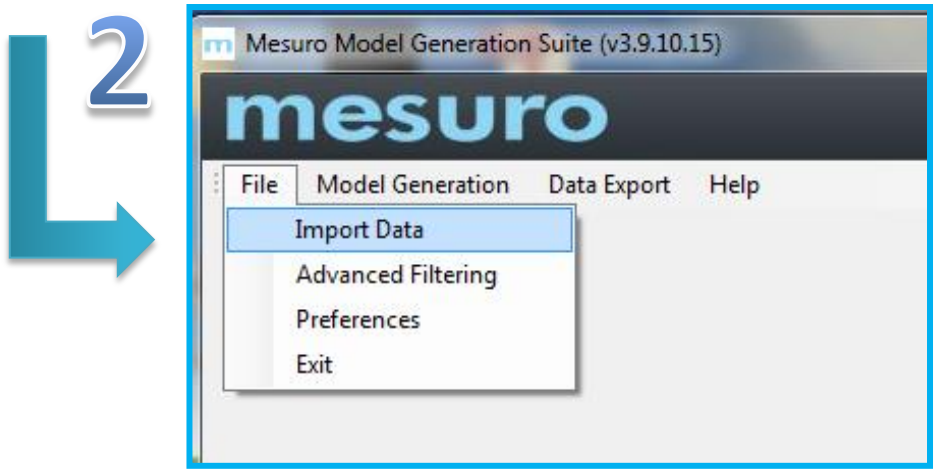
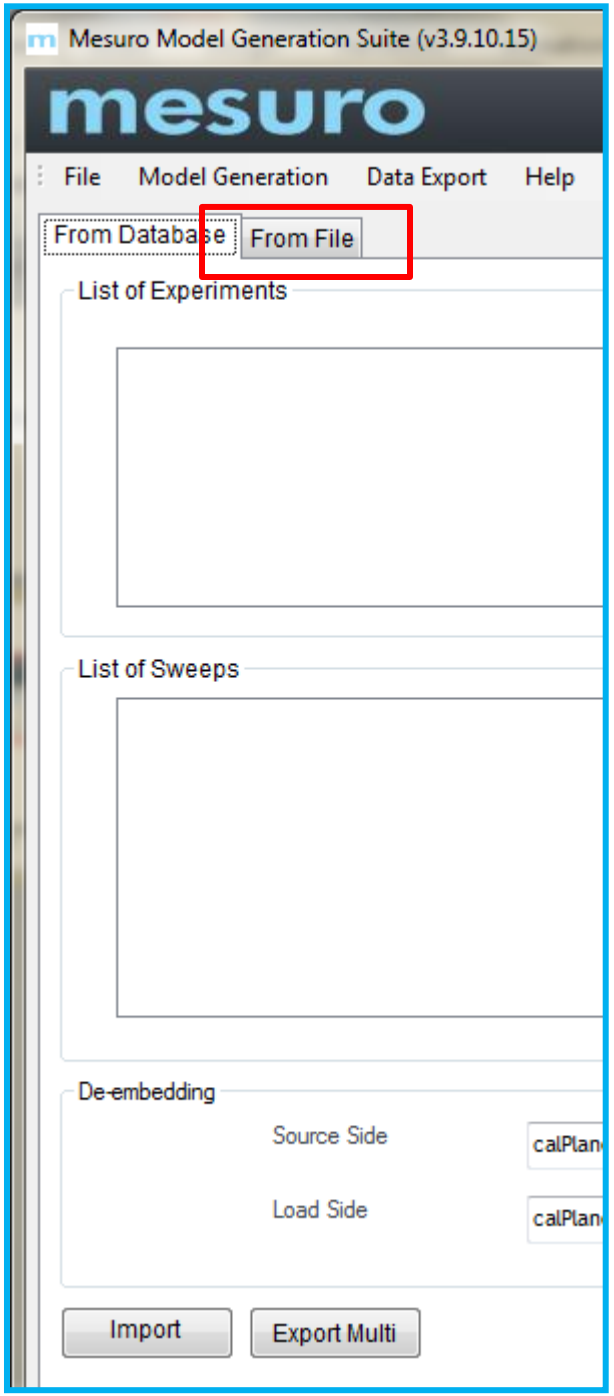
Import and Generate CM+ Model with Focus LPCWave File

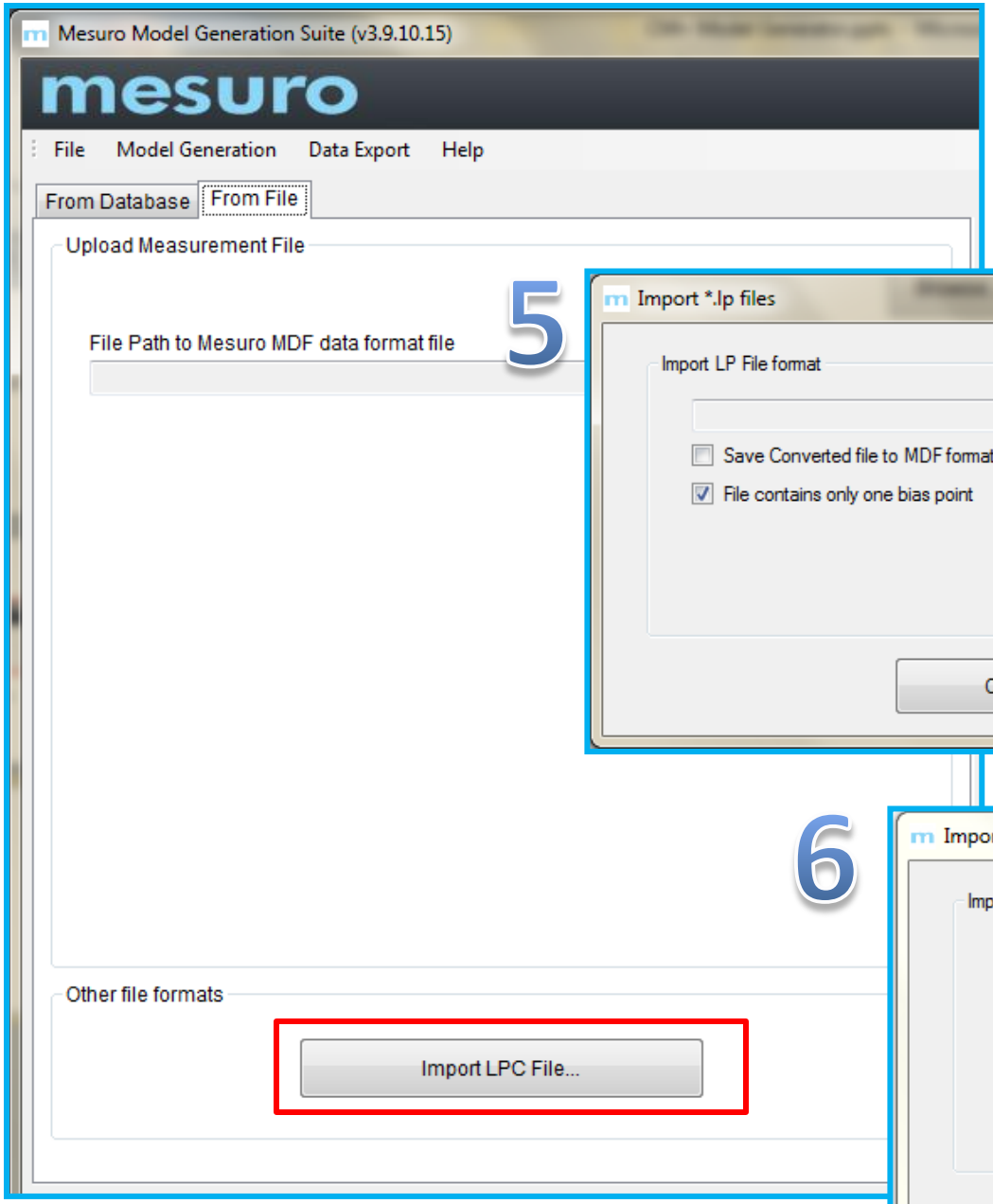
Neo

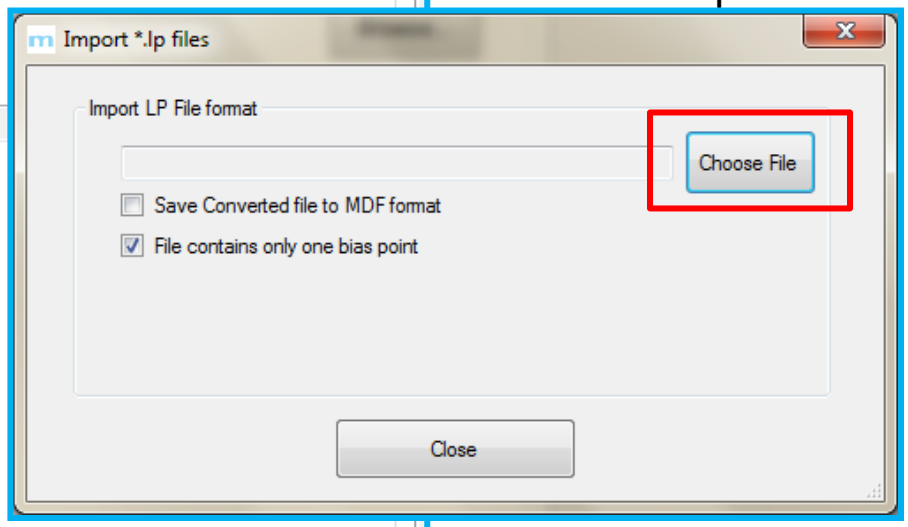


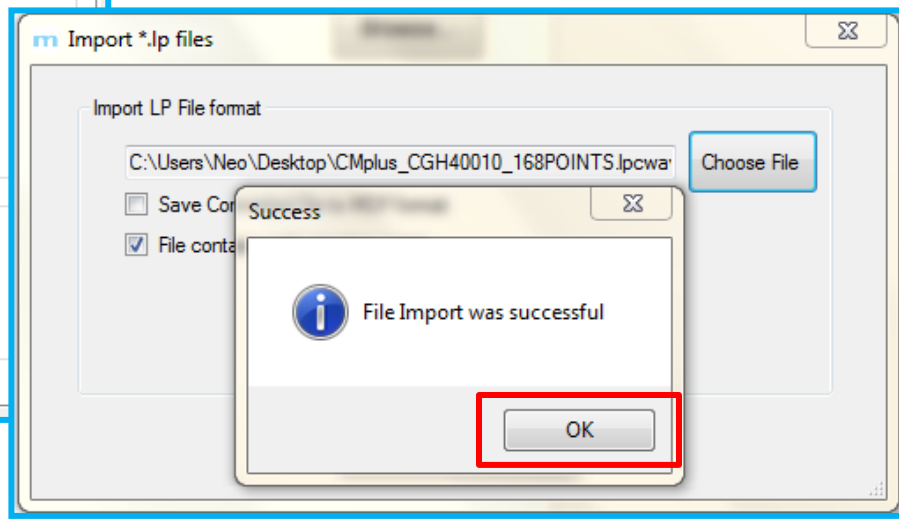


1. Open Mesuro Model Generation Suite.exe
2. Click ***File – Import Data***
3. Choose tab ***From File***

4. Click ***Import LPC File***
5. Click ***Choose File*** and load Focus LPCWave file (In this example, we have only one bias condition)
6. There will be a dialog once the file is imported successfully and





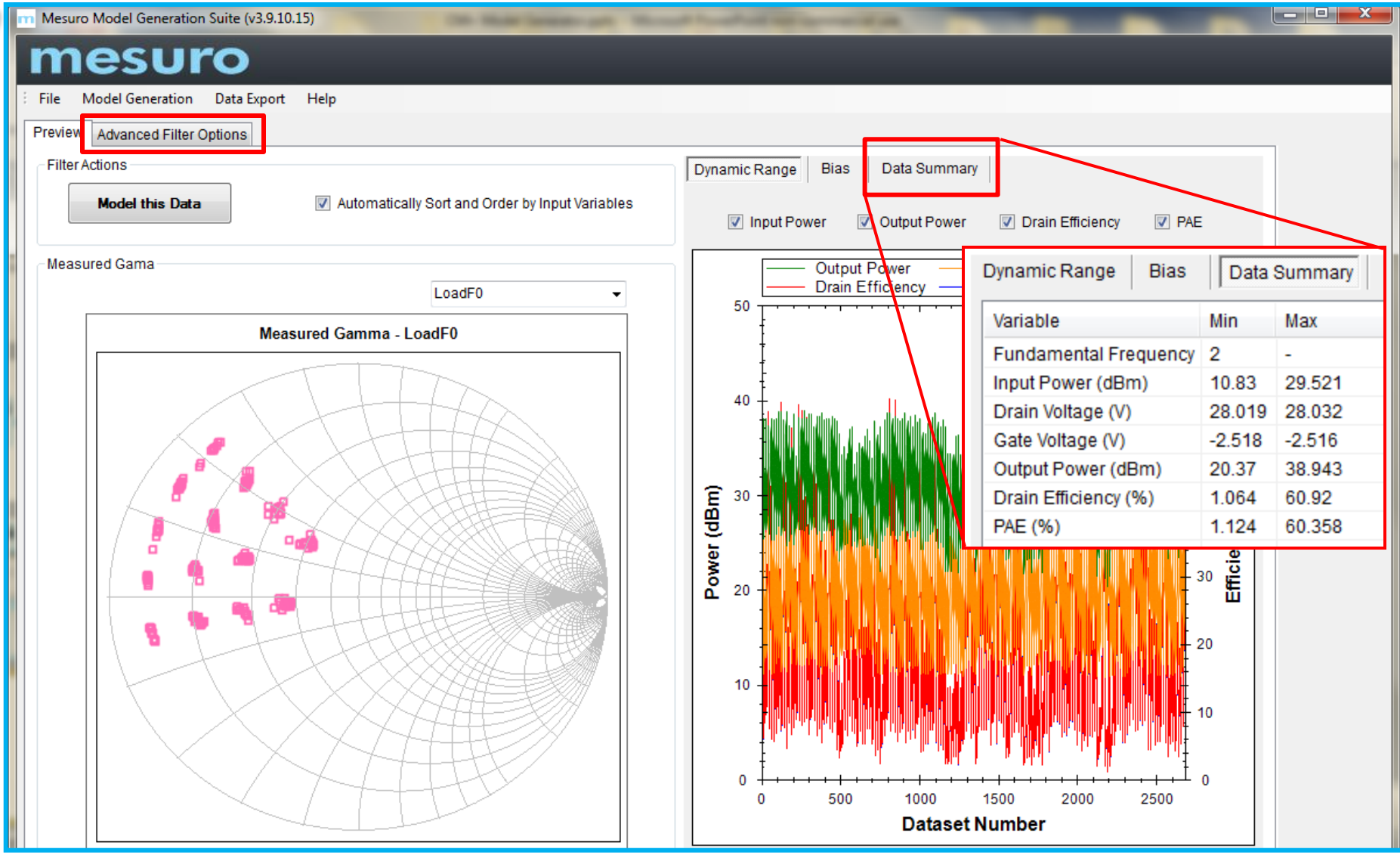


7. In this part, we can check the LPCWave data by clicking ***Data Summary.***

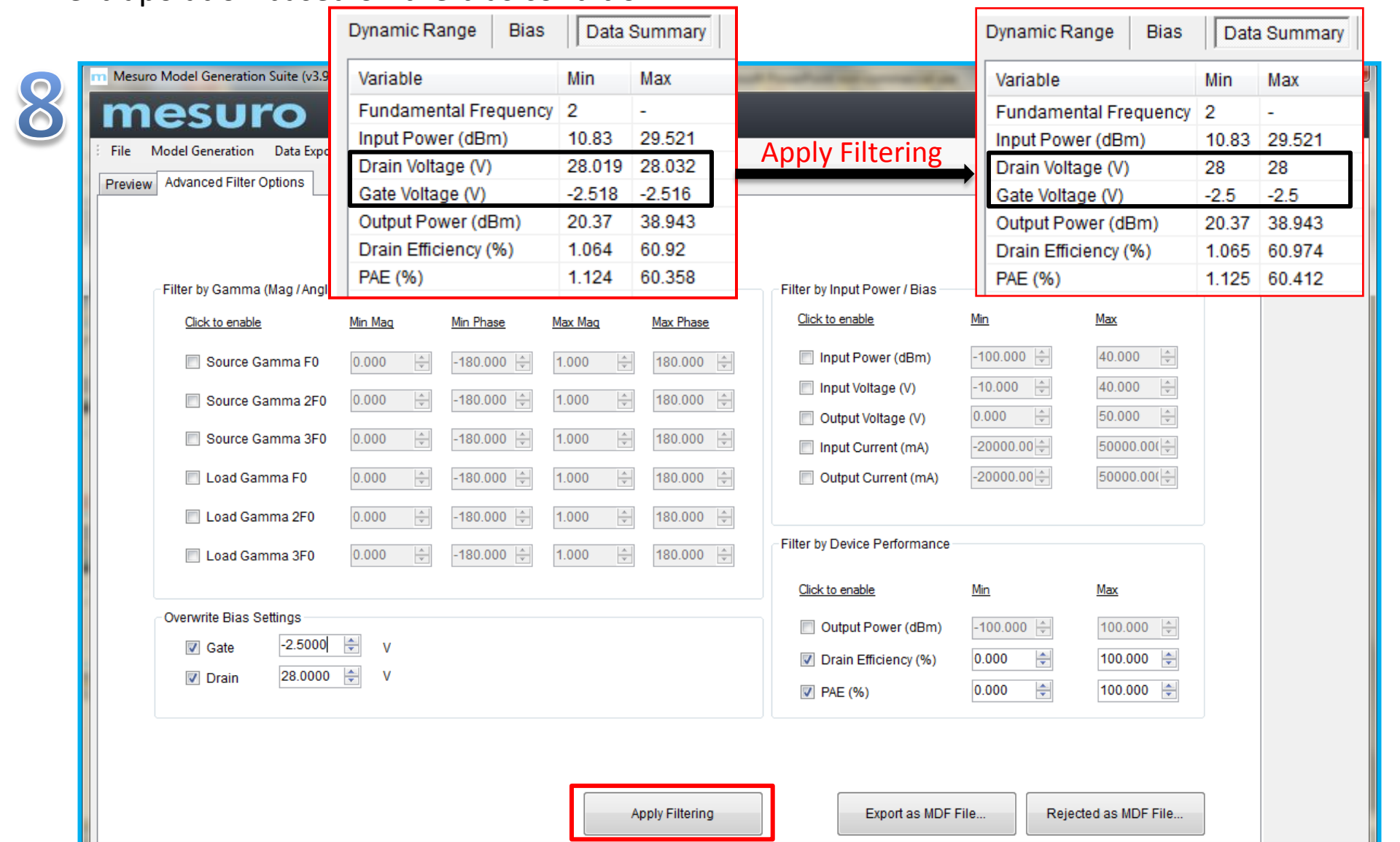
***Check if the data is reasonable:**

if Drain/Gate Voltage varies unusually, if efficiency exceeds 100%, etc.

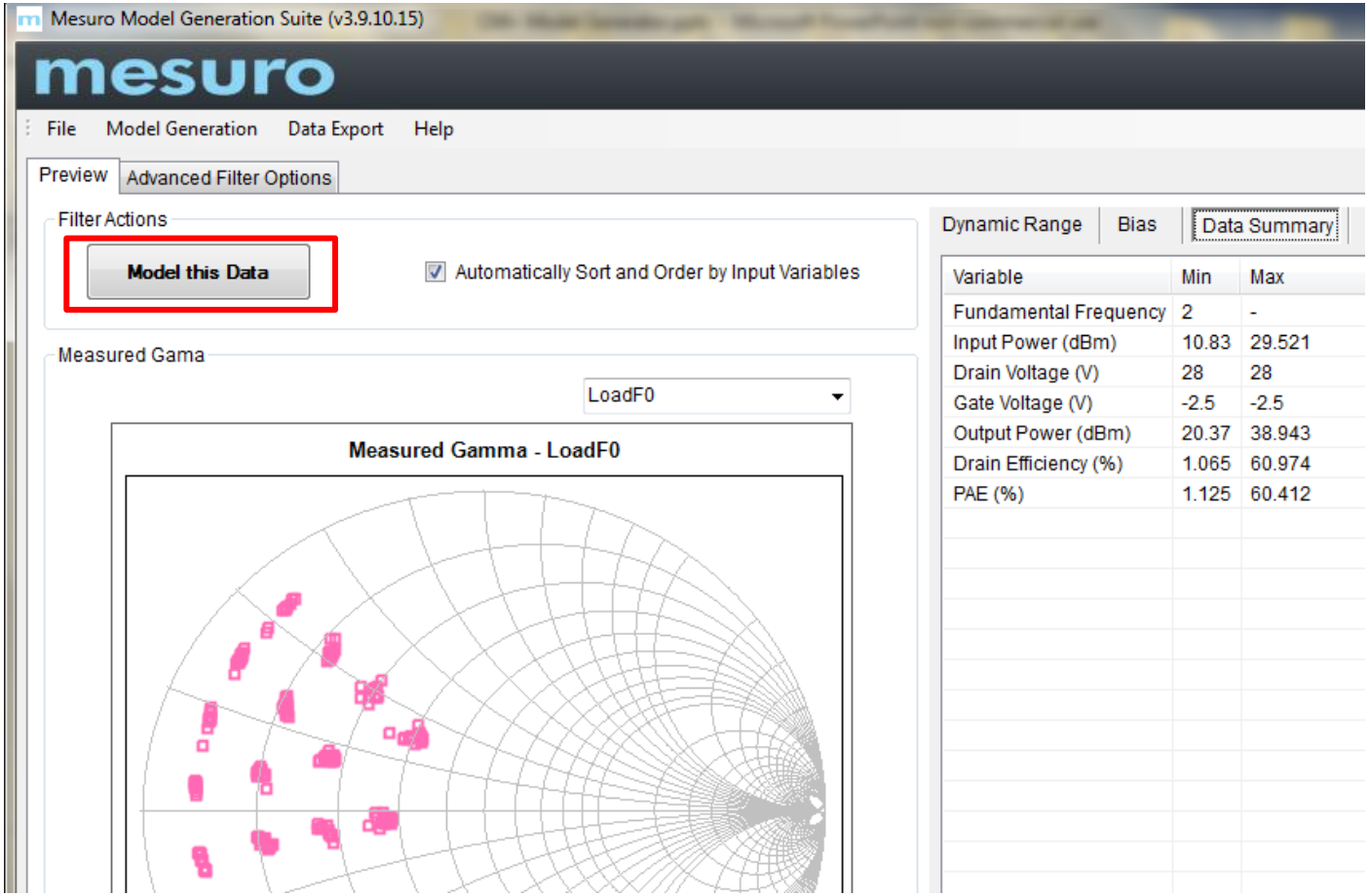
To filter undesired data, click ***Advanced Filter Option***.



8. In this part, we can remove undesired data by setting these filters and clicking ***Apply Filtering***. In this example, we recommend to overwrite the bias settings as shown, so that the drain and gate voltage are fixed. When this model is used in the simulator, same bias condition (Vg: -2.5V, Vd: 28V in this case) should be set. Otherwise, the simulator will do extrapolation based on the bias condition.



9. After applying the filter, click ***Model this Data***.



10. In this step, choose the corresponding option based on the LPWave file and click ***Generate Model Now***. In this example, the imported LPWave file contains load F0 and 2F0 nested pattern, so ***Output Fundamental And Second (With Mixing)*** is chosen. If the file contains only load F0, choose ***Fundamental Only (6 Term)***.

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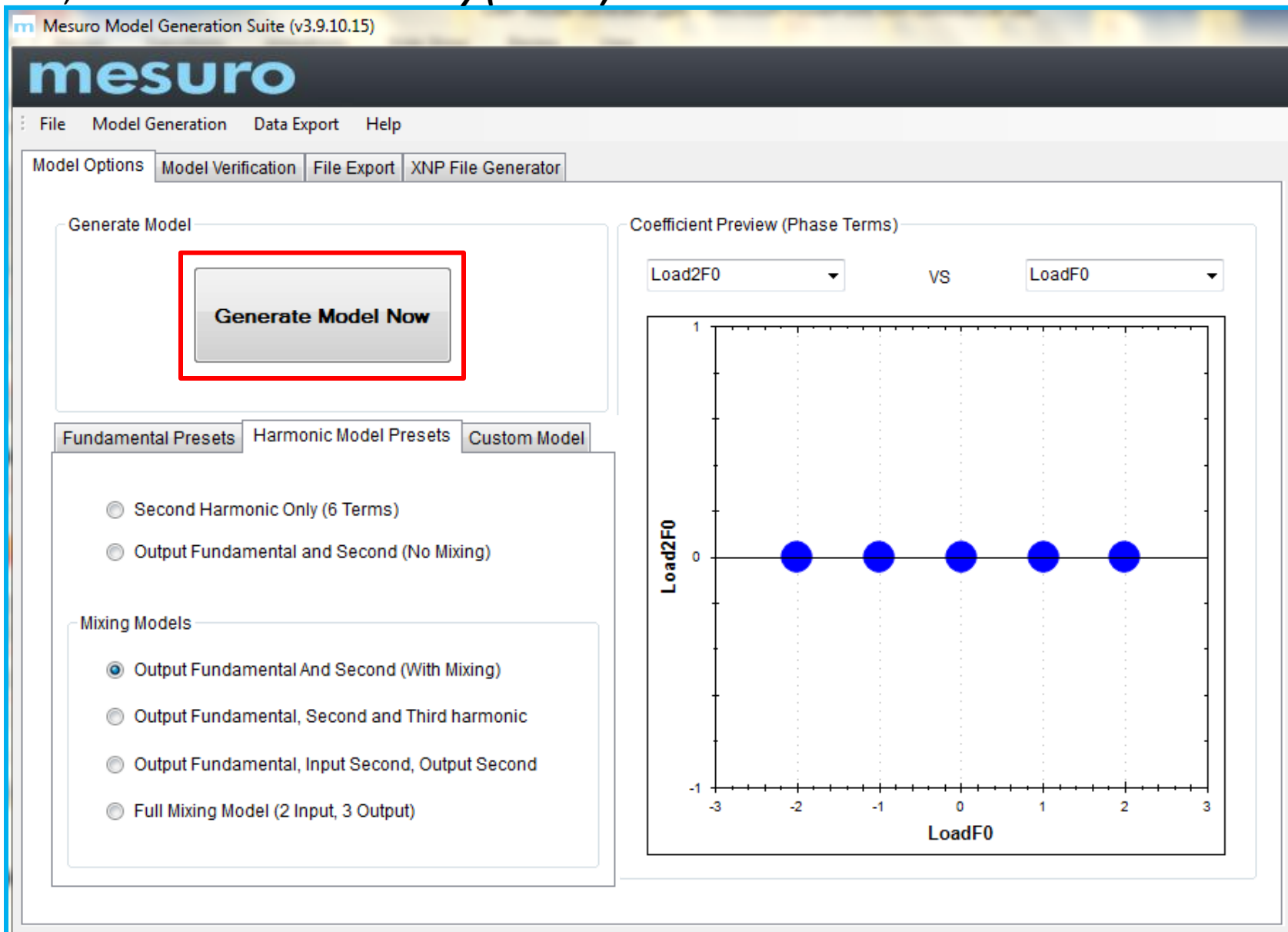

11. This part allows you to check the accuracy of the model. Always check the accuracy of only the frequency you wish to model e.g. the average value of B21 should be < 1%

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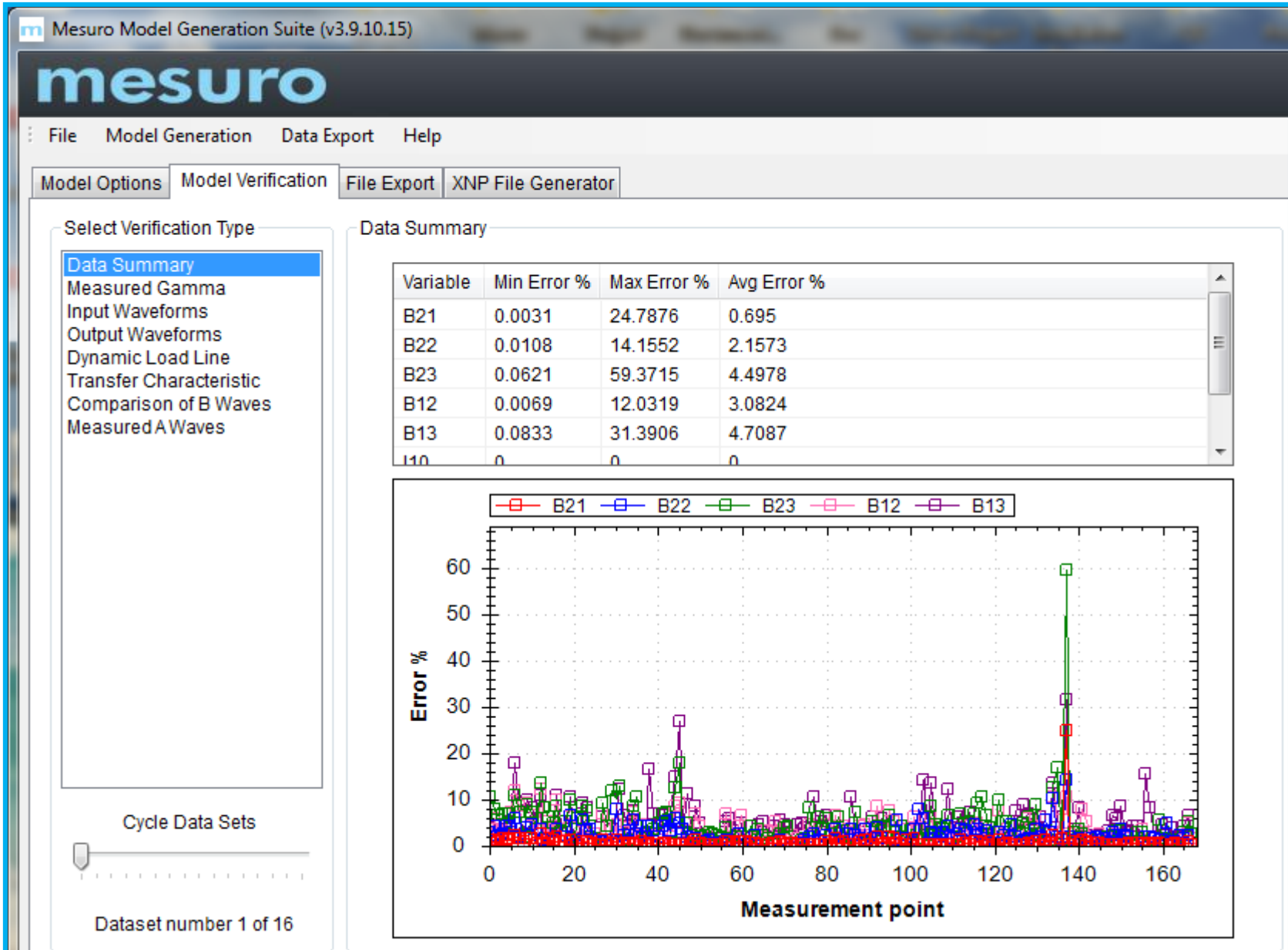
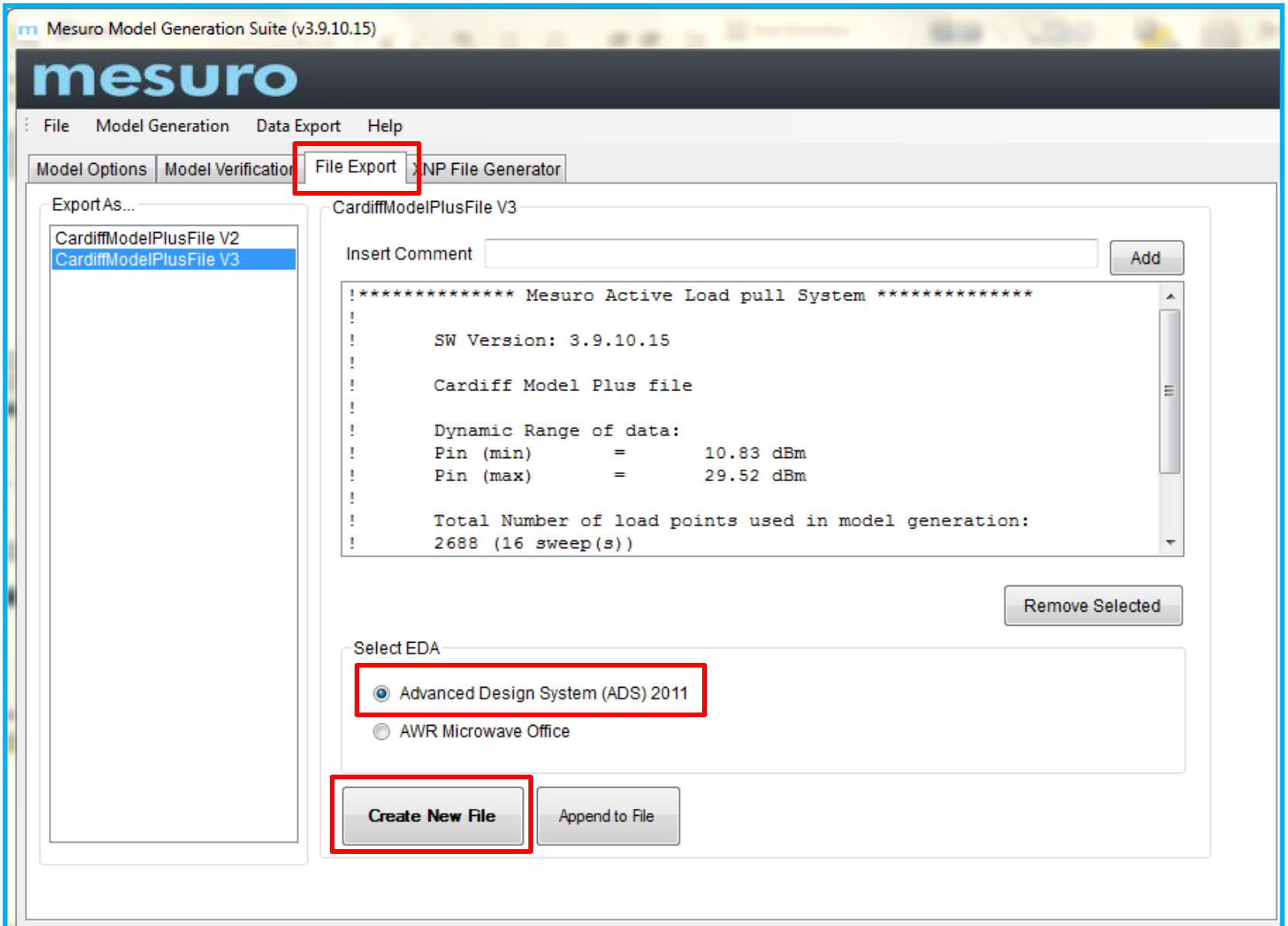
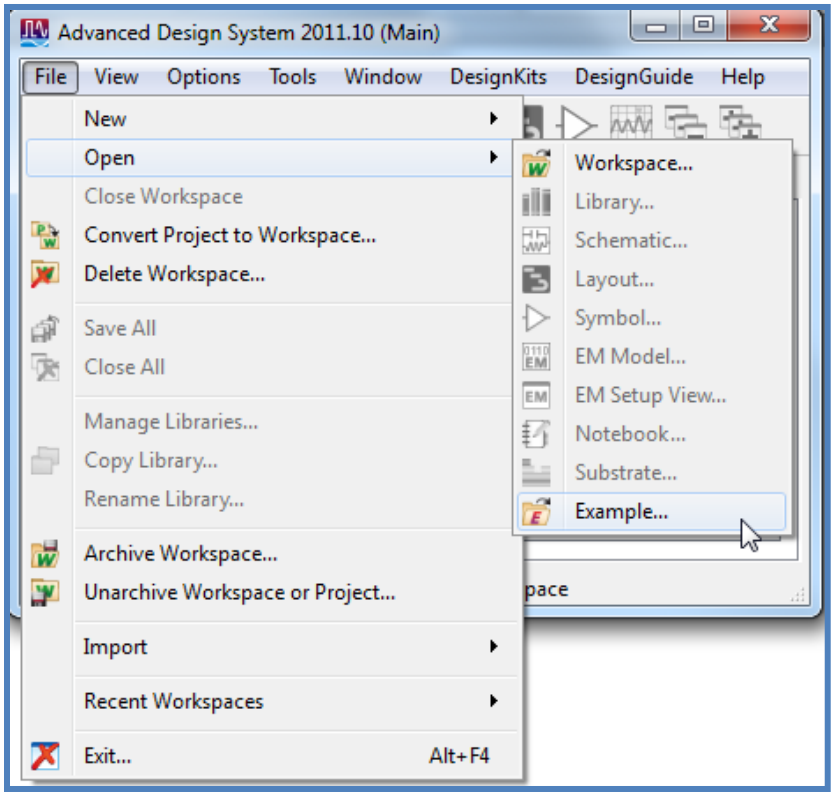
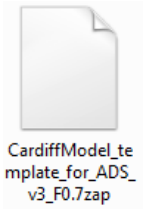
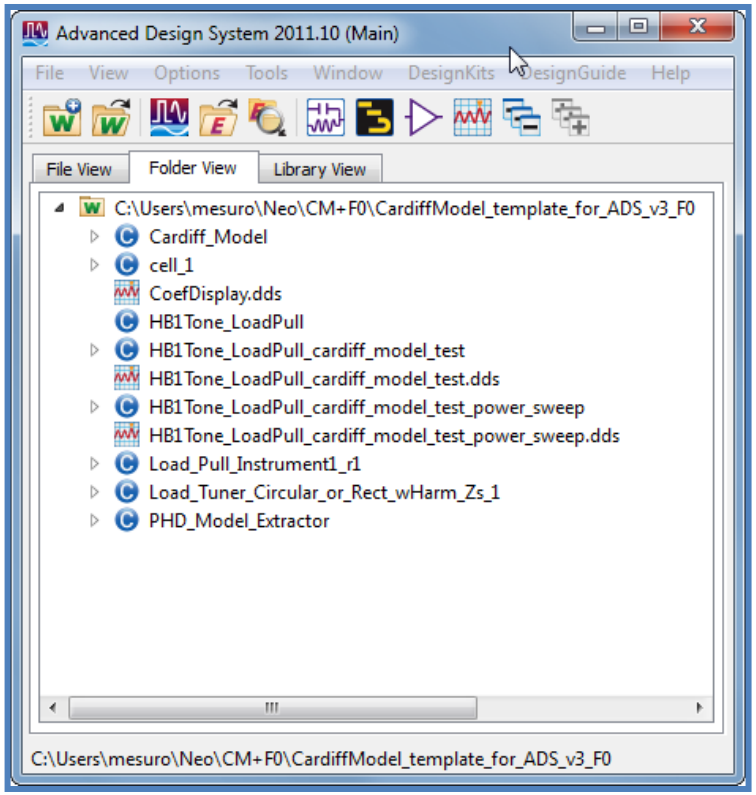


12. Choose ***File Export*** tab, check ***Advanced Design System (ADS) 2011*** or ***AWR Microwave Office***, and click ***Create New File.*** Save the .mdf file. This .mdf file is the model file that will be used in ADS or AWR. Use **V3**





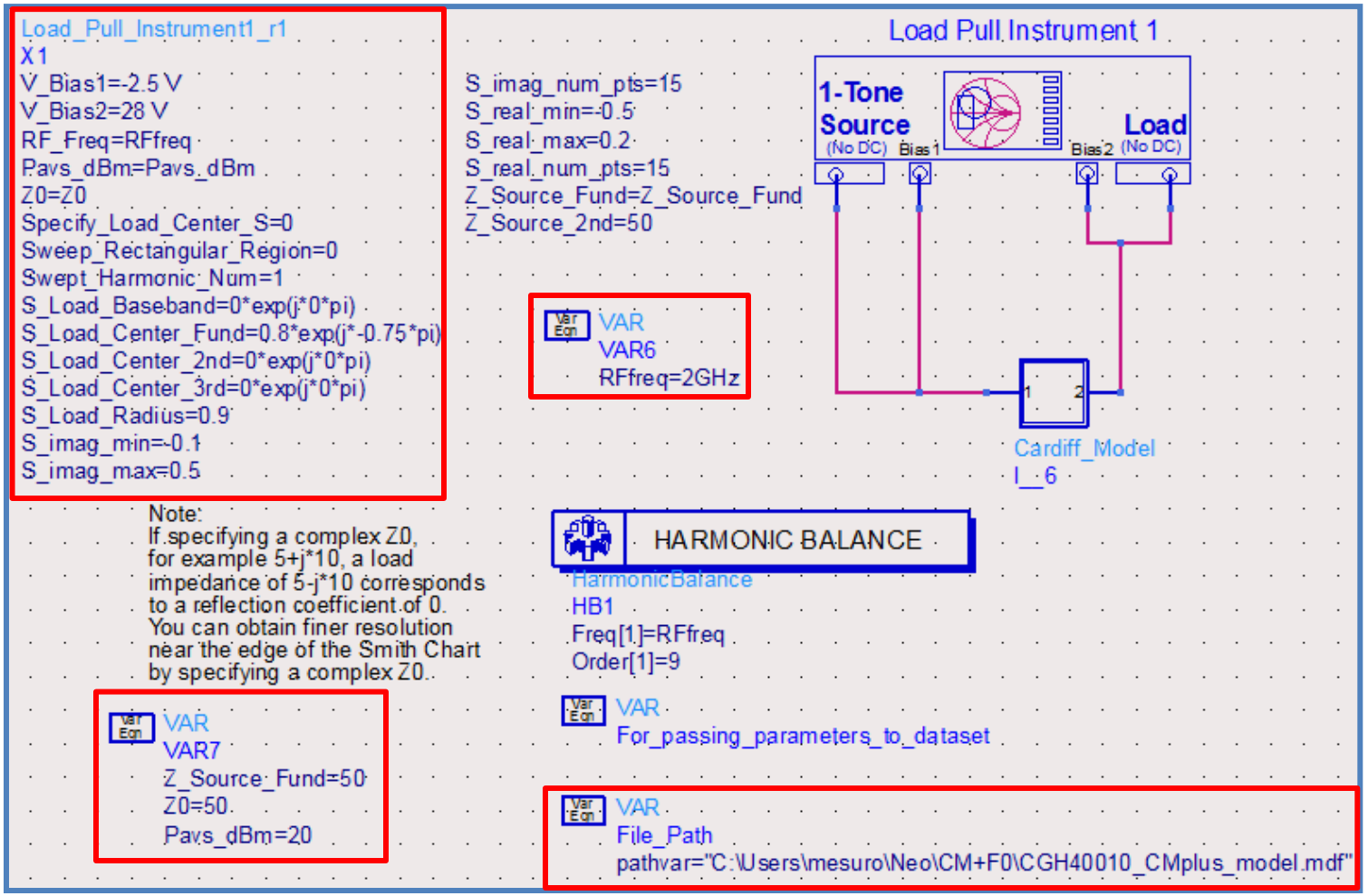




1. In ADS, click ***File – Open - Example***, and load the template file:
   CardiffModel_template_for_ADS_v3_F0.7zap
   This file can be found in ***…¥MESURO TEMPLATES¥ADS¥F0_ONLY***
2. There are two simulations template:
   - HB1Tone_LoadPull_cardiff_model_test:
     Generate Pout and PAE contour in Smith chart
   - HB1Tone_LoadPull_cardiff_model_test_power_sweep:
     Power sweep at one load impedance point

In ***HB1Tone_LoadPull_cardiff_model_test***, check the following parameters before simulation:

- File_Path of the CM+ model
- Load Pull region
- RFfreq
- Bias condition
- Pavs_dBm



At load that gives maximum power (and gain):

BiasCurrent_at_MaxPower	Zload_at_MaxPower	MaxPowerRho
0.273	15.609 + j14.595	0.556 / 144.463

PAE_at_MaxPower
26.777

Z_In_at_MaxPower	Gain_at_MaxPower
0.627 - j0.184	13.115

Pdel_dBm_Max
33.115

At load that gives maximum PAE:

BiasCurrent_at_MaxPAE	Zload_at_MaxPAE	MaxPAE_Rho
0.187	11.853 + j26.258	-0.370 + j0.582

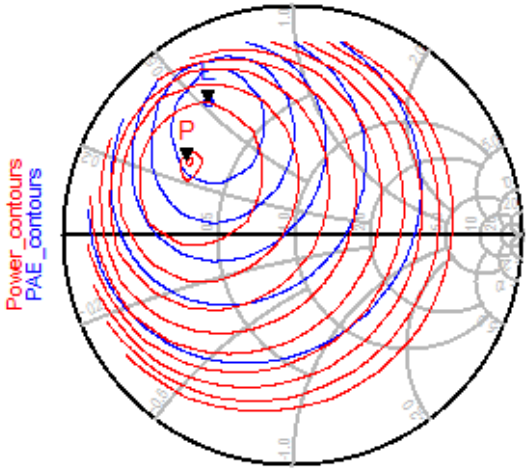
PAEmax	DEmax
30.160	30.369

Z_In_at_MaxPAE	Gain_at_MaxPAE
0.273 + j1.245	11.991

Pdel_dBm_at_MaxPAE
31.991

System Reference Impedance Z0: 50.000
A Rho of 0 corresponds to a load impedance of conj(Z0).

PAE and Delivered Power Contours



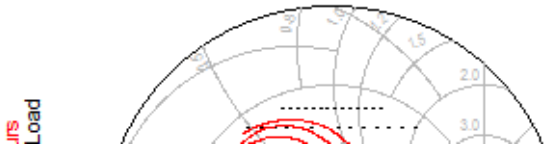
Power contour levels, dBm:
33.08
33.00
32.00
31.00
30.00
29.00
28.00

PAE contour levels, %:
30.130
25.000
20.000
15.000
10.000
5.000

(PAE, %)
level=30.129608, number=65
11.828 + j26.240

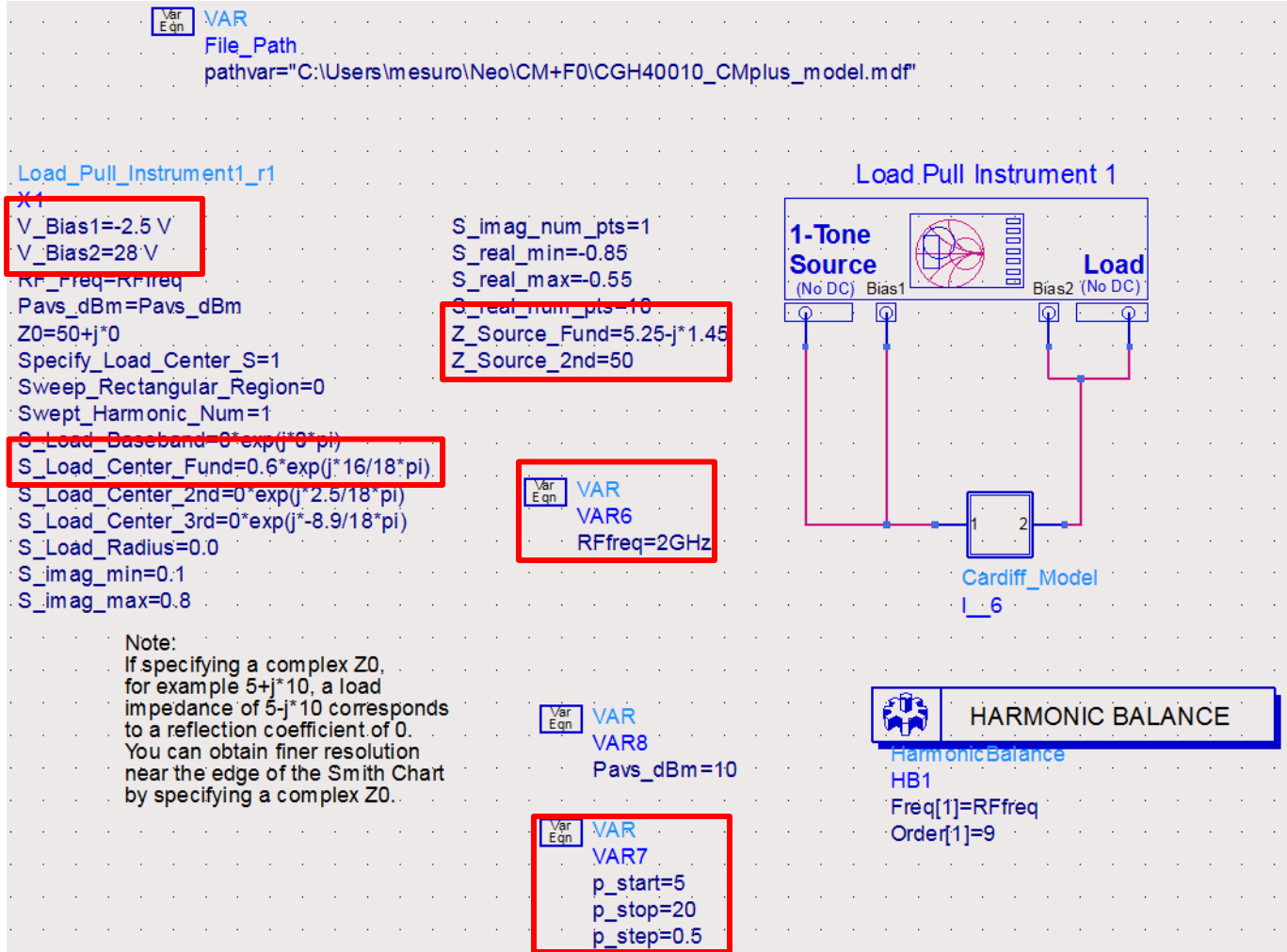
(Power Delivered, dBm)
level=33.081451, number=64
15.188 + j14.493

Transducer Power Gain Contours,
Simulated Load Reflection Coefficients and
Corresponding Input Reflection Coefficients



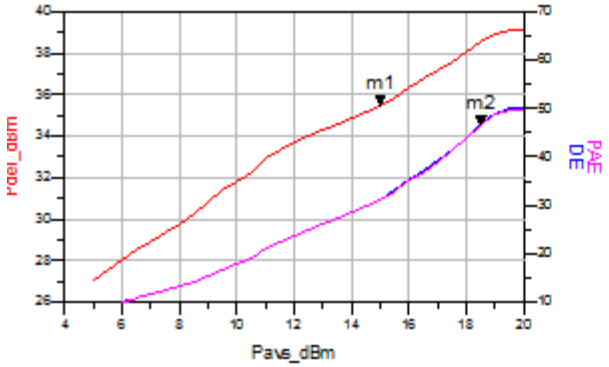
In ***HB1Tone_LoadPull_cardiff_model_test_power_sweep***, check the following parameters before simulation:

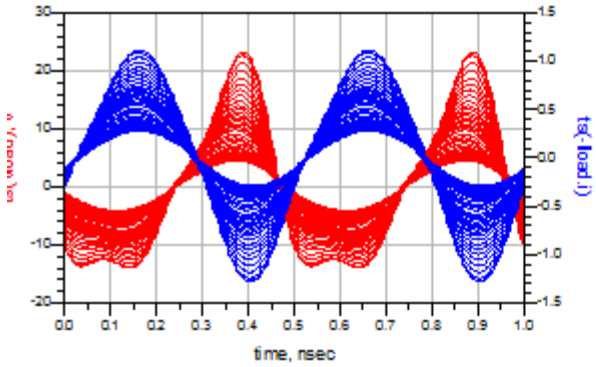
- File_Path of the CM+ model
- Source & Load impedance @ F0
- RFfreq
- Bias condition
- p_start, p_stop & p_step



m2
indep(m2)=18.500
plot_vs(DE, Pavs_dBm)=46.617
X1.X1.imag_indexs11=0.205212, X1.X1.real_indexs11=-0.563816

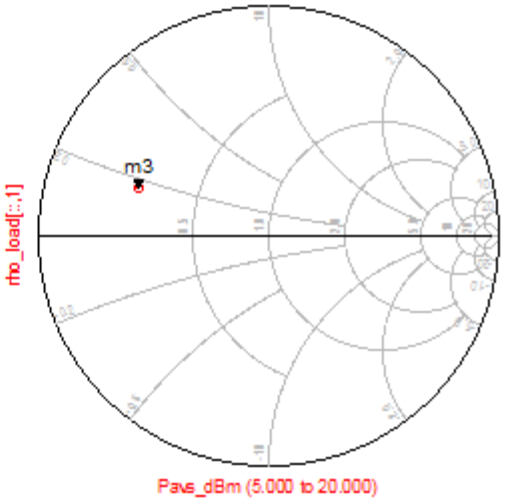
m1
indep(m1)=15.000
plot_vs(Pdel_dBm, Pavs_dBm)=35.484
X1.X1.imag_indexs11=0.205212, X1.X1.real_indexs11=-0.563816





Eqn z_load=Vload/Iload.i

Eqn rho_load=(z_load-50)/(z_load+50)



m3
Pavs_dBm=20.000
rho_load[::,1]=0.600 / 160.000
X1.X1.imag_indexs11=0.205212, X1.X1.real_indexs11=-0.563816
impedance = Z0 * (0.257 + j0.165)