Agilent IFT Automation Scripts for AT&T Wireless Compliance Test Plans (N5974A)
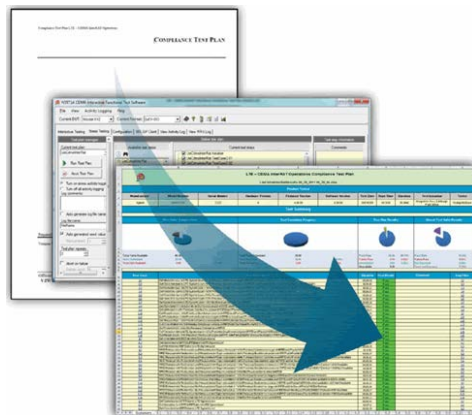

Installation and User's Guide

Agilent Technologies

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Statement of Compliance

This product has been designed and tested in accordance with accepted industry standards, and has been supplied in a safe condition. The documentation contains information and warnings that must be followed by the user to ensure safe operation and to maintain the product in a safe condition.

Manual Part Number

N5974-90003

Supersedes: N5974-90001 and N5974-90002

Edition

December 2012

Software Version 1.4

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Safety Notices

The following general safety precautions must be observed during all phases of operation of this instrument. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture, and intended use of the instrument. Agilent Technologies Inc. assumes no liability for the customer's failure to comply with these requirements.

Where to Find the Latest Information

Documentation is updated periodically. For the latest information about the N5974A product, consult the following website: www.agilent.com/find/N5974A.

For the latest information about the Agilent E6621A PXT product, including operating and application information and product and accessory information, see the following website: www.agilent.com/find/pxt.

For the latest information about the Agilent 8960 product, including operating and application information and product and accessory information, see the following website: www.agilent.com/find/8960

Is your product software up-to-date?

Periodically, Agilent releases software updates to incorporate product enhancements, and fix known defects. All N5974A software revisions are available from www.agilent.com/find/softwaremanager, and require a valid N5974AS Software and Technical Support Contract (STSC).

IMPORTANT	To obtain the most current software for the products listed, you must also have: • Agilent E6720A Annual Contract for the Agilent 8960 • Agilent Software and Technical Support Contract (STSC) for the Agilent E6621A • Agilent Software and Technical Support Contract (STSC) for the Agilent N5974A

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Table of Contents

1 Introduction

Welcome to the *Agilent Interactive Functional Test Automation Scripts for AT&T Wireless Compliance Test Plans (N5974A) User's and Installation Guide*. The purpose of this guide is to provide you with the information you need to do the following:

- Install and license the N5974A IFT test scripts that run within the Agilent N5972A Interactive Functional Test software.

- Perform the test provided by the N5974A IFT.

The N5974A scripts are accessed and executed within the Agilent N5972A Interactive Functional Tester (IFT) product. The N5972A IFT is a software application that runs on a PC using Microsoft (MS) Windows XP or Windows 7 operating system.

The N5974A in conjunction with N5972A , controls a combination of test instruments to provide the overall environment for performing the AT&T Wireless Compliance Test Plans on a mobile device; for example battery performance.

Test plans performing similar functions are grouped together and licensed as a group; for example the Test Plans related to battery performance are grouped together and licensed as N5974A-9FP.

In this book, you'll find…

- System Component Overview

- Software Installation and Licensing

- Uninstalling N5974A Software

- Using the N5974A IFT Wireless Compliance Scripts

- Directory Structure

- Test Results Storage

- Software Organization & Parameter Settings

- Test Cases

- Service and Support

2   System Component Overview

This section provides an overview of the components required to setup and use the N5974A AT&T wireless compliance test plan scripts.

Server and Client PC Requirements

An IBM® (or compatible) PC with at least:

- Processor: 1.8 GHz Pentium® Dual Core Processor or better

- Operating System: Microsoft® Windows® XP Professional Service Pack 3 (English version only) or Windows 7 Professional

- Memory: 2 GB RAM

- Hard Disk Space: 2 GB of available hard disk space

- Connection: IP Network Connection (broadband, LAN, and wireless)

- LAN Port (If you are using LAN for your connection.)

- Sound Card: Full-duplex, 16-bit

- 2 USB ports: (2.0 or later)

Other Requirements for Client PC

- Microsoft Internet Explorer® version 6.0 or later

- Microsoft Office Excel version 2007 or later

- Agilent IO Libraries version 16.0 or later

- Agilent E6584A Wireless Protocol Advisor (WPA) version A.10.01 or later

- Agilent N6061A Protocol Logging and Analysis software version 6.3 or later

- Agilent N5972A Interactive Functional Test (IFT) version 1.0 or later. For information on the installation of the N5972A software, refer to the N5972A IFT CHM Help File at http://www.agilent.com/find/N5972A.

- N5974A-9FP IFT Scripts for Battery Performance test, fixed, perpetual license. (To obtain your license, follow the instructions on the Software Entitlement Certificate you received upon ordering the software.) See "Licensing" in the N5972A Help file for more information.

- An active Agilent N5974AS IFT Automation for AT&T Compliance Test Plan – Software and Technical Support Contract (STSC). Refer to the Software and Technical Support Contracts for more information on STSCs.

- The client PC requires two GPIB interfaces for operation with external power supplies.

Other Requirements for Server PC

- Agilent N597X IFT (Server) version 9.0 or later.

PXT Scenario Files

The Base Station Emulator in the Agilent E6621A PXT operates on the basis of Scenario Files (for more details, see the Agilent E6621A User Guide). Scenario Files have been established for use with the Agilent N5974A software. Scenario files have an lbmf file extension.

When the Agilent N5974A is installed these files are located in the following directory:

...<OS Public Agilent>\Agilent\N5972A\TestData\N5974A\Docs\ScenarioFiles\

You need to copy the Scenario files to the Agilent E6621A PXT Scenario File directory which is located here: D:\Program Files\Agilent\E6621A\LTE-Scenario.

System Requirements

- N5974A IFT Scripts:

  o You need access to the web at: www.agilent.com/find/N5974A.

  o Refer to the N5974A release notes located here: www.agilent.com/find/N5974A.

- Testing using N5974A IFT requires a Programmable Power Supply. For example:

  o Agilent 66319/21 Power Supply with 14565B power supply software

    OR

  o Agilent N6705B Power Supply

NOTE	If you are using the Agilent 66319/21 Power Supply, you will need to install the 14565B software onto your IFT client PC.

- Typically a system for wireless compliance test plans need test instruments acting as mobile network base station emulators. The base station emulators expected by N5974A are:

  o Agilent 8960A providing the UMTS base station emulator functionality running the appropriate licensed application, as shown in the table below.

Hardware	Application
E5515C	E6785G Fast Switch Lab App
	E6703G WCDMA Lab App
E5515E	E6785H Fast Switch Lab App[†]
	E6703H WCDMA Lab App[†]

[†]Some of the test scripts require Revision "H" and do not work with Revision "G". Refer to the test case details in Test Cases on page 37.

o   The Agilent E6621A PXT providing the LTE base station emulator functionality running the appropriately licensed application, as shown in the table below.

Hardware	Application
E6621A	Version 6.3

NOTE	The LTE test scripts require the Agilent E6621A to have GP-IB control (version 6 Hardware)

3   Software Installation and Licensing

NOTE	Always check the release notes for the latest information about any known issues and other important information about your product. Release notes are available for download from www.agilent.com/find/N5974A.

Installation of IFT Scripts and Licenses

This section contains what you should know before you install this product as well as installation instructions.

When you purchase the Agilent N5974A and N5974AS, you receive a "License Entitlement Certificate". Follow the instructions on this certificate to redeem your license keys for these products. In outline, the procedure is as follows:

- You should close any applications currently running.

- Register the STSC (N5974AS) first,

- Download and install N5972A software on the Client PC. Refer to the N5972A IFT Help File for instructions. Note that you need to install the N597X software on the Server PC before installing the N5972A software, in order to complete the IFT verification installation.

- Identify the Host ID for your Client PC. This is electronically generated and does NOT relate to any printed serial number on your PC. Refer to the STSC Entitlement Certificate for instructions.
  Your licenses will be "locked" to this "Host ID" and are not transportable to a different PC.

- Redeem and install N5974A and N5974AS licenses.

- Download and install N5974A script software. Refer to Installation of Client Applications on the Client PC for details.

NOTE	You must install both the N5974A and N5974AS-licenses on the same PC (Client). Your N5974A license also activates the Agilent N5972A Interactive Functional Test software. No separate purchase of N5972A is required.

Valid STSC License Verification

The N5974AS STSC license resides in the Client PC and is tied to the PC Host ID. Before new firmware is downloaded to the PC, the firmware installer will check that a valid STSC license is present before allowing the firmware to be installed.

If the installer does not detect a valid license, for example, the original license expired before the release of the new firmware; it will display a message, similar to the one below, informing you that you cannot install the new firmware. You must then purchase a new license to enable you to install new firmware releases and access technical support.

N5974A License Error

A license required to run the N5974A IFT automation for AT&T compliance test plan is not installed or has expired.

License errors:
N5974A-9FP (not installed)
N5974AS (not installed) OR (expired on YYYY-MM-DD)

If you received a software entitlement certificate you may redeem your license at
http://www.agilent.com/find/softwaremanager.
Otherwise, please contact Agilent Technologies to purchase the necessary licenses.

This computer's Host ID is: PCSERNO,BD23466368

The N5974AS STSC for your N5974A has expired; this release was created on YYYY-MM-DD and cannot be used. Install an earlier release or install an updated STSC license.

OK
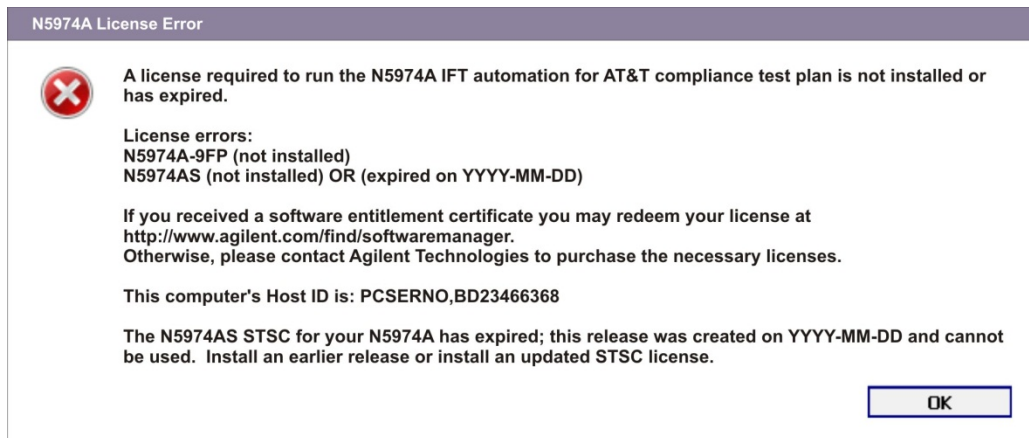
Firmware Installer Checks for a Valid License

Location of User Data

When installed, IFT creates a storage folder called "Agilent" where user data related to IFT is stored. This folder is located in different places depending upon the operating system of the Client PC. For directory structure details, refer to

Installation of Client Applications on the Client PC

1. If you have not already done so, install the N5972A IFT software. Refer to the N5972A IFT Help File for detailed instructions. Note that you need to install the N597X software on the Server PC before installing the N5972A software, in order to complete the IFT installation verification.

2. Install the N5974A IFT software.

   a. Locate the file on your PC and open the Installer self extracting zip file (the default extract location is "C:\Temp\N5974A_x_y ", where x_y represent the revision of the software). Follow the on-screen instructions to complete the installation

   b. Navigate to the folder where the zip content was extracted.

      i. This folder should contain a version-specific directory for the application, for example, "C:\Temp\N5974A_x_y ", where x_y represent the revision of the software.

ii.   Navigate into the version-specific directory and run the executable, for example, N5974A_Setup.exe.

3.   Your system may be prompted to reboot

4.   Copy the PXT Scenario files from the installed directory
…<OS Public Agilent>\Agilent\N5972A\TestData\N5974A\Docs\ScenarioFiles\
into the Agilent E6621A PXT Scenario File directory, as defined above.

4 Uninstalling N5974A Software

When Using MS Windows XP

1. Open the **Windows Control Panel** ![start] from the **Start** Menu and select **Add/Remove Programs**.

2. From the **Add/Remove Programs** window, select "Agilent N5974A".

3. Select "Remove" and follow the instructions.

When Using MS Windows 7.0

1. Select the **Start** icon ⊙ > **Control Panel** > **Programs and Features**.

2. From the **Uninstall or Change a Program** window, select "Agilent N5974A".

3. Select "Uninstall" and follow the instructions.

5 Using the N5974A IFT Wireless Compliance Scripts

After installing the N5972A IFT and N5974A software, you need to setup and connect the test hardware and configure the test software. You can configure the IFT in many different ways. For example, this section describes the expected configuration for AT&T Battery performance test plans.

N5974A-9FP System Configuration

- The test configuration shown below contains a router; however, the router is only required for tests which use an external network for data transfer, for example, Video Streaming from an internet site. If external access is not required, a hub is sufficient.

- The IFT client PC needs to have two GPIB interfaces. One to communicate with the base station emulator instruments and one for communicating with the power supply.

  o Connect one of the Client PC cables to the rear panel GPIB ports on the E6621A PXT and on the 8960.

  o Connect one of the Client PC cables to the rear panel GPIB port on either the 66319/21 or the N6705B power supply.

NOTE	Agilent does not supply a custom cable or battery eliminator solution for powering the UE from the power supply. You need to supply any custom cable or battery eliminators for your specific UE.

CAUTION	Do not connect the UE to the power supply or turn on the power supply output until the output voltage and current limit has been set to the appropriate value for the UE under test.

External Network
(If Required)

Router (IP v4/v6)/Hub

8960/Test Set 1

Server PC

FileZilla
Apache
NowSMS Gateway
UDP Server

E6621/Test Set 2

Client/Workstation PC

Interactive Functional Test SW
WPA

UE

————— LAN/Ethernet/IP
----------- GPIB 1
·············· GPIB 2
————— RF
{ DC Current/Power +
  USB Data/Modem Cable } PS Cable spliced into USB Cable

Programmable Power Supply
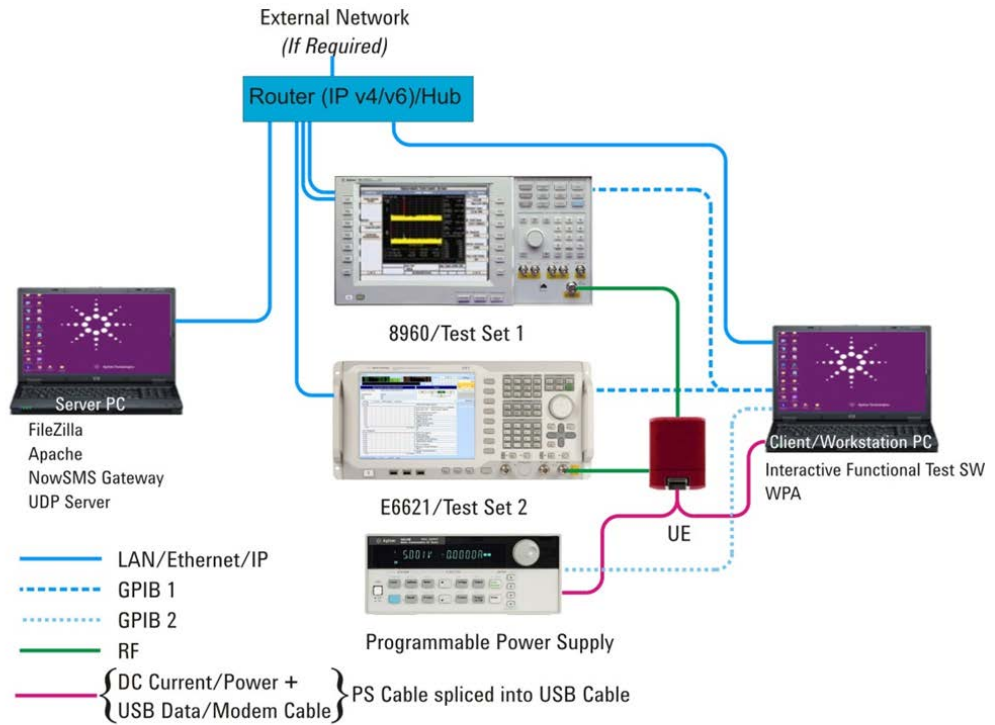
USB Modem Test Configuration

External Network
(If Required)

Router (IP v4/v6)/Hub

8960/Test Set 1

Server PC

FileZilla
Apache
NowSMS Gateway
UDP Server

E6621/Test Set 2

Client/Workstation PC

Interactive Functional Test SW
WPA

UE

————— LAN/Ethernet/IP
----------- GPIB 1
·············· GPIB 2
————— DC Current/Power
————— RF

Programmable Power Supply
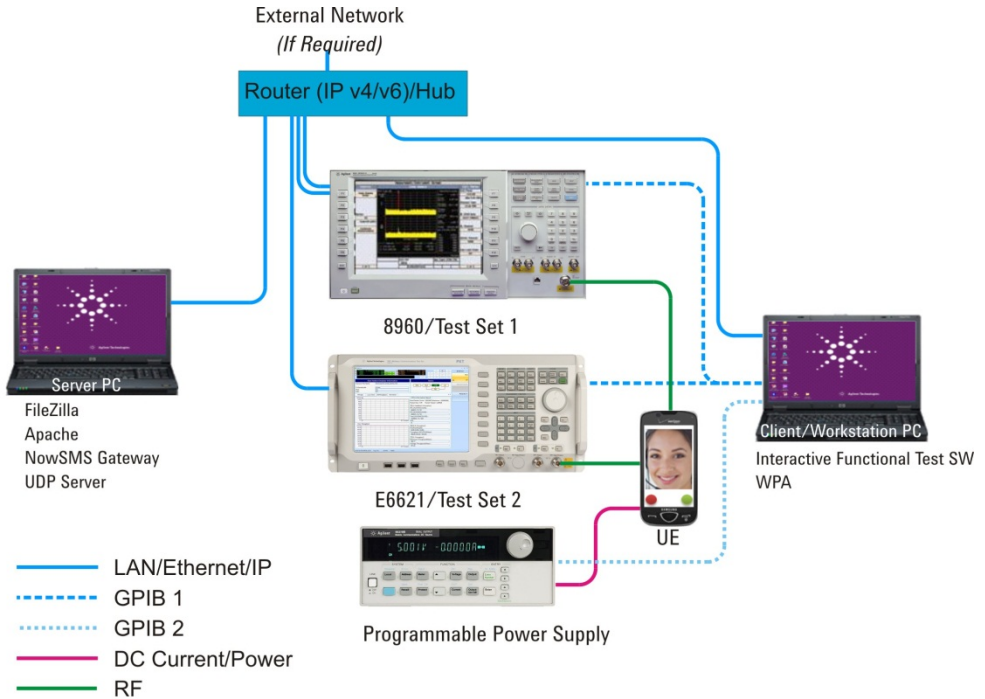
Untethered Smartphone Test Configuration

Setting Up the Test System

Prior to running N5972A, and accessing the N5974A scripts, make the following settings to the test system.

1. Set the following IP addresses:

   - Router LAN IP Address: 192.168.1.10

   - IFT Client IP Address: 192.168.1.11

   - IFT Server PC IP Address: 192.168.1.230

2. Set the 8960/Test set 1 address as follows:

   - IP Address: 192.168.1.13

   - IP Address2 (data):   192.168.1.14

   - Gateway IP Address: 192.168.1.10   (Router used in system)

   - Gateway IP Address: 192.168.1.230   (No router used in system)

   - DUT IP Addresses: 192.168.1.12

3. Set the E6621A/Test set 2 addresses as follows

   - IP Address: 192.168.1.16

   - Gateway IP Address: 192.168.1.10   (Router used in system)

   - Gateway IP Address: 192.168.1.230   (No router used in system)

   - Net Mask: 255.255.255.0

   - DUT IP Address: 192.168.1.15

   - Ensure that the Agilent E6621A has the N5974A Scenario Files available (refer to PXT Scenario Files).

Confirming the Equipment Connections

You need to power up the test system and ensure that the client PC can communicate with the test equipment.

1. Power on all of the test equipment and PCs.

2. Use the Agilent IO Connection Expert to ensure that the test equipment is properly connected to the client PC.

   a. To open the IO control menu list, click on the Agilent IO Control icon in your PC tool tray,

   b. In the IO Control menu list, select **Agilent IO Connection Expert**. When the Connection Expert opens, it searches for and confirms all equipment is connected properly.

   c. If any of the items listed in the Instrument I/O on this PC panel indicate a communications failure, correct the problem before proceeding to ensure that the test scripts function properly.
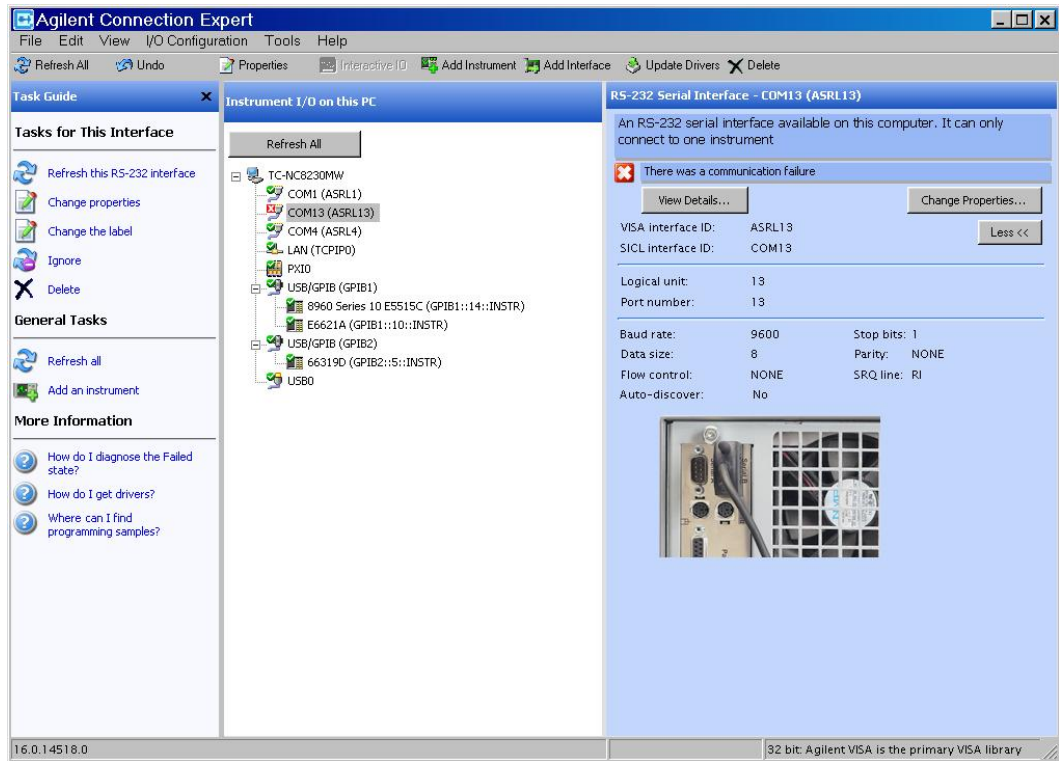
Agilent IO Connection Expert UI

Launch the Software

Start the N5972A IFT application by either by double-clicking on the desktop icon
or from the Windows Start menu by selecting **Start > (All) Programs > Agilent Interactive Functional Tests > N5972A > Applications > N5972A.**

An example of the N5972A user interface with the N5974A scripts installed is shown below.
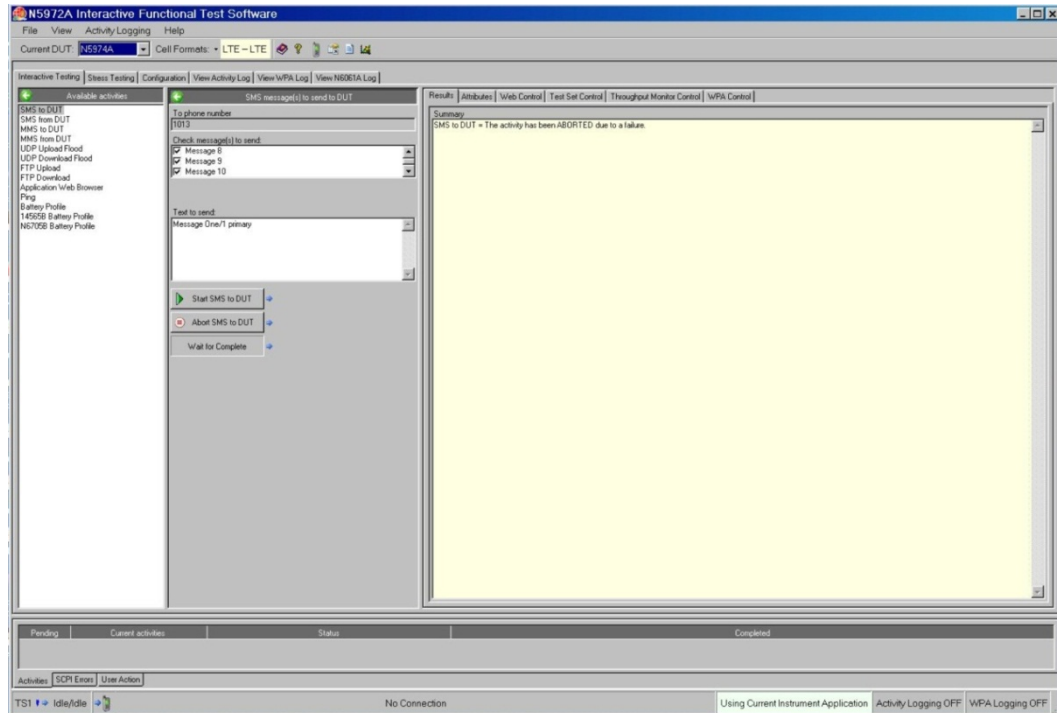
N5972A IFT User Interface

Configuring the N5972A to Use the N5974A-9FP Battery Performance Scripts

When the N5972A IFT interface opens, you need to configure the software for your test system. The setup configuration includes setting the N5974A as the active performance software and setting the cell format, setting GPIB addresses for the test sets and the power supply, setting the power supply output requirements, and verifying the integrity of LAN and instrument connections.

Selecting the N5972A Active Software and Setting the Cell Format

The **Current DUT** setting determines the test scripts available in the **Stress Testing** and **Scripting Tool,** based on the IFT automation script product number.

The Cell **Formats** setting ensures the correct application is loaded on the test set, and also for filtering and presenting the available test scripts in the **Stress Testing** and **Scripting Tool**.

1. In the **Current DUT** drop-down list, select *N5974A*.

2. In the **Cell Formats** drop-down list, set the **Active Cell** and **Neighbor** formats, based on what scripts you intend to run. For the purpose of setup, make these selections:

    a. **Active Cell Forma**t to *WCDMA*

    b. **Neighbor Cell Format** to *LTE*

    c. Click **Close Format Selection**.

Setting and Verifying the Test Equipment Connections

1. Select the **Configuration** Tab.

2. Select *Instrument Control* in the **Available configurations** panel.

3. Obtain the instruments' GPIB addresses and GPIB interface card numbers by pressing the **Find Instruments** button.

4. Set the **GPIB interface card** values for both test sets in **Test set 1** and **Test set 2** drop-down list.

5. Set the GPIB address for both test sets on **Test set 1** and **Test set 2** drop-down list of the **GPIB address** panel.

6. Check the ***Use current LA*** boxes for both test sets in the **Test connection** panel.

7. In the **Power Supply** panel, select the following settings from each of the specified drop-down lists:

    a. Set the **Interface type** to *GPIB*.

      b. Set the **GPIB interface card**.

      c. Set the **GPIB address**.

8. Test and verify the equipment connections:

      a. Click on each ***IDN?** button in the **Test connection** panel and the **Power Supply** panel.

      b. Confirm that the proper test equipment is shown in the ***IDN? Results** box.
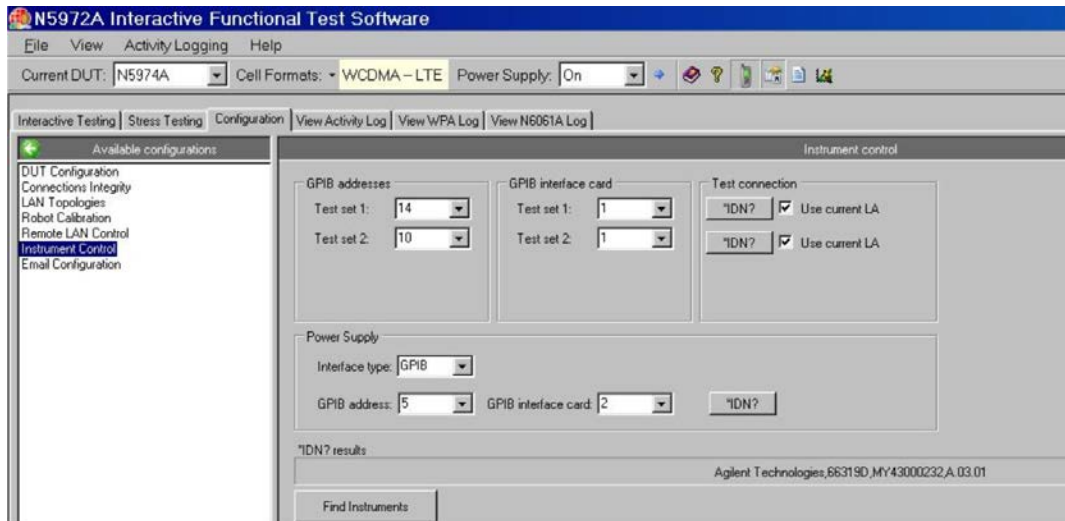
Configuring the Power Supply

CAUTION	Ensure no device is connected to the power supply.

1. Ensure that the **Power Supply** drop-down list is set to *Off*.

2. Select the **Configuration** tab.

3. Select *DUT Configuration* in the Available configurations panel.

4. In the **Power supply** panel, set the following UE power requirements in the order listed:

    a. Max current limit

    b. Min voltage limit

    c. Max voltage limit

    d. Voltage

5. Set the Power Supply drop-down list to On, and visually confirm that the power supply is displaying the values you set in the Voltage control. You may wish to confirm the voltage output of the power supply using a DVM on the DUT connection cable.

6. Set the Power Supply drop-down list to Off,

NOTE	Other values on this window are entered automatically from the N5974A scripts.
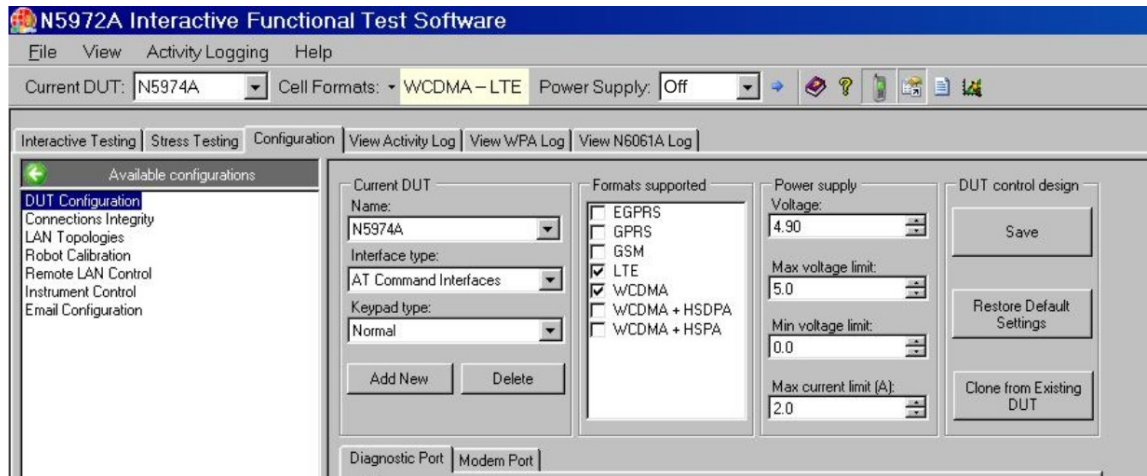
Select the Configure **tab.**

1. Select *Connections Integrity* in the Available configurations panel.

2. Click the **Check All Functions** button. Test setup connections are tested and the status indicated in the **Available Integrity Selections** pane.

     a.   A green check "✔"indicates a good connection.

     b.   A red "✘" indicates a failed connection.

3. You can select each item in the **Available Integrity Selections** panel to view in the individual integrity check results.

     a.   Green fields next to a parameter indicate a satisfactory connection, OK .

     b.   Red fields next to a parameter indicate a failed connection, Fail .

     c.   Yellow fields next to a parameter indicate a connection that is not checked, Not Checked .

4. If there are errors, fix them and click **Check All Functions**, wait for all checks to finish.

5. If there are persistent errors, check with Agilent representative. (Refer to Service and Support on page 63).
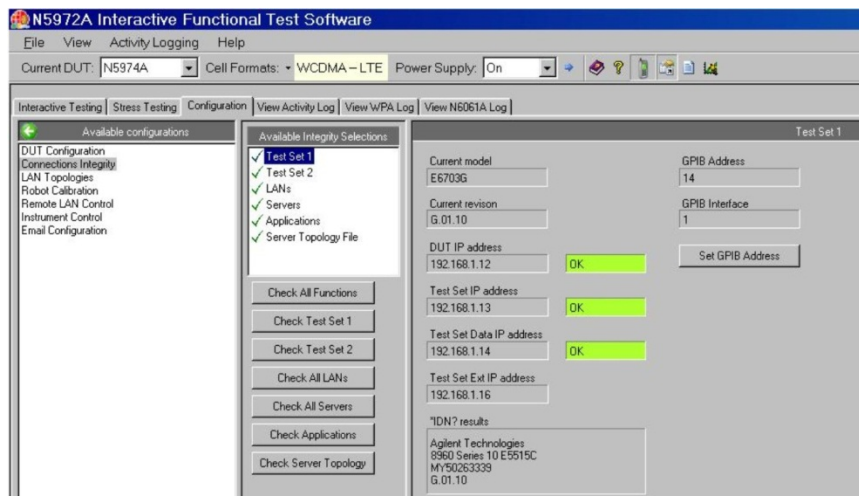
Running the N5972A Software and N5974A Battery Performance Scripts

There are various options for running the N5974A Battery Performance scripts.

1. You can run all of the test cases as a Test Plan using the **Stress Testing** tab.

2. You can create and run an individualized Test Plan from the **Stress Testing** tab by selecting the test cases you want to run and running them from the N5972A interface.

3. You can use the **Scripting Tool** to select and run an individual test case.
    The **N5972A Scripting Tool** facilitates customizing the test case scripts to meet your individual needs, refer to Running the Test Cases with the N5972A Scripting Tool on page 19.

CAUTION	Any change you make to the scripts **WILL** violate conformance to the Compliance Test Plan. Before making any changes to a script, it is strongly recommended that you make a copy of the original script so that it can be recovered. *If you make any changes to a script, the original script **MUST** be recovered to restore conformance to the Compliance Test Plan.*

NOTE	When creating a custom test plan, you must always run the *StartUp* test case as the first step and the *CleanUp* test case as the last step of the test plan.

Running the Test Cases with the Stress Testing Tab

1. To use the N5972A IFT Interface to run a test plan, select the **Stress Testing** tab.

2. Set the test plan in the **Test plan manager** panel by selecting the desired test plan from **Current test plan** drop-down list, for example *LteBatteryPerformance*.

3. To run all of the test cases in the test plan:

   a. Click the **Run Test Plan** button. This launches the N5974A Battery Performance Parameters window.

   b. To complete the test process, skip to Using the N5974A Battery Performance Parameters Interface on page 20.

4. To run a custom test plan:

   a. In the **Current test steps** panel, check the test cases you want to include in your test plan.

   b. Click the **Run Test Plan** button. This launches the N5974A Battery Performance Parameters window.

   c. To complete the test process, skip to Using the N5974A Battery Performance Parameters Interface on page 20.
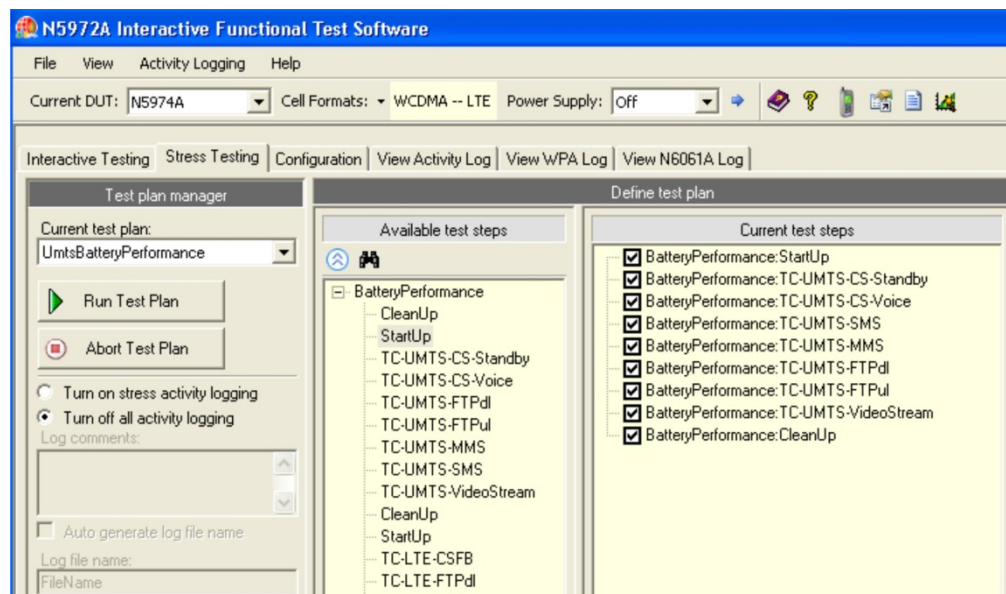
Running the Test Cases with the N5972A Scripting Tool

The N5972A Scripting Tool enables you to run individual test cases and to edit the test case code.

CAUTION	Any change you make to the scripts **WILL** violate conformance to the Compliance Test Plan. Before making any changes to a script, it is strongly recommended that you make a copy of the original script so that it can be recovered.
	*If you make any changes to a script, the original script **MUST** be recovered to restore conformance to the Compliance Test Plan*.

1. Launch the N5972A Scripting Tool, either by clicking on the **Scripting tool Show/Hide** icon or, from the Menu bar select **View**, **Scripting Tool**.
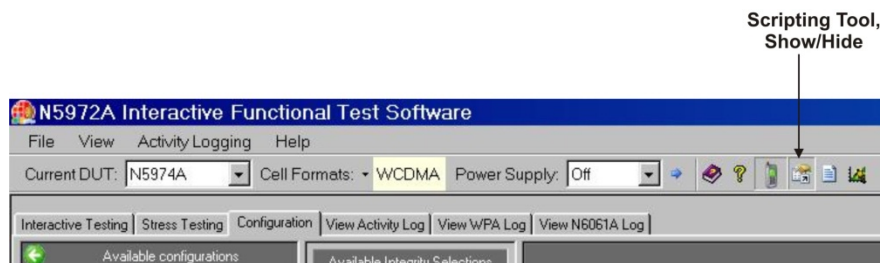
2. If you need to edit any of the script code, do so in the code edit panel.

   a. If you want to save the code changes, click on the **Save Code Changes** icon.

3. In the **Control** panel, under the *BatteryPerformance* test list, select *StartUp*.

NOTE	When creating a custom test plan, you must always run the *StartUp* test case as the first step and the *CleanUp* test case as the last step of the test plan.

4. Click the **Run** button. This launches the N5974A Battery Performance Parameters window.

   a. Skip to Using the N5974A Battery Performance Parameters Interface on page 20 and return to the following step after completing the parameter setup.

5. Select the desired test in the **Control** panel.

6. Click the **Run** button. This launches the selected test.

7. Repeat steps 5 and 6 until you have run all of the desired tests.

8. Complete the running of your test by selecting *Cleanup* and click the **Run** button.

Code Edit
panel

Save Code
Changes

Selected
Test Case
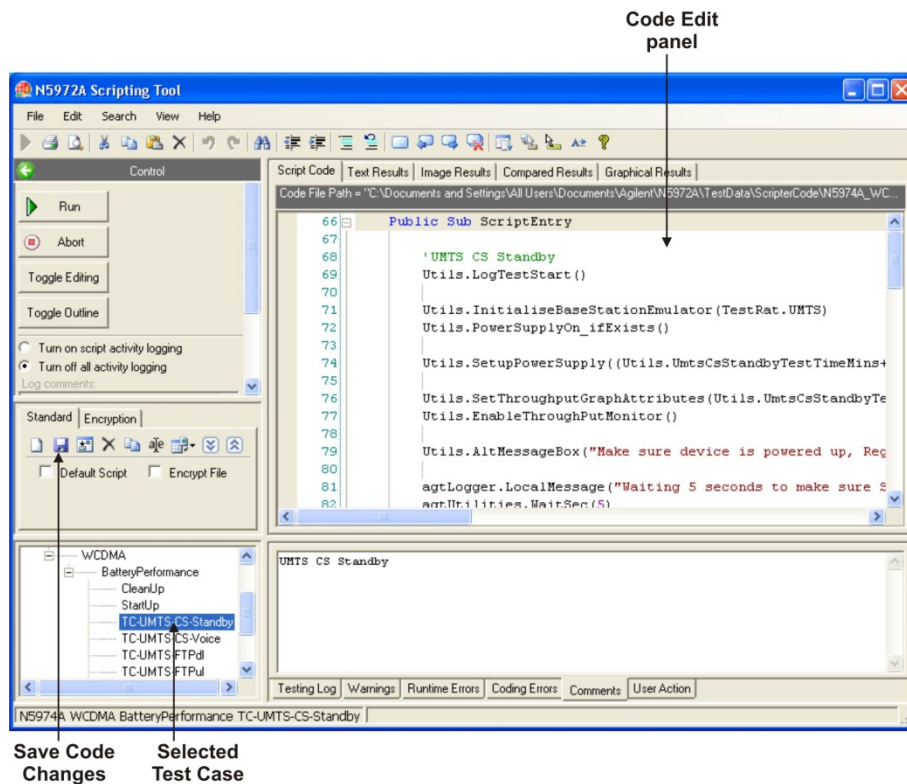
Using the N5974A Battery Performance Parameters Interface

When you click the **Run** button to start a test plan in the N5972A interface, the N5974A Battery Performance Parameters interface is launched. You need to set or verify the parameters of your DUT for a successful test run. Refer to Performance Test Parameters Window on page 30 for instructions on making these selections.

Click the Start button.

When the **Start** button is selected, several things happen.

- First, a results Microsoft© Excel© spreadsheet, like that shown in the example below, is opened, triggered by the *StartUp* test. The results spreadsheet file name is dependent upon what you enter as the **Device Name** on the parameters interface with the date time stamp added. The default file name is formatted like this: <DeviceName>_<DateTime>.xlsx. For more information on the log file and the storage location, see Activity Log on page 27 and Storage/Saved File Structure on page 28.

NOTE	The results spreadsheet is created from a template file.
	The scripts expect the spreadsheet to be in the form of the installed template. Modification of the Excel template may result in a corrupt results file or failure to write the results.

- Second, the N5972A interface is brought up on screen.

- What happens next is dependent upon the type of device you have connected.

  o If you have a **USB Modem** connected, go to <u>Device Type set to Tethered Modem</u>.

  o If you have an **Untethered Smartphone** connected, go to <u>Device Type set to Untethered Smartphone</u>.

Device Type set to Tethered Modem

When you run a test script or a test plan with **Device Type** set to **USB Modem**, a message box pops-up instructing you to use a connection manager to complete the connection with your modem. As each test script starts, you need to make sure you have an active data connection.

NOTE	Manufacturers typically provide drivers and connection management software for their USB modems. These connection mangers setup the IP Network link between the PC and the USB Modem. You need to install the connection manager software on the IFT Client PC prior to using that USB modem with the N5974A. You also need to launch the connection manager software on the IFT Client PC prior to running N5974A scripts.

When the device is connected via the connection manager software, return to the N5972A interface and in the message pop-up box, select the OK button. The test scripts begin and progress is indicated on the N5972A interface.

When the tests start running, test results and test data windows are displayed.

Device Type set to Untethered Smartphone

When you click the **Start** button on the N5974A Parameter interface, a pop-up box opens instructing you to power on the phone. As each test script starts, you must perform the following smartphone power up steps.

1. Ensure that the power supply is on and supplying the correct voltage.

2. Press the power button on the phone.

3. When the phone is on and an active data connection is established, click the **OK** button.

When you run a test script or a test plan with **Device Type** set to **Untethered Smartphone**, a message box appears instructing you to perform various actions. As you perform the listed action and click on the response button, the IFT continues with the testing process. For example, when the FTP download script runs, the following messages boxes open at the beginning and completion of the test.

When the first box appears, start the FTP download on your phone and click on **OK**. The second box appears while the test is running. When the FTP download on your phone is complete click **OK** in this box.
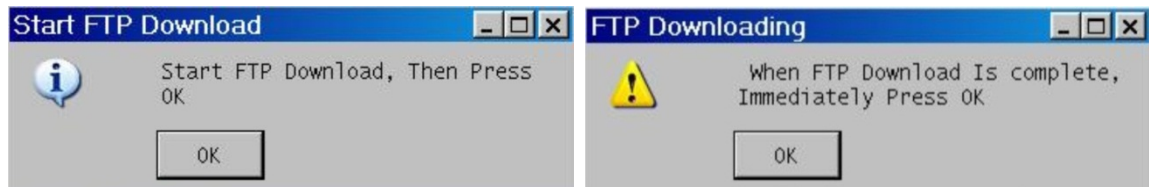
Displayed Test Results

When the tests are started the following test results and test data windows are displayed:

- The 14565B is launched and a 14565B Device Characterization results window is displayed. See example below.
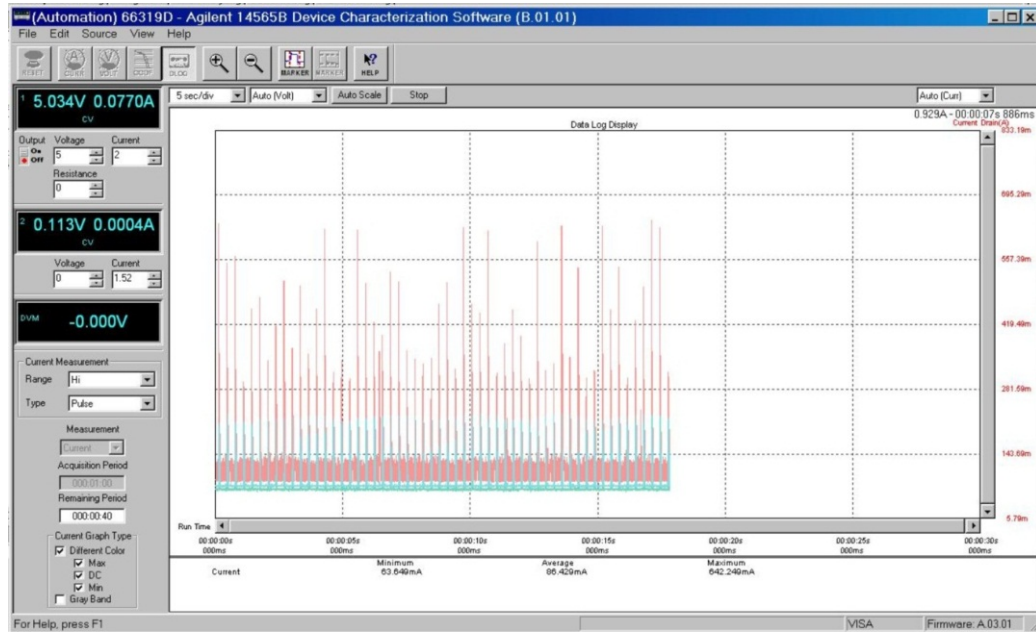
- A data Rate Monitor window is displayed. See example below.
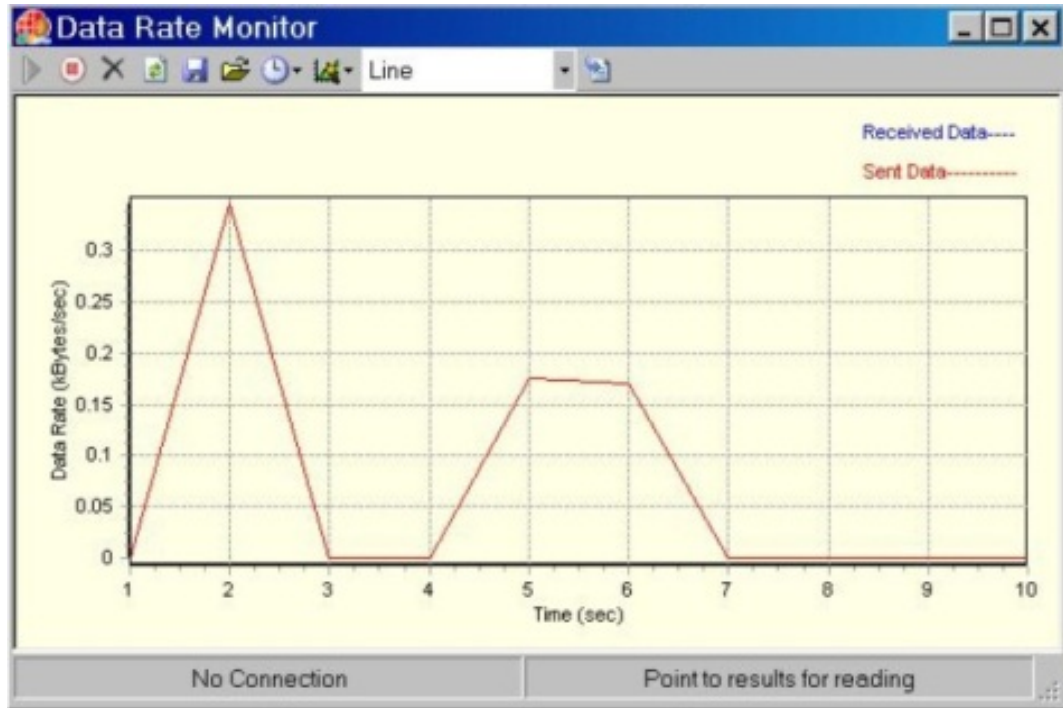
• As each test is completed, the results spreadsheet is updated with the test data and the test status. See example below.

AT&T IFT Battery Drain Test Results

	A	B	C	D	E	F	G	H
1								
2	Product Tested:			Version				
3	MFR/Model:			Hardware:			Software/Firmware:	Inspector:
4								
5	Module(if applicable):			Hardware:			Software/Firmware:	
6								
7	ESN:							
8	Additional Info							
9	Tester:			Test Date(s):			Test Location:	
10								
11	Test No	Test		Expected			Actual	Pass/Fail
12								
13			Parameter	Criteria	Values		Measured Values	
14		LTE FTP Download	Elapsed Test Time	Greater Than	300	Seconds	278	
15			Average Current	Less Than	500	mA	436.2626	Passed
16		LTE-BTR-1-2494	Maximum Current	Less Than	900	mA	805.7842	
17		10776 Compliant	Minimum Current	Less Than	300	mA	299.5105	
18			Parameter	Criteria	Values		Measured Values	
19		LTE FTP Upload	Elapsed Test Time	Greater Than	300	Seconds	235	
20			Average Current	Less Than	500	mA	248.3596	Passed
21		Maximum Current	Less Than	900	mA	633.8786	
22		Minimum Current	Less Than	300	mA	173.5323	
23			Parameter	Criteria	Values		Measured Values	
24		LTE Video Stream	Elapsed Test Time	Greater Than	300	Seconds		
25			Average Current	Less Than	500	mA		Not Tested
26	LTE Battery	LTE-BTR-1-2498	Maximum Current	Less Than	900	mA		
27	Drain	10776 Compliant	Minimum Current	Less Than	300	mA		
28			Parameter	Criteria	Values		Measured Values	
29		LTE UDP	Elapsed Test Time	Greater Than	300	Seconds	139	
30			Average Current	Less Than	500	mA	433.2947	Passed
31		LTE-BTR-1-2496	Maximum Current	Less Than	900	mA	730.8841	
32		10776 Compliant	Minimum Current	Less Than	300	mA	302.3005	
33			Parameter	Criteria	Values		Measured Values	
34		LTE CSFB	Elapsed Test Time	Greater Than	300	Seconds		
35			Average Current	Less Than	500	mA		Not Tested
36		Maximum Current	Less Than	900	mA		
37		Minimum Current	Less Than	300	mA		
38			Parameter	Criteria	Values		Measured Values	
39		LTE Idle	Elapsed Test Time	Greater Than	300	Seconds	3605	
40			Average Current	Less Than	500	mA	77.8103	Passed
41		LTE-BTR-1-2492	Maximum Current	Less Than	900	mA	531.2933	
42		10776 Compliant	Minimum Current	Less Than	300	mA	64.9378	
43				Step tbd				

The three test results examples shown above are saved as part of your test results. For more information on the log file and the storage location, see Activity Log on page 27 and Storage/Saved File Structure on page 28.

6 Directory Structure

When installed, IFT creates a storage folder called "Agilent" where user data related to IFT is stored. This folder is located in different places depending upon the operating system of the Client PC.

Windows 7: C:\Users\Public\Public Documents\Agilent

Windows XP: C:\Documents and Settings\All Users\Shared Documents\Agilent

NOTE	Since the above directory paths are different, this document will reference these "User Data" locations like this: <OS Public Agilent>.

A directory called, "TestData" is created inside this Agilent directory and is located here:

<OS Public Agilent>\N5972A\TestData

Within the "TestData" directory N5974A scripts create a sub-directory called "N5974A", which in turn contains "Docs" and "Results" sub-directories. This "Results" directory contains the output from the Script test run.

```
Agilent
    N5972A
        TestData
            ActivityLogFiles
            ApplicationSettings
            DataBase
            DRMCaptures
            DUTSetup
            EmailFilesFromDUT
            EmailFilesToDUT
        ▷  Excel
            FTPFiles
            InstrumentSettings
        ▷  LanTopologies
            MRDCaptures
            N5974A
            ▷  Docs
                Results
                    BatteryPerformance
                        NoNameDevice
                            NoNameDevice_20121203T081932
            ScripterCode
        ▷  ScripterSettings
        ▷  TempData
            ThroughputCaptures
        ▷  TwoBoxHandover
            WPAData
```
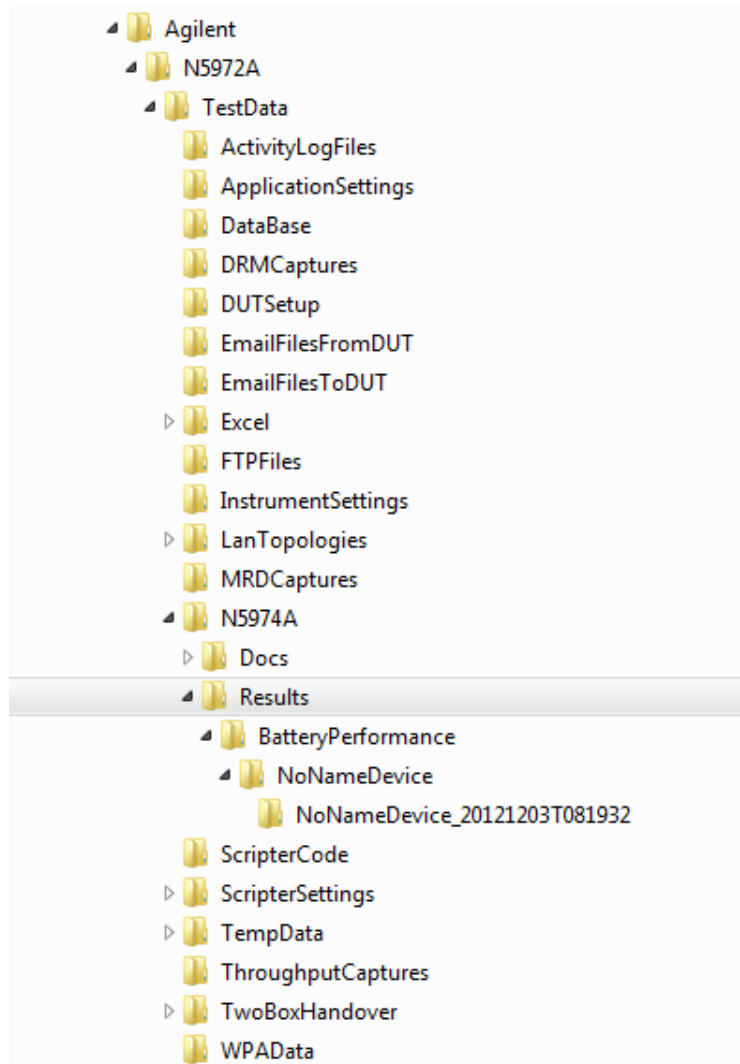
7   Test Results Storage

Introduction

A test case records the test measured values/results in an Excel spreadsheet.

Standard Data

Every test case stores the following records:

- Average Current
- Minimum Current
- Maximum Current
- Elapsed Time
- The test log in an IFT activity log.

Additional Data

Some test cases store additional information which can include the following:

- Agilent 8960 Throughput Monitor Graph

- Agilent Wireless Protocol Advisor Protocol Log Files

- IFT Data Throughput Monitor Graph

- Current Graph

The test case descriptions in Test Cases on page 37 indicate which of these are stored and any associated conditions

Excel Spreadsheet

A results Excel spreadsheet is created at the start of each test plan run when the *StartUp* test is called. The new results spreadsheet file is named using the following format <DeviceName>_<DateTime>.xlsx". For a definition of DeviceName_DateTime, see the Activity Log. For details about where this file is stored, see Storage/Saved File Structure.

The Excel spreadsheet is created from a template file. They are located in TestData/N5974A/Docs/ExcelTemplate/ATT_BatteryDrain_IftTemplate.xlsx. For a guide to the location of the "TestData" directory, see Storage/Saved File Structure.

The scripts expect the spreadsheet to be in the form of the installed template. Modification of the Excel template may result in corrupt result files or failure to write the results.

Activity Log

IFT has an activity logging capability. The log contains details of the occurrences of the built-in IFT activities. It also includes other information text, logged by the test scripts such as test start/end.

You can use the IFT built-in activity log viewer to readily view the details of the occurrences of the built-in IFT activities. However, it does not show the test logged text. You can view the test logged text by using a simple text editor/viewer.

The *StartUp* test is included at the start of each test plan. Running this closes any open activity log files and sets up a new activity log file named <DeviceName>_<DateTime>; where DeviceName is a user settable variable and DateTime is a date and time stamp from the IFT Client PC clock when the *StartUp* test is run. For more information on this, see <u>Software Organization & Parameter Settings</u> on page <u>29</u>.

The activity log file is stored in the standard IFT activity log file storage directory.

The *CleanUp* test is included at the end of each test plan run. Running this closes the current activity log file and copies it to the N5974A results storage directory. This ensures that the activity log and the associated Excel results file are in the same directory. For more information on this, see <u>Software Organization & Parameter Settings</u> on page <u>29</u>.

Storage/Saved File Structure

When installed, IFT creates a storage folder called "TestData" where various files are stored. (For more details, see the N5972A Interactive Functional Test Software Help documentation. For example, the storage folder contains a sub-directory called ActivityLogFiles where all activity log files are stored. The location of the TestData directory depends on the Client PC operating system. You should be aware of the exact location of the TestData directory for your installed version of IFT.

- Generally, the TestData directory is created in "Public"/Agilent/N5972A/TestData/<GroupName>, see the examples below.

- Where "Public" is wherever your operating system puts public documents.

    Windows 7: C:\Users\Public\Public Documents\Agilent

    Windows XP: C:\Documents and Settings\All Users\Shared Documents\Agilent

Within the "TestData" directory N5974A scripts create a sub-directory called "N5974A", which in turn contains "Docs" and "Results" sub-directories. This "Results" directory contains the output from the Script test run.

Each time the *StartUp* test is run a new sub-directory is created within TestData/N5974A/Results/ named <GroupName>. The <GroupName> variable designates the test suite used to generate the test data. For the N5974A-9FP, the group name is "BatteryPerformance".

Within the <GroupName> directory another sub-directory is created, named <DeviceName>_<DateTime>. It contains a <DeviceName>_<DateTime>.xlsx file with Excel file results, and a copy of the <DeviceName>_<DateTime>.log file after the *CleanUp* test is run. For a description of <DeviceName>_<DateTime>, see <u>Activity Log</u> on <u>27</u>.

8 Software Organization & Parameter Settings

Introduction

The software is organized into two major blocks:

1. IFT Scripts
2. Compiled Library (DLL/Dynamic Linked Library)

IFT Scripts

The scripts are compatible with the N5972A-IFT **Scripting Tool**. You can run them individually in the IFT **Scripting Tool** or run them as part of an IFT **Stress Testing** Test Plan.

A separate script is available for each test case, and its file is named according to the test case covered. For the details of each test case and names/filenames for each test script, see Test Cases on page 37.

Two additional scripts are included for each technology; these are named [GSM|LTE|UMTS]-*StartUp* and [GSM|LTE|UMTS]-*CleanUp*.

StartUp Scripts

A *StartUp* script is run as the first script/step of a Test Plan. It must also be run at the start of a session when you are running individual tests using the **Scripting Tool**.

Each *StartUp* script provides the following functionality:

- Ensures that the results directories are established
- Creates an IFT Activity Log file and the Excel results spreadsheet. For details of data storage and file naming see Test Results Storage on page 27.
- Provides a pop-up graphical user interface (GUI) for setting common test parameters.

Any of the three *StartUp* scripts (*GSM-StartUp*, *LTE-StartUp*, *UMTS-StartUp*) can be run. They are essentially the same and the parameters for all of the tests are remembered.

Two additional scripts are included; these are named *StartUp* and *CleanUp*.

NOTE	If the *StartUp* test is not part of your **Stress Testing** Test Plan, the **N5974A Battery Performance Parameters Interface** does not appear.

CleanUp Scripts

A *CleanUp* script is run as the very last script of a Test Plan. It is run as the end of a session of running individual test using the **Scripting Tool**.

Each *CleanUp* script provides the following functionality:

- Stops the IFT Activity Logging, and copies the file to the results storage area. For details of the data storage and file naming see Test Results Storage on page 18.
- The Excel results file is NOT closed down in order for you to view the results after the test run. The Excel results file needs to be closed manually. (It is not necessary to save the file. IFT saves the file during result output).

Any of the three *CleanUp* scripts (*GSM-StartUp*, *LTE-StartUp*, *UMTS-StartUp*) can be run at the end of a test plan. They all provide the same functionality.

Performance Test Parameters Window

When a test case is initiated, a window opens that enables you to enter performance test parameters. The window has four Tabs:

- **Device**: Enables you to enter general parameters and settings peculiar to the DUT, UE being tested.
- **LTE**: Enables you to enter LTE test related parameters
- **UMT**: Enables you to enter UMTS (WCDMA) test related parameters
- **GSM**: Enables you to enter GSM test related parameters
- **Cell Broadcast**: for cell broadcast related parameters

Start: When you click on the start button, the test validates your entries, passes the parameters to the script, and continues with the operation of the *Startup* Script.

- When you enter the following parameters, a validation test is run:

  o **Device Name**: If the Device Name field is empty, the parameter defaults to "NoDeviceName". If you have made an entry, any spaces and non-alphanumeric (apart from underscore) are removed.
  o **Durations**: The values you enter in the duration fields must be non-zero entries.
  o **Check Boxes**: If you have made a selection in the left most list box, you must make a single selection in each of the other list boxes. For example, when you select an LTE Band, you must also select a Bandwidth and a Transmission Mode.
     ▪ Valid LTE Band Bandwidth Combinations are confirmed.
  o **Numeric Entry boxes**: Numeric entry ranges are confirmed.

Device:

Settings available are:

- **Device Name**: A user defined Identifier, limited to 20 characters (alphanumeric plus underscore), which is used in the results storage. (See Test Results Storage on page 18).

- **Device Type**: Enables you to set the test to either *USB Modem* or *Untethered Smartphone*. The setting determines detailed operation of certain test cases. (See Test Cases on page 37).

- **SIM Authentication**: Defines the authentication K value on the DUT SIM; predefined *Agilent*, *3GPP*, or *User Defined value*.

- **SIM User K Value**: Only applied for SIM Authentication when **SIM Authentication** is set to *User*, 32 Hex characters.

- **Battery Capacity**: The capacity of the battery expected to be powering the test device.

LTE
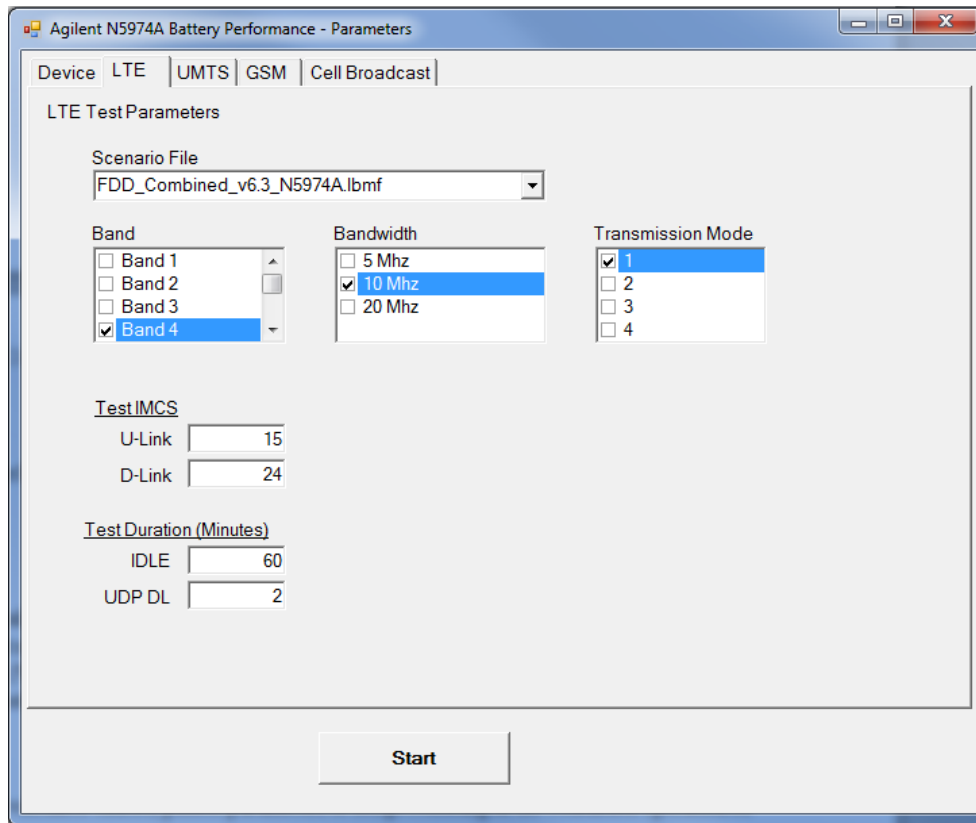
The available **LTE Test Parameter** settings are:

- **Scenario File**: Enables you to select the PXT scenario file used in most of the LTE Test cases. You are allowed to select from the scenario files installed as part of N5974A.

- **Band**: Enables you to set the Band used in all of the LTE test cases and uses PXT scenario override functionality. Currently, you can select bands 1-14 and 17-21.

- **Bandwidth**: Enables you to set the Bandwidth used in all of the LTE test cases and uses PXT scenario override functionality.

- **Transmission Mode**: Enables you to set the Transmission Mode used in all of the LTE test cases and uses PXT scenario override functionality.

- **Test IMCS** (Uplink, Downlink): Enables you to set the uplink and downlink Index Modulation and Coding Scheme value used during the main active portion of a Test Case. For example, the IMCS values are set to these Test IMCS values during the actual FTP file download portion of the test.

- **Test Duration (Minutes):**

  - o **IDLE**: Enables you to set the duration of the *LTE IDLE* test.

  - o **UDP DL**: Enables you to set the duration of the *LTE UDP* download test.

UMTS

The available **UMTS Test Parameter** settings are:

- **Category**: Enables you to set the device category used in all of the UMTS test cases.

- **Test Duration (Minutes):**

  - **CS Standby**: Enables you to set the duration of the *UMTS Circuit Switched Standby* test.

  - **CS Voice**: Enables you to set duration of the *UMTS Circuit Switched Voice* test.

- **MNC**: Enables you to set the Mobile Network Code used in the UMTS tests.

- **MCC**: Enables you to set the Mobile Country Code used in the UMTS tests.

- **Cell Power**: Enables you to set the Cell Power used in the UMTS test.

- **UE Target Power**: Enables you to set the UE Target Power set on the 8960 for use in the UMTS tests.

- **UE DL ARFCN**: Enables you to set the UE Downlink ARFCN set on the 8960 for use in the UMTS tests.

GSM

The available **GSM Test Parameter** settings are:

- **Band**: Enables you to set the Band used in all of the GSM test cases.

- **MNC Digits**: Enables you to set the MNC value. The value should be two or three digits long.

- **MNC**: Enables you to set the Mobile Network Code used in all the GSM test cases.

- **MCC**: Enables you to set the Mobile Country Code used in all the GSM test cases.

- **LAU Timer**: Enables you to set the expected time between Location Area Updates.

- **Paging Multiframe**: Enables you to set the number of multi-frames between the BSE sending paging to the mobile.

- **Broadcast Channel**: Enables you to set the broadcast channel number used on 8960 for the GSM tests.

- **Cell Power**: Enables you to set the cell power used on 8960 for the GSM tests.

- **Traffic Channel**: Enables you to set the traffic channel number used to establish the call on the 8960 for the GSM tests.

- **MS Tx Level**: Enables you to set the value associated with the UE power set on the 8960 for the GSM tests.

- **GSM Test Duration (Minutes)**

  - o **CS Standby**: Enables you to set the duration of the GSM Circuit Switched Standby test.
  - o **CS Voice**: Enables you to set the duration of the GSM Circuit Switched Voice test.

Cell Broadcast

The available **Cell Broadcast Test Parameter** settings are:

- **Geographical Scope**: Enables you to set the geographical scope set/sent in cell broadcast messages.

- **Message Code**: Enables you to set the message code set/sent in cell broadcast messages.

- **Message Id**: Enables you to set the message ID set/sent in cell broadcast messages.

- **Repeat Period**: Enables you to set the repeat period for cell broadcast messages in seconds.

- **Band**: Enables you to set the Band used in all of the GSM test cases.

Parameter Update Script

The *UMTS Parameter Update* script can be used to pop-up the GUI and change parameters between test scripts.

Although this test resides under the UMTS format in the scripter, it can be run if it is visible. All the parameters except **Device Name** can be updated and will remain in place for subsequent tests. The **Device Name** is not changed to ensure consistency with the open results path/file.

Compiled Library (DLL/Dynamically Linked Library)

The scripts and the DLL complement each other; the provided scripts cannot be run without the DLL. The DLL is automatically installed by the N5974A installer.

The DLL provides a number of sub-routines and functions which help to keep the scripts small and simple. For example, the DLL contains the pop-up windows enabling you to enter variables. It also helps ensure that those variables remain consistent through all of the scripts in a test plan.

9 Test Cases

The scripts provided in the N5974A IFT Automation Scripts run within the **Stress Testing** or **Scripting Tool** provided in the N5972A version of IFT. This enables you to run an individual test or a collection of tests as part of your test plan.

The test cases are divided into three groups based on radio technology: GSM Test cases, UMTS test cases, and LTE test cases. Each test case covers specific functional activity for a radio technology; such as File Transfer for LTE or SMS for UMTS.

Each test runs only once for a combination of user set variables; a test does not loop for multiple values of user variables. You can input your user variables using the GUI called from the *GSM/UMTS/LTE-StartUp* test.

- The GUI settable variables for LTE are: **Band**, **Bandwidth**, **Transmission Mode**, and some test duration times.

- The GUI settable variables for UMTS are: **Category** and some test duration times.

- The GUI settable variables common to each format are: **Device Name** and an indication of whether or not the device is a USB modem or an untethered device (such as smartphone or tablet).

For more details on the user variables, see .

The individual tests do not check measured values against pass/fail criteria; the tests report the values by writing them to an Excel spreadsheet. The Spreadsheet contains the test pass or fail criteria, and indicates pass/fail via a formula. This enables you to fine tune the pass/fail criteria. For details on where the spreadsheet is saved see

UMTS CS Standby Test Case

UMTS Cell:

- Provided by 8960 Base station Emulator, configured as IFT Test set 1

IFT Activities used:

- 14565B Battery Profile
- N6705B Battery Profile

Main Procedure:

This test measures average, minimum, and maximum current, using the 14565B or N6705B Battery Profile activity, for a period of time, while the DUT is in "Idle" mode. Current measuring is stopped when the UMTS Test Duration **CS Standby** timer expires.

The standby-current-measurement loop is executed for the four combinations of WiFi enabled/disable and Bluetooth enable/disabled.

- WiFi enabling expects WiFi to be on and searching for a network but not connected.

- Bluetooth enabled expects a Bluetooth headset to be connected to the DUT (Agilent does not supply Bluetooth headset)

Results Stored to Excel Spreadsheet:

- Average, Minimum, and Maximum Current
- Elapsed Time

Additional Stored Artifacts:

- None

Restrictions/Conditions:

- Does not run if you select the **Device Type** on the N5974A Battery Performance Parameters interface as **USBModem**.

UE Automation:

- Limited/None - You are prompted to make connections and interactions as necessary.

Variable Impacting Test Run:

- Device Type
- CS Standby (test duration)

Use of System Components (see table):

System Components	Used in this test
UE	Yes
Power Supply	Yes
Router	Yes (Hub would suffice)
8960/UMTS Test Set	Yes
E6621A/LTE Test Set	No
IFT Server	No
IFT Client	Yes

UMTS CS Voice Test Case

UMTS Cell:

- Provided by 8960 Base station Emulator, configured as IFT Test set 1

IFT Activities used:

- 14565B Battery Profile
- N6705B Battery Profile
- Call Processing

Main Procedure:

This test measures average, minimum, and maximum current using either the 14565B or N6705B Battery Profile activity, during a circuit switched call directly between 8960 BSE to the DUT; the call is initiated by the BSE and needs to be answered on the DUT. Current is measured at a number DUT power setting defined by AT&T; the time spent at each power is also defined by AT&T and factors in the UMTS Test Duration **CS Voice**.

The voice-call-current-measurement loop is executed for the four combinations of WiFi enabled/disable and Bluetooth enable/disabled.

- WiFi enabling expects WiFi to be on and searching for a network but not connected.

- Bluetooth enabled expects a Bluetooth headset to be connected to DUT (Agilent does not supply Bluetooth headset

Results Stored to Excel Spreadsheet:

- Average, Minimum, and Maximum Current
- Elapsed Time

Additional Stored Artifacts:

- None

Restrictions/Conditions:

- Does not run if you select the **Device Type** on the N5974A Battery Performance Parameters Interface as *Tethered Modem*.

UE Automation:

- Limited/None - You are prompted to make connections and interactions as necessary.

Variable Impacting Test Run:

- Device Type
- CS Voice (test duration)

Use of System Components (see table):

System Components	Used in this test
UE	Yes
Power Supply	Yes
Router	Yes (Hub would suffice)
8960/UMTS Test Set	Yes
E6621A/LTE Test Set	No

System Components	Used in this test
IFT Server	No
IFT Client	Yes

UMTS SMS Test Case

UMTS Cell:

- Provided by 8960 Base station Emulator, configured as IFT Test set 1

IFT Activities used:

- 14565B Battery Profile
- N6705B Battery Profile
- SMS to DUT

Main Procedure:

This test measures average, minimum, and maximum current using the 14565B or N6705B Battery Profile activity, while the ***SMS to DUT*** sends a series of text messages (ten individual messages). Current measuring is stopped when the ***SMS to DUT*** activity is complete.

Results Stored to Excel Spreadsheet:

- Average, Minimum, and Maximum Current
- Elapsed Time

Additional Stored Artifacts:

- 8960 Throughput Monitor graph (jpg)
- Agilent Wireless Protocol Advisor log

Restrictions/Conditions:

- Does not run if you select the **Device Type** on the N5974A Battery Performance Parameters Interface as ***Tethered Modem***.

UE Automation:

- Limited/None - You are prompted to make connections and interactions as necessary.

Variable Impacting Test Run:

- Device Type

Use of System Components (see table):

System Components	Used in this test
UE	Yes
Power Supply	Yes
Router	Yes (Hub would suffice)
8960/UMTS Test set	Yes
E6621A/LTE Test set	No
IFT Server	Yes
IFT Client	Yes

UMTS MMS Test Case

UMTS Cell:

- Provided by 8960 Base station Emulator, configured as IFT Test set 1

IFT Activities used:

- 14565B Battery Profile
- N6705B Battery Profile
- MMS to DUT
- MMS from DUT

Main Procedure:

This test measures average, minimum, and maximum current using the 14565B or N6705B Battery Profile activity, while the *MMS from DUT* and *MMS to DUT* activities are used to simulate a picture message exchange. The current for each of these activities is recorded separately.

Results Stored to Excel Spreadsheet:

- Average, Minimum, and Maximum Current
- Elapsed Time

Additional Stored Artifacts:

- 8960 Throughput Monitor graph (jpg)
- Agilent Wireless Protocol Advisor log

Restrictions/Conditions:

- Does not run if you select the *Device Type* on the N5974A Battery Performance Parameters Interface as *Tethered Modem*.

UE Automation:

- Limited/None - You are prompted to make connections and interactions as necessary.

Variable Impacting Test Run:

- Device Type

Use of System Components (see table):

System Components	Used in this test
UE	Yes
Power Supply	Yes
Router	Yes (Hub would suffice)
8960/UMTS Test set	Yes
E6621A/LTE Test set	No
IFT Server	Yes
IFT Client	Yes

UMTS FTP Download Test Case

UMTS Cell:

- Provided by 8960 Base station Emulator, configured as IFT Test set 1

IFT Activities used:

- 14565B Battery Profile
- N6705B Battery Profile
- FTP download

Main Procedure:

This test measures average, minimum, and maximum current using the 14565B or N6705B Battery Profile activity, while downloading a file using the ***FTP download*** activity. Current measuring is stopped when the ***FTP download*** activity is complete.

Results Stored to Excel Spreadsheet:

- Average, Minimum, and Maximum Current
- Elapsed Time

Additional Stored Artifacts:

- 8960 Throughput Monitor graph (jpg)
- IFT Data Rate Monitor, if you select **Device Type** as ***Tethered Modem***.

Restrictions/Conditions:

- If you select the **Device Type** on the N5974A Battery Performance Parameters Interface as ***UnTethered Smartphone***, you are prompted to manually run FTP client and manually download the file.

UE Automation:

- Limited/None - You are prompted to make connections and interactions as necessary.

Variable Impacting Test Run:

- UMTS Category
- Device Type

Use of System Components (see table):

System Components	Used in this test
UE	Yes
Power Supply	Yes
Router	Yes (Hub would suffice)
8960/UMTS Test set	Yes
E6621A/LTE Test set	No
IFT Server	Yes
IFT Client	Yes

UMTS FTP Upload Test Case

UMTS Cell:

- Provided by 8960 Base station Emulator, configured as IFT Test set 1

IFT Activities used:

- 14565B Battery Profile
- N6705B Battery Profile
- FTP Upload(If Device Type is *Tethered Modem*)

Main Procedure:

This test measures average, minimum, and maximum current using the 14565B or N6705B Battery Profile activity, while uploading a file using the *FTP Upload* activity. Current measuring is stopped when the *FTP Upload* activity is complete.

- If the DUT is not tethered, you are prompted to start an FTP client and upload a file. The Current measuring is stopped when the user indicates the file download is compete.

Results Stored to Excel Spreadsheet:

- Average, Minimum, and Maximum Current
- Elapsed Time

Additional Stored Artifacts:

- 8960 Throughput Monitor graph (jpg)
- IFT Data Rate Monitor if, you select **Device Type** as *Tethered Modem*.

Restrictions/Conditions:

- If you select the **Device Type** on the N5974A Battery Performance Parameters Interface as *UnTethered Smartphone*, you are prompted to manually run FTP client and manually download a file, you are prompted to manually run FTP client and manually upload a file.

UE Automation:

- Limited/None - You are prompted to make connections and interactions as necessary.

Variable Impacting Test Run:

- UMTS Category
- Device Type

Use of System Components (see table):

System Components	Used in this test
UE	Yes
Power Supply	Yes
Router	Yes (Hub would suffice)
8960/UMTS Test set	Yes
E6621A/LTE Test set	No
IFT Server	Yes
IFT Client	Yes

UMTS Video Stream Test Case

UMTS Cell:

- Provided by 8960 Base station Emulator, configured as IFT Test set 1

IFT Activities used:

- 14565B Battery Profile
- N6705B Battery Profile

Main Procedure:

This test measures average, minimum, and maximum current using the 14565B or N6705B Battery Profile activity, while a *YouTube* video file is manually accessed and viewed. Current measuring is stopped when the user indicates downloading and viewing is complete.

Results Stored to Excel Spreadsheet:

- Average, Minimum, and Maximum Current
- Elapsed Time

Additional Stored Artifacts:

- 8960 Throughput Monitor graph (jpg)

Restrictions/Conditions:

- Does not run if you select the **Device Type** on the N5974A Battery Performance Parameters Interface as *Tethered Modem*.
- Test requires manual intervention from you.
- Needs *YouTube* or browser application on DUT

UE Automation:

- Limited/None - You are prompted to make connections and interactions as necessary.

Variable Impacting Test Run:

- Device Type
- UMTS Category

Use of System Components (see table):

System Components	Used in this test
UE	Yes
Power Supply	Yes
Router	Yes
8960/UMTS Test set	Yes
E6621A/LTE Test set	No
IFT Server	No
IFT Client	Yes

UMTS NFC Tag/Application Reader

UMTS Cell:

- Provided by 8960 Base station Emulator, configured as IFT Test set 1

IFT Activities used:

- 14565B Battery Profile
- N6705B Battery Profile

Main Procedure:

Measures average, minimum, and maximum current, using the 14565B or N6705B Battery Profile activity, while the DUT's NFC capability is exercised either manually or interactively. Current measurements are taken for both Idle and Active (NFC being operated) states. Four idle measurements are made interspersed with three active measurements.

There are two separate test cases one for the NFC Application use and one for Tag Reader use.

Results Stored to Excel Spreadsheet:

- Average, Minimum, and Maximum Current
- Elapsed Time

Additional Stored Artifacts:

- 8960 Throughput Monitor graph (jpg)

Restrictions/Conditions:

- Does not run if you select the **Device Type** on the N5974A Battery Performance Parameters Interface as *Tethered Modem*.
- Test requires manual intervention from you.

UE Automation:

- Limited/None - You are prompted to make connections and interactions as necessary.

Variable Impacting Test Run:

- Device Type

Use of System Components (see table):

System Components	Used in this test
UE	Yes
Power Supply	Yes
Router	Yes (Hub would suffice)
8960/UMTS Test set	Yes
E6621A/LTE Test set	No
IFT Server	No
IFT Client	Yes

UMTS Cell Broadcast

UMTS Cell:

- Provided by 8960 Base station Emulator, configured as IFT Test set 1

IFT Activities used:

- 14565B Battery Profile
- N6705B Battery Profile

Main Procedure:

Measures average, minimum, and maximum current, using the 14565B or N6705B Battery Profile activity, during the reception of a Cell Broadcast Message.

Results Stored to Excel Spreadsheet:

- Average, Minimum, and Maximum Current
- Elapsed Time

Additional Stored Artifacts:

- None

Restrictions/Conditions:

- Does not run if you select the **Device Type** on the N5974A Battery Performance Parameters Interface as *Tethered Modem*.

UE Automation:

- Limited/None - You are prompted to make connections and interactions as necessary.

Variable Impacting Test Run:

- Device Type

Use of System Components (see table):

System Components	Used in this test
UE	Yes
Power Supply	Yes
Router	Yes (Hub would suffice)
8960/UMTS Test set	Yes
E6621A/LTE Test set	No
IFT Server	No
IFT Client	Yes

UMTS Play Music

UMTS Cell:

- Provided by 8960 Base station Emulator, configured as IFT Test set 1

IFT Activities used:

- 14565B Battery Profile
- N6705B Battery Profile

Main Procedure:

Measures average, minimum, and maximum current, using the 14565B or N6705B Battery Profile activity, while music is being played at full volume through a headset; DUT is in standby .Current is measured for the duration of the time set in **UMTS Test Duration** > *Music Play*.

The music-current-measurement loop is executed for each of WiFi enabled and WiFi disabled.

- WiFi enabling expects WiFi to be on and searching for a network but not connected.

Results Stored to Excel Spreadsheet:

- Average, Minimum, and Maximum Current
- Elapsed Time

Additional Stored Artifacts:

- None

Restrictions/Conditions:

- Does not run if you select the **Device Type** on the N5974A Battery Performance Parameters Interface as *Tethered Modem*.

UE Automation:

- Limited/None - You are prompted to make connections and interactions as necessary.

Variable Impacting Test Run:

- Device Type
- Music Play (test duration)

Use of System Components (see table):

System Components	Used in this test
UE	Yes
Power Supply	Yes
Router	Yes (Hub would suffice)
8960/UMTS Test set	Yes
E6621A/LTE Test set	No
IFT Server	No
IFT Client	Yes

UMTS Web Browse

UMTS Cell:

- Provided by 8960 Base station Emulator, configured as IFT Test set 1

IFT Activities used:

- 14565B Battery Profile
- N6705B Battery Profile

Main Procedure:

Measures average, minimum, and maximum current, using the 14565B or N6705B Battery Profile activity, while the operator uses the DUT's web browser to visit or check an external weather website. Current is measured for the duration of the time between prompts or responses while the operator browses.

Results Stored to Excel Spreadsheet:

- Average, Minimum, and Maximum Current
- Elapsed Time

Additional Stored Artifacts:

- None

Restrictions/Conditions:

- Does not run if you select the **Device Type** on the N5974A Battery Performance Parameters Interface as *Tethered Modem*.

UE Automation:

- Limited/None - You are prompted to make connections and interactions as necessary.

Variable Impacting Test Run:

- Device Type

Use of System Components (see table):

System Components	Used in this test
UE	Yes
Power Supply	Yes
Router	Yes/Must
8960/UMTS Test set	Yes
E6621A/LTE Test set	No
IFT Server	No
IFT Client	Yes

UMTS Pop/Push Email

UMTS Cell:

- Provided by 8960 Base station Emulator, configured as IFT Test set 1

IFT Activities used:

- 14565B Battery Profile
- N6705B Battery Profile

Main Procedure:

Measures average, minimum, and maximum current, using the 14565B or N6705B Battery Profile activity, while the operator receives or reads an email; DUT is in standby. Current is measured for the duration of the time between prompts or responses while the operator receives, checks, or reads email.

There are separate test scripts for Pop and Push, and separate results in the spreadsheet.

Results Stored to Excel Spreadsheet:

- Average, Minimum, and Maximum Current
- Elapsed Time

Additional Stored Artifacts:

- None

Restrictions/Conditions:

- Does not run if you select the **Device Type** on the N5974A Battery Performance Parameters Interface as *Tethered Modem*.

UE Automation:

- Limited/None - You are prompted to make connections and interactions as necessary.

Variable Impacting Test Run:

- Device Type

Use of System Components (see table):

System Components	Used in this test
UE	Yes
Power Supply	Yes
Router	Yes (Hub would suffice)
8960/UMTS Test set	Yes
E6621A/LTE Test set	No
IFT Server	No
IFT Client	Yes

UMTS Multi (Photo, Video, SMS, Game Play)

UMTS Cell:

- Provided by 8960 Base station Emulator, configured as IFT Test set 1

IFT Activities used:

- 14565B Battery Profile
- N6705B Battery Profile

Main Procedure:

Measures average, minimum, and maximum current, using the 14565B or N6705B Battery Profile activity, while the operator performs various actions; DUT is in standby. The operator actions are:

- Take a photograph
- View a photograph
- Take a video
- View a video
- Send a text(only) message
- Receive, Read, or Delete a text(only) message
- Play a game for a few minutes

Current is measured for the duration of the time between prompts or responses while the operator performs the actions.

These actions are contained in a single script, however there are separate results associated with each action in the results spreadsheet.

Results Stored to Excel Spreadsheet:

- Average, Minimum, and Maximum Current
- Elapsed Time

Additional Stored Artifacts:

- None

Restrictions/Conditions:

- Does not run if you select the **Device Type** on the N5974A Battery Performance Parameters Interface as ***Tethered Modem***.

UE Automation:

- Limited/None - You are prompted to make connections and interactions as necessary.

Variable Impacting Test Run:

- Device Type

Use of System Components (see table):

System Components	Used in this test
UE	Yes
Power Supply	Yes
Router	Yes (Hub would suffice)

System Components	Used in this test
8960/UMTS Test set	Yes
E6621A/LTE Test set	No
IFT Server	No
IFT Client	Yes

LTE Idle Test Case

LTE Cell:

- Provided by E6621A Base station Emulator, configured as IFT Test set 2

Expected E6621A BSE Scenario File:

- FDD_Combined_v6.3_N5974A.lbmf

IFT Activities used:

- 14565B Battery Profile
- N6705B Battery Profile

Main Procedure:

This test measures average, minimum, and maximum current, using the 14565B or N6705B Battery Profile activity, for a period of time, while the DUT is in "Idle" mode. Current measuring is stopped when the LTE Test Duration "IDLE" timer expires.

Results Stored to Excel Spreadsheet:

- Average, Minimum, and Maximum Current
- Elapsed Time

Additional Stored Artifacts:

- None

Restrictions/Conditions:

- None

UE Automation:

- Limited/None - you are prompted to make connections and interactions as necessary.

Variable Impacting Test Run:

- IDLE (test duration)

Use of System Components (see table):

System Components	Used in this test
UE	Yes
Power Supply	Yes
Router	Yes (Hub would suffice)
8960/UMTS Test set	No
E6621A/LTE Test set	Yes
IFT Server	No
IFT Client	Yes

LTE FTP Download Test Case

LTE Cell:

- Provided by E6621A Base station Emulator, configured as IFT Test set 2

Expected E6621A BSE Scenario File:

- FDD_Combined_v6.3_N5974A.lbmf

IFT Activities used:

- 14565B Battery Profile
- N6705B Battery Profile
- FTP Download (If Device Type is ***Tethered Modem***)

Main Procedure:

This test measures average, minimum, and maximum current, using the 14565B or N6705B Battery Profile activity. The Current is continually monitored and measured during the ***FTP Download*** activity, where a single file is downloaded to the DUT. Current measuring is stopped when the ***FTP Download*** activity is complete.

- If the DUT is not tethered, you are prompted to start an FTP client and download a file. Current measuring is stopped when the user indicates the file download is complete.

Results Stored to Excel Spreadsheet:

- Average, Minimum, and Maximum Current
- Elapsed Time

Additional Stored Artifacts:

- IFT Data Rate Monitor, if **Device Type** is ***Tethered Modem***

Restrictions/Conditions:

- If you select the **Device Type** on the N5974A Battery Performance Parameters Interface as ***UnTethered Smartphone***, you are prompted to manually run FTP client and manually download a file.

UE Automation:

- Limited/None - you are prompted to make connections and interactions as necessary.

Variable Impacting Test Run:

- Device Type

Use of System Components (see table):

System Components	Used in this test
UE	Yes
Power Supply	Yes
Router	Yes (Hub would suffice)
8960/UMTS Test set	No
E6621A/LTE Test set	Yes
IFT Server	Yes
IFT Client	Yes

LTE FTP Upload Test Case

LTE Cell:

- Provided by E6621A Base station Emulator, configured as IFT Test set 2

Expected E6621A BSE Scenario File:

- FDD_Combined_v6.3_N5974A.lbmf

IFT Activities used:

- 14565B Battery Profile
- N6705B Battery Profile
- FTP Upload (If Device Type is *Tethered Modem*)

Main Procedure:

This test measures average, minimum, and maximum current, using the 14565B or N6705B Battery Profile activity . The current is continually monitored and measured during the *FTP Upload* activity, where a single file is uploaded via the DUT. Current measuring is stopped when the *FTP Upload* activity is complete.

- If the DUT is not tethered, you are prompted to start an FTP client and upload a file. Current measuring is stopped when the user indicates the file download is complete.

Results Stored to Excel Spreadsheet:

- Average, Minimum, and Maximum Current
- Elapsed Time

Additional Stored Artifacts:

- IFT Data Rate Monitor, if you select the **Device Type** on the N5974A Battery Performance Parameters Interface as *Tethered Modem*.

Restrictions/Conditions:

- If you select the **Device Type** on the N5974A Battery Performance Parameters Interface as *UnTethered Smartphone*, you are prompted to manually run FTP client and manually download a file, you are prompted to manually run FTP client and manually upload a file.

UE Automation:

- Limited/None - you are prompted to make connections and interactions as necessary.

Variable Impacting Test Run:

- Device Type

Use of System Components (see table):

System Components	Used in this test
UE	Yes
Power Supply	Yes
Router	Yes (Hub would suffice)
8960/UMTS Test set	No
E6621A/LTE Test set	No
IFT Server	Yes
IFT Client	Yes

LTE UDP Download Test Case

LTE Cell:

- Provided by E6621A Base station Emulator, configured as IFT Test set 2

Expected E6621A BSE Scenario File:

- FDD_Combined_v6.3_N5974A.lbmf

IFT Activities used:

- 14565B Battery Profile
- N6705B Battery Profile
- FTP Download (If Device Type is *Tethered Modem*)

Main Procedure:

This test measures average, minimum, and maximum current, using the 14565B or N6705B Profile activity. The current is continually monitored and measured during the *UDP Download* activity. Current measuring is stopped when the *UDP Download Flood* activity completes.

If the DUT is not tethered, then you are prompted to configure 'iperf'* on the Server PC and DUT, and to initiate an 'iperf' transaction. Current measuring is stopped when you indicate the 'iperf' transaction is complete.

Results Stored to Excel Spreadsheet:

- Average, Minimum, and Maximum Current
- Elapsed Time

Additional Stored Artifacts:

- IFT Data Rate Monitor, if you select the **Device Type** on the N5974A Battery Performance Parameters Interface as *Tethered Modem*.

Restrictions/Conditions:

- None

UE Automation:

- Limited/None - you are prompted to make connections and interactions as necessary.

Variable Impacting Test Run:

- Device Type

Use of System Components (see table):

System Components	Used in this test
UE	Yes
Power Supply	Yes
Router	Yes (Hub would suffice)
8960/UMTS Test set	No
E6621A/LTE Test set	Yes
IFT Server	Yes
IFT Client	Yes

*'iperf' is a widely used tool for measuring IP network performance. Agilent does not distribute or supply 'iperf' applications. It is expected that you will install an appropriate 'iperf' application on the Server PC and also on the DUT.

LTE Video Stream Test Case

LTE Cell:

- Provided by E6621A Base station Emulator, configured as IFT Test set 2

Expected E6621A BSE Scenario File:

- FDD_Combined_v6.3_N5974A.lbmf (If you select an alternative scenario from the N5974A Battery Performance Parameters Interface, this test overrides the selected scenario with the expected scenario during the test and restores the selected scenario after the test is complete.)

IFT Activities used:

- 14565B Battery Profile
- N6705B Battery Profile

Main Procedure:

This test measures average, minimum, and maximum current using the 14565B or N6705B Profile activity, while a *YouTube* video file is manually accessed and viewed. Current measuring is stopped when the user indicates downloading and viewing is complete.

Results Stored to Excel Spreadsheet:

- Average, Minimum, and Maximum Current
- Elapsed Time

Additional Stored Artifacts:

- None

Restrictions/Conditions:

- Does not run if you select the **Device Type** on the N5974A Battery Performance Parameters Interface as *Tethered Modem*.
- Test requires manual intervention from you.
- Needs *YouTube* application or browser application on DUT

UE Automation:

- None - you are prompted to make connections and interactions as necessary.

Variable Impacting Test Run:

- Device Type

Use of System Components (see table):

System Components	Used in this test
UE	Yes
Power Supply	Yes
Router	Yes/Must
8960/UMTS Test set	No
E6621A/LTE Test set	Yes
IFT Server	No
IFT Client	Yes

LTE NFC Tag/Application Reader

LTE Cell:

- Provided by E6621A Base station Emulator, configured as IFT Test set 2

Expected E6621A BSE Scenario File:

- FDD_Combined_v6.3_N5974A.lbmf

IFT Activities used:

- 14565B Battery Profile
- N6705B Battery Profile

Main Procedure:

This test measures average, minimum, and maximum current using the 14565B or N6705B Profile activity, while the DUT's NFC capability is exercised manually or interactively. Current Measurements are taken for both Idle and Active (NFC being operated) states. Four idle measurements are made interspersed with three active measurements.

There are two separate test cases one for the NFC Application use and one for Tag Reader use.

Results Stored to Excel Spreadsheet:

- Average, Minimum, and Maximum Current
- Elapsed Time

Additional Stored Artifacts:

- None

Restrictions/Conditions:

- Does not run if you select the **Device Type** on the N5974A Battery Performance Parameters Interface as *Tethered Modem*.
- Test requires manual intervention from you.

UE Automation:

- None - you are prompted to make connections and interactions as necessary.

Variable Impacting Test Run:

- Device Type

Use of System Components (see table):

System Components	Used in this test
UE	Yes
Power Supply	Yes
Router	Yes (Hub would suffice)
8960/UMTS Test set	No
E6621A/LTE Test set	Yes
IFT Server	No
IFT Client	Yes

LTE Circuit Switch Fallback Test Case

UMTS Cell:

- Provided by 8960 Base station Emulator, configured as IFT Test set 1. This test requires the 8960 Base Station Emulator to be running E6703H WCDMA Lab App H, or E6785H Fast Switch Lab App H.

LTE Cell:

- Provided by E6621A Base station Emulator, configured as IFT Test set 2

Expected E6621A BSE Scenario File:

- FDD_Combined_v6.3_N5974A.lbmf

IFT Activities used:

- 14565B Battery Profile
- N6705B Battery Profile

Main Procedure:

The UE is connected to the LTE cell; it is then sent a message notifying it that there are CS Services. The UE then leaves the LTE Cell, and responds to the call setup.

Current measurement is started when the UE is confirmed connected to the LTE cell, and is stopped once the voice call is answered (and programmatically ended).

This test measures average, minimum, and maximum current, using the 14565B or N6705B Profile activity.

Results Stored to Excel Spreadsheet:

- Average, Minimum, and Maximum Current
- Elapsed Time

Additional Stored Artifacts:

- None

Restrictions/Conditions:

- Does not run if you select the **Device Type** on the N5974A Battery Performance Parameters Interface as ***Tethered Modem***.

UE Automation:

- Limited/None - you are prompted to make connections and interactions as necessary.

Variable Impacting Test Run:

- Device Type

Use of System Components (see table):

System Components	Used in this test
UE	Yes
Power Supply	Yes
Router	Yes (Hub would suffice)
8960/UMTS Test set	Yes

System Components	Used in this test
E6621A/LTE Test set	Yes
IFT Server	No
IFT Client	Yes

GSM CS Standby Test Case

GSM Cell:

- Provided by 8960 Base station Emulator, configured as IFT Test set 1.

IFT Activities used:

- 14565B Battery Profile
- N6705B Battery Profile

Main Procedure:

Measures average, minimum, and maximum current, using the 14565B or N6705B Profile activity, for a period of time, while the DUT is in "Idle" mode. Current measuring is stopped when the GSM Test Duration *CS Standby* timer expires.

Results Stored to Excel Spreadsheet:

- Average, Minimum, and Maximum Current
- Elapsed Time

Additional Stored Artifacts:

- None

Restrictions/Conditions:

- Does not run if you select the **Device Type** on the N5974A Battery Performance Parameters Interface as *Tethered Modem*.

UE Automation:

- Limited/None - you are prompted to make connections and interactions as necessary.

Variable Impacting Test Run:

- Device Type
- CS Standby (test duration)

Use of System Components (see table):

System Components	Used in this test
UE	Yes
Power Supply	Yes
Router	Yes (Hub would suffice)
8960/UMTS Test set	Yes
E6621A/LTE Test set	No
IFT Server	No
IFT Client	Yes

GSM CS Voice Test Case

GSM Cell:

- Provided by 8960 Base station Emulator, configured as IFT Test set 1.

IFT Activities used:

- 14565B Battery Profile
- N6705B Battery Profile

Main Procedure:

Measures average, minimum, and maximum current, using the 14565B or N6705B Profile activity, during a circuit switched call directly between 8960 BSE to the DUT; the call is initiated by the BSE and needs to be answered on the DUT. Current measuring is stopped when the GSM Test Duration *CS Voice* timer expires.

Results Stored to Excel Spreadsheet:

- Average, Minimum, and Maximum Current
- Elapsed Time

Additional Stored Artifacts:

- None

Restrictions/Conditions:

- Does not run if you select the **Device Type** on the N5974A Battery Performance Parameters Interface as *Tethered Modem*.

UE Automation:

- Limited/None - you are prompted to make connections and interactions as necessary.

Variable Impacting Test Run:

- Device Type
- CS Voice (test duration)

Use of System Components (see table):

System Components	Used in this test
UE	Yes
Power Supply	Yes
Router	Yes (Hub would suffice)
8960/UMTS Test set	Yes
E6621A/LTE Test set	No
IFT Server	No
IFT Client	Yes

10 Service and Support

Calling Agilent Technologies

Agilent Technologies has offices around the world to provide you with complete support for your products. For help, to obtain servicing information, or to order replacement parts, you can call the Agilent customer contact centers nearest you. The customer contact center routes your request to a technical support expert, who contacts you about your support request via phone or email. Local language support is available in many countries.

For the nearest Agilent Technologies office, refer to Locations for Agilent Technologies on page 64.

In any correspondence or telephone conversations, you need the product number, full serial number, software revision, and any other pertinent contract numbers.

Locations for Agilent Technologies

Online assistance: http://www.agilent.com/find/assist

If you do not have access to the Internet, one of these centers can direct you to your nearest representative:

If you have a current STSC, you can contact Agilent at the email addresses listed in Software and Technical Support Contracts.

Americas

Brazil	Canada	Mexico
(11) 4197 3600	(877) 894 4414	01800 5064 800
United States		
(800) 829 4444		

Asia Pacific

Australia	India	Malaysia
1 800 629 485	1 800 112 929	1 800 888 848
China	Japan	Singapore
800 810 0189	0120 (421) 345	1 800 375 8100
Hong Kong	Korea	Taiwan
800 938 693	080 769 0800	0800 047 866

Other Asian Countries:
www.agilent.com/find/contactus

Europe & Middle East

Belgium	Ireland	Spain
32 (0) 2 404 93 40	1890 924 204	34 (91) 631 3300
Denmark	Israel	Sweden
45 45 80 12 15	972-3-9288-504/544	0200-88 22 55
Finland	Italy	Switzerland
358 (0) 10 855 2100	39 02 92 60 8484	0800 80 53 53
France	Netherlands	United Kingdom
0825 010 700*	31 (0) 20 547 2111	44 (0) 118 927 6201
*0.125 €/minute		
Germany		
49 (0) 7031 464 6333		

Other Unlisted Countries:
www.agilent.com/find/contactus

Software and Technical Support Contracts

Software and Technical Support Contracts (STSC) entitle you to software updates and feature enhancements, as well as direct access to a technical expert for technical support for a fixed period, usually one year.

Software Support

The STSC entitles you to the latest firmware and software releases, which include feature enhancements and defect fixes for the period of the STSC contract.

Access to latest software releases are available from: www.agilent.com/find/N5974A.

Technical Support

The STSC gives you direct access to technical product experts to increase your productivity and minimize the software difficulties you encounter. These technical support engineers are experts on the Agilent Interactive Functional Test solution and related software products. They have instant access to instruments and software to enable them to resolve your issues as quickly as possible. Agilent investigates all software defects and operational problems reported through the technical support channel. Upon completion of the investigation, we advise you on possible solutions and functional alternatives. Where possible, Agilent provides software releases to address problems caused by defects in the firmware or software.

STSCs for the Agilent N5974A IFT

The N5974AS STSC covers the N5974A software application.

If you have a Software and Technical Support Contract, there are three methods of accessing your technical support:

- Web-based support
- E-mail support
- Phone support

For fastest response times, we recommend using the web-based or email access methods as these provide the most direct route to your technical support expert. All support cases may be viewed and tracked through the online support center (**My Support Center**), regardless of how you initially contacted technical support.

Web-based support

You can directly enter and manage your support requests online via
www.agilent.com/find/mysupportcenter.

The first time you use My Support Center you are asked to create a profile and provide proof of entitlement. Once your profile is created, you can use the online support center to enter your support request.

Each support request is given a unique case number which you can use to track the progress of your support case. A technical expert contacts you via phone or email (whichever you have stated as your preferred option) to resolve your issue.

> English, Japanese, Korean, and Mandarin local language support is available.

E-mail support

You can also contact our technical support at the following e-mail addresses:

- wireless_test_support_americas@agilent.com

- wireless_test_support_japan@agilent.com

- wireless_test_support_europe@agilent.com

- wireless_test_support_asia@agilent.com

- wireless_test_support_korea@agilent.com

Your support request is routed to a technical expert who contacts you via e-mail or phone (whichever you have stated as your preferred option) to help resolve your issue.

> English, Japanese, Korean, and Mandarin local language support is available.

Phone support

If you prefer to speak to someone directly, you can call the Agilent customer contact centers. For the nearest Agilent Technologies office, refer to Locations for Agilent Technologies on page 64.

The customer contact center will route your request to a technical support expert, who will contact you about your support request via phone or email. Local language support is available in many countries.

In any correspondence or telephone conversations, you need the product number, full serial number, software revision, and any other pertinent contract numbers.

Licensing and Software Compatibility

The N5974AS STSC license resides in the Client PC and is tied to the PC Host ID. Before new firmware is downloaded to the PC, the firmware installer will check that a valid STSC license is present before allowing the firmware to be installed.

If the installer does not detect a valid license, for example, the original license expired before the release of the new firmware; it will display a message, similar to the one below, informing you that you cannot install the new firmware. You must then purchase a new license to enable you to install new firmware releases and access technical support.

N5974A License Error

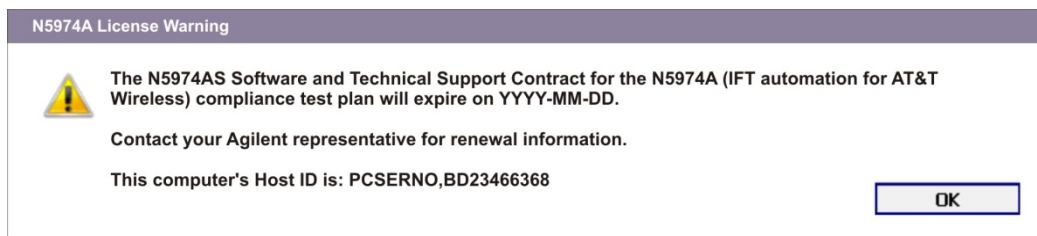A license required to run the N5974A IFT automation for AT&T compliance test plan is not installed or has expired.

License errors:
N5974A-9FP (not installed)
N5974AS (not installed) OR (expired on YYYY-MM-DD)

If you received a software entitlement certificate you may redeem your license at http://www.agilent.com/find/softwaremanager.
Otherwise, please contact Agilent Technologies to purchase the necessary licenses.

This computer's Host ID is: PCSERNO,BD23466368

The N5974AS STSC for your N5974A has expired; this release was created on YYYY-MM-DD and cannot be used. Install an earlier release or install an updated STSC license.
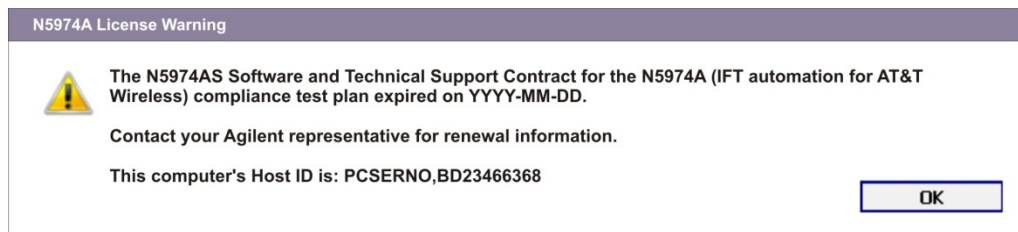
OK

Firmware Installer Checks for a Valid License

Renewals

You will be notified 90 days prior to the expiration date of the N5974AS-1SY STSC license, by a pop-up window in the N5974A software.

N5974A License Warning

The N5974AS Software and Technical Support Contract for the N5974A (IFT automation for AT&T Wireless) compliance test plan will expire on YYYY-MM-DD.

Contact your Agilent representative for renewal information.

This computer's Host ID is: PCSERNO,BD23466368

OK

If you do not renew your N5974A STSC license before its expiration date, you will receive a message, similar to the following one, in the N5974A software.

N5974A License Warning

The N5974AS Software and Technical Support Contract for the N5974A (IFT automation for AT&T Wireless) compliance test plan expired on YYYY-MM-DD.

Contact your Agilent representative for renewal information.

This computer's Host ID is: PCSERNO,BD23466368

OK

Expired N5974A STSC License

You can continue to use existing software after your STSC has expired, but you will not be able to install N5974A software releases created after this expiration date, or access technical support, until a new STSC license is installed.