Microwave Bandpass Filter Design Competition: Evaluation Criteria

Total: 100 points

1. Electrical Performance (30 points)

- **Working Frequency Bandwidth (5 pts)**
  Accuracy of the realized working frequency bandwidth to the specified value.
- **Insertion Loss (5 pts)**
  Maximum insertion loss in the passband (less than 1.6 dB).
- **Return Loss (5 pts)**
  Minimum return loss in the passband. Higher is better (good matching).
- **Out-of-band Rejection (15 pts)**
  Attenuation at specified offset frequencies (stopband performance).

2. Physical Realization (15 points)

- **Volume/Footprint (5 pts)**
  Inner dimension less than 15 (Height)×1850 (Area) mm3 with maximum dimension less than 58 mm.
- **Physical Robustness/Manufacturability (5 pts)**
  Robustness of structure; ease and cost-effectiveness of fabrication.
- **Repeatability/Ease of Tuning (5 pts)**
  How easy is it to retune/adjust if needed for mass production?

3. Volume and IL product figure (20 points)

- **Volume × (maximum IL in dB)^3)**
  Inner dimension less than 15 (Height)×1850 (Area) mm3 with maximum dimension less

4. Design Novelty and Presentation (35 points)

- **Innovation in Coupling Matrix Synthesis or Realization (10 pts)**
  Novel methods or features in synthesis, coupling schemes, or filter topology.
- **Innovative Physical Structure or Integration (10 pts)**
  E.g., novel resonator or coupling structures, use of new materials or processes.
- **Clear and Logical Design Process Presentation (10 pts)**
  Well-documented steps from coupling matrix to realization and justification of design choices.
- **Oral Presentation/Demonstration (5 pts)**
  Ability to effectively explain the design and answer questions.

Notes For Judges:

- All simulations should be validated and presented clearly.
- Bonus points (+5) may be awarded for exceptional designs (e.g., breakthrough miniaturization, very low-cost solutions, or new filter functions).
- Deductions may be applied for not meeting baseline requirements/specifications.