



U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

# Advisory Circular

Consolidated to include Changes 1-3

Subject: Airport Ground Vehicle Automatic  
Dependent Surveillance - Broadcast (ADS-B)  
Out Equipment

Date: 11/14/2011

AC No: 150/5220-26

Initiated by: AAS-1

Change: 3

## 1 Purpose of the Advisory Circular.

This Advisory Circular (AC) provides guidance on the development, installation, testing, approval, and maintenance of Automatic Dependent Surveillance – Broadcast (ADS-B) Out squitter units, commonly referred to as Vehicle Movement Area Transmitters (VMATs), for airport ground vehicles that regularly operate in airport movement areas. Using this AC, airports will be able to acquire approved and authorized VMAT units that are compliant with Title 14 Code of Federal Regulations (CFR), Part 91, *ADS-B Out Performance Requirements to Support Air Traffic Control (ATC) Service*. FAA-E-3032, *Vehicle ADS-B Specification*, dated January 7, 2015, established technical specifications for manufacturing VMAT units.

## 2 Application of this AC.

The Federal Aviation Administration (FAA) recommends the guidance in this AC for airport ground vehicles that regularly operate in the movement areas at public-use airports. This AC does not constitute a regulation, is not mandatory, and is not legally binding in its own right. It will not be relied upon as a separate basis by the FAA for affirmative enforcement action or other administrative penalty. Conformity with this AC is voluntary, and nonconformity will not affect rights and obligations under existing statutes and regulations, except as follows:

- a. While an airport has voluntary discretion to equip its vehicles with VMAT equipment, an airport that opts to implement VMATs must comply with federal regulatory requirements for radio frequency transmission. The National Telecommunications and Information Administration (NTIA) has authority over spectrum management for all Federal agencies as specified in 47 CFR § 300, the Manual of Regulations and Procedures for Federal Radio Frequency Management. Vehicle ADS-B use is regulated as a type of Aeronautical Mobile Utility station under 47 CFR § 87.345 and 47 CFR § 87.349. FAA Order 6050.32, *Spectrum Management Regulations and Procedures Manual*, serves as the governing FAA policy addressing spectrum management for aeronautical uses, including ADS-B Out. In support of the FAA's responsibilities for

spectrum management, the following requirements apply to an airport that opts to install VMATs on its vehicles:

- (1) Airports and other entities operating (such as airline super tugs) on the movement area must have FAA approval to use Ground Vehicle ADS-B Out equipment, in conjunction with the provisions of this AC.
  - (2) All airport VMAT units must meet the requirements stated in FAA-E-3032, *Airport Ground Vehicle ADS-B Specification*, January 7, 2015, or its successors.
  - (3) Airport authorities or entities approved by the FAA to use VMAT equipment must obtain a FCC license to transmit prior to operating, per 47 CFR Part 87.
  - (4) Vendors developing, installing, testing, and seeking FAA approval of ADS-B Out units for installation on airport ground vehicles, must comply with this AC.
  - (5) Use of these standards and guidelines is mandatory for projects funded under Federal grant assistance programs, including the Airport Improvement Program (AIP). See Grant Assurance #34. Refer to FAA Order 5100.38, *Airport Improvement Program Handbook*, for information on grant funding eligibility.
- b. This AC is mandatory for projects funded by the Passenger Facility Charge program. See 14 CFR Part 158, *ADS-B Out Performance Requirements to Support Air Traffic Control (ATC) Service*, Appendix A.
  - c. This AC provides one, but not the only, acceptable means of meeting the requirements of 14 CFR part 139, *Certification of Airports*.
  - d. The FAA recommends the guidance in this AC for vendors, airport operators, and other personnel to ensure proper implementation, monitoring, and operation of the VMAT units deployed to vehicles on the airport.
  - e. In this AC, the words “must”, “shall”, “should”, and “may” are used to define different levels of requirements or recommendations:
    - “Must” or “shall”: Conveys a requirement.
    - “Should”: Describes a recommendation.
    - “May”: Denotes a permissible practice or action, but not a requirement.

### 3 **Deployment considerations at airport locations.**

VMATs enable improved safety and situational awareness on the airport surface. The FAA encourages voluntary action by airport operators to install VMATs on vehicles that regularly operate in the movement area.

- a. Airports equipped with FAA Airport Surface Detection Equipment (ASDE) are the most suitable locations for installation of VMATs. ASDE systems are necessary to receive the ADS-B Out signals from VMATs for use on ATC displays. The ATC displays assist controllers with issuing separation

instructions to vehicles or aircraft to maintain safety. The precise location information from VMATs also enhance the performance of ASDE subsystems used to activate Runway Status Warning Lights (RWSL). The FAA strongly encourages airport operators at the ASDE-equipped airports (shown in [Table 1](#)) to equip their vehicles that regularly operate in the movement area with VMATs. If in the future, the FAA installs new ASDE at additional airports, those locations become suitable sites for equipage of vehicles with VMATs.

- b. Airports without ASDE may choose to equip their vehicles with VMATs. Aircraft equipped with ADS-B In avionics and Cockpit Display of Traffic Information (CDTI) will enable pilots to see the location of VMAT-equipped vehicles on cockpit moving map displays. Aircraft equipage with ADS-B In should become more widespread in future years. The FAA advises airports without ASDE to consider current and near-term ADS-B In equipage of aircraft using their airport when assessing investments in VMATs.

#### 4 **Background.**

Every year, aircraft and vehicles are involved in incidents at airports that have potentially serious consequences. Many of these events occur in periods of reduced visibility, which results in reduced or lost situational awareness for flight crews and air traffic controllers. The FAA deploys and maintains several systems and technologies to help reduce the number and severity of these incidents within airport movement areas.

##### a. **Definitions.**

- (1) **VMAT:** Mobile equipment that determines the position of the surface vehicle in which it is installed using Global Positioning System (GPS) navigation and broadcasts that information on one of the two ADS-B data links (978 MHz UAT or 1090 MHz ES).
- (2) **Squitter:** Output pulses from an airport ground vehicle ADS-B transponder unit generated by an internal triggering system rather than by external interrogation pulses.
- (3) **VMAT Transmit Map for Airport Surface:** The transmit maps of the airport surface define where the VMAT unit is active by controlling the ADS-B transmit out off/on function. The FAA generates the transmit boundaries when requested by the airport.

##### b. **ASDE.**

The FAA deployed ASDE systems to Airport Traffic Control Towers (ATCTs) at 43 commercial airports as shown in [Table 1](#). The design of the ASDE system supports safe ground operations at an airport by providing reliable and accurate information on the location of aircraft and ground vehicles. It does this through a combination of technologies, including ADS-B. ASDE includes both the Model X system, known as ASDE-X, or the Airport Surface Surveillance Capability (ASSC).

Due to the inherent problems associated with radio frequency and radar transmissions, a single sensor surveillance system may not provide a complete and accurate depiction of a target to the controller. The ASDE mitigates this problem by fusing the data from several different sources, including ADS-B, multilateration, and radar (as applicable) to provide the most accurate target information. The ASDE system receives the position reports from multiple sensors and “fuses” them into a single accurate target report. Data fusion provides the most complete and accurate picture of the intended target’s position and motion. The ASDE system alerts controllers to potential conflicts so they can take appropriate action to prevent surface incidents. The ASDE system also contains the logic needed to activate RWSL, where installed.

**c. ADS-B.**

ADS-B is a cornerstone technology in the FAA’s Next Generation Air Transportation System (NextGen) initiative. NextGen’s goal is to modernize the safety and efficiency of the National Airspace System. ADS-B provides improved surveillance of aircraft in the terminal, en route, and on surface environments, as well as vehicles on the airport surface; and provides equipped aircraft with shared situational awareness via a cockpit display of proximate traffic.

Aircraft and ground vehicles equipped with ADS-B transponders continually broadcast information, such as identification, current position, altitude, and velocity. ADS-B uses highly-accurate GPS navigation signals to determine the aircraft or vehicle location, thereby making the location information more timely and accurate than the position information provided by a conventional radar system. The system converts that position into a unique digital code and transmits it, along with a unique identification code, to locate, identify, and track the specific aircraft or vehicle. A network of ground-based and space-based ADS-B sensors, including some integrated into ASDE, receive the ADS-B data from aircraft and vehicles and send it to ATC automation systems and displays. ADS-B is “automatic” by not requiring external interrogation, but is “dependent” because it relies on onboard GPS position sources and onboard broadcast transmission systems to provide surveillance information to ATC, and other aviation users including pilots and airports.

“ADS-B Out” refers to the capability of transmitting ADS-B information. ADS-B Out provides an accurate and timely position report to ATC including aircraft or vehicle identity and other information. The ADS-B position broadcast also provides a signal for multilateration receivers. Aircraft or vehicles can voluntarily equip with the “ADS-B In” equipment necessary to receive ADS-B Out messages and other broadcast services, such as Traffic Information Service-Broadcast (TIS-B), and display that information in the cockpit or vehicle. ADS-B In improves situational awareness for pilots and/or vehicle operators.

**d. VMATs.**

VMAT units are ADS-B transponders deployed on airport ground vehicles to reduce the risk of runway incursions and conflicts between aircraft and vehicles

operating in the airport movement areas. VMATs utilize an ADS-B transmitter to broadcast a highly accurate position (GPS-based), which is received by various ATC ground stations and aircraft on or near the airport and presented on an ATC or vehicle display. Additionally, the ADS-B system provides a mechanism for the delivery and display of an integrated surface picture to airport operators through an add-on display capability.

The VMAT unit uses a GPS sensor navigation source capable of providing highly accurate position data as outlined in the specification. The VMAT units operate on either the 1090 ES link or the 978 MHz/UAT link. However, due to 1090 MHz spectrum congestion, the FAA strongly prefers the use of the uncongested 978 MHz/UAT link.

Whether the unit is capable of transmitting on just one link or both (1090 and 978 MHz), the unit must only transmit on one link at a time. The VMAT ADS-B transmissions are only active when the vehicle position is within or approaching the defined transmit area. The ADS-B equipment contains a transmit map that controls the on/off transmit function based on position of the vehicle on the airport when within or proximate to the movement area.

The FAA authorizes the airport operator and potentially other entities (e.g., airlines) to deploy and use VMATs on airport vehicles that regularly operate in the movement area. Typical vehicles equipped VMATs include airport inspection vehicles, fire and rescue vehicles, maintenance vehicles for snow and grass, and other vehicles authorized by the airport operator, such as airline supertugs. FAA vehicles operating in movement areas can be equipped with VMATs.

**Table 1. Airports with Existing FAA ASDE Surveillance Systems in the ATCT**

Below is a table of commercial service airports currently equipped with FAA ASDE surveillance systems in the ATCT.

Identifier	Airport
<b>ASDE-X equipped ATCTs</b>	
BWI	Baltimore-Washington International Thurgood Marshall Airport
BOS	Boston Logan International Airport
BDL	Bradley International Airport
MDW	Chicago Midway Airport
ORD	Chicago O'Hare International Airport
CLT	Charlotte Douglas International Airport
DFW	Dallas-Ft. Worth International Airport
DEN	Denver International Airport

Identifier	Airport
DTW	Detroit Metro Wayne County Airport
FLL	Ft. Lauderdale/Hollywood Airport
MKE	General Mitchell International Airport
IAH	George Bush Intercontinental Airport
ATL	Hartsfield-Jackson Atlanta International Airport
HNL	Honolulu International –Hickam Air Force Base Airport
JFK	John F. Kennedy International Airport
SNA	John Wayne-Orange County Airport
LGA	LaGuardia Airport
STL	Lambert-St. Louis International Airport
LAS	Las Vegas Harry Reid International Airport
LAX	Los Angeles International Airport
SDF	Louisville Muhammad Ali International Airport
MEM	Memphis International Airport
MIA	Miami International Airport
MSP	Minneapolis St. Paul International Airport
EWR	Newark International Airport
MCO	Orlando International Airport
PHL	Philadelphia International Airport
PHX	Phoenix Sky Harbor International Airport
DCA	Ronald Reagan Washington National Airport
SAN	San Diego International Airport
SLC	Salt Lake City International Airport
SEA	Seattle-Tacoma International Airport
PVD	Theodore Francis Green State Airport
IAD	Washington Dulles International Airport
HOU	William P. Hobby Airport

Identifier	Airport
<b>ASSC equipped ATCTs</b>	
SFO	San Francisco International Airport
CLE	Cleveland/Hopkins International Airport
PIT	Pittsburgh International Airport
PDX	Portland International Airport
ANC	Anchorage International Airport
CVG	Cincinnati/Northern Kentucky International Airport
MSY	Louis Armstrong New Orleans International Airport
MCI	Kansas City International Airport

## 5 **Developing VMAT equipment meeting FAA Specifications.**

### a. **VMAT Technical Specification.**

The vehicle ADS-B squitter specification details functional requirements for the vehicle units installed on airport surface vehicles. These requirements are necessary to determine the position of the surface vehicle in which it resides and broadcast that information on one of the two ADS-B data links. See FAA-E-3032, *Vehicle ADS-B Specification*, dated January 7, 2015. The specification document provides the requirements for both 978 MHz UAT and 1090 MHz ES transmissions. Vendors producing equipment for surface vehicles must adhere to the requirements stated in the document.

The specification document addresses the broadcast of ADS-B only (the reception and display of ADS-B data in the vehicle is not addressed); and the testing, compliance, and verification guidelines of the VMAT units.

### b. **FAA Specification Testing.**

The VMAT Factory Acceptance Test (FAT) plan outline the test procedures and processes necessary for demonstrating the vehicle unit's compliance with FAA-E-302. Testing of VMAT units serves to verify they meet the functional and performance requirements. Testing includes the bench tests and environmental tests outlined in the specification document. Unit level testing requirements exist for both 1090 MHz ES and 978 MHz UAT equipment. Performance of tests occur at the vendor's facilities as approved by the FAA. Integration testing of VMAT units, including the navigation system and the ADS-B transmitting system, verifies system performance. The vendor submits test documentation to the FAA verifying successful completion of the specified tests. The vendor provides the FAA with documentation of their quality control program for

production of their VMAT units when submitting the factory test report. The FAA reserves the right to witness specific test procedures at the vendor's facility.

Subsequent to obtaining approval for the bench and environmental test results, the vendor makes a VMAT unit available to the FAA for additional testing at the FAA Technical Center. This testing consists of limited bench testing of key requirements to verify performance. The FAA may request vendors to provide test tool support, similar to the capabilities that the vendor used for its factory bench testing, in order to enable specific tests or provide access to internal test points for verification. The FAA tests for correct use of the transmit map and function for operations on the airport surface.

**c. FCC Equipment Authorization.**

Vendors must obtain FCC Equipment Authorization in accordance with 47 CFR Part 2, Subpart J. Vendors must file FCC form 731 for each unique product identifier and a unique FCC identifier is required on the product label. The application must include product documentation, fees remittance, and descriptions of the required test data. Paragraph 2.1033(c) of FCC form 731 lists the requirements for equipment types other than those operating under 47 CFR Part 15 or Part 18 of the FCC rules.

For equipment type test requirements other than those operating under 47 CFR Part 15 or Part 18, refer to paragraphs listed in paragraph 2.1041 of FCC form 731. Paragraph 2.947 of that document outlines the measurement procedure. The following paragraphs list measurement data requirements:

- 2.1046 – RF power output
- 2.1047 – Modulation Characteristics
- 2.1049 – Occupied Bandwidth
- 2.1051 – spurious emissions at antenna terminals
- 2.1053 – Field strength of spurious radiation (substitution method)
- 2.1055 – Frequency stability
- 2.1057 – Frequency spectrum to be investigated
- 2.1091 – RF radiation exposure evaluation: mobile devices
- 2.1093 - RF radiation exposure evaluation: portable devices

Submit applications for equipment authorization electronically. Provide required exhibits the appropriate electronic file type. FCC requires up to 13 different exhibit types:

1. Identification label and location information
2. Attestation statements
3. External photos
4. Block diagrams
5. Schematics
6. Test Report
7. Test setup photos
8. User's manual



9. Internal photos
10. Parts list and tune-up information
11. RF exposure information
12. Operational description
13. Cover letters

Vendors submit applications to FCC via the OET Laboratory Division. Reviews take 5–10 weeks to complete.

**d. Training Materials.**

The VMAT manufacturer provides a detailed training manual for its equipment as part of its compliance with FAA technical specifications. The FAA reviews the training material to ensure proper development of all training plans and materials.

**e. VMAT Qualified Units List.**

When the FAA authorizes the new VMAT equipment, the FAA will update the qualified equipment list of the VMAT units authorized to operate on the airport surface and broadcast on ADS-B. The current listing of authorized VMAT units is published as an Addendum file to Appendix A of this AC. From <https://www.faa.gov/airports>, select “Airport Advisory Circulars” and continue to “AC 150/5220-26 Addendum.”

**6 Deploying VMAT Equipment.**

**a. Site Acceptance Testing (SAT).**

Conduct SAT at each airport deploying VMATs on vehicles. SAT validates every VMAT installation (i.e., current transmit map, International Civil Aviation Organization (ICAO) codes, and vehicle call signs) and confirms the VMAT units operate properly. Once the operator reviews the SAT report for satisfactory completion, the operator submits the report to the FAA within 30 days for review. If the FAA discovers deficiencies in the report, the FAA notifies the operator, who then takes corrective actions to address the deficiencies.

The airport operator may choose to contract with a third-party vendor to perform SAT. Refer to the current version of the *ATO Surveillance and Broadcast Services Vehicle ADS-B Out Deployment Plan* for additional information on the deployment process, including checklists. Complete a SAT checklist for each equipped vehicle.

The FAA may participate in an airport’s SAT at the time of VMATs deployment, or choose to evaluate the SAT report only. The FAA requests notification 60 days prior to the SAT to allow for optional participation. Successful completion of the SAT indicates the deployed VMATs meet all applicable regulatory requirements and equipment specifications. With completion of SAT, the airport operator can operate the VMAT equipment installed on its vehicles.

Complete SAT documents for transfer of VMATs from one vehicle to another.

**b. FCC Transmit Authorization.**

Airport operators or entities approved by the FAA to use VMATs must obtain an FCC license to transmit prior to operating. Title 47 CFR Part 87 governs the licensing and operation of equipment transmitting within aviation frequency bands. Operators adhere to the applicable parts of 47 CFR Part 87 and references contained within.

File applications for a transmit license through the FCC's Universal Licensing System (ULS). Airport operators or entities approved by the FAA can apply to operate up to 200 VMATs under a single application. Filing of applications for VMAT transmit licenses occurs under the station class Memorandum of Understanding (MOU) for Aeronautical Utility Mobile Stations.

Prior to filing with the FCC, the applicant must coordinate with the applicable FAA Regional Frequency Management Office (FMO). The Regional FMO provides a coordination number that is included in the application to the FCC.

**c. Vehicle 24-Bit ICAO Code Assignment.**

Each vehicle equipped with a VMAT unit is uniquely identifiable due to the use of the appropriate 24-bit ICAO identification and vehicle identification information programmed into the unit, in accordance with instructions provided by the manufacturer. Airport operators may request a block of 200 24-bit ICAO identification codes from the FAA Aircraft Registration Branch.

The block of up to 200 ICAO identification codes ensures compliance with the limit of 200 VMAT units (total of 1090 ES and UAT) per airport.

To obtain the 24-bit ICAO identification codes, approved airport operators must send a signed and dated letter that indicates the following:

- Request is for airport ground vehicle ADS-B equipment
- Number of 24-bit ICAO codes required
- Point of contact
- Name and address of the airport where equipment will operate

Airports should send their requests to the following addresses:

Via U.S. Postal Service:

FAA Aircraft Registration Branch  
PO Box 25504  
Oklahoma City OK 73125-0504

Via commercial delivery services:

FAA Aircraft Registration Branch  
Registry Building Room 118  
6425 South Denning  
Oklahoma City OK 73169-6937  
866-762-9434

## 7 **Operating VMAT Equipment.**

### a. **VMAT Performance Monitoring.**

The FAA conducts performance monitoring throughout the life cycle of the VMATs deployed at airports, using the ADS-B and/or ASDE systems. If a unit broadcasts erroneous information, the FAA notifies the airport operator to cease operating the non-performing VMAT until repair or replacement of the unit. Or, the vehicle driver may notice a VMAT malfunction and so remove the unit from service. Operators must remove from service immediately any unit broadcasting erroneous information. The airport operator coordinates with the vendor to ensure repair or replacement of the non-performing VMATs.

### b. **Airport Operator Responsibilities.**

At airports deploying VMATs, certain provisions apply ensuring system integrity and reliability. These provisions include the following:

- (1) The FAA authorizes the use of VMATs by the airport operator, or other entities (e.g., airlines towing aircraft) approved by the FAA and coordinated with the FCC and the FAA Spectrum Office. Other entities can include airlines that regularly operate super tugs in the airport movement area.
- (2) The FAA authorizes a maximum of 200 (1090 ES and UAT) VMATs per airport to ensure no performance degradation of other FAA surveillance systems operating on the 1090 MHz frequency. While any combination of 200 units per airport is permissible, the FAA strongly encourages airports to use the UAT units rather than the 1090 ES units due to potential congestion of the 1090 MHz spectrum.
- (3) Vehicles equipped with VMATs must meet the requirements outlined in FAA-E-3032, *Airport Ground Vehicle ADS-B Specification*, dated January 7, 2015.
- (4) FCC regulation defines the transmit area operation of VMATs, which is currently confined to the airport movement area. For vehicles equipped with 978 MHz UAT units, this includes operations in transit to the movement area. Use of the current transmit map ensures compliance with this requirement.
- (5) Promptly notify the FAA, AJM-421 SBS Surface Surveillance Programs, of unit configuration changes for new installations, transfers (including seasonal transfers), replacements and/or removals of VMAT units. Use the current configuration management template in the *ATO Surveillance and Broadcast Services Vehicle ADS-B Out Deployment Plan* to update the VMAT vehicle configuration information.

### c. **Current Transmit Maps.**

The FAA provides the vendor and airport with the current transmit boundaries for the airport surface in a .kml format. The vendor then develops the transmit map for the deployed VMATs. The transmit map for the airport surface is used

to control the VMAT on/off function as the vehicle moves on the airport surface. The vendor-supplied user interface software uploads the transmit map to the VMAT.

The FAA notifies the airport operator when/if there are updates to the transmit boundaries.

**d. Radio Call Sign Assignment.**

Program VMAT units with distinct vehicle radio call signs. The radio call signs apply to communications with ATC and appear on the ASDE display. Call signs are limited to a maximum of eight (8) characters. Examples of possible call sign designators are:

- ARFxxx is the aircraft rescue and fire-fighting department vehicle
- FAAxxx is an FAA vehicle
- APTxxx is an airport operator vehicle

**8 Obtaining FAA and Other Publications.**

**a. RTCA Documents.**

Obtain RTCA documents from RTCA, Inc., 1828 L Street NW, Suite 805, Washington DC 20036, (202) 833-9339, or from the RTCA website at <https://www.rtca.org>.

- (1) RTCA/DO-260B, *Minimum Operational Performance Standards for 1090 MHz Extended Squitter Automatic Dependent Surveillance Broadcast (ADS-B) and Traffic Information Services – Broadcast (TIS-B)*, December 2, 2009.
- (2) RTCA/DO-282B, *Minimum Operational Performance Standards for Universal Access Transceiver Automatic Dependent Surveillance – Broadcast Revision B*, December 2, 2009.

**b. Title 14 of the Code of Federal Regulations (14 CFR), Aeronautics and Space.**

Obtain copies of 14 CFR Parts 21, 23, 25, 27, 29, 43, and 91 from the Superintendent of Documents, Government Printing Office, PO Box 979050, St. Louis MO 63197. For general information, call 202-512-1800, fax 202-512-2250, or visit <https://www.govinfo.gov> (select “Code of Federal Regulations”).

- (1) 14 CFR Part 91, *Automatic Dependent Surveillance-Broadcast (ADS-B) Out Performance Requirements to Support Air Traffic Control (ATC) Service*, Final Rule, May 28, 2010, <https://www.federalregister.gov/documents/2010/05/28/2010-12645/automatic-dependent-surveillance-broadcast-ads-b-out-performance-requirements-to-support-air-traffic>.

**c. FAA Advisory Circulars.**

Access copies of ACs on the FAA website at [https://www.faa.gov/regulations\\_policies/advisory\\_circulars/](https://www.faa.gov/regulations_policies/advisory_circulars/).

d. **FAA Technical Standard Orders (TSO).**

Find a current list of technical standard orders at [https://www.faa.gov/aircraft/air\\_cert/design\\_approvals/tso](https://www.faa.gov/aircraft/air_cert/design_approvals/tso). You will also find the TSO Index of Articles at the same location.

e. **Collins Aerospace.**

Obtain copies of ARINC documents via Collins Aerospace from <https://www.collinsaerospace.com/what-we-do/service-and-support/support>.

f. **SAE International.**

Order SAE documents from SAE International, 400 Commonwealth Drive, Warrendale PA 15096-0001, 724-776-4970 (telephone), 724-776-0790 (fax) or at <https://www.sae.org>.



John R. Dermody  
Director of Airport Safety and Standards

## APPENDIX A. QUALIFIED VMATs

When the FAA authorizes new VMAT equipment, the FAA will update the qualified list of VMAT units authorized to operate on the airport surface and broadcast on ADS-B. The current listing of authorized VMAT units is published as an Addendum file to Appendix A of this AC. From <https://www.faa.gov/airports>, select “Advisory Circulars” and continue to “AC 150/5220-26 Addendum.”

The following VMAT units have met the requirements contained in FAA-E-3032, *Vehicle ADS-B Specification*. This listing contains the complete listing of currently certified VMAT units and their manufacturers. Equipment not listed here, but listed in prior addendums to the AC, has been deleted.

a. **FAA Approved Model Number: FDL-978-GTX/E**

ADS-B data link: 978 MHz Universal Access Transceiver

Vendor: Harris Corporation

Manufacturer: FreeFlight Systems

Contact:

Harris Corporation  
(855) 890-5137  
CAS@Harris.com  
[www.symphonycdm.com](http://www.symphonycdm.com)

b. **FAA Approved Model Number: FDL-978-GTX/A (External Mount)**

ADS-B data link: 978 MHz Universal Access Transceiver

Manufacturer: FreeFlight Systems

Note: This unit is no longer being manufactured and is not available for new installations; however, existing installations may continue for the lifecycle of the units.

Contact:

FreeFlight Systems  
(800) 487-4662  
<https://www.freeflightsystems.com>

c. **FAA Approved Model Number: uAvionix VTU-20**

ADS-B data link: 978 Mhz Universal Access Transceiver

Manufacturer: uAvionix

Contact:

uAvionix  
(844) 827-2372  
<https://uavionix.com>

## Advisory Circular Feedback

If you find an error in this AC, have recommendations for improving it, or have suggestions for new items/subjects to be added, you may let us know by (1) mailing this form to Manager, Airport Engineering Division, Federal Aviation Administration ATTN: AAS-100, 800 Independence Avenue SW, Washington DC 20591 or (2) faxing it to the attention of the Office of Airport Safety and Standards at (202) 267-5383.

Subject: AC 150/5220-26 Change 3

Date: \_\_\_\_\_

*Please check all appropriate line items:*

An error (procedural or typographical) has been noted in paragraph \_\_\_\_\_ on page \_\_\_\_\_.

Recommend paragraph \_\_\_\_\_ on page \_\_\_\_\_ be changed as follows:  
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In a future change to this AC, please cover the following subject:  
*(Briefly describe what you want added.)*  
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Other comments:  
\_\_\_\_\_  
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I would like to discuss the above. Please contact me at (phone number, email address).  
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Submitted by: \_\_\_\_\_

Date: \_\_\_\_\_