

145MHz/435MHz 手持衛星天線製作與量測

北台灣科學技術學院
電腦與通訊工程系

中華民國業餘無線電促進會

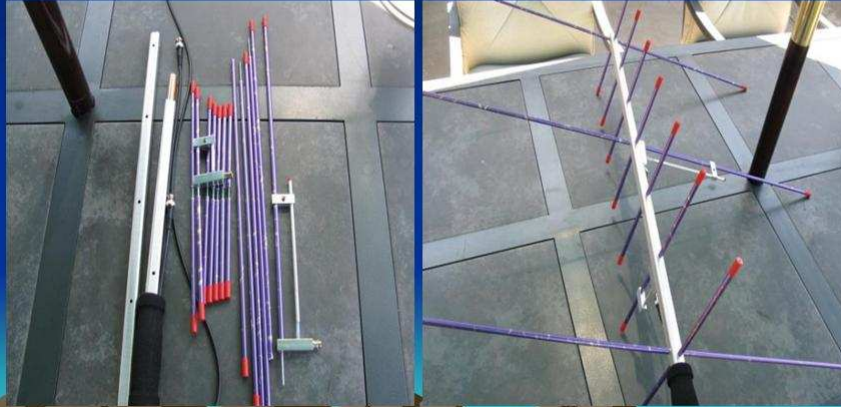
BV2OL 蔡耀斌

中華民國九十九年十二月十二日

145MHz/435MHz 手持衛星天線完成圖



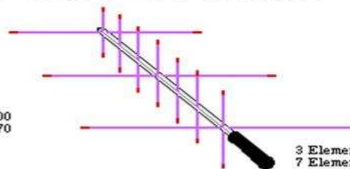
Arrow Satellite Antenna Model 146/437 - 10WBP



Arrow II Satellite Antenna

Work a Satellite with an HT

AO27 Up-link 145.950 Down-link 436.800
 UO14 Up-link 145.375 Down-link 435.070



146/437-10	Boom Length is 37 1/2"	\$ 73.
146/437-10BP	Split Boom (Bag Pack)	\$ 79.
146/437-10W	With 10 Watt Duplexer	\$ 132.
146/437-10WBP	Duplexer & Split Boom	\$ 139.

3 Elements for VHF
 7 Elements for UHF

Because the antenna
 is hand held, power
 should be kept no less
 than 10 watts Max.
 If mounted Max.
 Power is 150 watts

"BP" stands for Bag Pack or Back Pack - Two Piece Boom - Split Boom

The Arrow II line of Antennas has been engineered to provide maximum gain and efficiency in the smallest practical Size & Weight **ONLY About 19 oz.** (split boom adds 1 oz.)

Aluminum **Arrow Shafts** are used for Elements.

The 2 in-line Gamma Matches (shown below) are pre-assembled & pre-tuned.
 One connector for VHF and one for UHF and they are BNC only.
 (Duplexer & Cables included with 10W Models only).

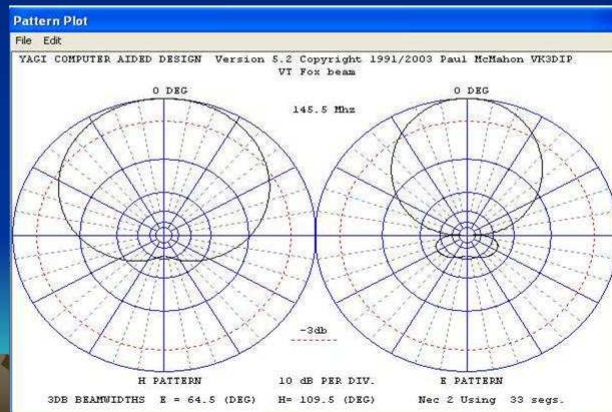
The Boom is 3/4" sq. (with round corners) 37 1/2" long.
 Model BP Split Boom, longest part is less than 22 inches long.

Note the big black foam grip, for easy holding.
 Under the foam grip, the boom is drilled & taped 1/4-20 for most camera tri-pods.
 Boom & elements all have plastic tips for safety.

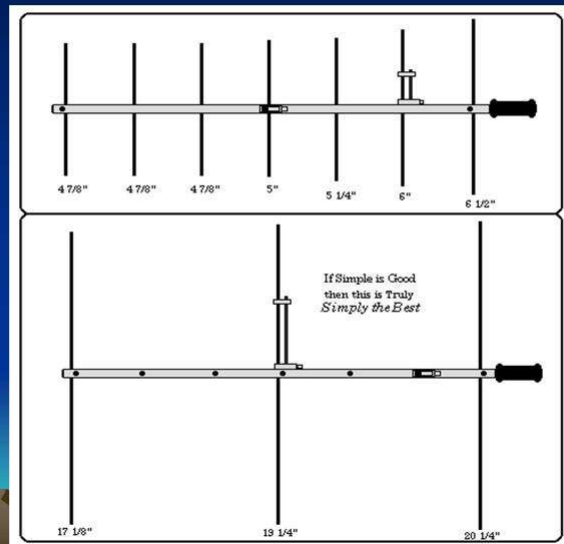
天線特性與規格

- 145MHz
 - 3單元
 - Gain < 6 dBd
 - 耐入力 10 W (雙工器)
- 435MHz
 - 7單元
 - Gain < 10 dBd
 - 耐入力 10 W (雙工器)

- 145MHz 波柱寬
- 與天線水平約(E)33度、與天線垂直約(H)64.5度
- 435MHz 波柱寬
- 與天線水平約(E)50度、與天線垂直約(H)55度



天線尺寸



435MHz 七個單元

- 5個導波單元
- 1個饋電單元
- 1個反射單元



145MHz 三個單元

- 1個導波單元
- 1個饋電單元
- 1個反射單元



組裝說明

- 先將所有天線單元依長度順序排列
- 先組裝435MHz單元再組裝145MHz單元
- 組裝順序：饋電單元->反射單元->導波單元
- 饋電單元BNC接頭朝向握把
- 435MHz饋電單元在第二孔(握把端為起始)
- 145MHz饋電單元在第二孔(中間)
- 饋電單元裝好BNC接頭再插接好
- 同頻段單元均在同一側
- 每個單元均需對齊(垂直或水平)

先將所有天線單元依長度順序排列



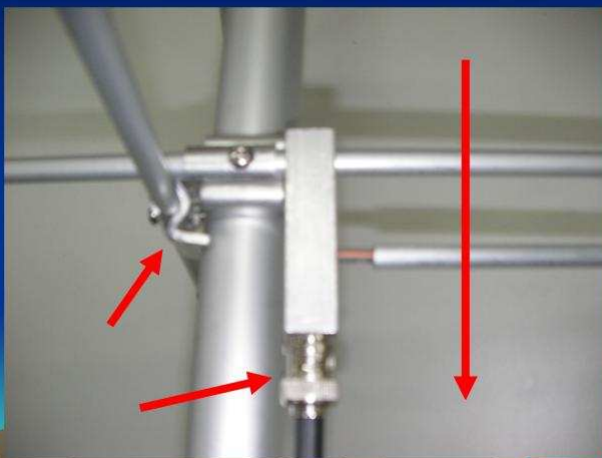
● 螺帽集中使用



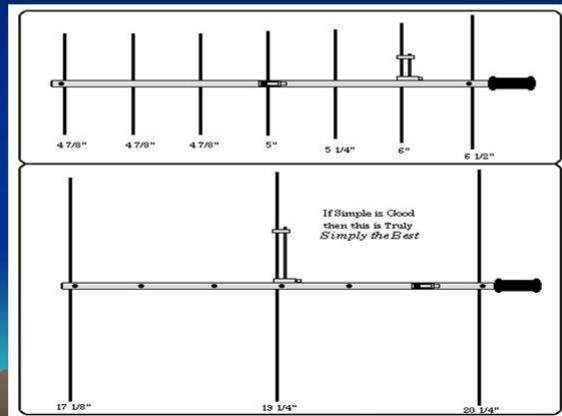
● 黑色膠帽天線組好再套



● 饋電單元BNC接頭朝向握把



- 435MHz饋電單元在第二孔(握把端為起始)
- 145MHz饋電單元在第二孔(中間)



同頻段單元均在同一側



● 雙工器與電纜線



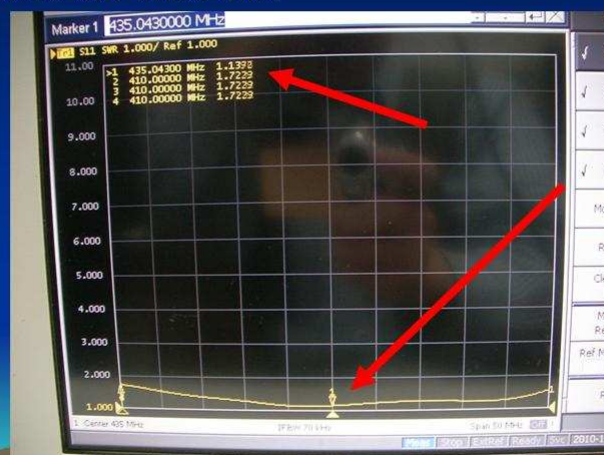
● 雙工器與電纜線



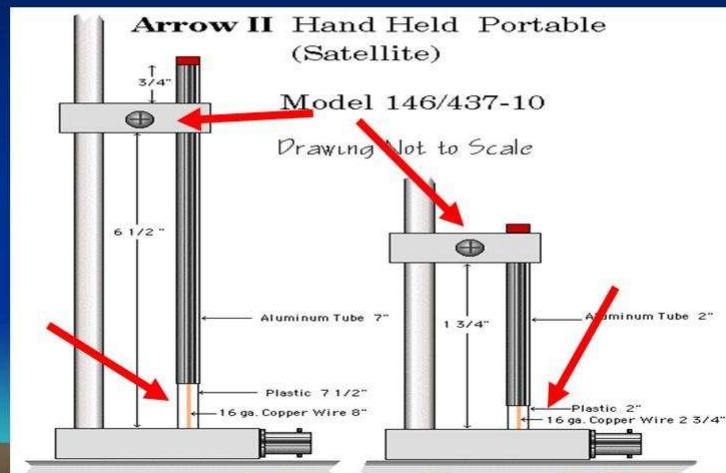
● 435/145 MHz SWR均可在1:1.5以下



● 使用網路分析儀量測



● 饋電單元調整



● 可使用相機三角架固定天線



- 可使用攝影機旋轉馬達(成本低)
- 俱備直水平及仰角調整



- 加入電子羅盤，方便調整天線方向
- 水平0~360度(重要)，仰角0~90度



謝謝聆聽 敬請指教!!

