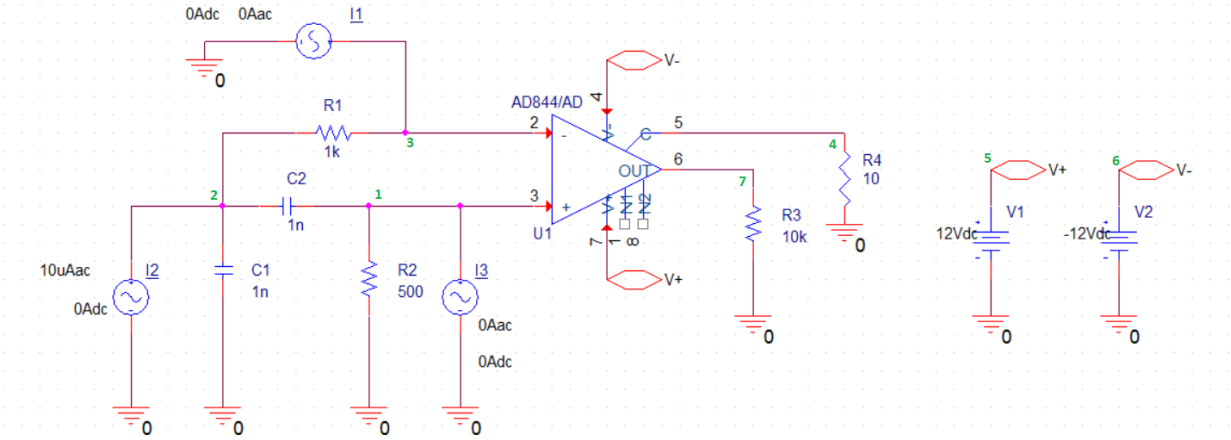
Current mode biquad using a single current conveyor (CCII+).



$$I_z = \frac{I_1(s^2 C_1 C_2 R_1 R_2 + s(C_1 + C_2)R_1 + 1) + I_2 - I_3 s C_1 R_2}{s^2 C_1 C_2 R_1 R_2 + s(C_1 + C_2)R_1 + 1}$$

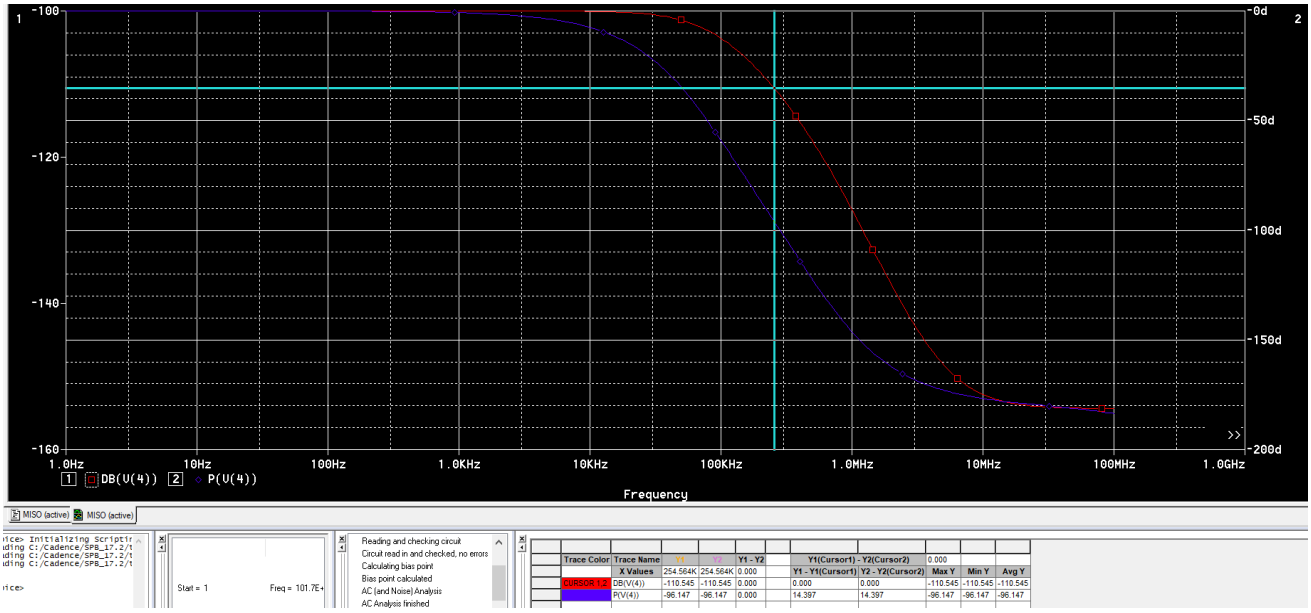
Script:

```
*
.lib "anlg_dev.lib"
.lib "eval.lib"

X1 1 3 5 6 7 4 AD844/AD

R4 4 0 10
R2 1 0 500
R1 3 2 1k
R3 7 0 1k

c1 2 0 1n
c2 1 2 1n
v+ 5 0 DC 12
v- 0 6 DC 12
```

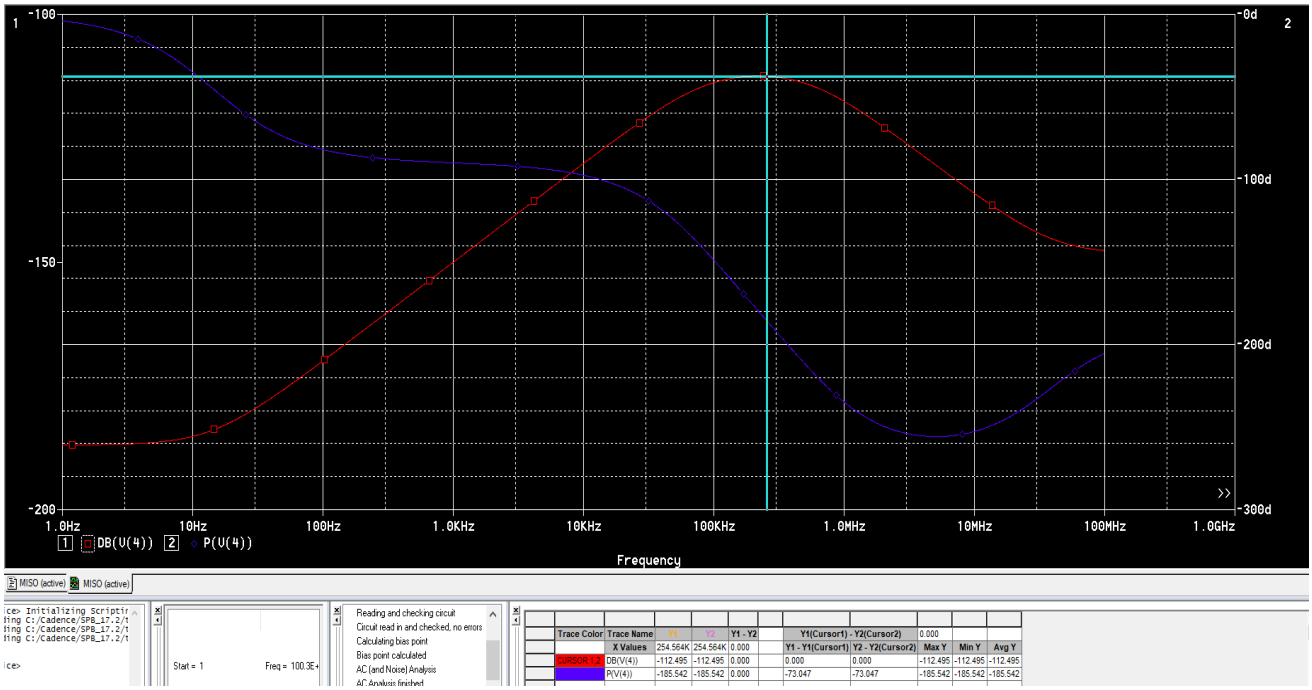
```
*LPF
I2 2 0 AC 10u

*BPF
*I3 1 0 AC 10u

*HPF
*I1 3 0 AC 10u
*I2 0 2 AC 10u
*I3 1 0 AC 40u

.ac oct 10 1 100MEG
.PROBE
.END
```

Outputs:

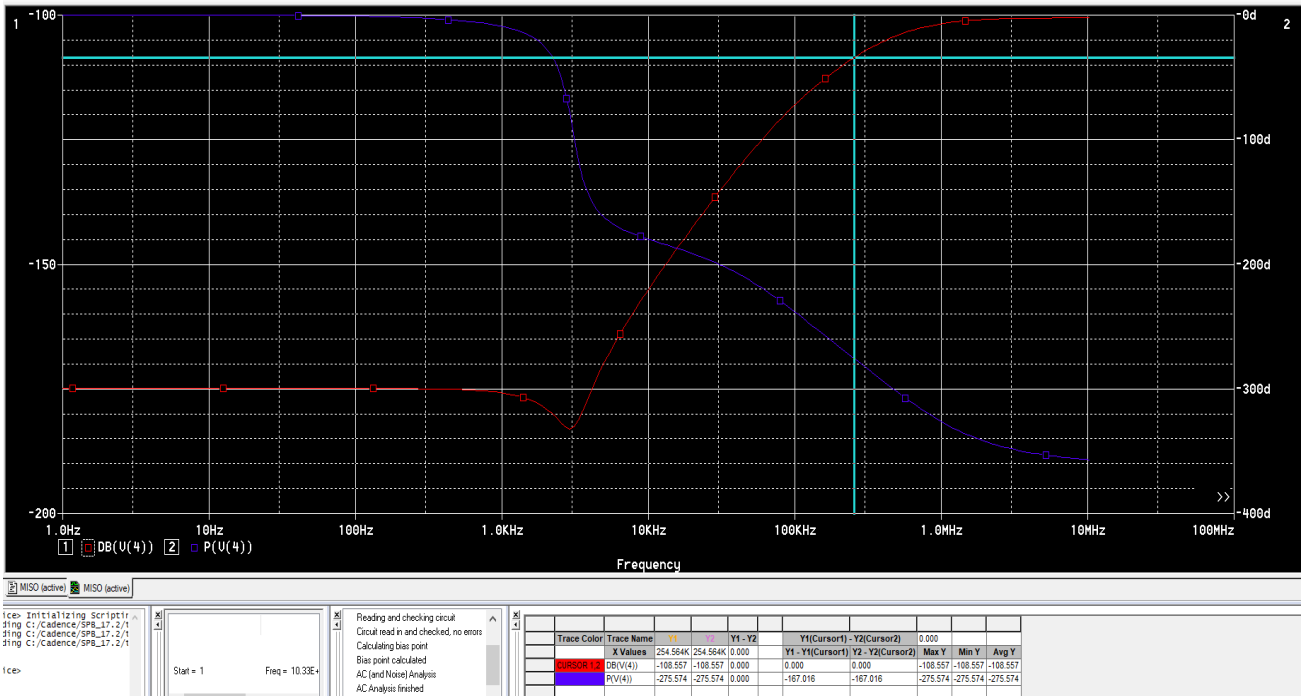
Lowpass



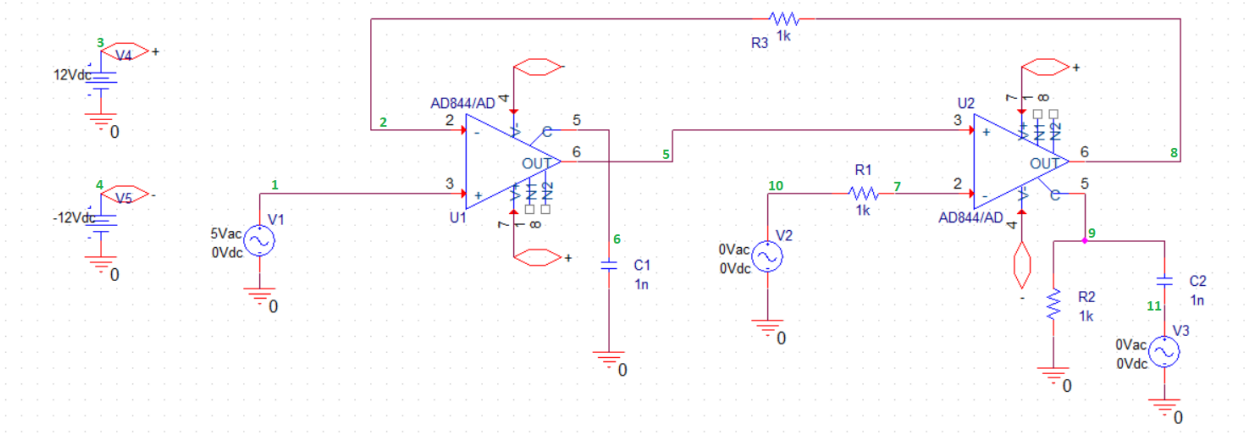
Bandpass


-100
-150
-200
-0d
-100d
-200d
-300d
1.0Hz
10Hz
100Hz
1.0KHz
10KHz
100KHz
1.0MHz
10MHz
100MHz
1.0GHz
DB(V(4))
P(V(4))
Frequency

Highpass


-100
-150
-200
-0d
-100d
-200d
-300d
-400d
1.0Hz
10Hz
100Hz
1.0KHz
10KHz
100KHz
1.0MHz
10MHz
100MHz
DB(V(4))
P(V(4))
Frequency

Universal biquad using CFOAs



$$Vo = \frac{s^2 V_3 - \frac{sV_2}{R_1 C_2} + \frac{V_1}{C_1 C_2 R_1 R_3}}{s^2 + \frac{s}{C_2 R_2} + \frac{1}{R_1 C_1 R_3 C_2}}$$

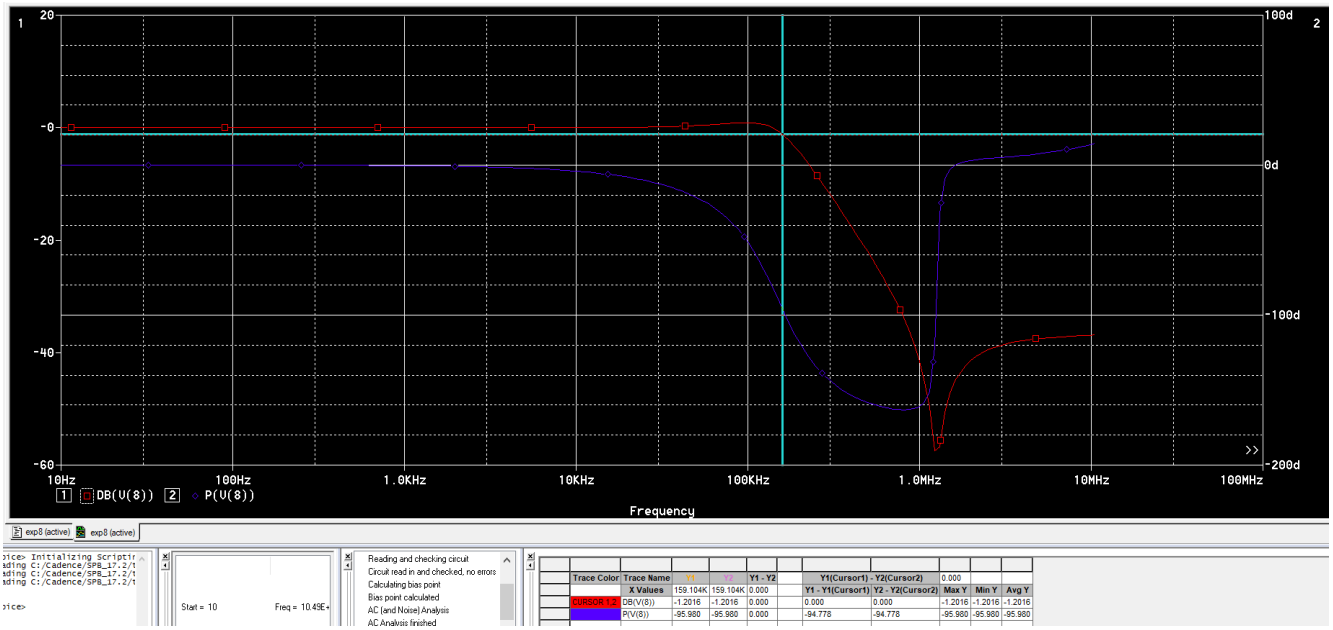
Script:

```
*
.lib "anlg_dev.lib"
.lib "eval.lib"

X1 1 2 3 4 5 6 AD844/AD
X2 5 7 3 4 8 9 AD844/AD

R2 9 0 320
R1 7 10 320
R3 2 8 640

c1 6 0 2.2n
c2 9 11 2.2n
v+ 3 0 DC 12
v- 0 4 DC 12

*LPF
*V1 1 0 AC 1
```

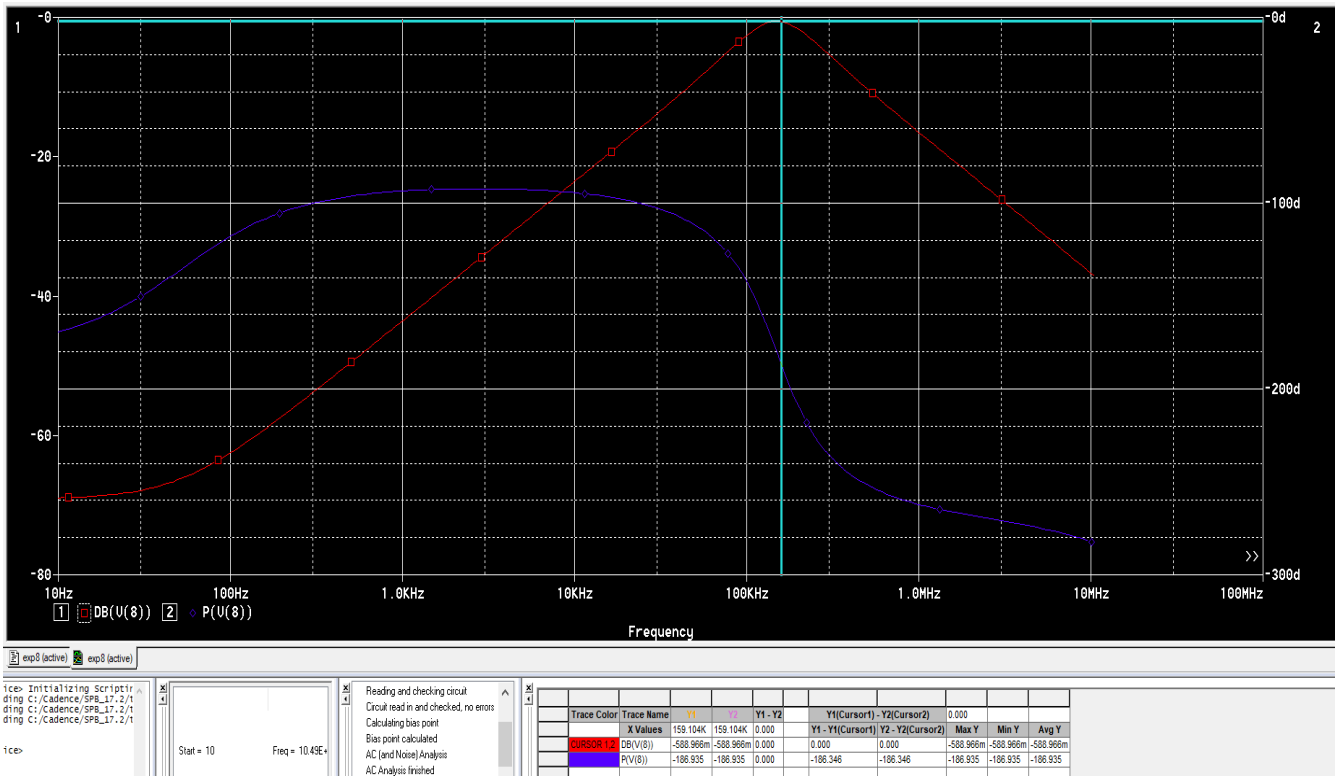
```
*V2 10 0 AC 0
*V3 11 0 AC 0
*BPF
*V1 1 0 AC 0
*V2 10 0 AC 1
*V3 11 0 AC 0
*HPF
*V1 1 0 AC 0
*V2 10 0 AC 0
*V3 11 0 AC 1
*BSF
*V1 1 0 AC 1
*V2 10 0 AC 0
*V3 11 0 AC 1
*APF
V1 1 0 AC 1
V2 10 0 AC 1
V3 11 0 AC 1
.ac oct 10 10 1000MEG
.PROBE
.END
```

Output:

Lowpass



Bandpass



exp8 (active) exp8 (active)

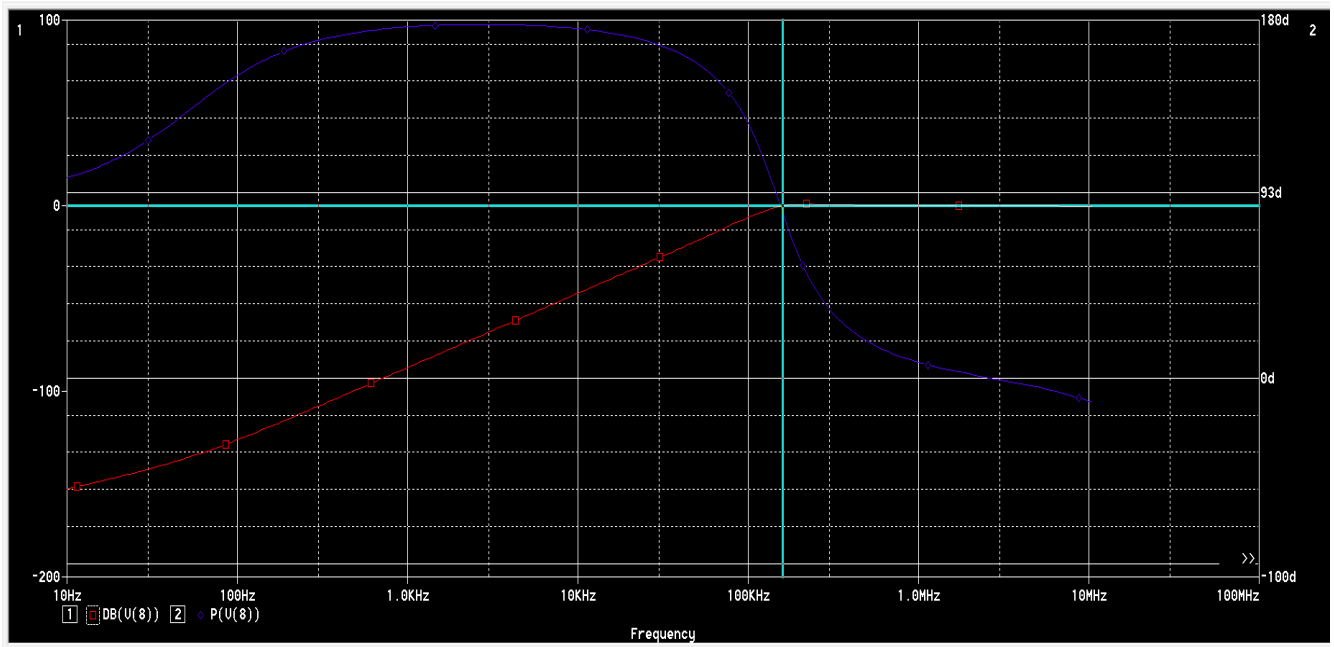
```
ice> Initializing Scriptin
ding C:/Cadence/SPB_17.2/t
ding C:/Cadence/SPB_17.2/t
ding C:/Cadence/SPB_17.2/t
ice>
```

Start = 10 Freq = 10.49E+

```
Reading and checking circuit
Circuit read in and checked, no errors
Calculating bias point
Bias point calculated
AC (and Noise) Analysis
AC Analysis finished
```

Trace Color	Trace Name	Y1	Y2	Y1 - Y2	Y1(Cursor1) - Y2(Cursor2)		0.000		
	X Values	159.104K	159.104K	0.000	Y1 - Y1(Cursor1)	Y2 - Y2(Cursor2)	Max Y	Min Y	Avg Y
CURSOR 1,2	DB(V(8))	-588.966m	-588.966m	0.000	0.000	0.000	-588.966m	-588.966m	-588.966m
	P(V(8))	-186.935	-186.935	0.000	-186.346	-186.346	-186.935	-186.935	-186.935

Highpass



exp8 (active) exp8 (active)

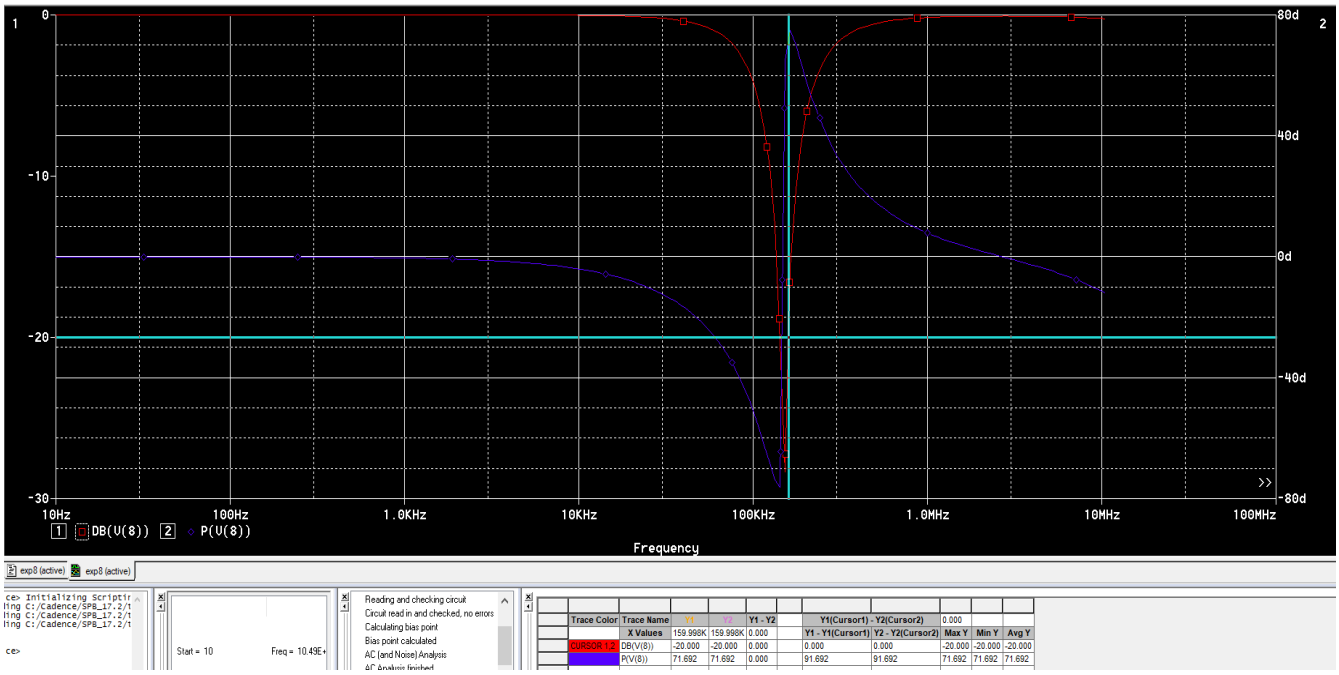
```
ice> Initializing Scriptin
ading C:/Cadence/SPB_17.2/t
ading C:/Cadence/SPB_17.2/t
ading C:/Cadence/SPB_17.2/t
ice>
```

Start = 10 Freq = 10.49E+

```
Reading and checking circuit
Circuit read in and checked, no errors
Calculating bias point
Bias point calculated
AC (and Noise) Analysis
AC Analysis finished
```

Trace Color	Trace Name	Y1	Y2	Y1 - Y2	Y1(Cursor1) - Y2(Cursor2)		0.000		
	X Values	159.416K	159.416K	0.000	Y1 - Y1(Cursor1)	Y2 - Y2(Cursor2)	Max Y	Min Y	Avg Y
CURSOR 1,2	DB(V(8))	-154.365m	-154.365m	0.000	0.000	0.000	-154.365m	-154.365m	-154.365m
	P(V(8))	82.915	82.915	0.000	83.069	83.069	82.915	82.915	82.915

Bandstop



Allpass