



Alcatel-Lucent 9764

Metro Cell Outdoor V1.0 B2 WCDMA 1W

Hardware Installation
3MN-01703-0002-RJZZA
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About this document

Purpose

The purpose of this document is to provide hardware installation instructions for an Alcatel-Lucent 9764 Metro Cell Outdoor V1.0 B2 WCDMA 1W.

Procedures are provided for mounting, grounding, powering, and cabling the Metro Cell.

Reason for reissue

The reissue reasons are:

Issue number	Issue Date	Reason for reissue
0.06	February 2013	Preliminary issue
0.05	December 2012	Preliminary issue
0.04	December 2012	Preliminary issue
0.03	November 2012	Preliminary issue
0.03	November 2012	Preliminary issue
0.02	November 2012	Draft RF exposure safety and conformance statements updated, Metro Dock and MCO chapters updated.
0.01	November 2012	Draft

New in this release

This is a new document.

Intended audience

The audience for this document is Installation personnel.

Supported systems

This document applies to the following:

- Alcatel-Lucent 9764 Metro Cell Outdoor V1.0 B2 WCDMA 1W (1900 MHz)
- Alcatel-Lucent 9764 Metro Dock.

How to use this document

Start with the first chapter and work through the manual to the end. Once you have done this, you will have carried out the hardware installation completely and in the proper sequence.

Prior to installing the equipment, the installer should be familiar with the safety precautions, warnings, and product conformance statements. Required tools and materials recommended for installation, and a process checklist, are listed in topic “Pre-installation information” .

Safety information

For your safety, this document contains safety statements. Safety statements are given at points where risks of damage to personnel, equipment, and operation may exist. Failure to follow the directions in a safety statement may result in serious consequences.

Prerequisites

None

Conventions used

Vocabulary conventions

In this document the Alcatel-Lucent 9764 Metro Cell Outdoor V1.0 B2 WCDMA 1W product is referred to as the “Alcatel-Lucent 9764 MCO V1.0 B2 WCDMA 1W” or the “9764 MCO V1.0 B2 WCDMA 1W”.

The following vocabulary conventions are also used when referring to Alcatel-Lucent products:

Table 1 Terminology

Term	Description/Meaning
9764 MCO	The 9764 MCO consists of the following modules: 9764 Metro Dock module, and the 9764 MCO WCDMA module.
9764 Metro Dock	Refers to the Alcatel-Lucent 9764 Metro Dock, a module supporting backhaul for the 9764 MCO.

Table 1 Terminology (continued)

Term	Description/Meaning
9764 MCO WCDMA	Refers to the module that contains the complete base station, including baseband unit, radio unit and antenna. It is attached to the front of the 9764 Metro Dock to form the 9764 MCO.
9764 MCO V1.0 B2 WCDMA 1W	Refers to the specific model of the 9764 MCO WCDMA module that is the focus of this document.

Typographical conventions

The typographical conventions used in this document are described in the following table.

Appearance	Description
<i>emphasis</i>	Text that is emphasized
document titles	Titles of books or other documents
graphical user interface text	Text that is displayed in a graphical user interface
<i>variables</i>	A value or command-line parameter that the user provides

Technical conventions

Lengths and other measurements are given in metric units, with non-metric units given as equivalents for use in non-metric markets.

For manufactured parts, the following system of conventions is used:

- Metric sizes of nuts, bolts, flat washers, and lock washers are identified by an uppercase letter M followed immediately by a size in millimeters (example: M10)
- American fractional sizes of nuts, bolts, anchor bolts, and washers are identified by a number followed immediately by a double apostrophe (example: 3/8"). In the case of lengths measured in feet, "2 feet" is used rather than "2'" so that the single apostrophe is not overlooked.

The illustrations in this document do not contain all details and exceptions, but are intended to highlight main points. Dimensions are usually shown in millimeters, with inches in parenthesis. As an example, 680.0 (26.77) equals 680 millimeters or 26.77 inches.

Wire gauges are specified in metric units. Equivalent sizes in the American Wire Gauge (AWG) system are given in the following table:

Standard cross-sections and wire diameter of round copper conductors

The following table is from CEI/IEC 60947-1:2004, *Table 1, Standard cross-sections of round copper conductors and approximate relationship between mm² and AWG/kcmil sizes* for reference. Additional wire sizes are included in this document as appropriate for the topic.

ISO rated cross-sectional area (mm ²)	AWG/kcmil size
0.2	24
0.34	22
0.5	20
0.75	18
1	-
1.5	16
2.5	14
4	12
6	10
10	8
16	6
25	4
35	2
-	1
50	0 (1/0)
70	00 (2/0)
95	000 (3/0)
-	0000 (4/0)
120	250 kcmil
150	300 kcmil
185	350 kcmil
-	400 kcmil
240	500 kcmil
300	600 kcmil
NOTE: The dash, when it appears, counts as a size when considering connecting capacity (see 7.1.7.2 in the standard).	

Related information

For information on subjects related to the content of this document, refer to the documents listed in the following table:

Refer to this document	At this location	For more information on
<i>Alcatel-Lucent 9764 Metro Cell Outdoor V1.0 B2 WCDMA 1W Technical Description, 9YZ-04190-0001-DEZZA</i>	http://support.alcatel-lucent.com	Technical Description
<i>Alcatel-Lucent 9764 Metro Cell Outdoor V1.0 B2 WCDMA 1W Site Preparation, 3MN-01703-0001-RJZZA</i>	http://support.alcatel-lucent.com	Site preparation
<i>Standard for Installation of Lightning Protection Systems, NFPA</i>	http://webstore.ansi.org/default.aspx	Lightning protection systems
<i>Recommended Practices on Surge Voltages in Low Voltage AC Power Circuits, IEEE C62.41 (Latest Edition)</i>	http://www.ieee.org/index.html	Power

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1 Safety statements

Overview

Purpose

This chapter provides general information on the structure of safety instructions and summarizes general safety requirements.

General safety and residual risk

The equipment has been developed in line with state-of-the-art technology and conforms with current national and international safety requirements.

The equipment is considered safe during normal operation when safe working practices are complied with. However, hazards may arise if procedures are not followed correctly or safe working practices are not complied with.

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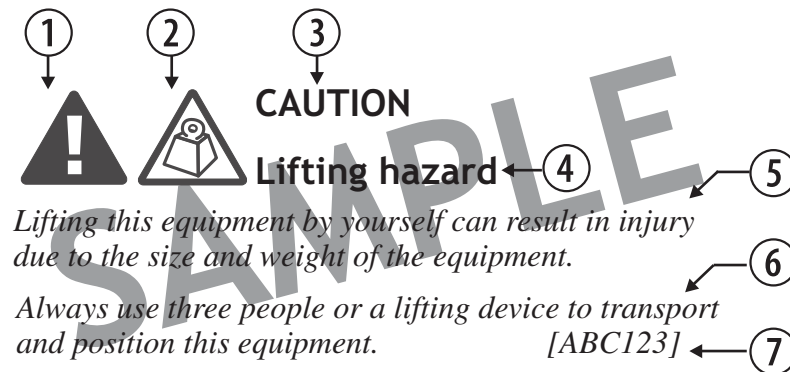
Structure of safety statements

Overview

This topic describes the components of safety statements that appear in this document.

General structure

Safety statements include the following structural elements:



Item	Structure element	Purpose
1	Safety alert symbol	Indicates the potential for personal injury (optional)
2	Safety symbol	Indicates hazard type (optional)
3	Signal word	Indicates the severity of the hazard
4	Hazard type	Describes the source of the risk of damage or injury
5	Safety message	Consequences if protective measures fail
6	Avoidance message	Protective measures to take to avoid the hazard
7	Identifier	The reference ID of the safety statement (optional)

Signal words

The signal words identify the hazard severity levels as follows:

Signal word	Meaning
DANGER	Indicates an extremely hazardous situation which, if not avoided, will result in death or serious injury.
WARNING	Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
CAUTION	Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
NOTICE	Indicates a hazardous situation not related to personal injury.

Safety

General precautions for installation procedures



WARNING

Failure to observe these safety precautions may result in personal injury or damage to equipment.

- *Read and understand all instructions.*
- *Follow all warnings and instructions marked on this product.*
- *Installation and maintenance procedures must be followed and performed by trained personnel only.*
- *The equipment must be provided with a readily accessible disconnect device as part of site preparation.*
- *Grounding and circuit continuity is vital for safe operation of the equipment. Never operate the equipment with grounding/bonding conductor disconnected.*
- *Install only equipment identified in the product's installation manual. Use of other equipment may result in an improper connection which could lead to fire or injury.*
- *Use caution when installing or modifying telecommunications equipment.*
- *Before servicing, disconnect power input to reduce the risk of energy hazards.*
- *For continued protection against risk of fire, all fuses used in this product must be replaced only with fuses of the same type and rating.*
- *Never install telecommunications equipment during a lightning storm or when conditions are wet.*
- *Never touch uninsulated wiring or terminals carrying direct current or ringing current, and never leave this wiring exposed. Protect and tape uninsulated wiring and terminals to avoid risk of fire, electrical shock, and injury to personnel.*
- *Never spill liquids of any kind on the product.*
- *To reduce the risk of an electrical shock, do not disassemble the product. Opening and removing covers and/or circuit boards may expose you to dangerous voltages or other risks. Incorrect reassembly can cause electrical shock when the unit is subsequently used.*

Safety - specific hazards



Working in severe weather can result in personal injury or death and damage to the equipment.

Never install or perform maintenance during severe weather (high winds, lightning, blizzards, hurricane etc.).



Use of unspecified cleaning agents can result in personal injury.

Use only specified cleaning agents. Never use flammable solvents.

Always ensure there is adequate ventilation in the work area and wear the appropriate personal protective equipment.



RF exposure in excess of applicable limits can result adverse health effects.

Metro Cells are designed and installed in order to comply with the international exposure guidelines laid down by the International Commission on Non-Ionizing Radiation Protection (ICNIRP) and/or the Institute of Electrical & Electronics Engineers (IEEE) C95.1. ICNIRP guidelines have been implemented by the European Commission and a number of other countries. IEEE guidelines have been implemented in North America and some other countries.

Workers that are required to work in close proximity to the equipment, for example maintenance personnel, should strictly follow instructions provided by their employer.

Workers equipped with personal medical electronic devices, such as pacemakers and hearing aids, shall consult the manufacturer's instructions and consult their occupational health practitioner.



Some parts of all electrical installations are energized. Failure to observe this fact and the safety warnings may lead to bodily injury and property damage.

For this reason, only trained and qualified personnel (electrical workers as defined in IEC 60215 + A1 or EN 60215) may install or service the installation.



The power supply lines to the network element are energized. Contact with parts carrying voltage can cause health problems, possibly including death, even hours after the event.

Open and lockout the load disconnect switch in the distribution box to completely de-energize the network element.



This product may be connected to an DC main power supply and may contain an internal battery supply. Disconnecting one power source may not de-energize the system, and can lead to serious injury.

Disconnect and lock out the DC main power supply, if present, and the internal battery supply, if present, before servicing the equipment.



Falls can occur when working at heights resulting in serious personal injury or death.

To prevent a fall when working at heights (ladder, scaffold, manlift, roof etc.) follow safe work practices and wear appropriate fall protection equipment.

NOTICE

Condensation

Sudden changes in the weather may lead to the formation of condensation on components. Operating the unit when condensation moisture is present can destroy the unit.

Units which show signs of condensation must be dried before installation.

NOTICE

Tools

Tools left in the working area can cause short circuits during operation which can lead to the destruction of units.

Make sure after finishing your work that no tools, testing equipment, flashlights, etc., have been left in or on the equipment.

Product safety

Equipment safety

Safety information for this equipment can be found on various Caution, Warning, Danger, information labels or instructions affixed to or included with the product or included within this document. Informational and cautionary labels may appear near the item they address or may be grouped in a single location on the equipment. Warnings are typically adjacent to the hazard that is noted on the label. The instructions, cautions and warnings found on these labels must be understood and observed by all personnel involved with the equipment installation and maintenance.

2 Product overview

Overview

Purpose

This chapter provides an overview of the Alcatel-Lucent 9764 Metro Cell Outdoor V1.0 B2 WCDMA 1W product.

Note:

1. CE certification for electrical backhaul will be completed by RFOA.
2. UL/FCC certification will be complete and product labels that include the UL/FCC marking will be available when the product reaches RFOA.

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Functional description

General description

As a key component of the Alcatel-Lucent lightRadio™ network, Alcatel-Lucent Metro Cells enable mobile service providers (MSPs) to deliver cost-effective capacity to urban spots, as well as affordable coverage to rural locations. They also enhance the quality of experience (QoE) for end users by enabling faster, more reliable data connections and higher data throughput on 3G networks.

The Alcatel-Lucent 9764 Metro Cell Outdoor V1.0 B2 WCDMA 1W product specified here is targeted for high user density locations where additional capacity is required or even in areas where cell phone coverage is needed on short notice. The product can be deployed by mobile operators to provide a transparent outdoor capacity layer to complement the macro cell “umbrella” coverage layer.

Product features and capabilities

The product features and capabilities in this release are:

- Integrated BBU, lightRadio™ cube enabled, 1900 MHz
- Supports up to 32 HSPA users simultaneously
- High transmit power: 1W at the internal antenna connector
- Capable of supporting a 21 Mbit/s HSDPA radio bearer (with the 64 QAM feature) and a 5.7 Mbit/s HSUPA radio bearer
- Integrated 8dBi minimum gain directional “Cube-based” antennas
- Supports Rx space diversity, improving the signal quality and accommodating more users
- The modular metro dock comes in different variants depending on backhaul options (including Gigabit Ethernet)
- Supports a A-GPS receiver to provide localization of the unit.

Deployment scenarios

The Alcatel-Lucent 9764 MCO V1.0 B2 WCDMA 1W is located outdoor in public places and can be mounted on walls, lamp posts, poles or even on the side of a building in a vertical orientation.

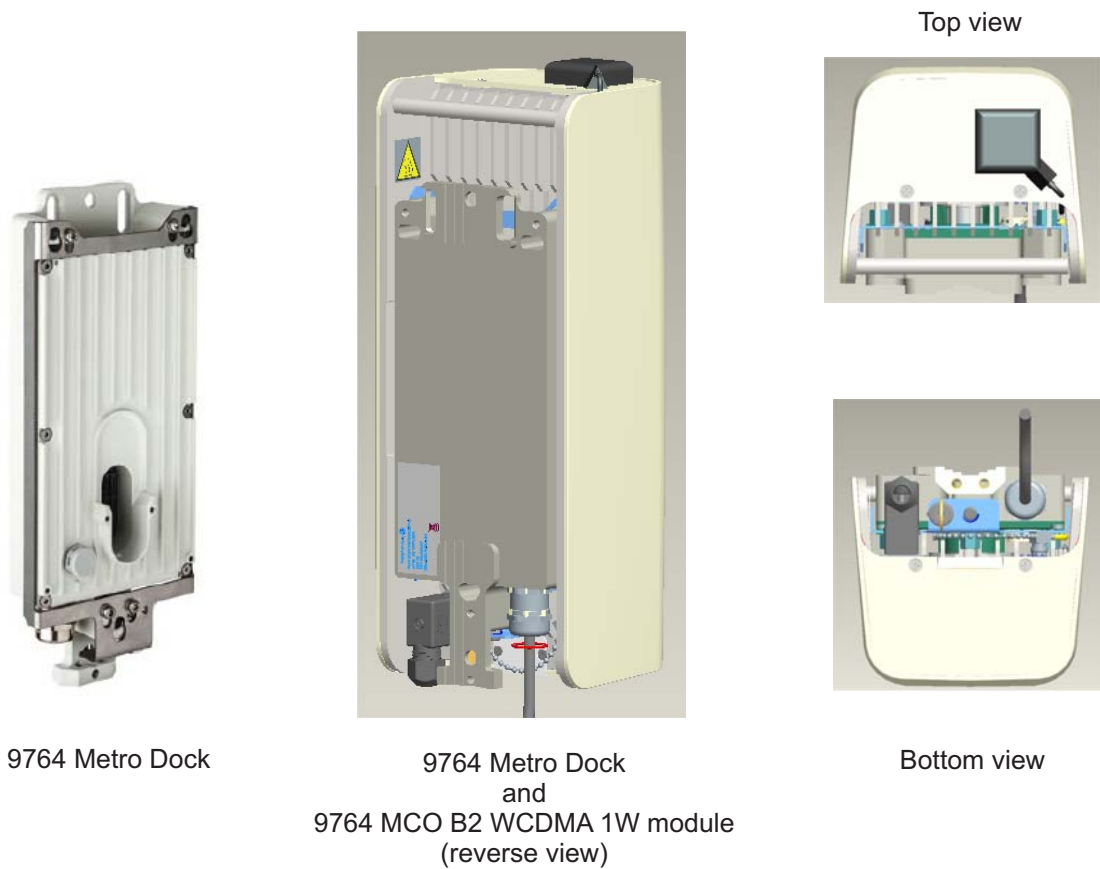
Physical description

Product overview

The Alcatel-Lucent 9764 Metro Cell Outdoor V1.0 B2 WCDMA 1W is housed in an Alcatel-Lucent generic metallic case. The product is designed to be deployed close to the users, usually in streets on light poles or on walls of buildings, with a vertical profile that hides cable connectors and mounting kit for a smooth integration into the surrounding environment.

The 9764 MCO V1.0 B2 WCDMA 1W product is shown in the following figure.

Figure 2-1 9764 MCO V1.0 B2 WCDMA 1W



9764 Metro Dock

9764 Metro Dock and
9764 MCO B2 WCDMA 1W module
(reverse view)

Bottom view

In order to simplify configurations the backhaul access function and the radio part functions are separated, with a common interface is defined:

Unit	Function	Description
9764 Metro Dock	Backhaul access function	Supports backhaul options Holds the 9764 MCO module in place

Unit	Function	Description
9764 MCO module	Radio part function	Radio functions Digital processing functions Power supply functions

Weights and dimensions

The physical dimensions of the Alcatel-Lucent 9764 MCO are:

Dimensions (9764 MCO WCDMA module + 9764 Metro Dock module) (Height x Width x Depth)	363 x 138 x 124 mm (with GPS antenna)
Volume (9764 MCO WCDMA module + 9764 Metro Dock module)	5.5L
Weight (9764 MCO WCDMA module only)	3.5 kg
Weight (9764 MCO WCDMA module + 9764 Metro Dock module)	4.47 kg

Alcatel-Lucent 9764 Metro Cell Outdoor WCDMA overview

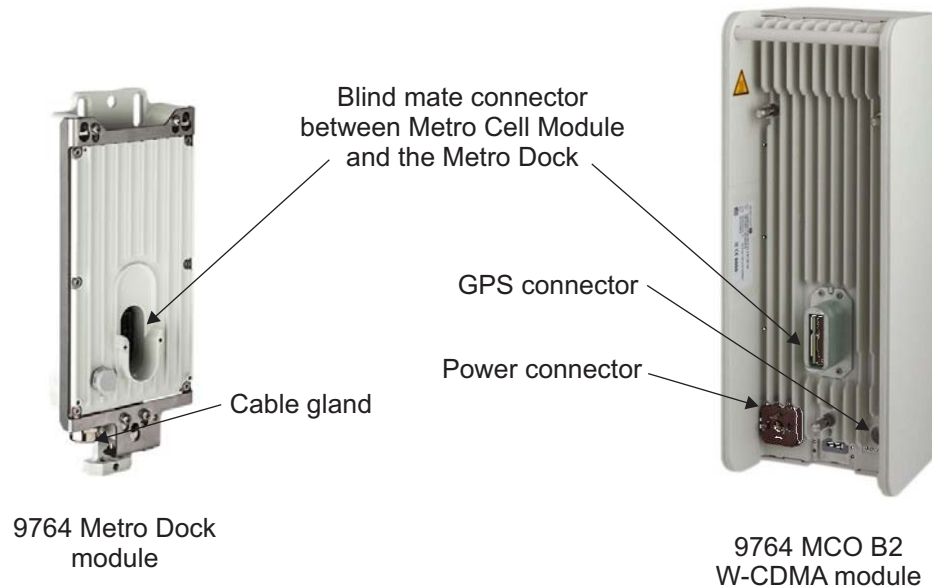
The 9764 MCO WCDMA module is made up of three main units which are responsible for radio, digital processing and power supply functions.

Unit	Function
9764 MCO WCDMA board	Digital part: <ul style="list-style-type: none"> • Giga Ethernet switch • PicoChip PC333 + memories (MoDem and control function) • 9764 Metro Dock interface (Data, control and power supply) Radio part: <ul style="list-style-type: none"> • WCDMA Band 2 • Single TX 1W at antenna connector • Dual RX for diversity management • 2G/3G sniffing supported on both band 2 (1900MHz) and band 5 (850MHz) Power supply part: <ul style="list-style-type: none"> • DC/DC converter for digital and radio • DC/DC converter for 9764 Metro Dock
Antennas	<ul style="list-style-type: none"> • Dual coupled TX RX antennas for main and diversity management • 2G/3G sniffing supported on both band 2 (1900MHz) and band 5 (850MHz)
Power supply	<ul style="list-style-type: none"> • DC/DC converter (Input -48V ; Output 12V)

9764 MCO WCDMA module connection interfaces

The following figure shows the connection interfaces for the 9764 MCO WCDMA module.

Figure 2-2 9764 MCO WCDMA module and 9764 Metro Dock module connectors



Connection location	Description
9764 MCO WCDMA module (back)	<p>A -48V DC power supply connector</p> <p>A blind mate connector for connecting the 9764 MCO WCDMA module and the 9764 Metro Dock module</p> <p>QMA GPS antenna connector</p>

Power supply

The 9764 MCO V1.0 B2 WCDMA 1W is powered by -48V DC (a DC/DC converter is integrated inside the 9764 MCO WCDMA module). This DC connector supplies power for the 9764 MCO WCDMA module, and the 9764 Metro Dock module.

RF Antenna

Two directional cross polarized main antennas are included with a > 8 dBi gain, antenna beam is 45° +/-5° vertical and 75° +/-5° horizontal half power beam width.





GPS Antenna

GPS antenna mounted on top of the 9764 MCO WCDMA module providing assisted GPS capability for localization of the unit.

Debug interface

The Alcatel-Lucent 9764 MCO V1.0 B2 WCDMA 1W supports four LEDs.

Note: LEDs can be used for debugging purposes during installation and commissioning. They are not intended for use during normal operation of the equipment.

LED	LED Icon	LED description
LED1		Power
LED2		System
LED3		Phone
LED4		GPS

Product labelling

A product label provides the following information:

- Model name
- Part number
- Serial number
- MAC address
- Power input range
- FCC, CSA and IC marking

Hardware and ancillary items

Overview

The following section lists the Alcatel-Lucent 9764 Metro Cell Outdoor base hardware equipment, the installation kits and ancillary items that can be ordered from Alcatel-Lucent.

Supported installation options

The Alcatel-Lucent 9764 Metro Cell Outdoor is designed to be installed outdoors and can be mounted either on:

- Poles, lamp posts, or
- Walls, sides of buildings

Figure 2-3 9764 MCO installation examples



Pole mount installation



Wall mount installation

9764 MCO base items

The Alcatel-Lucent 9764 Metro Cell Outdoor V1.0 B2 WCDMA 1W packaging contains the following base items:

- 9764 MCO V1.0 B2 WCDMA 1W module

9764 Metro Dock base items

The Alcatel-Lucent 9764 Metro Dock packaging contains the following base items:

- 9764 Metro Dock (including lock and key)

Installation kits

The following table list the installation kits that are available for order from Alcatel-Lucent in support of the equipment installation options.

Code	Installation kit	Description	Use
3JR30046AA	Banding kit	Stainless steel bands Band buckles (Ear-Lokt)	Mandatory: <ul style="list-style-type: none"> • pole mount only
1AD150180001	Banding tool	Standard BAND-IT [®] Banding Tool (CR00169), including operating instructions	Mandatory: <ul style="list-style-type: none"> • use with the Banding kit for pole mount only
3BK60980AA	Wall spacer kit	9764 Metro Dock wall spacer	Mandatory: <ul style="list-style-type: none"> • wall mount without tilt
3BK61036AB	Vertical tilt installation kit	Vertical tilt bracket	Mandatory: <ul style="list-style-type: none"> • pole mount with tilt • wall mount: with vertical only • wall mount: with vertical and horizontal tilt
3BK61037AA	Horizontal tilt installation kit	Horizontal tilt bracket	Mandatory: <ul style="list-style-type: none"> • wall mount: with horizontal tilt only • wall mount: with horizontal and vertical tilt
3JR30045AA	Basic installation kit	Ground cable lugs and screws, tie wraps	Mandatory All installation scenarios
1AB328430001	Surge arrestor	Ethernet surge arrestor	Optional Electrical Ethernet backhaul configuration only
tbd	Surge arrestor mounting kit	Surge arrestor bracket (pole and wall) Metal bands and buckles Ethernet cable (0.6m outdoor), spare RJ45 connectors	Optional Electrical Ethernet backhaul configuration only

Ancillary items

The following tables list the ancillary items that are available for order from Alcatel-Lucent in support of the defined equipment installation and configuration options.

Power

Code	Item	Description	Use
tbd	Power cable	tbd	Mandatory 100m cable roll
1AB418220002	Power connector	DC power connector (Molex)	Mandatory All installation scenarios

Grounding

Code	Item	Description	Use
tbd	Ground cable	tbd	Mandatory 100m cable roll

SFP modules

Code	Item	Description	Use
1AB413590001	SFP module	SFP GBE 10/100/1000BaseT (copper)	Optional Dependant on backhaul interface configuration
1AB187280029	SFP module	SFP GBE 1000BaseLX (Single mode)	Optional Dependant on backhaul interface configuration
1AB187280063	SFP module	SFP GBE 1000BaseSX (Multi mode)	Optional Dependant on backhaul interface configuration

Ethernet cable - Electrical

Code	Item	Description	Use
tbd	Electrical Ethernet cable	2m outdoor, 4 pairs, 2 RJ45	Optional Use with SFP GBE 10/100/1000BaseT
tbd	Electrical Ethernet cable	25m outdoor, 4 pairs, 2 RJ45	Optional Use with SFP GBE 10/100/1000BaseT
tbd	Electrical Ethernet cable	100m outdoor, 4 pairs, 2 RJ45	Optional Use with SFP GBE 10/100/1000BaseT

Ethernet cable - Optical

Code	Item	Description	Use
849147590	Fiber Optic cable	LC-LC 2SM 2.5m	Optional Use with SFP GBE 1000BaseLX (Single mode)
849134879	Fiber Optic cable	LC-LC 2SM 5m	Optional Use with SFP GBE 1000BaseLX (Single mode)
849122239	Fiber Optic cable	LC-LC 2SM 15m	Optional Use with SFP GBE 1000BaseLX (Single mode)
849125380	Fiber Optic cable	LC-LC 2SM 30m	Optional Use with SFP GBE 1000BaseLX (Single mode)
849122247	Fiber Optic cable	LC-LC 2SM 50m	Optional Use with SFP GBE 1000BaseLX (Single mode)
849123591	Fiber Optic cable	LC-LC 2SM 70m	Optional Use with SFP GBE 1000BaseLX (Single mode)
849125398	Fiber Optic cable	LC-LC 2SM 85m	Optional Use with SFP GBE 1000BaseLX (Single mode)
849123609	Fiber Optic cable	LC-LC 2SM 100m	Optional Use with SFP GBE 1000BaseLX (Single mode)
849125406	Fiber Optic cable	LC-LC 2SM 150m	Optional Use with SFP GBE 1000BaseLX (Single mode)
849125414	Fiber Optic cable	LC-LC 2SM 200m	Optional Use with SFP GBE 1000BaseLX (Single mode)
849125422	Fiber Optic cable	LC-LC 2SM 250m	Optional Use with SFP GBE 1000BaseLX (Single mode)
849125430	Fiber Optic cable	LC-LC 2SM 300m	Optional Use with SFP GBE 1000BaseLX (Single mode)
849147608	Fiber Optic cable	LC-LC 2MM 2.5m	Optional SFP GBE 1000BaseSX (Multi mode)

Code	Item	Description	Use
849125513	Fiber Optic cable	LC-LC 2MM 5m	Optional SFP GBE 1000BaseSX (Multi mode)
849122270	Fiber Optic cable	LC-LC 2MM 15m	Optional SFP GBE 1000BaseSX (Multi mode)
849125521	Fiber Optic cable	LC-LC 2MM 30m	Optional SFP GBE 1000BaseSX (Multi mode)
849122288	Fiber Optic cable	LC-LC 2MM 50m	Optional SFP GBE 1000BaseSX (Multi mode)
849123633	Fiber Optic cable	LC-LC 2MM 70m	Optional SFP GBE 1000BaseSX (Multi mode)
849125539	Fiber Optic cable	LC-LC 2MM 85m	Optional SFP GBE 1000BaseSX (Multi mode)
849123641	Fiber Optic cable	LC-LC 2MM 100m	Optional SFP GBE 1000BaseSX (Multi mode)
849125547	Fiber Optic cable	LC-LC 2MM 150m	Optional SFP GBE 1000BaseSX (Multi mode)

3 Installation of the 9764 Metro Dock

Overview

Purpose

This chapter provides the information and procedures for mounting the 9764 Metro Dock onto a pole or wall, with or without the optional tilt mechanism.

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9764 Metro Dock pre-installation

Overview

Purpose

This section provides pre-installation information as well as listing tools and materials required for Alcatel-Lucent 9764 Metro Dock mounting.

Contents

9764 Metro Dock Pre-installation information	3-3
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9764 Metro Dock Pre-installation information

Verify site preparation

The following site preparation requirements should be checked and met before the installation of the equipment can begin. If some of the requirements are not met, the installer must do so now:

- Ensure equipment is planned to be installed as high as possible to avoid obstructions
- Consider nearby sources of interference. Also check possibility of future obstructions such as plans to erect buildings and trees that may grow tall enough to obstruct the wireless path
- Ensure adequate clearance is provided for service access
- Ground, power and backhaul cabling has been routed and is in place
- Ensure any site specific fixing materials (screws, washers, wall plugs) for pole/wall mounting the equipment are available.

Product delivery contents

Unpack and examine the product packaging contents. If you notice any damage, or missing items as listed in the Packing List, immediately notify the carrier that delivered the unit and contact your Alcatel-Lucent representative.

The Alcatel-Lucent 9764 Metro Dock product packaging contains the following items:

- The 9764 Metro Dock module (including lock and key)

Installation kits

In addition to the standard product deliverable ensure the appropriate installation kits and ancillary items are available to support the product mounting options.

Installation Kits	Pole mount		Wall mount			
	No tilt	With tilt	No tilt	Vertical tilt only	Horizontal tilt only	Combined horiz./vert. tilt
Banding kit	Yes	Yes				
Banding tool	Yes	Yes				
Vertical tilt kit		Yes		Yes		Yes
Horizontal tilt kit					Yes	Yes
Wall spacer kit			Yes			
Basic kit	Yes	Yes	Yes	Yes	Yes	Yes

Tools required for installation

The following tools may be used during installation:

- Drill (pneumatic hammer) and assorted drill bits
- Pliers
- Adjustable spanners
- M17 socket wrench
- Screwdrivers (power and/or manual):
 - Phillips (flat blade)
 - Torx (T-25 and T-40)
- HRS (Hirose) HT206/TM21p-88p crimping tool (for RJ45 cable)
- Data cable tester for shielded RJ45 (optional)
- Measuring tape
- Digital compass (to aid establishing product orientation)
- Marker, to mark wall mounting holes
- Vacuum cleaner or equivalent (required for clearing debris from wall mounting holes)
- Spirit level
- Hammer
- PIB (self-amalgamating) tape and 3M Super 33+ vinyl tape
- Ear protectors and safety goggles/glasses
- Assorted cable ties

9764 Metro Dock installation

Overview

Purpose

This section provides the installation instructions for mounting the Alcatel-Lucent 9764 Metro Dock onto a pole or wall with or without the optional tilt mechanism.

Contents

Procedure 3-1: Mount 9764 Metro Dock onto pole	3-6
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Procedure 3-6: Mount the 9764 Metro Dock onto a wall using combined horizontal and vertical tilt brackets	3-41

Procedure 3-1: Mount 9764 Metro Dock onto pole

Purpose

This topic describes the procedures to be followed when installing the Alcatel-Lucent 9764 Metro Dock onto a pole (wooden or metal).

Prerequisites

A site survey has been conducted and a location for the device has been selected that is both central to the public space and elevated in order to maximize coverage. Before installation begins you should ensure the following are in place:

- Ensure adequate clearance is provided for service access
- Ground cable has been routed and the site grounding system is in place
- Backhaul cable has been routed and is in place
- Any site specific mounting and anchor materials are available.

Attention: The 9764 Metro Dock must be mounted with the appropriate mounting hardware suitable for the various supporting structures, building materials and construction methods. Following a site survey, it is the responsibility of the customer to ensure that:

- the installation support structure is adequate and compliant with Building Officials and Code Administrators (BOCA), Uniform Building Code (UBC), and all other national and local codes
- the appropriate mounting hardware and any necessary supporting material is used.

Pole mount installation

The 9764 Metro Dock is less than 1 kg (2.2 lbs) and can be easily mounted onto a pole (wooden or metal) using the following installation kits, anchor materials and tools:

Anchor method	Pole type	Required materials and installation kits
“Metro Dock pole mount using screws” (p. 3-7)	Wood	Mounting screws and washers have to be locally supplied. Two M8x50 stainless steel hex head screws (DIN 571 V2A) and two M8x16x1.6 plain washers are recommended
“Metro Dock pole mount using bands” (p. 3-8)	Wood or metal	Pole banding kit (3JR30046AA) Pole banding tool (1AD150180001)

For a list of standard tools that may be required to support the installation, see “[Tools required for installation](#)” (p. 3-4)

Before you begin

Record the 9764 Metro Dock 18 digit serial number before mounting onto a pole.

Metro Dock pole mount using screws

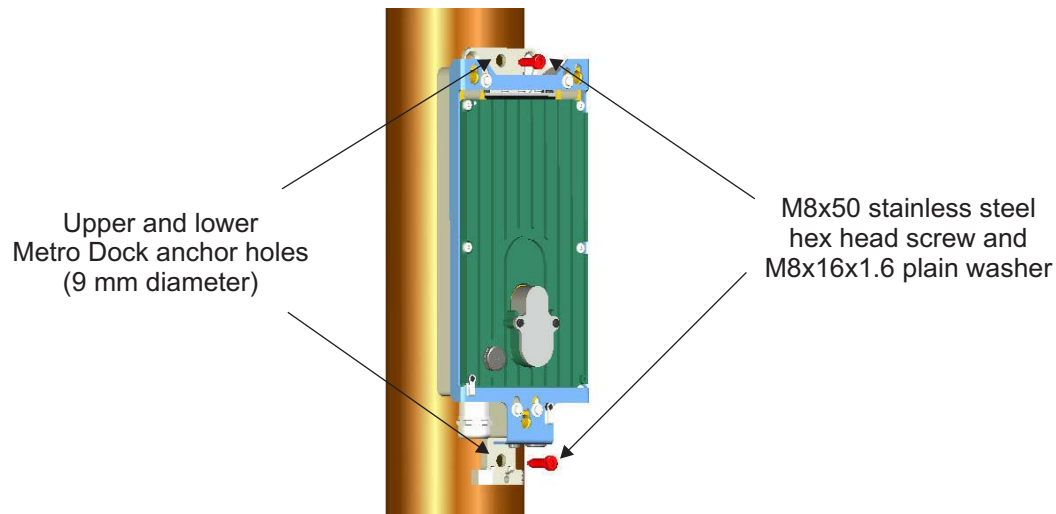


Falls can occur when working at heights resulting in serious personal injury or death.

To prevent a fall when working at heights (ladder, scaffold, manlift, roof etc.) follow safe work practices and wear appropriate fall protection equipment.

Perform the following procedure to mount the 9764 Metro Dock onto a wooden pole using screws.

- 1 Measure the height at which the 9764 Metro Dock is to be positioned on the pole. Mark this point.
- 2 Using a digital compass determine the planned horizontal (left/right) orientation of the 9764 Metro Dock around the pole. Mark this position.
- 3 At the identified 9764 Metro Dock position on the pole, mark the upper and lower screw anchor holes. The distance between the upper and lower screw anchor holes should be 270 mm (10.63 inches).
Tip: The 9764 Metro Dock can be placed against the pole and used as a template to mark the position of the upper and lower screw anchor holes.
- 4 Place the 9764 Metro Dock against the pole aligning the upper and lower anchor holes on the 9764 Metro Dock with the marked anchor hole positions on the pole.
- 5 Place a washer on each of the anchor screws. Using socket wrench (M8) screw the 9764 Metro Dock onto the pole.



- 6 Finally, check the 9764 Metro Dock is secure and there is no movement of the equipment on the pole.

END OF STEPS

Metro Dock pole mount using bands



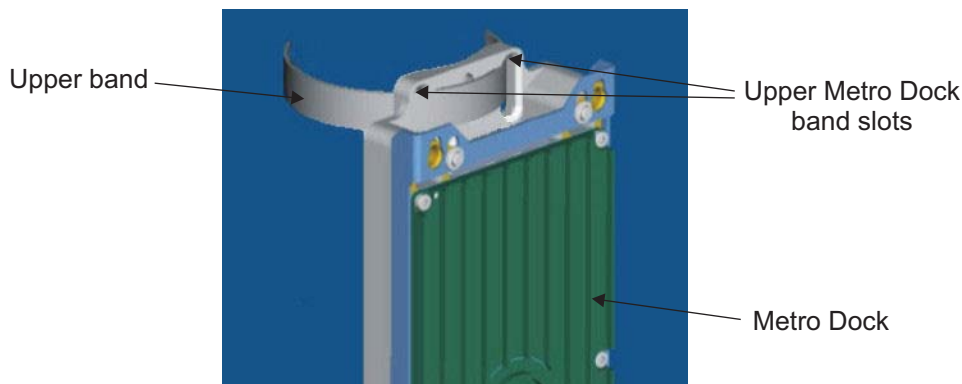
Falls can occur when working at heights resulting in serious personal injury or death.

To prevent a fall when working at heights (ladder, scaffold, manlift, roof etc.) follow safe work practices and wear appropriate fall protection equipment.

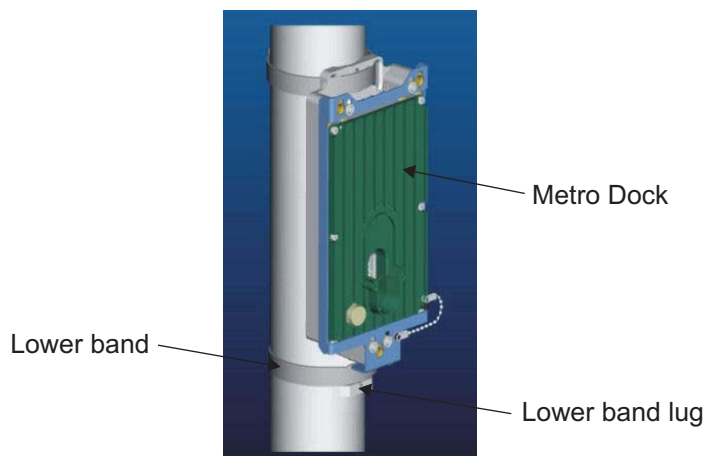
Perform the following procedure to mount the 9764 Metro Dock onto a pole (wooden or metal) using standard pole bands.

- 1 Measure the height at which the 9764 Metro Dock is to be positioned on the pole. Mark this point.
- 2 Using a digital compass determine the planned horizontal (left/right) orientation of the 9764 Metro Dock around the pole. Mark this position.

- 3 From the banding installation kit, take a steel pole band and thread the open end into the upper two slots on the 9764 Metro Dock.



- 4 At the marked installation point on the pole place the upper pole band around the pole at the determined height. Carry out any required adjustment of the 9764 Metro Dock around the pole so that it is pointing in the desired direction.
- 5 Taking the other steel band, place the band around the lower lug on the 9764 Metro Dock and the pole.



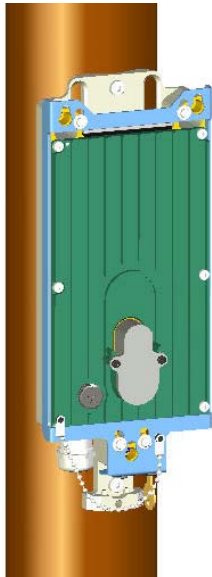
- 6 Once the 9764 Metro Dock is in the correct position and orientation tighten and secure the bands around the pole. Refer to *BAND-IT® C00169 Hand Tool Operation Instructions*, PO5886.

- 7 Finally, check the banding is secure, there is no movement of the 9764 Metro Dock around the pole and that the banding stubs (cut ends) are flattened down with a hammer.

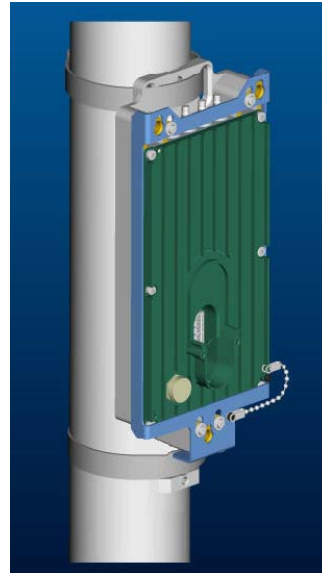
END OF STEPS

Standard pole mount example

The following figure shows the 9764 Metro Dock mounted onto a wooden pole using screws and a metal pole using bands.



Metro Dock screwed
onto wooden pole



Metro Dock banded
onto metal pole

How to continue

After mounting the 9764 Metro Dock onto a pole the cables need to be connected. Continue with the, [“9764 Metro Dock cabling”](#) (p. 3-51) chapter.

Procedure 3-2: Mount the 9764 Metro Dock onto pole using optional tilt brackets

Purpose

This topic describes the procedures to be followed when installing the Alcatel-Lucent 9764 Metro Dock onto a pole (wooden or metal) using optional vertical tilt brackets.

Prerequisites

A site survey has been conducted and a location for the device has been selected that is both central to the public space and elevated in order to maximize coverage. Before installation begins you should ensure the following are in place:

- Ensure adequate clearance is provided for service access
- Ground cable has been routed and the site grounding system is in place
- Backhaul cable has been routed and is in place
- Any site specific mounting and anchor materials are available.

Attention: The 9764 Metro Dock must be mounted with the appropriate mounting hardware suitable for the various supporting structures, building materials and construction methods. Following a site survey, it is the responsibility of the customer to ensure that:

- the installation support structure is adequate and compliant with Building Officials and Code Administrators (BOCA), Uniform Building Code (UBC), and all other national and local codes
- the appropriate mounting hardware and any necessary supporting material is used.

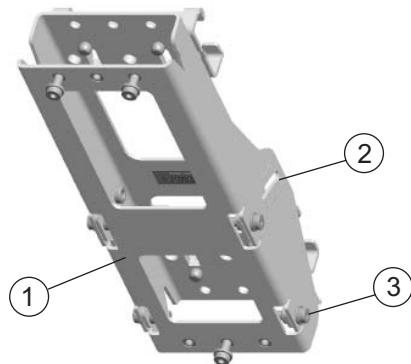
Pole mount installation

The 9764 Metro Dock is less than 1 kg (2.2 lbs) and can be easily mounted onto a pole (wooden or metal) using the following installation kits, anchor materials and tools:

Anchor method	Pole type	Required materials and installation kits
“Bracket pole mount using screws” (p. 3-12)	Wood	Vertical tilt installation kit (3BK61036AB) Mounting screws and washers have to be locally supplied. Two M8x50 stainless steel hex head screws (DIN 571 V2A) and two M8x16x1.6 plain washers are recommended
“Bracket pole mount using bands” (p. 3-14)	Wood or metal	Vertical tilt installation kit (3BK61036AB) Pole banding kit (3JR30046AA) Pole banding tool (1AD150180001)

For a list of standard tools that may be required to support the installation, see [“Tools required for installation”](#) (p. 3-4)

Figure 3-1 Vertical tilt bracket



Legend:

1	Vertical tilt bracket	3	Bracket pivot point
2	Tilt angle positioning gauge		

Before you begin

Record the 9764 Metro Dock 18 digit serial number before mounting onto a pole.

Bracket pole mount using screws



Falls can occur when working at heights resulting in serious personal injury or death.

To prevent a fall when working at heights (ladder, scaffold, manlift, roof etc.) follow safe work practices and wear appropriate fall protection equipment.

Perform the following procedure attach the vertical tilt bracket a wooden pole using screws.



- 1 Measure the height at which the 9764 Metro Dock is to be positioned on the pole. Mark this point.

- 2 Using a digital compass determine the planned horizontal (left/right) orientation of the 9764 Metro Dock around the pole. Mark this position.

- 3 At the identified 9764 Metro Dock position on the pole, mark the upper and lower screw anchor holes for the tilt bracket. The distance between the upper and lower screw anchor holes should be 200 mm (7.87 inches).

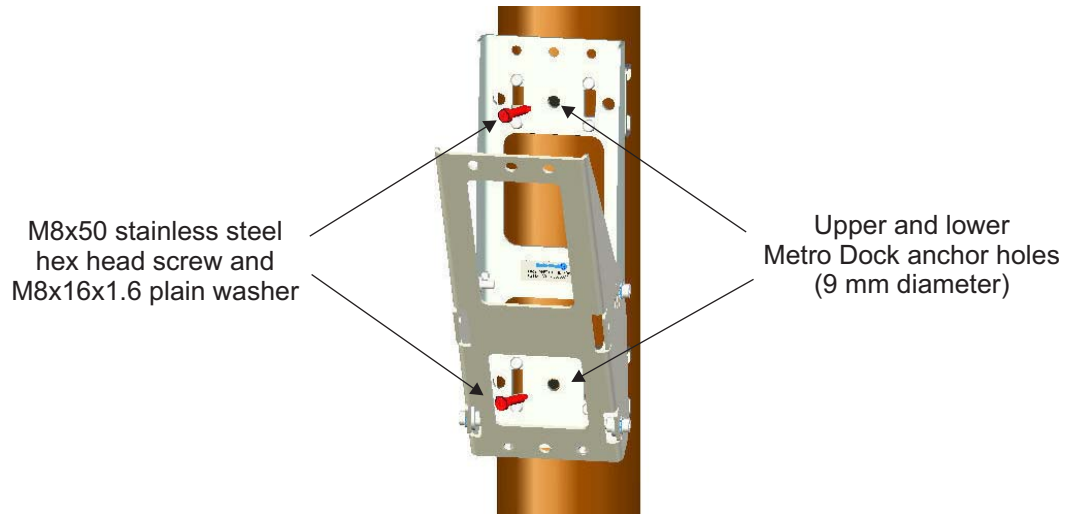
Tip: The vertical tilt bracket can be placed against the pole and used as a template to mark the position of the upper and lower screw holes.

- 4 Depending on the required vertical tilt orientation ensure the bracket is positioned the correct way up before placing on the pole:

If...	Then...	View...
upward vertical tilt is required	the tilt bracket must be positioned with the pivot point at the top	
downward vertical tilt is required	the tilt bracket must be positioned with the pivot point at the bottom	

- 5 Place the vertical tilt bracket against the pole aligning the upper and lower anchor holes on the bracket with the marked screw positions on the pole.

- 6 Place a washer on each of the anchor screws. Using a socket wrench (M8) screw the vertical tilt bracket onto the pole.



- 7 Finally, check the screws are secure and there is no movement of the bracket on the pole.
- 8 Continue onto [“Attach 9764 Metro Dock to the tilt bracket”](#) (p. 3-16)

END OF STEPS

Bracket pole mount using bands



Falls can occur when working at heights resulting in serious personal injury or death.

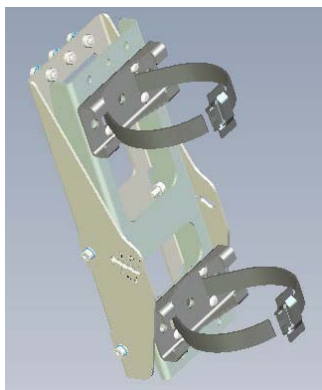
To prevent a fall when working at heights (ladder, scaffold, manlift, roof etc.) follow safe work practices and wear appropriate fall protection equipment.

Perform the following procedure to mount the vertical tilt bracket onto a pole (wooden or metal) using standard pole bands.



- 1 Measure the height at which the 9764 Metro Dock is to be positioned on the pole. Mark this point.

- 2 Using a digital compass determine the planned horizontal (left/right) orientation of the 9764 Metro Dock around the pole. Mark this position.
- 3 From the banding installation kit, take a steel pole band and thread the open end into the upper two slots on the tilt bracket.

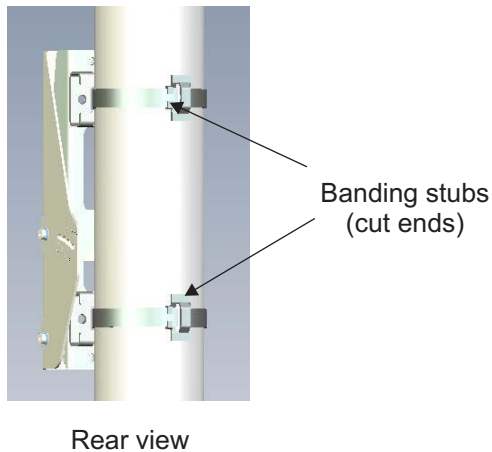
Taking the other steel band insert and thread the open end into the lower two slots on the tilt bracket.



- 4 Depending on the required vertical tilt orientation ensure the bracket is positioned the correct way up before placing on the pole:

If...	Then...	View...
upward vertical tilt is required	the tilt bracket must be positioned with the pivot point at the top	
downward vertical tilt is required	the tilt bracket must be positioned with the pivot point at the bottom	

- 5 At the marked installation position on the pole wrap the upper and lower pole bands around the pole at the determined height. Carry out any required adjustment of the 9764 Metro Dock around the pole so that it is pointing in the planned direction.
- 6 Once the 9764 Metro Dock is in the correct position and orientation tighten and secure the bands around the pole. Refer to *BAND-IT® C00169 Hand Tool Operation Instructions*, PO5886.
- 7 Finally, check the banding is secure, there is no movement of the bracket around the pole and that the banding stubs (cut ends) are flattened down with a hammer.



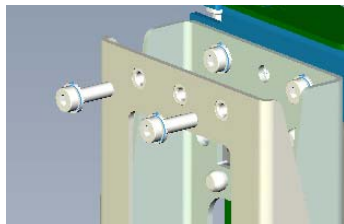
- 8 Continue onto [“Attach 9764 Metro Dock to the tilt bracket”](#) (p. 3-16)

END OF STEPS

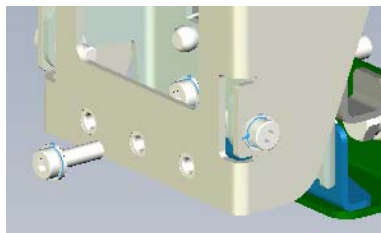
Attach 9764 Metro Dock to the tilt bracket

Perform the following procedure to attach the 9764 Metro Dock to the tilt bracket.

- 1 Unscrew and remove the two upper M6 bolts and the one lower M6 bolt from the tilt bracket.

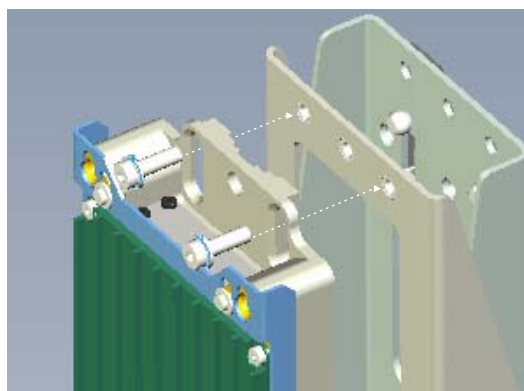


Upper M6 bolts x 2

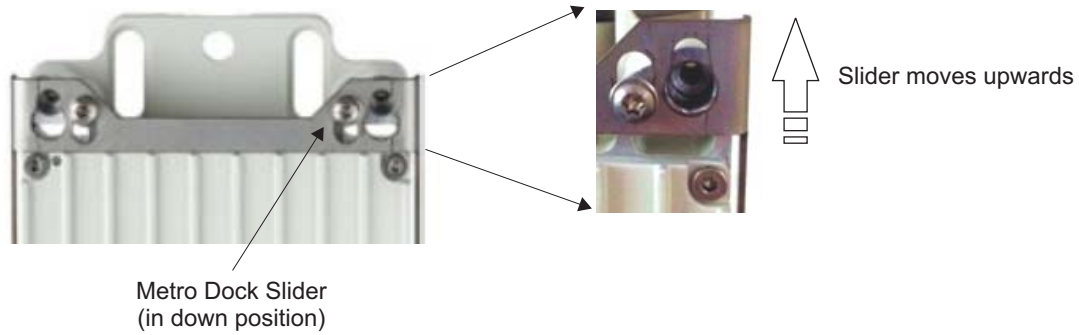


Lower M6 bolt x 1

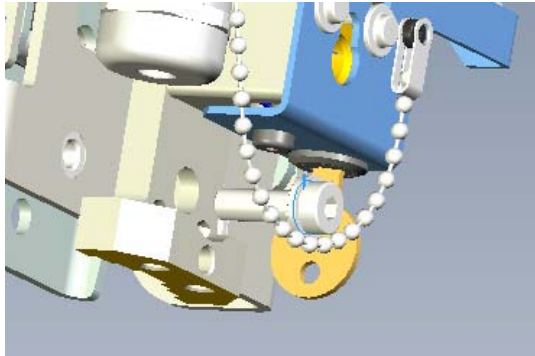
- 2 Position the 9764 Metro Dock against the front of the tilt bracket so that the two upper bolt holes and the single lower bolt hole on the 9764 Metro Dock are aligned with the bolts holes on the tilt bracket.
- 3 From the 9764 Metro Dock side, insert the two M6 bolts back through the upper bolt holes on the 9764 Metro Dock and through the upper tilt bracket bolt holes.



- 4 For each M6 bolt, screw on the retaining nut and finger tighten.
- 5 Move the 9764 Metro Dock metal slider to the “up” position as this allows easier access to the lower attachment bolt hole:
 1. insert supplied key into lock and turn 90° counterclockwise to unlock the slider.
 2. move the slider into the “up” position and turn key 30° clockwise to lock the slider in the up position.



- 6 From the 9764 Metro Dock side, insert the single M6 bolts back through the lower bolt hole on the 9764 Metro Dock and through the lower tilt bracket bolt hole.

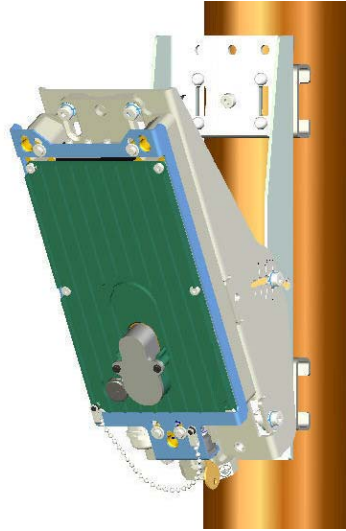


- 7 Screw the retaining nut onto the lower M6 bolt and finger tighten.
- 8 Using a 10 mm ratchet wrench, tighten the two upper and one lower M6 retaining bolts. Recommended screw torque; 7.0 N.m (62.0 lb.in).
- 9 Finally move the 9764 Metro Dock metal slider to the “down” position:
1. turn the key 30° counterclockwise to unlock the slider. The slider will automatically move to the “down” position.
 2. turn the key 90° clockwise to lock the slider in the “down” position and remove the key.

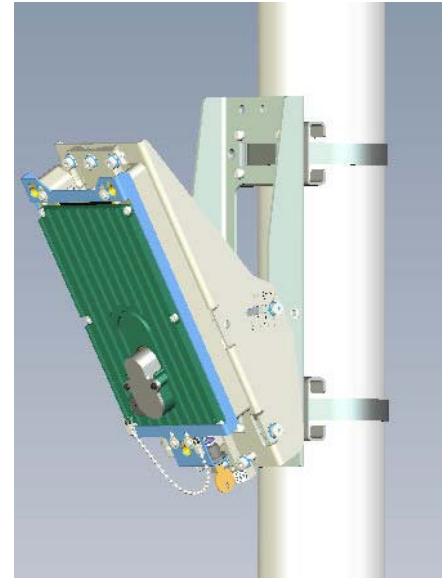
END OF STEPS

Pole mount example (with vertical tilt)

The following figure shows the 9764 Metro Dock, with vertical tilt, mounted onto a wooden pole using screws and a metal pole using bands.



Metro Dock mounted on
wooden pole with vertical tilt



Metro Dock mounted on
metal pole with vertical tilt

How to continue

After mounting the 9764 Metro Dock onto a pole the cables need to be connected. Continue with the, [“9764 Metro Dock cabling”](#) (p. 3-51) chapter.

Procedure 3-3: Mount the 9764 Metro Dock onto a wall

Purpose

This topic describes the procedures to be followed when installing the Alcatel-Lucent 9764 Metro Dock onto a wall or solid flat surface.

Prerequisites

A site survey has been conducted and a location for the device has been selected that is both central to the public space and elevated in order to maximize coverage. Before installation begins you should ensure the following are in place:

- Ensure adequate clearance is provided for service access
- Ground cable has been routed and the site grounding system is in place
- Backhaul cable has been routed and is in place
- Any site specific fixing materials are available (for example, bolts, washers and wall plug materials).

Attention: The 9764 Metro Dock must be mounted with the appropriate mounting hardware suitable for the various supporting structures, building materials and construction methods. Following a site survey, it is the responsibility of the customer to ensure that:

- the installation support structure is adequate and compliant with Building Officials and Code Administrators (BOCA), Uniform Building Code (UBC), and all other national and local codes
- the appropriate mounting hardware and any necessary supporting anchor fixings are used.

Wall mount installation

The 9764 Metro Dock is less than 1 kg (2.2 lbs) and can be easily mounted on a wall or solid flat surface using the following installation kits and tools:

- Wall spacer kit
- For a list of installation tools, see [“Tools required for installation”](#) (p. 3-4)

Before you begin

Record the 9764 Metro Dock 18 digit serial number before mounting onto a pole.

Perform standard wall mount installation

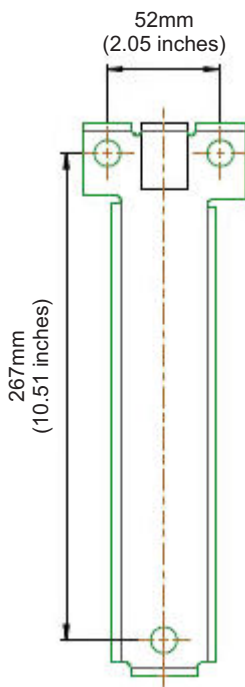


Falls can occur when working at heights resulting in serious personal injury or death.

To prevent a fall when working at heights (ladder, scaffold, manlift, roof etc.) follow safe work practices and wear appropriate fall protection equipment.

Perform the following procedure to mount the 9764 Metro Dock directly onto a wall.

- 1 Measure the height at which the 9764 Metro Dock is to be positioned on the wall. Mark this point.
- 2 At the selected installation location, mark the points on the wall for the anchor holes. See drill hole pattern below to use as a guide:



Tip: The wall spacer bracket can be placed against the wall and used as a template to mark the position of the upper and lower anchor holes.

Check the horizontal position of the planned holes with a level.

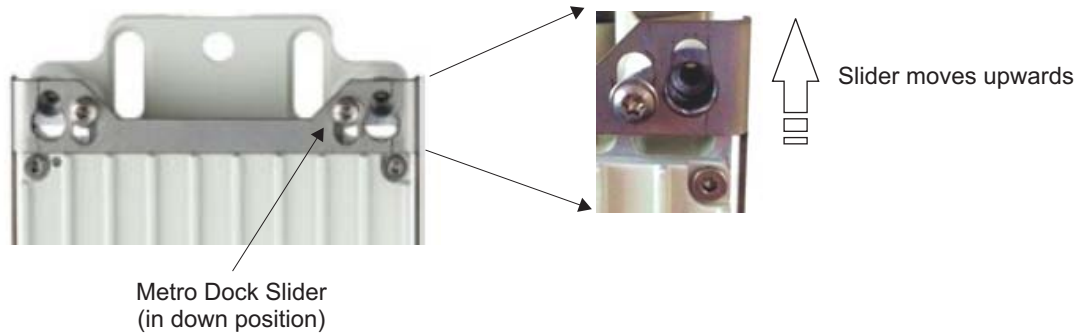
-
- 3 Drill two upper holes and one lower hole at the marked points to the appropriate depth.
-

- 4 Insert screw anchor plugs into the drilled holes and, using a hammer, tap home until the plugs are flush with the wall.

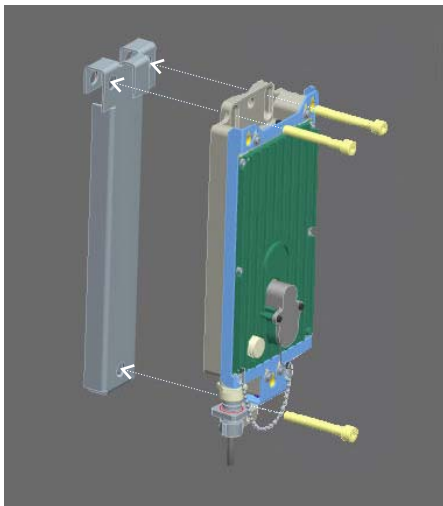
Important! Ensure the appropriate screw anchor plug size and type are used for the wall construction material.

- 5 Move the 9764 Metro Dock metal slider to the “up” position as this allows easier access to the lower attachment bolt hole:

1. insert supplied key into lock and turn 90° counterclockwise to unlock the slider.
2. move the slider into the “up” position and turn key 30° clockwise to lock the slider in the up position.



-
- 6 Align the 9764 Metro Dock bolt holes with the wall spacer bolt holes and thread bolts through the corresponding set of holes.

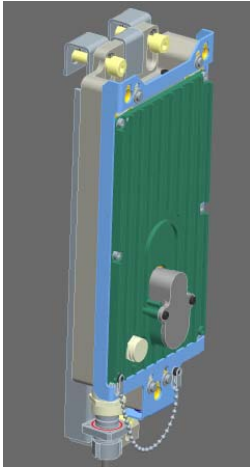


- 7 Screw in the 2 upper bolts and one lower bolt into the wall anchor holes to the appropriate depth so that the wall spacer and 9764 Metro Dock are securely attached to the wall.
- 8 Finally move the 9764 Metro Dock metal slider to the “down” position:
 1. turn the key 30° counterclockwise to unlock the slider. The slider will automatically move to the “down” position.
 2. turn the key 90° clockwise to lock the slider in the “down” position and remove the key.

END OF STEPS

Standard wall mount example

The following figure depicts a standard wall mount.



How to continue

After mounting the 9764 Metro Dock onto a pole, the cables need to be connected. Continue with the, “[9764 Metro Dock cabling](#)” (p. 3-51) chapter.

Procedure 3-4: Mount the 9764 Metro Dock onto a wall using vertical tilt bracket

Purpose

This topic describes the procedures to be followed when the Alcatel-Lucent 9764 Metro Dock is required to be mounted onto a wall or solid flat surface with vertical tilt.

Prerequisites

A site survey has been conducted and a location for the device has been selected that is both central to the public space and elevated in order to maximize coverage. Before installation begins you should ensure the following are in place:

- Ensure adequate clearance is provided for service access
- Ground cable has been routed and the site grounding system is in place
- Backhaul cable has been routed and is in place
- Any site specific fixing materials are available (for example, bolts, washers and wall plug materials).

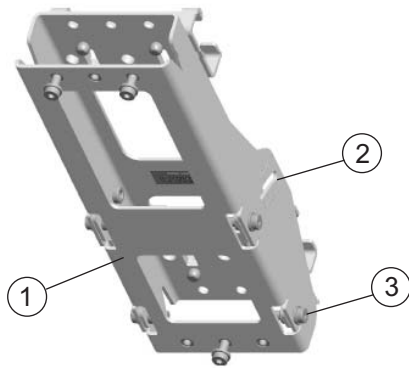
Attention: The 9764 Metro Dock must be mounted with the appropriate mounting hardware suitable for the various supporting structures, building materials and construction methods. Following a site survey, it is the responsibility of the customer to ensure that:

- the installation support structure is adequate and compliant with Building Officials and Code Administrators (BOCA), Uniform Building Code (UBC), and all other national and local codes
- the appropriate mounting hardware and any necessary supporting anchor fixings are used.

Wall mount installation

The 9764 Metro Dock is less than 1 kg (2.2 lbs) and can be easily mounted onto a wall or flat surface with the following installation kits and tools:

- Vertical tilt installation kit (provides +/- 30° tilting (up-/downward) adjustment)
- For a list of installation tools, see [“Tools required for installation”](#) (p. 3-4)

**Legend:**

1	Vertical tilt bracket	3	Bracket pivot point
2	Vertical tilt angle positioning gauge		

Before you begin

Record the 9764 Metro Dock 18 digit serial number before mounting onto a wall.

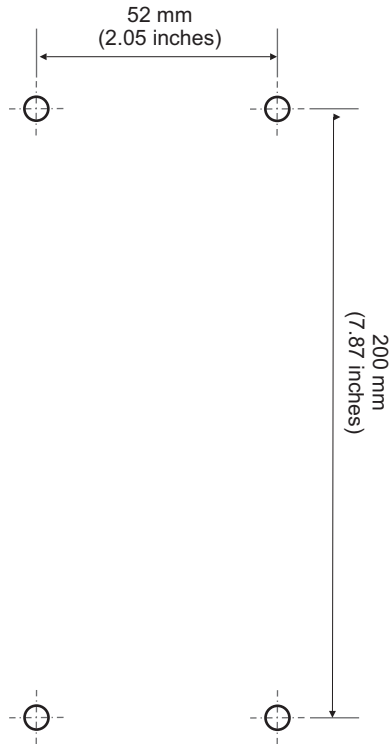
Prepare surface for bracket mounting

Falls can occur when working at heights resulting in serious personal injury or death.

To prevent a fall when working at heights (ladder, scaffold, manlift, roof etc.) follow safe work practices and wear appropriate fall protection equipment.

Perform the following procedure to prepare a wall or solid flat surface for mounting the vertical tilt bracket.

- 1 At the selected installation location, mark the points on the wall for the bracket anchor holes. See drill hole pattern below to use as a guide:



Tip: The vertical tilt bracket can be placed against the wall and be used as a template to mark the points on the wall for the bracket anchor holes.

Check the horizontal marked position of the holes with a level.

- 2 Drill the two upper holes and two lower holes at the marked points to the appropriate depth.
- 3 Insert screw anchor plugs into the drilled holes and, using a hammer, tap home until the plugs are flush with the wall.

Important! Ensure the appropriate screw anchor plug size and type are used for the wall construction material.

END OF STEPS

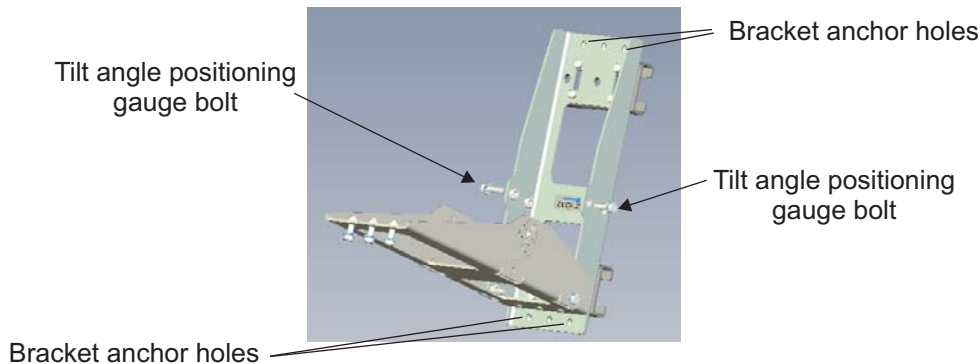
Mount the vertical tilt bracket



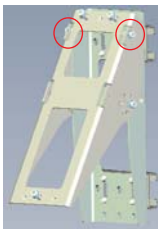
*Falls can occur when working at heights resulting in serious personal injury or death.
To prevent a fall when working at heights (ladder, scaffold, manlift, roof etc.) follow safe work practices and wear appropriate fall protection equipment.*


Perform the following procedure to attach vertical tilt bracket onto a flat surface or wall.

- 1 Remove the two tilt angle positioning gauge bolts on either side of the vertical tilt bracket and allow the front part of the bracket to pivot away allowing access to the bracket anchor holes.



- 2 Depending on the required vertical tilt orientation ensure the bracket is positioned the correct way up before placing on the wall:

If...	Then...	View...
upward vertical tilt is required	the tilt bracket must be positioned with the pivot point at the top	

If...	Then...	View...
downward vertical tilt is required	the tilt bracket must be positioned with the pivot point at the bottom	

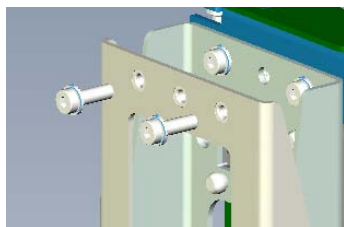
- 3 At the selected installation location, position the vertical tilt bracket so the anchor holes on the bracket align with the anchor holes drilled on the wall.
- 4 For each drilled anchor hole (upper and lower), either use the bolts from the wall fixing kit or appropriate locally sourced bolts, and insert through the vertical tilt bracket anchor holes and into the drilled holes.
- 5 Tighten bolts so that the bracket is firmly secured to the wall or flat surface.

END OF STEPS

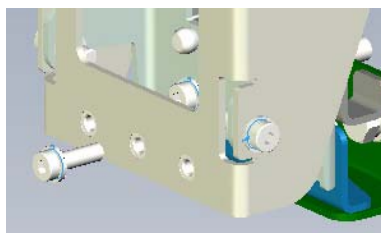
Attach 9764 Metro Dock to the tilt bracket

Perform the following procedure to attach the 9764 Metro Dock to the tilt bracket.

- 1 Unscrew and remove the two upper M6 bolts and the one lower M6 bolt from the tilt bracket.

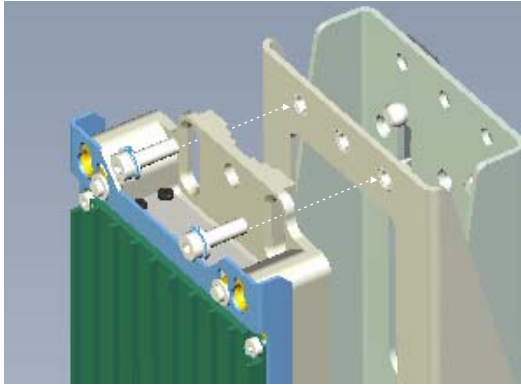


Upper M6 bolts x 2

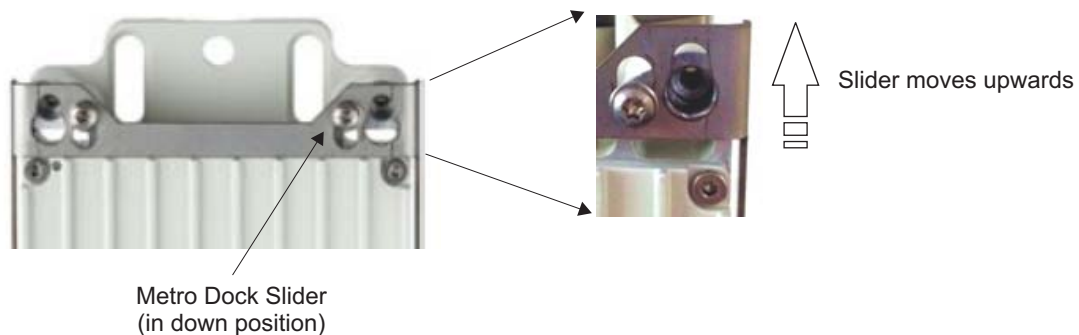


Lower M6 bolt x 1

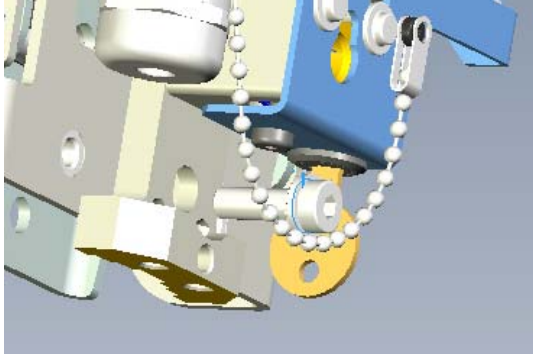
- 2 Position the 9764 Metro Dock against the front of the tilt bracket so that the two upper bolt holes and the single lower bolt hole on the 9764 Metro Dock are aligned with the bolts holes on the tilt bracket.
- 3 From the 9764 Metro Dock side, insert the two M6 bolts back through the upper bolt holes on the 9764 Metro Dock and through the upper tilt bracket bolt holes.



- 4 For each M6 bolt, screw on the retaining nut and finger tighten.
- 5 Move the 9764 Metro Dock metal slider to the “up” position as this allows easier access to the lower attachment bolt hole:
 1. insert supplied key into lock and turn 90° counterclockwise to unlock the slider.
 2. move the slider into the “up” position and turn key 30° clockwise to lock the slider in the up position.



- 6 From the 9764 Metro Dock side, insert the single M6 bolts back through the lower bolt hole on the 9764 Metro Dock and through the lower tilt bracket bolt hole.

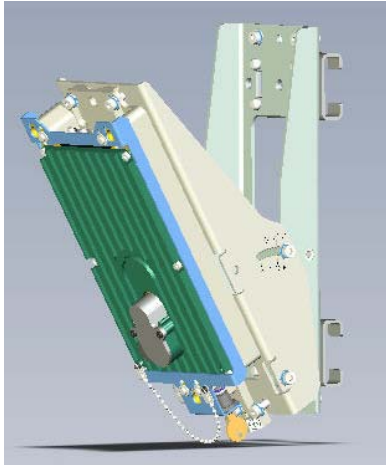


- 7 Screw the retaining nut onto the lower M6 bolt and finger tighten.
- 8 Using a 10 mm ratchet wrench, tighten the two upper and one lower M6 retaining bolts. Recommended screw torque; 7.0 N.m (62.0 lb.in).
- 9 Finally move the 9764 Metro Dock metal slider to the “down” position:
 1. turn the key 30° counterclockwise to unlock the slider. The slider will automatically move to the “down” position.
 2. turn the key 90° clockwise to lock the slider in the “down” position and remove the key.

END OF STEPS

Wall mount example (with vertical tilt)

The following figure depicts a wall mount installation with vertical tilt



How to continue

After mounting the 9764 Metro Dock onto a wall the cables need to be connected. Continue with the, [“9764 Metro Dock cabling”](#) (p. 3-51) chapter.

Procedure 3-5: Mount the 9764 Metro Dock onto a wall using horizontal tilt bracket

Purpose

This topic describes the procedures to be followed when the Alcatel-Lucent 9764 Metro Dock is required to be mounted onto a wall or solid flat surface with horizontal tilt.

Prerequisites

A site survey has been conducted and a location for the device has been selected that is both central to the public space and elevated in order to maximize coverage. Before installation begins you should ensure the following are in place:

- Ensure adequate clearance is provided for service access
- Ground cable has been routed and the site grounding system is in place
- Backhaul cable has been routed and is in place
- Any site specific fixing materials are available (for example, bolts, washers and wall plug materials).

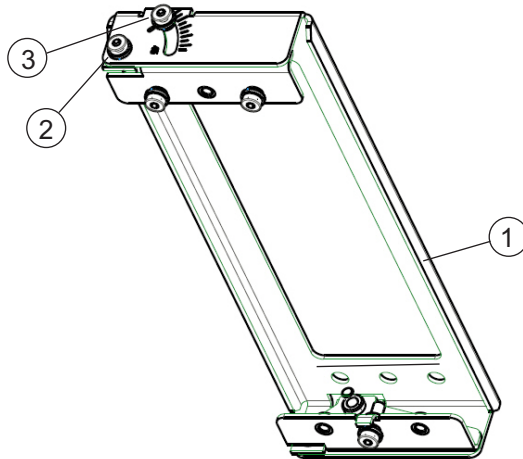
Attention: The 9764 Metro Dock must be mounted with the appropriate mounting hardware suitable for the various supporting structures, building materials and construction methods. Following a site survey, it is the responsibility of the customer to ensure that:

- the installation support structure is adequate and compliant with Building Officials and Code Administrators (BOCA), Uniform Building Code (UBC), and all other national and local codes
- the appropriate mounting hardware and any necessary supporting anchor fixings are used.

Wall mount installation

The 9764 Metro Dock is less than 1 kg (2.2 lbs) and can be easily mounted onto a wall or flat surface using the following installation kits and tools:

- Horizontal tilt installation kit (provides $\pm 45^\circ$ horizontal (left/right) adjustment)
- For a list of installation tools, see [“Tools required for installation”](#) (p. 3-4)

**Legend:**

1	Horizontal tilt bracket	3	Bracket pivot point
2	Horizontal tilt angle positioning gauge		

Before you begin

Record the 9764 Metro Dock 18 digit serial number before mounting onto a wall.

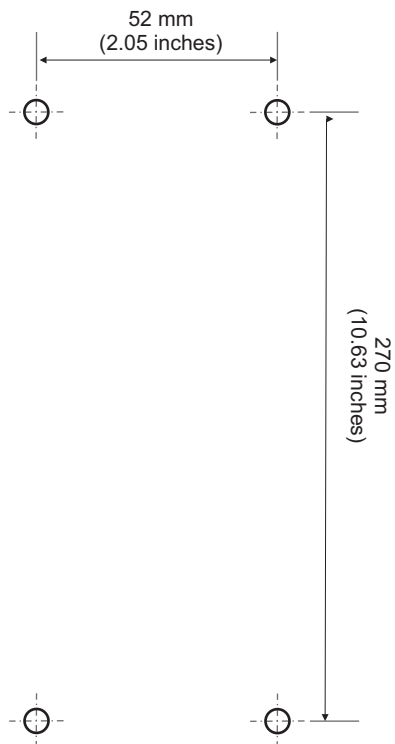
Prepare surface for bracket mounting**WARNING****Fall hazard**

Falls can occur when working at heights resulting in serious personal injury or death.

To prevent a fall when working at heights (ladder, scaffold, manlift, roof etc.) follow safe work practices and wear appropriate fall protection equipment.

Perform the following procedure to prepare a wall or solid flat surface for mounting the horizontal tilt bracket.

- 1 At the selected installation location, mark the points on the wall for the bracket anchor holes. See drill hole pattern below to use as a guide:



Tip: The horizontal tilt bracket can be placed against the wall and be used as a template to mark the points on the wall for the bracket anchor holes.

Check the horizontal marked position of the holes with a level.

- 2 Drill the two upper holes and two lower holes at the marked points to the appropriate depth.
- 3 Insert screw anchor plugs into the drilled holes and, using a hammer, tap home until the plugs are flush with the wall.

Important! Ensure the appropriate screw anchor plug size and type are used for the wall construction material.

END OF STEPS

Mount the horizontal tilt bracket

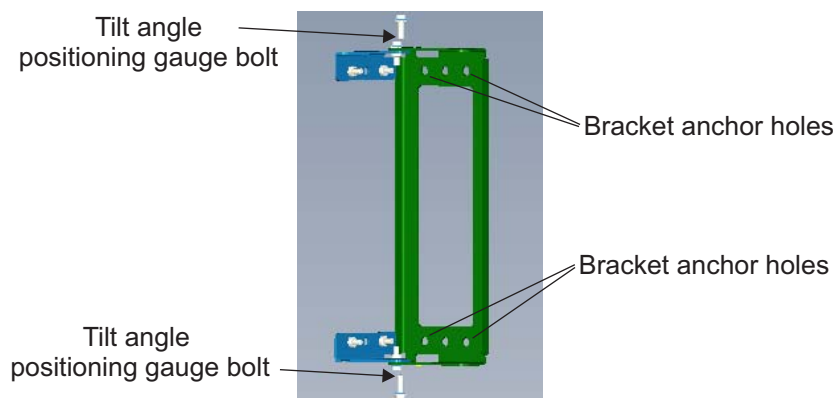


Falls can occur when working at heights resulting in serious personal injury or death.

To prevent a fall when working at heights (ladder, scaffold, manlift, roof etc.) follow safe work practices and wear appropriate fall protection equipment.

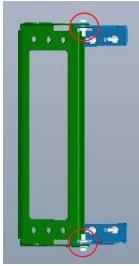
Perform the following procedure to attach the horizontal tilt bracket onto a flat surface or wall.

- 1 Remove the two tilt angle positioning gauge bolts from the top and bottom of the horizontal tilt bracket and allow the front part of the bracket to pivot away allowing access to the bracket anchor holes.



- 2 Depending on the required horizontal tilt orientation ensure the bracket is the correct way up before securing the bracket onto the wall:

If...	Then...	View...
left horizontal tilt is required	the tilt bracket must be positioned with the pivot point on the left	

If...	Then...	View...
right horizontal tilt is required	the tilt bracket must be positioned with the pivot point on the right	

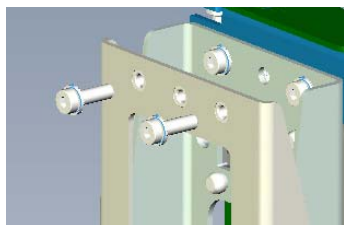
- 3 At the selected installation location, position the horizontal tilt bracket so the anchor holes on the bracket align with the anchor holes drilled in the wall.
- 4 For each drilled anchor hole (upper and lower), either use the bolts from the wall fixing kit or appropriate locally sourced bolts, and insert through the horizontal tilt bracket anchor holes and into the drilled holes.
- 5 Tighten bolts so that the bracket is firmly secured to the wall or flat surface.

END OF STEPS

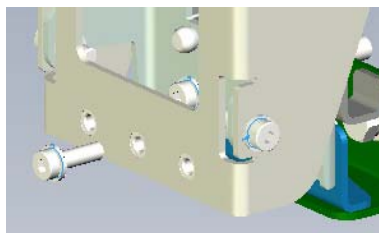
Attach 9764 Metro Dock to the tilt bracket

Perform the following procedure to attach the 9764 Metro Dock to the tilt bracket.

- 1 Unscrew and remove the two upper M6 bolts and the one lower M6 bolt from the tilt bracket.

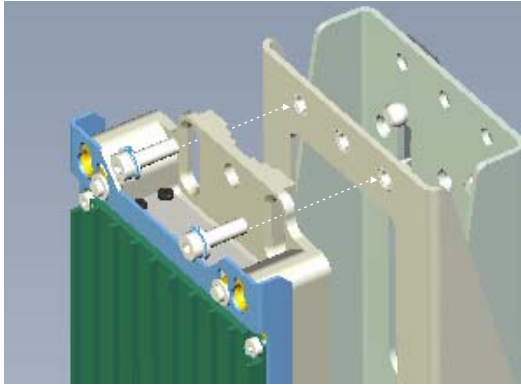


Upper M6 bolts x 2

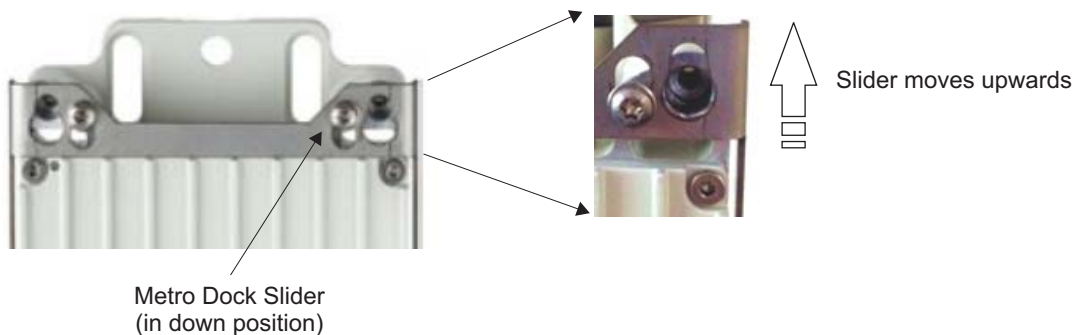


Lower M6 bolt x 1

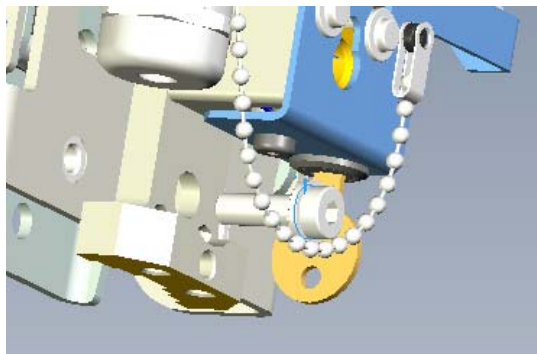
- 2 Position the 9764 Metro Dock against the front of the tilt bracket so that the two upper bolt holes and the single lower bolt hole on the 9764 Metro Dock are aligned with the bolts holes on the tilt bracket.
- 3 From the 9764 Metro Dock side, insert the two M6 bolts back through the upper bolt holes on the 9764 Metro Dock and through the upper tilt bracket bolt holes.



- 4 For each M6 bolt, screw on the retaining nut and finger tighten.
- 5 Move the 9764 Metro Dock metal slider to the “up” position as this allows easier access to the lower attachment bolt hole:
 1. insert supplied key into lock and turn 90° counterclockwise to unlock the slider.
 2. move the slider into the “up” position and turn key 30° clockwise to lock the slider in the up position.



- 6 From the 9764 Metro Dock side, insert the single M6 bolts back through the lower bolt hole on the 9764 Metro Dock and through the lower tilt bracket bolt hole.

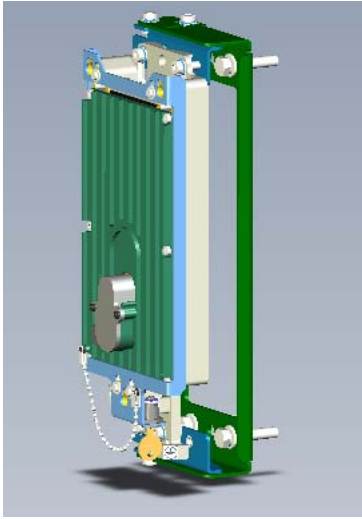


- 7 Screw the retaining nut onto the lower M6 bolt and finger tighten.
- 8 Using a 10 mm ratchet wrench, tighten the two upper and one lower M6 retaining bolts. Recommended screw torque; 7.0 N.m (62.0 lb.in).
- 9 Finally move the 9764 Metro Dock metal slider to the “down” position:
 1. turn the key 30° counterclockwise to unlock the slider. The slider will automatically move to the “down” position.
 2. turn the key 90° clockwise to lock the slider in the “down” position and remove the key.

END OF STEPS

Wall mount example (with horizontal tilt)

The following figure depicts a wall mount installation with horizontal tilt.



How to continue

After mounting the 9764 Metro Dock onto a wall the cables need to be connected.
Continue with the, [“9764 Metro Dock cabling”](#) (p. 3-51) chapter.

Procedure 3-6: Mount the 9764 Metro Dock onto a wall using combined horizontal and vertical tilt brackets

Purpose

This topic describes the procedures to be followed when the Alcatel-Lucent 9764 Metro Dock is required to be mounted onto a wall or solid flat surface with horizontal and vertical tilt.

Prerequisites

A site survey has been conducted and a location for the device has been selected that is both central to the public space and elevated in order to maximize coverage. Before installation begins you should ensure the following are in place:

- Ensure adequate clearance is provided for service access
- Ground cable has been routed and the site grounding system is in place
- Backhaul cable has been routed and is in place
- Any site specific fixing materials are available (for example, bolts, washers and wall plug materials).

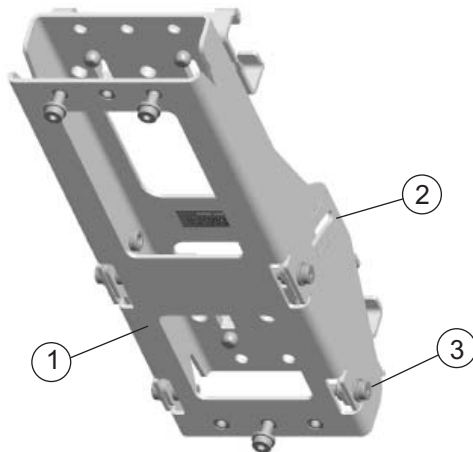
Attention: The 9764 Metro Dock must be mounted with the appropriate mounting hardware suitable for the various supporting structures, building materials and construction methods. Following a site survey, it is the responsibility of the customer to ensure that:

- the installation support structure is adequate and compliant with Building Officials and Code Administrators (BOCA), Uniform Building Code (UBC), and all other national and local codes
- the appropriate mounting hardware and any necessary supporting anchor fixings are used.

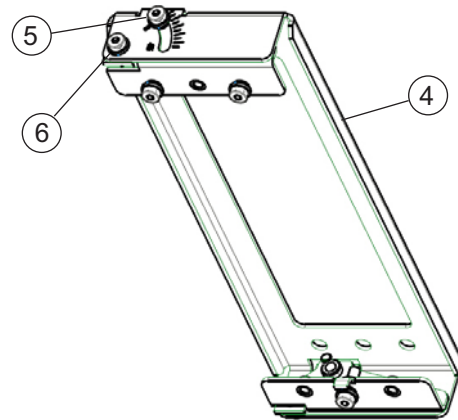
Wall mount installation

The 9764 Metro Dock is less than 1 kg (2.2 lbs) and can be easily mounted onto a wall or flat surface with horizontal and vertical tilt using the orderable installation kits:

- Vertical tilt installation kit (provides +/- 30° tilting (up-/downward) adjustment)
- Horizontal tilt installation kit (provides +/-45° azimuth (left/right) adjustment)
- For a list of installation tools, see [“Tools required for installation” \(p. 3-4\)](#)



Vertical tilt bracket



Horizontal tilt bracket

Legend:

1	Vertical tilt bracket	4	Horizontal tilt bracket
2	Vertical tilt angle positioning gauge	5	Horizontal tilt angle positioning gauge
3	Vertical tilt pivot point	6	Horizontal tilt pivot point

Before you begin

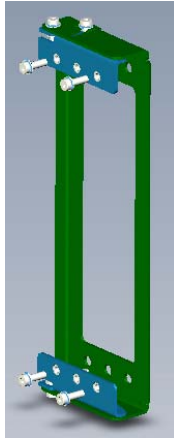
Record the 9764 Metro Dock 18 digit serial number before mounting onto a wall.

Combine the horizontal and vertical tilt brackets

Note: For combined horizontal and vertical tilt, the horizontal tilt bracket is attached to the wall or flat surface. The vertical tilt bracket is attached to the horizontal tilt bracket.

Perform the following procedure to combine the tilt brackets.

- 1 Unscrew and remove the two upper and two lower M6 bolts on the front of the horizontal tilt bracket.



- 2 Align the attachment holes on the vertical tilt bracket with the attachments holes on the horizontal tilt bracket.

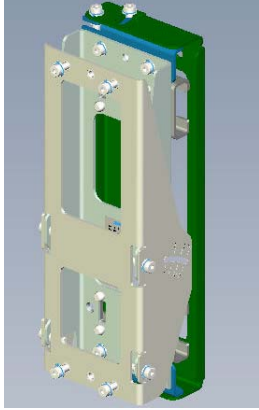
Important! Ensure the brackets are combined in the correct way based on the planned horizontal and vertical tilt orientation of the equipment.

If...	Then...	View...
left horizontal tilt and downward vertical tilt is required or right horizontal tilt and upward vertical tilt is required	the brackets should be attached with the horizontal bracket pivot point on the left and the vertical bracket pivot point at the bottom Note: when positioning on a wall the bracket assembly can be turned through 180° for right horizontal tilt and upward vertical tilt	
right horizontal tilt and downward vertical tilt is required or left horizontal tilt and upward vertical tilt is required	the brackets should be attached with the horizontal bracket pivot point on the right and the vertical bracket pivot point at the bottom Note: when positioning on a wall the bracket assembly can be turned through 180° for left horizontal tilt and upward vertical tilt	

- 3 Insert the two upper and two lower bolts through the attachment holes on the vertical tilt bracket and through the attachment holes on the horizontal tilt bracket.

-
-
- 4 For each bolt, screw on the retaining nut. Using a 10 mm ratchet wrench, tighten the two upper and two lower M6 retaining bolts so that the brackets are securely attached.

Recommended screw torque; 7.0 N.m (62.0 lb.in).



END OF STEPS

Prepare surface for bracket mounting

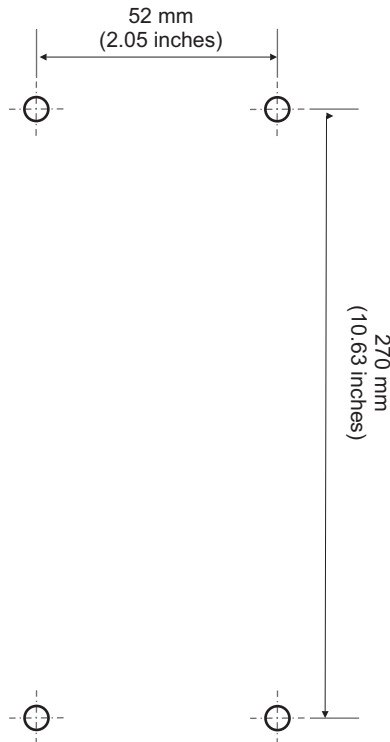


Falls can occur when working at heights resulting in serious personal injury or death.

To prevent a fall when working at heights (ladder, scaffold, manlift, roof etc.) follow safe work practices and wear appropriate fall protection equipment.

Perform the following procedure to prepare a wall or solid flat surface for mounting the combined horizontal/vertical tilt bracket.

- 1 At the selected installation location, mark the points on the wall for the bracket anchor holes. See drill hole pattern below to use as a guide:



Tip: The combined horizontal/vertical tilt bracket can be placed against the wall and be used as a template to mark the points on the wall for the bracket anchor holes.

Check the horizontal marked position of the holes with a level.

- 2 Drill the two upper holes and two lower holes at the marked points to the appropriate depth.
- 3 Insert screw anchor plugs into the drilled holes and, using a hammer, tap home until the plugs are flush with the wall.

Important! Ensure the appropriate screw anchor plug size and type are used for the wall construction material.

END OF STEPS

Mount combined horizontal/vertical tilt brackets

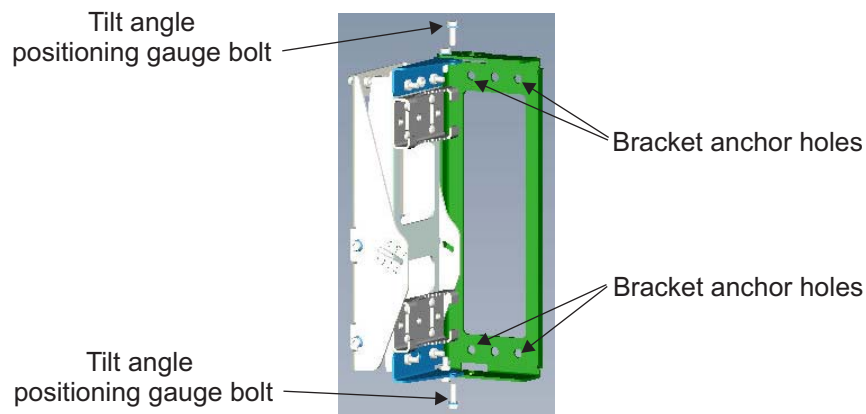


Falls can occur when working at heights resulting in serious personal injury or death.

To prevent a fall when working at heights (ladder, scaffold, manlift, roof etc.) follow safe work practices and wear appropriate fall protection equipment.

Perform the following procedure to attach the combined horizontal/vertical tilt bracket onto a flat surface or wall.

- 1 Remove the two tilt angle positioning gauge bolts from the top and bottom of the horizontal tilt bracket and allow the front part of the bracket to pivot away allowing access to the bracket anchor holes.



- 2 At the selected installation location, position the combined horizontal/vertical tilt bracket so the anchor holes on the bracket align with the anchor holes drilled in the wall.

Important! Ensure the combined brackets are positioned on the wall correctly based on the planned horizontal and vertical tilt orientation of the equipment.

- 3 For each drilled anchor hole (upper and lower), either use the bolts from the wall fixing kit or appropriate locally sourced bolts, and insert through the vertical tilt bracket anchor holes and into the drilled holes.

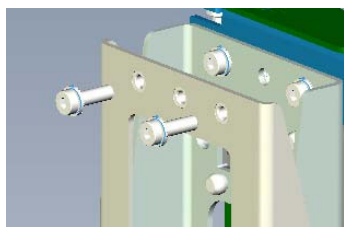
- 4 Tighten bolts so that the bracket is firmly secured to the wall or flat surface.

END OF STEPS

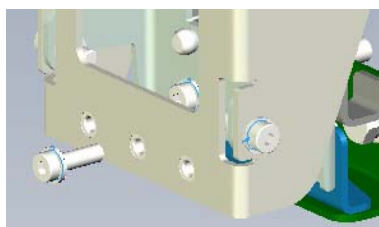
Attach 9764 Metro Dock to the tilt bracket

Perform the following procedure to attach the 9764 Metro Dock to the tilt bracket.

- 1 Unscrew and remove the two upper M6 bolts and the one lower M6 bolt from the tilt bracket.

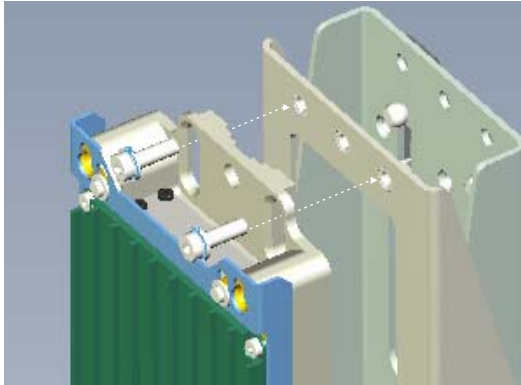


Upper M6 bolts x 2

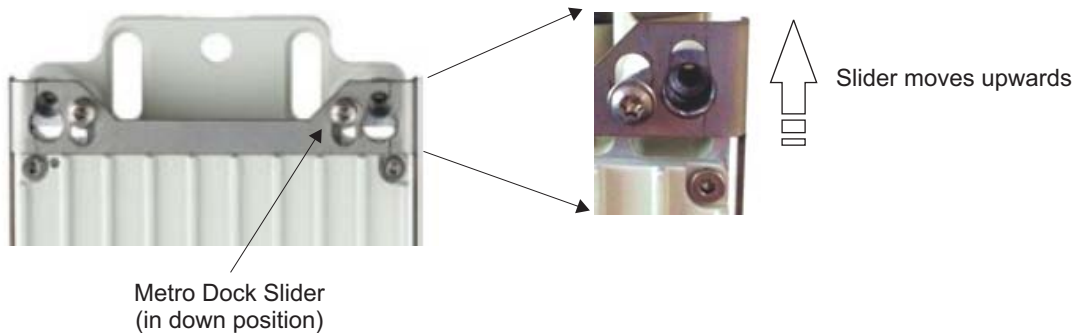


Lower M6 bolt x 1

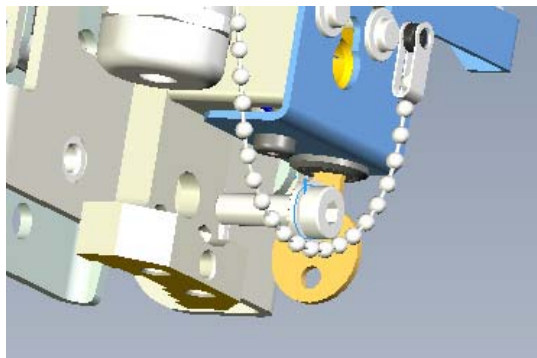
- 2 Position the 9764 Metro Dock against the front of the tilt bracket so that the two upper bolt holes and the single lower bolt hole on the 9764 Metro Dock are aligned with the bolts holes on the tilt bracket.
- 3 From the 9764 Metro Dock side, insert the two M6 bolts back through the upper bolt holes on the 9764 Metro Dock and through the upper tilt bracket bolt holes.



- 4 For each M6 bolt, screw on the retaining nut and finger tighten.
- 5 Move the 9764 Metro Dock metal slider to the “up” position as this allows easier access to the lower attachment bolt hole:
 1. insert supplied key into lock and turn 90° counterclockwise to unlock the slider.
 2. move the slider into the “up” position and turn key 30° clockwise to lock the slider in the up position.



- 6 From the 9764 Metro Dock side, insert the single M6 bolts back through the lower bolt hole on the 9764 Metro Dock and through the lower tilt bracket bolt hole.

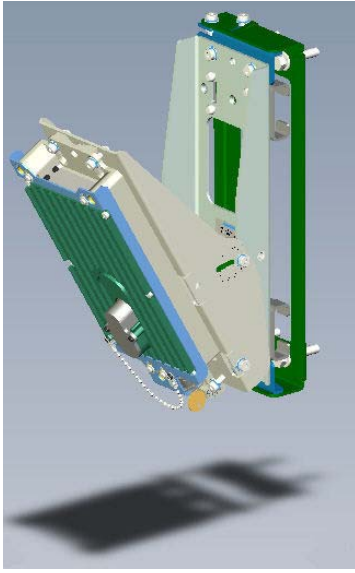


- 7 Screw the retaining nut onto the lower M6 bolt and finger tighten.
- 8 Using a 10 mm ratchet wrench, tighten the two upper and one lower M6 retaining bolts. Recommended screw torque; 7.0 N.m (62.0 lb.in).
- 9 Finally move the 9764 Metro Dock metal slider to the “down” position:
 1. turn the key 30° counterclockwise to unlock the slider. The slider will automatically move to the “down” position.
 2. turn the key 90° clockwise to lock the slider in the “down” position and remove the key.

END OF STEPS

Wall mount with horizontal/vertical tilt example

The following figure depicts a wall mount installation with horizontal/vertical tilt.



How to continue

After mounting the 9764 Metro Dock onto a wall the cables need to be connected. Continue with the, [“9764 Metro Dock cabling”](#) (p. 3-51) chapter.

9764 Metro Dock cabling

Overview

Purpose

This section provides instructions for routing and connecting the following cables to the 9764 Metro Dock module:

- Grounding cable
- Ethernet cable

Note: For outdoor NAR installations, or where local regulations dictate, the facility and power cables are required to be routed to the equipment within rigid-steel or liquid-tight flexible metal conduit. As part of site preparation, the customer must provide the metal conduit and associated fittings for cable routes and connecting conduit to the outdoor equipment.

Contents

Procedure 3-7: 9764 Metro Dock ground cabling	3-52
Procedure 3-8: 9764 Metro Dock Ethernet cabling - fiber optic	3-54
Procedure 3-9: 9764 Metro Dock Ethernet cabling - electrical	3-59

Procedure 3-7: 9764 Metro Dock ground cabling

Purpose

This topic describes the procedures to be followed when connecting the grounding cable to the 9764 Metro Dock.

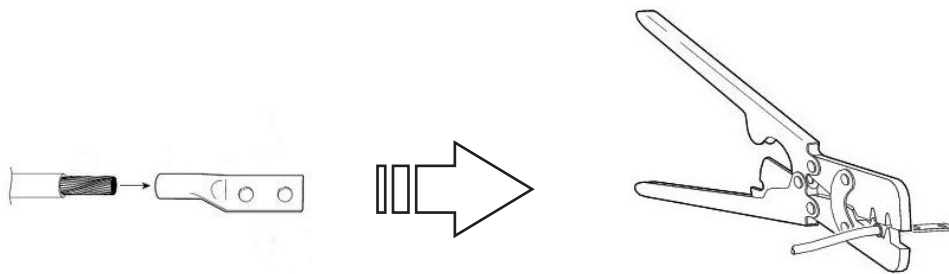
Important! The following must be observed:

- This equipment must be externally grounded to an appropriate grounding system using Yellow/Green 10 mm² insulated ground cable. Grounding cable can be ordered from Alcatel-Lucent or be locally supplied.
- All grounding system material (cable, connectors, etc.) must be of high quality, that resist deterioration and require little or no maintenance.
- Installation of the equipment must comply with local and national electrical codes and guidelines. If there is uncertainty that suitable grounding is available contact the appropriate site preparation contact or electrical inspection authority.

Connect the ground cable

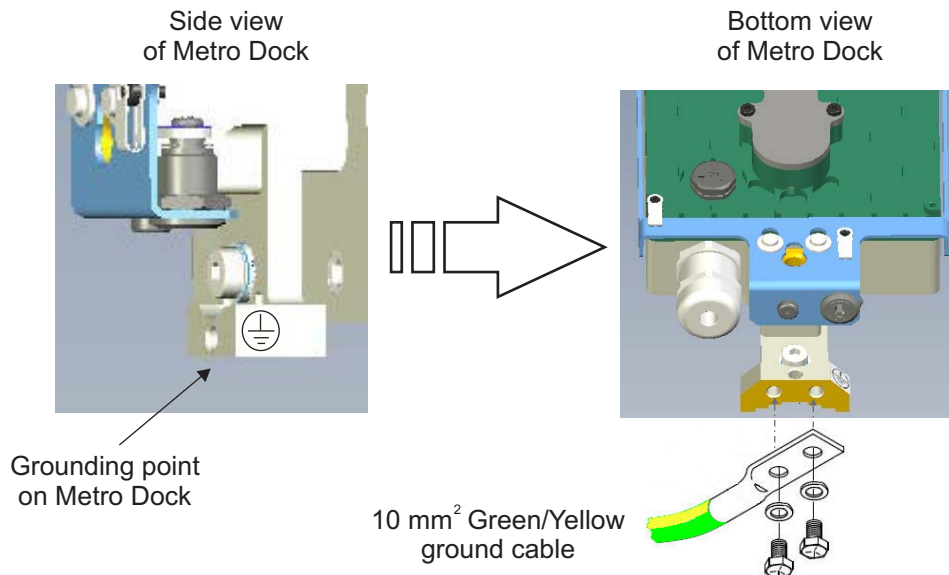
To attach the ground cable to the 9764 Metro Dock perform the following steps.

- 1 Route the ground cable from the site grounding system to the 9764 Metro Dock.
- 2 At the 9764 Metro Dock cut the ground cable to a proper length and strip the cable end to expose approximately 20 mm (0.75 in).
- 3 Place a double hole cable lug (with a holes suitable for M6 screws) onto the end of the cable. Using an appropriate crimping tool, crimp the lug onto the cable.



- 4 Clean the contact surface area of the cable lug and earthing point on the 9764 Metro Dock and use antioxidant to avoid oxidation.

- 5 Place one washer (wave spring washer) on each terminal screw, align the grounding cable lug holes with the earthing terminal holes on the 9764 Metro Dock, and secure the cable to the grounding point using the terminal screws.



- 6 Secure grounding cable to the wall/pole.
Important! The installation location (wall/pole) must be grounded in accordance with local regulatory guidelines
- 7 Finally, crimp on a double cable lug at the other end of the ground cable and attach to the main grounding system.

END OF STEPS

Procedure 3-8: 9764 Metro Dock Ethernet cabling - fiber optic

Purpose

This topic describes the procedures to be followed when connecting the optical Ethernet cable to the 9764 Metro Dock.

Cabling ancillary items

The following cabling related ancillary items can be ordered from Alcatel-Lucent when the backhaul infrastructure is configured for optical Ethernet:

- SFP GBE 1000BaseLX SFP module (SM or MM). See “[SFP modules](#)” (p. 2-10)
- Fiber Optic Ethernet cable with LC connector to optical SFP module at the 9764 Metro Dock module. See “[Ethernet cable - Optical](#)” (p. 2-11)

Install SFP transceiver module



NOTICE

ESD hazard

Semiconductor devices can be damaged by electrostatic discharges (ESD)

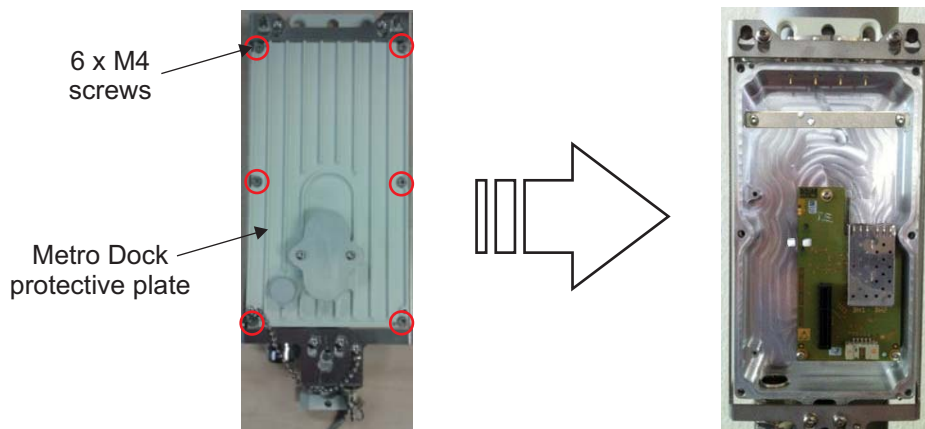
Always observe the general ESD instructions for handling modules containing semiconductor components.

Before the optical Ethernet cable can be connected the SFP port(s) have to be equipped with the appropriate optical SFP transceiver (either 1000Base-SX Multi Mode or 1000Base-LX Single Mode) according to the network specifications.

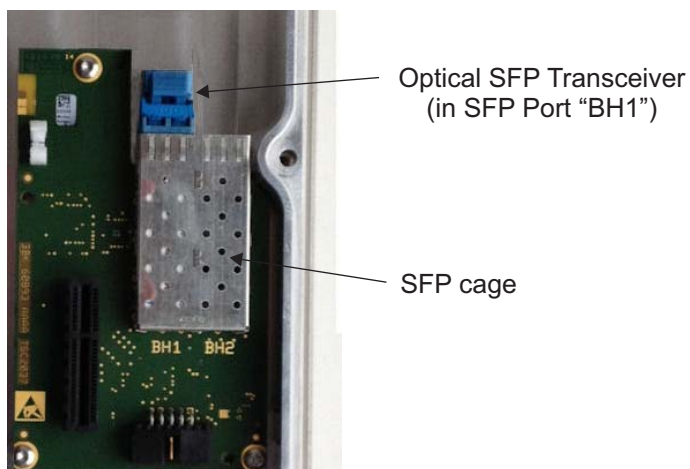
To install an SFP transceiver module into the 9764 Metro Dock module SFP port:

-
- 1 Firstly, in order to remove the 9764 Metro Dock protective plate, ensure the Metrodock metal slider is in the default “down” position. This allows easier access to all six of the plate retention screws.
 - 2 On the front of the protective plate unscrew and safely store the 6 x M4 plate retention screws (Hex wrench size, 2.5 mm).

Carefully lift off the 9764 Metro Dock protective plate.



- 3 Remove the SFP transceiver module from its protective packaging.
Important! Do not remove the SFP transceiver module dust plugs until directed to do so later in the procedure.
- 4 Check the label on the SFP transceiver module body to verify that you have the correct model for your network.
- 5 Align the optical SFP transceiver module with the 9764 Metro Dock SFP port labelled “BH 1”) and insert the SFP module into the socket until you feel the connector latch into place.



Attention: If the SFP module resists as you insert it, do not force it. Remove the module, turn it over, and try reinserting.

- 6 Push up and latch the SFP module locking bar into position to secure SFP transceiver module into the port.
- 7 To check that the SFP transceiver module is seated and latched properly, grasp the SFP module and try to remove it without releasing the latch.

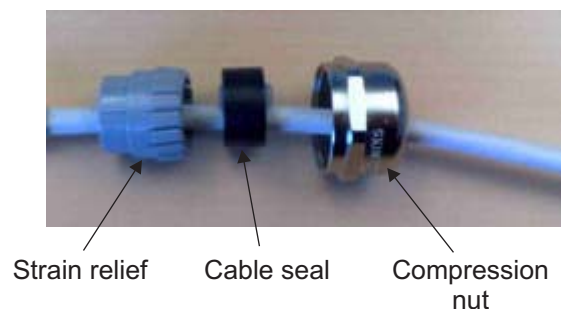
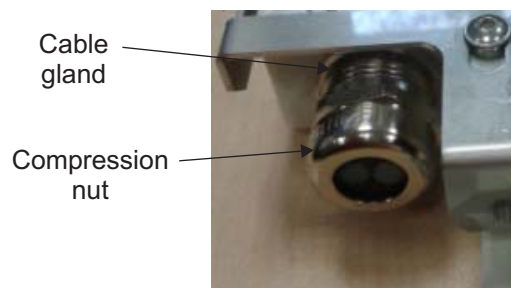
If the SFP module cannot be removed, it is installed and seated properly. If the SFP module can be removed, reinsert it until the module is latched securely into the socket.

END OF STEPS

Connect the Ethernet cable

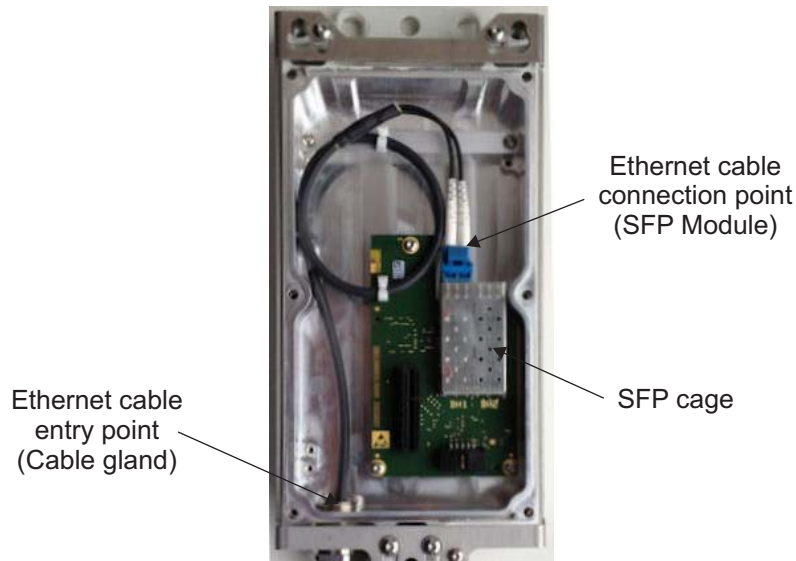
To connect the optical Ethernet cable to the Alcatel-Lucent 9764 Metro Dock perform the following steps.

- 1 Route the optical Ethernet cable coming from the backhaul system to the 9764 Metro Dock.
- 2 Unscrew and remove the rounded compression nut from the cable gland located on the bottom of the 9764 Metro Dock casing. In the following order place the rounded compression nut, the double slotted cable seal and the strain relief onto the cable, as shown.



- 3 Close off the unused slot in the cable seal by inserting a blind plug.
- 4 Feed the Ethernet cable through the gland and, within the 9764 Metro Dock casing, carefully route the cable to the port that houses the SFP transceiver module.

- 5 Remove dust plugs from the optical cable LC connectors and the SFP transceiver module. Immediately insert the optical cable LC connectors into the SFP transceiver module.



- 6 Screw the rounded compression nut back onto the main body of the gland. Use an adjustable or open-end wrench to tighten the compression nut

Important! It is recommended that the compression nut is torqued to 2.5 N.m (1.8 lb.ft) in order to create a watertight seal and avoid a potential loose connection.

- 7 Replace and reattach the 9764 Metro Dock protective plate via the six plate retention screws.

Important! Ensure the plate gasket is seated correctly in the groove on the underside of the plate. Tighten the six plate retention screws in the sequence shown. Recommended torque, 2.0 N.m (1.5 lb.ft).



8 Finally, secure the Ethernet cable to the wall/pole.

Important! When securing cables ensure the following to avoid cable damage:

- Secure cables with tie wraps. Use additional tie wraps wherever necessary for neatness
- All cables should be run parallel with no twisting or tangled cables
- Avoid excessive tension on the cable.

END OF STEPS

How to continue

After the grounding and Ethernet cable connections are completed:

If...	Then...
The 9764 MCO module is to be installed at a later time	continue with Procedure 3-10: “Final installation activities and checks” (p. 3-67)
Only the 9764 MCO module is to be installed immediately after Metro Dock installation	continue with Chapter 4, “Installation of the 9764 MCO module”

Procedure 3-9: 9764 Metro Dock Ethernet cabling - electrical

Purpose

This topic describes the procedures to be followed when connecting the electrical Ethernet cable to the 9764 Metro Dock.

Note: CE certification for electrical backhaul will be completed by RFOA.

Cabling ancillary items

The following Ethernet cabling related ancillary items are required when the backhaul infrastructure is configured for electrical Ethernet:

- 10/100/1000Base-T Electrical SFP module. See “[SFP modules](#)” (p. 2-10)
- Electrical Ethernet cable with RJ45 connector to electrical SFP module at the 9764 Metro Dock module. See “[Ethernet cable - Electrical](#)” (p. 2-10)
- Ethernet surge arrestor kit (optional)
Can be installed if additional surge protection is required.

Install SFP transceiver module



NOTICE

ESD hazard

Semiconductor devices can be damaged by electrostatic discharges (ESD)

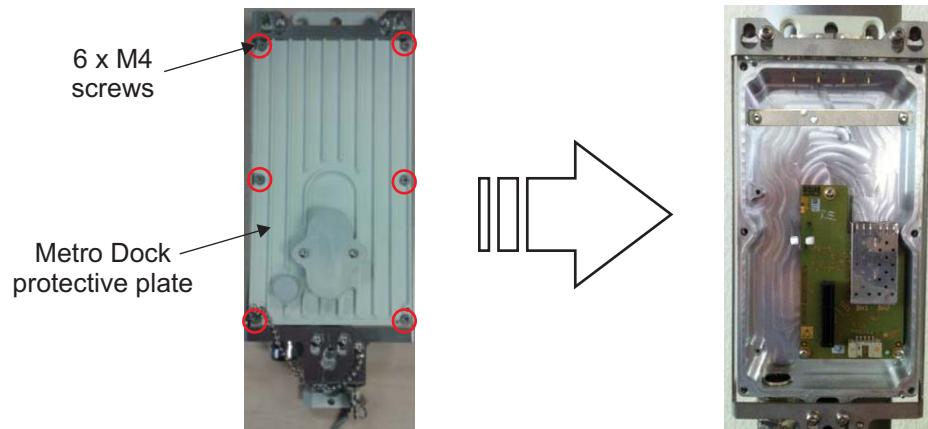
Always observe the general ESD instructions for handling modules containing semiconductor components.

Before the optical Ethernet cable can be connected the SFP port(s) have to be equipped with the appropriate optical SFP transceiver (either 1000Base-SX Multi Mode or 1000Base-LX Single Mode) according to the network specifications.

To install an SFP transceiver module into the 9764 Metro Dock module SFP port:

- 1 Firstly, in order to remove the 9764 Metro Dock protective plate, ensure the Metrodock metal slider is in the default “down” position. This allows easier access to all six of the plate retention screws.
- 2 On the front of the protective plate unscrew and safely store the 6 x M4 plate retention screws (Hex wrench size, 2.5 mm).

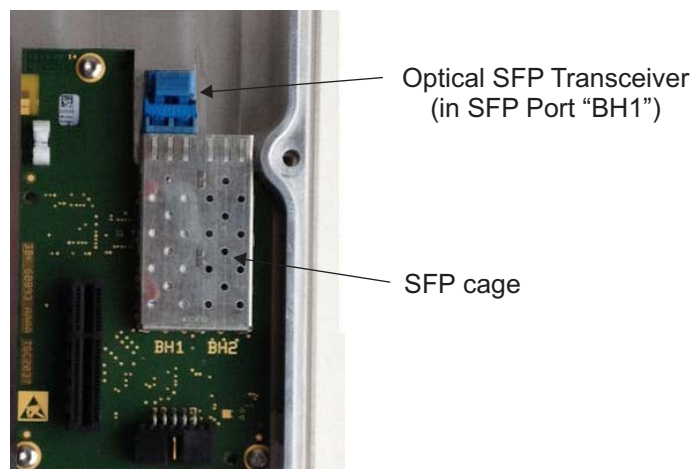
Carefully lift off the 9764 Metro Dock protective plate.



- 3 Remove the SFP transceiver module from its protective packaging.

Important! Do not remove the SFP transceiver module dust plugs until directed to do so later in the procedure.

- 4 Check the label on the SFP transceiver module body to verify that you have the correct model for your network.
- 5 Align the optical SFP transceiver module with the 9764 Metro Dock SFP port labelled “BH 1”) and insert the SFP module into the socket until you feel the connector latch into place.



Attention: If the SFP module resists as you insert it, do not force it. Remove the module, turn it over, and try reinserting.

- 6 Push up and latch the SFP module locking bar into position to secure SFP transceiver module into the port.

- 7 To check that the SFP transceiver module is seated and latched properly, grasp the SFP module and try to remove it without releasing the latch.

If the SFP module cannot be removed, it is installed and seated properly. If the SFP module can be removed, reinsert it until the module is latched securely into the socket.

END OF STEPS

Connect the Ethernet cable

Follow these step in order to connect the electrical Ethernet cable to the SFP module in the 9764 Metro Dock.

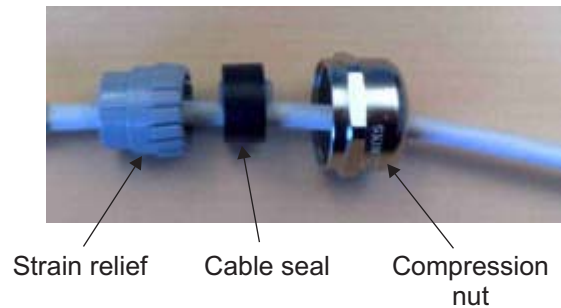
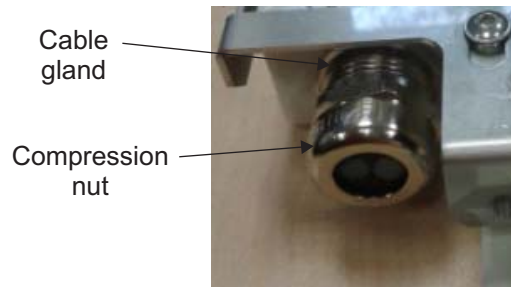
- 1 Route the electrical Ethernet cable coming from the backhaul system to the 9764 Metro Dock.

Note: If an additional external surge arrestor is used, route the Ethernet cable coming from the backhaul system to the surge arrestor, and then use a short cable from the surge arrestor to the 9764 Metro Dock.

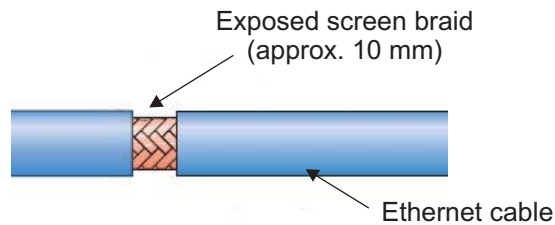
- 2 Remove the RJ45 connector cover before feeding the cable through the cable gland.



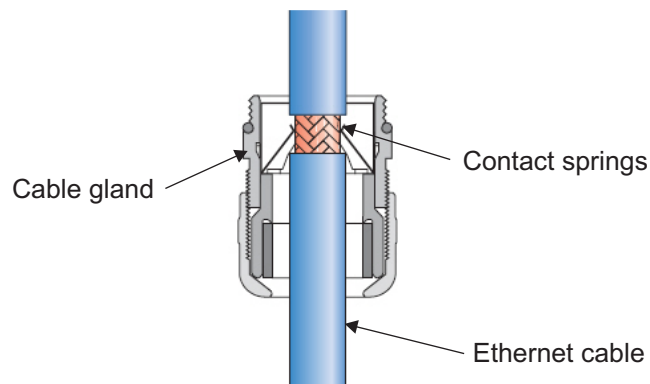
- 3 Unscrew and remove the rounded compression nut from the cable gland located on the bottom of the 9764 Metro Dock casing. In the following order place the rounded compression nut, the double slotted cable seal and the strain relief onto the cable, as shown.



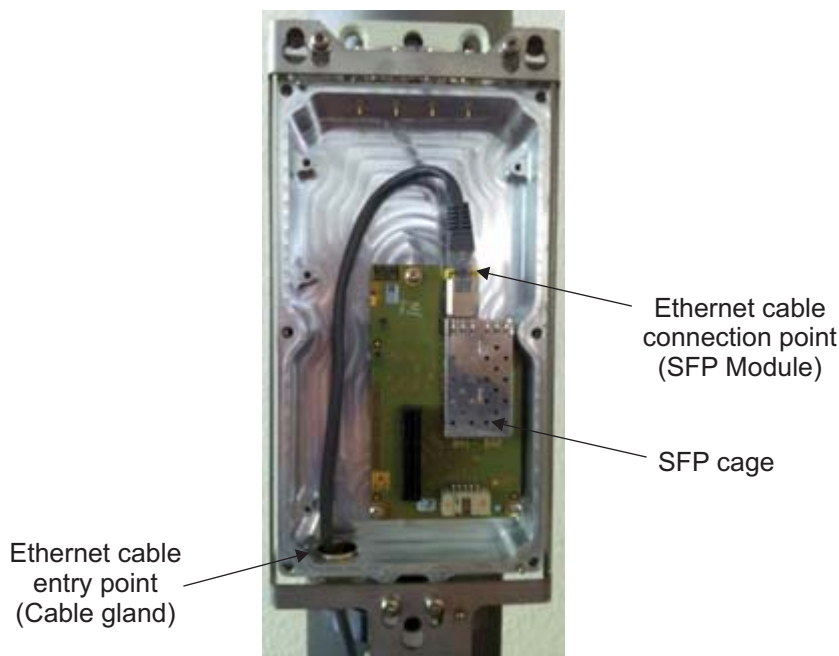
- 4 Close off the unused slot in the cable seal by inserting a blind plug.
- 5 Determine the point on the cable where the cable will be clamped inside the cable gland. At this point expose the screen braid (approximately 10 mm) by cutting through the cable jacket.



- 6 Feed the cable through the gland until a connection is made between the exposed cable screen braid and the contact spring inside the gland.



- 7 Reattach the RJ45 connector cover.
- 8 Within the 9764 Metro Dock casing carefully route the cable to the port that houses the SFP transceiver module. Insert the RJ45 connector into the SFP transceiver module.



- 9 Screw the rounded compression nut back onto the main body of the gland. Use an adjustable or open-end wrench to tighten the compression nut
Important! It is recommended that the compression nut is torqued to 2.5 N.m (1.8 lb.ft) in order to create a watertight seal and avoid a potential loose connection.
- 10 Replace and reattach the 9764 Metro Dock protective plate via the six plate retention screws.
Important! Ensure the plate gasket is seated correctly in the groove on the underside of the plate. Tighten the six plate retention screws in the sequence shown. Recommended torque, 2.0 N.m (1.5 lb.ft).



- 11 Finally, secure the Ethernet cable to the wall/pole.

Important! When securing cables ensure the following to avoid cable damage:

- Secure cables with tie wraps. Use additional tie wraps wherever necessary for neatness
- All cables should be run parallel with no twisting or tangled cables
- Avoid excessive tension on the cable.

END OF STEPS

Mount and cable the surge arrestor

Follow these step in order to mount (either pole or wall) the surge arrestor onto the surge arrestor bracket and connect the Ethernet cables.

- 1 On the surge arrestor, unscrew the lower weatherized strain relief connector and locking nut from the surge arrestor.
- 2 Site the surge arrestor onto the bracket so that the lower threaded Ethernet connection point is positioned through the arrestor mounting hole.
- 3 Screw the arrestor locking nut back onto the arrestor and tighten so that the arrestor is securely attached to the bracket.

- 4 Carefully feed the end of Ethernet cable coming from the Customer Network Interface Device through the previously unscrewed lower strain relief connector.
- 5 Plug the Ethernet cable RJ45 connector into the lower connector on the arrestor. Screw the weatherized strain relief connector back onto the arrestor and tighten.
- 6 At the top of the arrestor, unscrew the upper weatherized strain relief connector from the surge arrestor.
- 7 Carefully feed the end of Ethernet cable coming from the 9764 Metro Dock through the upper strain relief connector.
- 8 Plug the Ethernet cable RJ45 connector into the upper connector on the arrestor. Screw the weatherized strain relief connector back onto the arrestor and tighten.
- 9 Finally, secure the Ethernet cable to the wall/pole.

Important! When securing cables ensure the following to avoid cable damage:

 - Secure cables with tie wraps. Use additional tie wraps wherever necessary for neatness
 - All cables should be run parallel with no twisting or tangled cables
 - Avoid excessive tension on the cable.

END OF STEPS

How to continue

After the grounding and Ethernet cable connections are completed:

If...	Then...
The 9764 MCO module is to be installed at a later time	continue with Procedure 3-10: “Final installation activities and checks” (p. 3-67)
Only the 9764 MCO module is to be installed immediately after Metro Dock installation	continue with Chapter 4, “Installation of the 9764 MCO module”

9764 Metro Dock post-installation

Overview

Purpose

This section provides post-installation information and activities that should be carried out after the Alcatel-Lucent 9764 Metro Dock has been installed.

Contents

Procedure 3-10: Final installation activities and checks	3-67
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Procedure 3-10: Final installation activities and checks

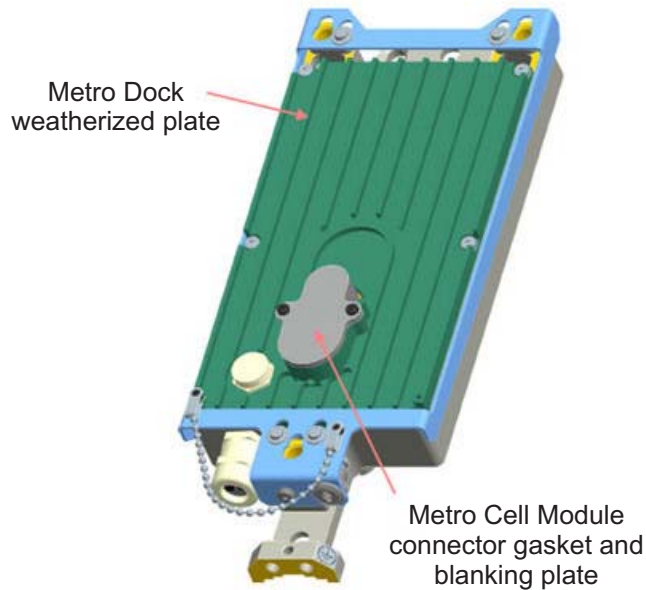
Overview

This topic describes the final 9764 Metro Dock installation activities and checks to be carried out if the 9764 MCO module is to be connected at a later time.

9764 Metro Dock plate and connection covers

If the 9764 MCO module is to be connected at a later time ensure that the following are in place in order to protect the 9764 Metro Dock against the elements.

- The 9764 Metro Dock is fitted with its weatherized plate
- The 9764 MCO module connector is fitted with its gasket and blanking plate.



Final installation checks

Before leaving the installation site, check the following:

- 1 Check the overall installation. Verify that mounted equipment is secure and that no unintentional mechanical alteration has occurred to either the equipment itself or the installation infrastructure.
- 2 Ensure all the exterior connections are secure.

-
-
- 3 Ensure all cables are secured along their routes.
-
- 4 Finally, inspect the site for loose tools, materials, and parts. Remove all such loose tools, materials, and parts.

.....

END OF STEPS

.....

4 Installation of the 9764 MCO module

Overview

Purpose

This chapter provides instructions for installing the Alcatel-Lucent 9764 Metro Cell Outdoor module.

Contents

9764 MCO pre-installation	4-2
Pre-installation information	4-3
9764 MCO cabling	4-4
Site power requirements (DC)	4-5
Product power requirements	4-8
Procedure 4-1: Connect power cable	4-10
9764 MCO installation	4-13
Procedure 4-2: Attach 9764 MCO module to 9764 Metro Dock	4-14
Procedure 4-3: Orient 9764 MCO module	4-17
9764 MCO post-installation	4-19
Procedure 4-4: Post installation activities	4-20
Procedure 4-5: Perform commissioning of the 9764 MCO	4-21

9764 MCO pre-installation

Overview

Purpose

This section provides pre-installation information and lists tools and materials required to install the Alcatel-Lucent 9764 Metro Cell Outdoor.

Contents

Pre-installation information	4-3
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Pre-installation information

Product delivery contents

The following items are supplied with the 9764 MCO module:

- The 9764 MCO module

Variable parts and ancillary items

In addition to the standard delivered parts, the following variable and ancillary items are available:

- Molex 1212020011 DC power connector
- Power supply cable (100 m roll)

Installation tools required

The following tools may be used during installation:

- Pliers
- Screwdrivers (power and/or manual):
 - Phillips (flat blade)
 - Torx (T-25 and T-40)
- Assorted cable ties

9764 MCO cabling

Overview

Purpose

This section provides instructions for routing and connecting the following cables to the Alcatel-Lucent 9764 Metro Cell Outdoor module:

- Power cable

Note: For outdoor NAR installations, or where local regulations dictate, the facility and power cables are required to be routed to the equipment within rigid steel or liquid-tight flexible metal conduit. As part of site preparation, the customer must provide the metal conduit and associated fittings for cable routes and connecting conduit to the outdoor equipment.

Contents

Site power requirements (DC)	4-5
Product power requirements	4-8
Procedure 4-1: Connect power cable	4-10

Site power requirements (DC)

Purpose

This section describes the power and grounding requirements that must be considered when planning site facilities for Alcatel-Lucent installed equipment and products.

General requirements

All power and grounding system wiring, short-circuit (over-current) protection and surge protection devices must be installed by the appropriately licensed personnel. Installation must be performed in accordance with national and local electrical codes, for example:

- In the United States:
United States National Fire Protection Association (NFPA) 70 and United States National Electrical Code (NEC)
- In Canada:
Canadian Electrical Code, part I, CSA C22.1
- In other countries:
International Electrotechnical Commission (IEC) 60364, parts 1 through 7

In addition, adherence to all additional requirements mandated by the “country of use” is the customer's responsibility.

The appropriate power supply ground connections and site equipment ground connections must be in place before commercial AC power service can be connected to the equipment installed at the site.

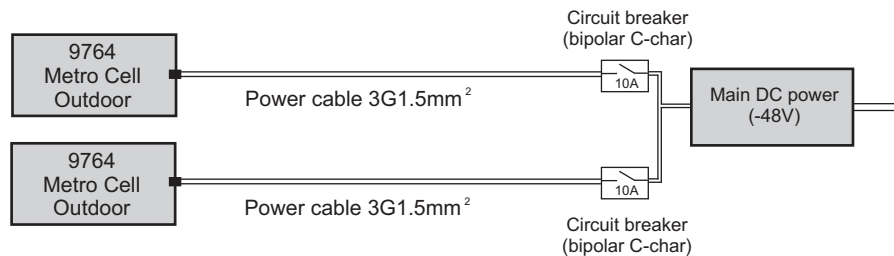
Customer DC power supply

The equipment installed on site must be supported with a customer supplied nominal -48V DC power service. The DC connection point should be easily accessible by the service team and be marked as the disconnect device of the equipment.

Note:

- The service board (or load center), circuit breakers and surge protectors devices are not supplied with the product. They must be ordered and installed as part of site preparation by the customer.
- All wiring (including grounding) and over-current protection must be installed at the service panel by suitably trained and licensed personnel and in accordance with the national and local electrical codes.
- An appropriate earth ground connection is required before commercial power service can be connected to any equipment at the site.

The branch circuit breaker should always be situated upstream of the equipment and must be a “bipolar-based” 10A C-char disconnect device.



Line surge protection

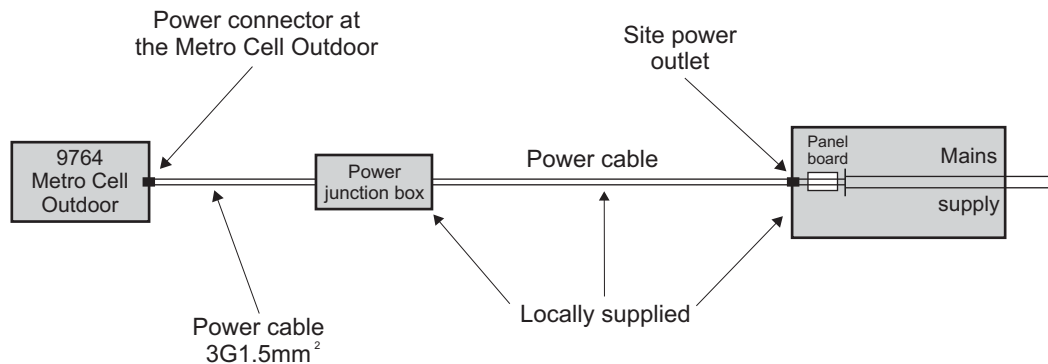
A surge protection device is not supplied with the product. It must be ordered and installed as part of site preparation by the customer.

The equipment can be connected to a mains distribution system classified as CAT II (equipment dedicated for connection to the mains distributed within a building). If the category of the mains is higher than CAT II (III or IV), then upstream surge protection must be installed by the customer to reduce the voltage range of transients in accordance with CAT II.

Power source	Over-voltage category
Equipment connected to building mains	CAT II
Equipment connected directly to low voltage mains	CAT III or CAT IV

Power junction box

For outdoor installations, in countries where local regulations dictate, a customer supplied power junction box may need to be installed as part of site preparation. As part of site preparation, the customer must provide the appropriate junction box and associated fittings.



Conduit requirements

For outdoor installations, in countries where local regulations dictate, the power cables are required to be routed to the equipment within rigid-steel or liquid-tight flexible metal conduit. As part of site preparation, the customer must provide the metal conduit and associated fittings for cable routes and connecting conduit to the outdoor equipment.

Product power requirements

Product power data

The following table provides power related information applicable to the Alcatel-Lucent 9764 Metro Cell Outdoor V1.0 B2 WCDMA 1W

Power supply	
Power mode	DC power variant only
Power supply	-48V DC
Earthing system	
Supported earthing systems	TT or TN
Unsupported earthing systems	IT
Electrical rating	
Electrical rating of product	1.5A
Power consumption	
Gigabit Ethernet backhaul	< 34W

Power ancillary items

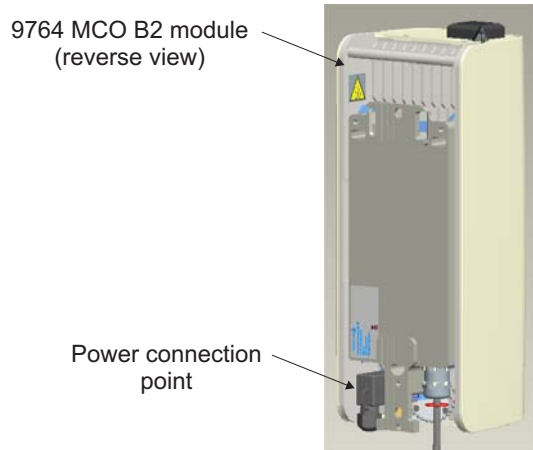
The following power related ancillary items can be ordered from Alcatel-Lucent.

Table 4-1 Power materials

Order code	Item	Description
tbd	Power cable	In/Out 3G 1.5mm ² on a 100m roll
1AB418220002	Power connector	DC power connector (Molex)

Power connection point

Power is supplied to the 9764 MCO module and the 9764 Metro Dock module via a DC connector on the reverse side of the 9764 MCO module.



Procedure 4-1: Connect power cable

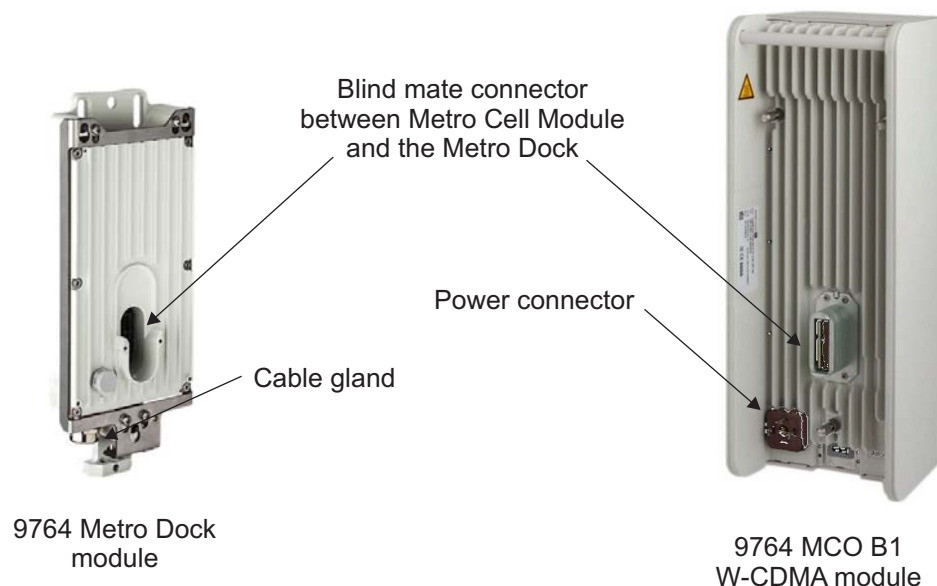
Purpose

This topic describes the procedures to be followed when connecting the DC power cable to the 9764 MCO module.

Connections

The following figure shows the connection interfaces of the 9764 MCO module:

Figure 4-1 9764 MCO connection interfaces



Before you begin

You must connect the power cable to the 9764 MCO module before you attach the 9764 MCO module to the 9764 Metro Dock, otherwise you will not be able to access the DC power connector on the 9764 MCO module.

Connect cable



Since the 9764 MCO operates on DC power, the risk of serious injury or death from electrocution exists throughout this procedure.

Follow the first step of this procedure carefully and completely.

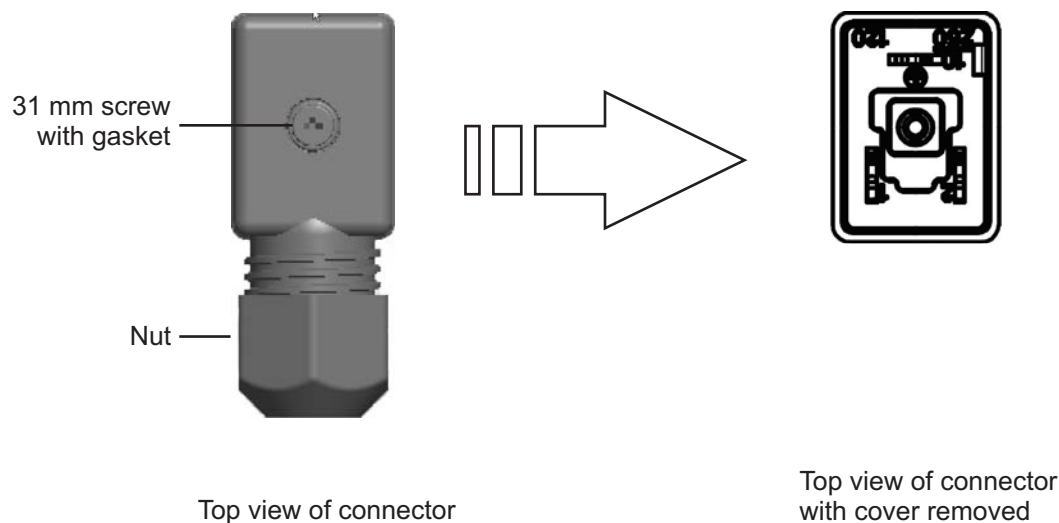


Falls can occur when working at heights resulting in serious personal injury or death.

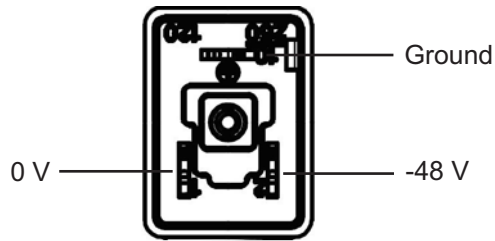
To prevent a fall when working at heights (ladder, scaffold, manlift, roof etc.) follow safe work practices and wear appropriate fall protection equipment.

To attach the DC power cable to the 9764 MCO module, perform the following steps:

- 1 Ensure that the power that feeds the DC power cable to the 9764 MCO is OFF, and block access so that no one can restore power to that cable during this procedure.
- 2 Cut the DC power cable to the required length.
- 3 Remove the cover of the DC power connector by unscrewing the 31 mm screw using a screwdriver with a Phillips head. See the following figure:



- 4 Attach the DC power connector to one end of the DC power cable. Do this by threading the cable through the nut and connecting the wires to the pins. Ensure that you connect the 0 V, -48 V, and ground wires to the correct pins as shown in the following figure:



Torque the screws to 0.6 Nm (0.44 lb ft).

- 5 Replace the cover on the DC power connector.
- 6 Plug the DC power connector into the power connector on the bottom left of the 9764 MCO module.
- 7 Fix the DC power connector in position by tightening the screw on the DC power connector. Using a screwdriver with a Phillips head, torque to 0.4 Nm (0.295 lb ft).

END OF STEPS

How to continue

After connection of the DC power cable has been completed, continue with procedure [Procedure 4-2: “Attach 9764 MCO module to 9764 Metro Dock”](#) (p. 4-14).

9764 MCO installation

Overview

Purpose

This section provides the installation instructions for mounting the Alcatel-Lucent 9764 Metro Cell Outdoor onto a 9764 Metro Dock.

Contents

Procedure 4-2: Attach 9764 MCO module to 9764 Metro Dock	4-14
Procedure 4-3: Orient 9764 MCO module	4-17

Procedure 4-2: Attach 9764 MCO module to 9764 Metro Dock

Purpose

This topic describes the procedures to attach the Alcatel-Lucent 9764 Metro Cell Outdoor module to the 9764 Metro Dock.

Prerequisites

A site survey has been conducted and a location for the device has been selected that is both central to the public space and elevated to maximize coverage.

Before installation begins, ensure that the following are in place:

- Internet service is available for backhaul.
- The 9764 Metro Dock has been installed and is in place.
- The 9764 Metro Dock has been closed.
- The power cable has been connected to the 9764 MCO module.
- The key that was supplied with the 9764 Metro Dock is available.

Before you begin

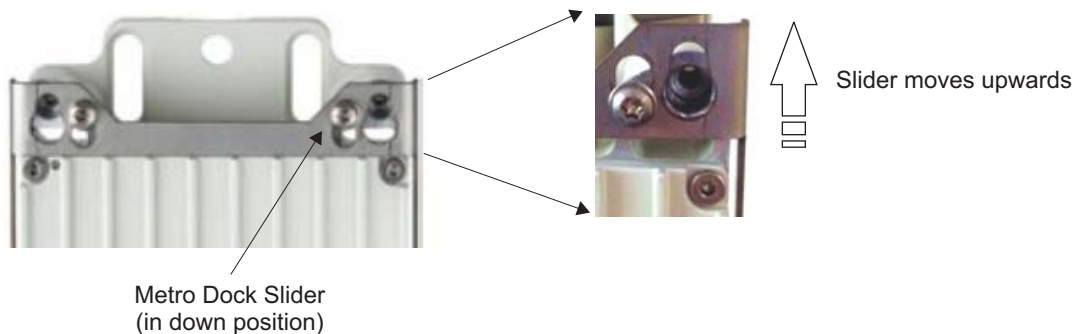
Record the 18 digit serial number before mounting the 9764 MCO module.

Attach 9764 MCO module to 9764 Metro Dock

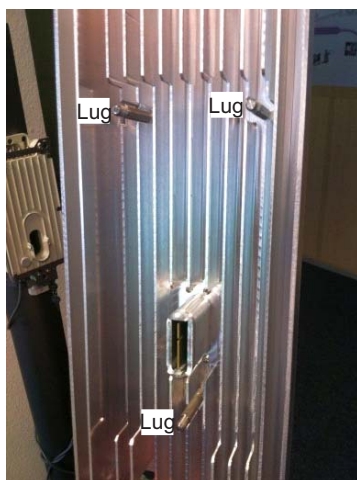
Perform the following steps to attach the 9764 MCO module to the 9764 Metro Dock:

-
- 1 Remove the cover from the blind mate connector on the 9764 Metro Dock by unscrewing the two M3x6 Torx screws that hold it in position.

 - 2 Move the 9764 Metro Dock metal slider to the “up” position:
 1. Insert supplied key into lock and turn 90° counterclockwise to unlock the slider.
 2. Push slider upwards and turn key 30° clockwise to lock slider into the “up” position.



- 3 Position the 9764 MCO module in front of the 9764 Metro Dock. Ensure that the three metal lugs on the 9764 MCO module are in front of the holes on the 9764 Metro Dock.



Align lugs to holes on
Metro Dock



Push MCO module onto
Metro Dock

- 4 Push the 9764 MCO module into the 9764 Metro Dock.
- 5 Finally, move the 9764 Metro Dock metal slider to the “down” position:
 1. Turn the key 30° counterclockwise to unlock the slider. The slider will automatically move to the “down” position.
 2. Turn the key 90° clockwise to lock the slider in the “down” position and remove the key.

END OF STEPS

How to continue

After 9764 MCO module has been attached to the 9764 Metro Dock, continue with procedure [Procedure 4-3: “Orient 9764 MCO module ” \(p. 4-17\)](#).

Procedure 4-3: Orient 9764 MCO module

Purpose

This topic describes the procedures to orient the Alcatel-Lucent 9764 Metro Cell Outdoor module towards its target using tilt and/or azimuth brackets.

Prerequisites

Ensure that the following are in place:

- The 9764 Metro Dock has been installed and is in place.
- The 9764 MCO has been attached to the 9764 Metro Dock.
- You have the equipment orientation plan.

Orient 9764 MCO module





Falls can occur when working at heights resulting in serious personal injury or death.

To prevent a fall when working at heights (ladder, scaffold, manlift, roof etc.) follow safe work practices and wear appropriate fall protection equipment.

Perform the following steps to angle the 9764 MCO module towards its target:

- 1 Refer to the equipment orientation plan.

If...	Then...
If the 9764 Metro Dock is installed on either a pole or a wall, and a tilt bracket has been used	<ol style="list-style-type: none">1. Using the tilt angle positioning gauge, adjust the 9764 Metro Dock tilt (+/- 20° up/down) to the desired angle. 2. Using a ratchet wrench, tighten all the tilt positioning gauge bolts and the bracket assembly hex bolts to fix the orientation of the 9764 Metro Dock.

If...	Then...
If the 9764 Metro Dock is installed on a wall, and an azimuth bracket has been used	<ol style="list-style-type: none"> <li data-bbox="889 264 1414 401">1. Using the azimuth angle positioning gauge, adjust the 9764 Metro Dock azimuth ($\pm 45^\circ$ left/right) to the desired orientation.  <ol style="list-style-type: none"> <li data-bbox="889 667 1409 804">2. Using a ratchet wrench, tighten all the azimuth positioning gauge bolts and the bracket assembly hex bolts to fix the orientation of the 9764 Metro Dock.
If the 9764 Metro Dock is installed on a wall, and both the tilt bracket the azimuth bracket have been used	Perform both of the above procedures.

END OF STEPS

How to continue

After 9764 MCO module has been attached to the 9764 Metro Dock, continue with procedure [Procedure 4-4: “Post installation activities”](#) (p. 4-20).

9764 MCO post-installation

Overview

Purpose

This section provides post-installation information and activities that should be carried out after the Alcatel-Lucent 9764 Metro Cell Outdoor has been installed.

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Procedure 4-4: Post installation activities

Final installation checks

Before leaving the installation site, check the following:

- 1 Secure all cables along their routes.
.....
- 2 Verify that all the exterior conduit and cable connections are secure.
.....
- 3 Inspect the site for loose tools, materials, and parts. Remove all such loose tools, materials, and parts.
.....
- 4 Continue with procedure [Procedure 4-5: “Perform commissioning of the 9764 MCO”](#) (p. 4-21)

.....
E N D O F S T E P S
.....

Procedure 4-5: Perform commissioning of the 9764 MCO

Purpose

This topic describes the commissioning process for the 9764 MCO. For single device deployments, the 9764 MCO is self-commissioning. For multiple device deployments, the operator may complement zero-touch commissioning with appropriate cell planning.

Troubleshooting

If any problems occur during the commissioning process refer to the following document:

- *Alcatel-Lucent 9764 Metro Cell Outdoor V1.0 B2 WCDMA 1W Maintenance and Troubleshooting*, 9YZ-04190-0002-REZZA .

Power on the 9764 MCO

Perform the following step to power on the 9764 MCO:

- 1 Follow site-specific procedures to power on the 9764 MCO by to applying power to the power cable. The 9764 MCO will then begin auto-configuration and auto-commissioning. After 1-3 seconds the Power LED will light and the Backhaul Connectivity LED will flash green.

END OF STEPS

Auto-configuration and auto-commissioning process

The following steps outline the zero-touch commissioning process:

- 1 After approximately 2 minutes the 9764 MCO will initialize and establish connectivity. During this operation the 3G Cell Status LED will blink slowly.
- 2 After the 9764 MCO has established a network connection, the 9764 MCO will automatically update its software. This process takes approximately 15 minutes. During this operation both the 3G Cell Status LED and the Backhaul Connectivity LED will blink.
- 3 Once the software update has completed, the 9764 MCO will carry out an automatic reboot. During reboot, the Power and 3G Cell Status LEDs will be lit.

-
- 4 After rebooting, the 9764 MCO will automatically auto-configure itself. During this operation the System status LED will blink slowly.
 - 5 When the 9764 MCO is ready for use the Power, 3G Cell Status and Backhaul Connectivity LEDs will all be lit.

END OF STEPS

Appendix A: Product conformance statements

Overview

Purpose

This section presents the product conformance statements that apply to the 9764 MCO Access Point equipment.

The statements that are required are determined primarily by national or multinational regulations. However, in some regions, contract terms determine which statements are required.

The presence of the statement indicates that the product does comply with that statement wherever it is required to do so.

Note: Together, the 9764 MCO module and 9764 Metro Dock comprise the 9764 MCO. Although the 9764 Metro Dock may be physically installed either prior to *or* at the same time as 9764 MCO module, *both* components must be installed in order to activate (power up and put into service) the 9764 MCO.

Note: UL/FCC certification will be complete and product labels that include the UL/FCC marking will be available when the product reaches RFOA.

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United States compliance

Introduction

Purpose

The statements that follow are the product conformance statements that apply to the 9764 MCO when deployed in the United States.

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Federal Communications Commission

Federal Communications Commission Interference Statement 47 CFR Section 15.21 - No Unauthorized Modifications

Important! Changes or modifications not expressly approved by Alcatel-Lucent, Inc. could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Part 15 Class B Statement 47 CFR Section 15.19 and 15.105(b)

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help.

FCC Part 68

This equipment complies with Part 68 of the FCC rules and the requirements adopted by the ACTA. At the upper-right-hand corner inside the cabinet assembly of this equipment is a label that contains, among other information, a product identifier in the format of AAAEQ##TXXXX. If requested, this number must be provided to the telephone company.

FIC	04DU9-1SN.
SOC	6.0N

The T1 network interface on this equipment is hardwired to a punchdown block, which meets the FCC specifications.

If this equipment causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. However, if advance notice is not practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the operation of the equipment. If this happens, the telephone company will provide advance notice in order for you to make necessary modifications to maintain uninterrupted service.

FCC regulations prohibit the connection of customer-provided equipment to central office implemented systems. Connection to party lines is subject to tariffs; users should contact their state public utility commission, public service commission, or corporation commission for information.

If the equipment is causing harm to the telephone network, the telephone company may request that you disconnect the equipment until the problem is resolved.

If trouble is experienced with this equipment repair or warranty information may be obtained by contacting:

Technical Support Services, within the United States: +1 630 224 4762, prompt 2

RF approval

This equipment complies with Part 2, Subpart J - Equipment Authorization Procedures, of the FCC Rules.

This equipment complies with Part 24 - Personal Communications Services, Subpart E - Broadband PCS.

Product safety and RF exposure

Product safety and RF exposure

The equipment complies with the following product safety and RF exposure specifications:

Standard reference	Title
UL 60950-1 (Ed 2 of 2007) + Amendment 1 (2011) & CSA C22.2 No 60950-1-07 Amendment 1 (2011)	Information Technology Equipment – Safety – Part 1: General Requirements
UL 60950-22 (Ed 1 of 2007)	Information Technology Equipment – Safety – Part 22: Equipment to be installed outdoors
Canada RSS 102	Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)
US FCC OET Bulletin 65 (incl. supplements)	Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields and its supplements

RF exposure

Europe:

- European Council recommendation 1999/519/EC on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz). This includes EN 50383, EN 50384 and EN 50385.
- Directive 2004/40/EC of the European Parliament and of the Council on the minimum health and safety requirements regarding the exposure of workers to the risks arising from physical agents (electromagnetic fields). Together with its amendment 2012/11/EC.

Note: These standards are aligned with the Guidelines of 1998 from the International Commission for Non-Ionizing Radiation Protection (ICNIRP). The recommendations provided below may also be extended to other ICNIRP based regulations.

North America:

- Canada Safety Code 6 – Limits of Human Exposure to Radiofrequency Electromagnetic Fields in the Frequency Range from 3 kHz to 300 GHz. Together with Canada RSS 102 for compliance of radio communication apparatus.
- USA FCC 47CFR 1.1310 – Radiofrequency radiation exposure limits. Together with FCC OET Bulletin 65 and its supplements for evaluating compliance with FCC guidelines for human exposure to RF fields.

Note: These standards are aligned with IEEE C95.1 from the Institute of Electrical & Electronics Engineers (IEEE). The recommendations provided below may also be extended to other IEEE or FCC based regulations.

The Alcatel-Lucent 9764 MCO V1.0 B2 WCDMA 1W is basically a radio transmitter and receiver. When it's turned on, it receives and transmits radio frequency (RF) signals. The system controls the transmitted power level within a range up to 1 W.

The Specific Absorption Rate (SAR) is a value that corresponds to the relative amount of RF energy absorbed in the body of a person standing in the close vicinity of the equipment. Measured SAR values result from an extensive assessment process defined by international standards. Tests are performed in strict laboratory settings at the highest transmitted power of the equipment. When in operation, the SAR resulting from of the equipment emissions will most likely be substantially less than the measured values because of a variety of factors including number and proximity of connected end users, telecom traffic etc...

Installation for the Alcatel-Lucent 9764 MCO V1.0 B2 WCDMA 1W equipment shall be performed in accordance with all applicable manufacturer's recommendations, and national laws and regulations.

North America:

The product complies with FCC 47CFR1.1310 (US) and Safety Code 6 (Canada) RF exposure limits for uncontrolled (general public) environments. The equipment must be installed and operated with a minimum separation distance of 20 cm (8 inches) between the radiator and user (see: USA – FCC OET Bulletin 65 and supplements and Canada – RSS 102).

Europe and countries with ICNIRP based regulations:

According to the results of the SAR assessment of the equipment, the installation shall at least adhere to the following recommendations:

- the equipment shall be installed in a location restricting access by the general public to the area within 30 millimetres directly in front of the equipment shroud. One practical implementation of this requirement is to ensure that the equipment is mounted a minimum of 3 meters above local ground, this vertical distance being measured from the local ground or closest walkway to the bottom of the equipment.
- the SAR value when touching the equipment complies with the ICNIRP/EU exposure limits values for workers. The action levels (cf. table below) may be exceeded within a distance of 100 millimetres from the shroud when the equipment is transmitting at its maximum power.

For European Union countries, a standardized warning sign for non-ionizing radiations as per Council Directive 92/58/ECC amended by Directive 2007/30/EC of 20 June 2007 is provided together with the equipment in case the operator or any other entity putting the

equipment into service or having access to it for other any reasons needs it for the implementation of the European Directive 2004/40/EC regarding the exposure of workers to electromagnetic fields.

For further information on RF exposure, the following table provides indicative values of electromagnetic field reference levels in the main lobe in front of the antenna:

Electric field (V/m)	Distance from the shroud (m)	Comment
140	0.1	ICNIRP reference level and EU action level for workers
61	0.3	EU/ICNIRP reference level for public

FDA/IEC optical transmitter product compliance statements

FDA/IEC optical transmitter product compliance

Alcatel-Lucent declares that this equipment complies with the Food and Drug Administration's Center for Devices and Radiological Health (FDA/CDRH) regulations 21 CFR 1040.10 and 1040.11. It is a Class I/1 laser optical fiber communication systems "product" under the FDA.

This Product is designed to ensure that personnel operating the product are not endangered by laser radiation during normal operation and fault conditions. This product does not present a risk of eye injury because it is fully enclosed and does not contain embedded lasers greater than Class I/1 unless otherwise noted.

Laser warning



Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous laser radiation exposure.

Do not view directly into the laser beam with optical instruments such as a fiber microscope because viewing of laser emission in excess of Class 1 limits significantly increases the risk of eye damage.

Never look into the end of an exposed fiber or an open connector as long as the optical source is switched on.

Ensure that the optical source is switched off before disconnecting optical fiber connectors.

Eco-environmental statements

Packaging collection and recovery requirements

Countries, states, localities, or other jurisdictions may require that systems be established for the return and/or collection of packaging waste from the consumer, or other end user, or from the waste stream. Additionally, reuse, recovery, and/or recycling targets for the return and/or collection of the packaging waste may be established.

For more information regarding collection and recovery of packaging and packaging waste within specific jurisdictions, contact the Alcatel-Lucent Environment, Health and Safety organization or Alcatel-Lucent Hazardous Waste Center technical support at (888) 539-2783.

For installations not performed by Alcatel-Lucent, please contact the Alcatel-Lucent Customer Support Center at:

Technical Support Services, within the United States: +1 630 224 4762, prompt 2

Material content compliance

The following notification applies to Alcatel-Lucent products distributed for sale, resale, or use.

This product, part, or both may include a lithium-manganese dioxide battery, which contains very small amounts of a perchlorate substance. Special handling may apply.

For California:

Perchlorate Material - special handling may apply.

See <http://www.dtsc.ca.gov/hazardouswaste/perchlorate/>.

Glossary

Numerics

3GPP

3rd Generation Partnership Project

A **A (Ampere)**

Base SI unit of electrical current.

AC (Alternating Current)

Continuously variable current, rising to a maximum in one direction, falling to zero, then reversing direction and repeating the cycle in the other direction.

AC convenience outlet

Sites must be equipped with at least two duplex outlets for installation and maintenance procedures. The outlets are required to power test equipment and installation tools.

Ambient temperature

The temperature of air or other media in a designated area, particularly the area

ANSI (American National Standards Institute)

An organization chartered to accredit standards developed by a wide variety of industry groups, without influence from any one company or organization. Does not develop standards, but reviews and implements those developed by other organizations. ANSI is a member of the International Standards Organization (ISO).

Antenna

An elevated device for radiating or receiving radio waves. It changes electrical currents into electromagnetic waves, and vice versa.

AP

Access Point

AWG (American Wire Gauge)

American standard for classifying wire diameter.

B **Backup**

Facility used to replace an element which has failed.

Base station

The equipment that provides the air interface that allows mobile terminals to communicate with the telecommunications network.

BBU

BaseBand Unit

BOCA

Building Officials and Code Administrators

Bonding

Permanent connection of metallic parts to form an electrically conductive path that will assure electrical continuity and have the capability to safely conduct any current likely to be imposed.

Branch circuit

The circuit conductors between the final overcurrent device protecting the circuit and the outlet(s).

Breaker, circuit

A cut-out device which breaks a circuit when preset limits of current are exceeded.

Buried ring ground

A buried, bare, tinned, solid copper cable encircling the site building and/or tower foundation.

C**CDRH**

Center for Devices and Radiological Health

Cell site

An installation located within a cell that houses the equipment needed to set up and complete calls on a cellular telephone.

CIC ((Customer Information Center))

Source for locating and obtaining delivery of Alcatel-Lucent customer documents.

Circuit

1. The complete path between two terminals over which one-way or two-way communications may be provided. 2. An electronic path between two or more points, capable of providing a number of channels. 3. A number of conductors connected together for the purpose of carrying an electrical current. 4. An electronic closed-loop path among two or more points used for signal transfer. 5. A number of electrical components, such as resistors, inductances, capacitors, transistors, and power sources connected together in one or more closed loops.

Configuration

An arrangement of functional units according to their nature, number, and chief characteristics.

Controlled environment

An indoor location in which temperature, humidity, and ventilation are maintained at specific levels.

CSA (Canadian Standards Association)

An independent, non-government, not-for-profit association for the development, by consensus, of Canadian standards and product certifications.

CSC (Cell Site Configuration)

Sheets provided in this document for documenting cell site configuration, conditions, and other pertinent information for reference during product deployment, and future additions.

D dB (Decibel)

A unit which expresses the ratio of two voltages, currents, or powers. It is used to specify transmission loss, gain, or relative level. It is equal to 20 times the common logarithm of the ratio of two voltages or two currents, or 10 times the common logarithm of the ratio of two powers.

DC (Direct Current)

Current flow in one direction.

Diversity

A method of radio transmission and/or reception, which counteracts the effects of fading by combining several signals all bearing the same information.

Driven ground rod

A copper-clad steel or stainless steel rod, a minimum of 2.4 meters (8 feet) long and 5/8 inch in diameter.

E Earthquake zone

Seismic ratings ranging from zone 1 (relatively low central office operational shock and vibration levels) to the most severe zone 4 levels. Equipment must be able to withstand earthquake zone requirements under both operational and non-operational conditions.

Electrolytic ground rod

A low resistance grounding rod (pipe) using low resistivity materials.

EU

European Union

Exothermic weld

A method of making electrical connections of copper to copper or copper to steel using high temperature fusion. The molten copper flows over conductors in a mold, melting and welding them together.

F Facility

Any element of physical telephone equipment needed to provide service, such as cables, switching systems, and microwave radio transmission systems.

FCC (Federal Communications Commission)

A group founded in 1934 to regulate all types of communications in the United States.

FDA

Food and Drug Administration

Frequency

For a periodic wave, such as alternating current, the number of complete cycles per unit of time. The unit of frequency is cycles per second, or hertz.

Fuse

An overcurrent protective device that has as its critical component a metal wire or strip that will melt when heated by a prescribed (design) amperage, creating an open in the circuit of which it is a part, thereby protecting the circuit from an overcurrent condition.

G Gain

The ratio of output current, voltage, or power to input current, voltage, or power, respectively. Gain is usually expressed in dB. If the ratio is less than unity, the gain, expressed in dB, will be negative, in which case there is a loss between input and output.

GBE

GigaBit Ethernet

GFCI (Ground Fault Circuit Interrupter)

A device intended for protection of personnel that functions to de-energize a circuit or portion thereof within an established period of time when a current to ground exceeds some predetermined value that is less than that required to operate the overcurrent protective device of the supply circuit.

GPS (Global Positioning System)

A system of 24 satellites that provides, among other things, extremely accurate timing information to the cell sites.

Ground

A conducting connection between equipment or an electrical circuit and earth, or conductive body that is used in place of earth.

Ground conductor

A conductor used to connect equipment or a grounded electrical circuit to the grounding electrode system.

Grounding electrode system

The conductive objects that are intentionally bonded to furnish connection to earth (i.e., buried ring ground with ground rods, electrically continuous buried metallic water pipe, electrolytic ground electrode, etc.).

Guy

Steel wire or rope used to hold a pole upright.

H Heat dissipation

The heat generated by equipment during operation.

HSDPA

High Speed Downlink Packet Access

HSUPA

High Speed Uplink Packet Access

HV

High Voltage

Hz (Hertz)

A unit of frequency of a periodic process equal to one cycle per second.

I ICNIRP

International Commission for Non-Ionizing Radiation Protection

IEEE

Institute of Electrical and Electronics Engineers

INTR (Intrusion Alarm)

The Intrusion (INTR) alarm indicates a door or access panel to the power system is open.

IT

In an IT earthing system, the electrical distribution system has no connection to earth at all, or it has only a high impedance connection. In such systems, an insulation monitoring device is used to monitor the impedance.

L LAN

Local Area Network

Load

The power consumed by a device or circuit in performing its function.

Loss

The diminution, usually expressed in dB, of signal level in a communications medium. The power, usually expressed in watts, consumed by a circuit or component. The energy dissipated without accomplishing useful work or purpose.

LV

Low Voltage

M MHz (Megahertz)

Reference of radio frequency spectrum of one-million cycles.

MOP (Method of Procedure)

Cell site walk-through where site preparation activities are verified prior to installing the 9412 eNodeB Compact equipment.

MSP

Mobile Service Provider

N NEC (National Electric Code)

Standard that governs the use of electric wire, cable, and fixtures, and electrical and optical communication cable installed in buildings.

Network

A set of terminals, the communications link that joins them, and the protocols that allow them to function together and communicate with each other.

NFPA (National Fire Protection Association)

Standards and code writing organization made up of volunteer industrial and institutional subject-matter-expert committees.

NFPA

National Fire Protection Association

Nominal

Specified value or intended value independent to any uncertainty in its realization. In a device that realizes a physical quantity, it is the value of such a quantity specified by the manufacturer.

Non Alcatel-Lucent power

3rd party power systems, or power systems other than Alcatel-Lucent.

P Phase

The number of separate voltage waves in commercial alternating current, designated as "single phase", "three phase", etc.

Q **QAM**
 Quadrature Amplitude Modulation

QoE
 Quality Of Experience

R **RCD**
 Residual Current Device

RF (Radio Frequency)
 Electromagnetic wave used for, among other things, cellular voice and data communications.

RMS (Root Mean Square)
 Effective value of an alternative wave. For AC, this is numerically equal to DC value of the current with the same heating effect.

RoHS
 Restriction of Hazardous Substances

Rx (Receive)

S **SAR (Specific Absorption Rate)**
 A measure of the rate at which energy is absorbed by the body when exposed to radio frequency energy.

Sector
 The coverage area within the degree of directionality of the antennas.

SFP
 Small Form-Factor Pluggable (a transceiver module)

Shield
 A housing, screen, sheath, or cover that substantially reduces the coupling of electric, magnetic, or electromagnetic fields into or out of circuits or transmission lines.

Site
 An installation that houses the equipment needed to set up and complete calls on a cellular telephone.

Site preparation
 To perform the requirements necessary at the site before installation can begin.

Stranded
 Wires twisted together to form a strong flexible cable.

Surge protector

Protective device used to limit surge voltages by discharging or bypassing any unwanted surge current that may enter a building or equipment.

T T1

A four-wire voice and data trunking facility that carries 24 duplex channels over 56-kbps time slots.

TN

In a TN earthing system, one of the points in the generator or transformer is connected with earth, usually the star point in a three-phase system. The body of the electrical device is connected with earth via this earth connection at the transformer.

TT

In a TT earthing system, the protective earth connection of the consumer is provided by a local connection to earth, independent of any earth connection at the generator.

Twisted pair cable

Cable made up of one or more separately insulated twisted-wire pairs, none of which is arranged with another to form quads.

Tx (Transmit)

U UBC

Uniform Building Code

UL (Underwriters Laboratories)

Laboratories that test and approve materials and equipment against pre-determined performance standards.

V V (Volt)

The derived SI unit of electrical potential difference. It is the difference in potential between two points of a conducting wire carrying a constant current of 1 ampere when the power dissipated between these two points is equal to 1 watt.

V AC (Volts Alternating Current)**V DC (Volts Direct Current)****V rms (Volts Root Mean Square)****VSWR (Voltage Standing Wave Ratio)**

In a transmission line, the ratio of maximum to minimum voltage in a standing wave pattern. The VSWR is a measure of impedance mismatch between the transmission line and its load. The

higher the VSWR, the greater the mismatch. The minimum VSWR, i.e., that which corresponds to a perfect impedance match, is unity.

W W (Watts)

The derived SI unit of power. It is equivalent to 1 joule per second, or 1 volt-ampere.

Walk-through

A critical examination of a design or product undertaken to ensure that it is of adequate quality.

Waveform

The characteristic shape of a periodic wave, determined by the frequencies present and their amplitudes and relative phases.

WCDMA

Wideband Code Division Multiple Access

WEEE

Waste Electrical and Electronic Equipment

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