



IFR 6000: Frequently Asked Questions & Answers (XPDR)

Q: How do I use the IFR 6000 to check RVS (Reduced Vertical Separation) barometric reporting?

A: The altitude data transmitted via ARINC 429 from the air data computer to the Mode S transponder may be verified on the IFR 6000 using the Mode S UF4 test. The altitude is displayed in the AC field.

Q: What is the resolution/accuracy of the IFR 6000 Mode S Altitude data?

A: The UF4 test, displays Mode S altitude data to a resolution of 25 ft. The IFR 6000 has no tolerance associated with the display of altitude data, as the data is converted to digital format prior to transmission from the air data computer to the Mode S transponder. The IFR 6000 just displays the digital data, as down-linked from the Mode S transponder. The important tolerance is that of the barometric test equipment used to simulate the air data computer.

Q: Why is Auto Test displaying 'NO REPLY' at the bottom of the screen, even though the Mode S transponder is turned on and the 6000 interrogation indicator is illuminated?

A: Commonly, Mode S installations are configured so that the weight on wheels or strut switch places the transponder into a ground mode via the Ground/Air Discrete. This inhibits the ATCRBS (Mode A/C) & DF11 acquisition squitter capability of the Mode S transponder, allowing only replies to Mode S discrete interrogations. The IFR 6000 needs replies to ATCRBS/Mode S all-call interrogations to obtain the aircraft discrete address, (FAR Part 43 appendix F test requirement). Without the discrete address many tests can not be performed.

To allow comprehensive ground testing, the aircraft installation must be placed in the AIR mode. Installation configurations vary according to airframe manufacturer but usually the installation is provisioned with either a GROUND/AIR test switch or a CCT breaker which when pulled will isolate the weight on wheels or strut switch. In some installations, ADC's are also inhibited while the aircraft is on the ground, therefore even Mode S discrete interrogations will fail to return valid altitude reports.

Q: I have an ICAO amendment 77 Mode S transponder, which will not reply to ATCRBS all-call interrogations when in the ground state. How can I verify VS and FS bits in DF0 and DF4/5 when the installation is in the ground state, as the test set needs an ATCRBS all-call reply to function correctly?

A: To test the VS and FS discrettes, start the IFR 6000 tests with the installation in the airborne state and then switch the installation to the ground state. The IFR 6000 will use the last all-call address received to perform tests, thereby allowing the VS and FS discrettes to be verified. A fixed Mode S address may also be manually entered via the setup menu.

Q: What is the latest version of IFR 6000 firmware?

A: The latest release version is available from the Aeroflex.com web site for download into a USB flash memory stick. The test set will automatically guide the user through a software update process when the memory stick is plugged into the IFR 6000 USB port.

Q: Why don't I get replies to the UF16 test?

A: UF0/DF0 and UF16/DF16 are used by TCAS 2 systems for short and long Air to Air Surveillance. If a TCAS 2 system is deactivated or not installed, a failure to reply to a UF16 is normal.

Q: Why don't I get replies to UF20 & UF21 tests?

A: Ensure your transponder is at least level 2 (i.e. Comm A/B capable.) Also your transponder must have an ADLP (Air Data Link Processor) capable of accepting Comm A messages.

Q: Why does the mode C altitude data disagree with the Mode S altitude data shown in the AC field UF0, 4, 16 & 20 tests?

A: Altitude reported in Mode S DF's 0,4,16 & 20 may disagree with Mode C altitude reports. This is due to resolution differences. Mode S has an altitude resolution of 25 ft, Mode C has an altitude resolution of 100 ft. Differences are most noticeable below 300 ft and discrepancies of 50 ft are not uncommon.

Q: Why is the aircraft tail number not displayed in the squitter test?

A: Only certain countries have allocated their Mode S discrete addresses on an aircraft tail number basis. Those countries that have encoded the tail numbers have each used different software algorithms.