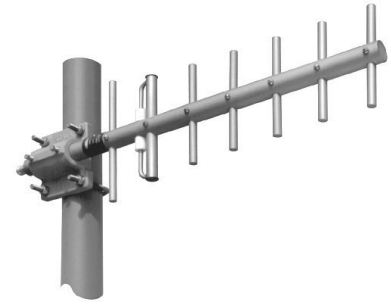


Attachment D.1 Antennae Data Sheets

The Scala TY series are rugged broadband yagi antennas fabricated of aluminum rod and extruded pipe, anodized for maximum reliability and corrosion resistance. The hardware and fastenings are stainless steel. The internal balun, coax feed and connector are sealed in a foam potting system to prevent moisture penetration and assure long service life in severe environmental conditions. The heavy aluminum mounting casting allows installation for V or H polarization.

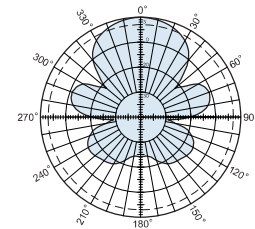
The TY-900 is specifically designed for professional fixed-station applications in the 890-960 MHz band.



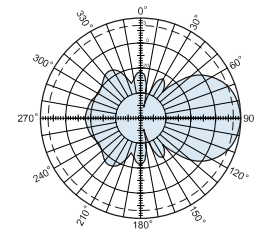
(Shown vertically polarized)

Specifications	
Frequency range	890—960 MHz
Gain	10 dBd (12.15 dBi)
Impedance	50 ohms
VSWR	<1.5:1 maximum (1.35:1 typical)
Polarization	Horizontal or vertical
Front-to-back ratio	>20 dB
Maximum input power	100 watts (at 50°C)
H-plane beamwidth	48 degrees (half-power)
E-plane beamwidth	40 degrees (half-power)
Connector	N female
Weight	3 b (1.4 kg)
Dimensions	23 x 6.8 inches (584 x 173 mm)
Wind load at 93 mph (150 kph)	
Front / Side	3 bf / 4 bf (11 N / 17 N)
Wind survival rating*	150 mph (241 kph)
Shipping dimensions	28 x 10 x 4.5 inches (maximum) (711 x 254 x 114 mm)
Shipping weight	5 b (2.3 kg)
Mounting	For masts of 1.5 to 2.375 inch (32 to 60 mm) OD.

* Mechanical design is based on environmental conditions as stipulated in TIA-222-G-2 (December 2009) and/or ETS 300 019-1-4 which include the static mechanical load imposed on an antenna by wind at maximum velocity. Contact KBU for further details.



H-plane
Horizontal pattern — V-polarization
Vertical pattern — H-polarization

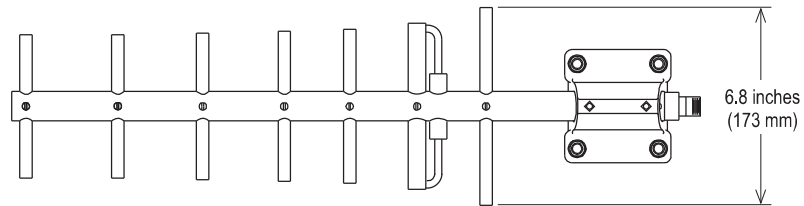
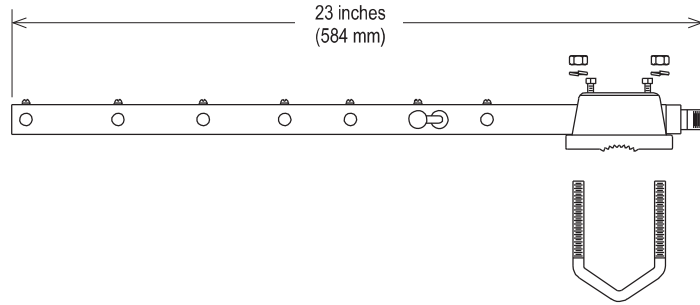


E-plane
Horizontal pattern — H-polarization
Vertical pattern — V-polarization



A Kathrein Broadcast Brand

TY-900
YAGI ANTENNA
890-960 MHz



30022a subject to alteration

KP-900-SPOMA-8

824-960 MHz, 8 dBi, Vertical Polarization OMNI Antenna, 1 Port

- Operates over licensed 800MHz/900MHz and unlicensed 902-928MHz ISM band
- Lightweight, rugged industrial grade design
- Heavy duty powder coated mounting bracket
- Ideally suited for multipoint, Non Line of Sight, and mobile applications

Electrical Specification

Frequency Band	MHz	824—900	900—960
Gain	dBi	7.5±0.5	8.0±0.5
Polarization		Vertical	Vertical
Horizontal HPBW	Degree	360	360
Vertical HPBW	Degree	15±5	12±5
Electrical Downtilt	Degree	0	0
VSWR		1.7 typ 2 max	1.5 typ 1.7 max
Return Loss	dB	12 typ 10 max	14 typ 12 max
Max. Input Power per Port	W	100	100
Impedance	Ohms	50	50

Mechanical Specifications

RF Connector Type	Type N Female
RF Connector Quantity	1
RF Connector Position	Bottom of radome
Electrical Grounding	RF connector grounded to reflector and mounting bracket
Radome Material	White Fiberglass
Ingress Protection	IP55 rain and dust resistant
Operating Temperature	-40° to +60° C (-40° to +140° F)
Max. Wind Speed	210km/h 130mph
Compliance	RoHS

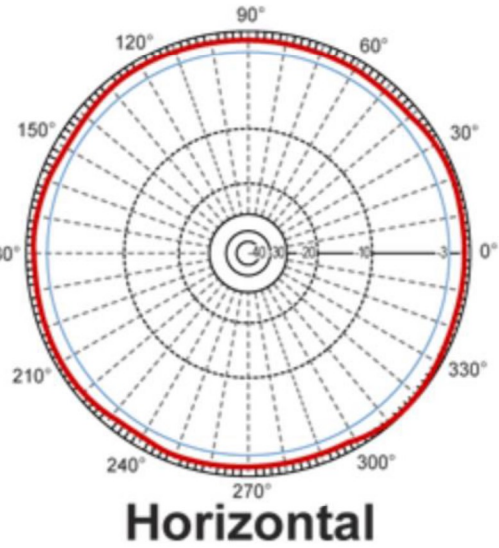
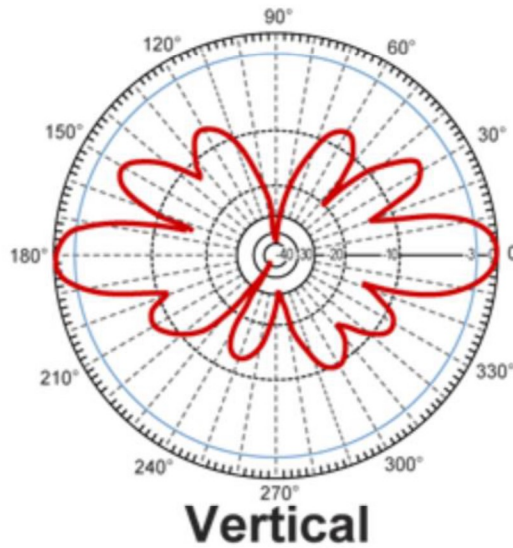
Bracket Specifications

Material Type	Power Coated Steel
Mounting Type	Pipe Mount
Mounting pole diameter	30 mm – 51 mm 1.2 in – 2.0 in

OMNI Dimensions

Diameter	38 mm 1.5 in
Length	1613 mm 63.5 in
Net Weight, with brackets	1.7 kg 3.8 lb

Graphical Data



Appendix

HPBW: Average and variation of the antenna's 3dB beamwidth in its horizontal (Azimuth) or vertical (Elevation) pattern.

Electrical Downtilt: Angle in the antenna's elevation pattern in which the maximum gain occurs.

Gain: Antenna's average gain and variation in each frequency band.



CompactLine Easy Antenna, Ultra High Performance, Single Polarized, 3 ft

Product Description

RFS CompactLine® and CompactLine® Easy Antennas are designed for short-haul microwave systems in all common frequency ranges from 6 GHz to 80 GHz. They are typically deployed in dense urban areas, metropolitan and suburban locations, aggregation points. They are especially optimized to integrated radios to reduce costs, installation complexity and time.

Features/Benefits

- Sizes ranging from 0.3 m (1 ft) to 1.8 m (6 ft)
- Frequencies ranging from 5.925 GHz to 80 GHz with support for three wideband frequency ranges (5.925-7.125, 7.125-8.5 and 10.0-11.7 GHz) to reduce antenna requirements and simplify logistics
- Single (SB and SC) and dual-polarized (SBX and SCX) models with the ability to upgrade from single to dual polarization and change frequencies in the field
- Low-profile design to reduce transportation requirements, wind load and antenna weight
- Simplified mounting design to accelerate installation
- CompactLine EASY models are extra light and easy to transport, deploy and upgrade
- Hardcover radomes
- Tested and validated ultra-high (ETSI EN 302 217 Class 3, FCC Class A) electrical performance
- Support for winds up to 250 km/h (155 mph) and even 320 km/h (195 mph) for SB1/SBX1
- An optional sway bar for antennas 1 m (3 ft) and larger for added assurance in case mistakes are made during installation



Antenna

Technical Features

Product Type	Point to point antennas
Frequency, GHz	10 - 11.7
Diameter, ft (m)	3 (0.9)
Profile	CompactLineEasy
Reflector	1-part
Swaybar	0: (not applicable)
optional Swaybar	1: SMA-SK-3 (1.00 m x Ø33 mm)
Performance	Ultra High
Polarization	Single
Regulatory Compliance	ETSI EN 302217 Range 1 Class 3, Brazil Anatel Class 2, Canada SRSP 310.5, FCC Category A
3dB beamwidth, (degrees)	2
Antenna Input	CPR90G
Low Band Gain, dBi	37.6
Mid Band Gain, dBi	38.3
High Band Gain, dBi	39.1
F/B Ratio, dB	64
XPD, dB	30
Max VSWR / R L, dB	1.38 (16)
Elevation Adjustment, degrees	± 15
Azimuth Adjustment, degrees	± 15
Polarization Adjustment, degrees	± 5
Radome	rigid
Antenna color	White RAL 9010
Mounting Pipe Diameter minimum, mm (in)	89 (3.5)
Mounting Pipe Diameter maximum, mm (in)	114 (4.5)
Approximate Weight, kg (lb)	18 (40)
Survival Windspeed, km/h (mph)	252 (155)
Operational Windspeed, km/h (mph)	180 (112)
Further Accessories	SMA-SKO-UNIVERSAL : Universal sway bar fixation kit

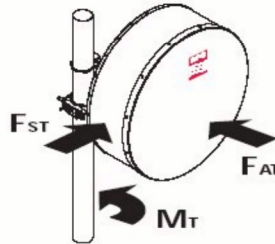
All information contained in the present datasheet is subject to confirmation at time of ordering



CompactLine Easy Antenna, Ultra High Performance, Single Polarized, 3 ft

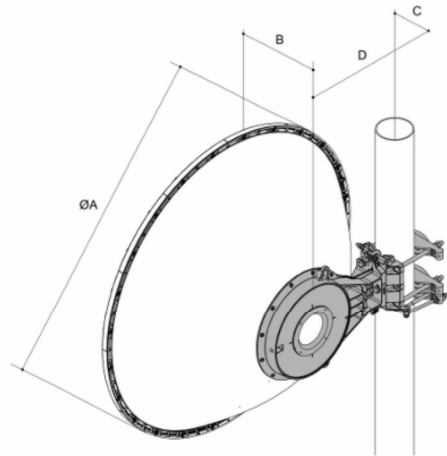
All values @ Survival Wind Speed

F _{ST} Side force max, N (lb)	1451 (326)
F _{AT} Fa Axial force max, N (lb)	2930 (659)
M Torque max., Nm (lb*ft)	1213 (895)



Dimensions mm (in)

ØA	999 (39.5)
B	375 (15)
C	56 (2.2)
D @ Mounting pipe Ø 219 (8.5):	not applicable
D @ Mounting pipe Ø 114 (4.5):	392 (15.5)
D @ Mounting pipe Ø 89 (3.5):	379.5 (14.9)
D @ Mounting pipe Ø 48 (1.9):	not applicable
E	79 (3)
F	182 (7)
G	not applicable
H	not applicable



Notes

no notes

Documentation

Reflector Installation	RPE (10.55-10.68 GHz) (Pathloss format)
Feed Installation	RPE (10.55-10.68 GHz) (PDF format)
	RPE (10.0-11.7 GHz)(Pathloss Format)
	RPE (10.0-11.7 GHz)(PDF Format)
	RPE (10.7-11.7 GHz)(Pathloss Format)
	RPE (10.7-11.7 GHz)(PDF Format)

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