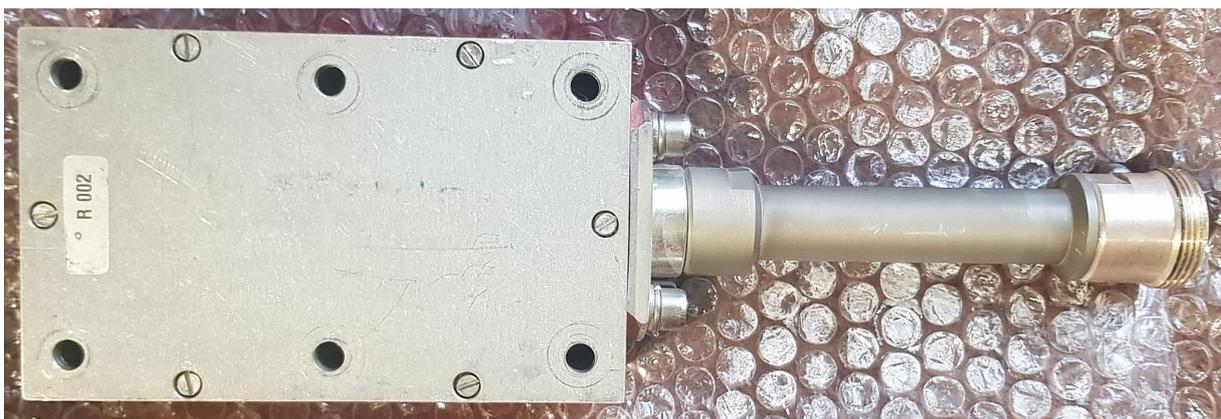


Dummy Load SPINNER BN154796 50 Ohm 1250 W

Matthias, DD1US, July 18th 2020, rev 1.1

I guess we have never enough dummy loads for tuning and testing power amplifiers. Searching for a device to test and tune my 1.3 GHz PAs a friend helped me and provided me a surplus SPINNER dummy load with the part number BN154796. It is a 50 Ohm load in a massive milled aluminium block with a 7/16 jack. The dummy load has a label which states 1250W. That fits perfectly the maximum legal power on 1.3 GHz in Germany which is 750 W. The operating conditions for this power are not known to me but for sure a massive heatsink is needed. I had one spare heatsink in my storage (the same type I had used for my dummy load up to 4 GHz based on a 50 Ohm 150W load assembly from Filtronics. I the SPINNER dummy load on the heat sink and added a fan to active cool the device. I also created an air channel to make sure that all the cool air blown into the fins of the heatsink is guided along those fins. The fan is also surplus from PABST and runs from 20V to 40V.

Here are some pictures of the dummy load:



The next pictures show the dummy load assembled to a heat sink with a fan:







After having finished the mechanical assembly work, I tested the dummy load with my network analyzer. Please note that during those measurements an Adapter from 7/16 to N was attached to the dummy load as this will be my typical application. All measurements were performed from 30kHz up to 3 GHz.

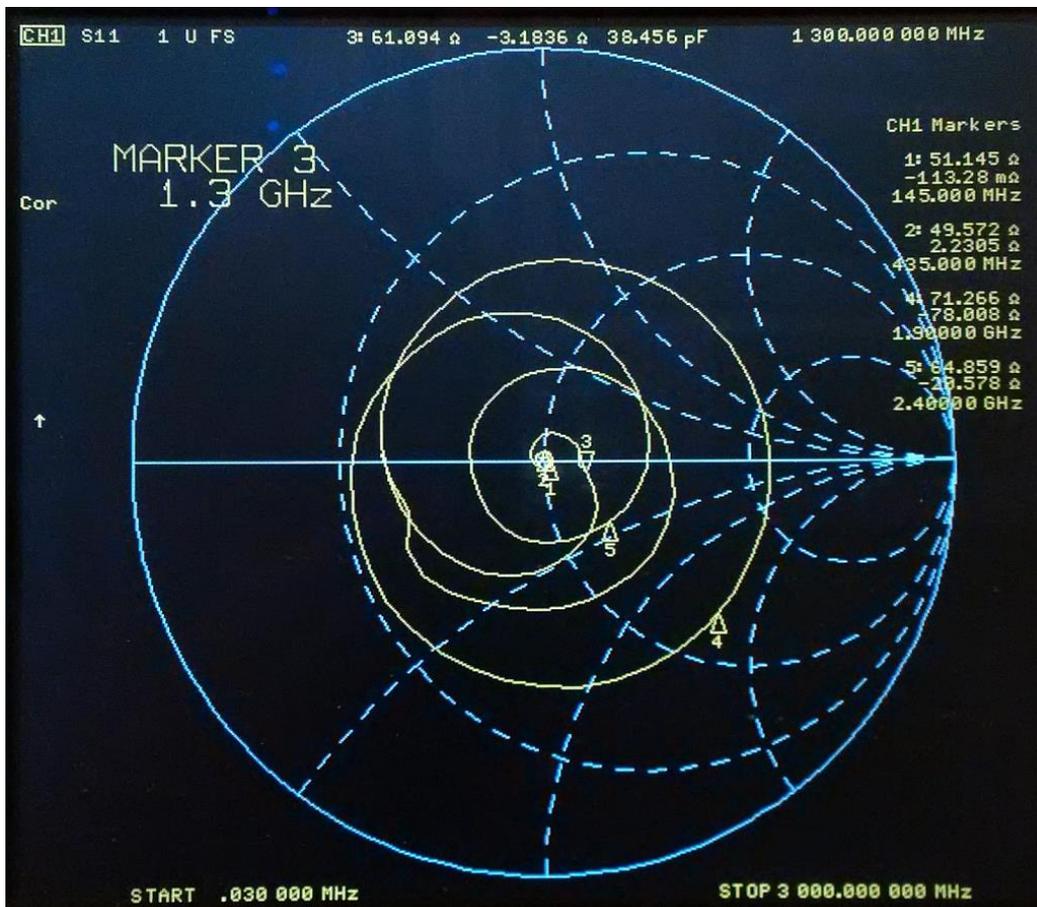
Here are the S11 measurement results of the device. The return loss is better than 30dB in the 2m, 70cm amateur radio bands. In the 23cm band the return loss is about 20dB. In the 13cm band the return loss is only 13dB and thus hardly acceptable. The worst return loss in the measured frequency range is 5dB at 1.9 GHz.



S11 log magnitude



S11 SWR



S11 Smith Chart

Summary:

The SPINNER dummy load is well suited up to the 1,3 GHz frequency band with a return loss of min. 20dB.

For the 2.4 GHz and 3.5 GHz bands I plan to use my Filtronics dummy load which has a higher return loss and can be used up to 4 GHz. In Germany the maximum allowed power in the 2.4GHz amateur radio band is 75W, which can be easily handled by the Filtronics dummy load with a maximum CW power of 150W (400W peak for a short period of time). You can find a description also on my website.

In comparison to the Telegaertner JO1124A0005 dummy load, which has a similar shape, the SPINNER is much better. The Telegartner can only be used up to 1 GHz with a return loss of 20dB and better. Its return loss at 1.3 GHz is only 8.5dB. Furthermore, the Telegaertner load is specified for only half the power i.e. 625W. You can find a description with measurement results on my website.

Daniel DL3IAE sent me a notice that he measured the return loss of the 625W dummy load BN 15 48 90 from Spinner and got the following results:

Frequency	Return loss
145 MHz	>40dB
435 MHz	ca. 30dB
1000 MHz	ca. 24dB
1300 MHz	ca. 10dB

Thus both, the Spinner and the Telegaertner 625W dummy loads show very similar results.

I always appreciate feedback. Many thanks in advance.

Best regards

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