Wideband Amplifier MITEQ AMF-3F-00820096-14-30P

Matthias, DD1US, July 17th 2022

Recently I acquired another wide band amplifier from MITEQ. The part number is AMF-3F-00820096-14-30P.

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

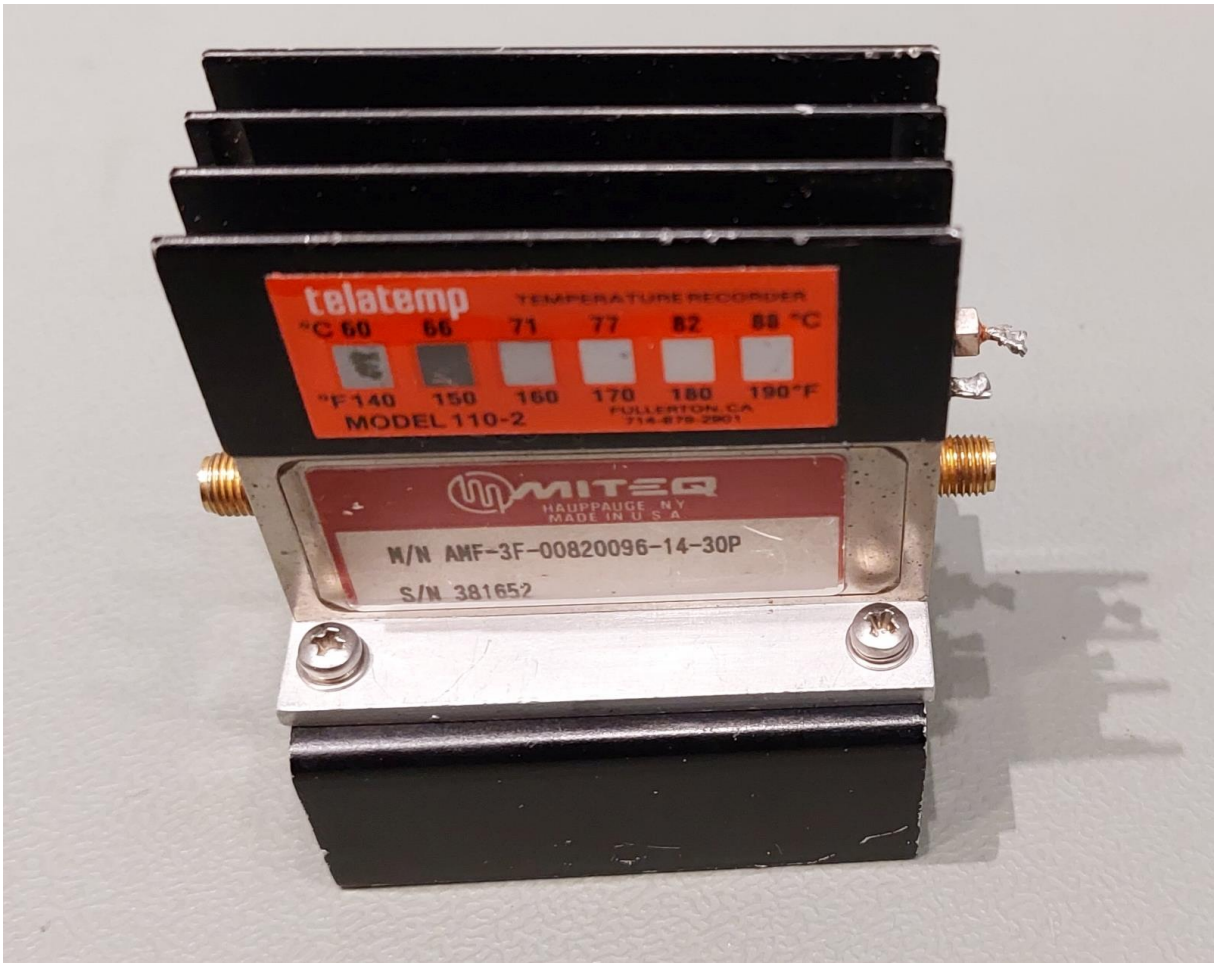
Model:	AMF-3F-00820096-14-30P
Serial number:	381652
Description:	Wideband Amplifier
Frequency Range:	820–960 MHz
Gain:	3 stage amplifier thus approx. 40dB expected
Noise Figure:	1.4 dB
Output Power:	30 dBm
Supply Voltage:	15 V

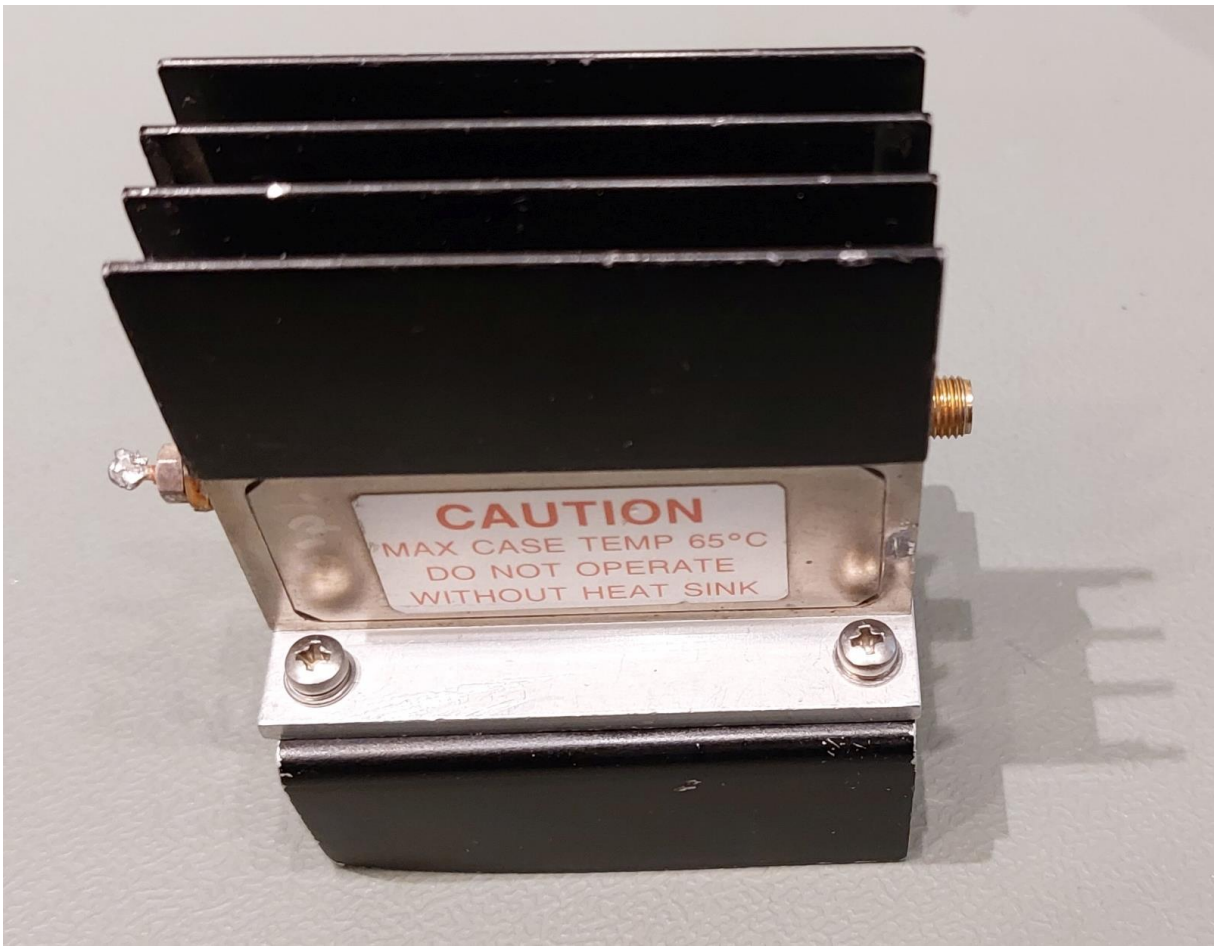
My device has a current consumption of 845mA at a supply voltage of 15V.

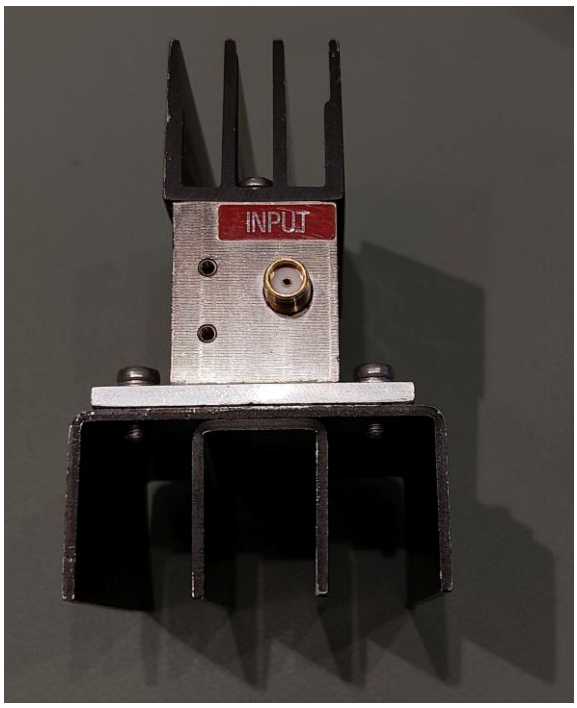
Input and output connectors are SMA jacks.

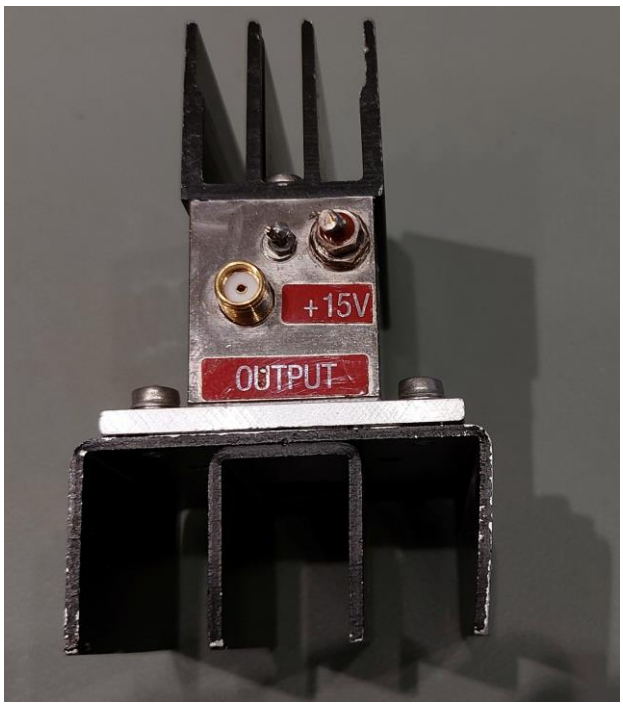
The amplifier has a small heat sink attached in order to avoid getting it too warm as this certainly degrades not only the lifetime but also performance, especially the noise figure. On the amplifier a label warns to not exceed a maximum case temperature of 65°C. Another label on the heatsink records the maximum case temperature which was in my case 66°C. Therefore, I °mounted an additional heatsink on the opposite side of the amplifier.

Here are some pictures:

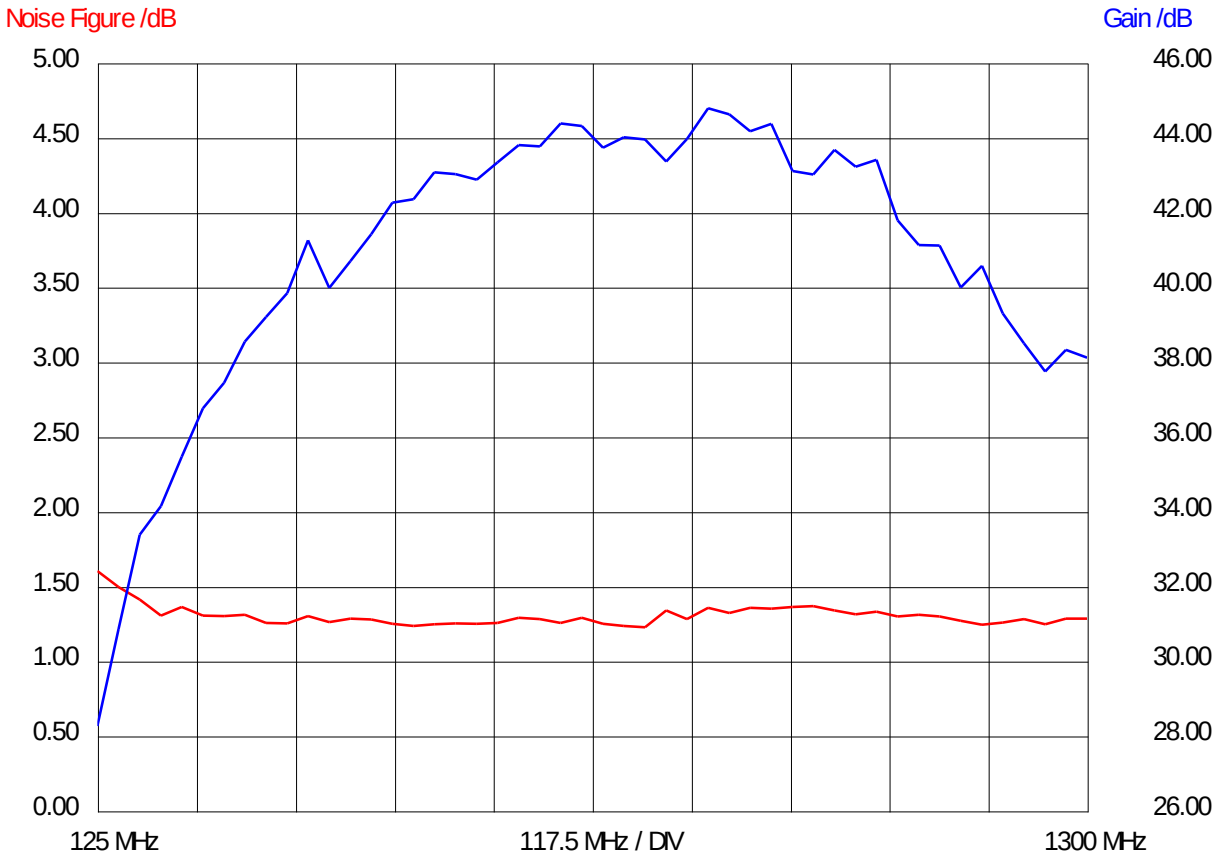



CAUTION
MAX CASE TEMP 65°C
DO NOT OPERATE
WITHOUT HEAT SINK


INPUT


+15V
OUTPUT

I measured gain (blue) and noise figure (red) of the device in the range from 125 MHz up to 1300 MHz at a supply voltage of 15 V.



Below please find a table with the corresponding measurement values:

Frequency	Gain /dB	NF /dB	Frequency	Gain /dB	NF /dB
125 MHz	28.27	1.60	550 MHz	43.03	1.25
150 MHz	30.86	1.49	575 MHz	42.87	1.25
175 MHz	33.39	1.41	600 MHz	43.34	1.26
200 MHz	34.15	1.30	625 MHz	43.80	1.29
225 MHz	35.47	1.36	650 MHz	43.77	1.28
250 MHz	36.76	1.30	675 MHz	44.37	1.26
275 MHz	37.45	1.30	700 MHz	44.32	1.29
300 MHz	38.55	1.31	725 MHz	43.74	1.25
325 MHz	39.20	1.26	750 MHz	44.01	1.24
350 MHz	39.84	1.25	775 MHz	43.96	1.23
375 MHz	41.26	1.30	800 MHz	43.36	1.34
400 MHz	39.98	1.26	825 MHz	43.96	1.28
425 MHz	40.70	1.28	850 MHz	44.79	1.36
450 MHz	41.41	1.28	875 MHz	44.63	1.32
475 MHz	42.26	1.25	900 MHz	44.17	1.36
500 MHz	42.36	1.23	925 MHz	44.36	1.35
525 MHz	43.07	1.25	950 MHz	43.10	1.36

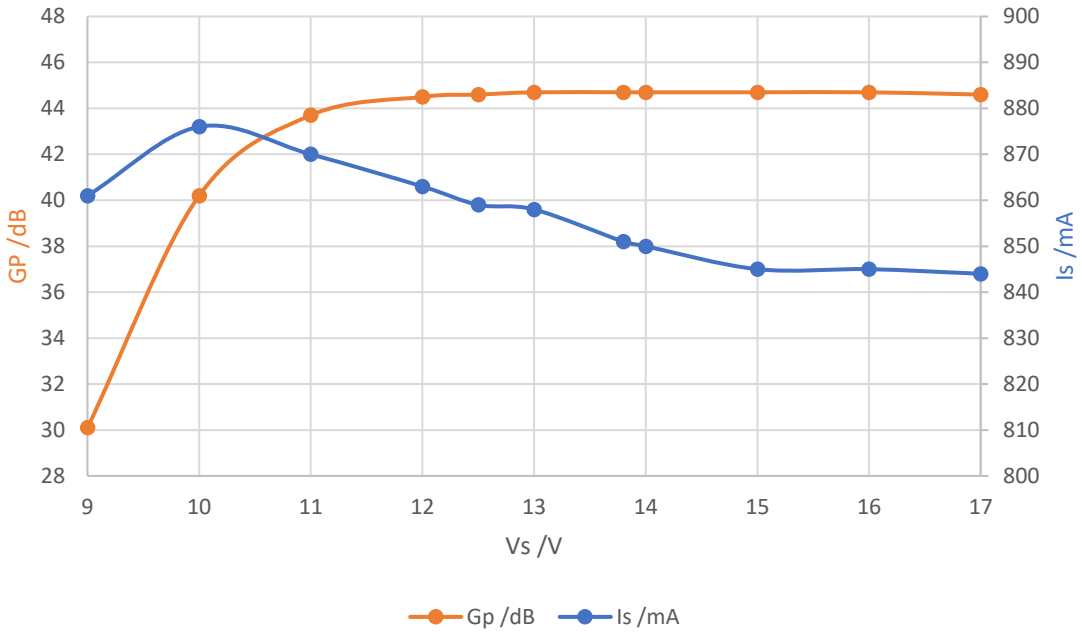
Frequency	Gain /dB	NF /dB
975 MHz	43.01	1.37
1000 MHz	43.67	1.34
1025 MHz	43.22	1.31
1050 MHz	43.41	1.33
1075 MHz	41.79	1.30
1100 MHz	41.13	1.31
1125 MHz	41.12	1.30
1150 MHz	40.00	1.27
1175 MHz	40.57	1.24
1200 MHz	39.30	1.26
1225 MHz	38.49	1.28
1250 MHz	37.75	1.25
1275 MHz	38.32	1.28
1300 MHz	38.12	1.28

As can be seen the device has a maximum gain of approx. 44.5dB at around 868MHz.

The gain is more than 43dB in the frequency range between 600MHz and 1050MHz.
Below and above, it drops steadily to about 30dB at 145MHz respectively 38dB at 1300MHz.

The noise figure between 180MHz and 1300MHz is very flat below 1.4dB.
I measured a minimum noise figure in that frequency range of 1.23dB.

Next, I measured the gain at 868MHz as function of supply voltage:



The gain is flat at Vs=12V and higher. The amplifier can probably still be used with a supply voltage of 11V. Below the drain drops significantly. The maximum current consumption of 876mA was measured at a supply voltage of 10V decreasing steadily to 845mA at a supply voltage of 15V.

Thus, this device features an excellent low noise figure with a high gain and high output power in a wide frequency range.

This is the first device from MITEQ I have measured with such an interesting feature set.

The only downside is the high current and thus power consumption of more than 12W @Vs=15V.

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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