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Model Z501 / Z502 Statement on GNSS Receiver

The IEC specification for AIS SART (IEC 61097-14) paragraph 4.1.6.2 requires that the GNSS receiver has specific properties and that these are clarified by vendor documentation during type approval. Please see below...

a) Minimum update of once per minute

The Z501 / Z502 product provide a position update once per minute as required by IEC 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 of one ten-thousandth of a minute of arc

The Z501 / Z502 product uses a uBlox type NEO-6M GPS receiver module. This provides NMEA output data with minutes or arc expressed with 5 decimal digits. The example GPS output sentence below shows this. (e.g. 5049.71988 represents 50 degrees 49.71988 minutes). This exceeds the resolution required by 61097-14.

\$GPRMC,105425.00,A,5049.71988,N,00103.40650,W,0.008,,301110,,,A*6D

c) Use of WGS 84 datum

The NEO-6M defaults to the WGS84 datum upon power up.

d) Evidence of forced cold start at every activation

The following paragraph from the NEO-6M hardware integration manual explains that like most GPS receivers it will use information stored in backup RAM to aid a solution if it finds valid information present in backup RAM.

In case of a power failure on pin VCC, the real-time clock and backup RAM are supplied through pin V_BCKP. This enables the u-blox 6 receiver to recover from a power failure with either a Hot start or a Warm start (depending on the duration of VCC outage) and to maintain the configuration settings. If no backup battery is connected, the receiver performs a Cold start at power up.

The Z501 / Z502 circuitry only supplies power to V_BCKP while the unit is activated. Once the product is de-activated all power is removed from the GPS receiver and backup RAM is cleared. There is no capacitor or other storage media to support the RAM. Hence the product forces the GPS to "cold start" whenever it has been turned off.