FIVE AND NINE PLUS

THE OFFICIAL NEWSLETTER OF THE APPLEDORE AND DISTRICT AMATEUR RADIO CLUB

Club Callsigns: G2FKO and GX2FKO
Website: www.adarc.co.uk

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			Exam Secretary	John Lovell	G3JKL
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EDITORIAL

Thanks to Terry for his input into July's Talk, "How to Tell a Good Choke." From my perspective, it was very well received and demonstrated how a simple homebrew choke can vastly improve shack performance. Terry has kindly supplied an article on this topic, which I have included at the end of this newsletter.

The July meeting is a "Bring and Buy" event—a great chance to have a sociable chat over coffee, with the opportunity to buy and sell any surplus gear.

73,
Mike (G4KXQ)

CLUB PROGRAM

August 17th 2026	Bring and Buy	
Sept 21st 2026	LoRa Modulation and Its Uses	Chris G0FJY
Oct 19th 2026	Club Quiz Night	
Nov 16th 2026	Shack Remote Operations	John G3JKL
Dec 14th 2026	Christmas Party	
Jan 18th 2027	External speaker	TBC
Feb 15th 2027	On-Line Talk – Portable Antennas	Colin MM0OPX
Mar 15th 2027	Annual General Meeting	

LOCAL NETS

2m Elevenses FM Net: Mon/Wed/Fri :
11 - 12.00 noon via GB3DN Net Control ; Mike (G3PGA)

Friday Night 2m Net: Friday : 145.450 FM, 8 -9pm

Sunday Top Band Net: Sunday 1.860 MHz
9.30 - 10.15am, (LSB - 32W pep max)

2m SSB Nets: Wed: 8 - 9pm 144.260MHz USB SSB (Vertical polarised)
Sun: approx 10.30am (follows Top Band Net) 144.260MHz USB SSB (Vertical polarised)

Sunday FM Net: Sunday: 11 to noon via GB3DN
Net Control : Chris (G0FJY)

Note :- FM Nets which use GB3DN as shown above will continue despite the recent changes. GB3DN is disconnected from the Wires-X/ Southern England Room just before the listed start and end of each FM Net

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Action Required: Keep Your DMR Access Active by Revalidating Your DMR ID

To keep our digital amateur radio networks secure, accurate, and free of orphaned callsigns, platforms like **RadioID** and **BrandMeister** require operators to periodically revalidate their DMR ID. As callsign updates, license renewals, and silent keys naturally alter the database over time, regular revalidation ensures that every registered ID corresponds to an active, validly licensed operator—and prevents unauthorized spoofing.

Completing this quick check guarantees your radio will continue to communicate seamlessly across local repeaters, IP-linked reflectors, and talkgroups worldwide, without sudden service disruptions or network lockouts.

Log in to your RadioID account today to verify your details and ensure your station remains fully operational on the airwaves.

DX NEWS

15/08/2026 - 22/08/2026	St Lucia	J68TT	LoTW	By N4XTT; 40-10m, perhaps 80m; SSB CW FT8 FT4; POTA activations; QSL via Club Log OQRS or N4XTT direct.
18/08/2026 - 29/08/2026	Canary Is	EA8	IZ1GDB (B/d)	By IZ1GDB as EA8/IZ1GDB fm Mogan, Gran Canaria; 40 20 15 10m.
28/08/2026 - 08/09/2026	Lord Howe Island	VK9L	LoTW	By VK2DX as VK9L/VK2DX; 80-10m; SSB CW FT8.
01/09/2026 - 14/09/2026	Samoa	5W	LoTW	By DL2SHM as 5W0HM; 40-10m; CW SSB digital.
05/09/2026 - 18/09/2026	Market Reef	OJ0	LoTW	By OH team; 160-6m; CW SSB FT8.

Data courtesy of Ng3K.com DX Operations: 2026

CONTEST CALENDAR - Data Thanks to WA7BNM Contest Calendar

Contest	Start–End (UTC)
SARTG WW RTTY Contest	15/08/2026 0000Z – 16/08/2026 1600Z
Russian District Award Contest	15/08/2026 0800Z – 16/08/2026 0800Z
Keyman's Club of Japan Contest	15/08/2026 1200Z – 16/08/2026 1200Z
SARL Youth QSO Party	15/08/2026 1200Z – 15/08/2026 1300Z
Feld Hell Sprint	15/08/2026 1600Z – 15/08/2026 1759Z
CVA DX Contest, CW	15/08/2026 1800Z – 16/08/2026 2100Z
YB Bekasi Merdeka Contest	16/08/2026 0000Z – 16/08/2026 2359Z
ARRL Rookie Roundup, RTTY	16/08/2026 1800Z – 16/08/2026 2359Z
Turkey HF Contest	22/08/2026 0600Z – 23/08/2026 0600Z
YO DX HF Contest	22/08/2026 1200Z – 23/08/2026 1200Z
ARSI VU DX Contest	22/08/2026 1200Z – 23/08/2026 1200Z
CVA DX Contest, SSB	22/08/2026 1800Z – 23/08/2026 2100Z
SARL HF CW Contest	23/08/2026 1400Z – 23/08/2026 1700Z
SCRY/RTTYOps WW DX RTTY Contest	28/08/2026 2200Z – 30/08/2026 2359Z
Feld Hell Sprint	29/08/2026 0000Z – 29/08/2026 2359Z
ALARA Contest	30/08/2026 0600Z – 31/08/2026 0559Z
World Wide Digi DX Contest	29/08/2026 1200Z – 30/08/2026 1200Z
All Asian DX Contest, Phone	05/09/2026 0000Z – 06/09/2026 2400Z
SARL VHF/UHF FM Contest	05/09/2026 0800Z – 06/09/2026 1000Z
SARL Field Day Contest	05/09/2026 0800Z – 06/09/2026 1000Z
Russian RTTY WW Contest	05/09/2026 1200Z – 06/09/2026 1159Z
IARU Region 1 Field Day, SSB	05/09/2026 1300Z – 06/09/2026 1259Z
RSGB SSB Field Day	05/09/2026 1300Z – 06/09/2026 1300Z
AGCW Straight Key Party	05/09/2026 1300Z – 05/09/2026 1600Z
IARU Region 1 145 MHz Contest	05/09/2026 1400Z – 06/09/2026 1400Z
PODXS 070 Club Jay Hudak Memorial 80m Sprint	05/09/2026 2000Z – 06/09/2026 2000Z
CWOps CW Open	05/09/2026 2000Z – 05/09/2026 2359Z
WAB 144 MHz Phone	06/09/2026 1000Z – 06/09/2026 1400Z
WAE DX Contest, SSB	12/09/2026 0000Z – 13/09/2026 2359Z
SKCC Weekend Sprintathon	12/09/2026 1200Z – 13/09/2026 2400Z
SEANET Contest	12/09/2026 1200Z – 13/09/2026 1200Z
Africa FT4 DX Contest	12/09/2026 1500Z – 12/09/2026 1800Z
North American Sprint, CW	13/09/2026 0000Z – 13/09/2026 0400Z
IRTS 70cm Counties Contest	13/09/2026 1300Z – 13/09/2026 1330Z
IRTS 2m Counties Contest	13/09/2026 1330Z – 13/09/2026 1500Z

Important – Club Subscriptions were due March 2026

Club bank account details: Account name: Appledore & District Amateur Radio Club, Sort Code: 30-90-78, Account Number: 01047485. The club's membership subscription is £15

Regards Alan M9NAE. Club Treasurer.

LOCAL REPEATERS/GATEWAYS

GB3XM – UHF DMR Repeater - Brayford

TX 439.5625 MHz RX 430.5625
Colour code 1, Slot 1 Talkgroup 9 local and direct dial, Slot 2 South West Cluster

GB7MX – VHF FM Tiverton *(QRP, Solar powered)*
TX 145.075, RX 145.575, Tone 77Hz – Keeper Steve M0ZZT

GB7MZ UHF DMR Repeater - Tiverton, *(daylight hours solar powered)*
TX 439.5625 MHz RX 430.5625
Colour code 1, Slot 1 Bradmeister Talkgroup 91. Keeper Steve M0ZZT

GB3ND UHF DMR Repeater - Holsworthy Beacon TX 439.7375 RX 430.7375 Colour code 1
Slot 1 local RF, Slot 2 SW Cluster Keeper G1BHM

GB3DN VHF FM/C4FM Repeater - Stibb Cross
Tone 77Hz (for analogue FM) TX 145.6375 RX 145.0375, Default Digital Connection : Wires-X Southern Fusion http://www.g0rql.co.uk/gb3dn.htm. Keeper Tony G1BHM

GB7FB UHF DMR Repeater - Bideford TX 439.475 RX 430.4750 Colour code 5 Slot 1 Local RF/DoD Slot 2 SW Cluster . Keeper Drew M0MFS

GB3LZ VHF FM/C4FM Repeater - Winkleigh
Tone 77Hz (for analogue FM) TX 145.6625 RX 145.0625, Digital Connection :
Wires-X SOUTHERN ENGLAND. Keeper Phil G6DLJ

GB7LZ UHF DMR Repeater - Winkleigh
TX 430.9125 RX 438.5125 Colour code 1, Slot 1 Talkgroup 9 local and direct dial, Slot 2 South West Cluster. Keeper G4MQQ

GB7TG - UHF DMR Repeater - Wembworthy
TX 430.9750 RX 438.5750 Colour Code 7, Default Connection : Slot 1 Local/DoD Slot 2 SW Cluster Keeper G7SOJ

GB3NX VHF FM Allstar Holsworthy Beacon TX 145.7375 RX 144.1375. CTCSS tone 77hz Connection SW AllStar network (SWAN). Wires-X default room: Southern-Fusion, Keeper G1BHM

GB7BU (was GB3BU)- UHF DMR Repeater - Bude
TX 430.9625 RX 438.5625 Colour Code 1
Default Connection: Slot 1 Local/DoD Slot 2 SW Cluster Keeper G1BHM

GB3JH – UHF Analogue Repeater – Tiverton
TX 430.8625 RX 438.4625, Tone 77Hz – Keeper G6ASK

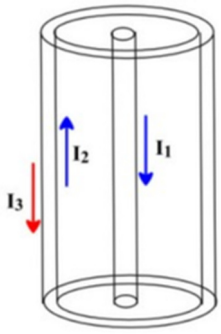
GB3MD – UHF Analogue Repeater – Coldridge, Mid Devon
TX 430.850 RX 438.450, Tone 77Hz – Keeper G4PKZ
South West All Star Network (SWAN HUB)
Frequencies are those transmitted and received by the Repeater .

COMMON MODE CURRENT - ITS CAUSE AND CURE by Terry G4CHD

COAXIAL CABLE

At first sight, coaxial cable (coax) appears to have just two conductors - a central wire and an outer braid.

However, due to the Skin Effect which forces rf current to flow on the outer surface of a conductor, and coax has three surfaces namely - that of the central wire, and the inner and outer surfaces of the outer braid, coax has therefore three conductors.

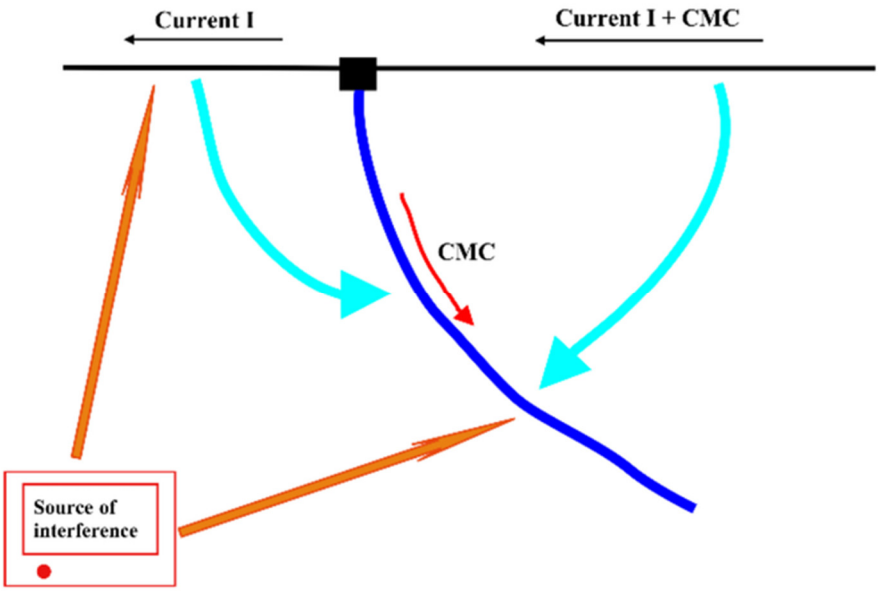


When coax is used to feed an antenna, the feed current uses the surface of the central wire and the return current on the inner surface of the outer braid. These two equal but opposite currents are termed **Differential Currents**.

This leaves the braid outer surface conductor unused unless **Common Mode Current** is produced on it as described in the following section.

COMMON MODE CURRENT - CAUSES

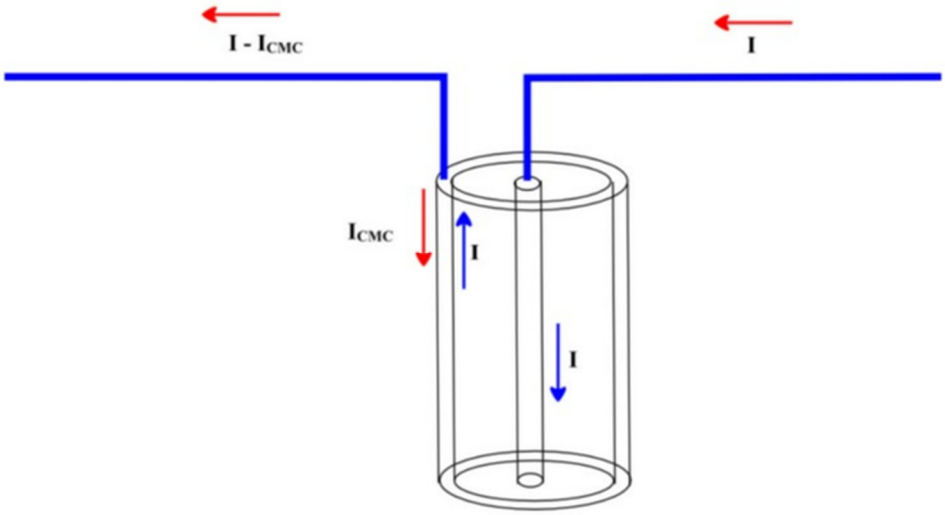
There are basically three ways Common Mode Current can be caused to flow on the braid outer surface as summarised below :-



Cause 1

Consider a dipole centre fed **directly** by coax with the dipole right arm connected to the coax central wire and the dipole left arm connected to the coax outer braid using eg a dipole SO239 centre connector.

The antenna currents are shown in the diagram opposite :- The same current I flows in both the dipole right arm and the coax central wire. However, the current I on the braid inner which is equal and opposite to that on the central wire, splits between feeding the dipole left arm with the remainder flowing onto the braid outer as Common Mode Current (CMC).



The current split is determined by the relative impedance of each route. In fact someone compared this to feeding a tripole and not a simple dipole!!

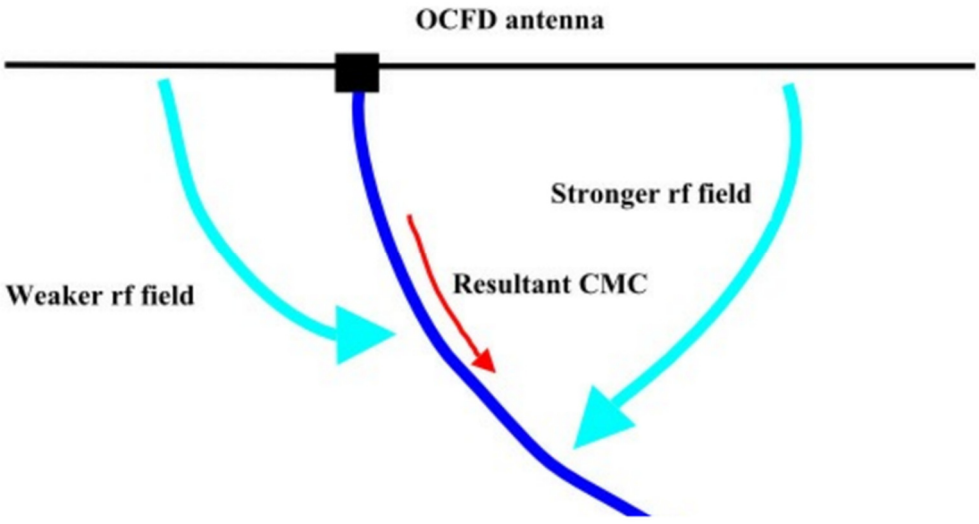
The impedance to current flowing in the dipole left arm is approx 30 - 40 ohms whereas the impedance to Common Mode Current flowing on the braid outer depends on the length of coax from the antenna feed point to the far end where it should be terminated at the rf earth point. If this length is an even number of half wavelengths, the impedance offered to Common Mode Current will be very low leading to virtually all the current I flowing on the braid outer as common Mode Current. However, typically it will generally be higher than 30 - 40 ohms and hence normally the dipole left arm will receiver virtually the same current as the right arm with any difference being Common Mode Current flowing on the braid outer.

This may well explain why many amateurs who directly feed a centre fed dipole experience few problems or have just been lucky!

To summarise, Common Mode Current on the braid outer only occurs when **different currents** flow in each arm of the antenna.

Cause 2

The braid outer surface conductor acts as a wire in the radiation field of the antenna and so there will be rf currents induced in it. The current induced by one half of the antenna will be in the opposite direction to that induced by the other.



Hence any resulting Common Mode Current is the difference between these two induced currents. So, if the coax feeder leaves the antenna at an angle other than ninety degrees or the antenna arms produce different levels of radiation, then the difference in induced currents will be much greater. It is for this reason that Common Mode Current produced is much more common with Off Centre Fed Dipoles see diagram below and even more so with End Fed Dipoles.

Cause 3

Finally, in a similar way to cause 2, any other source of rf eg from a neighbour etc will induce current onto the braid outer even when not transmitting. This can explain why you get a high S meter reading on receive in some locations.

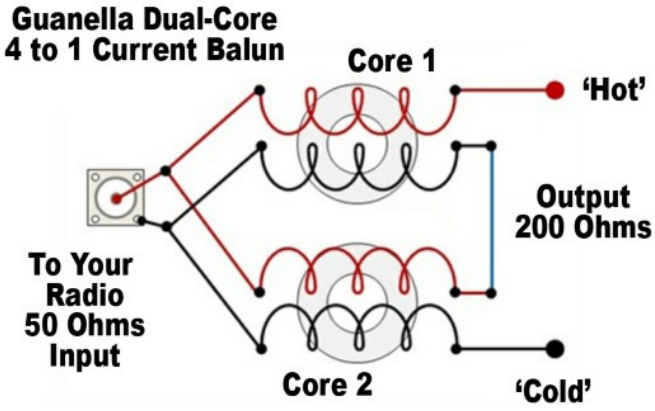
COMMON MODE CURRENT - CURES

Cause 1 - the Cure

Since Common Mode Current on the braid outer only occurs when the current fed to each arm of an antenna is different, then if an antenna can be fed in such a way as to ensure **equal currents are fed to both arms** then there will be no Common Mode Current.

This can easily be achieved by feeding the antenna through a **Current Balun** (NOT a Voltage Balun).

Hence use a 1:1 Current Balun to feed a centre fed dipole and since the OCFD has a feed impedance of approx 200 ohms, feed the OCFD with a 4:1 Current Balun as shown in the diagram below from the web site :-



https://q82.uk/41balun-transformer

which recommends using either FT240-43 or FT240-52 ferrite rings and gives full construction details.

Causes 2 and 3 - the Cure

Here Common Mode Current is induced onto the coax outer braid between the shack and antenna. Hence the cure is to introduce a high attenuation (in excess of 20dB) in the coax feed preferably just before where the coax enters the shack. In this way the Coax in the shack should be relatively free of any Common Mode Current which if present would cause rf feedback and erratic SWR readings and possibly a high noise level on receive. This attenuation should be applied only to the Common Mode Current flowing on the braid outer and **NOT** to the differential antenna feed currents within the coax.

This can readily be achieved by inserting a **Current Choke** - shown below - in the dipole or OCFD antenna coax feed.

A Current Choke can be easily made by winding eg 11 turns of RG58 onto either a FT240-43 or FT240-52 ferrite ring with a crossover half way to minimise self capacitance and terminated with eg PL259 plugs - see excellent article on RF Choke design by Steve Hunt (G3TXQ).

Cure - End Fed Dipole

There are many who prefer the long wire to be resonant ie exactly half a wavelength since this leads to the feed current being very very low resulting in less Common Mode Current problems but operation being restricted to harmonically related bands. The high impedance feed needs to be fed via a 64:1 Unun.

Alternatively, using a non resonant length of wire, leads to a lower feed impedance and can now be fed via a 49:1 Unun providing access to more bands with the aid of an ATU. However, the higher feed current leads to a higher Common Mode Current.

With an end fed dipole, only one coax connector eg the central wire, is connected to the end of the antenna wire via an Unun with no connection to the braid inner which therefore needs a return route to complete the circuit.

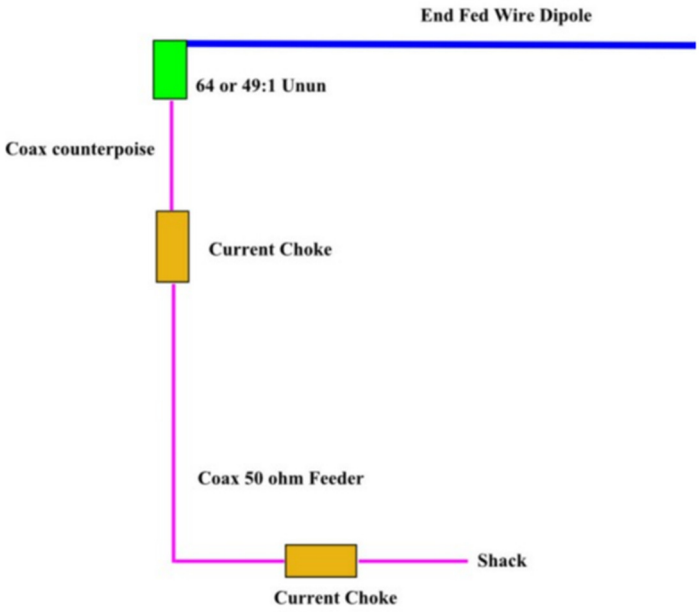
If the feed point is at ground level, then connect a short lead (eg a tenth of longest wavelength) from the

Unun earth terminal to a ground stake to provide the return path.

Alternatively use a horizontal counterpoise again approximately one tenth of longest wavelength used connected to the Unun earth terminal.

However, to prevent the coax also outer acting as a counterpoise, fit a Current Choke in the coax feed very close to the Unun - this precaution also applies when using the rf ground option.

Perhaps an even simpler method is to use the outer braid of coax feed as the counterpoise (approx one ten of the longest wavelength used) with a Current Choke inserted in the coax to terminate the counterpoise section as shown below :-.

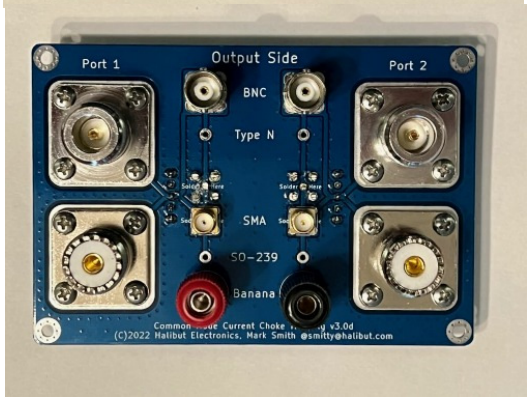


Measurement of the effectiveness of a Current Choke

A good indicator is a plot of Common Mode Current attenuation over the operating range of frequencies. This will need a scanning rf generator and amplitude measuring instrument which can be readily achieved with a NanoVNA.

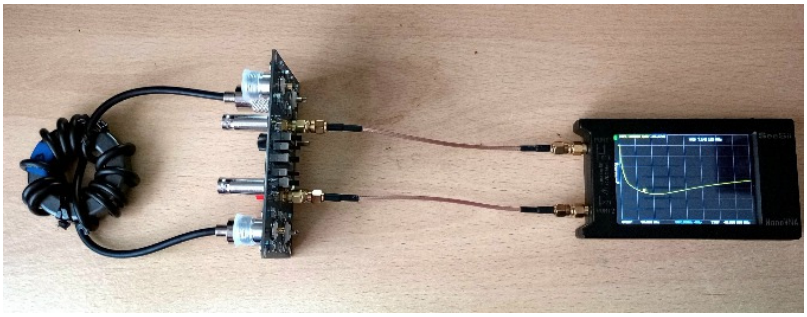
But there is a problem - the NanoVNA rf out feed is within the coax as Differential Current and not on the coax outer where Common Mode Current flows and the attenuation is applied.

Fortunately there is a solution which is an excellent product available from the States - the Halibut Common Mode Current Choke Test Rig - (CMCC Test Rig) - available either ready made or in kit form.



This double sided PCB accepts rf on its input side from a NanoVNA and swaps the rf signal from the coax inner to the coax outer which is then available on the output side to feed the Current Choke under test. The board also contains through calibration standard loads for calibrating the NanoVNA.

Below is a plot showing attenuation against frequency with the magenta line for 11 turns of RG58 on a FT240-52 ferrite ring and the blue trace for 11 turns of RG58 on a FT240-43 ferrite ring (ignore the top blue line).



Attenuation increases downwards and the horizontal frequency scale is from 50kHz to 40 MHz.

As can be seen, the FT240-43 Current Choke offers attenuation in excess of 20dB from 1 MHz to beyond 40 MHz.

Conclusion

Hopefully this article makes sense and answers some of the questions associated with feeding antennas.