DuraFon Roam

Conquer Coverage with SIP-Based, 900 MHz Industrial Cordless

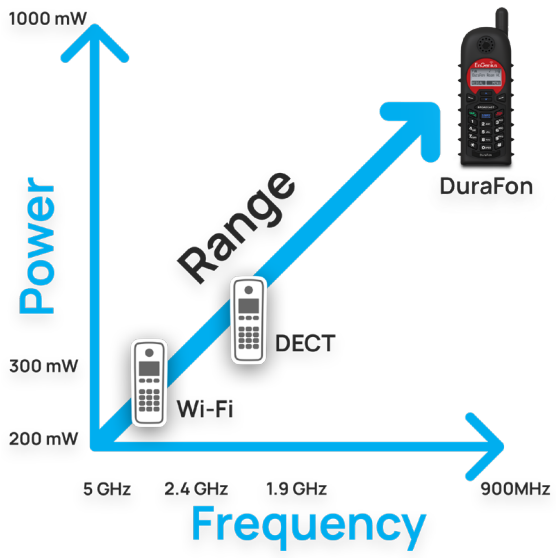
EnGenius DuraFon Roam

For large and demanding environments, where employees require mobility, voice communication can be a struggle. Assisting customers and directing staff is a significant challenge for places like: large stores, warehouses and offices. The numerous technology choices can make it confusing to identify a strong appropriate solution. This brief aims at shedding light on the technologies and feature sets that satisfy voice communication for employees that require on-site mobility in a demanding environment.

The challenge of getting effective, on-premises, wireless voice communications

Common Misunderstandings about Frequency

In North America, there are three popular wireless RF bands available for voice communications that do not require user licensing or fees. These bands are: Wi-Fi (2.4 GHz and 5 GHz), DECT (1.9 GHz) and ISM (900 MHz). Some of the issues that may be experienced include: poor coverage, crowded bandwidth and significant backbone infrastructure requirements.



Low transmission power can result in poor coverage

Poor coverage can be the result of the transmission signal not having the power to reach the receiver's device. It's intuitive that the weaker the power is behind the signal the less range the transmission will have, resulting in missed or dropped calls or the inability to connect to the system's communication base.

Signal obstructions: visible and invisible

Wireless signals can have coverage reduced or even completely blocked due to various obstacles, including: walls, windows, floors, racking and machinery. In addition, RF signals can be interfered with by unseen obstacles like: devices on the same or close frequencies, power lines, lighting, and electro-magnetic fields from machinery.

The right mix for communication coverage

The advantage of low frequency and open bandwidth

The frequency band that a wireless voice signal travels on will affect how far or how much coverage can be provided by a voice communication system. High frequencies will attenuate (diminish) over distance quicker than low frequency signals. All else being equal, a low frequency signal will travel further in an environment over a higher frequency signal.

Some frequencies bandwidths are crowded with numerous devices competing for the shared bandwidth, slowing or blocking the bandwidth. Think of a Wi-Fi network with laptops, cell phones, scanners, security camera, IoT and other devices all sharing the bandwidth.

The power to cover

The greater the transmission output power of a signal the further the signal will travel and better its ability to penetrate obstacles. With a system's Receive Signal Strength Indicator (RSSI) tool the best base unit placement location can be identified.

Better to go around than through

By utilizing coaxial antennas to get signals above or around obstacles will improve coverage verses trying to push through obstructions. For multiple base systems, signal syncing should be used to avoid cross interference.

Sensitive "hearing" helps even weak signals

Good antenna sensitivity (-100 dBm or lower) will allow even weak signals to be effectively received. The better the antenna sensitivity the better a device can "hear" a signal from further away.

When Coverage Matters

- Low Frequency
- High Transmit Power
- Good Receive Sensitivity
- Uncrowded Bandwidth
- Antenna Options

Built for long-range: DuraFon Roam

Low frequency, open unlicensed bandwidth

The DuraFon Roam uses the low, open and unlicensed bandwidth of 900 MHz for clear and effective long-range, SIP-based voice communication. By using 900 MHz, the DuraFon Roam does not compete with wi-fi bandwidth demands of other devices.

Powering the transmission

With transmission power is just under 1,000 mW, the DuraFon Roam's signal is 3 to 5 times the output transmission power of typical Wi-Fi and DECT phones.

Tools and options for performance

The DuraFon Roam has a built-in RSSI tool to measure signal strength as ideal base placement is being determined. In addition, optional indoor and outdoor base unit antennas are available to help get the signal above or around obstacles.

"Hearing" the signal

The antenna sensitivity of the DuraFon Roam is specified at -108 dBm resulting in even weak or distant signals being received. Once the signal is received, the digital transmission can be rebuilt into clear communication.

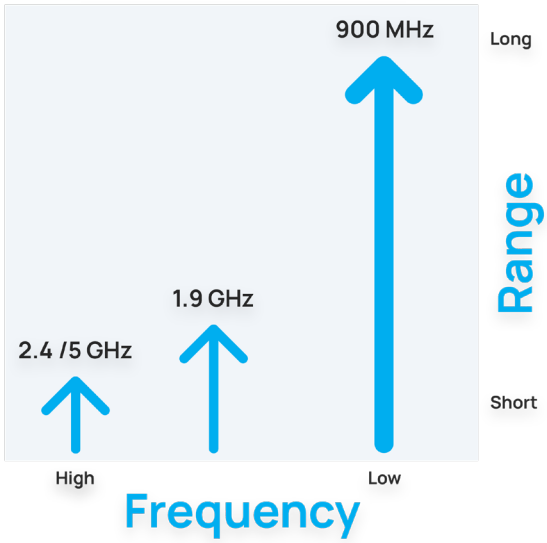
Demanding environments

Demanding environments like: big box retail stores, warehouses, manufacturing plants, hotels, and assisted living facilities require the consideration on numerous technology advantages to provide personnel mobility and communications within a large or obstructed environment.

In addition to the coverage demands for these environments, communications should be easy to set-up, monitor and maintain. Durability and ease-of-use are also important considerations. Along with the systems flexibility to provide various communication options for user's needs.

900 MHz

EnGenius voice products use long-range 900 MHz reducing the infrastructure required to cover large or obstructed areas. Does not take up valuable Wi-Fi bandwidth for voice communication.



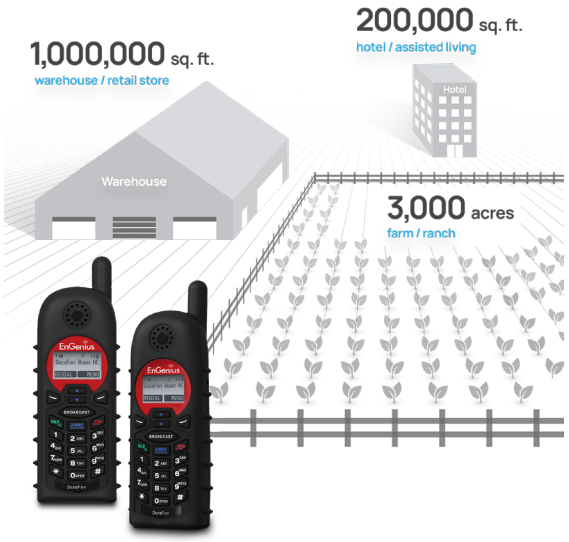
Compatibility:

The SIP-based EnGenius voice products use standard SIP protocol that allows the systems to work behind most premises IP-PBXs and hosted SIP provider services. The DuraFon Roam and the other SIP-based EnGenius voice products can work behind most systems or services already in place without replacing the SIP service or PBX to add long-range cordless voice communications.

Multi-Cell capabilities:

The multi-cell system supports roaming and hand-over for portable handsets to move seamlessly among all installed base stations. It enhances higher coverage and gives proper communication mobility even within large premises, enabling you to have comfortable conversations no matter where a handset user is within the system's coverage area.

The multi-cell system enhances the coverage in a single location even in environments with multiple floors. With IP networking, the base stations can be installed throughout a large facility and managed by a single base station controller.



Built for Range:

With the ability to hand-off calls between base units, the range of the DuraFon Roam system can extend to 3,000 acres in wide-open spaces (farms or ranches), 1,000,000 sq. ft. in a warehouse or retail store-type environment, or 200,000 sq. ft. in obstructed environments (hotels or schools), all from a cordless (non-cellular) solution.

Designed for Durability:

EnGenius DuraFon Roam handsets are subjected to a 6-foot drop test over 50 times onto concrete floors to simulate use in demanding environments. The distinctive handset hand grips make for secure use, even while wearing gloves.

Set Up with Simplicity:

DuraFon Roam's long-range base units means minimal infrastructure set-up is required. Set-up videos are available online to quickly get your system up and working. Simple and intuitive handset functions allows new users to get up to speed with effective communication quickly.

System Architecture

EnGenius DuraFon Roam is an advanced multi-cell SIP system comprised of three major components:

- (1) Base Station Controller (BSC)
- (2) Base Unit (BU)
- (3) Portable Handset (HC)

The EnGenius DuraFon Roam becomes a unique long-range wireless system, supports multi-cell architecture in the existing company network infrastructure and fulfills large-scale enterprises' inbound and outbound communication demands.

Base Station Controller

The central controller of the DuraFon Roam is called Base Station Controller (BSC), a core device to manage calls and signal information between the phone system or service and the Roam base unit and handsets during communication. The BSC evaluated the signal strength between a base and handset to determine where and when to hand-off the communication to another base unit, seamlessly. DuraFon Roam users can then move freely to work in multiple covered areas without interrupting their call.

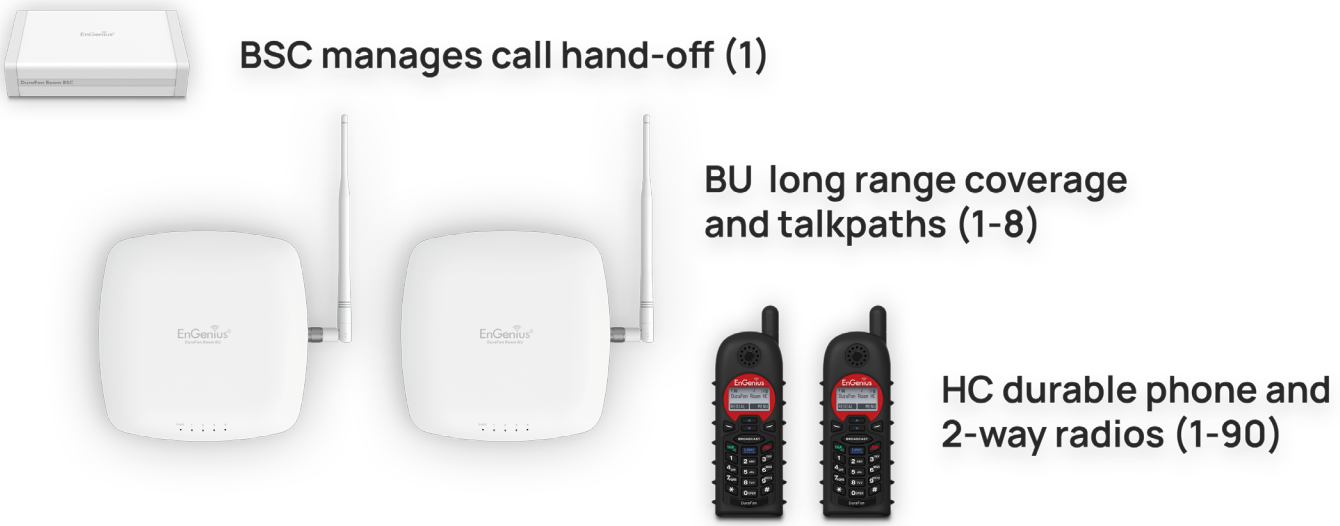
The DuraFon Roam uses IEEE1588 synchronization protocol via an Ethernet network to synchronize communication between base units and handsets within the same subnet network.

Base Unit

- The base unit of DuraFon Roam enables long-range 900MHz radio communication between the base units and the handsets. Each Roam base unit can support up to 4 current calls and in a multi-base deployment additional bases can be used for additional call talkpaths.
- The Roam system can be expanded to eight (8) long-range base units provide either addition area coverage or adding additional talkpaths.
- The base units can be powered by a 12 volt / 1 amp AC power adapter or, like the BSC, can be powered via IEEE802.11af/at POE.

Portable Handsets

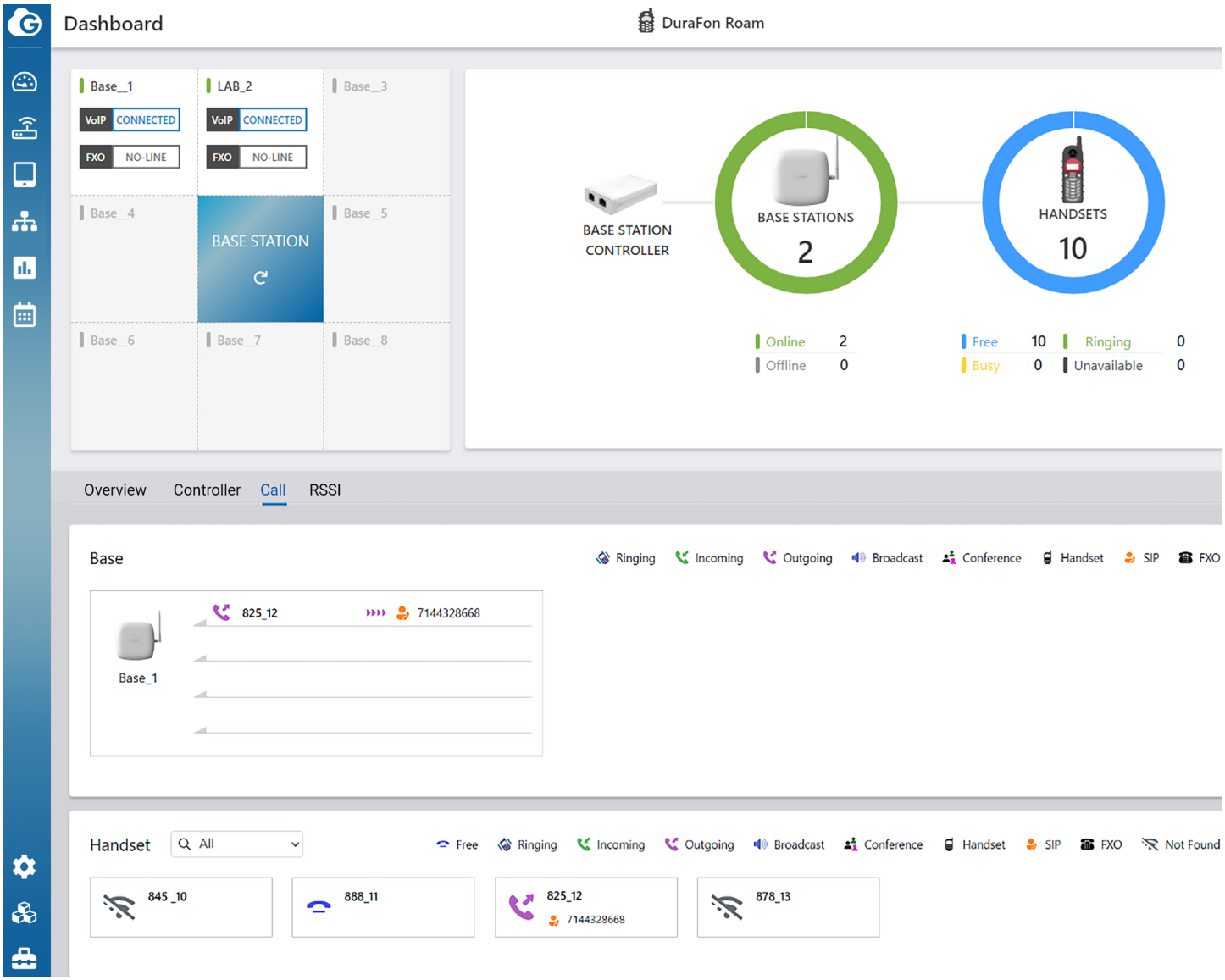
The DuraFon Roam handsets provide extreme mobility and durability for demanding environment users, supporting internal and external calls and broadcast communications. The DuraFon Roam flexible communication options provides convenience and security.



Features

Remote management: manage, monitor, and firmware updates are available with the DuraFon Roam system via the EnGenius Cloud.

- The management capability allows for numerous functions, including: controlling base unit access by select handsets, permitting incoming and outbound calls and two-way radio transmissions. Handsets can be added to a Roam system without requiring physical access to the base units. Handset IDs and custom naming of bases and handsets, can all be assigning wirelessly with the remote access GUI.
- Monitor call traffic to determine the type of calls; phone (SIP or analog), two-way radio broadcast, or intercom. Determine which bases are experiencing the most use and when.
- Via the EnGenius Roam GUI the base station controller (BSC) and base units (BU) can be updated remotely, and wireless updates can be sent to the handsets. Firmware updates can be done immediately or scheduled.



System Monitoring

Remote management, monitoring and updating, via the EnGenius Cloud, is available for the DuraFon Roam system. This allows for an easy view of the status of the system and the activity of individual base units and handsets.

Multi-cell access with hand-off

Seamless call hand-off between base units allows for extremely large or obstructed environment to have call and two-way radio communication coverage.

Group Calling and Private Intercom

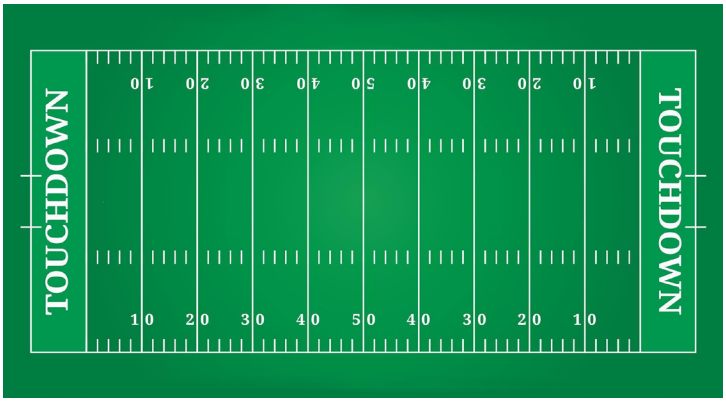
DuraFon Roam handsets can join 1 to 7 calls groups receive calls or broadcasts just for that or those groups. Private handset-to-handset intercom calls can also be made, by utilizing the base(s) or going direct peer-to-peer.

External antennas options

Getting around or above obstacles will usually outperform trying send a signal through on obstruction. EnGenius offers indoor and outdoor antenna kits with coaxial cable that attach to the base unit. In addition, other optional accessories, like antenna splitters and static charge surge arrestors, help maximize communication performance.

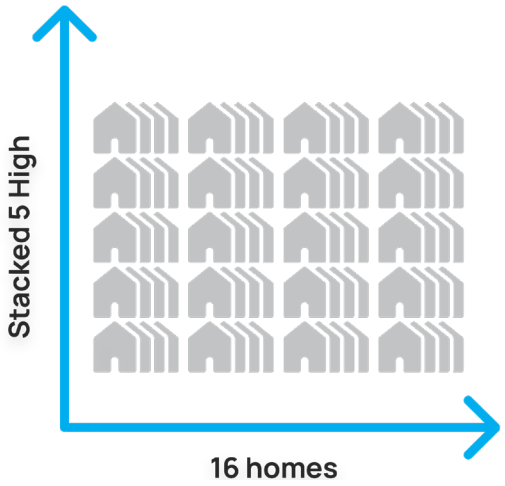
3,000 acres of open area coverage is about the size of

2,200 American football fields!



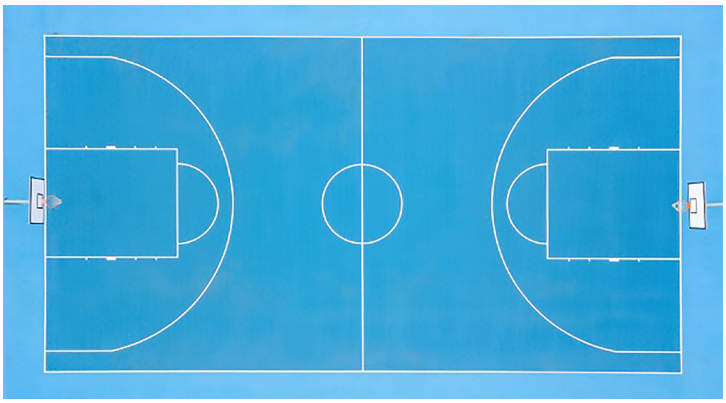
200,000 sq. ft. of an obstructed environment is about the size of

16 U.S. homes stacked 5 high!



1,000,000 sq. ft. of a semi-open environment is about the size of

200 professional basketball courts!



Use Cases

Retail / Warehouses:

With these long-range handsets, employees can be reliably called on to clean up spills, come to the registers or assist with a delivery at the bay door as needed by the business.

Assisted Living / Hotels:

Emergency or maintenance services can be contacted immediately from throughout the property, even if the employee is on the move to help assist residents and guests.

Key Point	Why it Matters
900 MHz frequency	Low freq. travels further, doesn't use Wi-Fi bandwidth, not heavily used by other devices, unlicensed band
Output power	More signal transmission power to go further with less infrastructure
Digital signal	Private and can rebuild the transmission even further away
Antenna sensitivity	Allows a weak signal to be heard
Antenna options	Base unit optional antenna to provide coverage indoor or outdoor and get around obstacles
Durability	Built to withstand drops and bumps
Remote management	Reduce truck rolls, identify usage, update firmware
Call handoff	Expand coverage as a handset users moves about
Two-way radio broadcast groups	Broadcast to all handsets or just a select group, independent or via base units
Two-way radio intercom	Private call between handsets, independent or via base units

EnGenius Technologies, Inc.

Since 1999 EnGenius has been proud to provide exceptional voice communication solutions for businesses and our DuraFon brand family remains the leader in long-range industrial cordless voice communications. EnGenius cordless voice solutions allow users to stay connected and mobile within large or obstructed environments, including: retail and grocery stores, hotels and assisted living facilities and farms and ranches. EnGenius' flagship SIP-based solution, the DuraFon Roam system, brings an exceptional communication solution to demanding environments along with, being our first model line to offer, remote management, monitoring and updating.

Conquering Coverage: What is in it for you.

Large and demanding environments require unique solutions built to address the voice coverage challenges of these workplaces, that typical devices are unable to provide. EnGenius DuraFon Roam provides effective voice communications allowing employees to do their jobs and be redirected where and when needed, improving productivity and managing costs. Long-range voice mobility gives employees and management to ability to react quickly to safety and security concerns. Customer service is enhanced by employee's immediate ability to address customer inquiries and provide a better experience.

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To learn more about the DuraFon Roam visit this link:

https://www.engeniustech.com/durafon-roam-industrial-long-range-phone-system.html