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SPECIAL REPORT

Compact 8020A Monitor Solution

By Christophe Anet

IISALMI, Finland The launch of Genelec 8000 MDE Series monitors unmasked the need for a smaller sized monitoring system able to reveal the actual audio content of a signal without adding or removing anything from the original audio.

The end result is the 8020A biamplified monitor.

Defined aesthetics

The R&D challenge for Genelec in creating the 8020A was to combine small physical size and defined outer aesthetics with outstanding technical performance and functionality.

Considering small loudspeaker performance, the first questions that come to mind concern maximum sound pressure level (SPL) and low-frequency reproduction capabilities.

Such characteristics are set by physical limits, but in order to establish realistic specifications, a user should also ask how much SPL is really needed for these kinds of applications.

A 1998 study titled "Daily Noise-Level Exposures of Professional Music Recording Engineers" by Wesley A. Bulla and James W. Hall III, presented at the 105th AES Convention, revealed that after many years of exposure, sound levels of 85 dBA for eight hours per day will produce hearing loss.

Bulla and Hall concluded the only option for an audio engineer with a 10-hour workday, who wishes to extend his or her career as long as possible, is to monitor audio material at safe sound levels currently believed to be between 80 and 85 dB SPL.

The established practice in multichannel systems is to calibrate each monitor to produce 85 dB SPL at the mix position.

Having set this reference SPL figure, the 8020A maximum short-term sine wave SPL output at 1 meter on axis in half space, averaged from 100 Hz to 3 kHz, was set to 95 dB. This is more than sufficient for small production spaces such as OB vans or audio/video edit suites where a short listening distance is a necessity.

It is then necessary to establish the recommended listening distance for a typical multichannel setup and the size of the reference listening area.

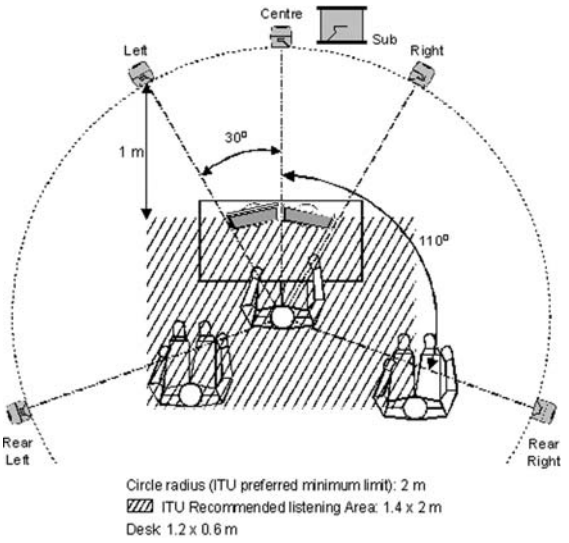

Figure 1: The ITU-Recommended Listening Area

Arrangement

The International Telecommunication Union (ITU) recommendation specifies listening arrangements for stereo and multichannel audio reproduction. Its preferred listening distance is a minimum of 2 meters and a maximum of 4 to 5 meters.

Figure 1 illustrates a 2-meter radius setup with all other elements in the sketch in correct relative scale.

It is interesting to note that, with a 2-meter radius and a typical production desk of 1.2 × 0.6 meters, the ITU listening area only covers 1.4 × 2 meters. That means only three people can work adequately within the accepted ITU listening area.

Due to room acoustics, the reference mix position is in the reverberant field. Hence, doubling the listening distance from 1 to 2 meters reduces the level less than 6 dB.

Despite its small size, the 8020A with its 105-millimeter woofer and 19-millimeter metal-dome tweeter, still fulfills the 85 dB SPL requirement.

Also, as the 8020A is widely used in multichannel applications, the addition of a subwoofer combined with a bass management system is mandatory. To fulfill this need, the 7050B subwoofer complements the 8020A, providing an LF response extension down to 25 Hz (-3 dB).

It is thus possible to achieve outstanding acoustic performance with a very small enclosure design. Once again, the Genelec goal is to push all physical constraints to their limits and ultimately provide better tools for the professionals.

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