

---

# Overview

---

## Introduction

This document describes the system features used in the WLAN Cable Access Point 6220 Release 1.0 Product.

The Wireless LAN Cable Access Point 6220 is an outdoor hardened, strand-mountable access point solution designed to extend the reach of the cable operators' hybrid fiber coax network utilizing wireless technologies from existing rights of ways. This solution from Nortel Networks provides cable operators a fast, low-cost alternative for delivering service to new customers by eliminating the time, permits, and construction costs associated with extending aerial or buried drops.

The WLAN Cable Access Point 6220 solution provides :

Flexible service platform

The WLAN Cable Access Point 6220 is a flexible service platform giving cable operators the ability to offer many different wireless services such as Public Hot Spots and Commercial High Speed Data services.

Standard Compliance and Interoperability

The WLAN Cable Access Point 6220 utilizes standard-compliant DOCSIS<sup>TM</sup> cable modems, thus ensuring interoperability with the existing cable network. Wireless access is accomplished using industry-standard IEEE 802.11 radios approved by government regulatory agencies for use in "unlicensed" ISM frequencies.

## Security

Security is of the highest importance when delivering wireless services. The WLAN Cable Access Point 6220 adheres to industry standards for 802.11 devices and augments those standards with additional security features designed to provide both the cable operator and the end-user maximum protection.

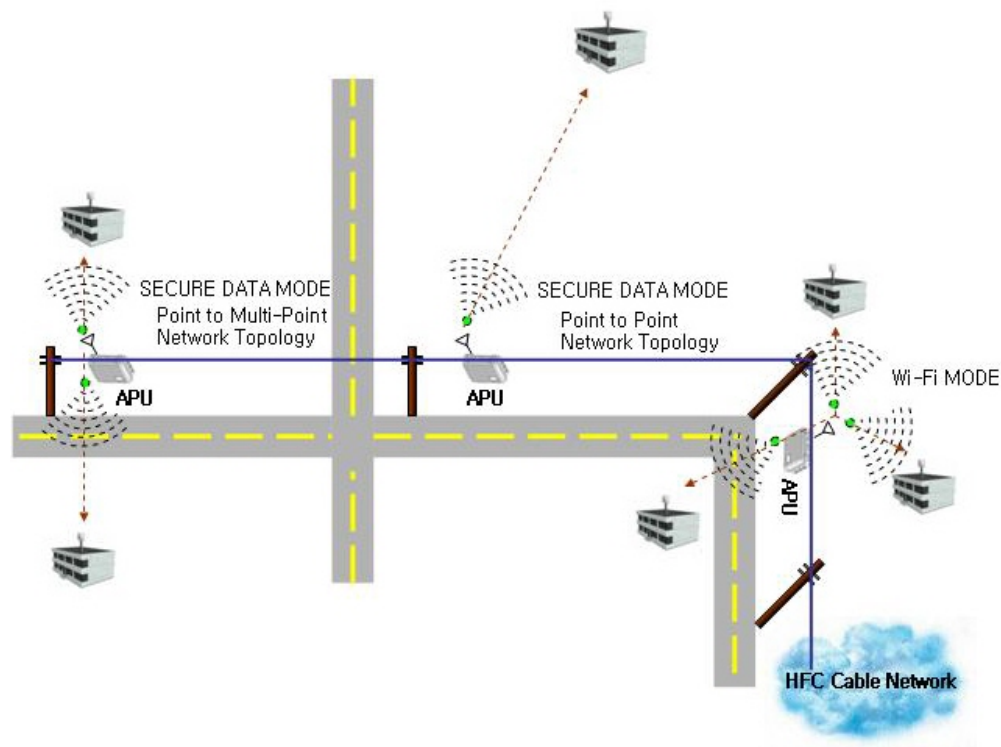
## Performance optimization via multiple antenna options

Nortel Networks provides antenna options specifically engineered to enable the WLAN Cable Access Point 6220 to achieve peak link performance in Line of Sight (LOS) and Near LOS applications.

## Ease of installation

Designed for simple, fast installation by professional technicians, the WLAN Cable Access Point 6220 is installed in a simple three-step procedure: lock down strand clamps, connect power via coax drop, and attach and align antenna for service optimization

**Figure 1-1**  
**WLAN Cable Access Point 6220 Service Concept Diagram**



## Product Description

Table 1-1  
WLAN Cable Access Point 6220 Products

No.	PEC	Description
1	<b>NTPM99AC</b>	APU, 2.4G,A/B/G RADIO, CM
2	<b>NTPM99AE</b>	APU, 2.4G,FP ANTENNA, 14dB gain
3	<b>NTPM99AF</b>	APU, 2.4G,OMNI ANTENNA, 7dB gain
4	<b>NTPM99AP</b>	APU, 2.4G,BI-DIRECTIONAL ANTENNA, 9dB Peak
5	<b>NTPM99AE</b>	APU Antenna Mounting Kit / Tool
6	<b>NTPM99CB</b>	R1.0 WLAN6220 CAP DOC,CD
7	<b>NTPM99DA</b>	R1.0 WLAN6220 CAP SOFTWARE, CD
8	<b>NTPM99CA</b>	R1.0 WLAN6220 CAP DOC,PAPER
9	<b>NTPM99BC</b>	CSU, 2.4G,B RADIO, Flat Panel
10	<b>NTPM99EG</b>	CSU Mounting Kit / Tool

Figure 1-2  
WLAN Cable Access Point 6220 APU Package Components



Figure 1-3  
WLAN Cable Access Point 6220 CSU Package Components



## **CSU(Corporate Service Unit)**

The following is a list of WLAN Cable Access Point 6220 CSU features:

Enclosure has a POE connection interface and a DC Power Adapter Jack at the bottom of CSU.

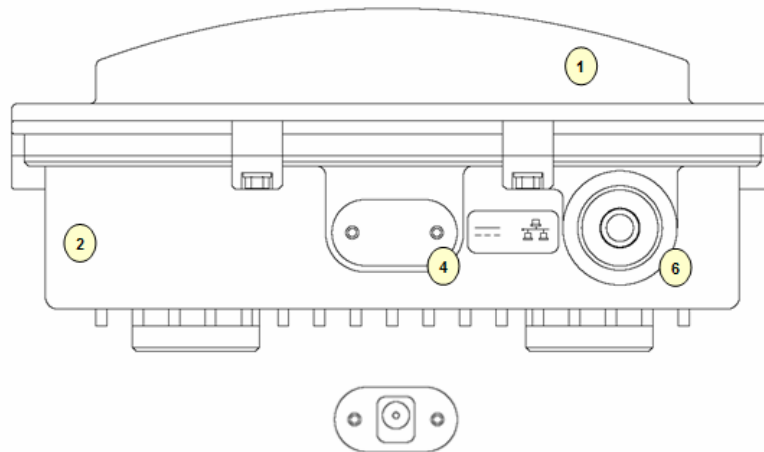
Operation Power & Data Traffic are mixed at POE Injector and supplied to the Ethernet Port on CSU through CAT5 Cable.

Basically, two kinds of mounting types are available for CSU, such as a pole mounting and wall mounting at house or tall building, but in case of wall mounting, another optional bracket kit will be needed for installation.

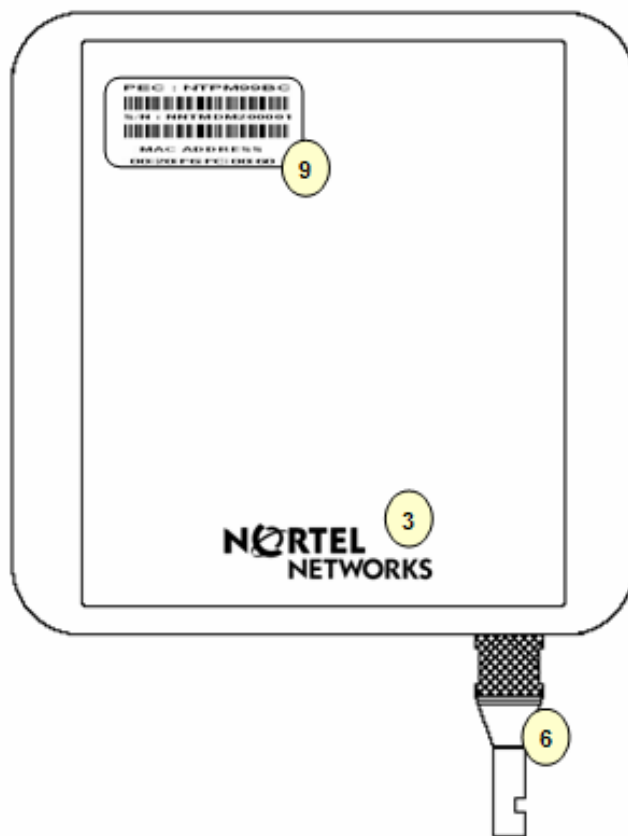
The antennas is basically Flat Panel type which is built-in CSU body and protected by a plastic material RADOM.

WLAN AP support the secure mode connection which mean that wireless traffic from APU and CSU is not scanned and detected by a conventional sniffing program like 'Netstumbler'.

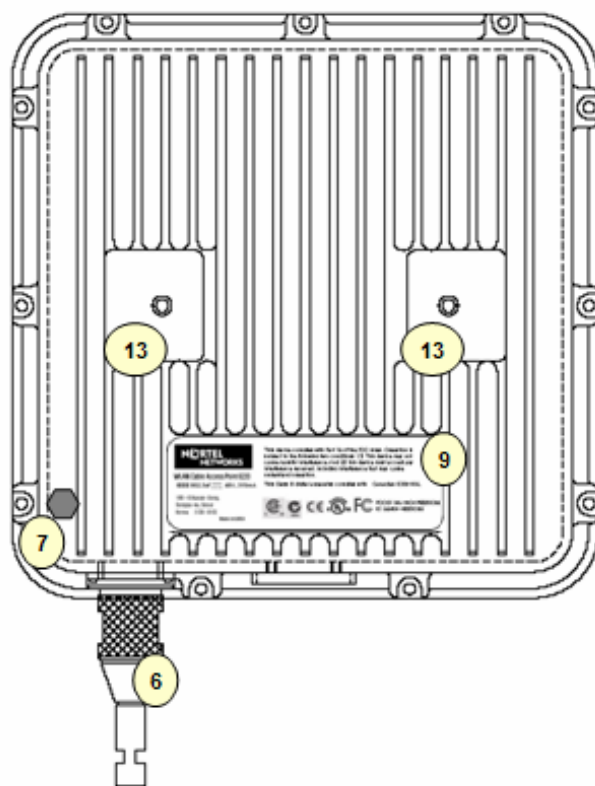
**Figure 1-9**  
**WLAN Cable Access Point 6220 CSU (Bottom)**



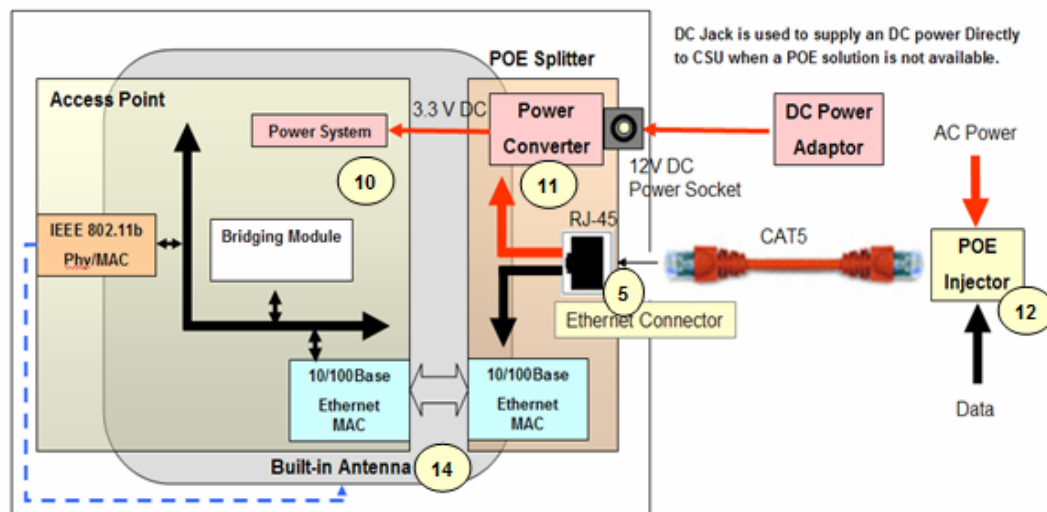
**Figure 1-10**  
**WLAN Cable Access Point 6220 CSU (Front)**



**Figure 1-11 (Back)**  
**WLAN Cable Access Point 6220 CSU**



**Figure 1-12**  
**WLAN Cable Access Point 6220 CSU**



**Table 1-3. Modules and Connectors (CSU)**

Item	Label	Description & Function
1	Antenna Radome	Protective Cover designed to contain a built-in antenna
2	Enclosure(Body)	Housing Integrated with an Antenna Case Assembly
3	Logo Panel	Location for Nortel networks Logo
4	DC Power Socket	Provide DC power(12V) from AC-DC Adaptor to CSU
5	Ethernet Port(POE)	Provide data connection between CSU and POE Injector or LAN Switch
6	EMI Cap	EMI Cap designed to prevent CSU from interfering to or from other devices Additionally, provide water proof feature accompanied by sealing tape.
7	Ground Point	Location for grounding the enclosure to earth for protecting the product from damage
8	Label(Front)	Location for attaching a product label which include S/N,PEC,MAC address and so on
9	Label(Back)	Location for attaching a product label which include S/N,PEC,MAC address and so on
10	Access Point	Mini-PCI type III Radio Card, System Board(Wi-Fi & Secure Mode™)
11	POE Splitter	Power Module to divide Ethernet Signal and DC power combined signal from POE Injector
12	POE Injector	Provide 802.3af based signal to CSU through Ethernet Port on CSU
13	Bracket Hole	Bolt Hole for assembly of mounting bracket
14	Built-in Antenna	2.4GHz Radio Frequency Antenna (Flat Panel).

## **Corporate service unit (CSU)**

### **General**

- o Case: Aluminum alloy steel (Body), RADOME
- o Size: 180 (W) x 239 (L) x 81 (D) (mm)  
7.08 (W) x 9.40 (L) x 3.19 (D) (inch)
- o Weight: 1.3 Kg / 2.8659 lbs
- o Elements: Access Point, POE Splitter, Built-in Antenna in CSU body, RADOME
- o Ports: POE Ethernet Port(RJ-45/CAT5), 12V DC Jack
- o Temperature: -40 ~ 65 °C (Operating)
- o Power supply(Optional): 802.3af compliant POE Injector(45V DC, 315 mA)
- o Power Consumption : MAX 10W (Current < 0.4A)

### **Hardware**

#### **Radio Card**

- o Operation Frequency: 2.4 ~ 2.4835GHz (ISM Band; a/b/g ready with radio upgrade)
- o Wireless LAN standard: IEEE 802.11b (a/b/g ready w/ radio upgrade)
- o Frequency: 2.4GHz ISM band(North America 11 Channels)
- o Modulation: Direct Sequence Spread Spectrum (DBPSK, DQPSK, CCK)
- o Data rate: 1M, 2M, 5.5M, 11Mbps with auto fall-back
- o Receive sensitivity: Min. -83dBm at 11Mbps

#### **POE Splitter**

- o IEEE 802.3af Compatible
- o Input Signal : DC Power (45V DC, Max 315mA), Base-band Signal(Ethernet)
- o Output : DC Power(3.3V DC), Base-band Signal(Ethernet)

#### **DC Power Input Jack**

- o Back up interface in the preparation of non-POE application
- o Input Power: 12 V DC (from AC-DC Power Adapter)

### **Software**

- o Firmware : CSU Secure Data Mode(Subscriber Station), Wi-Fi Access Point
- o Wireless Service Protocol : Secure Data Mode, Dynamic Polling



- 
- o 802.1x - MD5, TLS, TTLS, PEAP over EAP
  - o MAC access control – 32 local MAC Address Table
  - o Standard RADIUS server support
  - o Wired Equivalent Privacy encryption - 64, 128
  - o Firewall(ICMP/UDP/TCP/IP Protocol Filtering)
  - o Layer 2 Protocol Filtering
  - o BOOTP/DHCP(Server, Relay, Client), Static IP
  - o NAT(Incoming/Outgoing)
  - o Routing Protocol(RIP v2, Static)
  - o Restriction of Broadcast Storm
  - o SNMP v1, Software upgrade via TFTP
  - o GUI Program : Windows Based
  - o Throughput Analysis: Ping Fill
  - o Radio Performance Testing Tool: Antenna Alignment
  - o Remote Statistics Monitoring
  - o SNMP Traps
  - o MIB II