GSM865CF Plug-In Terminus GPS Demonstration Guide

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DISCLAIMER

GSM865CF Plug-In Terminus GPS Demonstration

This document includes all information needed to successfully alter, compile, download and run the GSM865CF Plug-In Terminus GPS demonstration. The guidelines established in this document are based on mainstream programs and equipment. You may need to alter the demonstration, as well as configure your server to match your specific settings.

Relevant Telit documentation for the application includes:
- Telit GSM AT Commands Reference Guide
- Telit Easy Script in Python User Guide
- Telit GE865 Software User Guide

All can be accessed via Telit's website at www.telit.com

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GSM865CF Plug-In Terminus GPS Demonstration Requirements:
1. GSM865CF V1.1 Evaluation Kit
2. Personal Computer (The Development Computer)
    2.1 Windows OS (WINXP, 2000)
    2.2 A Serial Port (DB9 Connector)
    2.3 Pythonwin IDE Installed
    2.4 VisualGPS Installed (Optional)
3. Personal Computer (The Customer Server)
    3.1. Windows OS (WINXP, 2000 or NT4)
    3.2. Connected to Internet
    3.3. Firewall to Allow TCP/IP Socket Connections to PORT 5556
    3.4. Netcat Installed

1 Getting Started – The Development Computer

1.1 Installing Terminus GPS Demonstration

Unzip the contents of the GSM865CF Plug-In Terminus GPS Demo.zip file to a local drive on the development computer.

C:\GSM865CF Plug-In Terminus GPS Demo

1.2 Installing Pythonwin IDE

Execute the TelitPy1.5.2+_v4.1.exe file and follow setup instructions.

File: C:\GSM865CF Plug-In Terminus GPS Demo\Pythonwin IDE\TelitPy1.5.2+_v4.1.exe

Cancel when prompted for COM Port selection.

Copy the following file into the Pythonwin installation directory.

   File: C:\GSM865CF Plug-In Terminus GPS Demo\Pythonwin IDE\choice.py Installation Directory: C:\Program Files\Python\

Select yes when prompted to overwrite existing choice.py file.

1.3 Installing VisualGPS

Execute the VisualGPSInstall.exe file and follow setup instructions.

   File: C:\GSM865CF Plug-In Terminus GPS Demo\VisualGPS\VisualGPSInstall.exe

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1.4 Customizing Demonstration Properties

In order to evaluate the Terminus GPS demonstration, the customer must customize the following properties in the GSM865CF_GPS.py file.

Python Script

```
##--------------------------------------------------------------------------------------------------
## Application Specific Configuration
##--------------------------------------------------------------------------------------------------


## BAND
## Please refer to AT Command guide for AT#BND
## If Terminal used in North America (BAND = '3')
myApp.BAND = '3'

## NETWORK
## If Terminal used on ATT / Cingular in North America (NETWORK = 'ATT')
## Else (NETWORK = 'GSM')
myApp.NETWORK = 'ATT'

## APN
## Gateway Address for GPRS traffic
## This setting is GSM Provider and possible customer specific when a VPN is used
## This demo is defaulted with proxy that is used for ATT wireless (Blue Network)
## You MUST obtain the APN setting for your GSM account. Please call GSM provider!
MyApp.APN = 'proxy'

## IP
## IP address of server that will interact with this GPS demonstration
## Address in this example is not operational for customer evaluation.
## Customer must have a server setup to interact with this demo.
myApp.IP = 'xxx.xxx.xxx.xxx'

## PORT
## PORT number of server that will interact with this GPS demonstration.
## PORT number in this example is not operational for customer evaluation.
## Customer must have a server setup to interact with this demo.
myApp.PORT = '5556'

## PROTOCOL
## If using TCPIP (PROTOCOL = 'TCPIP')
## Else leave blank (PROTOCOL = '')
myApp.PROTOCOL = 'TCPIP'

## INTERVAL
## How many seconds the demo will wait before sending new GPS data to server.
## In this demo, GPS data will be sent every 60 seconds (INTERVAL = '60')
myApp.INTERVAL = '60'
```

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1.5 Compiling Python Scripts

Open the directory that contains the GSM865CF Plug-In Terminus GPS demonstration scripts with explorer.exe.

Right click on all the python scripts and select compile.
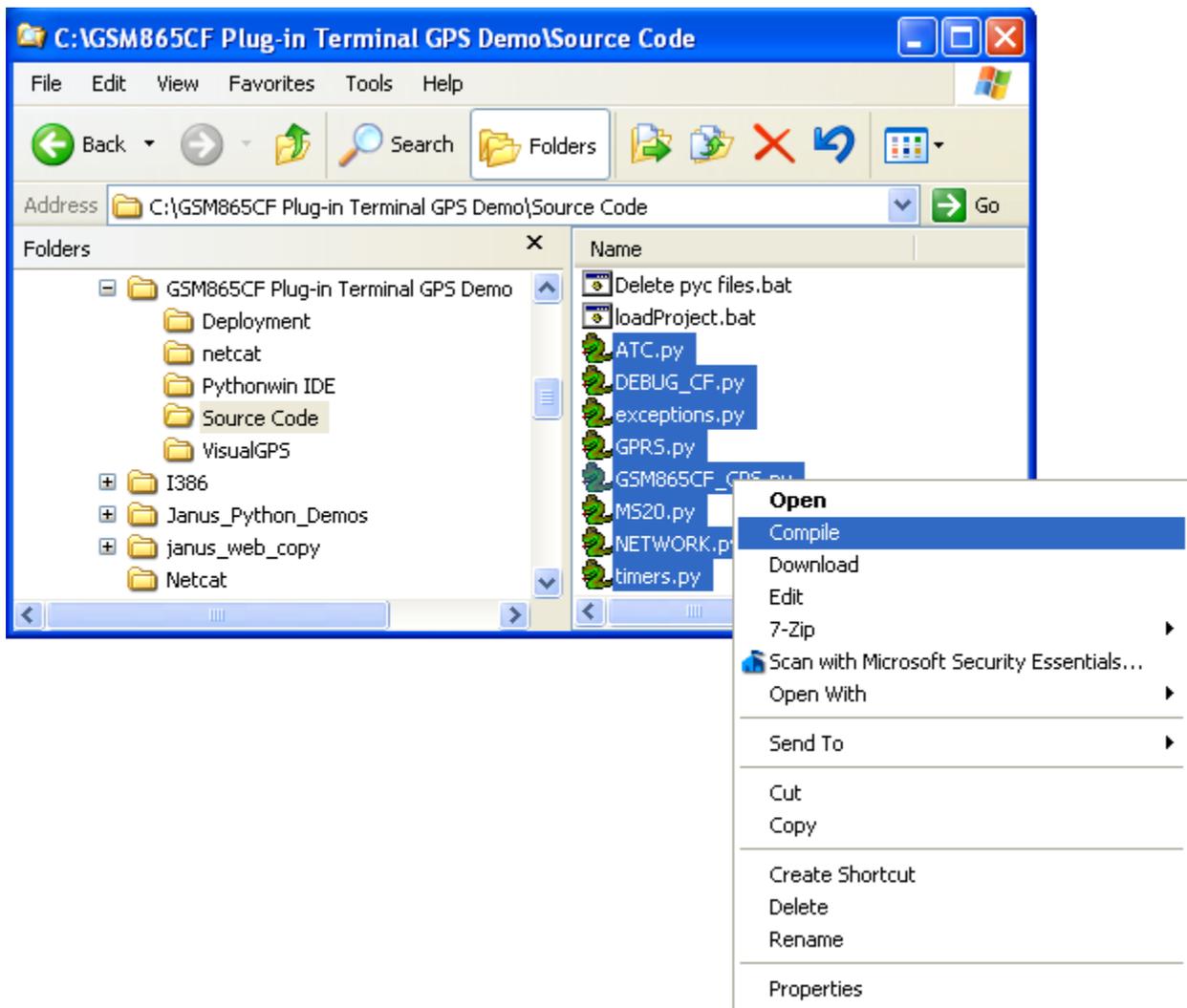
All files should compile and additional files should exist with *.pyo extension.

Move all .pyo files to the directory named Deployment

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2 Getting Started – GSM865CF V1.1 Evaluation Kit Setup

2.1 GSM865CF Plug-In Terminus Installation

Align GSM865CF Plug-In Terminus pins to evaluation board socket. Insert GSM865CF Plug-In Terminus into the evaluation board socket applying even force to both rows of pins.

2.2 RF Patch Cables Installation (Janus Part # MC-0315-G)

Two RF patch cables are supplied in the GSM865CF V1.1 evaluation kit.

Install the first RF patch cable from GSM865CF P5 to P15 of the evaluation board.

Install the second RF patch cable from GSM865CF P4 to P14 of the evaluation board.

2.3 GSM Antenna Installation (Janus Part # ANT-0003)

Attach GSM antenna to P16 of the evaluation board.

2.4 GPS Antenna Installation (Janus Part # ANT-0039)

Attach GPS antenna to P17 of the evaluation board.

2.5 Jumper Installation (Janus Part # YT-193)

Attach jumper shunt across Pin 1 and 2 of J1 of the evaluation board.

2.6 Serial Cable Connections (Janus Part # MC-0203 & MC-0269)

The GSM865CF Plug-In Terminus GPS demonstration requires only a single serial cable to upload Python scripts and view debug messages when running. With an additional serial cable you can monitor NMEA GPS sentences while running the demo. VisualGPS will allow you to analyze the GPS sentences in a graphical display.

A single RS-232 is included in the evaluation kit. You will need to get additional serial cables if you would like to monitor the NAVSYNC GPS or TRACE ports during evaluation.

Connect the supplied RS-232 cable between the AT COMMAND port (P8) of the evaluation board and a serial port of your development PC. If your development PC doesn't have a built-in serial port then use the supplied USB to serial converter.

2.7 Power Supply Connection (Janus Part # MC-0159)

The supplied power supply connects to the barrel connector of the Plug-In Terminus evaluation board. Leave the AC adapter unplugged at this time.

2.8 Configured Evaluation Board

3 Getting Started – The Server Computer
3.1 Installing Netcat on the Server Computer

Copy the directory Netcat and all files to the following directory on the server computer. C:\netcat.

Open the command prompt.
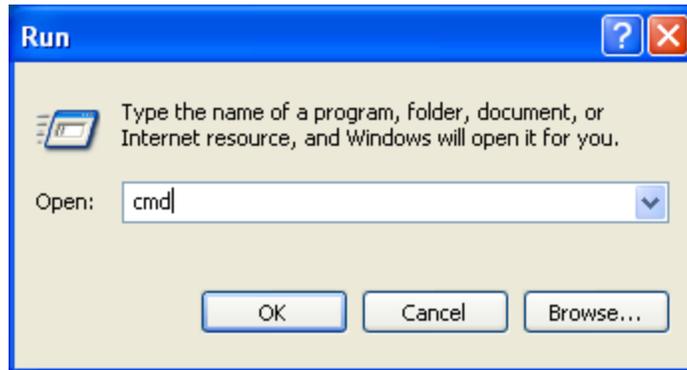
Execute the following command to start Netcat listening for incoming TCP/IP connection.
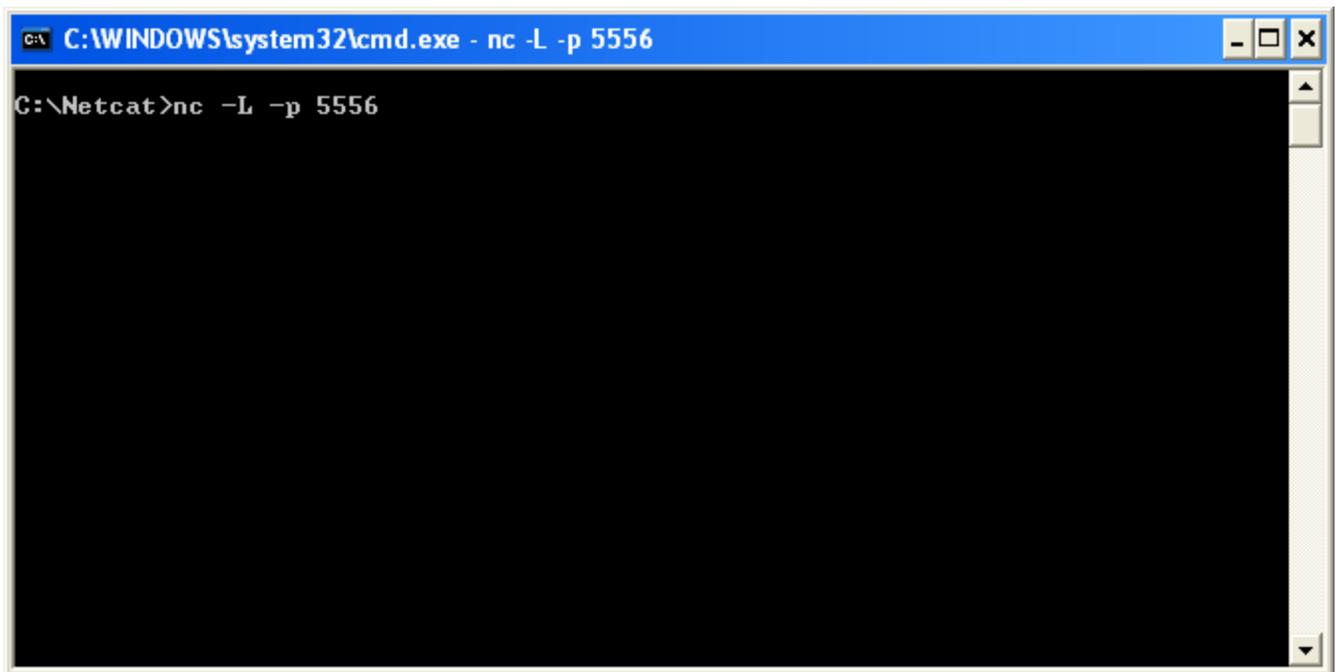
Note: The server computer must be connected to the internet and able to except TCP/IP socket connections to the PORT defined in the GSM865CF_ GPS.py script. Please make sure the firewall is configured to allow this type of network traffic. If behind a wireless router you will need to specify routes to the server computer. Please call your IT professional to make sure your computer and network has the correct configuration for this. Janus cannot help you with your network settings.

4 Getting Started – Running the Demonstration
4.1 Downloading Python Scripts to GSM865CF Plug-In Terminus

Power the Plug-In Terminus evaluation board by plugging power supply adaptor into an AC outlet.

Open up the Telit COM Port Selection tool from the following location.

   Windows Start Button\All Programs\Telit Python 1.5.2+ Package\Telit COM Port Selection Tool

The MDM emulation COM Port needs to have the PC serial port entered that is connected to the AT command port (P8) of the Plug-In Terminus evaluation board. Once this is selected click OK to save the selection.

Open the directory that contains the compiled GSM865CF Plug-In Terminus GPS demonstration scripts with explorer.exe.

Right click download for each pyo file in the deployment directory.
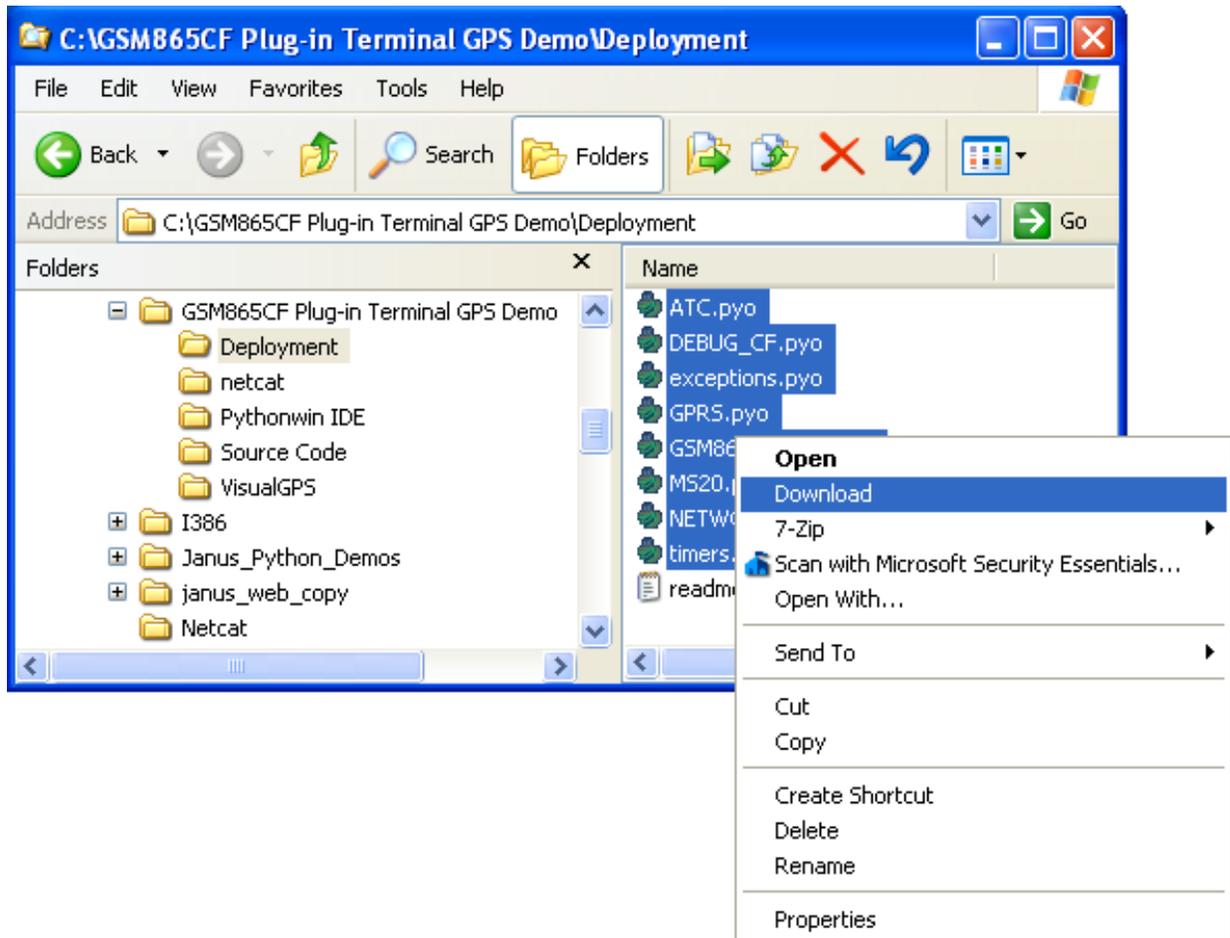
Note: This step will fail if the PC serial port configured with the Telit Com Port Selection tool is open by another application or the incorrect PC serial port is configured.

4.2 Enable GPS Demonstration to Execute on Power On

Open Windows Hyper-Terminal and create a new connection. Select the serial port of the development computer that has been selected as the MDM interface in the Telit COM Port Selection tool.

Configure the serial port as follows.
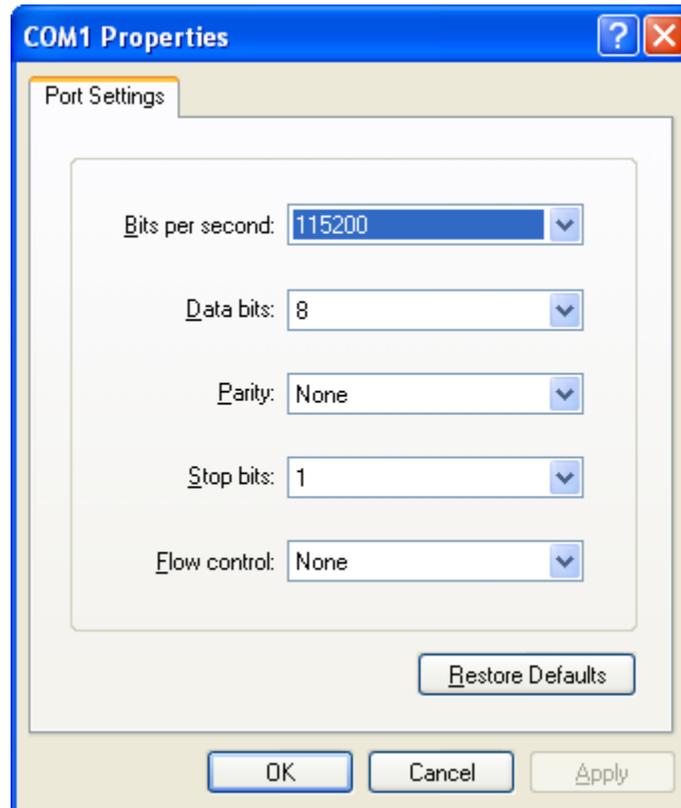
Apply power to the Terminus.

Open the serial port and send the following commands within Hyper-Terminal.

AT#STARTMODESCR=1,10
AT#ESCRIPT="GSM865CF_GPS.pyo"

Plug-In Terminus evaluation boards marked with the following part information have an operation mode that supports connecting the TRACE port with the NAVSYNC GPS port with a switch setting. Slide switch SW1 MODE1 of the evaluation board to the ON position. This setting is required for the GPS demonstration to work.

Plug-In Terminus evaluation board marking: CF_EVAL_PCB001 V3.1

4 Getting Started – Running the Demonstration continued

Early versions of the Plug-In Terminus evaluation boards do not support the funtionality described above. If your evaluation board does not have a version specified on the product label on the board, you have an early version of the evaluation board. In this case, you will need to connect an external Null Modem cable between the TRACE and NAVSYNC serial ports of the evaluation board.

At this point you can press the Cellular Reset button SW4 of the Plug-In Terminus evaluation board to start the GPS demo script.

After approximately ten seconds data should start to appear in Hyper-Terminal.
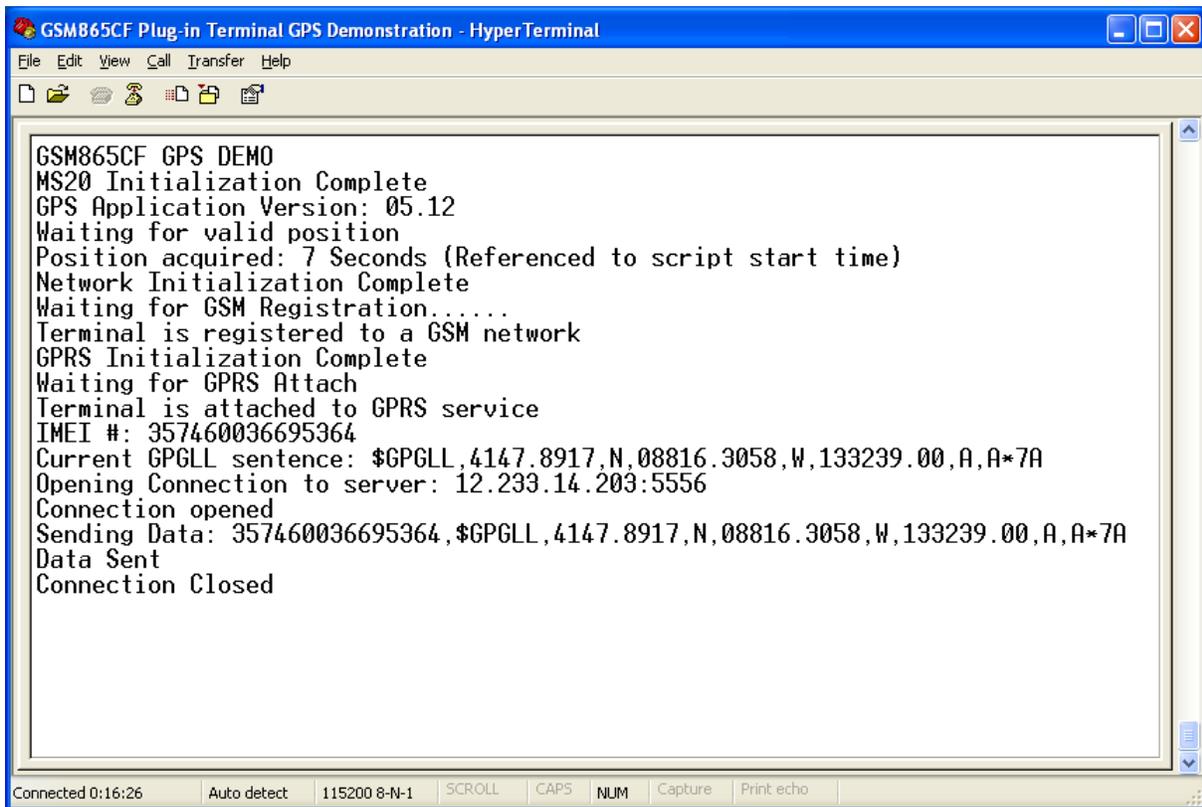
On the server computer you should see data appear in Netcat session.
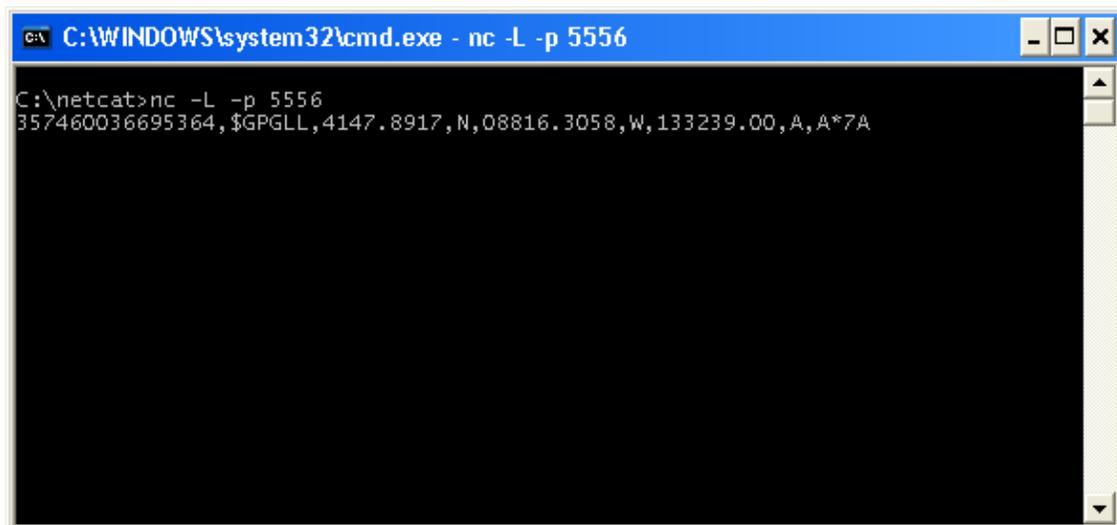
5 Getting Started – Debugging Demonstration
5.1 GPS Not Acquiring Valid Positional Data

The main cause of the GPS not acquiring positional data is that the GPS antenna doesn't have a clear sky view. This is usually the case inside a building.

A good starting point to determine the signal strength at the antenna installation location is to use VisualGPS to view GPS data graphically.

Connect the NAVSYNC serial port (P10) of the evaluation board to a PC serial port. Open VisualGPS application and select "Connect to GPS" menu selection. Select the PC serial port that has the NAVSYNC port connected and a baud rate of 9600.

The Signal Quality Window displays the current satellites seen by the MS20 GPS receiver and the Signal to Noise Ratio of each satellite. If the SNR of two or more satellites are in the mid 40's than GPS Time To First Fix is usually less than a minute after power has been applied to the terminal. If TTFF is taking a long time try moving the GPS antenna to different window locations in your building.
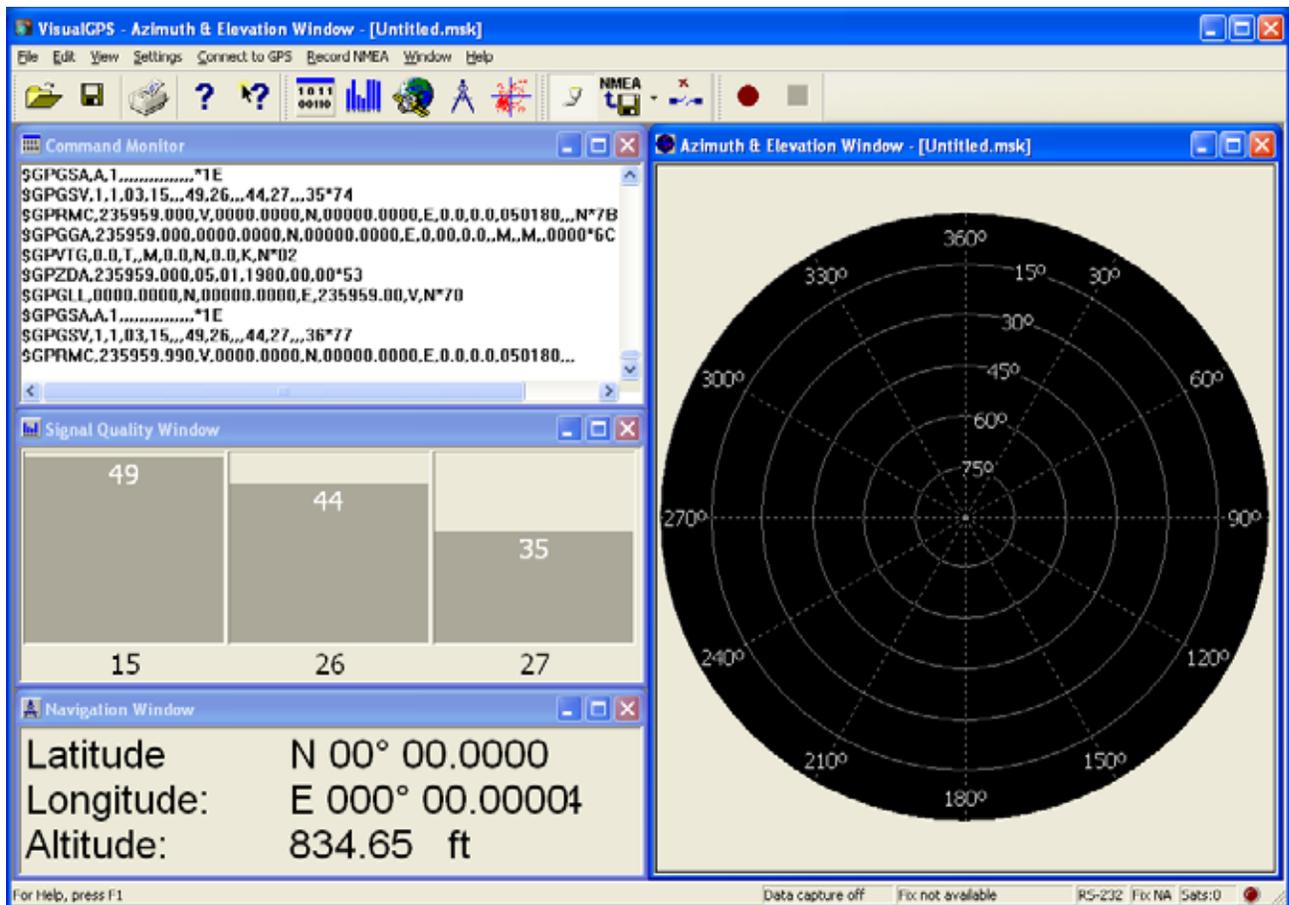
Note: The image above was captured after power up with the following conditions. Antenna within a foot of first floor eastern facing window in a two-story building. TTFF was within a minute for multiple power up cycles.

5 Getting Started – Debugging Demonstration continued
5.2 TCP/IP Socket Connection Not Established to Netcat Server

The following causes of the GSM865CF Plug-In Terminus GPS demonstration not transmitting TCP/IP socket data to server computer are as follows.

Cause	Resolution
SIM card not provisioned for GPRS services	Call your GSM provider and ask for this service.
APN not configured for your GSM provider and or account type.	Call your GSM provider and ask for APN settings for your account type.
Server not connected to Internet.	Call your IT professional. Janus is unable to help configure your network settings.
Server firewall blocking TCP/IP traffic at configured PORT. See GSM865CF_GPS.py file.	Call your IT professional. Janus is unable to help configure your network settings.
Server computer behind a router that doesn't have routes setup to the server.	Call your IT professional. Janus is unable to help configure your network settings.

Appendix A – GSM865CF Plug-in Terminus GPS Demonstration Python Scripts

Python scripts included in the GSM865CF Plug-In Terminus GPS demonstration

Script File Name	Script Description	Script Author
GSM865CF_GPS.py	Main script that will need to be enabled to run on power-on.	Janus RC
ATC.py	Script contains methods and properties that relate to the sending and receiving of AT commands.	Janus RC
DEBUG_CF.py	Script contains methods to communicate demonstration debug messages to an external terminal application.	Janus RC
exceptions.py	Script contains exception-handling methods.Telit	
GPRS.py	Script contains methods to control sending of TCP/IP and UDP packets.	Janus RC
MS20.py	Script contains methods and properties that relate to the sending and receiving of commands to the internal MS20 GPS module.	Janus RC
NETWORK.py	Script contains methods for network setup.	Janus RC
timers.py	Script contains methods and properties to implement timer routine.	Telit

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Revision History

Revision	Revision Date	Note
00	05/26/2011	Released to Public