

SKF Microlog Frequency Response Function (FRF) Module

How to capture data using the SKF Frequency Response Function module

Summary

This application note gives instructions on how to set up your equipment in order to capture data for SKF Microlog Frequency Response Function (FRF) module measurements using an SKF Microlog analyzer.

How to capture data

To collect an FRF measurements, first set up the equipment. You will need:

- An accelerometer
- A modal hammer
- The structure on which you are going to collect the measurement

Next, connect the modal hammer to the Channel 1 input of the SKF Microlog. The hammer is used to create the force that is measured in the FRF module. The accelerometer is used to measure the structure's response to the hammer input and is connected to the Channel 2 input of the SKF Microlog. The accelerometer is then attached to the structure you are going to measure.

After your equipment is assembled, start the FRF module on the SKF Microlog and enter the setup menu. Some settings are preset to simplify setup. The preset measurement parameters are:

- Pre-trigger delay: Set to 10% of block length
- Trigger level: Set to 10% of input range
- Coherence with 80% threshold

For an FRF measurement, set the acquisition type to **Hammer**. If you set the acquisition type to **Continuous**, you will collect an ODS type measurement and not an FRF. Additional setup selections will be required. For further information on the other settings in the setup menu, use the help menu in the application by pressing the **F2** key. Once the measurement is set up and the hammer and transducer are attached correctly, the next step is to start collecting data. If you have set **Hammer Range**, **Response Range** and **Num of Lines** to **automatic**, then you will first be asked to perform three hits for automatic parameter setup.



The automatic parameter setup is used to allow the module to automatically determine the best settings to be used for these parameters in case the user is unsure what to set. When hitting the object, try to make one clean impact (no double hits). If this is done correctly, the SKF Microlog will register the hit and increase the hit count accordingly.

To complete the automatic setup, this must be done three times. Once complete, a message box will appear showing the settings the application has applied. After accepting the automatic parameter setup, the module waits for the next impact, which is added to the actual FRF reading.

What happens next depends on what the **Accept/Reject** option in the setup was set to. If this option was set to **manual**, the time waveforms for both the hammer and accelerometer inputs will be displayed and will not be accepted as a reading unless you accept it. If you reject the data, it will not be added to the average count. If the **Accept/Reject** option was set to **automatic**, then each time the structure is impacted the data will automatically be added to the average count if the system detects no overloads, double hits or truncated data.

After collecting the specified number of impacts determined by the number of averages, the completed FRF will be shown. The FRF measurement is displayed on the top trace and the phase on the bottom. The top trace also shows the coherence for the measurement, represented by the color of the trace. Good coherence (above 80%) is shown in green, while poor coherence is shown in red. An example of a completed FRF can be seen in **Figure 1**. Once completed, the data can be stored by selecting the **Save** function key. Once stored, the application reverts to the setup screen.

Note: If you are taking a second measurement on the same structure and have not altered any settings, you will be asked whether you want to reuse the previous auto range settings or run the auto range again.

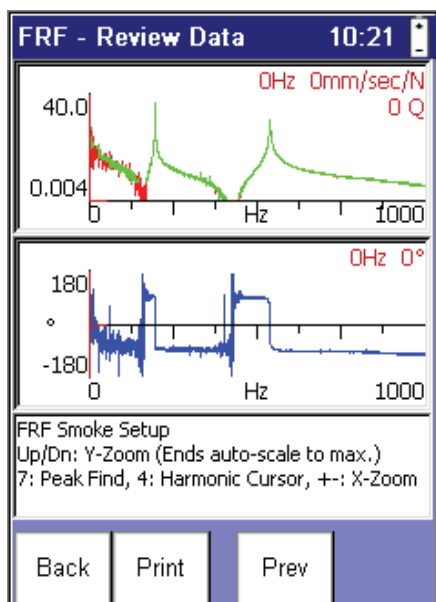


Figure 1. FRF – Review Data screen.

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