



# Alcatel-Lucent 9962

Multi-standard Enterprise Cell v1

Hardware Installation

3MN-02001-0002-RJZZA

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# About this document

## Purpose

The purpose of this document is to provide hardware installation instructions for the Alcatel-Lucent 9962 Multi-standard Enterprise Cell v1 Small Cell access point.

Procedures are provided for product handling, placement, powering on and off, and cabling.

## Intended audience

The audience for this document is installation personnel.

## Supported systems

This document applies to the Alcatel-Lucent 9962 Multi-standard Enterprise Cell v1 access point.

## 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. Before installing the product, the installer should be familiar with the safety precautions, warnings, and product conformance statements.

## 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.

## Conventions used

### Naming Conventions

The full product name, Alcatel-Lucent 9962 Multi-standard Enterprise Cell v1, is referred to as one of the following throughout this manual:

- Alcatel-Lucent 9962 MSEC
- 9962 MSEC v1.0
- MSEC

### Typographical conventions

The following typographical convention is used in this document:

Appearance	Description
<i>Document reference</i> , reference number	Related document that is referenced in the document

## 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 9962 Multi-standard Enterprise Cell v1 - Technical Description and Troubleshooting Guide</i> , 3MN-02001-0003-DEZZA	<a href="http://www.alcatel-lucent.com/">http://www.alcatel-lucent.com/</a>	The 9962 MSEC v1.0: <ul style="list-style-type: none"> <li>• Basic characteristics</li> <li>• Hardware description</li> <li>• Troubleshooting</li> </ul>
<i>Alcatel-Lucent Small Cell Wi-Fi AP - Technical Description</i> , 3MN-01840-0004-DEZZA	<a href="http://www.alcatel-lucent.com/">http://www.alcatel-lucent.com/</a>	The Alcatel-Lucent Wi-Fi Access Point running its own Wi-Fi Access (WA) software including: <ul style="list-style-type: none"> <li>• Functional description</li> <li>• Technical description</li> </ul>
<i>Alcatel-Lucent 9363 Metro Cell Indoor (V2 1900/850MHz and 2100MHz) Installation and Commissioning</i> , 3MN-01121-0301-RJZZA	<a href="http://www.alcatel-lucent.com/">http://www.alcatel-lucent.com/</a>	The 9363 installation & commissioning

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# 1 Safety and general information

## Overview

### Purpose

This chapter provides a generic overview of the standard hazard symbols and statements that are currently used in Alcatel-Lucent documentation, and which may appear in this document.

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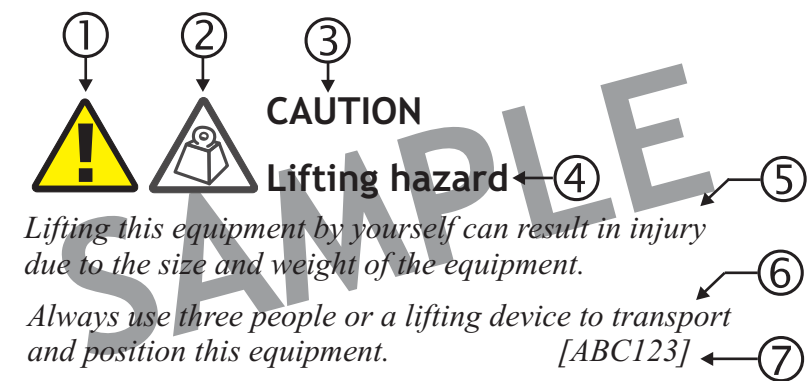
## Structure of safety statements

### 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.

## General hazard statements

### Purpose

Provides information on general hazard statements that may arise in the course of your work, but are not necessarily related to a specific procedure.



#### **DANGER**

##### **Electric-shock hazard**

*This equipment generates high leakage current. This can lead to high voltages with respect to ground for accessible parts of the installation. Contact with these parts can cause serious health effects, possibly including death, even hours after the event.*

*This equipment is only suited for permanent connection. Before connecting the power supply, establish a grounding connection.*



#### **WARNING**

##### **Electric-shock hazard**

*Contact with energized parts can cause serious injury.*

*At least one other trained person must be in attendance, who can immediately and safely disconnect the system if necessary.*

*This second person must be trained in first aid for emergency purposes.*



#### **WARNING**

##### **Electric-shock hazard**

*There is a danger of electric shock if the grounding system is inadequate.*

*You must comply with the grounding requirements for the grounding system.*



#### **WARNING**

##### **Electric-shock hazard**

*Contact with energized parts can cause serious injury.*

*Work on energized equipment is only permitted if you are using insulated connection terminals, are adequately trained and follow safe work practices.*

**WARNING****Electric-shock hazard**

*Contact with energized parts can cause serious personal injury.*

*Seal off the installation area (warning tape, signs) to prevent untrained or unauthorized persons from entering.*

*Follow safe work practices and lockout/tagout procedures.*

**WARNING****Electric-shock hazard**

*Some parts of all electrical installations are energized. Failure to follow safe work practices 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 or EN 60215 + A1 or in the National Electrical Code or in ANSI/NFPA No. 10) may install or service the installation.*

**WARNING****Laser hazard**

*The light from laser and high-radiance LED's may cause eye damage if absorbed by the retina.*

*In the US consult ANSI Z136.2, in Europe consult IEC-60825 Safety of laser products, for guidance on the safe use of optical fiber communication systems in the workplace.*

**WARNING****Falling-object hazard**

*Cabinet may tip when it is moved if an obstacle or a downward step is encountered.*

*Do not use dolly wheels if the installation location has an uneven surface, steps etc.*

**WARNING****Overhead-load hazard**

*Cabinet eyebolts can break, severely damaging the cabinet, if a crane is used to lift the cabinet into an upright position.*

*Ensure that the cabinet is in an upright position before transportation by crane.*



**WARNING****Inhalation hazard**

*Inhalation of asbestos fibers can result in serious illness or death.*

*Buildings constructed before 1980 MAY contain asbestos. Buildings constructed before 1970 OFTEN contain asbestos. Potential exposure could occur during routing of cable or wires, removing cables, removing transite or asbestos cement boards, drilling wallboard, transite panels, or floor tiles, removing sprayed-on fireproofing, moving or removing ceiling tiles, installing cable hangers.*

*Do not disturb asbestos. If asbestos is present, ensure potential exposure is controlled by adhering to local asbestos management regulations and follow safe work practices.*

**NOTICE****Service-disruption hazard**

*Condensation can occur in the network element during transport, especially on moving from outside to closed rooms. Condensation can cause malfunctioning of the circuit packs.*

*Ensure that circuit packs and shelves have reached room temperature and are dry before taking them into operation.*

**NOTICE****Service-disruption hazard**

*Tools left in the work 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.*

**CAUTION****Lifting hazard**

*Lifting this equipment by yourself can result in injury due to the size and weight of the equipment.*

*Always use three people or a lifting device to transport and position this equipment.*

**NOTICE****Flammable-material hazard**

*The heat vent (grill) at the top of the cabinet can become obstructed, preventing ventilation of the cabinet.*

*Make sure that the airvent is not obstructed and remains clear at all times.*

**NOTICE****ESD hazard**

*Semiconductor components can be damaged by static discharges.*

*The following rules must be followed when handling any module containing semiconductor components:*

- *Wear conductive or antistatic working clothes (for example, a coat made of 100% cotton).*
- *Wear the grounded wrist strap.*
- *Wear shoes with conductive soles on a conductive floor surface or conductive work mat.*
- *Leave the modules in their original packaging until ready for use.*
- *Make sure there is no difference in potential between yourself, the workplace, and the packaging before removing, unpacking, or packing a module.*
- *Hold the module only by the grip without touching the connection pins, tracks, or components.*
- *Place modules removed from the equipment on a conductive surface.*
- *Test or handle the module only with grounded tools on grounded equipment.*
- *Handle defective modules exactly like new ones to avoid causing further damage.*

---

## Basic safety aspects

### General safety requirements

In order to keep the technically unavoidable residual risk to a minimum, it is imperative to observe the following rules:

- **DO NOT CONNECT CABLES TO WORKING/LIVE EQUIPMENT. This activity should only be performed by the services/delivery team during integration.**
- Transport, storage, installation, and operation of the system must be under specified permissible conditions only. See accompanying documentation and information on the system.
- Installation, configuration, and disassembly must be carried out only by suitably qualified personnel and with reference to the respective documentation. Due to the complexity of the system, personnel require special training.
- Identify potential hazards prior to starting the installation.
- The system must be operated by trained and authorized users only. The user must only operate the system after having read and understood the chapter on safety and the parts of the documentation relevant to operation. For complex systems, additional training is recommended. Any obligatory training for operating and service personnel must be carried out and documented.
- Follow all instructions marked on the product, including both general instructions and the stated methods for avoiding hazards.
- The system must not be operated unless safety is guaranteed. Any faults and errors that might affect safety must be reported immediately by the user to a person in responsibility.
- The system must only be operated under the environmental conditions and with the connections, described in the documentation.
- Modifications to any part of the system (including software) must be carried out by Alcatel-Lucent or by trained and qualified personnel authorized by Alcatel-Lucent. Unauthorized modifications will lead to a complete exemption from liability. Only components recommended by the manufacturer and listed in the procurement documents should be used.
- The use of non-system software is not recommended. The use/installation of non-system software can adversely affect the normal functioning of the system.
- Only use tested and virus-free data carriers (for example, floppy disks and streamer tapes).
- The removal or disabling of safety facilities, fault clearance, and maintenance of equipment must be carried out by trained and qualified personnel only and in conjunction with the respective documentation. Only approved measuring and test equipment must be used.

- Calibrations, special tests after repairs, and regular safety checks must be carried out, documented, and archived.
- Follow applicable hazardous waste, electronic scrap, and take-back disposal procedures.

### Other important safety instructions

Observe the following safety instructions, they are of particular importance for your safety:

- Be familiar with evacuation plans and emergency telephone numbers.
- Ensure first-aid kits are available.
- Wear appropriate personal protective equipment (PPE) such as safety glasses, hard hats, gloves, and fall protection.
- Never wear jewelry (rings, bracelets, watches, etc.) when working on or near energized equipment.

### Summary of equipment safety instructions

Observe the following safety instructions while working with the equipment:

- This product is to be installed only in restricted access areas.
- This product should be only operated from the type of power source indicated on the marking label.
- This product must be provided with a readily accessible disconnect device as part of the building installation.
- Installation must include an independent frame ground drop to the building ground. Refer to the Hardware Installation Guide.
- For information on correct mounting instruction, refer to the Hardware Installation Guide.
- Install only equipment identified in the Hardware Installation Guide provided with this product. Use of other equipment may result in improper connection of circuitry leading to fire or injury to persons.
- To reduce the risk of electrical shock, do not disassemble this product. Only trained personnel should install and service this product. Opening or 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.
- Slots and openings in this product are provided for ventilation. To protect the product from overheating, these openings must not be blocked or covered. This product should not be placed in a built-in installation unless proper ventilation is provided

- Never push objects of any kind into this product through slots as they may touch dangerous voltage points or short-out parts that could result in risk of fire or electrical shock. Never spill liquids of any kind on the product. Any telecommunication interfaces should not leave the building premises unless connected to telecommunication devices providing primary and secondary protection, as applicable.
- Use caution when installing or modifying telecommunication lines.
- Never install telecommunication wiring during a lightning storm.
- Never install telecommunication connections in wet locations.
- Never touch non insulated telecommunication wires or terminals unless the telecommunication line has been disconnected at the interface.
- The ITE is to be connected only to PoE networks without routing to the outside plant.



# 2 Alcatel-Lucent 9962 Multi-standard Enterprise Cell v1 installation

## Overview

### Purpose

This chapter describes the installation procedure for the 9962 MSEC v1.0 access point.

### Contents

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<a href="#">Mounting guidelines</a>	2-5
<a href="#">Cabling</a>	2-19

## Pre-installation information

### Introduction

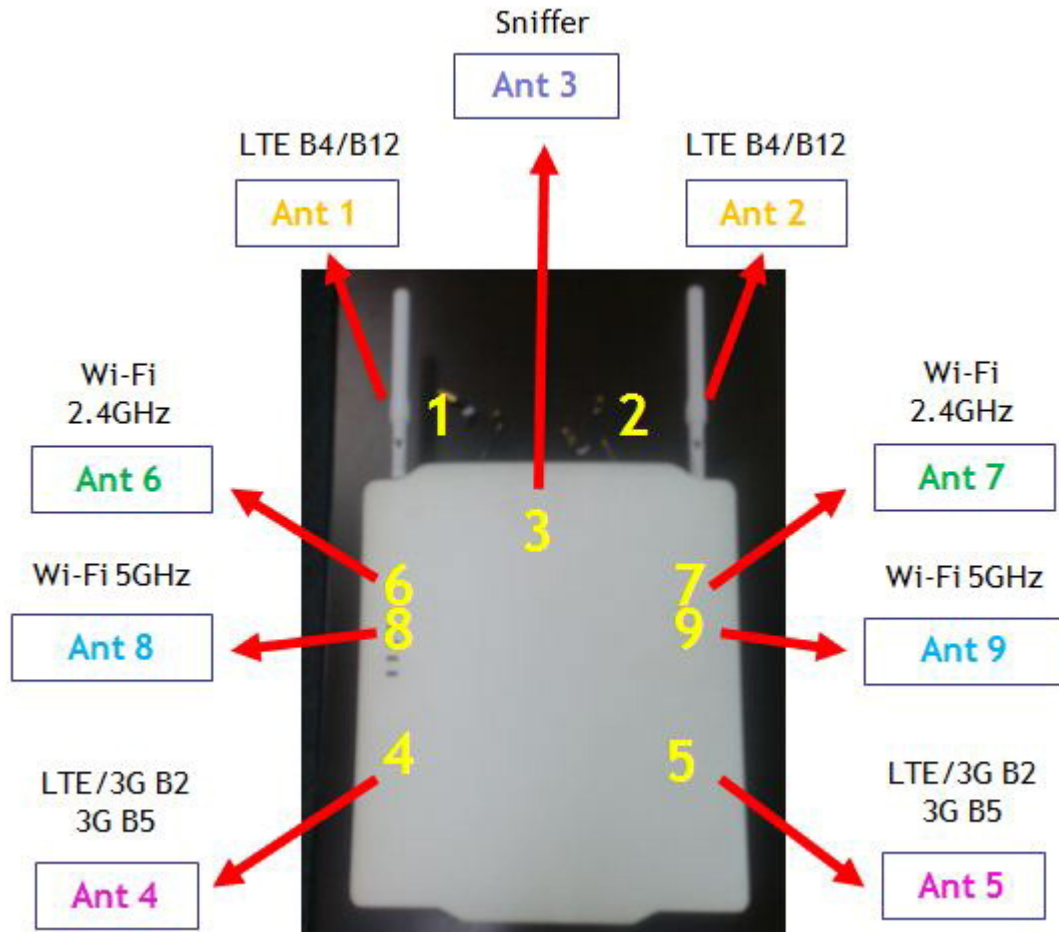
The Alcatel-Lucent 9962 Multi-standard Enterprise Cell v1, or 9962 MSEC v1.0, is a wireless access point using licensed spectrum delivering improved network reach and increased capacity while offloading traffic from the macro network.

As part of the Alcatel-Lucent 9360 Small Cell Solution, it can be deployed in a network supporting a mix of Home and Enterprise cells.

The 9962 MSEC v1.0 is a multi-band antenna device that supports simultaneous transmission of three different air interface technologies:

- LTE,
- WCDMA,
- Wi-Fi.

Figure 2-1 Multi-standard Enterprise Cell v1 antennas



**Note:** The 9962 MSEC v1.0 is available in a variant without the LTE B12 radio frequency.

Refer to the *Alcatel-Lucent 9962 Multi-standard Enterprise Cell v1 - Technical Description and Troubleshooting Guide*, 3MN-02001-0003-DEZZA and the *Alcatel-Lucent Small Cell Wi-Fi AP - Technical Description*, 3MN-01840-0004-DEZZA for complete technical details on the 9962 MSEC v1.0 access point.

## Device placement

The Alcatel-Lucent 9962 Multi-standard Enterprise Cell v1 has been designed to be deployed in any (and only) indoor environment :

- either in private places such as business offices, warehouses etc,
- either in public places such as supermarkets, shopping malls, airports etc.



The access point and all its components (including cables and power adaptor) have to be placed in a dry area and be kept away from any wet or damp environments; such as lavatories or any other areas with exposure to moisture, sprays, drips, or running water. For the safety of stored data, it must not be placed near magnetic devices such as audio or video tapes.

The 9962 MSEC v1.0 emits a radio signal. The quality of coverage achieved therefore depends upon where the device is placed.

For best results it should be located:

- In a central place within the area in which the product is intended to operate,
- As high as possible, for example, on high shelving, under the ceiling or mounted on a wall.

To improve coverage, avoid installing near the following:

- Other radio transmitters,
- Other metallic devices or objects,
- Windows.

## Product delivery contents

The standard 9962 MSEC v1.0 is provided in a cardboard box with the following contents:

- The 9962 MSEC v1.0 access point,
- A mounting kit (wall or ceiling) including M5 steel screws to be used with N°2 driver,
- A quick start guide/user guide.

The standard package can be customized on demand.

The custom-tailoring process allows the option of adding the following items to the standard package :

- one GPS antenna with 10m cable length included,
- two RF stick antennas in case of wall-mounted installation.

The GPS antenna acquisition sensitivity is:

- -160dBm/Hz with AGPS server assistance and 2.5dB NF,
- -158dBm/Hz, unassisted.

## Ancillary items

In addition to the standard delivered parts, the following ancillary items may be required. They may be purchased separately from Alcatel-Lucent, or purchased locally :

- two RF stick antennas for use in wall-mounted installation,
- SFP transceiver,

- 
- Ethernet and/or fiber cable,
  - 4p PoE compliant with PoH standard adapter,
  - AC to DC power adapter,
  - Lock,
  - RF antenna jumper,
  - GPS extension cable.

### Installation tools required

The following is a list of the tools that may be used during installation:

- Drill and assorted drill bits,
- Screwdrivers (power and/or manual),
- Measuring tape,
- Marker, to mark wall mounting holes,
- Vacuum cleaner or equivalent (required for clearing debris from wall mounting holes),
- Spirit level.

### Professional installation instruction

#### Installation personal

This product is designed for specific application and requires to be installed by a qualified personal who has RF and related rule knowledge. The general user shall not attempt to install or change the setting.

#### Installation location

The product shall be installed at a location where the radiating antenna can be kept 30 cm from nearby person in normal operation condition to meet regulatory RF exposure requirement.

#### External antenna

The product must only be used with the antennas which have been approved by the applicant. The non-approved antenna(s) may produce unwanted spurious or excessive RF transmitting power which may lead to the violation of FCC limit and is prohibited.

#### Warning

The installation position must be carefully selected and the final output power must not exceed the limit set force in relevant rules. The violation of the rule could lead to serious federal penalty.

# Mounting guidelines

## Introduction

The 9962 MSEC v1.0 has been designed for an effective plug & play installation. The device is based on single hardware core associated with dedicated mounting kits.

This topic describes the procedures to be followed when installing the 9962 MSEC v1.0 access point.

## Prerequisites

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

Before installation begins you should ensure the following are in place:

- Internet service is available,
- The Ethernet cable has been routed and is in place,
- Site specific fixing materials according to the mounting option (wall or ceiling).

Various building materials and construction methods dictate that the device be fastened to the wall or ceiling with appropriate mounting hardware.

**Important!** It is the responsibility of the customer to provide any necessary support material and structures to ensure that the installation will be in compliance with Building Officials and Code Administrators (BOCA), Uniform Building Code (UBC), and all local codes.

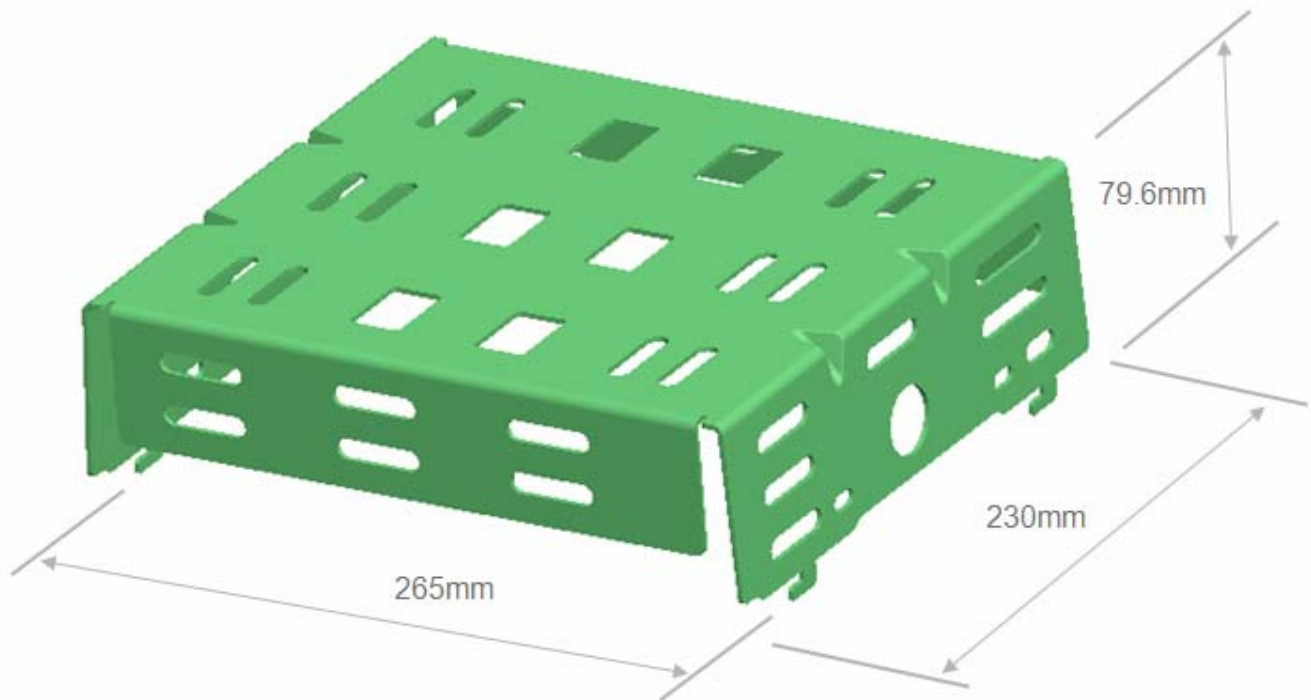
The relevant items have been ordered according to the selected mounting option (wall or ceiling). Refer to [“Product delivery contents”](#) (p. 2-3) and [“Ancillary items”](#) (p. 2-3) to get details on the delivered items.

**Note:** The RF stick antennas are required for wall-mounted installation, and must be ordered separately.

## Mounting plate

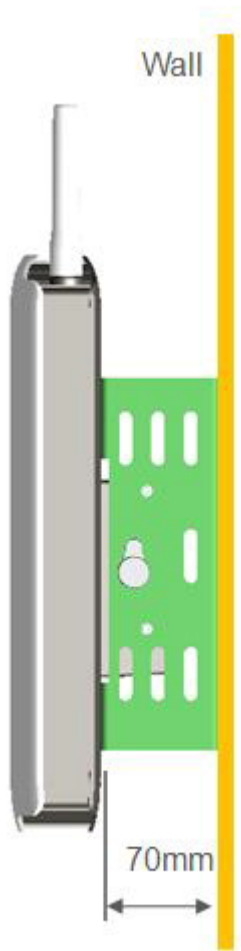
The 9962 MSEC v1.0 requires a mounting plate to be installed at its final place.

The following figure illustrates the mounting plate.

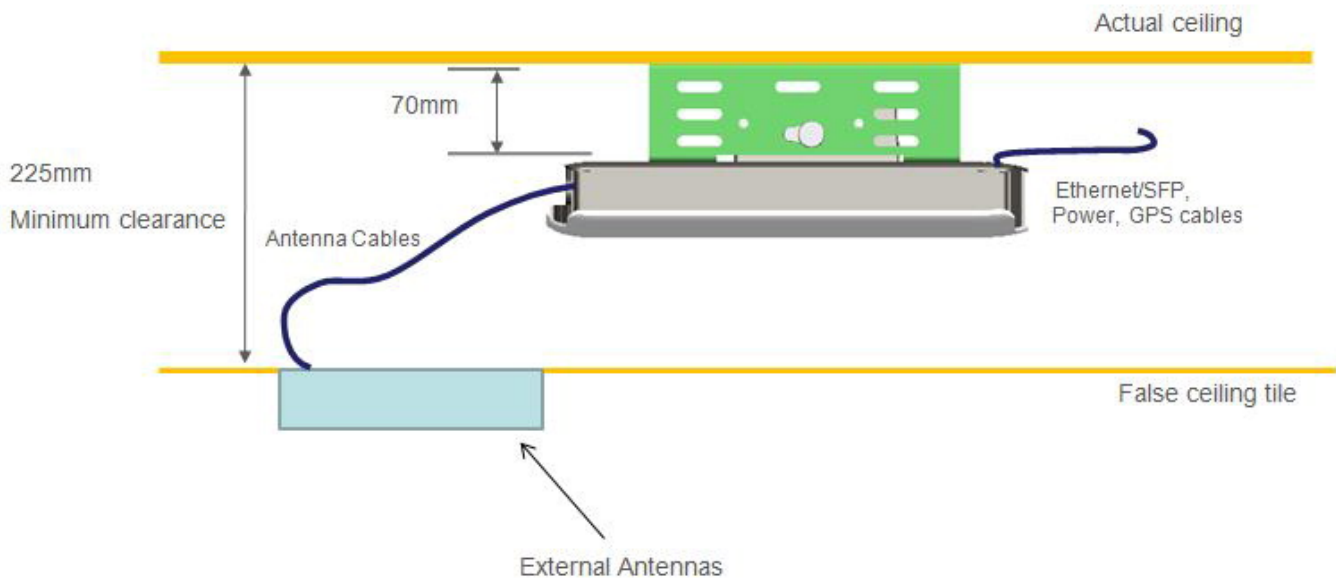
**Figure 2-2 9962 MSEC v1.0 mounting plate****Mounting characteristics**

The 9962 MSEC v1.0 is designed to be installed using the following options:

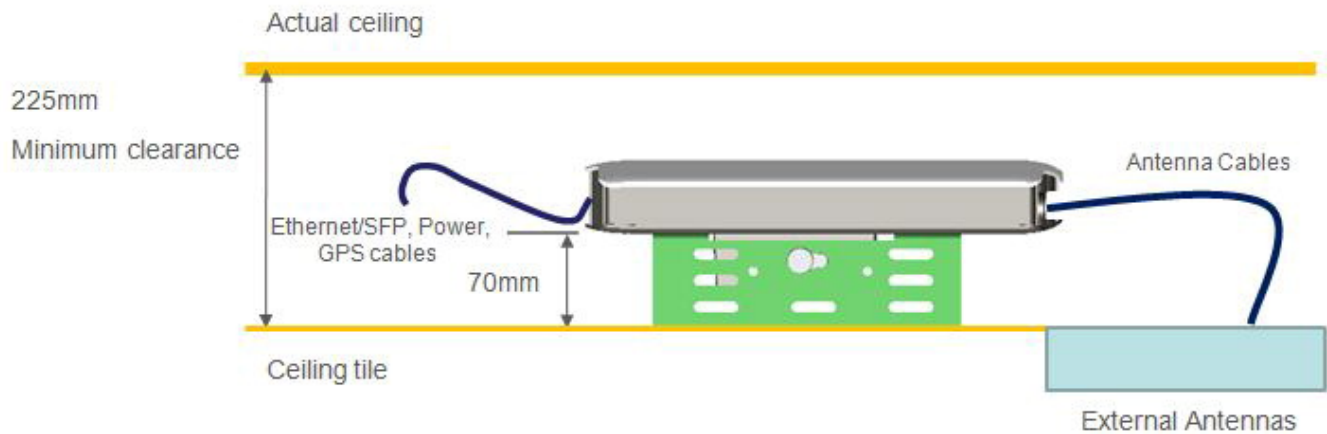
- the wall mount that requires two (2) stick antennas per 9962 MSEC v1.0 access point,



- the ceiling mount (inside a false ceiling) that requires external antennas only. In this configuration, the antenna port isolation for external antennas is 20dB minimum.
  - Option 1



– Option 2



**Before you begin**

- 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.
- Record the 18 digit serial number before mounting the 9962 MSEC v1.0 access point.

## Mount to wall



*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 mount the device onto a wall, perform the following steps:

- 1 Connect the RF stick antennas on the 9962 MSEC v1.0 access point.

**Note:** The wall mount implies that the access point is vertically installed with the stick antennas pointing upwards (not downwards or sideways). The stick antennas cannot be bent. Failure to comply with these requirements would change and degrade the omnidirectional radio frequency pattern.

Figure 2-3 9962 MSEC v1.0 stick antennas



- 
- 2 At the selected installation location, mark the points on the flat surface for the four (4) fixing holes, using the holes in the mounting plate as a guide.

Check the horizontal position with a spirit level.

---

- 3 Drill holes at the marked points, and insert wall plugs into the fixing holes.
- 

- 4 Attach the mounting plate to the wall using appropriate screw fixings.

**Note:** Depending on the wall the device must be mounted to, different screw fixings might be needed. After site survey, these mounting accessories must be procured locally.

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- 5 Connect the cables. Refer to the procedure “[Cabling](#)” (p. 2-19) for details.
- 

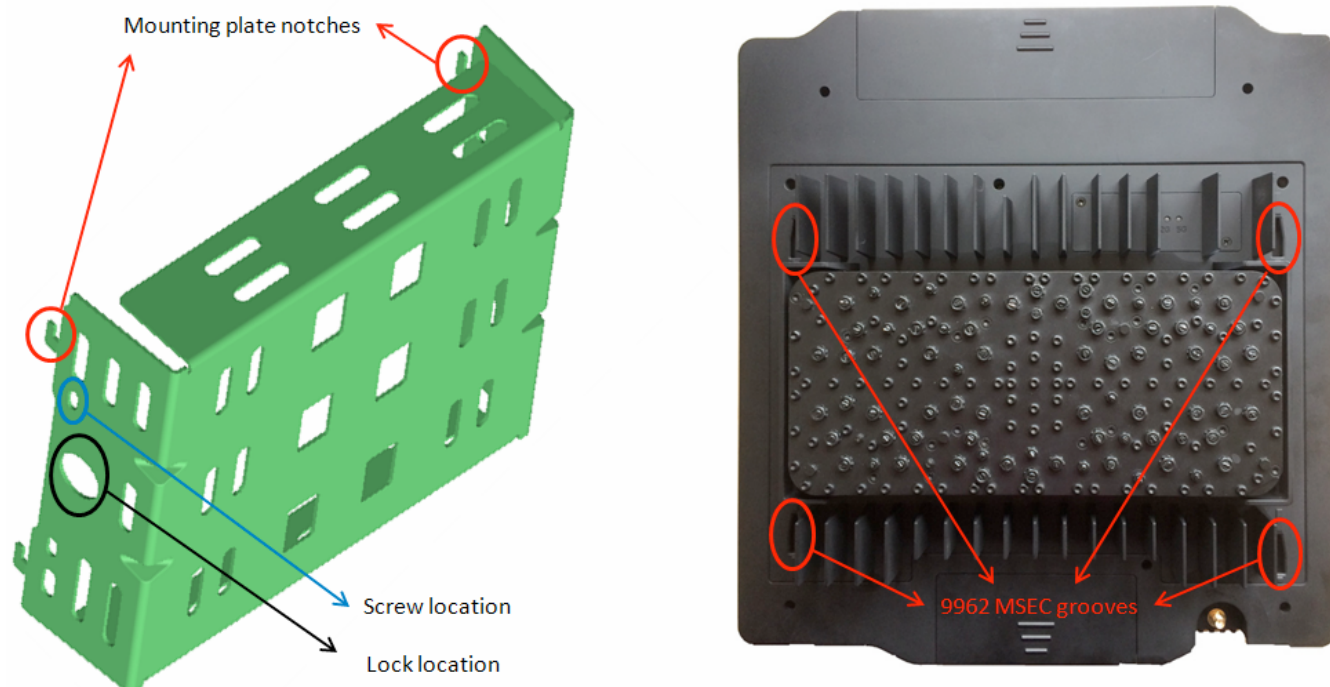
- 6 Attach the 9962 MSEC v1.0 to the mounting plate as follows:

1. Line up the four (4) grooves in the back of the 9962 MSEC v1.0 with the four (4) notches protruding from the mounting plate.

The following graphic shows the notches and the lock location on the mounting plate and the grooves in the back of the 9962 MSEC v1.0:



Figure 2-4 Notch, groove and lock locations

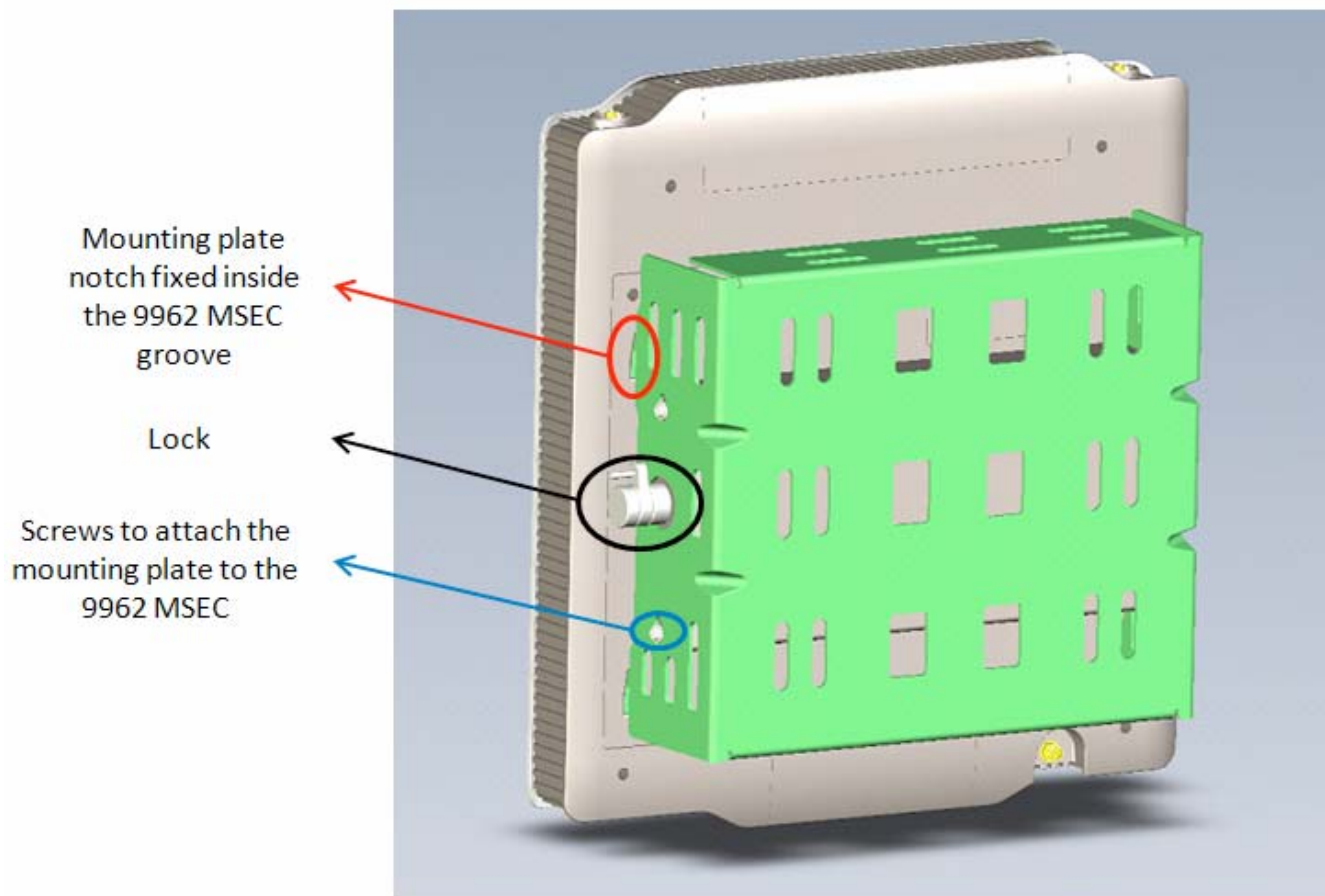


2. Push the 9962 MSEC v1.0 downwards to lock it into position.

3. Then screw the four (4) screws (provided in the wall mounting kit) to attach the 9962 MSEC v1.0 to the mounting plate.

- 7 If locks have been ordered by the customer, attach the lock to secure the 9962 MSEC v1.0 to the mounting plate.

The following graphic shows the mounting plate attached to the back of the 9962 MSEC v1.0:

**Figure 2-5 Mounting plate on the 9962 MSEC v1.0 access point****END OF STEPS****Mount inside a false ceiling - Option 1****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.*

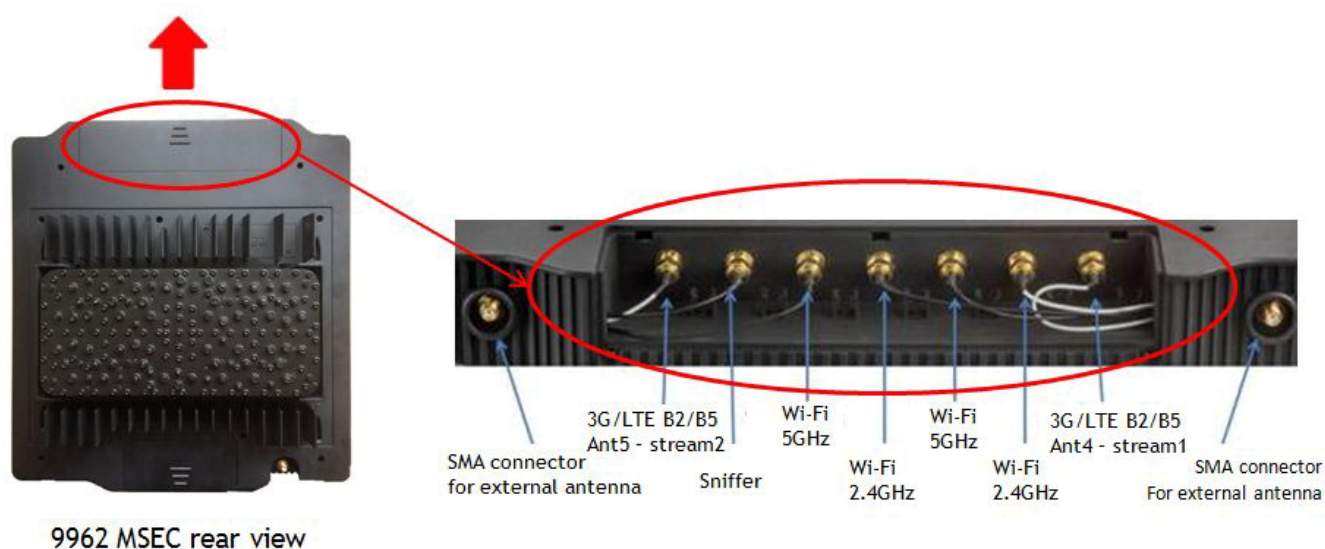
To mount the device inside the false ceiling, perform the following steps:

- 1 As the ceiling mount implies external antenna use only, check that no stick antennas are mounted on the 9962 MSEC v1.0 access point.

Open the cover of the antenna connectors at the back of the 9962 MSEC v1.0 to deactivate the integrated antennas related to the radio frequencies of the external antennas.

Unscrew the integrated antennas connections and attach the left antenna cables into the dedicated grooves.

**Figure 2-6 9962 MSEC v1.0 integrated antennas**



Put the cover back on the integrated antenna connectors.

- 2 At the selected installation location, mark the points on the ceiling for the four (4) fixing holes, using the holes in the mounting plate as a guide.

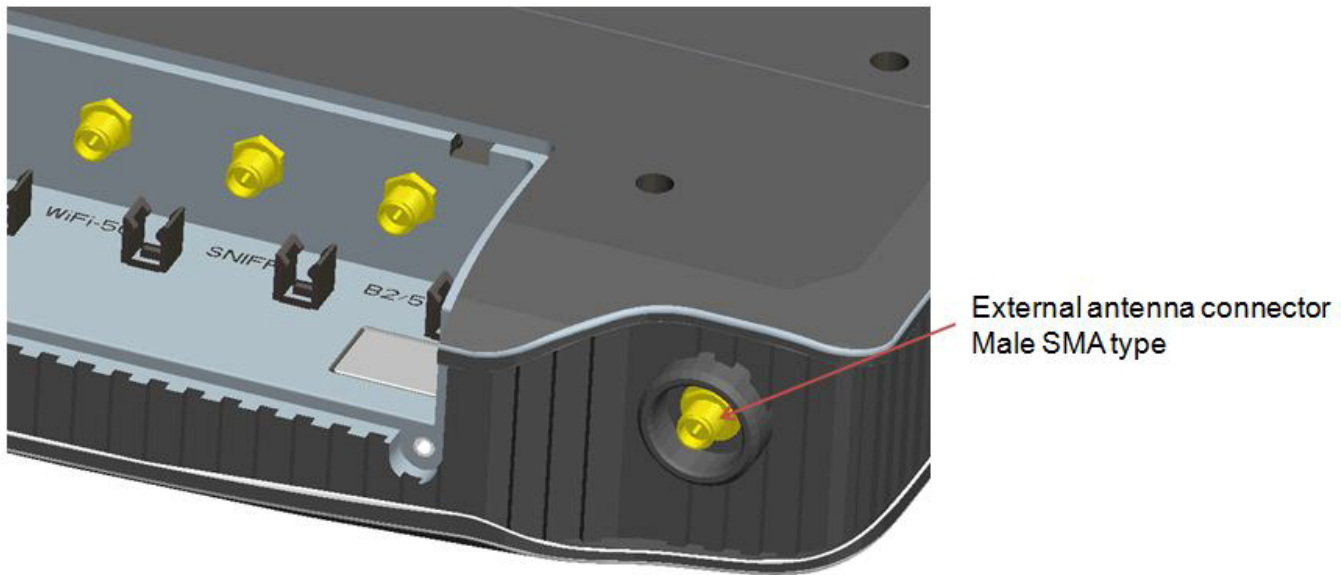
Check the horizontal position with a spirit level.

- 3 Drill holes at the marked points, and insert ceiling plugs into the fixing holes.
- 4 Attach the mounting plate to the ceiling using appropriate screw fixings.

**Note:** Depending on the ceiling the device must be mounted to, different screw fixings might be needed. After site survey, these mounting accessories must be procured locally.

- 5 Connect the different cables. Refer to the procedure “Cabling” (p. 2-19) for details.
- 6 Refer to the “External antennas connections” (p. 2-24) paragraph to get details on the jumper cables used to connect external antennas to 9962 MSEC v1.0.  
Select the appropriate jumper cables and connect the external antennas to the dedicated SMA connectors:

**Figure 2-7 9962 MSEC v1.0 external antenna connector**



- 7 Attach the 9962 MSEC v1.0 to the mounting plate as follows:
  1. Line up the four (4) grooves in the back of the 9962 MSEC v1.0 with the four (4) notches protruding from the mounting plate.
  2. Push the 9962 MSEC v1.0 horizontally to lock it into position.
  3. Then screw the four (4) screws (provided in the ceiling mounting kit) to attach the 9962 MSEC v1.0 to the mounting plate.

- 8 If locks have been ordered by the customer, attach the lock to secure the 9962 MSEC v1.0 to the mounting plate.

END OF STEPS

## Mount inside a false ceiling - Option 2



### WARNING

#### Fall hazard

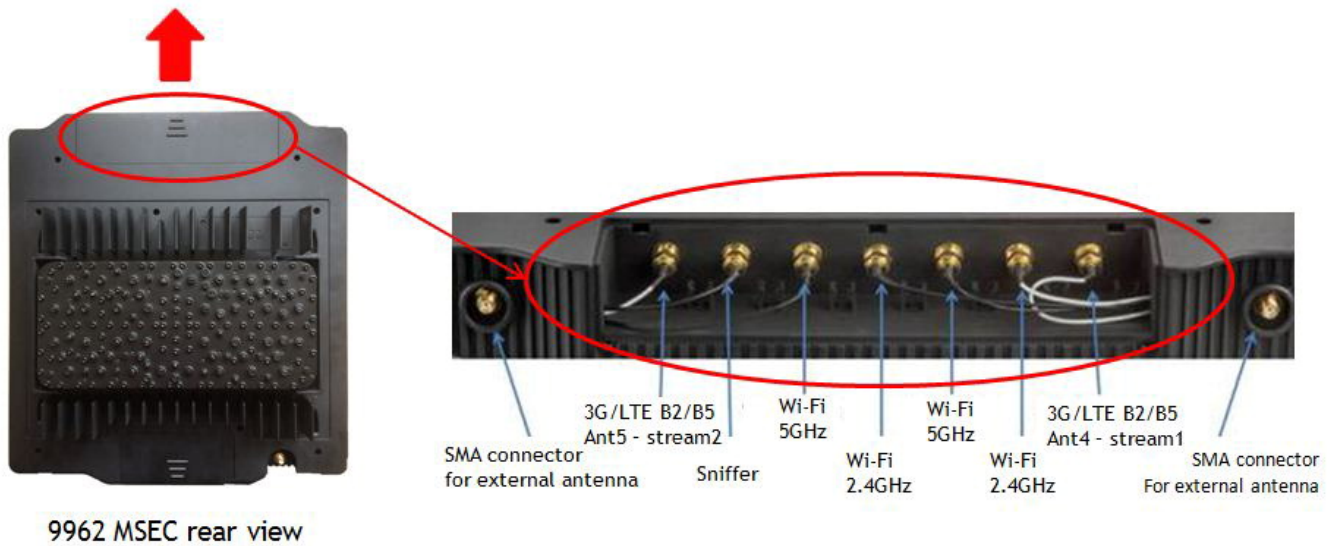
*Falls can occur when working at heights resulting in serious personal injury or death.*

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

Some customers may have already deployed Alcatel-Lucent 9363 products. In order to make smoothly evolve their network to LTE, the existing 9363 access points can be simply replaced with the new 9962 MSEC v1.0 as the mounting plates of the two products require the same installation. The 9363 access point supporting installation inside false ceiling, the following procedure lists the steps to perform to replace one 9363 access point in such a case:

- 1 Prepare the 9962 MSEC v1.0 access point: open the cover of the antenna connectors at the back of the 9962 MSEC v1.0 to deactivate the integrated antennas related to the radio frequencies of the external antennas.

Unscrew the integrated antennas connections and attach the left antenna cables into the dedicated grooves.

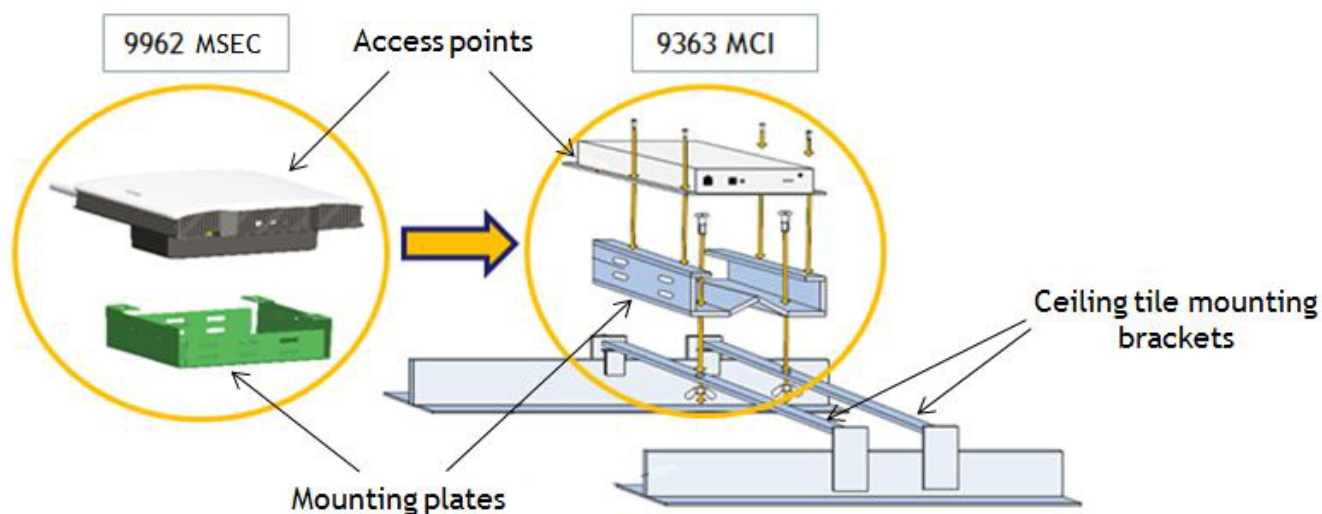
**Figure 2-8 9962 MSEC v1.0 integrated antennas**

Put the cover back on the integrated antenna connectors.

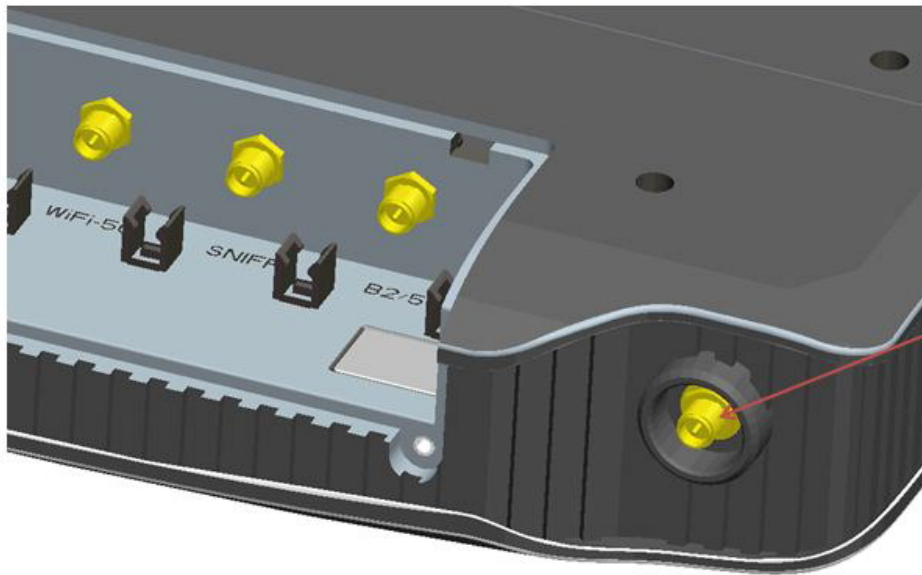
- 2 Disconnect all the cables from the installed 9363 access point.
- 3 Remove the 9363 access point and its mounting plate from the ceiling tile mounting brackets: refer to the *Alcatel-Lucent 9363 Metro Cell Indoor (V2 1900/850MHz and 2100MHz) Installation and Commissioning*, 3MN-01121-0301-RJZZA.
- 4 Attach the 9962 MSEC v1.0 mounting plate at the place left free by the 9363 access point.



Figure 2-9 9363 access point replacement



- 5 Connect the different cables to the 9962 MSEC v1.0 access point. Refer to the procedure “Cabling” (p. 2-19) for details.
- 6 Refer to the “External antennas connections” (p. 2-24) paragraph to get details on the jumper cables used to connect external antennas to 9962 MSEC v1.0.  
Select the appropriate jumper cables and connect the external antennas to the dedicated SMA connectors:



External antenna connector  
Male SMA type

- 7 Attach the 9962 MSEC v1.0 to the mounting plate as follows:
  1. Line up the four (4) grooves in the back of the 9962 MSEC v1.0 with the four (4) notches protruding from the mounting plate.
  2. Push the 9962 MSEC v1.0 horizontally to lock it into position.
  3. Then screw the four (4) screws (provided in the ceiling mounting kit) to attach the 9962 MSEC v1.0 to the mounting plate.
- 8 If locks have been ordered by the customer, attach the lock to secure the 9962 MSEC v1.0 to the mounting plate.

END OF STEPS



# Cabling

## Purpose

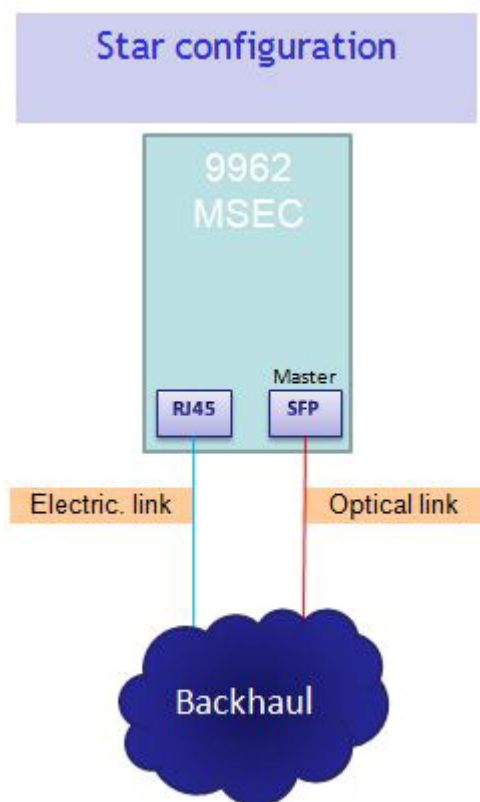
This topic describes the procedures to be followed when connecting the 9962 MSEC v1.0 cables.

## Backhaul connection

Each 9962 MSEC v1.0 access point requires at least one data cable to connect the backhaul. In case of daisy chain, an additional data cable is required (refer to [“Daisy chain”](#) (p. 2-27) for details).

The data cable can be a standard Ethernet cable with RJ45 connector or a fiber cable with an electrical/optical transceiver.

**Figure 2-10 Backhaul connection - Star configuration - 2 options**



The table lists the Ethernet cables complying with the 9962 MSEC v1.0 access point:

Order codes	Description	Cable category	Market
3BK61218CB	Ethernet cable 2m, 4 pairs, 2+1 RJ45 <sup>1</sup>	CAT5e	North America (NAR)
3BK61218CC	Ethernet cable 25m, 4 pairs, 2+1 RJ45 <sup>1</sup>	CAT5e	North America (NAR)
3BK61218CD	Ethernet cable 100m, 4 pairs, 2+1 RJ45 <sup>1</sup>	CAT5e	North America (NAR)
3JR30051CA	Ethernet cable 2m <sup>2</sup>	CAT5e	Outside North America (non-NAR)
3JR30051HK	Ethernet cable 25m <sup>2</sup>	CAT5e	Outside North America (non-NAR)
3JR30051LL	Ethernet cable 100m <sup>2</sup>	CAT5e	Outside North America (non-NAR)

**Notes:**

1. These cables are standard cables delivered with an additional RJ45 connector. This option enables to adapt the cable length by cutting it and mounting the RJ45 connector at the cut end.
2. These cables are outdoor cables.

The tables below list the fiber cables complying with the 9962 MSEC v1.0 access point:

- in single mode - duplex,
- and in multi-mode - duplex.

Single mode - duplex cables

Order codes	Description
849193453	OPTICAL CABLE / 1.0m / 2SM / 5.5mm / 2LC to 2LC / OFNR-LS / Breakout 80-80mm
849193461	OPTICAL CABLE / 2.5m / 2SM / 5.5mm / 2LC to 2LC / OFNR-LS / Breakout 80-80mm
849193479	OPTICAL CABLE / 5m / 2SM / 5.5mm / 2LC to 2LC / OFNR-LS / Breakout 80-80mm
849193487	OPTICAL CABLE / 10m / 2SM / 5.5mm / 2LC to 2LC / OFNR-LS / Breakout 80-80mm
849193495	OPTICAL CABLE / 15m / 2SM / 5.5mm / 2LC to 2LC / OFNR-LS / Breakout 80-80mm

Order codes	Description
849193503	OPTICAL CABLE / 30m / 2SM / 5.5mm / 2LC to 2LC / OFNR-LS / Breakout 80-80mm
849193511	OPTICAL CABLE / 50m / 2SM / 5.5mm / 2LC to 2LC / OFNR-LS / Breakout 80-80mm
849193529	OPTICAL CABLE / 70m / 2SM / 5.5mm / 2LC to 2LC / OFNR-LS / Breakout 80-80mm
849193537	OPTICAL CABLE / 85m / 2SM / 5.5mm / 2LC to 2LC / OFNR-LS / Breakout 80-80mm
849193545	OPTICAL CABLE / 100m / 2SM / 5.5mm / 2LC to 2LC / OFNR-LS / Breakout 80-80mm
849193552	OPTICAL CABLE / 150m / 2SM / 5.5mm / 2LC to 2LC / OFNR-LS / Breakout 80-80mm
849193560	OPTICAL CABLE / 200m / 2SM / 5.5mm / 2LC to 2LC / OFNR-LS / Breakout 80-80mm
849193578	OPTICAL CABLE / 250m / 2SM / 5.5mm / 2LC to 2LC / OFNR-LS / Breakout 80-80mm
849193586	OPTICAL CABLE / 300m / 2SM / 5.5mm / 2LC to 2LC / OFNR-LS / Breakout 80-80mm

**Notes:**

1. Select one cable per single mode duplex link.

## Multi-mode - duplex cables

Order codes	Description
849193594	OPTICAL CABLE / 1.0m / 2MM / 5.5mm / 2LC to 2LC / OFNR-LS / Breakout 80-80mm
849193602	OPTICAL CABLE / 2.5m / 2MM / 5.5mm / 2LC to 2LC / OFNR-LS / Breakout 80-80mm
849193610	OPTICAL CABLE / 5m / 2MM / 5.5mm / 2LC to 2LC / OFNR-LS / Breakout 80-80mm
849193628	OPTICAL CABLE / 10m / 2MM / 5.5mm / 2LC to 2LC / OFNR-LS / Breakout 80-80mm
849193636	OPTICAL CABLE / 15m / 2MM / 5.5mm / 2LC to 2LC / OFNR-LS / Breakout 80-80mm
849193644	OPTICAL CABLE / 30m / 2MM / 5.5mm / 2LC to 2LC / OFNR-LS / Breakout 80-80mm

Order codes	Description
849193651	OPTICAL CABLE / 50m / 2MM / 5.5mm / 2LC to 2LC / OFNR-LS / Breakout 80-80mm
849193669	OPTICAL CABLE / 70m / 2MM / 5.5mm / 2LC to 2LC / OFNR-LS / Breakout 80-80mm
849193677	OPTICAL CABLE / 85m / 2MM / 5.5mm / 2LC to 2LC / OFNR-LS / Breakout 80-80mm
849193685	OPTICAL CABLE / 100m / 2MM / 5.5mm / 2LC to 2LC / OFNR-LS / Breakout 80-80mm
849193693	OPTICAL CABLE / 150m / 2MM / 5.5mm / 2LC to 2LC / OFNR-LS / Breakout 80-80mm
849193701	OPTICAL CABLE / 200m / 2MM / 5.5mm / 2LC to 2LC / OFNR-LS / Breakout 80-80mm
849193719	OPTICAL CABLE / 250m / 2MM / 5.5mm / 2LC to 2LC / OFNR-LS / Breakout 80-80mm
849193727	OPTICAL CABLE / 300m / 2MM / 5.5mm / 2LC to 2LC / OFNR-LS / Breakout 80-80mm

**Notes:**

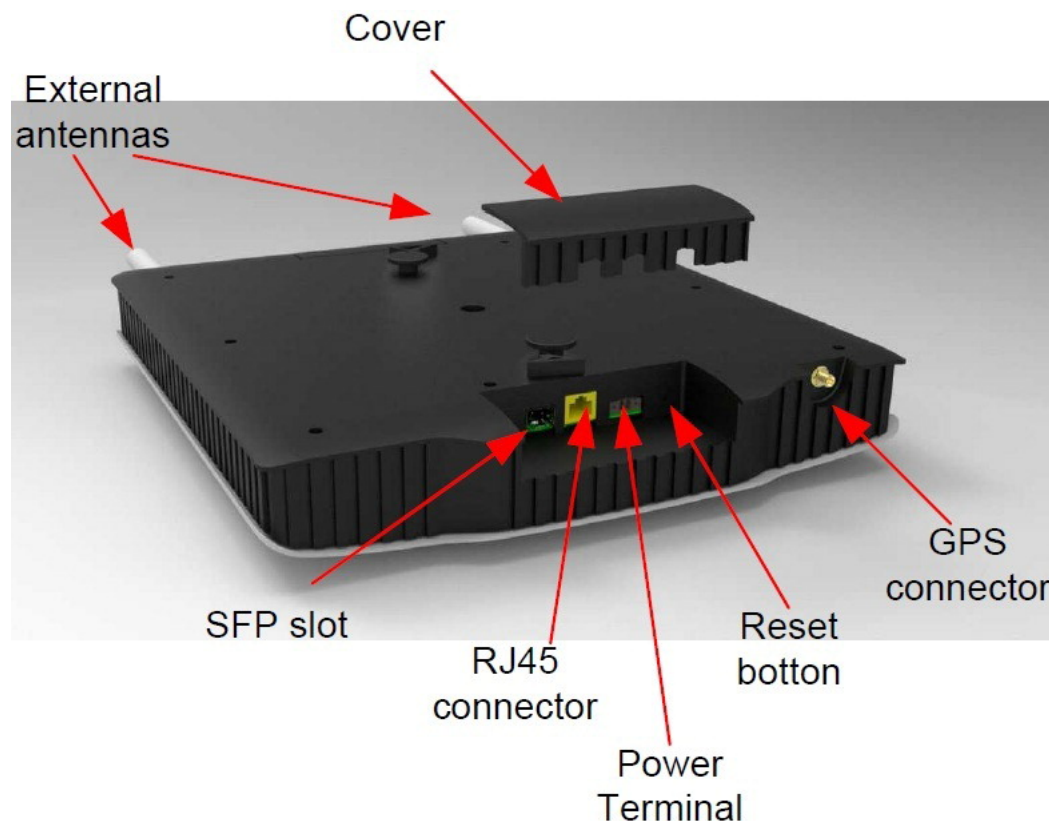
1. Select one cable per multi-mode duplex link.

**Important!** Ethernet and/or fiber cables must be purchased by customers either directly to Alcatel-Lucent either to a local provider.

**Cable connectors**

The following picture shows the positions of the different physical connectors on the 9962 MSEC v1.0 access point:

Figure 2-11 9962 MSEC v1.0 connectors



The 9962 MSEC v1.0 access point provides two Giga Ethernet (GE) ports for backhaul and daisy chain (refer to [“Daisy chain”](#) (p. 2-27) for details about the daisy chaining).

One of those ports provides a RJ45 slot and the second port a SFP slot. The SFP slot accepts 1000Base-X GE optical transceiver or 100/1000Base-T electrical transceiver.

The table lists the SFP transceivers complying with the 9962 MSEC v1.0 SFP port :

Order codes	Description
1AB413590001	SFP GBE 10/100/1000BaseT (copper)
1AB187280029	SFP GBE 1000BaseLX (Single Mode, LC connector)
1AB187280063	SFP GBE 1000BaseSX (Multi Mode, LC connector)

**Note:** SFP transceivers must be purchased by customers either directly to Alcatel-Lucent either to a local provider.

## External antennas connections

The ceiling installation requires external antennas that have to be linked to the 9962 MSEC v1.0 access point with the appropriate jumper cables on the antenna SMA connectors.

The table lists the jumper cables complying with the 9962 MSEC v1.0 antennas connectors:

Order codes	Description
1AB414660001	Jumper Type N to SMA (1m – SMA Male / N Female)
1AB425160001	Jumper Type N to SMA (1m – SMA Male / N Male)
1AB414570001	Jumper Type N to SMA (2m – SMA Male / N Male)

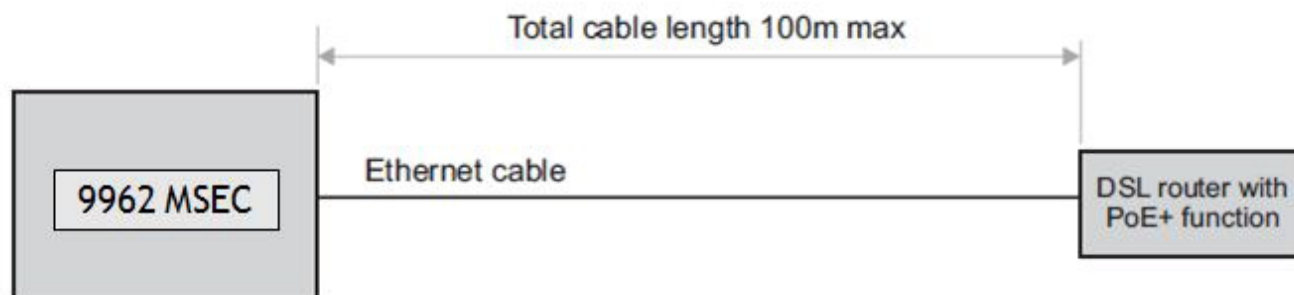
## Power supply

The 9962 MSEC v1.0 access point can be powered through:

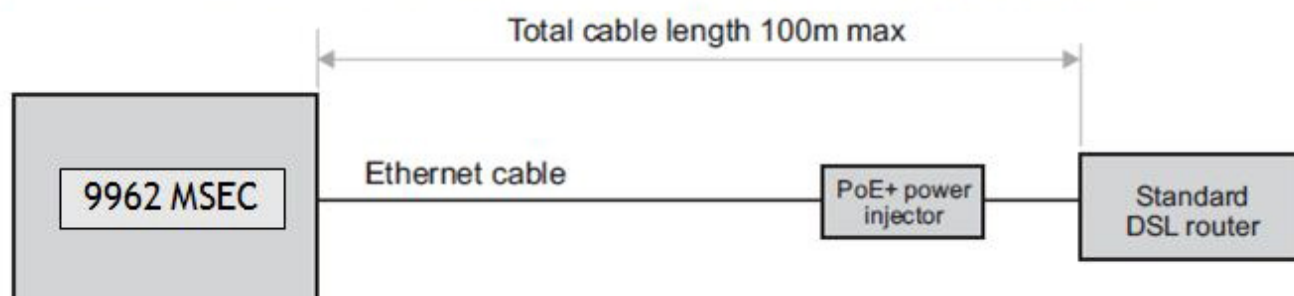
- DC input power with an AC-DC power adapter including an appropriate Jack,
- or 4p PoE compliant with PoH standard (following IEEE 802.3 at Power over Ethernet standard).

If PoE compliant with PoH standard is used to supply the power then a PoE injector or a PoE capable router can be used.

### Power over Ethernet connection to PoE+ router



### Power over Ethernet connection via power injector to standard DSL router



### Connect the 9962 MSEC v1.0 cables

- 1 According to the on-site configuration , select the appropriate option in the following table, and perform the associated procedure:

If you want to...	Then ...
Use an AC-DC power adaptor and a standard router,	Go to <a href="#">“Connect to a standard DSL router”</a> (p. 2-26) and <a href="#">“Connect the AC-DC power adaptor”</a> (p. 2-26)
Use PoE supplied by a DSL router with PoE function,	Go to <a href="#">“Connect to a DSL router with PoE function”</a> (p. 2-26)

END OF STEPS

**Connect to a standard DSL router**

To connect the 9962 MSEC v1.0 to a standard DSL router using an Ethernet cable through which power is not supplied, perform the following steps:

- 1 Route the Ethernet cable from the 9962 MSEC v1.0 to a standard DSL router.
- 2 Connect one end of the Ethernet cable to the 9962 MSEC v1.0.
- 3 Connect the other end of the Ethernet cable to the router.
- 4 Finally, secure the Ethernet cable to the wall.

END OF STEPS

**Connect the AC-DC power adapter**

If you intend to use an AC-DC power adapter to supply power to the 9962 MSEC v1.0, perform the following steps:

- 1 Route the power supply cable from the 9962 MSEC v1.0 to the supplied AC-DC power adapter.
- 2 Connect the power supply cable to the 9962 MSEC v1.0.
- 3 Finally, secure the power supply cable to the wall.

END OF STEPS

**Connect to a DSL router with PoE function**

To connect the 9962 MSEC v1.0 to a DSL router with PoE function, perform the following steps:

- 1 Route the Ethernet cable from the 9962 MSEC v1.0 to a DSL router with PoE function.



- 2 Connect one end of the Ethernet cable to the 9962 MSEC v1.0.

- 3 Connect the other end of Ethernet cable to the router.

- 4 Finally, secure the Ethernet cable to the wall.

END OF STEPS

### Connect to the GPS antenna

The GPS antenna is used for synchronization purpose. Perform the following steps to connect the 9962 MSEC v1.0 to the GPS antenna:

- 1 Route the GPS antenna cable to the 9962 MSEC v1.0 access point.

- 2 Connect the GPS antenna cable to the dedicated SMA connector in the 9962 MSEC v1.0.

- 3 Finally, secure the GPS antenna cable to the wall.

END OF STEPS

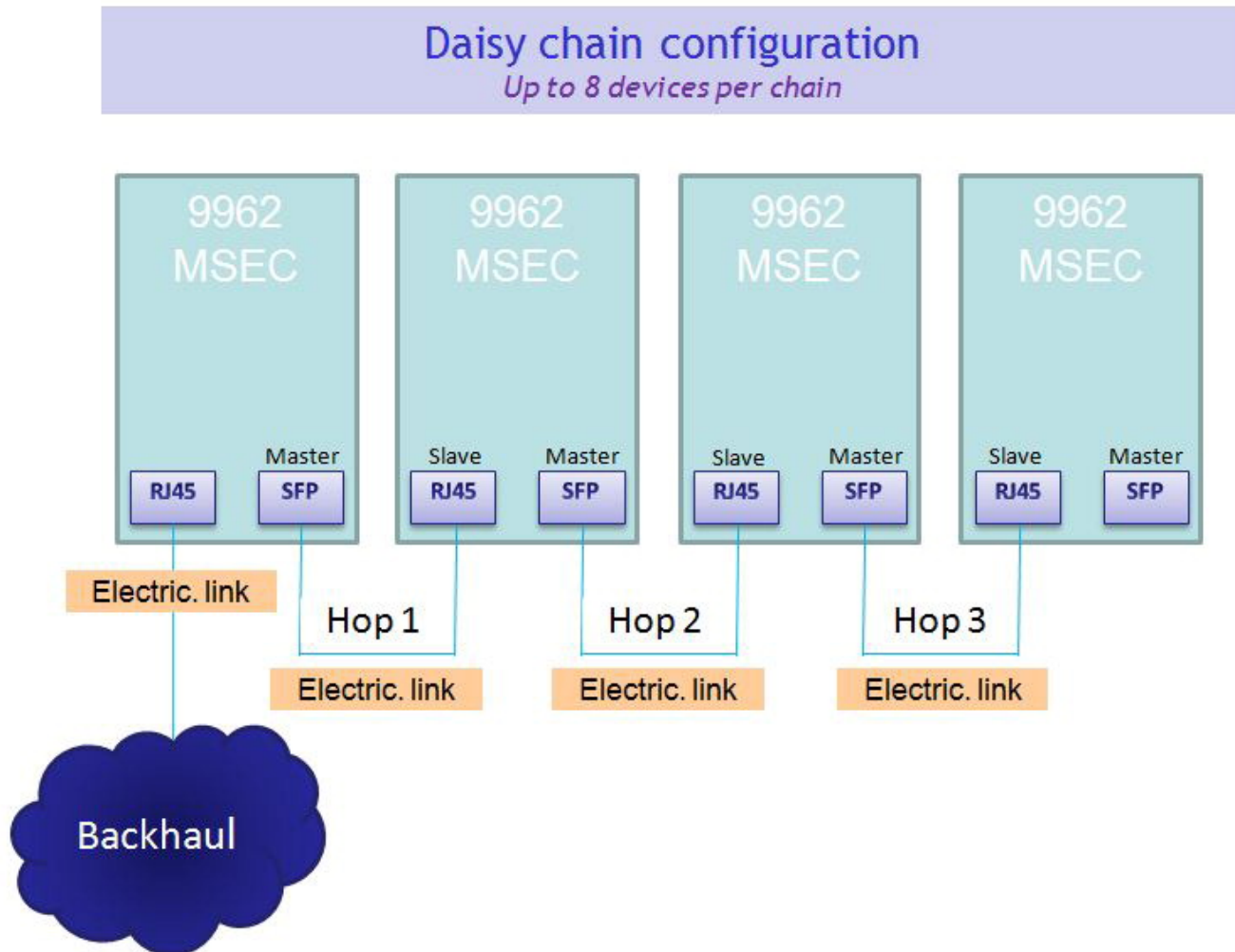
### Daisy chain

The 9962 MSEC v1.0 access point can be linked in a daisy chain. Fiber links are not allowed in this configuration.

The daisy chain hop is set by connecting the SFP slot of the “Master” access point to the RJ45 port of the “Slave” access point. Therefore, the “Master” SFP slot must be equipped with an appropriate RJ45 SFP.

Up to eight 9962 MSEC v1.0 access points can be daisy-chained.

Figure 2-12 Example of 9962 MSEC v1.0 daisy chain



# 3 Alcatel-Lucent 9962 Multi-standard Enterprise Cell v1 commissioning

## Overview

### Purpose

This chapter describes the 9962 MSEC v1.0 commissioning process. The 9962 MSEC v1.0 is self commissioning in the case of single device deployments.

### Contents

<a href="#">Commissioning process</a>	3-2
---------------------------------------	-----

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# Commissioning process

## Overview

The 9962 MSEC v1.0 supports the following technology combinations:

- One cell of LTE,
- One cell of WCDMA,
- One cell of LTE plus one cell of WCDMA.

In any of these configurations the 9962 MSEC v1.0 simultaneously supports Wi-Fi thanks to the integrated Wi-Fi module that supports 802.11n operation.

## Purpose

This section outlines the 9962 MSEC v1.0 zero-touch commissioning process.

## Related information

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

- *Alcatel-Lucent 9962 Multi-standard Enterprise Cell v1 - Technical Description and Troubleshooting Guide*, 3MN-02001-0003-DEZZA

## Before you begin

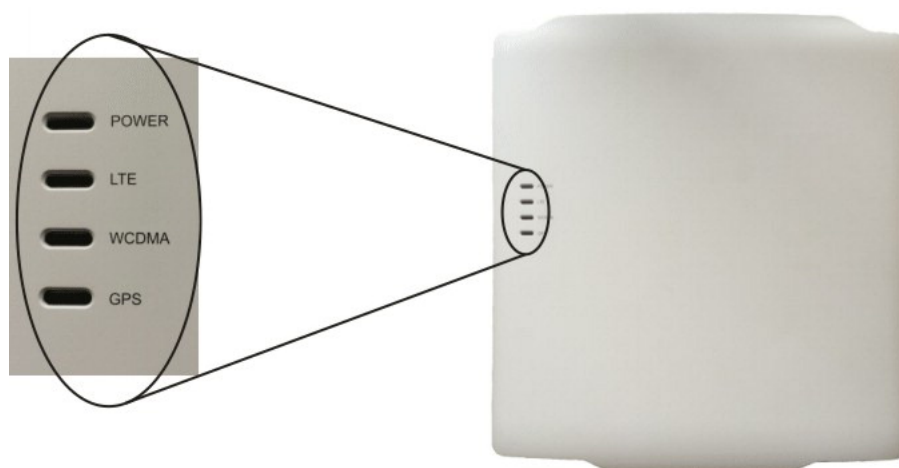
The 9962 MSEC v1.0 is intended to be installed and then left unattended so the LED pattern activated in the commissioning process is mainly focused on indicating that the installation and initial network connection have succeeded and that the access point is properly functioning.

## 9962 MSEC v1.0 access point commissioning

---

- 1 Power on the 9962 MSEC v1.0 access point. All LEDs (Power, LTE, WCDMA and GPS) are solid red: if the software fails to start, the LEDs remain in this condition. Otherwise the LEDs indicate the progress of the initialization of the unit.

Figure 3-1 9962 MSEC v1.0 front LEDs



- 2 After approximately 2 minutes the 9962 MSEC v1.0 access point will initialize and establish IPsec connectivity. During this operation the Power status indicator will blink slowly. Only red at the beginning then toggling red/green once the access point attempts to contact DNS Internal for HDM/SAM address resolution.
- 3 After the 9962 MSEC v1.0 access point has established a network connection it will automatically update its software and configuration database. This process takes approximately 15 minutes. During this operation the Power indicator will blink green.
- 4 Once the software update has completed the 9962 MSEC v1.0 access point will carry out an automatic reboot. During reboot the Power indicator will still be blinking green.
- 5 The access point is ready to enable applications and the Power indicator is solid green.
- 6 The 9962 MSEC v1.0 access point starts looking for a GPS signal: the GPS LED is blinking red.

**Important!** If GPS signal is not available, the GPS LED turns off.

- 7 As soon as the GPS signal is acquired, the GPS LED goes solid green.

8	If the access point configuration ...	Then ...
	supports one LTE cell	go to “ <a href="#">LTE commissioning</a> ” (p. 3-4)
	supports one WCDMA cell	go to “ <a href="#">WCDMA commissioning</a> ” (p. 3-4)
	supports Wi-Fi	go to “ <a href="#">Wi-Fi commissioning</a> ” (p. 3-5)

- 9 After the 9962 MSEC v1.0 access point has been in a normal system state for fifteen minutes, all the non-Wi-Fi LEDs are turned off to avoid bringing attention to the unit. They remain off until one of them changes to an Off-Normal state. As the Wi-Fi LEDs are managed by the Wi-Fi module they are not included in this procedure but turned off in a separate procedure.

END OF STEPS

## LTE commissioning

- 1 The 9962 MSEC v1.0 access point starts its LTE auto-configuration and self optimisation of the radio access. During this operation the LTE status indicator will blink red/green until the service is operational marked by a solid green LTE status indicator.

**Important!** In case the configuration supports only one LTE cell, the WCDMA LED is off. If the configuration enables LTE and WCDMA concurrent operation, the LTE and WCDMA commissioning proceed simultaneously.

- 2 Return to the [Step 8](#).

END OF STEPS

## WCDMA commissioning

- 1 The 9962 MSEC v1.0 access point starts its WCDMA auto-configuration and self optimisation of the radio access. During this operation the WCDMA status indicator will blink red/green until the WCDMA service is operational marked by a solid green WCDMA status indicator.

**Important!** In case the configuration supports only one WCDMA cell, the LTE LED is off. If the configuration enables WCDMA and LTE concurrent operation, the WCDMA and LTE commissioning proceed simultaneously.

- 2 Return to the [Step 8](#).

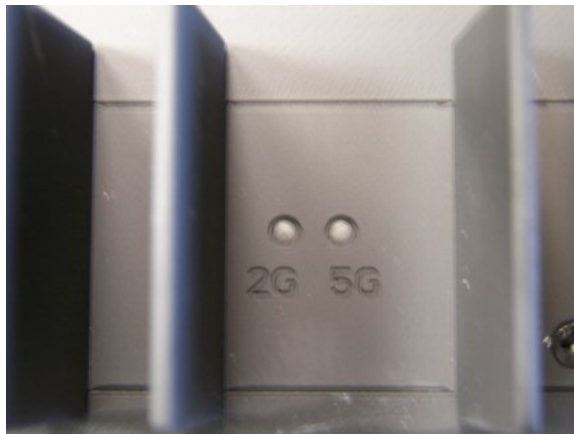
END OF STEPS

## Wi-Fi commissioning

The 9962 MSEC v1.0 integrated Wi-Fi module manages the Wi-Fi LEDs located at the rear of the access point.

- 1 As soon as the access point is powered on, the 9962 MSEC v1.0 starts booting and the Wi-Fi LEDs are solid on.

**Figure 3-2 9962 MSEC v1.0 Wi-Fi LEDs**



- 2 Then the 9962 MSEC v1.0 tries to get adopted by the 9772 Wi-Fi Service Controller and the 5G LED starts blinking slowly. The 2G LED related to the 2.4GHz frequency is off.
- 3 This step is optional and occurs only in case of software updates pushed by the 9772 Wi-Fi Service Controller. If no software updates, see the next step.  
Otherwise, the 2G LED starts blinking slowly while the 5G LED related to the 5GHz frequency is off.

- 
- 4 The 9772 Wi-Fi Service Controller pushes the access point configuration. During this operation the both Wi-Fi LEDs will blink quickly until the WLANs are mapped to radios marked by a slow blinking Wi-Fi status indicator.

The Wi-Fi service may be operational on a single frequency (2.4GHz or 5GHz) or simultaneously on the both frequencies.

---

- 5 After a period in the same state, that is parameterized, all the Wi-Fi LEDs are switched off.
- 

- 6 Return to the [Step 9](#).
- 

END OF STEPS

---

The Wi-Fi LEDs initialization steps are summarized in the following table:

**Table 3-1 Wi-Fi Status LED initialization states**

Step	Description	State	5G LED	2G LED
1	Power-up or reload	BOOTING	Solid On	Solid On
2	9962 MSEC v1.0 access point tries to get adopted by 9772 Wi-Fi Service Controller	ADOPTING	Slow blinking	Off
3	(optional) 9772 Wi-Fi Service Controller pushes a software upgrade	UPGRADING	Off	Slow blinking
4	The 9772 Wi-Fi Service Controller pushes the 9962 MSEC v1.0 access point configuration	CONFIGURING	Fast blinking	Fast blinking
5	WLAN are mapped to radios: normal service	OPERATIONAL	5GHz service: Slow blinking	2.4GHz service: Slow blinking
6	After 30 <sup>1</sup> minutes in the same state	HIDING	Off	Off

**Notes:**

1. configurable from 15 to 1440 minutes.



# 4 Post-installation activities

## Overview

### Purpose

This chapter describes the post-installation activities and checks.

### Contents

<a href="#">Post-installation information</a>	4-2
---	-----

---

## Post-installation information

### Final installation checks

Before leaving the installation site, carry out 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 and remove all loose tools, materials, and parts.  
.....

END OF STEPS  
.....

# Appendix A: Product conformance statements

## Overview

### Purpose

This appendix provides the product conformance statements relating to the Alcatel-Lucent 9962 MSEC v1.0.

### Contents

<a href="#">United States</a>	<a href="#">A-1</a>
<a href="#">Environmental requirements</a>	<a href="#">A-3</a>

## United States

### Introduction

The statements that follow are the product conformance and eco-environmental statements that apply to the 9962 MSEC v1.0 when deployed in the United States.

### Federal Communications Commission

**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:

- This device may not cause harmful interference
- This device must accept any interference received, including interference that may cause undesired operation.

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 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.

This transmitter must not be collocated or operating in conjunction with any other antenna or transmitter.

**Important!** The country code selection is for non-US model only and is not available to all US model. Per FCC regulation, all Wi-Fi product marketed in US must fixed to US operation channels only.

#### **Radiation Exposure Statement**

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 30 cm between the radiator and your body.

#### **Packaging collection 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, please contact the Alcatel-Lucent Field Services / Installation - Environmental Health and Safety organization.

For technical support, contact your local Alcatel-Lucent customer support team. See the Alcatel-Lucent Support web site <http://www.alcatel-lucent.com/support/> for contact information.

## Environmental requirements

### Environmental factors

The installation location requires the following environmental factors to be controlled:

- Temperature
- Humidity
- Ventilation

### Environmental limits

The atmosphere in the room that houses the device must be maintained within the following limits:

Environmental factor	Requirement	Range
Operating temperature	Normal Operation	-5°C to 50°C (23°F to 122°F) <ul style="list-style-type: none"><li>• Telcordia GR-63-CORE</li><li>• Telcordia GR-3108-CORE</li><li>• ANSI ATIS-0600010.2007</li></ul>
Operating relative humidity	Condensing	5% to 95% <ul style="list-style-type: none"><li>• Telcordia GR-63-CORE</li><li>• Telcordia GR-3108-CORE</li><li>• ANSI ATIS-0600010.2007</li></ul>
	Ingress protection	NEMA Level 1 IP2X of IEC 60529
Operating altitude		0 to 4000m (13 000ft)
Vibration	NAR	Telcordia GR-63-CORE sections 4.4.4 & 5.4.2
	Earthquake	Richter scale 7



# Glossary

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## Numerics

### 4p PoE

4 pair Power over Ethernet

---

## A

### AC

Alternative Current

### AGPS

Assisted GPS

---

## D

### DC

Direct Current

### DNS

Domain Name Server

### DSL

Digital Subscriber Line

---

## E

### EU

European Union

---

## G

### GE

Giga Ethernet

### GPS

Global Positioning System

---

## H

### HDM

Home Device Manager

---

## Glossary

**I**      **IP**  
Internet Protocol

**L**      **LTE**  
Long Term Evolution - 4G

**N**      **NAR**  
North America

**NTP**  
Network Time Protocol

**P**      **PoE+**  
Power over Ethernet

**PoH**  
Power-on Hours

**R**      **RF**  
Radio Frequency

**RNC**  
Radio Network Controller

**S**      **SAM**  
Service Activation Manager

**SFP**  
Small form-factor pluggable

**SMA**  
SubMiniature version A

**W**      **WCDMA**  
Wideband Code Division Multiple Access

**Wi-Fi**  
Wireless Fidelity (IEEE 802.11b wireless networking)



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