

'Patch' Feed for S-Band

Dish Antennas

[Deutsch](#)

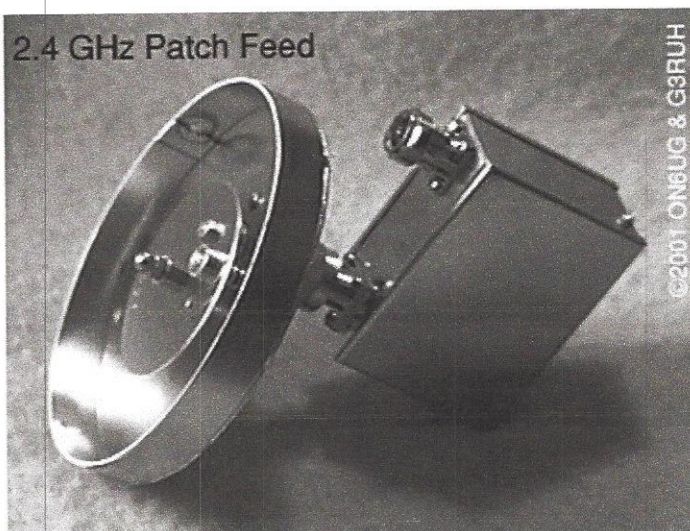
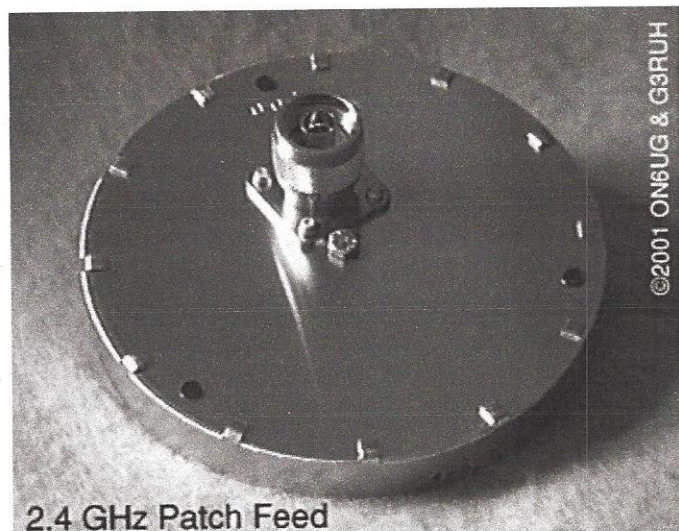
Introduction

Some years ago (1992) when experimenting with [S-band antennas](#) I threw together a simple 2 turn helix dish feed in a couple of hours, well aware that this solution could be improved upon. It had always been my intention to 'productionise' a version of this for use with the AO-40 and other amateur radio satellites. [2019 - for example the Es-hail-2 QO-100 geostationary satellite].

Experiments with an alternative feed based on the 'patch' principle showed it to be a better option both electrically and mechanically. Freddy de Guchteneire ON6UG used his formidable microwave antenna design skills to develop the feed electrically; then it was refined jointly with James Miller G3RUH who undertook production, manufacture and distribution. Together we offer you this ready-to-use design.

Description

This feed is a patch antenna for 2.4 GHz intended for use with a parabolic reflector dish. It is supplied fully assembled and tested.

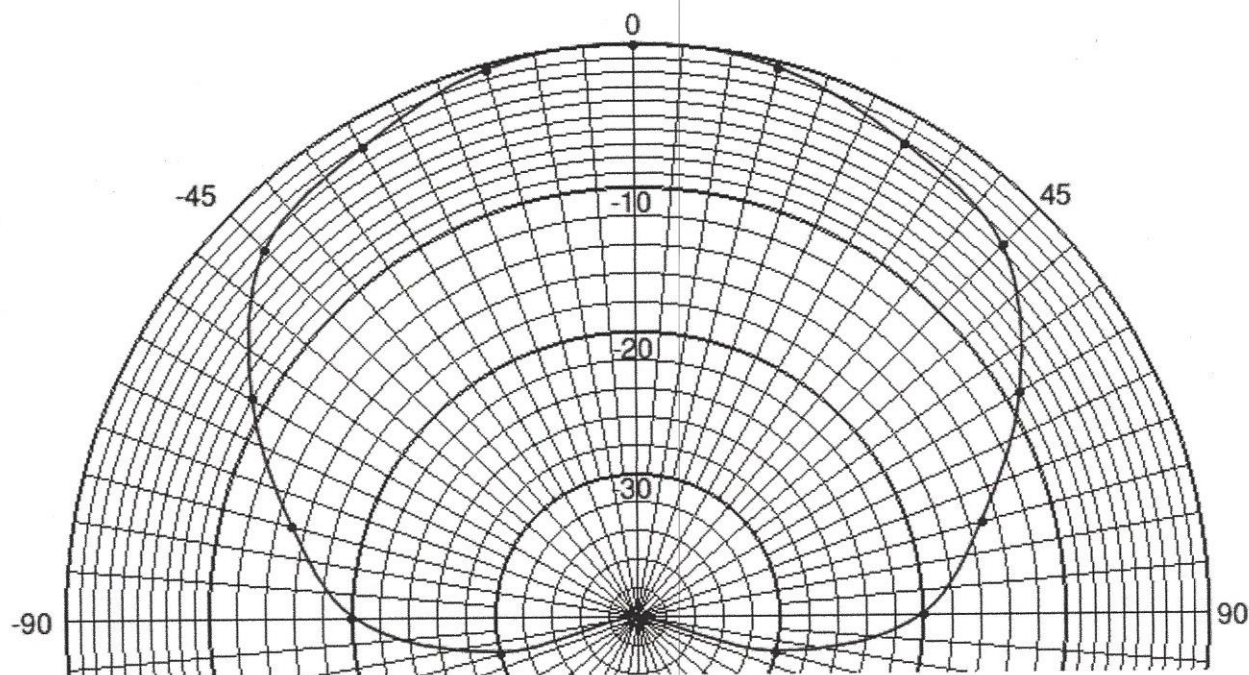


[Note: downconverter not included!]

When installed in an f/d 0.35 [60cm dish](#) for example, the ideal beam pattern of this feed results in a G/T typically 1-2 dB better than with the small helix often used for this application, and the axial ratio is almost perfect. The recommended f/d ratio for a dish using this feed is 0.3 to 0.5, the smaller values giving lowest noise reception (highest G/T), but the higher values a little more gain. SWR is better than 1.2:1 across 2.3 - 2.4 GHz. *Any size dish may be used!*

To realise the performance offered by today's lowest noise converters, you need a feed and dish system that together contribute less noise than the converter. This feed achieves that.

Feed polar plot:



The feed has LHCP (left hand circular polarisation) so that when installed in a dish the resulting polarisation is RHCP, as used by Amsat spacecraft. The feed may be used for transmission (150W) or reception.

An N-male connector is used for direct coupling to typical S-band converters. The alternative N-female connector version can be supplied at no extra charge.

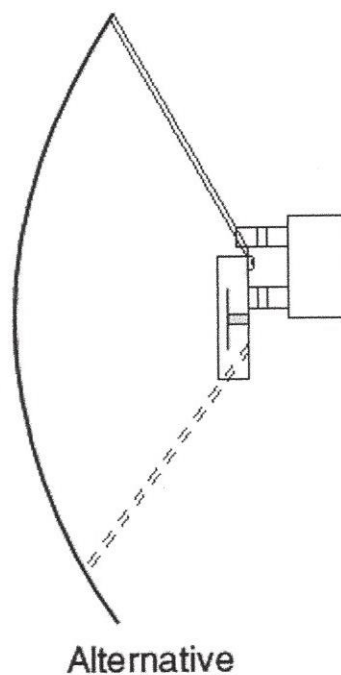
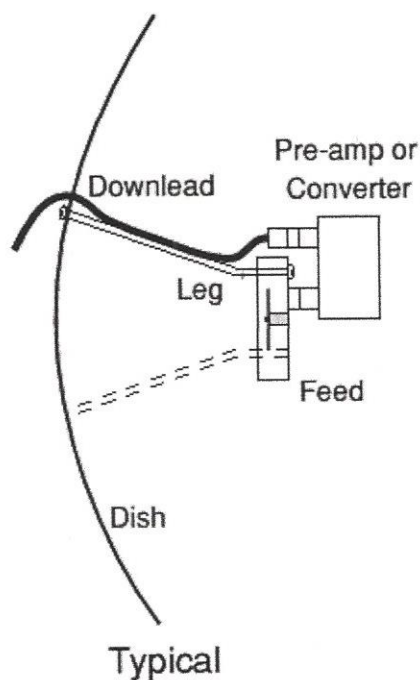
Mounting is via legs (not supplied) to three M5 (3/16") holes in the feed. The feed is weather-proofed to keep out direct rain, and is ventilated to prevent internal moisture build-up. All component parts are non-rusting.

The input is DC grounded; static charge cannot build up to damage converters.

Remember, the feed is an antenna in its own right, and can be used independently where a wide-beamed low gain system is needed.

The patch has been tested as a transmit antenna up to 150W - the limit of the PA used. [Anyone successfully exceeding this, please let me know].

Typical dish installation:



Summary

Frequency	2250-2450	MHz	
Gain	8.5		dBic
-3dB beamwidth	85°		
-10 dB beamwidth	125°		
SWR	< 1.2:1		
Axial ratio	1.05:1		
Feed polarisation	LHCP		[Option: RHCP]
Suitable dish f/d	0.3 to 0.5		
Power handling	150	watt	
Connector	N-male		[Option: N-female]
Impedance	50	ohm	
Overall diameter	120	mm	
Depth	17	mm	excl. connector
Weight	130	gram	

Price

Price of the S-band feed is **£150** plus insured carriage at cost, as follows:

Carriage

UK	£8.
Rest of world	£13, via air-mail.

[Frequently asked questions](#)

[Feedback](#) from users.

[Photos](#) of users' systems.

[Methods of payment](#)

News: 2018 Aug 06

This feed was introduced on 2001 Aug 06 at a price of £95, which remained almost unchanged for nearly 2 decades ...

Since then the cost of components has more than doubled, but as a service to radio amateurs I absorbed this. I am unable to do that any longer; hence the recent price increase.

Stock, as of date below, is:

LHCP 27 patches.

RHCP 1 patch.

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Last updated: 2019 Nov 25