

Introduction of Hentenna

[Link to Hentenna Applications](#)

"Hentenna" was developed by Japanese 6m Hams ([JE1DEU](#) / JH1FCZ/ JH1YST members) in 1970s.

Finally they got new antenna with good performance, however, it was difficult to explain why the performance is so good, or how it work basically at that time, besides there are many unusual properties. So they named it Hentenna, because, "Hen" means "strange" in Japanese.

Anyway, the antenna has good performance and many advantages, it was becoming very popular in Japan. Many of JA stations make it and enjoy their Ham life at Home or in a field. Some Japanese 6m beacon stations are using Hentenna based antenna actually.

I got more than 400 hits using keyword by "Hentenna" on Japanese search engine, but, not many Hentenna information is available in English. I am very happy if we could share the good antenna with many people on the web.



1. Easy to make

- It is possible to adjust impedance and SWR perfectly, This means, not so sensitive to make.
- No special parts are required. You can use any electric conductor for making the main rectangle
- Easy adjustment

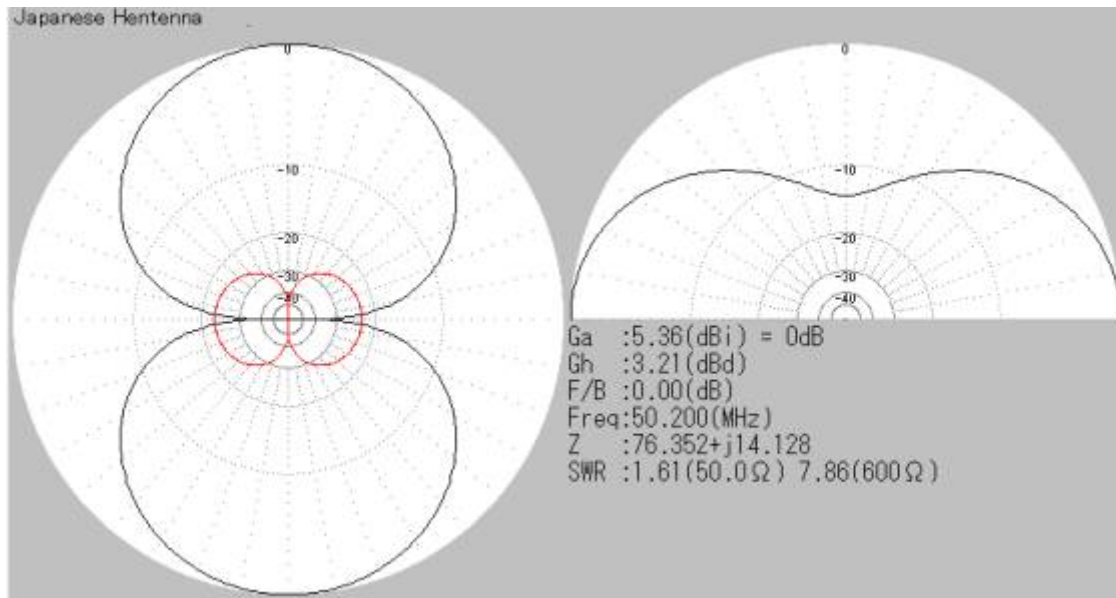
2. Easy to build up

- If you use thin aluminum pipe and thin wire, you can make this antenna for 6m less than 500g
- This means, it is easy to put it higher position in the air. You can also use light mast for it.

- As this vertically long antenna, it is easy to install the antenna on a veranda or small space.
- Vertical long physically but mainly Horizontal radiation: This is one of the reason this antenna is "Hen".

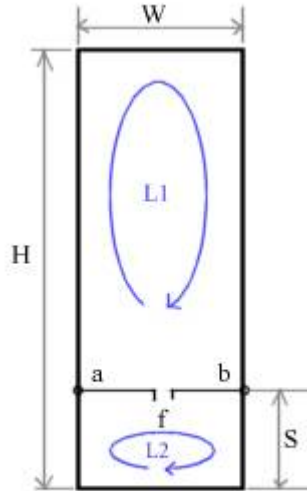
3. Good performance

- Low angle radiation
 - 3-3.5 dBd gain
- * Total performance is equivalent to 2-3 element Yagi-uda antenna,
- Wide band width



[\(MMANA Antenna Simulation Software by JE3HHT\)](#)

How to make Hentenna



General Formula	Length For 6m
$W = 1/6 \text{ WL}$	1.0m
$H = 1/2 \text{ WL}$	3.0m
S : about $1/10 \text{ WL}$ Need to adjust (Points "a" and "b")	0.6m
F : Feeding point	50 or 75 Ohm Feed here by coax cable direct (Balancer feed is preferable)
WL : Wave Length	

- Above formula is applicable from HF to UHF
- W also applicable from $1/10 - 1/5 \text{ WL}$
W:1/6 is the standard

How to Adjust

1. Move "a" and "b" point to adjust
S1 > S Matching Frequency UP
S1 < S Frq DOWN)
2. Even matching point is fixed, SWR may higher than 1:1.5, Try to move points "a": S1 + little / "b": S1 - little to find best position for SWR .
(This action makes balancer into hentenna !)

* S1: Adjusted "S" Length

Hentenna Basics

1. Basically 1 WL Loop antenna
2. L1 works as 1 loop antenna
3. L2 works as matching section
4. Vertical long rectangle make more gain than ordinal square loop and less impedance. L2 helps the matching and low angle radiation.
5. 3D pattern is like shell of peanut

6m Hentenna parts example

1. Horizontal element	12mm diameter Aluminum pipe 1000mm x 2
2. Vertical element	2mm diameter Stainless steel wire 3000mm x2
3. Feeding element	2mm diameter Copper wire 480 mm x2
4. Bite clip for "a" and "b" points	To make adjustment easier

Assembly work

Make rectangular using parts 1, 2 and appropriate bolts, press connection terminals.

Make feeder elements using 3 and 4 and coax cable.

(You can use coax connector at "F" point)

Adjust Frequency and impedance moving point "a" and "b"

Remarks : You may use electric conduct materials for the antenna mast, as far as connecting center of horizontal elements. There is no problem to use none electric conduct mast, like FRP, or using isolator for the joint points.