

# The BBC Monitor

## Birth of a Legend

BY PAUL SEYDOR

The “BBC Monitor” is neither a product as such nor a design strictly defined. It might be more accurate to call it a set of loudspeaker parameters and specifications drawn up to meet a very precise set of goals for an equally precise set of uses and circumstances. “BBC,” of course, stands for the British Broadcasting Corporation, which has been in existence since 1922 and for much of that time engaged in research into loudspeaker design and performance. This research originated in necessity: Famous for the high excellence of its music programming and the sound quality of its broadcasts (back in the day peerless), the BBC needed monitors that would accurately tell its engineers and programmers what its broadcasts sounded like, and it couldn’t find good enough loudspeakers.

When Dudley Harwood and D. E. L. Shorter were brought on board by the research department in 1948, one of their first assignments was to investigate what was available. Their sobering report stated at the outset that “none of the loudspeakers examined was found to meet our requirements.” In particular, they noted that “the middle and high frequencies [gave] the impression of being detached from one another; definition was poor; the bass response extended lower than usual but was boomy in character; the high frequency response was deficient and the whole reproduction was heavily coloured.” The only logical step after that was to inquire why the speakers weren’t better and how they might be made so.

The BBC was in a unique position to conduct this inquiry because it could readily correlate measurements in the lab with what was heard in its own studios. Primary interest initially centered on voice for a number of reasons, though mainly that vocal reproduction afforded an easy to check for accuracy because the announcers were right there (or close enough). But as the BBC was also a pioneer in music programming, especially classical music, the need for monitors with frequency response adequate to the full range of music and its dynamic requirements became a top priority as well. The BBC investigated everything—drivers, crossovers, cone materials, and enclosures—using careful experimentation by both measurement and listening, and keeping absolutely meticulous records.

### Did You Know?

**The great British tradition of loudspeaker design and manufacturing had its genesis in 1948 when the BBC hired Dudley Harwood and D.E.L. Shorter to evaluate the available loudspeakers for broadcast monitoring. The two engineers stated at the outset that “none of the loudspeakers examined was found to meet our requirements.” Thus began the BBC’s research program to develop better broadcast monitors, the seed that spawned the British hi-fi industry.**



and the capability of playing louder with lower distortion. Grade 1 speakers were to be used for critical evaluation, spectral balancing of programs, checking microphone level and placement, and the like. Grade 2, quite a bit smaller, was more restricted in response and loudness capability, and was intended for small control-rooms and vans where space was restricted but accurate reproduction still a necessity. Whether Grade 1 or 2, BBC monitors all shared certain physical characteristics: They consisted of two or more drivers mounted on baffles in boxes, not open configurations; they were as compact as possible consistent with performance requirements, even the Grade 1 models; and they were usually made to be placed on stands, up off the floor and somewhat away from walls, though the smaller models of either grade could also be placed on shelves or desk tops and used for close-in listening. Perhaps the best known of the upper grade was the LS5/6, and unquestionably the most famous of the lower was the classic LS3/5a.

Although the BBC had facilities to manufacture very small quantities of monitors, it soon became apparent that it would have to license consumer manufacturers to meet the demand even within the corporation (which was and remains the largest

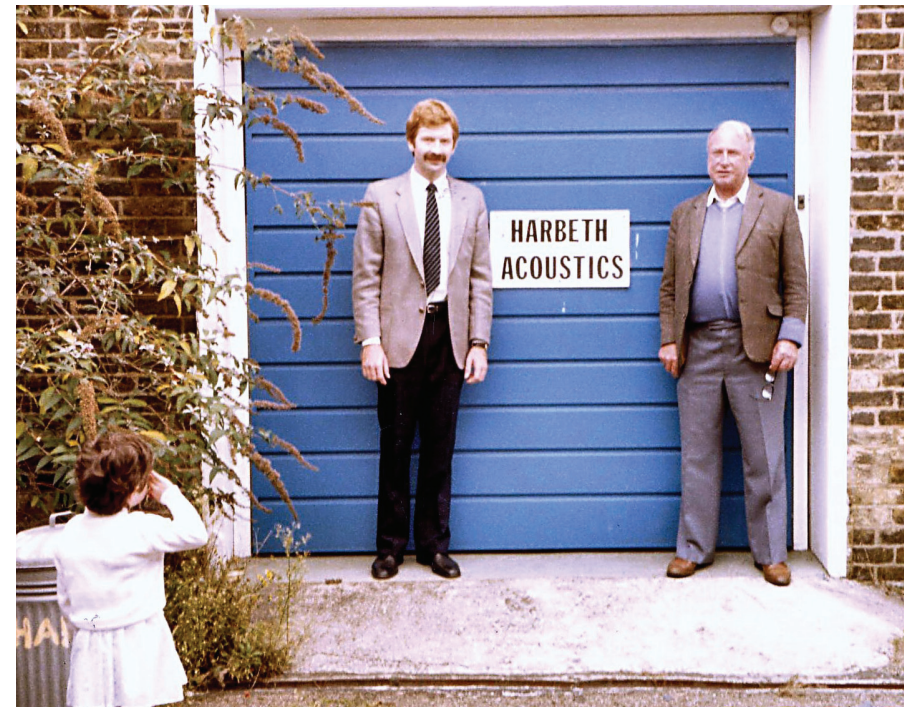
*Above: Many of today’s British loudspeakers can trace their history to the BBC’s seminal research project. (Photo courtesy of the Harbeth Archive).*

single broadcasting corporation in the world). One of the first of the original licensees was Rogers, but others soon followed. It was also only a matter of time before the designs went public, as it were, audiophiles being a pretty determined lot when it comes to ferreting out desirable products, a process hastened when some of the BBC’s own personnel, notably Spencer Hughes and later Dudley Harwood, started their own speaker companies.

The primary design goal of what might be called “the BBC school” was always accuracy, but it couldn’t be denied that loudspeakers derived from it had a distinct sound that was fractionally on the warm side, never harsh or fatiguing throughout the presence band or upper regions, and with an outstandingly beautiful midrange. None of these qualities translated as colorations but instead came across as producing a sound of exceptional naturalness. Nor were the engineers above tailoring response. For example, the famous—or notorious, depending on your point of view—“Gundry dip” put a very mild trough through the two octaves from 1kHz–4kHz, which took the curse off recordings peaked in that range, of which there were many.



*In the early 1970s the BBC experimented with scale-model acoustic environments. This loudspeaker is fitted with an “exciter,” made from microphone capsules used as tiny speakers, that sprayed high-frequency energy in many directions within the scale-model acoustic space. (Photo courtesy of the Harbeth Archive).*



However, it’s important to remember that, as Alan Shaw has pointed out, the dip originally served the purpose of compensating for response anomalies in early plastic drivers, which the BBC was among the first to experiment with. And the LS3/5a—if ever there was an iconic BBC design, this was it—had a 3dB boost around 120Hz in order to give the impression of deeper bass response than was actually there, as well as a slight rise between 1kHz–2kHz for more projection. These effects are relatively mild and, it’s again important to note, were there to counterbalance some of the response limitations of a subcompact monitor in order to make it sound more accurate to the ear.

Those last four words, “accurate to the ear,” serve as a reminder that as scientific as the BBC engineers and designers were with respect to the way they gathered and used data acquired through measurement, listening nevertheless remained central to the research and it too was regarded as a part of the scientific process. Indeed, it was precisely one of the great strengths of the BBC school that listening did play such an important role in the development of its monitors—that and the detailed notes and records the engineers kept of their work. Many innovations in crossover design and driver materials came out of their research, and these eventually found their way into consumer products, notable among them the use of polymers in cone materials for greater consistency, lower distortion, and flatter frequency response than paper. It’s by no means an overstatement to say that every British speaker manufacturer from the sixties onward profited (in both senses) from the BBC’s research.

As regards the world of consumer audio, the BBC philosophy resulted in a number of classic products still widely sought after and cherished today. The first of these was Spencer Hughes’ LS/6-inspired BC-1, which, some loose bass notwithstanding, had a midrange and an overall musicality that were glorious; and the SP1/2, authored mostly by his son Derek, remains one of the half dozen (or fewer) full-range consumer loudspeakers with the flattest response and the most neutral tonal balance. Stirling Broadcast has reintroduced the LS3/5a and the LS/6 (again with substantial work by Derek Hughes) to great acclaim. And of course Alan Shaw at Harbeth, the company he eventually purchased from Harwood, preserves the BBC legacy both in his working methods and his signature designs (and also in the person of Derek Hughes, who joined the company in 2010), including the full-range Monitor 40.1 and the smaller Monitor 30.1, both true reference-caliber monitors of the highest order and in wide use at the BBC. As long as live unamplified music of voice and acoustic instruments are used as references for the design of audio equipment, the priorities of the BBC monitor will remain valid and central.

*Above left: The first LS3/5A. (Photo courtesy of the Harbeth Archive).*

*Above right: Alan Shaw and Dudley Harwood brought the BBC monitor into the modern age. (Photo courtesy of the Harbeth Archive).*