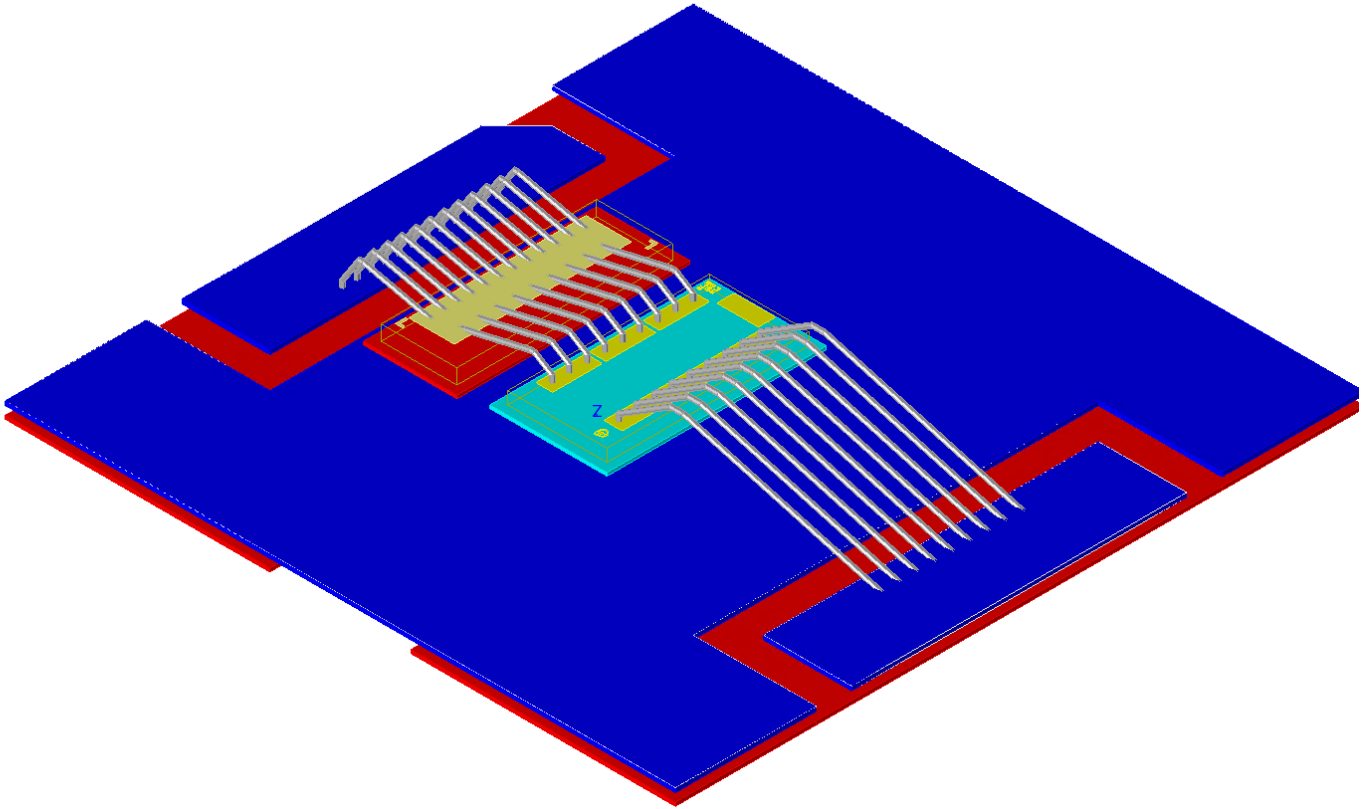
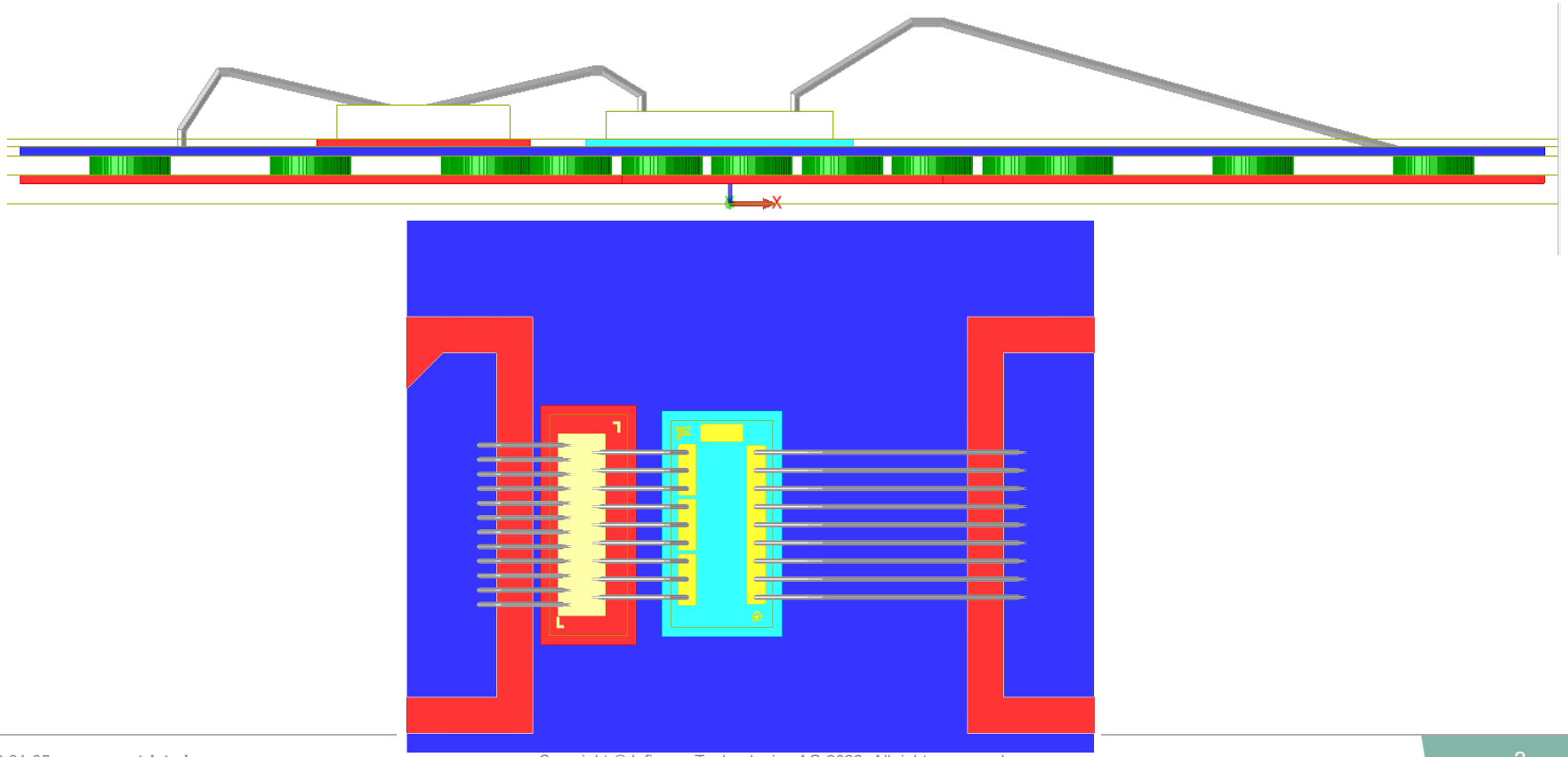
Prematch design PLP3839

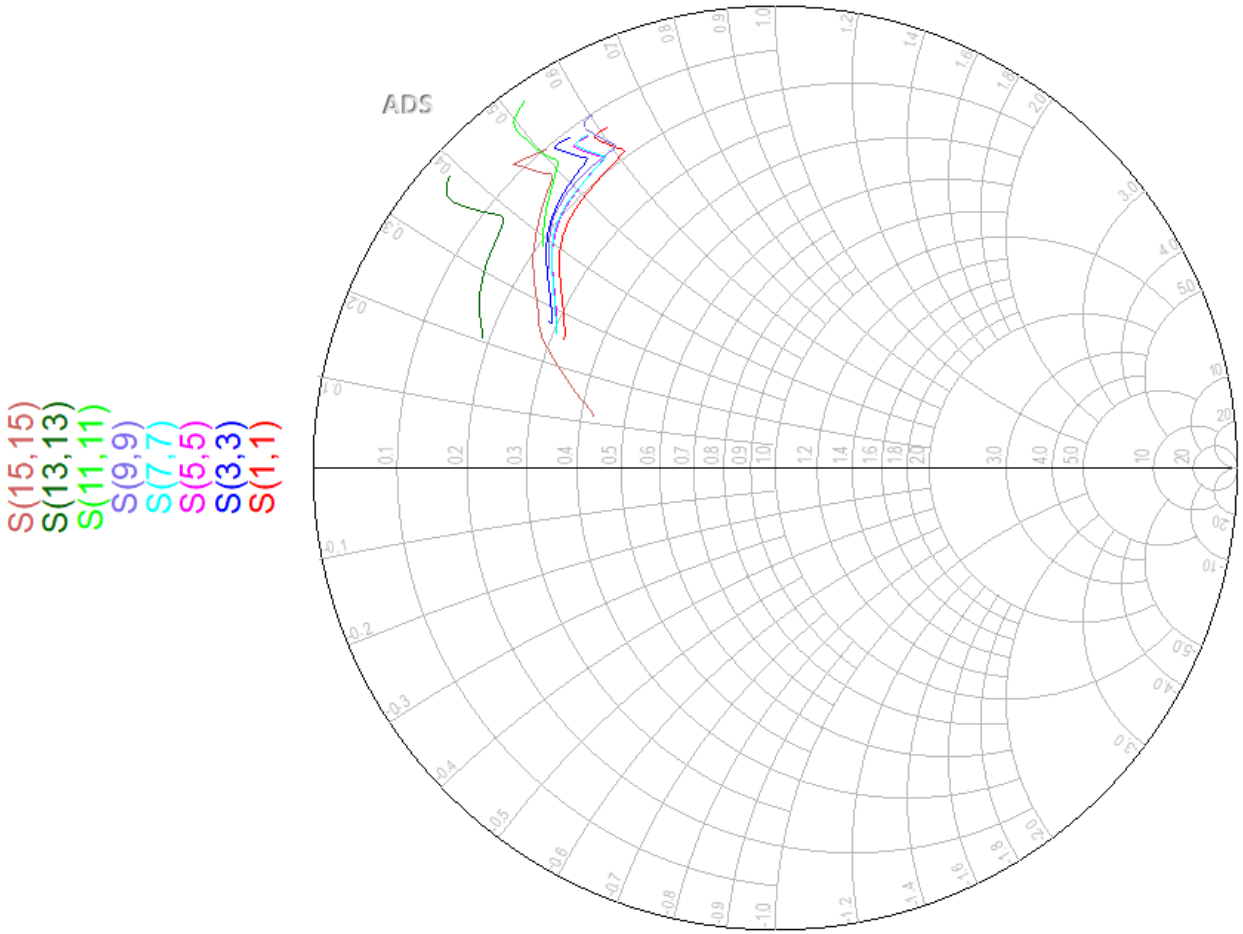


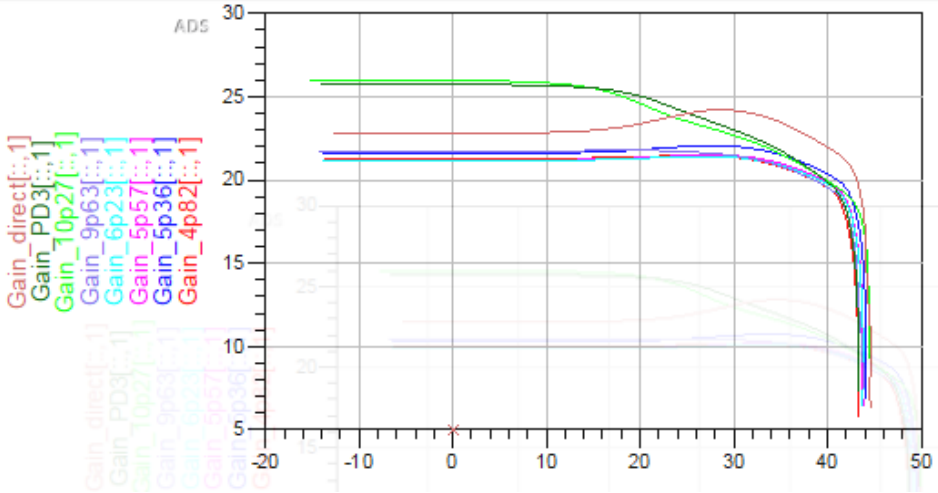


Overview

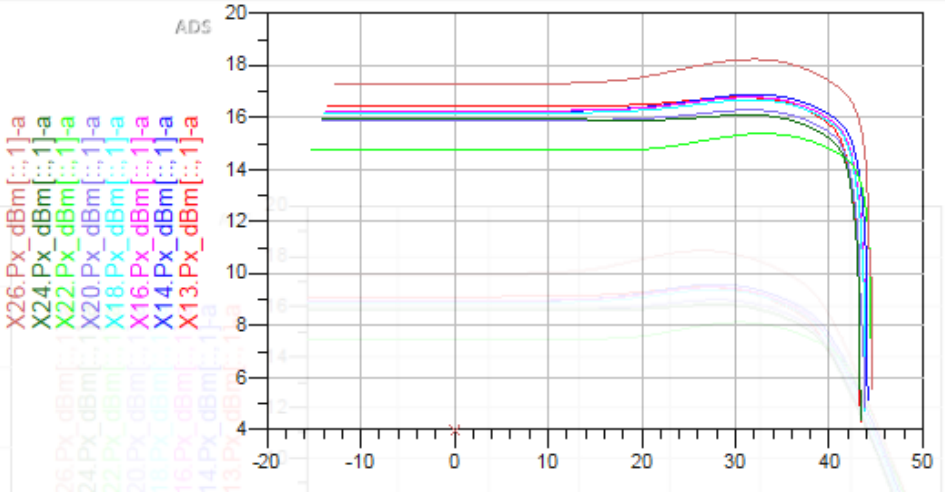
	cap	Max. Eff	Gt	Max. Power
Direct		62,92	16,21	43,6
Option1	4,82pF	73,33	14,77	43,64
	5,29 →5,36pF	72,66	14,91	43,66
	5,5 →5,57pF	72,81	14,8	43,66
	6,17 →6,23pF	73,34	14,7	43,65
	9,55 →9,63pF	74,86	14,28	43,61
	10,19 →10,27pF	51,97	13,08	42,8
Option2 (PD3-A		76,83	14,23	43,88

- 4,82pF
- 5,36pF
- 5,57pF
- 6,23pF
- 9,63pF
- 10,27pF
- PD3
- direct





› Gp

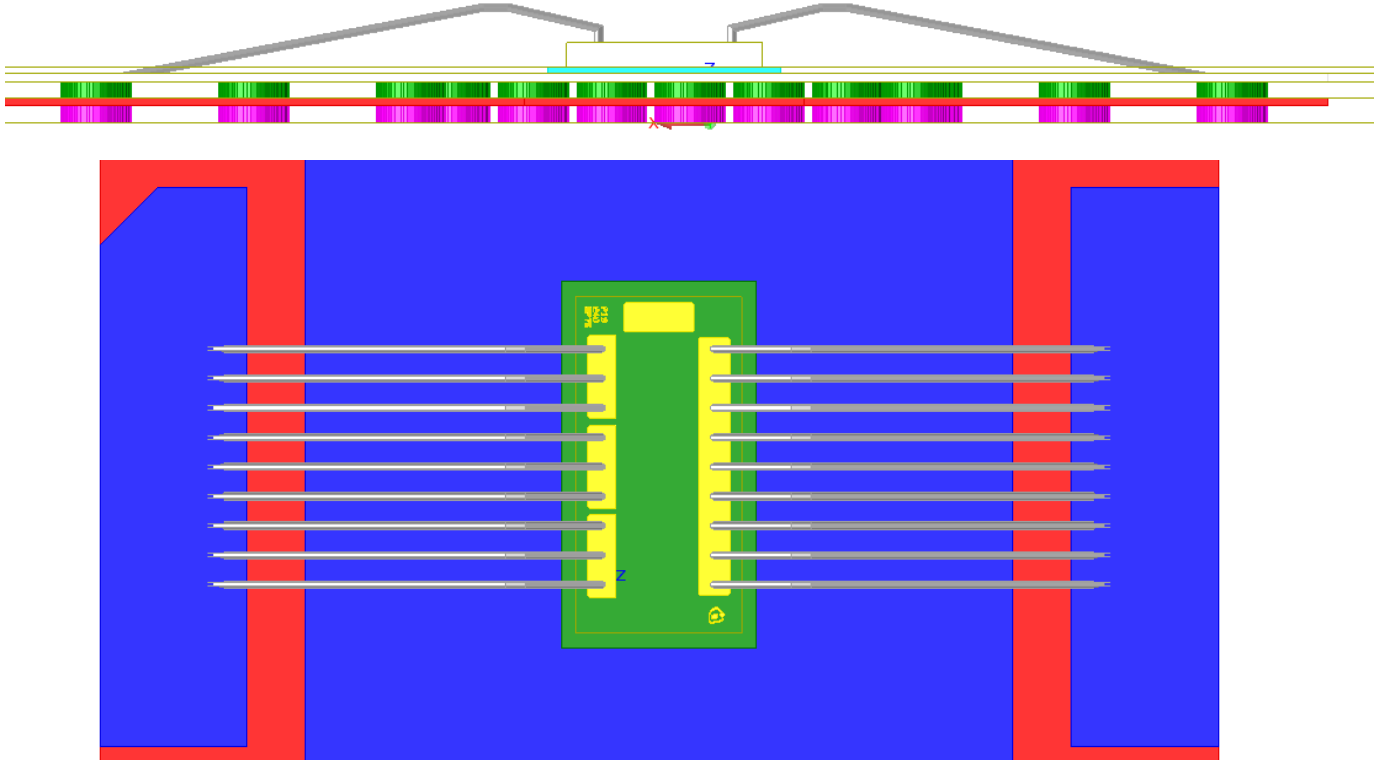


› Gt, with 3ohm source

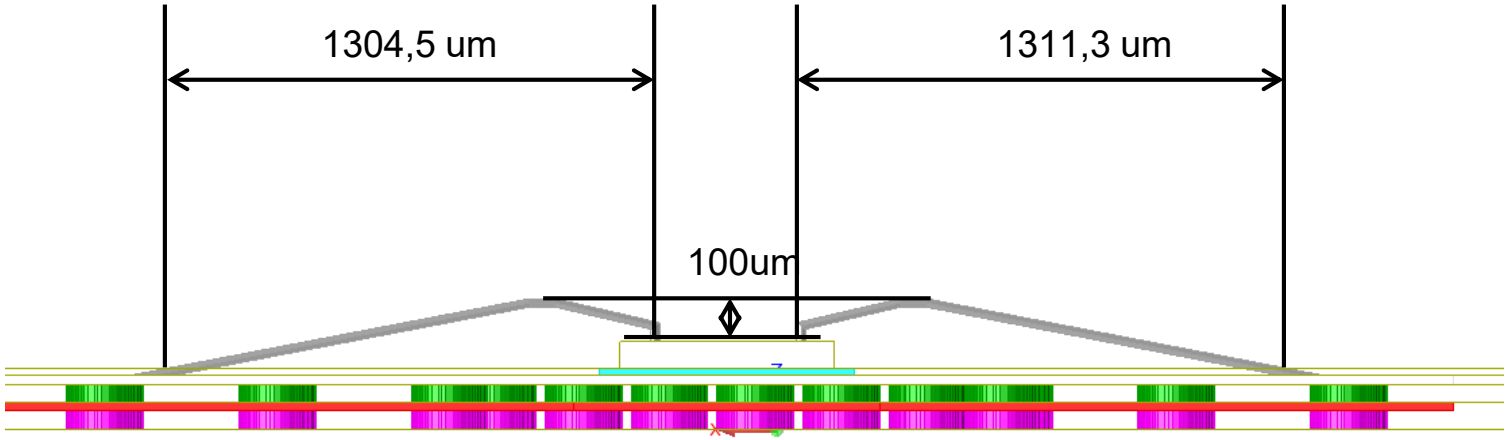
Option direct

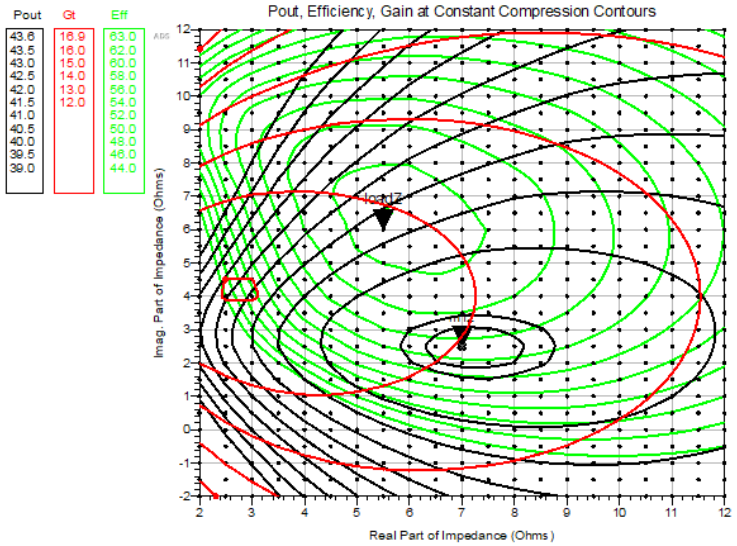
- Die : R9505A, P19
- Minipack : PLP3839

Option direct



Option direct





Power Sweep Inspector

Eqn VSWRVal=3

Move Marker 'loadZ' to desired impedance point.

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

VSWR Locus center Impedance = 7.00 + j2.50
VSWR=3

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
5.50 + j6.00	0.80 / 166.15	2

Pout (dBm)	Eff (%)	Gt (dB)
42.31	62.92	16.21

AMPM (dBm)	IRL (dB)	Zin (Ohm)
-4.50	-2.33	0.51 + j1.54

✖ In plots below corresponds to this data.

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

VSWR Locus center Impedance = 7.00 + j2.50
VSWR=3

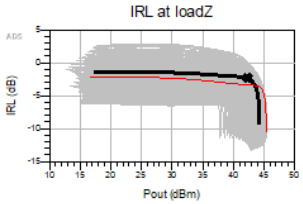
Summary of Performance at Compression

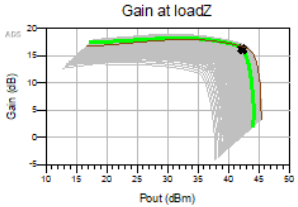
Marker Impedance	Marker Gamma	Reference Compression Level (dB)
7.00 + j2.50	0.75 / 174.16	2

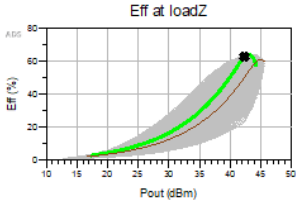
Pout (dBm)	Eff (%)	Gt (dB)
43.60	57.38	15.97

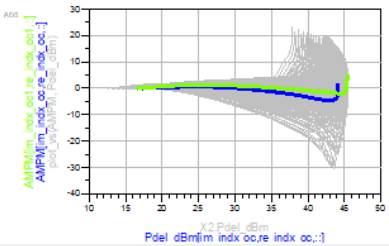
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-1.76	-3.45	0.64 + j0.88

✖ In plots below corresponds to this data.





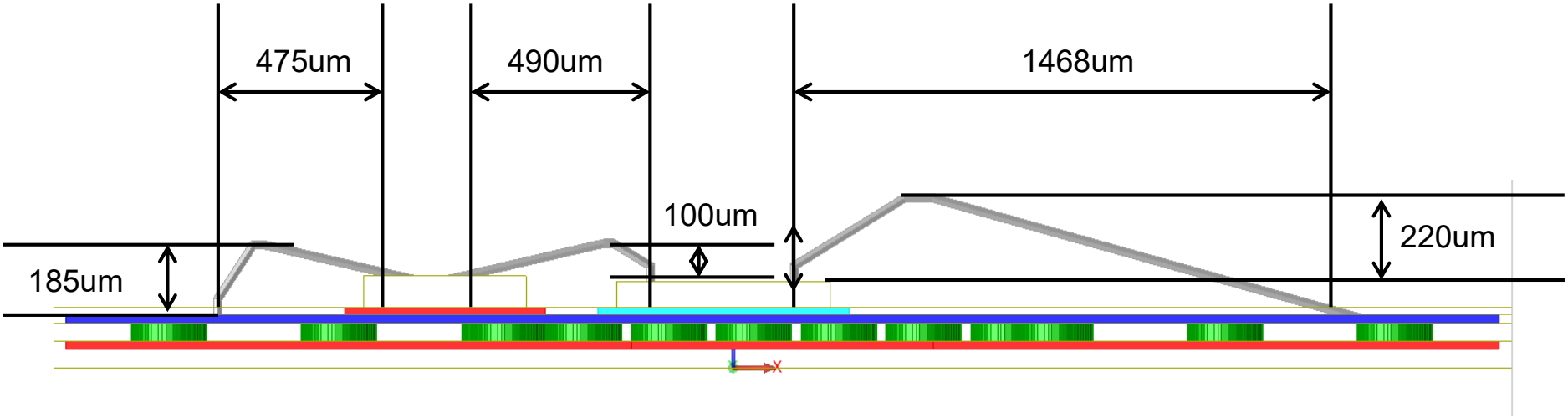


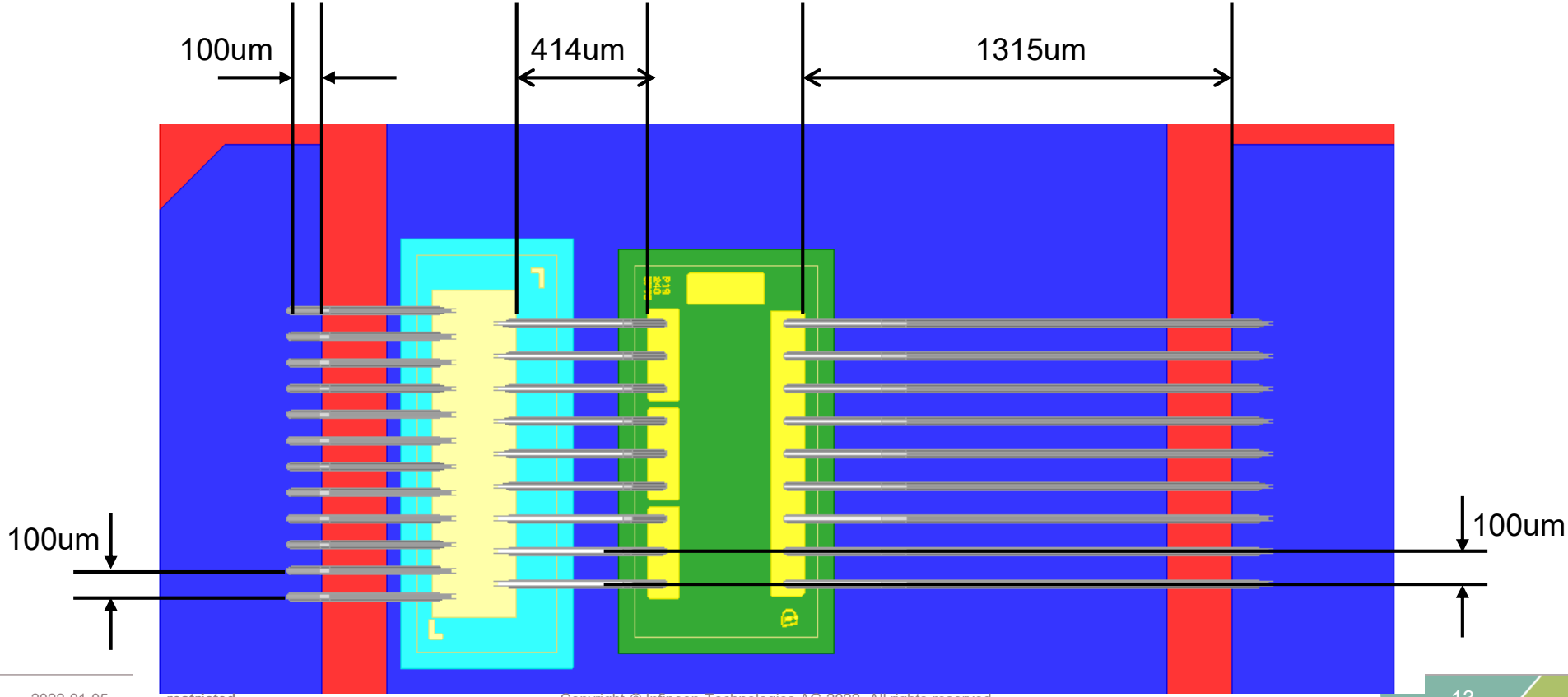


Option 1

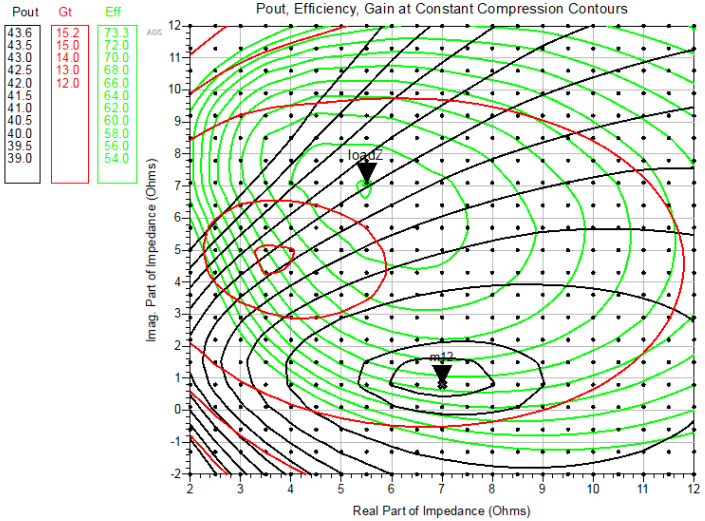
- Die : R9505A, P19
- MOSCap : N9500B series
- Minipack : PLP3839
- Recommend to use N9500B_V6, with ox=1950.
  - At low power region, real part of impedance is most high

Option 1





1010x263 um, ox=1950 (4,82pF)



Power Sweep Inspector

Eqn VSWRVal=3

Move Marker 'loadZ' to desired impedance point.

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

VSWR Locus center Impedance = VSWR=3 7.00 + j0.80

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

VSWR Locus center Impedance = VSWR=3 7.00 + j0.80

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
5.50 + j7.10	0.81 / 163.64	2

Pout (dBm)	Eff (%)	Gt (dB)
40.93	73.33	14.77

AMPM (dBm)	IRL (dB)	Zin (Ohm)
-6.39	-3.28	0.81 + j1.96

✕ In plots below corresponds to this data.

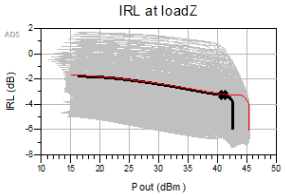
Summary of Performance at Compression

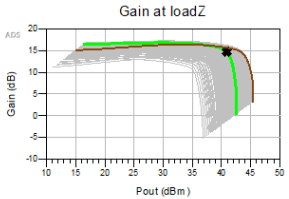
Marker Impedance	Marker Gamma	Reference Compression Level (dB)
7.00 + j0.80	0.75 / 178.13	2

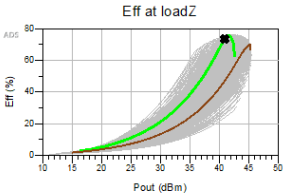
Pout (dBm)	Eff (%)	Gt (dB)
43.64	62.91	14.36

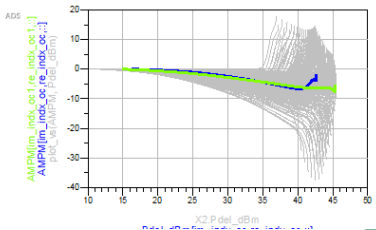
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-6.23	-3.26	0.64 + j1.15

✕ In plots below corresponds to this data.

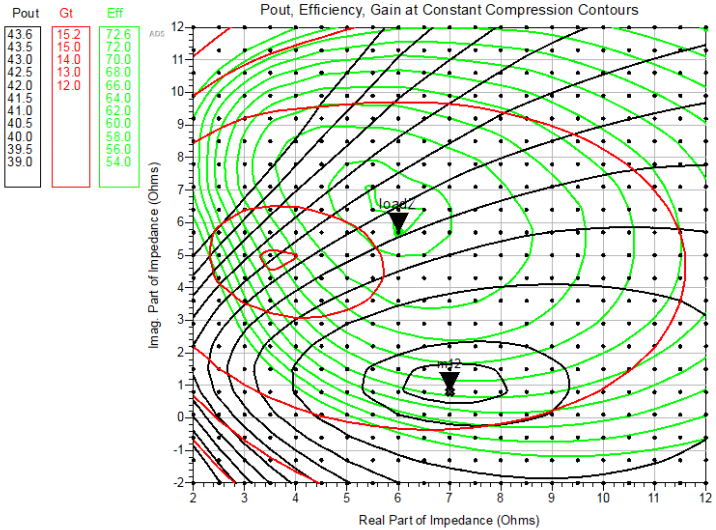








1010x253 um, ox=1700 (5,29 →5,36pF)



Power Sweep Inspector

Eqn VSWRVal=3

Move Marker 'loadZ' to desired impedance point.

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

VSWR Locus center Impedance = VSWR=3 | 7.00 + j0.80

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

VSWR Locus center Impedance = VSWR=3 | 7.00 + j0.80

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
6.00 + j5.70	0.79 / 166.81	2

Pout (dBm)	Eff (%)	Gt (dB)
41.93	72.66	14.91

AMPM (dBm)	IRL (dB)	Zin (Ohm)
-6.93	-2.93	0.68 + j1.77

✕ In plots below corresponds to this data.

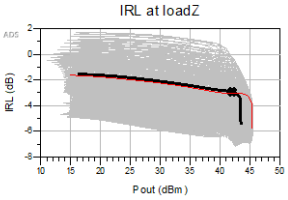
Summary of Performance at Compression

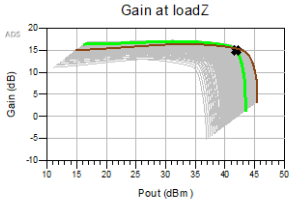
Marker Impedance	Marker Gamma	Reference Compression Level (dB)
7.00 + j0.80	0.75 / 178.13	2

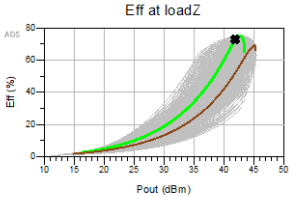
Pout (dBm)	Eff (%)	Gt (dB)
43.66	62.57	14.32

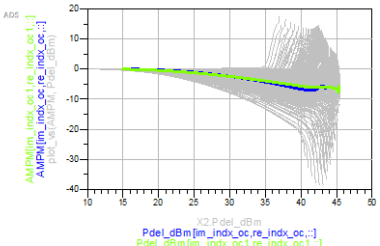
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-5.94	-3.08	0.61 + j1.15

✕ In plots below corresponds to this data.

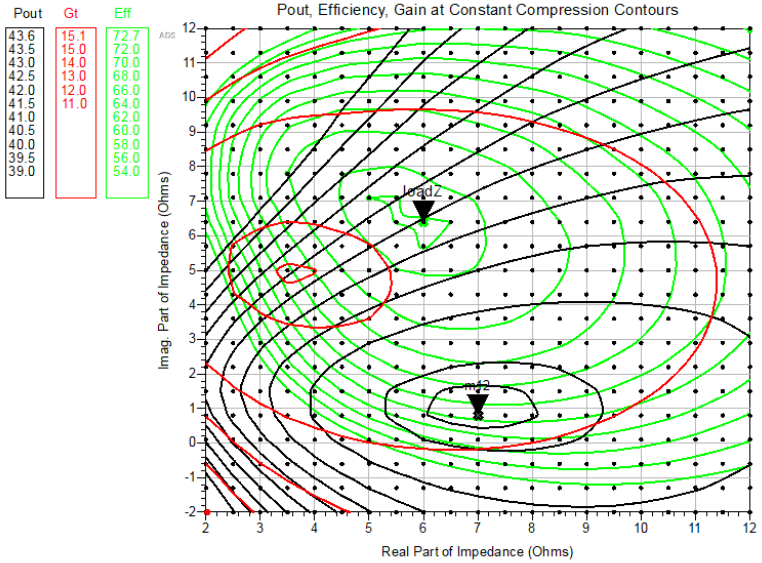








1010x263 um, ox=1700 (5,5 →5,57pF)



Power Sweep Inspector

Eqn VSWRVal=3

Move Marker 'loadZ' to desired impedance point.

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

VSWR Locus center Impedance = 7.00 + j0.80
VSWR=3

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

VSWR Locus center Impedance = 7.00 + j0.80
VSWR=3

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
6.00 + j6.40	0.79 / 165.20	2

Pout (dBm)	Eff (%)	Gt (dB)
41.55	72.81	14.80

AMPM (dBm)	IRL (dB)	Zin (Ohm)
-6.36	-3.14	0.75 + j1.84

✕ In plots below corresponds to this data.

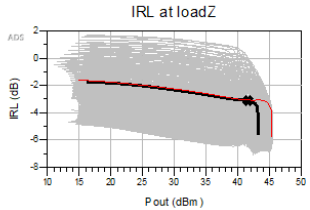
Summary of Performance at Compression

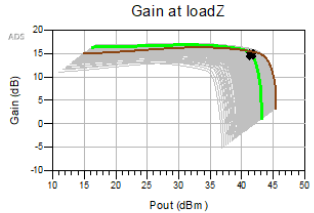
Marker Impedance	Marker Gamma	Reference Compression Level (dB)
7.00 + j0.80	0.75 / 178.13	2

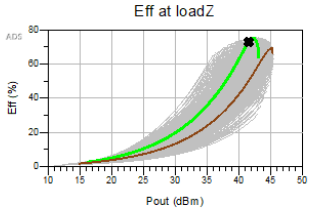
Pout (dBm)	Eff (%)	Gt (dB)
43.66	62.66	14.27

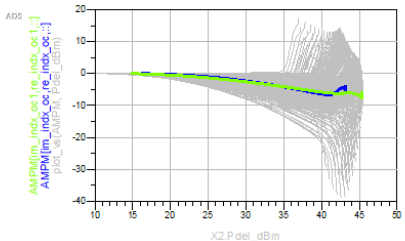
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-6.13	-3.09	0.61 + j1.16

✕ In plots below corresponds to this data.

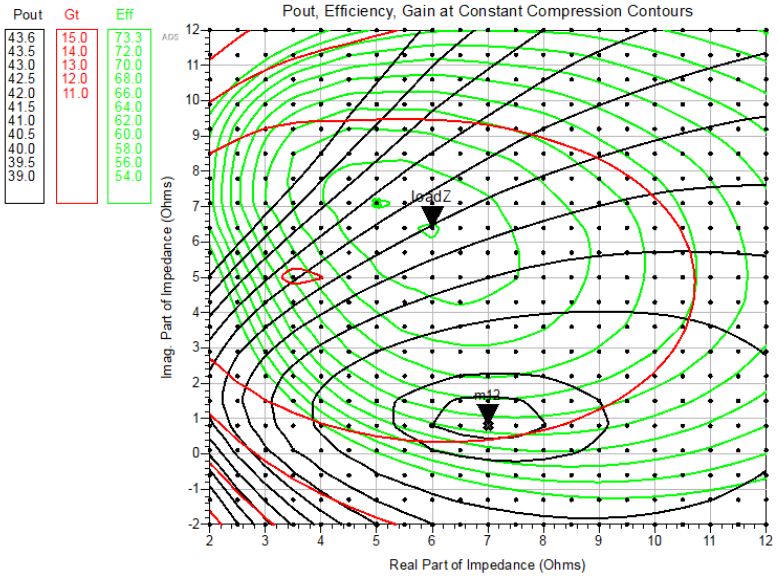








1010x295 um, ox=1700 (6,17 →6,23pF)



Power Sweep Inspector

Eqn VSWRVal=3

Move Marker 'loadZ' to desired impedance point.

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

VSWR Locus center Impedance = 7.00 + j0.80
VSWR=3

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
6.00 + j6.40	0.79 / 165.20	2

Pout (dBm)	Eff (%)	Gt (dB)
41.54	73.34	14.70

AMPM (dBm)	IRL (dB)	Zin (Ohm)
-7.15	-3.27	0.78 + j1.85

✕ In plots below corresponds to this data.

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

VSWR Locus center Impedance = 7.00 + j0.80
VSWR=3

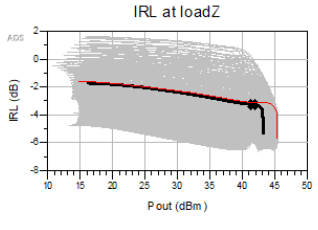
Summary of Performance at Compression

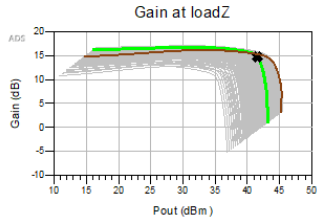
Marker Impedance	Marker Gamma	Reference Compression Level (dB)
7.00 + j0.80	0.75 / 178.13	2

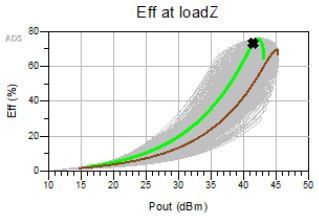
Pout (dBm)	Eff (%)	Gt (dB)
43.65	62.96	14.11

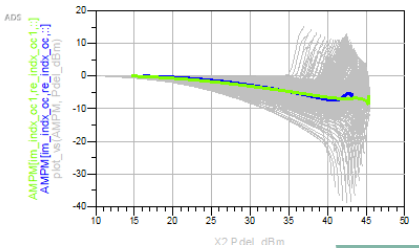
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-6.80	-3.13	0.62 + j1.19

✕ In plots below corresponds to this data.

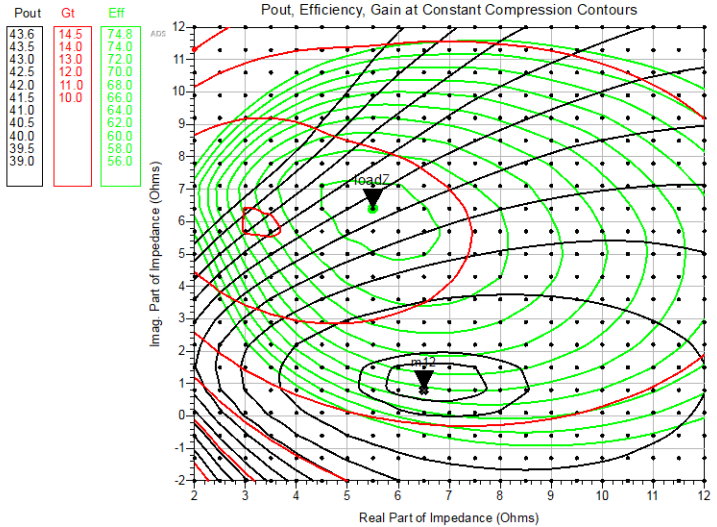








1010x253 um, ox=900 (9,55 →9,63pF)



Power Sweep Inspector

Eqn VSWRVal=3

Move Marker 'loadZ' to desired impedance point.

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

VSWR Locus center Impedance = 6.50 + j0.80
VSWR=3

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
5.50 + j6.40	0.80 / 165.24	2

Pout (dBm)	Eff (%)	Gt (dB)
41.27	74.86	14.28

AMPM (dBm)	IRL (dB)	Zin (Ohm)
-12.64	-3.78	0.91 + j1.88

✕ In plots below corresponds to this data.

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

VSWR Locus center Impedance = 6.50 + j0.80
VSWR=3

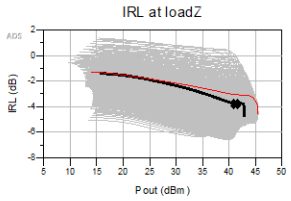
Summary of Performance at Compression

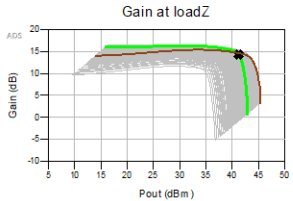
Marker Impedance	Marker Gamma	Reference Compression Level (dB)
6.50 + j0.80	0.77 / 178.14	2

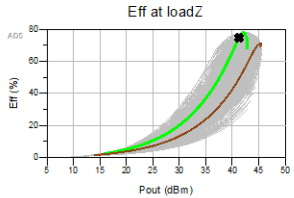
Pout (dBm)	Eff (%)	Gt (dB)
43.61	63.58	13.36

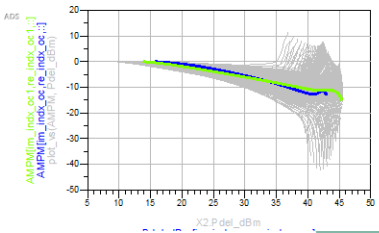
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-11.17	-3.12	0.63 + j1.28

✕ In plots below corresponds to this data.

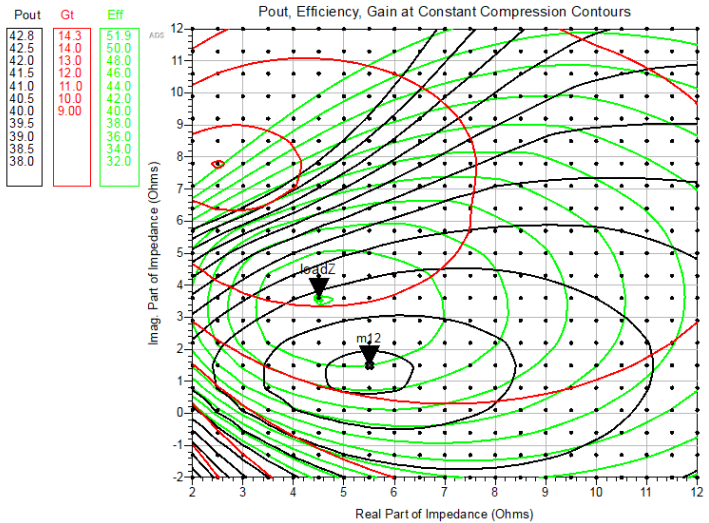








1010x270 um, ox=900 (10,19 →10,27pF)



Power Sweep Inspector

Eqn VSWRVal=3

Move Marker 'loadZ' to desired impedance point.

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

VSWR Locus center Impedance = VSWR=3 5.50 + j1.50

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

VSWR Locus center Impedance = VSWR=3 5.50 + j1.50

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
4.50 + j3.60	0.84 / 171.70	2

Pout (dBm)	Eff (%)	Gt (dB)
42.14	51.97	13.08

AMPM (dBm)	IRL (dB)	Zin (Ohm)
-19.64	-2.95	0.62 + j1.42

✕ In plots below corresponds to this data.

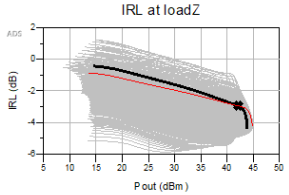
Summary of Performance at Compression

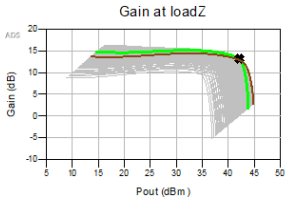
Marker Impedance	Marker Gamma	Reference Compression Level (dB)
5.50 + j1.50	0.80 / 176.52	2

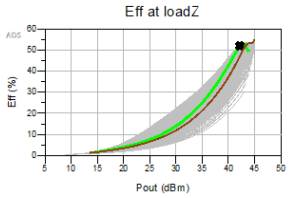
Pout (dBm)	Eff (%)	Gt (dB)
42.80	50.02	12.40

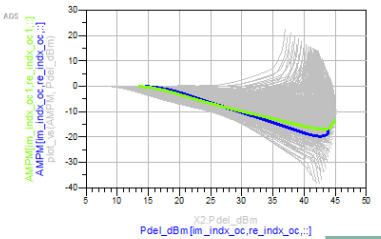
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-16.85	-3.01	0.60 + j1.18

✕ In plots below corresponds to this data.





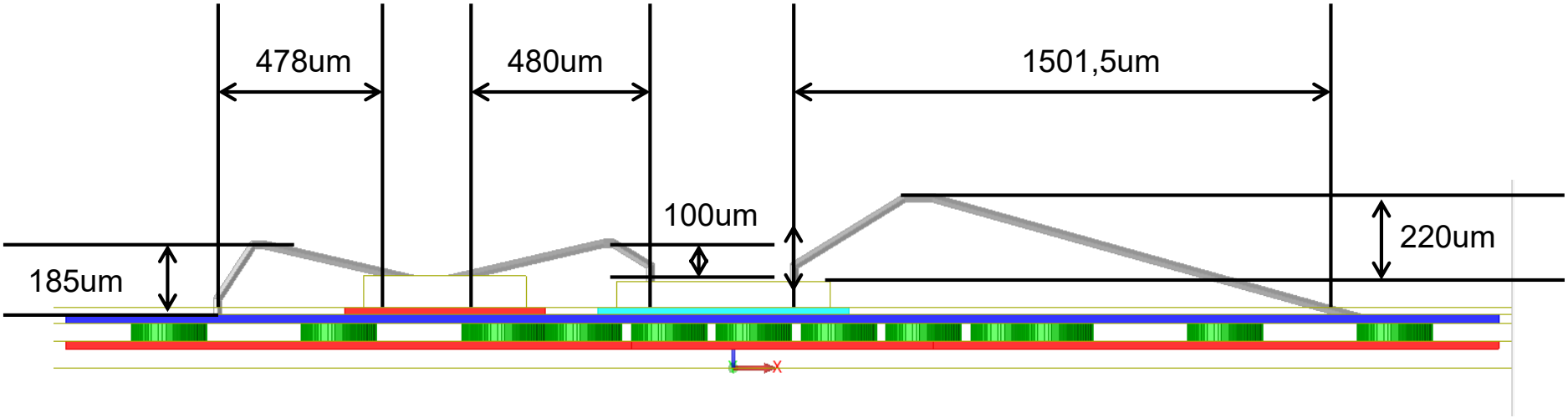


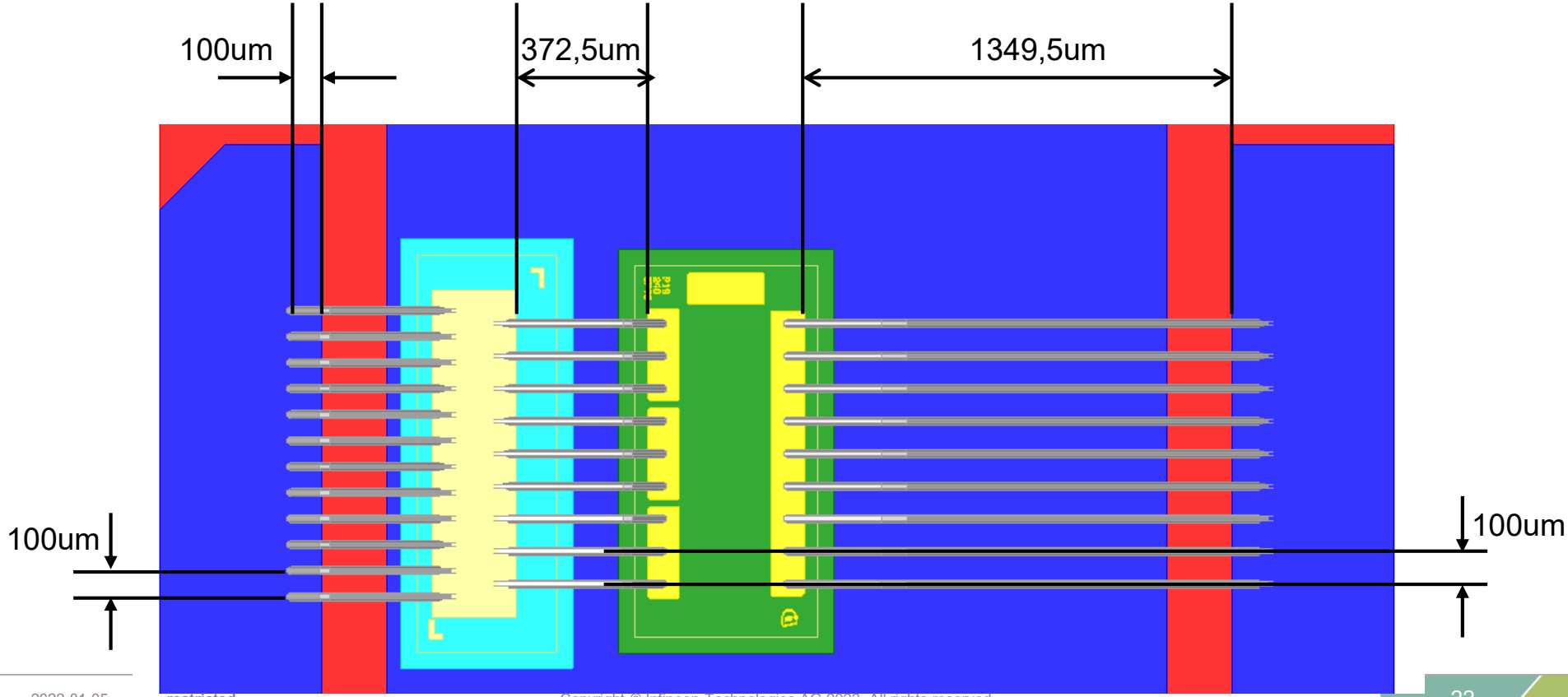


Option 2

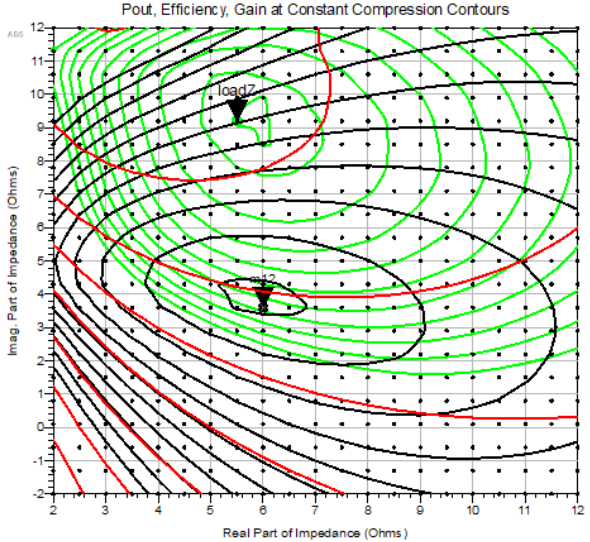
- Die : R9505A, P19
- MOSCap : N9500B_v5 (oxide thickness = 900nm)
- Minipack : PLP3839
- Target :
  - Check PD3 simulation and design
  - Check prematching 2nd harmonic Source tuning circuit performance.
    - PD3 prematching circuit is focus to design 2nd harmonic source tuning.
    - During LP, can compare external 2nd harmonic tuning and no harmonic tuning.
    - From this data, we can judge effectiveness of internal 2nd harmonic tuning circuit.

Option 2





Pout	Gt	Eff
43.8	14.7	76.8
43.5	14.0	76.0
43.0	13.0	74.0
42.5	12.0	72.0
42.0	11.0	70.0
41.5	10.0	68.0
41.0	9.00	66.0
40.5	8.00	64.0
40.0		62.0
39.5		60.0
39.0		58.0



Power Sweep Inspector

Eqn VSWR Val=3

Move Marker 'loadZ' to desired impedance point.

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

VSWR Locus center Impedance = VSWR=3 | 6.00 + j3.60

Summary of Performance at Compression

Marker Impedance	Marker Gamma	Reference Compression Level (dB)
5.50 + j9.20	0.81 / 158.91	2

Pout (dBm)	Eff (%)	Gt (dB)
41.46	76.83	14.23

AMPM (dBm)	IRL (dB)	Zin (Ohm)
-18.00	-3.10	0.62 + j1.23

✕ In plots below corresponds to this data.

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

VSWR Locus center Impedance = VSWR=3 | 6.00 + j3.60

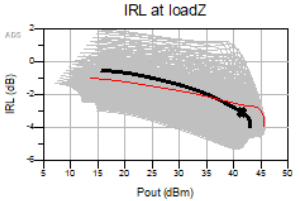
Summary of Performance at Compression

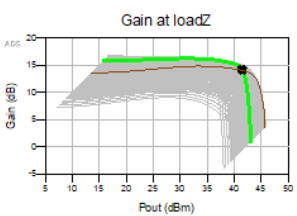
Marker Impedance	Marker Gamma	Reference Compression Level (dB)
6.00 + j3.60	0.79 / 171.64	2

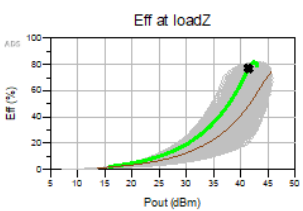
Pout (dBm)	Eff (%)	Gt (dB)
43.88	64.71	12.83

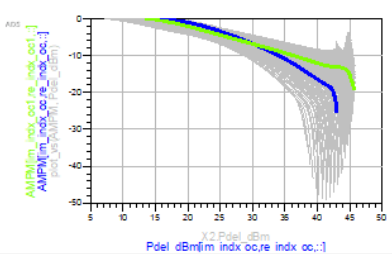
AMPM (dBm)	IRL (dB)	Zin (Ohm)
-13.30	-2.76	0.50 + j0.70

✕ In plots below corresponds to this data.

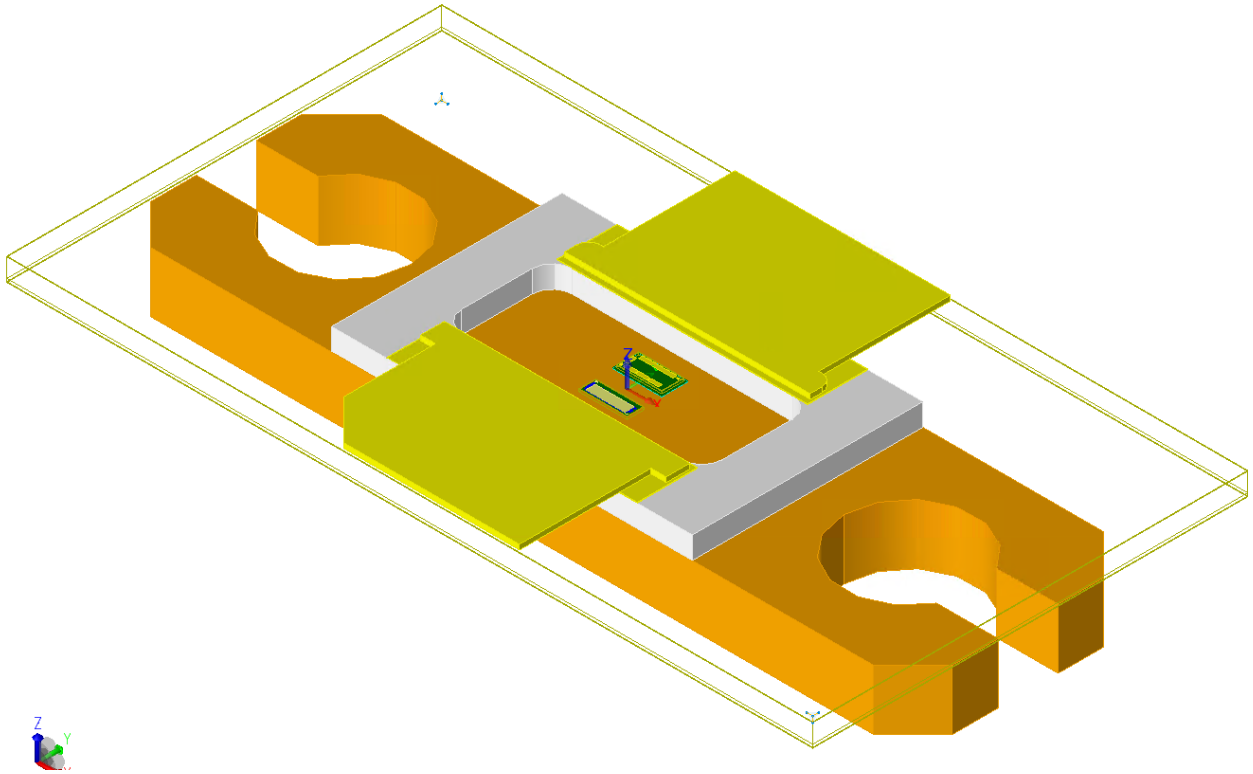








Ceramic package



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