

# R&S®BBA150/BBL200

## Release Notes

### Software Version 02.75

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

The following abbreviations are used throughout this document: R&S®BBA150/BBL200 is abbreviated as R&SBBA150/BBL200

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# 1 Information on the current version and history

## 1.1 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.

## 1.2 Version 02.70

### Software package content

Name of file	Description
SW_BBA150_BBL200_APPLICATION_02.70.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.

### 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.

## 1.3 Version 02.66

### Software package content

Name of file	Description
SW_BBA150_BBL200_APPLICATION_02.66.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

- -

### 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.

## 1.4 Version 02.65

### Software package content

Name of file	Description
SW_BBA150_BBL200_APPLICATION_02.65.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

- -

### 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.

## 1.5 Version 02.60

### Software package content

Name of file	Description
SW_BBA150_BBL200_APPLICATION_02.60.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

- -

### 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.
- 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.

## 1.6 Version 02.56

### Software package content

Name of file	Description
SW_BBA150_BBL200_APPLICATION_02.56.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

- -

### 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 E006 "Too low current for amplifier X on bus Y!" might appear in rare cases

## 1.7 Version 02.55

### Software package content

Name of file	Description
SW_BBA150_BBL200_APPLICATION_02.55.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

- -

### 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.

## 1.8 Version 02.52

### Software package content

Name of file	Description
SW_BBA150_BBL200_APPLICATION_02.52.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

- -

### 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.

## 1.9 Version 02.51

### Software package content

Name of file	Description
SW_BBA150_BBL200_APPLICATION_02.51.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.

### 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.

## 1.10 Version 02.50

### Software package content

Name of file	Description
SW_BBA150_BBL200_APPLICATION_02.50.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.

### 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

## 1.11 Version 02.47

### Software package content

Name of file	Description
SW_BBA150_BBL200_APPLICATION_02.47.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

- -

### 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.

## 1.12 Version 02.46

### Software package content

Name of file	Description
SW_BBA150_BBL200_APPLICATION_02.46.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

- -

### 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

## 1.13 Version 02.45

### Software package content

Name of file	Description
SW_BBA150_BBL200_APPLICATION_02.45.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

- -

### 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.

## 1.14 Version 02.40

### Software package content

Name of file	Description
SW_BBA150_BBL200_APPLICATION_02.40.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.

### 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.

## 1.15 Version 02.35

### Software package content

Name of file	Description
SW_BBA150_BBL200_APPLICATION_02.35.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

- -

### 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 be 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.

## 1.16 Version 02.30

### Software package content

Name of file	Description
SW_BBA150_BBL200_APPLICATION_02.30.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.

### 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.

## 1.17 Version 02.20

### Software package content

Name of file	Description
SW_BBA150_BBL200_APPLICATION_02.20.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.

### 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

## 1.18 Version 02.12

### Software package content

Name of file	Description
SW_BBA150_BBL200_APPLICATION_02.12.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.

### 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.

## 1.19 Version 02.11

### Software package content

Name of file	Description
SW_BBA150_BBL200_APPLICATION_02.11.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.

### 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.

## 1.20 Version 02.10

### Software package content

Name of file	Description
SW_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.

### 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

## 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 to restart the system.  
After this reboot the system should work fine again.

## 1.21 Version 02.00

### Software package content

Name of file	Description
SW_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.

### 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

## 1.22 Version 01.96

### Software package content

Name of file	Description
SW_BBA150_BBL200_APPLICATION_1.96.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.

### 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

## 1.23 Version 01.95

### Software package content

Name of file	Description
SW_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.

### 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 leading 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.

## 1.24 Version 01.92

### Software package content

Name of file	Description
SW_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.

### 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.

## 1.25 Version 01.91

### Software package content

Name of file	Description
SW_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.

### 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

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### 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.

## 1.26 Version 01.90

### Software package content

Name of file	Description
SW_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.

### 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.

## 1.27 Version 01.81

### Software package content

Name of file	Description
SW_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.

### New functionality

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### Modified functionality

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### 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.



## 1.28 Version 01.80

### Software package content

Name of file	Description
SW_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.

## 1.29 Version 01.70

### Software package content

Name of file	Description
SW_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.

### 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

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### 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

## 1.30 Version 01.63

### Software package content

Name of file	Description
SW_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.

### 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

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### 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

## 1.31 Version 01.62

### Software package content

Name of file	Description
SW_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.

### 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.

## 1.32 Version 01.51

### Software package content

Name of file	Description
SW_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.

### 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

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### 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

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## 1.33 Version 01.50

### Software package content

Name of file	Description
SW_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.

### 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

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## 1.34 Version 01.40

### Software package content

Name of file	Description
SW_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.

### 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

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## 1.35 Version 01.31

### Software package content

Name of file	Description
SW_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.

### New functionality

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### 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

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### Known Issues

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## 1.36 Version 01.30

### Software package content

Name of file	Description
SW_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.

### 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

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## 1.37 Version 01.20

### Software package content

Name of file	Description
SW_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.

### 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

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### 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

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## 1.38 Version 01.14

### Software package content

Name of file	Description
SW_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.

### New functionality

- -

### Modified functionality

- -

### Improvements

- -

### Known Issues

- -

## 1.39 Version 01.13

### Software package content

Name of file	Description
SW_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.

### New functionality

- -

### Modified functionality

- -

### Improvements

- -

### Known Issues

- -

## 1.40 Version 01.12

### Software package content

Name of file	Description
SW_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.

### 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

- -

## 1.41 Version 01.11

### Software package content

Name of file	Description
SW_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.

### 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

Updating the Software is supported from a version with a lower version number up to any version with a higher version number.

This means that on one hand downgrading is not supported but on the other hand there are no restrictions for updating.

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.

### 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

## 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](http://www.rohde-schwarz.com/support) or follow this QR code:



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