

# On the signal track

Antenna/receiver applications

# Stationary deployment

## Worldwide monitoring of shortwave signals

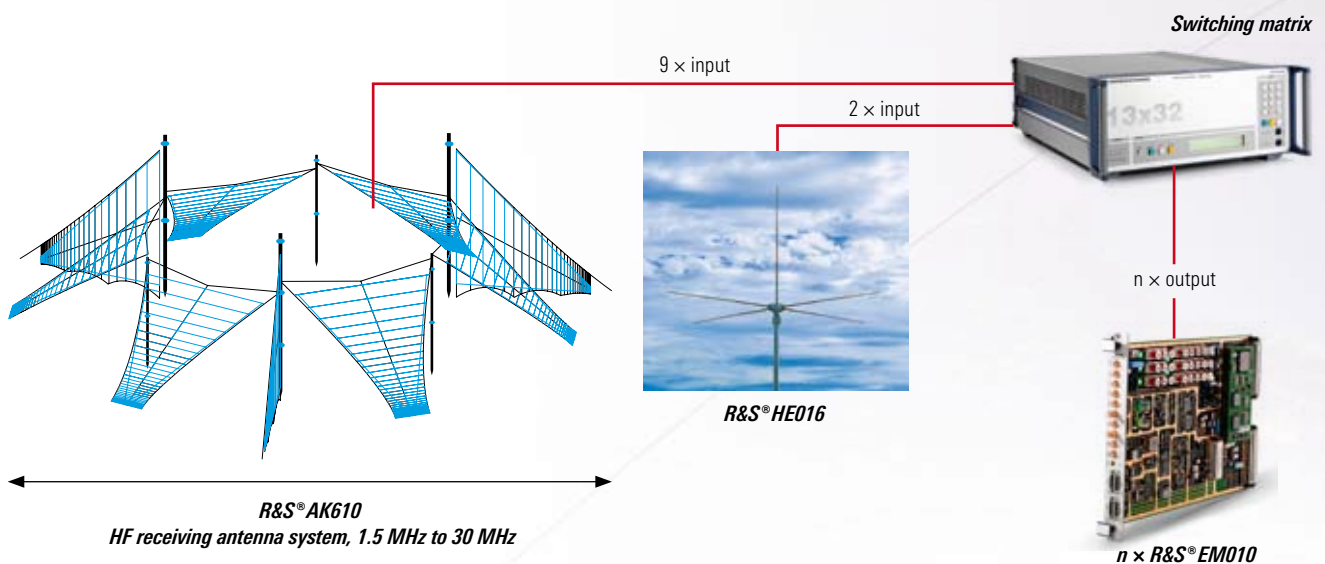
- ◆ Frequency range 1.5 MHz to 30 MHz
- ◆ Worldwide monitoring, for all distance ranges
- ◆ 360° azimuth coverage using directional antenna elements arranged in a circle
- ◆ Horizontal and vertical polarization
- ◆ Very high gain, enabling extremely sensitive reception
- ◆ Customer-specific adaptation of antenna patterns and receive distance

## R&S® NVX1332 switching matrix

- ◆ Turnkey systems with application software
- ◆ Modular hardware concept for customer-specific solutions
- ◆ Non-blocking fast silicon switches for low-noise switching

## R&S® EM010

- ◆ DSP-based VXI receiver
- ◆ Suitable for all common reconnaissance methods
- ◆ Single module covering the entire frequency range
- ◆ Compatible with R&S® AMMOS

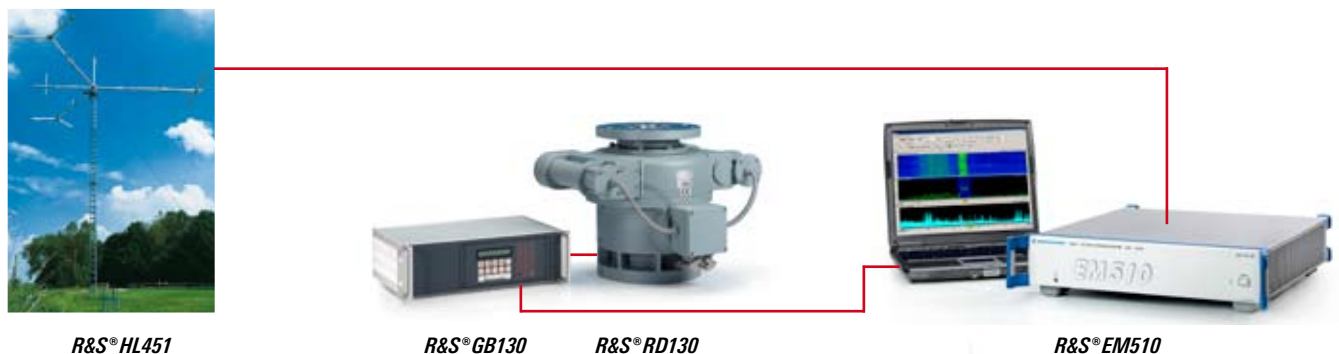


## Directional reception of shortwave signals

- ◆ Frequency range 2 MHz to 30 MHz
- ◆ Deployment on rooftops and under tight space constraints
- ◆ Antenna radiation patterns can be optimized for customer-specific distance ranges by selecting the appropriate mast height
- ◆ n x 360° antenna rotation possible when using a rotary joint

## R&S® EM510

- ◆ Spectrum monitoring in accordance with ITU recommendations
- ◆ High scanning speed for broadband applications
- ◆ System integration via LAN interface

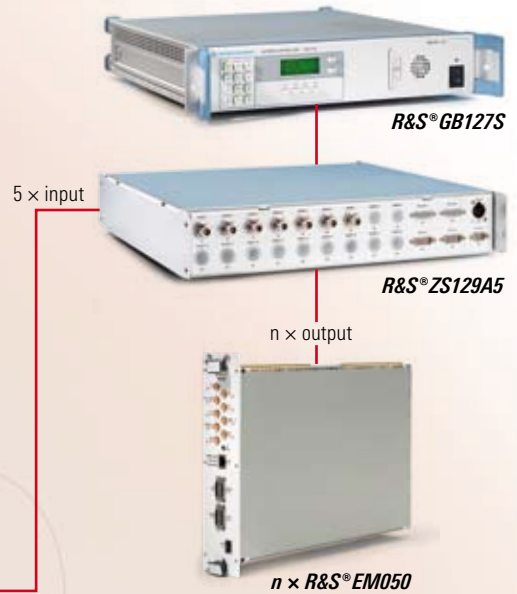
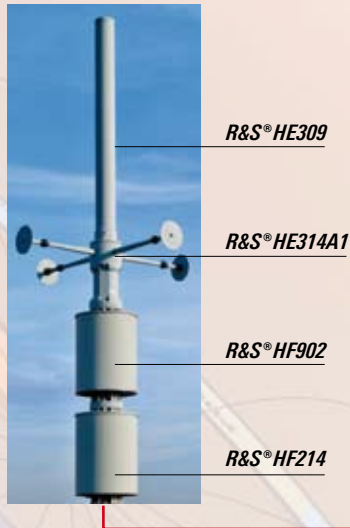


### Omnidirectional reception from 20 MHz to 3 GHz

- ◆ Horizontal and vertical polarization
- ◆ All antennas are mechanically compatible because of uniform flanges
- ◆ Mast does not influence omnidirectional reception patterns

#### R&S® EM050

- ◆ High-performance VHF/UHF receiver
- ◆ Broadband signal detection
- ◆ Compatible with R&S® AMMOS
- ◆ Software compatible with R&S® EB200 – for simple upgrades of existing systems

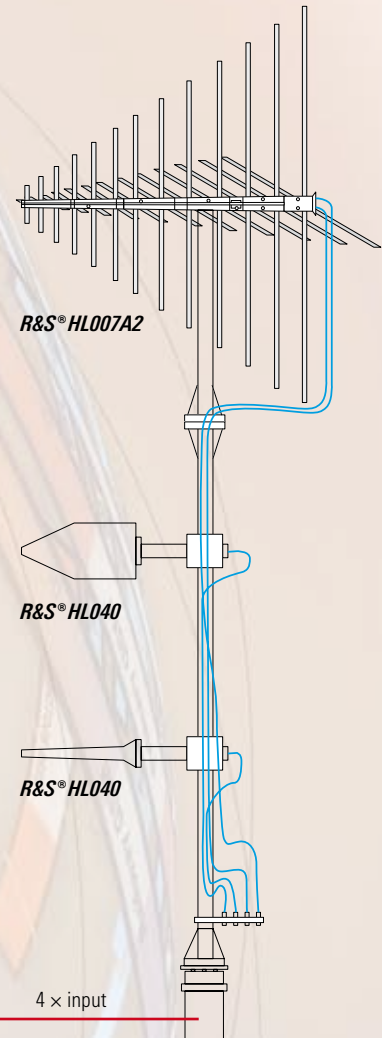
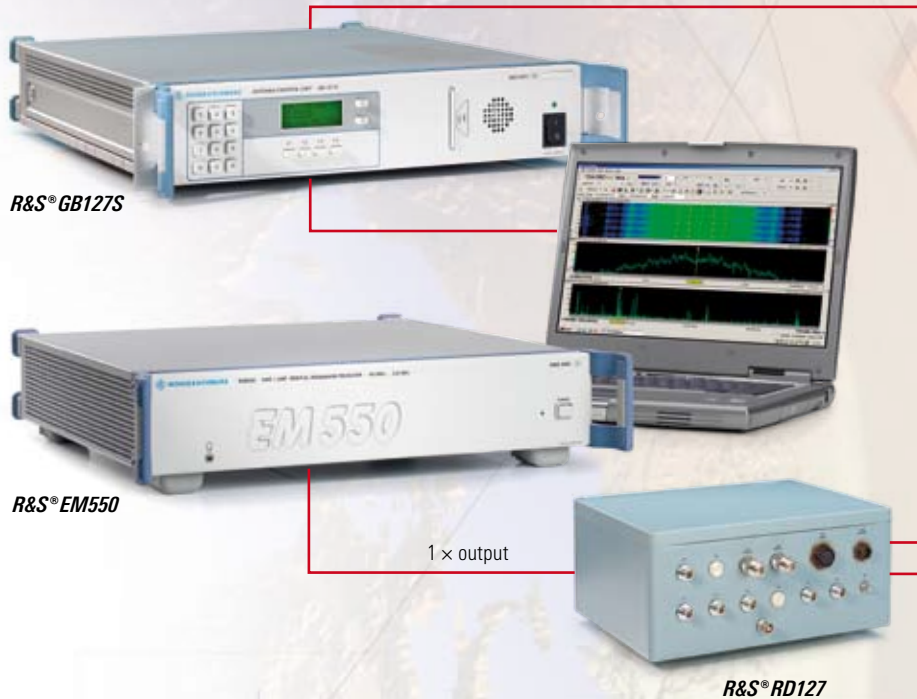


### Directional reception from 80 MHz to 3 GHz

- ◆ Horizontal and vertical polarization
- ◆ Antennas are oriented using an azimuth rotor
- ◆ Optimum reception of signals with directional antennas

#### R&S® EM550

- ◆ Spectrum monitoring in accordance with ITU recommendations
- ◆ Fast signal searching
- ◆ Broadband signal analysis



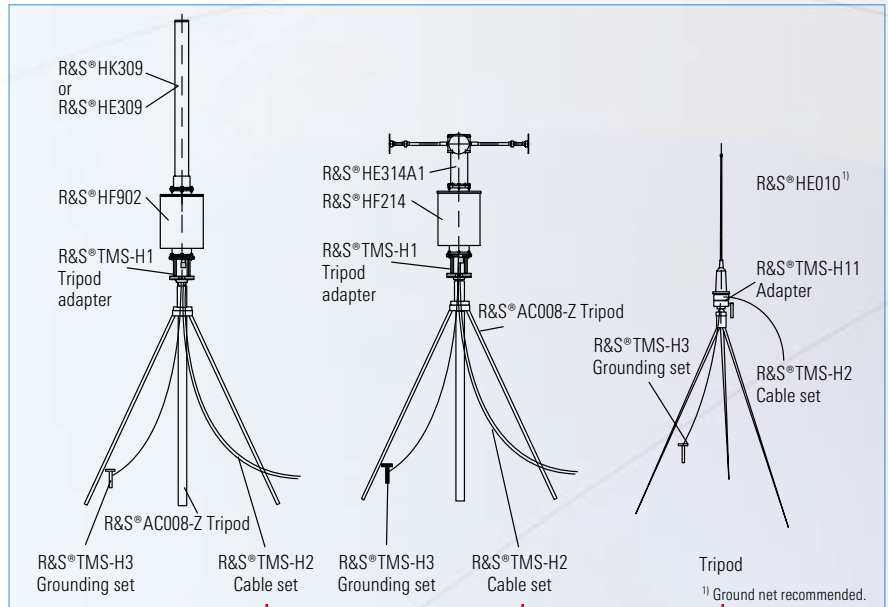
# Mobile/semimobile deployment

## Omnidirectional reception from 10 kHz to 3 GHz

- ◆ Tripod setup of antennas detached from vehicle
- ◆ Signal distribution and receiver integrated into vehicle
- ◆ Fast setup and takedown

### R&S® ESMB

- ◆ Compact device, ideal for use in vehicle
- ◆ Spectrum monitoring in accordance with ITU recommendations
- ◆ Usable for range, coverage, and field strength measurements



R&S® ESMB in ruggedized box



R&S® ZS129A1



## Omnidirectional reception from 1.5 MHz to 600 MHz

- ◆ Ruggedized design for use in vehicles
- ◆ Deployable close to powerful interference sources
- ◆ Very high dynamic range

### Examples of services that can be received:

- ◆ Shortwave communications
- ◆ Tactical communications
- ◆ ATC aeronautical radio
- ◆ VHF/UHF aeronautical radio
- ◆ Radio and television broadcast signals
- ◆ Public safety communications systems
- ◆ ISM band (433 MHz)
- ◆ SRD (short range devices)



R&S® HE055



Omnidirectional

1-to-2 power splitter



For mobile applications:  
R&S® EM510/550

## Omnidirectional reception from 20 MHz to 3 GHz

- ◆ Ruggedized design for use in vehicles
- ◆ Compact design combined with vehicle installation makes it possible to reach locations close to the transmission site for receiving even very low-amplitude signals
- ◆ The antenna can also be installed on a non-conductive surface or on a mast

### R&S® ESMD

- ◆ Realtime bandwidth of 20 MHz (extendable)
- ◆ Microwave expansion up to 26.5 GHz and HF expansion down to 9 kHz
- ◆ DC powering from vehicle
- ◆ 19" width for rack mounting

### Examples of services that can be received:

- ◆ Shortwave communications (partial)
- ◆ Tactical communications
- ◆ ATC aeronautical radio
- ◆ VHF/UHF aeronautical radio
- ◆ Radio and television broadcast signals
- ◆ Public safety communications systems
- ◆ ISM bands (433/868 MHz, 2.4 GHz)
- ◆ GSM 900/1800
- ◆ AMPS/DECT/UMTS
- ◆ SRD (short range devices)



R&S® HE500

Omnidirectional

**NEW**



R&S® ESMD

## Directional reception from 400 MHz to 3 GHz

- ◆ Good system sensitivity due to high antenna gain
- ◆ Concealed installation possible
- ◆ Determination of the signal's direction of incidence
- ◆ System completely installed in vehicle (no setup and takedown required at site of use)



R&S® HL040

Directional

**NEW**



R&S® EM100

### Examples of services that can be received:

- ◆ ISM bands (433/868 MHz, 2.4 GHz)
- ◆ GSM 900/1800
- ◆ AMPS/DECT/UMTS
- ◆ SRD (short range devices)



### R&S® EM100

- ◆ Remotely controlled operation regardless of installation site
- ◆ Audio monitoring of transmissions via audio interface
- ◆ Demodulation and recording of received signals
- ◆ Data transfer via LAN
- ◆ DC powering from vehicle
- ◆ Half 19" width for rack mounting

# Portable use

## Directional reception from 9 kHz to 7.5 GHz (R&S® HE300)

- ◆ Handy antenna
- ◆ Coverage of a wide frequency range due to fast change of modules (plug-in installation)
- ◆ Concealed use possible by installing in a standard suitcase
- ◆ Monitoring of very weak signals by situating the inconspicuous receiving system close to the source
- ◆ Location of transmission sources ("homing")



## R&S® PR100

- ◆ Handy, portable receiver
- ◆ Frequency range 9 kHz to 7.5 GHz
- ◆ Realtime bandwidth of 10 MHz
- ◆ Large, easy-to-read display
- ◆ Marker function for fast signal evaluation
- ◆ Up to four hours of operation with rechargeable battery



## Examples of applications



*Searching for interference sources in areas with sensitive equipment*



*Fast setup and takedown of the receiving system in areas hazardous to the operating personnel*



*Searching for bugs in restricted areas*

## R&S® EB200



*Tried and tested in many different application scenarios!*



**ROHDE & SCHWARZ**

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