HNT PENETRATOR 10 DBI

HNT PENETRATOR 10 dBi
868 MHz HELIUM
LORAWAN ANTENNA

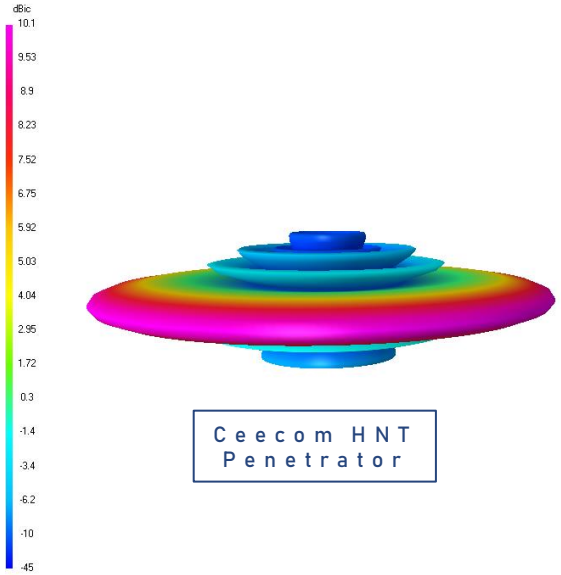
CEECOM Amateur Radio Antennas

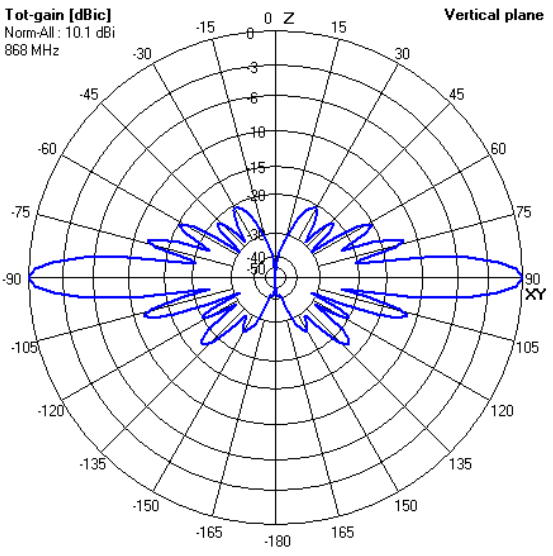
Compatible with all Helium Miners

Specification

Model: HNT Penetrator 10 dBi
Frequency: Tuned 868 MHz
Bandwidth: 4 MHz
Gain: 10 dBi (10.1 dBi exact)
Impedance: 50 ohm
VSWR: Below 1.3:1
Length: 150cm (Split into 2 sections)
Vertical beamwidth: 10°
Horizontal beamwidth: 360° Omni
Power Handling: 50w
Connector: N Type Male
(requires N type female fitted to coax cable)
Bracket: Fits 38 -53mm diameter pole

This is second from largest of our range, the 10 dBi HNT Penetrator offering a narrow 10 degrees vertical beamwidth and 360 degrees omni directional coverage. Designed for flat terrain only! This will achieve some serious distance witnessing hotspots that would normally be unreachable. The combination of gain and narrow beamwidth will focus RF energy far into the distance exactly where you want it. If you live outside of a populated hotspot area then this will definitely make you feel part of the crowd. Manufactured from high quality materials to withstand harsh environments. Supplied with mounting bracket to fit mast poles up to 53mm diameter. Antenna is supplied in two sections for easy shipping.





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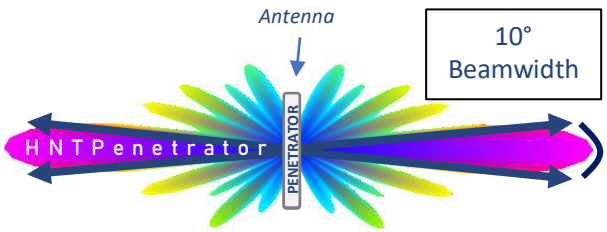
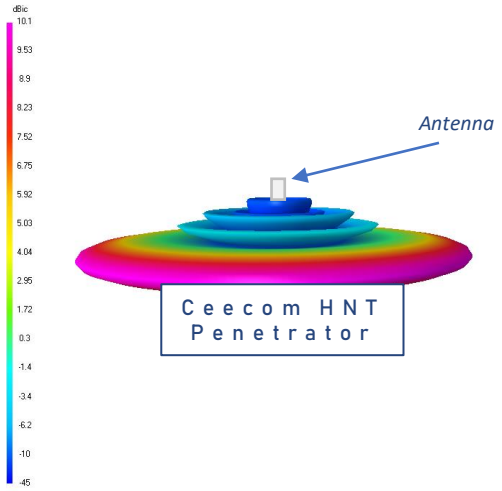
Beacon & Witness Radiation Patterns

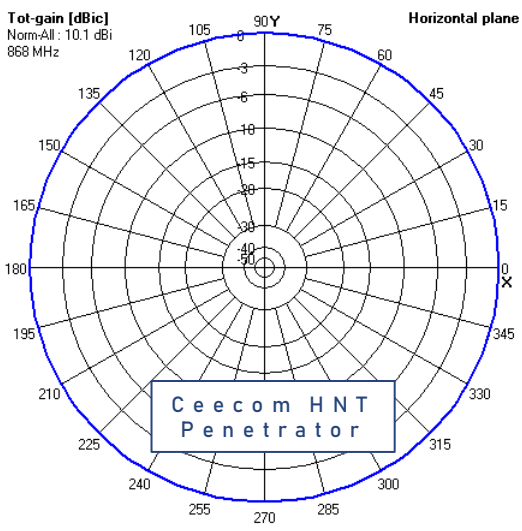
Slice image showing 10° beamwidth



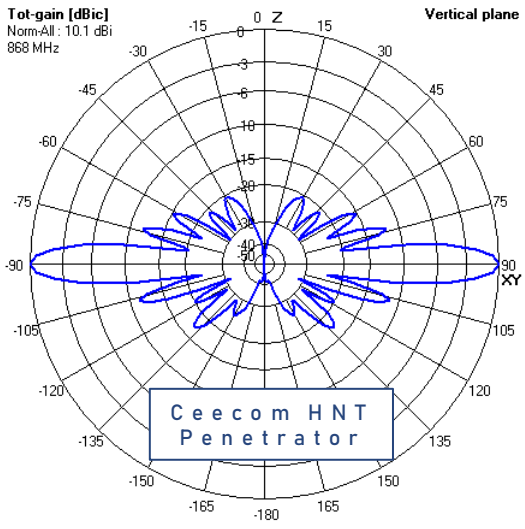
3D image of radiation pattern



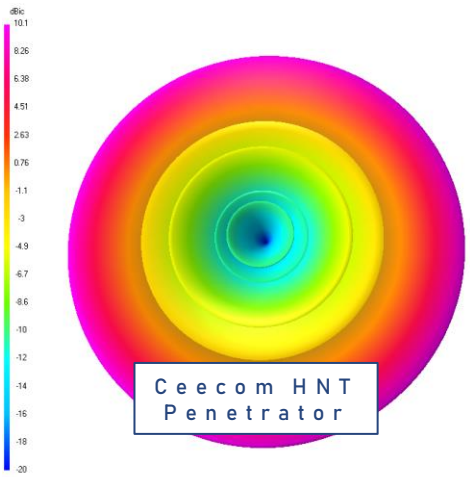
H Plane Pattern 360° - Looking down from above



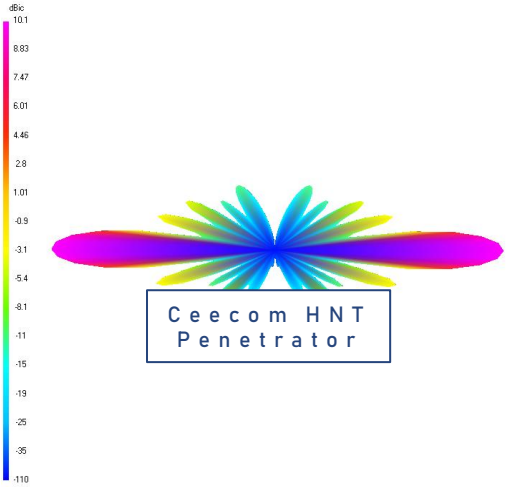
V Plane Pattern 10° - Looking in from the side



3D radiation pattern looking down from above



2D radiation pattern looking in from side (slice)



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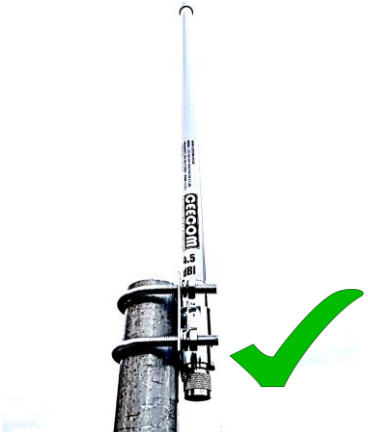
Installation



Mounting the antenna is simple. Its easier to connect your coax to the antenna before mounting it to the mast pole.

1. Connect coax cable to the antenna and be sure to tighten connections.

2. Tightly wrap the supplied self amalgamating tape around your coaxial cable connections. Be sure to remove the backing film from the tape. Start from the bottom of the connector making sure the tape overlaps some cable then tightly wrap upwards so that each layer of tape overlaps the previous layer forming a rain run off (Similar to how roof tiles over lap). Be sure to stretch the tape as you apply it. Please note. Self amalgamating tape is not sticky and has no adhesive, it amalgamates to itself over time forming a weathertight barrier.

3. Loosely Insert U Bolts into mounting plate of the antenna and attach the supplied nuts onto the threads. Be sure to insert the U bolts to the correct side of the bracket, antenna should be positioned on opposite side of plate to the mast pole. Slide the U bolts and antenna over the top of mast pole and tighten securely in place. IMPORTANT: Mount the antenna at top of mast pole like in top left image. The mast pole should not extend higher than the mounting bracket like in top right image. If the mast pole extends higher than the bracket it will distort radiation (witness and beacon) pattern of the antenna. See next page.

4. Using cable ties attach coax cable to your mast pole. Be sure to stop the coax moving in windy environment's as this could cause stress on the connections causing faulty and intermittent signal loss. Do not overtighten cables ties causing damage to cable.

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Incorrectly mounted antenna, what happens?

Antennas are designed to operate in open spaces and do not like nearby obstructions. Helium Lorawan operates at 868MHz which has a wavelength of approximately 35cm's. Anything within twice this distance will cause havoc to its radiation pattern and tuning of the antenna. This applies to any brand of antenna

When a hotspots beacons it transmits a signal which has an RF power level of upto 26dBm (This is how powerful the beacon is). An antenna with a low VSWR reading (eg VSWR below 1.3) will be capable of transmitting the full 26dBm RF energy onto the airwaves without much loss due to good antenna tuning. An antenna with a higher VSWR reading will not be able to transmit the full 26dBm of RF power and some RF will be wasted due to poor tuning. The above also applies for reception of beacons, eg when you witness another beacon.

Our antennas are optimised and tuned on only 868MHz and have a VSWR typically below 1.2. Other brands manufacture their antennas to work on both EU 868mhz and US 915mhz. The wider bandwidth naturally has a higher return loss causing RF energy to be wasted thus resulting in lower rewards.

Correctly mounting your antenna is important. An incorrectly mounted antenna can cause higher VSWR readings and cause havoc with the radiation pattern. Below is an example of what could happen when the mast pole is positioned against the antenna. It causes a higher VSWR, disforms the radiation pattern and has wasted RF energy.