



Certelecum 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: _____

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

FCC ID: LA5WERB001

GENERAL EQUIPMENT INFORMATION

TRANSMITTER

<u>Frequency Range:</u>	506 kHz
<u>Frequency of Sample Tested:</u>	506 kHz
<u>Tunable Bands:</u>	One
<u>Number of Channels:</u>	One
<u>Channel Spacing:</u>	Not Applicable
<u>Emission Designator:</u>	54K8P0N
<u>Crystal Frequencies:</u>	83 kHz
<u>User Frequency Adjustment:</u>	None
<u>Power Requirement:</u>	3 Vdc Lithium Battery

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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	$\text{dB}\mu\text{V}$
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 ($\mu\text{V/m}$)	Field Strength (dB $\mu\text{V/m}$ @ 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	$30 @ 30\text{m}$	-----
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 6.9dB $\mu\text{V/m}$ @ 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 test on three orthogonal axis to determine worst-
case orientation.

STANDARD: FCC Part 15, Subpart C				E.U.T. S/N.: None				DETECTOR: Average		
TESTED BY: Wayne Clarke				TEST DISTANCE(metres): 3				ANTENNA: Active Loop		
DATE: February 18, 1998				TEST RECEIVER: ESH3002				ANTENNA MODEL: HFH2-Z2		
E.U.T. MODEL NO.: 18035				RECEIVER BW: 10 kHz				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									
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NOTES:

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FCC PART 15, SUBPART C

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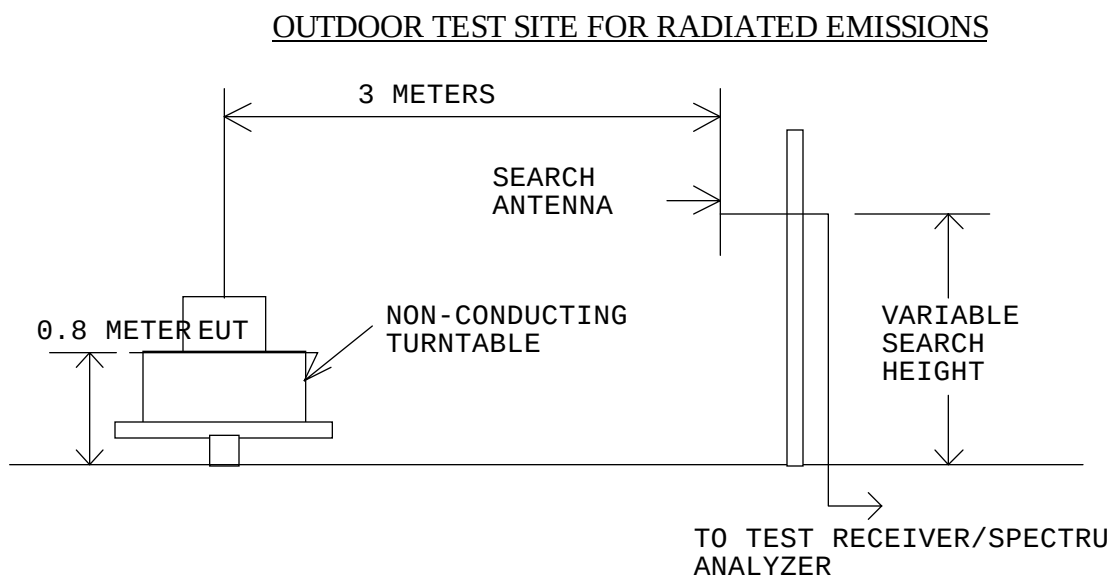
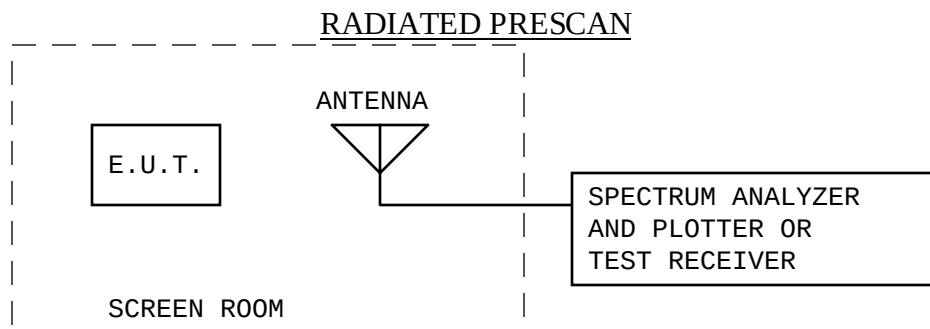
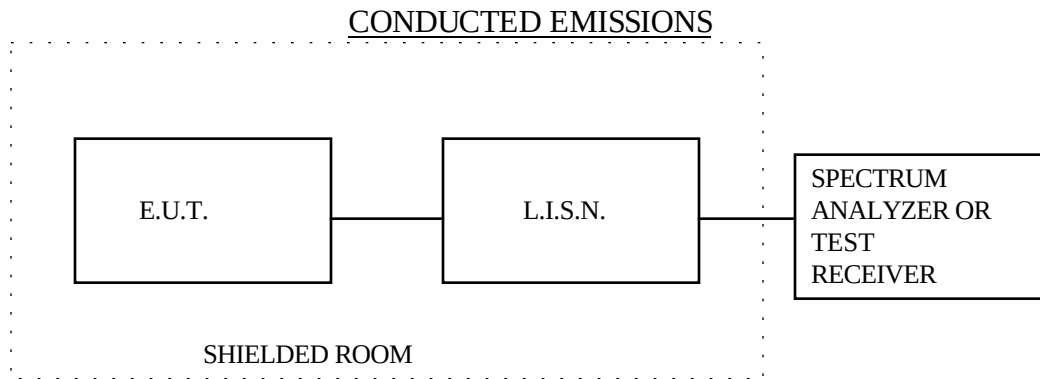
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BLOCK DIAGRAMS



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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