

# Wideband Amplifier MITEQ AMF-5F-06001800-15-10P-E

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

Recently I acquired a wide band amplifier from MITEQ. The part number is AMF-5F-06001800-15-10P-E.

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

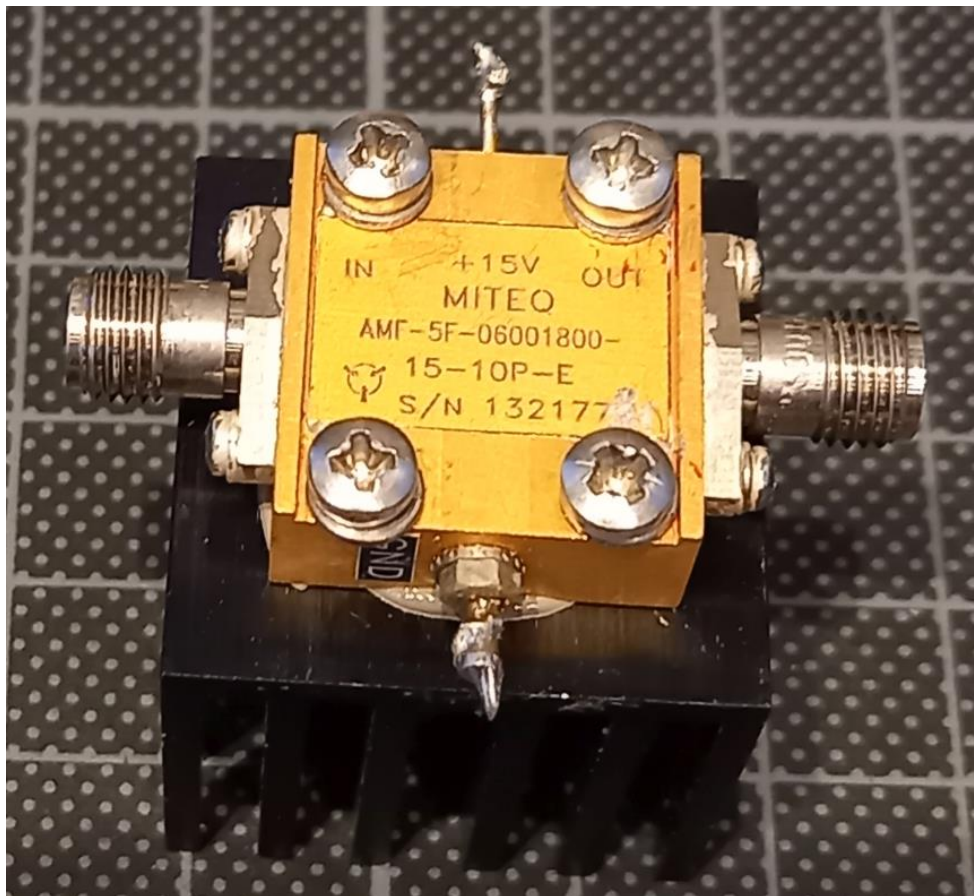
Model:	AMF-5F-06001800-15-10P-E
Serial number:	131277
Description:	Wideband Amplifier
Frequency Range:	6–18 GHz
Gain:	5 stage amplifier thus approx. 40 dB expected
Noise Figure:	1.5 dB
Output Power:	10 dBm
Supply Voltage:	15 V

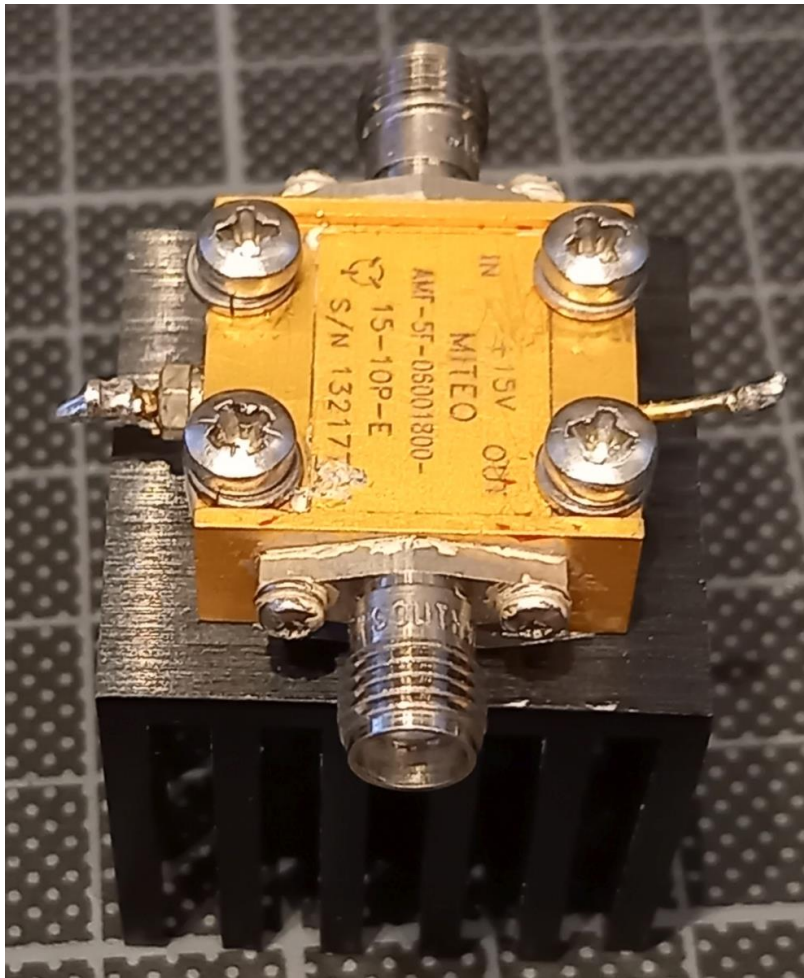
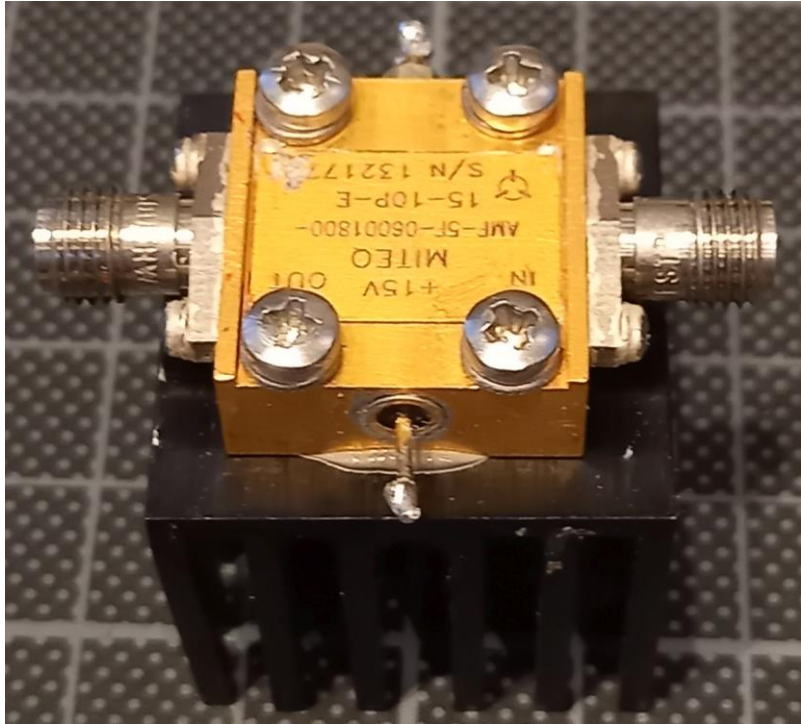
My device has a current consumption of 256 mA at a supply voltage of 15 V.

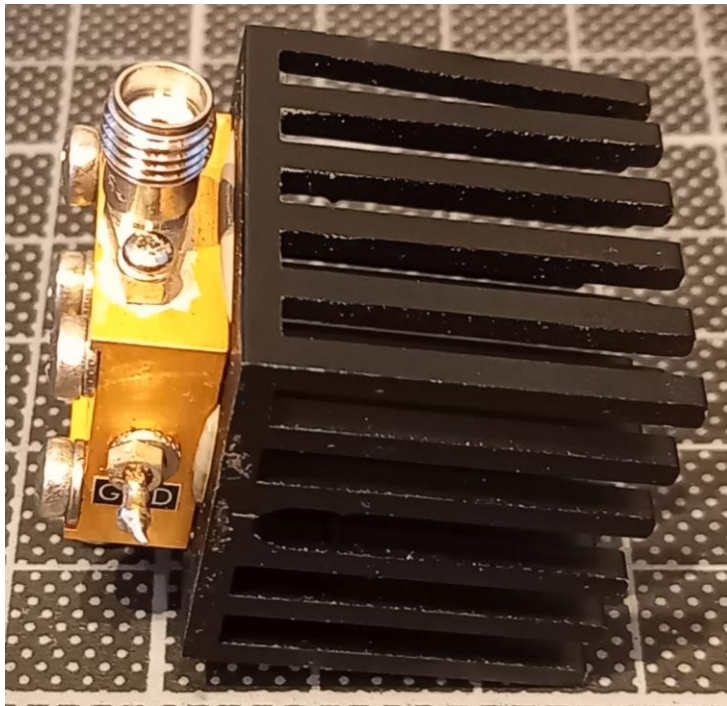
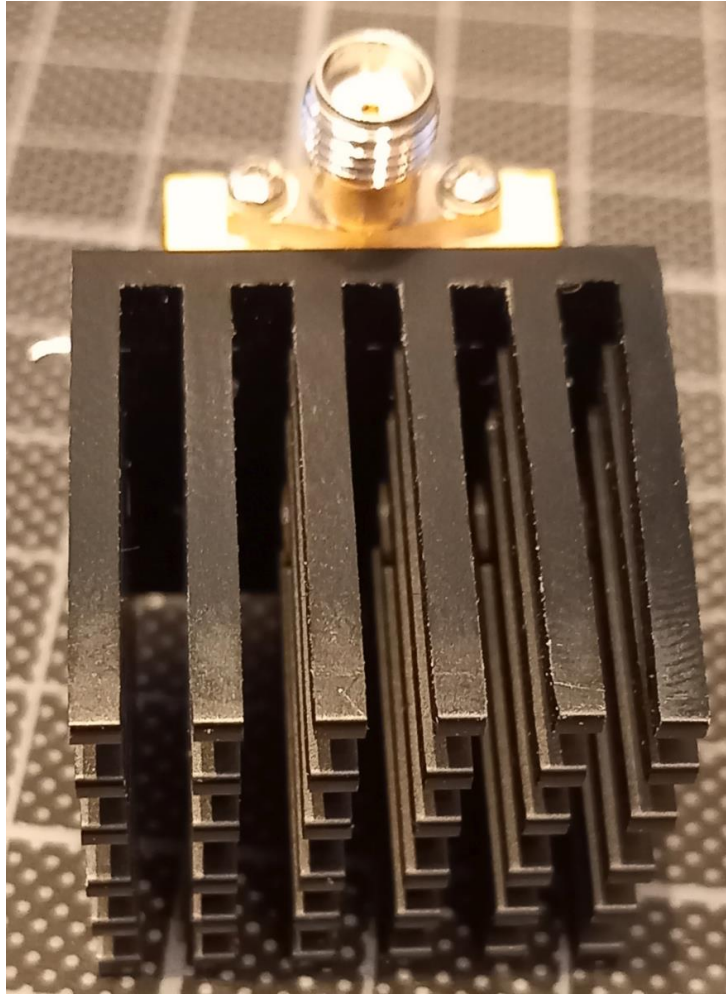
Input and output connectors are SMA jacks.

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.

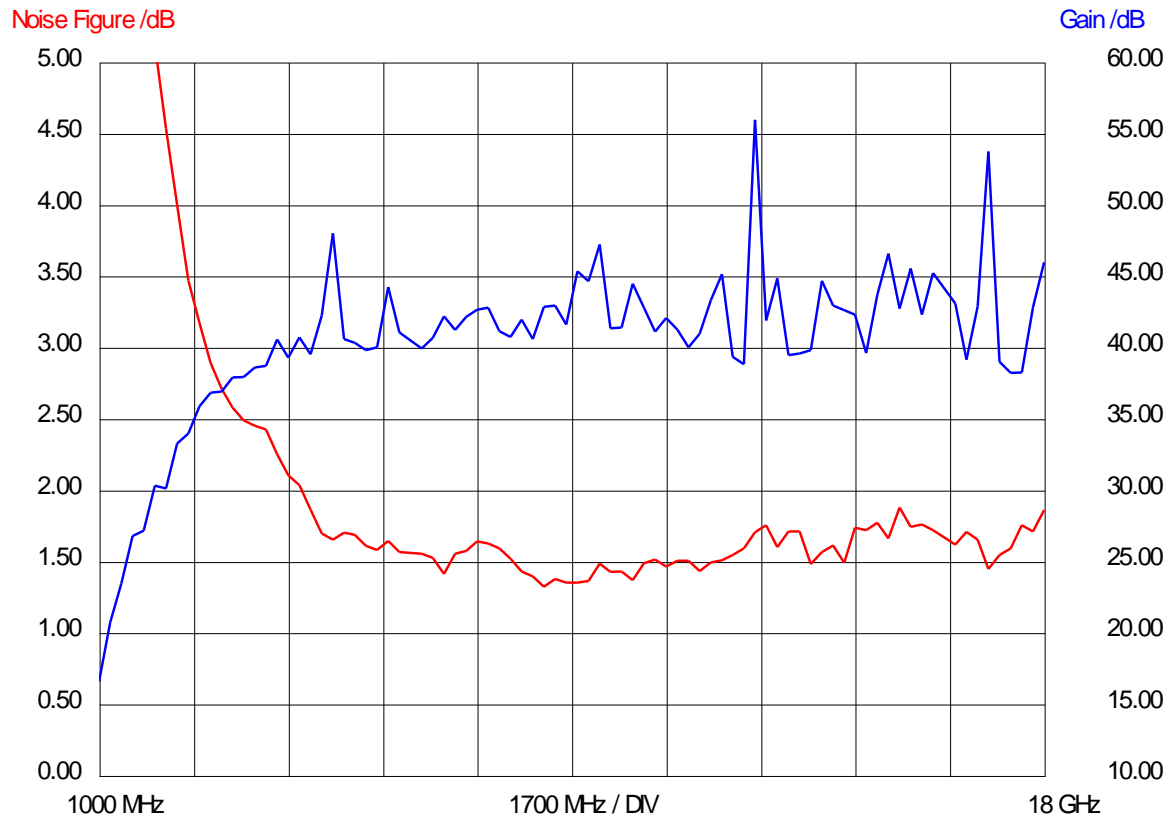
Here are some pictures:







First, I measured gain (blue) and noise figure (red) of the device in the range from 1 GHz up to 18 GHz at the nominal supply voltage of 15 V. The current consumption was 256mA.



Below please find a table with the corresponding measurement values:

Frequency	Gain /dB	NF /dB	Frequency	Gain /dB	NF /dB
1000 MHz	16.58	11.07	4400 MHz	39.29	2.10
1200 MHz	20.74	9.26	4600 MHz	40.69	2.03
1400 MHz	23.44	7.86	4800 MHz	39.52	1.86
1600 MHz	26.77	6.90	5000 MHz	42.24	1.70
1800 MHz	27.16	6.02	5200 MHz	48.00	1.65
2000 MHz	30.32	5.13	5400 MHz	40.59	1.70
2200 MHz	30.12	4.53	5600 MHz	40.31	1.69
2400 MHz	33.25	4.00	5800 MHz	39.80	1.61
2600 MHz	33.96	3.47	6000 MHz	40.01	1.58
2800 MHz	35.86	3.17	6200 MHz	44.24	1.64
3000 MHz	36.81	2.89	6400 MHz	41.04	1.57
3200 MHz	36.92	2.71	6600 MHz	-999.00	-999.00
3400 MHz	37.90	2.58	6800 MHz	39.91	1.55
3600 MHz	37.91	2.49	7000 MHz	40.66	1.53
3800 MHz	38.60	2.45	7200 MHz	42.18	1.41
4000 MHz	38.70	2.42	7400 MHz	41.22	1.55
4200 MHz	40.54	2.25	7600 MHz	42.15	1.57

Frequency	Gain /dB	NF /dB	Frequency	Gain /dB	NF /dB
7800 MHz	42.64	1.64	14.6 GHz	42.29	1.74
8000 MHz	42.79	1.63	14.8 GHz	39.61	1.72
8200 MHz	41.13	1.59	15 GHz	43.69	1.77
8400 MHz	40.74	1.52	15.2 GHz	46.57	1.66
8600 MHz	41.96	1.43	15.4 GHz	42.72	1.88
8800 MHz	40.58	1.39	15.6 GHz	45.52	1.74
9000 MHz	42.85	1.32	15.8 GHz	42.30	1.76
9200 MHz	42.92	1.38	16 GHz	45.23	1.72
9400 MHz	41.61	1.35	16.2 GHz	-999.00	-999.00
9600 MHz	45.33	1.35	16.4 GHz	43.07	1.62
9800 MHz	44.64	1.36	16.6 GHz	39.12	1.71
10 GHz	47.21	1.48	16.8 GHz	42.86	1.65
10.2 GHz	41.34	1.43	17 GHz	53.71	1.45
10.4 GHz	41.39	1.43	17.2 GHz	39.00	1.55
10.6 GHz	44.47	1.37	17.4 GHz	38.21	1.59
10.8 GHz	42.78	1.49	17.6 GHz	38.24	1.75
11 GHz	41.11	1.51	17.8 GHz	42.82	1.71
11.2 GHz	42.06	1.47	18 GHz	45.98	1.86
11.4 GHz	41.25	1.51			
11.6 GHz	40.00	1.50			
11.8 GHz	40.95	1.43			
12 GHz	43.31	1.49			
12.2 GHz	45.13	1.51			
12.4 GHz	39.34	1.55			
12.6 GHz	38.82	1.59			
12.8 GHz	55.94	1.71			
13 GHz	41.90	1.75			
13.2 GHz	44.83	1.60			
13.4 GHz	39.47	1.71			
13.6 GHz	39.57	1.71			
13.8 GHz	39.79	1.48			
14 GHz	44.68	1.57			
14.2 GHz	42.94	1.61			
14.4 GHz	42.62	1.49			

The amplifier has a gain of more than 39 dB in the frequency range between 4 GHz and 18 GHz. Taking out some outliers from the measurement results the device has a maximum gain of approx. 45 dB.

The noise figure between 5 GHz and 18 GHz is quite flat and below 1.8 dB. I measured a minimum noise figure of 1.32 dB at 9 GHz.

Next, I measured gain and noise figure over the same frequency range of 1 to 18 GHz at a supply voltage of 12V and the results were basically identical. The current consumption at 12 V was still 256 mA.

I then measured gain and noise figure over the same frequency range of 1 to 18 GHz at a supply voltage of 8 V and the results were almost the same. The noise figure was approximately 0.1 dB higher than at 12 V. The current consumption at 12 V was still 256 mA.

Finally, I measured gain and noise figure over the same frequency range of 1 to 18 GHz at a supply voltage of 7 V and the results were again almost the same. The noise figure was approximately 0.2 dB higher than at 12 V but gain curve was basically still the same. The current consumption at 12 V was slightly lower at 250 mA.

The MITEQ AMF-5F-06001800-15-10P-E is a very interesting wideband amplifier up from 5.8 GHz to at least 18 GHz, possibly still useable at 24 GHz. Interestingly this device can be operated down to 8 V with basically the same gain and only a slight degradation of the noise figure. 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

Email: [DD1US@AMSAT.ORG](mailto:DD1US@AMSAT.ORG)

Homepage: <http://www.dd1us.de>