

CHOKING BALUN FOR HF BANDS

Choking balun for HF and upper MF bands. (1.5MHz - 30MHz).

Requiring a choking balun to isolate the potential feed-line common mode RF on the coax cable for HF/MF bands 1.5MHz - 30MHz. A simple coax cable wound on to a ferrite toroidal core was chosen.

- Prevents unwanted RFI by eliminating feedline common mode currents and radiation
- All power goes to the antenna, improving efficiency
- Reduces noise or EMI picked-up by your coax shield
- Power is balanced between driven elements of antenna

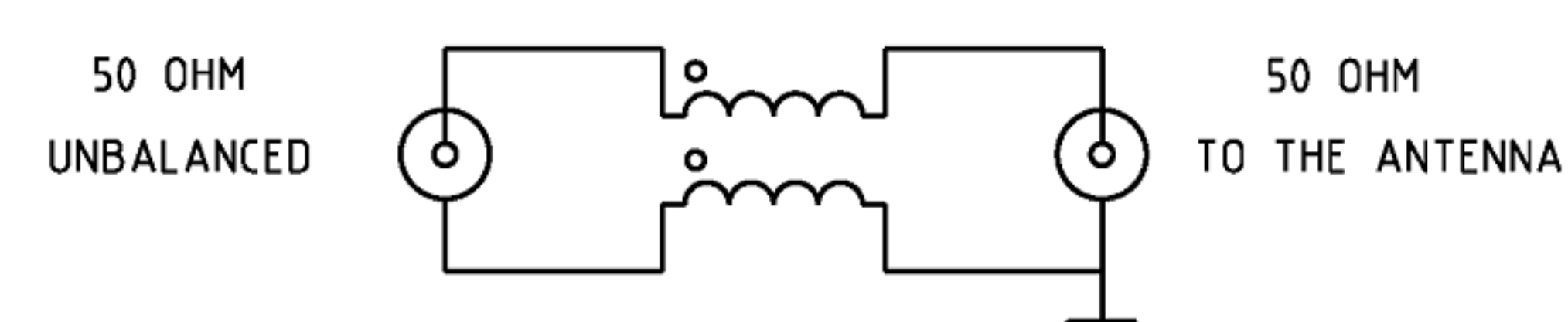


Figure 1 Schematic of the 1:1 choking balun

Type	Choking Balun
Ratio	1:1
Frequency Range	1.0 - 30MHz
Choking Impedance	1k Ohms (-21dB) minimum. Ref: Figure 3
Core Used	FT240-43 Ferrite Toroid Core
Number of turns	14 (7 + 7). Ref: Figure 2
SWR	1:1 Ref: Figure 5

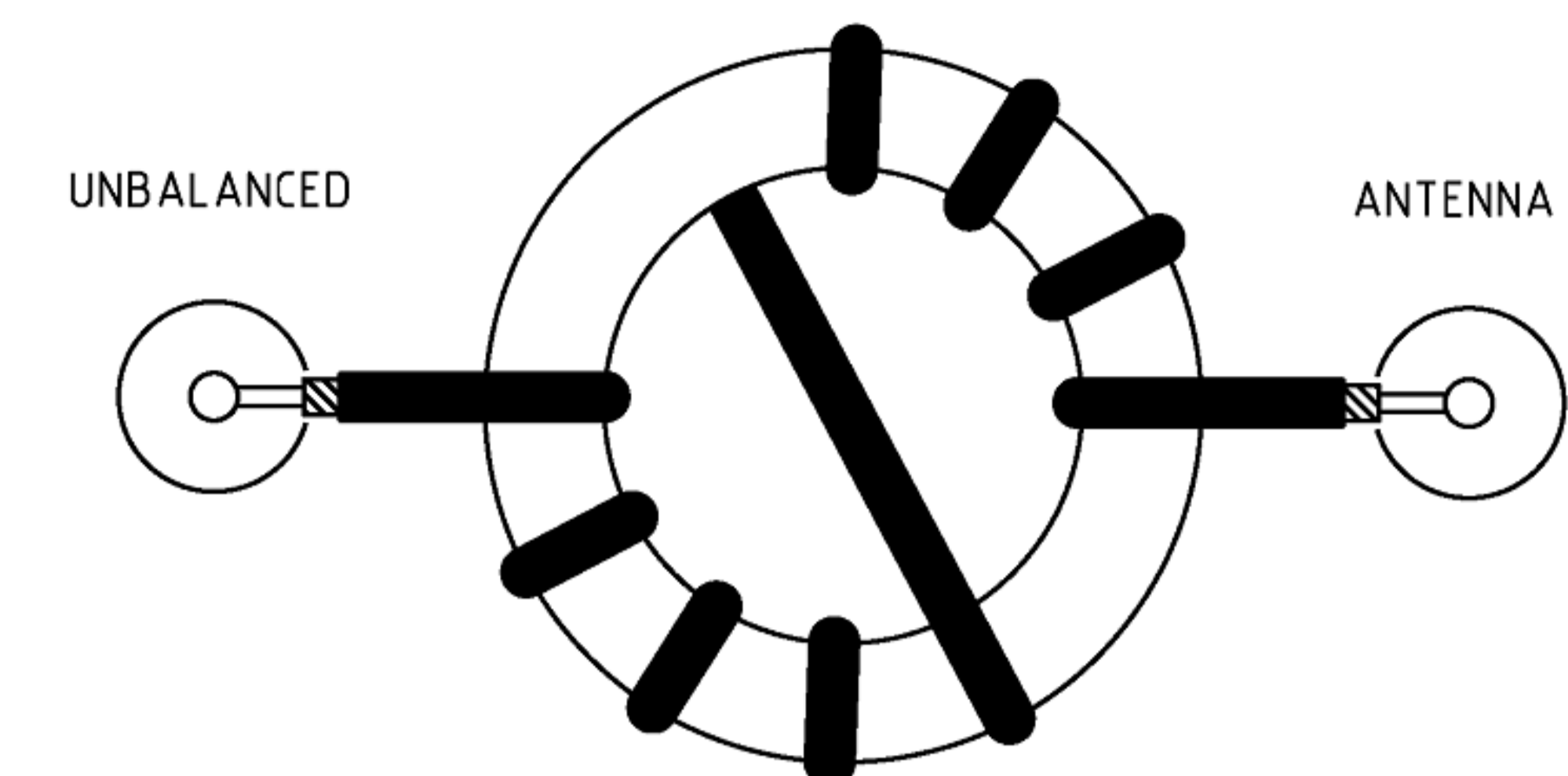


Figure 2 Winding details of the 1:1 choking balun

Construction

The construction was simply to wind 14 turns of RG58 coax onto a FT240-43 Ferrite Toroid Core. The result of 14 turns achieved an average of 40uH lumped value inductive reactance to common mode RF currents from approximately 1.0MHz to 30MHz.

Parts list

- FT240-43 Ferrite Toroid Core
- About 1.0mtr of RG58 coax.



Photo 1 Choking balun assembled.

Testing

The AIM 4170C antenna analyser recorded in Figure 3 show the Impedance as measured in the coax shield presents a minimum of 1000 Ohms from 1.0MHz to about 30MHz and much greater for the 1.8MHz to 14MHz amateur radio bands.

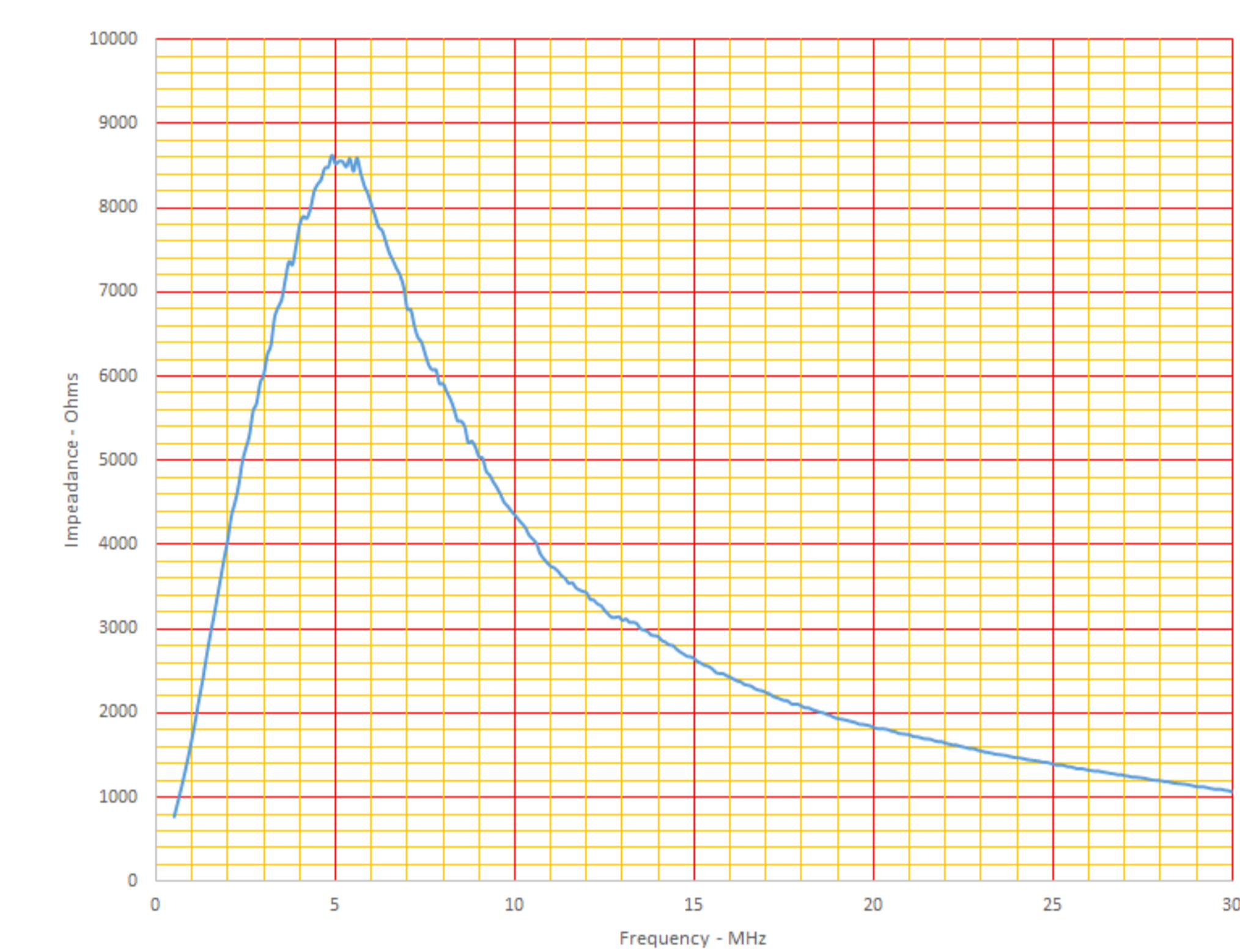


Figure 3 The evaluation of the choking impedance of the balun over a bandwidth from 1.0MHz- 30MHz.

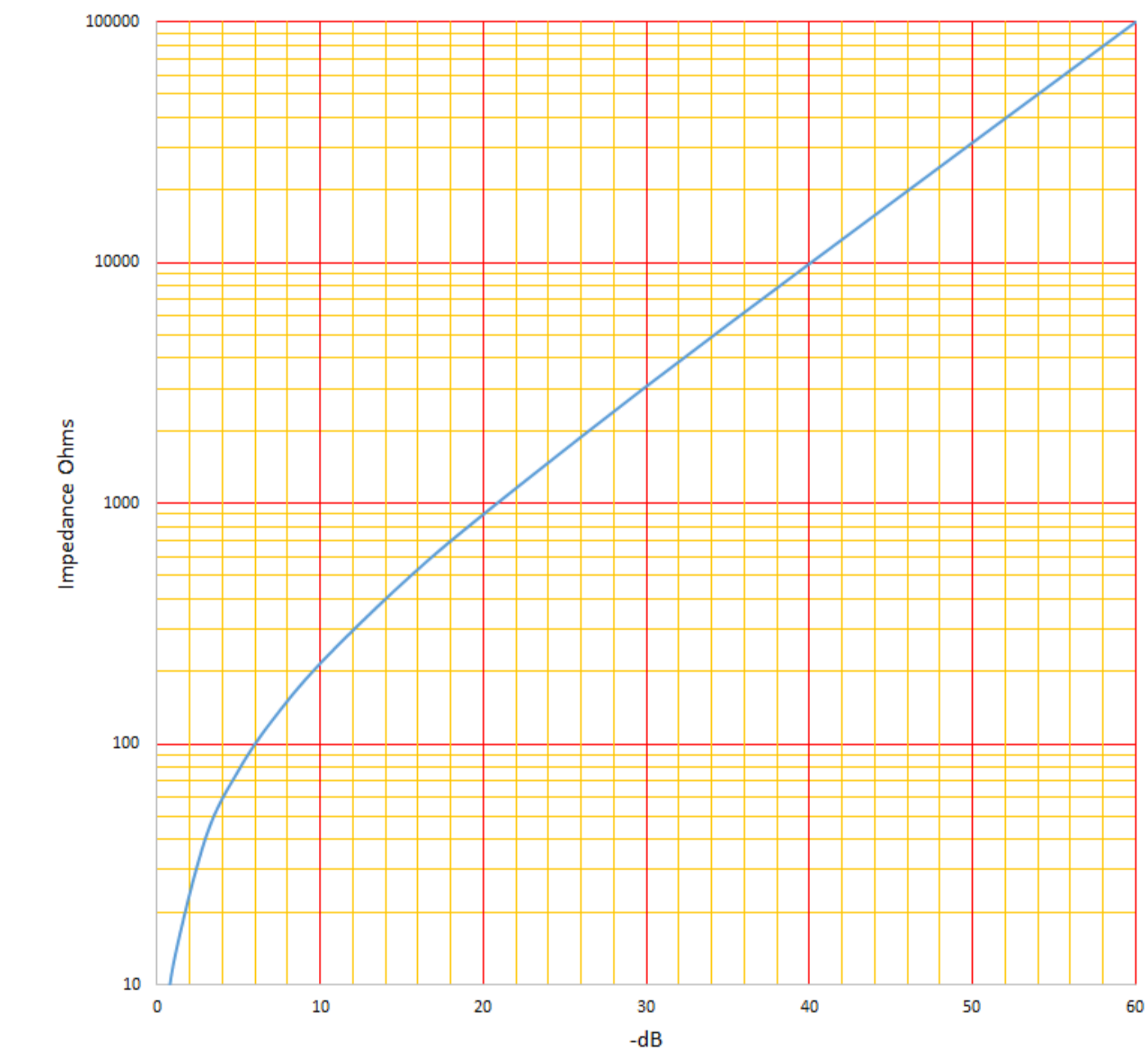


Figure 4 Choking impedance to dB of choking. 20dB attenuation should be considered the minimum.

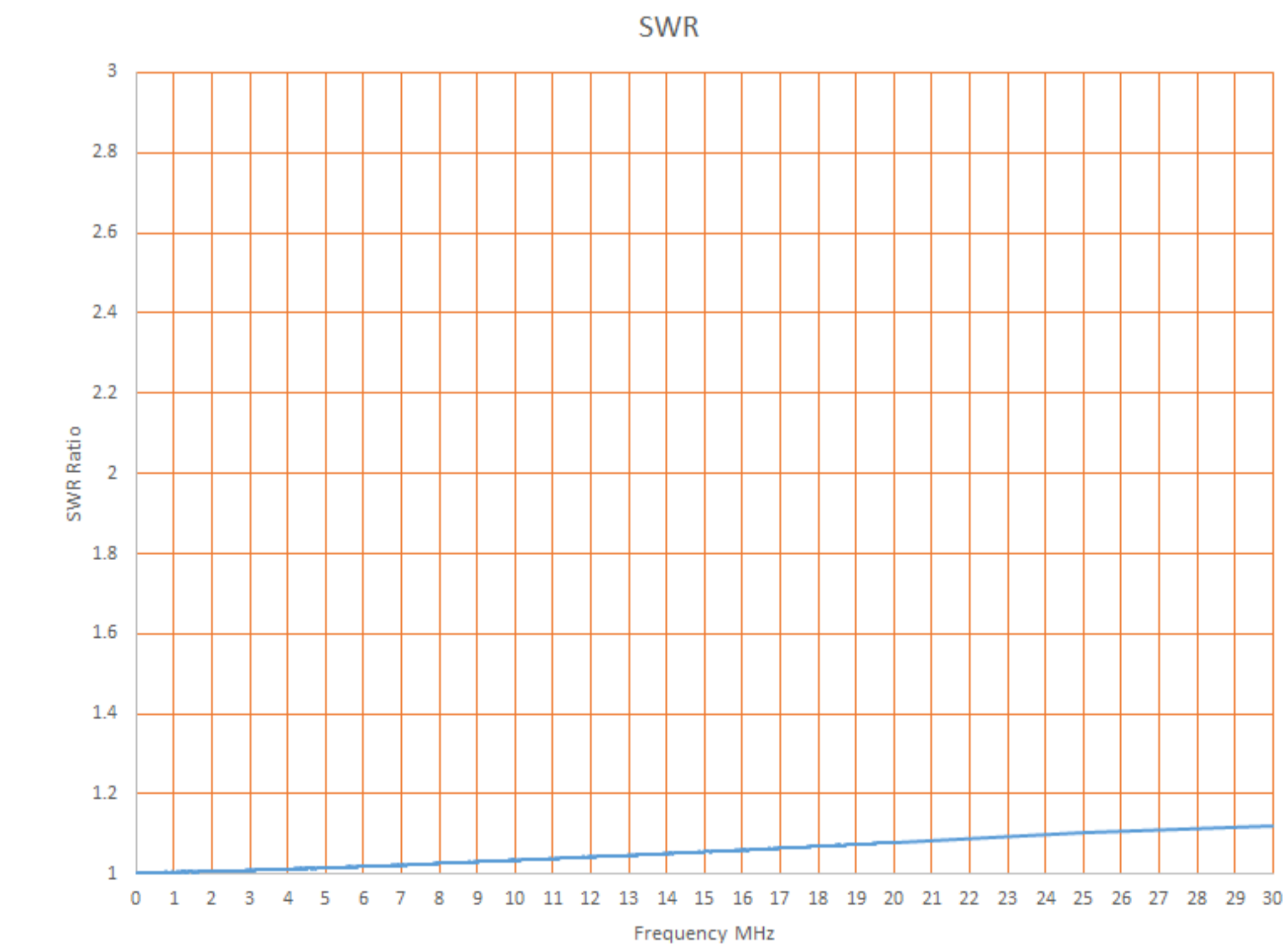


Figure 5 SWR from 0.1MHz- 30MHz

Also see other baluns and ununs:

- [BALUN 1:1 CHOKE & 1:4 BALUN](#) HF ladder feed-line to coaxial cable combination choke and 1:4 balun. (0.1MHz - 30MHz).
- [BALUN 1:1 CHOKING](#) Choking balun for lower HF and MF bands. (200kHz - 10MHz).
- [CHOKING 1:1 BALUN - HF BANDS](#) Reinsert choking balun. (1.0MHz - 30MHz). FT240-43 Ferrite Toroid Core.
- [CHOKING 1:1 BALUN - HF BANDS](#) Reinsert choking balun. (1.5MHz - 30MHz). FT140-43 Ferrite Toroid Core.
- [CHOKING 1:1 BALUN - LOW VHF BAND](#) Choking balun. (10MHz - 60MHz). FT140-43 Ferrite Toroid Core.
- [BALUN 1:1 CURRENT](#) 1:1 Guanella Current balun using a L15 ferrite core (1.8 - 30MHz).
- [BALUN 1:4 CURRENT](#) 1:4 Guanella Current balun using a L15 ferrite core (1.8 - 30MHz).
- [BALUN 1:4 SINGLE CORE CURRENT](#) 1:4 Guanella Current balun, single FT240-43 ferrite toroid cores. (0.3MHz - 30MHz).
- [BALUN 1:1 VOLTAGE](#) 1:1 Ruthroff voltage balun using a T-200-2 powdered iron toroid core (1.8 - 30MHz).
- [BALUN 4:1 VOLTAGE](#) 4:1 Ruthroff voltage balun using a T-200-2 powdered iron toroid core (1.8 - 30MHz).
- [BALUN 6:1 VOLTAGE - VERSION 1](#) 6:1 Voltage balun using a L15 ferrite toroid core (1.8 - 30MHz).
- [BALUN 6:1 VOLTAGE - VERSION 2](#) 6:1 Voltage balun using a FT140-43 Ferrite Toroid Core (1.8 - 30MHz)
- [BALUN 9:1 VOLTAGE - VERSION 1](#) 9:1 Voltage balun using a L15 ferrite toroid core (1.8 - 30MHz).
- [BALUN 9:1 VOLTAGE - VERSION 2](#) 9:1 Voltage balun using a FT140-43 Ferrite Toroid Core (0.5 - 60MHz).
- [UNUN 9:1 VOLTAGE](#) 9:1 voltage unun using a T-200-2 powdered iron toroid core (1.8 - 30MHz).
- [UNUN 9:1 VOLTAGE VERSION 2](#) 9:1 voltage unun using a L15 ferrite core (1.8 - 30MHz).
- [UNUN 9:1 VOLTAGE VERSION 3](#) 9:1 voltage unun using a FT140-43 ferrite core (0.5 - 60MHz).

[TOP OF PAGE](#)

Page last revised 04 July 2023

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