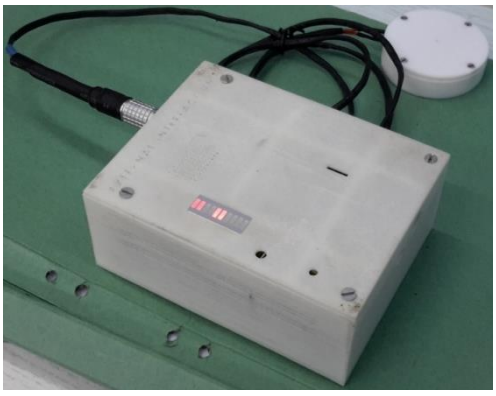
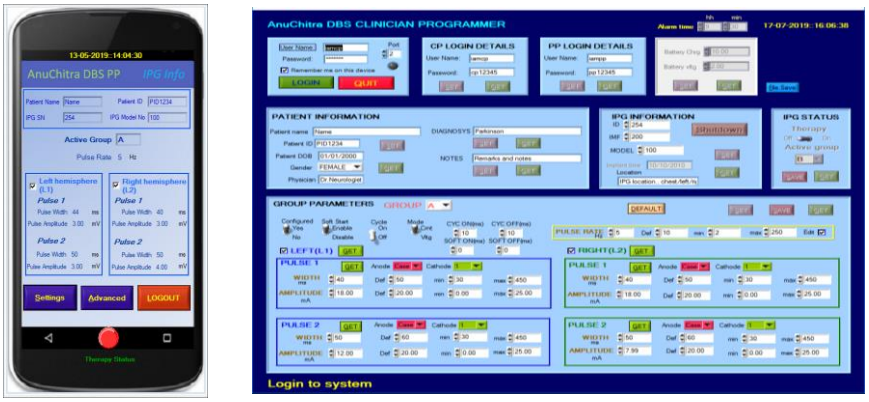
Development of Deep Brain Stimulator (DBS)

Deep brain stimulation (DBS) is used to treat a number of neurological conditions, such as Essential tremor, Parkinson's disease & Dystonia, by delivering carefully controlled electrical stimulation to precisely targeted areas of the brain responsible for motor function. It is being developed under MoU with SCTIMST, Thiruvananthapuram. The DBS system consists of implantable components (IPG, brain lead & intermediate lead) and external components (EIU, PP and CP). The IPG is implanted subcutaneously in the subclavicular or upper abdominal region. It is comprised of a battery and integrated circuits that are hermetically sealed in titanium enclosure. The IPG generates electrical stimulation pulses with a variety of parameters, modes, and polarities. Electrodes are placed on both sides of the brain for bilateral stimulation. Non-invasive adjustment of the stimulation parameters and wireless charging of IPG battery are achieved using the external components of the DBS. Prototypes of all the DBS system components have been designed and developed. Integrated testing of the system has been successfully carried out with the bio-simulator (PBS phantom solution) as load.

Implantable components: Pulse Generator (IPG), Brain Lead, Intermediate Lead



External Interface Unit (EIU) for programming & charging of IPG, with wireless interface with IPG & PP/CP.



PC based Patient Programmer (PP) and Clinician Programmer (CP) software