Raycap

SMALL CELL CONCEALMENT

PRODUCT GUIDE 2023

V3

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About Raycap

Raycap is a global solutions provider with a clear vision of the future network, a result of many years of research and development in the telecommunications field and our continuous engagement with the leading companies in our industry, including partners, customers, suppliers, current and future stakeholders of the network. We have proven to be a thought-leader in the development of telecommunications infrastructure, and our edge is in the design of high throughput, high-density, and multi-technology passive solutions. We possess a unique capability to quickly turn concepts and innovative ideas into industrialized, cost-efficient products, providing realistic solutions and support in any network infrastructure.

Twenty-five years ago, the telecommunications landscape was much different than today – cell phones were larger, smart phones were non-existent, and society was not connected by technology 24-hours a day, seven days a week. Since then, the industry has grown immensely with new equipment and increased demand from mobile operators for more expanded and hardened networks. The latter necessitates the installation of numerous apparatus such as remote radio heads, small cells, antennas, and microwave links located on tower tops, rooftops, and even at street level, which must be concealed.

Raycap has one goal in mind: to provide our customers the best design, R&D, engineering, manufacturing, and sales support to be a one-stop-shop for customers looking to build out their next-generation networks.

Manufacturing Facilities

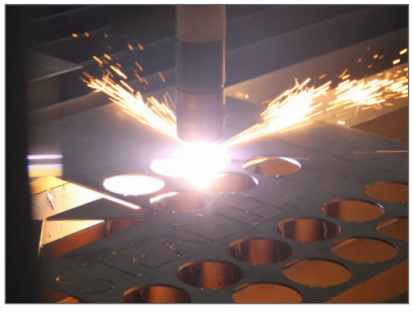
Facilities in Drama, North Greece
A 30,000m² plant with engineering, product development, manufacturing, assembly and testing facilities, plus in house wet paint and powdercoat lines.

West Coast Facility, Post Falls ID
A 10,300m² plant with engineering, product development, manufacturing, assembly, and testing facilities.

East Coast Facilities, Charleston SC and Kearny NJ
27,400m² fabrication and integration facilities with full steel and composite fabrication capabilities plus in house wet paint and powdercoat lines.

Our complete in-house design and manufacturing facilities have the capacity to produce more than 1,000 small cell, concealed or unconcealed poles per month. We provide our customers with:

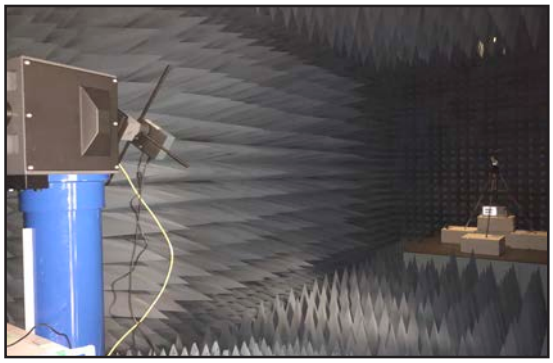
- R&D Expertise
- Product Design
- Electrical and RF Engineering
- Metal Fabrication and Forming
- Cutting
- Welding
- Drilling
- Wet painting and powder coating lines
- Equipment Integration and Cabling
- Trouble Free Commissioning and Activation
- Assembly
- RF Testing
- Thermal Testing
- Fiber Optic Testing
- Electrical Testing
- Warehousing, Crating, Shipping



Testing & Measurement

Raycap conducts measurements for its North American products in an RF (radio-frequency) anechoic chamber at its partner's facilities in San Antonio, Texas. Southwest Research Institute (SwRI) and Raycap have a 10+ year testing history, managing demanding testing requirements. RF propagation through concealment material has been critical for wireless service providers as concealment should not compromise the signal quality and service level. Because of this, Raycap has significantly invested in signal generators, network analyzers, beam forming transmitters, and PIM analyzers. All results are recorded for every material that is considered for concealment solutions. Raycap has also developed RF propagation models based on measurements for several frequency bands and therefore is in a position to define, with details, the RF performance in any spectrum region.

RF Test Capabilities



RF insertion loss testing for all commonly used frequencies from 700 MHz to 100 GHz, including detailed pattern impact testing at mmWave frequencies.

10+ year testing history with Southwest Research

Institute (SwRI) in San Antonio, TX on all concealment materials used.

ENV Test Capabilities

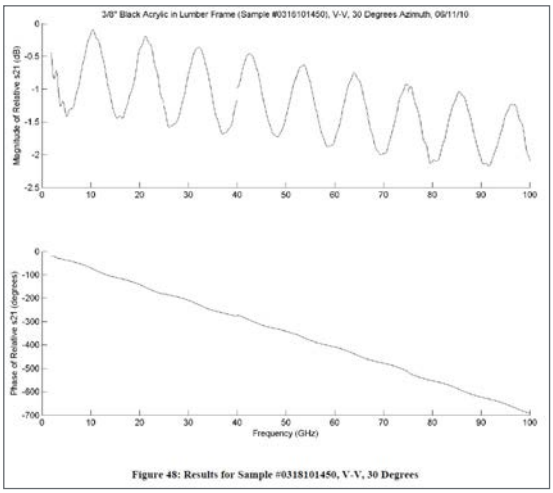


Figure 48: Results for Sample #0318101450, V-V, 30 Degrees

Experience in the field of environmental testing according to UL, NEBS, GR, ISO, EN, MIL, ASTM standards.

Project scope for poles defined and initiated with UL, RTP:

- UL Project Number 4788755381, Product Category NWGQ
- Complete UL Listing expected Q3, 2019

Verification of initial cooling (active – passive) performance simulations and actual measurements for low noise level requirements (below 40dBA).

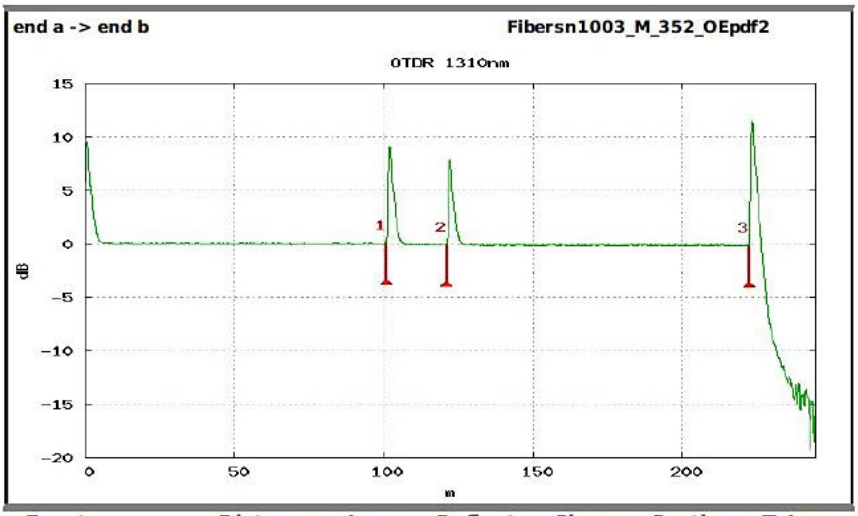
Supervised anti-vandalism tests according to DIN ENV

1627 (RC2/WK2 burglar resistance tests).

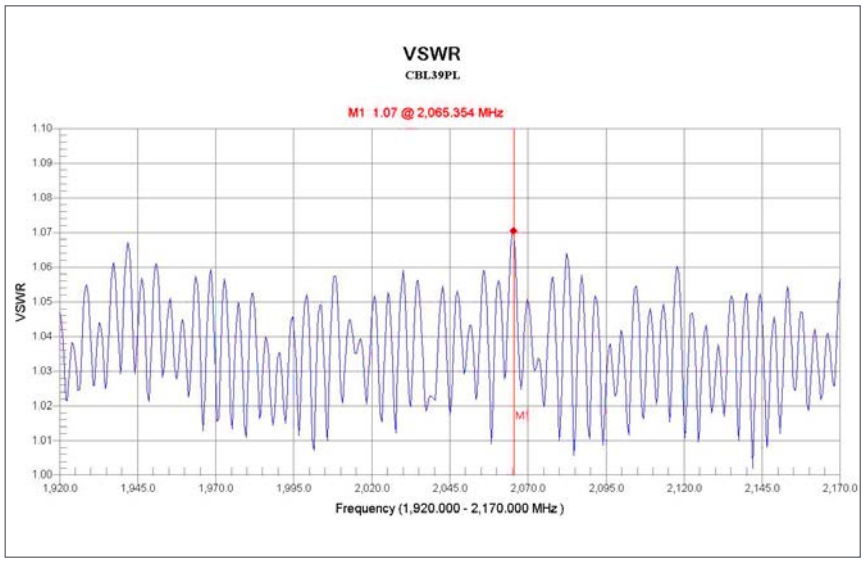
Quality Inspection

Quality inspection is of fundamental importance before any solution is dispatched. Performing all measurements in a controlled environment guarantees less complications during field installation and minimizes commissioning and activation time. For the integrated poles, we conduct several inspections of every cable line:

- RF quality measurements (VSWR, PIM)
- Fibre optic quality measurements (OTDR)
- Power quality measurement (continuity, earth leakage, power ON load tests)
- Quality inspection checklist



Event		Distance	Loss	Reflect.	Slope	Section	T. Loss
		m	dB	dB	dB/km	m	dB
1		101.11	0.073	-49.78	0.213	101.11	0.018
2		121.26	0.046	-52.12		20.15	0.097
3		222.48		-44.72	0.396	101.23	0.182



Distribution Equipment Compliance

The luminaire pole houses a proprietary load distribution centre capable of providing up to 12 branch circuits at 120VAC, or 6 branch circuits at 240VAC. This distribution equipment is also certified to UL67 Panelboards (E479137) and meets the requirements of being Suitable for Service Equipment (SuSE).

As part of the production line testing required under UL 1598, both a Bonding Circuit Impedance test and a Dielectric Voltage-Withstand test have been taken.

Raycap recently completed all the necessary testing as per UL 1598 Standard for Safety. The relevant certificate of compliance is below.

CERTIFICATE OF COMPLIANCE

Certificate Number	20190826-E483273
Report Reference	E483273-20190813
Issue Date	2019-AUGUST-26
Issued to:	RAYCAP INC 806 S Clearwater Loop Post Falls, ID 83854
This certificate confirms that representative samples of	LUMINAIRE POLES Model RCP-6X
	Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.
Standard(s) for Safety:	UL 1598, Luminaires.
Additional Information:	See the UL Online Certifications Directory at https://iq.ulprospector.com for additional information.

This *Certificate of Compliance* does not provide authorization to apply the UL Mark. Only the UL Follow-Up Services Procedure provides authorization to apply the UL Mark.

Only those products bearing the UL Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Certification Mark on the product.

Bruce Mahrenholz, Director North American Certification Program

UL LLC

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL. For questions, please contact a local UL Customer Service Representative at http://ul.com/aboutul/locations/

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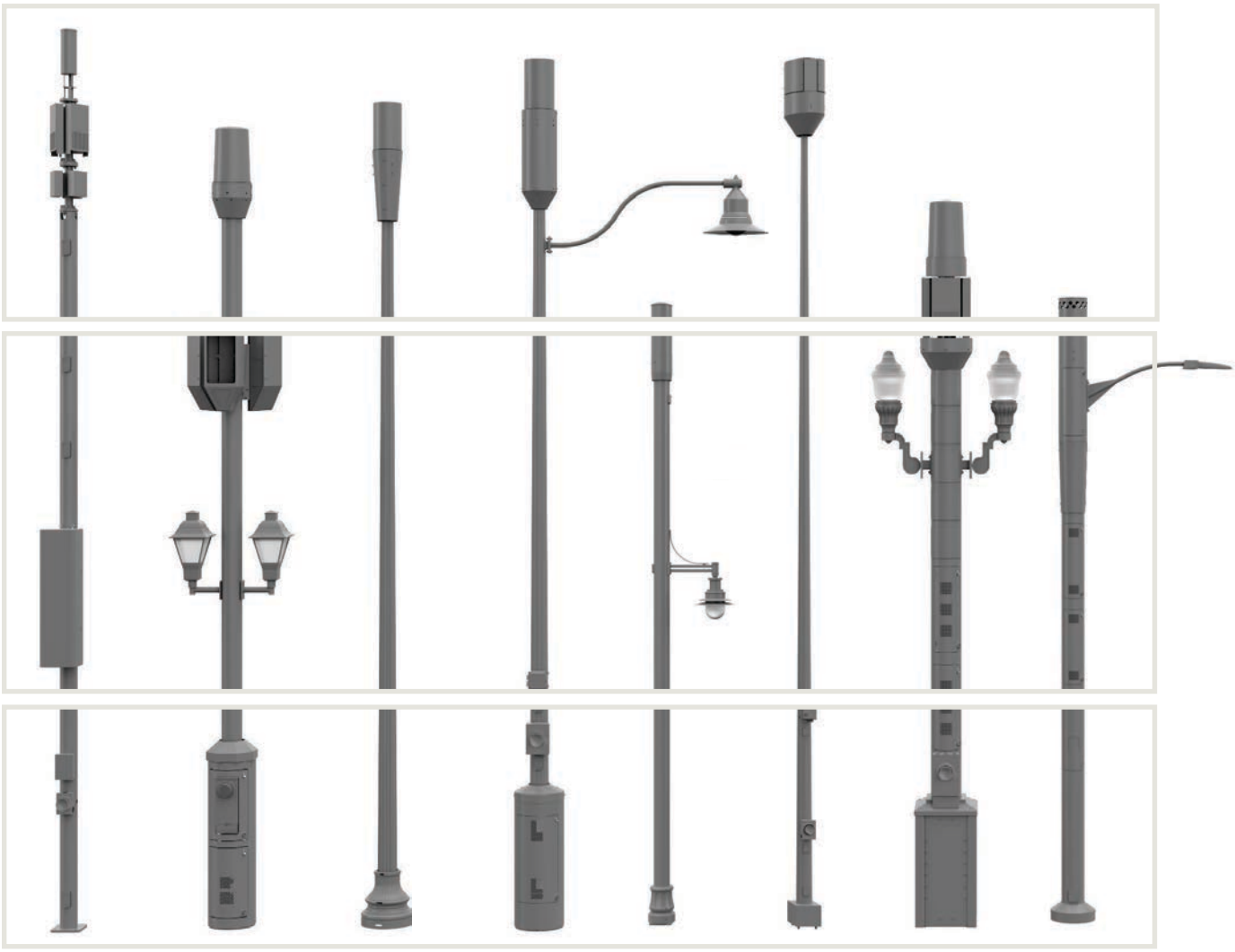
Raycap Small Cell Poles

Raycap's poles are designed for flexibility and can be ordered with pole top or mid-pole equipment shrouds, light arms and luminaires, mounts, and other hardware. In addition, power and fibre connectivity and power management solutions can be included to enable easy integration and provide protection from electrical overvoltages. No matter your rollout needs, Raycap has the right solution for you.

Hand-holes, doors, internal and external base plates shown for reference and can be engineered per customer custom order. Final configurations to be determined by pole loading and equipment layout.



Radio Technology

Small cell poles are designed to customer specifications and delivered fully integrated and concealed, or in any format upon request. Raycap designs can accommodate all radio technologies with many available toppers and shrouds.

Light Arms & Shrouds

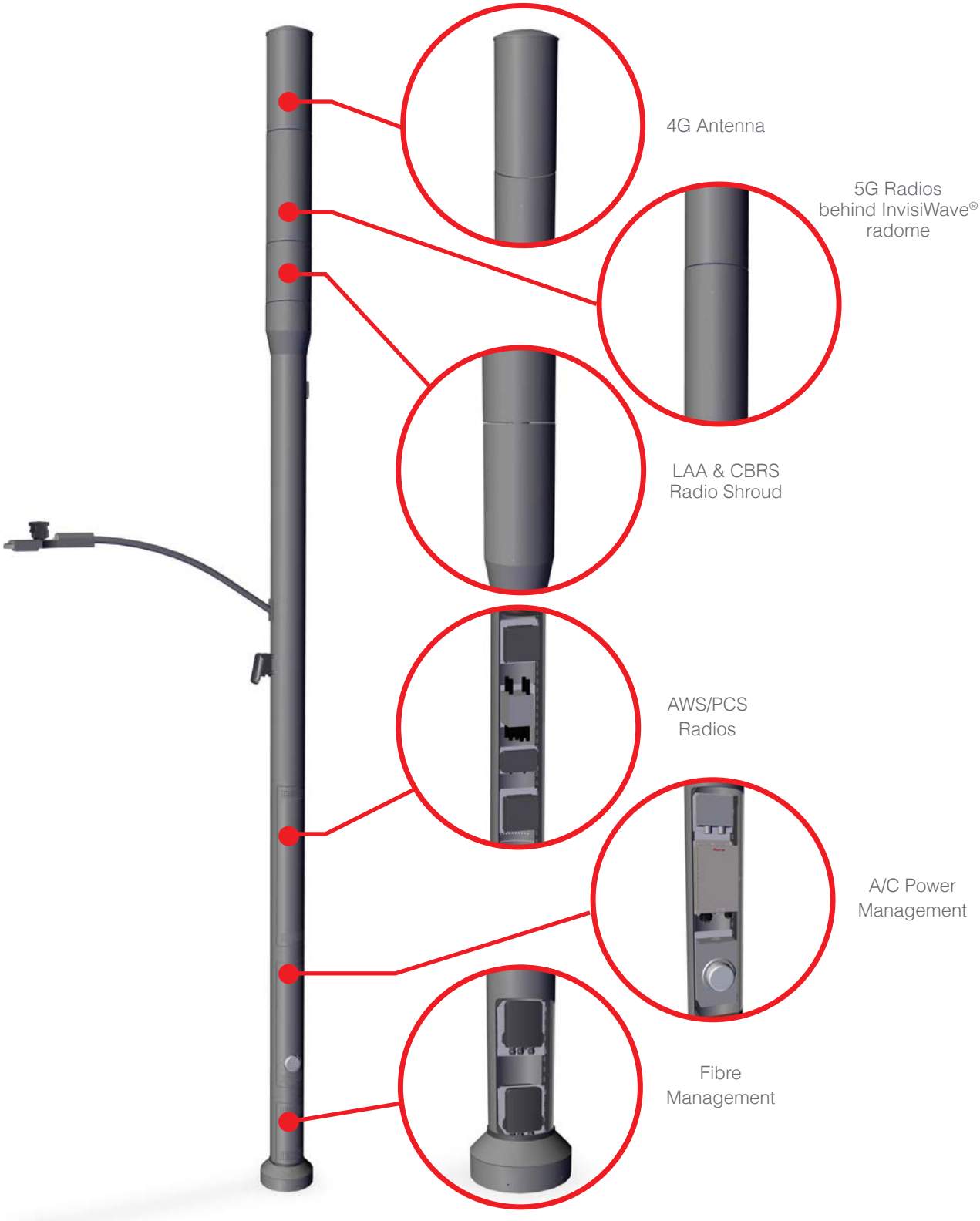
Customers can order pole solutions with optional lighting arms, mid-pole shrouds, or attachments to match surrounding light poles. Poles can be designed and engineered to re-use existing luminaires, reducing site costs and lead time.

Bases

Raycap provides decorative bases to be installed around existing poles to hold and conceal power, fibre distribution, and radio equipment. Structural bases are also available and can support an existing or new light pole installed on top.

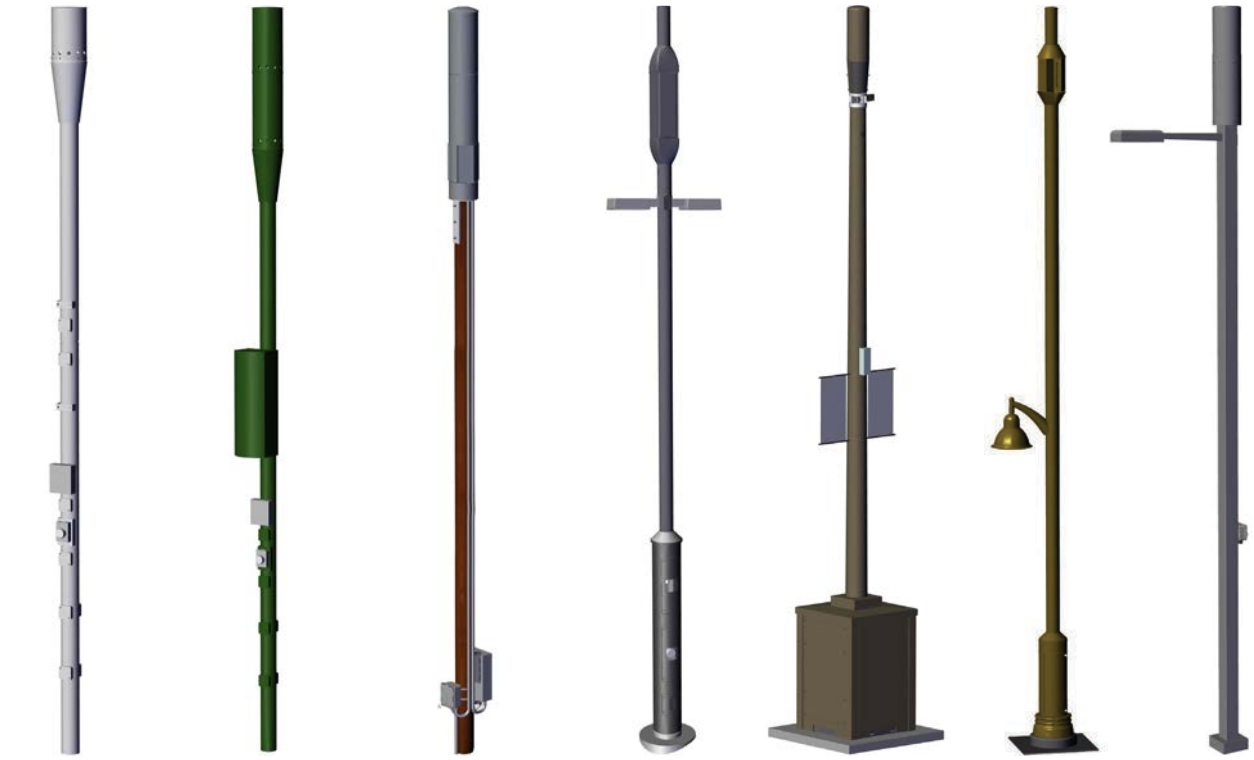
Fully Concealed

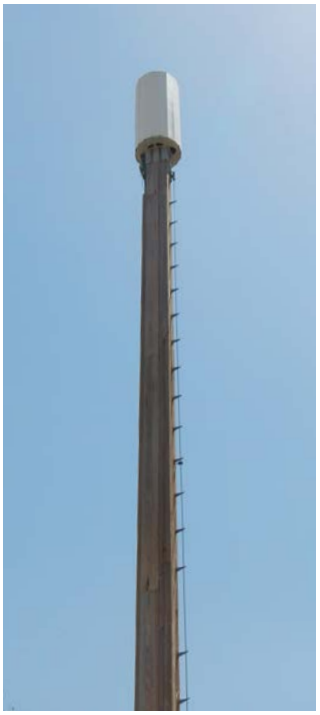
Raycap's fully concealed small cell poles are built to meet certain specifications and maintain maximum RF performance. They are designed for flexibility, performance and aesthetics. We offer pole varieties which can be delivered fully integrated, with colour options.



Concealed & Non-Concealed

Concealed and non-concealed poles are suitable for situations when full concealment is not necessary.





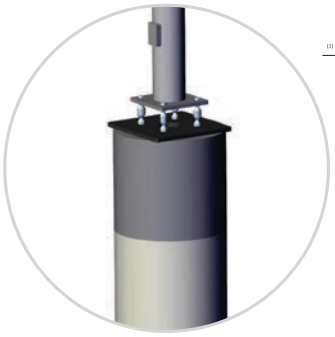
Optional Pre-Fab Foundation

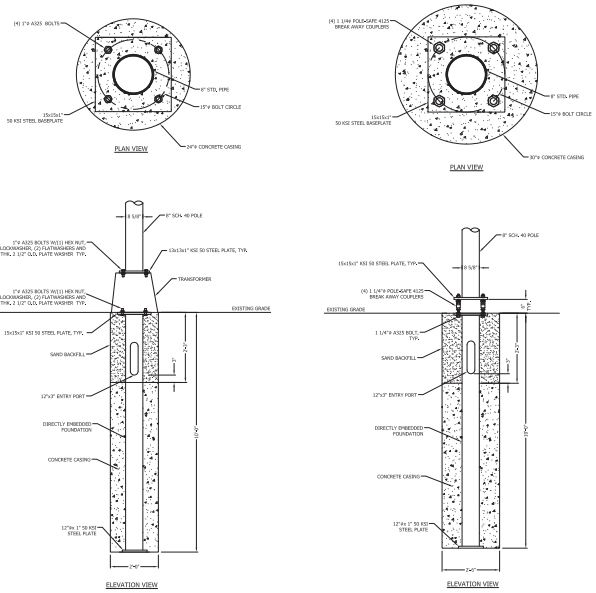
Raycap can provide customers with traditional poured-in-place foundation designs, as well as alternative pre-fabricated foundation options to help expedite deployment.

Options include:

- Direct Embedded
- Mechanical/Helical
- Pre-Cast
- Break-Away Mechanisms

Contact us directly for more information.





Integration Options

Our broad experience in integration services enables us to help our customers by manufacturing a fully or partially integrated concealed small cell pole product.

Raycap fully integrated concealed small cell poles arrive at a customer's site with cabling, radios, and power/fibre equipment, pre-installed and pre-tested. In the case of fully integrated poles, all that is needed for installation is to set the pole on the foundation, then hook up the feed lines for power and fibre. This is a much faster solution than the traditional method of hiring field crews to install electrical components and run cabling. Taking advantage of Raycap's expertise in integration saves customers time and money.

Pole Colour Options

RAL 6012 RAL 7022 RAL 7013 RAL 7040 RAL 7047 RAL 9011 RAL 8008

RAL Color	Description
6012	Black Green
7022	Umbra Gray
7013	Brown Gray
7040	Window Gray
7047	Telegray
9011	Graphite Black
8008	Olive Brown

Custom colours available upon request

Proprietary 5G mmWave Material

InvisiWave®

Raycap has performed extensive research and testing in the frequency ranges of 28GHz, 37GHz, 39GHz, and up to 52GHz bands to produce its InvisiWave material that is suitable for the concealment of 5G mmWave systems in the U.S. market. These higher frequency applications are much more sensitive to concealment materials being placed in the antenna path.

After nearly a year of problem-solving and testing, and with input and approval from industry stakeholders, the Raycap team has a solution that meets the concealment needs of next generation small cell networks.

In order to validate performance and determine the best possible materials for different concealment applications, all candidate materials were subjected to an array of tests and ultimately the material has proven to provide the performance needed while still maintaining the qualities needed in a good concealment material. The InvisiWave material is available to be used in pole toppers, surrounds and radomes as well as for panel products like chimneys, cupolas and other rooftop concealments.

- Covers and hides mmWave equipment attached to poles or other structures without interfering in performance
- Fabricated from RF friendly, 3mm material
- Easy to install
- Tested from 700MHz to 52GHz
- Features minimum dB loss
- Thoroughly tested to identify beamforming impact
- Hydrophobic surface
- Compatible to back lobe mitigation techniques with use of upgrade kits
- Patent pending design
- Custom sizes available based on a case by case basis
- Materials are approved for smooth textures only
- Field painting is not recommended but film textures are available
- Radomes are all one-piece with a 14” - 36” diameter range and can be up to 10’ tall
- Radomes require continuous rolled ring bulkheads for proper attachment
- Patented material

InvisiWave Technical Specifications

Property	Method	Units	Value
Thickness		mm	3
Density	ASTM D-792	g/cm8	0.6 +/- 0.02
Flexural Modules	ASTM D-790	mPa	1600
Shore Hardness	ASTM D-2240	Shore D	60
Flammability	UL94		V-0
Flammability (Smoke Developed)	ASTM E84/ ASTM E2768		10 (550)/7.4ft
Surface Resistance	ASTM D-257	Ohm	$4.1x10^{14}$
Heat Deflection Temperature	ASTM D-648 @ 1.8Pa Load	°C	62
Coefficient of Thermal Expansion	ASTM D-696	10-5/°C	6.7
Tested/Approved Spectrum	sub 6GHz, 24GHz, 28GHz and 39GHz		
Flammability Certification	Class ‘A’ Fire rated – City of Los Angeles Dept. of Building & Safety Approved (LARR)		

Invisiwave 5G mmWave Solutions

4G + 5G Pole Toppers For Wood or Metal Poles

RTR-1044-IW

- Covers, hides from sight radios attached to poles or other structures without interfering in radio performance
- Fabricated from RF friendly material
- Tested from low frequencies up to 100 GHz
- Suitable for concealing mmWave radios
- Features minimum dB loss
- PIM free tested per IEC 62037-8
- Thoroughly tested to validate no beam forming impact
- Hydrophobic surface
- Compatible with multiple radio/antenna configurations (mounts supplied per customer-specified combinations)
- Multiple colour options available
- Easy to install
- Includes 5G radio bracket and antenna mount
- Includes pole mounting brackets
- Fans and controllers included
- Adjustable internal height is configurable to multiple radio/antenna configurations to allow for easy fixture expansion or equipment swaps

RTR-1044-IW

REM-5470 for NR AU Radios

- Complete solution for Samsung 5G NR AU radios
- Through bolted connection style; alternative connection types available for different pole styles
- Accommodates all small cell 4G canister antennas and
- Samsung 5G NR AU radios
- Variable pole diameter – attaches to most common sizes
- All structural steel hot dip galvanized per ASTM A123 with optional powder-coated finish to customer colour specification
- Optional RCS-5128 antenna cable shroud for 5G radios*
  – Provides cable concealment and protection
  – Fabrication fit to radio used
- Fabricated from RF friendly, mmWave friendly material
- Tested from low frequencies up to 100 GHz with minimum dB loss
- Thoroughly tested to validate no beam forming impact
- PIM free tested per IEC 62037-8
- Hydrophobic surface
- Easy to install
- Multiple colour options available

REN-5470

RCR-5128 (optional cable shroud)

Pole Toppers

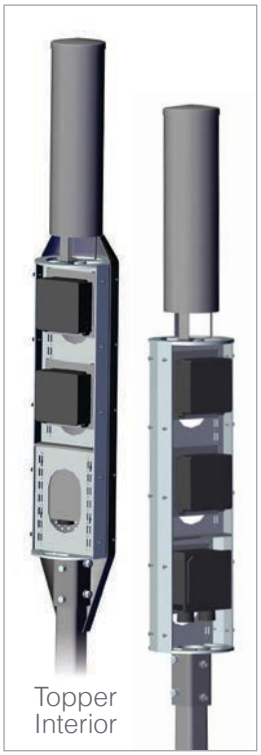
InvisiWave®

For Wood or Metal Poles

Available in a variety of types from 4G only to 4G/5G or 5G only, Raycap Pole Toppers fit onto existing poles and are available in both concealed and non-concealed styles.

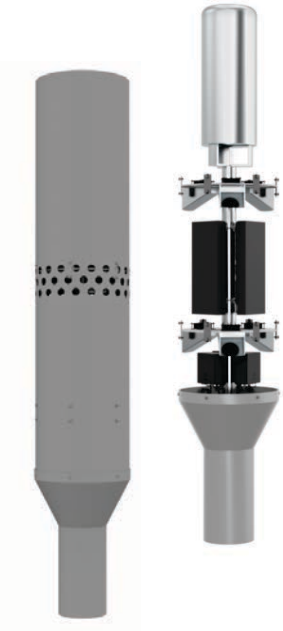
Raycap Pole Toppers can be designed with InvisiWave radomes to accommodate 24GHz frequencies.

- Overall-height can be adjusted as required
- Concealment can be designed to various diameters to meet operator and/or municipality requirements
- Can be ordered in various colours to blend in with the surrounding environment



RTR-3733-X
4G & 5G

RTR-2789-IW



RTR-1694-IW

RTR-9397-IW

Pole Toppers

4G + 5G Pole Toppers For Wood or Metal Poles

RTR-2001164-00

- 24" OD partially concealed topper for Ericsson (E///) 6701
- Standard with down tilt mounts
- Designed for 8" or 10" Raycap steel pole

REM-2849-2

- 18" fully concealed for Gamma Nu 4G Omni & E/// 2203
- Clamps on top of wood or steel pole from 5" - 10" outside diameter (OD)

RTR-2001604-00

- 18" OD fully concealed for Amphenol 4G Omni
- Clamps on top of wood or steel pole of 5" - 9" OD
- 3° of tilt correction

REM-5651-IW

- 22" OD fully concealed topper for E/// 6701
- Clamps on top of wood or steel pole of 5" - 12" OD
- No down tilt included

RTR-2000793-00

- 22.5" OD fully concealed for Samsung 5G and 4G Omni
- Slip fits on top of 9" - 10" OD tapered steel pole

RTR-2100357-00

- Unconcealed 4G wood pole topper
- Galtronics 4G Omni
- Clamps to wood pole 5" - 14" OD

RTR-2100459-00

- 16" OD partially concealed topper for E/// 6701
- Standard with down tilt mounts
- Designed for Raycap steel pole or REM pole clamp mounts

RTR-2100828-00

- Unconcealed JMA 4G Omni topper
- Conceals (2) E/// 220x radios within ventilated cable shroud
- Designed for Raycap steel pole or REM pole clamp mounts

RTR-2100278-00

- Unconcealed Gamma Nu 4G Omni topper
- Conceals (4) E/// 220x radios within ventilated cable shroud
- Designed for Raycap steel pole or REM pole clamp mounts

RTR-2101843-00

- 18" Radome for Gamma Nu 4G Omni & E/// 2203
- E/// 2181 5G radio mask combo
- Clamps on top of wood or steel pole of 5" - 14" OD
- Also bolts to top of Raycap steel poles

Additional designs available upon request

Side & Mid-Pole Mounted Shrouds

Pole Mounted Infrastructure

In some locations installation on the ground is not possible. Whether due to lack of space, permit restrictions or even a costly installation of power and/or fibre cables for the connectivity, this scenario requires the installation of active equipment (antennas and connectivity enclosures) on or at the side of an existing structure. We have developed several side mounted solutions for existing light poles as well as additional approaches that can be wall mounted.

Side Mounted Shrouds

- Shroud passive vented design
- Door access design allows easy access
- Construction:
  - Aluminum cage
  - Stainless steel mast supports
- Many options and heights available

Side Mounted 5G Shrouds

- Ergonomic design for easy radio installation and replacement
- Covered with InvisiWave mmWave friendly material
- InvisiWave is tested per UL 746C and meets requirements of an f1 rated material, suitable for outdoor use
- Entire solutions thermally tested according to GR-487
- Includes fibre and power management
- Offset bracket to minimize signal blockage components
- Supports various configurations
- Mount secures with bolts around top of pole
- Many colour finishes

Pole Collar

- Antenna Top-Mount
- Mount secures with bolts around top of pole
- Many colour finishes

Equipment Mounts & Hardware

4G + 5G Wood Pole Top Mount Solutions

Raycap offers pole mount hardware for easy installation of equipment on existing poles. They are specifically designed for fast installation and easy access.

- RTR Series - Accommodates all small cell 4G panel antennas through various adapter plates
- Variable pole diameter – attaches to most common sizes
- All structural steel powder-coated galvannealed finish to customer colour specification
- PIM free tested per IEC 62037-8
- Included bubble-level assists in precise and easy installation
- Universal wood pole base or custom metal pole base available
- Each unit ships with the RTR-Series Universal Top-Mount Base

RTR Series
Universal

RTR-FG-TRBR

RTR-TRBR

RTR-5G-CM

RTR- FXG

RTR-CMM-NT

RTR-CM

Equipment Mounts & Hardware

4G + 5G Wood Pole Side-Mount Solutions

- RSM Series – Accommodates all small cell 4G panel antennas through various adapter plates
- Variable pole diameter – attaches to most common sizes
- All structural steel powder-coated galvannealed finish to customer colour specification
- PIM free tested per IEC 62037-8
- Included bubble-level assists in precise and easy installation
- Universal wood pole base or custom metal pole base available
- Each unit ships with the RSM-Series Universal Side-Mount Base

RSM Series

Universal

RSM-CMM

RSM-FXGL

RSM-CMM-PA

Equipment Mounts & Hardware

4G + 5G Wood Pole Top Mount Solutions

Our modular series offers nearly endless combinations that can be made with a set of modular components. Available options are not limited to the below pre-built assemblies. All common OEMs are supported.

- Can be employed to fit almost any custom equipment configuration
- Accommodates all 5G mmWave radios or small panel, whip, or canister 4G antennas
- Variable pole diameter – attaches to most common sizes
- All structural steel hot dip galvanized per ASTM A123 with optional powder coated finish
- Integrated leveling is provided in three axes for all technologies, and bulls-eye leveling dots are included.

Connection to Pole		
1	M-22922	Base component for most topper and side arm assemblies, two universal mounting patterns
2	M-22080	Base component, single universal mounting pattern
3	M-22780	Triple clamp assembly, 7" diameter poles
Leveling		
4	M-22062	Light duty leveling for omni-directional whip and canister antennas, up to 5° in any direction
5	M-22231	Heavy duty leveling assembly, tall, extra clearance for large 5G radios, up to 10° in any direction
6	M-22436	Heavy duty leveling assembly, compact, up to 10° in any direction
Equipment Mounting - Radios and Antennas		
7	M-22643	Whip antenna mount, bolt
8	M-22047	Whip antenna mount, clamp
9	M-22858	Omni-directional canister antenna mount
10	M-22078	Radio mounting bracket, 10° downtilt, 5° uptilt,supports all major radios
Side Arm Options		
11	M-22193	Side arm, single-bolt pattern
12	M-22291	Side arm extension, universal mounting pattern
Adapter / Extension		
13	M-22925	Converts between the universal mounting pattern and single-bolt mount pattern
14	M-22585	90° universal mounting pattern adapter, also supports single-bolt pattern
15	M-22774	Provides two additional universal mounting locations
16	M-22919	For bridging between two legs (M-22922) to support a large topper assembly

Equipment Mounts & Hardware

4G + 5G Modular Component Solutions

SINGLE LEG

Options are for light-duty installations, down to 5.5" diameter poles.
Mounting via thru-bolts and/or straps.

RTR-M-22532
Single Whip Antenna

RTR-M-22092
Whip and Single 5G Elevation

RTR-M-22148
Cannister and 5G

DUAL LEG

These options support more and larger equipment and up to 13" diameter poles.
Mounts via thrubolts and/or straps.

RTR-M-22783
Canister and 5G Above Pole

RTR-M-22238
5G Elevated Above Pole

RTR-M-22336
Canister and 2 5G Elevations

Equipment Mounts & Hardware

4G + 5G Modular Component Solutions

TRIPLE CLAMP

Feature clamping with additional bolt-through option. Fits 7"-13" diameter poles.

REM-M-22081
5G Triple Clamp Assembly

REM-M-22244
Omni-mount Clamp Assembly

SHORT BRACKET

Mounts via thru-bolts and/or straps.

RSM-M-22815
Single 5G Radio

RSM-M-22487
5G Side Mount
Low Profile

TALL BRACKET

With side arm available in multiple lengths.
Thru-bolt or strap mounts.

RSM-M-22162
5G Mount

RSM-M-22291
5G Side Arm Mount

DOUBLE SIDED

Equipment mounted on both sides of the pole, thru-bolt and/or strap mounting.

RSM-M-22844
Equipment mounted on both sides of the pole, thru-bolt and/or strap mounting.

RSM-M-22227
4G / 5G Side Mount

Equipment Mounts & Hardware

4G + 5G Wood Pole Extension Mounts

WOOD MOUNT EXTENSIONS

RATM-211501-A

- 4G/5G wood pole solution
- Supports various pole ODs
- Fiberglass extension, bulls-eye leveling dots are included
- Tri-sector mmWave radio mounts with downtilt shown with Samsung AT1K radios technologies

RATM-211501-ST

- 4G/5G wood pole solution
- Supports various pole ODs
- Fiberglass extension, bulls-eye leveling dots are included
- Dual-sector mmWave radio mounts with downtilt shown with Nokia AEUD/E radios.

Raycap's line of 4G + 5G specialized extension mounts for wood poles provides excellent mounting solutions for various radios or antennas.

Our complete side-mounted hardware series enables the easy mounting of radio and antenna systems to the sides of wood or steel poles.

SIDE MOUNT SOLUTIONS

REM-3099

- Side arm mount for 4G Omni and supporting radios
- 5G radios may be banded to the pipe mast as shown with Nokia AEUD/E
- Can be strapped or thru-bolted to wood or steel poles

REM-1348

- Side mounted enclosure for (3)
- E/// 220x radios
- Fully concealed 4G Omni within radome
- Can be strapped or thru-bolted to wood or steel poles

RSM-4651-5

- Side mounted enclosure for (3)
- E/// 220x radios
- Elevated radome for 5G radios mounting as shown with E/// 1281
- Can be strapped or thru-bolted to wood or steel poles

RSM-20247

- Side mount frame for 4G Omni and supporting radios
- 5G radios may be banded to the pipe mast as shown with E/// 1281
- Can be strapped or thru-bolted to wood or steel poles

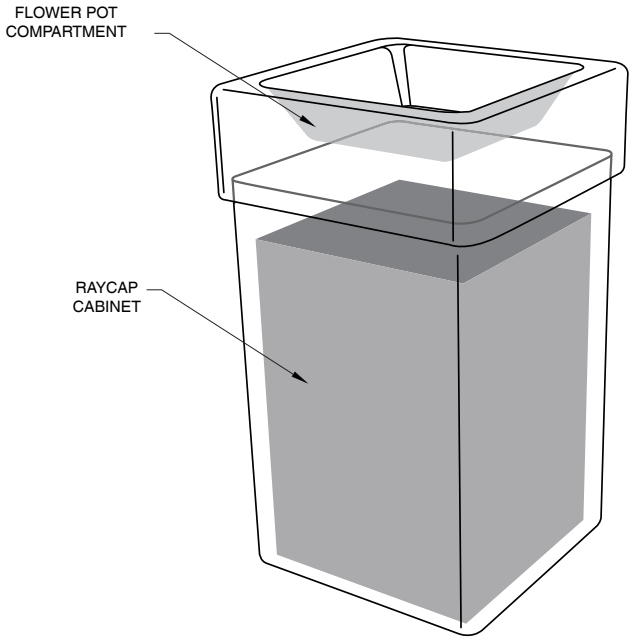
Enclosures Next To Existing Poles

Raycap has developed a modular small cell cabinet solution that can be seamlessly integrated in various environments. The solution is comprised of two parts; the lower part hosts equipment while the upper part is decorative.

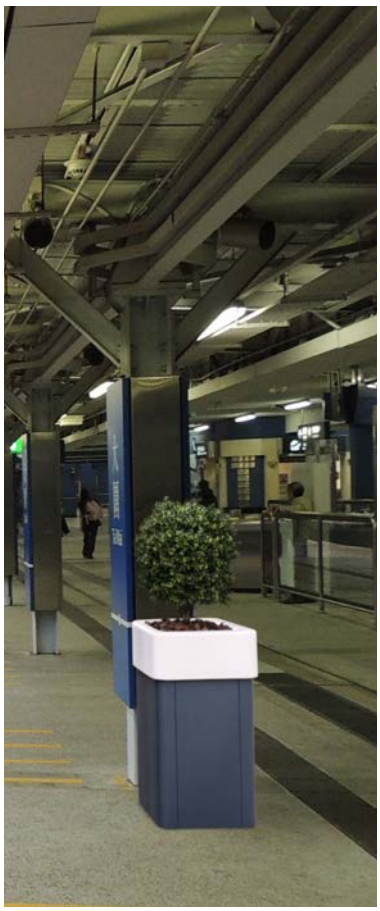
Depending on the equipment (single band, dual band or multiband), there are two (2) sizes for the lower compartment. For the decorative part, there are three (3) variants: plant, recycle bin and map. This modular approach gives customers the flexibility to choose among different configurations and adapt the appearance based on the surrounding environment.

Planter Box

- Modular design
- Lower compartment contains:
  - Electrical components
  - Fibre optic components
  - Active Equipment
  - Ventilation System
  - Locking mechanism
  - Cable entry system
- Decorative part is a planter box:
  - Easy detachment
  - Drainage system available
  - Plastic or real plants to be considered



Enclosures Next To Existing Poles



Wall or Building Mounted

Product solutions covering rooftop small cell sites with screen walls or side-mounted boxes of all sizes are available from Raycap. Rooftop or wall side-mounted box concealments compliment existing construction, and hand-crafted faux brick, block, stucco, and stone textures seamlessly blend with buildings.

Custom Shrouds

- Conceal small cell equipment
- Blend into any existing facility
- Round form factor shown; shrouds can be any shape including square, rectangular, or multi-sided
- Multiple operator and 5G/ InvisiWave versions available

Replica Antennas

- Fabricated from RF friendly InvisiWave
- Covers and hides from sight radios attached to poles or other structures without interfering in radio performance
- Compatible with 5G radios
- Suitable to conceal mmWave radios
- Full range of heights and diameters available to meet virtually all concealment applications
- Compatible to back lobe mitigation techniques with use
- Easy to install

Rooftop Solutions

Ballasted (non-penetrating) concealment pods are a great solution for disguising rooftop antennas. The ballasted pods are comprised of a steel frame, centre mast pipe, steel clamp-on bulkheads and a radome. These standard frames allow for reduced engineering cost and lead time plus the optimized framing material makes manufacturing and installation a breeze.

Ballasted Pods

- 5G InvisiWave version available
- Does not require roof penetrations
- Can be used as temporary solution
- Easily to assemble and install

RBM-21068

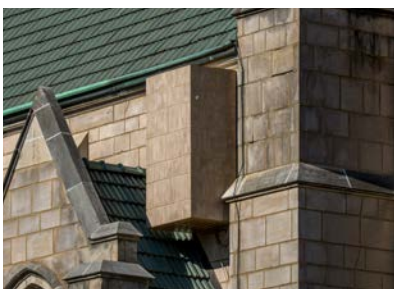
RBM-21090

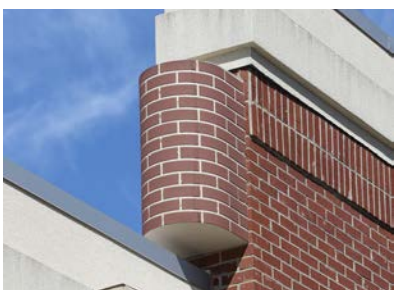
RBM-21108

Screen Walls

- Screen walls hide rooftop equipment
- The exterior can be factory colored or painted, if InvisiWave, or textured if StealthSkinTM to blend into any building
- Screens can include an InvisiWave panel to accommodate 5G radios
- Many options to choose from

Building & Rooftop Solutions Gallery





AC Disconnects

The RSCAC and RSx-Series are 120/240 VAC industry-standard load centres and surge protection devices suitable for use as service equipment (SUSE) with NO conditions per UL and NEC.

Designed to provide robust overvoltage surge protection for the AC power circuits for today's small cell radio systems, they employ patented Strikesorb® 30-A-2CHV modules capable of withstanding direct surge currents up to 5kA (10/350µs) and induced surge currents up to 60kA (8/20µs).

This product line provides dual (Line 1 to Neutral) (Line 2 to Neutral) protection for up to sixteen AC circuits depending on the model.

Common and Standard Features

- Suitable for use as Service Equipment SUSE with NO condition per UL and NEC
- 120/240 VAC, up to 100A installations
- Load breakers can be 2A - 25A rated (RSx-Series) or 15A and 20A Tandems (RSCAC-Series)
- Tightly integrated AC disconnect, AC distribution and AC surge protection in one cabinet
- Strikesorb Over Voltage Protection (OVP) on AC circuits
- Ruggedized industrial construction, most with top and bottom cable access for maximum flexibility and space-savings in small cell deployments
- Rigorous weatherproof enclosure options: NEMA 4 (for hose down/sprinkler protection), Nema 4x (for corrosive locations) and even NEMA 6/6p (IP68) for temporarily submerged locations like street hand holes
- Optional AC GFI protected outlet and/or various means of external disconnects available on some models

RSD-FMC-Z16MS-21NN
(16 Breakers, Strikesorb SPD, External Disconnect)

AC Disconnects

RSCAC-1333 Series

- 60A main breaker
- 22kA Fault Current Rating (kAIC)
- 6x configurable tandem breakers provided (12 Loads) (Default is 6x 15A/15A tandem breakers. Custom breaker lists can be specified at the time of order.)
- Bottom cable-access
- 9”H x 9”W x 5”D NEMA 4X or IP 68 & NEMA 6/6P rated enclosure
- Versatile mounting bracket included

RSCAC-1333-P-240

RSCAC-1333-P-240-D

– Hinged-Cover External Disconnect

RSCAC-1333-PH-240

– No-hinge front door for concealment or pole applications
– Submersion up to 1 meter for 30 minutes

RSCAC-9556 Series

- 100A main breaker
- 22kA Fault Current Rating (kAIC)
- 6x configurable tandem breakers provided (12 Loads) (Default is 6x 15A/15A tandem breakers. Custom breaker lists can be specified at the time of order.)
- Bottom cable-access
- 11”H x 9”W x 5”D NEMA 4X or IP 68 & NEMA 6/6P rated enclosure
- Versatile mounting bracket included

RSCAC-9556-P-240

RSCAC-9556-P-240-D

– Hinged-Cover External Disconnect

RSCAC-9556-PH-240

– No-hinge front door for concealment or pole applications
– Submersion up to 1 meter for 30 minutes

RSCAC-9550 Series

- 60A main breaker
- 22kA Fault Current Rating (kAIC)
- 6x configurable tandem breakers provided (12 Loads) (Default is 6x 15A/15A tandem breakers. Custom breaker lists can be specified at the time of order.)
- Top & Bottom cable-access
- 11”H x 9”W x 5”D NEMA 4X or IP 68 & NEMA 6/6P rated enclosure
- Versatile mounting bracket included

RSCAC-9550-P-240

RSCAC-9550-P-240-D

– Hinged-Cover External Disconnect

RSCAC-9550-PH-240

– No-hinge front door for concealment or pole applications
– Submersion up to 1 meter for 30 minutes

AC Disconnects

RSCAC-7038 Series

- 100A main breaker
- 10kAIC System Rating (due to GFI)
- 6x configurable tandem breakers provided (12 Loads) (Default is 6x 15A/15A tandem breakers. Custom breaker lists can be specified at the time of order.)
- Top & Bottom cable-access
- 14”H x 9”W x 5”D NEMA 4 rated enclosure
- GFI Convenience Outlet

RSCAC-7038-P-240

RSCAC-7038-P-240-D – Hinged-Cover External Disconnect

RSCAC-7239 Series

- 100A main breaker
- 22kAIC System Rating
- 6x configurable tandem breakers provided (12 Loads) (Default is 6x 15A/15A tandem breakers. Custom breaker lists can be specified at the time of order.)
- Top & Bottom cable-access
- 14”H x 9”W x 5”D NEMA 4 rated enclosure

RSCAC-7239-P-240

RSCAC-7239-P-240-D

RSCAC-1440-P-240

- 60A main breaker
- DC power supply capable of providing up to 2 x 600 Watts at -54VDC
- (2) 15A DC outputs
- Passive or active cooling
- Indicator LEDs for AC available (1) and DC available (2)
- NEMA 3R rated enclosure suitable for outdoor
- Field retrofitable from 1 PSU to 2

AC Disconnects

RSx-F Series

- 16x configurable breakers provided (Load breaker list [ampacities and quantities - total 16] to be specified at the time of order.)
- 60A or 100A Main Breaker
- 10kA Fault Current Rating (kAIC)
- Top, bottom and side cable/conduit access
- 18.5”H x 9”W x 6”D NEMA 4 powder-coated enclosure, available in many colors
- Versatile mounting bracket included

RSD-FMC-Z16MS-21NN
(16 Breakers, Strikesorb SPD, External Disconnect)

Model Number Configuration

RSa-FMb-c16MS-21NN

a: RAL color		
D		= Light Gray / RAL7047
G		= Green / RAL6012
B		= Black / RAL9011
N		= Brown / RAL5022
L		= Blue / RAL5005

b: LED & Ext. Disconnect	
N	= None
L	= Light and External Disconnect

c: Main Breaker	
X	= 60A Main Breaker
Z	= 100A Main Breaker

AC Disconnect Options

	Clolor Options		No External Disconnect	With External Disconnect & Status Light
60A Main Breaker	Light Gray / RAL7047		**RSD-FMN-X16MS-21NN**	**RSD-FML-X16MS-21NN**
	Green / RAL6012		**RSG-FMN-X16MS-21NN**	**RSG-FML-X16MS-21NN**
	Black / RAL9011		**RSB-FMN-X16MS-21NN**	**RSB-FML-X16MS-21NN**
	Brown / RAL5022		**RSN-FMN-X16MS-21NN**	**RSN-FML-X16MS-21NN**
	Blue / RAL5005		**RSL-FMN-X16MS-21NN**	**RSL-FML-X16MS-21NN**
100A Main Breaker	Light Gray / RAL7047		**RSD-FMN-Z16MS-21NN**	**RSD-FML-Z16MS-21NN**
	Green / RAL6012		**RSG-FMN-Z16MS-21NN**	**RSG-FML-Z16MS-21NN**
	Black / RAL9011		**RSB-FMN-Z16MS-21NN**	**RSB-FML-Z16MS-21NN**
	Brown / RAL5022		**RSN-FMN-Z16MS-21NN**	**RSN-FML-Z16MS-21NN**
	Blue / RAL5005		**RSL-FMN-Z16MS-21NN**	**RSL-FML-Z16MS-21NN**

AC Disconnects

Common and Standard Features

- Suitable as Service Equipment (SUSE) with NO condition per UL and NEC
- 60A or 100A Main Breaker
- 120/240 VAC
- Up to 16 circuits available
- Strikesorb 2CHV SPD (L1-N, L2-N)
- Metallic enclosure, NEMA 4
- 9”W x 6”D (Ht depends on Bkrs)
- Versatile mounting bracket included

RSx-D Series

- 60A or 100A Main Breaker, 10kAIC
- NEMA 4 rated Powder Coated Steel enclosure
- Top, btm, side cable-access
- Can ship with Qty=2 to 10 Bkrs

RSD-DMN-X10MS-21NN

RSD-DML-X10MS-21NN
– Hinged-Cover External Disconnect

RSD-DML-Z16MS-21NN (Lt. Gray colour, 10 Breakers, Strikesorb SPD, External Disconnect)

RSx-E Series

- 60A or 100A Main Breaker, 10kAIC
- NEMA 4 rated Powder Coated Steel enclosure
- Top, btm, side cable-access
- Can ship with Qty=2 to 12 Bkrs

RSD-EMN-Z12MS-21NN

RSD-EML-Z12MS-21NN
– Hinged-Cover External Disconnect

RSD-EML-Z12MS-21NN (Lt. Gray colour, 10 Breakers, Strikesorb SPD, External Disconnect)

Fibre Management

Raycap offers pole or wall mount fibre enclosures for indoor and outdoor use. They are specifically designed for fast deployment and easy customer connection, providing the ultimate flexibility and optimal fibre organization.

Common and Standard Features

- Lightweight design
- IP65 sealing rate
- Minimum bending radius protection 30mm
- Customized configuration capacity available
- Allows integration of passive optical components
- Wall and pole mounted
- UV stable material for outdoor above ground use
- Passive convection cooling
- The standard kit contents include wall mounting brackets and splice protector sleeves
- Optional installation of 6 PLC splitters* (PLC splitters are pre-connectorized only on the outputs.) Customization available

RTF-8028

- Splicing capacity of 8 fibres

RTF-3392

- Splicing capacity of 16 fibres

Fibre Management

RTF-5238

- Splicing capacity of 6 fibres

RTF-3018

- Splicing capacity of 2 fibres

RTF-7054

- Splicing capacity of 4 fibres

RTF-3116

- Splicing capacity of 12 fibres

RTF-8818

- Splicing capacity of 24 fibres

Multi-Fibre Cables
(OMCS-GY-xx-yy-LCLC-zzzM)

- Dielectric rodent protected
- Low smoke, halogen free (FR LSZH) outer sheath
- Connectors: RRH side: Duplex LC BBU side: Duplex LC

Single Mode / Multi Mode Cables
(Duplex Patch cords)

- 0.9/1.8/2.0/3.0mm versions available
- Low loss connectors
- LSZH jacket
- RoHS compliant
- Different boot lengths available

Notes

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