

8866 Series

***Nardalert* XT****High Frequency  
User's Guide  
Supplement****WARNING**

This monitor should only be used after you have read and understood it's operation and consulted with your company's safety officer. High level, electro-magnetic fields may be hazardous to your health. This monitor cannot protect you from all electromagnetic hazards that you could encounter.

**narda**  
**Safety Test Solutions**an  communications company

## ***Table of Contents***

<b>CHAPTER 1 INTRODUCTION</b> . . . . .	3
About Your Nardalert XT 8866 Series . . . . .	3
Equipment Supplied . . . . .	3
<b>CHAPTER 2 UNDERSTANDING YOUR NARDALERT XT</b> . . .	5
General Description . . . . .	5
Specifications . . . . .	6
<b>CHAPTER 3 USING YOUR NARDALERT XT</b> . . . . .	9
Getting Started . . . . .	9
Alarm Thresholds . . . . .	9
Checking the Alarm Threshold . . . . .	10
Wearing the Nardalert XT . . . . .	12
Using the Nardalert XT Off the Body . . . . .	12
Other Features and Applications . . . . .	13
<b>WARRANTY</b> . . . . .	14
<b>ABOUT NARDA SAFETY TEST SOLUTIONS</b> . . . . .	15

## **Chapter 1**

# **INTRODUCTION**

### ***About Your Nardalert XT***

The Nardalert XT is a small, battery-operated RF personal monitor. The 8866 Series of the Nardalert XT is also referred to as the "High Frequency" Series.

This supplement to the *Nardalert XT User's Guide* provides information on the specific features of the High Frequency Series that differ from other series of the Nardalert XT and the special cautions and operating instructions that must be followed when working in high RF field levels. Refer to the standard *Nardalert XT User's Guide* for all other information regarding the Nardalert XT RF Personal Monitors.

### ***Equipment Supplied***

Your Nardalert XT is supplied with:

- ◆ Monitor
- ◆ Batteries, AA Alkaline (includes one spare)
- ◆ Pocket Clip P/N 11085700
- ◆ Belt Clip P/N 21843600
- ◆ Plastic Storage Box P/N 11088800
- ◆ User's Guide P/N 42994900
- ◆ User's Guide Supplement P/N 43036500



## *Chapter 2*

# **UNDERSTANDING YOUR NARDALERT XT**

### *General Description*

The basic Nardalert XT RF Personal Monitor is comprised of a sophisticated ultra-broadband, thermocouple RF sensor and a microprocessor-based control circuit housed in a compact plastic housing.

The 8866 Series of the Nardalert XT is also referred to as the "High Frequency" series. The major difference between the High Frequency 8866 Series and the standard 8860 Series Nardalert XT is related to the range of field levels that are detected and the alarm levels. The 8866 High Frequency Series monitors have five high intensity LEDs that illuminate at field levels of 1.0, 2.0, 5.0, 10 and 20 mW/cm<sup>2</sup>. In contrast, the LEDs on the standard Nardalert XT monitors, Series 8860, 8861, and 8862, illuminate at field levels of 10%, 20%, 50%, 100%, and 200% of standard.

The Nardalert XT High Frequency Series monitors are designed for use with only microwave radars. The 8866 series monitors are worn on the outside of any article of clothing. These monitors sound an alarm at field levels to warn the wearer that they are in an area where the microwave field strength is approaching exposure limits.

## Specifications

<b>Series</b>	<b>8866</b>
<b>Frequency Range</b>	1 to 40 GHz
<b>Frequency Sensitivity</b>	+3/-1 dB
<b>Polarization</b>	±1.5 dB
<b>Sensor (E-field)</b>	Thermocouple
<b>Alarm Indicators</b> <b>LEDs</b>  <b>Audio Alarm 1</b> <b>Audio Alarm 2</b> <b>Vibrator, Internal</b> <b>Vibrator, Remote<sup>a</sup></b>	Five High Intensity Flashing: 2 Yellow, 3 Red Steady Tone Variable Tone Continuous Continuous
<b>Alarm Threshold</b> <b>Alarm 1, Default Setting</b> <b>Range of Adjustment<sup>b</sup></b> <b>Alarm 2, Default Setting</b> <b>Range of Adjustment<sup>b</sup></b> <b>Vibrator, Internal</b> <b>Vibrator, Remote<sup>a</sup></b>	5 mW/cm <sup>2</sup> 0.5 to 10 mW/cm <sup>2</sup> 10 mW/cm <sup>2</sup> 1.0 to 20 mW/cm <sup>2</sup> Same Threshold as Alarm 1 Same Threshold as Alarm 1
<b>LED Indicators</b>	1.0, 2.0, 5.0, 10 and 20 mW/cm <sup>2</sup>
<b>CW Overload</b>	600 mW/cm <sup>2</sup>
<b>Peak Overload</b>	150 W/cm <sup>2</sup>
<b>Memory</b> <b>Number of Data Points</b> <b>Logging Interval, Default</b> <b>Range</b>  <b>Logging Time @ 12/min</b>	31,263 5 sec. 1-60 sec. in 1 sec. increments 1.5-6.0 min in 0.5 min. increments 42.3 hrs

## Specifications (continued)

<b>Series</b>	<b>8866</b>
<b>Maximum Hold Modes<sup>b</sup></b>	Off, Instantaneous, Averaged up to 6 Minutes
<b>ELF Immunity</b>	6,000 V/m
<b>Battery Type Life</b>	1 x AA Alkaline 1000 hrs. with LEDs and Alarms OFF
<b>Temp. Operating Non-operating</b>	-10°C to +55°C -20°C to +55°C
<b>Humidity</b>	0 to 95%, non-condensing
<b>Weight (inc. battery)</b>	157 g. / 5.5 oz
<b>Size</b>	10.5 cm H x 7.6 cm W x 3.5 cm D 4.12" H x 3.0" W x 1.37" D
<b>Color</b>	Gray
<b>Accessories Supplied</b>	Pocket Clip, Belt Clip, Plastic Storage Box, Battery, User's Guide, User's Guide Supplement
<b>Optional Accessories</b>	Interface Kit (Model 8865), Soft Case with Belt Clip (P/N 21847600), Soft Case for Climber's Harness (P/N 21847700), Remote Vibrator <sup>a</sup> , and Earphone

### NOTES:

- <sup>a</sup> Remote vibrator, P/N 11110100, is available as an option. It operates from its own battery.
- <sup>b</sup> The Interface Kit is required to make adjustments to the monitor settings and/or to download logged data.





## *Chapter 3*

# USING YOUR NARDALERT XT

### *Getting Started*

The default alarm threshold settings are:

Alarm Function	Description	Level
Alarm 1	Steady audio tone and/or vibrator	5 mW/cm <sup>2</sup>
Alarm 2	Variable audio tone	10 mW/cm <sup>2</sup>

Threshold levels can be changed using a Model 8865 Interface Kit. The interface kit includes User's Software that is installed on your personal computer.

### *Alarm Thresholds*

The thresholds for Alarm 1 and Alarm 2 can be adjusted over the following ranges

Alarm 1	1.0 to 10 mW/cm <sup>2</sup> in increments of 0.1
Alarm 2	2.0 to 20 mW/cm <sup>2</sup> in increments of 0.1

If desired, the Nardalert XT can be adjusted for a single alarm threshold. Simply adjust the two alarms to the same level. The audio alarm will be the variable tone of Alarm 2.

Alarm 2 cannot be set to a lower threshold than Alarm 1.

## ***Checking the Alarm Threshold***

The alarm threshold settings can be determined in two ways:

1. Using the Model 8865 Interface Kit and User's Software
2. By observing the monitor during its turn-on sequence. This technique is very easy but, depending on the monitor's settings, the indications may be only approximate.
3. The green LED and one of the five level-indicator LEDs flashes to indicate battery level.

To check basic functions plus the alarm threshold settings...

1. Turn the high power Nardalert XT on.
2. Observe the audible, vibratory, and visual indicators in sequence.
3. Check that the vibrator functions properly.
4. Check battery level by observing which indicator LED flashes in combination with the Green LED. If it is the  $1.0 \text{ mW/cm}^2$  LED, then the battery is down to about 20% of capacity. Similarly, if the  $20 \text{ mW/cm}^2$  LED flashes with the Green LED, then the battery capacity is close to full. The other three LEDs indicate approximate battery capacity of 40%, 60%, and 80%.
5. Observe which LED or LEDs flash when the steady tone (Alarm 1) goes off. If only one LED flashes, then the Alarm 1 threshold setting is the same as the LED. For example, if the monitor is set to the

default setting, the steady tone of Alarm 1 will sound and the 5.0 mW/cm<sup>2</sup> LED will flash indicating that Alarm 1 is set to 5.0 mW/cm<sup>2</sup>. If two LEDs flash while the steady tone of Alarm 1 sounds, the alarm threshold setting is somewhere between the levels indicated by the two LEDs. For example, if the 2.0 and 5.0 mW/cm<sup>2</sup> LEDs flash, the Alarm 1 threshold is set to a level anywhere from 2.1 to 4.95 mW/cm<sup>2</sup>. The User's Software and Interface kit are required to determine the exact alarm threshold.

6. Observe which LED or LEDs flash when the variable tone (Alarm 2) goes off. If only one LED flashes, then the Alarm 2 threshold setting is the same as the LED. For example, if the monitor is set to the default setting, the variable tone of Alarm 2 will sound and the 20 mW/cm<sup>2</sup> LED will flash indicating that Alarm 2 is set to 20 mW/cm<sup>2</sup>. If two LEDs flash while the variable tone of Alarm 2 sounds, the alarm threshold setting is somewhere between the levels indicated by the two LEDs. For example, if the 10 and 20 mW/cm<sup>2</sup> LEDs flash, the Alarm 2 threshold is set to a level anywhere from 10.1 to 19.95 mW/cm<sup>2</sup>. The User's Software and Interface kit are required to determine the exact alarm threshold.

## ***Wearing the Nardalert XT***

The Nardalert XT should be worn on the torso of your body facing forward. Chest level is the preferred location, but belt level is also acceptable. If you are climbing a tower, it is highly recommended that you wear the monitor high on your torso. This is because you may be climbing into very high fields and the field intensity can vary significantly over a few feet. Make sure the monitor is not facing your body and cannot turn while in use. For example, do not attach the monitor by a simple retaining line; although a retaining line can be useful as a backup method to prevent dropping the monitor should it become detached from your body. The optional climber's harness case is recommended for tower climbing applications.

### **◆◆◆ Note ◆◆◆**

**The monitor cannot detect RF fields through the body, except under some low frequency conditions.**

## ***Using the Nardalert XT Off the Body***

When using the Nardalert XT to detect leaks from waveguide systems, hold the unit in such a way as to not block the sensors mounted under the front surface. The supplied belt clip may be used to assist in holding the Nardalert XT for this application.

The front surface should, at all times practical, face the suspected direction from where the leak may be generated. Although the detection angle is broad, the best accuracy and sensitivity is obtained when the front surface faces the potential leak.

## ***Other Features and Applications Notes***

Refer to the *Nardalert XT User's Guide* for general information that is applicable to all Nardalert XT models, including the High Frequency 8866 Series.

## **Warranty**

Narda Safety Test Solutions (Narda STS) warrants Nardalert XT Personal Monitors to be free from any defect in material and workmanship for a period of two years from date of shipment to, and return by, the original purchaser. All warranty returns, however, must first be authorized by a factory office representative.

The limit of liability under this warranty shall be to repair or replace any product, or part thereof, which proves to be defective after inspection by Narda STS. This warranty shall not apply to any Narda STS product that has been disassembled, modified, physically or electrically damaged or any product that has been subjected to conditions exceeding the applicable specifications or ratings.

Narda STS shall not be liable for any direct or consequential injury, loss or damage incurred through the use, or the inability to use, any Narda STS product.

Narda STS reserves the right to make design changes to any Narda STS product without incurring any obligation to make the same changes to previously purchased units.


This warranty is the full extent of obligation and liability assumed by Narda STS with respect to any and all Narda STS products. Narda STS neither makes, nor authorizes any person to make, any other guarantee or warranty concerning Narda STS products.

## ***About Narda Safety Test Solutions***

Narda Safety Test Solutions is the new name for the world leader in non-ionizing radiation safety equipment. In February 2000, Narda – an L-3 Communications Company – acquired the Safety Test Solutions business from Wavetek Wandel & Goltermann. To give more focus to the RF safety business and to separate it from Narda's other business in components and networks, a new division was formed – Narda Safety Test Solutions. It combines the complementary product lines and expertise of these two businesses. The company holds more than 95% of the patents in the field. Products are available to accurately measure electromagnetic fields from a few Hertz to over 100 GHz plus static magnetic fields. RF personal monitors cover 100 kHz to 100 GHz and area monitors detect energy from 300 kHz to 100 GHz.



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