

SteppIR UrbanBeam 40- to 6-Meter Antenna

Reviewed by
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Most serious DXers will agree that a monoband beam for each band is the best HF antenna setup. Unfortunately, for most of us, an antenna farm like that is not possible because it requires too much land and likely more than one tower. But still, the idea of having a monoband beam on all bands is a dream for many hams.

I consider myself very lucky that on my 6,500-square-foot lot I can have a 56-foot tower. In the past, I had an 80- and 40-meter dipole (using the same feed line) and a two-element beam for 10, 15, and 20 meters. I was missing the 30-, 17-, 12-, and 6-meter bands, as well as 160 meters. I had another wire antenna covering from 10 to 20 meters, but I couldn't install it very high. I was also concerned about what the neighbors might say if I installed too many antennas on my small lot.

I know it should have been the other way around, but I have a lot of high-end gear in my shack, and it was time to invest in a better antenna. I wanted to improve my signal (both receive and transmit) and cover more bands, without having to move my family. Adding to the challenge, my tower is limited to 6 square feet of wind load, and I wanted to be able to operate up to 1.5 kW. The UrbanBeam from SteppIR looked like a great fit for my needs.

Overview

SteppIR antennas use a clever design where the antenna elements are made from copper tape in combination with a stepping motor to



adjust the element length. You can match any frequency within the bands of operation — it's like trimming your antenna length every time you change the operating frequency. The copper tape elements move within fixed fiberglass poles that provide structural integrity and protect the components.

The SteppIR UrbanBeam works as a compact two-element beam from 20 through 6 meters. It is configured as a rotating dipole on 30 and 40 meters. The beam uses a driven element and a director element. The director is used only on 20 through 6 meters, and is completely retracted for operation on 30 and 40 meters. The driven element covers from 40 through 6 meters, acting as a folded dipole on 30 and 40 meters, where the driven element is quite long and sweeps around into the area used by the director for the other bands.

The SteppIR antennas use a matching controller in the station, connected by a shielded multiconductor cable (12 conductors for the

Bottom Line

SteppIR's compact UrbanBeam operates on 40 through 6 meters with a single feed line. It's a folded dipole on 40 and 30 meters, and a two-element beam on the other bands.

Table 3
SteppIR UrbanBeam
Specifications

Frequency coverage:	6.8 – 54 MHz
Boom length:	4.0 feet
Boom outside diameter:	1.75 inches
Longest element:	30.5 feet
Turning radius:	15.5 feet
Weight:	45 pounds
Wind load (EIA-222-F/G):	7.9 square feet
Wind load (EIA-222-C):	4.4 square feet
Power rating:	3 kW continuous

UrbanBeam). When you buy the UrbanBeam, it includes the standard SDA 100 controller. With the SDA 100, you can adjust the element length manually from the front panel or automatically, if you add an optional radio interface. Other options for the SDA 100 include amplifier lockout during antenna tuning and an advanced lightning protection (ALP) module. I upgraded to an optional SDA 2000 controller (called the "OptimizIR") that has these options built in, as well as other useful features. I won't cover the SDA 2000 here, but for more information, see the review by Martin Ewing, AA6E, in the October 2018 issue of *QST*.

The UrbanBeam turning radius is 15.5 feet, with the longest element at 30.5 feet. The boom length is only 48 inches, and the antenna weighs 45 pounds (see Table 3 for specifications).

Parts Checklist and Antenna Assembly

SteppIR introduced this adjustable element technology in 2001 and has used it in a number of different antenna designs. The technology has improved over time, but attention to detail during antenna assembly is very important for years of reliability.

In addition to upgrading to the SDA 2000 controller, here's the list of the other options I got with my kit: 110 feet of 12-conductor control cable; a DB-25 field splice board used to connect the control cable to the controller; a connector junction box that creates a pluggable/unpluggable connection for the antenna wiring (see Figure 5); and a transceiver control cable.

The antenna was shipped in an impressively compact box, and it was very well packed. Figure 6 shows all of the parts. SteppIR recommends that you read the manual twice before starting the assembly, and they also recommend doing a complete inventory of all the parts that came with the antenna. I followed these recommendations, and it was very helpful. Reading the manual with all the parts around me helped me understand where all the parts go.

I have to admit that at first, I was intimidated by all the parts required

for the assembly. If you follow the steps in the well-illustrated manual, it's like building a LEGO set. It took me around 20 hours to do the assembly, and 95% of it was done in my 16 × 28 foot garage. The main advice I can give is to take your time. It is a complex antenna, but the instructions are excellent. The final result after assembly is a very solid antenna.

Operation on the Air

The SDA 2000 controller (see Figure 7) is a pleasure to operate. You just select a band, and then you can fine-tune the antenna for the operating frequency by turning the knob. I found that adjusting the length

(SWR) was easy to do manually, and I preferred this mode over automatic tracking from the transceiver.

Although, lately, band conditions have varied, I was impressed by the performance of the UrbanBeam on all bands. I was very happy to add 12-, 17-, and 30-meter operation to my station, as I didn't have antennas for those bands previously.

The most improvement for me was on 40 meters. Prior to the UrbanBeam, I had a half-wave 40-meter inverted-V dipole that shared a feed line with my 80-meter dipole. The feed point was about 2 feet lower than the beam. The



Figure 6 — All the parts that came with the author's UrbanBeam kit.

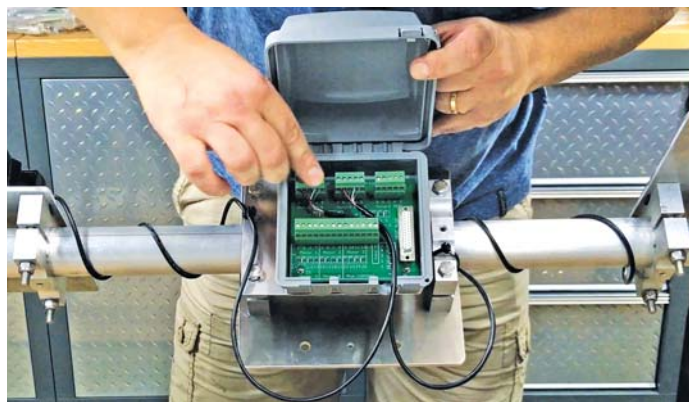


Figure 5 — The optional connector junction box offers a convenient way to connect and disconnect the antenna wiring.



Figure 7 — The optional SDA 2000 controller offers many additional features compared to the standard SDA 100.



Figure 8 — The UrbanBeam installed on the author's tower on his small lot. An inverted V for 80 meters hangs just below the beam.

UrbanBeam completely clears the surrounding obstacles of my small lot, and the improvement on 40 meters is noticeable for both local and DX stations. For example, I never worked Australian (VK) stations on 40 meters before, but now I can with the new antenna. I removed my 40-meter dipole as it's no longer needed.

With the SDA 2000 controller, you can change the antenna pattern (maximum forward gain, maximum front-to-rear, and wide beamwidth) with a simple knob. On one occasion, I was in contact on 20 meters with a strong station from Georgia, who was the only visible signal on my radio waterfall display at the time. The band was almost completely closed, but at the end of the contact, I heard another station calling me. The station was so weak that, for a moment, I thought it was my imagination. But just in case, I asked the weak station to continue to transmit while I turned the beam. Finally, I was able to hear the call sign, and with this information, I got the correct

bearing for the antenna. By adjusting the pattern, I was able to bring his signal further out of the noise, and we had a long, comfortable contact.

Conclusion

The UrbanBeam is aptly named. In Figure 8, you can see how it fits on my small lot. The day I installed the antenna, my wife was not at home.

When she arrived later on, her comment was something I didn't expect to hear in my lifetime: "What a beautiful antenna! It looks like a butterfly."

With the UrbanBeam and a single feed line, I now have very good performance on eight bands, and on six of them, I can enjoy the performance of a two-element monoband Yagi. This antenna has made a huge difference in my appreciation of my ham radio station. I have fewer wires hanging in my backyard, and the new antenna is no bigger than my previous beam.

At one point, I thought I would have to move to another location to make significant improvements to my station. Now I'm only missing 160 meters, which will be another project.

If you would like to know more about my experience with the UrbanBeam, videos showing the unboxing and step-by-step assembly are available on my website at www.va2pv.com/steppir-urbanbeam-sda-2000-optimizir-en.

Manufacturer: SteppIR Communication Systems, 13406 SE 32nd St., Bellevue, WA 98005; www.steppir.com. Price: Urbanbeam, \$1,769 with SDA 100 controller; SDA 2000 controller, \$899.99.



To see the video of Pascal Villeneuve, VA2PV, reviewing the SteppIR UrbanBeam 40- to 6-Meter Antenna, visit <https://youtu.be/8618e3Di6xU> on YouTube.