MOOSE JAW AMATEUR RADIO CLUB

TESTING DATA FOR: TYPE 31 CORE: 2631801202

SIZE: 1.142" [29.01MM] OD.

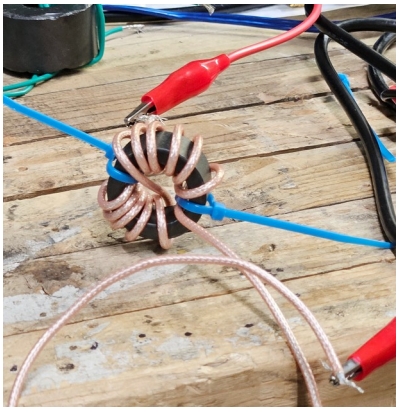
PRICE: $2.13 IN 2025 USE CASE: 1:1 CHOKE

Testing Notes: All tests have been done with a NanoVNA calibrated with alligator clip leads. These are all S21 THRU LOGMAG measurements to determine how much attenuation the core provides for isolation and hindering common mode current.

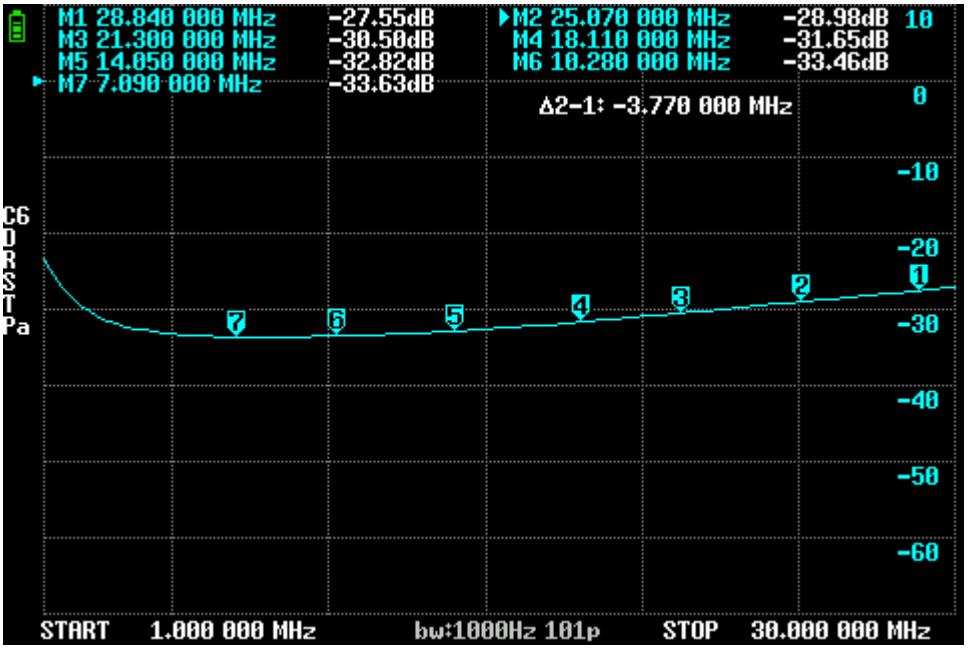
Best Result:
12 Turns of 18awg solid core wire with a cross-over pattern.
Average: -31dB from 40m-10m Bands.

This core is a stellar performer as a common mode current choke. No matter the wrapping wire selection, it consistently provides ~ -30dB attenuation across the 40m-10m amateur bands. The small size of the physical core makes it a great choice for portable work.

TEST 1: 12 TURNS RG316 COAX CROSS-OVER PATTERN

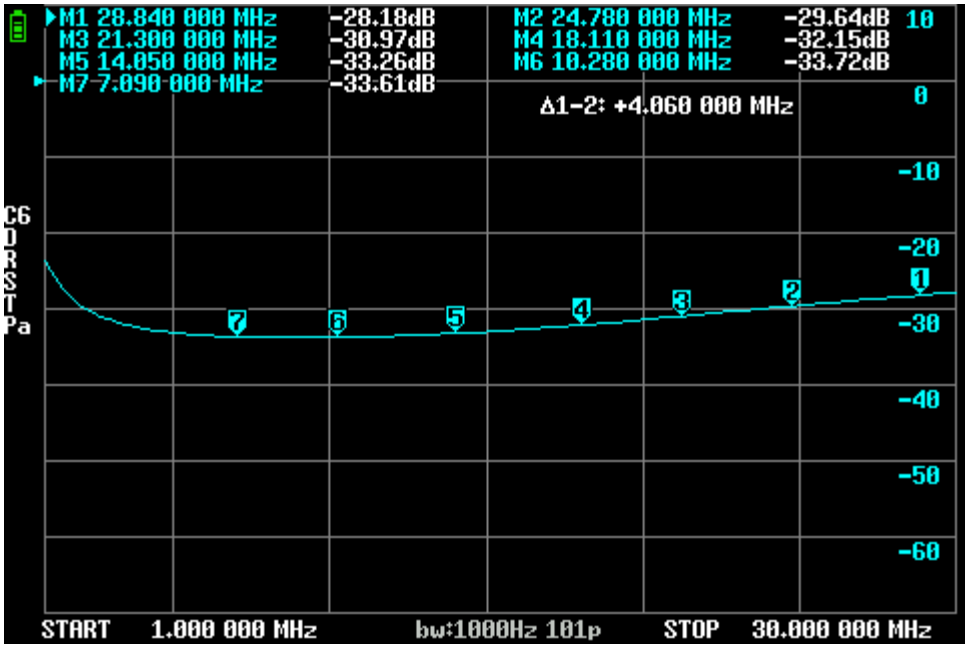


Average Loss: -31dB

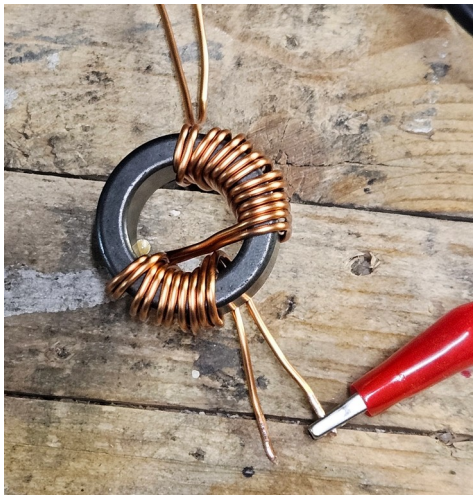


TEST 2: 12 TURNS 20AWG STRANDED SILICONE WIRE CROSS-OVER PATTERN

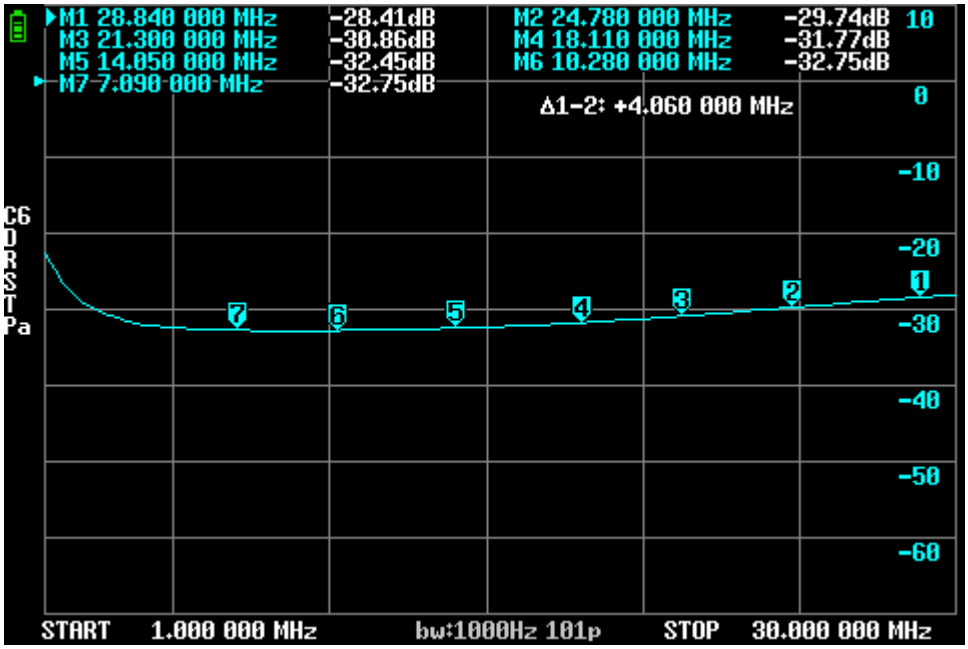
Average Loss: -32dB



TEST 3: 12 TURNS 18AWG ENAMEL WIRE CROSS-OVER PATTERN

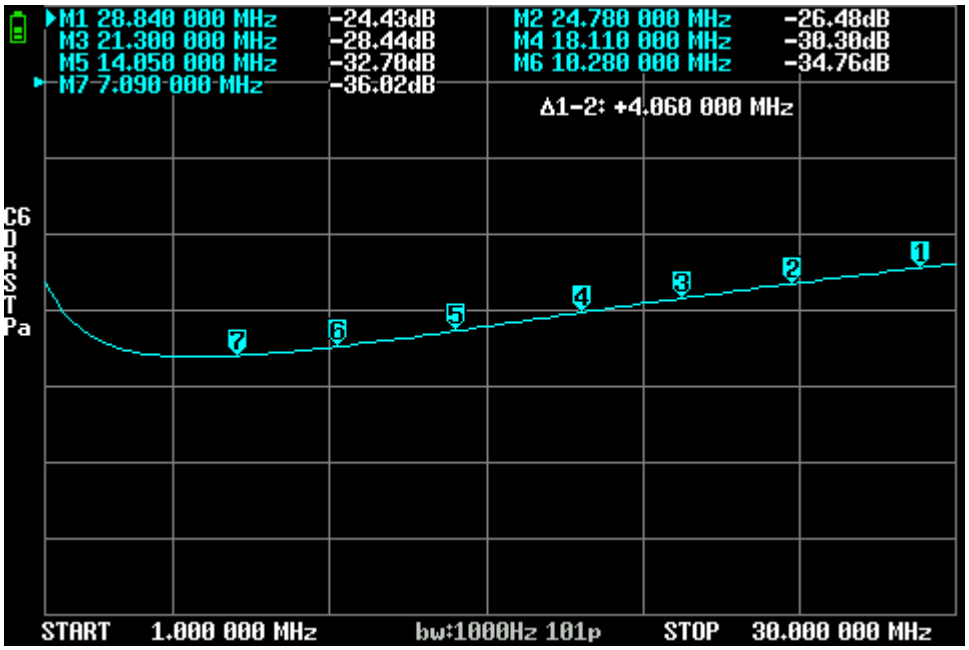


Average Loss: -31dB



TEST 4: 12 TURNS 16AWG STRANDED WIRE CROSS-OVER PATTERN, DOUBLE CORE

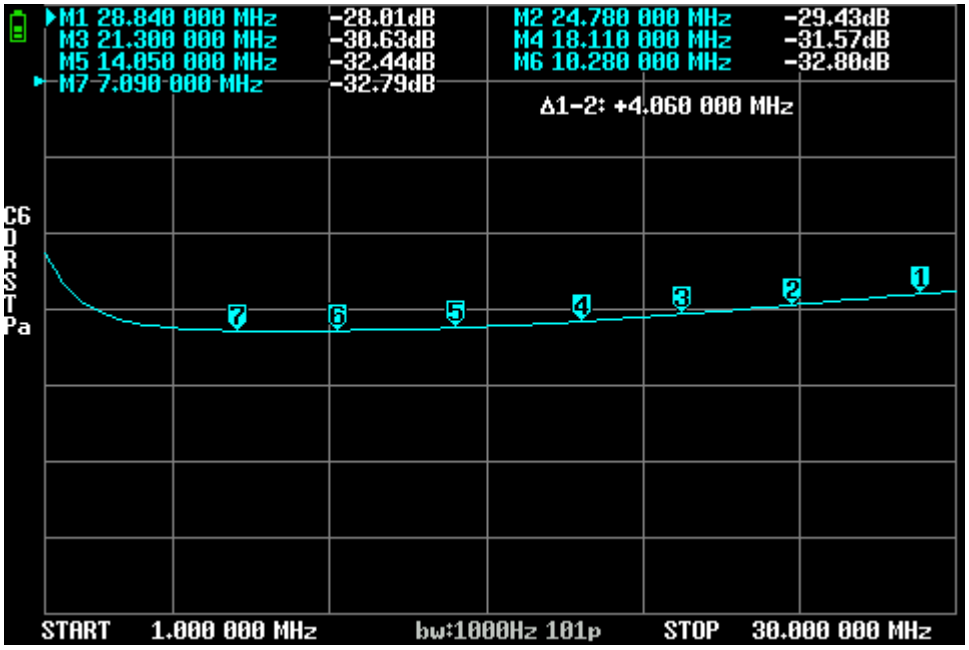
Average Loss: -30dB



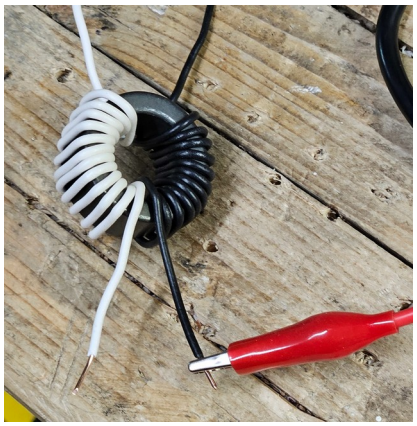
TEST 5: 12 TURNS 18AWG SOLID CORE WIRE CROSS-OVER PATTERN

Average Loss: -31dB

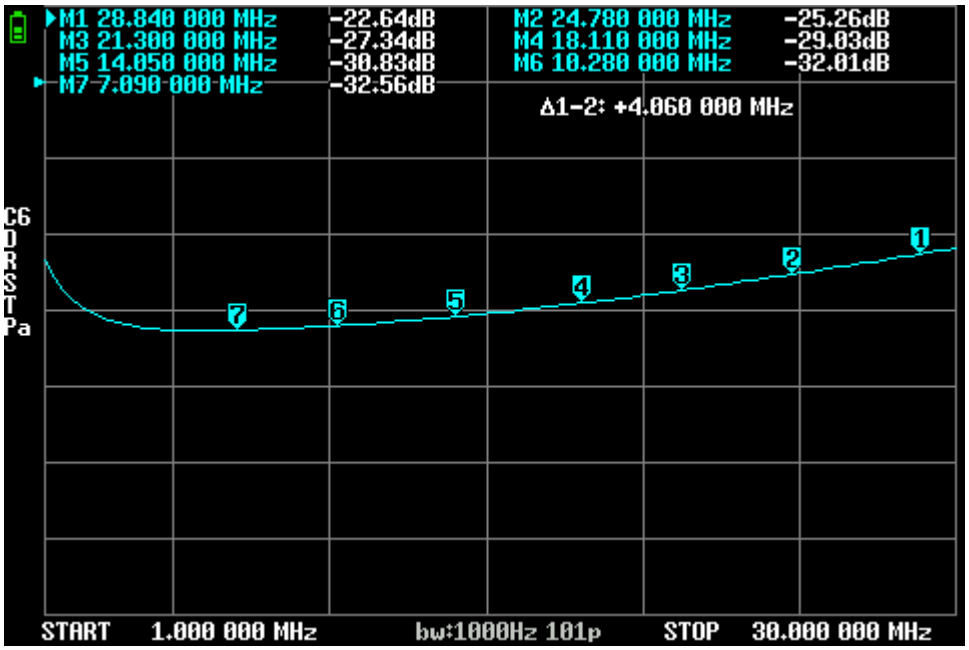
Recommended Design Choice!



TEST 6: 12 TURNS 18AWG SOLID CORE INDEPENDENT WINDINGS

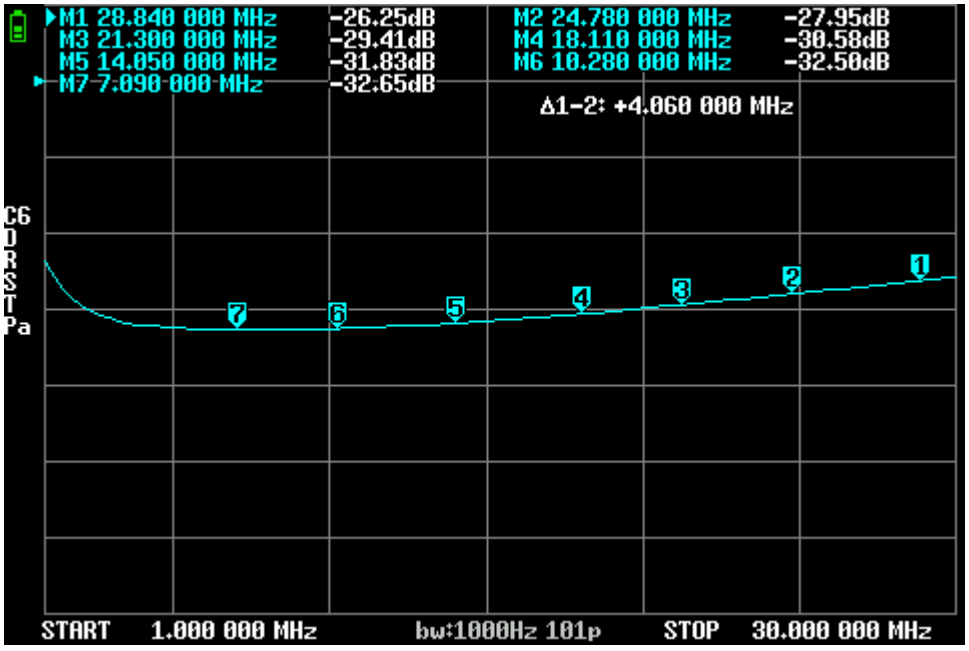


Average Loss: -29dB



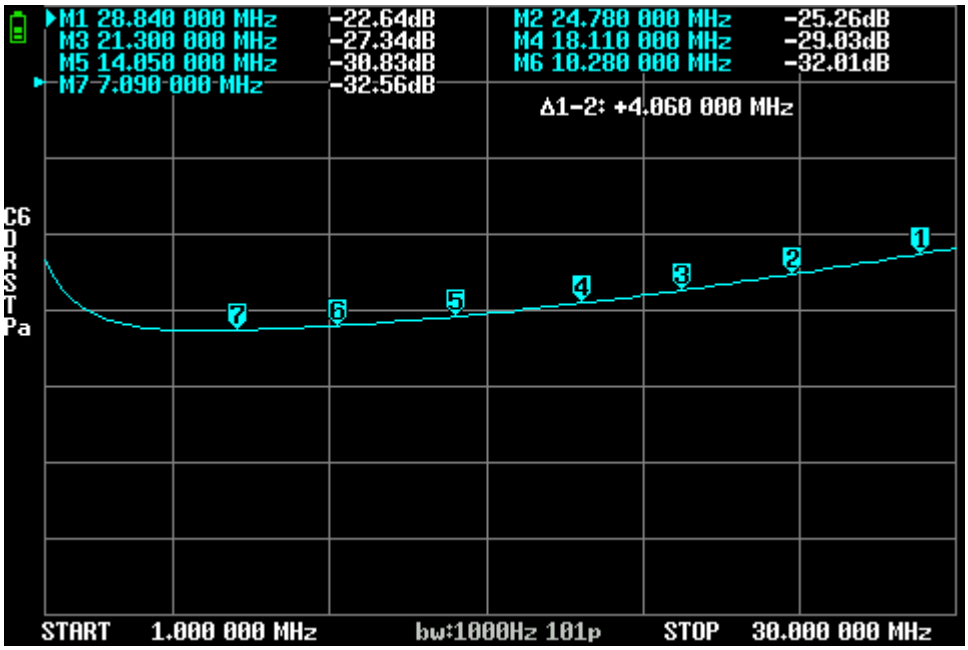
TEST 7: 12 TURNS 18AWG SOLID CORE WIRE CROSS-OVER PATTERN, LOOSELY TWISTED PAIR

Average Loss: -29dB



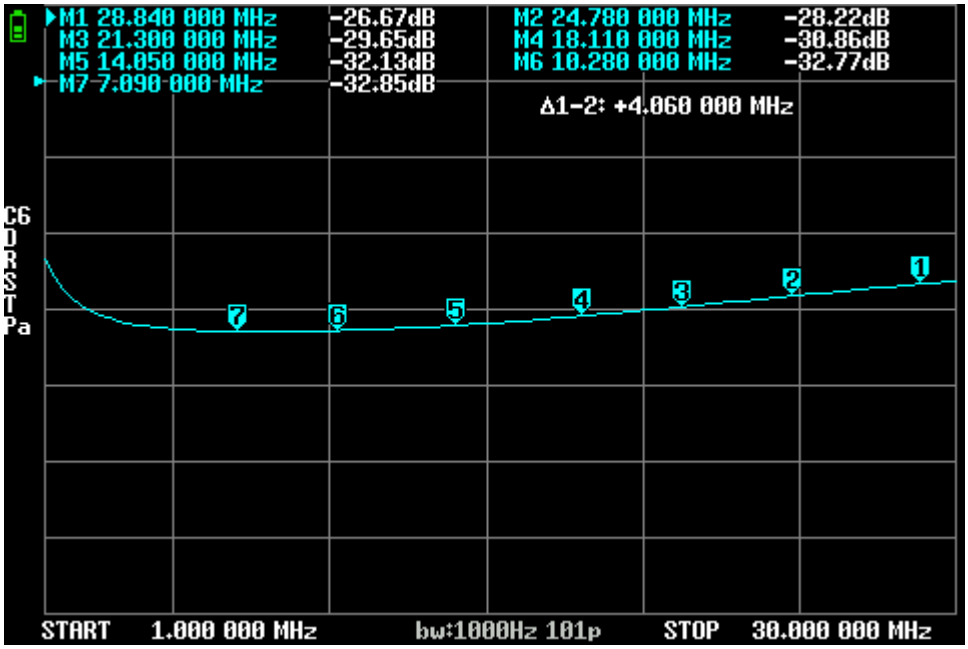
TEST 8: 9 TURNS 18AWG SOLID CORE WIRE CROSS-OVER PATTERN, LOOSELY TWISTED PAIR

Average Loss: -29dB



TEST 9: 12 TURNS 18AWG SOLID CORE WIRE CROSS-OVER PATTERN, TIGHTLY TWISTED PAIR

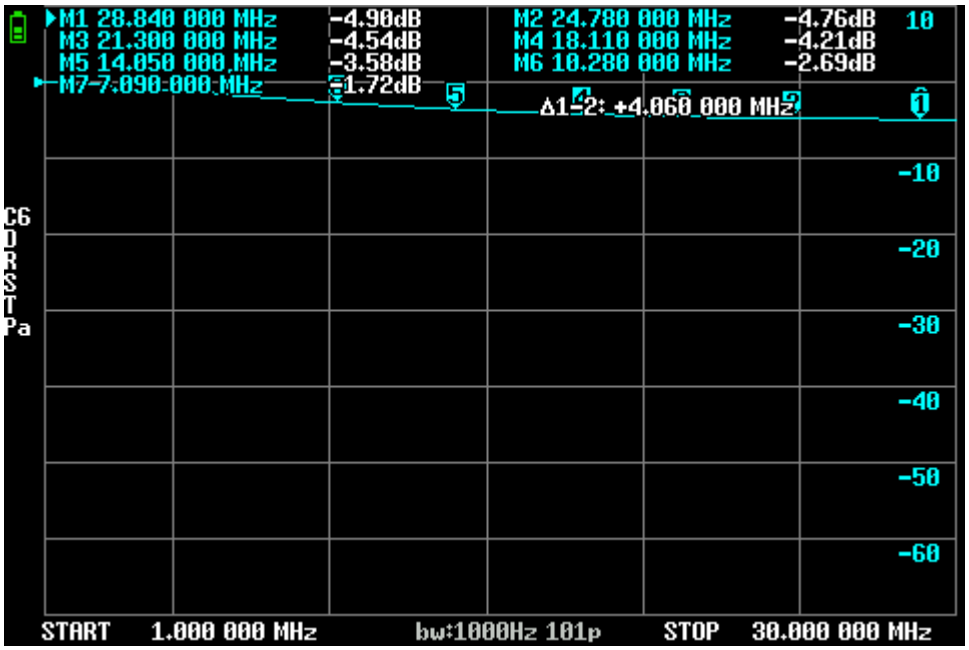
Average Loss: -31dB



TEST 10: 8 TURNS 18AWG SOLID CORE WIRE BISECTIONAL BIFILAR WINDING

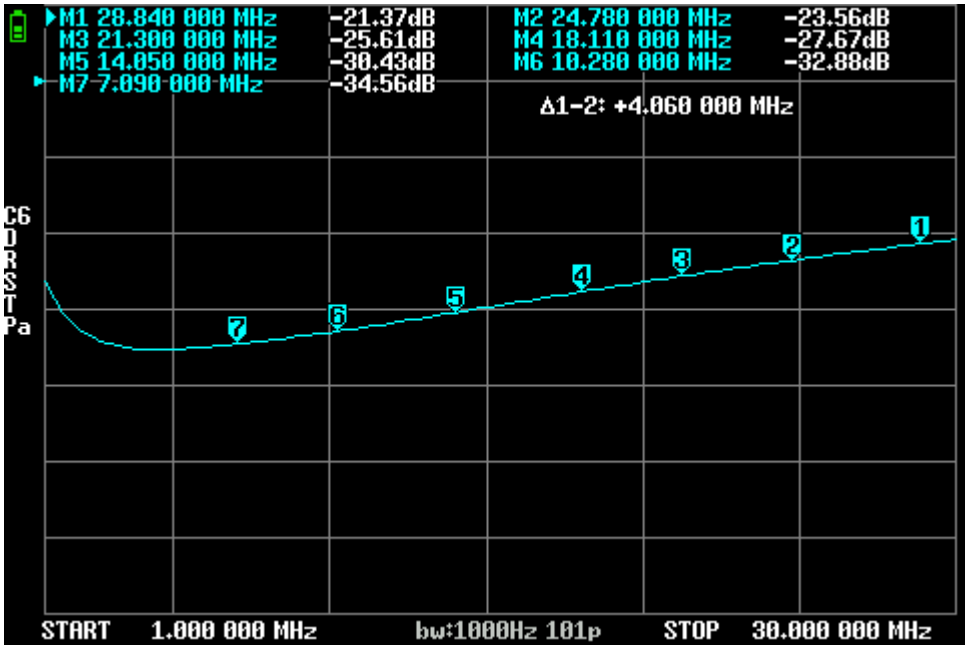
Average Loss: -4dB

> ! These values were checked twice for verification.

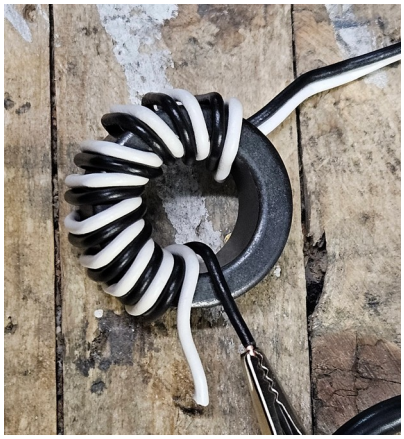


TEST 11: 14 TURNS 18AWG SOLID CORE WIRE TOTAL WRAP

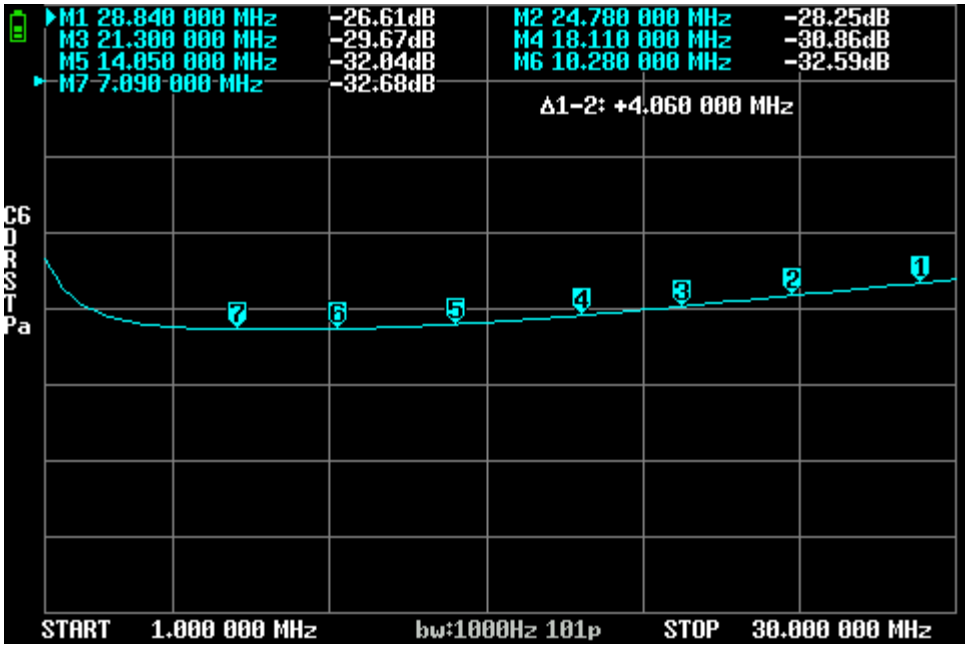
Average Loss: -28dB



TEST 12: 10 TURNS 18AWG SOLID CORE WIRE TOTAL WRAP



Average Loss: -27dB



CONCLUSION:

The Type 31 2631801202 core is a stellar performer as a common mode current choke. No matter the wrapping wire selection or pattern, it consistently provides superb attenuation across the 40m-10m amateur bands. It has best performance under 24MHz, routinely getting -33dB.

The only anomaly in these tests was the 8 turn bisectional bifilar winding pattern. It was checked twice for verification. This design was a terrible performer which is puzzling, as this pattern is becoming the widely accepted ‘default’ for 1:1 chokes.

The recommended design choice was Test 5 with 12 turns of 18awg solid core wire with the cross over. The stranded wire variants did provide slightly more attenuation - possibly due to greater surface area for skin effect(?). However, other research recommends solid core wire.

The physical small size of the core makes it a great choice for portable work.

VE5REV 73 20250202-V1