

Test Report: 1R03610.2

Applicant: EXI Wireless Systems Inc.
Suite 100 – 13551 Commerce Pk.
Richmond, BC
V6V 2L1

**Equipment Under Test:
(EUT)** R3 Controller

FCC ID: HE7R3C

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

Tested By: Nemko Canada Inc.
(Formerly KTL Ottawa Inc.)
3325 River Road, R.R. 5
Ottawa, Ontario K1V 1H2

Authorized By:

G. Westwell, Wireless Technologist

Date:

Total Number of Pages: 16

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FCC ID: HE7R3C

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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 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



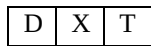
Production Unit



Class II Permissive Change



Pre-Production Unit



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:** _____
Russell Grant, Wireless Group Manager

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This report applies only to the items tested.

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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	N/A

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Section 2. General Equipment Specification

Date Received In Laboratory: March 5, 2001

Nemko Identification No.: Item #1

Frequency Range: Tx 307kHz,
 Rx 433.92MHz

Modulation: Pulse Modulation

Emission Designator: 14K7L1D

Integral Antenna	Yes	No
	☐	☒

Note: BNC Connector Professionally Installed.

*EQUIPMENT: R3 Controller**FCC ID: HE7R3C*

Section 3. Powerline Conducted Emissions**Para. No.: 15.207****Test Performed By:** Russell Grant**Date of Test:** March 13, 2001**Minimum Standard:**

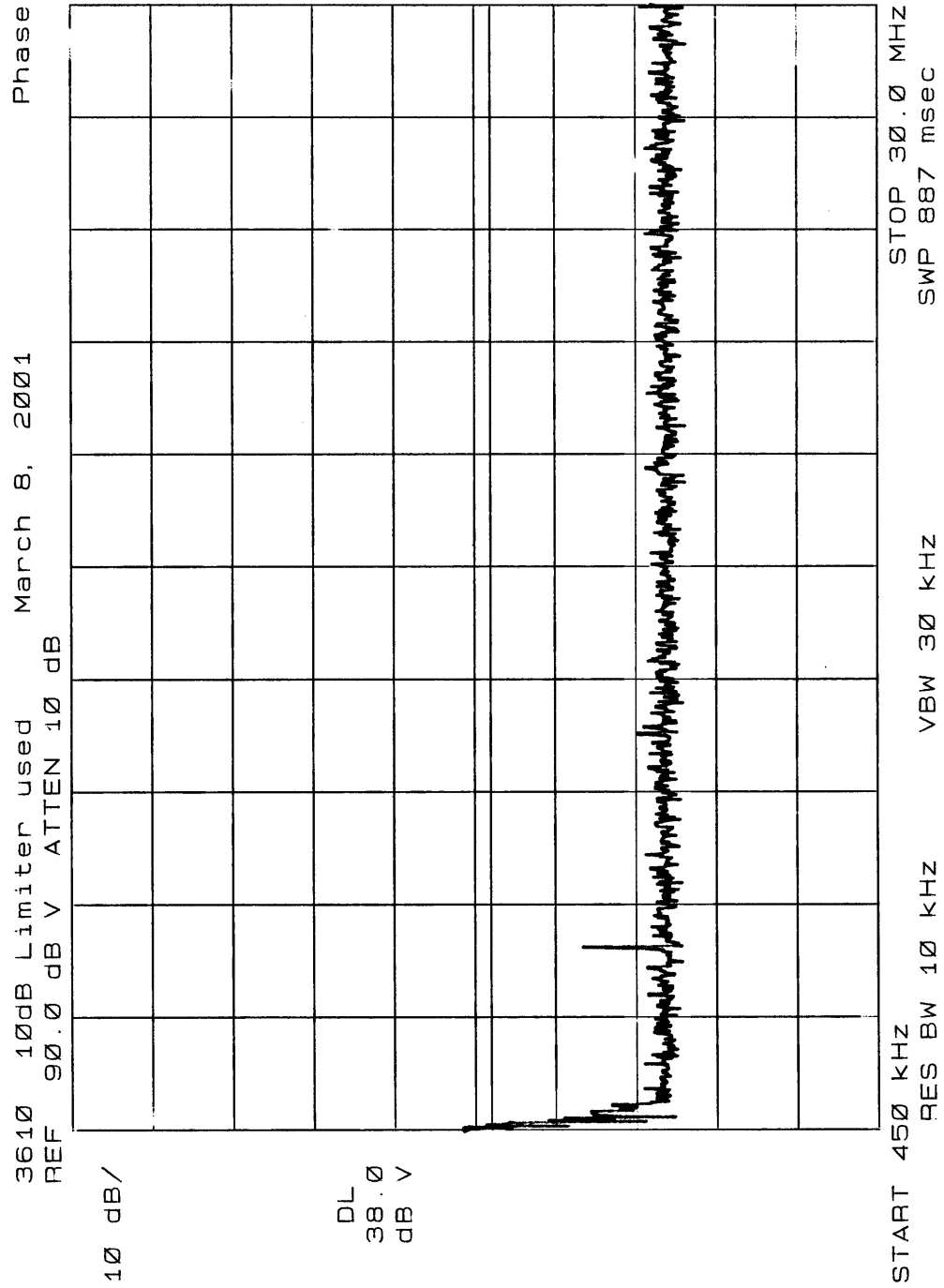
Frequency (MHz)	Maximum Powerline Conducted RF Voltage	
	(μ V)	(dB μ V)
0.45 - 30.0	250	48

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

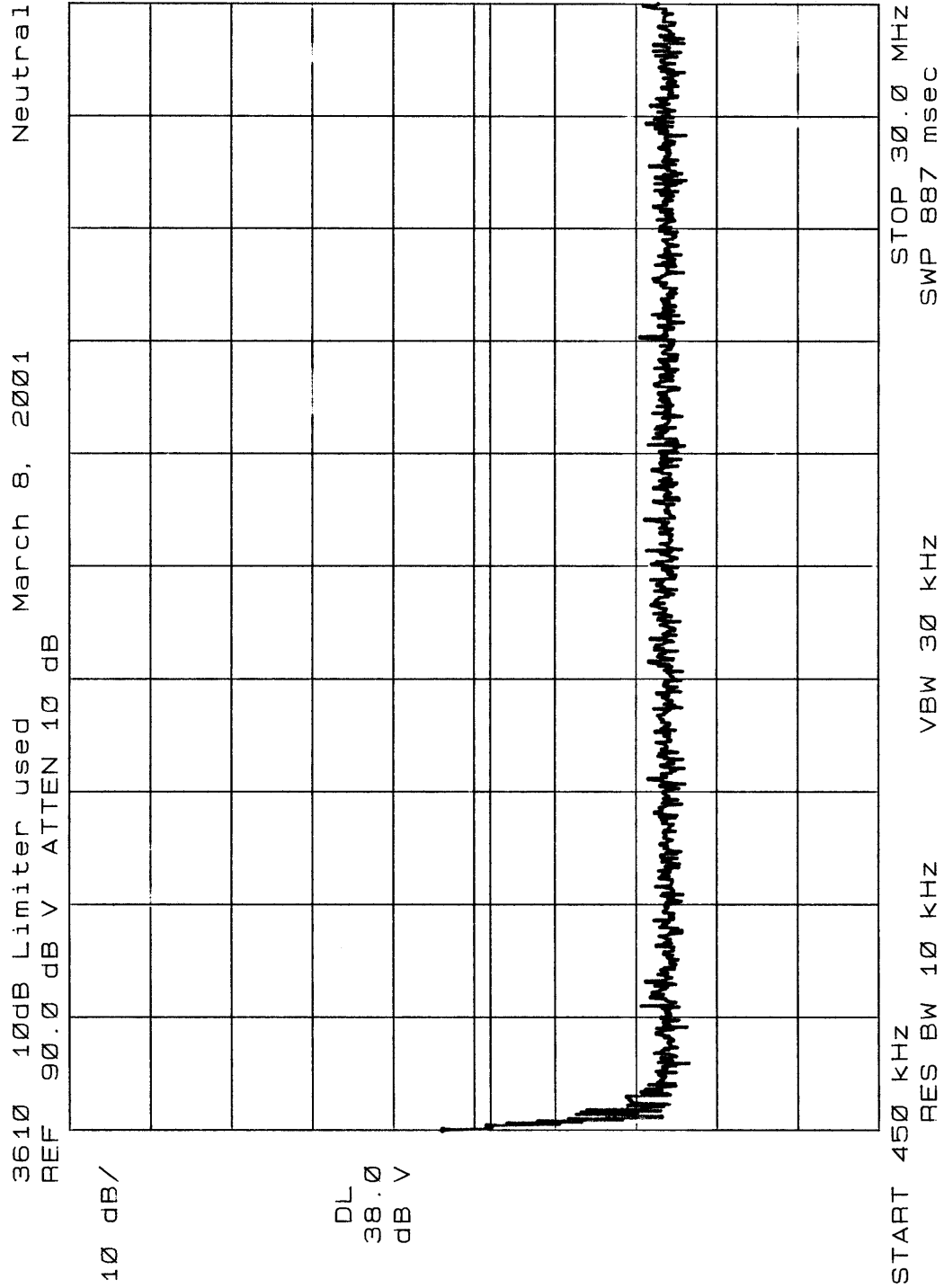
EQUIPMENT: R3 Controller

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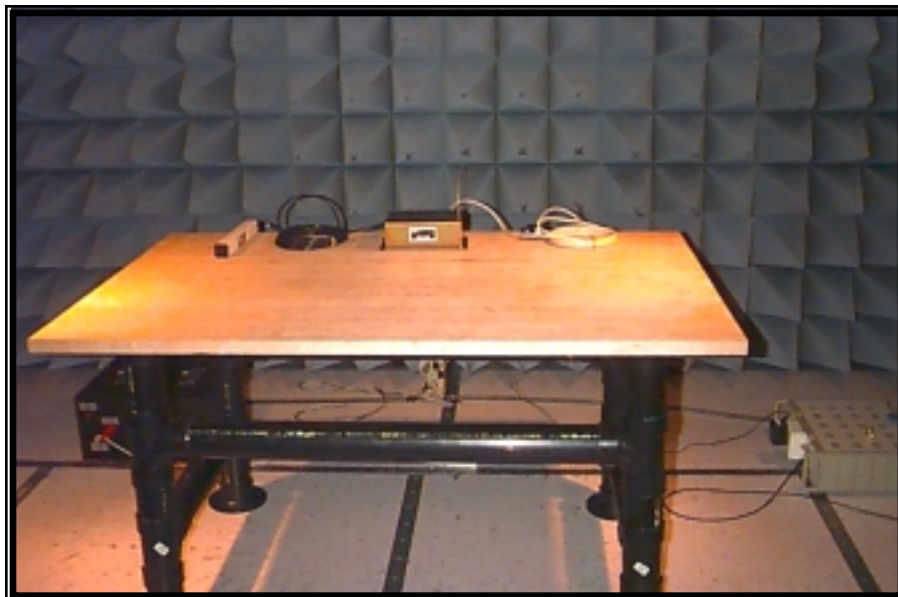
EQUIPMENT: R3 Controller
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Powerline Conducted Photographs (Worst Case Configuration)

Side View



Rear View



EQUIPMENT: R3 Controller
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Section 4. Radiated Emissions**Para. No.: 15.209****Test Performed By:** Russell Grant**Date of Test:** March 13, 2001

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

Fundamental (MHz)	Field Strength (μV/m)	Field Strength (dBμV)
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 -0.4 dB μ V/m @ 3m at 0.307 MHz. This is 18.3 dB below the specification limit.

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

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Test Data - Radiated Emissions**Peak Detector, 10 kHz RBW**

Frequency Of Emission (MHz)	Received Signal (dBμV)	Extrapolation Factor (dB)	Field Strength (dBμV/m)	Limit (dBμV/m)	Margin (dB)
0.307			-0.4	17.9	18.3
0.614	44.0	-40.0	4.0	31.8	27.8
0.921	41.0	-40.0	1.0	28.3	27.3
1.535	38.0	-40.0	-2.0	23.9	25.9

Notes: All emissions except the fundamental were measured at 3m and extrapolated to 30m using an inverse square law extrapolation factor. The fundamental emission at 307kHz was measured at 1, 3 and 5m and extrapolated to 300m using an extrapolation factor derived from the measurement data.

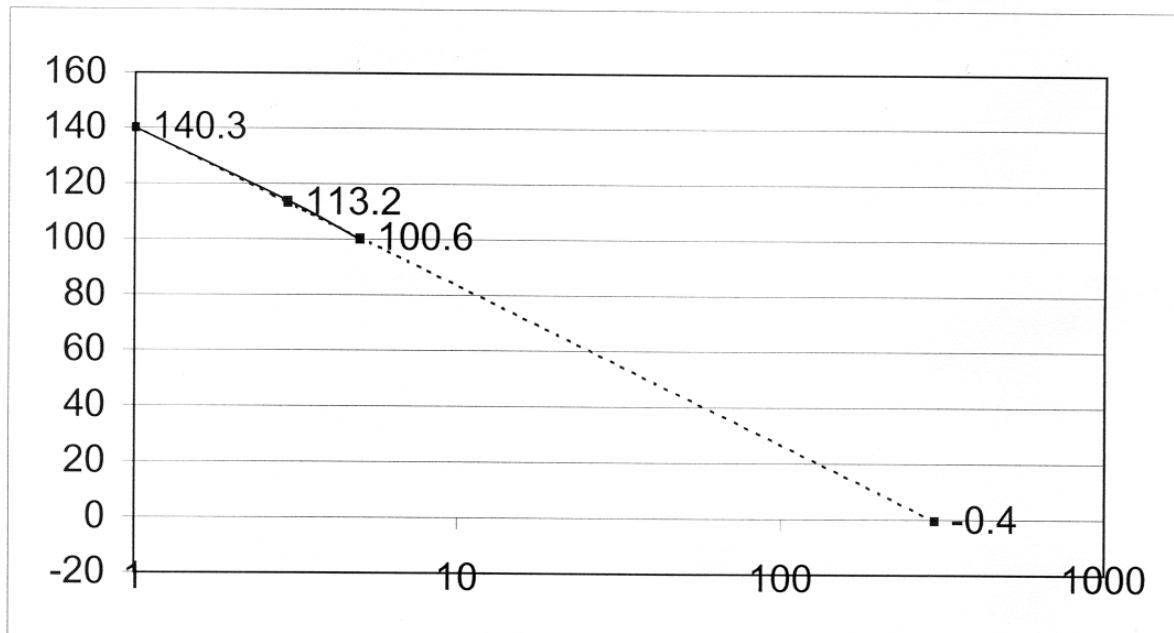
See attached graph.

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Measurement Data: Fundamental at 307 kHz

Measured at 1,3, and 5 m
and Extrapolated to 300 m

Measurement Distance (m)	Log Measurement Distance	Field Strength (dBuV/m)			Derived Extrapolation (dBuV/m)
1	0	140	SLOPE=	-56.7920876	140.3
3	0.477121255	114	INTERCEPT=	140.264226	113.2
5	0.698970004	100			100.6
300	2.477121255				-0.4



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Radiated Photographs (Worst Case)

Rear View



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Section 5. Occupied Bandwidth

Para. No.: Not Applicable

Test Performed By: Russell Grant	Date of Test: March 13, 2001
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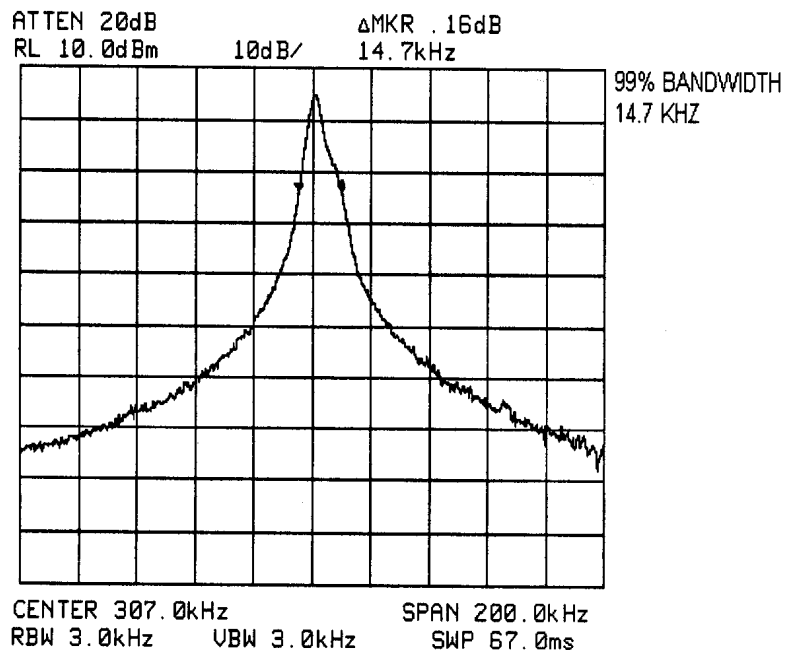
Minimum Standard: Not specified.

Test Results: The 99% power occupied bandwidth is 14.7kHz.

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-1	Hewlett Packard	8566B	2311A02238	Dec. 10/00	Dec. 10/01
1 Year	Spectrum Analyzer Display-1	Hewlett Packard	8566B	2314A04759	Dec. 10/00	Dec. 10/01
1 Year	LISN	EMCO	4825/2	0002-1/47	Feb. 14/00	Feb. 14/01
1 Year	Receiver	Rohde & Schwarz	ESH3	892473/002	Jan. 3/01	Jan. 3/02
2 Year	Active Loop Antenna	Rohde & Schwarz	HFH2-Z2	FA000631	Feb. 9/00	Feb. 9/01

NA: Not Applicable

NCR: No Cal Required

COU: CAL On Use

Nemko Canada Inc.

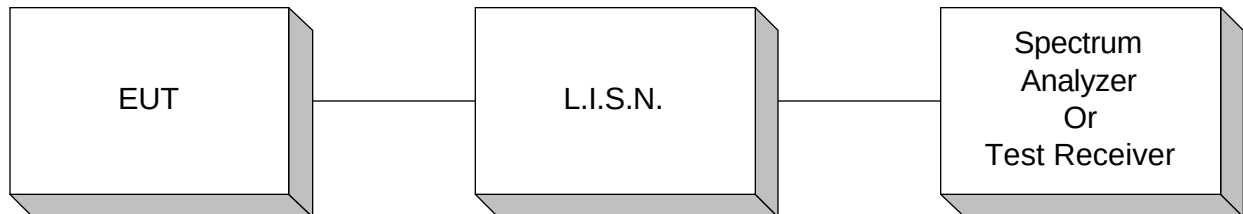
FCC PART 15, SUBPART C
PARAGRAPH 15.209
PROJECT NO.: 1R03610.2
ANNEX A

EQUIPMENT: R3 Controller
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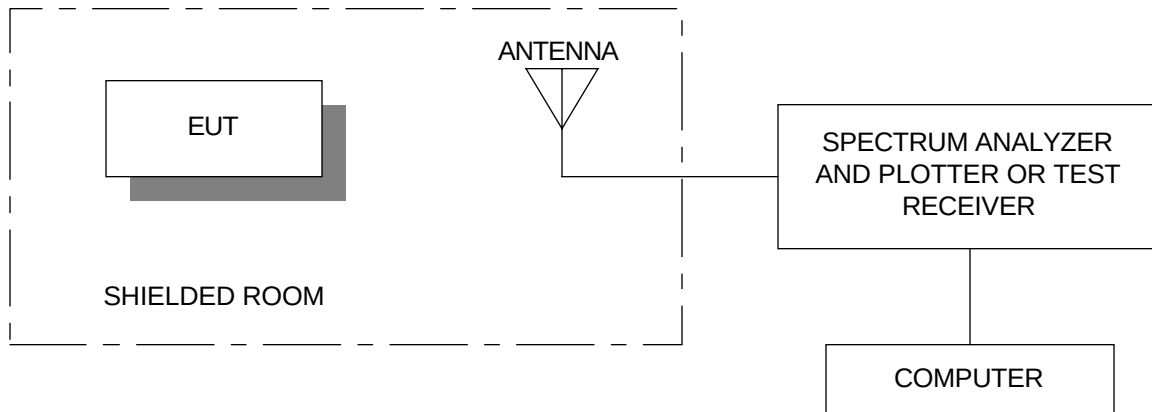
Annex A
Test Diagrams

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Conducted Emissions



Radiated Prescan



Test Site For Radiated Emissions

