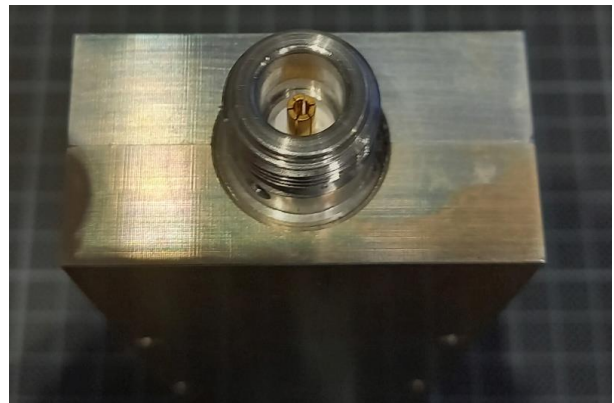
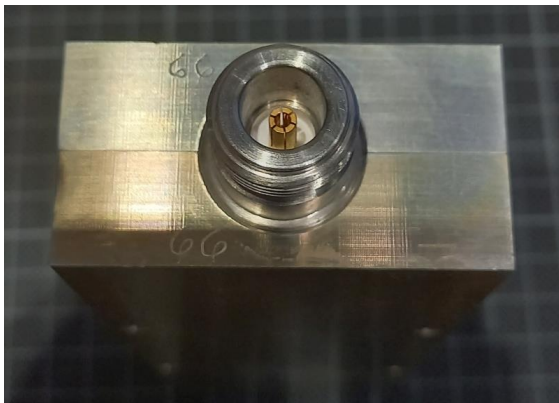


20dB Power Attenuator Aeroflex Weinschel Model 6464-1

Matthias, DD1US, July 21st 2021, rev 1.1

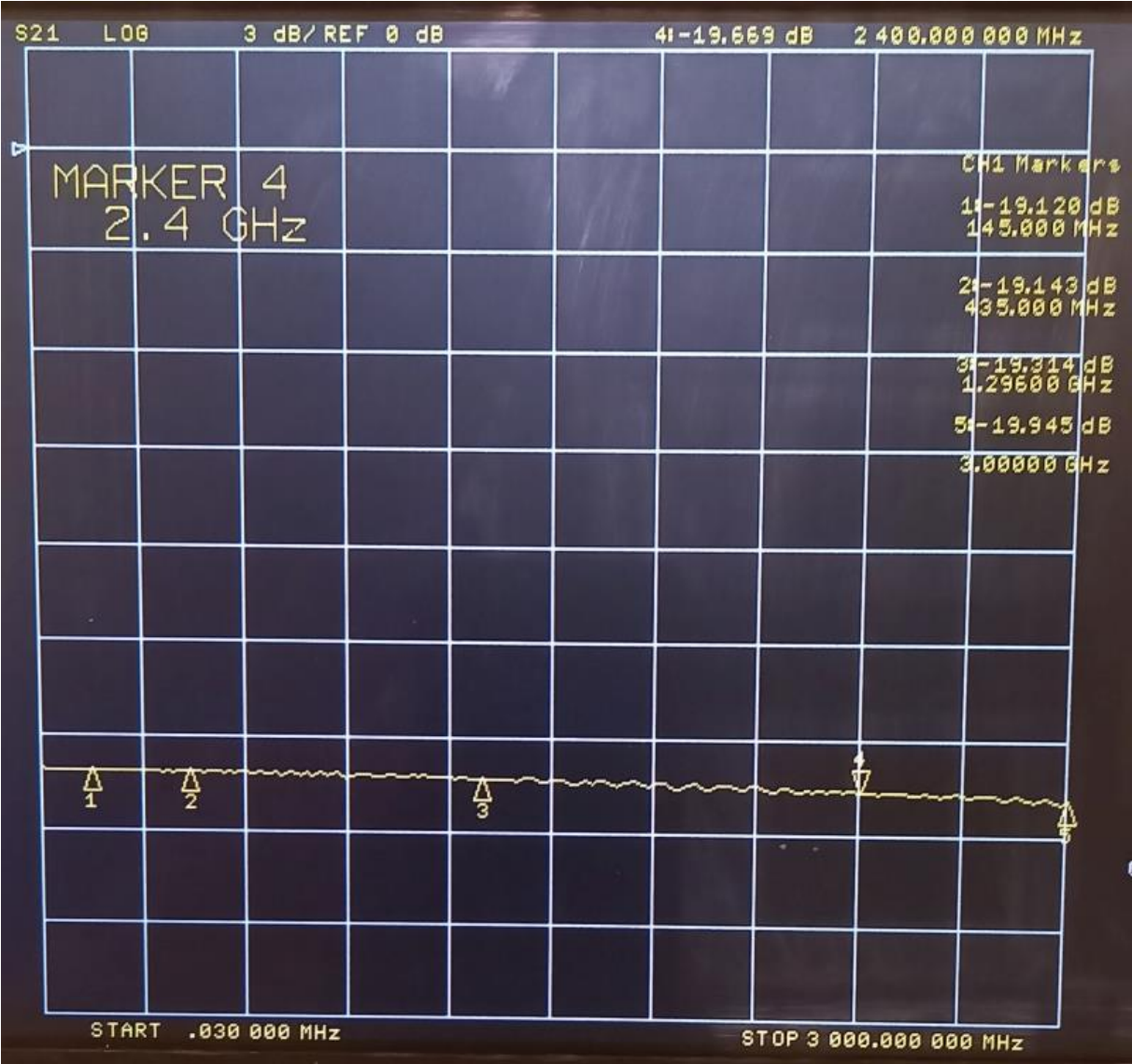
Recently I was able to acquire 2nd hand a power attenuator from Aeroflex Weinschel. The model number is 6464-1 and the only specification I found was printed on the device: attenuation is 20dB, maximum input power is 250W. Searching the internet I did not find any other specification.

The attenuator is mounted in a solid milled aluminum encasing which is supposed to be mounted on a heatsink in order to guarantee the full power handling. The input and output connectors are high quality N-type jacks. Here are some pictures of the attenuator.



As mentioned, I did not find any information on the attenuator in the internet. I suppose it was a custom-built device. Therefore, I measured the S-parameter of the attenuator in the frequency range 0.03 – 3 GHz. On the following pages you will find the detailed measurement results.

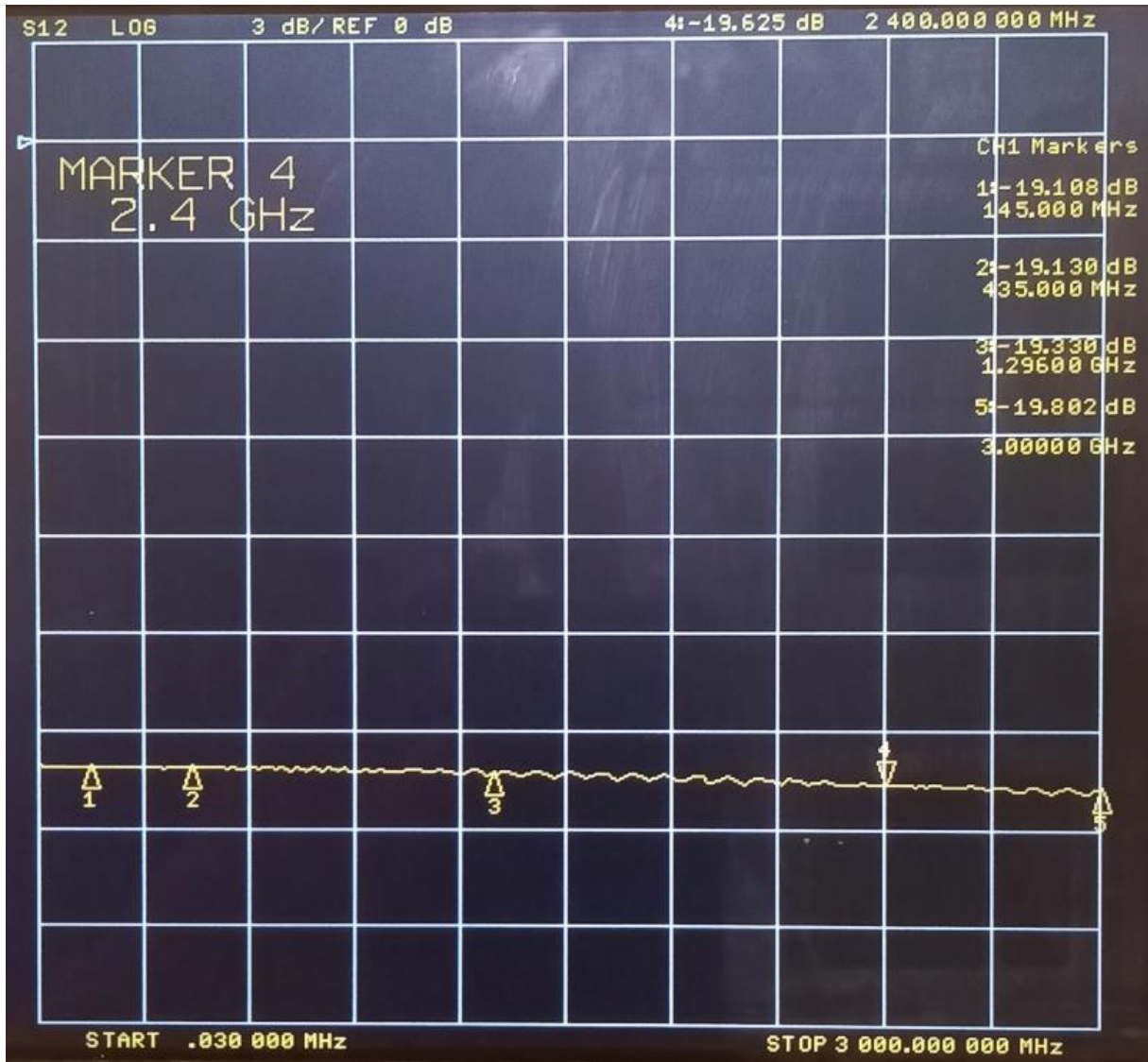
First, I measured the attenuation S21 of the attenuator. The nominal attenuation is 20dB.



The attenuation S21 up to 2.4 GHz is between 19.1 and 19.7dB.

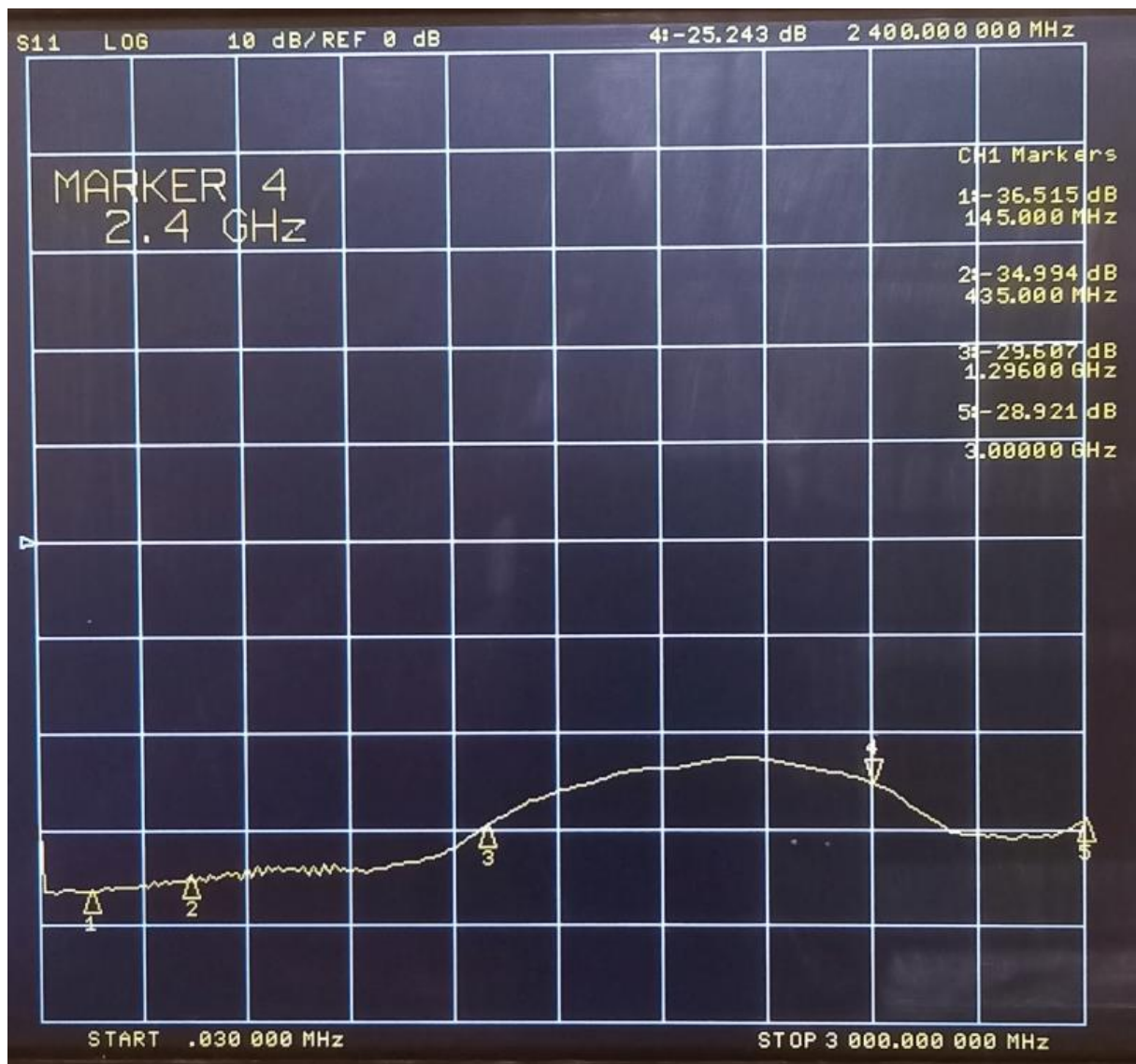
More precisely the measured attenuation in the ham radio bands is:

145 MHz	19.12dB
435 MHz	19.14dB
1296 MHz	19.31dB
2400 MHz	19.67dB



No surprise: S12 is almost identical to S21

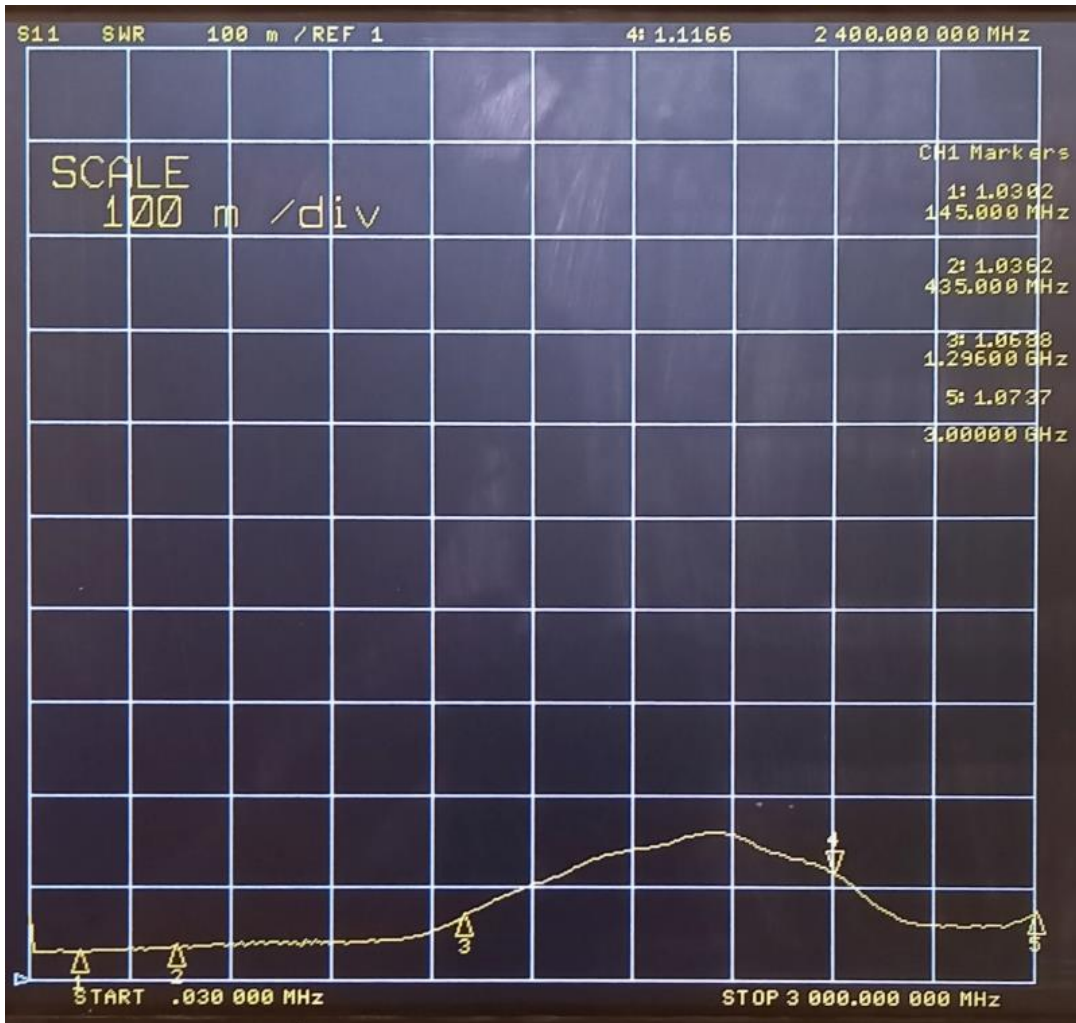
Next, I measured the input matching S11 of the attenuator.



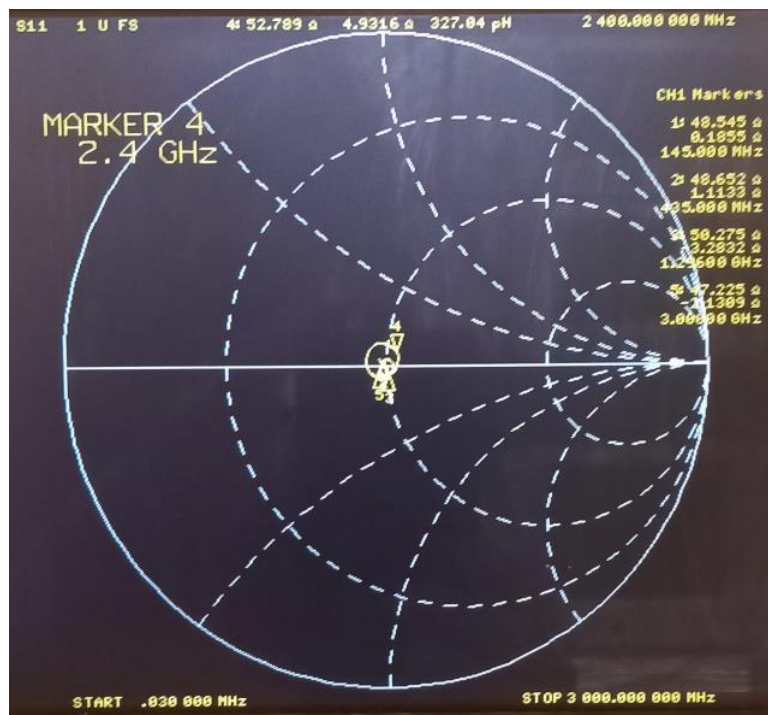
The input return loss S11 log mag is better than 25dB in all ham radio bands up to 2.4 GHz.
Most likely the attenuator can also be used for the 9cm band but I did not verify this.

More precisely the return loss in the ham radio bands is:

145 MHz	36.52dB
435 MHz	34.99dB
1296 MHz	29.61dB
2400 MHz	25.24dB

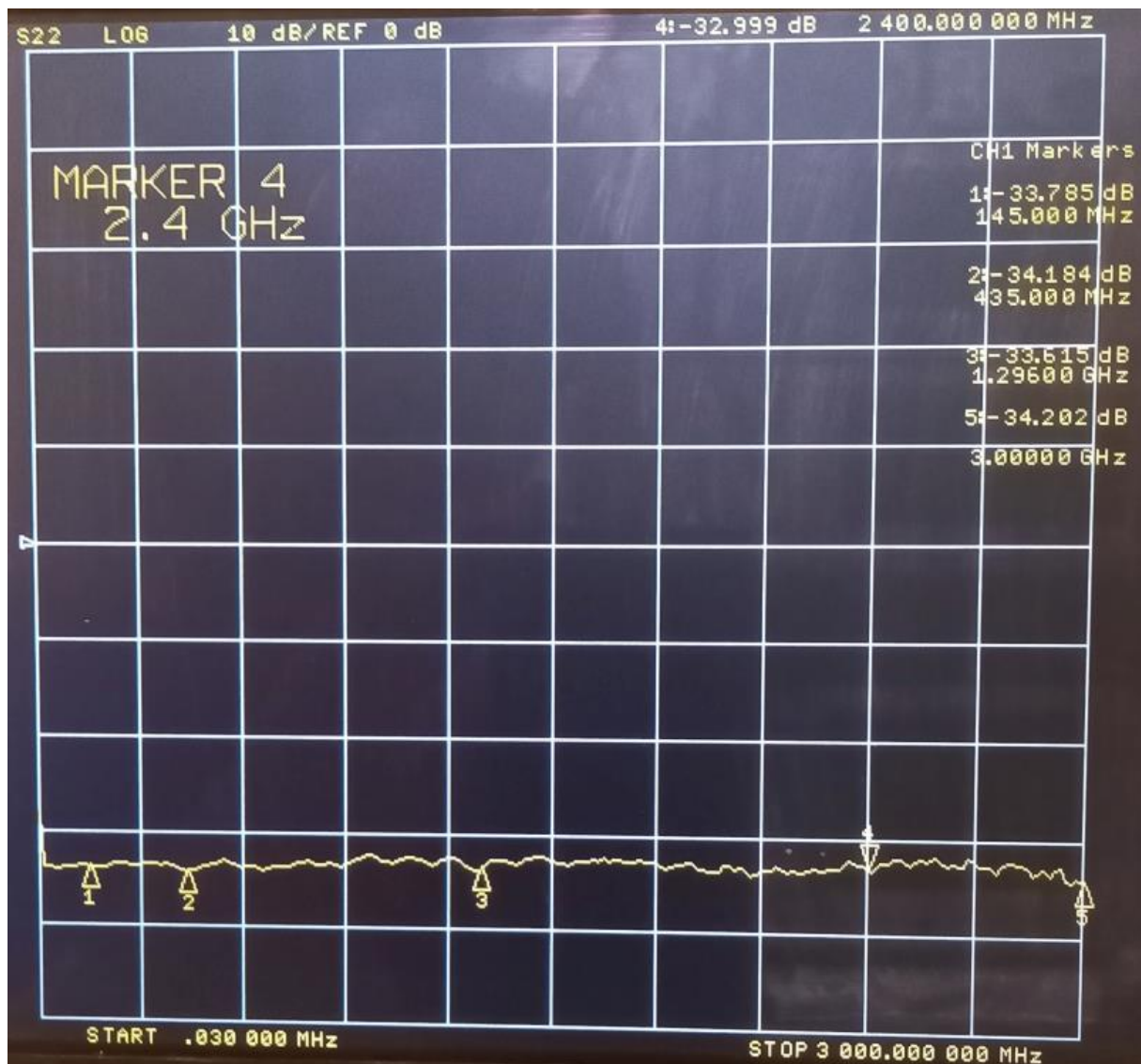


Correspondingly the input VSWR is better than 1.12 in all ham radio bands up to 2.4 GHz

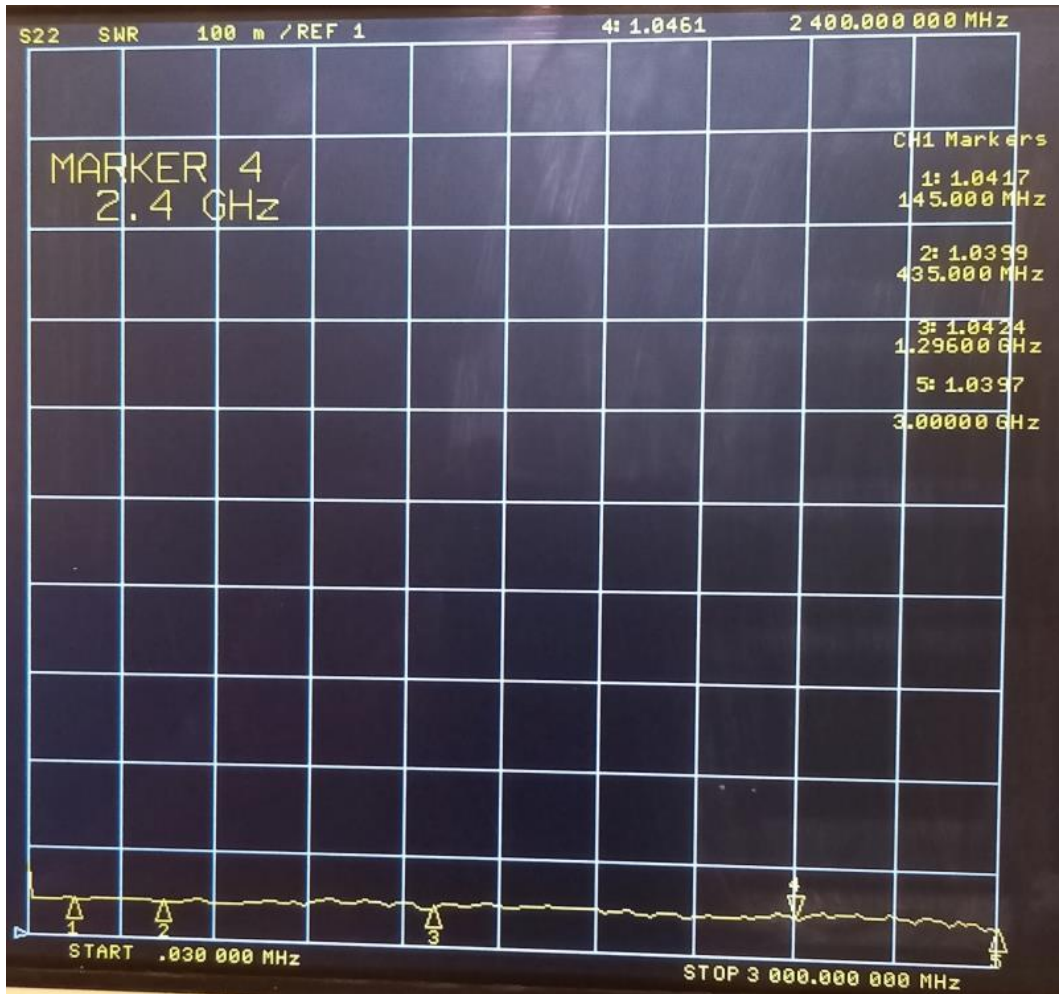


Smith Chart of S11

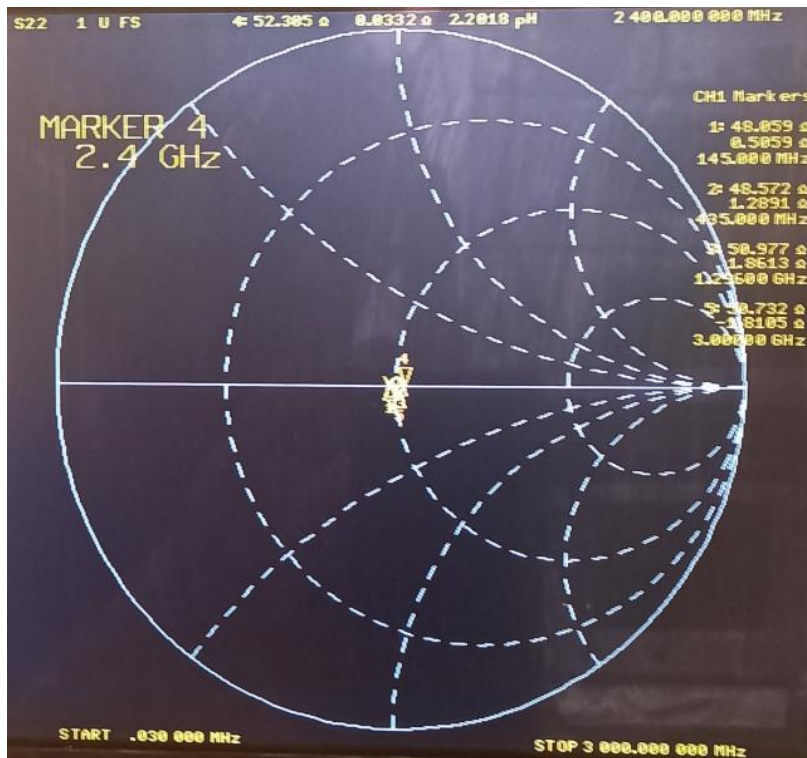
Finally I measured the output matching S22



The output return loss (S22 log mag) is 33dB or better in all ham radio bands up to 2.4 GHz.



Correspondingly the output VSWR is better than 1.05 in all ham radio bands up to 2.4 GHz



Smith Chart of S22

After finishing the measurements, I mounted the attenuator on a heatsink. The chosen heatsink was a compromise of size versus power handling capability. I wanted the combination of attenuator and heatsink still small enough to fit on my workbench in order to integrate it in my measurement setups. Most of my measurements are in the power range up to 30W for which the heatsink should be adequate. For extended measurements at higher power levels (up to 250W) I will add one or two fans to keep the setup cool.



I also added the calibration data (Attenuation and Return Loss) for the common ham radio bands.



The Aeroflex / Weinschel power attenuator model 6464-1 is very well suited up to the 2.4 GHz frequency band with an attenuation of 19.1 – 19.7dB, an input return loss of min. 25dB and an output return loss of min. 33dB.

Most likely this attenuator is useable up to 4 GHz but I have not verified this as I am presently not operating in the 9cm band. I always appreciate feedback. Many thanks in advance.

Best regards

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