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At one time or another every radio amateur aspires to buy a matching speaker for their radio transceiver or receiver. Just about every amateur radio manufacturer has produced matching speakers for almost all their individual radios. And where they haven't, an audio manufacturer has neatly stepped in to take advantage of this gap in the market.

Matching or 'companion' speakers were pretty basic from the 1940s to the 1990s, most consisting of a single four to six inch (100mm to 150mm speaker) sometimes round but quite often elliptical in shape in an otherwise empty wood or steel box with a perforated grill over the speaker. And they weren't cheap either – the matching MS-4 speaker for the Drake R-4 and TR-4 series cost around US\$100 back in the 1960s. (US\$100 in 1965 is equivalent today to almost \$950! [1])

In the early 1970s I bought a used Drake TX-4B transmitter and R4B receiver – my dream radios back then. After a few months of searching I managed to find an MS-4 for about 80 quid and was ecstatic.

After the initial thrill wore off, I tried it against the discarded mono speaker from the family au-

Using Old Home Theatre Centre Speakers for Amateur Radio

Amateur radio speakers can be expensive. **Steve Ireland VK6VZ/G3ZZD** explains how used home-theatre speakers can provide a cheaper, better sounding alternative.

dio system. My dad had built this from thick particle board, used a six inch Wharfedale speaker and stuffed the cavity with speaker wadding. The homebrew speaker had a full, clear sound to me – unlike the tinny-sounding MS-4, which was quickly put away in a cupboard.

Now a lot of people who have used a MS-4 speaker will probably be horrified about my opinion – unless they have swapped one out with a decent bookshelf hi-fi speaker of similar impedance.

So began a pattern in my radio operation which lasted for the next 40 years. Over this time my choice of hi-fi speakers used for radio became

further refined. Any matching speakers that came with a radio into the shack got compared against this benchmark. And every time the matching speaker quickly got put away or sold off.

Up to about six years ago the benchmark was an Akai SW-393 three-way hi-fi speaker. Then I came across an internet article by **David K3DAV [2]** about the benefits of using a centre speaker from a home theatre for radio. My hearing had begun to deteriorate – too much low-band DXing and loud rock music – and I was looking into ways of improving the audio fidelity of my HF transceivers, so listening for several hours straight was less fatiguing.

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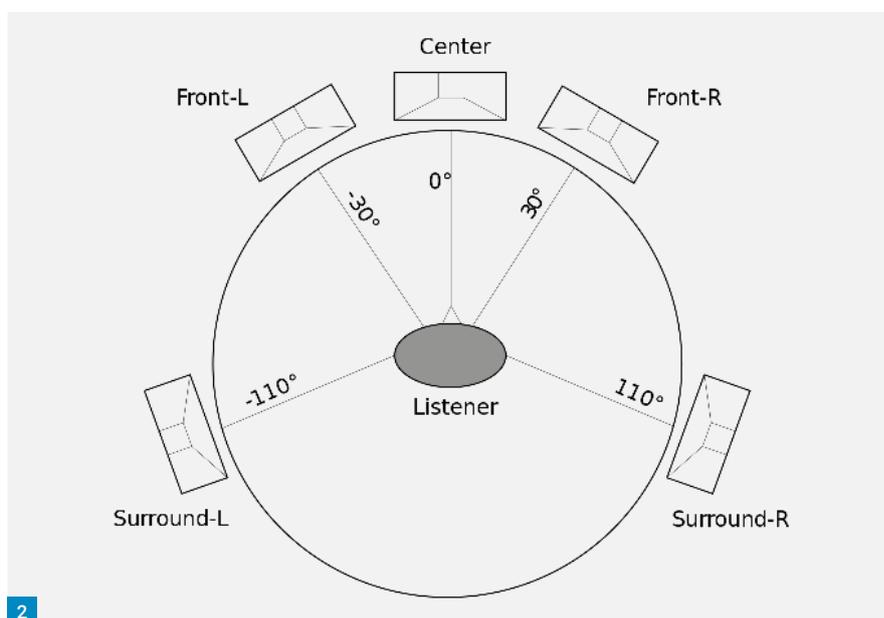


Header photo: My IC-7610 with Mission m7c centre speaker. Wood blocks are used to raise it above the IC-7610's case, to allow air to flow freely into the radio. Fig. 1: Mission 75C speaker in use at VK6VZ. This is switched between my TS-830S and Ten Tec Orion, using the Digitech audio switch on top of the speaker. Fig. 2: Typical 5.1 home theatre surround speaker configure. Diagram courtesy of Kamina, Wikimedia Commons. Fig. 3: My Mission 75C with the speaker cloth removed, showing the twin mid woofers, tweeter and quality of build.

Like me, David had been using bookshelf hi-fi speakers but was looking for something better that would aid signal clarity on weak signals among noise and static on his Icom IC-746Pro. He looked at what US amateur radio dealers were selling and ended up purchasing a reputable, well-known add-on speaker. To quote him: "I was not happy. I reconnected my little bookshelf speaker and it sounded much better".

David tried a few other add-on speakers and the matching speaker for the IC-746Pro, but without success. "They were OK but lacked a certain amount of natural tone quality found in voices. The sound was always too tinny, or too bassy, or muddy, or flat with poor voice ranges...blah, blah, blah... I got tired of searching and kinda gave up for a while".

This sounded all too familiar to me. Like Goldilocks, David and I were both searching for the speaker that was "just right".



K3DAV was also an audio/video enthusiast and had a home theatre system with high definition TV and hi-fi surround sound, often known as a five-point-one (or 5.1) surround system, Fig. 2.

Five-point-one systems [3] use a speaker configuration consisting of front (left and right) speakers, a centre speaker, two rear (left and right) surround speakers and a low frequency speaker, better known as a sub-woofer, for LF special effects. This quintaphonic system evolved from the quadrophonic one of the early

1970s and was first used in the 1976 movie 'Tommy' (as in Pinball Wizard).

The first five speakers are the '5' and the sub-woofer is the 'point one' in the system's name. The most important speaker when it comes to speech is the centre speaker, which is designed specifically for the dialogue of a film. One day, watching the movie *Top Gun*, K3DAV listened to the voices coming out his from centre speaker and had an idea. He linked his centre speaker up to his IC-746Pro and was amazed at the results.

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A home theatre centre speaker of 1990 vintage – when watching films at home really caught on – generally consists of two 140mm diameter mid-range ‘woofers’, separated by a 70mm tweeter and all electrically linked by a three-way inductor-capacitor (LC) crossover network. This network is where the magic happens.

Typically, the network is designed so the two mid woofers range is limited from around 50 to 3,500Hz – perfect for reproducing SSB, FM, AM or CW. In the case of the tweeter, only audio frequencies from 2.5kHz to 25kHz will be passed to it – which in the case of amateur radio speech modes is NOT going to be much. Furthermore, any frequencies above 15kHz are rolled off anyway.

As K3DAV wrote: *“It is a nice balance for voices. The soft level of the tweeter adds just the right amount of ‘highs’ to complement the two mid woofers, which do 80% of the work. But the hiss and high frequency static sounds are not heard”.*

Finding a Centre Speaker

K3DAV had an Optimus PRO-CS-5 centre speaker in his home theatre setup, which after putting it into his radio setup was replaced with a comparable Polk one.

It was around 2015 or so when I read David’s article, when my main HF radio was a Ten-Tec Orion 2. This had nicer audio than its predecessor Elecraft K3 and I was very keen to find a centre speaker to try out on it.

The Australian equivalent of the UK’s *Preloved*

online site is called *Gumtree* and I carefully searched it. While Optimus and Polk speakers were non-existent, I found an advert for a home theatre centre speaker of similar specifications to the PR-CS-5 from a UK company called Mission Electronics [4].

Doing some searching on the internet, I discovered Mission, founded in 1977, were a company whose products were favoured by UK and Australian hi-fi buffs. I quickly rang up the speaker’s owner and purchased a Mission 75C centre speaker [5] from him for about £50 UK, **Figs 1 and 3**.

The next day I hooked up the 75C – and was amazed. I had bought the matching speaker for the Orion 2 (a Ten-Tec 307) as part of a package and previously thought it sounded quite decent. On both SSB and CW, the Mission 75C was so much clearer and cleaner – exactly in the way K3DAV had described.

As a radio amateur for almost half a century and former *Ham Radio Today* editor I am not easily impressed (and indeed am rather cynical) but this speaker was the ‘bee’s knees’.

Subsequently, I tried several smaller, lower quality and cheaper centre speakers, owned by friends. These often only had single speakers, of 50 to 80mm in diameter, and sounded poor in comparison to my Akai hi-fi speaker, let alone the 75C. The only way was to ‘go big’ and buy one with a couple of 110 – 140mm mid-woofers and a tweeter in the middle.

A few years back I sold the Orion 2 to buy an Icom IC-7610. As this had dual receivers and can be used for diversity, I bought a pair of reputable, new Behringer 1C monitor speakers to go with it. But after a comparison between the 1C and the 75C, the Mission ruled supreme and the Behringer on the main receiver got the boot.

I then did some searching on *Gumtree* again and found there were several big Mission home theatre speakers for sale – and the prices had dropped considerably! I picked up a sleek Mission m7c1 [6] for £15 (UK), which now sits on wooden blocks atop the IC-7610 – and the Mission 75C is switched between my antique TS-830S and back-up Orion 1.

Do yer ‘Toby Jugs’ (ears) a favour and find yourself a used centre-speaker. Alright, guv’nor?

References

- [1] CPI Inflation Calculator: <https://tinyurl.com/btcvv35u>
- [2] K3DAV isn’t currently active in amateur radio, but you can currently find a copy of his article at **Simone IW5EDI’s** website: <https://tinyurl.com/s6ztev4p>
- [3] See Wikipedia: <https://tinyurl.com/55eatjkn>
- [4] www.mission.co.uk
- [5] Mission 75C specifications can be found at: <https://tinyurl.com/55n9t5jy>
- [6] For Mission m7c1 specifications, see: <https://tinyurl.com/muxe229r>

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