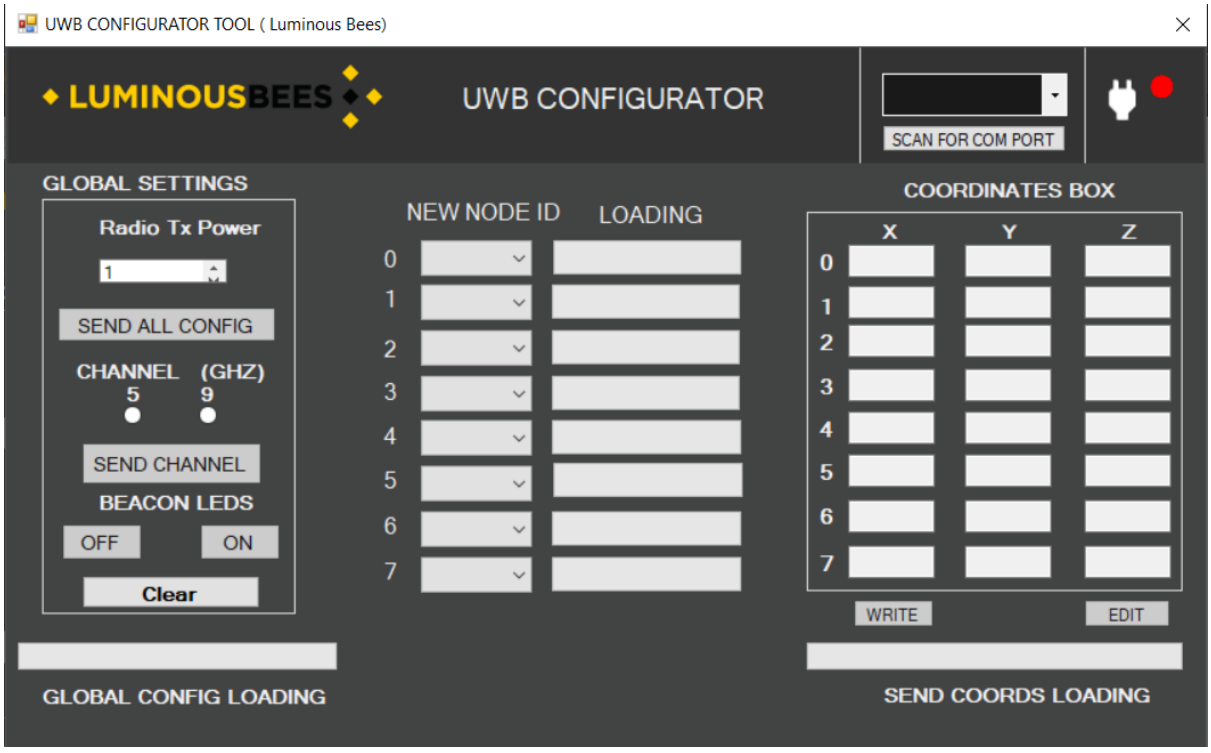
UWB CONFIGURATOR TOOL GUIDE

THE PROGRAM:

After installing the beacons and testing the signal quality of the beacons, you can move on to the configuration. This program is intended as a program for the global and singular modification of the beacon settings, and to be done after the first configuration. The beacon settings that can be changed are:

1) Node id of the beacon (0 to 7)
2) Channel of the beacon (5 or 9)
3) Power of transmitting and receiving (1 to 28)
4)Coordinates saved in the beacon memory
5)The status of the led during the show (Configuration Mode = ON , Show Mode = OFF)

These settings, in particular the power and the channel are settings that are changed globally in the beacon network, being that these must be set on all beacons to allow the correct operation of the network.



This is the graphical interface. To configure the other beacons, a secondary beacon is required, the configurator beacon.
Currently there are 2 firmware for the configurator beacon. One firmware works with channel 5 and the other with channel 9, at the discretion of the network and the channel used by all the beacons you have to choose the right firmware.

CONNECTING TO THE CONFIGURATOR BEACON:

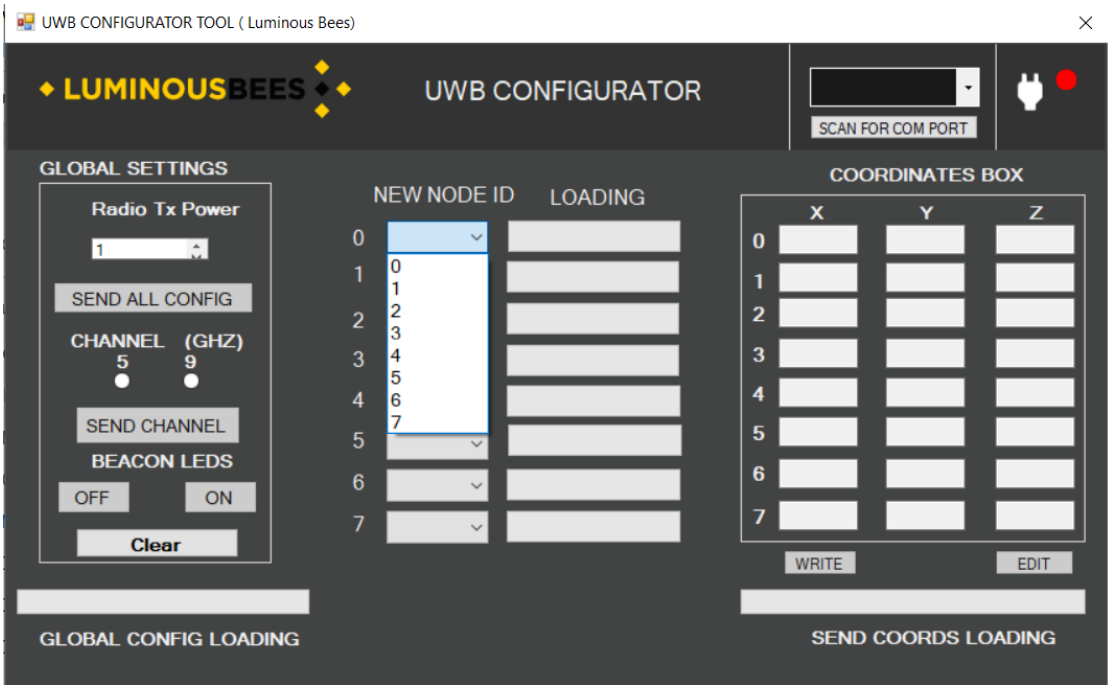
Select the right com port and press the connect button , the green led indicates that the connection is stable , if the led is red maybe the com port is already in use.

USE OF THE PROGRAM:

On the right of the interface you can see a list of the 8 beacons (currently this program uses Tdoa2 mode).
Next to each beacon number there are two elements:
A list for setting the node id and a loading bar that will indicate
whenever necessary, the progress of sending and writing on the beacon concerned.
On the left of the program there will be the group for the global settings:
Within this group are the settings which, if sent, will change the settings to all beacons from 0 to 7.
In case of need, to clean all the textboxes, you can press the "**Clear**" button

CHANGING THE NODE ID:

The “node id” is the identifying address of each beacon. The possibility of changing it derives from a need to replace 2 beacons, however this is a setting that will rarely be used globally as it would completely change the mapping of the room.



An example of setting for the node id is replacing the address of beacon 0 with another address between 1 and 7.
Another use of this setting is to confirm the address of a beacon by sending its own address to it.

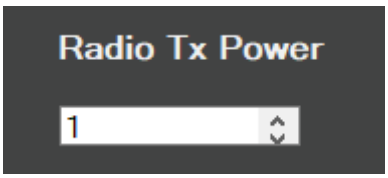
SENDING THE NEW NODE ID:

After setting the new node ids, you will be able to send them to the beacons to change them remotely. This possibility is given by the "*Send all config*" button.

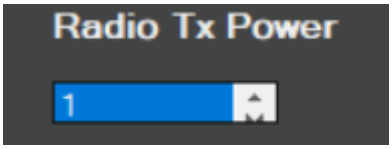
In fact, by clicking this button the node id and power settings will be sent to beacons. That of the node id in particular will be sent individually to the beacons that will have the inserted setting, the power value will instead be sent to all the beacons.
In this case the loading bar will help you to follow the sending procedure.
In fact, the progress bar of a beacon will advance regularly while sending information towards it, whether this information is the power or the new node id.
it is also possible to see the progress visually, in fact the LED of the configurator beacon will flash red when it is sending settings.To view the response of the target beacon it is possible to see the beacon LEDs stop and light up green for a few seconds, this event means that the target beacon has managed to receive the new settings from the configurator beacon.

SENDING A NEW POWER CONFIGURATION :

In global configurations it is possible to change the power configuration of all beacons. In fact, this setting will be changed globally to allow for improved signal distribution.
The settable value ranges from 1 to 28. You can select this value through the Radio tx Power list.



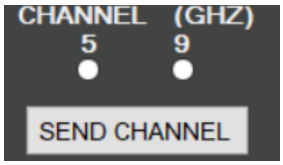
To correctly select the power value, click ONCE on the value in the list. If done correctly the value should highlight blue



The minimum power value corresponds to the minimum value of fine and coarse, for these values see the decawave support page.
The maximum value is 28 , and that indicates: coarse 3 and fine 63.
The procedure will change the beacon power configuration following the pre-established order from 0 to 7.

SENDING A NEW CHANNEL CONFIGURATION:

The channel again is a setting that needs to be changed globally.The channel can be changed between 5 and 9, at the discretion of the beacon network.During the “sending channel procedure” , to follow it , it will be possible to carry out the progress bar of the “Global Config Loading”.



The procedure will change the beacon channel following the pre-established order from 0 to 7. As the node id sending procedure and power configuration sending procedure , you will see , progressly , leds of each beacon target from 0 to 7 change their leds in a static green when the configuration is received and then return to normal led routine.

CHANGE THE LED STATUS ON ALL BEACONS:

On the beacons there are several LEDs that signal theri status. These LEDs do not need to be turned on during the show, even for an aesthetic value they could cause annoyance to the show, especially in dark places.

To overcome this problem, it is possible to turn off the flashing LEDs and leave only the fixed ones on. In this case the procedure will always be possible through a sending routine.

After the end of the show, or for a technical check, it will be possible to turn on the LEDs again.

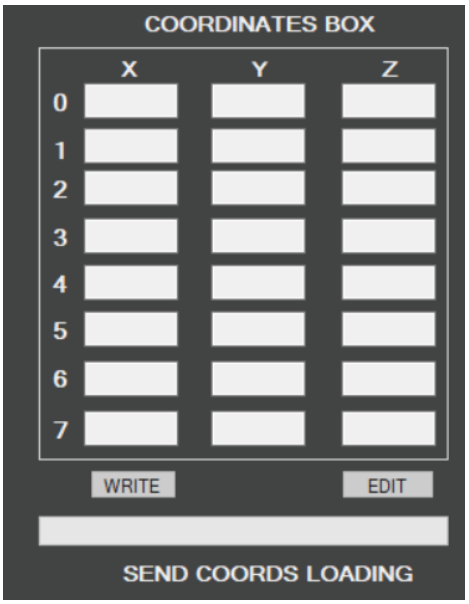
Switching on and off is possible by pressing two buttons.

When the "OFF" key is pressed, a sending procedure will be initiated, which can be controlled from the "Global Config Loading" progress bar, And progressively, as soon as the beacon has received the command, the flashing LEDs will switch off.

To turn them back on, at the end of the show, for example, it will be possible to press the "on" button, and progressively the lights on the beacons should come back on

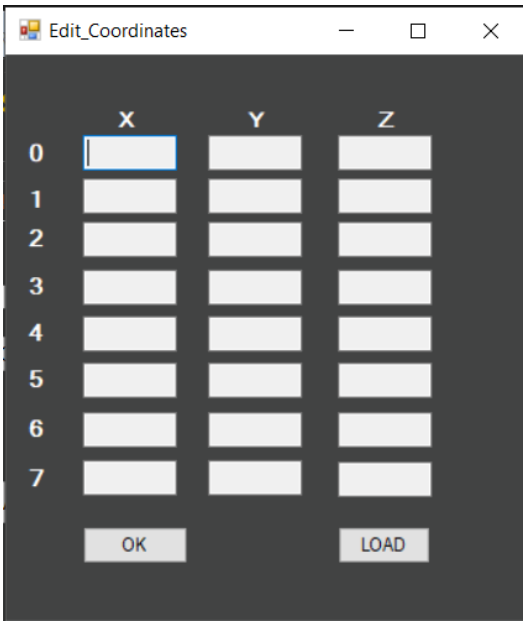
INSERT COORDINATES INSIDE THE MEMORY OF EACH BEACON:

On each beacon it will be possible to save its coordinate, which will be used later by an external localization system as a reference to the position of the beacon.
The useful part of this program is the "Coordinates Box". This table will contain all the coordinates entered by the user.



Follow this procedure for entering coordinates:

1) Press the "**edit**" button, when this button is pressed a second window called "Edit coordinates" will open

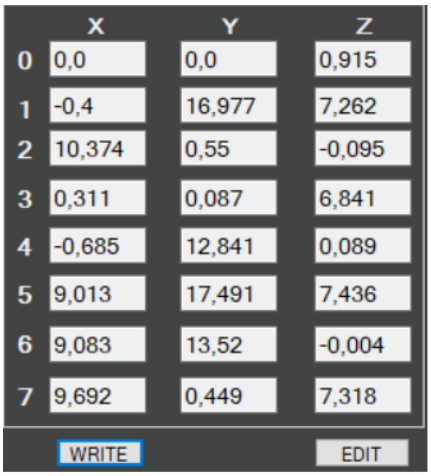


2) In this window you can enter the coordinates in 2 ways: manually or by loading it from a previously saved file containing the coordinates. The containing file can be a ".param" from Mission Planner containing the coordinates.

If you want to create a file containing the coordinates of the beacons, you need to create a .txt or .param file containing a structure exactly like this:
BCN_BCN0_X,0.0
BCN_BCN0_Y,0.0
BCN_BCN0_Z,0.915
BCN_BCN1_X,-0.4
BCN_BCN1_Y,16.977
BCN_BCN1_Z,7.262
|
|
|
[...]

Or you can manually enter the coordinates of the beacon one by one. You can use "," or "." It's not important . The important thing is not to leave empty boxes or put non-numeric values

3)When finished entering the coordinates in this window, press "OK" and you will return to the initial screen, where the coordinates will all be entered in the "coordinates box"



4)At this point it is possible to press the "WRITE" key and the sending process will start, which will be possible to follow from the progress bar "SENDS COORDS LOADING"

At the end of this procedure the coordinates entered will be saved in the memory of each anchor.

CONCLUSIONS:

Thanks for your attention from Luminous Bees!