

OK1DFC Septum feed 1296 – f/D: 0.32
PA0PLY

Using the details given by OK1DFC the size of the feed shall be optimised for the f/D
 A f/D=0.32 results in a feed dimension of 130x130mm.
 See below table

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

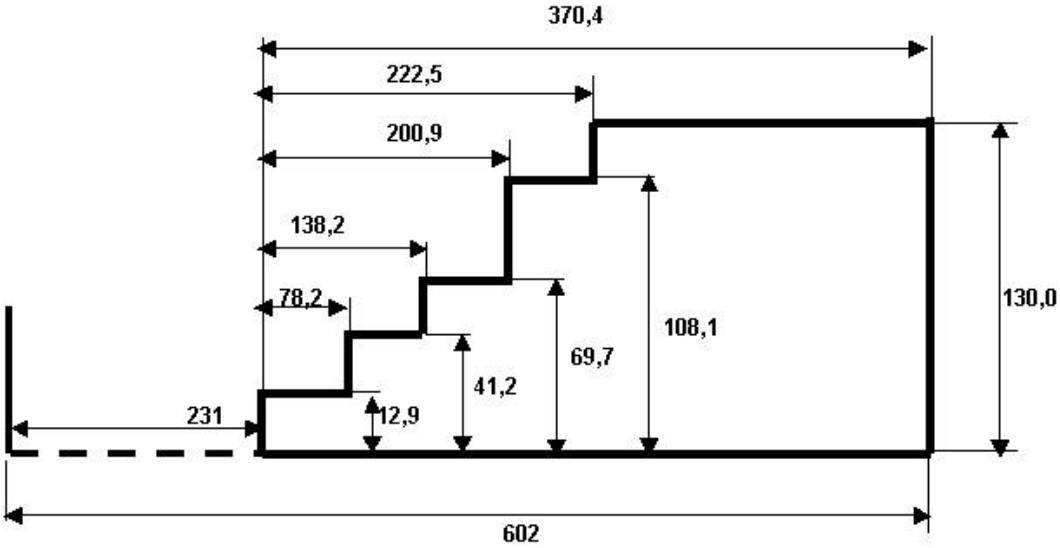


This feed was constructed using following dimensions:

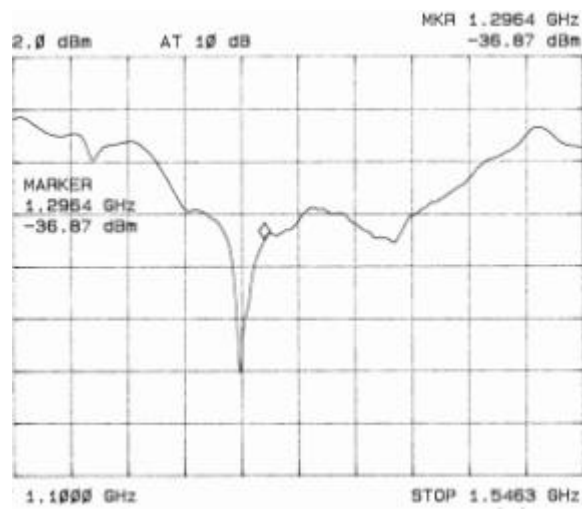
Length: 602mm
 Outside: 130 x 130mm
 Material: Aluminium 3mm

Calculation of septum transformer on picture			
Frequency:	1296	MHz	
Calcul of wave length:	231,481	mm	Lambda
Messe	distance in mm		
A	78,2	Long of tooth	0,338
B	138,2		0,597
C	200,9		0,86
D	222,5		0,961
E	370,4		1,6
F	18,5	Brite of tooth	0,08
G	41,2		0,178
H	69,7		0,301
I	113,7		0,491
J	144,9		0,626
Messe in mm			
Distance from output on feed and transformer	231	K	1
Distance beetven dipol and rear wall	44	L	0,19
Dipol long	43	M	0,185
Thickness of septum transformer sheet	1,852	No critical parameter	
Total of feed lenght	602	Total	

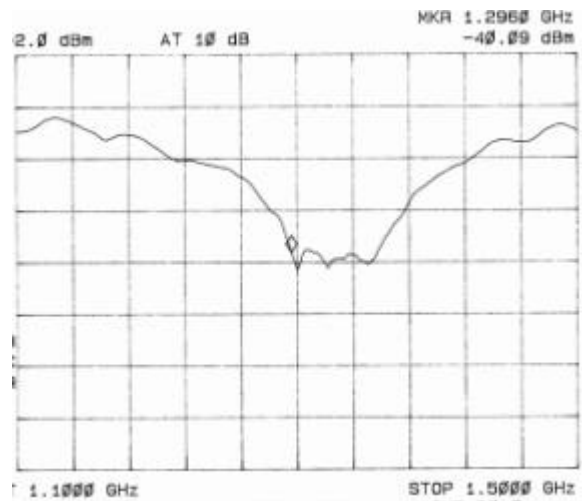
Septum spacer drawing - $f/D: 0.32$



Below graph shows the results for the RX section using above dimensions.



Below graph show the results for the TX section with different dimension for Position of monopole to backwall: 43mm.



From my experience seems the position of the monopole is majorly defining the resonance of the feed while the length and probe can be used to 'fine-tune'.

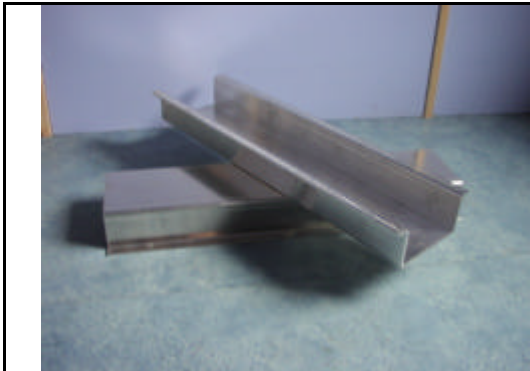
The TX graph shows more smooth / wide band behaviour compared to RX side. This might be the result of having the RX tuned as well when measuring the TX section.

Testing have been done on the feed, not mounted in the dish!

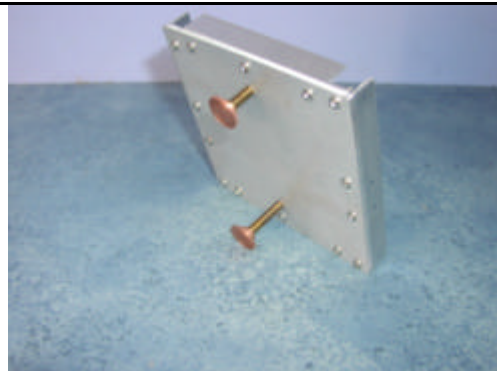
The marker shows 1296Mhz frequency

I suggest to have the mounting of the connector to be adjustable for a few mm's, so one can tune more precisely.

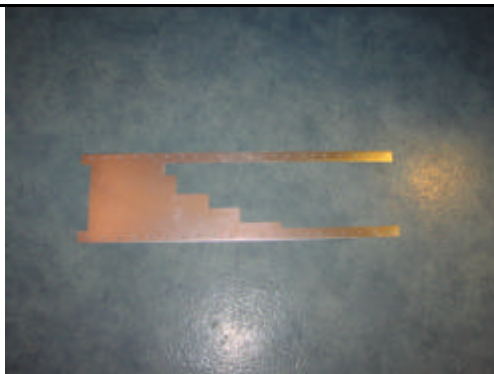
Collection of construction pictures



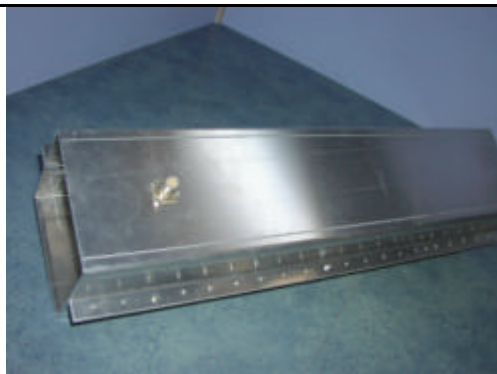
COVERSECTIONS



REARSECTION



SEPTUM



N-CONNECTOR



FEED incl PREAMP



DISH OVERVIEW