LIRA CS-R4.3

LIRA ACQUISITION GUIDELINES

INTRODUCTION

This document provides guidelines to perform correct acquisitions using LIRA 4.2/4.3. For the analysis part, please refer to the LIRA User Guide (LIRA-CS-R4-UserGuide.pdf, provided with the installation package).
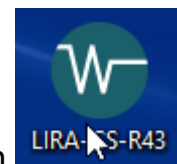
For the installation of LIRA-CS-R4, refer to the Quick Installation Guidelines (LIRA-CS-QuickInstGuide.pdf, also provided with the installation package).
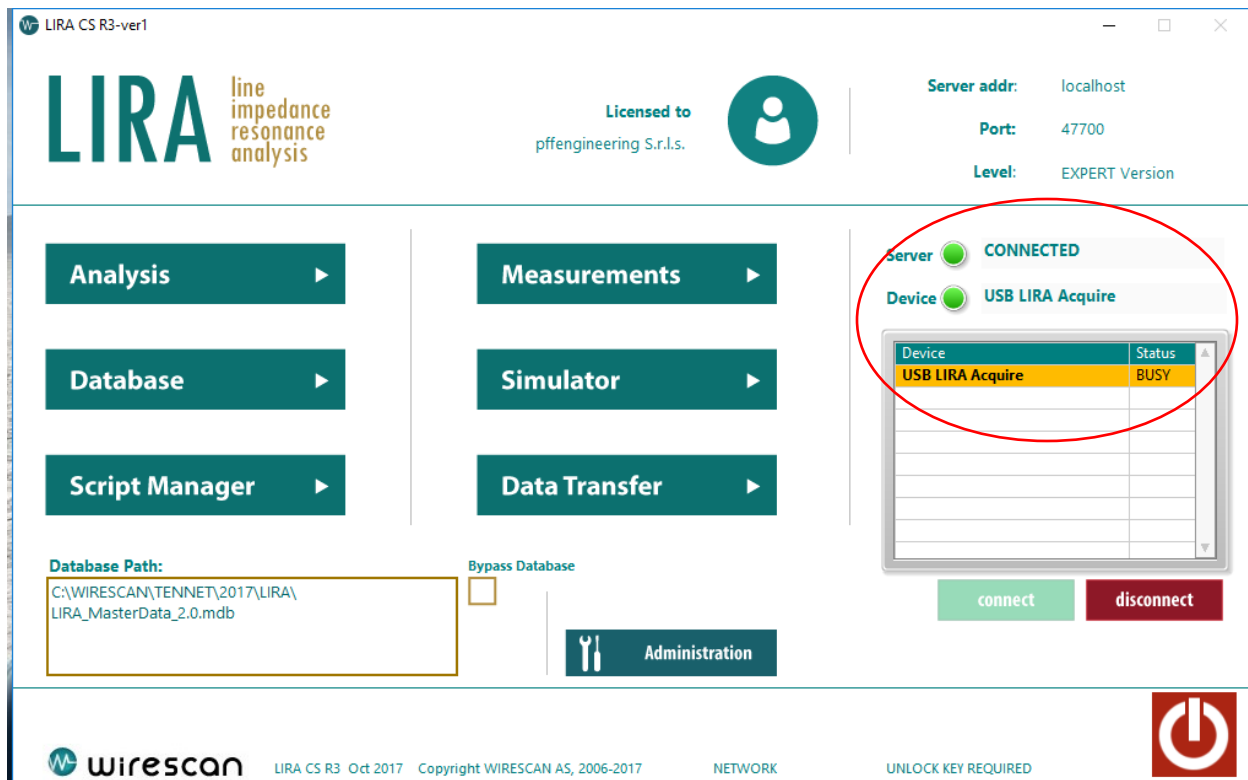
NOTE:

Before the acquisition, you need to create your Project using the **DATABASE** function in LIRA. Please refer to the User Guide to learn how to create and manage your projects.

PROCEDURE
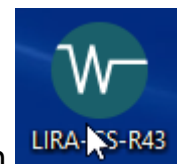
Start the LIRA-CS Client (double click on the LIRA Client icon on the desktop).

The Main window will be displayed:

Preliminary Checks

Check that the Server and Devices led are green and the device status is BUSY.

If the Device status is OFF, the communication between the device and the Client is broken. Try to reconnect the USB cable, check that the device is powered, restart the LIRA program. If the problem persists, the installation was not completed. The most probable problem is that the communication driver was not installed correctly. Try the following:

- Go to the LIRA Program Folder (**C:\ProgramFiles(x86)\LIRA-CS-43**)
- Find the executable file **NIVISA1550runtime.exe**
- Double click it and run the installation.
- Restart LIRA

Hardware setup recommendations

- Always check that the cable to be measured is not energized and discharged, before connecting the device to the cable.
- When measuring shielded cables, always connect the red wire of the probe to the conductor and the black wire to the shield.
- The cable conductor at the near end must be disconnected. The shield should be left grounded.
- The cable at the far end can be left as it is, ie connected to the load (if the load impedance is higher that 1 Kohm), disconnected or shorted. When possible, leave the shield at the far end grounded.

Acquisition

Press the **MEASUREMENTS** button. The Acquisition panel will be displayed:

- Select the Project and Cable for which you want to perform an acquisition (the database project must be created before the acquisition campaign). When you select the cable, the cable geometry information (on the lower left corner) and the cable length will be automatically filled. You can change these data at any time, before or after the acquisition.
  If you have LIRA-CS-R4 June 2019, the Max acquisition frequency (on the top left corner) will be automatically set with the right suggested value. You can accept it or change it, BEFORE the acquisition step.
- The following 5 parameters must be set (or accepted at the default value) BEFORE the acquisition. Anything else can be changed after the acquisition, offline (including the cable length):
  - **Max Frequency(MHz)**. The system suggests the best value (only with LIRA-CS-R4 June 20199), but you can change it, from 100 to 0.1 Mhz. This number should be set at lower values as the cable length increases. A rule of thumb, for MV/HV cables, is the following:

Cable length (m)	MaxFerq(MHz)
<150	100
150-400	50
400-1000	25
1000-5000	10
5000-10000	5
10000-20000	2
20000-40000	1
40000-80000	0.5
>80000	0.1

    It is always good practice to perform measurements using 2 or 3 different values for the MaxFreq

  - **OutputImp(Ω)**.   (Default 50). Use the value corresponding to the characteristic impedance of the probe. If you use the probe provided

with the package, this value must be left at 50.

- o **OutputSelect**.   The Acquire device has 3 connectors called L1,L2 and L3. You can use either one to connect the probe (Default L1). Just make sure that the selector is set to the used connector.

- o **IFB (Intermediate Frequency Band)**. This parameter can be set at one of the following values: FAST,AVG,LONG or NOISE (Default: AVG). It corresponds to the length of each frequency step in the acquisition signal. LONG and NOISE will result in longer steps, suitable for noisy environment. The results will be more stable and accurate, but the acquisition time is much longer. FAST should be used only for preliminary measurements. Stick to the default value (AVG), unless you are running LIRA close to other energized lines or motors.

- o **Freq.Steps Number**. The number of frequency steps, from 0 to the maximum frequency (Default: 10000). Use the default value, unless you run at 100 MHz, when you can consider using 20000 steps. If you increase this value, the acquisition time will be proportionally longer.

- Press the **ACQUIRE** button to initiate the acquisition. If you use the default values for the parameters above, the acquisition time will be about 1 minute. A progress bar will indicate the acquisition status. You can **ABORT** the acquisition process at any time, while the progress bar is displayed.

- At the end of the acquisition process, you will be directed to the Impedance spectrum panel:
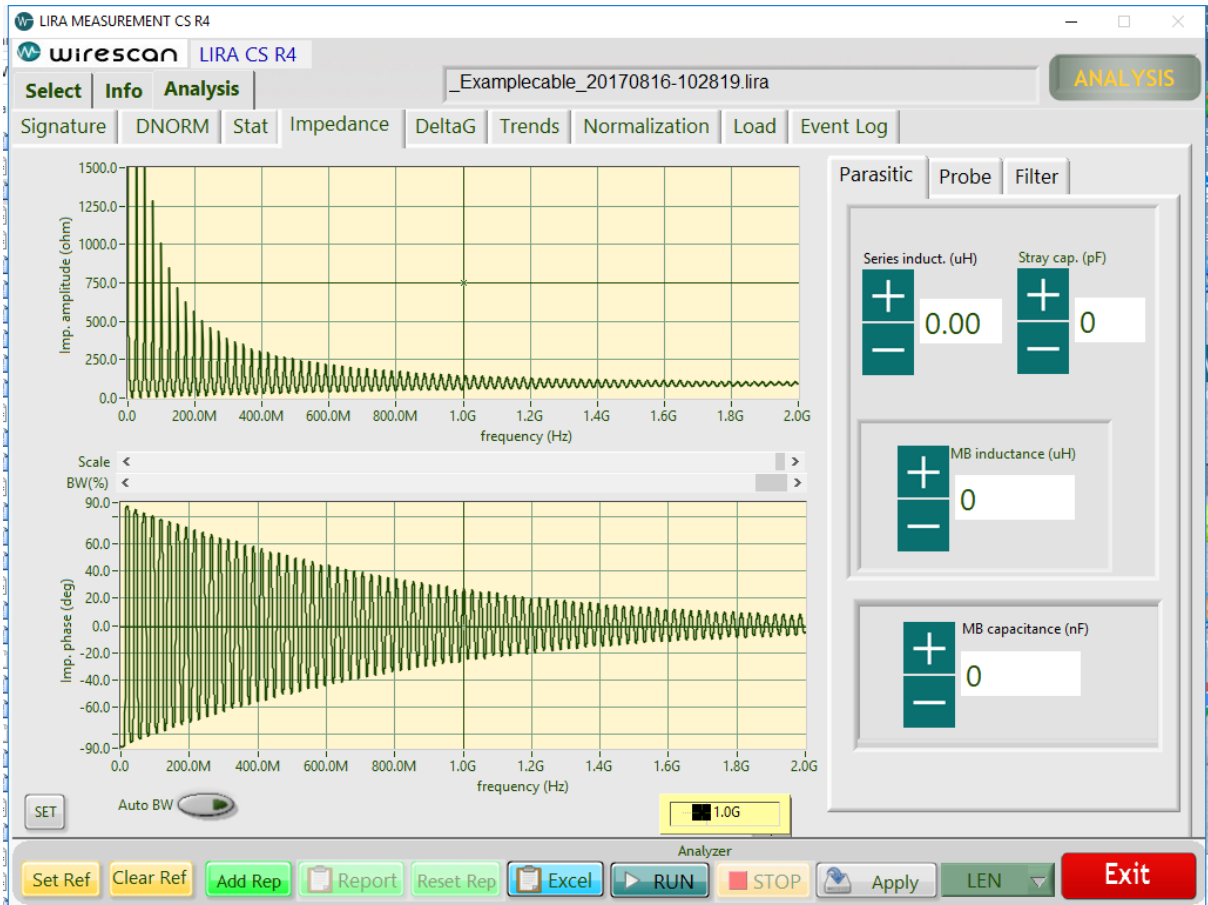
Check the spectrum to verify that the acquisition was successful. In this case, press **STOP** and then **SAVE**, to save the measurement for offline analysis.

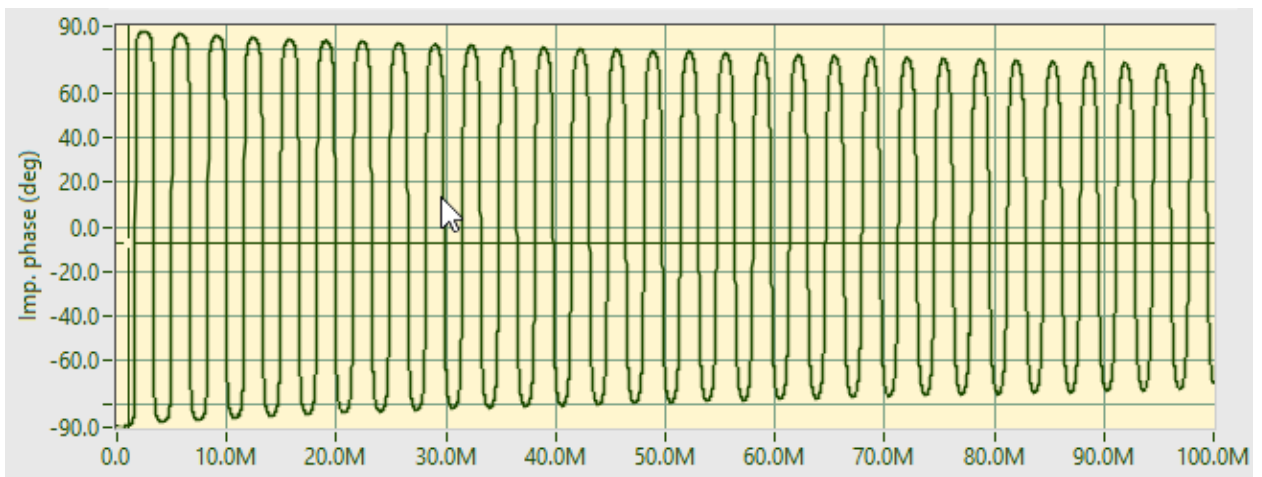*How to judge if the Maximum Frequency setting was correct*

The cable attenuation increases with frequency. If you use a MAxFreq setting too high, there will not be useful information in the higher part of

the spectrum, as in the picture below:
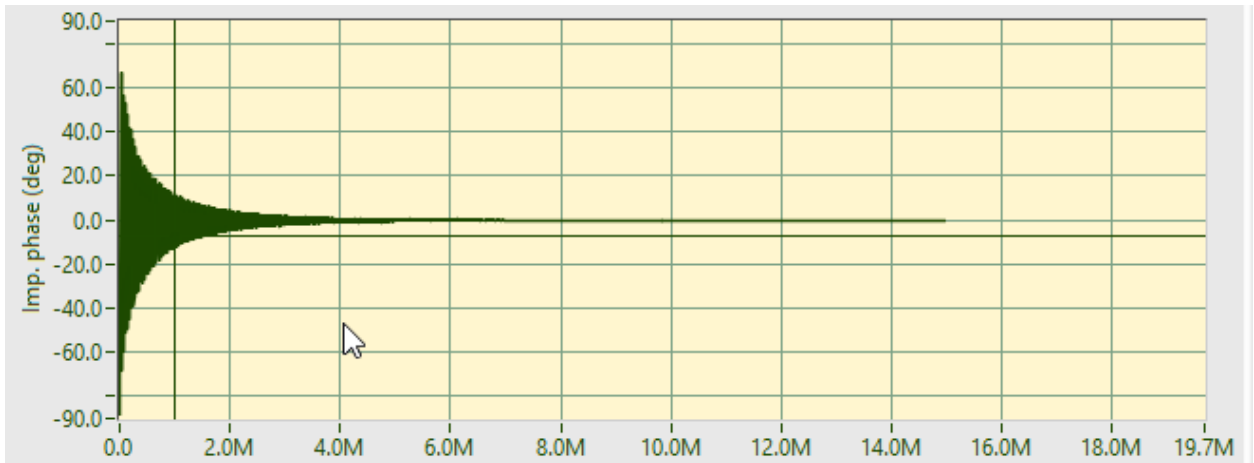
Maximum Frequency too high

If you use a MaxFreq too low, there will be information not used in the high part of the spectrum, as in the figure below:

MaxFreq too low