VIAVI ADS-B INTEGRITY Application

The VIAVI software application is a time-saving tool used for performance testing of ADS-B Out systems. The application is ideal to support Supplemental Type Certification (STC) and post approval testing for ADS-B Out equipment installations and R&D requirements. A complete detailed ADS-B Out performance report in FAA format can be generated showing Pass/Fail criteria, along with detailed analysis of system latency.

Accuracy and Integrity Performance Test (requires IFR6000 or IFR6015)

- Parameter checks per 20–165B (91.227) and FAA ADS-B Operation Performance Report
- Mode S address validation (from GiCB to ADS-B and against known problem values)
- ADS-B Out performance requirements for SIL, SDA, NIC/NUC, NACP, NACv
- Latitude/Longitude positional accuracy per bounds of NACP
- Emitter category reporting

Positional Accuracy Test (requires GPSG-1000)

- Log of latitude and longitude positional data for evaluation of accuracy and integrity over a simulated flight path
- Exact simulated time and position information logged
- ADS-B squitter data received and logged
- Squitter positional data compared against coordinated simulation
- Logging and evaluation of SIL, SDA, NIC/NUC, NACP, NACv values in static or dynamic motion scenarios
- Logging of N/S, E/W velocity data with reasonableness testing per bounds of NACv

Benefits

- ADS-B equipment installation verification
- Complete AC 20–165B fast and convenient reporting to identify installation issues
- STC support
- Eliminate post STC operational flights
- Coupled testing in the hangar or on the flight line eliminates:
  - Open sky requirements
  - GPS repeater
  - Weather issues
  - Interference with ATC operations
- Comprehensive solution for accurate system latency measurements
- Ability to measure latency and associated errors over a variety of simulated velocities and positions
- Save time and money

Applications

- Performance verification of:
  - ADS-B Transponders
  - UAT Transceivers
  - GPS Receivers
Data analysis screen identifies performance failures

Test Setup and Results

Instrument Setup

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Test Setup and Results
Latency

Plots of instantaneous and average system latency, velocity at average latency, and instantaneous positional error based on linear track are available.

PC Minimum Requirements

- Windows® XP or Windows® 7 32-bit (or later)
- CPU: Intel® Core 2 Duo P8400 2.26 GHz or equivalent
- RAM: 2 GB
- Monitor: XGA (1024 x 768) or higher
- Free Disk Space: 1 GB

Required Equipment for ADS-B Installation/Verification and Performance Report

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>72422 or 72424</td>
<td>IFR6000 Mode A/C/S Transponder/DME Test Set</td>
</tr>
<tr>
<td>83411</td>
<td>6000OPT3 ADS-B 1090 MHz option</td>
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<tr>
<td>112795</td>
<td>6000OPT5 UAT 978 MHz option (if applicable)</td>
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<tr>
<td>140609*</td>
<td>6000Opt6 ADS-B Integrity Test option*</td>
</tr>
<tr>
<td>112350</td>
<td>UC-584 Coupler Kit, Single Antenna (recommended)</td>
</tr>
<tr>
<td>91136</td>
<td>Coupler Kit, Dual Antenna GPS Systems (if required)</td>
</tr>
<tr>
<td>91137</td>
<td>Coupler Kit, Triple Antenna GPS Systems (if required)</td>
</tr>
<tr>
<td>87339</td>
<td>GPSG-1000 Twelve Satellite GPS Simulator</td>
</tr>
<tr>
<td>140607</td>
<td>GPSGOPT3 ADS-B Integrity Test option</td>
</tr>
</tbody>
</table>

Note: the following military kits are available

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>141112</td>
<td>Includes P/N’s 72424, 83411, 140609, 87339, 140607, 112350</td>
</tr>
<tr>
<td>141111</td>
<td>Same as 141112 plus controller P/N 92137</td>
</tr>
</tbody>
</table>

*This option includes the ADS-B Integrity app
## Required Equipment for R&D and Factory Test

<table>
<thead>
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<th>Part No.</th>
<th>Description</th>
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<tbody>
<tr>
<td>72438 or 72439</td>
<td>IFF-45TS Mode A/C/S Transponder/DME Test Set</td>
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<tr>
<td>72439</td>
<td>IFF-45TS-A Military version including E-TCAS and TACAN</td>
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<tr>
<td>91684</td>
<td>45TSOPT5 ADS-B Out option</td>
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<tr>
<td>140608*</td>
<td>45TSOPT10 ADS-B Integrity Test option*</td>
</tr>
<tr>
<td>87339</td>
<td>GPSG-1000 Twelve Satellite GPS Simulator</td>
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<td>140607</td>
<td>GPSGOPT3 ADS-B Integrity Test option</td>
</tr>
</tbody>
</table>

*This option includes the ADS-B Integrity app

### Diagram Description

- **UUT**: UAT or ADS-B Transponder
- **GNSS Antenna Coupler**: UC-584
- **ADS-B Out**: IFR6000/6015 or IFF-45TS
- **RS-232**: Connection to HOST PC
- **LAN**: Connection to GPSG-1000
- **REPORT**: Generated based on GNSS Positional Data
- **Simulated Flight Path**: RCI to IFR6000/6015
- **Clock Sync**: Ensures time accuracy

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