Emotiva Emo-Q Automatic Room Correction Guide

This guide provides a detailed overview of the Emo-Q room correction program available in current BasX A/V products. Provided are detailed explanations for each step, along with helpful tips for avoiding common errors. This guide may be used in conjunction with our Emo-Q tutorial video to give you a complete overview of what Emo-Q can offer.

1. Configuring your Speaker Layout before running Emo-Q

First, we need to configure the speaker layout so that it matches what is physically set up in your room and connected to your processor. Please see our tutorial video on configuring your speaker preset in your BasX unit for more information.

Navigate in the menu to Setup > Speaker Setup > Speaker Layout, and ensure that the speaker layout that you have set in the menu matches the physical speaker layout of your room, without any missing or extra channels. Emo-Q will error out if this is not done first.

To test that your speaker layout and connections are correct, select the Level Test/Adjust portion of the Speaker Setup menu. Scroll through each of the listed speaker channels, and ensure that the test tone is playing from the correct speaker in your room as you select each channel in the menu. If audio is coming out of the incorrect speaker, no audio is coming from one or more of your speakers, or you have extra speaker outputs listed in the Level Test/Adjust menu that are not connected to the system, this means that your amplifier connections and/or speaker layout need to be revisited until the Level Test/Adjust tones all play from the appropriate speaker and you have no extra speakers listed. The titles for each of the channels listed in the Level Test/Adjust menu help to indicate which physical output connections to use on the back of the unit to connect to your amplifiers/speakers.

There is no need to measure and equalize the levels in this portion of the menu unless you are performing a manual calibration. Emo-Q will take care of leveling the channels for us.

2. Connecting and placing the measurement microphone

Connect the provided Emo-Q measurement microphone to the rear panel jack labeled “EMO-Q MIC”. There are a few 3.5mm jacks on the back panel, so make sure you are using the correct MIC jack that is right next to the Bluetooth Antenna. The Emo-Q program will produce an error message if it does not detect the microphone at the Emo-Q Mic input jack when you start the program.

The microphone should be placed at or near the main listening position at ear level for the initial level/distance sweeps performed by the Emo-Q program, pointing upwards towards the ceiling. We suggest you use a stable platform in clear view of all speakers from the main listening position. You may hold the microphone, but any movement of the microphone during measurement and the proximity of your body may interfere.

3. Starting the Emo-Q program

Navigate to the Emo-Q portion of the menu, and select Emo-Q Calibration to begin the measurement process. This consists of three different segments, where levels, distances, and EQ will be measured and adjusted individually. The Emo-Q program will launch and quickly begin playing test tones from each of your connected speakers. If it does not detect the microphone, it will alert you with an error message “No Speaker or MIC”. You should check that the microphone connector is fully seated in the Mic jack on the back panel, and if you still receive this error, contact us for support at customerservice@emotiva.com or (615) 790-6754.

4. Calibrating Levels and Distances

The first set of tones will be pink noise test tones designed to measure and adjust the relative output level of each channel, and these will start almost immediately when the Emo-Q program initializes after you select it. Each speaker will play a couple of test tones of varying volume and report the dB adjustment made as it measures each channel. Any subwoofer channels will play a low rumble test tone.

Immediately after level readings are taken, test tones that sound like a “sonar ping” will play in each channel to help gauge the distance the speaker is away from the microphone, based on the timing of the signal playback and reading at the microphone from the listening position. It will report the distances measured in real-time for each speaker.

If the Emo-Q microphone does not hear a response from any of the configured speakers, then it will list out any channels that were not found by the Emo-Q calibration program. This will happen if you have extra speaker channels configured in your speaker layout that are not actually connected to the system, your channel output connections are incorrect, or if your amplifiers are off and not playing back the test tones, for example. Return to Step #1 for information on configuring your speaker preset before running Emo-Q if needed.

5. Equalization

After taking the level and distance readings, the Emo-Q program will pause before the Equalization measurements are taken. At this point, the program will instruct you to aim the measurement microphone in the direction of each speaker, one at a time. You may sit in your main listening position, hold the microphone, and aim it at the tweeter of each speaker as prompted. The program will pause between each channel to give you time to reposition before starting the next test.

A few EQ sweeps are performed on each speaker:

- The first sweep will produce a red curve that represents the measured response of the speaker with no EQ or other correction applied.
- The next sweep will produce the first green correction curve that represents the up to 11 filter bands that are being applied. You will see this green correction curve adjust as more measurements are taken.
- The final sweeps produce blue curves that represent the measured response after the correction curve is applied. These blue curves are also refined each time a sweep is taken and represent the corrected response curve for each speaker after Emo-Q is applied.

Once all sweeps are completed, you will get three curves, red, green, and blue. The red curve represents the initial measured speaker response with no EQ applied. The green curve represents the correction curve that corresponds to the 11 filter band adjustments. The blue curve represents the final measured response from your speaker once the green correction curve has been applied to the original red measurement curve.

You should select Apply to save the results to the EmoQ filter in the unit. You may select the View option, where you can see the resulting level, distance, and EQ adjustments per each individual speaker for the Emo-Q filter that you have just created. These can all be adjusted later after you exit the Emo-Q program.

6. Selecting between different Equalization options: Emo-Q, bypass, and manual

After we have applied and/or viewed the corrections for the Emo-Q calibration, we can select Quit to exit the Emo-Q program. If you navigate to Setup > EQ Setup, you can toggle between the Emo-Q filter, the three manual EQ filters available, or EQ Bypass so that no corrections are applied from either Emo-Q or manual adjustments. This EQ setting will apply globally to the system, and only one set of Emo-Q filters can be stored in the unit at a time. You may also assign different default EQ options to each of your inputs in the Source Setup portion of the menu in your BasX unit.

7. Adjusting your Emo-Q filter manually

After your Emo-Q adjustments are applied, you can navigate back to the Emo-Q portion of the menu, where you can select the Individual Test option. You may then select to redo either the Level/Distance portion of the Emo-Q program or only the EQ Test. The Level/Distance portion will run on its own and reset those values without altering the EQ for each speaker.

If you select EQ Test, this allows you to redo the EQ measurements completely or view and make manual corrections to the EQ filters applied by Emo-Q per each speaker. You can change the speaker Channel listed to select between each of your speakers, as well as reset the EQ for each speaker if needed. You can also play back test tones with or without the EQ adjustments applied for comparison. If you navigate up to where the various filter information is listed, you can select each of the fields within each of the 11 bands of equalization and alter them.

There will be a total of 11 EQ bands applied to each speaker. Each of these bands includes three main parameters that affect the equalization of your speaker.

- The Fc refers to the center frequency for that particular band and represents the midpoint or peak of the parametric EQ band where the adjustment will be applied. The bands are not organized by order of the center frequency but by order of importance or impact as Emo-Q ran the various sweeps. You can find each of the 11 bands on the graph by looking at the peaks and valleys of the green correction curve and the approximate center frequency at which they occur.
- The Gain adjusts the amount of volume adjustment in dB, either boost or cut, that will be applied in the EQ band at the center frequency.
- The Q adjusts the width of the EQ band, which will also have an effect on the steepness of each parametric adjustment. A lower Q value will produce a wider range of frequencies covered by the EQ band, and a higher Q value will create a narrower, steeper EQ band adjustment.

As you make adjustments to your Emo-Q filters, you will see any changes made to the Fc, Gain, and Q reflected in the graphical representation of your Emo-Q filter in real-time.

Once you are finished making adjustments or viewing your Emo-Q filters, you may exit the Emo-Q program by using the back button on the remote and save any changes made. This can be revisited and adjusted at any time.