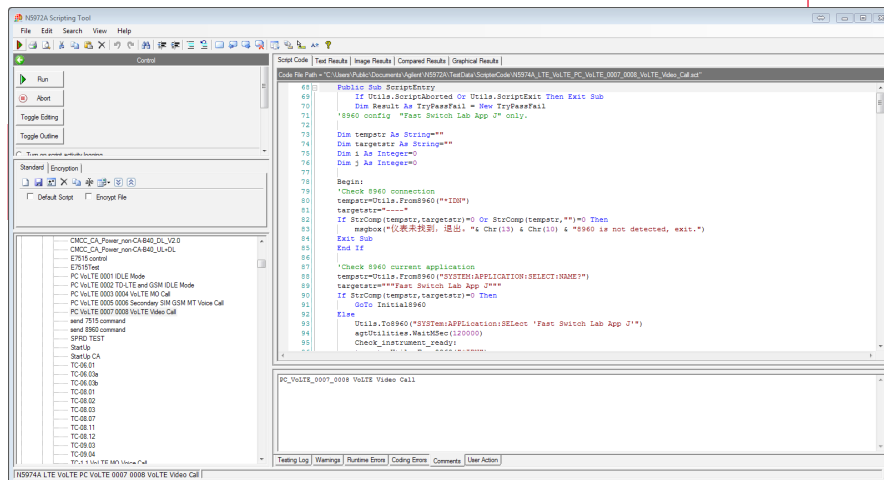


Keysight Technologies

VoLTE Battery Test, Reference Solution

Solution Brochure



The VoLTE battery test reference solution implements battery performance test plan and output results to a required test report. With this solution you can make reliable, repeatable measurements follow standard without having to create complex code or program the test equipment by yourself, thus to accelerate your whole VoLTE and Battery test and validation process.

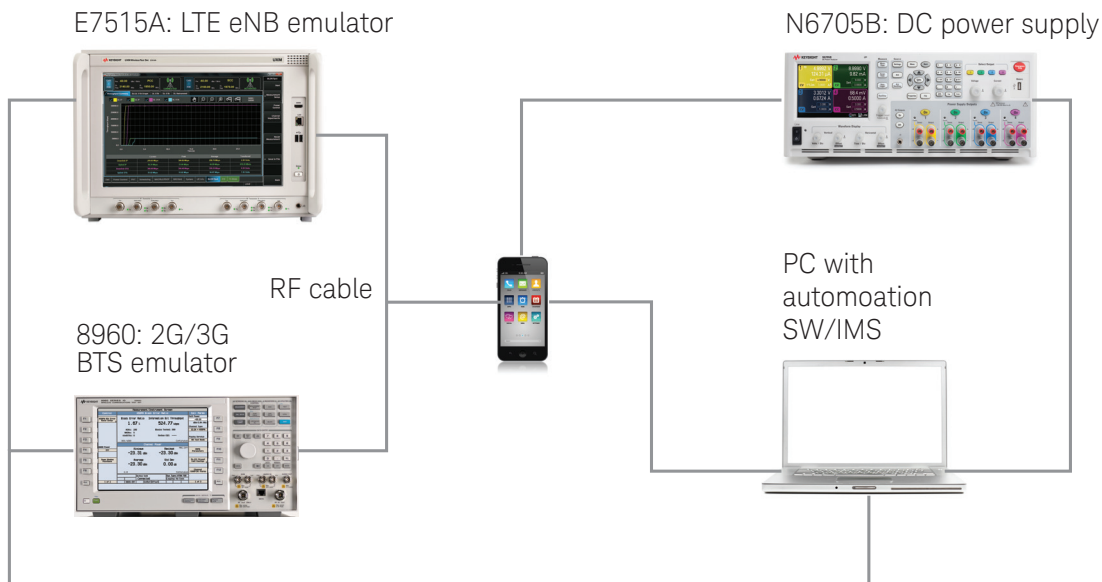
VoLTE Battery Test Challenges

Extended battery life during a VoLTE call has become one of the leading competitive differentiators for operators to provide more qualified VoLTE service. It is very important for device manufacturers to pre-qualify their devices before sending to operators' inter-operative test lab. However, the VoLTE battery test configuration is way complex as it is used in conjunction with Keysight Wireless Communications Test Sets for base-station emulation, DC power sources for battery emulation and includes all necessary software applications, enabling realistic user scenarios to be replicated in a controlled laboratory environment.

VoLTE Battery Test Reference Solution

With the VoLTE battery test reference solution, you do not having to create complex code or program test equipment. The VoLTE battery test reference solution has helped to integrate all software and hardware together and has been fully qualified. With this reference solution, you can focus on fine-tuning the design of UE hardware, firmware and software apps for optimal VoLTE current drain while not having to worry about the whole test environment set up.

Reference Solution Architecture



Hardware

Solution features & benefits

Feature

Power Consumption test for VoLTE MT/MO call - Audio	Qualify UE VoLTE audio performance
Power Consumption test for VoLTE MT/MO call - Video	Qualify UE VoLTE Video performance
Power Consumption test during CSFB	Qualify UE's capability to fallback to 2G/3G network
Power Consumption test during SRVCC	Qualify UE's capability to implement SRVCC process under IMS/SIP environment
Power Consumption in LTE IDLE mode	Qualify UE's Idle mode power consumption

Product specifications & characteristics

E7515A UXM Wireless Test Set

Frequency range	300 MHz to 3, 8 GHz
RF modulation bandwidth	Up to 100 MHz
Absolute amplitude accuracy	±0.45 dB typical

E5515C 8960 Series 10 Wireless Test Set

Frequency range	292 MHz to 2.7 GHz
RF modulation bandwidth	Up to 5 MHz
Absolute amplitude accuracy	±0.5 dB typical

N6705B DC Power Analyzer

Measure DC Power during VoLTE operation

PC (or E7515A-S01 server PC option with E7515A)

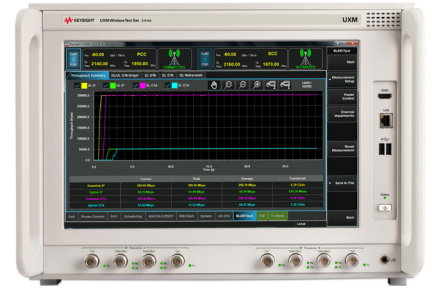
Run IMS-SIP emulator and Automation software

Hardware – Instruments

E7515A UXM Wireless Test Set

www.keysight.com/find/e7515a

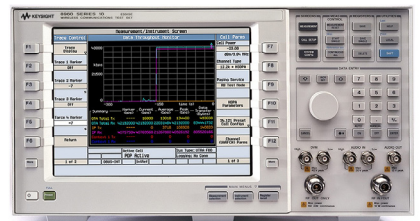
The UXM is a highly-integrated signaling test set created for functional and RF design validation in the 4G era and beyond. It provides the integrated capabilities you need to test the newest designs, delivering LTE-Advanced data rates up to 600Mbps now and handling more complex requirements later. When the team counts on you to know when a new chipset or UE will pass, count on the UXM to help you make a clear call.



E5515C 8960 Series 10 Wireless Test Set

www.keysight.com/find/e5515c

The E5515C 8960 wireless communications test set is the world's most trusted solution for 2G and 3G wireless device manufacturing and RF design and verification.



N6705B DC Power Analyzer

www.keysight.com/find/n6705b

The N6705B DC Power Analyzer provides unrivaled productivity gains for sourcing and measuring DC voltage and current into the DUT by integrating up to 4 advanced power supplies with DMM, Scope, Arb, and Data Logger features. The N6705B eliminates the need to gather multiple pieces of equipment and create complex test setups including transducers (such as current probes and shunts) to measure current into your DUT. The DC Power Analyzer also eliminates the need to develop and debug programs to control a collection of instruments and take useful measurements because all functions and measurements are available at the front panel.



Software

IMS-SIP Network Emulator Software

IMS-SIP are progressively being adopted as part of the network infrastructure to carry traditional wireless telephony services over an all-IP network. VoLTE is one of the telephony services that requires a IMS-SIP environment.

Keysight offers PC-based software providing an IMS-SIP server emulator (E6966B-1FP), IMS-SIP client emulator (E6966B-2FP) and IMS-SIP conference server emulator (E6966B-3FP). With this IMS-SIP server and client software you can efficiently test the functionality and performance of your UE operating within an all IP system. Check the processes of registration, authentication and de-registration between UE and server. Exchange voice, video, SMS and SS messages via the UE client to confirm correct operation. The server includes a call flow log and ladder diagram to capture and represent the handshaking between server and clients, essential for verification and also to aid debugging. You can control both Keysight client and server through a manual user interface, or automate your testing process by using the defined .NET application programming interface (API). If your UE includes an embedded client, you may use that in conjunction with our server, or use both the Keysight server and client. Whatever the combination, the server and client support simultaneous end to end user applications, allowing you to recreate real world network test scenarios in a controlled lab environment.

Keysight E6966B IMS-SIP network emulator software is designed to complement the powerful 8960 and UXM wireless test sets, delivering unique capabilities for UE performance testing. These test sets establish data connection to UEs with various radio access technologies, including LTE, W-CDMA/HSPA, and more.

Automation software

The Keysight software provides an automated and simplified interface for testing cellular UE for real-world network scenarios experienced by end users. It directly controls all the Keysight HW instruments used in the VoLTE Battery test configuration. It also provides a fully automated test scripts based on VoLTE battery test plan. With the automation software, you do not need to worry about the complex test environment set up and coding while make repeatable test execution and reporting fully handled.

Recommended reference solution configuration ¹

Hardware

Model	Description
E7515A-504	Frequency range 300 MHz to 3.8 GHz
E7515A-BA1	Digital baseband transceiver A
E7515A-RA1	RF up-down converter A
E7530A-1FP-FDD	FDD version A.01 (LTE rel 8), fixed perpetual license
E7530A-1FP-TDD	TDD version A.02, fixed perpetual license
E7530A-FFP-0P1	IP Data
E5515C	8960 series 10 wireless communications test set
E5515C-002	2nd RF source
E5515C-003	Flexible CDMA base station emulator
E1969A-201	TD-SCDMA Signaling mode
E1969A-501	Inter-RAT with TD-LTE
E6701K	GGE lab application
N6705B	DC Power Analyzer

Software

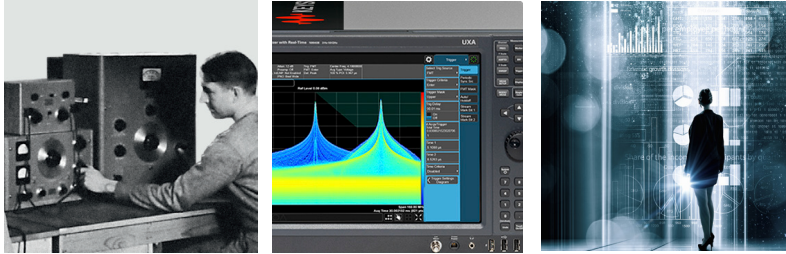
Model	Description
E6966B-1FP/2FP	IMS-SIP Sever Emulator
N5972A/N5974A	Automation test script for VoLTE Battery Test Reference Solution

1. For a more complete set of configuration options, please refer to the *VoLTE Battery Test Reference Solution Configuration Guide*, literature number 5992-1195EN.

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