

KTL Test Report:	9R02177 Version: 2.0
Applicant:	Senior Technologies Inc. P.O. Box 80238 Lincoln, NE 68501 USA
Equipment Under Test: (E.U.T.)	WanderGuard E+ Transmitter
FCC ID:	LA5 SWSD005
In Accordance With:	FCC Part 15, Subpart C, Paragraph 15.209 General Limits For Low Power Transmitters
Tested By:	KTL Ottawa Inc. 3325 River Road, R.R. 5 Ottawa, Ontario K1V 1H2
Authorized By:	 Kevin Carr, Technologist
Date:	
Total Number of Pages:	16

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Section 1. Summary Of Test Results

Manufacturer: Senior Technologies Inc.

Model No.: 32013

Serial No.: None

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	Not Applicable
Radiated Emissions	15.209	Complies
Occupied Bandwidth	Not Specified	Complies

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

Indoor Temperature: 22°C
 Humidity: 30%

Outdoor Temperature: 18°C
 Humidity: 40%

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Section 2. General Equipment Specification

Frequency Range: 508 kHz (Fixed)

Operating Frequency(ies) of Sample: 508 kHz

Modulation: Pulse

Emission Designator: 18K0PON

Integral Antenna

Yes

☒

No

☐

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Theory of Operation

The EUT is a 90-day continuous transmitting device worn on the wrists of elderly residents of skilled care nursing facilities. It is designed to prevent residents with dementia from exiting the facility by themselves, which often leads to injury or accidental death. Receivers located at the exit doors detect the magnetic field of the transmitting device when the resident approaches to within approx. 4-5 feet of the door. The EUT is designed so that it will not be detected at greater distances. An alarm is then sounded to alert nursing staff, who immediately proceed to the door to prevent the resident from leaving the facility.

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NAME OF TEST: Radiated Emissions	PARA. NO.: 15.209
TESTED BY: Russell Grant	DATE: February 15, 2000

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

Fundamental (MHz)	Field Strength ($\mu\text{V/m}$)	Field Strength (dB μV)
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 -31.3 dB $\mu\text{V/m}$ @ 30m at 1016 kHz. This is 58.8 dB below the specification limit.

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

Maximizing Emission Levels:

For hand held equipment or equipment that may be mounted in a variety of positions, the E.U.T. was tested on three orthogonal axis to determine orientation of worst-case emission levels. Below 30 MHz an active loop antenna is used at a fixed height of 1 meter. The loop is rotated about it's vertical axis to obtain worst-case results.

Spectrum Searched:

The spectrum was searched from the lowest frequency generated in the E.U.T. up to 1000 MHz, or the 10th harmonic of the fundamental emission.

Near-Field Measurement:

Emissions below 30 MHz are measured in the near-field and an extrapolation factor of 40 dB per decade is used to determine the limit.

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Test Data - Radiated Emissions

Receiver: ESVP-053			Detector: CISPR		
Frequency of Emissions (kHz)	Received Signal (dBµV)	Distance Correction Factor	Field Strength	Limit	Margin
508*			-30.4	33.5	63.9
1016**	39.8	-71.1	-31.3	27.5	58.8
Notes:					
* This emission measured at 3 measurement distances and extrapolated to 30m. See next page for measurement data.					
** This emission measured at 0.5 m and extrapolated to 30 m using 40 dB per decade.					

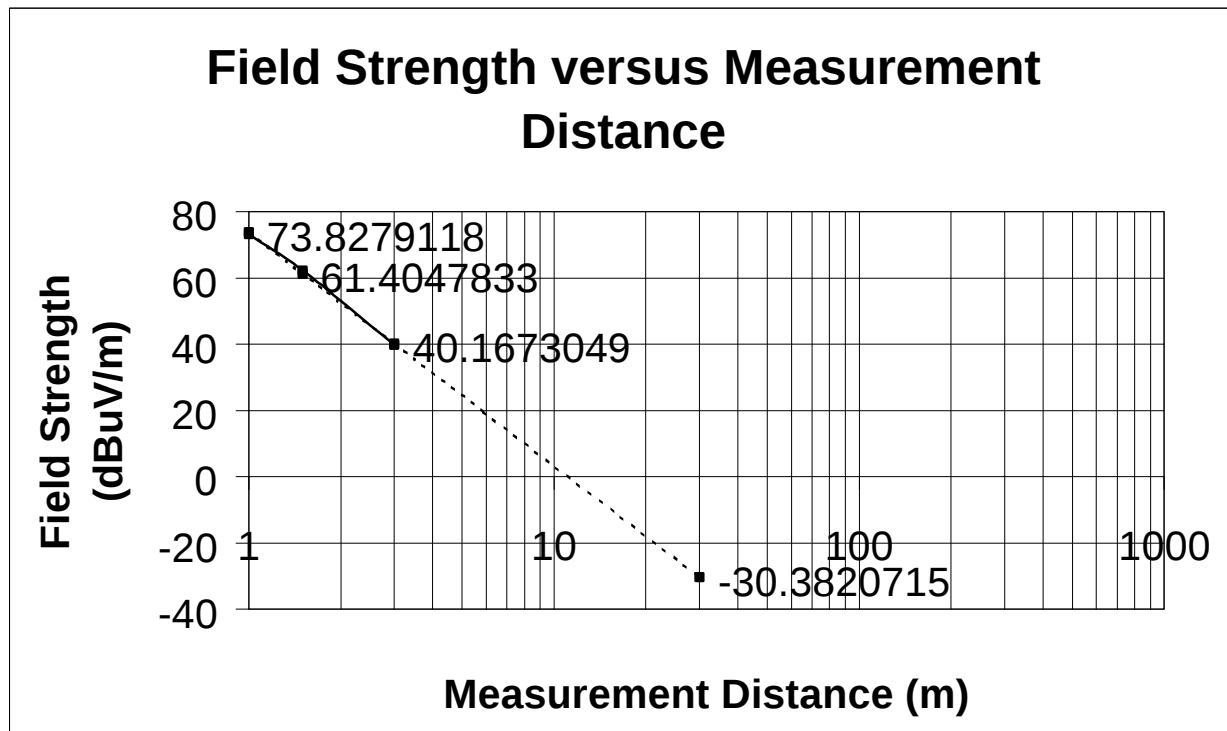
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Measurement Data: Fundamental at 508 kHz

Measured at 1, 1.5, 3 m

and Extrapolated to 30 m

Log Measurement Distance (m)	Measurement Distance	Field Strength (dBuV/m)	Derived Extrapolation (dBuV/m)
1	0	73.2	73.82791182
1.5	0.176091259	62.4	61.40478332
3	0.477121255	39.8	40.16730487
30	1.477121255		-30.38207146



Measured: Russell Grant
 Equipment: R&S Active Loop Antenna

R&S ESH3 Receiver with CISPR detector
 EUT tested on 3 axis for strongest emission

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Radiated Photographs (Worst Case Configuration)

Front View



Rear View



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Section 4. Occupied Bandwidth

NAME OF TEST: Occupied Bandwidth	PARA. NO.: N/A
TESTED BY: Russell Grant	DATE: February 15, 2000

Minimum Standard: Not specified.

Test Results: The 99% power occupied bandwidth is 0.018 MHz.

Measurement Data: See attached graph(s).

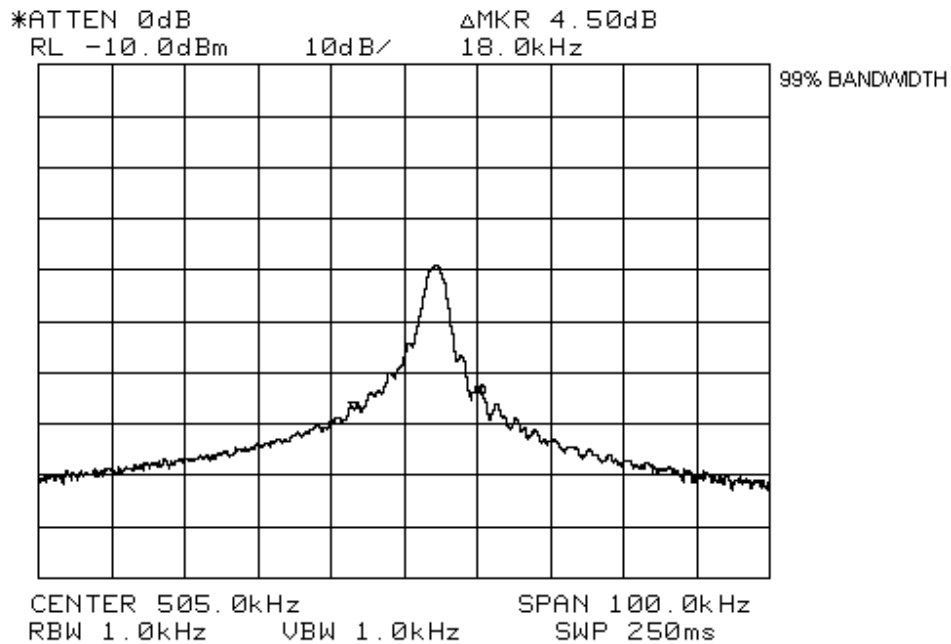
Method of Measurement:

A spectrum analyzer was used to measure the 99% power occupied bandwidth of the fundamental emission. This value is used as the bandwidth for the emission designator.

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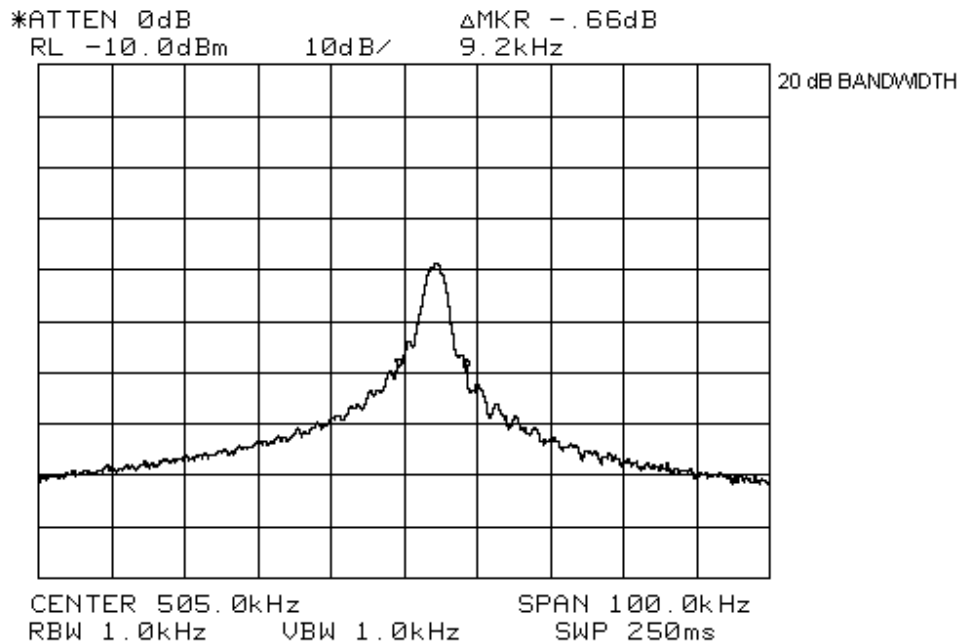
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Section 5. Test Equipment List

Equipment List - Conducted Emissions - Shielded Room #1

CAL CYCLE	EQUIPMENT	MANUFACTURER	MODEL	SERIAL	LAST CAL.	NEXT CAL.
1 Year	Receiver	Rohde & Schwarz	ESH3	872079/053	Oct. 5/99	Oct. 5/00

Equipment List - Radiated Emissions

CAL CYCLE	EQUIPMENT	MANUFACTURER	MODEL	SERIAL	LAST CAL.	NEXT CAL.
2 Year	Active Loop Antenna	Rohde & Schwarz	HFH2-Z2	FA000631	Feb. 9/00	Feb. 9/02

Note: N/A = Not Applicable
NCR = No Cal Required
COU = CAL On Use

KTL Ottawa

FCC PART 15, SUBPART C
PARAGRAPH 15.209
PROJECT NO.: 9R02177
ANNEX A

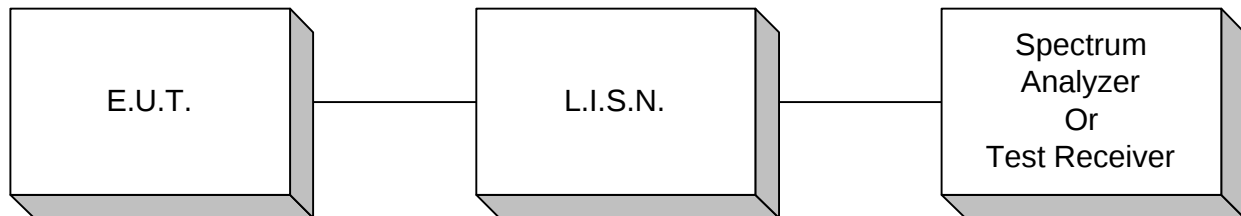
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ANNEX A

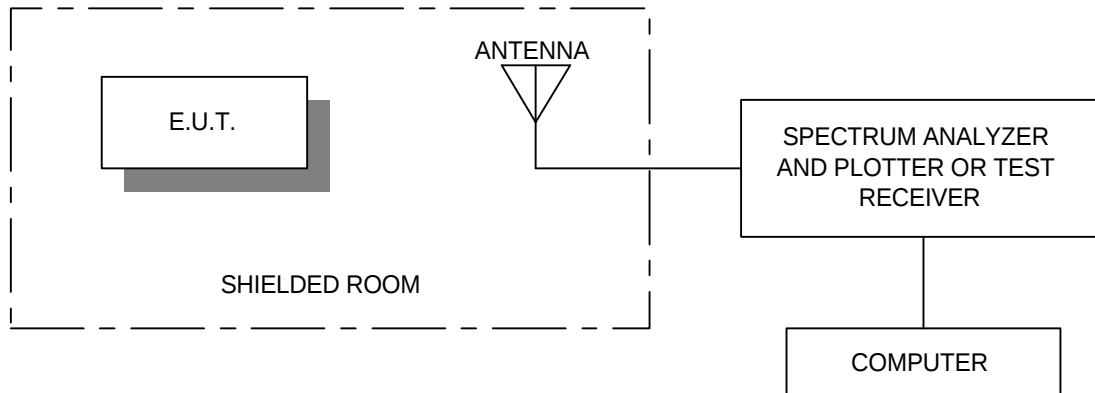
TEST DIAGRAMS

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Conducted Emissions



Radiated Prescan



Test Site For Radiated Emissions

