Wideband Amplifier MITEQ AFS4-07200780-20-10P

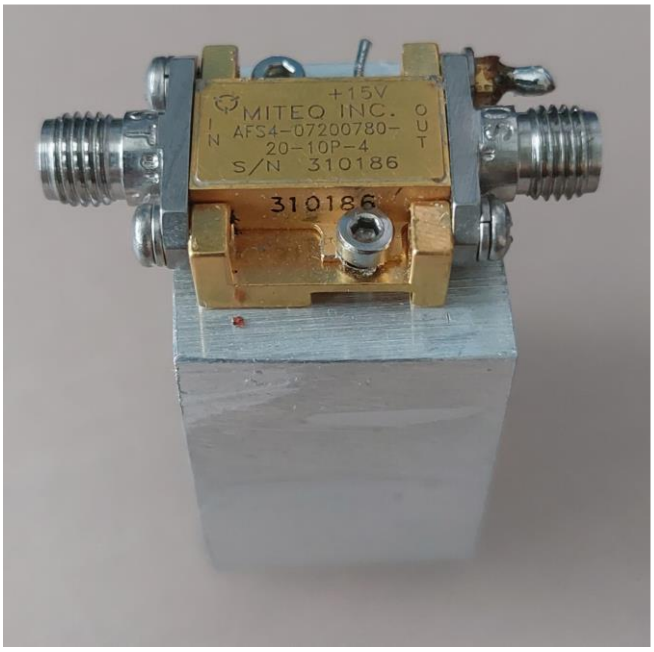
Matthias, DD1US, October 11th 2025

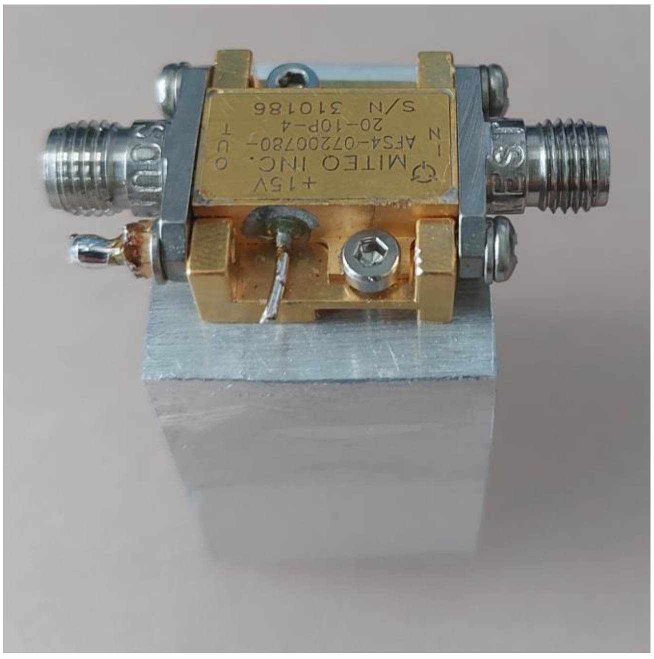
Yesterday characterized a wideband amplifier which I bought recently second hand. The amplifier is from MITEQ, the model number is AFS4-7200780-20-10P.

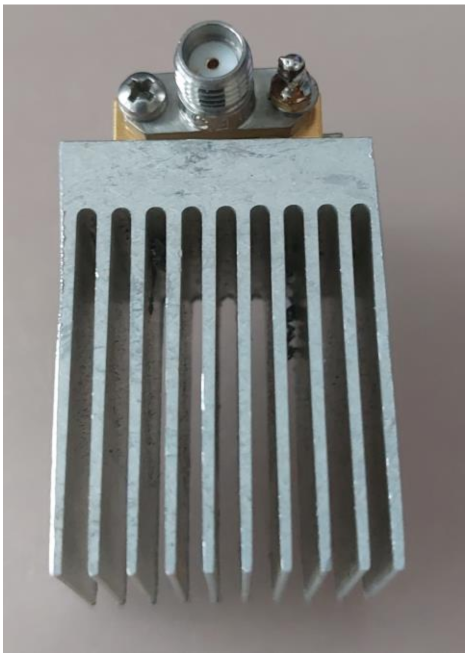
The nomenclature suggests, that this amplifier is intended to be used in the frequency range 7.2 – 7.8 GHz with a noise figure of 2 dB and a P1db of +10 dBm. As it is a four stage design the gain should be in the range of 35 dB.

The amplifier features female SMA connectors at its input and output. The nominal supply voltage is 15 V. As most MITEQ amplifiers also this unit works well at a supply voltage of 12 V. I measured a supply current of 84 mA at 12 V.

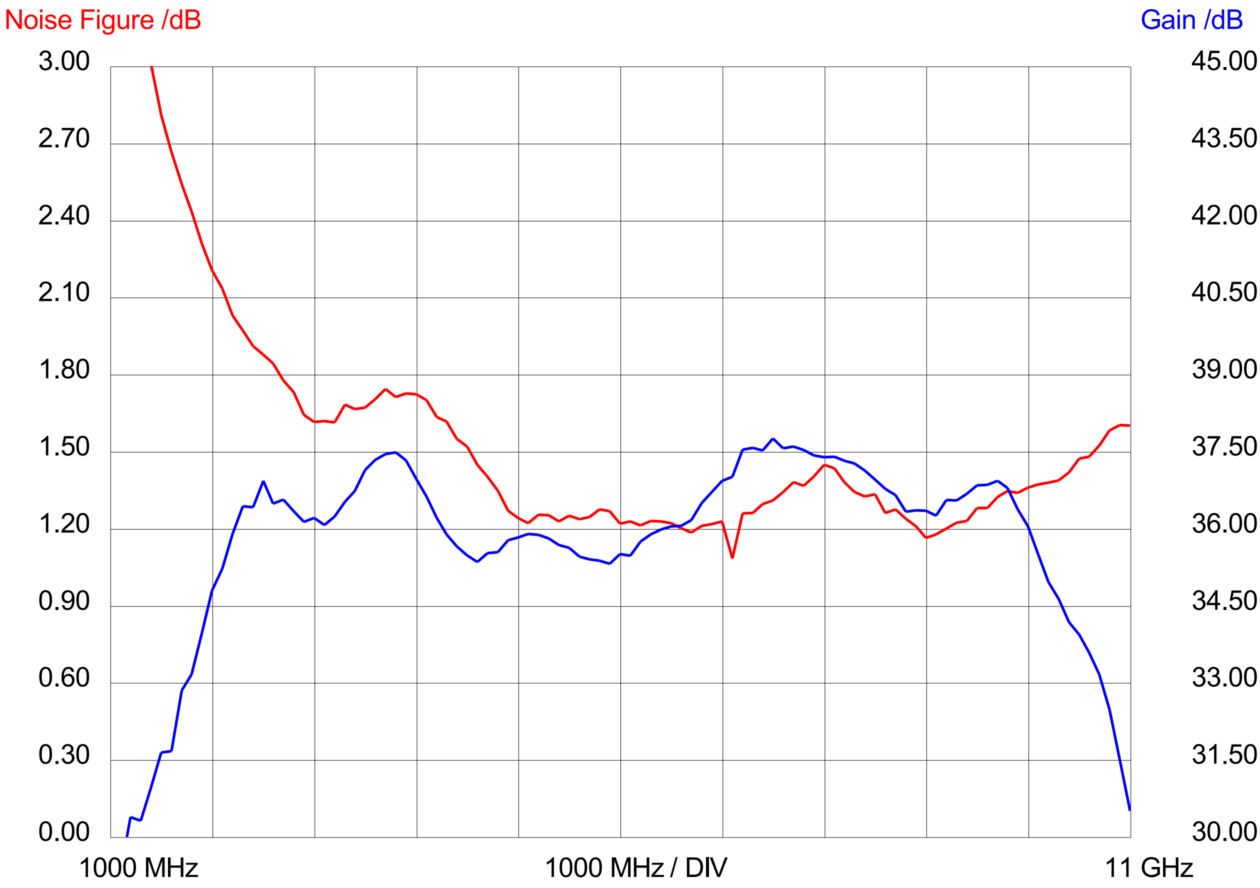
Here are some pictures of this amplifier mounted on a heatsink in order to keep it cool while I made gain and noise figure measurements.







I measured the gain and the noise figure in the frequency range 1 GHz to 11 GHz.



Below you can find the exact measurement results in a table covering the frequency range 1 GHz to 11 GHz:

Frequency	Gain	NF
1000 MHz	28.92 dB	4.23 dB
1100 MHz	29.27 dB	3.78 dB
1200 MHz	30.38 dB	3.51 dB
1300 MHz	30.31 dB	3.24 dB
1400 MHz	30.95 dB	3.01 dB
1500 MHz	31.64 dB	2.81 dB
1600 MHz	31.66 dB	2.66 dB
1700 MHz	32.84 dB	2.54 dB
1800 MHz	33.16 dB	2.43 dB
1900 MHz	33.96 dB	2.31 dB
2000 MHz	34.79 dB	2.20 dB
2100 MHz	35.22 dB	2.13 dB
2200 MHz	35.90 dB	2.03 dB
2300 MHz	36.43 dB	1.97 dB
2400 MHz	36.42 dB	1.91 dB
2500 MHz	36.93 dB	1.88 dB
2600 MHz	36.48 dB	1.84 dB
2700 MHz	36.56 dB	1.78 dB
2800 MHz	36.34 dB	1.73 dB
2900 MHz	36.13 dB	1.64 dB
3000 MHz	36.21 dB	1.61 dB
3100 MHz	36.07 dB	1.62 dB
3200 MHz	36.23 dB	1.61 dB
3300 MHz	36.52 dB	1.68 dB
3400 MHz	36.72 dB	1.67 dB
3500 MHz	37.13 dB	1.67 dB
3600 MHz	37.34 dB	1.70 dB
3700 MHz	37.45 dB	1.74 dB
3800 MHz	37.49 dB	1.71 dB
3900 MHz	37.33 dB	1.73 dB
4000 MHz	36.96 dB	1.72 dB
4100 MHz	36.63 dB	1.70 dB
4200 MHz	36.20 dB	1.63 dB
4300 MHz	35.88 dB	1.62 dB
4400 MHz	35.65 dB	1.55 dB
4500 MHz	35.48 dB	1.52 dB
4600 MHz	35.34 dB	1.45 dB
4700 MHz	35.52 dB	1.40 dB
4800 MHz	35.54 dB	1.35 dB
4900 MHz	35.77 dB	1.27 dB
5000 MHz	35.82 dB	1.24 dB
5100 MHz	35.89 dB	1.22 dB
5200 MHz	35.87 dB	1.25 dB
5300 MHz	35.81 dB	1.25 dB
5400 MHz	35.68 dB	1.23 dB
5500 MHz	35.62 dB	1.25 dB
5600 MHz	35.45 dB	1.24 dB
5700 MHz	35.40 dB	1.24 dB
5800 MHz	35.37 dB	1.27 dB
5900 MHz	35.31 dB	1.27 dB
6000 MHz	35.50 dB	1.22 dB
6100 MHz	35.47 dB	1.23 dB
6200 MHz	35.74 dB	1.21 dB
6300 MHz	35.89 dB	1.23 dB
6400 MHz	35.98 dB	1.23 dB
6500 MHz	36.04 dB	1.22 dB
6600 MHz	36.05 dB	1.20 dB
6700 MHz	36.17 dB	1.18 dB
6800 MHz	36.49 dB	1.21 dB
6900 MHz	36.71 dB	1.22 dB
7000 MHz	36.93 dB	1.23 dB
7100 MHz	37.01 dB	1.08 dB
7200 MHz	37.53 dB	1.26 dB
7300 MHz	37.57 dB	1.26 dB
7400 MHz	37.52 dB	1.30 dB
7500 MHz	37.75 dB	1.31 dB
7600 MHz	37.56 dB	1.34 dB
7700 MHz	37.60 dB	1.38 dB
7800 MHz	37.53 dB	1.37 dB
7900 MHz	37.42 dB	1.40 dB
8000 MHz	37.39 dB	1.45 dB
8100 MHz	37.39 dB	1.43 dB
8200 MHz	37.32 dB	1.38 dB
8300 MHz	37.27 dB	1.34 dB
8400 MHz	37.13 dB	1.32 dB
8500 MHz	36.95 dB	1.33 dB
8600 MHz	36.77 dB	1.26 dB
8700 MHz	36.65 dB	1.27 dB
8800 MHz	36.33 dB	1.24 dB
8900 MHz	36.35 dB	1.21 dB
9000 MHz	36.35 dB	1.16 dB
9100 MHz	36.25 dB	1.18 dB
9200 MHz	36.56 dB	1.20 dB
9300 MHz	36.55 dB	1.22 dB
9400 MHz	36.67 dB	1.23 dB
9500 MHz	36.84 dB	1.28 dB
9600 MHz	36.85 dB	1.28 dB
9700 MHz	36.93 dB	1.32 dB
9800 MHz	36.79 dB	1.35 dB
9900 MHz	36.37 dB	1.34 dB
10.0 GHz	36.04 dB	1.36 dB
10.1 GHz	35.49 dB	1.37 dB
10.2 GHz	34.96 dB	1.38 dB
10.3 GHz	34.62 dB	1.39 dB
10.4 GHz	34.18 dB	1.42 dB
10.5 GHz	33.93 dB	1.47 dB
10.6 GHz	33.58 dB	1.48 dB
10.7 GHz	33.16 dB	1.52 dB
10.8 GHz	32.47 dB	1.58 dB
10.9 GHz	31.49 dB	1.60 dB
11.0 GHz	30.50 dB	1.60 dB

Here is a brief summary of the measurement results:

Ambient temperature: 23 ° C:
Supply voltage: 12 V
Supply current: 84 mA
Supply power: 1.0 W

Frequency /MHz	Gain /dB	NF /dB
1300	30.3	3.24
2400	36.4	1.91
3500	37.1	1.67
5600	35.5	1.24
7200	37.5	1.26
7800	37.5	1.37
8600	36.8	1.26
10300	34.6	1.39

This amplifier covers the frequency range from the 13cm band to the 3cm band with a gain of approx. 35 – 37 dB and a noise figure below 2 dB.

In the specified X-band frequency range 7200 – 7800 MHz the gain is 37.5 – 37.8 dB and the noise figure is 1.26 – 1.38 dB. Thus, it is better than specified.

In the whole X-band frequency range from 7200 – 8600 MHz the gain is 36.8 – 37-8 dB and the noise figure is 1.26 – 1.45 dB.

Even in the 3cm band it features a gain of 34.6 dB and a remarkable noise figure of 1.39 dB.

Also, 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: matthias.bopp@dd1us.de Homepage: http://www.dd1us.de