qorvo
all around you

QPL9503 Performance vs Bias

Malcolm Teal

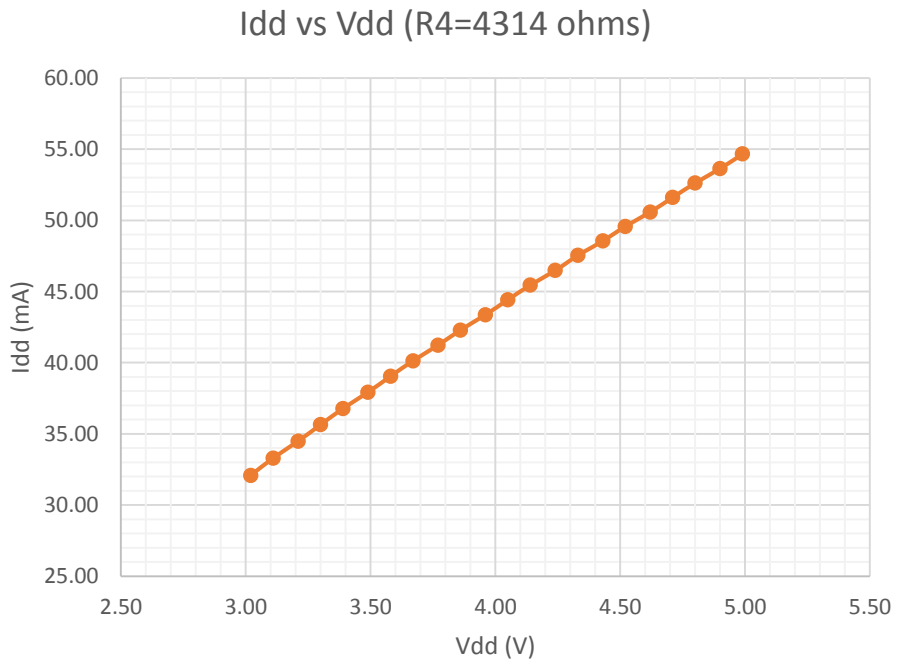
Q1 2017

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

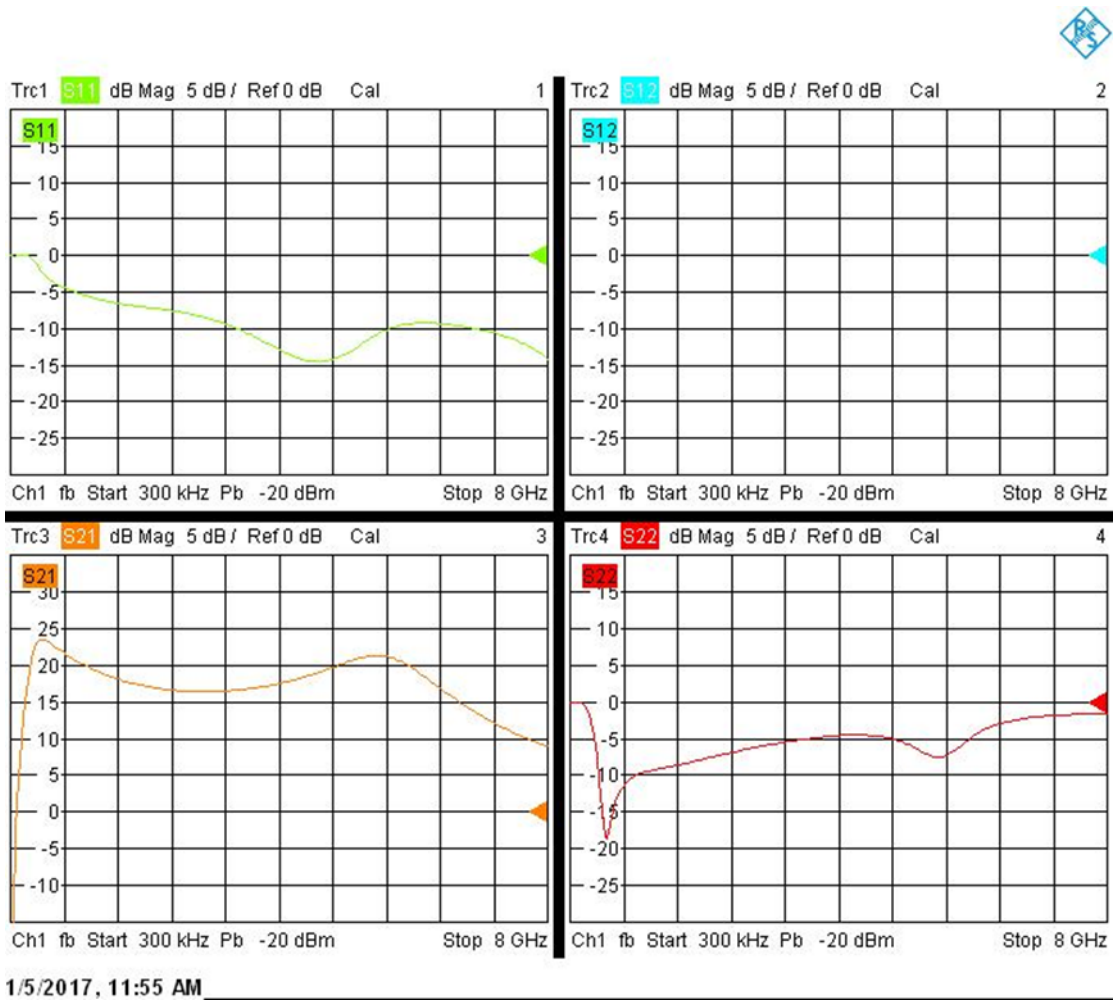
Vdd	Idd
5.0V	55mA
4.2V	46mA
3.6V	39mA
3.3V	36mA
3.0V	32mA



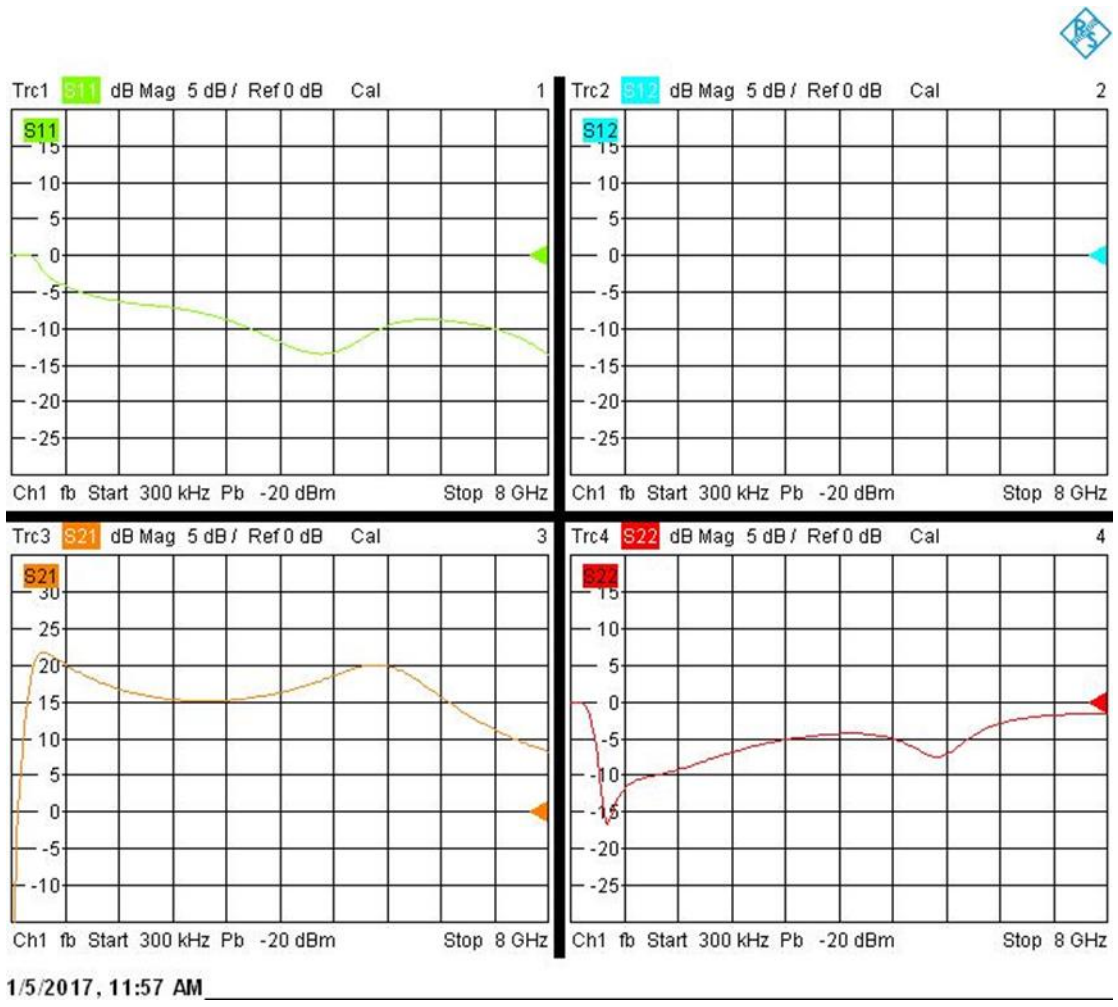
“As Built” (R4 = 4k3) vs Vdd

S2P vs Vdd

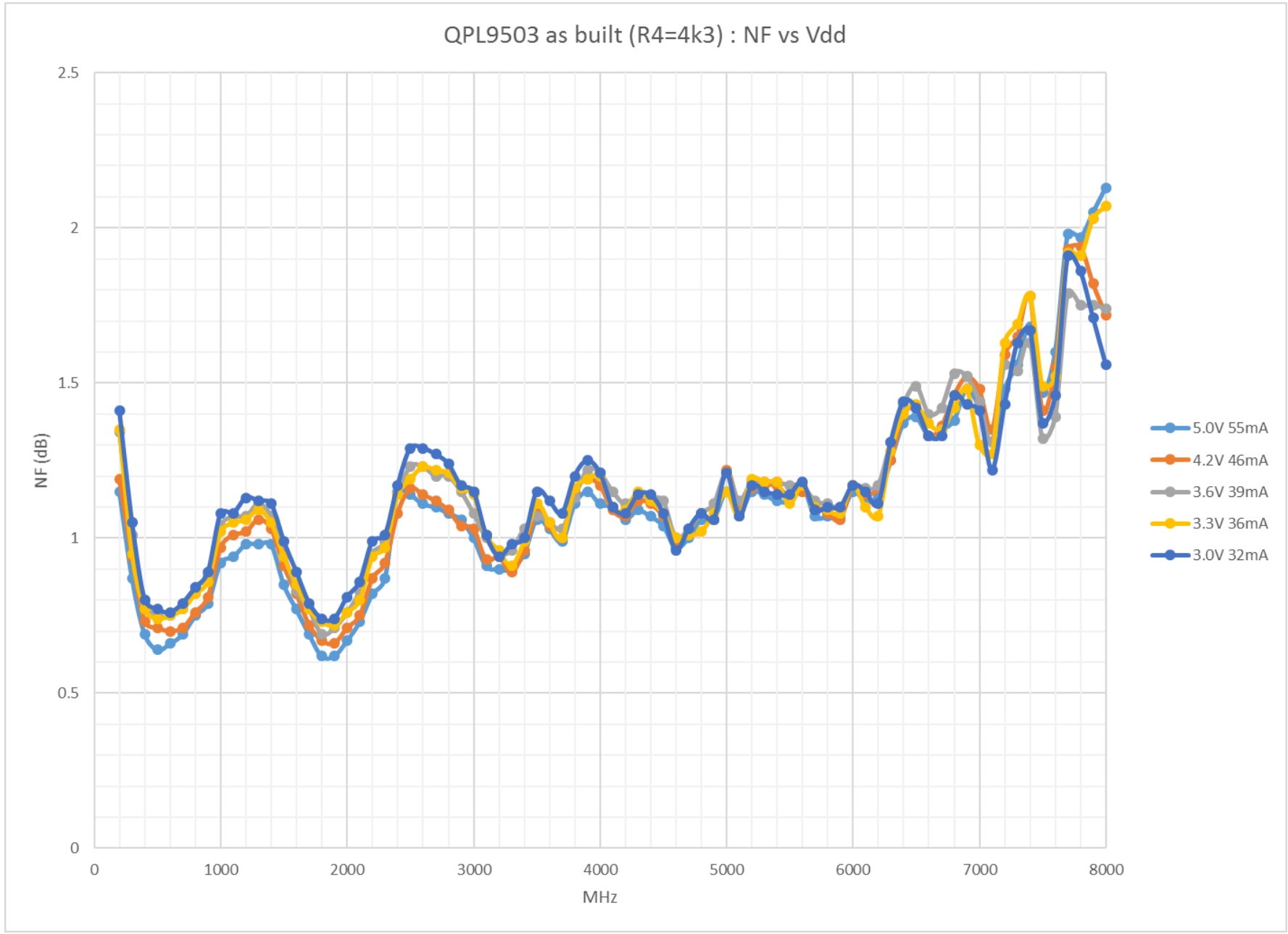
5V



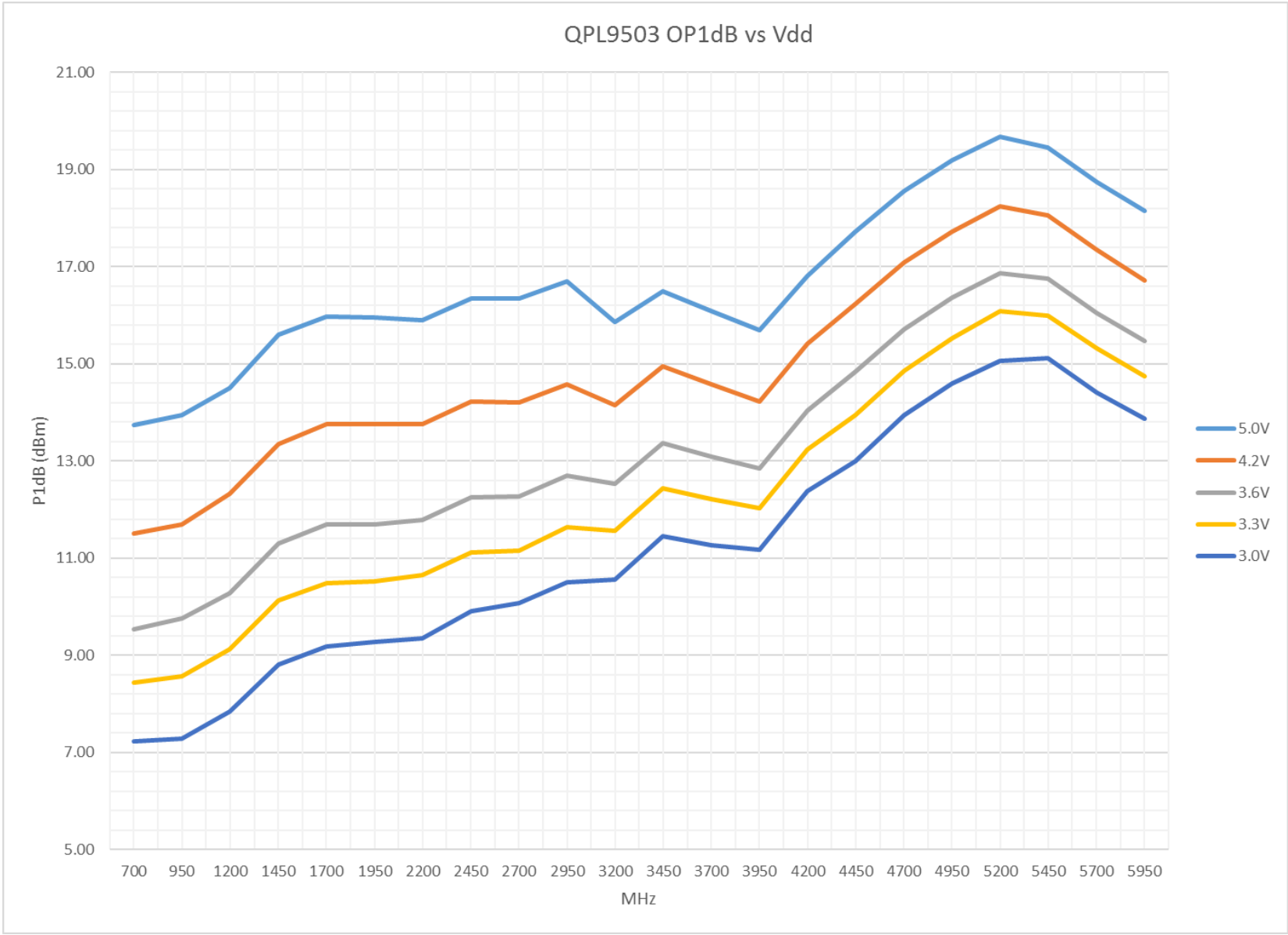
3.3V



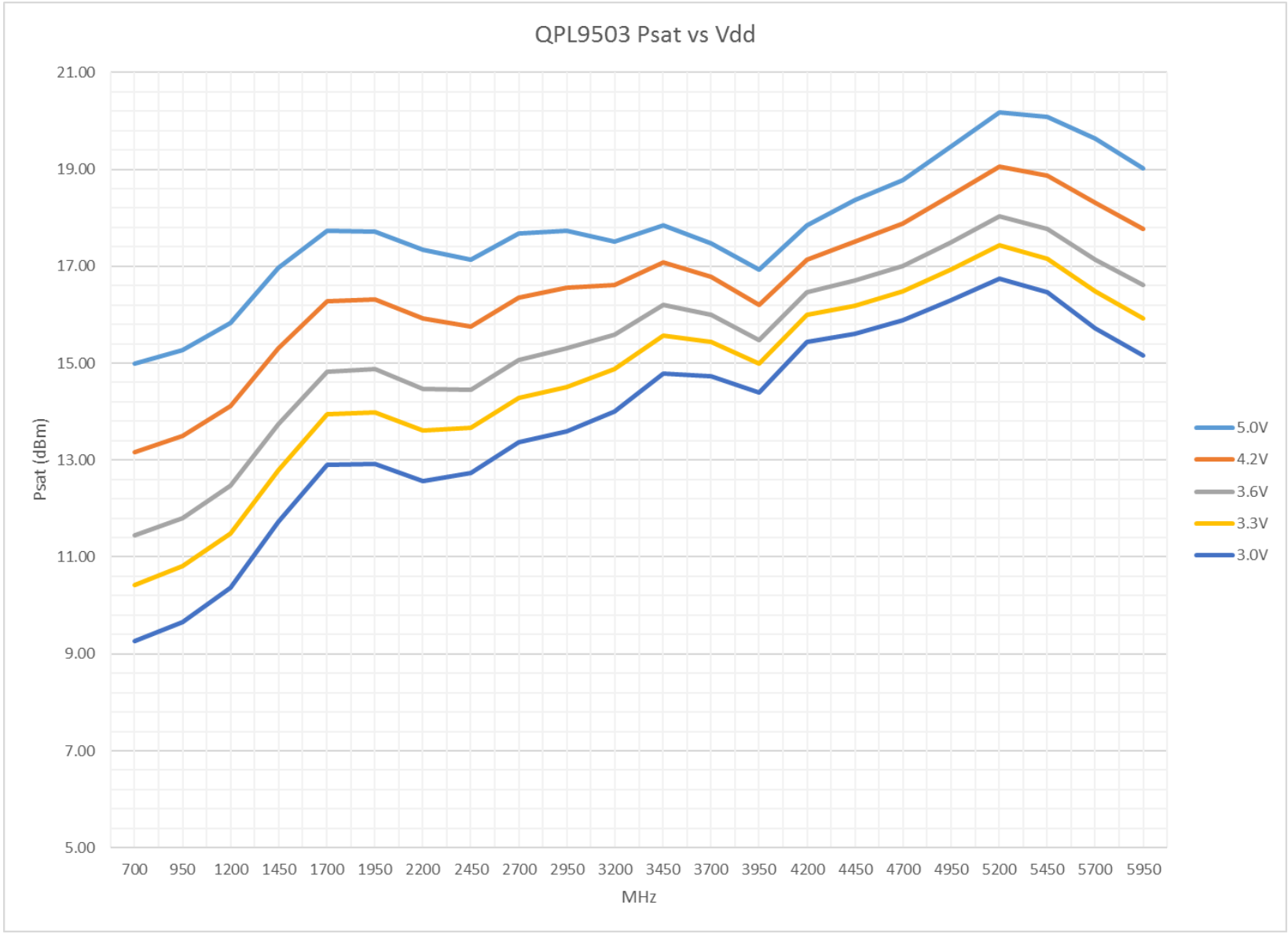
NF



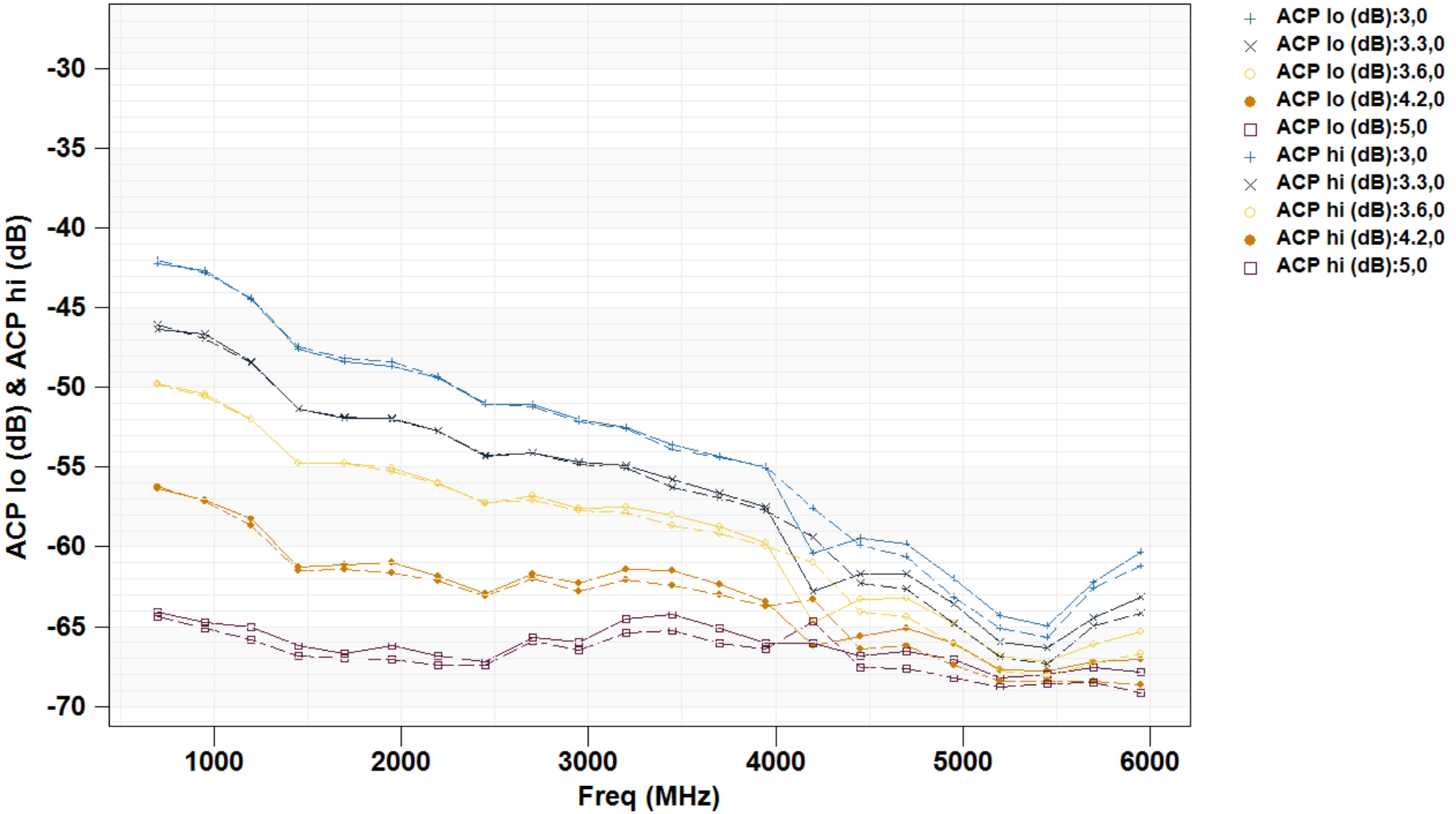
P1dB vs Vdd



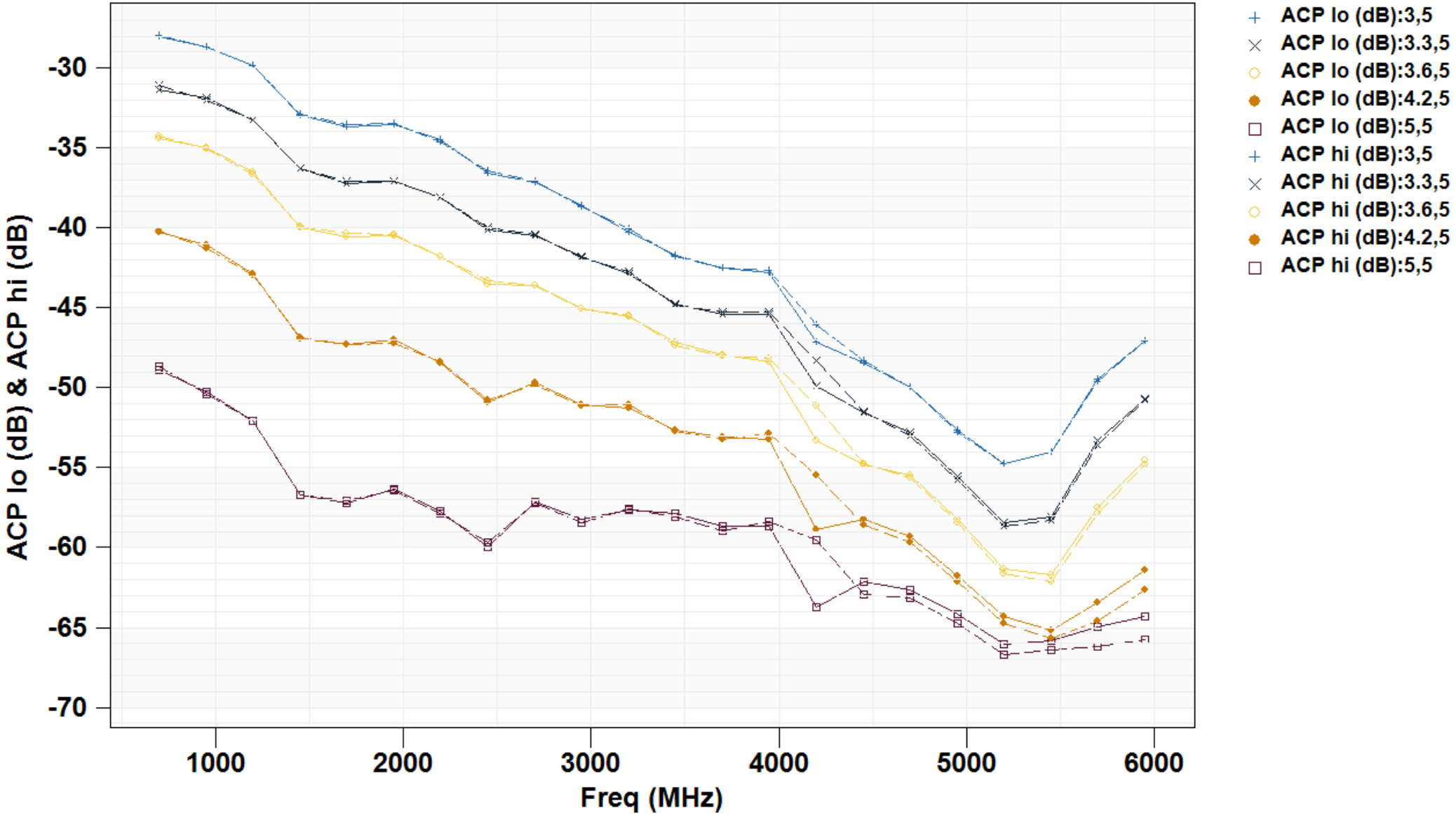
Psat vs Vdd



ACP @ 0dBm output (WDCMA) vs Vdd



ACP @ +5dBm output (WDCMA) vs Vdd



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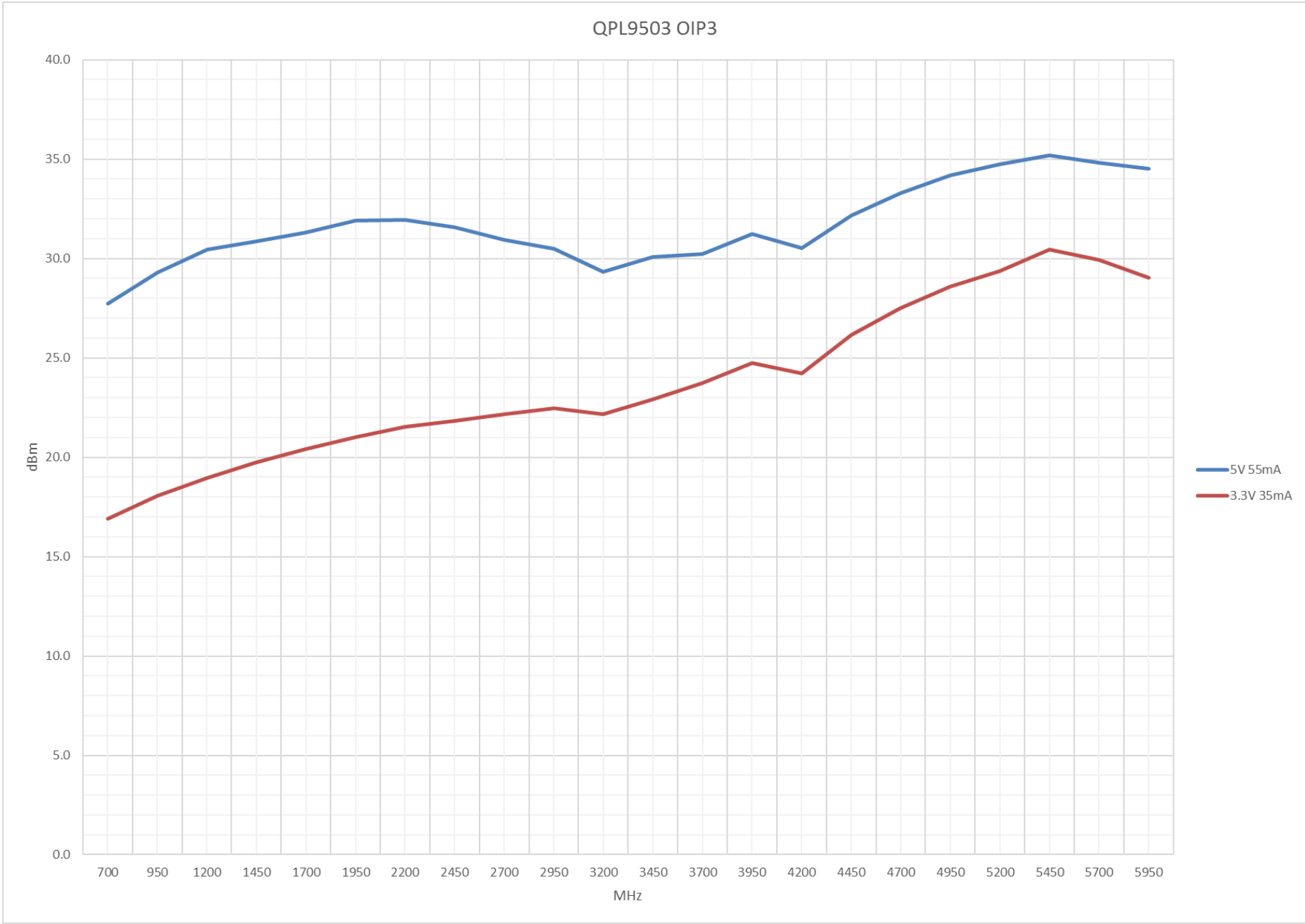


Bias Resistor R4 Variations

QPL9503 performance vs Bias Resistor R4

R4 Variations

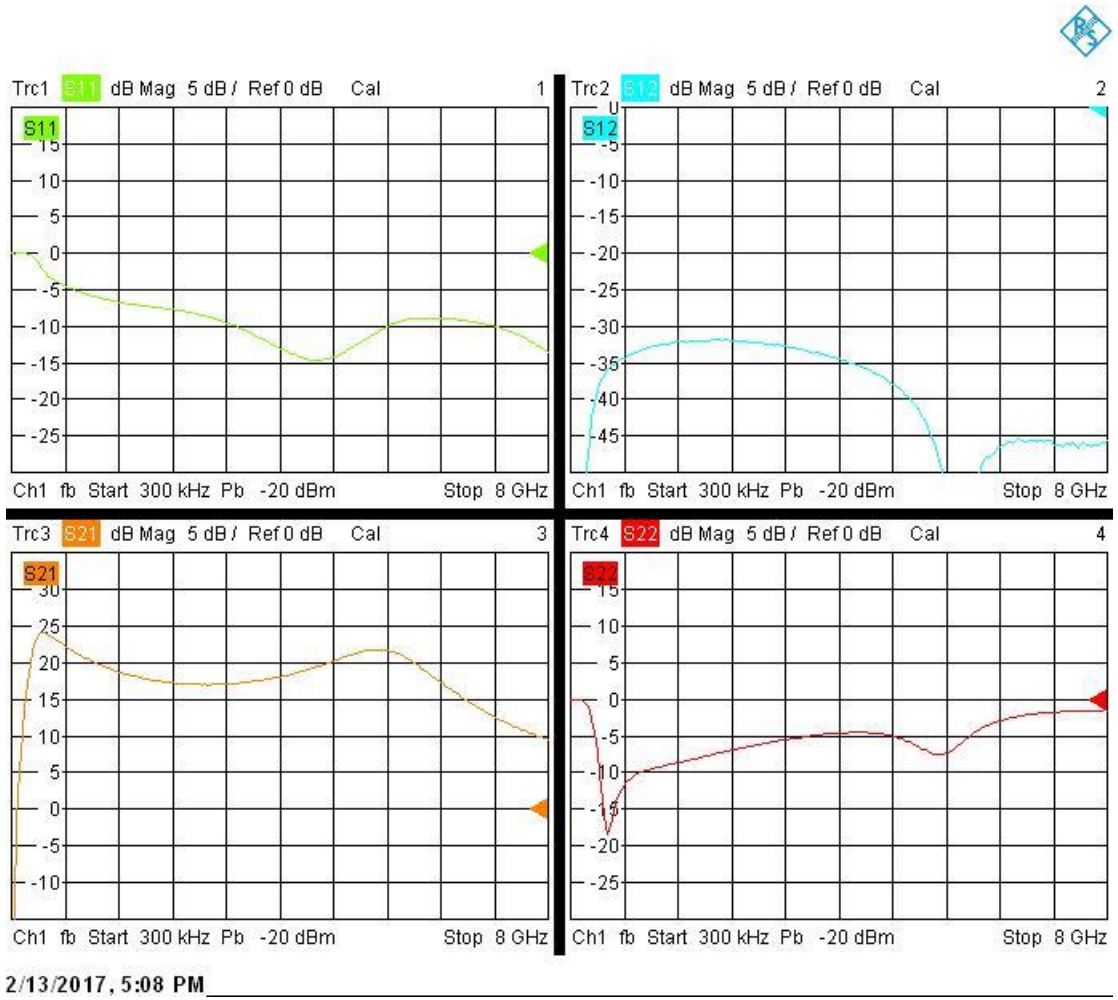
- "As Built" (R4 = 4k3),Idd was 55mA @ 5V, dropping to 32mA @ 3.3V
  - Two more R4 values were developed to give (a) 55mA @ 3.3V and (b) 32mA @ 5V
  - This gave the table of combinations below

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

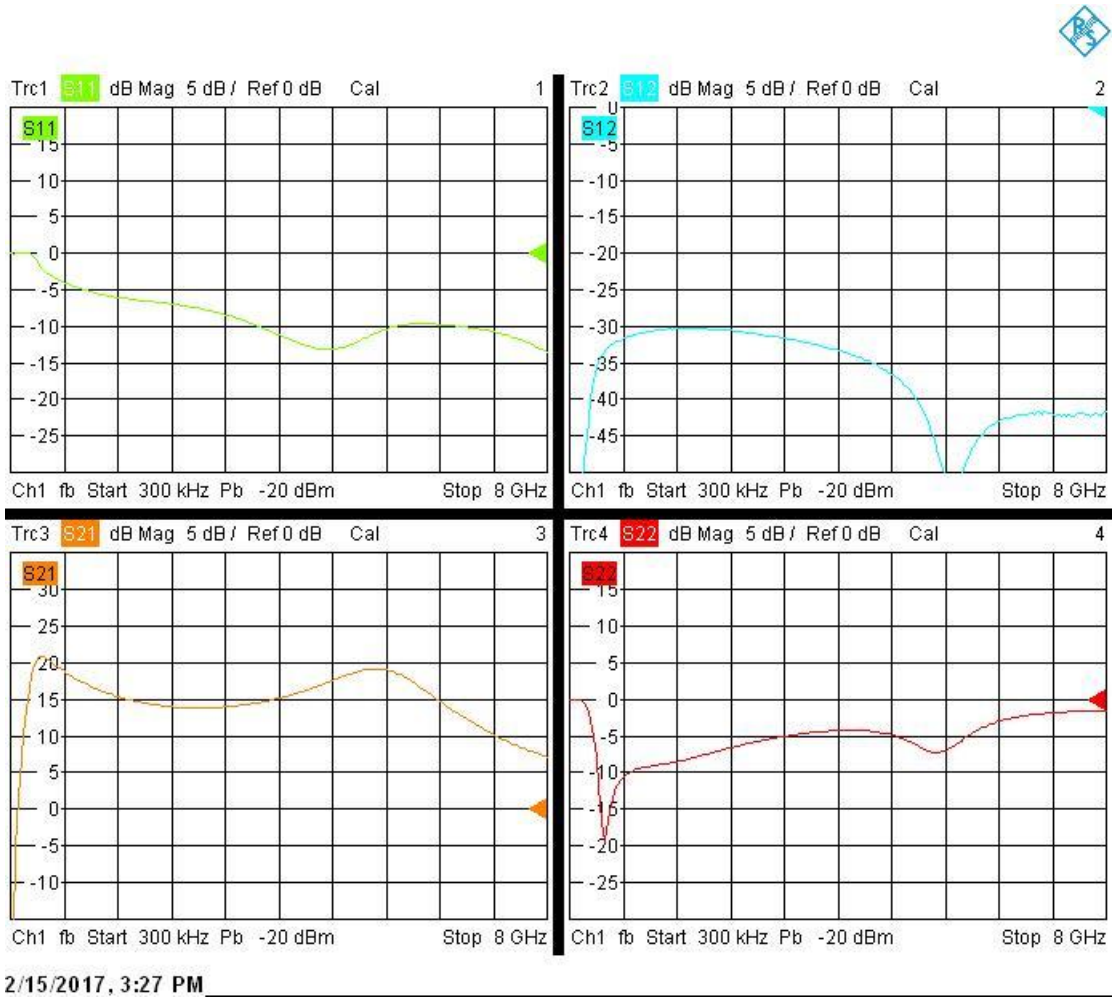
  - Further tests were run using some of these combinations
  - Following slides focus on the extremes, i.e. 75mA @ 5V and 23mA @ 3.3V

S2P vs Vdd/R4

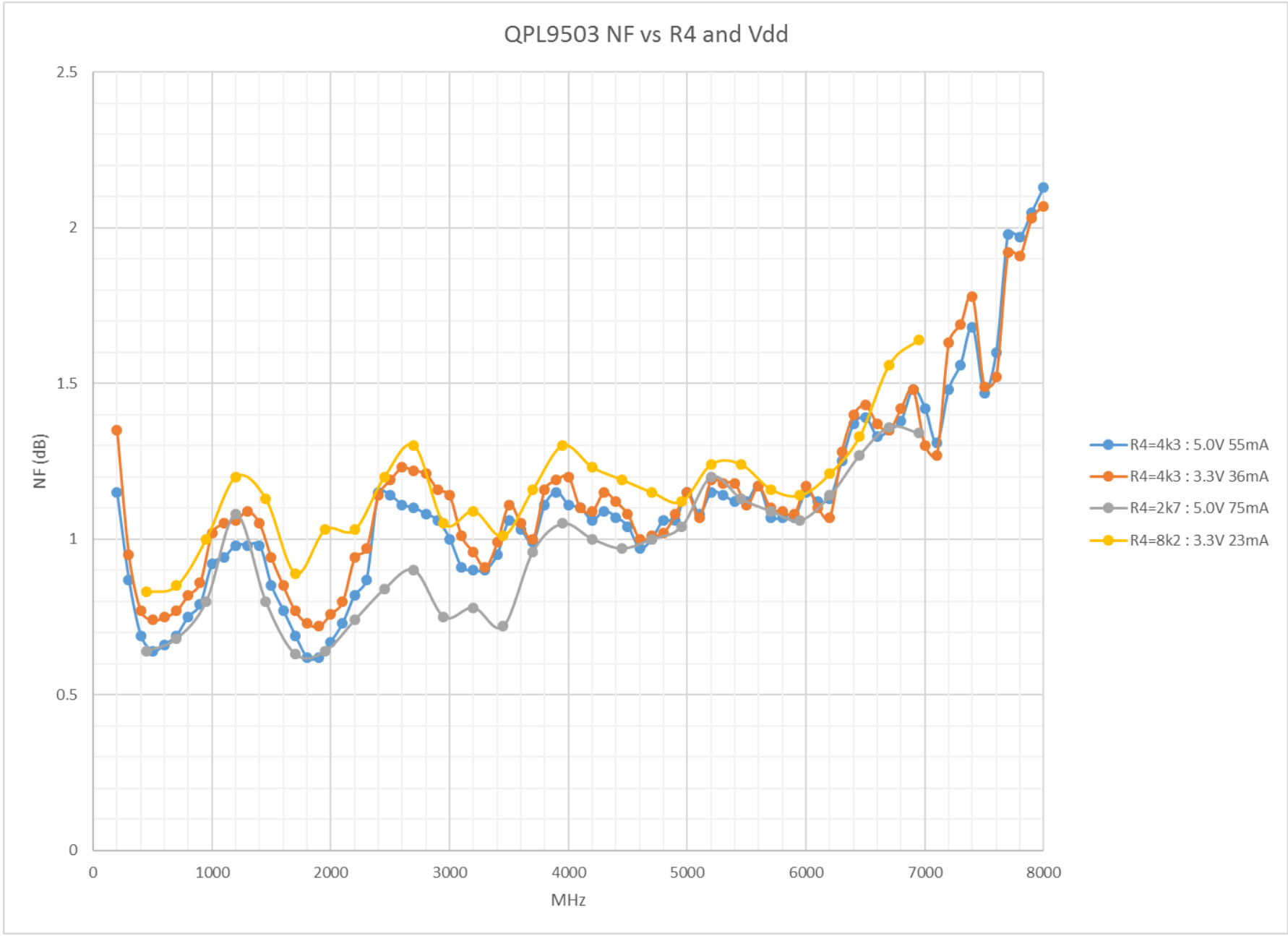
5V 75mA (R4=2k7)



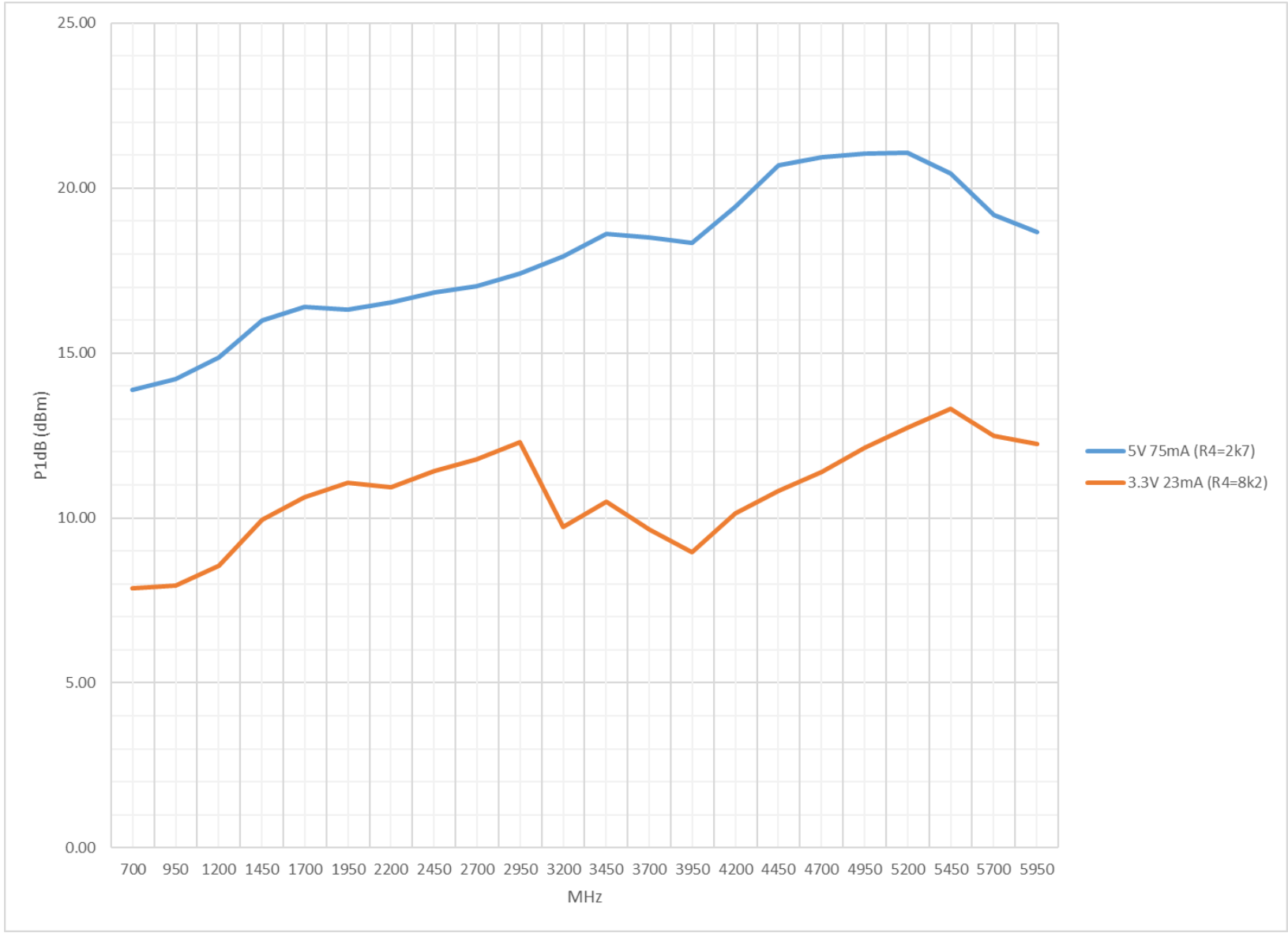
3.3V 23mA (R4=8k2)



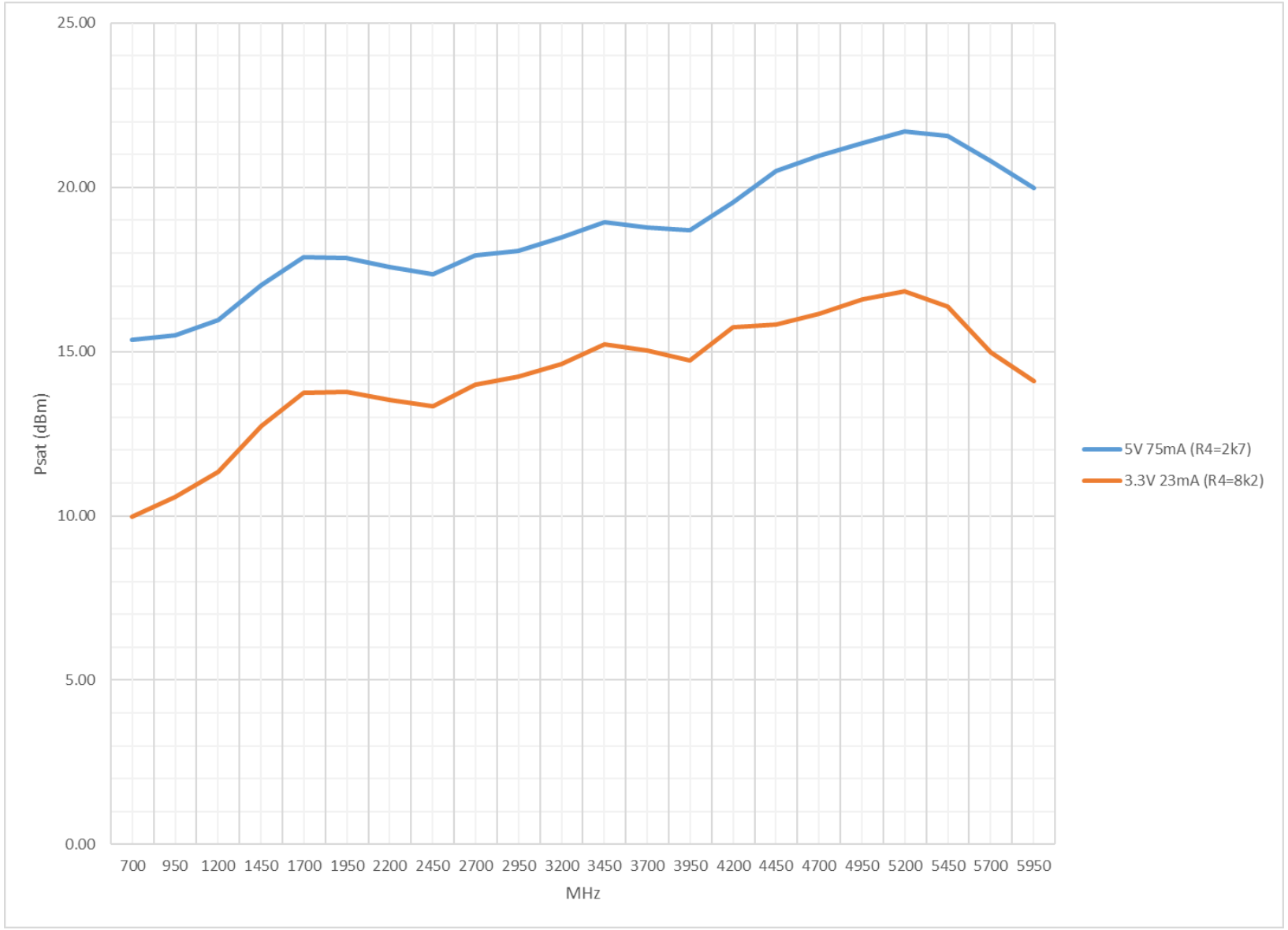
NF



P1dB vs Vdd/R4

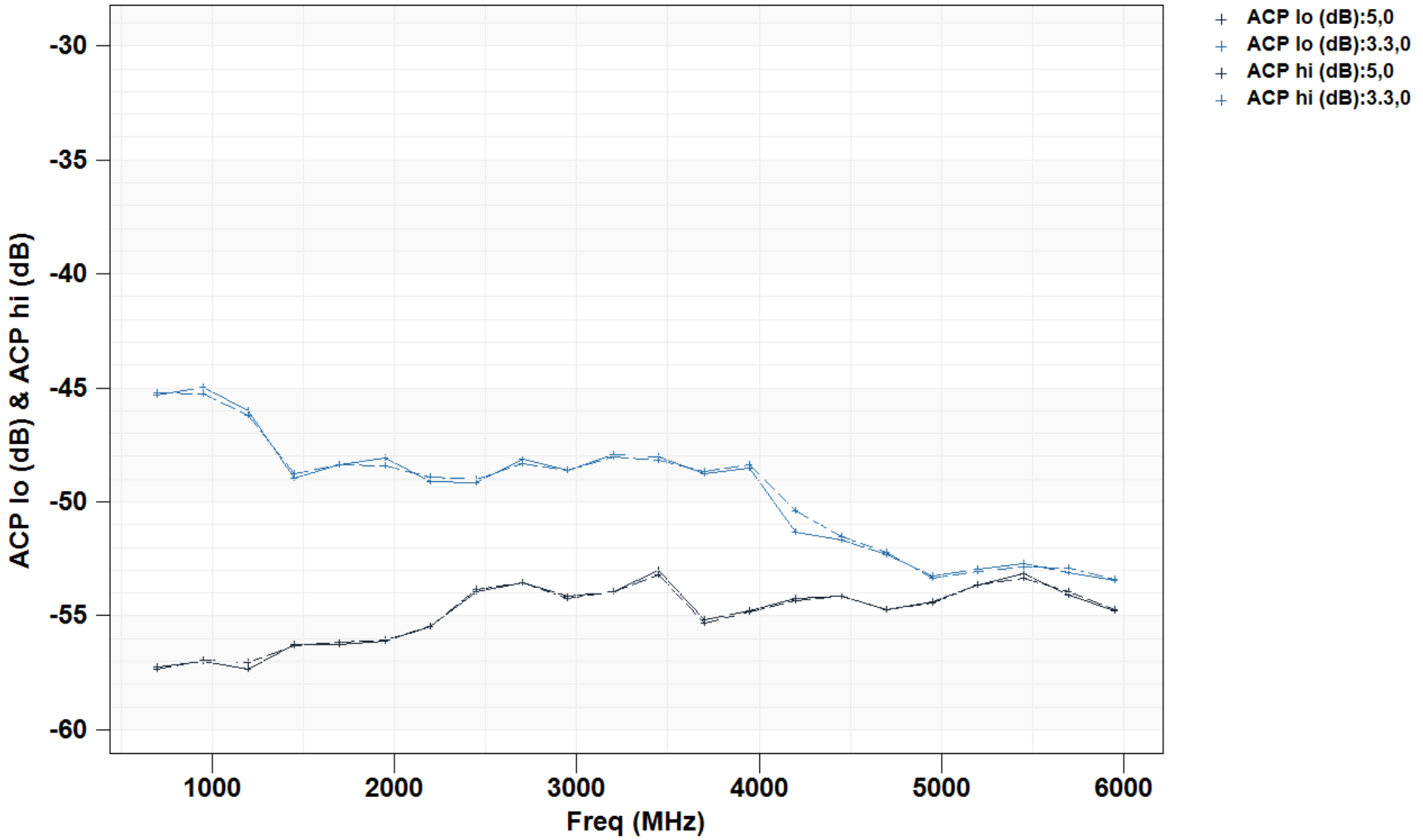


Psat vs Vdd/R4



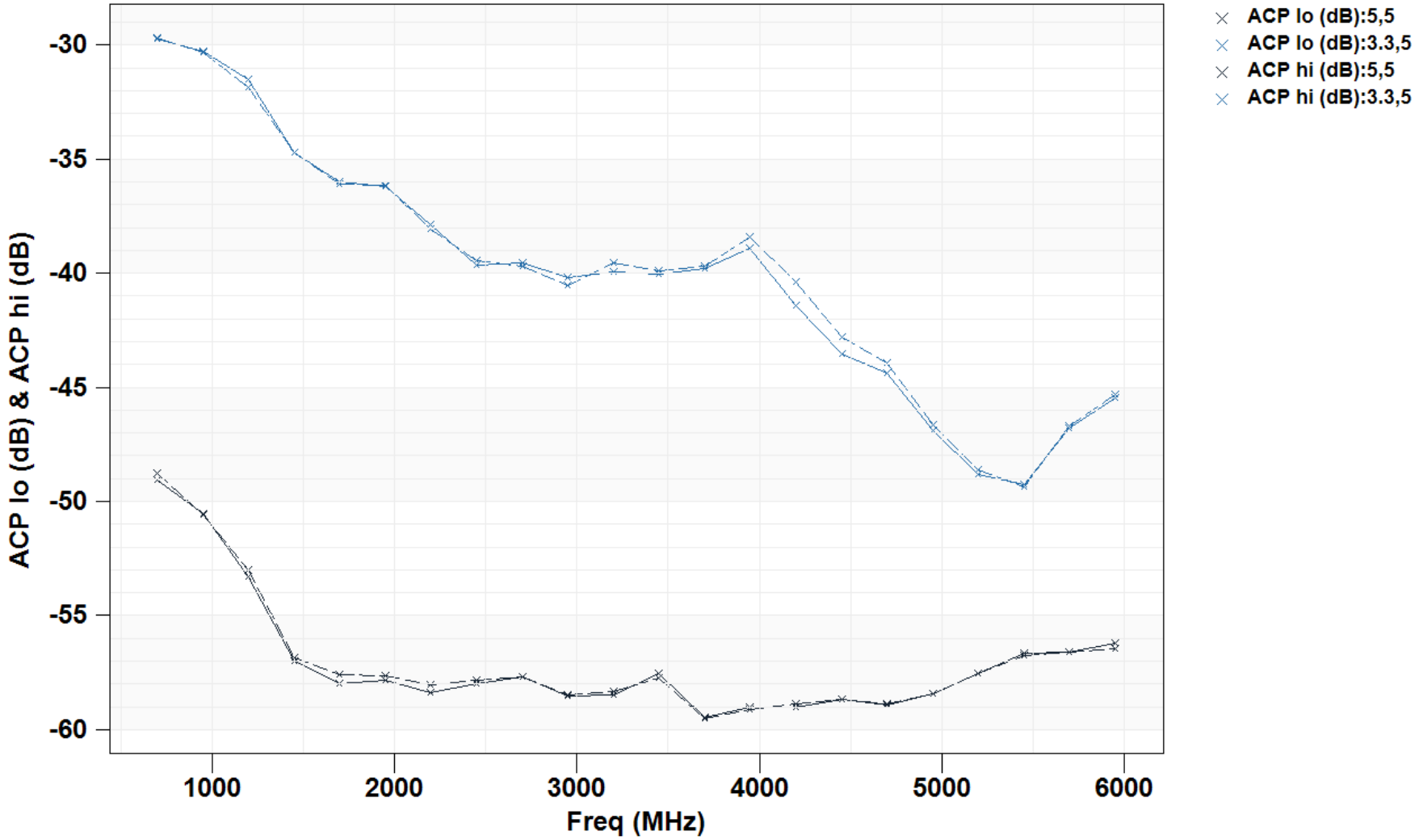
ACP @ 0dBm output (WDCMA) vs Vdd/R4

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



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

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



OIP3

Thank You