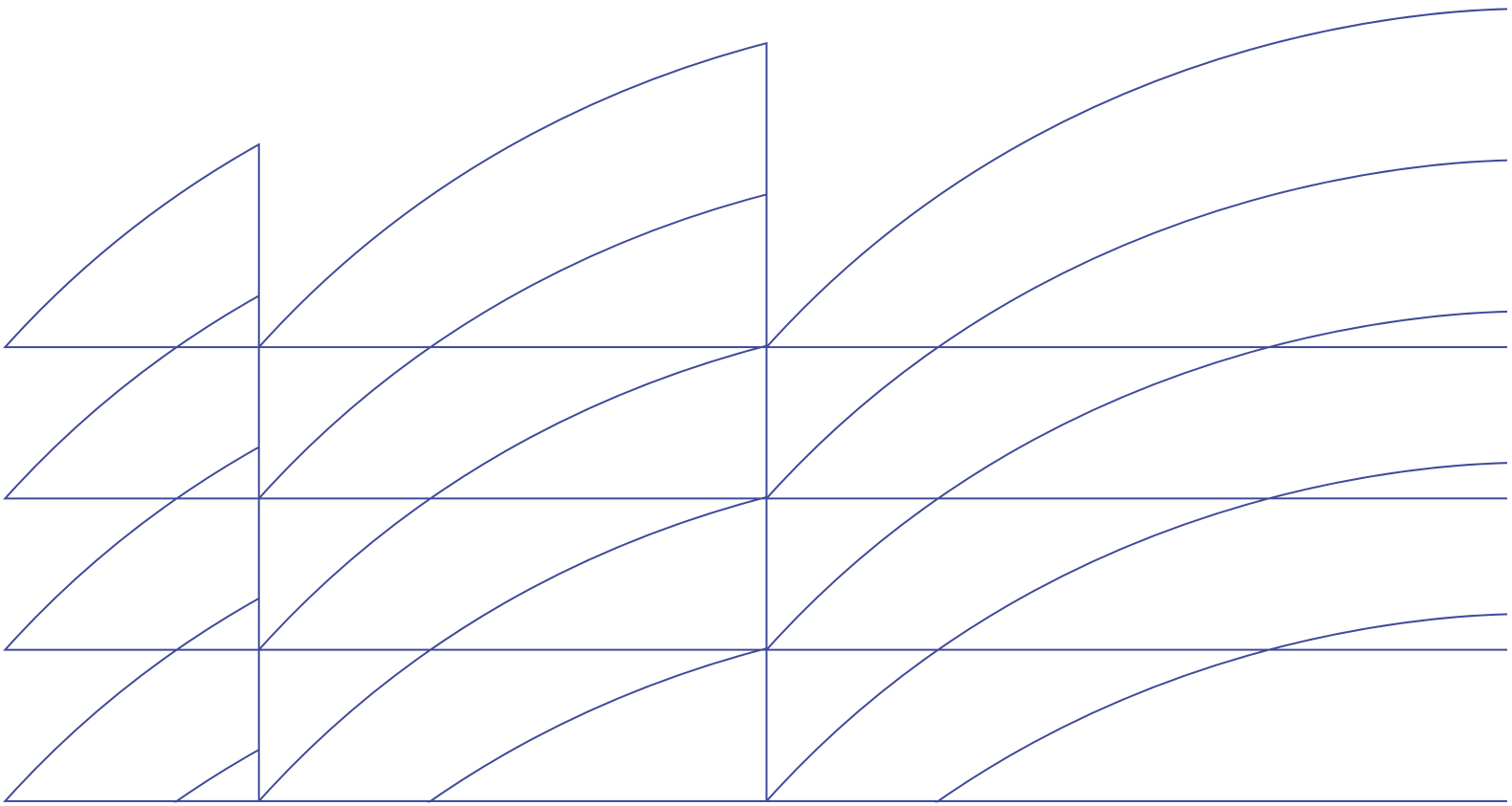
Persistent Inquiry Approval (PIA)

Geolocation General Description

Version 2.1



1 Device Details:

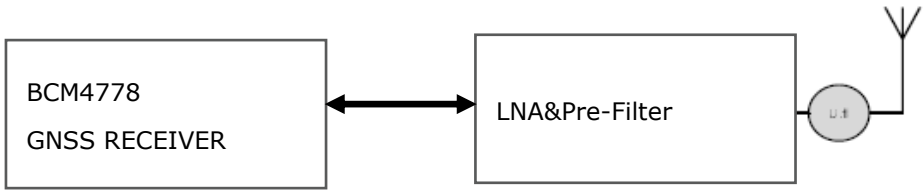
Brand: Airties

Model name is WFEXT4991-41
Application owner: Airties

2 Geolocation Solution:

WFEXT4991-41 has an internal GPS Solution. BCM4778(L1-only) GNSS Receiver chip was employed in the GNSS Module to determine the geolocation information in terms of X, Y axis and Z Axis for the Altitude.

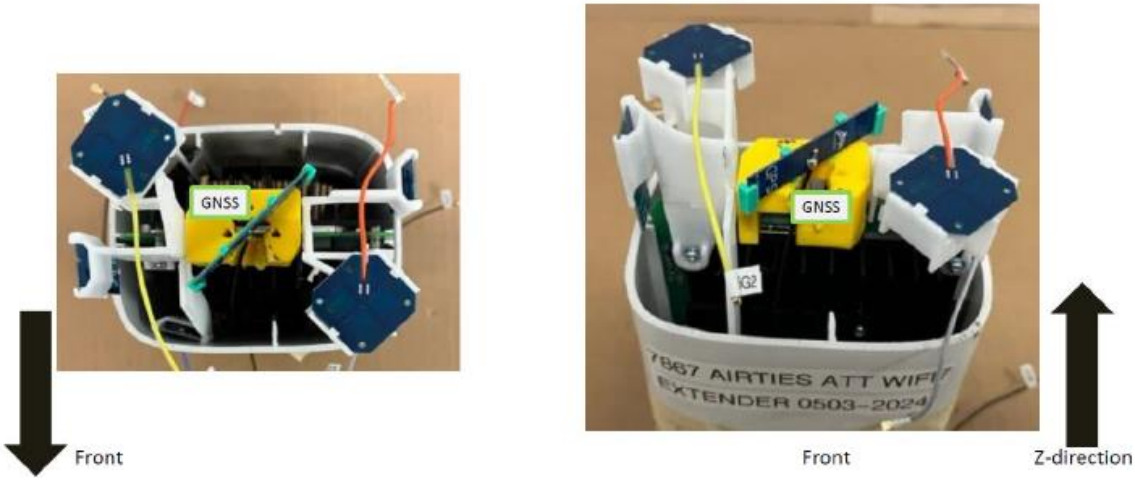
Hardware block diagram of the GNSS module shows the main components. Broadcom BCM4778 (GNSS receiver IC), LNA (low noise amplifier) and internal GNSS Antenna



The GNSS receiver can track GPS, GA Galileo

The Device has high Gain GNSS Antenna (Galtronics brand) like shown the picture below. The GNSS Chipset Supports LTO/RTO assistance for fast TTFF and improved accuracy for in indoor environments.

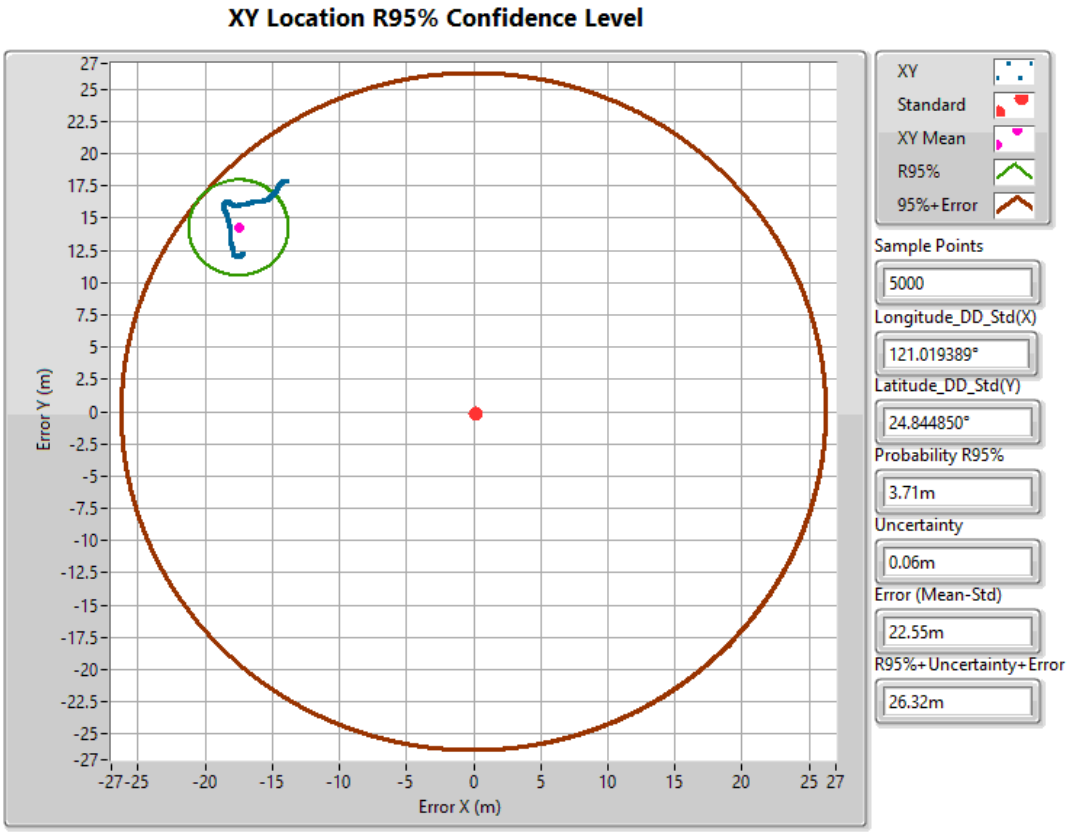
BCM4778 outputs a proprietary NMEA sentence with this elliptical uncertainty Information (Circular uncertainty is also provided)

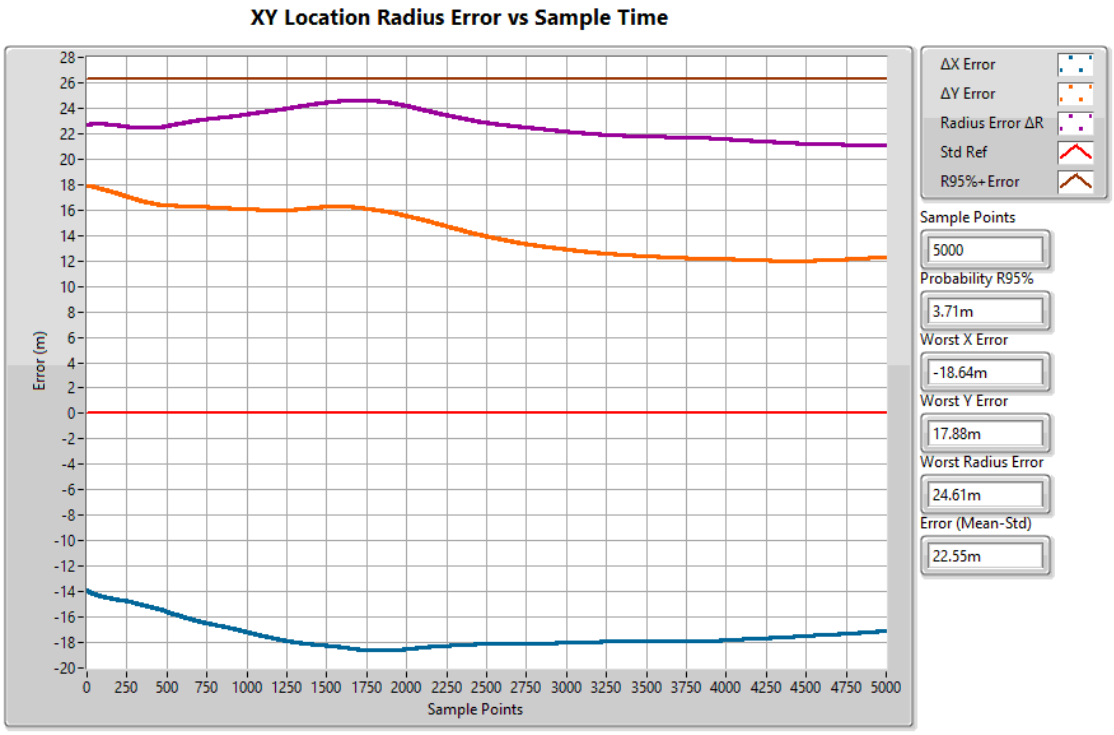


3 Attestation:

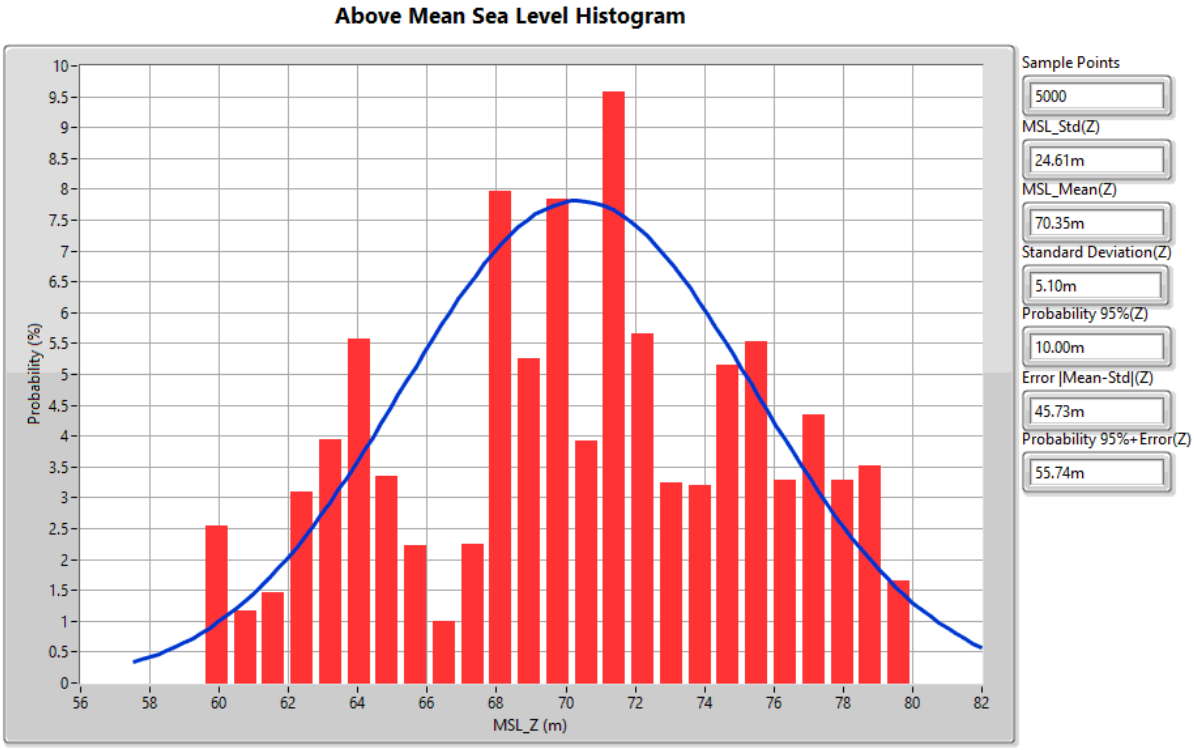
"F23D0518-02_Geolocation Accuracy Test Report" is individually provided to be confirmed the location uncertainty with a 95% confidence level. The summary of the results shows the worst-case scenario below.

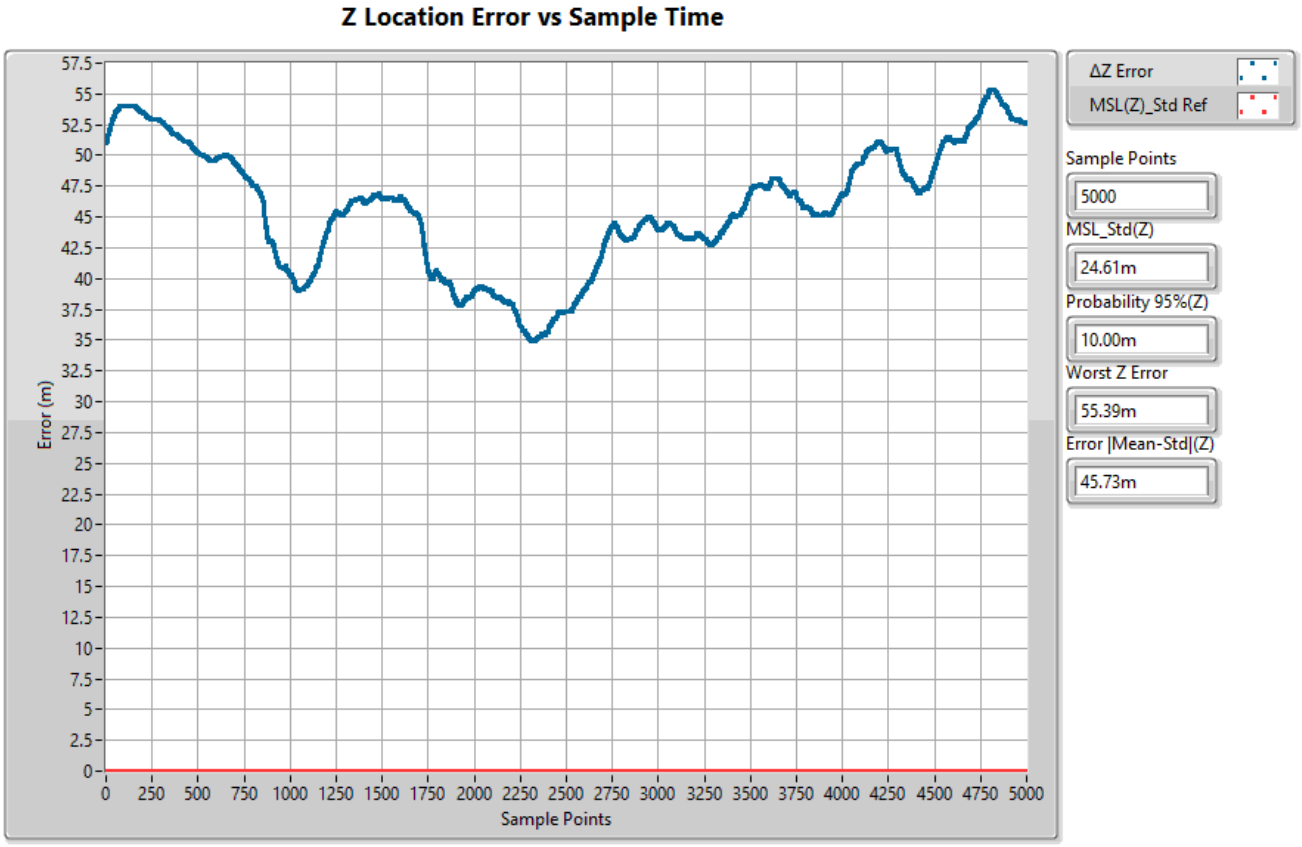
XY LOCATION 95% CONFIDENCE LEVEL:





Z 95% CONFIDENCE LEVEL:





4 SW Components:

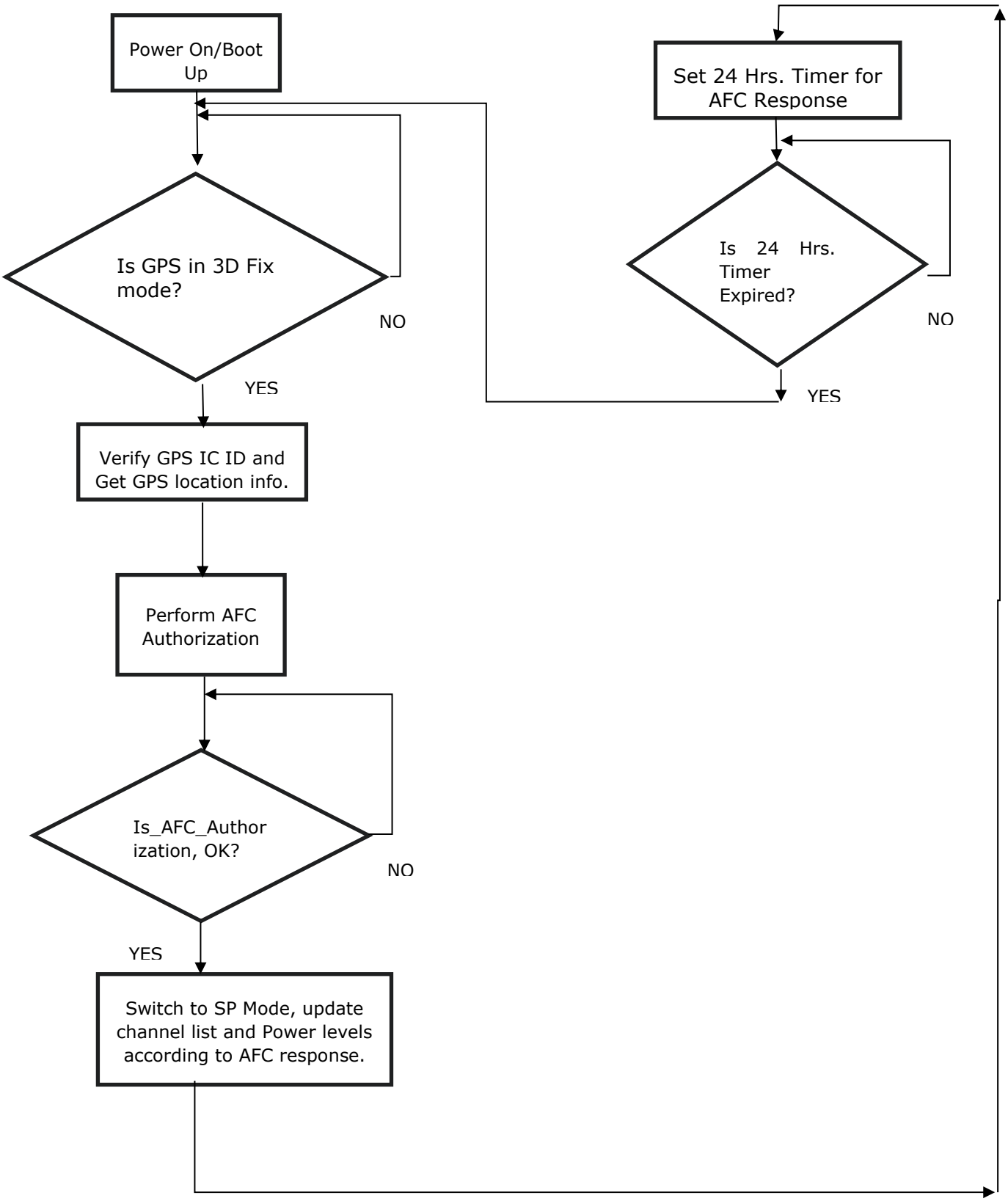
On boot up, multiple daemons are started on the router. Few relevant ones are indicated below.

AFCD: an application daemon that interacts with web server (and geolocation providers). It looks for availability of geo-location information through LocPoID, Sends requests to an external AFC server periodically or on expiry of previous information.

LocPoID/LPD:
Location Policy daemon runs on the interface between AFCD and geo-location source daemons (GNSSD AFCMD)

GNSSD: GNSS Daemon runs on the router to interface with GNSS Chips on the router.

Each Airties Device can communicate with AFC system individually. The device was designed for indoor use. The fixed operation is not intended to use.



5 Operating Modes:

The Device will be operating as Low Power indoor AP or Standard Power AP.

6GHz Radio AFC mode:

- Standard power AP: if the device has received a positive AFC grant, 6GHz radio is configured according to AFC limits.
- Low Power indoor AP (for all other cases)

If the device has received a negative AFC grant (empty frequency/PSD limit and empty channel/EIRP limits)

- Or AFC grant has expired.
- Or No AFC supported.
- Or platform has no AFC enabled.