

425 Harbor Blvd.  
Belmont, California 94002



**GRE AMERICA, INC.**

Tel: (650) 591-1400  
Fax: (650) 591-2001

### ANTENNA GAIN & CABLE LOSS CALCULATIONS

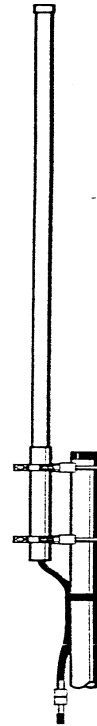
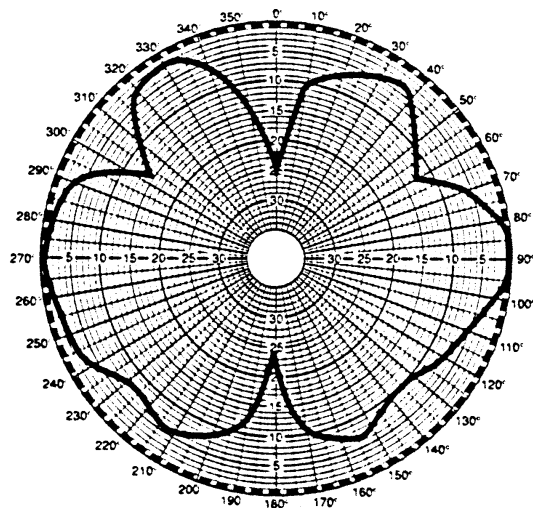
The two antennas are constructed with a 10' or 13' coaxial cable and non-standard MMCX connector. Below we have calculated the total net gain with the cable loss.

#### 1. OMNIDIRECTIONAL ANTENNA CUSHCRAFT S2403BP120

This antenna is constructed with a 10 ft. Ultralink cable Part number TL92463. The Connector and cable has a loss of 4.3 dB.

|                |            |
|----------------|------------|
| Antenna gain   | = 3.0 dBd  |
| Cable loss     | = 3.8 dBd  |
| Total gain     | = -0.8 dBd |
|                |            |
| Connector loss | = -0.5 dBd |
| Net gain       | = -1.3 dBd |
| Or             | = 0.84 dBi |

|                    |                    |
|--------------------|--------------------|
| Type               | Omni               |
| Frequency          | 2.404 to 2.478 GHz |
| Gain               | 3 dBd              |
| Front to Back      | N/A                |
| Bandwidth, 1.5.1   | 100 MHz            |
| Beamwidth          | -3 dB              |
| E-plane            | 45°                |
| H-plane            | 360°               |
| Connector Type     | MMCX               |
| Height             | 13.5"              |
| Enclosure Material | Fiberglass         |
| Weight             | 6 oz.              |
| Mount style        | Pipe clamp         |
| Max. Mast Diameter | 2"                 |



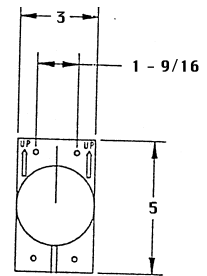
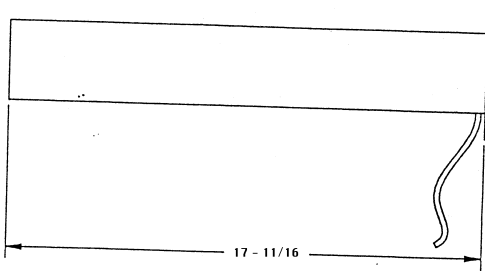
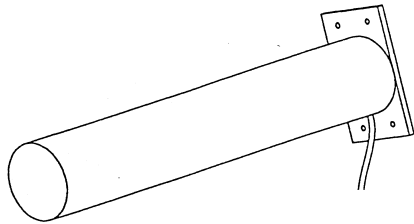
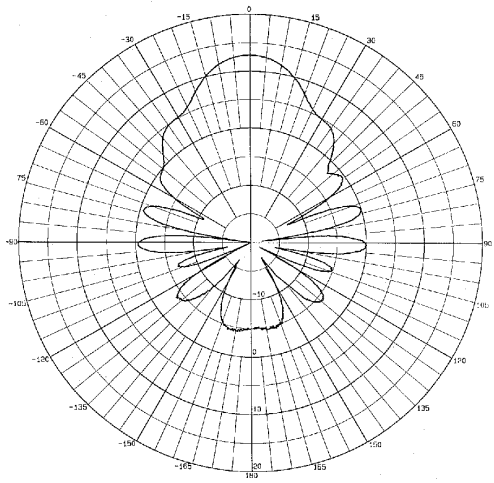
## 2. DIRECTIONAL ANTENNA TELEX 2415

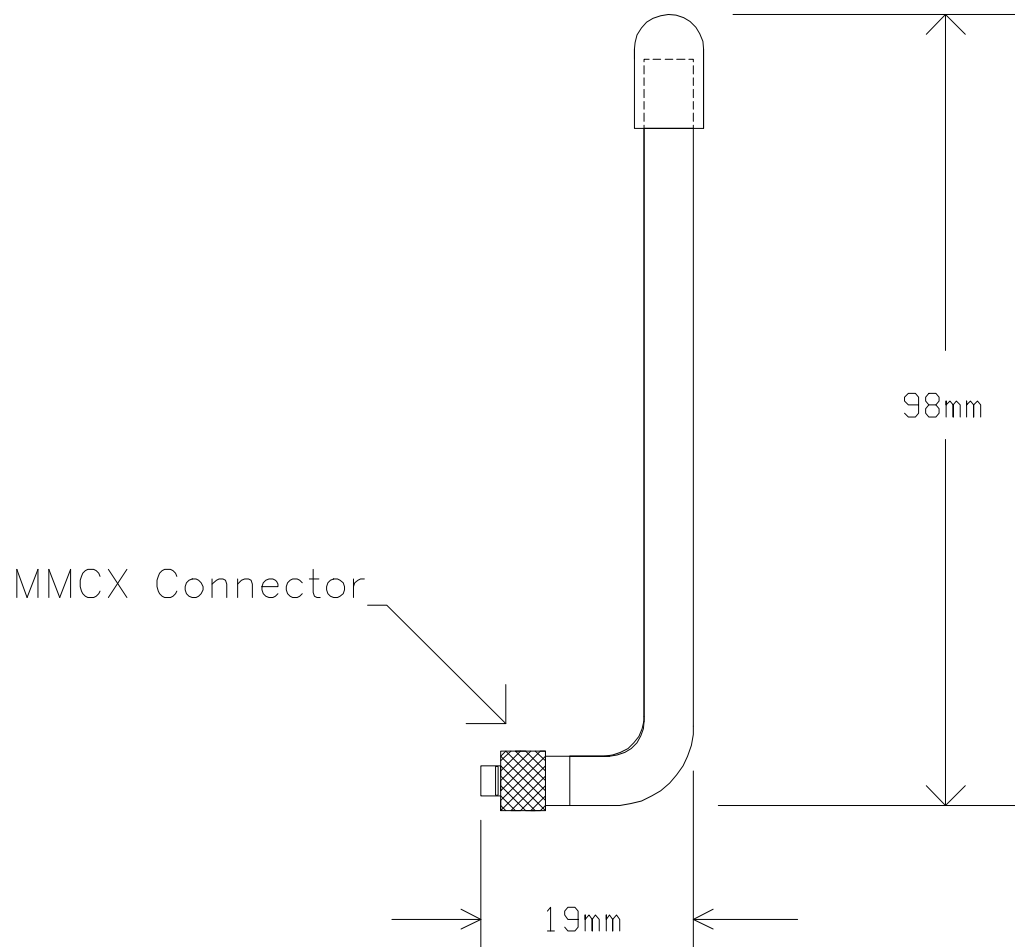
This antenna is constructed with a 13 ft. Ultralink cable Part number TL92463. Connector and cable for 13 ft is 4.3 dBd.

|              |            |
|--------------|------------|
| Antenna gain | = 6.86 dBd |
| Cable loss   | = -3.8 dBd |
| Total gain   | = 3.06 dBd |

|                |            |
|----------------|------------|
| Connector loss | = -0.5 dBd |
| Net gain       | = 2.56 dBd |
| Or             | = 4.7 dBi  |

|                      |                        |
|----------------------|------------------------|
| Polarity             | Vertical or Horizontal |
| Frequency            | 2.404 to 2.478 GHz     |
| Gain                 | 9 dBi or 6.86 dBd      |
| Diameter             | 3" x 18"               |
| Front to Back        | >20 dB                 |
| SWR                  | 1.5:1 maximum          |
| Half Power Beamwidth | 30°                    |
| Nominal Impedance    | 50 ohms                |
| Connector Type       | MMCX                   |
| Weight               | 25 oz                  |
| Mount                | U-Bolt Provided        |
| Max. Mast Diameter   | 1.52 "                 |





Gain less then 0 dBb

1/ Tune for 2.450GHZ.

2/ Use MMCX Connector.



Title:

ANTENNA FOR 2.4GHZ

Drawn by: Thuc Nguyen

Date: 7-11-01

Checked by: Teru Takahashi

Date: 7-11-01

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