Verify your GBAS signals with high reliability

The R&S®EVS300 level and modulation analyzer with the R&S®EVS-K9 option reliably analyzes GBAS systems during ground and flight inspection.

Your task
A ground based augmentation system (GBAS) delivers differential GNSS correction data in real time to enable precision approach and landing for aircraft. The GBAS ground station (control center) uses data from two to four GNSS reference receivers located around the airport to create a correction message. The correction data is transmitted via a VHF data broadcast (VDB, 108.025 MHz to 117.95 MHz) to the receiver of the approaching airplane to correct its received GNSS signal. The DBPSK modulated VDB data is sent in bursts with eight timeslots each. Each slot carries application data which can belong to one or more message types (MT).

VDB data timing structure

Same as other precision landing systems, GBAS must fulfill the most stringent safety requirements. To ensure precise operation and worldwide compatibility, the International Civil Aviation Organization (ICAO) standardized critical GBAS parameters. Service providers and flight inspection organizations regularly monitor, check, calibrate and certify GBAS navigation systems to ensure conformance with the specification – essential for ensuring public safety. These activities call for robust and reliable test equipment that meets all relevant requirements from calibration to installation and maintenance in the lab and in the field.

T & M solution
The R&S®EVS300 is a portable, battery-powered level and modulation analyzer designed especially for starting up, verifying and maintaining navigation aid (NavAid) systems such as ILS, VOR and marker beacon. The R&S®EVS-K9 option adds GBAS test functionality to the R&S®EVS300 to reliably verify and analyze the VHF data link (VDL) via which GBAS stations in the field broadcast differential correction messages. The frames of a GBAS message burst are easily synchronized by connecting the PPS output of an external GNSS device to the trigger input of the R&S®EVS300. The analyzer captures the eight GBAS timeslots and decodes their contents.
The R&S®EVS-K9 option displays the decoded timeslots of a GBAS signal in various views. The GBAS main view provides an overview of the eight timeslots of a VDB message, listing the most important parameters such as level and frequency offset for each slot. This enables operators and technicians to verify GBAS functionality at a glance.

The data logger integrated in the R&S®EVS300 records and manages the captured measurement data. Recorded data can be graphically displayed on the instrument screen, downloaded to the operator’s lab via LAN for long-term evaluation and monitoring, or exported to a USB storage device in CSV format for offline analysis.

The graphical interface of the R&S®EVS-K9 data logger provides a straightforward overview of the parameters of a GBAS timeslot including:

- Power level
- Position – via NMEA from external GNSS receiver – relative to reference position
- Pseudorange correction for satellites

The R&S®EVS-K10 option provides similar functionality for SCAT-1 signals, based on the RTCA DO 217 standards.

**Summary**

Equipped with the GBAS functionality, the R&S®EVS300 is an ideal choice for analyzing GBAS systems during ground and flight inspection. The instrument supports all NavAid systems in line with the relevant standards in one portable, battery-operated box, making it a perfect tool for ATC organizations and service technicians.

**See also**

http://www.rohde-schwarz.com/product/EVS300

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