

MicroStrain® Quick Start Guide

SG-Link® 2.4 GHz Tester Board 350 ohm

- ½ bridge with 350 ohm completion
- ¼ bridge with 350 ohm completion

Part Number 3036-0026 Rev C

Firmware Version 4.9.9 and higher

Software Version 1.4.1 and higher

Revised: 28 January 2008

Welcome

- Thank you for purchasing MicroStrain's SG-Link®. Each SG-Link® starter kit is provided with a Tester Board. The Tester Board provides a precise instrument by which to test the differential input channel and the single ended input channel of the SG-Link® in the field.

Software Installation

- The Tester Board is used in conjunction with Agile-Link™ software and requires no other software.

Hardware Installation

- Determine the bridge configuration of the SG-Link® by reviewing its accompanying certificates and documentation; either Full, Half or Quarter.

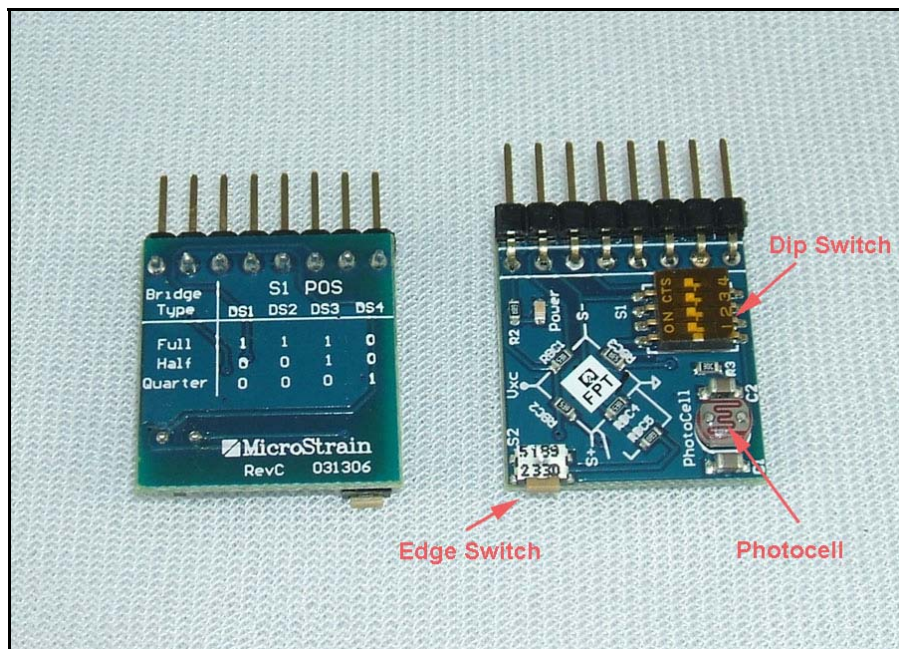


Figure 1

- Set the appropriate dip switch settings for the bridge configuration using the guide (bottom of the Tester Board). **For our example we will use a Full bridge configuration.**
- Set switches 1, 2 and 3 to ON and switch 4 to OFF. As you view **Figure 1**, switches 1, 2 and 3 would be to the left and switch 4 would be to the right.
- Note: The dip switch may come with a brown protective film over its surface; simply peel the film off to access the white levers.
- Turn the SG-Link® power switch off and unplug the battery charger barrel connector to insure internal battery is not being charged.
- Loosen (by turning counterclockwise) the 8 terminal screws in the green Phoenix connector on the SG-Link®.
- Insert the 8 fingers of the Tester Board into the Phoenix connector as shown in **Figure 2**.
- Tighten snugly (but do not over-tighten) the 8 terminal screws.
- Turn the SG-Link® power switch on and observe that the small green LED on the surface of the Tester Board flashes once.

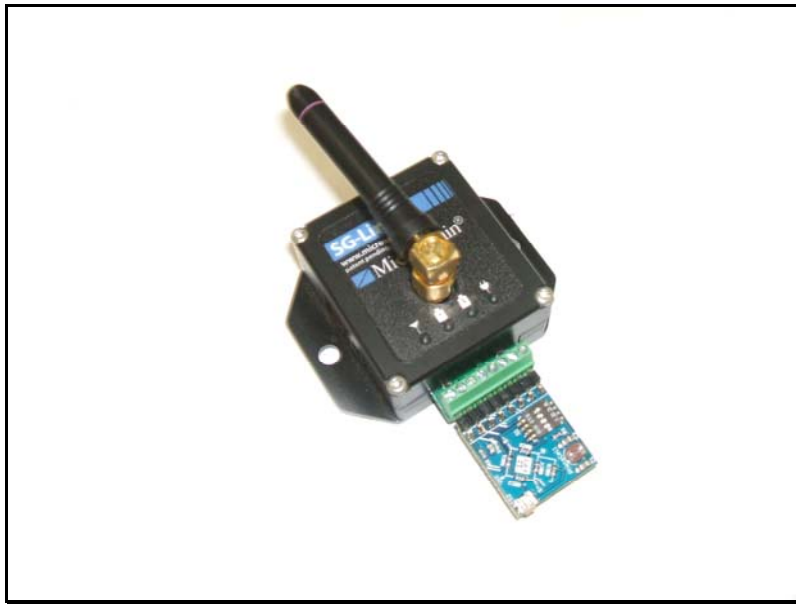


Figure 2

Software Operations

- Launch the Agile-Link™ software and establish communications with the SG-Link® as normal.
- Right-click the node and a drop-down menu will appear.
- Click Configure and the Configuration window will appear.
- Click the Channels tab.
- Enable channels 1 and 4 by checking the checkboxes.
- Set the Hardware Gain to 198.
- Do not set Offset, Label, Mid-scale Balance or Graph Analog Channel as Volts.
- Click Apply.

- Click OK and the Configuration window disappears.
- Right-click the node and a drop-down menu will appear.
- Click Plugins. Click Strain Wizard. The Strain Wizard window will appear.
- Click Test Settings and a message “Node settings successfully tested.” will appear.
- Click Next to move to the next view.
- Click the down arrow on the Bridge Type drop-down box and select Full Bridge.
- Click Next to move to the next view.
- Click Auto-Balance and a message “Auto-balance completed successfully” will appear.
- Click Next to move to the next view.
- Click Use Strain Measurement Wizard.
- Click Next to move to the next view.
- Enter the following values into the text boxes:
 - Number of Active Gauges = 1
 - Gauge Factor = 2.00
 - Gauge Resistance = 350 ohm
 - Shunt Resistance = 499000 ohm
- Click Calibrate and the view will change to the Shunt Calibration Graph.
- Click Calibrate and the SG-Link® will stream momentarily and automatically perform the shunt.
- The resultant graph will appear as exemplified in Figure 3 and a message “To accept calibration, click Accept” will appear.

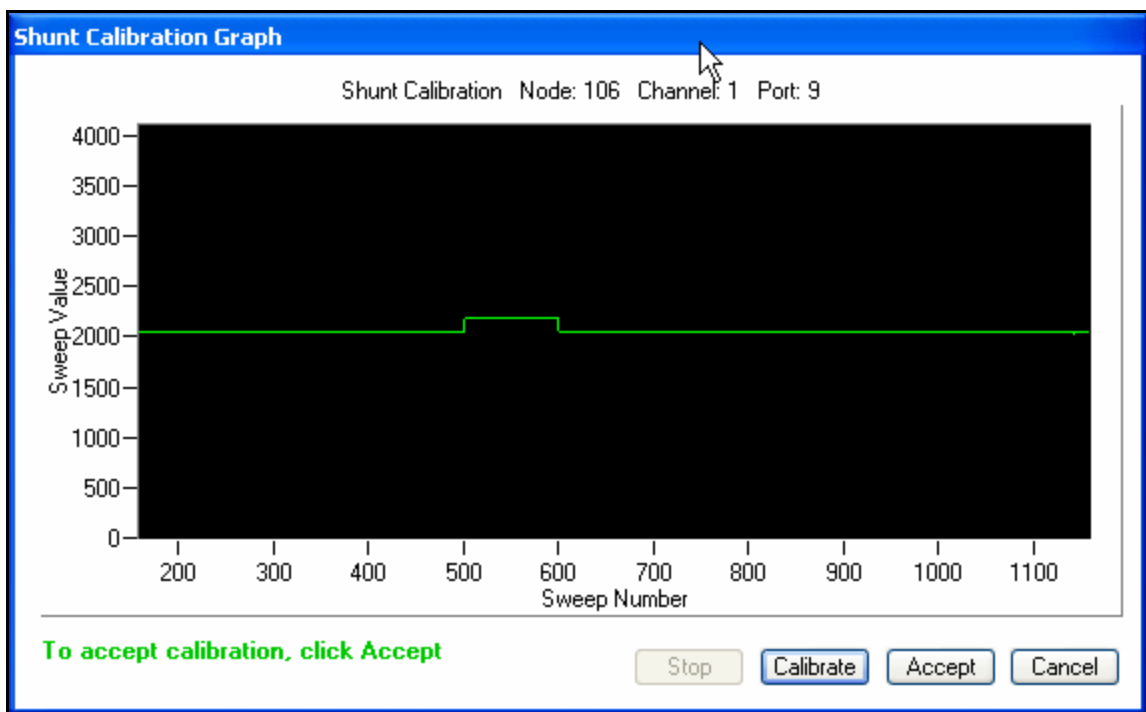


Figure 3

- Click Accept to move to the next view as exemplified in **Figure 4**.

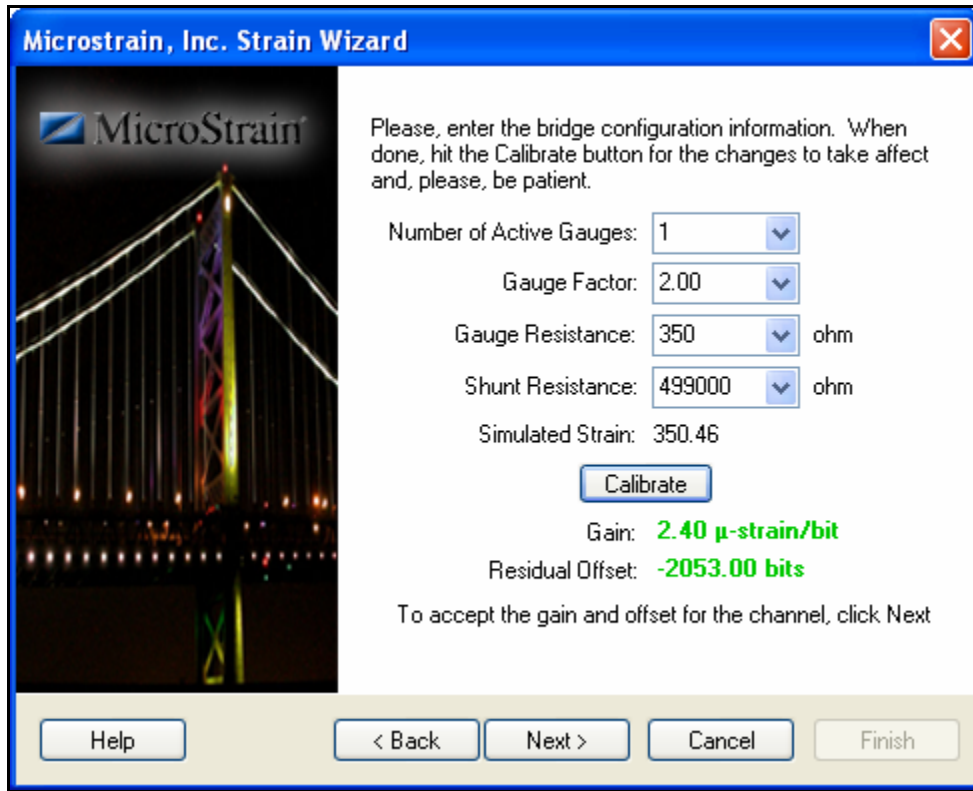


Figure 4

- Note that in our example we see a Gain of 2.40 μ -strain/bit; we are normally expecting a range of 2.30 to 2.50 μ -strain/bit.
- Note that in our example we see a Residual Offset of -2053 bits; we are normally expecting a range of -2000 to -2100 bits.
- Click Next and a message box will appear confirming that the calibration values should be written to the node. Click Yes.
- The values will write and the Congratulations view will appear.
- Click Finish and the Strain Wizard window will disappear.
- Right-click the node and a drop-down menu will appear.
- Click Configure and the Configuration window will appear.
- Click the Channels tab.
- Observe that the Offset should now be a value that is at or near 512 or so-called “mid-scale”.
- Click the Streaming tab.
- Uncheck Continuous Streaming.
- Enter a Sweeps value of 10000.
- Click Apply. Click OK and the Configuration window will disappear.
- Right-click the node and a drop-down menu will appear.
- Click Stream. Click Start and the node will stream for ~14 seconds.

- During the streaming, push in and release several times, the button on the edge of the Tester Board to shunt the resistor in and out of the stream. This will appear as a stepped (green) line as shown in **Figure 5**.
- During the streaming move your finger over, off and around the photocell to change the light passage. This will appear as a wavy (purple) line as shown in **Figure 5**.

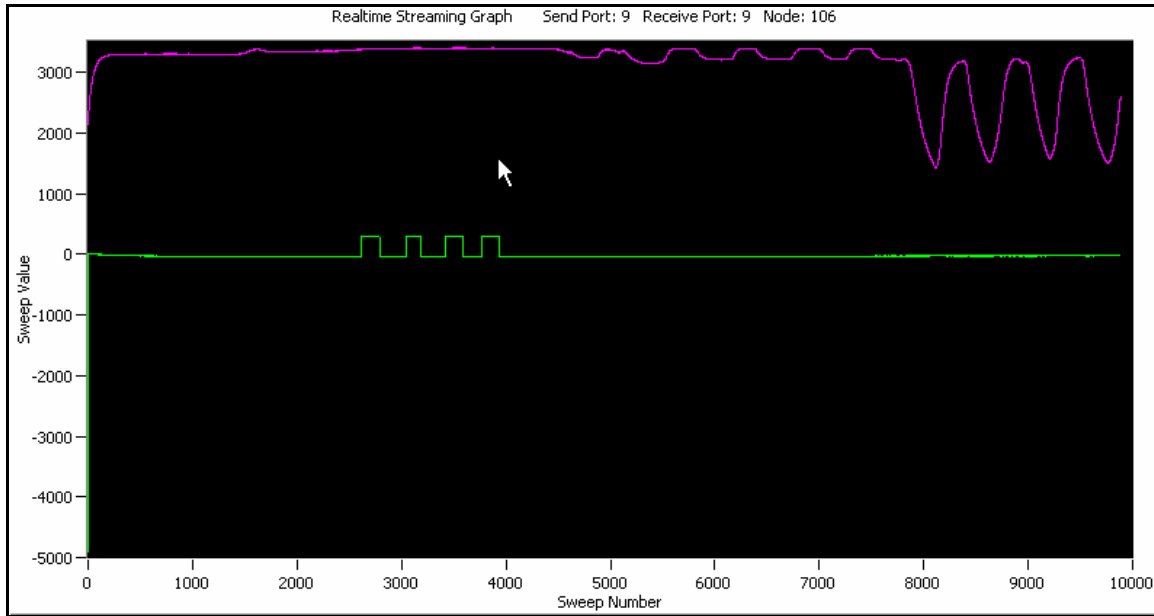


Figure 5

- **You have now demonstrated that channels 1 and 4 are working correctly!** Let's perform one more test on channel 1 only to insure we have an accurate read-out.
- Right-click the node and a drop-down menu will appear.
- Click Configure and the Configuration window will appear.
- Click the Channels tab.
- Uncheck channel 4 and leave only channel 1 checked.
- Set the Hardware Gain to 503.
- Do not set Offset, Label or Mid-scale Balance.
- Click Apply.
- Click OK and the Configuration window disappears.
- Right-click the node and a drop-down menu will appear.
- Click Plugins. Click Strain Wizard. The Strain Wizard window will appear.
- Click Test Settings and a message "**Node settings successfully tested.**" will appear.
- Click Next to move to the next view.
- Click the down arrow on the Bridge Type drop-down box and select Full Bridge.
- Click Next to move to the next view.
- Click Auto-Balance and a message "**Auto-balance completed successfully**" will appear.

- Click Next to move to the next view.
- Click Use Strain Measurement Wizard.
- Click Next to move to the next view.
- Enter the following values into the text boxes:
 - Number of Active Gauges = 1
 - Gauge Factor = 2.00
 - Gauge Resistance = 350 ohm
 - Shunt Resistance = 499000 ohm
- Click Calibrate and the view will change to the Shunt Calibration Graph.
- Click Calibrate and the SG-Link® will stream momentarily and automatically perform the shunt.
- The resultant graph will appear as exemplified in **Figure 6** and a message “To accept calibration, click Accept” will appear.

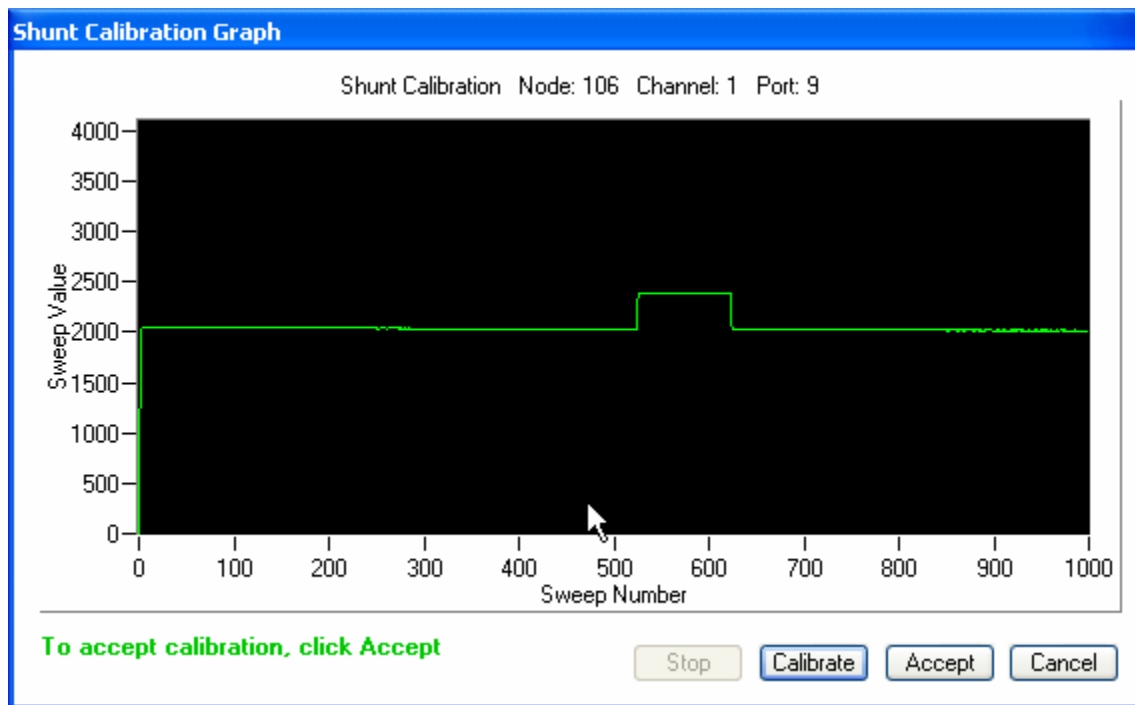


Figure 6

- Click Accept to move to the next view as exemplified in **Figure 7**.

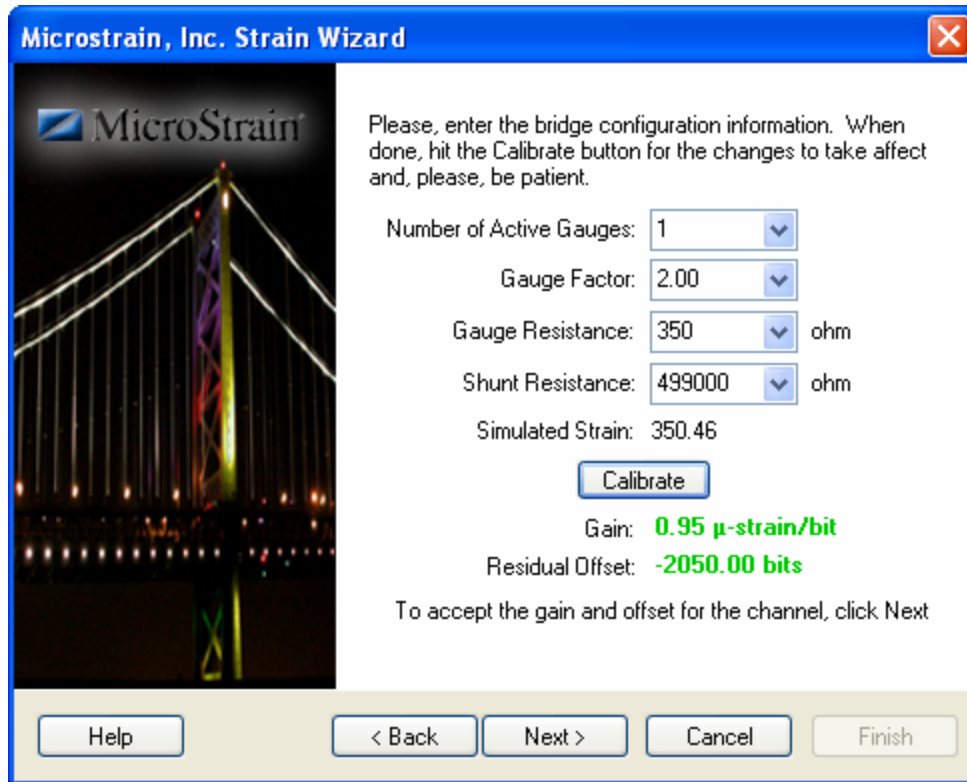


Figure 7

- Note that in our example we see a Gain of 0.95 μ -strain/bit; we are normally expecting a range of ~ 1.0 μ -strain/bit.
- Note that in our example we see a Residual Offset of -2050 bits; we are normally expecting a range of -2000 to -2100 bits.
- Click Next and a message box will appear confirming that the calibration values should be written to the node. Click Yes.
- The values will write and the Congratulations view will appear.
- Click Finish and the Strain Wizard window will disappear.
- Right-click the node and a drop-down menu will appear.
- Click Configure and the Configuration window will appear.
- Click the Channels tab.
- Observe that the Offset should now be a value that is at or near 512 or so-called “mid-scale”.
- Click the Streaming tab.
- Uncheck Continuous Streaming.
- Enter a Sweeps value of 10000.
- Click Apply. Click OK and the Configuration window will disappear.
- Right-click the node and a drop-down menu will appear.
- Click Stream. Click Start and the node will stream for ~ 14 seconds.
- During the streaming, push in and release several times, the button on the edge of the Tester Board to shunt the resistor in and out of the stream. This will appear as a stepped (green) line as shown in **Figure 8**. Steps will be ~ 350 μ -strain.

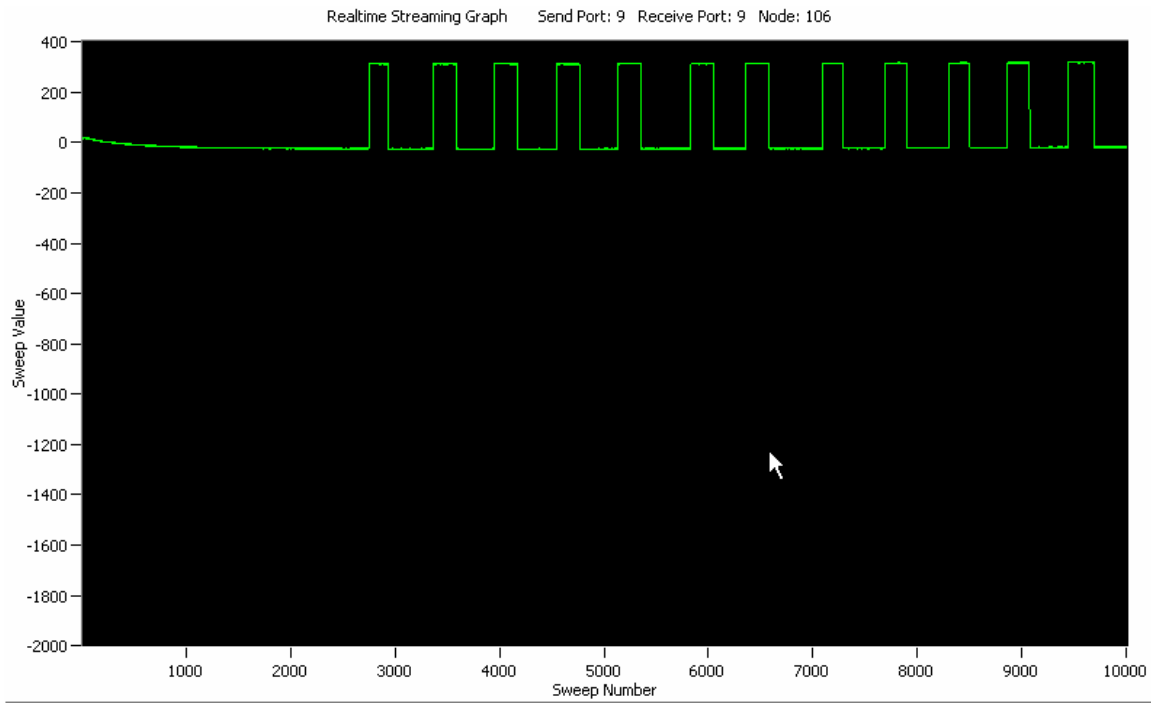


Figure 8

Congratulations!

The SG-Link® is functioning properly and you are off and running! Please read the SG-Link® users manual to learn more about using your SG-Link® successfully. You will now want to connect your own sensors to the SG-Link®. Good practice at this point would be to reset the Gain to 198 (default), the Offset to 512 (default) and to set the Channel Actions to None (default). This will remove the Tester Board's configuration and allow you to start fresh with your own sensors.