



**ROHDE & SCHWARZ**

Test and Measurement  
Division

## **Release Notes**

**cdma2000/1xEV-DV**

**Base Station Test**

**Application Firmware R&S FS-K82**

**Release 4.70**

**with Service Pack 2**

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

**Release Note Revision: 4**

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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-K82 Firmware 4.70
08 August 2012	2	New function with Service Pack 1 added.
06 February 2014	3	Update according to new operating manual revision.
10 March 2016	4	Support for 4.7x SP7 with Service Pack 2 added.

## General Topics

### Compatibility of R&S FS-K82 cdma2000 BTS Application Firmware

The following table shows the compatible version of the basic analyzer firmware version and the cdma2000 BTS application firmware:

**Table of compatible versions:**

R&S FS-K82 Application Firmware	R&S FSP Basic Firmware	R&S FSU Basic Firmware	R&S FSQ Basic Firmware	R&S FSMR Basic Firmware	R&S FSUP Basic Firmware	R&S FMU Basic Firmware	R&S FSG Basic Firmware
4.70 SP2	-	-	4.75 SP7	-	-	-	-
4.70 SP1	-	4.71 SP5 4.71 SP4	4.75 SP5 4.75 SP4	-	-	-	4.79 SP5 4.79 SP4
4.70	-	4.71	4.75	-	-	-	4.79
4.60 SP1	-	4.61 SP1	4.65 SP1	-	-	-	4.69 SP1
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	-	4.27	-	4.29 SP1
4.20	-	-	-	4.26	-	-	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	-	-	-	-

R&S FS-K82 Application Firmware	R&S FSP Basic Firmware	R&S FSU Basic Firmware	R&S FSQ Basic Firmware	R&S FSMR Basic Firmware	R&S FSUP Basic Firmware	R&S FMU Basic Firmware	R&S FSG Basic Firmware
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	-	-	-	-
2.28	2.20	2.21	2.25	-	-	-	-
2.24	2.10	2.11	2.15	-	-	-	-
1.20	1.80	1.81	1.85	-	-	-	-
1.12	1.70	1.71	-	-	-	-	-
1.10	1.60	1.61	1.65	-	-	-	-

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-K82 cdma2000 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-K82 cdma2000 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 a successful validation the message 'option key valid' will appear.

- If the validation failed, the application firmware is not 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

- Support for base system version 4.7x SP4 (with Service Pack 1)
- Support for base system version 4.7x SP7 (with Service Pack 2)

## Improvements

None

## Improvements with Service Pack 1

None

## Improvements with Service Pack 2

None

## Known Issues

None

## Modified Functions

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

1. [V1.20] FSQ Baseband Inputs R&S FSQ-B71 supported for Code Domain Analyzer.
2. [V3.20/V1.20] Evaluation Channel Table in conjunction with Time/Phase Offset measurement shows maximum values for Time and Phase Offset.
3. [V3.24/V2.24] Higher resolution of trigger to frame value on display.
4. [V3.24/V2.24] Result summary evaluation allows MIN/MAX and AVERAGE statistics.
5. [V3.24/V2.24] Transducer factors supported also for Code Domain Analyzer.
6. [V3.24/V2.24] Number of Sweep Points selectable in RF measurements.
7. [V3.28/V2.28] Unit circle display in constellation diagrams.

8. [V3.28] Option FS-K9 power sensor support for RF measurements.
9. [V3.30/V2.30] Read out of spectrum emission mask worst fail position.
10. [V3.40/V2.40] Support for 1xEV-DV channels PDCCH and PDCH including additional modulation types 8PSK, 16QAM.
11. [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.
12. [V3.50/V2.60] CDP measurement over 2432 consecutive PCGs for R&S FSQ possible (over 3 seconds of IQ data).
13. [V3.50/V2.60] CDP measurement over 64 PCGs in R&S FSU and R&S FSP with B70 possible.
14. [V3.50/V2.60] Maximal capture length is increased to 64 for R&S FSU and R&S FSQ. On R&S FSQ also up to 38 sets of 64 PCGs are possible.
15. [V3.50/V2.60] Remote command : [SENSe:] CDPower:ORDer? Delivers now short form HAD or BITR as result.
16. [V3.60/V2.60] Enhanced multicarrier support with improved algorithm for multicarrier and low pass filter.
17. [V3.60/V2.60] External trigger level adjustable from 0.5 to 3.5V.
18. [V3.60/V2.60] Carrier frequency step size softkey available.
19. [V3.60/V2.60] Changed SCPI commands  
In order to limit to 12 characters the  
: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'.
20. [V3.70/V2.80] Multi carrier adjacent channel power measurement within application.
21. [V3.70/V2.80] ACP: number of adjacent channels increased to 12.
22. [V3.70/V2.80] ACP: power mode to max holds the power results.
23. [V3.70/V2.80] SEM: configurable transition frequency for RBW change between 30 kHz and 1 MHz.
24. [V3.70/V2.80] Extended configuration of multi carrier filter: Selectable enhanced algorithm and additional filter type (RRC filter with configurable roll off factor and cut off frequency).
25. [V3.80/V2.80] SEM now supports peak list evaluation.
26. [V3.80/V2.80] Trace view available within code domain analyzer.
27. [V4.00] Spectrum emission mask: List evaluation in lower screen now supported.
28. [V4.20] Support for instrument R&S FSG.
29. [V4.20] Softkey REF VALUE Y AXIS available for CDP measurements.
30. [V4.21] Band Classes 14 and 15 supported.
31. [V4.30] Softkey AC / DC Coupling available.
32. [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-K82 cdma2000 BTS Application Firmware manuals please refer to the following order numbers:

- 1007.9797.44-06 (German/English)

They can be downloaded from R&S internet – search: FS-K82:

<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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