Geosight User Manual

SUMMARY

I. INTRODUCTION

> This document describes the functionalities of the Geosight software, which is used for a number of operations: configuring a Geoport, configuring Geocubes, checking and mapping the radio connections in a Geocube network with the help of a Geoscope.
>
> To use the Geosight software, you will have to first download and install it on a computer or preferably a laptop.

To navigate in this document, you can directly access a given chapter by clicking the corresponding entry in the summary page 2.

To go back to the summary, you can click on the following icon, ▤ , on the top left hand side of every page.
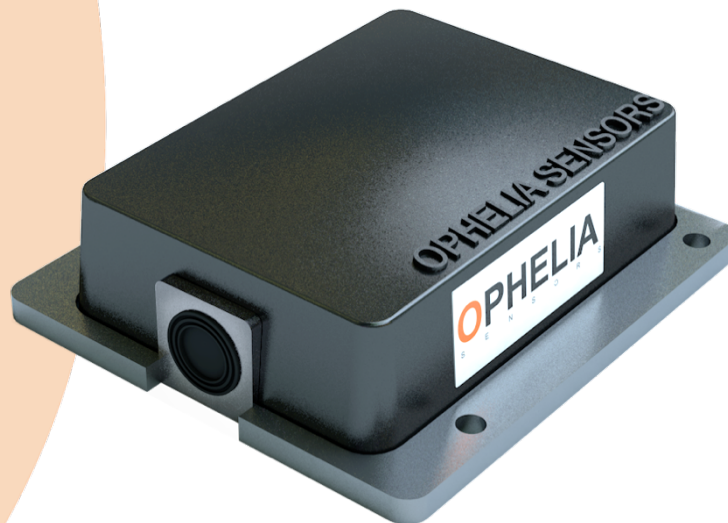
II. CONFIGURING A GEOPORT

II.A.   CONNECTING A GEOPORT

Once installed the Geosight software, connect your Geoport with the USB cable, using the extension marked "Cable Conf Geoport" which you have received if you have purchased a deployment pack..

The following screen should appear (additional ports may be listed if you are using a mac):
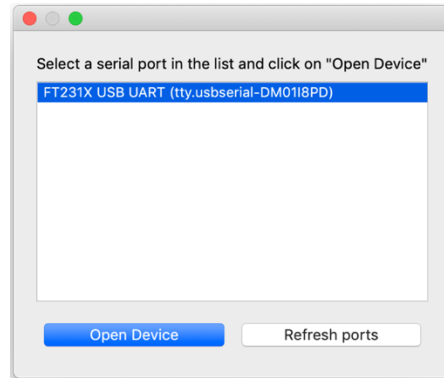
Select the indicated port and click on Open device.

II.B.   MODIFYING GEOPORT PARAMETERS

The following screen will pop-up:

To modify the APN corresponding to your service provider or the destination address which corresponds to your project (this information is contained in a a mail inviting you to create your profile), simply enter the correct information and press "Write".

III. DETECTING A GEOSCOPE

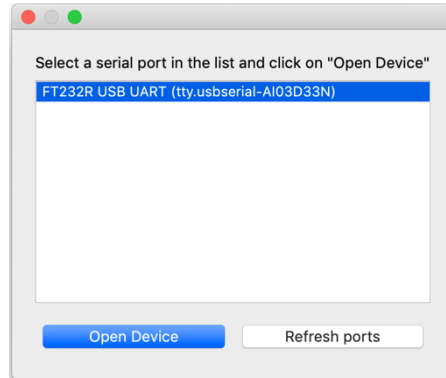All operations listed hereafter, the Geosight software will be communicating with the Geocubes. To do so you will to connect a Geoscope to your laptop.

After, connecting the Geoscope through USB, launch the Geosight software:

Geosight will detect the Geoscope and will automatically detect it's immediate surroundings. You will arrive on the following landing page:
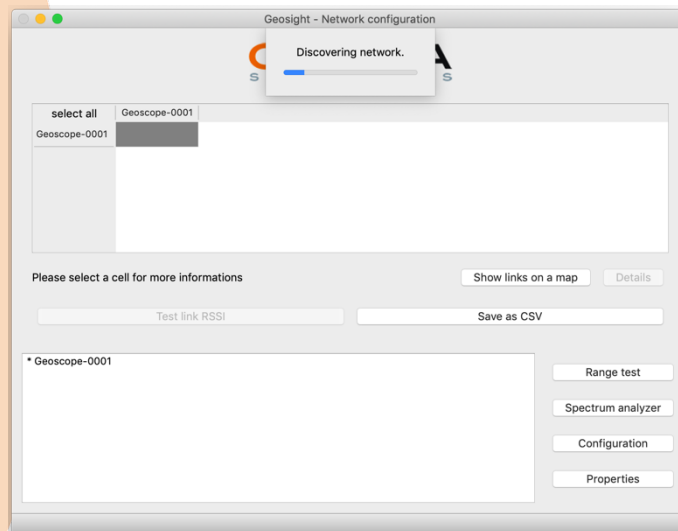
If there are powered Geocubes within radio reach and on the same radio channel as the Geoscope (see chapter V.C for configuring radio channels), they will appear in the chart in the upper part of the screen:

IV. CHECKING RADIO LINKS

Strengths of radio signals between Geocubes and Geoports, named RSSI for *Received Signal Strenght Indication*, is an essential factor of stability for a Geocube project, and are expressed in dBm. The higher the value, the stronger the signal. Following figures can give you rough guidelines to assess the values provided by Geosight:

- -30 dBm to -60 dBm: good
- -60 dBm to -75 dBm: medium
- -75 dBm to -85 dBm: bad
- Below -85 dBm: very bad, you may experience loss of data

IV.A. MAPPING RADIO LINKS FOR AN SELECTION OF GEOCUBES

To do so, simply select in the chart all the cells that you want to be tested and press "Test link RSSI", the selected cells will be filled with the RSSI value for messages going from the item indicated on the line to the item indicated on the column.
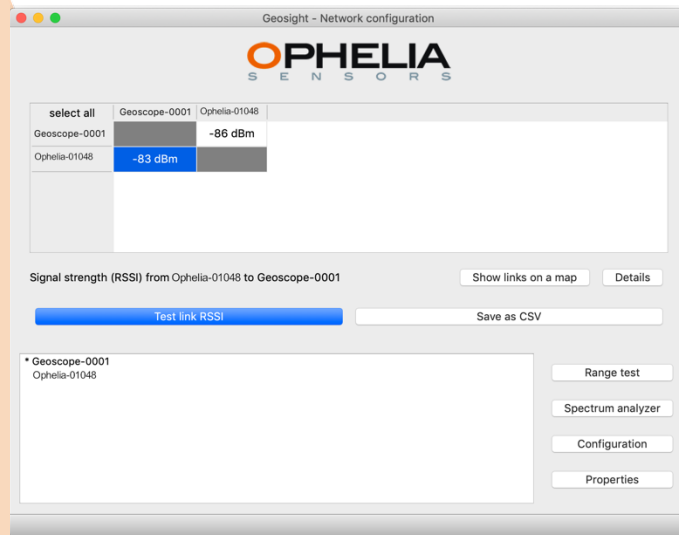
Once the test is terminated, the following resume will appear in a pop-up:
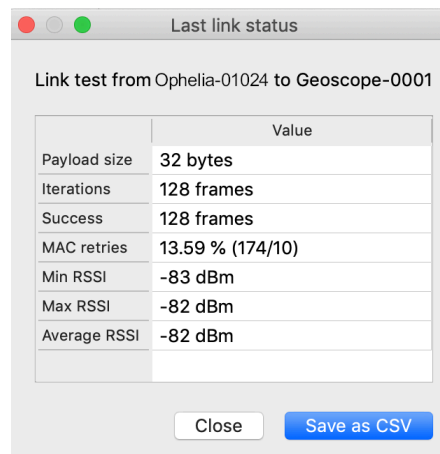
### IV.B. MAPPING RADIO LINKS FOR AN ENTIRE GEOCUBE NETWORK

To do so, simply press "select all" on the upper left hand corner of the chart and press "Test link RSSI".

When setting up a project, it is useful to map the entire network to understand what could be potential weak or critical links. To serve as point of comparison for future analysis, you might want to save the RSSI matrix by pressing "Save as CSV".

IV.C.   IMPROVE SIGNAL STRENGTH WITH A SINGLE GEOCUBE

On occasions, it might be necessary to improve signal between a Geocube and a given location (whether it be a Geoport or another Geocube serving as relay). To fine tune the signal, place the Geoscope on the reception end of the signal, select the hardware to be tested and press "Range test". The following pop-up page will appear:
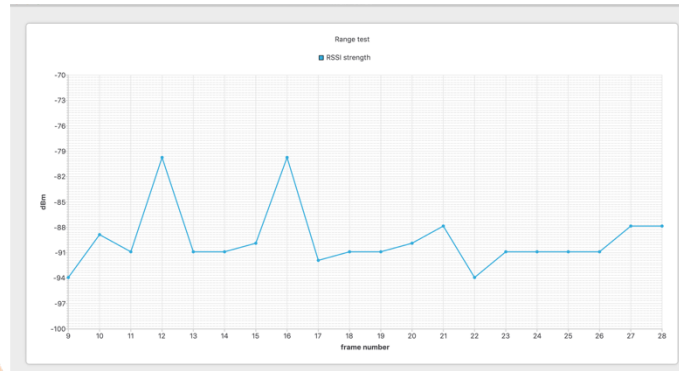
Every second, the graph will plot the strength of the signal (RSSI) between the selected equipment (Geocube or Geoport) and the Geoscope. The higher the signal, the stronger the signal is. You can improve in real time signal quality by moving the devices or their antennas (notably when using directional antennas)

Once you have set the best position, simply close the window.

V. Setting channels and Sub-networks

V.A. Selecting a channel

Geocubes and Geoports can communicate on 12 different channels, numbered 12 to 23. In order to communicate, two items need to be on the same channel.

On some occasions, certain channels on the 2.4 GHz band might be crowded with other apparatus in the area using some of the channels. If necessary, you can test the clearest channels in the area of your project by pressing "Spectrum analyser".

The following pop-up window will appear and test all channels every second. Both the instantaneous value (indicated in bars) and the average value since the beginning of the testing (indicated by the curve) are indicated.
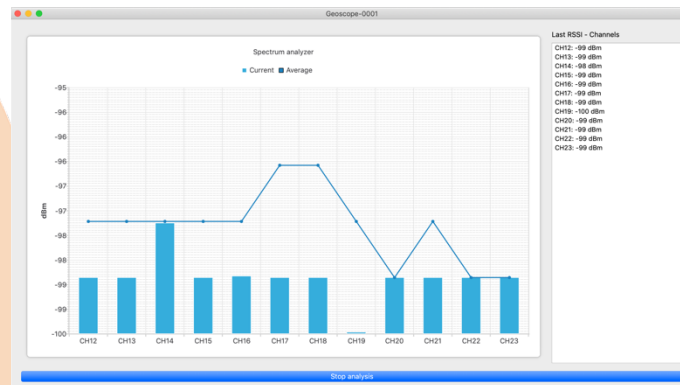
The best channels are those which have the highest dBm value (these being negative, they correspond to the highest position of the curve). Make sure, if you decide to switch to a different channel, to change the channel on every equipment will be using (see V.C on how to change channels on an item).

V.B. Using subnetworks

Whenever installed and powered, Geocubes naturally try and connect to the maximum number of items within reach. If you have several Geoports, it will connect to both which usually means the Geocube will receive all instructions twice and send information randomly to one or the other Geoport. To avoid this, you can create subnetworks. An item can then only communicate with items in his own subnetwork.

By using this possibility, you can precisely define which Geocubes are linked to a given Geoport, thus ending any cross-talk issues.

Given devices can only communicate if they are in the same subnetwork, when setting a new subnetwork, make sure to change Geocubes first before changing their related Geoport. To then communicate with this subnetwork, the Geoscope's subnetwork will also have to be modified.

V.C. Setting Channels and Subnetworks

To change both parameters, select a device (Geocube, Geoport, Geoscope) on the left hand side of the screen and press "Configuration". Following screen will appear:

To set new values, simply type them in the corresponding field and press "Write".

Possible values for Channels are integers between 12 and 23.

When setting a Network ID to define a subnetwork, make sure to keep trace of the entered value. If lost or forgotten, you would be unable to communicate with the device.

VI.   CHECKING A DEVICE PARAMETERS

To check the parameters of a given device, simply select the corresponding item and press "Properties", the following pop-up will appear after a few seconds giving basic information and values reported by sensors: