R&S®VEGA Suite
Detailed media file analysis
The R&S®VEGA Suite contains software tools for in-depth offline analysis of media files on a PC. Broadcast operators and service providers can use this software to find deep-lying signal errors and optimize content. Manufacturers of DTV components use the R&S®VEGA Suite to check that their products are standard compliant, for quality assurance testing and to improve performance. The software is ideal for analyzing compressed audio and video signals, MPEG-2 transport streams and MXF files.

The R&S®VEGA Suite consists of three products. R&S®VEGA-H264 is for detailed analysis of video and audio signals. R&S®VEGA-TSA is for analyzing MPEG-2 transport streams and MXF files. R&S®VEGA-SYNC is for checking audio-video synchronization.

The R&S®VEGA Suite supports the latest standards and technologies, making it especially useful for developers of DTV components and devices such as encoders, multiplexers and transcoders. Many video formats can be analyzed, including H.264, H.264 SVC, H.264 MVC and VC-1. Supported audio formats include MPEG and a number of Dolby standards. Data streams such as teletext, DVB subtitling, closed captioning and EPG can also be analyzed.

The Interra software is the perfect complement for the R&S®DVMS digital TV monitoring system, the R&S®DVM400 digital video measurement system and the R&S®ETL TV analyzer. The R&S®VEGA Suite software was developed by Interra Systems. Rohde & Schwarz has a long-standing cooperation with this company.

Key facts
- Support of the latest standards and technologies
- Detailed analysis capabilities
- Comprehensive visualization functions
- Batch mode for checking multiple files (R&S®VEGA-K11 option)
**R&S®VEGA Suite**

**Benefits and key features**

- **In-depth audio and video analysis – R&S®VEGA-H264**
  - Support of broad range of DTV standards
  - Extensive video analysis functions
  - Extensive audio analysis functions
  - Support of several data applications
  - Automated analysis of multiple files – batch mode (R&S®VEGA-K11)
  - Comparison of two video signals – video comparator (R&S®VEGA-K13)
  - page 4

- **Comprehensive MPEG-2 transport stream analysis – R&S®VEGA-TSA**
  - Extensive analysis functions (MPEG-2 transport streams)
  - Support of characteristics specific to various digital TV standards
  - Special analysis features for data services
  - Comprehensive analysis of MXF streams
  - Support of PCAP files
  - page 5

- **Precise audio-video synchronization analysis – R&S®VEGA-SYNC**
  - Support of numerous standards
  - Extensive analysis functions
  - page 6

**Use of the R&S®VEGA Suite**

Any recorded TS files, for example from the

- R&S®ETL
- R&S®DVMS
- Files from any device/software

Detailed offline analysis on a PC using the R&S®VEGA Suite
Support of broad range of DTV standards

- **Video:** H.264, H.263, H.263+, MPEG-4, MPEG-1, H.264 SVC (R&S®VEGA-K4), H.264 MVC (R&S®VEGA-K5), MPEG-2 (R&S®VEGA-K2), VC-1 (R&S®VEGA-K6), AVS (R&S®VEGA-K3)
- **Audio:** AAC, AMR, MP3, PCM, LPCM, MPEG-1/2 Audio, WMA, Dolby AC-3/Dolby Digital Plus (R&S®VEGA-K7), Dolby E (R&S®VEGA-K8)
- **Data:** XDS, JPEG, JPEG2000, closed captioning (R&S®VEGA-K9)
- **Container:** MPEG-2 transport stream (DVB, ATSC, ISDB), MPEG-2 program stream/DVD VOB, MPEG-1 systems, MP4, 3GPP/3GPP2, AVC, AVI

Extensive video analysis functions

- Support of all profiles and levels
- Display of sequence, VOL, picture, VOP, macroblock, slice, NAL unit, and binary data for each picture
- Display of frame statistics to analyze interpolation, prediction mode, coded bits, and frame size
- Generation of encoder performance and quality metrics graphs
- Buffer analysis: CPB, VBV, VMV, VCV
- Display of hierarchy for SVC layers
- Display of multiple views for H.264 MVC

Support of several data applications

- Closed captioning
- XDS
- JPEG/JPEG2000

Automated analysis of multiple files – batch mode (R&S®VEGA-K11)

- Command interface for batch analysis of multiple streams
- Automated storage of analysis results to project folder
- Use of R&S®VEGA-H264 GUI to browse and examine coding details of streams and to navigate to error locations

Comparison of two video signals – video comparator (R&S®VEGA-K13)

- Analysis of statistical details of an H.264 stream by displaying the differences between two video streams
- Thumbnails of pictures in the stream
- Summary information at format-specific level and sequence level
- Display of parameters and properties of both streams
- Summary information on differences including location, type and value
- Statistical details of the video stream in text and graph mode at picture level, sequence level and stream level
Comprehensive MPEG-2 transport stream analysis — R&S®VEGA-TSA

Extensive analysis functions (MPEG-2 transport streams)
- Profile, level, resolution, bit rate and more
- Stream occupancy and packet distribution statistics
- Bandwidth statistics for all programs
- Display of packet header, PES header, SI, PSI, PSIP and more
- PCR/PTS inaccuracy and intervals, PCR jitter and drift rate, PCR frequency offset, PTS/DTS analysis
- TR 101 290 priority and CableLabs checks
- T-STD buffer analysis

Support of characteristics specific to various digital TV standards
- DVB
- ATSC
- ISDB

Special analysis features for data services
- DVB subtitling
- Teletext
- EPG
- DSM-CC
- CableLabs VoD

Comprehensive analysis of MXF streams
- Partitions and their top-level contents
- MXF structures and descriptors
- Source package tracking

Support of PCAP files
- RTSP, SIP, H.264, H.263, SDP and RTP
Precise audio-video synchronization analysis – R&S®VEGA-SYNC

Support of numerous standards
- **Video**: H.264, MPEG-4, MPEG-2
- **Audio**: AAC, Dolby AC-3, Dolby Digital Plus, Dolby E, MP3, AES3/LPCM, MPEG-1/MPEG-2 Audio
- **Container**: MPEG-2 transport stream (DVB, ATSC, ISDB), MPEG-2 program stream/DVD VOB, MP4

Extensive analysis functions
- Detailed insight into sync points: packet number, frame number, PTS value and more
- Manual/automatic detection of sync points
- Channel-wise summary information: audio/video index, sync points, out-of-sync points, PTS, and PTS differences
- Quick forward and backward navigation across PTS timeline
- Support of comprehensive set of audio-video synchronization test patterns
- Coarse sync measurements using packet sync feature
- Customization options for tolerance levels and more
## Ordering information

<table>
<thead>
<tr>
<th>Designation</th>
<th>Type</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>R&amp;S®VEGA Suite</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TS Analyzer</strong></td>
<td>R&amp;S®VEGA-TSA</td>
<td>2116.8000.02</td>
</tr>
<tr>
<td>including USB dongle, printed installation instructions and CD with software and license file</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>AVSync Analyzer</strong></td>
<td>R&amp;S®VEGA-SYNC</td>
<td>2116.8100.02</td>
</tr>
<tr>
<td>including USB dongle, printed installation instructions and CD with software and license file</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>H264 Analyzer</strong></td>
<td>R&amp;S®VEGA-H264</td>
<td>2116.8200.02</td>
</tr>
<tr>
<td>including USB dongle, printed installation instructions and CD with software and license file</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### H264 Analyzer options

- **MPEG-2 Video**
  - R&S®VEGA-K2
  - 2116.8216.02

- **AVS Video**
  - R&S®VEGA-K3
  - 2116.8222.02

- **SVC (Scalable Video Codec)**
  - R&S®VEGA-K4
  - 2116.8239.02

- **MVC (Multiview Video Codec)**
  - R&S®VEGA-K5
  - 2116.8245.02

- **VC-1 Video**
  - R&S®VEGA-K6
  - 2116.8251.02

- **Dolby Digital Plus/AC-3 Audio**
  - R&S®VEGA-K7
  - 2116.8268.02

- **Dolby E Audio**
  - R&S®VEGA-K8
  - 2116.8274.02

- **CC 708 (Closed Captioning)**
  - R&S®VEGA-K9
  - 2116.8280.02

- **Batch Mode and Command Line**
  - R&S®VEGA-K11
  - 2116.8300.02

- **DVB-H**
  - R&S®VEGA-K12
  - 2116.8316.02

- **Video Comparator**
  - R&S®VEGA-K13
  - 2116.8322.02

- **Maintenance**
  - R&S®VEGA-K20
  - 2116.8400.02

### Software licensing

Use of the software requires a dongle with a matching license file. The dongle and the license file are included with R&S®VEGA-TSA, R&S®VEGA-H264 and R&S®VEGA-SYNC. The license file enables all purchased options and supports new software versions released during the maintenance period.

### Maintenance

The maintenance feature is required for product support and allows the use of new software versions. Six months of maintenance are included with the purchase of the software. Additional maintenance time can be purchased in one year increments.

### System requirements

<table>
<thead>
<tr>
<th></th>
<th>Operating system</th>
<th>Processor</th>
<th>RAM</th>
<th>Disk space</th>
<th>Display</th>
</tr>
</thead>
<tbody>
<tr>
<td>R&amp;S®VEGA-H264</td>
<td>Windows XP, Windows 7</td>
<td>quad-core processor (i3 or i5) (min. Core 2 Duo 1.8 GHz)</td>
<td>4 Gbyte (min. 1 Gbyte)</td>
<td>min. 20 Gbyte</td>
<td>min. 1024 x 768 pixel</td>
</tr>
<tr>
<td>R&amp;S®VEGA-TSA</td>
<td>Windows XP, Windows 7</td>
<td>quad-core processor (i3 or i5) (min. Core 2 Duo 1.8 GHz)</td>
<td>4 Gbyte (min. 1 Gbyte)</td>
<td>min. 20 Gbyte</td>
<td>min. 1024 x 768 pixel</td>
</tr>
<tr>
<td>R&amp;S®VEGA-SYNC</td>
<td>Windows XP, Windows 7</td>
<td>quad-core processor (i3 or i5) (min. Core 2 Duo 1.8 GHz)</td>
<td>4 Gbyte (min. 2 Gbyte)</td>
<td>min. 20 Gbyte</td>
<td>min. 1024 x 768 pixel</td>
</tr>
</tbody>
</table>

Your local Rohde & Schwarz representative will help you determine the optimum solution for your requirements. To find your nearest Rohde & Schwarz representative, visit [www.sales.rohde-schwarz.com](http://www.sales.rohde-schwarz.com)
About Rohde & Schwarz
Rohde & Schwarz is an independent group of companies specializing in electronics. It is a leading supplier of solutions in the fields of test and measurement, broadcasting, radiomonitoring and radiolocation, as well as secure communications. Established more than 75 years ago, Rohde & Schwarz has a global presence and a dedicated service network in over 70 countries. Company headquarters are in Munich, Germany.

Environmental commitment
- Energy-efficient products
- Continuous improvement in environmental sustainability
- ISO 14001-certified environmental management system

Rohde & Schwarz GmbH & Co. KG
www.rohde-schwarz.com

Regional contact
- Europe, Africa, Middle East
  +49 89 4129 123 45
customersupport@rohde-schwarz.com
- North America
  1 888 TEST RSA (1 888 837 87 72)
customer.support@rsa.rohde-schwarz.com
- Latin America
  +1 410 910 79 88
customersupport.la@rohde-schwarz.com
- Asia/Pacific
  +65 65 13 04 88
customersupport.asia@rohde-schwarz.com