

Part Number CN-ANT-OMNI-KIT

Includes two surge protectors and two LMR400 120" / 3m antenna cables. Two required per Celona outdoor AP.

Electrical

Frequency range	3300-3800 MHz
Polarization	Vertical and Horizontal
Gain	13 dBi
Elevation 3dB beamwidth	7 °
Electrical Downtilt	1 °
VSWR	< 2:1
Return loss	> 10 dB
Cross-pol ratio	> 20 dB
V-H port isolation	> 30 dB
Input power	50 W max per port
Impedance	50 Ω
Connector Type	Type N Female x 2

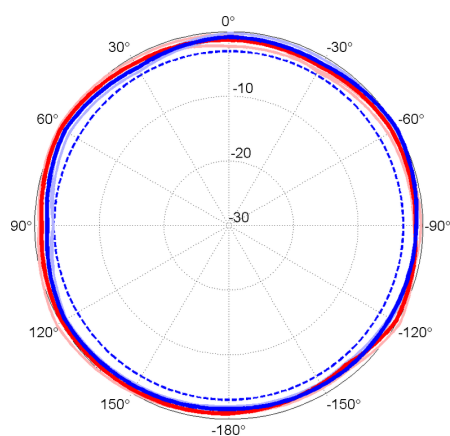
Mechanical

Dimensions	33" x 6" x 5" 83.8 x 15.2 x 12.7cm
Weight	5 lb / 2.27 kg
Mounting method	Mast
Mounting pole dia	1.6" - 2.4" 4.1cm - 6.1cm
Radome material	UV resistant PVC

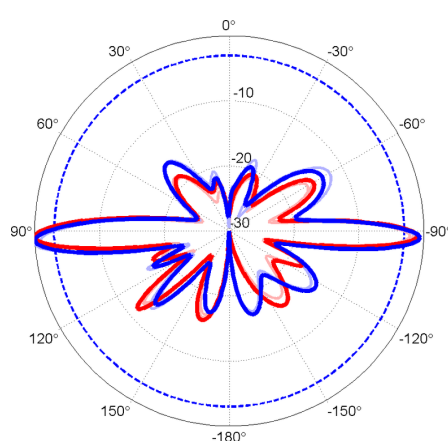
Environmental

Temperature range	-40° to +65° C / +150° F
Wind speed	210 km/h / 130 mph
UV protection	UV resistant PVC
Ingress protection	IP55 rain resistant
Lightning protection	DC Ground

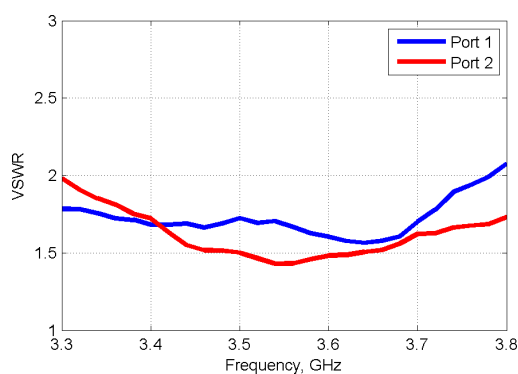
Azimuth patterns



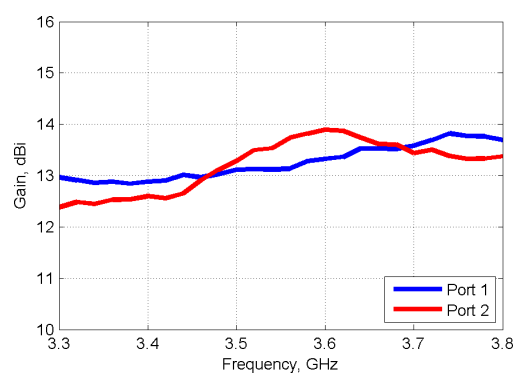
Elevation patterns



VSWR



Gain



3.5 GHz to 4.2 GHz, 33 Degree Sector Antenna, 18.8 dBi, 2-Port, $\pm 45^\circ$ Slant

- 4° fixed electrical downtilt
- ProLine sector with stable and high gain
- Interference mitigation with azimuth and elevation side-lobe suppression
- Includes two surge protectors and two LMR400 120" / 3m antenna cables.
- Two required per Celona outdoor AP.

Electrical Specification

Frequency Band	MHz	3500—3800	3800—4200
Gain	dBi	18.5 \pm 0.2	18.8 \pm 0.3
Polarization		Slant ($\pm 45^\circ$)	Slant ($\pm 45^\circ$)
Horizontal HPBW	Degree	35 \pm 1	33 \pm 1
Horizontal Squint	Degree	\pm 0.5	\pm 0.5
Vertical HPBW	Degree	8.5 \pm 0.5	7.8 \pm 0.4
Electrical Downtilt	Degree	4	4
Front-to-Back Ratio @ $180^\circ \pm 30^\circ$	dB	35	33
Upper Side Lobe Suppression ($+20^\circ$)	dB	15	15
Cross-polarization Ratio over HPBW	dB	15	13
VSWR		1.3 typ 1.5 max	1.3 typ 1.5 max
Return Loss	dB	17 typ 14 max	17 typ 14 max
Port-to-Port Isolation	dB	30	25
Max. Input Power per Port	W	50	50
Impedance	Ohms	50	50

Mechanical Specifications

RF Connector Type	N-Type Female
RF Connector Quantity	2
RF Connector Position	Bottom of radome
Electrical Grounding	RF connector grounded to reflector and mounting bracket
Radome Material	UV resistant PVC
Reflector Material	Fully-Enclosed Aluminium
Ingress Protection	IP55 rain and dust resistant
Wind Load, frontal	135N @ 160km/h 30lbf @ 100mph
Max. Wind Speed	160km/h 100mph
Temperature Range	-40° to $+60^\circ$ C -40° to $+140^\circ$ F

Bracket Specification

Material Type	Powder Coated High-Strength Aluminium
Mechanical Tilt (Degree)	-1 to +18 (Slot 1) -7 to +11 (Slot 2)
Mounting Type	Pipe Mount
Mounting pole diameter	1.9cm - 11.4cm / 0.75" - 4.5"
Antenna-to-Pipe Distance	12.1cm / 4.8"
Bracket-to-Bracket Distance	47cm / 18.5"

Sector Dimensions

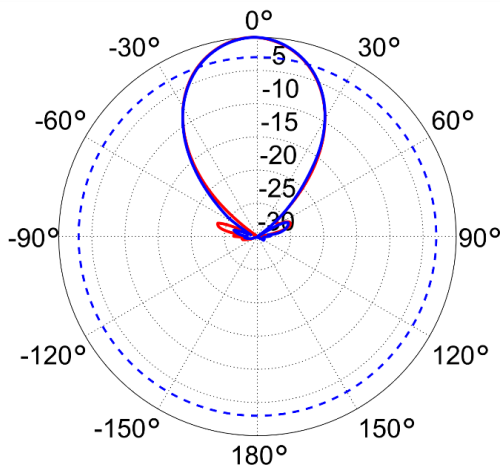
Length	58.5cm		23.0"
Width	17.4cm		6.9"
Height	7.9cm		3.1"
Net Weight, with brackets	5.7 kg		12.5 lb

Shipping Dimensions

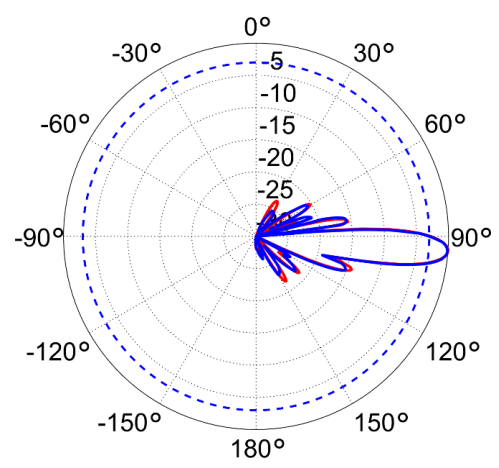
Length	102cm		40"
Width	36cm		14"
Height	36cm		14"
Net Weight	7.3 kg		16 lb

Graphical Data

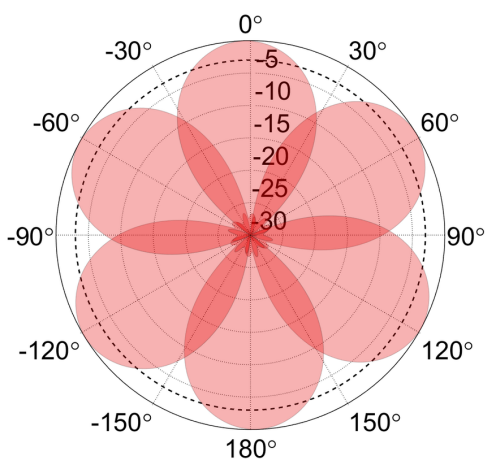
45 Slant Azimuth Pattern



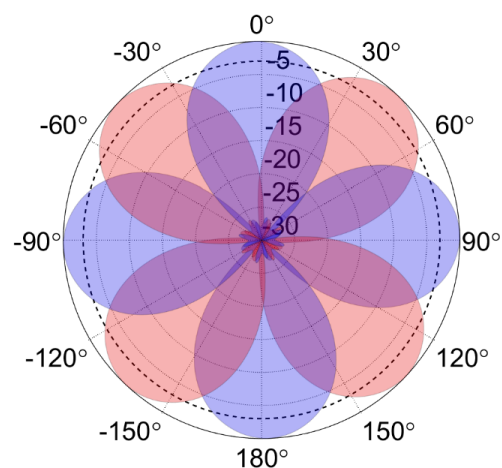
45 Slant Elevation Pattern



Frequency- Reuse One



ABAB Channel Reuse



Appendix

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

Horizontal Squint: Angle in the antenna's azimuth pattern in which the maximum gain occurs. Reported is the maximum variation in the frequency band.

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.

Front to Back Ratio @ 180°±30°: Difference between the antenna's maximum gain and the maximum gain in the antenna's back lobe over ±30° angles.

Upper Side Lobe Suppression: The maximum value for the antenna's elevation upper side lobes from the main beam to +20°.

Cross-polarization Ratio over HPBW (dB): Maximum difference between the co-polarization and cross-polarization gain across the sector's HPBW.

2-port sector antenna, 3300–3800 MHz, 90° HPBW

- High gain and slant dual polarization
- Simultaneously maximize coverage and minimize interference
- Ideal for 3-sector frequency-reuse one with LTE equipment
- Includes two surge protectors and two LMR400 120" / 3m antenna cables.
- Two required per Celona outdoor AP.

Electrical Specification

Frequency Band	MHz	3300—3550	3550—3800
Gain	dBi	16.7±0.25	16.5±0.25
Polarization		Slant (±45°)	Slant (±45°)
Horizontal HPBW	Degree	85±2	90±2
Horizontal Skew	Degree	±2	±3
Vertical HPBW	Degree	7±0.25	6.5±0.25
Electrical Downtilt	Degree	2	3.5
Front-to-Back Ratio @ 180°	dB	31	35
Front-to-Back Ratio @ 180°±30°	dB	28	28
Cross-polarization Ratio at Boresight	dB	25	23
Cross-polarization Ratio over HPBW	dB	20	17
VSWR		1.5 typ 1.7 max	1.3 typ 1.5 max
Return Loss	dB	14 typ 12 max	18 typ 14 max
Port-to-Port Isolation	dB	25	30
Max. Input Power per Port	W	50	50
Impedance	Ohms	50	50

Mechanical Specifications

RF Connector Type	Type N Female
RF Connector Quantity	2
RF Connector Position	Bottom of radome
Electrical Grounding	RF connector grounded to reflector and mounting bracket
Radome Material	UV resistant PVC
Ingress Protection	IP55 rain and dust resistant
Wind Load, frontal	240N @ 160km/h 54 lbf @ 100mph
Max. Wind Speed	160km/h 100mph
Temperature Range	-40° to +60° C -40° to +140° F

Bracket Specification

Material Type	Hot Dipped Galvanized Steel
Mechanical Tilt (Degree)	-4 – 16
Mounting Type	Pipe Mount
Mounting pole diameter	2.5cm – 8.9cm / 1.25" – 3.5"
Antenna-to-Pipe Distance	13.1cm / 5"
Bracket-to-Bracket Distance	49cm / 19"

Sector Dimensions

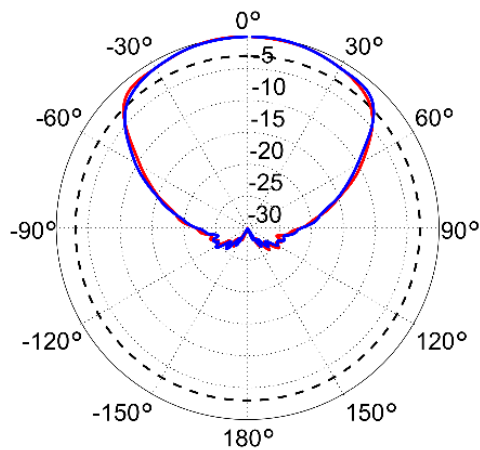
Length	71cm		27"
Width	17cm		7"
Height	8.9cm		3.5"
Net Weight, with brackets	3.2 kg		10 lb

Shipping Dimensions

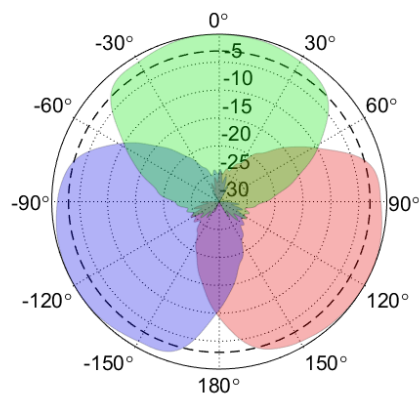
Length	102cm		40"
Width	36cm		14"
Height	36cm		14"
Net Weight	8.2 kg		18 lb

Graphical Data

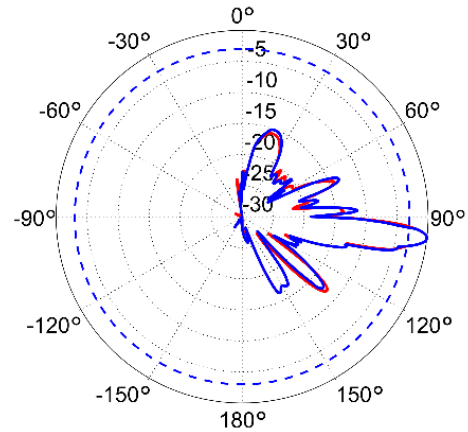
Port 1 - 45 Slant



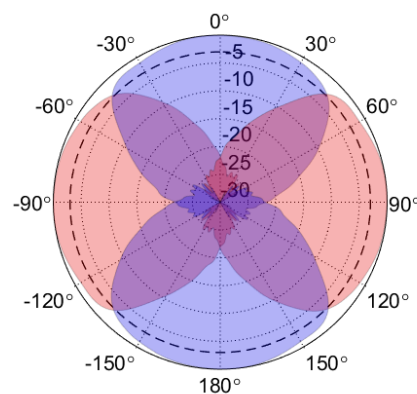
Frequency-Reuse One



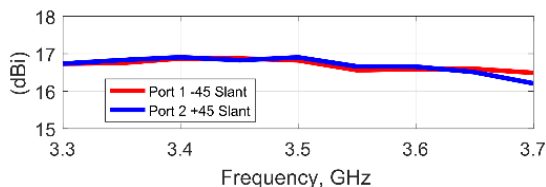
Port 2 + 45 Slant



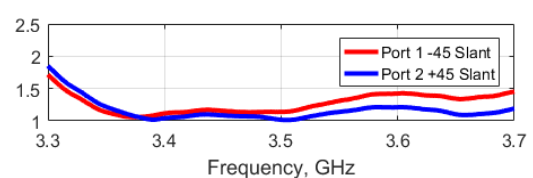
ABAB Channel Reuse



Gain



VSWR



Appendix

HPBW: Average and variation of the antenna's 3dB beamwidth (half power beamwidth) in its horizontal (Azimuth) or vertical (Elevation) pattern.
 Azimuth Skew: Angle in the antenna's azimuth pattern in which the maximum gain occurs. Reported is the maximum variation in the frequency band.
 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.
 Front to Back Ratio @ 180°: Difference between the antenna's maximum gain and the gain directly behind the antenna ($\theta=180^\circ$).
 Front to Back Ratio @ 180°±30°: Difference between the antenna's maximum gain and the maximum gain in the antenna's back lobe over ±30° angles.
 Cross polarization at boresight: Difference between the co-polarization and cross-polarization gain at 0° (boresight).
 Cross-polarization Ratio over HPBW (dB): Maximum difference between the co-polarization and cross-polarization gain across the sector's HPBW.

2-port sector antenna, 3300–3800 MHz, 120° HPBW

- High gain and slant dual polarization
- Simultaneously maximize coverage and minimize interference
- Ideal for 2-sector frequency-reuse one with LTE equipment
- Includes two surge protectors and two LMR400 120" / 3m antenna cables.
- Two required per Celona outdoor AP.

Electrical Specification

Frequency Band	MHz	3300—3550	3550—3800
Gain	dBi	15±0.25	15.5±0.25
Polarization		Slant (±45°)	Slant (±45°)
Horizontal HPBW	Degree	115±5	120±5
Horizontal Squint	Degree	±4	±2
Vertical HPBW	Degree	8±1	7±1
Electrical Downtilt	Degree	3.5	3
Front-to-Back Ratio @ 180°	dB	35	35
Front-to-Back Ratio @ 180°±30°	dB	28	30
Cross-polarization Ratio at Boresight	dB	25	20
Cross-polarization Ratio over HPBW	dB	15	14
VSWR		1.7 typ 2 max	1.5 typ 1.7 max
Return Loss	dB	12 typ 10 max	14 typ 12 max
Port-to-Port Isolation	dB	20	25
Max. Input Power per Port	W	50	50
Impedance	Ohms	50	50

Mechanical Specifications

RF Connector Type	Type N Female
RF Connector Quantity	2
RF Connector Position	Bottom of radome
Electrical Grounding	RF connector grounded to reflector and mounting bracket
Radome Material	UV resistant PVC
Ingress Protection	IP55 rain and dust resistant
Wind Load, frontal	220N @ 160km/h 49lbf @ 100mph
Max. Wind Speed	160km/h 100mph
Temperature Range	-40° to +60° C -40° to +140° F

Bracket Specification

Material Type	Hot Dipped Galvanized Steel
Mechanical Tilt (Degree)	-4 – 15
Mounting Type	Pipe Mount
Mounting pole diameter	2.5cm – 8.9cm / 1.25" – 3.5"
Antenna-to-Pipe Distance	12.7cm / 5"
Bracket-to-Bracket Distance	54.6cm / 21.5"

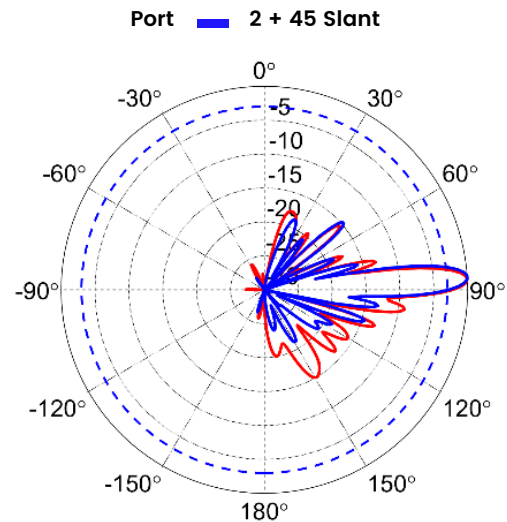
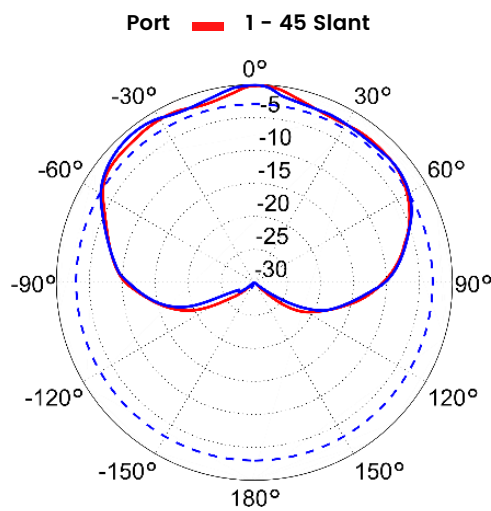
Sector Dimensions

Length	73.6cm		29"
Width	17.8cm		7"
Height	8.9cm		3.5"
Net Weight, with brackets	5 kg		11 lb

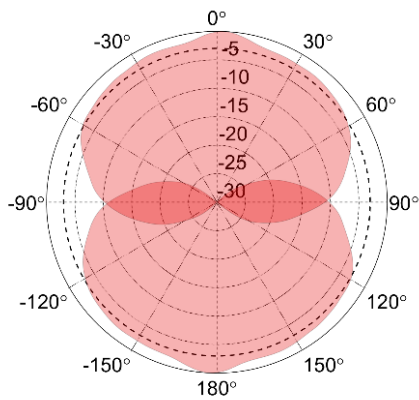
Shipping Dimensions

Length	102cm		40"
Width	36cm		14"
Height	36cm		14"
Net Weight	9.5 kg		21 lb

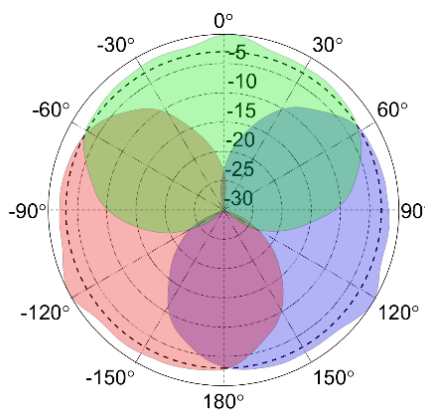
Graphical Data



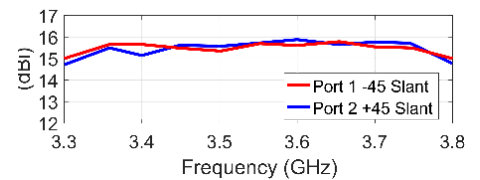
Frequency-Reuse One



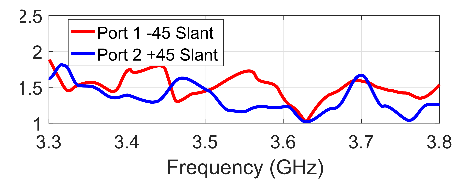
Three Sector Deployment



Gain



VSWR



Appendix

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

Horizontal Squint: Angle in the antenna's azimuth pattern in which the maximum gain occurs. Reported is the maximum variation in the frequency band.

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.

Front to Back Ratio @ 180°: Difference between the antenna's maximum gain and the gain directly behind the antenna ($\theta=180^\circ$).

Front to Back Ratio @ $180^\circ \pm 30^\circ$: Difference between the antenna's maximum gain and the maximum gain in the antenna's back lobe over $\pm 30^\circ$ angles.

Cross polarization at boresight: Difference between the co-polarization and cross-polarization gain at 0° (boresight).

Cross-polarization Ratio over HPBW (dB): Maximum difference between the co-polarization and cross-polarization gain across the sector's HPBW.

2-port sector antenna, 3300–3800 MHz, 65° HPBW

- High gain and slant dual polarization
- Simultaneously maximize coverage and minimize interference
- Ideal for 3-sector frequency-reuse one with LTE equipment
- Includes two surge protectors and two LMR400 120" / 3m antenna cables
- Two required per Celona outdoor AP

Electrical Specification

Frequency Band	MHz	3300—3550	3550—3800
Gain	dBi	17.3 ± 0.4	17.7 ± 0.4
Polarization		Slant (±45°)	Slant (±45°)
Horizontal HPBW	Degree	65 ± 2	62 ± 2
Horizontal Skew	Degree	± 2	± 2
Vertical HPBW	Degree	7 ± 0.5	6.5 ± 0.5
Electrical Downtilt	Degree	3.5	3
Front-to-Back Ratio @ 180°	dB	35	38
Front-to-Back Ratio @ 180°±30°	dB	30	35
Cross-polarization Ratio at Boresight	dB	18	20
Cross-polarization Ratio over HPBW	dB	13	14
VSWR		1.5 typ 2 max	1.5 typ 1.7 max
Return Loss	dB	14 typ 10 max	14 typ 12 max
Port-to-Port Isolation	dB	20	25
Max. Input Power per Port	W	50	50
Impedance	Ohms	50	50

Mechanical Specifications

RF Connector Type	Type N Female
RF Connector Quantity	2
RF Connector Position	Bottom of radome
Electrical Grounding	RF connector grounded to reflector and mounting bracket
Radome Material	UV resistant PVC
Ingress Protection	IP55 rain and dust resistant
Wind Load, frontal	170N @ 160km/h 38 lbf @ 100mph
Max. Wind Speed	160km/h 100mph
Temperature Range	-40° to +60° C -40° to +140° F

Bracket Specification

Material Type	Hot Dipped Galvanized Steel
Mechanical Tilt (Degree)	-4 – 16
Mounting Type	Pipe Mount
Mounting pole diameter	2.5cm – 8.9cm / 1.25" – 3.5"
Antenna-to-Pipe Distance	13.1cm / 5"
Bracket-to-Bracket Distance	49cm / 19"

Sector Dimensions

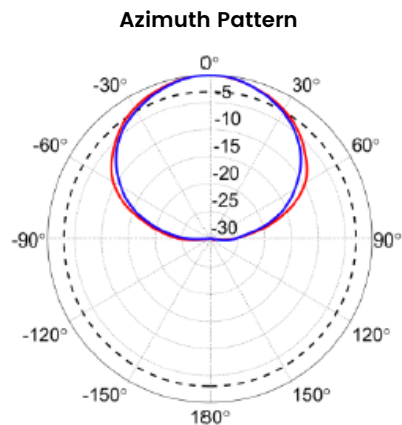
Length	73.6cm		29"
Width	17cm		7"
Height	8.9cm		3.5"
Net Weight, with brackets	4.5 kg		10 lb

Shipping Dimensions

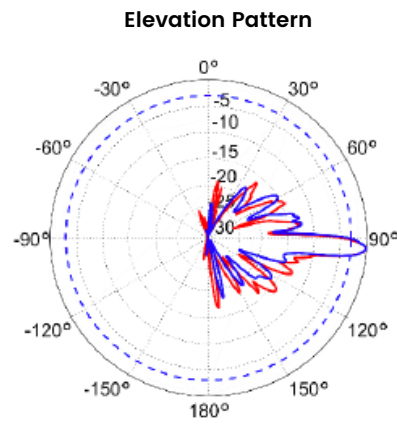
Length	102cm		40"
Width	36cm		14"
Height	36cm		14"
Net Weight	8.2 kg		18 lb

Graphical Data

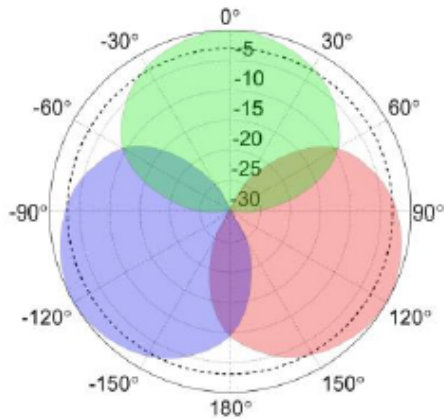
Port 1 - 45 Slant



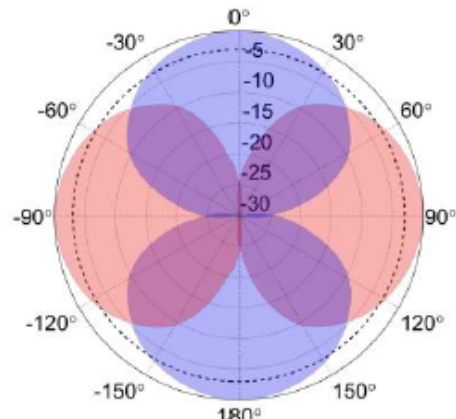
Port 2 + 45 Slant



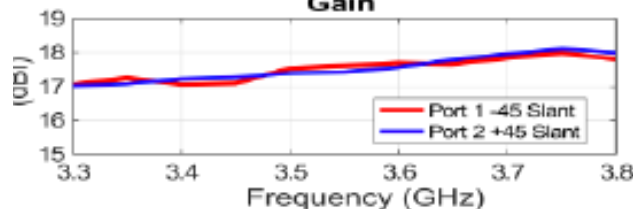
Frequency-Reuse One



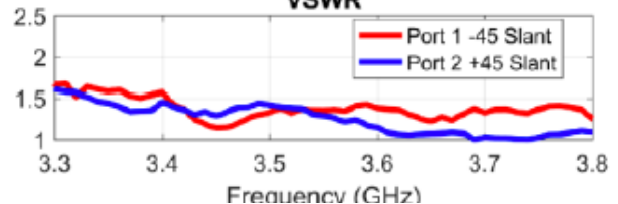
ABAB Channel Reuse



Gain



VSWR



Appendix

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

Azimuth Skew: Angle in the antenna's azimuth pattern in which the maximum gain occurs. Reported is the maximum variation in the frequency band.

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.

Front to Back Ratio @ 180°: Difference between the antenna's maximum gain and the gain directly behind the antenna ($\theta=180^\circ$).

Front to Back Ratio @ $180^\circ \pm 30^\circ$: Difference between the antenna's maximum gain and the maximum gain in the antenna's back lobe over $\pm 30^\circ$ angles.

Cross polarization at boresight: Difference between the co-polarization and cross-polarization gain at 0° (boresight).

Cross-polarization Ratio over HPBW (dB): Maximum difference between the co-polarization and cross-polarization gain across the sector's HPBW.

4-port sector antenna, 3300–3800 MHz, 90° HPBW

- High gain and slant dual polarization
- Simultaneously maximize coverage and minimize interference
- Ideal for 4-sector frequency-reuse two with LTE equipment and CBRS deployments
- Includes four surge protectors and four LMR400 120" / 3m antenna cables
- One required per Celona outdoor AP

Electrical Specification

Frequency Band	MHz	3300—3550	3550—3800
Gain	dBi	16.5 ± 0.5	17 ± 0.3
Polarization		Slant (±45°)	Slant (±45°)
Horizontal HPBW	Degree	95 ± 5	90 ± 5
Horizontal Skew	Degree	±3	±3
Vertical HPBW	Degree	6.5 ± 0.3	6 ± 0.3
Electrical Downtilt	Degree	0	0
Front-to-Back Ratio @ 180°±30°	dB	30	30
Cross-polarization Ratio over HPBW	dB	15	14
VSWR		1.5 typ 2 max	1.5 typ 1.7 max
Return Loss	dB	14 typ 10 max	14 typ 12 max
Port-to-Port Isolation	dB	25	25
Max. Input Power per Port	W	50	50
Impedance	Ohms	50	50

Mechanical Specifications

RF Connector Type	Type N Female
RF Connector Quantity	4
RF Connector Position	Bottom of radome
Electrical Grounding	RF connector grounded to reflector and mounting bracket
Radome Material	UV resistant PVC
Ingress Protection	IP55 rain and dust resistant
Wind Load, frontal	240N @ 160km/h 54 lbf @ 100mph
Max. Wind Speed	160km/h 100mph
Temperature Range	-40° to +60° C -40° to +140° F

Bracket Specification

Material Type	Power Coated Steel
Mechanical Tilt (Degree)	-2 – 8
Mounting Type	Pipe Mount
Mounting pole diameter	2.5cm – 8.9cm / 1.25" – 3.5"
Antenna-to-Pipe Distance	7.6cm / 3"
Bracket-to-Bracket Distance	52.4cm / 20.6"

Sector Dimensions

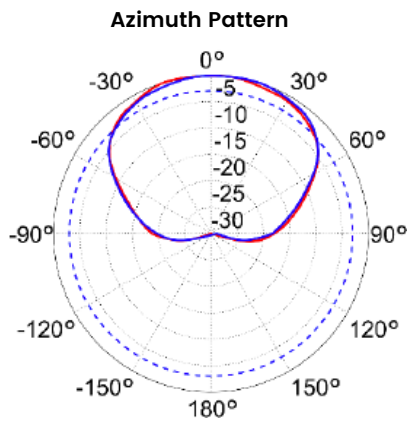
Length	72cm		28.3"
Width	27.9cm		11"
Height	8.9cm		3.5"
Net Weight, with brackets	10 kg		22 lb

Shipping Dimensions

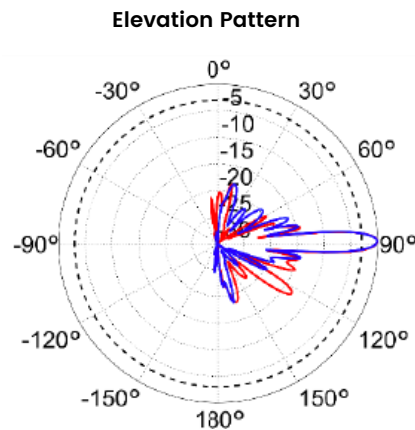
Length	102cm		40"
Width	36cm		14"
Height	36cm		14"
Net Weight	13.6 kg		30 lb

Graphical Data

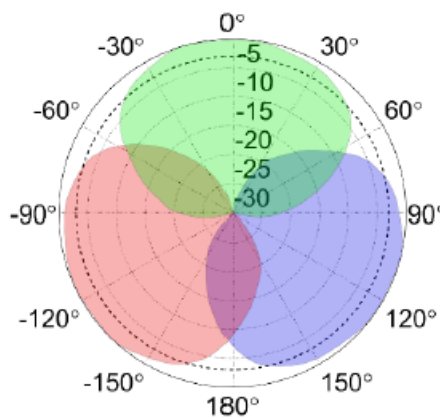
Port ■ 1 - 45 Slant



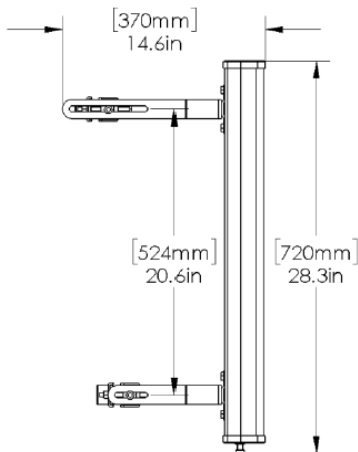
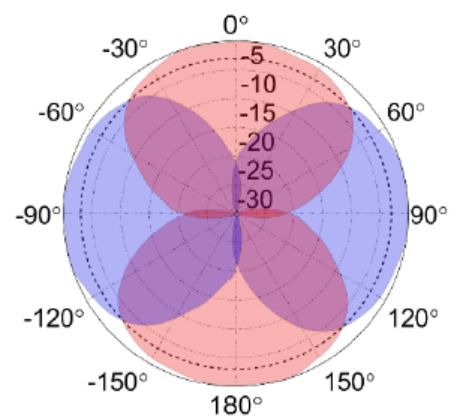
Port ■ 2 + 45 Slant



Frequency-Reuse One



ABAB Channel Reuse



Appendix

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

Azimuth Skew: Angle in the antenna's azimuth pattern in which the maximum gain occurs. Reported is the maximum variation in the frequency band.

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.

Front to Back Ratio @ 180°±30°: Difference between the antenna's maximum gain and the maximum gain in the antenna's back lobe over ±30° angles.

Cross-polarization Ratio over HPBW (dB): Maximum difference between the co-polarization and cross-polarization gain across the sector's HPBW.

1.574 GHz to 1.61 GHz, 32 dBi GPS/GLNSS Timing Antenna

- High Selectivity Dual Filter RF Architecture
- Eliminated high Power RFI Operating within Multi-Located Base Station Environment
- Impact Resistant ASA Radome
- Rugged Die-Cast Aluminum Base
- Integrated Bulkhead, TNC Jack
- IP67 Rated
- 0.75" NPT and 1"-14 Marine Mount Compatible
- UV Resistant / Cool Gray for Reduced Visibility
- Mounts to standard pipe up to 1-0.5"
- High grade stainless steel and Dacron plated steel mounting clamps
- Includes surge protector, cables (75ft, 15ft) and mounting brackets

Electrical Specification

		Minimum	Typical	Maximum
Frequency Range	MHz	1,574		1,610
Output VSWR				2:1
Impedance	Ohms		50	
Gain	dBi		32	
Gain Variation	dBi		±3	
Noise Figure	dB		3.1	3.5
Out Of Band Rejection	dB			70
Operating DC Voltage	Volts	2.7		5.5
Current	mA		7	15

Mechanical Specifications

Connector Type	TNC Female
Housing Plating / Color	Gray
Mounting Application	0.75" NPT 316 SS Pipe
Operating Range	-40 °C to +85 °C
Wind Survivability	150 MPH (241.4 KPH)
Humidity	95%

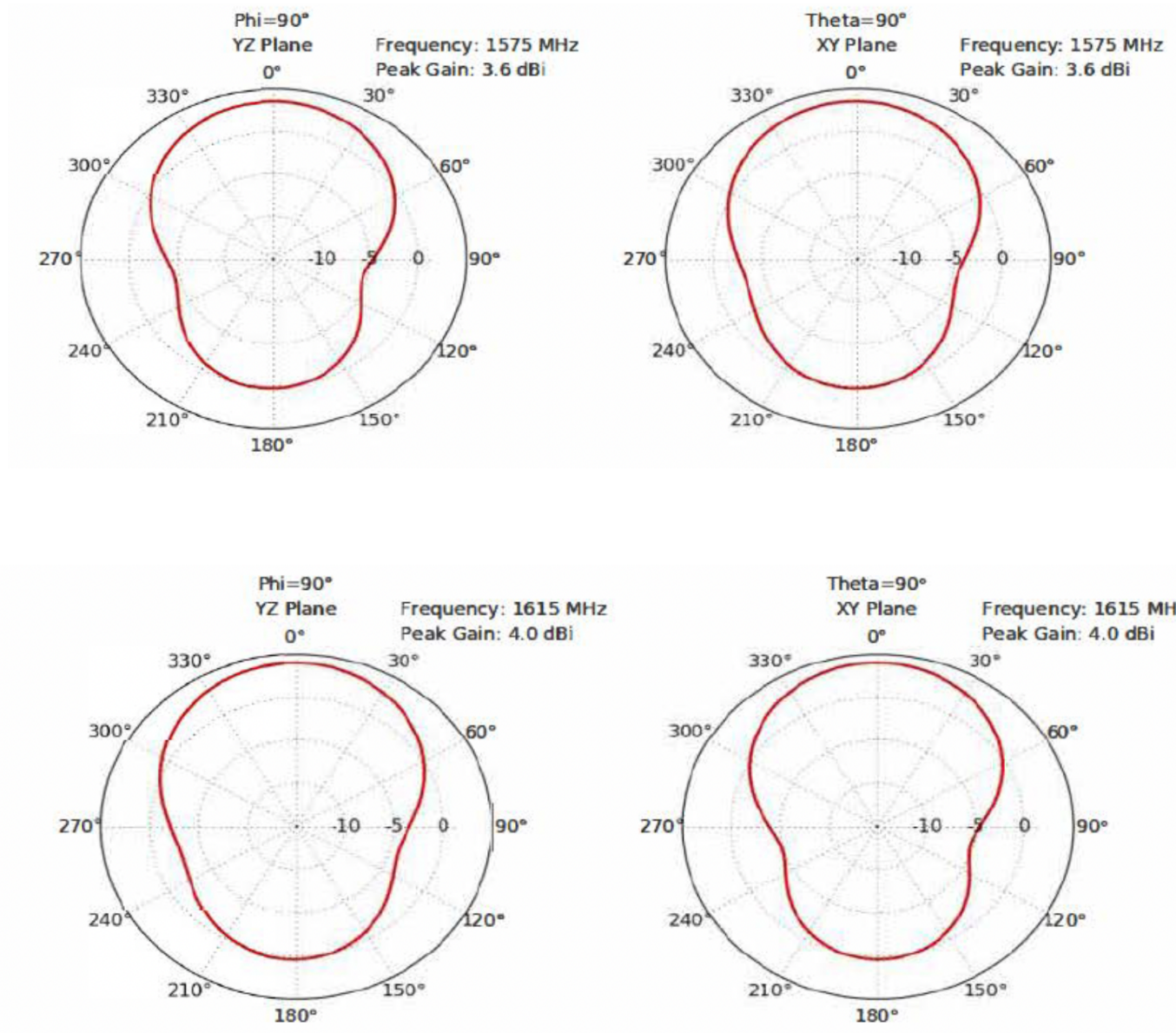
Unit Dimensions

Base Diameter	8.9cm		3.5"
Height	12.4cm		4.9"
Weight	6.8 kg		15 lb

Shipping Dimensions

Length	30.5cm		12"
Width	30.5cm		12"
Height	25.4cm		10"
Net Weight	6.8 kg		15 lb

Typical Radiation Pattern



Appendix

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

Gain: Antenna's average gain.

Front to Back Ratio @ 180°±30°: Difference between the antenna's maximum gain and the maximum gain in the antenna's back lobe over ±30° angles.

Cross polarization Ration (dB): Typical difference between the co-polarization and cross-polarization gain across the sector's 3 dB Beam width.

PTP Grandmaster Clock designed for small cell, 4G and LTE-A deployments

- IEEE-1588 PTP Grandmaster Clock
 - Multiple PTP Profiles (G.8265.1, G.8275.1, G.8275.2, Telecom-2008 Profile, 802.1AS, Enterprise Profile, Broadcast Profile SMPTE)
- Multi-Constellation (GPS, GLONASS, Beidou & Galileo)
- 15ns (1-sigma) time accuracy relative to GNSS reference
- Includes power adapter, bullet 360 antenna, 75-ft & 12-ft cables and surge protector
- Holdover of $\pm 1.5\mu s$ over 4hours (constant temperature and when locked to GPS for 7 days)
- Inputs: GNSS, 1588-PTP and SyncE
- Outputs: 1588-PTP, NTP, SyncE, PPS, and 10MHz
- Dedicated management port (1xRJ45)
- Network Management: SNMP, Web UI, CLI
- VLAN support
- IPv4 and IPv6



General Specifications

Inputs	GNSS, 1588-PTP, SyncE
Outputs	PPS, 10MHz, NTP, PTP, SyncE
Ethernet Ports	1x Mgmt RJ45 1x 1G SFP 1x 1G RJ45
Protocols	PTP, NTP & SyncE
GNSS Antenna	SMA
Protocols: IEEE-1588 (PTP), NTPv4, SyncE, IPv4, IPv6, TELNET, SFTP, SSH, RADIUS, TACACS+, SNMP, DAYTIME, TIME	
Network management	SNMPv2, v3, HTTPS, CLI
User Interfaces:	
CLI	Monitoring and Management
Web UI	Monitoring and Management

Performance

Time of day accuracy	15ns (1-sigma) reference GNSS
Time stamp accuracy	<10 ns rms
Frequency accuracy	1.16×10^{-12} (one day ave.)
Holdover	$<1 \times 10^{-10}$ /24hrs
Time accuracy:	
Tracking to GPS	<15ns (locked)
Holdover	$< \pm 1.5\mu s$ /4hrs (7 days locked)

Power consumption	5W average, 10W maximum
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Physical Characteristics

Dimensions:

Length	20.8cm		8.2"
Width	20cm		7.9"
Height	4.4cm		1.7"
	(19" half-rack x 1U)		
Weight	3kg		6 lb

Regulatory & Standards

Operating conditions:	
Temperature	-40°C to +85°C
Humidity	5%-95% RH non-condensing (+60°C)

Storage temperature: -55°C to +105°C

Safety & Health:	
UL EN 62368-1	
CE, CISPR32 class A	
GR-63; Level 3	
ETSI (EN55032/EN55024) EN 300019, Class T3.2	

Electrical	EMC, ESD Immunity & susceptibility
FCC Part 15 Class B / ICES 003 Class-B	
Korea KN32 / KN35 Class A	
EN	301 489-1, EN 301 489-19 EN 303 413
IEEE	1613-1
Telcordia	GR-1089

Synchronization:	
ITU	G.8265.x, G.8275.x (PRTC/T-GM)
IEEE	PTP (IEEE 1588v2)
IETF	NTPv4 (RFC5905)

Product compliance:	
2014/53/EU (RED Directive)	
2011/65/EU (RoHS2 Directive)	
2012/19/EU (WEEE Directive)	

Power

DC Power, dual feed	-36VDC to -72VDC
Current consumption	330mA (max)