F1490 OP1DB INITIAL TUNING

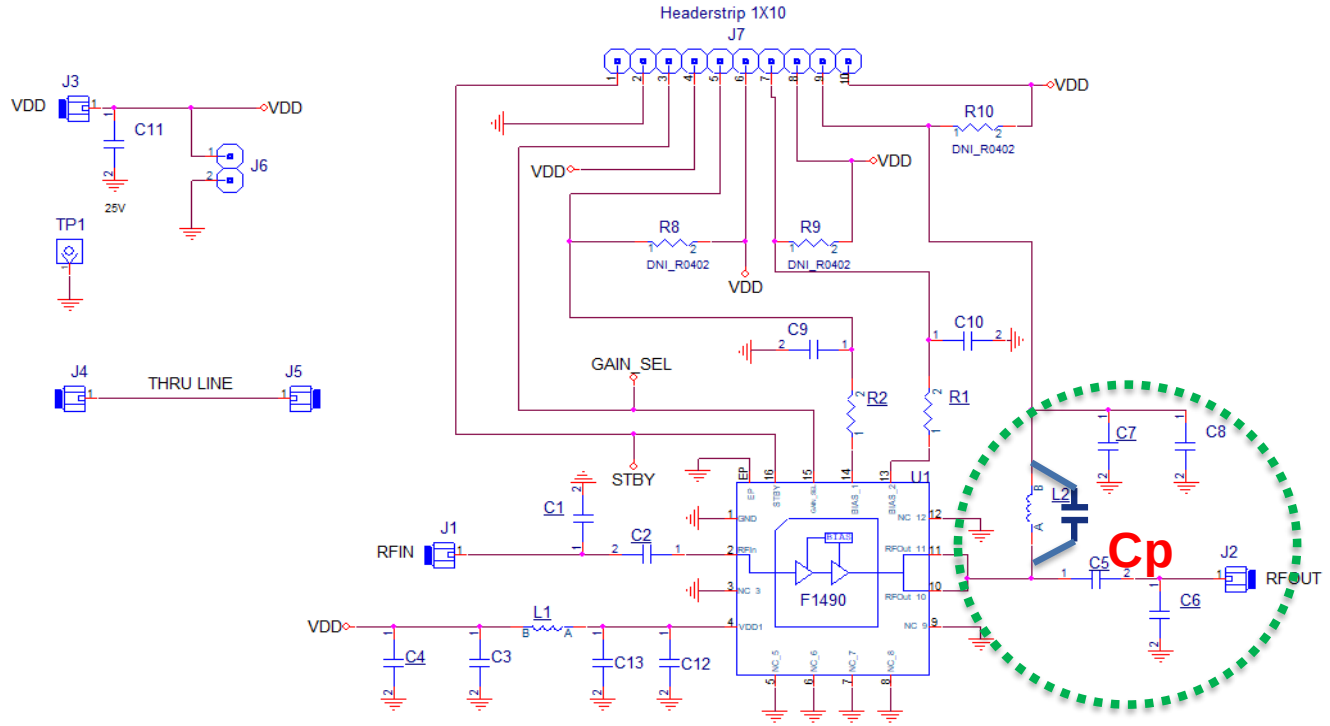
2019 NOVEMBER 3

EXECUTIVE SUMMARY

- F1490 OP1dB performance in the 3.3GHz – 3.8GHz BOM is currently 23dBm typical.
- Different tuning options for the F1490 to increase OP1dB up to 25dBm in the 3.3GHz – 3.8GHz band in low gain mode are presented.
- In order to improve OP1dB, output return loss and to a lesser degree OIP3 performance is sacrificed.
- Further tuning of the device bias current in progress to evaluate impact on OP1dB performance.

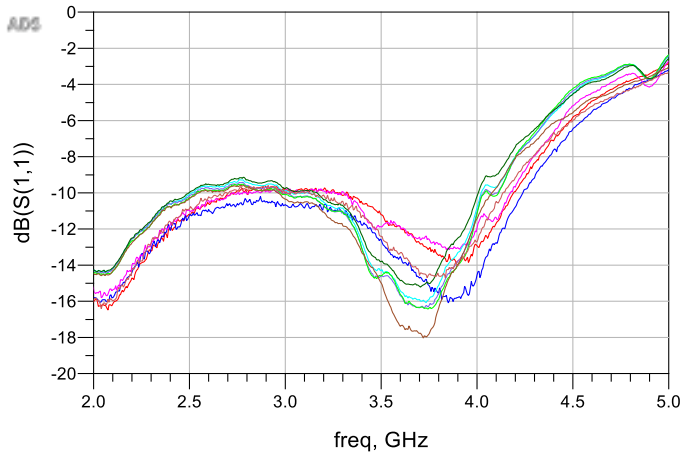
BOM

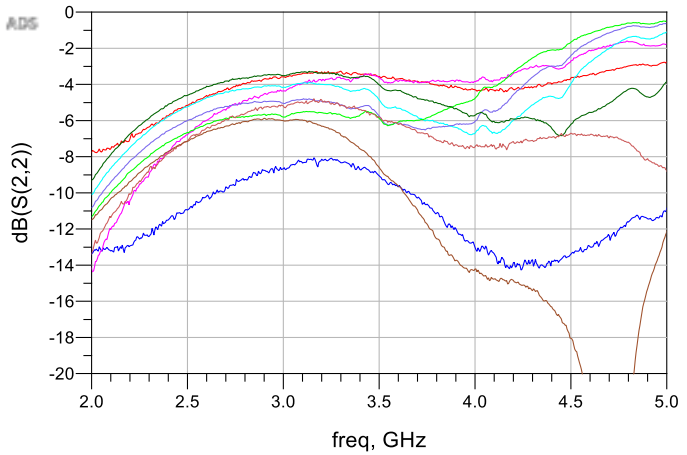
- 21 different output matching configurations explored for OP1dB increase
- Only C5, C6, Cp, and L2 are changed from the 3.5GHz reference BOM

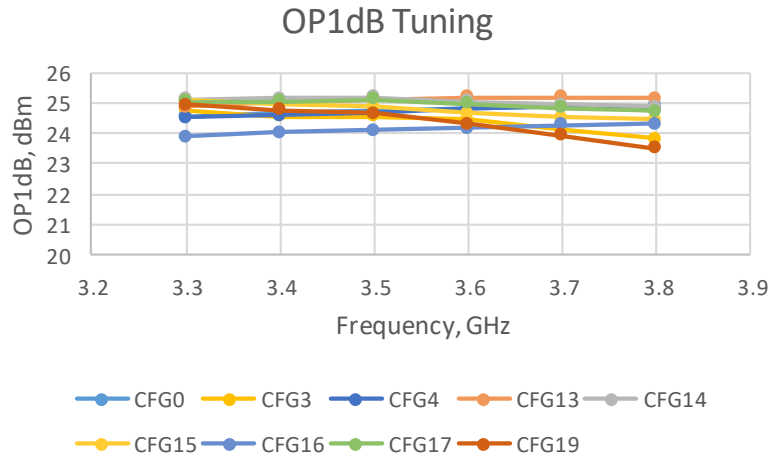


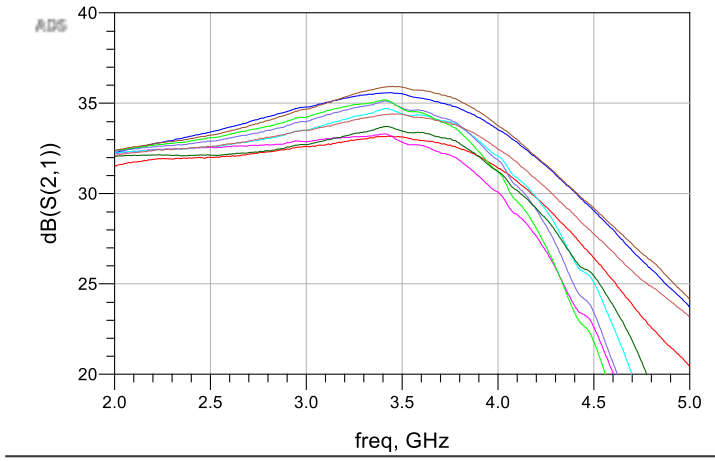
Configuration	C5	C6	Cp	L2
CFG0	1.1pF	NC	NC	10nH
CFG1	1.5nH	NC	NC	10nH
CFG2	1.5nH	0.4pF	NC	10nH
CFG3	1.2nH	0.4pF	NC	10nH
CFG4	1.2nH	0.4pF	0.7pF	10nH
CFG5	1.2nH	NC	0.7pF	10nH
CFG6	1.5nH	NC	0.7pF	10nH
CFG7	1.5nH	2.2pF	0.7pF	10nH
CFG8	1.5nH	1pF	0.7pF	10nH
CFG9	1.5nH	1.3pF	0.7pF	10nH
CFG10	1.5nH	1.1pF	0.7pF	10nH
CFG11	1ohm	NC	0.7pF	10nH
CFG12	1nH	NC	0.7pF	10nH
CFG13	1nH	0.7pF	0.7pF	10nH
CFG14	1.2nH	0.7pF	0.7pF	10nH
CFG15	1.5nH	0.7pF	0.7pF	10nH
CFG16	1ohm	0.7pF	0.7pF	10nH
CFG17	1ohm	0.7pF	NC	10nH
CFG18	1ohm	NC	NC	10nH
CFG19	1nH	0.7pF	NC	10nH
CFG20	1.5nH	0.7pF	NC	10nH

TOP 9 HIGH OP1DB CONFIGURATIONS S-PARAMETER

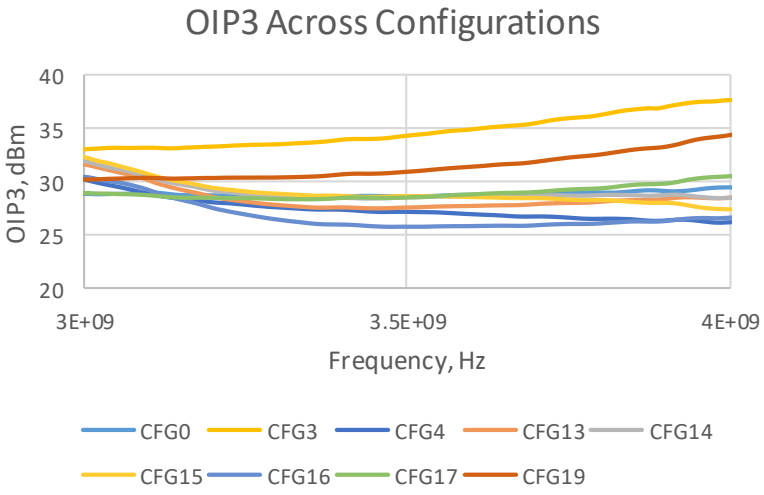




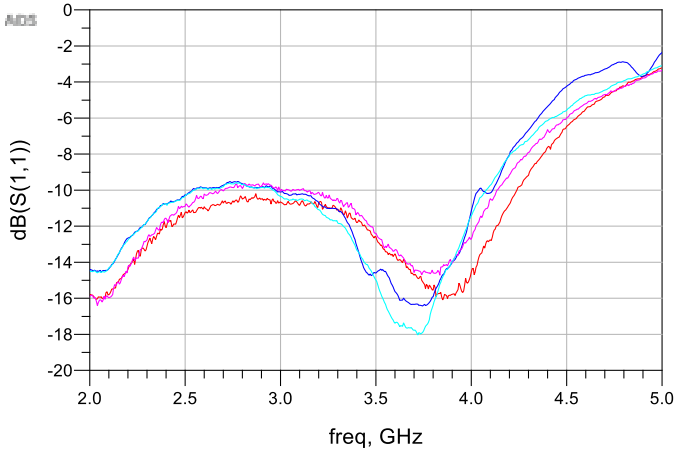


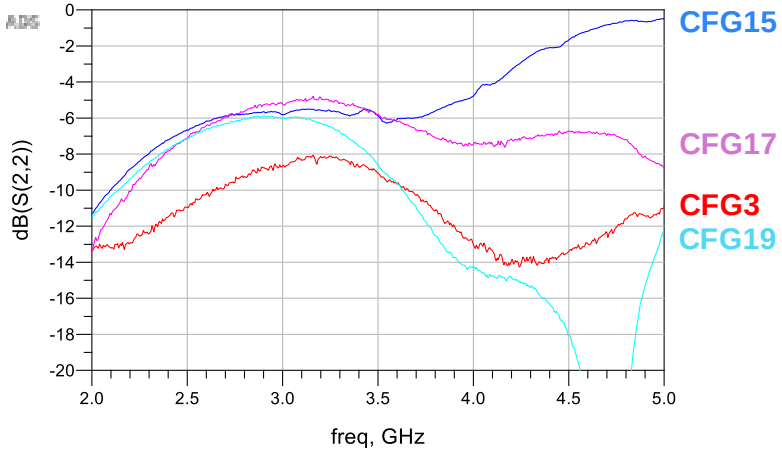


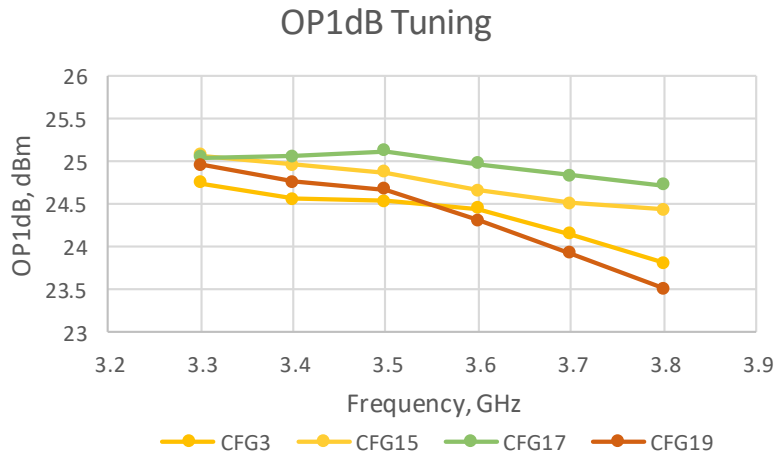
- Limited changes in input return loss and gain
- Significant changes in output return loss

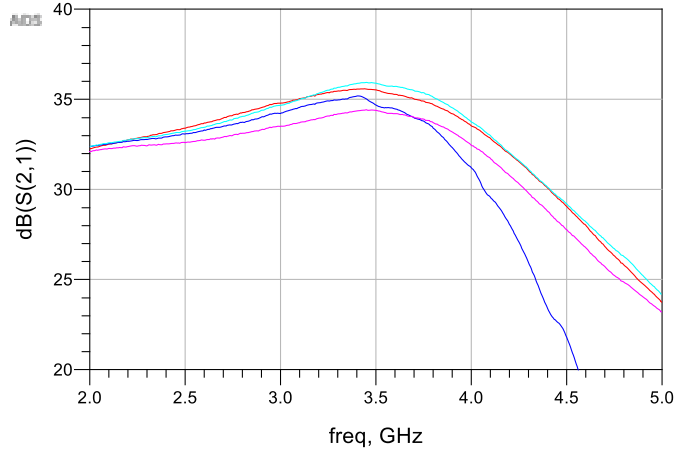


TOP 4 RETURN LOSS CONFIGURATIONS WITHIN TOP 9

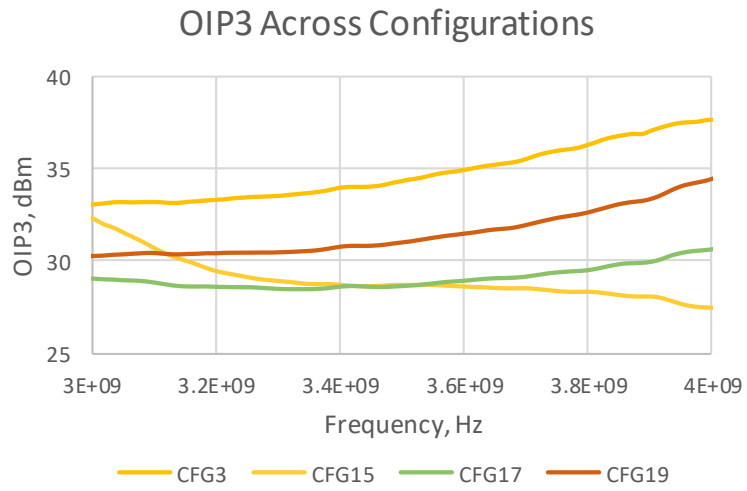




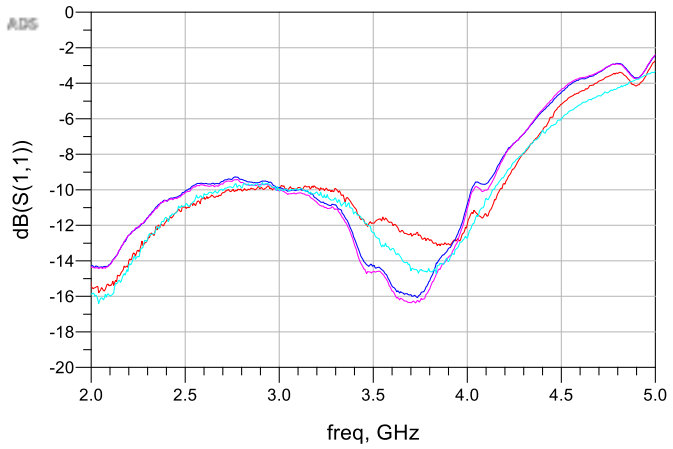


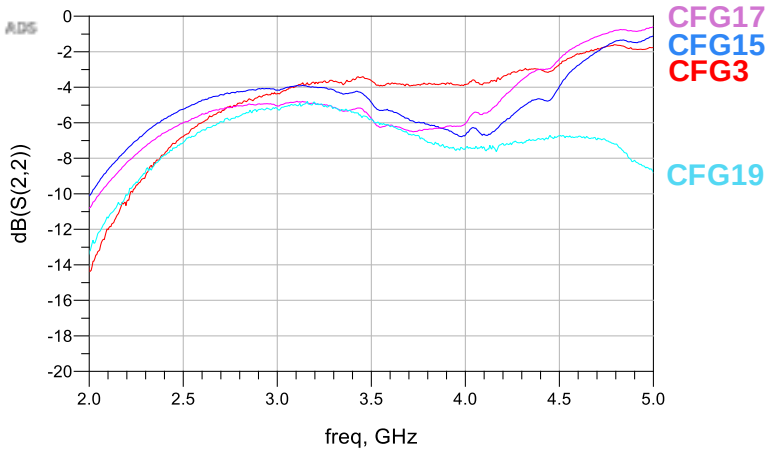


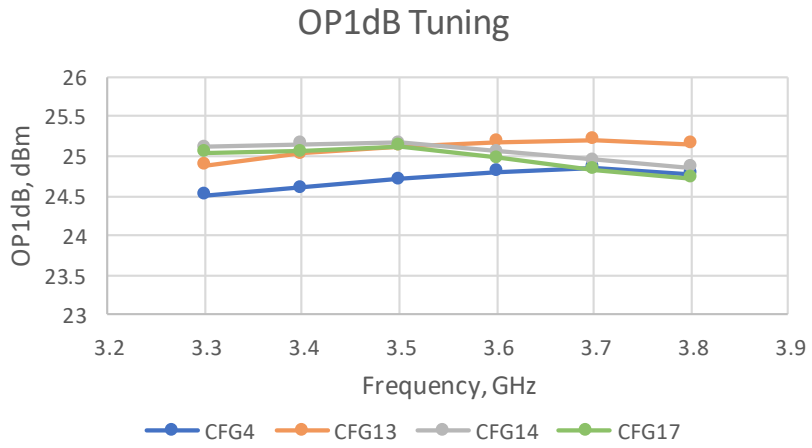
- Configuration 3 reflects the most balanced performance if output return loss is prioritized

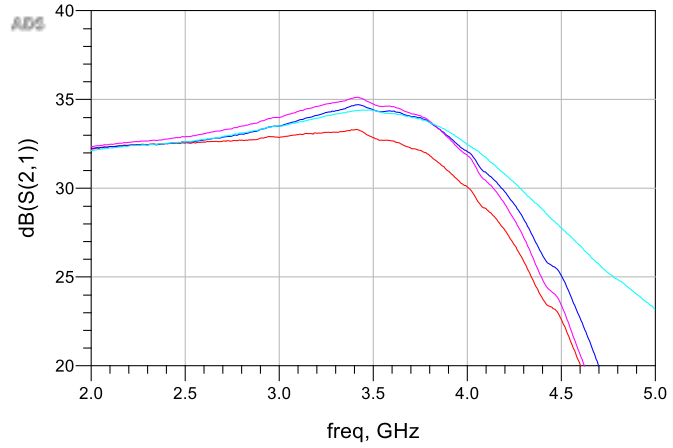


TOP 4 OP1DB CONFIGURATIONS WITHIN TOP 9

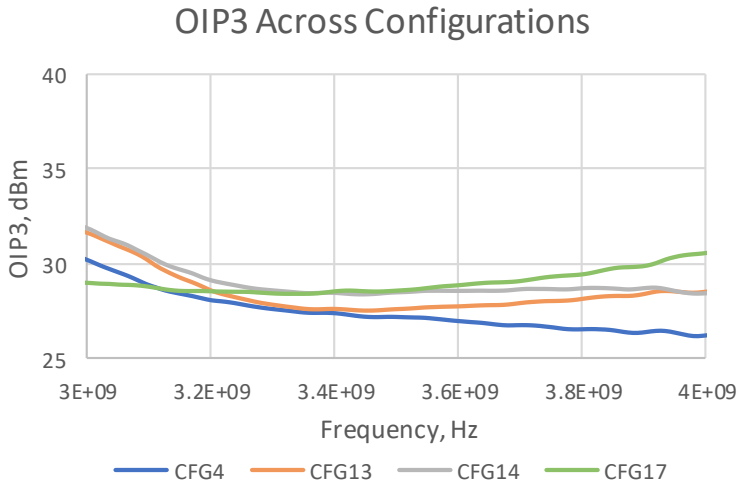








- Configuration 17 reflects the most balanced performance if OP1dB is prioritized



THANK YOU