Septum Feed – History in OK.

By Frantisek Srihavka, OK1CA

The need to control MAGION science satellites launched in 1992 by the Geophysical Institute of the Academy of Science of Czech Republic, ASCR, created the requirement for a dish antenna feed with both circular polarizations. Franta, OK1CA, an employee of ASCR, asked J. Kysela, OK1AHH /silent key 2001/, a professional RF antenna designer at Radioelectronic Institute of TESLA Pardubice, now ERA Pardubice, to help design and develop the required feed. Kysela designed the septum feed for a 10 m dish in 1992. This feed was used for receiving telemetry from MAGION 4 and 5 satellites on 1.6 GHz.

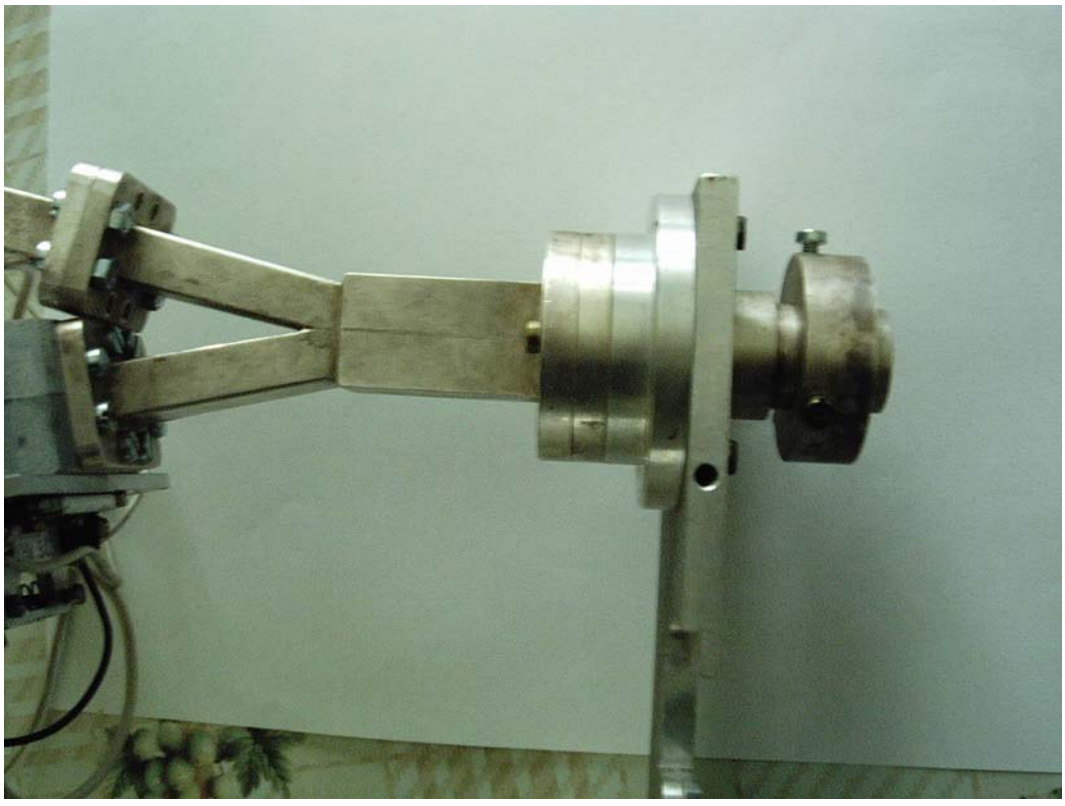
At the same time, members of radio club OK1KIR were looking for a feed suitable for EME applications at 5.7 and 10 GHz. Kysela designed these septum feeds for both bands, probably based on IEEE references. A feed for 10 GHz, designed by Kysela, was first built by Antonin, OK1DAI, in early 1993 with construction of the 5.7 GHz feed beginning in the later half of the same year. Feeds for other amateur radio bands have been designed based on these two examples. Antonin published technical information on the 5.7 and 10 GHz feeds in the French magazine "HYPER" for the 1998 EME conference in Paris. Additional information on septum feed was published by Zdenek, OK1DFC, on a CD ROM prepared for the 2002 EME conference in Prague.

Septum feed 5.7 GHz OK1DAI

Franta designed and built a 10 m dish antenna incorporating septum feed in a Cassegrain configuration in early 1995. The first QSO on 23 cm was established on 7 May 1995. The first contact on 13 cm was made by Franta on 27 March 1999.

All feeds described above were manufactured according to Kysela's design, using a square shaped waveguide coupled to a circular aperture. Feeds were of simple design or perhaps included a multi-collar choke. The septum feed described by Zdenek for the 2002 EME conference in Prague employed a square shaped aperture. This type of septum feed is mechanically simple to manufacture and is suitable for deeper dishes with F/D ratios of 0.35 to 0.40.

Septum feed design continues to evolve with further improvements being made to the basic configuration, such as the modified feed developed by R. Galuscak, OM6AA, which is described in the following article.



Septum feed 10 GHz OK1DAI