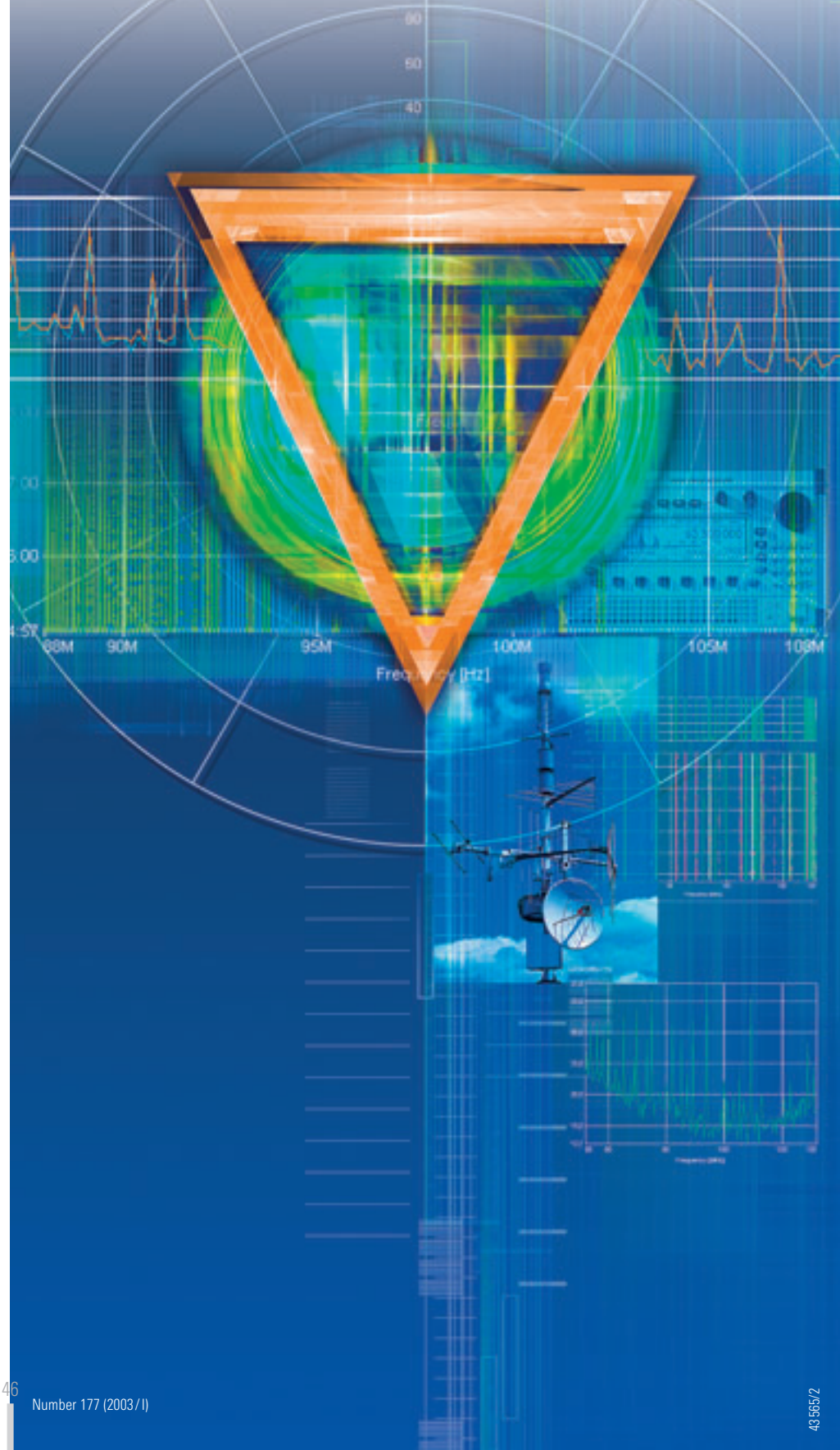
Spectrum Monitoring Software R&S ARGUS

The successful "classic" now available as version 5



Spectrum Monitoring Software R&S ARGUS is the core of the software packages for the Spectrum Monitoring and Management System R&S ARGUS-IT [1, 2] and the Coverage Measurement System R&S ARGUS-FMTV [3]. The comprehensive software package has been continuously developed and updated since 1987 for various operating systems from MS-DOS to Windows™ XP. Version 5 of R&S ARGUS is now available. Numerous customer requests and extensions such as the latest ITU recommendations have been implemented in this version.

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Rich in innovations

Spectrum Monitoring Software R&S ARGUS provides a variety of modes and routines for measuring and evaluating electromagnetic emissions in line with ITU recommendations. It can be scaled by using modular components, whether for the control of single instruments [4] or the operation of a nationwide radiomonitoring system with many fixed, mobile and transportable stations [5]. The modular structure of the software with options permits customized solutions to be configured for individual requirements.

Version 5.0 of R&S ARGUS is now available featuring a large number of customer requests and extensions such as the latest ITU recommendations. The software is also user-friendly and easier to operate. The most important modifications compared to version 4.4 are described in this article.

R&S ArgusMon and R&S ArgusEval combined into R&S ARGUS

The most important innovation is the combination of Measurement Software R&S ArgusMon and Evaluation Software R&S ArgusEval to form Monitoring Software R&S ARGUS. Data no longer needs to be transferred between the two software packages, and all tasks can be centrally controlled. In addition, R&S ARGUS data from all test stations rather than from just one can now be displayed and processed.

Order/report module

Owing to the new, optional order/report module (ORM), other applications can send orders to R&S ARGUS and receive results in the form of reports (FIG 1). This is done by exchanging extensible markup language (XML) files between the software packages (blue in FIG 2). For instance, a spectrum management system can now send measurement orders to the monitoring software. R&S ARGUS returns the results after the measurements, which are then compared to predicted values with the aid of planning tools. The measurements can be performed either fully automatically by R&S ARGUS or manually using R&S ARGUS.

Orders may contain suborders for various stations. For instance, if R&S ARGUS receives an order at station 1, it processes the suborders for station 1, then forwards the order to the next station for processing, and so on. The last station in the chain returns the complete report to station 1, which sends it to the application from which the order was received (FIG 2). A network has to be set up in this case and the ORM option must be installed in each station. R&S ARGUS can also send orders to itself and to other stations and will then receive the reports.

Interface to spectrum management database

Via this interface, transmitter data as well as assigned and non-assigned frequencies can be queried and imported from the spectrum management database according to specific criteria. The interface uses the same method and XML format as the order/report module.

Difference measurement module

The new difference measurement module (DIFF) is available as an option for the automatic measurement mode. It permits simultaneous difference measurements to be performed with two receivers. The measured frequency spectra of the two receivers and their difference are displayed. Settable thresholds are available for noise suppression so that only relevant information is indicated. Emissions in monitored rooms can be detected, for instance, by comparison with a reference room (FIG 3). Even cable defects can be determined with this method.

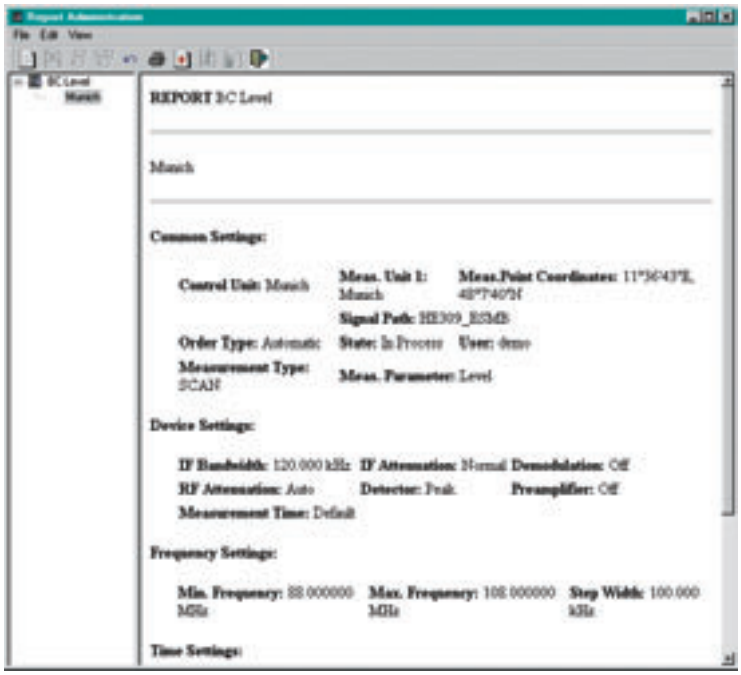


FIG 1
Typical R&S ARGUS report.

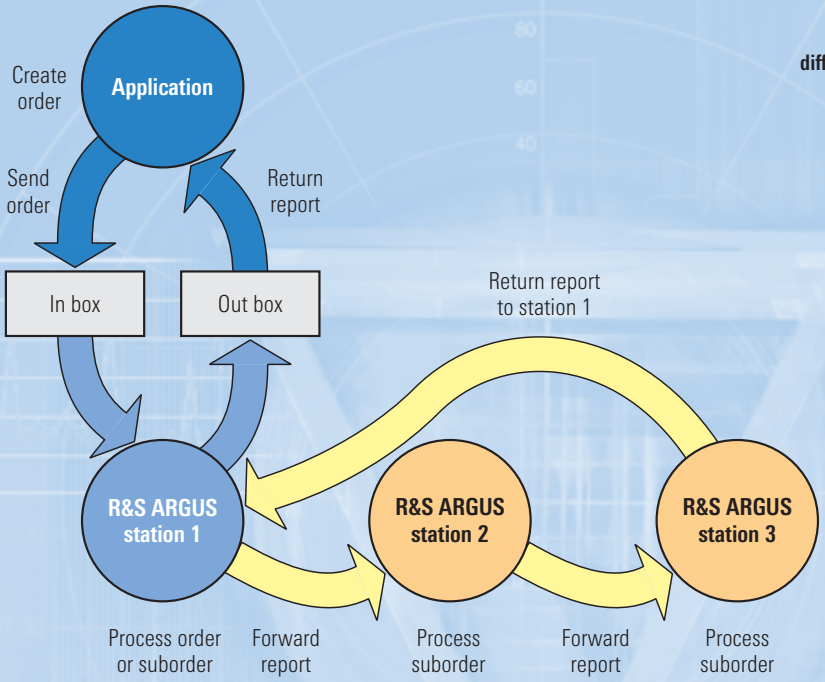
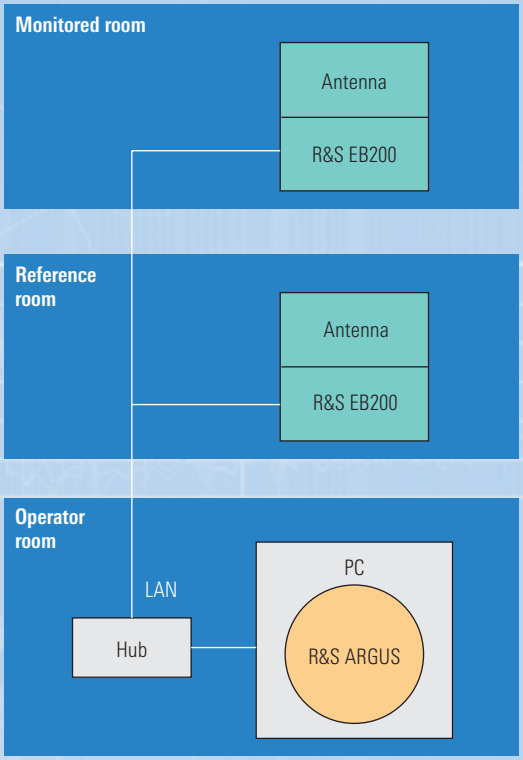


FIG 2 Order/report processing with one or more stations.

FIG 3 Basic setup for difference measurements.



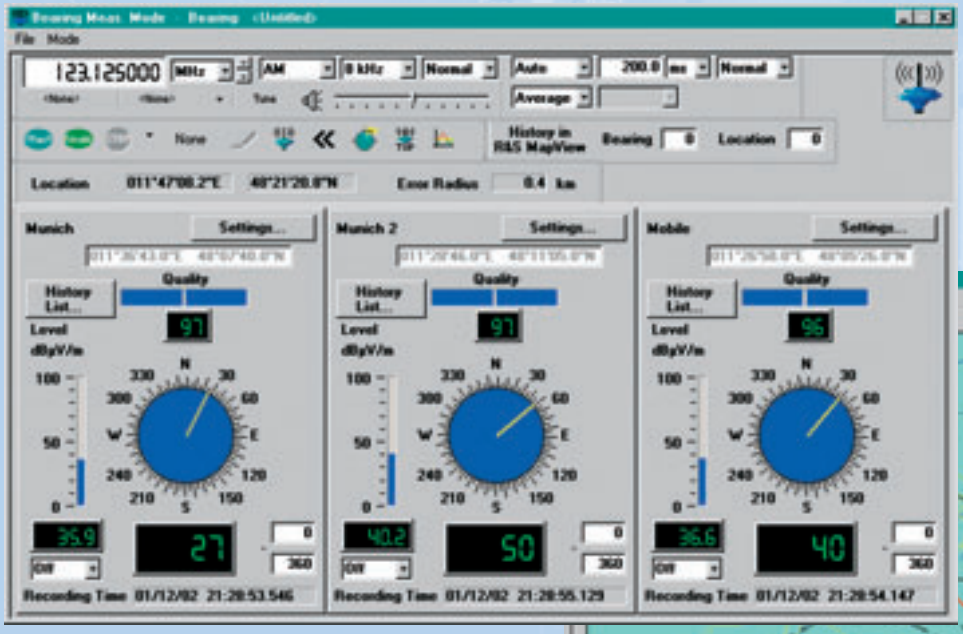


FIG 4 New dialog window for the bearing measurement mode.

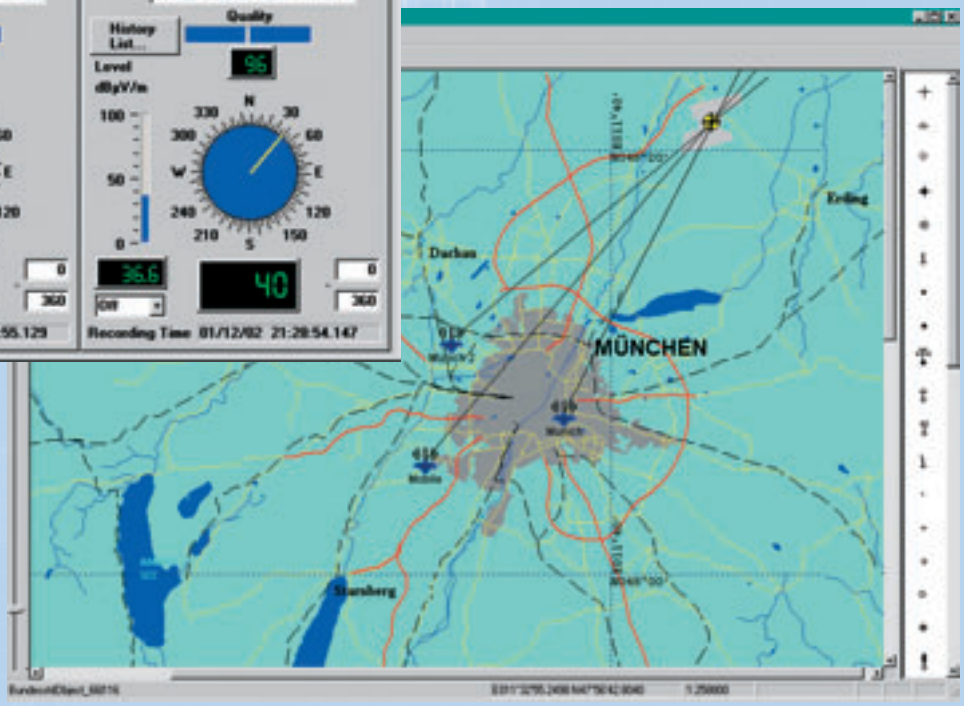


FIG 5 Geographic Information Software R&S MapView.

Intermodulation analysis

If the originating frequencies of intermodulations are known, they can be directly specified for intermodulation analysis. The desired number of originating frequencies can also be exactly determined. These two new features considerably simplify the search for originating frequencies.

Bearing measurement mode

The user interface of the bearing measurement mode was completely revised to simplify operation with several DF stations (FIG 4). An aspect deserving special mention is that entered frequencies are automatically buffered in a history list so that they are available whenever required. Bearings can also be automatically stored and displayed by the Geographic Information Software R&S MapView (FIG 5). The dialog window of the bearing measurement mode can always be displayed in the foreground so that settings are no longer covered by R&S MapView.

Automatic measurement mode

Several innovations have improved the automatic measurement mode.

Saving measurement results

All or no measurement results as well as preprocessed results can be saved. The following can be selected:

- Only the maximum value is saved for each measured frequency (MaxHold)
- The maximum, minimum and average values measured within a user-defined period are saved for each frequency
- All values measured during an alarm are saved
- Only the values measured at the beginning and the end of an alarm are saved
- All values measured during an alarm are saved; outside the alarm, the maximum, minimum and average values measured within a user-defined period are saved for each frequency

Since modern receivers may provide a considerable amount of data, these functions, selectable in the Measurement Definition window (FIG 6), will help reduce the number of measurement results. If all measurement results are stored, they can be processed at a later time. This is of particular advantage if the results are stored in a remote-controlled measurement station. In this case, only the evaluated results have to be transmitted via the network.

Improvements in brief

- R&S ARGUS now runs under Windows™ XP / 2000 / NT 4.0.
- Frequency assignment was revised in line with the new ITU manual.
- Limit lines can be entered in a mask that can be easily shifted to a frequency. This is of great importance when measuring digital signals that have to meet specific criteria.
- Frequency lists can be generated directly from measurement results. Only frequencies with results above a specific threshold will be considered.
- General transmitter data can be imported and exported by R&S ARGUS also in dBase, Excel, Access, text and HTML formats.
- The Switch Unit R&S ZS 129 A1 is supported (page 44).
- The RF Step Attenuator R&S DPSP as well as manual attenuation or amplifier switches can be easily integrated and operated in the software.
- Live graphics can be stored as images.
- Receivers or analyzers with two inputs can be integrated in the software so that the correct input is always used when a system path (antenna/receiver) is selected.
- MaxHold data can also be stored in the interactive measurement mode.
- In measurement statistics, the number of measurement results can be displayed in addition to the percentage.
- All manuals and the link to the ARGUS homepage can be opened from the help menu.
- Data and programs may be stored on different hard disks or in different partitions. Data can therefore be stored on backup media without storing the whole program.
- Detailed glossary.

Radiolocation now also by means of transmitter list scans

Tiresome conversion of transmitter lists to frequency lists is therefore no longer required.

Limit values in the transmitter lists may be directly used as alarm conditions

No more tedious setting of limit values in a separate dialog window.

New user manuals

The new interactive user manuals for R&S ARGUS-IT and R&S ARGUS-FMTV (FIG 7) will help users to quickly and efficiently familiarize themselves with the software. The most common, typical measurement tasks and their solutions are explained step by step with the aid of examples.

Another step ahead

Version 5.0 of R&S ARGUS meets many new customer requirements. The large number of improvements and additions makes the software easier to operate and increases productivity.

Jörg Pfitzner

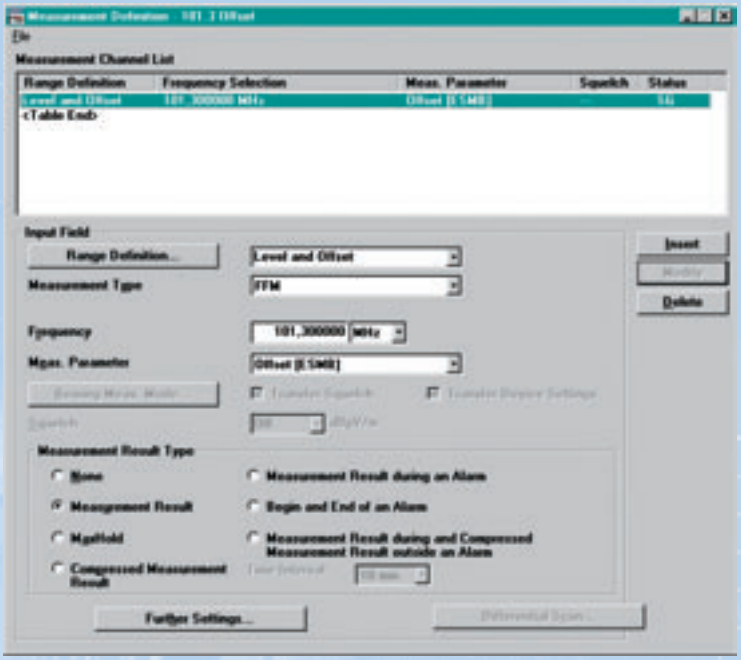


FIG 6 Measurement Definition window.

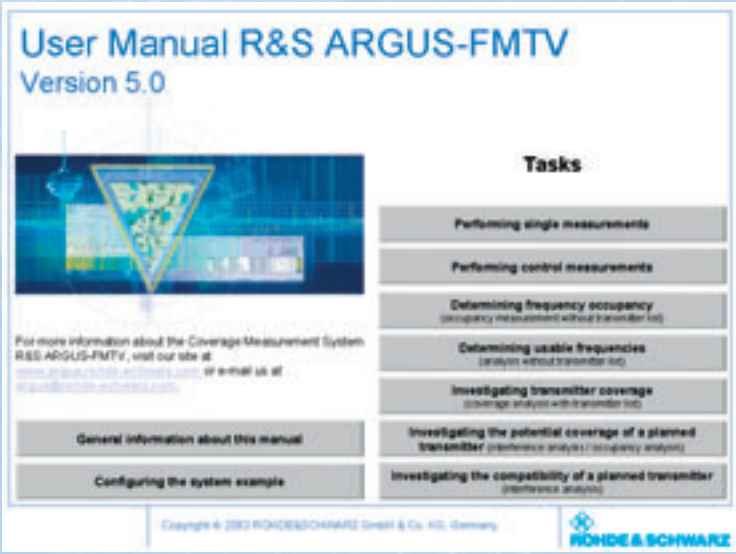


FIG 7 Interactive user manual for R&S ARGUS-FMTV

More information, data sheets and technical information sheets at www.argus.rohde-schwarz.com or www.rohde-schwarz.com

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[1] Spectrum monitoring and management system for Sri Lanka – Electromagnetic waves do not stop at frontiers. News from Rohde & Schwarz (2000) No. 168, pp 40–42

[2] Transportable Monitoring and Direction Finding Systems R&S TMS – Versatile solutions for spectrum monitoring. News from Rohde & Schwarz (2002) No. 175, pp 47–51

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[4] Miniport Receiver EB200 / Compact Receiver ESMC – Minireceivers: remote control lends weight to network role. News from Rohde & Schwarz (1999) No. 165, pp 16–17

[5] Nationwide radiomonitoring system for Nicaragua. News from Rohde & Schwarz (2002) No. 176, p 45