

Version
02.00

June
2007

R&S® EVS300 ILS/VOR Analyzer

Ground and flight inspection of air navigation signals with maximum precision

ILS signal analysis

- ◆ Highly accurate localizer, glidepath, and marker beacon measurements
- ◆ Parallel localizer and glidepath measurements (second independent signal processing unit, R&S® EVS-B1 option)
- ◆ Simultaneous dual-channel course/clearance measurements (R&S® EVS-K3 option)
- ◆ Realtime distortion measurement of ILS modulation signals (K2, K3, THD)

VOR signal analysis

- ◆ Precise checking of CVOR/DVOR antenna systems in the field
- ◆ Selective measurement of modulation depth and deviation as well as display of useful and interfering signals

Further special characteristics

- ◆ Steep-edge preselector filters for high immunity to interference
- ◆ Frequency scan (R&S® EVS-K1 option) with a dynamic range of up to 100 dB
- ◆ FFT analysis of AM signals (R&S® EVS-K4 option)
- ◆ Enhanced realtime data logging with graphical result display
- ◆ Operating time of 8 h to 10 h on battery power during continuous measurement
- ◆ Rugged and compact design for use in the field
- ◆ Embedded web server for remote access



ROHDE & SCHWARZ

Flight inspection and ground measurements with the R&S®EVS300

Up to now, different receiver types and measurement methods have been used for ground measurements and flight inspection.

The R&S®EVS300 is the first device that meets all requirements for ground- and air-based signal analysis.

⇒ Correlation between ground and flight inspection results (as recommended by ICAO Doc. 8071) is therefore feasible.



Checking terrestrial air navigation equipment

Outstanding scope of functions

The R&S®EVS300 was designed as a highly accurate level and modulation analyzer specifically for checking and maintaining ILS and VOR systems. Due to the numerous functions tailored to perform lab and field applications, the R&S®EVS300 can handle even the most complex tasks without requiring any additional measurement equipment.

High-precision realtime modulation measurements

Due to direct IF sampling, channel filtering in the R&S®EVS300 is digital. This eliminates the IF crystal filter as a major source of ripple and nonlinear level response. In combination with the high-precision 16 bit A/D converter, this ensures maximum accuracy of level and modulation measurements.

High level measurement accuracy

An internal calibration generator ensures high level measurement accuracy for precisely determining the receive level. This calibration generator also provides high long-term stability. An integrated switchable preamplifier and a switchable attenuator pad in combination with a high-level mixer ensure an extremely wide dynamic range for all measurement parameters.

Due to the wide input level range and the sophisticated shielding of the modules, measurements can be performed directly next to antennas.



Immunity to nearby VHF communications

With its optimized preselector filters, the R&S®EVS300 features maximum immunity to high-power VHF signals (e.g. due to the use of handheld VHF during runway measurements or control tower to airplane communications).

Stationary or mains-independent

The long operating time of 8 h to 10 h with rechargeable batteries during continuous measurements ensures all-day use. A 10 V to 28 V power supply input allows the R&S®EVS300 to be used in vehicles for ground measurements and in aircrafts for flight inspection.

Compact and rugged

Its compact size, rugged design, and low weight make the R&S®EVS300 ideally suited for field applications.

Two-frequency ILS system analysis

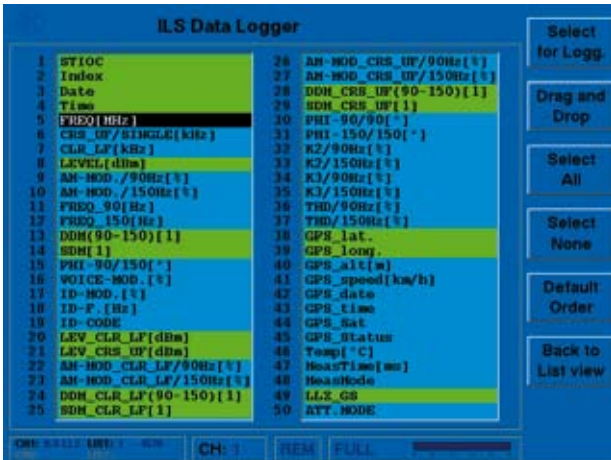
Equipped with the R&S®EVS-K3 option, the R&S®EVS300 can analyze the two carriers of a two-frequency ILS system jointly or separately. This enables users to exactly measure the level ratio and phase relationship of the course and clearance signal while the ILS system is in operating mode.

Measuring additional signal parameters

By means of the realtime distortion analysis (K2, K3, THD), ILS signal harmonics can exactly be measured.

Simultaneous measurement of the course and clearance signal plus display of the phase relationship between the two 90 Hz and 150 Hz signals

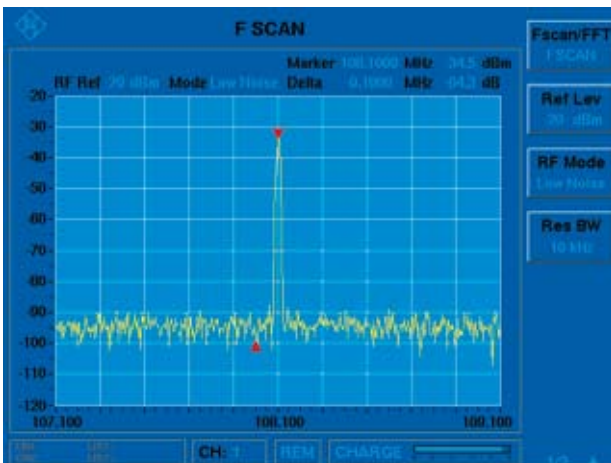




Data logger setup



Data logger trace



FSCAN screen

Precise checking of CVOR/DVOR stations

The R&S®EVS300 is ideally suited for measuring CVOR and DVOR stations in the field (e.g. bearing, AM depth, frequency of the 30 Hz/9960 Hz carrier, subcarrier FM deviation, or identifier modulation depth).

The internal FM demodulator of the R&S®EVS300 is designed to cope with the spurious AM of the 9960 Hz subcarrier in DVOR antenna systems. The amount of this unwanted AM is also measured.

Two independent measurement channels

Despite its compact size, the R&S®EVS300 can be fitted with a second independent signal processing unit. Equipped with the R&S®EVS-B1 option, the R&S®EVS300 can simultaneously perform two independent measurement tasks on any frequencies, e.g. simultaneously record the localizer and glideslope signals during a measurement flight or simultaneously measure two VOR stations.

Enhanced data logger and visualization functionality

The R&S®EVS300 is equipped with a large internal data memory which records all measurement parameters even at highest data rates of up to 100 measurements per second (e.g. during flight inspections). The data logger stores up to 999 individual data lists per mode (ILS/VOR/MB) with up to 1 000 000 record sets (containing all measured parameters) each. The visualization capabilities of the R&S®EVS300 allow a fast and easy graphical representation of the data logger content. This unique feature allows even runway measurements to be verified in realtime. For further processing and archiving, the measurement values can be transferred via the standard interfaces (LAN, RS-232-C) and optionally via the GSM network or simply copied to a USB memory stick.

Long-term measurement mode

The long-term measurement mode allows signals to be monitored in remote stations for extended periods of time. For this purpose, the R&S®EVS300 is periodically activated to perform a specific number of measurements. Thus, the R&S®EVS300 provides a mains-independent operating time of up to one week.

RF spectrum evaluation

Equipped with the R&S®EVS-K1 frequency scan (FSCAN) option, the R&S®EVS300 can analyze the RF spectrum: It covers the frequency range from 70 MHz to 350 MHz; clear/write, average, and peak hold trace modes are selectable. The measurement bandwidth can be set to 30/10/3/1 kHz. Marker and delta marker functions are available. The dynamic range of up to 100 dB in combination with the very low noise figure makes the R&S®EVS300 the ideal instrument for analyzing spurious signals in the ILS/VOR and communications bands.

AM signal analysis

The R&S®EVS-K4 option enables the R&S®EVS300 to perform an FFT (fast Fourier transformation) of the demodulated RF signal or the signal supplied at the external baseband input. Thus, harmonics and intermodulation products of ILS, VOR, and marker beacon signals can be analyzed. The spectrum is displayed in logarithmic or linear form. Hanning and flat top window functions are additionally selectable. Marker and delta marker functions allow fast and easy signal analysis.

Remote control via GSM modem

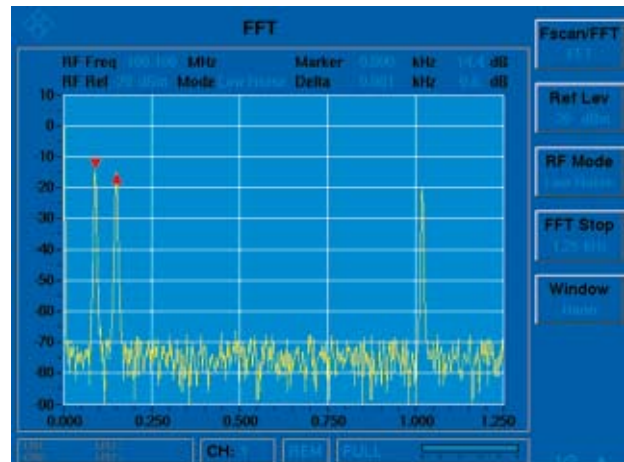
The optional R&S®EVS-B2 GSM modem allows the analyzer to be remote-controlled without requiring special infrastructure. Thanks to the R&S®EVS-B2, users can remote-control the analyzer functions plus transmit measurement data via the public GSM network (other networks on request). Power is supplied to the modem directly from the R&S®EVS300.

Embedded web server for remote control

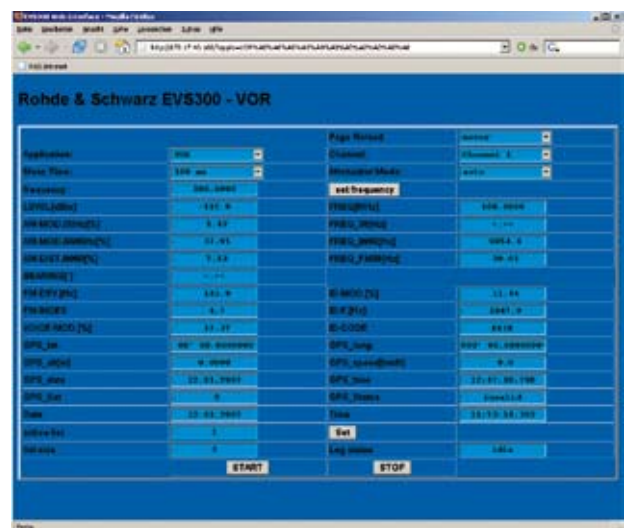
The R&S®EVS300 features an integrated web server. If the analyzer is connected via a TCP/IP network, the user can easily control measurements from a remote site. For example, the measurement values are displayed using a simple web browser, or the data logger content can be downloaded via the Internet.

GPS-based measurement

Its high measurement accuracy and fast data storage make the R&S®EVS300 ideal for dynamic runway measurements and flight inspections. An external GPS receiver determines the current position, which is then imported in NMEA 183 format via a second RS-232-C interface (other formats on request). The exact location and time can thus be stamped on each block of measurement data. The R&S®EVS300 additionally features a configurable external trigger input for connecting a position-signaling sensor.



FFT screen



Web server (VOR screen)

General characteristics

- ◆ High-contrast TFT color display (16.4 cm/6.4")
- ◆ Wide operating temperature range from -10°C to $+55^{\circ}\text{C}$
- ◆ Low weight (approx. 5.7 kg)
- ◆ High mechanical resistance in line with MIL-STD-810 and IEC 68
- ◆ Analog output allowing further analysis of received signals in the baseband
- ◆ Analysis of external baseband signals
- ◆ Trigger input for synchronization purposes
- ◆ Selftest (BITE)
- ◆ LAN, RS-232-C, and GSM interface for remote control of all functions and for measurement data output
- ◆ USB connector for data export and software updates
- ◆ Rackmounting kit

Recommended extras



R&S® EVS-Z1 weather protection bag

The R&S® EVS300-Z1 weather protection bag with its transparent cover permits convenient operation in the field even under adverse weather conditions.

The front pocket can be used for transporting other accessories.



R&S® EVS-Z2 transit case

For transport in rough environments, the R&S® EVS-Z2 transit case ensures maximum protection owing to its strong all-aluminum body. The case is lockable. A supplementary compartment accommodates cables, a GPS receiver, or documentation, for example.



R&S® EVS-Z5 DC/DC converter

When runway measurements are performed by car, the R&S® EVS300 can be directly connected to the onboard supply system. Additionally, the R&S® EVS-Z5 DC/DC converter allows simultaneous operation and charging even if the DC supply voltage is lower than 22 V.

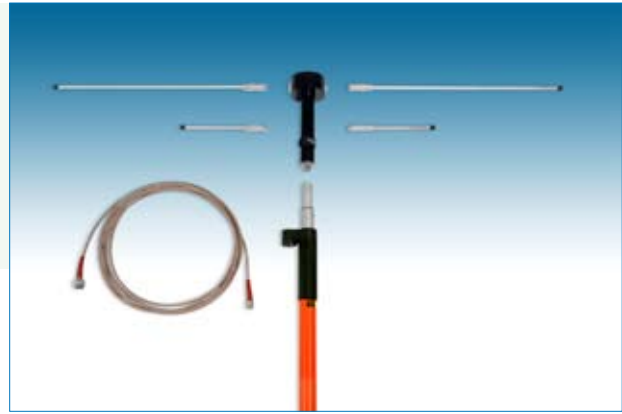


R&S® EVS-Z6 protective hard cover

The R&S EVS-Z6 is the ideal extra when it comes to protecting the front-panel elements of the R&S EVS300. The display and keypad are thus well-protected during transportation or in a car installation, for example.

R&S® EVS-Z3 ILS (LLZ/GS)/VOR dipole antenna

The lightweight design of the R&S® EVS-Z3 ILS (LLZ/GS)/VOR dipole antenna and its compact size makes this antenna ideal for mobile measurement tasks in the field. With two different snap-in sets of rods for LLZ and GS, the antenna's RF characteristics are particularly adapted to ILS and VOR measurements. The telescope mast can be extended to 3 m.



R&S® EVS-Z4 dipole antenna transit case

Up to two disassembled R&S® EVS-Z3 antennas can be transported in the R&S® EVS-Z4 transit case. It features special pockets for two sets of antenna rods and additional compartments on the front for cables and documents. The bottom of the transit case is made of abrasion-proof material.



Ordering information

Designation	Type	Order No.
ILS/VOR Analyzer	R&S® EVS300	3544.4005.02
Options		
Second Signal Processing Unit	R&S® EVS-B1	5200.6625.02
GSM Modem	R&S® EVS-B2	5200.6631.02
Battery Pack	R&S® EVS-B3	5200.8240.02
Frequency Scan	R&S® EVS-K1	5200.6554.00
GPS Mode	R&S® EVS-K2	5200.6548.00
CRS CLS Mode	R&S® EVS-K3	5200.9082.00
FFT Mode	R&S® EVS-K4	5201.5922.00
Recommended extras		
Weather Protection Bag	R&S® EVS-Z1	5200.5812.00
Transit Case	R&S® EVS-Z2	5200.6525.00
ILS (LLZ/GS)/VOR Dipole Antenna	R&S® EVS-Z3	5200.6577.02
Transit Case for ILS (LLZ/GS)/VOR Dipole Antenna	R&S® EVS-Z4	5200.9999.00
DC/DC Converter (10 V to 34 V, 3 A at 24 V)	R&S® EVS-Z5	5200.6619.02
ILS/VOR Test Antenna	R&S® HF108	4061.0506.02
Protective Hard Cover	R&S® EVS-Z6	5201.7760.00
Test System for R&S® EVS300	R&S® EVS-Z10	5201.7777.02
Service manual		3544.4486.22
Accessories supplied		
External power supply (100 V to 240 V)		5200.9118.02
User manual		3544.4486.12
DC supply cable		



For data sheet, see PD 5213.6070.22
and www.rohde-schwarz.com
(search term: EVS300)



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