

R&S®QAR50

Release Notes

Firmware Version 2.4.0.298

© 2024 Rohde & Schwarz GmbH & Co. KG
Muehldorfstr. 15, 81671 Munich, Germany
Phone: +49 89 41 29 - 0
E-mail: info@rohde-schwarz.com
Internet: <http://www.rohde-schwarz.com>

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The software makes use of several valuable open source software packages. For information, see the "Open Source Acknowledgment" provided with the product.

The following abbreviations are used throughout this document: R&S®QAR50 is abbreviated as R&SQAR50.

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1 Information on the current version and history

1.1 Version 2.4.0.298

New functionality

Version	Functions
2.4.0.298	Multiple normalization sets are now supported. For more information refer to the user manual.
	Raw data buffering and delayed image reconstruction is now available and can be used to increase the cycle time in automated measurement setups. Raw data buffering is available via remote commands. Refer to the user manual for more information.
	Added the option to deactivate the remote control window in the qar50_user_config.json using the parameter "ShowSCPIWindow". This allows to simultaneously control the firmware via the UI and SCPI commands.

Modified functionality

Version	Functions
2.4.0.298	Phase steps between -180° and 180° are now checked in the grid evaluation and evaluation mask as well additionally to the standard evaluation window and shifted correctly, to avoid wrong mean values.

Improvements

Version	Improvements
2.4.0.298	Fixed a bug, where restoring previous measurements would display QAR50-K10 frequency resolved measurement results incorrectly.

Known issues

Version	Known Issues
2.4.0.298	-

1.2 Version 2.3.0.285

New functionality

Version	Functions
2.3.0.285	-

Modified functionality

Version	Functions
2.3.0.285	-

Improvements

Version	Improvements
2.3.0.285	Fixed a bug, where the software could crash when evaluating the attenuation of a metallic surface using the grid evaluation.
	Fixed a bug, where the high-resolution reflection images recorded with software versions before 2.X.X.X were displayed incorrectly when imported into the software.
	In simulation mode, the grid evaluation now correctly reflects the settings. Before, the settings of the grid did not change correctly.
	Fixed a bug, where re-evaluation of measurements performed with software version 1.1.0.117 and K20 and K30 option enabled fails, when the grid evaluation is used due to wrong config file entries.
	Grid evaluation does not reset its enable status after device restart anymore.

Known issues

Version	Known Issues
2.3.0.285	-

1.3 Version 2.3.0.279

New functionality

Version	Functions
2.3.0.279	High resolution attenuation image is now evaluated using the evaluation window, or the evaluation mask feature. The results are mean value, standard deviation, and the maximum deviation to the mean value.
	The evaluation grid is now plotted in the high resolution attenuation image and the phasemask image when activated.
	The evaluation grid can now be configured in the user interface.
	The results returned by SCPI commands can now be configured to omit the “\n” character after every line in the json string. Set the “NoNewlineSCPIResult” inside the “qar50_user_cfg.json” to true to use this format.

Modified functionality

Version	Functions
2.3.0.279	Normalization data is not written to the drive with every initialization to reduce chances of corrupted normalization files. The normalization data is only written to the drive when a normalization is triggered.
	Two additional, optional parameters for the MEASurement:GRID:CONFig were added. These allow to save the results of the grid evaluation to the *_results.m struct or save them as a *.csv file.

Improvements

Version	Improvements
2.3.0.279	Fixed an issue, where plotted images are empty when no physical or virtual monitor is connected to the QAR50. This requires the installation of the QAR50IndirectDisplayDriver.
	Fixed an issue, where loading previous measurement results failed when results were partly unavailable. (e.g. after a new software option is activated)
	Fixed a typo in the results statistics of the grid evaluation “MaxDeviationToNeighbor B ”.

Known issues

Version	Known Issues
2.3.0.279	Re-evaluation of measurements performed with software version 1.1.0.117 and K20 and K30 option enabled fails, when the grid evaluation is used due to wrong config file entries.

1.4 Version 2.2.0.244

New functionality

Version	Functions
2.2.0.244	Added support for a grid evaluation using including SCPI commands. Grid cell values are mean values of all pixel values inside the grid. Grid evaluation is available for High Resolution Attenuation and Phasemask results. (requires the QAR50-K20 option)
	Added possibility to change evaluation configuration of loaded results. (e.g. resize the evaluation window of a previous measurement.)

Modified functionality

Version	Functions
2.2.0.244	Changing evaluation configurations (evaluation window size or evaluation mask) are applied automatically on the current measurement, when changed in the options menu, or via SCPI.

Improvements

Version	Improvements
2.2.0.244	Fixed an issue, where the software could crash sporadically when using the K11 option.

Known issues

Version	Known Issues
	-

1.5 Version 2.1.0.228

New functionality

Version	Functions
2.1.0.228	Added support for a phasemask evaluation mask bitmap including SCPI commands.
	Added a phasemask result auto verification wizard.
	Added the possibility to en-/disable the High Quality mode via SCPI.

Modified functionality

Version	Functions
-	

Improvements

Version	Improvements
2.1.0.228	Title frequency in the high-resolution attenuation band 1 image is now displayed correctly.
	K0 Option is now compatible with QAR50 devices that have a 4GB GPU.
	Fixed an issue where the wrong synthesizer frequency was programmed when settings were changed during simulation mode.

Known issues

Version	Known Issues
-	

1.6 Version 2.0.0.217

New functionality

Version	Functions
2.0.0.217	Added support for the QAR50-SKD (1343.0099K04).
	Added support for the QAR50-K11 fast frequency resolved calculation using NVIDIA T1000 8 GB GPU.
	SCPI "DIAGnostic:CALibration" command for calibration added.
	Added the option to evaluate the QAR50-K20 results using a grid. The grid size can be specified in the "config.json" file. The grid evaluation results are saved in the measurement folder.
	Added the high-quality mode to the options menu. The high-quality mode reduces noise and image ripple by averaging the measured raw data 10x. This increases the measurement time by about 1.5 s.
	Added the high-resolution attenuation image to the QAR50-K20 software option.

Modified functionality

Version	Functions
2.0.0.217	<p>"MEASurement:RESult?" SCPI command will now also return the maximum value of attenuation or reflection within band 2 (76 81 GHz). There are now additional fields in the struct.</p> <ul style="list-style-type: none"> -FResponseMaximumdB: Value of the highest reflectivity or attenuation within band 2 in dB -FResponseMaximumPercent: Value of the highest reflectivity or attenuation within band 2 in percent -FResponseMaximumFrequencyValue: Frequency of the highest reflectivity or attenuation within band 2 in Hertz
	<p>When the device temperature deviates more than 5 K from the last normalization temperature, the measurement button in the GUI is locked until the user normalizes the device. This is meant to prevent wrong measurement results due to high device temperature differences.</p> <p>Measurements via SCPI are still possible to avoid interrupting automated measurement cycles.</p> <p>Automated setups should regularly check the normalization status using the "MEASurement:NORMALization:REFLECTION/TRANSMission:REQuired?" SCPI command and normalize as required.</p>
	Reconstruction coordinates for the frequency resolved measurement are now calculated individually for S11 and S22 to improve results for strongly curved or asymmetrical DUTs.

Improvements

Version	Improvements
2.0.0.217	In previous versions, a measurement could not be saved under a new path, as changing the save path deleted the measurement data. This is now fixed.
	Fixed a bug, where an incorrect normalization with a tilted metal plate would cause issues with following measurements.
	Fixed a bug, where the UI could lock up, when the fast warmup failed.

Known issues

Version	Known Issues
	-

1.7 Version 1.2.0.177

New functionality

Version	Functions
1.2.0.177	Fast hardware warmup added, that will try to warm up the hardware to the temperature of the last normalization.
	Temperature monitoring, so that the normalization is required again, if the hardware temperature changed more than a specific threshold value. This is done to avoid a drift of measurement values due to temperature drift of the hardware.
	Better Error handling with error codes for common errors and debugging hints in the user manual.
	Added "SYSTem:STATus:ERRor?" SCPI query, to query the latest entry in the error queue.
	A button to dump all logfiles to a user specific zip file is now added into the GUI.
	Added simulation mode functionality. This allows to install the software on any prepared PC (installation of MCR 9.5 is required) in order to simulate the SCPI interface of the QAR50 or view previous measurements.
	FPGAs can now be updated automatically on the first software start, incase FPGA version is not compatible.
	Added support for the QAR50-K999 Polarization switching option

Modified functionality

Version	Functions
1.2.0.177	Temperature inside the GUI now shows the temperature of the transmitter chips instead of the cluster FPGAs, resulting in a better estimate of potential measurement drifts.
	Logfile trace level is tuned down to "Info / -10" to reduce logfile size.
	Updated User Manual describing the added features.

Improvements

Version	Improvements
1.2.0.177	Fixed an issue, where transmission measurements on a metal plate could return NaN values.
	Hardware initialization is now attempted multiple times to circumvent sporadic initialization issues.
	Configuration file "config.json" is now backed up after a software start, to avoid problems with corrupted config files after a power outage.

Fixed the known issue, where loading old results failed, if the save level was set to 0.

Fixed the known issue, where changing the “shape setup” option after activating the K10 software option lead to unsuccessful measurements.

Fixed an issue, where the evaluation window size could be set wrong, after loading a previous measurement.

Known issues

Version	Known Issues
1.2.0.177	QAR50-K999 Polarization switching option does not work in combination with the KO Demo license.
	Both, reflection and transmission attenuation, have to be normalized before the SCPI query “MEAS:NORM:REFL:REQ?” or “MEAS:NORM:TRAN:REQ?” will return 0.

1.8 Version 1.1.1.117

New functionality

Version	Functions
1.1.1.117	-

Modified functionality

Version	Functions
1.1.1.117	-

Improvements

Version	Improvements
1.1.1.117	Fixed an error, where the K0 demo license did not show all results in the GUI.

Known issues

Version	Known Issues
1.1.1.117	Trying to load previous measurements while using "save level 0" / "Statistics" currently fails, even when the previous measurement data is present. Try to use the "save level 1" / "Statistics, Result and Images" setting instead.
	After the first activation of the K10 software option, the "Shape setup" must not be changed, as this can lead to errors in the software (unsuccessful measurements). Restart the software after the activation of the K10 software option before changing any further settings.

1.9 Version 1.1.1.115

New functionality

Version	Functions
1.1.1.115	Standard deviation of phase values and maximum deviation of phase values from mean phase is now available via SCPI and included in the saved results.
	The scaling of the phasemask display can now be changed inside the options. (Between +/- 10° and +/- 45°)

Modified functionality

Version	Functions
1.1.1.115	Evaluation window is now always centered to avoid wrong measurements.
	Normalization data is now calculated automatically after changing the evaluation window size. A new normalization after changing the evaluation window is not necessary anymore.
	Evaluation window is now also used to calculate the phasemask statistics.

Improvements

Version	Improvements
1.1.1.115	The results of a normalization measurement are now displayed in the user interface in order to check the correct positioning of the metal plate.
	Phasemask and High resolution images are now calculated with linear instead of rotational symmetric aperture weighting, resulting in reduced phase ripple.
	Phasemask values are now corrected, when they are close to +/- 180°.
	Correction is performed using this pseudocode: if (max(phase) – min(phase)) > 359 phase = angle(exp(1i*(phase - mean(phase))*pi/180))*180/pi + mean(phase); end
	Field names of result struct via SCPI interface and the statistics.json file are now identical.
	Scaling of frequency resolved measurement trace is improved.
	NaN values during transmission normalization are now avoided.
	Transmission.Attenuation.FRResponseMinimumPercent available as a SCPI result is now calculated correctly.
	The result available from the "MEAS:RES?" SCPI command is now transferred as a byte array instead of a string to avoid double quotes.
	Saved pictures now have a white background instead of a transparent one.

Known issues

Version	Known Issues
1.1.1.115	Trying to load previous measurements while using "save level 0" / "Statistics" currently fails, even when the previous measurement data is present. Try to use the "save level 1" / "Statistics, Result and Images" setting instead.

1.10 Version 1.0.0.88

New functionality

Version	Functions
1.0.0.88	Initial release

Modified functionality

Version	Functions
1.0.0.88	Initial release

Improvements

Version	Improvements
1.0.0.88	Initial release

Known issues

Version	Known Issues
1.0.0.88	Scaling of frequency resolved measurement trace can be difficult to read in some cases.
1.0.0.88	Field names of result struct via SCPI interface and the statistics.json file differ.
1.0.0.88	Phasemask scaling does not use phase unwrapping, causing irritating phasemask displays with radomes close to +/- 180°.
1.0.0.88	Phasemask image uses rotational symmetric aperture weighting, resulting in increased phase ripples.

2 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 2-1: QR code to the Rohde & Schwarz support page