

R&S®Pulse Sequencer DFS

Release Notes

Software Version 2.3

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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®Pulse Sequencer DFS is abbreviated as R&SPulse Sequencer DFS

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1 Information on current version & history

1.1 Version 2.3

Released: March 2022

New functionality

Functions

Added feature to export debugging information in the main menus "debug information" action

Added Shortcut buttons in sequence dialog to directly create and append pulses and waveforms

Linked Show Connector Dialog in Main menu bar

Saving big repositories took a long time. Speed up by factor 10

Improvements

Improvements

R&S SMM100A support was missing

ETSI301893 2.1.1 signal S6-CAC fixed PRF3-PRF1 to be between 80 and 400 pps

ETSI301893 2.1.1 signal S5-CAC fixed PRF3-PRF1 to be between 20 and 50 pps

Fixed barker Codes 4a/4b. Added 2a/b

Fixed MOP Preview. Try to display maximum number of samples for preview

MOP Preview Sample Rate was too low. FFT preview had low resolution

Fixed waveform viewer scaling

Fixed flickering progress dialog after calculation was actually finished

Missing update on instrument capabilities table when removing an instrument

Update of generator firmware version was missing upon refresh of instruments

Timeout for resetting the signal generators increased. Could lead to errors in some cases

Fixed broken layouts due to high DPI scaling

Generator config info showed no data if no repository was selected

Generator HW dialog was empty and had a broken GUI if no workspace or repository was selected

Fixed math problems in FSK modulation. Could cause 0 signal.

Known issues

Known Issues

None

1.2 Version 2.2

Released: October 2021

New functionality

Functions

Improved the software startup time by 300%

Added support for the R&S SMM100A signal generator

Progress dialog is now movable and resizable

Added proxy settings for networks using proxy servers

Refactored the upper toolbars actions, buttons and icons

Improved discovery times of the repository manager dialog by 1000%

Adapted software to new R&S CI. Changed default color scheme, application icons and splash screens

Added support for SMW-B1067, SMW-B1056, SMW-B1067N and SMW-B1056N RF options

Redesigned block diagram workflow and GUI

Redesigned scenario dialogs for improved usability

Added plugin variables preview table in plugin dialog

Added R&SSMBVB100B-K525 1GHz RF bandwidth support

Added 2GB ARB RAM buffer support for faster calculation of large waveforms

Improved calculation speed for large waveforms (<1GB) by 300%

Improved calculation speed for large waveforms (>1GB) by 100%

Improvements

Prevent potential crash when generators are synchronized when switching between repositories

Changed Wording "Master/Slave" to "Primary/Secondary". Old SCPIs are backward compatible

Fixed window resize functionality, when not using the bottom right resize slider

Fixed missing GUI update in generator configuration dialog after changing generator model

No filtering of generators depending on setups was done. A generator that was present in multiple setups was shown as duplicate instrument

If a generator in "Master" mode inside a hardware setup had no signal assigned to it, the SW crashed

Fixed maximum signal upload timeout. It was limited to 250s, which could lead to timeouts when uploading large waveform files

When exchanging a plugin by other one, all plugin tables in the corresponding dialogs where the plugin is used where not updated to new variables

Disabled calculate button if the volatile results are already there

Fixed potential crash when running the SW on high resolution monitors

SCPI recorder trace for creating virtual generators was missing

SCPI command for creating virtual generators was missing

SCPI recorder trace for creating generators was displaying unnecessary commands

Known issues

Known Issues

None

1.3 Version 2.1

Released: November 2020

New functionality

Functions

Reworked the Signal generator handling inside the Pulse Sequencer. We do not use generator profiles anymore, but instrument handling is implemented as a global pool for all repositories in the workspace. Mapping of profiles is now obsolete to ease the configuration for the user.

Added a summary report in HTML and csv to export information about all items in the repository.

Added combo box in Waveform viewer to switch between all calculated signals.

Added SMW high quality table mode support in generator configuration dialog.

Improved calculation times for random IPM profiles by 400%.

Removing write locks from repositories is not accessible via the repository trees context menu.

Improvements

Improvements

Exchanged Visual Studio runtime related DLLs. Could lead to installation problems.

Timeout for uploading large files was not sufficient. Could lead to abort of the signal.

Changed SCPI sequence for Generator configuration to prevent CW signals before the trigger.

Addition of IPM profiles affecting the same parameter did not work.

Uniform white noise distribution generated numbers above the upper limit by one step size.

IPM preview switched to an envelope mode for a large numbers of preview values. Only the maximum values were displayed in this mode, which could lead to the impression that the other values were missing.

Generator configuration dialog had an issue when switching between a dual channel and a single path generator. Options in path B were invisible but still part of the profile.

SMW-K22 Pulse modulator support was missing for DFS scenarios.

Fixed generator configuration dialog layout for SMWs in DFS mode.

Wizard action "Create Repository" did not work after clearing the workspace

Fixed hidden size grip when maximizing or normalizing window sizes.

SCPI SETup:DELeTe could lead to crash.

SCPI SCENario:TYPE could lead to crash if used with invalid parameters

Repository Manager failed to open via call from the startup Assistant Wizard

Several utility windows like the message log or the console window did not support multiple display support and could end up in a hidden state if the secondary screen was disconnected.

The splash screen of the Pulse Sequencers booting routine was not always shown on the main computer screen when using multiple displays.

SCPI recorder did not show the correct repetitions for loop sequence items.

Fixed cut off text in the main menus sub entries on first show event.

Known issues

Known Issues

None

1.4 Version 2.0

Released: Mai 2020

New functionality

Functions

Added SCPI recorder feature for recording corresponding SCPI commands from GUI interactions

Added clipping level feature to limit signal power to a certain threshold instead of aborting the calculation if the generators upper limit was violated

Reworked several GUI dialogs to improve usability and make things easier to understand

Improved calculation times with random IPM profiles by 400%

Added support for SMW-B144 RF option

Added support for new 1xxx SMW RF options

Increased maximum value for poly chirp coefficients to $-1e32$ to $+1e32$

Added visualization of RAM usage for all signal generators when calculating signals

Changed folder names to human readable format when uploading signals to the generator

Improvements

Improvements

ETSI 301893 2.1.1 Signal 5 Mixed PRF 2/3:

Difference between PRF1 & PRF3 is bounded by 20 Hz and 50 Hz

ETSI 301893 2.1.1 Signal 6 mixed PRF 2/3:

Difference between PRF1 & PRF3 is bounded by 80 Hz and 400 Hz

ETSI 301893 2.1.1 Signal 5 Off-channel-CAC:

New scenario dedicated for wideband devices such as SMW/B9

Changed signal generator configuration order in order to suppress unwanted RF Signals before the final trigger

Fixed installer bundle. Last version 1.10 expected R&S Visa installation and aborted installation if not present

Level changes in single sequence scenarios required re calculation

Copying imported waveforms from one repository to another did not work correctly

Internal pulse modulator did only work for ASCII markers (less than 64 transitions) and not for binary markers (More than 64 transitions)

Fixed combo box behavior. Double click was needed to activate them

Timeout for sanitizing operation was too short which could lead to timeout errors

Settings for FTP block size transmission were empty

Unpinned windows could not be displayed full screen

SCPI for IPM source type was not working. Missing limits as well

When using setups with multiple signal generators an error message was thrown if one of them did not have a signal assigned to it

Rise and fall time markers did not work with multi segment waveform signal generation

Internal pulse modulator cannot be used for multi segment waveforms

Scroll Buttons for Tab Widgets were broken

Progress during FTP upload was missing

FTP transmissions could not be aborted by the user

Aborting a waveform upload did not reset the volatile storage resulting the SW to think, that the waveform was uploaded

SCPIs for clearing the interleaved results and query the volatile status were missing

SCPI INST:COUNT? Always returned 1, no matter how many signal generators were in the setup

Tooltips of numeric edits were not updated regarding their min and max values

Repository manager discard was not working anymore

SCPI connection was not completely closed when closing the application which caused the program thread to remain active

Clarified error message when trying to create a profile from a connected instrument when no physical instrument was present

Known issues

Known Issues

None

1.5 Version 1.10

Released: October 2019

New functionality

Functions

Added MIC standard 07_2019 update

Migrated the Pulse Sequencer DFS software to 64 Bit to ease memory requirements

Added SMW-K545 "RF Ports Alignment" support for hardware setups

Added SMW Master/Slave trigger support for hardware setups

Added SMW LO coupling support for hardware setups

Improved performance of waveform viewers by 350%

Improved all waveform based calculations by 350%

Added RAM buffer setting for faster ARB waveform calculations without buffering to the HDD

Improved table editing. Excel like operation

Markers can now be generated from MOP plugins

Added R&S Visa installer to Pulse Sequencer installer

Added pre pulse and post pulse markers for pulses

Added undock functionality for MDI windows to support multiple screens

Repositories are now saved prior to exporting to prevent empty or incomplete archive files

Improvements

Improvements

Fixed missing conditional formatting in several DFS reporting spreadsheets

Fixed minimum PRI check based on pulse timing parameters. Previously only the pulse width was taken into account and no rise and fall times were considered

Fixed timing preview of pulse for 10/50/90 modes

MSK MOP was not working

Unavailable instrument paths could be selected for signal generation

Fixed zoom in waveform preview. Sometimes the mouse wheel did not trigger a zoom event

Fixed Pos1 key behavior in numeric edits. An unnecessary space character was inserted

Fixed hidden/trapped windows due to dragging them outside the visible area or by changing the size of the main window

Clear workspace action in wizard did not work

Fixed ALC configuration in the SMBV100B generator to prevent unwanted measurement pulses

Erroneous SCPI queries caused a VISA timeout, because no response was send

SCENario:LOCalized:MOVement:WAYPoint could lead to crash if called with wrong parameters

Known issues

Known Issues

None

1.6 Version 1.9

Released: May 2019

New functionality

Functions

Added repository export functionality in file menu

Single sequence scenario GUI now marks the currently selected item in the drop down menu

Improved combo box behavior in tables. Selecting a different combo box with a single click is now possible. Prior the current combo box had to be closed before selecting a different one

Added checkbox to disable recalculation of sequences and collection of sequences when changing the carrier frequency

Improvements

Improvements

Addition of IPM profiles affecting the same parameter did not work

Fixed bug in HW manager. Selection was lost after creating a profile from a connected instrument

Start menu link to pulse sequencer DFS executable was not working

Wideband SMW and SMBVB had wrong maximum clock rate constrain in calculations. 600MHz instead of 520MHz are allowed

Fixed bug in sequence collection scenarios if no generator profile was selected. SW gives a hint now. When creating a scenario, a generator profile is assigned per default

Calculation of overlays of imported waveforms caused an error if the overlay was smaller than the waveform length. Clock rate could not be determined

Executing a rollback repository command could cause a crash

Progress bars did not display a 100% value

Fixed bug when working with separate trigger command mode. Changing between single and continuous mode cleared the volatile storage. A recalculation was required

Fixed bug when working with separate trigger command mode. Changing between single and continuous mode cleared did not change the trigger mode in the generator when pressing the trigger button

Fixed bug in wizard. Creating a new repository did not work

Removed all dock widgets. Close operations on detached windows did no longer work

Fixed spectrogram preview in waveform viewer. Window resize did not clear the FFT data

Fixed 'insert before' and 'insert after' table operations. Index shift caused insertion at wrong pos.

Fixed potential crash when reloading a repository from mass storage

Fixed DFS reporting. End of burst pulse is no longer added to reporting excel sheet

Fixed several GUI and layout issues

Known issues

Known Issues

None

1.7 Version 1.8

Released: February 2019

New functionality

Functions

Increased calculation speed for ARB based signals by 100%

Added support of waveforms for DFS repositories

Added R&S SMBV-B generator profiles in DFS repositories

Added ETSI standard update EN 301893 V2.1.1 with OFDM waveforms

Added ETSI 301893 off-channel CAC. Burst Interval Time (BIT) from 45s to 60s.

Added custom envelope support for DFS version of the Pulse Sequencer

Added buttons for expand / collapse tree operations

Increased waveform viewer performance by 300% (preview calculation times)

Improvements

Improvements

Fixed bug where bandwidth checks were performed on the generators clock rate instead of its bandwidth. Signals with too high bandwidth could be calculated without error message, causing aliased signals

Fixed type 6 signal for ETSI 302 502 v2.0.8. Wrong pulse widths were used

Fixed bug in waveform viewer. Zooming out could result in a small negative start time causing an error message

Fixed bug where collection variables in sequence collection scenarios did not work

Fixed GUI bug, where IPM profiles based on variables were not selectable unless a IPM profile was created in the repository

Fixed bug where newly created generator profiles in DFS repositories did not contain the SMW-K350 option

Minimized windows were not sent to the taskbar, but closed instead

Known issues

Known Issues

None

1.8 Version 1.7

Released: September 2018

New functionality

Functions

Added R&SSMBV-100B generator support

Added time estimate for remaining calculation time

When importing repository archives the repository is now directly opened

Added drag and Drop support for importing repository archives

Added Drag & Drop support for opening waveform files

Added the Pulse Sequencer as default program for opening repository archive and R&S waveform files

Added keyboard shortcuts for most common actions

Added support of using internal pulse modulator in R&S SMW. No more need for external cabling.

Added repository export functionality via right mouse button smart menu in tree view

Improvements

Improvements

Fixed sequence editor delay SCPI. Wrong item index caused limit violation.

MOP plugin parameters where not forwarded to reporting plugin

Fixed wrong reporting template in DFS FCC 06-96_Type 6

Fixed potential crash when using special characters in repository names

Fixed level calibration for external RFs connected via digital interfaces

Fixed calibration. Did not check for analog and digital I/Q output options SMW-K16/K17/K18/K19

Fixed bug in reporting feature. If pulses where dropped because their level was below the level threshold, they still appeared in the report with wrong TOA information

Fixed level preview in pulse dialog. Drag markers showed a 10dB offset

Fixed smart menus in all tables with single selection property. Removed multi select actions

Added message when opening repositories from previous Pulse Sequencer versions. The user can decide, if he wants to update the database.

Fixed bug in MSWV evaluation. Pulses with level below threshold where counted as segments

Added missing check and error message when trying to calculate an empty sequence

The pulse width of Barker codes was confused as the chip width in all viewers

Fixed bug where the internal clock rate of the signal generator was taken into consideration for bandwidth calculations and not the actual bandwidth

Fixed bug where all windows were initially restricted to 80% of screen size. Only after pressing the maximize button, the size could be increased to full screen

Fixed wrong pulse widths in ETSI 302 502 v2.0.8 Type 6

Added off channel testing in ETSI 301.893 (CAC, off-channel CAC)

Known issues

Known Issues

None

1.9 Version 1.6

Released: February 2018

New functionality

Functions

Added YD/T 2950-2015

Added EN 302502 V 2.0.8

Added EN 301893 V1.8.5

Added firing order to list-based IPM profiles

New page with storage locations in settings dialog

Added shortcuts for IPM assignment dialog

Improvements

Improvements

Fixed EN 302502 V 1.2.1 PRF IPM for signal 2

Fixed bug related to HW setups. The pulse sequencer always tried to connect to all generators, even if they were not used in a scenario

Fixed bug where a generator profile with two basebands but only one RF caused the Pulse Sequencer to not configure the second baseband

Fixed bug, where selecting the "use pulse modulator" option in the HW management dialog did not have an effect on the instrument configuration

Fixed bug in waveform triangular IPM profile where one entry more than needed was generated

Fixed bug where the default generator profile created upon creation of a repository could not be deleted

Fixed dialog windows for high-DPI displays

Fixed bug, where the RUN button in sequence based scenarios did not update level and frequency of the generator if value is changed after initial calculation

Known issues

Known Issues

None

1.10 Version 1.5

Released: Mai 2017

New functionality

Functions

Added level calibration wizard for HW setups

Added import/export functionality for HW setups

Added x axis zoom in MOP preview

Waveform generation duration settings simplified. Auto option added

Improvements

Improvements

Fixed wrong frequency scaling in pulse modulation preview

Optimized FFT preview in MOP preview

Fixed bug where pulse MOP frequency preview was limited to 200MHz

Fixed bug where changing the RF channel was not working after the signal was calculated

Known issues

Known Issues

None

1.11 Version 1.4

Released: September 2016

New functionality

Functions

Added FCC KDB 905462 D02 New Rules

DFS FCC0696 - Type 5 - Standard Update

Added binomial IPM profile

Added loop variables for use in IPM profiles, enabling sequencing of sequences

Installer now checks correct VISA driver installation

Added SCPI commands for minimizing/maximizing the Pulse Sequencer GUI

Added SCPI commands for querying the Pulse Sequencer message log

Custom Pulse Envelope now also available for K-350 option

IPM profiles can now be specified based on repetitions or time

Improvements

Improvements

Fixed potential crash when restoring a workspace with less repositories than the current one

Known issues

Known Issues

None

1.12 Version 1.3

Released: March 2016

New functionality

Functions

Added SMW wideband generator profile with 2GHz baseband bandwidth

Improvements

Improvements

Fixed spectrogram scaling error in waveform viewer

Fixed bug that showed wrong connector name in the scenario block diagram

RF B was selectable in generator profiles with only a single RF

Suppressed measurement pulse at SMU and SMJ ARB startup, which could disturb a DUT

Known issues

Known Issues

None

1.13 Version 1.2

Released: January 2016

New functionality

Functions

ETSI 301893 1.7.1 reference signal added

ETSI 301893 1.7.1 end of burst pulse corrected to have zero amplitude

ETSI 301893 1.7.1 signal clock increased to 100 MHz

ETSI 301893 1.7.1 marker signals are now properly generated

ETSI 301893 1.7.1 multi PRF signals now generate the correct number of pulses

FCC0696 Type 5 waveforms size decreased to fit ARB memory and speed up calculation

FCC0696 Type 6 band limited hopping signal added

FCC0696 Type 5 SMU specific waveform added because of 96 segment limitation in SMU

FCC0696 Type 1 clock rate increased to 100 MHz (required for detection BW measurement)

FCC0696 Type 5 clock rate set to 30 MHz ensures proper chirp generation

FCC1322 Type 0 clock rate increased to 100 MHz (required for detection BW measurement)

FCC1322 Type 2-4 changed to use identical PW and PRI value for all pulses

FCC1322 Type 2-4 pulse per burst count corrected

FCC1322 Type 1 PRI values are now unique

Japan MIC W56 chirp waveform generates smaller files now

Japan MIC generator profiles updated

Japan MIC some waveform parameters corrected

Japan MIC added W56 chirp type waveform for use with SMU and SMJ

Japan MIC added W56 band limited hopping signal

DFS plugin source code added as SDK option in installer

Japanese DFS renamed from TELECOM to MIC

SGT generator profile added to all DFS projects

K350 DFS option now also available for SGT100A signal generator

Frequency setting in scenario dialog allows Hz precision

Added Java Script functionality to GUI

Changed restart() API in IPM plugin

Creation of Save/Recall file can be turned off under waveform generation settings in scenario

Enabled high quality I/Q modulator mode in generator

IPM Steps used with phase return value as modulo 360 value

Sequence editor now supports undo/redo functionality

Repository version increased to 2. Compatibility check added

Generator profile dialog and connection diagram now have a "Show Connector" feature

It is now possible to create a generator profile directly from the generator mapping dialog

GUI now scales automatically, when changing the DPI size of the text in the OS settings

Added SCPI command for sanitize

Loop sequence item can now define a variable which can be used for marker generation

Sequence supports phase modes (absolute, continuous, memory) for frequency hopping

Improvements

Improvements

Copying sequence to other repository did not copy waveforms used as sequence items

Phase was not correctly shown in degrees in waveform viewer window

Static phase offset was not correctly applied in pulse modulation

When renaming a tree element, the item was named "Rename" by default when the field was empty

Editing the repetition count in a sequence also affected other sequences

Minimum PRI was not correctly applied in first sequence line

Long SCPI commands were truncated when copied using SCPI help copy functionality

Markers were missing when importing a waveform

Known issues

Known Issues

None

1.14 Version 1.1

Released: April 2015

New functionality

Functions

Log is brought to desktop if it was located outside of the visible desktop area and an error occurs

Value range in IPM U-Distribution increased because 1000 was not enough for frequency offsets

TX/RX buffer size can now be set by the user (instrument upload/download)

Added FTP upload and new GUI settings for FTP upload

Modified LAN search to work with direct links PC <-> Instrument (no DNS in network)

Sequence block diagram is interactive. Features direct access to items as well as context menus

Pulse timing is now visualized in plot

Marker positions are now visualized in plot

Measurement line now shows delta units on y axis

Waveform viewer now also shows frequency at cursor position

New installer based on Windows Installer, fixes issues with Windows UAC and 64-bit systems

New version numbering scheme <Major>.<Minor>.<DaysSince2000>.<SecondsSinceMidnight/10>

Network scan in "ZeroConf" networks improved (host resolution omitted)

Creating a new repository from GUI also creates one SMW200 default generator profile

Creating data source from MOP also assigns the new data source automatically

Improvements

Improvements

The minimum permissible PRI was wrong with 10/50/90 timing

Due to a rounding problem waveform could be too long by one PRI cycle

Sequence marker and scenario marker could not be controlled independently

Pulse ripple frequency was not evaluated in min. required clock rate

Fixed SGT profile capabilities error. Memory and bandwidth options were not recognized

IPM List Preview auto scale error

Sequence editor crashed when deleting loops with children

SMBV-B50 and SMBV B55 options were not recognized

Level and Frequency were not applied if volatile storage was already valid

Waveform viewer 'auto play' did not stop if window was minimized

Fixed update problem in instrument capabilities

Not supported instruments were shown in table for connected instruments

MOP 'Width' restriction was not correct when used with 0/100 pulse definitions

Fixed bug in sequence block diagram, which leads to quickly disappearing tooltips

Fixed problem with instrument profile generation from a connected instrument. The generator type combo box disappeared for all other profiles.

When changing the name of a tree element, it was no longer selected, causing wrong SCPI help.

Fixed bug in waveform generation. Last sample was always missing.

Fixed potential crash in sequence editor

All collections did not keep their item order on subsequent load from storage

Data source dialog was not properly set to invalid when data source got removed

BPSK MOP with automatic symbol rate did not work in preview if no data source was assigned

Known issues

Known Issues

None

1.15 Version 1.0

Released: January 2015

2 Modifications to the documentation

The current documentation is up-to-date.

3 Installing the Software

3.1 Uninstall a previous installation

To uninstall a previous version of the Pulse Sequencer software, click on the Windows Start button and navigate to Settings -> Control Panel -> Add or Remove Programs. Then select the previously installed version of the Pulse Sequencer to uninstall it.

3.2 Install the new software version

R&S Pulse Sequencer requires one of the following operating systems:

Windows 7 (64 Bit)

Windows 8 (64 Bit)

Windows 10 (64 Bit)

It is suggested to uninstall any previous version of the Pulse Sequencer software before installing the new software.

In Windows Explorer double-click the installer executable 'PS-DFS-Install 2.3.x.x.msi' and follow the instructions. Existing Pulse Sequencer installations are automatically updated. This includes example repositories provided by Rohde & Schwarz. Other user data, such as repositories or settings are not affected by the software update.

4 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:



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