

An exceptional 5el 144MHz beam antenna with high gain across a wide beamwidth - The 144MHz Slot-Q



Description

Available through **WiMo Germany** and **DX Engineering in the USA** - for Direct factory supply, Email us for pricing and time lines.

www.dxengineering.com - www.wimo.com

A 5el rear mounted Slot-Q Yagi beam antenna with exceptional performance. Ideal portable or contesting antenna. **New for 2023**

This product is provided with a G0KSC 2:1 Coaxial Balun

Main Benefits of the G0KSC Slot-Q

- More gain and similar length Yagi antenna
- Gain provided over wider beamwidth than similar performing Yagi
- more compressed down-facing lobes for less noise pick-up
- Grounded loop 'dipole' for lower noise
- High Front to Back ratio
- NO Splitter required for stack a pair - just 2 lengths of 50? Coax!

What makes the Slot-Q different?

The Slot-Q is based upon the original slot beam design. A driven loop is used as is with LFA Yagis. However, this time the loop is placed horizontally and feed at either the top or bottom. 2 reflectors and 2 directors (per position, top and bottom of the antenna) effectively increase the height of the array, a little like a pair of close spaced Yagis with a common feed point. This provides **extra gain** by suppression of the elevation plane lobe that would otherwise have unwanted pattern both in an upward and downward direction. The suppression of the elevation lobe also **reduces down-facing pattern** which in return, **reduces potential noise pick-up** from below the antenna (neighbours, houses, electrical systems, shack noise etc.) so this is a win-win scenario!

Much more gain than a Yagi?

Yes! Per foot (metre) of boom, the Slot-Q gives a much higher gain figure with lower noise pick up.

How high does the Slot-Q stand?

2m band versions of this antenna stand 60-70cms high depending on the model in question. The booms do not need to be large diameter and with the exception of the driven element (which is grounded opposite the feed point) all elements are insulated through the boom on 144MHz and 432MHz examples, electrically connected to the boom on all other bands.

Why is the driven loop connected to the boom?

The loop is fed by means of a G0KSC 2:1 coaxial loop balun, typically at the bottom of the antenna and across the boom. On the opposite side, the loop passes through and is electrically connected to the boom. Theoretically, this is a point of zero current (everything has been radiated) so just voltage at this point. This means, at the design frequency, this electrical connection is not be seen. However, the antenna feedpoint goes very high impedance very quickly either side of the design frequency. This provides a BPF (Band Pass Filter) property to the loop as well as a 'forced' balancing of the feed point for when coax cable is used to feed the antenna. The final benefit is having the driven element grounded means your receiver is better protected against static discharge related failures.

How much 'extra' gain does it have over other antennas?

It is not just the gain benefit that makes the Slot-Q exceptional, it is the vertical pattern suppression which adds an advantage too. Like Quads, the benefits in terms of performance (over a conventional Yagi) decrease with boom length. Direct comparisons are difficult to achieve as bandwidth and F/B would need to be identical to compare directly. This 5el displaces similar boom length to a much longer 4 element conventional Yagi yet delivers similar top-end gain although over a much wider 3dB beamwidth. All this with exceptional F/B at the same time.

Lots of gain over a wide 3dB beamwidth

Another benefit of the slot being short and having high gain is performance being spread over a wider beamwidth meaning less rotator turning is needed. With traditional Yagis, as gain increases, beamwidth decreases. With the slot you achieve the best of both worlds.

Is the slot still 50Ohm direct feed?

During Optimisation, the gain advantages of impedances below 50 Ω on smaller examples were exceptional. Therefore the feed impedance is around 25 Ω . For single antennas which are supplied with a G0KSC 2:1 coaxial balun. Note, As with all baluns and chokes we provide, there are no 'open' coaxial connections with infinite impedance behind any connector or socket other than where the terminals split to feed the antenna.

Can these slot Yagis be stacked?

Yes they can and with very good effect. In fact, they are far easier to stack than with most antennas because there is no need for any splitter nor 'special' impedance coax cable either. Due to the native 25 Ω impedance, a stacked pair of these slots can be connected together by means of 2 x equal lengths of standard 50 Ω coax (not 75 Ω , 50 Ω). These equal lengths do need to be odd quarter wavelengths (w/l) though. Help with this is provided in the manual. Additionally, any stacked pair would be fed on the loop side closest to one another. For example, top antenna fed at the bottom, bottom antenna fed at the top. This reduced coax lengths needed for any stack and of course, associated losses too.

No additional hardware or components (other than extra 50 Ω coax) would be needed for the stack on the basis an N-type 'T' is provided with the antennas loop balun. As the loop balun is not needed as a part of a stack, the N-type 'T' used within this arrangement is used to join the coax from each antenna to your feed line. **Using the N-type T ensures there are NO open coaxial joins within or after any balun within the system.** Another win-win!

Front to Back ratio and gain?

Typically, in most directional antennas to achieve higher gain levels, Front to Back ratio has to be given up. Likewise, if you want F/B, you need to give up a little gain. One advantage with the Slot-Q is it tends to deliver exceptional gain and F/B at the same time. Front to back drops off with the longer designs, this is intentional in order to maintain a gain advantage over a similar length Yagi which as mentioned above, drops off with boom length.



The 3el Slot-Q on test with the provided coaxial 'Loop' Balun. rear mounted version shown, centre mounted version also available.

Performance

Gain: 9.71dBi free space

3dB Beamwidth: 64.2 degrees

F/B: 43.39dB

Gain above ground: 15.57dBi @ 10m above average ground

Power Rating: 5kw

SWR: Below 1.4:1 from 144.00MHz to 145.00MHz (for custom versions, 146MHz, 147MHz, 148MHz or other, This email address is being protected from spambots. You need JavaScript enabled to view it.)

Stacking Distance: 2m

2 Stacked Gain @ 2m spacing: 12.81dBi

2 Stacked F/B: 26dBi

Boom Length: 1m including rear mount section

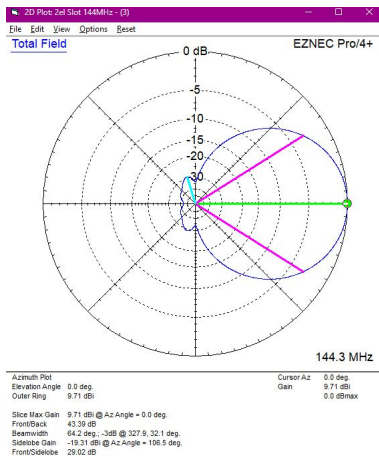
Distance between booms: 70cms

Weight: 1KG / 2.2LB

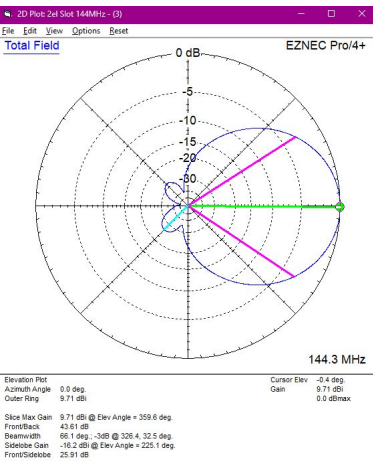
Turning Radius: 1.09m (rear mount) 62cms (centre mount)

Wind Survival: 184KPH

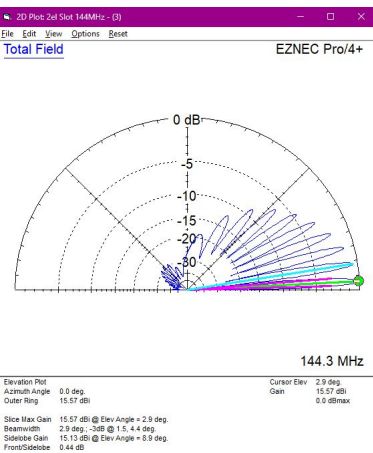
5 element slot-Q high Gain 144MHZ Yagi beam



A single 5el Slot for 144MHz with incredible F/B and gain over 64.2 degrees

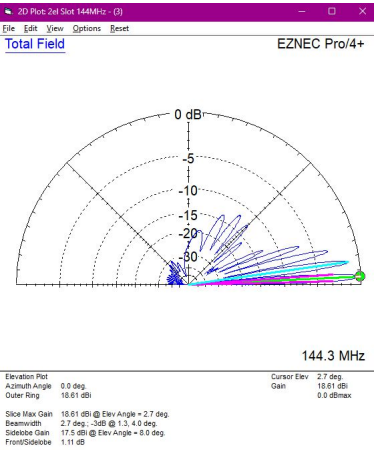


5el Slot elevation plot in free space

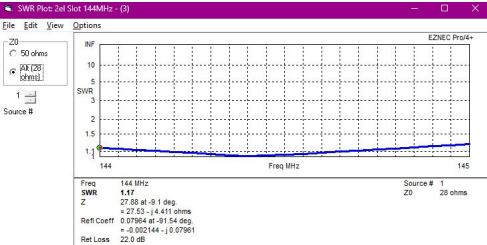


A single 5el slot placed 10m above average ground

5 element slot-Q high Gain 144MHZ Yagi beam



2 x 5el slots stacked @ 2m apart and 10m above average ground



SWR sweep for the single antenna
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