



421 Aviation Way
Frederick, Maryland 21701

T. 301-695-2000
F. 301-695-2375

www.aopa.org

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Sheila Mariano
Federal Aviation Administration
Design, Manufacturing and Airworthiness Division
Systems and Equipment Standards Branch AIR-130
470 L'Enfant Plaza SW, Suite 4102
Washington, DC 20024
Sheila.mariano@faa.gov

RE: Draft TSO-C211, *Detect and Avoid Systems*; TSO-C212, *Air-to-Air Radar for Traffic Surveillance*

Dear Ms. Mariano:

The Aircraft Owners and Pilots Association (AOPA), the world's largest aviation membership association, is pleased to provide comments in response to the Federal Aviation Administration's (FAA) draft technical standard orders (TSO), TSO-C211, *Detect and Avoid (DAA) Systems*, and TSO-C212, *Air-to-Air Radar (ATAR) for Traffic Surveillance*. Based upon our review, we believe the TSOs establish appropriate minimum performance standards for DAA systems and ATAR, and ensure that operators of unmanned aircraft systems (UAS) equipped with these technologies are capable of safely operating in the national airspace system (NAS). Today we urge the FAA to adopt and finalize the draft TSOs, and applaud the work of the FAA and RTCA Special Committee (SC) 228 in developing these consensus standards.

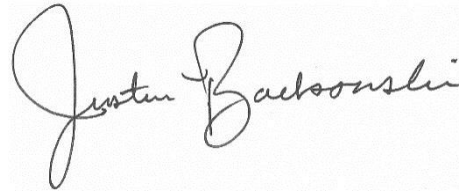
In general aviation, one the fundamental flight rules in 14 C.F.R. part 91 is the requirement for pilots to "see and avoid other aircraft." (14 C.F.R. § 91.113(b).) The ability of pilots to avoid other aircraft in the NAS and comply with standard right-of-way rules is critical to ensuring safe aircraft operations. This can be a challenge for the UAS community when an operator on the ground controlling the unmanned aircraft (UA) is incapable of performing that see and avoid function under an equivalent level of safety. AOPA appreciates the inability of UA operators to expand their capabilities and operate beyond visual line of sight (BVLOS) without technology to assist the operator in avoiding aircraft in the NAS.

The standards developed by the FAA and SC 228 will enable existing technology to fill this void for certain classes of airspace and UAS types. DAA systems provide UAS operators with alerts and guidance on nearby traffic, allowing them to maintain a safe boundary from any conflicting traffic. ATAR for traffic surveillance is a critical, supplemental component because it provides a mechanism for detecting non-cooperative aircraft, or those aircraft not broadcasting their position in the NAS with a transponder or Automatic Dependent Surveillance-Broadcast (ADS-B) Out system. The draft TSOs will create a minimum design assurance level for these technologies and a pathway for them to be certified and installed in UAS.

AOPA has continuously advocated for the safe integration of UAS into the NAS. AOPA believes these TSOs will enable the safe expansion of UAS operations, particularly BVLOS, by ensuring that DAA and ATAR technologies are designed to an appropriate level of safety. Equally important, these standards will give confidence to users of the NAS that UAS operators with this technology can safely detect and avoid other aircraft, including those aircraft not broadcasting their position with a transponder or ADS-B Out system. AOPA is also pleased that the underlying operational performance standards developed through SC 228 were based on consensus from a diverse group of stakeholders in the aviation community.

AOPA appreciates the opportunity to provide comments and support the draft TSOs on DAA systems and ATAR for traffic surveillance. AOPA applauds the FAA and aviation community for tackling these important issues in safe UAS integration, and stand ready, willing, and able to assist the FAA in any way possible.

Sincerely,

A handwritten signature in black ink that reads "Justin T. Barkowski". The signature is written in a cursive style with a large initial "J" and "B".

Justin T. Barkowski
Director, Regulatory Affairs