

02-22-2019

Jim Mosher

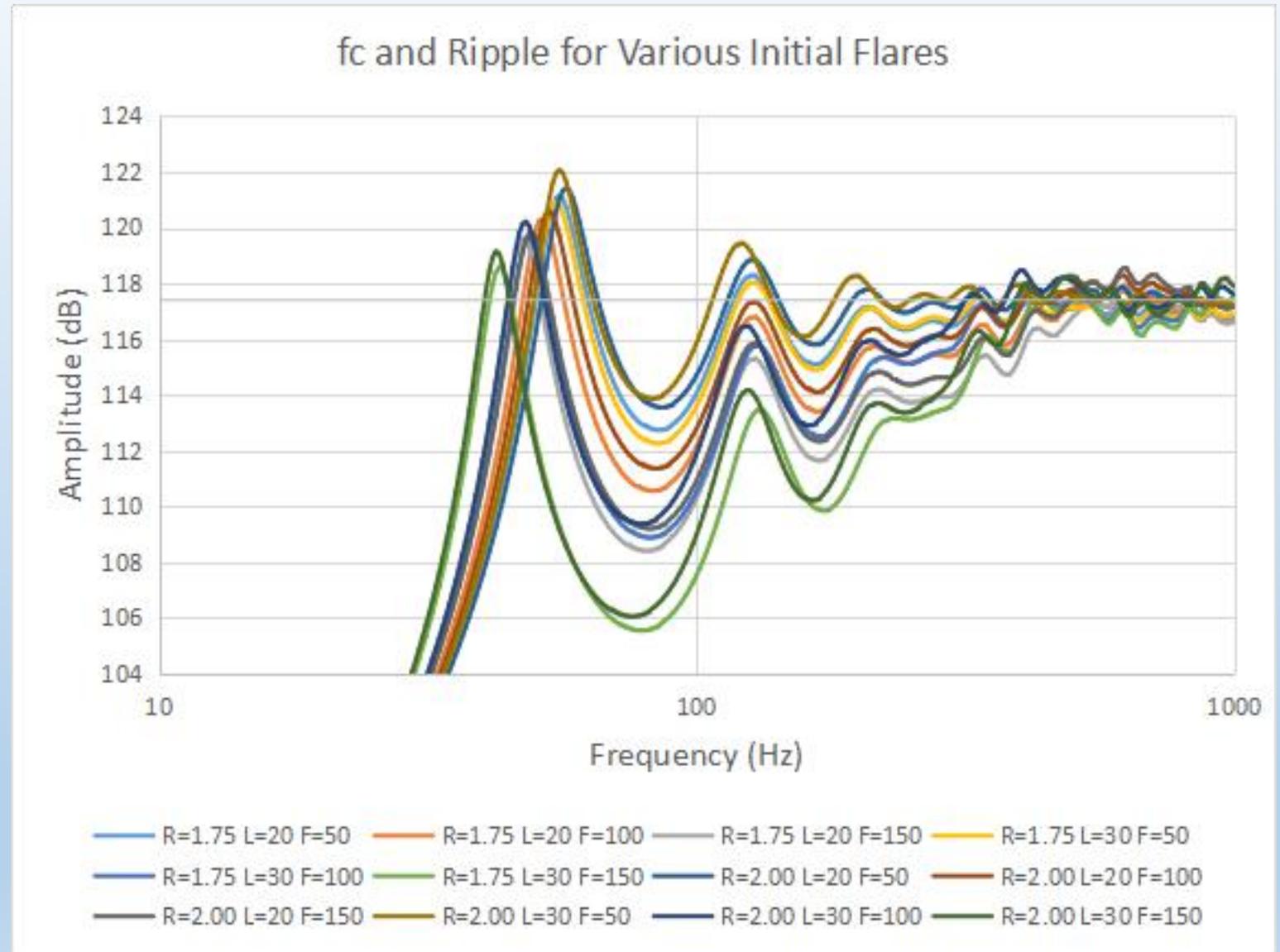
A First Study to Determine the Effect of High Initial Flares in Corner Horns

No drivers are considered in this study

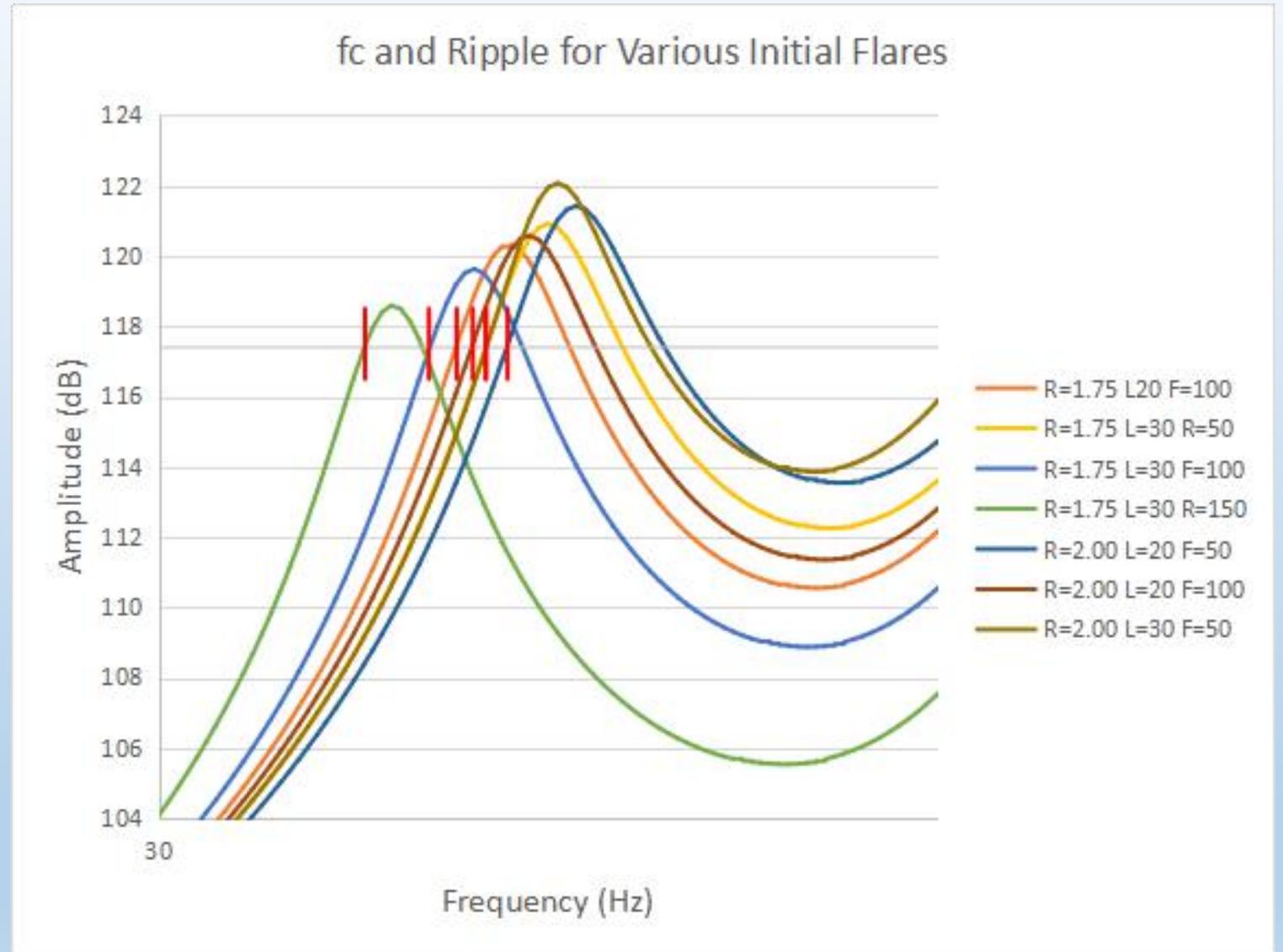
Horn Theoretical Parameters

- Throat compression ratios start at 1.75:1 and extend to 3.00:1
- The length of the initial flare is either 20 or 30 cm in length
- The angle of the initial flare is conical in nature, but runs from an effective exponential expansion f_c of 50 to 150 Hz

One can see the exchange of lower fc along with higher ripple and vis-versa.



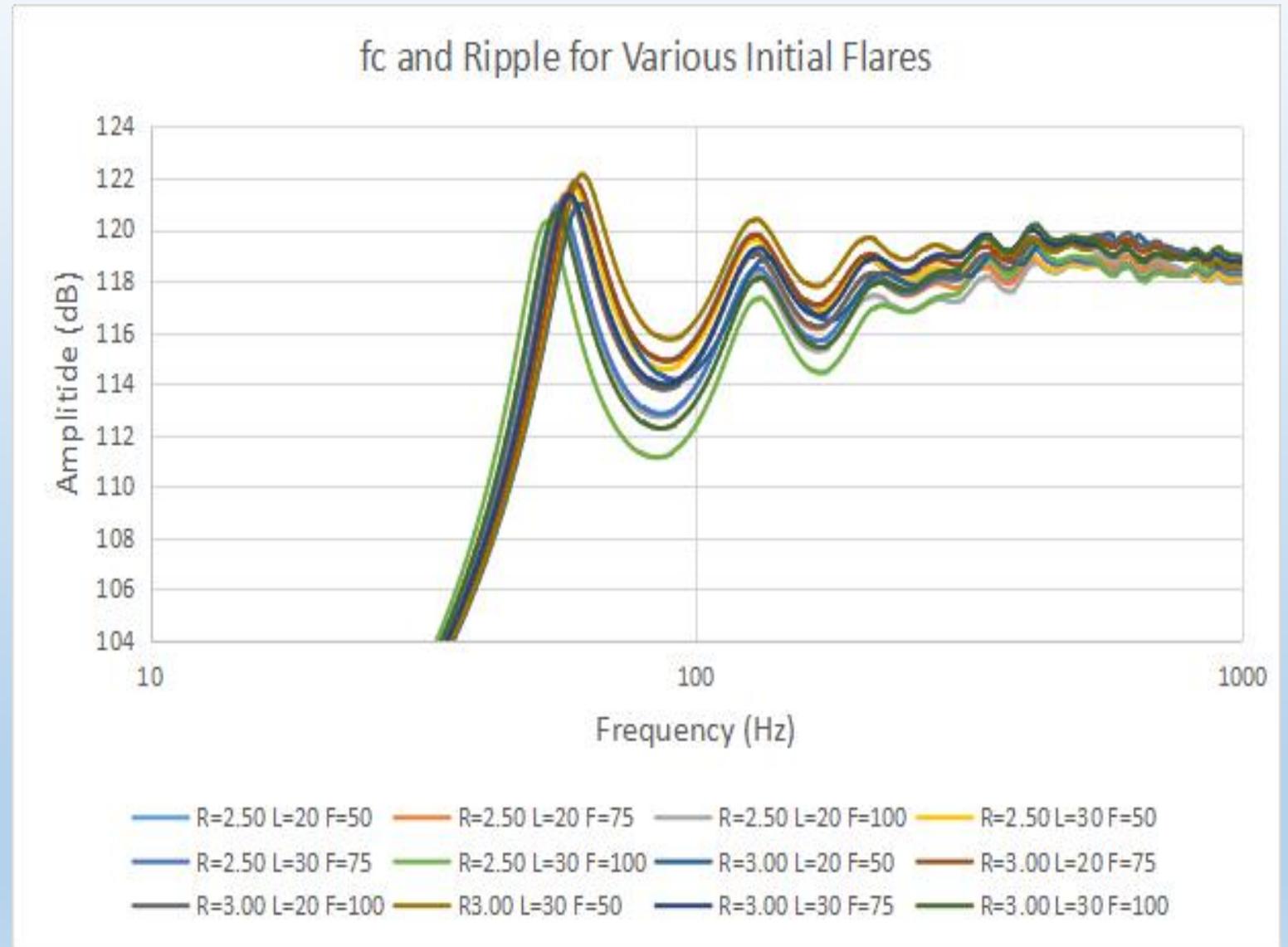
More detail showing the change in f_c , while allowing more ripple.



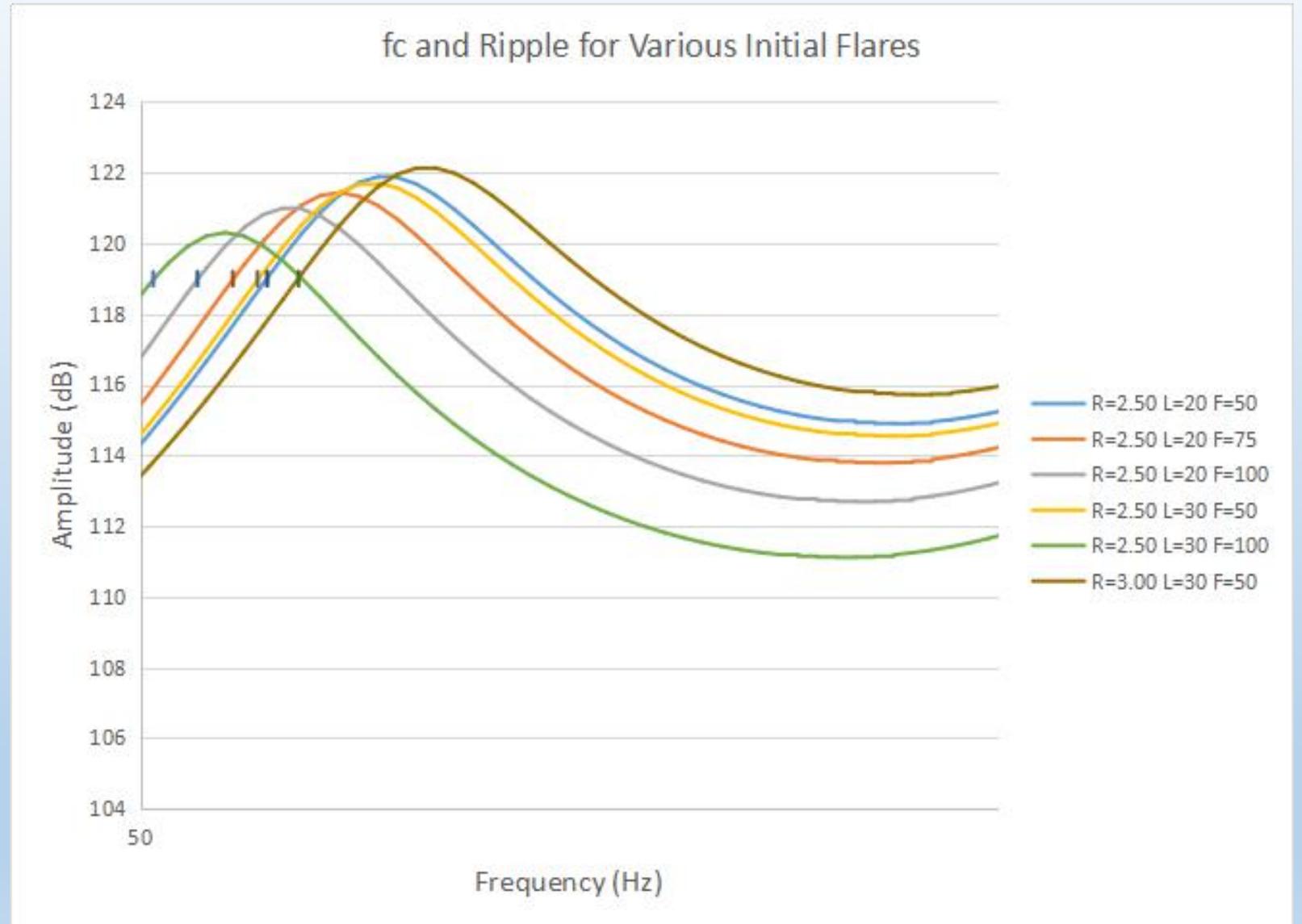
More parameters from the second group of data.

13	14	15	16	17	18	19	20	21	22	23	24
ID=48.20											
Ang=0.5 x	Ang=0.5 x Pi										
Eg=0.00											
Rg=0.00											
Cir=0.64	Cir=0.58	Cir=0.52	Cir=0.62	Cir=0.52	Cir=0.42	Cir=0.70	Cir=0.64	Cir=0.58	Cir=0.68	Cir=0.58	Cir=0.49
S1=416.00	S1=416.00	S1=416.00	S1=416.00	S1=416.00	S1=416.00	S1=347.00	S1=347.00	S1=347.00	S1=347.00	S1=347.00	S1=347.00
S2=599.40	S2=719.50	S2=863.60	S2=719.50	S2=946.20	S2=1244.40	S2=499.90	S2=600.20	S2=720.40	S2=600.20	S2=789.30	S2=1038.00
Con=20.00	Con=20.00	Con=20.00	Con=30.00	Con=30.00	Con=30.00	Con=20.00	Con=20.00	Con=20.00	Con=30.00	Con=30.00	Con=30.00
F12=0.00											
S2=599.40	S2=719.50	S2=863.60	S2=719.50	S2=946.20	S2=1244.40	S2=499.90	S2=600.20	S2=720.40	S2=600.20	S2=789.30	S2=1038.00
S3=4056.10											
Exp=152.40	Exp=152.40	Exp=152.40	Exp=142.40	Exp=142.40	Exp=142.40	Exp=152.40	Exp=152.40	Exp=152.40	Exp=142.40	Exp=142.40	Exp=142.40
F23=34.34	F23=31.06	F23=27.79	F23=33.25	F23=27.98	F23=22.71	F23=37.61	F23=34.32	F23=31.04	F23=36.73	F23=31.47	F23=26.20

The data from this group is more tightly packed because the initial flare angle was limited to a maximum of f_c 100 Hz.



Another detail of the initial flare rate models generated.



Here is the relation between f_c and ripple for the two groups studied.

