



KTL Ottawa

Safety - EMI - Telecom - ISO Guide 25

ENGINEERING TEST REPORT

**ON:
THE INSTANTEL INC.
"EXCITER - 312.5 kHz MAGNETIC FIELD GENERATOR"**

FCC ID: ISEPEX

**IN ACCORDANCE WITH:
FCC PART 15, SUBPART C
FOR TRANSMITTERS OPERATING UNDER
THE GENERAL LIMITS OF PARAGRAPH 15.209**

PROJECT NO.: 8R00343.1

TESTED FOR:

INSTANTEL INC.
359 TERY FOX DRIVE
KANATA, ONTARIO K2K 2E7

TESTED BY:

KTL OTTAWA INC.
3325 RIVER ROAD, R.R. 5
OTTAWA, ONTARIO K1V 1H2

JUNE 1998

This document contains 13 pages including this one.

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This report applies only to the items tested.

EQUIPMENT: *Exciter - 312.5 kHz Magnetic Field Generator*
FCC ID: *ISEPEX*

EQUIPMENT: 312.5 kHz Magnetic Field Generator

MODEL NO.: Exciter

SERIAL NO.: None

GENERAL:

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with FCC Part 15, Subpart C for Transmitters operating under the general limits of Paragraph 15.209. All tests were conducted in accordance with ANSI C63.4. Radiated measurements were made on an open area test site. A description of the test facility is on file with the FCC.

ABSTRACT:

NAME OF TEST	PARA. NO.	RESULTS
Conducted Emissions	15.207(a)	Complies
Radiated Emissions	15.209	Complies

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. None

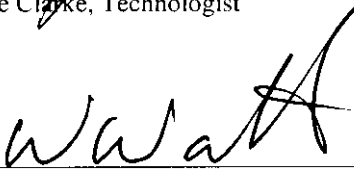
TESTED BY:


Wayne Clarke, Technologist

DATE:

June 25, 98

APPROVED BY:


W. Waterhouse, RF Engineering Lab Manager

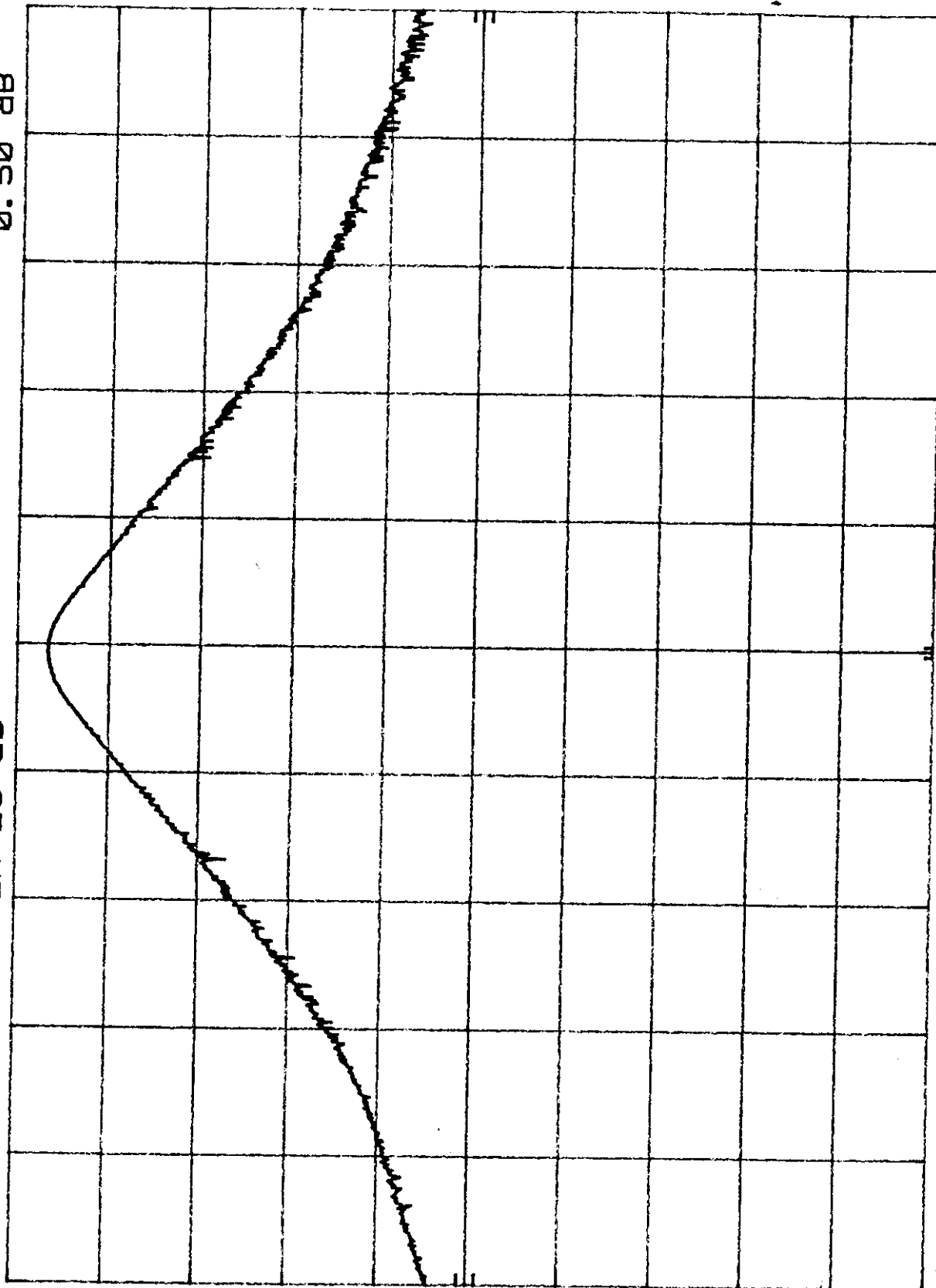
DATE:

25th June 1998

h₀ MKR Δ 38.0 kHz
10 dB/ 0.50 dB

REF 10.0 dBm ATTEN 20 dB

10 dB/



SPAN 100 kHz
SWP 30.0 msec

VBW 30 kHz

RES BW 10 kHz

CENTER 313 kHz

*EQUIPMENT: Exciter - 312.5 kHz Magnetic Field Generator**FCC ID: ISEPEX*

NAME OF TEST: Conducted Emissions	PARA. NO.: 15.107
TESTED BY: Wayne Clarke	DATE: June 8, 1998

TEST CONDITIONS: Standard Temperature and Humidity
 Standard Test Voltage

MINIMUM STANDARD:

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

TEST RESULTS: Complies. See attached graphs.

MEASUREMENT DATA: See attached graphs.

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.

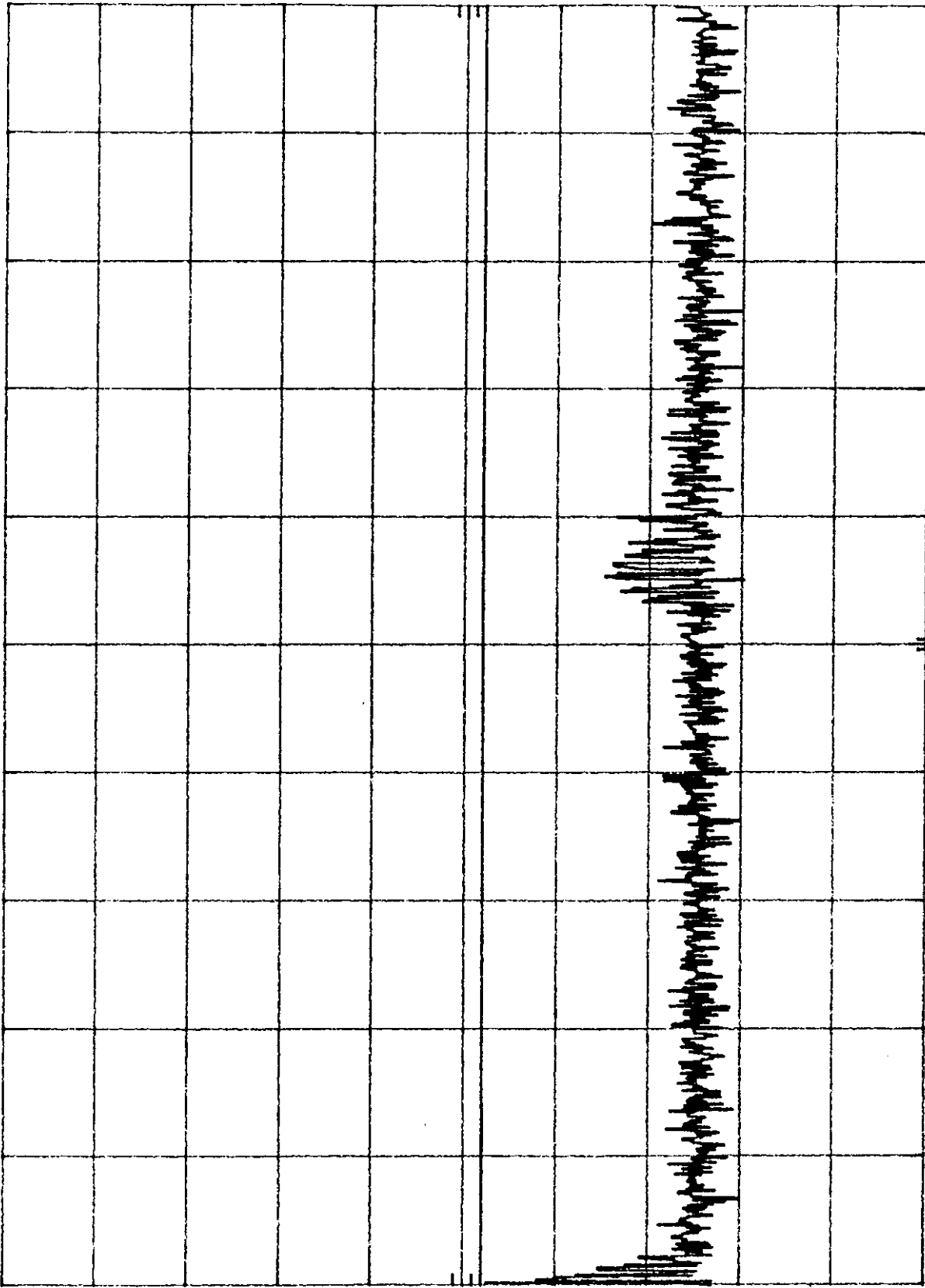
Broadband emissions are identified by switching the receiver detector function from Quasi-Peak to Average. If the amplitude of the emission drops by 6 dB or more then the emission is classified as broadband and the Quasi-Peak level is reduced by a factor of 13 dB.

8R00343 10dB Limiter used June 8, 1998 Neutral
REF 90.0 dBμV ATTN 10 dB

hp

10 dB/

DL
38.0
dBμV



Project No.: 8R00343.1
Conducted Emissions
120 VAC, 60 Hz
Page No.: 5 of 13

START 450 KHz RES BW 10 KHz VBW 30 KHz STOP 30.0 MHz
SWP 887 msec

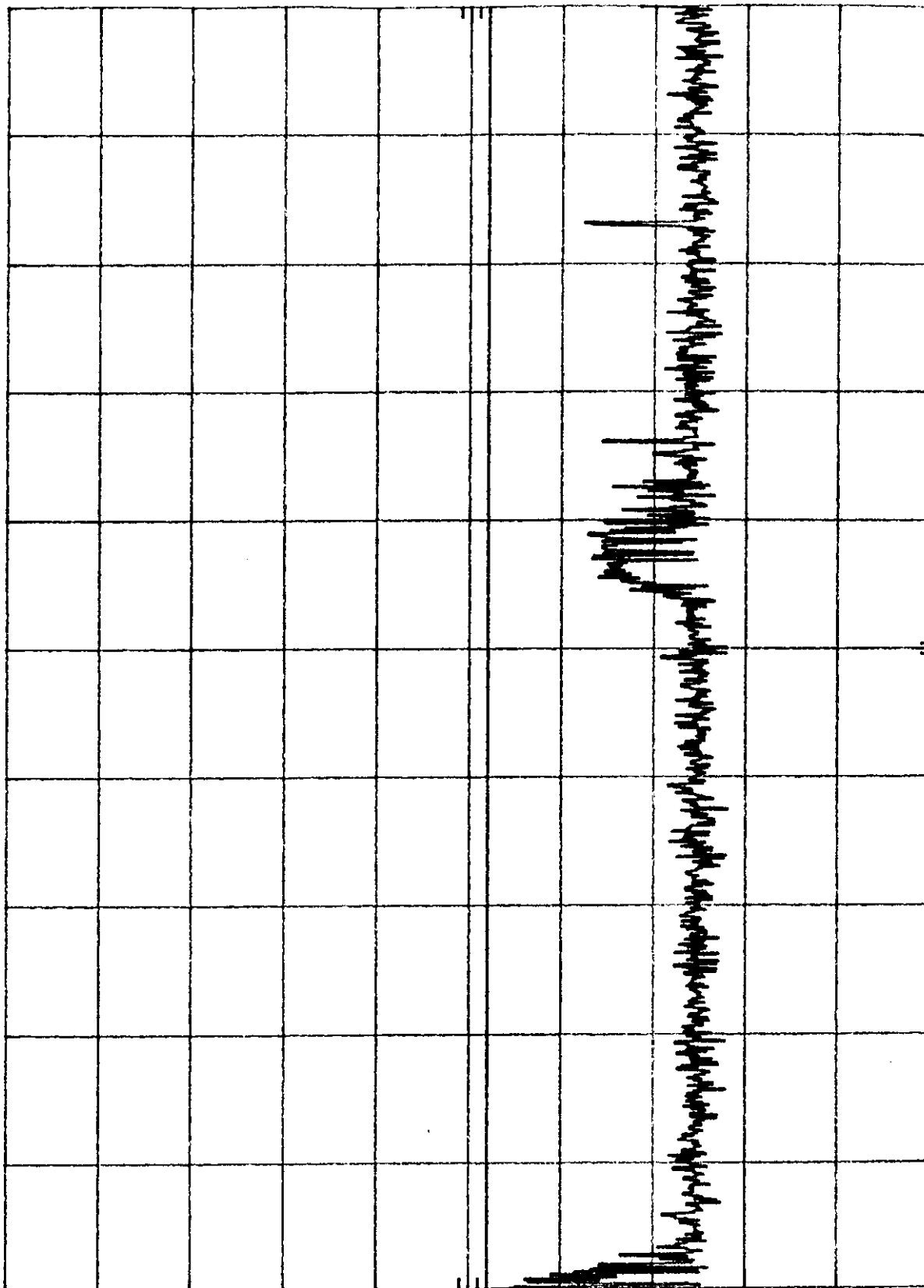
8R00343 10dB Limiter used June 8, 1998 Phase
REF 90.0 dBμV ATTN 10 dB

HP

10 dB/

DL
38.0
dBμV

Project No.: 8R00343.1
Conducted Emissions
120 VAC, 60 Hz
Page No.: 6 of 13



START 450 KHz RES BW 10 KHz VBW 30 KHz STOP 30.0 MHz
SWP 887 msec

EQUIPMENT: Exciter - 312.5 kHz Magnetic Field Generator
FCC ID: ISEPEX

NAME OF TEST: Radiated Emissions	PARA. NO.: 15.209
TESTED BY: Wayne Clarke	DATE: June 8, 1998

TEST CONDITIONS: Outdoor Range
Standard Test Voltage

MINIMUM STANDARD: The field strength of emissions from the device shall not exceed the following limits:

Frequency (MHz)	Field Strength ($\mu\text{V/m}$)	Field Strength ($\text{dB}\mu\text{V/m @ 3m}$)
0.009 - 0.490	$2400/F(\text{kHz}) @ 300\text{m}$	97.6
0.490 - 1.705	$24000/F(\text{kHz}) @ 30\text{m}$	68.1
1.705 - 30	$30 @ 30\text{m}$	—
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 $70.0 \text{ dB}\mu\text{V/m @ 3m}$ at 0.3132 MHz. This is 27.6 dB below the specification limit.

MEASUREMENT DATA: See attached table.

The E.U.T. was tested in the three orthogonal axis to determine maximum emissions.

The spectrum was searched up to 10 times the fundamental frequency.

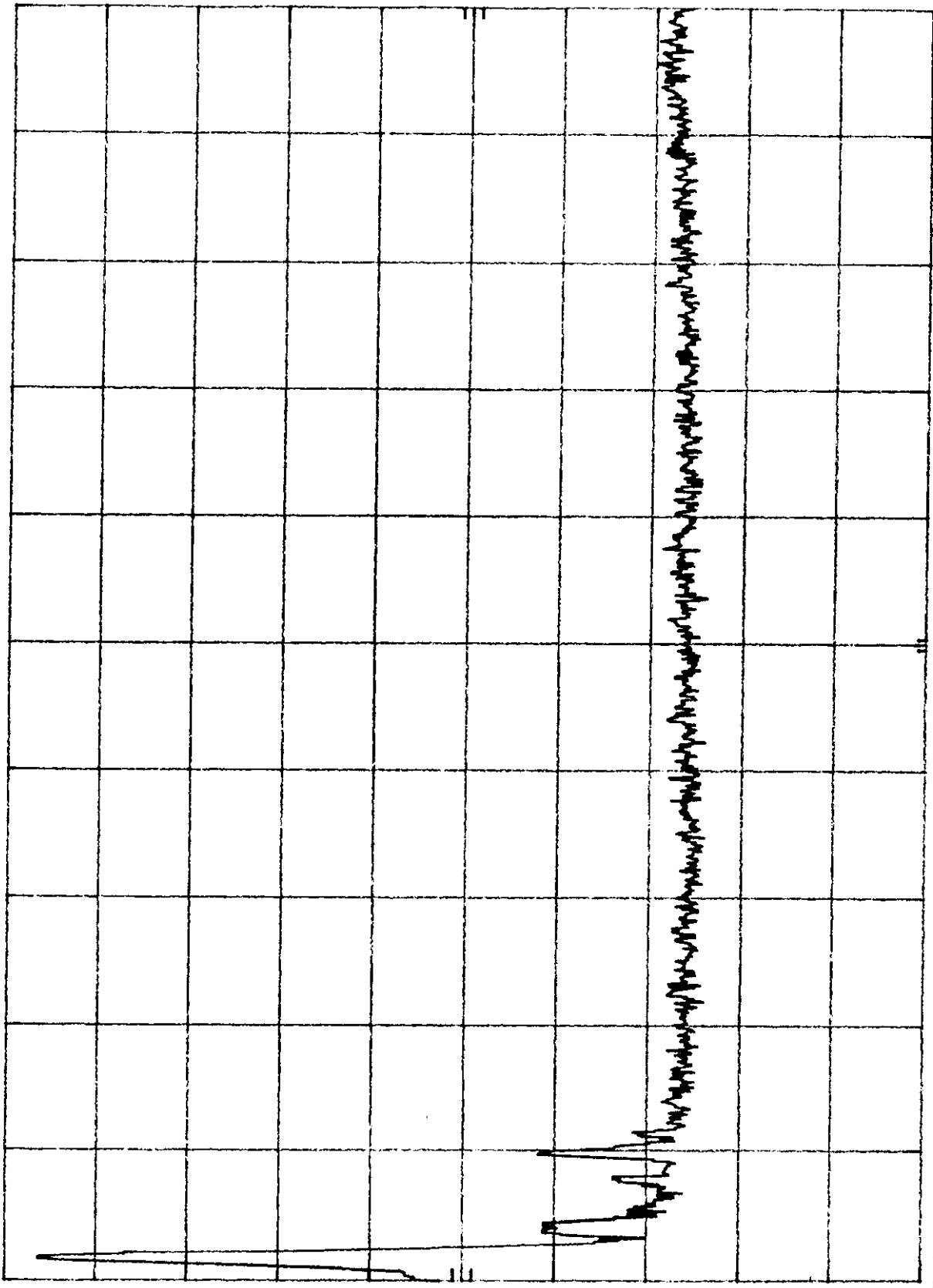
FCC PART 15, SUBPART C
PROJECT NO.: 8R00343.1

FCC PART 15, SUBPART C
PROJECT NO.: 8R00343.1

B/C = Biconical, B/L = Biconilog, L/P = Log-Periodic, H = Horn, D/P = Dipole
 ** Includes cable loss when amplifier is not used.
 *** Includes cable loss.
 () Denotes failing emission level.

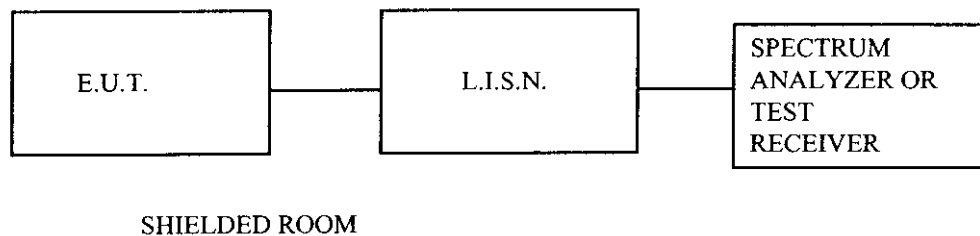
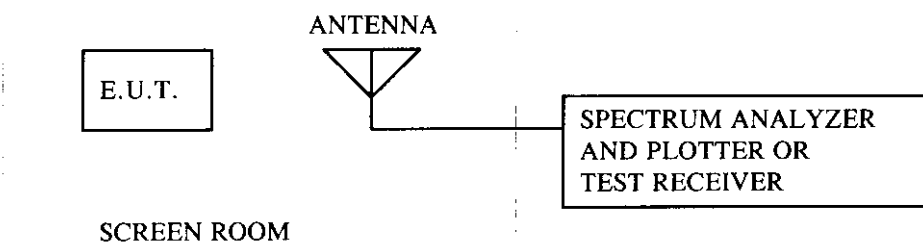
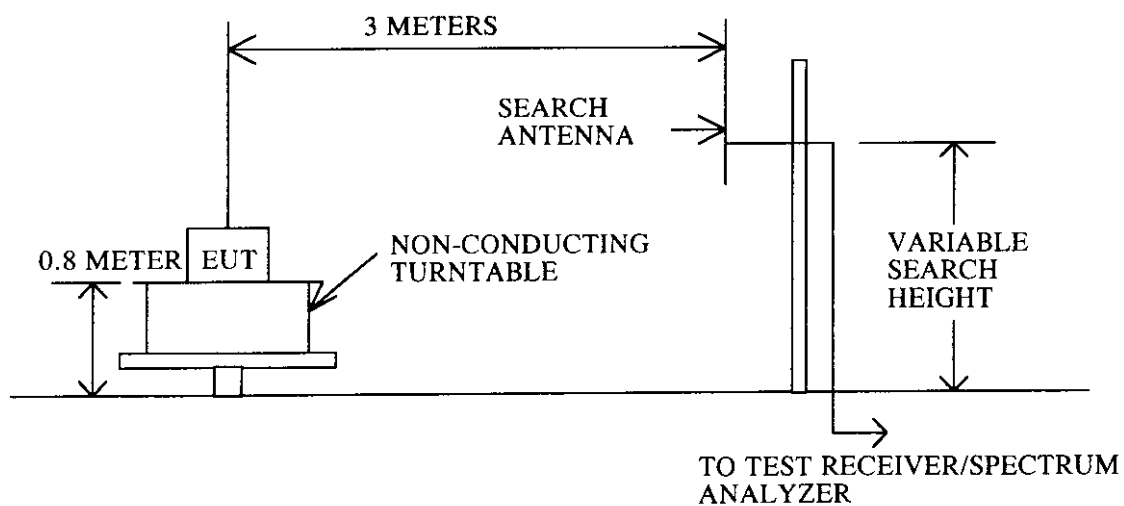
HP REF 90.0 dBμV ATTN 0 dB

10 dB/



Project No: 8R00343.1
Radiated Emissions
Prescans
Active Loop Antenna
Page No: 11 of 13

START 200 KHz RES BW 30 KHz VBW 100 KHz STOP 10.00 MHz
SWP 29.4 msec

*EQUIPMENT: Exciter - 312.5 kHz Magnetic Field Generator**FCC ID: ISEPEX*BLOCK DIAGRAMSCONDUCTED EMISSIONSRADIATED PRESCANOUTDOOR TEST SITE FOR RADIATED EMISSIONS

*EQUIPMENT: Exciter - 312.5 kHz Magnetic Field Generator**FCC ID: ISEPEX***RADIO TEST EQUIPMENT LIST**

CAL CYCLE	EQUIPMENT	MANUFACTURER	MODEL	SERIAL	LAST CAL.	NEXT CAL.	
	Plotter	Hewlett Packard	7470A	2308A30807	NCR	NCR	
1 Year	Spectrum Analyzer-1	Hewlett Packard	8566B	2311A02238	Sept. 30/97	Sept. 30/98	
1 Year	Spectrum Analyzer Display-1	Hewlett Packard	8566B	2314A04759	Sept. 30/97	Sept. 30/98	
1 Year	Quasi-peak adapter-1	Hewlett-Packard	85650A	2043A00302	Sept. 30/97	Sept. 30/98	
1 Year	LISN	Rohde & Schwarz	ESH2-Z5	890485/017	July 25/97	July 25/98	
1 Year	Receiver	Rohde & Schwarz	ESH3	872079/053	July 25/97	July 25/98	
2 Year	Active Loop Antenna	Rohde & Schwarz	HFH2-Z2	FA0000631	Feb. 7/98	Feb. 7/00	

NA: Not Applicable

NCR: No Cal Required