



Türkiye's Spectrum Monitoring Capabilities in the New Century

May 30th, 2023

Proven Technology

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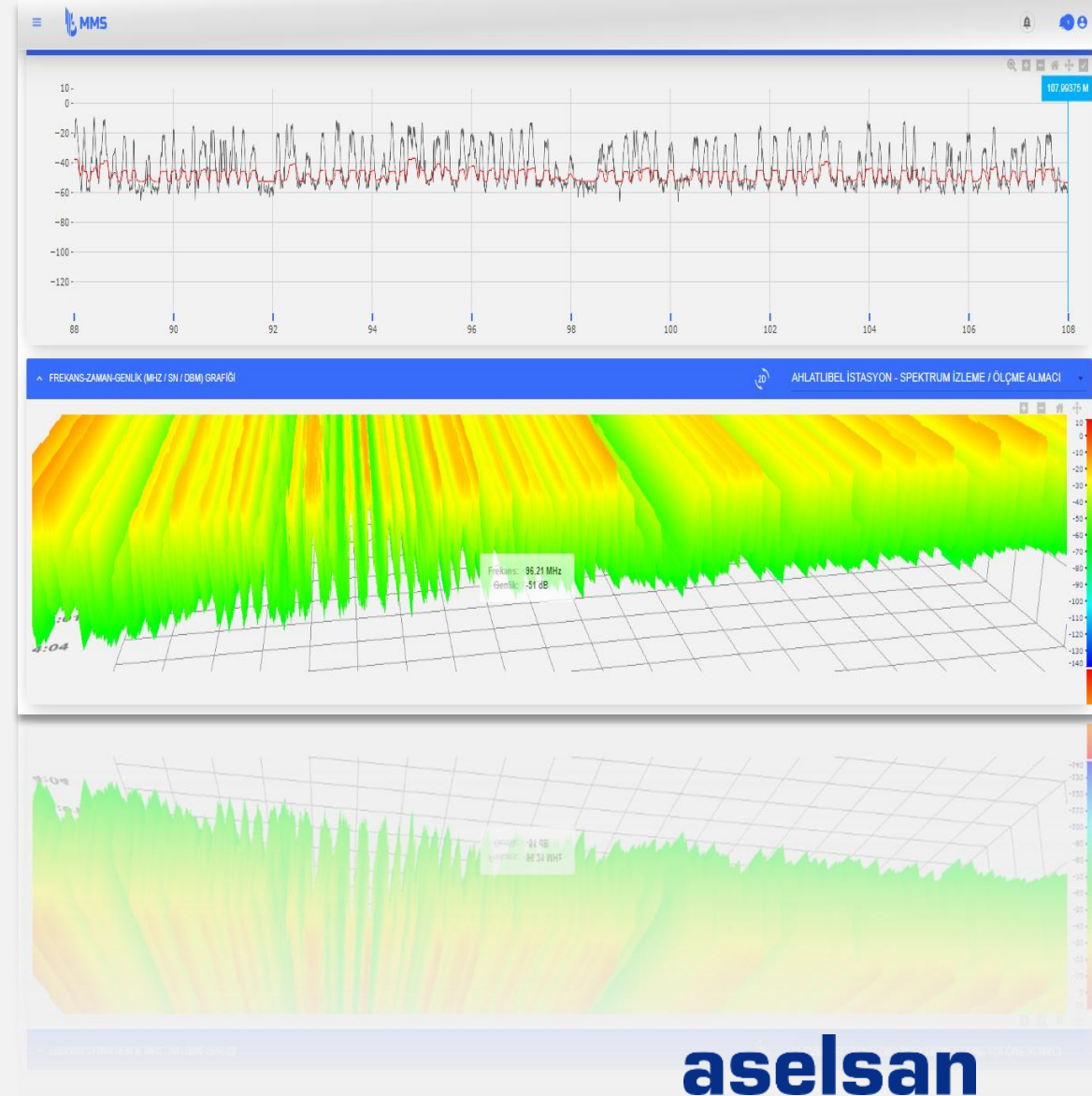
TURKISH NATIONAL MONITORING SYSTEM (NMS)

- National Monitoring Center (NMC)
- Regional Monitoring Centers (RMC)
- Fixed-Site Monitoring Stations (FMS)
- Mobile Monitoring Stations (MMS)
- Portable Monitoring Stations (PMS)



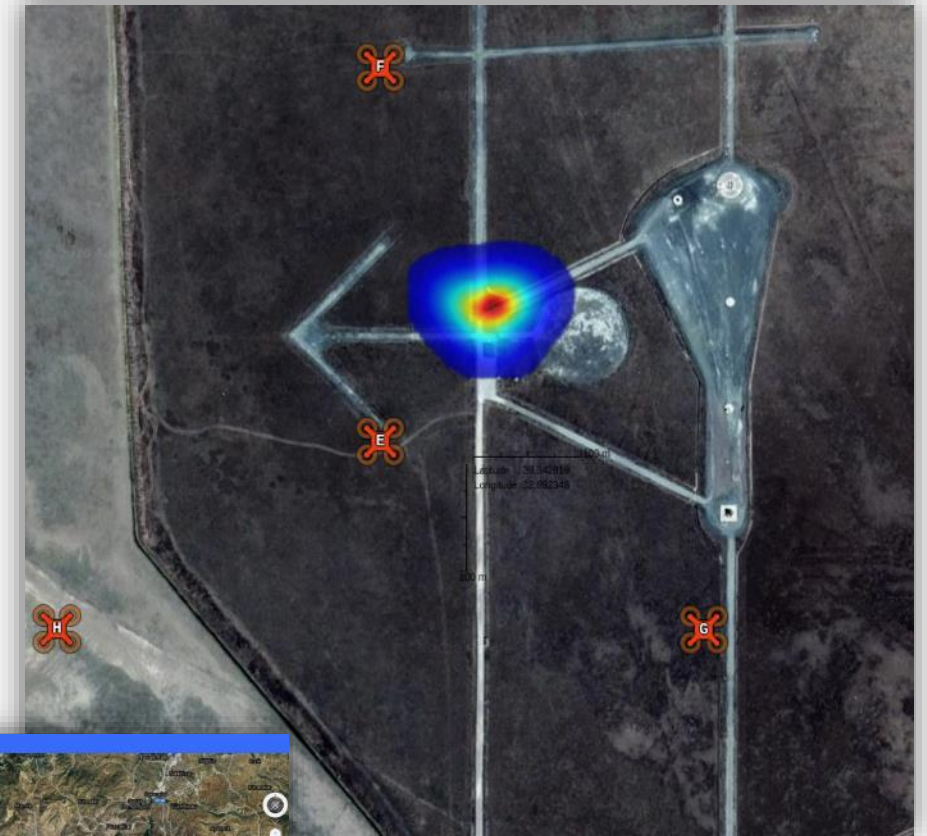
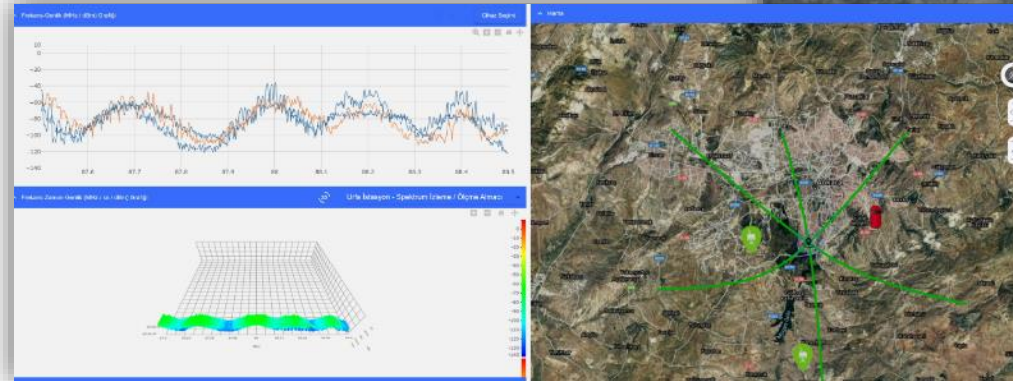
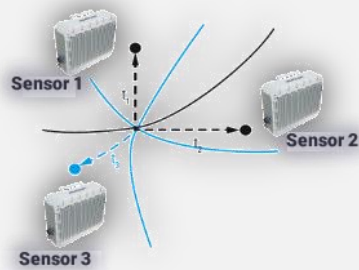
DETECTION & ESTIMATION

- **2 MHz - 8 GHz** frequency coverage
- High speed scanning & **unlicensed emission detection**
- ITU-R compatible parameter estimation
- Automatic modulation and protocol recognition
- Detection of the **license violating emissions**
- Integration with Authority's frequency database
- Multiple wideband receiver channels and DDR's
- Multichannel demodulation and decoding
- **Web-based** and stand-alone user interface options
- Analysis for mobile network & TV broadcast signals



LOCALIZATION

- High precision direction finding (DF)
- Homing localization
- Single-site location fixing by mobile DF (AOA) systems
- Instantaneous location fixing by cooperative DF (AOA) systems
- Highly accurate localization using TDOA method,
- Hybrid localization combining the TDOA and AOA



FIXED-SITE MONITORING STATIONS (FMS)

- HF & V/U/SHF frequency coverage
- Wideband receiver(s) with high speed scanning & TDOA
- Optimal antennas & special antenna tower designs
- Optimal deployment referred to ITU-R's
- Uninterrupted operation & situational awareness



MOBILE MONITORING STATIONS (MMS)

- HF & V/U/SHF frequency coverage
- Wideband receiver(s) with high speed scanning
- TDOA & AOA (DF) capabilities
- Optimal/patented DF antenna design
- Optimal deployment & integration with vehicle systems
- Uninterrupted mobile and fixed operations



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MOBILE MONITORING STATIONS (MMS)



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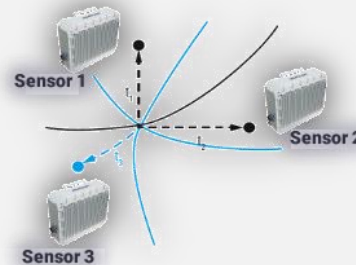
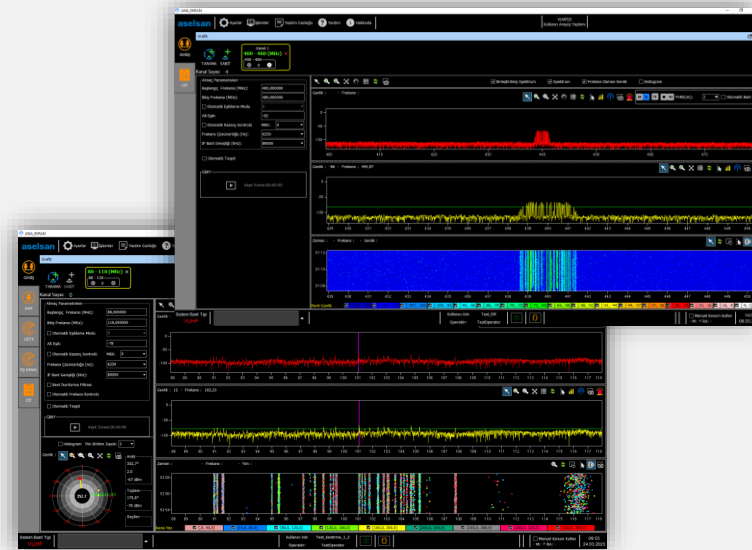
PORTABLE MONITORING STATIONS (PMS)

- HF & V/U/SHF frequency coverage
- Wideband receiver with high speed scanning
- TDOA capability
- Compact mechanical design
- IP65 level environmental protection
- Uninterrupted operation (mains & own battery)



RECEIVERS

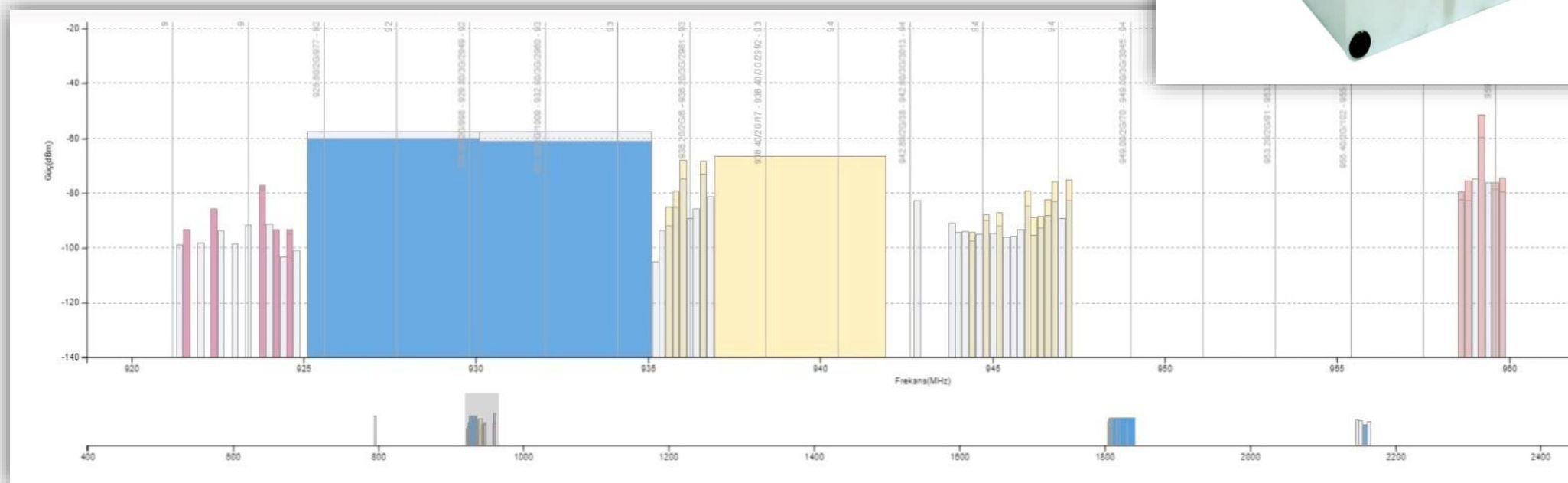
- 2 MHz – 8 GHz frequency coverage
- Single or multiple RF channels
- Phase-coherent operations
- 80 MHz instantaneous IF BW
- High resolution spectrum
- -110 dBm RF detection sensitivity
- High speed spectrum scanning
- Integrated GPSDO and high-precision time stamp
- TDOA & AOA (DF) capabilities
- Multiple DDR's and multichannel demodulation
- MIL-STD-810 & MIL-STD-461 compatible



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MOBILE NETWORK ANALYSIS

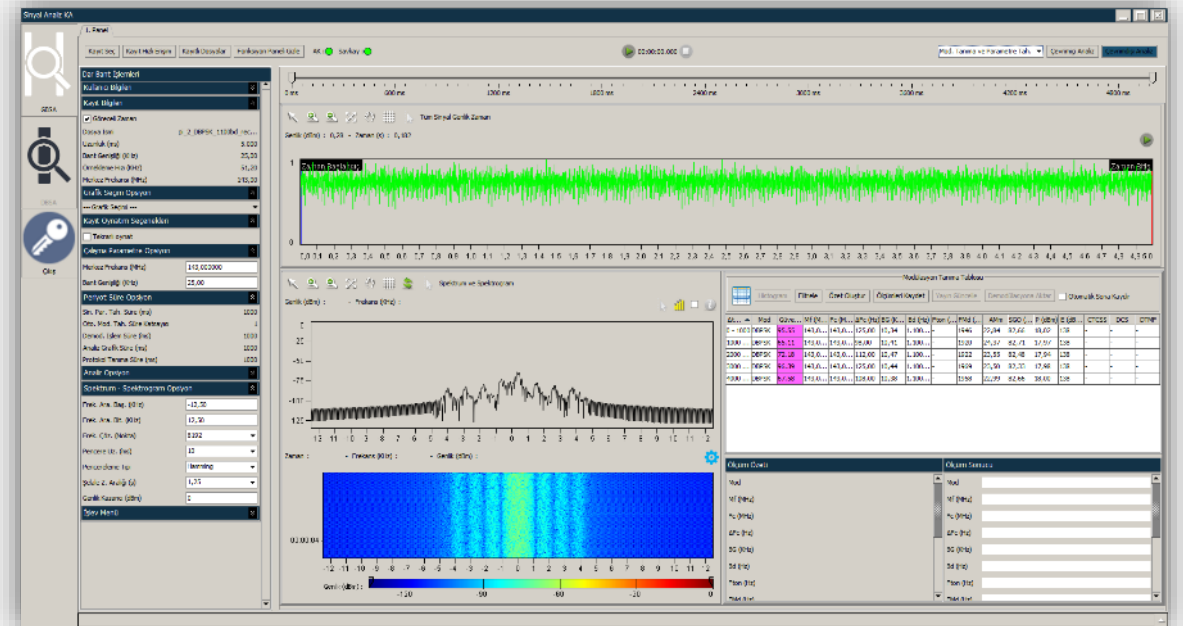
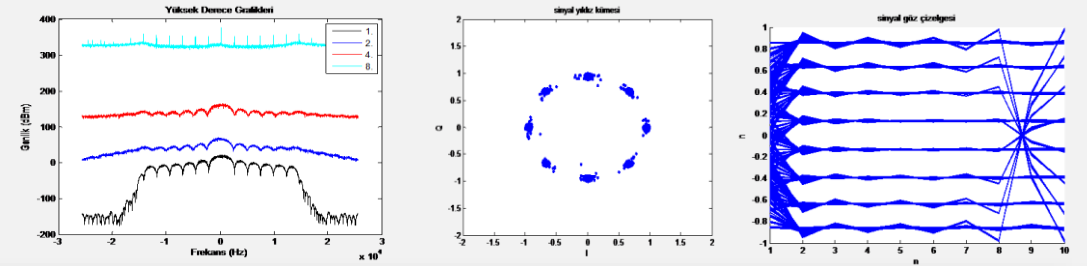
- Mobile network detection and analysis
- Parameter estimation
- Integrated operation with DF system for localization



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SIGNAL ANALYSIS

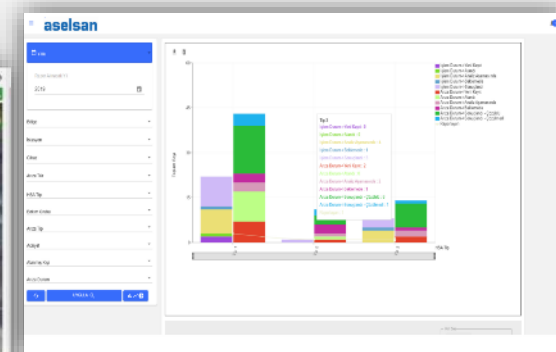
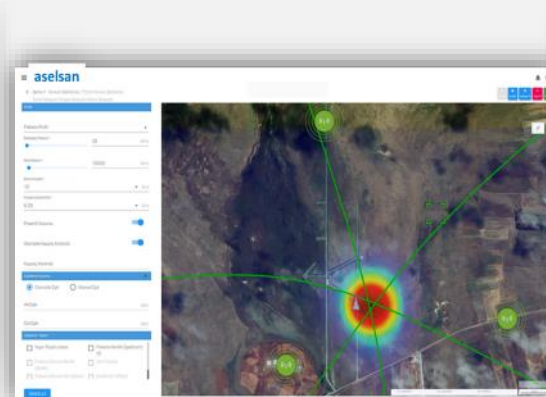
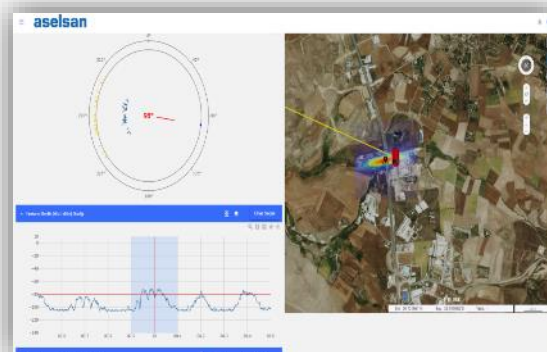
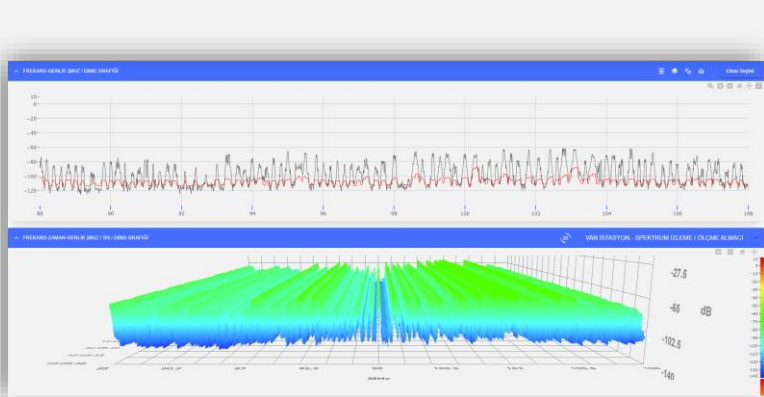
- Automatic modulation recognition & demodulation
- Automatic protocol recognition & decoding
- Advanced signal analysis tools & displays



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NATIONAL MONITORING CENTER (NMC)

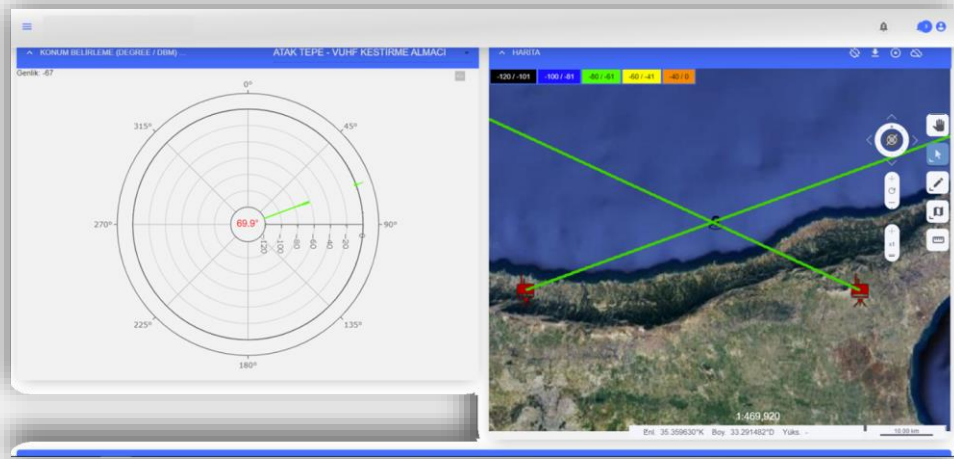
- Control, coordination, configuration and tasking
- Different communication alternatives
- Web-based & user-friendly GUI SW
- User role setting and authorization,
- Monitoring and analysis of task results,
- List and report creation capabilities,
- Status monitoring for the stations on the operation



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NEW GENERATION PORTABLES

- Portable & fixed-site operations,
- V/U/SHF frequency coverage @ 80 MHz IF BW,
- Integrated AOA, TDOA & hybrid localization

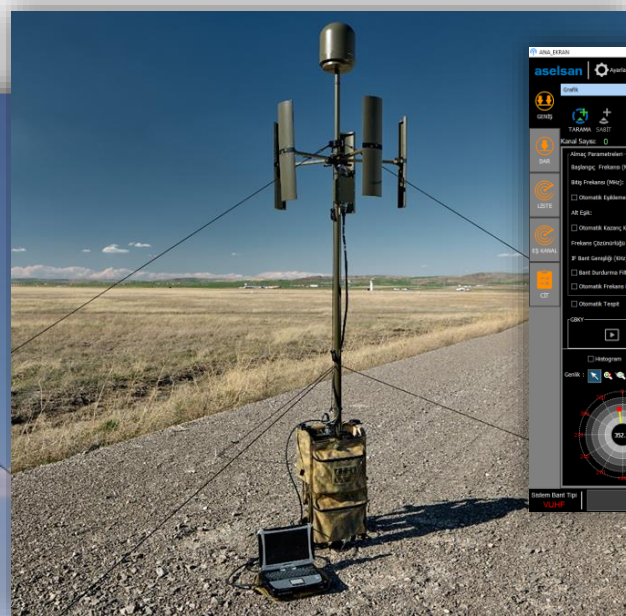


- READY FOR SERIAL PRODUCTION -



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PUHU - MAN-PORTABLE DF SYSTEM



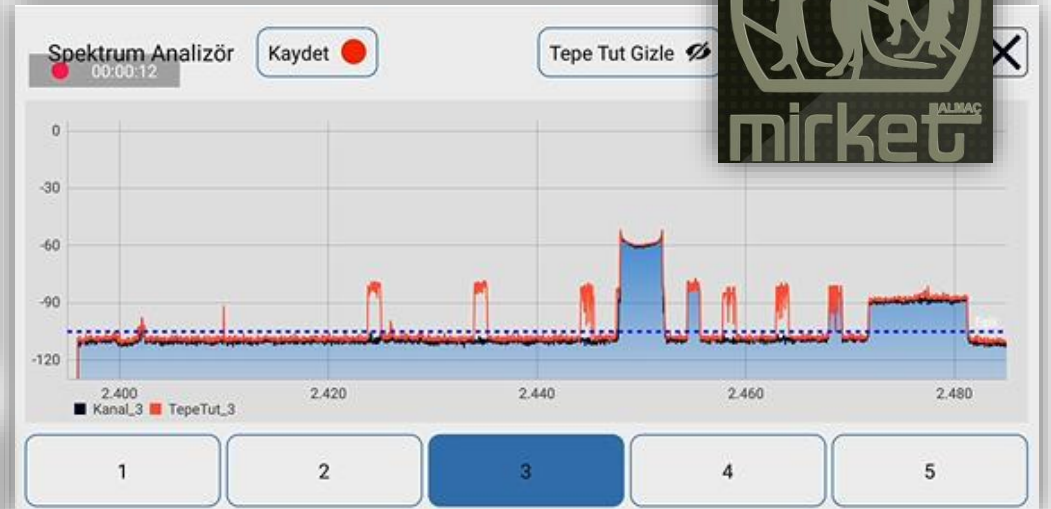
- CONFIGURABLE FOR CIVILIAN USE-

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MIRKET – POCKET RECEIVER



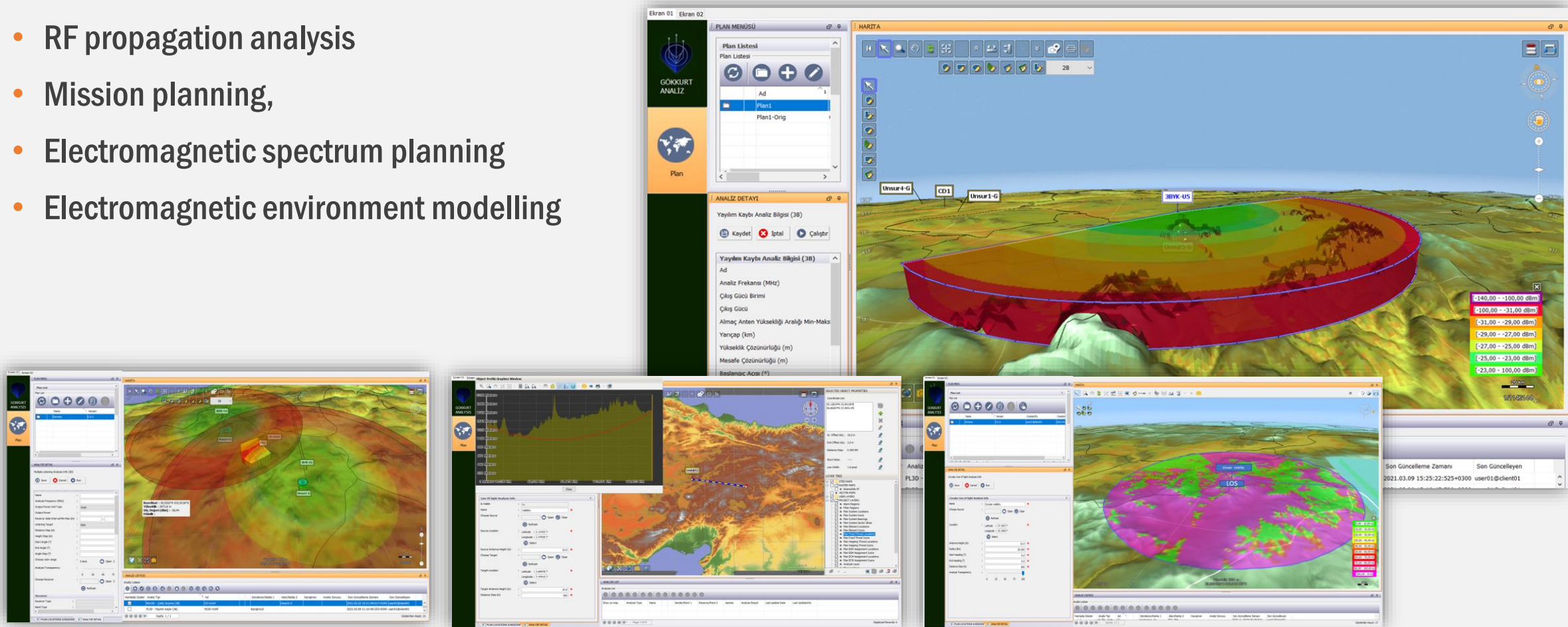
Less than 600 g



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GÖKKURT - PLANNING & ANALYSIS SW

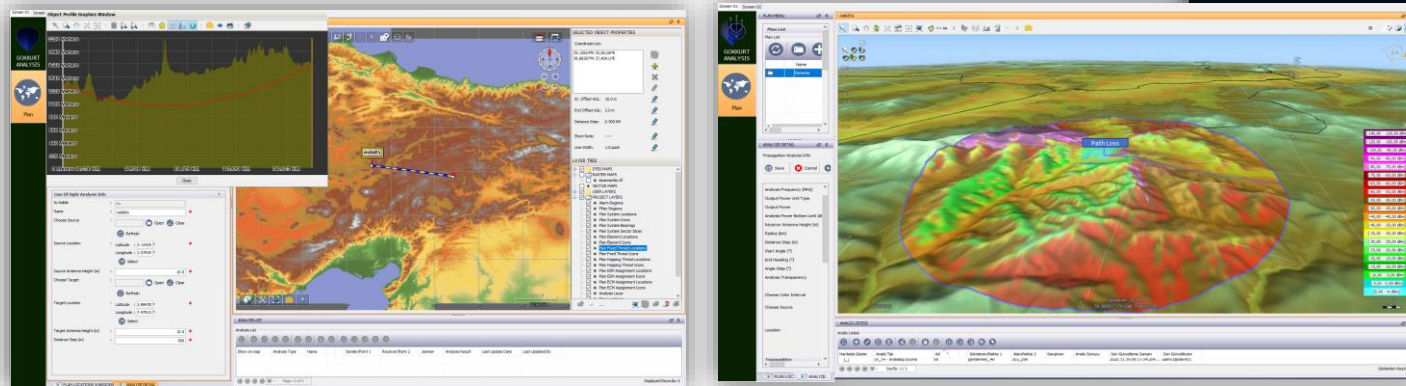
- RF propagation analysis
- Mission planning,
- Electromagnetic spectrum planning
- Electromagnetic environment modelling



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COUNTRY SPECIFIC SOLUTIONS

- Cooperation for requirement identification
- RF visibility and propagation analysis
- Special RF surveys for system deployment locations
- Territorial surveys for system deployment locations
- Solutions for country specific requirements





BEYOND BORDERS FOR A BRIGHTER FUTURE

May 30th, 2023

Speaker: Muhammet AVAN



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