

DOE15_LDMOS_0p8+1p6_380um_ Simulation_400um Minipac design

Bhagath Talluri
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- restricted -

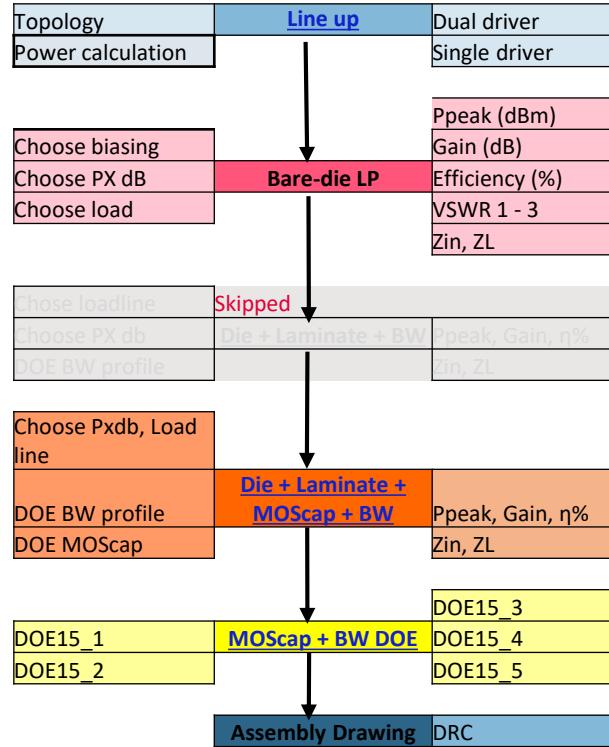


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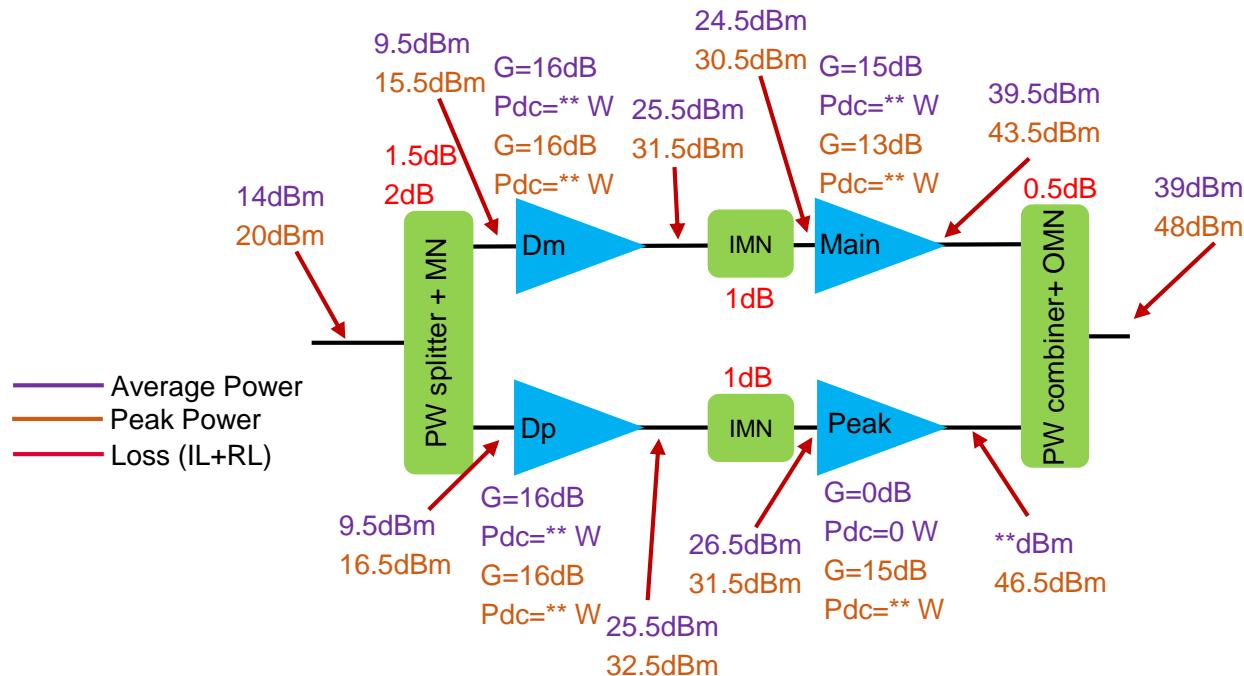
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Design approach

- › Step 1: Line up calculation with losses
- › Step 2: Obtain Main section driver power requirement
- › Step 3: Choose the available LDMOS die that delivers the power
- › Step 4: Design/performance criteria
 - › Compression X dB <1,
 - › Px dB > 33 dBm
 - › As high Gt as possible
 - › As high η% as possible
- › Bondwire + Moscap to improve performance
 - › Select Moscap DOE



From: Dual driver Architecture-Draft (Alireza)

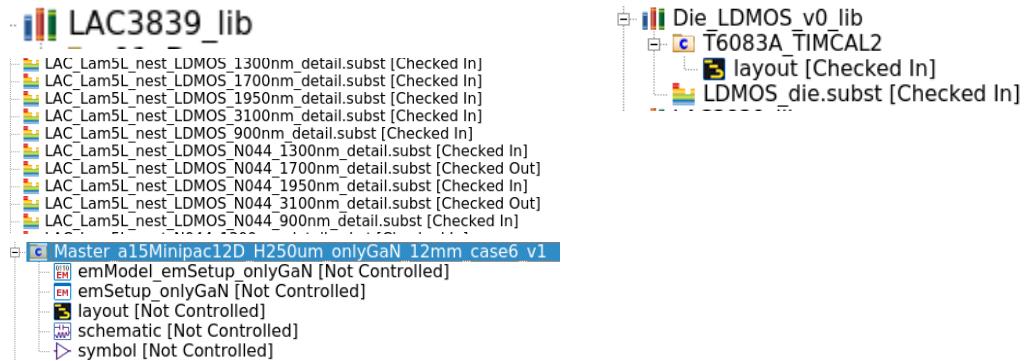


- › Around 33 dBm expected from main section
- › Intended to operate in as much linear region as possible until Pout = 33 dBm



Design on laminate DOE15

› Laminate library:LAC3839_lib



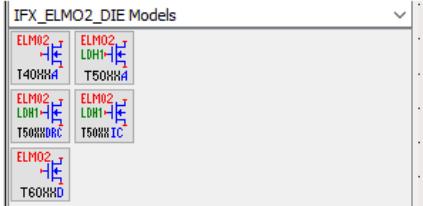
	LDMOS	MOSCap
Design	Die_LDMOS_v0_lib	IC_LD8C_lib
Assembly drawing	Die_LDMOS_v0_lib	Central_v0_lib



LDMOS model

LDMOS models,

- Model validation I was never involved here. I have the model itself, and we could theoretically even support and improve this in the future, but I don't have validation data or report.



You need to go to the 'ELMO2' palette (there are many palettes)

T40xx = LD10

T60xx = LD12 (LD10S)

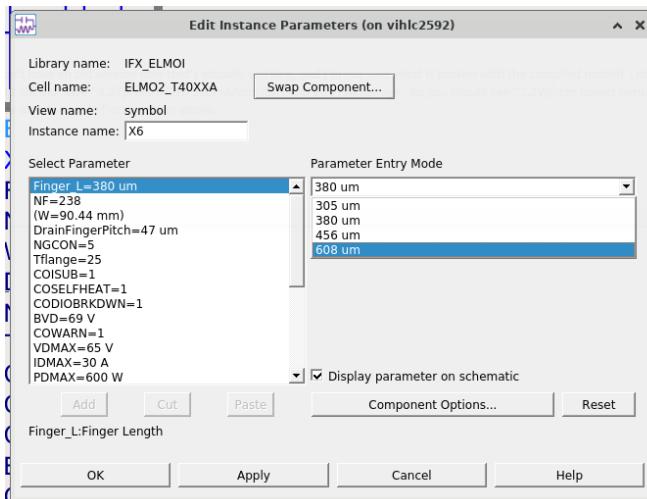
Anything marked with LH1 is 50V LDMOS – poor performance >1GHz.

I believe the LD11 model was discontinued – and in any case for a plastic OM product we shouldn't consider LD11.

\\mucsdv534.infineon.com\RFS\PG_WI\90_TechInfo\LDMOS\PDK_Model

Design Notes

Right Finger length is not Available, So only 2.28 mm can be made (Interested 2.4mm)



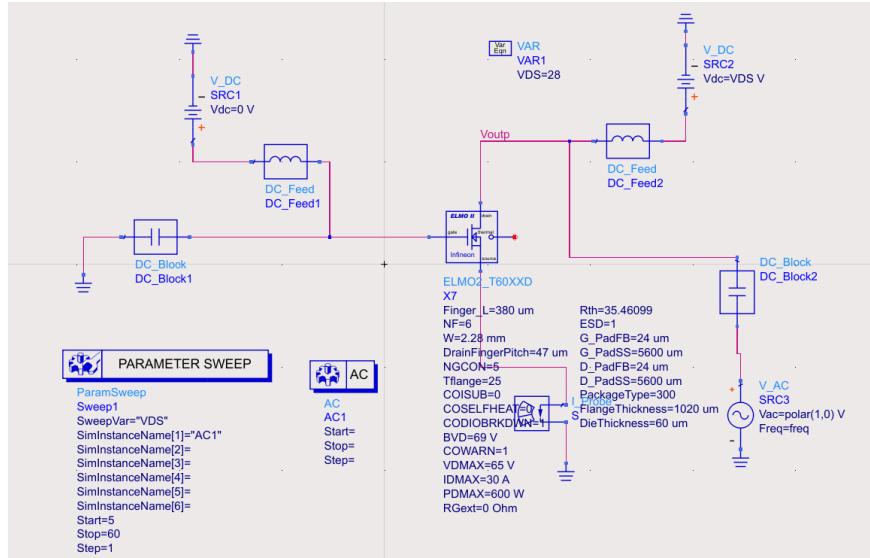
Fab Name	Marketing Name	Comment
LD10M	LD10	Oldest run material, Sinker (no TSV) and no voids
LD10E	LD11	LD10M with 'open' voids. Not suitable for plastic
LD10S	LD12	High res+TSV and integrated capped voids for low Cds.

So if you are using LD10S, this is not the same thing as LD10.

CDS checking

N.B. I don't have an old version now that's actually working, and I'm not sure what is broken with the compiled model! Let's looks carefully at the results you get.

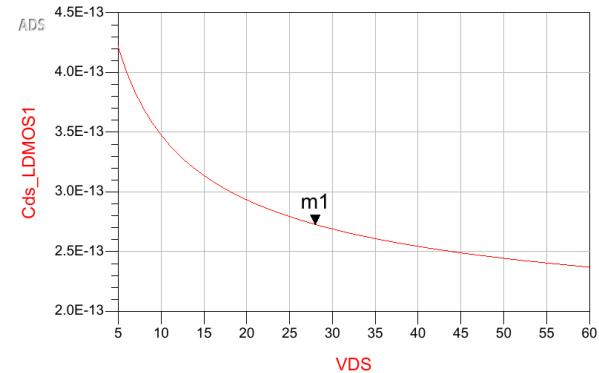
N.B. LD12 should have $\sim 0.27\text{pF/mm}$ Cds, 110mA/mm ISAT and 28V rail voltage. So you should see $\sim 1.2\text{W/mm}$ power density and the Cout should let you roughly estimate the load contours. If you get strange results you should be able to realise from number above.



$$\text{Eqn } Z_{out_p} = V_{outp}/S_i$$

$$\text{Eqn } C_{ds_LDMOS1} = 1/(2 * 4.56 * \pi * AC.freq * -\text{imag}(Z_{out_p}))$$

```
m1
indep(m1)=28.000
plot_vs(Cds_LDMOS1,VDS)=2.728E-13
freq=3.600E9
```



DOE 15 with Mocap (mdif file based)

LDMOS_A (0.8 + 1.6 mm)	P_1dB	Mocap				Freq.	Max. performance @ P1dB			Performance @ (33,3 dBm)					Performance @ (34 dBm)								
							MXP (dBm)	MXG (dB)	MXE (%)	Zin (Ω)	Z_L (Ω)	Pout (dBm)	Eff. (%)	Gt (dB)	IRL (dB)	Zin (Ω)	Z_L (Ω)	Pout (dBm)	Eff. (%)	Gt (dB)	IRL (dB)		
DOE_15	BW_profile	N9500A	3	RF top plate (X x Y)	Oxide thickness (μm)	Value (pF)	2,21	3.4 GHz	34.2	16.3	51.8	4.6 - j 1.0	4.0 + j 16	33.25	50.6	16.1	-15.4	4.7 - j 1.3	5.2 + j 16.3	33.88	49.5	15.2	-14.6
								3.6 GHz	34.2	16.3	52.1	4.2 + j 0.2	4.0 + j 16.8	33.33	52.0	16.3	-17.1	4.0 + j 0.1	5.2 + j 16.3	34.01	51.4	15.7	-15.9
								3.8 GHz	34.2	16.1	52.4	4.2 + j 1.2	4.0 + j 16.8	33.31	49.6	15.6	-16.7	4.0 + j 1.2	5.2 + j 16.3	33.96	50.2	15.3	-15.2
DOE_15_1	BW_3q_4q_5q	N9501B_V8	1466 x 207	3100	3,53			3.4 GHz	34.3	16.2	52.3	3.2 - j 0.3	4 + j 16.7	33.23	50.1	16.0	-13.9	3.3 - j 0.4	5.4 + j 16.3	34.03	49.5	15.0	-12.9
								3.6 GHz	34.2	16.4	52.1	3.0 + j 0.9	4 + j 16.7	33.25	52.1	16.4	-31.7	2.9 + j 0.8	5.4 + j 16.2	34.09	51.3	15.7	-26.9
								3.8 GHz	34.2	16.2	52.3	3.0 + j 1.7	4.0 + j 16.7	33.26	50.0	15.7	-19.1	2.9 + j 1.7	5.4 + j 16.3	33.99	50.1	15.3	-18.5
DOE_15_2	BW_3q_4q_5q	N9500B_V7	1010 x 253	1950	4,64			3.4 GHz	34.2	16.0	52.2	2.5 + j 0.4	4.0 + j 16.7	33.33	50.4	15.8	-13.2	2.5 + j 0.2	5.8 + j 15.8	34.12	48.0	14.5	-12.2
								3.6 GHz	34.2	16.2	52.6	2.4 + j 1.4	4.0 + j 16.7	33.30	52.3	16.2	-18.4	2.3 + j 1.3	5.8 + j 15.8	34.25	50.6	15.2	-16.8
								3.8 GHz	34.2	16.0	52.8	2.5 + j 2.1	4.0 + j 16.7	33.36	50.4	15.5	-17.1	2.3 + j 2.2	5.8 + j 15.8	34.16	50.1	15.0	-15.1
DOE_15_3	BW_3q_4q_5q	N9500B_V2	1010 x 295	1950	5,41			3.4 GHz	34.2	16.0	52.6	2.1 + j 0.8	4.0 + j 16.7	33.33	50.5	15.8	-15.1	2.2 + j 0.6	5.4 + j 15.8	34.05	48.5	14.8	-14.0
								3.6 GHz	34.2	16.2	53.4	2.1 + j 1.7	4.0 + j 16.7	33.31	52.5	16.2	-19.3	2.0 + j 1.7	5.4 + j 15.8	34.16	51.2	15.4	-17.8
								3.8 GHz	34.2	16.0	53.3	2.2 + j 2.4	4.0 + j 16.7	33.39	50.6	15.5	-22.2	2.1 + j 2.5	5.4 + j 15.8	34.15	51.0	15.2	-20.0
DOE_15_4	BW_3q_4q_5q	N9500B_Std	1010 x 337	1950	6,18			3.4 GHz	34.2	15.9	52.4	1.8 + j 1.1	4.0 + j 16.7	33.37	50.8	15.6	-12.9	1.9 + j 1.0	5.4 + j 15.8	34.06	48.5	14.5	-11.9
								3.6 GHz	34.2	16.1	52.7	1.8 + j 2.0	4.0 + j 16.7	33.31	52.5	16.1	-24.7	1.7 + j 2.0	5.4 + j 15.8	34.16	51.3	15.4	-21.6
								3.8 GHz	34.2	15.8	53.4	1.9 + j 2.6	4.0 + j 16.7	33.39	50.7	15.4	-15.9	1.8 + j 2.7	5.4 + j 15.8	34.11	51.0	15.1	-14.4
DOE_15_5	BW_3q_4q_5q	N9500B_V7	1010 x 337	1950	7,11			3.4 GHz	34.2	15.9	52.5	1.6 + j 1.5	4.0 + j 16.7	33.33	50.7	15.7	-15.4	1.6 + j 1.4	5.4 + j 15.8	34.04	48.6	14.5	-14.0
								3.6 GHz	34.2	16.1	52.8	1.5 + j 2.3	4.0 + j 16.7	33.28	52.6	16.1	-20.9	1.5 + j 23	5.4 + j 15.8	34.14	51.3	15.3	-20.9
								3.8 GHz	34.3	15.5	53.2	1.6 + j 2.9	4.0 + j 16.7	33.45	50.7	15.0	-12.0	1.6 + j 3.0	5.4 + j 15.8	34.20	51.1	14.6	-11.7
	BW_3q_4q_5q	N9500B_V7	1010 x 253		9,63			3.4 GHz	34.2	14.6	53.6	1.1 + j 2.3	4.0 + j 16.7	33.51	51.2	14.2	-6.8	1.1 + j 2.2	5.4 + j 15.8	34.17	48.9	13.0	-6.5
								3.6 GHz	34.2	15.2	53.2	1.1 + j 3.0	4.0 + j 16.7	33.51	53.3	15.2	-10.5	1.0 + j 3.0	5.4 + j 15.8	34.28	51.6	14.3	-9.9
								3.8 GHz	34.2	15.1	53.6	1.1 + j 3.6	4.0 + j 16.7	33.49	50.9	14.6	-11.2	1.1 + j 3.6	5.4 + j 15.8	34.23	51.3	14.1	-10.6



DOE_15 variants

LDMOS_A (0.8 + 1.6 mm)	P_1dB	Moscap_detail_EM					Max. performance @ P1dB			Performance_@ (33.3 dBm)					Performance_@ (34 dBm)						
DOE_15	BW_profile	Name	RF top plate (X x Y)	Oxide thickness (μm)	Value (pF)	Freq.	MXP (dBm)	MXG (dB)	MXE (%)	Zin (Ω)	Z_L (Ω)	Pout (dBm)	Eff. (%)	Gt (dB)	IRL (dB)	Zin (Ω)	Z_L (Ω)	Pout (dBm)	Eff. (%)	Gt (dB)	IRL (dB)
DOE_15_1	BW_3q_4q_5q	N9501B_V8	1466 x 207	3100	3,53	3.4 GHz	33.9	16.2	51.2	5.5+j1.0	4.4+j16.3	33.18	49.1	13.9	-16.1	5.6+j1.2	6.1+j15.8	33.79	47.0	13.0	-15.1
						3.6 GHz	34.0	15.8	51.4	5.3+j0.2	4.4+j16.3	33.22	51.3	14.1	-22.3	5.3+j0.1	6.1+j15.8	33.94	49.0	13.2	-20.8
						3.8 GHz	33.9	15.3	51.7	5.6+j1.0	4.4+j16.3	33.29	50.5	13.6	-28.1	5.4+j1.0	6.1+j15.8	33.93	48.4	12.8	-25.6
DOE_15_2	BW_3q_4q_5q	N9500B_V7	1010 x 253	1950	4,64	3.4 GHz	33.9	16.1	51.4	4.6-j0.2	4.4+j16.3	33.24	49.2	13.8	-19.6	4.6-j0.4	6.1+j15.8	33.86	47.3	12.9	-18.1
						3.6 GHz	34.0		51.4	4.6-j0.9	4.4+j16.3	33.28	51.6	14.0	-26.4	4.5+j0.8	6.1+j15.8	34.0	49.2	13.0	-25.0
						3.8 GHz	34.0	15.2	52.2	4.8+j1.5	4.4+j16.2	33.40	51.0	13.4	-22.5	4.7+j1.6	6.1+j15.8	33.95	48.5	12.6	-21.1
DOE_15_3	BW_3q_4q_5q	N9500B_V2	1010 x 295	1950	5,41	3.4 GHz	33.9	15.9	51.6	4.1+j0.3	4.4+j16.2	33.32	49.5	13.6	-18.7	4.1+j0.1	6.1+j15.8	33.87	47.3	12.7	-17.0
						3.6 GHz	34.0	15.5	51.8	4.1+j1.2	4.4+j16.2	33.33	51.8	13.8	-36.1	4.0+j1.1	6.1+j15.8	34.00	49.2	12.9	-37.4
						3.8 GHz	34.0	15.0	52.2	4.3+j1.8	4.4+j16.2	33.41	51.0	13.1	-15.7	4.2+j1.8	6.1+j15.8	33.99	48.6	12.3	-15.2
DOE_15_4	BW_3q_4q_5q	N9500B_Std	1010 x 337	1950	6,18	3.4 GHz	33.9	15.8	52.2	3.7+j0.5	4.4+j16.2	33.43	50.0	13.4	-15.1	3.7+j0.3	6.1+j15.8	33.88	47.4	12.4	-14.1
						3.6 GHz	34.1	15.3	52.4	3.8+j1.3	4.4+j16.2	33.49	52.5	13.3	-12.5	3.7+j1.2	6.1+j15.8	34.06	49.4	12.3	-12.0
						3.8 GHz	34.0	15.0	52.2	4.0+j1.9	4.4+j16.2	33.38	51.1	13.1	-41.6	3.9+j1.9	6.1+j15.8	33.95	48.6	12.3	-35.0
DOE_15_5	BW_3q_4q_5q	N9500B_V7	1010 x 337	1950	7,11	3.4 GHz	34.0	15.8	52.1	3.7+j0.5	4.4+j16.2	33.45	50.0	13.3	-14.0	3.7+j0.3	6.1+j15.8	33.91	47.4	12.4	-13.9
						3.6 GHz	34.3	15.4	52.3	3.7+j1.3	4.4+j16.2	33.45	52.3	13.6	-16.9	3.7+j1.3	6.1+j15.8	34.02	49.4	12.6	-16.2
						3.8 GHz	34.0		52.5	4.0+j1.9	4.4+j16.2	33.41	51.1	12.9	-13.3	3.9+j1.9	6.1+j15.8	34.02	48.7	12.1	-12.9

Compression = 1, ClassAB, Moscap: Detail EM



ADS cells and symbols

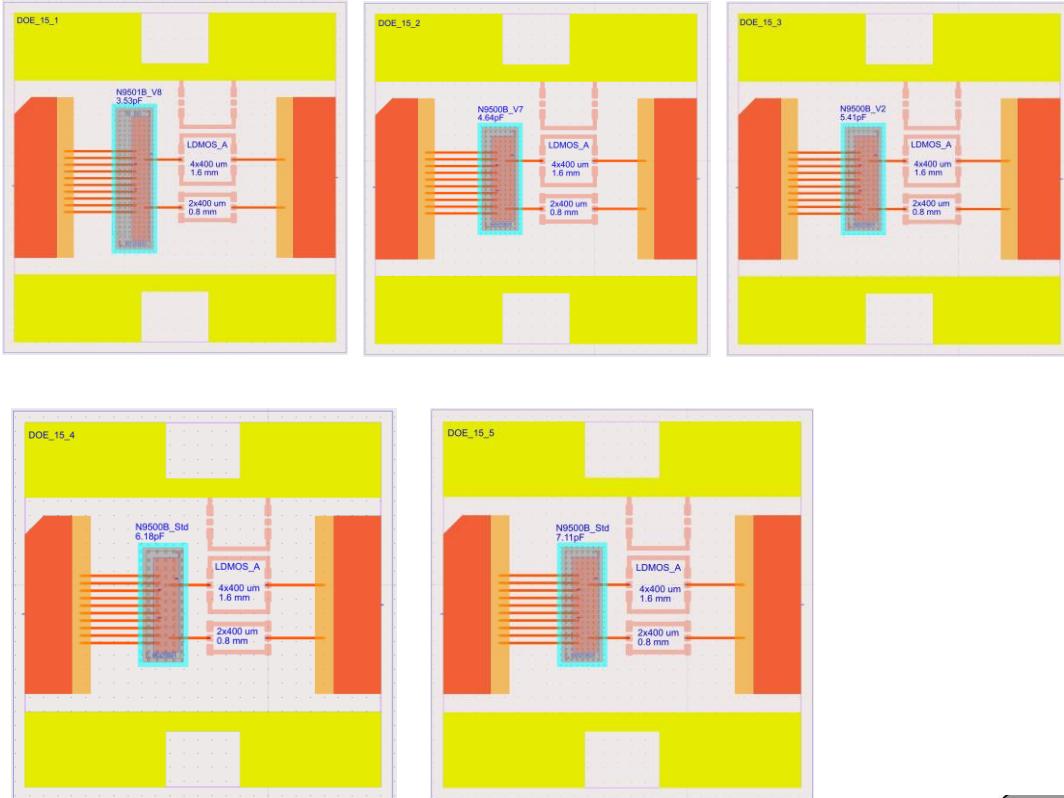
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 - [D] symbol [Checked In]



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- › [Theepak ShoundraBalan](#): Design related discussions, design review, troubleshooting and debugging.
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- › [Jorge Texeira](#): Assembly design rule guidelines, drawing review, build planning, coordination and documentation.
- › [Shamsafar Alireza](#): Design review, design target discussions and guidelines.
- › [De Astis Giuseppe & Andrea Scarpa](#): Design follow up, design environment & logistic coordination.

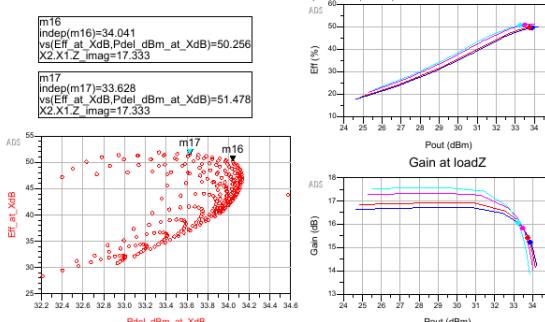
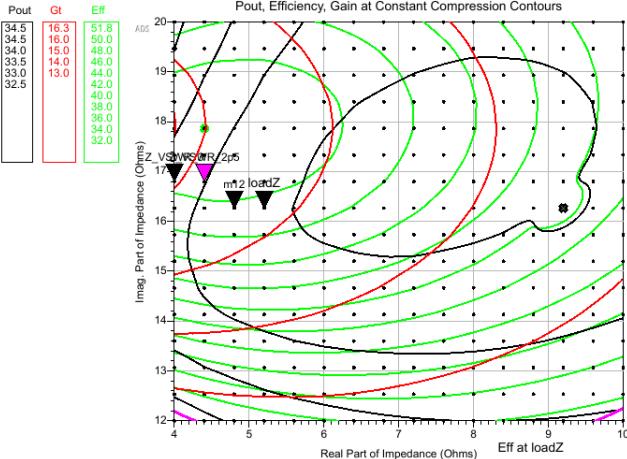




Part of your life. Part of tomorrow.

DOE15_x

C=2p23pF
Simple
Moscap:mdif
3,4GHz



Power Sweep Inspector

$\text{Eqn VSWR} = 5$ $\text{Eqn VSWR} = 2.5$

Move Marker 'loadZ' to desired impedance point.

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR Locus center Impedance = $[9.20 + j16.27]$
VSWR=5

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$5.20 + j16.27$	$0.83 / 143.62$	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.88	49.51	15.22
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-8.21	-14.57	$4.73 - j1.28$

✗ In plots below corresponds to this data.

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.80 + j16.27$	$0.84 / 143.67$	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.75	49.70	15.43
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-9.38	-14.71	$4.66 - j1.20$

✗ In plots below corresponds to this data.

VSWR = 2.5 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.40 + j16.80$	$0.85 / 142.61$	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.48	50.77	15.82
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-9.79	-15.10	$4.67 - j1.11$

✗ In plots below corresponds to this data.

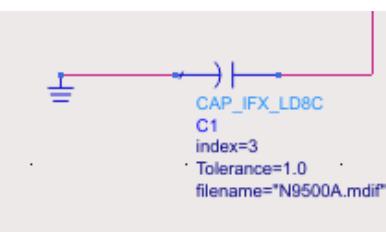
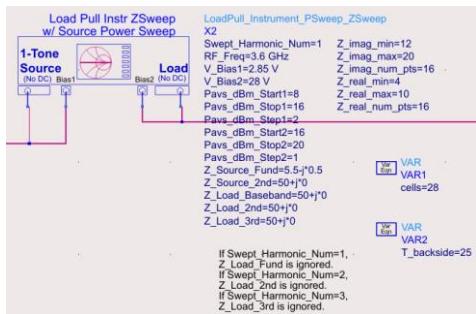
VSWR = 3 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.00 + j16.80$	$0.87 / 142.66$	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.25	50.56	16.05
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-11.14	-15.36	$4.61 - j1.00$

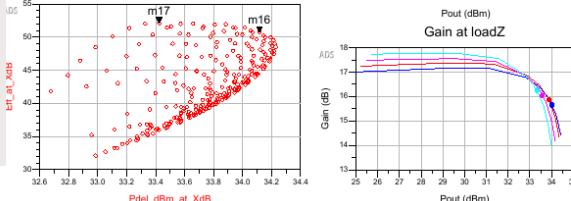
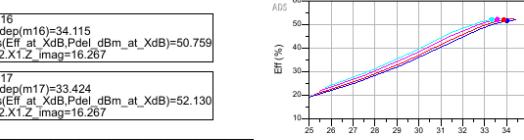
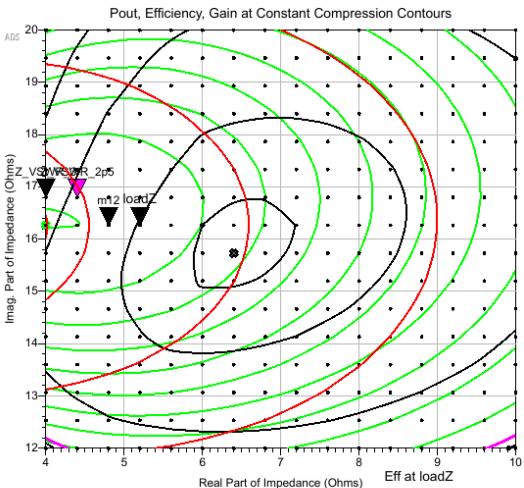
✗ In plots below corresponds to this data.

DOE15_x

C=2p23pF Simple Moscap:mdif 3,6GHz



Pout	GT	Eff
34.2	16.3	52.1
34.0	16.0	50.0
33.5	15.0	48.0
33.0	14.0	46.0
		44.0
		42.0
		40.0
		38.0
		36.0
		34.0



Power Sweep Inspector

Eqn VSWRVal=5 Eqn VSWRVal1=2.5

Move Marker 'loadZ' to desired impedance point.

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR Locus center Impedance = $6.40 + j15.73$
VSWR=5

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR Locus center Impedance = $4.80 + j16.27$
VSWR=5

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$5.20 + j16.27$	0.83 / 143.62	1.50
Pout (dBm)	Eff (%)	Gt (dB)
34.01	51.43	15.65
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-7.22	-15.91	$4.03 + j0.09$

✗ In plots below corresponds to this data.

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.80 + j16.27$	0.84 / 143.67	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.88	51.94	15.87
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-7.82	-16.08	$4.04 + j0.15$

✗ In plots below corresponds to this data.

VSWR = 2.5 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.40 + j16.80$	0.85 / 142.61	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.57	52.03	16.05
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-6.87	-16.76	$4.14 + j0.15$

✗ In plots below corresponds to this data.

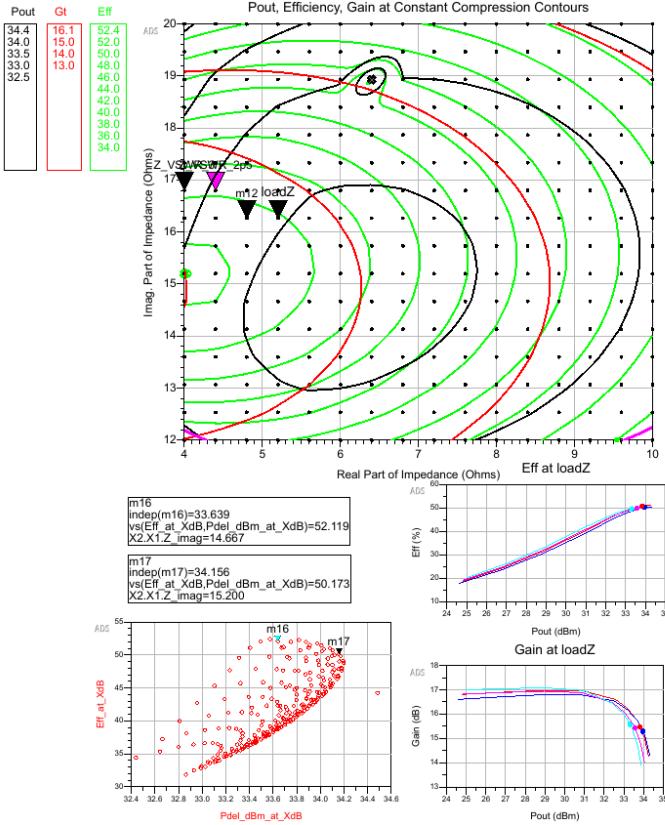
VSWR = 3 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.00 + j16.80$	0.87 / 142.66	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.33	52.04	16.26
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-7.40	-17.13	$4.18 + j0.22$

✗ In plots below corresponds to this data.



C=2p23pF
Simple
Moscap:mdif
3,8GHz



Power Sweep Inspector

Eqn VSWRVal=5 **Eqn** VSWRVal1=2.

Move Marker 'loadZ' to desired impedance point.

VSWR Locus of Points selector is located on Constant Compression Loadpull page

VSWR Locus center Impedance = $6.40 + j18.9$
VSWR=5

Summary of Performance at Compression		
Marker Impedance	Marker Gamma	Reference Compression Level (dB)
5.20 + j16.27	0.83 / 143.62	1.50
Pout (dBm)	Eff (%)	Gl (dB)
33.96	50.19	15.29
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-5.60	-15.24	4.02 + j1.23

X In plots below corresponds to this data.

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
4.80 + j16.27	0.84 / 143.67	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.83	50.74	15.47
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-5.59	-15.43	4.06 + j1.25

X In plots below corresponds to this data

VSWR = 2.5 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
4.40 + j16.80	0.85 / 142.61	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.57	49.74	15.43
AMPP (dBm)	IRL (dB)	Zin (Ohm)
-4.45	-16.34	4.18 + j1.17

X In plots below corresponds to this data

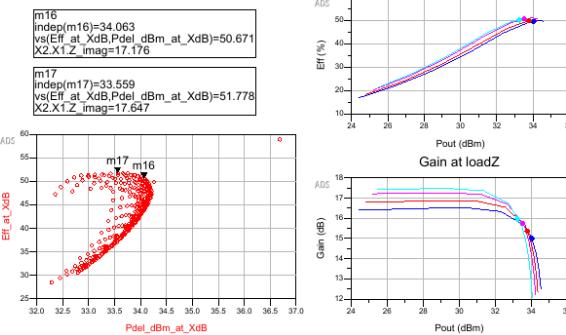
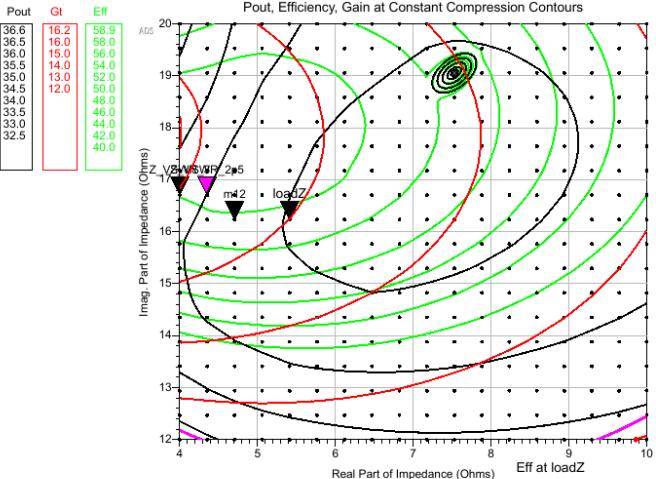
VSWR = 3 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
4.00 + j16.80	0.87 / 142.66	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.31	49.59	15.57
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-4.28	-16.68	4.24 + j1.18

 In plots below corresponds to this data

DOE15_00

C=3p53pF
Simple
Moscap:mdif
3,4GHz



Power Sweep Inspector

Eqn VSWRVal=5 Eqn VSWRVal=2.5

Move Marker 'loadZ' to desired impedance point.

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR Locus center Impedance = $7.53 + j19.06$
VSWR=5

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR Locus center Impedance = $4.71 + j16.24$
VSWR=5

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$5.41 + j16.24$	$0.82 / 143.66$	1.50
Pout (dBm)	Eff (%)	Gt (dB)
34.03	49.47	15.00
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-8.19	-12.86	$3.28 - j0.44$

✗ In plots below corresponds to this data.

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.71 + j16.24$	$0.84 / 143.75$	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.77	49.72	15.37
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-9.99	-13.36	$3.22 - j0.35$

✗ In plots below corresponds to this data.

VSWR = 2.5 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.35 + j16.71$	$0.85 / 142.81$	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.51	50.55	15.74
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-10.10	-13.64	$3.23 - j0.30$

✗ In plots below corresponds to this data.

VSWR = 3 point DATA

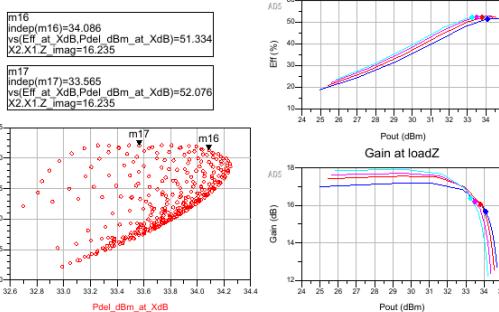
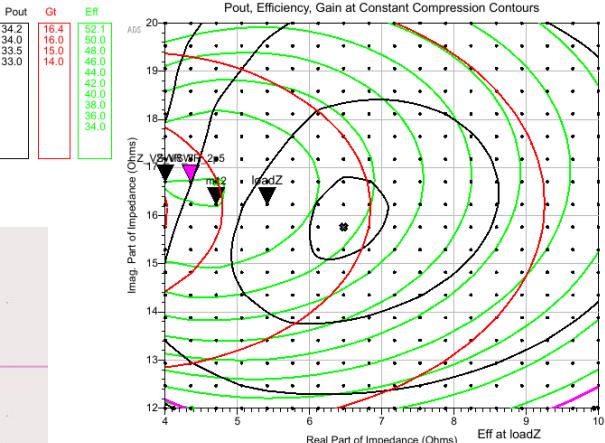
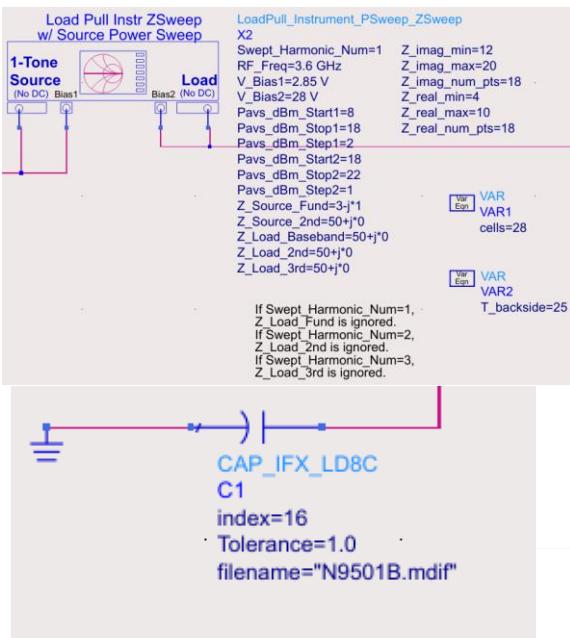
Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.00 + j16.71$	$0.87 / 142.85$	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.23	50.09	15.96
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-10.82	-13.94	$3.18 - j0.25$

✗ In plots below corresponds to this data.



DOE15_00

C=3p53pF
Simple
Moscap:mdif
3,6GHz



Power Sweep Inspector

VSWRVal5 **VSWRVal1=2.5**

Move Marker 'loadZ' to desired impedance point.

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR Locus center Impedance = $6.47 + j15.76$
 VSWR=5

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
5.41 + j16.24	0.82 / 143.66	1.50
Pout (dBm)	Eff (%)	Gt (dB)
34.09	51.33	15.67
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-7.54	-26.87	2.88 + j0.76

X In plots below corresponds to this data.

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
4.71 + j16.24	0.84 / 143.75	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.81	52.12	16.05
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-8.31	-29.71	2.89 + j0.83

X In plots below corresponds to this data.

VSWR = 2.5 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
4.35 + j16.71	0.85 / 142.81	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.49	52.10	16.20
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-7.19	-29.93	2.95 + j0.81

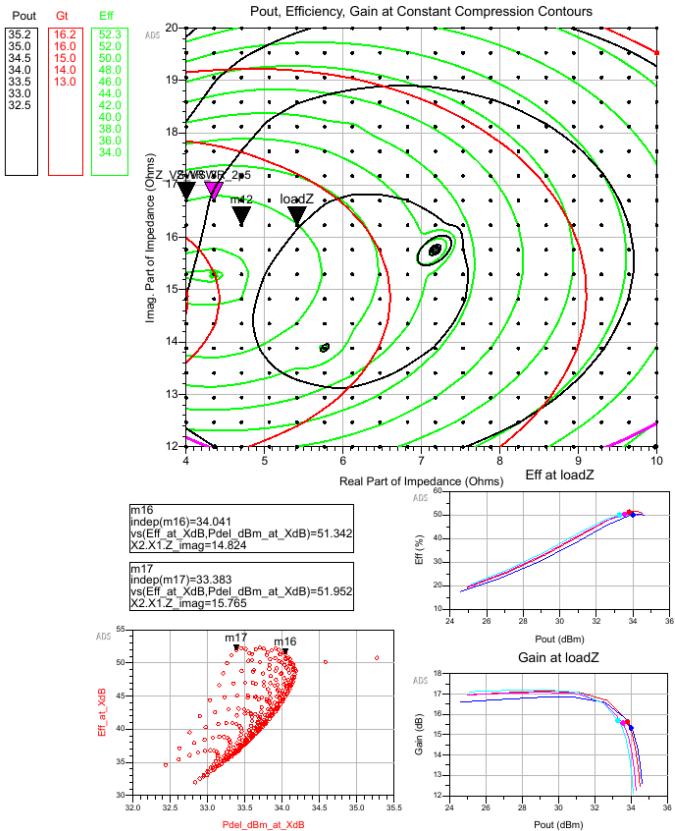
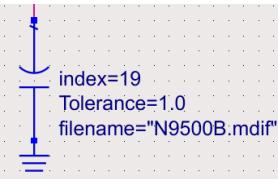
X In plots below corresponds to this data.

VSWR = 3 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
4.00 + j16.71	0.87 / 142.85	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.25	52.08	16.38
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-7.50	-31.72	2.97 + j0.85

X In plots below corresponds to this data.

C=3p53pF
Simple
Moscap:mdif
3,8GHz



Power Sweep Inspector

Eqn VSWRVal=5 **Eqn** VSWRVal1=2.

VSWR Locus of Points selector is
located on the Configuration tab.

VSWR Locus center Impedance = $7.18 + j15.7$
VSWR=5

Summary of Performance at Compression		
Marker Impedance	Marker Gamma	Reference Compression Level (dB)
5.41 + j16.24	0.82 / 143.66	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.99	50.06	15.33
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-5.97	-18.45	2.94 + j1.71

X In plots below corresponds to this data

Summary of Performance at Compression		
Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.71 + j16.24$	$0.84 / 143.75$	1.50
Pout (dBm)	Erf (%)	Gt (dB)
33.79	51.22	15.63
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-6.01	-18.33	$3.00 + j1.73$

X In plots below corresponds to this data.

VSWR = 2.5 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
4.35 + [16.71]	0.85 / 142.81	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.55	50.33	15.58
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-4.94	-19.16	3.07 + j1.67

X In plots below corresponds to this data

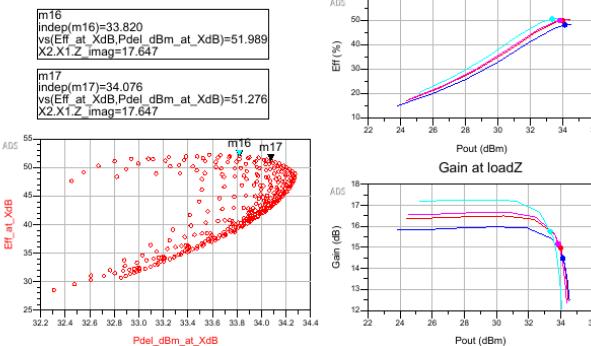
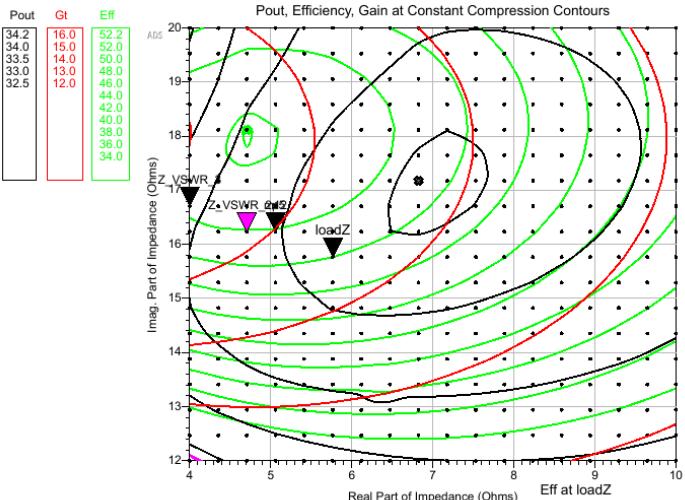
VSWR = 3 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
4.00 + j16.71	0.87 / 142.88	1.50
Pout (dBm)	Eff (%)	GI (dB)
33.26	49.98	15.70
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-4.59	-19.10	3.10 + j1.67

X In plots below corresponds to this data.

DOE15_01

C=4p64pF
Simple
Moscap:mdif
3,4GHz



Power Sweep Inspector

Eqn VSWRVal=5 Eqn VSWRVal=2.5

Move Marker 'loadZ' to desired impedance point.

VSWR Locus of Points selector is located on Constant Compression Loadpull page.
VSWR center Impedance = $6.82 + j17.18$

VSWR Locus of Points selector is located on Constant Compression Loadpull page.
VSWR center Impedance = $5.06 + j16.24$

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$5.76 + j15.76$	0.81 / 144.60	1.50
Pout (dBm)	Eff (%)	Gt (dB)
34.12	48.01	14.47
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-7.39	-12.23	$2.54 + j0.18$

✗ In plots below corresponds to this data.

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$5.06 + j16.24$	0.83 / 143.71	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.98	49.90	14.98
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-8.81	-12.57	$2.53 + j0.25$

✗ In plots below corresponds to this data.

VSWR = 2.5 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.71 + j16.24$	0.84 / 143.75	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.83	49.93	15.16
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-9.74	-12.71	$2.51 + j0.29$

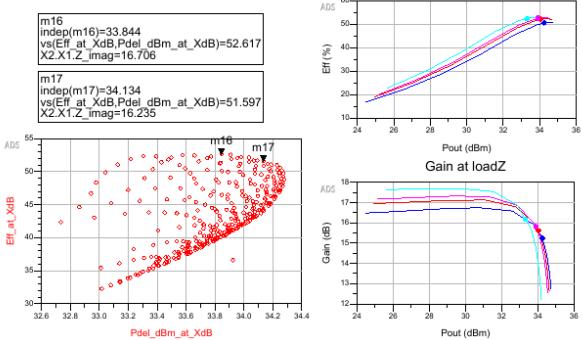
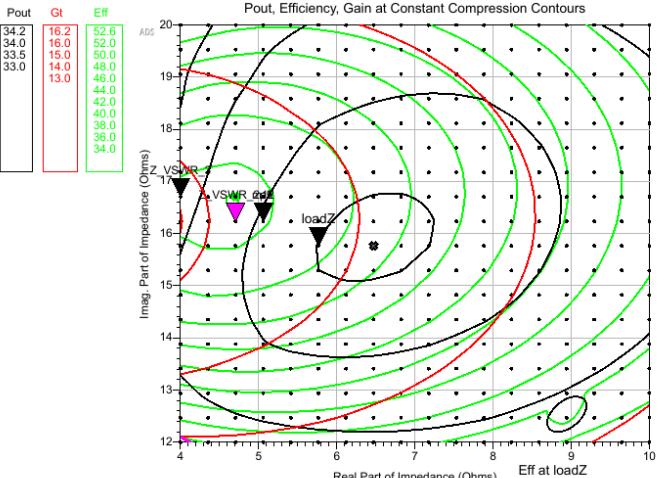
✗ In plots below corresponds to this data.

VSWR = 3 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.00 + j16.71$	0.87 / 142.85	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.33	50.44	15.75
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-10.97	-13.21	$2.50 + j0.38$

✗ In plots below corresponds to this data.

C=4p64pF
Simple
Moscap:mdif
3,6GHz



Power Sweep Inspector

Eqn VSWRVal=5 Eqn VSWRVal1=2.5

Move Marker 'loadZ' to desired impedance point.

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR Locus center Impedance = $6.47 + j15.76$
VSWR=5

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR Locus center Impedance = $5.06 + j16.24$
VSWR=5

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$5.76 + j15.76$	$0.81 / 144.60$	1.50
Pout (dBm)	Eff (%)	Gt (dB)
34.26	50.56	15.24
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-7.91	-16.76	$2.26 + j1.30$

✗ In plots below corresponds to this data.

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$5.06 + j16.24$	$0.83 / 143.71$	1.50
Pout (dBm)	Eff (%)	Gt (dB)
34.03	52.14	15.61
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-7.93	-17.37	$2.30 + j1.32$

✗ In plots below corresponds to this data.

VSWR = 2.5 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.71 + j16.24$	$0.84 / 143.75$	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.91	52.55	15.81
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-8.48	-17.63	$2.32 + j1.35$

✗ In plots below corresponds to this data.

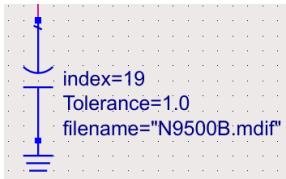
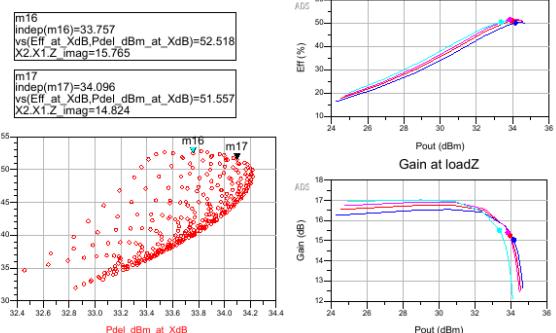
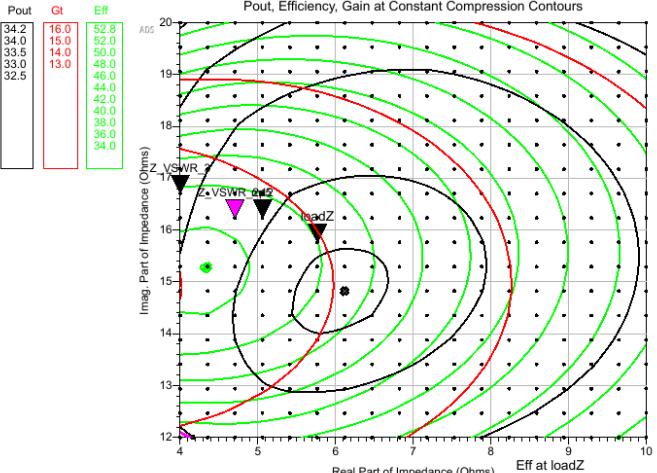
VSWR = 3 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.00 + j16.71$	$0.87 / 142.85$	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.30	52.32	16.18
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-7.52	-18.39	$2.37 + j1.35$

✗ In plots below corresponds to this data.



C=4p64pF
Simple
Moscap:mdif
3,8GHz



Power Sweep Inspector

Eqn VSWRVal=5 Eqn VSWRVal1=2.5

Move Marker 'loadZ' to desired impedance point.

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR Locus center Impedance = $6.12 + j14.82$
VSWR=5

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR Locus center Impedance = $5.06 + j16.24$
VSWR=5

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$5.76 + j15.76$	$0.81 / 144.60$	1.50
Pout (dBm)	Eff (%)	GT (dB)
34.16	50.04	15.04

✖ In plots below corresponds to this data.

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$5.06 + j16.24$	$0.83 / 143.71$	1.50
Pout (dBm)	Eff (%)	GT (dB)
33.96	50.94	15.25

✖ In plots below corresponds to this data.

VSWR = 2.5 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.71 + j16.24$	$0.84 / 143.75$	1.50
Pout (dBm)	Eff (%)	GT (dB)
33.83	51.40	15.40

✖ In plots below corresponds to this data.

VSWR = 3 point DATA

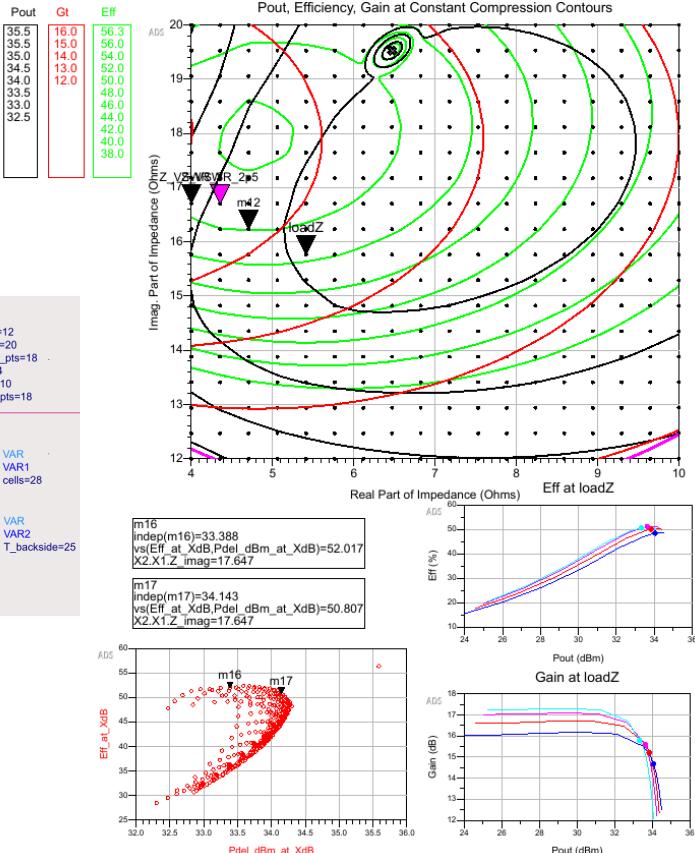
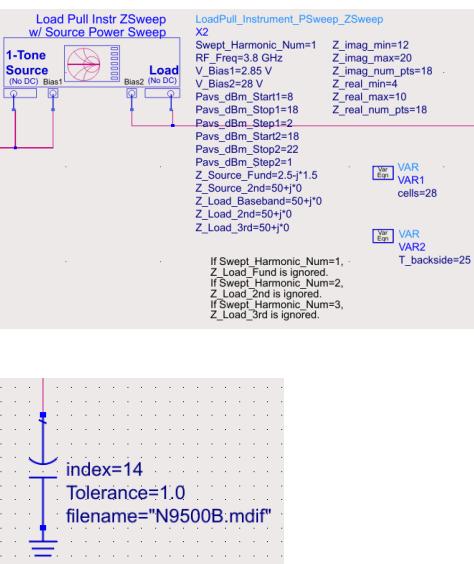
Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.00 + j16.71$	$0.87 / 142.85$	1.50
Pout (dBm)	Eff (%)	GT (dB)
33.36	50.40	15.51

✖ In plots below corresponds to this data.

DOE15_02



C=5p41pF
Simple
Moscap:mdif
3,4GHz



Power Sweep Inspector

Eqn VSWRVal=5 **Eqn** VSWRVal1=2.

Move Marker 'loadZ' to desired impedance point.

WSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR Locus center Impedance = 6.47 + j19.5
VSWR=5

Summary of Performance at Compression		
Marker Impedance	Marker Gamma	Reference Compression Level (dB)
5.41 + j15.76	0.82 / 144.65	1.50
Pout (dBm)	Eff (%)	Gt (dB)
34.05	48.45	14.67
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-8.16	-14.01	2.14 + j0.63

X In plots below corresponds to this data.

VSWR Locus center Impedance = 4.71 + j16.24
VSWR=5

Summary of Performance at Compression		
Marker Impedance	Marker Gamma	Reference Compression Level (dB)
4.71 + j16.24	0.84 / 143.75	1.50
Pout (dBm)	Eff (%)	Gl (dB)
33.83	50.06	15.21
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-9.74	-14.54	2.13 + j0.70

X In plots below corresponds to this data

VSWR = 2.5 point DATA		
Marker Impedance	Marker Gamma	Reference Compression Level (dB)
4.35 + j16.71	0.85 / 142.81	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.63	51.11	15.58
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-10.18	-14.97	2.15 + j0.73

X In plots below corresponds to this data.

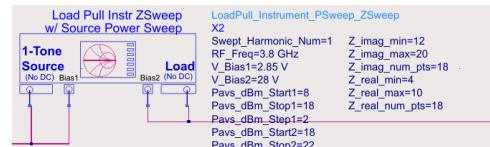
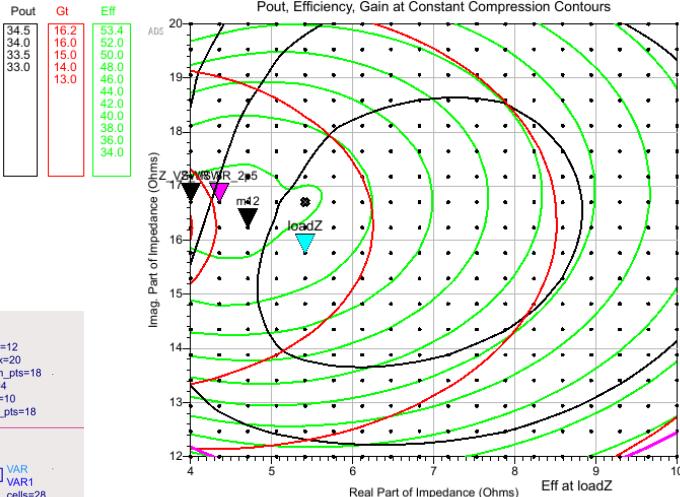
VSWR = 3 point DATA		
Marker Impedance	Marker Gamma	Reference Compression Level (dB)
4.00 + j16.71	0.87 / 142.85	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.33	50.53	15.79
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-10.81	-15.09	2.13 + j0.77

X In plots below corresponds to this data



DOE15_02

C=5p41pF
Simple
Moscap:mdif
3,6GHz

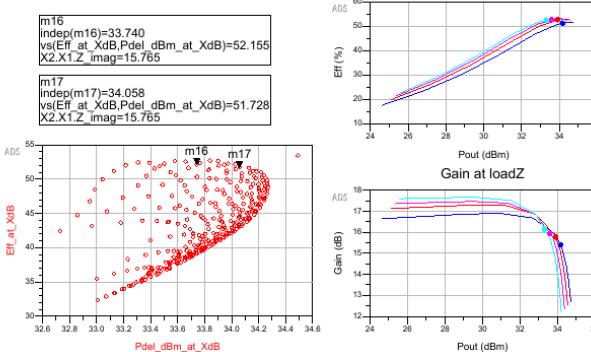


```

If Swept_Harmonic_Num=1,
Z_Load_1nd is ignored.
If Swept_Harmonic_Num=2,
Z_Load_2nd is ignored.
If Swept_Harmonic_Num=3,
Z_Load_3rd is ignored.
    
```

```

index=14
Tolerance=1.0
filename="N9500B.mdif"
    
```



Power Sweep Inspector

Eqn VSWRVal=5 Eqn VSWRVal=2.5

Move Marker 'loadZ' to desired impedance point.

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR Locus center Impedance = $5.41 + j16.71$
VSWR=5

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR Locus center Impedance = $4.71 + j16.24$
VSWR=5

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$5.41 + j15.76$	$0.82 / 144.65$	1.50
Pout (dBm)	Eff (%)	Gt (dB)
34.16	51.21	15.39

AMPM (dBm)	IRL (dB)	Zin (Ohm)
-8.08	-17.81	$1.95 + j1.65$

✗ In plots below corresponds to this data.

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.71 + j16.24$	$0.84 / 143.75$	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.90	52.62	15.78

AMPM (dBm)	IRL (dB)	Zin (Ohm)
-8.26	-18.55	$2.00 + j1.67$

✗ In plots below corresponds to this data.

VSWR = 2.5 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.35 + j16.71$	$0.85 / 142.81$	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.58	52.62	15.95

AMPM (dBm)	IRL (dB)	Zin (Ohm)
-7.27	-19.28	$2.03 + j1.65$

✗ In plots below corresponds to this data.

VSWR = 3 point DATA

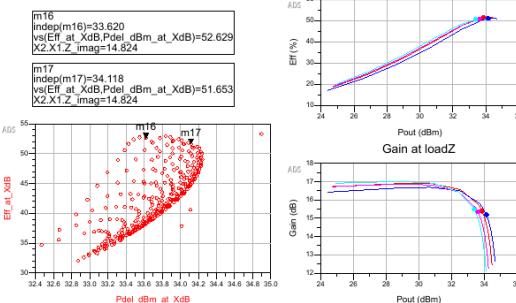
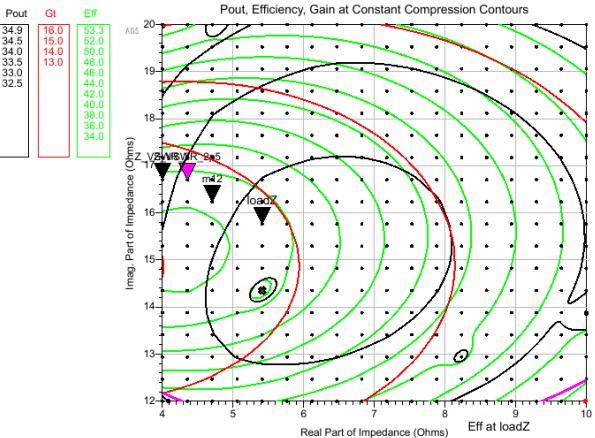
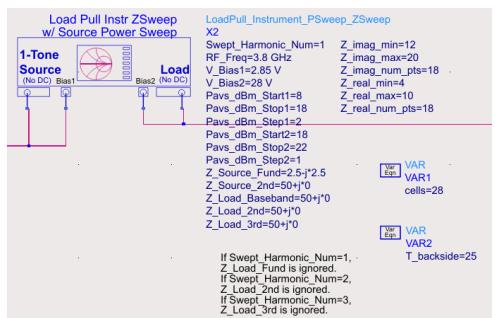
Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.00 + j16.71$	$0.87 / 142.85$	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.31	52.46	16.15

AMPM (dBm)	IRL (dB)	Zin (Ohm)
-7.44	-19.34	$2.04 + j1.67$

✗ In plots below corresponds to this data.



C=5p41pF
Simple
Moscap:mdif
3,8GHz



Power Sweep Inspector

Eqn VSWRVal=5 **Eqn** VSWRVal1=2

[View Details](#)

Move Marker 'loadZ' to desired impedance point.

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR Locus center Impedance =
VSWR=5

Summary of Performance at Compression		
Marker Impedance	Marker Gamma	Reference Compression Level (dB)
5.41 + i15.76	0.82 / 144.65	1.50

Pout (dBm)	Eff (%)	Gt (dB)
34.15	51.00	15.18
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-7.51	-20.01	$2.05 + j2.45$

11 of 11 pages

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
4.71 + 16.24	0.84 / 143.75	1.50
Pout (dBm)	Eff (%)	Gl (dB)
33.85	51.50	15.38
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-6.62	-21.01	2.10 + j2.42

2000-01-02

VSWR = 2.5 point DATA

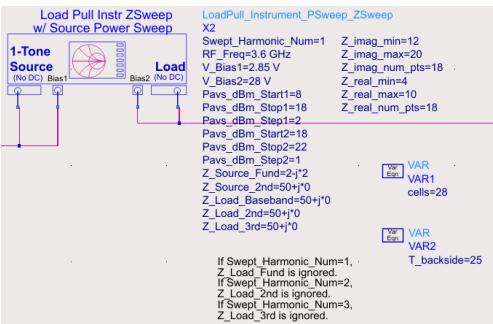
Marker Impedance	Marker Gamma	Reference Compression Level (dB)
4.35 + [16.7]	0.85 / [142.8]	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.61	50.63	15.35
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-5.50	-21.55	2.13 + j2.37

X In plots below corresponds to this data.

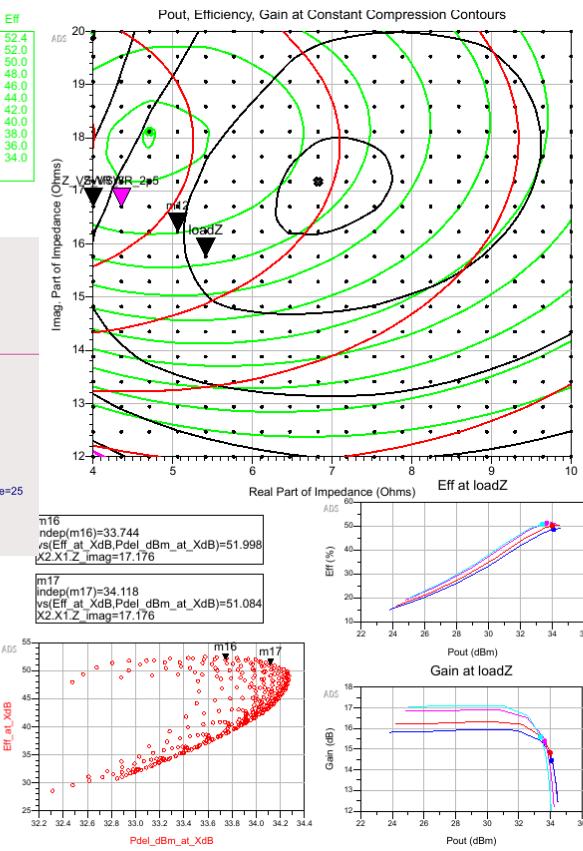
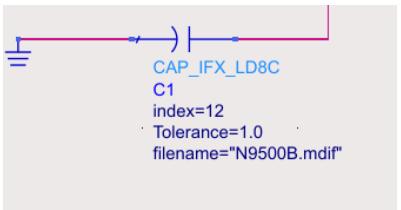
VSWR = 3 point DATA	
Marker Impedance	Marker Gamma
4.00 + j16.71	0.87 /
Pout (dBm)	Eff (%)
33.39	50.56
AMPM (dBm)	IRL (dB)
-5.38	-22.24

X In plots below corresponds to this data.

C=6p18pF
Simple
Moscap:mdif
3,4GHz



Swept_Harmonic_Num=1,
Load_Fund is ignored.
Swept_Harmonic_Num=2,
Load_2nd is ignored.
Swept_Harmonic_Num=3,
Load_3rd is ignored.



Power Sweep Inspector

Eqn VSWRVal=5 **Eqn** VSWRVal1=2.

VSWR Locus of Points selector is

VSWR Locus center Impedance =
VSWR=5

Summary of Performance at Compression		
Marker Impedance	Marker Gamma	Reference Compression Level (dB)
5.41 + j15.76	0.82 / 144.65	1.50
Pout (dBm)	Eff (%)	Gt (dB)
34.06	48.51	14.45
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-8.56	-11.88	1.85 + j1.00

X In plots below corresponds to this data.

VSWR = 2.5 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
4.35 + j16.71	0.85 / 142.81	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.63	51.20	15.38
AMPM (dBm)	IRL (dB)	Zin (Ohm)

X In plots below corresponds to this data.

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
5.06 + j16.24	0.83 / 143.71	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.98	50.08	14.82
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-9.14	-12.10	1.85 + j1.02

X In plots below corresponds to this data

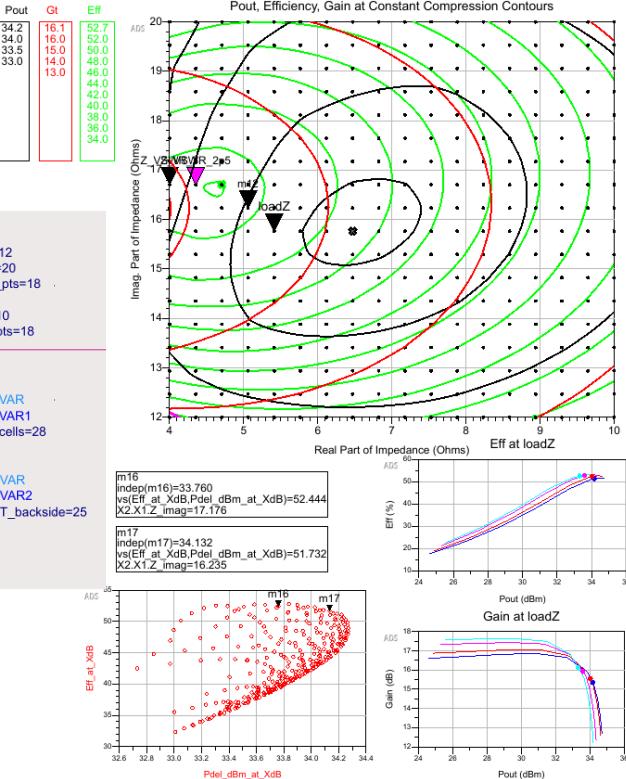
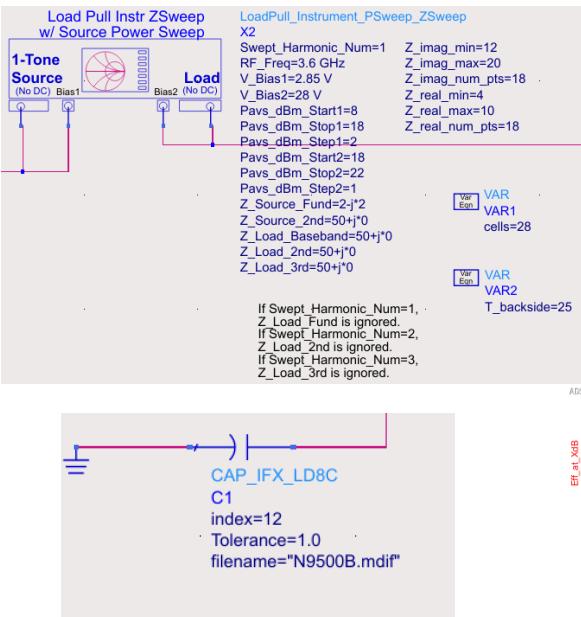
VSWR = 3 point DATA

Marker Impedance	Marker Gamma	Reference Compensation Level (dB)
4.00 + j16.71	0.87 / 142.85	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.37	50.75	15.60
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-11.53	-12.92	1.84 + j1.12

X In plots below corresponds to this data.

DOE15_03

C=6p18pF
Simple
Moscap:mdif
3.6GHz



Power Sweep Inspector

VSWRVal=5 VSWRVal=2.5

Move Marker 'loadZ' to desired impedance point.

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR Locus center Impedance = $6.47 + j15.76$
 VSWR=5

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR Locus center Impedance = $5.06 + j16.24$
 VSWR=5

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$5.41 + j15.76$	0.82 / 144.65	1.50
Pout (dBm)	Eff (%)	Gt (dB)
34.16	51.29	15.35
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-8.47	-21.64	$1.70 + j1.95$

✗ In plots below corresponds to this data.

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$5.06 + j16.24$	0.83 / 143.71	1.50
Pout (dBm)	Eff (%)	Gt (dB)
34.02	52.27	15.55
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-8.06	-22.51	$1.73 + j1.95$

✗ In plots below corresponds to this data.

VSWR = 2.5 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.35 + j16.71$	0.85 / 142.81	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.58	52.72	15.92
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-7.58	-24.18	$1.77 + j1.95$

✗ In plots below corresponds to this data.

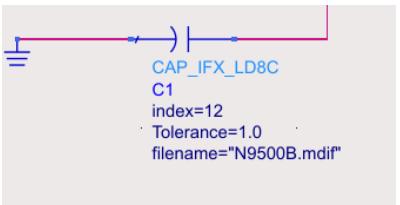
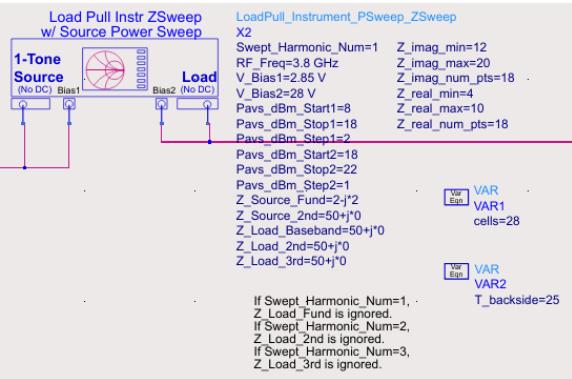
VSWR = 3 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.00 + j16.71$	0.87 / 142.85	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.31	52.53	16.12
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-7.72	-24.70	$1.78 + j1.97$

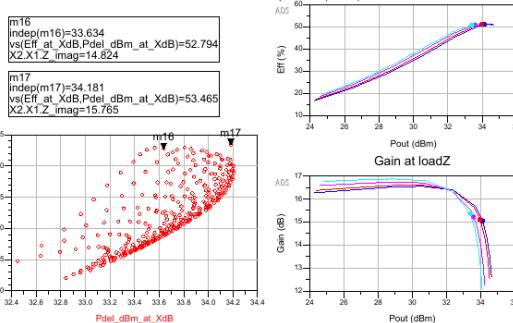
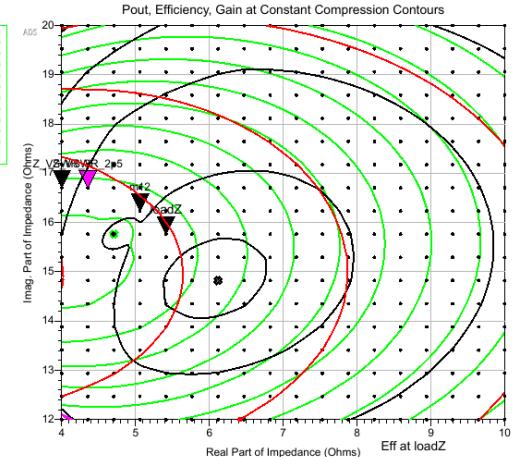
✗ In plots below corresponds to this data.

DOE15_03

C=6p18pF
Simple
Moscap:mdif
3.8GHz



Pout	Gt	Eff
34.2	15.8	53.4
34.0	15.0	52.0
33.5	14.0	50.0
33.0	13.0	48.0
32.5		46.0
		44.0
		42.0
		40.0
		38.0
		36.0
		34.0



Power Sweep Inspector

VSWRVal=5 VSWRVal1=2.5

Move Marker 'loadZ' to desired impedance point.

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR Locus center Impedance = $6.12 + j14.82$
 VSWR=5

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR Locus center Impedance = $5.06 + j16.24$
 VSWR=5

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$5.41 + j15.76$	$0.82 / 144.65$	1.50
Pout (dBm)	Eff (%)	Gt (dB)
34.11	51.01	15.08
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-6.72	-14.38	$1.79 + j2.71$

In plots below corresponds to this data.

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$5.06 + j16.24$	$0.83 / 143.71$	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.96	51.08	15.10
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-5.98	-14.83	$1.81 + j2.68$

In plots below corresponds to this data.

VSWR = 2.5 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.35 + j16.71$	$0.85 / 142.81$	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.58	50.64	15.23
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-4.90	-15.65	$1.86 + j2.63$

In plots below corresponds to this data.

VSWR = 3 point DATA

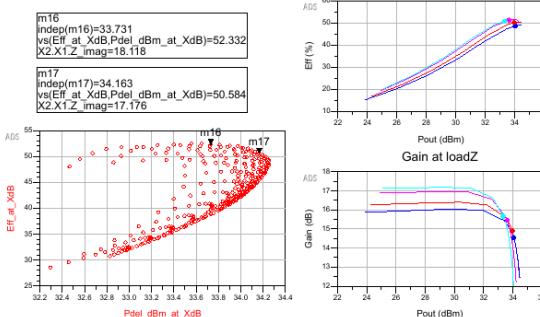
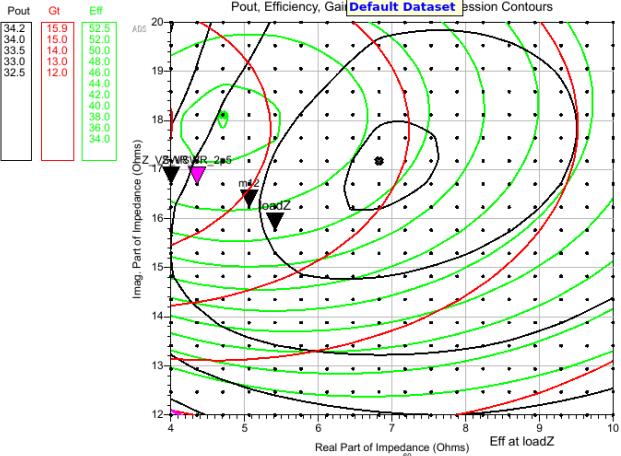
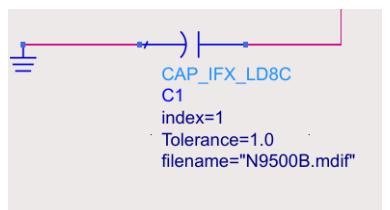
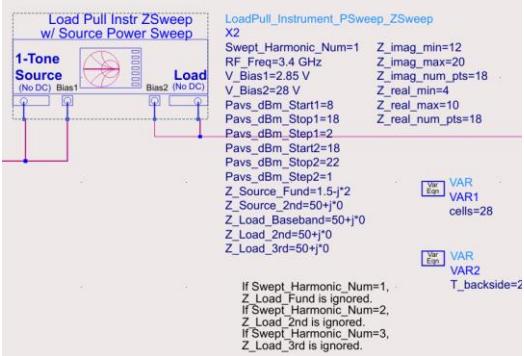
Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.00 + j16.71$	$0.87 / 142.85$	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.39	50.67	15.36
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-4.88	-15.89	$1.89 + j2.62$

In plots below corresponds to this data.



DOE15_04

C=7p11pF Simple Moscap:mdif 3.4GHz



Power Sweep Inspector

Eqn VSWRVal=5 Eqn VSWRVal1=2.5

Move Marker 'loadZ' to desired impedance point.

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR Locus center Impedance = $6.82 + j17.18$
VSWR=5

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR Locus center Impedance = $5.06 + j16.24$
VSWR=5

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$5.41 + j15.76$	$0.82 / 144.65$	1.50
Pout (dBm)	Eff (%)	Gt (dB)
34.04	48.57	14.53
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-8.54	-14.02	$1.58 + j1.38$

✗ In plots below corresponds to this data.

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$5.06 + j16.24$	$0.83 / 143.71$	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.97	50.17	14.89
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-9.10	-14.31	$1.58 + j1.40$

✗ In plots below corresponds to this data.

VSWR = 2.5 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.35 + j16.71$	$0.85 / 142.81$	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.61	51.23	15.45
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-10.42	-14.99	$1.59 + j1.45$

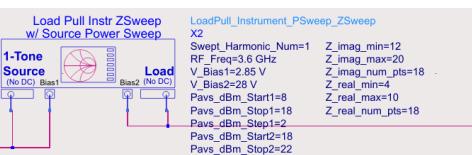
✗ In plots below corresponds to this data.

VSWR = 3 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.00 + j16.71$	$0.87 / 142.85$	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.33	50.71	15.67
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-11.18	-15.35	$1.57 + j1.47$

✗ In plots below corresponds to this data.

C=7p11pF Simple Moscap:mdif 3.6GHz

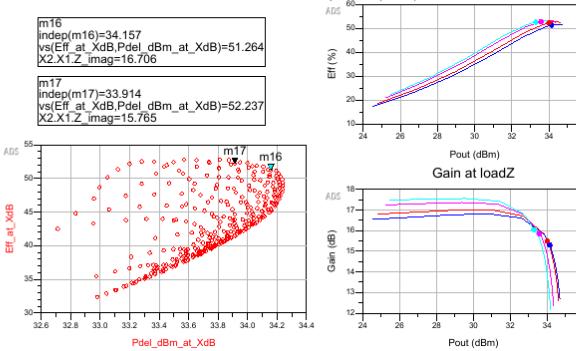
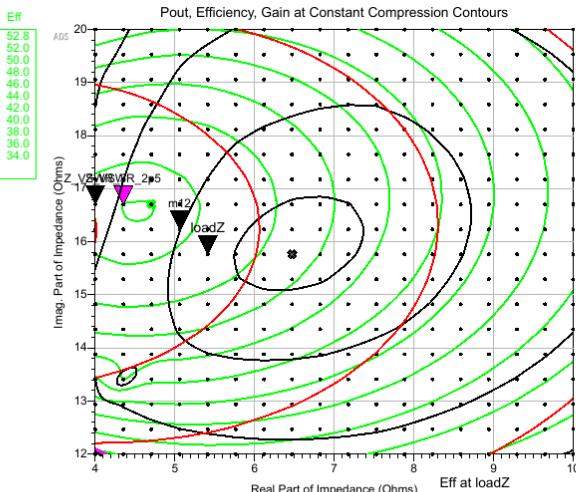


X2! LoadPull_Instrument_PSweep_ZSweep
 RF_Freq=3.6 GHz
 V_Bias1=2.85 V
 V_Bias2=2.8 V
 Pavs_dBm_Start1=8
 Pavs_dBm_Stop1=18
 Pavs_dBm_Step1=2
 Pavs_dBm_Start2=18
 Pavs_dBm_Stop2=22
 Pavs_dBm_Step2=1
 Z_Source_Fund=1.5j⁰
 Z_Source_2nd=50+j⁰
 Z_Load_Baseband=50+j⁰
 Z_Load_2nd=50+j⁰
 Z_Load_3rd=50+j⁰

If Swept_Harmonic_Num=1,
 Z_Load_Fund is ignored.
 If Swept_Harmonic_Num=2,
 Z_Load_2nd is ignored.
 If Swept_Harmonic_Num=3,
 Z_Load_3rd is ignored.

CAP_IFX_LD8C
 C1
 index=1
 Tolerance=1.0
 filename="N9500B.mdif"

Pout	Gt	Eff
34.2	16.1	52.8
34.0	15.0	52.0
33.5	14.0	50.0
33.0	13.0	48.0
		46.0
		44.0
		42.0
		40.0
		38.0
		36.0
		34.0



Power Sweep Inspector

VSWRVal=5 VSWRVal1=2.5

Move Marker 'loadZ' to desired impedance point.

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR center Impedance = $6.47 + j15.76$
 VSWR=5

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR center Impedance = $5.06 + j16.24$
 VSWR=5

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$5.41 + j15.76$	$0.82 / 144.65$	1.50
Pout (dBm)	Eff (%)	Gt (dB)
34.14	51.34	15.30
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-8.18	-20.91	$1.47 + j2.27$

X In plots below corresponds to this data.

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$5.06 + j16.24$	$0.83 / 143.71$	1.50
Pout (dBm)	Eff (%)	Gt (dB)
34.00	52.30	15.50
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-7.77	-21.24	$1.49 + j2.26$

X In plots below corresponds to this data.

VSWR = 2.5 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.35 + j16.71$	$0.85 / 142.81$	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.57	52.78	15.85
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-7.35	-21.26	$1.53 + j2.26$

X In plots below corresponds to this data.

VSWR = 3 point DATA

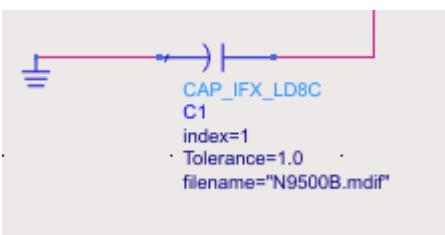
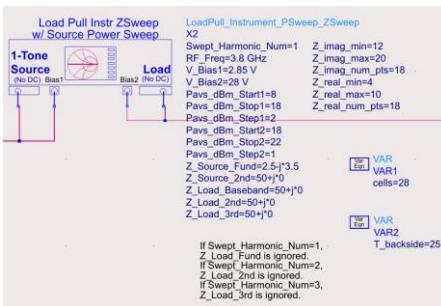
Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.00 + j16.71$	$0.87 / 142.85$	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.28	52.55	16.05
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-7.41	-20.86	$1.53 + j2.27$

X In plots below corresponds to this data.

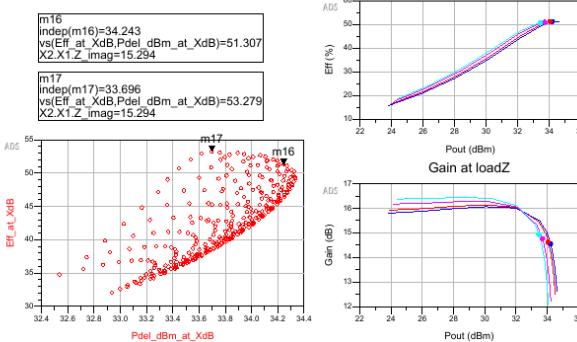
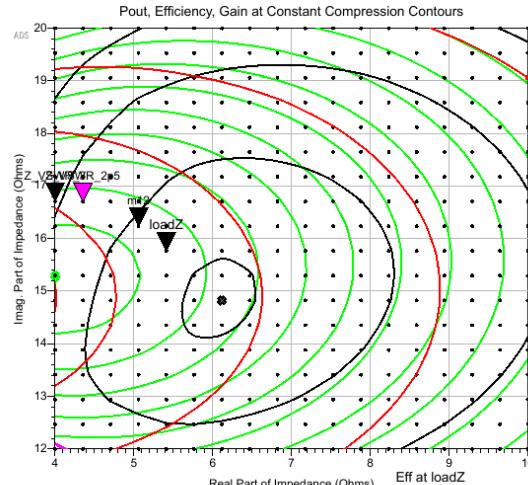


DOE15_04

C=7p11pF
Simple
Moscap:mdif
3.8GHz



Pout	Gt	Eff
34.3	15.5	53.2
34.0	15.0	52.0
33.5	14.0	50.0
33.0	13.0	48.0
		46.0
		44.0
		42.0
		40.0
		38.0
		36.0
		34.0
		32.0



Power Sweep Inspector

\square VSWRVal=5 \square VSWRVal=2.5

Move Marker 'loadZ' to desired impedance point.

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR Locus center Impedance = $6.12 + j14.82$
VSWR=5

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR Locus center Impedance = $5.06 + j16.24$
VSWR=5

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$5.41 + j15.76$	$0.82 / 144.65$	1.50
Pout (dBm)	Eff (%)	Gt (dB)
34.20	51.11	14.56
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-7.61	-11.65	$1.56 + j2.98$

\times In plots below corresponds to this data.

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$5.06 + j16.24$	$0.83 / 143.71$	1.50
Pout (dBm)	Eff (%)	Gt (dB)
34.05	51.20	14.63
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-6.79	-11.72	$1.58 + j2.95$

\times In plots below corresponds to this data.

VSWR = 2.5 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.35 + j16.71$	$0.85 / 142.81$	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.69	50.88	14.77
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-5.78	-11.92	$1.62 + j2.91$

\times In plots below corresponds to this data.

VSWR = 3 point DATA

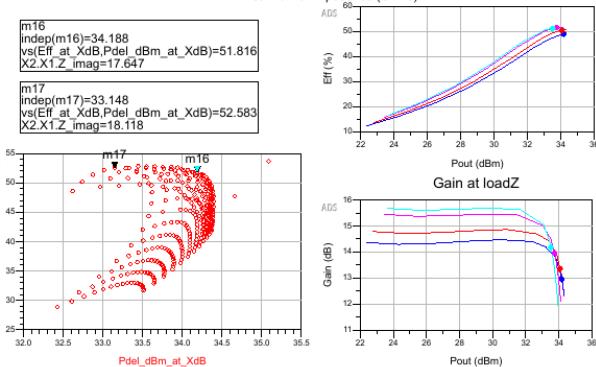
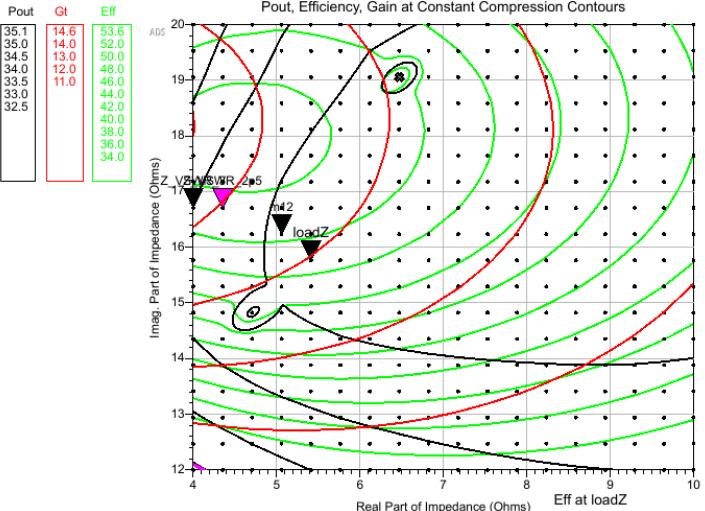
Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.00 + j16.71$	$0.87 / 142.85$	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.45	50.74	14.94
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-5.55	-11.99	$1.63 + j2.90$

\times In plots below corresponds to this data.

DOE15_05



C=9p63pF
Simple
Moscap:mdif
3.4GHz



Power Sweep Inspector

Eqn VSWRVal=5 Eqn VSWRVal1=2.5

Move Marker 'loadZ' to desired impedance point.

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR Locus center Impedance = $6.47 + j19.06$
VSWR=5

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR Locus center Impedance = $5.06 + j16.24$
VSWR=5

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$5.41 + j15.76$	0.82 / 144.65	1.50
Pout (dBm)	Eff (%)	Gt (dB)
34.17	48.87	12.97
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-8.80	-6.52	$1.09 + j2.21$

✗ In plots below corresponds to this data.

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$5.06 + j16.24$	0.83 / 143.71	1.50
Pout (dBm)	Eff (%)	Gt (dB)
34.07	50.39	13.36
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-9.28	-6.57	$1.09 + j2.22$

✗ In plots below corresponds to this data.

VSWR = 2.5 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.35 + j16.71$	0.85 / 142.81	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.73	51.47	13.95
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-10.78	-6.69	$1.09 + j2.25$

✗ In plots below corresponds to this data.

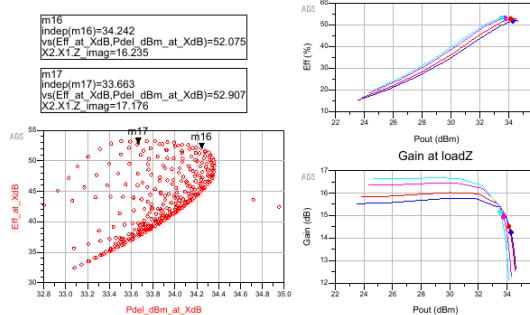
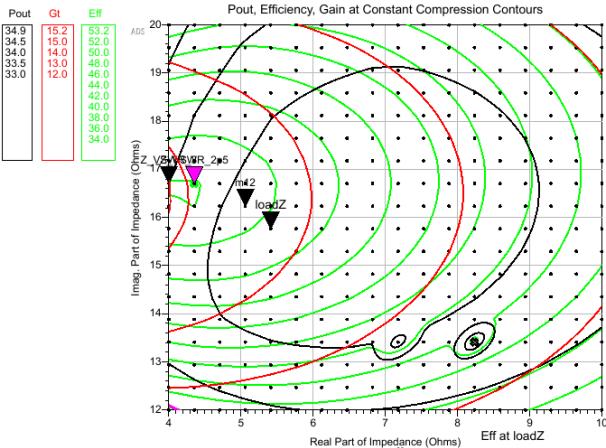
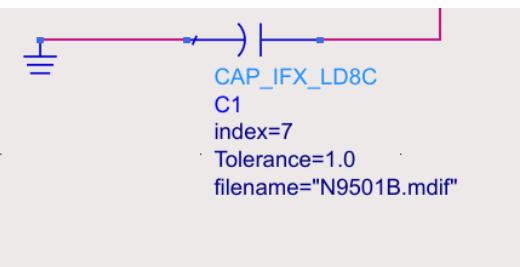
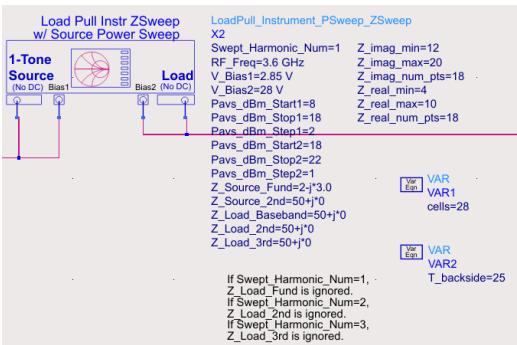
VSWR = 3 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.00 + j16.71$	0.87 / 142.85	1.50
Pout (dBm)	Eff (%)	Gt (dB)
33.51	51.18	14.18
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-12.07	-6.76	$1.09 + j2.27$

✗ In plots below corresponds to this data.

DOE15_05

C=9p63pF
Simple
Moscap:mdif
3,6GHz



Power Sweep Inspector

Eqn VSWRVal=5 Eqn VSWRVal=2.5

Move Marker 'loadZ' to desired impedance point.

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR Locus center Impedance = $8.24 + j13.47$
VSWR=5

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$5.41 + j15.76$	$0.82 / 144.65$	1.50

Pout (dBm): 34.28
Eff (%): 51.64
Gt (dB): 14.26

AMPM (dBm): -8.27
IRL (dB): -9.91
Zin (Ohm): $1.03 + j2.97$

\times In plots below corresponds to this data.

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR Locus center Impedance = $5.06 + j16.24$
VSWR=5

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$5.06 + j16.24$	$0.83 / 143.71$	1.50

Pout (dBm): 34.12
Eff (%): 52.59
Gt (dB): 14.52

AMPM (dBm): -7.88
IRL (dB): -10.05
Zin (Ohm): $1.04 + j2.96$

\times In plots below corresponds to this data.

VSWR = 2.5 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.35 + j16.71$	$0.85 / 142.81$	1.50

Pout (dBm): 33.74
Eff (%): 53.26
Gt (dB): 14.94

AMPM (dBm): -7.84
IRL (dB): -10.37
Zin (Ohm): $1.07 + j2.96$

\times In plots below corresponds to this data.

VSWR = 3 point DATA

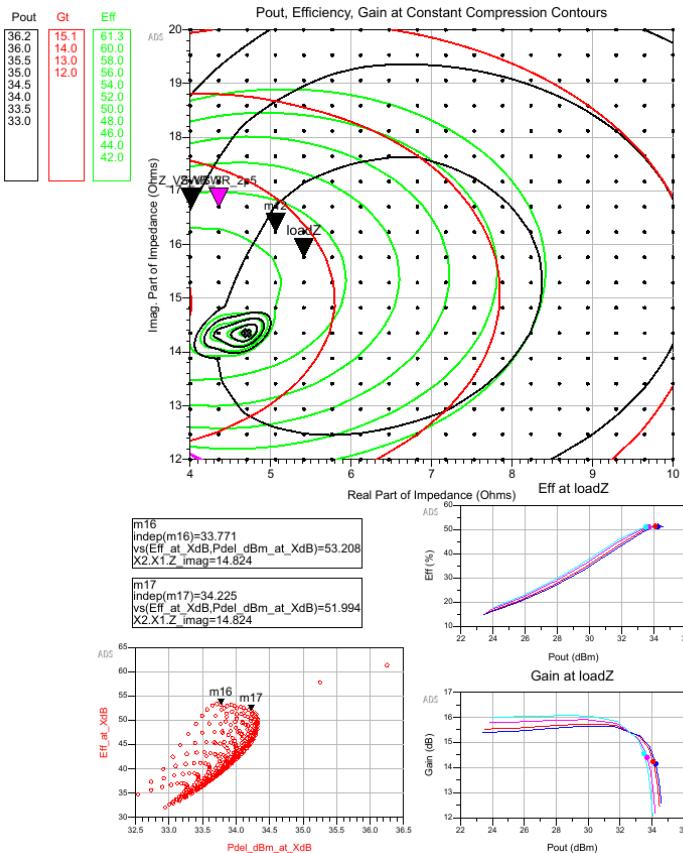
Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.00 + j16.71$	$0.87 / 142.85$	1.50

Pout (dBm): 33.51
Eff (%): 53.25
Gt (dB): 15.17

AMPM (dBm): -8.40
IRL (dB): -10.51
Zin (Ohm): $1.08 + j2.97$

\times In plots below corresponds to this data.

C=9p63pF
Simple
Moscap:mdif
3,8GHz



Power Sweep Inspector

Epn VSWRVal=5 Epn VSWRVal1=2.5

Move Marker 'loadZ' to desired impedance point.

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR Locus center Impedance = $4.71 + j14.35$

Summary of Performance at Compression

Marker Impedance: $5.41 + j15.76$, Marker Gamma: $0.82 / 144.65$, Reference Compression Level (dB): 1.50

Pout (dBm): 34.23, Eff (%): 51.26, Gt (dB): 14.14

AMPM (dBm): -7.23, IRL (dB): -10.60, Zin (Ohm): $1.09 + j3.60$

✖ In plots below corresponds to this data.

VSWR = 2.5 point DATA

Marker Impedance: $4.35 + j16.71$, Marker Gamma: $0.85 / 142.81$, Reference Compression Level (dB): 1.50

Pout (dBm): 33.69, Eff (%): 50.93, Gt (dB): 14.40

AMPM (dBm): -5.37, IRL (dB): -10.97, Zin (Ohm): $1.12 + j3.55$

✖ In plots below corresponds to this data.

Summary of Performance at Compression

Marker Impedance: $5.06 + j16.24$, Marker Gamma: $0.83 / 143.71$, Reference Compression Level (dB): 1.50

Pout (dBm): 34.07, Eff (%): 51.33, Gt (dB): 14.23

AMPM (dBm): -6.41, IRL (dB): -10.73, Zin (Ohm): $1.10 + j3.58$

✖ In plots below corresponds to this data.

VSWR = 3 point DATA

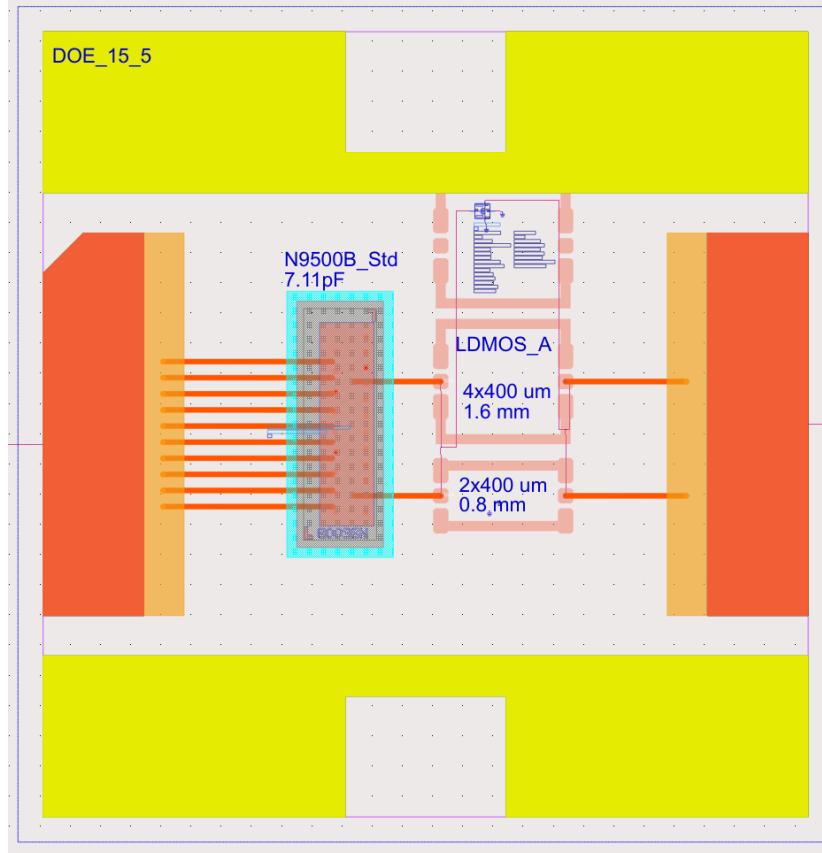
Marker Impedance: $4.00 + j16.71$, Marker Gamma: $0.87 / 142.85$, Reference Compression Level (dB): 1.50

Pout (dBm): 33.49, Eff (%): 50.94, Gt (dB): 14.56

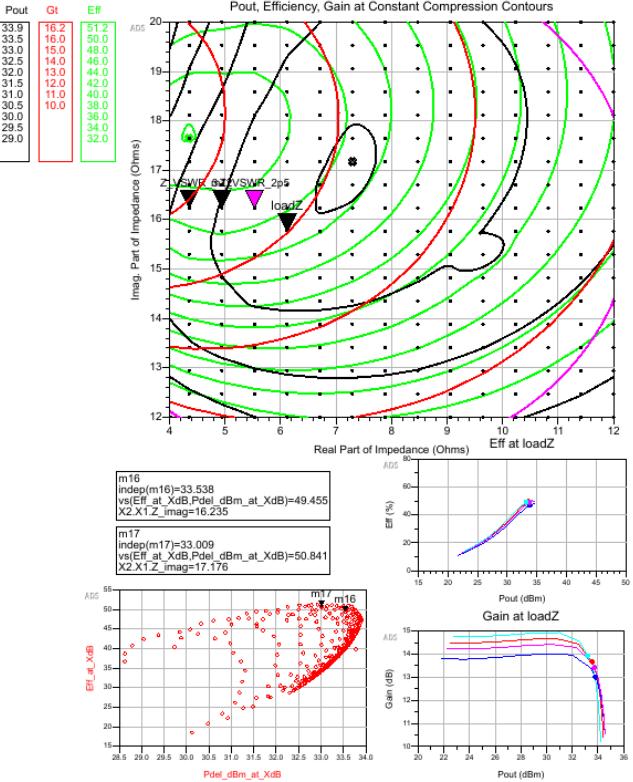
AMPM (dBm): -5.39, IRL (dB): -11.15, Zin (Ohm): $1.13 + j3.55$

✖ In plots below corresponds to this data.

Frequency spread 1-dB Compression, Moscap: Em Simulated



C=3p53pF
Simple
Moscap; Detailed
3,4GHz



Power Sweep Inspector

Eqn VSWRVal=5 Eqn VSWRVal=2.5

Move Marker 'loadZ' to desired impedance point.

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR Locus center Impedance = $7.29 + j17.18$
VSWR=5

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR Locus center Impedance = $4.94 + j16.24$
VSWR=5

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$6.12 + j15.78$	$0.80 / 144.58$	1
Pout (dBm)	Eff (%)	Gt (dB)
33.79	47.02	13.02
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-4.43	-15.05	$5.58 - j1.23$

X In plots below corresponds to this data.

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.94 + j16.24$	$0.84 / 143.72$	1
Pout (dBm)	Eff (%)	Gt (dB)
33.54	49.46	13.68
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-7.23	-15.82	$5.54 - j1.04$

X In plots below corresponds to this data.

VSWR = 2.5 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$5.53 + j16.24$	$0.82 / 143.65$	1
Pout (dBm)	Eff (%)	Gt (dB)
33.71	49.03	13.42
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-5.62	-15.41	$5.58 - j1.14$

X In plots below corresponds to this data.

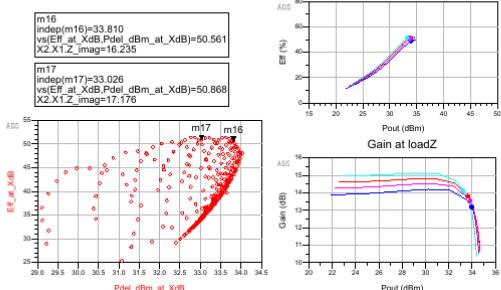
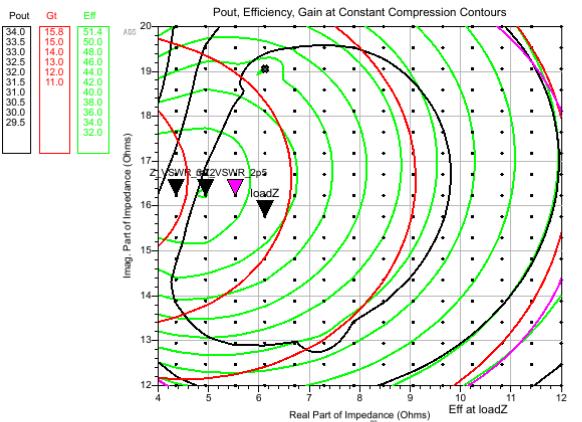
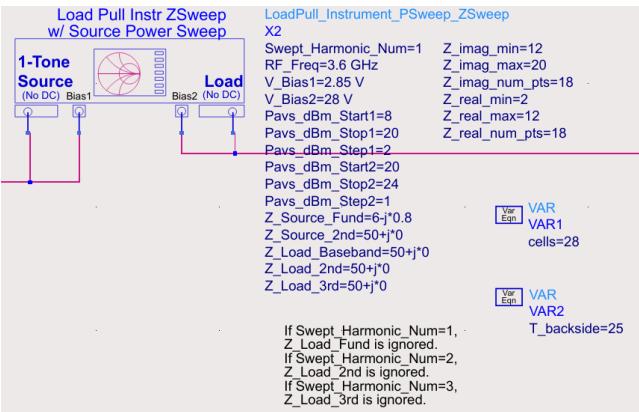
VSWR = 3 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.35 + j16.24$	$0.85 / 143.79$	1
Pout (dBm)	Eff (%)	Gt (dB)
33.18	49.04	13.93
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-8.48	-16.07	$5.48 - j0.95$

X In plots below corresponds to this data.

DOE15_01

C=3p53pF Simple Moscap; Detailed 3,6GHz



Power Sweep Inspector

Ein VSWRVal=5 Egn VSWRVal=2.5

Move Marker "loadZ" to desired impedance point.

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR Locus center Impedance = $6.12 + j19.00$

VSWR=5

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR Locus center Impedance = $4.94 + j16.24$

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$6.12 + j15.76$	$0.80 / 144.55$	1
Pout (dBm)	Eff (%)	GI (dB)
33.94	48.98	13.19
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-4.88	-20.77	$5.27 + j0.07$

✗ In plots below corresponds to this data.

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.94 + j16.24$	$0.84 / 143.72$	1
Pout (dBm)	Eff (%)	GI (dB)
33.63	51.39	13.81
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-6.03	-21.84	$5.34 + j0.15$

✗ In plots below corresponds to this data.

VSWR = 2.5 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$5.53 + j16.24$	$0.82 / 143.65$	1
Pout (dBm)	Eff (%)	GI (dB)
33.81	50.56	13.52
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-5.10	-21.21	$5.32 + j0.09$

✗ In plots below corresponds to this data.

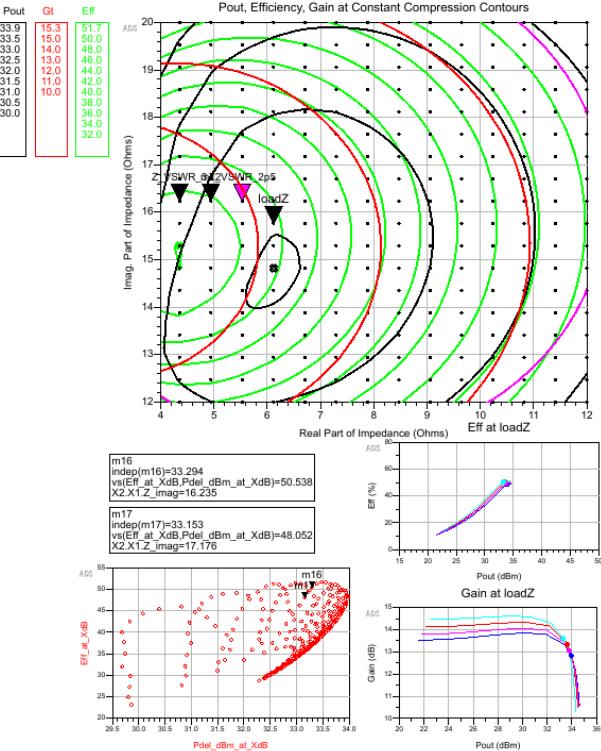
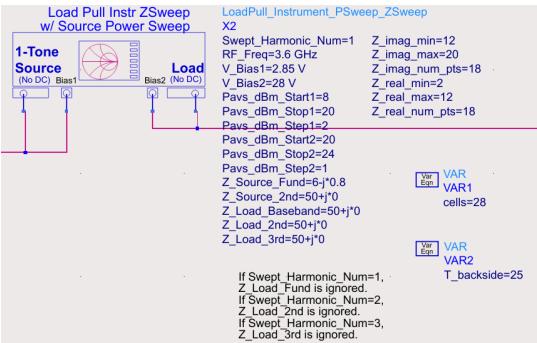
VSWR = 3 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.35 + j16.24$	$0.85 / 143.79$	1
Pout (dBm)	Eff (%)	GI (dB)
33.22	51.32	14.11
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-6.60	-22.27	$5.34 + j0.21$

✗ In plots below corresponds to this data.

DOE15_01

C=3p53pF Simple Moscap; Detailed 3,8GHz



Power Sweep Inspector

Move Marker 'loadZ' to desired impedance point.

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR center Impedance = $6.12 + j14.82$
VSWR=5

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$6.12 + j15.76$	$0.80 / 144.55$	1
Pout (dBm)	Eff (%)	GI (dB)
33.93	48.44	12.84
AMPm (dBm)	IRL (dB)	Zin (Ohm)
-3.89	-25.58	$5.43 + j1.00$

X In plots below corresponds to this data.

VSWR = 2.5 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$5.53 + j16.24$	$0.62 / 143.65$	1
Pout (dBm)	Eff (%)	GI (dB)
33.77	49.23	13.06
AMPm (dBm)	IRL (dB)	Zin (Ohm)
-3.56	-26.53	$5.48 + j0.97$

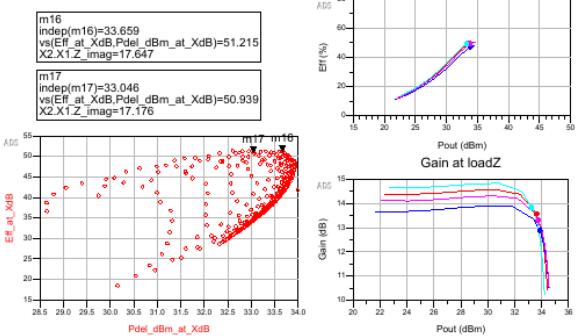
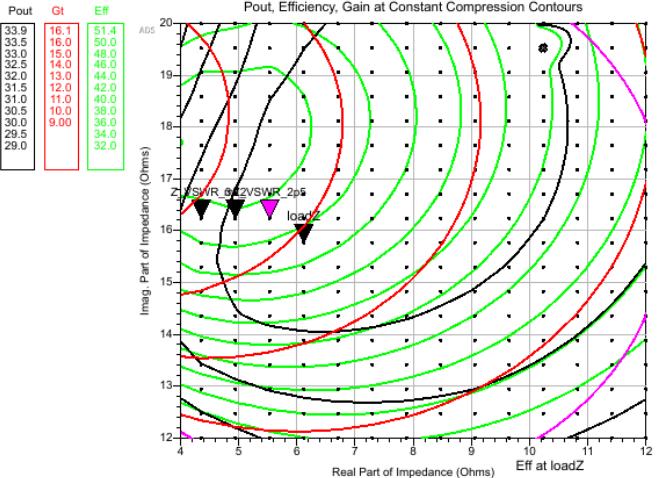
X In plots below corresponds to this data.

VSWR = 3 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.35 + j16.24$	$0.85 / 143.79$	1
Pout (dBm)	Eff (%)	GI (dB)
33.29	50.54	13.60
AMPm (dBm)	IRL (dB)	Zin (Ohm)
-4.23	-28.09	$5.59 + j1.01$

X In plots below corresponds to this data.

C=4p64pF Simple Moscap: Detailed 3,4GHz



Power Sweep Inspector

Eqn VSWRVal=5 Eqn VSWRVal=2.5

Move Marker 'loadZ' to desired impedance point.

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR Locus center Impedance = $10.24 + j19.53$
VSWR=5

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR Locus center Impedance = $4.94 + j16.24$
VSWR=5

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$6.12 + j15.76$	$0.80 / 144.55$	1
Pout (dBm)	Eff (%)	Gt (dB)
33.86	47.28	12.89
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-4.41	-18.05	$4.60 - j0.37$

✗ In plots below corresponds to this data.

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.94 + j16.24$	$0.84 / 143.72$	1
Pout (dBm)	Eff (%)	Gt (dB)
33.62	49.74	13.57
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-7.13	-19.09	$4.59 - j0.23$

✗ In plots below corresponds to this data.

VSWR = 2.5 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$5.53 + j16.24$	$0.82 / 143.65$	1
Pout (dBm)	Eff (%)	Gt (dB)
33.74	49.13	13.31
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-5.37	-18.44	$4.60 - j0.31$

✗ In plots below corresponds to this data.

VSWR = 3 point DATA

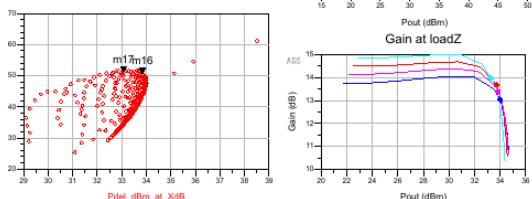
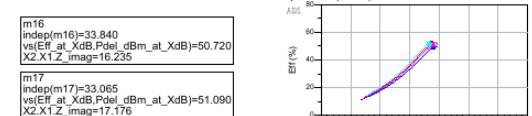
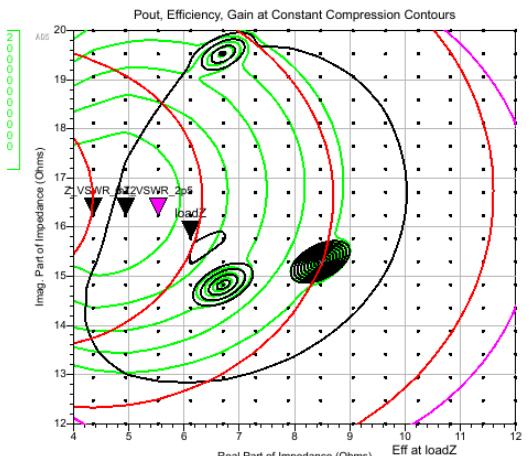
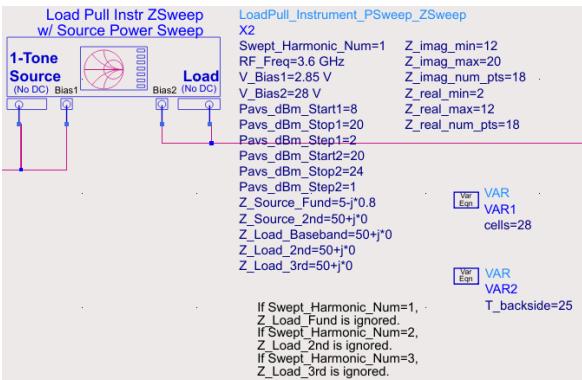
Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.35 + j16.24$	$0.85 / 143.79$	1
Pout (dBm)	Eff (%)	Gt (dB)
33.24	49.20	13.83
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-8.32	-19.54	$4.55 - j0.15$

✗ In plots below corresponds to this data.

DOE15_02

C=4p64pF

Simple
Moscap: Detailed
3,6GHz



Power Sweep Inspector

Eqn VSWRval=5 Eqn VSWRval=2.5

Move Marker "loadZ" to desired impedance point.

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR Locus center Impedance = $8.47 + j15.29$
VSWR=5

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$6.12 + j15.76$	$0.80 / 144.55$	-1
Pout (dBm)	Eff (%)	Gt (dB)
34.00	49.23	13.04
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-4.89	-24.94	$4.46 + j0.76$

X In plots below corresponds to this data.

VSWR = 2.5 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$5.53 + j16.24$	$0.82 / 143.65$	-1
Pout (dBm)	Eff (%)	Gt (dB)
33.84	50.72	13.38
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-5.02	-25.55	$4.50 + j0.77$

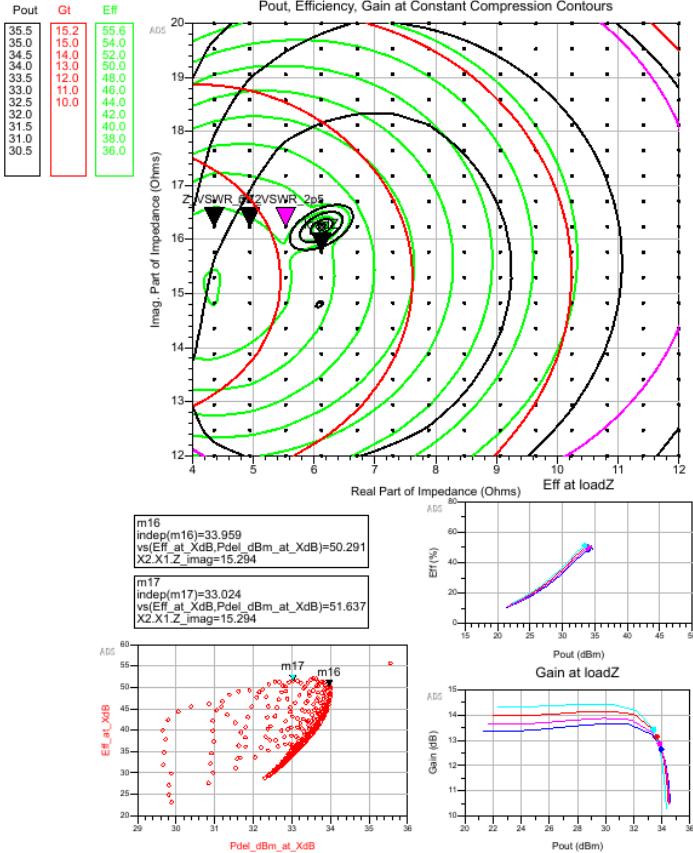
X In plots below corresponds to this data.

VSWR = 3 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.35 + j16.24$	$0.85 / 143.79$	-1
Pout (dBm)	Eff (%)	Gt (dB)
33.28	51.60	13.98
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-6.68	-26.44	$4.54 + j0.86$

X In plots below corresponds to this data.

C=4p64pF Simple Moscap: Detailed 3,8GHz



Power Sweep Inspector

Eqn VSWRVal=5 Eqn VSWRVal=2.5

Move Marker 'loadZ' to desired impedance point.

VSWR Locus of Points selector is located on Constant Compression Loadpull page.
VSWR Locus center Impedance = $6.12 + j16.24$
VSWR=5

VSWR Locus of Points selector is located on Constant Compression Loadpull page.
VSWR Locus center Impedance = $4.94 + j16.24$
VSWR=5

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$6.12 + j15.76$	0.80 / 144.55	1
Pout (dBm)	Eff (%)	Gt (dB)
33.95	48.54	12.64
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-3.98	-21.05	$4.67 + j1.56$

✗ In plots below corresponds to this data.

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.94 + j16.24$	0.84 / 143.72	1
Pout (dBm)	Eff (%)	Gt (dB)
33.63	50.36	13.15
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-3.99	-21.90	$4.74 + j1.53$

✗ In plots below corresponds to this data.

VSWR = 2.5 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$5.53 + j16.24$	0.82 / 143.65	1
Pout (dBm)	Eff (%)	Gt (dB)
33.84	49.53	12.86
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-3.80	-21.64	$4.72 + j1.52$

✗ In plots below corresponds to this data.

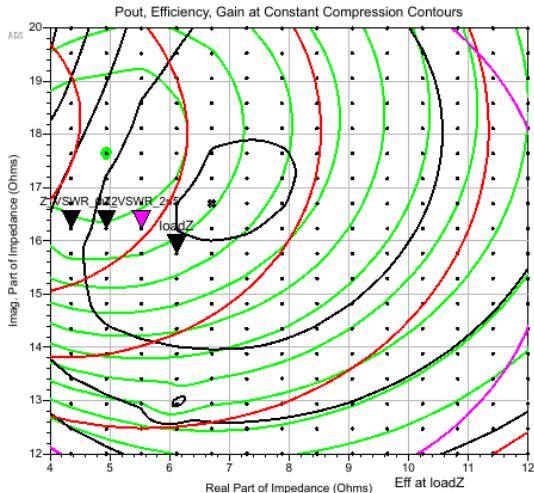
VSWR = 3 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.35 + j16.24$	0.85 / 143.79	1
Pout (dBm)	Eff (%)	Gt (dB)
33.40	51.03	13.43
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-4.48	-22.53	$4.80 + j1.53$

✗ In plots below corresponds to this data.

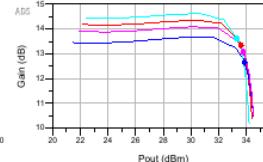
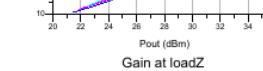
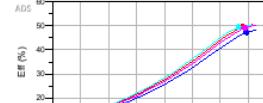
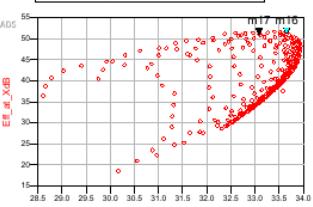
C=5p41pF Simple Moscap: Detailed 3.4GHz

Pout	Gt	Eff
33.9	15.9	51.6
33.5	15.0	50.0
33.3	14.0	48.0
32.5	12.0	44.0
32.0	11.0	42.0
31.5	10.0	40.0
31.0	9.00	38.0
30.5		36.0
30.0		34.0
29.5		32.0
29.0		



```
m16
indep(m16)=33.655
vs(Eff_at_XdB,Pdel_dBm_at_XdB)=51.218
X2:X1,Z_imag=17.647
```

```
m17
indep(m17)=33.080
vs(Eff_at_XdB,Pdel_dBm_at_XdB)=51.068
X2:X1,Z_imag=17.176
```



Power Sweep Inspector

VSWRVal=5 VSWRVal=2.5

Move Marker 'loadZ' to desired impedance point.

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR Locus center Impedance = VSWR=5

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR Locus center Impedance = VSWR=5

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
<input type="text" value="6.12 + j15.76"/>	<input type="text" value="0.80 / 144.55"/>	<input type="checkbox"/>
Pout (dBm)	Eff (%)	Gt (dB)
<input type="text" value="33.87"/>	<input type="text" value="47.30"/>	<input type="text" value="12.66"/>
AMPM (dBm)	IRL (dB)	Zin (Ohm)
<input type="text" value="-4.24"/>	<input type="text" value="-17.04"/>	<input type="text" value="4.06 + j0.06"/>

✗ In plots below corresponds to this data.

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
<input type="text" value="4.94 + j16.24"/>	<input type="text" value="0.84 / 143.72"/>	<input type="checkbox"/>
Pout (dBm)	Eff (%)	Gt (dB)
<input type="text" value="33.62"/>	<input type="text" value="49.77"/>	<input type="text" value="13.38"/>
AMPM (dBm)	IRL (dB)	Zin (Ohm)
<input type="text" value="-6.96"/>	<input type="text" value="-18.02"/>	<input type="text" value="4.06 + j0.18"/>

✗ In plots below corresponds to this data.

VSWR = 2.5 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
<input type="text" value="5.53 + j16.24"/>	<input type="text" value="0.82 / 143.65"/>	<input type="checkbox"/>
Pout (dBm)	Eff (%)	Gt (dB)
<input type="text" value="33.78"/>	<input type="text" value="49.24"/>	<input type="text" value="13.08"/>
AMPM (dBm)	IRL (dB)	Zin (Ohm)
<input type="text" value="-5.32"/>	<input type="text" value="-17.45"/>	<input type="text" value="4.06 + j0.11"/>

✗ In plots below corresponds to this data.

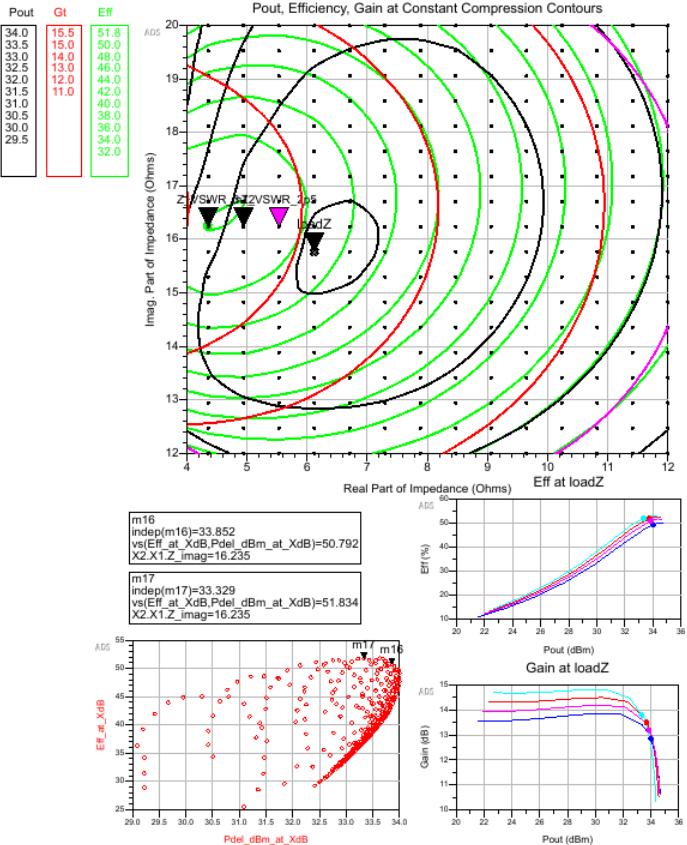
VSWR = 3 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
<input type="text" value="4.35 + j16.24"/>	<input type="text" value="0.85 / 143.79"/>	<input type="checkbox"/>
Pout (dBm)	Eff (%)	Gt (dB)
<input type="text" value="33.32"/>	<input type="text" value="49.54"/>	<input type="text" value="13.62"/>
AMPM (dBm)	IRL (dB)	Zin (Ohm)
<input type="text" value="-8.57"/>	<input type="text" value="-18.66"/>	<input type="text" value="4.05 + j0.26"/>

✗ In plots below corresponds to this data.

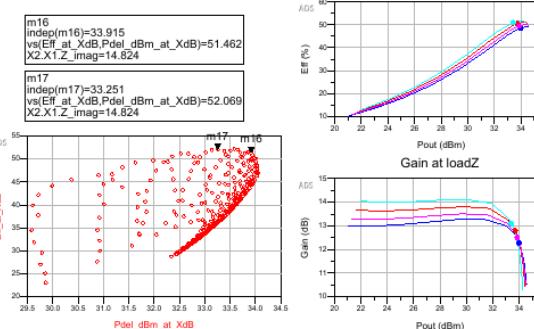
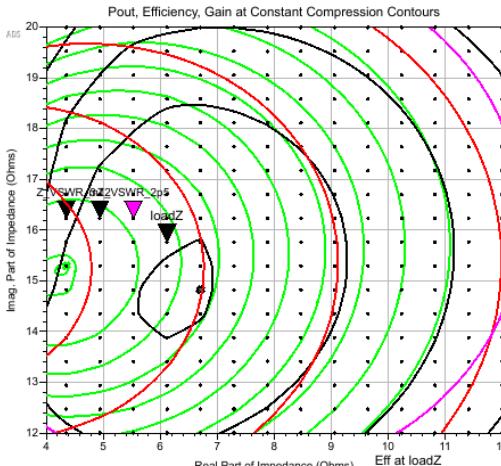
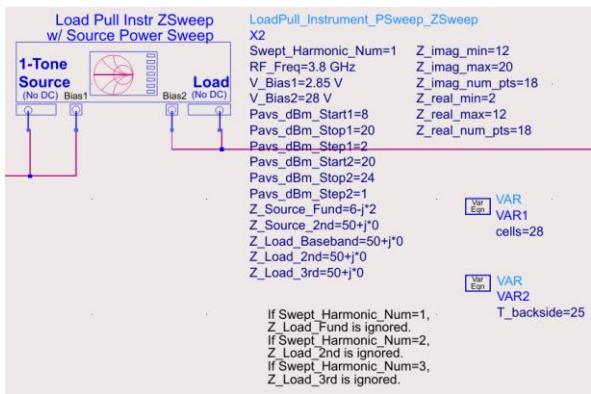
C=5p41pF

Moscap: Detailed
3.6GHz



C=5p41pF

Moscap: Detailed
3,8GHz



Power Sweep Inspector

Egn VSWRVal=5 Egn VSWRVal=2.5

Move Marker 'loadZ' to desired impedance point.

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR Locus center Impedance = $6.71 + j14.82$

VSWR=5

Summary of Performance at Compression

Marker Impedance: $6.12 + j15.76$

Marker Gamma: $0.80 / 144.55$

Reference Compression Level (dB): 1

Pout (dBm): 33.99

Eff (%): 48.60

Gt (dB): 12.28

AMPM (dBm): -4.10

IRL (dB): -15.18

Zin (Ohm): $4.23 + j1.82$

VSWR = 2.5 point DATA

Marker Impedance: $5.53 + j16.24$

Marker Gamma: $0.82 / 143.65$

Reference Compression Level (dB): 1

Pout (dBm): 33.85

Eff (%): 49.52

Gt (dB): 12.50

AMPM (dBm): -3.80

IRL (dB): -15.30

Zin (Ohm): $4.25 + j1.79$

Marker Impedance: $4.35 + j16.24$

Marker Gamma: $0.85 / 143.79$

Reference Compression Level (dB): 1

Pout (dBm): 33.41

Eff (%): 51.02

Gt (dB): 13.10

AMPM (dBm): -4.50

IRL (dB): -15.70

Zin (Ohm): $4.32 + j1.78$

Summary of Performance at Compression

Marker Impedance: $4.94 + j16.24$

Marker Gamma: $0.84 / 143.72$

Reference Compression Level (dB): 1

Pout (dBm): 33.71

Eff (%): 50.59

Gt (dB): 12.80

AMPM (dBm): -4.22

IRL (dB): -15.50

Zin (Ohm): $4.29 + j1.78$

VSWR = 3 point DATA

Marker Impedance: $4.35 + j16.24$

Marker Gamma: $0.85 / 143.79$

Reference Compression Level (dB): 1

Pout (dBm): 33.41

Eff (%): 51.02

Gt (dB): 13.10

AMPM (dBm): -4.50

IRL (dB): -15.70

Zin (Ohm): $4.32 + j1.78$

Marker Impedance: $4.35 + j16.24$

Marker Gamma: $0.85 / 143.79$

Reference Compression Level (dB): 1

Pout (dBm): 33.41

Eff (%): 51.02

Gt (dB): 13.10

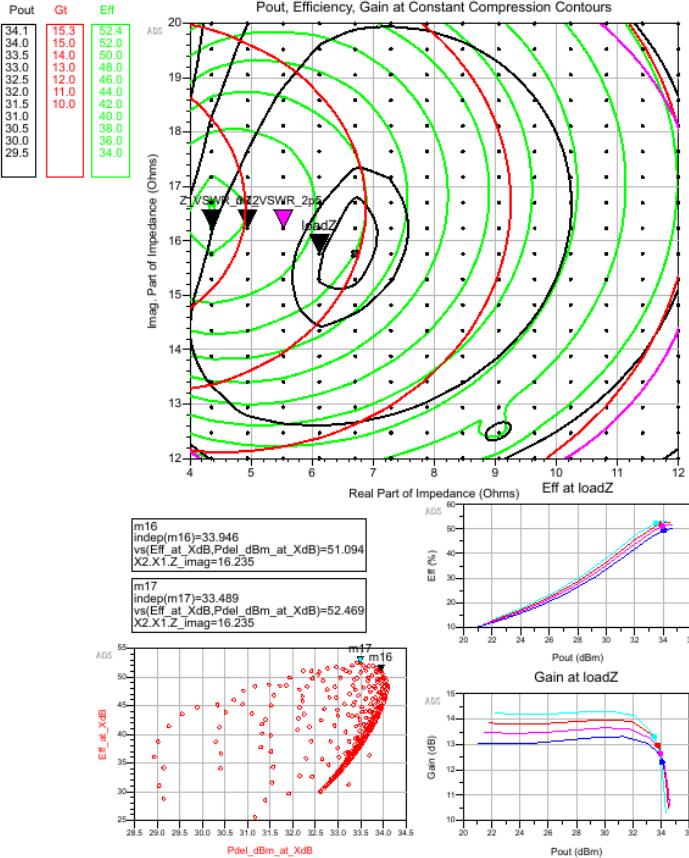
AMPM (dBm): -4.50

IRL (dB): -15.70

Zin (Ohm): $4.32 + j1.78$

C=6p18pF

Moscap: Detailed 3,6GHz



Power Sweep Inspector

Egn VSWRVal=5 **Egn** VSWRVal1=2.

Move Marker 'loadZ' to desired impedance point

VSWR Locus of Points selector is located on Constant Compression Loadpull page

VSWR Locus center Impedance = **6.71 + j15.7**
VSWR=5

Summary of Performance at Compressor		
Marker Impedance	Marker Gamma	Reference Compression Level (dB)
6.12 + j15.76	0.80 / 144.55	1
Pout (dBm)	Eff (%)	Gt (dB)
34.06	49.42	12.31
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-5.11	-12.04	3.69 + j124

X In plots below corresponds to this data

VSWR = 2.5 point DATA

Marker Impedance	Marker Gamma	Normalized Compression Level (dB)
$5.53 + j16.24$	$0.82 / +143.65$	1
Pout (dBm)	Eff (%)	Gt (dB)
33.95	51.09	12.64
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-5.42	-12.18	$3.72 + j1.24$

In plots below corresponds to this data

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reflection Coefficient Level (dB)
4.94 + j16.24	0.84 / 143.72	1
Pout (dBm)	Eff (%)	Gt (dB)
33.76	51.99	12.97
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-6.41	-12.33	3.75 + j1.27

X In plots below corresponds to this data.

VSWR = 3 point DATA

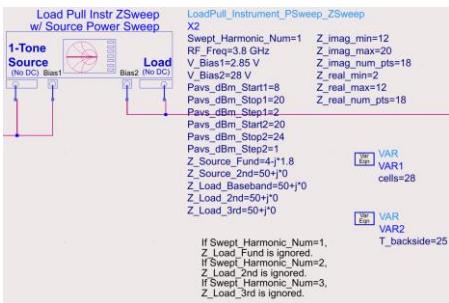
Marker Impedance	Marker Gamma	Return Loss / Compression Level (dB)
$4.35 + 16.24j$	$0.85 / 143.79$	1
Pout (dBm)	Eff (%)	GI (dB)
33.49	52.47	13.31
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-7.55	-12.51	$3.78 + \mathbf{j}1.30$

X In plots below corresponds to this data.

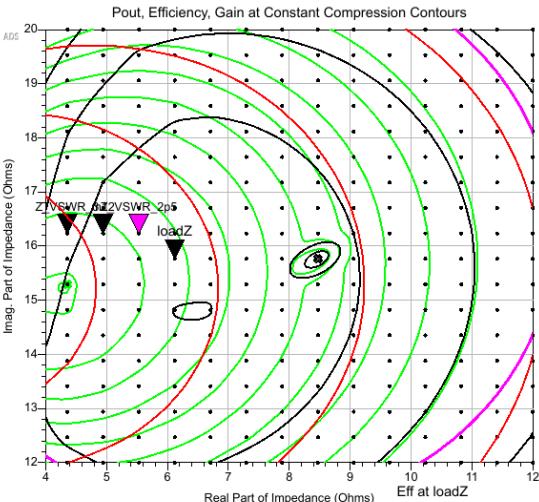


C=6p18pF

Moscap: Detailed
3,8GHz



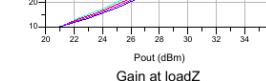
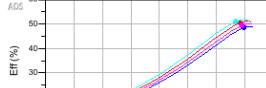
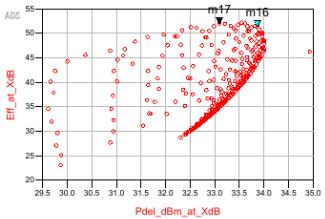
Pout	Gt	Eff
34.9	15.0	52.2
34.5	14.0	52.0
34.0	13.0	50.0
33.5	12.0	48.0
33.0	11.0	46.0
32.5	10.0	44.0
32.0		42.0
31.5		40.0
31.0		38.0
30.5		36.0
30.0		34.0



```

m16
indep(m16)=33.867
vs(Eff_at_XdB,Pdel_dBm_at_XdB)=51.409
X2.X1.Z_Img=14.824

m17
indep(m17)=33.094
vs(Eff_at_XdB,Pdel_dBm_at_XdB)=52.012
X2.X1.Z_Img=15.294
    
```



Power Sweep Inspector

Eqn|VSWRVal=5 Eqn|VSWRVal=2.5

Move Marker 'loadZ' to desired impedance point.

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR Locus center Impedance = $8.47 + j15.76$
VSWR=5

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR Locus center Impedance = $4.94 + j16.24$
VSWR=5

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$6.12 + j15.76$	0.80 / 144.55	1
Pout (dBm)	Eff (%)	Gt (dB)
33.95	48.56	12.30
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-3.98	-34.98	$3.89 + j1.89$

✗ In plots below corresponds to this data.

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.94 + j16.24$	0.84 / 143.72	1
Pout (dBm)	Eff (%)	Gt (dB)
33.66	50.56	12.81
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-4.08	-40.51	$3.94 + j1.85$

✗ In plots below corresponds to this data.

VSWR = 2.5 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$5.53 + j16.24$	0.82 / 143.65	1
Pout (dBm)	Eff (%)	Gt (dB)
33.82	49.51	12.52
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-3.72	-37.41	$3.91 + j1.86$

✗ In plots below corresponds to this data.

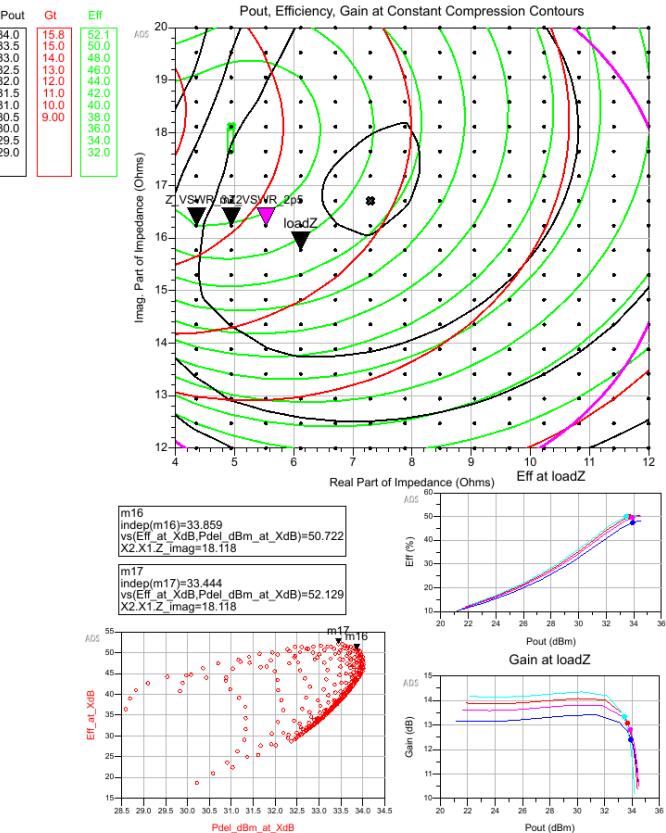
VSWR = 3 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.35 + j16.24$	0.85 / 143.79	1
Pout (dBm)	Eff (%)	Gt (dB)
33.38	51.05	13.11
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-4.43	-41.60	$3.98 + j1.88$

✗ In plots below corresponds to this data.

C=7p11pF

Moscap: Detailed
3.4GHz



Power Sweep Inspector

Eqn VSWRVal=5 Eqn VSWRVal1=2.5

Move Marker 'loadZ' to desired impedance point.

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR Locus center Impedance = $7.29 + j16.71$
VSWR=5

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR Locus center Impedance = $4.94 + j16.24$
VSWR=5

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$6.12 + j15.76$	$0.80 / 144.55$	1
Pout (dBm)	Eff (%)	Gt (dB)
33.91	47.42	12.41
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-4.33	-13.89	$3.66 + j0.30$

✗ In plots below corresponds to this data.

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.94 + j16.24$	$0.84 / 143.72$	1
Pout (dBm)	Eff (%)	Gt (dB)
33.68	49.91	13.07
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-7.02	-13.99	$3.67 + j0.41$

✗ In plots below corresponds to this data.

VSWR = 2.5 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$5.53 + j16.24$	$0.82 / 143.65$	1
Pout (dBm)	Eff (%)	Gt (dB)
33.88	49.57	12.80
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-5.62	-14.02	$3.68 + j0.35$

✗ In plots below corresponds to this data.

VSWR = 3 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.35 + j16.24$	$0.85 / 143.79$	1
Pout (dBm)	Eff (%)	Gt (dB)
33.45	50.03	13.34
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-9.05	-14.03	$3.68 + j0.48$

✗ In plots below corresponds to this data.



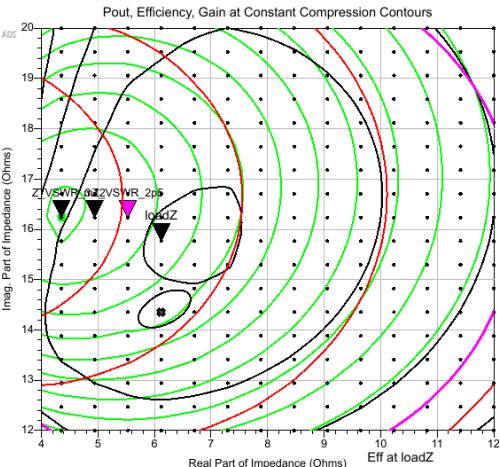
C=7p11pF

Moscap: Detailed 3.6GHz

One Tone Load Pull Simulation with input power sweep; output power and PAE found at each fundamental or harmonic load

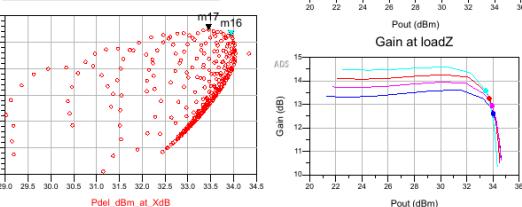


Pout	Gt	Eff
34.3	15.0	52.3
34.0	15.0	52.0
33.5	14.0	50.0
33.0	13.0	48.0
32.5	12.0	46.0
32.0	11.0	44.0
31.5	10.0	42.0
31.0		40.0
30.5		38.0
30.0		36.0
29.5		34.0



m16
indep(m16)=33.948
vs(Eff_at_XdB,Pdel_dBm_at_XdB)=51.149
X2:X1:Z_imag=16.235

m17
indep(m17)=33.451
vs(Eff_at_XdB,Pdel_dBm_at_XdB)=52.323
X2:X1:Z_imag=16.235



Power Sweep Inspector

Eqn_VSWRVal=5 Eqn_VSWRVal=1.25

Move Marker 'loadZ' to desired impedance point.

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR Locus center Impedance = $6.12 + j14.35$
VSWR=5

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$6.12 + j15.76$	$0.80 / 144.55$	1
Pout (dBm)	Eff (%)	Gt (dB)
34.02	49.35	12.59
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-4.98	-16.17	$3.65 + j1.27$

✗ In plots below corresponds to this data.

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR Locus center Impedance = $4.94 + j16.24$
VSWR=5

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.94 + j16.24$	$0.84 / 143.72$	1
Pout (dBm)	Eff (%)	Gt (dB)
33.72	51.85	13.25
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-6.12	-16.58	$3.71 + j1.29$

✗ In plots below corresponds to this data.

VSWR = 2.5 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$5.53 + j16.24$	$0.82 / 143.65$	1
Pout (dBm)	Eff (%)	Gt (dB)
33.95	51.15	12.94
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-5.39	-16.46	$3.69 + j1.26$

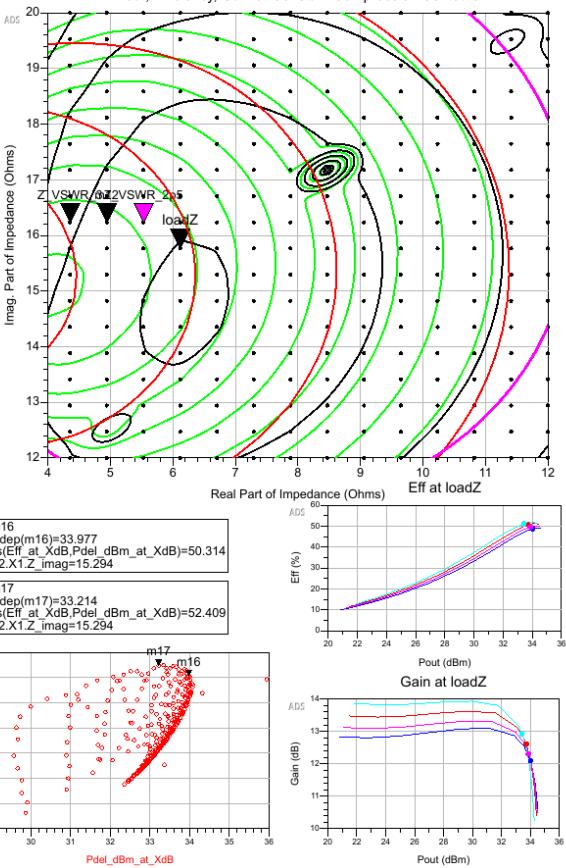
✗ In plots below corresponds to this data.

VSWR = 3 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.35 + j16.24$	$0.85 / 143.79$	1
Pout (dBm)	Eff (%)	Gt (dB)
33.45	52.32	13.58
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-7.30	-16.86	$3.74 + j1.32$

✗ In plots below corresponds to this data.

C=7p11pF

Moscap: Detailed
3.8GHz**Power Sweep Inspector**

Eqn VSWRVal=5 Eqn VSWRVal=2.5

Move Marker 'loadZ' to desired impedance point.

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR Locus center Impedance = $8.47 + j17.18$
VSWR=5**Summary of Performance at Compression**

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$6.12 + j15.76$	$0.80 / 144.55$	1
Pout (dBm)	Eff (%)	Gt (dB)
34.02	48.74	12.10
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-4.03	-12.87	$3.88 + j1.92$

X In plots below corresponds to this data.

VSWR Locus of Points selector is located on Constant Compression Loadpull page.

VSWR Locus center Impedance = $4.94 + j16.24$
VSWR=5**Summary of Performance at Compression**

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.94 + j16.24$	$0.84 / 143.72$	1
Pout (dBm)	Eff (%)	Gt (dB)
33.72	50.68	12.61
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-4.13	-13.15	$3.92 + j1.88$

X In plots below corresponds to this data.

VSWR = 2.5 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$5.53 + j16.24$	$0.82 / 143.65$	1
Pout (dBm)	Eff (%)	Gt (dB)
33.87	49.57	12.31
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-3.71	-13.01	$3.89 + j1.89$

X In plots below corresponds to this data.

VSWR = 3 point DATA

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
$4.35 + j16.24$	$0.85 / 143.79$	1
Pout (dBm)	Eff (%)	Gt (dB)
33.41	51.07	12.92
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-4.45	-13.29	$3.95 + j1.87$

X In plots below corresponds to this data.

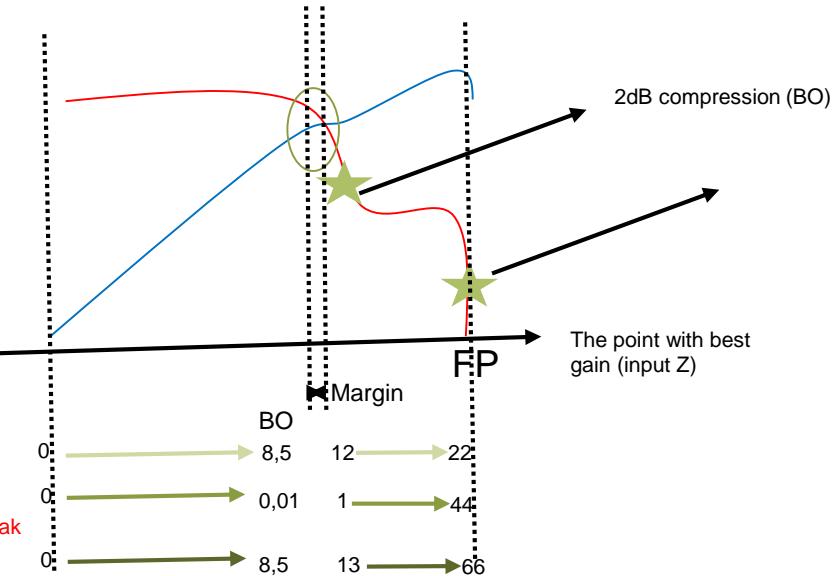


Part of your life. Part of tomorrow.

Power calculation: Asymmetric Doherty

Specification		Frequency-Range [MHz]	P3dB (dBm)	P3dB (W)	PAR
Project	PAM 2.0+	3400 - 3800	47,4	54,95	8,4
			Pavg (dBm)	Pavg (W)	
			39	7,94	
Doherty Topology	Remark	Ratio	Main (W)	Peak (W)	
2-way asymmetric	To maximize efficiency	2	18,32	36,64	
Estimation including loss		Required power (W)	Required power (dBm)	Loss (dBm)	Total required power (dBm)
Main		18,32	42,63	0,8	43,43
					22,02
Peak		36,64	45,64	0,8	46,44
					44,05
		Total output power (dBm)	PAR	Power @ MXE (dBm)	Margin (dB)
Main		48,2	8,4	39,8	1,00
				40,80	
Peak				Peak_start_ideal	
				Peak_start	
				Power @ MXE (W)	MXP (W)
Main				12,02	22,02
				43,43	
Peak				0,01	44,05
				46,44	
				MXP (dBm)	
Main				66,07	48,20
Peak					

Required power from peak



Maximize Gain

- >Main section gain as high as possible while maintaining Power @ MXE
- Peak section gain as high as possible while maintaining MXP

