

KTL Test Report: 9R05174.2

Applicant: EXI Wireless Systems Inc.
Suite 100-13551 Commerce Parkway
Richmond, B.C.
V6V 2L1

**Equipment Under Test:
(E.U.T.)** EXI Controller – Roam II

FCC ID: HE7MAX

In Accordance With: **FCC Part 15, Subpart C, Paragraph 15.209**
General Limits For Low Power Transmitters

Tested By: KTL Ottawa Inc.
3325 River Road, R.R. 5
Ottawa, Ontario K1V 1H2

Authorized By:

R. Grant, Wireless Group Manager

Date:

Total Number of Pages: 19

EQUIPMENT: EXI Controller – Roam II
FCC ID: HE7MAX

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EQUIPMENT: EXI Controller – Roam II
FCC ID: HE7MAX

Section 1. Summary Of Test Results

Manufacturer: EXI Wireless Systems
Model No.: Roam II Controller
Serial No.: 3119
Date Received In Laboratory: November 5, 1999
KTL Identification No.: Item #1

General: **All measurements are traceable to national standards.**

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with FCC Part 15, Subpart C for low power devices. All tests were conducted using measurement procedure ANSI C63.4-1992. Radiated Emissions were made on an open area test site.

☐

New Submission

☒

Production Unit

☒

Class II Permissive Change

☐

Pre-Production Unit

D	X	T
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Equipment Code

THIS TEST REPORT RELATES ONLY TO THE ITEM(S) TESTED.

THE FOLLOWING DEVIATIONS FROM, ADDITIONS TO, OR EXCLUSIONS FROM THE TEST SPECIFICATIONS HAVE BEEN MADE.

See “ Summary of Test Data”.



NVLAP LAB CODE: 100351-0

TESTED BY: _____ DATE: _____
Glen Westwell, Technologist

TESTED BY: _____ DATE: _____
Kevin Rose, Test Technician

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*EQUIPMENT: EXI Controller – Roam II**FCC ID: HE7MAX*

Summary Of Test Data

NAME OF TEST	PARA. NO.	RESULT
Powerline Conducted Emissions	15.207	Complies
Radiated Emissions	15.209	Complies
Occupied Bandwidth	Not Specified	Complies

Footnotes For N/A's:**Test Conditions:****Indoor**

Temperature: 22 °C

Humidity: 31 %

Outdoor

Temperature: 12 °C

Humidity: 32 %

EQUIPMENT: EXI Controller – Roam II
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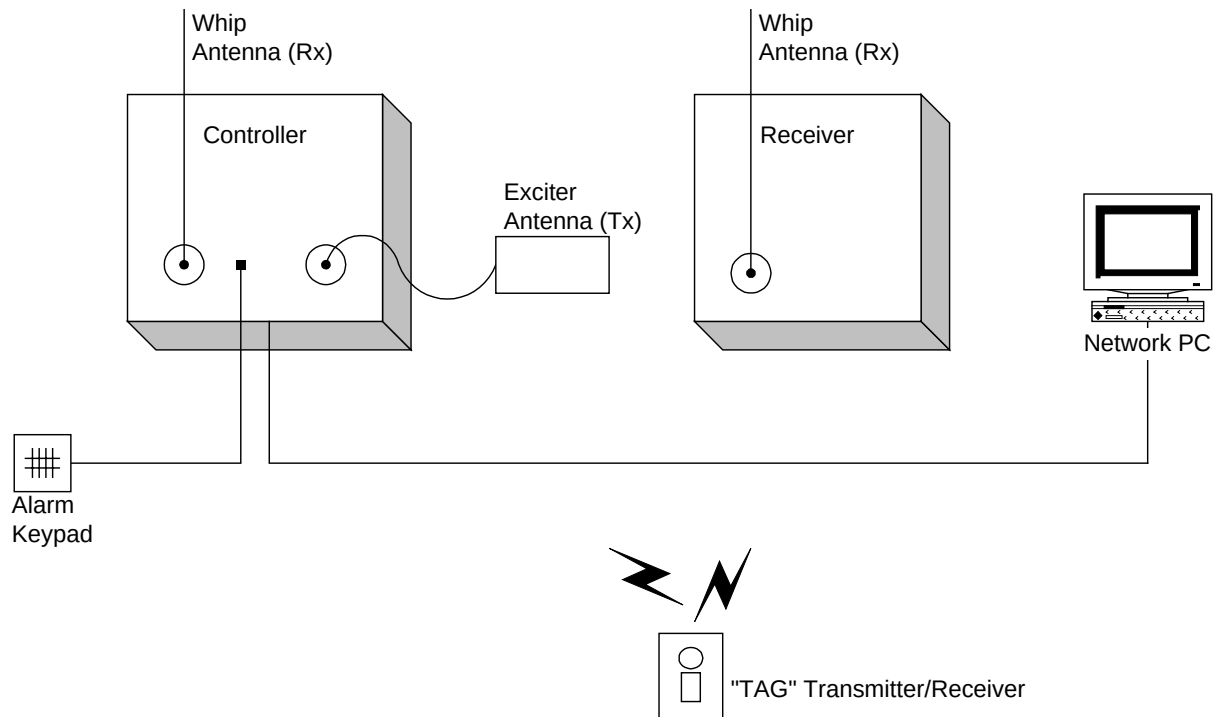
Section 2. General Equipment Specification

Frequency Range:	Tx Frequency = 307 kHz Rx Frequency = 433.92 MHz	
Operating Frequency(ies) of Sample:	Tx Frequency = 307 kHz Rx Frequency = 433.92 MHz	
Modulation:	Pulse Width Modulation (PWM)	
Emission Designator:	26K67F1D	
Crystal Frequencies:		
Integral Antenna	Yes ☐	No ☒

***Note:** If antenna is not integral to transmitter explain method of attachment and type of unique connector: BNC*

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Configuration of the Equipment Under Test



*EQUIPMENT: EXI Controller – Roam II**FCC ID: HE7MAX*

Section 3. Powerline Conducted Emissions

NAME OF TEST: Powerline Conducted Emissions	PARA. NO.: 15.207
TESTED BY: Kevin Rose	DATE: November 8, 1999

Minimum Standard:

Frequency (MHz)	Maximum Powerline Conducted RF Voltage	
	(μ V)	(dB μ V)
0.45 - 30.0	250	48

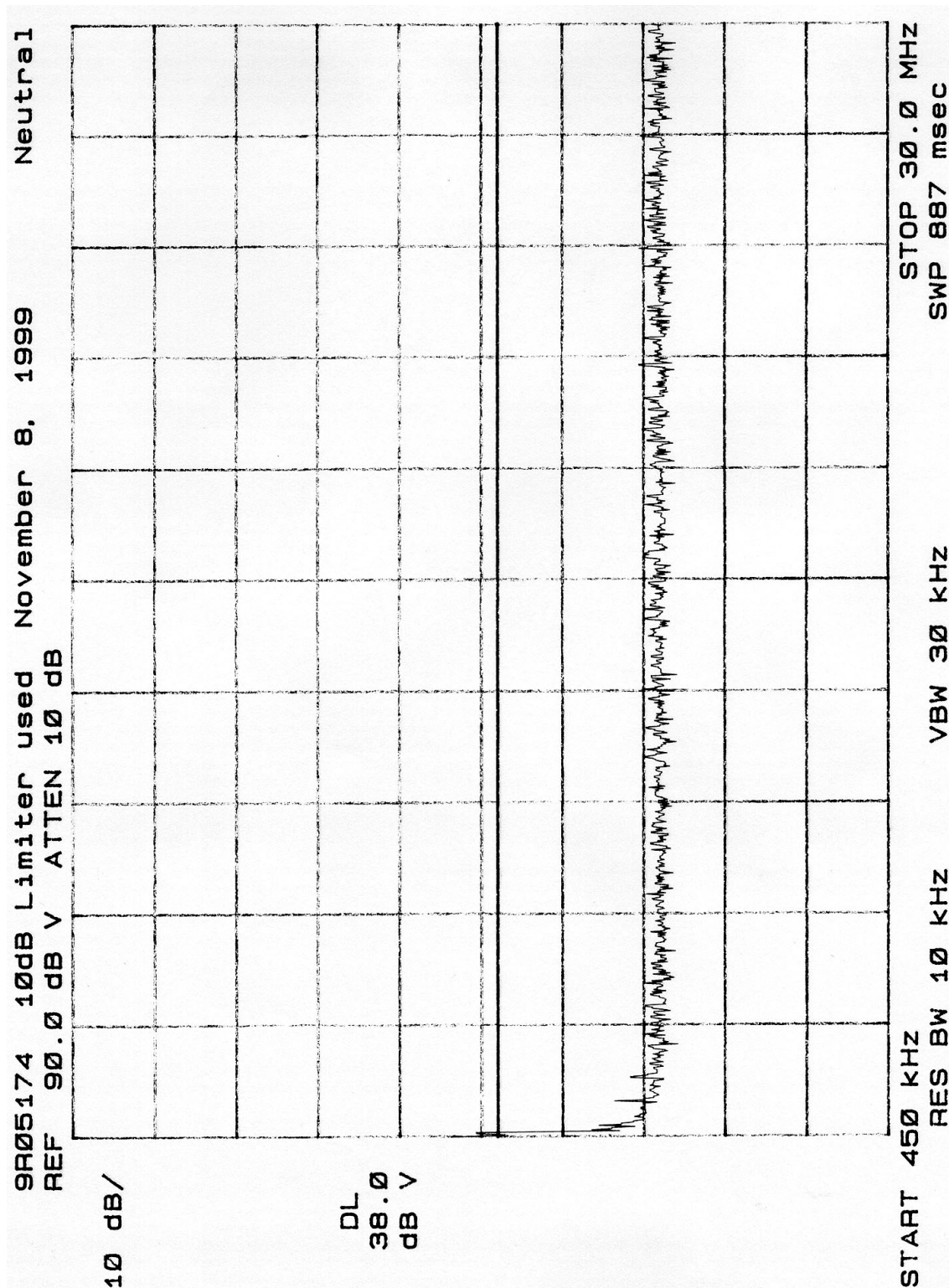
Test Results: Complies. See attached graph(s).**Measurement Data:** See attached graphs and table.

	Frequency (MHz)	Emission Level (dB μ V) CISPR
Phase:	0.450	42.2
Neutral:	0.450	42.1

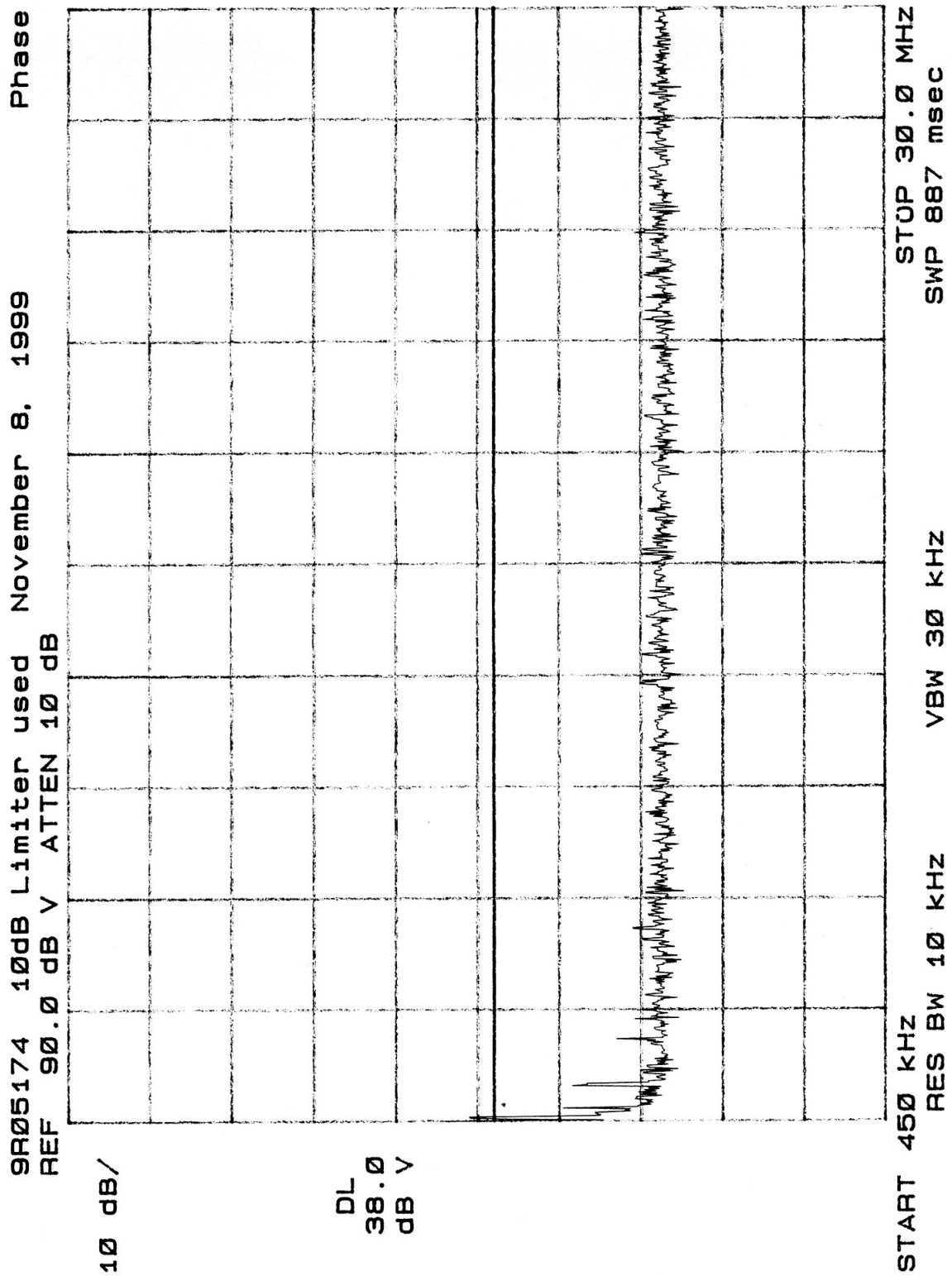
Method of Measurement: (Procedure ANSI C63.4-1992)

Measurements were made using a spectrum analyzer with 10 kHz RBW, Peak Detector. Any emissions that are close to the limit are measured using a test receiver with 10 kHz bandwidth, CISPR Quasi-Peak Detector.

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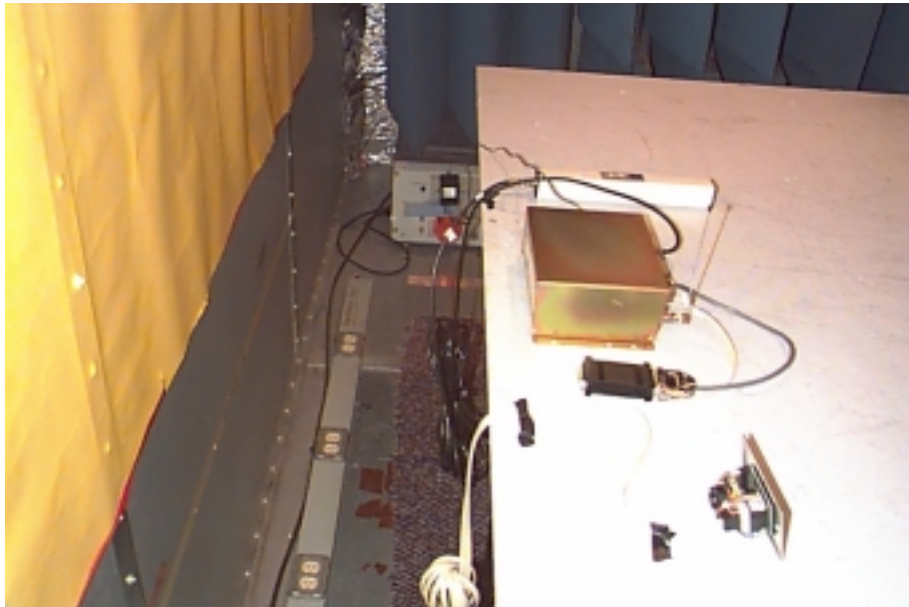
EQUIPMENT: EXI Controller – Roam II
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Powerline Conducted Photographs (Worst Case Configuration)

Front View



Side View



*EQUIPMENT: EXI Controller – Roam II**FCC ID: HE7MAX*

Section 4. Radiated Emissions

NAME OF TEST: Radiated Emissions	PARA. NO.: 15.209
TESTED BY: Glen Westwell	DATE: November 8, 1999

Minimum Standard: The field strength of emissions from the device shall not exceed the following limits.

Fundamental (MHz)	Field Strength ($\mu\text{V/m}$)	Field Strength (dB μV)
0.009 - 0.490	2400/F(kHz) @ 300m	—
0.490 - 1.705	24000/F(kHz) @ 30m	—
1.705 - 30	30 @ 30m	—
30 - 88	100	40.0
88 - 216	150	43.5
216 - 960	200	46.0
Above 960	500	54.0

Test Results: Complies. The worst-case emission level is 6.5 dB $\mu\text{V/m}$ @ 3m at 0.307 MHz. This is 11.4 dB below the specification limit.

Measurement Data: (Procedure ANSI C63.4-1992)

*EQUIPMENT: EXI Controller – Roam II**FCC ID: HE7MAX***Test Data - Radiated Emissions**

Test Distance (meters) :	Receiver:		RBW(kHz):		Detector:	
Freq. (MHz)	Ant. *	RCVD Signal (dBμV/m)	Dist. Corr. (dB)	Field Strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
0.307	Loop			6.5	17.9	11.4
0.614	Loop	40.2	-40.0	0.2	31.8	31.6
0.912	Loop	40.6	-40.0	0.6	28.3	27.7
1.228	Loop	49.9	-40.0	9.9	25.8	15.9
1.535	Loop	33.8	-40.0	-6.2	23.9	30.1
Notes: B/C = Biconical, B/L = Biconilog, L/P = Log-Periodic, H = Horn, D/P = Dipole * Re-measured using dipole antenna. ** Includes cable loss when amplifier is not used. *** Includes cable loss. () Denotes failing emission level.						

Notes: All emissions except for fundamental measured at 3 m and extrapolated to 30 m using an inverse square law extrapolation factor. The fundamental emissions of 307 kHz was measured at 3, 5 and 10 m and extrapolated to 300 m using an extrapolation factor derived from the measurement data. See attached.

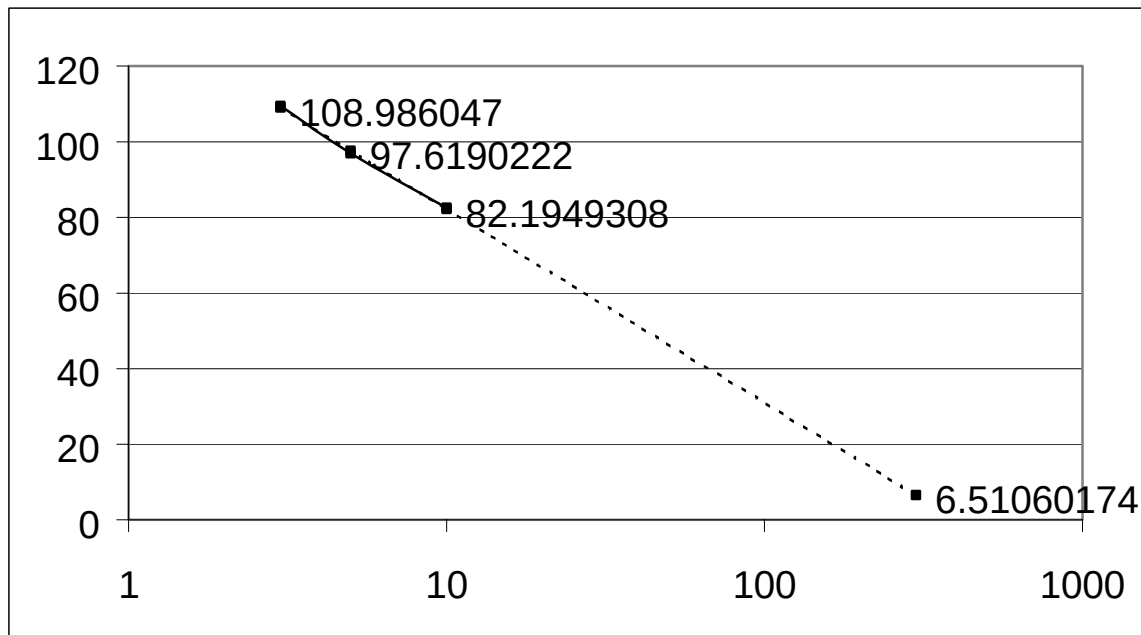
*EQUIPMENT: EXI Controller – Roam II**FCC ID: HE7MAX*

Measurement Data: Fundamental at 307 kHz

Measured at 3, 5, and 10 m

and Extrapolated to 300 m

Measurement Distance (m)	Log Measurement Distance	Field Strength (dBuV/m)		Extrapolated Field Strength (dBuV/m)
3	0.477121255	109.4	SLOPE=	108.9860469
5	0.698970004	96.9	INTERCEPT=	97.61902224
10	1	82.5		82.19493083
300	2.477121255			6.510601745



EQUIPMENT: EXI Controller – Roam II
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Radiated Photographs (Worst Case Configuration)

Front View



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Section 5. Occupied Bandwidth

NAME OF TEST: Occupied Bandwidth	PARA. NO.: N/A
TESTED BY: Glen Westwell	DATE: November 9, 1999

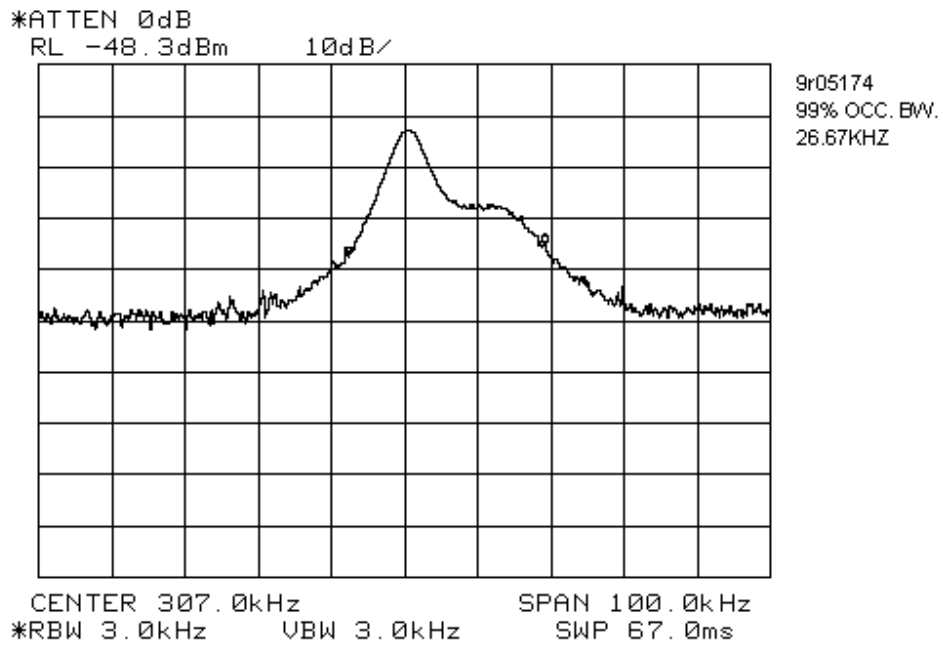
Minimum Standard: Not specified.

Test Results: The 99% power occupied bandwidth is 26.67 kHz.

Measurement Data: See attached graph(s).

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Section 6. Test Equipment List

CAL CYCLE	EQUIPMENT	MANUFACTURER	MODEL	SERIAL	LAST CAL.	NEXT CAL.
1 Year	Spectrum Analyzer	Hewlett Packard	8564E	3846A01407	May 31/99	May 31/00
1 Year	Spectrum Analyzer-1	Hewlett Packard	8566B	2311A02238	Oct. 22/98	Oct. 22/99
1 Year	Spectrum Analyzer Display-1	Hewlett Packard	8566B	2314A04759	Oct. 22/98	Oct. 22/99
1 Year	Quasi-peak adapter-1	Hewlett-Packard	85650A	2043A00302	Oct. 22/98	Oct. 22/99
1 Year	LISN	Rohde & Schwarz	ESH2-Z5	890485/017	Aug. 24/99	Aug. 24/00
1 Year	Receiver	Rohde & Schwarz	ESH3	872079/053	Oct. 5/99	Oct. 5/00
1 Year	Receiver	Rohde & Schwarz	ESVP	892661/014	Mar. 29/99	Mar. 29/00
1 Year	Plotter	Hewlett Packard	7550A	FA001129	NCR	NCR

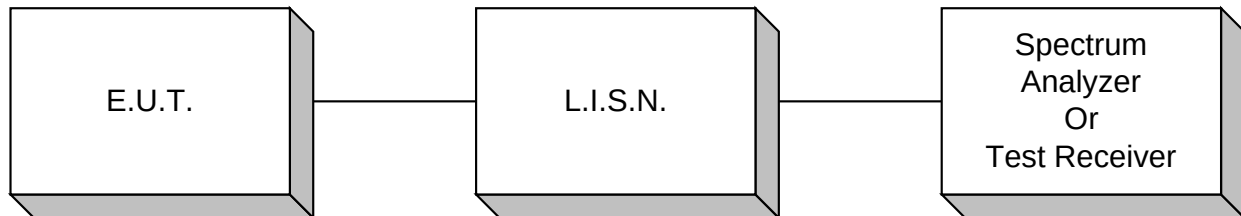
NA: Not Applicable
NCR: No Cal Required
COU: CAL On Use

EQUIPMENT: EXI Controller – Roam II
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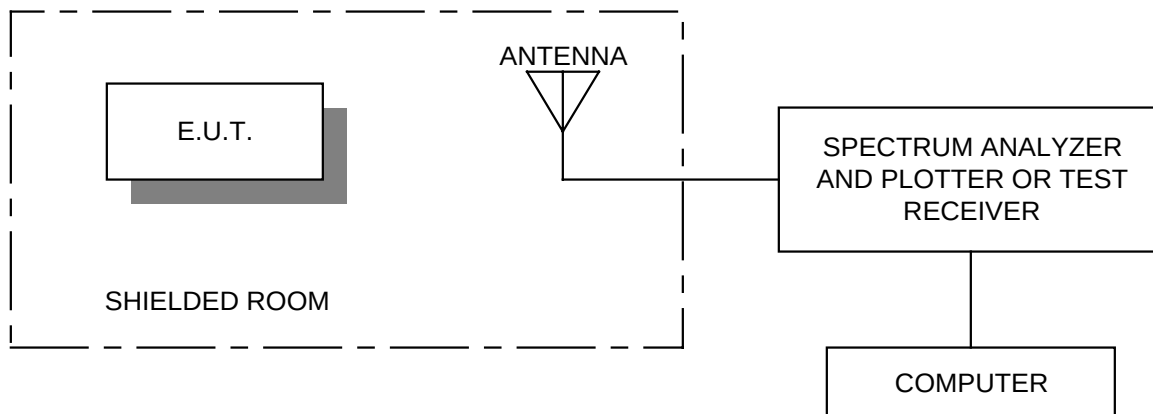
ANNEX A
TEST DIAGRAMS

EQUIPMENT: EXI Controller – Roam II
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Conducted Emissions



Radiated Prescan



Test Site For Radiated Emissions

