Overview

This configuration guide contains information to help you configure your S8890A Wireless Device Functional Test Reference Solution and tailor the system to meet your requirements.

The S8890A wireless device functional test reference solution is intended for automated UE test for:

- Signalling
- Mobility (handovers)
- Throughput
- IMS/VoLTE
- Battery Drain

This configuration guide contains most but not all of the common options for these solutions. For example, the UXM instrument can be connected to a second UXM to provide up to 5CC throughput testing, however this configuration guide will only show the options for up to 2CC in a single instrument. Where options such as this are omitted, the related literature section provides links to the full configuration guides for the available instruments and software options.

Some individual features may require options ordered from multiple option sections A-D. For example, battery drain for throughput and VoLTE calls will require multiple UXM options (section A), a power analyzer (section B), all 4 S8890A options (section C) and E6966B IMS software options (section C).
A. Select options for UXM

The S8890A Wireless Device Functional Test reference solution will operate with all UXM configurations, which are too numerous to list here. Below is a configuration which will allow throughput analysis for up to 2*2MIMO with 2 carrier aggregation, end to end IMS VoLTE calls with SRVCC, CSFB to W-CDMA and DC power analysis.

Other MIMO and CA configurations are available with dual UXM configurations, see the full UXM configuration Guide which can be located at [http://literature.cdn.keysight.com/litweb/pdf/5991-4078EN.pdf](http://literature.cdn.keysight.com/litweb/pdf/5991-4078EN.pdf)

<table>
<thead>
<tr>
<th>Step 1. Start with E7515A base configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ E7515A – 504: 300 MHz to 3.8 GHz Included in base configuration of E7515A</td>
</tr>
<tr>
<td>□ E7515A – 506: 300 MHz to 6 GHz Extend frequency range to 6GHz</td>
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<tr>
<th>Step 2. Choose between single transceiver (TRX) set and dual transceiver set</th>
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<tr>
<td>□ E7515A-RA1: RF up-down converter A Included in base configuration of E7515A</td>
</tr>
<tr>
<td>□ E7515A-BA1: Digital baseband transceiver A Included in base configuration of E7515A</td>
</tr>
<tr>
<td>□ E7515A-RB1: RF up-down converter B Enable the 2nd cell in E7515A</td>
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<tr>
<td>□ E7515A-BB1: Digital baseband transceiver B Enable the 2nd cell in E7515A</td>
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<tr>
<th>Step 3. Add channel emulation</th>
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<tbody>
<tr>
<td>□ E7515A-C01: Channel emulation Enable the channel emulation feature in E7515A</td>
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<tr>
<th>Step 4. Add Protocol Logging</th>
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<tr>
<td>□ E7515A-L01: Protocol logging data source Provide protocol logging capability</td>
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<tr>
<th>Step 5. Add internal application server (recommended)</th>
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<tbody>
<tr>
<td>□ E7515A-S01: Internal application server to host an IMS-SIP server application &amp; TAP software</td>
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<tr>
<th>Step 6. Select UXM Wireless Test Set Features</th>
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</thead>
<tbody>
<tr>
<td>□ E7515A-1BW: Getting Started Guide</td>
</tr>
<tr>
<td>□ E7515A-KYB: Keyboard, USB</td>
</tr>
<tr>
<td>□ E7515A-MSE: Mouse, USB</td>
</tr>
<tr>
<td>□ E7515A-1CM: Rackmount flange kit</td>
</tr>
<tr>
<td>□ E7515A-9xx Powercord: (15 A)</td>
</tr>
<tr>
<td>□ E7515-10910: Keysight test USIM card, tri namo Enables end to end VoLTE calls on a single, dual cell UXM</td>
</tr>
<tr>
<td>□ T1099-11200: Keysight 3GPP standard mini SIM card Enables end to end VoLTE calls on a single, dual cell UXM</td>
</tr>
<tr>
<td>□ T1099-11300: Keysight 3GPP standard micro SIM card Enables end to end VoLTE calls on a single, dual cell UXM</td>
</tr>
<tr>
<td>□ T1099-11400: Keysight 3GPP standard nano SIM card Enables end to end VoLTE calls on a single, dual cell UXM</td>
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<tr>
<th>Step 7. Select LTE applications</th>
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<tbody>
<tr>
<td>□ E7530A-1FP-TDD: TDD Test Application Basic VoLTE TDD software</td>
</tr>
<tr>
<td>□ E7530A-1FP-FDD: FDD Application Basic VoLTE FDD software</td>
</tr>
<tr>
<td>□ E7530A-FFP-0P1: IP Data IP Data connection to support VoLTE</td>
</tr>
<tr>
<td>□ E7530A-FFP-0H1: iRAT Handover For SRVCC and CSFB test</td>
</tr>
<tr>
<td>□ E7530A-AFP-TDD: TDD 2CC DL CA For TDD DL CA test</td>
</tr>
<tr>
<td>□ E7530A-AFP-FDD: FDD 2CC DL CA For FDD DL CA test</td>
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<tr>
<th>Step 8. Select W-CDMA application</th>
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<tr>
<td>□ E7523A-1FP: W-CDMA/HSPA+ For SRVCC and CSFB test</td>
</tr>
<tr>
<td>□ E7523A-AFP: HSDPA MIMO</td>
</tr>
<tr>
<td>□ E7523A-FFP-0P1: IP data For SRVCC and CSFB test</td>
</tr>
<tr>
<td>□ E7523A-FFP-0H1: Handovers For SRVCC and CSFB test</td>
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<tr>
<th>Step 9. Select GSM application</th>
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</thead>
<tbody>
<tr>
<td>□ E7521A-1FP: GSM/GPRS/EGPRS For SRVCC and CSFB test</td>
</tr>
<tr>
<td>□ E7521A-FFP-0P1: IP data For SRVCC and CSFB test</td>
</tr>
<tr>
<td>□ E7521A-FFP-0H1: Handovers For SRVCC and CSFB test</td>
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</tbody>
</table>
B. Select options for N6705B DC Power Analyzer

Step 1. Select DC Power Analyser options

- N6705B DC Power analyzer, Modular, 600W, 4 slots
- N6781A 2 Quadrant Source/Measure Unit for Battery Drain Analysis (20W)
- N6785A 2 Quadrant Source/Measure Unit for Battery Drain Analysis (80W)
- 14585A Control and Analysis Software for Advanced Power Supplies
  For recording and indepth analysis

www.keysight.com/find/14585A
www.keysight.com/find/N6705B

C. Select software

C1. Select software for IMS-SIP Network Emulator Software

E6966B IMS-SIP Network Emulator Software

- E6966B-1TP IMS-SIP Server Emulator
- E6966B-2TP IMS-SIP Client Emulator
- E6966B-3TP IMS-SIP Conference Server Emulator
- E6966B-5TP EVS Codec for IMS-SIP Client

All the above IMS options are only required for VoLTE test. E6966B-3TP is required only for conferencing tests. The IMS software above can operate on the main PC of the UXM, the optional internal UXM application server or on the automation PC (see below). The PC requirements are listed in section E. More information on the E6966B IMS-SIP Network Emulator Software is available at: www.keysight.com/find/E6966B

C2. Add Automation software

Select Automation software

S8990A Wireless Device Functional Test Reference Solution

- KS8400A Test Automation Platform
  Developer's System
  Provides core automation functions

- KS8201A UXM Signalling and Mobility
  Automates UXM signaling and mobility, and Android UE's

- KS8202A UXM Data Performance
  Automates UXM data throughput - FTP, TCP/IP, UDP, iPERF

- KS8203A IMS/VoLTE Signalling
  Automates E6966B (Server, Client, Conference Server)

- KS8204A UE Battery Analysis
  Automates Keysight Power Supplies

The automation software above runs on a Windows PC connected to the various instruments via LAN. Each of the KS82xxA options above provides a separately licensed downloadable plug-in to be installed with the main KS8400A user interface. KS8400A and KS8201A provides the basis for all the remaining plug-ins and should always be ordered. KS8202A, KS8203A and KS8204A should only be ordered individually as upgrades to a system which already includes both KS8400A and KS8201A. Keysight can provide Technical Consultantcy using the ordering options in section D below to customize test cases or to write new test cases specific to end user requirements. Your Keysight representative can provide detail and prices for these services. More information on the KS8400A Test Automation Platform can be found at www.keysight.com/find/TAP

<table>
<thead>
<tr>
<th>Suffix</th>
<th>License Name / Type</th>
<th>Time Limit</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1FP</td>
<td>Fixed Perpetual</td>
<td></td>
<td>Fixed permanently to a single PC</td>
</tr>
<tr>
<td>-1TP</td>
<td>Transportable Perpetual</td>
<td></td>
<td>Can be re-hosted to other PC's using Keysight License Server</td>
</tr>
<tr>
<td>-1FL</td>
<td>Fixed Limited</td>
<td>1 year</td>
<td>Fixed to a single PC for one year</td>
</tr>
<tr>
<td>-1TL</td>
<td>Transportable Limited</td>
<td>1 year</td>
<td>Can be re-hosted to other PC's using Keysight License Server</td>
</tr>
<tr>
<td>-TRL</td>
<td>Trial</td>
<td>30 days</td>
<td>Free Trial License</td>
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</table>
D. Select services, calibration, startup assistance

<table>
<thead>
<tr>
<th>Service</th>
<th>Description</th>
<th>Notes</th>
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<tbody>
<tr>
<td>☑ PS-S10</td>
<td>Remote schedules productivity assistance.</td>
<td>Optional, may be required for specific applications</td>
</tr>
<tr>
<td>☑ PS-X10</td>
<td>Custom Services</td>
<td>Optional, may be required for specific applications</td>
</tr>
</tbody>
</table>

Sample test cases can be provided through Keysight Custom Services or Productivity Assistance. With these services S8890A can be configured to provide the test cases required.

One Day Start-up Assistance

A Keysight applications engineer will get you started quickly by helping you install the modules in a chassis, configure the controller, load software and start making measurements.

Calibration Services

The E7515A is factory calibrated and shipped with an ISO-9002, NIST-traceable calibration certificate. A one year calibration cycle is recommended for E7515A.

E. PC requirements for Test Automation Platform and Plug-ins

Recommended minimum PC configuration

- Microsoft Windows 7 Service Pack 1: Starter, Home Basic, Home Premium, Professional, Ultimate or Enterprise (32- or 64-bit)
- Microsoft Windows 8 or 8.1: Base, Professional or Enterprise (32- or 64-bit)
- Microsoft Windows 10: Home, Professional, Enterprise or Education (32- or 64-bit)
- At least 1 GB free disk space
- Minimum 1024x768 video monitor

Prerequisite drivers and software

- Keysight IO Libraries Suite Version 15.0 or above
- For software development: Microsoft Visual Studio 2012, 2013 or 2015, Professional or Enterprise editions recommended
- Microsoft .NET v3.5 and 4.5.2 or later
- LAN port

F. Related literature

More details on S8890A: www.keysight.com/find/S8890A
More details on TAP KS8400A: www.keysight.com/find/TAP
More details on UXM: www.keysight.com/find/uxm
More details on Power Analyzer: www.keysight.com/find/N6705B
More details on Power Analysis SW www.keysight.com/find/14585A
More details on IMS Server, Client and Conference Server: www.keysight.com/find/E6966B
Keysight IO Libraries Suite Version 15.0 or above: www.keysight.com/find/iosuite
G. Physical Connections and Configurations

**Configuration 1**
- Single UE connected via RF to the UXM, which provides LTE, W-CDMA and GSM emulation
- VoLTE calls originated or terminated by IMS Client on UXM
- IMS Server and IMS Conference Server on UXM
- UE Power supplied by N6705B/N6781A Power Analyzer
- UE, UXM, IMS and Power Analyzer all controlled by S8890A Wireless Device Functional Test Reference Solution SW on PC

**Configuration 2**
- Two UE's with different SIM cards, both connected to different TRX units on UXM
- End to end VoLTE calls from UE to UE, registered to IMS server on UXM
- UE, UXM and IMS all controlled by S8890A Wireless Device Functional Test Reference Solution SW on PC
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India 1 800 11 2626
Japan 0120 (421) 345
Korea 080 769 0800
Malaysia 1 800 988 848
Singapore 1 800 375 8100
Taiwan 0800 047 866
Other AP Countries (65) 6375 8100

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Russia 8800 5093286
Spain 800 000154
Sweden 0200 682255
Switzerland 0800 805363
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Opt. 3 (IT)
United Kingdom 0800 0260637

For other unlisted countries:
www.keysight.com/find/contactus
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