

- (a) A. Try the Em50G Communication Test again. Move the Em50G a short distance to see if there is better cellular signal at a different location.
- (b) Use the “List Cellular Carriers...” feature of ECH2O Utility (Action menu). This feature lists the cellular carriers within range of your Em50G. If no carriers are listed, then the Em50G is not within range of a cell tower or there is a hardware problem with the Em50G.
- (c) Use the coverage maps published by the local carrier to see if the location of your Em50G should have cellular signal for data communication.

**Issue 3.** Internet connect failure indicates the Em50G successfully attach to the local cellular network but is unable to access the internet for transmitting data. This error typically indicates a problem with the APN configuration of the. Revisit steps 6 to 8 in the instructions above to make sure you have the correct SIM settings.

**If Problems Persist.** Note the specific ECH2O Utility error message (screen shots or cell phone pictures are helpful), then contact a Decagon representative with the following information:

1. Device ID (serial number) of your Em50G
2. Specific error messages from Cellular Connection Test
3. List from “List Cellular Carriers...” test (if applicable)
4. The carrier for your user-supplied SIM

Select “Send Feedback to Decagon...” in ECH2O Utility (Help menu) to send this information to Decagon or email it to Decagon customer support at [support@decagon.com](mailto:support@decagon.com).

*Note: Decagon cannot always troubleshoot the cellular connection with third party SIM. You may have to contact the service provider.*

## Using Em50G with a User Supplied SIM

Follow steps 1 through 10 to operate a user-supplied SIM in the Em50G data logger. See the troubleshooting issues after step 10 if you need assistance.

1. Obtain a standard-sized SIM from your local GSM cellular carrier to enable EM50G internet data service without needing a proxy setting. The Em50G does not use voice, SMS (texting), or WAP protocols and typically uses less than 500 KB data per month. The cellular carrier must supply the APN setting to access internet data and may also provide a user name and password. The Em50G does not require a public or fixed IP address and does not use mobile-terminated services.
2. To install the SIM, first unscrew the four screws on the Em50G printed circuit board (PCB). Carefully tilt the PCB up and forward to expose the back while leaving the antenna cable connected to the cellular module. Do not unscrew the antenna connector from the Em50G case or disconnect the antenna cable from the cellular module.
3. Slide the top of the SIM holder back towards the cellular module to unlock the SIM. Insert the new SIM into the holder with the correct orientation. Close the holder and slide the top of the holder away from the cellular module to lock the SIM in place. Put the PCB back in the Em50G case.
4. Launch the latest version of ECH2O Utility from: <http://www.decagon.com/support/ech2o-utility-download/>
5. Connect the Em50G to ECH2O Utility, choose “Show Terminal” to view the serial commands sent between the Em50G and ECH2O Utility. Type commands in the lower left text box (Figure 1)
6. Type the following command in the command box: `set -apn <apn_setting>` where `<apn_setting>` is the APN setting provided by the cellular carrier.

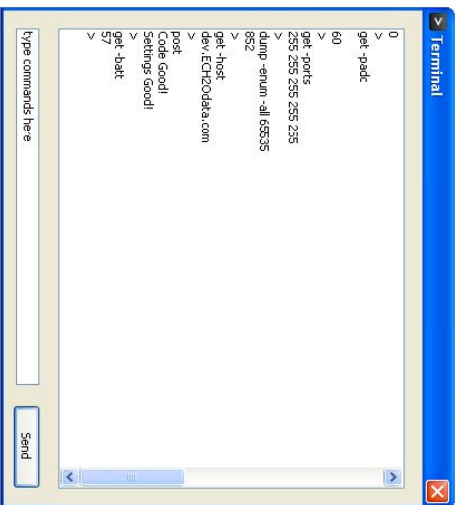


Figure 1

7. Press the Send button in the Terminal window. The command and logger response show up in the window above the command box. Make sure the logger sent "OK." If you see "ERROR," make sure you have typed the command correctly. If the Send button is disabled, make sure you are typing the command in the small text box next to the Send button.
8. If the carrier supplied a user name and password for use with the APN, set these with the following commands:  

```
set -user <apn_user>
```

Press the Send button set  

```
-passwd <apn_password>
```

Press Send and the Em50G should return "OK" after each command.
9. Now you are ready to test the Em50G communicating over the cellular network. Click the "Test..." button in the Communication Hardware Options portion of the main window of ECH20 Utility to start a Cellular Connection Test. Please note any

errors you see. See below for troubleshooting tips. If you are successful, please reattach the PCB into the Em50G case.

## Troubleshooting

Use this quick guide to troubleshoot cellular connection issues with the Em50G logger. Performing these steps before contacting Decagon or your cellular carrier will result in the quickest possible resolution of the problem.

Consider the simple causes first. Is the Em50G antenna connected? Is the logger installed where there is cellular service? Did you configure the APN setting correctly?

Use the Communication Test feature of ECH20 Utility (in the Action menu) to test the cellular connection at the location where the Em50G is deployed. Important messages appear in the "Test Status:" field above the progress bar. Carefully note the error message and match with the messages below. Always perform the Em50G Communication Test several times to make sure the error (or success) is not intermittent. It is normal for the Em50G to take longer to connect to the cellular network when it is first used in a new area.

- "SIM failed (with error code)" go to issue 1
- "GPRS network registration timeout error" go to issue 2
- "GPRS network registration denied or failed" go to issue 2
- "failed to start internet connection" go to issue 3

**Issue 1.** The SIM card in the Em50G enables cellular communications. A SIM failed error indicates the SIM is not operating correctly or is not inserted in the logger correctly. If the SIM is installed correctly, contact your cellular provider for suggestions.

**Issue 2.** GPRS network registration errors indicate the Em50G is not able to connect to the local cellular network. The reason for this failure could be as simple as there is no cellular coverage at the install location. Try the following troubleshooting steps: