DPA26BZ02-NV007
Compact Wideband Tunable Filters
Frequently Asked Questions (FAQs)

1. Many types of tunable filter technologies were explored under the DARPA WARP program, including magnetostatic, acoustic, photonic, N path, and GaN based approaches. For this SBIR topic, are you specifically seeking approaches that are different from, or not covered by, the technologies developed by the WARP contractors?
   A: We are not seeking a specific filter type.

2. Among the required metrics (2–18 GHz tuning, <3 dB loss, >40 dB rejection, <20 cc volume, <250 mW power), which ones are most critical, and which allow the most flexibility?
   A: We are seeking filters that have a clear path to meeting all metrics, and we consider all of the metrics to be critical.

3. Is DARPA primarily seeking fundamentally new physics/architectures for wideband tunable filtering, or would substantial improvements to existing approaches (e.g., acoustic, photonic, magnetostatic, MEMS) still be competitive?
   A: Our focus is on metrics rather than filter physics or topologies, improvements to existing filter types are acceptable.

4. Switching/Tuning Speeds: The solicitation requires a center frequency tuning ratio of >4:1 (2-18 GHz range) and a bandwidth tuning of >3:1, but it completely omits the required tuning speed. Given your needs , what is an objective switching speed (e.g., microseconds vs. nanoseconds) to design towards.
   A: Switching speed should equal to, or less than, 100 microseconds.

5. Target EW Scenarios: The objective focuses heavily on protecting wideband receivers from external and self-interference, specifically referencing the DARPA WARP program. For our analytical feasibility studies, which specific jamming profiles (e.g., continuous wave, broadband noise, sweep jamming) should we prioritize demonstrating against? I'd like to ensure our selected threat profiles align with current DoD priorities.
   A: The filter is intended to protect wideband receivers from noise and jamming; however no specific jamming waveform/technique is prioritized. If one profile is prioritized, the proposal should explain the reasons for doing so.

6. Unit Cost vs. SWaP-C: The BAA provides strict metrics for size (< 20 cc) and power (< 250 mW), but omits target manufacturing costs. Because Phase III requires a clear commercialization plan for both military and private sector markets (like software-defined radios and telecommunications).

What is a defensible unit cost target we should target for our design?
A: Unit cost should be less than $150 at full-rate production volumes. This is for a fully packaged filter with connectors and control module.

7. At what input power does DARPA desire to have tunable filtering solutions activated to protect wideband receivers? I.e. what wideband receiver P1dB should we prioritize when proposing a solution
   A: DARPA seeks tunable filters that suppress interference over as wide a range of input power as possible. Maximum input power can be assumed to be 20 dBm. Proposals may offer their own metrics for optimal input power.

8. In the filter metrics, an insertion loss less than 3 dB is required. The active NF is much higher. What exactly is meant by active vs. passive? If this is meant to mean active solutions vs. passive solutions, can you elaborate on why the difference in NF?
   A: For passive circuits the average insertion is measured over the -3 dB bandwidth. For technical approaches that have active embedded RF gain, then noise figure shall be used as the relevant metric to track the impact on receiver sensitivity.

9. For our feasibility studies and development towards a solution, what is the maximum power we should expect our tunable filter to see?
   A: Maximum input power can be assumed to be 20 dBm.