



**ROHDE & SCHWARZ**

Test and Measurement  
Division

## **Release Notes**

# **1xEV-DO Base Station Test Application Firmware R&S FS-K84**

## **Release 4.70 with Service Pack 1**

for R&S FSP, FSU, FSQ, FSG, FSMR, FSUP  
Analyzer Firmware 4.7x

**Release Note Revision: 3**

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## History

| <b>Date</b>      | <b>Rel Note Rev</b> | <b>Changes</b>                                     |
|------------------|---------------------|--|
| 21 April 2011    | 1                   | First revision for R&S FS-K84 Firmware 4.70.       |
| 08 August 2012   | 2                   | Improvements with Service Pack 1 added.            |
| 06 February 2014 | 3                   | Update according to new operating manual revision. |

## General Topics

### Compatibility of R&S FS-K84 1xEV-DO BTS Application Firmware

The following table shows the compatible version of the basic spectrum firmware version and the 1xEV-DO BTS application firmware:

**Table of compatible versions:**

| R&S FS-K84<br>Application<br>Firmware | R&S FSP<br>Basic<br>Firmware | R&S FSU<br>Basic<br>Firmware | R&S FSQ<br>Basic<br>Firmware | R&S FSMR<br>Basic<br>Firmware | R&S FSUP<br>Basic<br>Firmware | R&S FMU<br>Basic<br>Firmware | R&S FSG<br>Basic<br>Firmware |
|---------------------------------------|------------------------------|------------------------------|------------------------------|-------------------------------|-------------------------------|------------------------------|------------------------------|
| 4.70 SP1                              | -                            | 4.71 SP5                     | 4.75 SP5                     | -                             | -                             | -                            | 4.79 SP5                     |
| 4.70 SP1                              | -                            | 4.71 SP4                     | 4.75 SP4                     | -                             | -                             | -                            | 4.79 SP4                     |
| 4.70                                  | -                            | 4.71                         | 4.75                         | -                             | -                             | -                            | 4.79                         |
| 4.60                                  | -                            | 4.61                         | 4.65                         | -                             | 4.67                          | -                            | 4.69                         |
| 4.50                                  | 4.50                         | 4.51                         | 4.55                         | -                             | -                             | -                            | 4.59                         |
| 4.40 SP1                              | -                            | -                            | -                            | -                             | 4.47                          | -                            |                              |
| 4.40                                  | 4.40                         | 4.41                         | 4.45                         | -                             | -                             | -                            | 4.49                         |
| 4.30                                  | 4.30                         | 4.31                         | 4.35                         | 4.36                          | 4.37                          | 4.38                         | 4.39                         |
| 4.21                                  | 4.20                         | 4.21                         | 4.25                         | 4.26                          | 4.27                          | -                            | 4.29 SP1                     |
| 4.20                                  | -                            | -                            | -                            | -                             | -                             | -                            | 4.29                         |
| 4.10                                  | 4.10                         | 4.11                         | 4.15                         | 4.16                          | 4.17                          | -                            | -                            |
| 4.00                                  | 4.00                         | 4.01                         | 4.05                         | 4.06                          | -                             | -                            | -                            |
| 3.90                                  | 3.90                         | 3.91                         | 3.95                         | 3.96                          | 3.99                          | -                            | -                            |
| 3.80                                  | 3.80                         | 3.81                         | 3.85                         | 3.86                          | -                             | -                            | -                            |
| 3.70                                  | 3.70                         | 3.71                         | 3.75                         | -                             | -                             | -                            | -                            |
| 3.60                                  | 3.60                         | 3.61                         | 3.65                         | 3.66 SP1                      | -                             | -                            | -                            |
| 3.50                                  | 3.50                         | 3.51                         | 3.55                         | -                             | -                             | -                            | -                            |
| 3.40                                  | 3.40                         | 3.41                         | 3.45                         | -                             | -                             | -                            | -                            |
| 3.30                                  | 3.30                         | 3.31                         | 3.35                         | -                             | -                             | -                            | -                            |
| 3.28                                  | 3.20                         | 3.21                         | 3.25                         | -                             | -                             | -                            | -                            |
| 3.24                                  | 3.10                         | 3.11                         | 3.15                         | -                             | -                             | -                            | -                            |
| 3.20                                  | 3.00                         | -                            | 3.05                         | -                             | -                             | -                            | -                            |
| 2.80                                  | 2.80                         | 2.81                         | -                            | -                             | -                             | -                            | -                            |
| 2.60                                  | 2.60                         | 2.61                         | -                            | -                             | -                             | -                            | -                            |
| 2.40                                  | 2.40                         | 2.41                         | 2.45                         | -                             | -                             | -                            | -                            |
| 2.30                                  | 2.30                         | 2.31                         | 2.35                         | -                             | -                             | -                            | -                            |

| R&S FS-K84<br>Application<br>Firmware | R&S FSP<br>Basic<br>Firmware | R&S FSU<br>Basic<br>Firmware | R&S FSQ<br>Basic<br>Firmware | R&S FSMR<br>Basic<br>Firmware | R&S FSUP<br>Basic<br>Firmware | R&S FMU<br>Basic<br>Firmware | R&S FSG<br>Basic<br>Firmware |
|---------------------------------------|------------------------------|------------------------------|------------------------------|-------------------------------|-------------------------------|------------------------------|------------------------------|
| 2.28                                  | 2.20                         | 2.21                         | 2.25                         | -                             | -                             | -                            | -                            |
| 2.24                                  | 2.10                         | 2.11                         | 2.15                         | -                             | -                             | -                            | -                            |
| 1.20                                  | 1.80                         | 1.81                         | 1.85                         | -                             | -                             | -                            | -                            |

Application firmware versions 3.xx are running on R&S FSPs with order # 1164.4391.xx or R&S FSU with order # 1166.1660.xx or R&S FSQ with operating system XP.

Application firmware version 2.xx are running on R&S FSPs with order # 1093.4495.xx or R&S FSU with order # 1129.9003.xx or R&S FSQ with operating system NT.

## Firmware Update of R&S FS-K84 1xEV-DO BTS Application Firmware

Since basic firmware version 4.2x a ZIP file with the update sets of the basic system firmware and all available applications is provided. This ZIP file is available in the instruments FIRMWARE section, e.g. R&S FSU of the Service Board on GLORIS.

Please follow the steps described in the instrument's basic firmware release note to perform a complete firmware update.

## Enabling the Application Firmware via License Key Code Entry

This section can be skipped if the option key was entered once.

After installing the application firmware package a license key for validation must be entered. The license key is printed either on a label on the rear panel of the analyzer or delivered as a part of the R&S FS-K84 1xEV-DO BTS application firmware package.

The key sequence for entering the license key is:

SETUP - GENERAL SETUP – OPTIONS - INSTALL OPTION

Use the numeric keypad to input the license key number and press ENTER.

- On successful validation the message 'option key valid' will appear.
- If the validation failed, the application firmware will not be installed.  
The most likely reason will be that the instrument is not equipped with the correct basic firmware version. In this case a message box will appear asking for installation of the correct basic firmware version.  
If the application firmware package was not installed prior to entering the license key code, a message will appear asking for installation of the application firmware package.  
**In any case please make sure that the correct basic firmware version and the application firmware package is installed prior to entering the license key code.**

## New Functions in version 4.70

None

## Improvements

None.

## Improvements with Service Pack 1

The version numbers in brackets indicate the version in which the issue was observed for the first time.

1. [V4.70] The preamble search algorithm for preamble length 64 chips is corrected. Preambles of this length are now detected with better stability.

## Known Issues with R&S FS-K84

None.

## Modified Functions

The version numbers in brackets indicate the version in which the function was modified

1. [V3.24/V2.24] **Higher resolution of trigger to frame value on display.**
2. [V3.24/V2.24] **Result summary evaluation allows MIN/MAX and AVERAGE statistics.**
3. [V3.24/V2.24] **Transducer factors supported also for Code Domain Analyzer.**
4. [V3.24/V2.24] **Number of Sweep Points selectable in RF measurements.**
5. [V3.28/V2.28] **Unit circle display in constellation diagrams.**
6. [V3.28] **Option FS-K9 power sensor support for RF measurements.**
7. [V3.30/V2.30] **Read out of spectrum emission mask worst fail position.**
8. [V3.50] **CDP measurement over 1824 consecutive Slots for R&S FSQ possible (over 3 seconds of IQ data).**
9. [V3.40/V2.40] **Sign change for frequency offset, phase offset and q-inversion for symbol constellation and bitstream.**  
Due to a correction of the cdma2000 specific -q definition, the mention values had been changed
10. [V3.60/V2.60] **Changed SCPI commands**  
In order to limit to 12 chars the commands  
:CALCulate2:FEED 'XTime:CDPower:SYMBOL:CONStellation' and  
:CALCulate2:FEED 'XTime:CDPower:COMPOSITE:CONStellation' are  
changed to

```
:CALCulate2:FEED 'XTime:CDPower:SYMBOL:CONST' and
:CALCulate2:FEED 'XTime:CDPower:COMPOSITE:CONST'.
```

11. [V3.60/V2.60] External trigger level adjustable from 0.5 to 3.5V.
12. [V3.60/V2.60] Carrier frequency step size softkey available.
13. [V3.70/V2.80] Multi carrier adjacent channel power measurement within application.
14. [V3.70/V2.80] ACP: Number of adjacent channels increased to 12.
15. [V3.70/V2.80] ACP: Power mode to max holds the power results.
16. [V3.70/V2.80] SEM: Configurable transition frequency for RBW change between 30 kHz and 1 MHz.
17. [V3.70/V2.80] CDP with multi carrier filter: Selectable enhanced algorithm and low pass or RRC filter with configurable roll off factor and cut off frequency.
18. [V3.80/V2.80] SEM now supports peak list evaluation.
19. [V3.80/V2.80] PVT now with restart on fail functionality and burst fit algorithm.
20. [V3.80/V2.80] PVT measurement with improved usage of IF power trigger.
21. [V3.80/V2.80] Trace view available within code domain analyzer.
22. [V3.90] Support for 1xEV-DO Revision A (Subtype 2).
23. [V4.00] Support for RHO Mac and RHO DATA.
24. [V4.00] Spectrum emission mask: List evaluation in lower screen now supported.
25. [V4.20] Support for instrument R&S FSG.
26. [V4.20] Softkey REF VALUE Y AXIS available for CDP measurements.
27. [V4.21] Band Classes 14 and 15 supported.
28. [V4.30] Softkey AC / DC Coupling available.
29. [V4.30] **New Ref Value Y Axis / Reference Level coupling simplifies grid scaling configuration for Code Domain measurements.**

Since version 4.20 the Reference Level and the grid scaling (REF VALUE Y AXIS) with unit dBm can be independently set for Code Domain measurements. In previous versions changing the Reference Level and changing the Ref Value Y Axis were independent. If the Reference Level value is changed the Ref Value Y Axis is now automatically adjusted to keep the difference between Reference Level and Ref Value Y axis constant.

Example:

Ref Level set to 0 dBm

Ref Value Y axis set to -10 dBm (at Y Axis Position 100%)

► The upper Y limit of the grid scaling is now at 10 dB below reference level.

Change Reference Level to -10dBm

The Ref Value Y Axis is now adjusted to -20 dB

► The upper Y limit of the grid scaling is at 10 dB below reference level as before.

**Note:** The internal reference level change with function ADJUST REF LEVEL is treated in the same way.

# Modifications to the Operating Manual

For the R&S FS-K84 1xEV-DO BTS Application Firmware manuals please refer to the following order numbers:

- 1007.2868.44-06 (English)
- 1007.2868.42-06 (German)

They can be downloaded from R&S internet – search: FS-K84:

<http://www.rohde-schwarz.com>

The current documentation is up-to-date.

## Customer Support

### Technical support – where and when you need it

For quick, expert help with any Rohde & Schwarz equipment, contact one of our Customer Support Centers. A team of highly qualified engineers provides telephone support and will work with you to find a solution to your query on any aspect of the operation, programming or applications of Rohde & Schwarz equipment.

### Up-to-date information and upgrades

To keep your instrument up-to-date and to be informed about new application notes related to your instrument, please send an e-mail to the Customer Support Center stating your instrument and your wish. We will take care that you will get the right information.

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