E6701C Demonstration and Application Guide

This document applies directly to the following Agilent products:

E6701C GSM/GPRS Lab Application
(installed on the E5515C Wireless Communications Test Set)

E6910A GPRS Protocol Application
(installed on the E6900A Wireless Protocol Test Set)

E6581A GSM/GPRS Wireless Protocol Advisor

Release 1.2 (6/13/03)
Agilent Part Number 1000-1877

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Additional information is available on the Web at the following sites:
http://www.agilent.com/find/E6701C
http://wireless.agilent.com/rfcomms/promo/networkonabenchpromo.php

Release Notes

Release 1.0

1. Missing some block diagrams for connections
2. Missing some demos to be added later, so there are instructions for setups in the first release that don't have a matching demo procedure.

Release 1.1

1. Added multiple corrections
2. Added PCM7: instructions to install ftp server
3. Added PCM8: instructions to install web server

Release 1.2

1. Changed title page; added part number
2. Missing Siemens S45/S46 cellular phone setup information
3. Updated Appendix A: Troubleshooting
4. Added RF Cable part numbers; removed duplicate RF cable instructions
5. Corrected Nokia phone model number
6. Corrected web links

General Comments

Over time, testing cellular phones on voice calls has become very consistent and reliable. Customers expect and rely on repeatable, consistent performance from cellular phones. This applies to both "real" customers who use phones in real networks, and to Agilent customers who use our test equipment to verify phone performance.

However, data transmission over cellular phones is a different story (at least at this time: around May 2003). Using a phone as a wireless modem can be very frustrating, because the behavior is sometimes not repeatable and inconsistent when connecting and making data calls. From my experience, this applies to commonly available phones from multiple vendors, and in multiple technologies: GSM, GPRS, cdma2000, W-CDMA.

When you hook a phone up to a PC, it takes on some of the characteristics of a PC that most people know well. So, when you use this demo guide, do not be surprised if you must reboot your PC and your phone multiple times to get a demo to work. If a phone seems to have stopped responding, it is probably the phone equivalent of Microsoft Window's "blue screen of death".

George's Rule of Phones with Data:

If it doesn't work the first time, just power cycle the phone, and try again. If necessary, power cycle the PC, and maybe even the Test Set, and try again.

Which demo procedures do I perform?

First: Match the technologies you want to demo with Test Set requirements

Refer to the Introduction – Background Information section for details of which functions are available in each Application.

Table I

Technology (Network Emulation)	Agilent Test Set (Model Number & Required Options)	Agilent Application Software (installed in Test Set)	Agilent WPA Software (installed in Server PC)
GPRS	E6900A	E6910A Protocol Application	E6581A GSM/GPRS Wireless Protocol Advisor
GSM and/or GPRS	E5515B or E5515C With Option 002	E6701C Lab Application	E6581A GSM/GPRS Wireless Protocol Advisor
GSM and/or GPRS and/or E-GPRS	E5515B or E5515C With Option 002 & Option H03	E6701C Lab Application & E6704A Lab Application	E6581A GSM/GPRS Wireless Protocol Advisor

Refer to the *8960 Configuration Guide* for specific hardware configurations required for an E5515B or E5515C to do demos. This *Guide* is available from the web directly at:

http://cp.literature.agilent.com/litweb/pdf/5968-7873E.pdf

or indirectly by selecting the *8960 Configuration Guide* link at:

http://www.agilent.com/find/E5515

Second: Determine what demo equipment you have available

Table II lists equipment combinations, from simple to complex. Each combination has a letter classification. For example: "Group a" indicates you can perform the simplest demos; "Group d" indicates more complex demos.

Table II

Equipment Available	Detailed Equipment Description		Equipment Group						
			a	b	c	d	e	f	
Test Set	Test Set (& correct options) *		R	R	R	R	R	R	
	Connection to Internet (via LAN)						R	R	
Wireless Device	Phone, PDA, or modem		R	R	R	R	R	R	
	RF Cable		R	R	R	R	R	R	
	Data Cable (from Device; to serial or USB interface on PC)				R	R		R	
Ethernet LAN cable(s)	Crossover CAT-5 cable			R		R			
	Standard CAT-5 cables						R	R	
Server Personal Computer	Ethernet LAN interface			R		R	R	O	
(including required hardware, software,	Connection to Internet (via LAN)						R	O	
& network connectivity features)	Agilent WPA software			R		R	R	O	
	WAP server/gateway software			R			R		
	WAP files			R					
	FTP server software and files					R			
	Web server (http) and files					R			
Client Personal Computer	USB or serial interface (to match Device data cable)				R	R		R	
(including required hardware, software,	Modem Software for Device				R	R		R	
& network connectivity features)	Browser Software (for http sites; typically Internet Explorer)				R	R		R	

*See Table I for required Test Set hardware by technology
R indicates required
O indicates optional to add WPA logging

Third: Choose the demos you can perform with your equipment

Table III

Demonstration		Test Set & Application	
Demo Description	Demo Result Displays On:	**E5515C with E6701C** GSM / GPRS Lab Application	**E6900A with E6910A** GPRS Protocol Application
		FW C.01.20	FW A.01.20
Equipment Group a			
Cell Broadcast SMS	Device	**1G**	**1G**
RF Parametric Measurement	Test Set	**3G**	**--**
Equipment Group b			
WPA Protocol Logging	Logging PC	**5G**	**5G**
Equipment Group c			
Browse http content from the Test Set	Client PC	**6G**	**6G**
Equipment Group d			
Use FTP to download a file from a local Server PC	Client PC and Server PC	**7G**	**7G**
Equipment Group e			
Equipment Group f			

To test E-OTD functions on a GSM device, see Agilent Application Note 1440.

Fourth: Determine the setups required for each demo

Setups Required for each Demo				
Demo No.	**Demo Description**	**Test Set Setup**	**DUT Setup**	**PC Setup**
1G	Cell Broadcast SMS	TSG1 TSG4	DG1, DG6	--
3G	RF Parametric Measurements	TSG1	DG1	--
5G	WPA Protocol Logging on a local Server PC	TSG1, TSG2	DG1	PCM3, PCM5, PCM6
6G	Browse http content from the Test Set	TSG1, TSG2	DG1, DG4	PCG1, PCG2, PCM3, PCM5
7G	Use FTP to download a file from a local Server PC	TSG1, TSG2	DG1, DG4	PCG1, PCG2, PCM3, PCM5, PCM7

Fifth: Go to each demo you chose, do the setups, and do the demo

Introduction – Background Information

Basic LA, PA, and TA Definitions

Products			Basic Functions			
Type	Test Set	Typical Uses (for Wireless Devices)	Network Emulation	Data Channel; Ethernet Connection	Protocol Message Logging	RF Measurements
LA = **Lab Application**	E5515B or E5515C	• Verification and Integration of Device Hardware and Software	X	X	X	X
PA = **Protocol Application**	E6900A	• Software R&D • Protocol R&D	X	X	X	
TA = **Test Application**	E5515A, E5515B, or E5515C	• Manufacturing (Calibration, Final Test, and QA) • RF Hardware R&D	X			X

GSM / GPRS / E-GPRS Test Set Product Comparison

Software Type	Agilent Software Model Number	Software Status	Agilent Test Set Model Number & Options	Functions Available						
				Network Emulation			GSM Circuit Switch Data	GPRS Packet Data	Protocol Message Logging	RF Mea-sure-ments
				GSM	GPRS	EGPRS				
Lab Application	E6701C	Active	E5515B/C Opt 002	X	X		X	X	X	X
Lab Application	E6704A & E6701C	Beta & Active	E5515B/C Opt 002/H03	X	X	X	X	X	X	X
Lab Application	E6701B	Support	E5515B/C Opt 002		X			X	X	X
Lab Application	E6701A	Obsolete	E5515B/C Opt 002		X			X	X	X
Protocol Application	E6910A	Active	E6900A		X			X	X	
Test Application	E1968A	Active	E5515B/C Opt 002	X	X					X
Test Application	E1960A	Support	E5515B/C Opt 002	X						X
Test Application	E1964A	Support	E5515B/C Opt 002		X					X

Detailed GSM/GPRS Equipment List

1. **Agilent E5515B Opt. 002** or **E5515C Opt. 002** or **E5515TU Opt. 002 (upgraded)**
   - 1.1. If unit is E5515B, check serial number for compatibility:
     - 1.1.1. Serial number with US prefix must be ≥ US40410511
     - 1.1.2. Serial number with GB prefix must be ≥ GB40410348
     - 1.1.3. Contact Agilent for E5515B upgrade information if you have a lower serial number.
   - 1.2. **E6701C GSM/GPRS Lab Application** (Test Set internal software; Rev. C.01.20 or higher)

2. **GSM/GPRS phone** or other wireless appliance
   - 2.1. For standard Agilent demos:
     - 2.1.1. **Motorola** Timeport™ 260 Series GSM/GPRS Mobile Phone (model P7389i) with RF cable, battery, battery charger, data cable, modem software
       - 2.1.1.1. Motorola RF cable part number: ???
       - 2.1.1.2. Motorola-compatible RF cable: Wilson 352003
       - 2.1.1.3. Motorola Data cable part number: SKN6330A
     - 2.1.2. **Nokia** Model 6310i GSM/GPRS phone with RF cable, battery, battery charger, data cable, modem software
       - 2.1.2.1. Nokia RF cable part number: XRC-1BV2.0
       - 2.1.2.2. Nokia-compatible RF cable: Wilson 353001
       - 2.1.2.3. Nokia Data cable part number: DLR-3 or DLR-3P
     - 2.1.3. One source of **cellular phone RF cable adapters**: Wilson Electronics, Inc. Telephone: 1-866-294-6996
     - 2.1.4. http://www.wilsonelectronics.com On the website, select "Click here to find your phone's antenna adapter"; then choose from the list of manufacturers, and find the cable for your model.
   - 2.2. **SIM Card** (Subscriber Identity Module):
     - 2.2.1. Agilent Test MicroSIM preferred (part number 08922-80048)
     - 2.2.2. Another Test SIM may be substituted

3. **Server PC** (personal computer required for some demos in this document)
   - 3.1. PC Hardware: **Ethernet LAN port**
   - 3.2. PC Operating System:
     - 3.2.1. **Microsoft Windows 2000 recommended**
       or
     - 3.2.2. **Windows 98**
   - 3.3. Web Browser: **Microsoft Internet Explorer** (Version 5.0)
     - 3.3.1. Other browsers may work, but require the following features:
       - 3.3.1.1. Support for nested frames
       - 3.3.1.2. Support for JavaScript (Version 1.2 or higher)
       - 3.3.1.3. Support for tables
   - 3.4. **Server Software for demonstrations**

   The following has been tested for basic functionality in these demos by Agilent, but is not endorsed or guaranteed by Agilent.
     - 3.4.1. **WAP Server & Gateway** (for WAP browser demonstrations).
       WAP3GX Gateway (version 2.16 or higher) from Now Wireless
       Download an evaluation copy at http://www.wap3gx.com
       If you are an Agilent employee, contact George Brandle for a licensed copy.

3.4.2. **Web (http) Server**

SimpleServer:WWW (version 1.23 or higher) from AnalogX
Download a free copy of this freeware at:
http://www.analogx.com/contents/download/network.htm
Scroll to SimpleServer:WWW and select the links to download.

3.4.3. **FTP Server**

CesarFTP 0.99 (version e or higher) from ACLogic
Download a free copy of this freeware at: http://www.aclogic.com
Click on the CesarFTP 0.99 link to download.

4. **Crossover LAN Cable**

4.1. Agilent Part Number: 8121-0510

Same As:

4.2. Black Box® Part No. EVCRB05-0006; Category-5 Crossover Cable,1.8 meters, 4-pair, RJ-45 connectors (Black Box Corporation)

1. **Standard LAN Cables (quantity 2)**

1.1. Category-5 Cable, 4-pair, RJ-45 connectors

Demo 1G: Cell Broadcast SMS

Required Setups:

1. Do Test Set Setup TSG1: Set channel, RF output level, etc.
2. Do Test Set Setup TSG4: Setup cell broadcast parameters
3. Do DUT Setup DG1: Basic phone setup
4. Do DUT Setup DG6: Enable SMS Cell Broadcast

Demo Procedure:

Introduction to Cell Broadcast Messaging

Cell Broadcast SMS messages provide identical information to multiple subscribers at the same time. For example, many automobile drivers can purchase a service to receive traffic advisories every day during their drive to work. The same message is broadcast to all of them. Other examples include weather forecasts and sporting event results.

Cellular Service Providers broadcast these messages, and phones receive the messages (phones cannot transmit Cell Broadcast SMS, and do not send an acknowledgement of receipt).

Cell Broadcast may also be called Information Services or Information Messages.

Each type of message broadcast by a provider has a reference number called a "Message Channel Number". Each number usually defines a specific topic. For example, in our demo, Message Channel Number 10 sends the Text1 message, but in a real situation, it may be a traffic report. And Message Channel Number 20 sends a different message (which might be the weather forecast).

Whenever a new traffic update is sent, the Message Channel Number stays the same (10), but the Message Update Number increments each time new information is sent. The phone will only display a new message for a certain channel number if the Update Number increments.

Demo

1. To send Message 1, press the Start Cell Broadcast (F1) softkey on the Test Set.
2. Cell Broadcast messages are sent once every 30 seconds by the Test Set, so you may have to wait for the phone to receive it.
3. Read the message on the phone. Some phones display the message on the screen automatically; others require you to press keys to read the message.
4. To send Message 2 from the Test Set:
    a. Press Stop Cell Broadcast (F1)
    b. Press Message 2 Setup (F3)
    c. Set Message State to On

    d. Press Start Cell Broadcast (F1)
5. Read the second message on the phone.
    a. On some phones, you may have to return to the main menu to read the second message.
6. To simulate an updated message on the same Message Channel Number (like an updated weather forecast):
    a. Press Message 2 Setup (F3)
    b. Select Message Update Number and enter 1 (or increment the number in the field by one).
    c. Within 30 seconds, Message 2 should be received by the phone again.
7. Press Stop Cell Broadcast (F1).

Demo 3G: RF Parametric Measurements

Required Setups:

1. Do Test Set Setup TSG1: Set channel, RF output level, etc.
2. Do DUT Setup DG1: Basic phone setup
3. On the Call Setup screen, press Originate Call (F3) to make a GSM voice call
4. Answer the call on the phone

General Information

1. Measurements can only be made on the E5515C Test Set.
2. Only two of the Test Set's many measurements are included in the procedure below.
3. These procedures use a GSM voice call; the measurements can also be made during a GPRS or GSM data connection.

Perform a Power versus Time (PvT) measurement

1. Press the Measurement Selection key below the screen. Start the Power vs Time measurement by selecting it from the menu.
2. Select Change View (F2) and then Graph (F4).
3. Observe the pulse waveform. It should fall within the mask, and indicate "Pass" in green at the lower left of the display.

Perform an Output RF Spectrum (ORFS) measurement

1. Press the Measurement Selection key below the screen. Start the Output RF Spectrum measurement by selecting it from the menu.
2. Select ORFS Setup (F1). This menu allows you to reconfigure the ORFS measurement settings.
3. Select Modulation Frequencies (F2). In the menu displayed, turn on Modulation Offset 5,6,9, and 10 by scrolling to that offset and pressing the ON key on the test set's keypad.
4. Select Switching Frequencies (F3). Turn on Switching Offset 3 and 4.
5. Press Close Menu (F6)
6. Press Return (F6)
7. Press Change View (F2), then Graph (F5).
8. Press Modulation Graph Control (F4). Press Limits Display (F3) to select the limits configuration to be displayed on the ORFS due to Modulation graph (such as Relative and Absolute).
9. Press Return (F6).
10. Press Switching Graph Control (F5). Press Limits Display (F3) to select the limits On or Off.
11. Press Return (F6) 3 times.
12. Press the Swap Window Positions (F5) softkey to switch between the active measurements (PvT and ORFS).

Turn off measurements

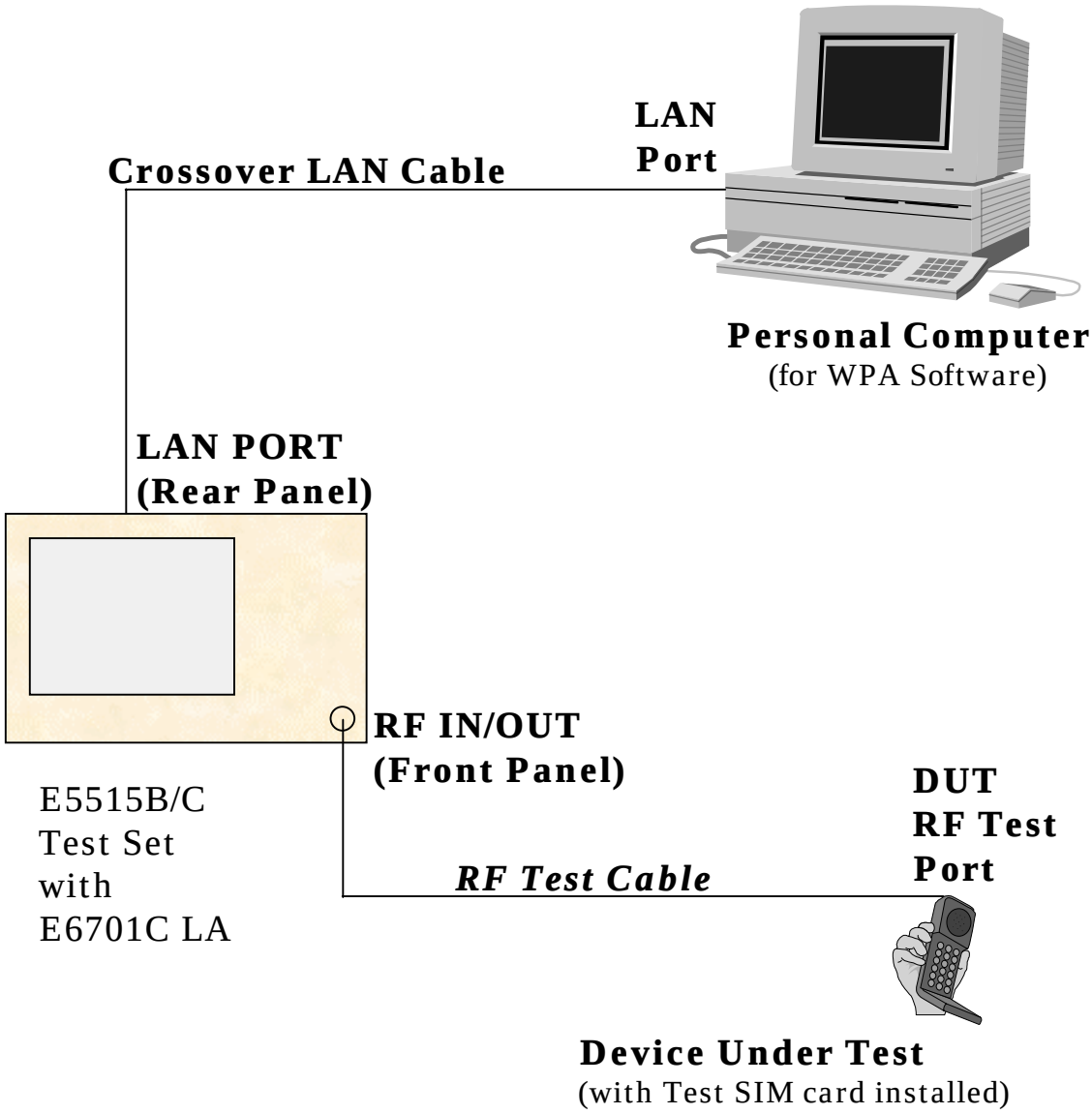
1. Press the Measurement Selection key below the screen.
2. Scroll to Power vs Time, and press the Close Measurement (F4) softkey, then do the same for Output RF Spectrum.
3. Press Close Menu (F6).
4. Press End Call (F3).

Demo 5G: Basic WPA Procedures for GSM/GPRS

Required Setups:

1. Connect equipment using Figure for simplest WPA demo.

PC Connected Directly to Test Set via LAN Crossover Cable



2. Do Test Set Setup TSG1: Set channel, RF output level, etc.
3. Do Test Set Setup TSG2: Set Test Set crossover LAN parameters
4. Do DUT Setup DG1: Basic phone setup
5. Do PC Setup PCM3: Set LAN parameters on PC for use with crossover LAN cable
6. Do PC Setup PCM5: Verify LAN connection between Server PC and Test Set with pings
7. Do PC Setup PCM6: Install E6581A WPA (Wireless Protocol Advisor) software in your Server PC

Demo Procedure:

Introduction to WPA

The E6701C GSM/GPRS Lab Application enables the Test Set to log GSM and GPRS protocol messages. The log results are displayed via the WPA software that runs on a PC. The log data and control commands travel on the LAN between the Test Set and PC (using a proprietary transmission scheme).

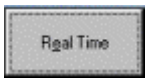
Note: some of these instructions also apply for use with the E6701B GPRS Lab Application. (However, these instructions do not apply to the obsolete E6701A GPRS Lab Application).

Here are some important points about the log data:

- The data is formatted for the E6581A GSM/GPRS WPA on the PC.
- You cannot view the log data on the Test Set's display, only on the PC.
- To save this log data, you must store it in the PC's memory. (You will learn how to do this in the instructions that follow).
- You can log while using any of the Connection Types in the Test Set:
    1. Auto (automatic selection of GSM or GPRS functions)
    2. GPRS test modes:
        - ETSI Type A
        - ETSI Type B (Unack)
        - ETSI Type B (Ack)
        - BLER.

Start the Wireless Protocol Advisor software

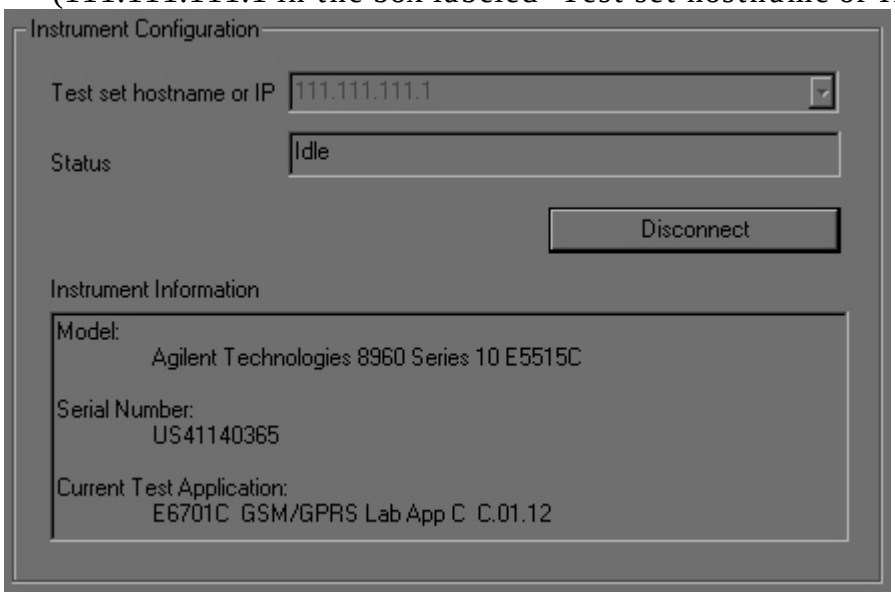
4. On the Server PC, start the E6581A WPA software (double-click the icon):

5. Click 

to start the software to capture a new log from the Test Set. (The Post Capture mode is used for viewing previously-saved logs).
6. ***If you just performed the PCM6 WPA Setup, then skip ahead to step 10.*** If this is the first time to run WPA, then the Configuration view should be the first thing you see.

Enter Test Set's IP address to connect (if you have not entered it before)

7. Enter the Test Set's IP Address for a crossover LAN demo configuration as shown below (111.111.111.1 in the box labeled "Test set hostname or IP").



8. After connection to the Test Set, WPA should switch to the **WPA – Real Time [CaptureData Traffic Overview]** screen. If not, click  to go to the main logging screen (called the Monitor). You can start and view protocol logs from the Monitor.

9. There are separate displays on the PC and Test Set to indicate that logging is connected but idle.
   a. On the PC, look in the lower right-hand corner of the **WPA – Real Time [CaptureData Traffic Overview]** screen; you should see "Connected to 111.111.111.1 – Idle".
   b. On the Test Set, look in the lower right of the Call Setup screen; you should see this:

Change the logging setup (use the Measurement Setup)

10. Click on the Measurement Setup View icon  to view a flow diagram of the logging setup (called the Measurement Setup). When selected, each of the icons on the flow diagram leads to information or a setup screen.

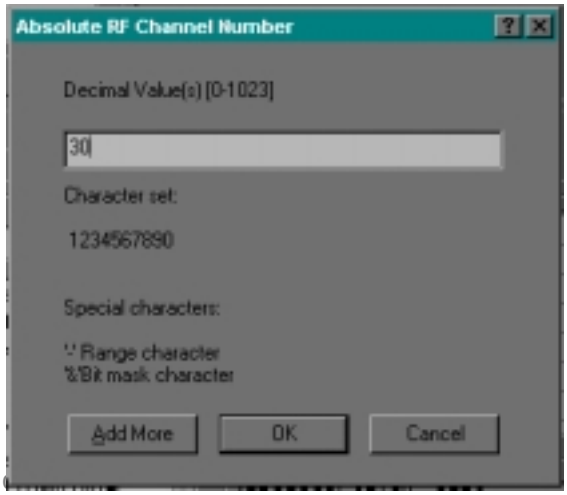
Determine the Test Set Traffic Channel number

11. On the Test Set:
    a. On the Call Setup screen
    b. Press the **TCH Parameters (F8)** softkey
    c. Note the default value of the **Traffic Channel (F9)** (this is typically channel 30 or 698, depending on the Traffic Band in use).

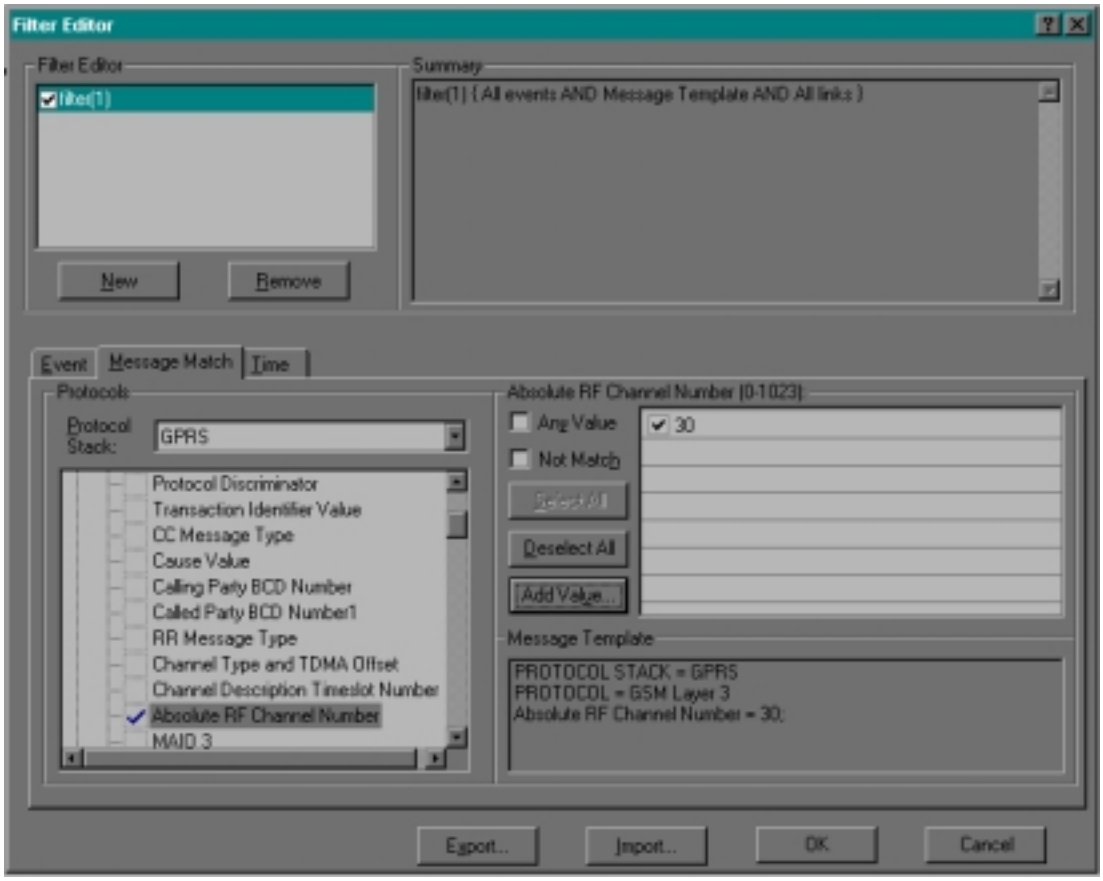
Use the WPA Filter Editor

This setup will use the View Filter to display only protocol messages which include the Traffic Channel ARFCN (absolute radio frequency channel number) which you found above.

12. On the PC, in WPA, double-click the View Filter icon. The Filter Editor window will appear. The Filter Editor allows you to display the messages you want to see in a log, while filtering out those you want to ignore.
13. Click on the **New** button near the top (to define a new filter).
14. You can filter messages based on:
    a. Certain events occurring
    b. Certain messages occurring
    c. Or a time (related to the message timestamp)
15. Choose the **Message Match** tab.
    a. On the Protocols list, scroll so you can see **GSM Layer 3**.
    b. Click on the plus sign to the left of **GSM Layer 3** to see the fields for this layer.
        1) Scroll down to **Absolute RF Channel Number** and click on it.
        2) Select the **Add Value** button on the right side.
        3) On the **Absolute RF Channel Number** popup window, enter the Test Set Traffic Channel number, then select OK.



c. Notice that the new filter you just defined has been added to the Filter Editor window near the top.



16. At the bottom of the Filter Editor window, click the OK button.

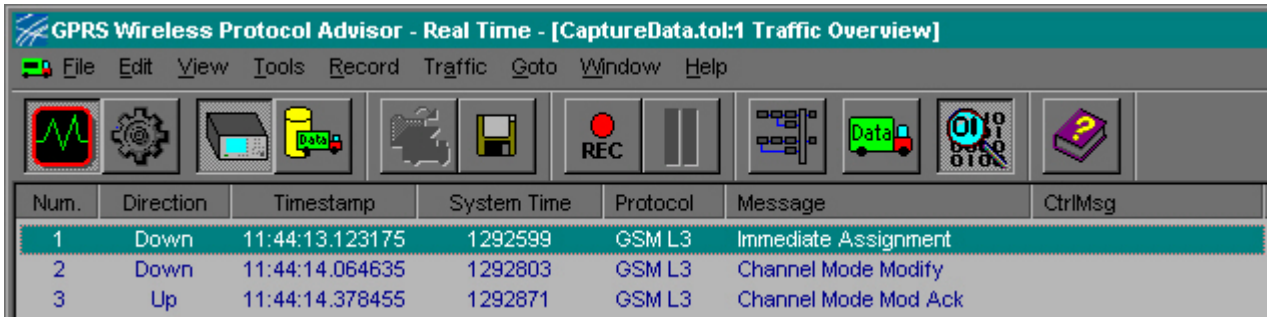
Start a new log using your "ARFCN filter"

17. Double-click the Traffic Overview icon: 

to change your view back to the **WPA – Real Time [CaptureData Traffic Overview]** screen.
18. Click 

to start capturing the protocol log.
19. Connect a GSM phone to the Test Set, and turn on the phone.
20. Wait for the phone to see service (displays "001 01").
21. On the Test Set, on the Call Setup screen, press the **Originate Call (F3)** softkey.
22. Answer the ringing phone to connect the call.
23. On the Test Set, press the **End Call (F3)** softkey.

24. On the WPA, you should see a GSM Layer 3 Immediate Assignment message, and possibly other messages that include the ARFCN.

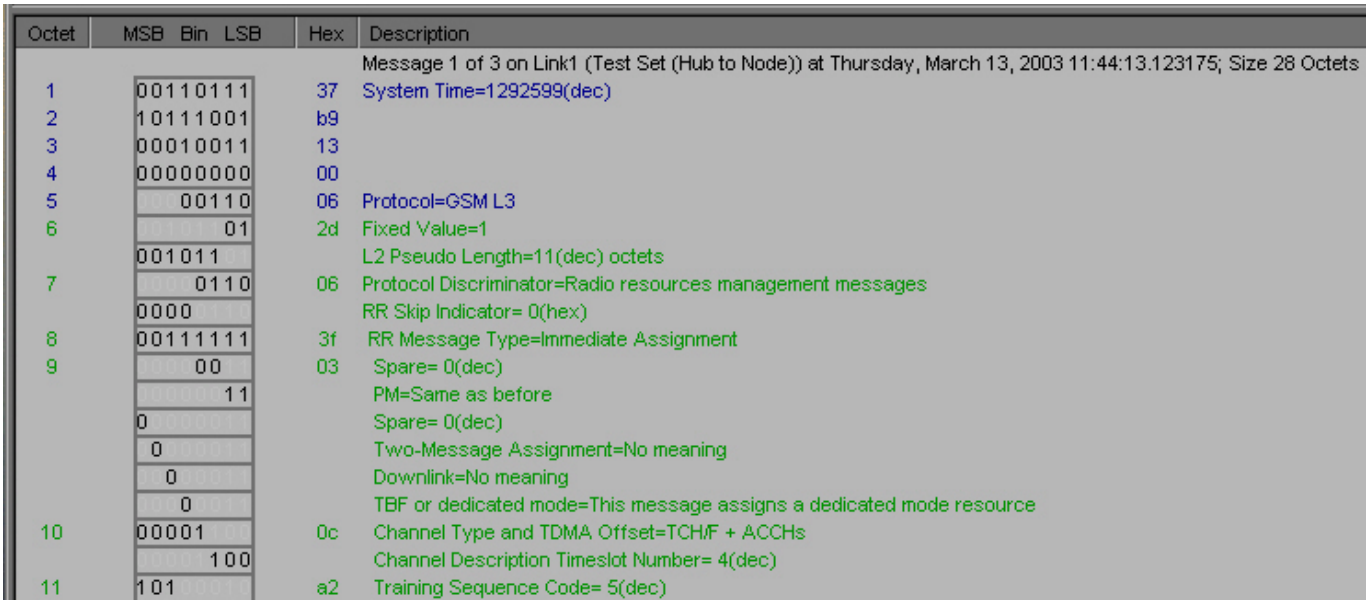


Stop the log capture

25. Click the Stop icon: ■ to stop capturing the protocol log.

Look at the decoded message (with the View Filter)

26. Double-click the Immediate Assignment message to see the decoded details of the message.
27. Notice that all bits of this message are decoded (part of this message is shown below):



Look at the decoded message (without the View Filter)

28. To see all of the protocol messages which were logged:
    a. Click on the Measurement Setup View icon
    b. Double-click the View Filter.
    c. Click the Remove box to turn off this filter, then select OK.
29. Go back to the Traffic Overview screen; you should see more messages.

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Save the log to the PC

30. To save this WPA log data in the PC, follow these steps:
    a. On WPA, click on the Floppy Disk icon:  .
    b. On the **Save As** popup window, use the default **Save In:** file folder named **Capture Data**.
    c. To easily find your log files, point to the file icon to **Create New Folder**, then select it.
    d. For this demo, type this name for your **New Folder:** ***E6701C Demo***; then press the Enter key.
    e. Double-click your new folder; ***E6701C Demo*** will be shown in the **Save in** box.
    f. In the **File name** box, you can use the default log file name, or enter your own name for this log.
    g. Select the **Save** button.

Log Data Using the Test Set's Front Panel

After WPA is ready for Real Time capture, you can also start and stop log capture using the front-panel keys of the Test Set.

31. On the Test Set, on the Call Setup screen, on the Control (left) column of softkeys, press the **More** key until you see **2 of 2**.
32. Press the **Protocol Logging (F1)** softkey.
33. Watch the PC WPA display after you press the Test Set **Start Protocol Logging** / **Stop Protocol Logging (F1)** softkey. The WPA display on the PC will update as new data is captured in the Test Set.
34. NOTE: When you start a new log from the Test Set, the last log data displayed on WPA will be erased, and cannot be retrieved. When you start a new log from the PC, you are first asked if you want to save the old WPA captured data. (To demonstrate, simply press the **Originate Call (F3)** softkey on the Test Set.
35. On the Test Set, press the **Stop Protocol Logging (F1)** softkey.

Turn off the WPA software

36. Close WPA like any other Windows program:
    a. File / Exit
    b. Or click the X in the upper right-hand corner.
    c. If a message says "Do you want to save the captured data?", you can select "Yes" to save the latest log, or "no" to discard this data.

View the saved log data

To view the log data you saved earlier in this demo:

37. Start WPA.
38. Click on the Post Capture button.

39. In the Select Log File popup window, find the ***E6701C Demo*** folder you created, and double-click it.
40. Find the name of the data file you saved.
41. Double-click on the saved file name.
42. The saved log data should display.
43. You can scroll through this data, filter it before display, and decode the messages just like on the original log.
44. Close WPA.

Demo 6G: Use GPRS Modem to browse http server on Test Set

Demo 6G: Use a GPRS modem to browse the http server on the Test Set			
Steps	**Motorola Timeport P7389i**	**Nokia 6310i**	**Siemens S45 / S46**
Do TS Setup TSG1	Set channel standard, channel number, RF output level, RF IN/OUT amplitude offsets, etc.	Set channel standard, channel number, RF output level, RF IN/OUT amplitude offsets, etc.	
Do DUT Setup DG1	Do basic DUT setup	Do basic DUT setup	
Do DUT Setup DG4	Setup DUT as packet-switched modem for Client PC	Setup DUT as packet-switched modem for Client PC	
Do PC Setup PCG1	Install modem software on Client PC for specific DUT	Install modem software on Client PC for specific DUT	
Do PC Setup PCG2	(Not applicable)	Change Internet Explorer software options on Client PC for use with modem	
Charge phone battery before demo	Data connections can use lots of battery power, so charge the battery before the demo.	Data connections can use lots of battery power, so charge the battery before the demo.	
Connect data cable between phone and PC	Data Cable: Motorola part number SKN6330A 1. Attach Data Cable serial connector to PC serial port 2. Attach other end of Data Cable to phone: 3. Gently insert into phone's bottom port until it clicks ("M" logo and release latch of cable face "up" on same side as phone keypad)	Data Cable: Nokia part number DLR-3 or DLR-3P 1. Attach Data Cable serial connector to PC serial port 2. Attach other end of Data Cable to phone: 3. Gently insert into phone's bottom port until it clicks (release latch of cable is face "up" on same side as phone keypad)	
Connect RF cable between phone and Test Set	1. Attach RF Cable to side of Data Cable connector on bottom of phone 2. Gently insert until it clicks; the release latch of the RF cable faces "up" on same side as phone keypad 3. Attach RF adapters between Test Set and RF cable	Verify connection between phone and Test Set	
Turn on	Press Test Set power switch;	Press Test Set power switch;	

Demo 6G: Use a GPRS modem to browse the http server on the Test Set			
Steps	**Motorola Timeport P7389i**	**Nokia 6310i**	**Siemens S45 / S46**
Test Set	wait about 2 minutes for power-up	wait about 2 minutes for power-up	
Turn on device (power switch)	1. Do not turn on phone until Test Set is on and adjusted. 2. Phone power switch is round black button with red symbol on lower left of keypad	1. Do not turn on phone until Test Set is on and adjusted. 2. Phone power switch is black button with red symbol on "top" of phone.	
Wait for device to show service	Phone should display: 1. "001 01" in center 2. "GPRS" at bottom right Test Set Active Cell field should display Attached	Phone should display: "001 01" in center. Test Set Active Cell field should display Attached.	
Turn on Client PC	Turn on your Client PC; wait until Windows desktop displays	Turn on your Client PC; wait until the Windows desktop displays.	
Start modem software on PC	1. Double-click the icon: "Motorola GPRS Wizard" 2. In the Motorola GPRS Wizard window, double-click the icon: "Moto TP GPRS Serial" 3. The modem software will send data to the phone to make the GPRS connection 4. A popup window will display "Setting Phone Parameters … Please Wait 5. A popup window will display "Dialling…Please Wait" 6. When the PC popup windows go away, the phone is connected 7. The phone will display "Connected 111.111.111.2" for awhile, then it will display "GPRS Data Session" 8. The Test Set Active Cell field should display: PDP Active	If a popup window displays "Found New Hardware Wizard", and this relates to the Nokia 6310i, then select "Cancel"	
Start IE (Internet Explorer) browser on PC	1. Double-click on the Internet Explorer (IE) icon on the PC 2. IE will try to access a homepage; press the IE Stop icon 3. The phone will display "GPRS Data Session"	1. Double-click on the Internet Explorer (IE) icon on the PC 2. A Dial-up Connection popup window should appear, with Connect to: Nokia 6310i GPRS Serial a. If this popup window	

Demo 6G: Use a GPRS modem to browse the http server on the Test Set			
Steps	**Motorola Timeport P7389i**	**Nokia 6310i**	**Siemens S45 / S46**
		appears, skip ahead to step 3 b. If this popup window does NOT appear, select the "Refresh" icon on the IE toolbar c. A small popup window should appear d. Select "Connect" in the Connect to: window, and another popup window should appear 3. Do not enter or change any entries 4. Click on the Connect box 5. The Dial-up Connection window will show the progress of the data call connection 6. The phone will momentarily display : Creating GPRS connection 7. The Test Set Active Cell field should display: PDP Active or Transferring 8. IE will try to access a homepage; press the IE Stop icon 9. When the PC modem connection is on, an icon (showing 2 PC's) will appear in the lower right corner of the PC window for the Nokia 6310i GPRS Serial modem	
On IE, enter the Test Set IP Address	1. On the IE Address line, enter: 111.111.111.1 2. Then press the PC Enter key	1. On the IE Address line, enter: 111.111.111.1 2. Then press the PC Enter key	
IE requests web data from Test Set	The web server page of the Test Set should load and display on IE (this may take over 60 seconds to finish). The phone displays "GPRS Data Session"	The web server page of the Test Set should load and display on IE (this may take over 60 seconds to finish). The phone displays 001 01 (there is no indication of a data call)	
Trouble-shooting		A. If the web page download is incomplete or stops: On the PC:	

Demo 6G: Use a GPRS modem to browse the http server on the Test Set			
Steps	**Motorola Timeport P7389i**	**Nokia 6310i**	**Siemens S45 / S46**
		1. Close the IE window(s) 2. An "Auto Disconnect" popup window should display: Do you want to close the connection to Nokia 6310I GPRS Serial? 3. Click the Disconnect Now box On the phone: 1. Display shows for a moment: GPRS Connection Ended 2. Power cycle the phone and wait until it shows "001 01" 3. Remove and reconnect the data cable from the phone 4. Phone momentarily displays: Data accessory connected. On the PC, start IE again, and follow the connection steps. B. If you see "GPRS data connection…." error messages on the Test Set, you can ignore them if the download is working. If not, you can use the WPA to log the messages (see Demo 5G to use WPA)	
Reset the Test Set Counters	On the Test Set, press the Measurement Reset hardkey to clear various counters (RACH, Burst, DUT IP, etc.)	On the Test Set, press the Measurement Reset hardkey to clear various counters (RACH, Burst, DUT IP, etc.)	
Retrieve a copy of the Test Set display on the PC	On the 8960 Web Page on the PC: 1. Click on the "Get Image" icon 2. On the Test Set Call Setup screen: observe the "Counters" section of the display to measure the data flow 3. Wait until the image finishes loading, then close the "Get Image" window. For E6701C users: While the data is transferring, you could also make RF measurements of the phone's TX signal (see Demo 3G to make RF parametric measurements)	On the 8960 Web Page on the PC: 1. Click on the "Get Image" icon 2. On the Test Set Call Setup screen: observe the "Counters" section of the display to measure the data flow 3. Wait until the image finishes loading, then close the "Get Image" window. For E6701C users: While the data is transferring, you could also make RF measurements of the phone's TX signal (see Demo 3G to make RF parametric measurements)	

Demo 6G: Use a GPRS modem to browse the http server on the Test Set			
Steps	**Motorola Timeport P7389i**	**Nokia 6310i**	**Siemens S45 / S46**
Demo a Traffic Channel Handover during data transfer	Test Set setup for the handover: 1. On the Call Setup screen 2. Press the "Handover Setup" (F5 softkey 3. Press the "GPRS Handover Setup" (F2) softkey 4. In the table, change the)Traffic Channel (for instance, from 30 to 50)	Test Set setup for the handover: 1. On the Call Setup screen 2. Press the "Handover Setup" (F5) softkey 3. Press the "GPRS Handover Setup"(F2) softkey 4. In the table, change the Traffic Channel (for instance, from 30 to 50)	
	On the 8960 Web Page on the PC: Click on the "Get Image" window to reload the Test Set display image	On the 8960 Web Page on the PC: Click on the "Get Image" window to reload the Test Set display image	
	On the Test Set: Quickly press the "Handover Execute" (F5) softkey	On the Test Set: Quickly press the "Handover Execute" (F5) softkey	
	On the PC, the Test Set image should continue to transfer while the channel handover occurs	On the PC, the Test Set image should continue to transfer while the channel handover occurs	
End the data call	On the PC: 1. Close the IE window(s) 2. In the Motorola GPRS Wizard window, double-click the icon: "Moto TP GPRS Serial" 3. A "Confirm Hang-up" popup window should display: "Disconnect from GPRS Serial 56K?" 4. Select Yes 5. A popup window should display: "Hanging up connection: please wait" The Test Set Active Cell field should change from "PDP Active" to "Attached" The phone display should change from "GPRS Data Session" to "001 01"	On the PC: 1. Close the IE window(s) 2. An "Auto Disconnect" popup window should display: Do you want to close the connection to Nokia 6310I GPRS Serial? 3. Click the Disconnect Now box The Test Set Active Cell field should change from "PDP Active" to "Attached" The phone momentarily displays: "GPRS connection ended", then returns to "001 01"	

Demo 7G: Use Client PC to FTP files from Server PC using phone as modem

Demo 7G: Use a Client PC to ftp files from a Server PC (using phone as modem)			
Steps	**Motorola Timeport P7389i**	**Nokia 6310i**	**Siemens S45 / S46**
Do TS Setup TSG1	Set channel standard, channel number, RF output level, RF IN/OUT amplitude offsets, etc.	Set channel standard, channel number, RF output level, RF IN/OUT amplitude offsets, etc.	
Do TS Setup TSG2	Set crossover LAN parameters	Set crossover LAN parameters	
Do DUT Setup DG1	Do basic DUT setup	Do basic DUT setup	
Do DUT Setup DG4	Setup DUT as packet-switched modem for Client PC	Setup DUT as packet-switched modem for Client PC	
Do PC Setup PCG1	Install modem software on Client PC for specific DUT	Install modem software on Client PC for specific DUT	
Do PC Setup PCG2	(Not applicable)	Change Internet Explorer software options on Client PC for use with modem	
Do PC Setup PCM3	Connect LAN crossover cable between Test Set and Server PC; set LAN parameters of Server PC	Connect LAN crossover cable between Test Set and Server PC; set LAN parameters of Server PC	
Do PC Setup PCM5	Verify LAN connection between Test Set and Server PC with 2 pings	Verify LAN connection between Test Set and Server PC with 2 pings	
Do PC Setup PCM7	Install FTP server on Server PC	Install FTP server on Server PC	
Charge phone battery before demo	Data connections can use lots of battery power, so charge the battery before the demo.	Data connections can use lots of battery power, so charge the battery before the demo.	
Connect data cable between phone and Client PC	Data Cable: Motorola part number SKN6330A 1. Attach Data Cable serial connector to PC serial port 2. Attach other end of Data Cable to phone: 3. Gently insert into phone's	Data Cable: Nokia part number DLR-3 or DLR-3P 1. Attach Data Cable serial connector to PC serial port 2. Attach other end of Data Cable to phone: 3. Gently insert into phone's	

Demo 7G: Use a Client PC to ftp files from a Server PC (using phone as modem)			
Steps	**Motorola Timeport P7389i**	**Nokia 6310i**	**Siemens S45 / S46**
	bottom port until it clicks ("M" logo and release latch of cable face "up" on same side as phone keypad)	bottom port until it clicks (release latch of cable is face "up" on same side as phone keypad)	
Connect RF cable between phone and Test Set	1. Attach RF Cable to side of Data Cable connector on bottom of phone 2. Gently insert until it clicks; the release latch of the RF cable faces "up" on same side as phone keypad 3. Attach RF adapters between Test Set and RF cable	Verify connection between phone and Test Set	
Turn on Test Set	Press power switch; wait about 2 minutes for power-up	Press power switch; wait about 2 minutes for power-up	
Turn on Server PC	Turn on your Server PC; wait until Windows desktop displays	Turn on your Server PC; wait until Windows desktop displays	
Start FTP software on Server PC	On the Server PC, double-click the icon: CesarFTP	On the Server PC, double-click the icon: CesarFTP	
On the Server PC, display the FTP software "statistic window" to measure download speed	On the CesarFTP window, click on the "graph" icon to open another window labeled: User Statistics	On the CesarFTP window, click on the "graph" icon to open another window labeled: User Statistics	
Turn on device (power switch)	1. Do not turn on phone until Test Set is on and adjusted. 2. Phone power switch is round black button with red symbol on lower left of keypad	1. Do not turn on phone until Test Set is on and adjusted. 2. Phone power switch is black button with red symbol on "top" of phone.	
Wait for device to show service	Phone should display: 1. "001 01" in center 2. "GPRS" at bottom right Test Set Active Cell field should display Attached	Phone should display: "001 01" in center; Test Set Active Cell field should display Attached.	

Demo 7G: Use a Client PC to ftp files from a Server PC (using phone as modem)			
Steps	**Motorola Timeport P7389i**	**Nokia 6310i**	**Siemens S45 / S46**
Turn on Client PC	Turn on your Client PC; wait until Windows desktop displays	Turn on your Client PC; wait until the Windows desktop displays.	
Start modem software on Client PC	1. Double-click the icon: "Motorola GPRS Wizard" 2. In the Motorola GPRS Wizard window, double-click the icon: "Moto TP GPRS Serial" 3. The modem software will send data to the phone to make the GPRS connection 4. A popup window will display "Setting Phone Parameters … Please Wait 5. A popup window will display "Dialling…Please Wait" 6. When the PC popup windows go away, the phone is connected 7. The phone will display "Connected 111.111.111.2" for awhile, then it will display "GPRS Data Session" 8. The Test Set Active Cell field should display: PDP Active	If a popup window displays "Found New Hardware Wizard", and this relates to the Nokia 6310i, then select "Cancel"	
Start IE (Internet Explorer) browser on Client PC	1. Double-click on the Internet Explorer (IE) icon on the PC 2. IE will try to access a homepage; press the IE Stop icon 3. The phone will display "GPRS Data Session"	1. Double-click on the Internet Explorer (IE) icon on the Client PC 2. A Dial-up Connection popup window should appear, with Connect to: Nokia 6310i GPRS Serial 3. Do not enter or change any entries 4. Click on the Connect box 5. The Dial-up Connection window will show the progress of the data call connection 6. The phone will momentarily display : Creating GPRS connection 7. The Test Set Active Cell field should display: PDP Active or Transferring 8. IE will try to access a homepage; press the IE	

Demo 7G: Use a Client PC to ftp files from a Server PC (using phone as modem)			
Steps	**Motorola Timeport P7389i**	**Nokia 6310i**	**Siemens S45 / S46**
		Stop icon 9. When the PC modem connection is on, an icon (showing 2 PC's) will appear in the lower right corner of the PC window for the Nokia 6310i GPRS Serial modem	
On IE on Client PC, enter the Server PC's IP Address	1. On the IE Address line, enter: ftp://111.111.111.3 [the Server PC] 2. Then press the PC Enter key 3. If the Test Set Counters don't show any DUT Packets transferring, then try selecting "Go" on the IE address line to start again	1. On the IE Address line, enter: ftp://111.111.111.3 [the Server PC] 2. Then press the PC Enter key 3. If the Test Set Counters don't show any DUT Packets transferring, then try selecting "Go" on the IE address line to start again	
IE on Client PC requests web data from Test Set	The FTP server page of the Server PC should load and display on IE (this may take over 60 seconds to finish). The phone displays "GPRS Data Session"	The FTP server page of the Server PC should load and display on IE (this may take over 60 seconds to finish). The phone displays 001 01 (there is no indication of a data call)	
On the FTP server on Server PC, select data to observe transfer rate	1. On the Server PC 2. On CesarFTP 3. On the User Statistics window: 4. Highlight the data entry which shows a non-zero Download Speed 5. A graph of the data flow should appear in the lower right User Statistics window 6. Click on a file icon on IE on the Client PC (to choose a server file to access more data) 7. Experiment!	1. On the Server PC 2. On CesarFTP 3. On the User Statistics window: 4. Highlight the data entry which shows a non-zero Download Speed 5. A graph of the data flow should appear in the lower right User Statistics window 6. Click on a file icon on IE on the Client PC (to choose a server file to access more data) 7. Experiment!	
Trouble-shooting		A. If the data download is incomplete or stops: On the Client PC: 1. Close the IE window(s) 2. An "Auto Disconnect" popup window should display: Do you want to close the connection to Nokia 6310I GPRS Serial?	

Demo 7G: Use a Client PC to ftp files from a Server PC (using phone as modem)			
Steps	**Motorola Timeport P7389i**	**Nokia 6310i**	**Siemens S45 / S46**
		3. Click the Disconnect Now box On the phone: 1. Display shows for a moment: GPRS Connection Ended 2. Power cycle the phone and wait until it shows "001 01" 3. Remove and reconnect the data cable from the phone 4. Phone momentarily displays: Data accessory connected. On the Client PC, start IE again, and follow the connection steps. B. If you see "GPRS data connection…." error messages on the Test Set, you can ignore them if the download is working. If not, you can use the WPA to log the messages (see Demo 5G to use WPA)	
Reset the Test Set Counters	On the Test Set, press the Measurement Reset hardkey to clear various counters (RACH, Burst, DUT IP, etc.)	On the Test Set, press the Measurement Reset hardkey to clear various counters (RACH, Burst, DUT IP, etc.)	
End the data call	On the Client PC: 1. Close the IE window(s) 2. In the Motorola GPRS Wizard window, double-click the icon: "Moto TP GPRS Serial" 3. A "Confirm Hang-up" popup window should display: "Disconnect from GPRS Serial 56K?" 4. Select Yes 5. A popup window should display: "Hanging up connection: please wait" The Test Set Active Cell field should change from "PDP Active" to "Attached" The phone display should change from "GPRS Data Session" to "001 01"	On the Client PC: 1. Close the IE window(s) 2. An "Auto Disconnect" popup window should display: Do you want to close the connection to Nokia 6310I GPRS Serial? 3. Click the Disconnect Now box The Test Set Active Cell field should change from "PDP Active" to "Attached" The phone momentarily displays: "GPRS connection ended", then returns to "001 01"	

Test Set Setups for GSM / GPRS devices

Test Set Setup Summary	
Setup Number	Description
TSG1	Set channel standard, channel number, RF output level, RF IN/OUT amplitude offsets, etc.
TSG2	Set crossover LAN parameters
TSG3	Set "real" LAN parameters
TSG4	Setup Cell Broadcast SMS
TSG5	Setup Point-to-Point SMS

Setup TSG1: Set channel standard, channel number, RF output level, RF IN/OUT amplitude offsets, etc.

Verify correct Lab Application

1. Turn on the Test Set.
2. Press System Config key.
3. On display, in Instrument Information box, verify that Application is E6701C.
4. If not E6701C:
   a. Press Application Selection (F3) softkey
   b. Press Application Switch (F1)
   c. Scroll and select GSM/GPRS Lab App C
   d. Select Yes for Switch Now?
   e. Test Set will reboot (requires about 2 minutes)

On the Call Setup screen:

1. Press the Call Setup key
2. On right-hand column (Call Parms), choose BCH Parameters (F7)
   a. Set Cell Power (F7) = -50 dBm
   b. Set Cell Band as desired for GSM/GPRS broadcast channel used:
      1) PGSM = original 800 MHz GSM band; common in Europe/Asia (default Test Set setting)
      2) EGSM = enhanced 800 MHz GSM band (more channels); common in Europe/Asia
      3) DCS = 1800 MHz GSM band; common higher frequency band in Europe/Asia
      4) PCS = 1900 MHz GSM band; used primarily in North America
   c. Press Return (F12)
3. If you will demo GPRS functions: Choose PDTCH Parameters (F9)

a. Set Coding Scheme (F11) = CS-2
b. To adjust multislot configuration (number of up and downlinks for GPRS):
   1) Select 1 of 2 (More) softkey
   2) Select Multislot Config (F7) = 2 Down, 1 Up (for default condition)

Setting the RF IN/OUT Amptd Offset

(uses RF measurements on a GSM voice call using the E6701C/E5515; method will not work for E6910A/E6900A):

1. Start on the Call Setup screen of the Test Set
2. Insert Test SIM into phone
3. Connect phone with RF cable to Test Set RF In/Out connector **[you may need to do DUT Setup DG1 before doing the next step]**
4. Turn on phone; wait for phone to camp to Test Set (phones will typically display 00101)
5. Press Originate Call (F3) key and answer phone to connect a voice call
6. Press Measurement Selection key (below display)
7. Press knob to select "GSM/GPRS Transmit Power"
   a. With Test Set default settings, the phone is being told to transmit +13 dBm
   b. Power meter should measure +13 dBm (if RF cable has nearly 0 dB of loss)
   c. Thus, if power measures +10 dBm, then cable loss is approximately 3 dB
   d. Thus, RF offset will be **–3 dB for this mobile transmit frequency**
8. To verify that the mobile receive frequency has a similar loss (it should, because it is less than 100 MHz higher in frequency than mobile TX):
   a. Press Call Setup key
   b. On the left-hand column (Control):
   c. Press the 1 of 2 (More) softkey
   d. Select Measurement Reports (F6)
   e. The value for RX Level field should measure (–51 to –50 dBm) if the RF cable has nearly 0 dB of loss (because the Test Set output is set at –50 dBm)
   f. Again, if RX Level reads (-54 to–53 dBm), then cable loss is approximately 3 dB
   g. Thus, RF offset will be **–3 dB for this mobile receive frequency**
9. End the phone call
10. Press the Measurement Selection key, and press the Close Measurement (F4) softkey
11. Go to the System Config screen
12. Press the RF IN/OUT Amptd Offset (F5) softkey
    a. The table displayed shows any offsets currently enabled
13. Press the RF IN/OUT Amptd Offset Setup (F2) softkey
14. (This example assumes a multiband phone covering EGSM, DCS, and PCS bands)
15. If cable loss is about 3 dB:
    a. Set Frequency 1 to 880MHz
    b. Set Offset 1 to –3 dB
    c. Set Frequency 2 to 1990MHz
    d. Set Offset 2 to –3 dB
    e. If any other frequencies are active, scroll to the frequencies and press the OFF key to disable them

16. Press Close Menu (F6); examine the table to ensure your entries are correct
17. Press Return (F6)
18. To verify the settings, repeat steps 5 through 10

Setup TSG2: Set Crossover LAN parameters

Set Test Set LAN addresses on System Config screen

1. Press System Config key
2. Press Instrument Setup (F1) softkey
3. Scroll to LAN IP Address, press knob to select, and enter: 111.111.111.1 [as the Test Set's IP address]
4. Scroll to Subnet Mask; enter: 255.255.0.0
5. Leave Default Gateway: (blank)
6. Press Close Menu (F6)

Set other LAN addresses on Call Setup screen

1. Press Call Setup key
2. On the left-hand Control column, press More (1 of 2) softkey
3. Press DUT PDP Setup (F2)
   a. Press knob at DUT IP Address; enter: 111.111.111.2 [as the phone's assigned IP address]
   b. Press Close Menu (F6)
4. Press Ping (F3)
   a. Press Ping Setup (F1)
   b. Press knob to select Device to Ping and scroll to Alternate; press knob
   c. Scroll to Alternate Ping Address; press knob; enter: 111.111.111.3 [for the server PC's assigned IP address]
   d. Press Close Menu (F6)

Setup TSG3: Set "Real" LAN parameters

1. Talk to your LAN Administrator or Information Technology department representative
   a. Ask for two fixed IP addresses to be assigned for use: one for the Test Set, and one for the phone (Device Under Test)
      1) Note that they must be fixed, not DHCP addresses
      2) The two fixed addresses should be on the same Subnet Mask and Gateway on the network
   b. Ask for the correct Subnet Mask and Gateway numbers to use with the IP addresses
2. On the Test Set, System Config screen:
   a. Press the Instrument Setup (F1) softkey
   b. Select the LAN IP Address, and enter one of the assigned IP addresses
   c. Select the Subnet Mask, and enter the appropriate data
   d. Select the Default Gateway, and enter the data (this can be left blank in some cases)

3. On the Test Set, on the Call Setup screen:
   a. On the left column (Control), find and select the DUT PDP Setup softkey
   b. On the DUT IP Address field, enter the other assigned IP address
4. Add DNS server instructions (future for http to real LAN)

Setup TSG4: Setup Cell Broadcast SMS

1. On the Call Setup screen
2. On the left Control column
   a. Select More (1 of 2) softkey
   b. Select Short Message Service (F5)
   c. Select Cell Broadcast (F2)
   d. Select Message 1 Setup (F2)
      1) Message State = On
      2) Message Text = Text 1 (“The quick brown fox jumps over the lazy dog”)
      3) Message Code = 0
      4) Message Channel Number = 10
      5) Message Update Number = 0
      6) Message Language = English (or other choice from list as desired). This is simply an over-the-air message indicating what language is being sent to the phone, normally set by the phone’s owner. (It does not translate the transmitted text into different languages).
   e. Press Close Menu (F6)
3. Now let’s setup a second Cell Broadcast message to send during the demo
   a. Select Message 2 Setup (F3)
      1) Message State = Off
      2) Message Text = Text 2 (“This instrument provides functional testing of broadcast SMS by sending up to three broadcast messages to the device under test. Two fixed messages and a user defined message are available for selection. The second fixed message spans multiple pages.”)
      3) Message Code = 0
      4) Message Channel Number = 20
      5) Message Update Number = 0
      6) Message Language = English (or other choice from list as desired)
   b. Press Close Menu (F6)

Setup TSG5: Setup Point-to-Point SMS

(Incomplete section)

DUT (Device Under Test) Setup Table (GSM/GPRS)

DUT Setup Summary	
Description	Number
Basic phone setup (required for all demos)	DG1
Setup internal packet-switched WAP browser	DG2
Setup internal circuit-switched WAP browser	DG3
Setup DUT as packet-switched modem for PC	DG4
Setup DUT as circuit-switched modem for PC (Incomplete)	DG5
Setup DUT to enable SMS cell broadcast	DG6
Setup DUT to enable point-to-point SMS (GSM)	DG7
Setup DUT to enable point-to-point SMS (GPRS)	DG8
Verify a voice call connects for GSM; or a data connection completes for GPRS	DG9

Recommendation: After changing phone settings in the table below, power cycle the device to ensure the changes are stored in the device.

Note: some phone menu functions listed may vary by the firmware version in the device

Device Under Test Setup Table (DG Steps) for GMS/GPRS Devices			
	Motorola Timeport P7389i	**Nokia 6310i**	**Siemens S45 / S46**
DG1: Basic Phone Setup (REQUIRED first step for all demos)			
Helpful setup functions			
To turn on the device power switch	Press and hold in the round black button with red symbol on lower left of keypad	Press and hold in the round black button with red symbol on "top" of phone	
To enter symbols on data entry fields	For example, when on a web address entry screen: Press "Alpha / Menu" key to see "Sym1" symbol menu; press "4" to get "/"; press "Sym / OK" key to see more symbol menus	For example, when on a web address entry screen: Press the "*" key to enter a "."	
To "back-up" on menus	"C" (red) key	"Back" softkey	
To delete characters in input fields	"C" (red) key	????	
Initial Setup steps			
1. Set Test Set BCH Parameters to the desired band before changing the device (some devices won't change unless they find a valid BS signal)	On Test Set, recommended setup is default power-up state: 1. To verify the default state: 2. Go to Call Setup screen 3. Press BCH Parameters (F7) softkey 4. Cell Band = PGSM 5. Broadcast Chan = 20	On Test Set, recommended setup is default power-up state: 1. To verify the default state: 2. Go to Call Setup screen 3. Press BCH Parameters (F7) softkey 4. Cell Band = PGSM 5. Broadcast Chan = 20	

Device Under Test Setup Table (DG Steps) for GMS/GPRS Devices			
	Motorola Timeport P7389i	**Nokia 6310i**	**Siemens S45 / S46**
2. Connect the device to the Test Set	Phone RF Cable part numbers: 4. Motorola ?????? 5. Wilson 353002 RF Adapters are typically required: -- FME (f) to BNC (f) -- BNC (m) to BNC (m) -- N (m) to BNC (f) 6. Attach RF Cable to connector on bottom of phone 7. Gently insert until it clicks; release latch of RF cable faces "up" on same side as phone keypad 8. Attach RF adapters between Test Set and RF cable	Phone RF Cable part numbers: 1. Nokia XRC-1BV2.0 2. Wilson 353001 RF Adapters are typically required: -- FME (f) to BNC (f) -- BNC (m) to BNC (m) -- N (m) to BNC (f) 3. If necessary, remove black rubber plug near "Nokia" logo at top on rear of phone 4. Attach RF Cable to connector by gently pressing it into hole 5. If connector seems loose, use rubber bands wrapped around phone to hold it in position 6. Attach RF adapters between Test Set and RF cable	
3. Turn on device (power switch)	Press and hold in the round black button with red symbol on lower left of keypad	Press and hold in the round black button with red symbol on "top" of phone	
4. Change the device's band if needed	Menu, Network Selection, View Opt? (press OK key), Change Band, View Opt?, Change to 900/1800 *or* 1900, Select?, OK Recommended setting = 900/1800	Menu, Settings, Select, Phone Settings, Select, Network Selection (or System Selection on some firmware versions), Select, Automatic (Phone searches for BS signals)	
General Functions supported by device			
Voice Technologies	GSM	GSM	
Data Technologies	GSM, GPRS	GSM, GPRS	
Bands (MHz)	900/1800/1900	900/1800/1900	
WAP Browser	Yes	Yes	
WAP Push Messages	???	Yes	
SMS (Short Message Service)			
SMS: GSM Point-to-Point	Yes	Yes	
SMS: GPRS Point-to-Point	No	Yes	

Device Under Test Setup Table (DG Steps) for GMS/GPRS Devices			
	Motorola Timeport P7389i	**Nokia 6310i**	**Siemens S45 / S46**
SMS: Cell Broadcast	Yes	Yes	
Ping	Yes	No	
2-Uplink TX	No	No	
ETSI Type B support	Yes	????	

DG2:

To Set Internal GPRS WAP Browser (packet-switched)

1. Turn on the device	Turn on the phone	Turn on the phone	
2. Choose GPRS Data Bearer	1. Menu, Access Internet? 2. Select? / OK 3. Hold Menu key down for 3 sec 4. 7>Setup, OK 5. Scroll to a profile # or name, Sel / OK 6. Menu (Edit) 7. 2>Data Bearer, Edit / OK 8. 1>GPRS, Edit / OK 9. (continue to next steps)	1. Menu, Services 2. Settings, Active Service Settings 3. Scroll to a Set # or name, Activate 4. Scroll to "Edit active service settings", Select 5. Data bearer, Select 6. GPRS, Select	
3. GPRS Connection Type	(defaults to always attached)	GPRS connection: When needed	
4. APN (access point name)	1>APN, (blank), OK	GPRS access point: (blank)	
5. User name	2>User name, (blank), OK	User name: (blank)	
6. Password	3>Password, (blank), OK	Password: (blank)	
7. WAP Setup	1>WAP Settings, Edit / OK		
8. Primary IP Address Server PC address [in a real network, this is also the main server IP address]	1>Primary IP, Edit / OK, 111.111.111.003, OK [“.” enters automatically after ever 3 digits]	IP address, Select, 111.111.111.003 [for “.”, press the “*” key]	
9. Primary Port	2>Primary Port, Edit / OK, 9201, OK		
10. Time Out	5>Idle Time Out, Edit / OK, 600 seconds, OK [after setting this field, press the “C” (red) key to reach the main menu, then POWER CYCLE the phone	(not available)	

Device Under Test Setup Table (DG Steps) for GMS/GPRS Devices			
	Motorola Timeport P7389i	**Nokia 6310i**	**Siemens S45 / S46**
	before setting the homepage]		
11. Homepage	1. Menu, Access Internet? 2. Select? / OK 3. Hold Menu key down for 3 sec 4. 6>Advanced, OK 5. 3>Set Homepage, OK 6. Edit Homepage URL, OK 7. Set Homepage, Edit 8. Enter http://local/gprs/index.wml, OK 9. [To enter "/", see "Enter symbols on data entry fields" in "General Functions and Settings"] 10. Phone will now search for this URL 11. If phone cannot access the URL, homepage will not be set	1. Homepage, Select 2. Enter http://local/gprs/index.wml, OK 3. [Use "1" key for symbols]	
12. Mode	(not settable)	Session mode: Temporary	
13. Security	(not settable)	Connection Security: Off	
14. Authentication	(not settable)	Authentication type: Normal	
15. Network Login	(not settable)	Login type: Automatic	
DG3: To Set Internal GSM WAP Browser (circuit-switched)			
1. Turn on the device	Turn on the phone	Turn on the phone	
2. Choose GSM data bearer	2>Data Bearer, Edit / OK, 2>CSD, Edit / OK	Data bearer, Select, GSM data, Select	
3. Phone number	1>Phone #, Edit, 5555555, OK	Dial-up number, Select, 5555555, OK	
4. User name	2>User name, (blank), OK	User name: (blank)	
5. Password	3>Password, (blank), OK	Password: (blank)	
6. Data Call Type	Line Type, Edit / OK, Modem, OK	Data call type: Analogue	

Device Under Test Setup Table (DG Steps) for GMS/GPRS Devices			
	Motorola Timeport P7389i	**Nokia 6310i**	**Siemens S45 / S46**
7. Data Call Baud Rate	Baud Rate: 9600	Data call speed: Automatic	
8. WAP Setup [After setting these fields, press the "C" (red) key to reach the main menu, then POWER CYCLE the phone before setting the homepage]	1>WAP Settings, Edit / OK		
9. Primary IP Address Server PC address [in a real network, this is also the main server IP address]	1>Primary IP, Edit / OK, 111.111.111.003, OK [" . " enters automatically after every 3 digits]	IP address, Select, 111.111.111.003 [for ".", press the "*" key]	
10. Primary Port	2>Primary Port, Edit / OK, 9201, OK		
11. Time Out	Idle Time Out, Edit / OK, 600 seconds, OK	(not available)	
12. Homepage	1. Menu, Access Internet? 2. Select? / OK 3. Hold Menu key down for 3 sec 4. 6>Advanced, OK 5. 3>Set Homepage, OK 6. Edit Homepage URL, OK 7. Set Homepage, Edit 8. Enter http://local/gprs/index.wml, OK 9. [To enter "/", see "Enter symbols on data entry fields" in "General Functions and Settings"] 10. Phone will now search for this URL 11. If phone cannot access the URL, homepage will not be set	1. Homepage, Select 2. Enter http://local/gprs/index.wml, OK 3. [Use "1" key for symbols]	
13. Mode	(not settable)	Session mode: Temporary	
14. Security	(not settable)	Connection Security: Off	
15. Authentication	(not settable)	Authentication type: Normal	
16. Network Login	(not settable)	Login type: Automatic	

Device Under Test Setup Table (DG Steps) for GMS/GPRS Devices			
	Motorola Timeport P7389i	**Nokia 6310i**	**Siemens S45 / S46**
Setup WAP display	(not settable)	Menu, Services, Settings, Appearance settings	
1. Text Format	(not settable)	Text wrapping: On	
2. Pictures Displayed?	(not settable)	Show images: Yes	
Common WAP functions			
1. Clear WAP browser cache memory	1. While connected to a WAP site: 2. Menu, Access Internet? 3. Select? / OK 4. Hold Menu key down for 3 sec 5. 6>Advanced, OK 6. 4>Reset, OK 7. Edit Homepage URL, OK 8. Set Homepage, Edit 9. Enter http://local/gprs/index.wml, OK 10. [To enter "/", see "Enter symbols on data entry fields" in "General Functions and Settings"] 11. Phone will now search for this URL 12. If phone cannot access the URL, homepage will not be set	1. While connected to a WAP site: 2. Choose Options 3. Clear the cache 4. Select	
Hints	If the phone won't go to a web page or gets stuck during a step, power cycle it and try again	If the phone won't go to a web page or gets stuck during a step, power cycle it and try again	

DG4:

To Setup GPRS modem for a PC (packet-switched)

1. Turn on the device	Turn on the phone	Turn on the phone	
2. Choose GPRS Data Bearer	1. Menu, Access Internet? 2. Select? / OK 3. Hold Menu key down for 3 sec	**1.** Menu, Services **2.** Settings, Active Service Settings **3.** Scroll to a Set # or	

Device Under Test Setup Table (DG Steps) for GMS/GPRS Devices			
	Motorola Timeport P7389i	**Nokia 6310i**	**Siemens S45 / S46**
	4. 7>Setup, OK 5. Scroll to a profile # or name, Sel / OK 6. Menu (Edit) 7. 2>Data Bearer, Edit / OK 8. 1>GPRS, Edit / OK 9. (continue to next steps)	name, Activate **4.** Scroll to "Edit active service settings", Select **5.** Data bearer, Select **6.** GPRS, Select	
3. GPRS Connection Type	(defaults to always attached)	GPRS connection: Always online	
4. APN (access point name)	1>APN, (blank), OK	GPRS access point: (blank)	
5. User name	2>User name, (blank), OK	User name: (blank)	
6. Password	3>Password, (blank), OK	Password: (blank)	
7. Activate the chosen mode		1. Back 2. Active Service Settings; Select the same name you just edited 3. Press Back until you return to main menu	

DG5:

To Setup GSM modem for a PC (circuit-switched)

(incomplete section)	(not functional)		

DG6:

To Enable SMS Cell Broadcast

1. Turn on the device	Turn on the phone	Turn on the phone	
2. Turn on cell broadcast reception in device [this is a receive-only function; phones cannot transmit cell broadcast SMS messages]	Menu, Messages, Cell Broadcast, View Options, On, Select? / OK	1. Menu, Settings, Phone settings, Cell info display, On, Select 2. If phone is set for GPRS data operation: Menu,	

Device Under Test Setup Table (DG Steps) for GMS/GPRS Devices			
	Motorola Timeport P7389i	**Nokia 6310i**	**Siemens S45 / S46**
		Services, Settings, Active Service Settings, Scroll to "Edit active service settings", scroll to: **GPRS onnection:** 3. Set to: **When needed** 4. **["When needed" works for SMS Cell Broadcast messages; "Always online" works for GPRS point-to-point SMS]** 5. Menu, Messages, Info messages, Info service, On, Select	
3. Setup two cell broadcast messages to receive: a. Message: "The quick brown fox…" b. Long multi-page text message: "This instrument…."	Menu, Messages, Cell Broadcast, View Options, Channel List, Channel Index, Display shows 1' xxxxx; Modify? / OK Enter Channel: 10 OK Scroll down to 2' xxxxx; Modify? / OK Enter Channel: 20 OK Press "C" (red) key to go back to main menu [After setting these fields, press the "C" (red) key to reach the main menu, then POWER CYCLE the phone]	Menu, Messages, Info Messages, Topics, Add; Topic number: 10 Topic name: SMS Quick Add; Topic number: 20 Topic name: SMS Long	
4. Choose language	Menu, Messages, Cell Broadcast, Language List 1' English Go to next? / OK 2' Automatic	Menu, Messages, Info messages, Language, mark All, Done	
5. How to read cell broadcast messages on phones	1. Messages automatically appear at bottom of display when phone is on. 2. If two messages are	1. Phone displays "Info message received" 2. Press "Read" key; choose message to read	

Device Under Test Setup Table (DG Steps) for GMS/GPRS Devices			
	Motorola Timeport P7389i	**Nokia 6310i**	**Siemens S45 / S46**
	sent to phone, first will scroll across, then automatically be replaced by the second. 3. Press "C" (red) key to delete a message. 4. Press "# >" key to read message from beginning	3. Message cannot be read again unless it is re-sent by Test Set with higher "Message Update Number"	
DG7: To Enable SMS GSM Point-to-Point			
1. Turn on the device	Turn on the phone	Turn on the phone	
2. GSM SMS point-to-point setup	Menu, Messages, Message Settings 1. Service Centre, Enter Service Centre Number: 1 2. Expiry Period, Enter Hours: 24 3. Outgoing Message Type, select Text	Menu, Messages, Message settings, Sending profile 1. Default profile 2. Message centre number: 5555555 3. Messages sent as: Text 4. Message validity: 24 hours 5. Default recipient number: 1234567; Options; Accept 6. Delivery reports: No 7. Use GPRS: No 8. Reply via same centre: No	
3. Phone receives and reads GSM SMS point-to-point messages	Menu, Messages, Received Messages, scroll to select the message to read	When you see an envelope symbol on the display, you have a message; Menu, Messages, Inbox, scroll to the message, Select, read message (select Options to Erase the message)	
4. Phone generates and transmits GSM SMS point-to-point messages	Menu, Messages, Message Editor 1. Enter text, then press OK 2. Send Message; Select? / OK	1. Menu, Messages 2. Write message 3. Enter text, Options, Send 4. Enter any phone number, OK	

Device Under Test Setup Table (DG Steps) for GMS/GPRS Devices			
	Motorola Timeport P7389i	**Nokia 6310i**	**Siemens S45 / S46**
	3. Phone Number Entry 4. Enter number: 5555555, or any other digits 5. Send Message? / OK; sends the message 6. Phone displays "Message sent"; OK	[**Note:** sometimes the phone misses the Test Set acknowledgement that the SMS was received: 1. Observe Test Set display to verify SMS receipt 2. Observe WPA software to see Test Set ack message]	
DG8: To Enable SMS GPRS Point-to-Point			
1. Turn on the device	Turn on the phone	Turn on the phone	
2. GPRS SMS point-to-point setup [In the Nokia 6310i, this setup may require a SIM card which supports more than one Message Profile Set]	(not functional)	**1. Set phone so it will stay in GPRS attach mode:** 2. Menu, Services, Settings 3. Active Service Settings, Select 4. Scroll to GPRS profile, Activate 5. Scroll to Edit active service settings, Select 6. Scroll to GPRS connection, Select 7. Select Always online, and enable it **1. Set phone so GPRS is the preferred SMS bearer:** 2. Menu, Messages, Message settings 3. Sending profile (second profile; not default) 4. Message centre number: 4444444 5. Messages sent as: Text	

Device Under Test Setup Table (DG Steps) for GMS/GPRS Devices			
	Motorola Timeport P7389i	**Nokia 6310i**	**Siemens S45 / S46**
		6. Message validity: 6 hours 7. Default recipient number: 1234567; Options; Accept 8. Delivery reports: No 9. Use GPRS: Yes 10. Reply via same centre: No 11. Rename sending profile: Gprs sms	
3. Phone receives and reads GPRS SMS point-to-point messages	(not functional)	When the phone beeps, you have a message 1. The number of messages received will display 2. Select "Show", scroll to message 3. Select the message to read OR: When you see an envelope symbol on the display, you have a message 1. Menu, Messages 2. Inbox, scroll to the message 3. Select, read message (select Options to Erase the message)	
4. Phone generates and transmits GPRS SMS point-to-point messages	(not functional)	1. Menu, Messages, Write message 2. Enter text, Options 3. Sending options, Sending profile 4. Gprs sms, enter any phone number, Options, Accept **Note:** The phone may miss the Test Set acknowledgement that the SMS was received 1. See Test Set display to verify SMS was received from phone 2. Watch WPA	

Device Under Test Setup Table (DG Steps) for GMS/GPRS Devices			
	Motorola Timeport P7389i	**Nokia 6310i**	**Siemens S45 / S46**
		software to verify that Test Set sent acknowledgement message to phone	

PC Setup Table (GSM/GPRS)

PC Setup Numbers		
Setup Number	Setup Description	PC Type
PCG1	Install modem software for specific DUT	Client
PCG2	Change Internet Explorer options for modem use	Client
PCM3	Connect crossover LAN between PC and Test Set; set LAN parameters of PC	Server
PCM4	Connect "real" LAN between PC and Test Set; set LAN parameters of PC	Server
PCM5	Verify LAN connection between Test Set and PC with pings	Server
PCM6	Install Wireless Protocol Advisor software	Server
PCM7	Install ftp server software on PC	Server
PCM8	Install web server software on PC	Server
PCM9	Install WAP server software on PC	Server

M = instructions are for multiple technologies.

PC Setup Table (PCG Steps) for GSM / GPRS Devices			
	Motorola Timeport P7389i	**Nokia 6310i**	**Siemens S45 / S46**
PCG1: **Install Modem SW on Client PC (for Windows 98 and Windows 2000)**			
Turn on PC	Turn on your PC; do not connect to LAN or other interfaces	Turn on your PC; do not connect to LAN or other interfaces	
Close other programs	Close any other Windows programs that are running on your PC.	Close any other Windows programs that are running on your PC.	
Locate the CD-ROM, or download the latest version from a website	Insert the "Motorola GPRS Wizard for Timeport" CD-ROM (Version 2.0 or higher) into the PC CD drive [I have not found this software on a Motorola website; you must buy it on CD-ROM or contact Motorola]	Insert the "PC Software for your Nokia 6310i" CD-ROM) into the PC CD drive OR Download the software free from http://www.nokiausa.com/phones/software/6310i	
Start install	The installation software	The installation software	

PC Setup Table (PCG Steps) for GSM / GPRS Devices			
	Motorola Timeport P7389i	**Nokia 6310i**	**Siemens S45 / S46**
	should autostart. If not, choose Start, Run, Browse to Setup.exe file on CD-ROM drive, and Run.	should autostart. If not, choose Start, Run, Browse to Setup.exe file on CD-ROM drive, and Run.	
Choose language		A list of languages will display on a screen. Click on "English"	
Accept license	From the Motorola GPRS Wizard Installation Welcome screen, click Next to continue	A license agreement displays. Click on the small blue "down arrow" on the left side to scroll down. Then click on the "I accept" box to continue.	
	Click Yes on the License Agreement screen to continue	A photo of a phone and Nokia 6310i logo displays; on the left side, click on the words "Install Software".	
		On the Install Software screen, in the small box near the center bottom, click on the words "Modem Setup"	
		On the Install Software: Modem Setup screen, in the small box near the center bottom labeled Install Now, click on the words "Modem setup for Nokia 6310i"	
Choose directory	On the Choose Destination screen, accept the Default Installation directory and click Next	An InstallShield screen displays for the Location to Save Files 1. Typically it is OK to accept the default directory folder 2. Select Next	
	On the Setup Status screen, watch the File Copy progress bar until finished.	InstallShield Wizard boxes will display while the software is loaded.	
	Click Finish on the Setup Complete screen.		
Setup serial modem	On the Choose Communication Mode screen, select Serial RS232 and click Next.	Next, a "Welcome to Modem Setup for Nokia 6310i setup" screen will display. Click Next	
		On the License Agreement screen, click Yes	
		On the Safety Information screen, click Next	
		On the Language Selection screen, typically you would choose the default "English", then click Next	
		On the Connection Method	

PC Setup Table (PCG Steps) for GSM / GPRS Devices			
	Motorola Timeport P7389i	**Nokia 6310i**	**Siemens S45 / S46**
		Selection screen, check the box labeled "Install a modem for cable connection" (for the serial port). Click Next. [This document does not include instructions for using Bluetooth or Infrared connections, so DO NOT check these boxes.]	
Connect data cable between PC and phone to verify connect	A. If the "Set Connection Properties" screen is displayed, then skip to the next applicable step. B. If a small popup window displays the message "Motorola GPRS Serial Modem not installed": 1. Connect the phone data cable (Motorola part number SKN6330A) between the phone and PC serial port (gently insert into phone's bottom port until it clicks; "M" logo and release latch of cable face "up" on same side as phone keypad) 2. Turn on the phone and wait until it is fully up 3. Click OK on the PC message 4. Another popup message should display "Motorola GPRS Phone found on COM1" 5. Click OK on the PC message 6. On "Motorola Installation Successful" message, click OK	On the Cable Connection screen: 1. Turn on the Nokia 6310i phone 2. Connect the Nokia DLR-3 or DLR-3P serial data cable between the phone and the PC COM serial port (the release button on the phone connector faces "up", toward the keypad side of the phone) 3. Notes: Use a free serial port (example: don't disconnect a serial mouse); Port must be enabled in PC BIOS; Windows must recognize the selected port. 4. Click Next. 5. The Setup software will search for the PC COM port where the phone is connected. 6. If the PC detects the phone data connection, then the COM Port Selection screen will highlight one serial port where the phone is connected. 7. Click Next	
PC auto-installs modem driver	A popup message displays the "Install New Modem" screen. 1. In the "Manufacturers" column, select "Mototorola". 2. In the "Models" column, select "Motorola Serial GPRS 56K" 3. Click OK	A Windows popup message will display "Windows builds a driver information database"	

PC Setup Table (PCG Steps) for GSM / GPRS Devices			
	Motorola Timeport P7389i	**Nokia 6310i**	**Siemens S45 / S46**
	If a popup message displays "Digital Signature Not Found", click Yes to continue the installation.	A Windows popup message will display "Please wait while setup software installs the selected modem"; other messages and driver install windows may also display during this section	
	A popup message should display "Modem Installation Successful". Click OK.	The Start Copying Files screen will display. Click Next.	
	If the "Choose Communication Mode" screen is still displayed: Select "Serial RS232" Click Next.	On the Setup Complete screen: 1. Select the "Yes , I want to restart my computer now" circle 2. Remove the CD-ROM from the drive 3. Click Finish 4. Select OK if an "OK to EJECT CD?" message pops up; then click Finish again 5. Disconnect the serial cable from the PC	
PC reboots		PC restarts	
Enter modem name	On the Set Connection Properties screen: 1. In the Connection Name field, enter "Moto TP GPRS Serial" 2. Make sure the "Dynamic" circle box is selected 3. Leave the other fields blank or with their default data 4. Click Finish		
	A new window should popup, with an icon named "Moto TP GPRS Serial"		
Install complete	Modem software installation is complete.	Modem software installation is complete.	
Install verify	There should be an icon on your Windows desktop labeled "Motorola GPRS Wizard"	Access "Nokia Modem Options" in the Control Panel Windows 98: 1. Click the Windows Start button 2. Point to Settings 3. Click on Control Panel 4. Double-click on the "Nokia Modem Options" icon	

PC Setup Table (PCG Steps) for GSM / GPRS Devices			
	Motorola Timeport P7389i	**Nokia 6310i**	**Siemens S45 / S46**
		5. In the box labeled "Installed Nokia Modems", you should see Nokia 6310i (cable) Windows 2000: 1. Click the Windows Start button 2. Point to Settings 3. Click on Control Panel 4. Click on the "Nokia Modem Options" icon 5. In the box labeled "Installed Nokia Modems", you should see Nokia 6310i (cable) 6. Click Cancel to exit this window	
		There should also be a new entry under Modems in the Device Manager. Windows 98: 1. Right click on My Computer 2. Select Properties 3. Select Device Manager 4. In the Device Manager window, double-click on Modems 5. Look for: Nokia 6310i (cable) 6. Double-click Nokia 6310i (cable) to look at its setup Windows 2000: 1. Right click on My Computer 2. Select Properties 3. Select the Hardware tab 4. In the Device Manager center section, select the Device Manager box 5. In the Device Manager window, double-click on Modems 6. Look for: Nokia 6310i (cable) 7. Double-click Nokia 6310i (cable) to look at its setup 8. After checking the setup, close the Device Manager	

PC Setup Table (PCG Steps) for GSM / GPRS Devices			
	Motorola Timeport P7389i	**Nokia 6310i**	**Siemens S45 / S46**
Trouble-shooting	COM1 should be the default serial port		
PCG2: **Change Internet Explorer options for modem on Client PC**			
Start IE5 & begin the modem connect process	(Not applicable)	This demo procedure is written for Microsoft Internet Explorer 5. Other versions may require modifications to the following steps. 1. Double-click on the Internet Explorer (IE) icon on the PC 2. If a Work Offline popup window appears, select Try Again 3. If a connection popup window appears, close it 4. IE will try to access a homepage; press the IE Stop icon 5. On the IE toolbar, select Tools, then Internet Options 6. Select the Connections tab 7. Select the circle labeled "Dial whenever a network connection is not present" 8. If the Dial-up Settings box lists the "Nokia 6310i (cable)", then skip ahead in this procedure to the step titled "Configure the modem" 9. If Dial-up Settings does not list the Nokia modem, then select the Setup button (next to the "Use Internet Connection Wizard" text)	
Do the steps of the Internet Connect Wizard		1. On the Welcome to the Internet Connection Wizard screen, choose "I want to setup my Internet connection manually", then click Next 2. On the Setting up your Internet connection screen, select "I connect through a phone line and a modem",	

PC Setup Table (PCG Steps) for GSM / GPRS Devices			
	Motorola Timeport P7389i	**Nokia 6310i**	**Siemens S45 / S46**
		then click Next 3. On the Choose Modem screen, select and highlight "Nokia 6310i (cable), then click Next 4. On the Step 1 of 3: Internet account screen, uncheck the box "Use area code and dialing rules" 5. In the Telephone Number box, enter: *99# 6. Click Next 7. On the Step 2 of 3: Internet account screen, leave both User name and Password blank, then click Next 8. If you see warning messages about blank User name and Password, just click Yes to continue 9. On the Step 3 of 3: Configuring your computer screen, enter this connection name: Nokia 6310i GPRS Serial 10. Click Next 11. On the Setup Your Internet Mail screen, select No, then click Next 12. On the Completing the Internet Connection Wizard screen, uncheck the "To connect to the Internet immediately" box 13. Click Finish	
Configure the modem		1. In the Dialup Settings box, double-click "Nokia 6310i GPRS Serial" 2. Uncheck the "Automatic Configuration" and "Proxy Settings" boxes 3. Select the "OK" button 4. Select "OK" to exit the Internet Options menu	
Close IE		Close the IE program	

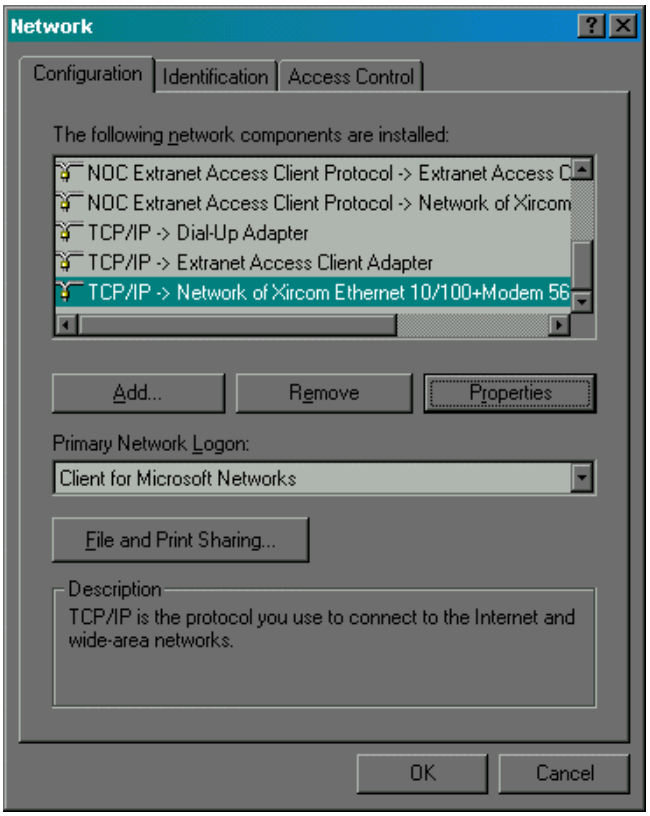
PCM3:

Set LAN parameters on PC for use with crossover LAN cable

Windows 98

This procedure assumes you are using a standalone PC (not connected to a network) using the Microsoft Windows 98 operating system

1. Open the Control Panel
2. Choose the Internet Options icon
    a. Select the Connections tab
    b. Select the LAN Settings box
    c. In the "Automatic configuration" section, both "Automatically detect settings" and "Use automatic configuration script" must NOT be checked.
    d. In the "Proxy server" section, "Use a proxy server" must NOT be checked.
    Select OK, then OK again to exit the Internet Options menu
3. Choose the Network icon
    a. Select the Configuration tab



    b. In the scroll box labeled "The following network components are installed:" highlight your Ethernet network device.
    c. Select the Properties box
    d. In the TCP/IP Properties box, select the IP Address tab
        1. Write down the original IP address (if you want to

	restore the original settings): PC's original IP address: _____ 2. Select "Specify an IP address" 3. Enter in the field labeled IP Address: 111.111.111.3 4. In the Subnet Mask: field, set the PC's subnet mask to 255.255.0.0 5. Select OK, then OK again to exit the Network menu 6. If you made changes, a System Settings Change box will appear. Select the Yes box to Restart your PC.
Windows 2000	This procedure assumes you are using a standalone PC (not connected to a network) using the Microsoft Windows 2000 operating system. 1. Go to the Control Panel 2. Choose the Internet Options icon a. Select the Connections tab b. Select the LAN Settings box c. In the "Automatic configuration" section, both "Automatically detect settings" and "Use automatic configuration script" must NOT be checked. d. In the "Proxy server" section, "Use a proxy server" must NOT be checked. e. Select OK, then OK again to exit the Internet Options menu 3. Choose the Network and Dial-up Connections icon a. Select the Local Area Connection icon b. Select Properties c. Highlight "Internet Protocol (TCP/IP)" i. Select Properties ii. Select "Use the following IP Address" iii. Write down the original IP address here (if you want to restore the original settings later): PC's original IP address: _____ iv. In the field labeled IP Address enter: 111.111.111.3 d. In the Subnet Mask: field, set the PC's subnet mask to: 255.255.0.0 e. Select OK, then OK again to exit the Network menu f. Close the Network Connections window.

PCM4:

Connect "real" LAN between Server PC and Test Set; set LAN parameters of PC

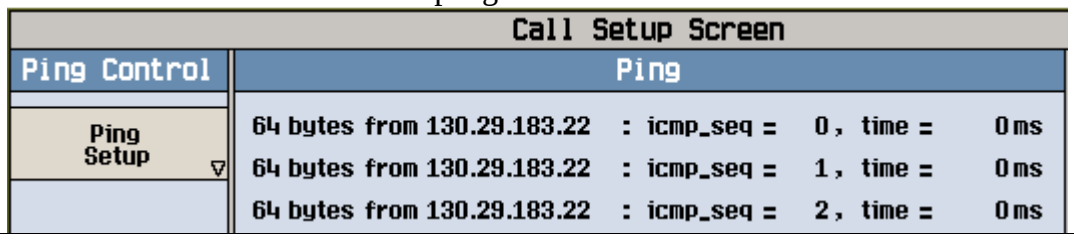
	(Incomplete)

PCM5:

Verify LAN connection between Test Set & Server PC with pings

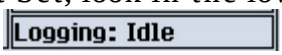
Description	Ping is a tool to help check system interconnects. In the Test Set, a Ping sends a 64-byte packet to the device being pinged. If the connection is good, then the device will return a packet to the Test Set and the packet transfer information is displayed on the Test Set's screen.

Ping from PC to Test Set	1. Open an MS DOS command prompt on the PC.
	a. This is typically found by using Windows Start at the lower left:
	b. Programs / Accessories / Command Prompt
	2. On the command line, type "doskey", then press the PC's Enter key.
	a. This will allow you to select previously entered commands using the up and down arrows on your keyboard if needed.
	3. On the command line, input the following line:
	a. `ping 111.111.111.1`
	b. Press the PC's Enter key.
	4. The PC display should show something like this as a correct response:
	`Pinging 111.111.111.1 with 32 bytes of data:`
	
	`Reply from 111.111.111.1: bytes=32 time<1ms TTL=64`
	5. Exit the Command Prompt program.

Ping from Test Set to PC	1. On the Test Set, go to the Call Setup screen. 2. On the Control (left) column of softkeys, press the **More** key until you see 2 of 2. 3. Press the Ping (F3) key. This will switch the column to Ping Control. 4. Press the Ping Setup (F1) key 5. In the Ping Setup table: a. Verify Device to Ping = Alternate b. Verify Alternate Ping Address = 111.111.111.3. 6. Press Start Ping (F3) key. It may take a moment for the PC to respond. A correct response looks like the image below. This indicates a functioning IP connection exists between the Test Set and the PC. 7. Press Stop Ping (F3) key if desired. 8. On the Test Set, at the bottom of the display, note the Summary Results data from the ping. 

PCM6: **WPA Software Installation**	
Prepare to install applicable Wireless Protocol Advisor software 1. Get the software **2.** Get the license key data	Obtain the latest version of the Wireless Protocol Advisor (WPA) software for your technology (Example: Agilent E6581A for GSM / GPRS). 1. Locate the WPA CD-ROM Or 2. Download the latest version from the Agilent Technologies website: http://www.agilent.com/find/E6581A 3. Locate the license key document which was shipped with the WPA CD-ROM or provided by Agilent another way. 4. If you do not have a WPA license key, call or Email your Agilent Technologies contact (such as your Agilent Field Sales Engineer at the nearest Agilent Technologies office).
Prepare the Server PC for installation	1. Turn off any Windows programs 2. Insert the CD-ROM in the PC drive, or start the downloaded executable file.
First-Time Installation on this PC *(for an upgrade, skip down in this document to the "Upgrade Installation" section)*	
1st Time: Start the install program	1. The InstallShield program should autostart. 2. Follow the InstallShield instructions. 3. If it does not autostart, use Start, Run, Browse to the CD-ROM drive 4. Find the .exe file for the WPA. 5. Run it.
1st Time: Choose install parameters	1. Popup windows will display "unpacking" and "preparing" 2. On the Welcome screen, click Next 3. On the License Agreement, click Yes 4. On Choose Destination Location, I recommend using the default location; click Next 5. On Choose Destination Location / folder name, I recommend using the default location; click Next 6. On Select Program Folder, I recommend using the default location; click Next 7. Progress bars will display as the program is installed 8. On the Setup Complete window, click Finish 9. When finished, the Windows desktop will be displayed
1st Time: Start the WPA program	On the Windows desktop, find the WPA icon for the WPA technology you just installed; double-click the icon
1st Time Troubleshooting: If a new	1. If this is the first time to install this software on this PC, then it may give errors the first time it is run 2. This may occur because some .dll files may not be available.

PCM6: **WPA Software Installation**	
installation of WPA will not run	a. First, try re-installing the WPA software. b. If the re-install is not successful, try installing a recent version of Microsoft Internet Explorer (IE) on the PC to provide the missing .dll files 1) IE should be available as a free download from http://www.microsoft.com/downloads 3. If WPA still will not run, contact your Agilent Field Sales Engineer (or the Agilent representative who provided the WPA software) for assistance.
1st Time: Enter the WPA license keys on the Software Option Controller	The Software Option Controller program (which works with WPA) will appear. 1. Ignore and close any error message that pops up.
1st Time: Installing a permanent license key	1. If you purchased the WPA, a license document came with the software with the permanent key data. 2. The ID Number and License Key are typically located at the top right of this document. 3. Type in the ID Number and License Key. 4. Select Set Keys. 5. A popup message says: "Permanent key accepted and saved"; select OK 6. Note: a check box labeled "001 – GPRS decodes" may be checked now (if not, check the box) 7. Select Close
1st Time: Installing a temporary license key	1. Select the Temporary Key tab. 2. Type in the ID Number, License Key, and Key Expiration. 3. Select Set Keys. 4. A popup message says: "Temporary key accepted and saved"; select OK 5. Select Close
1st Time: WPA starts after license data is entered	WPA should start after you close the Software Option Controller program.
1st Time: Verify WPA connects to the Test Set over the LAN	On the Wireless Protocol Advisor Start Up screen: Select the Real Time button
	On the **WPA – Real Time - [Capture Configuration –Data Source View]** screen: 1. In the box labeled "Test set hostname or IP", enter the Test Set's IP

	address: 111.111.111.1 2. Select the Connect box 3. Click  to go to the **WPA – Real Time [CaptureData Traffic Overview]** screen (called the Monitor).
1st Time: See the connection indicators	1. On the PC, look in the lower right-hand corner of the **WPA – Real Time [CaptureData Traffic Overview]** screen; you should see "Connected to 111.111.111.1 – Idle". 2. On the Test Set, look in the lower right of the Call Setup screen; you should see: 
1st Time: Verify WPA logs real data	1. On the **WPA – Real Time [CaptureData Traffic Overview]** screen: a. Select the Record icon:  to begin data logging. b. On the Test Set, on the Call Setup screen, press the **Originate Call (F3)** softkey; then press it again to **End Call**. 2. On the **WPA – Real Time [CaptureData Traffic Overview]** screen, you should see at least one line of logged data at the top of the display. 3. On WPA, select the Stop icon:  to end the log.
1st Time: Close WPA	1. On the **WPA – Real Time [CaptureData Traffic Overview]** screen 2. On the top menu line, select File, Exit 3. If you see a popup window asking "Do you want to save the captured data?", select NO

Upgrade Installation

Upgrade: Start the install program	1. The InstallShield program should autostart. 2. Follow the InstallShield instructions. 3. If it does not autostart, use Start, Run, Browse to the CD-ROM drive 4. Find the .exe file for the WPA. 5. Run it. 6. Popup windows will display "unpacking" and "preparing"
Upgrade: Remove the old version of WPA?	1. On the Welcome screen, a Warning message will display that a "previous installation of WPA has been detected…do you wish to remove it?". 2. Click Yes to continue.
Upgrade: Record your old license key data	1. On the Welcome screen, a Warning message will display your previous license keys. 2. Record your old license key numbers in case the automated transfer process fails.

	3. Click Yes to continue.
Upgrade: The old version of WPA is uninstalled	1. UninstallShield will run and remove the old WPA. 2. A progress window will display. 3. Click OK when the uninstall is complete.
Upgrade: Choose install parameters	1. On the Welcome screen, click Next 2. On the License Agreement, click Yes 3. On Choose Destination Location, I recommend using the default location; click Next 4. On Choose Destination Location / folder name, I recommend using the default location; click Next 5. On Select Program Folder, I recommend using the default location; click Next 6. Progress bars will display as the program is installed 7. On the Setup Complete window, click Finish 8. When finished, the Windows desktop will be displayed
Upgrade: Start the WPA program	On the Windows desktop, find the WPA icon for the WPA technology you just upgraded; double-click the icon
Upgrade: Verify WPA connects to the Test Set over the LAN	On the Wireless Protocol Advisor Start Up screen: Select the Real Time button
Upgrade Troubleshooting: License keys	For an upgrade installation, the previous license keys should have been copied into the Software Option Controller automatically. If the old keys aren't copied, then manually enter them into the Software Option Controller.
	On the **WPA – Real Time - [Capture Configuration –Data Source View]** screen: 1. In the box labeled "Test set hostname or IP", enter the Test Set's IP address: 111.111.111.1 2. Select the Connect box 3. Click  to go to the **WPA – Real Time [CaptureData Traffic Overview]** screen (called the Monitor).
Upgrade: See the connection indicators	1. On the PC, look in the lower right-hand corner of the **WPA – Real Time [CaptureData Traffic Overview]** screen; you should see "Connected to 111.111.111.1 – Idle". 2. On the Test Set, look in the lower right of the Call Setup screen; you should see: 
Upgrade: Verify WPA logs real data	1. On the **WPA – Real Time [CaptureData Traffic Overview]** screen:

	a. Select  to begin data logging. b. On the Test Set, press the **Originate Call (F3)** softkey; then press it again to **End Call**. 2. On the **WPA – Real Time [CaptureData Traffic Overview]** screen, you should see at least one line of logged data at the top of the display. 3. On WPA, select  to end the log.
Upgrade: Close WPA	1. On the **WPA – Real Time [CaptureData Traffic Overview]** screen 2. On the top menu line, select File, Exit 3. If you see a popup window asking "Do you want to save the captured data?", select NO
Troubleshooting: If LAN connection is unsuccessful	1. If LAN connection is unsuccessful, then the Configuration screen will remain. a. An error message will usually appear: Ping Error. Request timed out. 1) Enter the IP address of the Test Set in the "Test Set hostname or IP" field. 2) Select the Connect button.
Troubleshooting: If LAN connection is unsuccessful	There is sometimes a Windows interaction problem with Microsoft Internet Explorer: 1. Start IE 2. Tools, Internet Options, Connections, LAN Settings 3. Uncheck the "Use a proxy server" box 4. Select OK 5. Close IE 6. Close the WPA software, then re-start WPA
Troubleshooting: To verify or modify the license key data in the Software Option Controller program	On the Windows desktop: 1. Select Start 2. Highlight Programs 3. Highlight the Wireless Protocol Advisor for your technology 4. From the list, select Software Option Controller 5. Edit the keys.

PCM7: **Install ftp server software on local Server PC**	FTP (or file transfer protocol) software is used to enable easy file transfers.
Disclaimer	***Note: Agilent Technologies does not endorse or recommend the product listed. We provide this information solely as a possible choice to aid in this demo. Use this software product at your own risk.***
Protect against unauthorized access to your PC	***This is very simple software. It does not protect your computer against unauthorized access. Take precautions (such as adding a firewall) to prevent unauthorized access.***
Prepare to install the ftp software	Obtain the latest version (version e or higher) of the free software CesarFTP 0.99 from ACLogic at the website. 1. Download a free copy of this freeware at: http://www.aclogic.com 2. Click on the CesarFTP 0.99 link to download. 3. Save the downloaded program in your PC.
Prepare the Server PC for installation	Turn off any Windows programs
Complete the installation	1. Install the FTP server a. Double-click the program named "CesarFTP.exe" b. In the setup window, select Yes c. In the welcome window, select Yes d. In the license agreement window, select Yes e. Select choices to install program in default directory (select Next 3 times). f. On next window, select Install g. On the next window, uncheck the box for "Launch CesarFTP", then select Finish h. When complete, the program icon can be found on the Windows Desktop for CesarFTP. 2. Configure the FTP server: a. On Windows Desktop, double-click the CesarFTP icon. b. On the Toolbar, select Settings, then Edit Users & Groups. c. On the User & Group Settings window, select the Add User button. i. In the User/Group Name box, type "Agilent". d. Select the "Anonymous Access" button.

	e. Select the “File Access Rights” button. f. In the upper right-hand window, you should see a PC file directory. i. Double-click on My Computer ii. Double-click on C: drive iii. Choose a directory / subdirectory (“your directory”) to allow access for ftp transfers for your wireless device demo. g. Drag and Drop “your directory” to the lower right-hand window. h. In the lower right-hand window, select “your directory”. i. Right click on “your directory”, then select “Set as default directory” j. Select “Close” on the Toolbar menu. k. Select “OK” on the “User & Group Settings” window. l. The FTP server is now on.

PCM8: **Install web server software on local Server PC**	A Web server allows access to files using http protocols.
Disclaimer	***Note: Agilent Technologies does not endorse or recommend the product listed. We provide this information solely as a possible choice to aid in this demo. Use this software product at your own risk.***
Protect against unauthorized access to your PC	***This is very simple software. It does not protect your computer against unauthorized access. Take precautions (such as adding a firewall) to prevent unauthorized access.***
Prepare to install the web server software	Obtain the latest version (version 1.23 or higher) of the free SimpleServer: WWW software from the AnalogX website. 1. Download a free copy of this freeware at: http://www.analogx.com/contents/download/network.htm 2. Scroll to the SimpleServer section and select the link to download SimpleServer:WWW. 3. Save the downloaded program in your PC.
Prepare the Server PC for installation	Turn off any Windows programs
Complete the installation	1. Find the downloaded executable file, and double-click the program named "sswwwi.exe". 2. On the "AnalogX End User Agreement", select "I accept". 3. On the "Installation Directory" window, I recommend using the default directory, then select "Continue". 4. Select "Yes" to verify your choice of directory. 5. Select "No" (or Yes if you prefer) on the product registration window. 6. The help text will display; read it if you desire, then Exit it. 7. On the "Installation Complete" popup window, select OK.
Start the web server	1. The program icon can be found at Start, Programs, AnalogX, SimpleServer, www, SimpleServer.www. 2. If you wish, copy this icon to your desktop. 3. Start the web server. 4. A window should appear for SimpleServer.
Choose a directory on your PC to access files via http	1. At the center bottom of the window, click on "Click here to set your Web directory". 2. Choose a directory / subdirectory to allow access for http web browsing for your wireless device demo. a. This directory should contain html files to browse.
Enable the web	Click on the "Start" button in the lower right-hand corner of the

server	"SimpleServer" window to enable the web server on your PC.
To verify the web server is correctly installed on your Server PC: Access the web server from a Client PC	From a Client PC (that can access your Server PC via the LAN): 1. Start a web browser such as Internet Explorer on the Client PC 2. Enter the IP address of the Server PC in the address line of the Client PC's web browser a. The current IP address of the Server PC should appear on the top of the SimpleServer window. 3. A list of the html-formatted files in the linked SimpleServer directory (from the Server PC) should display on the Client PC's web browser. 4. Choose one of the files on the web browser and open it.

PCM9: **Install WAP server software on local Server PC**	*(Incomplete section)*
Disclaimer	Note: Agilent Technologies does not endorse or recommend the product listed. We provide this information solely as a service to aid in this demo. Use at your own risk. Agilent has done minimal testing in this application only.
WAP Troubleshooting	If a phone seems to try to connect to a local WAP server for a long time but is not successful, and finally times out: Check that both .wml and .wbmp files are in the same directory (if a .wml file "points" to a .wbmp file).

Appendix A: GSM/GPRS Troubleshooting

1. The wireless appliance will not attach in GPRS

1.1. Verify cable loss is correctly specified in RF IN/OUT Amplitude Offset table
1.2. Verify that Test SIM is good and installed correctly
1.3. Verify cell power is sufficient (increase it up to -35dBm to overcome interference, or if an indirect RF connection is used between the Test Set and phone)
1.4. Try Coding Scheme CS-1. Go to the Call Setup Screen; Call Parms column; `PDTCH Parameters` (**F9** key); `Coding Scheme` (**F11** key)
1.5. Maybe the wireless appliance is not capable of multislot configuration operation; if in doubt, try 1 down 1up. Go to the Call Setup Screen; Call Parms column; `PDTCH Parameters` (**F9** key); More (1 of 2 key); `Multislot Config` (**F7** key)
1.6. This could relate to a connection parameter called TBF Frame Starting Position.
  1.6.1. Go to the Call Setup Screen; Control column; More (2 of 2 key); Protocol Control (F4 key); RLC/MAC (F1 key); Frame Start Position (F5 key)
  1.6.2. Try Absolute or Immediate frame starting position; the default is relative and not all mobiles support this.
1.7. Test Set displays IMSI warning:

GSM protocol warning: No IMSI received from MS
(Using default IMSI)

  1.7.1. This is often an error in the firmware of the phone.
  1.7.2. The default IMSI is 001012345678901. This is the IMSI programmed into Agilent or HP Test SIM's.
  1.7.3. If this message is received, it is not possible to make a data connection, unless a SIM with the default IMSI value is installed in the wireless device.
1.8. If you experience problems establishing a data connection specifically with the BLER Data Conn Type:
  1.8.1. Try changing the setting of the LLC BLER Frame Check Sequence from Valid to Corrupt.
    1.8.1.1. Go to the Call Setup Screen; Control column; More (2 of 2 key); Protocol Control (F4 key); LLC (F2 key); BLER FCS (F1 key).
  1.8.2. Try changing the setting of the Block Poll Rate (default is 1; range is 1 to 32).
    1.8.2.1. Go to the Call Setup Screen
    1.8.2.2. Control column; More (2 of 2 key)
    1.8.2.3. Protocol Control (F4 key)
    1.8.2.4. RLC/MAC (F1 key)
    1.8.2.5. Block Poll Rate (F4 key); adjust value

2. GPRS BLER (Connection Type) measurements have problems

2.1. Attach problem solutions still apply; see **1.** above
2.2. MS must be capable of GMM_INFORMATION messaging.
  2.2.1. This is the type of message sent by the Test Set to provoke an ACK/NACK from the mobile.

  2.2.2. If the mobile is not capable of GMM information messaging, then the data connection will timeout.
    2.2.2.1. One possible solution: set the LLC frame check sequence to Corrupt. This will stop the message getting to GMM and the mobile should still provide the ACK/NACK. Go to the Call

Setup Screen; Control column; More (2 of 2 key); Protocol Control (F4 key); LLC (F2 key); BLER FCS (F1 key); change the table value to `Corrupt`.

2.2.3. It is possible that the mobile is capable but GMM is prioritised too low and the wireless appliance is unable to sustain the link.

2.2.3.1. One solution: change the BLER Block Polling Interval. This will allow the mobile to send the ACK/NACK less frequently (one negative result: TX measurements will be slower since the mobile is not transmitting every frame.) Go to Call Parameters; 4 of 4; Connection Parameters table.

3. GPRS ETSI Test Mode measurements have problems

3.1. Check that the mobile is capable of the ETSI test mode you would like to use; if not, it will not work.

3.2. Check the same parameters as in **1.** Attach problems.

4. The GPRS Attach condition terminates prematurely

4.1. This may be a Connection Reconfiguration problem. When any of the connection parameters are reconfigured the connection is terminated.

4.1.1. The mobile likely does not have the PACKET_TIMESLOT_RECONFIGURE message implemented.

4.1.1.1. This message is used to change MSTXL, channel, Band, Coding Scheme, Multislot configuration, and offset P0.

4.1.1.2. The solution when using the PACKET_TIMESLOT_RECONFIGURE message is to stop the data connection before changing parameters, then restart the data connection.

4.1.2. Alternatively, you can change the message used to change parameters to PACKET_DOWNLINK_ASSIGNMENT; or, for power changes use the PACKET_POWER_AND_TIMING_ADVANCE message. Go to call parameters, 1 of 4.

5. E5515 LAN Issues

5.1. Connections:

5.1.1. Check that the LAN cables are good, and are properly connected

5.1.2. If you are using the Test Set's front panel DATA port: check that the LAN jumper cable is attached on the Test Set rear panel between the LAN PORT connector and the ETHERNET TO FRONT PANEL connector. (NOTE: For minimum RF interference, Agilent recommends using the rear-panel LAN PORT connector).

5.2. Test Set:

5.2.1. The Test Set LAN IP Address and Subnet Mask should not include leading zeros.

Example: 111.22.333.44 is correct
111.022.333.044 is incorrect

5.3. PC:

5.3.1. Check that the network card (if present) is fully seated in the PC Card slot.

6. The phone can't access (browse) real Internet sites

6.1. It can be difficult to "browse" WAP sites or other locations on the Internet because of firewalls or other restrictions on a specific Intranet. Get help from your Network Administrator.

7. BER measurement errors occur

7.1. During Data Channel operation, the BER measurement DOES NOT function correctly.

8. An older Motorola Timeport® phone won't transmit IP datagrams in Data Channel functions

8.1. Some older versions of Motorola Timeport® phones may lose the IP address you have entered. Check this whenever you turn on the phone.

9. When checking the IPCONFIG of your PC, multiple non-zero IP addresses display

9.1. If available in your PC, use the WINIPCFG utility program to help you troubleshoot.

1.1.1. Choose Windows Start
1.1.2. Select Run
1.1.3. Enter **winipcfg**, then select OK
1.1.4. Select the Release All button to release the addresses
1.1.5. Select the Renew All button to re-enable the active IP address

9.2. If an old "artifact" IP address is still present in the PC:

1.2.1. You can use a network access program designed to get through a firewall (such as Nortel Networks Extranet Access Client) to reset the "bad" address.
1.2.2. Start the Extranet program
1.2.3. Use your SecureID card to enter the password and access your network as normal.
1.2.4. Log off the network
1.2.5. Use the MS-DOS IPCONFIG command, or the WINIPCFG utility to check that the errant IP address is reset to all zeroes.

Appendix B. GSM/GPRS Glossary

BER	Bit Error Rate
BLER	Block Error Rate (Agilent proprietary connection mode – patent applied for)
DUT	Device Under Test (typically, a cellular phone or wireless appliance)
GGSN	Gateway GPRS Support Node (provides gateway between GPRS network and public packet data network [internet]; connects to HLR; provides location and authentication management; counts packets for billing; and stays constant)
GMM	GPRS Mobility Management
GPRS	General Packet Radio Service
GSM	Global System for Mobile Communications
GSM L3	Global System for Mobile Communications Layer 3
HTML	Heuristic Tag Markup Language
IMSI	International Mobile Subscriber Identity
IP	Internet Protocol
L1	Layer One (defines PDCH physical channel; defines logical channels such as PDTCH and PACCH; and defines coding schemes CS1 to CS4)
LAB	Laboratory (where research and development work is done)
LAN	Local Area Network
LLC	Logical Link Control (air interface independent; discriminates between data and control signalling)
MAC	Medium Access Control (mediates access across multiple mobiles)
MS	Mobile Station (typically, a cellular phone)
PDP	Packet Data Protocol
RF	Radio Frequency
RLC	Radio Link Control (performs procedures to transfer data)
SGSN	Serving GPRS Support Node (controls connection between network and MS; manages sessions; manages mobility functions like handovers and paging; and changes as MS roams)
SIM	Subscriber Identity Module
SM	Session Management
SNDCP	Subnetwork Dependent Convergence Protocol (multiplexes multiple application protocols)
TBF	Temporary Block Flow
USF	Uplink State Flag
WAP	Wireless Application Protocol
WML	Wireless Markup Language