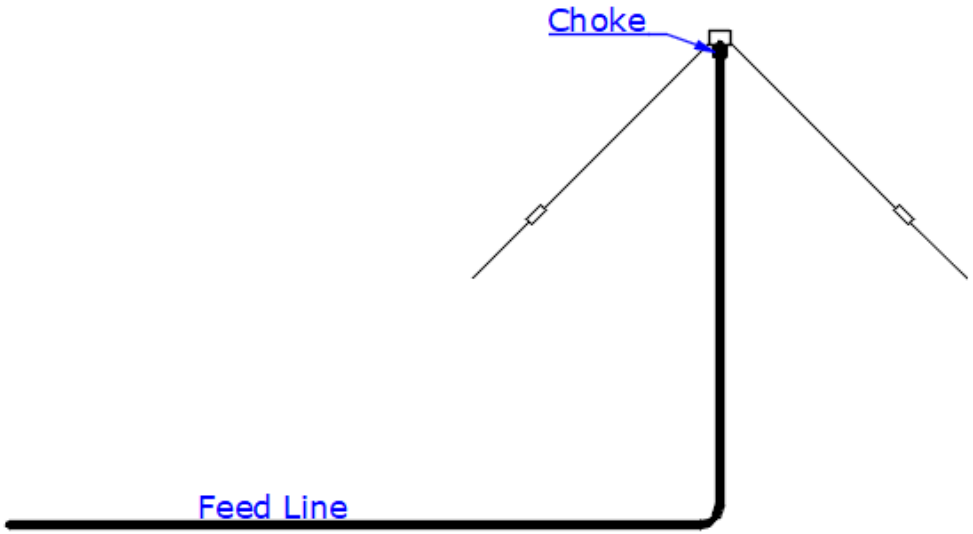
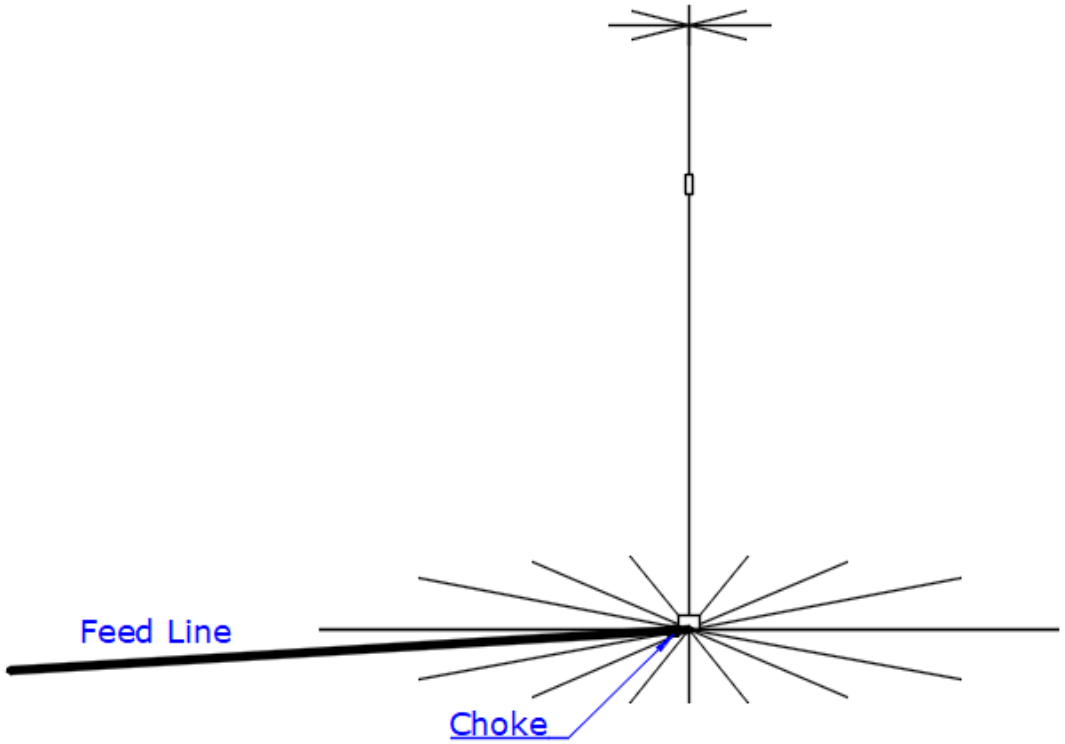
CHOKE QRO per Bande Basse

By iw2fnd Lucio

POSIZIONE DEL CHOKE



Balanced Antenna



Unbalanced Antenna

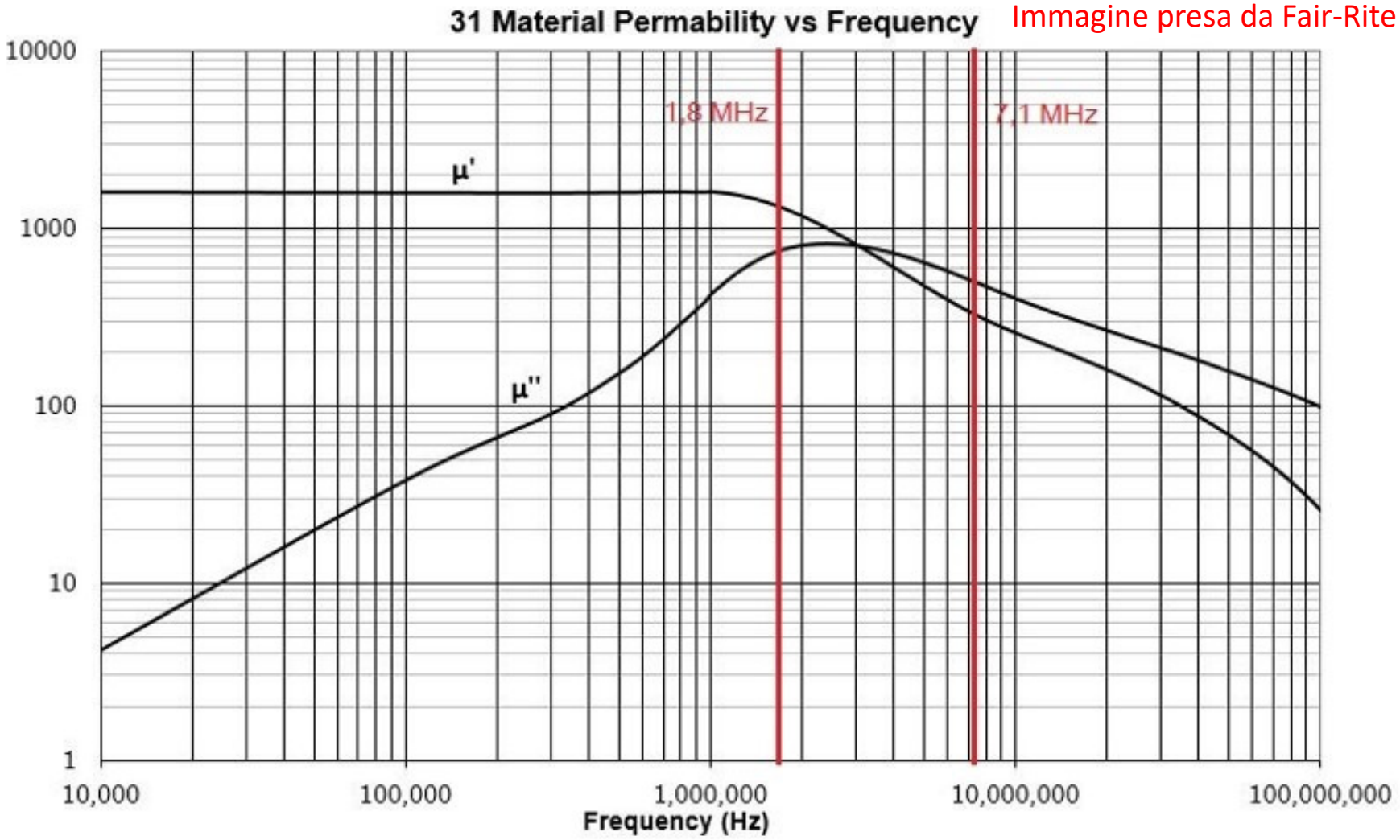
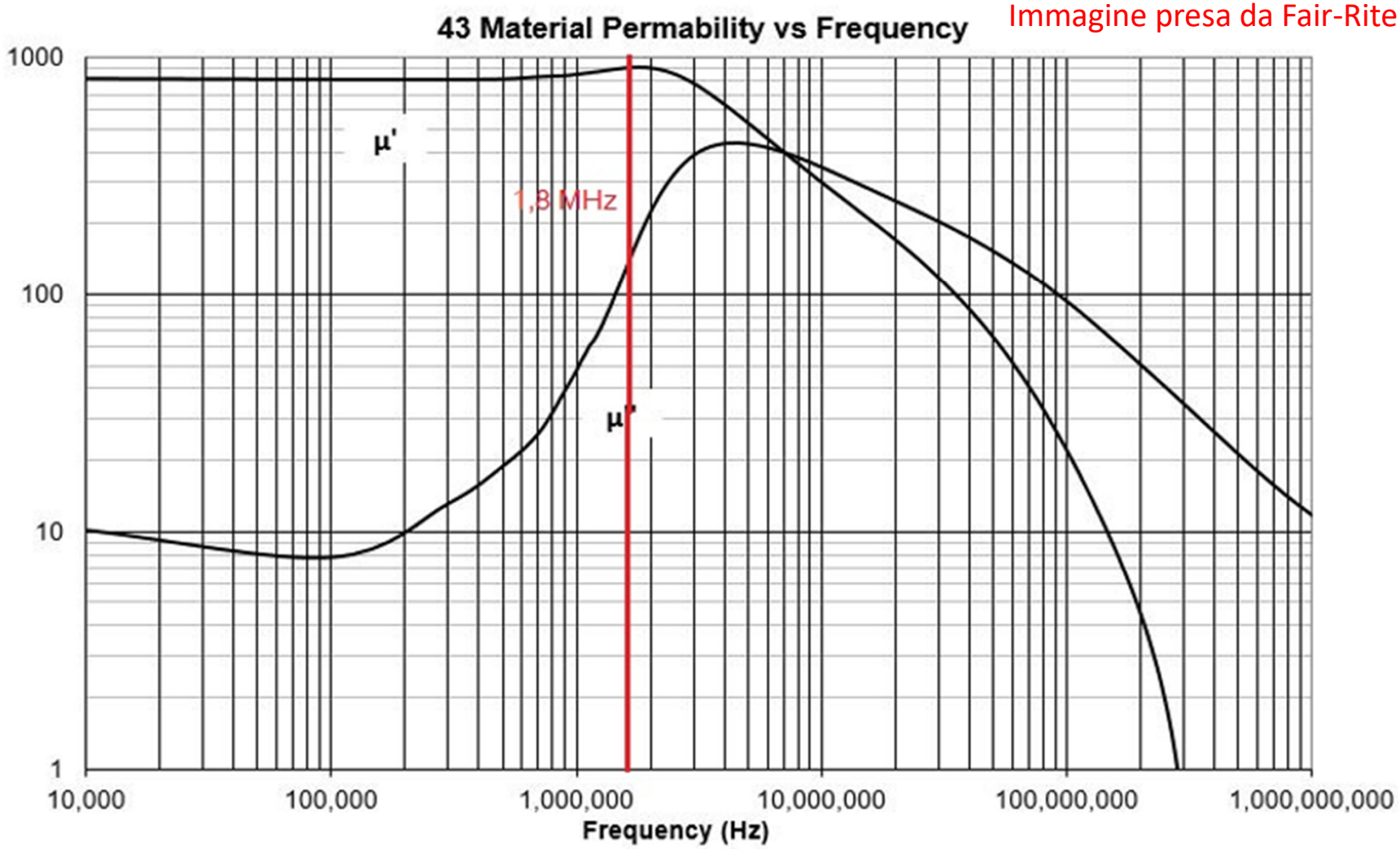

31 Material Permability vs Frequency
Immagine presa da Fair-Rite
10000
1000
100
10
1
1,8 MHz
7,1 MHz
μ'
μ''
10,000
100,000
1,000,000
10,000,000
100,000,000
Frequency (Hz)

Immagine presa da Fair-Rite



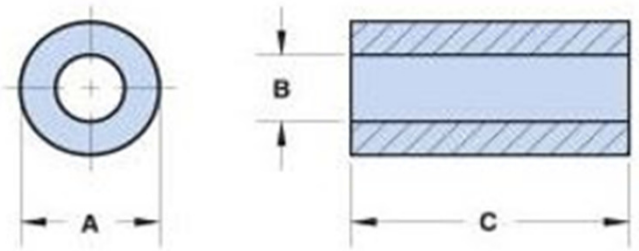
SCELTA DELLA FORMA

Immagini prese da Fair-Rite

Part Number: 2631626202

31 ROUND CABLE CORE

31 Material®



Weight: 278 (g)

Dim	mm	mm tol	nominal inch	inch misc.
A	50.8	±1.30	2	_
B	25.4	±0.80	1	_
C	38.1	±0.75	1.5	_

SCELTA DELLA FORMA

Formula dell'induttanza di un solenoide

$$L = \mu\, N^2 \frac{A_e}{l_e} \text{ [H]}$$

Formula di calcolo dell'area attraversata dal flusso magnetico in un toroide

$$A_e = h \frac{ln^2(\frac{De}{Di})}{2\left(\frac{1}{D_i} - \frac{1}{D_e}\right)} \text{ [mm}^2\text{]}$$

Formula di calcolo del percorso del flusso magnetico in un toroide

$$l_e = \pi \frac{ln(\frac{De}{Di})}{\left(\frac{1}{D_i} - \frac{1}{D_e}\right)} \text{ [mm]}$$

SCELTA DELLA FORMA

$$L = \mu N^2 \frac{A_e}{l_e} \text{ [H]}$$

Ferrite	Magnetic Area A_e [cmq]	Path Length l_e [cm]	Ratio A_e/l_e
2631626202	4,65	11,06	0,42
FT240-31	1,58	14,5	0,11
2xFT240-31	3,16	14,5	0,22
3xFT240-31	4,74	14,5	0,33
4xFT240-31	6,32	14,5	0,44

SCELTA DEL COASSIALE

Power Matrix			
Calculation: typical Attenuation [formula: (a*f^0.5 + b*f)] and maximum Power CW [formula: (p/f^0.5)]			
a coefficient typical =	**0.296**	b coefficient typical =	**0.02**
fmax =	**33**	P at 1 GHz =	**457**
Frequency	**Nom. attenuation**	**Nom. attenuation**	**CW power**
GHz	**(dB/m)**	**(dB/ft)**	**(W)**
	sea level 25°C ambient temperature	sea level 25°C ambient temperature	sea level 40°C ambient temperature
0.20	0.136	0.042	1022
0.40	0.195	0.059	723
0.60	0.241	0.074	590
0.80	0.281	0.086	511
1.00	0.316	0.096	457

$$P_{CW} = \frac{P_{1G}}{\sqrt{f}} = \frac{457}{\sqrt{0{,}03}} = 2638\ W$$

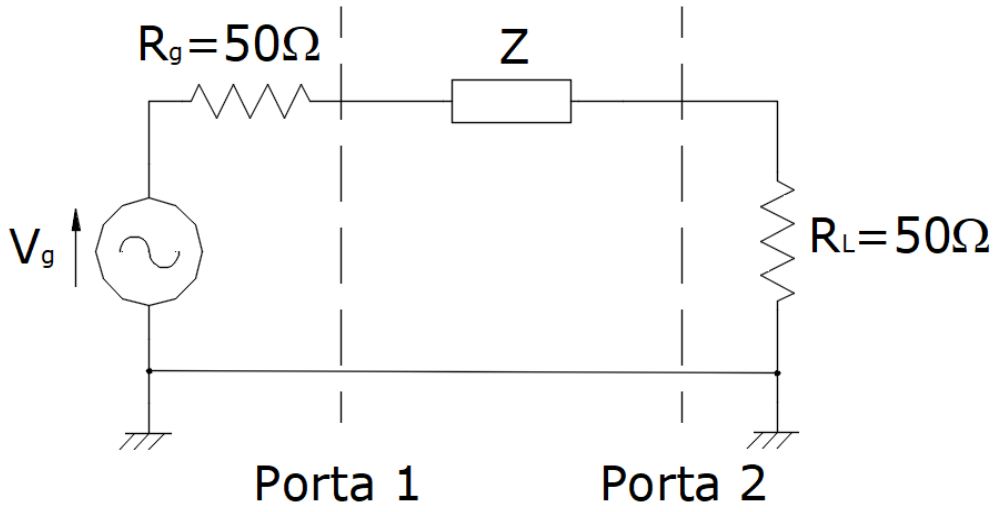
SCELTA DEL COASSIALE

Construction			
Component	**Material**	**Detail**	**Diameter**
Centre conductor	Aluminium, Copper cladded, Silver plated	Wire	1.15 mm
Dielectric	Low density fluorine polymer		3.07 mm
Outer conductor	Copper, Silver plated	Wrapped foil, 100%	3.19 mm
Outer conductor	Copper, Silver plated	Braid, 84%	3.55 mm
Jacket	FEP (Fluorinated ethylene propylene)	RAL 5015 - bl	4.2 mm +/- 0.1 mm

Electrical data	
Impedance	50 Ω +/-2Ω
Operating frequency	≤ 33 GHz
Capacitance	80 pF/m
Velocity of signal propagation	84 %
Signal delay	4 ns/m
Screening effectiveness	90 dB at frequency 0.1 GHz ... 18GHz
Insulation resistance	1000000 MΩ*m
Operating Voltage (at sea level)	≤ 0.5 kVrms
Phase vs temperature	300 ppm at temperature -55 ... 125 °C
Test voltage (50 Hz/1 min)	≤ 1 kVrms

Mechanical data	
Weight	approx. 29 g/m
Static bending radius	≥ 12 mm
Dynamic bending radius	≥ 40 mm

CALCOLO DELL'IMPEDENZA



$$|Z_{min}| = 100\left(10^{\frac{IL_{min}}{20}} - 1\right) = 100\left(10^{\frac{30}{20}} - 1\right) = 3062\ \Omega$$