

## MEASUREMENT/TECHNICAL REPORT



### Intermec Technologies Corporation 2100 UAP RFID Reader

**REPORT NO: 20040504-1**

**DATE: May 4, 2004**  
**Appendix A**

#### ANTENNA AND DIAGRAMS

Page 2 - 3  
Kathrien 6 dBi panel antenna

Page 5  
Cushcraft 4 dBi panel antenna

Page 6  
Intermec Card Programming Station -5 dBi antenna

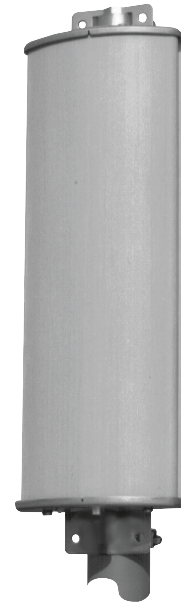
Kathrein-Scala RFID Antennas are designed and manufactured to the same standards as our wireless panel antennas, using the finest materials for strength and reliability. Heavy-duty radomes of high strength pulltruded fiberglass, rigid matching network and element circuit boards, and stainless steel mounting hardware all contribute to antennas that will perform in the toughest outdoor environment.

These directional antennas are available with other polarizations (LHCP, RHCP, Linear), and with other gains. Part 15 and 90 FCC requirements are available. Far-field and Near-field radiation patterns available.

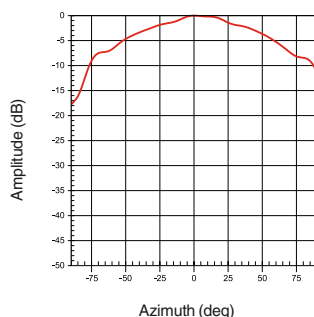
- For Far-field, specify azimuth and/or elevation and orientation.
- For Near-field, specify distance from antenna to tag.

**General Specifications:**

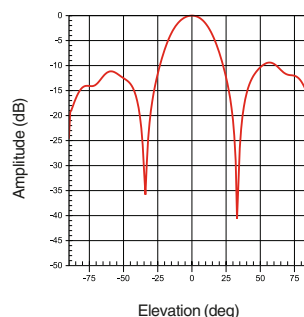
Frequency range	865–870 MHz or 902–928 MHz
Gain	9 dBic
Impedance	50 ohms
Grounding	DC grounding
VSWR	< 1.3:1
Axial ratio	< 3 dB over entire half power beam < 1 dB at boresight
Polarization	Circular (Linear available)
Front-to-back ratio	>23 dB
Maximum input power	100 watts (at 50°C)
Far field beamwidths	80 degrees (half-power) 30 degrees (half-power)
Connector	SMA, TNC, or N type (SMA female shown)
Weight	5.19 lb (2.35 kg)
Dimensions	19.3 x 6.1 x 1.9 inches (490 x 155 x 49 mm)
Equivalent flat plate area	1.16 ft <sup>2</sup> (0.107 m <sup>2</sup> )
Wind survival rating	120 mph (200 kph)
Materials	Radome is gray fiberglass and mounting hardware is stainless steel.
Mounting	Mounting hardware kit required. Fixed mount kits and tilt mount kits available for 1.2 to 5.3 inch (30 to 135 mm) OD masts. Antenna panel may be inverted.



Far-field Pattern in the Short Dimension of Antenna

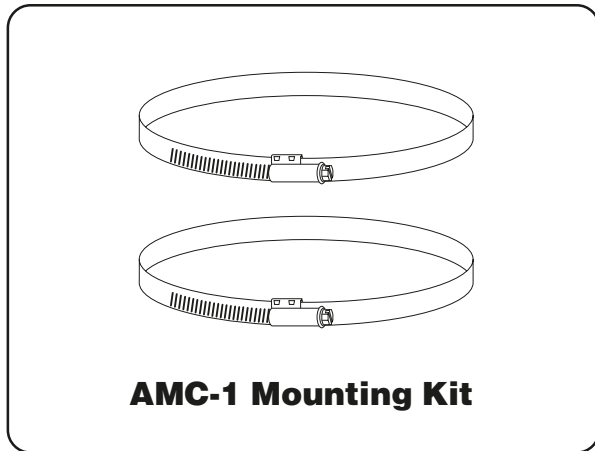


Far-field Pattern in the Long Dimension of Antenna



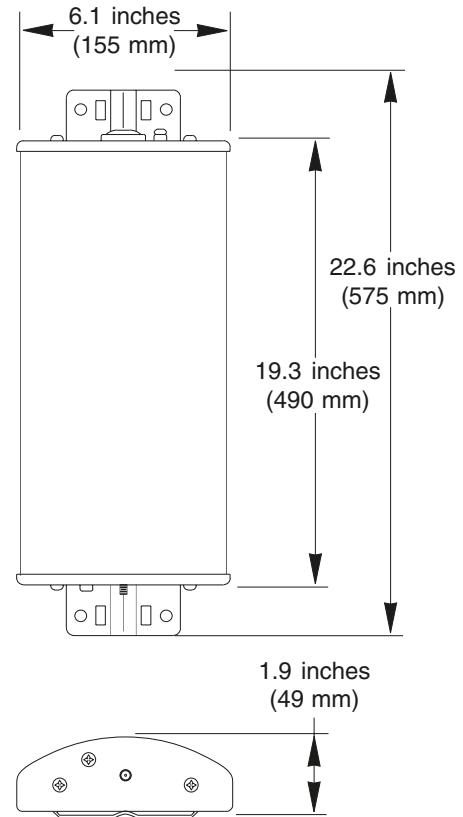
10808-E

**25-100 Series**  
**RFID**  
Directional Antenna



**Mounting Options:**

Model	Description
AMC-1 (shown)	Mounting Kit for 1.2 to 2.125 inch (30 to 55 mm) OD mast.
AMC-2	Mounting Kit for 2.125 to 3 inch (55 to 75 mm) OD mast.
AMC-3	Mounting Kit for 3 to 3.75 inch (75 to 95 mm) OD mast.
AMC-4	Mounting Kit for 3.75 to 4.5 inch (95 to 115 mm) OD mast.
AMC-5	Mounting Kit for 4.5 to 5.3 inch (115 to 135 mm) OD mast.
TB-11	Tilt Mounting Kit for use with AMC series mounting kits, 0–20 degrees downtilt angle.



**Order Information:**

Model	Frequency	Description
25-175	902–928 MHz	Antenna with SMA connector
25-176	902–928 MHz	Antenna with TNC connector
25-177	902–928 MHz	Antenna with N connector
25-178	902–928 MHz	Antenna with reverse polarity N connector
25-185A	865–870 MHz	Antenna with SMA connector
25-186	865–870 MHz	Antenna with TNC connector
25-187	865–870 MHz	Antenna with N connector
25-188	865–870 MHz	Antenna with reverse polarity N connector

All specifications are subject to change without notice


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## 902-960 MHz

### Circularly Polarized Panel Antenna for ISM Band

Cushcraft Corporation has engineered an ISM Band circularly polarized patch antenna, the S9028PC12NF. This antenna provides for reception and transmission in the 902-928 MHz frequency band. This antenna is designed to increase signal reception in environments where there is a presence of multipath and high scattering. The structure itself is designed using Cushcraft's MicroAir technology, which provides a low cost alternative to dielectric substrate designs. It has been proven to increase the antenna's radiation efficiency and hence achievable gain. The small size of this antenna provides an excellent antenna solution for system installers to build out seamless local area networks. Custom configurations of radome finish, color and texture can be provided to complement and blend within any environment, making it an ideal solution to meet the most demanding aesthetic requirements in today's workplace. Applications for this antenna include industrial complexes, office environments, shopping malls, parking garages, airports, hospitals, campus settings and more.

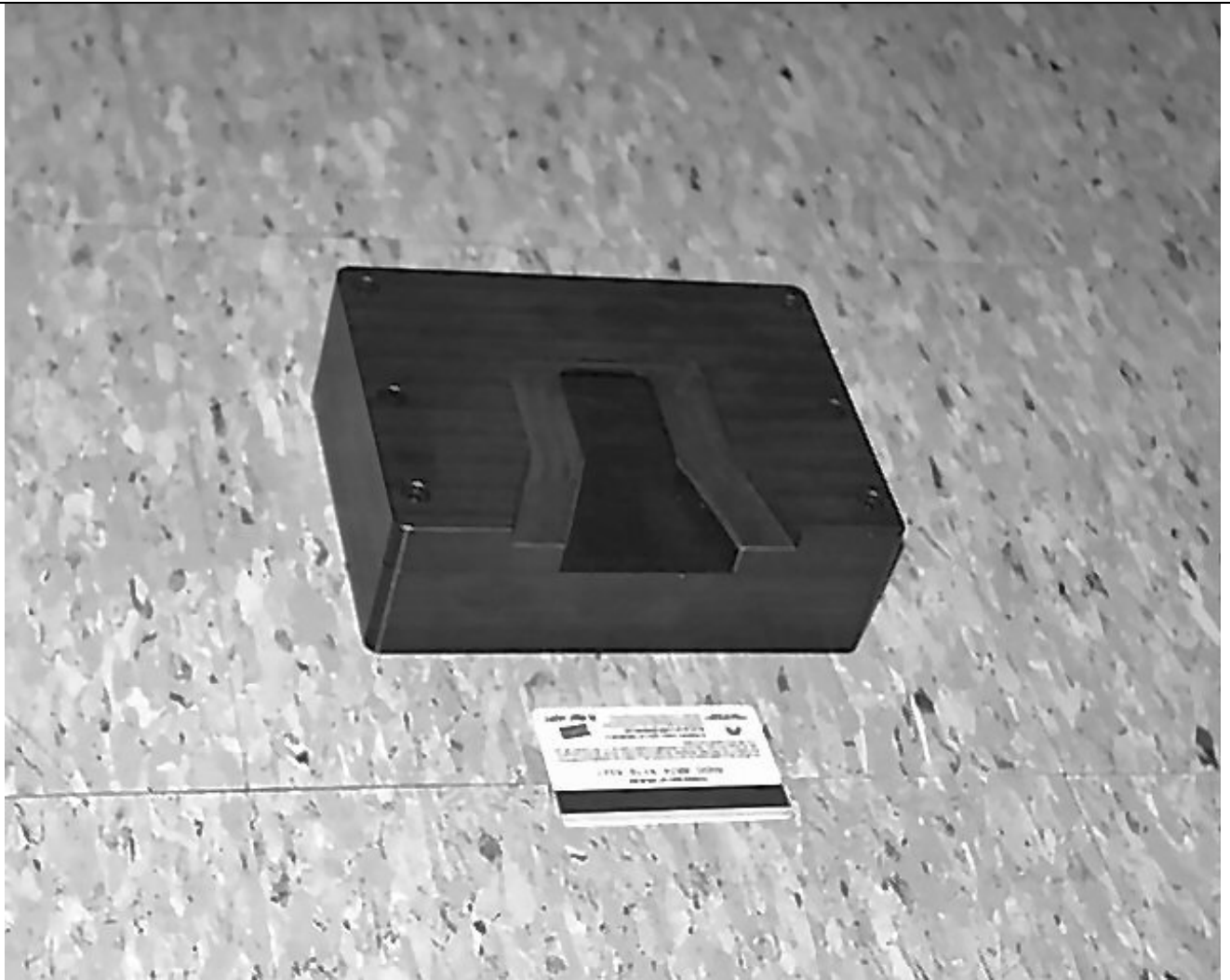


Model	S9028PC12NF
3dB Beamwidth, Degrees E-Plane	65
3dB Beamwidth, Degrees H-Plane	65
Dimensions in.(cm)	10x10x1.5(25.4x25.4x3.8)
Frequency, MHz	902-928
Gain, dBi	7.5dBic
Mount Style	Wall/Surface
Polarization	Circular
Power (Watts)	1
RF Connector(f)	N
VSWR	1.5:1
Weight, lb(kg)	1.25(.57)

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Intermec Card Programming Station PN ITA915017