Super Nasal-Oral Ratiometry System (SNORS)

SNORS detects nasal and oral airflow during speech to provide a non-invasive objective assessment of velopharyngeal insufficiency (VPI). It uses a lightweight dual chamber mask that is held over the nose and mouth. A soft silicone cuff moulds to the contours of the face providing a comfortable air tight seal. Rapid response airflow sensors and microphones are contained in both the nasal and oral chambers of the mask to enable aerodynamic and acoustic analysis.

SNORS mask

- Lightweight dual chamber mask separates nasal and oral signals
- Soft silicone cuff moulds to the contours of the face providing a comfortable air tight seal
- Fast response nasal and oral airflow sensors allow the rapid movements of the velum to be detected
- Highly directional nasal and oral microphones record speech and enable acoustic analysis
- Detects voiced and unvoiced sounds
- Adult and child (4+) sizes available
- Child mask available in a range of colours

SNORS unit

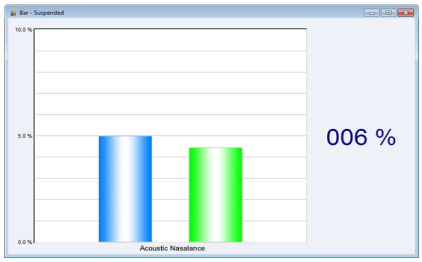
- Quick release connector for interchangeable adult and child masks
- Volume control enables optimised audio recording levels
- Auxiliary channel allows data from other devices to be synchronously recorded
- Connects to the host computer via USB
- USB powered - no external power supply required

Compatible software

When used in combination with icSpeech Professional Edition, the following SNORS parameters are available:

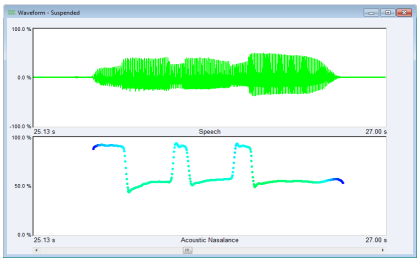
Parameter	Description
Nasal airflow	Unfiltered nasal airflow signal
Nasal airflow intensity	Low pass filtered nasal airflow envelope
Oral airflow	Unfiltered oral airflow signal
Oral airflow intensity	Low pass filtered oral airflow envelope
Combined airflow	Combined nasal and oral airflow
Combined airflow intensity	Low pass filtered combined airflow envelope
Aerodynamic nasalance	Percentage of the total airflow that is nasal
Aerodynamic ratio	Ratio of the difference between nasal and oral airflow to the total airflow
Nasal speech	Nasal acoustic signal
Nasal speech intensity	Low pass filtered nasal speech envelope
Oral speech	Oral acoustic signal
Oral speech intensity	Low pass filtered oral speech envelope
Speech	Combined nasal and oral acoustic signal
Speech intensity	Low pass filtered speech envelope
Pitch	Derived from the combined acoustic signal
Acoustic nasalance	Percentage of the total acoustic energy that is nasal
Auxiliary	Signal derived from user defined auxiliary channel

There are a number of ways in which these parameters can be displayed. All displays can be synchronously viewed in real-time for biofeedback, recorded for off-line assessment or printed for hard copy.



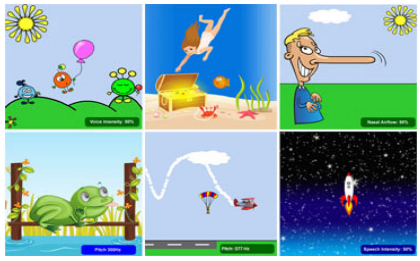
Bar display

The real-time Bar is a useful biofeedback tool that provides a clear and simple display reflecting the selected SNORS parameter. This allows the speaker to monitor their speech, make corrections, and instantly see the result. Real-time Bar is particularly useful when working with sustained sounds.



Waveform display

The Waveform display allows the speaker to see the dynamics of their speech during the utterance of complete words or phrases. Measurements are made on the waveform display by positioning cursors over areas of interest. The data can also be exported to a comma-separated values (CSV) file for further manipulation.



Games

icSpeech Professional Edition contains six interactive speech therapy games. Each game features adjustable targets, rewards and can be controlled by the SNORS parameters.

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