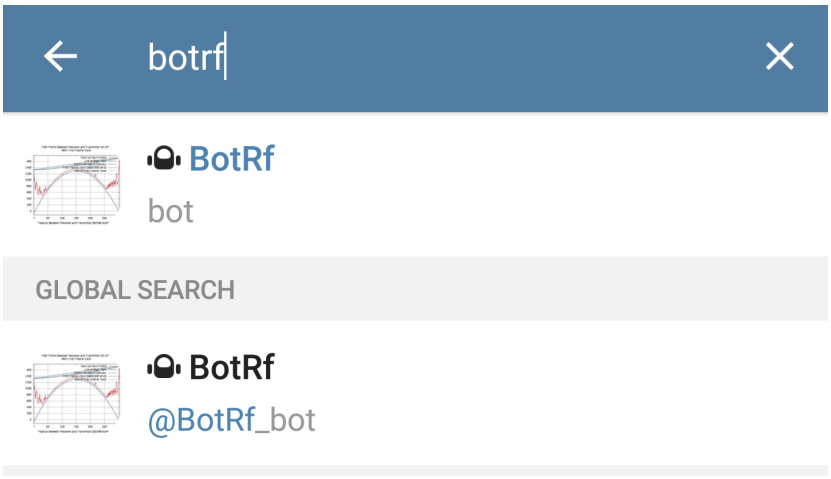
BotRF is a Telegram bot to check the feasibility of wireless links. It works with the SRTM database that contains the elevation data for most of the world. BotRf will build a profile of the terrain between the chosen end points that will detect any obstruction bigger than 90 m, the resolution of the database. Furthermore, it will also draw the first Fresnel zone and the apparent curvature of the earth for different refractive index values.

Requirements

BotRF is a Telegram Bot that works on any smartphone or PC running Telegram. Install Telegram as described here: https://telegram.org/

Once you have Telegram up and running, choose BotRf as contact.

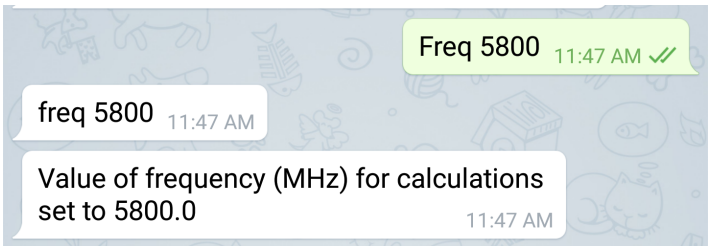


Usage

There are 4 steps to check the feasibility of a wireless link:

1) Set the **frequency**. You can do so by using the freq command and entering the frequency in MHz. So if you are going to use the 5.8 GHz frequency for you link, you have to write (the system is case insensitive):

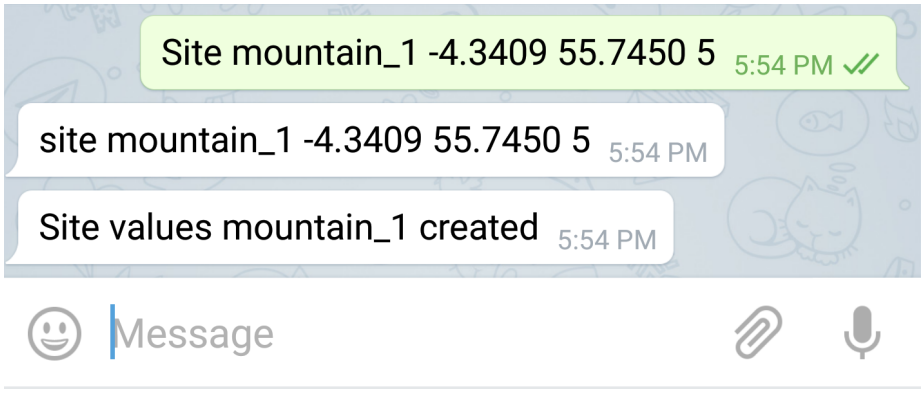
freq 5800



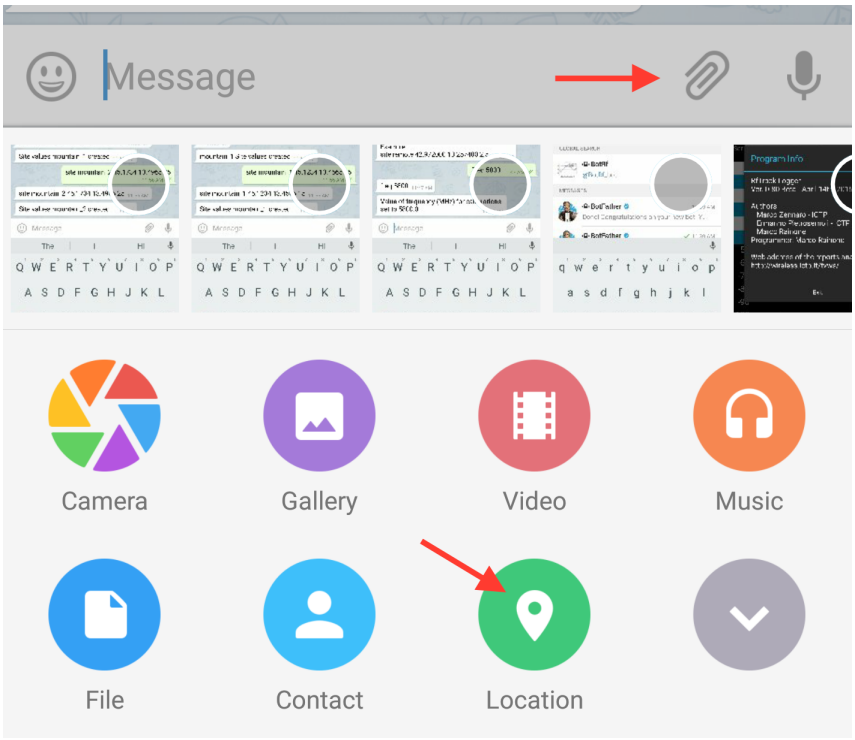
2) Insert the information about the **first site**.
   If you are using Telegram on a **PC**, you have to enter the information manually. For example:

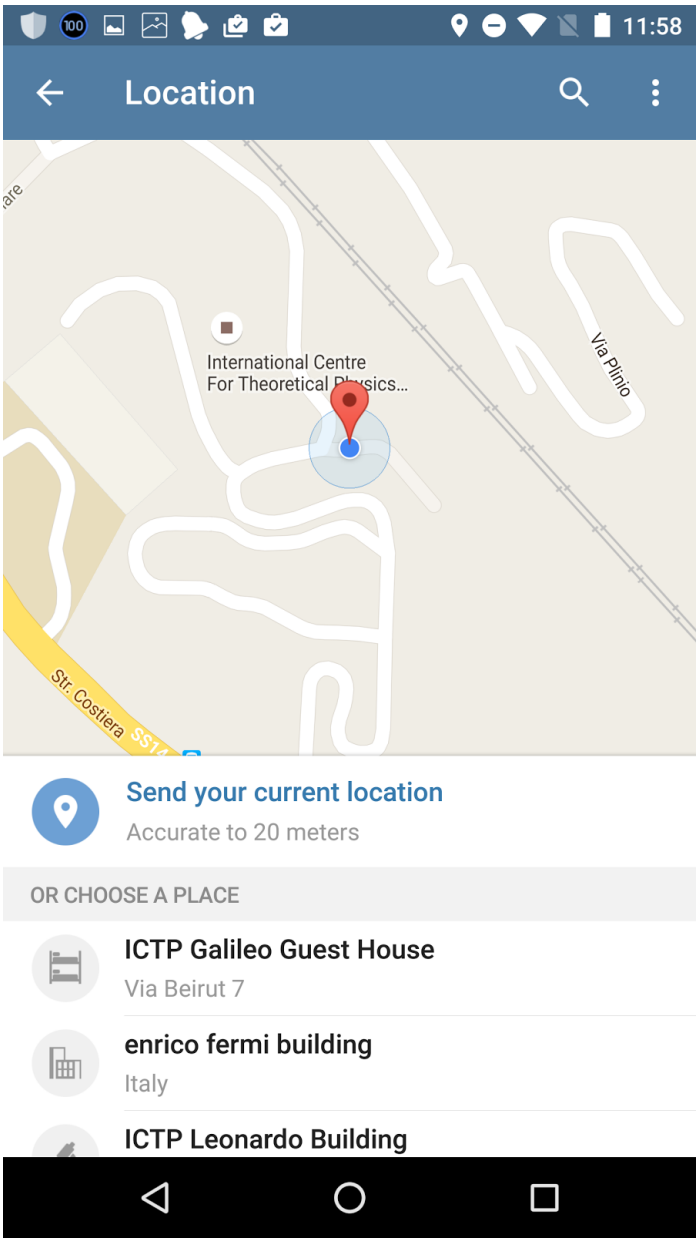
site mountain_1 -4.3409 55.7450 5

Where *mountain_1* is the name of the site, **-4.3409** is the latitude in decimal degrees, **55.7450** is the longitude in decimal degrees, and 5 is the height of the antenna above the ground in meters.



If you are using Telegram on a **smartphone**, you can enter your current location with the click of a button, by selecting the paperclip icon (beware that different smartphones have slightly different setups), clicking *Location* and then *Send your current location*. The image below shows the procedure on an Android phone:


Message
Camera
Gallery
Video
Music
File
Contact
Location



You will get:

BotRf

Send location

Position inserted: {"latitude": 45.703755, "longitude": 13.720064}

To create site file, set these values:

<name> <antenna height>

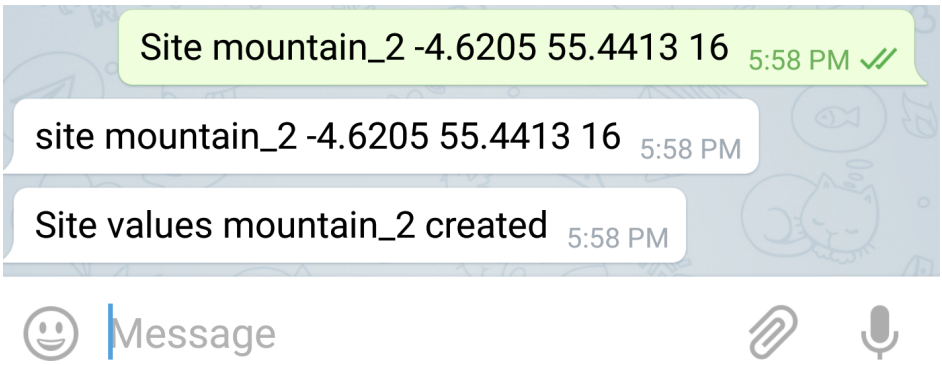
You will then be asked to enter the site *name* and the *antenna height* in meters. So in this example the site name is **ggh** and the antenna height is **15** meters above ground level, you would enter:

ggh 15

3) Insert the information about the **second site** (you need two sites to setup a link, right?)

For example:

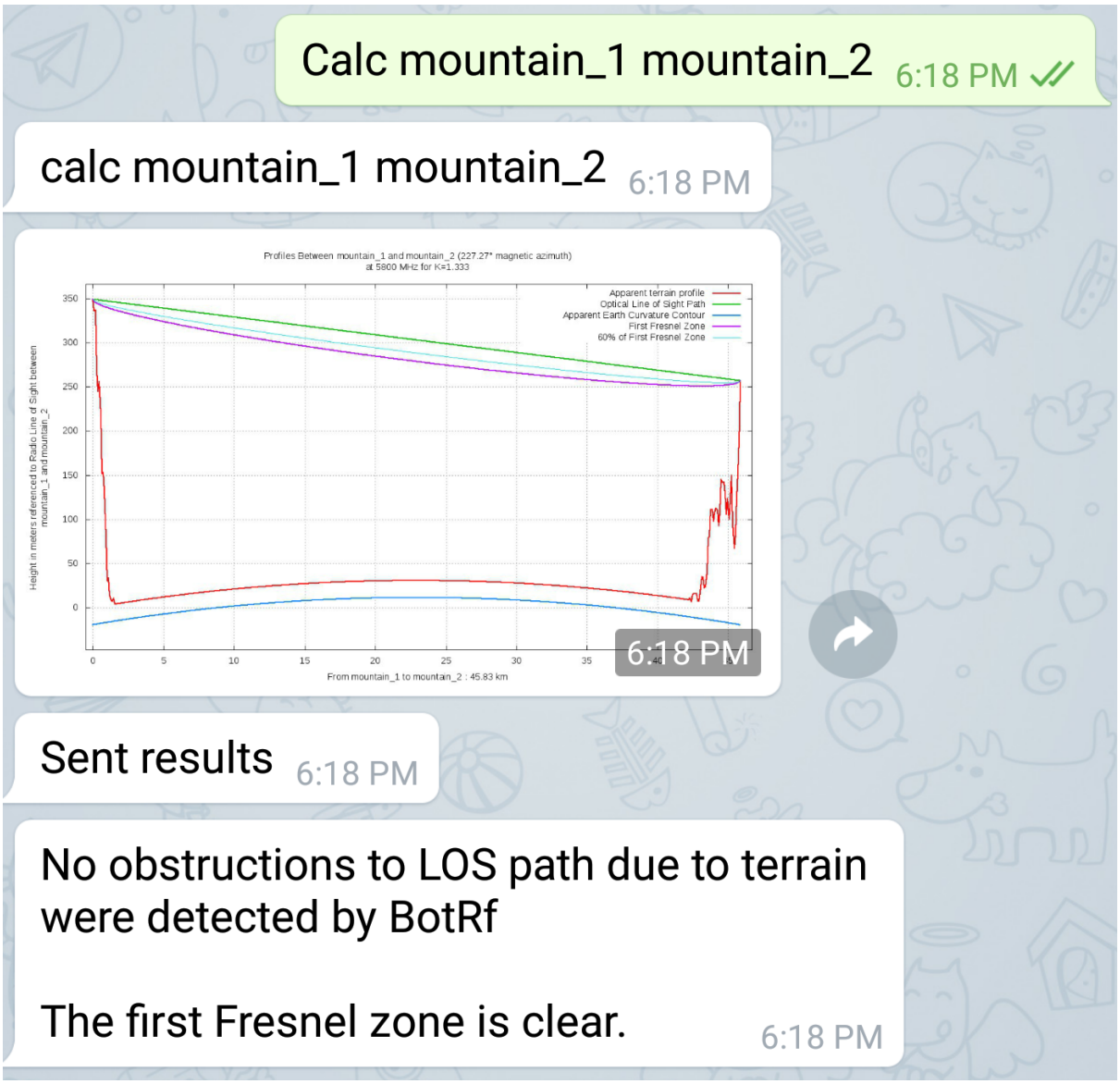
site mountain_2 -4.6205 55.4413 16



4) Now we have all the information required to check if the path is clear or obstructed, from the radio signal viewpoint, using the **calc** command. So enter:

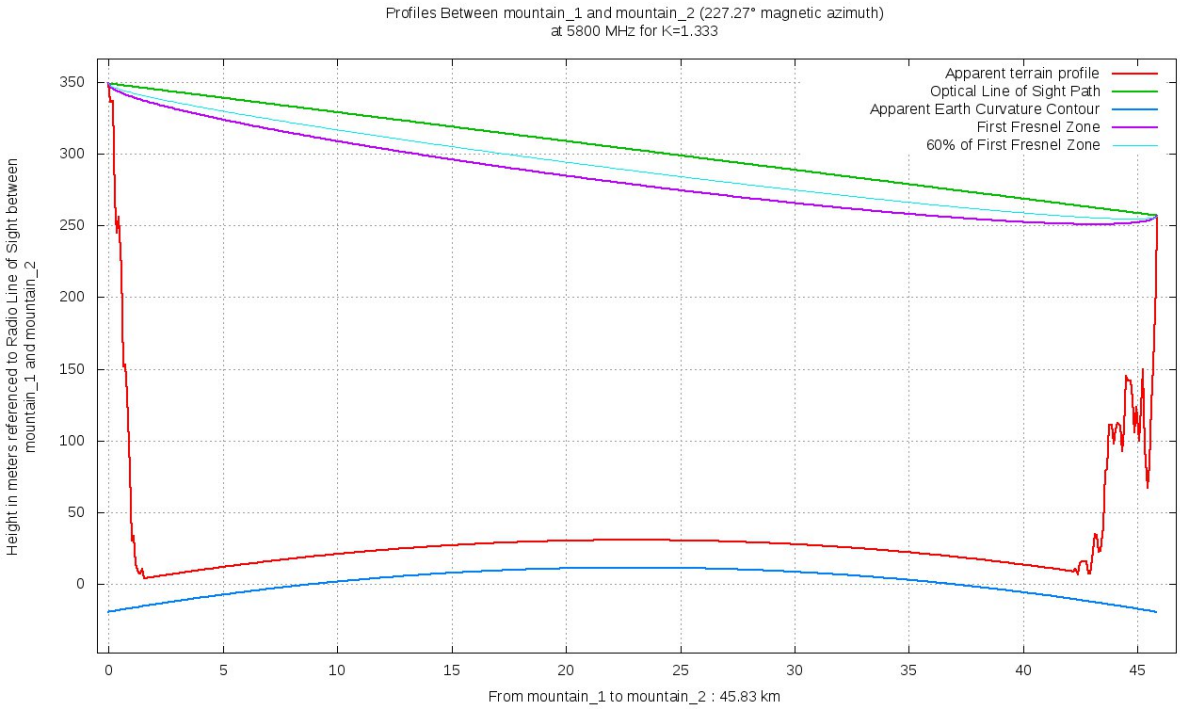
Calc mountain_1 mountain_2

And you will obtain the following information:



Which tells you that the link is feasible since there is no obstruction due to terrain. Congratulations!

You can select the graph to analyse it carefully and copy elsewhere:



The blue line is the earth's curvature, modified by the refraction index. The red line is the terrain profile as seen by the radio wave. In cyan we have the first Fresnel zone contour. The magenta line is the 60% of the first Fresnel zone.

5) If there is an obstruction that can be cleared by raising the antenna, you can use the command **alt** to choose a new value. So enter:

alt mountain_1 30

To change the antenna height of the site called mountain_1 to 30 meters.

Documentation

You can always ask for help to the Bot using the **/help** command.

Contact

You can contact us at: botrfinfo@gmail.com

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