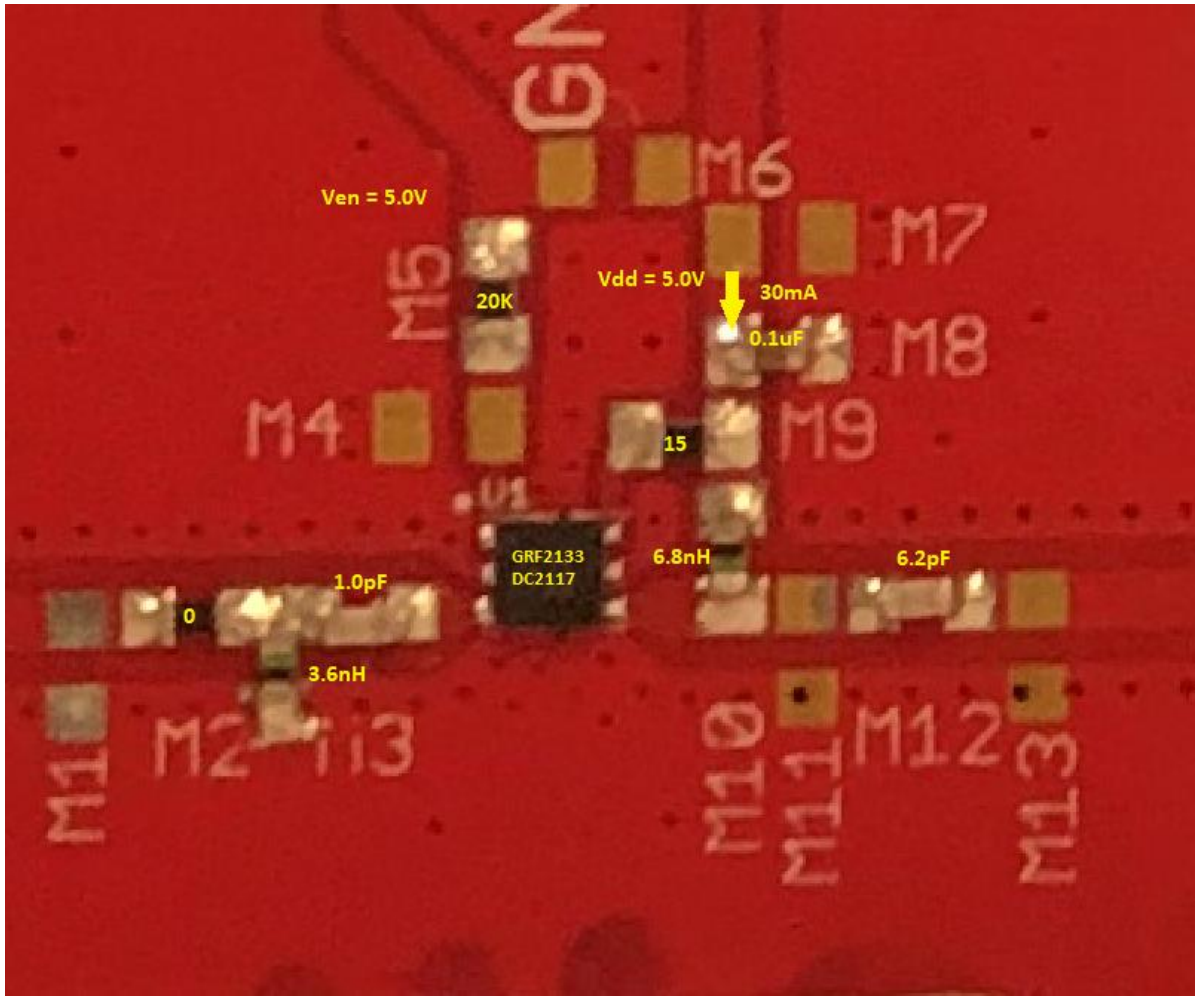
GRF2133 3300-4200 MHz 5.0V 30mA

11/1/22

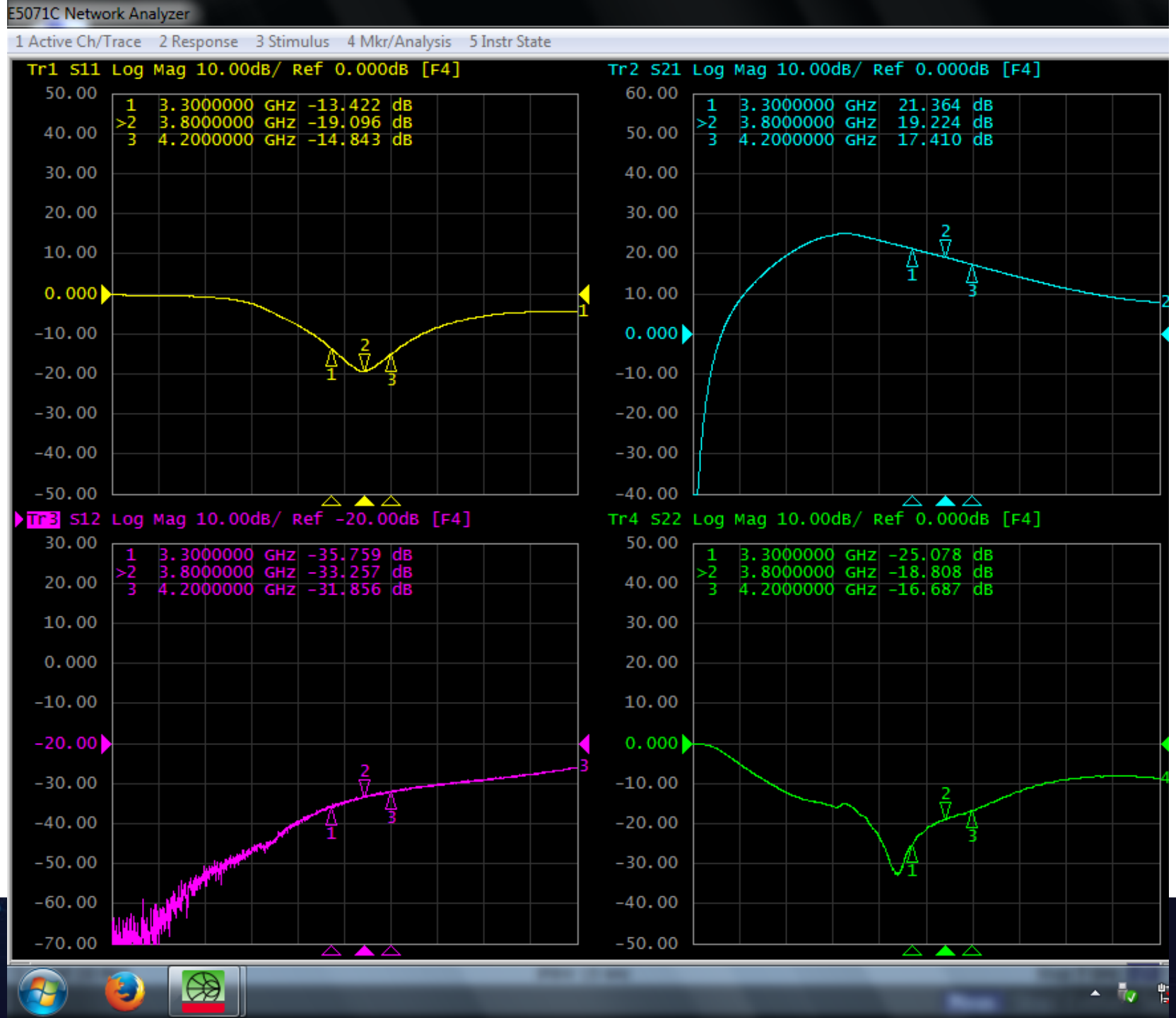
Schematic:

GRF2133 intended as a low current linear pre-driver with target gain = 18dB @ 3800 MHz. Device will be biased at 30mA and performance evaluated -40C → 85C.

Note for higher P1dB/IP3, this match can be run with M5 scaled for higher current.



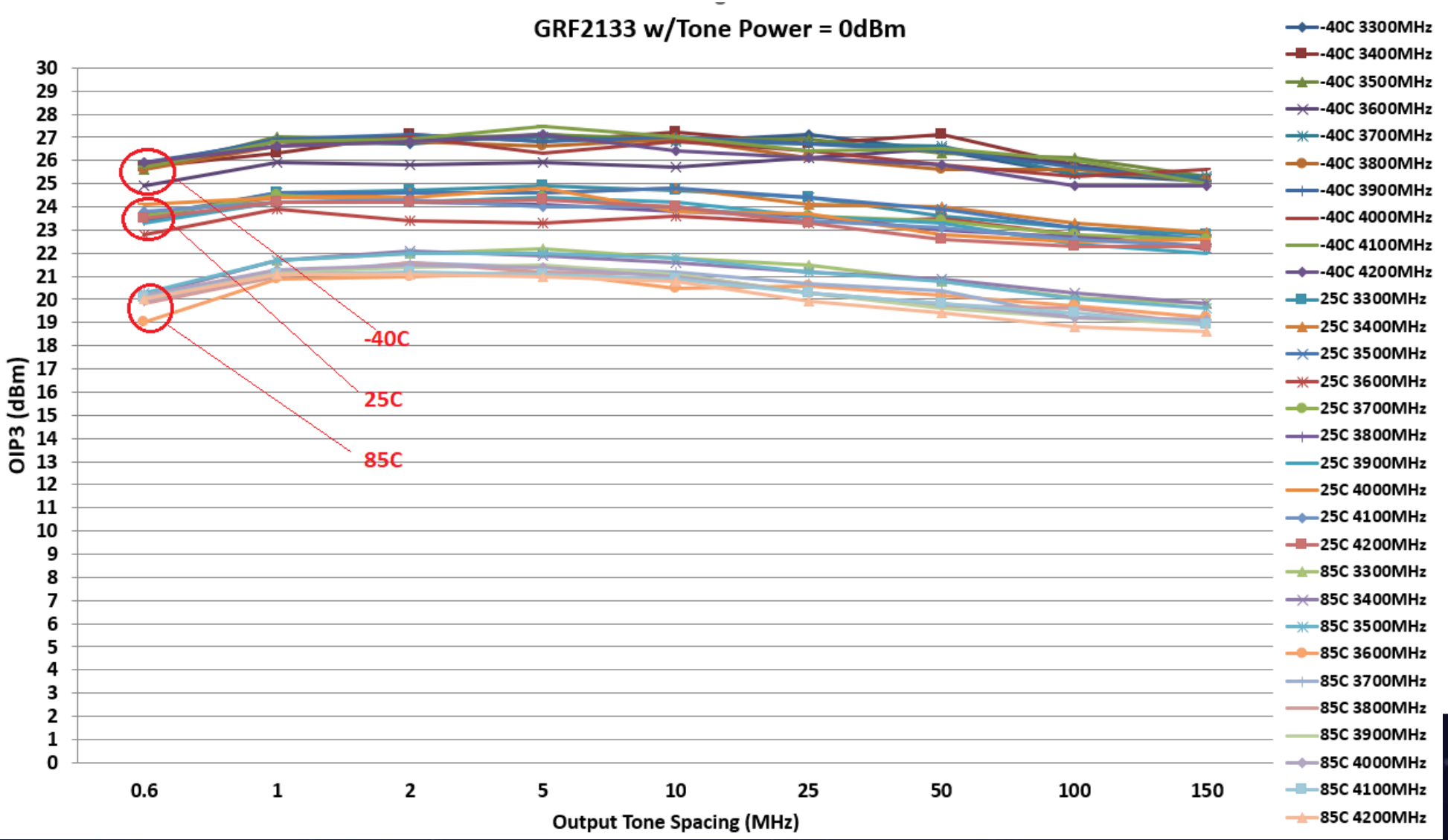
Response:


E5071C Network Analyzer
1 Active Ch/Trace 2 Response 3 Stimulus 4 Mkr/Analysis 5 Instr State
Tr1 S11 Log Mag 10.00dB/ Ref 0.000dB [F4]
1 3.3000000 GHz -13.422 dB
>2 3.8000000 GHz -19.096 dB
3 4.2000000 GHz -14.843 dB
Tr2 S21 Log Mag 10.00dB/ Ref 0.000dB [F4]
1 3.3000000 GHz 21.364 dB
>2 3.8000000 GHz 19.224 dB
3 4.2000000 GHz 17.410 dB
Tr3 S12 Log Mag 10.00dB/ Ref -20.00dB [F4]
1 3.3000000 GHz -35.759 dB
>2 3.8000000 GHz -33.257 dB
3 4.2000000 GHz -31.856 dB
Tr4 S22 Log Mag 10.00dB/ Ref 0.000dB [F4]
1 3.3000000 GHz -25.078 dB
>2 3.8000000 GHz -18.808 dB
3 4.2000000 GHz -16.687 dB

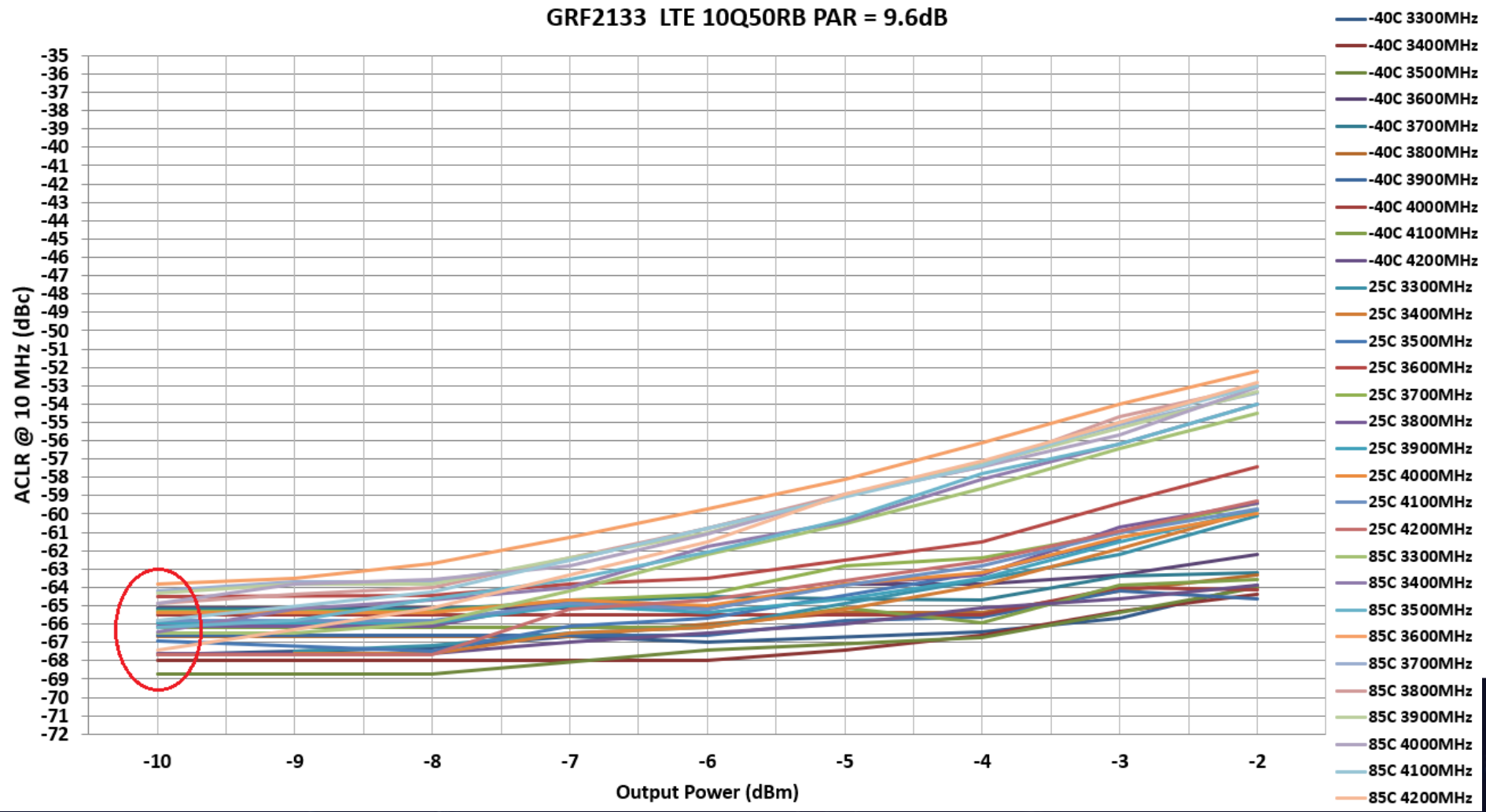
Standard Data:

Temp Deg C	Freq MHz	Vdd V	Ven V	Iddq mA	Ien mA	Pout/Ptone dBm	gain dB	tone spacing MHz	IIP3 dBm	OIP3 dBm	IMD3 dBm	IP1dB dBm	OP1dB dBm	EVB NF dB
-40	3300	5	5	38.2	0.4	0	22.5	2	4.5	27	-54	-0.6	20.8	x
-40	3400	5	5	38.2	0.4	0	22.1	2	5	27.1	-54.1	-0.5	20.6	x
-40	3500	5	5	38.2	0.4	0	21.6	2	5.2	26.8	-53.6	-0.1	20.5	x
-40	3600	5	5	38.2	0.4	0	21.3	2	4.5	25.8	-53	-0.3	19.9	x
-40	3700	5	5	38.2	0.4	0	20.8	2	6.3	27.1	-54.2	-0.1	19.7	x
-40	3800	5	5	38.2	0.4	0	20.3	2	6.2	26.5	-53.3	0.6	19.9	x
-40	3900	5	5	38.2	0.4	0	19.9	2	6.9	26.8	-53.9	0.9	19.8	x
-40	4000	5	5	38.2	0.4	0	19.5	2	7.1	26.6	-53.5	1.6	20	x
-40	4100	5	5	38.2	0.4	0	19	2	8	27	-54.3	1.8	19.8	x
-40	4200	5	5	38.2	0.4	0	18.6	2	7.7	26.3	-53.2	2.2	19.7	x
25	3300	5	5	29.7	0.4	0	21.3	2	3.4	24.7	-49.4	-0.3	20	1
25	3400	5	5	29.7	0.4	0	20.9	2	3.7	24.6	-49.6	-0.4	19.5	0.98
25	3500	5	5	29.7	0.4	0	20.5	2	4.1	24.6	-49.1	-0.1	19.4	0.94
25	3600	5	5	29.7	0.4	0	20.1	2	3.3	23.4	-48.4	0	19.1	0.96
25	3700	5	5	29.7	0.4	0	19.7	2	4.4	24.1	-48.6	0.3	19	0.97
25	3800	5	5	29.7	0.4	0	19.2	2	4.9	24.1	-48.9	0.9	19.1	0.97
25	3900	5	5	29.7	0.4	0	18.8	2	5.5	24.3	-49.3	1.7	19.5	1
25	4000	5	5	29.7	0.4	0	18.4	2	6.1	24.5	-49.3	2.4	19.8	1
25	4100	5	5	29.7	0.4	0	17.9	2	6.5	24.4	-49.1	2.7	19.6	1.1
25	4200	5	5	29.7	0.4	0	17.4	2	6.5	23.9	-48.1	3.4	19.8	1.1
85	3300	5	5	22.7	0.4	0	19.8	2	2.3	22.1	-44.6	1.9	20.7	x
85	3400	5	5	22.7	0.4	0	19.4	2	2.7	22.1	-44.3	1.4	19.8	x
85	3500	5	5	22.7	0.4	0	19	2	2.9	21.9	-44.2	1.9	19.9	x
85	3600	5	5	22.7	0.4	0	18.7	2	2.3	21	-43.8	2.1	19.8	x
85	3700	5	5	22.7	0.4	0	18.2	2	3.3	21.5	-43.6	2.6	19.8	x
85	3800	5	5	22.7	0.4	0	17.8	2	3.5	21.3	-43.3	3.2	20	x
85	3900	5	5	22.7	0.4	0	17.3	2	4.1	21.4	-43.2	4.4	20.7	x
85	4000	5	5	22.7	0.4	0	17	2	4.4	21.4	-43.2	5.1	21	x
85	4100	5	5	22.7	0.4	0	16.4	2	4.9	21.3	-43.3	5.6	21	x
85	4200	5	5	22.7	0.4	0	15.9	2	5.2	21.1	-42.8	6.3	21.2	x

OIP3 vs. Tone Spacing quite flat out to 150 MHz, implying device will accommodate 100 MHz bandwidth signal. If needed, OIP3 can be improved with bias increase.



LTE 10Q50RB PAR = 9.6dB ACLR: worst case backed off ACLR will sit at -64dBc, quite clean. This is primarily a function of OIP3 and can be improved a bit with bias increase. In addition, bias increase will allow for compliant ACLR at higher power.



Contact Us

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