. is the log periodic antenna factor in dB.

Cbl-2/Cable is the cable loss in dB of the coaxial cable on the OATS.

Dist is the distance factor (in dB). It is used when testing at a different test distance than the one stated in the spec.

Corr dB μ V/m is the corrected reading which is now in dB μ V/m (field strength).

Spec is the specification limit (dB) stated in the agency's regulations.

Margin is the closeness to the specified limit in dB; + is over and - is under the limit.

Polar is the Polarity of the antenna with respect to earth.

3.95, 5.85G, 8.2-1, 12.4- are the different transducer factors or wave guides.

APPENDIX A
INFORMATION ABOUT THE EQUIPMENT UNDER TEST

INFORMATION ABOUT THE EQUIPMENT UNDER TEST

Test Software/Firmware: **PMU firmware: 0.19**

Main firmware: A10

FCC test software: This software activates the computer by continuously transmitting a data file across the wireless LAN connection, to the server.

CRT was displaying: **No display**

Power Supply Manufacturer: **None, battery powered**

Power Supply Part Number: **None, battery powered**

AC Line Filter Manufacturer: **None, battery powered**

AC Line Filter Part Number: **None, battery powered**

Line voltage used during testing: **None, battery powered**

I/O PORTS	
Type	#
User Interface, general	1
Headphone, Microphone	
Remote control	
Serial	
RS-232, PS/2	No options exist for this port

CRYSTAL OSCILLATORS	
Type	Freq In MHz
Oscillator	3.6864
Crystal	14.318
Crystal	0.032768
Oscillator	14.318, 66.48
Oscillator	14.318, 33.41

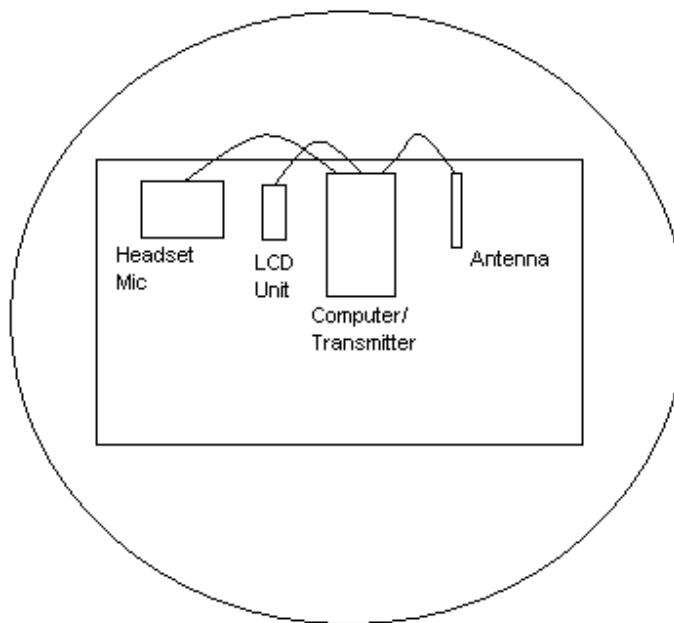
PRINTED CIRCUIT BOARDS				
Function	Model & Rev	Clocks, MHz	Layers	Location
CPU PWA	100-1217-01	66.48, 33.41, 14.318, 3.6864	12	Inquire housing
I/O PWA	100-1218-03	33.41, 14.318, 0.032786	12	Inquire housing
PCMCIA PWA	100-1219-01	3.92	6	Inquire housing
CPU Keypad PWA	100-1205-01	----	2	Inquire housing
Memory PWA	100-1202-01	66.48	6	Inquire housing
Remote control button PWA	100-1203-01	0.060	2	Remote control
Remote control display PWA	100-1204-01	0.060	2	Remote control

CABLE INFORMATION

Cable #: 1 Headset cable	Cable(s) of this type: 1
Cable Type:	Shield Type: Tin plated copper braid
Construction: 28awg, 1 shielded twisted pair, 3 conductors, no overall shield	Length In Meters: 1.219
Connected To End (1): Inquire user interface port	Connected To End (2): Headset
Connector At End (1): 25 pin micro-miniture molex	Connector At End (2): Hypertronix connector
Shield Grounded At (1): To pin in connector	Shield Grounded At (2): no
Part Number: 100-2310	Number of Conductors: 5 plus shield
Notes:	

Cable #: 2 Remote Control Cable	Cable(s) of this type: 1
Cable Type:	Shield Type: N/A
Construction: 28awg, 6 conductor	Length In Meters: 1.219
Connected To End (1): Inquire user interface port	Connected To End (2): Remote control
Connector At End (1): 25 pin micro-miniture molex, same connector as Cable #1	Connector At End (2): 6 pin header
Shield Grounded At (1): No	Shield Grounded At (2): N/A
Part Number: 100-2310	Number of Conductors: 6
Notes:	

EQUIPMENT CONFIGURATION BLOCK DIAGRAM

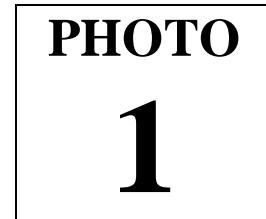


Block Diagram

NOTES:

PHOTOGRAPH SHOWING RADIATED EMISSIONS

Applicant: Inroad, Inc.
Equipment: Inroad Inquire
Model Number: Inquire

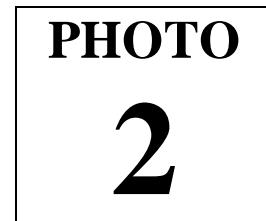


Radiated Emissions - Front View

NOTES:

PHOTOGRAPH SHOWING RADIATED EMISSIONS

Applicant: Inroad, Inc.
Equipment: Inroad Inquire
Model Number: Inquire



Radiated Emissions - Back View

NOTES:

APPENDIX B
MEASUREMENT DATA SHEETS

Test Location: CKC Laboratories • 22105 Wilson River Hwy. • Tillamook, Or, 97141 Site B • 1-503-842-5577

Customer: **Inroad, Inc.** Date: Sep-09-98
 Specification: **FCC B RADIATED** Time: 10:41
 Test Type: **Maximized Emissions** Sequence#: 2
 Equipment: **Network Computer**
 Manufacturer: Solectron Washington, Inc. Tested By: Steve Behm
 Model: Inquire
 S/N: None

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Network Computer*	Inroad Inc.	Inquire	none

Support Devices:

Function	Manufacturer	Model #	S/N
Computer	Micron	Transport Xpe	922527-0001
Access point	Proxim	7520	NONE
Ethernet Hub	SMC	EtherEZ hub 3605T	none

Test Conditions / Notes:

The EUT is configured according to ANSI C63.4. The RF transmitter internal to the unit is turned on for this portion of the test. The device is exercised a rapid data transfer application.

Measurement Data:

Sorted by Margin

Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	Amp-B dB	Bicon DB	Cable dB	Log B dB	Dist dB	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar
1	450.799 Quasi Peak	46.5	-28.0	+0.0	+5.6	+17.1	+0.0	41.2	46.0	-4.8	Vert
^	450.769	51.3	-28.0	+0.0	+5.6	+17.1	+0.0	46.0	46.0	+0.0	Vert
3	192.962 Quasi Peak	45.5	-27.4	+16.8	+3.2	+0.0	+0.0	38.1	43.5	-5.4	Vert
^	192.952	49.5	-27.4	+16.8	+3.2	+0.0	+0.0	42.1	43.5	-1.4	Vert
5	166.200 Quasi Peak	47.9	-27.5	+14.6	+2.8	+0.0	+0.0	37.8	43.5	-5.7	Vert
^	166.200	51.9	-27.5	+14.6	+2.8	+0.0	+0.0	41.8	43.5	-1.7	Vert
7	323.498 Quasi Peak	40.1	-27.1	+0.0	+4.9	+20.7	+0.0	38.6	46.0	-7.4	Vert
^	323.510	46.0	-27.1	+0.0	+4.9	+20.7	+0.0	44.5	46.0	-1.5	Vert
9	322.080 Quasi Peak	39.6	-27.1	+0.0	+4.8	+20.8	+0.0	38.1	46.0	-7.9	Horiz
^	322.040	45.4	-27.1	+0.0	+4.8	+20.8	+0.0	43.9	46.0	-2.1	Horiz
11	449.860 Quasi Peak	43.3	-28.0	+0.0	+5.6	+17.1	+0.0	38.0	46.0	-8.0	Horiz

^	449.870	48.8	-28.0	+0.0	+5.6	+17.1	+0.0	43.5	46.0	-2.5	Horiz
13	166.320	45.5	-27.5	+14.6	+2.8	+0.0	+0.0	35.4	43.5	-8.1	Horiz
	Quasi Peak										
^	166.340	49.2	-27.5	+14.6	+2.8	+0.0	+0.0	39.1	43.5	-4.4	Horiz
15	517.991	42.0	-28.3	+0.0	+5.9	+17.8	+0.0	37.3	46.0	-8.7	Vert
	Quasi Peak										
^	517.983	48.8	-28.3	+0.0	+5.9	+17.8	+0.0	44.2	46.0	-1.8	Vert
17	515.515	41.5	-28.3	+0.0	+6.0	+17.8	+0.0	37.0	46.0	-9.0	Horiz
	Quasi Peak										
^	515.505	48.0	-28.3	+0.0	+6.0	+17.8	+0.0	43.5	46.0	-2.5	Horiz
19	578.475	39.7	-28.3	+0.0	+6.4	+18.8	+0.0	36.6	46.0	-9.4	Vert
	Quasi Peak										
^	578.455	44.8	-28.3	+0.0	+6.4	+18.8	+0.0	41.7	46.0	-4.3	Vert

Test Location: CKC Laboratories • 22105 Wilson River Hwy. • Tillamook, Or, 97141 Site B • 1-503-842-5577

Customer: **Inroad, Inc.** Date: Sep-10-98
 Specification: **FCC15.247 & 15.209** Time: 15:37
 Test Type: **Maximized Emissions** Sequence#: 2
 Equipment: **Network Computer**
 Manufacturer: Solectorn Washington, Inc. Tested By: Steve Behm
 Model: Inquire
 S/N: None

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Network Computer*	Inroad Inc.	Inquire	none

Support Devices:

Function	Manufacturer	Model #	S/N
Ethernet Hub	SMC	EtherEZ hub 3605T	none
Access point	Proxim	7520	NONE
Computer	Micron	Transport Xpe	922527-0001

Test Conditions / Notes:

The EUT is configured according to ANSI C63.4. The EUT is operating on channel one (lowest channel). The EUT is exercised by a rapid data transfer application. The EUT is on its back.

Measurement Data:

Sorted by Margin

Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	Hi Fr dB	Cbl-2 dB	Horn dB	Cable dB	3.95	Dist dB	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar
1	4804.200	34.7	-39.7 +0.0	+10.1 +4.3	+34.5	+1.4	+0.0	45.3	54.0	-8.7	Vert	
2	7206.200	29.4	-39.1 +0.7	+13.4 +0.0	+36.7	+3.5	+0.0	44.6	54.0	-9.4	Vert	
3	9608.000	23.6	-43.1 +0.0	+17.6 +0.0	+39.1	+6.2	+0.0	43.4	54.0	-10.6	Vert	
4	7025.000	29.5	-38.3 +0.3	+12.8 +0.0	+36.2	+2.1	+0.0	42.6	54.0	-11.4	Horiz	
5	2402.130	110.0	-39.6 +0.0	+6.1 +0.0	+30.6	+1.0	+0.0	108.1	137.0	-28.9	Horiz	

Test Location: CKC Laboratories • 22105 Wilson River Hwy. • Tillamook, Or, 97141 Site B • 1-503-842-5577

Customer: **Inroad, Inc.** Date: Sep-10-98
 Specification: **FCC15.247 & 15.209** Time: 16:06
 Test Type: **Maximized Emissions** Sequence#: 3
 Equipment: **Network Computer**
 Manufacturer: Solelectron Washington, Inc. Tested By: Steve Behm
 Model: Inquire
 S/N: None

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Network Computer*	Inroad Inc.	Inquire	none

Support Devices:

Function	Manufacturer	Model #	S/N
Ethernet Hub	SMC	EtherEZ hub 3605T	none
Access point	Proxim	7520	NONE
Computer	Micron	Transport Xpe	922527-0001

Test Conditions / Notes:

The EUT is configured according to ANSI C63.4. The EUT is operating on channel one (lowest channel). The EUT is exercised by a rapid data transfer application. The EUT is on its side.

Measurement Data:

Sorted by Margin

Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	Hi Fr dB	Cbl-2 DB	Horn DB	Cable dB	3.95	Dist dB	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar
1	7206.880	32.4	-38.3 +0.3	+12.8	+36.2 +0.0	+2.1 +0.0	+0.0	45.2	54.0	-8.8	Horiz	
2	4804.178	33.2	-39.7 +0.0	+10.1	+34.5 +4.3	+1.4	+0.0	43.8	54.0	-10.2	Horiz	
3	2402.130	112.2	-39.6 +0.0	+6.1	+30.6 +0.0	+1.0 +0.0	+0.0	110.3	137.0	-26.7	Horiz	
4	2402.000	104.5	-39.6 +0.0	+6.1	+30.6 +0.0	+1.0 +0.0	+0.0	102.6	137.0	-34.4	Vert	

Test Location: CKC Laboratories • 22105 Wilson River Hwy. • Tillamook, Or, 97141 Site B • 1-503-842-5577

Customer: **Inroad, Inc.** Date: Sep-10-98
 Specification: **FCC15.247 & 15.209** Time: 16:38
 Test Type: **Maximized Emissions** Sequence#: 4
 Equipment: **Network Computer**
 Manufacturer: Solecton Washington, Inc. Tested By: Steve Behm
 Model: Inquire
 S/N: None

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Network Computer*	Inroad Inc.	Inquire	none

Support Devices:

Function	Manufacturer	Model #	S/N
Ethernet Hub	SMC	EtherEZ hub 3605T	none
Access point	Proxim	7520	NONE
Computer	Micron	Transport Xpe	922527-0001

Test Conditions / Notes:

The EUT is configured according to ANSI C63.4. The EUT is operating on channel one (lowest channel). The EUT is exercised by a rapid data transfer application. The EUT is upright.

Measurement Data:

Sorted by Margin

Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	Hi Fr dB	Cbl-2 DB	Horn DB	Cable dB	Dist dB	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar
1	7206.000	30.4	-39.1	+13.4	+36.7	+3.5	+0.0	44.9	54.0	-9.1	Horiz
2	4804.000	36.4	-39.7	+10.1	+34.5	+1.4	+0.0	42.7	54.0	-11.3	Vert
3	2402.190	114.5	-39.6	+6.1	+30.6	+1.0	+0.0	112.6	137.0	-24.4	Vert

Test Location: CKC Laboratories • 22105 Wilson River Hwy. • Tillamook, Or, 97141 Site B • 1-503-842-5577

Customer: **Inroad, Inc.** Date: Sep-10-98
 Specification: **FCC15.247 & 15.209** Time: 19:56
 Test Type: **Maximized Emissions** Sequence#: 10
 Equipment: **Network Computer**
 Manufacturer: Solectron Washinton, Inc. Tested By: Steve Behm
 Model: Inquire
 S/N: None

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Network Computer*	Inroad Inc.	Inquire	none

Support Devices:

Function	Manufacturer	Model #	S/N
Ethernet Hub	SMC	EtherEZ hub 3605T	none
Access point	Proxim	7520	NONE
Computer	Micron	Transport Xpe	922527-0001

Test Conditions / Notes:

The EUT is configured according to ANSI C63.4. The EUT is operating on channel forty (mid channel). The EUT is exercised by a rapid data transfer application. The EUT is on its back.

Measurement Data:

Sorted by Margin

Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	Hi Fr dB	Cbl-2 DB	Horn DB	Cable dB	Dist dB	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar
1	4882.562	33.5	-39.5 +3.7	+10.3	+34.7	+1.5	+0.0	44.2	54.0	-9.8	Horiz
2	2440.780	111.8	-39.5 +0.0	+5.9	+30.8	+1.0	+0.0	110.0	137.0	-27.0	Horiz
3	2441.320	106.5	-39.5 +0.0	+5.9	+30.8	+1.0	+0.0	104.7	137.0	-32.3	Vert

Test Location: CKC Laboratories • 22105 Wilson River Hwy. • Tillamook, Or, 97141 Site B • 1-503-842-5577

Customer: **Inroad, Inc.** Date: Sep-10-98
Specification: **FCC15.247 & 15.209** Time: 17:41
Test Type: **Maximized Emissions** Sequence#: 6
Equipment: **Network Computer**
Manufacturer: Solectron Washington, Inc. Tested By: Steve Behm
Model: Inquire
S/N: None

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Network Computer*	Inroad Inc.	Inquire	none

Support Devices:

Function	Manufacturer	Model #	S/N
Ethernet Hub	SMC	EtherEZ hub 3605T	none
Access point	Proxim	7520	NONE
Computer	Micron	Transport Xpe	922527-0001

Test Conditions / Notes:

The EUT is configured according to ANSI C63.4. The EUT is operating on channel forty (middle channel). The EUT is exercised by a rapid data transfer application. The EUT is on its side.

Measurement Data:

Sorted by Margin

Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	Hi Fr dB	Cbl-2 DB	Horn DB	Cable dB	Dist dB	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar
1	4840.925	31.1	-39.6 +3.5	+10.2	+34.6	+1.4	+0.0	41.2	54.0	-12.8	Vert
2	2440.795	111.9	-39.5 +0.0	+5.9	+30.8	+1.0	+0.0	110.1	137.0	-26.9	Horiz
3	2440.943	107.5	-39.5 +0.0	+5.9	+30.8	+1.0	+0.0	105.7	137.0	-31.3	Vert

Test Location: CKC Laboratories • 22105 Wilson River Hwy. • Tillamook, Or, 97141 Site B • 1-503-842-5577

Customer: **Inroad, Inc.** Date: Sep-10-98
 Specification: **FCC15.247 & 15.209** Time: 17:18
 Test Type: **Maximized Emissions** Sequence#: 5
 Equipment: **Network Computer**
 Manufacturer: Solelectron Washington, Inc. Tested By: Steve Behm
 Model: Inquire
 S/N: None

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Network Computer*	Inroad Inc.	Inquire	none

Support Devices:

Function	Manufacturer	Model #	S/N
Ethernet Hub	SMC	EtherEZ hub 3605T	none
Access point	Proxim	7520	NONE
Computer	Micron	Transport Xpe	922527-0001

Test Conditions / Notes:

The EUT is configured according to ANSI C63.4. The EUT is operating on channel forty (middle channel). The EUT is exercised by a rapid data transfer application. The EUT is upright.

Measurement Data:

Sorted by Margin

Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	Hi Fr dB	Cbl-2 DB	Horn DB	Cable dB	Dist dB	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar
1	7026.550	29.1 +0.3	-38.3	+12.8	+36.2	+2.1	+0.0	42.2	54.0	-11.8	Horiz
2	4840.078	30.5 +3.5	-39.6	+10.2	+34.6	+1.4	+0.0	40.6	54.0	-13.4	Horiz
3	2440.905	111.8 +0.0	-39.5	+5.9	+30.8	+1.0	+0.0	110.0	137.0	-27.0	Vert
4	2440.980	107.3 +0.0	-39.5	+5.9	+30.8	+1.0	+0.0	105.5	137.0	-31.5	Horiz

Test Location: CKC Laboratories • 22105 Wilson River Hwy. • Tillamook, Or, 97141 Site B • 1-503-842-5577

Customer: **Inroad, Inc.** Date: Sep-10-98
 Specification: **FCC15.247 & 15.209** Time: 19:50
 Test Type: **Maximized Emissions** Sequence#: 8
 Equipment: **Network Computer**
 Manufacturer: Solelectron Washington, Inc. Tested By: Steve Behm
 Model: Inquire
 S/N: None

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Network Computer*	Inroad Inc.	Inquire	none

Support Devices:

Function	Manufacturer	Model #	S/N
Ethernet Hub	SMC	EtherEZ hub 3605T	none
Access point	Proxim	7520	NONE
Computer	Micron	Transport Xpe	922527-0001

Test Conditions / Notes:

The EUT is configured according to ANSI C63.4. The EUT is operating on channel eighty (high channel). The EUT is exercised by a rapid data transfer application. The EUT is on its back.

Measurement Data:

Sorted by Margin

Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	Hi Fr dB	Cbl-2 DB	Horn DB	Cable dB	Dist dB	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar
1	7430.230	30.5	-39.2 +0.0	+13.2	+37.3	+2.5	+0.0	44.3	54.0	-9.7	Horiz
2	4960.231	34.5	-39.5 +0.2	+10.6	+34.9	+1.6	+0.0	42.3	54.0	-11.7	Horiz
3	2480.780	111.9	-39.4 +0.0	+5.8	+31.1	+1.0	+0.0	110.4	137.0	-26.6	Horiz
4	2480.720	106.5	-39.4 +0.0	+5.8	+31.1	+1.0	+0.0	105.0	137.0	-32.0	Vert

Test Location: CKC Laboratories • 22105 Wilson River Hwy. • Tillamook, Or, 97141 Site B • 1-503-842-5577

Customer: **Inroad, Inc.** Date: Sep-10-98
 Specification: **FCC15.247 & 15.209** Time: 19:45
 Test Type: **Maximized Emissions** Sequence#: 7
 Equipment: **Network Computer**
 Manufacturer: Solelectron Washington, Inc. Tested By: Steve Behm
 Model: Inquire
 S/N: None

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Network Computer*	Inroad Inc.	Inquire	none

Support Devices:

Function	Manufacturer	Model #	S/N
Ethernet Hub	SMC	EtherEZ hub 3605T	none
Access point	Proxim	7520	NONE
Computer	Micron	Transport Xpe	922527-0001

Test Conditions / Notes:

The EUT is configured according to ANSI C63.4. The EUT is operating on channel eighty (high channel). The EUT is exercised by a rapid data transfer application. The EUT is on its side.

Measurement Data:

Sorted by Margin

Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	Hi Fr dB	Cbl-2 DB	Horn DB	Cable dB	Dist dB	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar
1	7440.000	30.5	-39.2 +0.0	+13.2	+37.3	+2.5	+0.0	44.3	54.0	-9.7	Vert
2	4659.955	33.9	-39.6 +4.0	+10.1	+34.2	+1.3	+0.0	43.9	54.0	-10.1	Horiz
3	2480.823	112.3	-39.4 +0.0	+5.8	+31.1	+1.0	+0.0	110.8	137.0	-26.2	Horiz
4	2480.670	105.5	-39.4 +0.0	+5.8	+31.1	+1.0	+0.0	104.0	137.0	-33.0	Vert

Test Location: CKC Laboratories • 22105 Wilson River Hwy. • Tillamook, Or, 97141 Site B • 1-503-842-5577

Customer: **Inroad, Inc.** Date: Sep-10-98
 Specification: **FCC15.247 & 15.209** Time: 19:57
 Test Type: **Maximized Emissions** Sequence#: 9
 Equipment: **Network Computer**
 Manufacturer: Solelectron Washington, Inc. Tested By: Steve Behm
 Model: Inquire
 S/N: None

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Network Computer*	Inroad Inc.	Inquire	none

Support Devices:

Function	Manufacturer	Model #	S/N
Ethernet Hub	SMC	EtherEZ hub 3605T	none
Access point	Proxim	7520	NONE
Computer	Micron	Transport Xpe	922527-0001

Test Conditions / Notes:

The EUT is configured according to ANSI C63.4. The EUT is operating on channel eighty (high channel). The EUT is exercised by a rapid data transfer application. The EUT is upright.

Measurement Data:

Sorted by Margin

Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	Hi Fr dB	Cbl-2 DB	Horn DB	Cable dB	Dist dB	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar
1	7439.940	30.4	-39.2 +0.0	+13.2	+37.3	+2.5	+0.0	44.2	54.0	-9.8	Horiz
2	4961.190	33.2	-39.5 +0.2	+10.6	+34.9	+1.6	+0.0	41.0	54.0	-13.0	Horiz
3	2480.761	112.4	-39.4 +0.0	+5.8	+31.1	+1.0	+0.0	110.9	137.0	-26.1	Vert
4	2480.270	105.8	-39.4 +0.0	+5.8	+31.1	+1.0	+0.0	104.3	137.0	-32.7	Horiz

Test Location: CKC LABORATORIES INC. • 22105 Wilson River Hwy, Site A • Tillamook, Oregon 97141
 • (800) 500-4EMC

Customer: **Inroad, Inc.** Date: Sep-11-98
 Specification: **FCC 15.247 Cond Spur** Time: 11:45
 Test Type: **Conducted Spurious** Sequence#: 13
 Equipment: **Network Computer**
 Manufacturer: Solectron Washington, Inc. Tested By: Steve Behm
 Model: Inquire
 S/N: None

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Network Computer*	Inroad Inc.	Inquire	none

Support Devices:

Function	Manufacturer	Model #	S/N
Ethernet Hub	SMC	EtherEZ hub 3605T	none
Access point	Proxim	7520	NONE
Computer	Micron	Transport Xpe	922527-0001

Test Conditions / Notes:

The EUT is configured according to ANSI C63.4. The EUT is operating on channel eighty (high channel). The EUT is exercised by a rapid data transfer application. The EUT is being tested by conducted spurious from the antenna port directly to the spectrum analyzer.

Measurement Data:			Sorted by Margin			Test Distance: None				
#	Freq MHz	Rdng dB μ V	8.2-1 dB	12.4- dB	Dist dB	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar	
1	7442.900	42.2		+0.4	+0.0	+0.0	42.6	54.0	-11.4	None
Average										
^	7442.900	44.2		+0.4	+0.0	+0.0	44.6	54.0	-9.4	None
3	9923.700	36.3		+0.0	+5.4	+0.0	41.7	54.0	-12.3	None
Average										
^	9923.743	42.3		+0.0	+5.4	+0.0	47.7	54.0	-6.3	None
5	2480.673	123.7		+0.0	+0.0	+0.0	123.7	137.0	-13.3	None
6	14885.520	37.0		+0.0	+3.2	+0.0	40.2	54.0	-13.8	None
7	4962.073	39.7		+0.0	+0.0	+0.0	39.7	54.0	-14.3	None
8	17365.939	35.7		+0.0	+0.0	+0.0	35.7	54.0	-18.3	None
9	12404.540	34.5		+0.0	+0.4	+0.0	34.9	54.0	-19.1	None

Test Location: CKC LABORATORIES INC. • 22105 Wilson River Hwy, Site A • Tillamook, Oregon 97141
 • (800) 500-4EMC

Customer: **Inroad, Inc.** Date: Sep-11-98
 Specification: **FCC 15.247 Cond Spur** Time: 11:24
 Test Type: **Conducted Spurious** Sequence#: 12
 Equipment: **Network Computer**
 Manufacturer: Solectron Washington, Inc. Tested By: Steve Behm
 Model: Inquire
 S/N: none

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Network Computer*	Inroad Inc.	Inquire	None

Support Devices:

Function	Manufacturer	Model #	S/N
Ethernet Hub	SMC	EtherEZ hub 3605T	None
Access point	Proxim	7520	NONE
Computer	Micron	Transport Xpe	922527-0001

Test Conditions / Notes:

The EUT is configured according to ANSI C63.4. The EUT is operating on channel forty (mid channel). The EUT is exercised by a rapid data transfer application. The EUT is being tested by conducted spurious from the antenna port directly to the spectrum analyzer.

Measurement Data:

Sorted by Margin

Test Distance: None

#	Freq MHz	Rdng dB μ V	3.95 dB	8.2-1 dB	Dist dB	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar
1	7322.650	50.4	+0.0	+0.0	+0.0	50.4	54.0	-3.6	None
	Average								
^	7322.650	51.7	+0.0	+0.0	+0.0	51.7	54.0	-2.3	None
3	4881.626	44.7	+0.5	+0.0	+0.0	45.2	54.0	-8.8	None
	Average								
^	4881.617	48.5	+0.5	+0.0	+0.0	49.0	54.0	-5.0	None
5	9762.700	42.7	+0.0	+1.5	+0.0	44.2	54.0	-9.8	None
	Average								
^	9762.650	47.2	+0.0	+1.4	+0.0	48.6	54.0	-5.4	None
7	2440.827	123.8	+0.0	+0.0	+0.0	123.8	137.0	-13.2	None
	Average								
^	2440.827	123.8	+0.0	+0.0	+0.0	123.8	137.0	-13.2	None
9	12204.860	34.7	+0.0	+0.2	+0.0	34.9	54.0	-19.1	None

Test Location: CKC LABORATORIES INC. • 22105 Wilson River Hwy, Site A • Tillamook, Oregon 97141
 • (800) 500-4EMC

Customer: **Inroad, Inc.** Date: Sep-11-98
 Specification: **FCC 15.247 Cond Spur** Time: 10:38
 Test Type: **Conducted Spurious** Sequence#: 11
 Equipment: **Network Computer**
 Manufacturer: Solectron Washington, Inc. Tested By: Steve Behm
 Model: Inquire
 S/N: none

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Network Computer*	Inroad Inc.	Inquire	none

Support Devices:

Function	Manufacturer	Model #	S/N
Ethernet Hub	SMC	EtherEZ hub 3605T	none
Access point	Proxim	7520	NONE
Computer	Micron	Transport Xpe	922527-0001

Test Conditions / Notes:

The EUT is configured according to ANSI C63.4. The EUT is operating on channel one (low channel). The EUT is exercised by a rapid data transfer application. The EUT is being tested by conducted spurious from the antenna port directly to the spectrum analyzer.

Measurement Data:

Sorted by Margin

Test Distance: None

#	Freq MHz	Rdng dB μ V	3.95 dB	5.85G dB	8.2-1 dB	12.4- dB	Dist dB	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar
1	7205.955	38.8	+0.0	+0.0	+2.2	+0.0	+0.0	41.0	54.0	-13.0	None
	Average										
^	7205.955	42.3	+0.0	+0.0	+2.2	+0.0	+0.0	44.5	54.0	-9.5	None
3	2401.577	123.2	+0.0	+0.0	+0.0	+0.0	+0.0	123.2	137.0	-13.8	None
4	2402.000	123.0	+0.0	+0.0	+0.0	+0.0	+0.0	123.0	137.0	-14.0	None
	Average										
5	16813.961	39.8	+0.0	+0.0	+0.0	+1.3	+0.0	39.8	54.0	-14.2	None
	Average										
6	4804.000	32.4	+0.5	+0.0	+0.0	+0.0	+0.0	32.9	54.0	-21.1	None
	Average										
^	4803.940	37.0	+0.5	+0.0	+0.0	+0.0	+0.0	37.5	54.0	-16.5	None
8	9607.955	32.2	+0.0	+0.0	+0.0	+0.0	+0.0	32.2	54.0	-21.8	None
	Average										
9	12009.960	25.0	+0.0	+2.3	+0.0	+0.0	+0.0	27.3	54.0	-26.7	None
	Average										