

## Release Notes for Firmware Version V3.21

This help describes version V3.21 and higher of the R&S ZVL firmware. Compared to the previous firmware version V3.20, the following issues have been fixed:

- Network Analysis: Spikes at 3 frequencies removed.
- Network Analysis: Bug fix for steep limit lines covering no measurement points.
- Network Analysis: Spurious responses at frequencies <7.2 MHz eliminated.
- Spectrum Analysis option (R&S ZVL-K1): Spurious response at approx. 35 MHz eliminated.
- Spectrum Analysis option (R&S ZVL-K1): Correction of trace discontinuities at large IF.
- Spectrum Analysis option (R&S ZVL-K1), model R&S ZVL3-75: Correction of measurement results in units which depend on the input impedance, e.g. dB $\mu$ V.



To check your R&S ZVL firmware version, click *Help – About Nwa...* Refer to section **Firmware Update** for information about an upgrade of your network analyzer firmware.



**Contents of this help and of your documentation CD-ROM**

This help system represents an up-to-date version of the R&S ZVL documentation including all new features of the current firmware version. An updated printable (.pdf) file and CD-ROM is provided for each major (2-digit) firmware version.

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### Product Improvements in Firmware Version V3.20 (Compared to V3.10)

- Various software improvements

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### New Features in Firmware Version V3.10 (Compared to V2.31)

- Support of **calibration unit** R&S ZV-Z53 (3 GHz, 75  $\Omega$ )
- Possibility of running the instrument without administrator rights; see **Operation with and without Administrator Rights** .

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### Product Improvements in Firmware Version V2.31 (Compared to V2.30)

- Coupled markers work correctly
  - Model R&S ZVL13: error in phase measurement at frequencies below 10 MHz corrected
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## New Features in Firmware Version V2.30 (Compared to V2.10)

- Support of R&S ZVL13 network analyzers. The R&S ZVL13 has an upper frequency limit of 15 GHz and a maximum RF source power of 0 dBm. The new analyzer type does not support the **point trigger** and **measurement delay** settings.
- The R&S ZVL complies with **LXI class C** .
- New softkeys (*FILE* -> **Recall Shortcuts** ) for fast recall of test setups.
- New commands `CALCulate<Chn>:MARKer:REFerence:MODE` and `CALCulate<Chn>:MARKer:REFerence:TYPE` , define the mode and type of the reference marker.

### Product improvements in firmware version V2.30

- `MMEMemory:STORe:TRACe:USER:...`  commands for custom headers in trace files included in documentation (available since firmware version V2.10).

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## New Features in Firmware Version V2.10 (Compared to V2.01)

- New spectrum analyzer option R&S FSL-K20 (Cable TV). Refer to the separate R&S ZVL-K1 help system.
- Model R&S ZVL3-75 supports option R&S FSL-K7, AM/FM/φM Measurement Demodulator.
- Support of 75 Ω calibration kits 85039B and 85039A
- Selectable **units of length** : metric units (m) or foot (ft)
- Custom **file header** for trace export files
- New remote command `DISPlay:WINDow:TRACe:SHOW` , displays or hides a trace or a group of traces.
- New remote command `DISPlay:WINDow:TRACe:EFFed` , displays a trace referenced by its name.
- Extended remote command `MMEMemory:STORe:TRACe` , also defines a decimal separator and a field separator.

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## Product Improvements in Firmware Version V2.01 (Compared to V2.00)

- Problem on switchover from AC power supply to battery supply solved.

## New Features in Firmware Version V2.00 (Compared to V1.25)

- New model R&S ZVL3-75 (75 Ω variant of R&S ZVL3). The new network analyzer model uses the 75 Ω calibration kit as a default kit.
- Option R&S ZVL-K3, **Time Domain** .
- Support of **external trigger**
- Sweeps may be started for **all channels** , or for the active channel only

- **Bandstop Search ref to Marker** searches the absolute minimum in the active search range. The response value for the lower and upper band edges is calculated as the response value at the active marker position plus / minus x dB, where x is equal to the <x dB Bandwidth> value.
- **New remote control features**
  - New command `INPut<port_no>:ATTenuation` , sets the attenuation for the received waves.
  - New command `CALCulate<Chn>:GDAPerture:SCount` , defines the number of aperture steps for the group delay calculation.
  - `CALCulate<Chn>:DATA` extended, can be used to write memory traces.
- **New spectrum analyzer features (option R&S ZVL-K1 and supplementary spectrum analyzer options)**
  - Support of Spectrum Emission Mask measurement in base spectrum analyzer
  - Support of Spurious Emission measurement in base spectrum analyzer
  - Support of RFID 14443 within ACP measurement
  - Support of range linear % as default linear display in spectrum mode
  - Support of y unit % within CCDF and APD measurement
  - Support of transducers in IQ measurements, CCDF/APD measurement as well as in video trigger mode
  - Support of Q factor reading in "n dB down" measurement
  - Within the MC ACP measurement, the TX spacing is now definable between every TX carrier
  - Marker peak list can not be exported as an ASCII list
  - Option R&S FSL-K93: Support for controlling the pre-amplifier via remote control
  - Option R&S FSL-K93: Support for setting hold-off and hysteresis settings for the IF power trigger
  - Option R&S FSL-K93: Closes point to failure points available via remote control for spectrum flatness and spectrum flatness difference results

### Product improvements in firmware version V2.00

- The mouse pointer is switched off when the mouse is disconnected from the instrument.
- The *Soft Frontpanel* key was moved up in the softkey tree (*SETUP -> General Setup -> More -> **Soft Frontpanel*** ).
- The source power range (see `SOURce<Ch>:POWER<Pt>[:LEVel] [:IMMediate] [:AMPliTude]` ) is limited to -70 dBm to +20 dBm.
- Command `MMEMory:LOAD:STATe` accepts file names with or without extensions.
- Power on/off key on the front panel may shut down the instrument or command it to **standby state** .
- Corrections to the help system: `[SENSe<Ch>:] CORRection:LOSS<port_no>:OFFSet <DC_loss>` defines the frequency-independent part (DC value) of the offset loss. R&S ZVR-compatible command `[SENSe<Ch>:] CORRection:OFFSet<port_no>:MAGNitude <DC_loss>` defines the frequency-independent part (DC value) of the offset loss. `[SENSe<Ch>:] CORRection:LOSS<port_no> <ref_loss>` defines the offset loss at the reference frequency.

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## New Features in Firmware Version V1.25 (Compared to V1.21)

- **S-parameter wizard** , provides settings for a standard S-parameter measurement
- **Ripple limit** test
- New measurement mode: **Embedding/deembedding** of a transformation network
- Export of **formatted traces**
- Absolute bandpass search (**bandpass/bandstop absolute level** )
- **New remote control features**
  - New command `CALCulate<Chn>:GDAPerture:SCount` , sets the number of aperture steps for the group delay calculation.

### Product improvements in firmware version V1.25

- Improved HP8714 parser emulation.

### Bug fixes in firmware version V1.25

- Very time-consuming calibration sweeps (>30 s) are no longer canceled.
- Correct type and version information for spectrum analyzer options R&S FSL-K30, R&S FSL-K91, and R&S FSL-K93 in the **Versions / Options** dialog.

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## New Features in Firmware Version V1.21 (Compared to V1.20)

- Support for digital monitor interface (**DVI-D** )
- Configurable **marker table** ("Normal" vs. "Reduced")
- **New remote control features**
  - New data formats `...CH<nr>Fdata, ...CH<nr>Sdata, CH<nr>FMEM, CH<nr>SMEM` for `TRACE[:DATA][:RESPonse][:ALL]` .

### Bug fixes in firmware version V1.21

- Standards in predefined and ideal 75  $\Omega$  calibration kits are stored with the correct impedance (75  $\Omega$  instead of 50  $\Omega$ ).
- Limit check for limit lines with a length below the frequency step size corrected.

### Known issues in firmware version V1.21

- On an external monitor with a screen resolution > 640x480 pixels, the screen for options R&S FSL-K14 (Spectrogram Measurements), R&S FSL-K30 (Noise Figure and Gain Measurements), R&S FSL-K91 (WLAN OFDM Analysis) and R&S FSL-K93 (WCDMA Measurements) does not scale correctly. We recommend to use a compatible resolution when working with these spectrum analyzer options.

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## New Features in Firmware Version V1.20 (Compared to V1.10)

- Support for new spectrum analysis options:

R&S FSL-B6, TV Trigger

R&S FSK-B8, Gated Sweep

R&S FSL-K7, AM/FM/φM Measurement Demodulator

R&S FSL-K8, Bluetooth Measurements

R&S FSL-K14, Spectrogram Measurements

R&S FSL-K30, Noise Figure and Gain Measurements (requires option R&S FSL-B5, Additional Interfaces, and a preamplifier)

R&S FSL-K72, WCDMA Measurements (3GPP/FDD BTS)

R&S FSL-K91, WLAN OFDM Analysis

R&S FSL-K93, WiMAX OFDM/OFDMA Analysis. **Note:** In the installation manager, this option is referred to as option R&S FSL-K92

The new options are extensions to option R&S ZVL-K1, **Spectrum Analysis** .

The following new features apply to the network analyzer mode:

- Extended functionality of option R&S ZVL-K2, **Distance-to-Fault** measurement: fault limit check and fault list, frequency list for cable attenuation, context menu.
- **New remote control features**

The new features reported above are also available via remote control; the SCPI commands are reported in the relevant reference sections. Besides the following remote-control features have been added:

- New remote control command `OUTPut<Ch>[:STATe]` , turns the source power on or off.
- New command `CALCulate<Ch>:LIMit:SEGment:COUNT?` , queries the number of limit line segments.

### Product improvements in firmware version V1.20

- The cable type is channel-specific rather than trace-specific
- NWA setup files (`*.nwa` ) are saved to the same default directory as the setup files for spectrum analysis: `R_S/Intr/user`.
- The size of the application window can be changed by an easy drag-and-drop operation.
- `*CLS` clears the remote error tooltip.

### Bug fixes in firmware version V1.20

- Changing the permittivity in the length offset dialogs changes the electrical length, leaving the mechanical length unchanged.

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## New Features in Firmware Version V1.10 (Compared to V1.00)

- Support for option R&S ZVL-K1, **Spectrum Analysis**

The following new features apply to the network analyzer mode:

- Support for option R&S ZVL-K2, **Distance-to-Fault** measurement.
- Hardware **error messages** with corresponding status registers
- **Unidirectional normalization** calibration for two-port (transmission) measurements
- Extended autoscale feature: **Autoscale All**
- Configurable marker info field: *Active Trace Only, Stimulus Info Off* (see **Marker Properties** dialog)
- Indication of **power supply option** in the status bar
- Transparent **info fields** for marker values and trace statistics
- **New remote control features**

The new features reported above are also available via remote control; the SCPI commands are reported in the relevant reference sections. Besides the following remote-control features have been added:

- Changed (and configurable) response string format of **\*IDN?** query.
- New remote control command `HCOPY[:IMMEDIATE<config>]:NEXT`
- New remote control command `CONFfigure:TRACe<Trc>:CATalog?` , returns the numbers and names of all traces in the current setup.

### Product improvements in firmware version V1.10

- Enhanced measurement speed in **segmented sweep**

### Changed numeric values in firmware version V1.10

- Preset/\*RST value for *Step Atten. b1, Step Atten. b2*: +10 dB
  - Preset/\*RST value for *Start* frequency: 9 kHz
  - Maximum source *Power*: + 20 dBm
  - The center frequency of a bandfilter search is calculated as the geometric mean value of the lower and upper band edge.
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