

NextGEN

Capabilities

A simple reference for equipage public standards.



FAA

NextGEN Capabilities

The table lists current authorized manufacturers and articles produced under a TSO authorization or letter of TSO Design Approval.

Program/ Portfolio	Capability	Description with Relevant TSOs	TSO Holders
<p>Performance Based Navigation</p>	<p>Localizer Performance with Vertical Guidance (LPV) approach minima</p>	<p>Improves access to many airports in reduced visibility, with an approach aligned to the runway.</p> <p>For flight management systems (larger aircraft): TSO-C145, Airborne Navigation Sensors using the Global Positioning System (GPS) Augmented by the Wide Area Augmentation System (WAAS)</p> <p>For single-box avionics (smaller aircraft): TSO-C146, Stand-Alone Airborne Navigation Equipment using the Global Positioning System (GPS) Augmented by the Wide Area Augmentation System (WAAS)</p>	<p>TSO-C145:</p> <p>Free Flight Systems; Garmin International; Rockwell International Avionics Group; UPS Aviation Technologies (became Garmin AT, Inc.); CMC Electronics, Inc.; Spectralux Corporation; Accord Technology, LLC; Honeywell International, Inc.; NavWorx International; Thales Avionics, S.A.S.</p> <p>TSO-C146:</p> <p>Artex Aircraft Supplies, Inc.; Garmin AT, Inc.; Garmin International; Wulfsberg Electronics Division; Avidyne Corporation;</p> <p>CMC Electronics; L-3 Communications Avionics Systems, Inc.; Rockwell International Avionics Group; Astronautics Corp. of America; Chelton Flight Systems; Honeywell International, Inc.; Innovative Solutions and Support, Inc.; L-3 Communications Avionics Systems, Inc.; Rockwell Collins; Rockwell Collins International Avionics Group; Thales Avionics S.A.S.; Universal Avionics Systems Corporation</p>
	<p>Required Navigation Performance (RNP)</p>	<p>Enables precise departure, arrival and approach procedures, including repeatable curved paths</p> <p>TSO-C196, Airborne Supplemental Navigation Sensors for Global Positioning System Equipment using Aircraft- Based Augmentation</p>	<p>TSO-C196:</p> <p>Honeywell International Inc.</p>
	<p>Area Navigation (RNAV 1 and RNAV 2)</p>	<p>Enables more efficient routes and procedures. TSO-C115b, TSO-C66c, TSO-C129/C129a, TSO-C145/C146/C196</p>	<p>Garmin, Honeywell, Rockwell Collins, Universal Avionics, CMC Electronics</p> <p>http://www.faa.gov/about/office_org/headquarters_offices/avs/offices/afs/afs400/afs470/policy_guidance/</p>

Program/ Portfolio	Capability	Description with Relevant TSOs	TSO Holders
Automatic Dependent Surveillance-Broadcast (ADS-B)	ADS-B OUT	Enables improved air traffic surveillance and automation processing TSO-C154, Universal Access Transceiver (UAT) Automatic Dependent Surveillance-Broadcast (ADS-B) Equipment Operating on the Frequency of 978 MHz TSO-C166, Extended Squitter Automatic Dependent Surveillance- Broadcast (ADS-B) and Traffic Information Service-Broadcast (TIS-B) Equipment Operating on the Radio Frequency of 1090 MegaHertz (MHz)	TSO-C154: Dayton-Granger, Inc.; FreeFlight Systems; Garmin AT, Inc.; Garmin International; Lorch Microwave; NavWorx Incorporated; Trig Avionics Limited TSO-C166: Aviation Communication & Surveillance Systems, Inc.; Gables Engineering, Inc.; Garmin AT; Garmin International; Honeywell International Inc.; Rockwell International Avionics Group; Trig Avionics Limited; Dayton-Granger, Inc.; Raytheon Company; Rockwell Collins, Inc.
	Airborne/ Ground Cockpit Display of Traffic Information	Improves awareness of other traffic. TSO-C195, Avionics Supporting Automatic Dependent Surveillance- Broadcast (ADS-B) Aircraft Surveillance Applications (ASA)	TSO-C195: Gables Engineering, Inc.
	In-Trail Procedure	TSO-C195a, Avionics Supporting Automatic Dependent Surveillance- Broadcast (ADS-B) Aircraft Surveillance Applications (ASA)	TSO-C195a: Garmin AT; Garmin International
Data Communications	FANS 1/A (Satellite Communications)	Provides oceanic data communications and surveillance, transfer of communications TSO-C159, Avionics Supporting the Next Generation Satellite Systems (NGSS)	TSO-C159: Avidyne Corporation; Sensor Systems, Inc.
	FANS 1/A (VHF Digital Link Mode 0, Mode 2)	Provides domestic data link clearances TSO-C160, VHF Digital Link (VDL) Mode 2 Communications Equipment	TSO-C160: Garmin International; Rockwell Collins; Spectra Link Corporation; Universal Avionics Systems Corporation

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Low Visibility Operations	Ground Based Augmentation System Landing System	Provides autoland in very low visibility	TSO-C161: Honeywell International, Inc.; Rockwell International Avionics Group TSO-C162: Honeywell International, Inc.; Rockwell International Avionics Group
		TSO-C161, Ground Based Augmentation System Positioning and Navigation System TSO-C162, Ground Based Augmentation System Very High Frequency Data Broadcast Equipment	
Flight Deck Enhancements	Flight Information Service-Broadcast	Provides Universal Access Transceiver link- specific requirements for weather and aeronautical information to the cockpit TSO-C157, Aircraft Flight Information Services- Broadcast (FIS-B) Data Link Systems and Equipment	TSO-C157: Avidyne Corporation; Garmin International; Garmin AT; Honeywell International Inc.; L-3 Communications Avionics Systems, Inc.

Notes

NextGen capabilities are usually grouped by functionality. The term enabler describes the technologies required for an aircraft, operator or airport to implement a NextGen capability. From an equipment perspective, FAA support for NextGen equipage begins with standards development¹.

Public standards are usually incorporated into Technical Standard Orders. A Technical Standard Order (TSO) is a minimum performance standard issued by the Administrator for specified materials, parts, processes, and appliances used on civil aircraft.

Note: TSO holders may hold approval for portions of the total system (e.g., displays and controls).

¹ Installation and operational guidance can be published in Advisory Circulars.