Chaitanya Bharathi Institute of Technology
An Autonomous Institute Affiliated to Osmania University, Hyd

Departments of
Electronics and Communication Engineering
&
Artificial Intelligence and Data Science

One Day Research Facility Training
on
PolaRx5S Scintillation Monitoring Receiver and other GNSS Receivers

28 June 2025, DST-SERB SSR Programme
(Venue: Department of ECE-Research Room, R&D-206, R&E Hub)

Schedule

S. No	IST (Hrs)	Topic	Session Coordinators
1.	09:30-10:00	Registration	
2.	10:00-10:30	Introductory Session	Venue: Mini-Conference Hall, R&E Hub
High Tea: 10:30-10:45 IST (Hrs)			
3.	10:45-11:30	Overview of GNSS and Research Facilities at NCRC	Prof. A D Sarma
4.	11:30-12:00	Installation procedure and Operation of IRNSS-SPS-GPS Receiver	Mr. K Lakshmanna and Prof. A D Sarma
5.	12:00-12:30	Installation procedure and Operation of PoLaRx5S receiver	Mr. MD Kursheed and Prof. A D Sarma
6.	12:30-13:00	SDR based NavIC/GPS receiver	Dr. K Satyanarayana
Lunch Break: 13:00-14:00 IST (Hrs)			
7.	14:00-14:20	Basic operation of GPS/NavIC modules	Dr. KSRS. Jyothsna & Dr. A Supraja Reddy
	14:20-14:40	Field Fox Analyzer (Spectrum analyzer & Network analyzer)	Dr. T. Sridher
	14:40-15:00	Basic operation of HackRF	Dr. M Vinodh Kumar
Tea Break: 15:00-15:15 IST (Hrs)			
8.	15:15-15:30	Software-Defined Radio (SDR)	Dr. D Sony & Prof. D Krishna Reddy
9.	15:30-15:45	IoT modules	Dr. D L S Reddy
10.	15:45-16:00	Drones	Mr. K Lakshmanna & Prof. A D Sarma
11.	16:00-16:30	Concluding Session	Venue: Mini-Conference Hall, R&E Hub

Report on One-Day Research Facility Training

DST-SERB Scientific Social Responsibility (SSR) Programme

Date: 28th June 2025

Venue: Department of ECE - Research Room (R&D-206), R&E Hub, CBIT

1. Overview

The Departments of Electronics and Communication Engineering (ECE) and Artificial Intelligence & Data Science (AI&DS) jointly organized a One-Day Research Facility Training on the PolaRx5S Scintillation Monitoring Receiver and other GNSS (Global Navigation Satellite System) Receivers under the DST-SERB SSR Programme.

This programme aimed to provide hands-on exposure and technical understanding of advanced navigation and communication technologies to faculty, research scholars, and students, enhancing their ability to conduct applied research in Positioning, Navigation, and Timing (PNT) systems.

2. Objectives of the Training

- To familiarize participants with GNSS infrastructure and equipment available in the Navigation and Communication Research Center (NCRC).
- To provide practical demonstrations of the installation and operation of IRNSS, GPS, and PoLaRx5S Receivers.
- To train participants on the use of Software-Defined Radio (SDR) systems for navigation and signal analysis.
- To demonstrate the integration of IoT and Drone technologies with GNSS receivers for research and real-world applications.
- To promote interdisciplinary research collaboration among ECE and AI&DS departments in the domain of PNT technologies.

3. Programme Schedule and Session Details

Time (IST)	Session Title	Resource Person(s)	Details
09:30–10:00	Registration	—	Participants registered and received training materials.
10:00–10:30	Introductory Session	—	Opening remarks, overview of DST-SERB SSR objectives, and importance of GNSS research.
10:30–10:45	High Tea	—	Networking and informal discussion among attendees.
10:45–11:30	Overview of GNSS and Research Facilities at NCRC	Prof. A. D. Sarma	Introduced GNSS concepts, satellite navigation principles, and facilities at NCRC.
11:30–12:00	Installation and Operation of IRNSS-SPS-GPS Receiver	Mr. K. Lakshmanna & Prof. A. D. Sarma	Demonstrated installation, configuration, and data acquisition process.
12:00–12:30	Installation and Operation of PoLaRx5S Receiver	Mr. Md. Kursheed & Prof. A. D. Sarma	Showcased advanced scintillation monitoring and receiver calibration.
12:30–13:00	SDR-based NavIC/GPS Receiver	Dr. K. Satyanarayana	Explained the role of SDR in customizable signal processing for NavIC and GPS.
13:00–14:00	Lunch Break	—	—
14:00–14:20	Basic Operation of GPS/NavIC Modules	Dr. K. S. R. S. Jyothsna & Dr. A. Supraja Reddy	Demonstrated use of basic modules for positioning and timing experiments.
14:20–14:40	Field Fox Analyzer (Spectrum & Network Analyzer)	Dr. T. Sridher	Explained RF analysis and measurement techniques for signal diagnostics.
14:40–15:00	Basic Operation of HackRF	Dr. M. Vinodh Kumar	Introduced open-source SDR platforms for signal capture and modulation.
15:00–15:15	Tea Break	—	—

Time (IST)	Session Title	Resource Person(s)	Details
15:15–15:30	Software-Defined Radio (SDR)	Dr. D. Sony & Prof. D. Krishna Reddy	Discussed SDR architecture, applications, and research possibilities.
15:30–15:45	IoT Modules	Dr. D. L. S. Reddy	Demonstrated integration of IoT sensors and communication protocols with GNSS.
15:45–16:00	Drones and GNSS Integration	Mr. K. Lakshmanna & Prof. A. D. Sarma	Explained how drones can utilize GNSS systems for navigation and mapping.
16:00–16:30	Concluding Session	—	Summary of sessions, participant feedback, and closing remarks.

4. Key Outcomes

- Participants gained hands-on skills in installing and configuring multiple GNSS receiver systems.
- The session strengthened awareness about IRNSS (NavIC), India's indigenous navigation system.
- Demonstrations of SDR and IoT modules bridged theoretical learning with practical experimentation.
- The training encouraged faculty-student collaboration for research proposals in PNT technologies.
- Exposure to Field Fox Analyzer and HackRF tools enhanced understanding of RF measurements and software radio concepts.

5. Impact and Future Scope

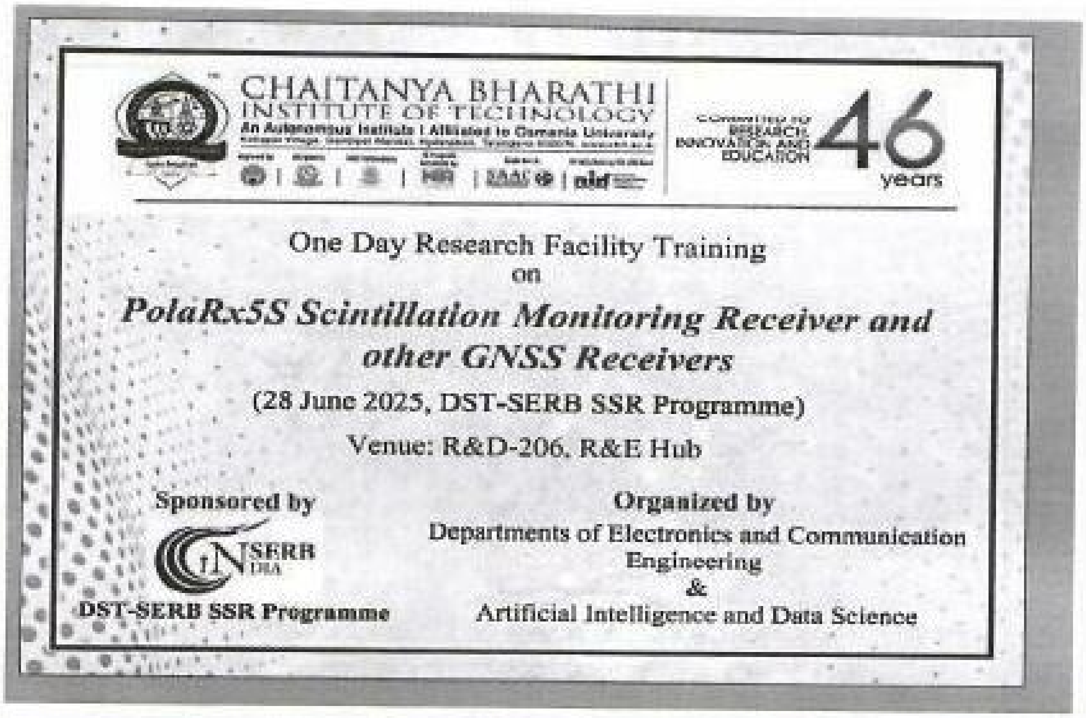
The training successfully achieved its objectives by empowering participants with advanced research skills in GNSS-based technologies. Future extensions of this programme may include:

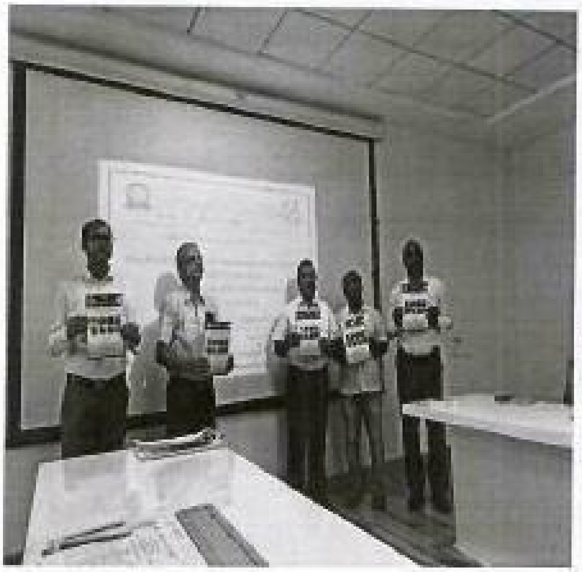
- Establishing student research projects on PNT applications using PoLaRx5S receivers.
- Collaborative research with IIT Tirupati and DST-SERB for precision timing and navigation models.
- Integration of AI-driven signal processing techniques for GNSS data analytics.

6. Acknowledgements

The departments express gratitude to DST-SERB for supporting the SSR programme, and to Prof. A. D. Sarma and the organizing committee for their technical guidance. Special thanks to all faculty coordinators and student volunteers from ECE and AI&DS departments for ensuring the success of the event.

GALLERY





Event Co ordinator

HoD, AI&DS.