

Application Software

MobiDemo

Application Note 1MA11_1E

Products:

SMIQ
FSE/FSIQ

Subject to change - Roland Minihold 99-07



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1. Overview

MobiDemo is an application software for controlling a combination of Generator **SMIQ** and Analyzer **FSE/ FSE-B7** or **FSIQ**. **MobiDemo** offers a convenient user interface to facilitate testing of components used in digital mobile radio systems, for instance amplifiers or filters. The software can handle the **GSM**, **PHS**, **IRIDIUM**, **IS-95** and **W-CDMA** standards. The corresponding test signals can be activated on **SMIQ** with a few keystrokes and mouse clicks. FSE/FSIQ is set up in accordance with SMIQ and analyzes signals in the modulation analysis or adjacent-channel power measurement mode.

The settings for SMIQ and FSE/FSIQ are transferred via the IEC/IEEE bus.

The following instruments equipped with the indicated options are suitable:

Generators:

SMIQ02/03/04/06B + SMIQB10 + SMIQB11 (+ SMIQB42 +SMIQB43)

Analyzers:

FSEA20/30 + FSE-B7 (+ FSE-B15 + FSE-B17)

FSEB20/30 + FSE-B7 (+ FSE-B15 + FSE-B17)

FSEM20/30 + FSE-B7 (+ FSE-B15 + FSE-B17)

FSEK20/30 + FSE-B7 (+ FSE-B15 + FSE-B17)

FSIQ3 +(FSE-B17)

FSIQ7 +(FSE-B17)

FSIQ26 +(FSE-B17)

The program runs under Windows 95 as well as Windows 98 or Windows NT. It can also be oper-

ated on the controller function of FSIQ (provided that option FSE-B17 is fitted).

The software is supplied with an operating manual in PDF (Acrobat Reader) format.

2. Software Features

MobiDemo offers a straightforward user interface for the generation and analysis of digital mobile radio signals by means of a combination of Vector Signal Generator **SMIQ** and Spectrum/Vector Signal Analyzer **FSE/FSE-B7** or **FSIQ**

The software can handle the following mobile radio standards:

- **PHS** (Personal Handy Phone System)
- **IS-95** (Qualcomm CDMA)
- **IRIDIUM** (digital satellite mobile radio standard)
- **W-CDMA** (wideband CDMA)
- **GSM** (digital mobile radio standard, Global System for Mobile Communication)

FSE/FSIQ performs digital modulation analysis with various selectable display modes as well as adjacent-channel power measurements.

For standard W-CDMA, the **MobiDemo** software allows adjacent-channel power measurement by means of automatic test sequences utilizing the FSE dynamic range to the full. Test curves can be displayed on the PC and output on a printer.

Settings for the different standards can be stored and loaded.

An info line (TIP) at the bottom of the screen provides information on **MobiDemo** softkeys and display fields during the program.

3. Hardware and Software Requirements

Controller Requirements

Hardware

The program runs on any IBM-AT-compatible PC.
 CPU: 486, Pentium or better, clock rate >100 MHz
 RAM: >16 Mbyte (for Windows NT >32 Mbyte)
 GPIB: Rohde & Schwarz IEEE 488.2 Bus Interface PS-B4, 1006.6207.04 or National Instruments AT GPIB/TNT.

Software

The program runs under Windows 95 as well as Windows 98 or Windows NT. It can also be operated on the controller function of FSIQ (provided that option FSE-B17 is fitted). Moreover, the GPIB (IEC/IEEE)-bus drivers for Windows from National Instruments are required.

SMIQ Requirements

Models **SMIQ 02/03(B)** equipped with the following minimum of options are suitable: **SMIQB10**, **SMIQB11** and **SMIQB42** (the latter is only needed if IS-95 signals are to be generated).

Models SMIQ 02E/03E (with options same as above) are not suitable for generating W-CDMA signals. PHS, IRIDIUM and IS-95 signals can be generated, on the other hand.

Software version: 3.91IQ or higher.

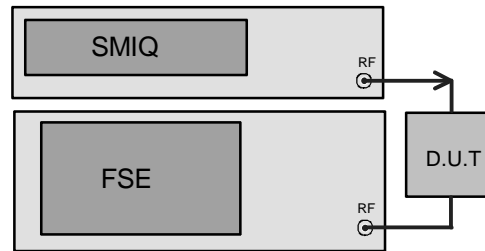
FSE Requirements

The following FSE models can be used: **FSEA20/30**, **FSEB 20/30**, **FSEM 20/30**, **FSEK 20/30**. FSE must be equipped with the optional Vector Signal Analyzer **FSE-B7**. All FSIQ models **FSIQ3**, **FSIQ7** and **FSIQ26** can be used too. If the program is to be run on FSIQ itself option **FSE-B17** is also required.

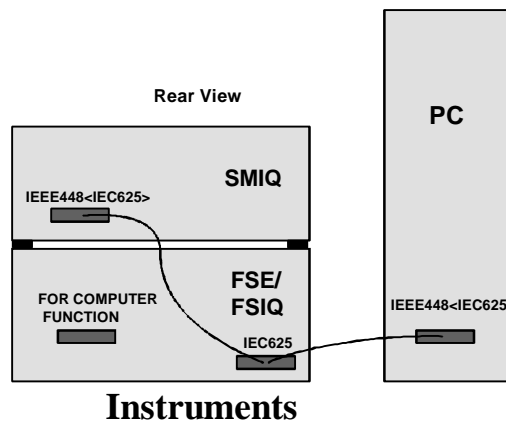
Software version: 1.71 for FSE or 2.03 for FSIQ or more recent.

4. Test Setup

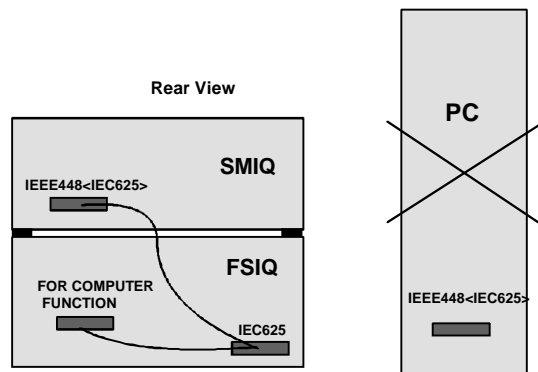
The DUT is connected between the generator output and the analyzer input.



5. Connecting the Controller to the Instruments



Depending on the configuration, connect IEC/IEEE-bus cables as shown below. The



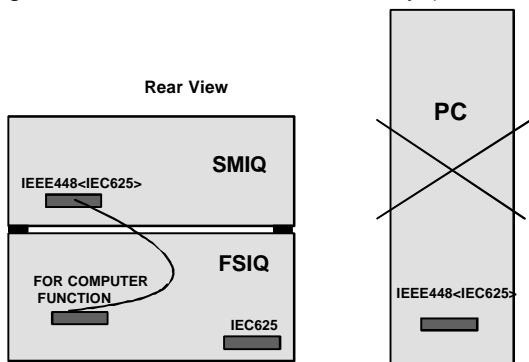
following configurations are possible:

- a) *MobiDemo* runs on an external PC.
- b) *MobiDemo* uses controller function of FSIQ (not FSE!) with control of FSIQ via IEC/IEEE-bus interface.
- c) *MobiDemo* uses controller function of FSIQ (not FSE!) with internal control via a DDE interface.

6. Installing the Software

MobiDemo Application Software is available as a self-extracting .EXE file.

When **MOBIDEM.EXE** is started, the subdirectories Disk1 and Disk2 with the associated files are generated in the selected directory (default:



C:\Install).

Installation from hard disk:

To install **MobiDemo** from the hard disk, use the file manager and call up **SETUP.EXE** from the Disk1 directory. The program and some files for SMIQ data and control lists for special standards are installed on the PC. To continue, follow the instructions of the setup program.

Installation by means of disks:

Two disks are needed. To generate installation disks, copy the contents of the Disk1 directory onto disk No. 1 and the contents of the Disk2 directory onto disk No. 2.

To install **MobiDemo** from the disks, insert disk No. 1 into the disk drive and execute **a: SETUP.EXE** using the Windows file manager. The program and some files for SMIQ data and control lists for special standards are installed on the PC. To continue, follow the instructions of the setup program.

7. Starting the Program

The program is started by executing **MOBIDEM.EXE**. To do so, click the **MobiDemo** icon in Windows 3.X, for example.

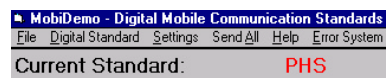
8. Getting Started

As an example, EVM (error vector magnitude) measurement of a PHS signal (Downlink TCH Frame) with synchronization of FSE to the Unique Word is described. For this measurement, connect the generator output with the analyzer input.

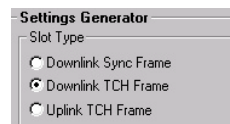
- Click on **Go to Remote** both in the **Settings Generator** field and the **Settings Analyzer** field.



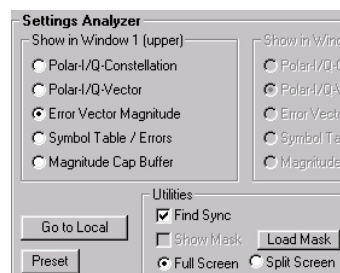
- The digital **PHS** standard is active as default setting.



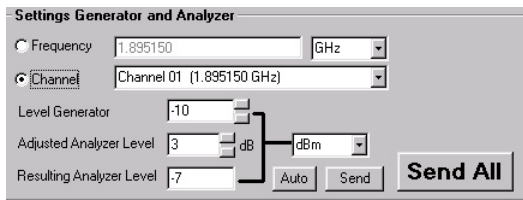
- Click on slot type **Downlink TCH Frame**.



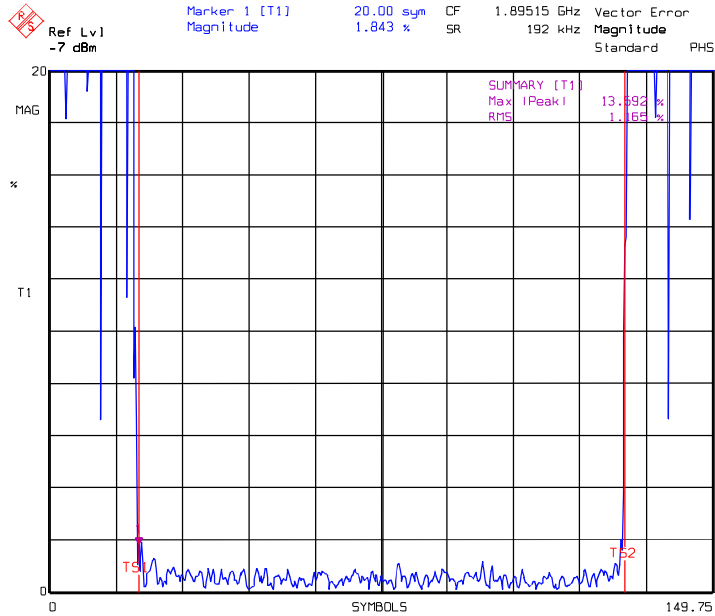
- Settings Analyzer** field: Click on **Error Vector Magnitude** and **Find Sync**.



- The correct frequency and level are already preset on SMIQ and FSE. With **SEND ALL**, all data are transferred to the two instruments.



On FSE, the following graphic display appears, for example: (if **MobiDemo** is run on FSIQ, switch to normal FIQ display by pressing Alt + Print Scrn).



FSE display of error vector magnitude for PHS standard

TS1 and TS2 are search limits marking the burst section (symbol No. 20 to symbol No. 130) for which the summary marker values Max |Peak| and

rms value of the error vector magnitude are determined.

9. Ordering Information

Vector Signal Generator

SMIQ02B (300 kHz to 2.2 GHz)	1125.5555.02
SMIQ03B (300 kHz to 3.3 GHz)	1125.5555.03
SMIQ04B (300 kHz to 4.4 GHz)	1125.5555.04
SMIQ04B (300 kHz to 4.4 GHz)	1125.5555.06

Options required for SMIQ:

SMIQB10 Modulation Coder	1085.5009.02
SMIQB11 Data Generator	1085.4502.02

Standard IS-95 only:

SMIQB42 IS-95 CDMA	1104.7036.02
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Standard W-CDMA only:

SMIQB43 WCDMA	1104.8032.02
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Spectrum Analyzer

FSEA20 (9 kHz to 3.5 GHz)	1065.6000.20
FSEA30 (20 Hz to 3.5 GHz)	1065.6000.30
FSEB20 (9 kHz to 7.0 GHz)	1066.3010.20
FSEB30 (20 Hz to 7.0 GHz)	1066.3010.30
FSEM20 (9 kHz to 26.5 GHz)	1080.1505.20
FSEM30 (20 Hz to 26.5 GHz)	1079.8500.30
FSEK20 (9 kHz to 40 GHz)	1088.1491.20
FSEK30 (20 Hz to 40 GHz)	1088.3494.30
FSIQ3 (9 kHz to 3.5 GHz)	1119.5005.03
FSIQ3 (9 kHz to 7 GHz)	1119.5005.07
FSIQ3 (9 kHz to 26.6 GHz)	1119.5005.26

Options required for FSE:

FSE-B7 Vector Signal Analyzer	1066.4317.02
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Option required for **MobiDemo** to run on FSIQ:

FSE-B17 2nd IEC/IEEE-bus Interface	1066.4017.02
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