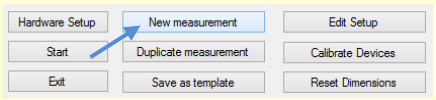
Quick Setup Guide – SCN Near Field Add-On

1 Start Klippel Robotics and Create New Measurement

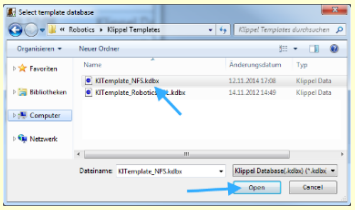
1) Start Klippel Robotics:

Open Robotics Software and click:
New Measurement



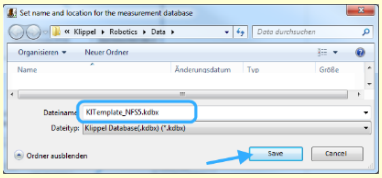
2) Select Template:

Select: ***KlTemplate SCN Near Field Add-On.kdbx***



3) Select Results Path:

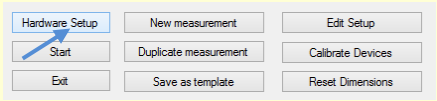
Choose a folder and name for your measurement database.



2 Hardware Setup

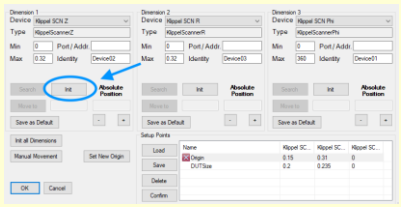
1) Open Hardware Setup:

Click ***Hardware Setup*** to open the hardware dialog window.



2) Initialize SCN Axes:

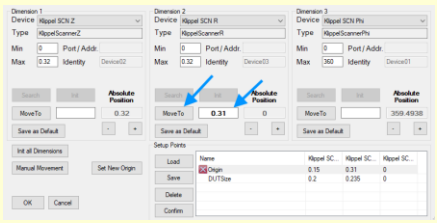
Click the ***Init*** Button of an SCN axis.



⚠ The SCN Unit will move to initialize. Keep the moving range clear of obstacles!
The Add-on Baffle can stay on the turntable.

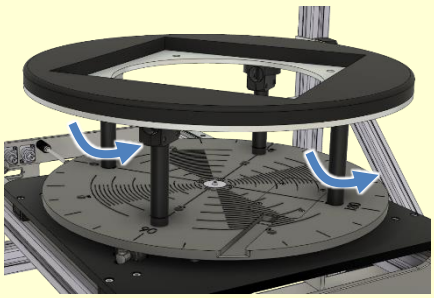
4) Move R-Axis to Setup Point

Enter the Setup Point **0.31**
and click ***MoveTo*** on the R-Axis.



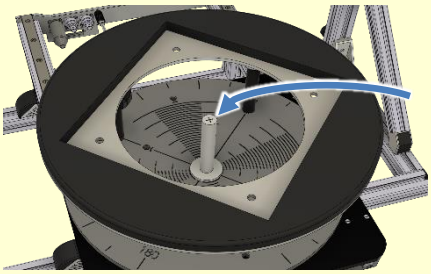
4) Mount the Baffle:

Screw in the rotating baffle feet to the M10 threads of the SCN turntable.



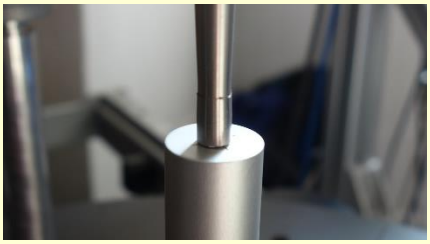
5) Insert Calibration Cone

Insert the large SCN calibration cone. (cone height 125mm)



6) Setup Microphone

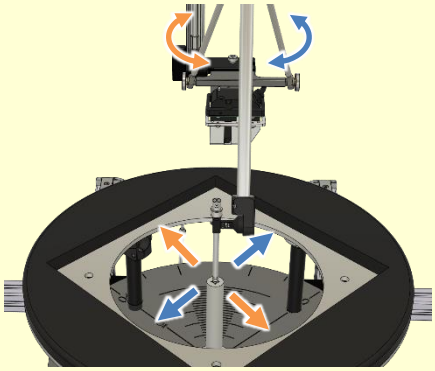
Lower the Z-Axis until the mic hovers slightly over the calibration cone.



ℹ Switch the SCN Motor Control Hardware to Manual and use the buttons to move Z.

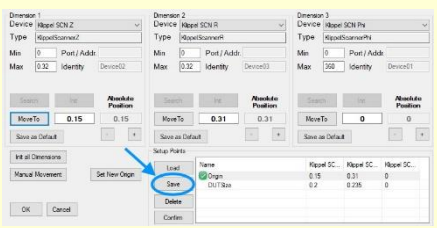
7) Setup Microphone

The mic must be centered over the calibration cone cross. Rotate the adjustment rods to center the mic.



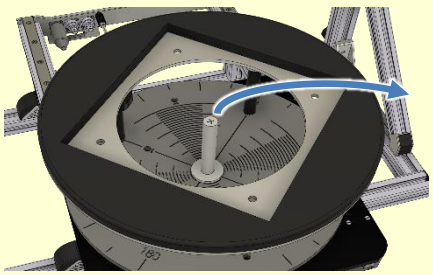
8) Save Origin

If the mic is centered directly over the cross ***Save*** this position as ***Setup Point: Origin***.



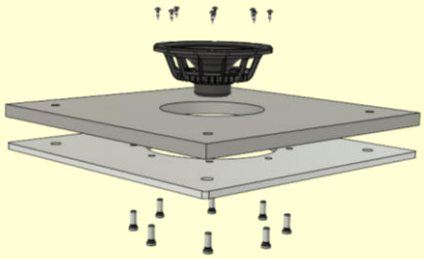
9) Remove Calibration Cone

Raise the Z-Axis approx. 15 cm and remove the calibration cone.



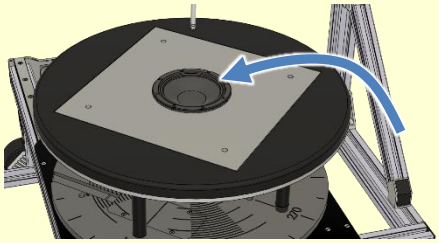
10) Mount DUT in Insert Plate:

Mount the DUT in an Insert Plate.



11) Place DUT Insert Plate

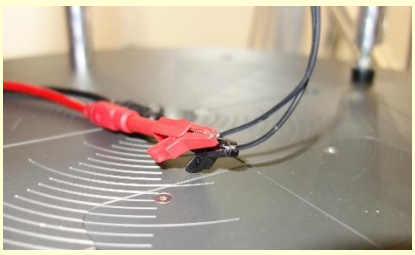
Place the Insert Plate with the DUT.



For small signal measurements the insert is not locked down to the baffle with screws.

12) Connect DUT

Connect the DUT to the amp or source.



Take care that the connection cables do not loop outside of the SCN turntable.

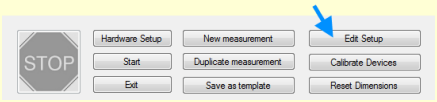
3 Save Hardware Settings and open Measurement Database

1) Confirm Settings:

Click ***OK*** to confirm your settings

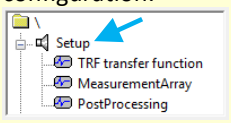
2) Open Database:

Click ***Edit Setup*** to open the dB-Lab database.



3) Select Setup Object:

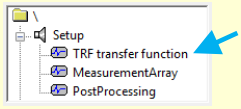
Select ***Setup*** object. The object consists of 3 operations for measurement configuration.



4 Configure measurement operation – TRF transfer function

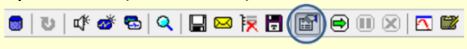
1) Select TRF operation

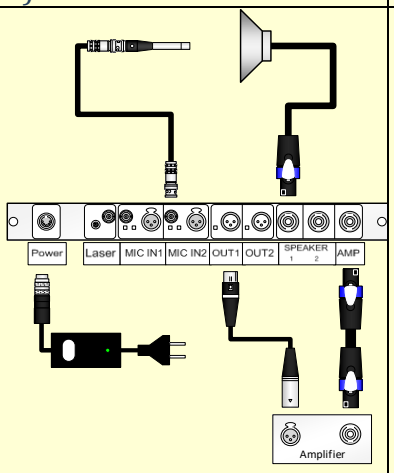
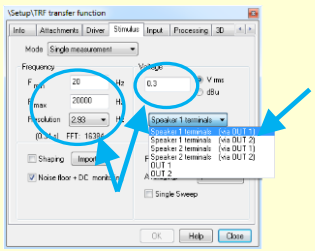
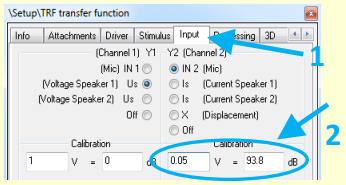
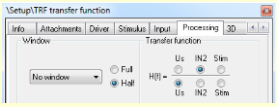
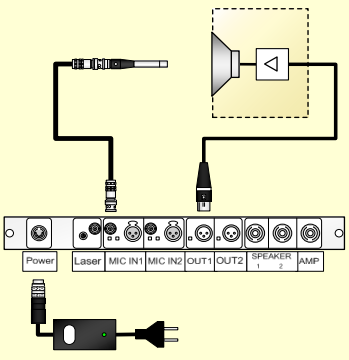
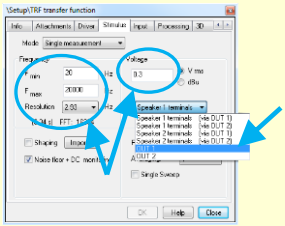
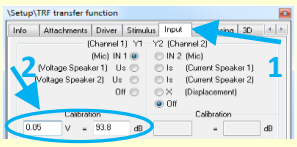
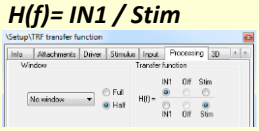
Select the operation:
TRF transfer function



2) Properties Window:

Open ***Properties Window*** to configure the measurement operation. (Alt + Enter)



	3) Connect Hardware	4) Configure Stimulus	5) Define Channels and H(f)
Passive Speaker		Select the ***Stimulus*** tab and define: ***Speaker 1 (via OUT1)*** Configure Parameters Frequency Range, Frequency resolution and Input Voltage for your device 	1) Select the ***Input*** tab and define: ***Channel 1: (Voltage Speaker 1) Us*** ***Channel 2: IN 2 (Mic)*** 2) Insert the Calibration of the mic  3) Select the ***Processing*** Tab and define: ***H(f)= IN2 / Us*** 
Active Speaker		Select the ***Stimulus*** tab and define: ***OUT1*** Configure Parameters Frequency Range, Frequency resolution and Input Voltage for your device. 	1) Select the ***Input*** taband define: ***Channel 1: IN 1 (Mic)*** ***Channel 2: Off*** 2) Insert the Calibration of the mic  3) Select the ***Processing*** Tab and define: ***H(f)= IN1 / Stim*** 

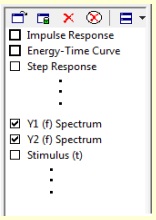
6) Run Operation

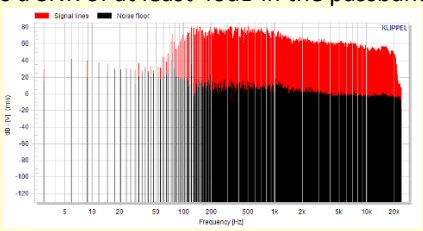
Run the TRF operation by clicking on the green arrow. (Ctrl + R)

The measurement should be performed in front of the loudspeaker. Move the microphone to an On-Axis position.

7) Check SNR (Signal-To-Noise-Ratio)

Open the Result Windows ***Y1(f) Spectrum*** and ***Y2(f) Spectrum*** and check if the microphone signal has a SNR of at least 40dB in the passband.



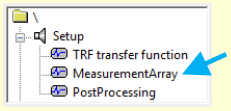


If the SNR is less increase the voltage of the stimulus or apply averaging.

5 Generate Measurement Grid – MeasurementArray

1) Select Operation

Select the operation:
MeasurementArray



and open the Properties Window

2) Configure Grid Type

Select a ***Grid Type*** which corresponds with the symmetry features of your DUT.

Select ***Line Scan*** for round DUTs with rotational symmetry.

Select ***Full Scan*** for oddly shaped DUTs.

3) Measurement Points

Define the ***Number of Measurement Points*** for the scan.

Full Scan (detailed): 250 to 600 points
Full Scan (coarse): 100 to 200 points
Line Scan: 20 to 40 points

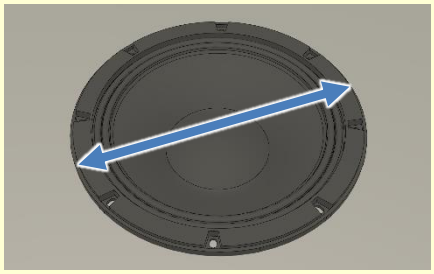
4) Configure DUT Type

Select ***Transducer*** for loudspeaker chassis mounted in a baffle insert plate.

Select ***Compact Device*** for small loudspeaker boxes placed on a blank baffle insert plate.

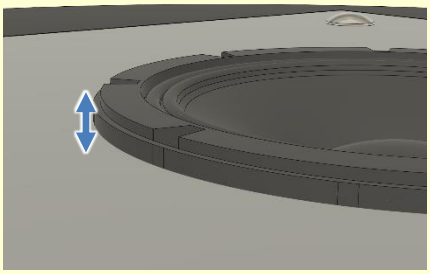
5) Configure DUT Diameter

The entered ***DUT Diameter*** should be as small as possible but envelop the full size of the DUT.



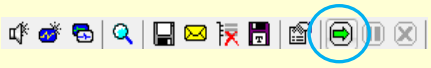
6) Safety Distance

Enter the distance which your DUT protrudes outside the baffle as ***Safety Distance.***



7) Generate Grid

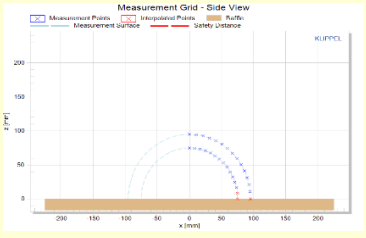
Run the ***MeasurementArray*** operation by clicking on the green arrow. (Ctrl + R)



After running the script, the distribution of measurement points is visualized in the result windows.

8) Check Grid

Double click ***MeasurementArray*** to visualize and check the grid.



9) Close dB-Lab

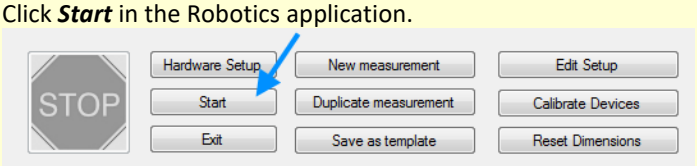
Close dB-Lab and return to the Robotics software.

(the ***PostProcessing*** operation does not require manual set up)

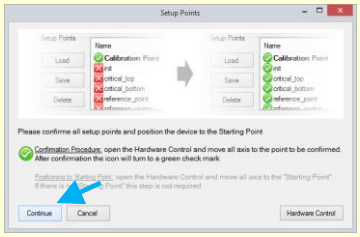
6 Start Measurement

1) Start Measurement

Click ***Start*** in the Robotics application.



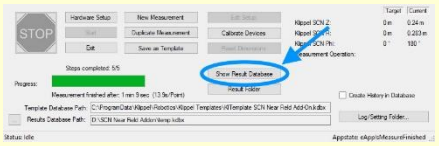
Press ***continue*** to start the measurement.



7 Results, Field Identification and Visualization

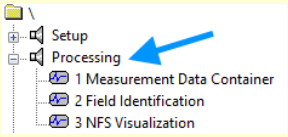
1) Open Result Database

After the measurement is finished click ***Show Result Database*** in the Robotics application to open dB-Lab.



2) Select Processing Object

Select ***Processing*** object. The object consists of 3 operations for signal processing and result visualization.



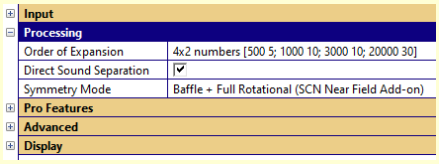
3) Process Data Container

Select and run the ***Measurement Data Container*** operation by clicking on the green arrow. (Ctrl + R)

For detailed reference to the Data Container refer to the NFS Manual.

4) Config Field Identification

Select the ***Field Identification*** operation and open the ***Properties Window*** for configuration. (Alt + Enter)



5) Config Field Identification

Order of Expansion is preconfigured and only needs to be changed for advanced evaluation purposes.

Direct Sound Separation must always be activated for measurements with the SCN Add-On.

Symmetry Mode has to be configured according to your DUT/grid. Select ***Baffle Symmetry*** for Full Scans or ***Baffle + Full Rotational*** for Line Scans.

6) Run Field Identification

Run the ***Field Identification*** operation by clicking on the green arrow. (Ctrl + R)

(The identification process will take a few minutes. The result windows are periodically updated with more detailed frequency resolutions. Double click ***Field Identification*** for live monitoring)

For detailed reference to the Field Identification process refer to the NFS Manual.

7) Further Visualization

Further visualization and evaluation can be done with the ***NFS Visualization*** object or other template objects like the ***NFS ListeningZone - CEA2034 Spinorama***.

For detailed reference to the NFS Visualization process refer to the NFS Manual.