

Preserving signal integrity during oxygen desaturation

Optical sensing performance degrades under challenging physiological conditions, particularly during oxygen desaturation. Maintaining a high-quality pulsatile signal is essential for accurate and continuous physiological measurement.

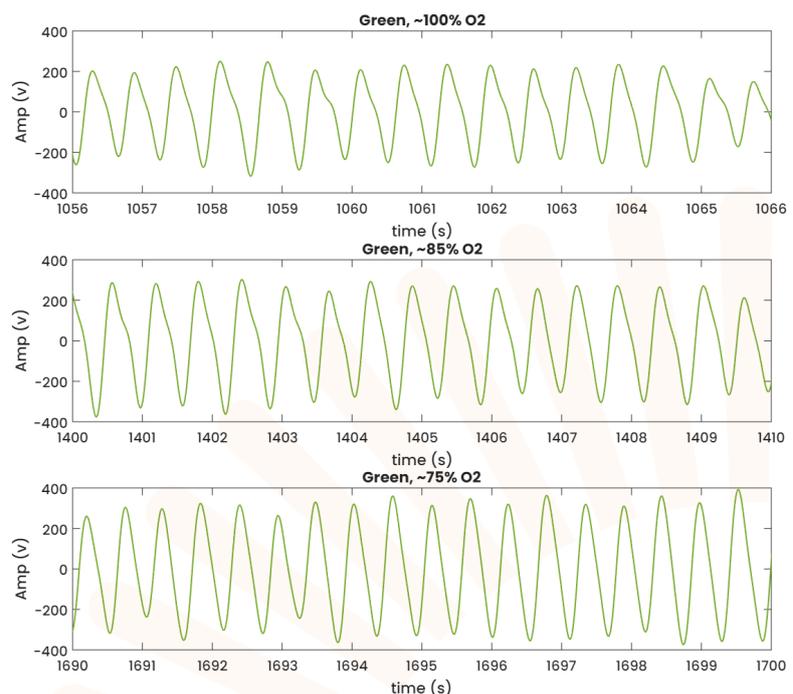
OPM preserves high-definition pulsatile waveforms across oxygenation levels. The following section demonstrates signal performance during controlled hypoxia and shows how preserved signal quality enables real-time calculation of multiple physiological parameters.

High-definition pulsatile wave

Carelight's proprietary OPM optical design and spectral optimisation ensure pulsatile signal quality is maintained in challenging physiological conditions, including low oxygenation levels. Stable pulsatile waveforms are preserved during oxygen desaturation, as shown in the 10-second signal clips captured at 100%, 85% and 75% oxygenation.

Signal quality for a wrist-worn Weartech device was evaluated in a controlled hypoxia study based on ISO standard 80601-2-61:2017 for pulse oximeters, with the protocol expanded to include 24 subjects evenly distributed across light, medium and dark skin tones.

Ten-second pulsatile signal segments captured at 100%, 85% and 75% oxygenation, demonstrating preserved waveform quality during controlled hypoxia.



Real-time calculation of SpO₂, perfusion index, respiration rate and heart rate derived from preserved high-definition pulsatile signals during oxygen desaturation.

Preserved high-quality pulsatile signals enable real-time calculation of multiple physiological parameters during oxygen desaturation. As illustrated in the accompanying parameter charts, OPM supports continuous measurement of heart rate, SpO₂, respiration rate and perfusion index throughout changing oxygenation levels.

Wrist-worn Weartech data collected from a female subject (MST4, ITA:39) during a controlled hypoxia study.

