Custom Three-Way Crossover Network Design

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3-Way Crossover Network

Low-Pass (LP) Filter: 1 required
  Type: 2nd-Order All-Pass (APC)
  Desired Corner Frequency: 400 Hz
Band-Pass (BP) Filter: 1 required
  Type: 2nd-Order All-Pass (APC)
  Desired Lower Corner Freq: 400 Hz
  Desired Upper Corner Freq: 3000 Hz
High-Pass (HP) Filter: 1 required
  Type: 2nd-Order All-Pass (APC)
  Desired Corner Frequency: 3000 Hz
C1 = 6.8 µF, Polypropylene, 0.0062 ohms
C2 = 50 µF, Polypropylene, 0.00233 ohms
C3 = 2 µF, Polypropylene, 0.0109 ohms
C4 = 27 µF, Polypropylene, 0.00312 ohms
L1 = 0.4 mH, Air Core (#16), 0.296 ohms
L2 = 5 mH, Air Core (#16), 0.805 ohms
L3 = 0.5 mH, Air Core (#16), 0.308 ohms
L4 = 0.8 mH, Air Core (#16), 0.342 ohms
R1 = 2.4 ohms (R1+Rp1 = 3.4 ohms)

Tweeter

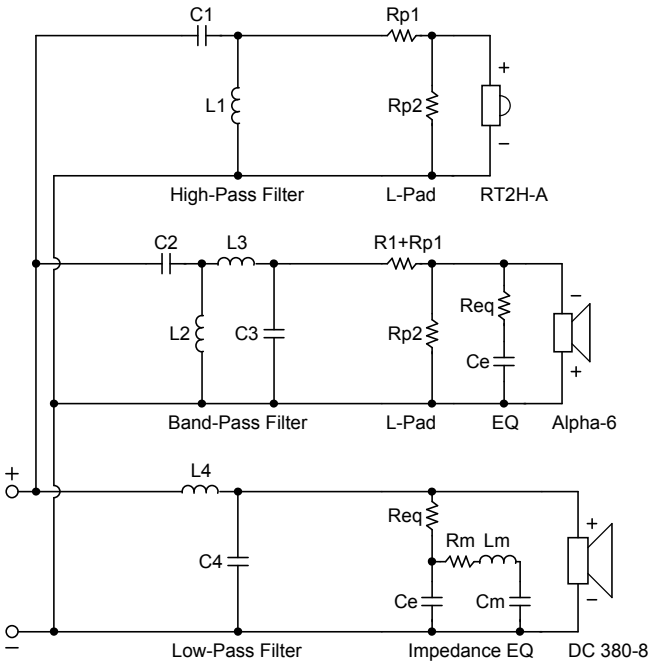
4.82 dB L-Pad
Rp1 = 3 ohms
Rp2 = 10 ohms

Midrange

Impedance EQ
Req = 7 ohms
Ce = 4 µF
1.86 dB L-Pad
Rp1 = 1 ohms
Rp2 = 10 ohms

Woofer

Impedance EQ
Req = 6 ohms
Ce = 80 µF
Rm = 1 ohms
Cm = 2.7 mF
Lm = 18 mH



File: Loren42 three way.xo3

Tweeter Properties

--Driver Description--
Name: RT2H-A
Type: Standard one-way driver
Company: Hi-Vi Research
--Driver Configuration--
No. of Drivers = 1
--Driver Parameters--

Fs =	0.1 Hz
Qms =	1
Vas =	13343496359 liters
Cms =	13480476354 mm/N
Mms =	0.000188 g
Rms =	0.000000118 kg/s
Sd =	26.4 sq.cm
Qes =	1
Re =	6.8 ohms
Le =	0.0163 mH
Z =	8 ohms
BL =	0.000896 Tm
Pe =	30 watts
Qts =	0.5

1-W SPL = 93.29 dB
2.83-V SPL = 94 dB

Midrange Properties

--Driver Description--
Name: Alpha-6
Type: One-way open back driver
Company: Eminence Speaker LLC
Comment: Revised Sep-2002
--Driver Configuration--
No. of Drivers = 1
--Driver Parameters--

Fs =	118 Hz
Qms =	5.68
Vas =	5.8 liters
Cms =	0.26 mm/N
Mms =	7 g
Rms =	0.93 kg/s
Xmax =	7.28 mm
Xmech =	10.92 mm
P-Dia =	126.3 mm
Sd =	126.7 sq.cm
P-Vd =	0.0912 liters
Qes =	0.6
Re =	7.2 ohms
Le =	0.19 mH
Z =	8 ohms
BL =	8 Tm
Pe =	100 watts
Qts =	0.54
no =	1.531 %

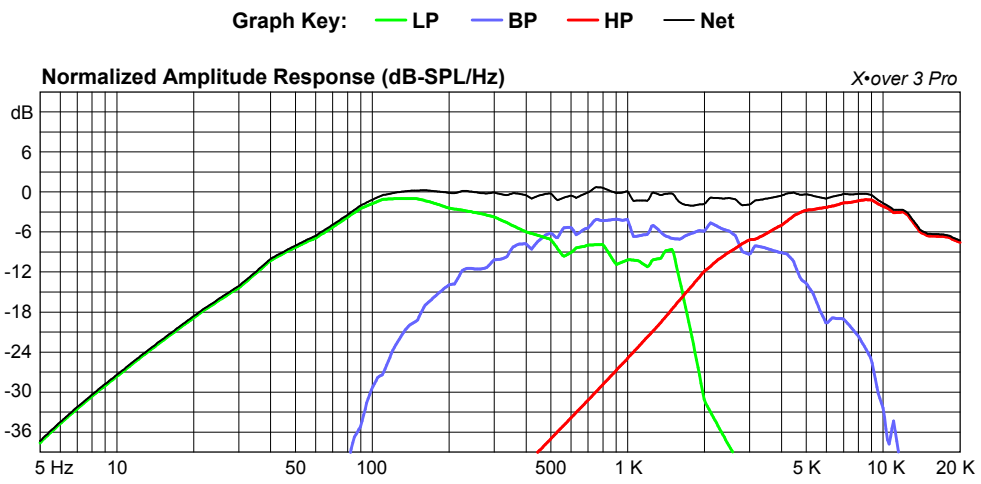
1-W SPL = 97 dB
2.83-V SPL = 94.46 dB

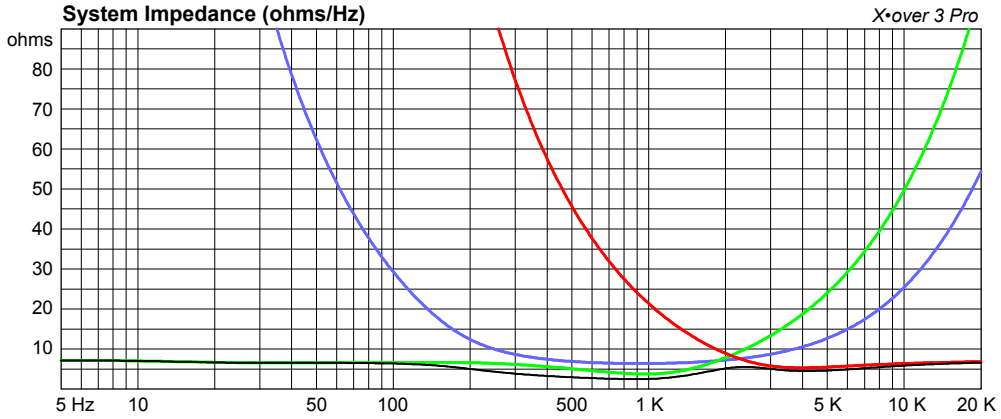
Woofer Properties

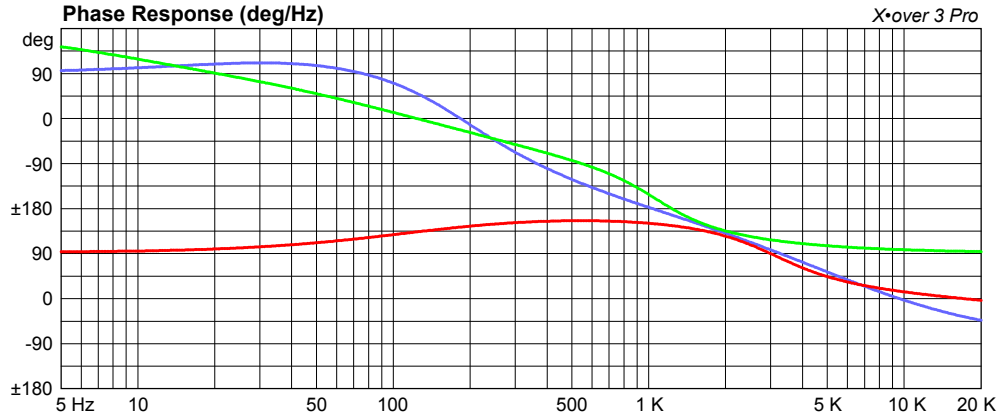
--Driver Description--
Name: DC 380-8
Type: Standard one-way driver
Company: Dayton Loudspeaker Co.
--Driver Configuration--
No. of Drivers = 1
--Driver Parameters--

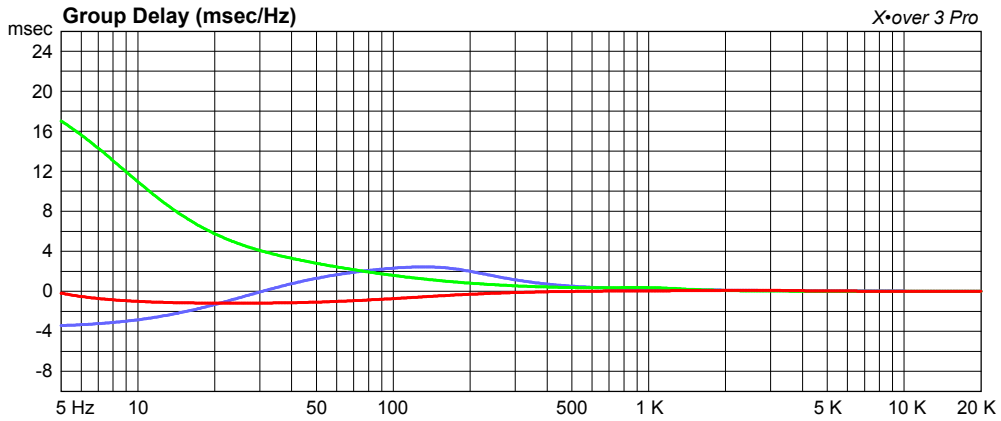
Fs =	21.5 Hz
Qms =	3.52
Vas =	305.8 liters
Cms =	0.31 mm/N
Mms =	176.8 g
Rms =	6.784 kg/s
Xmax =	4.35 mm
Xmech =	6.525 mm
P-Dia =	325.8 mm
Sd =	834.7 sq.cm
P-Vd =	0.363 liters
Qes =	0.39
Re =	6.5 ohms
Le =	3.34 mH
Z =	8 ohms
BL =	19.96 Tm
Pe =	100 watts
Qts =	0.35
no =	0.751 %

1-W SPL = 92.8 dB
2.83-V SPL = 91.81 dB




System Impedance (ohms/Hz)
X•over 3 Pro
ohms
80
70
60
50
40
30
20
10
5 Hz
10
50
100
500
1 K
5 K
10 K
20 K


Phase Response (deg/Hz)
X•over 3 Pro
deg
90
0
-90
±180
90
0
-90
±180
5 Hz
10
50
100
500
1 K
5 K
10 K
20 K


Group Delay (msec/Hz)
X•over 3 Pro
msec
24
20
16
12
8
4
0
-4
-8
5 Hz
10
50
100
500
1 K
5 K
10 K
20 K