



Certelcom Laboratories Inc.

Safety - EMI - Telecom - ISO Guide 25

ENGINEERING TEST REPORT

**ON:
THE SENIOR TECHNOLOGIES
“WANDER GUARD REMOTE BYPASS”, MODEL: 18035**

FCC ID: LA5WERB001

**IN ACCORDANCE WITH:
FCC PART 15, SUBPART C
PARAGRAPH 15.209
FOR LOW FREQUENCY TRANSMITTERS**

PROJECT NO.: 7R00505

TESTED FOR:

SENIOR TECHNOLOGIES INC.
PO BOX 80238
LINCOLN, NE 68501
USA

TESTED BY:

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

FEBRUARY 1998

This document contains 10 pages including this one.

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This report applies only to the items tested.

EQUIPMENT: The Senior Technologies "WanderGuard E Remote Bypass" Model: 18035
FCC ID: LA5WERB001

EQUIPMENT: WanderGuard E Remote Bypass

MODEL NO.: 18035

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)	Not Applicable
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.

Conducted Emissions were not performed because the equipment is battery powered.

TESTED BY: _____
Wayne Clarke, Technologist

DATE: _____

APPROVED BY: _____
W. Waterhouse, RF Engineering Lab Manager

DATE: _____

GENERAL EQUIPMENT INFORMATIONTRANSMITTERFrequency Range: 506 kHzFrequency of Sample Tested: 506 kHzTunable Bands: OneNumber of Channels: OneChannel Spacing: Not ApplicableEmission Designator: 54K8P0NCrystal Frequencies: 83 kHzUser Frequency Adjustment: NonePower Requirement: 3 Vdc Lithium Battery

KTL - Certelcom Laboratories Inc.

FCC PART 15, SUBPART C

PROJECT NO.: 7R00505

EQUIPMENT: The Senior Technologies "WanderGuard E Remote Bypass" Model: 18035

FCC ID: LA5WERB001

*EQUIPMENT: The Senior Technologies "WanderGuard E Remote Bypass" Model: 18035**FCC ID: LA5WERB001*

NAME OF TEST: Conducted Emissions

PARA. NO.: 15.107

TESTED BY:

DATE:

TEST CONDITIONS: Standard Temperature and Humidity
Standard Test Voltage

MINIMUM STANDARD:

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

TEST RESULTS: Complies/Does Not Comply. 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.

EQUIPMENT: The Senior Technologies "WanderGuard E Remote Bypass" Model: 18035
FCC ID: LA5WERB001

NAME OF TEST: Radiated Emissions	PARA. NO.: 15.209
TESTED BY: Wayne Clarke	DATE: February 18, 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 (μ V/m)	Field Strength (dB μ V/m @ 3m)
0.009 - 0.490	$2400/F(\text{kHz}) @ 300\text{m}$	-----
0.490 - 1.705	$24000/F(\text{kHz}) @ 30\text{m}$	-----
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 6.9dB μ V/m @ 3m at 0.506MHz. This is 40.5dB below the specification limit.

MEASUREMENT DATA: See attached table.

LIMIT: $\frac{24000}{506} = 47.4 \text{ dBuV}$

The E.U.T. was searched to the 10th harmonic. The noise floor was sufficient to measure 20dB down from limit line.

The E.U.T. was tested on three orthogonal axis to determine worst-case orientation.

EQUIPMENT: The Senior Technologies "WanderGuard E Remote Bypass" Model: 18035
 FCC ID: LA5WERB001

STANDARD: FCC Part 15, Subpart C TESTED BY: Wayne Clarke DATE: February 18, 1998 E.U.T. MODEL NO.: 18035				E.U.T. S/N.: None TEST DISTANCE(metres): 3 TEST RECEIVER: ESH3002 RECEIVER BW: 10 kHz				DETECTOR: Average ANTENNA: Active Loop ANTENNA MODEL: HFH2-Z2 ANTENNA S/N.: FA000631			
FREQ. (MHz)	POL. (V/H)	ANTENNA HEIGHT (m)	TABLE AZIMUTH (Degrees)	RECEIVED SIGNAL (dBuV)	ANTENNA FACTOR (dB)*	AMP GAIN (dB)**	DIST. CORR. (dB)	FIELD STRENGTH (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	
0.506	V			46.9			-40	6.9	47.4	40.5	
	H										
+	V										
	H										
	V										
	H										
	V										
	H										
	V										
	H										
	V										
	H										
	V										
	H										
	V										
	H										
	H										
NOTES:											

* Includes cable loss when amplifier is not used.

** Includes cable loss.

+ The E.U.T. was searched to the 10th harmonic.

() Denotes failing emission level.

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FCC PART 15, SUBPART C

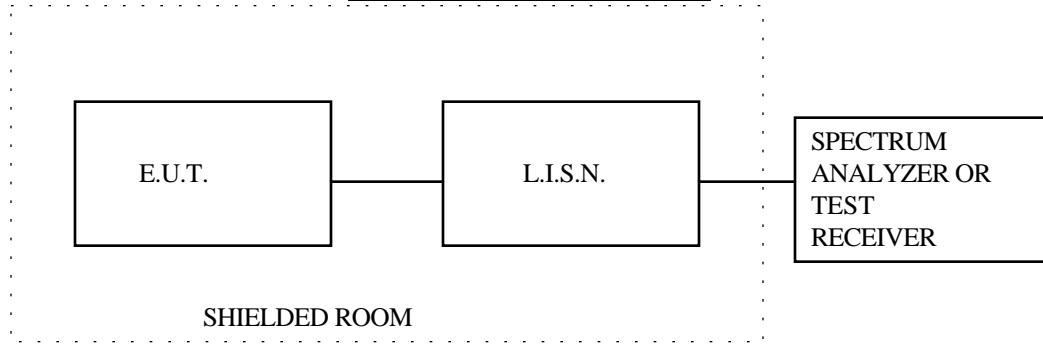
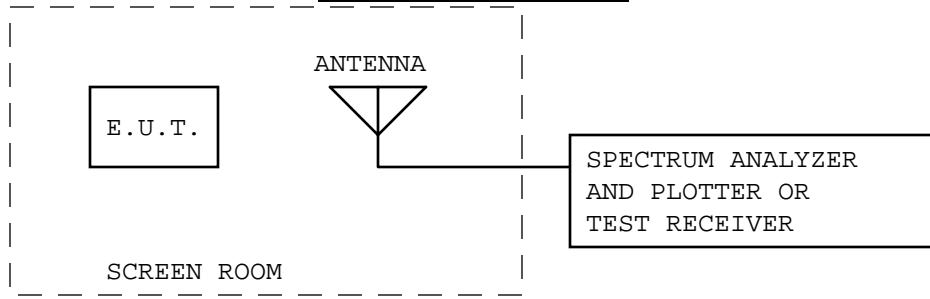
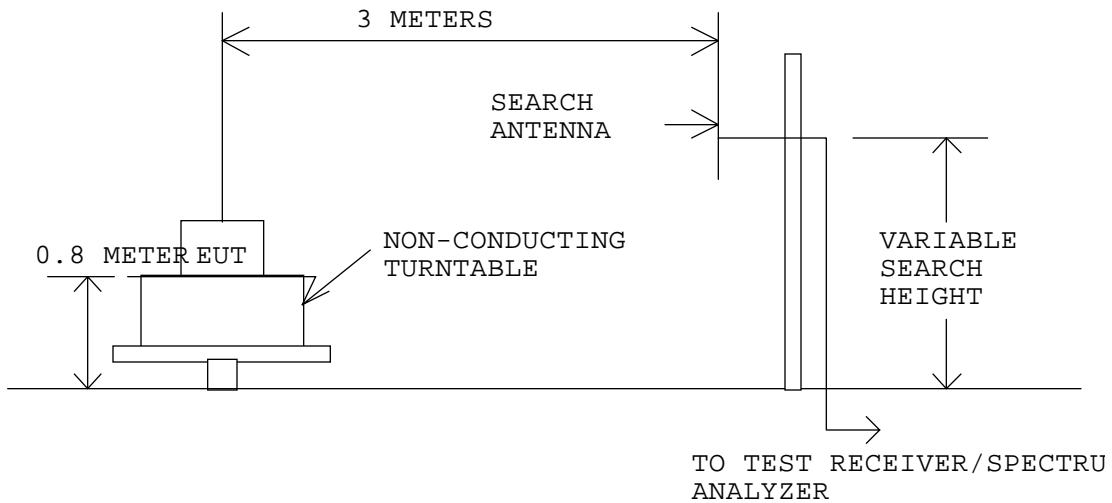
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BLOCK DIAGRAMSCONDUCTED EMISSIONSRADIATED PRESCANOUTDOOR TEST SITE FOR RADIATED EMISSIONS

*EQUIPMENT: The Senior Technologies "WanderGuard E Remote Bypass" Model: 18035**FCC ID: LA5WERB001***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-2	Hewlett Packard	8566B	1950A00400	Oct. 3/97	April 3/98	
1 Year	Spectrum Analyzer Display-2	Hewlett Packard	85662A	1950A01177	Oct. 3/97	April 3/98	
1 Year	Quasi Peak Adaptor-2	Hewlett Packard	85650A	2251A00620	Oct. 3/98	April. 3/98	
1 Year	Receiver	Rohde & Schwarz	ESH3	892473/002	July 25/97	July 25/98	
1 Year	Active Loop Antenna	Rhode & Schwarz	HFH2-Z2	FA000631	Feb. 6/98	Feb. 6/99	

NA: Not Applicable

NCR: No Cal Required