# FSx RecordPlay Software Application Note

#### Products:

- | R&S<sup>®</sup>FSP | R&S<sup>®</sup>FSV | R&S<sup>®</sup>FSU | R&S<sup>®</sup>FSH4
- | R&S<sup>®</sup>FSQ | R&S<sup>®</sup>FSH8
- | R&S<sup>®</sup>FSIQ | R&S<sup>®</sup>ESCI
- | R&S<sup>®</sup>FSMR | R&S<sup>®</sup>ESU
- | R&S<sup>®</sup>FSL | R&S<sup>®</sup>ESPI
- | R&S<sup>®</sup>FMU

FSxRecordPlay is a program for recording the trace data in frequency and time domain from R&S<sup>®</sup> Spectrum Analyzer FSx family and Test receiver ESx family via IEEE bus, LAN/Internet, or internal remote control connection. The stream waveform data can be played back and analyzed directly in this software.



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## 1 Overview

FSx\_RecordPlay software is useful for checking RF hardware design faults when the fault signal to be measured occurs only occasionally (spark value). This is especially true when it involves measurement of RF signals that change over time, and often unpredictably.

The software can find out on known or unpredictable events, capture the signals seamlessly to PC hard-disk, and analyze the behavior of frequency and amplitude parameters over time.

You can also trace & monitor non-licensed channels or interference signals in some test areas for a specified time via the "Spectrum History" diagram feature. i.e identify the frequency of interference with respect to neighboring transmitters.

The software allows for trace data capture in the time domain (zero span) and FFT mode (FMU36 and FSQ only) as well. This function is useful for capture the Pulse/Radar or RFID signal in time domain. It included the EMI 6dB filter 200Hz, 9kHz and 120kHz in the RBW selection.

In the latest version of 2.85, the software can also operate with the FSH4 and FSH8 spectrum analyzers.



## 2 Software Features

FSx\_RecordPlay is a program for capturing the stream waveform data in frequency and time domain from the Rohde & Schwarz FSx spectrum instrument family and ESx test receiver family via the IEEE bus/LAN/Internal remote control connection. Waveform data can be played back directly on this software.

It features:

- 1. Recording of Frequency, Time Domian and FFT mode (FMU36 and FSQ only) stream waveform data from your FSx Spectrum Analyzer or ESx Test Receiver directly to your PC's disk drive or internal FSx/ESx disk drive.
- Playback of recorded waveform. The stream waveform is saved as *.sft* format and the capture duration time can be set.
- 3. Spectrum History Diagram (waterfall diagram)
- 4. Marker value position in Absolute or relative

Note: The "AUTO" (Max and Min value) detector is not supported in this version.

## 3 Hardware and Software Requirements

#### 3.1 PC Hardware Requirement

CPU: Pentium III 800MHz or better.

RAM: 256 MB or more

Monitor: VGA colour monitor

IEEE bus (optional): IEC/IEEE-bus interface

#### 3.2 PC Software Requirement

Microsoft 32-bit operating system (Windows 2000/XP)

GPIB (optional) driver installed

CVI Run Time Engine

VISA runtime version 2.5 above

RSIB.DLL driver installed (Only need for LAN and internal remote control connection)

# 4 Connecting the Computer and the Instrument

The setup of the instrument connection is done via IEC/IEEE-bus primary address or IP address. Ensure that the GPIB and IP addresses are not the same.

To use the LAN/Internal for remote control connection, please go to the website <a href="http://www.rohde-schwarz.com/">http://www.rohde-schwarz.com/</a> to download and install *RSIB-PassportV1.4.zip*. The RSIB passport requires **NI-VISA V2.5** or higher to be installed. Note that NI-VISA has to be licensed separately.

## 5 Installing the Software

- 1. Extract the ZIP file, FSxRecordPlay.zip, attached with this Application Note.
- Start SETUP.EXE to install the program.
  Program files are copied to a directory of your choice during installation.

Welcom	e to FSX_RECORDPLAYV2_5_v2	2.50		
You are us	ing an unregistered version of FSX_REC	ORDPLAYV2	5. This version has full functionality and	
no expiratio	no expiration date. As we are continuously improving the program, we depend on your comments and			
experience	experience with FSX_RECORDPLAYV2_5. Therefore, we kindly ask you to register			
FSX_RECO	RDPLAYV2_5. Registration is free of ch	arge and does	sn't obligate you or your company.	
To registe	er			
1. Fill out th	e registration form below.			
2. Click 'Cop	py Registration Form to Clipboard'.			
3. Open yo	ur mail client and paste the clipboard into	the email mes	ssage field with 'Ctrl-V'. Then send the	
registration	i form to RAC.ap@ronde-schwarz.com		handland have	
You will red	ceive an email from Ronde & Schwarz w	/ith your regist	tration key.	
Name *	L			
	* The registration key is derived from yo	our name. All o	other fields may be filled out optionally.	
	Please help us by also providing these	few details.		
Company		Dep.		
Street		City	United States	
Telephone		_		
Email				
Comments				
	Copy <u>R</u> egist	tration For	rm to Clipboard	
Once you	receive your registration key			
1. Enter you	ur User Name and Registration Key.			
2. Click 'Cor	ntinue'.			
FSX_RECO	RDPLAYV2_5 will start immediately. This	s registration fo	orm will no longer appear at program start.	
User Name			Chart	
Key Code			<u>s</u> tart	

- 3. Complete the Registration form to receive a registration key.
- 4. Enter the keycode into the registration form and click "Start". The main window for *FSxRecordPlay* appears.
- 5. Once registered, the registration form will not appear for the subsequent times you run *FSxRecordPlay*.

**NOTE:** You can still start the program with full functionality by clicking the "Start" button, even if FSxRecordPlay has not been registered.

# 6 Operating FSx\_RecordPlay Software

🎨 F5x_RecordPlay			
Ele Help			
ROHDE&SCHWAR	Z Current Time: 22:49:46	Zoom	Connection Setup GPIB - Primary Address
Freq Spectrum Spectrum Histo	y l		LAN- TCP/IP Address 10.0.0.15
100.00-			Internal-
95.00-			Meas Mode Cont Stop Quit
90.00-			Freq Mode Start Freq [MHz] Stop Freq [MHz]
85.00-			Start \$890.000000 \$990.000000
80.00-			Cent Cent Freq (MHz) Freq Span(MHz)
75.00-			
70.00-			RBW Ref_Lev (dBm) Detector
65.00-			300kHz -20.00 AutoPeak
55.00-			VBW Lev_Offset Reference:
50.00-			1MHz 0.00 Internal
45.00-			C SWT_Man (ms) 2.500 Mode: Analyzer
40.00-			Marker position
35.00-			
30.00-			X-MHz 33.333333 Y- dBm 66.67
25.00-			X-MHz 66.666667 Y-dBm 33.34 Abs
20.00-			·
15.00-			Sneed:
10.00-			Conf
5.00-			ReplayTime:
890.00000	Frequency [MHz]	Sean(MHz): 103.030030 990.00000	PlayEila:
			Statue:

## 6.1 Start FSx\_RecordPlay.Exe

## 6.2 Connection and instrument control setup

Configure the program to match the setup values shown below before connecting the instrument. In order to capture in time domain (zero span), please select the "Freq Span [MHz]" in 0.0 or set the start and stop Freq in same value.



### 6.3 Capture your stream waveform

Before you capturing stream waveform data, you need to configure:

- 1. Path Filename
- 2. Capture Time
- 3. Capture Interval time

Select the check box for access to the record and play functions. Click on the **"Conf"** button as shown circled in blue to bring up the *Rcord&Play* configuration window.

Conf	Speed:
Status: P	layFile:
Rcc	ord&Play
Path Filename:	
P30_Measurement\F	RecordPlay\fspdemo01.sft
Hours Mins Sec	Capture Interval time (s)

Click on the *Record* button to begin the capture process.

The software displays the remaining recording time in seconds before capturing stops. Click the *Stop* button to end the capturing process.

Conf	Speed	
ReplayTime: 200	€.10.5_18.6102.29	33000(secs
Status: Record		

#### 6.4 Playback the stream waveform data

Double click the PlayFile enty field to display a list of recorded files. Select the recorded waveform file (xxx.sft) and click the *Play* button to begin playback. The software allows you to select different playback speeds, jog forwards/backwards, and pause.

Another feature is the ability to zoom and view marker information.

![](_page_8_Figure_4.jpeg)

![](_page_8_Figure_5.jpeg)

### 6.5 Spectrum History Diagram Features

In "Play" mode, check the **"Spectrum History Diagram On/Off"** checkbox (as shown below) to view the spectrum history diagram. Note that when program is in "Record" mode, it is better to disable **"Spectrum History Diagram On/Off"** checkbox to save PC resources and get more trace data per second.

F5x_RecordPlaydemo			
	Current Time:	15:08:48	
ROHDE & SCHWARZ Pectrum History Diagram On/Off			
Freq Spectrum Spectrum History			

Right-click the mouse on the diagram for options to change the configuration of the Spectrum History Diagram, and save the Graph image.

In the configuration of spectrum history diagram, you can define:

- 1. Number of lines (It's better to select < 100)
- 2. Colors
- 3. Dynamic Range
- 4. User defined minimum and maximum display range.

Spectrum History Config			
Number of Line: \$50 Color D	)efine:		
Min (dBm): -50.0 Max (dBm): 2	20.0	Default Color	Cancel
Color Scale: Dynamic Range:) 🖨	User Define		
	Min: -135dBm	Max: -35dBm	
	Min: -130dBm	Max: -30dBm	
	Min: -125dBm	Max: -25dBm	
	Min: -120dBm	Max: -20dBm	
	Min: -115dBm	Max: -15dBm	
	Min: -110dBm	Max: -10dBm	
	Min: -105dBm	Max: -5dBm	
andre and the barrier of the barrier	Min: -100dBm	Max: 0dBm	
ectrum History Conn	Min: -95dBm	Max: 5dBm	
ve specifistory Graph	Min: -90dBm	Max: 10dBm	
e following link only work for Play mod	e Min: -85dBm	Max: 15dBm	
mp to Spectrum detail (Black)	Min: -80dBm	Max: 20dBm	
port ASCII trace data(Black)	Min: -75dBm	Max: 25dBm	
	🗸 User Define		

Changing the dynamic range for spectrum history configuration will also extended to the frequency spectrum level range.

The following is an example diagram with an interference signal present near a WLAN operating signal.

Right-click the diagram and select "Jump to Spect detail (Black)" (or double left click the black horizontal line) to see details of the interference signal or save it as file in ASCII data format.

![](_page_10_Figure_1.jpeg)

![](_page_11_Figure_1.jpeg)

The following is another example diagram with monitoring the RFID tag response signal present in zero span (time domain).

## 7 Additional Information

Please contact your nearest Rohde-Schwarz office or <u>customersupport.asia@rohde-</u> <u>schwarz.com</u> for additional information or further suggestions.

## 8 Ordering Information

Signal Analyzer, Spectrum	Analyzer, Measuring Recei	ver, Test Receiver
R&S FSP3	9 kHz 3 GHz	1164.4391.03
R&S FSP7	9 kHz 7 GHz	1164.4391.07
R&S FSP13	9 kHz 13.6 GHz	1164.4391.13
R&S FSP30	9 kHz 30 GHz	1164.4391.30
R&S FSP40	9 kHz 40 GHz	1164.4391.40
R&S FSU3	20 Hz 3.6 GHz	1166.1660.03
R&S FSU8	20 Hz 8 GHz	1166.1660.08
R&S FSU26	20 Hz 26.5 GHz	1166.1660.26
R&S FSU46	20 Hz 46.5 GHz	1166.1660.46
R&S FSU50	20 Hz 50 GHz	1166.1660.50
R&S FSQ3	20 Hz 3.6 GHz	1155.5001.03
R&S FSQ8	20 Hz 8 GHz	1155.5001.08
R&S FSQ26	20 Hz 3.6 GHz	1155.5001.26
R&S FSMR3	20 Hz 3.6 GHz	1166.3311.03
R&S FSMR26	20 Hz 26.5 GHz	1166.3311.26
R&S FSMR50	20 Hz 50 GHz	1166.3311.03
R&S FSL3	9 kHz 3 GHz	1300.2502.03
R&S FSL3 with tracking gen	9 kHz 3 GHz	1300.2502.13
R&S FSL6	9 kHz 6 GHz	1300.2502.06
R&S FSL6 with tracking gen	9 kHz 6 GHz	1300.2502.16
R&S ESPI3	9 kHz3 GHz	1164.6407.03
R&S ESPI7	9 kHz7 GHz	1164.6407.07
R&S ESU8	20Hz 8GHz	1302.6005.08
R&S ESU26	20Hz26.5 GHz	1302.6005.26
R&S ESU40	20Hz40GHz	1302.6005.40
R&S FMU36	DC 36MHz	1303.3500.02
R&S FSV3	9 kHz 3.6 GHz	1307.9002K03
R&S FSV7	9 kHz …7 GHz	1307.9002K07
R&S FSV13	9 kHz …13.6 GHz	1307.9002K13
R&S FSV30	9 kHz30 GHz	1307.9002K30
R&S FSV40	9 kHz40 GHz	1307.9002K40
R&S FSH4 with pre-amp	9 kHz3.6 GHz	1309.6000.04
R&S FSH4 with pre-amp &		1200 6000 14
tracking gen	9 KHZ	1309.8000.14
R&S FSH4 with pre-amp &		1300 6000 20
tracking gen & VSWR brige	9 KHZ	1309.0000.20
R&S FSH8 with pre-amp	9 kHz …8 GHz	1309.6000.08
R&S FSH8 with pre-amp &		1300 6000 18
tracking gen	Э KПZ0 GПZ	1203.0000.18
R&S FSH8 with pre-amp &		1300 6000 29
tracking gen & VSWR bridge	3 KHZO GHZ	1309.0000.20

#### About Rohde & Schwarz

Rohde & Schwarz is an independent group of companies specializing in electronics. It is a leading supplier of solutions in the fields of test and measurement, broadcasting, radiomonitoring and radiolocation, as well as secure communications. Established 75 years ago, Rohde & Schwarz has a global presence and a dedicated service network in over 70 countries. Company headquarters are in Munich, Germany.

#### **Environmental commitment**

- Energy-efficient products
- Continuous improvement in environmental sustainability
- ISO 14001-certified environmental management system

![](_page_13_Picture_6.jpeg)

#### **Regional contact**

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