
Althea Relay

Telecommunications System Plan

PREPARED BY

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SUMMARY

The Relay consists of the 20' Easy Up mast anchored to a flat non-penetrating roof mount and guyed with steel cable. A rubber mat is placed underneath the mount to protect the roof and prevent slipping. The mount is secured with 8 cinder blocks. Mast will be grounded with copper ground wire to house ground.

Located approx 16' on the mast will be the connecting powerbeam or gigabeam antenna and sector antennas connected with Cat5e shielded ethernet cable. All radios operate in unlicensed spectrum and within FCC power limitations. This ethernet cable provides power and is plugged into the home. The ethernet cable is terminated with shielded ends providing an equipment ground and is plugged into a UPS in the residence that provides surge protection and a source of emergency power backup.

The radios are then plugged into a Linksys 32X router modified with Althea firmware for routing and billing. This Linksys also provides the relay residence with internet in the home. Key functions are remotely monitored, including router temperature, UPS health, and status. The majority of system repairs and maintenance can be performed remotely. Other equipment repairs and maintenance will be performed by your local Althea operator.

Equipment List

Non Penetrating mount	35 x 35 x 30.5 inches
Easy Up Mast	20'9" x 2" OD

Customer support and installation is provided locally, backed by Althea network operations center and technical support.

Technical overview

Althea networks relay traffic from neighbor to neighbor. These neighbor to neighbor connections tend to be short hops. We use carrier grade high frequency antennas to achieve fast speeds over these short distances.

A traditional Wireless ISP would put this same hardware on a tower many miles away from the user and be unable to reach its full speed or dodge obstacles like clusters of trees or tall buildings.

Links can be placed within a mile of the end user, dodging most obstacles by simply picking a different user's home as a vantage point.

1-3ms latency added per hop. Average user latency <10ms to Internet Exchange

Focus on many small and inexpensive towers provides opportunities for cross links

Dynamic failover at the relay level using these cross links results in 99.95% reliability for the average user.

Automatic payment to upstream links.

Althea runs and maintains the "exit node" which provides local encryption with Wireguard, and routing and billing verification.

Images



Non Penetrating Roof Mount



Easy Up Mast