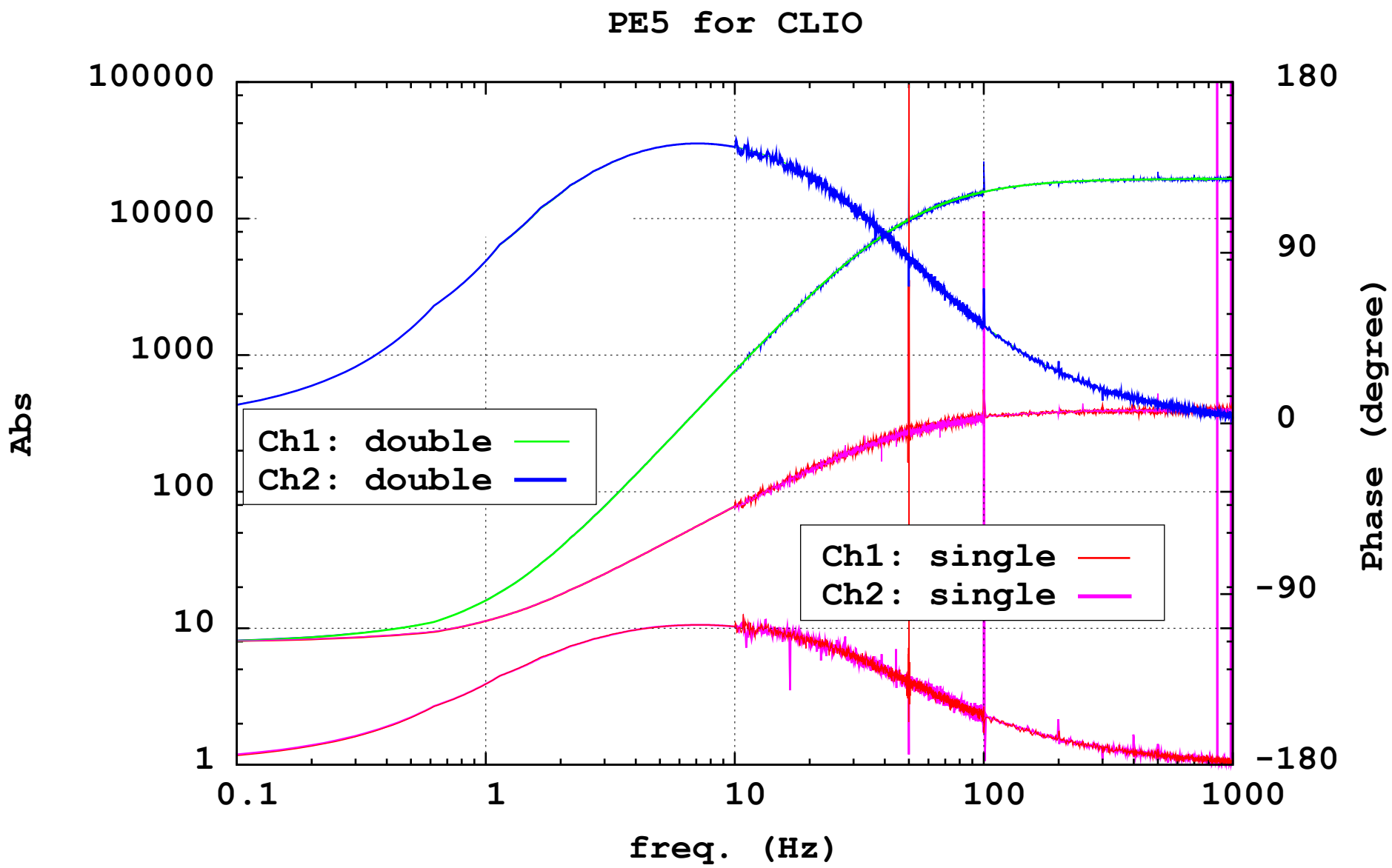
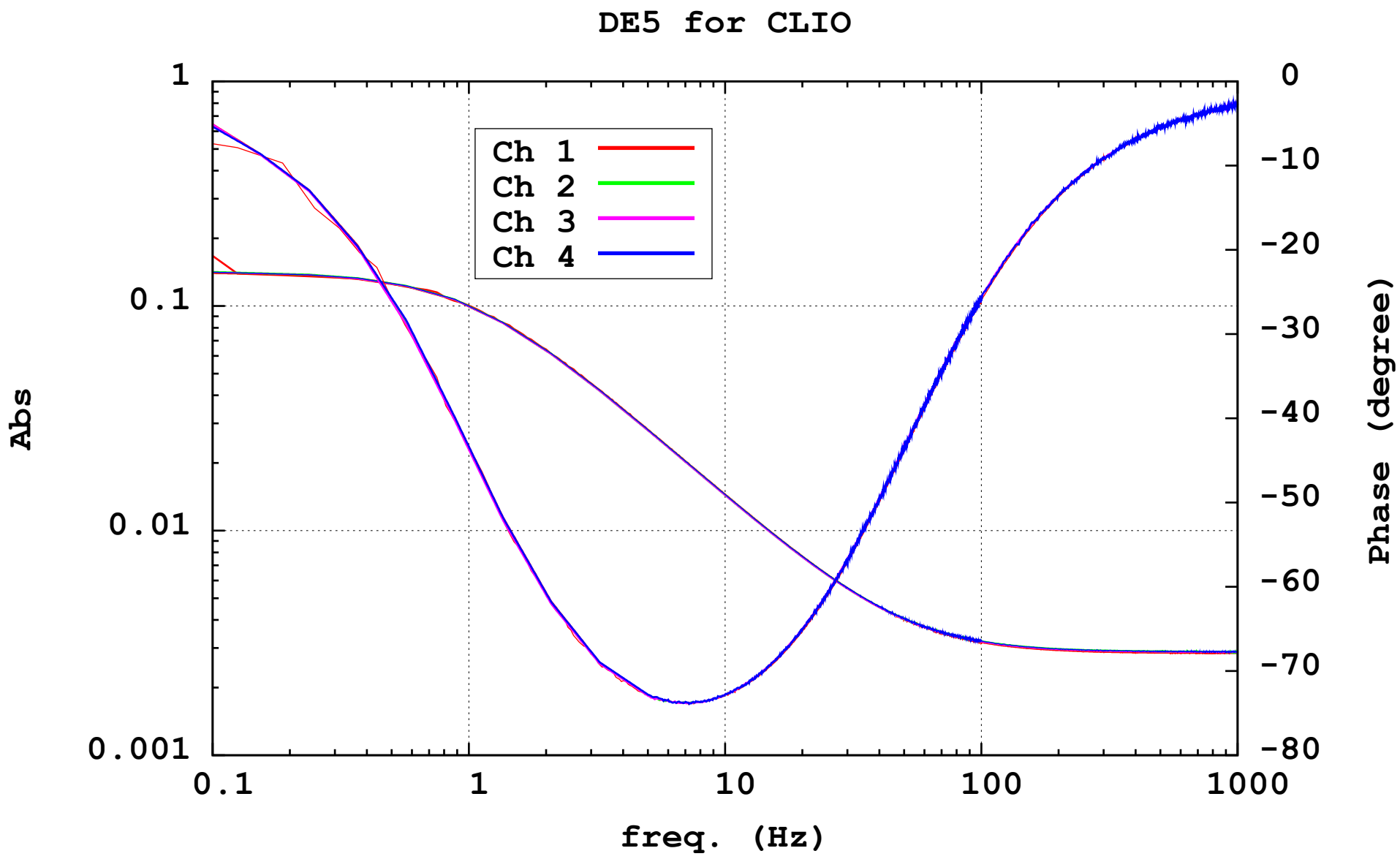

PE5 for CLIO
100000
10000
1000
100
10
1
Abs
180
90
0
-90
-180
Phase (degree)
0.1
1
10
100
1000
freq. (Hz)
Ch1: double
Ch2: double
Ch1: single
Ch2: single

Pre-emphasis (Whitening) filter for CLIO
-- In the case of single gain up --

```
=== CH1 ===
Best parameter estimates:
pole0:f =  50.2821723660 +- 209.8m (0.417%)
zero0:f =  1.0522069363 +- 49.92m (4.74%)
factor =  -8.2220178963 +- -380.5m (4.63%)

Final chi^2=7847.81

=== CH2 ===
Best parameter estimates:
pole0:f =  50.8092370418 +- 327.8m (0.645%)
zero0:f =  1.1106882679 +- 79m (7.11%)
factor =  -8.5631184759 +- -593.2m (6.93%)

Final chi^2=18690.7
```

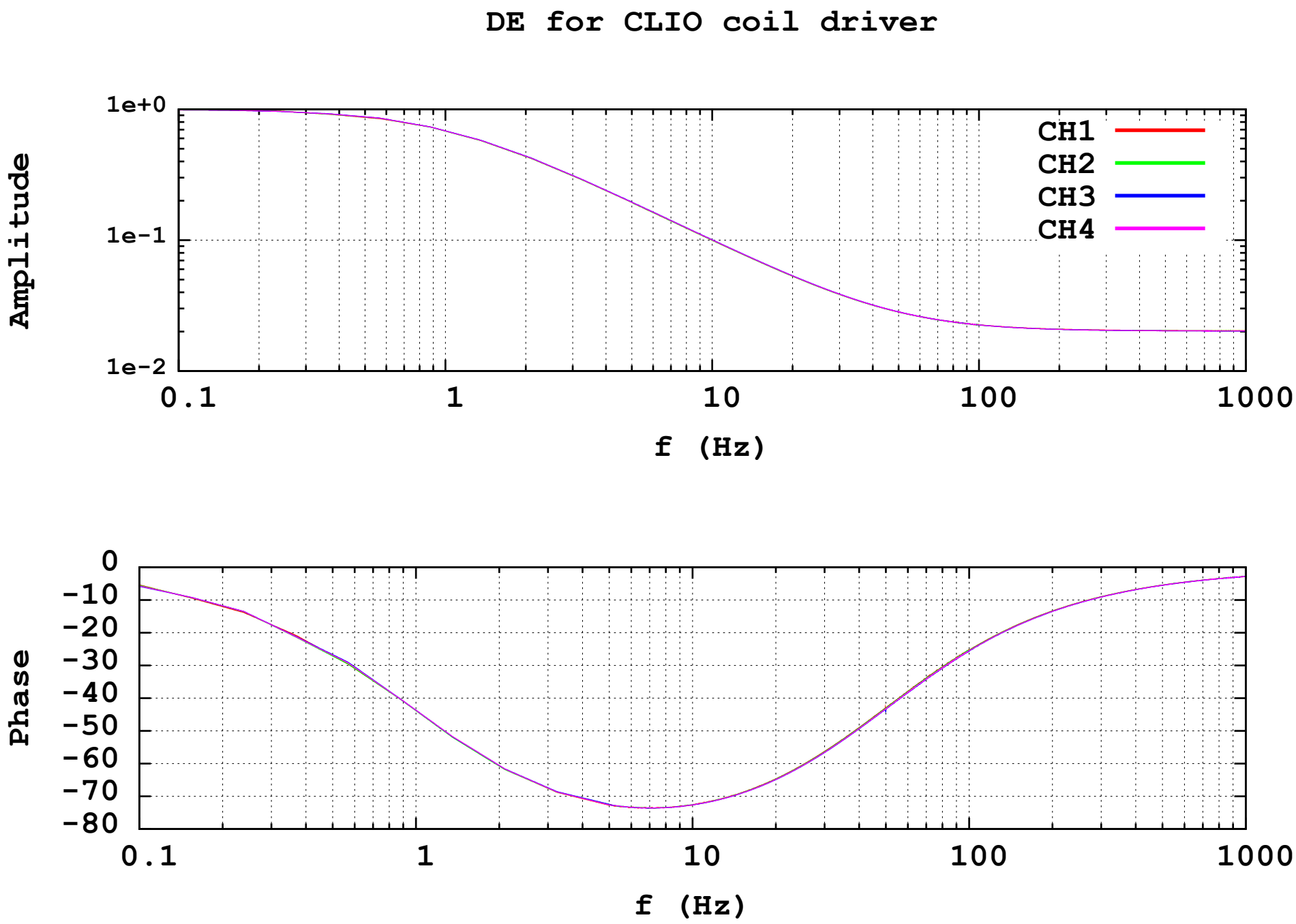
Pre-emphasis (Whitening) filter for CLIO
-- In the case of dual gain up --

```
=== CH1 ===
Best parameter estimates:
pole0:f =  49.7608218604 */ 1.915
pole1:f =  49.5731786662 */ 1.918
zero0:f =  1.0349468774 */ 13.73
zero1:f =  992.4263826143m */ 15.12
factor =  8.1512357363 +- 874.7m (10.7%)

Final chi^2=15777

=== CH2 ===
Best parameter estimates:
pole0:f =  49.7933569740 */ 10.59
pole1:f =  49.6703682256 */ 10.63
zero0:f =  1.1422783124 */ 9.86
zero1:f =  1.0353622881 */ 12.01
factor =  9.3312486640 +- 2.196 (23.5%)

Final chi^2=88138.5
```


DE5 for CLIO
Ch 1
Ch 2
Ch 3
Ch 4
Abs
Phase (degree)
freq. (Hz)
1
0.1
0.01
0.001
0
-10
-20
-30
-40
-50
-60
-70
-80
0.1
1
10
100
1000

De-emphasis (De-Whitening) filter for CLIO

```
=== CH1 ===
Best parameter estimates:
pole0:f =  1.0104803576 +- 2.26m (0.224%)
zero0:f =  49.9275083937 +- 171m (0.343%)
factor =  140.8564802472m +- 193.2u (0.137%)

Final chi^2=0.205884

=== CH2 ===
Best parameter estimates:
pole0:f =  1.0019189709 +- 163.7u (0.0163%)
zero0:f =  49.0382489347 +- 11.67m (0.0238%)
factor =  141.2448208844m +- 13.76u (0.00974%)

Final chi^2=0.000938682

=== CH3 ===
Best parameter estimates:
pole0:f =  997.7446577560m +- 176u (0.0176%)
zero0:f =  49.0005287079 +- 12.62m (0.0258%)
factor =  140.7933817706m +- 14.84u (0.0105%)

Final chi^2=0.00109521

=== CH4 ===
Best parameter estimates:
pole0:f =  1.0105515772 +- 174.3u (0.0172%)
zero0:f =  49.3499922809 +- 12.43m (0.0252%)
factor =  140.9861941866m +- 14.51u (0.0103%)

Final chi^2=0.00105249
```


DE for CLIO coil driver
Amplitude
1e+0
1e-1
1e-2
0.1
1
10
100
1000
f (Hz)
CH1
CH2
CH3
CH4
Phase
0
-10
-20
-30
-40
-50
-60
-70
-80
0.1
1
10
100
1000
f (Hz)

De-emphasis filter for CLIO coil-driver

```
=== CH1 ===
Best parameter estimates:
pole0:f =  996.1892197211m +- 438.1u (0.044%)
zero0:f =  48.3058801439 +- 11.3m (0.0234%)
factor =  984.1114240731m +- 379.9u (0.0386%)

Final chi^2=0.120671

=== CH2 ===
Best parameter estimates:
pole0:f =  996.1106298503m +- 431.9u (0.0434%)
zero0:f =  48.4929088807 +- 11.18m (0.0231%)
factor =  984.0357223330m +- 374.6u (0.0381%)

Final chi^2=0.117434

=== CH3 ===
Best parameter estimates:
pole0:f =  1.0057302202 +- 417u (0.0415%)
zero0:f =  49.0046114436 +- 10.81m (0.0221%)
factor =  984.2842490447m +- 358.4u (0.0364%)

Final chi^2=0.107847

=== CH4 ===
Best parameter estimates:
pole0:f =  1.0026871155 +- 423.8u (0.0423%)
zero0:f =  48.8468584617 +- 10.98m (0.0225%)
factor =  984.0043518075m +- 365.2u (0.0371%)

Final chi^2=0.11193
```