

Official Announcement: SEDIC 2026 RF Track – Phase 1 Preliminary Qualifier

Welcome to the SEDIC 2026 Radio Frequency (RF) Track. We are evolving the challenge to meet the demands of modern Cyber Electromagnetic Activities (CEMA). This year, we are looking for sophisticated AI models capable of high-stakes signal identification in complex, contested electromagnetic environments.

Phase 1: Preliminary Stage (Online Submission)

1. Mission Name: Project Overwatch: Cognitive Cyber Electromagnetic Activities

2. Format: Online Technical Proof-of-Concept (POC). Teams must develop and submit a trained AI/DSP model along with a technical report demonstrating its capabilities.

3. Technical Requirements & Mission Overview: Participants must develop a signal detection and classification model capable of multi-condition identification, including high-SNR (clean) and low-SNR (faded/noisy) environments.

- **Training Data:** Participants are responsible for sourcing or generating their own training data using open-source datasets (e.g., RadioML, DeepSig) or synthetic generation tools (e.g., GNU Radio).
- **Mandatory Classifications:** Models must accurately detect and classify the following signal types from Raw IQ data:
 - **Civilian / Standard Comms:** Standard digital modulations (e.g., BPSK, QPSK, 16QAM, 64QAM).
 - **High Priority (MILITARY / CEMA): [MANDATORY]** Identification of tactical signals, such as Radar Pulses (e.g., Linear Frequency Modulation) or Frequency Hopping Spread Spectrum (FHSS) bursts.
 - **Competitive Advantage:** Models that can successfully distinguish between standard communication signals and **hostile CEMA interference (e.g., RF Jamming)** will be awarded significantly higher technical scores by the expert panel.

4. Evaluation Requirements (Submission Package) To be considered for the Top 10 selection, teams must submit:

- **Model Source Code:** Utilizing standard open-source libraries (e.g., PyTorch, TensorFlow, GNU Radio).
- **Classification Log & Results:** Generated by running the model on the provided "Qualifier IQ Data Stream."
- **Performance Benchmark:** Must achieve an Accuracy/Recall of > 90% specifically on the High Priority (Military/CEMA) and Jamming classes.
- **Technical Brief:** A PDF detailing the dataset used, the model architecture (e.g., CNN, Transformer), and the signal processing logic used for tactical classification.
- **A Video Demonstration:** Max 5 minutes via YouTube Channel explaining the model's functionality and results.

Phase 2: Grand Finale – "The Wireless Village" (Top 10 Only)

Only the top 10 scoring teams from Phase 1 will be invited to the Grand Finale to showcase their technology in a live environment to our panel of industry experts and judges.

1. Finalist Preparation Selected teams must prepare the following for their allocated booth:

- **Display Poster:** A professional visual representation of your AI pipeline, Digital Signal Processing (DSP) methods, and model accuracy under various noise conditions.
- **Live Demo System:** A working station capable of running your AI model in real-time to process continuous signal data.
- **Graphical User Interface (GUI):** While not mandatory, teams with a functional and intuitive GUI for their detection system (e.g., an interactive Spectrogram or Waterfall display highlighting detected CEMA threats) will receive a significant **Competitive Advantage** during judging.

2. Final Evaluation & Verification On the final day, teams will undergo a two-part assessment by the judging panel:

- **Jury Presentation:** A formal pitch to a panel of experts explaining your technical approach, resilience to noise, and the scalability of your model for real-world CEMA operations.
- **Live Stress Test:** The jury will provide a fresh set of "Hidden Verification" IQ data files—or inject a live signal feed. Teams must process this data on the spot to verify the model's accuracy, processing speed, and reliability in handling unexpected cyber-electromagnetic interference.