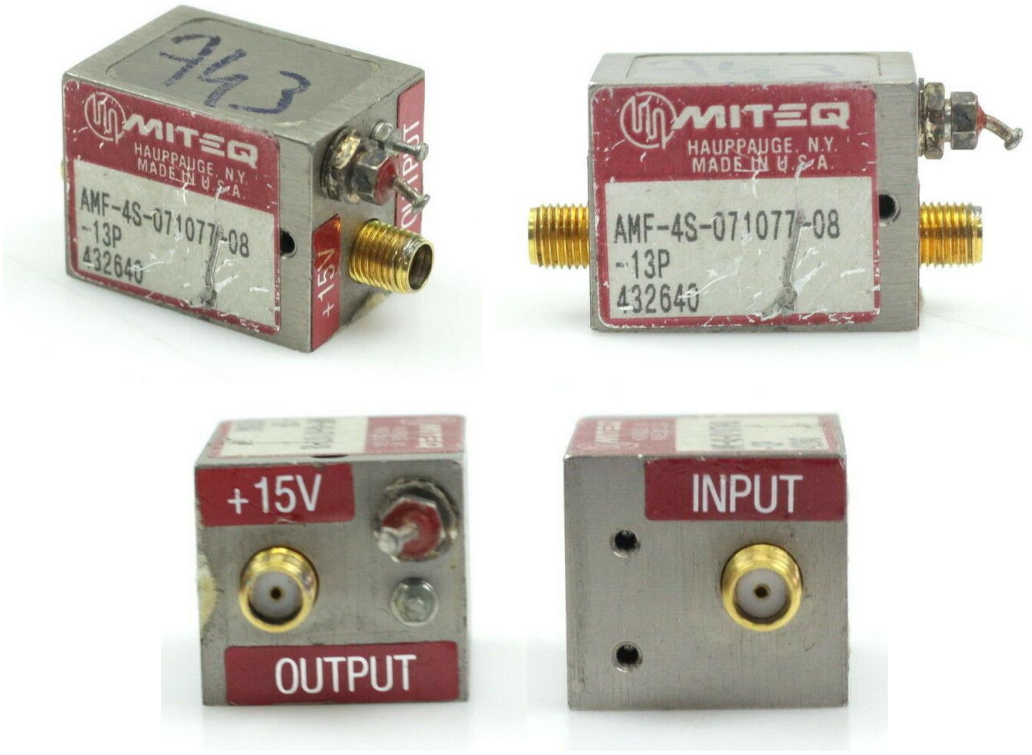
Wideband Amplifier MITEQ AMF-4S-071077-08-13P

Matthias, DD1US, May 17th 2021, rev 1.0

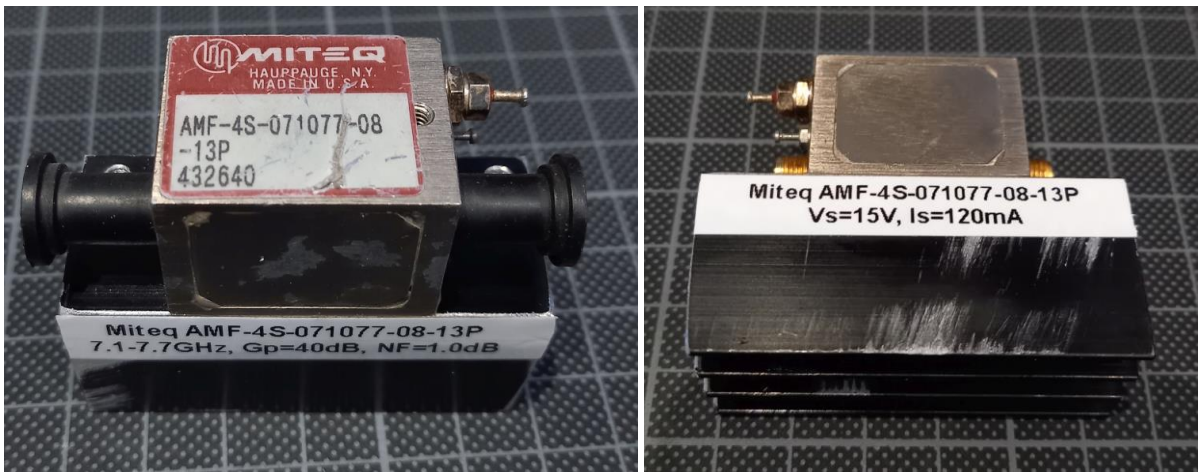
As I am planning to get ready to receive X-Band signal for instance from deep space probes I bought a surplus amplifier from MITEQ. The part number is AMF-4S-071077-08-13P.

I did not find any data on the internet but based on the product designator I assumed a frequency range from 7.1-7.7GHz, a gain of about 40dB, a noise figure of 0.8dB and a P1dB of 13dBm.

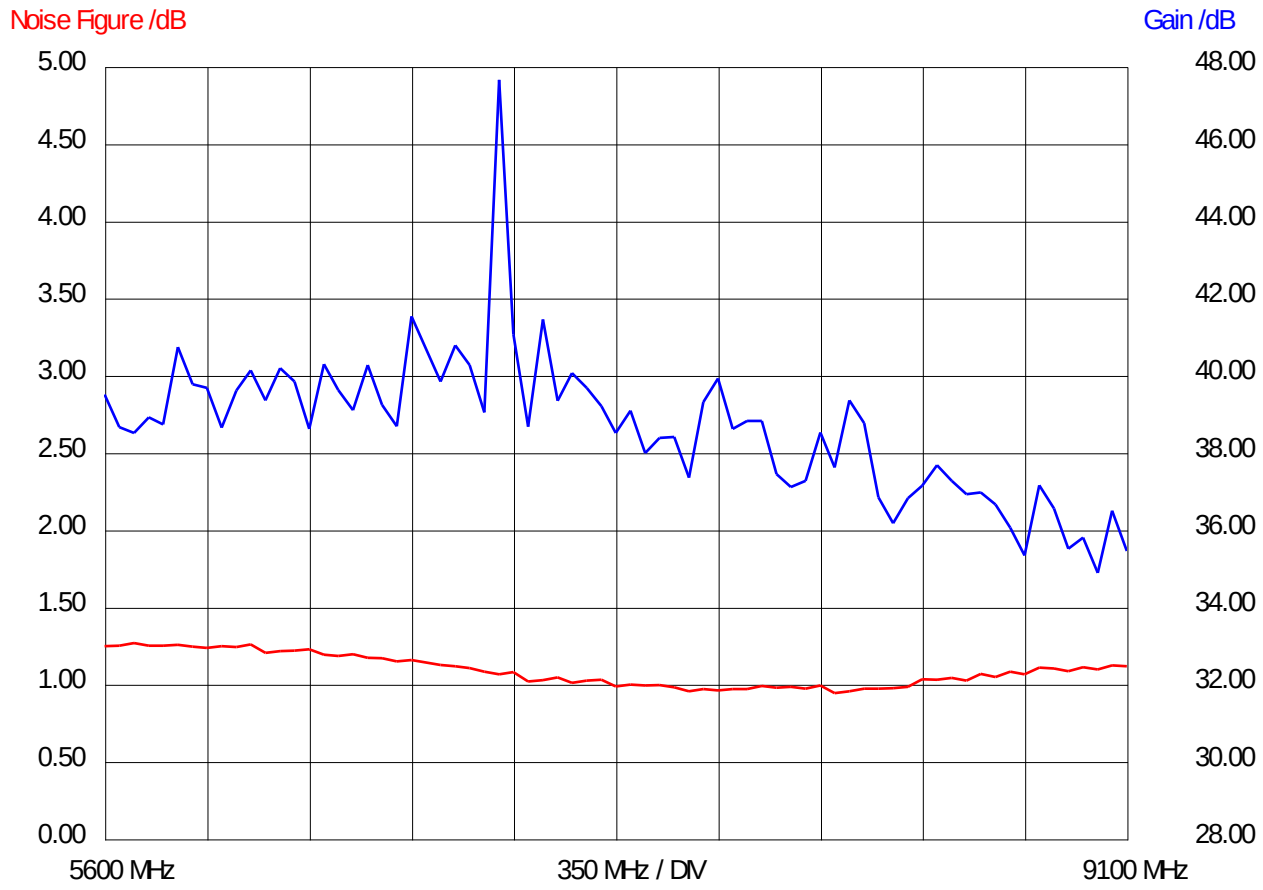
Here are some pictures of the device which I bought:



I mounted the amplifier on a small heatsink as I measured a current consumption of 120mA at a supply voltage of 15V. As the amplifier dissipates quite some heat it is certainly better to keep it cool using a heatsink as low noise figure and high temperature do not get along well. Here are some pictures of the amplifier mounted to the heatsink:



I measured the gain and the noise figure between 5600 MHz and 9100 MHz using a supply voltage of 15V.



The minimum noise figure of about 1.0dB is reached in the frequency range from 7050 to 8550 MHz. The gain in this frequency range is between 41dB (at the lower end of the frequency range) and 36dB (at the upper end of the frequency range).

Even though the noise figure is slightly higher than expected this amplifier is well suited to be used as an X-band LNA.

In the table below you can find all the measurement data, as shown in the graph before.

Frequency	Gain /dB	NF /dB
5600 MHz	39.51	1.25
5650 MHz	38.66	1.25
5700 MHz	38.51	1.27
5750 MHz	38.92	1.25
5800 MHz	38.73	1.25
5850 MHz	40.73	1.26
5900 MHz	39.77	1.24
5950 MHz	39.68	1.24
6000 MHz	38.65	1.25
6050 MHz	39.61	1.24
6100 MHz	40.13	1.26
6150 MHz	39.35	1.20
6200 MHz	40.18	1.21
6250 MHz	39.84	1.22
6300 MHz	38.62	1.23
6350 MHz	40.29	1.19
6400 MHz	39.62	1.18
6450 MHz	39.09	1.19
6500 MHz	40.27	1.17
6550 MHz	39.24	1.17
6600 MHz	38.68	1.15
6650 MHz	41.53	1.16
6700 MHz	-999.00	-999.00
6750 MHz	39.85	1.13
6800 MHz	40.78	1.12
6850 MHz	40.27	1.11
6900 MHz	39.04	1.08
6950 MHz	47.65	1.07
7000 MHz	41.07	1.08
7050 MHz	38.67	1.02
7100 MHz	41.45	1.03
7150 MHz	39.35	1.04
7200 MHz	40.06	1.01
7250 MHz	39.68	1.02

Frequency	Gain /dB	NF /dB
7300 MHz	39.20	1.03
7350 MHz	38.51	0.99
7400 MHz	39.09	1.00
7450 MHz	37.99	0.99
7500 MHz	38.38	1.00
7550 MHz	38.41	0.98
7600 MHz	37.35	0.96
7650 MHz	39.31	0.97
7700 MHz	39.93	0.96
7750 MHz	38.61	0.97
7800 MHz	38.82	0.97
7850 MHz	38.82	0.99
7900 MHz	37.45	0.98
7950 MHz	37.11	0.98
8000 MHz	37.28	0.97
8050 MHz	38.52	0.99
8100 MHz	37.61	0.94
8150 MHz	39.36	0.96
8200 MHz	38.77	0.97
8250 MHz	36.84	0.97
8300 MHz	36.17	0.98
8350 MHz	36.81	0.98
8400 MHz	37.14	1.03
8450 MHz	37.68	1.03
8500 MHz	37.27	1.04
8550 MHz	36.92	1.02
8600 MHz	36.97	1.07
8650 MHz	36.66	1.05
8700 MHz	36.06	1.08
8750 MHz	35.34	1.06
8800 MHz	37.16	1.11
8850 MHz	36.55	1.10
8900 MHz	35.51	1.08
8950 MHz	35.80	1.11
9000 MHz	34.88	1.10
9050 MHz	36.50	1.12
9100 MHz	35.45	1.12

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

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