Virtuoso 23.1
Module 13 – Pre-Layout versus Post-Layout Simulation Results

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Contents

Module Objective

In this module, we will compare the pre-layout and post-layout results for the dc and ac analysis. The main difference between the pre-layout and post-layout simulation is the connections (wiring) of the devices. For the pre-layout, the connections are ideal, thus there are no parasitics included in the simulation. However, for the post-layout, the parasitics are included, which in turn affect the performance of the common source amplifier.

1. DC and AC Simulation Results

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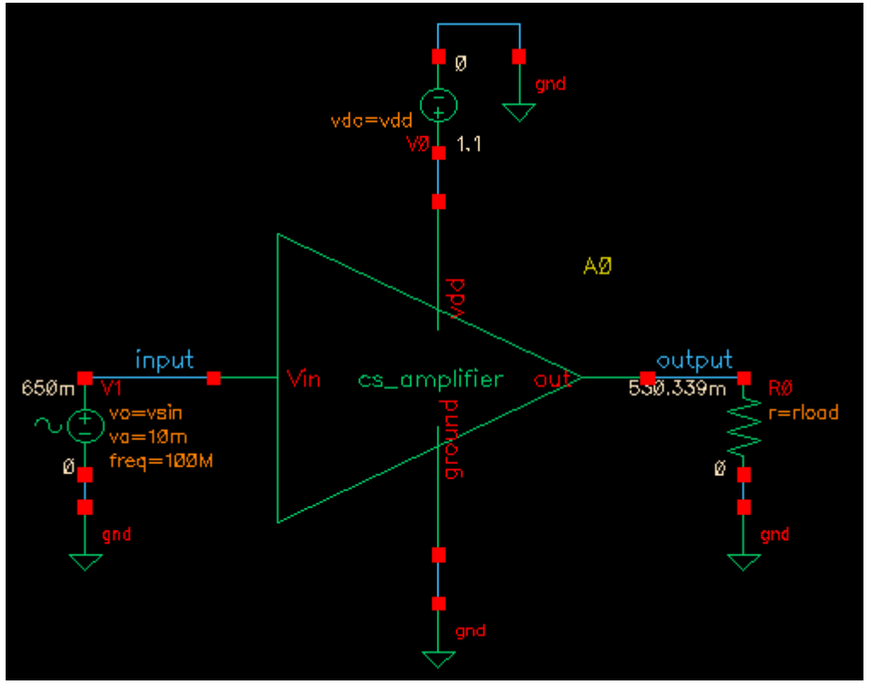
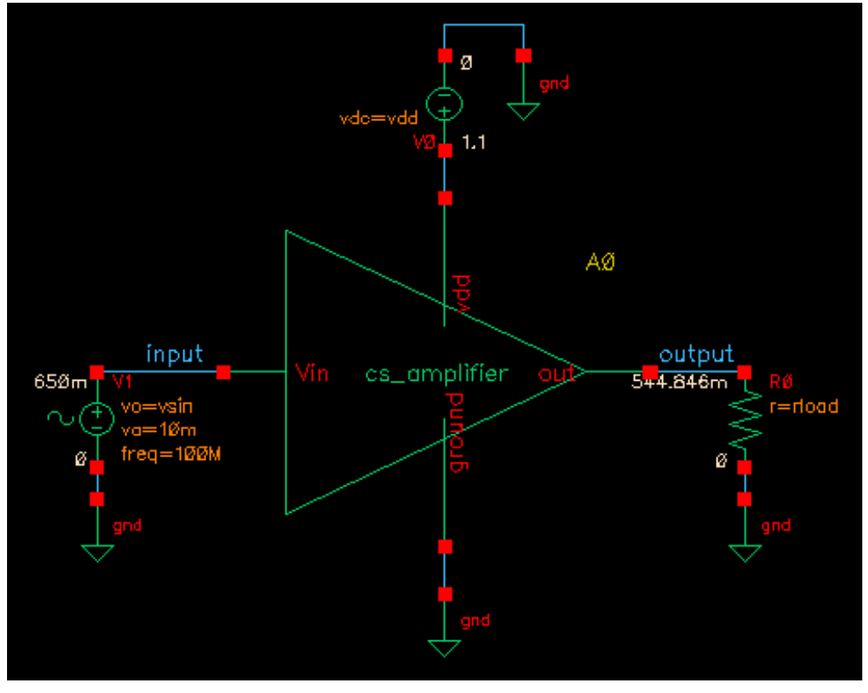
- DC and AC Analysis
- Measurements Across Sweeps and Corners
- Monte Carlo Analysis

1. DC and AC Simulation Results

➢ DC Analysis



Pre-Layout Result
Vout = 530.339 mV



Post-Layout Result
Vout = 544.846 mV

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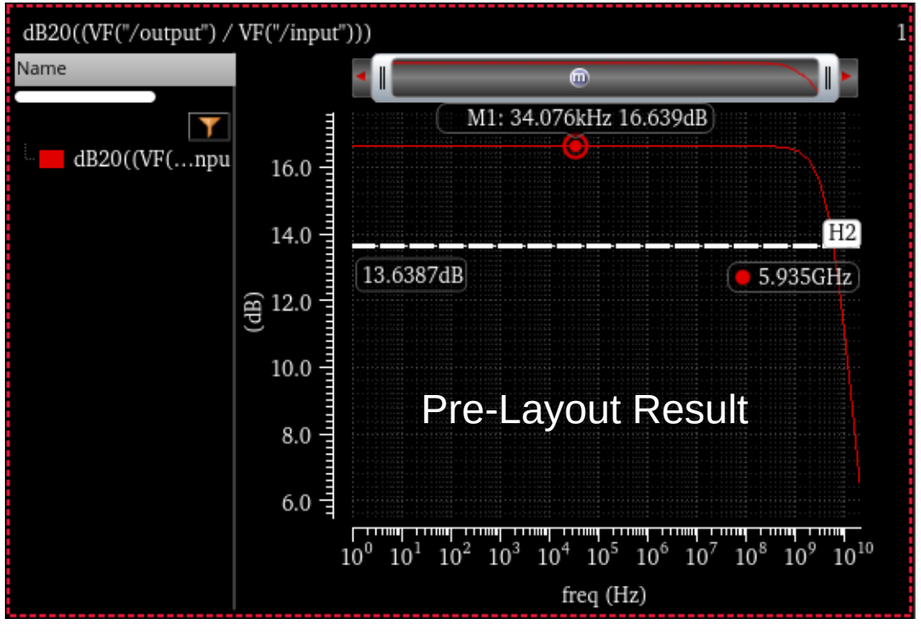
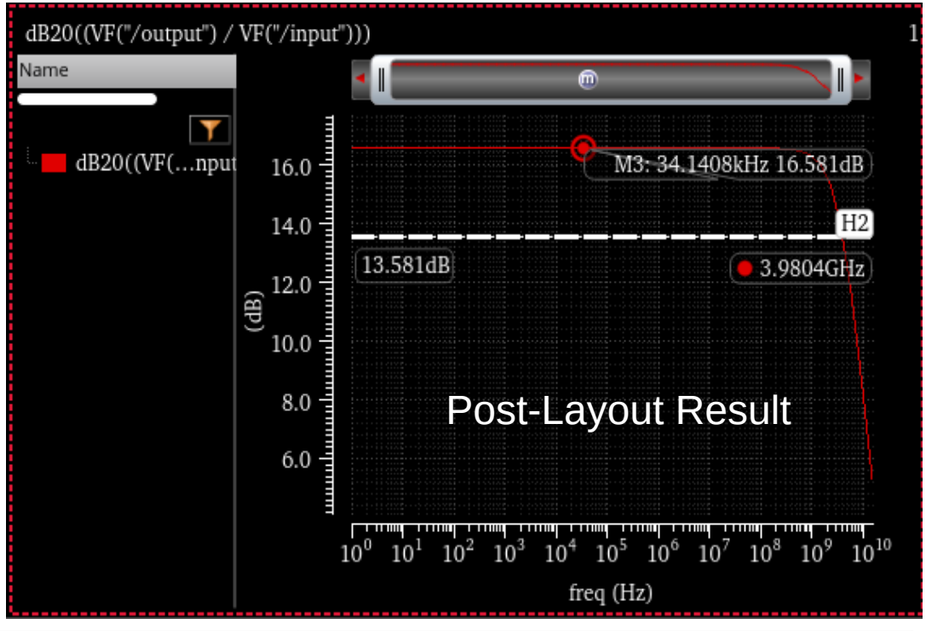
- DC and AC Analysis
- Measurements Across Sweeps and Corners
- Monte Carlo Analysis

1. DC and AC Simulation Results *(continued)*

➢ AC Analysis





	Pre-Layout (schematic view)	Post-Layout (extracted view)
Gain	16.6387 dB	16.51 dB
Bandwidth	5.93 GHz	3.98 GHz

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DC and AC Analysis

Measurements Across Sweeps and Corners

Monte Carlo Analysis

1. DC and AC Simulation Results *(continued)*

➢ AC Analysis

- The results shown are for the process “tt”.
- The parasitics have affected the bandwidth of the design. In order to fix this issue, the parasitics must be reduced. One way is to reconsider device placement and routing.

Pre-Layout Result:

Test	Output	Nominal	Spec	Weight	Pass/Fail
Filter	Filter	Filter	Filter	Filter	Filter
testbench_pre_l...	Gain	16.64 dB	> 7.5		pass
testbench_pre_l...	Bandwidth	6.017 GHz	> 4G		pass
testbench_pre_l...	Current Consu...	1.82 mA	< 2.5m		pass
testbench_pre_l...	Power Consum...	2.002 mW	< 2.75m		pass

Post-Layout Result:

Test	Output	Nominal	Spec	Weight	Pass/Fail
Filter	Filter	Filter	Filter	Filter	Filter
testbench_post_...	Gain	16.58 dB	> 7.5		pass
testbench_post_...	Bandwidth	4.016 GHz	> 4G		pass
testbench_post_...	Current Consu...	1.734 mA	< 2.5m		pass
testbench_post_...	Power Consum...	1.908 mW	< 2.75m		pass

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2. Measurements Across Sweeps and Corners

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DC and AC Analysis

Measurements Across Sweeps and Corners

Monte Carlo Analysis

2. Measurements Across Sweeps and Corners

Post-Layout Result (tt)

Point	Corner	vdd	temperature	Pass/Fail	Gain	Bandwidth	Current Consumption	Power Consumption
1	nom	950m	nom	pass	14.37 dB	6.385 GHz	1.364 mA	1.296 mW
1	C0	950m	10	pass	14.55 dB	6.634 GHz	1.362 mA	1.294 mW
1	C1	950m	45	pass	14.22 dB	6.129 GHz	1.364 mA	1.296 mW
1	C2	950m	75	pass	14.06 dB	5.709 GHz	1.36 mA	1.292 mW
2	nom	1	nom	pass	15.26 dB	6.229 GHz	1.518 mA	1.518 mW
2	C0	1	10	pass	15.45 dB	6.48 GHz	1.518 mA	1.518 mW
2	C1	1	45	pass	15.11 dB	5.97 GHz	1.517 mA	1.517 mW
2	C2	1	75	pass	14.95 dB	5.543 GHz	1.51 mA	1.51 mW
3	nom	1.05	nom	pass	16.02 dB	6.101 GHz	1.671 mA	1.754 mW
3	C0	1.05	10	pass	16.21 dB	6.352 GHz	1.672 mA	1.755 mW
3	C1	1.05	45	pass	15.86 dB	5.842 GHz	1.667 mA	1.751 mW
3	C2	1.05	75	pass	15.69 dB	5.412 GHz	1.658 mA	1.741 mW
4	nom	1.1	nom	pass	16.64 dB	6.017 GHz	1.82 mA	2.002 mW
4	C0	1.1	10	pass	16.83 dB	6.266 GHz	1.823 mA	2.005 mW
4	C1	1.1	45	pass	16.47 dB	5.761 GHz	1.815 mA	1.997 mW
4	C2	1.1	75	pass	16.28 dB	5.337 GHz	1.803 mA	1.984 mW

Pre-Layout Result (tt)

5	nom	950m	nom	pass	14.34 dB	4.302 GHz	1.305 mA	1.24 mW
5	C0	950m	10	pass	14.53 dB	4.453 GHz	1.303 mA	1.238 mW
5	C1	950m	45	pass	14.18 dB	4.142 GHz	1.306 mA	1.241 mW
5	C2	950m	75	near	14.02 dB	3.869 GHz	1.304 mA	1.239 mW
6	nom	1	nom	pass	15.23 dB	4.178 GHz	1.451 mA	1.451 mW
6	C0	1	10	pass	15.42 dB	4.331 GHz	1.449 mA	1.449 mW
6	C1	1	45	pass	15.07 dB	4.016 GHz	1.451 mA	1.451 mW
6	C2	1	75	near	14.91 dB	3.736 GHz	1.447 mA	1.447 mW
7	nom	1.05	nom	pass	15.98 dB	4.079 GHz	1.594 mA	1.674 mW
7	C0	1.05	10	pass	16.17 dB	4.232 GHz	1.594 mA	1.673 mW
7	C1	1.05	45	near	15.82 dB	3.915 GHz	1.593 mA	1.672 mW
7	C2	1.05	75	near	15.65 dB	3.643 GHz	1.586 mA	1.666 mW
8	nom	1.1	nom	pass	16.58 dB	4.016 GHz	1.734 mA	1.908 mW
8	C0	1.1	10	pass	16.78 dB	4.167 GHz	1.735 mA	1.909 mW
8	C1	1.1	45	near	16.41 dB	3.854 GHz	1.732 mA	1.905 mW
8	C2	1.1	75	fail	16.22 dB	3.599 GHz	1.723 mA	1.896 mW

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DC and AC Analysis

Measurements Across Sweeps and Corners

Monte Carlo Analysis

2. Measurements Across Sweeps and Corners

- The results shown are for the “tt” process corners.
- The gain is almost as that of the pre-layout.
- The current and the power consumption pass the given specs.
- The bandwidth is affected for some of the sweeps and corners due to the parasitics.

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- DC and AC Analysis
- **Measurements Across Sweeps and Corners**
- Monte Carlo Analysis

2. Measurements Across Sweeps and Corners *(continued)*

Pre-Layout Result (ff)

Point	Corner	vdd	temperature	Pass/Fail	Gain	Bandwidth	Current Consumption	Power Consumption
1	nom	950m	nom	pass	13.03 dB	9.021 GHz	2.023 mA	1.922 mW
1	C0	950m	10	pass	13.07 dB	9.588 GHz	2.037 mA	1.935 mW
1	C1	950m	45	pass	12.99 dB	8.455 GHz	2.006 mA	1.906 mW
1	C2	950m	75	pass	12.95 dB	7.603 GHz	1.975 mA	1.877 mW
2	nom	1	nom	pass	13.88 dB	8.765 GHz	2.239 mA	2.239 mW
2	C0	1	10	pass	13.94 dB	9.32 GHz	2.257 mA	2.257 mW
2	C1	1	45	pass	13.82 dB	8.206 GHz	2.219 mA	2.219 mW
2	C2	1	75	pass	13.75 dB	7.428 GHz	2.181 mA	2.181 mW
3	nom	1.05	nom	pass	14.6 dB	8.549 GHz	2.453 mA	2.576 mW
3	C0	1.05	10	pass	14.69 dB	9.088 GHz	2.475 mA	2.599 mW
3	C1	1.05	45	pass	14.52 dB	8.006 GHz	2.429 mA	2.55 mW
3	C2	1.05	75	pass	14.42 dB	7.302 GHz	2.384 mA	2.503 mW
4	nom	1.1	nom	near	15.21 dB	8.393 GHz	2.664 mA	2.931 mW
4	C0	1.1	10	near	15.32 dB	8.906 GHz	2.691 mA	2.96 mW
4	C1	1.1	45	near	15.09 dB	7.875 GHz	2.635 mA	2.899 mW
4	C2	1.1	75	near	14.93 dB	7.239 GHz	2.583 mA	2.842 mW

Post-Layout Result (ff)

5	nom	950m	nom	pass	13 dB	5.991 GHz	1.906 mA	1.811 mW
5	C0	950m	10	pass	13.05 dB	6.358 GHz	1.917 mA	1.821 mW
5	C1	950m	45	pass	12.95 dB	5.681 GHz	1.894 mA	1.799 mW
5	C2	950m	75	pass	12.9 dB	5.255 GHz	1.869 mA	1.775 mW
6	nom	1	nom	pass	13.85 dB	5.806 GHz	2.107 mA	2.107 mW
6	C0	1	10	pass	13.93 dB	6.142 GHz	2.12 mA	2.12 mW
6	C1	1	45	pass	13.78 dB	5.536 GHz	2.091 mA	2.091 mW
6	C2	1	75	pass	13.71 dB	5.126 GHz	2.061 mA	2.061 mW
7	nom	1.05	nom	pass	14.57 dB	5.679 GHz	2.304 mA	2.42 mW
7	C0	1.05	10	pass	14.67 dB	5.96 GHz	2.321 mA	2.437 mW
7	C1	1.05	45	pass	14.48 dB	5.424 GHz	2.285 mA	2.4 mW
7	C2	1.05	75	pass	14.36 dB	5.036 GHz	2.25 mA	2.362 mW
8	nom	1.1	nom	pass	15.16 dB	5.593 GHz	2.499 mA	2.749 mW
8	C0	1.1	10	near	15.3 dB	5.835 GHz	2.519 mA	2.771 mW
8	C1	1.1	45	pass	15.04 dB	5.356 GHz	2.476 mA	2.724 mW
8	C2	1.1	75	pass	14.87 dB	4.994 GHz	2.435 mA	2.678 mW

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DC and AC Analysis

Measurements Across Sweeps and Corners

Monte Carlo Analysis

2. Measurements Across Sweeps and Corners *(continued)*

- The results shown are for the “ff” process corners.
- The gain is almost the same in both simulations.
- The current and the power consumption have better results post-layout.

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- DC and AC Analysis
- **Measurements Across Sweeps and Corners**
- Monte Carlo Analysis

2. Measurements Across Sweeps and Corners *(continued)*

Pre-Layout Result (ss)

Point	Corner	vdd	temperature	Pass/Fail	Gain	Bandwidth	Current Consumption	Power Consumption
1	nom	950m	27	pass	16.48 dB	4.071 GHz	974.7 uA	925.9 uW
1	C0	950m	10	pass	16.71 dB	4.162 GHz	964.5 uA	916.3 uW
1	C1	950m	45	near	16.3 dB	3.969 GHz	983.1 uA	933.9 uW
1	C2	950m	75	near	16.1 dB	3.783 GHz	992.2 uA	942.6 uW
2	nom	1	27	pass	17.15 dB	4.066 GHz	1.087 mA	1.087 mW
2	C0	1	10	pass	17.34 dB	4.174 GHz	1.077 mA	1.077 mW
2	C1	1	45	near	16.98 dB	3.95 GHz	1.096 mA	1.096 mW
2	C2	1	75	near	16.82 dB	3.746 GHz	1.105 mA	1.105 mW
3	nom	1.05	27	pass	17.58 dB	4.115 GHz	1.197 mA	1.257 mW
3	C0	1.05	10	pass	17.75 dB	4.24 GHz	1.187 mA	1.246 mW
3	C1	1.05	45	near	17.44 dB	3.985 GHz	1.206 mA	1.267 mW
3	C2	1.05	75	near	17.29 dB	3.767 GHz	1.215 mA	1.276 mW
4	nom	1.1	27	pass	17.81 dB	4.223 GHz	1.304 mA	1.435 mW
4	C0	1.1	10	pass	17.95 dB	4.363 GHz	1.293 mA	1.423 mW
4	C1	1.1	45	pass	17.68 dB	4.08 GHz	1.313 mA	1.445 mW
4	C2	1.1	75	near	17.52 dB	3.853 GHz	1.322 mA	1.454 mW

Post-Layout Result (ss)

5	nom	950m	nom	fail	16.42 dB	2.746 GHz	942.2 uA	895.1 uW
5	C0	950m	10	fail	16.64 dB	2.797 GHz	932.1 uA	885.5 uW
5	C1	950m	45	fail	16.23 dB	2.687 GHz	950.7 uA	903.2 uW
5	C2	950m	75	fail	16.05 dB	2.572 GHz	960.1 uA	912.1 uW
6	nom	1	nom	fail	17.07 dB	2.74 GHz	1.05 mA	1.05 mW
6	C0	1	10	fail	17.25 dB	2.802 GHz	1.039 mA	1.039 mW
6	C1	1	45	fail	16.91 dB	2.67 GHz	1.059 mA	1.059 mW
6	C2	1	75	fail	16.75 dB	2.541 GHz	1.068 mA	1.068 mW
7	nom	1.05	nom	fail	17.48 dB	2.775 GHz	1.155 mA	1.213 mW
7	C0	1.05	10	fail	17.64 dB	2.848 GHz	1.144 mA	1.201 mW
7	C1	1.05	45	fail	17.35 dB	2.696 GHz	1.164 mA	1.222 mW
7	C2	1.05	75	fail	17.21 dB	2.557 GHz	1.173 mA	1.232 mW
8	nom	1.1	nom	fail	17.66 dB	2.856 GHz	1.257 mA	1.382 mW
8	C0	1.1	10	fail	17.79 dB	2.94 GHz	1.245 mA	1.37 mW
8	C1	1.1	45	fail	17.55 dB	2.77 GHz	1.266 mA	1.392 mW
8	C2	1.1	75	fail	17.4 dB	2.627 GHz	1.275 mA	1.402 mW

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DC and AC Analysis

Measurements Across Sweeps and Corners

Monte Carlo Analysis

2. Measurements Across Sweeps and Corners *(continued)*

- The results shown are for the “ss” process corners.
- The gain, current, and power consumption specifications pass the given specs.
- Also, for this model, the bandwidth is affected the most.

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- DC and AC Analysis
- **Measurements Across Sweeps and Corners**
- Monte Carlo Analysis

2. Measurements Across Sweeps and Corners *(continued)*

Pre-Layout Result (fs)

Point	Corner	vdd	temperature	Pass/Fail	Gain	Bandwidth	Current Consumption	Power Consumption
1	nom	950m	nom	near	7.421 dB	11.11 GHz	1.164 mA	1.105 mW
1	C0	950m	10	near	7.307 dB	11.77 GHz	1.161 mA	1.103 mW
1	C1	950m	45	pass	7.616 dB	10.39 GHz	1.165 mA	1.107 mW
1	C2	950m	75	pass	8.145 dB	9.14 GHz	1.165 mA	1.107 mW
2	nom	1	nom	pass	10.89 dB	8.733 GHz	1.312 mA	1.312 mW
2	C0	1	10	pass	10.89 dB	9.265 GHz	1.311 mA	1.311 mW
2	C1	1	45	pass	10.92 dB	8.178 GHz	1.312 mA	1.312 mW
2	C2	1	75	pass	11.05 dB	7.394 GHz	1.31 mA	1.31 mW
3	nom	1.05	nom	pass	12.48 dB	7.968 GHz	1.459 mA	1.532 mW
3	C0	1.05	10	pass	12.55 dB	8.462 GHz	1.459 mA	1.532 mW
3	C1	1.05	45	pass	12.44 dB	7.536 GHz	1.457 mA	1.53 mW
3	C2	1.05	75	pass	12.42 dB	6.967 GHz	1.453 mA	1.526 mW
4	nom	1.1	nom	pass	13.53 dB	7.626 GHz	1.605 mA	1.766 mW
4	C0	1.1	10	pass	13.62 dB	8.079 GHz	1.607 mA	1.768 mW
4	C1	1.1	45	pass	13.47 dB	7.264 GHz	1.603 mA	1.763 mW
4	C2	1.1	75	pass	13.43 dB	6.711 GHz	1.596 mA	1.756 mW

Post-Layout Result (fs)

5	nom	950m	nom	near	7.42 dB	7.541 GHz	1.119 mA	1.063 mW
5	C0	950m	10	near	7.343 dB	7.956 GHz	1.116 mA	1.06 mW
5	C1	950m	45	pass	7.583 dB	7.08 GHz	1.121 mA	1.065 mW
5	C2	950m	75	pass	8.078 dB	6.228 GHz	1.123 mA	1.067 mW
6	nom	1	nom	pass	10.95 dB	5.775 GHz	1.259 mA	1.259 mW
6	C0	1	10	pass	10.98 dB	6.088 GHz	1.257 mA	1.257 mW
6	C1	1	45	pass	10.95 dB	5.509 GHz	1.261 mA	1.261 mW
6	C2	1	75	pass	11.05 dB	5.085 GHz	1.26 mA	1.26 mW
7	nom	1.05	nom	pass	12.54 dB	5.343 GHz	1.398 mA	1.468 mW
7	C0	1.05	10	pass	12.62 dB	5.569 GHz	1.397 mA	1.467 mW
7	C1	1.05	45	pass	12.48 dB	5.119 GHz	1.398 mA	1.468 mW
7	C2	1.05	75	pass	12.44 dB	4.764 GHz	1.396 mA	1.466 mW
8	nom	1.1	nom	pass	13.59 dB	5.129 GHz	1.536 mA	1.69 mW
8	C0	1.1	10	pass	13.69 dB	5.345 GHz	1.536 mA	1.69 mW
8	C1	1.1	45	pass	13.51 dB	4.913 GHz	1.535 mA	1.689 mW
8	C2	1.1	75	pass	13.46 dB	4.568 GHz	1.531 mA	1.685 mW

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DC and AC Analysis

Measurements Across Sweeps and Corners

Monte Carlo Analysis

2. Measurements Across Sweeps and Corners *(continued)*

- The results shown are for the “fs” process corners.
- The gain is almost the same as that of the pre-layout.
- The bandwidth, current and power consumptions pass for all the specs.

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- DC and AC Analysis
- **Measurements Across Sweeps and Corners**
- Monte Carlo Analysis

2. Measurements Across Sweeps and Corners *(continued)*

Pre-Layout Result (sf)

Point	Corner	vdd	temperature	Pass/Fail	Gain	Bandwidth	Current Consumption	Power Consumption
1	nom	950m	nom	pass	15.65 dB	5.05 GHz	1.19 mA	1.13 mW
1	C0	950m	10	pass	15.86 dB	5.242 GHz	1.184 mA	1.125 mW
1	C1	950m	45	pass	15.48 dB	4.841 GHz	1.194 mA	1.134 mW
1	C2	950m	75	pass	15.3 dB	4.565 GHz	1.196 mA	1.136 mW
2	nom	1	nom	pass	16.29 dB	5.018 GHz	1.311 mA	1.311 mW
2	C0	1	10	pass	16.49 dB	5.221 GHz	1.306 mA	1.306 mW
2	C1	1	45	pass	16.12 dB	4.804 GHz	1.315 mA	1.315 mW
2	C2	1	75	pass	15.95 dB	4.527 GHz	1.316 mA	1.316 mW
3	nom	1.05	nom	pass	16.78 dB	5.033 GHz	1.431 mA	1.502 mW
3	C0	1.05	10	pass	16.97 dB	5.243 GHz	1.426 mA	1.497 mW
3	C1	1.05	45	pass	16.61 dB	4.811 GHz	1.433 mA	1.505 mW
3	C2	1.05	75	pass	16.44 dB	4.53 GHz	1.433 mA	1.505 mW
4	nom	1.1	nom	pass	17.12 dB	5.102 GHz	1.548 mA	1.702 mW
4	C0	1.1	10	pass	17.32 dB	5.315 GHz	1.544 mA	1.698 mW
4	C1	1.1	45	pass	16.95 dB	4.876 GHz	1.55 mA	1.705 mW
4	C2	1.1	75	pass	16.76 dB	4.58 GHz	1.548 mA	1.703 mW

Post-Layout Result (sf)

5	nom	950m	nom	fail	15.6 dB	3.425 GHz	1.146 mA	1.089 mW
5	C0	950m	10	fail	15.8 dB	3.513 GHz	1.14 mA	1.083 mW
5	C1	950m	45	fail	15.43 dB	3.33 GHz	1.151 mA	1.093 mW
5	C2	950m	75	fail	15.26 dB	3.165 GHz	1.154 mA	1.096 mW
6	nom	1	nom	fail	16.22 dB	3.404 GHz	1.261 mA	1.261 mW
6	C0	1	10	fail	16.42 dB	3.497 GHz	1.256 mA	1.256 mW
6	C1	1	45	fail	16.06 dB	3.305 GHz	1.266 mA	1.266 mW
6	C2	1	75	fail	15.89 dB	3.136 GHz	1.268 mA	1.268 mW
7	nom	1.05	nom	fail	16.69 dB	3.412 GHz	1.375 mA	1.443 mW
7	C0	1.05	10	fail	16.88 dB	3.51 GHz	1.369 mA	1.438 mW
7	C1	1.05	45	fail	16.53 dB	3.309 GHz	1.378 mA	1.447 mW
7	C2	1.05	75	fail	16.36 dB	3.138 GHz	1.38 mA	1.449 mW
8	nom	1.1	nom	fail	17 dB	3.453 GHz	1.485 mA	1.634 mW
8	C0	1.1	10	fail	17.19 dB	3.555 GHz	1.48 mA	1.628 mW
8	C1	1.1	45	fail	16.84 dB	3.348 GHz	1.489 mA	1.637 mW
8	C2	1.1	75	fail	16.65 dB	3.177 GHz	1.489 mA	1.638 mW

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DC and AC Analysis

Measurements Across Sweeps and Corners

Monte Carlo Analysis

2. Measurements Across Sweeps and Corners *(continued)*

- The results shown are for the “sf” process corners.
- The gain, current, and power consumption pass the given specs.
- Also, the bandwidth fails for all the sweeps and corners in post-layout.

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3. Monte Carlo Statistical Analysis

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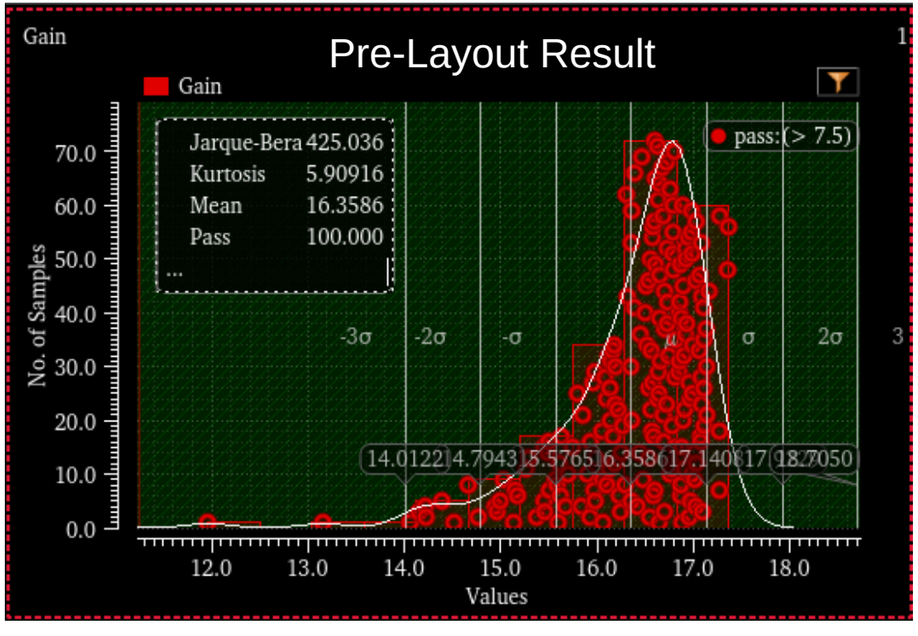
DC and AC Analysis

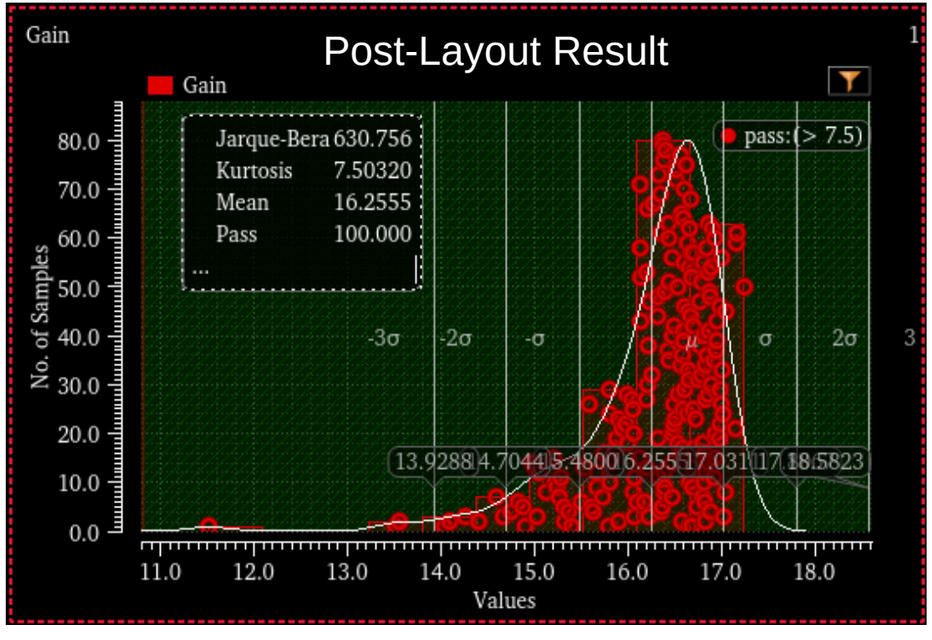
Measurements Across Sweeps and Corners

Monte Carlo Analysis

3. Monte Carlo Statistical Analysis

- Gain





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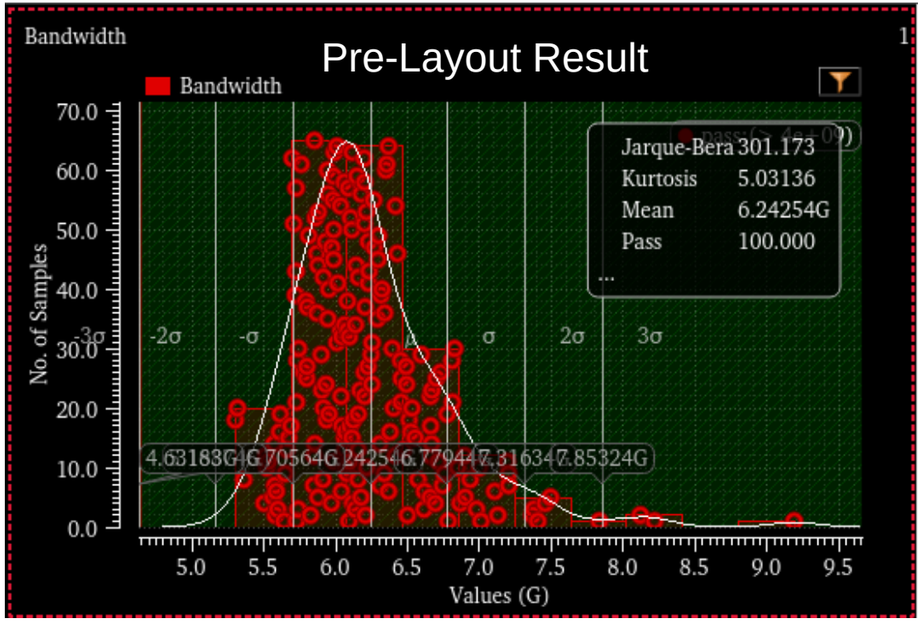
DC and AC Analysis

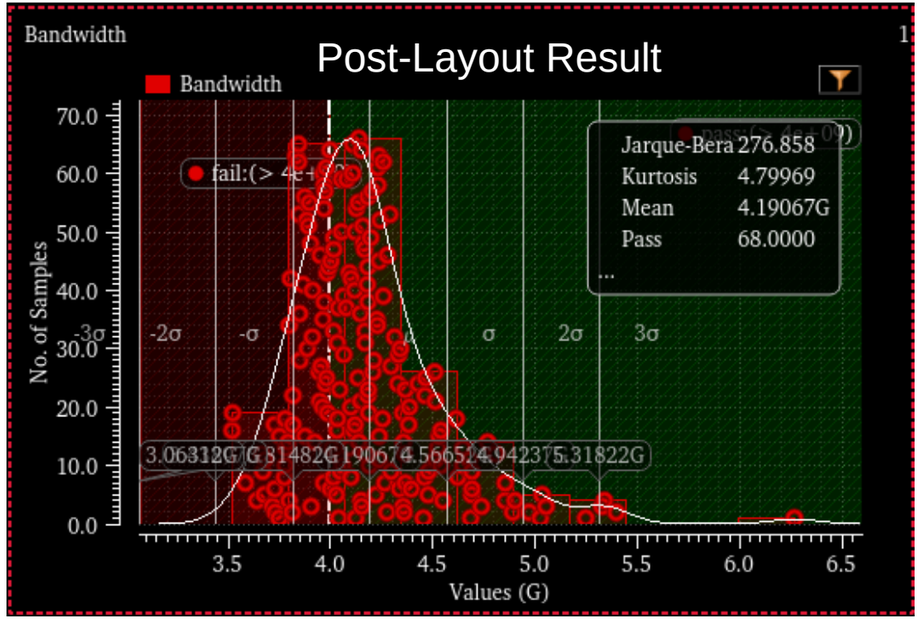
Measurements Across Sweeps and Corners

Monte Carlo Analysis

3. Monte Carlo Statistical Analysis *(continued)*

- Bandwidth





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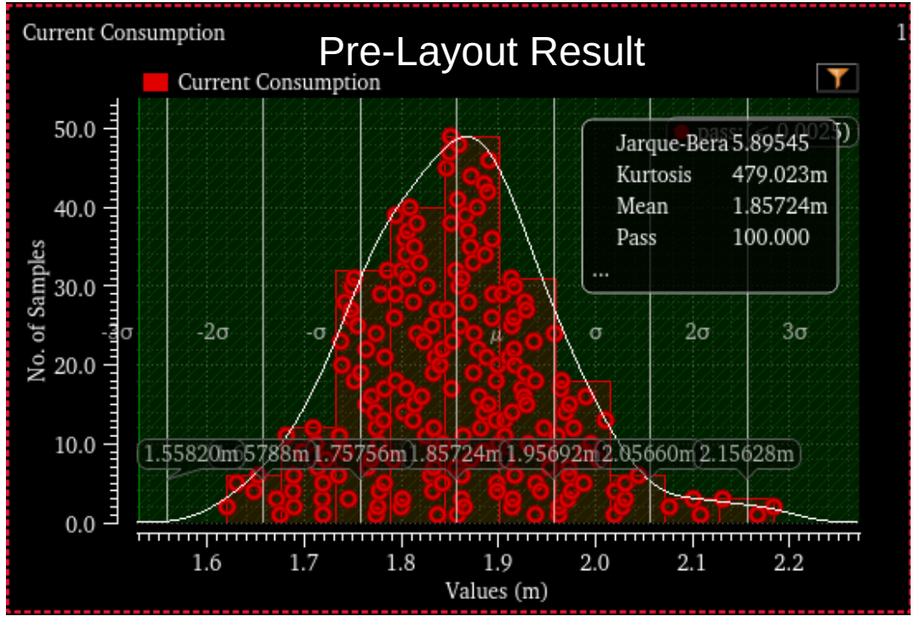
DC and AC Analysis

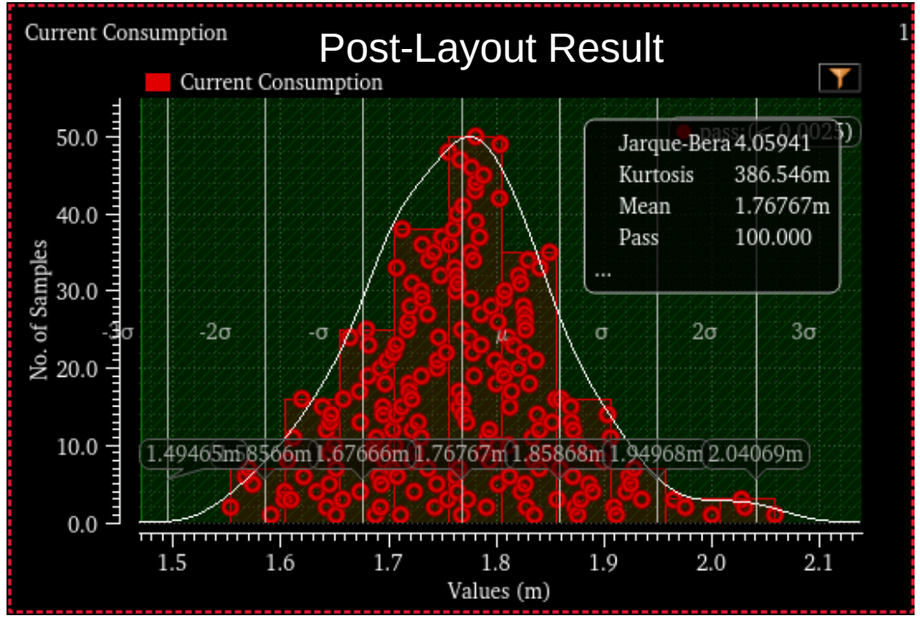
Measurements Across Sweeps and Corners

Monte Carlo Analysis

3. Monte Carlo Statistical Analysis *(continued)*

- Current Consumption





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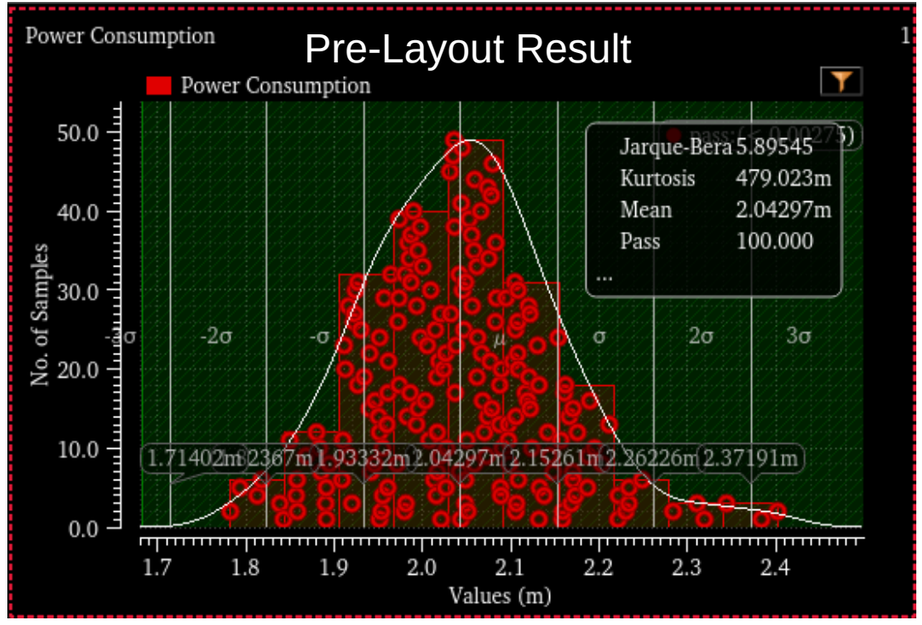
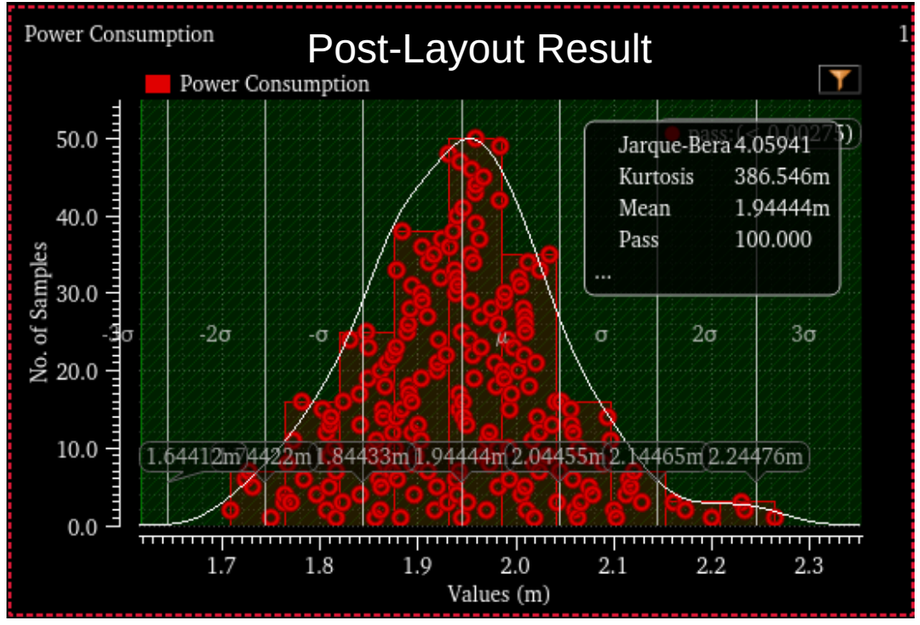
3. Monte Carlo Statistical Analysis *(continued)*

- Power Consumption





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DC and AC Analysis

Measurements Across Sweeps and Corners

Monte Carlo Analysis

3. Monte Carlo Statistical Analysis *(continued)*

- Yield

Pre-Layout Result

Outputs Setup | Results

Yield

Test	Name	Yield	Min	Target	Max	Mean	Std Dev	Cpk	Errors
Yield Estimate: 100 %(200 passed/200 pts) Confidence Level: <not set> Filter: <not set>									
testbench_pre_layout									
	Gain(summary)	100% (200/200)	11.96 dB	> 7.5	17.37 dB	16.36 dB	782.1 mdB	3.78	0
	Gain	100% (200/200)	11.96 dB	> 7.5	17.37 dB	16.36 dB	782.1 mdB	3.78	0
	Bandwidth(summary)	100% (200/200)	5.302 GHz	> 4G	9.187 GHz	6.243 GHz	536.9 MHz	1.39	0
	Bandwidth	100% (200/200)	5.302 GHz	> 4G	9.187 GHz	6.243 GHz	536.9 MHz	1.39	0
	Current Consumption(summary)	100% (200/200)	1.62 mA	< 2.5m	2.184 mA	1.857 mA	99.68 uA	2.15	0
	Current Consumption	100% (200/200)	1.62 mA	< 2.5m	2.184 mA	1.857 mA	99.68 uA	2.15	0
	Power Consumption(summary)	100% (200/200)	1.782 mW	< 2.75m	2.402 mW	2.043 mW	109.6 uW	2.15	0
	Power Consumption	100% (200/200)	1.782 mW	< 2.75m	2.402 mW	2.043 mW	109.6 uW	2.15	0

Outputs Setup | Results | Run Preview

Yield | Filter ... | New Win | (None)

Test	Name	Yield	Min	Target	Max	Mean	Std Dev	Cpk	Errors
Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter	Filter
Yield Estimate: 56 %(112 passed/200 pts) Confidence Level: <not set> Filter: <not set>									
testbench_post_layout									
	Gain(summary)	100% (200/200)	11.55 dB	> 7.5	17.28 dB	16.29 dB	775.5 mdB	3.78	0
	Gain	100% (200/200)	11.55 dB	> 7.5	17.28 dB	16.29 dB	775.5 mdB	3.78	0
	Bandwidth(summary)	56% (112/200)	3.478 GHz	> 4G	6.189 GHz	4.096 GHz	351.8 MHz	0.091	0
	Bandwidth	56% (112/200)	3.478 GHz	> 4G	6.189 GHz	4.096 GHz	351.8 MHz	0.091	0
	Current Consumption(summary)	100% (200/200)	1.556 mA	< 2.5m	2.063 mA	1.771 mA	91.36 uA	2.66	0
	Current Consumption	100% (200/200)	1.556 mA	< 2.5m	2.063 mA	1.771 mA	91.36 uA	2.66	0
	Power Consumption(summary)	100% (200/200)	1.712 mW	< 2.75m	2.269 mW	1.948 mW	100.5 uW	2.66	0
	Power Consumption	100% (200/200)	1.712 mW	< 2.75m	2.269 mW	1.948 mW	100.5 uW	2.66	0

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Measurements Across Sweeps and Corners

Monte Carlo Analysis

3. Monte Carlo Statistical Analysis *(continued)*

- The number of passing and failing trials is recorded and these numbers are used to compute an estimate of the yield.
- The yield estimate for the Pre-Layout case is 100%, meaning all the points operate within the design bounds, however for the Post-Layout, the yield estimate drops to 68.5%. This drop is because of the bandwidth.
- It is true that the yield did somewhat decline, but also the standard deviation dropped, this means that the results are closer to each other. This is because for the Post-Layout, the connections created manually using the Layout GXL tool would be the same for every design point in the Monte Carlo simulation, whereas for the Pre-Layout, the connections are not implemented.
- Since for the Post-Layout the connections are the same for every design point in the analysis, there is less variation in the Post-Layout than in the Pre-Layout, therefore we would expect the standard deviation to be less for the Post-Layout than for the Pre-Layout simulation.

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