R&S® ZNL/ZNLE
Vector Network Analyzers
Release Notes for Firmware V1.71

1178684002
Version 18

ROHDE&SCHWARZ
Make ideas real

This document applies to the following vector network analyzer models:

- R&S®ZNL3, 5 kHz to 3 GHz, 2 ports, N(f) connectors, order no. 1323.0012K03
- R&S®ZNL4, 5 kHz to 4.5 GHz, 2 ports, N(f) connectors, order no. 1323.0012K04
- R&S®ZNL6, 5 kHz to 6 GHz, 2 ports, N(f) connectors, order no. 1323.0012K06
- R&S®ZNL14, 5 kHz to 14 GHz, 2 ports, N(f) connectors, order no. 1323.0012K14
- R&S®ZNL20, 5 kHz to 20 GHz, 2 ports, 3.5 mm (m) connectors, order no. 1323.0012K20
- R&S®ZNLE3, 1 MHz* to 3 GHz, 2 ports, N(f) connectors, order no. 1323.0012K53
- R&S®ZNLE4, 1 MHz* to 4.5 GHz, 2 ports, N(f) connectors, order no. 1323.0012K54
- R&S®ZNLE6, 1 MHz* to 6 GHz, 2 ports, N(f) connectors, order no. 1323.0012K56
- R&S®ZNLE14, 1 MHz* to 14 GHz, 2 ports, N(f) connectors, order no. 1323.0012K64
- R&S®ZNLE18, 1 MHz* to 18 GHz, 2 ports, N(f) connectors, order no. 1323.0012K70

* 100 kHz with R&S®ZNLE-B100 low frequency extension option

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Throughout this document, R&S® is abbreviated as R&S

Contents

1 Current firmware and version history

This document lists the changes introduced in the current and earlier versions of the R&S ZNL/ZNLE firmware.

Compatibility with Windows 10 version 21H2

On instruments running Windows 10 version 21H2, firmware versions < 1.71 are not supported.

Software version

► To check your R&S ZNL/ZNLE "Instrument Firmware" and "VNA Server" version, select [SETUP] > "System Config" > "Versions + Options".

1.1 Firmware version 1.71

This section lists the changes introduced in firmware version 1.71.

1.1.1 New functionality

Version	Function
1.71	Power sweep, power meter and power cal support for R&S ZNL
1.71	Support of Windows 10, version 21H2

New remote control functionality

Version	Function
1.71	New command `MMEMory:STORe:TRACe:OPTion:COMMent` to define a comment to be added to exported trace files

1.1.2 Improvements

Version	Improvement
1.71	Optional display of X-axis grid labels in cartesian diagrams with linear scale.
1.71	For calibration kit standards defined using snp files, it is now possible to export these files
1.71	Command `DISPlay[:WINDow<Wnd>]:TRACe<WndTr>:EFEed` can now move live and memory traces between diagram areas
1.71	Improved power meter LAN detection with updated R&S VISA library

Solved issues

Version	Issue
1.71	With multiple traces and coupled markers in channel `<Chn>`, adding a marker `<no>` greater than 10 using `CALCulate<Chn>:MARKer<no>:STATe ON` did not work as expected.
1.71	If measurement data is available for a calibration, and the related setup was saved under a different name, then "Repeat Calibration" failed in the resulting recall set
1.71	If measurement data is available for a calibration of channel no. x and this calibration was stored to the cal pool, then "Repeat Calibration" failed if the related cal pool calibration was applied to a channel no. y≠x

Version	Issue
1.71	Changing the smoothing aperture did not take effect immediately
1.71	"Delay" memory traces used the current stimulus axis instead of the stored one
1.71	"Max Hold" traces: "Restart" and "Restart All" did not work
1.71	Generating default calibration data using `[SENSe<Ch>:]CORRection:COLLect:SAVE:SELected:DEFault` now also works for frequency-converting channels.
1.71	A memory trace with "Math" could not be recalled correctly if the original trace was a wave
1.71	Considerable residual responses for some configurations
1.71	The analyzer GUI became slow if many markers were active
1.71	In FW versions 1.61 and higher, selecting a trace via `CALCulate<Ch>:PARameter:SELect <TraceName>` restarted the sweep

1.1.3 Spectrum analysis changes

The spectrum analysis function of the R&S ZNLxx (with hardware option R&S ZNLxx-B1) and its additional software options are based on firmware 2.00 of the Rohde & Schwarz spectrum analyzer R&S FPL1000.

See the Release Notes of the R&S FPL1000 (at https://www.rohde-schwarz.com/firmware/fpl1000/) for a history of changes.

1.2 Firmware version 1.63

This section lists the changes introduced in firmware version 1.63.

1.2.1 Improvements

Version	Improvement
1.63	Improvement for R&S ZNL14 and R&S ZNL20 production purposes

1.2.2 Spectrum analysis changes

The spectrum analysis function of the R&S ZNLxx (with hardware option R&S ZNLxx-B1) and its additional software options are based on firmware 1.90 of the Rohde & Schwarz spectrum analyzer R&S FPL1000.

See the Release Notes of the R&S FPL1000 (at https://www.rohde-schwarz.com/firmware/fpl1000/) for a history of changes.

1.3 Firmware version 1.62

This section lists the changes introduced in firmware version 1.62.

1.3.1 Improvements

Version	Improvement
1.62	Selftest improvements for R&S ZNL14 and R&S ZNL20

1.3.2 Spectrum analysis changes

The spectrum analysis function of the R&S ZNLxx (with hardware option R&S ZNLxx-B1) and its additional software options are based on firmware 1.90 of the Rohde & Schwarz spectrum analyzer R&S FPL1000.

See the Release Notes of the R&S FPL1000 (at https://www.rohde-schwarz.com/firmware/fpl1000/) for a history of changes.

1.4 Firmware version 1.61

This section lists the changes introduced in firmware version 1.61.

1.4.1 New functionality

Version	Function
1.61	Spectrum analysis options R&S ZNL14-B1 and R&S ZNL20-B1 for R&S ZNL14 and R&S ZNL20 with serial numbers 101200 and higher • Spectrum analysis up to 14 GHz for R&S ZNL14 • Spectrum analysis **up to 26.5 GHz** for R&S ZNL20 • Support of R&S FPL1-B11 "YIG preselector bypass" (R&S ZNL14|20 only!)
1.61	Support of new economy calibration units R&S ZN-ZE1xx

New remote control functionality

Version	Function
1.61	New remote commands `DISPlay:LAYout:OVERlay` and `DISPlay:LAYout:SPLit` for diagram functions "Overlay All" and "Split All", respectively
1.61	Various reference marker commands `CALCulate<Chn>:MARKer<Mk>:REFerence:...` added; same functionality as for regular markers

1.4.2 Modified functionality

Version	Function
1.61	Wave quantity measurements: Renormalization adapted to R&S ZNA logic

1.4.3 Improvements

Version	Improvement
1.61	Y-axis grid labels now show values with units instead of unit-less values
1.61	Marker values for wave and ratio traces in complex diagrams (polar coordinates)

Solved issues

Version	Issue
1.61	If the current length was zero, "Auto Length and Loss" always calculated a zero loss.
1.61	Command `CONFigure:CHANnel<Ch>[:STATe] ON` did not make channel `<Ch>` the active one.
1.61	Multiple peak marker search: once no peaks were found, the marker info field was hidden permanently
1.61	If a calibration unit was recharacterized with sexless connectors (e.g. 7 mm), subsequent calibrations using this recharacterization failed with an "invalid cal unit port" warning.
1.61	µ1 and µ2 in "Stability" parameter selection combo-box erroneously prepended with "Å"
1.61	`CALCulate<Ch>:DATA:CHANnel:ALL` failed if, between measurement and data retrieval, a lower-numbered channel was deleted.
1.61	Mouse wheel scrolls in dialogs were propagated to the diagram area – with undesired side effects such as changing the current marker position.
1.61	Stability factor measurements always returned zero
1.61	Calibration kit Keysight 85058EP: wrong capacitance value C_0 in Open (f) circuit model
1.61	Time domain analysis R&S ZNL-K2: • Selecting a different time domain transform ("Type" selection on "Time Domain" tab) did not take effect • Changing the permittivity did not change the distance in TDR distance plots
1.61	Distance to fault only worked for live traces
1.61	Compression point measurements (trace statistics): the compression values were not displayed, if the input power of the compression point was not visible on the selected stimulus axis.

1.4.4 Spectrum analysis changes

The spectrum analysis function of the R&S ZNLxx (with hardware option R&S ZNLxx-B1) and its additional software options are based on firmware 1.90 of the Rohde & Schwarz spectrum analyzer R&S FPL1000.

See the Release Notes of the R&S FPL1000 (at https://www.rohde-schwarz.com/firmware/fpl1000/) for a history of changes.

1.5 Firmware version 1.50

This section lists the changes introduced in firmware version 1.50.

1.5.1 New functionality

Version	Function
1.50	TRL calibration **Note** that TRL calibration is **not available** for R&S ZNL3|4|6 and R&S ZNLE3|4|6 equipped with the older version of the VNA board (order no 1323.0070).

New remote control functionality

Version	Function
1.50	New command `[SENSe<Ch>:]CORRection:COLLect:AUTO:REPeat` to repeat an automatic calibration

1.5.2 Improvements

Version	Improvement
1.50	Manual UOSM calibration now also possible on R&S ZNLE3|4|6 with new VNA board (order no 1323.2967).

Solved issues

Version	Issue
1.50	Marker format "dB Mag Phase": For certain trace formats the magnitude calculations were improved.
1.50	Error popup "Sweep time exceeds requested time ..." for time sweeps with only one point
1.50	Calibration kit Keysight 85052C (predefined): Both Reflect standards were defined as Open instead of Short
1.50	For some single-ended S-parameter measurements, "Cal Off" was displayed although a calibration was applied

Version	Issue
1.50	[Print] key did not always work if the VNA application had the focus
1.50	`DISPlay:LAYout HORizontal` incorrectly did the same as the command `DISPlay:LAYout VERTictal`
1.50	Touchstone file export: data for an export of 2 frequency points were exported in reverse order
1.50	Some instruments showed spurious around 2.5 MHz

1.5.3 Spectrum analysis changes (R&S ZNL3|4|6 only)

The spectrum analysis function of the R&S ZNL (with hardware option B1) and its additional software options are based on firmware 1.80 of the Rohde & Schwarz spectrum analyzer R&S FPL1000.

See the Release Notes of the R&S FPL1000 (at https://www.rohde-schwarz.com/firmware/fpl1000/) for a history of changes.

1.6 Firmware version 1.42

This section lists the changes introduced in firmware version 1.42.

1.6.1 New functionality

Version	Improvement
1.42	Support of new PC board

1.6.2 Spectrum analysis changes (R&S ZNL3|4|6 only)

The spectrum analysis function of the R&S ZNL3|4|6 (with hardware option B1) and its additional software options are based on firmware 1.71 of the Rohde & Schwarz spectrum analyzer R&S FPL1000.

See the Release Notes of the R&S FPL1000 (at https://www.rohde-schwarz.com/firmware/fpl1000/) for a history of changes.

1.7 Firmware version 1.41

This section lists the changes introduced in firmware version 1.41.

1.7.1 Improvements

Solved issues

Version	Issue
1.41	Software option R&S®ZNL-K14 did not appear in [Setup] > "System Configuration" > "Versions + Options"

1.7.2 Spectrum analysis changes (R&S ZNL3|4|6 only)

The spectrum analysis function of the R&S ZNL3|4|6 (with hardware option B1) and its additional software options are based on firmware 1.71 of the Rohde & Schwarz spectrum analyzer R&S FPL1000.

See the Release Notes of the R&S FPL1000 (at https://www.rohde-schwarz.com/firmware/fpl1000/) for a history of changes.

1.8 Firmware version 1.40

This section lists the changes introduced in firmware version 1.40.

1.8.1 New functionality

Version	Function
1.40	Support for new instrument models: • R&S®ZNL14, 5 kHz to 14 GHz, 2 ports, N(f) connectors, order no. 1323.0012K14 • R&S®ZNL20, 5 kHz to 20 GHz, 2 ports, 3.5 mm (m) connectors, order no. 1323.0012K20 • R&S®ZNLE14, 1 MHz* to 14 GHz, 2 ports, N(f) connectors, order no. 1323.0012K64 • R&S®ZNLE18, 1 MHz* to 18 GHz, 2 ports, N(f) connectors, order no. 1323.0012K70 * 100 kHz with R&S®ZNLE-B100 low frequency extension option **Note** that for these R&S®ZNL14 and R&S®ZNL20 models, the Spectrum Analysis option and all other dependent options **are not available** and **will not be available** in future. Successor models, which will support the B1 option and all other dependent options will be available at a later stage.
1.40	Software option R&S®ZNL-K14 "Independent CW source for R&S®ZNL" enables continuous wave stimuli in Spectrum Mode, using port 1 as the driving port. Requires option R&S®ZNLx-B1.
1.40	"Web Control": browser-based access to the R&S ZNL/ZNLE GUI via the instrument's web interface

New remote control functionality

Version	Function
1.40	ENA emulation command alias `[SENSe<Ch>]:SWEep:MODE`

1.8.2 Improvements

Version	Improvement
1.40	The number of decimal places can now also be configured for *meter* values
1.40	Trace data export: the number of decimal places of stimulus and response values can now be configured
1.40	Support for Spectrum Analysis framework FS-SNS18 added
1.40	Lower minimum "Ref Value" in polar diagrams allows larger scaling

Solved issues

Version	Issue
1.40	Changing the average factor was ignored while averaging was active
1.40	Limit line check: PASS/FAIL info field disappeared when diagram was maximized
1.40	Command `SENSe<Ch>:SWEep:TYPE POINt` did not always switch from segmented to CW sweep mode
1.40	LAN power sensors R&S NRP18SN and R&S NRP18AN were not detected correctly
1.40	Formula-defined limit lines were not exported to limit line files (`*.limit`)
1.40	"Repeat Cal" remained enabled after incompatible changes of the swept frequencies
1.40	Markers on traces whose value at the marker position was above or below the visible range, were not displayed
1.40	Option installation via GUI: empty alert message if unsuccessful
1.40	Automatic calibration: changing the port assignment to non-default or after auto-detection did not work and caused an exception

1.8.3 Spectrum analysis changes (R&S ZNL3|4|6 only)

The spectrum analysis function of the R&S ZNL3|4|6 (with hardware option B1) and its additional software options are based on firmware 1.71 of the Rohde & Schwarz spectrum analyzer R&S FPL1000.

See the Release Notes of the R&S FPL1000 (at https://www.rohde-schwarz.com/firmware/fpl1000/) for a history of changes.

1.9 Firmware version 1.37

This section lists the changes introduced in firmware version 1.37.

1.9.1 New functionality

Version	Function
1.37	Touchstone file export conforming to Touchstone® File Format Specification Version 2.0

1.9.2 Modified functionality

Version	Function
1.37	Touchstone file export: option "Symmetric Params" renamed to "Balanced Params"

1.9.3 Improvements

Version	Improvement
1.37	Updated PCI drivers for Windows 10 compatibility

Solved issues

Version	Issue
1.37	Logarithmic interpolation of limit lines did not work for linear sweeps
1.37	Error message for missing calibration not informative
1.37	When storing calibration files using `MMEM:STOR:CORR`, file names containing dots were truncated
1.37	"RF Off" All Channels" checkbox disappeared from "Stimulus"/"Bw Avg Power" > "Power" tab in FW V1.35
1.37	For segmented sweeps, markers could not be positioned between sweep segments
1.37	`CALCulate<Chn>:MARKer<Mk>:FUNCtion:DOMain:USER:SHOW ON` did not switch on range limit lines at the GUI
1.37	Remote command `CALCulate<Ch>:PARameter:SDEFine <TraceName>, <Result>` did accept invalid `<Result>` parameters

1.9.4 Spectrum analysis changes (R&S ZNL only)

The spectrum analysis function of the R&S ZNL (with hardware option B1) and its additional software options are based on firmware 1.71 of the Rohde & Schwarz spectrum analyzer R&S FPL1000.

See the Release Notes of the R&S FPL1000 (at https://www.rohde-schwarz.com/firmware/fpl1000/) for a history of changes.

1.10 Firmware Version 1.35

This section lists the changes introduced in firmware version 1.35.

1.10.1 New functionality

Version	Function
1.35	Support for new instrument models: • R&S®ZNL4, 5 kHz to 4.5 GHz, 2 ports, N(f) connectors, order no. 1323.0012K04 • R&S®ZNLE4, 1 MHz* to 4.5 GHz, 2 ports, N(f) connectors, order no. 1323.0012K54 * 100 kHz with R&S®ZNLE-B100 low frequency extension option
1.35	Manual UOSM calibration on R&S ZNL with VNA board 1323.2967
1.35	Distance to fault measurements (R&S ZNL-K3): Import dialog for cable types
1.35	Transmission measurements: "parallel" converted impedance and admittance modeling (in addition to "series" modeling) New measurement results and marker formats

New remote control functionality

Version	Function
1.35	Memory-mapped trace data transfer

1.10.2 Modified functionality

Version	Function
1.35	Probe tip setting for shunt-thru converted impedance measurements discarded. • GUI: [Meas] > "Z←Sij" > "Probe Tip" removed • RC: `CALCulate<Ch>:PARameter:PTIP` no longer available

1.10.3 Improvements

Version	Improvement
1.35	Support for additional calibration kits: • Spinner BN 533843, 533844, 533845, 533846 • Spinner BN 533863, 533864, 533865, 533866 • Keysight 85032B, 85032F, 85038A, 85515A
1.35	Limit line enhancements: • Formula-defined limit lines • Logarithmic interpolation
1.35	Optimized calculation of port set de-/embedding
1.35	Shunt-thru converted impedance measurements no longer restricted to Z←S21

Solved issues

Version	Issue
1.35	Segmented frequency sweeps: If the column "Segm Time" was not displayed in the "Define Segments" dialog, the total sweep time ([Sweep] > "Sweep Params" > "Sweep Time") • was not calculated from the segment times • was configurable
1.35	Deleting a trace by dragging it to the recycle bin sometimes did not work
1.35	A copy of a predefined cal kit could not be modified or deleted
1.35	Selecting different "Print Colors" in "Print Setup" dialog did not change the background color
1.35	Unintended trace format coupling when adding traces or channels
1.35	Calibrations using cal unit R&S ZN-Z150 resulted in an error message
1.35	Firmware versions 1.30, 1.31 and 1.32 created incompatible `*.calkit` files (`*.calkit` files containing snp data could not be used with previous FW versions)

1.10.4 Spectrum analysis changes (R&S ZNL only)

The spectrum analysis function of the R&S ZNL (with hardware option B1) and its additional software options are based on firmware 1.60 of the Rohde & Schwarz spectrum analyzer R&S FPL1000.

See the Release Notes of the R&S FPL1000 (at https://www.rohde-schwarz.com/firmware/fpl1000/) for a history of changes.

1.11 Firmware version 1.32

This section lists the changes introduced in version 1.32 of the R&S ZNL/ZNLE firmware.

1.11.1 New functionality

Version	Function
1.32	New hardware option R&S ZN-B13 "Broadband Limiter“

1.11.2 Spectrum analysis changes (R&S ZNL with hardware option B1)

For version 1.32 of the R&S ZNL firmware, the spectrum analysis function and its additional software options are based on firmware 1.30 of the Rohde & Schwarz spectrum analyzer R&S FPL1000.

See the Release Notes of the R&S FPL1000 (at https://www.rohde-schwarz.com/firmware/fpl1000/) for a history of changes.

1.12 Firmware version 1.31

This section lists the changes introduced in version 1.31 of the R&S ZNL/ZNLE firmware.

1.12.1 Improvements

Version	Improvement
1.31	Improved self test

1.12.2 Spectrum analysis changes (R&S ZNL with hardware option B1)

For version 1.31 of the R&S ZNL firmware, the spectrum analysis function and its additional software options are based on firmware 1.30 of the Rohde & Schwarz spectrum analyzer R&S FPL1000.

See the Release Notes of the R&S FPL1000 (at https://www.rohde-schwarz.com/firmware/fpl1000/) for a history of changes.

1.13 Firmware version 1.30

This section lists the changes introduced in version 1.30 of the R&S ZNL/ZNLE firmware.

1.13.1 New functionality

Version	Function
1.30	Spectrum analysis up to 6 GHz with hardware option R&S ZNL6-B1
1.30	100 kHz start frequency for R&S ZNLE with hardware option R&S ZNLE-B100
1.30	Time domain measurements for R&S ZNLE with software option R&S ZNL-K2
1.30	Distance to fault measurements for R&S ZNLE with software option R&S ZNL-K3
1.30	Translations of the analyzer GUI: (preinstalled, no separate setup required) • German • Spanish • French • Italian • Japanese • Korean • Portuguese • Russian • Simplified Chinese (China) • Traditional Chinese (Taiwan) See [Setup] > "Language".
1.30	Offset calculation can be performed after deembedding/embedding calculation
1.30	Continuous auto-scaling of traces
1.30	Trace math on formatted traces
1.30	Dynamic trace shifting, relative to the trace value at a configurable sweep point

New remote control functionality

Version	Function
1.30	New remote command `CALCulate<Chn>:MARKer<Mk>:REFerence:FORMat` to set/query the reference marker format

1.13.2 Modified functionality

Version	Function
1.30	Index selection combo-boxes for parameters not measured by the active trace now display an empty selection

1.13.3 Improvements

Version	Improvement
1.30	Trace labels can be hidden
1.30	Segmented sweeps • It is now possible to measure several points on the same frequency in one segment • For adjacent segments ($f_{start,n}$, $f_{stop,n}$) and ($f_{start,n+1}$, $f_{stop,n+1}$) the connection line is not shown if $f_{stop,n} > f_{start,n+1}$
1.30	Ports sets for offset de-/embedding: the "port set number" is now indicated in the "Port Set" selection combo boxes
1.30	"Fixture Compensation" calculation now uses the configured "Freq for Loss" instead of a fixed reference frequency of 1 GHz
1.30	Touchstone file export dialog (free configuration): selected ports and port order can be preserved per channel setup
1.30	The splash screen now displays the correct VNA model, firmware version, order number, and serial number
1.30	Larger toolbar icons
1.30	The on-screen "Mini Front Panel" now uses the key labeling of the R&S ZNL/ZNLE
1.30	Distance to Fault measurements (R&S ZNL-K3): new cable types added
1.30	Marker tracking now also works for coupled markers
1.30	Offset parameters: "Loss at Freq" can be set to a value ≠ 0 even if "Delay" is set to 0
1.30	Trace statistics and bandfilter info fields can be closed from their respective context menus

Solved issues

Version	Issue
1.30	Selecting diagram split type "Rows + Cols" made all diagrams disappear ("No Trace")
1.30	"Low Pass Step" time domain representation (R&S ZNL-K2): DC extrapolation did only work for S-parameter traces
1.30	Fixture measurement data were not always stored with `s1p` file name extension
1.30	The "S-Parameter Wizard" always ended up with the same connector type for all ports
1.30	When switching from a cartesian to a complex trace, the "Scale/Div" and "Ref Pos" fields still displayed the values of the cartesian trace
1.30	"Trace Manager" dialog: • Buttons "Delete", "Decouple all Channels", and "Couple all Scales" remained enabled after all but one trace were deleted • Misleading popup "Name must be unique" when entering a single illegal character as the new trace name
1.30	In polar trace formats, marker values were always calculated before "Smoothing" and "Hold"
1.30	"Confirm Password" dialog appeared when "Hide Sensitive Information" was disabled and no password was set

Version	Issue
1.30	Memory leak in firmware application (recoverable via [Preset]/`*RST`)
1.30	Peak search did not find minima below -100 dBm

1.13.4 Spectrum analysis changes (R&S ZNL with hardware option B1)

For version 1.30 of the R&S ZNL firmware, the spectrum analysis function and its additional software options are based on firmware 1.30 of the Rohde & Schwarz spectrum analyzer R&S FPL1000.

See the Release Notes of the R&S FPL1000 (at https://www.rohde-schwarz.com/firmware/fpl1000/) for a history of changes.

1.14 Firmware version 1.22

This section lists the changes introduced in version 1.22 of the R&S ZNL/ZNLE firmware.

1.14.1 New functionality

Version	Function
1.22	Shunt-thru impedance measurement "Shunt←S21"
1.22	Peak searches can be limited to: • Maxima above and minima below a configurable threshold • Peaks with an excursion above a configurable value
1.22	New trace format "Log Mag" (in addition to "dB Mag")
1.22	New mode of automatic diagram scaling: equally formatted traces are scaled together
1.22	New "Info Window" Marker and bandfilter information can be displayed in a separate, resizeable "Info Window" with: • configurable content • automatic font scaling

New remote control functionality

Version	Function
1.22	New command `[SENSe<Ch>:]CORRection:COLLect:DISCard` to terminate a system error correction, discarding the acquired data
1.22	New query `CALCulate:LIMit:FAIL:DATA?` returns the sweep points that have failed to pass a limit line, ripple or circle test
1.22	The query `LAYout:CATalog:WINDow?` now also works for VNA channel setups

1.14.2 Modified functionality

Version	Function
1.22	Double-tapping a VNA diagram no longer adds a marker to the diagram's active trace, but maximizes the diagram or restores its original size.

1.14.3 Improvements

Version	Improvement
1.22	Markers • Unlimited number of markers • Interworking of marker coupling and marker tracking • Improved handling of overlapping segments and point based segmented sweeps
1.22	The auto-hide behavior of the softtool bar can be configured.
1.22	"Print Multiple Windows" can print the info table.
1.22	Improved sorting in "Trace Manager"
1.22	For overlapping sweep segments, the line connecting the trace segments is no longer shown
1.22	New context menu actions for trace and bandfilter search info fields: • Close the info field or fields (and disable their calculation) • Open the related softtool tab
1.22	Additional license agreement for IVI Shared Components available via "System Configuration" dialog

Solved issues

Version	Issue
1.22	The R&S ZNL/ZNLE stopped sweeping if the start or stop frequency was queried
1.22	Segment list file (`*.SegList`) export did not include segment bits
1.22	Establishing a remote control connection while the "Global Check" window was opened sometimes caused the application to crash.
1.22	Trace label context menus did not open related softtool tabs
1.22	Averaging slowed down the measurement if unused channels were present
1.22	Single-ended de-/embedding: selecting a network was not possible at the GUI
1.22	A "Generator Level out of range" error was raised for power levels below -30 dBm instead of -40 dBm
1.22	The status bar displayed a charge state of 50% although the internal battery was fully loaded.
1.22	Fixed markers were calculated with wrong interpolation

1.14.4 Spectrum analysis changes (R&S ZNL with hardware option B1)

For version 1.22 of the R&S ZNL firmware, the spectrum analysis function and its additional software options are based on firmware 1.20 of the Rohde & Schwarz spectrum analyzer R&S FPL1000.

See the Release Notes of the R&S FPL1000 (at https://www.rohde-schwarz.com/firmware/fpl1000/) for a history of changes.

1.15 Firmware version 1.20

This section lists the changes introduced in version 1.20 of the R&S ZNL/ZNLE firmware.

1.15.1 New functionality

Version	Function
1.20	Distance to Fault measurement option R&S ZNL-K3 (R&S ZNL only)
1.20	Noise Figure Measurement option R&S FPL1-K30 for R&S ZNL with spectrum analysis option B1
1.20	The R&S ZNLE now supports automatic calibration ZNLE can use calibration unit (#270346)
1.20	Support of new calibration unit R&S ZN-Z150
1.20	Brightness of the display can be adjusted
1.20	Charge state of internal battery displayed in status bar (R&S ZNL with R&S FPL1-B31 only)

New remote control functionality

Version	Function
1.20	Some missing remote commands were added

1.15.2 Improvements

Version	Improvement
1.20	The FWA splash screen now displays the correct instrument type (R&S ZNL or R&S ZNLE), order number, and serial number
1.20	The "Start Auto Cal" function now also checks whether • the active cal unit covers the frequency range of the active channel • each port that is used by (a trace in) the active channel is attached to some cal unit port Otherwise an appropriate error message is displayed and the user can decide to continue or abort.

Version	Improvement
1.20	*Open/Match* and *Short/Match* reflection normalization calibrations: Manual calibration types "Refl Norm Open" and "Refl Norm Short" now offer a complementary Match standard measurement.
1.20	Improved marker behavior: • simplified dragging (vertical line serving as drag handle) • double-tapping/clicking a diagram area adds a marker to the active trace of this diagram; for cartesian diagrams the tap/click location determines the horizontal marker position
1.20	Small changes in colors to improve readability
1.20	Small changes in colors to improve readability of hard copies

Solved issues

Version	Issue
1.20	Power sweep functions were available via GUI and remote interface although they are not supported on R&S ZNL/ZNLE
1.20	Unsupported R&S ZNL functions were available via R&S ZNLE GUI and remote interface: • TTL pass/fail signals (no Aux. Port for R&S ZNLE) • Configurable IF filter selectivity (always normal selectivity for R&S ZNLE) • Configurable image suppression (always automatic mode for R&S ZNLE)
1.20	When using the rotary knob to set a "Loss at DC" value in the "Offset Embed" dock widget, the corresponding column header became unreadable
1.20	Measurement progress indication in "Cal Unit" dock widget was truncated
1.20	Manual calibration: "Calibration Presetting" wizard renamed to "Calibration Setting"
1.20	SmartGrid: even with only a single diagram, sometimes the hand symbol for moving diagrams was shown
1.20	The [Mkr->] hardkey did't cycle through the tabs of the "Marker Search" softtool

1.15.3 Spectrum analysis changes (R&S ZNL with hardware option B1)

For version 1.20 of the R&S ZNL firmware, the spectrum analysis function and its additional software options are based on firmware 1.10 of the Rohde & Schwarz spectrum analyzer R&S FPL1000.

See the Release Notes of the R&S FPL1000 (at https://www.rohde-schwarz.com/firmware/fpl1000/) for a history of changes.

2 Modifications to the documentation

The current documentation is up-to-date.

3 Firmware update

3.1 Update information

Firmware releases are supplied as single setup files `ZNLSetup_<version>.exe`.

3.2 Updating the firmware

Download the latest firmware from the R&S ZNL/ZNLE firmware page (https://www.rohde-schwarz.com/firmware/znl/ or https://www.rohde-schwarz.com/firmware/znle/). Store it on a memory stick, on the instrument, or on a server network drive that can be accessed by the instrument.

Administrator Rights

By default, Windows® User Account Control is enabled on the instrument to prevent unwanted system-wide changes. Hence you need administrator rights to install a new firmware version. Refer to the Getting Started manual for details.

NOTICE

Before the update

- Carefully read the release notes provided with the firmware.
- Do not perform the firmware update while a spectrum measurement is running (R&S ZNL only).
  If a spectrum measurement is running, stop it by activating the corresponding tab, selecting the [Sweep] key and toggling the "Continuous Sweep" or "Single Sweep" softkey, whichever is highlighted.

How to Update the Instrument Firmware

1. Select the [Setup] key.
2. Select the "System Config" softkey.
3. Select the "Firmware Update" tab.
4. In the file selection dialog box, select the `ZNLSetup_<version>.exe` file.
5. Select "Install".
6. To start the firmware update, you need to pass a Windows User Account Control dialog. As a standard Windows user, you have to enter an administrator name and password. Select "Yes" to proceed.
7. After the firmware update, the R&S ZNL/ZNLE reboots automatically.

8. Depending on the previous firmware version, a hardware reconfiguration can be necessary during the first startup of the firmware. The reconfiguration starts automatically, and a message box informs you about the process. When the reconfiguration has finished, the instrument again reboots automatically.

   Note: Do not switch off the instrument during the reconfiguration process.

   Now the firmware update is complete.

- A firmware update does not affect the factory calibration.
- For a R&S ZNL with spectrum analysis hardware option B1, it is recommended to perform a self-alignment after the update ([Setup] > "Spectrum Setup" > "Alignment" > " Start Self Alignment")

4 Contacting customer support

Technical support – where and when you need it

For quick, expert help with any Rohde & Schwarz product, contact our customer support center. A team of highly qualified engineers provides support and works with you to find a solution to your query on any aspect of the operation, programming or applications of Rohde & Schwarz products.

Contact information

Contact our customer support center at www.rohde-schwarz.com/support, or follow this QR code:

Figure 4-1: QR code to the Rohde & Schwarz support page