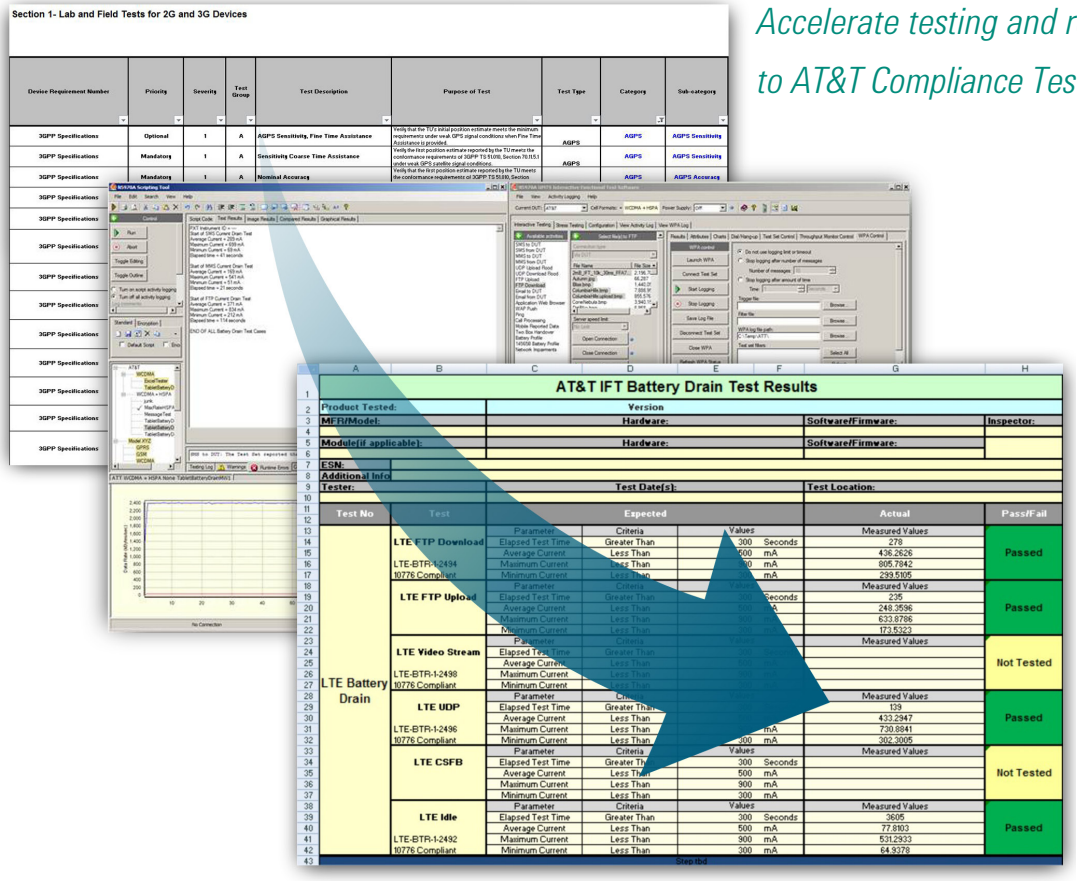
Agilent N5974A IFT Automation for AT&T Compliance Test Plans

Technical Overview

Accelerate testing and reporting to AT&T Compliance Test Plans



Simplify Your AT&T Compliance Test Process

- AT&T-listed test solution
- Repeatable test execution and reporting
- Compatible with selected Agilent DC power sources for battery emulation
- Builds on Agilent IFT software and is expandable to add future test plans
- Supports Agilent's established 8960 and PXT test sets

Extended battery life has become one of the leading competitive differentiators for today's wireless devices. Users demand long battery life despite the ever-increasing power demands of today's multi-function user equipment (UE). Wireless device developers must optimize battery performance by considering software, hardware, and firmware effects, and provide accurate battery specifications based on realistic user scenarios.

The Agilent N5974A-9FP automation scripts implement AT&T's battery performance test plan and output results to an .xls spreadsheet formatted as an AT&T test report. The software is used in conjunction with Agilent wireless communications test sets for base-station emulation and DC power sources for battery emulation, and includes all necessary server applications, enabling realistic user scenarios to be replicated in a controlled laboratory environment. With this test configuration you can make reliable, repeatable measurements without having to create complex code or program test equipment, allowing you to focus on fine-tuning the design of UE hardware, firmware, and software apps for optimal current drain.

Anticipate increasing UE performance demands

Today's multi-tasking cellular UE boasts powerful processors, incorporates back-lit touch-screen displays, and has amassed multiple radio receivers and transmitters that are sending and receiving data at unprecedented rates. The might and performance of these devices have one common dependency – they rely on limited battery power to keep their users simultaneously informed, entertained, in-touch, and happy. Anticipating battery performance issues requires early verification testing, allowing any necessary alterations to be made during the development phase.

Accelerate design and verification test cycles

Agilent has developed test scripts based on the AT&T requirements for battery performance test. Our measurement knowledge and experience of testing is built into the pre-defined test cases, so you do not have to deal with the complexity associated with test development, instrument control, and data management. Our test software allows you to create your own test plans in a drag-and-drop environment. You can run many tests unattended and progress rapidly to deployment, providing reliable, repeatable measurements and automatically generating measurement reports to an AT&T-approved format.

Achieve compliance testing to AT&T test plans

The Agilent N5974A IFT automation for AT&T compliance test plans allows you to focus on testing to the AT&T compliance standards without having to create complex code or program test equipment. Developed specifically for engineers engaged in design verification of wireless devices for use on AT&T networks, this solution supplements your testing expertise with Agilent's experience and measurement knowledge. The N5974A-9FP battery performance test scripts ensure your device is tested to the specific requirements detailed in AT&T's 10776 document.

Get ahead faster

Agilent provides start-up assistance services to help you learn and harness the power of the N5974A software products. One day of start-up assistance is mandatory for the first-time purchase of the N5974A. Additional days of start-up assistance or productivity assistance can be ordered if required.

Efficiently test and report results

- Drag-and-drop environment for sequencing pre-defined test cases into test plans
- Customizable UE control
- Generated results reported to an AT&T-approved format

Keep your test plans productive and current

Software and technical support contracts (STSCs) entitle you to software updates and feature enhancements, as well as direct access to technical experts. These contracts are designed to increase your productivity by delivering software updates and providing a formal technical support channel for any operational difficulties you may encounter.

Our technical support engineers are experts on the N5974A test plans and related hardware. They have instant access to software and test sets enabling them to resolve your issues quickly. Agilent will investigate all software defects and operational problems reported through the technical support channel. Upon completion of the investigation, we will advise you of possible solutions or functional alternatives. Where possible, Agilent will provide software releases to address problems caused by defects in the software.

The N5974AS STSC covers all automation scripts you have purchased for the N5974A and also provides you with updates to the related IFT software. Contracts run for a fixed period, usually one year. An STSC will be required for each PC on which you are running N5974A automation scripts.

Support for Agilent's established 8960 and PXT test sets

LTE, GSM, and UMTS base station emulation is achieved using the Agilent E6621A PXT and 8960 (E5515C/E) wireless communications test sets. The N5974A scripts are also compatible with several Agilent DC power sources for battery emulation and accompanying battery analysis software.

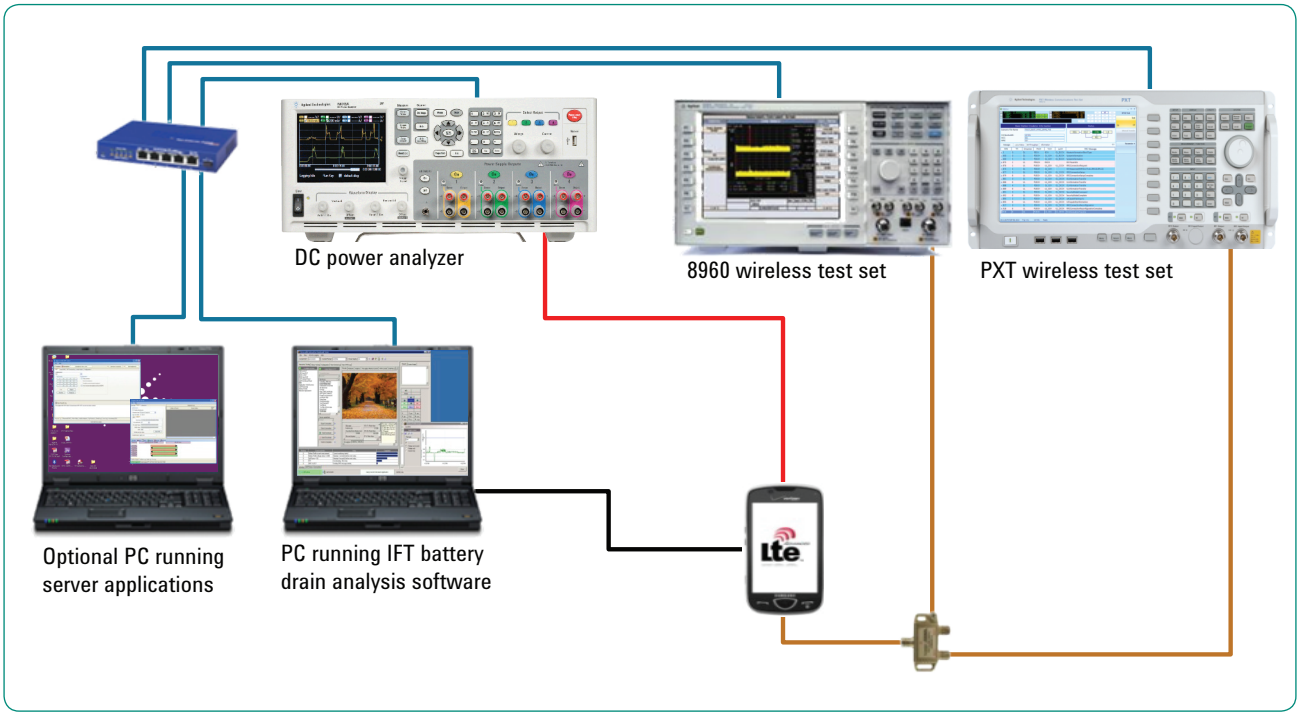


Figure 1. Schematic showing Agilent test implementation of AT&T battery performance test plan

Get protocol logs for verification and debug

Software tools available for the PXT and 8960 test sets provide logging of protocol exchanges between the test set and the UE. The logs are invaluable for verifying correct operation of UE against the test plan and providing users powerful debugging capability when test outcomes deviate from the expected results.

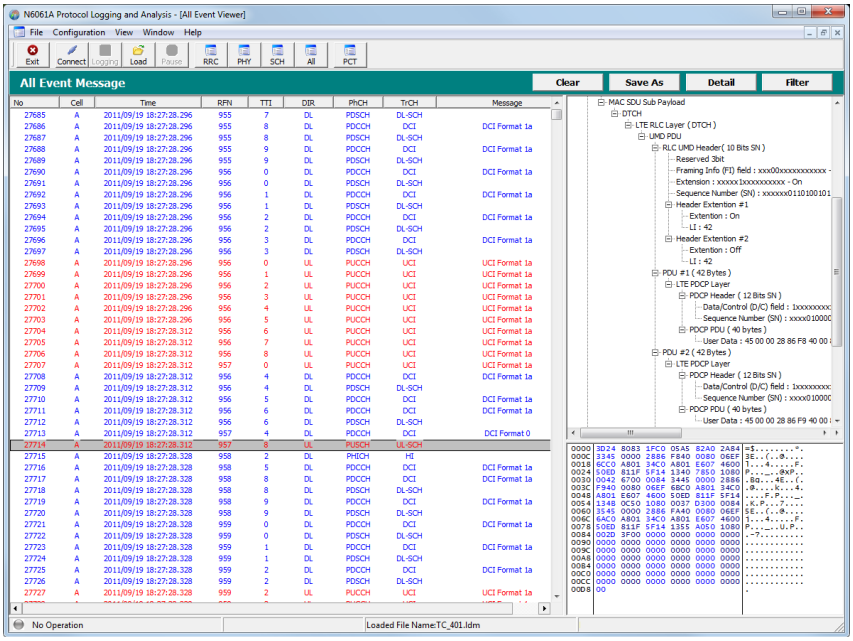


Figure 2. Protocol logging and analysis software assists verification and debug

AT&T validates Agilent implementation of compliance test plans

The Agilent N5974A-9FP battery performance test plan is exclusively available to AT&T-approved customers. Agilent is listed in the AT&T Document 10776 Lab and Field Test Requirements for Terminal Unit Acceptance document as an accepted solution for battery performance test, which is accessible to authorized users via AT&T.

AT&T IFT Battery Drain Test Results

Product Tested:		Version					
MFR/Model:		Hardware:			Software/Firmware:		Inspector:
Module(if applicable):		Hardware:			Software/Firmware:		
ESN:							
Additional Info							
Tester:		Test Date(s):			Test Location:		
Test No	Test	Expected				Actual	Pass/Fail
LTE Battery Drain	LTE FTP Download	Parameter	Criteria	Values		Measured Values	Passed
		Elapsed Test Time	Greater Than	300	Seconds	278	
		Average Current	Less Than	500	mA	496.2626	
	LTE-BTR-1-2494	Maximum Current	Less Than	900	mA	805.7842	
	10776 Compliant	Minimum Current	Less Than	300	mA	299.5105	
	LTE FTP Upload	Parameter	Criteria	Values		Measured Values	Passed
		Elapsed Test Time	Greater Than	300	Seconds	235	
		Average Current	Less Than	500	mA	248.3596	
		Maximum Current	Less Than	900	mA	633.8786	
		Minimum Current	Less Than	300	mA	173.5323	
	LTE Video Stream	Parameter	Criteria	Values		Measured Values	Not Tested
		Elapsed Test Time	Greater Than	300	Seconds		
		Average Current	Less Than	500	mA		
	LTE-BTR-1-2498	Maximum Current	Less Than	900	mA		
	10776 Compliant	Minimum Current	Less Than	300	mA		
	LTE UDP	Parameter	Criteria	Values		Measured Values	Passed
		Elapsed Test Time	Greater Than	300	Seconds	139	
		Average Current	Less Than	500	mA	433.2947	
	LTE-BTR-1-2496	Maximum Current	Less Than	900	mA	730.8841	
	10776 Compliant	Minimum Current	Less Than	300	mA	302.3005	
	LTE CSFB	Parameter	Criteria	Values		Measured Values	Not Tested
		Elapsed Test Time	Greater Than	300	Seconds		
		Average Current	Less Than	500	mA		
		Maximum Current	Less Than	900	mA		
		Minimum Current	Less Than	300	mA		
	LTE Idle	Parameter	Criteria	Values		Measured Values	Passed
		Elapsed Test Time	Greater Than	300	Seconds	3605	
		Average Current	Less Than	500	mA	77.8103	
	LTE-BTR-1-2492	Maximum Current	Less Than	900	mA	531.2933	
	10776 Compliant	Minimum Current	Less Than	300	mA	64.9378	

Figure 3. Example test report, in the AT&T-approved format

Configuration information

Interactive functional test software

- N5974A-9FP – Battery performance test
- N5974AS – Software and technical support contract
- PS-S20 – Startup assistance
- PS-S10 – Remote scheduled productivity assistance (optional)

The N5972A interactive functional test software must also be installed (N5972A is automatically enabled by the N5974A; no separate purchase is necessary.)

LTE cell

- E6621A – PXT wireless communications test set with Option 2D2 and Option 503 or 506
- N6050A-7FP – LTE FDD base station emulation
- N6050AS – LTE mobile test software: software and technical support contract
- N6052A-1FP – LTE-enhanced BSE and IP data test
- N6061A – LTE protocol logging and analysis

GSM/UMTS cell

- E5515C or E5515E – 8960 Series 10 wireless communications test set
- E6785 – Fast switching lab application (with required E6701 GSM/(E)GPRS and E6703 W-CDMA lab application licenses)
- E6584A – Wireless protocol adviser

PC requirements for running IFT, protocol logging

Hardware/operating system

- 1.8 GHz Pentium dual core processor or better
- Windows 7 Professional or Windows 7 Enterprise
- 2 GB RAM
- 2 GB of available hard disk space
- LAN port
- 2 available USB ports
- Port for controlling UE (e.g. additional USB)
- One installed, configured, and tested Agilent Technologies or National Instruments IEEE 488.2 GPIB interface

Software

- Microsoft Internet Explorer version 6.0 or later
- Microsoft Excel version 2007 or later
- The latest version of VISA (virtual instrument software architecture) from the manufacturer of your GPIB interface

Optional: Visual Studio 2010 is required for changing UE interface project and for script modification

Miscellaneous items

- Battery emulator power supply and battery analysis software (for battery performance test)
  - 66319D power supply with 14565B software
    or
  - N6705B power supply with N6781A SMU and 14585A software
- Agilent 82357B (or similar) USB/GPIB interface
- 8-way Gigabit LAN switch/hub, LAN cables
- Three 6-dB RF splitters/combiners
- RF cables

For more information

On the N5974A: **www.agilent.com/find/N5974A**

On IFT and associated products: **www.agilent.com/find/IFT**

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