ABSTRACT

Electrosurgery Unit has the purpose of damaging certain body tissues by heating the tissue. And in this study there are several modes and also power selection. The contribution of this research is to design the power management and also the addition of several modes for the surgical process. Electrosurgery Unit involves the use of IC CMOS 4069 as a frequency generator. The frequency output is set at 250 KHz and then passed on to the pulse regulator circuit and controlled by using Arduino and then forwarded to the inverter circuit which functions to increase the voltage and output in the form of power. Modules are calibrated using ESU Analyzer. This module is equipped with a selection of LOW, MEDIUM, and HIGH power. And also there are some additional modes including Blend 1 and Blend 2. After the measurement is carried out, the voltage values obtained at the setting of low, medium high, on the inverter input with a value on Blend 1 mode low 80 V with an error of 0.84%, Medium 90 V with error 0.84%, High 104 V with an error of 0.81%, in Blend 2 mode low 84 V with an error of 0.83%, Medium 86 V with a error of 0.85%, High 105 V with an error of 0.81%, the Cutting mode is low 162 V with an error of 2.88%, medium 172 V with an error of 3.03%, High 192 V with an error of 2.86%. The measurement shows an error of less than 1% for Blend 1 and Blend 2 modes while cutting is less than 3%. The results of this study can be implemented in order to minimize errors due to lack of power settings and mode selection during surgery.

Keyword : electrosurgery unit, tissue, frequency, power