

## 1.5-15 GHz Vivaldi antenna designed by WA5VJB

Matthias, DD1US, 13.01.2021

Some months ago, Sam G4DDK kindly sent me a pair of Vivaldi antennas designed by Kent WA5VJB.

Initially I planned to use them as an ultrawideband feed for my dish but as I am presently preparing an antenna measurement setup, I decided to put an available plastic housing around them and use them as reference antennas.

In order to be able to swap antennas / feeds easily I mounted adapters for ¼" screws to the housings. This will allow me also to attach them easily to a camera tripod.

The coaxial transitions of the antennas is made with semirigid cables with N-jacks attached to them. This N-jacks are mounted in the plastic housings and provide adequate mechanical decoupling even when using thicker coaxial cables.

The plastic encasing protects the Vivaldi antenna against rain but it is not perfectly water tight. Therefore, I coated the PCB based Vivaldi antenna with a polyurethane film and also added a venting hole to the housing. This hole is covered by a Teflon membrane (DAM-AD10 from S+S Sensors) and thus humidity in the housing can escape.

Here are some pictures of the setup:

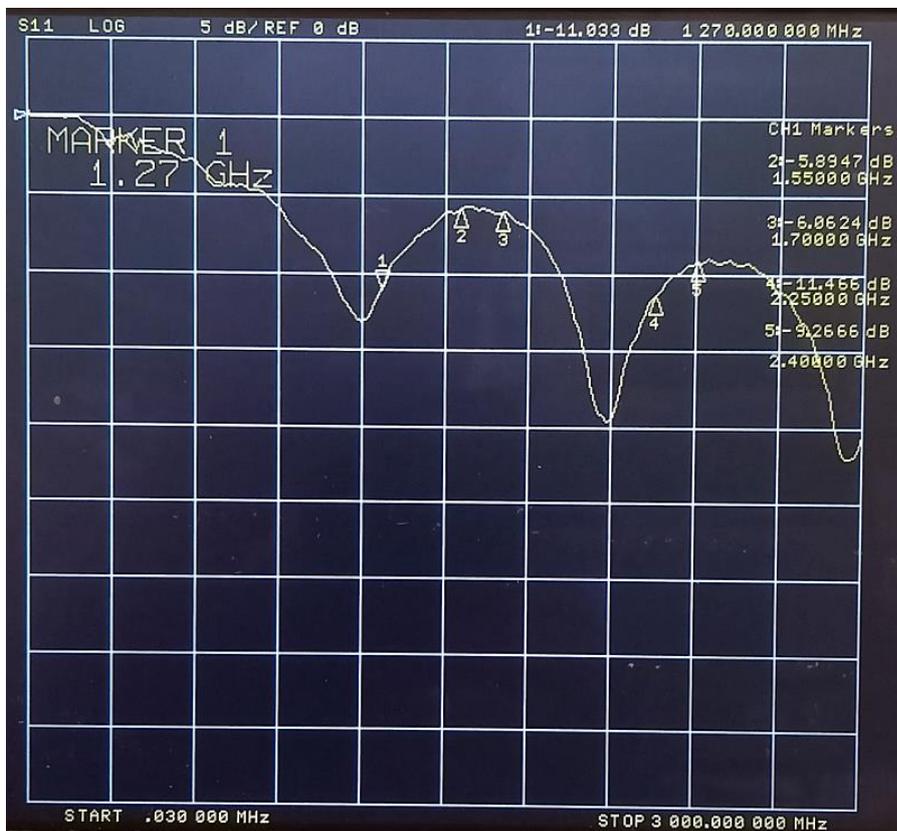
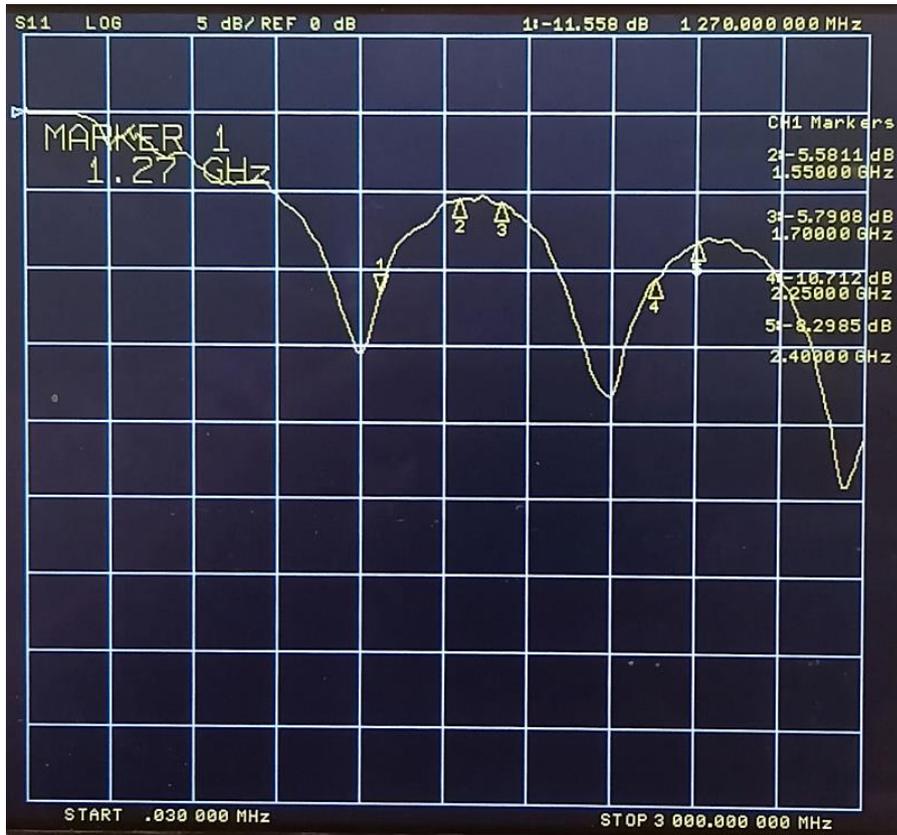


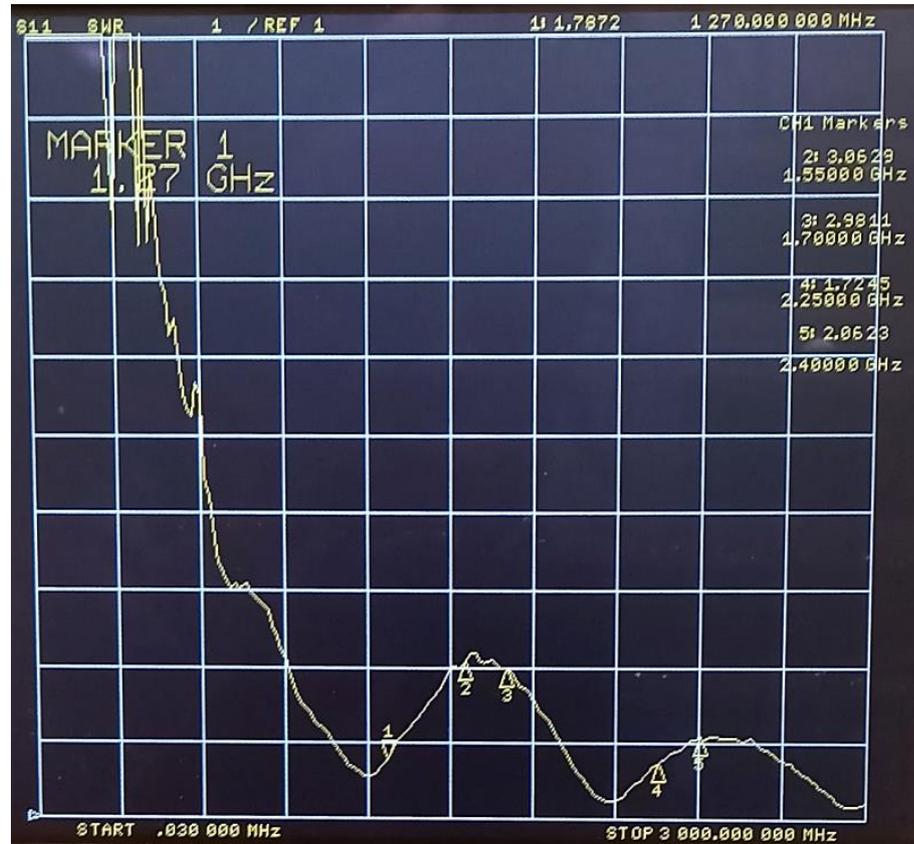
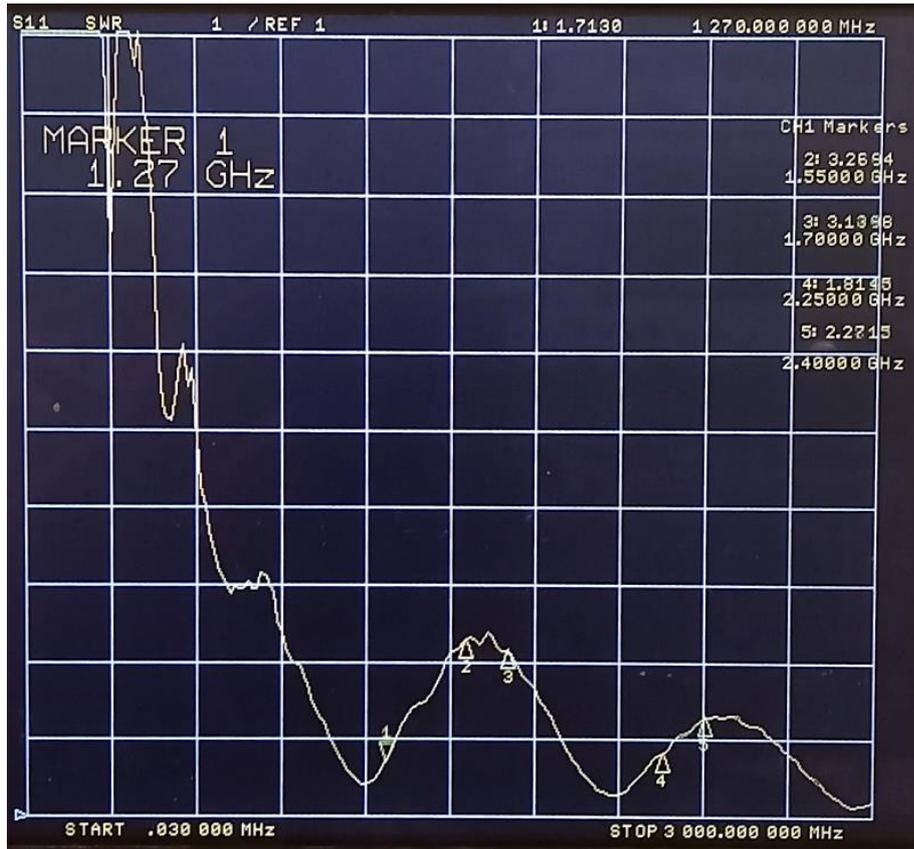




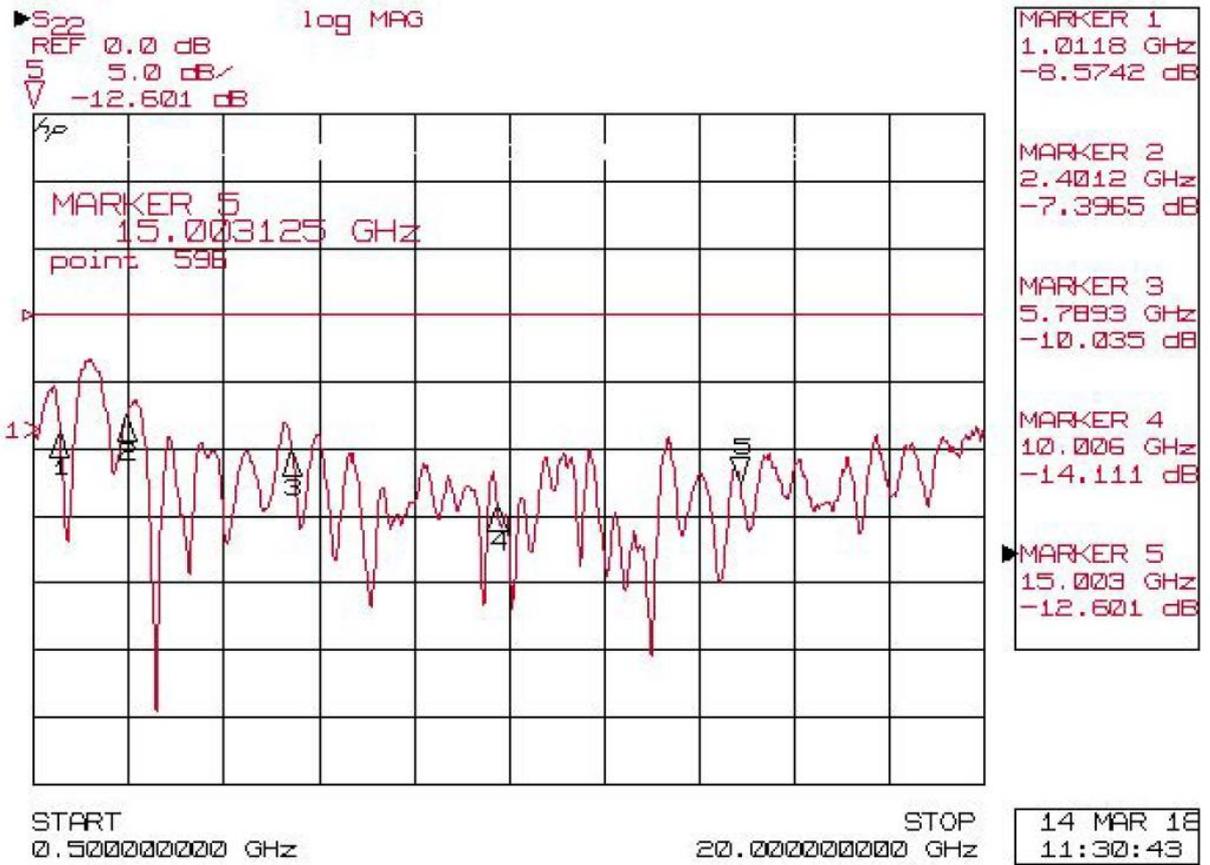


Next, I made some measurements of the return loss of the antennas. In order to avoid any reflexions, I had put the antenna out of the window directed away from the house. My present measurement setup is limited to the frequency range 50kHz to 3 GHz. Here are the results of both antennas for comparison:

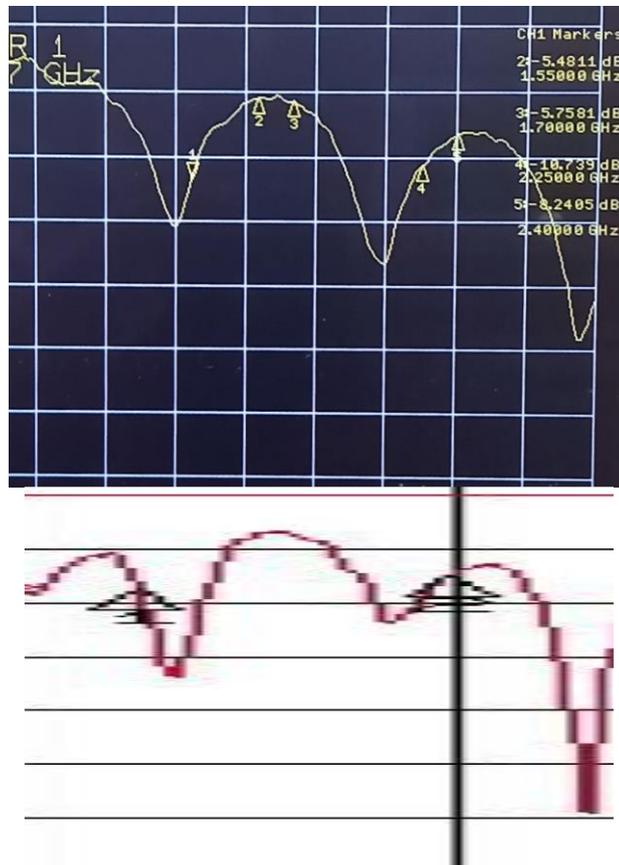




Both antennas show almost identical return loss. For comparison here is the S11 return loss of such a Vivaldi antenna measured by Kent WA5VJB in the frequency range 0.5 to 20 GHz:



I zoomed out the same frequency range I had measured and the resulting curves are very similar.



I am always interested to get feedback and hints for possible errors or improvements. Please send you answer to the Email address given below.

Kind regards

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