R&S®BBA130/BBA150/BBL200 Release Notes

Software Version 04.60

PAD-T-M: 3574.3288.02/02.00/CI/1/EN

ROHDE & SCHWARZ

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Contents

1 Information on the current version and history

1.1 Version 04.60

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_04.60.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA130_BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: For BBA150 this Firmware is suitable for serial numbers >= 102179 only! For details see chapter** 3.

New functionality

- The SCPI remote control now supports the following new commands:
  - "RF<1..32>:SerialNumber?" for requesting the device serial number of an RF-Path
  - "SYSTem:PATHs:ENAbled:SAVE" for saving all previously made changes concerning the enable/disable of (coupled) RF-Paths (and therefore their units)

Modified functionality

- The coupler fans have a rundown time of 1 minute now to prevent overheating after turning RF-Operate off.
- Enable/disable of (coupled) RF-Paths (and therefore their units) does not take immediate effect now, instead you have to explicitly save your changes via the new item "Save Configuration" in the menu "RF-Path Info & Enable" or via the new SCPI command "SYSTem:PATHs:ENAbled:SAVE".
  This enables you to make multiple changes at once.
- The menu item "Gain Control" was renamed to "Gain Adjustment".

Improvements

- Numerous improvements were made concerning the Firmware Update.
- Numerous improvements were made concerning integration into BBA300 systems.

- Numerous improvements were made concerning the host name.
- The problem was solved that a device A75BC250 stated its system type as A75BC160 and vice versa.
- The problem was solved that in case of a fixed rack fan the respective info message I178 appeared twice.
- The problem was solved that in case of a fixed coupler fan the respective info message I187 appeared twice.
- The problem was solved that in BBA130 systems the grey (inactive) slider for the operating class did not move to the blue (active) one when turning RF-Operate on.
- The problem was solved that in systems with multiple RF-Paths changes of the gain, output mode and operating class via a remote control (Web-MMI, SCPI) were not immediately updated in the respective view of the front panel.
- The problem was solved that in older BBL200-A10000 (containing pumps by manufacturer Grundfos) there appeared sporadic problems and errors concerning the pump control.
- The problem was solved that in BBL200-A10000 the warning message W51 was created when turning RF-Operate off even though the coupler fans were indeed working correctly.
- The problem was solved that in very rare cases an old logbook entry was rewritten to the beginning of the logbook instead of getting deleted.
- The problem was solved that in case of asynchronous handling of lengthy set commands ("RF:OUTPut:STATe", "RF:BAND:PATH", "RF:BAND:PATHSELect<1..32>" and "RF:BAND:COUPledpath") calling many of these commands immediately after one another caused one of these commands to not get processed in rare cases.
- The problem was solved that in very rare cases right after the system start-up an amplifier module was stated as defective even though it was indeed working correctly.
- A minor correction was made concerning the error handling for internal connections between subunits in high power and liquid cooled systems.

Known Issues

- When turning an older liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation
To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.
- In systems consisting of multiple units it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware package on each of the units).
To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some minutes until all units have finished their start-up phase with an error. Plug in the

Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.

After this procedure the system should work fine again.

- In some older systems setting "Automatic Standby" to "YES" does not have any effect.
- Heavy traffic on the Ethernet could cause the system to slow down a bit.
- Ethernet connections with 10 Mbit are not possible in small systems consisting of one unit.
- When opening and closing the device interlock multiple times within a few milliseconds, the error message E006 "Too low current for amplifier X on bus Y!" might appear in rare cases.
- In rare cases it might happen that one or more of the system's units freeze (do not react to any interactions anymore). In that case you are kindly requested to turn the whole system off and on again.
- The time stamp of the system is not accurate and therefor might differ from the real time depending on the load of the system.
As a workaround you can use the SCPI command "SYSTem:TIMe" to set the system time from time to time, so that the system can fix its time stamp according to this.

1.2 Version 04.50

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_04.50.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA130_BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: For BBA150 this Firmware is suitable for serial numbers >= 102179 only! For details see chapter** 3.

New functionality

- The SCPI remote control now supports the following new commands:
- - "SENSe:NFRange:TEXt?" for requesting the frequency range text of the selected RF-Paths
  - "SENSe<1..32>:NFRange:TEXt?" for requesting the frequency range text of an RF-Path
  - "SENSe:NPOWer:PREcise?" for requesting the nominal power of the selected RF-Paths with a precision of 3 decimal places
  - "SENSe<1..32>:NPOWer:PREcise?" for requesting the nominal power of an RF-Path with a precision of 3 decimal places
  - "SENSe:NPOWer:VSWRatio?" for requesting the nominal power of the selected RF-Paths for the output mode setting "0|High VSWR" (BBA130 only)
  - "SENSe:NPOWer:VSWRatio:PREcise?" for requesting the nominal power of the selected RF-Paths for the output mode setting "0|High VSWR" with a precision of 3 decimal places (BBA130 only)
  - "SENSe<1..32>:NPOWer:VSWRatio?" for requesting the nominal power of an RF-Path for the output mode setting "0|High VSWR" (BBA130 only)
  - "SENSe<1..32>:NPOWer:VSWRatio:PREcise?" for requesting the nominal power of an RF-Path for the output mode setting "0|High VSWR" with a precision of 3 decimal places (BBA130 only)
  - "SENSe:NPOWer:POWer?" for requesting the nominal power of the selected RF-Paths for the output mode setting "10|High Power" (BBA130 only)
  - "SENSe:NPOWer:POWer:PREcise?" for requesting the nominal power of the selected RF-Paths for the output mode setting "10|High Power" with a precision of 3 decimal places (BBA130 only)
  - "SENSe<1..32>:NPOWer:POWer?" for requesting the nominal power of an RF-Path for the output mode setting "10|High Power" (BBA130 only)
  - "SENSe<1..32>:NPOWer:POWer:PREcise?" for requesting the nominal power of an RF-Path for the output mode setting "10|High Power" with a precision of 3 decimal places (BBA130 only)
  - "SENSe:MPOWer?" for requesting the currently possible maximum power of the

selected RF-Paths according to their current power level with a precision of 3 decimal places
- - "SENSe<1..32>:MPOWer?" for requesting the currently possible maximum power of an RF-Path according to its current power level with a precision of 3 decimal places
- - "SYSTem:ERRor[:NEXT]:EXTended:TYPe?" for requesting the error queue in an extended format like in command "SYSTem:ERRor[:NEXT]:EXTended?", but also containing the type of the entry
- "SYSTem:TIMe" for setting the system time
- "SYSTem:TIMe?" for requesting the system time (works only if system time was set before via command "SYSTem:TIMe")

Modified functionality

- (De-)Activating of Mute Ready via the "X105 Control Interface" has the highest priority now. This means that deactivation of Mute Ready via the "X105 Control Interface" now also works after having Mute Ready activated via the Web-MMI or SCPI.

Improvements

- Further minor improvements were made for better error identification and handling to improve system availability e.g. continuous operation with full power.
- For BBL200-A10000 numerous improvements were made concerning control and surveillance of its pumps and (optional) heat exchanger fans.
- For BBL200-A1000, A3000 and A5000 the problem was solved that the state of pumps was always displayed as "OFF", so even when the pumps were running.
- For BBL200-A1000, A3000 and A5000 the problem was solved that in very rare cases one or more of the measured values "Temp. In", "Temp. Out" and "Pressure" of the liquid cooling were 0.
- Numerous improvements were made concerning integration into BBA300 systems.
- A minor improvement was made concerning the front panel of Extension Units.
- The problem was solved that for the frequency ranges from 80 MHz to 1 GHz, from 0.69 to 3.2 GHz and from 2.5 to 6 GHz the bias current calibration failed for the latest types of the respective amplifier modules.
- The problem was solved that no SCPI error queue entry was created when executing SCPI query commands concerning the selected RF-Path(s) with an error during the system start-up.
- The problem was solved that muting with high frequencies could cause misleading error messages E006.
- Numerous improvements were made concerning the system start-up with disabled RF-Paths.

Known Issues

- When turning an older liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button

afterwards), the pump of the liquid cooling might still be running, which may cause condensation

- To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
- This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.
- In systems consisting of multiple units it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware package on each of the units).
- To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.
- After this procedure the system should work fine again.
- In some older systems setting "Automatic Standby" to "YES" does not have any effect.
- Heavy traffic on the Ethernet could cause the system to slow down a bit.
- Ethernet connections with 10 Mbit are not possible in small systems consisting of one unit.
- When opening and closing the device interlock multiple times within a few milliseconds, the error message E006 "Too low current for amplifier X on bus Y!" might appear in rare cases.
- In rare cases it might happen that one or more of the system's units freeze (do not react to any interactions anymore). In that case you are kindly requested to turn the whole system off and on again.
- The time stamp of the system is not accurate and therefor might differ from the real time depending on the load of the system.
  As a workaround you can use the SCPI command "SYSTem:TIMe" to set the system time from time to time, so that the system can fix its time stamp according to this.
- In systems with multiple RF-Paths changes of the gain, output mode and operating class via a remote control (Web-MMI, SCPI) are not immediately updated in the respective view of the front panel.
- In BBA130 systems the grey (inactive) slider for the operating class does not move to the blue (active) one when turning RF-Operate on.
- In case of a fixed rack fan it might happen that the respective info message I178 appears twice.

1.3 Version 04.40

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_04.40.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA130_BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: For BBA150 this Firmware is suitable for serial numbers >= 102179 only! For details see chapter** 3.

New functionality

● The R&S®Interlock Support Kit is supported now. It is strongly recommended to use this, if you are using the HW Interlock of the amplifier.
● For the SCPI remote control you now have the possibility to choose between synchronous (old and default) and asynchronous (new) handling of lengthy set commands ("RF:OUTPut:STATe", "RF:BAND:PATH", "RF:BAND:PATHSELect<1..32>" and "RF:BAND:COUPledpath").
  For this configuration setting the new SCPI commands "SYSTem:SCPI:ASYnc" and "SYSTem:SCPI:ASYnc?" were introduced.
● The SCPI remote control now supports the following new commands:
  - "SYSTem:STARtfinished?" for requesting whether the system has completely finished starting or not
  - "SYSTem:ERRor[:NEXT]:EXTended?" for requesting the error queue in an extended format, which might be more suitable for parsing its parameters than the known and still existent command "SYSTem:ERRor[:NEXT]?"
  - "RFCOUPledpath<1..32>:PAThs?" for requesting the RF-Paths that are part of a Coupled RF-Path
  - "RFCOUPledpath<1..32>:NAMe?" for requesting the name of a Coupled RF-Path
  - "RF<1..32>:NAMe?" for requesting the name of an RF-Path
  - "RF<1..32>:ERRor?" for requesting whether the RF-Path has an error or not

- BBA130 and BBA150 are now prepared for integration into BBA300 systems. Therefor there is a new item "Control by BBA300: NO/YES" in the main menu of the front panel display, which can be used later on to configure whether the BBA130 or BBA150 is part of a BBA300 system or not.

Modified functionality

- A possible higher power level is now explicitly advertised on the front panel as soon as it is possible and after each following system start.
  This helps you to always get the highest power out of your amplifier.
- For RF-Paths with switches the RF-Path selection was speed up.
- For twin-band amplifiers RF stays on now when (de-)selecting one of its single RF-Paths while having the amplifier in RF-Operate mode.
- For BBL200-A10000 control and surveillance of its pumps and (optional) heat exchanger fans was completely redesigned to achieve better and faster cooling on one hand and prevent possible condensation on the other hand.
- The self-test now checks many more components of the system.
  Additionally, some other minor improvements were made concerning the self-test.
- Turning RF on and off via the "X105 Control Interface" does only work now when not being in local mode.
- The menu item "Gain" was renamed to "Gain Control".

Improvements

- Further minor improvements were made for better error identification and handling to improve system availability e.g. continuous operation with full power.
- System performance was improved for the case of high power loss.
- Numerous minor improvements were made concerning ethernet connections.
- Numerous minor improvements were made concerning the fan control.
- Numerous improvements were made concerning the error handling for coupler fans and rack fans.
- A minor improvement was made concerning the front panel of Extension Units.
- A minor improvement was made concerning the Web-MMI.
- A minor improvement was made concerning the start-up phase when having "Automatic RF-ON" set to "ON".
- A minor improvement was made concerning control of the power supplies.
- The problem was solved that a BBL200 might have stopped working in very rare cases.
- For BBL200 the problem was solved that the measured temperature values of the liquid cooling were fluctuating and therefor inaccurate.
- For BBL200-A10000 the problem was solved that the measured flow rate of the pumps was updated rarely.
- For BBL200 the SCPI remote control commands "SENSe:LIQuidcooling:*" were speed up.
  Additionally, for these commands the problem was solved that the returned measured values sometimes slightly differed from the ones shown on the front panel and in the Web-MMI.
- The problem was solved that for logbook entry E064 the first part of its message was missing.

Known Issues

- When turning an older liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation
  To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
  This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.
- In systems consisting of multiple units it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware package on each of the units).
  To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.
  After this procedure the system should work fine again.
- In some older systems setting "Automatic Standby" to "YES" does not have any effect.
- Heavy traffic on the Ethernet could cause the system to slow down a bit.
- Ethernet connections with 10 Mbit are not possible in small systems consisting of one unit.
- When opening and closing the device interlock multiple times within a few milliseconds, the error message E006 "Too low current for amplifier X on bus Y!" might appear in rare cases.
- In rare cases it might happen that one or more of the system's units freeze (do not react to any interactions anymore). In that case you are kindly requested to turn the whole system off and on again.
- The time stamp of the system is not accurate and therefor might differ from the real time depending on the load of the system.
- In systems with multiple RF-Paths changes of the gain, output mode and operating class via a remote control (Web-MMI, SCPI) are not immediately updated in the respective view of the front panel.
- In BBA130 systems the grey (inactive) slider for the operating class does not move to the blue (active) one when turning RF-Operate on.

1.4　Version 04.30

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_04.30.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA130_BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: For BBA150 this Firmware is suitable for serial numbers >= 102179 only! For details see chapter** 3.

New functionality

● Enhancement of error identification and handling, further improving system availability e.g. continuous operation with full power.
● The SCPI remote control now supports the new command "SENSe:MPOWer?" for requesting the currently possible maximum power of all selected RF-Paths according to their current power level and "SENSe<x>:MPOWer?" of the specified RF-Path <x> only.

Modified functionality

● The pumps and heat exchanger fans in liquid cooled systems now feature a better management of error situations to improve system availability.

Improvements

● Numerous improvements were made concerning the fan control specifically for the different frequency ranges.
● Numerous improvements were made concerning the bias current calibration for the different frequency ranges.
● Numerous minor improvements were made concerning the self-test.

Known Issues

● When turning an older liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation

To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.

- In systems consisting of multiple units it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware package on each of the units).
  To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.
  After this procedure the system should work fine again.
- In some older systems setting "Automatic Standby" to "YES" does not have any effect.
- Heavy traffic on the Ethernet could cause the system to slow down a bit.
- Ethernet connections with 10 Mbit are not possible in small systems consisting of one unit.
- When opening and closing the device interlock multiple times within a few milliseconds, the error message E006 "Too low current for amplifier X on bus Y!" might appear in rare cases.
- In rare cases it might happen that one or more of the system's units freeze (do not react to any interactions anymore). In that case you are kindly requested to turn the whole system off and on again.
- In systems with multiple RF-Paths changes of the gain, output mode and operating class via a remote control (Web-MMI, SCPI) are not immediately updated in the respective view of the front panel.
- In BBA130 systems the grey (inactive) slider for the operating class does not move to the blue (active) one when turning RF-Operate on.

1.5　Version 04.20

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_04.20.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA130_BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: For BBA150 this Firmware is suitable for serial numbers >= 102179 only! For details see chapter** 3.

New functionality

- You now have the possibility to configure the point in time when pin 22 ("out aux 5") of the X105 Control Interface is pulled to low when turning RF-Operate off.
  You can use the new SCPI commands "RF:OUTPut:OUTaux5atveryendofrfoff" to change and "RF:OUTPut:OUTaux5atveryendofrfoff?" to request this setting.
  The default setting 1/on pulls it to low at the very end of the sequence while 0/off does so immediately after the RF is turned off.
- You can now request the contents of the logbook via the new SCPI command "SYSTem:LOGbook?".

Modified functionality

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Improvements

- The self-protection of the amplifier was improved.
- The RF-Path selection while having the amplifier in RF-Operate mode was sped up.
- Numerous improvements were made concerning the self-test.
- Numerous improvements were made concerning the bias current calibration.
- Numerous improvements were made concerning the fan control.
- Numerous improvements were made concerning the Web-MMI.
- The problem was solved that sometimes the LOCAL button does not work after a connection loss (for example when unplugging the Ethernet cable).
- The problem was solved that in systems containing an external or receiving RF-Path it might happen the Web-MMI shows random measured power values.

- The problem was solved that using the SCPI remote control via multiple clients simultaneously might mix up the replies in some cases.
- The problem was solved that in liquid cooled BBL amplifiers the liquid cooling might not be turned off when turning the amplifier off via the pressing the STANDBY button.
- A minor improvement was made concerning the turning on and off of RF-Operate.
- A minor improvement was made concerning the system start-up phase.

Known Issues

- When turning an older liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation
To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.
- In systems consisting of multiple units it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware package on each of the units).
To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.
After this procedure the system should work fine again.
- In some older systems setting "Automatic Standby" to "YES" does not have any effect.
- Heavy traffic on the Ethernet could cause the system to slow down a bit.
- Ethernet connections with 10 Mbit are not possible in small systems consisting of one unit.
- When opening and closing the device interlock multiple times within a few milliseconds, the error message E006 "Too low current for amplifier X on bus Y!" might appear in rare cases.
- In rare cases it might happen that one or more of the system's units freeze (do not react to any interactions anymore). In that case you are kindly requested to turn the whole system off and on again.
- In systems with multiple RF-Paths changes of the gain, output mode and operating class via a remote control (Web-MMI, SCPI) are not immediately updated in the respective view of the front panel.
- In BBA130 systems the grey (inactive) slider for the operating class does not move to the blue (active) one when turning RF-Operate on.

1.6 Version 04.11

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_04.11.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA130_BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: For BBA150 this Firmware is suitable for serial numbers >= 102179 only! For details see chapter** 3.

New functionality

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Modified functionality

● For systems containing at least one of the frequency ranges 80 MHz to 1 GHz, 0.69 to 3.2 GHz and 2.5 to 6.0 GHz you are kindly requested to avoid keeping the interlock permanently open or the amplifier muted, if not really necessary.
● Thus, a respective warning is created now on the front panel display after 10 minutes for muting and after 30 minutes for open interlock, but can be suppressed via the new menu item "Interl. /Mute Warn." on the front panel display. Respective logbook entries are created in any case.
● RF-Path selection is now also possible while having the amplifier in RF-Operate mode.

Improvements

● The problem was solved that the SCPI remote control sometimes did not answer a command till sending another command when being stressed with multiple commands within a few milliseconds.
● The problem was solved that turning RF-Operate was not possible in some systems containing an external or receiving RF-Path.
● Numerous improvements were made concerning the fan control.
● Numerous improvements were made concerning the Web-MMI.
● Numerous improvements were made concerning the self-test.
● Numerous improvements were made concerning the option "R&S®BBA-B130 (Fast Amplifier Mute)".

- The problem was solved that a selected coupled RF-Path (consisting of 2 RF-Paths with the same frequency range) not automatically selected again after a restart of the system.
- A minor improvement was made concerning the turning on and off of RF-Operate.

Known Issues

- When turning an older liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation
  To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
  This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.
- In systems consisting of multiple units it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware package on each of the units).
  To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.
  After this procedure the system should work fine again.
- In some older systems setting "Automatic Standby" to "YES" does not have any effect.
- Heavy traffic on the Ethernet could cause the system to slow down a bit.
  Ethernet connections with 10 Mbit are not possible in small systems consisting of one unit.
- When opening and closing the device interlock multiple times within a few milliseconds, the error message E006 "Too low current for amplifier X on bus Y!" might appear in rare cases.
- In rare cases it might happen that one or more of the system's units freeze (do not react to any interactions anymore). In that case you are kindly requested to turn the whole system off and on again.
- In systems containing an external or receiving RF-Path it might happen the Web-MMI shows random measured power values even though this is not possible, of course.
- In systems consisting of multiple units it might happen that the LOCAL button does not work after a connection loss (for example when unplugging the Ethernet cable).

- In systems with multiple RF-Paths changes of the gain, output mode and operating class via a remote control (Web-MMI, SCPI) are not immediately updated in the respective view of the front panel.
- In BBA130 systems the grey (inactive) slider for the operating class does not move to the blue (active) one when turning RF-Operate on.

1.7 Version 04.10

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_04.10.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA130_BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: For BBA150 this Firmware is suitable for serial numbers >= 102179 only! For details see chapter** 3.

New functionality

- Compared to version 04.00, version 04.10 provides an improved system availability. A new standby mode has been implemented for frequency ranges 80 MHz to 1 GHz, 0.69 to 3.2 GHz and 2.5 to 6.0 GHz to improve the system robustness significantly.

Modified functionality

- -

Improvements

- The self-protection of the amplifier was improved.
- Switching and thus RF-Path selection were speed up a little bit.
- Numerous improvements were made concerning the turning on and off of RF-Operate.
- Numerous improvements were made concerning the system start-up phase.
- Numerous improvements were made concerning the fan control.
- A minor improvement was made concerning the system soft reset.
- A minor improvement was made concerning the continued operation with reduced power in case of possible defective amplifier modules.
- A minor improvement was made concerning the self-test.

- A minor improvement was made concerning the error handling in case of a defective coupler fan.
- The problem was solved that in some cases no matching logbook entry was created in case of old errors during turning on of RF-Operate.
- The problem was solved that the Firmware Update might stop right after starting it in case of a slow network connection.

Known Issues

- When turning an older liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
  To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
  This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.
- In systems consisting of multiple units it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware package on each of the units).
  To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.
  After this procedure the system should work fine again
- In some older systems setting "Automatic Standby" to "YES" does not have any effect.
- Heavy traffic on the Ethernet could cause the system to slow down a bit.
- Ethernet connections with 10 Mbit are not possible in small systems consisting of one unit
- When opening and closing the device interlock multiple times within a few milliseconds, the error message E006 "Too low current for amplifier X on bus Y!" might appear in rare cases.
- In rare cases it might happen that one or more of the system's units freeze (do not react to any interactions anymore). In that case you are kindly requested to turn the whole system off and on again.
- In systems with multiple RF-Paths changes of the gain, output mode and operating class via a remote control (Web-MMI, SCPI) are not immediately updated in the respective view of the front panel.
- In BBA130 systems the grey (inactive) slider for the operating class does not move to the blue (active) one when turning RF-Operate on.

1.8   Version 04.00

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_04.00.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA130_BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: For BBA150 this Firmware is suitable for serial numbers >= 102179 only! For details see chapter** 3.

New functionality

- For frequency ranges 80 MHz to 1 GHz, 0.69 to 3.2 GHz and 2.5 to 6.0 GHz the system now can continue operation with reduced power in case of possible defective amplifier modules. The possible power level depends on the frequency range, original nominal output power and number of detected defects.
  Automatic activation of such reduced power level is being announced as warning W112 "Medium Power Level activated for RF-Path X!" or W113 "Low Power Level activated for RF-Path X!" and causes the fans to run with full power and the Output Mode in a BBA130 being locked to "High VSWR".
  Possible higher power level is being announced as info I120 "Full Power Level possible for RF-Path X!" or I121 "Medium Power Level possible for RF-Path X!" and can be manually activated via the new menu item "Maintenance" > "Act. higher power level" or the new SCPI command "RF<1..32>:OUTPut:PowerLevel:HIgher:ACTivate".
  For further details concerning this new outstanding feature consult the latest version (>= 12) of the user's manual.
- For safety reasons you can now change the password of the internal router of the system and tell the system this changed password via the new SCPI command "SYSTem:ROUTer:PASSword", so that it then can use this one for internal communication with the router.

Modified functionality

- -

Improvements

- Numerous improvements and corrections were made concerning the self-test.
- Numerous improvements and corrections were made concerning the Web-MMI.

- Numerous improvements were made concerning the system start-up phase, thus logbook entry I20 "System restarted." is now really the very first one followed by all detected defects, if there are any.
- A minor improvement was made concerning the bias current calibration.

Known Issues

- When turning an older liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
  To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
  This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.
- In systems consisting of multiple units it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware package on each of the units).
  To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again
  After this procedure the system should work fine again.
- In some older systems setting "Automatic Standby" to "YES" does not have any effect.
- Heavy traffic on the Ethernet could cause the system to slow down a bit.
- Ethernet connections with 10 Mbit are not possible in small systems consisting of one unit.
- When opening and closing the device interlock multiple times within a few milliseconds, the error message E006 "Too low current for amplifier X on bus Y!" might appear in rare cases.
- In systems with multiple RF-Paths changes of the gain, output mode and operating class via a remote control (Web-MMI, SCPI) are not immediately updated in the respective view of the front panel.
- In BBA130 systems the grey (inactive) slider for the operating class does not move to the blue (active) one when turning RF-Operate on.

1.9 Version 03.80

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_03.80.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA130_BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: For BBA150 this Firmware is suitable for serial numbers >= 102179 only! For details see chapter** 3.

New functionality

- The system now features a self-test.
  You can run it via the item "Run Self-Test" in the new sub menu "Maintenance" of the front panel display and the appropriate new button of the Web-MMI.
  You can also start it via the new SCPI command "SYSTem:selfTEST:STATe 1" and request its state via the new SCPI command "SYSTem:selfTEST:STATe?".
- You can also configure the system to run the self-test after each start of the system automatically.
  For this there is an item "Self-Test at Start" in the new sub menu "Maintenance" of the front panel display and the Web-MMI.
  Via SCPI you can use the new command "SYSTem:selfTEST:ATStart" to change this setting and the new command "SYSTem:selfTEST:ATStart?" to request it.
- You now have the possibility to let the system calibrate its bias currents.
  For this there is an item "Run Bias-Current-Cal." in the new sub menu "Maintenance" of the front panel display and the Web-MMI.
  You can also start the bias current calibration via the new SCPI command "SYSTem:BIAScurrentcalibration:STATe 1" and request its state via the new SCPI command "SYSTem:BIAScurrentcalibration:STATe?".
- In the Web-MMI the basic system information (Firmware, System/Device Serial Number and System Order Number) is shown in the header now.
- You can now configure the system to turn RF on after start of the system automatically.
  For this there is a new item "Automatic RF-ON" in the main menu of the front panel display and in the "Misc. Settings"-part of the "Settings"-tab of the Web-MMI.
  Via SCPI you can use the new command "SYSTem:AutomaticRFon" to change this setting and the new command "SYSTem:AutomaticRFon?" to request it.
- You can now configure the system to turn RF off in case of lost remote control automatically.
  For this there is a new item "RF-OFF on lost Rem" in the main menu of the front panel display and in the "Ethernet"-part of the "Settings"-tab of the Web-MMI.

    Via SCPI you can use the new command "RF:OUTPut:offonLOSTremotecontrol" to change this setting and the new command "RF:OUTPut:offonLOSTremotecontrol?" to request it.

- You can now see/get the current timestamp of the system, which is the passed time since start of the system.
  This timestamp is shown in the sub menu "System Info" > "General" of the front panel display as well as in the "System Info"-part of the "Settings"-tab and in the "Logbook"-tab of the Web-MMI.
  You can also request it via the new SCPI command "SYSTem:INFO:GENeral:TIMEstamp?".

Modified functionality

- In high power and liquid cooled systems setting the IP address of the system to 192.168.3.x is rejected now as this address range is reserved for internal use, as well as 192.168.2.x, which was already rejected before.
- Logbook entry codes were expanded from 2 to 3 digits.
- For the frequency ranges from 4 kHz to 400 MHz and 2.5 to 6.0 GHz the bias currents were adjusted.
- The serial number part of the answer to the SCPI command "*IDN?" has the following format now: <system serial number>/<device serial number>

Improvements

- Numerous minor improvements were made concerning the front panel display.
- Numerous minor improvements were made concerning the Web-MMI.
- Numerous minor improvements were made concerning the turning on and off of RF-Operate.
- Numerous corrections were made concerning the error handling for internal connections between subunits in high power and liquid cooled systems.
- Numerous corrections were made concerning the error handling for switches and RF-Path selection.
- The problem was solved that in some cases the Web-MMI showed some inconsistent/wrong data after restarting the system.
- A correction was made concerning enabling and disabling of RF-Paths in systems consisting of multiple units with multiple frequency ranges.
- A correction was made concerning the error handling for heat exchanger fans in liquid cooled systems.

Known Issues

- When turning an older liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
  To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.

This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.

- In systems consisting of multiple units it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware package on each of the units).
  To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.
  After this procedure the system should work fine again.
- In some older systems setting "Automatic Standby" to "YES" does not have any effect.
- Heavy traffic on the Ethernet could cause the system to slow down a bit.
- Ethernet connections with 10 Mbit are not possible in small systems consisting of one unit.
- When opening and closing the device interlock multiple times within a few milliseconds, the error message E006 "Too low current for amplifier X on bus Y!" might appear in rare cases.
- In systems with multiple RF-Paths changes of the gain, output mode and operating class via a remote control (Web-MMI, SCPI) are not immediately updated in the respective view of the front panel.
- In BBA130 systems the grey (inactive) slider for the operating class does not move to the blue (active) one when turning RF-Operate on.

1.10   Version 03.72

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_03.72.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA130_BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: For BBA150 this Firmware is suitable for serial numbers >= 102179 only! For details see chapter** 3.

New functionality

● -

Modified functionality

● -

Improvements

● Numerous improvements were made concerning control of the pumps in newer liquid cooled systems.

Known Issues

● When turning an older liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.
● In systems consisting of multiple units it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware package on each of the units).

To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.

After this procedure the system should work fine again.

- In some older systems setting "Automatic Standby" to "YES" does not have any effect.
- Heavy traffic on the Ethernet could cause the system to slow down a bit.
- Ethernet connections with 10 Mbit are not possible in small systems consisting of one unit.
- When opening and closing the device interlock multiple times within a few milliseconds, the error message E06 "Too low current for amplifier X on bus Y!" might appear in rare cases.
- In systems with multiple RF-Paths changes of the gain, output mode and operating class via a remote control (Web-MMI, SCPI) are not immediately updated in the respective view of the front panel.
- In BBA130 systems the grey (inactive) slider for the operating class does not move to the blue (active) one when turning RF-Operate on.

1.11 Version 03.71

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_03.71.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA130_BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: For BBA150 this Firmware is suitable for serial numbers >= 102179 only! For details see chapter** 3.

New functionality

- -

Modified functionality

- -

Improvements

- The self-protection of the amplifier was improved.
- Numerous improvements were made concerning the turning on and off of RF-Operate.
- The problem was solved that in rare cases the front panel did not show any content after finished system start-up.

Known Issues

- When turning an older liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
  To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
  This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation
- In systems consisting of multiple units it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed

on them (which is the case after having forgotten to install a new Firmware package on each of the units).

To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.

After this procedure the system should work fine again.

● In some older systems setting "Automatic Standby" to "YES" does not have any effect.

● Heavy traffic on the Ethernet could cause the system to slow down a bit.

● Ethernet connections with 10 Mbit are not possible in small systems consisting of one unit.

● When opening and closing the device interlock multiple times within a few milliseconds, the error message E06 "Too low current for amplifier X on bus Y!" might appear in rare cases.

● In systems with multiple RF-Paths changes of the gain, output mode and operating class via a remote control (Web-MMI, SCPI) are not immediately updated in the respective view of the front panel.

● In BBA130 systems the grey (inactive) slider for the operating class does not move to the blue (active) one when turning RF-Operate on.

1.12 Version 03.70

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_03.70.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA130_BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: For BBA150 this Firmware is suitable for serial numbers >= 102179 only! For details see chapter** 3.

New functionality

- The system now supports use of the Switch Control, which allows complex system configuration with switches making it possible to split it without extensive reconfiguration.
  In the front panel as well as the Web-MMI of unhinged devices from such a system there is a new menu item "Stand-Alone Device" for configuring whether the device is used as a stand-alone device or as a device in a rack.
  You can also change this setting via the new SCPI command "SYSTem:STAndalonedevice" and request it via the new SCPI command "SYSTem:STAndalonedevice?".
- The SCPI remote control now supports the following new commands for configuring the Ethernet settings of the system without having to re-establish a new remote session after each change: „SYSTem:TEMPorary:USE", "SYSTem:TEMPorary:IPADDress", "SYSTem:TEMPorary:IPADDress?", "SYSTem:TEMPorary:MASK", "SYSTem:TEMPorary:MASK?", "SYSTem:TEMPorary:GATEway", "SYSTem:TEMPorary:GATEway?", "SYSTem:TEMPorary:DHCPclient", "SYSTem:TEMPorary:DHCPclient?", "SYSTem:TEMPorary:HOSTname", "SYSTem:TEMPorary:HOSTname?".
- The "System Info" menus in the front panel and Web-MMI were enhanced, so that the following things will be shown, if available: system type, system serial number, system order number and installed options.
  Additionally the information from the "System Info" can be requested via the following new SCPI commands: "SYSTem:INFO:GENeral:TYPE?", "SYSTem:INFO:GENeral:SerialNumber?", "SYSTem:INFO:GENeral:OrderNumber?", "SYSTem:INFO:GENeral:DEVicetype<0..127>?", "SYSTem:INFO:ETHernet:CONNection?" and "SYSTem:INFO:ETHernet:MACaddress?"
- In systems of type BBA130 you now have the possibility to define and use up to 3 presets for the settings "Output Mode" and "Operating Class". You will find this feature in the appropriate menu items in the front panel and Web-MMI.

Additionally the following new SCPI commands were introduced:
"RF:OUTPut:MODe:PREset<1..3>?", "RF:OUTPut:MODe:PREset<1..3>:LOAD",
"RF:OUTPut:MODe:PREset<1..3>:SAVE",
"RF:OPERating:CLAss:PREset<1..3>?",
"RF:OPERating:CLAss:PREset<1..3>:LOAD",
"RF:OPERating:CLAss:PREset<1..3>:SAVE",
"RFCOUPledpath<1..32>:OUTPut:MODe:PREset<1..3>?",
"RFCOUPledpath<1..32>:OUTPut:MODe:PREset<1..3>:LOAD",
"RFCOUPledpath<1..32>:OUTPut:MODe:PREset<1..3>:SAVE",
"RFCOUPledpath<1..32>:OPERating:CLAss:PREset<1..3>?",
"RFCOUPledpath<1..32>:OPERating:CLAss:PREset<1..3>:LOAD",
"RFCOUPledpath<1..32>:OPERating:CLAss:PREset<1..3>:SAVE",
"RF<1..32>:OUTPut:MODe:PREset<1..3>?",
"RF<1..32>:OUTPut:MODe:PREset<1..3>:LOAD",
"RF<1..32>:OUTPut:MODe:PREset<1..3>:SAVE",
"RF<1..32>:OPERating:CLAss:PREset<1..3>?",
"RF<1..32>:OPERating:CLAss:PREset<1..3>:LOAD",
"RF<1..32>:OPERating:CLAss:PREset<1..3>:SAVE"

- In systems consisting of multiple units there are 3 new SCPI-commands:
  - "SYSTem:UNIT<1..127>:IPADDress" for settings the IP address of a unit
  - "SYSTem:UNIT<1..127>:IPADDress?" for requesting the IP address of a unit
  - "SYSTem:UNIT:MAXimum?" for requesting the number of units in the system

Modified functionality

- Fan speed was changed for frequency ranges from 0.69 to 3.2 GHz and from 2.5 to 6 GHz.
- As some of the internal configurations of the Firmware had to be changed, an initial conversion is necessary after updating to SW-version 03.70 (and higher) from a SW-version 03.60 (and lower). As this takes some time there will appear a message "One-time init in progress... Please wait! This takes some time." on the front panel display in the meantime. You are kindly requested to be patient and not turn off the system during that process.

Improvements

- The self-protection of the amplifier was improved.
- Numerous corrections were made concerning the error handling.
- Numerous improvements were made concerning the turning on of RF-Operate.
- Numerous minor corrections were made concerning the Web-MMI.
- Numerous minor corrections were made concerning the fan control.
- A problem was solved for the enabling and disabling of (coupled) RF-Paths (and therefore their units) in systems consisting of multiple units with multiple frequency ranges.
- The problem was solved that in rare cases an error occurred and therefore the RF was automatically switched off when changing the Operating Class in systems of type BBA130.

Known Issues

- When turning an older liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
  To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
  This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.
- In systems consisting of multiple units it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware package on each of the units).
  To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.
  After this procedure the system should work fine again.
- In some older systems setting "Automatic Standby" to "YES" does not have any effect.
- Heavy traffic on the Ethernet could cause the system to slow down a bit.
- Ethernet connections with 10 Mbit are not possible in small systems consisting of one unit.
- When opening and closing the device interlock multiple times within a few milliseconds, the error message E06 "Too low current for amplifier X on bus Y!" might appear in rare cases.
- In systems with multiple RF-Paths changes of the gain, output mode and operating class via a remote control (Web-MMI, SCPI) are not immediately updated in the respective view of the front panel.
- In BBA130 systems the grey (inactive) slider for the operating class does not move to the blue (active) one when turning RF-Operate on.

1.13   Version 03.60

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_03.60.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA130_BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: For BBA150 this Firmware is suitable for serial numbers >= 102179 only! For details see chapter** 3.

New functionality

● The system now supports multiple RF-Paths of the same frequency range with different nominal power.

Modified functionality

● As some of the internal configurations of the Firmware had to be changed, an initial conversion is necessary after updating to SW-version 03.60 (and higher) from a SW-version 03.50 (and lower). As this takes some time there will appear a message "One-time init in progress... Please wait! This takes some time." on the front panel display in the meantime. You are kindly requested to be patient and not turn off the system during that process.

Improvements

● The problem was solved that the stored gain value was not used when turning RF-Operate on.
● The problem was solved that in certain systems consisting of multiple units with multiple frequency ranges and multiple RF-Paths turning RF-Operate on did not have any effect.
● The problem was solved that the error message E79 "Detected all fans to be defective!" appeared under certain rare circumstances even though the fans were not defective at all.

Known Issues

● When turning an older liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button

afterwards), the pump of the liquid cooling might still be running, which may cause condensation.

To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.

This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.

- In systems consisting of multiple units it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware package on each of the units).

  To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.

  After this procedure the system should work fine again.
- In some older systems setting "Automatic Standby" to "YES" does not have any effect.
- Heavy traffic on the Ethernet could cause the system to slow down a bit.
- Ethernet connections with 10 Mbit are not possible in small systems consisting of one unit.
- When opening and closing the device interlock multiple times within a few milliseconds, the error message E06 "Too low current for amplifier X on bus Y!" might appear in rare cases.
- In systems with multiple RF-Paths changes of the gain, output mode and operating class via a remote control (Web-MMI, SCPI) are not immediately updated in the respective view of the front panel.
- In BBA130 systems the grey (inactive) slider for the operating class does not move to the blue (active) one when turning RF-Operate on.

1.14 Version 03.50

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_03.50.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA130_BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: For BBA150 this Firmware is suitable for serial numbers >= 102179 only! For details see chapter** 3.

New functionality

● In systems consisting of multiple units with multiple frequency ranges you now have the possibility to disable one or more (coupled) RF-Paths (and therefore their units), so that you can keep on working with the system in case you need to unhinge one or more units from it, for example.
For this there is a new item in the main menu of the front panel display called "RF-Path Info & Enable".
In the Web-MMI there is a new tab called "RF-Path Info&Enable".
Additionally to this you can enable and disable an RF-Path via the new SCPI command "SYSTem:PATH<x>:ENAbled" and request this setting via the new SCPI command "SYSTem:PATH<x>:ENAbled?". The same goes for coupled RF-Paths (consisting of 2 RF-Paths with the same frequency range) with the new SCPI-commands "SYSTem:COUPledpath<x>:ENAbled" and "SYSTem:COUPledpath<x>:ENAbled?".
Last but not least the new SCPI command "SYSTem:SCPI:ENAbledPATHsonly" allows you to configure whether only enabled (coupled) RF-Paths should be considered for RF-Path specific SCPI commands or all (coupled) RF-Paths (even disabled ones). This setting can be requested via the new SCPI command "SYSTem:SCPI:ENAbledPATHsonly?".
● A system can now have multiple instances of the same frequency range.

Modified functionality

● The menu item "Clear Logbook" was removed from the front panel display as well as from the Web-MMI.

Improvements

- Numerous improvements were made concerning the turning on and off of RF-Operate.
- Numerous minor corrections were made concerning the error handling.
- Numerous corrections were made concerning the Web-MMI.
- The problem was solved that in systems of type BBA130 the first change of the setting "Output Mode" after starting the system sometimes did not have any effect.

Known Issues

- When turning an older liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
  To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
  This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.
- In systems consisting of multiple units it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware package on each of the units).
  To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.
  After this procedure the system should work fine again.
- In some older systems setting "Automatic Standby" to "YES" does not have any effect.
- Heavy traffic on the Ethernet could cause the system to slow down a bit.
  When opening and closing the device interlock multiple times within a few milliseconds, the error message E06 "Too low current for amplifier X on bus Y!" might appear in rare cases.
- In systems with multiple RF-Paths changes of the gain, output mode and operating class via a remote control (Web-MMI, SCPI) are not immediately updated in the respective view of the front panel.
- In BBA130 systems the grey (inactive) slider for the operating class does not move to the blue (active) one when turning RF-Operate on.

1.15 Version 03.42

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_03.42.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA130_BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: For BBA150 this Firmware is suitable for serial numbers >= 102179 only! For details see chapter** 3.

New functionality

● -

Modified functionality

● -

Improvements

● The problem was solved that switching did not work for some types of switches

Known Issues

● When turning an older liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.
● In systems consisting of multiple units it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware package on each of the units).
To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some

minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.
After this procedure the system should work fine again.

- In some older systems setting "Automatic Standby" to "YES" does not have any effect.
- Heavy traffic on the Ethernet could cause the system to slow down a bit.
- When opening and closing the device interlock multiple times within a few milliseconds, the error message E06 "Too low current for amplifier X on bus Y!" might appear in rare cases. In systems with multiple RF-Paths changes of the gain, output mode and operating class via a remote control (Web-MMI, SCPI) are not immediately updated in the respective view of the front panel.
- In BBA130 systems the grey (inactive) slider for the operating class does not move to the blue (active) one when turning RF-Operate on.

1.16 Version 03.41

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_03.41.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA130_BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: For BBA150 this Firmware is suitable for serial numbers >= 102179 only! For details see chapter** 3.

New functionality

● -

Modified functionality

● -

Improvements

● Service capabilities were improved.

Known Issues

● When turning an older liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
   To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
   This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.
● In systems consisting of multiple units it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware package on each of the units).
   To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some

minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.

After this procedure the system should work fine again.

- In some older systems setting "Automatic Standby" to "YES" does not have any effect.
- Heavy traffic on the Ethernet could cause the system to slow down a bit.
- When opening and closing the device interlock multiple times within a few milliseconds, the error message E06 "Too low current for amplifier X on bus Y!" might appear in rare cases.
- In systems with multiple RF-Paths changes of the gain, output mode and operating class via a remote control (Web-MMI, SCPI) are not immediately updated in the respective view of the front panel.
- In BBA130 systems the grey (inactive) slider for the operating class does not move to the blue (active) one when turning RF-Operate on.

1.17　Version 03.40

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_03.40.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA130_BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: For BBA150 this Firmware is suitable for serial numbers >= 102179 only! For details see chapter** 3.

New functionality

● The system now supports the frequency range from 4 kHz to 400 MHz.

Modified functionality

● For coupled RF-Paths (consisting of 2 RF-Paths with the same frequency range) a defect/error, which is specific to one of the RF-Paths only, does not cause immediate turning off of RF-Operate anymore. Only the concerned RF-Path is switched off while the other one remains switched on instead.

Improvements

● Fan control mode 2 was improved, especially for the frequency range from 80 MHz to 1 GHz.
● Some error entries in the logbook were improved.
● Numerous corrections were made concerning the error handling for internal connections between subunits in high power and liquid cooled systems.
● Numerous corrections were made concerning the Web-MMI.

Known Issues

● When turning an older liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the

front panel.
This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.

● In systems consisting of multiple units it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware package on each of the units).
To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.
After this procedure the system should work fine again.

● In some older systems setting "Automatic Standby" to "YES" does not have any effect.

● Heavy traffic on the Ethernet could cause the system to slow down a bit.

● When opening and closing the device interlock multiple times within a few milliseconds, the error message E06 "Too low current for amplifier X on bus Y!" might appear in rare cases.

● In systems with multiple RF-Paths changes of the gain, output mode and operating class via a remote control (Web-MMI, SCPI) are not immediately updated in the respective view of the front panel.

● In BBA130 systems the grey (inactive) slider for the operating class does not move to the blue (active) one when turning RF-Operate on.

1.18 Version 03.30

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_03.30.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA130_BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: For BBA150 this Firmware is suitable for serial numbers >= 102179 only! For details see chapter** 3.

New functionality

- In liquid cooled systems you now have the possibility to request the measured values of the liquid cooling via the new SCPI commands "SENSe:LIQuidcooling:TemperatureIN?", "SENSe:LIQuidcooling:TemperatureOUT?", "SENSe:LIQuidcooling:PRESsure?", "SENSe:LIQuidcooling:PumpsSTATe?", "SENSe:LIQuidcooling:Pump1SPeed?", "SENSe:LIQuidcooling:Pump1FLowrate?", "SENSe:LIQuidcooling:Pump2SPeed?", "SENSe:LIQuidcooling:Pump2FLowrate?", "SENSe:LIQuidcooling:Fan1SPeed?" and "SENSe:LIQuidcooling:Fan2SPeed?".

Modified functionality

- In systems of type BBA130 with multiple frequency ranges and/or RF-Paths the settings "Output Mode" and "Operating Class" now can be made for each of the frequency ranges / RF-Paths separately. Thus the following new SCPI commands were introduced:
  - "RF<x>:OUTPut:MODe?" for requesting the Output Mode of the RF-Path <x>
  - "RF<x>:OUTPut:MODe" for setting the Output Mode of the RF-Path <x>
  - "RFCOUPledpath<x>:OUTPut:MODe?" for requesting the Output Mode of the coupled RF-Path <x>
  - "RFCOUPledpath<x>:OUTPut:MODe" for setting the Output Mode of the coupled RF-Path <x>
  - "RF<x>:OPERating:CLAss?" for requesting the Operating Class of the RF-Path <x>
  - "RF<x>:OPERating:CLAss" for setting the Operating Class of the RF-Path <x>
  - "RFCOUPledpath<x>:OPERating:CLAss?" for requesting the Operating Class of the coupled RF-Path <x>
  - "RFCOUPledpath<x>:OPERating:CLAss" for setting the Operating Class of the coupled RF-Path <x>

Improvements

- The self-protection of the amplifier was improved.
- Numerous improvements were made concerning liquid cooled systems.
- Numerous improvements were made concerning the turning on of RF-Operate.
- Numerous corrections were made concerning the Ethernet settings, especially DHCP Client.
- Numerous corrections were made concerning the changing of the Operating Class in systems of type BBA130.
- Numerous minor improvements were made concerning the front panel display.
- Numerous minor improvements were made concerning the Web-MMI.
- Numerous minor corrections were made concerning the error handling for internal connections between subunits in high power and liquid cooled systems.
- A minor correction was made concerning the detection of defective fans.

Known Issues

- When turning an older liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
  To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
  This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.
- In systems consisting of multiple units it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware package on each of the units).
  To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.
  After this procedure the system should work fine again.
- In some older systems setting "Automatic Standby" to "YES" does not have any effect.
- Heavy traffic on the Ethernet could cause the system to slow down a bit.
- When opening and closing the device interlock multiple times within a few milliseconds, the error message E06 "Too low current for amplifier X on bus Y!" might appear in rare cases.
- In systems with multiple RF-Paths changes of the gain, output mode and operating class via a remote control (Web-MMI, SCPI) are not immediately updated in the respective view of the front panel.
  In BBA130 systems the grey (inactive) slider for the operating class does not move to the blue (active) one when turning RF-Operate on.

1.19 Version 03.22

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_03.22.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA130_BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: For BBA150 this Firmware is suitable for serial numbers >= 102179 only! For details see chapter** 3.

New functionality

● -

Modified functionality

● -

Improvements

● The problem was solved that turning RF-Operate under certain circumstances failed with error message E06 "Too low current for amplifier X on bus Y!" right after switching RF-Paths in some systems having the frequency ranges from 0.69 to 3.2 GHz and from 2.5 to 6 GHz both.

Known Issues

● When turning a liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.
● In systems consisting of multiple units it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware

package on each of the units).

To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.

After this procedure the system should work fine again.

- In some older systems setting "Automatic Standby" to "YES" does not have any effect.
- Heavy traffic on the Ethernet could cause the system to slow down a bit.
- When opening and closing the device interlock multiple times within a few milliseconds, the error message E06 "Too low current for amplifier X on bus Y!" might appear in rare cases.
- In systems with multiple RF-Paths changes of the gain, output mode and operating class via a remote control (Web-MMI, SCPI) are not immediately updated in the respective view of the front panel.
- In BBA130 systems the grey (inactive) slider for the operating class does not move to the blue (active) one when turning RF-Operate on.

1.20 Version 03.21

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_03.21.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA130_BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: For BBA150 this Firmware is suitable for serial numbers >= 102179 only! For details see chapter** 3.

New functionality

● -

Modified functionality

● -

Improvements

● Some improvements were made concerning the turning off of RF-Operate.
● Minor corrections were made concerning the Web-MMI.

A problem was solved that in rare cases the LED "ERROR" remained on even after successfully turning RF-Operate on.

Known Issues

● When turning a liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
  To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
  This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.
● In systems consisting of multiple units it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware

package on each of the units).

To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.

After this procedure the system should work fine again.

● In some older systems setting "Automatic Standby" to "YES" does not have any effect.

● Heavy traffic on the Ethernet could cause the system to slow down a bit. When opening and closing the device interlock multiple times within a few milliseconds, the error message E06 "Too low current for amplifier X on bus Y!" might appear in rare cases.

● In systems with multiple RF-Paths changes of the gain, output mode and operating class via a remote control (Web-MMI, SCPI) are not immediately updated in the respective view of the front panel.

● In BBA130 systems the grey (inactive) slider for the operating class does not move to the blue (active) one when turning RF-Operate on.

1.21 Version 03.20

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_03.20.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA130_BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: For BBA150 this Firmware is suitable for serial numbers >= 102179 only! For details see chapter** 3.

New functionality

● You can now choose between 2 different behaviors/modes of the fan control.
  For this there is a new item in the main menu of the front panel display called "Fan Control".
  In the Web-MMI you can find this new menu item in the "Misc. Settings" area of the "Settings"-tab.
  Additionally to this you can change this setting via the new SCPI command "SYSTem:FANcontrol:MODe" and request it via the new SCPI command "SYSTem:FANcontrol:MODe?".

Modified functionality

● When changing the "SCPI Timeout" via the front panel or Web-MMI there is being displayed a message now, stating that this setting takes effect at the next start of the system.
● For systems of type BBA130 the behavior of the SCPI commands "SENSe:NPOWer?" and "SENSe<x>:NPOWer?" was slightly changed.
● The menu item "Permanent Power On" was renamed to "Automatic Standby".
  You can also change this setting via the new SCPI command "SYSTem:AUTomaticstandby" and request it via the new SCPI command "SYSTem:AUTomaticstandby?".
● At the front panel the menu "Gain" remains open when pressing the OK button, allowing you to change the gain continuously. The menu can by exited by pressing the BACK button only. Thus, the former menu item "Continuous Gain" is not needed anymore, so it was removed.

Improvements

● Fan control was improved for the frequency range from 80 MHz to 1 GHz

- For systems of type BBA130 the problem was solved that the configured gain was ignored when changing the Operating Class immediately after changing the gain without turning RF-Operate mode off and on between these steps.
- Numerous improvements and corrections were made concerning the Web-MMI.
- Numerous minor corrections were made concerning the error handling for internal connections between subunits in high power and liquid cooled systems.
- Numerous improvements and corrections were made concerning the Firmware Update.
- A problem was solved that heavy traffic on the Ethernet could cause the system to stop working after some time when having DHCP Client turned on.

Known Issues

- When turning a liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
  To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
  This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.
- In systems consisting of multiple units it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware package on each of the units).
  To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.
  After this procedure the system should work fine again.
- In some older systems setting "Automatic Standby" to "YES" does not have any effect.
- Heavy traffic on the Ethernet could cause the system to slow down a bit.
  When opening and closing the device interlock multiple times within a few milliseconds, the error message E06 "Too low current for amplifier X on bus Y!" might appear in rare cases.
- In systems with multiple RF-Paths changes of the gain, output mode and operating class via a remote control (Web-MMI, SCPI) are not immediately updated in the respective view of the front panel.
- In BBA130 systems the grey (inactive) slider for the operating class does not move to the blue (active) one when turning RF-Operate on.

1.22 Version 03.10

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_03.10.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA130_BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: For BBA150 this Firmware is suitable for serial numbers >= 102179 only! For details see chapter** 3.

New functionality

● The firmware now also supports systems of type BBA130.
● There are two new SCPI-commands:
  - "RF:BAND:PATHMAXimum?" for requesting the number of installed RF-Paths
  - "RF:BAND:COUPledpathMAXimum?" for requesting the number of installed coupled RF-Paths.
● The system now saves the currently selected RF-Path when switching the system off by pressing the STANDBY button at the front panel and restores this setting automatically when switching it on again.
● Logbook entries do now contain a (relative) timestamp, which is the elapsed time since last switching the amplifier system on.
● The number of active Web-MMIs is now displayed in the top right corner of the Web-MMI. The maximum number of Web-MMIs that can be opened simultaneously is 3. Opening a 4th Web-MMI is denied.

Modified functionality

● Only for option "R&S®BBA-B130 (Fast Amplifier Mute)": Activating mute with RF-Operate being turned off causes the LED "MUTE READY" to blink signaling that this request has been recognized and will be really activated when turning RF-operate on.
● As the firmware now supports gain limits depending on the system configuration it might happen that the available gain range (in the front panel and Web-MMI as well via the SCPI-commands "CONT<x>: AMOD: FGA" and "CONTCOUP<x>: AMOD: FGA") differs from the default (-25.00 to +15.00 dB).

Improvements

- Numerous improvements and corrections were made concerning the front panel MMI.
- Numerous improvements and corrections were made concerning the Web-MMI.
- Fan control was improved for the frequency range from 0.69 to 3.2 GHz.
- The problem was solved that after setting "Permanent Power On" to "OFF" you had to turn the amplifier completely off via its mains switch for this change to take effect. That means that changing this setting takes immediate effect now.
- It is not possible anymore to turn RF-Operate on after it was turned off because of a defective fan.

Known Issues

- When turning a liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
  To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
  This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.
- In systems consisting of multiple units it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware package on each of the units).
  To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.
  After this procedure the system should work fine again.
- In some older systems setting "Permanent Power On" to "ON" does not have any effect.
- In systems with multiple RF-Paths changes of the gain, output mode and operating class via a remote control (Web-MMI, SCPI) are not immediately updated in the respective view of the front panel.
- In BBA130 systems the grey (inactive) slider for the operating class does not move to the blue (active) one when turning RF-Operate on.

1.23　Version 03.00

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_03.00.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA130_BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: For BBA150 this Firmware is suitable for serial numbers >= 102179 only! For details see chapter** 3.

New functionality

- The system now supports combination of 2 RF-Paths with the same frequency range in one system, with the following enhancements in detail:
  - These 2 RF-Paths can be selected both at the same time (as a "Coupled RF-Path") or alone. Switching between (coupled) RF-Paths can be done via the menu item "RF-Path Selection" of the front panel display and the Web-MMI or via the new SCPI-command "RF:BAND:COUP" for coupled RF-Paths and the known SCPI-command "RF:BAND:PATH" for RF-Paths.
  - When having a coupled RF-Path selected, you can also choose whether to adjust the gain for the coupled RF-Path (and therefore both RF-Paths together) or for each of the RF-Paths separately. In the front panel display and the Web-MMI this can be done in the known menu item "Gain" and via SCPI via the new command "CONTCOUP<x>:AMOD:FGA".
  - Additionally to this when having a coupled RF-Path selected, you can reach a new menu called "RF-Paths Overview" by pressing the BACK-key in the "RF-Path Details" menu (formerly known as "System Overview") in the front panel display. This "RF-Paths Overview" shows a list of all RF-Paths, which are part of the selected coupled RF-Path, including their measured forward and reflected power. When pressing OK while having the title line selected, you get directly into the main menu. When pressing OK while having a line with an RF-Path selected, you get into the "RF-Paths Details" of that RF-Path.
  - The "Operating Panel" tab of the Web-MMI now also shows all selected RF-Paths at the same time, so when having a coupled RF-Path selected, there can be seen the details and measured values of both RF-Paths, which are part of that coupled RF-Path.

Modified functionality

- The former frequency range from 0.8 to 3 GHz was widened so that it ranges from 0.69 to 3.2 GHz now.

Improvements

- The check of the power supplies while turning RF-Operate on of was improved.

Known Issues

- When turning a liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
  To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
  This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.
- In systems consisting of multiple units it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware package on each of the units).
  To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.
  After this procedure the system should work fine again.
- After setting "Permanent Power On" to "OFF" you have to turn the amplifier completely off via its mains switch for this change to take effect.
- In some older systems setting "Permanent Power On" to "ON" does not have any effect

1.24 Version 02.80

Software package content

Name of file	Description
SW_BBA150_BBL200_APPLICATION_02.80.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device.

New functionality

● The R&S®Interlock Support Kit is supported now. It is strongly recommended to use this, if you are using the HW Interlock of the amplifier.
● For the SCPI remote control you now have the possibility to choose between synchronous (old and default) and asynchronous (new) handling of lengthy set commands ("RF:OUTPut:STATe" and "RF:BAND:PATH").
For this configuration setting the new SCPI commands "SYSTem:SCPI:ASYnc" and "SYSTem:SCPI:ASYnc?" were introduced.

Modified functionality

● Turning RF on and off via the "X105 Control Interface" does only work now, when not being in local mode.
● The menu item "Gain" was renamed to "Gain Control".

Improvements

● Further minor improvements were made for better error identification and handling to improve system availability e.g. continuous operation with full power.
● System performance was improved for the case of high power loss.
● Numerous minor improvements were made concerning ethernet connections.
● The problem was solved that a liquid cooled BBL amplifier might have stopped working in very rare cases.

Known Issues

- When turning a liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
  To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
  This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.
- In systems consisting of multiple units without it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware package on each of the units).
  To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.
  After this procedure the system should work fine again.
- After setting "Automatic Standby" to "NO" you have to turn the amplifier completely off via its mains switch for this change to take effect.
- In some older systems setting "Automatic Standby" to "YES" does not have any effect.
- Heavy traffic on the Ethernet could cause the system to slow down a bit.
- When opening and closing the device interlock multiple times within a few milliseconds, the error message E006 "Too low current for amplifier X on bus Y!" might appear in rare cases.

1.25 Version 02.75

Software package content

Name of file	Description
SW_BBA150_BBL200_APPLICATION_02.75.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device.

New functionality

- Enhancement of error identification and handling, further improving system availability e.g. continuous operation with full power.

Modified functionality

- -

Improvements

- Numerous improvements were made concerning the fan control specifically for the different frequency ranges.
- Numerous minor improvements were made concerning the Web-MMI.
- A minor improvement was made concerning the system start-up phase.
- The problem was solved that in liquid cooled BBL amplifiers the liquid cooling might not be turned off when turning the amplifier off via the pressing the STANDBY button.
- The problem was solved that using the SCPI remote control via multiple clients simultaneously might mix up the replies in some cases.
- The problem was solved that in some systems the system might freeze after changing its IP address or after a connection loss.

Known Issues

- When turning a liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
  To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
  This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.

- In systems consisting of multiple units without it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware package on each of the units).
  To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.
  After this procedure the system should work fine again.

- After setting "Automatic Standby" to "NO" you have to turn the amplifier completely off via its mains switch for this change to take effect.

- In some older systems setting "Automatic Standby" to "YES" does not have any effect.

- Heavy traffic on the Ethernet could cause the system to slow down a bit.

- When opening and closing the device interlock multiple times within a few milliseconds, the error message E006 "Too low current for amplifier X on bus Y!" might appear in rare cases.

1.26   Version 02.70

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_02.70.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA130_BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: This Firmware is suitable for serial numbers < 102179 of BBA150 only! For details see chapter** 3.

New functionality

● Compared to version 02.66, version 02.70 provides an improved system availability. A new standby mode has been implemented for frequency ranges 80 MHz to 1 GHz, 0.69 to 3.2 GHz and 2.5 to 6.0 GHz to improve the system robustness significantly.

Modified functionality

● For systems containing at least one of the frequency ranges 80 MHz to 1 GHz, 0.69 to 3.2 GHz and 2.5 to 6.0 GHz you are kindly requested to avoid keeping the interlock permanently open or the amplifier muted, if not really necessary.
Thus a respective warning is created now on the front panel display after 10 minutes for muting and after 30 minutes for open interlock, but can be suppressed via the new menu item "Interl./Mute Warn." on the front panel display. Respective logbook entries are created in any case.

Improvements

● The self-protection of the amplifier was improved.
● Switching and thus RF-Path selection were speed up a little bit.
● Numerous improvements were made concerning the turning on and off of RF-Operate.
● Numerous improvements were made concerning the system start-up phase.
● Numerous improvements were made concerning the fan control.
● A minor improvement was made concerning the system soft reset.
● A minor improvement was made concerning the error handling in case of a defective coupler fan.
● A minor improvement was made concerning the option "R&S®BBA-B130 (Fast Amplifier Mute)".

- The problem was solved that the Firmware Update might stop right after starting it in case of a slow network connection.
- The problem was solved that the SCPI remote control sometimes did not answer a command till sending another command when being stressed with multiple commands within a few milliseconds.

Known Issues

- When turning a liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
  To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
  This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.
- In systems consisting of multiple units without it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware package on each of the units).
  To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.
  After this procedure the system should work fine again.
- After setting "Automatic Standby" to "NO" you have to turn the amplifier completely off via its mains switch for this change to take effect.
- In some older systems setting "Automatic Standby" to "YES" does not have any effect.
- Heavy traffic on the Ethernet could cause the system to slow down a bit.
- When opening and closing the device interlock multiple times within a few milliseconds, the error message E006 "Too low current for amplifier X on bus Y!" might appear in rare cases.
- In some systems it might happen that the system freezes after changing its IP address at the front panel. In that case you are kindly requested to restart the system.

1.27   Version 02.66

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_02.66.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA130_BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: This Firmware is suitable for serial numbers < 102179 of BBA150 only! For details see chapter** 3.

New functionality

● -

Modified functionality

● -

Improvements

● Service capabilities were improved

Known Issues

● When turning a liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.

- In systems consisting of multiple units without it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware package on each of the units).
  To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.
  After this procedure the system should work fine again.
- After setting "Automatic Standby" to "NO" you have to turn the amplifier completely off via its mains switch for this change to take effect.
- In some older systems setting "Automatic Standby" to "YES" does not have any effect.
- Heavy traffic on the Ethernet could cause the system to slow down a bit.
- When opening and closing the device interlock multiple times within a few milliseconds, the error message E006 "Too low current for amplifier X on bus Y!" might appear in rare cases.
- In some systems it might happen that the system freezes after changing its IP address at the front panel. In that case you are kindly requested to restart the system.

1.28 Version 02.65

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_02.65.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA130_BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: This Firmware is suitable for serial numbers < 102179 of BBA150 only! For details see chapter** 3.

New functionality

- -

Modified functionality

- -

Improvements

- Numerous minor corrections were made concerning the Web-MMI.

Known Issues

- When turning a liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
  To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
  This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.

- In systems consisting of multiple units without it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware package on each of the units).
  To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.
  After this procedure the system should work fine again.
- After setting "Automatic Standby" to "NO" you have to turn the amplifier completely off via its mains switch for this change to take effect.
- In some older systems setting "Automatic Standby" to "YES" does not have any effect.
- Heavy traffic on the Ethernet could cause the system to slow down a bit.
- When opening and closing the device interlock multiple times within a few milliseconds, the error message E006 "Too low current for amplifier X on bus Y!" might appear in rare cases.
- In some systems it might happen that the system freezes after changing its IP address at the front panel. In that case you are kindly requested to restart the system.

1.29 Version 02.60

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_02.60.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA130_BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: This Firmware is suitable for serial numbers < 102179 of BBA150 only! For details see chapter** 3.

New functionality

●   -

Modified functionality

●   In high power and liquid cooled systems setting the IP address of the system to 192.168.3.x is rejected now as this address range is reserved for internal use, as well as 192.168.2.x, which was already rejected before.

●   Logbook entry codes were expanded from 2 to 3 digits.

●   For the frequency range from 2.5 to 6.0 GHz the bias currents were adjusted.

Improvements

●   The problem was solved that no matching logbook entry was created in case of errors during RF-Path selection.

●   The problem was solved that in some cases the Web-MMI showed some inconsistent/wrong data after restarting the system.

Known Issues

- When turning a liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
  To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
  This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.
- In systems consisting of multiple units without it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware package on each of the units).
  To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.
  After this procedure the system should work fine again.
- After setting "Automatic Standby" to "NO" you have to turn the amplifier completely off via its mains switch for this change to take effect.
- In some older systems setting "Automatic Standby" to "YES" does not have any effect.
- Heavy traffic on the Ethernet could cause the system to slow down a bit.
- When opening and closing the device interlock multiple times within a few milliseconds, the error message E006 "Too low current for amplifier X on bus Y!" might appear in rare cases.

1.30 Version 02.56

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_02.56.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA130_BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: This Firmware is suitable for serial numbers < 102179 of BBA150 only! For details see chapter** 3.

New functionality

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Modified functionality

- -

Improvements

- The self-protection of the amplifier was improved.
- Numerous improvements were made concerning the turning on and off of RF-Operate.
- The problem was solved that in rare cases the front panel did not show any content after finished system start-up.

Known Issues

- When turning a liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
  To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
  This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.

- In systems consisting of multiple units it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware package on each of the units).
  To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.
  After this procedure the system should work fine again.
- After setting "Automatic Standby" to "NO" you have to turn the amplifier completely off via its mains switch for this change to take effect.
- In some older systems setting "Automatic Standby" to "YES" does not have any effect.
- Heavy traffic on the Ethernet could cause the system to slow down a bit.
- When opening and closing the device interlock multiple times within a few milliseconds, the error message E06 "Too low current for amplifier X on bus Y!" might appear in rare cases.

1.31 Version 02.55

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_02.55.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA130_BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: This Firmware is suitable for serial numbers < 102179 of BBA150 only! For details see chapter** 3.

New functionality

- -

Modified functionality

- Fan speed was changed for frequency ranges from 0.69 to 3.2 GHz and from 2.5 to 6 GHz

Improvements

- The self-protection of the amplifier was improved.
- Numerous corrections were made concerning the error handling.
- Numerous improvements were made concerning the turning on of RF-Operate.
- Numerous minor corrections were made concerning the Web-MMI.

Known Issues

- When turning a liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
  To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
  This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.

- In systems consisting of multiple units it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware package on each of the units).
  To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.
  After this procedure the system should work fine again.
- After setting "Automatic Standby" to "NO" you have to turn the amplifier completely off via its mains switch for this change to take effect.
- In some older systems setting "Automatic Standby" to "YES" does not have any effect.
- Heavy traffic on the Ethernet could cause the system to slow down a bit.
- When opening and closing the device interlock multiple times within a few milliseconds, the error message E06 "Too low current for amplifier X on bus Y!" might appear in rare cases.

1.32 Version 02.52

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_02.52.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA130_BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: This Firmware is suitable for serial numbers < 102179 of BBA150 only! For details see chapter** 3.

New functionality

- -

Modified functionality

- -

Improvements

The problem was solved that the stored gain value was not used when turning RF-Operate on.

Known Issues

- When turning a liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
  To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
  This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.

- In systems consisting of multiple units it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware package on each of the units).
  To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.
  After this procedure the system should work fine again.
- After setting "Automatic Standby" to "NO" you have to turn the amplifier completely off via its mains switch for this change to take effect.
- In some older systems setting "Automatic Standby" to "YES" does not have any effect.
- Heavy traffic on the Ethernet could cause the system to slow down a bit.
- When opening and closing the device interlock multiple times within a few milliseconds, the error message E06 "Too low current for amplifier X on bus Y!" might appear in rare cases.

1.33 Version 02.51

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_02.51.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA130_BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: This Firmware is suitable for serial numbers < 102179 of BBA150 only! For details see chapter** 3.

New functionality

● -

Modified functionality

● -

Improvements

● The problem was solved that the amplifier may not reach its nominal output power for the frequency ranges from 80 MHz to 1 GHz, from 0.8 to 3 GHz and from 2.5 to 6 GHz.

Known Issues

● When turning a liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.

- In systems consisting of multiple units it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware package on each of the units).
  To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.
  After this procedure the system should work fine again.
- After setting "Automatic Standby" to "NO" you have to turn the amplifier completely off via its mains switch for this change to take effect.
- In some older systems setting "Automatic Standby" to "YES" does not have any effect.
- Heavy traffic on the Ethernet could cause the system to slow down a bit.
- When opening and closing the device interlock multiple times within a few milliseconds, the error message E06 "Too low current for amplifier X on bus Y!" might appear in rare cases.

1.34 Version 02.50

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_02.50.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA130_BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: This Firmware is suitable for serial numbers < 102179 of BBA150 only! For details see chapter** 3.

New functionality

● -

Modified functionality

● The menu item "Clear Logbook" was removed from the front panel display as well as from the Web-MMI.

Improvements

● Numerous improvements were made concerning the turning on and off of RF-Operate
● Numerous minor corrections were made concerning the error handling.

Known Issues

● When turning a liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.

- In systems consisting of multiple units it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware package on each of the units).
  To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.
  After this procedure the system should work fine again.
- After setting "Automatic Standby" to "NO" you have to turn the amplifier completely off via its mains switch for this change to take effect.
- In some older systems setting "Automatic Standby" to "YES" does not have any effect.
- Heavy traffic on the Ethernet could cause the system to slow down a bit.
- When opening and closing the device interlock multiple times within a few milliseconds, the error message E06 "Too low current for amplifier X on bus Y!" might appear in rare cases.

1.35 Version 02.47

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_02.47.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA130_BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: This Firmware is suitable for serial numbers < 102179 of BBA150 only! For details see chapter** 3.

New functionality

- -

Modified functionality

- -

Improvements

- The problem was solved that switching did not work for some types of switches.

Known Issues

- When turning a liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
  To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
  This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.

- In systems consisting of multiple units it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware package on each of the units).
  To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.
  After this procedure the system should work fine again.
- After setting "Automatic Standby" to "NO" you have to turn the amplifier completely off via its mains switch for this change to take effect.
- In some older systems setting "Automatic Standby" to "YES" does not have any effect.
- Heavy traffic on the Ethernet could cause the system to slow down a bit.
- When opening and closing the device interlock multiple times within a few milliseconds, the error message E06 "Too low current for amplifier X on bus Y!" might appear in rare cases.

1.36 Version 02.46

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_02.46.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA130_BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: This Firmware is suitable for serial numbers < 102179 of BBA150 only! For details see chapter** 3.

New functionality

● -

Modified functionality

● -

Improvements

● Service capabilities were improved.

Known Issues

● When turning a liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.

- In systems consisting of multiple units it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware package on each of the units).
  To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.
  After this procedure the system should work fine again.
- After setting "Automatic Standby" to "NO" you have to turn the amplifier completely off via its mains switch for this change to take effect.
- In some older systems setting "Automatic Standby" to "YES" does not have any effect.
- Heavy traffic on the Ethernet could cause the system to slow down a bit.
- When opening and closing the device interlock multiple times within a few milliseconds, the error message E06 "Too low current for amplifier X on bus Y!" might appear in rare cases

1.37 Version 02.45

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_02.45.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA130_BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: This Firmware is suitable for serial numbers < 102179 of BBA150 only! For details see chapter** 3.

New functionality

- -

Modified functionality

- -

Improvements

- Some error entries in the logbook were improved.
- A correction was made concerning the error handling for internal connections between subunits in high power and liquid cooled systems.
- A correction was made concerning the limitation of simultaneously opened Web-MMIs

Known Issues

- When turning a liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
  To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
  This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.

- In systems consisting of multiple units it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware package on each of the units).
  To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.
  After this procedure the system should work fine again.
- After setting "Automatic Standby" to "NO" you have to turn the amplifier completely off via its mains switch for this change to take effect.
- In some older systems setting "Automatic Standby" to "YES" does not have any effect.
- Heavy traffic on the Ethernet could cause the system to slow down a bit.
- When opening and closing the device interlock multiple times within a few milliseconds, the error message E06 "Too low current for amplifier X on bus Y!" might appear in rare cases.

1.38   Version 02.40

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_02.40.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA130_BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: This Firmware is suitable for serial numbers < 102179 of BBA150 only! For details see chapter** 3.

New functionality

- In liquid cooled systems you now have the possibility to request the measured values of the liquid cooling via the new SCPI commands "SENSe:LIQuidcooling:TemperatureIN?", "SENSe:LIQuidcooling:TemperatureOUT?", "SENSe:LIQuidcooling:PRESsure?", "SENSe:LIQuidcooling:PumpsSTATe?", "SENSe:LIQuidcooling:Pump1SPeed?", "SENSe:LIQuidcooling:Pump1FLowrate?", "SENSe:LIQuidcooling:Pump2SPeed?", "SENSe:LIQuidcooling:Pump2FLowrate?", "SENSe:LIQuidcooling:Fan1SPeed?" and "SENSe:LIQuidcooling:Fan2SPeed?".

Modified functionality

- -

Improvements

- The self-protection of the amplifier was improved.
- Numerous corrections were made concerning the DHCP client feature.
- Numerous minor improvements were made concerning the front panel display.
- Numerous minor improvements were made concerning the Web-MMI.
- Numerous minor corrections were made concerning the error handling for internal connections between subunits in high power and liquid cooled systems.
- A minor improvement was made concerning control of the pumps in liquid cooled systems.
- A minor correction was made concerning the detection of defective fans

Known Issues

- When turning a liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
  To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
  This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.

- In systems consisting of multiple units it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware package on each of the units).
  To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.
  After this procedure the system should work fine again.

- After setting "Automatic Standby" to "NO" you have to turn the amplifier completely off via its mains switch for this change to take effect.

- In some older systems setting "Automatic Standby" to "YES" does not have any effect.

- Heavy traffic on the Ethernet could cause the system to slow down a bit.

- When opening and closing the device interlock multiple times within a few milliseconds, the error message E06 "Too low current for amplifier X on bus Y!" might appear in rare cases.

1.39 Version 02.35

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_02.35.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA130_BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: This Firmware is suitable for serial numbers < 102179 of BBA150 only! For details see chapter** 3.

New functionality

● -

Modified functionality

● The menu item "Permanent Power On" was renamed to "Automatic Standby".
● At the front panel the menu "Gain" remains open when pressing the OK button, allowing you to change the gain continuously. The menu can by exited by pressing the BACK button only. Thus, the former menu item "Continuous Gain" is not needed anymore, so it was removed.

Improvements

● Numerous improvements and corrections were made concerning the Web-MMI.
● Numerous minor corrections were made concerning the error handling for internal connections between subunits in high power and liquid cooled systems.
● Numerous improvements and corrections were made concerning the Firmware Update.
● A problem was solved that heavy traffic on the Ethernet could cause the system to stop working after some time when having DHCP Client turned on.

Known Issues

- When turning a liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
  To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
  This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.
- In systems consisting of multiple units it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware package on each of the units).
  To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.
  After this procedure the system should work fine again.
- After setting "Automatic Standby" to "NO" you have to turn the amplifier completely off via its mains switch for this change to take effect.
- In some older systems setting "Automatic Standby" to "YES" does not have any effect.
- Heavy traffic on the Ethernet could cause the system to slow down a bit.
- When opening and closing the device interlock multiple times within a few milliseconds, the error message E06 "Too low current for amplifier X on bus Y!" might appear in rare cases.

1.40 Version 02.30

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_02.30.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA130_BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: This Firmware is suitable for serial numbers < 102179 of BBA150 only! For details see chapter** 3.

New functionality

- The number of active Web-MMIs is now displayed in the top right corner of the Web-MMI. The maximum number of Web-MMIs that can be opened simultaneously is 3. Opening a 4th Web-MMI is denied.

Modified functionality

- -

Improvements

- It is not possible anymore to turn RF-Operate on after it was turned off because of a defective fan.

Known Issues

- When turning a liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
  To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
  This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.

- In systems consisting of multiple units it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware package on each of the units).
  To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.
  After this procedure the system should work fine again.
- After setting "Permanent Power On" to "OFF" you have to turn the amplifier completely off via its mains switch for this change to take effect.
  In some older systems setting "Permanent Power On" to "ON" does not have any effect.

1.41　Version 02.20

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_02.20.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA130_BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: This Firmware is suitable for serial numbers < 102179 of BBA150 only! For details see chapter** 3.

New functionality

- When having bought the option "R&S®BBA-B130 (Fast Amplifier Mute)", you can now activate and deactivate it also via the Web-MMI.
  For this there is a new button "MUTE ON/OFF" in the "Operating Panel"-tab.
- You now have the possibility to change/request the timeout for SCPI remote control also via SCPI commands.
- For changing this timeout there is a new SCPI command "SYSTem:SCPI:TIMEout" and for requesting a new SCPI command "SYSTem:SCPI:TIMEout?".

Modified functionality

- In systems featuring a router for external Ethernet communication the "DHCP-Client" menu item cannot be edited on the Extension Units anymore.

Improvements

- Numerous improvements and corrections were made concerning the Web-MMI.
- Numerous improvements and corrections were made concerning the gain adjustment.
- Numerous improvements were made concerning the detection of a too high RF input signal.
- A minor correction was made concerning the cyclic checks of the temperatures of the amplifier modules.
- A minor correction was made concerning the menus "IP Address", "Subnet Mask" und "Gateway" of the front panel display.

- The problem was solved that in some systems with frequency ranges from 0.8 to 3 GHz and from 2.5 to 6 GHz turning RF-Operate on caused error E73 under certain circumstances

Known Issues

- When turning a liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
  To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
  This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.
- In systems consisting of multiple units it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware package on each of the units).
  To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.
  After this procedure the system should work fine again.
- After setting "Permanent Power On" to "OFF" you have to turn the amplifier completely off via its mains switch for this change to take effect.
- In some older systems setting "Permanent Power On" to "ON" does not have any effect.

1.42 Version 02.12

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_02.12.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA130_BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: This Firmware is suitable for serial numbers < 102179 of BBA150 only! For details see chapter** 3.

New functionality

●   -

Modified functionality

●   -

Improvements

● The problem was solved that in some systems it happened from time to time that after starting the system it stated an internal sporadic error asking you to restart the system

Known Issues

● When turning a liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.

- In systems consisting of multiple units it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware package on each of the units).
  To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.
  After this procedure the system should work fine again.
- After setting "Permanent Power On" to "OFF" you have to turn the amplifier completely off via its mains switch for this change to take effect.
- In some older systems setting "Permanent Power On" to "ON" does not have any effect.

1.43 Version 02.11

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_02.11.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA130_BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: This Firmware is suitable for serial numbers < 102179 of BBA150 only! For details see chapter** 3.

New functionality

● -

Modified functionality

● -

Improvements

● The problem was solved that setting the gain to a negative value did not work in some systems.
● A correction was made concerning the error handling for internal connections between subunits in high power and liquid cooled systems.

Known Issues

● When turning a liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.

- In systems consisting of multiple units it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware package on each of the units).
  To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.
  After this procedure the system should work fine again.
- After setting "Permanent Power On" to "OFF" you have to turn the amplifier completely off via its mains switch for this change to take effect.
- In some older systems setting "Permanent Power On" to "ON" does not have any effect.
- In some systems it might happen from time to time that some of its potentiometers do not work correctly. That case is then automatically detected during the start-up phase, asking you the restart the system.
  After this reboot the system should work fine again.

1.44 Version 02.10

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_02.10.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: This Firmware is suitable for serial numbers < 102179 of BBA150 only! For details see chapter** 3.

New functionality

- You now have the possibility to change the timeout for SCPI remote control.
  For this there is a new item in the main menu of the front panel display called "SCPI Timeout". You can choose between "30 Minutes", which is the recommended default value, and "1 Day".
  In the Web-MMI you can find this new menu item in the "Settings"-tab.
- You now have the possibility to set the host name for the DHCP client.
  For this there is a new item in the main menu of the front panel display called "Host Name".
  In the Web-MMI you can find this new menu item in the "Settings"-tab.
  Additionally to this the host name can also be changed via the new SCPI command "SYSTem:HOSTname <hostname>" and be requested via the new SCPI command "SYSTem:HOSTname?".
  In systems featuring a router for external Ethernet communication changing the host name does not have any effect.
- In the menu "System Info" of the front panel display there is now also being displayed the MAC address of the device.
  In the Web-MMI this information can be found in the "Settings"-tab.

Modified functionality

- The detection of a too high RF input signal was enhanced the following way:
  In case of an RF input level > 0 dBm for the frequency range from 9 kHz to 250 MHz or > 5 dBm for the frequency range from 80 MHz to 1 GHz while having the amplifier in RF-Operate mode there is still being created a matching warning logbook entry stating this fact. This warning is then reset in case of RF input level < -2 dBm for the frequency range from 9 kHz to 250 MHz or < 3 dBm for the frequency range from 80 MHz to 1 GHz.
  Additionally, to this an RF input level > 3 dBm for the frequency range from 9 kHz to 250 MHz or > 9 dBm for the frequency range from 80 MHz to 1 GHz while having the amplifier in RF-Operate mode there is now being handled as an error.
- The gain can now be increased up to +15 dB instead of 0 dB.
- In systems consisting of multiple units the gain cannot be edited on the Extension Units anymore as the gain is completely controlled by the systems Base Unit.
- In the front panel display the former item "Reset Default Settings" was removed from the main menu as this feature is not supported anymore.

Modified functionality

- Numerous improvements were made concerning the turning on and off of RF-Operate.
- A correction was made concerning the gain adjustment.
- The problem was solved that in systems with only one fan the warning W78 occurred.
- The problem was solved that DHCP client did not work correctly with some DHCP servers.
- Numerous minor improvements were made concerning the start of the system.
- Numerous minor improvements and corrections were made concerning the front panel display.
- Numerous minor improvements and corrections were made concerning the Web-MMI.

Improvements

- Numerous improvements were made concerning the turning on and off of RF-Operate.
- A correction was made concerning the gain adjustment.
- The problem was solved that in systems with only one fan the warning W78 occurred.
- The problem was solved that DHCP client did not work correctly with some DHCP servers.
- Numerous minor improvements were made concerning the start of the system.
- Numerous minor improvements and corrections were made concerning the front panel display.
- Numerous minor improvements and corrections were made concerning the Web-MMI.

Known Issues

- When turning a liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
  To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
  This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.
- In systems consisting of multiple units it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware package on each of the units).
  To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.
  After this procedure the system should work fine again.
- After setting "Permanent Power On" to "OFF" you have to turn the amplifier completely off via its mains switch for this change to take effect.
- In some older systems setting "Permanent Power On" to "ON" does not have any effect.
- In some systems it might happen from time to time that some of its potentiometers do not work correctly. That case is then automatically detected during the start-up phase, asking you the restart the system.
  After this reboot the system should work fine again

1.45 Version 02.00

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_02.00.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: This Firmware is suitable for serial numbers < 102179 of BBA150 only! For details see chapter** 3.

New functionality

● The system can now also have and display a warning state besides the known error state.
  Warnings are being signaled with the blinking text "! WARNING!" in the lower left corner of the main view ("System Overview") in the front panel display and with a yellow LED "ERROR" in the Web-MMI.
  Additionally to this also errors are being signaled with the blinking text
  "! ERROR!" in the same lower left corner of the main view ("System Overview") in the front panel display and still with a red LED "ERROR" in the Web-MMI.
  For details about the signaled warnings and errors you are still recommended to check the logbook

Modified functionality

● As some of the internal configurations of the Firmware had to be changed, an initial conversion is necessary after updating to SW-version 02.00 (and higher) from a SW-version 01.96 (and lower). As this takes some time there will appear a message "One-time init in progress... Please wait! This takes some time." on the front panel display in the meantime. You are kindly requested to be patient and not turn off the system during that process.
● The fan control was completely redesigned.
  Additionally, to this fan are also cyclically checked now

Improvements

● Improvements were made concerning the turning on and off of RF-Operate. Especially the problem was solved that in some systems turning RF-Operate on failed with Error E71 from time to time.

- The problem was solved that in some liquid cooled BBL amplifiers turning RF-Operate off caused Error E36 from time to time.
- The self-protection of the amplifier was improved, especially concerning the cyclic checks of the temperatures of the amplifier modules.
- Numerous minor improvements and corrections were made concerning the front panel display.
- Numerous minor improvements and corrections were made concerning the Web-MMI.

Known Issues

- When turning a liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
  To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
  This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.
- In systems consisting of multiple units it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware package on each of the units).
  To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.
  After this procedure the system should work fine again.
- After setting "Permanent Power On" to "OFF" you have to turn the amplifier completely off via its mains switch for this change to take effect.

1.46 Version 01.96

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_01.96.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: This Firmware is suitable for serial numbers < 102179 of BBA150 only! For details see chapter** 3.

New functionality

● -

Modified functionality

● -

Improvements

● Improvements were made concerning the turning on and off of RF-Operate.
● A correction was made concerning the gain adjustment.
● A correction was made concerning control of the power supplies.

Known Issues

● When turning a liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.

● In systems consisting of multiple units it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware package on each of the units).
To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.
After this procedure the system should work fine again.

1.47 Version 01.95

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_01.95.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: This Firmware is suitable for serial numbers < 102179 of BBA150 only! For details see chapter** 3.

New functionality

- For liquid cooled systems there is a new sub menu called "Liquid Cooling" in the front panel display, where you can find the measured values from the liquid cooling as well as from its pumps and heat exchanger fans, if applicable. According to this there is also a new tab "Liquid Cooling" in the Web-MMI.
- In the front panel display you now have the possibility to edit the gain without leaving the gain sub menu.
  For this there is a new item in the main menu of the front panel display called "Continuous Gain: ON/OFF". Setting this persistent value to "ON" causes the gain sub menu to remain opened when pressing OK in it. Setting the value to "OFF" causes gain sub menu to act the formerly known way.
- The Web-MMI now also features the new LED "MUTE RDY" as well as the blinking mode for the LEDs "RF ON", "LOCAL" and "ERROR".
- The system now supports limiting the number of simultaneously open remote control sessions via SCPI, causing additional new connections to be automatically terminated right away after opening when having reached the maximum number of connections.
  By default this is set to 12 connections. You can contact your R&S service if you would like to have another maximum value.
- You now have the possibility to make your SCPI remote control session an exclusive one. You can use the new command "SYST:EXCL:REQ?" to request exclusive SCPI control, the new command "SYST:EXCL:REL" to release it again and the new command "SYST:EXCL:OWN?" to get information whether your current session has exclusive control or not.
  When trying to execute commands on another SCPI session while exclusive control was requested by a SCPI session these commands are ignored and a new entry with code -203 and text "Command protected!" will be added to the error queue.

● A too high RF input signal is detected now. In case of an RF input level > 3 dB while having the amplifier in RF-Operate mode there is now being created a matching warning logbook entry stating this fact. This works for all frequency ranges except for the ones from 0.8 to 3 GHz and from 2.5 to 6 GHz.

Modified functionality

● In the MMIs IP-Addresses, subnet mask and the gateway address are now displayed without leadings zeros.
● The sub menu "Legal Notices" was renamed to "Legal Information".
● Remote control via SCPI is not available anymore while the system is still in the start-up phase.
  When trying to execute SCPI commands during that phase these commands are ignored and a new entry with code -221 and text "Settings conflict!" will be added to the error queue.
● Gain adjustment can now be done in steps of 0.01 dB instead of 0.1 dB before. This concerns the gain sub menu in the MMIs as well as the SCPI commands "CONT<X>:AMOD:FGA" and "CONT<X>:AMOD:FGA?".
● The bias currents were decreased for the frequency range from 0.8 to 3 GHz and increased for the frequency range from 80 MHz to 1 GHz.
● The temperature compensation of the system is turned off by default now.

Improvements

● The Web-MMI was optimized for different screen sizes/resolutions and dynamic resizing so that it can also be used very well on smartphones and tablets. Additionally to this many other minor improvements and corrections were made concerning the Web-MMI.
● Numerous improvements and corrections were made concerning the start of the system.
● Numerous improvements were made concerning the turning on and off of RF-Operate.
● Numerous improvements concerning the system behavior in case of errors.
● Minor corrections were made concerning the gain adjustment.
● Error handling for internal connections between subunits in high power and liquid cooled systems was improved in many ways.
● The automatic power reduction to half of the nominal power in case of errors (too high VSWR and defective coupler fans) was stabilized.
● In systems consisting of multiple units and featuring multiple frequency ranges displaying of the measured power values works for all frequency ranges now.
● The problem was solved that in systems consisting of multiple units and featuring multiple frequency ranges the adjusted gain of the base unit was not used for the frequency ranges of the other units.
● The problem was solved that when removing the input signal completely while having the amplifier in RF-Operate mode the previous measured power values were still displayed.
● The problem was solved that the value returned by the SCPI-command "RF:ISW:STAT?" was always the same instead of the real position of the input switch.

● The problem was solved that the INTERLOCK-LED was sometimes flashing during a Firmware Update.

Known Issues

● When turning a liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.

● In systems consisting of multiple units it might happen that some of the units do not finish their start-up phase when having different Firmware versions installed on them (which is the case after having forgotten to install a new Firmware package on each of the units).
To prevent this, you are kindly requested to execute the following steps. Unplug the Ethernet cable from each of the units. Reboot the system and wait some minutes until all units have finished their start-up phase with an error. Plug in the Ethernet cables again. Install the Firmware package on all units making sure to really not forget one of the units. After finished Firmware Update reboot the system again.
After this procedure the system should work fine again.

1.48 Version 01.92

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_01.92.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: This Firmware is suitable for serial numbers < 102179 of BBA150 only! For details see chapter** 3.

New functionality

● -

Modified functionality

● -

Improvements

● Numerous improvements concerning control of the amplifier modules

Known Issues

● When turning a liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.

1.49 Version 01.91

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_01.91.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: This Firmware is suitable for serial numbers < 102179 of BBA150 only! For details see chapter** 3.

New functionality

● The "Open Source Acknowledgment" is now part of the Firmware package.
● There is a new sub menu called "Legal Notices" in the front panel display, where you can find some statements about the Firm- and Software licenses.
● According to this there is also a new tab "Legal Notices" in the Web-MMI, which additionally leads you to the online version of our "Open Source Acknowledgment".

Modified functionality

● -

Improvements

● The problem was solved that in some cases the system got mixed up when opening an interlock loop and closing it again straight afterwards while turning RF-Operate on.
● Error handling for internal connections between subunits in high power and liquid cooled systems was improved in quite some ways.
One of this is that you will now get the new error message E64 "Connecting to Base Unit failed!" in case of no connection from Extension to Base Unit at system start-up.
Another thing is that you will now get the new error message E65 "Extension Unit X is not in REMOTE mode!" in case of an Extension Unit being in LOCAL instead of REMOTE mode.
● The problem was solved that the "Alarm" (pin 24) of the interface "X105 Control Interface" was not set correctly at system start-up when the system had an error before.

- The problem was solved that in rare cases the ERROR-LED was not turned off when turning RF-Operate on.
- The problem was solved that the bus and module numbers were interchanged for error messages E01-E06 and E53

Known Issues

- When turning a liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
  To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
  This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.

1.50　Version 01.90

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_01.90.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: This Firmware is suitable for serial numbers < 102179 of BBA150 only! For details see chapter** 3.

New functionality

- RF Sample Port Switches are supported now. They can be controlled via the new SCPI remote control commands "RF: PROB: STAT" and "RF: PROB: STAT?" when being installed in your system.

Modified functionality

- As some of the internal configurations of the Firmware had to be changed, an initial conversion is necessary after updating to SW-version 01.90 (and higher) from a SW-version 01.81 (and lower). As this takes some time there will appear a message "One-time init in progress... Please wait! This takes some time." on the front panel display in the meantime. You are kindly requested to be patient and not turn off the system during that process
- Numerous changes were made concerning the system start-up, especially for high power and liquid cooled systems

Improvements

- The self-protection of the amplifier was improved in quite some ways.
  One of this is that now also the driver currents of the amplifier modules are observed. So, in case of a too high driver current you will now get the new error message E62 "Too high driver current for amplifier X on bus Y!", and E63 "Too low driver current for amplifier X on bus Y!" in case of a too low driver current, of course.
- The problem was solved that in rare cases the error message E06 "Too low current for amplifier X on bus Y!" appeared when opening an interlock loop.
- The problem was solved that Ethernet connections were terminated when having DHCP Client turned on and the timeout of the DHCP servers lease time caused reassignment of the IP address.

- Numerous improvements concerning the system behavior in case of errors.
- Numerous improvements concerning control of the pumps and heat exchanger fans in liquid cooled systems.
- Numerous minor improvements and corrections concerning the Firmware Update.
- Numerous minor improvements concerning the layout and handling in the Web-MMI.
- Numerous minor improvements and corrections concerning the gain control.

Known Issues

- When turning a liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
  To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
  This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.

1.51 Version 01.81

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_01.81.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: This Firmware is suitable for serial numbers < 102179 of BBA150 only! For details see chapter** 3.

New functionality

● -

Modified functionality

● -

Improvements

● Numerous improvements concerning control of the heat exchanger fans in liquid cooled systems.
● The problem was solved that in extremely rare cases RF-Operate was not turned off in reaction to a newly-occurred error.

Known Issues

● When turning a liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation

1.52 Version 01.80

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_01.80.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device

New functionality

● In liquid cooled systems heat exchangers can be automatically controlled by the system now.

Modified functionality

● The message "RF Operate ON" (pin 22) of the interface "X105 Control Interface" is now also being initially served on system startup

Improvements

● Numerous improvements concerning control of the pumps in liquid cooled systems.
● Numerous improvements concerning the system behavior in case of errors.
● Numerous minor improvements concerning the layout and handling in the Web-MMI.
● Numerous minor improvements concerning the router of liquid cooled systems for external Ethernet communication.
● Numerous minor improvements and corrections were made concerning the Firmware Update.

Known Issues

- When turning a liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
  To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
  This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation

1.53 Version 01.70

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_01.70.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: This Firmware is suitable for serial numbers < 102179 of BBA150 only! For details see chapter** 3.

New functionality

● The system now supports up to 32 RF-Paths.
  Therefore in systems with more than 2 RF-Paths there is a new sub menu called "RF-Path Selection" in the front panel display, where all possible RF-Paths are displayed and the currently selected one is marked by a right arrow on the left hand side. When being in local mode another RF-Path can be selected by going to it with the cursor and pressing OK.
  In the Web-MMI you can find this new menu item in the "Operating panel"-tab.
  The existing SCPI remote control commands "RF:BAND:PATH", "RF:BAND:PATH?", "CONTrol<X>AMODe:FGAin" and "CONTrol<X>AMODe:FGAin?" were respectively enhanced.
● You now have the possibility to adjust the gateway address of the system.
  For this there is a new item in the main menu of the front panel display called "Gateway".
  In the Web-MMI you can find this new menu item in the "Settings"-tab.
  SCPI remote control also supports this feature with the new command "SYSTem:GATEway" for setting and the new command "SYSTem:GATEway?" for requesting the gateway address

Modified functionality

● -

Improvements

● Numerous improvements concerning control of the pumps in liquid cooled systems.
● The problem was solved that editing the IP settings was not possible in some cases.

Known Issues

● When turning a liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation.

1.54 Version 01.63

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_01.63.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: This Firmware is suitable for serial numbers < 102179 of BBA150 only! For details see chapter** 3.

New functionality

● Systems with a nominal power up to 10 kW for the frequency range from 9 kHz to 225 MHz are supported now

Modified functionality

● -

Improvements

● Minor corrections concerning the updating of changed IP settings in the front panel display.

Known Issues

● When turning a liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation

1.55　Version 01.62

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_01.62.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: This Firmware is suitable for serial numbers < 102179 of BBA150 only! For details see chapter** 3.

New functionality

- The system now also supports the frequency range from 80 MHz to 1 GHz with a nominal power up to 1 kW. Also, combination of this frequency range with the frequency range from 9 kHz to 250 MHz together in one system is possible now.
- The system now serves the messages "State Group Interlock Loop" (pin 20), "RF Operate ON" (pin 22) and "Alarm" (pin 24) of the interface "X105 Control Interface".
- You now have the possibility to tell the system that it should stay permanently switched on and thus also automatically switch on after something like a power failure.
  For this there is a new item in the main menu of the front panel display called "Permanent Power On: ON/OFF".
  In the Web-MMI you can find this new menu item in the "Settings"-tab.
  SCPI remote control also supports this feature with the new commands "SYSTem:POWer:PERManent" for setting and "SYSTem:POWer:PERManent?" for requesting the state of this feature.
- In case of turning the system off with the Web-MMI still being open, the Web-MMI now displays a message "Connection to device lost! The Web-MMI will be closed now." after a short period of time.

Modified functionality

- For switching the system OFF the STANDBY button has to be pressed for at least 1 second now.
- For high power systems (consisting of more than one unit) the SCPI-command "*RST" now automatically resets all Extension Units when being called on the Base Unit

Improvements

- Numerous improvements were made concerning the self-protection and error-detection mechanisms.
- Numerous improvements were made concerning the turning on and off of RF-Operate.
- Numerous improvements and corrections were made concerning the Firmware Update.
- Measured power values higher than 1 kW are rounded in steps of 0.1 kW now. Additionally, to this the bar display of the measured power values was improved.
- The problem was solved that the option "R&S®BBA-B130 (Fast Amplifier Mute)" did not work correctly in high power systems (consisting of more than one unit).
- The problem was solved that extremely fast toggling (< 100 ms) of the Interlock loops was not handled correctly by the system.
- For liquid cooled systems a problem was solved that in some rare cases the system could not connect to the router for external Ethernet communication when starting up

Known Issues

- When turning a liquid cooled BBL amplifier off using the power switch S1 at the back of the rack while having the amplifier in RF-Operate mode and turning it on again using that switch only (without pressing the STANDBY button afterwards), the pump of the liquid cooling might still be running, which may cause condensation.
  To prevent this, you are kindly requested when switching the amplifier on again using the power switch S1 at the back to also press the STANDBY button at the front panel.
  This procedure ensures that the liquid cooling does not run unnecessarily and avoids possible condensation

1.56 Version 01.51

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_01.51.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: This Firmware is suitable for serial numbers < 102179 of BBA150 only! For details see chapter** 3.

New functionality

● You now have the possibility to request the details of the installed firmware via the new SCPI command "SYSTem:FWVersion?".
Additionally, to this these details can also be seen in the sub menu "System Info" of the front panel display and in the "Settings"-tab of the Web-MMI.

Modified functionality

● -

Improvements

● A problem was solved that value returned by the SCPI-command "SENSe:REFLected?" was always in dBm instead of the selected power unit.
● A problem was solved that in very rare cases it could happen that the Firmware Update stopped with an error right after starting it.
● A problem was solved that using the Web-MMI with very old web browsers could cause the system to stop working after some time.
● Numerous improvements for liquid cooled systems concerning the self-protection and error-detection mechanisms.
● Numerous improvements for liquid cooled systems concerning the turning on/off of the liquid cooling.
● Numerous improvements concerning unnecessary messages in the logbook.
● Numerous improvements concerning the router of liquid cooled systems for external Ethernet communication

Known Issues

● -

1.57 Version 01.50

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_01.50.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: This Firmware is suitable for serial numbers < 102179 of BBA150 only! For details see chapter** 3.

New functionality

- The system now also supports the frequency range from 9 kHz to 225 MHz for liquid cooled systems with a nominal power up to 3000 W and 9 kHz to 250 MHz for air cooled systems with a nominal power up to 200 W.
- In case of timeout (1 minute) for acquiring an IP address with activated DHCP client mode there is now being created a matching logbook entry stating this fact.

Modified functionality

- The RF-LED is blinking now while turning on/off of RF-Operate is in progress.

Improvements

- Numerous minor improvements and corrections were made concerning the start of the system and the MMIs.
- For high power systems (consisting of more than one unit) switching RF-Operate off in case of errors was improved.

Known Issues

- -

1.58 Version 01.40

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_01.40.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: This Firmware is suitable for serial numbers < 102179 of BBA150 only! For details see chapter** 3.

New functionality

● You now have the possibility to adjust the gain of the amplifier in the range of -25.0 up to 0.0 dB in steps of 0.1 dB.
  For this there is a new item in the main menu of the front panel display called "Gain".
  In the Web-MMI you can find this new menu item in the "Settings"-tab.
  SCPI remote control also supports this feature with the new command(s) "CONT1:AMOD:FGA" / "CONT2:AMOD:FGA" for setting the gain of RF-Path 1 / 2 and the new command(s) "CONT1:AMOD:FGA?" / "CONT2:AMOD:FGA?" for requesting the currently set gain of RF-Path 1 / 2.

Modified functionality

● A minor change concerning white spaces in texts of GPIB errors entries of the GPIB Error Queue returned by the SCPI-command "SYST:ERR?" was made.
● In high power systems (consisting of more than one unit) the logbook of the base unit now also displays the error messages which occurred on the extension units

Improvements

● A minor problem with the texts of GPIB errors entries of the GPIB Error Queue returned by the SCPI-command "SYST:ERR?" was solved.
● Switching high power systems (consisting of more than one unit) off works now even while RF-Operate is still turned on

Known Issues

● -

1.59 Version 01.31

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_01.31.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: This Firmware is suitable for serial numbers < 102179 of BBA150 only! For details see chapter** 3.

New functionality

● -

Modified functionality

● The end of line sign for SCPI remote control was changed from ASCII Dec. 13 (Hex. 0D; CR = carriage return) to ASCII Dec.10 (Hex. 0A; LF = line feed).
Thus, it is now possible to use SCPI remote control also via GPIB with the help of GPIB to LAN converters like the 4865B GPIB-to-LAN Interface from ICS.

Improvements

● -

Known Issues

● -

1.60 Version 01.30

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_01.30.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: This Firmware is suitable for serial numbers < 102179 of BBA150 only! For details see chapter** 3.

New functionality

● High power systems consisting of more than one unit are supported now

Modified functionality

● The texts of entries of the GPIB Error Queue returned by the SCPI-command "SYST:ERR?" do not contain any obsolete trailing white spaces anymore.

Improvements

● "Clear Logbook" can now also be triggered via the Web-MMI
● Numerous improvements and corrections were made concerning the Firmware Update.

Known Issues

● -

1.61 Version 01.20

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_01.20.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: This Firmware is suitable for serial numbers < 102179 of BBA150 only! For details see chapter** 3.

New functionality

- The system now supports combination of both frequency ranges (0.8 to 3.0 GHz and 2.5 to 6.0 GHz) in one system. Selecting the frequency range can be done via the new menu item "Range" and the new SCPI-command "RF: BAND: PATH".
- The system now supports the option "R&S®BBA-B130 (Fast Amplifier Mute)". When having bought this option, you can activate and deactivate it via the "X105 Control Interface" and the new SCPI-command "RF:MUTe:STATus".
- The system now supports the option "R&S®BBA-B160 (Transparent I/O)" for use of the interface "X106 Transparent IO". You can request the status of the inputs 6-9 via new the SCPI-command "SYSTem:TRIO<6..9>?" and set the status of the outputs 1-4 via the new SCPI-command "SYSTem:TRIO<1..4>".
- The system now supports the option "R&S®BBA-B110 (RF Input Switch)" for use of an RF input switch and therefore perfect integration in systems with the R&S®BBA100. The position of the input switch can be set via new the SCPI-command "RF:ISWitch:STATus" and requested via the new SCPI-command "RF:ISWitch:STATus?".

Modified functionality

- -

Improvements

- The temperature compensation of the system was improved.
- The firmware update ensures now 100% safe updating of the FPGA as well the SW.
- Changing the IP address after just having turned DHCP client off works now without a restart of the system.

- The problem was solved that the display data in the front panel display menu "System Info" was flickering when having no Ethernet connected.
- The problem was solved that changes of the power unit via the SCPI-command "UNIT:POWer" did not affect the Web-MMI until having switched the system to LOCAL-mode.

Known Issues

- -

1.62 Version 01.14

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_01.14.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: This Firmware is suitable for serial numbers < 102179 of BBA150 only! For details see chapter** 3.

New functionality

● -

Modified functionality

● -

Improvements

● -

Known Issues

● -

1.63   Version 01.13

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_01.13.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: This Firmware is suitable for serial numbers < 102179 of BBA150 only! For details see chapter** 3.

New functionality

● -

Modified functionality

● For the frequency range from 2.5 to 6.0 GHz the bias currents were adjusted.

Improvements

● -

Known Issues

● -

1.64　Version 01.12

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_01.12.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: This Firmware is suitable for serial numbers < 102179 of BBA150 only! For details see chapter** 3.

New functionality

- The system now also supports the frequency range from 2.5 to 6.0 GHz.
- The system now supports Ethernet hot-plugging, so that any changes in the Ethernet settings and network take immediate effect without having to restart the system.
- The detected Ethernet connection parameters (speed, duplex mode) are now displayed in the menu "System Info" of the front panel display and, in the tab, "Settings" of the Web-MMI.
- The firmware update now also supports update of the FPGA.
- The firmware update tool now displays the SW- and FPGA-version of the connected system as well as the ones of the update bundle.
- The firmware update tool now provides the possibility of a manual soft reset of the system after a successful update. But this only works in case that only the SW was updated, because after an update of the FPGA a hard reset is necessary.
- After a successful firmware update there are now being created matching logbook entries stating the update including the new version number.
- The logbook in the front panel display now displays the logbook entry number of the central logbook entry at the very left of it, so that you know where in the logbook you currently are when navigating through it.
- In the logbook in the front panel display you now have the possibility to navigate 10 entries forward by pressing the right cursor key as well as 10 entries backward by pressing the left cursor key.
- You now have the possibility to do a soft-reset of the system via the new SCPI command "*RST".
- You now have the possibility to change the Ethernet settings of the system via the new SCPI commands "SYSTem:IPADDress <ipaddress>", "SYSTem:MASK <mask>", "SYSTem:DHCPclient <mode>". Additionally to this you can also request these settings via the new SCPI commands "SYSTem:IPADDress?", "SYSTem:MASK?", "SYSTem:DHCPclient?", of course.
- In the Web-MMI now there is a new tab "Logbook", where you can see the whole logbook of the system

Modified functionality

- -

Improvements

- -

Known Issues

- -

1.65 Version 01.11

Software package content

Name of file	Description
SW_BBA130_BBA150_BBL200_APPLICATION_01.11.zip	This ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory. Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device. **Attention: This Firmware is suitable for serial numbers < 102179 of BBA150 only! For details see chapter** 3.

New functionality

● -

Modified functionality

● The bias currents were increased.

Improvements

● -

Known Issues

● -

2 Modifications to the documentation

The current documentation is up-to-date.

3 Firmware update

Further information

● For detailed instructions and information about the Firmware Update refer to the chapter named "Software Update" in the User's Manual

3.1 Update information

3.1.1 General

Downgrading to lower version numbers than the installed one is not supported.

3.1.2 Serial numbers < 102179 of BBA150

On serial numbers < 102179 of BBA150 updating the Firmware is supported from a version with any lower version number up to any version with a higher version number lower than 03.00.

3.1.3 BBA130, BBL200 and serial numbers >= 102179 of BBA150

On BBA130, BBL200 and serial numbers >= 102179 of BBA150 updating the Firmware is supported from a version with any lower version number starting with version 02.12 up to any version with a higher version number considering the following restrictions:

● As Firmware versions < 03.00 and >= 03.00 are not compatible, updating from versions < 03.00 to versions >= 03.00 can be done by authorized Rohde & Schwarz service personell only.
● Customers with installed Firmware versions >= 02.12 can update up to versions < 03.00 only.
● Customers with installed Firmware versions >= 03.00 can update to any version with a higher version number.

3.2 Updating the Firmware

The ZIP-archive contains the files "swUpdateBBA.exe", "mainapp.flash", "fpga.flash", "failsafe.flash", "bba150.xml" and "BBA150_BBL200_OSS-Acknowledgment.pdf" and must be extracted to any directory.
Then the file "swUpdateBBA.exe" has to be executed. It then automatically uses the other files to update the device.

When restarting the system for the first time after a finished update an initial reset and/or conversion of internal configuration tables might be automatically executed once.
As this takes some time there will appear a message "One-time init in progress... Please wait! This takes some time." on the front panel display in the meantime. You are kindly requested to be patient and not turn off the system during that process.

4 Customer support

Technical support – where and when you need it

For quick, expert help with any Rohde & Schwarz product, contact our customer support center. A team of highly qualified engineers provides support and works with you to find a solution to your query on any aspect of the operation, programming or applications of Rohde & Schwarz products.

Contact information

Contact our customer support center at www.rohde-schwarz.com/support or follow this QR code:

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