4.3.2. Navigation module requirements

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Position determination if AECS is fitted with multi-GNSS receiver

- Supporting at least 3 GNSS including:
  - GLONASS
  - Galileo
  - GPS
- Capability to reception and process SBAS signals
- Positioning capabilities shall be demonstrated by performing a reduced set of test methods
- Tests can be performed conveniently:
  - Simulated GNSS signals per the test methods (no need for time-consuming complex field tests)
  - Either on the AECD unit or directly on the GNSS receiver being a part of the AECD
Position determination if AECS is **fitted** with multi-GNSS receiver

- Simplified list of the **GNSS test methods** proposed by:
  1. Messages output
  2. Positioning accuracy in static/dynamic mode
  3. Movement in urban canyons
  4. Time to first fix
  5. Re-acquisition time
  6. Receiver sensitivity
  7. Radio frequency interferences
  8. Field tests/complex scenarios

- **Test simplification** agreed between parties (Russian Fed. and EC) and taking into account the opinion of external experts (GNSS Task Force)
Position determination if AECS is fitted with multi-GNSS receiver

- **General requirements** for the navigation module:
  - **Horizontal position**:
    - Open sky conditions shall not exceed 15 m
    - Urban canyons conditions shall not exceed 40 m
    - PDOP not more than 2.5 and 4 respectively
    - 95% of the measurements done
    - Speed up to 140 km/h
  - **Sensitivity** at receiver shall be:
    - Acquisition: at least minus 144 dBm
    - Tracking: at least minus 155 dBm
    - Reacquisition: at least minus 150 dBm
  - **Time to first fix** not exceed:
    - 60 sec for signal level down to minus 130 dBm
    - 300 sec for signal level down to minus 140 dBm
  - **Re-acquisition time** after block out of 60 sec not exceed:
    - 20 sec at signal level down to minus 130 dBm
Position determination if AECS is **not fitted** with multi-GNSS receiver

- AECD shall comply with the **various** requirements and tests methods from the Contracting Party national regulations