ABSTRACT

Respiration is one of the existing aspects of each human being both during activities and sleeping. In general, the sleeping positions of human beings are categorized 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 sleeping 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 respiration 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 subjects 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*