

IK Multimedia ARC 2

Room Correction System For Mac OS & Windows

It's not always practical to solve room problems with acoustic treatment. Enter IK's updated monitor correction system...

PAUL WHITE

The right way to sort out monitoring problems starts with fixing any room acoustic problems that are fixable. In a typical home studio, as we see in many Studio SOS articles, that might mean installing some mid/high absorbers and finding the best position for your monitors. This can result in a huge improvement, but it is rarely a complete solution, and in particular, does little to address any serious low-frequency concerns. Many rooms are simply too small to fit effective bass trapping, and even in larger studios, some form of monitor equalisation may be required to achieve a subjectively flat response. At one time this was done by ear using graphic equalisers, but the room resonances aren't always considerate enough to fall exactly on the frequencies your graphic EQ offers, and even if they do, a third-octave graphic equaliser can

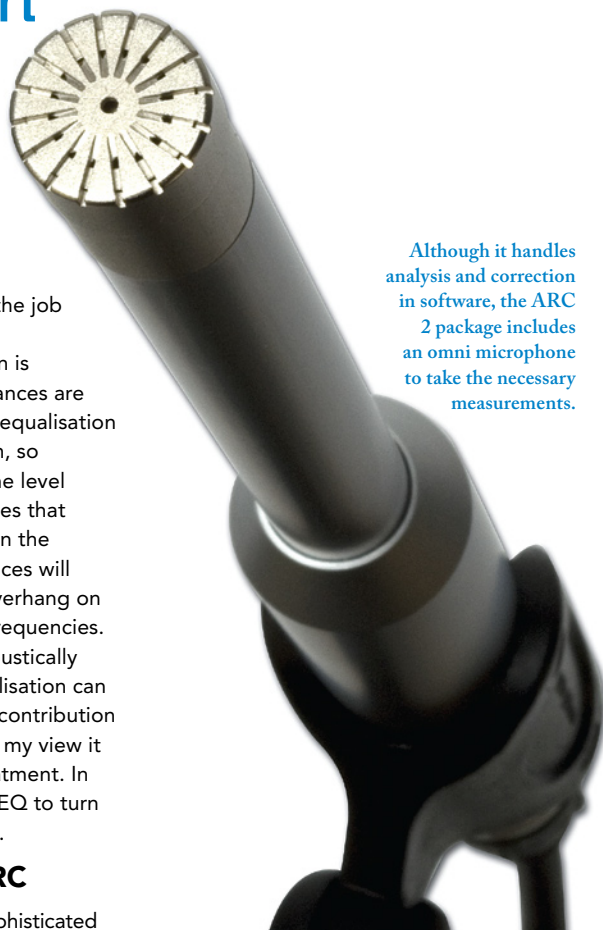
still be too blunt a tool to do the job with adequate precision.

Simple monitor equalisation is a compromise solution: resonances are time-domain effects, whereas equalisation is a frequency-domain solution, so although you can pull down the level of the monitoring at frequencies that coincide with resonant peaks in the room response, those resonances will still exist and can still cause overhang on notes hitting those resonant frequencies. Where the room has been acoustically treated, well-considered equalisation can nevertheless make a valuable contribution to monitoring accuracy, but in my view it isn't a substitute for room treatment. In other words you can't expect EQ to turn a cave into a mastering studio.

Out Of The ARC

IK's ARC 2 system is a more sophisticated solution, combining equalisation with time-domain manipulation to get around

Although it handles analysis and correction in software, the ARC 2 package includes an omni microphone to take the necessary measurements.



The process of measuring your room and speakers is made very simple by helpful prompts from the ARC software.

IK Multimedia ARC 2 £250

PROS

- Works effectively in flattening the room/monitor response with minimal side-effects.
- Easy to use.
- Affordable.
- Includes emulations of a variety of speaker types.

CONS

- No software solution can negate all room problems, so some acoustic treatment is still desirable for the best outcome.
- You have to remember to bypass the plug-in when bouncing your final mix.

SUMMARY

Many smaller project studios have acoustic problems that can't be entirely cured by hanging simple absorbing panels around the place, and that's where ARC 2 can really help achieve more accurate monitoring.

some of the phase issues caused by basic EQ. Although the literature seems to suggest that you can then forget all about acoustic treatment, I would still be inclined to treat the room as effectively as possible before handing over to ARC 2!

ARC stands for Advanced Room Correction, and ARC 2 is an updated version of the original ARC system reviewed in March 2008 (www.soundonsound.com/sos/mar08/articles/ikmultimediaarc.htm). The box includes a measurement microphone, measurement software and a plug-in to provide the necessary monitoring correction. Based on patented Audyssey MultEQ XT32 technology, ARC is intended for use with nearfield monitoring systems, countering the way in which the room skews the frequency distribution and phase of reflected sound. To paraphrase the official explanation of how this room correction technology works: "MultEQ XT32 looks at patterns in the time-domain responses and classifies them into clusters based on the similarities in those patterns, typically in three to five groups. A representative response is created

"The bass end seemed subtly deeper and more even with ARC switched on, and everything sounded natural, with good clarity and no evidence of algorithmic tampering, such as unnatural phasiness."

from each cluster and a final response is then created by grouping them." ARC 2 is backwards-compatible with measurements made using previous ARC system versions as far back as v1.3, though some of the newer features of ARC 2 are not used when these older files are loaded.

The 64-bit native plug-in that performs the EQ and time-domain manipulation includes support for the AAX plug-in format as well as the usual Windows and Mac OS suspects, and is authorised online. The user interface has been redesigned since the first incarnation of ARC, the resolution in the super-low 10-40 Hz region is said to be four times greater than that of the original for more precise correction. Recognising that different engineers have different ideas on how monitors should sound, there are now also user tweaks to adjust the final response to taste. Also new in this version is a Virtual Monitoring feature that is similar in concept to Focusrite's VRM box, emulating the sound of various playback devices such as car audio systems and domestic music players. A newly designed monitor control panel provides a level knob and an adjustable level dim switch, and like some larger hardware monitor controllers, makes it possible to monitor Stereo, Mono or Sides signals.

Measure Seven Times, Cut Once

The manual is very detailed and easy to follow, with most of the prompts also being repeated in the software. The >>



The ARC 2 plug-in lets you select from multiple measured curves — if, for instance, you have several sets of monitors — and apply either a flat response or, as here, a Virtual Monitoring speaker emulation.

» included flat-response omni mic is first used to measure the response of the room in various positions while a test signal plays back over your monitors. This must be done with the mic aimed towards the ceiling, not towards the speakers. Prompts help you set up your audio interface, which must support 48kHz operation for this part of the procedure, and check your meters to ensure you have a suitable level of test signal hitting the mic. Any direct source monitoring must be turned off. Only once the monitor level and mic amp gain puts the signal level within the accepted range are you allowed to move on to the next stage, which starts with putting the mic where your head normally resides while mixing. When you start the measurement process, you get a short countdown followed by a few seconds of sweep tones from each speaker: then you're ready to reposition the mic and move on to the next position. Additional measurements should be taken around the listening position in symmetrical pairs — for example, slightly to each side of where you normally sit, and perhaps either side of a spot further back and

further forward. If two of you generally sit behind the desk, you can widen the mic spacings to cover the area where you both sit. After seven measurements you get the option to finish, or you can carry on making additional measurements up to a maximum of 16.

Multiple sets of measurements can be taken, named and stored. This is useful if you have more than one set of monitors, in which case you can assign them speaker icons with graphics to match most monitor types. You might also want

to create setups for different listening positions in the room, or to have separate setups for a single person monitoring from dead centre and for two people sitting either side of centre.

Choices, Choices

With the hard work over, you can load the ARC 2 plug-in inside your DAW and get mixing. Both the measurement curve and the correction curve are visible in the plug-in window. The former provides the option to select which monitor you're working with if you have more than one stored setup, while the latter gives you a choice of a flat response or a number of preset 'tailored' voicings, including various Virtual Monitoring emulations. A couple of well-known smaller studio speakers are simulated along with laptop speakers, small desktop speakers, car audio, iPod docks and so on. These are very useful in telling you how well your mix might hold up in imperfect listening environments. At the bottom of the plug-in window, along with the Correction On button, you'll find a Gain Trim knob and a large PPM meter. Trim is an important feature when choosing correction voicings, as unless you adjust the gain to match, you'll nearly always assume the loudest one is best.

Clicking the Monitor tab brings up the monitor controller window, dominated by a large volume knob. A smaller knob sets the dim level, and there are separate buttons for Dim and Mute, »



The ARC 2 plug-in's monitor controller page includes Dim, Mute and various stereo options, as well as a MIDI-controllable volume knob.



New in version 2 is the option to apply a user-defined EQ curve to the monitor correction.

» plus a three-way rotary switch selecting the stereo mode. A MIDI learn mode is also available, allowing an external MIDI device to be used to control the monitoring functions. There's also an Editor section, accessed via the Edit tab, which allows the sound to be adjusted manually to the user's taste using a six-band EQ. Four customised versions can be stored as presets.

Since ARC 2 measures the output from your speakers, the compensation it applies is trying to correct shortcomings in both room and speakers. If you are

Range Correction mode.

Where the room is acoustically very asymmetrical, the ARC processing can also compromise the stereo imaging, most noticeably on centre-panned sounds. A combined L/R Correction mode is available to resolve such cases, where ARC 2 averages the correction applied to the L/R channels and then applies it equally to both.

The Verdict

In my room, which has had a fair amount of mid/high treatment, the correction

"The box includes a measurement microphone, measurement software and a plug-in to provide the necessary monitoring correction."

using very small speakers, adding a vast amount of bass boost in the attempt to make them sound like bigger monitors would be unsuccessful and would also risk damaging the speakers. To avoid this situation, ARC limits the amount of low-frequency boost it applies by trying automatically to gauge the roll-off of the speakers during the measurement process, so though the final response may not be entirely flat, what's left will only be an LF fall-off, with the more audible spectral peaks ironed out. However, if ARC 2 has been fooled into rolling off the speaker's bass response too high, it is possible to disable the automatic roll-off point detection by selecting Full Bass

curve never added or subtracted more than 5 or 6 dB of gain at any point with the most noticeable modifications being at the bass end where it boosted the very low bass slightly and dipped the level of the upper bass region. It also flattened out a few mid-range wrinkles. After balancing the levels, I tried comparing the sound with and without ARC 2 and was gratified to find that the subjective difference was smaller than I expected, which suggested my room wasn't too far off right in the first place. The bass end seemed subtly deeper and more even with ARC switched on, and everything sounded natural, with good clarity and no evidence of algorithmic tampering,

Alternatives

There are other room-correction systems out there, some built into speakers such as those made by JBL, and others including DSP hardware processors. Some other audio products also incorporate a form of Audyssey's technology, but to date this IK system is the only one-box software solution I've come across that includes the analysis software, the correction plug-in and a suitable measurement microphone.

such as unnatural phasiness. Of course the difference made by the processing would be even more pronounced in a less well-behaved room — many of the domestic rooms we've visited during the course of our Studio SOS adventures have exhibited bass problems that could not easily be cured by absorbers, and in these cases ARC 2 might be a good solution.

Overall, I was impressed by both the ease of use of the ARC 2 system and by the results, though as stated at the outset, the availability of this sort of product shouldn't be treated as an excuse to do nothing about your monitoring environment, at least as regards the mids and highs. If you take the worst-case scenario as a demonstration of why room problems are still going to cause some problems, consider a pair of studio monitors set up in a cathedral. No amount of ARC correction is going to reduce that 10-second reverb decay time, and though the decay time of modal frequencies in smaller rooms is of course very much shorter, the time smearing that they cause still exists.

Once you've applied acoustic treatment as best you can, though, ARC 2 does a great job of mopping up those room problems that you can't address, so even if all you can do is hang a foam tile or two at the main mirror points in a bedroom studio, this system will help you get more accurate monitoring results. Indeed, in unfortunately shaped rooms with strong peaks in the bass response, something like ARC 2 might be the only practical solution. On the whole, then, ARC 2 does exactly as claimed, without fuss and at a sensible price. Just make sure you switch it off before bouncing your final mix! **///**

E £249.99; upgrade from v1 £124.99.
Prices include VAT.
T IK Multimedia +44 (0)1223 234414.
E uk.sales@ikmultimedia.com
W www.ikmultimedia.com

Mix with the best!



"Besides the excellent interviews and fascinating, in-depth recording and mixing articles, I can always depend on Sound On Sound for complete, unbiased reviews of the latest pro-audio gear."

Bob Clearmountain, engineer, producer and mixer, Grammy Award winner (Bruce Springsteen, The Rolling Stones, Paul McCartney, INXS)

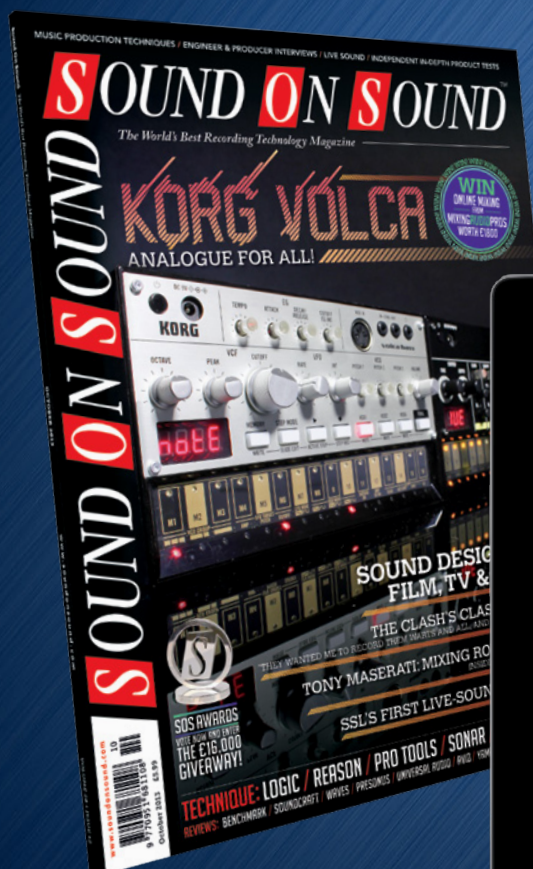


"As a professional I admire Sound On Sound as one of the most trusted and credible sources of inspiration and information."

Jack Joseph Puig, mixer, producer, Grammy Award winner (Rolling Stones, U2, Mary J Blige, Black Eyed Peas)

SOUND ON SOUND

The World's Best Recording Technology Magazine



This article was originally published
in Sound On Sound magazine,
October 2013 edition



Available on the
App Store



follow us
on Twitter



find us on
Facebook



go to the SOS
YouTube channel



visit the
SOS forum

Subscribe and Save Money!

Visit our subscriptions page at www.soundonsound.com/subscribe
for more information on the Sound On Sound App go to: www.soundonsound.com/app

Sound On Sound, Media House, Trafalgar Way, Bar Hill, Cambridge, CB23 8SQ, United Kingdom
Email: subscribe@soundonsound.com Tel: +44 (0) 1954 789888 Fax: +44 (0) 1954 789895

All contents copyright © SOS Publications Group and/or its licensors, 1985-2013. All rights reserved.

The contents of this article are subject to worldwide copyright protection and reproduction in whole or part, whether mechanical or electronic, is expressly forbidden without the prior written consent of the Publishers. Great care has been taken to ensure accuracy in the preparation of this article but neither Sound On Sound Limited nor the publishers can be held responsible for its contents. The views expressed are those of the contributors and not necessarily those of the publishers.