

**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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## **Table Of Contents**

<b>Section 1. Summary Of Test Results.....</b>	<b>3</b>
<b>Section 2. General Equipment Specification .....</b>	<b>5</b>
<b>Section 3. Powerline Conducted Emissions .....</b>	<b>7</b>
<b>Section 4. Radiated Emissions .....</b>	<b>10</b>
<b>Section 5. Occupied Bandwidth.....</b>	<b>15</b>
<b>Section 6. Test Equipment List.....</b>	<b>17</b>
<b>ANNEX A TEST DIAGRAMS .....</b>	<b>A1</b>

EQUIPMENT: EXI Controller – Roam II  
FCC ID: HE7MAX

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## 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.

<input type="checkbox"/>	New Submission	<input checked="" type="checkbox"/>	Production Unit			
<input checked="" type="checkbox"/>	Class II Permissive Change	<input type="checkbox"/>	Pre-Production Unit			
<table border="1"><tr><td>D</td><td>X</td><td>T</td></tr></table>	D	X	T	Equipment Code		
D	X	T				

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*

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**Summary Of Test Data**

<b>NAME OF TEST</b>	<b>PARA. NO.</b>	<b>RESULT</b>
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*  
*FCC ID: HE7MAX*

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## **Section 2.          General Equipment Specification**

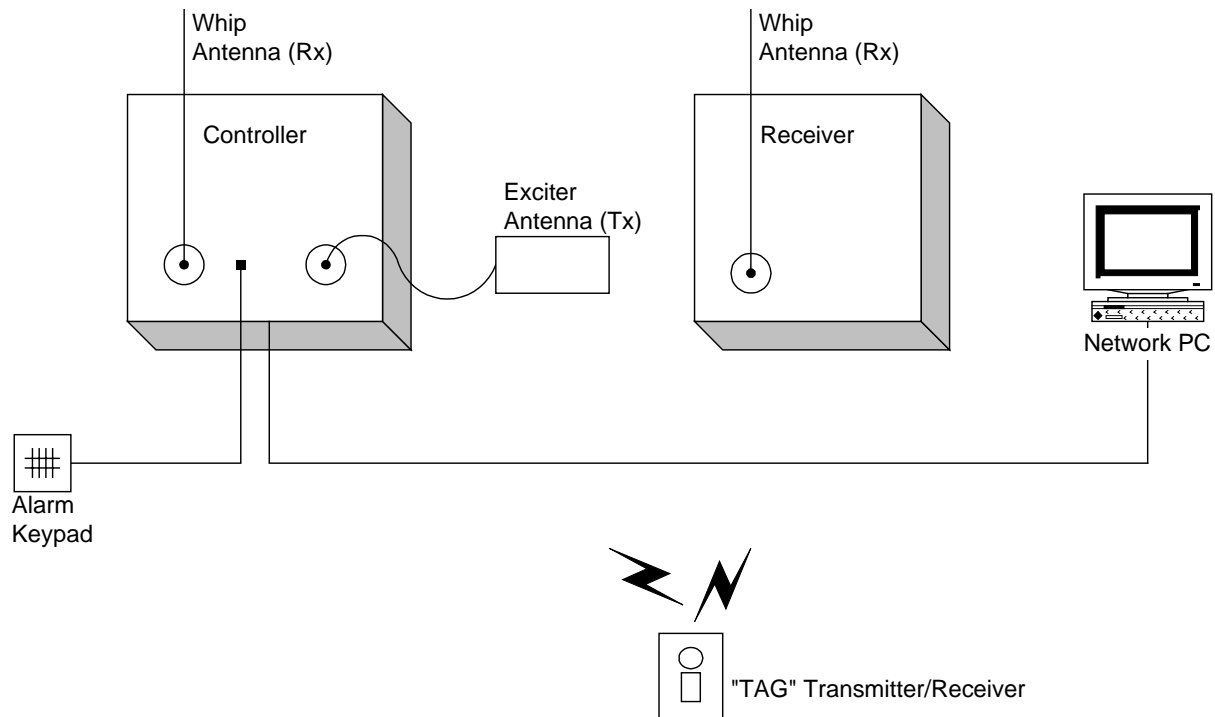
<b>Frequency Range:</b>	Tx Frequency = 307 kHz Rx Frequency = 433.92 MHz	
<b>Operating Frequency(ies) of Sample:</b>	Tx Frequency = 307 kHz Rx Frequency = 433.92 MHz	
<b>Modulation:</b>	Pulse Width Modulation (PWM)	
<b>Emission Designator:</b>	26K67F1D	
<b>Crystal Frequencies:</b>		
<b>Integral Antenna</b>	<b>Yes</b> <input type="checkbox"/>	<b>No</b> <input checked="" type="checkbox"/>

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

*EQUIPMENT: EXI Controller – Roam II*  
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**Configuration of the Equipment Under Test**



EQUIPMENT: EXI Controller – Roam II  
FCC ID: HE7MAX

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### 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	
	( $\mu$ V)	(dB $\mu$ V)
0.45 - 30.0	250	48

**Test Results:** Complies. See attached graph(s).

**Measurement Data:** See attached graphs and table.

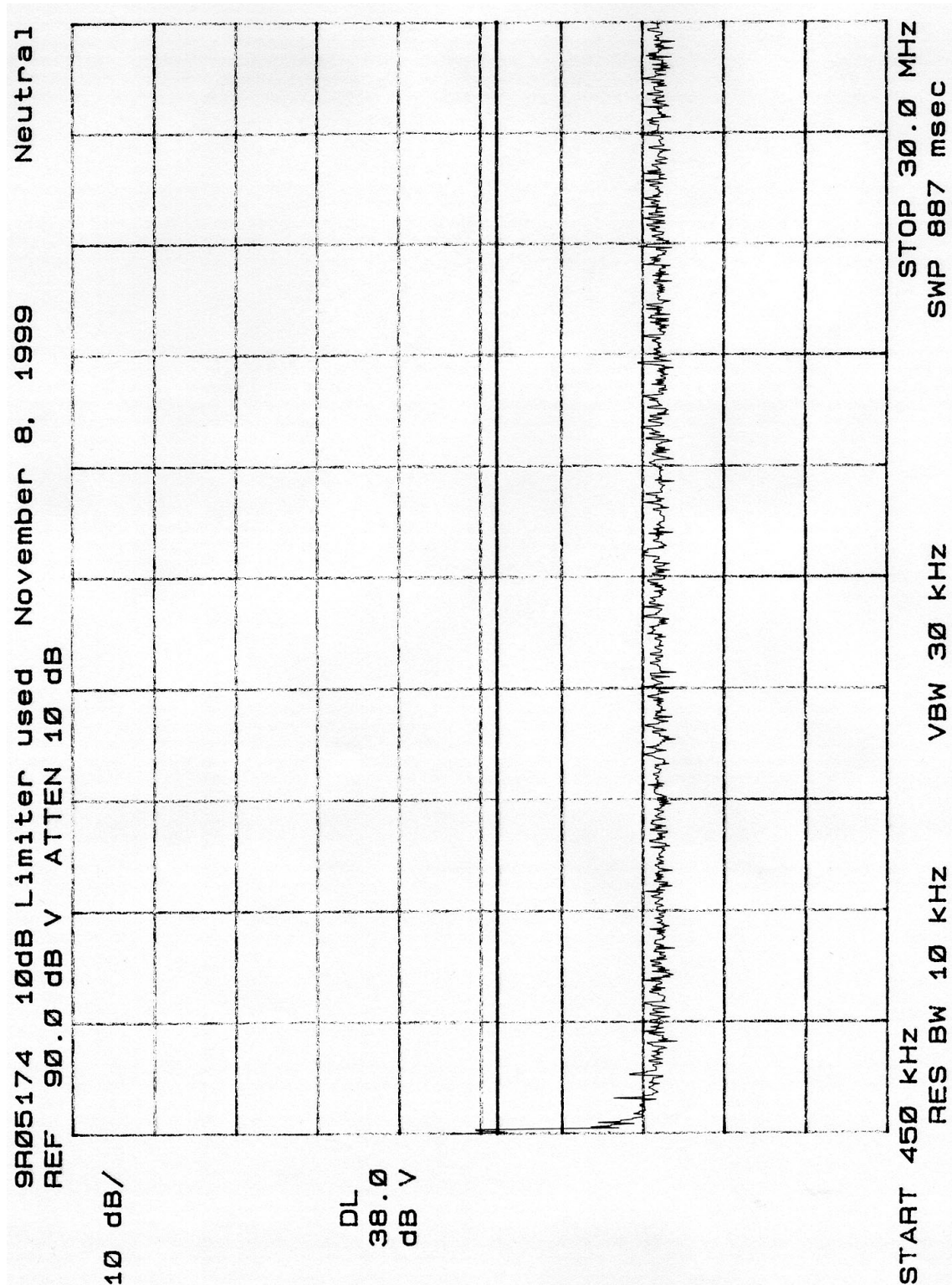
	Frequency (MHz)	Emission Level (dB $\mu$ V) CISPR
Phase:	0.450	42.2
Neutral:	0.450	42.1

#### 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.

EQUIPMENT: EXI Controller – Roam II

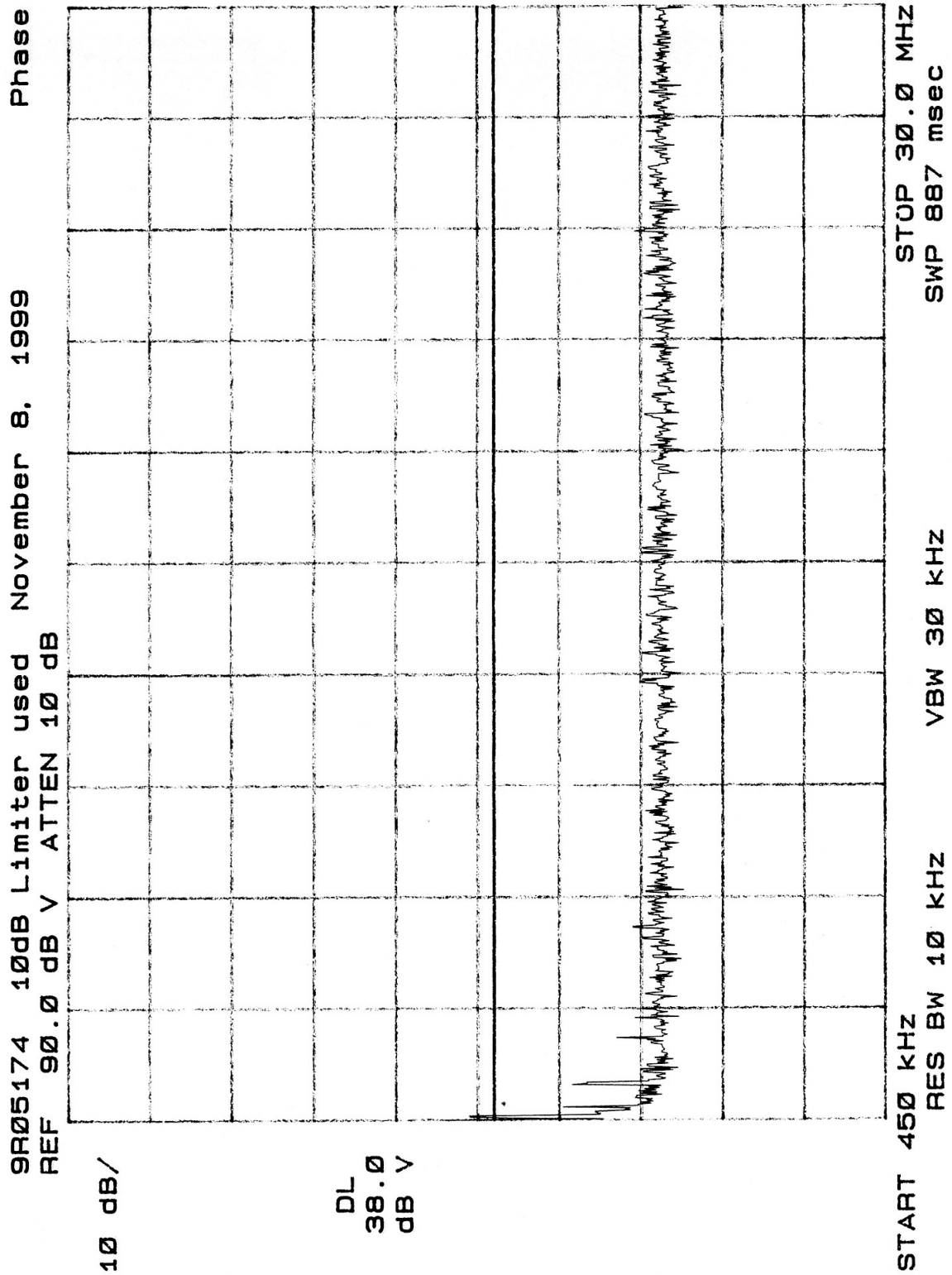
FCC ID: HE7MAX





EQUIPMENT: EXI Controller – Roam II

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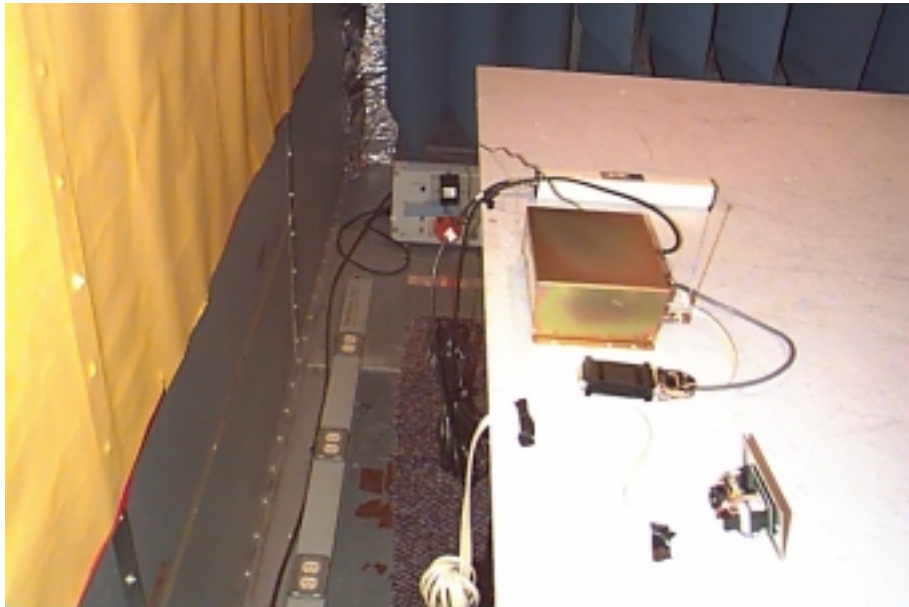
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**Powerline Conducted Photographs (Worst Case Configuration)**

**Front View**



**Side View**



EQUIPMENT: EXI Controller – Roam II  
FCC ID: HE7MAX

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## 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 $\mu\text{V}$ )
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.						

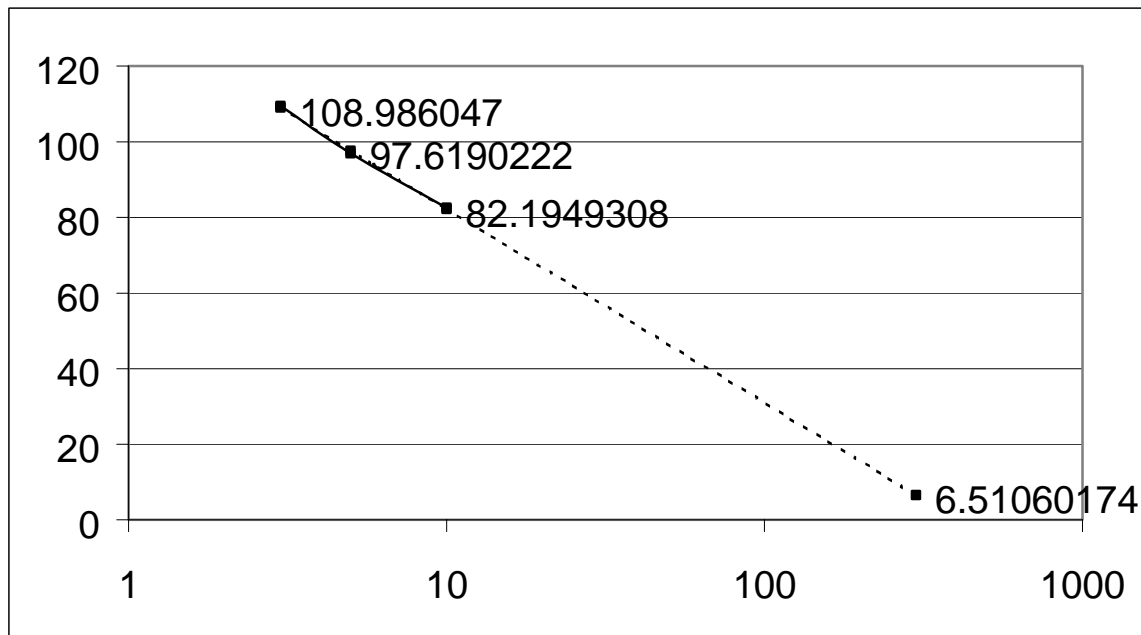
Notes: All emissions except for fundamental measured at 3 m and extrapolated to 30 m using an inverse square law extrapolation factor. The fundamental emissions of 307 kHz was measured at 3, 5 and 10 m and extrapolated to 300 m using an extrapolation factor derived from the measurement data. See attached.

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

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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



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*FCC ID: HE7MAX*

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**Radiated Photographs (Worst Case Configuration)**

**Front View**



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*FCC ID: HE7MAX*

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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.

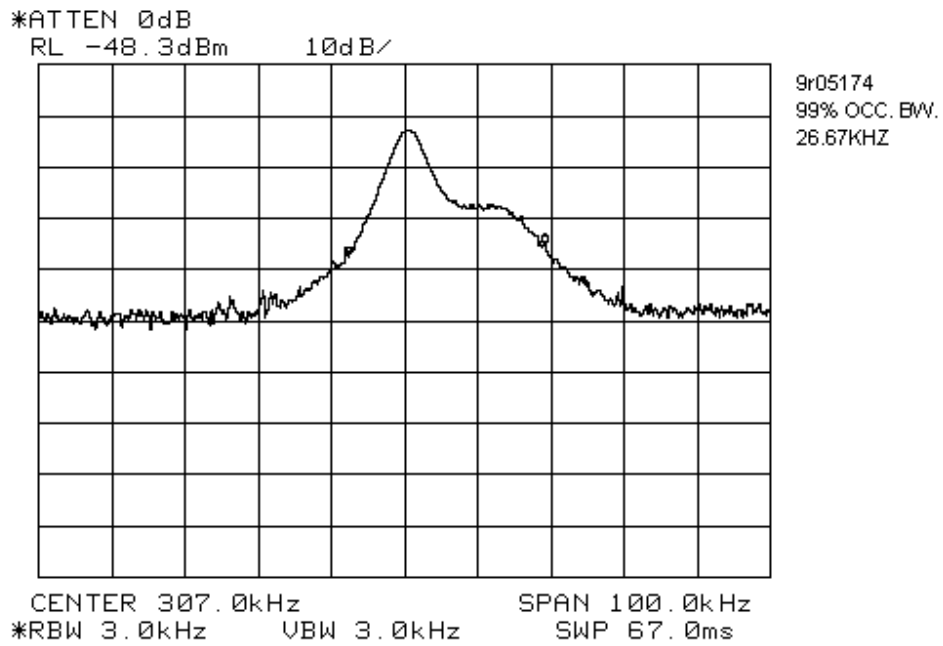
**Test Results:**                The 99% power occupied bandwidth is 26.67 kHz.

**Measurement Data:**        See attached graph(s).

EQUIPMENT: EXI Controller – Roam II

FCC ID: HE7MAX

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*FCC ID: HE7MAX*

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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

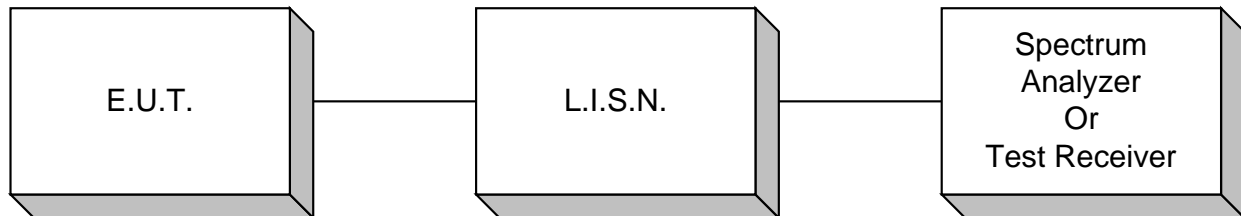
*EQUIPMENT: EXI Controller – Roam II*  
*FCC ID: HE7MAX*

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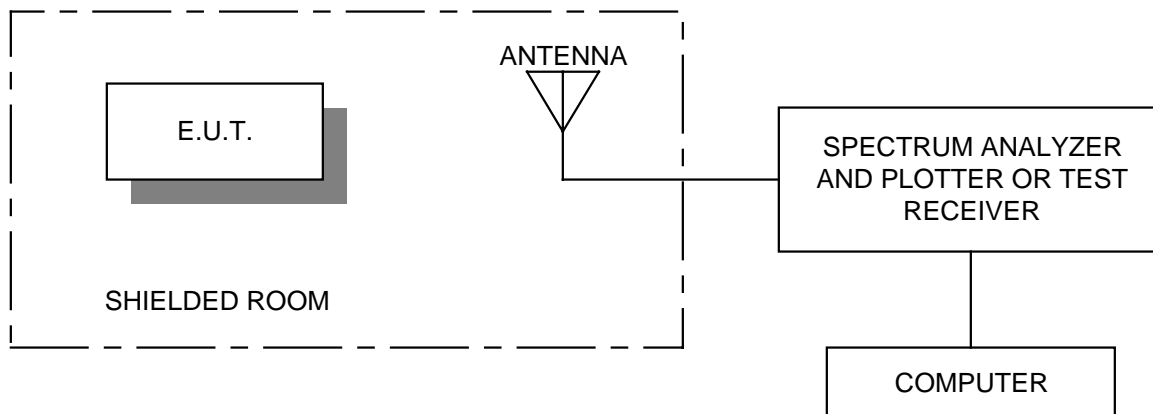
**ANNEX A**  
**TEST DIAGRAMS**

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

## Conducted Emissions



## Radiated Prescan



## Test Site For Radiated Emissions

