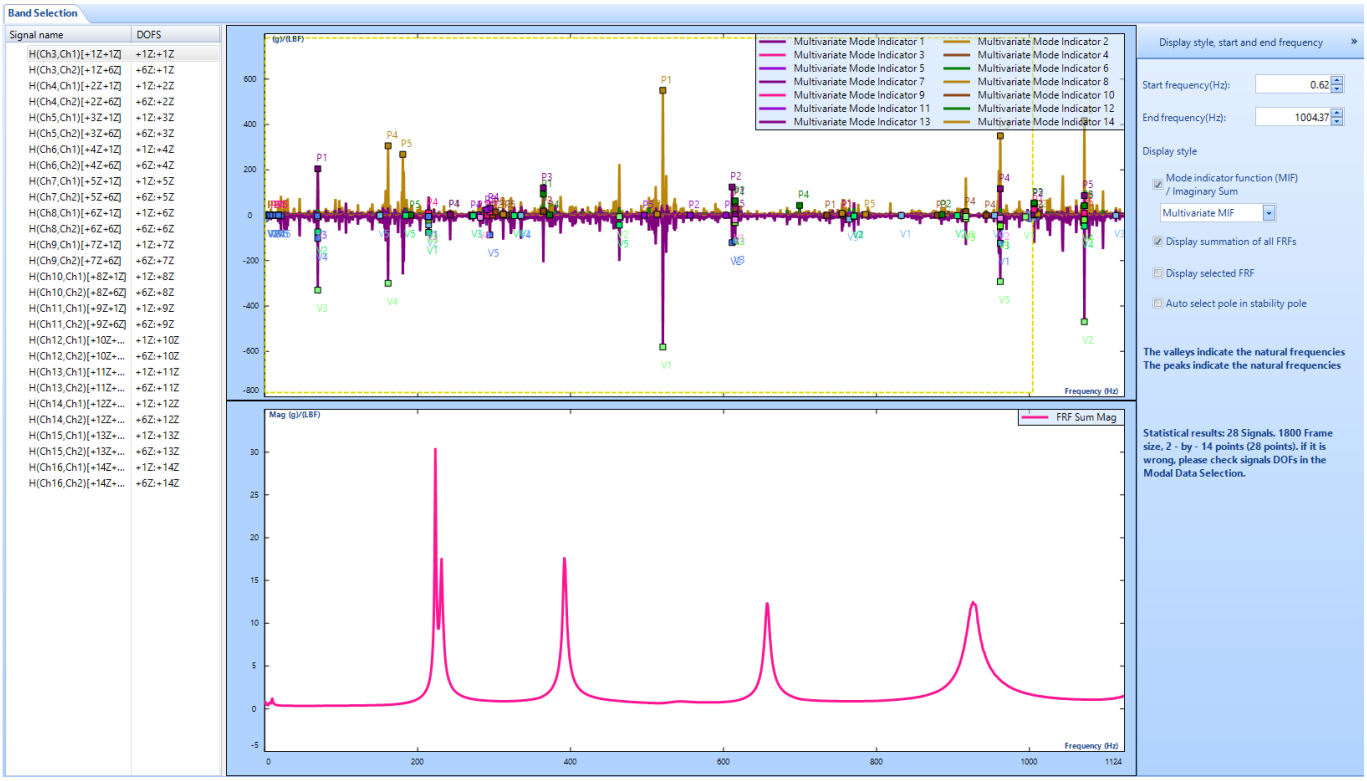
EMA Band Selection

The **Band Selection** tab is the second step of Modal Analysis in EDM, after Modal Data Selection. Here you look at the selected FRFs together, find the frequencies where the structure has modes, and choose the frequency band that EDM will curve-fit in the **Stability Diagram**.



The tab has two main areas:

Settings panel- lists the signals that came from Modal Data Selection and holds the display options and the frequency band settings.

Chart- shows the FRFs or a mode indicator function (MIF), and the range cursors that set the frequency band.

NOTE: Band Selection uses the signals that have **Calculate modal** selected in the Modal Data Selection tab. To change which signals are used, go back to Modal Data Selection. When you change the signal selection there, the Band Selection and the Stability Diagram are cleared.

Signal List

The list at the top of the settings panel shows each signal that will be used, with its **Signal name** and **DOFS**.

Below the list, a summary shows the number of signals, the frame size (number of frequency lines), and the size of the data set as *response DOFs-by-reference DOFs*. If these numbers are not what you expect, check the DOFs in the Modal Data Selection tab.

Display Style

Use the **Display style** options to choose what the chart shows. You can select more than one option.

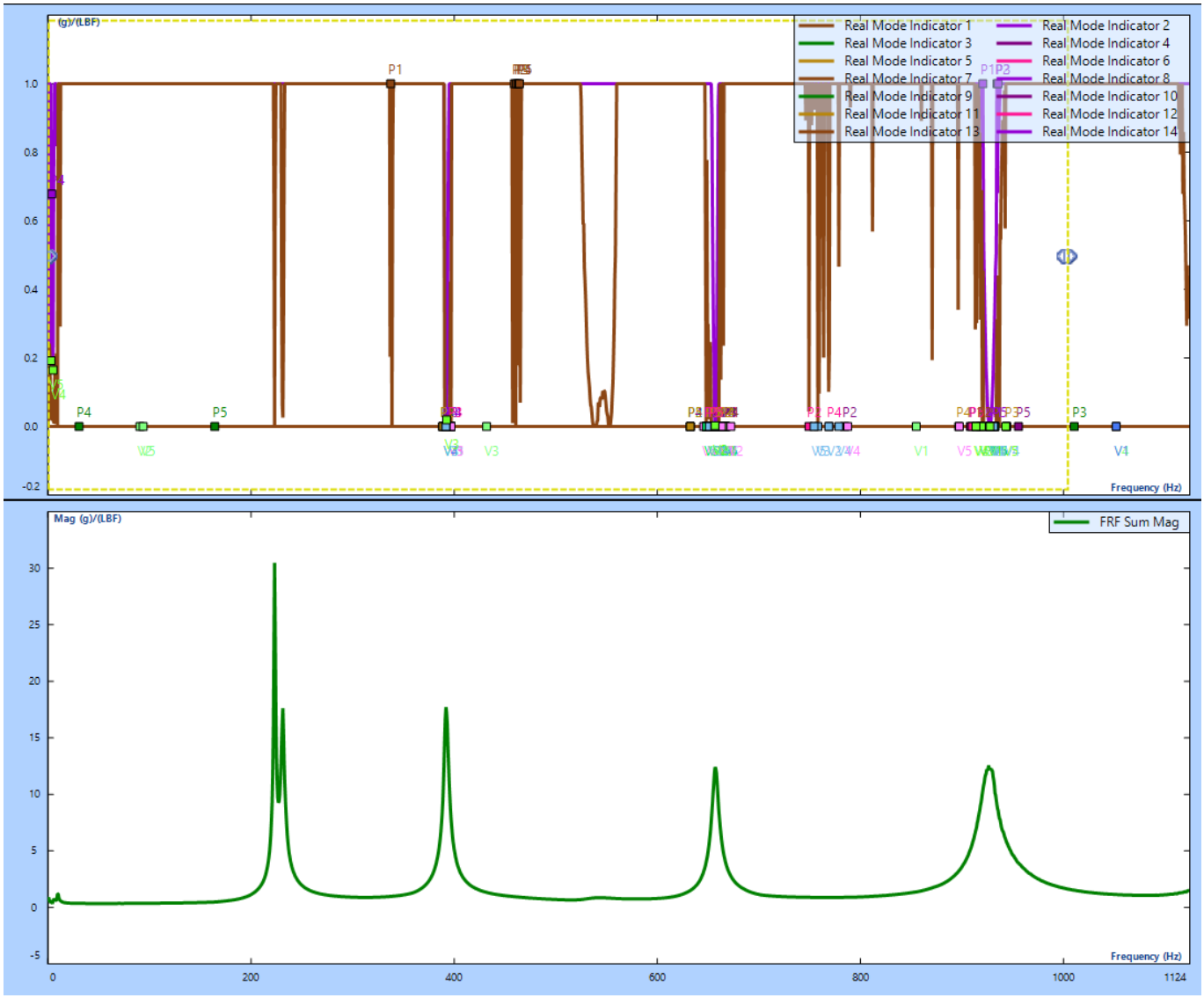
Display selected FRF- Shows the magnitude of one FRF. Click a signal in the signal list to choose which FRF is shown.

Display summation of all FRFs- Shows the sum of the magnitudes of all the selected FRFs. Modes appear as peaks. This gives a quick overview of where the modes are.

Mode indicator function (MIF)- Shows a mode indicator function calculated from all the selected FRFs. Choose the type of MIF from the list:

MIF type	Natural frequencies appear as	Notes
Multivariate MIF	Valleys	The default. Shows one curve for each reference.
Complex MIF	Peaks	Shows one curve for each reference. Useful for finding close or repeated modes in MIMO data.
Real MIF	Valleys	Shows one curve for each reference.
Imaginary Sum	Peaks	Shows the sum of the imaginary parts of all the FRFs.

If you select **Mode indicator function (MIF)** together with **Display selected FRF** or **Display summation of all FRFs**, the chart is split in two. The MIF is shown on top and the FRF or the summation is shown below it.



EDM adds peak or valley markers to the chart automatically, and a note below the display options tells you what to look for, for example *“The valleys indicate the natural frequencies”*.

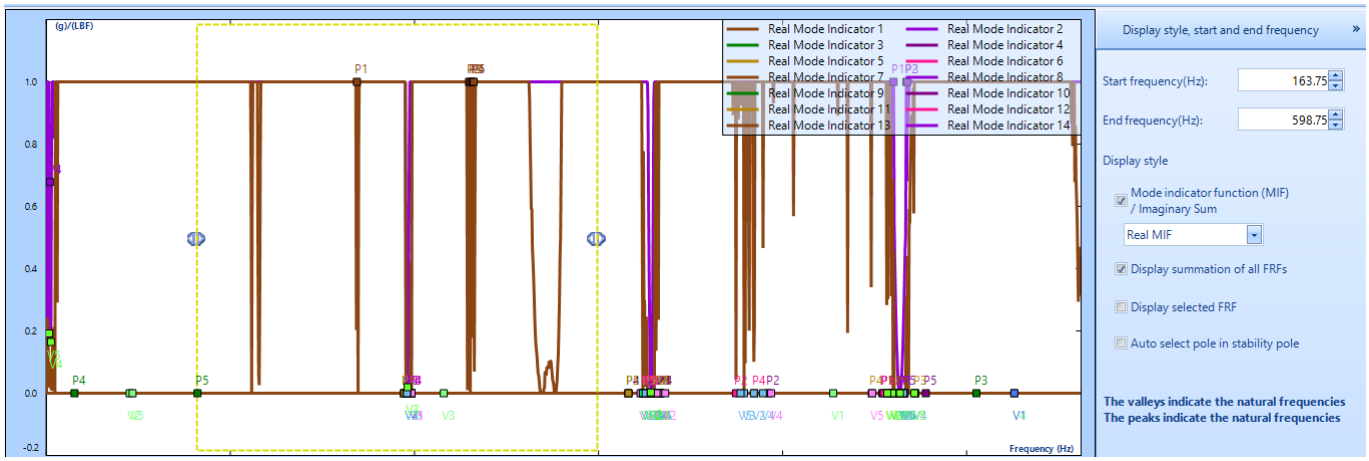
Selecting the Frequency Band

The frequency band is the range of frequencies that EDM will use to calculate the modes. Two range cursors on the chart show the start and the end of the band. They are added automatically when the chart is drawn.

You can set the band in two ways:

Drag the range cursors- Drag the left and right range cursors on the chart. The **Start frequency** and **End frequency** boxes update when you move a cursor.

Type the frequencies- Type a value in **Start frequency(Hz)** or **End frequency(Hz)** and press **Enter**. The range cursors move to the new value.



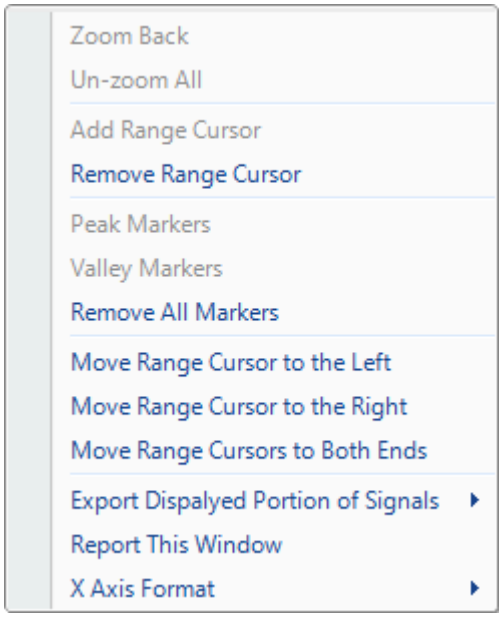
Tips for choosing a band:

- Include all the modes that you want to find, plus a little space on both sides of the first and last mode.
- A narrower band with fewer modes is usually easier to curve-fit than a wide band with many modes. You can fit several bands one at a time and save them to the same shape. See the Stability Diagram page.
- Avoid starting the band at a very low frequency where the FRFs are noisy.

Auto select pole in stability pole- When this is selected, EDM automatically picks the poles in the Stability Diagram that stay stable over many model orders. You can still add or remove poles yourself. See the Stability Diagram page.

Right-Click Menu

Right-click on the chart to open the menu.



Zoom Back- Returns to the previous zoom level. **Un-zoom All**- Returns to the full view of the chart.

Add Range Cursor / Remove Range Cursor- Adds or removes the two range cursors that set the frequency band.

Peak Markers / Valley Markers- Adds markers at the peaks or valleys of the curves. Use these to find the natural frequencies.

Move Range Cursor to the Left- Moves the start cursor to the lowest frequency currently shown in the chart.

Move Range Cursor to the Right- Moves the end cursor to the highest frequency currently shown in the chart.

Move Range Cursors to Both Ends- Moves both cursors to the edges of the chart. Zoom in on a range of interest first, then use this option to set the band to exactly what you see.

Export Displayed Portion of Signals- Exports the curves in the chart, between the range cursors, to a file. This option is available only when the range cursors are shown.

X Axis Format- Shows the frequency axis on a **Linear** or **Log** scale.

Y Axis Format- Shows the MIF on a **Linear** or **Log** scale. This option is available only when a Multivariate, Complex, or Real MIF is shown.

Next Step

When the band is set, open the **Stability Diagram** tab. EDM uses the band, the MIF type, and the signals from this tab to calculate the stability diagram.

FAQs

Why is the chart empty?- No signals were sent from Modal Data Selection. Go to Modal Data Selection, make sure that some signals have **Calculate modal** selected, then open Band Selection again.

Should I look for peaks or valleys?- It depends on the display. FRFs, the FRF summation, Complex MIF, and Imaginary Sum show modes as peaks. Multivariate MIF and Real MIF show modes as valleys. The note below the display options tells you which one applies.

Why did my band settings disappear?- The signal selection in Modal Data Selection was changed. When this happens, Band Selection and the Stability Diagram are cleared, and you must set the band again.

From:
https://help.go-ci.com/ - **Crystal Instruments Help**

Permanent link:
https://help.go-ci.com/modal:modal-analysis:band-selection

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