

R&S®SMW200A

Release Notes

Firmware Version 5.30.175.16

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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® SMW200A is abbreviated as R&S SMW200A

PAD-TM: 3574.3288.02/04.00/CI/1/EN

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1 Information on the current version and history

NOTICE

Specified frequency and level setting times for instruments equipped with an IPC10/2 Controller with firmware version 4.30.005.29 and higher are increased by typ. 0.2 ms.

NOTICE

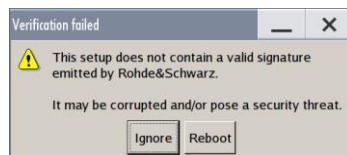
Signatures:

As of version 5.30.xxx.xx, only signed updates are released to make the instruments even more secure.

This will make it possible to detect all future unsigned or manipulated updates.

For more information, see the R&S SMW User Manual.

Through a modified check of the signature, the old releases 4.00.023.20, 4.15.048.29 and 4.20.004.25 generate the following message during the update process:



This message can be ignored, press "Ignore".

The signature of release

5.00.166.20/22/23

has a term of 2 years only.

1.1 Version 5.30.175.16

Released: June 2024

New Options

- none

New Functionality / Changed Behavior

Improved switching times when changing bias values of analog IQ out.	1266498
PHP has been upgraded to version 8.1.28 to ensure improved security, performance and compatibility.	1284780

Fixed Issues

SCPI Command :DISP:ANN:ALL not working	1286237
5G NR - Downlink: If the user configures a reserved value for the DCI antenna port field and attempts to generate the shared channel allocations, the firmware might crash	1286827

1.2 Version 5.30.175.14

Released: April 2024

New Options

- SMW-K178 Bluetooth 5.4 + Channel Sounding
- SMW-K478 Bluetooth 5.4 + Channel Sounding (WINIQSIM2)
- SMW-K129 MS GNSS INTERF.TEST

New Functionality / Changed Behavior

It is now possible to load in addition to .wav file types also .csv, .iq.tar and .mat files.	1073547	
OFDM: Addition of zero padding after symbols	1218874	
Radar Echo Generation (REG): Evoke system latency calibration additionally via Button, display when calibration value becomes invalid	1225188	
SMW-Fading: Adapt behavior with 1x SMW-K71, 1x SMW-K72 or 1x SMW-K820 and 2x/4x SMW-B14 or 2x/4x SMW-B15 according to description in SMW datasheet.	1107576	
5G New Radio		
General	Downlink: Coreset for 24 PRBs and 5 MHz bandwidth and 15 kHz can be punctured to 20 PRBs	1222515
	Sidelink: New message type PSFCH	1223419

	Rel-18: Addition of new bandwidth 3MHz and puncturing of SSB and CORESET	1174914
	R18 Test Models for 3 MHz	1248923
TCW	Test requirement for test case 841 PRACH with LRA=1151 and LRA=571	1206750
GNSS		
	For GNSS Assistance Data Generation the user reference location now automatically is synchronized to the current simulated GNSS receiver position and sub-widget Reference Location is removed. Additionally start time is now automatically derived from overall simulation start time and read only in Assistance Data Generation widget.	939512
	Add TLE data import from file for simulation of orbital trajectories for GNSS receivers	1179386
	User configurable Galileo OSNMA message content	900397
	Added GALILEO OSNMA test vector set	1236678
	Generation of GNSS log data now blocked when real-time GNSS signal generation is running	1264190
	Importing satellite ephemeris data for inactive GNSS systems is no longer possible via SCPI and leads now to an error message	1217234
RADAR		
	SMW-K502/3/4: Increased TOA stats counter from "s" to "ms" granularity	1268744
	SMW-K504: Added High Speed PDW option to reach a constant ~2MPDW/s streaming rate	1205233
Bluetooth		
	First version to support options K178/K478.	1093059
	Support for options K178 and K478.	1162649
	DataList and User Sync Word are added to the Test Packet Configuration.	1220939

Fixed Issues		
	ARB: instrument is crashing when Preset This Parameter is used inside ARB table (system mode Advanced + BB Coupled Sources)	1233678
	ARB: SCPI Recorder does not work for Multi Segment table	1232542
	Custom Digital Modulation: external local clock only available with 2x SMW-B10 installed	1213037
	Do Preset this parameter on the parameter Secure update policy and User Interface presets value to default	1084190
	Error message regarding LO signal displayed incorrectly under some circumstances	1215967
	EUTRA/LTE: Uplink: UI configuration issue for aperiodic SRS.	1238426
	Generated SCPI log contains dB?V instead of dB μ V.	1219661
	K544: Concatenation of s1p files in the first place of the list gave wrong result.K544: Resulting frequency response graphs and absolute level correction are now updated independent from RF state	1227956
	K555: Device crashes during setup calibration if the maximum PEP for calibration is set to negative values.K555: Devices equipped with B9F crashed during setup calibration.	1222565
	EUTRA/LTE: Fix Data Source ID value in V2X	1201752
	Multi instrument with 2 SMWs: no sync when SGTs are connected as external RFs to secondary SMW	1215158
	EUTRA/LTE: NB-IoT: RBIndex for Guardband is corrected for the respective bandwidths	1207036
	OFDM: Fix for External Trigger Delay.	1227977
	Output level setting using SCPI not handled correctly in Constant-Phase mode	1217318
	Port Alignment correction not working correctly in certain frequency / level ranges.	1242324
	Power Sensors: When adding a sensor manually in rare cases an error message could occur.	1222805
	Preset takes longer than usual if K810 is present	1219257
	Settling time of frequency/level too slow with 5.30.047.20/23 on devices equipped with IPC10/2	1235084
	SMW B9, SMM: GSM burst correction for slot 8	1205208
	SMW200A: For devices with B1006 or B2006 installed, the frequency response in High Quality Table mode showed in some cases high ripple	1230876
	SMW-B10: Incorrect signal when loading waveforms with binary control lists	1249901
	TELPV indicators are now correct when either option 'A RF Off & B External' or 'A External & B RF Off' are chosen. 'RF Connectors Dialog' now also shows the correct state for 'LO In' in these cases.	1234003
	The SCPI connection is not blocked as expected by an *OPC query for the user preset feature	1249141
	Using SGT as external RF, in advanced modes with fader clock of 125MHz, signal delays of ~35ns occur on the SGTs connected to fader boards.	1237910
5G New Radio		
General	Default carrier mapping for coupled system configurations is incomplete.	1226547
	Possible errors and missing updates when working with a sequence length greater or equal to 256 subframes.	1257207

	Saving delta f to Output parameter in WinIQSim2 and recalling e.g. in SMW results in different signal.	1239819
	Cinit values are interpreted as binary, but should be decimal	1235868
	FRC wizard sets FRC settings sometimes not correctly	1241625
	PRACH Format 2 uses a N ^{RA} _CP of 4680 instead of the 4688 given in 38.211, Table 6.3.3.1-1.	1258705
	PSS/SSS for SSB mapped incorrectly on FFT grid for 3 MHz bandwidth	1224538
	PSSCH cinit for DMRS uses wrong CRC calculation	1245262
	Restart slot index causes incorrect settingstransfer files. Settingstransfer should not be supported for this feature.	1244040
	Restart slot index does not update frame number correctly and therefore data reset is not called in the correct slots	1245865
	Rim-Rs for small bandwidths (10 MHz <) with Rim-Rs numerology being smaller than the bandwidth numerology causes waveform creation to crash	1220953
	Sidelink: CRC calculation did not append ones, but zeros	1236274
	Some Fr2_2 testmodels don't set restart data and control correctly.	1239834
	PSSCH SCI always modulated using QPSK	1206354
	The offset parameter in the FRC wizard does not work.	1227316
	Timeplan legend is not updated when changing the link direction	1255169
	Incorrect PDSCH pattern for slots >160 on FR2_2 TM2x	1265970
Downlink	FR2-2 test models do not correctly repeat after 80 slots.	1209276
Uplink	Copy Carrier in Scheduling Table does not work for Transport Block Over Multi Slots	1254486
	Parameter values of PRACH allocations are not updated correctly in certain circumstances	1257207
TCW	Prach test preambles issue for test case 8.4.1	1203045
	Missing SCS 15KHz issue in case of bandwidth 35/45Mhz for Chapter 7 test cases.	1218011
	Power level of chapter 7 test cases is not updated correctly.	1260821
GNSS		
	Satellite and user data logging in mode Offline is slow	1255845
	SCPI based PVT requests from generator for cyclic trajectories show small but increasing PVT discrepancy after each full cycle while RF signal is not affected	1216374
	Change default broadcast URA value for BeiDou satellites from 5 to 0	1267524
	Number of receiver antennas cannot be set to 5 or 6 via SCPI (SMW-B9 only)	1234656
	Constellation of BeiDou geostationary satellites might deviate from the expected one if the simulation time is changed.	498094

	Generating assistance data for satellites that are by default not present in constellation and have invalid orbital parameters may freeze the instrument	1255340
	Import BeiDou geostationary satellites orbits from almanac data may deviate from the expected constellation	726826
	Importing almanac files for some specific dates lead to GNSS constellations timely shifted towards real world constellations even with almanac reference times near to simulation time	1248637
	Importing WAAS "*.nsth" correction files from a folder path containing string "ems" may fail	1249229
	NMEA files with ill formatted timestamps for GGA or GNS sentences may not be rejected during trajectory import and lead to unreasonable results	1182784
	No RTK corrections are provided for BeiDou signals when BeiDou B2a signal is enabled	1234906
RADAR		
	SMW200A-K315: reactivate trigger delay parameter in sequencer settings in RTCI mode	1026682
	SMW-K502/3/4: External trigger delays had no effect in extended sequencer	596614
	SMW-K502/3/4: Statistics where limited to 32-bit values. Increased to 56 Bit range to avoid clipping.	1241237
	SMW-K502: "Running" flag was not reset to Idle after the signal was played	1204179
	Time dependencies in synchronized multi generator setups where incorrect in Extended Sequencer Mode.	620379
	Radar Echo Generation (REG): Fix calibration of system latency after Savrcl is executed.	1253977
802.11		
	Sample rate for BW of 20MHz is not displayed correctly.	1241273
	Single trigger sequence length incorrect in 20MHz MIMO mode for all other antennas except the first one.	1215302
802.11b	Incorrectly adding QoS field to 11b MAC header	1229109
802.11ax	STBC Encoding is wrong	1231914
	Incorrect setting of Nsts=1 with enabled STBC	1231895
802.11 be	EHT SU Puncturing is wrong	1266238
	Idle Time is wrong	1270518
	OFDMA Multi user mode some signal parts could have wrong power under certain circumstances.	1270380
HWP-UWB		

	Idle Interval dependency based on the Fixed 2ms Frame Length is fixed	1236397
	Oversampling factors are Enabled/Disabled based on the BW of the instruments used.	1197705
	Power issue, when chips per Burst set to 1.	1248606
Fading		
	Error in the configuration of the first path in the NTN-TDLC5-200 channel presets (wrong profile type)	1258140
	DAB channel presets contain some wrong settings (e.g. speed)	1269322
	In a system configuration where Fading>Dedicated Connector is FADx or BBMMx and Fading State is set to ON first and the SGT's RF frequency is changed later, the considered Res. Doppler Shift might be unexpectedly updated to a wrong value.	1218810
	Only SMW-B15: Update issue with Additional Delay < $n \cdot 4$ ns	1225255
	Some Fading preset do not restore changed parameter to default state	1231642
	Up to the summer releases 5.20.043.xx the simulated doppler shift was wrong in MIMO cases for a specific order of configuring the instrument.	1189276
	When Fading State is set to ON first and then the mapping of any stream in the I/Q Stream Mapper is done in a way that the Fading>Dedicated Connector changes and then finally Fading>Dedicated Frequency is changed, the considered Res. Doppler Shift might be unexpectedly updated to a wrong value.	1223462
Bluetooth		
	Scpi command issue in Dirty Transmitter Test	1236913
	External trigger delay doesn't work.	1241194
DVB		
DVBS-2X-E	Number of PL Frames can be wrong	1265690
	Minimum value of SFL can be wrong	1253329

Known Issues		
	ARB: filenames containing special characters (non ASCII), cannot be selected	1008640
	Fading: SMW-B15 / SMW-K820 Delay resolution only 4 ns	1280195
	Focus in Security-dialogue can not be set after display-only mode.	1065289
	For GPS LNAV message UTC reference week number may be displayed with wrong (i.e. not normalized) value in GUI	1089894
	ARB: filenames containig special characters (non ASCII), cannot be selected	1008640
	K548 Crest Factor Reduction: Output crest factor for some 5G NR carrier aggregation signals offset by up to 1 dB with respect to the desired value.	832180
	K556: connection issues using customized digital high-speed input with external boards	1279422
	SMW200A: Fix Baseband Doherty erroneously allowed to be enabled in conjunction with instrument own RF non-linearity compensation (Linearize RF).	1222789
	Table editing: Confusing behavior of TAB key on external keyboard	1013570
	Custom Digital Modulation: narrow band SMW is crashing when using External Data Source and the Modulation Type is changed from 16QAM or higher to MSK	1280261
GNSS		
	If start time is just before leap second insertion, the insertion might be omitted in log files.	652559
	Issue with smoothing of trajectories	466593
	In SMW legacy mode with using two independent RF outputs when configuring and enabling GNSS in BB A and afterwards configuring with exactly the same parameters BB B, then the constellation in BB B is different than in BB A	1176975
RADAR		
	SMW-K315: Fixed sporadic crashes when activating Extended Sequencer	1245778
	SMW-K502: When using single trigger, the state display of the signal was always showing Running	1012583
	SMW-K503/4: Coupled Basebands. BBB is not armed, when BBA is rearmed	1277540

1.3 Version 5.30.047.28

Released: February 2024

New Options

- none

New Functionality / Changed Behavior

GNSS: Improved Inter-Signal Coherence	1231812
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Fixed Issues

Settling time of frequency/level too slow with 5.30.047.20/23 on devices equipped with IPC10/2	1235084
GNSS: Generator may re-boot when simulation is running at certain week roll-over dates and Galileo F/NAV is used	1228525
GNSS: Navigation data bits are not correctly generated for BeiDou B1C for simulations running in the first seconds of a BeiDou week	1231339

1.4 Version 5.30.047.23

Released: December 2023

New Options

- none

Fixed Issues

Empty Open Source Acknowledgment File in FW	1222144
Time based trigger not working correctly in MIMO mode	1212142
Multi instrument with 2 SMWs: no sync when SGTs are connected as external RFs to secondary SMW	1215158

1.5 Version 5.30.047.20

Released: November 2023

New Options

- SMW-K363 CAR NAVIGATION TEST SUITE
- SMW-K556 CUSTOMIZED DIGITAL INPUT

New Functionality / Changed Behavior

SMW K502/3/4 Extended Sequencer now supports time based trigger mode	1173329
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SMW-K503/4: Added File Playback Mode for SMW-K503		1089518
New feature Time Based Trigger		934883
New option SMW-K556: Customized digital high-speed input		1185183
802.11be: make bits 54 and 55 available for trigger frame - special user info field		1084762
Digital Input (DIG IQ and HS DIG IQ): Changed max. value of input signal Crest Factor (40 dB).		1105233
OFDM: DC sub carrier handling modes puncture and skip.		1174793
OFDM: Support Cyclic Suffix (CS) for OFDM.		1089708
5G New Radio		
	R17 FR2-2 test models for 960 kHz.	1068590
	New filter that optimizes EVM	1094710
	Channel bandwidth filter optimization for FR2 due to bad EVM	1073214
	Allow resetting the slot in frame index (used for example to initialize DMRS sequences) following a custom period instead of the default period (equal to the number of slots in a frame)	1050711
	Top level FRC wizard.	1072138
Downlink	-	
Uplink	Apply HARQ feedback only at the leading slot of a set of slots transmitting the same transport block (TBOMS)	1171952
	Configurable offsets between slots for TBOMS	1095605
TCW	New test cases 8.2.12, 8.2.13, 8.3.11, 8.3.12, 8.3.13 are added.	1069108
	Power limits are able to select from 38.141 or 38.104.	1037405
	Record the Scpi commands for current test case.	956546
	Show what options are missing for test cases.	956560
	Support BS Type 2-O for test case 8.2.5.	1060181
GNSS		
	Add new option K363 Car Navigation Test Suite	1173647
	Added GALILEO OSNMA test vector set	1188333
	Added new signal Beidou B2b	1087157
	Changed NavIC/IRNSS ephemeris reference time to be more similar to current SIS signals	1196770
	Installing a new firmware version now deletes internal pre-processed GNSS files for trajectories and antenna patterns. Especially for very long trajectories this may lead to increased start times when a trajectory is loaded for the first time after firmware installation.	1069295
	The frequency number of GLONASS satellites is no longer automatically read-only when satellites are sending navigation	1086736

	messages, but only in mode "Navigation" when "Nav Msg Control" is set to "Auto". In all other cases, the frequency number is editable now	
FADING		
	Extend Basic Delay per Group to 1073 ms (only SMW-B15)	1174929
WLAN-11ay		
	Output sample rate will be adjusted according to the selected instrument hardware	1178046

Fixed Issues		
	3GPP FDD: Path C and D do not work on devices with SMW-B9/B15 options.	1097029
	Analog IQ outputs: long setting times when using bias > 0V	1182262
	Error message reference PLL unlocked shown when using Primary Secondary mode	1085398
	FM deviation incorrect in certain cases	1185723
	Frequency >= 10GHz can now be set in the main screen with the precision of 0.001 Hz	1203039
	Invalid PEP warning related to RF ports alignment (K545) has been removed.	1067487
	K544 state toggling has no effect if the Driver Amplifier is activated and the RF frequency is above 44 GHz.	1099579
	K555: Resolved some minor bugs during setup calibration	1196442
	NB-IoT: Error message for large start subframes if the Real Time feedback is activated.	1064267
	NFC: Fix for Preset This Parameter, which cannot preset the parameter to default in NFC/EMV sequence tab	1196135
	NFC: fix for SCPI Command availability for the parameters in GUI Table in EMV dialog	1186036
	selection of LowDistortion and LowNoise greyed out and not selectable with ATT70	1180261
	Unexpected line feeds in Python SCPI recording	1169964
	Warning occurs occasionally after initially activating Port Alignment.	1201735
	K544 state toggling has no effect if the Driver Amplifier is activated and the RF frequency is above 44 GHz.	1099579
5G New Radio		
General	dmrs port 1000 showed wrong data for dmrs values	1176845
	For sample rates close to the boards maximum CA rate (high advanced MIMO configs) the real-time signal is not output correctly	1075711
	Editing the antenna port table of shared channel allocations when using cylindrical mapping did not work	1082049
	Peak Cancellation fails in case reached cfr is not as good as desired by user	1096846
	PSSCH/PSCCH Settings - unexpected horizontal scrollbar at dialog	1172982
	TBOMS has a rate matching issue.	1174971
	Turning feedback ON sets the parameter Restart Data and Control to the correct setting After Each Codeword and Allocation, yet it is unexpectedly still possible to select a different setting for that parameter.	1093894
	Value of Delta f to Carrier for GUI Parameter for S-SSPBCH calculated incorrectly	1185072
	Waveform file generation does not correctly update marker-information	1083928
	Software crashes when closing the timeplan after zooming	1197541
	Some RNTI ranges corrected, set MCCH-RNTI and PEI-RNTI to fixed values	1178506
	FR2-2 test models do not correctly repeat after 80 slots	1209276

Test Case Wizard	Adjust the number of required K71 option to 2 for TC 824 and 825	1193451
	Prach test preambles issue for test case 8.4.1	1203045
Downlink	Crash while increasing the CSI-RS rows.	1100831
Uplink	SRS start index calculation incorrect	1104132
EUTRA/LTE		
	Uplink: In case of K69 realtime feedback and NB-IoT / eMTC, error messages can show up regarding failed leveling.	769389
	Wrong subframe index issue.	1094264
	TCW: Correct start subframe of NPUSCH transmissions for test case 8.5.1	1096511
GNSS		
	For some data files import of WAAS constellation and correction data may not work correctly	896721
	Approximation of curves in arc-line trajectory format is slightly noisy	1076425
	Under some circumstances user receiver yaw and pitch are set to zero if receiver stands still for arc-line trajectories or generally when align to motion is utilized	1085888
	In "Tracking" mode, the "Nvg Msg" Type of signal L1C is not displayed if the Nav Msg of signal C/A is deactivated	1088685
	Instrument may crash when intentionally generating acquisition data for satellites that are not present in constellation	1172969
	Instrument may freeze while trying to save the changes in body mask, antenna pattern, vertical obstacles and roadside planes editors	1044777
	Incorrect *.kml file input may lead to generator becoming non-responsive	1167087
	Incorrect signal levels for several signals	1106724
	For cyclic trajectories last waypoint which is added in cyclic mode may worsen the acceleration profile	1090753
	For GPS L1 C/A at the end of the GNSS week a reserved subframe instead of an almanac subframe is coded into navigation data message	1006917
	Galileo E1-B I/NAV Secondary Synchronization Pattern missing	1064107
	When importing GNSS constellations from RINEX files via GUI the preview of very large RINEX files is slow	1080258
	Wrong scale factor used when showing TGD values for BeiDou B1I within GUI	1174699
	Receiver position visualization in GUI Ground Track View may not be updated correctly for a receiver trajectory extending over a large distance relative to earth surface	1093090
	Fading	

	Synchronize start of simulation (or stochastically process) between both Fader in 2xSISO	1105203
	Some parameter values in the 802.11ac Model F preset are wrong	1199832
Radar		
	Fixed reset behavior when arming the trigger. Signal statistics were not reset correctly	1195240
	Radar Echo Generation (REG): Update Level for Simulation if external Frontend is connected.	1108492
802.11		
802.11.ac	Bugfix for crash because of clearing buffers that are not actually allocated when in MIMO mode	1086348
	Incorrect LDPC PPDU encoding process in some cases.	1098220
802.11ax	802.11ax/be: incorrect power factor for multiple MIMO streams.	1084706
	Firmware crash when selecting RU-996 with HE-160 for 2nd content channel	1104801
	Update preamble puncturing to latest specification version	1108272
802.11 be	Bugfix in segment deparser	1175599
	Data field power factor incorrect with 2 users, 2x2 MIMO and OFDMA disabled	1084309
	Incorrect power scaling for users in trigger based frames.	1105006
	Some large size MRUs in 160 and 320MHz are not working	1078873
	When user state is off, the STA ID will be set to 2046, and when user state is on, STA ID can not be set to 2046	1107497
HWP-UWB		
	Failure between PHR and PSDU which six zero bits are not correctly put into the gap for HPRF mode	1171268
	Appending of six Zeros to PHR.	1107048
AWGN		
	AWGN block state does not switch on the right streams when Duplicate Streams are active (System Config mode Advanced 3x1x1 or 4x1x1)	1108654
	Show SCPI Command... is not working well when called from context menu of AWGN Block (in Block Diagram)	1082824
Bluetooth		
	BLE setting error message	1103112
	SCPI command Filter/Clipping	1205383
	Sequence Length number when switch on/off Dirty Transmitter Test.	1100786

	Issue of single trigger which produces wrong number of trigger events for wideband instruments.	1168604
	Signal duration issue in case of single trigger mode.	1181007
	Unsuitable value range of impulse length from GUI part	1093198
	Set the parameter Corrupted CRC Every 2nd Packet to ready only and it can not set through GUI or scpi while Number of Packets per Set set to 1 and Dirty Transmitter Test set to On	1098222
WLAN 11 ay		
	8psk Long LDPC encoder error	1163671
	Typo Error for Bandwidth	1107291
OFDM		
	Missing warning if configuration is out of specification.	1047939
	Split Pattern not transmitted in Settings Transfer	1183157
	Waveform generation sometimes fails with Datalnit error, with only switching state to off and on again solving the problem.	1185661

Known Issues		
ARB: filenames containig special characters (non ASCII), cannot be selected		1008640
baseband selftest sometimes shows errors concerning DSP		902551
Fading: Sporadic error message when switching between some fading configurations. The simulated signal is not affected.		818966
Focus in Security-dialogue can not be set after display-only mode. Focus can be set again with a mouse click.		1065289
K548 Crest Factor Reduction: Output crest factor for some 5G NR carrier aggregation signals offset by up to 1 dB with respect to the desired value.		832180
Fading: Signal of Baseband D is not generated after recalling a saverecall file of a 4x2x2 coupled per entity system config		929582
SMW-K504: 2 MPDW PDW rate is unstable over long periods when simultaneously streaming		1190559
Table editing: Confusing behavior of TAB key on external keyboard		1013570
Radar: Time dependencies in synchronized multi generator setups where incorrect in Extended Sequencer Mode.		620379
Time Based Trigger: Not working when trigger settings common to all basebands		1212142
GNSS		
	Constellation of Beidou geostationary satellites might deviate from the expected one if the simulation time is changed.	498094
	If start time is just before leap second insertion, the insertion might be omitted in log files.	652559
	Issue with smoothing of trajectories	466593

1.6 Version 5.20.043.44

Released: June 2023

New Options

- SMW-K177 IEEE 802.11AY
- SMW-K477 IEEE 802.11AY (WINIQSIM2)

New Functionality / Changed Behavior

RF Measurement: Added new feature Power Control. R&S RF power sensors can now be used for closed loop power control of the RF output.	1042906
RF Measurement: Dialogs have been rearranged in order to clarify dependencies and to integrate Power Control.	1072459
Internal adjustments can be configured to start automatically after warm up period and switch off instrument after execution. This facilitates performing adjustments in absence of operator.	1042855
K555 Bandwidth Extension: - Power was 3dB lower than expected after setup alignment.- If digital attenuation was active before setup alignment, the aligned power was not correct.- Waveforms which are not a multiple of 60 were distorted during playback.- Multi instrument support.- FSV(A) support	1011839
Crest Factor Reduction: New algorithm Peak Cancellation added	922341
Custom Digital Modulation: added SOQPSK-TG modulation format	763987
Radar Echo Generation (REG): "Hold Off Time": Sets a time delay for the appearance of each object.	1050670
5G New Radio	
General	
Ability to show incoming parameter dependencies.	949423
Manual configuration of DMRS setting in scheduling table	1037294
R17 NTN FRCs (38.181)	1048072
Support 38.521-2 UL test-models tables for FR2	1004235
Support DCI TRS availability indication	953196
Write marker information into file on generate waveform	1027380
R17 DCI updates	975137
Add Peak Cancellation for 5G NR	1044356
Allow datasource reset in units of slots in case of single numerology case	1036965
Quick Settings: The number of slots now has a range of any value from 1 to 20	1017322
Rel-16: add missing dci 0_1 parameter	1042879
Rel-17 Add SSB Timeoffset	1044374
Rel-17: Add Fr2-2 testmodels up to 480 kHz subcarrier spacing	1031671
Downlink	
2nd Downlink Assignment Index Field for DCI 0_1 and 0_2	1061077

	R17 DCI fields updates for 0_x and 1_x formats	1004293
Uplink	SRS Rel.17 support.	1007385
	Transport Block Over Multi Slots	979048
EUTRA/LTE		
General	LTE: Support of ARB sequence Length in Subframes together with Frames.	1036955
GNSS		
	Add new reference scenario based on broadcast data for GPS, Galileo, Glonass and BeiDou under Predefined Scenario's	1044497
	Add possibility to load satellite ephemeris for active GNSS systems at once from one combined RINEX file	1067433
	Add satellite selection criteria based on Dilution of Precision (DOP)	1011478
	Beidou B2a added Type40 Messages	1048038
HWP-UWB		
	HRP-UWB:SFD settings User1/2/3 are hidden.	1051824
FADING		
	Add R17 NTN Channel Presets	1047940
	New 5G NR Channel Model Scenario Y for 120 kHz SCS	1031660
	SMW-B15: Base Delay (536 ms) available for path group 2,3,4	927551
WLAN-11ay		
	First version to support options K177/K477.	1034856
	Support for BW 2.16GHz.	1016241
	Support for BW 4.32GHz.	1016242
	Support of EDMG SC mode.	986091

Fixed Issues		
	ARB: multiplier keys are not accepted for Single Trigger Sequence Length	994625
	Common Trigger Source is not correctly displayed in 1-path instruments when they are set in mode Multi-Instrument Secondary.	1079924
	Multi Instrument Common Trigger dependencies are not always done in SMW instruments that use ADV CLK / TRG connectors for signal synchronization	1073960
	System Configuration (Fading/Baseband Config) Set to Default button was removed.	1042357
	The invalid information messages, which appears after restarting the device with enabled RF ports alignment (K545) has been removed.	1067705
	Digital standard Extended Sequencer: T/M/C local connectors not usable	1028170
	Impulsive Noise: unable to activate impulsive noise when general AWGN mode is set to CW interferer	1055603
	Internal adjustments not completing to 100% when other instruments are connected to HS DigiQ inputs or outputs.	1029271
	Listmode in path B with IQ modulation couldn't work. Condition improved.	1037438
	Preset behavior: Keep connections to external instruments' is not working well with external instruments connected to Analog I/Q Outputs	1038057
	K544: filter calculation issues with certain frequency responses	991199
	K544: Firmware crashes if empty *.ucor file is chosen	1048028
	Oneweb Uplink: Delta Sequence shift value for PUSCH is fixed	1046255
	OFDM: Timeplan does not scale correctly	1002976
	Invalid PEP warning related to RF ports alignment (K545) has been removed.	1067487
5G New Radio		
General	Faulty recall of carrier mapping using global savefiles.	1031252
	The delta frequency of a carrier can have an unwanted offset.	1056531
	Delta f value not correctly restricted for FR2_2.	1049829
	For sample rates close to the boards maximum CA rate (high advanced MIMO configs) the real-time signal is not output correctly	1075711
	Quick Setting: Slot Period 1 cause an error.	1051697
	Settings transfer broken in beta 22.09.	1019190
	Interval of Datasource reset is calculated wrong in case of scs higher 120 kHz	1061535
	SCPI set command for DCI Candidate does not work.	986418
	SRS periodicity had the same SCPI command as Allocation repetition. SRS periodicity command is modified now.	1026794
	Switching off RMC switches on 'restrict to search space'	1010753
	Timeplan: Grid and axis scaling are incorrect for subcarrier spacing 480 kHz and 960 kHz.	1036825
	O-RAN: TC 3.2.3.1.17 has wrong payload in symbol #10 when using O-RAN data source feature	1017268

Test Case Wizard	Increase wanted signal power limit to 50dBm for TC 6.7	1073884
	Correct Interferer RF Frequency Calculation for TC 7.7 RX Intermodulation Narrowband.	1037716
Downlink	Minimal Value of the PDSCH BWP Setting Multi Time Domain Allocations is wrong	1044641
	SS/PBCH can be wider than carrier channel bandwidth.	1067434
Uplink	SRS periodicity in scheduling table has no effect on signal	1058466
	Wrong configuration of the UCI payload length might lead to a firmware crash.	1016354
EUTRA/LTE		
General	Uplink: In case of TDD with a sequence length which is not a multiple of frames, signal parts can be missing or the level can be wrong. The issue was only in beta versions, not in officially released versions.	1070151
	For 8x1x1 Configuration Sampling rate is fixed.	688386
	3MHz and 5MHz PBSCCH mapping for DMRS is fixed for sidelink.	1015750
	Calculation of the NID1 is fixed.	1014576
	LTE-K69:Fix for wrong message about missing connector configuration	764516
	NB-IoT: TM mode N-TM_Guardband is not correct leads to deltaFToDc is wrong.	1061190
GNSS		
	After loading RINEX files which contain no visible satellite for a GNSS system at the simulation start time under some conditions a non-visible satellite may be marked visible in the GUI satellite view.	1079089
	'Error hardware or software option missing' is sporadically shown when clicking Synchronize in Assistance Data Generation.	1038529
	Inconsistencies in logging data for SBAS.	491788
	Raise an info message in case timestamps do not start with 0.0 of imported '.xtf' trajectory file.	864640
	For satellites rising during a simulation scenario with limited satellite number or with fully occupied hardware -> Resources may not get activated later when a satellite slot gets free because of a sinking satellite	1038716
	Simulated Glonass constellation changes after simulation startup at certain dates when using default Glonass configuration	1034523
	Wrong value is set by clicking the Reset button in on-screen keyboard, when editing Date or Time parameters	1022564
	GPS almanacs are not provided with Novatel receivers when a GPS satellite is not present in the constellation	1028805

Fading		
	Enhance maximum Base Delay SMW-B14: 671 ms + SMW-B15: 536 ms	1060469
	FaderDrv Error 22 when switch ist LogNormal State = ON to configuration Birth Death Propagation or High Speed Train	1046809
	SOUR1:FSIM:DEL:GRO1:PATH1:BDEL? res and SOUR1:FSIM:DEL:GRO1:PATH1:ADEL? res return wrong value in some cases	1010718
Radar		
	K315: Deactivated trigger delay param from sequencers in RTCl mode	1026682
	K502/3/4/6: Extended Sequencer mode is now shown in block diagram	1032261
	SMW-K502/3/4: Marker delay setting did not work	1007257
	Radar Echo Generation (REG): error messages can occur with signal routing and awgn	1030202
	K503/4: Added frequency index CNTRL PDW for fast frequency jump mode	1020210
802.11		
802.11	Set to default does not properly set the antenna configurations	1043899
802.11ax	Incorrectly calculated number of A-MPDU padding bytes with some HE-TRIG configurations.	1080436
802.11be	application crash with 320MHz and 140 users	1077114
	configuration for user numbers 139 - 144 not available	1030875
	disable combination of MCS14 and trigger based frames in 20MHz	1020120
	EHT-TRIG frame format issue in 80MHz	1080442
	firmware crash with EHT-MU, 320MHz and 144 configured users	1030872
	incorrect constellation mapping for MCS14 in 320MHz	1021646
	incorrect EHT-LTF for 2x2 MIMO	1035970
	incorrect EHT-LTF power for higher MIMO streams.	1034852
	incorrect EHT-STF normalization for 2nd 484 tone RU.	1076573
	incorrect encoding for some MU-MIMO cases.	1042825
	incorrectly calculated number of EHT-SIG symbols with EHT-SIGB MCS 15 and a large number of users.	1078896
	MRU indices 5-8 not working correctly in 160MHz	1025710
	partially wrong 11be waveforms because of incorrect punctured MRU index	1043484
HWP-UWB		
	Power level is fixed in BPRF mode for STS configuration 1.	1014838
	Fix for Default value for Sync Length in different modes.	1082831
	Power fixed for higher payload Lengths.	1025032
	Trigger Length calculation is fixed in BPRF mode.	1019503

DVB		
	Crash in case of setting BTU bandwidth to 10Hz.	1071573
	Bug fix for pi/2 BPSK.	1066802
DVB-RCS2	Bug fix for Pi/2-BPSk Modulation	1062751
	Bug Fix for 16QAM 5/6 code rate	1055606
	Bug fix for preset values.	1084261
DVB-S2X	The parameters of general tab are invisible in case of K52 is not installed.	1033661
AWGN		
	'Noise Power (System Bandwidth)' throws parameter is read only error when 'Show Powers for Output' is I/Q Out or BBMM	1047015
	Noise Power and Carrier Power do not work with an external Frontend connected	1040431
	intermittently missing noise signal on narrowband SMWs in 8-channel MIMO configurations.	1053484
	spectrum deviation of AWGN in 8-channel system configurations	512284

Known Issues		
	3GPP FDD: Path C and D do not work on devices with SMW-B9/B15 options.	1097029
	ARB: filenames containig special characters (non ASCII), cannot be selected	1008640
	baseband selftest sometimes shows errors concerning DSP	902551
	Fading: Sporadic error message when switching between some fading configurations. The simulated signal is not affected.	818966
	K545 embedding bug solved.	1099362
	K548 Crest Factor Reduction: Output crest factor for some 5G NR carrier aggregation signals offset by up to 1 dB with respect to the desired value.	832180
	Signal of Baseband D is not generated after recalling a saverecall file of a 4x2x2 coupled per entity system config	929582
	System Time locks via SCPI if using External Trigger, keeps running in the GUI	962298
	Table editing: Confusing behavior of TAB key on external keyboard	1013570
GNSS		
	Constellation of Beidou geostationary satellites might deviate from the expected one if the simulation time is changed.	498094
	If start time is just before leap second insertion, the insertion might be omitted in log files.	652559
	Issue with smoothing of trajectories	466593

1.7 Version 5.10.035.38

Released: April 2023

New Options

- SMW-B1044O 100 kHz to 44 GHz RF path A, Pulse and BW lim. in 31.8-37 GHz
- SMW-B1056O 100 kHz to 56 GHz RF path A, Pulse and BW lim. in 31.8-37 GHz
- SMW-B2044O 100 kHz to 44 GHz RF path B, Pulse and BW lim. in 31.8-37 GHz
- SMW-B1067O 100 kHz to 67 GHz RF path A, Pulse and BW lim. in 31.8-37 GHz

Fixed Issues

AWGN: intermittently missing noise signal on narrowband SMWs in 8-channel MIMO configurations.	1053484
K544: filter calculation issues with certain frequency responses	991199
802.11be: firmware crash with EHT-MU, 320MHz and 144 configured users	1030872
AWGN Noise Power and Carrier Power do not work with an external Frontend connected	1040431
AWGN 'Noise Power (System Bandwidth)' throws "parameter is read only" error when 'Show Powers for Output' is I/Q Out or BBMM	1047015
GNSS: wrong value for NAVIC Signal Dynamics Velocity when set via SCPI in GNPR context	1062079
'Preset behavior: Keep connections to external instruments' is not working well with external instruments connected to Analog I/Q Outputs	1038057

1.8 Version 5.10.035.29

Released: December 2022

New Options

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Fixed Issues

Internal adjustments not completing to 100% when other instruments are connected to HS DigIQ inputs or outputs.	1029271
Internal adjustments fail for B1031/B2031	926986
Digital standard Extended Sequencer: T/M/C local connectors not usable	1028170
Issue if Optimize EVM and phase offset are both activated	1028957

1.9 Version 5.10.035.25

Released: November 2022

New Options

- SMW-K122 RTK VIRTUAL REF.STATION
- SMW-K128 P(Y)-M-/PRS-NOISE

New Functionality / Changed Behavior

802.11be: support signalling of 320MHz channelization in U-SIG	1019456	
Add additional 3GPP2020 scenarios including QZSS and NAVIC (based on draft standard)	978942	
Added pre and post marker settings for Pulse Sequencer und Direction Finding Mode of the Extended Sequencer. Previously only available for SMW-K503 Extended Sequencer RTCI Mode	1009050	
Delivery of RTK corrections in RTCM 3 format via integrated Ntrip server supported	925261	
Generate Waveform: Add Markers to exported waveform file	992643	
K555: Added support for external frontends, added support for 4 GHz bandwidth over multiple SMW devices.	954484	
K555: One-box solution available	891171	
SMW-REG: Objects 4, 5, 6 and 10, 11, 12: No user list possible + maximum doppler shift: 190 kHz	1012936	
5G New Radio		
General	Up to 256 subframes are now configurable.	957180
	Add support for new TCs for Release 16: 8.2.10, 8.2.11, 8.3.7 - 8.3.10	862634
	Firmware is compatible to 3GPP spec 17.3.0.	1011290
	CSI-RS and SRS can be configured via scheduling table.	524481
	Implement all FR2-2 Bandwidths as suggested by R4-2202364.	968147
	Input of sequence length in subframes.	1000256
	Increased maximum RF frequency for phase compensation in manual mode to 999GHz	991770
	Introduce a Simple GUI mode which disables non custom DCI types and hides related parameters. Group all DCI related features into control sections.	958794
	Make internal debugging info visible without protection level. Caution, the shown information might change in future software version.	983917
	New FRC G-FR1-A8 of 38.141-1 and G-FR1-A9 of 38.141-2 is added in TC 8.2.1 according to V17.6.0.	968201
	O-RAN: Support compression test-cases 3.2.3.1.2-3.2.3.1.11 and 3.2.5.1.2-3.2.5.1.12 for 100MHz 30kHz	971949
	Selectable RF reference for each carrier auto phase compensation.	961187
	Support data-source distinction for multi-carrier copy carrier	973776

	Support desired and blocking channel only mode in the TCW for some chapter 7 cases.	946604
	Support manually scheduled SRS Resource Type Aperiodic.	986052
	Support new R17 DCI Format 2_7.	953190
	Support new signal type RIM-RS.	751570
	Test case wizard support bandwidth 35MHz and 45MHz for release 17.	968199
	Time Plan: Add mouse drag functionality once we zoom in the Time Plan	922134
	Update available number of resource blocks per SCS and Bandwidth according to 38.101-2 v17.6.0.	916650
Downlink	Addition of new parameter for selecting the table used for time domain resource allocation being applied for creation of PDSCH	932641
	Add support for DCI 3_0 and 3_1.	722054
	Make Coreset DMRS reference point configuration explicit. Warning, this can break configurations with CoresetID == 0. Please use the new reference point configuration.	974549
	Support of Test Model 2b and 3.1b defined in 17.5.0 spec.	958666
Uplink	Add new FRC G-FR1-A8 of 38.141-1 and G-FR1-A9 of 38.141-2.	968553
	Draw the PUCCH payload bits from a single data source (e.g. a PN sequence).	926173
	Draw the PUSCH UCI payload bits from a single data source (e.g. a PN sequence).	939105
EUTRA/LTE		
General	LTE Sidelink: 64QAM support added.	944854
	Optional baseband frequency sweep for NB-IoT and eMTC.	784608
GNSS		
	Added possibility to generate assistance data generation for Navic	913178
	QZSS LNAV - removed re-transmission of GPS data which was a remnant from IS-QZSS-JAXA (LNAV(L1C/A))	985661
	Add additional 3GPP2020 scenarios including QZSS and NAVIC (based on draft standard)	978942
	Changed QZSS L/NAV ephemeris and clock update rate from 15min to 1h to be more consistent with nominal SIS update rate	956906
	Increased Galileo I/NAV and F/NAV ephemeris update rate to be more similar to current SIS update rate	982293
HWP-UWB		
	STS Data can be configured Bitwise.	977043
DVB		

DVB-S2X-E	TSN is able to be set flexible for PL Frame of DVB-S2 / S2X.	956310
OFDM		
	Support CAZAK Preamble with a Zadoff Chu Sequence	958232
	Support of Custom Constellation	957648
	Support of Split Pattern for Allocations in both frequency and time domain	949974

Fixed Issues		
	Error message thrown under some conditions using frontend levels >0dBm	972842
	OneWeb: Single trigger mode is fixed.	993161
	3GPP: Updating of Symbol rate for user coding.	1021027
	Frequency response for SMW200A B1044N, B2044N, B1056N and B1067N and SMM100A B1044N devices got improved for frequencies of 20 GHz and above.	1017243
	Global Connectors: Incorrect settings applied in some cases when RF is switched on	1021540
	K315: Mixed addressing mode (DHCP and Static) in case of multiple sequencers not correctly displayed	960848
	K555: Output power sometimes not correct for uneven distribution in the spectrum of the signal. In rare cases, the error RFOPU on upper limit could appear	1011295
	SMW-K555: Baseband error - Fader during initial execution of Align RF Ports	1013616
	OFDM: Time plan can show symbol #0 twice.	981990
	On specific device configurations (without option SMW-K76), the firmware crashes on preset when starting with a MIMO case	921445
	On specific device configurations (without option SMW-K76), the firmware crashes on preset when starting with a MIMO case.	1001271
	Phase Noise: the User Profile might be wrong in some cases, when the values are set via SCPI while the AWGN dialog is not opened	1011593
	Remote Emulation: *IDN* and *OPT? strings can not be entered via touch screen. External keyboard or mouse required	657096
	The GUI is no longer accessible after Save As... is called in some File editors	1005052
	Unexpected options are used in special cases after loading a savefile.	1015972
	+/- Hardkey on Numblock does not toggle / change the sign of a numeric value.	957951
5G New Radio		
General	Checkboxes Unique Data Source for ... had a wrong behavior for enabling/disabling other parameters	1000907
	For coupled system configs and a very high number of frames the application can crash.	981427
	Buggy parameter values after a recall of device settings when working with auto phase compensation.	1007421
	Copy To and repetition-mode issues if only showing a certain user in the Scheduling table.	959766
	Empty scheduling table for subframe number 160 and bigger.	957289
	Error if no carrier is mapped on a block output.	951935
	Errors while activating feedback mode for coupled per entity system configurations.	554021
	FR2-2 default waveform results in a bad EVM as SSB overlaps with PDSCH DMRS.	967851
	Issue while loading save files with different older versions.	947852
	Missing adjustments for blocks >2 when loading a global safe-file.	952638

	5GNR: In Advanced System Configurations, if the number of entities is higher than 2 and the BB Source Config is set to Separate Sources, setting the baseband trigger source to External Global Trigger 2 might fail with the device showing a corresponding error message.	953321
	K148: Using real-time filter off in coupled system configuration crashes the firmware	963669
	O-RAN: K175 Output may create double signed values (1+-0j)	971307
	O-RAN: TMs 3.2.5.1.6 and 3.2.3.1.10 erroneously reset to invalid version for <= 10MHz	975363
	Quick Settings: Channel Spacing is limited to 300 MHz for K525	997429
	Saving the xml for Settings Transfer is not possible in case pi/2 modulation for Pxsch is being used	1005215
	Settings transfer broken in beta 22.09.	1019190
	Settings Transfer: MCS Table 4 is not forwarded.	952609
	UCI bits mapped between PUSCH DMRS symbols in UCI only mode.	995454
	Dysfunctionalities and crash when single user mode was selected in the scheduling table.	997822
	The New Radio application in non-average power modes like the constant PSD power mode can generate to high output power on SMW200A equipped with faders. A detailed description is available for this bug.	988396
	Creating waveform including a Rim-Rs signal fails	1005081
	SSB indices calculated incorrectly for SSB using either SCS of 120 kHz or 240 kHz using bitmaps with at least 17 and 33 consecutive ones respectively	989348
	Timeplan: Axis scaling is not updated if grid is on (coarse or fine) and scs changes	1014469
Test Case Wizard	Display wrong connectors for the HARQ in case of B9 for TC 8.2.5.	982743
	RB offset is not correct for both MUE and SUE for TC 8.2.5.	965974
	The second AWGN should be turned off for TC 8.2.5.	982744
	TCW should allow the user to configure the same frequency range as the connected front end	970823
	The SNR should be corrected according to specification for TC 8.2.5	986960
Downlink	Configuring SS/PBCH for FR2-2 gets wrong SCS/CP.	966835
	Copy Carrier with selected Test Model in the Quick Settings does not copy the cell id correctly.	973765
	Coreset: Firmware can create an internal error for specific interleaved settings.	937435
	Creating a transfer file with number of layers set to 7 or 8 causes an error.	950569
	CSI-RS configuration out of BWP range results in internal std::bad_alloc error message.	952566
	CSI-RS NZP: Too few bits are configurable for row 17 and row 18	1008291
Uplink	1024QAM not selectable without channel coding	951948

	Copy Carrier with selected Test Model in the Quick Settings does not work for O-RAN Test Models.	966512
	FRC: Some values on the FRC tab are not stored and might be wrong after save/recall	947865
	GUI does not update the IMCS correctly by switching USCH Channel Coding ON	963038
EUTRA/LTE		
General	LTE: 3MHz and 5MHz PBSCH mapping for DMRS is fixed for sidelink.	1015750
	EUtra: ORAN State was not stored.	979836
GNSS		
	BeiDou B1I and B3I almanac reference time may be wrong if satellite PRN 1 is excluded from simulated constellation	988474
	BeiDou ephemeris partly inaccurate for 3GPP scenario EUTRA/LTE Performance 2 ST11	981856
	Certain values for GPS-UTC time offset drift (A1) lead to unreasonably high inter-system time offsets	994010
	Enable generation of almanacs for BeiDou satellites with PRNs >30 at B1I signal	987912
	Galileo F/NAV: prevent overflow within almanac message generation leading to SVIDs>36 coded into the message data	952012
	Galileo to GPS offset (GGTO) handling for invalid value is not correct	890049
	Inconsistencies in movement dynamics in case of cyclic mode without smoothening at trajectory crossover point.	567203
	Removed badly designed last position sample from Munich_Car_Motion.txt example trajectory.	566842
	Transmitted values for AODE and AODC values in Beidou B1I message may not be consistent with values configured via GUI	987755
	GPS LNav IODE may be not correctly synchronized to LSBs of IODC when initially using higher IODC values and non-current ephemeris	956343
Fading		
	DSP Error 0x9000 with HST and 1x8 (only SMW-B15)	974843
	Error message FADER_ERROR_TYPE = 145 for MIMO 4x4 after MIMO 8x8, Subset 1/2 was set	1002004
	Moving propagation scenarios using several paths may fail in in MIMO configurations on wideband devices	895402
	On narrowband devices and for moving propagation scenarios, a 0x8004 error could be thrown if the stream mapper does not map some RF outputs to any stream.	919681
	B15: Reduce processing time after change system configuration mode Standard to Advanced	1011262

	For 5...8x1x1 with SMW-B14: wrong max value for Additional Delay: SOUR{1}:FSIM:DEL:GRO{1}:PATH{1}:ADEL? max and Base Delay: SOUR{1}:FSIM:DEL:GRO{1}:PATH{1}:BDEL?	1010808
	only B15: CDF - interval length (Interval[us]) too short by factor 0.8.	993266
	SMW-B15: Delay calculation faulty for some delays, e.g. path0: 60ns, path3: 124 ns	999937
Radar		
	SMW-REG: Objects 4, 5, 6 and 10, 11, 12: Range (due to wrong latency calibration) might be not accurate	1013114
	SMW-K78: Remove DSP Error 0x8004, 0x8016, improved System Latency Calibration = Automatic	828327
	SMW-K78: System Latency Calibration = Auto might result in wrong System Latency.	989793
	SMW-K78: User List, phase entry is random in some cases until the first timestamp > 0 ms.	977764
	SMW-K78: With Armed Auto: NCO start phase might be random after first trigger execute.	1010184
	SMW-K78: With Moving + Round Trip: User list is truncated after Time to reach end range is reached. Now full list is played until object returns to start range.	1014081
802.11		
	802.11b: Incorrect output power for low duty cycles	997428
	802.11be: EHT-LTF not correct in some cases with enabled preamble puncturing	1017654
	802.11be: incorrect processing of null carriers for small MRUs.	965596
HWP-UWB		
	Display of Mean PRF value is fixed in HPRF mode.	958974
	Fix for Data Length.	952104
	Fix for Database settings.	999851
	Fixes for different Chips per burst and hop burst combinations.	898437
	GUI label state for Impairments tab is fixed.	1009364
	Heap Fixes for CRC Append.	968937
	MAC FCS 4 fixed for different hop burst and chip burst configuration.	898039
	Power is fixed for different oversampling values.	1002624
	Power level is fixed in BPRF mode for STS configuration 1.	1014838
	Power level is fixed.	983775
	Remote control command fix for Signal Duration Unit.	1002728
	STS fixes without payload.	914827
	Trigger is fixed for oversampling factors other than one.	972105
	Trigger Length calculation is fixed in BPRF mode.	1019503

	Frequency offset in Impairments works for different Oversampling factors.	909774
	Power fixed for higher payload Lengths	1025032
DVB		
	DVB-RCS2: Fix for Data List.	992169
	DVB-RCS2: The default filter is not correct for DVB-RCS2.	970409
	DVB-S2X-E:Different SF lengths are fixed.	972444

Known Issues		
ARB: filenames containig special characters (non ASCII), cannot be selected		1008640
baseband selftest sometimes shows errors concerning DSP		902551
Fading: Sporadic error message when switching between some fading configurations. The simulated signal is not affected.		818966
K544: filter calculation issues with certain frequency responses		991199
K548 Crest Factor Reduction: Output crest factor for some 5G NR carrier aggregation signals offset by up to 1 dB with respect to the desired value.		832180
Signal of Baseband D is not generated after recalling a saverecall file of a 4x2x2 coupled per entity system config		929582
S-Parameter not used in Fill User Correction Data With Sensor		1021049
System Time locks via SCPI if using External Trigger, keeps running in the GUI		962298
GNSS		
	Constellation of Beidou geostationary satellites might deviate from the expected one if the simulation time is changed.	498094
	If start time is just before leap second insertion, the insertion might be omitted in log files.	652559
	Inconsistencies in logging data for SBAS.	491788
	Issue with smoothing of trajectories	466593

1.10 Version 5.00.166.23

Released: August 2022

New Options

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New Functionality / Changed Behavior

802.11be: add support for punctured RUs in OFDMA mode.	942903
802.11be: added non-OFDMA DL MU-MIMO	911554

Fixed Issues

On specific device configurations (without option SMW-K76), the firmware crashes on preset when starting with a MIMO case	921445
Internal adjustment: BUSY led was shown late	969479
802.11be: partly incorrect duplication of EHT-SIG content channels to 20MHz subblocks	946735
802.11be: encoding issues with MCS14 and MCS15, incorrect scrambling of payload data	965587
802.11be: incorrect constellation mapping to second 996 RU for EHT-160	966620

1.11 Version 5.00.166.22

Released: June 2022

New Options

- SMW-K555 Bandwidth Extension

New Functionality / Changed Behavior

802.11: New parameter Frame Delay supporting waveform time shift.	954461
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Fixed Issues

Custom Digital Modulation: firmware crash in some cases when using binary control lists	964263
SMW: Firmware crashes after changing the global connectors many times	962208

1.12 Version 5.00.166.20

Released: May 2022

New Options

- SMW-K111 GBAS
- SMW-K123 MODERNIZED GLONASS
- SMW-K423 MOD. GLONASS (WINIQSIM2)
- SMW-K169 DVB-RCS2
- SMW-K469 DVB-RCS2, WINIQSIM2
- SMW-K170 5G-NR SIDELINK
- SMW-K470 5G-NR SIDELINK, WINIQSIM2
- SMW-K171 5G NR RELEASE 17
- SMW-K471 5G NR RELEASE 17, WINIQSIM2
- SMW-K176 DVB-S2X-E
- SMW-K476 DVB-S2X-E, WINIQSIM2
- SMW-K506 AGILE SEQUENCING
- SMW-K507 ARB ETHERNET UPLOAD

New Functionality / Changed Behavior

AWGN: Incorrect display of signal and noise power values for analog IQ and BBMM outputs / incorrect min/max limitation of C/N value for analog IQ outputs	933250	
First version to support options K176/K476	837929	
First version to support options K169/K469	851370	
OFDM: Implement allocation based transform precoding.	365538	
Option SMW-B1067 (67GHz) supported	545657	
Option T0 expanded with options K22, K23, K24, K542, K548, K703, K704, K720 and K739	880492	
5G New Radio		
General	Add new allocation type Puncturing, which punctures zero energy holes into the signal.	880616
	Update specification version to 16.8.0	936392
	Up to 400 SFs may be displayed in the timeplan	913604
	Align with spec.-version 16.7.0	888968
	Change naming within the timeplan of conflict to overlap and change colour scheme (indicating warning not danger)	930888
	Clarify Point A definition by renaming Point A to Carrier Center to Point A to Baseband Center.	923367
	First version to support option K470 5G NR Sidelink	739208
	Update 3GPP Spec to 17.0.0	951651
	K145: Allow custom line rates to be set for serial feedback line	923096
	O-RAN: Add TMs 3.2.6.1.1-3.2.6.1.5 for 100 MHz	887418

	O-RAN: Support for 3.2.3.1.X and 3.2.5.1.X TMs for SCS=15kHz and BW >= 20MHz	920113
	O-RAN: Support for 3.2.6.1.1-3.2.6.1.5 for 100MHz 30kHz	923504
	Possibility to copy other carriers or to load single carrier out of a nr5g file.	908844
	Sidelink: Support message type PSSCH/PSCCH with DMRS	721736
	Sidelink: Support S-SSPSBCH generation.	721746
	Add possibility to sum up multiple multi layer carriers.	922407
	Add new R17 bandwidths and numerologies (K171 needed).	852075
	O-RAN: Support for 3.2.3.1.X and 3.2.5.1.X TMs for BW < 20MHz	924371
Downlink	Rel-17 feature, add new SCS and cases for SS/PBCH for FR2-2	916648
	IAB-MT reference measurement channels for PDCCH	885011
	Configurable PDSCH power for allocations generated through DCI	924036
	Rel-17 feature, enable coding for 1024 QAM	916652
	Rel-17 feature, new Test Models for 35&45 MHz	918873
Uplink	Rel-17 feature, more prbs supported for PUCCH for FR2-2	928100
	Rel-17 feature, new scs for PRACH	927164
	/User/BWP: Some new FRCs for Rel.16	862635
Setting Transfer	Settings Transfer: Add basic support for PUCCH format 3&4.	897124
EUTRA/LTE		
General	New 1024QAM test models (E-TMs 2b and 3.1b) of 3GPP TS 36.141.	934411
	O-RAN: Support for 3.2.3.7.X and 3.2.5.7.X TMs for BW < 20MHz	937390
	O-RAN: Support K175 U-Plane generation for NB-IoT	926024
	O-RAN: Uplink: Support U-Plane generation for Uplink (excluding PRACH)	909935
	O-RAN: Support for 3.2.3.7.X and 3.2.5.7.X TMs for 10MHz/20MHz	896594
GNSS		
	Add new 3GPP 2020 scenarios based on 3GPP TS 37.571-5 V16.6.0 (2021-09).	912353
	Increase max Attenuation for Body Mask/Antenna Pattern (values ≥40.0 are handled as obscured)	904669
	Changed range of pitch/elevation parameter of receiver attitude definition to [-90, 90]. The change is not backward compatible and values outside the [-90, 90] range will not be supported. It is still possible to import trajectory files with out-of-range pitch value definitions, in this case quality of the simulation is not guaranteed.	934644

	Changed range of yaw/heading parameter of receiver attitude definition to [0, 360]. For backward compatibility values between [-180, 0] are still allowed by SCPI interface and waypoint file import. The values will be internally mapped to the respective value of the new range definition.	934643
	GNSS supports QZSS L1C	818441
Fading		
	Changed name MIMO subsets (R&S®SMW-K821 option) + remove dependency on SMW-K75	936811
	Fixed error in SISO when loading some fading standards: 300, Device specific error / (A)General database error, (IdPDbFadStandard,h:0,c:0,s:0,d:0,g:0,u:0) and 222, Data out of range / (E)Parameter instance out of range, (IdPDbFadStandard,h:4,c:0,s:0,d:0,g:0,u:0) / Moving Propagation ALL: fixed Path Graph (delay), fixed Path Table (profile Pure Doppler, Frequency Ratio and Actual Doppler Shift) / Birth Death, changed min/max parameter setting range for Start Offset and Hopping Dwell / Two Channel Interferer: fixed Path Table (profile Pure Doppler, Frequency Ratio)	903494
	Function to import files with naming convention *customer*.fad_udyn at SMW-K820 path table. Supported format: Interval[us] Delay[ms] Fd[kHz] Pathloss[dB]. Further details, see data sheet.	938646
	High Speed Train - introduce Start Offset to shift profile in time	920939
	New MIMO 4x4, Subset 1+2 with 400 MHz BBBW (only B15)	821973
	New System Config with SMW-B15, -K74, -K821, -K822: MIMO 4x4, Subset 1+2 (BBBW = 400 MHz)	905690
	SMW-B14 Path Table supports upto 40 paths (in Configuration: Standard / Fine Delay) for system config 2x1x1 and 1x1x2 (with 2x B10 + >= 2x B14), 2x1x2 (with 2x B10 + 4x B14)	913442
HWP-UWB		
	Extra SFD Lengths are added	890953
	Filter for 15.4z supported.	847459
	Fixed 2ms Frame Length is added.	938033
	Text LSB is Transmitted First is added for Data Sources.	898371
DVB		
	Support for Super Frame Formats 4,5,6 and 7.	852844
	Support ModCod Adjustment.	857266
	Support for Beam Hopping Configuration.	864082
DVB-S2X-E	Support for Beam Hopping Time Plan.	869730
	Support for PN-Sequence with known Initialization Value.	877756
	SOSF Marker Support for Superframes.	893782
	Support for new Roll off values.	918704
	Support for Super Frame Configuration	900736
DVB-RCS2	Support for BTU Configuration.	900737
	Support for Grid Configuration.	900738

	Support for Slot / Section Configuration	900739
	BPSK, QPSK, 8PSK and 16QAM modulations are supported.	904023
	Support for Multicarrier.	905048
	Support for Spread Spectrum Linear Modulation Burst.	916241
	Support for DVB-RCS2 Time plan.	920262
	Support for User defined mode of Linear Modulation burst.	920478

Fixed Issues		
	ARB: Marker output of previously loaded waveform not disabled, when a new waveform without markers is selected.	943369
	Bluetooth: Measured guard time only ~4.5us for EDR packets on SMW and SMBVB internal generators	919953
	Bluetooth: Signal peaks during guard time for some EDR packets	933761
	I/Q Analog outputs: voltage not returning to zero when output is switched off and bias > 0V is set	933178
	K503/4: Added Default Gateway configuration for RTCI in static IP mode	921573
	K503/4: Fixed PDW statistics display for Baseband B.	919433
	OFDM: Trigger Mode Sigle, Signal Duration Unit - Sequence Length (SL) behaves like Signal Duration Unit - Sample.	955271
	OFDM: User data sources are restarted after each allocation.	947995
	OFDM: User state OFF has no implemented behavior. Switching to OFF can result in error messages or undefined behavior. The issue is fixed by removing the feature.	955245
	option K553: problems with devices having 2 RFs and one option K553 (RF_B doesn't work with frontend)	948389
	Pattern length could not be set using commands like.:SOURce1:BB:NR5G:SCHed:CELL0:SUBF0:USER0:BWPart0:ALLoc0:CS:DCI0:BITLength	884770
	OFDM: Trigger Mode Sigle, Signal Duration Unit - Sequence Length (SL) behaves like Signal Duration Unit - Sample.	955271
	SCPI: *ESR? and *STB? can not be accessed asynchronously during sensor nulling	843068
	SMW-B10: On narrowband devices, when using stream addition in the stream mapper, where AWGN with C/N value is << 0 dB is applied to at least one of the added streams, relative levels between baseband streams can be incorrect.	922600
	SMW-B10: When adding streams in the stream mapper, output power can be incorrect when also applying AWGN and one of the basebands at the adder input is switched off.	921626
	SMW-B15: Enable Restart Mode Baseband Trigger for 2x1x1	953462
	SMW-B9: 1xB9 and 0x/1xB15 and 0x/1xK62 in Mode ADV, Signal Outputs ALL: BBin State is always OFF	940708
	SMW-B9: ARB signal timing incorrect in some cases, when synchronizing 2 channels and using a binary control list in one channel but not in the other.	913220
	SMW-B9: Mode Advanced, Digital Only (HS): error while mapping connector BBMM2/7 to any stream.	708241
	SMW-K78: DSP Error 0x8004 with moving object and changes in stream mapper. Firmware crashes with moving object, big range difference and some certain velocities.	949021
	SMW-K78: DSP Error 0x8005 with moving object + cyclic	512682
	SMW-K78: Error message in REG B when using Armed Auto and clicking onto Arm.	949756
	DVB: Fix for High Roll off values.	927405
5G New Radio		
General	Two Coresets with different CCEs are displayed as conflicting in the timeplan.	928603

	Some parameters are not included in the generators' SCPI export.	886923
	Progress bar does not show up for long signal calculations.	891801
	New timeplan axis was not correctly scaled in some conditions, i.e. subcarrier spacing was not considered correctly	888409
	Slot Format Index 1 or 2 in quick settings causes a firmware crash.	888575
	The new grids in the Time Plan are only available for the first frame	922048
	Time Domain Resource Assignment should be 4 Bits for DCI 0_0	920211
	Errors while activating feedback mode for coupled per entity system configurations.	554021
	Missing adjustments for blocks >2 when loading a global safe-file.	952638
	PxSCH DMRS without data == 2 not correctly visualized in time plan.	839260
	Unexpected restart due to inconsistent CSI-RS data.	901318
	In Advanced System Configurations, if the number of entities is higher than 2 and the BB Source Config is set to Separate Sources, setting the baseband trigger source to External Global Trigger 2 might fail with the device showing a corresponding error message.	953321
	In higher order MIMO configurations, retriggering the baseband while a 5G signal is generated with real time mode ON results in a signal distortion for some seconds.	929549
	K145 + K81: Firmware crashes on system configuration change with both K145 and K81 logging activated	917109
	O-RAN TMs 3.2.3.7.4 & 3.2.5.7.4 10MHz not configured correctly	901181
	O-RAN: TC 3.2.3.1.3 for 20MHz 30kHz does not occupy entire bandwidth	944151
	Power Leveling for Count Full System Frame Number SSPBCH mode does not work with advanced power modes	906070
	Save Recall: Old Save Recall Files cause problems in Scheduling Symbol Offset created with versions up to C45.4.70.128.50.20 beta / Nov. 2020 beta.	947736
	SCPI: some SCPI commands ending with a number could be misunderstood.	908607
	Settings Transfer: Creating a transfer file with two active PDSCH codewords is broken and creates an error message.	926151
	Using K175 with bwp-offset settings creates invalid u-plane data	934488
Test Case Wizard	Interfering RB Center Frequency of TC 742B is not updated when SCS of WS changed.	895624
	TC 8.2.5 is not available on wideband devices with scenario X.	891680
Downlink	Auto Dci: Rel-15 PDSCH DMRS is generated even though dmrsDownLink-R16 is ON.	939932
	NR PDSCH coding uses wrong RNTI when configured by a CORESET	936382
	PDSCH Type configuration restrictions are too restrictive.	902268
	AutoDCI: Incorrect number CDM groups without data for antenna port index 23.	945505
	Coreset: Firmware can create an internal error for specific interleaved settings.	937435

	Coreset: Restrict to search space mode calculates incorrect CCE indexes for frame index bigger than 1.	912160
	CSI-RS configuration out of BWP range results in internal std::bad_alloc error message.	952566
	GUI display error in NZP CSI-RS Antenna Port Table.	945334
	When generating PDSCH through DCI 1_0 using P-RNTI, MsgB-RNTI, RA-RNTI, the redundancy version used might be wrong.	937429
	A pdsch scheduled by a CORESET always uses cellID for the PDSCH DMRS scrambling Ids regardless of scramblingId0/scramblingId1 set in DL BWP Config. This contradicts 38.211, clause 7.4.1.1.1 which requires the scrambling Id to be set depending on dci usage, dci format and set cellID/scramblingIds.	945811
Uplink	1024QAM not selectable without channel coding	951948
	PUCCH Format3 and Format4 polar coding might be wrong for some configurations (e.g. some payload sizes)	940867
EUTRA/LTE		
General	Oran-Models are not correctly shown on path B, TDD/FDD is not considered correctly	911352
GNSS		
	Baseband errors and disappearing SVs in HIL mode in combination with high velocities.	885757
	Change default broadcast URA value for GPS satellites from 5 to 0	556689
	Decimal point for satellite orbit parameter Eccentricity cannot be changed correctly from GUI	935886
	Glomass satellites rising only after a leap second event happened in a running simulation may not be usable	906604
	Glomass satellites which are not enabled in simulated constellation (i.e. not simulated at all) are still included with valid almanac data within the FDMA signal navigation message	922245
	Inconsistent naming of power/phase in GUI of antenna pattern / body mask	931114
	Incorrect constellation for GLONASS satellites after leap second event	906399
	Some Glonass satellites under certain conditions not usable within receiver PVT solution when simulation runs continuously for more than 12h	672947
	Typo in minimum value of System Latency (2ms instead of 20ms)	954515
	The body mask and antenna pattern editors assume a flipped direction of the z-axis	429406
	Velocity (Pseudorange Rate) in tracking mode does lead to an RF signal with opposite Doppler sign.	944404
Fading		

	If a spatial channel model preset is loaded and subsequently the antenna pattern is manually overwritten, changing the IQ stream mapping might unexpectedly set the changed antenna pattern back to default.	943327
	In advanced MIMO configurations and after recalling a fader state using a *.fad file, the GUI might not show the fading state correctly.	772421
	In moving propagation mode with moving channels set to ALL, if Keep Constant in the Table Setting is set to Res. Doppler Shift it is not possible to change the doppler shift.	869585
	Loading a saverecall file in MIMO configurations with the fader 'keep constant' set to 'Res. Doppler Shift' and afterwards changing the frequency might result in a wrong update of the speed and the doppler shift in the path table (for Standard/Fine Delay and Moving Propagation ALL)..Changed default behavior of parameter 'Signal Dedicated to'. Now always 'Auto Detect Output' is chosen.	924898
	Problem with setting configuration for High Speed Train (HSTR) or Moving Propagation (MDEL) fading standard in multi-entity MIMOs	954093
	When the fader table settings set the resulting doppler shift to be constant, it is still possible to change the speed through SCPI, and consequently the doppler shift changes too.	924946
Radar		
	Inter-board synchronization did not consider ARB sample rate and number of B15 boards. This could cause time skews between sequencers.	958334
802.11		
	802.11ac: Frame type Trigger not working correctly.	945603
	802.11ax: Possible firmware crash when activating time domain windowing	911014
	802.11be: added max PE duration of 20us	911570
	802.11be: added non-OFDMA DL MU-MIMO	911554
HWP-UWB		
	Channel Number is added instead of Channel Num.	912942
	Fixes for Pattern in Datasources.	887252

Known Issues		
	+/- Hardkey on Numblock does not toggle / change the sign of a numeric value.	957951
	baseband selftest sometimes shows errors concerning DSP	902551
	Fading: Sporadic error message when switching between some fading configurations. The simulated signal is not affected.	818966
	K548 Crest Factor Reduction: Output crest factor for some 5G NR carrier aggregation signals offset by up to 1 dB with respect to the desired value.	832180
	Remote Emulation: *IDN* and *OPT? strings can not be entered via touch screen. External keyboard or mouse required	657096
	Signal of Baseband D is not generated after recalling a saverecall file of a 4x2x2 coupled per entity system config	929582
	SMW-K78: REG recall (tab: Radar Setup) might not work in some cases (no recall executed)	954039
	SMW-K506: ADW Buffer overflow is not yet raised as an error	945870
GNSS		
	Constellation of Beidou geostationary satellites might deviate from the expected one if the simulation time is changed.	498094
	If start time is just before leap second insertion, the insertion might be omitted in log files.	652559
	Inconsistencies in logging data for SBAS.	491788
	Issue with smoothing of trajectories	466593
	Possible Ionospheric simulations mismatch	762298
	Channel allocation does not work for all signal type combinations (B10 only)	924777

1.13 Version 5.00.044.40

Released: March 2022

New Options

- -

New Functionality / Changed Behavior

Internal improvement / Support of new Controller

SMW-K553 - Allow up to two simultaneous LAN connections to one external frontend. Please note: Incompatible firmware versions installed on analyzer and the external frontend will lead to a deactivated connection to the external frontend. Please update the external frontend firmware in this case. FE50DTR Simultaneous Mode requires FSV Version \geq V1.70

Support for new revision of External Frontend synthesizer boards, revision \geq 3.11

Known Issues

See 5.00.044.34

1.14 Version 5.00.044.38

Released: January 2022

New Options

- SMW-B1056 100 kHz - 56 GHz, PATH A
- SMW-B1056N 100 kHz - 56 GHz, PATH A, LIM. BW
- SMW-B1067 100 kHz - 67 GHz, PATH A
- SMW-B1067N 100 kHz - 67 GHz, PATH A, LIM. BW

Known Issues

See 5.00.044.34

1.15 Version 5.00.044.34

Released: December 2021

New Options

- SMW-K307 EMITTER INTERLEAVING EXT

New Functionality / Changed Behavior		
	The option SMW-T0 includes now SMW-K300, SMW-K301, SMW-302, SMW-304, SMW-306, SMW-307, SMW-309, SMW-K502.	880467
	New functionality for external frontends: Network settings	869351
	ARB: New display parameter Processing Time shows the time required from an external trigger event to output of the first waveform sample	894193
	SMW-K980 HUMS: Utilization improved	796595
	DVB: New feature of DVB-S2 & S2x for BER test.	877754
	Fading: 3GPP CDL models update according to TS 38.151 (FR1 CDL-C UMi 2x2, FR1 CDL-C UMa 4x4)	890365
	Fading: New 5G NR Channel Models (TDLC300-600, TDLC300-1200, Moving Propagation Scenario X and Z)	861563
	Optimize the initial EVM performance via single button click	866496
5G New Radio		
General	The frequency range FR2 are divided into FR2-1 and FR2-2	865401
	Possible 200 configurable users.	819533
	Provide O-RAN TM configurations for 3.2.5.1.X and 3.2.3.1.X	815386
	Quick Settings and Marker: Support IAB slot formats according to release 16.	785344
	Quick Settings: More flexibility for special slot in TDD mode	831399
	Synchronize Quick Settings to Marker's TDD Mode.	849631
	xOverhead for transport block size determination	879622
	O-RAN: General: Provide O-RAN.CONF0 3.2.3.1.X and 3.2.5.1.X support for BW >= 20MHz	876115
	O-RAN: General: Provide O-RAN.CONF0 3.2.3.7.X	866243
	Time Plan: X- and Y-axis description cannot show slots/symbol and subcarrier/RB in axes	849736
Downlink	Add IAB-MT reference measurement channels	864231
	Additional SSPBCH Occasions.	774527
	Closed-loop HARQ K145 now also for PDSCH	800423
	Extend PBCH scrambling and payload generation for access to unlicensed spectrum.	774511
	Implement transport block scaling factor S.	863922
	K148: Increase number of configurable DCIs to 32.	866826
	New SSB periodicities for IAB	819201
	RMCs for FR2 according to 38.521-2	864358
	Type 1 Single Panel Codebook Precoding	724742
	Some release 16 updates to DCI type 2_0.	832345

Uplink	Add R16 OCC length and index configuration for PUCCH format 2 and 3.	774525
	Closed-loop HARQ K145 now also for PUSCH aggregation.	833844
	IAB-DU reference measurement channels	793740
	Optional Cyclic Prefix Extension for PUSCH and PUCCH.	774498
	PRACH sequence lengths 571 and 1151 for unlicensed spectrum	774505
	PUSCH allocation can be shifted in time (needed for 2-step-RACH BS conformance tests).	745720
	Support for additional FRCs according to recent versions of 3GPP TS 38.141.	762540
	Support for PUCCH interlace	774507
	Support for PUSCH interlace with allocation type 2	774497
	Support Multiplexing of R16 Configured Grant - Uplink Control Information to PUSCH.	774515
Test Case Wizard	Now the TCW sets the system config mode Analog & Digital (HS) in case of B13XT SMWs, which makes it optionally possible to connect instruments by means of 40G digital IQ.	832367
	Support for release 16 up to v16.7.0.	750672
	Support instrument setup for using one or two RF port for OTA chapter 7.	740801
Setting Transfer	Support allocation type 0.	869280
	Support coreset Allow PDSCH mode.	878228
EUTRA/LTE		
General	Marker delay is additionally displayed in time units.	761883
	Renamed DRS to DMRS where demodulation reference symbols are meant.	521452
	Starting seed of PN sequences is configurable.	846389
GNSS		
	Beidou: Support of up to 63 Satellites	867771
	Enable reading of RINEX 3.05 navigation message files	866552
	GNSS supports GPS L1C	817299
	Added Button to adjust repetition window of obstacles to trajectory length.	758535
	Satellite Logging now provides Carrier Range [m] instead of Carrier Phase [deg].	848746
	Transmitted default Galileo SISA index value of 5 is not realistic with respect to the SIS, value was increased	873345
	Import pseudorange error profiles from file	833206

Radar		
	Added K307 16 additional Emitters for interleaving	822244
	SMWK502 Added Stats for K502	869778
HWP-UWB		
	FCS support for 2 and 4 Octets.	812490
	Filter for 15.4z supported.	847459
	Frame Length is added in Frame Configuration.	817166
	Maximum Idle Interval is one second.	855484
	Payload Lengths 1023,2047 and 4095 are available in HPRF Mode.	811167
	Channel Number and Code Index are taken as 9.	849071

Fixed Issues		
	ARB: In sporadic cases the beginning of the waveform output is blanked	890929
	AWGN: changing the C/N parameter results in a time-shift of the signal with respect to an external trigger in some cases	776616
	Bluetooth: Allow test packets with 0 bytes payload length for all packet formats.	878035
	Fading: 5G FR1 CDL models: The might TX antenna patterns might be wrong for some carrier frequencies	890074
	Fading: In moving propagation mode, the GUI erroneously allows setting too large delay related parameter values, causing error messages to pop up during run time.	900938
	For some instrument configurations, fading cannot be activated after switching to advanced system config without manually reconfiguring the Baseband BW.	840062
	For Swerling 1-4 Mean, Peak and TestCoverage are not recalled correctly	899675
	I/Q Analog Output with mode=variable in path B not possible due to option missing	895884
	Occasional level overshoots while deactivating FM.	889891
	OneWeb User-Defined Signal Generation: Uplink: Issues on 8PSK PUSCH.	832153
	Permanent options that are also activated with the trial are displayed with the trial's expiry date.	870611
	Pulse Modulation: SOUR1:PULM:MODE ESIN leads to error message	854797
	SISO 2x1x1 with bandwidth 400/500MHz sometimes not working with path B	876490
	SMW-B13XT: Unwanted signal spike when switching on the I/Q Analog output	880220
	SMW-B15, 0xK822, 0xK823: In some cases SISO signals with BBBW 400 MHz or 800 MHz are blocked.	829941
	SMW-B9: Allow 200MHz AWGN bandwidth in all higher MIMO advanced system configuration modes.	851830
	SMW-B9: Baseband marker output on user 1-6 connectors sometimes incorrect, depending on stream mapper and RF / IQ output states.	897244
	Sometimes error messages hardware missing ... after starting device without available option SMW-K19	872973
	The Generate Waveform function of baseband standards fails to create a waveform file when parameters are changed before the waveform calculation has finished.	880043
	Fixed since 4.90.049.47SP1 already:	
	Bluetooth: Allow test packets with 0 bytes payload length for all packets formats	878035
	Sometimes error messages "hardware missing ..." after starting device without available option SMW-K19	872973
	B13XT: Unwanted signal spike when switching on the I/Q Analog output	880220
	Unwanted signal blank during change of digital attenuation value	882124
5G New Radio		
General	Changing the configuration of one baseband path can re-arm the other baseband path.	843850

	some parameters are not included in the generators' SCPI export.	886923
	Progress bar does not show up for long signal calculations.	891801
	new timeplan axis was not correctly scaled in some conditions, i.e. subcarrier spacing was not considered correctly	888409
	Slot Format Index 1 or 2 in quick settings causes a firmware crash.	888575
	Oran datalist files are not updated.	856241
	Allocation type 0 is allowed although transform precoding is enabled.	879309
	for some channel bandwidths, a PRACH allocation could require more RBs than what is available in the BWP	855328
	Fix settings transfer for FR2+	853541
	Min mode sample rate does not result in full sample cyclic prefix.	832872
	Possible issues with old savefiles when loading more carriers with deployment FR2.	843953
	Quick Settings: No SCPI for modulation type pi/2 available.	825524
	Generate waveform with active closed loop feedback produces an error message.	550015
	Settings File Transfer: Incorrect default value for Scaling factor S	855945
	Time Plan: x-axis does not zoom correctly in grid fine and coarse mode.	877783
	SMW might freeze when setting DCI usage to P-RNTI	898416
	UL PTRS MIMO: Codebook with fully-coherent restricts the PTRS mapping to first DMRS port	883568
	UL PTRS MIMO: PTRS AP does not include muted PTRS RE from other PTRS port and PT-RS power issue for MIMO PT-RS	885519
	Time domain resource assignment bit in CORESET is mostly only 1 bit for user 1 (instead of 4)	898411
	Timeplan: axis scaling (grid coarse and fine) does not consider Subcarrier spacing correctly	887853
Test Case Wizard	Generally using 'Analog & Digital HS' mode on B13XT SMWs prevents using SGTs..For the next release we can call it a new feature: 5G NR: Test Case Wizard: Support for mode 'Analog & Digital HS' in the test case wizard (B13XT SMWs only).	837601
	SNR is not correct for 38.141-1:TC73 Dynamic Range and 38.141-2:TC74 OTA Dynamic Range.	846999
	Incorrect RB offset of interfering signal of 7.4.2B in lower frequency	826900
	Interfering RB Center Frequency of TC 742B is not updated when SCS of WS changed.	895624
Downlink	DCI field Precoding Information and Number of Layers in DCI 0_1 and 0_2 could have an erroneous width in the case of SRS resources configured with different number of antenna ports	828830
	SRI field width in DCI 0_1 and 0_2 could be erroneous	828819
	Time Plan shows conflict while both PRS and OCNG are ON	844366
	FR2: RMC TBSIZE and nPhysBits for 64QAM and 256QAM are not correct. The numbers do not match 38.521-2.	888495

Uplink	Oran testmodels are not written into settings transfer file.	861104
	K145 SRS: SRS in Feedback Mode does not work.	867674
	PUCCH: Format 0 does not support 0 ACK bits in case of active scheduling request.	825783
	PUSCH Interlace: Transport Block calculation does not take into account interlacing	859573
	Several PTRS configurations cannot be mapped with only one SRS-PTRS Port Idx configuration.	828315
	the number of RBs shown in the scheduling table for PRACH allocations with certain configurations could be wrong	857381
EUTRA/LTE		
General	Error in TxDiversity is shown under certain conditions.	852923
	For some rarely used parameters, a value change could possibly not trigger a signal recalculation.	769627
	In case of carrier aggregation, an invalid sample rate can be configured, which causes a crash.	624353
	Some unlogical GUI behavior around the special subframe configs of newer specification releases.	540121
	Wrong delta-f limits for some system configurations.	730341
	O-RAN: Activating U-Plane generation does not re-trigger signal calculation and accordingly creates no files	849186
Downlink	DCI 1A mode PRACH does not work.	674649
	Problems with Release DCI while configuring and recalling SPS settings.	732688
GNSS		
	Beidou B2a signal in rare circumstances not usable for PVT	800292
	Satellite handover fails in rare cases at B10	849465
	Show SCPI command... is displaying wrong command when used for Ionosphere parameters of GPS/LNAV, Galileo/INAV, Beidou/DNAV, QZSS/NAV	780975
	Wrong satellite initialization leading to potential tracking errors for single satellites in some rare cases	856280
	C/Nav navigation data may be inconsistent with respect to L/Nav navigation data when importing RINEX files	880465
	Galileo almanac entries for satellites which are not present in the utilized constellation are not indicated with SVID = 0	893456
	Galileo health flag not utilized from RINEX import	806109
	Galileo I/NAV some reserved/spare words are not indicated as a word 0	865279

	Galileo satellites in some cases experience almanac vs. ephemeris mismatch when preceding Galileo satellites are not existing in constellation	893985
	No positioning solution for GPS L1/L5 when simulations start at dedicated points in time	855609
Radar		
	SCPI: improved *opc? handling while changing between ExecuteTrigger and RearmTrigger in all digital standards	875235
	K503: Now supports ignore PDW Flag	829067
802.11		
	802.11ax: some HE-160 trigger based PPDU configurations crash	845722
	802.11be: Filter settings cannot be changed in 20MHz.	896821
HWP-UWB		
	Hop Bursts 8 and 32 are added in BPRF mode.	848583
	Issue fix for BPRF- DRBM_HP PHR Data rate Mode.	847495
	Issue for SFD = 0 in BPRF mode.	833183

Known Issues		
baseband selftest sometimes shows errors concerning DSP		902551
BER: bit error rate is not displayed in engineering notation		901503
DIGIQ_SYSCONF: 4x8, 8x4, 2x4x4: DIG I/Q outputs at FADx to SGT might have signal interrupts or higher EVM		832175
Digital IQ: Enabling Markers 1 and 2 from Digital IQ HS input		845552
Digital IQ: Unstable HS digital IQ connection between devices.		804492
In higher MIMO modes, when using AWGN on I/Q Digital Outputs, the signal is missing after restarting or triggering the baseband.		697825
K548 Crest Factor Reduction: Output crest factor for some 5GNR carrier aggregation signals offset by up to 1 dB with respect to the desired value.		832180
Pulse generator external gated mode: Pulse delay applies delay to both pulse out and sync signal.		455775
Remote Emulation: *IDN* and *OPT? strings can not be entered via touch screen. External keyboard or mouse required		657096
SMW-WB: Mode Advanced, Digital Only (HS): error while mapping connector BBMM2/7 to any stream.		708241
Sporadic error message when switching between some fading configurations. The simulated signal is not affected.		818966
Wideband SMW, GSM: level at slot 8 for levatt 7 value is wrong		334932
SMW-K980 HUMS: SNMP Interface fails when requesting long data blocks		904603
GNSS		
	Constellation of Beidou geostationary satellites might deviate from the expected one if the simulation time is changed.	498094
	If start time is just before leap second insertion, the insertion might be omitted in log files.	652559
	Inconsistencies in logging data for SBAS.	491788
	Issue with smoothing of trajectories	466593
	The body mask and antenna pattern editors assume a flipped direction of the z-axis	429406
	Possible Ionospheric simulations mismatch	762298
Radar:		
	REG: For 2xK78 and addition of both streams in Stream Mapper: automatic level calculation not working correctly in all cases	183053
	REG: For signal routing to both REGs and addition in Stream Mapper, Automatic System Latency measurement not working in all cases	252364

1.16 Version 4.90.049.47

Released: August 2021

New Options

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New Functionality / Changed Behavior

SMW-K553 Support for 2nd frequency band configuration	809273
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1.17 Version 4.90.049.40

Released: June 2021

New Options

- SMW-K147 IEEE 802.11BE
- SMW-K447 IEEE 802.11BE with R&S®WinIQSIM2
- SMW-K175 U-PLANE GENERATION
- SMW-K553 EXTERNAL FRONTEND SUPPORT
- SMW-K980 HUMS
- SMW-K71 DYNAMIC FADING for B15
- SMW-K820 CUSTOMIZED DYNAMIC FADING for B15
- SMW-K823 FADING EXTENSION TO 800 MHZ

New Functionality / Changed Behavior

Digital IQ: HS digital IQ enabled in system config mode Advanced - Analog&Digital	813275
New Option SMW-B2044.New Option SMW-B2044N.New Option SMW-B2031	644588
SMCV100B supported as external RF (extension) for SISO/MIMO scenarios in SMW200A (B13XT) Mode Advanced / Analog & Digital (HS)	775305
SMM100A supported as external RF (extension) for SISO/MIMO scenarios in SMW200A (B13XT) Mode Advanced / Analog & Digital (HS)	775303
SMM-K811, Notched Signals, is implemented	817460
The 800 MHz baseband bandwidth can be configured in the Fading/Baseband Config 'Advanced' mode. See SMW data sheet for more details..	773633
The terms Master and Slave have been replaced by Primary and Secondary in documentation, user interface and remote control. Previous remote control commands continue to be valid in order to maintain compatibility.	777014
5G New Radio	
General	Dummy Data serves OCNB definition of 3GPP TS 38.521.
	720502

	Dummy Data supports precoding matrix	720502
	PDSCH, PUSCH, PUCCH: Support release 16 DMRS.	724635
	Possibility to store the 5G NR configuration in a file which can be imported by the 5G NR functionality of Rohde&Schwarz signal or spectrum analyzers.	684698
	Quick Settings: Copy Carrier usable for Settings Transfer	784812
	Add per carrier phase-shift for multi carrier setups	782352
	Add per carrier time-shift (< 1ms) for multi carrier setups	767366
	Add toggle for disabling scrambling in PDSCH and PUSCH.	786052
	Carrier signals can be cyclically shifted by subframes.	790660
	For marker type TDD UL/DL, the rise and fall offsets can be configured.	761653
	Further speedup of the signal calculation.	825114
	Increased number of independently configurable subframes.	781290
	Marker delay is additionally displayed in time units.	761652
	Markers: Add "active high" / "active low" selection to invert marker signal.	762926
	Optionally, the PDSCH/PUSCH target code rate can be configured manually.	754714
	O-RAN test models.	799001
	Release 15 option has been renamed for harmonization.	816536
	Support of the release 16 UL full power transmission modes (SRS and DCI).	806317
	Update to 3GPP specifications 38.211 V16.4.0, 38.212 V16.4.0, 38.213 V16.4.0, 38.214 V16.4.0. Test models according to 38.141 V16.6.0.	823042
Downlink	Possibility to apply a test model to multiple carriers (by means of Quick Settings).	720514
	Support for TS 38.521 RMC assistance functionality.	720513
	Additional PDSCH DMRS durations with option K148	774512
	Additional PDSCH Type B symbol lengths with option K148	774513
	Auto-DCI: Release 16 PDSCH Type B symbol lengths and DMRS positions	798674
	Create PDSCH for DCI 1_2	750928
	DCI formats 0_0, 0_1, 0_2, 1_0, 1_1, 1_2, 2_0 (partly), 2_1, 2_2, 2_3, 2_4, 2_5, 2_6 are updated / created according to release 16.	824884
	Default SRS Request field width in DCI 1_2 changed according to the related higher layer parameter	801642
	Display DMRS symbols in CORESET for DCI1_x after "Create PDSCH"	809007
	Generate U-Plane Data for given configuration (K175 needed).	767865
	New PDSCH type "DCI Format 1_2"	723892
	RNTI type "custom".	790880
	Settings transfer: Add DCI usage and format to transferred settings	788778
	Support for 38.141-2 FR2 NR-TM 2a and 3.1a.	750671

	Support for AI-RNTI and DCI 2_5.	748930
	Support for DCI format 0_2.	750930
	Support for DCI format 1_2.	755818
	Support for new antenna port tables in auto DCI mode with format 1_1	782493
	Support multiple lte-crs rate match patterns, according to release 16.	750495
	Type 1 frequency allocation with granularity larger than 1 for DCI format 1_2	811550
Uplink	Support release 16 SRS	725527
	New PUSCH type "DCI Format 0_2"	750933
	Support for additional FRCs except new FRCs defined in A.4 according to recent versions of 3GPP TS 38.141.	750670
EUTRA/LTE		
General	Marker delay is additionally displayed in time units.	761883
Test Case Wizard	Support for newer releases.	732520
Downlink	Generate U-Plane Data for given configuration (K175 needed).	759648
Uplink	FRCs A.21, A.22.	508595
GNSS		
	Improved antennas position visualization	596054
	Support for Assisted-GNSS logging	762436
	Support for higher simulation velocities	769075
	New experimental SBAS Signal Exp L5: WAAS L1 signal and EGNOS L1 signal on L5 carrier (not compliant to SBAS L5 ICDs)	743973
Radar		
	REG: RCS Model Swerling 1-4, User Lists (amplitude, phase), Restart Mode Armed Auto (internal, external)	743071
802.11		
	802.11be: first feature set including the non-OFDMA mode	732639
HWP-UWB		
	"Symbol timing Error" is replaced with "Chip Clock Error" in Impairments.	808096
	Configurable MAC Header.	781438
	Flexible configuration of sync lengths.	779506
	Gap Configuration is supported between Payload and STS.	808104

	SFD values are flexible in BPRF and HPRF mode.	815894
	Support for flexible STS active segment lengths and number of active segments	781354
	Support for Flexible STS Active Segment Lengths.	789311
	Support of up to 4096 octets for HPRF payload.	791465
	Oversampling factors 3 to 8 are supported.	790062
	The Maximum Value of Idle interval is 10ms.	821654

Fixed Issues		
	3GPP: Specific waveform files cannot be played back if only ARB file playback options (no internal options) are present.	811790
	AWGN: Setting range CW Frequency Offset and Center Frequency Offset might be too large. Affected devices: SMW-B9, SMW-B10, SMM, SMCVB.	786178
	Baseband Error - Fader: WaitTillDownlinkFlagOn() No DATA_DONE when changing system configuration	815601
	DIGIQ_SYSCONF: SMW-B9 via HS DIG I/Q with external Evalboard (K552): recommended to use Sample Rate Source = User Defined	830126
	External connection CODER IN: Connected FSW get unwanted scpi commands	808164
	Fading: SCM coefficients could be wrong in case of MS zero speed.	800457
	Fixed bug where high level spikes can appear during Power level or frequency change. Problem mainly occurred for signals with high crest factor	807989
	Full attenuation during RF off is not set when IQ modulation is active	750322
	K548 Crest Factor Reduction: improved output crest factor accuracy for a variety of different signals.	771072
	LXI-web-GUI: 'download log entries as CSV' (Diagnostics - SCPI Remote Trace) is not working with 4.80.xx	791471
	SMW-B10: modes with 5-8 output streams sometimes loose the signal when individual baseband sources are turned off.	819129
	SMW-B15: sporadic Fader Error 0x800B when changing the Fading configuration	830864
	Switching the system configuration through loading a settings file causes a firmware crash in some cases.	790653
	The frequency deviation for FM modulation in path B is 10% lower than expected (with V4.80.xx only)	830215
	When reading NRP-Z power values via SCPI while Power Viewer is on an unintended settings conflict arises.	780259
	OneWeb User-Defined Signal Generation: Reverse link: HARQ issue for 8PSK according to Rev D spec.	800759
	OneWeb User-Defined Signal Generation: Reverse link: Issues on 8PSK PUSCH.	832153
	Issue for the preset values of some 5G Release 16 HST fading models.	806098
	3GPP: Downlink: Crash with certain channel coding configurations.	809765
5G New Radio		
General	Allocations within a subframe might not be filled up with user payload data ordered according to playback order.	805145
	Clipping does not work for Carrier Aggregation (separate System Config)	808704
	Configuration issue for data list files in case of more than one user.	787883
	K81 output files are named: "<filename>.json.json" rather than "<filename>.json"	783420
	Markers: Raise offset, Fall offset not applied in TDD UL/DL mode	789034
	PDSCH/PUSCH settings transfer: dmrs nid_rs and dmrs antenna ports not exported. CSI-RS bitmap flipped, RB offsets not exported.	768574
	possible inconsistencies when first increasing number of carriers then number of users	768682

	Quick Settings: No SCPI for modulation type pi/2 available.	825524
	Unexpected data source behavior if there are allocations with state off.	823914
Test Case Wizard	Incorrect local connector for test cases with closed loop feedback on devices equipped with B9.	821470
	Incorrect RB offset of interfering signal of 7.4.2B in lower frequency	826900
	Issue for some configurations of 8.4.1.	801562
Downlink	Configuration issue for rate match pattern resource block data list files in case of more than one user.	787877
	Coreset interleaving by default has an invalid parameter value combination.	792335
	Creating a PDSCH through Auto DCI with format 1_0 in a cell with present CIF could fail	814070
	DCI field "Precoding Information and Number of Layers" in DCI 0_1 and 0_2 could have an erroneous width in the case of SRS resources configured with different number of antenna ports	828830
	Enabling "Restrict to Search Space" with a present CIF could lead to an NR5G internal error	794189
	No PDSCH allocation was created through Auto DCI for Format 1_0 and 1_1 in case of MCS-C-RNTI	803533
	Pattern initialization of coreset datasource does not work.	803522
	PDSCH target code rate is not shown correctly.	788936
	SRI field width in DCI 0_1 and 0_2 could be erroneous	828819
	Test models: Incorrect RNTI used in TM3_2 and TM3_3	767567
	The default number of bits for the PUCCH resource indicator field in DCI 1_2 changed	810875
Uplink	PUCCH: Format 0 does not support 0 ACK bits in case of active scheduling request.	825783
	Settings transfer: PUSCH Frequency Hopping Offset not transferred.	788770
	Several PTRS configurations cannot be mapped with only one SRS-PTRS Port Idx configuration.	828315
	SRS: internal error in case of BWP RB offset != 0	820323
EUTRA/LTE		
General	Crash in case of specific user filters.	622579
	For some rarely used parameters, a value change could possibly not trigger a signal recalculation.	769627
	In case of carrier aggregation, an invalid sample rate can be configured, which causes a crash.	624353
	Wrong delta-f limits for some system configurations.	730341
Test Case Wizard	For TC 8.3.3 the mode for splitting up the test over two devices is not working properly.	138540
	Incorrect local connector for test cases with closed loop feedback on devices equipped with B9.	821299
	The 2x2 tests of TC 8.3.9 are not configurable.	138541
Downlink	DCI 1A mode "PRACH" does not work.	674649

	Issue for test model N-TM_Standalone.	790511
	Problems with Release DCI while configuring and recalling SPS settings.	732688
Uplink	Crash when configuring PRACH for eMTC in some cases.	785922
	Occasionally the spectrum of an NB-IoT signal in standalone mode is distorted.	739369
	Parameter update issue for NB-IoT FRCs.	801138
GNSS		
	Ionosphere delay calculation mismatch	757690
	Rinex files generated with Assistance Data Generation contain tab characters which is not Rinex Spec. compliant.	465018
	Sporadic position deviations due to 1ms errors caused by numerical issues when parsing NMEA trajectory	771664
	Importing GLONASS Rinex does not synchronize Almanac data. It is recommended to work with AGL files. Ephemeris and Almanac data are also inconsistent when changing the simulation start time.	351472
	In some cases, the ARC segment of trajectory files is interpreted with inverted direction, which can lead to inconsistencies in the trajectory.	508429
	On the fly changes of the Reference Power do not work in GNSS Advanced mode. The GNSS state needs to be toggled off / on to update the power level.	781247
	Possible misalignment of user motion file generated by offline logging due to additional delimiter at the end of each row.	761387
Custom Digital Modulation		
	Activated power ramping disables subsequent use of other baseband standards.	809913
Radar		
	K503/K504: Changed PDW format parameter from Variant 1/2 to Basic Format and Expert Format. SCPIs changed as well. Old SCPIs are backward compatible.	774481
	K503/K504: Removed 5ms muting time after a CNTRL PDW. Please refer to the datasheet to find a suitable time for which no PDWs should be executed after the CNTRL PDW	758083
	REG: Calibration Mode (MAN/AUT) and User List file path not loaded correctly when using internal SavRcl (REG:STOR, REG:LOAD)	827933
	REG: Copy Object - RCS Peak Value for Swerling 3+4 is not copied in all cases. Test Coverage for Swerling 1+2 changes from 95.02% to 95.00% with Preset This Parameter.	826098
	REG: With low/high Mean RCS, Probability/CDF graphic disappears or is wrong	826025
	REG: With Save/Load Object: object name disappears, object type not loaded	825522
802.11		

	802.11: The effective single trigger sequence length is twice the set value for 11b and 11p	808712
	802.11ax: incorrect LDPC tone mapping with DCM=on	782439
	802.11ax: Packet Extension missing	819462
	802.11ax: post-FEC padding bits are not mapped correctly to the last 2 OFDM symbols with STBC=on	803469
	802.11b: Incorrect filter settings when setting CCK or PBCC modulation through SCPI	820433
Digital IQ		
	Bugfix for SMCVB and SMBVB Auto Level Set function	782538
	Fixed firmware crash in combination with internal graphics	800596
	Incorrect mapping of digital IQ HS output channels at BBMM2 in some cases.	801052
	Leveling partly incorrect when switching between baseband input and internal baseband.	704730
	Samplerate and level info mistakenly updated at the receiver even when state is off.	771987
HWP-UWB		
	Confusing GUI label for Viterbi constraint length.	791243
	Data Part should not be available in STS format 3 for both BPRF and HPRF modes.	797439
	Idle Interval is fixed for HPRF mode.	808782
	Issue fix for BPRF- DRBM_HP PHR Data rate Mode.	847495
	Issue for bandwidths more than 1GHz.	805073
	Issue for code indices in case of HPRF mode.	791194
	Issue for SFD = 0 in BPRF mode.	833183
	Issue for specific Viterbi constraint lengths in case of HPRF mode.	789265
	Signal issue in case of more than one STS segment.	789272
	The levelling is fixed for all the STS Packet modes.	811191

Known Issues		
Remote Emulation: *IDN* and *OPT? strings can not be entered via touch screen. External keyboard or mouse required		657096
SMW-B15, 0xK822, 0xK823: In some cases SISO signals with BBBW 400 MHz or 800 MHz are blocked.		829941
SMW-WB: Mode Advanced, Digital Only (HS): error while mapping connector BBMM2/7 to any stream.		708241
GNSS		
	Constellation of Beidou geostationary satellites might deviate from the expected one if the simulation time is changed.	498094
	If start time is just before leap second insertion, the insertion might be omitted in log files.	652559
	Inconsistencies in logging data for SBAS.	491788
	Issue with smoothing of trajectories	466593
	SBAS 'Generate Correction Data Automatically' does not correctly sync with the simulated ionosphere and GPS orbit/clock errors leading to an error of few meters in the position calculated by the receiver when using the SBAS correction service. Instead the 'Replay Historical Data and Sync Atmosphere & SV errors' can be used at the moment.	240388
	The body mask and antenna pattern editors assume a flipped direction of the z-axis	429406
	Possible Ionospheric simulations mismatch	762298

1.18 Version 4.80.041.66

Released: May 2021

New Options

- SMW-B2044 100 KHZ - 44 GHZ, PFAD B
- SMW-B2044N 100KHZ-44GHZ, PFADB, LIM.BW
- SMW-B2031 100KHZ-31,8GHZ, PFAD B
- SMW-B2012 100KHZ-12,75GHZ, PFAD B

1.19 Version 4.80.041.57

Released: January 2021

New Options

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Fixed Issues

Switching the system configuration through loading a settings file causes a firmware crash in some cases.	790653
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1.20 Version 4.80.041.48

Released: December 2020

New Options

- SMW-T0 TRIAL LICENSE (3M)
- SMW-K69 LTE Closed-Loop Base Station Test for B9 now
- SMW-K97 NAVIC/IRNSS
- SMW-K148 5G NR Release 16
- SMW-K448 5G NR Release 16 WinIQSIM2
- SMW-K149 HRP UWB
- SMW-K449 HRP UWB WinIQSIM2
- SMW-K360 eraGlonass Test Suite
- SMW-K361 eCall Test Suite
- SMW-K362 GNSS Test Suite
- SMW-K822 Fading extension 400 MHZ

New Functionality / Changed Behavior

Bluetooth: Added AOD antenna gain feature.	706197
dashboard now with temperature surveillance	735517
DIGIQ_SYSCONF: re-adjust BB-selector state when number of BBin channels changed and BB-selector state was dedicated to a non-active channel number.	703966
HRP-UWB: First version to support options K149/K449 (UWB-HRP).	697359
HRP-UWB: Support of 802.15.4, 802.15.4-BPRF and 802.15.4-HPRF Modes.	697359
OneWeb User-Defined Signal Generation: Uplink: PUSCH UCI updates according to specification revision D.	732250
Renamed FCC-0696-T6Sim.xls to FCC-0696-T6Hop.xls..Renamed FCC905462D02v02-T6Sim.xls -> FCC905462D02v02-T6Hop.xls	768069
Fading: Support of 5G NR release 16 500 km/h HST models of 38.104. K71 option needed.	734168
Fading: Support of 5G NR release 16 350 km/h HST and moving propagation models of 38.104. K71 option needed.	725870

5G New Radio		
General	Update to 3GPP specifications 38.211 V16.2.0, 38.212 V16.2.0, 38.213 V16.2.0, 38.214 V16.2.0. Test models according to 38.141 V16.5.0.	759091
	5G NR application version is displayed in the user interface.	744658
	First version to support options SMW-K148 (5G NR Release 16) and SMW-K448 (5G NR Release 16 (WinQSIM2)).	629977
	Support of up to 50 users with options K148/K448.	729225
	In the scheduling dialog, the slot number in the frame is shown in addition to the slot number in the subframe.	729161
	When changing to mapping type B, the number of symbols is always set to 7 first. Note that this can be a small compatibility break if you configured the number of symbols before changing the type, but it is needed as a preparation for a future Release 16 change, which would cause even a bigger compatibility break.	742001
	Discontinued support for "exemplary" (i.e. non-standard) test models.	634493
	Changes to "Restart Data" in User/BWP dialog, needed for NR-TM according to recent versions of 3GPP TS 38.141.	723400
	Configurable initialization value of PN sequences.	703925
	Frequency for the RF upconverter phase compensation can be determined automatically by means of the RF frequency also for Coupled System Configurations at least in some cases.	654104
	Marker mode "TDD UL/DL".	692441
	Usability functionality which eases the configuration for carrier aggregation.	704363
	Allow less carriers than given by system configuration.	689175
	Frequency for the RF upconverter phase compensation can be determined automatically by means of the RF frequency at least in some cases.	463168
	Showing slot borders in the time plan.	680164
	Possibility to configure an offset to the system frame number, with impact to e.g. hopping patterns.	693116
	Configured PDSCH, PUSCH, CORESET allocations can be copied to another slot.	675792
	Not switching automatically to "Minimum" sample rate mode anymore when using carrier aggregation in "separate" system configurations (performance improvement).	691214
	Performance improvement for signal generation (faster signal calculation).	689051
	Test Case Wizard	Test case wizard for base station conformance tests according to 38.141-2, chapter 6 and 8.
Test case wizard for base station conformance tests according to 38.141-2, chapter 7.		633100
Downlink	MIB SFN increment independently from the configured sequence length (K148 needed, not for instruments with SMW-B10 option).	652900
	Support for release 16 PRS.	722231
	Some cleanup in the user interface of the SS/PBCH settings.	728195
	Support for RRC / DCI time domain allocation list also for uplink DCI 0_1.	722381

	Support for DCI_2_6 and PS-RNTI.	723859
	Support for release 16 "Minimum applicable scheduling offset indicator".	723872
	Auto phase compensation for NR-TM.	727543
	NR-TM update to 38.141-1 V15.5.0 and 38.141-2 V15.5.0.	692669
	DCI2_4 and CI-RNTI.	722234
	More flexibility for mapping the SSPBCH antenna port to outputs of the baseband block.	661619
	Add SSPBCH starting half frame index field.	693679
Uplink	Support for closed loop timing adjustment, needed for release 16 base station conformance tests according to 3GPP TS 38.141. Options K148 and K145 needed.	643631
	Configured PUCCH, PRACH allocations can be copied to another slot.	692975
	Power mode "burst" also for PUCCH channels.	702930
	Support for time shift according to N_TA_offset.	714547
	Allow SRS in K145 feedback mode.	735216
	Provide K145 RV configuration through HPN association.	663983
	Support for group and sequence hopping.	683707
	Optionally create K145 debug log files.	697464
	Update of FRC assistance function to version 15.5.0 of 38.141-1 and 38.141-2. Support for FRCs which have been removed by 3GPP after early versions of 38.141-1/-2 is discontinued.	690846
EUTRA/LTE		
General	Some LTE / IoT options have been renamed for simplification.	759109
Downlink	Downlink PBCH SFN repetition mode "3GPP" is now also available on SMW with option B9.	554328
Uplink	Option SMW-K69 is now also available on SMW with option B9.	554328
	For K69 closed loop feedback it is optionally possible to ignore timing adjustment commands.	663988
GNSS		
	QZSS supports L2C and L5 and new GEO satellite	717330
	IRNSS L5 SPS supported	709039
	SMW-B9: GNSS extension for obscuration and auto multipath simulation.	742845
	Added the possibility to set the leap second transition in the past	652634
	Added the possibility to set the simulation start time to now (current simulator hardware time)	631692
	Added High Precision PPS output via I/Q connectors	608237
Radar		
	K503/K404: Introduction of a new PDW format, which offers several new features like:.- Rising/Falling Edges.- Pre/Post Marker.- Burst PDWs.- 54 Bit TOA	630168
	K503/K504: Introduction of a new CNTRL PDW that rearms the SMW	747556

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Fixed Issues		
	3GPP FDD: Sporadic crash in case of R99 channel coding with user settings (i.e. not predefined RMCs).	657747
	ARB, SMW-B10: Trigger delay in 8x1x1 mode not applied correctly for some streams	704781
	Bluetooth LE 1M: CP flag not set and CTEInfo byte missing despite being activated	702243
	Bluetooth: Changed max limit of Advertising Packet Interval to 28ms	719815
	Devices equipped with B140N/B144N/B1040N/B1044N showed signal distortions above 19.5 GHz RF frequency	724389
	Fading in REG mode: frequency offset of BBIN doesn't work	743525
	For some instruments and system configurations, fader error messages show up when recalling old setup files.	760046
	For specific instrument configurations, the AWGN state in the block diagram does not follow the state in the AWGN dialog.	761699
	Frequency setting: First increment step by UI entry uses wrong value	726278
	Incorrect envelope tracking output voltage when option K541 is not installed.	755972
	Incorrectly delayed pulse modulator input signal for external signal source.	771953
	Incorrectly displayed error message PEP value greater than defined limit in cases where 2 noise only signals are added in the IQ stream mapper.	729228
	Issue with option K17 in case of coupled system configurations.	709435
	NRP-Z Support: READ disables sensor	668481
	OFDM signal generation: Issue when exporting the configuration for R&S signal analyzers.	729109
	Pulse generator: trigger mode ExtSingle not selectable	696009
	SMW-B10: Multi Instrument Trigger mode not working correctly.	713165
	SMW-B9 Envelope Tracking: Transient phase during activation of IQ output leads to bias applied to I+ and not I- for a short period, until final signal becomes active.	659556
	SZU internal adjustments do not work with some hardware configurations	775046
	Undesired output signal on TMC connectors of fader boards	721675
	SMW-B9: Markers of baseband C and D selectable in GUI, but unavailable in hardware.	745417
	On instruments with B13/B13T (i.e. not wideband B13XT) there can be a situation where there is no signal after an addition in the IQ stream mapper, depending on the configuration order.	709151
5G New Radio		
General	Using the fast filter in advanced system configurations for large carrier bandwidths may result in a distorted signal.	740786
	Error message for some quick settings configurations.	752892
	Drifting TDD DL/UL marker signal for 120 kHz subcarrier spacing.	757082
	In marker mode "TDD UL/DL", sometimes invalid parameter combinations are accessible in the user interface.	757092
	Marker delay can be configured with higher resolution than supported.	745782

	Possible issues when double-applying the same system config.	723767
	Use of incorrect sub carrier spacing to generate TDD UL/DL marker.	739196
	In trigger mode "single sequence", parameter changes regarding the duration or mode could not have an effect immediately.	740033
	GUI crash in BWP-Config PUSCH tab for higher carrier indices.	740455
	Crash when showing time-plan with much content.	741014
	Direct input of "PointA to Carrier Center" is not adjusted properly to 15kHz resolution.	741966
	Clipping for non-average power modes does not produce expected leveling.	743394
	Signal calculation can run out of memory for multi carrier scenarios.	681599
	Internal error for coupled system configurations and delta f offset.	723834
	Save/recall issue for the new PN initialization value.	725419
	Auto phase compensation is faulty after a restart of the instrument.	726513
	Auto phase compensation does not work for some SMW instrument configurations.	726513
	Issue for marker configuration rise & fall offsets.	697037
	When using the "copy to" usability functionality, sometimes error messages are shown.	710607
	Error while setting mapping mode for PDSCH/PUSCH antenna port mapping over SCPI.	715252
	Possible crash after recalling settings from file.	718366
	Time plan issue when using more than one baseband block.	679878
	Signal calculation error for very small BWPs.	693600
Test Case Wizard	OTA transmitter intermodulation test case named incorrectly.	753883
	The RB position of narrowband interfering signal is not correct at lower frequency for case 7.4.2B and 7.7.	758749
	Frequency ranges in the test case wizard are limited unnecessarily.	705386
Downlink	Firmware crashes in case of invalid auto DCI settings.	740921
	DCI bits not filled up with zeros to 12 Bits.	754153
	Configuration issue in case of more than one "custom" DCI.	723273
	PT-RS: Issue in sequence generation with Mapping Type B.	754769
	Quick Settings: Number of Carriers >= 2 don't use the Coreset State in the Scheduling Table.	760460
	recall issues with PDSCH antenna ports.	772638
	Configured CORESET bundle size might not be used correctly in the signal generation.	755155
	Showing one SS/PBCH power in the scheduling table is confusing.	735386
	Phase compensation frequency is not auto determined when loading test models.	737955
	New SS/PBCH 64-bit patterns are not initialized properly.	740449
CI-RNTI is only configurable per user, but has to be configurable per BWP.	741843	

	Crashes or error messages in case of specific CORESET settings.	741348
	Save/recall issue for the phase compensation mode.	724974
	Erroneous SCPI command for DCI datasource initialization pattern.	723092
	Possible error while setting carrier deployment.	728692
	Erroneous c_init calculation for PDSCH scrambling with multiple codewords.	732459
	Test models TM2 and TM2a use PDSCHs with 14 instead of 12 symbols.	733185
	Missing SSPBCH antenna port mapping data of SCells in separate mode after recall.	724933
	CS-RNTI DCI could use the wrong RNTI value.	714617
	Error message can show up when configuring cross-carrier scheduling.	716834
	DCI issue for VRB-to-PRB mapping in case of "dynamic switch".	720336
	Unwanted preset of the position pattern when increasing the number of SSPBCHs.	706827
Uplink	PT-RS with transform precoding: Error in sequence generation.	760515
	When transform precoding is enabled the PT-RS scaling factor cannot be determined by the scheduled modulation.	732668
	For some scheduling configurations, turning OFF some allocations may lead to a firmware crash.	739884
	Error in signal generation if the value NRB0 for PTRS with transform precoding is higher than PUSCH RB.	728146
	For transform precoding, it is possible to configure invalid resource block allocations.	728187
	SCPI issue for PUSCH frequency hopping configuration.	734019
	Invalid number of RBs could be configured for PUCCH format 3.	523022
	UCI on PUSCH: Special cases for intra slot hopping not handled.	707068
	Data sent between DMRS in UCI-only mode and configured UCI.	709390
	The parameter "MCS table transform precoding" is not visible (but accessible by SCPI).	711492
	The path selected for K145 log files could be ignored and the files are written directly to the "share" or "user" path.	711528
	Error in calculating ARB file for some PT-RS settings.	712716
	In case of enabled transform precoding with PTRS, the DMRS ID is used for PTRS instead of N_ID^PUSCH.	716205
	Configuration issue for PTRS Auto mode in case of more than one BWP and transform precoding.	716696
	UCI on PUSCH: Incorrect number of coded CSI1 and CSI2 bits for < 2 HARQ-ACK bits calculated.	717724
	Signal generation issue in case of PTRS for transform precoding in mode "Auto".	719358
	Issue for UCI on PUSCH in case of small block lengths and PUSCH RB offset != 0.	699486
	SCPI issue for PRACH power reference mode "burst".	702754
	Error messages in case of some values of additional user delay for K145 closed loop feedback.	550006

	Issue for PUSCH in case of transform precoding and BPSK.	691889
	Channel coding issue for specific PUSCH UCI cases.	695120
EUTRA/LTE		
General	If an instrument self-test is executed after recalling specific settings, error messages show up.	724048
Downlink	User interface issue for PDSCH scheduling mode "Auto Sequence".	762783
	Issue for Auto-DCI in case of special RNTIs.	723451
Uplink	When reconfiguring PUSCH frequency hopping or NPUSCH frequency hopping, it could happen that the signal is not recalculated instantly.	769428
	NB-IoT delta offset display is not working properly in some cases.	780129
	In case of available option K115 but without K146, there can be a crash when configuring uplink NB-IoT.	780144
	For sidelink SCI format 1 the retransmission index field is always shown as 0 but is actually automatically determined to be 0 or 1.	675221
	For some cases, the FRC usability function allows invalid values of the NB-IoT subcarrier indication.	735861
	For carrier aggregation involving PUSCH signals, relative leveling of carriers can be wrong.	709427
	For some cases, the FRC usability function unnecessarily restricts the NB-IoT subcarrier offset.	724556
	Possible crash for certain PUSCH frequency hopping settings.	732896
	Save/recall issue if working with several component carriers in uplink.	709428
OneWeb User-Defined Signal Generation		
General	State of notched signals cannot be changed by remote control command.	699453
Uplink	Issues on 8PSK PUSCH with CQI signal (second issue).	701614
	Issue for UCI on 8PSK PUSCH.	711077
	Issues for CQI on PUSCH.	715315
	Issue when recalling settings (subframe configurations missing).	711971
GNSS		
	Altitude and Yaw, Pitch, Roll parsed incorrectly for .xtd File import in case .xtd File has no timestamps.	757332
	Changing the CW frequency of a CW interferer has no influence	729423
	Inconsistency of attitude parameters in HIL command Mode A. The correct order is Yaw,Pitch,Roll.	769336
	Maximum number of SVs ignored in certain circumstance	626506
	Missing marker output during GNSS simulation.	737513
	Reading of NMEA files with timestamps passing over midnight causes failure. Customers having had these issues may need to delete internal trajectory copies on the device via: Setup->Maintenance->Delete Temporary Files	727316
	Retriggering the simulation can lead to errors if satellite handovers have occurred before.	707675
	Beidou CUS/CRC data correction	753065
	Some SMBV-P101 remote commands are not supported by SMBV100B	747359

	Time offset within internal data logging of user trajectories is misaligned	727341
	When opening two "Power Spectrum" graphics for the same "Source", the second instance has a wrong x-axis scaling	690896
	Wrong leap second encoding in case leap second event is >127 weeks in the past or future from current simulation time	709273
Custom Digital Modulation		
	Incorrect output of binary control lists on SMW-B9	689699
	SMW-B10: IQ signal does not return to zero in single trigger mode with FSK modulations.	709808
	When switching the baseband off and on again, data list files that changed on disk in the meantime were not correctly updated.	725732
Radar		
	K501: Fixed potential freeze when using waveform segments with a duration > 200ms	737786
	K501 4x1x1 system config mode has an issue with ARB PDWs. This problem occurs only with setups that include B14 fader boards.	408671
	K502: Loading of large PDW files took a long time.	620481
	K503/4: A static IP address for the RTC interface was forgotten after restarting the instrument	717188
	K503/4: Repetitive on/off switching of the RTCI mode could lead to an abort of the TCP/IP communication from the DSP side. Data was lost. K503/4: Repetitive on/off switching of the RTCI mode could lead to communication errors between the host and the DSP. SCPI errors were generated.	729806
802.11		
	802.11: In some cases A-MPDU data length is not shown correctly in the GUI when loading a settings file.	749157
	802.11: Setting the scrambler to On (Random Init) initialized the scrambler with the same value and not random values	734027
	802.11: Unwanted signal output during signal recalculation after parameter changes in single trigger mode	717545
	802.11ac: Encoding of long VHT frames incorrect.	704066
	802.11ax: Datasource position incorrectly set to 0 at the beginning of each frame	740121
	802.11b: Improved chip clock error in 20MHz bandwidth.	718149
	802.11n: Incorrect channel encoding for MCS > 9 in MIMO modes.	704059
	802.11n: Incorrect LDPC encoding with some specific data lengths.	716913
	802.11n: Incorrect output power for stream B in 20MHz bandwidth, coupled mode and IFFT upsampling enabled.	746112
	802.11n: Incorrectly encoded MCS value in HT-SIG for 2 and 3 space time streams	747143

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Known Issues		
	Bug in relative phase	736547
	SMW-K550 is not allowed with one SMW-B14	684917
	SMW-WB: Mode Advanced, Digital Only (HS): error while mapping connector BBMM2/7 to any stream.	708241
GNSS		
	Constellation of Beidou geostationary satellites might deviate from the expected one if the simulation time is changed.	498094
	If start time is just before leap second insertion, the insertion might be omitted in log files.	652559
	In some cases the ARC segment of trajectory files is interpreted with inverted direction, which can lead to inconsistencies in the trajectory.	508429
	Inconsistencies in logging data for SBAS.	491788
	Issue with smoothing of trajectories	466593
	Importing GLONASS Rinex does not synchronize Almanac data. It is recommended to work with AGL files. Ephemeris and Almanac data are also inconsistent when changing the simulation start time.	351472
	SBAS 'Generate Correction Data Automatically' does not correctly sync with the simulated ionosphere and GPS orbit/clock errors leading to an error of few meters in the position calculated by the receiver when using the SBAS correction service. Instead the 'Replay Historical Data and Sync Atmosphere & SV errors' can be used at the moment.	240388
	The body mask and antenna pattern editors assume a flipped direction of the z-axis	429406
	Possible misalignment of user motion file generated by offline logging due to additional delimiter at the end of each row.	761387
	Ionosphere delay calculation mismatch	757690

2 Modifications to the documentation

The current documentation is up-to-date.

3 Firmware update

3.1 Downgrade

Generally, it is not recommended to use an earlier version than the latest version available. In some cases, the older versions do not support the hardware used in your instrument. Before installing this firmware, check if this could happen:

- ▶ Start System Config / Setup / Instrument Assembly / Versions/Options
- ▶ In the tab “Firmware”, you find the Downgrade Info

Downgrade Info	
Package	Version
Factory Version	4.80.041.48
Min. Version	03.01.009.16

Example

- ▶ If the version to be installed is greater or equal than the “Min.Version”, the hardware will be supported after downgrading. (However, this cannot be guaranteed for all software options)
- ▶ If the version to be installed is lesser than the “Min.Version”, not all of the modules will be supported. Your instrument will not work after downgrading!
- ▶ Downgrading may fail using standard rsu-Files (eg. due to changes in the instrument configuration file). In this case, press PRESET-Button during power-on or install ISO image available from service department.

3.2 Update Information

The update procedure requires that the instrument is operational. There is no need to uninstall the current firmware. Instrument settings are preserved during the update, including user data and network settings.

NOTICE

To perform this procedure, USB Storage must be enabled in security settings. Press the **SETUP** key, select Security and check USB Storage setting

3.3 Updating the Firmware

Required equipment

Software:

Firmware update file SMW_<version-number>.rsu

Hardware:

USB memory stick with enough free space to save the update file (about 900 MByte).

The memory stick does not need to be bootable and previous data on the stick is not affected. Several update files may reside on the stick in parallel. During update procedure the stick is not modified by the instrument.

Prepare Memory Stick

- ▶ Download update file to a PC
- ▶ Connect USB stick to PC and copy the update file to the root directory
- ▶ Wait until copy procedure has finished and remove USB stick


Install new firmware on R&S®SMW200A


- ▶ Connect USB stick to instrument
- ▶ Switch on instrument, if instrument is powered off
- ▶ Wait a few seconds until "Process Software Update?" message box appears. Confirm by touching the YES Button or pressing the rotary knob.
- ▶ Select firmware version using the arrow keys and press knob to start update
- ▶ Wait until "Software update successful" message box appears. This may take several minutes
- ▶ Remove USB stick and touch the Reboot button

The instrument now reboots.

Execute internal adjustments (only if indicated)

Internal adjustments can be initiated manually (e.g. after warming up) by performing the followings steps:

Press  on the instrument front panel.

Press  "Adjust All". internal instrument adjustments and will take several minutes.

Adjustments requiring external measurement equipment are not affected by the firmware update and need not to be performed.

3.4 Alternative update procedures

The USB firmware update is recommended for most situations. However, alternative methods for updating the firmware are available:

3.4.1 Firmware update over LAN

Instrument settings are preserved during the update, including user data and network settings.

- ▶ Get access to the file system of the instrument using ftp (other methods like samba share is also supported, see application note 1GP72 for details).
Enter `ftp://<ip address or host name>` in the file manager
- ▶ Copy `SMW_<version-number>.rsu` to directory update
- ▶ The update procedure starts immediately
- ▶ Execute internal adjustments, if indicated

3.4.2 Firmware update using ISO image

NOTICE

Potential loss of data!

User data and user specific instrument settings will be lost during this procedure. Instrument serial number, software license keys and all adjustments requiring external measuring equipment are not affected.

Required equipment

Software:

ISO image for firmware update `SMW_<version-number>.iso`
Please contact the service department to get this file!

Hardware:

- ▶ External USB CD or DVD ROM burner with USB cable.
- ▶ 1 CD Recordable.
- ▶ PC with burn program that can burn ISO images onto CD.

About ISO image

This is a standardized file format for creating CD images. A CD image is a single file encapsulating the whole data of a CD including directories and files. Unpacking the image to a CD restores the original data. Almost any CD burning program is able to write CDs based on ISO images.

Update procedure

Burn ISO image onto CD

On most computers, burning an ISO image can be initiated by simply double clicking the ISO image file. If this is not the case, the manual procedure is similar to the following instructions. Nero Burning ROM (StartSmart) is used in this example.

- ▶ Connect the external USB CD/DVD drive to the PC
- ▶ Insert CD recordable
- ▶ Start Nero StartSmart
- ▶ Select medium „CD“
- ▶ Select „Create Data CD“
- ▶ From the Files menu, open file SMW_<version-number>.iso
- ▶ Click "Burn"
- ▶ When finished, close Nero and disconnect external USB CD/DVD drive

Install new firmware on R&S®SMW200A

- ▶ Instrument must be switched off
- ▶ Connect the external USB CD/DVD drive to the R&S®SMW200A
- ▶ Switch on Instrument
- ▶ The instrument boots from external drive
- ▶ Follow the instructions on screen
- ▶ Disconnect the external USB device
- ▶ Reboot instrument
- ▶ Execute internal adjustments, if indicated

NOTICE

If the CD refuses to boot please ensure that you have burned the ISO-image as an "image" and not as a single file. Check the CD regarding presence of several files.

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:



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