WIBOON LEENHAPATTANALERT : DESIGN AND CONSTRUCTION OF A HIGH VOLTAGE POWER SUPPLY FOR X - RAY DETECTORS. THESIS ADVISOR : Asso. PROF. VIRUL MANGCLAVIRAJ, Assi. PROF.SUVIT PUNNACHAIYA. 93 PP.

The objective of the thesis is to develop a high voltage power supply utilizing electronic parts mainly available locally. The development should provide stable output voltage suitable for radiation detectors like proportional and scintillation detectors.

The circuit of the power supply is based on a driven type DC to AC converter operated at 10 kHz with a voltage doubler at the output. The high voltage output is adjustable within the range of 0 to 3000 V and regulated by a switching pulse-width modulation circuit yielding a maximum output current of 5 mA. Performance test of the power supply shows an efficiency of 77%. However, voltage regulation is rather poor owing to too wide output range and large transient occurs at the change of voltage setting. Voltage ripple of 45 mV exists at full load presenting a severe drawback of the circuit. It is suggested that through narrowing the output voltage range and modification of the switching circuit improvement in high voltage stability and ripple reduction can be made.