

# Hughes Cellular On-Demand, SatCell Connect FAQs



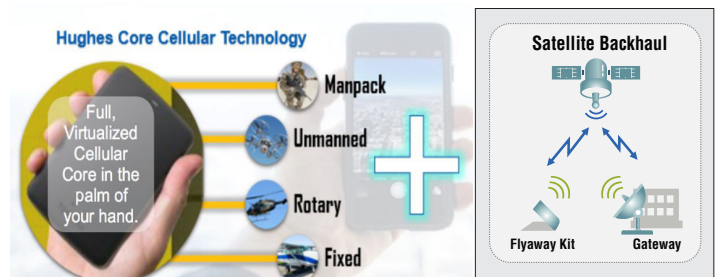
## What is the Hughes SatCell Connect solution?

SatCell Connect is an end-to-end wireless LTE communication capability integrated with satellite backhaul. SatCell Connect provides first responders, emergency medical response teams and military/government operators a rapidly deployable, LTE network bubble to connect reliably with the outside world from any emergency location where communication networks have been damaged or do not exist. The concept of operation follows the Defense Support to Civil Authorities (DSCA) handbook in adding value to four phases: Assessment, Preparation and Mobilization, Deployment, Support of Civil Authorities and Demobilization.

- Supports the same features and functions as fixed commercial LTE networks from operators like Verizon, AT&T, and T-Mobile
- Provides completely self-contained and portable network for immediate deployment
- DSCA handbook phased procedure compliant

## How does SatCell Connect work?

Users power up the core, suitcase-sized SatCell Connect unit that includes an integrated processing core, and a radio to create a localized communications bubble. The user then connects the unit with the portable, satellite flyaway kit to establish the backhaul for access to the Internet or other network providers.



## What do I need to operate SatCell Connect in the field?

The SatCell Connect kit contains all the needed components so users can push a single button to create an operational LTE bubble, typically within 5 minutes of arrival in the field.

- Solution functions without intervention or special operator skills
- Unit's management software can be accessed in the field by the operator or accessed remotely by an administrator via the satellite backhaul link
- Unit power comes from an external AC or DC power source



### What user devices can I operate with SatCell Connect?

SatCell Connect provides communication by standard LTE protocols, so almost any unlocked LTE device configured to the SatCell Connect frequency can be used. Once configured through a Roaming Gateway service, any mobile device with swappable SIM cards can be used on the network, from personal cell phones to tablets, watches, and MiFi devices for Wi-Fi.

- LTE devices typically support multiple bands so Hughes can help verify any device prior to deployment.

### How do I setup a device to use SatCell Connect?

Prior to deployment, LTE devices must have a physical, SatCell Connect SIM inserted to assure network security and prevent unauthorized network access. These SIM cards are pre-programmed and authenticated by the SatCell Connect administrator with a series of encrypted passwords and user information that identifies each SIM card and the device related to that SIM. A two-way authentication is provided when the SIM card information is loaded into the SatCell Connect unit, allowing only verified users onto the network to prevent eavesdropping or digital attack.

### How does someone “Bring Your Own Device” (BYOD) inside the bubble without having to change their SIM card?

You can connect via these two methods:

1. Personal cell phones can connect/roam to a Hughes SatCell Connect LTE network bubble using hand-off services provided by a Roaming Gateway provider.
2. Users can connect to cellular Wi-Fi hotspot provided by the SatCell Connect unit and use data and Wi-Fi calling services.



### How many devices can use the SatCell Connect at the same time?

A single SatCell Connect unit can support up to 100 devices simultaneously.

- The number can vary depending on the type of content carried within the network bubble
- The SatCell Connect unit can store an unlimited number of pre-registered SIM cards so the network will be accessible as soon as a device is within coverage range

### What is the range of the SatCell Connect system?

The SatCell Connect LTE bubble range can extend up to 1.25 miles in diameter using the two watts of output power supplied on a standard unit. This distance is dependent on the frequency, antenna gain, terrain, clutter, RF environment, and other factors.

- Coverage area is created by two compact, external antennas attached to the standard core unit
- Antennas can be exchanged in the field for larger, higher gain antennas that extend the coverage range, doubling the range depending on terrain and other environmental conditions
- Antennas or the entire SatCell Connect unit can be elevated on a pole or rooftop to extend the LTE coverage range even further

### Can multiple SatCell Connect units be deployed to extend coverage range?

Multiple SatCell Connect units can be deployed in the same area to extend coverage range or to mitigate coverage issues due to terrain or environment. Authorized devices can roam seamlessly between independent SatCell Connect network bubbles thanks to the solution's integrated satellite backhaul feature.

- Backhaul allows individual SatCell Connect network bubbles to exchange information including active user session data. This enables two SatCell Connect networks to handoff user sessions from one network to the other without service interruption.

### Can SatCell Connect units provide voice and data service beyond the bubble?

SatCell Connect's integrated satellite backhaul capability ensures devices connected to the SatCell network can communicate with external networks including the Internet. This allows SatCell Connect users to make voice and video calls to anywhere in the world, and access information and applications on the Internet.

### Can centralized applications or data sources be hosted on the SatCell Connect?

SatCell Connect has a robust, integrated computing core that can handle the complex operation of an LTE network. This core is virtualized and allows for additional applications or data sources to be hosted locally on the SatCell Connect unit. Shared applications (e.g. GoogleVoice) or other functions such as video storage/streaming and document storage/retrieval can be hosted locally and/or synchronized to cloud sources or applications via the satellite backhaul link.

### What RF frequencies does SatCell Connect support?

SatCell Connect unit currently uses LTE Band 14. However, Hughes can deliver units to support any 3GPP LTE RF band that meets specific customer requirements.

- Hughes plans to include two RF bands in each single unit as the SatCell Connect product roadmap evolves to support future requirements
- Each unit will incorporate a wideband amplifier to facilitate multiple bands and simultaneous operations
- Future units are expected to include both 4G and 5G standards in the same SatCell Connect unit by 4Q2021

### Does operation of SatCell Connect require a license or permission?

If the SatCell Connect solution is used to provide service in an area covered by regular cellular service during non-emergency times, then the Federal Communication Commission (FCC) or other agency that has jurisdiction, will require licenses.

However, the primary CONOP of the SatCell Connect mission is to provide emergency communications in areas where no connectivity exists, or the connectivity is temporarily inoperable. For that reason, the majority of use cases will require no licenses as Band 14 will provide critical connectivity without interference and restriction. Once additional cellular network resources have arrived at the disaster site, SatCell Connect can continue to act as a gap filler, if needed, or move to the next required emergency location.

In the case of a more permanent deployment, SatCell Connect's LTE network will require authorization obtained from a local RF governance party.

### What is the lead time on ordering the SatCell hardware for customer use?

The Hughes team is currently delivering 2 and 5-watt LTE units using Band 14 within 30 days from receipt of order. Other configurations will require 60-90 days for delivery. When ordering quantities over 25 units, Hughes can produce 10-20 units per week after an initial 90-day ramp up period.

### SatCell Connect SWaP Specifications

#### SatCell Connect Unit

- Weight: 9.5 lbs
- Dimensions: 13" H x 7.5" W x 4.8" D
- Supply Power: 12-48 VDC

#### Ultra-Compact Satellite Terminal

- Weight: 8 kg (17.6 lbs)
- 60mm H x 320mm W x 470mm D