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AIS SART model S5

Statement on GNSS Receiver

The IEC specification for AIS SART (IEC 61097-14) paragraph 4.1.6.2 requires that the GNSS receiver is tested to specific sections of IEC 61108 and also requires particular features that are not tested by 61108. These features are addressed below.

a) Minimum update of once per minute

The S5 AIS SART provides a position update once per minute as required by 61097-14. In advance of each transmission burst the GPS is powered up and provides an updated position. This is then coded into the transmission burst.

b) Provide a resolution on one ten-thousandth of a minute of arc

The S5 uses a Fastrax IT310 model GPS receiver which has a SiRF3 chipset. This provides NMEA output data with 4 digits of decimal minutes. The example GPS output sentence below shows this (e.g. 5049.7123 represents 50 degrees 49.7123 minutes). Hence the GPS does provide a resolution to one ten-thousandth of a minute.

$GPRMC,093145.099,A,5049.7123,N,00103.4081,W,0.00,,040209,,,A*64

c) Use WGS 84 datum

The IT310 defaults to the WGS84 datum upon power up.

d) Evidence of forced cold start at every activation

The following paragraph from the IT310 technical description explains that like most GPS receivers it will use information stored in backup RAM to aid a solution when the main power (VDD) is applied.

> The IT310 receiver enters navigating mode after power up. It will start navigation automatically after power up/reset using all (if any) aiding information on GPS time, satellite ephemeris and Last Known Good (LKG) position information provided by the non-volatile back up block (RTC & RAM). Navigation is available as long as the VCC and VDD_RTC power supplies are active. Any configuration settings are valid as long as the back up supply VDD_RTC is active. When the VDD_RTC is powered off, the configuration is reset to default configuration on next power up.

The S5 circuitry turns VDD on for a limited period once each minute to acquire a position update. Once the S5 is activated VDD_RTC has continuous power. However, when the S5 is de-activated ALL power is removed and all information in the backup RAM is lost. Hence the S5 forces a “cold start” whenever it has been turned off.