

SPECIFICATION SHEET

GPS ANTENNA, MULTIPATH LIMITING MODEL dBs 200-IMLA

dBs PART NUMBER 200300-100



The dBs 200-IMLA consists of two antennas coaxially mounted (1 each MLA & 1 each HZA). The MLA is for tracking of SVs near the horizon ($<3^\circ$), up to an elevation angle of 35° ; the HZA tracks SVs above 30° .

The MLA is a very high gain (≥ 7 dBi), omni-directional, GPS ground station antenna comprised of 14 wide aperture collinear dipoles.

Two to four IMLAs are used at each LAAS ground station in the National Airspace System (NAS).

The IMLA is also well suited for other GPS based systems, which require high levels of GPS multipath rejection, interference rejection, and high GPS signal-to-noise ratio.

The dBs 200 MLA antenna is vertically polarized and is specifically designed to operate with GPS signals operating at 1575.42 ± 20 MHz.

The dBs 200A-HZA is Right-Hand-Circularly-Polarized to maximize the received signal emitted from the GPS satellites. The dBs 200A-HZA is specifically designed to operate with GPS signals operating at 1575.42 ± 10 MHz.

Each of these two antennas has their own output connector which connects to separate GPS receiver inputs.

GPS ANTENNA, MULTIPATH LIMITING

Model dBs 200-IMLA
dBs PART NUMBER 200300-100

SPECIFICATIONS/CHARACTERISTICS FOR 200-IMLA

Type: Multipath Limiting Antenna Vertical Dipole Array

Azimuth Gain Variation from +3° to +35° in Elevation: Omni-directional with maximum azimuth gain variation of $\leq \pm 1.5$ dB with no phase reversals in azimuth or elevation.

Frequency Range: 1575.42 MHz \pm 20 MHz

Array: 14 Element Cylindrical Dipole Array (57.5" H)

Polarization: Vertically Polarized

Gain, Main Beam: ≥ 7 dBi in main vertical plane

Minimum Gain Between +5° to +35° in Elevation: ≥ 0 dBi

Direction of Maximum Gain in Elevation: $12^\circ \pm 1^\circ$ above horizon

Slope (Vicinity of horizon): ± 3 dB/°

Power Handling Capability: Up to at least 35 W peak RF power at 20% duty cycle

Impedance: 50 Ω nominal

VSWR: Not greater than 1.5:1 measured at end of low loss cable not exceeding 5 feet in length.

Desired-To-Undesired Ratio Between 0° and 40° In Elevation: 95% of elevation measurements must meet the desired-to-undesired signal performance requirement shown in Figure 3-1.

Phase Center Stability Between +3° and +35° in Elevation Angle: The electrical phase center of the antenna must not vary more than ~ 2 cm when subjected to the environmental conditions of FAA-G-2100 Environment III. See Figure 3-2 for phase variation as function of vertical angle.

Gain Variation from +3° to -3° in Elevation at Any Azimuth Angle: Monotonically decreasing with no more than 3 dB ripple.

Radome Coverage and Weatherproofing: Entire antenna weatherproofed and covered by radome. Removal/replacement of subassemblies possible without sealing compounds.

ADA Adapter Height, Weight, and Size (Other):

dBs 200-ADA: Adapter for obstruction lights, lightning protection, air terminals, and physical mount for dBs 200A-HZA antenna. 33" H x 35" W x 6" D x 18 lbs. Obstruction light connector is MS-3112E8-3P.

High Zenith Antenna RF Cable: RG-142 B/U RF cable run between HZA and bottom of MLA provided. HZA end of cable has SMA plug, MLA bottom end of cable has Type N jack. Maximum loss of cable run ≤ 2.5 dB.

MLA Height, Weight & Size: 77" L x 7" Dia. x 42 lbs.

Shipping Container Height, Weight, and Size:

Complete shipping container 31.5" H x 30.5" W x 130" L x 245 lbs. (excluding IMLA). Note: Pipe adapter not connected to IMLA during shipment. Complete shipping weight 380 lbs. (IMLA and container).

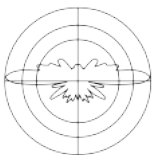
Antenna Mounting: 6 each 3/8"-16 bolts on 6" bolt circle which mount MLA to pipe adapter. Pipe adapter mounts to 4" O.D. Vertical mounting pipe provided by customer. 8 bolts for plumbing/leveling.

Wind Loading: Withstands without damage 100 mph gusts

RF Feed Connectors: One Type N jack RF port for MLA connection and one Type N jack RF port for MLHZA connection at base of MLA antenna. Connectors located at each plate/clamp.

MLA Low Noise Amplifier: Located within pipe adapter. Can be bypassed for pseudolite transmission. 25 dB gain, noise figure ≤ 1.5 dB, 50 dB out-of-band rejection, +7 to +32 VDC input.

FAA Environmental Requirements: FAA-G-2100F, Environment III



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GPS ANTENNA, Multipath Limiting

Model dBs 200-IMLA
dBs PART NUMBER 200300-100

SPECIFICATIONS/CHARACTERISTICS FOR 200A-HZA

Type: Multipath Limiting High Zenith Antenna
Cross-V-Dipole Array

Frequency Range: 1575.42 MHz \pm 10 MHz

Polarization: Right Hand Circular Polarization

Impedance: 50 Ω nominal

VSWR: Not greater than 1.3:1 measured at end of
low loss cable not exceeding 5 feet in length.

Direction of Max Gain in Elevation: Upward
looking

**Maximum RHCP Pattern Variation Through All
Azimuth Angles and Elevation Angles Between
30° and 90°:**

(Taken to be the algebraic sum of the maximum
azimuth pattern variation and the maximum
elevation pattern variation)

Note: 30° is 30° above horizon plane and 90° is
perpendicular to horizon plane \leq 11 dBic

Peak Antenna Gain: >1 dBic

**Desired-To-Undesired Signal Ratio Between 30°
and 90° in Elevation:** 95% of the elevation
measurements must meet the desired-to-undesired
signal performance requirement shown in Figure 3-
3, when averaged over azimuth.

Ellipticity Ratio at Beam Peak: <2 dB

Radome Coverage: Entire antenna weatherproofed
and covered by radome. Removal/replacement of
subassemblies possible without sealing
compounds.

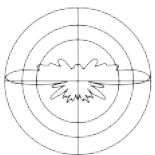
Connector for Feed: Connector at output of LNA
inside of MLHZA is Type SMA jack; connector at
bottom of MLA is Type N jack.

Transmitting or Receiving: Receive only

Lightning Protection and Obstruction Lights:
Provided via dBs 200-ADA. Adapter for obstruction
lights, lightning protection, air terminals, and
physical mount for dBs 200A-HZA antenna. 33" H x
35" W x 6" D x 18 lbs. Obstruction light connector is
MS-3112E8-3P.

FAA Environmental Requirements: FAA-G-
2100F, Environment III

MLA Low Noise Amplifier & Filter: Located within
HZA antenna. 25 dB gain, noise figure \leq 1.5 dB, 50
dB out-of-band rejection, +7 to +32 VDC input.



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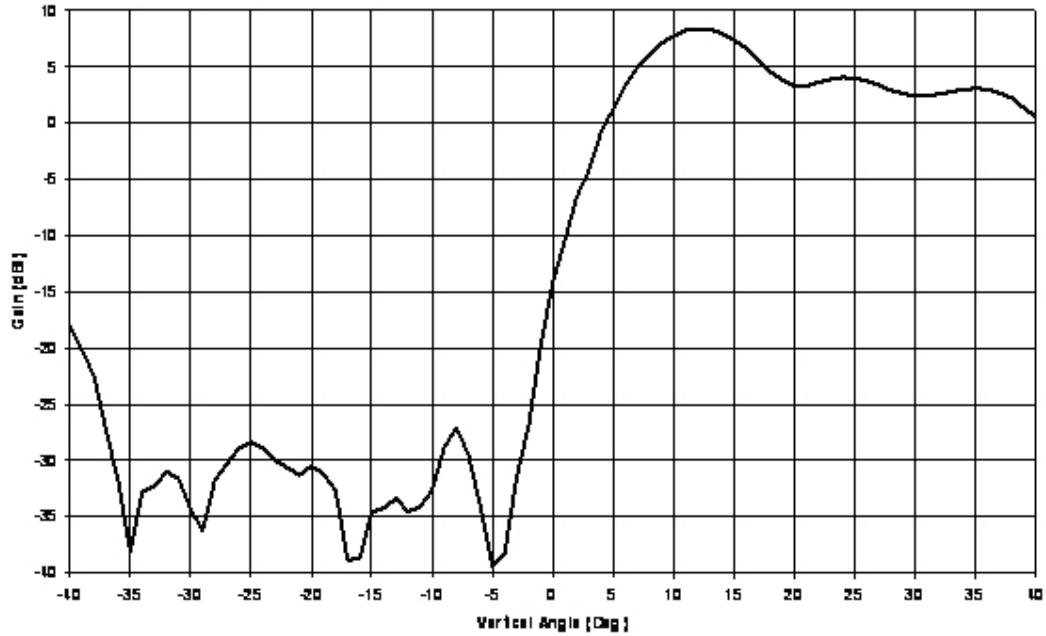
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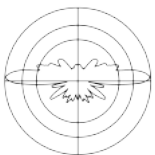
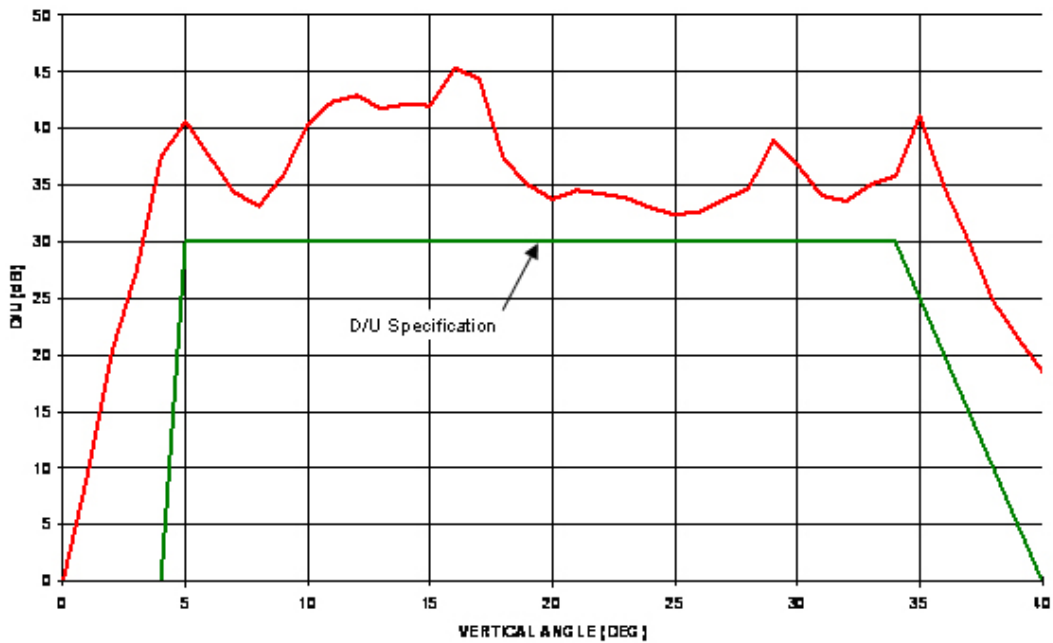
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dBs 200-IMLA Patterns

dBs 200 Vertical Pattern, S/N 028, As Plot of Absolute Gain



dBs 200 MLA GPS Array, DIRECT TO INDIRECT RATIO, S/N 028, 1575 MHz



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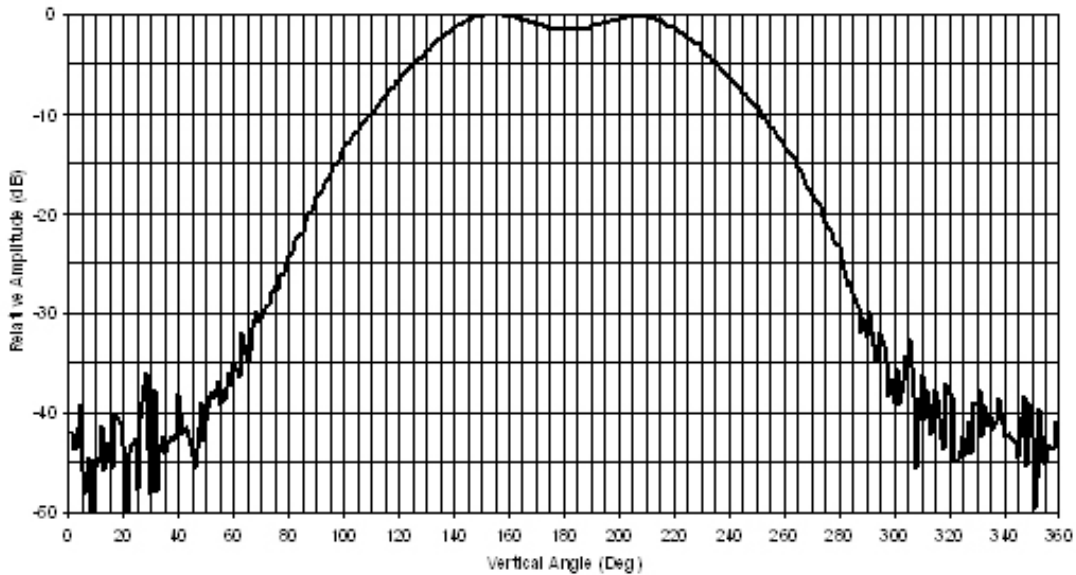
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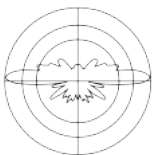
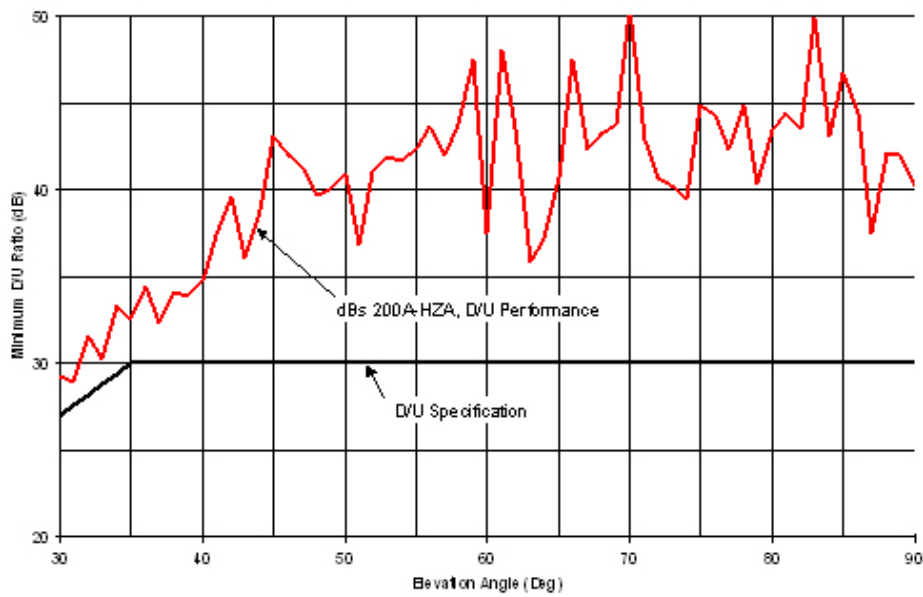
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dBs 200A-HZA Patterns

dBs 200A-HZA, RHCP, Vertical Pattern



dBs 200A-HZA, Desired-to-Undesired Ratio



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