



Fraunhofer
IIS

FRAUNHOFER INSTITUTE FOR
INTEGRATED CIRCUITS IIS

SOMNOSENS®
HOME SLEEP MONITORING





With SomnoSENS, Fraunhofer IIS has developed a miniaturized system for at-home sleep monitoring. SomnoSENS is a functional prototype of a “portable sleep laboratory” that the patient can use independently at home. It records seven vital signs, can temporarily store the measurements and transmits them wirelessly to a base station (e. g. a laptop or PC) inside the house for data analysis.

Sleep disturbances result in impaired performance and stress to the cardiovascular system. Sleep disorder diagnosis and therapy can considerably improve quality of life and reduce the risk of cardiovascular disease. For patients, being examined in the sleep laboratory means long waiting times. Furthermore, it is well known that the unfamiliar environment in the sleep laboratory is detrimental to the quality of sleep and that the stay in the sleep laboratory generates high costs.

SomnoSENS®: Portable sleep laboratory

SomnoSENS monitors the vital signs of ECG, heart rate, SpO₂, arterial pleth, body motion, inspired/expired airflow and thorax/abdomen respiratory activity. The motion sensor is

integrated right into the SomnoSENS box; the remaining sensors are connected to the portable box, which is slightly larger than a business card holder. The system is worn on the body while the patient is sleeping and is extremely unobtrusive thanks to its miniature size. SomnoSENS records the data, stores it temporarily if necessary and transmits it wirelessly by radio contact to the base station. The Bluetooth wireless connection between the SomnoSENS box and the base station is established automatically without the need for patient intervention. If the patient moves outside the radio range of the base station, the box automatically switches to memory mode, which has a 24-hour data recording capacity. SomnoSENS hence places little restriction on movement, so the patient doesn't have to worry about getting up in the middle of the night to go to the bathroom. SomnoSENS can also easily be used for 24-hour-monitoring even when the patient is not home all day long.

SomnoSENS has not yet been certified as a medical device. The Fraunhofer IIS is presenting SomnoSENS with the objective of gaining partners for further development, production and marketing.

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