

## Accuracy of NONIN Onyx® 9500 Fingertip Pulse Oximeter Is Superior to Competitor's Device



Nonin Onyx® 9500



SPO Medical  
PulseOx 5500™

### SUMMARY:

An independent laboratory study found the accuracy of the NONIN Onyx 9500 to be within plus or minus two digits ( $\pm 2$ ), while SPO Medical PulseOx 5500 was within plus or minus five digits ( $\pm 5$ ). The study was an industry standard breathe-down protocol of induced hypoxemia in normal subjects.

### PURPOSE:

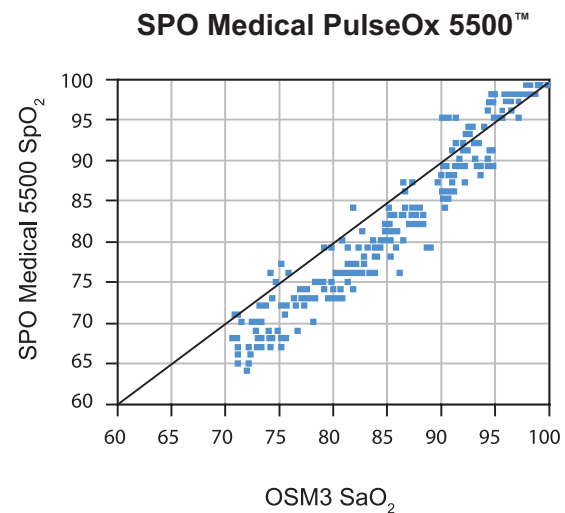
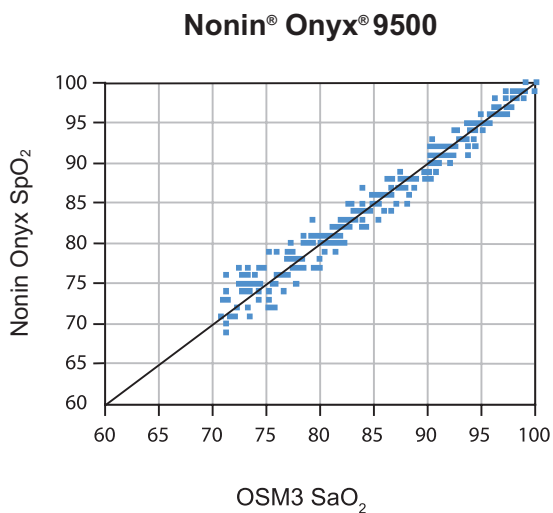
To assess the accuracy of two fingertip pulse oximeter devices compared to arterial blood saturation ( $\text{SaO}_2$ ) levels in normal subjects. The devices tested were NONIN Onyx 9500 and SPO Medical PulseOx 5500.

### METHODS:

Twelve normal subjects underwent induced hypoxia testing at the University of California San Francisco Hypoxia Research Laboratory. Each device was attached to a subject's finger. Hypoxia was induced to five levels of oxyhemoglobin saturation between 70% and 100% by having subjects breathe a mixture of inspired gas. Each level was held in a stable plateau for approximately two minutes while pulse oximeter readings and arterial blood samples were taken simultaneously. Twenty-five samples were obtained from each subject. Accuracy is defined as the closeness of agreement between a test result and an accepted reference value. The  $A_{\text{rms}}$  value was calculated with the reference value from arterial oxygen saturation ( $\text{SaO}_2$ ) determined using the Radiometer OSM-3 multi-wavelength co-oximeter.

## RESULTS:

NONIN Onyx 9500 had superior accuracy as noted by the lower  $A_{rms}$  compared to the SPO Medical PulseOx 5500. The accuracy of NONIN Onyx 9500 was consistent throughout the range of 70% to 100%, with no signs of deterioration in the lower ranges of oxygenation. The SPO Medical PulseOx 5500 had decreased accuracy at values less than 90% as seen below. NONIN Onyx 9500  $A_{rms}$  was determined to be 1.40, which equates to accuracy within plus or minus two digits ( $\pm 2$ ) of the observed value. SPO Medical PulseOx 5500  $A_{rms}$  was determined to be 4.20, which equates to accuracy within plus or minus five digits ( $\pm 5$ ).



The blue dots are the SpO<sub>2</sub> values of the pulse oximeter plotted against the SaO<sub>2</sub> value of the co-oximeter. Note how tightly the NONIN Onyx data points align with the black line, representing a consistent and good correlation to the “gold standard” of co-oximetry.

$A_{rms}$	Nonin Onyx 9500	SPO Medical PulseOx 5500
<b>SaO<sub>2</sub></b>		
<b>Entire Range</b>	<b>1.40</b>	<b>4.20</b>
90 to 100%	0.93	2.55
80 to 89.9%	1.17	5.27
70 to 79.9%	2.07	4.73