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ASELSAN Türk Silahlı Kuvvetlerini Güçlendirme Vakfı'nın bir kuruluşudur.

Stabilized Antenna Systems for SOTM

29.11.2018

Satellite Communication System Solutions

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Satellite Communication System Solutions

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SATCOM ON THE PAUSE

SATCOM ON THE MOVE

AIRBORNE SATELLITE COMMUNICATION TERMINAL

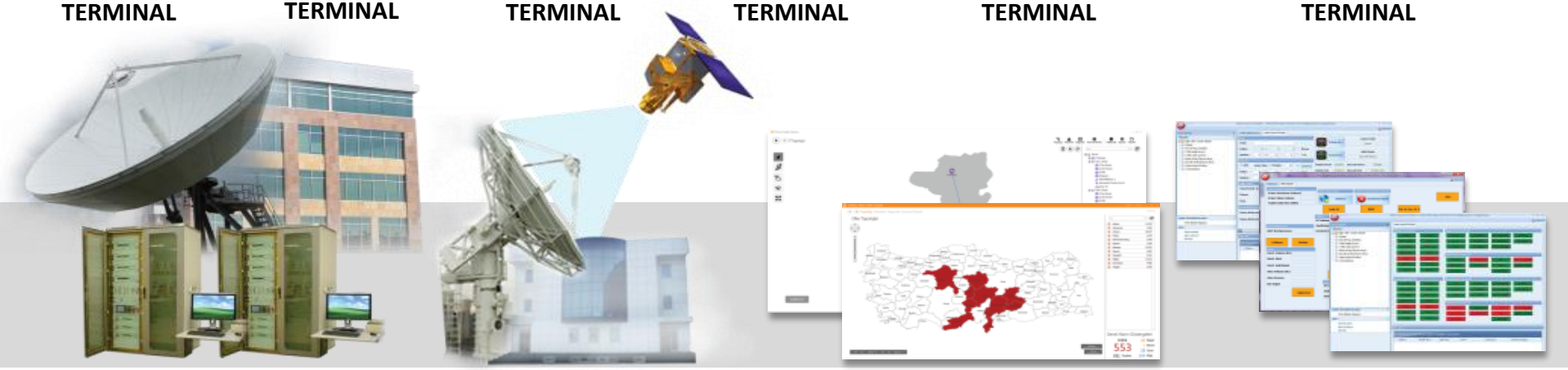
SHIPBORNE SATELLITE COMMUNICATION TERMINAL

SUBMARINE SATELLITE COMMUNICATION TERMINAL

MANPACK SATELLITE COMMUNICATION TERMINAL

FLYAWAY SATELLITE COMMUNICATION TERMINAL

VEHICULAR SATELLITE COMMUNICATION TERMINAL



NETWORK CONTROL STATION

SURVEILLANCE & RECONNAISSANCE SATELLITE GROUND STATIONS

SYSTEM MANAGEMENT SOFTWARE

TERMINAL MANAGEMENT SOFTWARE

ASELSAN Systems in Operation On the Field

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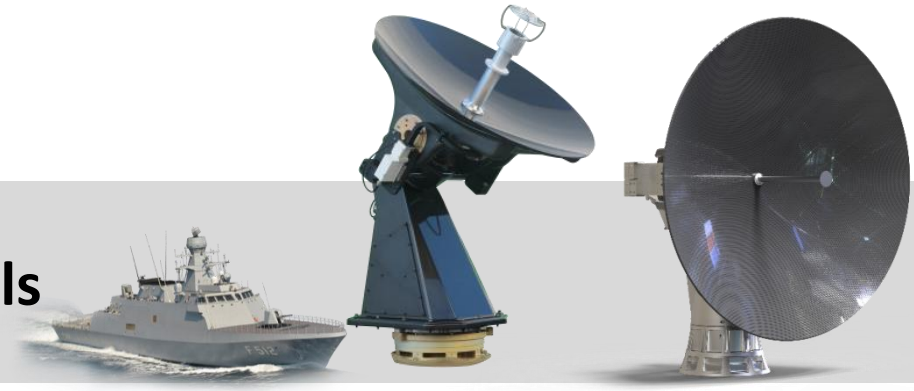
- **6 off Network Control Centres**

- **377 off Land Platform Terminals**

- Vehicular(56)/Flyaway(266)/Manpack(55)

- **56 off Naval Platform Terminals**



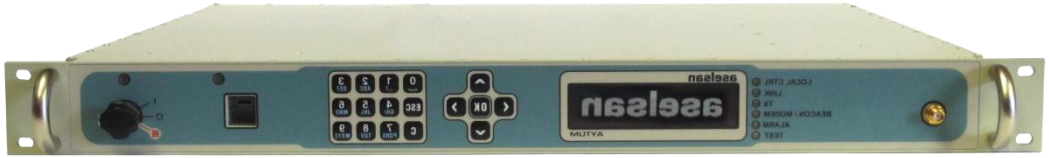
ASELSAN Satellite Communication History

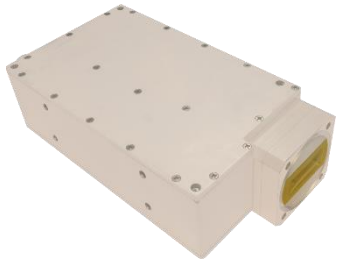
- ASELSAN start to work for satellite communication with Turkish Military Satellite Communication Systems Program on 2000.
- As of today all RF, Baseband equipments, ship, vehicular and airborne terminals are designed and manufactured indigeniously

ASELSAN Satellite Communication History

- Based on the knowledege and experience from mechanical and electronic design activites,

- The SOTM Terminals and its sub units are ready to meet customer requirements





Design Considerations for SOTM Terminals

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- SOTM Terminals should provide sufficient performance at the same time should not be impacted on the Adjacent Satellite Interference.

- Each SOTM Terminals need to be designed differently based on the platform and satellite requirements

- SOTM systems should be designed to tolerate shock and vibration during the movement of the related platform.

Design Considerations for SOTM Terminals

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- The aperture size of the antennas are critical and effect the terminal design concepts
- Smaller antennas need more transponder power and bandwidth from the target satellite
- Design of waveforms or modulation characteristics are most important parameters for the link performance.

Stabilized Antenna Systems Fundamentals

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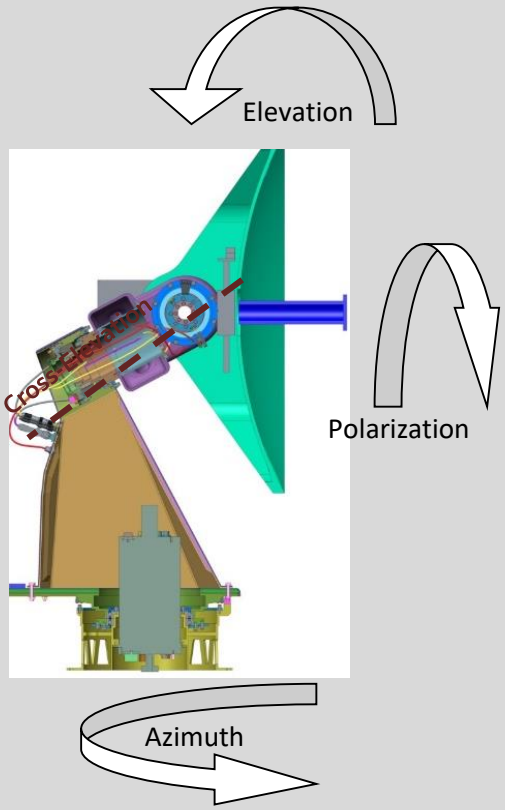

- Stabilized Antenna Systems compensate platform movement for tracking satellite at SOTM systems
- Stabilization shall be performed both elevation and azimuth axis
- If linear polarization is used (like ku band), Polarization tracking shall be performed.
- If platform is operated close to equator, Cross-L Axis should be implemented

- Different types of compensation techniques can be used at SOTM systems depends on platform movement limits
- For limited movement limits, open loop tracking (Platform INS Data Only) may be enough depends on performance requirements
- For High movement limits, closed loop tracking (both platform INS Data and Beacon Signal) should be used

PRODUCT- 1.0m X-Band Naval Termina

- In House Developed Terminal, comprising the following units:
  - 2-off 3-axis Stabilized Carbon fiber Antenna Assembly with 1.0m X-Band Reflector,
  - Satellite Modem,
  - BUC, LNB,
  - EMCON Control Units,
  - Power Distribution Units,
  - Tx Waveguide Switch, RF Combiner, RF Distribution Units,
  - Serial/IP Conversion Unit, Gateway,
  - Dehydrator,
  - UPS,
  - C&M Software
- MIL-STD-810G, MIL-S-901 and MIL-STD-461F qualified.
- Delivery Date: November 2018

PRODUCT-1.5m/1.8m X-Band Naval Terminal

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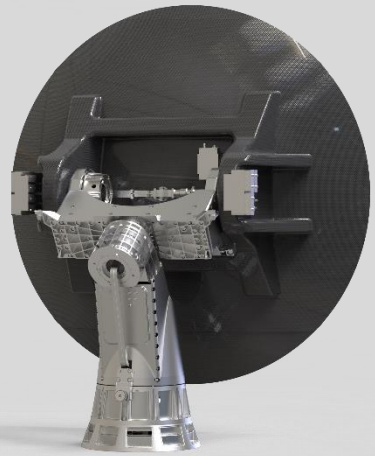

- In House Developed Terminal, comprising the following units:
  - 2-off 3-axis Stabilized Antenna Assembly with 1.5m or 1.8m Carbonfiber X-Band Reflector,
  - Satellite Modem,
  - BUC, LNB,
  - EMCON Control Units,
  - Power Distribution Units,
  - Tx Waveguide Switch, RF Combiner, RF Distribution Units,
  - Serial/IP Conversion Unit, Gateway,
  - Dehydrator,
  - UPS,
  - C&M Software
- MIL-STD-810G, MIL-S-901 and MIL-STD-461F qualified.
- Delivery Date: June 2019

PRODUCT-Airborne Ku Band Satcom Terminal

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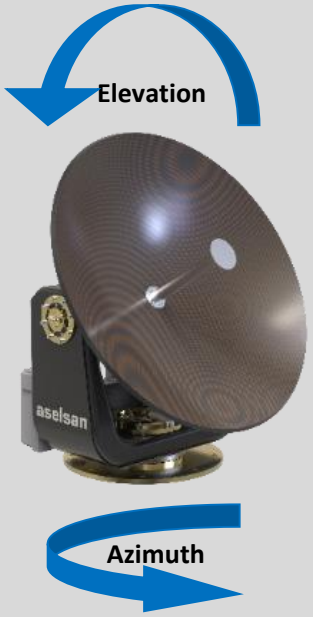
- Compact Terminal Design
- Data rate higher than 10 Mbps (customized waveform design)
- Different data rates according to the needs
- Composite pedestal (lightweight, high endurance)
- Direct drive motor (playfree, stiffness)
- High antenna balance
- Two axis movement and polarization tracking
- High satellite tracking ability
- Compatible to military standards
- Easy to integrate to different platforms



Aselsan SOTM Systems

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-Velocities and accelerations are different for land/maritime/air-borne terminals

-Specialized mount required for Shock and vibration requirements for different platforms

X band Naval SOTM

Ku Band Airborne SOTM

X Band SOTM-Vehicular