This manual applies to the following options:

- R&S QuickStep Test Executive Software (1528.9010.02)
- Development option for R&S QuickStep Test Executive Software (1528.9026.02)
- R&S QuickStep OTA Basic Application, ATSCAL (1528.9078.02)
- R&S QuickStep license dongle and key card (1528.9003.02)

The firmware of the instrument uses several valuable open source software packages. For information, see the "Open Source Acknowledgment" document, which is available for download from the customer web section on GLORIS, the global Rohde & Schwarz information system: https://extranet.rohde-schwarz.com.

Rohde & Schwarz would like to thank the open source community for their valuable contribution to embedded computing.
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1 Welcome

Welcome to the R&S QuickStep Test Executive software! QuickStep provides a high-speed test sequencer in combination with a powerful graphical user interface for the parameterization and control of test execution. Test procedures are designed in a graphical editor as flow charts based on the provided or additionally developed test functions.

QuickStep lets you set up and run test plans – sequences of individual tests together with scheduling and execution information –, to build test procedures and to evaluate the test results. During test execution, QuickStep controls the test equipment.

QuickStep includes example test projects for typical test conditions and hardware setups. It offers facilities to adapt given test plans and their execution schedules and to develop new ones. Customer extensions can easily be integrated, e.g. for exploiting or developing special test algorithms.

If you only use the QuickStep OTA basic application (installed with QuickStep, QS-ATSCAL license required), most test executive features are hidden at the GUI but used in the background. For details, see the QuickStep ATSCAL OTA Testing user manual.

1.1 Key Features

General features:

- **High performance:**
  QuickStep causes a minimum processing overhead. The test execution speed is comparable to native C++/C# code. Parallel execution of code is supported.

- **User-friendly handling:**
  Configurations are done via graphical user interface (GUI) and intuitive handling (for example drag & drop). Standard tests need only a minimum configuration effort.

- **High flexibility and wide application range:**
  - Examples and reference test cases are available and ready to run.
    The test packages are optimized regarding time consumption.
QuickStep is not confined to a certain set of test instruments since standard communication interfaces are used for controlling the test equipment. 3rd-party instruments are easily integrated.

- Customer-defined test setups and test conditions are supported.
- QuickStep is appropriate for production tests (particularly due to high performance) as well as for test development purposes.

- Support for developing test functionality and easy integration of customer code

Test plan / test procedure configuration:
- Static and dynamic parameter references
- Convenient set and sweep functions
- Limit handling
- Configuration of preparatory and finishing test phases (for example for instrument initialization) around sequences of test steps
- Dynamic control statements (loops, if conditions, jumps)

Test results and execution protocol:
- Diagram for result plots
- Histogram view for statistical analysis
- Configurable result charts and live view results
- Configurable reports
- Test execution protocol viewer

System configuration management:
- Graphical representation of the test setup
- Intuitive building of system configurations with elements from a library
- Parameter and path mapping for multiple test setups

Development of new tests:
- Intuitive building of test procedures via flow charts of blocks from a library
- Control structures (conditions, "If", "Or") and dependencies
- GUI supported generation of source code templates for new test functions
- Powerful API to support standard functionality
- Microsoft Visual Studio® based test function development with C++ or C#
Welcome

Software Components, Product Licensing

- Debugging support: Breakpoints allow to pause a test run on well-defined steps and block functions; single step execution mode is provided
- Usage and extension of R&S Forum, MATLAB and Python scripts
- Support of user-defined dialogs implemented with Windows Forms or WPF
- Standalone usage of block DLLs

1.2 Software Components, Product Licensing

The software has the following components:

- **Test Executive Software**
  Includes the complete functionality to define tests based on the provided block functions, to run tests and analyze the results.
  Type: R&S QS-APP, included option keys: R&S QS-EXE, R&S QS-EDI

- **Development Option**
  Enables the creation of new block functions. The Block Development Tool provides the complete interface to integrate user code into QuickStep via MS Visual Studio projects.
  Type: R&S QS-DEV, option key: R&S QS-DEV, included option key: R&S QS-DBG
  Additionally required type: R&S QS-APP

- **OTA Basic Application**
  Provides the OTA ATSCAL view for easy and integrated control of OTA (over the air) RF radiation testing, particularly for calibration and antenna measurements in combination with an ATS1000. No configuration of a testplan or test procedure is needed. Test results (total radiated power, gain, radiation pattern) are also displayed in the view including polar and 3D chart.
  Type: R&S QS-ATSCAL, option key: R&S QS-ATSCAL
  Additionally required type: R&S QS-APP

- **ATSDRV Positioner Driver Package**
  Provides the functionality to control an ATS-CCP1 antenna positioner with turntable and one antenna boom.
  Type: R&S QS-ATSDRV, free of charge

The licensing is realized with a **License Dongle** (R&S QS-DGL) and controlled with the **R&S license server**. The license dongle consists of a smart card and a USB smart card reader. If the license dongle is connected with a USB port at the PC where QuickStep runs, the local R&S license server (contained in the Quick-
Step installation package) manages the licensing. If connected to a server in the network (particularly for using floating licenses), an R&S license server at that server is needed for managing the licenses.

1.3 Documentation

PDF documentation

The pdf documents are included on the product's USB stick. Most documents are also accessible after QuickStep installation via the Windows "Start" button and the folder "R&S QuickStep > Documentation" or via the QuickStep Help menu. Additionally, the Getting Started is provided as printed document.

The pdf documentation consists of the following documents:

- **Getting Started**
  Provides basic information about the product and how to install it.

- **User Manual**
  Provides detailed information about the features of the application and how to install, configure and use the application. The manual includes descriptions of the applied mechanisms, step-by-step procedures showing how to carry out typical tasks, a reference chapter where the GUI elements and their usage are described, and application examples.

- **OTA Testing User Manual**
  User manual that is specialized for the OTA ATSCAL component of QuickStep.

- **Release Notes**
  Contains the most current information on the application, for example latest changes, news, restrictions.

- **Training Manuals**
  Provide detailed descriptions how to use QuickStep based on instructive examples. The descriptions include step-by-step procedures and many hints on practical usage.
  - **User Training**: Covers all topics related to the usage of QuickStep – except for the development of new blocks.
  - **Developer Training**: Covers the tasks for developing functional blocks. Code examples illustrating how user-defined block functions are developed. The example code can be copied and inserted in programming files.
in MS Visual Studio; therefore two versions of the training manual exist: one for programming in C++, one for programming in C#.

- **Quick Reference**
  Lists the typically required API functions on a poster.

- **ActiveReports User Guide**
  Describes how to use the ReportDesigner which is accessible via the Test Procedure Editor's toolbar. The ReportDesigner allows to create and edit report definitions and styles for the QuickStep reporting functionality.

**Help, CHM documentation**

- The context-sensitive help system is embedded in QuickStep. Press the "Help" button or the F1 key to access the help from the graphical user interface.

- The QuickStep API description is a help system describing the classes and files for block development. It is accessible via the Windows "Start" button and the folder "R&S QuickStep > Help and Manuals" or via the QuickStep Help menu.

- Developer documentation (CHM files) of the provided R&S base blocks for reuse of the block functions for the development of 3rd party blocks.
2 Required Hardware, Software and Firmware

Required hardware and operating system

- Standard PC
- Windows 10 or Windows 7 as 64 bit version, including service pack 1 and universal C runtime update (KB2999226)

Required software

The required software comprises the QuickStep software itself and environment software such as Microsoft C++ Redistributable packages, .NET framework including Developer Pack and the R&S License Server.

Delivered software

The required software is delivered via USB stick. It contains:

- The QuickStep installer which includes all required software
- A floating license server installer package for licensing QuickStep via a floating license server.
- PDF user documentation such as Getting Started, Release Notes, Open Source Acknowledgment
- If ordered, the ATSDRV positioner driver package

Alternatively, the software can be downloaded from GLORIS, the Global Rohde & Schwarz Information System (registration required).

Additional and Optional software

If you want to use VISA instruments for your tests or even develop your own QuickStep blocks, then install the related additional software.

Table 2-1: Additional and optional software

<table>
<thead>
<tr>
<th>Software</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>R&amp;S VISA 5.5.5 or higher</td>
<td>VISA communication with test instruments (except for GPIB)</td>
</tr>
<tr>
<td>VISA for GPIB instruments provided by the manufacturer</td>
<td>Alternative VISA communication with test instruments for GPIB connections</td>
</tr>
</tbody>
</table>
# R&S®QuickStep Required Hardware, Software and Firmware

<table>
<thead>
<tr>
<th>Software</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>NI Driver for GPIB-USB-HS adapter</td>
<td>NI USB-GPIB adapter</td>
</tr>
<tr>
<td>R&amp;S NRP Toolkit</td>
<td>NRP power meter measurements; includes NRPZ VXI plug&amp;play drivers</td>
</tr>
<tr>
<td>SignalCraft Scout Driver</td>
<td>SignalCraft Scout USB to serial / GPIO adapter</td>
</tr>
<tr>
<td>Microsoft Visual Studio (Community) for C++/C# (supported versions: 2015, 2017)</td>
<td>Integrated development environment for block development</td>
</tr>
<tr>
<td>R&amp;S Forum 3.3.6</td>
<td>Editor and runtime environment to create and execute Python scripts, for example for remote control of instruments</td>
</tr>
<tr>
<td>Mathworks MATLAB (tested versions: 2017a, 2017b, 2018a)</td>
<td>Editor and runtime environment to create and execute MATLAB scripts</td>
</tr>
<tr>
<td>Python 2.7 or higher</td>
<td>Native Python installation to edit or create Python scripts</td>
</tr>
<tr>
<td>Python extension for Visual Studio Code</td>
<td>Debugger for Python scripts</td>
</tr>
</tbody>
</table>

R&S-VISA and NI-VISA can be installed in parallel. The VISA variant can be selected per connection type (GPIB, Socket, HiSLIP, USB), for example in the RsVisaConfigure tool. R&S VISA does not support GPIB connections.

The optional software is not provided with QuickStep but can be downloaded from the manufacturer’s website or is provided together with the test instruments.


Special test instruments may require additional software on the host PC, for example device drivers.

**Required firmware on the test instruments**

The provided example test applications require certain firmware versions and options of the involved measurement equipment. So, verify that the firmware versions and options on the measurement equipment comply with the requirements given in the release notes.

Refer to the manuals of the measurement equipment on how to check and respectively update the firmware if necessary.
3 Installation and Start

3.1 Licensing Tasks

The QuickStep functionality is licensed with a smart card provided to the licensing PC via USB smart card reader and USB connection. At the PC, the R&S License Server manages the license issues. You can choose between the following options and related installations:

- Licensing on the PC where QuickStep will run: The QuickStep installation includes the installation of the R&S License Server. No separate license-related installations and configurations are required. Proceed as described in Putting the Smart Card into Operation, then connect the USB smart card reader containing the QuickStep smart card with the QuickStep PC.

- Licensing over another (remote) PC that is LAN-connected to the (local) QuickStep PC: This method allows to use licenses on different LAN-connected PCs, one PC for one license at a time (floating license concept). At the licensing PC (used as floating license server), the R&S License Server is required and additionally a QuickStep configuration file.

![Figure 3-1: Using a floating license server](image-url)
Proceed as follows:

– Install and configure as described in Preparing the Usage of a Floating License Server.
– Proceed as described in Putting the Smart Card into Operation.
– Connect the USB smart card reader containing the QuickStep smart card to the PC used as floating license server.

Details about using the RS License Server are described in the associated Help accessible via the Windows Start menu and via Help button in the title bar of the R&S License Server Manager (which is the GUI representation of the R&S License Server).

### 3.1.1 Preparing the Usage of a Floating License Server

Not required if licensing is done on the PC where QuickStep will run.

1. At the PC used as floating license server, install the `RSQuickStepFloatingLicenseServer_<version number>` package. This package is part of the QuickStep software delivery provided with the product's USB stick. It contains the R&S License Server (which would update an already installed license server) and required QuickStep configurations.

2. Connect the R&S License Server at the PC where QuickStep will run with the floating license server:

   ![R&S License Server Manager](image)

   **Figure 3-2: Connecting to the floating license server**

   a) At the PC where QuickStep will run, open the list of programs from the Windows Start button, open the "R&S License Server" folder and select "Edit Configuration". The R&S License Server Manager starts up with selected "Configuration" tab.
b) In the "Configuration" area on the left side, select "Floating license servers".

c) Select "Add" from the toolbar of the main area.

d) Enter the "Hostname" of the floating license server, keep the "Main port" value and click the "Add" button to accomplish the configuration.

The RS QuickStep floating license server package is versioned according to the QuickStep software. So, if you install a new version of QuickStep on the QuickStep PC, you also have to install the corresponding RS QuickStep floating license server package on the licensing PC.

### 3.1.2 Putting the Smart Card into Operation

A smart card and a USB smart card reader (USB stick) is provided with the QuickStep delivery.

Proceed as follows to use the smart card in SIM format together with the USB card reader (alternatively, the full format smart card can be inserted into a reader connected to or built into a PC):

1. Break out your smart card.

![Smart card and USB smart card reader](image)

2. Insert the smart card with the chip facing upwards and the angled corner facing to the USB stick into the USB stick. The USB stick's LED or "Rohde & Schwarz" label is also facing upwards.
3. Push the smart card completely inside the USB smart card reader.

The USB smart card reader is now ready to be connected with the PC used for QuickStep licensing.

3.2 Installing QuickStep

The QuickStep software is provided as RSQuickStep_[BuildNo].exe file on the product’s USB stick.

Proceed as follows to install QuickStep on the PC:

1. **Copy the RSQuickStep_[BuildNo].exe file into a local directory on your PC.**

2. **Double-click RSQuickStep_[BuildNo].exe.**
   The installation wizard opens. The dialog includes the license terms and conditions.
3. Read the license terms and conditions carefully and tick the checkbox at "I agree to the license terms and conditions" if you agree. Then click "Install" to start the installation.

The installation progress is displayed. The installation comprises QuickStep itself, environmental software and QuickStep applications.

The "Installation Successfully Completed" report indicates the end of a successful installation process. Additionally, optional software packages not installed yet are listed (to be installed later if required for your intended usage of QuickStep).

The installation of the environmental software might require a restart. Click "Restart" in this case to finish the installation.

4. Click "Launch" or "Close".

QuickStep is stored under
C:\Program Files\Rohde-Schwarz\QuickStep\. The example and user files can be found under
C:\Users\Public\Documents\Rohde-Schwarz\QuickStep. Depending on the Windows installation this path might vary. Use the links in the "R&S QuickStep" folder in the Windows start menu to determine the exact location.
Separate icons are created on the desktop to directly start QuickStep, the QuickStep Block Development Tool and the QuickStep OTA application.

QuickStep is ready to be started at the PC.

**Installation via command line with log file creation**

In case of an error during usual installation (for example due to a version conflict with a VS Redistributable), try the installation via command line with log file creation:

1. Open a command shell.
2. Navigate to the directory containing the QuickStep *.exe installation file.
3. Enter `RSQuickStep_<Version>.exe -log quickstep_installation.log`.
4. If the installation still ends with an error, send the created `quickstep_installation.log` via e-mail to R&S Customer Support to get further help. Use the contact information listed at [http://www.custumersupport.rohde-schwarz.com](http://www.custumersupport.rohde-schwarz.com).

A typical error cause could be a version conflict with respect to VS Redistributable software. The log file indicates if and which package, installed by the QuickStep bundle installer, causes problems.
3.3 Installing Optional Software, Configurations

For installing optional software and configuring the connections to your test instruments, see the QuickStep User Manual.

3.4 Starting QuickStep

Prerequisites:

- QuickStep has been installed on the PC.
- A smart card reader with inserted smart card for QuickStep (providing the required licenses) has been connected with the licensing PC. Connecting the smart card can also be done after start of QuickStep.
- The test instruments and the PC have been connected according to the desired test setup.

Proceed as follows:

1. Start all involved test instruments and devices.
2. Ensure that all test instruments are reachable from the PC.
3. At the PC, start QuickStep with a double-click from the Windows start menu or from the desktop icon.

Figure 3-7: QuickStep in the Windows start menu

QuickStep starts up and provides a start dialog.
If you start the QuickStep OTA ATSCAL application, this start dialog is not shown. Login as user Operator. No password is required and the following steps are not relevant.

4. If you do not want QuickStep to occupy an existing floating QS-DEV license in a network (which shall be used on another PC), select "Settings > Disable Development Option" from the menu. Then, the Test Procedure Editor and the Test Procedure Debugger will not be available. You can also occupy the QS-DEV license for several days and offline operation via "Settings > Enable License Occupation" from the menu. Select the desired license duration via "Settings > Set License Occupation Time".

5. Select one of the project options (for example, "Open Project") or double-click a project from the list of "Recent Projects". This selection does not cut the access to other projects. Afterwards, you can change the project or define a new one via the QuickStep "File" menu.

A license check is performed. Its result is reported in the "Log Viewer".

**Recommended next step for beginners**

If you are not yet familiar with QuickStep and look for a tutorial, proceed with the training manuals. They are accessible via the Windows "Start" button and the folder "R&S QuickStep > Documentation" or via the Help menu in QuickStep. The training manuals provide step-by-step procedures based on instructive examples.
# 4 Introduction to QuickStep

This chapter provides a brief overview over QuickStep for a first orientation. The given information is not comprehensive and not represented with full complexity.

## 4.1 Typical Test Setup

![Schematic test setup](image)

**Figure 4-1: Schematic test setup (DUT: Device under Test)**

**Characteristics:**
- QuickStep runs on a PC and controls the test instruments.
- QuickStep basically commands a sequence of test steps where the values of one or several test parameters are varied. The results for each test step are collected and presented within QuickStep.
- Typically, SCPI commands sent over LAN (or GPIB) control the test instruments. Any other remote control interface might be adapted.
- The test instruments can be of any type. Examples are generators, analyzers, power supplies, power sensors, switching devices. The number of used test instruments is not limited.
- One or more test instruments provide test signals as input for the DUT. Vice versa, one or several test instruments gather signals or data from the DUT. Examples:
  - A generator instrument provides an RF signal to the DUT. QuickStep defines the properties of the RF signal to be transmitted.
  - An analyzer instrument receives RF signals from the DUT and measures their properties. QuickStep gets the results from the analyzer.
  - A power supply with variable voltage powers the DUT.
4.2 Graphical User Interface

All operational tasks for configuring and executing tests are carried out on the PC. When starting QuickStep, the "QuickStep" window – the graphical user interface (GUI) – opens.

The GUI is structured with a menu bar, tabs, a toolbar and several panes. The content to be displayed is distributed in several tabs. The selected tab defines which type of information is displayed in the different panes. See the descriptions below for information on the content for single tabs. The entries in the toolbar also depend on the selected tab.

Figure 4-2: GUI overview
1 = Menu bar
2 = Tabs
3 = Toolbar
4 = Navigation / browser / library
5 = Main pane
6 = Secondary pane
4.2.1 Test Execution

This view becomes relevant when the current test is executed. You can start the test run and control the test execution.

Figure 4-3: Test Execution

1 = Start the test execution
2 = See and control the execution progress
3 = View the logged messages
4 = Select the block function flow chart of interest
5 = Inspect the current block function

Progress bar

The progress bar shows how far the test has been executed. You can control test execution, for example resume test execution after a halt due to a breakpoint in the test plan.

Log Viewer

The Log Viewer protocols the events occurred during operation of QuickStep, particularly after starting the test execution. The messages are color-coded.
Test Procedure Debugger

The "Test Procedure Debugger" allows to check the values of parameters during test run. It includes the Test Procedure Browser from the Test Procedure Editor for selecting the block function diagram that contains the block function of interest.

The debugger works together with the progress bar during test run. You can proceed in the test execution step by step with the "Step" button. If you have defined breakpoints for test steps (to be done in the Testplan Editor) and have clicked the "Continue" button, the test execution is halted at each breakpoint until you click "Continue" again.

4.2.2 Test Plan Editor

The "Test Plan Editor" is the initial view of QuickStep. The user prepares a list of test steps and starts the test execution from the toolbar.

Figure 4-4: Testplan Editor

1 = Select a sequence of test steps (or define groups and sequences)
2 = Inspect and edit the sequence of test steps
3 = Edit parameter values
4 = Start the test plan
Central test step table

In the table, each test step is represented in one row, the columns display the related parameters. Parameter values can directly be edited in the table after a double-click.

Each test step is connected to a test procedure by the entry in the "Test Procedure" column. The parameter set of each test step is dynamically adapted according to the selected test procedure. If test procedure parameters are modified in the test procedure editor, the modifications get effective in the test plan editor after clicking "Update Test Project" or when the test is started.

Powerful sweep and set functions allow quick generation of parameter sweeps for efficient parameter setting of multiple test steps. Multi-parameter sweeps might be defined within one single test step. Prioritization might be used to keep control on the order of the parameter sweeps within nested loops.

Panes on the right-hand side

In the "Test Step Parameters" tab, the parameters of a test step are displayed in vertical order for a better overview and providing a more convenient way to edit parameters without scrolling. The "TPR Options" tab contains parameters for the whole test, for example repetitions. The "Test Step Limits" tab shows the configured limits for measurement results.

Regarding test development, various settings for logging and debugging are offered. Breakpoints for debugging and single-step execution can be enabled for specific test steps.

Test Project Browser on the left-hand side

Multiple test step parameter tables are organized in a tree structure for keeping an overview of large tests. Control structures can be applied to sequences of test steps, their parameters are configured in the right pane. "Test Project Parameters" contains static and dynamic global parameters to be configured in the middle pane.

4.2.3 Results Viewer

The results of a test run are displayed in the "Results Viewer".

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Figure 4-5: Results Viewer

1 = Select a result file
2 = Inspect the result table and select one or more result columns
3 = Inspect the diagram representation of the results for the selected column(s)
4 = Inspect the distribution of result values and check the statistical evaluation

Results File Browser on the left-hand side

The "Result File Browser" helps to keep an overview of large sets of result data. Each test run generates a new time-stamped folder with a complete set of result files with tab-separated measurement and timing results. When testing several DUTs in "Continuous Run" mode, a separate subfolder is created for each DUT. If results of the type trace are generated, these are also collected in a DUT-specific subfolder. Additionally, a copy of the test plan and the execution log is stored as a reference.

When selecting a result file in the Result File Browser, its content is shown as table in the central area. TestStepsResults.log is the main result file containing the results for each test step. ExecutionProtocol ... .txt contains all logged messages with timestamp and origin.

Central Results Table

The central "Results Table" shows the results in a table. In case TestStepsResults.log has been selected, each test step is presented in one row and each result parameter in one column. If one or several result parameters
in the results table are selected, the results over the test steps (or other configurable running variables) are represented in the diagram on the right-hand side.

Each column of the table offers powerful sort and filter functions. An export filter makes it possible to export a subset of the table as CSV or XLS file. In case the table shows the content of the execution protocol, it is possible to export and reuse SCPI sequences within other test environments. References to specific results can be created via right-click. These can then be used in the "Test Procedure Editor".

**Analysis panes on the right-hand side**

The "Diagram" pane plots the data of a single or multiple columns that are selected within the result table. Scatter plots are possible, since any result parameter can be selected for the x-axis of the plot. Results can be assigned to color-coded groups by selecting an additional grouping parameter. Delta markers are available for measurements.

If results of the trace type are selected, an adopted diagram pane is available. Traces files can also be loaded directly into the central results table and displayed with the standard results viewer. Zoom in and out is supported by mouse click, mouse wheel and diagram bars. A right-click menu offers access to additional settings.

The "Histogram & Statistics" pane provides a histogram pane and statistical analysis of the result data that is selected within the result table.

### 4.2.4 Test Procedure Editor

A test procedure basically defines what functionality is executed when the test steps connected to the test procedure are carried out. The blocks which can be used for a test are managed in the "Blocks & Connectivity" part. The test flow for each procedure is then set up as flowchart with a graphical editor, based on a library of provided functions or user-developed functions.
Control elements such as "If", "Or", "Fork" and "Join" are available to handle execution branches and loops. Conditions achieve a conditional execution of test functions. All test function parameters can be made available for test parameterization within the test plan editor. Existing test procedures can be modified or extended without source code development. The right-click menu provides access to additional features like automatic alignment or changing the block instance. If a new block function is dropped directly on an existing block function without a successor, the new block function is automatically connected.

The toolbar provides access to tools for developing blocks, handling SCPI commands for connected test instruments, designing reports and integrating scripts.

### 4.2.5 System Configurator

The "System Configurator" reflects the test setup and can be used for setting the device- and connection-specific parameters as occurring with the test setup.
The main pane displays the used devices (test instruments, components, even attenuators) and connections. You drag devices from the "Device Library" on the left pane into the main pane. Then you draw connections between the devices. On the right side in the "Properties" pane, you can see and edit the properties of the currently activated device.

The system configurator facilitates the handling of several use cases:

- Assistance for building up a VISA connection to a test instrument.
- Automatic calculation of the RF path loss during test execution. Attenuations/losses for individual components of the system are defined, then one or more connections and system components are assigned to an RF path.
- Easy switching between several test benches. Therefore, the system configuration contains the configuration for each of them.
- Management of system-dependent parameters like connection IDs.

Using these features in a test plan is optional, the "System Configurator" can also be left empty.

### 4.2.6 OTA ATSCAL

The "OTA ATSCAL" view provides a comprehensive GUI for measuring the radio transmission characteristics of RF components like antennas including the calibration.
Figure 4-8: OTA view

1 = Select the used test instruments and configure the test system
2 = Set the frequency range and frequency increment, select the operating mode, for example "Measurement"
3 = Set the measurement angles and the measured quantity
4 = Initiate, continue or stop the measurement
5 = See the current angles and the live results
6 = Inspect the measurement results in a chart

4.3 Block Function Development

The Block Development Tool is provided for defining new test blocks, test functions and the associated function parameters. Based on these definitions, Microsoft Visual Studio C++ or C# projects with source code templates are automatically generated. The templates just have to be extended with user code in order to create user-specific test functions. The newly developed test functions are available in the test procedure editor after compilation.
The QuickStep API (application programming interface) offers a comprehensive set of functions for data exchange with other functions, logging of results and other frequently required tasks. Even users with limited software development experience can implement new test functions with just a few lines of code. Development experts can exploit all capabilities of Visual Studio for development of complex test functions.

Figure 4-9: Main section of the Block Development Tool