

**KTL Test Report:** 9R01881

**Applicant:** Digital Security Controls Ltd.  
3301 Langstaff Road  
Concord, Ontario  
L4K 4L2

**Equipment Under Test:  
(E.U.T.)** WLS 9001 Spread Spectrum Receiver

**FCC ID:** F5399SS9001

**In Accordance With:** **FCC Part 15, Subpart B**  
Radio Receivers

**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:** 17

*EQUIPMENT: WLS 9001 Spread Spectrum Receiver*  
*FCC ID: F5399SS9001*

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*EQUIPMENT: WLS 9001 Spread Spectrum Receiver*  
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**Section 1. Summary of Test Results**

**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 B. Measurement procedure ANSI C63.4-1992 was used for all tests. Radiated Emissions were measured on an open area test site.

New Submission

Production Unit

Class II Permissive Change

Pre-Production Unit

C	Y	Y
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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: \_\_\_\_\_  
Kevin Rose, Test Technician

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This report applies only to the items tested.

*EQUIPMENT: WLS 9001 Spread Spectrum Receiver*  
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**Summary Of Test Data**

<b>Name Of Test</b>	<b>Para. No.</b>	<b>Results</b>
Antenna Conducted Emissions	15.111	Not Applicable
Radiated Emissions	15.109	Complies
Powerline Conducted Emissions	15.107	Complies

**Footnotes For N/A's:**

**Test Conditions:**

**Indoor**                      Temperature: 20 °C  
   Humidity: 31 %

**Outdoor**                      Temperature: 15 °C  
   Humidity: 38 %

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**Section 2.           Equipment Under Test (E.U.T.)**

Manufacturer:                           Digital Security Controls Ltd.  
Model No.:                               WLS 9000  
Serial No.:                               None  
Date Received In Laboratory:       October 5, 1999  
KTL Identification No.:               Item #3

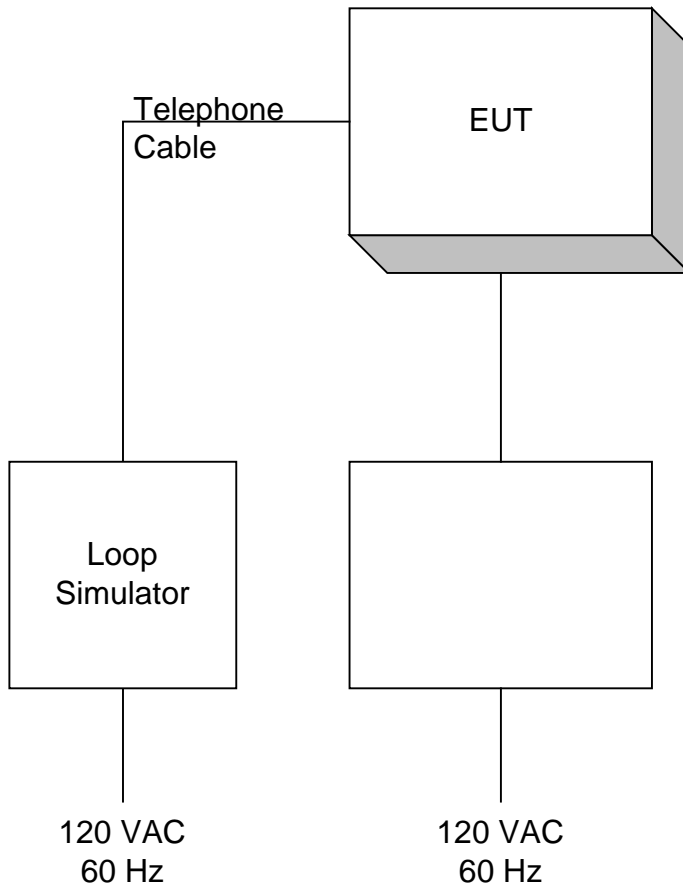
**Equipment Details**

Frequency Range:                       877.35 MHz (Fixed Local Oscillator)  
Number of Channels:                    1  
Operating Frequency(ies) of Sample: 924 MHz  
Primary Power Requirement:          9 VAC  
Bandwidth and Emission Designator: Not Applicable  
Intermediate Frequency(ies):         Not Applicable

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**Configuration of the Equipment Under Test (E.U.T)**



*EQUIPMENT: WLS 9001 Spread Spectrum Receiver*  
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**Section 3. Receiver Antenna Conducted Emissions**

NAME OF TEST: Receiver Antenna Conducted Emissions	PARA. NO.: 15.111
TESTED BY:	DATE:

**Test Results:** Complies/Does Not Comply. See attached graphs and table.

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

**NOT APPLICABLE**

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**Section 4. Radiated Emissions**

NAME OF TEST: Radiated Emissions	PARA. NO.: 15.109(a)
TESTED BY: Kevin Rose	DATE: October 5, 1999

**Minimum Standard:**

Frequency(MHz)	Field Strength (dBµV/m @ 3m)
30 - 88	40.0
88 - 216	43.5
216 - 960	46.0
Above 960	54.0

**Test Results:** Complies. The worst-case emission level is 48.5 dBµV/m @ 3m at 1754.69 MHz. This is 5.5 dB below the specification limit.

**Measurement Data:** See attached table.

For super-regenerative receivers the receiver is coerced using a signal generator and dipole antenna.

Handheld equipment and equipment not designed to be mounted in any fixed orientation, the E.U.T. is tested in three orthogonal axis to obtain worst case results.



*EQUIPMENT: WLS 9001 Spread Spectrum Receiver*  
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**Test Data - Radiated Emissions**

Test Distance (meters) : 3		Range: A Tower		Receiver: ESVP		RBW(kHz): 120		Detector: Q-Peak			
Freq. (MHz)	Ant. *	Pol. (V/H)	Ant. HGT. (m)	Table (deg.)	RCVD Signal (dBµV/m)	Ant. Factor (dB)**	Amp. Gain (dB)***	Dist. Corr. (dB)	Field Strength (dBµV/m)	Limit (dBµV/m)	Margin (dB)
877.35	E/D4	V			0.0	34.6			34.6	46.0	11.4
877.35	E/D4	H			4.3	34.6			38.9	46.0	7.1
1754.69	Hrn2	V			61.7	29.8	-43.0		48.5	54.0	5.5
1754.69	Hrn2	H			59.0	29.8	-43.0		45.8	54.0	8.2
2632.05	Hrn2	V			50.7	31.6	-45.5		36.8	54.0	17.2
2632.05	Hrn2	H			53.2	31.6	-45.5		39.3	54.0	14.7
3509.4	Hrn2	V			40.8	35.3	-42.2		33.9	54.0	20.1
3509.4	Hrn2	H			44.8	35.3	-42.2		37.9	54.0	16.1

Notes:  
 B/C = Biconical, B/L = Biconilog, L/P = Log-Periodic, H = Horn, D/P = Dipole  
 \* Re-measured using dipole antenna. ( ) Denotes failing emission level.  
 (1) 120 kHz, Q-Peak, (2) 10 kHz, Peak, (3) 100 kHz RGW, 300 kHz VBW, Peak,  
 (4) 300 kHz RBW, 1 MHz VBW, Peak, (5) 1 MHz RBW, 3 MHz VBW, Peak, (6) 1 MHz RBW, 10 Hz VBW, Peak

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**Radiated Photographs (Worst Case Configuration)**

FRONT VIEW



REAR VIEW



*EQUIPMENT: WLS 9001 Spread Spectrum Receiver*  
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**Section 5. Powerline Conducted Emissions**

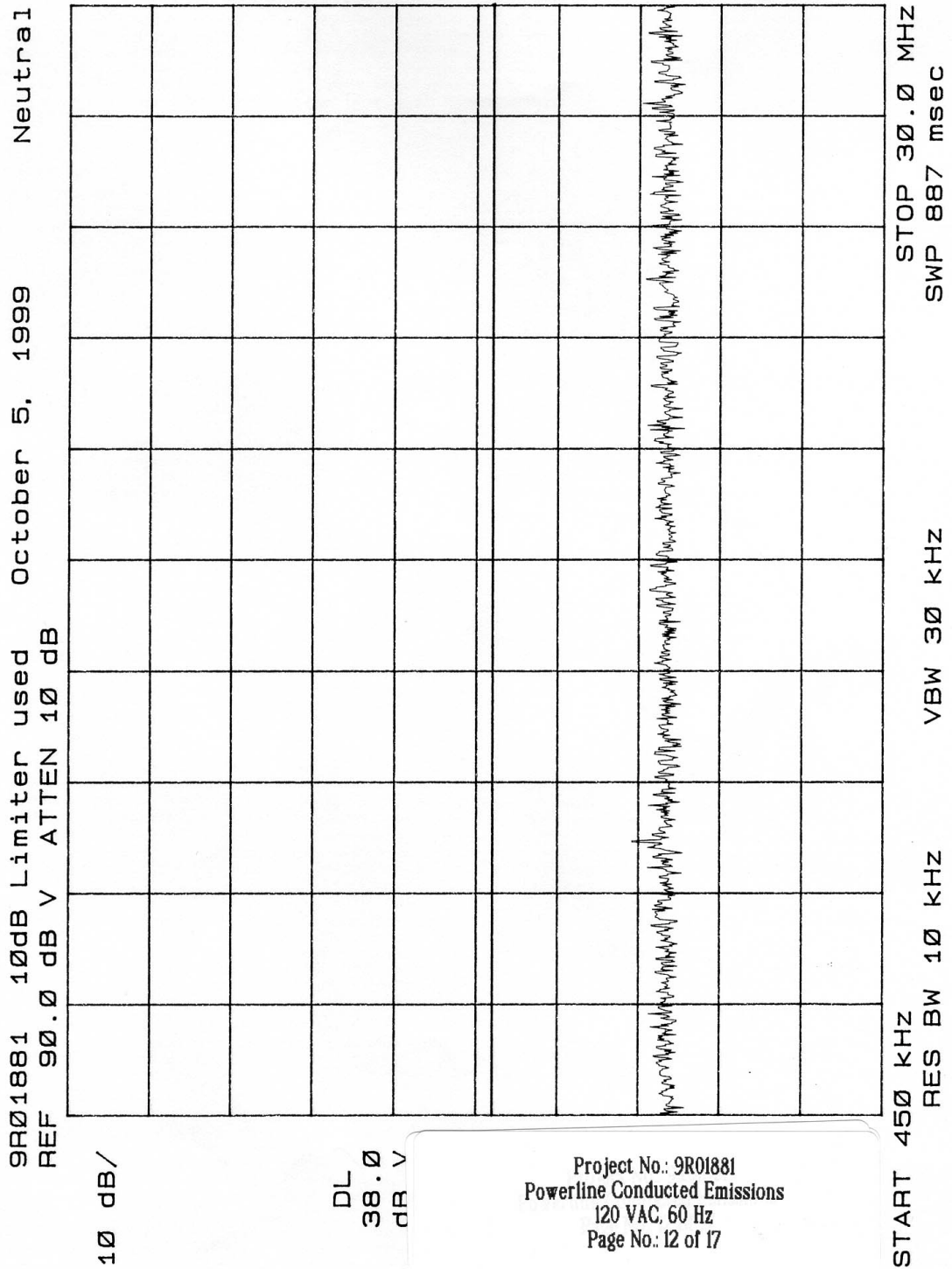
NAME OF TEST: Powerline Conducted Emissions	PARA. NO.: 15.107
TESTED BY: Kevin Rose	DATE: October 5, 1999

**Minimum Standard:** The RF energy feed back into the power lines shall not exceed 48 dB $\mu$ V on any frequency between 0.45 MHz and 30 MHz inclusive.

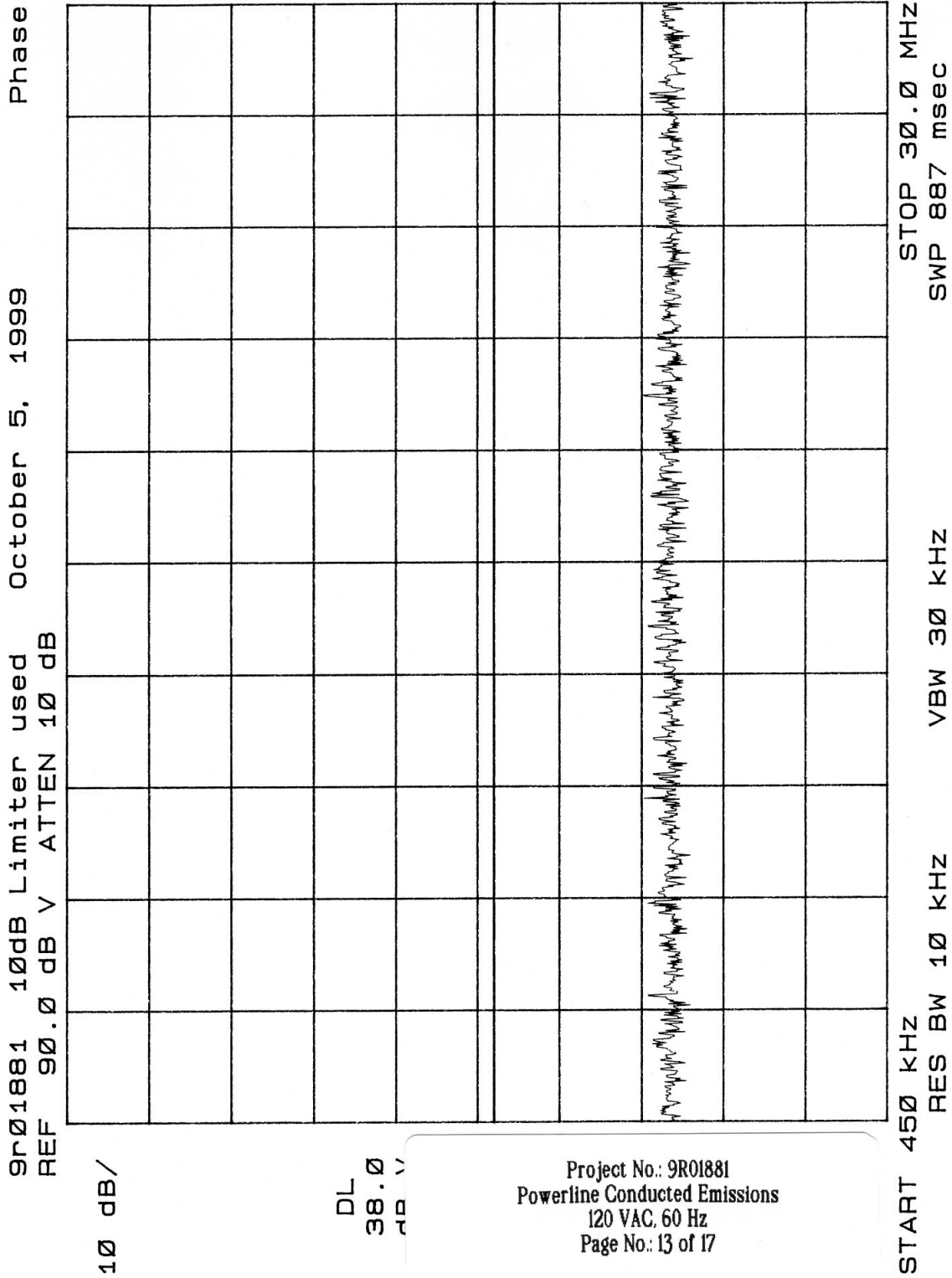
**Test Results:** Complies. See attached graphs.

**Measurement Data:** See attached graphs.

EQUIPMENT: WLS 9001 Spread Spectrum Receiver  
FCC ID: F5399SS9001



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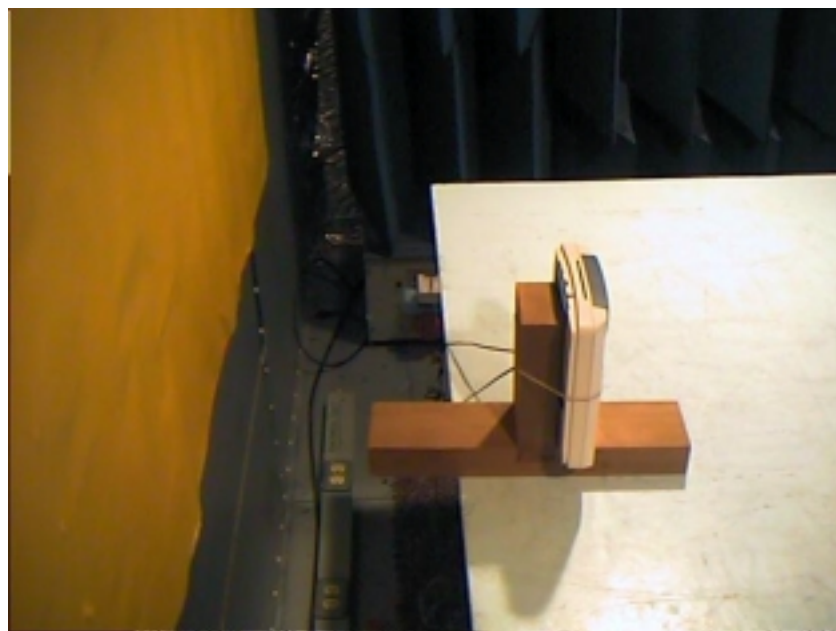
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**Powerline Conducted Photographs (Worst Case Configuration)**

FRONT VIEW



REAR VIEW

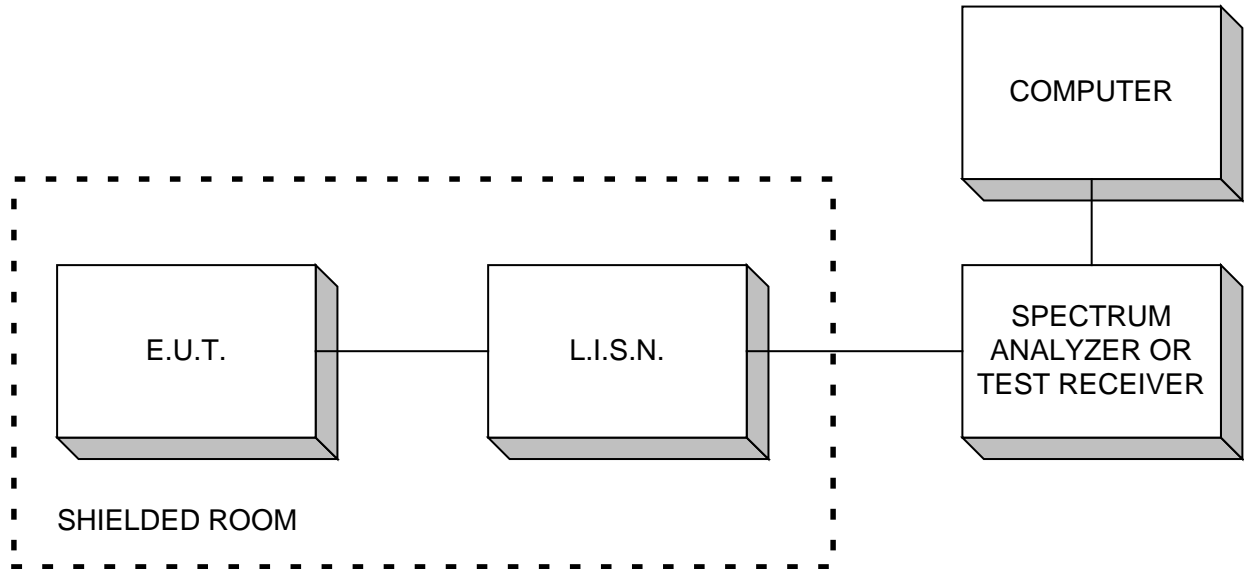


EQUIPMENT: WLS 9001 Spread Spectrum Receiver  
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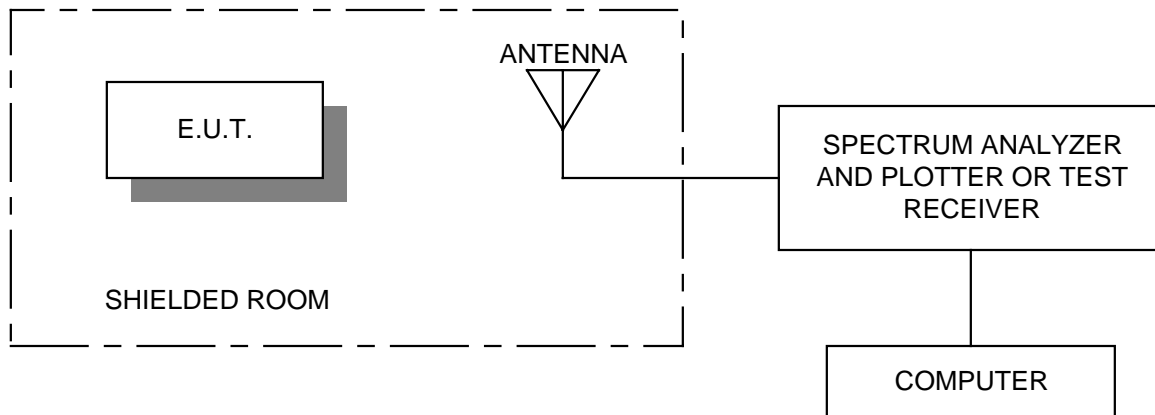
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## Section 6. Block Diagrams

### Conducted Emissions



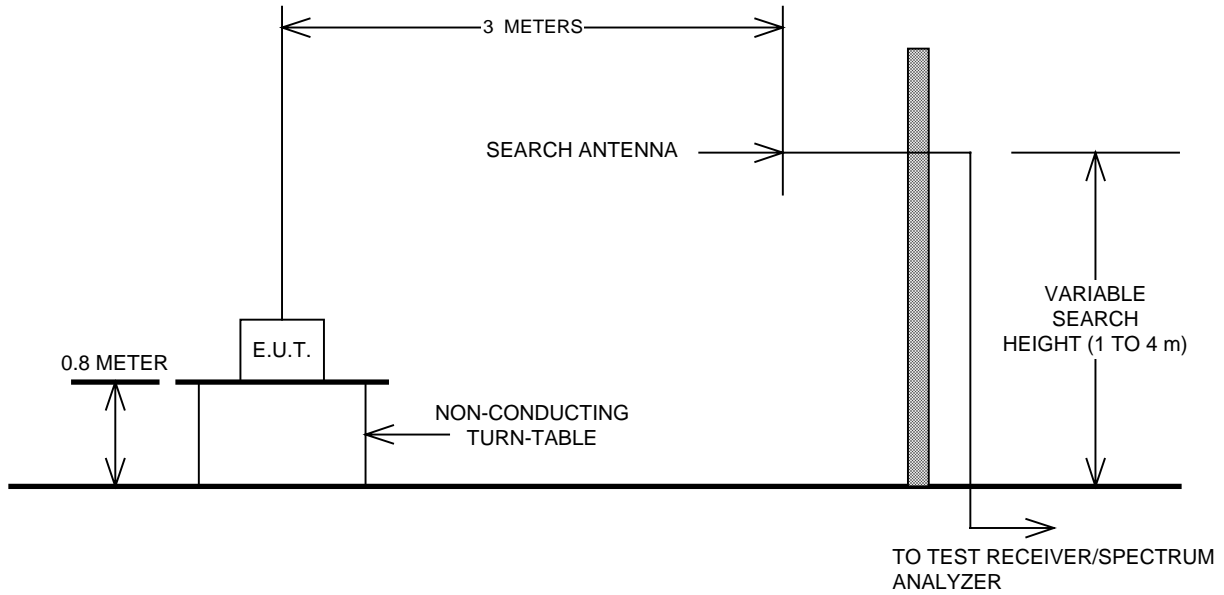
### Radiated Prescan



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**Outdoor Test Site For Radiated Emissions**



The spectrum was searched up to the 10th harmonic of the fundamental frequency of operation.



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**Section 7. Test Equipment List**

<b>CAL CYCLE</b>	<b>EQUIPMENT</b>	<b>MANUFACTURER</b>	<b>MODEL</b>	<b>SERIAL</b>	<b>LAST CAL.</b>	<b>NEXT CAL.</b>	
1 Year	Spectrum Analyzer	Hewlett Packard	8565E	FA000981	June 16/99	June 16/00	
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	July 23/98	Sept. 24/99	
1 Year	Receiver	Rohde & Schwarz	ESVP	892661/014	Mar. 29/99	Mar. 29/00	
2 Year	Horn Antenna	EMCO #2	3115	4336	Oct. 30/97	Oct. 30/99	
1 Year	Dipole Antenna Set	EMCO	3121C	1029	Nov. 18/98	Nov. 18/99	

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