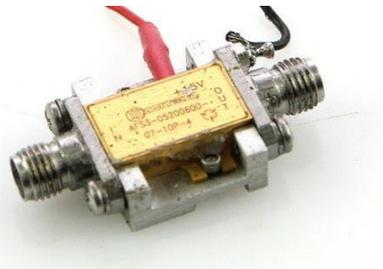


Wideband Amplifier MITEQ AFS3-05200600-07-10P-4

Matthias, DD1US, April 3rd 2021 rev 0.3

In the last days, I was able to acquire another MITEQ wide band amplifier and could not wait to characterize it.

The amplifier is of the following type: MITEQ AFS3-05200600-07-10P-4. Here is a picture of my unit:



On the internet, I found the following table with the key data of this type:

MODERATE BAND AFS AMPLIFIERS								
MODEL NUMBER	FREQUENCY RANGE (GHz)	GAIN (dB, Min.)	GAIN FLATNESS (±dB, Max.)	NOISE FIGURE (dB, Max.)	VSWR IN/OUT (Max.)	OUTPUT POWER @ 1 dB COMP. (dBm, Min.)	NOM. DC POWER (15 V, mA)	OUTLINE DRAWING
MODERATE BAND (CONT.)								
AFS1-03000350-10-10P-4	3-3.5	10	0.5	1	2:1	10	80	4
AFS2-03000350-06-10P-4	3-3.5	23	0.5	0.6	1.5:1	10	90	4
AFS3-03000350-06-10P-4	3-3.5	29	0.5	0.6	1.5:1	10	150	4
AFS4-03000350-06-13P-6	3-3.5	36	0.5	0.6	1.5:1	13	175	6
AFS3-03100350-06-10P-4	3.1-3.5	29	0.5	0.6	1.5:1	10	150	4
AFS1-03400420-10-5P-4	3.4-4.2	10	0.5	1	2:1	5	100	4
AFS2-03400420-06-8P-4	3.4-4.2	20	0.5	0.6	1.75:1	8	150	4
AFS3-03400420-06-13P-4	3.4-4.2	28	0.5	0.6	1.75:1	13	175	4
AFS4-03400420-10-13P-6	3.4-4.2	40	0.5	1	1.5:1	13	200	6
AFS3-04300480-07-S-4	4.3-4.8	30	0.5	0.7	1.5:1	10	100	4
AFS4-04300480-07-S-4	4.3-4.8	38	0.5	0.7	1.5:1	10	125	4
AFS3-04400510-07-S-4	4.4-5.1	30	0.5	0.7	1.5:1	10	100	4
AFS4-04400510-07-S-4	4.4-5.1	38	0.5	0.7	1.5:1	10	125	4
AFS3-04500480-07-S-4	4.5-4.8	30	0.5	0.7	1.5:1	10	100	4
AFS4-04500480-07-S-4	4.5-4.8	38	0.5	0.7	1.5:1	10	125	4
AFS5-04500480-07-S-5	4.5-4.8	44	0.75	0.7	1.5:1	10	150	5
AFS3-05200600-07-10P-4	5.2-6	30	0.5	0.7	1.5:1	10	100	4
AFS4-05200600-07-S-4	5.2-6	38	0.5	0.7	1.5:1	10	125	4

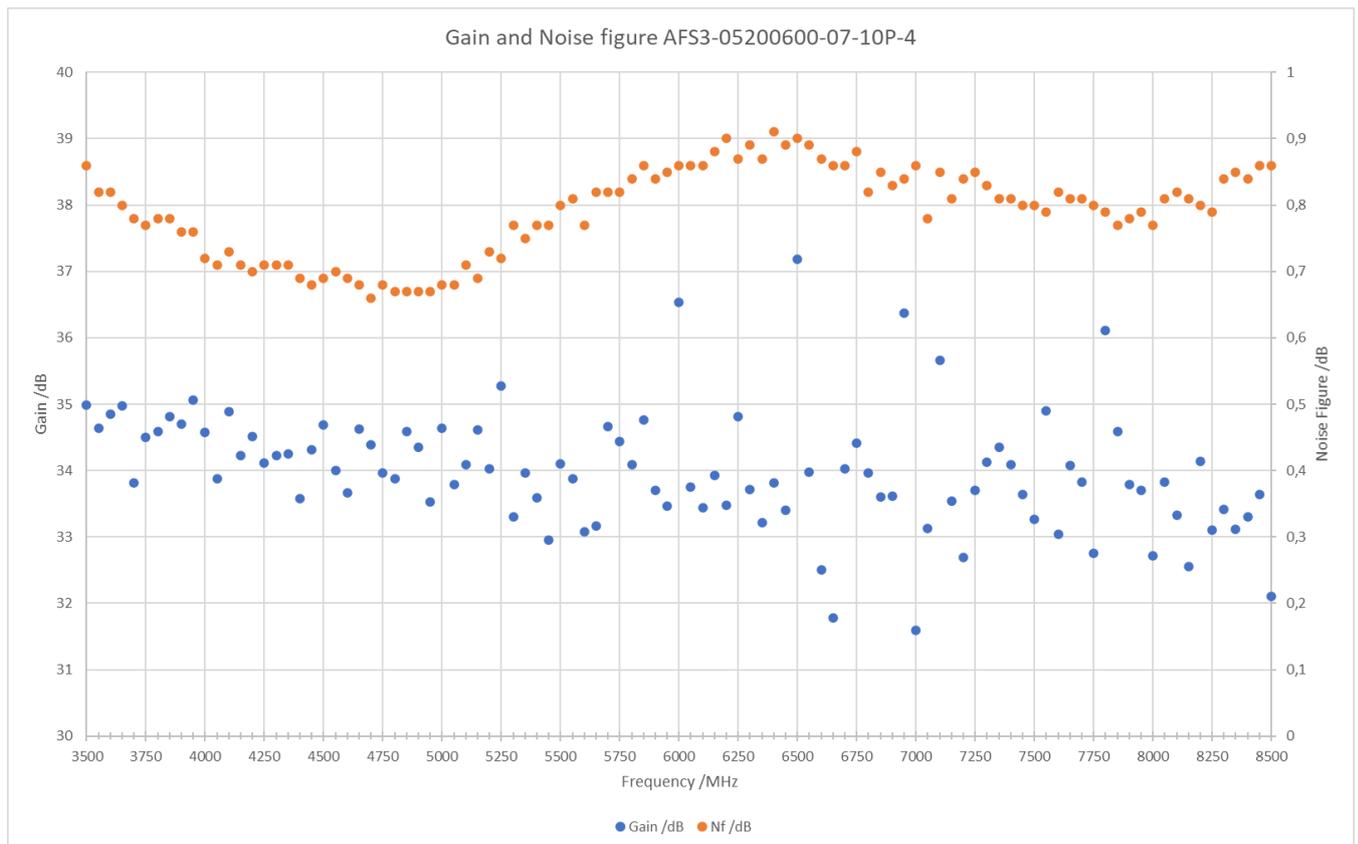
Here is a summary of the key data:

- Model: AFS3-05200600-07-10P-4
- Description: Amplifier
- Specifications at 23 °C:
- Frequency: 5.2 to 6 GHz
- Gain: 30 dB min.
- Gain Flatness: 0.5 dB+/- max.
- Noise Figure: 0.7 dB max.
- VSWR In: 1.5:1 max.
- VSWR Out: 1.5:1 max.
- P1dB Out: 10 dBm min.
- Voltage: 15 V nom.
- Current: 100 mA nom.

I conducted the subsequent measurements without mounting the amplifier on a heat sink. However, I powered the amplifier on only shortly before the measurement started and the measurement itself took only a few minutes. If there were a thermal effect then it would result in a degraded noise figure at higher frequencies. I do not think that it is substantial and therefore I did not investigate it any further.

For normal operations, I will certainly mount the amplifier on a proper heatsink. My device has a current consumption of 75mA at a supply voltage of 12.5V. The current consumption is actually independent of the supply voltage in a range from 10V to 17V.

I measured the gain and noise figure in a wide frequency range from 3.5GHz to 8.5 GHz with a step size of 50 MHz. Here are the results:



You can see that the gain (dark blue curve with the left scale) is quite constantly around 34dB in the range from 3500 to 8500 MHz and the noise figure (orange curve with the right scale) at the same frequency range is about 0.7 to 0.9dB.

Interestingly the minimum noise figure is in the frequency range from 4 GHz to 5GHz and not 5.2 GHz to 6 GHz. Changing the supply voltage from 15V to 12V did not result in major changes of the measured parameter. The noise figure was slightly lower than at 15V.

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

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

Best regards

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