



# RF AirAnalyzer

Digital protocol analyzer for PMR radio systems

The RF AirAnalyzer is a highly versatile measuring instrument for analyzing different professional mobile radio (PMR) systems. It logs system data on the air interface and its compact size makes it perfect for mobile use.





# RF AirAnalyzer 8150

## Measuring instrument for professional mobile radio systems

The RF AirAnalyzer is the optimum measuring instrument for analyzing existing mobile radio networks in detail and is exceptionally easy to use: Your own laptop with the requisite software licenses is connected to the measuring instrument via an Ethernet connection. Thanks to its compact size and robust design, the AirAnalyzer is perfect for mobile use.

Extensive functions allow users to quickly and easily obtain detailed results. The measured data is directly processed and visually displayed. The user-friendly software design and the versatile search and filter methods ensure that you can work effectively.

### Versatile use

- Conduct quality analyses of the air interface and services
- Analyze voice communication and quality
- Perform interoperability checks
- Ensure critical communications through resource monitoring
- Locate carrier and interference problems
- Examine problems during the introduction of new system technologies
- Take mobile radio coverage measurements
- Analyze and perform maintenance on a PMR network
- Verify security features



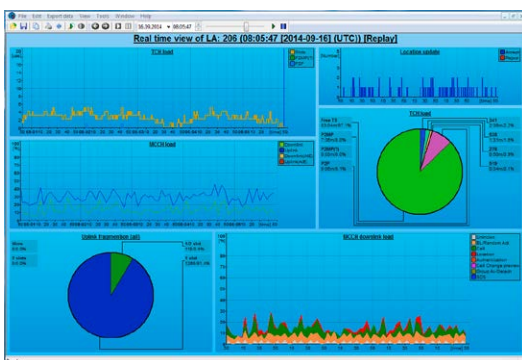
### The technology at a glance

The 8150 AirAnalyzer receives data from the air interface of the network being examined. The analysis always delivers very precise results, regardless of the manufacturer of the radio system.

The highly sensitive receivers enable the simultaneous analysis of the complete uplinks and downlinks of several carriers. The received data is decoded in real time and transferred to a computer for storage purposes.

With the help of different analysis software, the data can be analyzed in more depth simultaneously or at a later time, without the need for a direct connection to the measuring instrument. The 8150 RF AirAnalyzer supports the analysis of all important layers defined by the protocol.

The software is distinguished by its particularly intuitive user interface. Views can be adjusted expediently using different filters, for example, and large volumes of data can be selectively reduced using protocol and subscriber filters. This enables clear and effective searching of the communication protocols.



Quality of Service Analyzer

## Extensive analyses

The recorded data is stored as raw data on the hard disk of the computer. To evaluate the protocol, the raw data can be analyzed, filtered and displayed.

### ■ Message Sequence Chart (MSC)

The MSC depicts the complex communication flow in the signaling between the terminal and the base station in a user-friendly and detailed way.

### ■ Voice decoder

The voice decoder is able to check the voice quality in real time to ensure that it is always high. The data can be saved in WAV format for further analysis.

### ■ Scanner

All the available carriers are represented with their broadcast parameters in a selectable frequency range. A clear visualization shows parameters such as the current occupation of channels, the power received or frequency errors. The examination of the current network status takes both quality and quantity into account.

## Flexible expansion (selection)

In addition to the standard functions, the analysis software can be expanded with a large number of functions.

### ■ Quality of Service (QoS) Analyzer

Determines the network quality using the SDS parameters, call setup times, conversations in the queue, call priorities, cell utilization, etc. Expansion option: Depicts the capacity utilization and use of the channels by the current groups or group calls. This enables the user to identify when resources are being utilized to full capacity in good time so that they can remedy the situation.

### ■ IQ-Analyzer (Physical Data Analyzer)

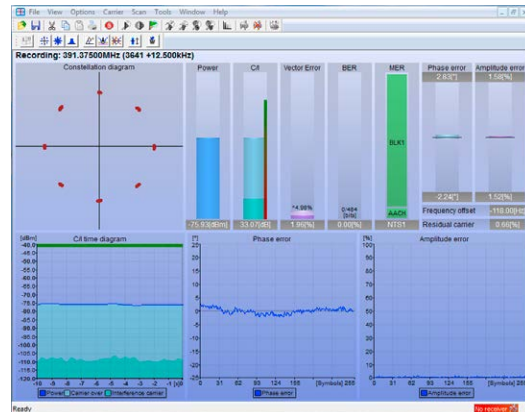
Measures all relevant IQ data of a base station (e.g. the spectrum of the carrier, peak, C/I and RMS vector errors as well as the base station's constellation display).

### ■ Scanner Analyzer

Displays neighborhood relations of base stations as well as the offline analysis of the scanner results. Records all carriers in the selected frequency spectrum with automatic fault analysis in the relationships between the neighbor cells.

### ■ Direct Mode Option (DMO)

Enables the full analysis potential for direct communication between terminals (DMO terminals, repeaters and gateways).



IQ-Analyzer

## DecryptAir®

The DecryptAir® is an optional decryption device which, in combination with the 8150 RF AirAnalyzer, enables encrypted mobile radio networks to be analyzed.

Statically or dynamically encrypted radio communications (air interface encryption) can be analyzed with the DecryptAir. Messages are automatically decrypted in the uplink and downlink for analysis.

Corresponding authentication and encryption algorithms, which are securely saved on the DecryptAir®, are required for this to work.

Besides the secure storage of the algorithms, the DecryptAir® also offers the advantage of providing a simple and quick connection to the analysis computer with its compact design and USB interface.



### ■ AirAnalyzer Coverage Test Software Option GeoMap

Enables the signal power measurements and different error rates to be linked to GPS position data from the user's location. The positions of terminals can also be displayed. The measurements are depicted in real time. The data provides information about the readings for signal power, frequency errors and the best server of multiple channels in the downlink.

## Technical Data AirAnalyzer

### Technical Specifications

|                   |                                   |
|-------------------|-----------------------------------|
| Chassis           | 19-inch chassis, 3 RU             |
| Temperature range | 0°C to +50°C                      |
| Voltage supply    | 100 V - 240 V AV, 47 - 63 Hz      |
| Power consumption | < 60W                             |
| Other connections | Ethernet, USB, RS232, Digital I/O |
| Weight            | < 5,5 kg                          |

### Receiver

|   |  |
|---|--|
| Number of RF receivers                                      | 2  |
| Frequency range   | 100 MHz - 1.000 MHz  |
| Max. input power  | 30 dBm (High Power Path)   |
| Connector   | two N-sockets  |
| Bandwidth   | 10 MHz (each receiver)   |
| Supported TETRA frequency ranges                            | no limitations   |
| Number of channel frequencies within a 10-MHz downlink band | All  |
| Sensitivity<br>RSSI measurement<br>BER in payload           | -124 dBm<br>100 to 500 MHz: typical -120 dBm<br>100 to 500 MHz: < -118 dBm<br>500 to 950 MHz: typical -117 dBm<br>500 to 950 MHz: < -115 dBm |
| IFDR (Intermodulation-Free Dynamic Range)                   | -75 dBc  |
| Dynamic range   | > 80 dB  |

### DecryptAir

|                        |                       |
|------------------------|-----------------------|
| Dimensions (w x h x d) | 62 mm x 32 mm x 90 mm |
| Weight                 | < 120 g               |
| Interfaces             | USB 2.0 Steckertyp B  |

## Services

In addition to powerful technology, we offer you services that are individually tailored to your needs. Our range of services includes the calibration and maintenance of devices, as well as the option to extend the warranty.

This means you can ensure optimal performance and availability of your fjord-e design product at low, calculable operating costs. Thanks to the extensive range of services provided, you benefit from guaranteed availability and a longer product service life for the device.

We offer specially tailored training covering all aspects of mobile radio network analysis. We concentrate primarily on your measurement problems, in addition to the measuring instruments. The training is suitable for beginners as well as specialists. Upon request, we will be happy to develop seminars that are specifically tailored to your needs. They can even be held at your company premises if desired.



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Encryption features are optional and have to be configured separately; they are also subject to German and European export regulations.

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