



## Transponder Testing

### 1. Applicability

Transponders undergoing either post maintenance or periodic functional testing.

### 2. Purpose

Following a number of instances being reported of Aircraft Collision Avoidance Systems (ACAS), also known as Traffic Collision Avoidance Systems (TCAS), receiving anomalous alerts generated by maintenance activities on the ground, aircraft maintenance facilities need to be aware of the consequences of inappropriate practices.

### 3. Background

Altitude reporting equipment and transponder systems are significant elements for safe operation of aircraft in Australian airspace. Air Traffic Control (ATC) monitors aircraft movements and ensures positive separation with aircraft identification and 3-D positional information obtained from an aircraft's altitude reporting equipment and transponder systems.

ACAS is installed in nearly all commercial passenger aircraft and, together with other aircraft, depend on reliable and accurate altitude reporting equipment and transponder systems fitted in surrounding aircraft. Proposals under consideration (such as Automatic Dependent Surveillance Broadcast (ADS-B)) are also dependent on other aircraft being equipped with reliable and accurate altitude and position reporting equipment and transponder systems.

To ensure correct functioning of these systems regular maintenance/testing needs to be conducted. Common practice in some maintenance facilities is to test the transponder output to confirm altitude reporting etc without ensuring that the transponder antenna is either shielded or disconnected. These test transmissions, received by overflying aircraft, may generate either a traffic advisory (TA) alerting the aircraft that another aircraft is in the same area or a resolution advisory (RA) requiring the aircraft to take evasive action by either climbing or descending. This can have significant issues in congested airspace around an airfield by disrupting traffic flow.

### 4. Recommendation

Maintenance facilities should ensure that either the:

- antenna is disconnected and the test equipment is directly connected to the transponder antenna lead, or
- antenna is effectively shielded by the test equipment during the tests.

Mode A Code 2100 should be used when carrying out transponder tests.



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## 5. Enquiries

Enquiries with regard to the content of this Airworthiness Bulletin should be made via the direct link e-mail address: [AirworthinessBulletin@casa.gov.au](mailto:AirworthinessBulletin@casa.gov.au)

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