CASE STUDY

EMBEDDED WORKS
Embedded in IoT

TAOGLAS

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Andy Do
Embedded Works President and CEO

Taoglas and Embedded Works Help Helium's Crypto-Miners Optimize Coverage and Revenue

About Embedded Works:

Embedded Works is a technology solutions provider specializing in wireless and Internet of Things (IoT) markets. For over 16 years, companies ranging from startups to Fortune 5000 enterprises have turned to Embedded Works to consult on the right wireless components, LTE data plans, antennas, and turnkey IoT solutions.

The Challenge:

Embedded Works provides wireless gateways, known as "Hotspots or miners" for use on Helium, a global, distributed network that utilizes blockchain technology which allows for crypto-mining via a decentralized wireless network. Helium users install a Hotspot at their home or business, where it serves as a gateway for Helium enabled IoT devices. They earn Helium Net Tokens (HNTs) two ways: for the data that their devices send and receive over the Helium network, and for participating in "Proof-of-Coverage," a process that verifies the location of other nearby Helium Hotspots, also known as Witnesses. Users can trade their HNTs on cryptocurrency exchanges for dollars, euros and other currencies.

The Helium network uses the ISM spectrum, which is in the 915 MHz band in the U.S. to maximize coverage — and thus the amount of HNTs they can earn. Helium crypto-miners frequently install their gateway's antenna on rooftops, in trees and other high, outdoor places. That's why Embedded Works wanted to equip its KST Affinity Enterprise Helium Miner gateway with a high-performance antenna that also would be rugged enough to withstand freezing rain, direct sunlight and high winds.

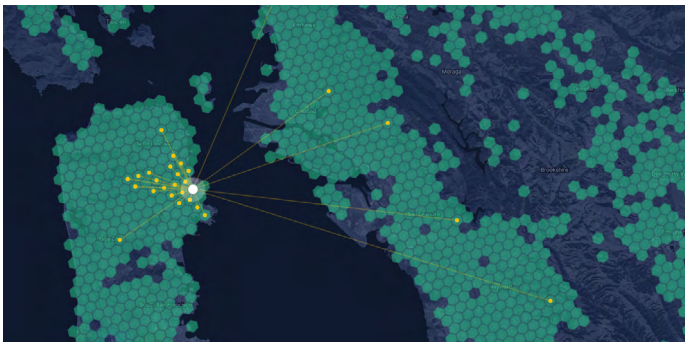
The Solution:

Embedded Works initially tested an antenna atop its four-story headquarters in Santa Clara, Calif. This gave their Helium miner an initial range of 53 km, enabling it to see Witnesses across the Bay in San Francisco.

Seeking additional coverage, Embedded Works turned to Taoglas and tested the Taoglas Barracuda OMB.915.B08F21 915MHz 8dBi Omnidirectional Outdoor Antenna. Featuring an integrated bracket for easy installation on poles and walls, the Barracuda has a UV-resistant, IP65-rated fiberglass housing that's more durable than traditional whip antennas. The antenna also has wind resistance up to 241 km/h and a ruggedized N-type female connector.

With a sturdy 1475 x 70 mm form factor, the Barracuda OMB.915 covers the 900 MHz LoRaWAN® protocol. The collinear dipole array provides up to 8 dBi peak gain and high efficiency, as well as an omnidirectional radiation pattern that's uniform in the azimuth to achieve long-distance coverage. That's key for wringing maximum performance out of even minimal signals.

Taoglas offers 30 compatible Helium antennas and recently added six standard Helium cable assemblies kits, with TGC-200 and TGC-400 cables available in 1m, 5m and 10m lengths as standard. Through the Taoglas Cable Builder, customized cable assemblies can also be built and shipped in as little as 24 hours.



The Outcome:

After a successful test, Embedded Works ultimately selected the Barracuda OMB.915 for use with its Helium miner bundled offerings.

"With the Taoglas high-gain outdoor antenna, we were able to connect to 19 percent more Witnesses," said Andy Do, Embedded Works President and CEO. "The furthest Hotspot was 63 km away adding an extra range of 10 km in the Bay area. Considering that the Helium network has over 500,000 Hotspots and is adding 80,000 more each month, that extra coverage could easily translate into significant additional crypto currency per month for a user with the Taoglas antenna, especially in urban areas."

The Barracuda OMB.915 also has a higher build quality than the other antenna that Embedded Works tested.

"It's a higher quality antenna," Do says. "The connectors and fiber glass housing are really well machined. With some lower end ones, the center pin connector tends to break."

Embedded Works also sees value in the rest of the Taoglas antenna lineup.

"They have probably the most diversified antenna portfolio for Helium miners," Do says. "They've got an outdoor version, a tabletop version, a window-mount version — all of these form factors to fit every scenario. If you don't have the luxury of putting it on your roof or balcony, or if you live in a high rise, they have so many different ways to connect that will amplify signals above and beyond the default antenna you get from the miner manufacturer."

Featured Taoglas Product

OMB.915.B08F21

915MHz 8dBi Omnidirectional Outdoor Antenna

Length: 1.474m, Weight: 870g

Click here for OMB.915.B08F21 Datasheet