SELEX GALILEO

A Finmeccanica Company

SAGE - DIGITAL ESM/ELINT FOR RF INTELLIGENCE, SURVEILLANCE AND RECONNAISANCE

With a market leading reputation for delivering integrated self-protection and situational awareness systems SELEX Galileo has developed SAGE, a family of Electronic Support Measures (ESM) products.

Due to the increase in mobile communications, data links and the commercialisation of the Radio Frequency (RF) spectrum the electromagnetic environment has gained significant complexity, with radar bands interleaved with non-radar signals causing traditional receivers to overload.

As a result, Advanced Digital Receiver Systems are required in order to ensure true situational awareness and advance intelligence.

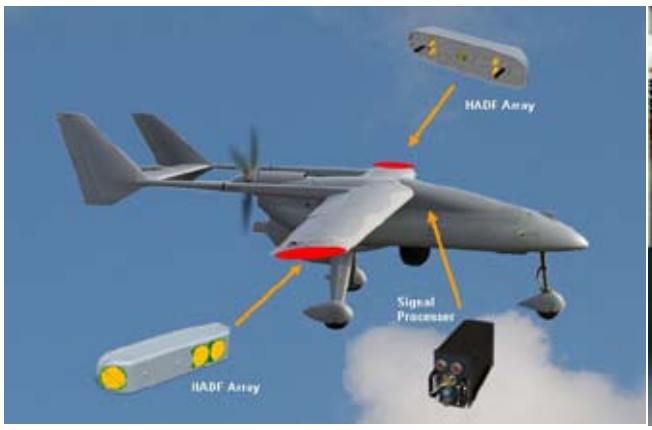
SAGE has been developed to combat modern RF complexities, providing ESM capability applicable to both the immediate and foreseeable future operational environments.

SAGE provides superior sensitivity with fine RF signal analysis capability for intelligence gathering with both single and multi-platform geo-location of RF assets.

SAGE has parallel wideband and channelised receivers to deliver optimised ESM performance and ensure instantaneous detection and ELINT analysis. SAGE also offers an option to add Communication ESM VHF to D Band.

KEY BENEFITS

- Compact and modular scalable architecture for all platforms using VPX backplane
- Comprehensive and detailed parametric measurement of emitters in C-K band (with C/D and K band extensions)
- High accuracy frequency and Angle of Arrival (AoA) measurement for fingerprinting and geo-location using phase interferometry and Time Difference of Arrival (TDOA)
- Advanced signal processing architecture and algorithms
- Detection, processing and characterisation of RF signals with RF and pulse parameter agility
- Processing of emission types: Pulse, Pulse Doppler, C and ICW
- Identification, characterisation and reporting of intercepts against generic or user defined mission libraries
- Recording of detailed emitter data and replay facilities together with data support and preparation tools.



SAGE is suitable for UAV and Counter-Insurgency (COIN) aircraft

TECHNICAL SPECIFICATIONS

RF Band	0.5 – 40 GHZ
RF Measurement Agility	1 MHz RMS typical, including RF characteristics
Sensitivity	-60dBmi wideband DRx sensitivity dependent on FFT, better than -80dBmi achievable
High Accuracy DF	Typically 1° rms
PRF types	Fixed, jittered, slide, stagger, random stagger, drift batch, irregular, nlets
Geo-Location	Typically better than 5%
Pulse Width	50ns to CW (Stable and all PW agile types)
Pulse width agility	Fixed, agile, agile discrete
Fine Frequency Measurement	<50 KHz RMS for Pulse Widths > 1µs <100 Hz for coherent signals (using external 10MHz ref.)
Intra-Pulse Measurements	Frequency Modulation: FMICW, FMCW, FM Chirp
Phase Modulation	Phase Shift Keying (PSK) Barker Codes
Emitter Library Size	16000 mode lines

Option for Communication ESM covering VHF–D band operation

SAGE FOR ALL PLATFORMS

SAGE ESM is available in two variants, SAGE Compact and SAGE Distributed. SAGE Compact is ideal for small platforms including Unmanned Aerial Vehicles (UAV) and Counter-Insurgency (COIN) aircraft.

SAGE OPERATION

- Primary operation
  - Wideband data gathering with channeliser analysis of selected emitters or bands
  - Geo-location of emitters on addition of High Accuracy Direction Finding (HADF) Arrays.

- Additional sensitivity
  - High sensitivity search for specific emitters and sections of targeted bands
  - Additional sensitivity in parallel with wideband operation using FFT based digital receiver.

- Detailed ELINT analysis
  - Detailed analysis in both wide and narrow band modes
  - Fine analysis providing detailed information on intra pulse characteristics including fine time measurement using the digital receiver
  - High accuracy measurement of frequency and time for geo-location both single and multi-platform with network capability.

SAGE Compact Digital ESM/ELINT Receiver

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