

Important note on OK1DFC Septum feed 1296 – f/D: 0.32 PA0PLY

Brief: Where my feed construction ended.

Some time ago, I have constructed a square Septumfeed for 23cm using below details. Since my dish is for f/D 0.32 following modifications has been made.

A f/D=0.32 results in ideal feed dimension of 130x130mm as shown in the table below.

2. Table of WG compare beam width 1296 MHz

Septum feed size A x A	E-H ° for 10 dB beamwidth	Optimum for f/D dish	
		Low noise	Max.gain
130	154	0,31	0,39
135	148	0,33	0,41
140	142	0,35	0,43
145 x 145	137	0,37	0,45
150	127	0,41	0,47

This feed was constructed using following dimensions:

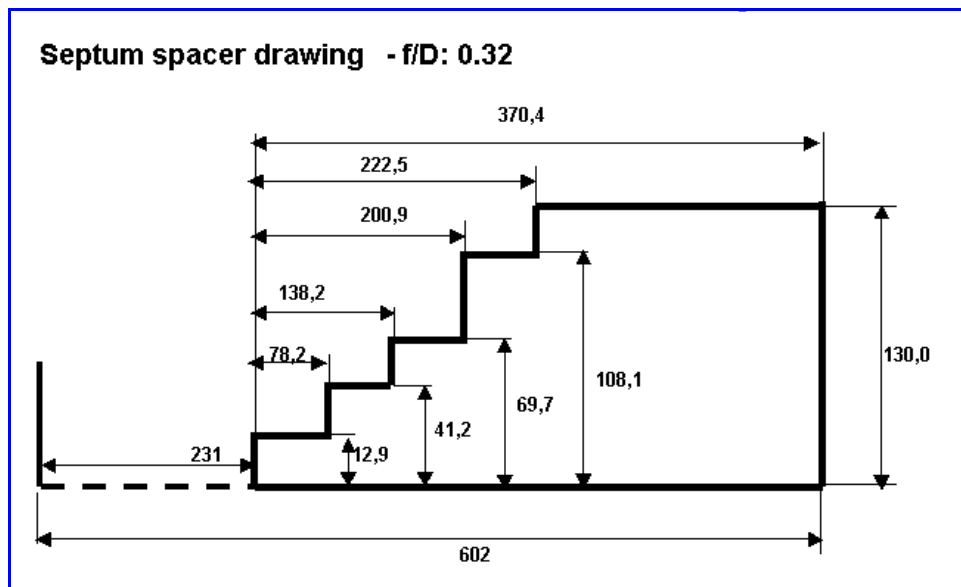


Figure 1

Results for this Septumfeed

Following the simulation results performed by Rasto, OM6AA the cross isolation was predicted to be only 10dB. Checking this parameter, it showed the simulation was correct and the concern was whether or not the feed will ever perform. Before making drastic conclusions I attempted to find my failures.

Using recent publications from OM6AA and DL4MEA in DUBUS 1/07, it was confirmed where I made a mistake.

Actually maybe two mistakes were made:

- 1) Using the initial information of the Excel sheet a choice for 130x130mm dimension feed should be optimum for f/D 0.32 dish configuration. I followed this way, while others did not change any dimension and started to experiment with different chokes added to the feed.
- 2) The septumfeed steps were scaled down for the 130x130mm feed, using the given dimension for the original dimensions given by OK1DFC.

In DUBUS 1/2007 DL4MEA described the way he used this excel sheet to determine the new size for the steps. He changes the frequency until the largest dimension fits 130mm in my case. Results are shown in figure 2, below.

Following this method it was clear to me that the constructed feed failed also because of wrong steps, resulting in the bad crossover isolation.

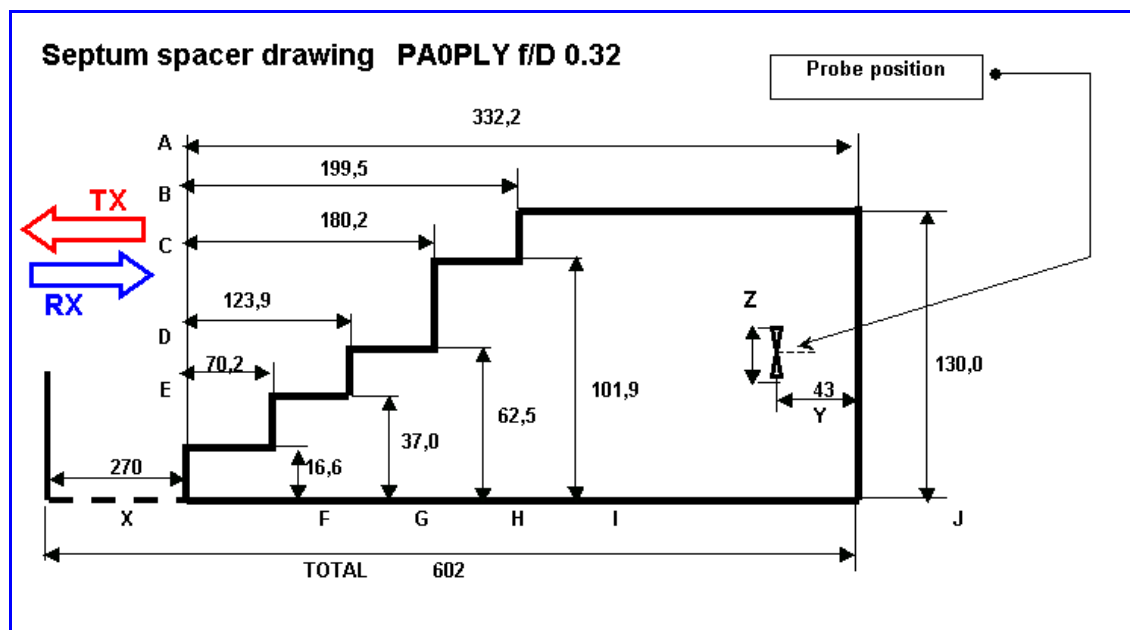


Figure 2

On the end of the day it was concluded to scrap this feed and add the experiments to gained experiences. Supported by developments on the round septumfeed by Rasto OM6AA eq as well as the continuous improvement on software simulation, I decided to construct the round septum feed system.