

A Quick Guide to Running a Dirac Live Calibration on the MiniDSP 88A/BM

(Updated November 11, 2016)

The purpose of this guide is to provide a quick cookbook approach to running a successful Dirac Live calibration on the MiniDSP 88A/BM. These instructions pertain to either the 88A or the 88BM, and “88A” is used for the rest of the guide.

Before you start:

- On your pre-pro, set all channel trims and distances to zero, and disable any automated room correction technology (e.g. Audyssey).
- Connect all channels from the pre-pro to the 88A and from the 88A to the power amplifier(s) per the cabling guidelines in the 88A User Guide.
- Make sure input and output voltages on the 88A are set properly as described in the Gain Management section of the 88A User Guide.
- If you have multiple subs, combine all sub signals onto one output channel from the 88A (typically channel 3).
- If you have multiple subs, and the subs are not equidistant, set the appropriate delays for the subs using an external device such as the MiniDSP 2x4. A Guide on consolidating subs onto one channel can be found [here](#).
- To ensure a fresh starting point, use the DDRC88A-Utility program to reset the 88A to factory defaults.
- Ensure that the Dirac Live Calibration Tool (DLCT) is installed on your laptop and the license has been validated.
- Ensure that you have the calibration file for the UMIK-1 (either the “0-degree” or the “90-degree” calibration file, depending on the configuration of your system).

The Dirac Live Calibration Procedure:

1. Connect your laptop to the 88A using the supplied USB cable.
2. Connect the UMIK-1 microphone to the laptop using a USB cable (passive cables up to 5m can be used).
3. Using a tripod or boom mic stand (preferred), place the mic at the main listening point (MLP), with the tip of the mic at ear height. If your system is a multi-channel (5.1 or 7.1) configuration, point the mic tip at the ceiling and use the 90-degree calibration file. For stereo (2.0) systems, point the mic horizontally at the center point between the front speakers, and use the 0-degree calibration file. (The first mic position is extremely important, because Dirac calculates delays and trims based on this position.) Note: [Here](#) is a post with mic orientation guidelines from the MiniDSP forum.

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4. Launch DLCT.
5. On the first DLT screen, select “**Custom Configuration**” and specify the number of speaker channels (e.g. 8 for a 7.1 system), or select Stereo system if you have a 2.0 system. Subsequent instructions will assume you have a multi-channel system. **Note:** Choosing either the 5.1 or 7.1 configurations will add a 10dB boost to the bass frequencies. Unless you have equipment that requires the 10dB bass boost for accurate reproduction of the LFE channel, you should select the Custom configuration.
6. On the next DLCT screen, make sure the mic calibration file has been loaded.
7. On the third DLCT screen, the “Level Setting” screen, carefully establish the proper levels for the calibration. **Note:** the pre-pro is not involved in the calibration process, so its master volume control has no effect on level-setting. In fact, the pre-pro can be turned off during the calibration.
 - a. Drag the Output volume slider all the way to the left (minimized) temporarily.
 - b. Drag the mic gain slider slowly to the left until you just start to see the mic input registering at the lower end of the scale (-36). This lowest mic input setting assures the best signal-to-noise ratio during the calibration.
 - c. Make sure the individual channel level sliders are all maxed out, i.e. set to “0”.
 - d. Click the output button for the left channel to start the test tone.
 - e. Gradually raise the output volume by dragging the output slider to the right, stopping when the level indicator is **exactly at -12**. Once this output level is reached, **do not touch or adjust the output volume again**.
 - f. Turn off the test tone to the left speaker.
 - g. One-by-one, click the output button for each of the other speaker channels and observe the output level. It should be very close to -12, like the left channel +/- 2. Small variations in output are not significant. Large variations indicate something is wrong with the gain setting for that channel, and the calibration should be stopped until the gain issue is resolved.
 - h. One-by-one, click the output button for each of the other speaker channels and observe the output level. It should be very close to -12, like the left channel +/- 2. Small variations in output are not significant. Large variations could indicate one of several conditions:
 - i. Something might be wrong with the gain setting for that channel. Research gain settings for the 88A to make sure the settings are correct for your configuration.
 - ii. You may have other factors that affect output levels, e.g. significant sensitivity differences across your speakers, or power amplifiers with different gain structures and without adjustable gain controls. In a recent example posted in the 88A thread, a user reported main speakers with 104dB sensitivity, and surround speakers with 94dB sensitivity. This large difference made it impossible to set the appropriate output level without using the individual channel level sliders. See the note below for suggestions on how to address this situation.

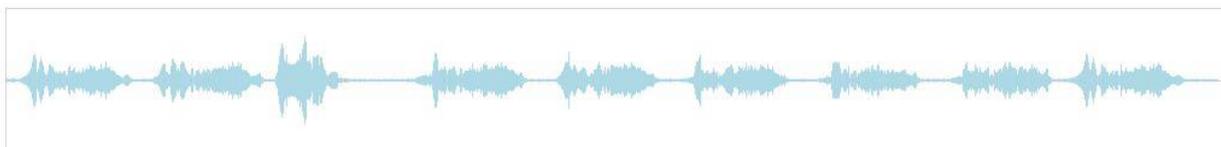
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- i. On the sub channel, a special circumstance exists. It is very important to ensure the sub output registers exactly -12. If it doesn't, you can adjust the gain setting on the sub's amplifier to raise or lower the sub output until it measures -12. (Note that if you have multiple subs, raising the combined sub output may require you to exit DLCT and gain-match the subs again.)
- j. Once all output channels are measuring close to the same output using the test tones, the level-setting process is complete, and you can proceed to the next DLCT screen.

Note: In the case of significant output level variances, try this approach to set the output levels properly:

- a. Identify the speaker channel exhibiting the lowest output level.
 - b. Output the test tone for that speaker and adjust the master output level slider until the level is exactly -12.
 - c. Now go to the speaker channel exhibiting the highest output level and generate the test tone. The level indicator will be significantly higher than -12.
 - d. Using the channel level slider for that channel, adjust the speaker-specific output level lower until it reaches -12.
 - e. Continue this process until all speakers, both the low sensitivity and the high sensitivity ones, are measuring -12.
 - f. Note that the sub channel should also measure -12, which you should be able to achieve without using the individual sub channel output slider (adjust the sub's gain instead).
 - g. Now you can continue with the Dirac measurements, and your resulting calibration should be good.
8. The fourth DLCT screen is the actual calibration screen. Proceed as follows:
- a. Select the mic pattern that most closely matches your listening room (Chair, Sofa, or Auditorium).
 - b. Click Start to run the first set of measurements.
 - c. While the measurements are running, observe the output levels to verify that the levels are in the green area (Don't worry, if the levels are too high or too low, Dirac will issue a warning message—no warning message means everything is OK).
 - d. Also, observe the sweep levels shown at the bottom of the screen. The space between the individual measurement bursts should be a very thin line. The thinness of the line is an indication of the background noise level, so to ensure the best signal-to-noise ratio, the line should be thin, not thick.



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- e. After the first set of sweeps completes, move the mic to the second placement position, as indicated by the yellow-colored dot on the placement diagram. Make sure you lower or raise the mic as recommended, and that you follow the guidelines in the 88A User Guide pertaining to mic placement.
 - f. Proceed with taking the full nine measurement sweeps.
9. When the ninth measurement sweep concludes, click Save to preserve the measurement data. Give the data file a descriptive file name that will help you identify it in the future. The saved data file is called a "Dirac Project". Proceed to the fifth DLCT screen, the Filter Design screen. On this screen:
 - a. Click "Auto Targets" to apply the Dirac default targets.
 - b. Click "Optimize" to allow Dirac to create levels, delays, and filters for this project.
 - c. When the optimization has completed, save the file again.
10. Proceed to the final DLCT screen, the Export screen. Complete the calibration by:
 - a. Clicking and dragging the blue box in the upper left corner of the screen to an unused memory slot (Designated Slot 1-4).
 - b. Wait until the filter export has successfully completed.
 - c. **IMPORTANT.** Before you exit DLCT, **maximize the output volume** slider at the top of the screen, and make sure the **Dirac filter is turned on** by clicking the "On" button.
11. The calibration is now complete. On the 88A front panel, the "Dirac" LED should be illuminated, as well as one of the four LED's associated with which filter slot is currently in use.
12. Turn on the pre-pro and adjust the its master volume to achieve your desired output level.
13. Enjoy the Dirac Live calibration!

Suggestions/corrections should be addressed to AustinJerry@AVSForum.com