

**KTL Test Report:** 9R02177  
Version: 2.0

**Applicant:** Senior Technologies Inc.  
P.O. Box 80238  
Lincoln, NE  
68501  
USA

**Equipment Under Test:** WanderGuard E+ Transmitter  
**(E.U.T.)**

**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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*EQUIPMENT: WanderGuard E+ Transmitter**FCC ID: LA5 SWSD005**VERSION: 2.0***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



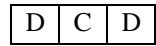
Production Unit



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.

## KTL Ottawa

## FCC PART 15, SUBPART C

## PARAGRAPH 15.209

PROJECT NO.: 9R02177

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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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## Section 3. Radiated Emissions

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 ( $\mu$ V/m)	Field Strength (dB $\mu$ V)
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 $\mu$ 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 10<sup>th</sup> 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.

*EQUIPMENT: WanderGuard E+ Transmitter**FCC ID: LA5 SWSD005**VERSION: 2.0***Test Data - Radiated Emissions**

Receiver: ESVP-053			Detector: CISPR		
Frequency of Emissions (kHz)	Received Signal (dB $\mu$ V)	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.

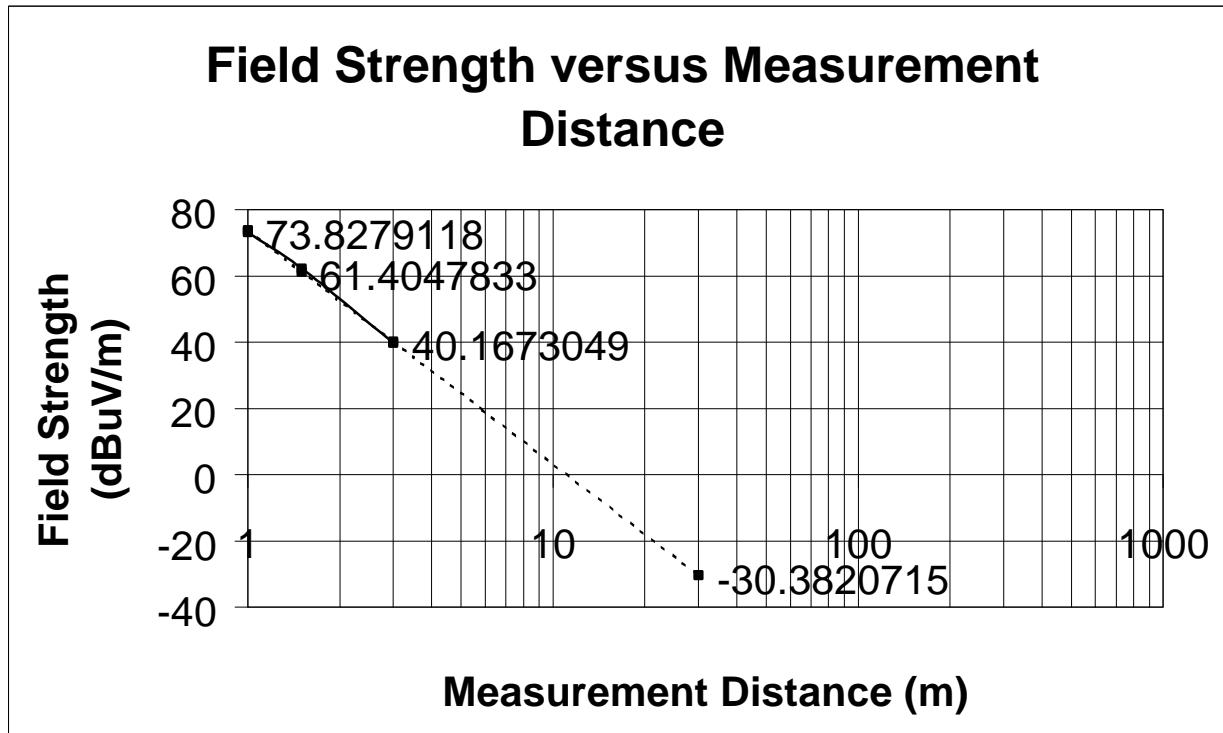
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Measurement Data: Fundamental at 508 kHz

Measured at 1, 1.5, 3 m

and Extrapolated to 30 m

Log Measurement Distance (m)	Field Measurement Distance	Strength (dBuV/m)	SLOPE=	INTERCEPT=	Derived Extrapolation (dBuV/m)
1	0	73.2	-70.5493763	73.82791182	
1.5	0.176091259	62.4	73.82791182	61.40478332	
3	0.477121255	39.8			40.16730487
30	1.477121255				-30.38207146



Measured: Russell Grant

Equipment: R&amp;S Active Loop Antenna

R&amp;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**



*EQUIPMENT: WanderGuard E+ Transmitter**FCC ID: LA5 SWSD005**VERSION: 2.0***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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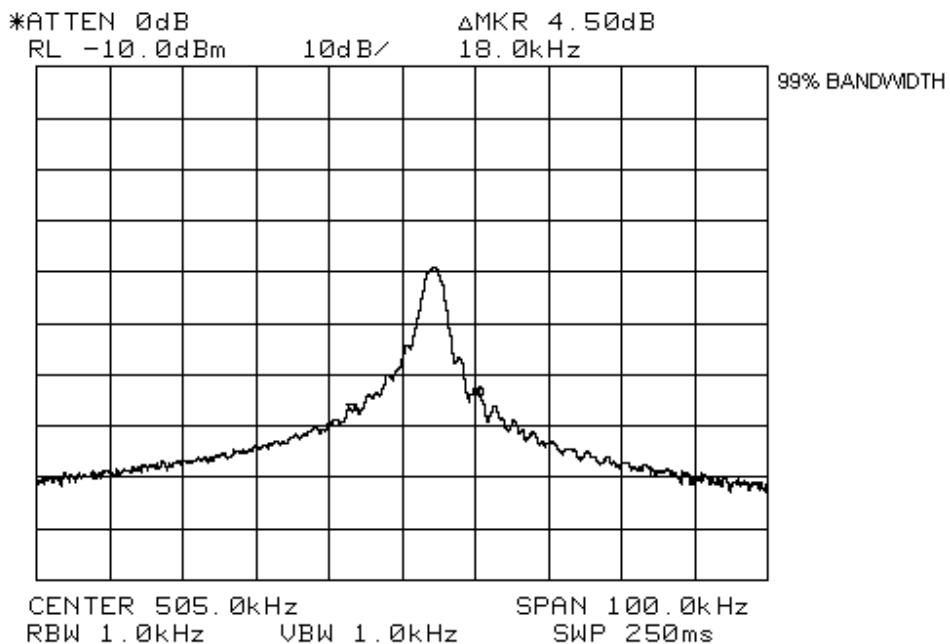
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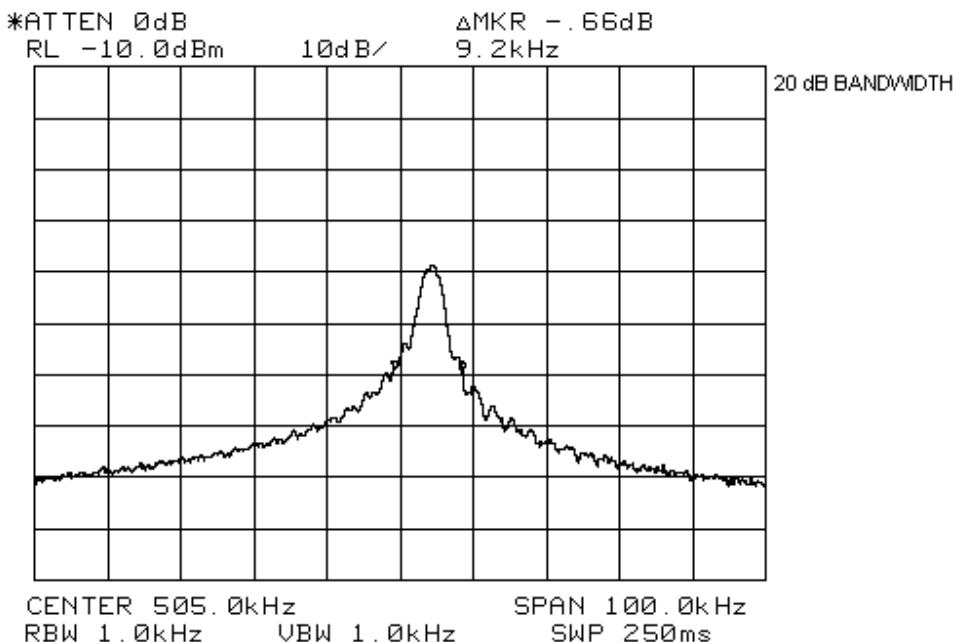
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*EQUIPMENT: WanderGuard E+ Transmitter**FCC ID: LA5 SWSD005**VERSION: 2.0***Section 5. Test Equipment List****Equipment List - Conducted Emissions - Shielded Room #1**

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

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ANNEX A

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## **ANNEX A**

### **TEST DIAGRAMS**

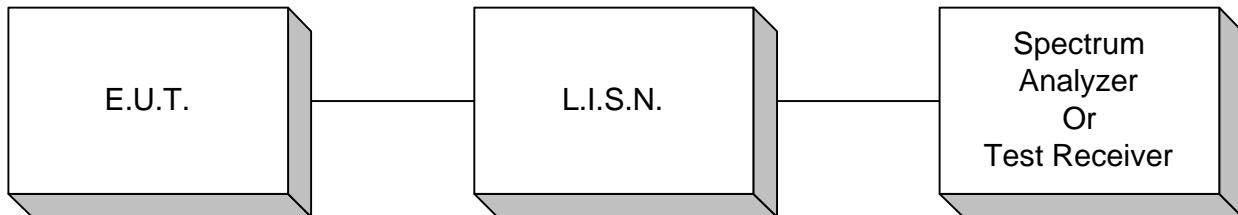
*EQUIPMENT: WanderGuard E+ Transmitter*

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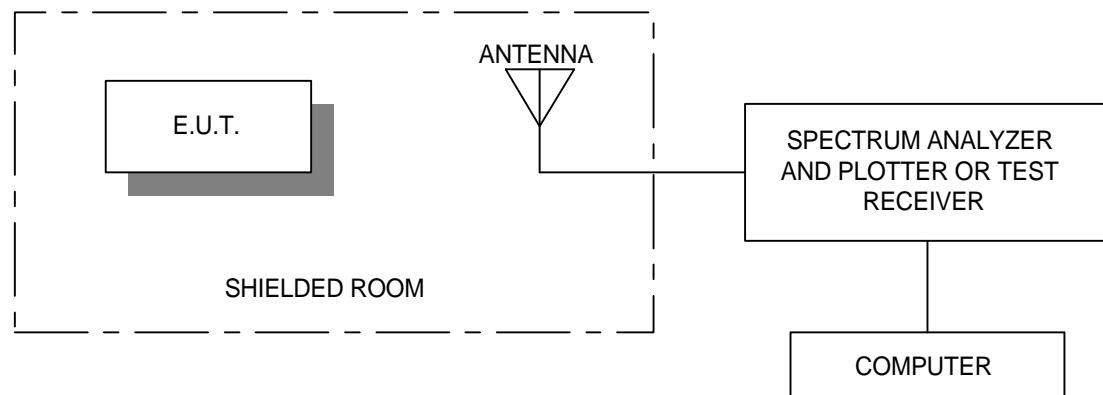
*VERSION: 2.0*

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### Conducted Emissions



### Radiated Prescan



### Test Site For Radiated Emissions

