

Original Paper

Sound Pressure Level in an Infant Incubator

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Abstract

Currently, there are a lot of infant incubators being used in hospitals in Thailand. That situation brings about the question on whether the values of physical quantities such as sound pressure or temperature inside the incubator still conform to the requirements of the international standards. The main objective of this research was to study the sound pressure level (SPL) generated within the incubator. The measurement method was based on IEC 60601-2-19:2009. There were two measurement conditions of the SPL in the infant incubator; the measurement during power-off condition and the measurement during the operation of incubator at a controlled temperature of 36 °C with a maximum humidity setting. Both measurement conditions were carried out in an empty incubator. The average values from the three measurement results of each operating incubator subtracted by the value of background noise were reported as the result of SPL generated in the incubator. The SPL results from this study were lower than 60 dBA, which are within the tolerance limit specified in IEC 60601-2-19. The estimated measurement uncertainty was lower than 1.8 dBA. This research will benefit to an investigation of hearing loss in infants possibly caused by the operation of the infant incubators in Neonatal Intensive Care Unit (NICU). Ultimately, this research will be a great evidence to show the NICU staffs in the hospitals in Thailand and also raise their awareness that it is important to sustain the proper maintenance and calibration of the infant incubators.

Keywords

Sound pressure level – Infant incubator