

QPL9503 Performance vs Bias

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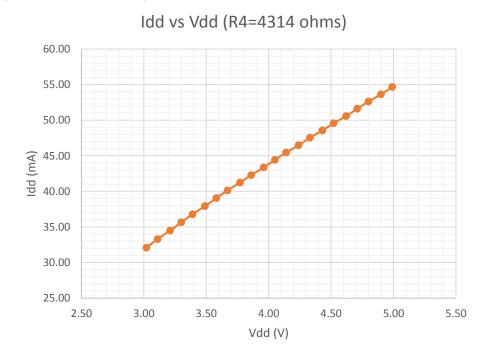
Q1 2017

QPL9503 performance vs Vdd

Purpose

- Data sheet includes data for 5V only
 - But it can be used over 3V-5V range
 - R4 can be used to adjust Idd
- Measurements were taken "as built" (R4 = 4k3) over 3.0V-5.0V

Vdd	ldd	
5.0V	55mA	
4.2V	46mA	
3.6V	39mA	
3.3V	36mA	
3.0V	32mA	

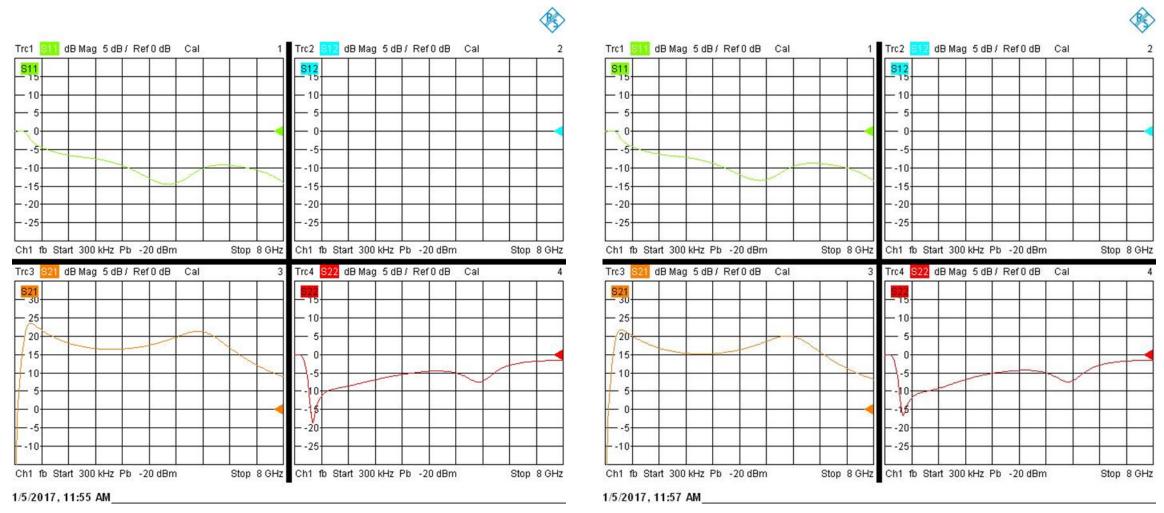


"As Built" (R4 = 4k3) vs Vdd

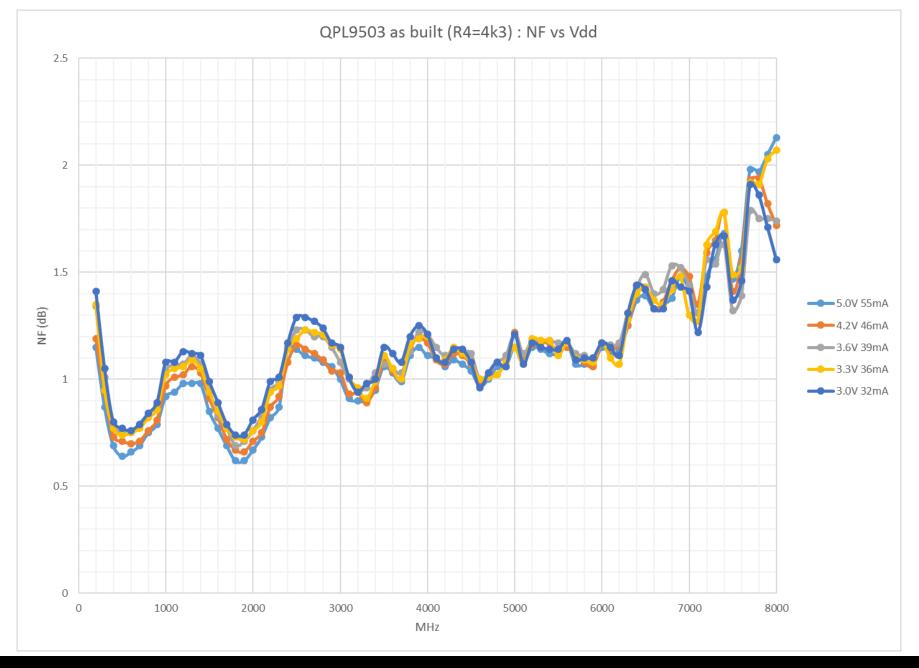
S2P vs Vdd

5V

3.3V

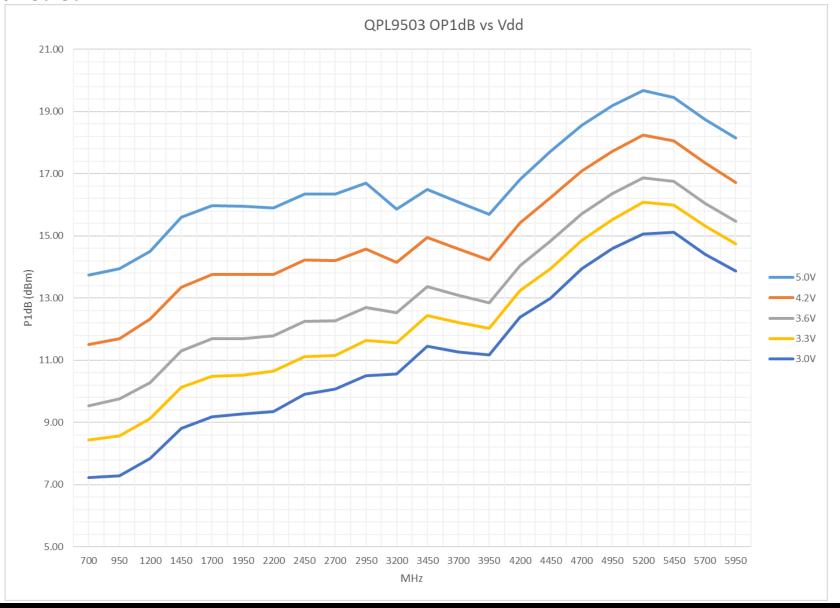


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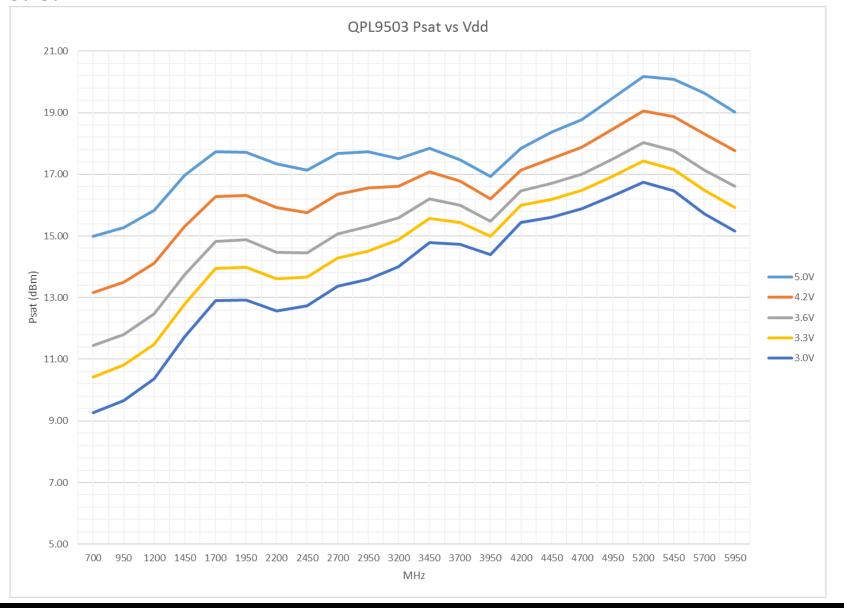


P1dB vs Vdd



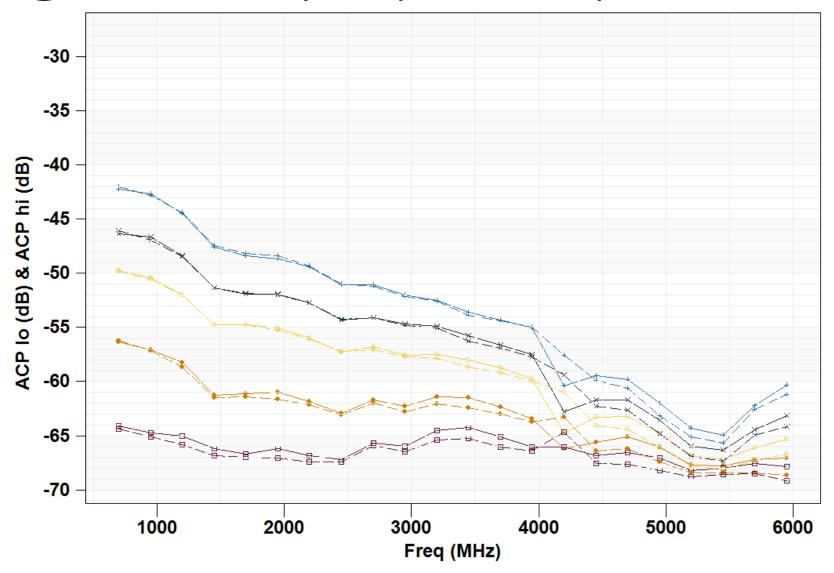


Psat vs Vdd



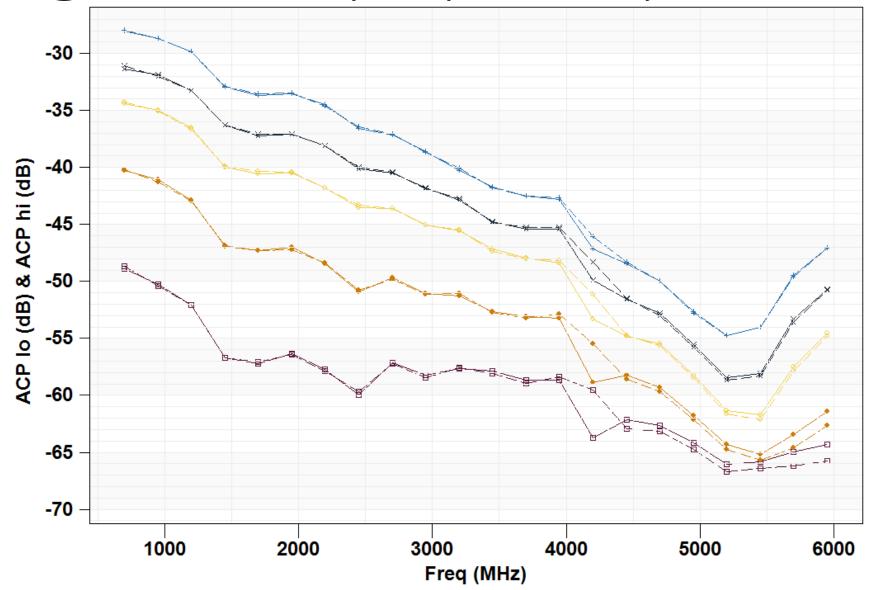


ACP @ 0dBm output (WDCMA) vs Vdd



- + ACP lo (dB):3,0
- × ACP lo (dB):3.3,0
- ACP lo (dB):3.6,0
- ACP lo (dB):4.2,0
- □ ACP lo (dB):5,0
- + ACP hi (dB):3,0
- × ACP hi (dB):3.3,0
- ACP hi (dB):3.6,0
- ACP hi (dB):4.2,0
- □ ACP hi (dB):5,0

ACP @ +5dBm output (WDCMA) vs Vdd



- + ACP lo (dB):3,5
- × ACP lo (dB):3.3,5
- o ACP lo (dB):3.6,5
- ACP lo (dB):4.2,5
- ☐ ACP lo (dB):5,5
- + ACP hi (dB):3,5
- × ACP hi (dB):3.3,5
- ACP hi (dB):3.6,5
- ACP hi (dB):4.2,5
- ☐ ACP hi (dB):5,5

OIP3





Bias Resistor R4 Variations

QPL9503 performance vs Bias Resistor R4

R4 Variations

- "As Built" (R4 = 4k3), Idd was 55mA @ 5V, dropping to 32mA @ 3.3V
 - Two more R4 values were developed to give (a) 55mA @ 3.3V and (b) 32mA @ 5V
 - This gave the table of combinations below

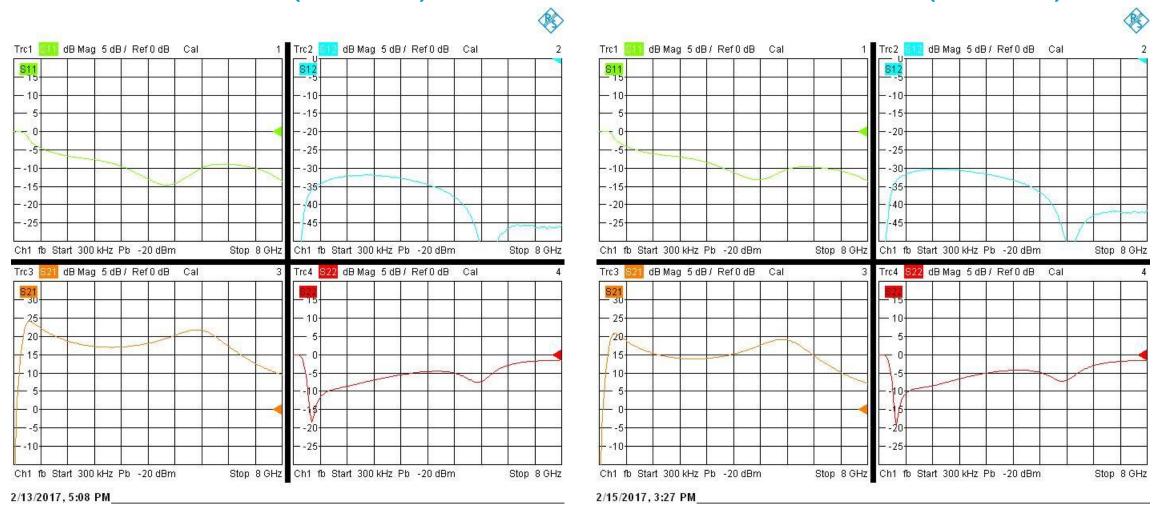
R4	V dd = 5 V	Vdd = 4.2V	Vdd = 3.3V
2k7	75mA	63mA	50mA
4k3	55mA	46mA	36mA
8k2	36mA	30mA	23mA

- Further tests were run using some of these combinations
- Following slides focus on the extremes, i.e. 75mA @ 5V and 23mA @ 3.3V

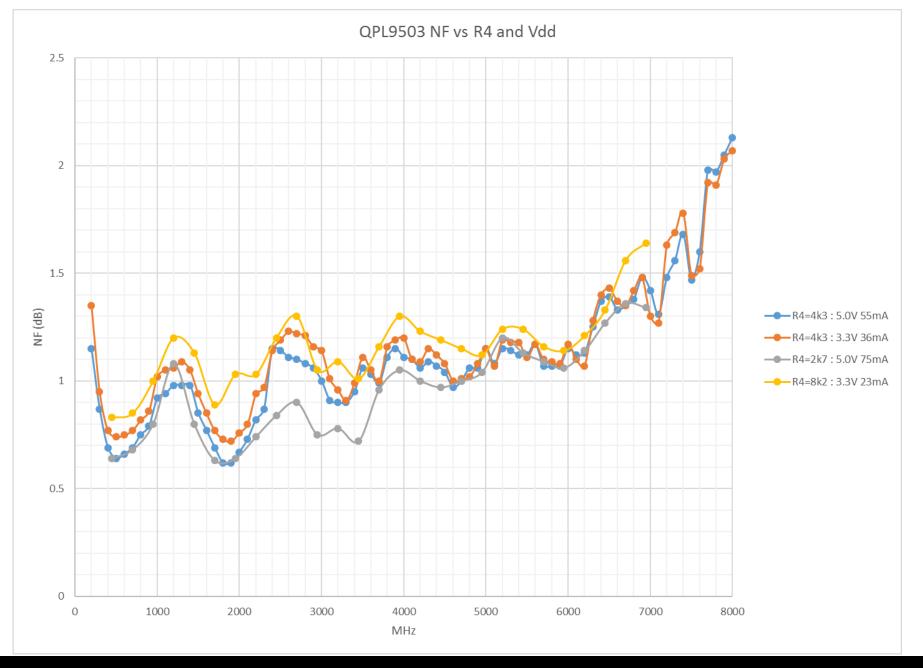
S2P vs Vdd/R4

5V 75mA (R4=2k7)

3.3V 23mA (R4=8k2)

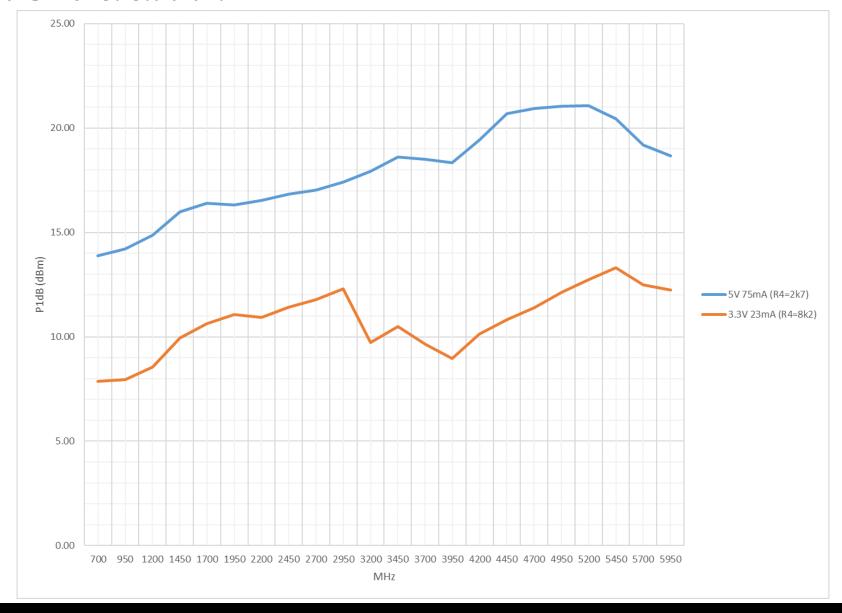


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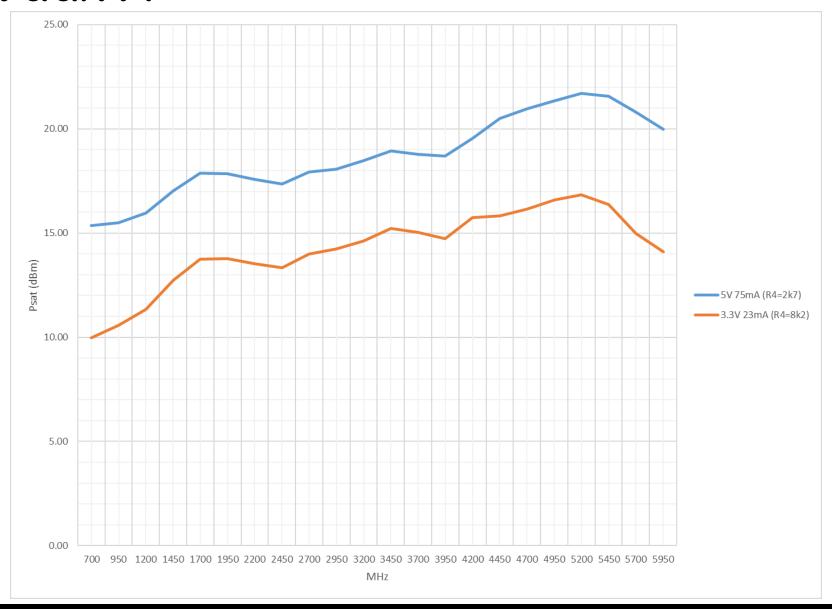


P1dB vs Vdd/R4





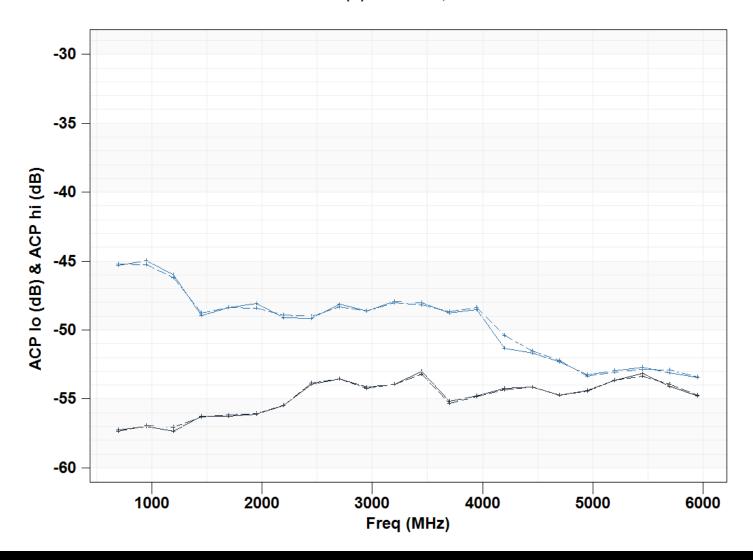
Psat vs Vdd/R4





ACP @ 0dBm output (WDCMA) vs Vdd/R4

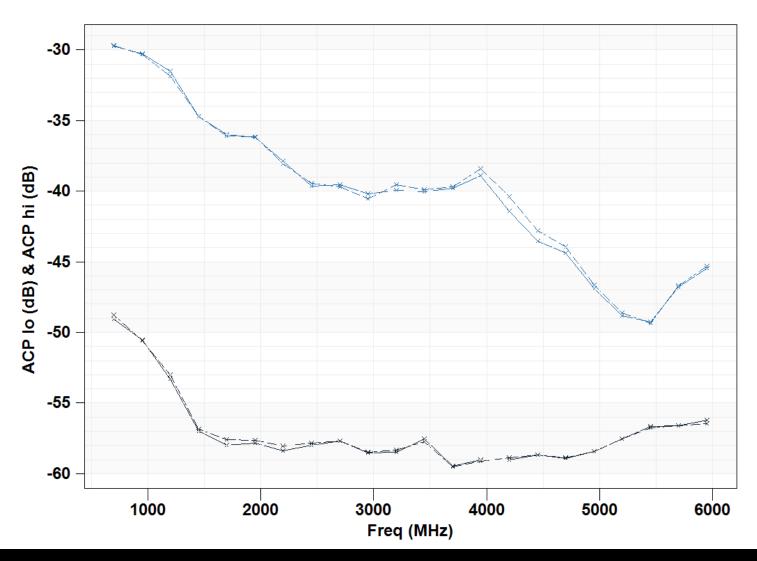
(a) Vcc=5V, R4=2k7 -> 75mA (b) Vcc=3.3V, R4=8k2 -> 23mA



- + ACP lo (dB):5,0
- + ACP lo (dB):3.3,0
- + ACP hi (dB):5,0
- + ACP hi (dB):3.3,0

ACP @ +5dBm output (WDCMA) vs Vdd/R4

(a) Vcc=5V, R4=2k7 -> 75mA (b) Vcc=3.3V, R4=8k2 -> 23mA



- \times ACP lo (dB):5,5
- \times ACP lo (dB):3.3,5
- \times ACP hi (dB):5,5
- imes ACP hi (dB):3.3,5

OIP3

