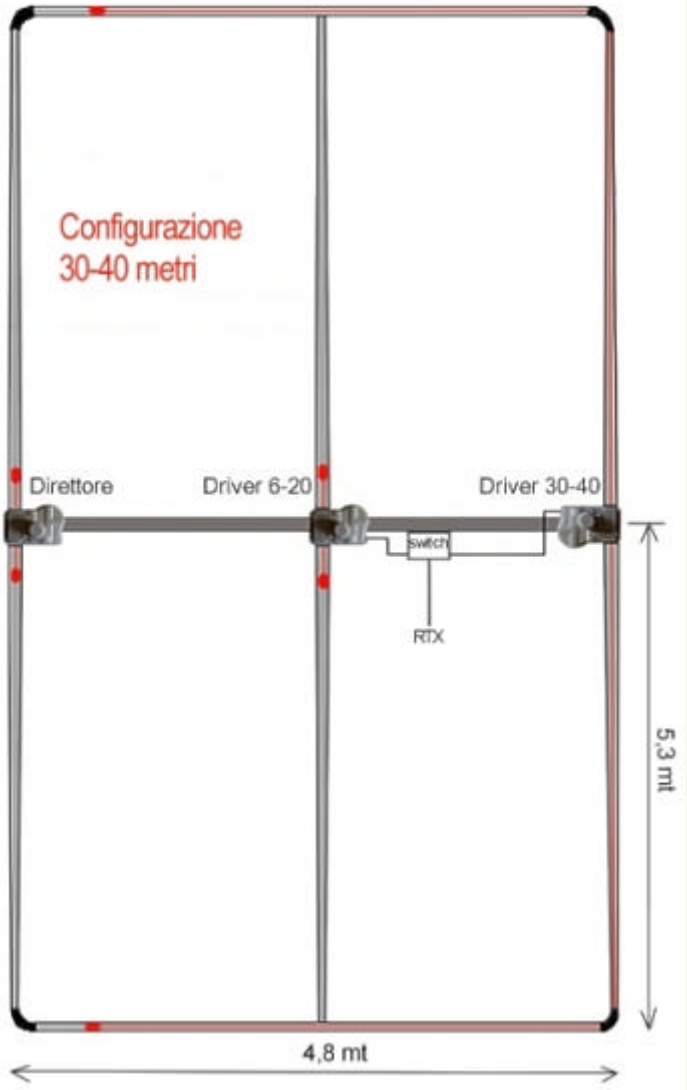
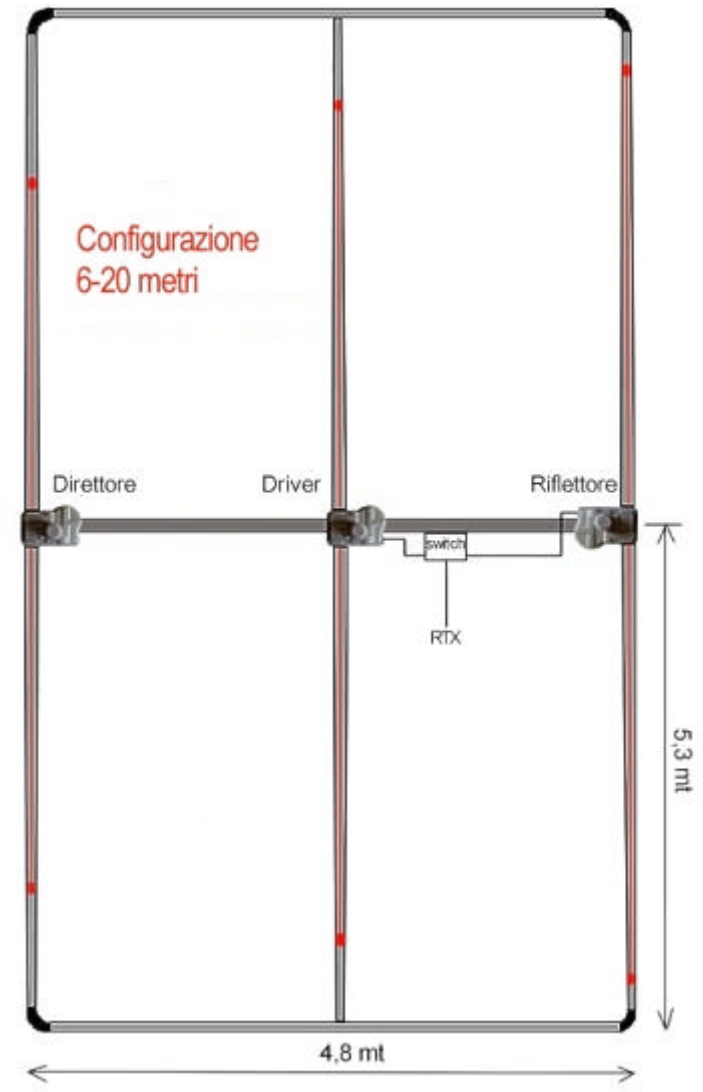
## NEW COMPACT 6-40 METERS YAGI

Today UltraBeam presents its latest UB-50.
The ability to tune on any specific frequency in the 7-50 MHz (40-6 mtr) range with utmost perfomances, soon will make this 3el Yagi antenna as a real UltraBeam "queen".

Drafted on the same design used in the 3 element Yagi 6-20 mt, the UB-50-Project has been made feasible by the convergence of determination and high tech materials. Despite the identical characteristics, weight and size as its elder sister 3el 6-20mtr), the new UB-50 features the remarkable ability to cover the 30 through 40 mtr bands as a full-size radiator (rigid dipole).


Configurazione
30-40 metri
Direttore
Driver 6-20
Driver 30-40
switch
RTX
5,3 mt
4,8 mt




The UB-50 is a 3 element Yagi with two different radiating elements automatically switched by the Antenna Controller : a driven-element when used as a 3ele on 6-20mtr and a single radiator when operating on 30-40mtr. The same switching-system designed by UltraBeam and yet successfully used in our 6-40 mtr Yagis (3el and 4el models) was the most deciding factor of the ambitious UT-50 project.

As you are probably aware, the driven-element of the 3el is matched to the 50 ohms coax-line by means of an indispensable 1:2 Balun (25:50 Ohms), if it were to be also used as a rigid-dipole on 30-40 mtr, the built-in Balun inside the Motor-Unit would cause a drastic impedance mis-match and a consequent impractical high Standing Wave Ratio (SWR =1:2,5 - 3 !). The result will inevitably be a drastic performance reduction.

Moreover, its mid-way position on the boom (center of the boom), would impose to bend it to such an extend that it would cause further efficiency loss, especially on the extrem lower end of the 40 metre-band.

Although the principle adopted in the 30-40 mtr element of the UB-50 is not quite new, in the case of the UB-50, we designed the geometry of the 30-40mtr full-size element to achieve the performance of an actual rigid-dipole.

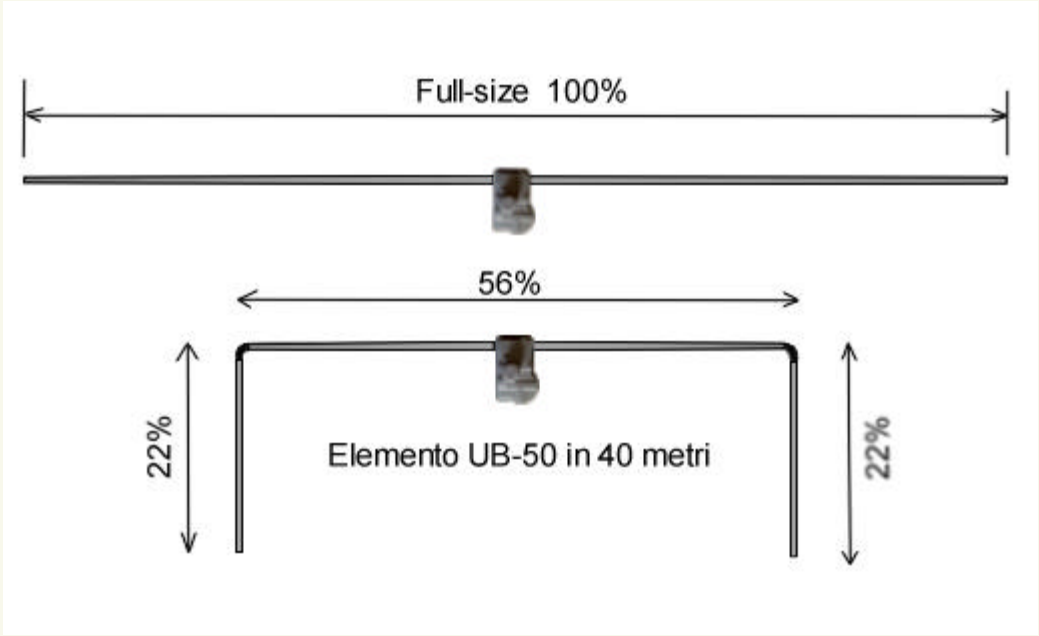
After many tests, UltraBeam fully met this aspect by bending the element as a "U" and positioning it on one end of the boom. This proved to be the most perfoming geometrical form of a radiating element and could be feasible in a dynamic-antenna system. The "U" form garantees an almost

constant 50 Ohms impedance in the full operating rang while the grade of efficiency on the extreme edge of the 40mtr band is still perfectly comparable with that of a free-standing rigid-dipole.

If this most effective UltraBeam solution can only be used in a dynamic antenna system, it is because in conventional antennas (aluminum, wire, etc..), despite a rather feasible matching, the interaction with the other physical elements on the same boom, will will nevitably result in a very reduced and, in some cases, impractical performance.

Today UltraBeam can go on record as saying to be the first antenna producing Firm ever to have achieved utmost performances with a bent 30-40 mtr rigid-dipole in a dynamic-antenna system.

The drawing shows the bending-percentage in comparison to a 1/2 Lambda 40 meter-band full-size dipole.




Our dynamic antenna system not only represents a multi-band antenna that has the ability to precisely adjust the length of each element (while in the air) to achieve the best performance in terms of gain and front to back ratio but, as you are probably aware, it also is the only system with the ability to better build different antenna-configurations and let them cohabit on the same boom and yet with utmost efficiencies.

In traditional multi-band Yagi antenna the presence of a bent radiating element inevitably influences the performance of the antenna on other bands and viceversa, in the case of the UB-50, when it performs as a 6-20mtr Yagi or as a 30-40mtr rigid-dipole, the specific element or elements wil be driven in or out from each related Motor-Unit in accordance with the selected band.

The Variable Reeling System (VRS) designed and developped by UltraBeam to grant utmost reliability to our Motor-Units, was very decisive, especially in terms of reliability and length accuracy in a dynamic system where the copper-beryllium strip has to travel a 90 degrees curve in a radius of only about 10 centimeters. It was the extraordinary reliability of the VRS that has made the UB-50 feasible and has permitted UltraBeam to continue offering absolute utmost performances.

Another important feature of this new antenna is the high reliability of the material used in the additional tubing necessary to bend the 30-40mtr element.

These tubes are made of neutral-coloured fiberglass-woven fabrics that, depending on the direction of light, distance of observation and rotation of the antenna, appear almost invisible and, beyond a

certain distance, the only structure to be distinguishable are the three antenna-elements (6-20mt) only.

***UB-50 FEATURES ON 30-40 METRE-BANDS:***

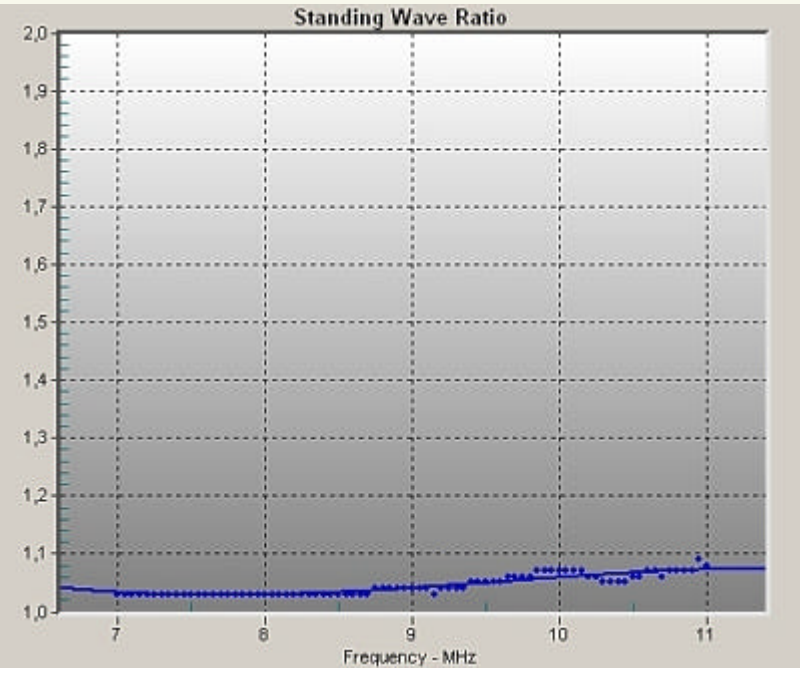
-Performance: extremely close to full-size* rigid-dipole
-Impedance: 50-54 Ohm - continuous coverage from 7,000 to 13,000 kHz
-SWR: 1.1 - 1.2 on both bands-
-Weight: 1 kg more than the 3 elements 6-20mtr
-Wind-area: 0.67
-Turning radius: 5.6 m

* We remind you some theory: the shorter the antenna respect to a ½ wave antenna (traps, linear loading, folded elements, etc.) the less the bandwidth and performance.

The UB-50 in this sense behaves very similarly to a full-size dipole. With the Antenna Controller blocked on 7,100 kHz the SWR graph relative to 7,000 to 7,200 kHz range will show an SWR of 1:1.3 on the extrem edges of this range. This measurement has been taken for demonstration purposes only.

Please, remember that as any other UltraBeam antenna, the new UB-50 has inherited the capability to precisely adjust the length of each element to the frequency in use, therefore, you can tuned it for a perfect SWR of 1:1 over the whole range.

The graph shows the behavior of the antenna in continuous coverage from 7,000 to 11,000 kHz.




The new UB-50 is especially intented for those Hams who do not have enough space to install one of the larger 6-40mtrYagis but want to operate in these two important bands without too much many sacrifice or compromises.

If UltraBeam has taken a long time to produce what is irrefutably the most requested antenna system, it is solely and exclusively because we never wanted to build an antenna only based on the reduction of its dimensions.

UltraBeam always wanted to produce an antenna that despite reduced dimentions had an efficiency almost identical to that of a reference full-size 1/2 Lambda dipole.

Last but not least, we wanted to have an effective full-size dipole with a genuine 52 Ohms impedance on the 30-50mtr like any other UltraBeam antennas.

UltraBeam is proud to has fully met all design aspects of the new UB-50 project and can go on record by saying that, in terms of performance, size, weight, wind-area and cost, its exclusive project is the most compact continuous-coverage antenna ever produced.

Before the UB-50 came above on the market, Hams around the world have never had the possibility to cover 6-40mtr (34 MHz of rf-spectrum !) or, if you prefer, the 6-10-12-15-17-20-30-40 metre-bands with the performance you can get from the new UB-50 !

Here follow some impressions received from one of the first UB-50 owners:

**" Hi Vincezo,**
**Yesterday put up my UB-50.**
**First impressions are very positive - 3W6C on 40m CW second call with 500W in big pileup,**
**ZD8RH on 20m CW first call with medium pileup.**
**Signals on 40m are 1-3S units stronger than on my 2x20m 160/80/40m loaded inv. V dipole**
**with apex at about the same height as UB-50.**
**This morning couple of ZL's on 30m with good signal reports both sides,**
**KH6 on 20m CW/SSB like a snap.**
**Antenna is working very good on 40/30m despite is only about 7 meters**

**above roof.**
**180 deg reverse and bi-directional features are amazing.**

**Many thanks!!!!**
**73, Mirek SP1NY "**

The new element support-plate for the new UB-50 !