Enfora GSM1308 and GSM1318 Quad-Band Spider® SA-G+

User Guide

GSM1308UG001

Revision: 1.06

9/10/2010

www.enfora.com

GENERAL

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WARRANTY INFORMATION

[Revised: 11/11/2010]

This warranty applies to (a) products sold directly by Enfora, unless a different warranty is specified in a written agreement between Enfora and the purchaser; and (b) products sold to end users through a distributor authorized by Enfora, but only where the authorized distributor does not provide a separate warranty on such products, and Enfora has agreed to provide this warranty to such end users. If you purchased the product from an authorized distributor, please check whether this warranty from Enfora, or a separate warranty from the distributor, applies to your purchase. This warranty does not apply to any (i) accessories or batteries for the products; or (ii) demonstration samples or prototypes of the products. Unless otherwise provided in a written agreement between Enfora and the purchaser, all such accessories, batteries, samples or prototypes are provided by Enfora AS IS without any warranty of any kind.

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This limited warranty shall be governed by the laws of the State of Texas, United States of America, without regard to conflict of laws principles. This limited warranty shall not be governed in any respect by the United Nations Convention on Contracts for the International Sale of Goods.

REGULATORY COMPLIANCE

FCC

The modem was tested and certified to meet FCC Parts 15 in a stand-alone configuration, which demonstrated that the GSM1308 and GSM1318 SA-G+ complies with Part 15 emission limits. FCC Part 22 & Part 24 is covered by the Enfora Enabler-IIIG "modular approval" process for a transmitter. This approach, described by FCC Public Notice DA 00-131407 released June 26, 2000, is intended to afford relief to equipment manufacturers by eliminating the requirement for obtaining a new equipment authorization for the same transmitter when installed in a new device.

In order to use the GSM1308 and GSM1318 SA-G+ without additional FCC certification approvals, the installation must meet the following conditions:

- A separation distance of at least 20 cm (7.87 inches) between the antenna and the body of the user and other persons must be maintained at all times.
- GSM 850 mode: With the maximum conducted power at 32 dBm, the maximum antenna gain is 4.5 dBi (2.35 dBd) in order to meet maximum 7 watt ERP for mobile transmitters and MPE (Maximum Permissible Exposure) requirement of General Population/Uncontrolled exposures.
- GSM 1900 mode: With the maximum conducted power at 31dBm, the maximum antenna gain is 2 dBi in order to meet maximum 2 watt EIRP for mobile transmitters and MPE (Maximum Permissible Exposure) requirement of General Population/Uncontrolled exposures.

RF EXPOSURE

Your GSM1308 or GSM1318 SA-G+ modem is a radio transmitter and receiver. It is designed and manufactured not to exceed the emissions limits for exposure to radio frequency (RF) energy set by the Federal Communications Commission (FCC) of the U.S. Government. These limits are part of comprehensive guidelines and establish permitted levels of RF energy for the general population. These guidelines are based on the safety standards previously set by the U.S. and international standards bodies. The standards include a substantial safety margin designed to assure the safety of all persons, regardless of age and health.

The exposure standard for wireless RF devices, such as the GSM1308 and GSM1318 SA-G+ modem, employs a unit of measurement known as the Specific Absorption Rate, or SAR. The SAR limit set by the FCC is 1.6W/kg. SAR values at or below that limit are considered safe for the general public.

Before a wireless RF device is made available for sale to the Public, it must be tested and certified to the FCC that it does not exceed the SAR limits established by the FCC. Tests for SAR are conducted using the positions and locations (e.g., at the ear or worn on the body) as required by the FCC for each device model. The Spider AT has been tested and meets the FCC RF exposure guidelines when used against the body under normal usage conditions.

R&TTE CE

The GSM1308 and GSM1318 SA-G+ modem has been fully tested and complies with all the requirements of EN301 489-1, EN301 489-7 and EN60950-1:2001. Compliance to EN 301 511 has been demonstrated by testing on both the GSM1308 and the integrated GSM0308 module. At the separation distance of at least 20 cm (7.87 inches) between the antenna and the body of the user and other persons, the product also meet EN50392 MPE requirement.

DISCLAIMER

The information and instructions contained within this publication comply with all FCC, GCF, PTCRB, R&TTE, IMEI and other applicable codes that are in effect at the time of publication. Enfora disclaims all responsibility for any act or omissions, or for breach of law, code or regulation, including local or state codes, performed by a third party.

Enfora strongly recommends that all installations, hookups, transmissions, etc., be performed by persons who are experienced in the fields of radio frequency technologies. Enfora acknowledges that the installation, setup and transmission guidelines contained within this publication are guidelines, and that each installation may have variables outside of the guidelines contained herein. Said variables must be taken into consideration when

installing or using the product, and Enfora shall not be responsible for installations or transmissions that fall outside of the parameters set forth in this publication.

TABLE OF CONTENTS

TABLE OF FIGURES

TABLE OF TABLES

1 Introduction

1.1 ABOUT THE GSM/GPRS SA-G+

The GSM/GPRS SA-G+ is a compact, stand-alone wireless IP (GSM/GPRS) modem. The GSM/GPRS SA-G+ is designed for computing devices operating Windows XP and Windows 2000 or any serial-enabled platform. The SA-G+ can be used as a stand-alone serial device with other vertical applications. Enfora's GSM/GPRS SA-G+ provides maximum versatility in a single affordable device with 2 User-Definable Input/Outputs (I/O) and 1 User-Definable Output.

1.2 ABOUT THIS MANUAL

Contained in this manual are instructions on how to install and configure the GSM/GPRS SA-G+ modem. Please follow the instructions herein closely to avoid damaging the GSM/GPRS SA-G+.

The GSM/GPRS SA-G+ modem contains an Enfora Enabler-IIIG OEM module. Detailed information pertaining to the specifications and operation of the module will pertain, in part, to the GSM/GPRS SA-G+ platform.

The information can be accessed at the Enfora website (http://www.enfora.com) under Support and Resources.

Refer to the following documentation for additional information, if required:

1.2.1 MANUALS

GSM0308AT001 - Enfora IIIG Module AT Command Set Reference

GSM0308UG001 - Enfora GSM-GPRS Family API Reference

1.2.2 APPLICATION NOTES

GSM0000AN002 - Enabler-G PPP Configuration for Windows 2000

GSM0000AN003 - Enabler-G Data Circuit Switched Call Configuration and Use

GSM0000AN004 - Enabler-G SMS Configuration and Use

GSM0000AN005 - Enabler-G Automated Network Connection Configuration and Use

GSM0000AN006 - Enabler-G Module Status Query

GSM0000AN007 - Enabler-G Status Reporting

GSM0000AN008 - Enabler-G PPP Configuration for Windows XP

GSM0000AN009 - Dynamic IP Assignment Support

GSM0000AN011 - PAD Configuration and Use

GSM0000AN012 - Network Transparency Configuration for PAD

GSM0000AN013 - Enabler-G Sleep Mode Configuration and Use

GSM0000AN014 - Anytime PPP API Access

GSM0000AN015 - Event Monitor and Reporting Overview

GSM0000AN016 - How to Send SMS Messages to an E-Mail Address

GSM0000AN017 - SMTP Mail Access via TCP PAD

GSM0000AN018 - USNO NTP Network Time Service TCP PAD

GSM0000AN019 - Network Configuration Worksheet

GSM0000AN022 - Sending AT Commands over SMS

GSM0000AN023 - Configure the Modem to talk to the Enfora Server

GSM0000AN026 - Using a Terminal Program to Test PAD

GSM0000AN027 - AT$ACTIVE Command Implementation Behavior

GSM0000AN029 - Enabler IIIG Network Personalization

1.2.3 TECHNICAL NOTES

GSM0000TN001 - Enabler-G Firmware Upgrade

GSM0000TN002 - Enabler-G PPP Negotiation Sequence

GSM0000TN006 - UDP Wakeup Message Header Decoding

GSM0000TN007 - Enabler-G 3-Wire Serial Interface Requirements

GSM0000TN009 - Server Application Design Considerations for Dynamic IP

GSM0000TN012 - Engineering Mode Manual

1.3 SYSTEM REQUIREMENTS

- Windows XP and Windows 2000 operating systems or other serial-enabled platform.
- One standard RS-232 serial port for GSM/GPRS SA-G+ configuration.

1.4 SA-G+ FRONT AND BACK VIEW

Figure 1 - Front view of GSM/GPRS SA-G+ modem.

Figure 2 - Rear view of GSM/GPRS SA-G+ modem.

2 Installation

2.1 SUBSCRIBER IDENTITY MODULE (SIM) CARD

The SIM, an integral part of any GSM terminal device, is a "smart card" that is programmed with subscriber information. The user information consists of an International Mobile Subscriber Identity (IMSI) number, which is registered with the GSM service provider, and an encryption Ki (pronounced "key"). This information consists of a microprocessor and memory installed on a plastic card. To install the SIM card into the modem, insert the SIM card in the modem as shown below in Figure 3.

Note: The SIM is not provided with the SA-G+ modem. The SIM must be obtained from the GSM service provider and must be provisioned by the operator for data and/or voice. Always take care to protect the SIM: the GSM terminal will not operate without the SIM installed.

Figure 3 - Inserting a SIM Card in a GSM/GPRS SA-G+ Module

2.2 EIGHT (8) PIN CONNECTOR

The GSM/GPRS SA-G+ modem can utilize input power ranging from 6 Vdc to 40 Vdc. If your unit did not include an optional power supply, or if you wish to configure a separate power interface, the following connector parts are the Enfora recommended parts that can be used to mate with the existing modem power connector:

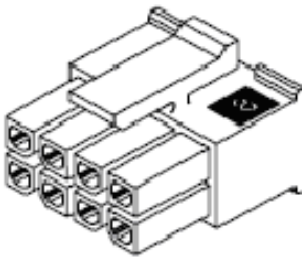
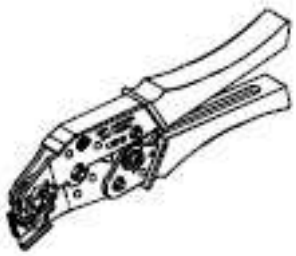
Connector: Manufacturer: Molex Part Number: 43025-0800	
Pins: Manufacturer: Molex Part Number: 43030-0008 20-24 AWG 43030-0011 26-30 AWG	
Crimp Tool: Manufacturer: Molex Part Number: 63811-2800	

Table 1 Cable Assembly Parts

During installation take precautions to help ensure proper operation of the SA-G+. Do not create loops, sharp bends or crimps in the cables. Use proper terminations on all power cables.

Note: If the SA-G+ will be used in a vehicle, attach all cables to the vehicle and equipment in such a way to reduce stress or wear caused by vibration generated by moving vehicles.

The user can purchase the optional eight (8) pin external I/O connector for the Enfora SA-G+ that can be used to interface with other devices. Enfora can provide an optional cable and connector (Part #CAB1308). The user also has the option of building his/her own cable. Table 2 describes the pin functionality for this 8 pin I/O connector. Pins that are not planned for usage can be left open without anything connected to them.

Pin Number	Functionality	Description
Pin – 1	Microphone +	
Pin – 2	Headset +	
Pin – 3	Ground	
Pin – 4	Ground	
Pin – 5	Supply Voltage	(6-40V)
Pin – 6	User Controlled IO1	(3.3 – 40V) – Uses GPIO1 of the Enabler IIIG Module
Pin – 7	User Controlled IO2	(3.3 – 40V) – Uses GPIO2 of the Enabler IIIG Module
Pin – 8	User Controlled Output	(1.5A sink) – Uses GPIO8 of the Enabler IIIG Module. This GPIO's state is latched during a reset.

Table 2 8 pin I/O Connector Interface

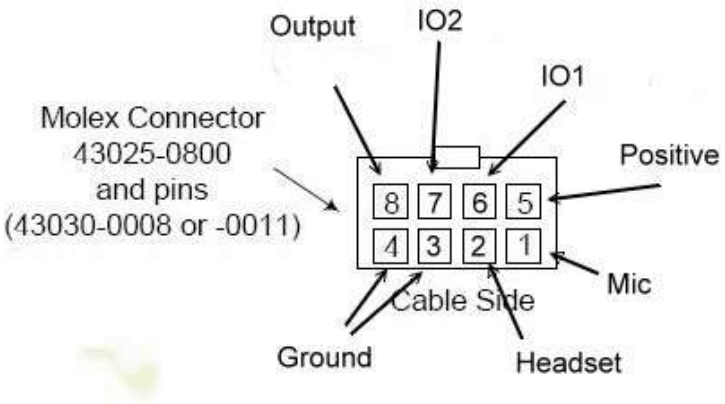


Figure 4 - Molex Connector and Pins

2.2.1 GPIO1 (INPUT/OUTPUT)

2.2.1.1 GPIO 1 ELECTRICAL SPECIFICATIONS

- Input VIH: >2.2 V
- Input VIL: <1 V
- Output VOH: 3 V
- Output VOL: 0
- Max Source Current: Approximately 350 µA
- Max Sink Current: 3.7 mA @ 40 V, 0.13 W

2.2.1.2 GPIO1 AS AN INPUT

Set the bus direction to be "input" by using the "AT$IOGP1=1" command.

Verify that GPIO1 is set to be an input by using the "AT$IOCFG?" command.

2.2.1.3 GPIO1 AS AN OUTPUT

Change GPIO1 to be an output by using the "AT$IOCFG=xxx" command.

Set the bus direction to be an output by using the "AT$IOGP1=0" command.

2.2.2 GPIO2 (INPUT/OUTPUT) PROGRAMMABLE PULL-UP SYSTEM

2.2.2.1 GPIO 2 ELECTRICAL SPECIFICATIONS

- Input VIH: >2.2 V
- Input VIL: <1 V
- Output VOH: 3 V
- Output VOL: 0
- Max Source Current: Approximately 320 µA
- Max Sink Current: 3.7 mA @ 40 V, 0.13 W

2.2.2.2 GPIO2 AS PULL-DOWN SYSTEM

Set GPIO2 to 0 by using the "AT$IOPULUP=0" command.

2.2.2.3 GPIO2 AS A PULL-UP SYSTEM

Set GPIO2 to 1 by using the "AT$IOPULUP=1" command.

*Set the bus direction as described in 3.2.1 using the AT$IOGP2=x command where x is 0 or 1.

Warning: Use of the device outside of the specified voltage range may result in damage to the device and/or undesirable results.

2.3 CONNECTING THE SERIAL CABLE

To connect the SA-G+ with a local computing device, connect one end (male end) of the 9-wire RS232 Serial Cable to the SA-G+ port labeled "Serial" and connect the other end to a computer.

The following figure provides the SA-G+ serial pin-out information.

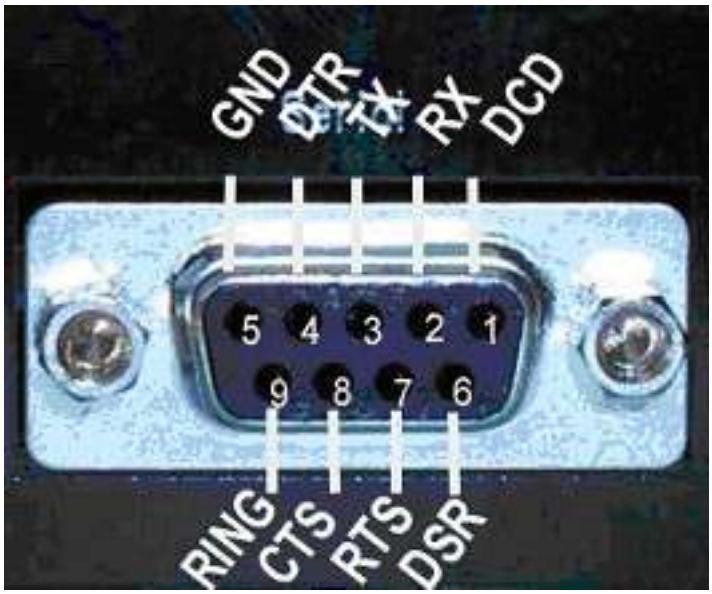


Figure 5 - Serial Pin-out

2.4 CONNECTING THE GSM/GPRS ANTENNA

The antenna is supplied by the user. The antenna must have a nominal impedance of 50 Ohms. The VSWR must be less than 2.0:1. System antenna gain should be 0-2 dB for optimum performance.

The GSM/GPRS SA-G+ operates at the 850/900/1800 and 1900 MHz frequency bands. Care needs to be taken when connecting the antenna since the right type of antenna will be required for proper operation of the modem. The antenna connector on the GSM/GPRS SA-G+ modem is SMA Female. The antenna has to be connected to the connector labeled "Antenna" as shown below in **Error! Reference source not found.**5.

Figure 6 - GSM/GPRS SA-G+ Connecting the Antenna

2.5 LED FUNCTIONS

The GSM/GPRS SA-G+ modem has one green LED on the front panel.

REG: Indicates GSM network registration status. Flashing when attempting to register on a GSM network. Solid when the modem is registered with a GSM network.

2.6 MOUNTING THE SA-G+

The GSM/GPRS SA-G+ includes two mounting options. The modem housing contains four thru holes that can utilize number 2 screws for securing the device. The other option available is the inclusion of four threaded holes for securing screws to be used to secure the device.

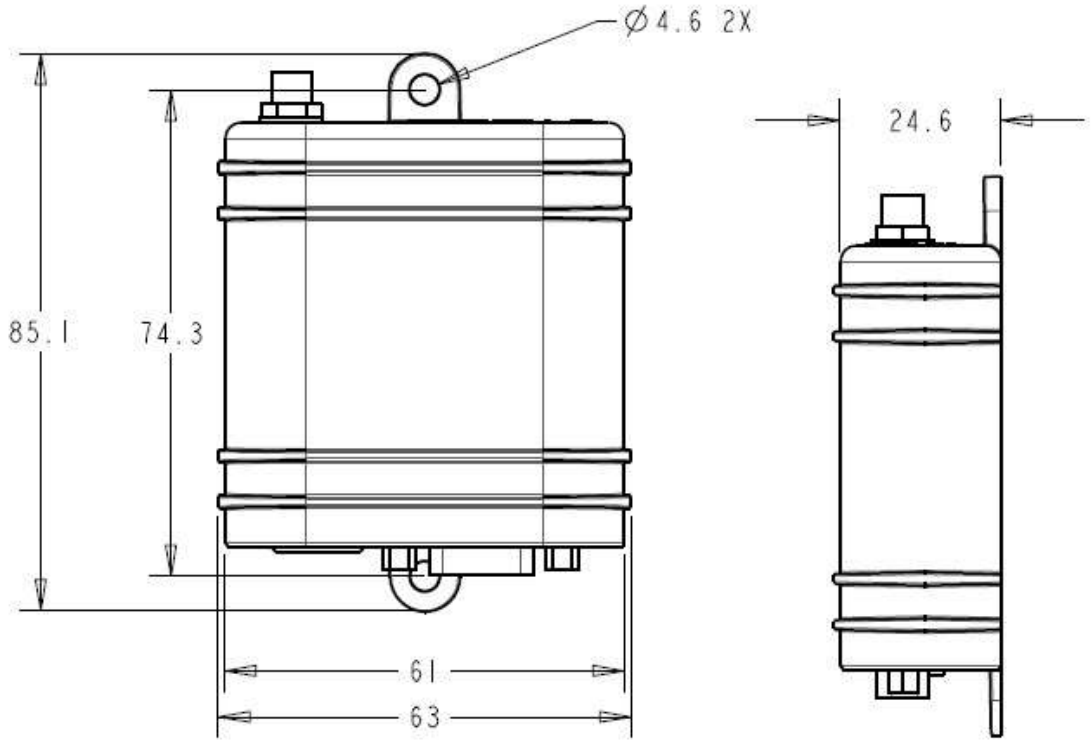


Figure 7 - Mounting Dimensions

3 Firmware Upgrade

To see if there is updated firmware for the SA-G+, please visit:

http://www.enfora.com > support

You will need to obtain a login to the website from Enfora Tech Support in order to download the firmware.

During the firmware upgrade, the LED's will display the following behavior:

	SIM Installed (registered with network)	SIM Not Installed (registering with network, LED is on)	SIM Not Installed (registering with network, LED is off)
REG LED Behavior	Solid		
		Solid	
			Off

Table 3 REG LED Behavior During Firmware Upgrade

4 Configure the Computer and Verify Correct Communications

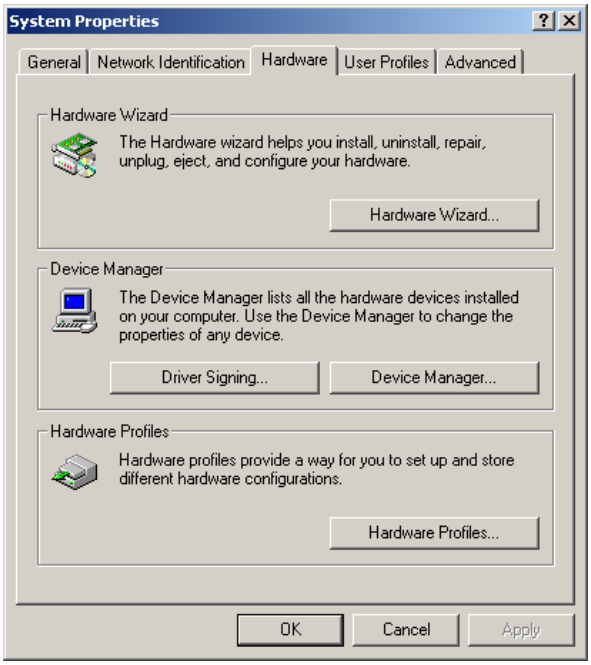
Note: The following examples use Windows 2000 and HyperTerminal. Any Terminal program should work, using the parameters in Step 1

1. Default Serial Parameters
   - Autobaud (power up message at115200 baud rate)
   - 8 data bits
   - 1 stop bit
   - No Parity
   - Flow Control = None

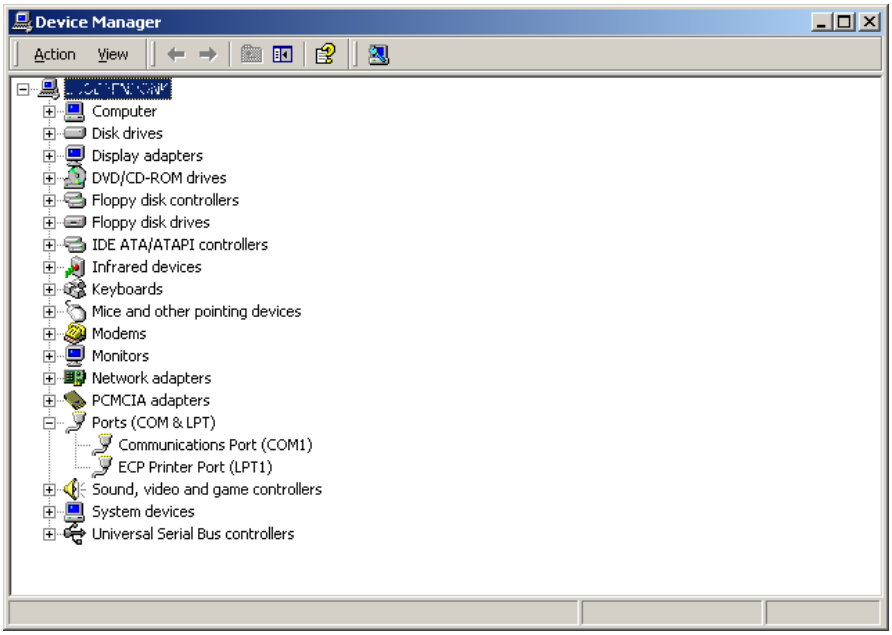
2. Determine which Com port to use
   - On older computers, there is usually a built in Com port. This is normally Com1.
   - If you are using a USB-to-serial converter, you will need to determine which Com port it is installed on.

Note: If the USB-to-serial converter has not been installed, install the necessary drivers per the instruction supplied by your USB-to-Serial device. Then leave the device unplugged.

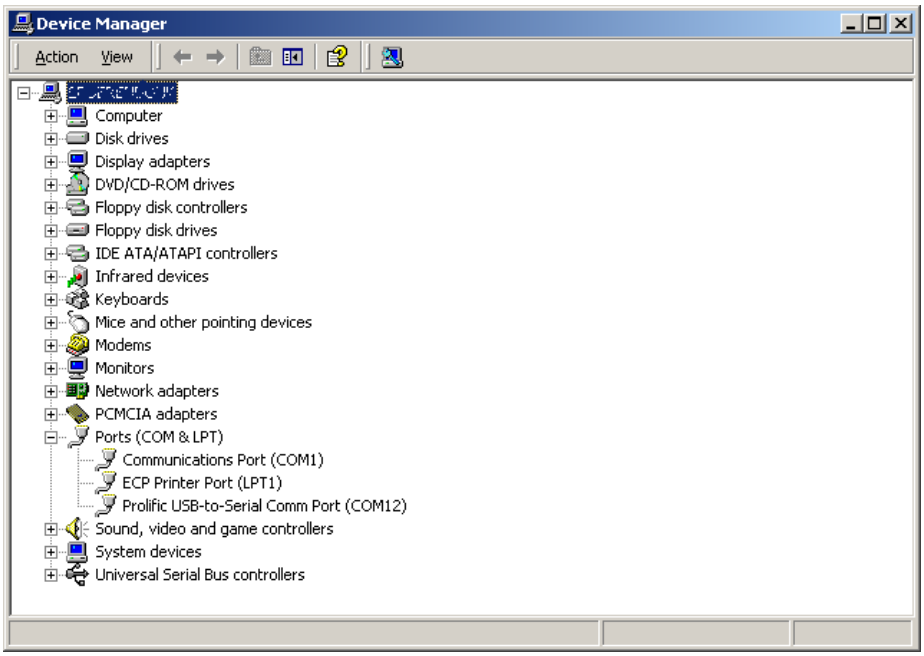
   - Open up the System Properties window. This is done through the Control Panel > System or right-click on My Computer and select Properties. Select the Hardware Tab. On Windows 2000 the screen looks like the following:



a. Select the Device Manager button. Expand the Ports section by selecting the + sign beside Ports. Your window should look like the following:



b. Plug in the USB-to-Serial converter. The window should change to show the USB-to-Serial converter installed.



c. Most devices will show the Com port next to the device name. Record this number. In this case, it is COM12.

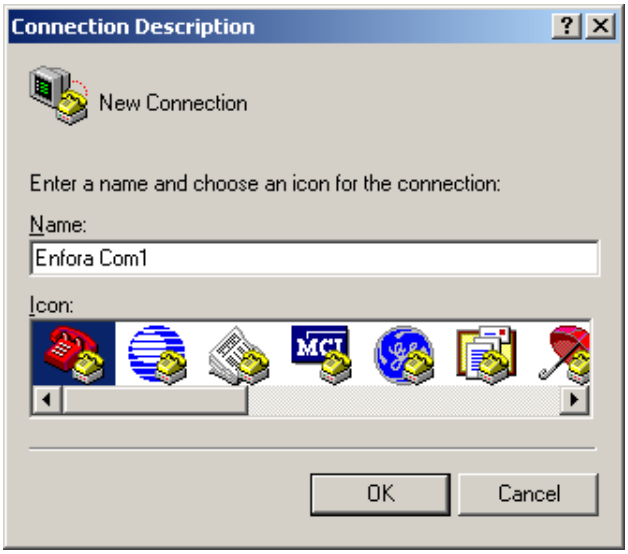
Note: Make sure there is no "!" or "X" next to the USB device. If you see an "!" or an "X," the device is not properly installed and will not work

3. Start HyperTerminal

On Windows 2000, click on:

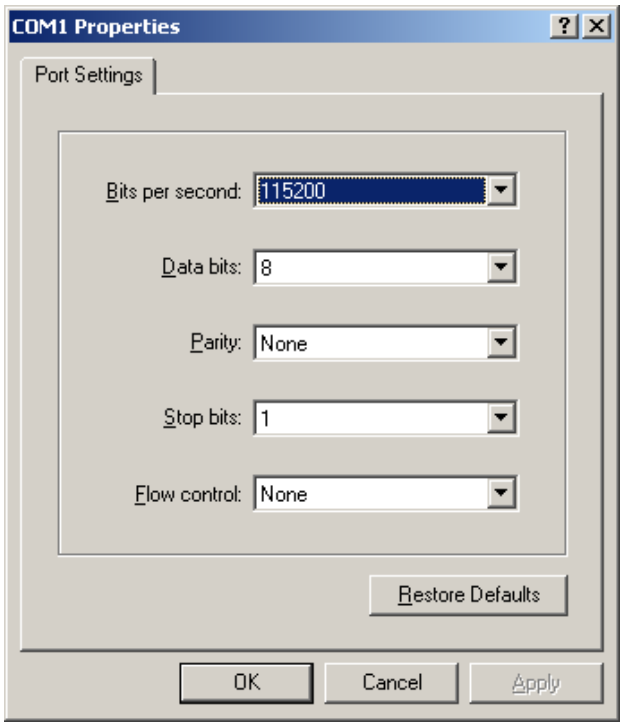
Start>Programs>Accessories>Communications>HyperTerminal

d. You should see the following screen.

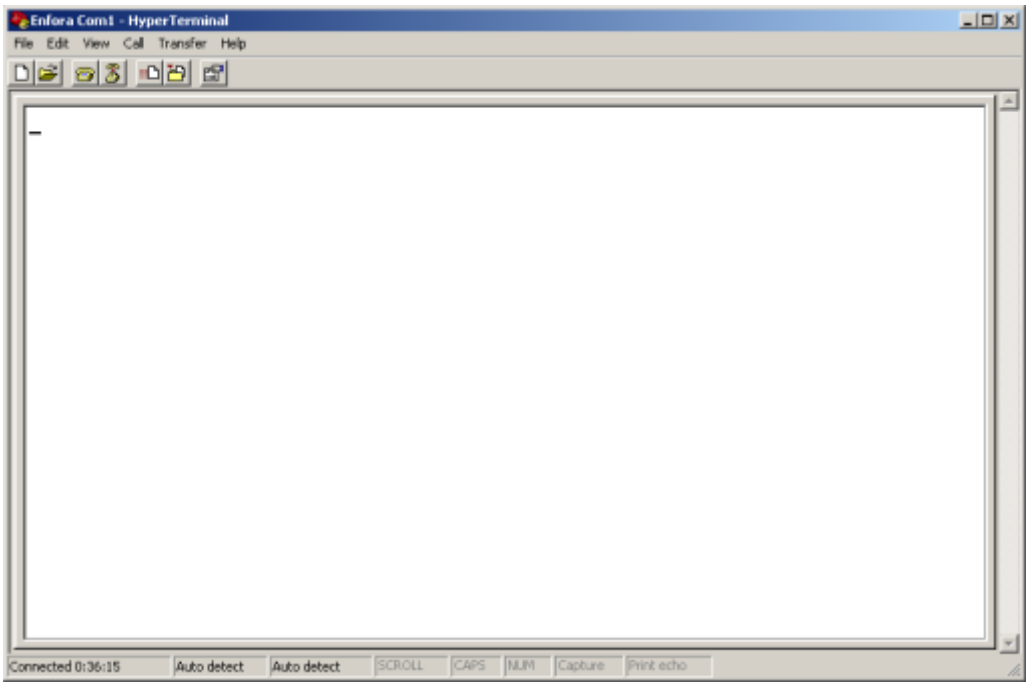


e. Enter a name for the Connection. In this example, the Name is Enfora Com1.
f. Click OK.
g. The next window that will appear is the Connect To window.

h. Change the Connect Using setting to the Com port that was determined in Step B.
i. Click OK.
j. The next window is the Port Settings window.



k. Make sure the settings match the example.
l. Click OK.
m. Now the Main Program Window should appear.



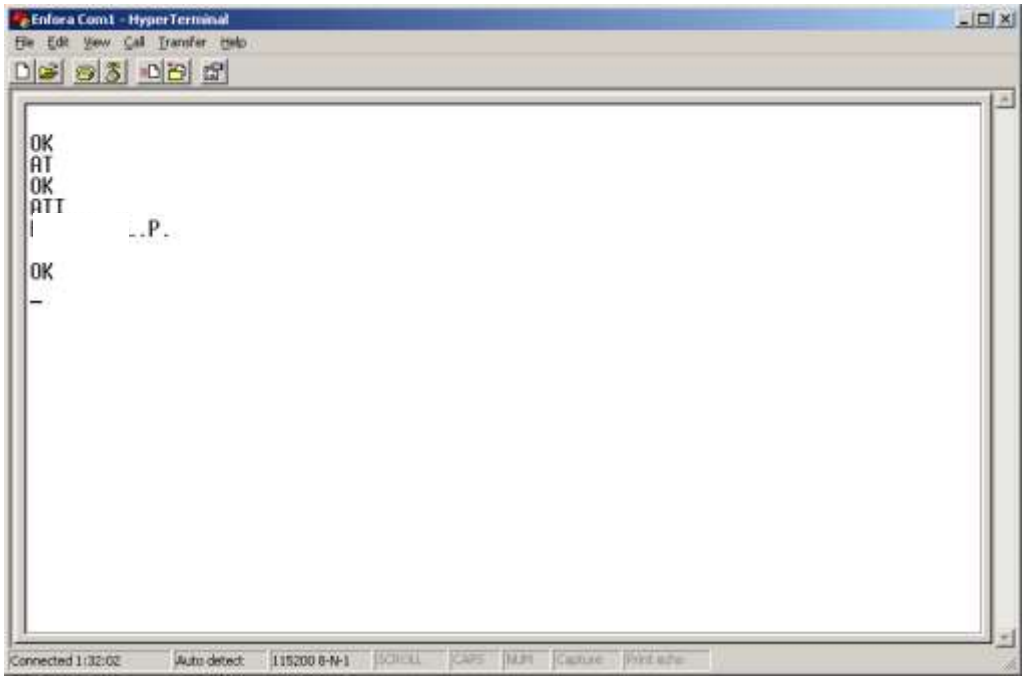
5 Configure the SA-G+ to talk to the Enfora Server

1. Connect and verify Serial connectivity with the Enfora SA-G+.
    a. Connect the PC serial connector to the SA-G+ serial port.

Note: In the following instructions, <CR> means using the Enter Key on the keyboard

With HyperTerminal open, hit the Enter key. The SA-G+ should respond with OK. If you do not see this response, double-check your connections.

b. Type AT<CR>. The SA-G+ should respond with OK. If you do not see the letters AT, send the following command to the SA-G+: ATE1<CR>
c. Type ATI<CR>. The SA-G+ should respond with Enfora, Inc. If you get any different response, you are not connected to the Enfora SA-G+.



2. Configure the SA-G+ to communicate with the Enfora Test Server.
    a. The following information will need to be obtained from the SIM provider. Please refer to GSM0000AN019 – Network Configuration Worksheet.
    b. APN
    c. Username and password (If necessary.)

Note: : In the following examples, the SIM is for Cingular.

APN = isp.cingular

Username = ISP@CINGULARGPRS.COM

Password = CINGULAR1

    d. Reset the SA-G+ to factory defaults:

To restore the SA-G+ to factory defaults, send the following command:

`AT&F<CR>`

To write current configuration to memory, send the following command:

`AT&W<CR>`

To reset the SA-G+, send the following command:

`AT$RESET<CR>`

e. Configure the SA-G+ to Access the GPRS network.

To inform the SA-G+ of the proper APN, send the following command:

`AT+CGDCONT=1,"IP","apn"<CR> (substitute the letters apn for the supplied apn.)`

To inform the SA-G+ of the proper username and password, (if necessary) send the following command:

`AT%CGPCO=1,"username,password"<CR> (substitute the correct username and password)`

To configure the SA-G+ to enable auto GPRS registration, send the following command:

AT$AREG=2<CR>

Store the current configuration to memory, send the following command:

AT&W<CR>

Reset the SA-G+ by removing power or sending the command.

AT$RESET<CR>.

Verify GSM status by sending the following command:

AT+CREG?<CR>

If everything is working, you should receive one of two responses:

+CREG: 0,1 (GSM registered to home network)

OR

+CREG: 0,5 (GSM registered roaming.)

Verify GPRS status by sending the following command:

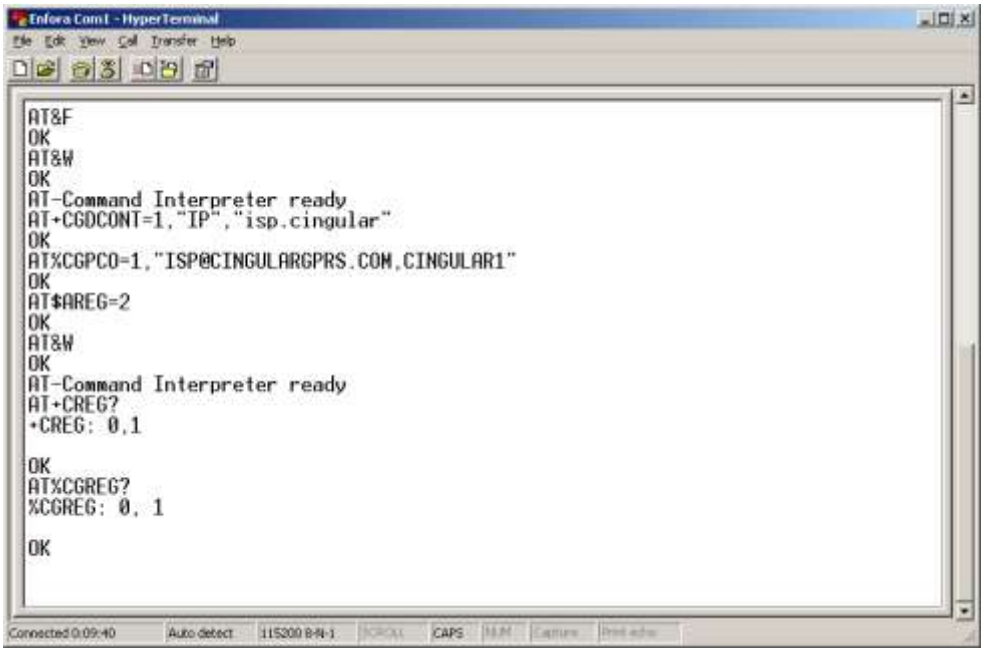
AT%CGREG?<CR>

If everything is working, you should receive one of two responses:

%CGREG: 0,1 (GPRS registered to home network)

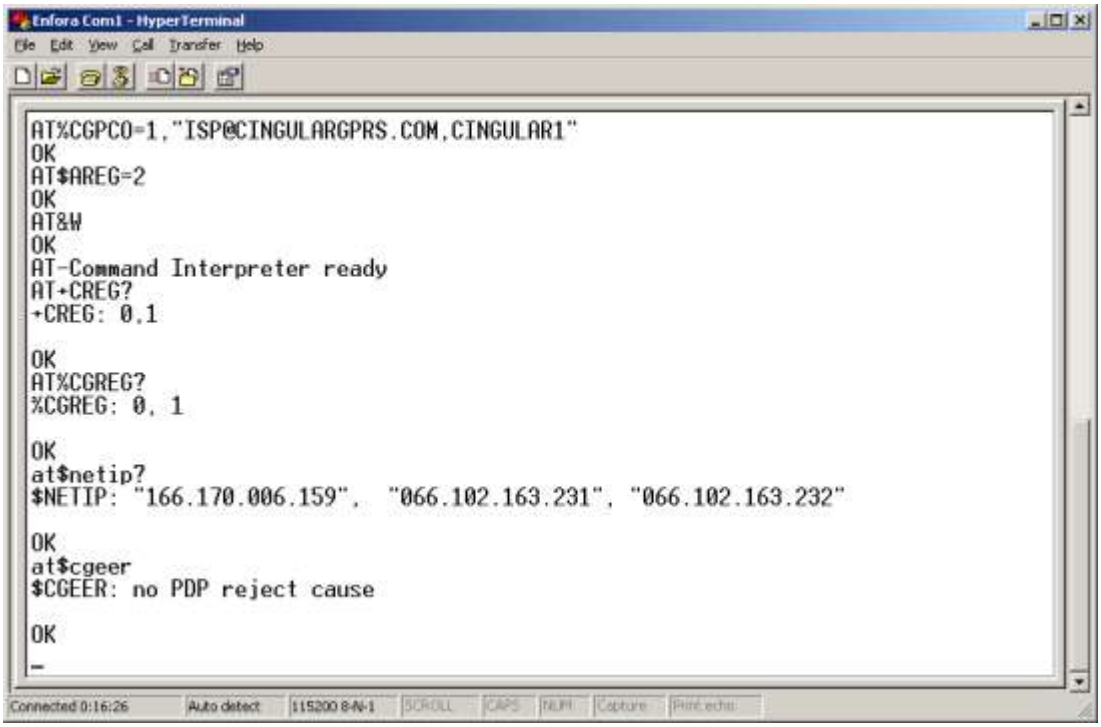
Or

%CGREG: 0,5 (GPRS registered roaming.)



Verify GPRS activation by sending the following command: AT$NETIP?<CR>

If the response is non-zero, then everything is working. Skip to Step 10.



If AT$NETIP returns all zeros, send the following command: AT$CGEER<CR>

There are three common responses:

- $CGEER: no PDP reject cause (Everything should be working OK)
- $CGEER: requested service option not subscribed (APN is incorrect or SIM has not been enabled for data mode.)
- $CGEER: user authentication failed (username and/or password is incorrect.)
-

Configure the SA-G+ to access the Enfora Server.

Note: To configure the SA-G+ for server interoperability, several things have to be addressed.

- Most GPRS configurations are Mobile Originate only. The mobile SA-G+ must initiate a conversation with a remote server before the remote server can talk to the SA-G+.
- IP addresses are dynamically assigned and can change.
- Some IP addresses are NAT and are non-routable IP addresses.

These issues are addressed with the following configuration commands.

The examples will use the following information:

- Modem ID/name = “SAG_Test”
- Remote Server DNS address = apitest.enfora.com
- Remote Server IP port = 1721

Give the SA-G+ a unique name.

- Send the following command: AT$MDMID=”SAG_Test” This command, combined with the wakeup message, will allow the server to associate a Public IP address with a specific SA-G+ and create a window of opportunity where the server can send commands to the SA-G+

Configure the SA-G+ to talk with a specific server.

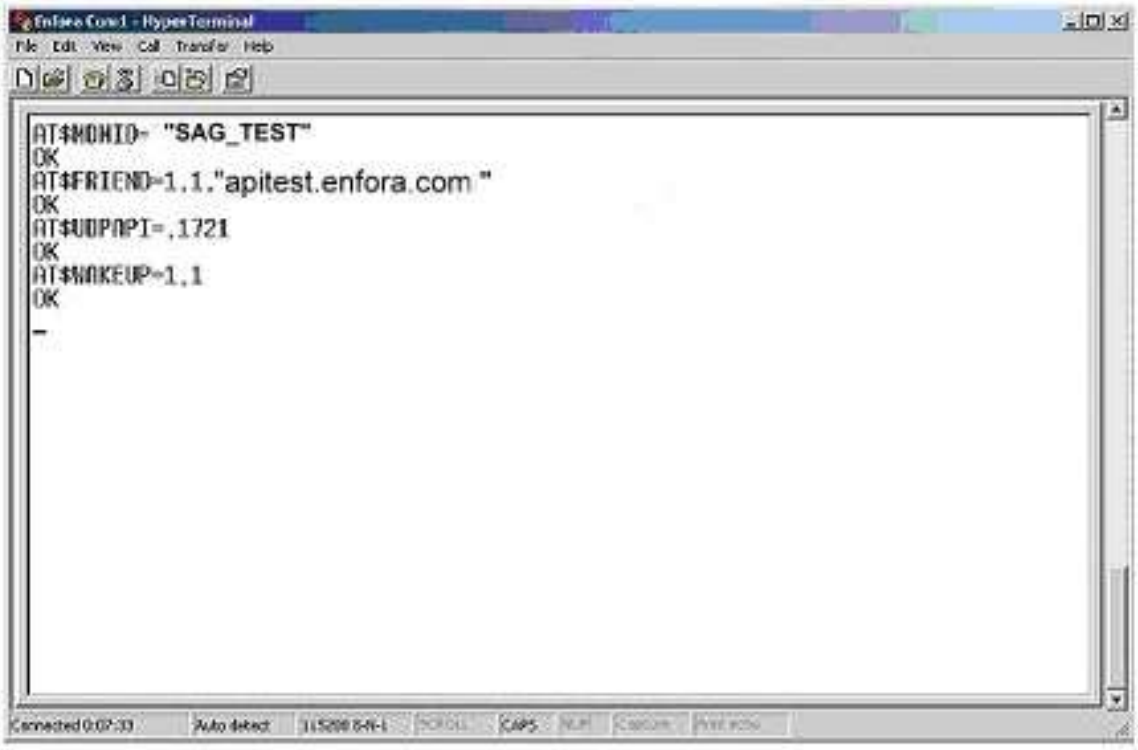
- Send the following command: AT$FRIEND=1,1,"apitest.enfora.com"

Set the port number

- Send the following command: AT$UDPAPI=,1721

Enable periodic messages (wakeup) to be sent to the server every 60 seconds

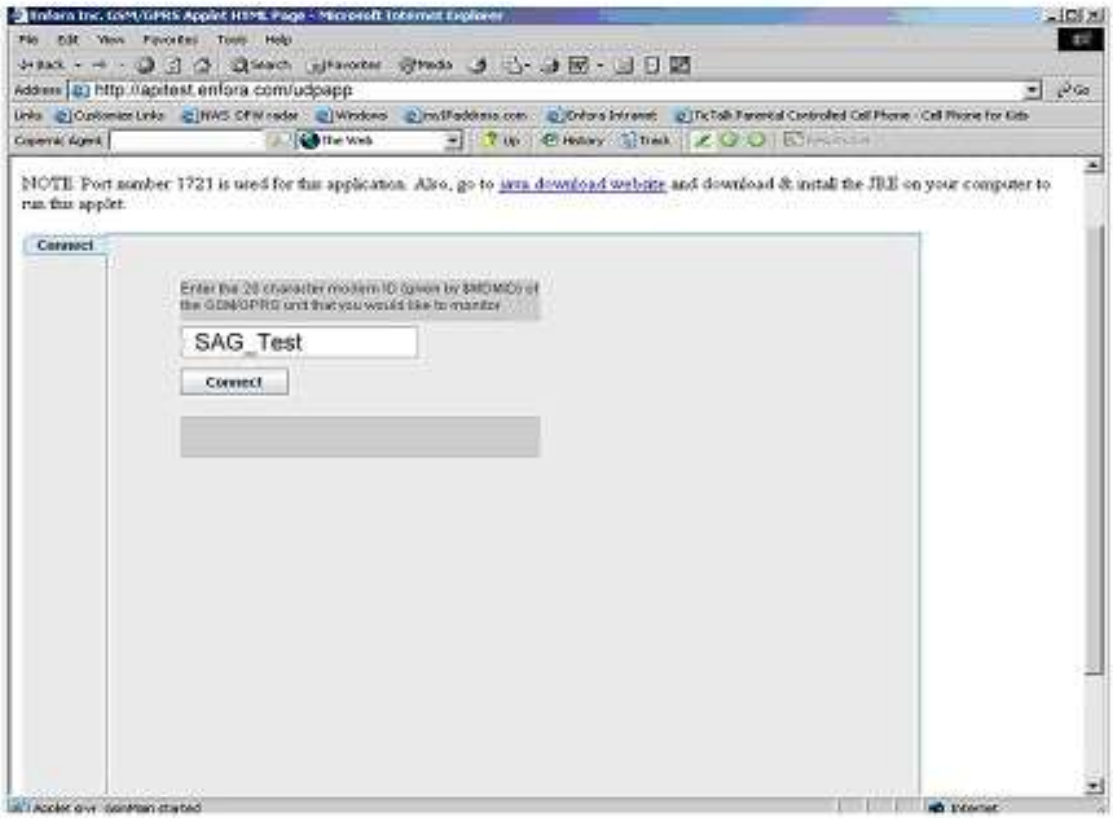
- Send the following command: AT$WAKEUP=1,1

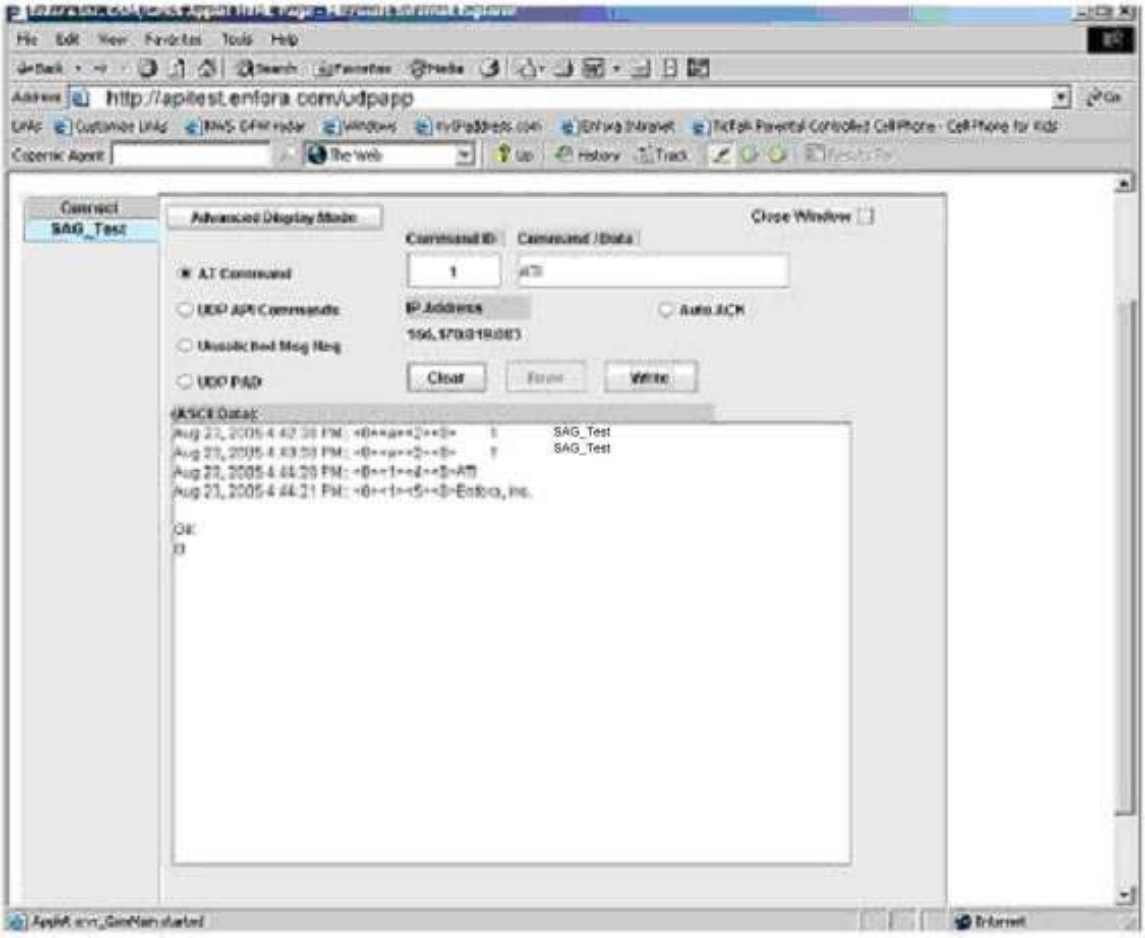


6 Verifying Server Connectivity

Note: For the following tests, Java Runtime must be installed on the computer. (To install Java Runtime, please visit the Java website here: http://www.java.com/en/download/manual.jsp)

1. Start Internet Explorer and enter the following URL: http://apitest.enfora.com/udpapp/
2. Enter the name used in the MDMID command in the box. Select Connect.
3. Select the tab with the SA-G+ name. Within approximately 60 seconds the wakeup messages should be seen in the window.





4. Enter the following command in the command/ data block: ATI
5. Select Write.
6. Verify that you see the following the SA-G+ response with Enfora, Inc. If so, you have successfully configured the SA-G+ to talk with the server.

7 Technical Support

For problems stemming from your network access, contact your GSM/GPRS carrier service. For technical support and customer service dealing with the modem itself, contact the company where you purchased the product. If you purchased the product directly from Enfora, visit the Support and Resources page on the Enfora website: http://www.enfora.com.

8 Appendix A – SA-G+ Current Measurements (Typical)

8.1 GSM

		GSM			
			Current, mA		
Band	**Sleep Mode**	**Min**	**Avg**	**Max**	**Peak**
GSM850	0	47.91	140.16	824.98	838.66
	1	37.25	129.82	824.22	841.23
	2	46.29	138.43	827.59	839.94
	3	47.71	139.8	828.11	840.8
	4	37.16	130.77	825.62	842.51
EDS900	0	48.72	138.05	797.63	811.48
	1	38.11	127.59	796.97	817.69
	2	47.04	136.59	801.84	815.12
	3	48.27	138.3	802.69	815.76
	4	38.15	127.59	799.23	817.05
DCS1800	0	44.61	114.99	588.71	599.63
	1	33.96	104.85	587.59	602.63
	2	42.77	113.44	590.91	600.92
	3	44.65	114.52	590.89	601.13
	4	34.43	105.08	588.17	602.42
PCS1900	0	67.46	112.93	579.61	589.58
	1	33.09	105.18	577.21	592.57
	2	68.59	114.16	580.66	591.29
	3	67.78	112.77	581.09	591.29
	4	32.89	104.64	579.14	593.64

GSM Idle

Band	Sleep Mode	DRX Mode	Current, mA Min	Avg	Max	Peak
GSM850	0	5	35.3	37.66	75.36	76
	1	5	24.12	27.07	59.39	75.58
	2	5	29.3	37.71	69.37	76.43
	3	5	35.7	37.57	75.58	76
	4	5	23.91	26.88	59.36	80.5
EDS900	0	5	35.69	37.77	75.77	81.35
	1	5	23.69	26.96	74.72	75.15
	2	5	35.77	37.5	75.55	82
	3	5	35.99	37.42	79.21	81.57
	4	5	24.98	26.78	56.13	90.55
DCS1800	0	2	35.48	37.92	87.35	89.91
	1	2	23.91	27.18	90.98	91.2
	2	2	33.85	37.59	84.35	87.77
	3	2	36.76	37.36	85.21	89.06
	4	2	24.96	26.64	91.62	92.48
PCS1900	0	2	34.69	38.09	77.07	90.55
	1	2	23.88	27.37	73.61	93.76
	2	2	36.71	37.69	88.41	89.91
	3	2	36.12	37.5	88.41	90.34
	4	2	24.97	26.83	76.22	93.12

GSM					
Deep sleep alterations		**Current, mA**			
		Min	**Avg**	**Max**	**Peak**
GSM850	0	47.53	139.86	825.57	839.52
	1	36.9	129.43	823.07	837.38
	2	45.78	138.62	828.3	841.66
	3	47.1	139.82	830.03	843.37
	4	36.73	129.8	825.26	839.09
	Idle				
GSM850	0	35.39	37.49	75.36	75.58
	1	23.71	26.66	68.94	78.79
	2	22.5	24.68	75.15	75.79
	3	15.87	20.04	59.62	75.79
	4	16.3	18.87	65.95	77.29

Idle Current	Configuration
17.7mA	sleep = 4, cfun = 0, events off, Serial cable connected, status monitor wakeup timer set to 5
8.4mA	sleep = 4, cfun = 0, events off, Serial cable disconnected, status monitor wakeup timer set to 5

8.2 GPRS

		GPRS			
			Current, mA		
Band	**Sleep Mode**	**Min**	**Avg**	**Max**	**Peak**
GSM850	0	43.59	131.91	822.8	836.74
	1	33.53	122.2	826.64	845.72
	2	41.79	130.74	828.15	840.59
	3	43.17	132.1	828.09	840.59
	4	33.27	122.72	828.62	845.72
EDS900	0	44.26	130.58	800.34	812.98
	1	32.57	119.95	802.68	819.19
	2	42.39	128.75	802.67	814.91
	3	44	130.55	803.84	815.55
	4	33.91	120.85	804.63	821.54
DCS1800	0	42.93	108.12	585.95	596
	1	31.11	97.75	583.51	597.92
	2	41.44	107.36	586.14	595.14
	3	42.65	108.17	586.62	596.42
	4	30.77	97.95	585.46	598.57
PCS1900	0	41.79	106.44	580.2	589.58
	1	30.57	99.13	579.08	593
	2	41.96	107.38	581.89	592.36
	3	41.38	106.23	582.08	590.65
	4	30.66	98.3	580.77	594.28

GPRS Idle

			Current, mA			
Band	**Sleep Mode**	**DRX Mode**	**Min**	**Avg**	**Max**	**Peak**
GSM850	0	2	33.63	38.2	75.79	76.65
	1	2	24.07	27.78	72.79	82
	2	2	35.25	38.23	75.79	76.43
	3	2	35.7	38.15	75.79	76.43
	4	2	24.32	27.61	60.03	80.28
EDS900	0	2	35.29	38.29	79.43	84.78
	1	2	24.11	27.67	74.72	85.63
	2	2	35.5	38.05	79.21	82.64
	3	2	36.72	37.97	79.21	84.35
	4	2	24.98	27.49	58.38	88.84
DCS1800	0	2	35.49	38.02	78.14	89.7
	1	2	25.2	27.32	76	88.41
	2	2	34.7	37.77	86.92	89.27
	3	2	34.6	37.66	84.99	89.06
	4	2	24.96	27.13	75.58	92.91
PCS1900	0	2	35.5	38.29	89.7	90.55
	1	2	23.8	27.8	75.79	90.13
	2	2	32.56	38.24	88.41	90.55
	3	2	35.5	38.11	79.86	90.55
	4	2	24.09	27.63	76.22	93.76