



# Manual

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# General

# Preparation DSP and software

## Feedback - danger for the speakers

Microphones for measurement are connected to a DSP input. If the microphone input is "open" (routed in the mixer), feedback may occur. Pay attention to this part of the instructions to avoid endangering your speakers.

 A DSP in factory condition is prepared for the use of the BARNIE system. (Write to DSP – Factory default)

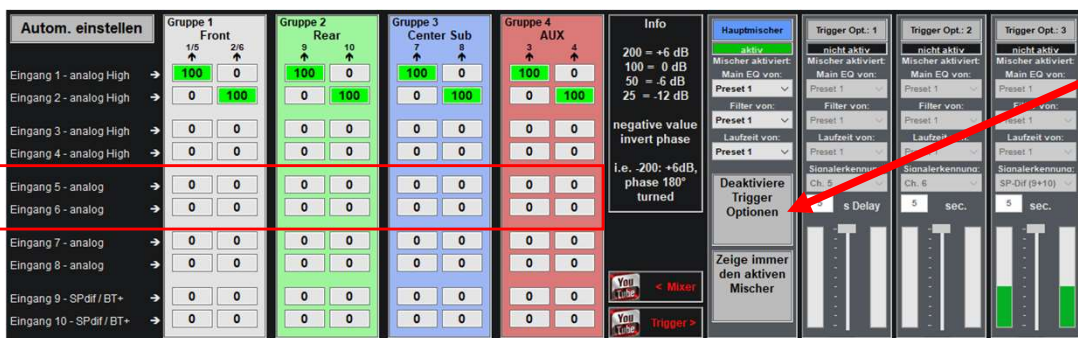


## ? Other microphones / unknown DSP setup:

The inputs used must be disabled in the mixer before connecting the microphones. Deactivate trigger options. Do not activate any other preset while the microphones are connected. (Unplug the control unit / preset switch). Set the BT+ port mode to "BT+ module / Mic".

Example.  
Mic. on  
input 5/6

Mute  
Inputs



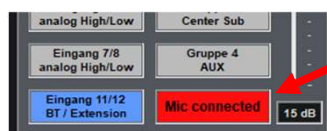
Disable  
trigger

 The easy way: "connect Mic" in the measuring menu:



Vor dem  
Anschluss der  
Mikrofone

The "connect Mic" function sets the entire mixer to zero, mutes all inputs and switches off trigger options. The preset change in the software is deactivated. The microphones can be connected after the procedure. After the measurement, first unplug the microphones, then use the same procedure to restore all settings. Restore.



Restore original settings.

## General

# Setup and connection

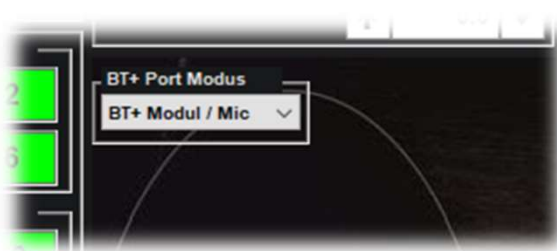
### ? Positioning the dummy head microphone:

Use the enclosed tripod to position the measuring head on the driver's seat. The position should correspond as precisely as possible to the head position of the real driver.

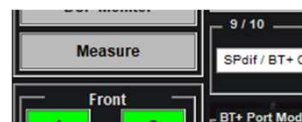


### Connection of the mosMIC preamplifier :

Make sure that the BT+ port mode is set to "BT+ module / Mic". Plug the mosMIC module into the BT+ port (CARD [EXT]). Connect the 3.5mm jack plug of the head to the mosMIC module. Only use high-quality cables (enclosed) for the extension.



👍 The preparations are completed.

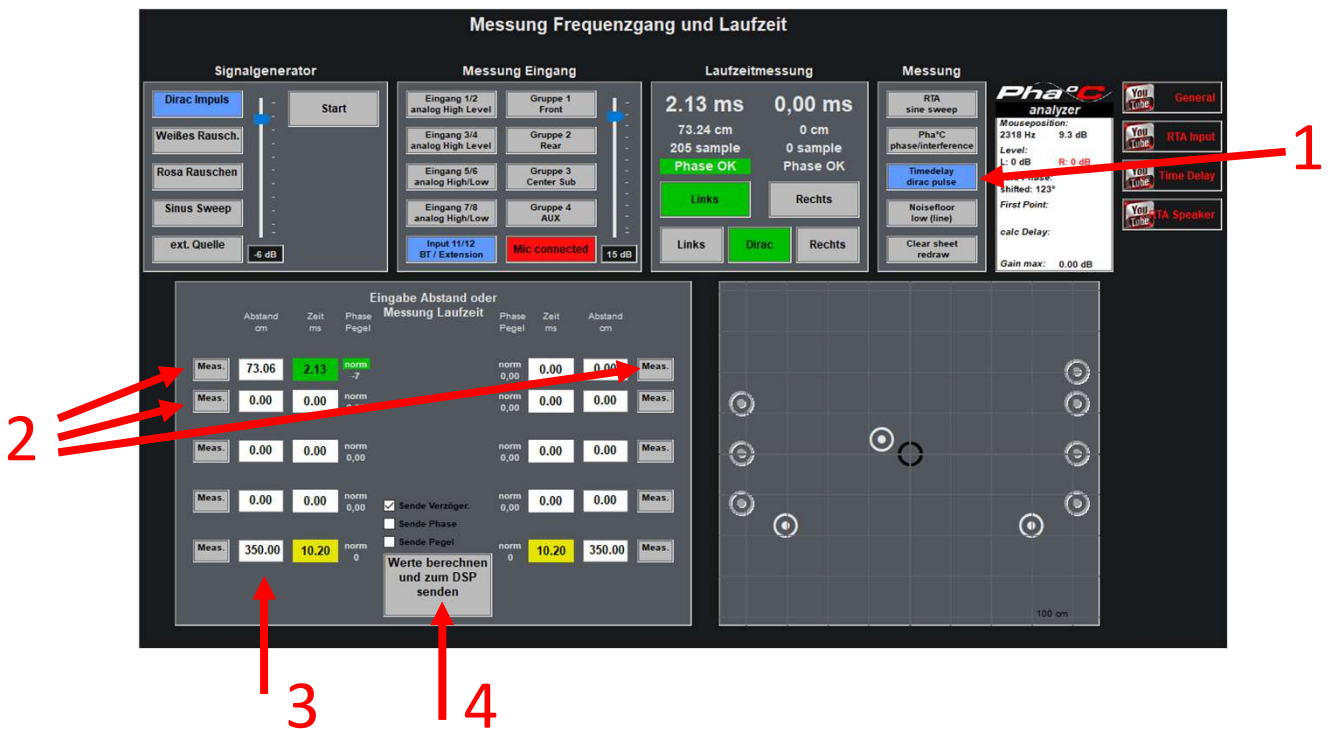


The system can be used by clicking on the "Measure" button. If the function is not available in the software, it must be activated with "ALT+m".

The measuring functions are preset for use with the BARNIE measuring system. When using other microphones, the level and sensitivity may have to be adjusted.

## Methods

# Measurement time delay



1. Press the "Timedelay / dirac phase" switch to access the measurement of the delay time.
2. Press the "Meas." switches of the individual speakers one after the other. You will hear a periodic crackling from the speakers and the measurement is carried out. If the measurement of a loudspeaker is successful, the running time is displayed with a green background.
3. For the subwoofer, enter the measured distance in cm in the column "Distance / cm". The manual entry is converted into the running time and highlighted in yellow.
4. When all loudspeakers have been measured, press the button "Calculate values and send to DSP". The time delay are now corrected in the DSP.

The measurement can be reset with the same button in order to carry out a check measurement. The display on the right serves as a visual check of the distances.

### Notes:



If in some measurements the display "Phase" is shown as "inv. (red) is displayed, increase the level of the signal generator and/or the sensitivity. If the display remains at "inv.", check the correct connection of the loudspeaker.

If the measurements are unstable, increase the level of the signal generator and/or the sensitivity slightly.

## Methods

# Measurement Frequency response



Attention: Before measuring, set the high-pass filters for the tweeter and midrange speakers!

1. Press "RTA sine sweep" to activate the measurement of the frequency response.
2. When the graph is visible in the lower part, "RTA sine sweep" starts the measurement.
3. Use the mute button to switch the speakers to be measured on or off.
4. Signal level and sensitivity (signal generator / measurement input) are preset, but can be adjusted if necessary. Make sure that the signal level does not overload the speakers.

### Display options :

Left (black) - left microphone measurement

Right (red) - Measurement right microphone

Sum (purple) - Electrical sum of both sides (phase is relevant)

Log Sum. (blue) - Calculated sum of both sides (phase is not relevant)

Phase (grey/blue) - Calculated relative phase between both sides.

Binaural (green) - Auditory sum of both sides (perceived loudness)

Reference curve (grey) - Target curve for frequency response (editable)

Interferences (black - red) - Room modes and interferences are displayed in red.



### Shortcuts:

F10 - New measurement

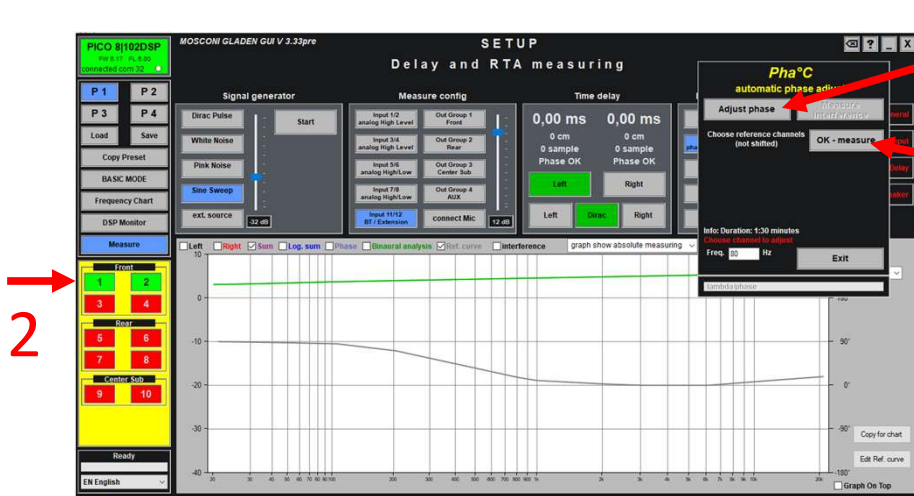
F11 - Delete graph, redraw last measurement

F12 - Delete graph

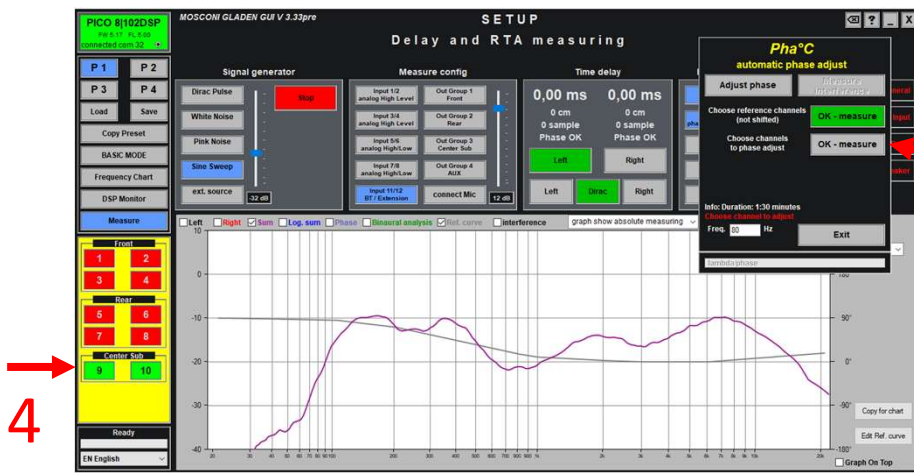


# Methods

## Phase measurement, automatic setting



1. "Select "adjust phase
2. Select reference channels (will not be changed)
3. Carry out the first measurement



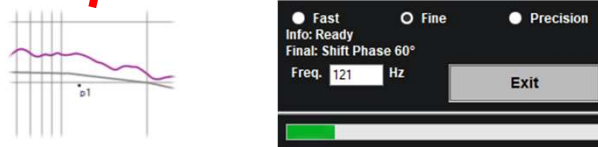
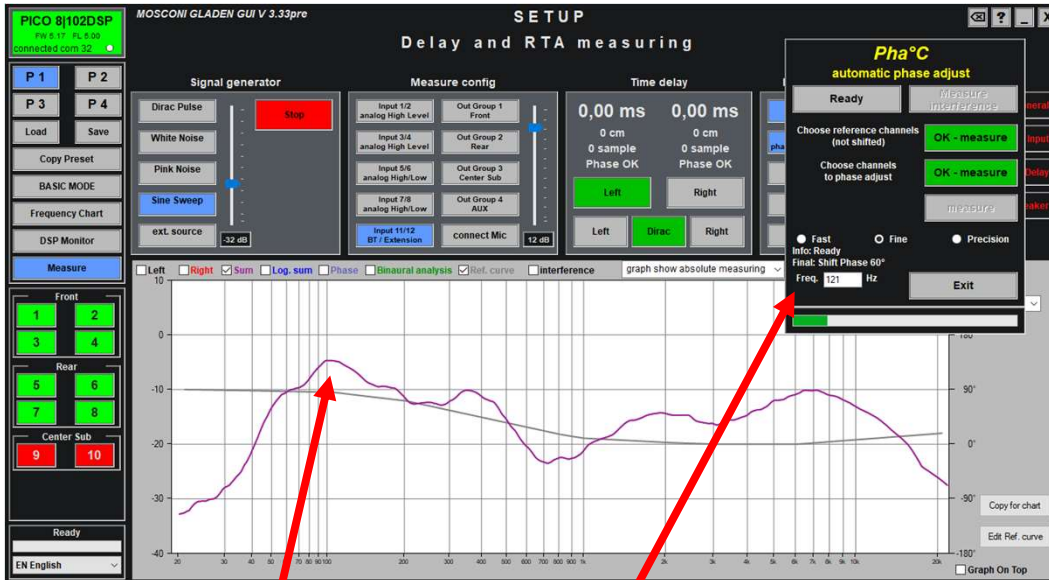
4. Select the channels to be shifted.
5. Carry out the second measurement.



6. The real crossover frequency is displayed and accepted.
7. Start the calibration with "Start"

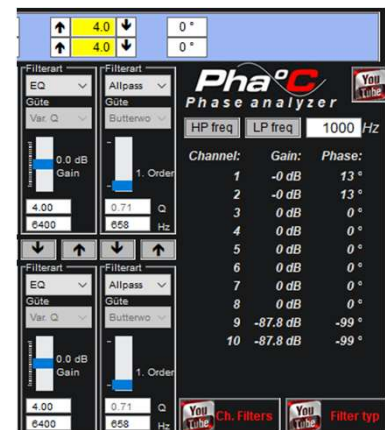
## Methods

# Phase measurement, automatic setting



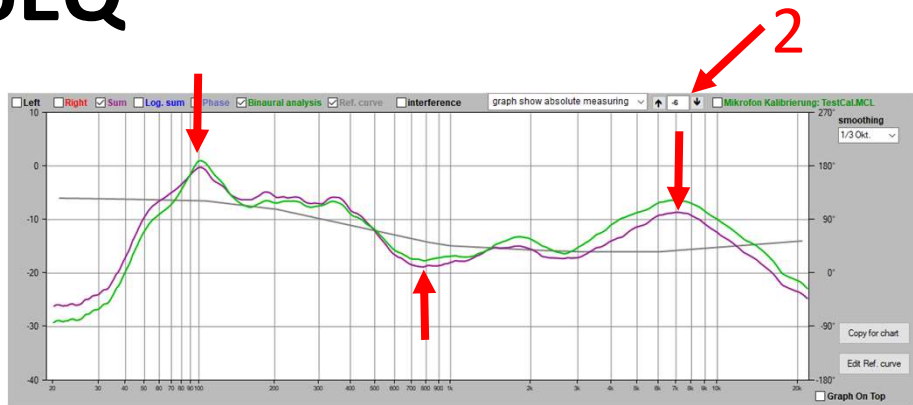
### Result:

Perfect addition +6dB by shifting the phase.  
All-passes in the output filters are set.

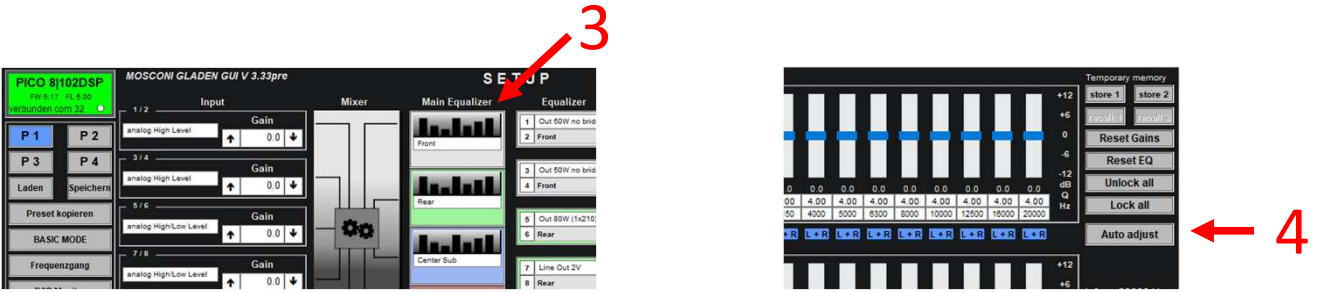


# Methoden

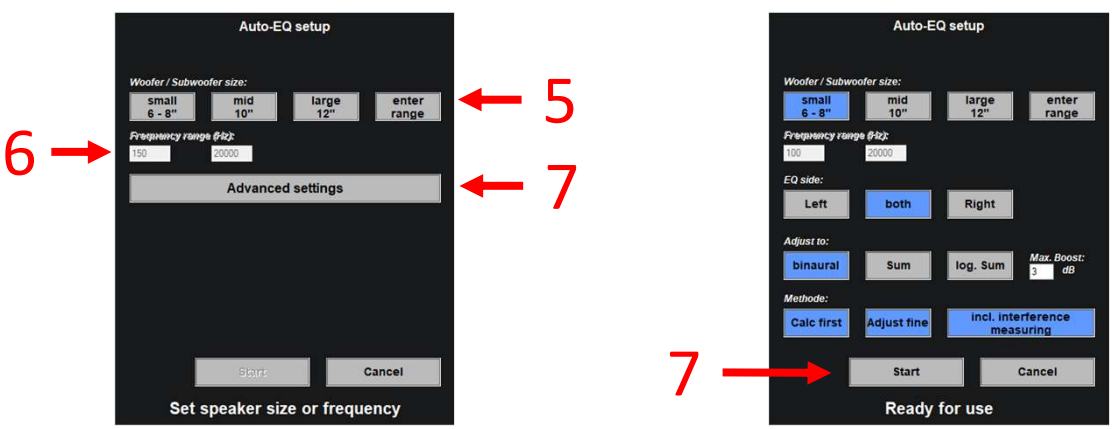
# AutoEQ



1. Take a frequency response measurement.
2. Move the position of the target curve with the arrow keys or the input field until it runs approximately centrally through the measured frequency response (a high position tends to raise the EQ bands, a low position tends to lower them).
3. Exit the measurement window and select the equaliser to be adjusted.
4. In the equaliser, select the "Auto adjust" switch.



5. In the Auto-EQ dialogue, select the diameter of the largest speaker on this equaliser, or enter the frequency range in which Auto-EQ should work (6).



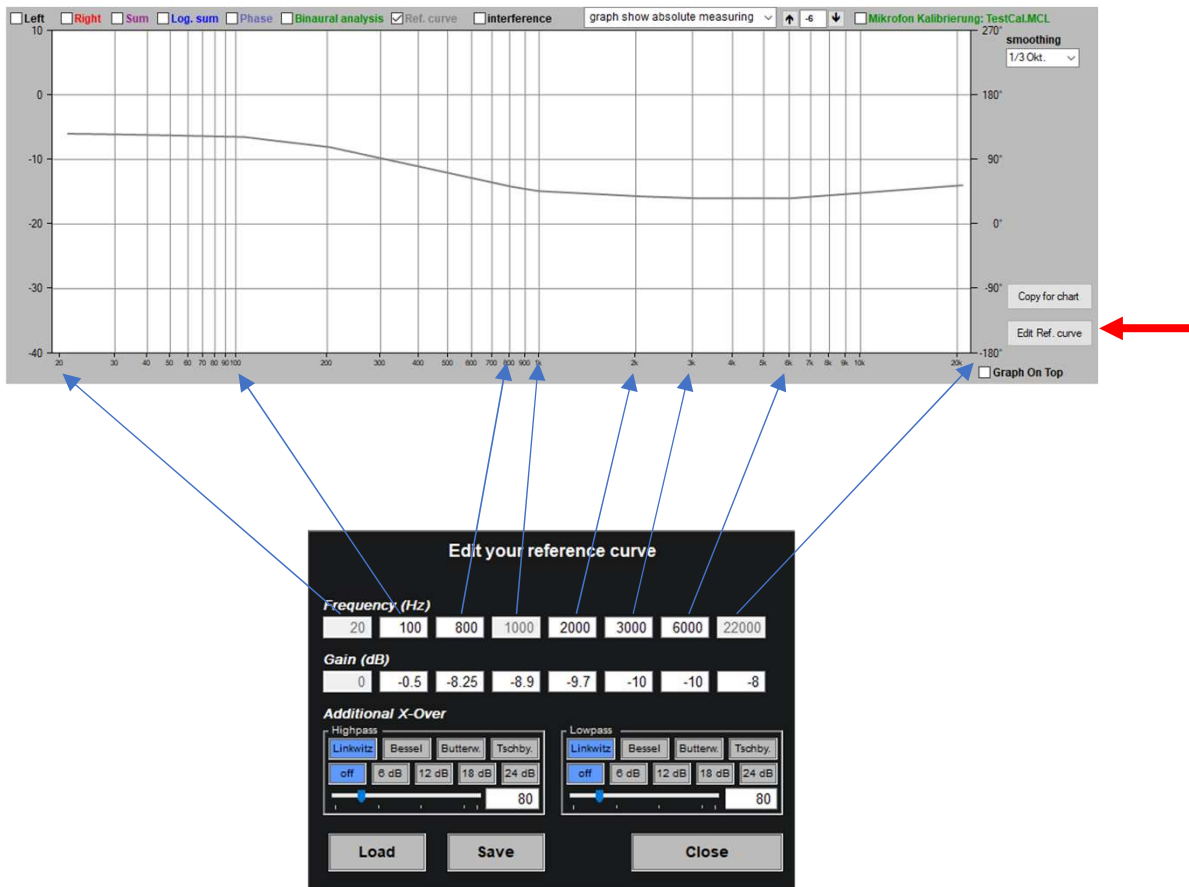
7. Start the process with default settings or make your own settings first.

The equaliser adjusts the frequency response according to the target curve. This process takes about 90 seconds.



## Methods

# Adjust target curve

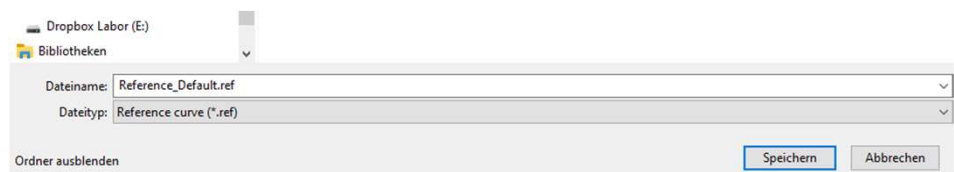


Auto-EQ and Auto-Filter adjust the frequency response to the target curve. This can be edited within a wide range according to personal preferences. You activate the dialogue for editing with the button "Edit Ref. Curve".

For 7 points in the frequency response, the boost/cut can be determined in relation to 0dB (20Hz). can be determined. For edge modelling, the target curve can be provided with crossovers (high pass / low pas (high pass / low pass) can be added to the target curve.

Own target curves can be saved. This is best done in the folder  
\\desktop\Testsignale\RefCurves.

If the "Reference\_Default.ref" is overwritten with an own target curve, then this is automatically used again the next time the software is started.



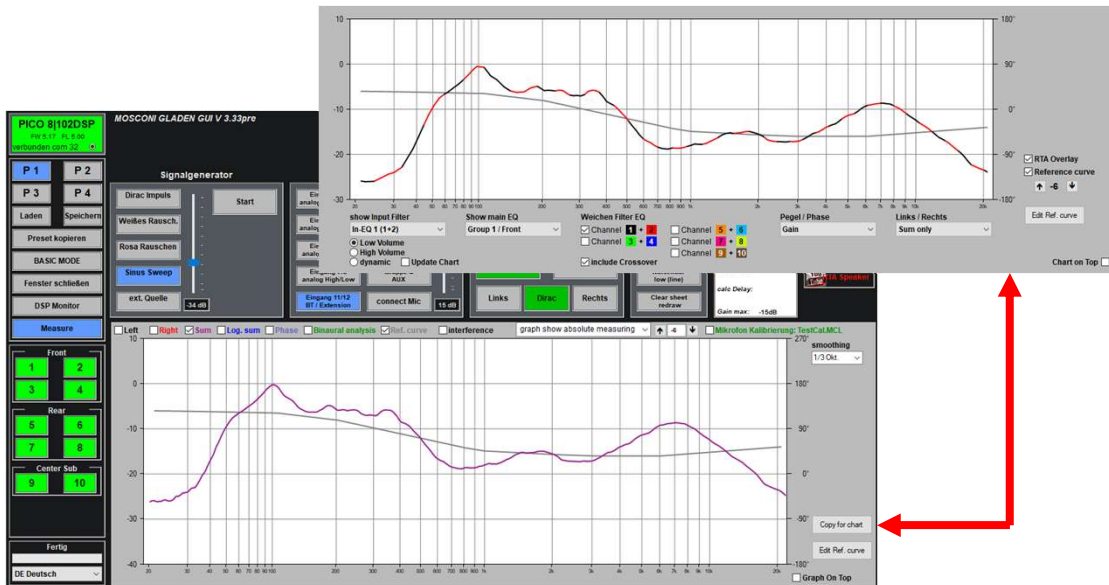
*Methoden*

# Flankenmodelation – AutoFilter

Comming soon

## Methods

# Frequency response overlay



With the "Copy for Chart" button, a measurement can be inserted directly into the chart. If the equaliser or filter is adjusted manually, the effects on the real frequency response can be seen immediately on the real frequency response.



### Notes:

Only the equaliser / frequency response that is currently being edited may be displayed in the chart.

With the option "Chart on Top", the frequency response always remains visible above other windows.

## *Procedures*

# **Front system passive + subwoofer**

1. Measure time delay
2. Enter distance subwoofer
3. Adjust crossovers
4. Auto-EQ front system
5. Auto-EQ Subwoofer (optional)
6. Auto Adjust Phase -> Subwoofer

## *Procedures*

# **Front system, rear system + subwoofer**

1. Measure time delay
2. Enter distance subwoofer
3. Adjust crossovers
4. Auto-EQ front system
5. Auto-EQ rear system
6. Auto-EQ Subwoofer (optional)
7. Auto Phase Adjustment Subwoofer/Front System(Phaseshift Subwoofer)
8. Auto Rear System/Subwoofer Phase Adjustment (Phaseshift Rear System)



## *Procedures*

# Front system active 2-way + subwoofer

1. Setting the crossover high-pass filter
2. Measure time delay
3. Enter distance subwoofer
4. Set crossover low pass filter
5. Automatic adjustment phase -> tweeter
6. Measure Frequency Response Tweeter / TMT(Level Matching)
7. Auto-EQ front system
8. Auto-EQ Subwoofer (optional)
9. Automatic Phase Adjustment Subwoofer/Front System(Phaseshift Subwoofer)

## *Procedures*

# **Front system active 3-way + subwoofer**

1. Setting the crossover high-pass filter
2. Measure time delay
3. Enter distance subwoofer
4. Set crossover low pass filter
5. Automatic adjustment phase -> midrange/bass (midrange is pushed)
6. Automatic setting phase -> tweeter/midrange (tweeter is pushed)
7. Measure Frequency Response Tweeter / Midrange / Bass(Level Matching)
8. Auto-EQ front system
9. Auto-EQ Subwoofer (optional)
10. Automatic Phase Adjustment Subwoofer/Front System(Phaseshift Subwoofer)