Portable AISG 2.0 Site Control Unit (SCU) Operating Instructions

CCI's SCU-AISG2-P

User Guide

Communication Components, Inc.

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1 Introduction

The SCU-AISG2-P system, acting as a portable AISG controller, is composed of a portable AISG adapter and a windows application. It is compatible to AISG (Antenna Interface Standards Group) protocol version 1.1 and 2.0, and can perform antenna tilt adjustment and AISG device control on site.

The major functions provided in the SCU-AISG2-P system include:

- ASIG RET Antenna Tilt Adjustment –
  The major functions for on-site adjusting and managing RET Antenna are:
  a.) Antenna electrical tilt setting
  b.) Antenna calibration
  c.) Self Test and Reset
  d.) RET alarm report
  e.) Maintenance of the antenna data

- AISG TMA Control –
  The major functions for on-site adjusting and managing TMA are:
  a.) TMA gain setting
  b.) TMA mode setting
  c.) Self Test and Reset
  d.) TMA alarm report

- Configuration –
  It's to configure operating environment of the SCU-AISG2-P system.

2 Installation

SCU-AISG2-P system comprises a hardware AISG adapter and a software windows application. You need to install and setup both the hardware and software appropriately to operate the system.

2.1 Hardware Specification

The SCU-AISG2-P AISG adapter has an AISG connector, four LED indicators, an USB port and a power port. The AISG female port is used to connect to AISG device(s) via AISG cable for controlling antenna electrical tilt or TMA gain. The USB port is used to connect a PC to the SCU-AISG2-P AISG adapter for data communication. The LED indicators show conditions of the SCU-AISG2-P adapter.

Figure 1 – CCI's Portable SCU (Model SCU-AISG2-P)

12V Indicator:	Will light up when 12V DC supply is turn on.
Power Indicator:	Will light up when the power is connected.
TX and RX Indicators:	Will blink when there is AISG data communication.

2.2 Hardware Setup

1. Connect USB port on CCI's SCU-AISG2-P AISG adapter to the PC/notebook with the USB cable.

2. Connect 24V DC power to the power port on CCI's SCU-AISG2-P AISG adapter.
3. Connect AISG female port on CCI's SCU-AISG2-P AISG adapter to the AISG line device via AISG cable.

2.3 System Requirement

1. Windows XP/Vista/Windows 7/Windows 8
2. USB port (USB 1.1 or USB 2.0)
3. Minimum screen resolution of 800 x 480. Screen resolution of 1024 x 768 is recommended.

2.4 Software Installation

The required software and document for installation are put in the CD enclosed. Please put the CD in the CD drive before software installation. Software installation includes USB driver installation and application software installation.

When you put in the CD, the following setup screen should be popped up automatically. If not, please go to /Installation directory of CD drive and run the setup.exe to launch the setup program.

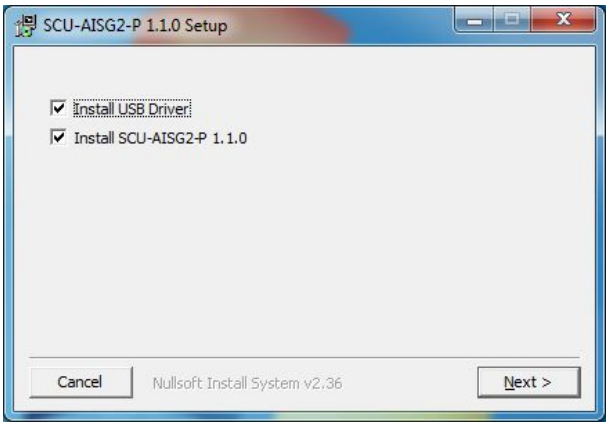


Figure 2 – SCU-AISG2-P Setup

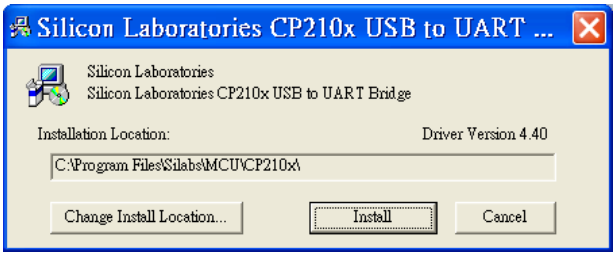
If this is your first time installation, you need to install both USB Driver and SCU-AISG2-P application. If you have installed USB Driver before and want to upgrade SCU-AISG2-P application, you don't need to install USB Driver again.
When you click [Next] button, the installation program of USB driver or SCU-AISG2-P application will be launched according to your selection. You can also run the individual installation program of USB driver and SCU-AISG2-P application. Please refer to 2.4.1 and 2.4.2 for the detailed installation procedures of USB driver and SCU-AISG2-P application.

2.4.1 USB Driver Installation

Step 1 is not required if you start from integrated setup program.

1. Browse to directory /Installation/USB Driver and run CP210xVCPInstaller.exe
2. When the following screen pop up, click the Install button to install the USB to COM port

driver. This program will copy the driver files to the PC's "Program Files" directory and then will register the driver files so the AISG adapter will be recognized when it is connected.



3. Connect the USB cable between the host computer and AISG adapter.
4. Windows will open a "Found New Hardware Wizard" window to indicate the new USB device is detected.
5. If the driver is properly installed and the adapter is connected with the USB cable, you'll find a new COM port appeared in your computer's Device Manager. The port name is "CP210x USB to UART Bridge Controller."

2.4.2 Application Software Installation

Step 1 is not required if you start from integrated setup program.

1. Browse to directory / Installation/Application and run HabilisPSetup.exe to begin the installation process.
2. Follow the on-screen prompts as follows to install the application software.

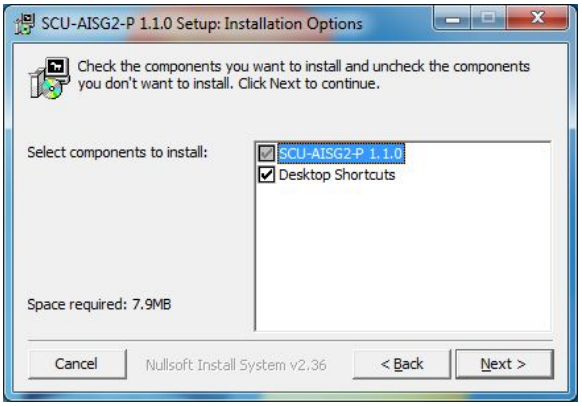


Figure 3 – SCU-AISG2-P Setup Installation Options

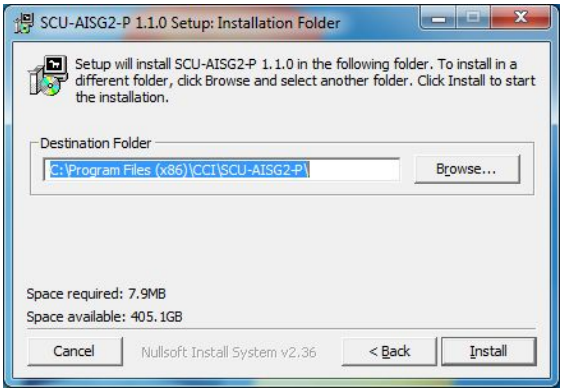


Figure 4 – SCU-AISG2-P Setup Installation Folder

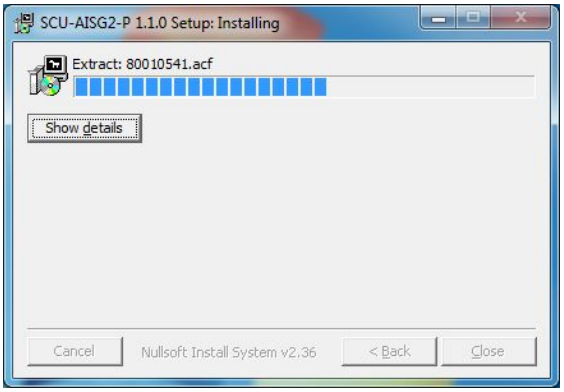


Figure 5 – SCU-AISG2-P Setup "Installing"

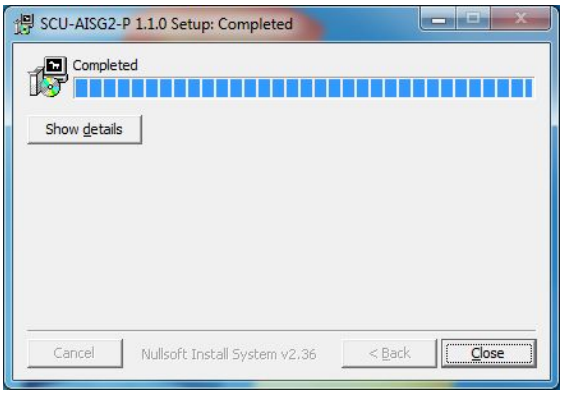


Figure 6– SCU-AISG2-P Setup Installation Completed

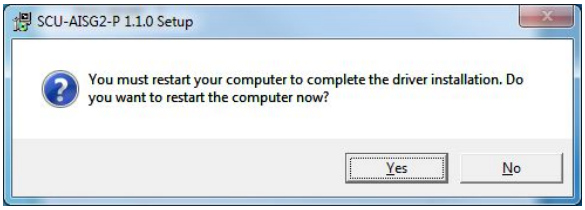


Figure 7 – SCU-AISG2-P Setup Restart Computer Request Pop-Up

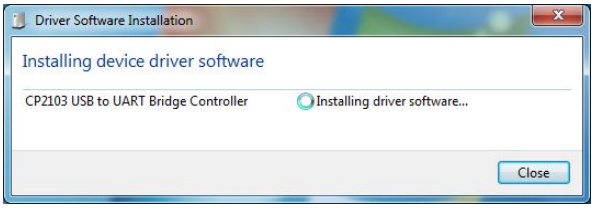


Figure 8 – Device Driver S/W Installing

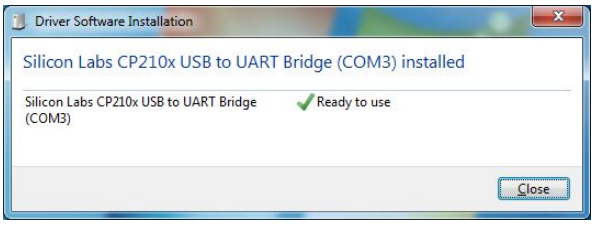


Figure 9 - Device Driver S/W Installation Completed

3 Launch the System

If you have installed the “Desktop Shortcuts” option, you can start the application from desktop’s SCU-AISG2-P shortcut. You can also go to “Start > Programs > SCU-AISG2-P > SCU-AISG2-P” to launch the SCU-AISG2-P windows application. The following application window will appear.

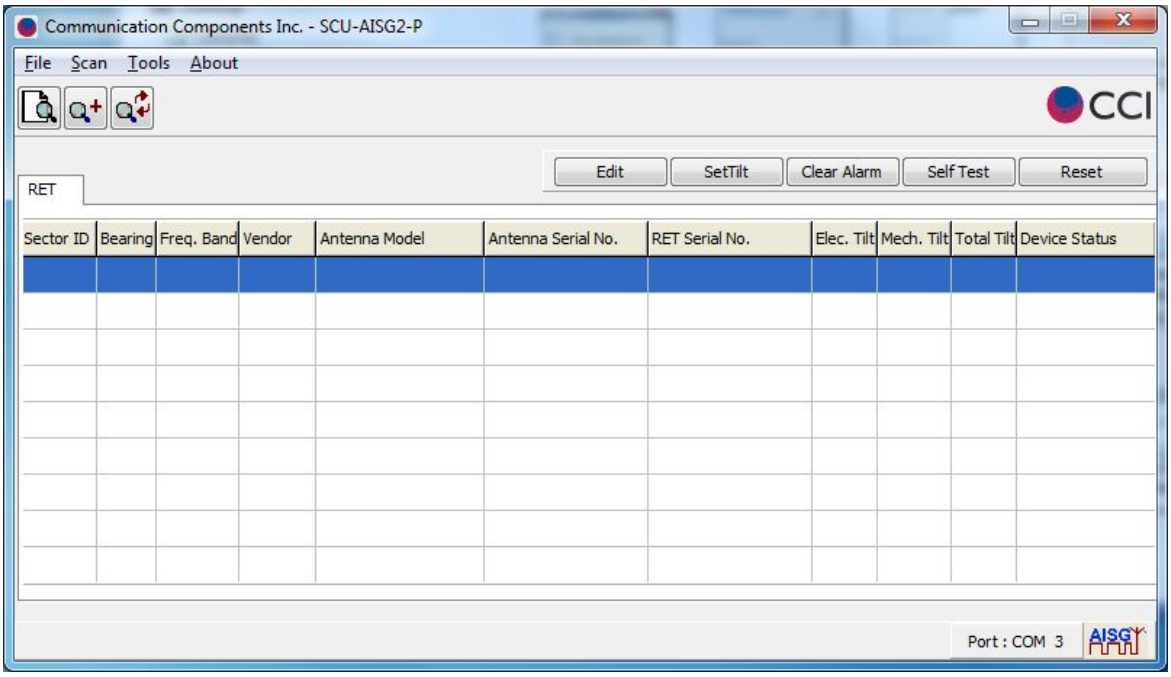


Figure 10 – Initial Window When Opening SCU-AISG2-P Application

The default panel is the RET that will always exist. Initially it contains an empty list of connected AISG device when the SCU-AISG2-P system is launched each time.
On the bottom-right side, you’ll see the COM port number the system is using. If the number is 0, the system is not properly connected. Either the USB cable is not connected with the adapter or the USB connection is not detected by windows system. In the latter case, please reconnect the cable and launch the system again.

Click [About] menu, the following window shows to provide a brief system information such as product name, product version etc.

Figure 11 – SCU-AISG2-P "About" Details

4 System Configuration

In this section, we will describe scan setting and power supply setting for AISG devices, and default values reset.

4.1 System Setting

The functionality is to determine how many bit-mask bytes will be used to scan the device and if the scanning process will change addresses of connected AISG devices. In Default, the scan length is 3, and the scanning process will reset addresses of connected AISG devices.

Click [Tools] on the menu bar, then click [System Setting].

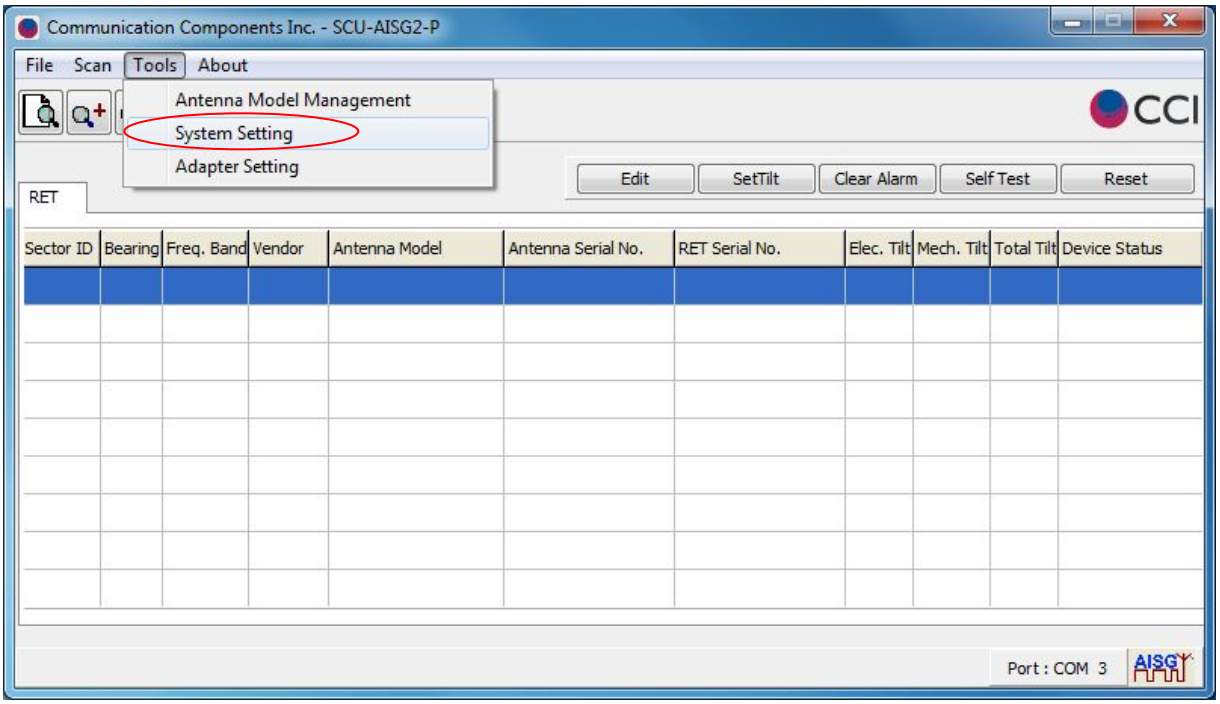


Figure 12 – Selection of System Setting via Tools Menu

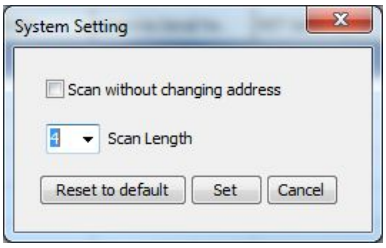


Figure 13 – System Setting Options

[Scan without changing address] is used to preserve the address of AISG 1.1 device for trouble shooting. This setting has nothing to do with AISG 2.0 device.

Click [Set] button to apply changes made into the system.

The message is shown to notify you that changes are applied successfully, click [OK] button to close the message window.

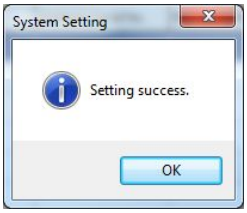


Figure 14 – System Setting Operation Success

Click [Reset to default] to reset these two settings back to the default value.

The message is shown to notify you that the default is loaded successfully, click [OK] button to close the message window and back to the [System Setting] window.

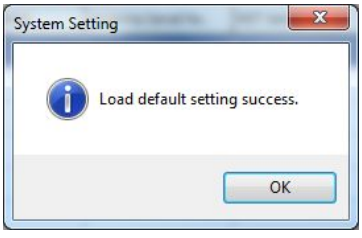


Figure 15 - System Setting Load Default Setting Success

4.2 Adapter Setting

In default, 24V DC is continuously supported. The functionality is to turn on-off RS485 12V DC used by the connected AISG device and switch RS485 A/B pin of the adapter.

Click [Tools] on the menu bar, then click [Adapter Setting].

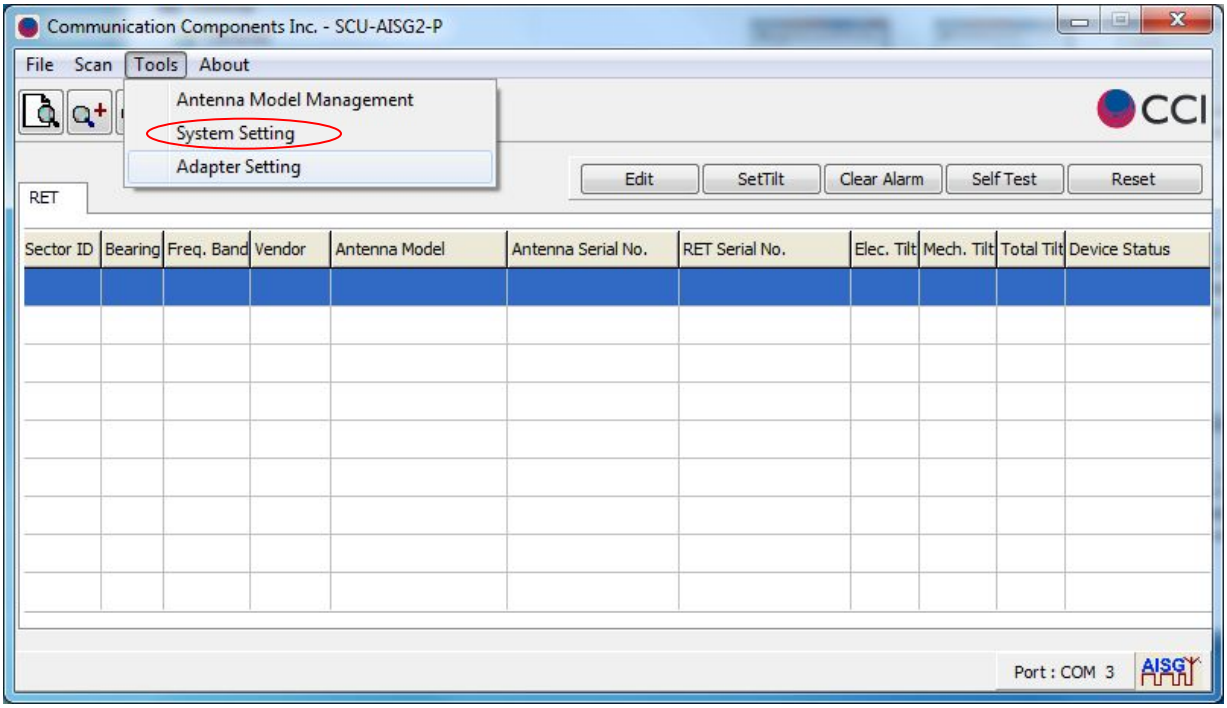


Figure 16 – Selection of Adapter Setting via Tools Menu

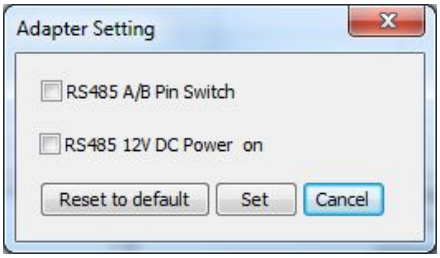


Figure 17 – Adapter Setting Options

Table 1 – Adapter Setting Options Description

Column Name	Constraint / Limit
RS485 A/B Pin Switch	Check the checkbox to switch the RS485 A/B pin of the adapter. This function is used when there is RS485 A/B pin compatibility problem between adapter and connected AISG device.
RS485 12V Power on	12V DC is turned on if the checkbox is checked

Click [Set] button to apply changes made into the system.

The message is shown to notify you that changes are applied successfully, click [OK] button to close the message window.

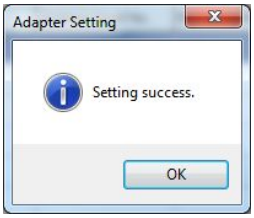


Figure 18 - Adapter Setting Operation Success

Click [Reset to default] to reset these two values back to the default value.

The message is shown to notify you that the default is loaded successfully, click [OK] button to close the message window and back to the [Adapter Setting] window.

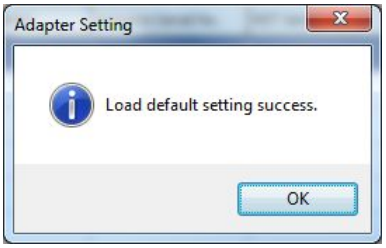


Figure 19 - Adapter Setting Load Default Setting Success

5 Using the SCU-AISG2-P System

5.1 AISG RET/TMA Device Scan

All AISG RET/TMA devices at the base station site that can be controlled are listed in their [RET] or [TMA] panel correspondingly.

This system is able to adjust electrical downtilt of antenna or the TMA mode/gain, and execute reset and self test on the connected AISG devices.

[SetTilt] or [Set Mode/Gain] button on the tool bar will be displayed depending on selecting [RET] or [TMA] panel.

The system displays the [RET] panel only when the system is launched each time.

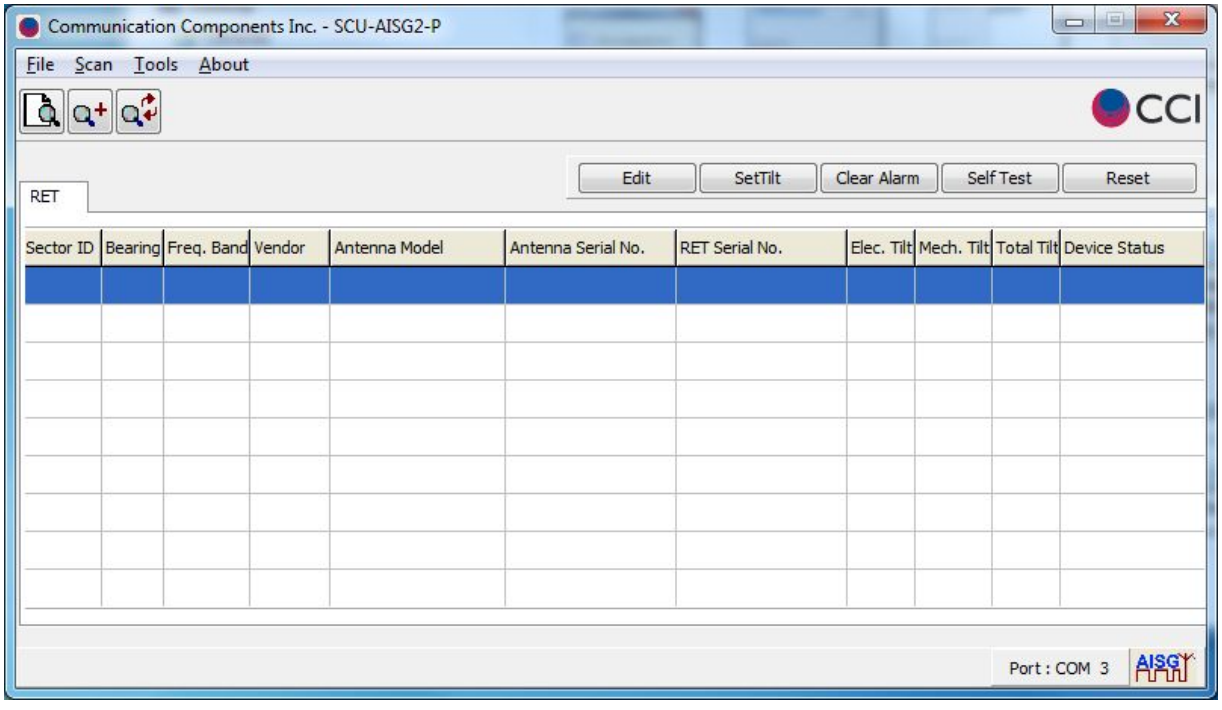


Figure 20– Initial Window Showing RET "Tab" When Opening SCU-AISG2-P Application

A device will be listed in the RET or TMA panel according to its device type. Please refer the table below for information displayed.

Device information will be updated after any scanning, refreshing, resetting and/or adding device action.

Table 2 - RET Device Column Name and Description

Column Name	Description / Constraint
Sector ID	Sector ID
Bearing	Antenna bearing in the range of 0-359 degree
Freq. Band	Current applied frequency band(s)
Vender	Vender name
Antenna Model	Antenna model name.
Antenna Serial No.	Antenna serial number
RET Serial No.	AISG RET device serial number
Elec. Tilt	Current electrical tilt value
Mech. Tilt	Current mechanical tilt value
Total Tilt	Sum of mechanical tilt and electrical tilt
Device Status	It can be “OK” or device alarm messages

Table 3- TMA Device Column Name and Description

Column Name	Description / Constraint
Sector ID	Sector ID
Freq. Band	Current applied frequency band(s)
Vender	Vender name
Antenna Model	Antenna model name.
Antenna Serial No.	Antenna serial number
TMA Model	TMA model name
TMA Serial No.	TMA serial number
Current Gain	Current gain value
Mode	TMA gain mode can be “Bypass” or “Normal”.
Device Status	It can be “OK” or device alarm messages.

5.1.1 Scan

This function is to scan current connected AISG devices and display in their corresponding panels. For scanning AISG device without changing address, if there is any connected AISG 2.0 device, please unplug the AISG cable before launching scan process (refer to “System Setting” for configuration of scanning without changing address).

The confirmation window shows as clicking the scan device icon on the tool bar or clicking [Scan Device] from [Scan] on the menu bar.

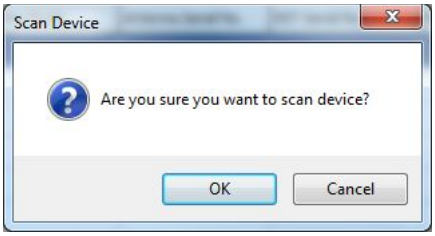


Figure 21 – Are You Sure You Want to “Scan Device” Request

Click [OK] button to initiate the process.

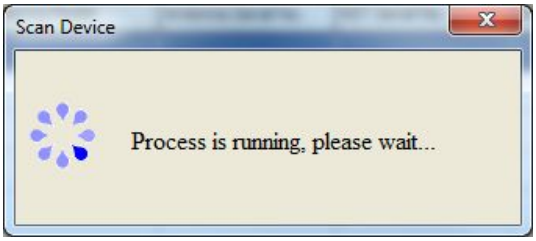


Figure 22 – Scan Device Process Running

The message is shown to notify you that the process is finished, and the list on the panel is updated. Click [OK] button to close the message window.

Figure 23 – Scan Device Process Finished

5.1.2 Add a Device

This function is to add a specific device into the SCU-AISG2-P system if a device cannot be found through scan process or you would like to add it manually.

The input window shows as clicking the add device icon on the tool bar or clicking [Add Device] from [Scan] on the menu bar. [Vendor Code] is optional.

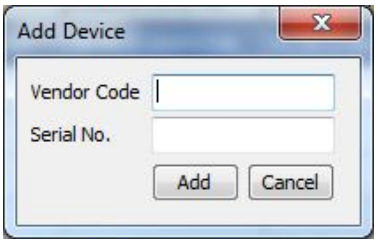


Figure 24 – Add Device

Click [Add] button to initiate the process.

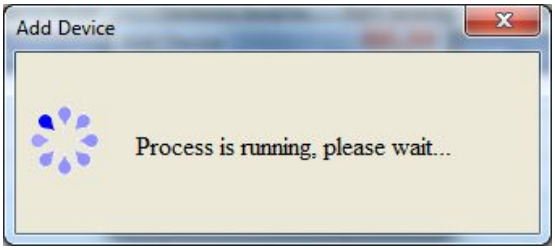


Figure 25 – Add Device Process Running

The message is shown to notify you that the process is finished, and the list on the panel is updated. Click [OK] button to close the message window.

Figure 26 - Add Device Process Finished

5.1.3 Refresh

This function is to get the latest device information of devices on the device list.

Click the refresh device icon on the tool bar or click [Refresh Device] from [Scan] on the menu bar to initiate the process.

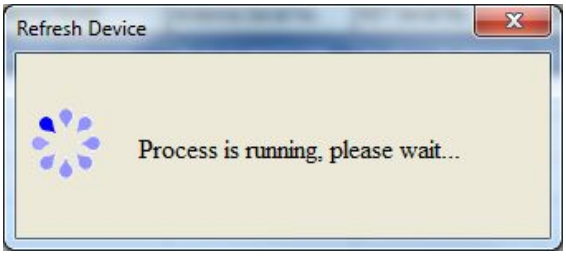


Figure 27 – Refresh Device Process Running

The message is shown to notify you that the process is finished, and the list on the panel is updated. Click [OK] button to close the message window.

Figure 28 - Refresh Device Process Finished

5.2 Quick Adjustment And Control

This section will describe a quick way for adjusting antenna electrical tilt, TMA mode and gain, and controlling AISG devices.

5.2.1 AISG RET/TMA Adjustment

It is to provide a quick way to change electrical tilt setting, TMA mode and gain of a selected device. The selected device on the panel will be highlighted as below.

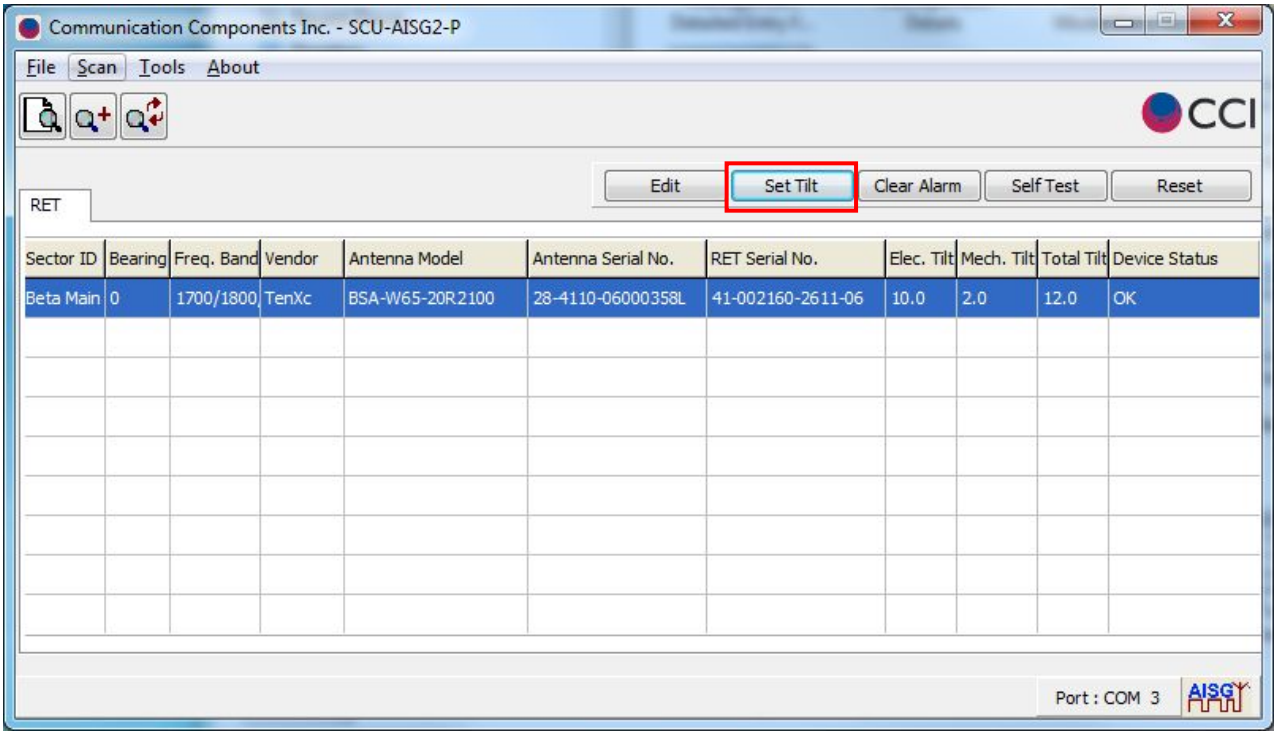


Figure 29 – Select Set Tilt Button on RET Screen

- **Set Tilt**

The input window of the selected device on the [RET] panel is shown after clicking [Set Tilt] button on the tool bar.

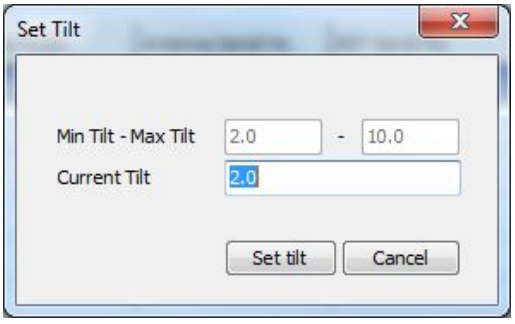


Figure 30 – Set Tilt Entry Window

Click [Set tilt] button for applying the tilt value entered in the [Current Tilt].

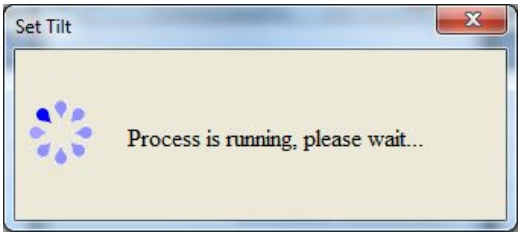


Figure 31 – Set Tilt Process Running

The message is shown to notify you that the downtilt value is applied successfully, click [OK] button to close the message window.

Figure 32 – Set Tilt Success

- **Set Mode/Gain**

The input window of the selected device on the [TMA] panel is shown after clicking [Set Mode/Gain] button on the tool bar.

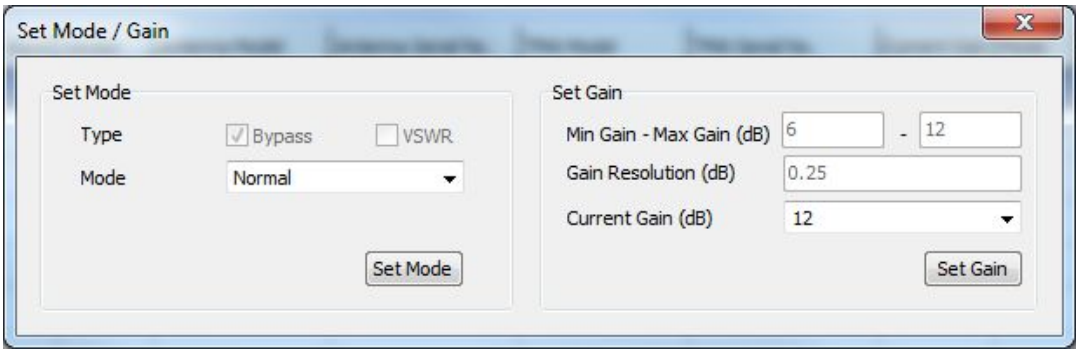


Figure 33 - Set Mode Entry Window

Click [Set Mode] button for applying the mode selected in the [Mode].

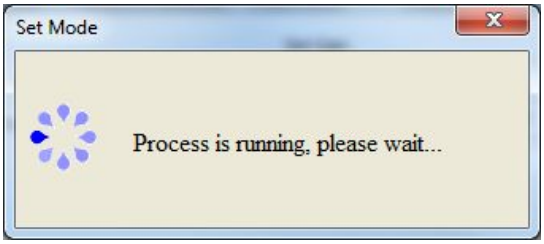


Figure 34 – Set Mode Process Running

The message is shown to notify you that the process is successfully and what the current mode is, click [OK] button to close the message window.

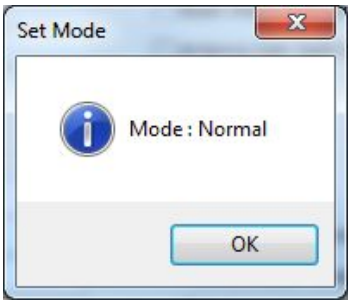


Figure 35 – Set Mode Success

Click [Set Gain] button for applying the gain value selected in the [Current Gain].

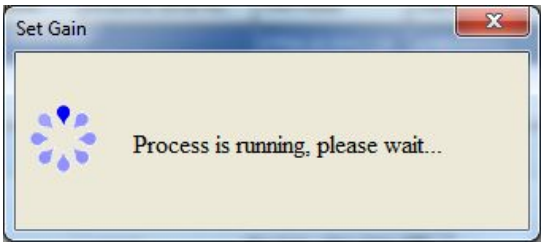


Figure 36 – Set Gain Process Running

A successful message is shown to notify you that the gain value is applied successfully. If this functionality is not supported by the device or failed, other warning messages will be displayed.

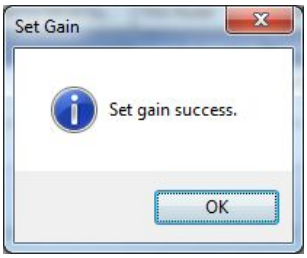


Figure 37 – Set Gain Success

5.2.2 Common Control Functions

It is to provide a quick way to control the selected device. The selected device on the panel will be highlighted as below.

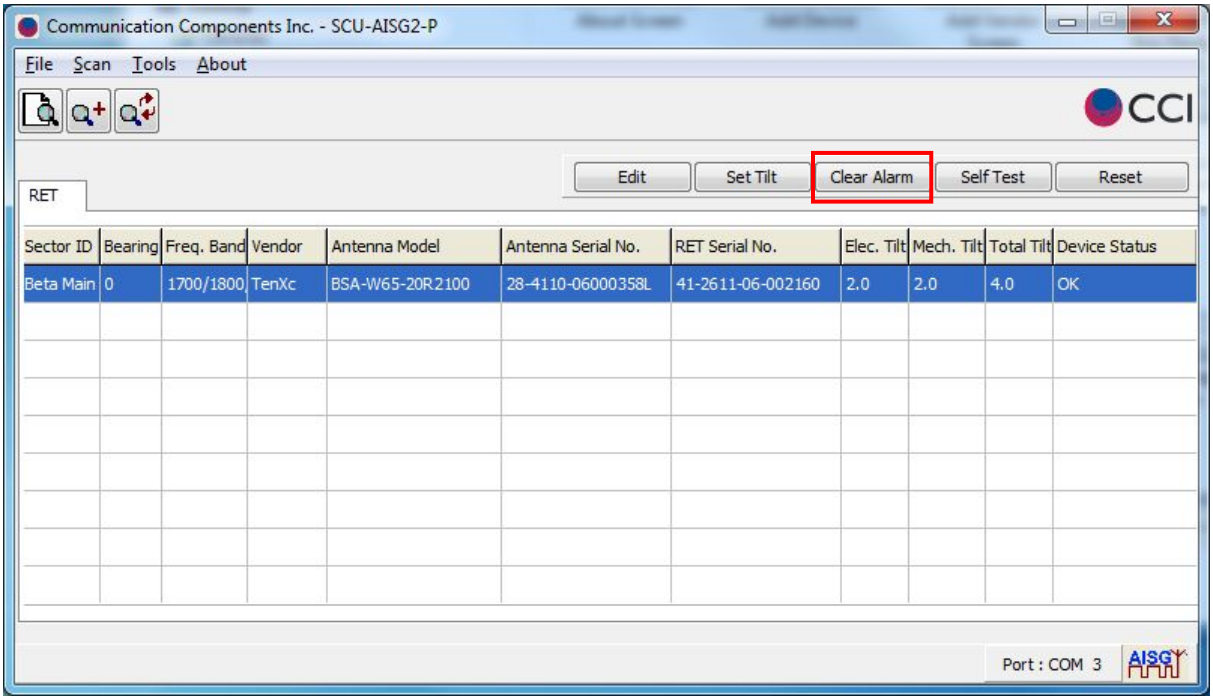


Figure 38 – Selected Device Highlighted on RET Screen

- **Clear Alarm**

This function is to clear AISG alarms of the selected device.

Click [Clear Alarm] button on the tool bar to initiate the process.

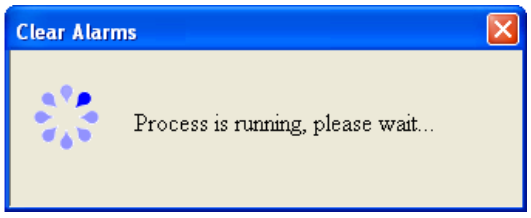


Figure 39 – Clear Alarms Process Running

The message is shown to notify you that the process is finished, click [OK] button to close the message window.

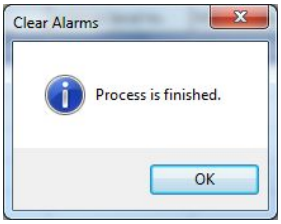


Figure 40 – Clear Alarms Process Finished

- **Self Test**

This function is to practice self test on the selected device.

Click [Self Test] button on the tool bar to initiate the process.

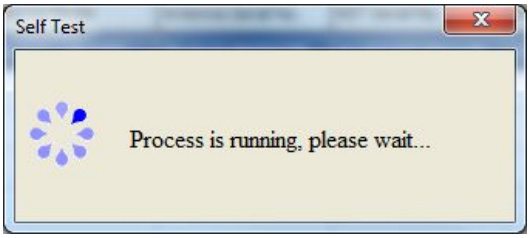


Figure 41 – Self Test Running

When the process is finished and no alarm is set, the message is shown to notify you that the process is finished, click [OK] button to close the message window.

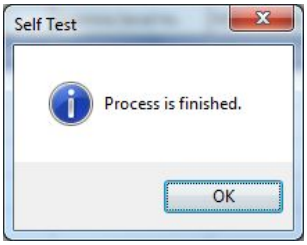


Figure 42 – Self Test Process Finished

- **Reset**

This function is to reset software of the selected device.

Click [Reset] button on the tool bar to initiate the process.

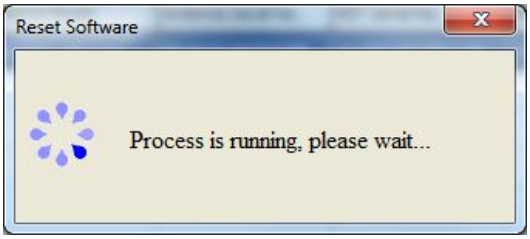


Figure 43 – Reset Software Process Running

The message is shown to notify you that the process is finished, click [OK] button to close the message window.

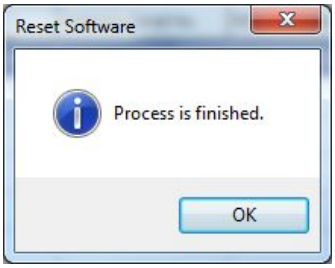


Figure 44 – Reset Software Process Finished

5.3 AISG RET/TMA Detail Setting

More detailed information of the antenna, and the RET or the TMA are displayed in the detail window. The information can be changed and saved into the device.

Click [Edit] button to display the detailed data of the selected device or double-click on the selected device. The selected device on the panel will be highlighted as below.

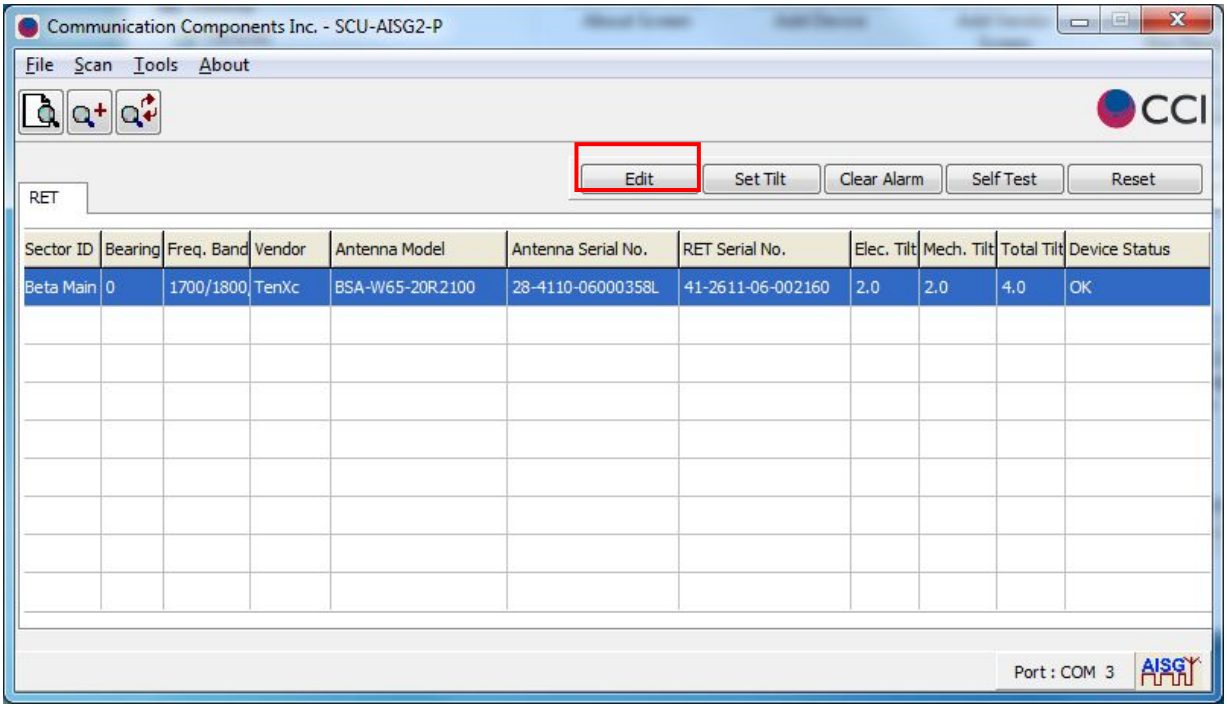


Figure 45 – Selected Device Highlighted on RET Screen for Edit

RET Device Detail

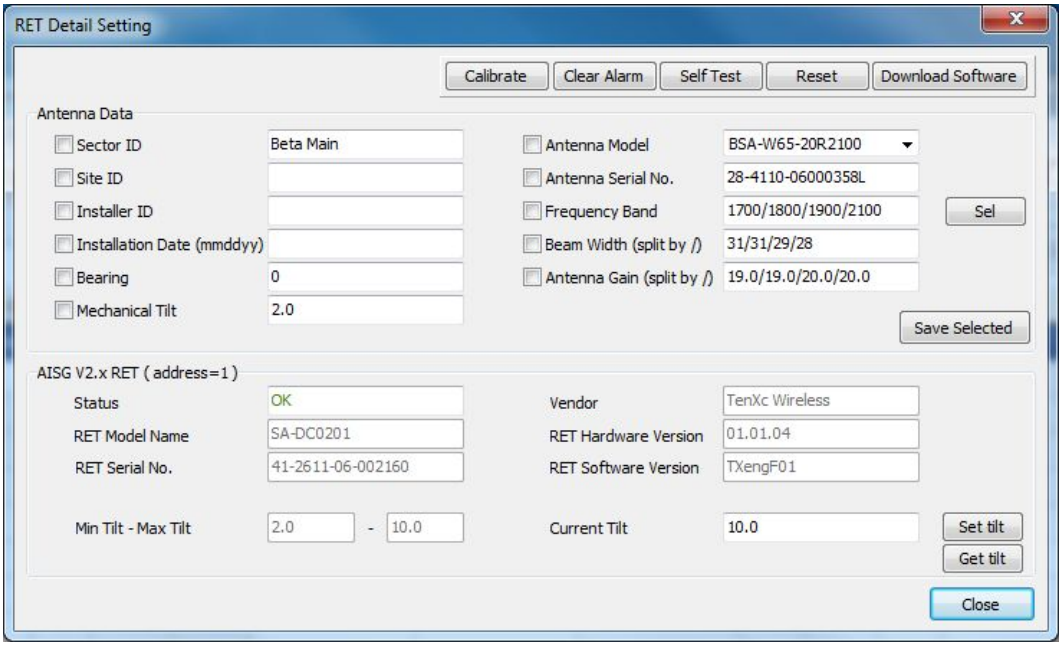


Figure 46 – RET Device Detail Window

TMA Device Detail

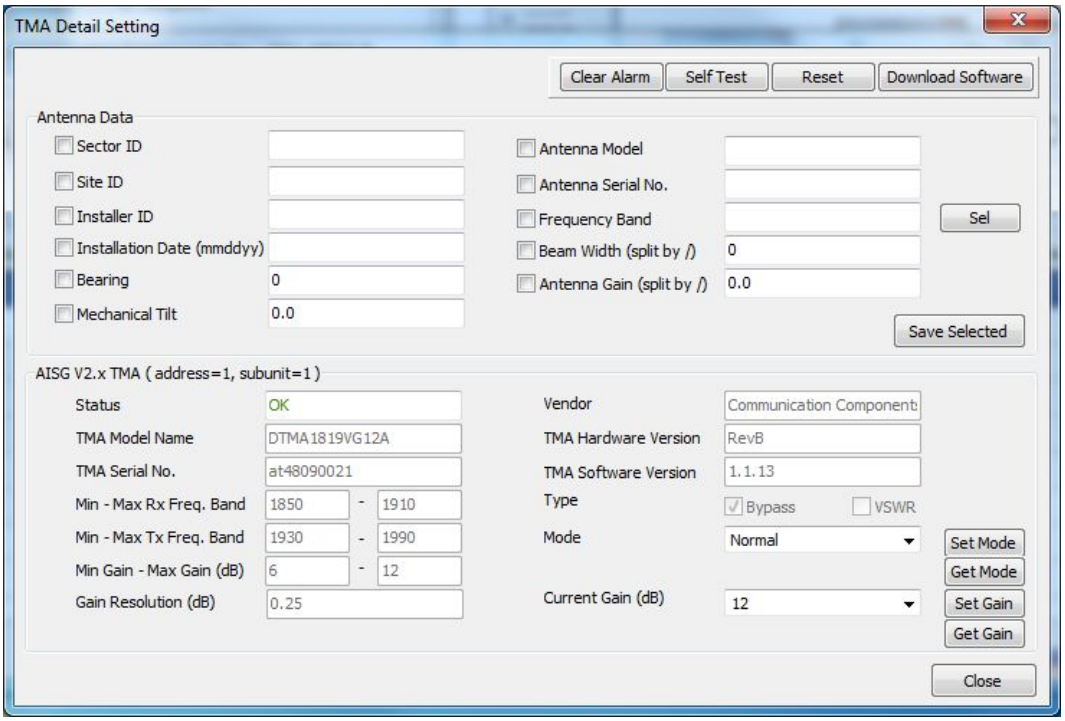


Figure 47 - TMA Device Detail Window

5.3.1 Antenna Data

The following table describes the antenna information displayed in the detail window. You can update any changed data into the device.

Table 4 – Antenna Data (Column Name and Description)

Column Name	Description / Constraint
Sector ID	Sector ID
Site ID	Base station site ID
Installer's ID	Installer's ID
Installation Date	mmddyy format
Bearing	Antenna bearing in the range of 0-359 degree
Mechanical tilt	Installed mechanical tilt in degree
Antenna Model	If you cannot find a proper antenna model for the RET, please refer to "Add an Antenna Model" for how to add your antenna model. For RET, it provides configuration data for the connected antenna.
Antenna Serial No.	Antenna serial number
Frequency Band	Frequency band(s) used by the antenna
Beam Width	Beamwidth for each band in frequency order. Split by / Displayed in order according to [Frequency Band]
Antenna Gain	Gain for each band in frequency order. Spit by / Displayed in order according to [Frequency Band]

- **Frequency Band & Beam Width & Antenna Gain**

As clicking [Sel] button, a window is shown with frequency band supported by the device.

After clicking [Apply] button, the selected frequency band(s) will be refreshed back into [Frequency Band]. For each selected frequency band, if there are built-in values for beam width and antenna gain in the system, these built-in values will be shown in [Beam Width] and [Antenna Gain]; otherwise 0.0 will be displayed.

- **Save Selected Changes**

Click [Save Selected] button to initiate the process for storing data value(s) with the checkbox checked (as shown in the red block below).

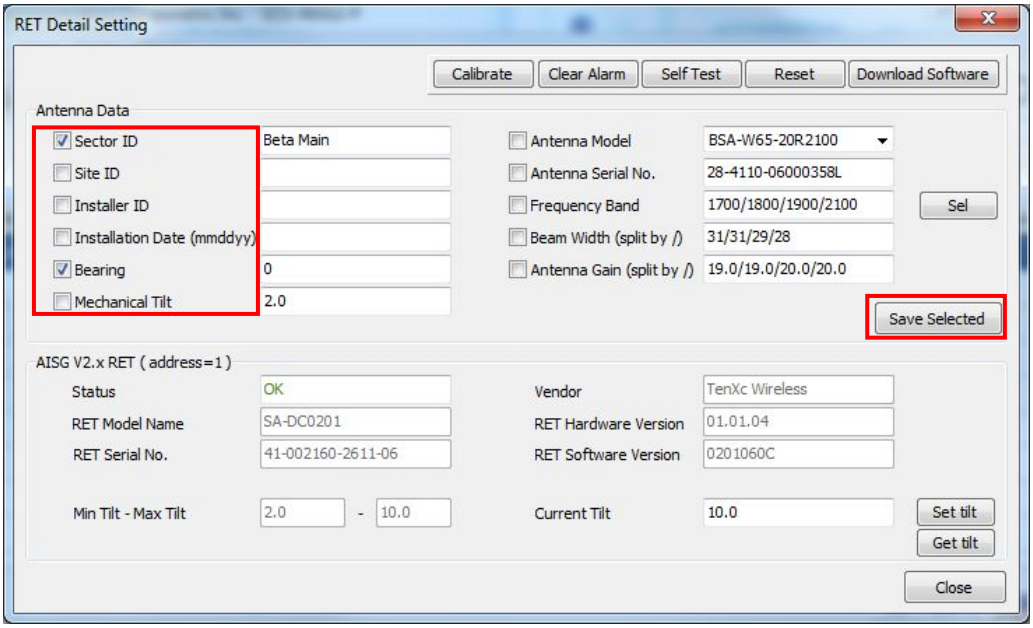


Figure 48 – Antenna Data Entry on RET Detail Tab and Save Selected Option

The message is shown to notify you that the process is successfully, click [OK] button to close the message window.

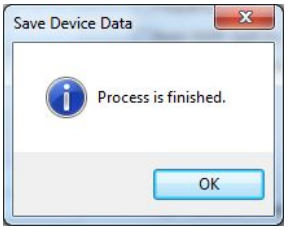


Figure 49 – Save Device Data

5.3.2 RET Data & Tilt Adjustment

In this section, it will cover functionalities of RET calibration and tilt value adjustment. The following table describes the RET information displayed in the detail window.

Table 5 - AISG V1.x RET (or AISG V2.x RET) Column Name and Description

Column Name	Description / Constraint
Status	It can be “OK” or device alarm messages
Vendor	Vendor name
RET Model Name	RET model name
RET Serial No.	RET serial number
RET Hardware Version	RET hardware version
RET Software Version	RET software version
Min Tilt - Max Tilt	Allowed electrical tilt range of the selected antenna model
Current Tilt	Tilt setting should be in the range of [Min Tilt - Max Tilt].

- **Calibrate**

This function is to do calibration of RET device.

Click [Calibrate] button on the tool bar to initiate the process.
A warning message regarding the fact that “Site Coverage May Change” will appear. Click OK to initiate the actual Calibration Process.

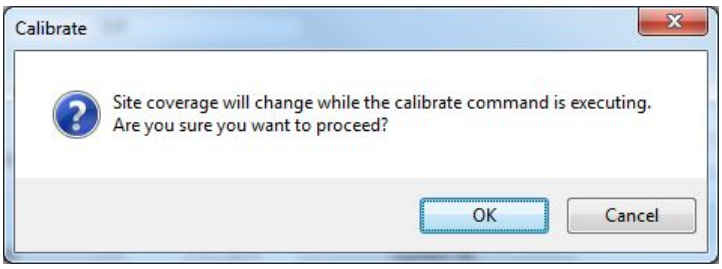


Figure 50 – Calibrate Warning Pop-Up

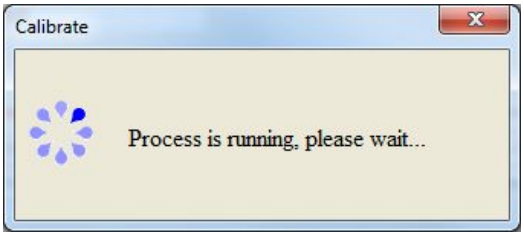


Figure 51 – Calibrate Process Running

The message is shown to notify you that the process is successfully, click [OK] button to close the message window.

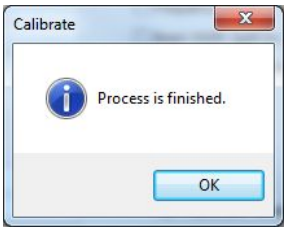


Figure 52 – Calibrate Process Finished

- **Set Tilt**

This function is to change the electrical tilt of an antenna.

Click [Set tilt] button for applying a down tilt value entered in the [Current Tilt].

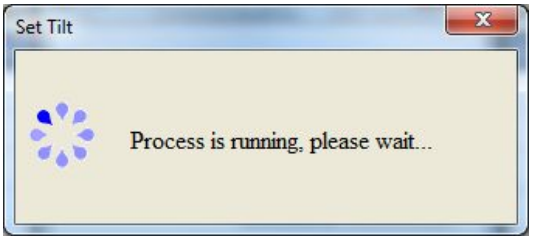


Figure 53 – Set Tilt Process Running

The message is shown to notify you that the process is successfully, click [OK] button to close the message window.

Figure 54 - Set Tilt Process Success

- **Get Tilt**

This function is to get the current electrical tilt of an antenna.

After clicking [Get tilt] button, the current down tilt value shows in a popup window.

Figure 55 – Get Tilt Pop-Up

5.3.3 TMA Data & Gain Adjustment

In this section, it will cover functionalities of TMA mode setting and gain value adjustment. The following table describes the TMA information displayed in the detail window.

Table 6 - AISG V1.x TMA (or AISG V2.x TMA) Column Name and Description

Column Name	Description / Constraint
Status	It can be “OK” or device alarm messages
Vendor	Vendor name
TMA Model Name	TMA model name
TMA Serial No.	TMA serial number
TMA Hardware Version	TMA hardware version
TMA Software Version	TMA software version
Min - Max Rx Freq. Band	Allowed receive frequency band range
Min - Max Tx Freq. Band	Allowed transmit frequency band range
Min Gain - Max Gain	Allowed gain range of the TMA model
Gain Resolution	An gain increment from min gain to max gain For fixed gain or non-linear gain TMA, this value is always zero
Type	It’s TMA type that can be “Bypass” and/or “VSWR”
Mode	TMA mode can be “Bypass” or “Normal”
Current Gain	The value should be in the range of [Min Gain - Max Gain].

- **Set Mode**

This function is to set the TMA mode that can be Bypass or Normal.

Click [Set Mode] button for applying a mode selected in the [Mode].

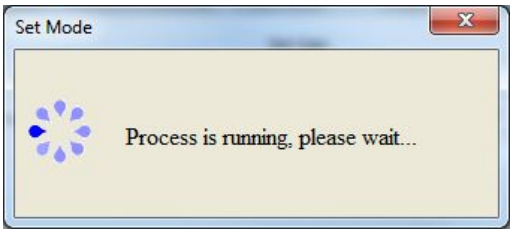


Figure 56 – Set Mode Process Running

The message is shown to notify you that the process is successfully and what the current mode is, click [OK] button to close the message window.

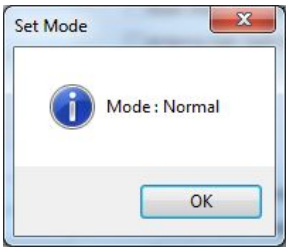


Figure 57 - Set Mode Response

- **Get Mode**

This function is to get the current TMA mode.

After clicking [Get Mode] button, the current TMA mode setting shows in a popup window.

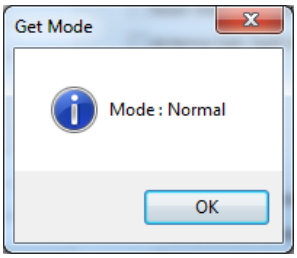


Figure 58 – Get Mode

- **Set Gain**

This function is to set the TMA gain that has to be between min gain and max gain.

Click [Set Gain] button for applying the gain value selected in the [Current Gain].

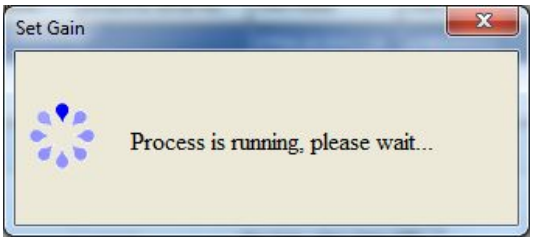


Figure 59 – Set Gain Process Running

If this functionality is not supported by the device, “Unsupported Proc” or “Read Only” message may be displayed to indicate the function is not supported; otherwise a successful message is shown to notify you that the gain value is applied successfully.

- **Get Gain**

This function is to get the current TMA gain value.

After clicking [Get Gain] button, the current TMA gain value shows in a popup window.

Figure 60 – Get Gain

5.3.4 Common Control Functions

Please refer “5.2.2” for detailed description on functionalities and processes on [Clear Alarm] , [Self Test] and [Reset] buttons.

5.3.5 Download Software

This functionality is to download AISG device software to the RET/TMA device.

Click [Download Software] button to launch the window for opening the software program to be downloaded. The software program provided by the device vendor will have .bin or .hex extension.

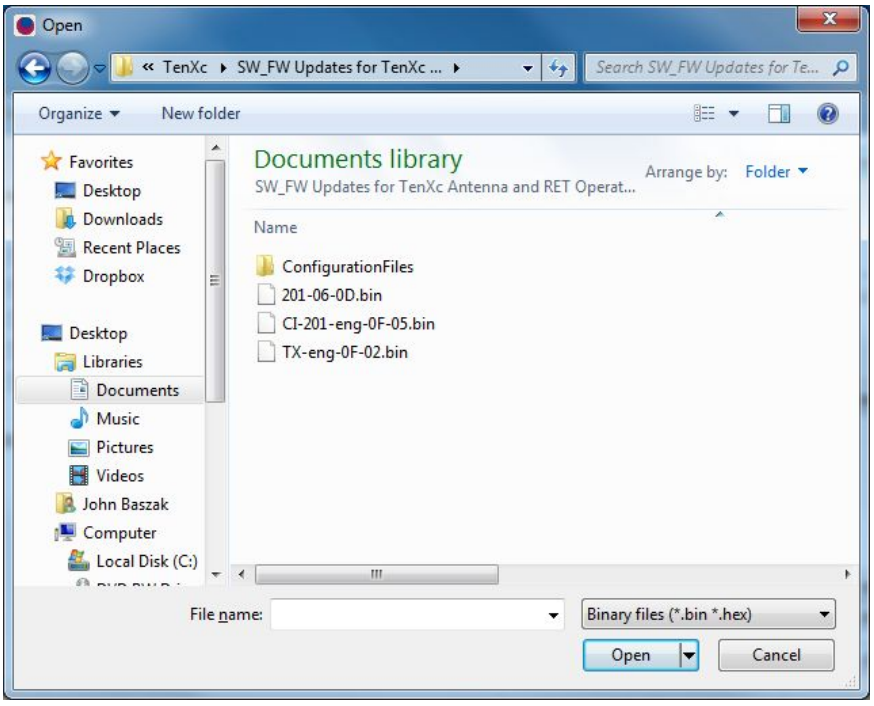


Figure 61 – Open Software Browser

Click [Open] button after selecting the software file. A confirmation window is shown to make sure you want to download the software.

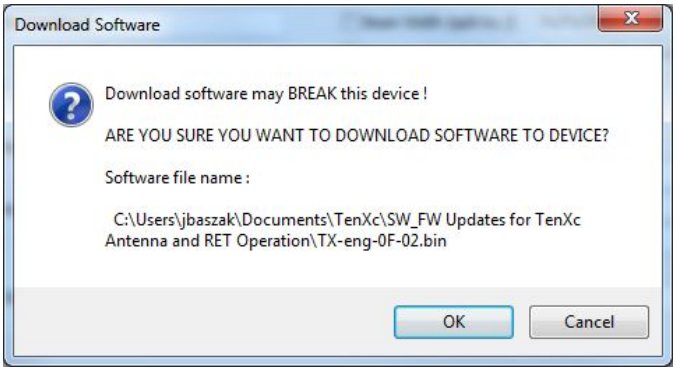


Figure 62 – Download Software Warning Pop-Up

Click [OK] button to initiate the download process.

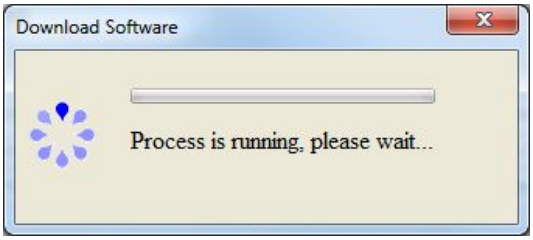


Figure 63 – Download Software Process Running

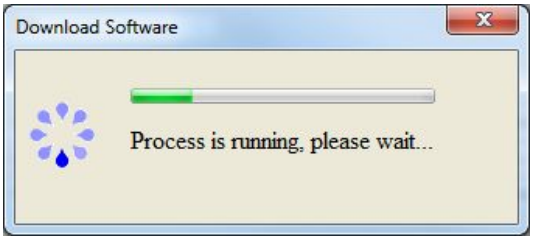


Figure 64 - Download Software Process Running Progress

The message is shown to notify you that the process is successfully. Click [OK] button to close the message window and the software version will be refreshed back to [RET Software Version] or [TMA Software Version].

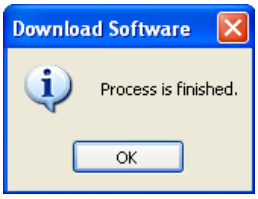


Figure 65 - Download Software Process Finished

5.4 Site Report

This functionality is to save information of on-site connected AISG devices into a CSV format file. The default file name is Report.csv

Click [File] on the menu bar, then click [Export Site Report]

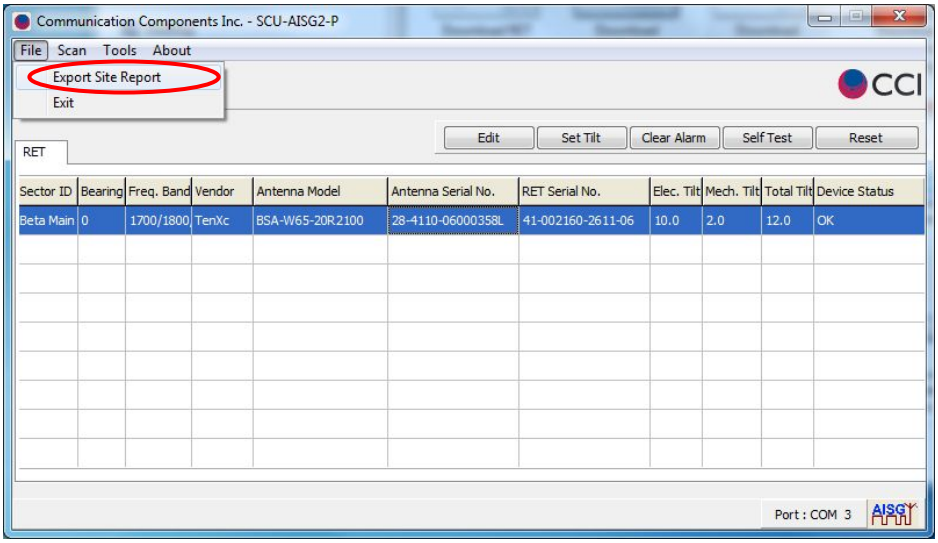


Figure 66 – File Export Site Report in RET Tab

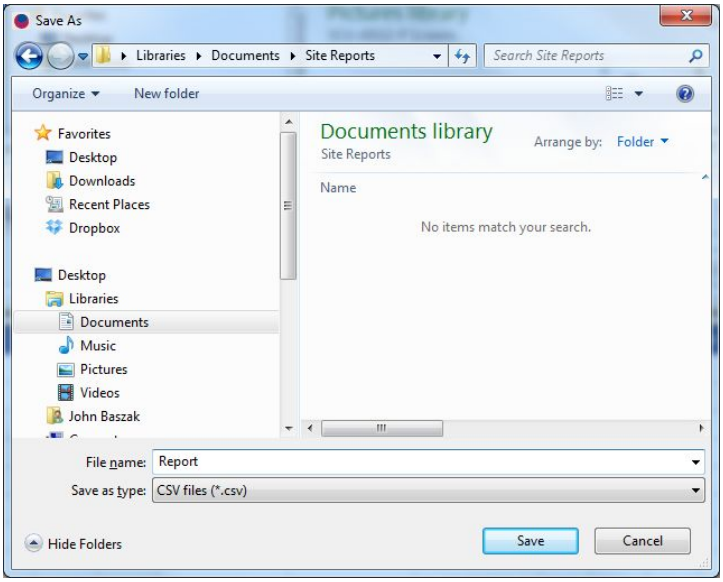


Figure 67 – File Export Site Report Browser

5.5 Vendor Specific Function

This functionality is to provide functions for specific vendors. For now, the system only provides AISG protocol version switching for Andrew.

- Switch to AISG 1.x

Click [Tools] on the menu bar, then click [Vendor Specific]>[Andrew]>[Switch to AISG 1.x]

- Switch to AISG 2.x

Click [Tools] on the menu bar, then click [Vendor Specific]>[Andrew]>[Switch to AISG 2.x]
You can also use this function to do AISG layer 2 reset, which allows an AISG 2.x device to respond scan again.

6 Antenna Model Management

The functionality is to manage antenna configuration files of the system.

An antenna configuration file is to provide configuration data used to configure the RET and a connected antenna of a specific antenna model.

Click [Antenna Model Management] from [Tools] on the menu bar to get into the window for managing antenna configuration files.

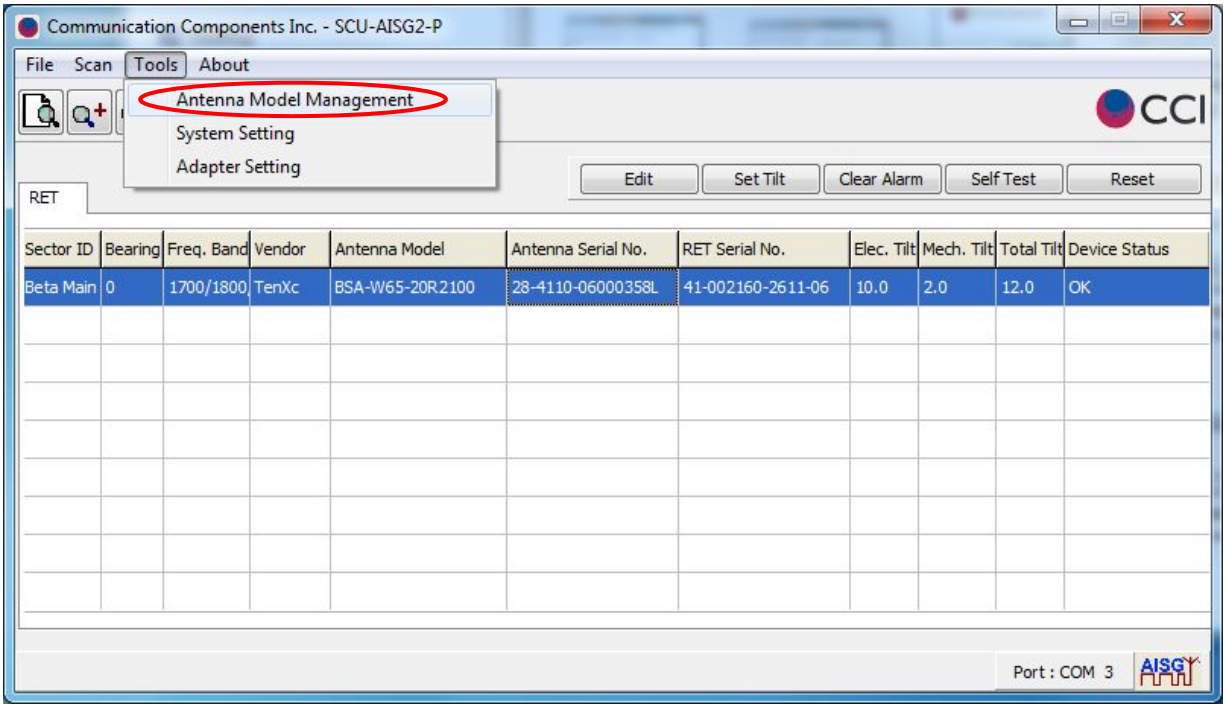


Figure 68 – Antenna Model Management in RET Tab

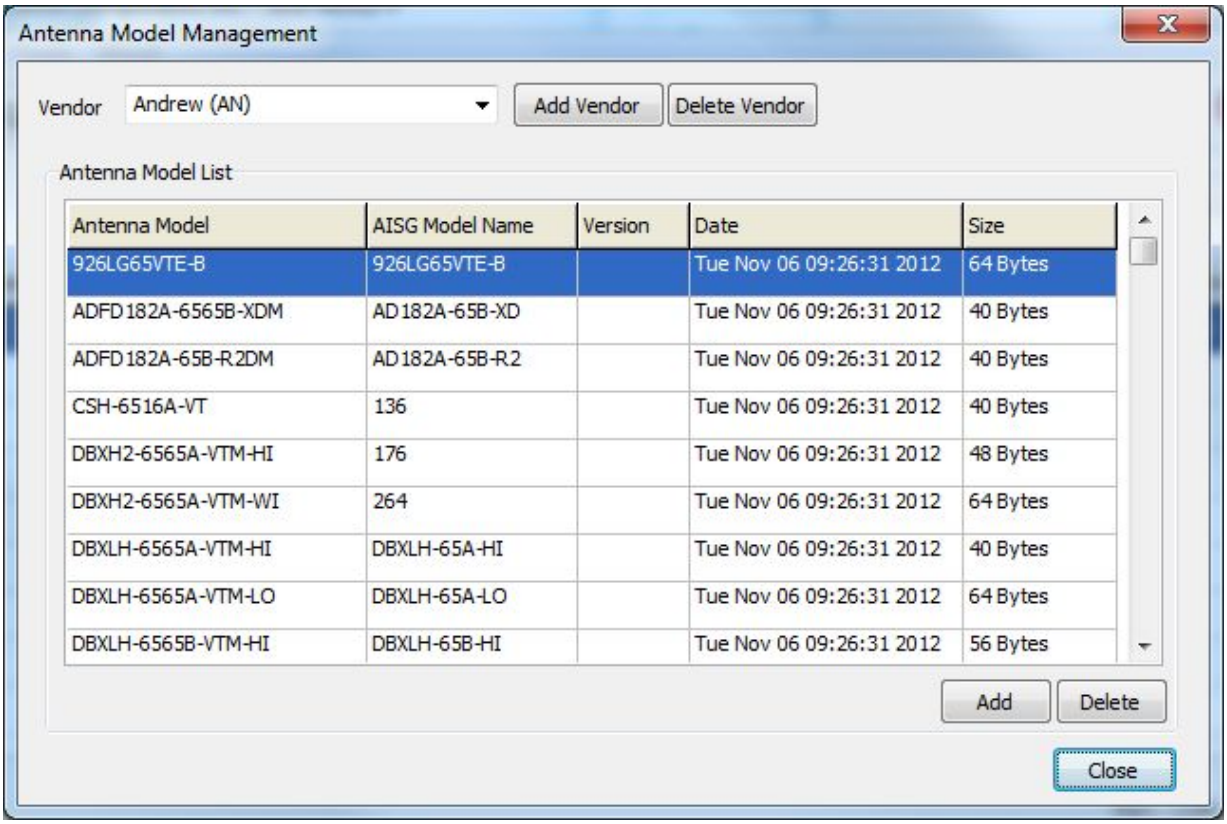


Figure 69 – Antenna Model Listing

The content of the [Antenna Model List] depends on the selected vendor in the [Vendor] list. The [Antenna Model List] is to list antenna models of the selected vendor.

6.1 Vendor Management

6.1.1 Add a Vendor

The vendor must exist in the [Vendor] list prior to its antenna model configuration files uploading. This function is to add a vendor for storing its antenna model configuration files.

The following window displays as clicking [Add Vendor] button.

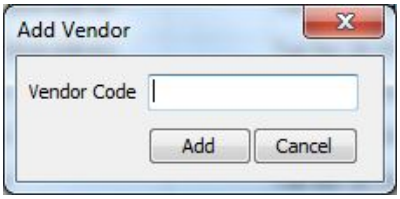


Figure 70 – Add Antenna Vendor Pop-Up

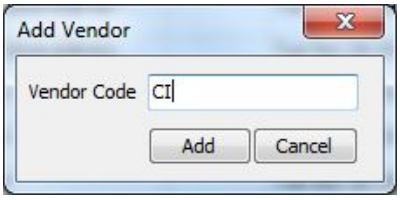


Figure 71 – Add Antenna Vendor Pop-Up with Vendor Code Entered

Click [Add] button to initiate the process window for adding the vendor code into the system and refreshing the [Vendor] list.

The message is shown to notify you that the vendor is added successfully, click [OK] button to close the message window.

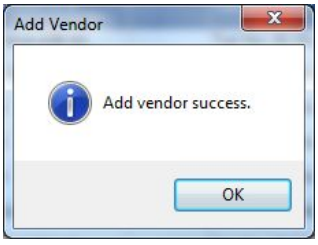


Figure 72 – Add Antenna Vendor Success

See below for the Antenna Model Management Vendor listing showing that Communication Components has been added.

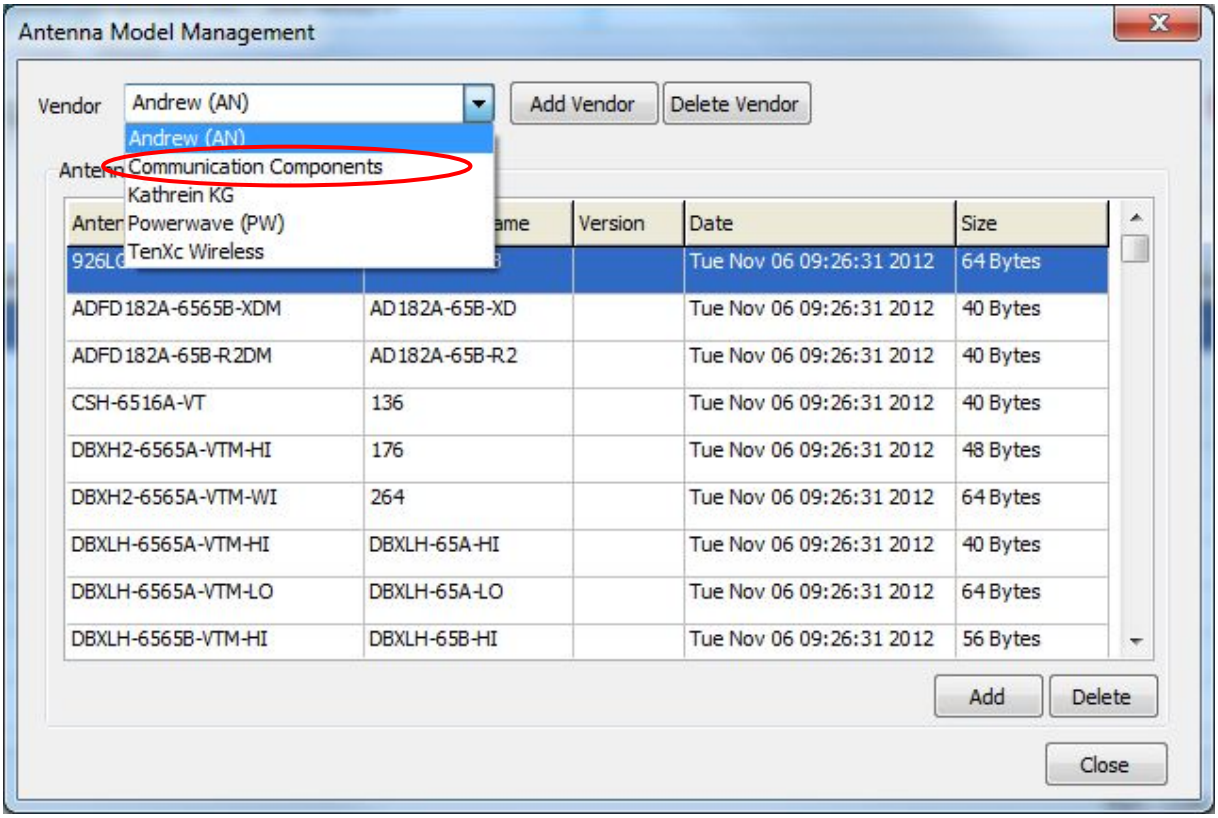


Figure 73 - Antenna Model Listing Showing Added Vendor

6.1.2 Delete a Vendor

This function is to remove the vendor. Before deleting a vendor, you have to make sure there is no any model exists under this vendor.

Select the vendor that would like to be deleted from the [Vendor] list, then click [Delete Vendor] button next to the [Vendor] list. The confirmation window displays.

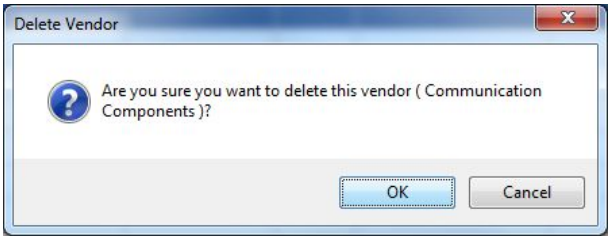


Figure 74 – Delete Antenna Vendor Warning

Click [OK] button to delete the selected vendor from the system and refresh the [Vendor] list.

The message is shown to notify you that the vendor is deleted successfully, click [OK] button to close the message window.

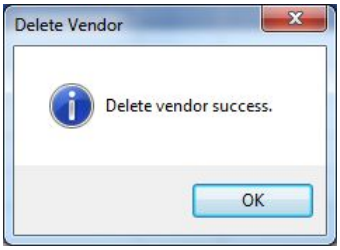


Figure 75 – Delete Vendor Success

If there is a model under the selected vendor, the following warning message shows up and the vendor won't be deleted.

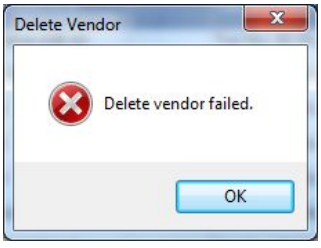


Figure 76 – Delete Vendor Failure

6.2 Antenna Model Management

6.2.1 Add an Antenna Model

The vendor must exist in the [Vendor] list before its antenna models can be uploaded. This function is to upload a model's configuration file of the selected vendor to the specific location in the PC.

Click [Add] button after selecting a vendor from the [Vendor] list for uploading a model's configuration file. Refer the following table for detailed information of each input field.

Table 7 – Antenna Vendor Data Entry Column Name and Description

Column Name	Description / Constraint
Vendor Name	Vendor name
Config File	Filename with its full path should be provided. Only a file less than 0.5K with extension of .bin or .acf or vendor specific extension is allowed.
Antenna Model Name	Antenna model name. The configuration filename will be used as the default model name that is allowed to be changed.
AISG Model Name	The model name will be stored in RET device. The max. length of AISG model name is 15.
Version	The antenna model config. file version (Optional)

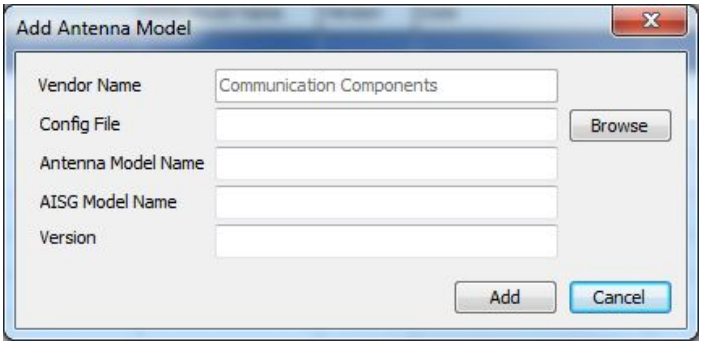


Figure 77 – Add Antenna Model Data Entry Window

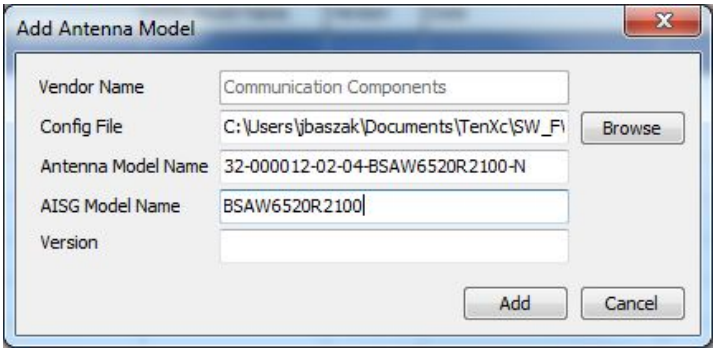


Figure 78 - Add Antenna Model Data Entry Window with Data Entered

Click [Add] button after filling in all required information.

The message is shown to notify you that the model is added successfully, click [OK] button to close the message window.

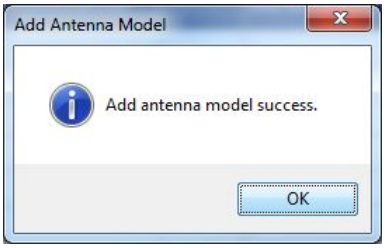


Figure 79 – Add Antenna Model Success

6.2.2 Delete an Antenna Model

This function is to delete the selected antenna model of a specific vendor out of the system. The selected antenna model of a specific vendor will be highlighted as below.

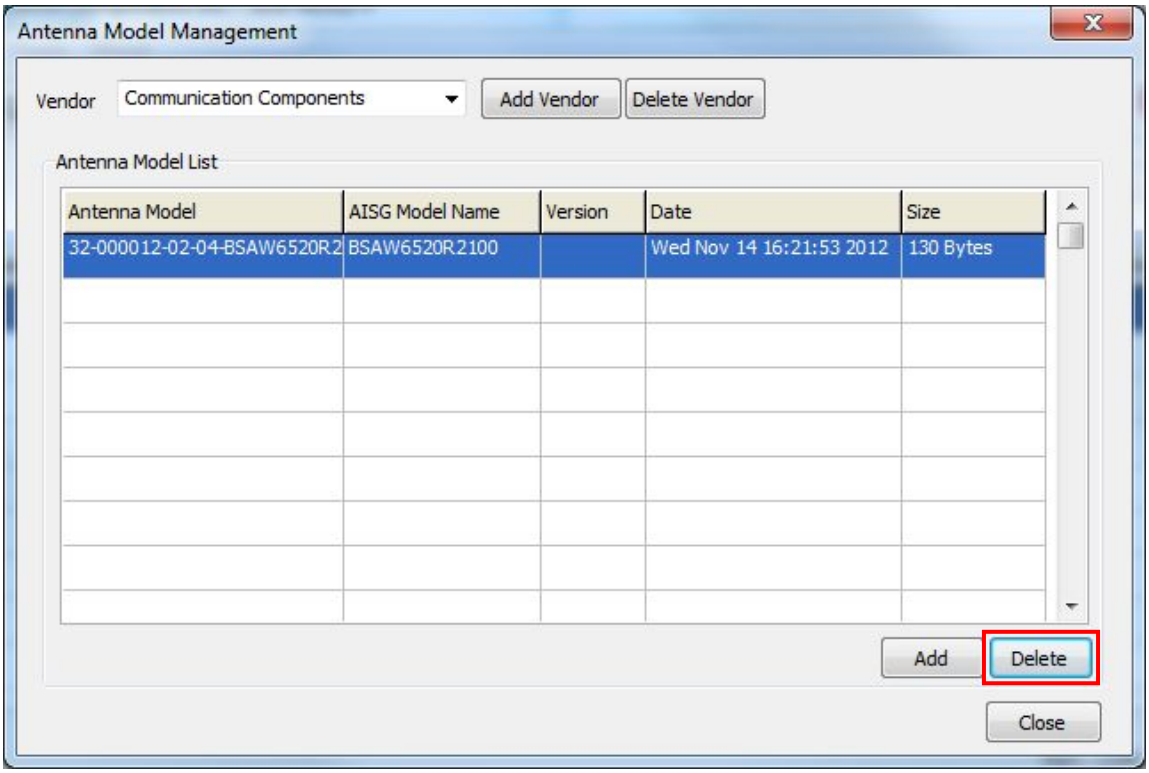


Figure 80 – Delete Antenna Model from Antenna Model List

The confirmation window is shown as clicking [Delete] button to delete the selected antenna model from the system.

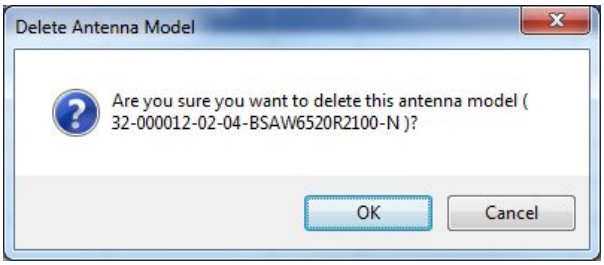


Figure 81 – Delete Antenna Model Warning

Click [OK] button to delete the selected antenna model.

Revision History

Revision	Date Released	Author	Changes
0.5	11/14/12	J. Baszak	Conversion of Habilis-P Manual to CCI
0.6	11/16/12	J. Baszak	Add Figure and Table Names

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