MyAntenna CMC-130-3k

A review of what some are calling the best kept secret in amateur radio.

Before I answer the question of 'what is it?' it is useful to take a quick look at how a coaxial cable works. Signals travel along the centre conductor. The braid around the outside serves two purposes:

- It shields the centre conductor from picking up or radiating any other signals, and
- It provides a return path for the current flowing in the centre conductor.

This is known as an unbalanced feed system, with the braid of the cable typically connected to ground. A very important point to note is that due to the skin effect, the return RF current of the signal travels only on *the inner skin* of the braid.

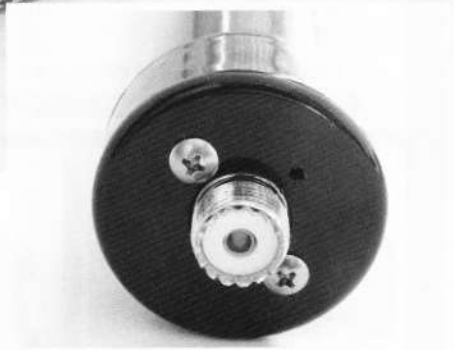
The problem is that RF is routinely picked up on *the outer skin* of the braid. This can – although not necessary does – cause locally generated noises such as come from switch mode power supplies to enter the shack and cause interference on receive equipment. More worryingly, when your coax picks up some of your transmit signal and conducts it back into shack, it might result in RF feedback or be conducted into the mains wiring of your home to cause RFI elsewhere.

There are a number of ways to 'choke off' RF current travelling on the outer skin of the braid of a length of coax. As radio amateurs we routinely place a balun at the feedpoint of a balanced antenna to do just that, but that doesn't prevent RF from being picked up directly on the coax, between the shack and the antenna. An antenna with coax run at exactly 90° to itself should pick up very little of a transmitted signal, but how many HF users can say they have a run of coax that is exactly straight and at exactly 90° to a dipole antenna... for its entire length? Not many, I'll wager.

How it works

A Common Mode Choke placed on the coax prevents unwanted RF from reaching equipment in the shack, by placing a high impedance on the line. The CMC-130-3k is such a piece of equipment. It should be placed close to or in the shack, so that the coax between it and the equipment is short. For those interested in learning more on the subject, Ian White (no relation), GM3SEK has produced a really good PowerPoint presentation. To download it, go to www.ifwtech.co.uk/g3sek/in-prac/gm3sek_ferrite_chokes_web.pps

The CMC-130-3k common mode choke.



SO-239 connector and vent hole.

The CMC-130-3k places an impedance on the line *to unwanted signals* of up to 15kΩ. This effectively isolates unwanted RF travelling on the outer skin of the braid from the equipment, reducing the ingress of locally generated noise. Earthing/grounding is important here, and the instruction leaflet states that it should essentially be placed so that it is the last item of equipment as the coax leaves the shack (ie after any amplifier, ATU, earth connection, etc).

It can also be used as a 1:1 current balun at the feedpoint of a balanced antenna, by using an adapter or a short length of coax as tails to connect it.

Note that if it is used outside, the single vent hole (see photo) needs to point downwards.

Inside and outside

The CMC-130-3k is fully sealed, so it is not possible to open it up and see what's inside. However, the designer had confirmed to me that inside are four common mode choke filters in series. Because of the overall size of the item they are wound using a thin coax that has PTFE dielectric. To give effective line isolation over a broad range of frequencies the filters don't all use the same permeability cores.

Outside, the CMC-130-3k has SO-239 connectors with PTFE insulation. The casing is made from a UV-stable black plastic, making it suitable for use outdoors. The finish is glossy and it has a solid feel to it.

About the designer

The man responsible for the CMC-130-3k is Daniel (Danny) Horvat, CEO and owner of EuroXpress Corporation. MyAntenna is a trading name of the corporation. These days Daniel is based in Florida and has the home callsign N4EXA, but his earlier home callsign was E73M. Formerly a resident of Sarajevo, he survived the siege that lasted almost four years during the Bosnian war (1992-1996). A year after the siege ended he moved to Boston, USA. There he joined antenna manufacturer Cushcraft. Over the next three years he designed several multiband antennas for them, including the MA5B compact beam and the R8 vertical.

The bottom line

If you experience RF feedback when you transmit or local noise sources are making it difficult to hear weak signals, the CMC-130-3k could be just the thing for you. In extreme cases it can apparently reduce your received HF noise level by several S-points. It is just one item in a range of filters from MyAntenna. Others cover different frequency ranges or are for different purposes.

I would like to thank Nevada for the review sample. The CMC-130-3k is available from them, priced £89.95. For full details, see www.nevadaradio.co.uk

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