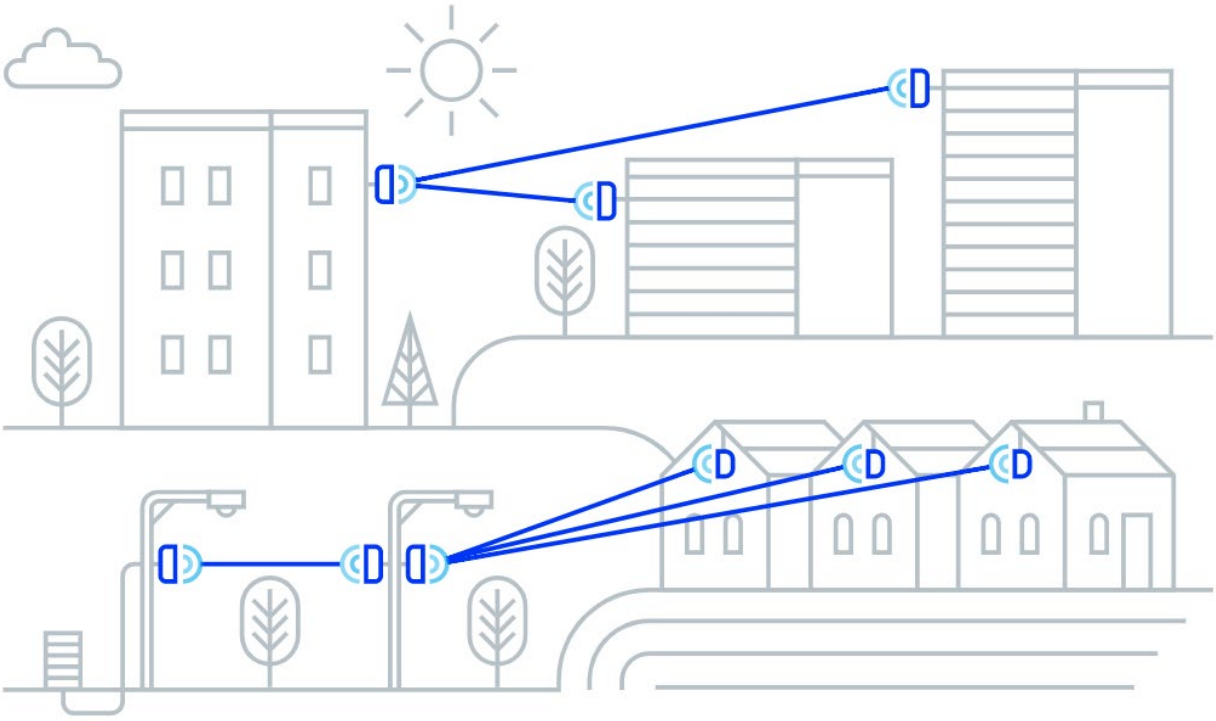

Architectural and Engineering Specification
AltoPlex D423

October 17, 2025

1. Summary

A. The intent of this document is to specify the minimum criteria for the design, supply, and installation of the AltoPlex D423 60GHz wireless radio.

B. Product: V band radio that provides wireless point-to-point and point-to-multipoint connectivity based on the 802.11ay standard, with 3-port 1GbE Ethernet support.

C. AltoPlex radios provide carrier-grade network connectivity for Ethernet applications such as high-definition megapixel cameras, multi-sensor cameras, and network video recorders (NVRs), as well as extending networks at fiber-quality speeds to provide Wi-Fi backhaul, smart city municipal building-top and street-level implementations, and connecting law enforcement locations.

D. Related requirements:

- Features and functionality
  - Operation
  - Connectivity
  - Security
  - System management
- Device Power
- Device dimensions
- Physical installation
- Enclosure
- Certifications

2. Specification

E. The AltoPlex D423 shall include the following features and functionality:
   1. The D423 shall be able to function as a Distribution Node (DN) or Client Node (CN).
   2. The D423 shall function in point-to-point (DN to DN) and point-to-multipoint (DN to CN) modes.
      a) When functioning in DN mode, the D423 shall support 1 DN connection and 15 CN connections simultaneously.
   3. The D423 shall provide 90° horizontal and +/-20° vertical coverage.
   4. The D423 shall operate in the unlicensed 57-66GHz band.
      a) The D423 shall provide 4 non-overlapping 2.16GHz channels within the 57-66GHz band.
      b) Channel access shall be TDMA/TDD.
   5. The D423 shall have 12 levels of Modulation and Coding Schemes from MCS-0 (BPSK) to MCS-12 (16QAM).
   6. The D423 shall have a capacity of up to 2Gbps aggregate.
   7. The D423 shall have less than 1ms latency.
   8. Ethernet port:
      a) The D423 shall have 3 RJ-45 1G BASE-T Ethernet port (with auto-negotiation to 100Mbps).
      b) The D423's Ethernet ports shall provide 802.3bt Power over Ethernet (PoE):
         i. 1 port active PoE input, 90W maximum.
         ii. 2 ports active PoE output, 60W maximum.
      c) The D423 shall have IP67-rated ingress protection.
   9. The D423 shall have transparent Ethernet bridging types including VLAN and VLAN stacking.
   10. The D423 shall utilize hardware-based AES-128 encryption.
   11. The D423 shall have an operating temperature range of -40° to +131°F (-40° to +55°C.)

F. System Management:
   1. The D423 shall provide a WebUI accessed from a desktop browser for configuration, management, and monitoring.
      a) The D423 shall also be optionally supported with AltoCommand, Altowav's enterprise management and monitoring UI.
      b) The D423 shall be able to be operated without AltoCommand.
   2. The D423 shall support various management protocols: HTTPS, SSH.
   3. The D423 shall provide a REST API for management and monitoring.
   4. The D423 shall provide the ability to save the unit configuration and upload it from local and remote connection.
      a) Configuration backup and restore shall be supported via the REST API.
   5. The D423 shall provide the ability to update configuration over the network (in-band).
   6. The D423 shall provide the ability to upgrade software over the network (in-band).

7. The D423 shall default to using a static IP address.
    a) The D423 shall be able to be configured to use dynamic IP address assignment (DHCP).
8. The D423 shall have a Wi-Fi management access point to allow for local wireless management of the device from a Wi-Fi-enabled PC, tablet, or hand-held device.
    a) The Wi-Fi management access point shall provide management access to the device only; it shall not provide access to the internet or LAN.
    b) The Wi-Fi management access point shall be able to be disabled.
    c) The D423 shall use the device hostname as the access point name by default.
        i. The name of the Wi-Fi management access point shall be configurable.
    d) The IP address of the Wi-Fi management access point shall be configurable.
9. The D423 shall have a single green/red bi-color LED.
    a) The LED shall provide visual indication of the status of the device, including:
        i. When the device is waiting to form connections.
        ii. When the device has a wired connection and at least one wireless connection.
        iii. When the device is powering up.
        iv. When the device is in an error condition.
    b) The D423 shall provide the ability to set the LED into "locate mode" which flashes a specific sequence to allow the device to be located.
    c) The D423 shall provide the ability to disable the LED.
10. The D423 shall include an integrated Global Positioning System (GPS) receiver.
    a) GPS shall provide location information for the D423.
    b) GPS support shall be enabled by default.
    c) GPS support shall be able to be disabled from within the WebUI.

G. Power:
1. The D423 shall support one Power over Ethernet (PoE) input port.
2. The D423 shall have two PoE output ports.
    a) Total maximum PoE output of both ports shall be 60W.
    b) Output of each PoE port shall be configurable:
        i. Disabled
        ii. 30W
        iii. 60W
3. The D423 shall have a 12W maximum power consumption (not including PoE output).

H. Dimensions:
1. The D423 shall be 6.88 x 6.88 x 1.62 inches (174.75 x 174.75 x 41.15mm).
2. The D423 shall weigh 1.59lbs (720g)

I. Physical installation
    1. The D423 shall provide wall-mounting and pole-mounting options without requiring additional brackets.
    2. The D423 shall have an optional wall mount bracket.
        a) The D423 shall be attached to the wall mount bracket by using band clamps.
        b) The wall mount bracket shall enable azimuth adjustment.
        c) The wall mount bracket shall have an optional pole extension to support multiple devices and increased elevation.
    3. The D423 shall have an optional tilting mount bracket.
        a) The tilting mounting bracket shall be able to be mounted to a wall or flat surface by using screws.
        b) The tilting mounting bracket shall be able to be mounted to a pipe or pole by using band clamps.
        c) The tilting mounting bracket shall allow for tilting elevation adjustments from +60° to -45°.
    4. The D423 shall provide an IP67-rated cable gland for installation of an Ethernet cable.

J. Enclosure
    1. Mechanical installation of the D423 shall not require special tools.
    2. The D423 enclosure shall include all necessary link components:
        a) Baseband.
        b) Radio.
        c) Scanning antenna.
        d) GPS antenna and module.
    3. The enclosure shall include the ability to be grounded.
    4. The enclosure shall be made of cast aluminum A338.
    5. The enclosure shall have a 60-100 microns power coating of pantone PMS 427C paint.
    6. The D423 front cover shall be made of PC/ABS thermoplastic.
    7. The front cover shall include 0.5% HALS 770 UV light stabilizer.

K. The D423 shall include the following certifications:
    1. Radio:
        a) FCC ID: Pending
        b) IC: Pending
    2. Wi-Fi management radio:
        a) FCC ID: Pending
        b) IC: Pending
    3. ESD: IEC EN 61000-4-2
    4. EMC: IEC EN 61000-4-3