ROHDE & SCHWARZ

Test and Measurement
Division

Release Notes

TD-SCDMA Mobile Station Test
Application Firmware R&S FS-K77

Release 4.10
for R&S FSP, FSU, FSQ, FMU, FSUP Analyzer Firmware 4.1x

New Features:

- High Dynamic Power vs. Time Measurement for external trigger.

Release Note Revision: **2**

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Contents

History

Date	Rel Note Rev	Changes
03. April. 2007	1	First revision for R&S FS-K77 Firmware 4.10
06. August 2007	2	Added R&S FSUP V4.17

General Topics

Compatibility of R&S FS-K77 TD-SCDMA MS Application Firmware

The following table shows the compatible versions of the basic analyzer firmware version and the TD-SCDMA MS application firmware:

Table of compatible versions:

R&S FS-K77 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
4.10	4.10	4.11	4.15	-	4.17	4.18
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	-	-	-
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	-	-	-

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-K77 TD-SCDMA MS Application Firmware

The R&S FS-K77 TD-SCDMA MS application firmware package is available with its own version number. This application firmware package requires an appropriate basic instrument firmware version. The compatible versions are shown in the table above.
Please make sure to have the correct basic firmware version installed prior to installing the R&S FS-K77 TD-SCDMA MS application firmware. Please refer to the basic firmware version release notes for firmware update information of the basic firmware.

Note: *R&S FS-K76 and R&S FS-K77 are using the same update set. It is therefore required to only update one of these applications.*

Generation of an update disk set for R&S FS-K77

The files needed for the R&S FS-K77 TD-SCDMA MS Application Firmware update are available in the FIRMWARE section of the Service Board on GLORIS (R&S FS-K77).
If you already have the update disk set you can skip this paragraph.

They are grouped according to the disk contents:

Disk 1:   disk1.bin   (self-extracting ZIP file)

The contents of disk 1 are packed in a self-extracting ZIP file and need to be unzipped. For this purpose the following steps are necessary:

1. Create a temporary directory on your local PC (e.g. FSK77TEMP on drive C:)
2. Copy disk1.bin into that directory and rename it to disk1.exe
3. Execute disk1.exe. Under Windows 95/98/NT/XP/2000 this is done best using the following sequence:

    <CTRL><ESC> - RUN – C:\ FSK77TEMP\DISK1 - <ENTER> or

    <CTRL><ESC> - AUSFÜHREN – C:\ FSK77TEMP\DISK1 - <ENTER> for a German Windows version.

    The files will be unzipped.

4. **For Version 2.xx only:**
    Delete disk1.exe from the temporary directory.
    The temporary directory will now contain the following files:

inst32i.ex	_isdel.exe	_setup.dll	_sys1.cab	_user1.cab
Data.tag	data1.cab	id.txt	lang.dat	layout.bin
os.dat	Setup.exe	Setup.ini	setup.ins	setup.lid

    For Version 3.xx only:
    Delete disk1.exe from the temporary directory.
    The temporary directory will now contain the following files:

 | | | | | | |
    |---|---|---|---|---|---|
    | data1.cab | data1.hdr | data2.cab | ExecCtrl.exe | id.txt | ikernel.ex_ |
    | ISSetup.exe | layout.bin | RestInst.exe | Setup.exe | Setup.ini | setup.inx |

    Please make sure that all filenames exactly match with these printed above before you try to use them for the firmware update. Especially the trailing underscore ('_') as used in ikernel.ex_ **or** _inst32i.ex_ **is essential for correct operation of the update program.**

5. Copy the contents of the temporary directory onto update disk #1.

Preparing installation via LAN or USB stick

If the installation shall be done via LAN or USB stick (XP only) please set up the following directory structure:

Copy all files as mentioned in the previous section in the directory ..\MyTemp\Extensions\K77\Disk1.
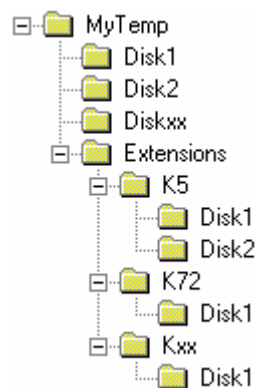
Performing an Application Firmware Update on the Instrument

The Application Firmware update process is performed in the following steps:

➢ Switch on the instrument and wait until the Analyzer has resumed operation.
➢ For updates from LAN or USB (XP only) use the SETUP | NEXT | FIRMWARE UPDATE | UPDATE PATH softkey to specify any path for the location of the Disk1 directory (e.g. F:\MyTemp\Extensions\K77). For floppy usage the default A:\ must not be changed.
➢ Press SETUP → NEXT → FIRMWARE UPDATE.
➢ Confirm the query "Do you really want to update the firmware?" with OK.
➢ Insert update disk #1 as requested (for LAN or USB just confirm the copy process). The instrument will perform several automatic shutdowns, until the new firmware is installed properly. **Do not switch off the instrument until the update process has been finished completely.**

After switching on the instrument for the first time after a successful firmware update it is necessary to execute the instument's self alignment process by pressing CAL and softkey CAL TOTAL.

Note: *R&S FS-K76 and R&S FS-K77 are using the same update set. It is therefore required to only update one of these applications.*

A simplified update process is available if base system firmware 4.1x or newer is installed. More details are described in the release note of the base system firmware.

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-K77 TD-SCDMA 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 <u>and</u> the application firmware package is installed prior to entering the license key code.

Modified Functions

1. [V3.50] Change of default node for `CALC2:FEED 'XTIM:CDP:PVSL'`.
For compatibility reason with other 3G applications the default node for the IEC/IEEE bus command
`CALC2:FEED    'XTIM:CDP:PVSL[:ABS]'` is changed to
`CALC2:FEED    'XTIM:CDP:PVSL[:RAT]'`.

2. [V3.50] CDP measurement over 11970 consecutive PCGs for R&S FSQ possible (8 seconds of IQ data).

3. [V3.60/V2.60] External trigger level adjustable from 0.5 to 3.5V.

4. [V3.60/V2.60] Center Frequency Stepsize softkey available.

5. [V3.60/V2.60] 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'`.

6. [V3.70/V2.80] ACP: number of adjacent channels increased to 12.

7. [V3.70/V2.80] ACP: power mode to max holds the power results.

8. [V3.80/V2.80] Trace view available within code domain analyzer.

9. [V3.90] Support for noise correction in ACLR measurement with power trigger.

10. [V4.00] Spectrum emission mask: List evaluation in lower screen now supported.

11. [V4.10] High Dynamic Mode for Power vs. Time Measurement.

Problems Eliminated

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

1. [V4.00] Spectrum Emission Mask measurement uses wrong limits for offset frequency range 2.385 MHz to 2.9MHz
Against the description in document 3GPP TS 25.102, section 6.6.2.1.2, table 6.5A, footnotes **) and ***), the limit checking was also done in the range between 2.385 MHz and 2.9 MHz.
In addition an absolute lower limit of -55dBm was used for all resolution bandwidths instead of -71.3 dBm for a resolution bandwidth of 30 kHz or -56.1 dBm for a resolution bandwidth of 1 MHz.

Known Problems

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

1. [V4.10] PvT High Dynamic with IF Power trigger is available.
The IF Power trigger is not supported for PvT High Dynamic but the softkey HIGH DYNAMIC is not disabled, if trigger source IF POWER is selected.

Modifications to the Operating Manual and Supplements

For the R&S FS-K77 TD-SCDMA Mobile Station Test Application Firmware manuals please refer to the following order numbers:

- 1300.7304.44-02 (German/English)

They can be downloaded from R&S internet – search: FS-K77:

http://www.rohde-schwarz.com

Modified Chapters for manual operation

Menu MEAS – POWER VS TIME

> **START MEAS**

The softkey *START MEAS* starts a single sweep measurement.

> IEC-Bus-command:
>   `INIT:CONT OFF;::INIT`

> **HIGH DYNAMIC**

The softkey *HIGH DYNAMIC* selects the high dynamic mode. The sweep mode is automatically set to single sweep.

The High Dynamic mode uses a digital 2 MHz RBW filter with an outstanding low settling time of about 1 chip duration. The Power vs. Time sweep is divided into a TX on power and a TX off power section. The TX on power section uses reference level and attenuator settings according to the maximum input level, whereas the TX off power section is optimized for a noise power of less than -80 dBm. Each section is averaged over the selected number of subframes. The measurement can be performed in single sweep mode only.

Due to the low reference level, power values above -50dBm are not displayed with the correct magnitude, if they fall into the TX off power section. However, these power values will clearly fail the time mask.

For all Power vs. Time measurements it is mandatory to keep the input power within the instruments specifications. The internal attenuator is set to 0 dB for reference levels below 20 dBm.
If the input power is increased above 20 dBm, the Auto Level & Time routine must be called before starting the measurement. Alternatively an RF attenuation of at least 10 dB can be set manually.

> IEC-Bus-command:
>   `:CONFigure:CDPower:PVTime:HDYNamic ON|OFF`

Menu MEAS – SPECTRUM EM MASK

LIST EVALUATION

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)

Menu MEAS - ACLR

NOISE CORR ON OFF
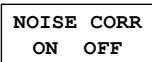
The softkey *NOISE CORR* is since firmware version 3.90 also available in IF or RF power trigger mode.

Menu TRACE

```
VIEW
```
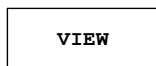
The softkey *VIEW* freezes the trace.

IEC-Bus-command:
```
:DISP:WIND:TRAC:MODE VIEW
```

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