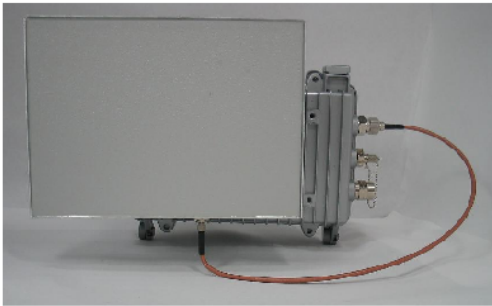


## Appendix C. Antenna Type

### NTA.2407 Panel Antenna

*The NTA-2407 is a compact, light-weight, vertically polarized panel antenna intended to mount to the APU Enclosure. The antenna consists of a printed patch array enclosed in an aluminum cavity with a UV stabilized ASA radome. The antenna is sealed and intended for outdoor use.*

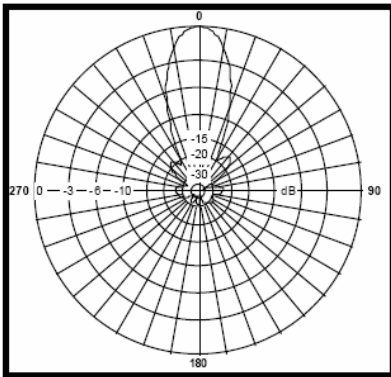


#### Electrical Specifications

**Frequency Range:** 2400-2483 MHz  
**Gain:** 14 +/- 1 dBi  
**VSWR:** 2.0:1 max.  
**Polarization:** Vertical  
**Power:** 20 Watts  
**H-Plane Beamwidth:** 27 degrees  
**E-Plane Beamwidth:** 36 degrees  
**Front to Back Ratio:** 25 dB min. (azimuth)  
**Cross Pol. Discrimination:** 13 dB min.  
**Electrical Beamtilt:** N/A  
**Impedance:** 50 ohms nominal  
**Termination:** SMA female

#### Radiation Patterns/Masks

H-Plane



#### Mechanical Specifications

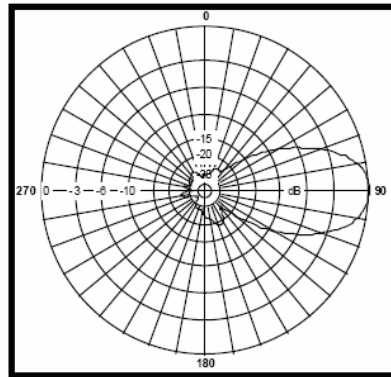
**Length:** 8 in. (203 mm)  
**Diameter:** N/A  
**Width:** 11 in. (279.4 mm)  
**Depth:** 0.44 in. (11 mm)  
  
**Weight (incl. hardware):** 1.66 lb. (0.75 kg)  
**Rated Wind Velocity:** 125 mph (200 km/h)  
**Horizontal Thrust at rated wind:** 38 lb. (17.2 kg)  
  
**Mechanical Tilt:** 0 +/- 22.5° Pan  
**Mounting:** Mounts to APU Enclosure

**Pig-Tail Length:** N/A

#### Material Specifications

**Radiating Elements:** Plated copper on PCB  
**Reflector:** Irridited aluminum  
**Radome:** Gray UV stabilized ASA  
**Mounting Hardware:** Aluminum and HDG steel

E-Plane



## NTA.2412 Bidirectional Antenna

*The NTA-2412 is a vertically polarized bidirectional antenna intended to mount to the APU Enclosure. The antenna consists of a printed dipole array enclosed in a UV stabilized ASA radome for superior weatherability. It is designed for wireless data in the ISM band and is at DC ground to aid in lightning protection.*



### Mechanical Specifications

**Length:** 10.5 in. (267 mm)

**Diameter:** 3 in. (76 mm)

**Width:** N/A

**Depth:** N/A

**Weight (incl. hardware):** 2 lb. (0.9 kg)

**Rated Wind Velocity:** 125 mph (200 km/h)

**Horizontal Thrust at rated wind:** 9 lb. (4 kg)

**Mechanical Tilt:** N/A

**Mounting:** Mounts to APU Enclosure

**Pig-Tail Length:** 12 in. (304.8mm)

### Electrical Specifications

**Frequency Range:** 2400-2483 MHz

**Gain:** 9 dBi (peak)

**VSWR:** 1.5:1 max.

**Polarization:** Vertical

**Power:** 5 Watts

**H-Plane Beamwidth:** 60 degrees

**E-Plane Beamwidth:** 28 degrees

**Front to Back Ratio:** N/A

**Cross Pol. Discrimination:** 20 dB min.

**Electrical Beamtilt:** N/A

**Impedance:** 50 ohms nominal

**Termination:** N male

### Material Specifications

**Radiating Elements:** Plated copper on PCB

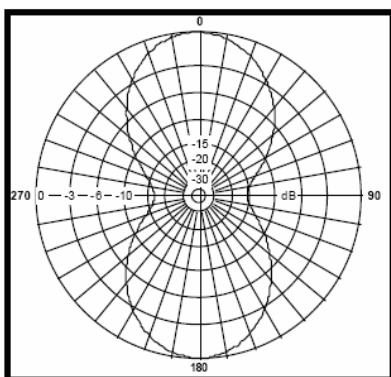
**Reflector:** Irridited aluminum

**Radome:** Gray UV stabilized ASA

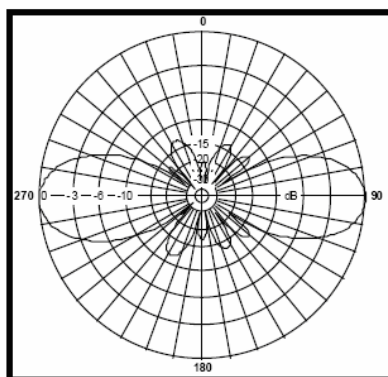
**Mounting Hardware:** Aluminum and HDG steel

### Radiation Patterns/Masks

H-Plane



E-Plane



# NTA.2400 Omni directional Antenna

*The NTA-2400 is a vertically polarized, medium gain, omni-directional antenna that covers the 2.4-2.5 GHz ISM band. This antenna is a robust point to multi-point antenna designed to be completely waterproof. The antenna is intended to mount to the APU Enclosure.*

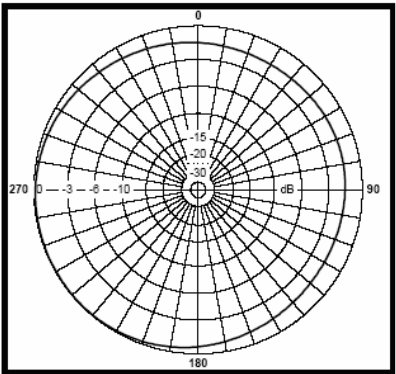


## Electrical Specifications

**Frequency Range:** 2400-2483 MHz  
**Gain:** 7 dBi typ.  
**VSWR:** 2.0:1 typ.  
**Polarization:** Vertical  
**Power:** 5 Watts  
**H-Plane Beamwidth:** 360 degrees  
**E-Plane Beamwidth:** 14 degrees typ.  
**Front to Back Ratio:** N/A  
**Cross Pol. Discrimination:** 18 dB typ.  
**Electrical Beamtilt:** N/A  
**Impedance:** 50 ohms nominal  
**Termination:** N female

## Radiation Patterns/Masks

H-Plane



## Mechanical Specifications

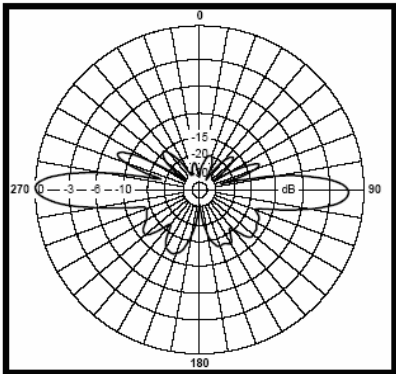
**Length:** 26 in. (660 mm)  
**Diameter:** 3.9 in. (100 mm)  
**Width:** N/A  
**Depth:** N/A  
  
**Weight (incl. hardware):** 1.25 lb. (0.57 kg)  
**Rated Wind Velocity:** 125 mph (200 km)  
**Horizontal Thrust at rated wind:** 7 lb. (3.2 kg)  
  
**Mechanical Tilt:** N/A  
**Mounting:** Mounts to APU Enclosure

**Pig-Tail Length:** N/A

## Material Specifications

**Radiating Elements:** Copper  
**Reflector:** N/A  
**Radome:** Gray UV stabilized PVC  
**Mounting Hardware:** Aluminum and Stainless steel

E-Plane



## ET-PR12 Built-in Panel Antenna

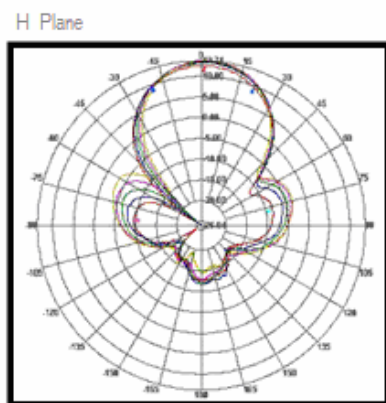
*The ET-PR12 is a compact, light-weight, vertically polarized panel antenna intended to be built in the CSU Enclosure. The antenna consists of a printed patch array enclosed in an aluminum cavity with a UV stabilized ASA radome. The antenna is sealed and intended for outdoor use.*



### Electrical Specifications

Frequency Range : 2400~2500 MHz  
 Gain : 12.0dBi (Minimum)  
 VSWR : 1 : 1.5 (Typical)  
 Polarization : Linear (Vertical or Horizontal)  
 Power : 3 Watts  
 H-Plane Beam width : 35 degrees  
 E-Plane Beam width : 35 degrees  
 Front to Back Ratio : > 30dB  
 Cross Pol. Discrimination : 20 dB min.  
 Electrical Beam tilt : N/A  
 Impedance : 50 ohms nominal  
 Termination : SMB male

### Radiation Patterns/Masks



### Mechanical Specifications

Length : 7 in. (180mm)  
 Diameter : N/A  
 Width : 7 in. (180mm)  
 Depth : 0.79 in. (20mm)  
 Weight (Incl. hardware) : 1.0kg  
 Rated Wind Velocity : 75 N (160 km/h)  
 Horizontal Trust at rated wind : 75 N (160km/h)  
 Mechanical Tilt : 90° ~ - 45°  
 Built-in : Built in CSU Enclosure  
 Pig-Tail Length : N/A

### Material Specifications

Radiating Elements : Plated copper on PCB  
 Reflector : aluminum  
 Radome : Gray UV Stabilized ASA  
 Built-in Hardware : Aluminum and HDG Steel

