R&S®Recal+
Release Notes
Software Version 5.03

ROHDE & SCHWARZ

Contents

1 General information

This package contains the **R&S®Recal+** calibration software with the additional program **R&S®ZVX_RECAL**.

2 Information on the Current Version and History

2.1 R&S®Recal+ Version 5.03

Released: November 2023

Functional improvements:

- Added support for additional diode power sensors R&S®NRP8E and R&S®NRP18E.
- NRP Sensor Service: S-parameters in the factory data set are automatically preserved throughout the repair process. This is especially important for NRP-Z22/23/24/92 and NRP18S-10/20/25.
- When the calibration data set of a sensor is updated, the corresponding self-test result file (`TS…`) is copied to the INCOME directory and renamed into `TO…` to preserve the self-test information from incoming inspection.
- Even for a vertical screen resolution < 900 pixels, the "Check Meas." and "Use Ext. Data" checkboxes are displayed now (if applicable).
- Help file: Replaced some measurement setup images with higher resolution images.
- Help file: Removed linearity test setup of URV5-Z7 (linearity measurement not supported anymore).

Fixed problems:

- When the verification of the power standard indicated an abnormal deviation, the actual deviation was not correctly shown in the error message.
- Help file: Added the necessary attenuator in the measurement setup for NRV-Z1, NRV-Z4, NRV-Z7, and NRV-Z31 in conjunction with NRPC18.

2.2 R&S®ZVX_RECAL Version 3.14.04

Fixed problems:

- Fixed an issue when selecting a 3.5 mm calibration kit configured as PC 3.5.

2.3 R&S®Recal+ Version 5.02

Released: January 2023

Functional improvements:

- Added support for additional pulse power sensors R&S®NRP18P, R&S®NRP40P, and R&S®NRP50P.
- Added firmware version of the power sensor in calibration report.

2.4 R&S®ZVX_RECAL Version 3.14

Functional improvements:

- Added support for using multiple ports for reflection measurements on a multi-port VNA. Each port is used for a pre-defined RF connector type. Activate and configure functionality in the configuration file `UserSetttings.ini`.

Fixed problems:

- Missing frequency point for measuring pulse power sensors R&S®NRP18P, R&S®NRP40P, and R&S®NRP50P.

2.5 R&S®Recal+ Version 5.01

Released: January 2022

Functional improvements:

- Some parameters in test report are specified more accurately:
    - *Voltage Reflection Coefficient of Sensor* (was: *Reflection Coefficient of Sensor*)
    - *VRC (magnitude)* (was: *Measured value*) in table header
    - *|S21|* (was: *Measured value*) in table header
    - *|S11|* (was: *Measured value*) in table header
    - *|S22|* (was: *Measured value*) in table header
- A power limit that was set on the LF generator is restored after linearity measurement.
- Added support for R&S®ZNA.

Fixed problems:

- Import of S1P files for NRPxxS(N)/A(N)/T(N) generated RF files with missing `SerialNoInt` entry.

2.6 R&S®ZVX_RECAL Version 3.13

Fixed problems:

- Deactivate recall of predefined SPINNER Calibration Kits (BN5338xx) due to timeout problems.

2.7   R&S®Recal+ Version 5.00

Released: July 2021

Functional improvements:

- Added support for additional multipath power sensor R&S®NRP67SN-V.

Changes that break compatibility with older hardware:

- Added support for second-generation R&S®NRPC-LS (with directional coupler); removed support for first-generation NRPC-LS (with resistive power splitter).
- Added support to measure linearity of R&S®NRV-Zxx and R&S®URV5-Zxx power sensors with second-generation R&S®NRPC-LS as linearity standard; removed support for R&S®NRVC-B2 as linearity standard.
- Removed support for SMB100A and SMGL as generator for linearity measurement (R&S®NRPC-LS requires R&S®SMA100B).
- Removed support for R&S®SWM.

2.8   R&S®Recal+ Version 4.03

Released: January 2021

Functional improvements:

- Added four-channel support for basic power meter: Channels C and D can be used for reference sensors now.
  Please note that channels C and D of the basic power meter can only be used for reference sensors, not for DUTs.
- Calibration certificate numbers may comprise 31 instead of 30 characters now.
- Dialogs make better use of up-to-date screen resolutions now.
  Please note that the minimum required screen resolution is 1024×768 (XGA) or 1440×900 (WXGA+). 800×600 (SVGA) is not sufficient anymore.
- Added support for additional multipath power sensors R&S®NRP67S(N).

Fixed problems:

- Changed test limits for absolute accuracy for frequencies >40 GHz to 44 GHz from 4.2 % to 3.8 % for thermal power sensors R&S®NRP50T(N) and R&S®NRP67T(N).
- Changed test limits for absolute accuracy for frequencies >50 GHz to 67 GHz from 4.3 % to 5.8 % for thermal power sensors R&S®NRP67T(N) and R&S®NRP-Z57.
- Changed test limits for input reflection factor for >50 GHz to 67 GHz from 0.130 to 0.149 for thermal power sensors R&S®NRP67T(N) and R&S®NRP-Z57.

2.9 R&S®Recal+ Version 4.02.02

Released: May 2020

Fixed problems:

- Because NI GPIB-USB-HS+ checks timeout values more tightly than its predecessors and NI PCI cards, and timeout values were a little bit short during zero calibration of thermal sensors (including NRPC reference standards), earlier Recal+ versions failed with a timeout when this adapter was used.
- A linearity measurement of an NRV-Z5x sensor, preceded by an EPROM data read operation, yielded incorrect results.
- If a second linearity reference was connected to the secondary power meter, it was selected for the current sensor under test even if it was not suitable. This yielded an error message during the reference measurement, thus making linearity measurements impossible without disconnecting the second linearity reference.

See also: R&S®Recal+ Version 4.02.01 and R&S®Recal+ Version 4.02

2.10 R&S®Recal+ Version 4.02.01

Released: April 2020

Fixed problems:

The installer of Recal+ 4.02 did not give write permission for the Recal+ data folder to normal users during a new installation (without Recal+ data folder still existing from an earlier installation), so that running Recal+ would have to be run with Administrator rights. This is fixed in Recal+ 4.02.01.

See also: R&S®Recal+ Version 4.02

2.11 R&S®Recal+ Version 4.02

Functional improvements:

- Added support for R&S®SMBV100B.
- Added support for R&S®NRX. Options NRX-B8 and NRX-K2 are required for meter 1 and meter 2. In addition to that, options NRX-B4 and NRX-K4 are recommended for meter 2.
- Added support for R&S®NRPC-LS. R&S®NRVC-B2 can still be used as an alternative and remains a prerequisite for calibration of NRV/URV sensors. **Please note that R&S®NRPC-LS can only be used together with SMA100B.**
- Enabled linearity adjustment with R&S®NRPC-LS for wideband sensors.
- Added automatic level control for linearity calibration. Level offset is measured once during reference measurement. To enable this feature, make sure the `FilterAttenuation` parameter in the `[CALIBRATION]` section of the `recal32.ini` file is either not present of set to `AUTO`. If this parameter is set to a non-negative numerical value, it is interpreted as level offset in dB, and automatic level control is disabled. An automatically determined level offset can range from 0 dB to 6 dB. This should be sufficient as the typical value for NRPC-LS is about 2 dB.

Removed features:

- Removed support for HP 8116A as generator for linearity calibration.

Fixed problems:

- The report date is now consistent all over the report. The report date is chosen so that it matches the most recent calibration date.
- The stock number of the sensor is now correctly stated in the report for KMAT sensors (####.####**K**## instead of ####.####**.**##).
- If the sensor allows for more than one s-parameter device, the first s-parameter device is explicitly selected. At the moment, this makes a difference only for R&S®NRP18S-10, R&S®NRP18S-20, and R&S®NRP18S-25 in case the user has changed the default s-parameter device.

Minimum firmware requirements:

- R&S®NRX: 2.31
- R&S®NRPxxT[N]: 02.00
- All other sensors: Make sure that the latest available firmware is used.

Known issues:

- There are problems with NI USB-GPIB-HS+.

2.12 R&S®Recal+ Version 4.01

Released: July 2018

Functional improvements:

- Added support for NRPC67.
- Added support for additional thermal power sensors R&S®NRP67T(N), R&S®NRP-Z57.

2.13 R&S®ZVX_RECAL Version 3.09

Released: July 2018

Functional improvements:

- Added support for NRPC67.
- Added support for additional thermal power sensors R&S®NRP67T(N), R&S®NRP-Z57.

2.14 R&S®Recal+ Version 4.00

Released: December 2017

Functional improvements:

- Added support for signal generator R&S®SMA100B. Generator support for calibration of absolute accuracy as well as linearity.
  Following options are recommended:
  R&S® SMA100B -B120 for calibration of absolute accuracy and
  R&S® SMA100B -K33 for calibration of linearity.

2.15 R&S®Recal+ Version 3.04

Released: April 2017

Functional improvements:

- Added support for multipath power sensors R&S®NRP18S-10, R&S®NRP18S-20, R&S®NRP18S-25.
- Added support for additional thermal power sensors R&S®NRP18T(N), R&S®NRP33T(N), R&S®NRP40T(N), R&S®NRP50T(N).
- Added support for additional multipath power sensors R&S®NRP33S(N), R&S®NRP40S(N), R&S®NRP50S(N).
- Added support for additional average power sensor R&S®NRP6A(N).
  Lower limit of RF frequency is 8 kHz to support new ITU frequency band.
  The R&S®SMB100A-B106 RF generator support the frequency point 8 kHz.
  The firmware of R&S®SMB100A must be replaced, if the displayed version number is less than the 2.20.382.115.
- Added support for additional average power sensor R&S®NRP18A(N).
  Lower limit of RF frequency is 8 kHz to support new ITU frequency band.
  The R&S®SMB100A-B106 RF generator support the frequency point 8 kHz.
  The firmware of R&S®SMB100A must be replaced, if the displayed version number is less than the 2.20.382.115.
  To cover the entire frequency range of 8 kHz up to 18 GHz two generators are needed. A Keysight® USB SPDT switch (U1810B) is mandatory.

2.16 R&S®ZVX_RECAL Version 3.08

Released: April 2017

Functional improvements:

- Added support for multipath power sensors R&S®NRP18S-10, R&S®NRP18S-20, R&S®NRP18S-25.
- Added support for additional thermal power sensors R&S®NRP18T(N), R&S®NRP33T(N), R&S®NRP40T(N), R&S®NRP50T(N)
- Added support for additional multipath power sensors R&S®NRP33S(N), R&S®NRP40S(N), R&S®NRP50S(N)
- Added support for additional average power sensors R&S®NRP6A(N) and R&S®NRP18A(N)

2.17   R&S®Recal+ Version 3.03

Released: April 2015

Functional improvements:

- Added support for additional power sensors R&S®NRP-Z41 and R&S®NRP-Z61
- Added support for additional power sensors R&S®NRP8S(N), R&S®NRP18S(N) and R&S®NRP33S(N)
- Added support for a four-channel power meter R&S®NRP2 used as Meter2 for handling up to four R&S®NRPC standards.

2.18   R&S®ZVX_RECAL Version 3.05

Released: April 2015

Functional improvements:

- Added support for additional power sensors R&S®NRP-Z41 and R&S®NRP-Z61
- Added support for additional power sensors R&S®NRP8S(N), R&S®NRP18S(N) and R&S®NRP33S(N)

3 Modifications to the Documentation

The manual Power Sensor Calibration Kits R&S®NRPC18/33/40/50/67, R&S®NRVC, Calibration Software R&S®Recal+ describes the R&S®Recal+ calibration software and the additional ZVX_RECAL program.

Manual order. no.1109.0930.32-16.

4 Installation

4.1 Prerequisites

The R&S®Recal+ calibration software is designed to run on a Microsoft Windows based operating system (Windows 7 or higher). The R&S®Recal+ installation requires about 20 Megabytes of free space on the hard disk. The additional R&S®ZVX_RECAL installation requires about 5 Megabytes of free space on the hard disk.

4.2 Validity Information

Calibration of the new R&S®NRPxxS/SN, R&S®NRPxxA/AN, and R&S®NRPxxT/TN series is only supported with R&S®NRP2 or R&S®NRX power meter. In order for the R&S®Recal+ calibration software to function properly, the appropriate firmware version must be installed in the power meter. Make sure the firmware is at least 7.13 for the R&S®NRP2 and 2.31 for the R&S®NRX. Otherwise, an update is required. For the R&S®NRPxxS/SN, R&S®NRPxxA/AN, and R&S®NRPxxT/TN power sensors, an R&S®NRP-ZK6 interface cable is mandatory.

Device	Order Number
R&S®NRX – Base Unit: Power Meter	1424.7005.02
R&S®NRX – Option NRX-B1: Sensor Check Source	1424.7805.02
R&S®NRX – Option NRX-K2: 2nd measuring channel	1424.9208.02
R&S®NRX – Option NRX-B4: 3rd and 4th sensor connector (C, D)	1424.8901.02
R&S®NRX – Option NRX-K4: 3rd and 4th measuring channel	1424.9308.02
R&S®NRX – Option NRX-B8: IEC Bus Interface	1424.8301.02
R&S®NRP-ZK6 (length: 1.5 m)	1419.0664.02
R&S®NRP-ZK6 (length: 3 m)	1419.0664.03
R&S®NRP-ZK6 (length: 5 m)	1419.0664.04

4.3 Update Procedure

The R&S®Recal+ installer is not capable of updating a previously installed version (4.01 or older) on your system. Firstly, the older version has to be removed by uninstall.

The R&S®ZVX_Recal installer is capable of updating a previously installed (older) version on your system. The windows system needs to reboot.

5 Customer Support

Technical support – where and when you need it

For quick, expert help with any Rohde & Schwarz equipment, contact one of our Customer Support Centers. A team of highly qualified engineers provides telephone support and will work with you to find a solution to your query on any aspect of the operation, programming or applications of Rohde & Schwarz equipment.

Up-to-date information and upgrades

To keep your instrument up-to-date and to be informed about new application notes related to your instrument, please send an e-mail to the Customer Support Center stating your instrument and your wish. We will take care that you will get the right information.

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