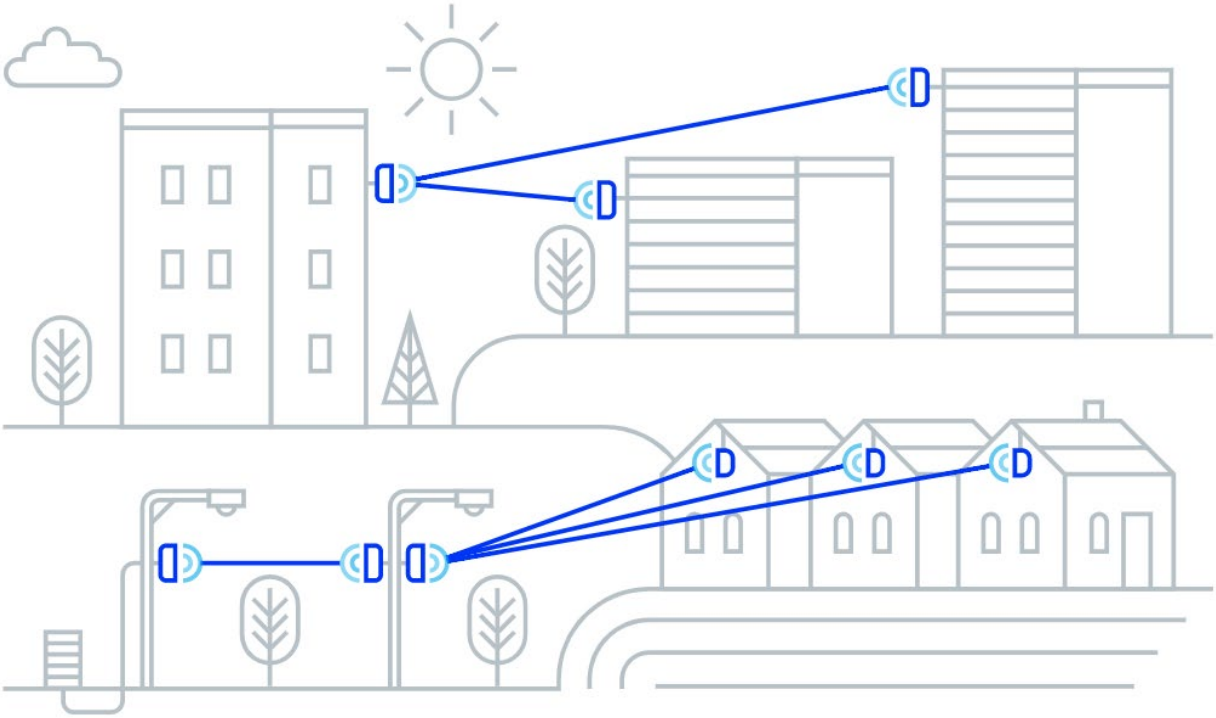

Architectural and Engineering Specification
AltoPlex C410 and C420

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 C410 and C420 60GHz wireless radios.

B. Product: V band radios that function in tandem with AltoPlex D621 radios to provide wireless point-to-multipoint connectivity based on the 802.11ay standard, with 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 C410 and C420 shall include the following features and functionality:
   1. The C410 and C420 shall function as client nodes (CNs).
   2. The C410 and C420 shall support one link to one AltoPlex D621, when the D621 is operating in distribution node (DN) mode.
   3. The C410 and C420 shall provide 90° horizontal and +/-20° vertical coverage.
   4. The C410 and C420 shall operate in the unlicensed 57-66GHz band.
      a) The C410 and C420 shall support 4 non-overlapping 2.16GHz channels within the 57-66GHz band.
      b) Channel access shall be TDMA/TDD.
      c) Wireless configuration, including the channel, shall be performed on the distribution node (D621) and propagated to the C410/C420 when the link is formed.
   5. The C410 and C420 shall have 12 levels of Modulation and Coding Schemes from MCS-0 (BPSK) to MCS-12 (16QAM).
   6. The C410 and C420 shall have a capacity of up to 2Gbps aggregate.
   7. The C410 and C420 shall have less than 1ms latency.
   8. Ethernet port:
      a) The C410 and C420 shall have 1 RJ-45 1G BASE-T Ethernet port (with auto-negotiation to 100Mbps).
      b) The C410 and C420 shall have IP67-rated ingress protection.
      c) The C410 and C420's Ethernet port shall be used to provide power to the device by using 802.3at Power over Ethernet (PoE).
   9. The C410 and C420 shall have transparent Ethernet bridging types including VLAN and VLAN stacking.
   10. The C410 and C420 shall utilize hardware-based AES-128 encryption.
   11. The C410 and C420 shall have an operating temperature range of -40° to +131°F (-40° to +55°C.)

F. System Management:
   1. The C410 and C420 shall provide a WebUI accessed from a desktop browser for configuration, management, and monitoring.
      a) The C410 and C420 shall also be optionally supported with AltoCommand, Altowav's enterprise management and monitoring UI.
      b) The C410 and C420 shall be able to be operated without AltoCommand.
   2. The C410 and C420 shall support various management protocols: HTTPS, SSH.
   3. The C410 and C420 shall provide a REST API for management and monitoring.
   4. The C410 and C420 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 C410 and C420 shall provide the ability to update configuration over the network (in-band).

6. The C410 and C420 shall provide the ability to upgrade software over the network (in-band).
7. The C410 and C420 shall default to using a static IP address.
    a) The C410 and C420 shall be able to be configured to use dynamic IP address assignment (DHCP).
8. The C410 and C420 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 C410 and C420 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 C410 and C420 shall provide the ability to disable the LED.
9. The C410 and C420 shall include an integrated Global Positioning System (GPS) receiver.
    a) GPS shall provide location information for the C410/C420.
    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 C410 and C420 shall support Power over Ethernet (PoE) input.
    a) The C420 shall have an 11W maximum power consumption.
    b) The C410 shall have a 10W maximum power consumption.

H. Dimensions:
1. The C410 and C420 shall be 5.9 x 3.8 x 1.4 inches (150 x 95 x 35mm).
2. The C410 and C420 shall weigh 14 oz (400g).

I. Physical installation:
1. The C410 and C420 shall provide wall-mounting and pole-mounting options without requiring additional brackets.
2. The C410 and C420 shall have an optional wall mount bracket.
    a) The C410 and C420 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 C410 and C420 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 C410 and C420 shall provide an IP67-rated cable gland for installation of an Ethernet cable.

J. Enclosure
   1. Mechanical installation of the C410 and C420 shall not require special tools.
   2. The C410 and C420 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 C410 and C420 front cover shall be made of PC/ABS thermoplastic.
   7. The front cover shall include 0.5% HALS 770 UV light stabilizer.

K. The C410 and C420 shall include the following certifications:
   1. Radio:
      a) C410:
         i. FCC ID: 2AMP5-46101
         ii. IC: 22992-46201
      b) C420:
         i. FCC ID: 2AMP5-46211
         ii. IC: 22992-46211
   2. ESD: IEC EN 61000-4-2
   3. EMC: IEC EN 61000-4-3