

Question 7: Purpose of Experiment

Honeywell is developing the next generation Traffic Alert and Collision Avoidance System (TCAS), the TPA-100. In addition to conventional TCAS capabilities, the TPA-100 will be capable of passively receiving Airborne Dependent Surveillance - Broadcast (ADS-B) information. The TPA-100 will provide additional functionality over current TCAS systems as well as increased reliability and reduced size and weight.

Developmental testing of the TPA-100 will require the use of two directional antennas mounted on the roof of Honeywell's laboratory facility in Redmond, WA. The use of these antennas will allow the equipment to operate in a laboratory environment, but with radio frequency inputs received from the real world aircraft environment. Transponders of aircraft in the vicinity will be interrogated, and their replies received and processed to ensure the TPA-100 functions as intended. This is the same operation the TCAS system will experience installed in an aircraft.

The laboratory test facility consists of a TCAS rack with trays to hold the TPA-100 TCAS Processor, single Air Traffic Control (ATC) Transponder, dual Vertical Speed Indicators (VSIs), Planned Position Indicator (PPI) display and the TCAS/ATC Control Panel. The TPA-100's top antenna port will be connected to one of the TCAS antennas mounted on the roof. The TCAS Processor's bottom antenna port will be dummy loaded. The ATC Transponder antenna ports will be dummy loaded with 50-ohm loads. A breakout panel allows full access to the rear connectors of the units. The airplane interfaces will be simulated via an ARINC 429 generator. At no time will the test set-up generate or transmit replies to other TCAS or ground stations.