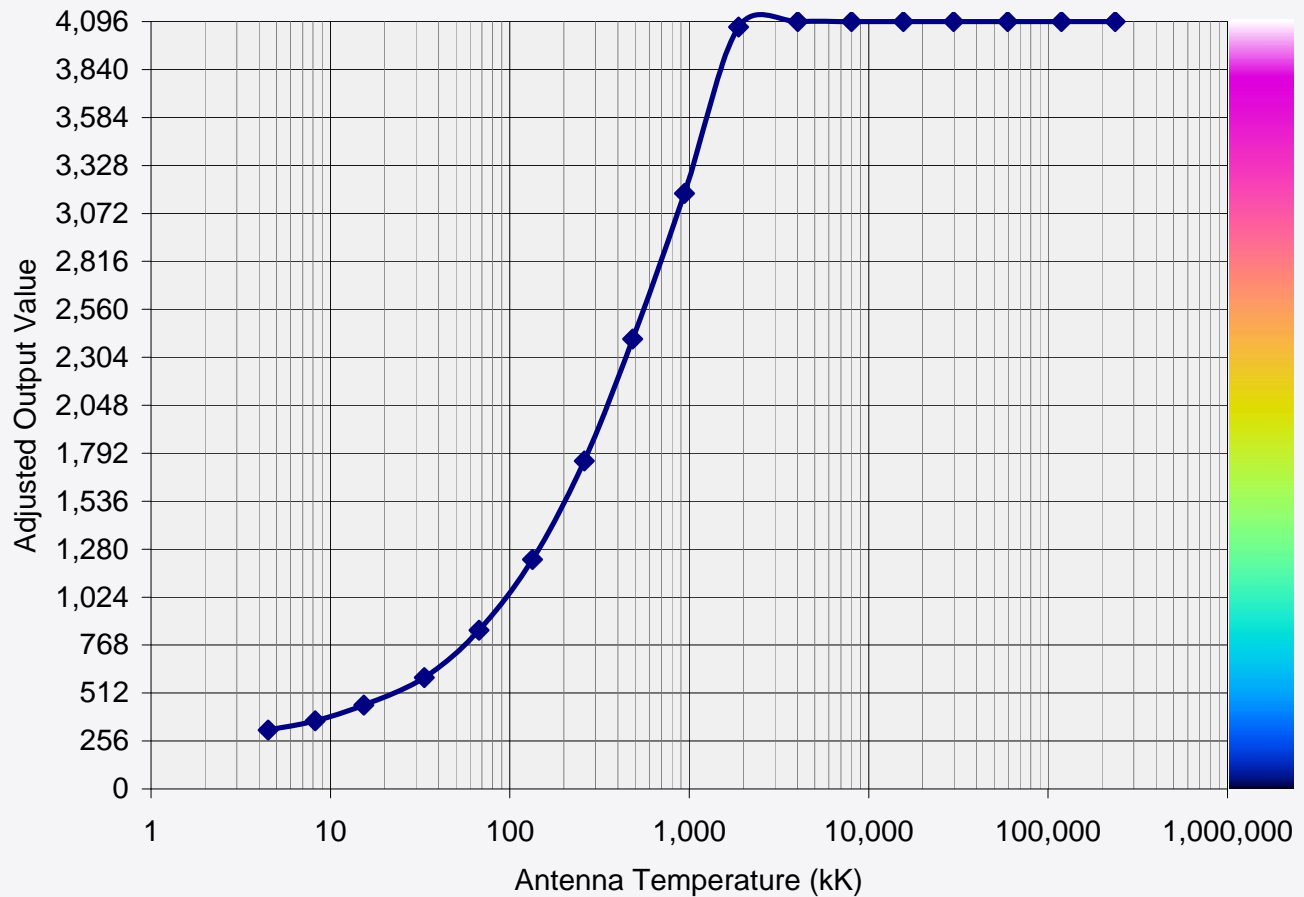


## TWB (12-bit) Spectrograph Step Calibration – 20-Dec-2013

Adjusted Output Value & Color vs Antenna Temperature for 5.5 dB Feed Loss

Color Bar Corresponds to RSS Color Offset = 1035, Color Gain = 7.00

Adjusted Output Value = (FFT Output Value - Color Offset) \* Color Gain



# TWB (12-bit) Spectrograph Step Calibration

20-Dec-2013 22:15 UTC

HP461A noise source + Kay 431D step attenuator

Calibration Plane: MC-A Input

T0 (K)	290
Noise source temperature (MK)	68.2
Feed loss, cal plane to antenna (dB)	5.5
Receiver noise figure (dB)	8.0

RSS Color Offset:	1035	1035	0.00	0.00
RSS Color Gain:	3.20	7.00	1.00	1.00

Solar

Jupiter

Custom 1

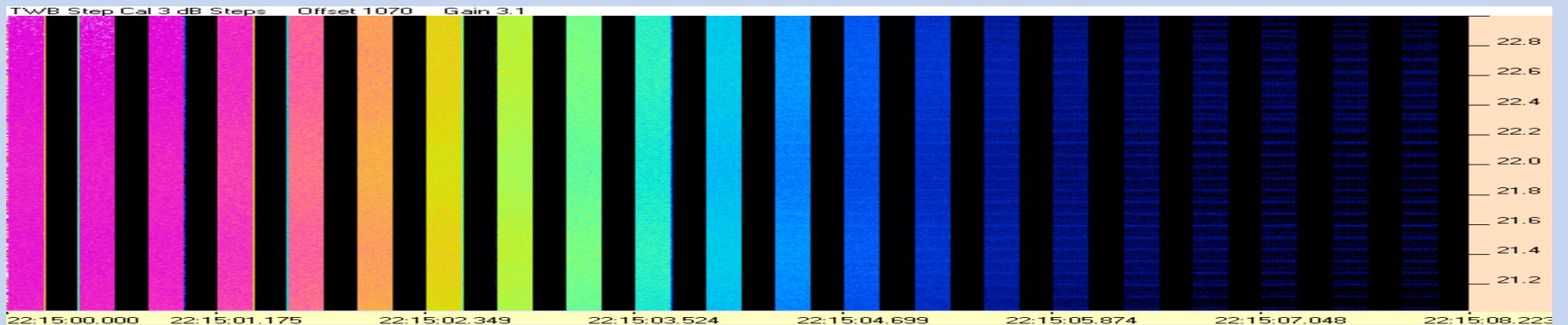
Custom 2



Att. dB	Source Temp (kK)	Equiv. Ant. Temp. (kK)	50 s Avg. @ Average MHz
0.1	66,649	236,475	2218
3.1	33,405	118,518	2222
6.1	16,743	59,400	2202
9.1	8,392	29,771	2136
11.9	4,405	15,624	2020
14.8	2,260	8,014	1880
17.8	1,134	4,017	1739
21.1	531	1,879	1616
24.1	267	942	1489
27.0	138	484	1378
29.7	75	260	1285
32.6	39	134	1210
35.6	21	67	1156
38.7	11	33	1120
42.2	6	15	1099
45.1	4	8	1087
48.1	3	4	1080

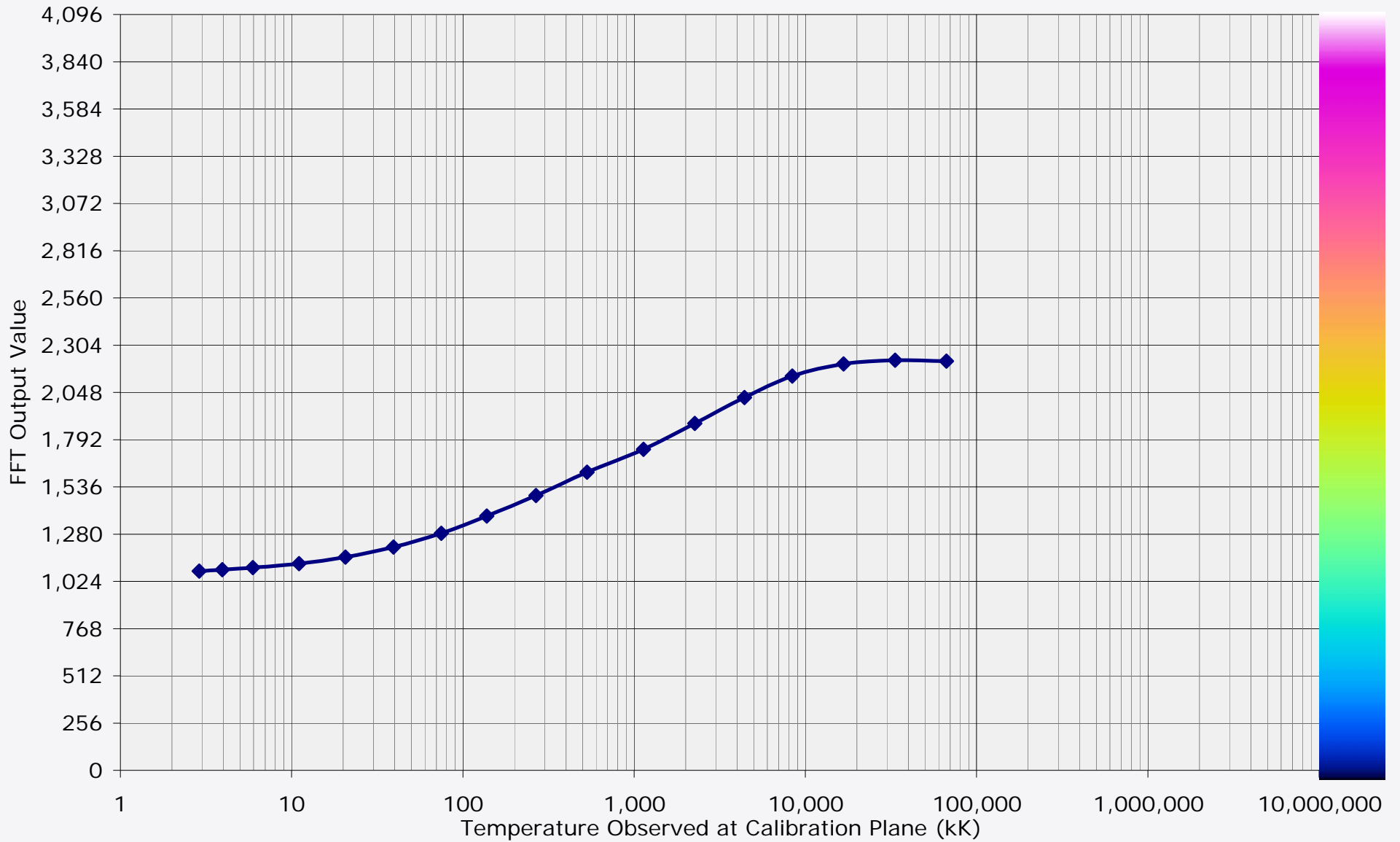
Adjusted Value	Adjusted Value	Adjusted Value	Adjusted Value
3786	4096	2218	2218
3798	4096	2222	2222
3734	4096	2202	2202
3523	4096	2136	2136
3152	4096	2020	2020
2704	4096	1880	1880
2253	4096	1739	1739
1859	4067	1616	1616
1453	3178	1489	1489
1098	2401	1378	1378
800	1750	1285	1285
560	1225	1210	1210
387	847	1156	1156
272	595	1120	1120
205	448	1099	1099
166	364	1087	1087
144	315	1080	1080

Image Below  
Offset: 1070  
Gain: 3.1



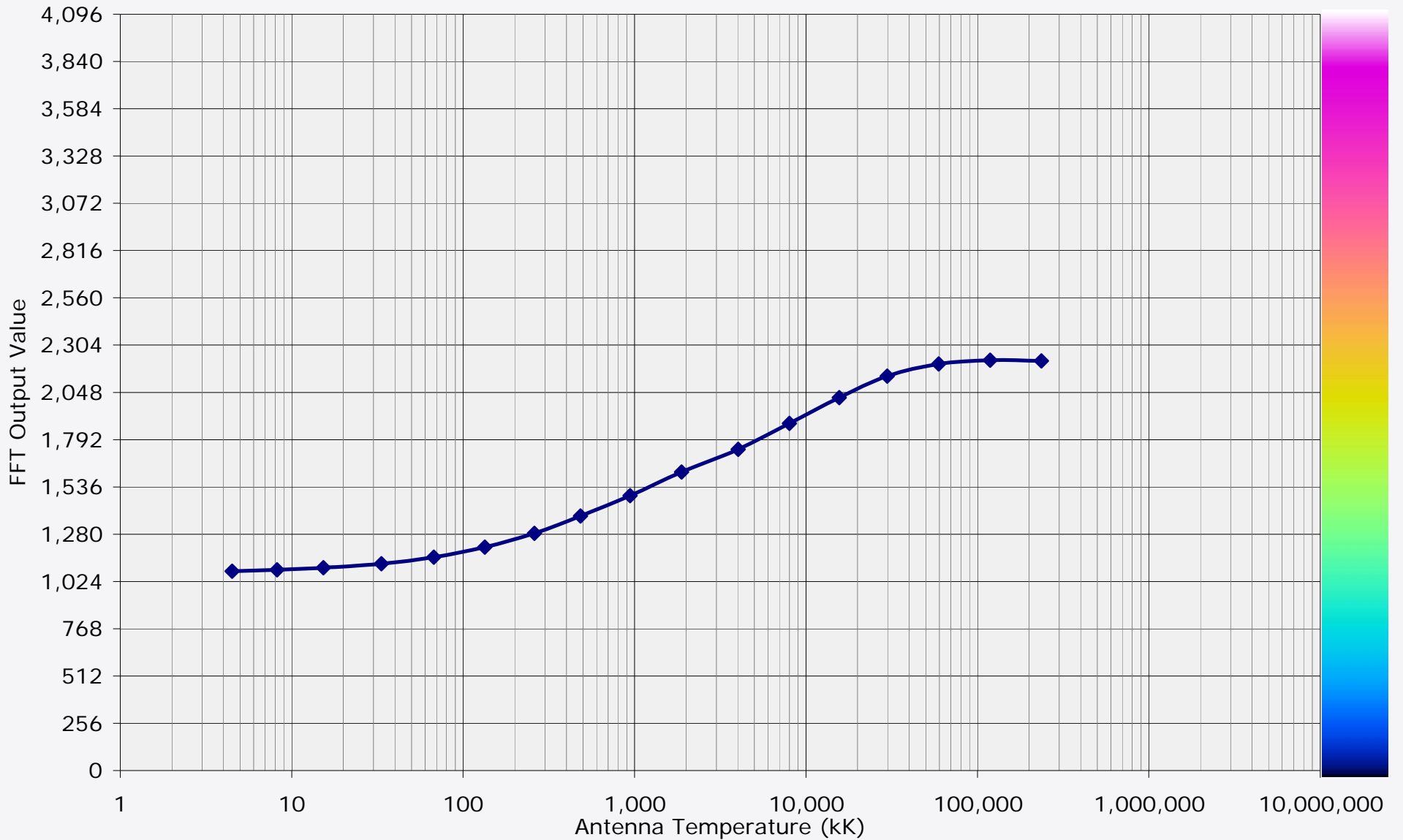
Raw ADC Output Value & Color vs Temperature Observed at MC-A Input

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



Raw ADC Output Value & Color vs Antenna Temperature for 5.5 dB Feed Loss

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



# TWB (12-bit) Spectrograph Step Calibration

20-Dec-2013 22:15 UTC

Radio-Sky Spectrograph Configuration:

Offset: 1035

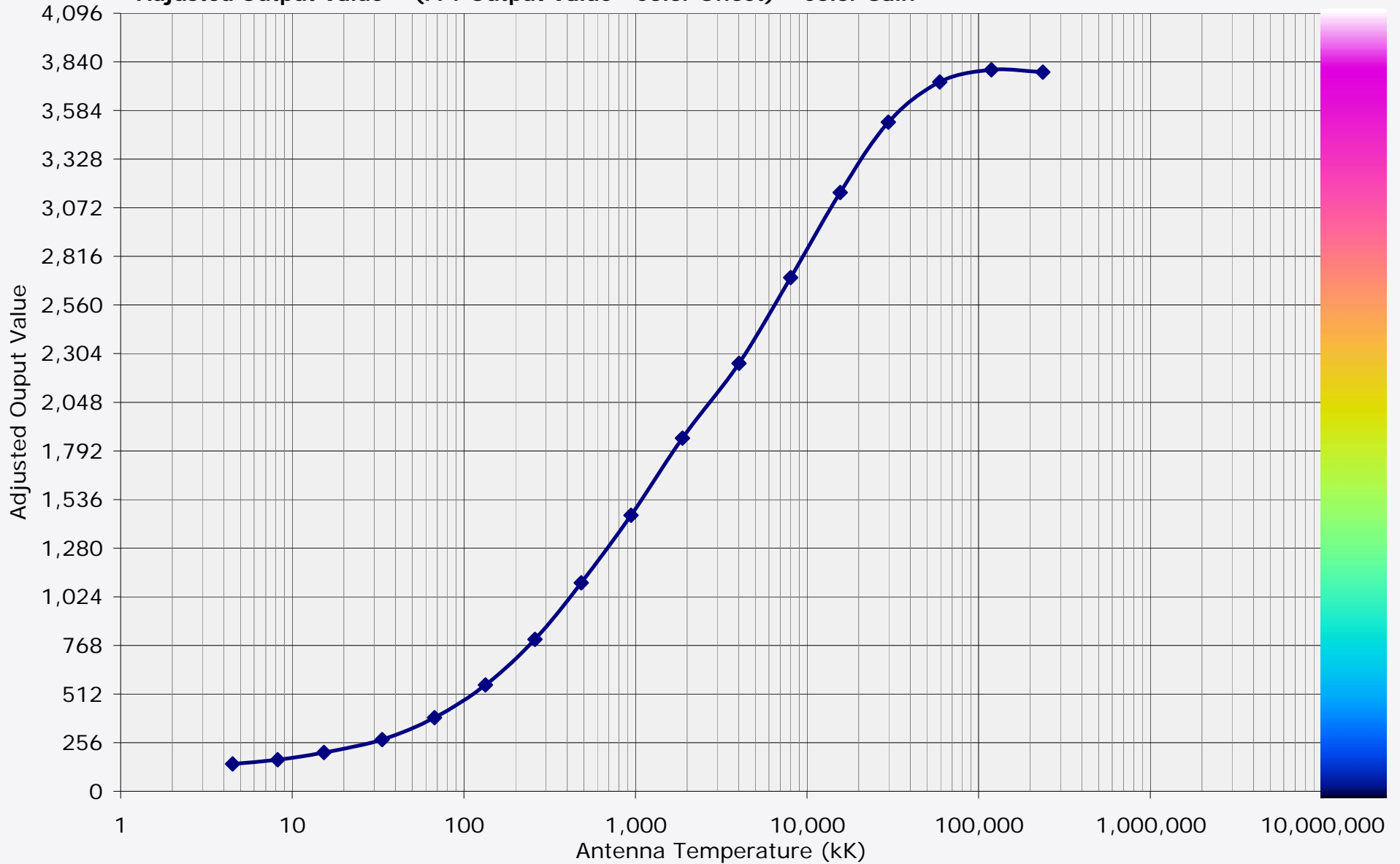
Gain: 3.20

**Adjusted Output Value & Color vs Antenna Temperature for 5.5 dB Feed Loss**

Color Bar Corresponds to RSS Color Offset = 1035, Color Gain = 3.20

Adjusted Output Value = (FFT Output Value - Color Offset) \* Color Gain

SOLAR



# TWB (12-bit) Spectrograph Step Calibration

20-Dec-2013 22:15 UTC

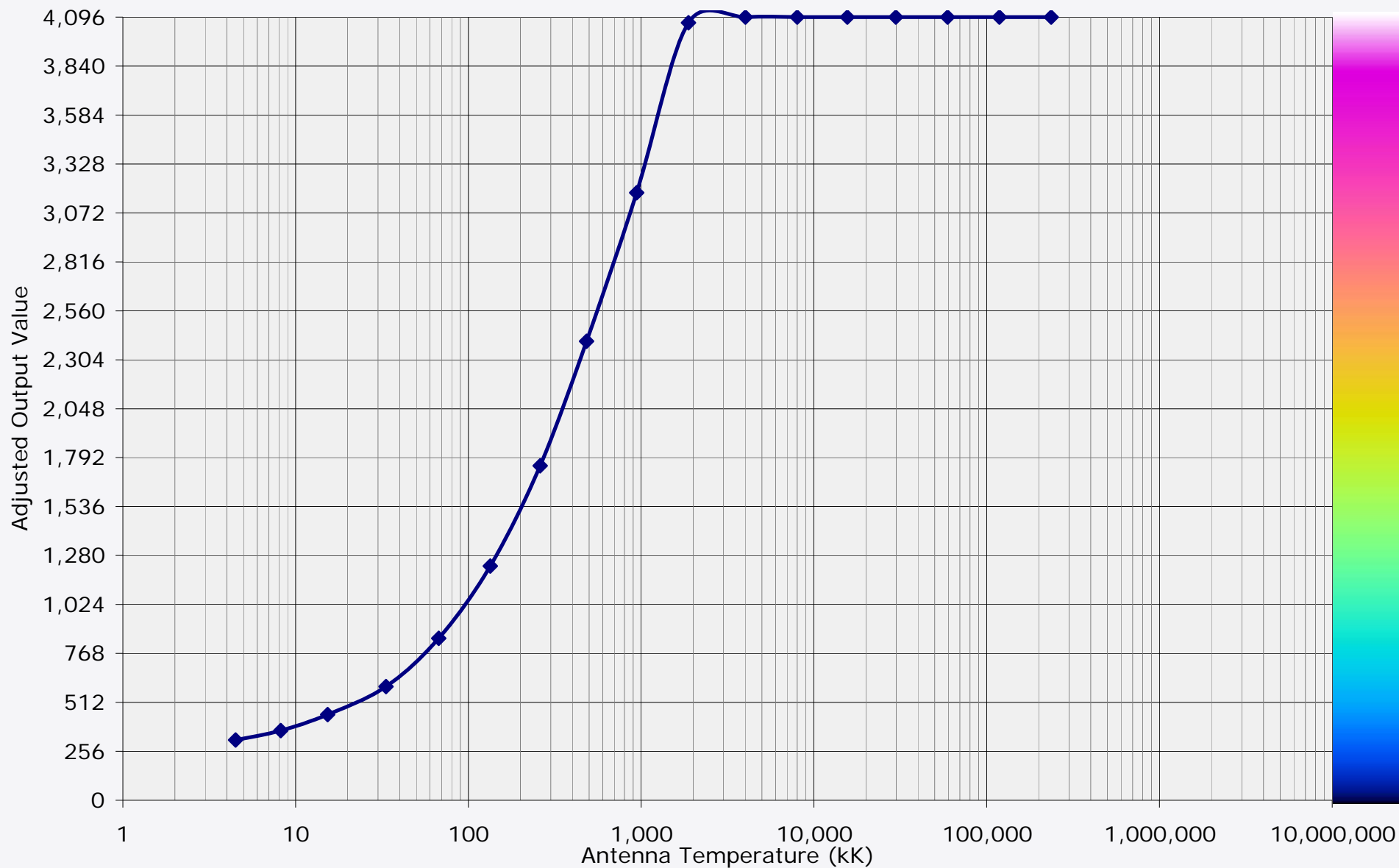
Radio-Sky Spectrograph Configuration:

Offset: 1035

Gain: 7.00

TWB (12-bit) Spectrograph Step Calibration – 20-Dec-2013  
Adjusted Output Value & Color vs Antenna Temperature for 5.5 dB Feed Loss

JUPITER



# TWB (12-bit) Spectrograph Step Calibration

20-Dec-2013 22:15 UTC

Radio-Sky Spectrograph Configuration:

Offset: 0

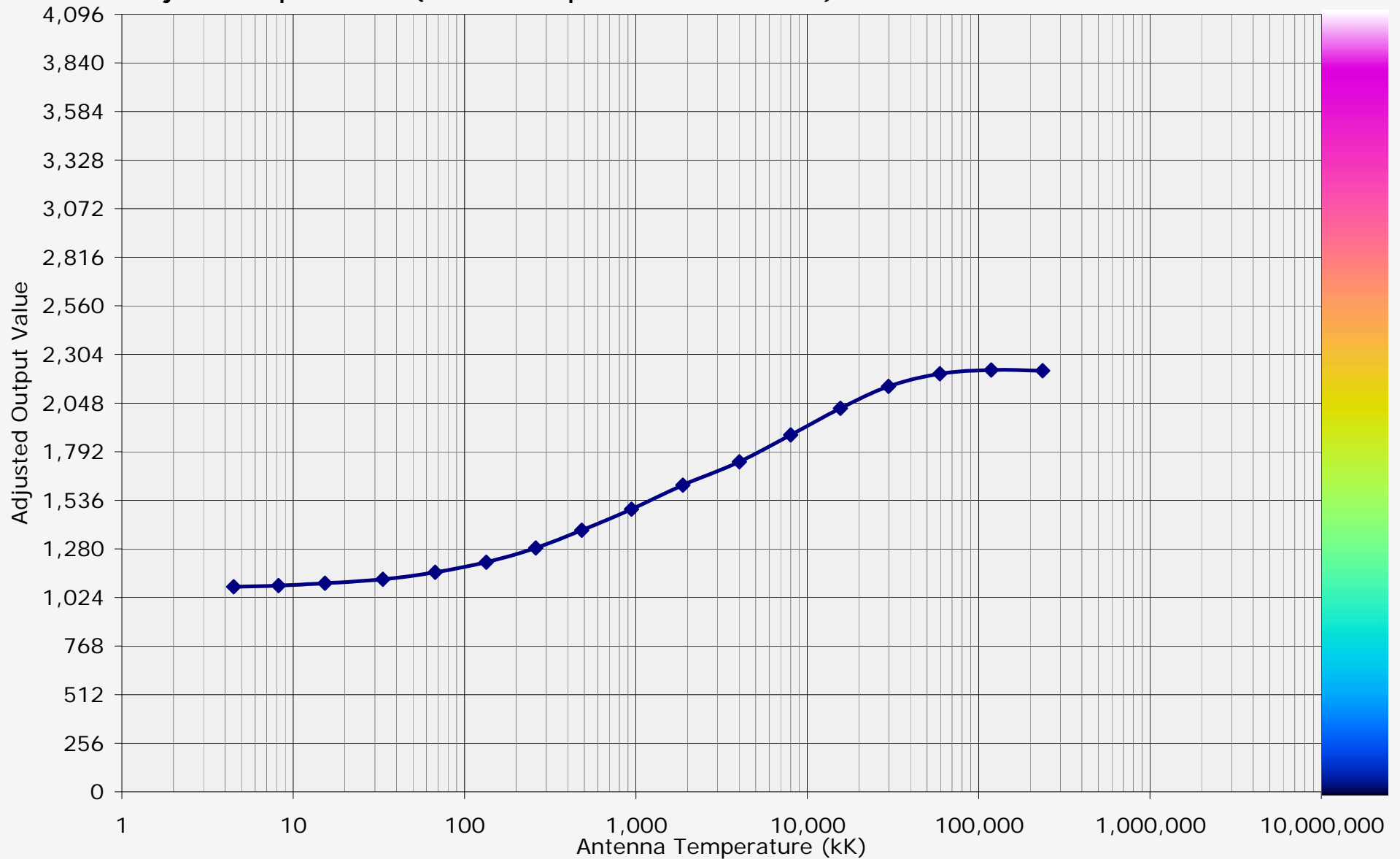
Gain: 1.00

Adjusted Output Value & Color vs Antenna Temperature for 5.5 dB Feed Loss

Color Bar Corresponds to RSS Color Offset = 0, Color Gain = 1.00

Adjusted Output Value = (Raw ADC Output Value - Color Offset) \* Color Gain

CUSTOM 1



# TWB (12-bit) Spectrograph Step Calibration

20-Dec-2013 22:15 UTC

Radio-Sky Spectrograph Configuration:

Offset: 0

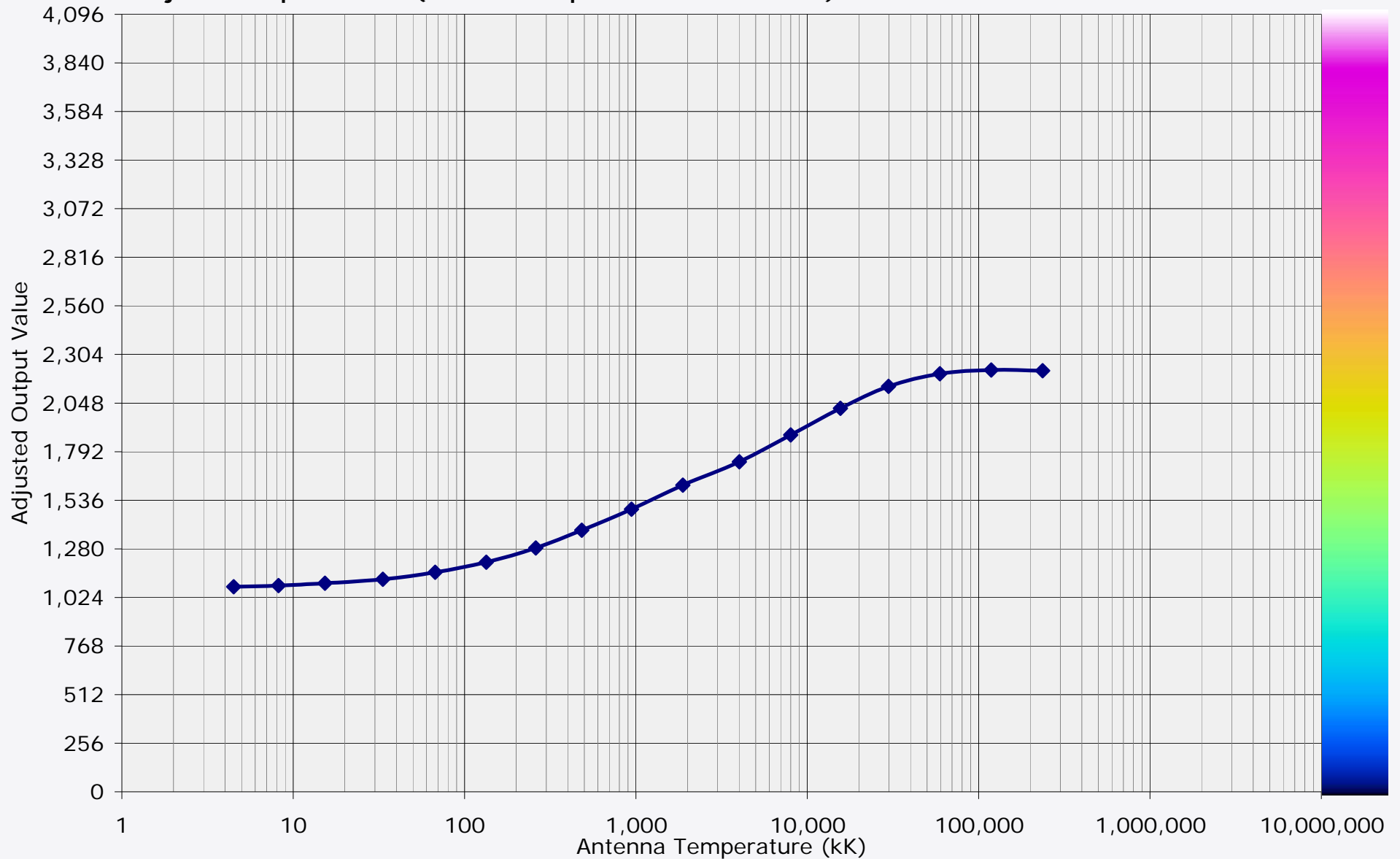
Gain: 1.00

Adjusted Output Value & Color vs Antenna Temperature for 5.5 dB Feed Loss

Color Bar Corresponds to RSS Color Offset = 0, Color Gain = 1.00

Adjusted Output Value = (Raw ADC Output Value - Color Offset) \* Color Gain

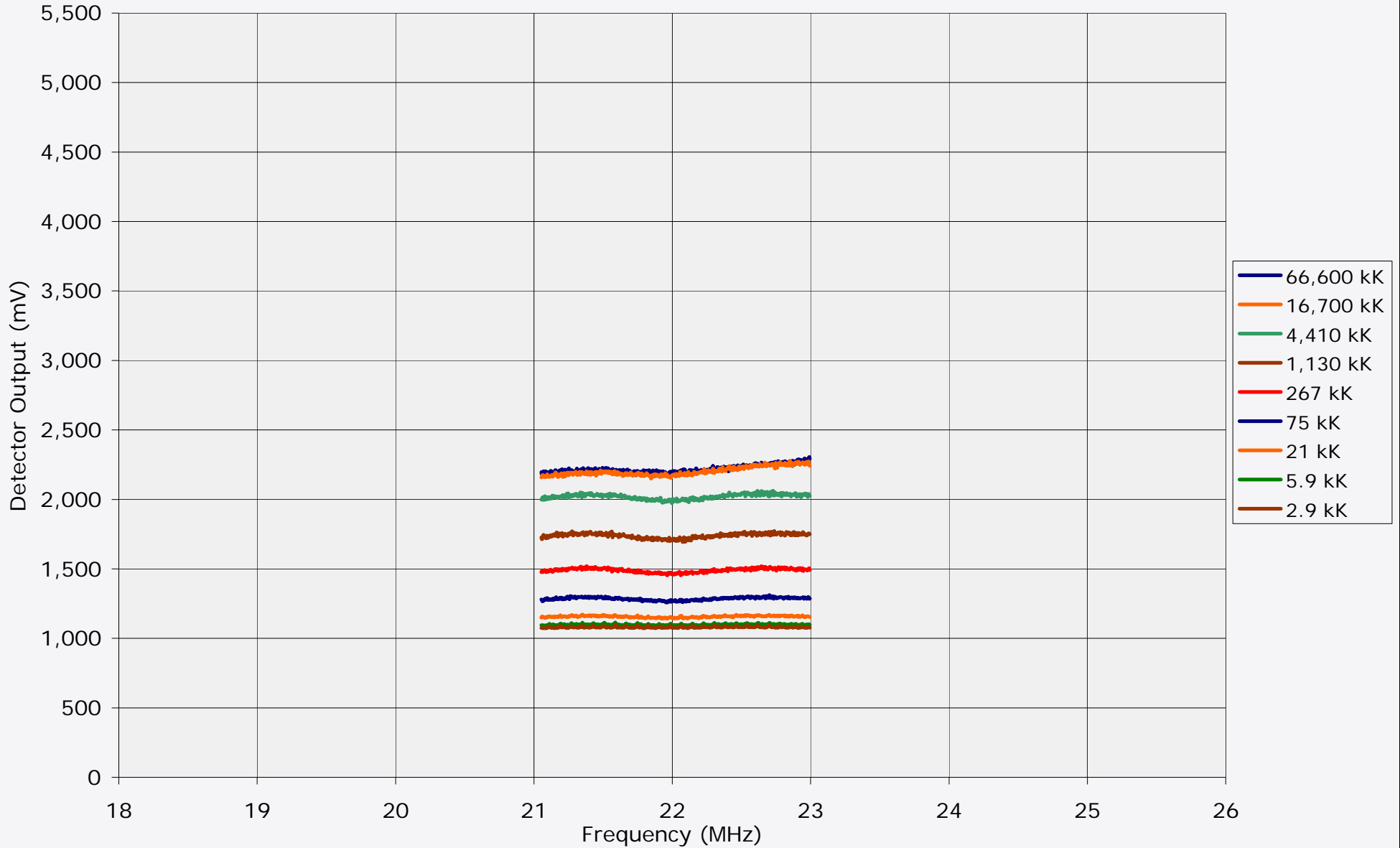
CUSTOM 2





## FFT Simulated Detector Output vs Frequency vs Temperature Observed at MC-A Input

ADC Voltage Reference = 4.096 V    Receiver Noise Figure = 8 dB



FFT Simulated Detector Response Averaged Over Adjacent 3 dB Calibration Steps

