SELEX
Sistemi Integrati
A Finmeccanica Company

Predictable results
for unpredictable threats

VEGA: VEHICLE EQUIPMENT FOR GROUND APPLICATIONS

VEGA is a fully integrated mobile system supporting surveillance, navigation and guidance application in the frame of a modern A-SMGCS.

VEGA is able to operate in high density airports in very low visibility environments thanks to the multiple data-link capability and its advanced features for on-board data processing and presentation.
VEGA implements ADS-B, TIS-B and FIS-B full capabilities providing the right response to current and future requests for safer and secure operation in wider airports.
VEGA is the vehicle transponder, able to broadcast the vehicle position and other navigational data and implementing on-board navigation able to provide situational awareness and automatic guidance.

With regards to surveillance application, VEGA exploits GPS DGPS/SBAS-capable receiver and broadcasts ADS-B navigational data over:

- 1090 MHz channel through ADS-B Extended Squitter capability
- HyperLan 5 GHz or WiFi 2.4 GHz

In this way, surveillance systems, such as Multilateration and ADS-B ground stations, can track vehicles providing additional data to any A-SMGCS client (Surveillance Data Processing, Flight Data Processing, Surface Conflict Alerting, and Data Recording).

Furthermore, in order to maximize the continuity of CNS service even in urban-like environments, VEGA uses a recognition technique with internal gyroscopes and odometer inputs to determine the vehicle position in absence of GPS signals.

Furthermore VEGA has also embedded a 1090 MHz receiver capable of detecting the position of all surrounding cooperative vehicles (ADS-B vehicles equipped with the mentioned data links) and receiving 1090 MHz (DF18 messages) TIS-B messages and/or TIS-B/FIS-B messages on HyperLan or WiFi from ground infrastructures. This provides mobile users with global situational awareness.

Decoded data can be forwarded to an on-board display where the vehicle position and the surrounding traffic are presented using the same airport maps as background, as presented to the Ground controller in the A-SMGCS.
Through 1090 RTX modules VEGA is able to transmit mode S Short Squitter DF11 and Extended Squitter DF18

messages while receiving DF17/18 Extended Squitter messages; in particular the system is capable to receive/transmit:

- Surface Position messages
- Airborne Position messages (only received from A/C)
- Airborne Velocity messages (only received from A/C)
- Identification & Type messages
- Operational Status messages

VEGA also exploits a HyperLan/WiFi module to exchange in a proprietary format ADS-B, TIS-B and FIS-B messages with Centralized processing.

SYSTEM ARCHITECTURE

VEGA is fully integrated for outdoor purposes, is aerodynamic and is simple to install (magnetics) with antenna (1090MHz, GPS, HyperLan or WiFi) and electronics fully embedded inside its radome, powered via RS422 by a simple car lighter.

The on-board display may be connected through RS422 or Ethernet LAN

VEGA BENEFITS

- DGPS/SBAS position information
- ADS-B/TIS-B/FIS-B reception
- ADS-B/FIS-B transmission
- Enhanced A-SMGCS
- On board Situational Awareness
- Recognition capability
- Short and extended squitter transmission
- Easy installation
- Low and easy maintenance
- Small dimensions
- Easily configurable
- Low battery consumption
- Low electromagnetic emission

VEGA CHARACTERISTICS

Applicable Standards

- ICAO Annex 10, Vol.4
- RTCA DO-260A
- EEE 802.11/a-b-g

1090 MHz Section

RX Section	
Bandwidth:	ICAO Compliant
Message types:	DF17/18

TX Section

Bandwidth:	ICAO Compliant
Message types:	DF11 (config. Format) DF18 (config. Format)
Transm. freq. (jittered):	1 Hz (DF11) 2 Hz / 0.2 Hz (DF18 surface) 0.2 Hz (DF18 identification) 0.2 Hz (DF18 Oper. Status)
Output power:	40, 43 dBm (configurable)

2.4GHz and 5GHz Sections

Bit rate:	up to 54 Mbit/s
Op. frequency:	2.4 ÷ 2.5 GHz 5.47 ÷ 5.725 GHz
Output power:	2.4 ÷ 2.5 GHz: 20 dBm EIRP (adjustable) 5.47 ÷ 5.725 GHz: 30 dBm EIRP (adjustable)
Data Encryption:	WPA, WPA2, WEP

Environmental

Operating Environment	
Temperature:	-30°÷ +55°
Humidity:	IP-67 Compliant

Electrical

Input voltage:	10,8 ÷ 27 V
Power consumption:	< 10 W

Interfaces

RS422 or Ethernet 10/100 BaseT (IEEE 802.3)

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Published by
SELEX Sistemi Integrati - External Relations

June 2008