



ROHDE & SCHWARZ

Test and Measurement
Division

Release Notes

cdma2000/1xEV-DV

Mobile Station Test

Application Firmware R&S FS-K83

Release 4.30

for R&S FSP, FSU, FSQ, FSG, FSMR, FSUP
Analyzer Firmware 4.3x

New Features:

- New Softkey RF INPUT AC / DC.
- New Ref Value Y Axis / Reference Level coupling simplifies grid scaling configuration for Code Domain measurements.

Release Note Revision: 1

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Contents

History	3
General Topics	3
Compatibility of R&S FS-K83 cdma2000/1xEV-DV MS Firmware	3
Firmware Update of R&S FS-K83 cdma2000/1xEV-DV MS Firmware	4
Enabling the Application Firmware via License Key Code Entry	4
New Functions in version 4.30	5
Modified Functions.....	5
Problems Eliminated.....	6
Known Problems	6
Modifications to the Operating Manual and Supplements	7
Modified Chapters	7
Menu SETTINGS.....	7
Menu TRACE.....	8
Measuring adjacent channel power – ACLR	8
Menu MEAS – SPECTRUM EM MASK.....	8
Remote Control Commands	10
Appendix: Contact to our hotline.....	11

History

Date	Rel Note Rev	Changes
06 March 2008	1	First revision for R&S FS-K83 Firmware 4.30.

General Topics

Compatibility of R&S FS-K83 cdma2000/1xEV-DV MS Firmware

The following table shows the compatible version of the basic analyzer firmware version and the cdma2000/1xEV-DV MS application firmware:

Table of compatible versions:

R&S FS-K83 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 FSG Basic Firmware
4.30	4.30	4.31	4.35	-	-	4.39
4.21	4.20	4.21	4.25	-	4.28	4.29 SP1
4.20	-	-	-	-	-	4.29
4.10	4.10	4.11	4.15	-	4.17	-
4.00	4.00	4.01	4.05	-	-	-
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	-	-	-
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	-	-	-

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-K83 cdma2000/1xEV-DV MS 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-K83 cdma2000/1xEV-DV MS 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 4.30

- **Softkey RF INPUT AC / DC is now available for the application.**

Note: AC /DC coupling is not provided by all instrument models.

- **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 10dB 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.

Modified Functions

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

1. [V3.28/V2.28] Unit circle display in constellation diagrams.
2. [V3.28] option FS-K9 power sensor support for RF measurements.
3. [V3.30/V2.30] The FS-K83 can now also analyze Agilent's ESG opt 101 non standard signals.
4. [V3.30/V2.30] Read out of spectrum emission mask worst fail position.
5. [V2.40/3.40] 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

6. [V3.50] 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.

7. [V3.50] Command: [SENSe:]CDPower:ORDER? delivers now short form HAD or BTR as result .

8. [V3.60/2.60] Changed SCPI commands

In order to limit to 12 chars 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'.

9. [V3.60/V2.60] External trigger level adjustable from 0.5 to 3.5V.
10. [V3.60/V2.60] Carrier frequency step size softkey available.
11. [V3.70/V2.80] ACP: number of adjacent channels increased to 12.
12. [V3.70/V2.80] ACP: power mode to max holds the power results.
13. [V3.80/V2.80] Trace view available within code domain analyzer.
14. [V4.00] Spectrum emission mask: List evaluation in lower screen now supported.
15. [V4.20] Support for instrument R&S FSG.
16. [V4.20] Softkey REF VALUE Y AXIS available for CDP measurements.
17. [V4.21] Band Classes 14 and 15 supported.

18. [V4.30] Softkey AC / DC Coupling available.

19. [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.

Problems Eliminated

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

1. [V4.20] A Reference Level Offset \neq 0 dB is not taken into account when the dialog REF VALUE X AXIS is opened.

A wrong REF VALUE X AXIS is displayed after changing the reference level offset. The problem is only visible on the input dialo. The grid scaling settings are correct. When a new value is entered the reference level is correctly taken into account.

2. [V4.20] Some open dialogs are not automatically closed when softkey CHANNEL BANDWIDTH is pressed.

Following dialogs are affected: EDIT ACLR LIMIT, ACP CHANNEL BW and ADJ CHANNEL SPACING.

3. [V4.20] ACLR Measurement: Softkeys SWEPTIME is not visible but described in the manual.

Known Problems

None

Modifications to the Operating Manual and Supplements

For the R&S FS-K83 cdma2000/1xEV-DV MS Application Firmware manuals please refer to the following order numbers:

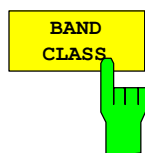
- 1007.9800.44-04 (German/English)

They can be downloaded from R&S internet – search: FS-K83:

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

Modified Chapters

Menu SETTINGS



The *BAND CLASS* softkey allows input of the used frequency band for the RF measurements "adjacent channel measurement" and "spectrum emission mask". The selection is made from a table in which the name of the band class is displayed.

Entry of the center frequency is not restricted by the band class selection.

BAND CLASS SELECTION	
Band Class 0	(800 MHz Band)
✓ Band Class 1	(1900 MHz Band)
Band Class 2	(TACS Band)
Band Class 3	(JTACS Band)
Band Class 4	(Korean PCS Band)
Band Class 5	(450 MHz Band)
Band Class 6	(2 GHz Band)
Band Class 7	(700 MHz Band)
Band Class 8	(1800 MHz Band)
Band Class 9	(900 MHz Band)
Band Class 10	(Secondary 800 MHz Band)
Band Class 11	(400 MHz European PAMR Band)
Band Class 12	(800 MHz PAMR Band)
Band Class 14	(US PCS 1.9GHz Band)
Band Class 15	(AWS Band)

Fig. 6-28 Band class selection

You can scroll in the table, and the entry currently being used is checked, while a bar displays the selected entry; press ENTER to apply the value. The numerical value is specified by means of the IEC/IEEE bus.

IEC-bus command: `:CONFigure:CDPower:BClass <band_class>`

Menu TRACE

VIEW

The softkey *VIEW* freezes the trace.

IEC-Bus-command:

:DISP:WIND:TRAC:MODE VIEW

Measuring adjacent channel power – ACLR

Table 6-5 ACLR settings for band classes 1, 4, 8, 14 and 15

Adjacent channel type	Spacing	RBW	Rel. limit	Abs. limit
Adjacent	1.25 MHz	30 kHz	-42 dBc	-70.2 dBm
Alternate	1.98 MHz	30 kHz	-50 dBc	-70.2 dBm
Alternate2	4.00 MHz	30 kHz	-50 dBc	-70.2 dBm

Menu MEAS – SPECTRUM EM MASK

The limits for band classes 1, 4, 6, 8, 14 and 15 are defined by separate limits. The frequency limit relative to the carrier in particular is not defined at 885 kHz but rather at 1.25 MHz.

Table 0-1 Band classes 1, 4, 6, 8 and 14

Offset frequency	Relative limit C2KM1_R.LIM	Absolute limit C2KM1_A.LIM	RBW
-4.00 MHz	-50 dBc	-70.2 dBm	30 kHz
-1.98 MHz	-50 dBc	-70.2 dBm	30 kHz
-1.98 MHz	-42 dBc	-70.2 dBm	30 kHz
-1.25 MHz	-42 dBc	-70.2 dBm	30 kHz
+1.25 MHz	-42 dBc	-70.2 dBm	30 kHz
+1.98 MHz	-42 dBc	-70.2 dBm	30 kHz
+1.98 MHz	-50 dBc	-70.2 dBm	30 kHz
+4.00 MHz	-50 dBc	-70.2 dBm	30 kHz



The softkey *LIST EVALUATION* reconfigures the SEM output to a split screen. In the upper half the trace with the limit line is shown. In the lower half the peak value list is shown. For every range of the spectrum emission defined by the standard the peak value is listed. For every peak value the frequency, the absolute power, the relative power to the channel power and the delta limit to the limit line is shown. As long as the delta limit is negative, the peak value is below the limit line. A positive delta indicates a failed value. The results are then colored in red, and a star is indicated at the end of the row, for indicating the fail on a black and white printout. If the list evaluation is active, the peak list function is not available.

IEC/IEEE-bus command:

```
:CALCulate1:PEAKsearch:AUTO ON | OFF
```

With this command the list evaluation which is by default for backwards compatibility reasons off can be turned on.

```
TRACe1:DATA? LIST
```

With this command the list evaluation results are queried in the following order:

```
<no>, <start>, <stop>, <rbw>, <freq>, <power abs>, <power rel>,
<delta>, <limit check>, <unused1>, <unused2>
```

All results are float values.

no	: range number
start	: start frequency
stop	: stop frequency
rbw	: resolution bandwidth of range
freq	: frequency of peak
power abs	: absolute power in dBm of peak
power rel	: relative power in dBc (related to the channel power) of peak
delta	: distance to the limit line in dB (positive indicates value above the limit, fail)
limit check	: limit fail (pass = 0, fail =1)
unused1	: reserved (0.0)
unused2	: reserved (0.0)

Remote Control Commands

:CONFigure:CDPower:BClass 0...12

This command selects the band class.

Band class	Name
0	800 MHz band
1	1900 MHz band
2	TACS band
3	JTACS band
4	Korean PCS band
5	450 MHz band
6	2 GHz band
7	700 MHz band
8	1800 MHz band
9	900 MHz band
10	Secondary 800 MHz band
11	400 MHz European PAMR band
12	800 MHz PAMR band
14	US PCS 1.9GHz Band
15	AWS Band

Example:	"INST:SEL MC2K"	'Activate cdma2000 MS
	"INIT:CONT OFF"	'Select single sweep
	"CONF:CDP:BCL 1"	'Select band class 1, 1900 MHz

Features:	*RST value:	0
	SCPI:	Device-specific

Appendix: Contact to our hotline

Any questions or ideas concerning the instrument are welcome by our hotline:

USA & Canada

Monday to Friday (except US public holidays)
8:00 AM – 8:00 PM Eastern Standard Time (EST)
Tel. from USA 888-test-rsa (888-837-8772) (opt 2)
From outside USA +1 410 910 7800 (opt 2)
Fax +1 410 910 7801
E-mail Customer.Support@rsa.rohde-schwarz.com

East Asia

Monday to Friday (except Singaporean public holidays)
8:30 AM – 6:00 PM Singapore Time (SGT)
Tel. +65 6 513 0488
Fax +65 6 846 1090
E-mail Customersupport.asia@rohde-schwarz.com

Rest of the World

Monday to Friday (except German public holidays)
08:00 – 17:00 Central European Time (CET)
Tel. from Europe +49 (0) 180 512 42 42
From outside Europe +49 89 4129 13776
Fax +49 (0) 89 41 29 637 78
E-mail CustomerSupport@rohde-schwarz.com