

## Wideband Amplifier MITEQ AFS2-04001800-50-8P-2

Matthias, DD1US, August 8<sup>th</sup> 2022

Recently I bought second hand a wide band amplifier from MITEQ with the part number AFS2-04001800-50-8P-2.

I did not find any specifications on the internet so I had to rely on the nomenclature MITEQ is typically using:

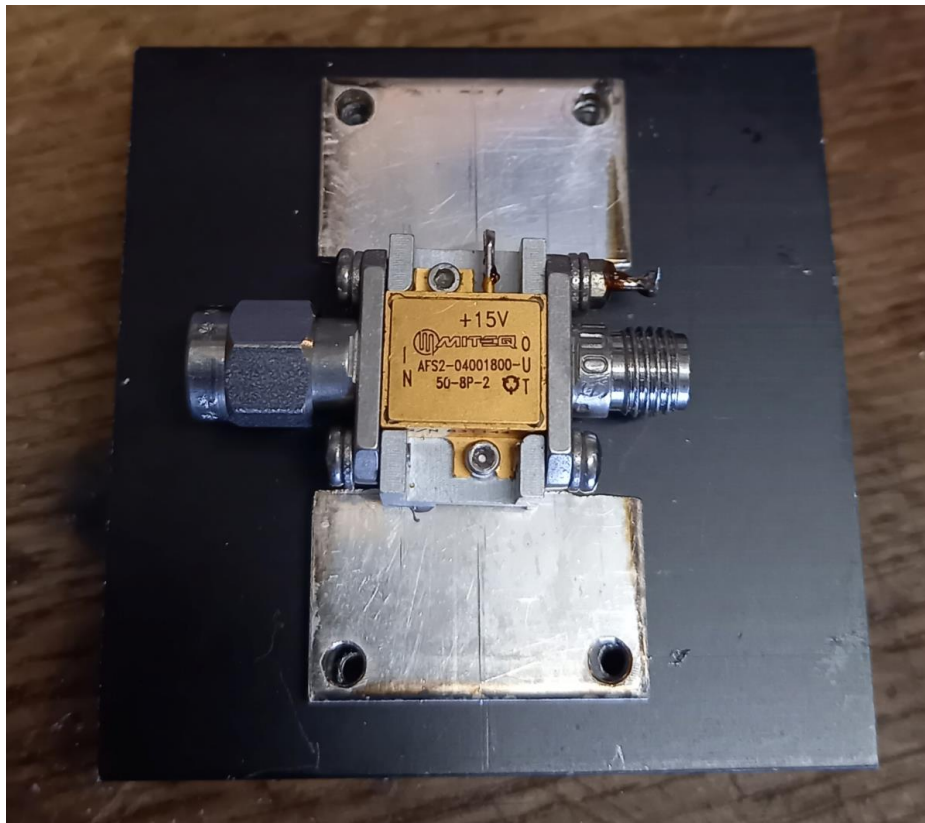
Model:	AFS2-04001800-50-8P-2
Serial number:	831144
Description:	Wideband Amplifier
Frequency Range:	4-18 GHz
Gain:	2 stage amplifier thus approx. 20 dB expected
Noise Figure:	5.0 dB
Output Power:	8 dBm
Supply Voltage:	15 V

My device has a current consumption of 66 mA at a supply voltage of 15 V.

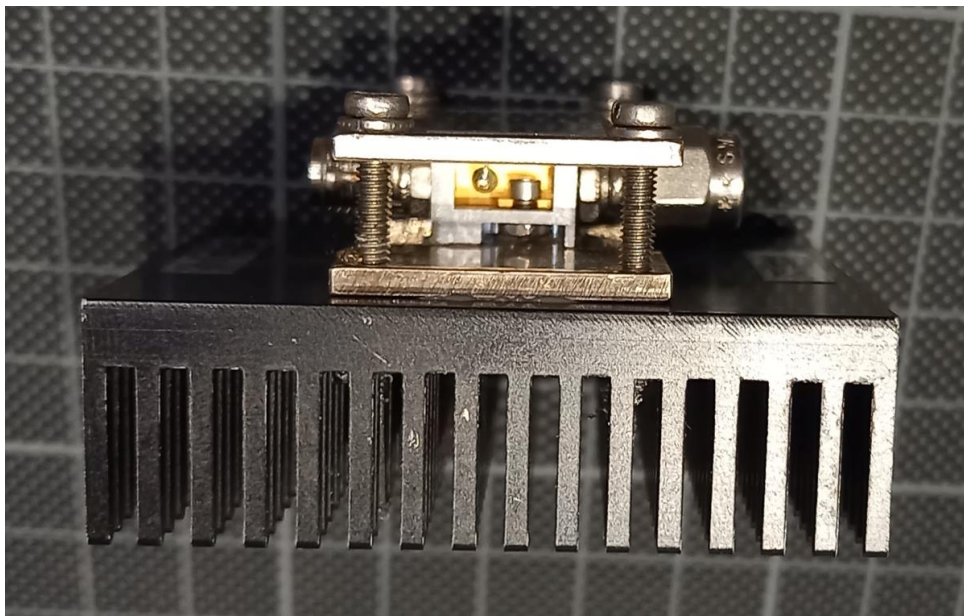
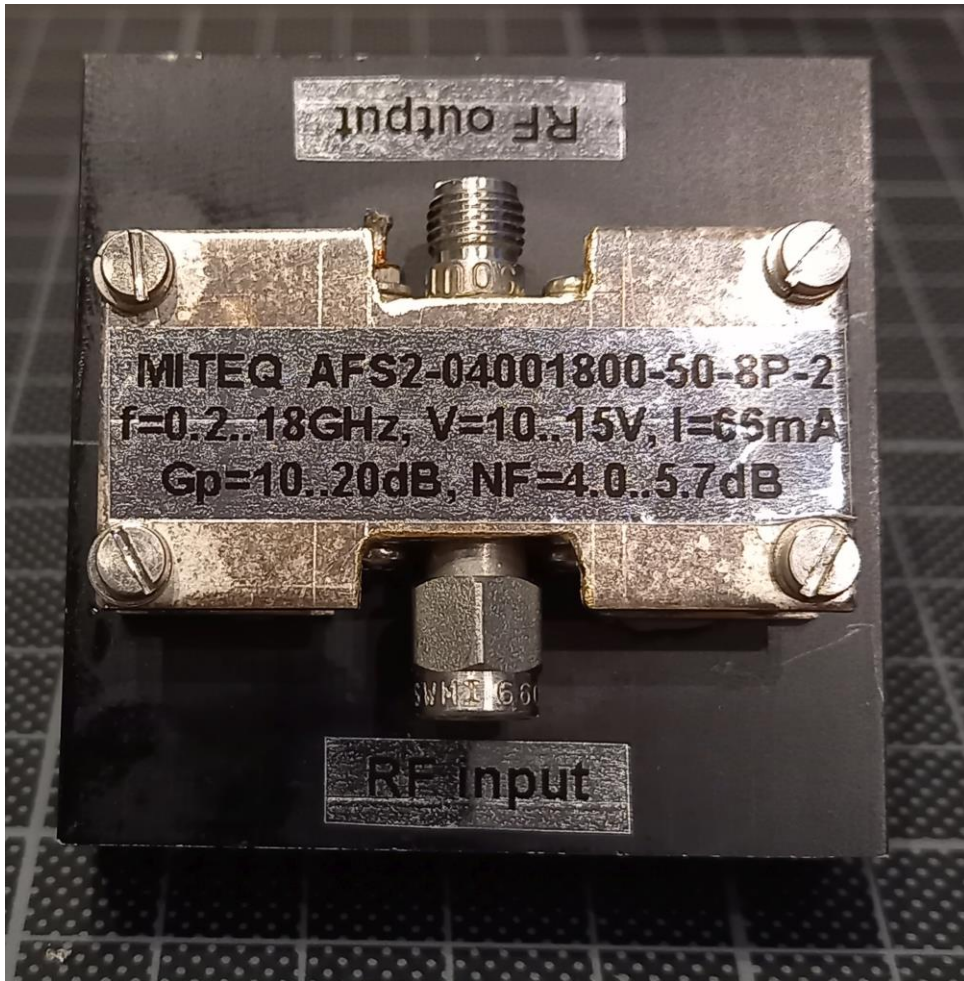
Input and output connectors are SMA jacks.

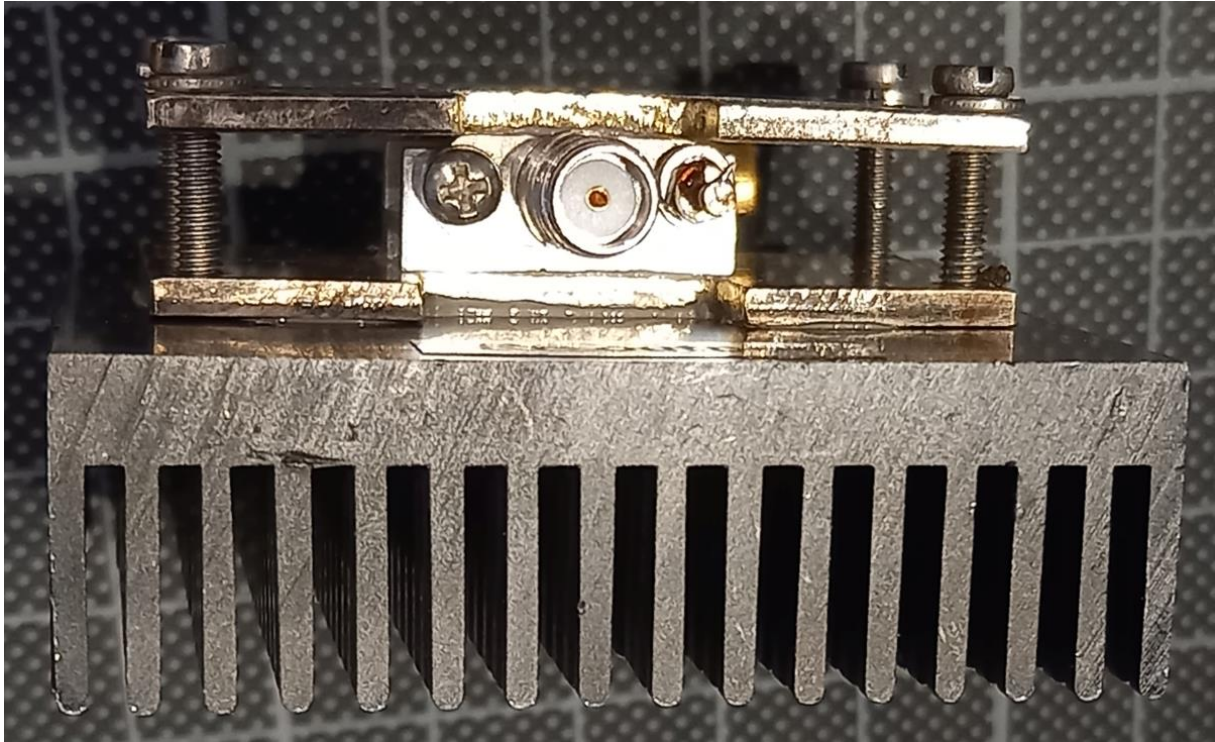
I attached a heat sink to the amplifier to avoid getting it too warm as this certainly degrades not only the lifetime but also performance, especially the noise figure.

Here are some pictures:

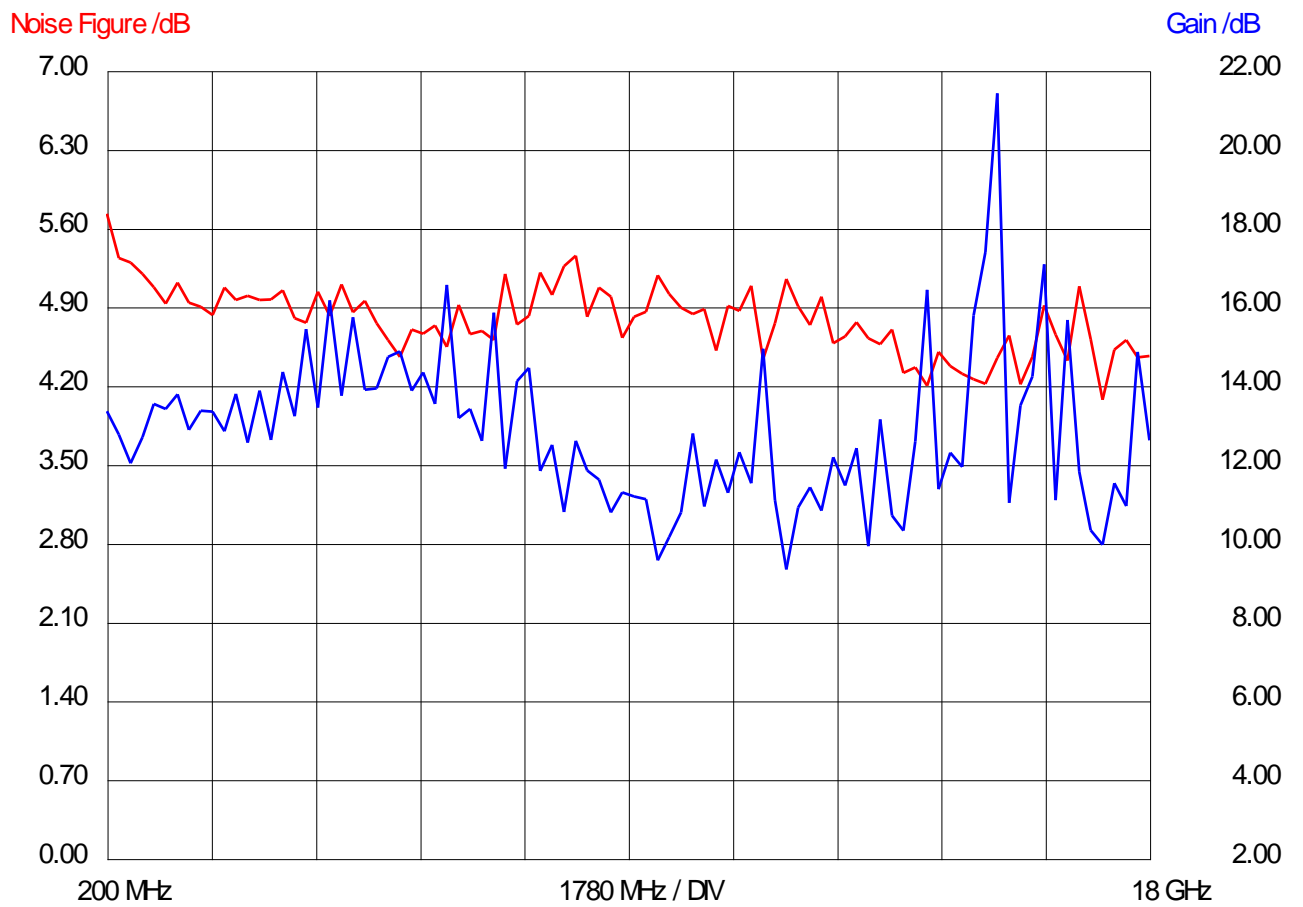


In the picture above the metal cover is missing which helps to clamp the amplifier to the main heatsink below. The clamp itself also acts as an additional heatsink.





First, I measured gain (blue) and noise figure (red) of the device in the range from 200 MHz up to 18 GHz at the nominal supply voltage of 15 V. The current consumption was 66 mA.



Below please find a table with the corresponding measurement values:

Frequency	Gain/dB	NF/dB	Frequency	Gain/dB	NF/dB
200 MHz	13.36	5.73	3600 MHz	15.44	4.76
400 MHz	12.77	5.33	3800 MHz	13.45	5.04
600 MHz	12.04	5.30	4000 MHz	16.17	4.82
800 MHz	12.70	5.19	4200 MHz	13.75	5.10
1000 MHz	13.54	5.07	4400 MHz	15.74	4.85
1200 MHz	13.41	4.93	4600 MHz	13.90	4.95
1400 MHz	13.79	5.12	4800 MHz	13.93	4.75
1600 MHz	12.88	4.94	5000 MHz	14.73	4.61
1800 MHz	13.37	4.90	5200 MHz	14.87	4.46
2000 MHz	13.34	4.83	5400 MHz	13.87	4.70
2200 MHz	12.84	5.07	5600 MHz	14.34	4.66
2400 MHz	13.80	4.96	5800 MHz	13.54	4.74
2600 MHz	12.56	5.00	6000 MHz	16.56	4.55
2800 MHz	13.87	4.96	6200 MHz	13.18	4.92
3000 MHz	12.63	4.97	6400 MHz	13.42	4.66
3200 MHz	14.35	5.05	6600 MHz	12.60	4.69
3400 MHz	13.22	4.80	6800 MHz	15.86	4.61

Frequency	Gain /dB	NF /dB	Frequency	Gain /dB	NF /dB
7000 MHz	11.90	5.19	13.8 GHz	10.33	4.31
7200 MHz	14.12	4.74	14 GHz	12.59	4.36
7400 MHz	14.45	4.82	14.2 GHz	16.43	4.20
7600 MHz	11.83	5.21	14.4 GHz	11.38	4.50
7800 MHz	12.50	5.01	14.6 GHz	12.30	4.37
8000 MHz	10.79	5.26	14.8 GHz	11.94	4.31
8200 MHz	12.60	5.36	15 GHz	15.79	4.26
8400 MHz	11.85	4.81	15.2 GHz	17.39	4.22
8600 MHz	11.62	5.07	15.4 GHz	21.42	4.45
8800 MHz	10.79	4.99	15.6 GHz	11.03	4.65
9000 MHz	11.29	4.63	15.8 GHz	13.50	4.21
9200 MHz	11.19	4.81	16 GHz	14.24	4.46
9400 MHz	11.13	4.86	16.2 GHz	17.08	4.91
9600 MHz	9.57	5.18	16.4 GHz	11.10	4.66
9800 MHz	10.16	5.02	16.6 GHz	15.67	4.42
10 GHz	10.78	4.90	16.8 GHz	11.82	5.08
10.2 GHz	12.79	4.84	17 GHz	10.34	4.62
10.4 GHz	10.93	4.88	17.2 GHz	9.97	4.08
10.6 GHz	12.13	4.51	17.4 GHz	11.53	4.52
10.8 GHz	11.28	4.91	17.6 GHz	10.94	4.61
11 GHz	12.31	4.87	17.8 GHz	14.86	4.45
11.2 GHz	11.52	5.09	18 GHz	12.61	4.47
11.4 GHz	14.94	4.44			
11.6 GHz	11.10	4.76			
11.8 GHz	9.34	5.15			
12 GHz	10.91	4.91			
12.2 GHz	11.43	4.74			
12.4 GHz	10.83	4.99			
12.6 GHz	12.19	4.58			
12.8 GHz	11.47	4.64			
13 GHz	12.42	4.77			
13.2 GHz	9.93	4.62			
13.4 GHz	13.15	4.57			
13.6 GHz	10.71	4.70			

This amplifier shows a very high fluctuation in gain. Taking the excursion of more than 21 dB gain at 15.4 GHz out the gain still varies between 10 dB and 16 dB.

In comparison the noise figure between 200 MHz and 18 GHz is rather flat and between 4.2 dB and 5.6 dB.

I measured gain and noise figure over the same frequency range of 200 MHz to 18 GHz at a supply voltage of 12V and 10V and the results were basically identical. The current consumption at 12 V was still 66 mA. At 10 V the current consumption dropped to 63mA.

The optimum supply voltage range is probably 10 to 15 V.

I am always grateful to get feedback and will be happy to answer questions.

Please direct them to the Email address which you will find below.

Best regards

Matthias DD1US

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