Product Training Catalogue

KEYSIGHT
TECHNOLOGIES

Training keeps you up to date with latest technologies and helps you gain the most from your Keysight test systems

We offer a comprehensive range of training courses in a variety of formats for each of our Wireless Devices & Operators (WDO) test solutions. The training is tailored to your requirements – you can choose the location, duration and focus. By combining live demonstrations with practical sessions, we help you quickly become confident in the efficient use of Keysight solutions.

Keysight provides specialist systems to enable manufacturers to design efficient chipsets, high quality mobile devices and network equipment and bring them to market quickly and cost-effectively. As technology continues to advance and the functionality of devices becomes increasingly complex, development and testing are ever more critical. Our laboratory-based test systems not only enable manufacturers to certify their products against industry standards, but also enable network operators to meet end-customers' quality expectations by ensuring that devices perform efficiently in real-life situations.

Instructor led training

Instructor led training includes demonstrations and practical sessions so you can quickly become confident in the efficient and full use of our test products.

Depending on the technical depth and requirements of attendees, Keysight offers three levels of training: Introductory, Intermediate and Advanced.

Prior to delivery, we welcome a discussion about your specific requirements in terms of content, technical depth and duration of each section.

Options:

- Closed courses for your staff held at your company premises
- Closed courses for your staff held at an Keysight office
- Open course for people from several companies

Custom courses

Upon request, we can modify and combine training sessions to meet your specific requirements. For example, custom courses could include related 3GPP RF and protocol theory, in depth study of test case/scripts, creation of new scripts, generation of channel models or E7515A UXM Wireless Test Set Solutions.

To book a training course, please email
training.di@Keysight.com

Conformance Toolset courses

Keysight's Conformance Toolset provides the user with the capability to test across a range of technologies from GSM to LTE-A for compliance with both GCF and PTCRB certification requirements.

Conformance Toolset training provides a solid grounding in the operations required to configure, execute and analyse the results of conformance tests cases.

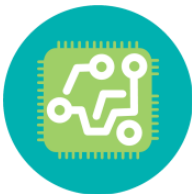| COURSE	LEVEL	DURATION
CONFORMANCE TOOLSET INTRODUCTION Provides an overview of Conformance Toolset, defining test plans, executing tests and analysing results.	Introductory	1 day
CT FOR TEST ENGINEERS Covers the key aspects of Conformance Toolset, configuring and defining test plans, executing test plans and analysing results.	Intermediate	2 days
CT FOR DEVELOPERS This course includes the *CT for Test Engineers* course and additionally studies the TTCN and C source code for the test cases. Typical test cases are reviewed and new test cases are created, built and run.	Advanced	4 days

SAS and operator acceptance script courses

SAS is an easy-to-use network simulator that facilitates interoperability testing across all technologies from GSM to LTE-A. Support for network operator acceptance scripts dramatically reduces testing and time to market.

SAS training describes how to perform tests in SAS interactive mode, how to create bespoke scripts and how to read and interpret the operator acceptance scripts. The courses also cover the operations required to configure the test environment, execute tests and analyse results.

COURSE	LEVEL	DURATION
SAS INTRODUCTION Provides an overview of SAS interactive mode and script execution.	Introductory	1 day
SAS FOR TEST ENGINEERS Covers SAS interactive mode for immediate interoperability testing and the execution of SAS scripts for formal network validation testing.	Intermediate	2 days
SAS FOR DEVELOPERS This course includes the *SAS for Test Engineers* course and additionally covers modification and creation of custom scripts for interoperability testing.	Advanced	3 days

Development Toolset courses

Development Toolset is a comprehensive suite of tools supporting all phases of mobile terminal development across all technologies. Custom test scripts may be built quickly from pre-defined protocol blocks in Scenario Mode. Alternatively, complete flexibility and control of the test applications may be accessed using source code programming in the Advanced Mode.

Development Toolset training provides a solid grounding in the operations required to configure, execute and analyse the results of Development Toolset test scripts.

COURSE	LEVEL	DURATION
DEVELOPMENT TOOLSET INTRODUCTION This course provides an overview of the tools provided by Development Toolset for execution of pre-defined scripts in both Scenario and Advanced modes.	Introductory	1 day
DT FOR INTEGRATION ENGINEERS The focus of this course is the configuration and execution of pre-defined scripts in both Scenario and Advanced modes.	Intermediate	2 days
DT FOR DEVELOPERS This includes the content of the *DT for Integration Engineers* course and additionally covers modification and creation of custom scripts in both modes.	Advanced	4 days

S-CORE application testing courses

The S-CORE solution offers device application testing for Wi-Fi offload, VoLTE, RCS and other IMS based services. S-CORE includes an application test suite, a rich and fully-featured user interface, a multi-RAT test platform and a wide portfolio of test case packages, enabling rapid operator acceptance and device certification.

S-CORE training provides a solid grounding in the operations required to configure, execute test cases and analyse the results. In addition, it also covers troubleshooting and methods of software update in S-Core.

COURSE	LEVEL	DURATION
S-CORE BASIS SYSTEM TRAINING Covers installation, S-Core system set up, S-Core software update, troubleshooting, operating GUI and running of test cases followed by result analysis.	Intermediate	3 days

T4010S Test System courses

Keysight's T4010S Test System provides the user with the capability to test LTE / LTE-Advanced carrier aggregation, RF and RRM conformance testing, NB-IOT RF and solutions for design verification. The system also supports a wide range of supplementary test plans required for network operator acceptance.

This training provides a solid grounding in the operations required to configure, execute and analyse the results of conformance tests cases.

COURSE	LEVEL	DURATION
T4010S TEST SYSTEM INTRODUCTION Provides an overview of T4010S Test System, defining test plans, executing tests and analysing results.	Introductory	1 day
T4010S TEST SYSTEM CONFORMANCE TESTING Covers the key aspects of Conformance Testing, providing a comprehensive training that helps you through the process of entering UE-under-test data into the test system, defining the test plan to be executed, configuring the system to execute the tests according to the specific UE characteristics, analysing the tests results, and producing the associated test reports.	Intermediate	2 days
T4010S TEST SYSTEM DESIGN AND VERIFICATION TESTING This course includes training to test beyond the scope of 3GPP conformance. Configuring test conditions and LTE signalling to customize your test plan according to your Design and Verification needs. T4010S DV system lets you create or customize test cases to verify LTE and NB-IOT UE RF parametric design characteristics. This course also covers supplementary test plans required for network operator acceptance and testing of Regulatory Requirements.	Advanced	4 days

E7515A UXM Wireless Test Set Solutions courses

The UXM is a highly integrated signalling test set created for functional and RF design validation in the 4G era and beyond, delivering LTE-Advanced Pro data rates up to 1 Gbps now and handling more complex requirements later.

This training provides a solid grounding in the operations required to configure, execute and analyse the results of the E7515A UXM Wireless Test Set solutions.

COURSE	LEVEL	DURATION
E7515A UXM WIRELESS TEST SET INTRODUCTION Provides an overview of E7515A UXM Wireless Test Set, defining test scenarios, executing tests and analysing results.	Introductory	1 day
E7515A UXM WIRELESS TEST SET FOR TEST ENGINEERS The focus of this course is to cover the operation of the key functionalities required for RF design validation, including flexible receiver test and trusted X-Series transmitter measurement science, capabilities such as multiple component carriers or advanced MIMO techniques, and functional test features including IP data and handovers. Additionally, it provides an overview of the Message Editor tool.	Intermediate	2 days
E7515A UXM WIRELESS TEST SET FOR DEVELOPERS This course provides the user with the capabilities to automate most of the features available on our current BSE emulator and additional instrumentation needed for functional testing: Data Performance, E2E Data Throughput, Mobility Testing, Battery Drainage Analysis, IMS, Audio Analysis, etc. It is the perfect platform that enables the creation of customer specific test plans around functional automation using the Test Automation Platform.	Advanced	4 days

Propsim courses

Keysight's Propsim channel emulators accurately emulate the characteristics of real-world radio channel conditions in the lab for a wide range of applications.

Note – If several Propsim courses are delivered together, the total duration may be reduced since some of the courses include common modules.

COURSE	LEVEL	DURATION
PROPSIM PRODUCTS INTRODUCTION This course provides an overview of the Propsim platforms and products, linked with explanations of the channel models that may be emulated.	Introductory	1 day
PROPSIM CUSTOM CHANNEL EMULATION Covering the Propsim platforms and user interface for creation of channel models, and the execution of standard and bespoke channel emulations.	Intermediate	2 days
PROPSIM MIMO OTA Over-the-air performance testing using the Propsim platform in conjunction with an anechoic chamber.	Advanced	2 days
PROPSIM GEOMETRIC CHANNEL MODELLING Scenario based applications which simulate 3D antenna models and antenna array geometries.	Advanced	2 days
PROPSIM WLAN MODELLING TOOL Emulation of channels relevant to testing and benchmarking Wi-Fi devices.	Advanced	2 days
PROPSIM MANET TEST SCENARIOS **PROPSIM VIRTUAL DRIVE TEST MODELLING TOOL** Special Consultancy training may be arranged for these tools on request.	Special	Custom

VDT Toolset courses

Real-world, automated performance testing of mobile devices and network infrastructure in the laboratory

COURSE	LEVEL	DURATION
PROPSIM VDT TOOLSET SIMULATED NETWORK FOR TEST ENGINEERS Covering configuration of the Propsim, SAS and Nemo test applications. Execution and automation of the VDT Toolset operator scripts. Analysis of the performance test results. *Special consultancy may be purchased to augment this training to cover creation of custom protocol control scripts and generation of channel models based on parameters captured from a live network.*	Intermediate	2 days
VDT TOOLSET REAL NETWORK Covering configuration of the Propsim and Nemo test applications. Capture and import of the radio channel information from the live network. Execution and automation of the VDT Toolset campaigns. Analysis of the performance test results.	Advanced	3 days

Online courses

Online courses are presented as a series of short sessions to optimise learning.

Online courses take approximately three hours, and are at introductory/intermediate level.

CONFORMANCE TOOLSET FOR TEST ENGINEERS

Covers the key aspects of Conformance Toolset, configuring and defining test plans, executing test plans and analysing results.

CONFORMANCE TOOLSET - RESULTS ANALYSIS

Provides a step-by-step guide for analysing test case failures. Focus is primarily on the verdicts, protocol records and advanced facilities within the Log Viewer. Also covers failures that relate to PICS and PIXIT settings for the UE and test execution.

MNO SCRIPT TESTING FOR TEST ENGINEERS

Provides an overview of the Mobile Network Operator scripts used for formal network validation testing and covers configuration, execution and the analysis of results.

MNO SCRIPTS - RESULTS ANALYSIS

Provides a step-by-step guide for analysing failures for MNO scripts. Focus is primarily on the verdicts, protocol and test execution records captured within the SAS result file. Also covers the records and advanced facilities within the Log Viewer.

DEVELOPMENT TOOLSET FOR INTEGRATION ENGINEERS

The focus of this course is the configuration and execution of pre-defined scripts in both Scenario and Advanced modes.

Online courses

S-CORE APPLICATION BASIC SYSTEM TRAINING

Covers Introduction of S-Core system, S-Core software update, operating GUI and running of Test cases followed by result analysis.

T4010S TEST SYSTEM OVERVIEW

Provides an overview of T4010S Test System, defining test plans, executing tests and analysing results.

E7515A UXM WIRELESS TEST SET SOLUTIONS OVERVIEW

Provides an overview of E7515A UXM Wireless Test Set, defining test scenarios, executing tests and analysing results.

PROPSIM OVERVIEW

Provides an overview of the Propsim platforms and products, linked with a description of the channel models that may be emulated.

VDT TOOLSET REAL NETWORK OVERVIEW

Provides an overview of the configuration of the Propsim and Nemo test applications, capturing the radio channel information from the live network and execution of the VDT Toolset campaigns.

VDT TOOLSET SIMULATED NETWORK OVERVIEW

Provides an overview of the configuration of the Propsim, SAS and Nemo test applications, and how to run campaigns of VDT Toolset operator scripts.

Webbinars

Webbinars

Web-based training seminars cover new features and complex areas of system operation, and typically are under an hour in duration.

Please find details of forthcoming webinars in Keysight's training newsletter.

- **Open sessions attended by staff from several companies**
- **Closed sessions, personalised to allow more interaction and questions**
- **Recorded sessions, allowing replays of webinars that you are unable to attend**

Videos

The Customer Extranet provides access to short videos introducing new products and features.

How to run a data throughput test