

RF Exposure Calculations:

The following information provides the minimum clearance distance for the various antennas provided with the Winncom Technologies AMP250 system, as calculated from **FCC OET 65 Appendix B, Table 1B** Guidelines for General Population/Uncontrolled Exposure. This calculation is based on the highest EIRP possible from the system, considering maximum power and antenna gain. The formula used was:

$$S = (P_o \cdot G) / (4 \cdot \pi \cdot r^2)$$

Where  $S = 1.0 \text{ mW/cm}^2$  for 2400 MHz.

Where  $P_o = 250 \text{ mW max.}$

For: 7 dBi Omni Antenna - Winncom Model WRO2400-70 ....  $r = 10 \text{ cm}$

Antenna Description: 23 inch omni whip

For: 12.5 dBi Omni Ant. - Winncom Model WRO2400-125 ..  $r = 19 \text{ cm}$

Antenna Description:

## Operation/Installation Instructions

### WRO2400-125

#### 2.4 GHz Omnidirectional Antenna

##### Features:

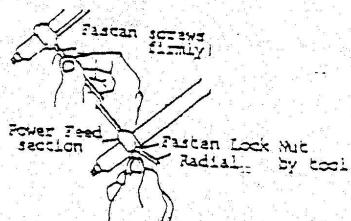
- Wide band requires no frequency adjustment
- One piece, heavy duty, durable fiberglass construction allows for complete water/pollution protection

##### Specifications:

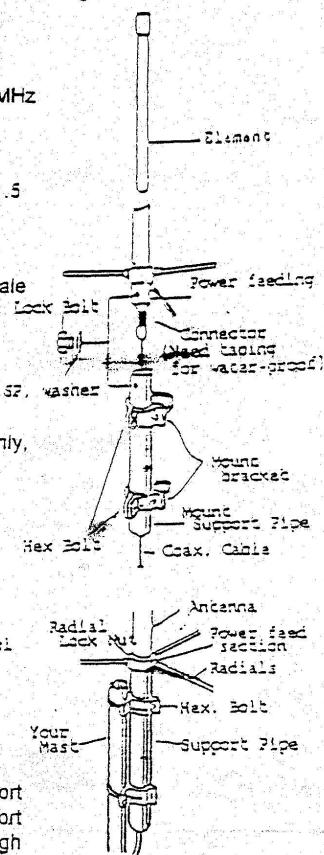
Frequency	2400-2500 MHz
Gain	12.4 dBi
Max Input Power	100 W
Impedance	50 ohm
V. SWR	less than 1:1.5
W. Velocity	50m/sec
Length	1.78 m
Weight	1.16 kg
Connector	N Type Female
Avail. Mast	30-62 mm

##### Assembling & Mounting:

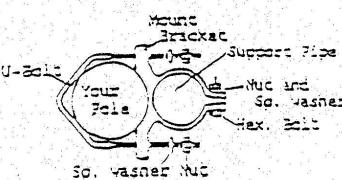
1. Assemble the 3 radials.
2. Fasten the radial lock nuts firmly, using spanner, etc.



3. Mount the 2 Mounting Support brackets onto the Mounting Support pipe. Pass the coaxial cable through the pipe and connect it to the Power Feeding Section. Fasten the hex bolts firmly. Mount the Support pipe to the antenna and fasten the lock bolt securely.



4. Mount the assembled antenna to the mast making sure the antenna is balanced well.

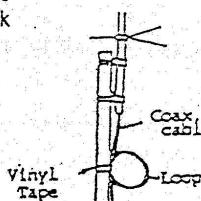


##### Parts List:

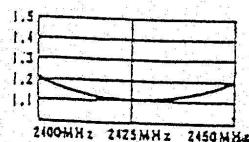
Qty.	Part Name
1	Element
3	Radials w/nut
1	Power Feeding Station
2	Mount Support Bracket
1	Mount Support Pipe
1	Lock Bolt with special washer M6x8
1	Hex Bolt with special washer M6x30
2	U-bolt with special washer and nut

##### Note:

- Use 50 ohm low loss, high quality coaxial cable.
- Waterproof connections using tape and silicone.



##### V. SWR Characteristics:



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For: 13.5 dBi Yagi Ant. - Winncom Model HGY15 . . . . . **r = 21**  
**cm**

Antenna Description:

99 292

**ORDER No. 2415WC**  
**High-Gain WLAN Antenna**  
**MODEL HGY-15**

**INSTRUCTION SHEET**

**General Description**

This antenna is a totally enclosed 16 element Yagi antenna for the 2400 to 2483 MHz frequency band. It is designed to be used as a bridge antenna between two networks, or for point to point communications. It can be either mast or wall mounted in a fixed position or wall mounted with the adjustable mount.

It has a typical VSWR of 1.5:1 and is less than 2:1 over the entire frequency band. The gain is 13.5 dBi and the half-power beamwidth is 30 degrees. This antenna comes complete with an adjustable mount made of durable nylon that is designed to adjust the antenna both vertically and horizontally.

**SPECIFICATIONS**

*Electrical:*

Frequency Range.....	2400-2483 MHz
VSWR .....	Less than 2:1, typically 1.5:1
Nominal Impedance.....	50 ohms
Gain .....	13.5 dBi (11.3 dBd)
Front-to-Back Ratio.....	greater than 20 dB
Half-power Beamwidth.....	30 degrees
Polarization .....	Vertical

*Mechanical:*

Size .....	18" long
Mounting method.....	Adjustable mount, mast or wall mounting
Adjustment Range for Adjustable Mount:	
Vertical .....	.130° in 10° increments
Horizontal .....	.170° in 10° increments
Cable length .....	1 Ft.
Cable Type.....	RG-58A/U, 50 ohm low-loss, white
Connector .....	Standard Type N Jack
Operating Temperature.....	+60°C (140°F) -40°C (-40°F)

**Antenna Location**

For: 24 dBi Dish Ant. - Winncom Model WRO2400-125 . . . **r = 71**  
**cm**

Antenna Description:

Grid Size: 42 inches X 24 inches

Dipole Length: 14 inches



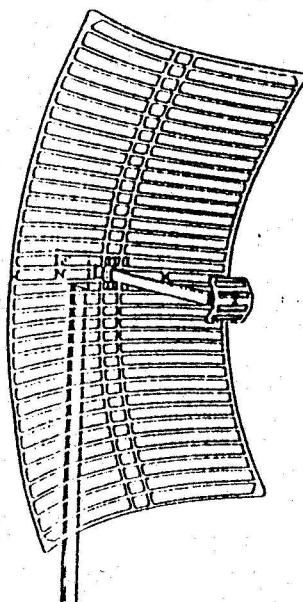
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42" x 24" Grid  
14" - dipole length

## ANTENNA FEED & REFLECTOR INSTRUCTION MANUAL

**WARNING: INSTALLATION OF ANTENNA NEAR  
POWER LINES IS DANGEROUS!**



The following statement will be presented in the AMP250 User Manual:

**WARNING**

In order to comply with **FCC adopted RF Exposure Requirements**, the included antenna must be installed in a manner that will provide clearance from the antenna, to any personnel or member of the public, according to the following guide:

**WRO2400-70 - 7dBi Omni - 20 cm**

**WRO2400-125 - 12.5 dBi Omni - 20 cm**

**HGY15 - 13.5 dBi Yagi - 21 cm**

**WRO2400-24 - 24 dBi Grid Dish - 71 cm**