Curriculum Vitae

Gowrish Basavarajappa

gowrish.biit@gmail.com , gowrish.b@ece.iitr.ac.in , www.gowrish.in

Mobile : +91 73493 42332

Current Profession

Asst. Professor, Electronics and Communication Engineering Department, IIT Roorkee, India

Since September 2021

Teaching :

RF and Microwave Engineering, Antenna Theory and Design, and Microwave Laboratory

Research and Projects:

Multi-Functional RF Components (IIT Roorkee, FIG – Grant 20 Lakhs, 2022 – 2024)

Tunable Microstrip Band Pass Filters (DST, SERB – 32 Lakhs, 2022 – 2024)

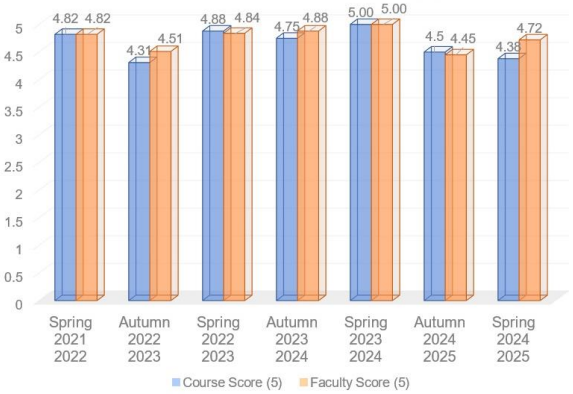
Antenna for THz Communication System at D Band (DoT, TTDF – 30 Lakhs, 2025)

Administrative Roles:

Department Research Committee, Member – (August 2023 – July 2025)

Department Faculty Search Committee, Convener – (January 2023 – December 2023)

M.Tech Programme Co-ordinator (RF and Microwave) – (July 2022 – December 2023)



Professional Experience

Scientist (Communication Systems Group) at ISRO (Indian Space Research Organization) URSC

December 2014 – May 2017 (2 years, 5 months), Bangalore, India

Band-Pass Filter – Dielectric Resonator, Waveguide, Co-axial Cavity, SIW Technologies : S band (2 GHz) to Ka band (27 GHz)

Characterization of BPF : Corona and Multi-paction , Mono-Pulse Comparator at S band in Rectangular Co-axial Guide

Systems Engineer (Wireless and RF System Design) at Cypress Semiconductor

June 2013 – September 2014 (1 year, 3 months), Bangalore, India

Designed PCB antenna for HID (Human Interface Device) applications like Mouse, Keyboard etc, collateral : Antenna Design Guide.

Education Qualification

Ph.D. : University of Waterloo, Canada

Ph.D. at the University of Waterloo, Canada 2017 – 2021 (7th April 2021 : Ph.D. defense), IDSA – International Doctoral Student Award

Thesis: Tunable Bandpass Filters for Communication Systems , Supervisor: Prof. Raafat R. Mansour

M.Tech : Indian Institute of Technology Delhi, India

Master of Technology (M.Tech) - RFDT (RF Design & Technology) in CARE, 2011 – 2013

Grade (CGPA): 9.903 / 10, Project: 60 GHz NRD Guide Transceiver, Supervisors: Prof. Shiban K Koul and Prof. Ananjan Basu

B.E : Bangalore Institute of Technology, India

Bachelor of Engineering (B.E.) in Electronics and Communications Engineering, 2006 – 2010, Grade (Percentage): 84.82%

Awards / Recognition

- IEEE SPACE Conference : Best Paper Award, 2024, Bengaluru, India
- Young Professional Excellence Award, IEEE WAMS – 2023, Gandhinagar, India
- RIDE Young Scientist Award 2022 – MIT, Pune, India
- Member IEEE MTT-5 Filters Technical Committee
- IEEE International Microwave Symposium : Best Advanced Industry Paper Award 2019, Boston, USA
- IETE Journal Award 2018 and 2016
- IEEE International Microwave Symposium : Student Paper Finalist 2018, Philadelphia, USA
- IDSA – International Doctoral Student Award, Uni. of Waterloo, Canada

Publications & Patent:

US Patents (2 Granted)

1. Tunable Bandpass Filter With Constant Absolute Bandwidth Using Single Tuning Element, Gowrish B. and Raafat R. Mansour, Patent application: US 16/228,587; Dec 21, 2017.
2. Tunable Filter With Minimum Variations in Absolute Bandwidth and Insertion Loss Using A Single Tuning Element, Gowrish B. and Raafat R. Mansour, Patent application: US 16/713,198; Dec 21, 2018.

Indian Patents (2 Granted, 5 Applied)

1. A Scalable Balun Filter, Gowrish B., Patent Application: 202211022250, April 14, 2022 - (Granted : Patent Number 510886) **Technology Transferred to Rapid Parts Solutions Pvt. Ltd. - 16th May 2024**
2. A Wideband Ferrite Transformer Based Power Divider, Gowrish B., Patent Application: 202211044718, August 4, 2022 (Granted : Patent Number – 547641)
3. A System And Method For Gain Enhancement In Pyramidal Horn Antenna Using Band Pass Gain Boosting Surface (GBS), Kalyan Mohan Patnaik and Gowrish Basavarajappa: 202311057857, August 29, 2023
4. A Multi-Functional System for Providing Coaxial to Waveguide Transitions for Power Combining Applications, Manoj Kumar, Gowrish Basavarajappa and Karun Rawat: 202411047134, June 19, 2024.
5. A Low-Cost Tunable S-Band and X-Band RF Source and Its Method For Microwave Analysis, Gowrish Basavarajappa: 202411081326, November 15, 2024.

Journal Publications : (Total Publications : 59, where **28 – Journals**, 31 – Conferences)

1. R. R. Mansour, G. Basavarajappa and S. M. Pourjaafari, "High-Q Tunable Bandpass Filters With a Wide Tuning Range Using a Minimum Number of Tuning Elements," in IEEE Microwave Magazine, doi: 10.1109/MMM.2025.3572869.
2. I. Suryarajitha, R. Jawale, G. Basavarajappa, H. H. Sigmarsson, R. K. Panigrahi and M. V. Kartikeyan, "An Innovative H-Plane Filtering Horn Antenna in Substrate-Integrated Waveguide Technology," in IEEE Transactions on Components, Packaging and Manufacturing Technology, vol. 15, no. 5, pp. 1072-1080, May 2025.
3. Rushiraj Jawale, Suryarajitha I., Gowrish Basavarajappa, and Hjalti Sigmarsson, "A Novel Multifunctional E-Plane Metal Septum Based Filtering Horn Antenna", accepted in IEEE Antennas and Wireless Propagation Letters, December 2024.
4. Kalyna Mohan Patnaik, Gowrish Basavarajappa, and Hjalti Sigmarsson, "An Innovative Design Methodology of a Novel Multifunctional All Pole Filtering Horn Antenna", accepted in IEEE Microwave and Wireless Technology Letters, November 2024.
5. Manoj Kumar, and Gowrish Basavarajappa, "A Novel Compact Multifunctional Co-axial to Waveguide Power Combining Transitions for X Band Applications " accepted in IET Microwaves, Antennas and Propagation (IET MAP), November 2024.
6. Manoj Kumar, Mansi Goyal, and Gowrish Basavarajappa, "An Inexpensive Tunable S and X Band RF Source for Microwave Laboratory" accepted in Microwave Journal, October 2024.
7. Kalyan Mohan Patnaik, Gowrish Basavarajappa, and Raafat Mansour, "A dual mode circular waveguide cavity resonator based frequency tunable band pass filter using a single tuning element", Microwave and Optical Technology Letters, Wiley Publications, Volume 66, Issue 9, September 2024. https://doi.org/10.1002/mop.34343
8. M. A. Shukoor, A. Z. Ahmad, M. Kumar, S. Dey, G. Basavarajappa and K. Rawat, "Design of Miniaturized Active Matching Network Integrated Ultra-Broadband VHF/UHF Monopole Antenna for Direction Finding Array Applications," in IEEE Antennas and Wireless Propagation Letters, 2024.
9. Manoj Kumar and Gowrish Basavarajappa, "Tunable Microstrip Bandpass Filter With Constant Absolute Bandwidth Using BST Varactors and Digitally Tunable Capacitors " accepted in International Journal of Microwave and Wireless Technologies (IJMWT), Cambridge Press, 2024.
10. M. Kumar and G. Basavarajappa, "Design Methodology of Multifunctional Balun Filters Based on Modified Coupling Matrix," in IEEE Transactions on Instrumentation and Measurement, vol. 73, pp. 1-10, 2024, Art no. 8000810, doi: 10.1109/TIM.2023.3332940.
11. Patnaik, K.M. and Basavarajappa, G. (2023), A novel miniaturized waveguide all pole band pass filter using confined multi-layered frequency selective surfaces. IET Electronics Letters, Wiley Publications, Vol. 59: e13059. https://doi.org/10.1049/ell2.13059
12. Kalyan M. Patnaik, and Gowrish Basavarajappa, "A Configuration to Double the Gain of Pyramidal Horn Antenna Using Single Layer Frequency Selective Surface", accepted in IET Microwaves, Antennas and Propagation, 2023.
13. Gowrish B., "A Ferrite Transformer Based Power Divider with 400:1 Bandwidth", in Microwave Journal, Vol. 66, Ed. 06, June 2023.
14. G. Basavarajappa and R. R. Mansour, "An Efficient EM-Based Synthesis Technique for Single-Band and Dual-Band Waveguide Filters," in IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, vol. 41, no. 6, pp. 1687-1692, June 2022.
15. B. Gowrish & Shiban K. Koul (2022) Broadband Multi-Stub PCB Monopole Antenna, IETE Journal of Education,63:2,5762
16. B. Gowrish and R. R. Mansour, "A Tunable Quarter-Wavelength Coaxial Filter With Constant Absolute Bandwidth Using a Single Tuning Element," in IEEE Microwave and Wireless Components Letters, vol. 31, no. 6, pp. 658-661, June 2021.
17. B. Gowrish, S. K. Koul and R. R. Mansour, "Transversal Coupled Triple-Mode Spherical Resonator-Based Bandpass Filters," in IEEE Microwave and Wireless Components Letters, vol. 31, no. 4, pp. 369-372, April 2021.
18. B. Gowrish & Shiban K. Koul (2021) Designing RF and Microwave Band Pass Filters Using Coupled Resonators, IETE Journal of Education, 62:1, 6-11.
19. B. Gowrish & Shiban K. Koul (2021) Analysis of Transmission Line with Distributed Series Voltage Sources Using Green's Function, IETE Journal of Education, 62:1, 21-28.
20. B. Gowrish and R. R. Mansour, "A Novel Bandwidth Reconfigurable Waveguide Filter for Aerospace Applications," in IEEE Microwave and Wireless Components Letters, vol. 30, no. 6, pp. 577-580, June 2020.
21. Gowrish. B and R. R. Mansour, "A High-Q Quadruple-Mode Rectangular Waveguide Resonator," in IEEE Microwave and Wireless Components Letters, vol. 29, no. 5, pp. 324-326, May 2019.
22. Gowrish. B and R. R. Mansour, "Design Methodology of a High- Q Tunable Coaxial Filter and Diplexer," in IEEE Transactions on Microwave Theory and Techniques, vol. 67, no. 12, pp. 5005-5015, Dec. 2019.

23. Gowrish B. and Ananjan Basu (2019) Deriving Poynting Theorem – A Student-Friendly Approach, IETE Journal of Education, 60:2.
24. Gowrish. B and R. R. Mansour, "Design Methodology of a Tunable Waveguide Filter With a Constant Absolute Bandwidth Using a Single Tuning Element," in IEEE Transactions on Microwave Theory and Techniques, vol. 66, no. 12, pp. 5632-5639, Dec. 2018.
25. Gowrish B. and Ananjan Basu (2017) Analysis and Design of a Dual-Band Stepped Impedance PCB Monopole Antenna, IETE Journal of Education, 58:1, 29-38. **IETE Student Journal Award**
26. Gowrish. B., S. Reddy D., A. V. G. Subramanyam, V. S. Kumar and V. V. Srinivasan, "Mono-Pulse Comparator in Rectangular Co-Axial Guide for Satellite Ground Station," in IEEE Microwave and Wireless Components Letters, vol. 26, no. 9, pp. 666-668, Sept. 2016.
27. Gowrish B., Rahul Kumar & Ananjan Basu (2015) Smith Chart-based Design of a Dual Band Real Impedance Matching Network, IETE Journal of Education, 56:2, 43-50. **IETE Student Journal Award**
28. K. Rawat, G. Gowrish, G. Ajmera, A. Basu, S.K. Koul, "Design scheme for broadband Doherty power amplifier using broadband load combiner", Wiley International Journal of RF and Microwave Computer-Aided Engineering, vol. 25, Issue 8, pages 655–674, Oct 2015.

Conference Publications : (**Total Publications : 59**, where 28 – Journals, **31 – Conferences**)

1. Manoj Kumar, and Gowrish Basavarajappa, "A Multifunctional Circularly Polarized All Pole Filtering Conical Horn Antenna" accepted in 2025 IEEE/MTT-S International Microwave Symposium - IMS 2025, San Francisco, CA, USA, 2025,
2. Suryarajitha I., Gowrish Basavarajappa, Rajib Panigrahi, and Kartikeyan M., "A Compact Millimeter-Wave Phase Shifter Integrated Variable Coupler in SIW Technology for Beam-forming Applications", accepted in 2025 IEEE/MTT-S International Microwave Symposium - IMS 2025, San Francisco, CA, USA, 2025.
3. Rushiraj Sunil Jawale, and Gowrish Basavarajappa, "An Interactive Application for the Design of a Pyramidal Horn Antenna Using Rectangular Waveguide Technology", accepted in IEEE International Conference on Microwave , Antenna and Communication 2025 (IEEE MAC 2025), Bhopal, Madhya Pradesh, India
4. Vinay Krishnan, and Gowrish Basavarajappa "Design and Development of A High Gain Planar Yagi Uda Antenna", accepted in 2025 IEEE WAMS, March 2025.
5. Manoj Kumar, Gowrish Basavarajappa and Karun Rawat, "Design of Multifunctional Filtering Power Divider in Coaxial Technology for Power Combining Applications ", in 2024 IEEE/MTT-S International Microwave Symposium - IMS 2024, Washington, DC, USA, 2024.
6. Manoj Kumar, Gowrish Basavarajappa, Kaushik Manjanbail, and A K Singh, "Design of an 8-Way 20kW Co-Axial Radial Power Combiner for High Power S-Band Applications", accepted in IEEE SPACE 2024 - Bengaluru, India.
7. Manoj Kumar and Gowrish Basavarajappa, "A Compact E-Plane Sectoral Waveguide Power Combiner for Ku Band SATCOM Applications", accepted in IEEE SPACE 2024 - Bengaluru, India. **(Best Paper Award)**
8. Neema S. Joseph, and Gowrish Basavarajappa, "A Novel Filtering Balun Implemented in Substrate Integrated Waveguide Technology" accepted in 2024 IEEE Microwaves, Antennas, and Propagation Conference (MAPCON), Hyderabad, India, Dec. 2024.
9. Gowrish. B, "A Novel Multi-Functional Coupled Resonator Based Balun Filter in Waveguide Technology," accepted in 2023 IEEE/MTT-S International Microwave Symposium (IMS), San Diego, CA, USA, 2023.
10. Manoj Kumar and Gowrish Basavarajappa, "A Temperature Compensated Light Weight Coaxial Band Pass Filter for Aero-Space Applications", accepted in 2023 IEEE MAPCON, India 2023.
11. Mansi Goyal and Gowrish Basavarajappa, "A Wearable IoT Based Assistive Device to Aid Communication With Hearing Impaired", accepted in 2023 IEEE MAPCON, India 2023.
12. Ahmed Abdalla Ibrahim Mohamed, Manoj Kumar and Gowrish Basavarajappa, "Design and Development of THz Pyramidal Horn Antenna from 220 GHz to 330 GHz ", accepted in 2023 IEEE MAPCON, India 2023.
13. A. Kumar, A. Vishwakarma, H. Kumar, G. Basavarajappa and K. Rawat, "An Inexpensive Drone and RF Emitter Tracking System Using Monopulse Comparator," 2023 IEEE Microwaves, Antennas, and Propagation Conference (MAPCON), Ahmedabad, India, 2023.
14. Gowrish B., "A High Performance Rectangular Waveguide Band Pass Filter for 5G Communication Systems", accepted in 2023 IEEE Wireless Antenna and Microwave Symposium (WAMS), India 2023.
15. G. Kumar Daga and G. Basavarajappa, "A Novel Broadband 3D Pyramidal Antenna for UWB Applications," 2022 IEEE Microwaves, Antennas, and Propagation Conference (MAPCON), Bangalore, India, 2022.
16. Gowrish. B and R. R. Mansour, "Applications of Double Mapping for Design Reutilization," 2022 IEEE/MTT-S International Microwave Symposium (IMS), Denver, CO, USA, 2022.
17. Gowrish. B and R. R. Mansour, " A Tunable Quarter-wavelength Coaxial Filter With Constant Absolute Bandwidth Using a Single Tuning Element," 2021 IEEE/MTT-S International Microwave Symposium (IMS), Atlanta, GA, USA, 2021.
18. Gowrish. B and R. R. Mansour, "A Dual-Mode Frequency Reconfigurable Waveguide Filter with a Constant Frequency Spacing between Transmission Zeros," 2020 IEEE/MTT-S International Microwave Symposium (IMS), Los Angeles, CA, USA, 2020.
19. Gowrish. B. and R. R. Mansour, "A Tunable Coaxial Filter with Minimum Variations in Absolute Bandwidth and Q using a Single Tuning Element," 2019 IEEE MTT-S International Microwave Symposium (IMS), Boston, MA, USA, 2019. **Best Advanced Paper Award**
20. Gowrish. B and R. R. Mansour, "A Tunable Waveguide Filter Designed with a Constantan Absolute Bandwidth U sing a Single Tuning Element," 2018 IEEE International Microwave Symposium - IMS, Philadelphia, PA, USA 2018. **Best Student Paper Award - Finalist**
21. Gowrish. B, A. B. Kiran and A. Ramaprasad, "Cluster analysis of a decade of Indian space activities based on an ontological framework," 2017 International Conference On Smart Technologies For Smart Nation (SmartTechCon), Bangalore, 2017.
22. Gowrish. B and R. Kumar, "Analysis of amplitude and phase imbalances on efficiency of microwave power combiner," 2017 International Conference On Smart Technologies For Smart Nation (SmartTechCon), Bangalore, 2017.

23. Gowrish. B, R. Kumar and A. Basu, "Radiation enhancement in PCB plane using novel multi-stub inverted F antenna," *2016 IEEE Annual India Conference (INDICON)*, Bangalore, 2016.
24. D. S. Reddy, Gowrish. B, V. K. Velidi, A. V. G. Subramanyam, V. V. Srinivasan and Y. Mehta, "Virtual negative coupling in folded waveguide cavity filter for space applications," 2015 IEEE MTT-S International Microwave and RF Conference (IMaRC), Hyderabad, 2015.
25. Gowrish. B, A. Basu and S. K. Koul, "Novel non radiative dielectric guide frequency tripler at 60 GHz," 2014 IEEE International Microwave and RF Conference (IMaRC), Bangalore, 2014.
26. Gowrish. B and A. Basu, "Measurement based chip impedance determination on validation board," TENCON 2014 - 2014 IEEE Region 10 Conference, Bangkok, 2014.
27. Gowrish. B and A. Basu, "Casing and hand effect on PCB antenna in 2.4 GHz wireless mouse: A measurement based characterization," Proceedings of 2014 3rd Asia-Pacific Conference on Antennas and Propagation, Harbin, 2014.
28. Gowrish. B, D. John, D. Settu, A. Basu and S. K. Koul, "Novel mechanical reconfigurable PCB antenna for 2.4 GHz wireless consumer product: Minimizing time to market," Proceedings of 2014 3rd Asia-Pacific Conference on Antennas and Propagation, Harbin, 2014.
29. Gowrish. B, A. Bhat, A. B. Kiran and K. Rawat, "Optimal finite bit Pi representation," 2014 IEEE REGION 10 SYMPOSIUM, Kuala Lumpur, 2014.
30. K. Rawat et al., "Design strategy for tri-band Doherty power amplifier," WAMICON 2014, Tampa, FL, 2014.
31. Gowrish. B, K. Rawat, A. Basu and S. K. Koul, "Broad-band matching network using band-pass filter with device parasitic absorption," 82nd ARFTG Microwave Measurement Conference, Columbus, OH, 2013

Sponsored Projects:

1. Faculty Initiation Grant : IIT Roorkee : 20 Lakhs (Jan 2022 - Jan 2024)
2. Startup Research Grant : Science and Engineering Research Board : 32 Lakhs (Oct 2022 - Oct 2024)
3. Design and Development of Antenna for THz Communication System at D Band (DoT, TTDF – 30 Lakhs, 2025)

Skills

- Electro-Magnetics, Microwave Engineering, RF Engineering
- RF Filter design using Coupling Matrix , Mux / Diplexer, Antennas, Passive components, Signal Integrity
- Instruments: Spectrum Analyzer, Vector Network Analyzer, Microwave Oscilloscope, Power Meter
- CAD tools: CST Microwave Studio, HFSS, ADS, MATLAB

Test Scores

- **GATE –** February 2011: All India rank: 4, **CET (Common Entrance Test - Karnataka) –** May 2006, Eng. rank: 592 , Medical rank: 81

Technical Student Activities:

- Image Processing Autonomous Robotics – 1st IIT Guwahati – 2009, Autonomous Robotics– 2nd NIT(Suratkal) – 2009, 1st BMSCE – 2009, 1st JSSATE – 2009

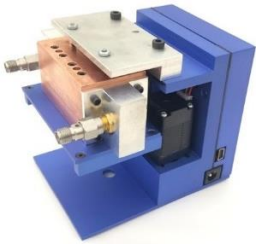
Societies: IEEE Member : Microwave Theory and Techniques Society , Antenna and Propagation Society

Languages: English, Kannada, Hindi, Sanskrit

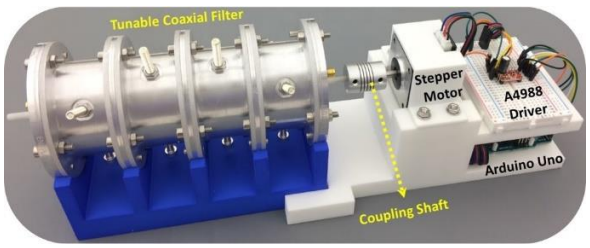
Co-curricular Activities:

- Travelling to different parts of the world & explore cultural heritage. As a person I am confident, sincere & humble, who has a passion for wireless communication and desire for continuous learning and self - improvement.

Sample RF and Microwave Components Developed: (2 GHz to 60 GHz)

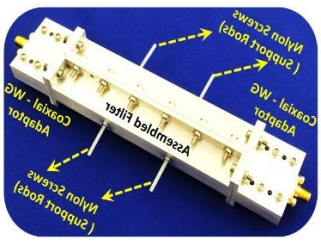


Tunable WG BPF



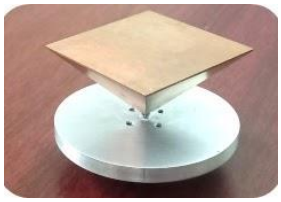
Tunable Coaxial BPF

Dual-Mode BPF



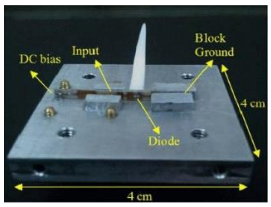
BW Tunable BPF


Triple & Quadruple Mode BPF

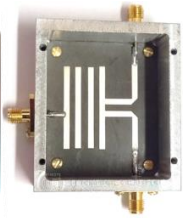


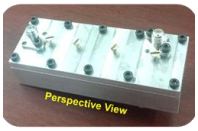
Pyramidal Antenna

Rect-ax Mono-Pulse Comparator



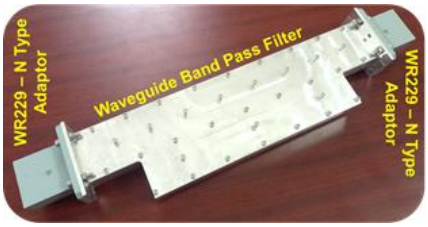
NRD Guide Tripler



FSS Horn Antenna

Balun Filter / Filtering Balun



5G Waveguide Filter

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