IMPACT HAMMER TEST SETUP

Purpose: Configure CoCo-80X for Impact Testing.

Version: CoCo-80X Software 1.0.4

1. SELECT CSA

Since we will be setting up the trigger for **Impact Testing**, we will choose an FRF CSAs. However, the same **trigger setup** can be used for other application such as remote monitoring, record/save automatically on trigger, etc.

On the CoCo, select **DSA** mode > **Frequency Response** > **FRF_COH_CPS_APS(x)**.

x = number of channel depends on quantity of sensors to be used.

2. GENERAL PARAMETER setup

Because this is an Impact Test, we will be using an Impact Hammer and Accelerometer to perform this test.
Press **F2 Param.** to access the following parameters:

2.1 FREQUENCY RANGE

An appropriate frequency range should be selected, depending on test subject's physical properties; density, mass, structure, etc.

2.2 ANALYSIS PARAMETERS

Depending on the impact and the windowing type, longer block sizes might be needed for test objects that have long-duration resonances. The signal must decay sufficiently before the end of the block in order to avoid leakage issues. This can be achieved by setting a sufficiently large block size, or by applying a certain Window Type.

For this example, we will be using **Linear Average** of **4** with **Force-Exponential** window.

2.3 INPUT CHANNELS

Only Channel 1 can be defined as the reference channel. For this configuration the input channels will be as follows:
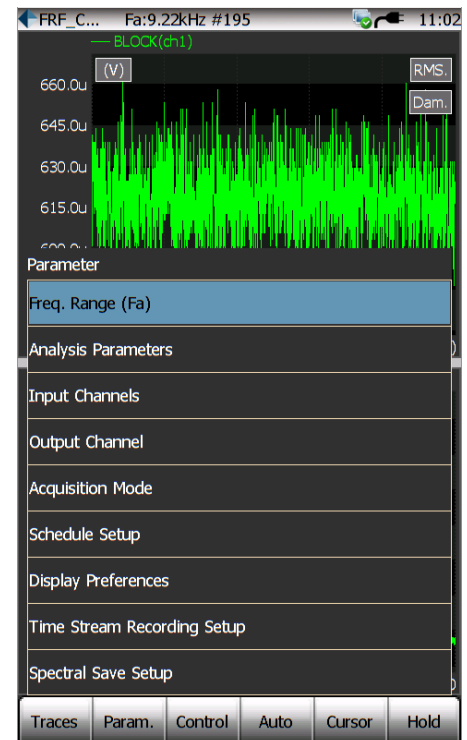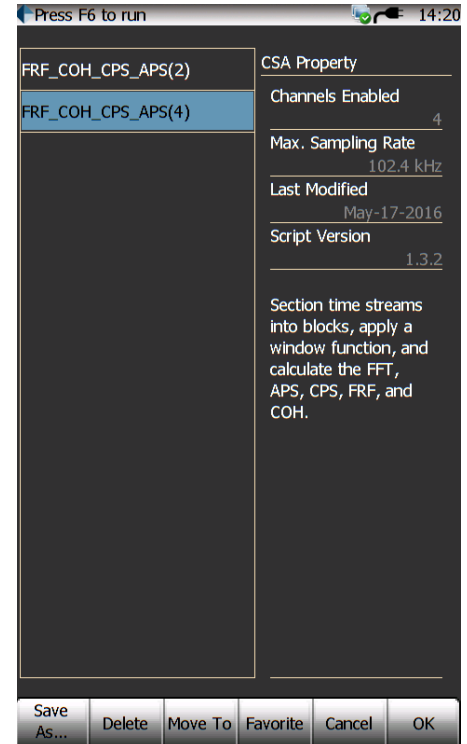
> **Channel 1**: Impact Hammer – Force Unit (LBF, Newton,…)
> **Channel 2**: Accelerometer – Acceleration Unit (g, m/s^2,…)

2.4 SPECTRAL SAVE SETUP

Here the user can select which signals need to be saved. The user can also choose how frequently the acquired frames will be saved.

For majority of the cases, **H(ch2,ch1)** and **COH(ch2,ch1)** are essential.

3. ACQUISITION MODE

This is the most important step for Impact Hammer testing.

Set up **Acquisition Mode** under **Param** > **Acquisition Mode**.

3.1 MODE (F1)

There are 6 modes for trigger:

- – Continuous after Trigger
- – Single Shot without Trigger
- – Single Shot with Trigger
- – Manual-Arm Trigger
- – Auto-Arm Trigger

For simplification of this example, we will be using **Manual-Arm Trigger**.
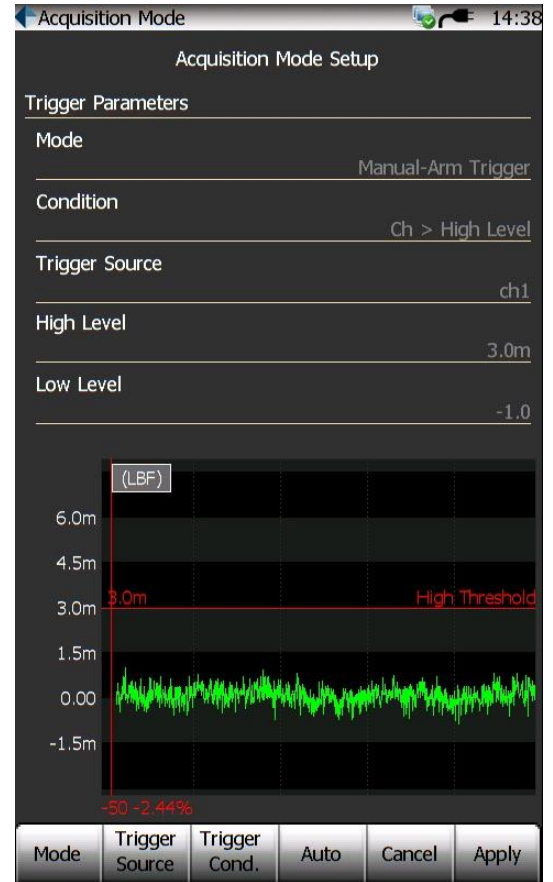
3.2 TRIGGER SOURCE (F2)

Since Channel 1 is our Impact Hammer, our **Trigger Source** will be channel 1.

3.3 TRIGGER CONDITION (F3)

Ch1 > High Level (rising edge)

As soon as the signal reaches the threshold level (to be configured in step **3.4**), the CoCo-80X will trigger and capture data.

3.4 SETTING TRIGGER THRESHOLD

Using the arrow key, set the threshold so that the signal level will not exceed threshold by moving the cable attached to the CoCo-80X (see figure to the right). This way, we will eliminate chances of CoCo being trigger by noise level.

Using the left and right **arrow key** to set pre-trigger. This will allow CoCo to use some buffer and capture data. For most cases, roughly **10%** pre-trigger is ideal. (some cases might be different)
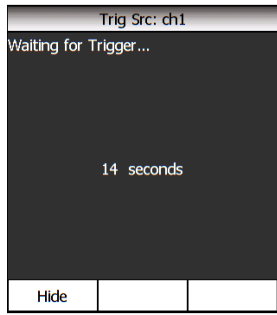
Lightly tap the hammer on the test subject. If the impact exceeds trigger threshold, but noise level does not exceed this limit, then the threshold level is successfully configured.

Press **F6 Apply** to apply changes and return to main test screen.
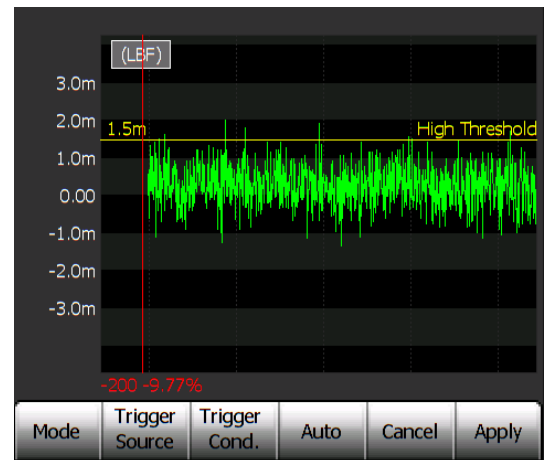
4. CAPTURING DATA

At the main test screen, you should see a window displaying 'Waiting for Trigger…'

Lightly tap the hammer onto the test subject. If we see a single pulse, that means we've made our impact without hitting the subject twice. Once, we have achieved that, select **Accept** and then **Next**. Otherwise, we can redo this impact by selecting **Reject**.
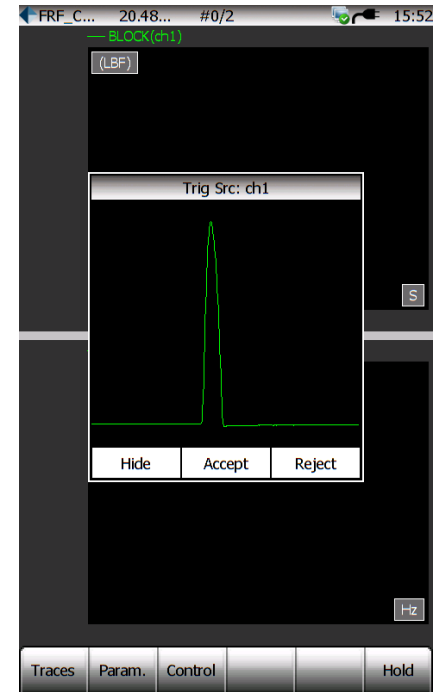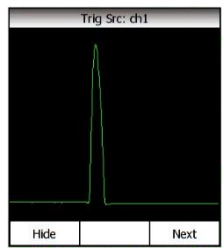
Repeat this process as many times as the average number is defined.

When the average number is reached, the user will be notified that the test has completed. We can either press **F3** to restart this test, or save the data collected by pressing the **Save** button **> Save one frame** to save the signals.