ABSTRACT

Respiration is one of the existing aspects of each human being both during ac-

tivities and sleeping. In general, the sleeping positions of human beings are catego-

rized into four, right, left, soldier (supine), and free-fall (stomach). Respiration also

indicates the health condition of human beings, such as sleep apnea. Sleep Apnea is

a type of sleep disorder whose symptoms can be found in respiration. The available

respiratory monitoring devices is called polysomnography (PSG).

In this study, respiratory monitoring during sleeping used Xethru X4M200. This

device is an ultra-wideband radar that can record the respiration results during sleep-

ing without having to attach electrodes to the body. In the respiratory monitoring

process, the device used the principle of the Dopler effect that was looking at the

movement on the target's chest. This study collected data in four sleep positions,

then saved and analyzed the results.

The results of the data analysis are the percentage of the average value of res-

piration per minute (RPM) for each sleep position and the percentage of truth in

the data collection. Based on the collected data from 20 subjects consisting of 10

female and 10 male subjects, respiration rates not normal were found in female sub-

jects with free-fall (stomach) sleep position with values of 60%, while the highest

percentage for normal respiration values was found in male subjects with the values

of 80%. The percentage of truth in data collection is 72% with 12% of the relative

error.

Keywords:RPM, doppler radar, non-contact measurement, respiration monitoring

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