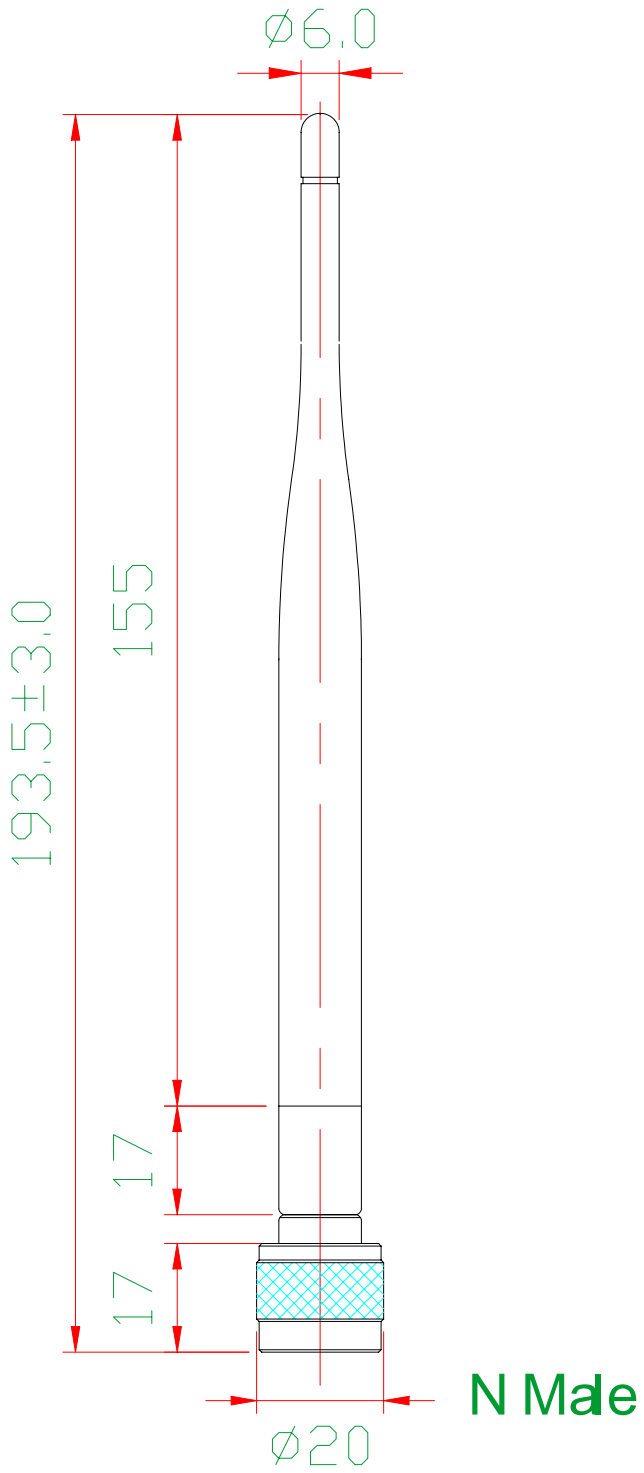
Antenna Specification Document

Manufacturer	Part Number	2.4GHz Gain	5.8GHz	Tested
Cushcraft	SL2402P	2.5dBi	—	
Cushcraft	SL24513P12SMF	3dBi	—	
Centurion	IO2450	3dBi	—	
Cushcraft	SQ2403PG12NF	3.5dBi	—	
Huber & Suhner	SOA 2400/360/4/20/V	4dBi	—	
Pacific Wireless	OD24M-5	5dBi	—	
Mobile Mark	ECO5-2400RN	5dBi	—	•
Wanshih	Black	3.3dBi	5dBi	
Comet	SF-D53N	—	5.5dBi	
Mobile Mark	ECO6-5500RN	—	6dBi	
Huber & Suhner	SWA 0859/360/4/0/DFRX30	—	8.5dBi	
Mobile Mark	ECO9-5500RN	—	9dBi	
Comet	SF-5818N	—	9.1dBi	•

N Male Dual Band Antenna

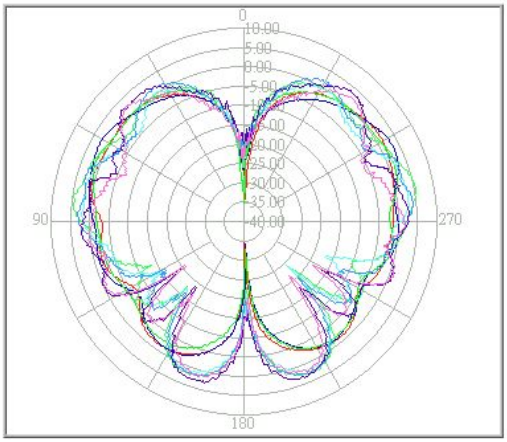


E Plane

萬旭電業股份有限公司

Model No: black **Antenna Position**: Horizontal

Test Mode: E-plane



Freq(MHz)	peak(dBi)	Angle(o)	Avg(dBi)
2400.00	1.63	58.12	-2.24
2450.00	3.26	63.75	-1.75
2500.00	1.57	68.12	-2.33
5150.00	5.36	77.50	-0.63
5250.00	2.96	81.25	-1.93
5350.00	4.24	83.12	-1.05
5725.00	3.83	39.37	-0.57
5850.00	2.59	315.00	-2.10

Test engineer:_____

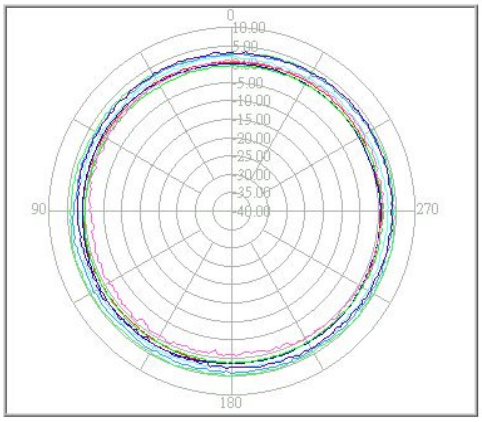
Test date: 2005/3/17 at PM 09:45

H Plane

萬旭電業股份有限公司

Model No: black **Antenna Position**: Vertical

Test Mode: H-plane

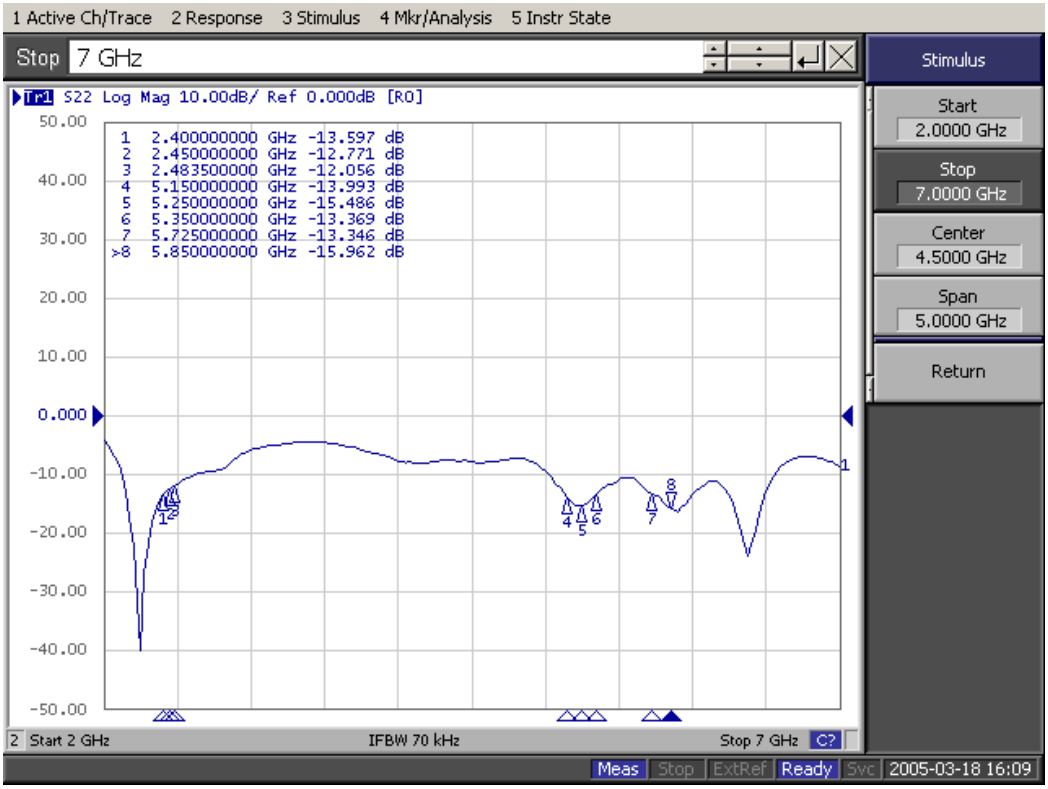


Freq(MHz)	peak(dBi)	Angle(o)	Avg(dBi)
2400.00	1.48	192.90	0.87
2450.00	2.18	211.33	0.94
2500.00	1.35	179.39	0.53
5150.00	5.03	103.21	4.03
5250.00	3.39	147.44	2.30
5350.00	4.18	158.50	3.37
5725.00	4.18	57.75	2.94
5850.00	2.09	51.60	0.15

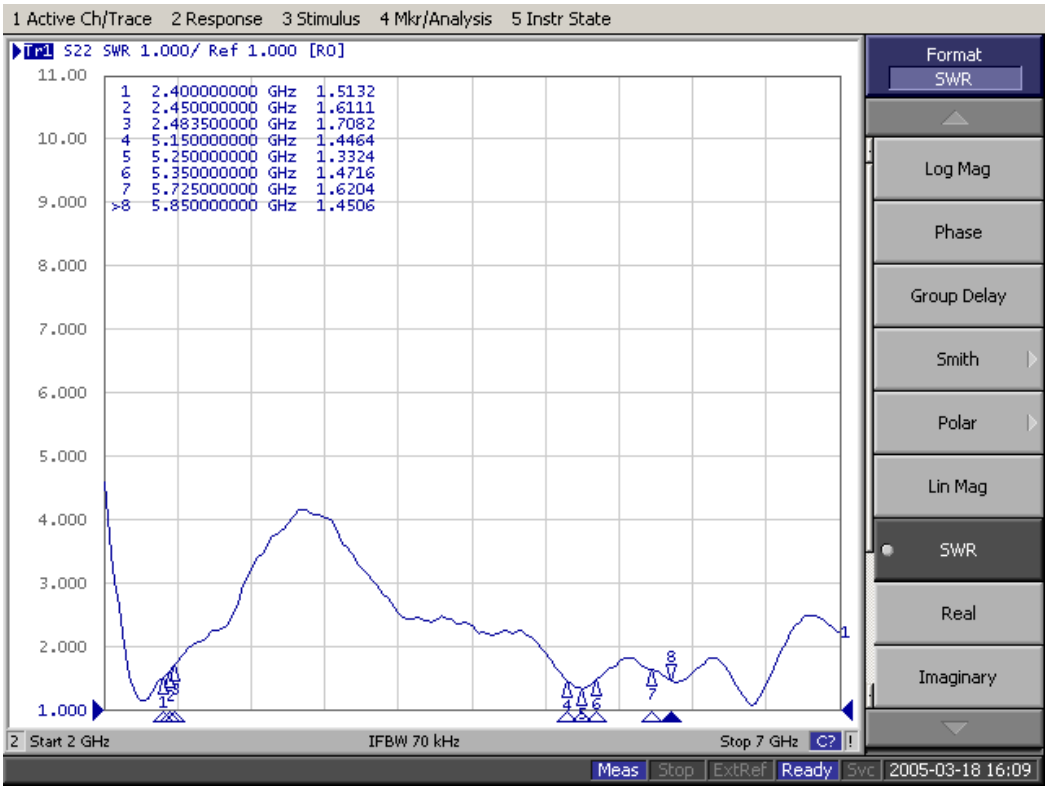
Test engineer:_____

Test date: 2005/3/17 at PM 09:54

Return Loss



VSWR



Pacific Wireless
a division of CUSHCRAFT CORPORATION

ODxxM
DATA SHEET

Mesh Series™ Vertically Polarized Omni Antennas
2.4GHz to 5.85GHz

Features

- **Mesh Networking Vertically Polarized Omnidirectionals**
- **Various Gains Available: 5dBi to 12dBi**
- **Various Frequencies Available: 2.4GHz to 5.8GHz, also Tri-Band Model**
- **Type N Male Integrated Connector**
- **Rugged, Lightweight and Waterproof**

Applications

- **Mesh Networking Applications**
- **2 to 6 GHz wireless applications**
- **Point to Multi-point Systems**
- **Base Station Antennas**
- **WiFi Access Points**
- **Wimax Base Stations**

Description

The Mesh Series™ Omni Directional antenna systems offered by Pacific Wireless are designed with Mesh Networking in mind. With their waterproof N Male connector they can be easily mounted to an enclosure like the Pacific Wireless Die Cast Enclosure to give total wireless coverage. Various gains and frequencies are available. They are constructed of UV resistant materials and are waterproof for a long service life.

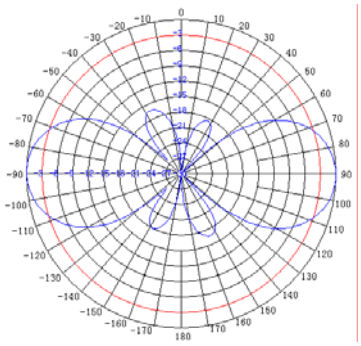
Specifications

Parameter	Min	Typ	Max	Units
VSWR		1.5:1		
Impedance		50		OHM
Input Power			10	W
Rated Wind Velocity			125 (56)	mph (m/sec)
Operating Temperature	-40		+70	Deg C

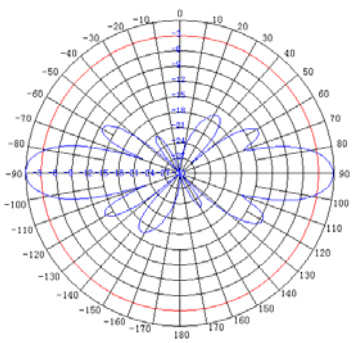
Typical Application
PAW-DCE with Mesh Omni

Model	Frequency (MHz)	Gain	Vert BW	Weight	Dim (L x dia)
OD24M-5	2400-2485	5dBi	25 deg	0.7 lbs (0.3kg)	14x0.6" (355x15mm)
OD24M-7	2400-2485	7dBi	18 deg	0.9 lbs (0.4kg)	21x0.6" (540x15mm)
OD24M-9	2400-2485	9dBi	14 deg	1.1 Lbs (0.5kg)	27x0.6" (690x15mm)
OD24M-12	2400-2485	12dBi	7 deg	1.4 Lbs (0.6kg)	48x0.6" (1220x15mm)
OD35M-10	3400-3600	10dBi	14 deg	1.1 Lbs (0.5kg)	27x0.6" (690x15mm)
OD35M-12	3400-3600	12dBi	7 deg	1.4 Lbs (0.6kg)	48x0.6" (1220x15mm)
OD58M-12	5400-5850	12dBi	7 deg	1.1 Lbs (0.5kg)	21.25x0.6" (540x15mm)
RD2458-5-NM	2400-2485,5150-5350,5725-5850	2dBi@2.4 5dBi@5.8	120 deg	1.6oz (45.4g)	7.6x0.5" (193 x 12.7mm)

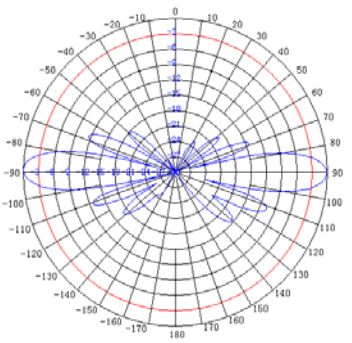
Antenna Patterns



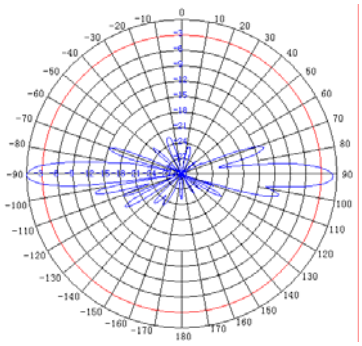
OD24M-5 E-Plane



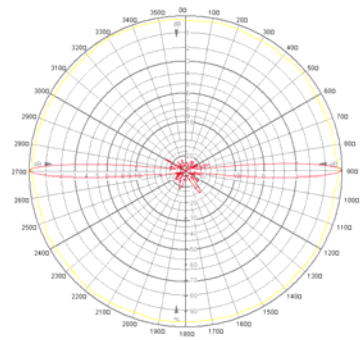
OD24M-7 E-Plane



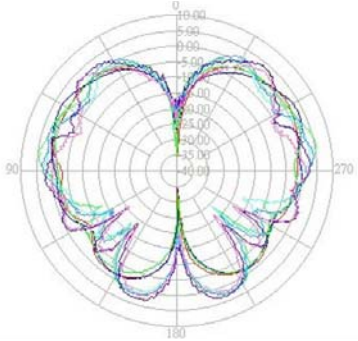
OD24M-9 E-Plane



OD24M-12 E-Plane



OD58M-12 E-Plane



RD2458-5-NM E-Plane

Notes:

- All shipments F.O.B. Pacific Wireless Bluffdale, UT 84065
- All antennas carry a 2 Year Warranty

Suggested Accessory

New N Female Bulkhead to SMA Female adapter for mounting a Mesh Omni in an enclosure
 # AD-NFB-SMAF

System Ordering: OD☐☐M- ☐

Frequency	Antenna Gain
24 = 2400 to 2485MHz	5 = 5dBi
35 = 3400 to 3600 MHz	7 = 7dBi
58 = 5400 to 5858 MHz	9 = 9dBi
	10 = 10dBi
	12 = 12dBi

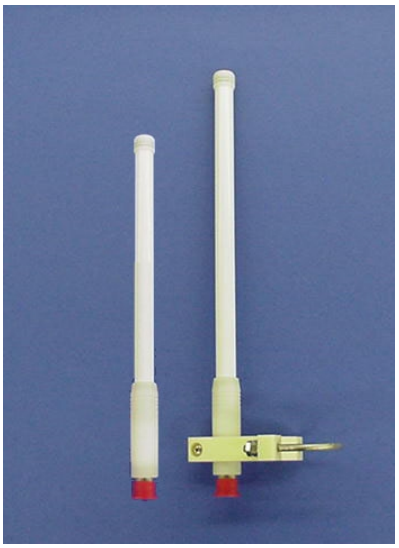
*** RD2458-5-NM 5dBi 2400,5300,5800MHz Tri Band Rubber Duck**

For further information contact:

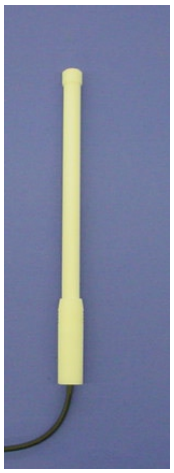
Pacific Wireless
14575 South Centerpoint Way
Bluffdale, UT 84065
TEL (801) 572-3024
FAX (801) 572-3025
www.pacwireless.com

ECO Series Omni Antennas (Pat.Pend.)

for all 2.4 - 6.0 GHz Systems



ECO Series 3 - 5 Ghz Models with N female



"PT" pigtail cable option for all models

- Gain configurations from 5 dBi to 12 dBi
- Economical, weatherproof and durable design for both indoors and outdoors
- Standard mounting kit includes all hardware needed for pole or wall mount
- Optional drop ceiling mount, as well as mobile magnetic & trunk lip mount

Mobile Mark's new ECO Series Omni antennas are designed for all new data & broadband systems, including WiFi, 802.11 & 802.16 systems being planned. Using the latest PCB technology, these antennas improve highspeed broadband system performance in an economical package.

The Omni antennas provide uniform horizontal pattern and excellent frequency response. The ECO Series are free space antennas; no ground plane is required. Because they are also low profile and durable, they can even be used in a mobile application. Mounting hardware is available for a variety of uses. Standard hardware includes pole/wall mount.

The antenna element is enclosed in an extremely tough white fiberglass radome. The low profile radome is only 0.63 inches (1.6 cm) diameter, and 0.9 in (2.3 cm) at the base. Windloading on the antenna is insignificant. The antenna terminates with an integrated N-female. A "PT" pigtail cable option also provides a direct coax into the antenna and can be outfitted with a variety of connectors, such as Reverse polarity TNC or SMA.

These antennas can withstand the harshest outdoor environments, yet are quite attractive for indoor use. The antennas are supplied with hardware for pole or surface mount. Other mount options include flush ceiling, drop ceiling and mobile mounts.

Model Numbers

Model	Description	Frequency
ECO5-2400PT	5 dBi Omni, Pigtail	2.4 - 2.5 GHz
ECO6-3500	6 dBi Omni	3.4 - 3.7 GHz
ECO9-3500	9 dBi Omni	3.4 - 3.7GHz
ECO6-4900	6 dBi Omni	4.9 - 5.0 GHz
ECO9-4900	9 dBi Omni	4.9 - 5.0 GHz
ECO6-5500	6 dBi Omni	5.0 - 6.0 GHz
ECO9-5500	9 dBi Omni	5.0 - 6.0 GHz
ECO12-5800	12 dBi Omni	5.7 - 6.0 GHz
add "PT"	Pigtail Direct Cable Option with N male connectors, others available	

Special configurations may be available upon request. Please consult factory for more information.

Specifications

Frequency/Gain:	See above	**Mounting:**	Pole or surface mount, mounts up to 2" (5cm)
Bandwidth@2:1 VSWR:	See above		
Impedance:	50 Ohm nominal	**Antenna Length:**	
Max Power:	25 Watts	ECO5-2400PT	11 in (28.0 cm)
ECO5 Beamwidth:	30° El, 360° Az	ECO6-3500	15 in (38.1 cm)
ECO6 Beamwidth:	25° El, 360° Az	ECO9-3500	19 in (48.3 cm)
ECO9 Beamwidth	14° El, 360° Az	ECO6-4900	11 in (28.0 cm)
ECO12 Beamwidth:	7° El, 360° Az	ECO9-4900	15 in (38.1 cm)
Lightning Protection:	External recommended	ECO6-5500	11 in (28.0 cm)
Max Wind Velocity:	100 mph, all models	ECO9-5500	15 in (38.1 cm)
Material:	White fiberglass radome,	ECO12-5800	19 in (48.3 cm)
Weight:	<0.75 lbs (< 0.340 kg)	**Connector (standard):**	N female direct,
Antenna Diameter:	0.63 in (1.6 cm) Radome, 0.9 in (2.3 cm) at the base	**PT Pigtail Option:**	1ft cable (0.3 meters) & N male, others available

US Office & Headquarters: 3900-B River Road, Schiller Park, IL 60176 Tel: 800-648-2800 or 847-671-6690 Fax: 847-671-6715
UK Office: 106 Anglesey Business Park, Hednesford, Staffs. WS12 1NR UK Tel: (+44) 1543-878343 Fax: (+44) 1543-871714
Visit our web page at www.mobilemark.com. Specifications subject to change without notice (12/2005).

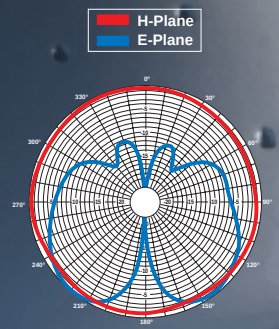
PRODUCT DATA SHEET

CUSHCRAFT CORPORATION

SQ2403PG

2.4 GHz, 3.5dBi PATCH ANTENNA

- Ultra compact, high performance
- Omnidirectional, ISM band
- Connector types optional
- Ceiling mount



SQ2403PG

Squint™ ISM Ceiling/Surface Mount Dipole Antenna

Cushcraft recently engineered an omnidirectional Squint™ ISM band patch antenna with a 3.5 dBi dipole like pattern shape and ceiling mount feature which provides an extremely low profile for minimum visual impact. This antenna provides for reception and transmission in the 2400-2500 MHz frequency band. The radiation pattern has a 50 degree beamwidth with the maximum directed at 45 degrees from the horizontal plane. A key feature of the Squint™ antenna is the use of a unique air dielectric design called MicroAir™. MicroAir™ eliminates the losses associated with etched circuit boards and provides higher performance. Measuring only 4-3/32″ x 4-3/32″ x 7/8″ (10.4 x 10.4 x 2.2 cm), this ultra-compact, high performance antenna provides coverage for large indoor open spaces, locations with high ceilings, and many places where extended coverage is needed. The total weight of the antenna is 4 ounces (114 grams). The antenna housing is vacuum thermoplastic. Standard models are white in color with a formed out of textured finish. 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 environments. Each Squint™ has a VSWR of 1:5:1 on 50 ohms impedance and comes with a standard 1-foot plenum coax and N-female connector, additional connector and coax configurations are available upon request. The mounting system installs to build out seamless microcellular and picocellular cell sites quickly and efficiently. Applications for Squint™ include wireless telephone booths, industrial complexes, office environments, shopping malls, parking garages, airports, hospitals, campus settings and more.

SQUINT™ SPECIFICATION CHART

Model	Frequency MHz	Impedance (Ohms)	Gain dBi	VSWR	Polarization	Beamwdth E-Plane, deg.	RF Connector (f)	Dimensions In (cm)	Mount Style	Weight lb (kg)
SQ2403PG12NF	2400-2500	50	3.5	1.5:1	Linear	50º (Peak @ 45º)	N	4x4x7/8 (10.2x10.2x2.2)	Ceiling	.52 (.23)
SQ1852PG12NF	1850-1990	50	2.5	1.5:1	Linear	50º (Peak @ 45º)	N	4x4x7/8 (10.2x10.2x2.2)	Ceiling	.20 (.01)

48 Perimeter Road, Manchester, NH 03103 • Phone: 603-627-7877 • Fax: 603-627-1764 • E-mail: sales@cushcraft.com
Web Site: www.cushcraft.com

PRODUCT DATA SHEET

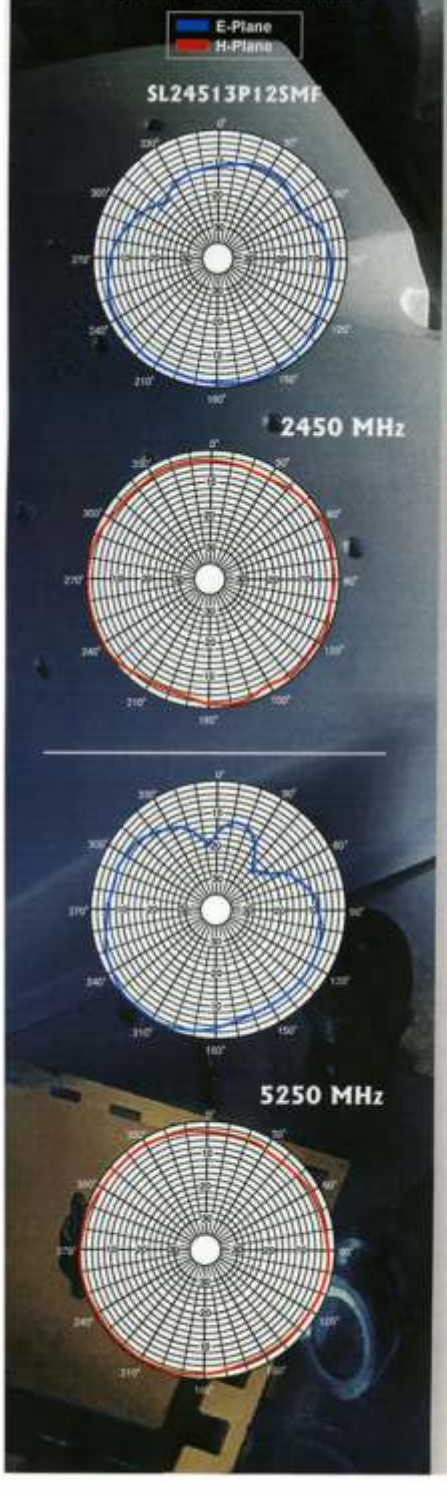
COMMUNICATIONS ANTENNAS

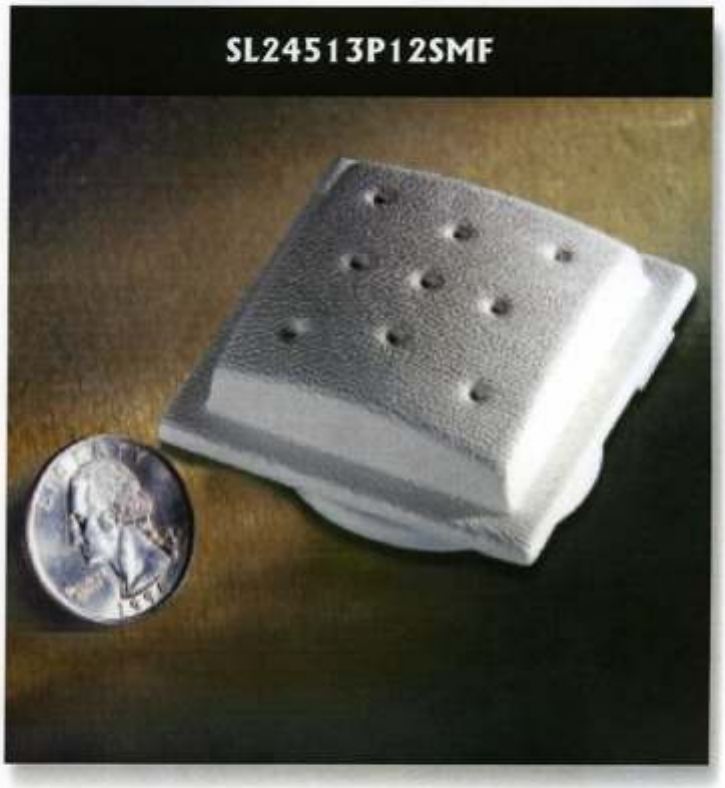
CUSHCRAFT CORPORATION

OMNIDIRECTIONAL CEILING MOUNT ANTENNA:

- High performance omni is small package
- Mounting hardware adjusts height from ceiling
- Coax pigtail length can be modified
- Additional mounting options available

Pattern data represents a ceiling mounted antenna





Tri-mode, dual band 802.11b/a/g ceiling mounted omnidirectional panel antenna

The Cushcraft SL24513P12SMF tri-mode, dual band omnidirectional panel antenna provides 3 dBi gain omnidirectional coverage for ceiling mount applications. The antenna is a diminutive 2.2" X 2.2" X 0.7" in size and the installation hardware is comprised of mounting clips that are integrated into the antenna design.

The sleek low profile design is a perfect choice for providing multimode, high performance, omnidirectional coverage with minimal aesthetic impact.

Typical applications include access points installed in offices, shopping, business and health care complexes as well as transportation centers where high speed 802.11 high speed wireless data connectivity is offered. The antennas incorporate a single RF port allowing them to support access point radio devices utilizing any combination of 802.11b/a/g multimode chip sets as well as access points utilizing 802.11b, 802.11a or 802.11g single mode chip sets.

The antenna features extremely symmetrical and uniform omnidirectional coverage. They are best suited to supporting high performance, high capacity data connectivity systems where the ability to identify each coverage zone can optimize the overall system performance characteristics.

The antenna comes standard with a 12" plenum rated coax pigtail and SMA female connector. However, any popular 802.11 access point connector option is available upon request.

SPECIFICATION CHART

Model / Part Number:	SL24513P12SMF
Frequency MHz:	2400 - 2500 5150-5350
Gain dBi: Peak	3.0
VSWR:	2.0:1
E-Plane (3 dB beamwidth):	120° / 80°
H-Plane (3 dB beamwidth):	Omnidirectional
Polarization:	Linear
Weight lbs. (kg) (w/12"cable):	.15 (68)
Mounting Style:	Ceiling Grid
Dimensions in.(cm):	2.2 x 2.2 x.7 (5.1 x 5.1 x 1.8)
Enclosure:	ABS/PVC
Power (Watts):	10
RF Connector:	SMA (f)
Pigtail:	12"

48 Perimeter Road, Manchester, NH 03103 • Phone: 603-627-7877 • Fax: 603-627-1764 • E-mail: sales@cushcraft.com
Web Site: www.cushcraft.com

PRODUCT DATA SHEET

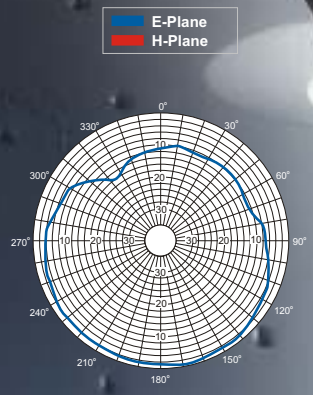
CUSHCRAFT CORPORATION

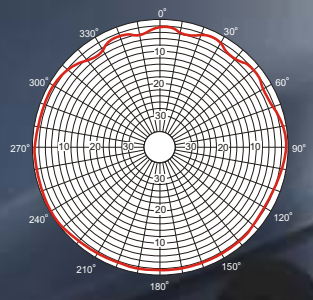
SL2402P

OMNIDIRECTIONAL CEILING MOUNT ANTENNA:

- High performance omni is small package
- Mounting hardware adjusts height from ceiling
- Coax pigtail length can be modified
- Additional mounting options available

Pattern data represents a ceiling mounted antenna





SL2402P

2.5 dBi Omnidirectional Ceiling Mount Antenna

The SL2402P antenna offers characteristics that one normally expects from much larger antennas, offering"no compromise" performance in an attractive small package. The SL2402P, 2.5 dBi omnidirectional ceiling mount antenna is designed for use in the ISM band from 2400 - 2500 MHz. The antenna dimensions are only 2" X 2" X 0.7".

Since the antenna's omnidirectional pattern is very uniform and symmetrical, it is perfectly suited to contemporary in-building wireless systems applications. A very well defined coverage area with high levels of radiated energy within each cell is critical to maintaining system-wide in-building performance especially if capacity related issues are driving the system design.

The antenna employs versatile easy to install clips for mounting to the ceiling support T-bar. The antenna mounting system is even adjustable for ceiling tile depth variances of as much as 0.5" from the grid support system. The antenna comes standard with N female connector and Cushcraft makes jumper cables available in varying lengths and connector options.

SPECIFICATION CHART

Model / Part Number:	SL2402P
Frequency MHz:	2400 - 2500
Gain dBi:	2.5
VSWR:	1.7:1
E-Plane (3 dB beamwidth):	160º
H-Plane (3 dB beamwidth):	Omnidirectional
Polarization:	Linear
Weight lbs (g): w/12"cable	.15 (68)
Mounting Style:	Ceiling Grid
Dimensions in.(cm):	2 x 2 x .7 (5.1x5.1x1.8)
Enclosure:	ABS/PVC
Power (Watts):	10
RF Connector:	Type N (f)
Pigtail:	12"

48 Perimeter Road, Manchester, NH 03103 Phone: 603-627-7877 Fax: 603-627-1764 E-mail: sales@cushcraft.com
Web Site: www.cushcraft.com

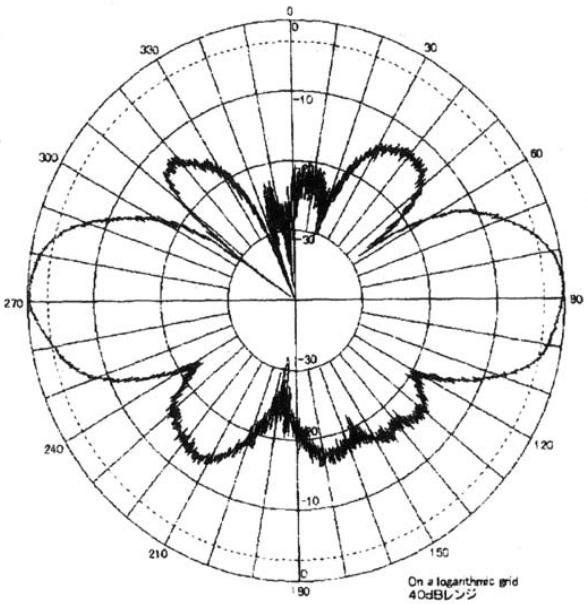
SF-D53N

5GHz Omnidirectional Antenna

Specifications:

- **5000-5900MHz 802.11a standard**
- **Gain: 5.5dBi**
- **VSWR: Less than 1.2:1**
- **Length: 7 inches**
- **Weight: 2.3ozs**
- **Vertical beam-width: 25 degrees**
- **Connector: Integral N-Male**
- **Radome: UV stabilized fiberglass**
- **Mast mounting hardware and mobile lip mounts optional**

Vertical radiation pattern



MB-100 Optional mast mount

Features:

- **High-gain omnidirectional pattern**
- **Commercial grade quality and construction**
- **Integral male N-type connector**
- **Optional stainless steel mast mounting bracket (MB-100) and mobile mounts available**
- **Perfect for the high speed 802.11a standard**

NCG COMPANY

NCG Company 1275 N. Grove St. Anaheim, CA 92806-2114
Phone: 800.962.2611 Fax: 714.630.7024
Email: micks@natcommgroup.com

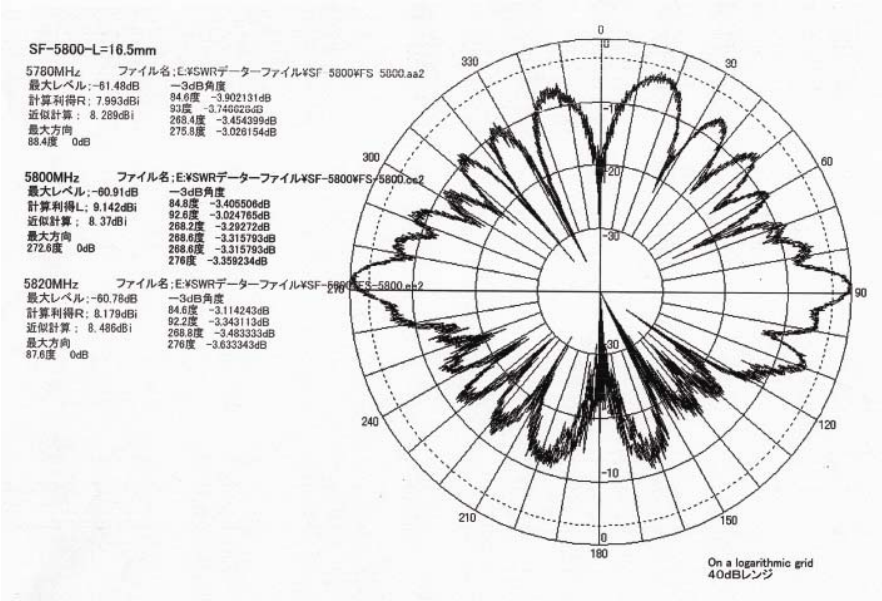
SF-5818N

5.8GHz Omni-directional A/P Antenna

Specifications:

- **5725-5825MHz**
- **Gain: 9.1dBi**
- **Length: 17.5 inches**
- **Weight: 4.7 oz**
- **-3dB Beam-width: 8 degrees**
- **Cross Polar Rejection: 15dB +**
- **Max Power: 50 watts**
- **Max wind survival: 150MPH +**
- **Wind Load: 7.1 sq in**
- **Connector: Integral N-male**
- **Radome: White UV stabilized fiberglass**
- **Mast mounting hardware optional**

Vertical radiation pattern



FEATURES:

- **802.11a compatible**
- **Designed as a A/P antenna in a mesh network system**
- **Male N-connector for easy installation**
- **Compact gain antenna for point-to-multipoint applications**
- **Heavy duty fiberglass for durability**
- **Weather proof for indoor or outdoor installation**

MOUNTING OPTIONS:

- **MB-100: 1"-2.5" mast mount**

MB-100 mast mount

NCG Company

1275 N. Grove St.
Anaheim, CA 92806-2114

Phone: 714.630.4541
Fax: 714.630.7024
Email: sales@natcommgroup.com

Manufactured by: COMET Company Ltd.

CENTURION™

Specifications

2.4 GHz Sphere

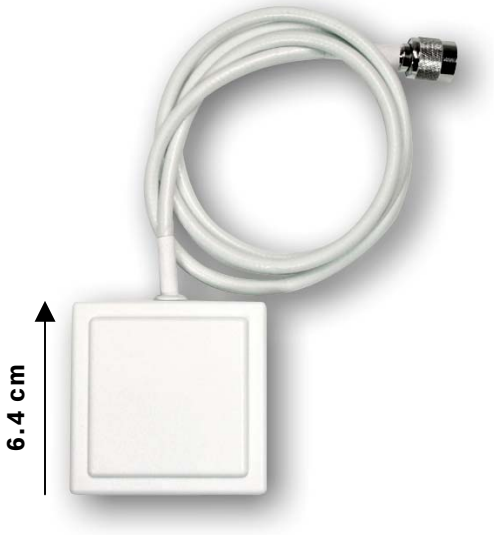
Omnidirectional In-Building Antenna

Model Number:
IO2450

Specifications:

Element Type	Air-Loaded Patch
Frequency Range	2.4 – 2.5 GHz
Peak Gain	3 dBi
Polarization[1]	Linear
Impedance	50 ohms
Maximum Input Power	50 watts
VSWR (Min. Performance)	1.5:1
Dimensions (L x W x H)	6.4 x 6.3 x 1.7 cm
Housing	ABS
Operating Temperature	-40º to +70ºC
Storage Temperature	-40º to +70ºC

[1]Contains both vertical and horizontal components, the ratio of which varies with the spatial location.



Mounting:

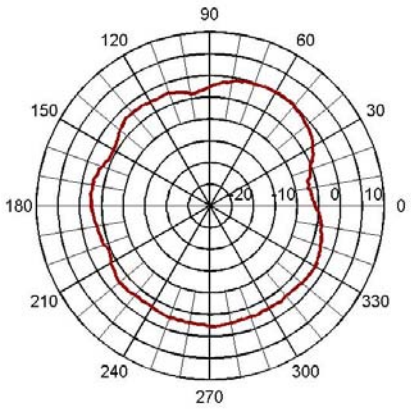
- Includes metal clip for mounting to a ceiling tile grid

Cables & Connectors:

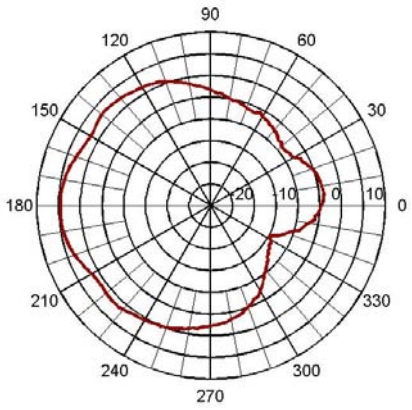
Model #	Reference #	Plenum Rated Coax	Connector
IO2450-NF06	CAF94166	6" RG-142	N-Female
IO2450-NF12	CAF94170	12" RG-142	N-Female
IO2450-RN12	CAF94120	12" RG-142	RP-N-Female
IO2450-SM12	CAF94101	12" RG-142	SMA-Male
IO2450-MX17	CAF95991	17" RG-142 & RG-316	Straight MMCX Plug
IO2450-LU18	CAF95977	18" RG-142 & RG-178	Straight Lucent Plug
IO2450-NM18	CAF94119	18" RG-142	N- Male
IO2450-RT36	CAF94150	36" RG-142	RP-TNC
IO2450-RT60	CAF94674	60" RG-142	RP-TNC
IO2450-RT84	CAF94672	84" RG-142	RP-TNC

Wireless Valley COMMUNICATIONS, INC.®

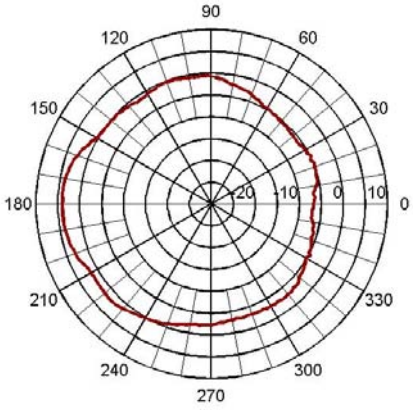
Pattern data files for LANPlanner are available at **www.centurion.com** or **www.wirelessvalley.com**.



Azimuth



Elevation Plane
phi=0



Omni Plane
phi=90

Specifications subject to change without notice.

IO2450a – 4/12/04

3425 N.44th Street, LINCOLN, NE 68504 USA
PHONE: 402.467.4491 • **FAX**: 402.467.4528
TECHNICAL SUPPORT: 888.454.6914
www.centurion.com • **sales@centurion.com**

2.3 GHz to 6 GHz Super Broadband 3 dBi Omnidirectional Ceiling Wireless LAN Antenna - Model: HG2458CU

Applications and Features

Applications:

- **2.3 GHz - 2.6 GHz Frequency Range:**
  - ◇ 802.11b & 802.11g Access Points and Routers
  - ◇ 2.4 GHz ISM Applications
  - ◇ WiFi Systems
  - ◇ Bluetooth® Applications
  - ◇ Public Wireless Hotspots
  - ◇ 2.3 GHz WCS/CDMA Applications
  - ◇ Wireless Two-Way Voice, Data, and Video Services
  - ◇ 2.6 GHz MMDS Band Applications
  - ◇ 802.16 and 802.20 Applications
- **4.9 GHz - 5.8 GHz Frequency Range:**
  - ◇ 802.11a Access Points and Routers
  - ◇ 5.3 GHz/5.8 GHz UNII/ISM Applications
  - ◇ Homeland Security
  - ◇ Public Safety Services: Fire, Police, Security
  - ◇ Radio Local Area Networks (RLAN)
  - ◇ WiMAX Technology

Features:

- Superior performance
- Broadband/Multi-Band operation
- Compact size, low profile
- Compatible with wireless hotspot applications
- Easy to mount
- 12 inch coax lead

Description

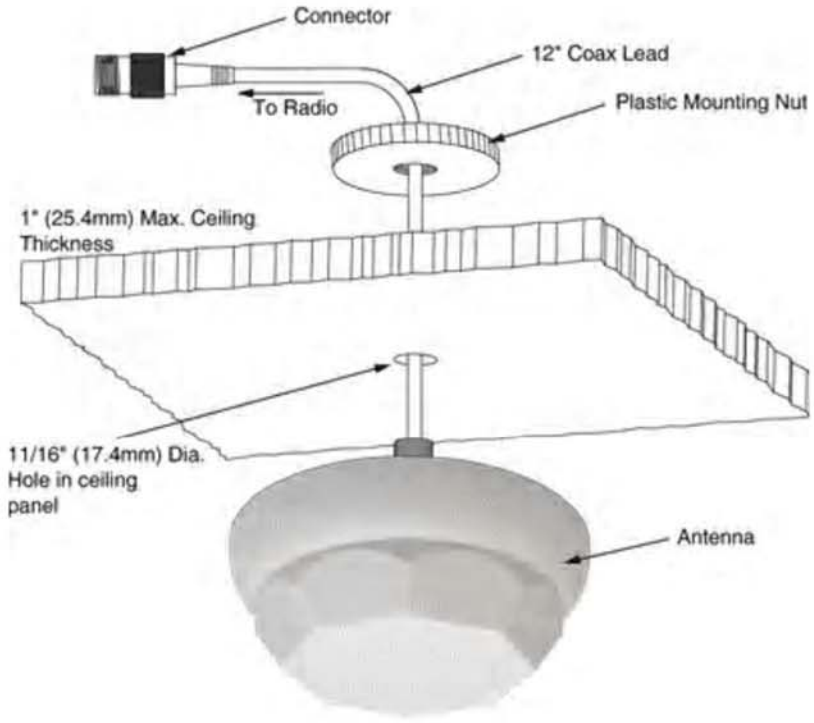
The HyperGain® Model HG2458CU is a high performance broadband/multi-band ceiling mount WiFi antenna designed to operate from 2.3 GHz to 6 GHz. The Multi-Band design of this antenna eliminates the need to purchase different antennas for each frequency. This simplifies installations since the same antenna can be used for a wide array of in-building wireless applications where wide coverage is desired. See above for applications by frequency range.

The compact and aesthetically pleasing design of this antenna makes it ideal for use in almost any indoor environment. It can be easily mounted through a single 11/16" hole in a solid or suspended ceiling up to 1" thick.

This antenna features a 12 inch coax lead terminated with a N-Female connector. Special order connectors are also available.

e-mail: sales@hyperlinktech.com • tel: 561-995-2256 • fax: 561-995-2432
web: www.hyperlinktech.com • 1201 Clint Moore Road • Boca Raton FL 33487

Mounting Details



Specifications

Electrical Specifications

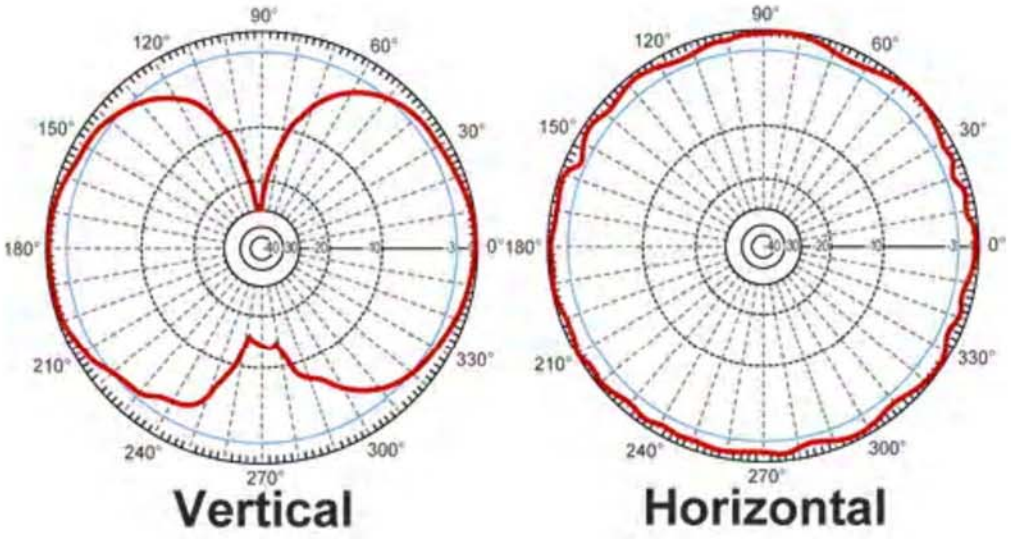
Frequency Range	2300-6000 MHz
Gain	3 dBi
Horizontal Beam Width	360 degrees
Vertical Beam Width	90 degrees
Impedance	50 Ohm
Max. Input Power	50 Watt
VSWR	< 1.5:1 avg.
Lightning Protection	DC Grounded

Mechanical Specifications

Weight	0.3 lbs. (.13 Kg)
Dimensions	4.9" (125 mm) Dia x 1.8" (46 mm)
Operating Temperature	-40° C to 85° C (-40° F to 185° F)
Mounting	.687" (17.4 mm) diameter hole
Polarization	Vertical

e-mail: sales@hyperlinktech.com • tel: 561-995-2256 • fax: 561-995-2432
web: www.hyperlinktech.com • 1201 Clint Moore Road • Boca Raton FL 33487

RF Antenna Gain Patterns



Guaranteed Quality

This product is backed by Hyperlink's Limited Warranty

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web: www.hyperlinktech.com • 1201 Clint Moore Road • Boca Raton FL 33487

HUBER+SUHNER®
SENCITY®RAIL ANTENNA
FOR WIRELESS COMMUNICATION

SWA 0859/360/4/0/DFRX30

Multiband antenna: GSM 900, GSM 1800, GSM/PCS 1900, UMTS, 2.4, 3.5, 5.3 and 5.8 GHz Bands and GPS including LNA

Technical Data

Electrical Properties Broaband Antenna

Frequency range (MHz)	870 - 960	1710 - 2170	2400 - 2700	3400 – 3700	5150 - 5875
Impedance	50 Ω				
VSWR	< 1.5	< 1.5	< 1.5	< 1.5	< 2.0
Polarization	linear, vertical				
Gain (using a 1 m^2 ground plane)	6 dBi	8.5 dBi	9.5 dBi	9.5 dBi	8.5 dBi
Max. power	400 W (CW) at 50°C				

Electrical Properties GPS Antenna

Frequency range	1575.42 ± 1.023 MHz				
Impedance	50 Ω				
VSWR	≤ 1.8				
Polarization	right hand circular polarized (RHCP)				
Antenna gain (using a 1 m^2 ground plane)	6 dBi (ref. to a circularly polarized isotropic antenna)				
Gain LNA	27 ± 2 dB				
Noise figure	≤ 2.7 dB, typ. 2 dB				
Operating voltage	3.0 to 5.5 VDC feed at centre conductor of GPS antenna				
Current consumption	≤ 25 mA, typ. 20 mA				
Out of band attenuation	> 20 dB at f_0 ± 50 MHz > 40 dB at f_0 ± 100 MHz				
Isolation between ports	> 30 dB	> 40 dB	> 40 dB	> 37 dB	> 28 dB

Mechanical Properties	
Dimensions	260 x 100 x 90 mm (10.24" x 3.94" x 3.54") *without mounting accessory 9091.99.0189*
Weight	1.2 kg (2.65 lbs.)
Housing material	aluminium powder painted RAL 7043 (dark grey)
Radome material	high impact acrylic styrene acrylonitrile (HRA150)
Radome color	RAL 7043 (dark grey)
Operating temperature range	- 30°C to + 85°C
Storage temperature range	- 40°C to + 80°C

Meets the following requirements:

- Protected against the effects of continuous immersion in water IP68 (only if correctly installed).
- EN 50155, electronic equipment used on rolling stock.
- EN 50124-1, insulation coordination (27.5 KV AC and 3.8 KV DC).
- High voltage and high current protection according to Deutsche Bahn specifications (protection against short circuits of 40 KA).
- EN 50121-3-2, electromagnetic compatibility.

Available Types	**Article no.**	
1399.17.0044	84002818	2 x N female

Mounting Hardware	**Article no.**	
9091.99.0189	84008192	Adapter panel[1]

[1]: Allowing the replacement of the antenna from another antenna manufacturer, without any modifications of the original mounting holes located on the vehicle's roof. Using this interface, the mounting holes dimension for the broadband and GPS connectors have to be 17 ...42 mm and 35 ...42 mm respectively (ref. to mounting instruction). The antenna has to be secured using four M10 screws.

Documents	
01.02.0777	security instruction
01.02.1045	mounting instruction

Material: The antenna is designed according the military standard MIL-F-14072D, which guarantees a long-life without corrosion.
Mounting: On a plane conductive surface clear of paint and other contaminants.
To ensure a correct sealing between the antenna and the roof, the connector mounting hole dimensions have to be 17 ... 42 mm for the broadband antenna and 35 ... 42 mm for GPS antenna. The antenna has to be secured using four M8 screws.

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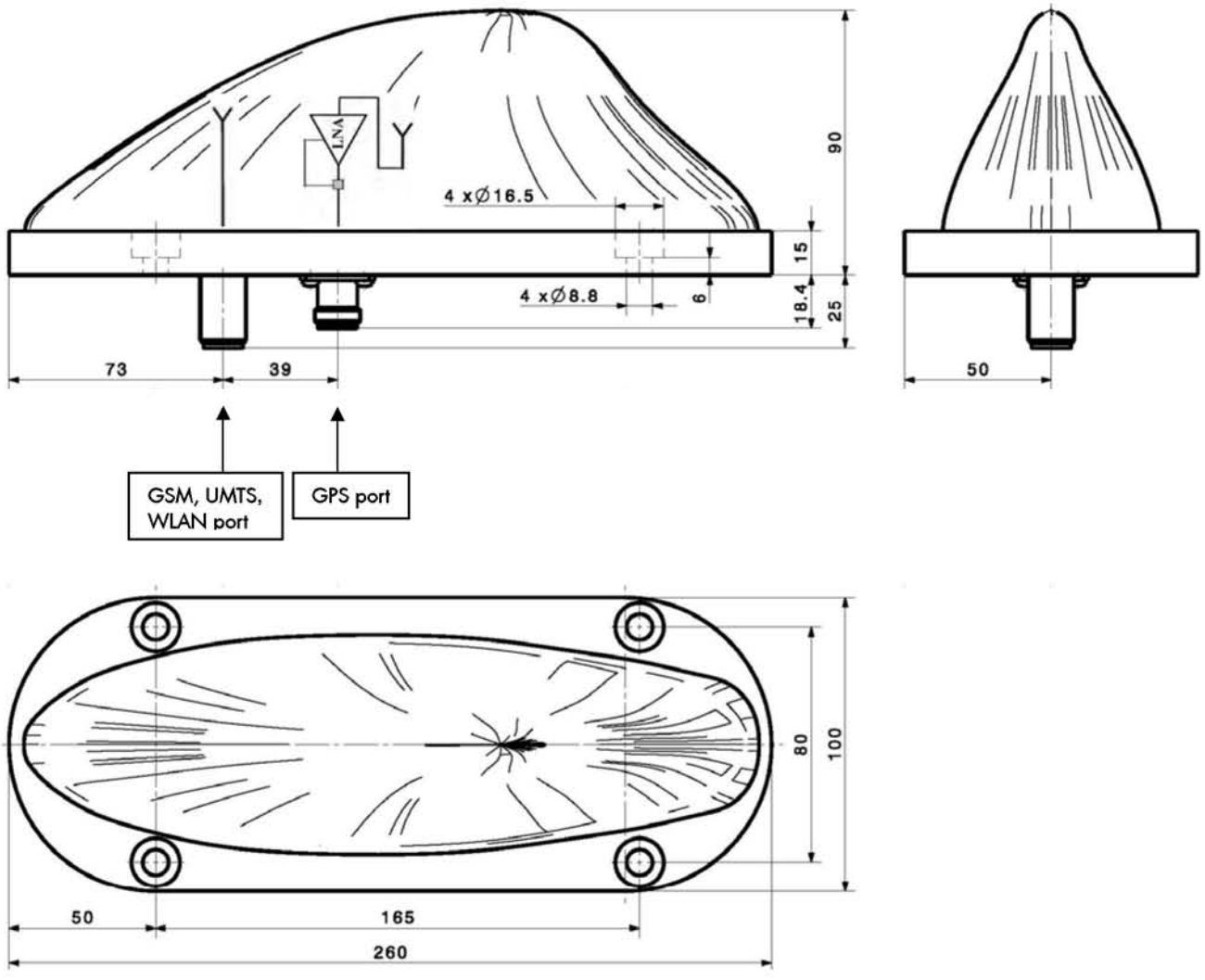
SWA 0859/360/4/0/DFRX30

Dimensions (mm)



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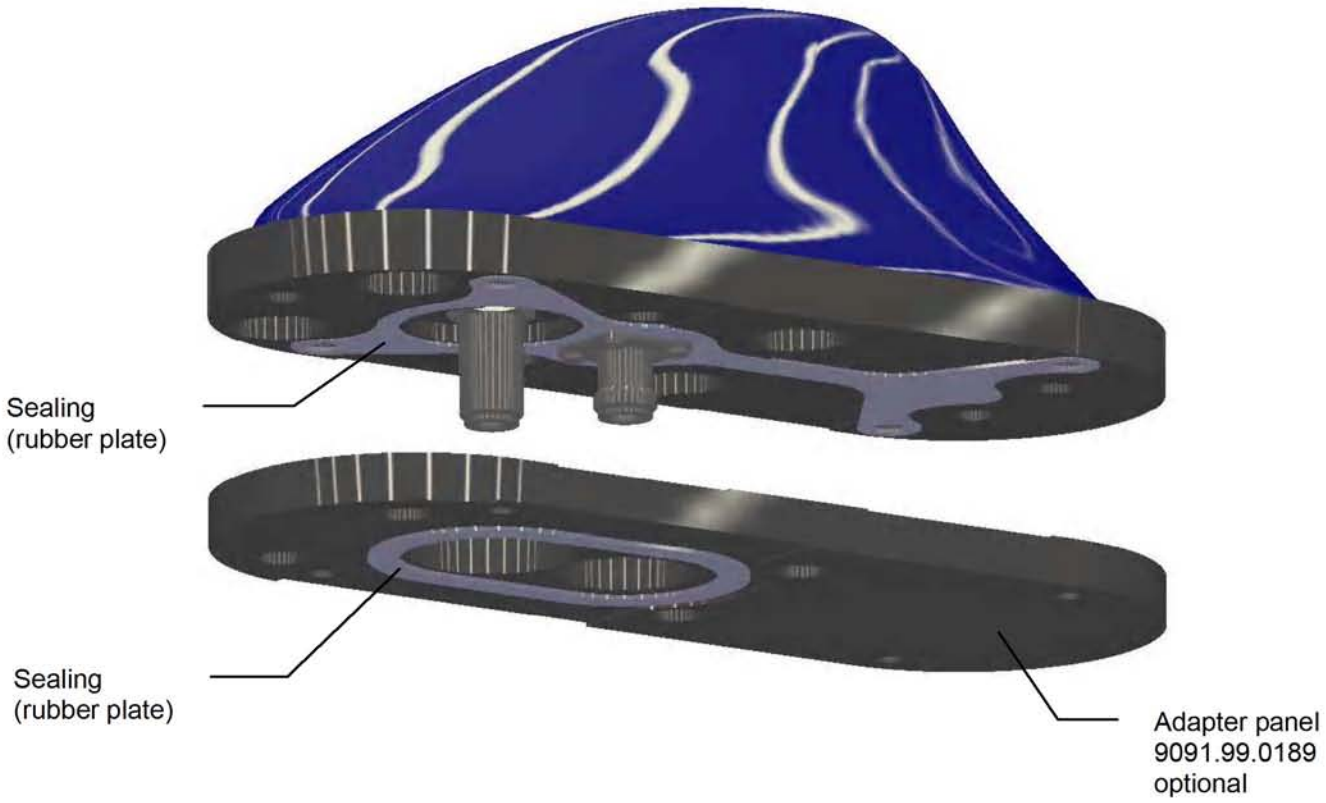
SWA 0859/360/4/0/DFRX30



HUBER+SUHNER is certified according to ISO 9001 and ISO 14001

HUBER+SUHNER – Excellence in Connectivity Solutions

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Last amended: 4159

HUBER+SUHNER®
OMNI ANTENNA
FOR WIRELESS COMMUNICATION

SOA 2400/360/4/20/V

Technical Data

Electrical Properties	
Frequency range	2400 - 2500 MHz
Impedance	50 Ω
VSWR	1.5
Polarization	linear, vertical
Gain	4.0 dBi
3 dB beamwidth horizontal	360°
3 dB beamwidth vertical	25°
Downtilt	20°
Max. power	75 W (CW) at 25°C

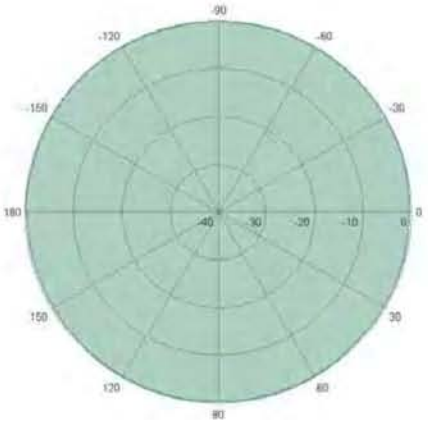
Mechanical Properties	
Dimensions	Ø 86 x 43 mm (Ø 3.39" x 1.69")
Weight	0.3 kg (0.66 lbs.)
Housing material	aluminium
Radome material	ASA
Radome color	RAL 7035 (light grey)
Operating temperature range	- 40°C to + 80°C
Storage temperature range	- 40°C to + 80°C
Windload	10 N at 160km/h (100mph)
Environmental requirements	EN 50155

Available Types	**Article no.**	
1324.17.0026	23004161	N female
1324.19.0035	23009880	SMA female

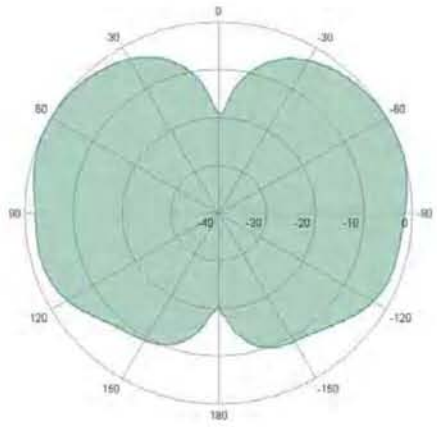
Mounting Hardware
Ceiling mounting material included.

Documents	
01.02.0777	security instruction
01.02.1089	mounting instruction

Radiation Pattern



horizontal



vertical

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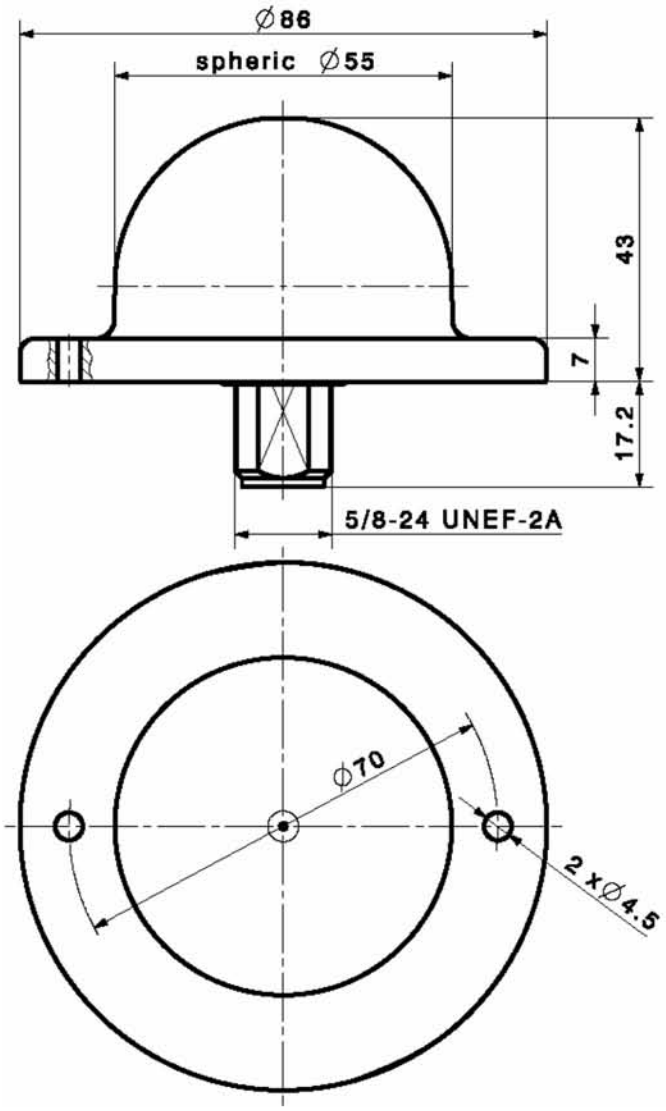
SOA 2400/360/4/20/V

Dimensions (mm)



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