



**ROHDE & SCHWARZ**

Test and Measurement  
Division

## **Release Notes**

# **GSM/EDGE**

## **Application Firmware R&S FS-K5**

### **Release 4.60**

for R&S FSP, FSU, FSQ, FSG, FSMR, FSUP, FMU  
Analyzer Firmware 4.6x

**Release Note Revision: 3**

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## History

| <b>Date</b>     | <b>Rel Note Rev</b> | <b>Changes</b>                                       |
|-----------------|---------------------|--|
| 29 July 2010    | 1                   | First revision for R&S FS-K5 GSM/EDGE Firmware 4.60. |
| 12 October 2010 | 2                   | New hot line phone number for calls from Europe.     |
| 07 March 2011   | 3                   | New chapter "Customer Support".                      |

## General Topics

### Compatibility of the R&S FS-K5 GSM/EDGE Application Firmware

The following table shows the compatible version of the basic analyzer firmware version and the GSM/EDGE Application Firmware:

**Table of compatible versions:**

| R&S FS-K5<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<br>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 |
|--------------------------------------|------------------------------|------------------------------|------------------------------|----------------------------------|-------------------------------|------------------------------|------------------------------|
| 4.60                                 | -                            | 4.61                         | 4.65                         | -                                | -                             | -                            | 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 SP3                      | 4.38                         | 4.39                         |
| 4.20                                 | 4.20                         | 4.21                         | 4.25                         | 4.26                             | 4.27                          | -                            | 4.29                         |
| 4.10                                 | 4.10                         | 4.11                         | 4.15                         | 4.16 SP1                         | 4.17                          | -                            | -                            |
| 4.00SP1                              | 4.00                         | 4.01                         | 4.05                         | -                                | -                             | -                            | -                            |
| 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                         | -                                | -                             | -                            | -                            |
| 2.28                                 | 2.20                         | 2.21                         | 2.25                         | -                                | -                             | -                            | -                            |
| 2.24                                 | 2.10                         | 2.11                         | 2.15                         | -                                | -                             | -                            | -                            |

| R&S FS-K5<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<br>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 |
|--------------------------------------|------------------------------|------------------------------|------------------------------|----------------------------------|-------------------------------|------------------------------|------------------------------|
| 1.20                                 | 1.80                         | 1.81                         | 1.85                         | -                                | -                             | -                            | -                            |
| 1.10                                 | 1.70                         | 1.71                         | 1.65                         | -                                | -                             | -                            | -                            |
| 1.07                                 | 1.50/1.60                    | 1.51/1.61                    | -                            | -                                | -                             | -                            | -                            |
| 1.06                                 | 1.50/1.60                    | 1.51/1.61                    | -                            | -                                | -                             | -                            | -                            |
| 1.05                                 | 1.40                         | 1.41/1.42                    | -                            | -                                | -                             | -                            | -                            |
| 1.04                                 | -                            | 1.31                         | -                            | -                                | -                             | -                            | -                            |
| 1.03                                 | 1.30 / 1.32                  | -                            | -                            | -                                | -                             | -                            | -                            |
| 1.02                                 | 1.20                         | -                            | -                            | -                                | -                             | -                            | -                            |
| 1.01                                 | 1.16                         | -                            | -                            | -                                | -                             | -                            | -                            |

Application firmware versions 3.xx/4.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 the R&S FS-K5 GSM/EDGE 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 R&S FSP or delivered as a part of the R&S FS-K5 GSM/EDGE 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 probable reason will be that the instrument is not equipped with the correct basic firmware version. Therefore 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 4.60

None

## Improvements

None

## Known Issues with R&S FS-K5

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

**1. [V1.03B] Limit Line Result of power vs. time (PVT) Rising or Falling might be FAILED, although PVT Full Burst or Top High Resolution is PASSED.**

In PVT measurement the Full Burst and Top High Resolution limit checks are performed with full sample resolution. Therefore they are very precise and deliver correct results.

The limit check of PVT measurement Rising and Falling is done on extrapolated data and therefore might result in FAILED due to rounding problems.

**2. [V4.40] Function AUTO LEVEL & TIME fails and reports "No Carrier" in spite of a valid signal.**

Active marker search limits are switched off on entry of the GSM option. The AUTO LEVEL & TIME function depends on the search limit state and valid search ranges. As a result a "No Carrier" message may be reported in spite of a signal with sufficient signal strength if the state of the marker search limits is changed by the user. Whenever the application internally uses the search limits they are correctly switched off if the AUTO LEVEL & TIME function is performed.

**Workaround:** Do not change the state of the marker search limits as this state is internally controlled by the application - or -

Switch off the marker search limits before function AUTO LEVEL & TIME is started if you need to control the search limits within one of the measurements.

## Modified Functions

The behaviour of the following functions changed compared to earlier versions [the number in brackets indicates the firmware version that introduced the individual change]:

**1. [V2.60/3.60] Spectrum due to modulation and spectrum due to transient measurements are now using main pll bandwidth mode narrow on R&S FSU and R&S FSQ instruments.**

**2. [V2.60/3.60] Spectrum due to modulation list measurement is now decreasing the reference level by 25 dB in  $\pm 600$  kHz difference from the carrier.**

**3. [V2.60/3.60] PVT – EDGE: Lower limit lines adjusted due to current standard -15 dB changed to -20 dB.**

If the instrument is shipped with V3.60 no action is necessary. If an update to 2.60/3.60 had been carried out the LINES | RESTORE GSM LINES function need to be carried out. All user changes to the default GSM limit lines of all measurements will be lost.

4. [V2.60/3.60] PVT – multislot measurement: The precision of the multislot samples and limit checking is enhanced.

Therefore the amount of samples for a PVT trace has changed as follows:

| Trace points in power versus time |                 |                      |                 |                      |
|-----------------------------------|-----------------|----------------------|-----------------|----------------------|
| Number of active slots            | over sampling 4 |                      | over sampling 8 |                      |
|                                   | older versions  | V2.60/3.60 or higher | older version   | V2.60/3.60 or higher |
| 1                                 | 868             | unchanged            | 1736            | unchanged            |
| 2                                 | 1492            | unchanged            | 2984            | unchanged            |
| 3                                 | 2116            | 2120                 | 4232            | 4240                 |
| 4                                 | 2740            | 2744                 | 5480            | 5488                 |
| 8                                 | 5240            | 5244                 | 10480           | 10488                |

5. [V3.70] MOD – list measurement: The average type is changed to logarithmic averaging.
6. [V4.00] Improved burst search for signals with high distortion.
7. [V4.10] Extended Slot Configuration for mixed modulation.
8. [V4.20] Power vs Time Limit Line Templates automatically adjustable for GSM900/GSM1800/GSM1900 (mobile station).
9. [V4.20] Command syntax changed for following command:.

CONFigure:ECONfigure:SLOT:MODulation  
 CONFigure:ECONfigure:SLOT:RLEVel:MODE  
 CONFigure:ECONfigure:SLOT:RLEVel:VALue  
 CONFigure:ECONfigure:SLOT:LIMit:LOWer  
 CONFigure:ECONfigure:SLOT:LIMit:UPPer

In version 4.10 the slot number is passed as a first parameter. With version 4.20 and newer, the slot number is handled by the numeric suffix at SLOT

CONFigure:ECONfigure:SLOT<0 | [1] ... 7>:..

This change ist not backward compatible, but was required for future extensions.

10. [V4.50] New function SWAP I/Q available.

## Modifications to the Operating Manual and Supplements

For the R&S FS-K5 GSM/EDGE Application Firmware manuals please refer to the following order numbers:

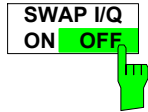
- 1141.1515.44-07 (German/English) and
- 1141.1515.49-07 (English US letter format).

They can be downloaded from R&S internet – search: FS-K5:

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

## Manual Operation R&S FS-K5 GSM/EDGE Application Firmware

### Menu DEMOD SETTINGS



The *SWAP I/Q* softkey allows the selection between normal and inverted I/Q modulation. The settings for this parameter are:

- OFF Normal I/Q modulation.
- ON I and Q signals are interchanged.

IEC/IEEE bus command:

```
CONFigure[:MS]:SWAPiq ON | OFF
```

## Remote Operation R&S FS-K5 GSM/EDGE Application Firmware

**CONFigure[:MS]:SWAPiq** ON | OFF

This command defines whether or not the recorded IQ pairs should be swapped (I<->Q) before being processed.

|                         |  |   |
|-------------------------|--|---|
| <b>Example:</b>         | "INST:SEL MGSM"<br>"CONF:SWAP ON "       | ' Select GSM/EDGE application<br>' Specifies that IQ values should be<br>' swapped. |
| <b>Characteristics:</b> | *RST value: OFF<br>SCPI: device-specific |   |

## **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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