

SimulANT (Garmin Developer version) User's Guide

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Revision History

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1 Introduction

SimulANT (Garmin Developer version) is an application used for simulating Garmin Developer ANT devices and displays. It is a test tool for first time ANT developers to simulate a sensor and test their display or vice versa.

Microsoft .Net Framework 4.5 is required for proper operation of SimulANT (Garmin Developer version).

2 Related Documents

Refer to current versions of the listed documents. To ensure you are using the current versions, check the ANT website at www.thisisant.com. Technical support is available via the ANT forum.

1. ANT Message Protocol and Usage
2. Garmin Device Profile – Ranging

3 Getting Started

This document will demonstrate how to setup a wireless connection between a ranging sensor and a simulated display using the application. One ranging sensor and one ANT USB stick is required to follow the demonstration in this guide.

Figure 3-1 shows the main application window.

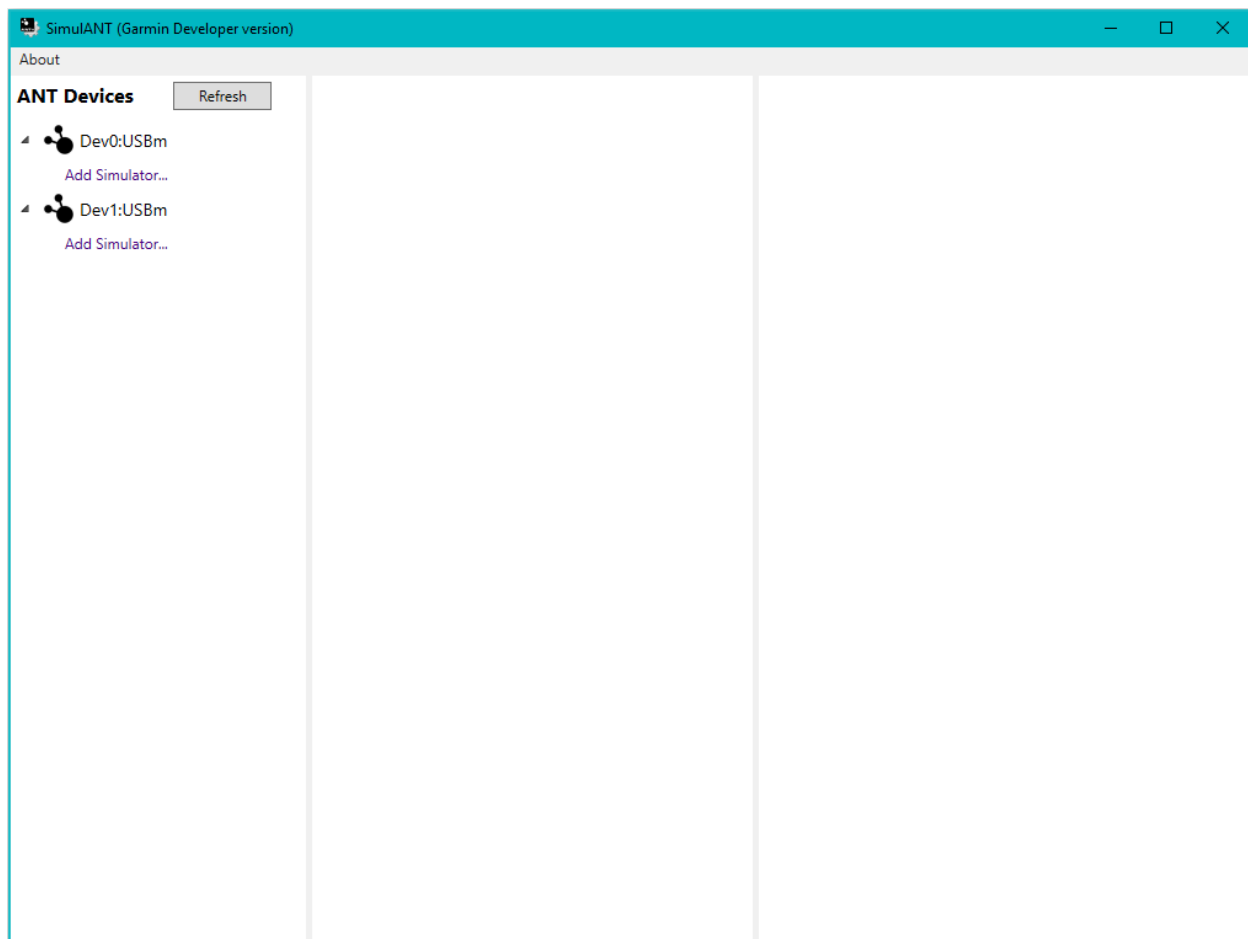


Figure 3-1. SimulANT (Garmin Developer version) Application Window

3.1 Startup Physical Ranging Sensor

Before creating a simulated ranging display, we first need a ranging sensor for the display to connect to. Refer to the user manual of your ranging sensor to enable ANT transmissions. If using the Garmin LIDAR-Lite v4 LED, simply provide power to the device.

3.2 Setup a Simulated Ranging Display

The following section is a description of the user interface along with instructions on how to setup a simulated ranging display. The simulated ranging display will be connected to the physical ranging sensor that was turned on in step 3.1.

3.2.1 Device Panel

The device panel shows all the ANT USB devices connected to the PC not in use by other applications. To view the capabilities of the respective ANT device, right click on the device and go to properties. If two ANT USB stick are connected to the PC, the device panel will look similar to Figure 3-2.



Figure 3-2. Device Panel

3.2.2 Add Simulator Window

Click on the Add Simulator button under the Dev0 in the device panel. An Add Simulator window will pop up. The drop-down list displays a list of available simulated devices. To select a device, simply click on the drop-down list and then select the desired simulator.

Select the Ranging Display option from the drop-down list.

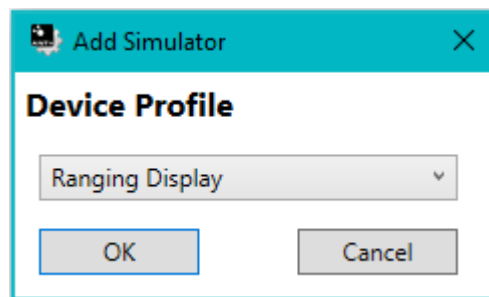


Figure 3-3. Add Simulator Window

3.2.3 Properties Panel

The center column of the application window holds the Properties Panel. The properties panel shows details of the selected simulator. Certain fields under the ANT Channel Configuration can be modified by the user. When connecting to a device for the first time, if you don't know the exact channel parameters for the device you are connecting to, you can set the Device Number and Transmission Type to zero (wildcard). Some channel parameters cannot be modified as they are defined by the ANT Profile such as the Device Type. Ensure the correct Network Key is used; your Network Key will be 'GarminDeveloper' unless you have reprogrammed your ranging sensor.

Properties

Ranging Display

- ANT Channel Configuration**
 - Channel Parameters**

Channel Period	8192
Device Number	0
Device Type	16
High Priority Search Timeout	2
Low Priority Search Timeout	10
Network Key	GarminDeveloper
Proximity Search Bin	0
Radio Frequency	66
Transmission Type	0
Use Pairing Bit	☐
Extended Device Number	0
- Command Data Page**
 - Configure LLV4 Settings
 - Power Mode Settings
 - Trigger Measurement
- Common Pages**
 - Manufacturer's Information
 - Product Information
- Data Pages**
 - Default Data

Figure 3-4. Properties Panel

3.2.4 Action Panel

The action panel is located near the bottom center of the application window. Click on the 'TurnOn' Button to turn on your simulated display.

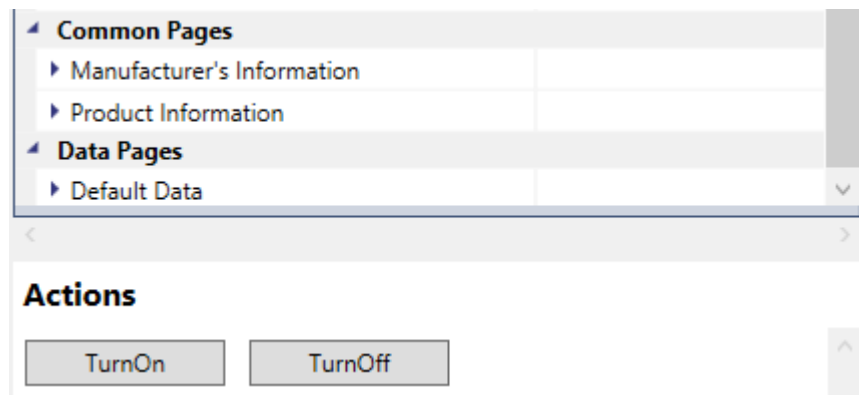


Figure 3-5. Action Panel

3.2.5 Output Panel

The right column of the application window holds the Output Panel. Under the output Panel, there are three tabs: Events tab, ANT Verification, and ANT Messages tab. The Events tab displays the time-stamped simulator events. The ANT Messages tab shows the raw ANT data messages that are being transmitted and received along with a timestamp. The ANT Verification tab is reserved for future functionality and is currently not used. For details on the ANT messages, please refer the related documents outlined in Section 2.

After completed all the steps, the events tab in the output panel should look similar to Figure 3-6 below.

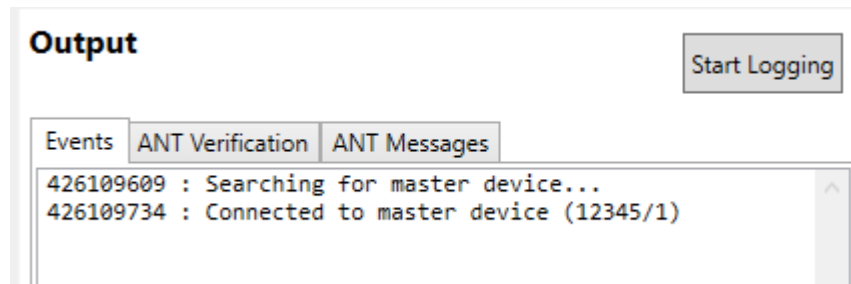


Figure 3-6. Output Panel

3.3 Sending and Receiving Messages

The following section will get you started in how to control the ranging sensor and how to view the data from the ranging sensor. This section only provides an example of how to send and request a subset of what is available on the ranging sensor. For more details on the messaging protocol and what configurations are available for ranging sensors, see the *Garmin Device Profile – Ranging* document.

3.3.1 Trigger a Distance Measurement

In the action panel, press the 'TriggerMeasurementCommand' button. For each measurement command, the Sequence Number needs to be incremented for the ranging sensor to accept the command. For the simulated display the sequence number must be manually entered. Be sure this gets updated for each new command. Press OK to send the command from the simulated ranging display to the ranging sensor.

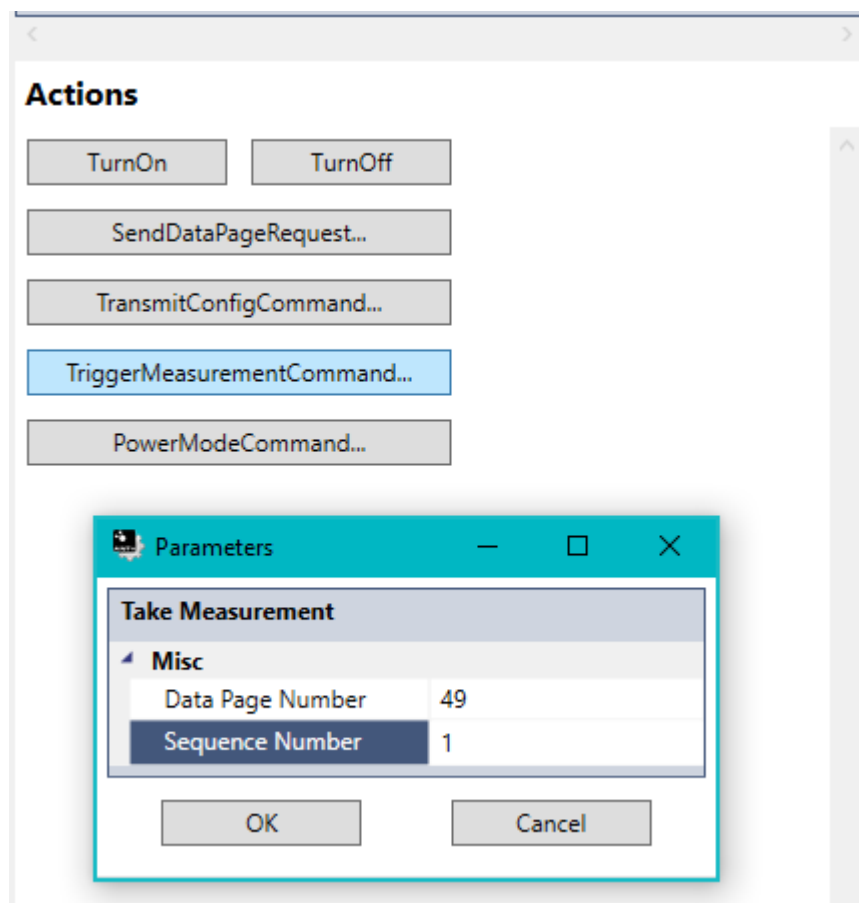


Figure 3-7. Triggering a Distance Measurement

3.3.2 Viewing the Distance

After the ranging sensor has completed taking a distance measurement, the measurement data can be viewed in the properties panel. Navigate to Data Pages and view the contents of the Default Data Page as seen in Figure 3-8. Also see Section 4 on how to use scripting to open a display that shows the display.

Properties	
Ranging Display	
▶ ANT Channel Configuration	
▶ Command Data Page	
▶ Common Pages	
▶ Data Pages	
▶ Default Data	
Board Temperature	36
Data Page Number	16
Distance (cm)	223
Event Count	1

Figure 3-8. Viewing the Distance

3.3.3 Adjusting ranging sensor settings

Note: This is currently performed using a manufacturing specific pages (0xF0 – 0xFF) since the configuration of a specific ranging sensor can vary widely from device to device.

To adjust the settings on the ranging sensor, view the *Garmin Device Profile – Ranging* document to see what settings are supported for adjusting using the manufacturing specific pages. After verifying what settings are available for adjusting, you will need to read the ranging sensor manufacturing manual for what values are supported on your device and what affect those values have on your given device.

As an example of adjusting the ranging sensor settings using the simulated display, we will turn off high accuracy mode on the Garmin LIDAR-Lite v4 LED in preparation for turning on the synchronous measurement mode.

3.3.3.1 Turn off high accuracy

After looking at the *Garmin LIDAR-Lite v4 LED operational manual*, we can see that to disable turn off high accuracy mode, the parameter's associated value should be set to zero. To do this we click the 'TransmitConfigCommand' button in the Action Panel and change the Op Code to 'High_accuracy'. Remember to increment the Sequence Number and enter a value of zero. See Figure 3-9 for a reference. Click OK.

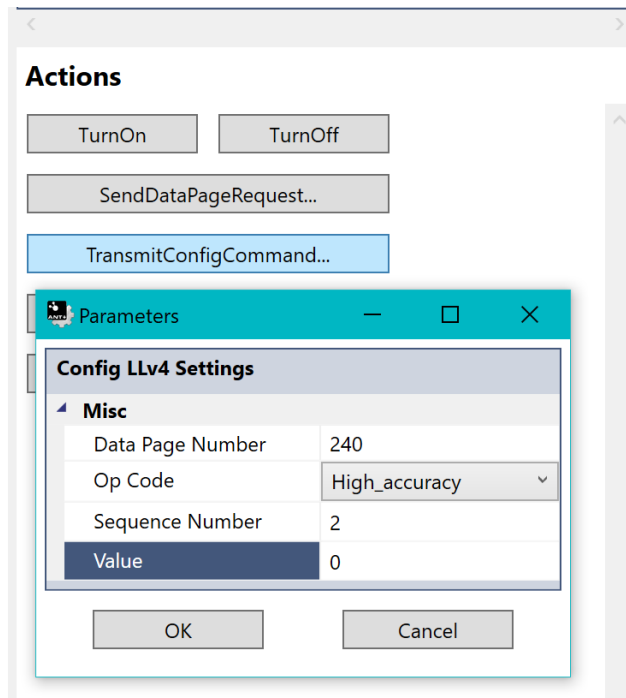


Figure 3-9. Turning off high accuracy mode

3.3.3.2 Setting the Measurement Mode (Power Mode)

After looking at the *Garmin Device Profile – Ranging* document, we will adjust the measurement mode to Synchronous Mode. This will configure the ranging sensor to take a new measurement automatically on each ANT transmission. Click the 'PowerModeCommand' button and set the Measurement interval to zero. Remember to increment the Sequence Number. See Figure 3-10 for a reference. Click OK. If done correctly the Garmin LIDAR-Lite v4 LED should now be taking a measurement automatically.

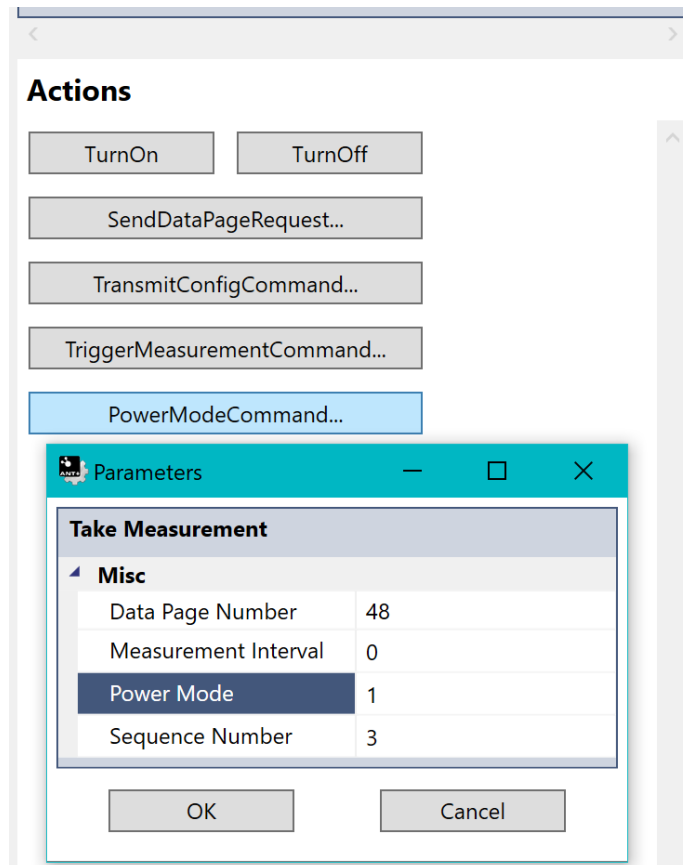


Figure 3-10. Set measurement mode to Synchronous mode

4 Script Panel

The Script panel is located below the Devices panel. Scripting is a feature designed to provide greater flexibility when using the simulator. To run a script to control a specific simulator, either select the script from the drop-down list or click on the load button. After clicking on the load button, a standard Windows pop-up will appear and allow you to select and open a script file. After selecting the desired script, click on the Run button.

As an example, if running the distance_Display script provided, a "Distance" pop-up will appear showing the connected ranging sensors current measurement, as shown in Figure 4-1.

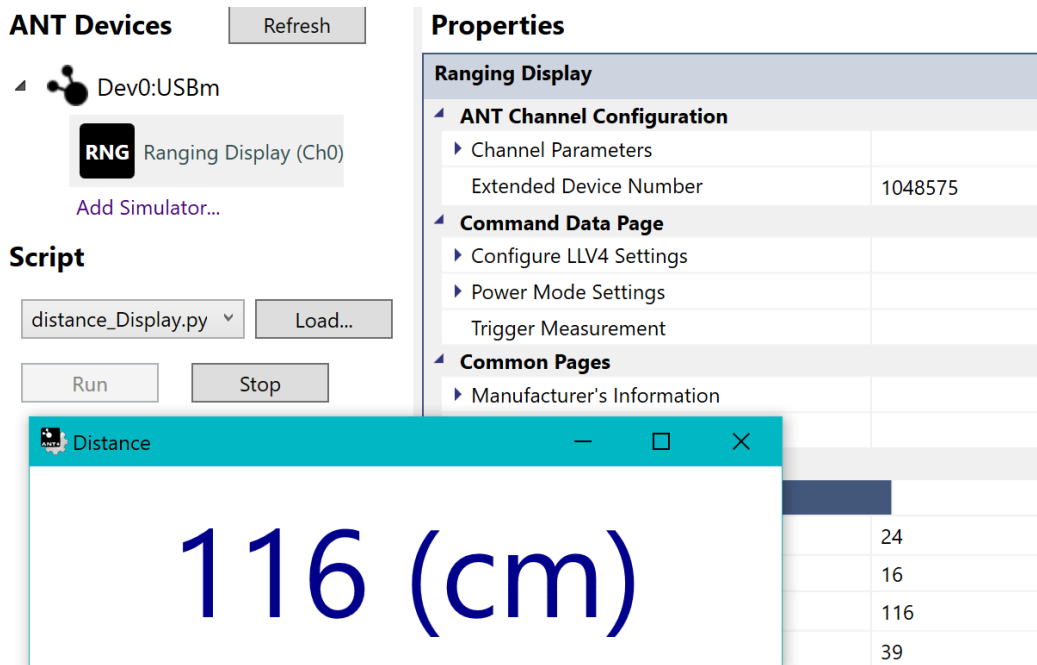


Figure 4-1. Distance display script