



TI PLC Development Kit User Guide

– Zero Configuration GUI

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1.0 Using Demo Application – Zero Configuration GUI

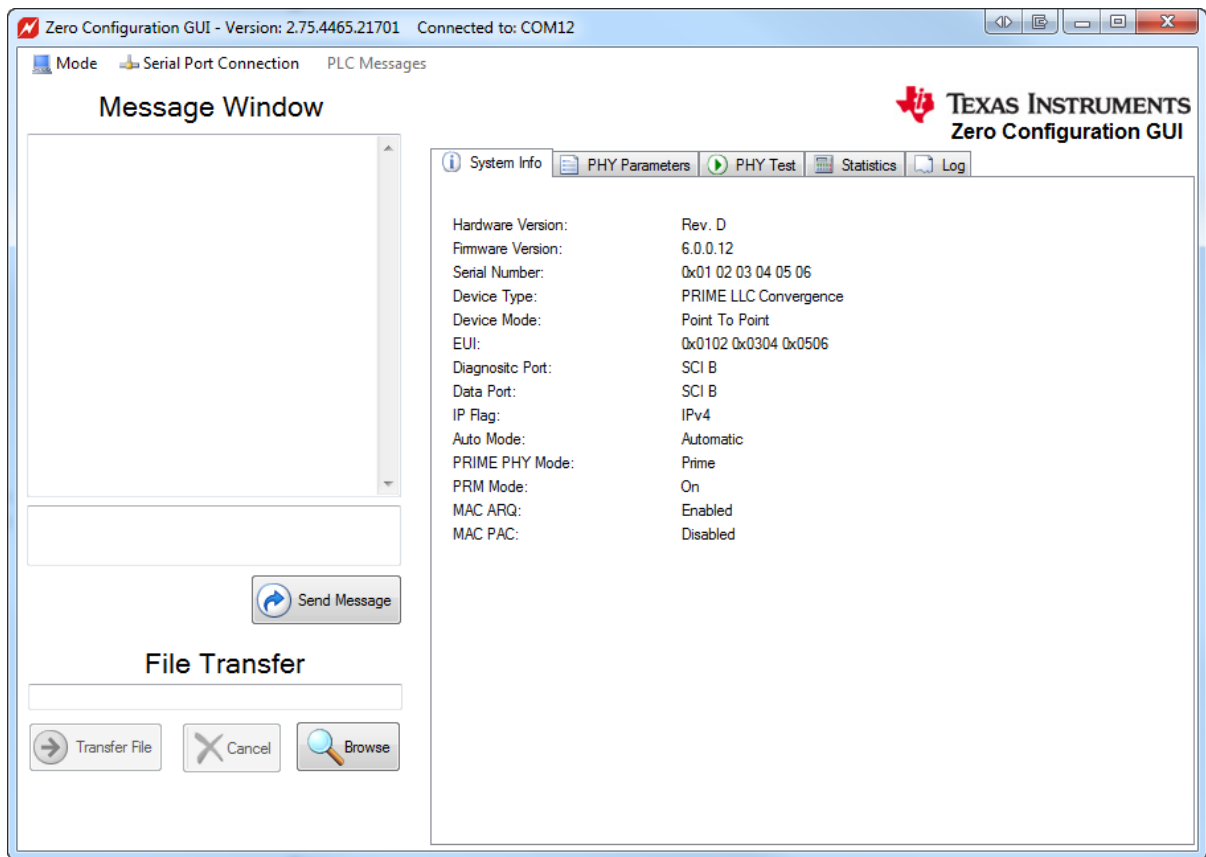


Figure 1 Zero Configuration GUI – Starting Screen

The Zero Configuration GUI is a windows application that the PLC-DK user may immediately start performing text and file transfers, examine the current system information, display the PHY parameters, change the PHY modulation, display the file and text transfer statistics, and display and save log information.

1.1 Configuration

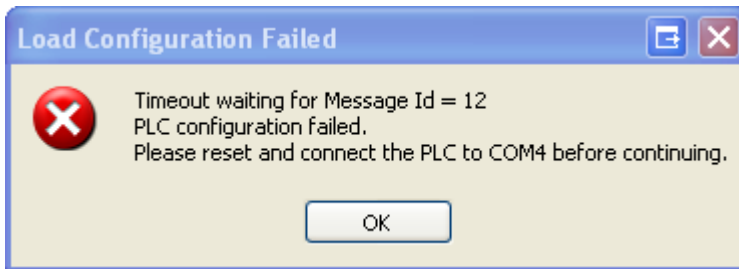
There is no software or PLC configuration is needed to use the Zero Configuration GUI. The only assumption is that the USB ports (SCI-B) on the PLC are being used.

The first available COMM port on the PC, which may be a USB to Serial Port or a standard COMM port, will be used to connect to the PCL.

If no available serial ports are found on the PC the Zero Configuration GUI will display an error and exit.

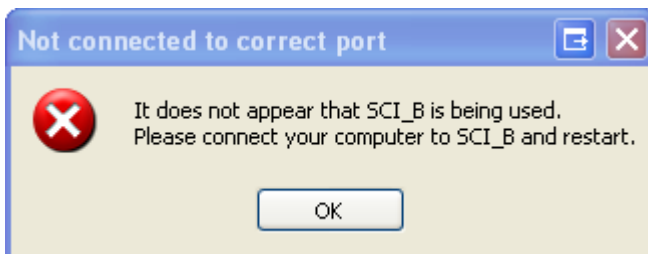


If there is no response on the COMM port selected, the Zero Configuration GUI will display a timeout error and remain active.



If the PLC is connected to another COMM port you may use the "Serial Port Connection" drop down menu to connect to the desired COMM port. If the PLC is not connected, connect the PLC to the desired port and try again. If the PLC is connected to the correct COMM port reset the PLC.

If the PLC is connected by the PLC serial ports instead of the default USB ports this message will be displayed.



If you wish to use the PLC serial ports instead of the USB ports the Zero Configuration GUI configuration file must be changed. This is a XML file that has a number of configuration items that may be changed and some that should not be changed.

To change the default PLC port to be used, change the "DefaultSCIPort" to "SCI_A" (PLC serial port connection) or to "SCI_B" (PLC USB port connection) in the configuration file.

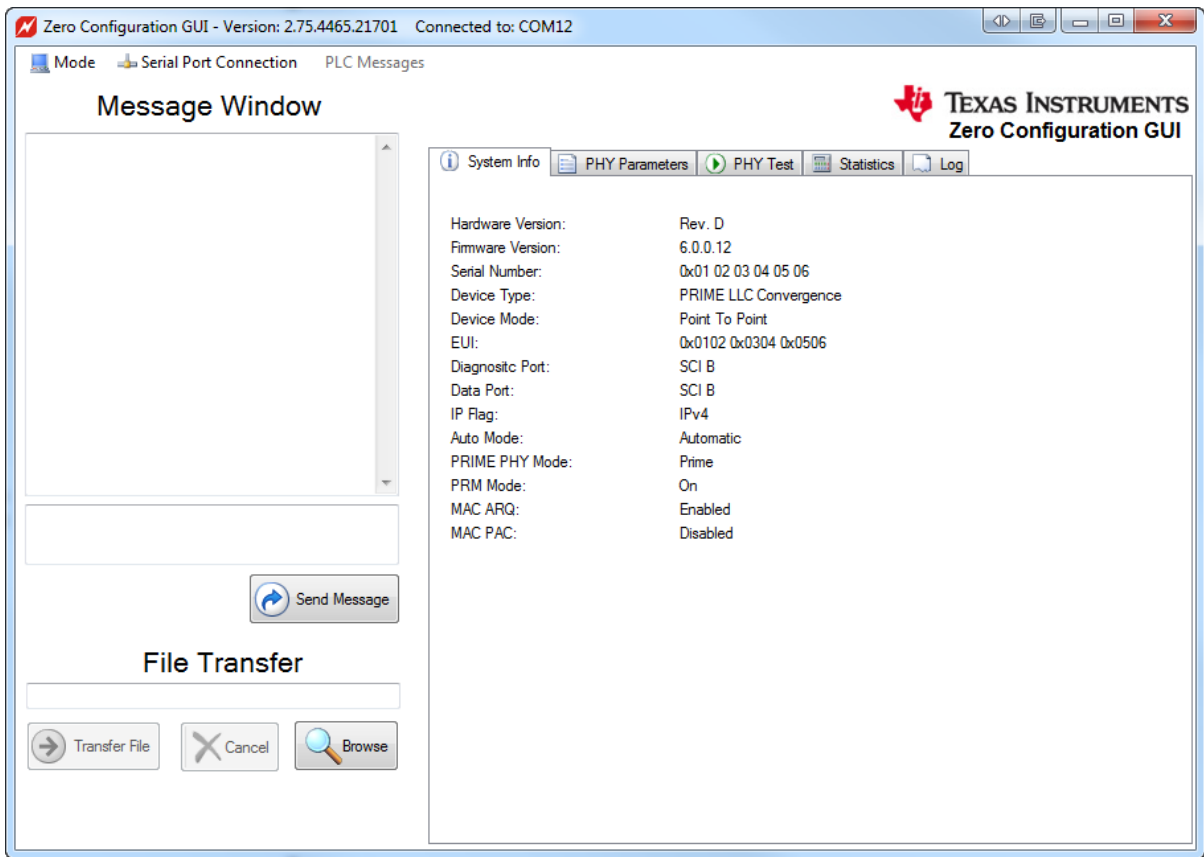
The Zero Configuration GUI configuration file will be found here:

“C:\Program Files\Texas Instruments\PLC Application Suite\ PLC_Application_Suite.exe.config”.

Below is the table of the items that may be changed and their description.

XML Tag	Description	Default Value	Range of Values
ConnectionAttempts	This is the number of retries the GUI will attempt to connect, initialize, and configure the PLC before displaying the failed initialization message box.	3	1- #####
DefaultG3Security	This will set the default security value for G3 data messages. Security G3 for data transfers is normally enabled for G3 firmware versions greater than 1.3.1.0. This setting can override this behavior and disable security. If the version is less than 1.3.1.0 the security is disabled even if this value is enabled.	Disabled	Enabled Disabled
FileTransferPageSize	This is the number of bytes transferred at a time during a file transfer. This does not count the extra data sent in the data packet during a file transfer. 24 bytes of the data packet is used for the file transfer protocol.	256	1 – Max Packet Size
CloseAllOnExit	If this is set to true than all instances of the Zero Configuration GUI will close when any instance on a PC is closed.	False	True or False
DefaultSCIPort	This is the default SCI port to use. The data and diagnostic ports must be set to the same port for the file transfer	SCI_B	SCI_A SCI_B

1.2 Main Screen



The Zero Configuration GUI consists of the main screen where text and file transfers may be performed. The tabs on the right display significant information about the PLC.

The COMM port attached to is displayed in the title bar. The first available and unopened COMM port is automatically chosen and checked to see if a PLC is connected. If there is no response the next available serial port will be checked and so on until a PLC is found. If not PLC is found a message box will be display. If a PLC is connected close the Zero Configuration GUI, reset the PLC, and then restart the Zero Configuration GUI. The “Serial Port Connection” drop down menu may be used to change the selection to another COMM port.

From this screen you can perform text message transfers and file transfers with another PLC controlled by the Zero Configuration GUI.

You may also change the mode by using the ‘Mode’ drop down menu. There are three modes, Zero Configuration, Intermediate, and Expert.

The Zero Configuration mode is the mode described. Any available COMM port 1-99 will work with the Zero Configuration GUI.

The intermediate mode executes the PLC Quality Monitor using the same COMM port as the Zero Configuration GUI. When the intermediate mode returns the Zero Configuration will use the same the COMM port and takes control once again. Any changes made to the PLC configuration will not be changed when returning from the intermediate GUI.

The Expert is currently disabled for this release.

1.3 Hot Keys

There are several hot keys available. The alpha key is not case sensitive.

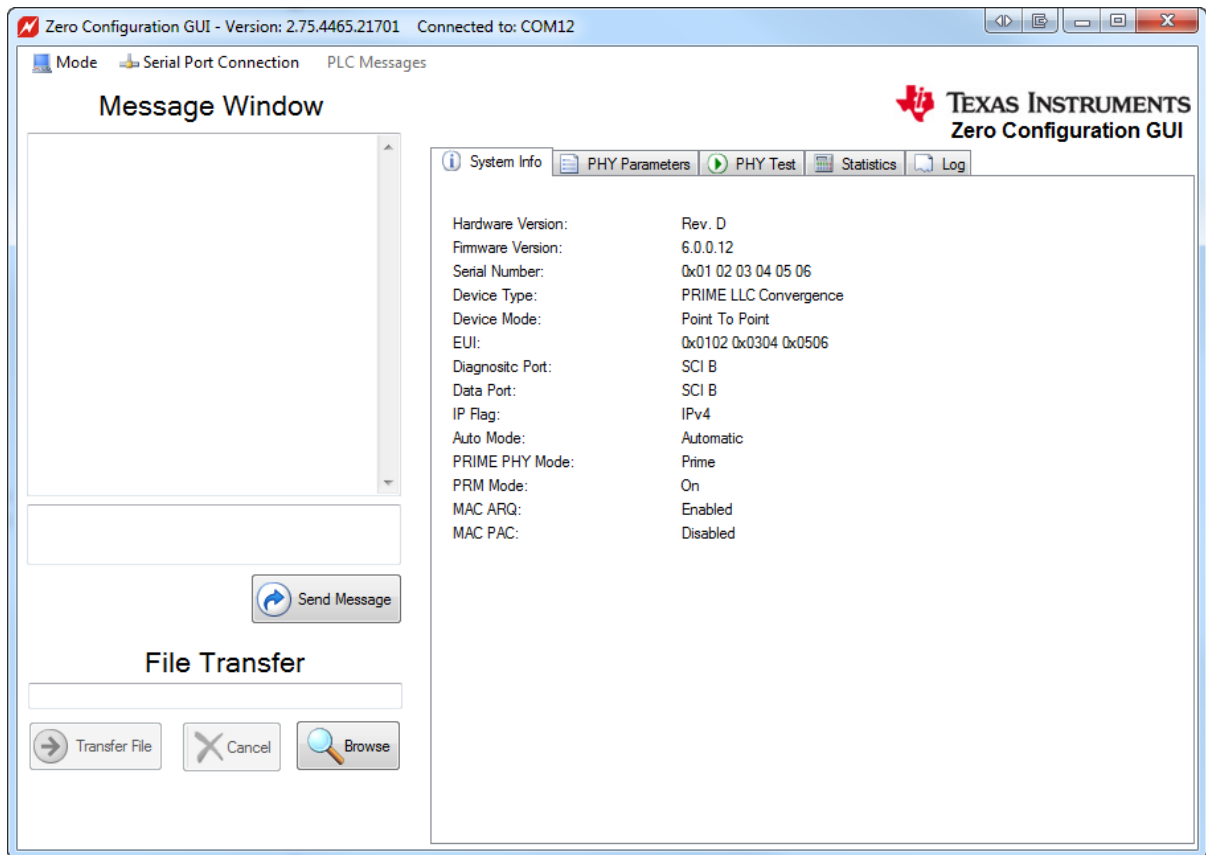
<Control I> will close this GUI and execute the PLC Quality Monitor GUI as the intermediate tool.

<Control R> will reset the file transfer statistics. The Statistics received in the Link Quality Report are not reset. This key stroke combo will reset the statistics screen regardless of what screen has focus in the GUI..

<Control T> will toggle the expert mode menu items on/off depending on their current state.

<Control S> will send a System Information request to the PLC and update the System Info panel when received.

1.4 System Info Panel

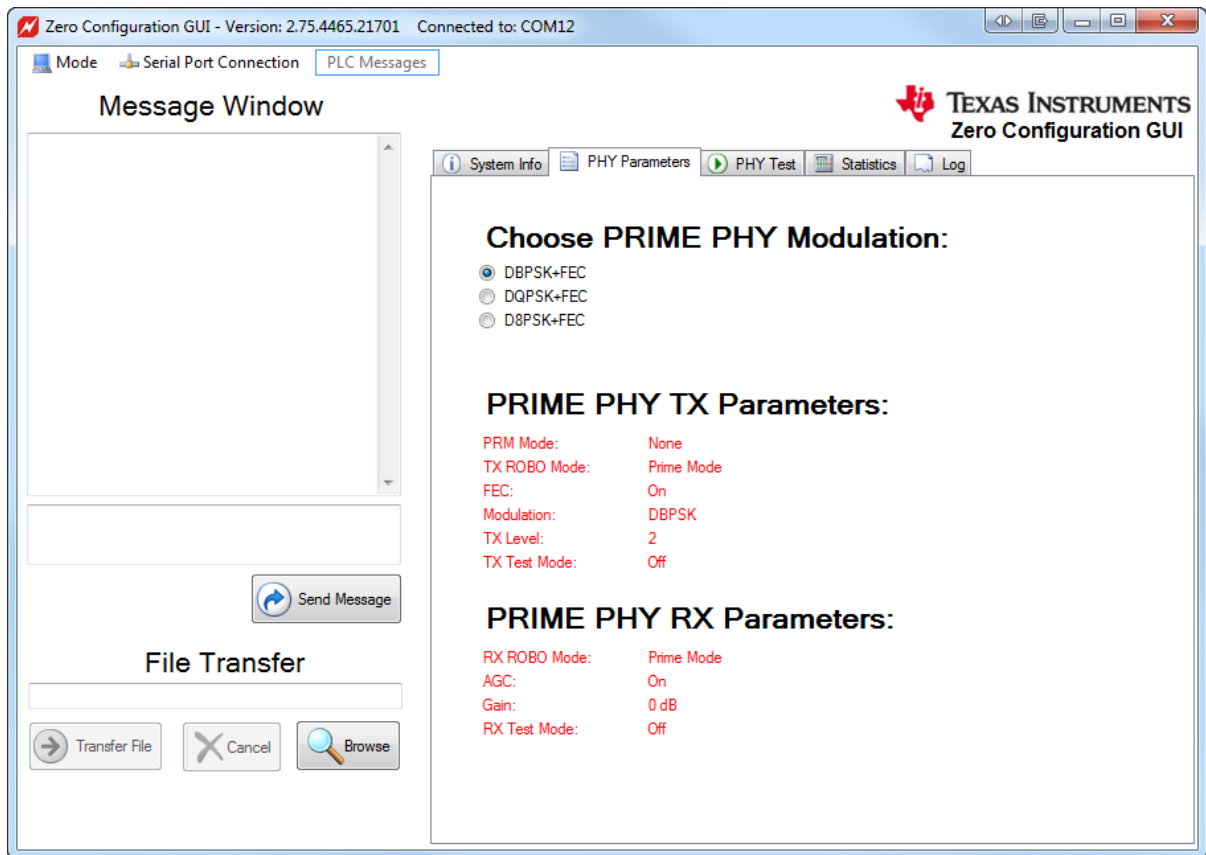


The PLC System information is displayed in the first tab. Right clicking on the System Info panel will expose a context menu with one menu item "Refresh System Information". This will resend a system information request to the PLC and refresh the system info panel with the updated information.

Pressing "Ctrl S" will perform the same function without displaying the context menu.

Any value changed will be displayed in red text.

1.5 PHY Parameters Panel

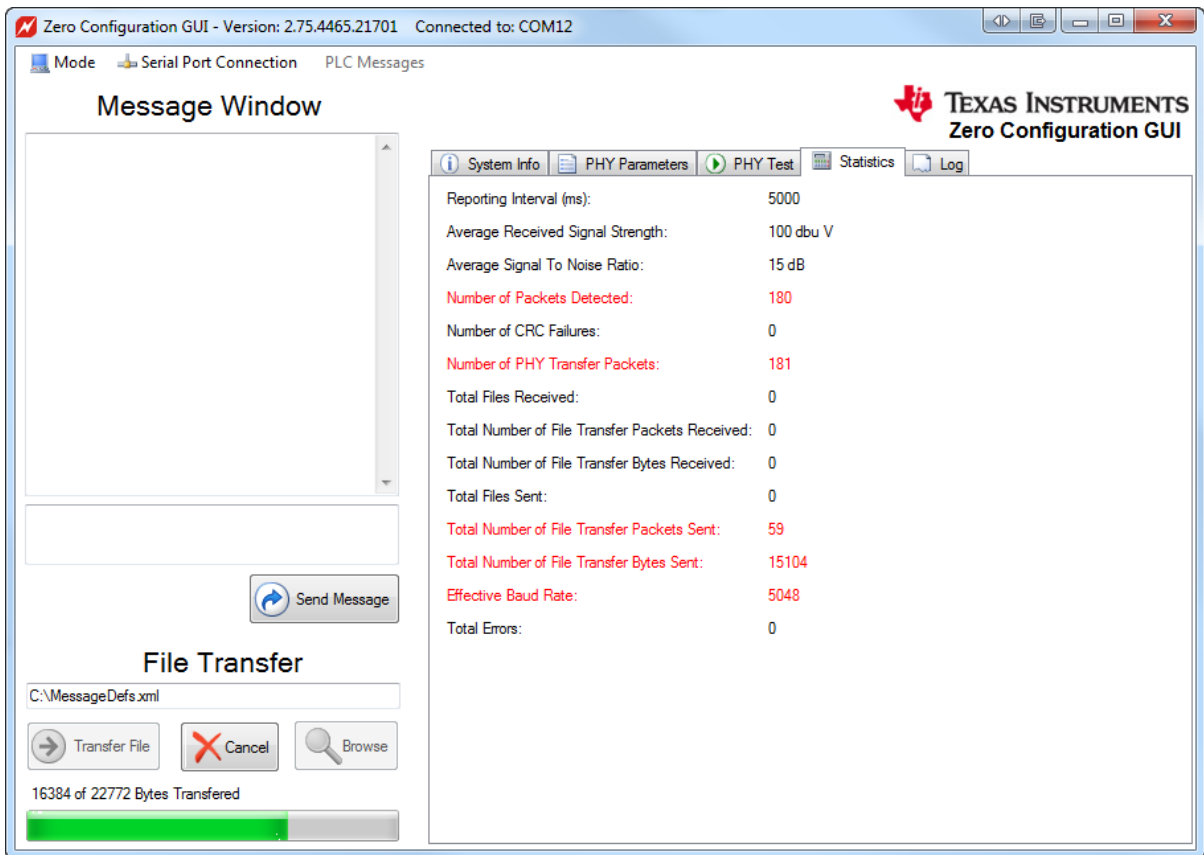


The PHY TX and RX parameters are displayed in the second tab.

The TX modulation may be changed using the radio boxes. Changing the modulation schemes will affect the reliability and baud rate of the power line transmission for file transfers only. PHY test modulation is always set by the Zero Configuration GUI and may not be changed here.

If you desire to test other modulations use the intermediate GUI.

1.6 Statistics Panel

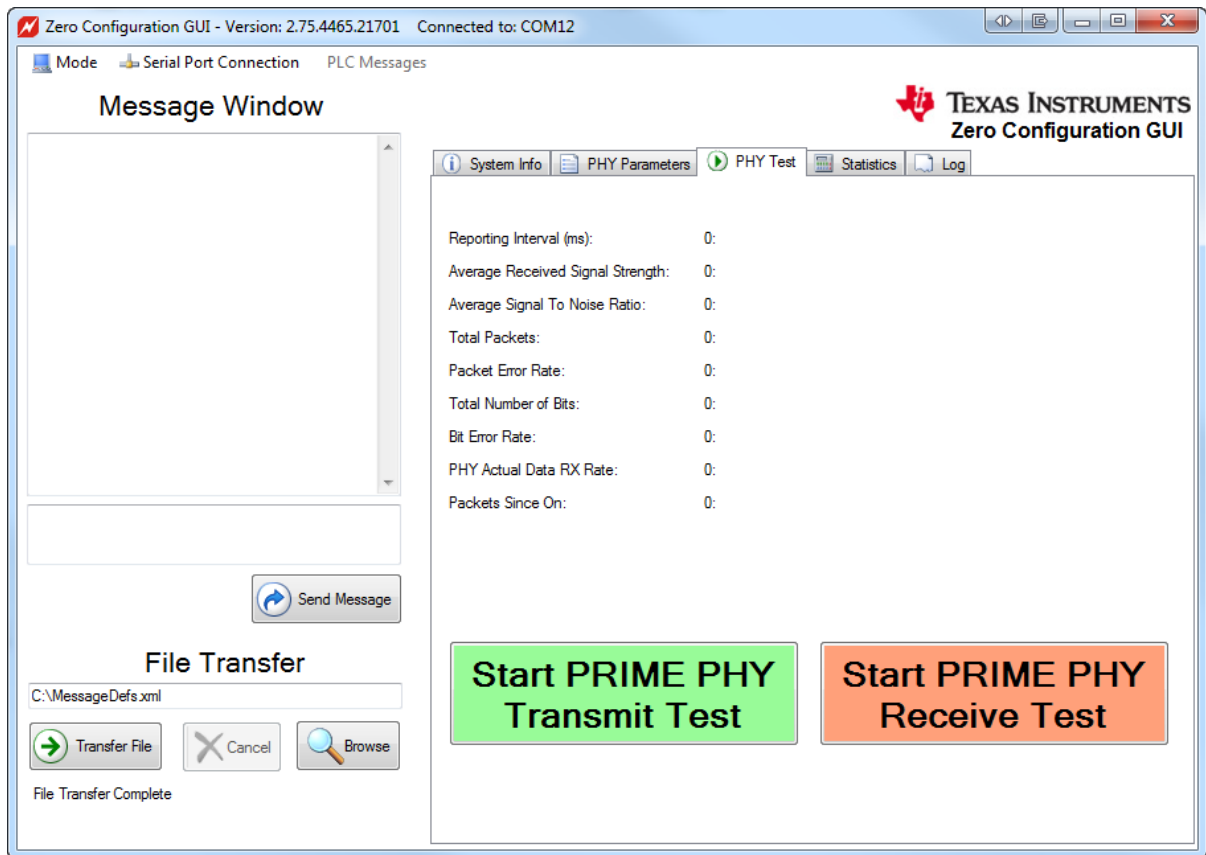


The Statistic panel displays information concerning the text and file transfers. Items that have changed are displayed in red.

Right clicking on the Statistics panel will expose a context menu with a single menu item “Reset Application Totals”. This will reset totals.

Pressing “Ctrl R” will perform the same function without displaying the context menu.

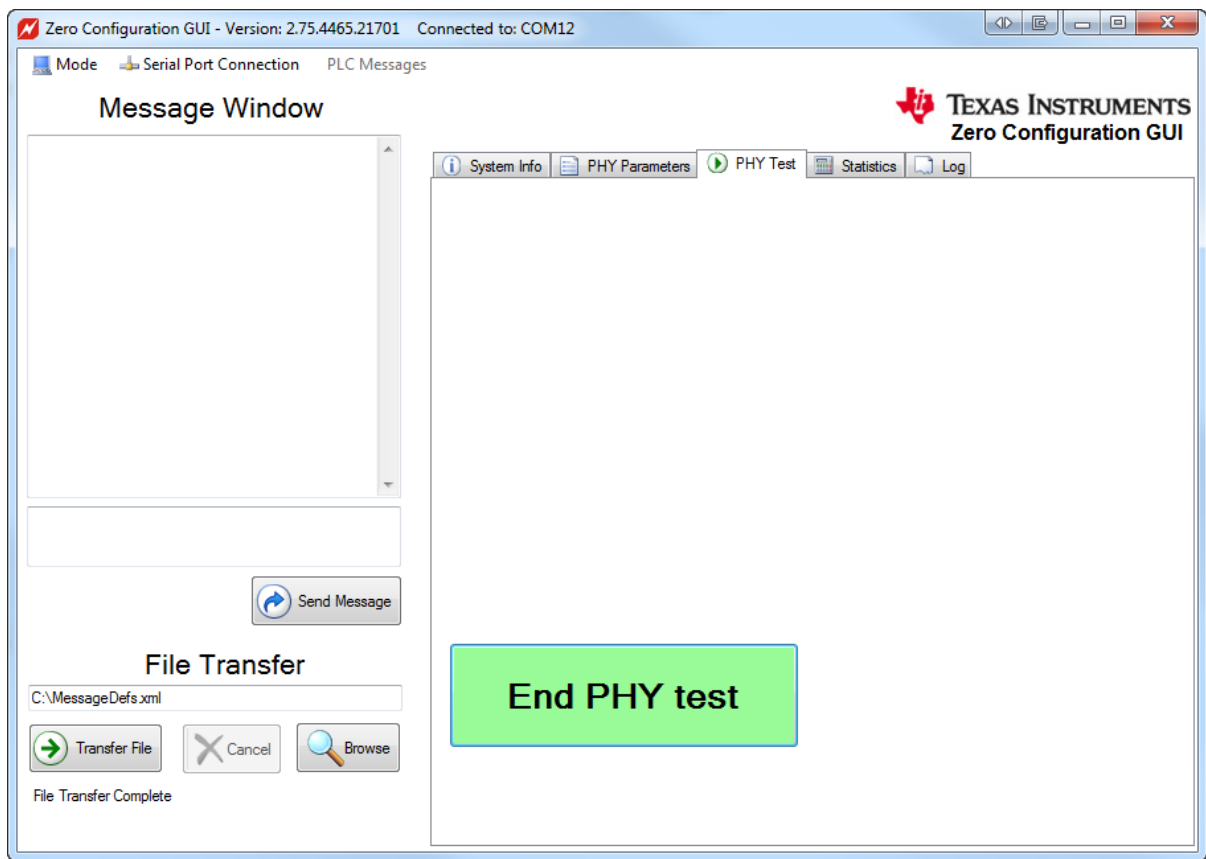
1.7 PHY Test Panel



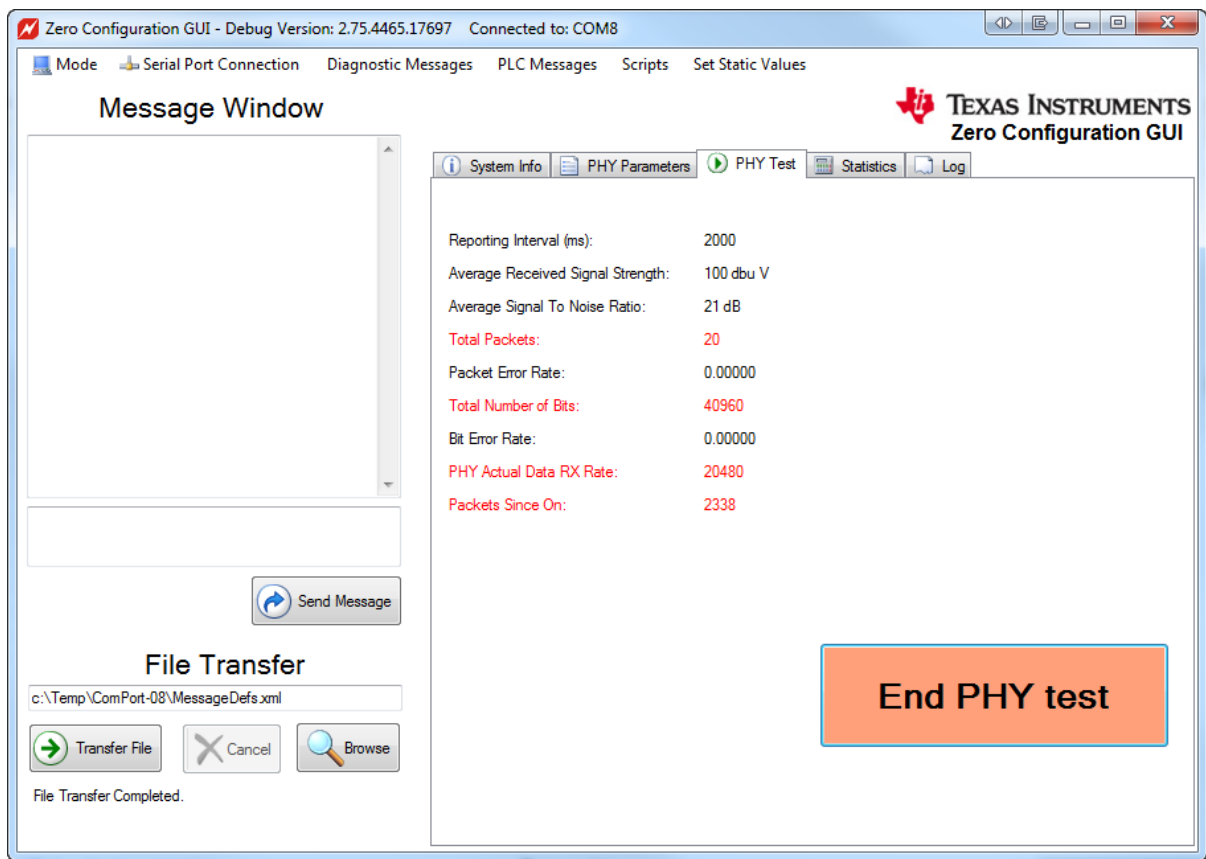
The PHY Test panel will test communications between two PLC's using PHY packets. One PLC will transmit the PHY packets while the other will receive the PHY packets.

To start the test click on the Start PRIME PHY Transmit Test button on either PLC. The statistics will disappear from the panel since there are no statistics collected on the transmitting PLC. See the figure below.

It is important to note that Text and File transfers will not work during PHY testing.

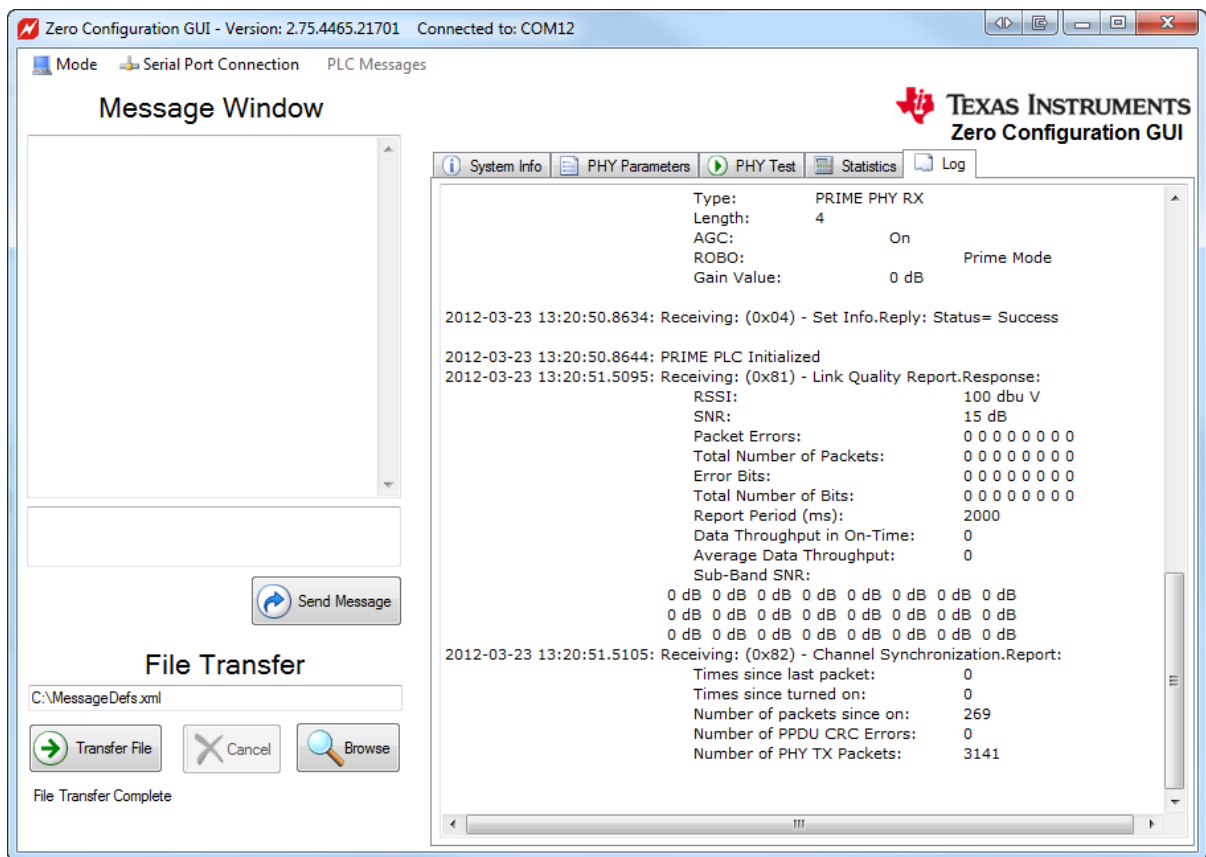


On the receiving PLC click the Start PRIME PHY Receive Test buttons. The button will change to the “End PHY Test” state and the statistics will start updating. See below.



To end the test click the “End PHY Test” button on both PLC’s.

1.8 Log Panel



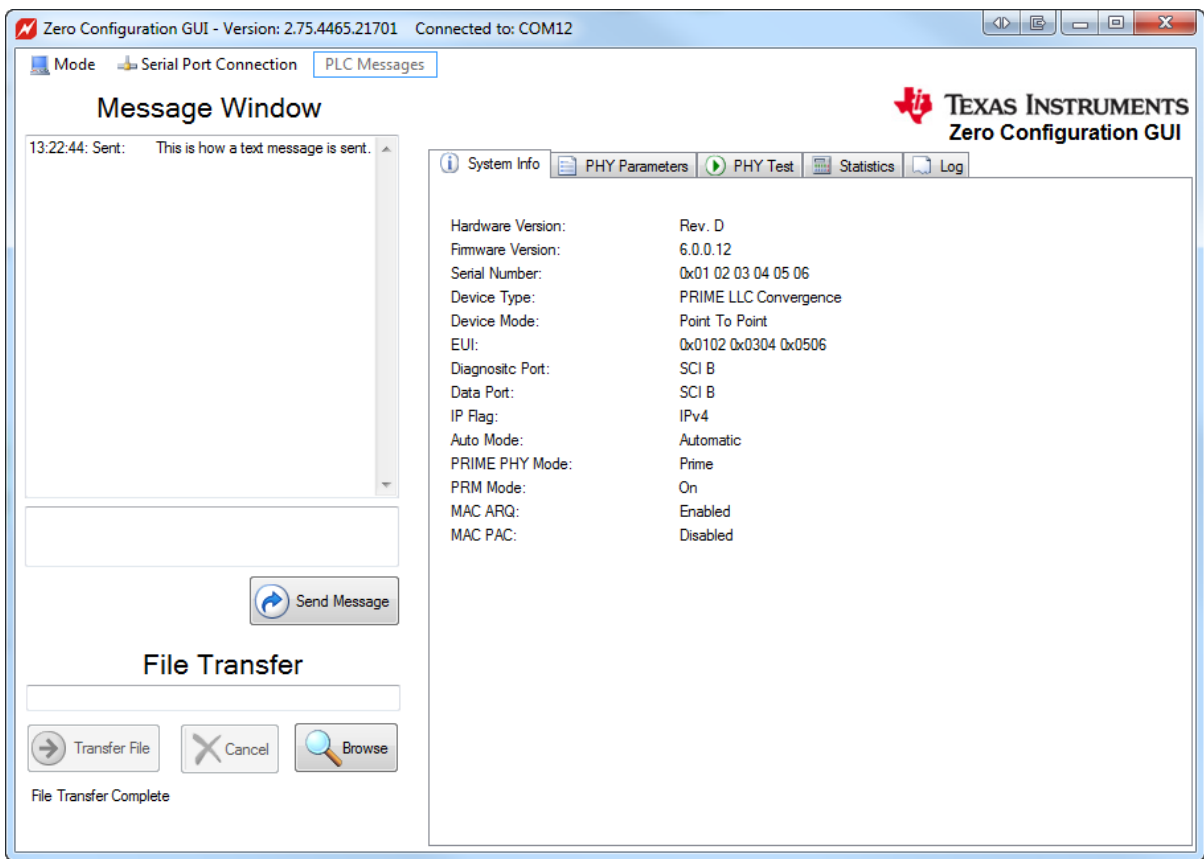
The log panel will hold about 100,000 characters then it will refresh the display. This prevents the panel from consuming large amounts of memory and keeps the log panel responsive to new input.

The Log panel by default displays very little information but right clicking on the log panel will display the log context menu. Using this menu you can enable the display of the formatted messages that are being sent and received by the Zero Configuration GUI. Below is the table of features exposed by the log pane context menu.

Enable Message Data Display	This will enable the log panel to display the message transfers, sending and receiving. Depending on the other options selected the raw data, formatted data, or both will be displayed. By default this option is turned off.
Enable Logging to a File	When selected the user will be prompted for a file to save the logged information. When enabled all messaged data, sent and received will be saved and will be written to the log.

Log Full Message Data	This will display the formatted message data in the log panel. No data will be displayed unless the “Enable Message Data Display” is enabled.
Log Condensed Data	This will only display the message type and no actual message data. This reduces the amount of data logged to the screen.
Log Raw Message Data	This will display the unformatted message data as a byte stream.
Clear Display	This will clear the log panel. This does not affect data being logged to a file.
Save to File	This will save the current contents of the log panel to a file of the user’s choosing.

1.9 Sending Text Messages



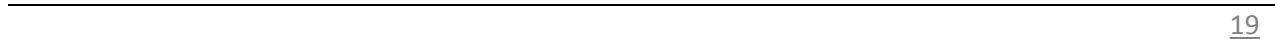
To transfer text between two connected PLC devices using the Zero Configuration GUI, simply type your text in the small text box and click on the “Send Message” button. Pressing ‘Enter’ while entering the text will not send the text message but add a line to your text.

When the text is sent the text is moved to the top text box and displayed by the receiving PLC

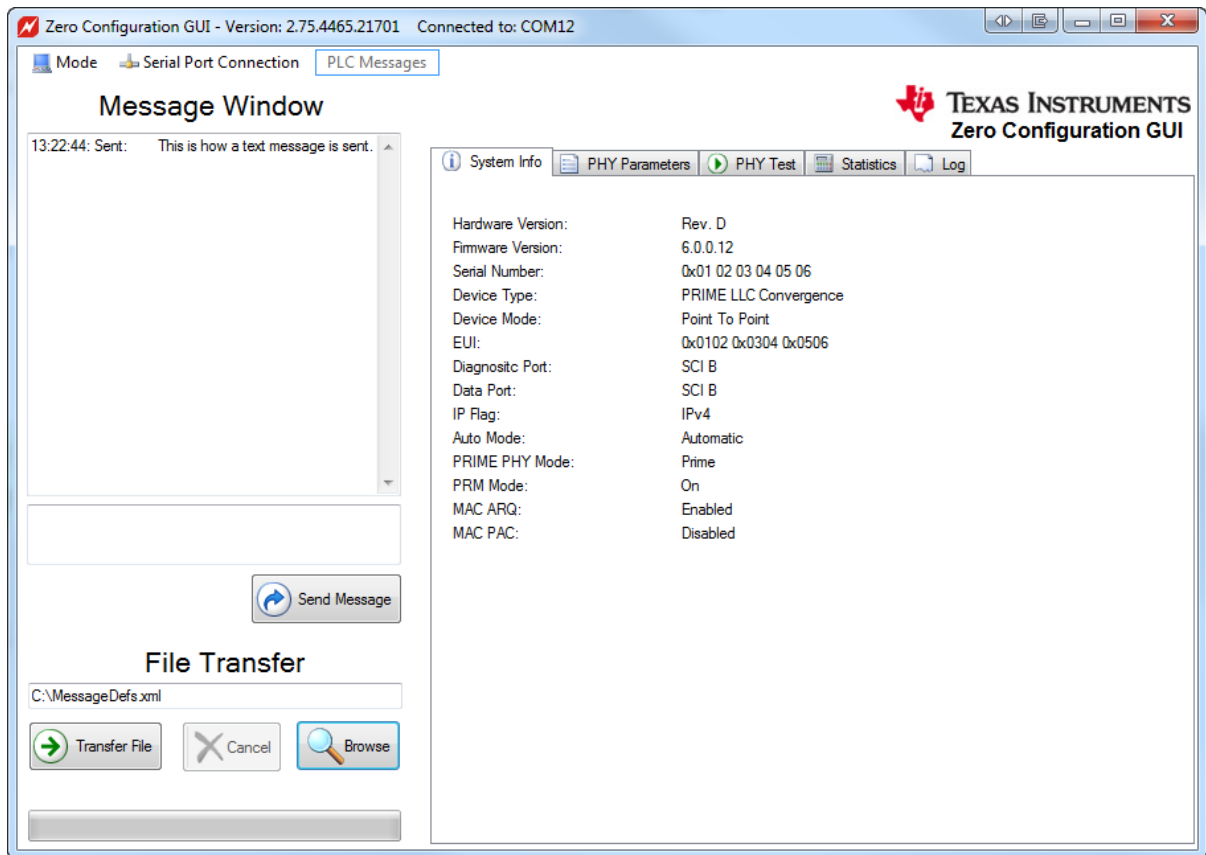
A screenshot of a text message interface. At the top, a status bar shows the time '13:22:44' and the word 'Sent:'. Below this, a large white rectangular area contains the text 'This is how a text message is sent.' in a black, sans-serif font. To the right of this area is a vertical scrollbar. At the bottom of the screen, there is a white input field and a blue circular button with a white right-pointing arrow. To the right of the button, the text 'Send Message' is displayed in a blue, sans-serif font.

A screenshot of a text message conversation. At the top, a received message is displayed: "13:22:44: Rec: This is how a text message is sent." Below this is a large, empty rectangular box for typing a response. At the bottom right, there is a blue circular button with a white right-pointing arrow, labeled "Send Message".

If the text transfer fails the message box below will be displayed.



1.10 File Transfers



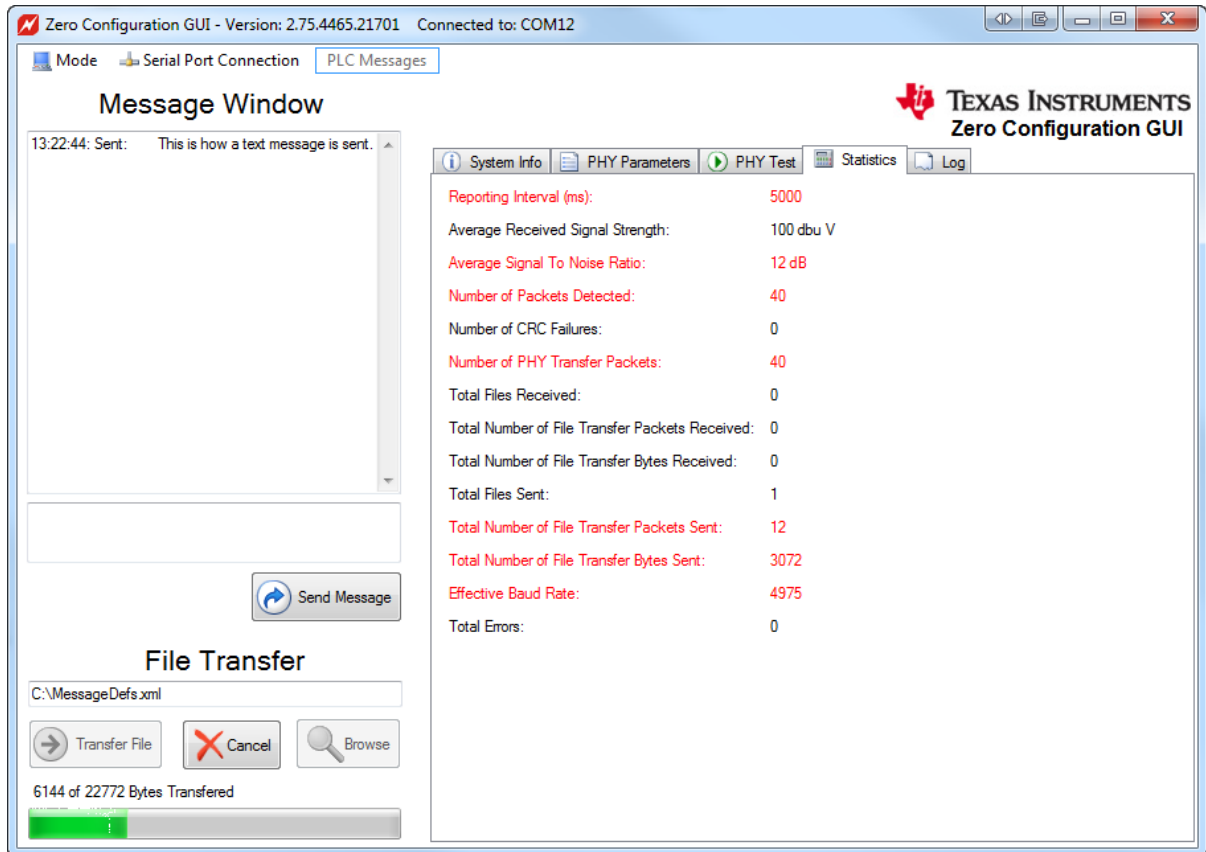
The file transfer function is contained in the bottom left hand corner.

Click on the 'Browse' button to display the standard windows file chooser dialog to choose the file you wish to transfer. Only one file at a time may be chosen for the file transfer.

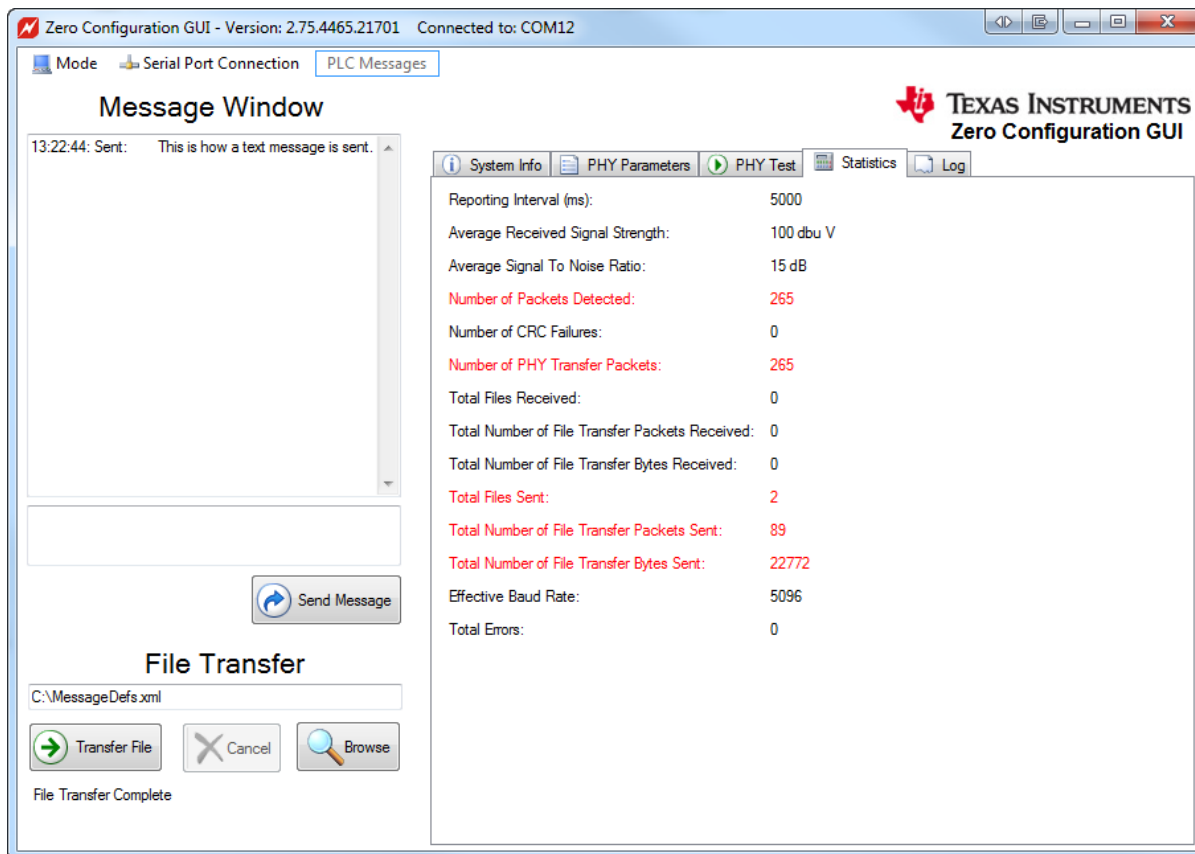
After the file is chosen, click on the 'Transfer File' button.

The other PLC must also be controlled by the Zero Configuration GUI.

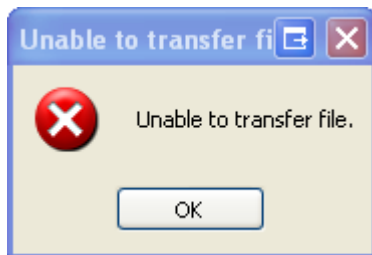
When the transfer starts the GUI will display a progress bar on both Zero Configuration GUIs. The GUI below is the receiving Zero Configuration GUI and displays the path and file name where the received file is being copied. The user is not allowed to change the directory path of the received file.



When the file transfer is complete the message will be displayed on both Zero Configuration GUIs.



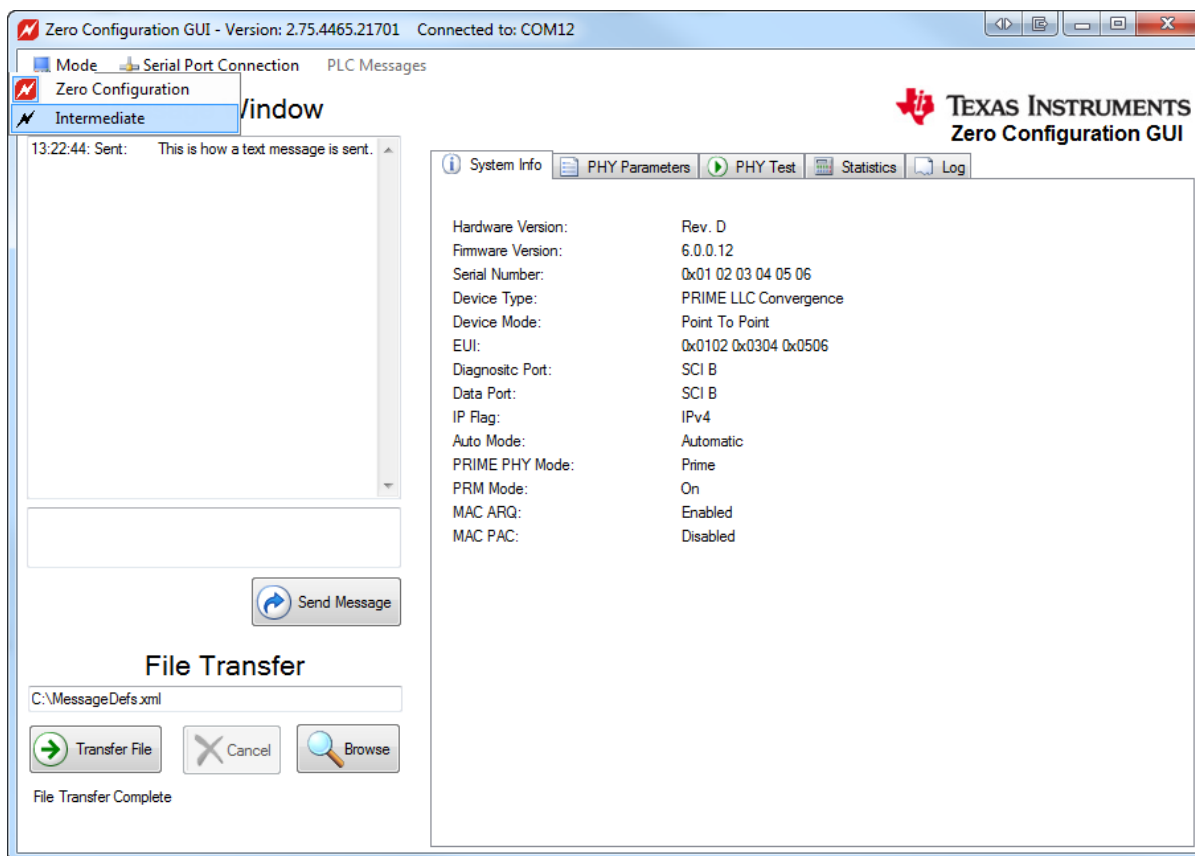
If the file transfer fails the following message box will be displayed by the sending GUI.



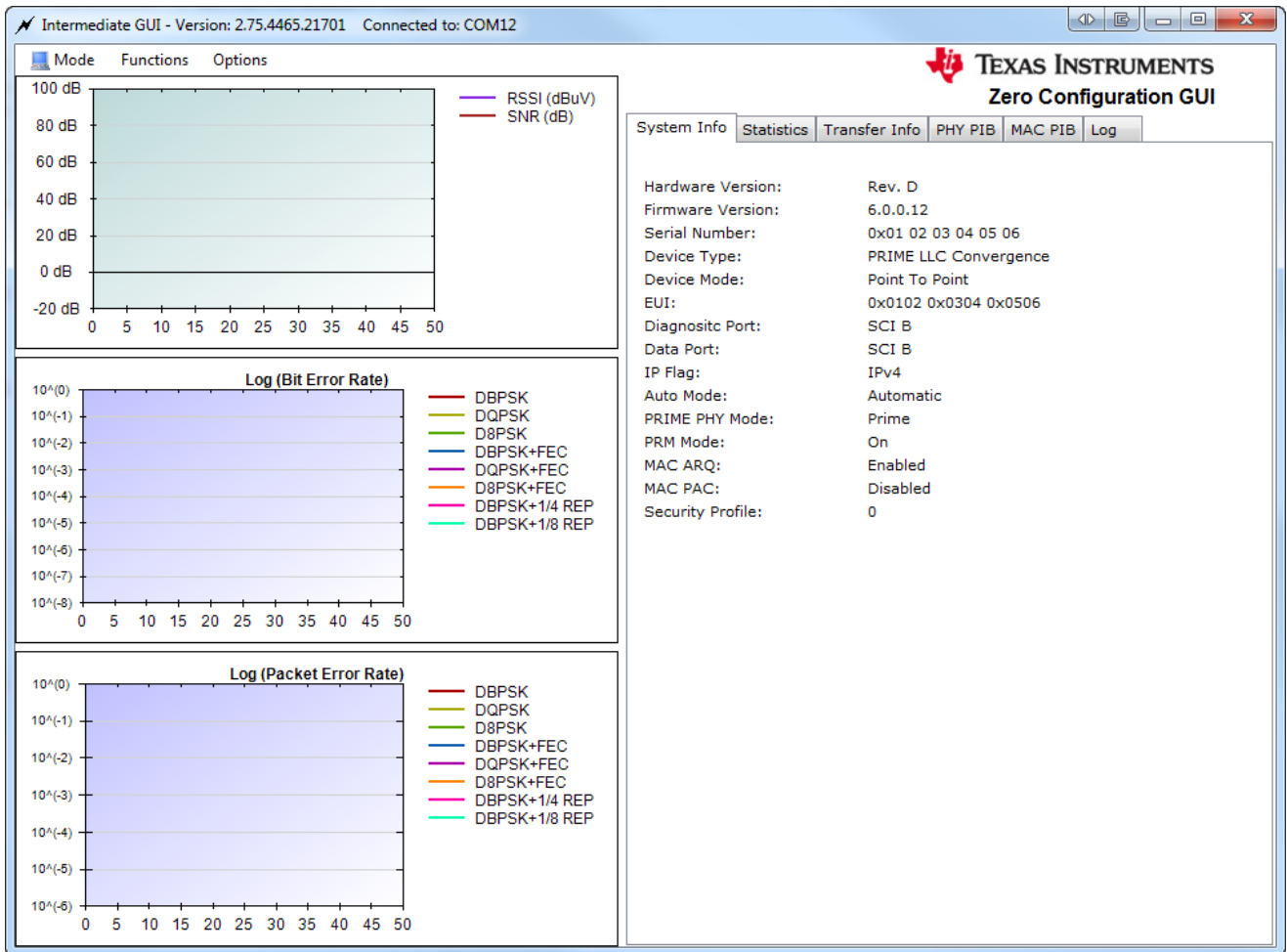
The file transfer may be canceled by clicking on the 'Cancel' button on either GUI.

2. Using the Intermediate Mode

The intermediate mode is chosen from the Zero Configuration Mode drop down menu.



2.1 User Interface



The Intermediate mode consists of the followings:

- Main Menu – All operations are initiated from the main menu with toolbars and buttons.
- Graphical Displays
 - PHY Parameters – PHY parameters configuration (see details below)
 - RSSI graph – Plot is in dBuV. Note this is limited between 70 dBuV and 98 dBuV.
 - SNR graph – Plot is in dB.
 - Bit Error Rate graph – Plots of PHY layer bit error rate, one line for each MCS (only applicable to PHY test mode operation)
 - Packet Error Rate graph – Plots of PHY layer packet error rate, one line for each MCS
- PHY statistics – This panel provides statistics in the physical link.
- MAC statistics – This panel provides statistics in the MAC and CL layers
- Transfer statistics – This panel provides statistics when file transfer is in operation.

- System Information – This panel provides system version information and PHY/MAC/CL IPv4/LLC configurations.

2.2 System Configuration

The system configuration provides a way to configure the PLC device (Menu -> Options -> Set System Config).

PRIME System Configuration - COM12

Device Type: PRIME LLC Convergence FW Ver.: 6.00.00.0C
Hdw Rev.: Rev. D
Device Mode: Point-to-Point ☒ Automatic Mode

Ports

Host Port: ☐ SCI-A ☒ SCI-B Diag Port: ☐ SCI-A ☒ SCI-B

System

Serial #: 01:02:03:04:05:06
Serial # Length: 6 EUI: 01:02:03:04:05:06

PHY

☒ PRM Flag ☐ Enable Robo

MAC

☒ Default ARQ Enabled ☐ Default PAC Enabled

OK Apply Refresh Cancel

The following describes the configuration settings:

- Application PIB Attributes
 - AppFwVersion – Textual description of firmware version running on device
 - AppVendorId - PRIME Alliance assigned unique vendor identifier.
 - AppProductId - Vendor assigned unique identifier for specific product.
- Hardware Revision – Docking board revision ID (default: Rev.D)
- Firmware Version – Firmware version ID
- Device Type – The current type of the device
 - **PRIME IEC-432 LLC Convergence** – PRIME standard in IEC432-LLC convergence layer
 - **PRIME IP Convergence** – PRIME standard in IP convergence layer

-
- Device Mode (Automatic flag is only applicable to PRIME IEC432-LLC) - The current mode of the device.
 - **PRIME IEC-432 Point-to-Point** – using the end-to-end setup between the two PLC devices. This mode interfaces with the eMeter GUI performing its functions such as PHY testing, File Transfer, Message Transfer, etc.
 - **PRIME_ IEC432 - eAppEMU MAC mode** – embedded AppEMU application is running, in F28069 and interfaces directly with MAC layer in PRIME network with the base node.
 - **PRIME IEC432 - eAppEmu IEC432-LLC mode** – embedded AppEMU application is running in F28069 and interfaces with IEC432-LLC layer in PRIME network with the base node.
 - **PRIME IEC432-LLC - AUTO** – for host eMeter applications such as hostAPPEMU running in PC and communicate with TI PLC at IEC61334-4-32 LLC layer through UART based on TI Host Message Protocol. It performs network registration and connection establishment automatically.
 - **PRIME IEC432-LLC** – for host eMeter applications such as hostAPPEMU running in PC and communicate with TI PLC at IEC61334-4-32 LLC layer through UART based on TI Host Message Protocol. It does not perform network registration and connection establishment automatically.
 - **PRIME IEC432 MAC** – for host eMeter applications such as hostAPPEMU running in PC and communicate with TI PLC at PRIME MAC layer through UART based on TI Host Message Protocol.
 - Serial Ports
 - Data port
 - The Data Port is the serial port the PLC device used for host and PLC communication following “plcSUITE host message protocol”. This can be either SCI-A or SCI-B on Rev C. hardware and newer. This port is used by a host application (hostAPPEMU) to communicate with the PLC device.
 - Diagnostic port
 - The Diagnostic Port is the serial port the PLC device uses to transfer diagnostic messages to the PLC Quality Monitor or Logger Tools. This can be either SCI-A or SCI-B on Rev C. hardware and newer. If using IEC432/LLC, the Diagnostic port can be shared with Data port if required, however, if using IPv4, the Data port and Diagnostic port must be different and cannot be shared.

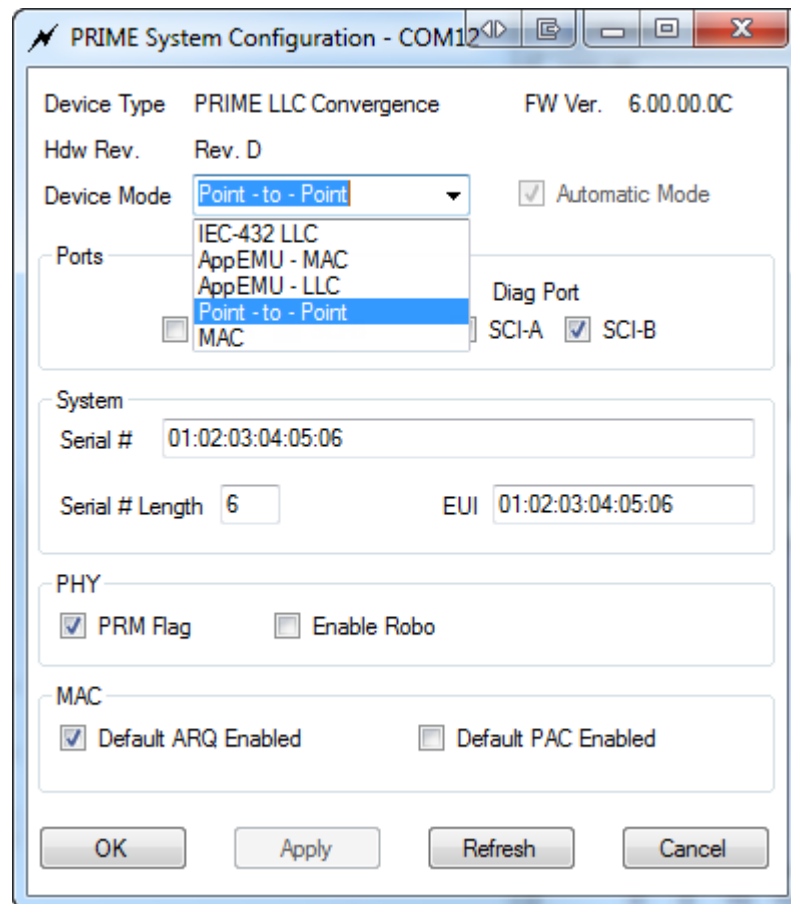
Note that SCI-B shall not be selected for docking board HW prior to Revision C

- System
 - Serial Number
 - A maximum 16 octet string representing the device serial number, . entered as ####-####-####, where # can be 0-9, a-f.
 - Serial Number Length
 - The length of valid octets in the 16 octet serial number

- EUI address
 - The hexadecimal EUI-48 of the PLC device, entered as ###:###:###:###:###:##, where # can be 0-9, a-f.
- PHY
 - PRIME – PRIME standard mode
 - PRIME ROBO – non-PRIME standard PHY robust mode
- MAC
 - Default ARQ enabled: ARQ is enabled by default
 - Default PAC enabled: Packet Aggregation enabled by default

The following example illustrates how to change the device type from “IEC432-LLC” to “Point-to-Point”:

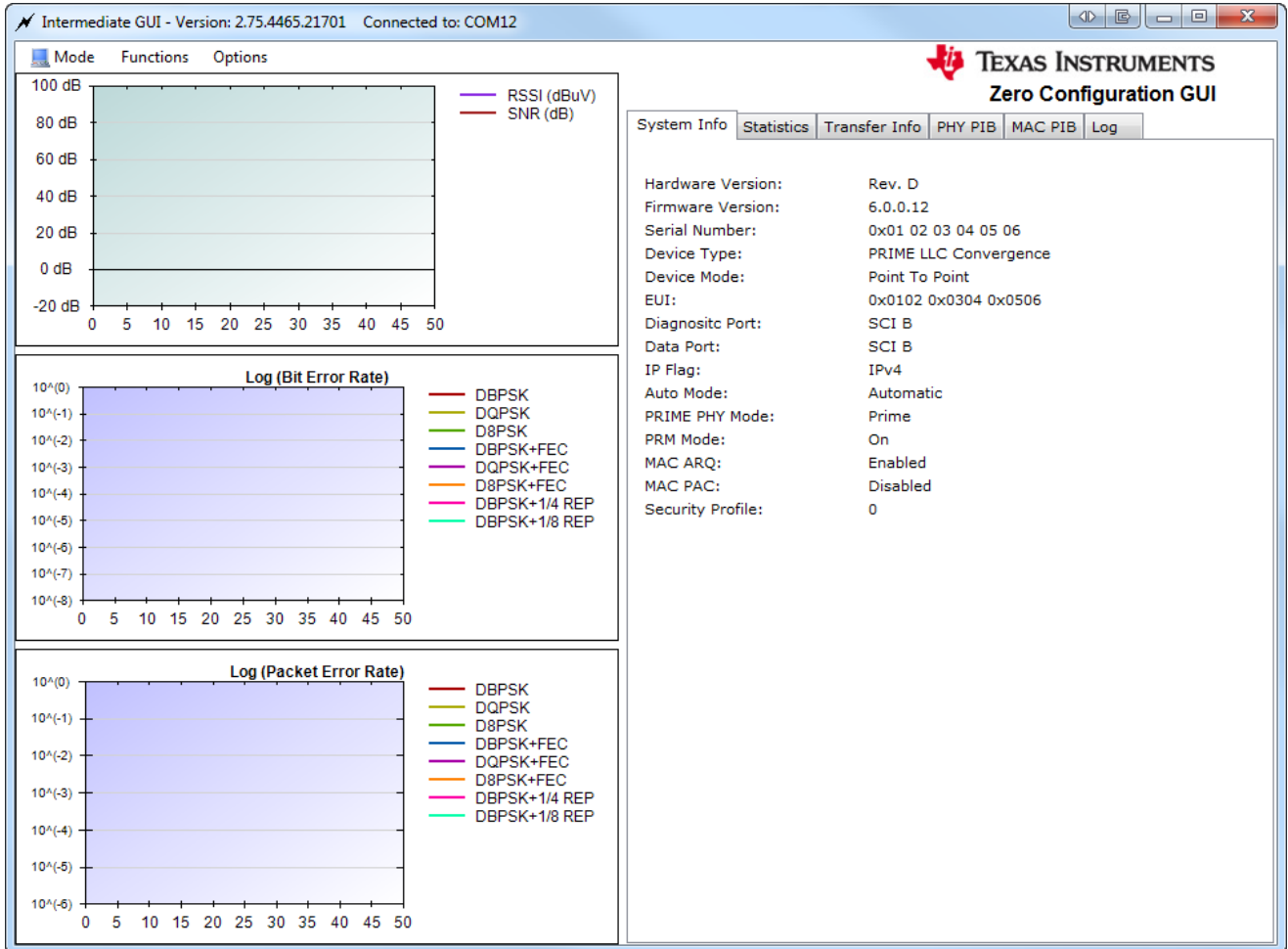
1. Menu -> Options -> Set System Config
2. Pull down menu from Device Type
3. Select Point to Point
4. Click OK



2.3 Getting System Information

The Get System Info option (Menu->Options->Get System Info) retrieves the current System Information values from the PLC-DK. These are represented in the System Information view. These values may be set using the Set System Config (Menu->Options->Set System Config).

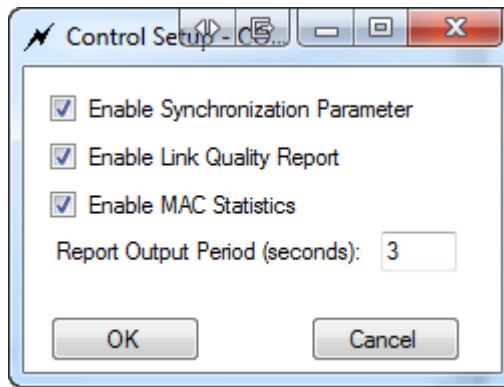
The system information may also be refreshed by right clicking on the panel and choosing “Refresh System Information”.



2.4 Control Set Up

The Control Setup option (Menu->Options->Control Set up) allows the followings:

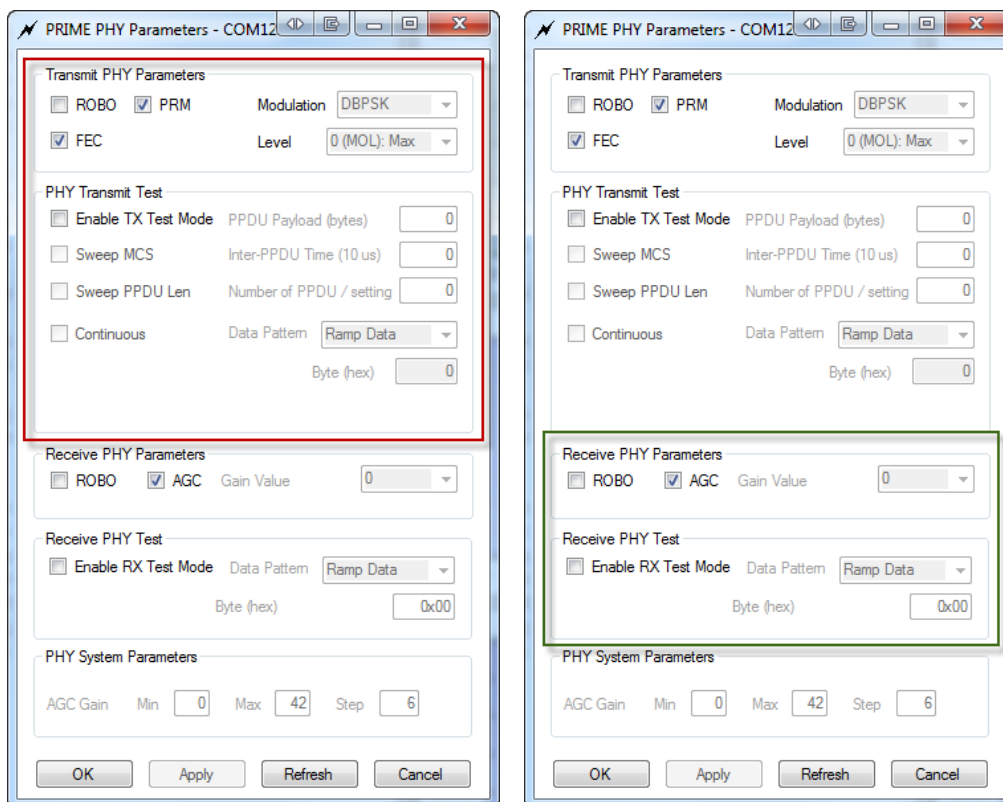
- Channel status update - Select “Enable Synchronization Parameters” check box for status display in statistic window.
- Link quality report update - Select “Enable Link Quality Report” check box for RSSI/SNR/BER/PER display in the statistics window.
- MAC statistic update – Select “Enable MAC statistics” check box for MAC statistics display in MAC statistic window.
- Update period in seconds – Enter duration between statistics updates.



Note that if both transmit and receive PLC LQM tool is running on the same PC, it is recommended to use a larger update periods (e.g. 3 seconds) to avoid too many traffic between device and host PC.

2.5 Configuring PHY Parameters

The PHY parameters configuration (Menu->Options->PHY parameters) is used for configuring the PHY transmitter (Red Box below) and receiver parameters (Green Box below).



Note that the enabling of PHY “Test Mode” on the Transmit or Receive requires the device mode to be “Point to Point”.

The following describes the PHY TX parameters that can be configured:

- ROBO – PHY Robust mode (non-PRIME standard)
- PRM – When enabled, it performs PHY Robustness Management as described in the PRIME standard and manages the modulation and FEC selections. The modulation/FEC selection from this panel will be ignored. PRM will not take effect if PHY test mode is selected.
- Modulation – DBPSK, DQPSK, D8PSK. Note this field is ignored if sweep MCS is selected. If ROBO mode is selected, then DBPSK + 1/4 repetition or DBPS + 1/8 repetition can be selected.
- FEC - ON or OFF. Note this field is ignored if sweep MCS is selected. If ROBO mode is selected, this field is not valid since FEC is always on.
- Level – Transmit Level

(Note that the maximum transmit level should be set to 2 for AFE HW prior to Revision C)

0 : Maximum Output Level (MOL)

1 : MOL – 3dB

2 : MOL – 6dB

3 : MOL – 9dB

4 : MOL – 12dB

5 : MOL – 15dB

6 : MOL – 18dB

7 : MOL – 21dB

The following describes the PHY TX parameters that can be configured for PHY Tx test mode only:

- Test Mode - When enabled, it configures the transmitter in test mode and it transmits fixed data pattern (selected in data pattern box) for BER testing
- Sweep MCS – When enabled, test will sweep through all MCS for the packets transmitted. The order of MCS used is DBPSK, DQPSK, D8PSK, DBPSK+FEC, DQPSK+FEC and D8PSK+FEC.
- Sweep PPDU length - When enabled, test will sweep through all valid PPDU length in increasing order for the MCS used.
- Continuous – When enabled, test will continuously transmit PPDU as specified. When disabled, test will transmit the “Number of PPDU per setting” (see below) as specified and stop. .
- Data Pattern – When PHY test mode is enabled, data pattern for the packet payload to be transmitted can be selected. The following data patterns are available:
 - A ramp data pattern from 0 to 255
 - A fixed data byte set by octet value
 - PRIME certification data pattern (PRIME IS A WONDERFUL TECHNOLOGYPRIME IS A WONDERFUL TECHNOLOGY) with no space between 2 sentences.

The data pattern is repeated for the duration of the payload.

- PPDU length – PPDU length in bytes. Note this field will be ignored when sweep PPDU length is selected. The current firmware version supports a PPDU length of 1 byte to 756 bytes. It is also governed by maximum length allowed for the selected modulation scheme.
- Inter-PPDU time – The gap time between PPDU in unit of 10 microseconds.
- Number of PPDUs per setting – The number of PPDU per setting during MCS sweep, PPDU length sweep or MCS/PPDU length sweep.

The following describes the PHY Rx Parameters can be configured:

- AGC – If selected, receiver performs automatic gain control. If unselected, manual gain setting is used. Valid gain values are from 0 to 7 with step of 6dB.

The following describes the PHY Rx Parameters can be configured in PHY Rx Test mode only:

- Test Mode - When enabled, receiver will start comparing receive packet using the data pattern selected and compute BER for BER testing.
- Data Pattern – When test mode is enabled, it can select data pattern used for comparison in computing BER. A ramp data patten from 0 to 255 or a fixed data byte set by octet value. Note this should be identical to the selection in the transmitter for valid BER result.

The following describes the PHY System Parameters:

- AGC Gain Min – Minimum AGC gain in dB
- AGC Gain Max – Maximum AGC gain in dB
- AGC Gain Step – Step size of AGC in dB

2.6 Get/Set MAC PIB

MAC PIB (PRIME standard Section 4.5.1-MAC variable attributes) can be configured as follows (Menu->Function->Set MAC PIBs). The MAC PIB's may also be refreshed, cleared, or set by using the context menu on the MAC PIB panel.

Set PRIME MAC PIBs - COM12

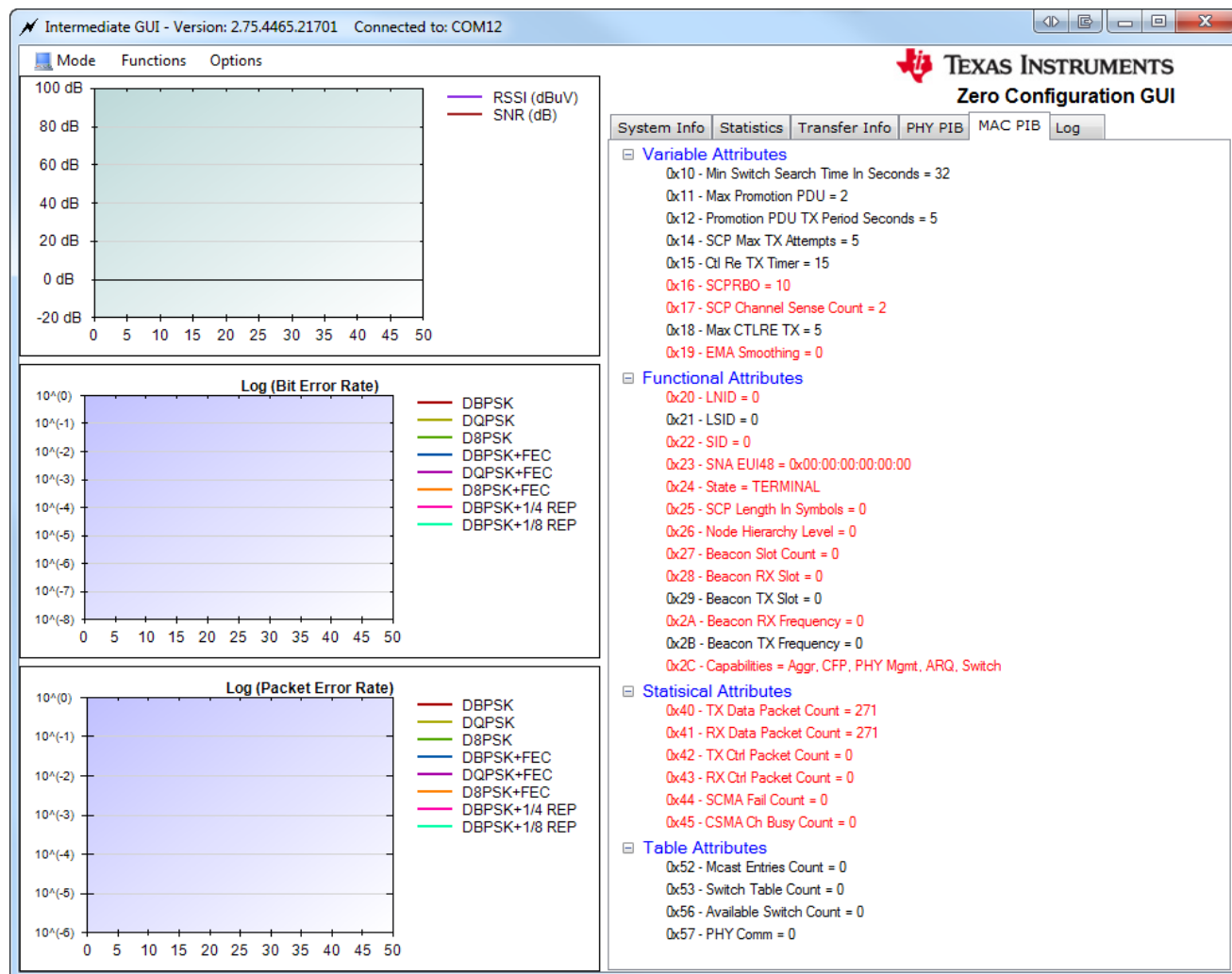
Min Switch Search Time	32	SCP Max TX Attempts	5
Max Promotion PDU	2	Ctl ReTX Timer	15
Promotion PDU TX Period	5	Max Ctl ReTX	5

Action PIBs

MAC Action TX Data	☐	MAC Action Pro Reject	☐
MAC Action Conn Close	☐	MAC Action Unregister	☐
MAC Action Req Reject	☐		

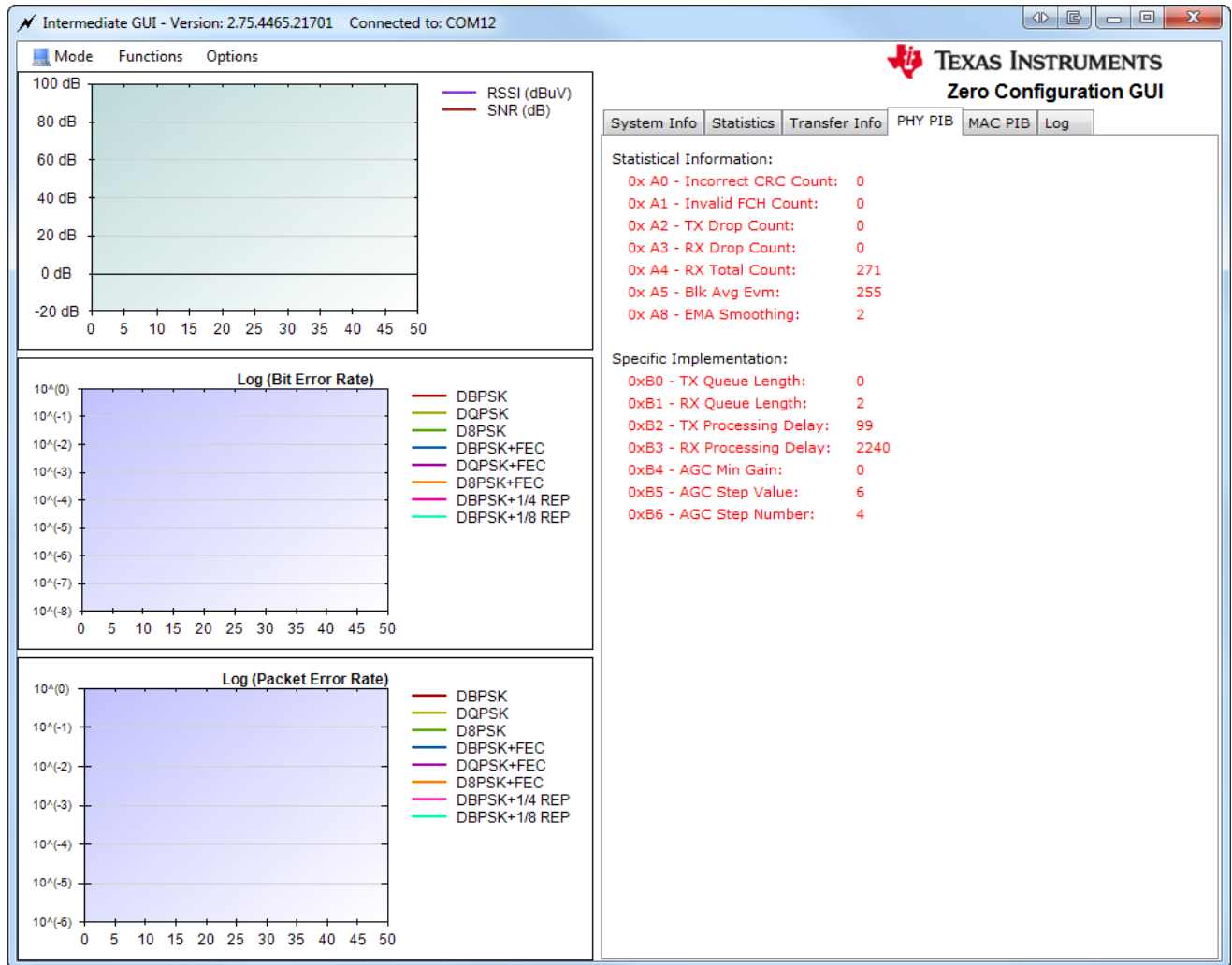
OK Apply Refresh Cancel

MAC PIB (PRIME standard Section 4.5.1 – MAC variable attributes) can be retrieved as follows (Menu->Function->Get MAC PIBs) or by using the MAC PIB context menu:



2.7 Get PHY PIB

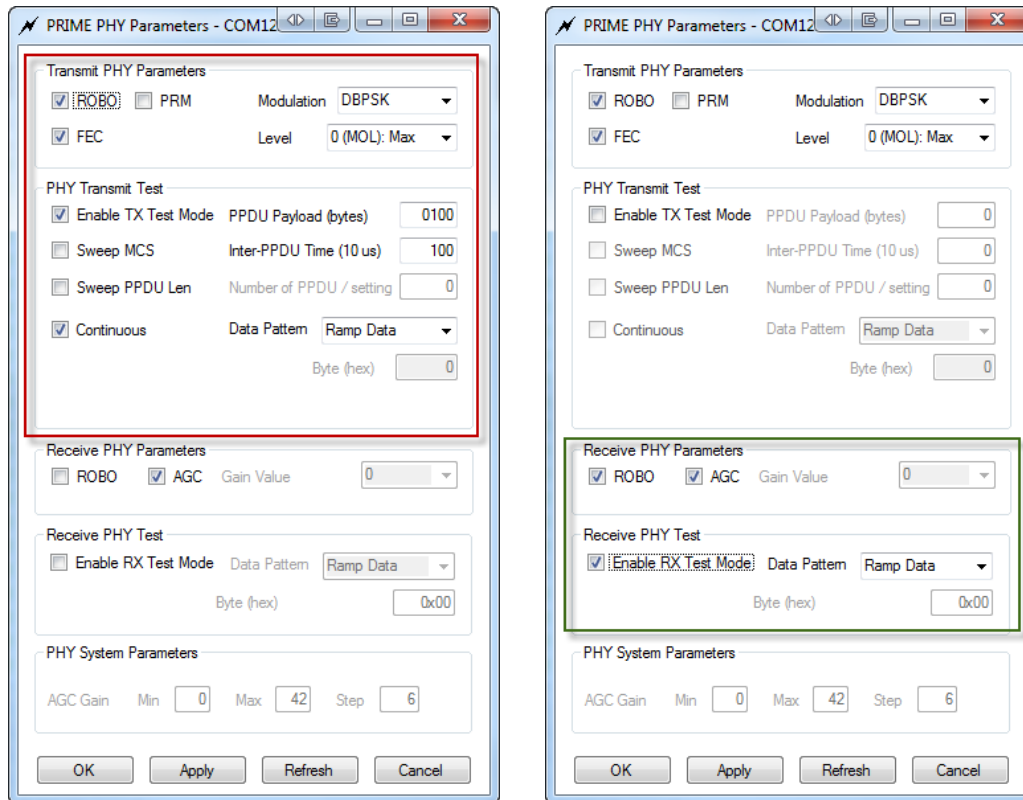
PHY PIB (PRIME standard Section 3.10.1 PHY statistical attributes and 3.10.2 PHY Implementation attributes) can be retrieved as follows (Menu->Function->Get PHY PIBs). The PHY PIBs may be refreshed or cleared by using the available context menu.



2.8 Testing PHY Performance

The PHY performance can be tested in a point-to-point configuration where system configuration steps described on Section 2.3 should be used. One modem should be configured as transmitter in test mode and the other modem as receiver in test mode (Menu->Options->PHY Parameters). The HW should be set up as described in Section 1.5.1. An example for PHY test with DBPSK+FEC, transmitting at level -9 dB, PPDU length of 100 bytes and inter-PPDU interval of 100 us in continuous mode is shown.

Note it does not support concurrent bi-directional data transfer.

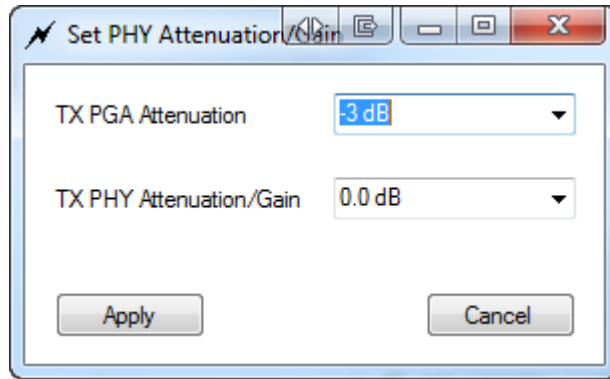


Note that the enabling of PHY “Test Mode” on the Transmit or Receive would require the device mode to be “Point to Point”. The device mode is not currently automatically changed.

The channel status and link quality report are automatically started with a report period of three seconds. The PHY performance (SNR/RSSI/PER/BER) will be displayed in the graphs and the statistics will be displayed in the statistics panel.

2.9 Set PHY Tx Attenuation and Gain

The Prime firmware sets the transmit PGA attenuation and digital attenuation/gain to -3dB and 0 dB correspondingly by default. The PLC EVM will produce transmit output level of 1 Vrms with 2 ohms load.



2.10 Sending and Receiving Message

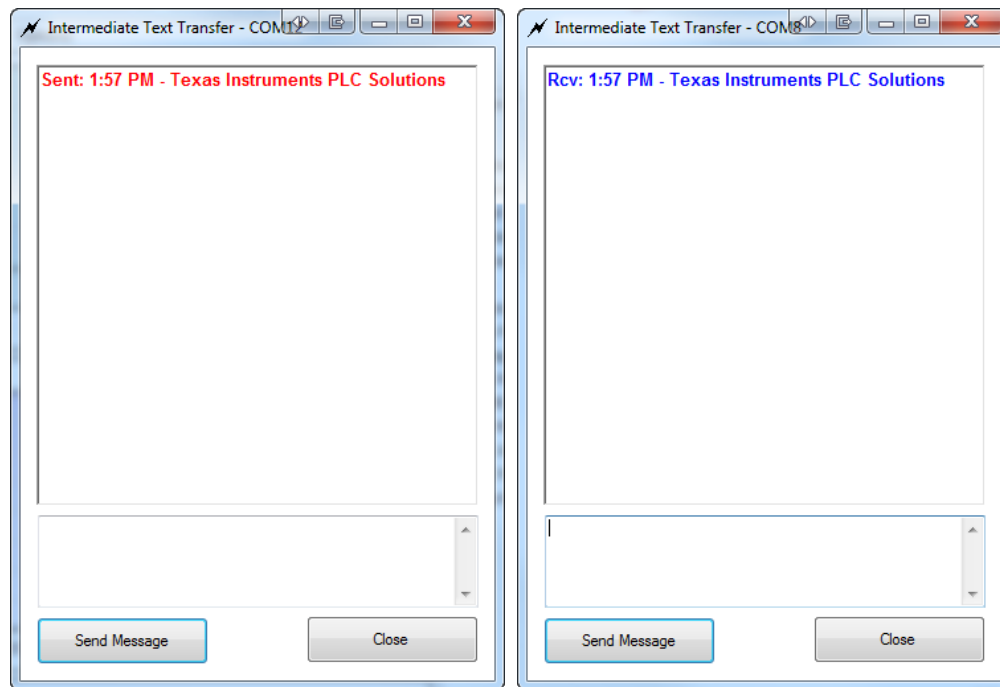
The Send Message function (Menu->Function->Send Message) sends a small text message from the one device to another in point-to-point configuration. It is intended to test and verify communication between the two systems in a point-to-point configuration.

Note that this operation would require the device mode to be “Point to Point” and the device is not automatically set to point to point mode by the application.

On the receiving device, the device mode must also be set to “Point to Point” following steps described in Section 2.3

Note that the connection type such as ARQ enabled, PAC enabled or security profile used for the message send can be modified via System configuration settings using steps described in Section 2.3.

When this option is selected, you may fill in a message and press send, and the other host will display the message.



Note that the connection type such as ARQ enabled, PAC enabled or security profile used for the message send can be modified via System configuration settings using steps described in Section 2.3.

2.11 Sending and Receiving File

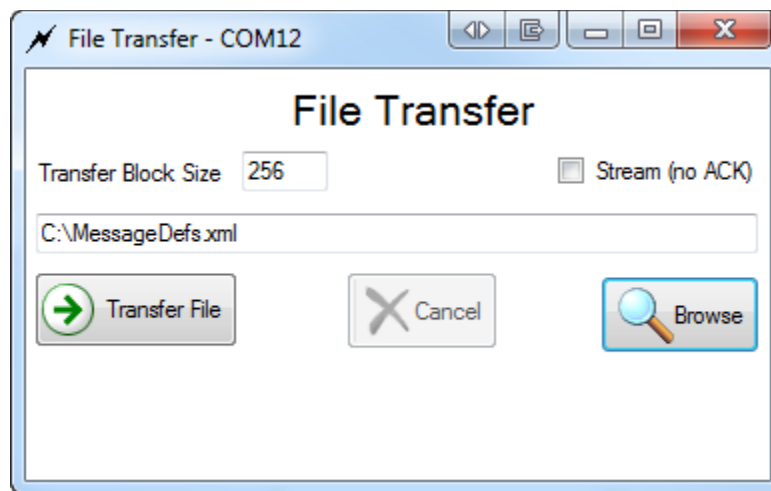
The Send File function (Menu->Function->Send File) sends file from one device to another in a point-to-point configuration.

Note that this operation would require the device mode to be “Point to Point”.

On the receiving device, the device mode must be set to “Point to Point” following steps described in Section 2.3

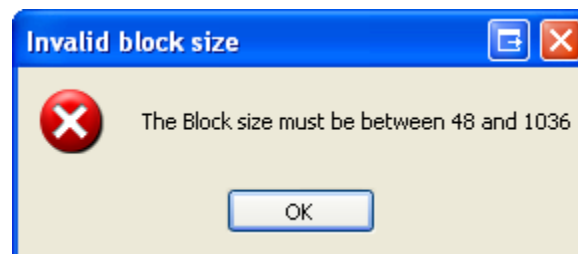
Note that the connection type such as ARQ enabled, PAC enabled or security profile used for file transfer can be modified via System configuration settings using steps described in Section 2.3.

This function is not a guaranteed error-free delivery (the file received may have dropped packets) and is a means to push data from one board to another. The receiver will note both payload CRC and missing packet errors and will attempt to notify the sender of these errors.

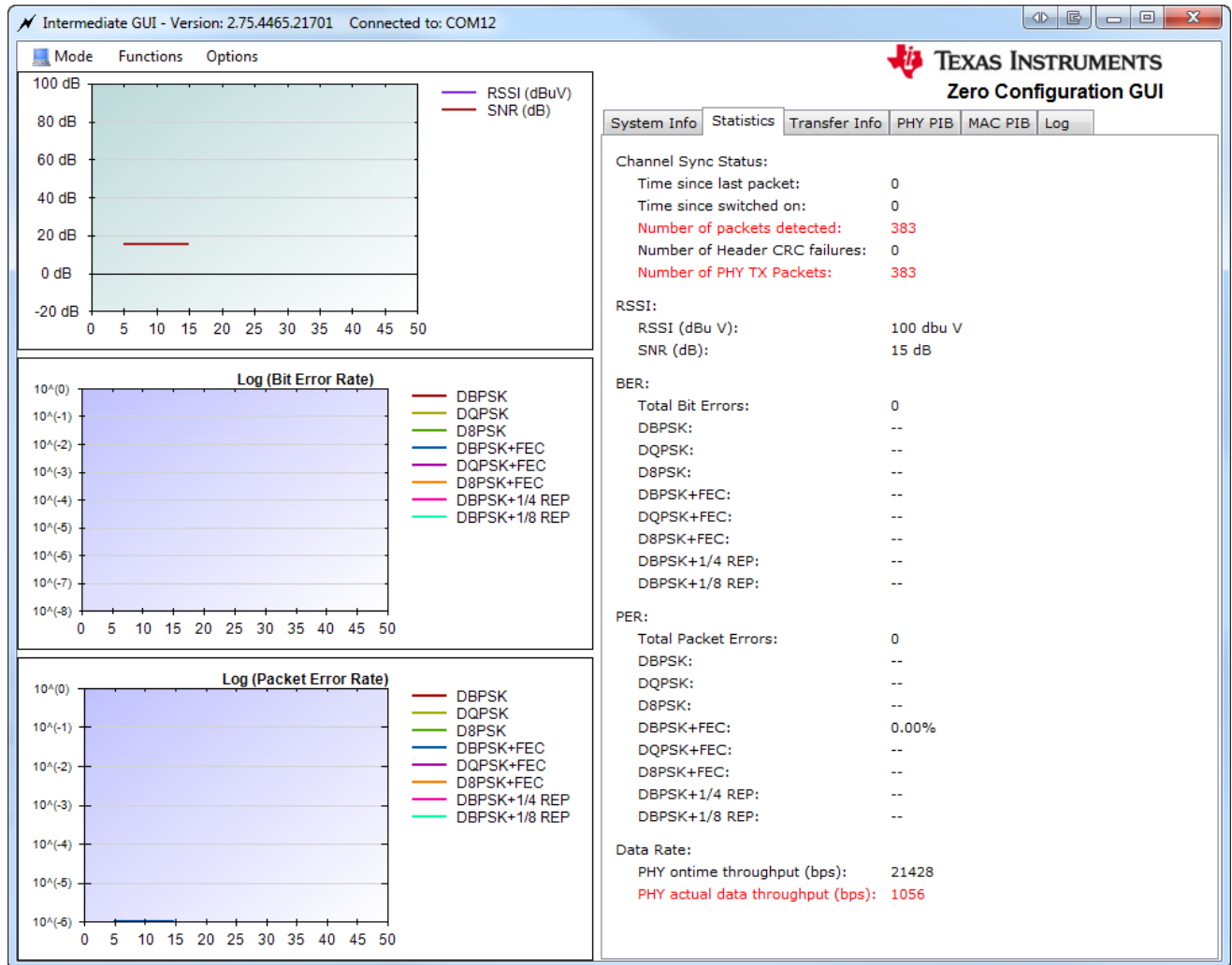


There are two modes for file transfer, stream and non-stream. Stream mode streams packets to the receiver without waiting for the receiver to acknowledge receipt. In non-stream mode the receiver must ACK each packet before the sender will send the next.

The packet size may also be specified. This value represents the total packet size, including any protocol headers. If an invalid size is entered, when Send is pressed, the following error will be displayed.



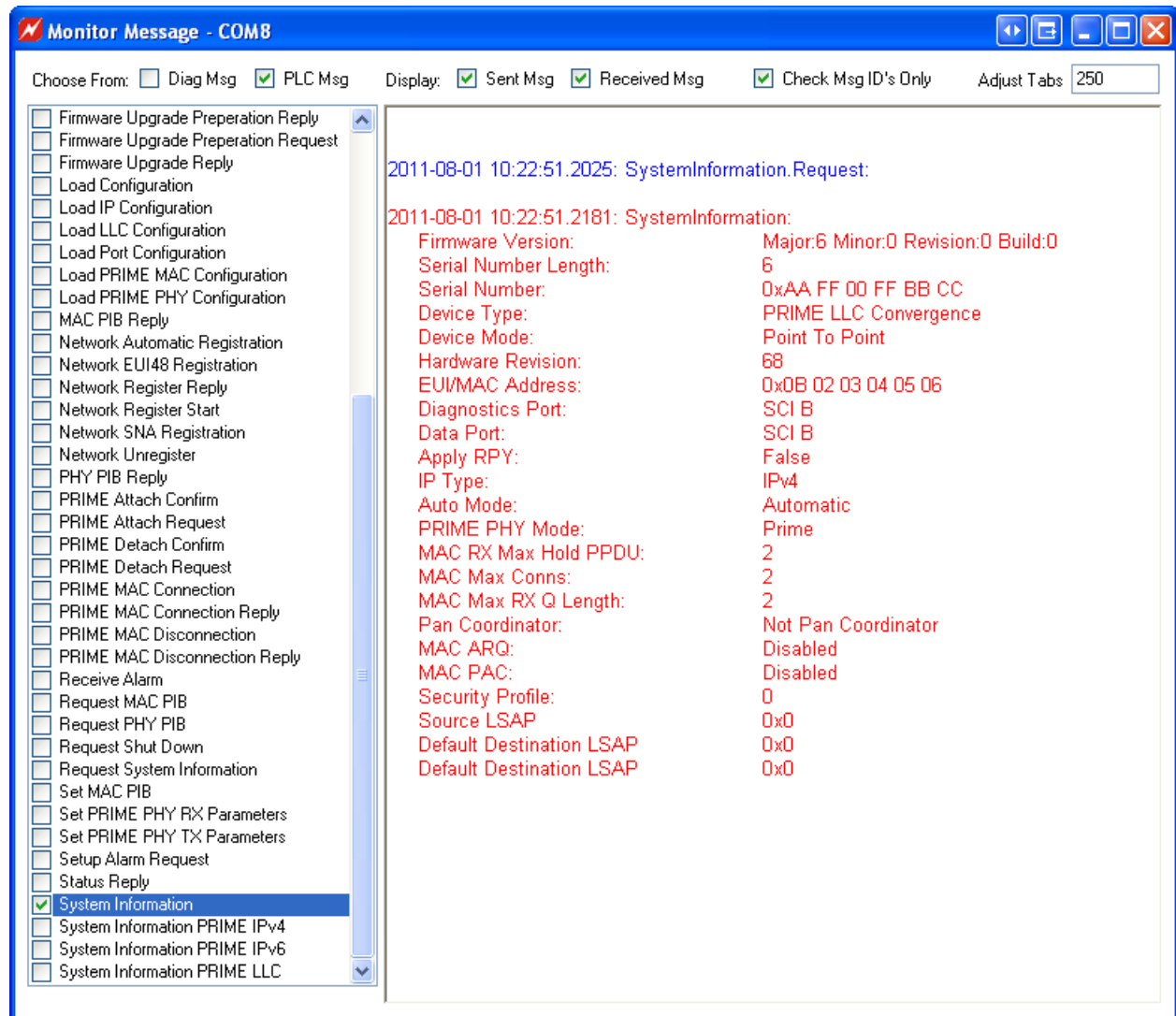
Once the file transfer begins, the Transfer Information section reflects transfer statistics.



The transfer may be aborted by either the sender or receiver. The sender may abort by pressing the Abort button and the receiver may abort by selecting the menu option "Functions/Abort file receive".

2.12 Monitor Message Function

The monitor message function allows you to display formatted messages in the same way as in the log panel but will display only the filtered messages you desire.



You are able to monitor as many or as few messages as you like using a check list box.

This includes all diag and the PLC host messages.

You are able to choose sent messages, received messages, or both.

The filtering is done by the message id or the message id and message class.

The difference is when you filter by the message id the requests and data returned are both displayed since the ids are the same. An example of this is selecting any data transfer message. This will display the data transfer message, the data confirm, and any data indication message since all have the same id.

If you filter by id and message class you can choose to see only requests, or the data received. Using the above example you can choose to see the data transfer, confirm or indication individually. This filters down to exact the message type you want to see.

Messages from the device are in red. Messages sent to the device are in blue.

When saving the display to a file via the context menu, the file is saved in a rich text format (*.rtf) to maintain the color and tab formatting.

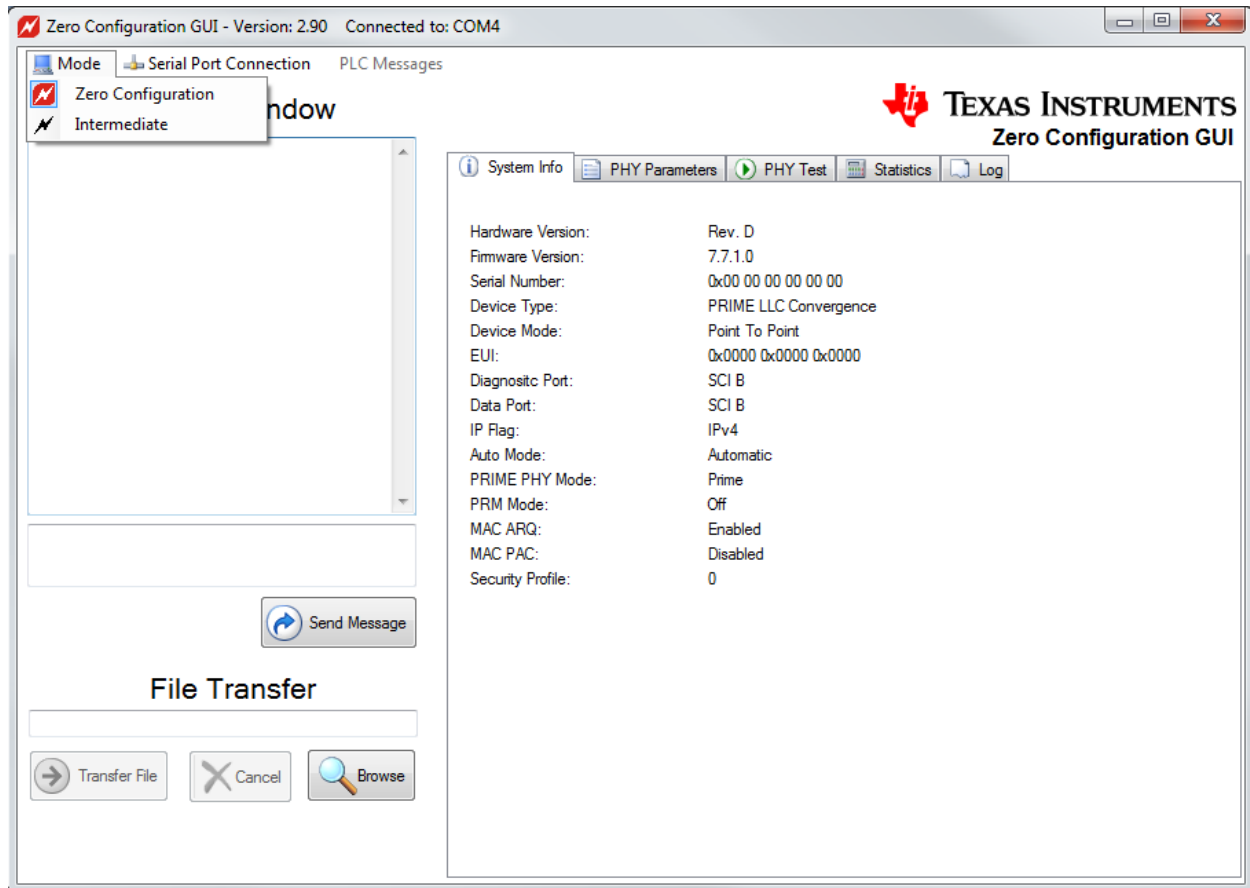
If “Enable Logging to File” is selected the log data is saved to a file but without the formatting.

You can display the full message details or the condensed one line version and this is the version logged to file if enabled.

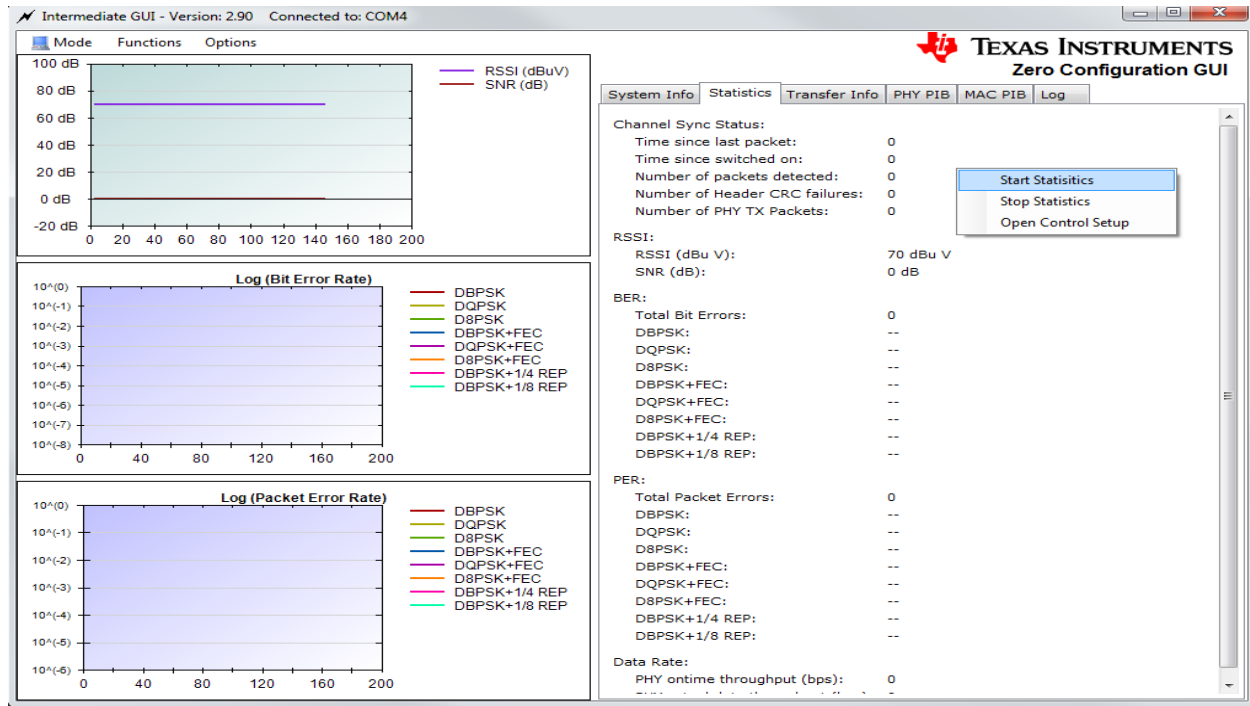
The raw message format is not currently implemented.

APPENDIX A - PRIME PHY Test Instruction

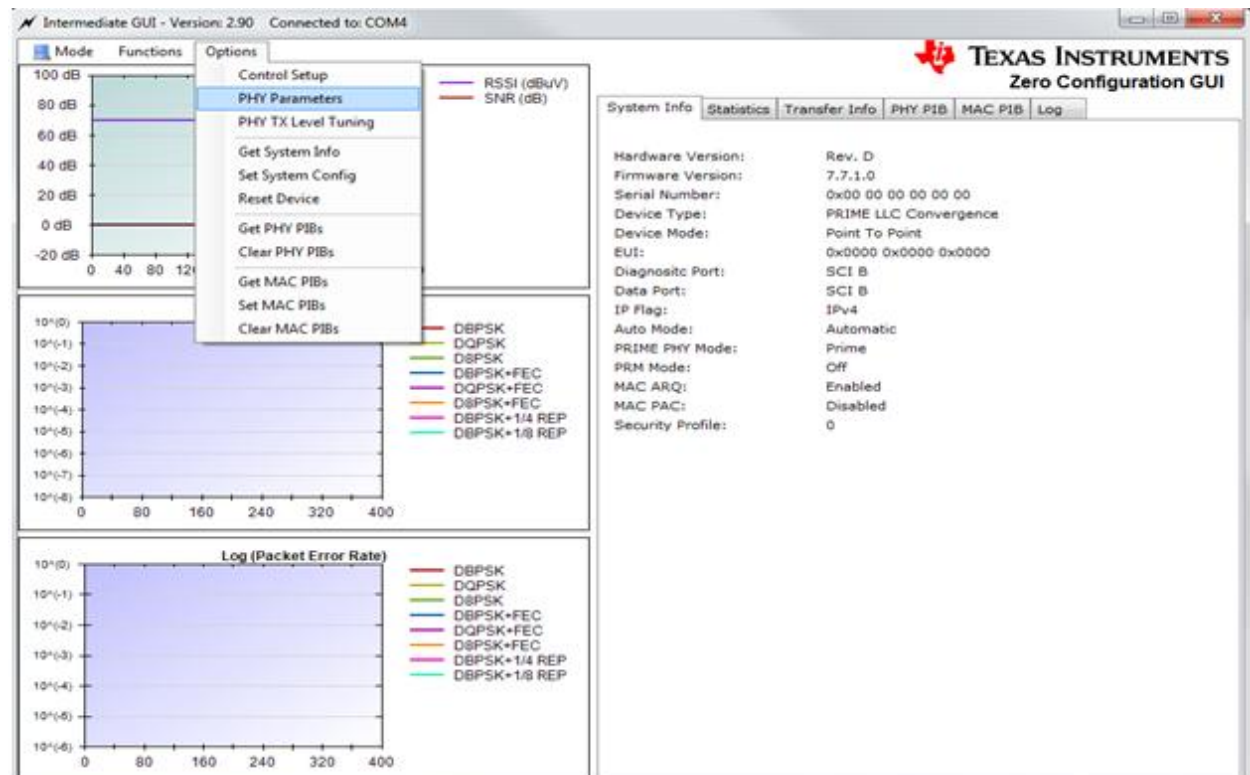
1. Open zero-configuration GUI and go to intermediate mode. Note that Diag/Data port should be set properly based on your physical HW configuration. For the example, it shows that the PLC modem is connected to PC via USB cable (SCI-B). In addition, check the firmware version number is correct.



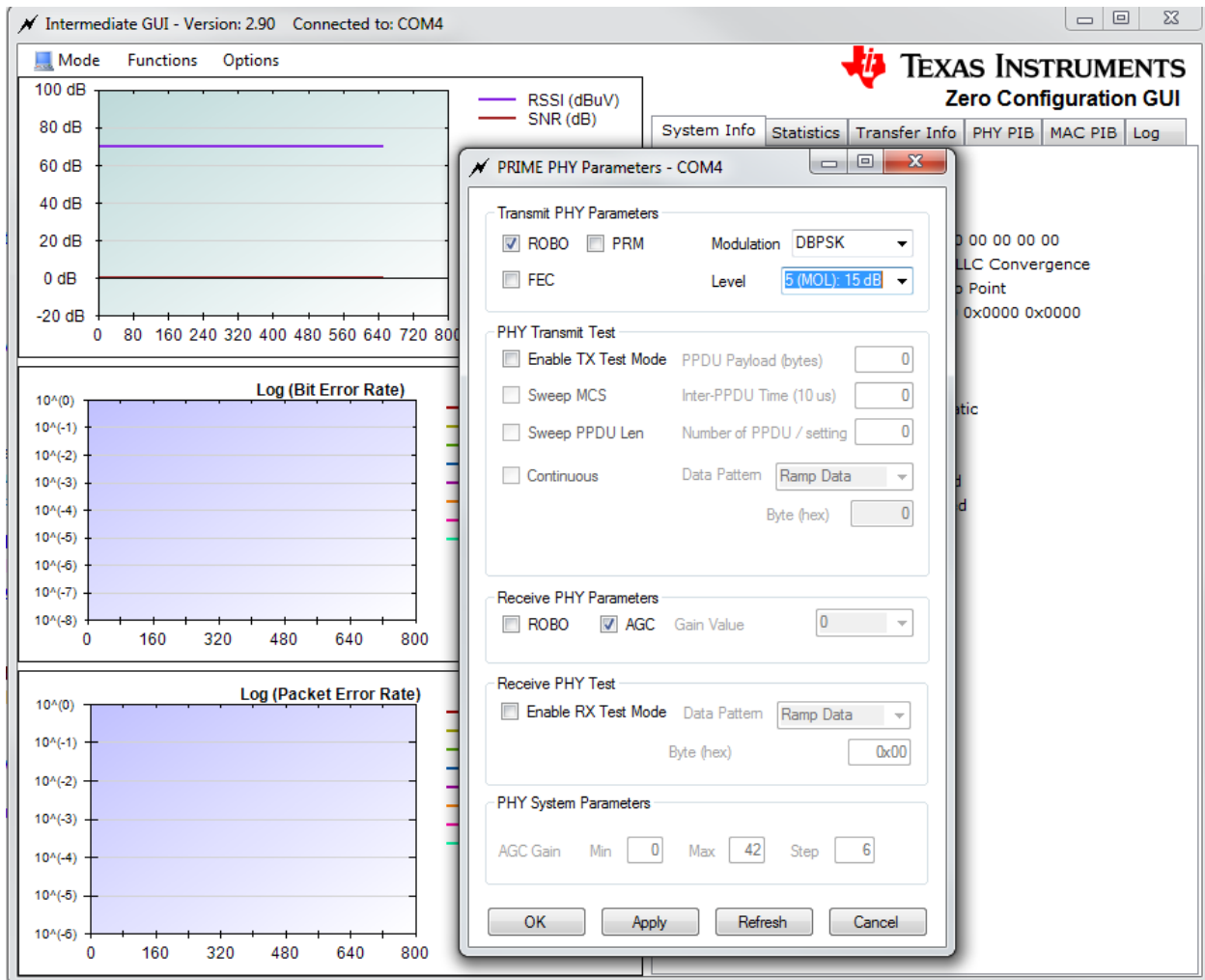
2. To get statistics from PHY testing, go to Statistics window and right click to select “Start Statistics”.



3. To run PHY test mode, go to “options→PHY Parameters” to set PHY TX or RX mode.



4. For RX, check “Enable RX Test mode”. Then, click “Apply” and then “OK”.



5. For TX, check “Enable TX Test mode” and “Continuous”(option 1) .If you want to send a limited number of packets, you can set “Number of PPDU” instead of checking “Continuous”(option 2) .Then, click “Apply” and then “OK”.

PRIME PHY Parameters - COM4

Transmit PHY Parameters

☒ ROBO ☐ PRM Modulation DBPSK

☒ FEC Level 0 (MOL): Max

PHY Transmit Test

☒ Enable TX Test Mode PDU Payload (bytes) 100

☐ Sweep MCS Inter-PPDU Time (10 us) 1000

☐ Sweep PDU Len Number of PDU / setting 0

☒ Continuous Data Pattern Ramp Data

Byte (hex) 0

Receive PHY Parameters

☐ ROBO ☒ AGC Gain Value 0

Receive PHY Test

☐ Enable RX Test Mode Data Pattern Ramp Data

Byte (hex) 0x00

PHY System Parameters

AGC Gain Min 0 Max 42 Step 6

OK Apply Refresh Cancel

(option 1)

PRIME PHY Parameters - COM4

Transmit PHY Parameters

☒ ROBO ☐ PRM Modulation DBPSK

☒ FEC Level 4 (MOL): 12 dB

PHY Transmit Test

☒ Enable TX Test Mode PDU Payload (bytes) 100

☐ Sweep MCS Inter-PPDU Time (10 us) 1000

☐ Sweep PDU Len Number of PDU / setting 100

☐ Continuous Data Pattern Ramp Data

Byte (hex) 0

Receive PHY Parameters

☐ ROBO ☒ AGC Gain Value 0

Receive PHY Test

☐ Enable RX Test Mode Data Pattern Ramp Data

Byte (hex) 0x00

PHY System Parameters

AGC Gain Min 0 Max 42 Step 6

OK Apply Refresh Cancel

(option 2)