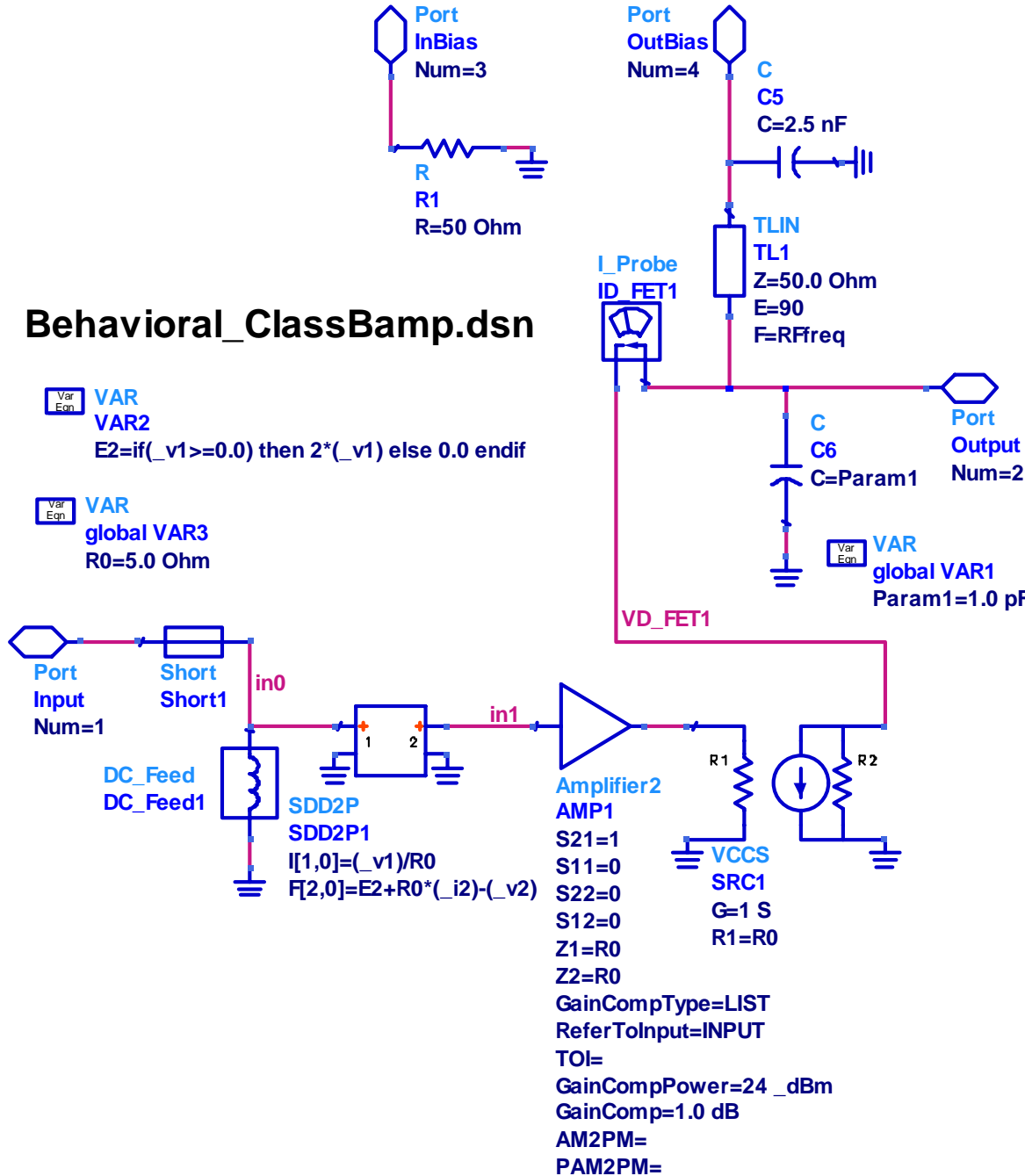


# Behavioral\_ClassBamp.dsn

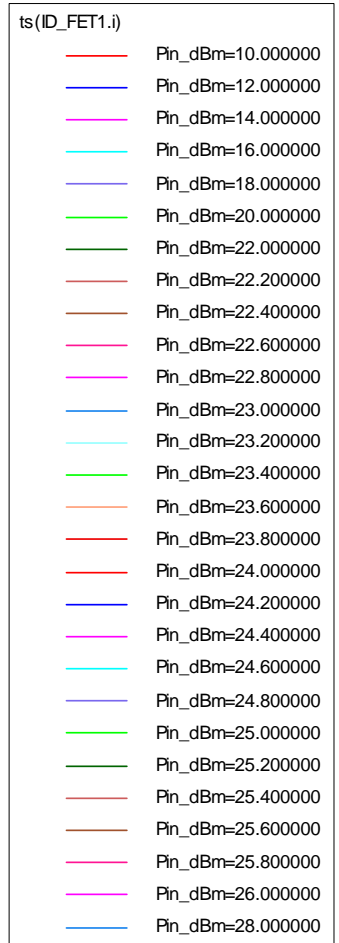
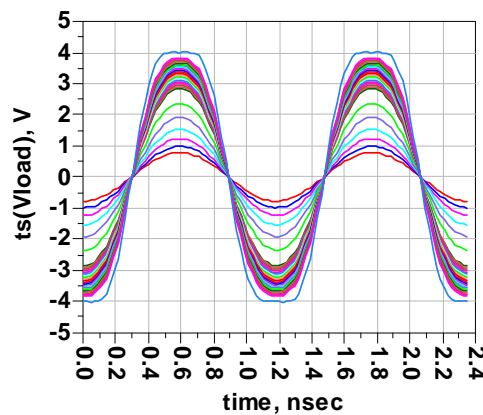
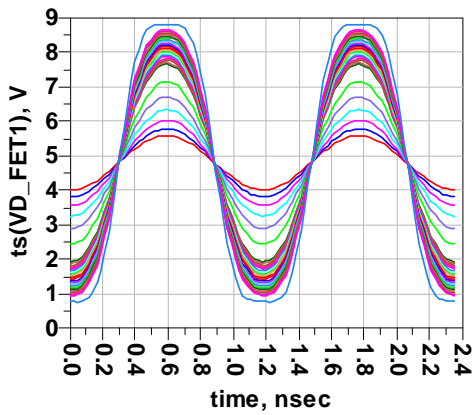
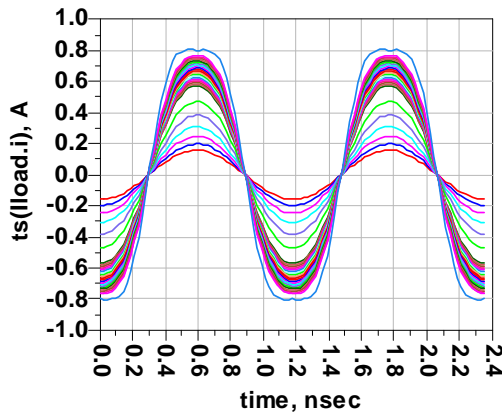
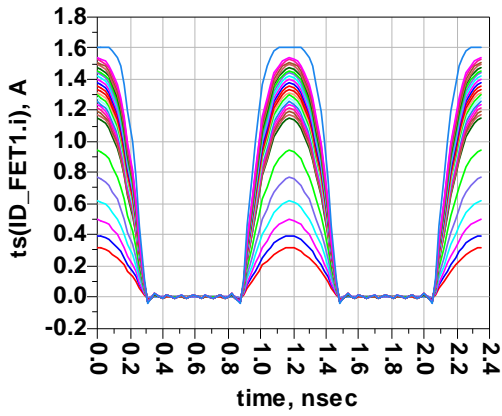
VAR  
 Egn VAR2  
 E2=if(\_v1>=0.0) then 2\*(\_v1) else 0.0 endif

VAR  
 Egn global VAR3  
 R0=5.0 Ohm

VAR  
 Egn global VAR1  
 Param1=1.0 pF



# Results for One Large Tone HB Analysis

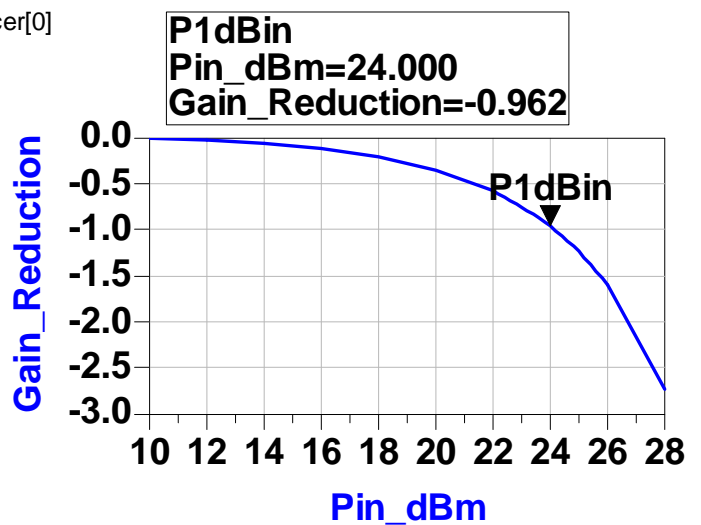
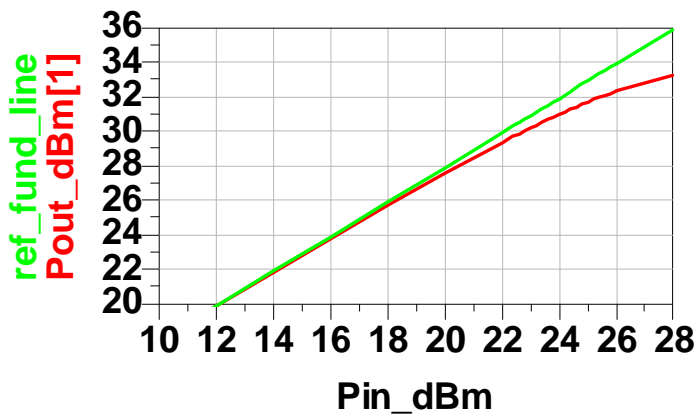


Eqn  $P_{out\_dBm} = 10 \cdot \log_{10}(0.5 \cdot \text{real}(V_{load} \cdot \text{conj}(I_{load.i})) + 1e-20) + 30$

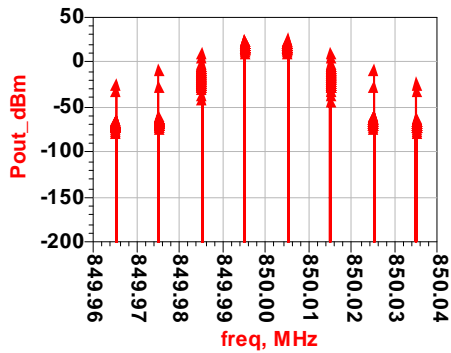
Eqn  $P\_gain\_transducer = P_{out\_dBm}[1] - Pin\_dBm$

Eqn  $Gain\_Reduction = P\_gain\_transducer - P\_gain\_transducer[0]$

Eqn  $ref\_fund\_line = 1 \cdot Pin\_dBm + 7.9$

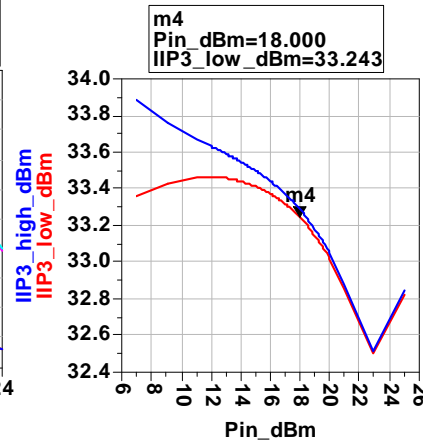
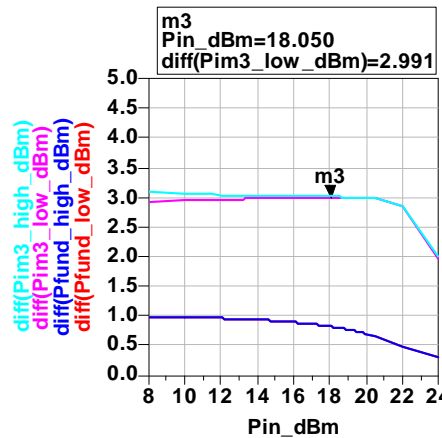
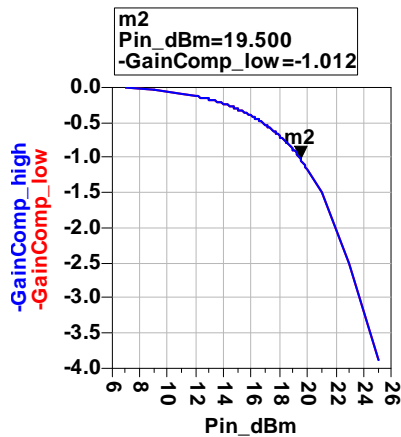
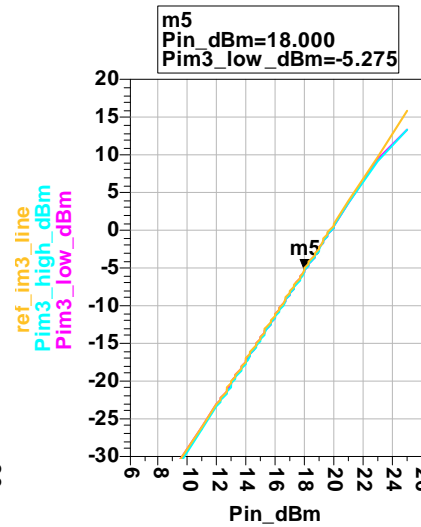
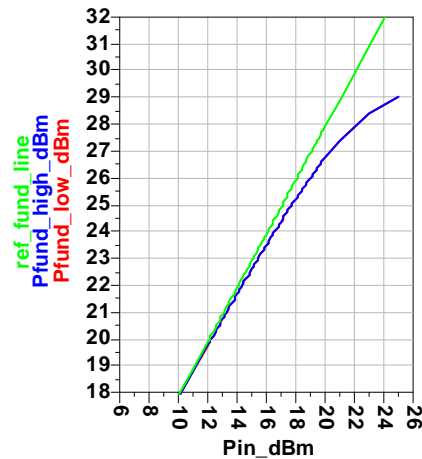
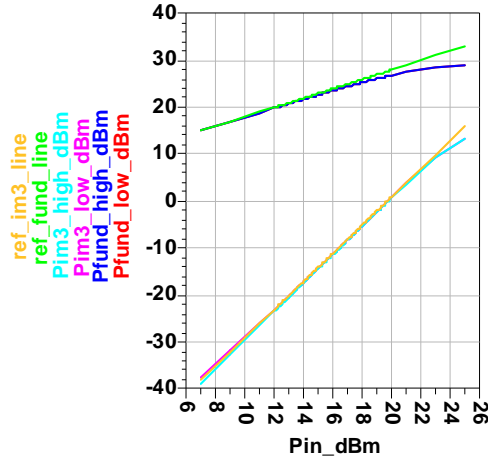


# Results for Two Large Tone HB Analysis

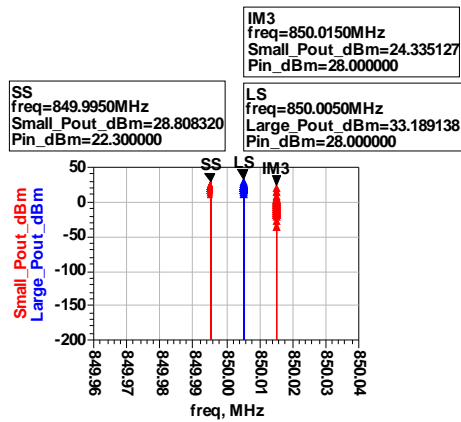


```

Eqn Pout_dBm=10*log10(0.5*real(Vload*conj(Iload.i))+1e-20)+30
Eqn Pfund_low_dBm=mix(Pout_dBm,{1,0},Mix)
Eqn Pfund_high_dBm=mix(Pout_dBm,{0,1},Mix)
Eqn Pim3_low_dBm=mix(Pout_dBm,{2,-1},Mix)
Eqn Pim3_high_dBm=mix(Pout_dBm,{-1,2},Mix)
Eqn IM3_low=Pfund_low_dBm-Pim3_low_dBm
Eqn IM3_high=Pfund_high_dBm-Pim3_high_dBm
Eqn IIP3_low_dBm=IM3_low/2+Pin_dBm
Eqn IIP3_high_dBm=IM3_high/2+Pin_dBm
Eqn ref_fund_line=1*Pin_dBm+7.9
Eqn ref_im3_line=3*Pin_dBm-59.1
Eqn Gain_low=Pfund_low_dBm-Pin_dBm
Eqn Gain_high=Pfund_high_dBm-Pin_dBm
Eqn GainComp_low=Gain_low[0]-Gain_low
Eqn GainComp_high=Gain_high[0]-Gain_high
    
```



# Results for One Large Tone + One Small Signal HB Analysis

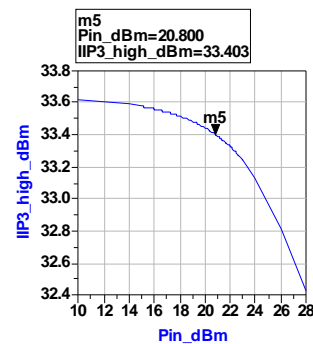
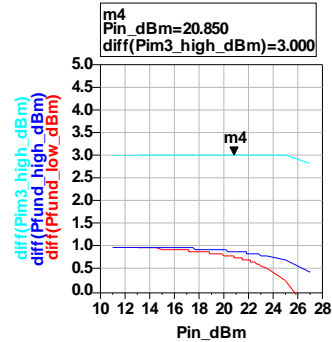
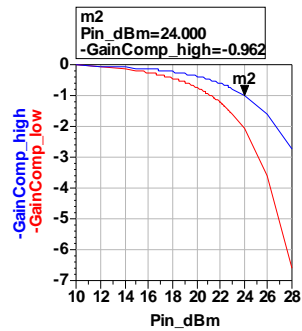
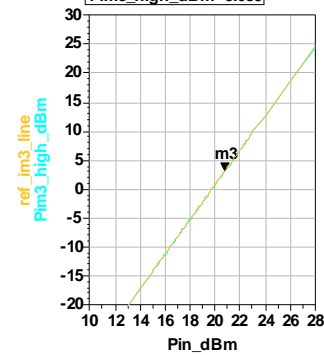
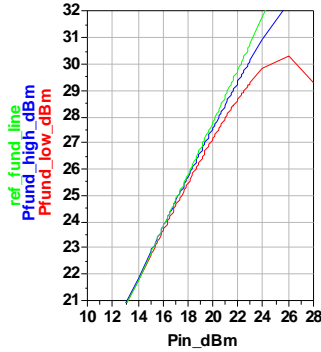
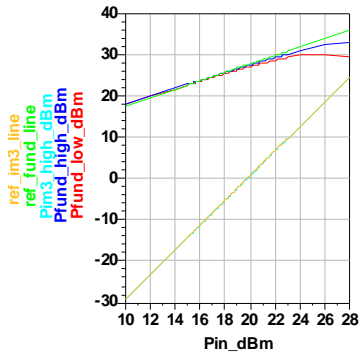


`mix(SM.freq[0,:],[1,-1],SM.Mix[0,:])`  
849.9950 MHz

`mix(SM.freq[0,:],[1,1],SM.Mix[0,:])`  
850.0150 MHz

- Eqn Large\_Pout\_dBm=10\*log10(0.5\*real(HB.Vload\*conj(HB.Iload)))+1e-20)+30
- Eqn Small\_Pout\_dBm=10\*log10(0.5\*real(SM.Vload\*conj(SM.Iload)))+1e-20)+30
- Eqn Pfund\_high\_dBm=Large\_Pout\_dBm[1]
- Eqn Pfund\_low\_dBm=mix(Small\_Pout\_dBm,[1,-1],SM.Mix)
- Eqn Pim3\_high\_dBm=mix(Small\_Pout\_dBm,[1,1],SM.Mix)
- Eqn IM3\_high=Pfund\_high\_dBm-Pim3\_high\_dBm
- Eqn IP3\_high\_dBm=IM3\_high/2+SM.Pin\_dBm
- Eqn ref\_fund\_line=1\*HB.Pin\_dBm+7.8
- Eqn ref\_im3\_line=3\*SM.Pin\_dBm-59.2
- Eqn Gain\_low=Pfund\_low\_dBm-SM.Pin\_dBm
- Eqn Gain\_high=Pfund\_high\_dBm-HB.Pin\_dBm
- Eqn GainComp\_low=Gain\_low[0]-Gain\_low
- Eqn GainComp\_high=Gain\_high[0]-Gain\_high

m3  
Pin\_dBm=20.800  
Pim3\_high\_dBm=3.085



# Comparison between HB2 and HB1SS

Eqn Large\_Pout\_dBm=10\*log10(0.5\*real(\$HB1SS.HB.Vload\*conj(\$HB1SS..HB.Iload.i))+1e-20)+30

Eqn Small\_Pout\_dBm=10\*log10(0.5\*real(\$HB1SS.SM.Vload\*conj(\$HB1SS..SM.Iload.i))+1e-20)+30

Eqn HB1SS\_Pfund\_high\_dBm=Large\_Pout\_dBm[1]

Eqn HB1SS\_Pfund\_low\_dBm=mix(Small\_Pout\_dBm,{1,-1},\$HB1SS..SM.Mix)

Eqn HB1SS\_Pim3\_high\_dBm=mix(Small\_Pout\_dBm,{1,1},\$HB1SS..SM.Mix)

Eqn HB1SS\_IM3\_high=HB1SS\_Pfund\_high\_dBm-HB1SS\_Pim3\_high\_dBm

Eqn HB1SS\_IIP3\_high\_dBm=HB1SS\_IM3\_high/2+\$HB1SS..SM.Pin\_dBm

