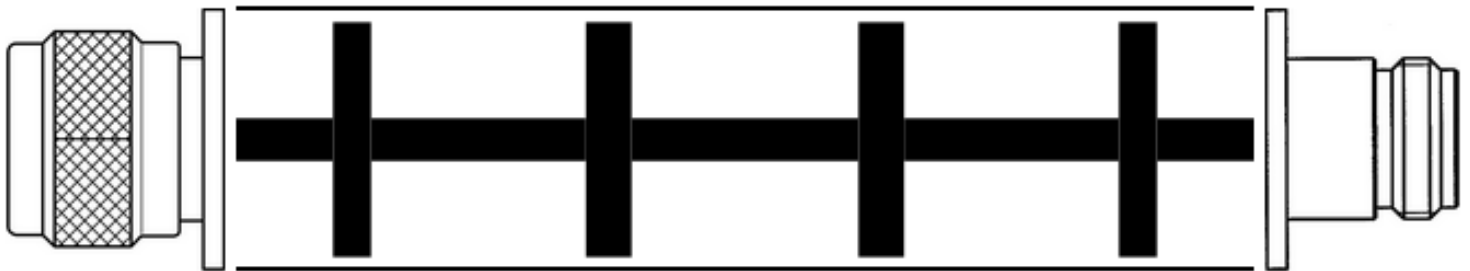


Stepped Impedance Coaxial Lowpass Filter Designer

An electronics project - for the mechanic in you :-)



Drawing not to scale. Just for illustration.

Cutoff Frequency	<input type="text" value="2500"/>	MHz
Order	<input type="text" value="9"/>	<input type="button" value="+"/> <input type="button" value="-"/>
Passband Ripple	<input type="text" value="0.01"/>	dB
First Element is	<input type="text" value="inductive"/>	▼
System Impedance	<input type="text" value="50"/>	Ω
Form of the Coax	<input checked="" type="radio"/> Round tube, round center	▼
Dielectrics, rel. Permittivity	<input type="text" value="Air, ε = 1.001"/>	▼
Tube inner Diameter / Width	<input type="text" value="6"/>	<input type="text" value="mm"/> ▼
Smaller Diameter (ind.)	<input type="text" value="1.00"/>	<input type="button" value="+ 5%"/> <input type="button" value="- 5%"/> (High Impedance)
Larger Diameter (cap.)	<input type="text" value="5.50"/>	<input type="button" value="+ 5%"/> <input type="button" value="- 5%"/> (Low Impedance)
<input type="button" value="CALCULATE"/>		

Stepped Impedance Coaxial Lowpass Filter Designer
[https://www.changpuak.ch/electronics/
Stepped_Impedance_Lowpass_Coax.php](https://www.changpuak.ch/electronics/Stepped_Impedance_Lowpass_Coax.php)
Version : 09. November 2014

Cutoff Frequency : 2500 MHz
System Impedance : 50 Ohm
Low Impedance : 5.21 Ω , cap.
High Impedance : 107.38 Ω , ind.
Order of Filter : 9
Filter Topology : Chebyshev, 0.0100 dB
Return Loss, S11 : 26.44 dB (approx)
Tube is round. Center is round.
Tube inner diam. / width : 6.00 mm, respectively 0.2362
inch
Overall Length : 76.0 mm, respectively 2.9934 inch
Depending on your connectors, you may need additional
length !

Section #0
Z (Ω): 50.0
Length : as required ...
Diameter : 2.61 mm, respectively 0.1027 inch

Section #1
Z (Ω): 107.38
 β^*l (deg) : 21.73
Length : 7.24 mm, respectively 0.285 inch
Diameter : 1.00 mm, respectively 0.039 inch
G[1] : 0.8145

Section #2
Z (Ω): 5.21
 β^*l (deg) : 8.53
Length : 2.84 mm, respectively 0.112 inch
Diameter : 5.50 mm, respectively 0.217 inch
G[2] : 1.4271

Section #3
Z (Ω): 107.38
 β^*l (deg) : 48.14
Length : 16.05 mm, respectively 0.632 inch
Diameter : 1.00 mm, respectively 0.039 inch
G[3] : 1.8044

Section #4
Z (Ω): 5.21
 β^*l (deg) : 10.23
Length : 3.41 mm, respectively 0.134 inch
Diameter : 5.50 mm, respectively 0.217 inch

G[4] : 1.7125

Section #5
Z (Ω): 107.38
 β^*l (deg) : 50.84
Length : 16.95 mm, respectively 0.667 inch
Diameter : 1.00 mm, respectively 0.039 inch
G[5] : 1.9058

Section #6
Z (Ω): 5.21
 β^*l (deg) : 10.23
Length : 3.41 mm, respectively 0.134 inch
Diameter : 5.50 mm, respectively 0.217 inch
G[6] : 1.7125

Section #7
Z (Ω): 107.38
 β^*l (deg) : 48.14
Length : 16.05 mm, respectively 0.632 inch
Diameter : 1.00 mm, respectively 0.039 inch
G[7] : 1.8044

Section #8
Z (Ω): 5.21
 β^*l (deg) : 8.53
Length : 2.84 mm, respectively 0.112 inch
Diameter : 5.50 mm, respectively 0.217 inch
G[8] : 1.4271

Section #9
Z (Ω): 107.38
 β^*l (deg) : 21.73
Length : 7.24 mm, respectively 0.285 inch
Diameter : 1.00 mm, respectively 0.039 inch
G[9] : 0.8145

Section #10
Z (Ω): 50.0
Length : as required ...
Diameter : 2.61 mm, respectively 0.1027 inch