



Kammavari Sangham (R) 1952

K. S. GROUP OF INSTITUTIONS

K. S. SCHOOL OF ENGINEERING AND MANAGEMENT

Approved by AICTE, New Delhi; Affiliated to VTU, Belagavi, Karnataka; Accredited by NAAC

www.kssem.edu.in

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

A Report on 5- Day Faculty Development Program on

“Antenna Modeling and Simulation using CST Studio Suite”

Date: 6th Jan – 10th Jan 2025

Time: 9 am– 5 pm

Venue: Aryabhata Seminar Hall, Dept. of ECE, KSSEM, Bangalore

Target Audiences: Faculty Members

No. of Participants: 40

Objective: The 5-day Faculty Development Program aims to provide information about the latest developments in the antenna-related fields, through a series of expert lectures and hands-on experience using CST Studio Suite for antenna modeling & simulation.

Day 1: 6th Jan 2025

Department of Electronics and Communication Engineering, KSSEM, in association with Best Engineering Aids and Consultancies Pvt. Ltd., (**BEACON**) & **IETE**-Bangalore organized a 5- Day FDP on “**Antenna Modeling and Simulation Using CST Studio Suite**”. Chief guest Dr. Ravishankar C V, Chairman, IETE- Bangalore inaugurated the FDP and suggested the department organize many more antenna and microwave-related workshops, seminars and symposiums, which will help the faculty members enhance their knowledge in these domains, and also assured technical support through IETE. Dr. K V A Balaji, CEO, KSGI addressed the gathering and advised the participants to utilize the FDP program effectively by interacting with the resource persons.

The event was followed by a technical talk on “**RADAR Active Phased Array Architecture and Controller**” by Mr. Amit Goel, Scientist, LRDE, Bangalore, who explained about active phased-array antennas, transmit and receive functions that are distributed at the antenna aperture using Transmitter and Receiver (T/R) modules, and the use of T/R modules in obtaining significant improvement in antenna performance and flexibility in the choice of array architectures. He also discussed various beamformer architectures for active phased-array antennas for radar applications.



Fig No. 1: Inguaration of the Event and Felistating the Chief Guest Dr. Ravishankar Chairmen- IETE Bengaluru.

Day 2: 7th Jan 2025

On the second day, a technical talk on “**Electromagnetic Waves: An Introduction**” was delivered by Mrs. Leena M, Scientist, Central Research Laboratory, BEL, Bangalore. The talk highlighted the working of different types of antennas, Reconfigurable Intelligence Surfaces (RIS) and their usage in controlling the propagation of electromagnetic waves, sensing the radio environment & enhancing the capacity and coverage of wireless networks.

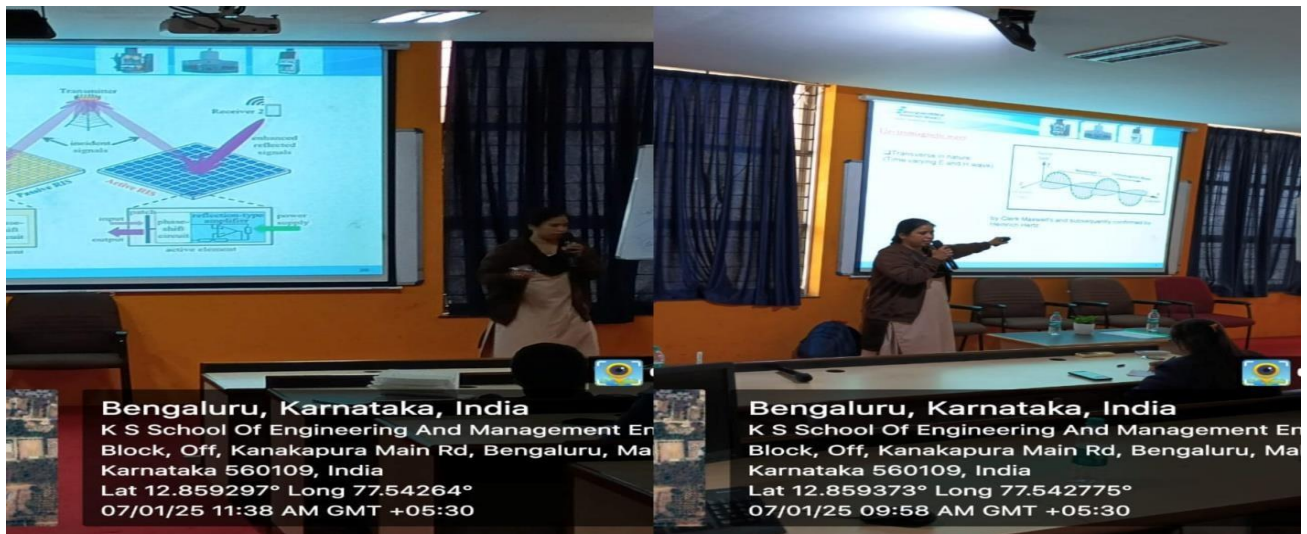


Fig No. 2: Technical Talk delivered by Mrs. Leena M, Scientist, Central Research Laboratory, BEL, Bangalore

Day 3: 8th Jan 2025

On the Third day, Dr. S. Biradar, Associate Professor, Dept. of ECE, DSATM, Bangalore conducted an insightful session on “5G and 6G Antenna Design using CST Tool” and emphasized research paper writing, and usage of CST Studio Suite tools for research in the field of antenna design.

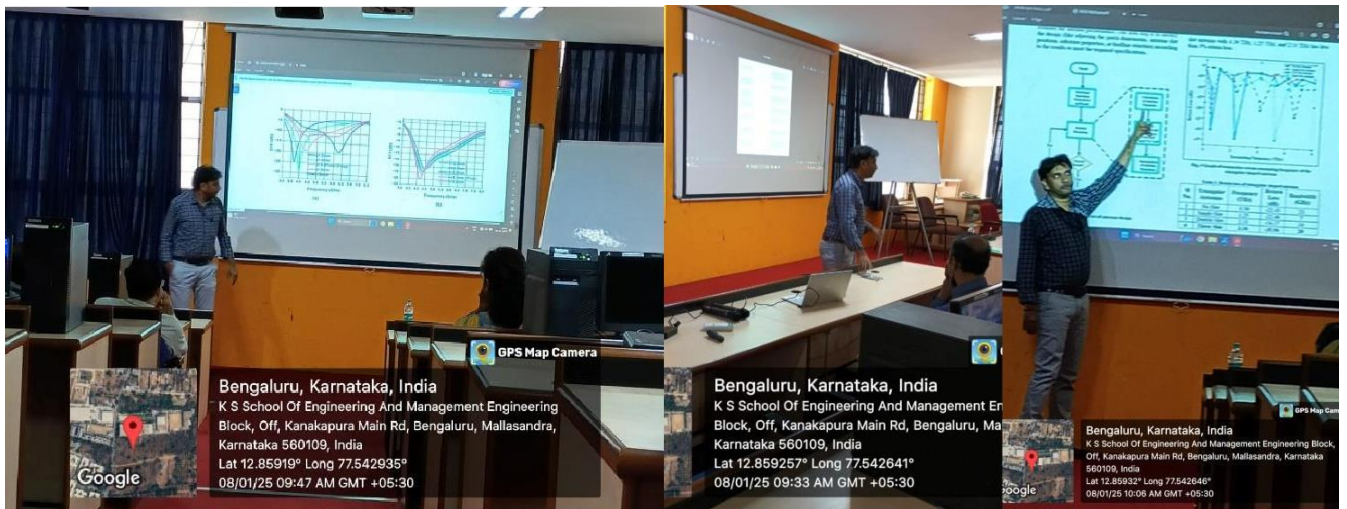


Fig No. 3: Technical Talk delivered by Dr. S. Biradar, Associate Professor, Dept. of ECE, DSATM, Bangalore.

Day 4: 9th Jan 2025

On the fourth day, Mr. Sasindran M Prabhu, Visiting Professor, Dept. of ECE, KSSEM, Bangalore, provided an overview of 5G and 6G Antenna evolution in the Mobile Communication.

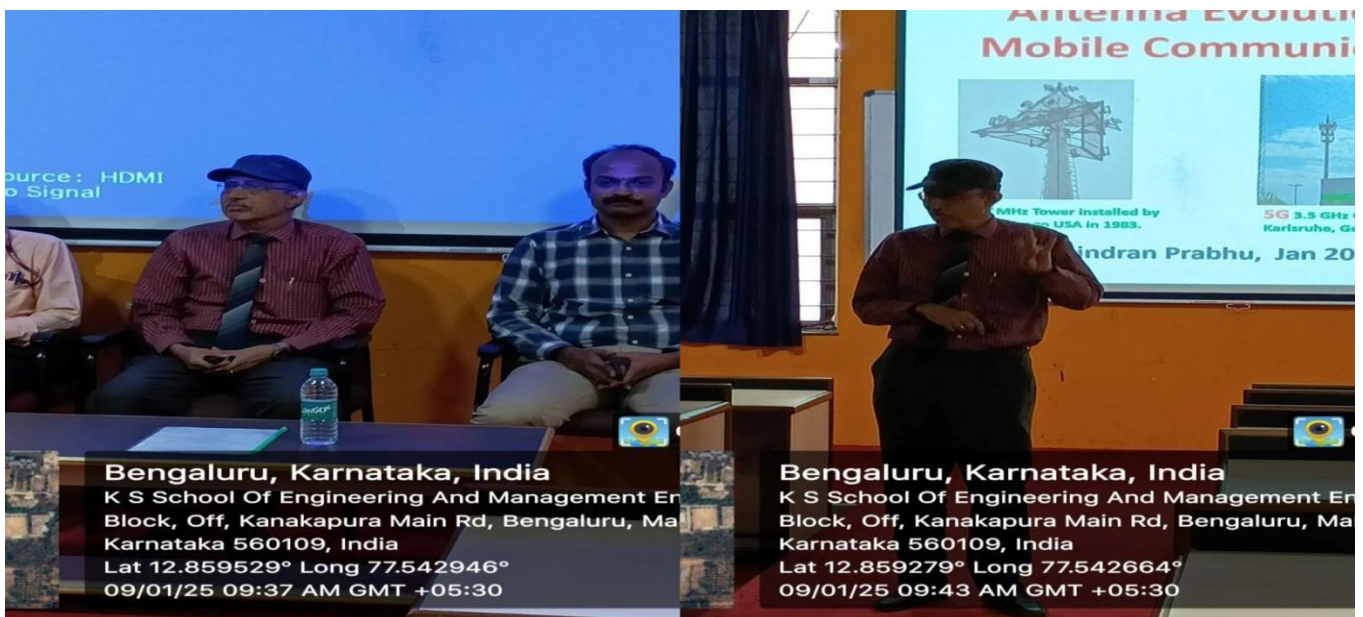


Fig No. 4: Technical Talk delivered by Prof. Sasindram M Prabhu Visiting Professor, Dept. of ECE, KSSEM, Bangalore.



KSSEM
K.S. SCHOOL OF ENGINEERING AND MANAGEMENT

Kammavari Sangham (R) 1952

K. S. GROUP OF INSTITUTIONS

K. S. SCHOOL OF ENGINEERING AND MANAGEMENT

Approved by AICTE, New Delhi; Affiliated to VTU, Belagavi, Karnataka; Accredited by NAAC

www.kssem.edu.in

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Day1 to Day 4: Hands-On Sessions

Mr. Nagarjuna L, Application Engineer, BEACON, Bangalore conducted hands-on sessions everyday afternoon, covering the basic usages of CST Studio Suite, in terms of its antenna modeling and simulation capabilities. Mr. Nagarjuna also gave insights into CST Microwave Studio workflow, with examples including design and simulation of Horn antenna and Reflector antenna, measurement of DC IR drop, Power Integrity solution and EDA Import-CST MWS workflow.

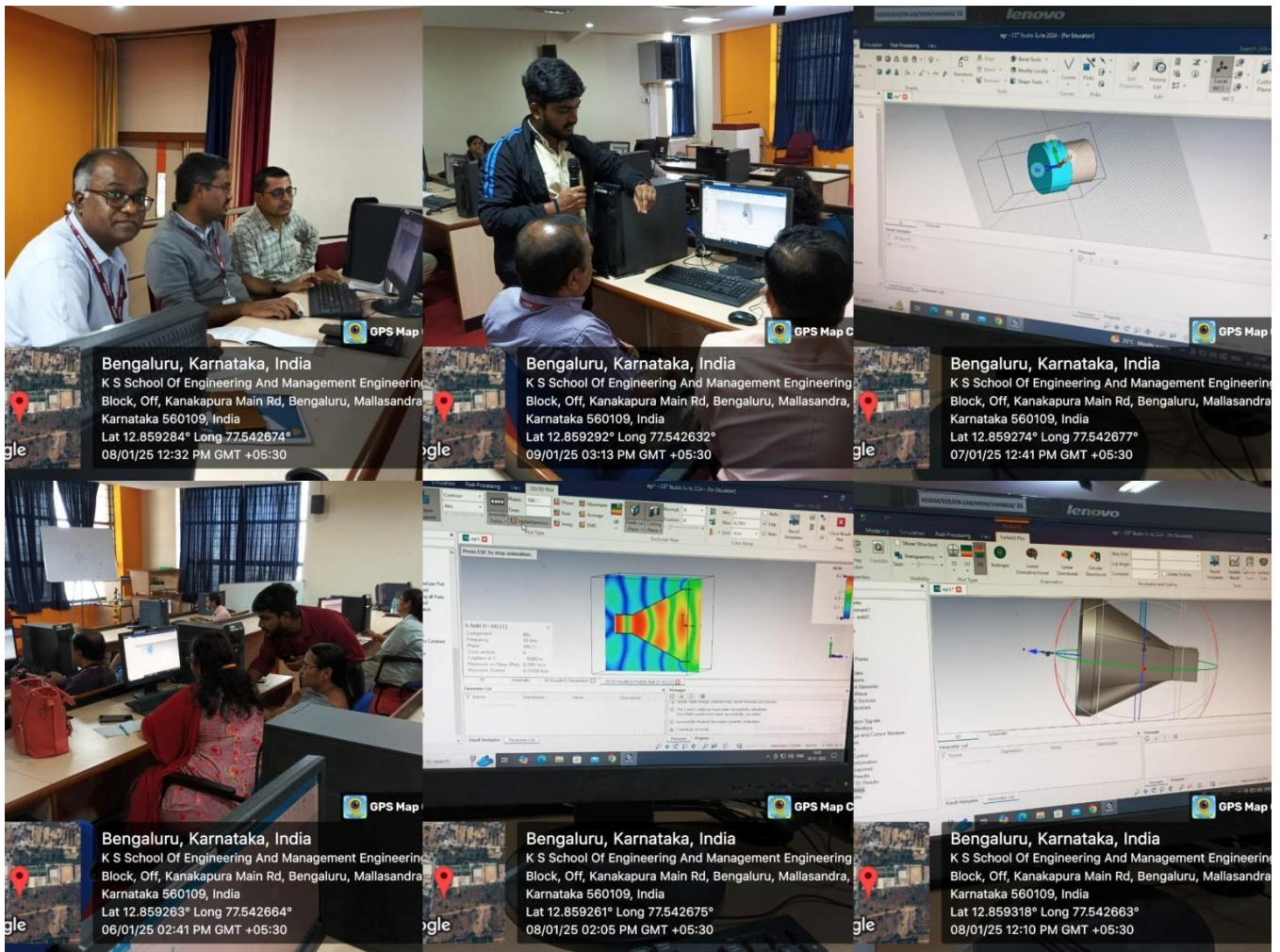


Fig No. 5: Hands on Training given by Mr. Nagarjuna L, Application Engineer, BEACON, Bangalore

Day 5: 10th Jan 2025

On the fifth day, the participants visited “**Technilab Instrument**” as a part of the Industrial visit. Mr. Ravikumar, Proprietor, explained the concept of construction of microstrip antenna, Vivaldi antenna, array antennas, PCB and demonstrated the practical uses of Vector Network Analyzer for the measurement of S-parameters.

The 5-Day event concluded with the Valedictory session of the FDP, which was graced by the presence of CEO, Principal, HODs of Various departments and Participants. Participation certificates were distributed during the function.



KSSEM
K.S. SCHOOL OF ENGINEERING AND MANAGEMENT

Kammavari Sangham (R) 1952

K. S. GROUP OF INSTITUTIONS

K. S. SCHOOL OF ENGINEERING AND MANAGEMENT

Approved by AICTE, New Delhi; Affiliated to VTU, Belagavi, Karnataka; Accredited by NAAC

www.kssem.edu.in

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

The Participants expressed their Feedback, stating that the five-day FDP was informative and all the arrangement & hospitality were good. The event witnessed enthusiastic participation from faculty members.



Fig No. 6: Glimps of Industrial Visit - **Technilab Instrument** explained by Mr. Ravikumar, Proprietor and Team.

Outcome:

- Participants gained knowledge in the fields of Electromagnetics, phased array antennas, antenna design and learned how to navigate the general layout of the CST STUDIO SUITE interface.
- Participants learned how to Generate CAD geometries within the native modeling interface
- They were able to Set up the project environment with the desired units, frequency settings, background materials and boundary conditions
- Participants understood the various material types that exist and how to define them in CST, learned to Setup excitations using lumped elements and waveguide ports and result monitors to obtain 2D/3D field data.
- Participants learned to select the most appropriate solvers and algorithm for high frequency applications, Analyzed simulation results such as S-parameters, voltages, currents, 3D near fields and Far fields.
- Participants obtained Practical exposure to the different types of antennas and live demo of microstrip antennas & measurements.

FDP Co-Ordinators

1. Dr. Girish V Attimarad :
2. Dr. Manu D K:
3. Mr. Gopalakrishnamurthy C R:

HoD, ECE

Dr. K Senthil Babu
Professor & Head
Dept. of Electronics & Communication Engineering
K.S. School of Engineering & Management
Bangalore - 560 105