Stabilized Antenna Systems for SOTM

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Satellite Communication System Solutions

- AIRBORNE Satellite Terminal
- SHIPBORNE Satellite Terminal
- VEHICULAR Satellite Terminal
- MANPACK Satellite Terminal
- FLYAWAY Satellite Terminal
- SUBMARINE Satellite Terminal
- SYSTEM Control Center
Satellite Communication System Solutions

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

- 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 indigenously.
ASELSAN Satellite Communication History

- Based on the knowledge and experience from mechanical and electronic design activities,

- The SOTM Terminals and its sub units are ready to meet customer requirements
• 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.
• 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 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
- 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
- Delivery Date: November 2018
- 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
- Delivery Date: June 2019
• 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

- Velocities and accelerations are different for land/maritime/airborne terminals

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