R&S®WMS32
Release Notes

Software Version 12.00.00

PAD-T-M: 3574.3288.02/05.00/CI/1/EN

ROHDE&SCHWARZ
Make ideas real

Contents

1 Information on the current version and history

1.1 General

ATTENTION:

In order to be compliant with normative requirements of the newest standard versions, R&S®OSP-B157W8 is required. For WMS32-K05E and WMS32-K06E, R&S®OSP-B157W8PLUS and a vector signal generator supporting 7.125 GHz is required. Additionally, all paths need to be calibrated up to the required measurement / test frequency.

This new software version (V10.50 or newer) supports Adaptivity test cases (ETSI EN 300 328) and DFS test cases (FCC & ETSI) only with R&S®OSP-B157W8 or R&S®OSP-B157W8PLUS.

Unfortunately, R&S®TS8997 cannot support R&S®OSP-B157 (4 port) any longer.

Please contact your sales engineer for trade-in offers.

Channel Access Mechanism / DFS / Contention Based Protocol:

It is necessary to upload new waveform files to the vector generator. To do so:

Go to "Device List" > used vector generator > "Properties" > "File Upload" deselect "Force overwriting existing files on device" and press "Upload TS8997 Waveform Files".

Some language and regional settings of the operating system might cause issues in WMS32. In case you are experiencing issues in WMS32, please first change the format and the current language for non-Unicode programs to English (United States).
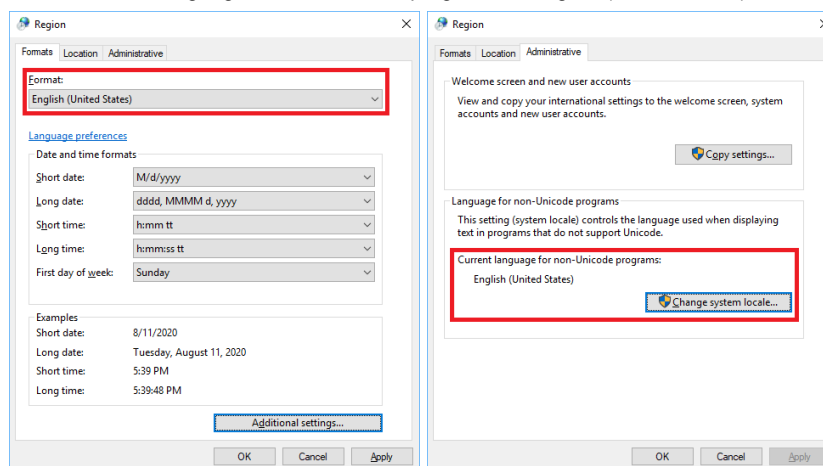
1.2 Version 12.00.00

New functionality

Version	Functions
12.00.00	***WMS32-K-W7 (WLAN driver for CMX):*** - Added support for R&S®CMX500 OBT (WLAN) to allow automated receiver testing with new WMS32 software option WMS32-K-W7. *Minimum firmware version of the R&S®CMX500 is CSW 7.60.0, with WLAN signaling firmware 5.0.0 (first release).*
12.00.00	***WMS32-K06E (FCC §15.407 U-NII-5/6/7/8):*** - Added new equipment type very low power device (6VL) to DUT configuration with corresponding limits for RF output power and power spectral density test cases.

Modified functionality

Version	Functions
12.00.00	***WMS32-K222 (ETSI EN 300 220-2):*** - Enabled selection of radiated max power position search in test template.
12.00.00	***WMS32-K05 (ETSI EN 301 893) / WMS32-K05E (ETSI EN 303 687):*** - Improved transmit spectral power mask calculation when absolute limit applies (e.g. relevant for VLP devices). - Changed absolute limit from -30 dBm/MHz to -40 dBm/100 kHz for additional 100 kHz RBW measurement procedure.

Improvements

Version	Improvements
12.00.00	***WMS32-K06 (FCC §15.407):*** - Removed redundant entry in limit line definition of Band Edge / Tx Spurious Emission in FCC §15.407 (2023).

Known issues

Version	Known Issues
12.00.00	No known issues.

1.3 Version 11.70.00

New functionality

Version	Functions
11.70.00	**WMS32-K05 (ETSI EN 301 893):** - Added anticipated final version ETSI EN 301 893 V2.2.1 (available to users with a valid SWS-301893).
11.70.00	**WMS32-K05E (ETSI EN 303 687):** - Added ETSI EN 303 687 V1.1.1 (available to users with a valid SWS-303687).
11.70.00	**WMS32-K07 (FCC §15.247) / WMS32-K06 (FCC §15.407) / WMS32-K06E (FCC §15.407 U-NII-5/6/7/8):** - Added new version 2023 for the FCC standards (available to users with valid SWS-15247, SWS-15407 and SWS-15407E). - Added new frequency band U-NII-4 (5850 MHz to 5895 MHz) for FCC §15.407 (available in version 2023).

Modified functionality

Version	Functions
11.70.00	**General Functionalities:** - Added driver support for R&S®SMCV100B as signal generator. - Added driver support for R&S®FPL1000 as WMSSpectrumAnalyzer. - OSP-B157WX is no longer accessed when deselected in hardware setup.
11.70.00	**WMS32-K07 (FCC §15.247):** - Added in-band peak value to report for band edge measurements. - Number of hops, average on time and accumulated average transmit time calculation considers truncated bursts.

Improvements

Version	Improvements
11.70.00	**WMS32-K05 (ETSI EN 301 893 V2.1.51):** - Fixed issue during RF output power measurement for transmissions in multiple sub-bands.
11.70.00	**WMS32-K222 (ETSI EN 300 220-2):** - Fixed issue during out-of-band measurements with non-integer center frequencies.

Known issues

Version	Known Issues
11.70.00	No known issues.

1.4 Version 11.60.00

New functionality

Version	Functions
11.60.00	**WMS32-K05 (ETSI EN 301 893):** - Added new draft version ETSI EN 301 893 V2.1.51 (available to users with a valid SWS-301893).
11.60.00	**WMS32-K05E (ETSI EN 303 687):** - Added new draft version ETSI EN 303 687 V1.1.0 (available to users with a valid SWS-303687). - Added support for DUTs with 320 MHz bandwidth to transmitter unwanted emissions within the 6 GHz WAS/RLAN band (multi-channel).
11.60.00	**WMS32-K07 (FCC §15.247) / WMS32-K06 (FCC §15.407) / WMS32-K06E (FCC §15.407 U-NII-5/6/7/8):** - Added new version 2022 for the FCC standards.

Modified functionality

Version	Functions
11.60.00	**General Functionalities:** - Test sequence execution order changed for ETSI and FCC standards. - Report indicates the used version of WMS32 during test execution instead of the version used for creating the test template.
11.60.00	**WMS32-K07 (FCC §15.247):** - Report indicates the in-band peak power for Tx spurious emission.

Improvements

Version	Improvements
11.60.00	**General Improvements:** - Implemented correct channel numbering when using CMW-Z800A.
11.60.00	**WMS32-K05 (ETSI EN 301 893) / WMS32-K05E (ETSI EN 303 687):** - Removed unused entry in advanced settings of adaptivity with interferer test.
11.60.00	**WMS32-K05 (ETSI EN 301 893):** - Fixed issue in selection of correct sub-band for PSD test. - Fixed issue when opening the test case settings of PSD.
11.60.00	**WMS32-K05E (ETSI EN 303 687):** - Adapted default frequency range in PSD graphics.

Known issues

Version	Known Issues
11.60.00	No known issues.

1.5 Version 11.50.00

New functionality

Version	Functions
11.50.00	**WMS32-INA / SWS-INA (Normalized Measurements):** - Introduction of new software options WMS32-INA and SWS-INA for the normalized measurement approach covering the supported test cases in ETSI EN 301 893 and ETSI EN 303 687. - Additional hardware required for normalized measurements (e.g. R&S®OSP-B157WN, R&S®TS7124).

Modified functionality

Version	Functions
11.50.00	**General Functionalities:** - Generated report indicates the used version of WMS32. - Selection of DUT port in connection settings is now mandatory. - Added driver support for R&S®SMCV100B and corresponding handling of limitations (e.g. DFS is not supported).
11.50.00	**WMS32-K02 (ETSI EN 300 328):** - Added duration of longest burst to reporting of RF power measurement.
11.50.00	**WMS32-K05E (ETSI EN 303 687):** - No limit from 5935 MHz to 5945 MHz for transmitter unwanted emissions outside the 6 GHz WAS/RLAN band.

Improvements

Version	Improvements
11.50.00	**General Improvements:** - Adapted SCPI commands for BT LE DTM in corresponding CMW driver. - Improved handling of vector signal generator when switching off signals.
11.50.00	**WMS32-K02 (ETSI EN 300 328):** - Fixed issue in DUT configuration where selected receiver category is not displayed in GUI.
11.50.00	**WMS32-K05E (ETSI EN 303 687):** - Fixed issue that calculation of stop frequency is only triggered by a frequency change.

Known issues

Version	Known Issues
11.50.00	No known issues.

1.6 Version 11.40.00

New functionality

Version	Functions
11.40.00	***WMS32-K05E (ETSI EN 303 687):*** - New option WMS32-K05E / SWS-303687 for Wi-Fi 6E covering the following test cases: RF Output Power, Power Spectral Density, Occupied Channel Bandwidth, Nominal Center Frequency, Rx Spurious Emissions, Tx Unwanted Emissions within the 6 GHz Band, Tx Unwanted Emissions outside the 6 GHz Band, Receiver Blocking, Receiver Selectivity, Channel Access Mechanism. - New ARB waveform files (AWGN, IEEE 802.11a, IEEE 802.11ax, NR FR1) for vector signal generators added (need to be uploaded, open vector generator configuration in device list > Properties > File Upload > "Upload TS8997 Waveform Files").
11.40.00	***WMS32-K07 (FCC §15.247) / WMS32-K06 (FCC §15.407) / WMS32-K06E (FCC §15.407 U-NII-5/6/7/8):*** - Added new version 2021 for the FCC standards.

Modified functionality

Version	Functions
11.40.00	***General Functionalities:*** - Report table configuration is again available for most test cases. - WMS Wizard allows the selection of different configurations for the OSP-B157WX (e.g. OSP120, OSP220). - Maximum additional attenuation between companion and DUT is now limited to 50 dB according to the dynamic range specified in the datasheet of the OSP-B157W8PLUS.
11.40.00	***WMS32-K02 (ETSI EN 300 328):*** - Added additional action in the adaptivity test case after normal operation (i.e. before injecting an interferer signal).
11.40.00	***WMS32-K02 (ETSI EN 300 328 V2.2.2):*** - Modified default equation for number of sweep points and sweep time for spurious and OOB measurements.
11.40.00	***WMS32-K07 (FCC §15.247):*** - Variable in equation for frequency span of peak PSD measurement changed from NBW to OBW.

Improvements

Version	Improvements
11.40.00	***General Improvements:*** - Word reporting (WMS32-K86) now shows a warning when Word is not installed properly. - Fixed issue during test sequence creation for special frequency combinations which also include frequency independent blocks.
11.40.00	***WMS32-K02 (ETSI EN 300 328) / WMS32-K05 (ETSI EN 301 893) / WMS32-K502 (ETSI EN 302 502):*** - Log displays correct sign in calculation when using a CMW for receiver blocking tests. - Improved handling of custom blocking frequencies.
11.40.00	***WMS32-K02 (ETSI EN 300 328):*** - Improved automatic blocking frequency selection in case of FHSS devices.
11.40.00	***WMS32-K502 (ETSI EN 302 502):*** - Issue resolved when only Word reporting (WMS32-K86) is selected.
11.40.00	***WMS32-K05 (ETSI EN 301 893) / WMS32-K06 (FCC §15.407):*** - Fixed issue in DFS trace evaluation when DUT power is continuously higher than threshold.
11.40.00	***WMS32-K06 (FCC §15.407):*** - Improved pulse width measurement accuracy for DFS radar verification. - Text in test report references corresponding bandwidth measurement (e.g. 99% BW, 6 dB BW, 26 dB BW).

Known issues

Version	Known Issues
11.40.00	No known issues.

1.7 Version 11.30.00

New functionality

Version	Functions
11.30.00	**General Functionalities:** - Support for R&S®SMM100A added. - New frequency options added to R&S®SMW200A driver.

Modified functionality

Version	Functions
11.30.00	**General Functionalities:** - Vector signal generator driver now supports to select port B. - Added report table configuration for most tests.
11.30.00	**ETSI EN 300 220:** - Additional tables added with results of spurious emission measurements.
11.30.00	**ETSI EN 300 328 / ETSI EN 301 893:** - Added corresponding timestamp of min. and max. COT for adaptivity (timestamp of max. COT is also included in report). - Added a variable search level for adaptivity instead of a fixed value of 15 dB (for DUT and companion). - Threshold for adaptivity is calculated from measured peak value of actual trace instead of max. DUT power. - Truncated bursts are no longer considered for the evaluation of min. COT. - Min. idle time is renamed to max. allowed gap during COT.
11.30.00	**ETSI EN 300 328 / FCC §15.247:** - Hopping / Carrier Frequency Separation test cases are displaying warnings instead of aborting the test when low dynamic range is detected.
11.30.00	**FCC §15.407 (U-NII-5/6/7/8):** - Radiated max. power position search (WMS32-RAD) added for FCC §15.407 (U-NII-5/6/7/8).

Improvements

Version	Improvements
11.30.00	**General Improvements:** - Hardcopies are no longer stored in root directory which resolves issues when creating hardcopies on new generation spectrum analyzers (e.g. R&S®FSV30XX, R&S®FSVA30XX). - Improved check for applicable frequency limitations for spurious emission measurements. - Improved level accuracy for Accumulated Transmit Time, Frequency Occupation and Time of Channel Occupancy when using R&S®OSP-B157W8PLUS. - Frequency name in action is now displayed properly if changed during a test case.
11.30.00	**ETSI EN 300 328 / ETSI EN 301 893:** - Opening a finished adaptivity test is now possible even if corresponding hardware setup missing. - Issue of missing first burst in combined traces is resolved for adaptivity. - Displaying issue when only one burst is detected during adaptivity is resolved. - Added correction of stop time during adaptivity tests for companion device measurements. - Improved correction of stop time during adaptivity tests for first burst when measurement already starts with a burst. - Improved accuracy of measured power during adaptivity tests when using R&S®OSP-B157W8PLUS.
11.30.00	**ETSI EN 301 893 / FCC §15.407 (DFS):** - Improved robustness against timing issues that occurred for some hardware combinations.
11.30.00	**FCC §15.407:** - Report of TPC test indicated pass/fail for tests even in case measurement is not applicable.

Known issues

Version	Known Issues
11.30.00	No known issues.

1.8   Version 11.20.00

New functionality

Version	Functions
11.20.00	***FCC §15.407 (U-NII-5/6/7/8):*** - New option WMS32-K06E / SWS-15407E for Wi-Fi6E in U-NII-5/6/7/8 bands covering the following test cases: RF Output Power, Power Spectral Density (SA-1/SA-2/ SA-3), Emission Bandwidth (26 dB), Occupied Channel Bandwidth (99%), Frequency Stability, In-Band Emissions, Tx Spurious Emissions, Emissions in Restricted Frequency Bands (WMS32-K14 required), Contention Based Protocol. New ARB waveform files (AWGN) for vector generators added (need to be uploaded, open vector generator configuration in device list > Properties > File Upload > "Upload TS8997 Waveform Files").
11.20.00	***FCC §15.247 / FCC §15.407:*** - Added new version 2020 for the FCC standards.

Modified functionality

Version	Functions
11.20.00	***ETSI EN 300 328:*** - Hopping sequence test additionally reports band allocation in percent. - Receiver blocking test case uses in-band gain from the DUT.
11.20.00	***ETSI EN 301 893 (V2.1.1):*** - Adaptivity test case displays uncertainty compensation value in report. - Added COT-dependent observation time to receiver settings for adaptivity test (limited to 65 s).

Improvements

Version	Improvements
11.20.00	***General Improvements:*** - Added timeout of 10 minutes in OSP-B157W8/W8PLUS driver in case instrument is non-responsive. - Remote commands related to options that are not available on the instrument are no longer used by default. - Issue resolved when using a hardware setup that includes a legacy OSP-B157 (4 port). - Legacy WMS32 report template files are automatically deleted before creating a report.
11.20.00	***EMC32-K10A:*** - Fixed issue with correction of peak value from pre-measurement for final measurement. - Issue resolved when defining minimum required measurement dynamic for burst detection. - Changed algorithm that truncated bursts are no longer considered in subsequent evaluation.

11.20.00	**_ETSI EN 300 328 (V2.2.2):_** - Fixed issue while increasing / decreasing attenuation in receiver blocking test case.
11.20.00	**_ETSI EN 300 328 / ETSI EN 301 893:_** - Fixed issue in adaptivity tests when configuring a DUT with negative gain and performing no power measurement. - Fixed issue in adaptivity tests displaying wrong generator device state in report.
11.20.00	**_ETSI EN 301 893 (V2.1.1):_** - Receiver blocking no longer uses the antenna gain to calculate the blocker level.
11.20.00	**_ETSI EN 301 893 / FCC §15.407 (DFS):_** - Report creation fixed and improved in case of user defined waveform (myARB.wv) is used.

Known issues

Version	Known Issues
11.20.00	No known issues.

1.9 Version 11.10.00

New functionality

Version	Functions
11.10.00	***General Functionalities:*** - New variables FREQUENCY and FREQUENCYWITHTESTMODE added to Word reporting. - Field "DUT Name:" provided in DUT configuration can now be used as variable in supported actions. - Added functionality to measure and combine multiple antenna ports for bandwidth measurements (WMS32-K09 necessary).
11.10.00	***EMC32-K10A:*** - Burst detection of EMC32-K10A now allows defining minimum required measurement dynamic for further evaluation.

Modified functionality

Version	Functions
11.10.00	***General Functionalities:*** - Improved loading speed of large WMS test templates (incl. detailed information in status bar). - Reduced file size and creation time of RTF reports (e.g. in case of many hardcopies).

Improvements

Version	Improvements
11.10.00	***General Improvements:*** - Issue fixed with saving of OSP-B157W8/W8PLUS attenuation tables in corresponding test folder. - Fixed issue when using only Word reporting for a test that is not according to the corresponding standard. - Issue resolved regarding wrong displaying of DUT connector settings when reopening a corresponding test case (e.g. band edge, unwanted emissions). - Issue resolved when stopping and resuming a test case using a CMW for EUT monitoring. - Problem solved with saving on/off analyzer settings with some Windows language and region settings. - Issue resolved when adding a CMW to the device list when only WMS32-K-BT / WMS32-K-WL is available. - Issue resolved that occurred after selecting beamforming gain table in the DUT configuration.
11.10.00	***ETSI EN 300 328 (V2.2.2):*** - Receiver blocking test case now shows correct CMW level in log. - Receiver blocking test case uses wanted level at DUT independent of external attenuation settings in CMW.

11.10.00	***ETSI EN 300 328 / ETSI EN 301 893:*** - Issue resolved in PSD tests for DUTs with Continuous Transmission / Constant Duty Cycle.
11.10.00	***ETSI EN 301 893 (V2.1.1):*** - Analyzer settings for Adaptivity (with interferer) changed (RBW = 0.5 * OBW).
11.10.00	***FCC §15.407 DFS (2019):*** - Issue resolved regarding missing waveform folder for vector signal generator.

Known issues

Version	Known Issues
11.10.00	No known issues.

1.10 Version 11.00.10

New functionality

Version	Functions
11.00.10	No new functionalities.

Modified functionality

Version	Functions
11.00.10	No modified functionalities.

Improvements

Version	Improvements
11.00.10	No improvements.

Known issues

Version	Known Issues
11.00.10	No known issues.

1.11   Version 11.00.00

New functionality

Version	Functions
11.00.00	**FCC §15.247** - Alternative measurement methods for power spectral density are added to the standard. - Existing power spectral density measurement is renamed to Power Spectral Density (AVGPSD-3).
11.00.00	**FCC §15.407:** - Alternative measurement methods for power spectral density are added to the standard. - Existing power spectral density measurement is renamed to Power Spectral Density (SA-3).

Modified functionality

Version	Functions
11.00.00	No modified functionalities.

Improvements

Version	Improvements
11.00.00	**General Improvements:** - Applicable standard of the DUT is displayed during execution and after loading of tests. - Binary data transfer from signal analyzer improved in order to fix related issues.
11.00.00	**FCC §15.247 / §15.407:** - TPC settings in the DUT configuration are again added for FCC standards.
11.00.00	**FCC §15.407:** - Renaming of equipment types in the DUT configuration to align with naming convention of §15.407.
11.00.00	**ETSI EN 300 328 (V2.2.2):** - Lower priority of receiver blocker measurements also for non-FHSS devices.

Known issues

Version	Known Issues
11.00.00	No known issues.

2 Modifications to the documentation

The current documentation is up-to-date.

3 Software update

3.1 Updating the software

Download and expand (unzip) the file "EMC_AMS_WMS32_11V60.zip" to a temporary folder on your hard drive.

Run the "Setup.exe" program in order to update your WMS32 installation to V11.60.00.

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:

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