

LGM FSX-1S (12-bit) Spectrograph Step Calibration

19-Dec-2015 17:29 UTC

HP461A noise source + rotary attenuators + MCL Splitter

Calibration Plane: 90 Deg Hybrid Inputs

T0 (K)	290
Noise source temperature (MK)	20.1
Feed loss, cal plane to antenna (dB)	3.5
Receiver noise figure (dB)	6.0

	Side A	Side B	Side A	Side B
RSS Color Offset:	1800	1800	1900	1900
RSS Color Gain:	1.80	1.80	2.50	2.50

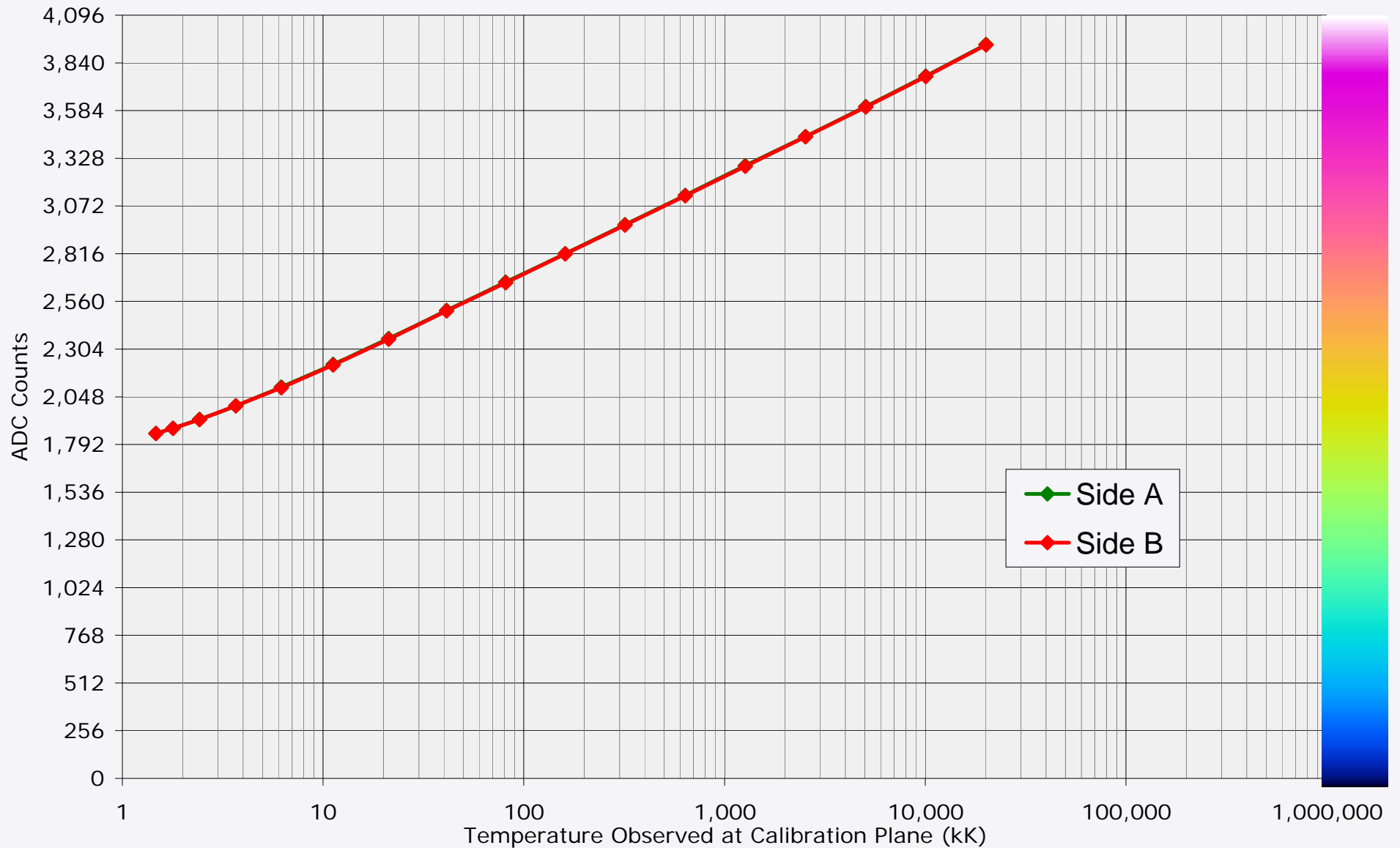
Att. dB	Source Temp (kK)	Equiv. Ant. Temp. (kK)	Side A ADC Counts	Side B ADC Counts
0.0	20,101	44,998	3939	3936
3.0	10,075	22,553	3769	3767
6.0	5,050	11,303	3605	3603
9.0	2,532	5,665	3445	3443
12.0	1,269	2,839	3288	3285
15.0	637	1,423	3129	3126
18.0	320	713	2972	2969
21.0	161	358	2816	2814
24.0	81	179	2663	2660
27.0	41	90	2512	2509
30.0	21	45	2360	2357
33.0	11	23	2222	2219
36.0	6.2	12	2100	2097
39.0	3.7	6	2000	1999
42.0	2.4	3.1	1927	1926
45.0	1.8	1.7	1879	1879
48.0	1.5	1.0	1851	1851

Solar		Jupiter	
Adjusted Value	Adjusted Value	Adjusted Value	Adjusted Value
3850	3845	4096	4096
3544	3541	4096	4096
3249	3245	4096	4096
2961	2957	3863	3858
2678	2673	3470	3463
2392	2387	3073	3065
2110	2104	2680	2673
1829	1825	2290	2285
1553	1548	1908	1900
1282	1276	1530	1523
1008	1003	1150	1143
760	754	805	798
540	535	500	493
360	358	250	248
229	227	68	65
142	142	0	0
92	92	0	0



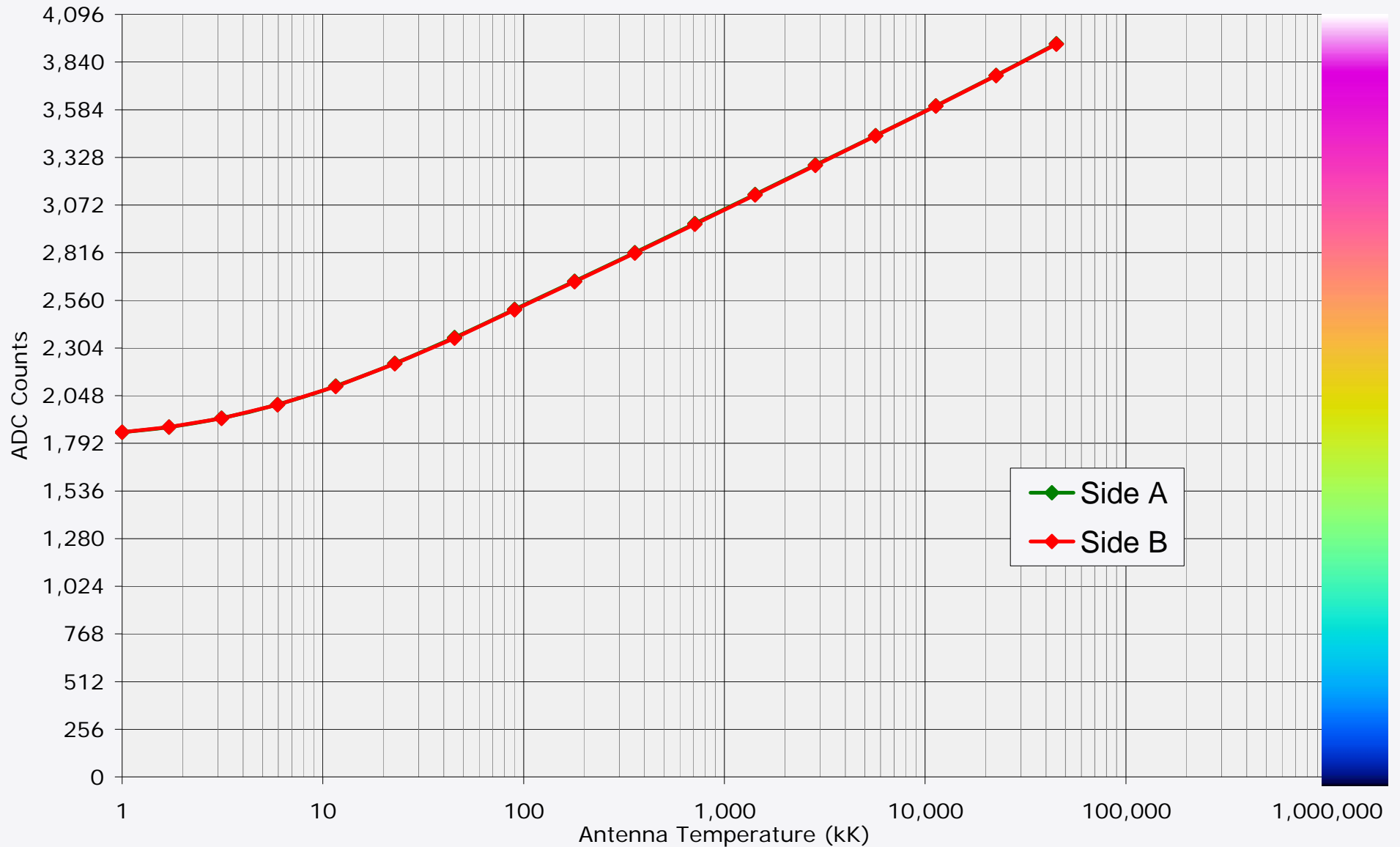
Raw ADC Output Value & Color vs Temperature Observed at 90 Deg Hybrid Inputs

Color Bar Corresponds to RSS Color Offset = 0, Color Gain = 1



Raw ADC Output Value & Color vs Antenna Temperature for 3.5 dB Feed Loss

Color Bar Corresponds to RSS Color Offset = 0, Color Gain = 1



LGM FSX-1S (12-bit) Spectrograph Step Calibration

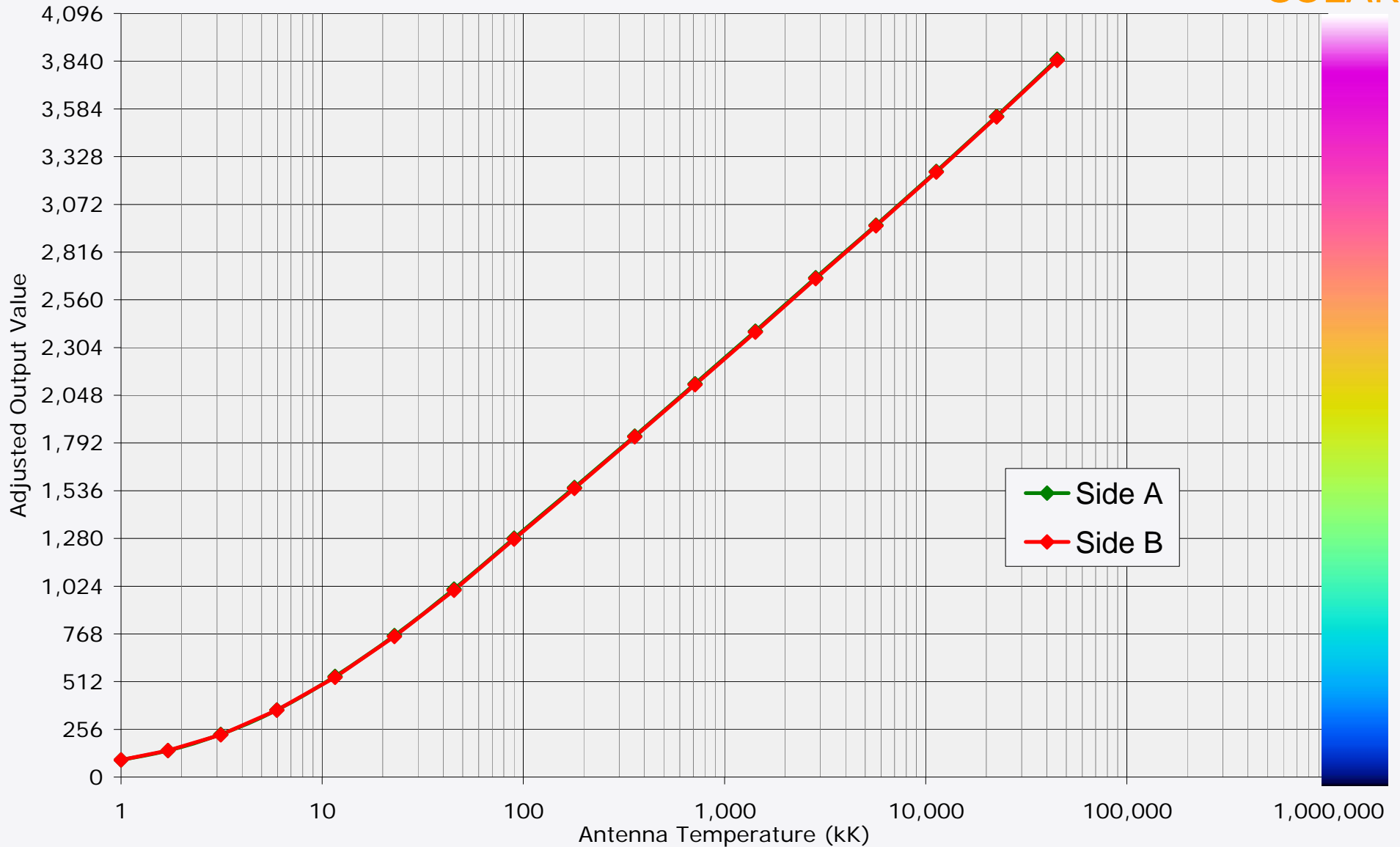
19-Dec-2015 17:29 UTC

	Side A		Side B
Offset:	1800	Offset:	1800
Gain:	1.80	Gain:	1.80

Adjusted Output Value & Color vs Antenna Temperature for 3.5 dB Feed Loss

Color Bar Corresponds to RSS Color Offset = 1800, Color Gain = 1.80

SOLAR

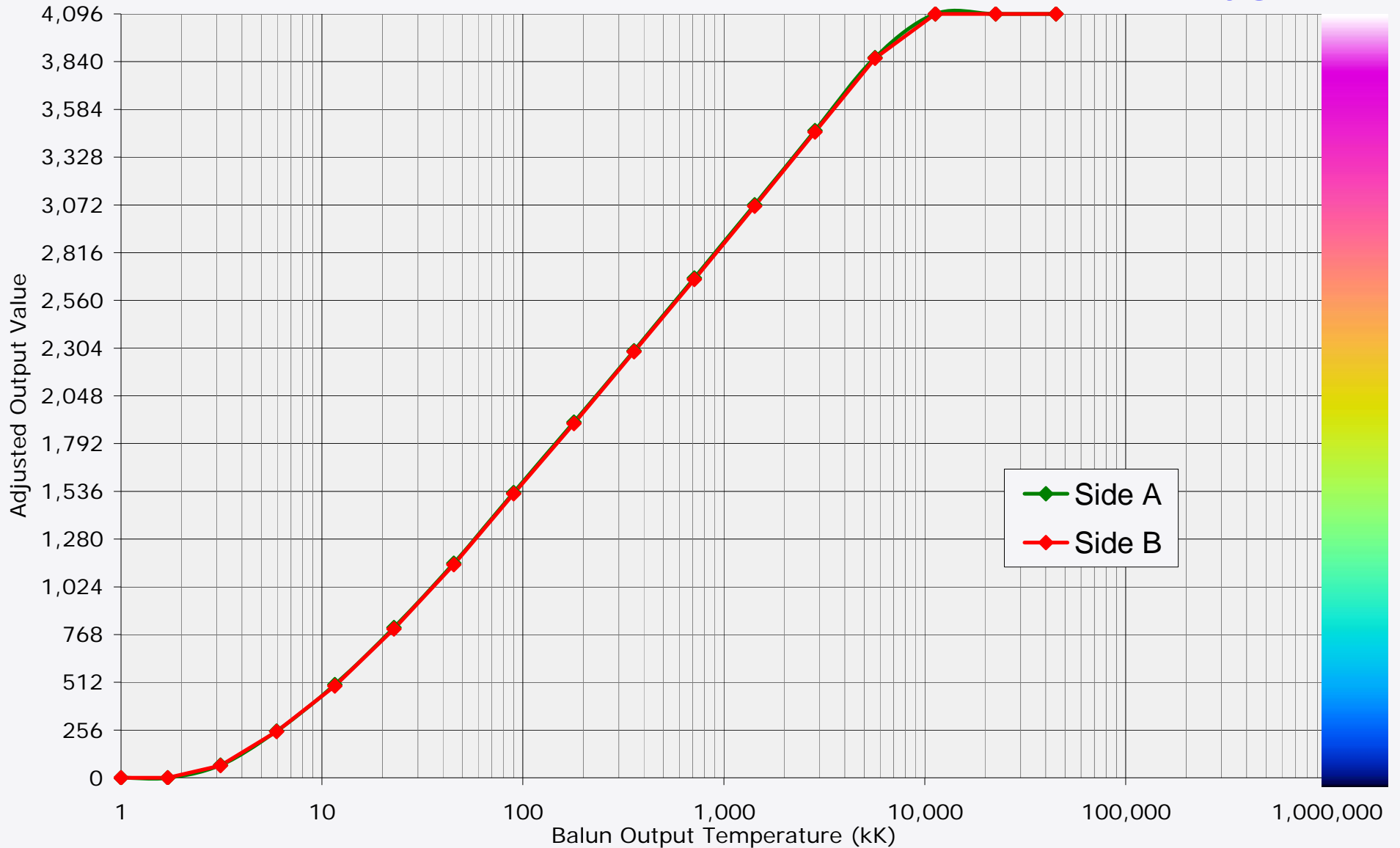


	Side A		Side B
Offset:	1900	Offset:	1900
Gain:	2.50	Gain:	2.50

Adjusted Output Value & Color vs Antenna Temperature for 3.5 dB Feed Loss

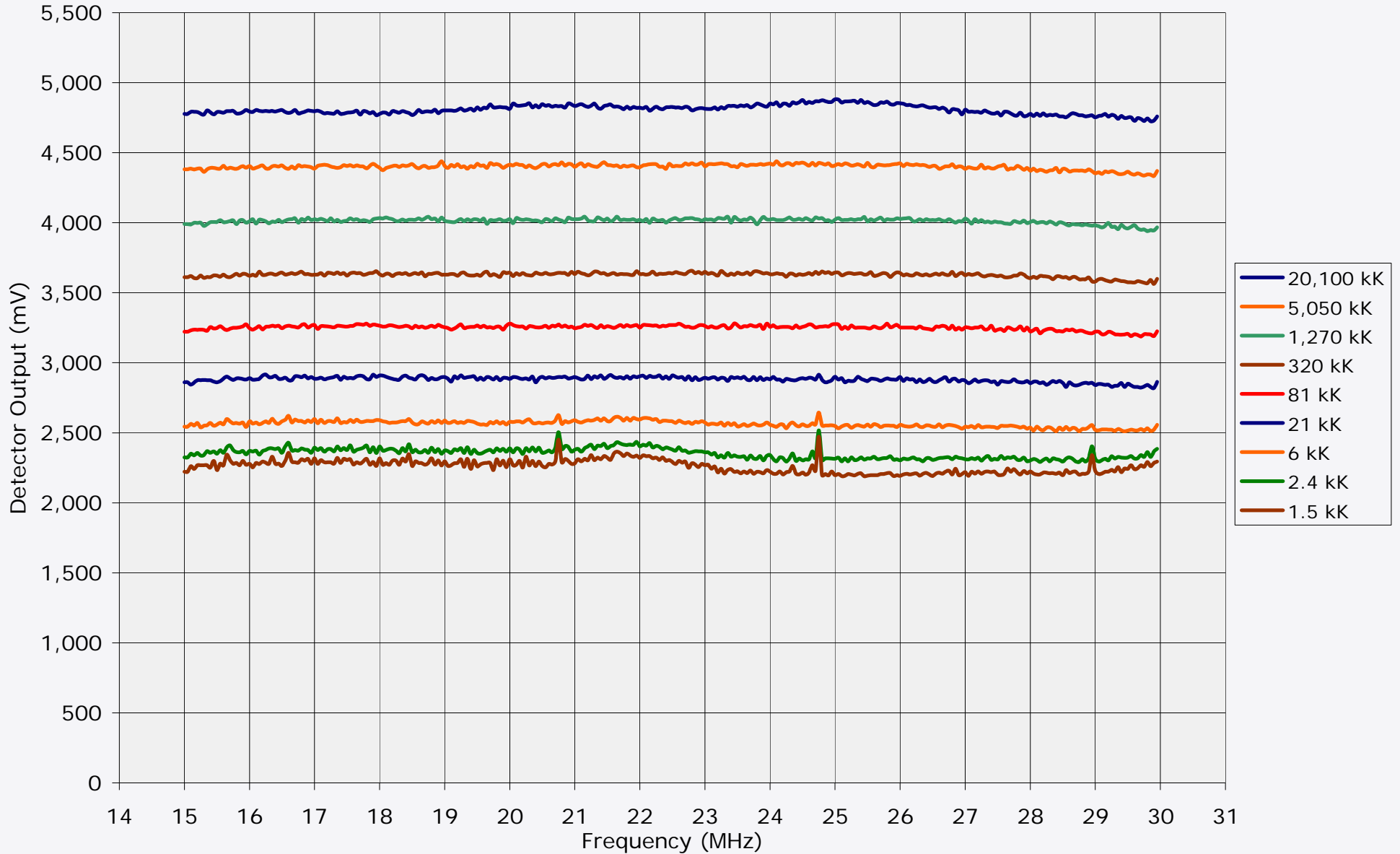
Color Bar Corresponds to RSS Color Offset = 1900, Color Gain = 2.50

JUPITER



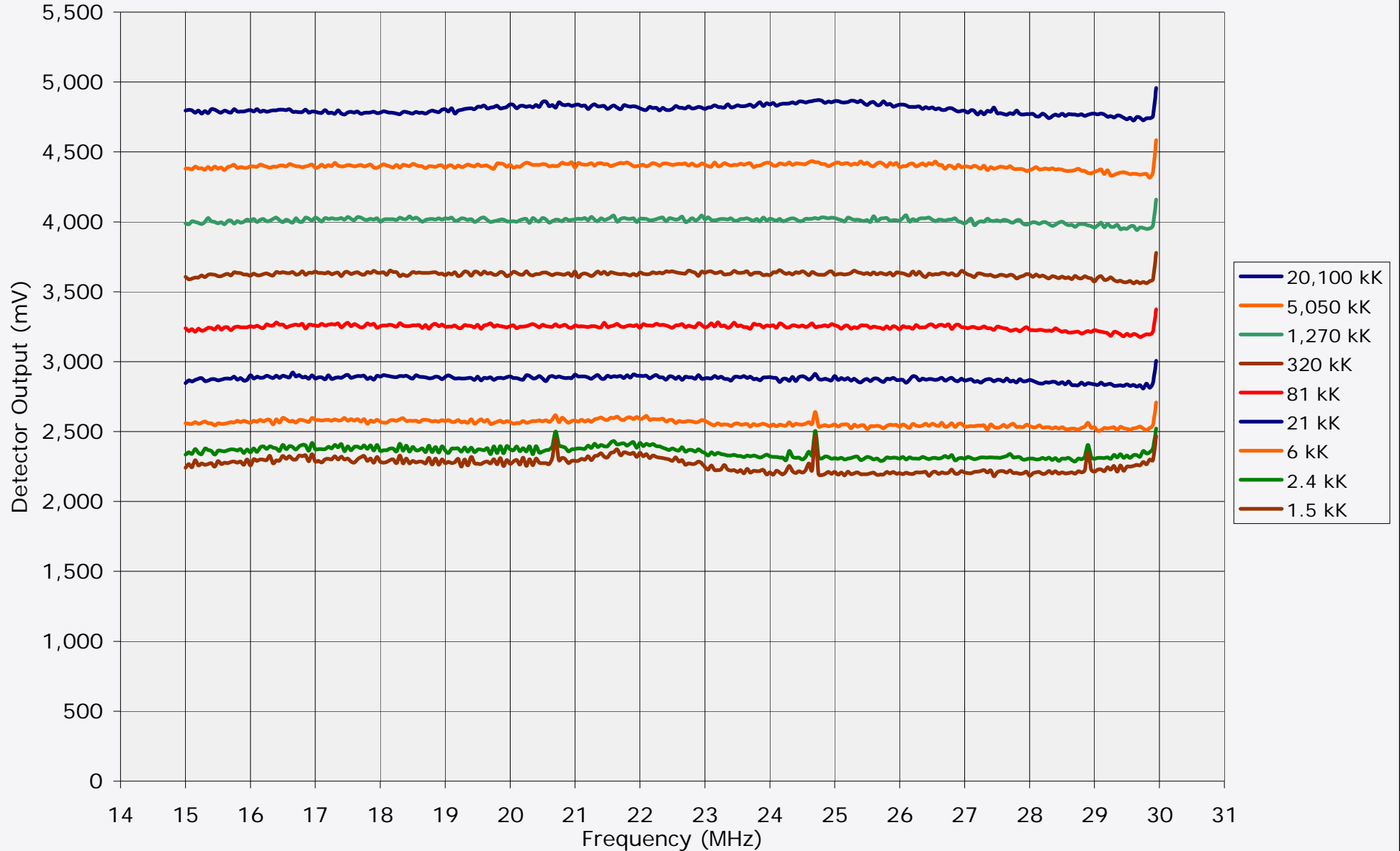
Side A Detector Output vs Frequency vs Temperature Observed at 90 Deg Hybrid Inputs

ADC Voltage Reference = 5 V Receiver Noise Figure = 6 dB



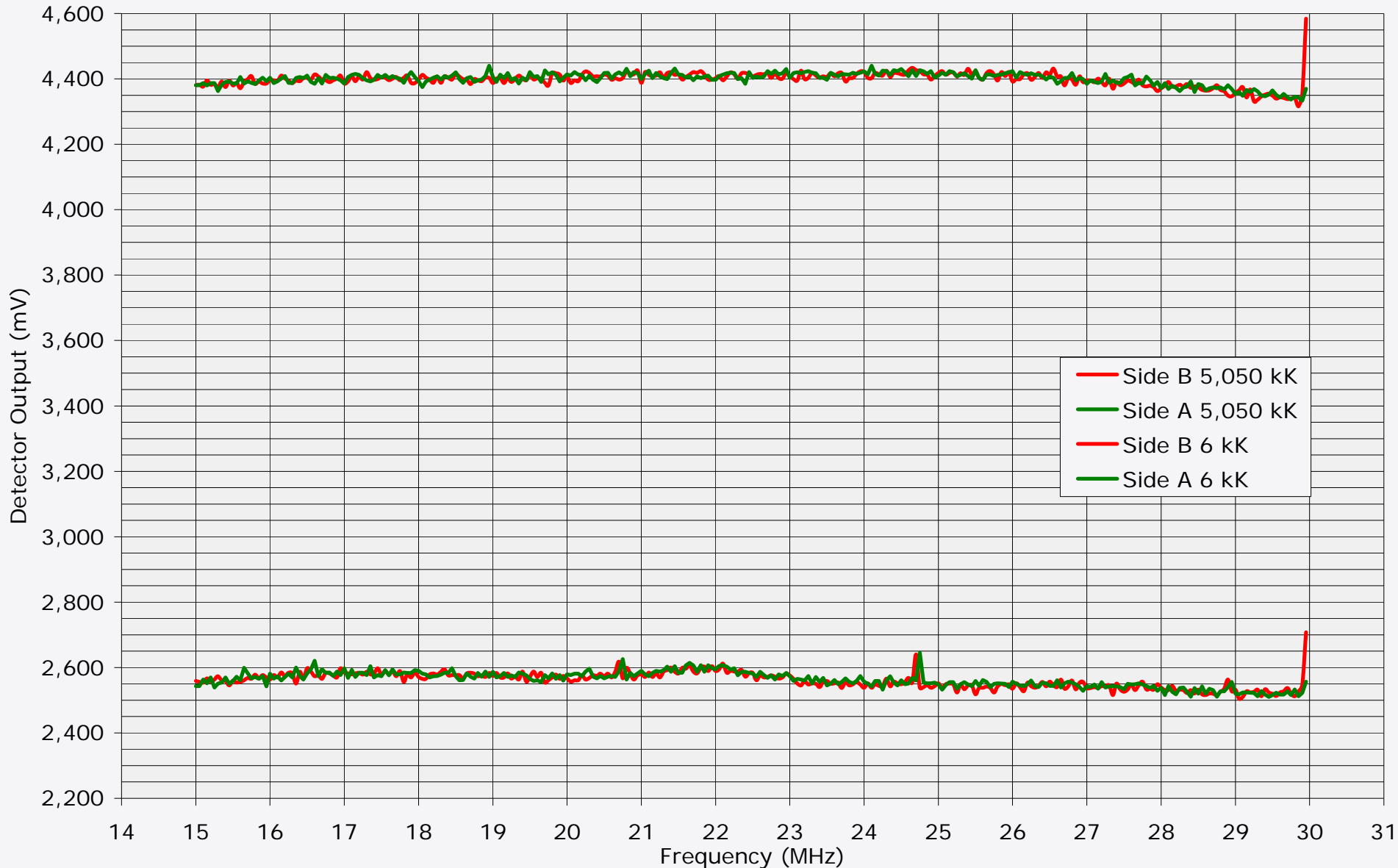
Side B Detector Output vs Frequency vs Temperature Observed at 90 Deg Hybrid Inputs

ADC Voltage Reference = 5 V Receiver Noise Figure = 6 dB

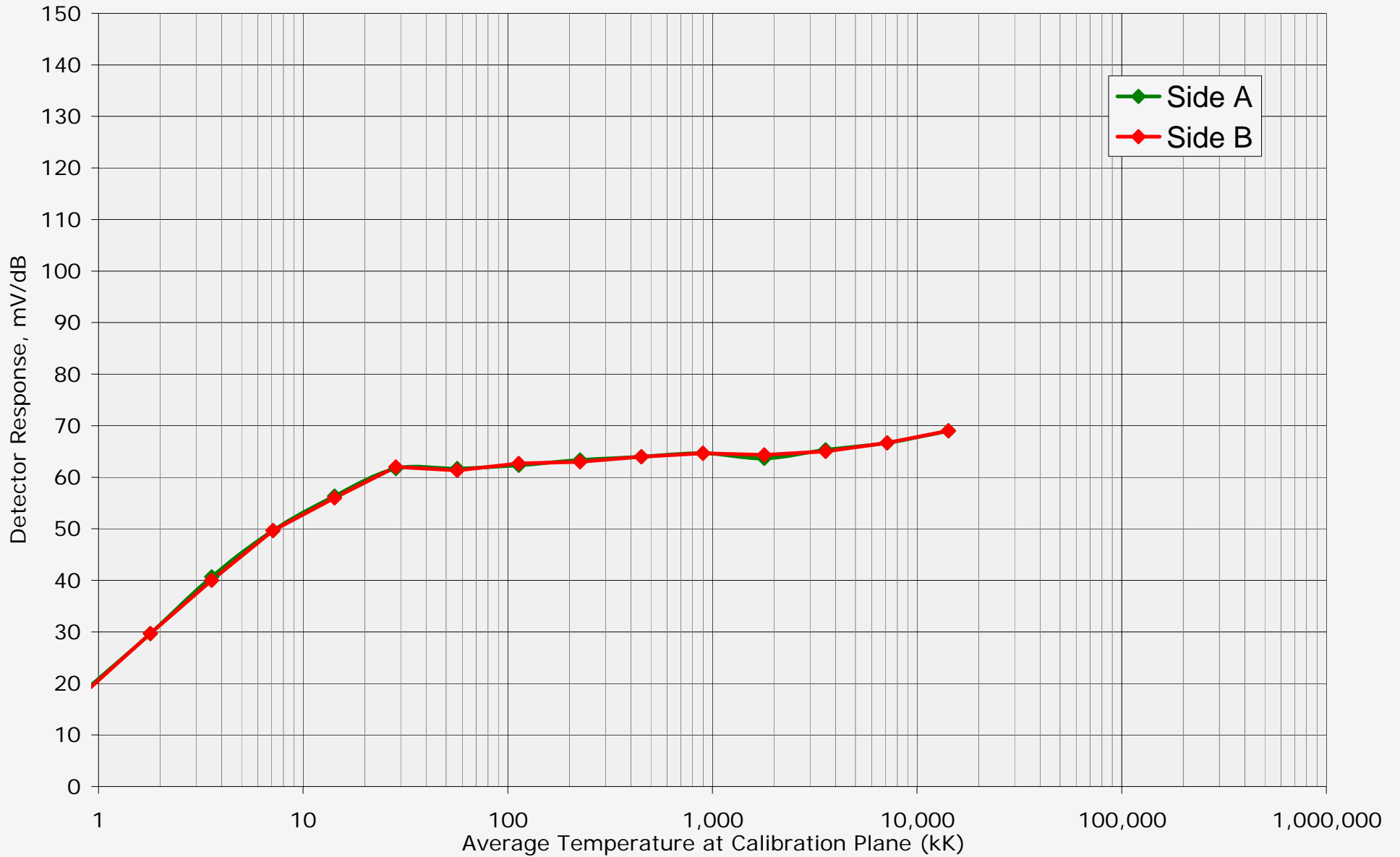


Side A & B Detector Output vs Frequency vs Temperature Observed at 90 Deg Hybrid Inputs

ADC Voltage Reference = 5 V Receiver Noise Figure = 6 dB



Detector Response Averaged Over Adjacent 3 dB Calibration Steps



Side B – Side A Response Mismatch

