



# Cel-Fi QUATRA brings cellular coverage to the Moxy Chelsea hotel



## ABOUT THE PROBLEM

### HOTELS & HOSPITALITY

- The Chelsea district of Manhattan boasts several of New York City's main attractions, including Madison Square Park, the High Line, Hudson Yards, and bustling art, restaurant, and bar scenes.
- The 37-storey hotel, a joint development between Marriott and national real estate investor and developer Lightstone, features a rooftop lounge, a flower shop, reiki classes, and more—right in the heart of the iconic neighborhood.
- Concrete walls and building materials blocked or inhibited cellular signal in the hotel, especially basement levels

## THE CHALLENGE

As is the case with most new buildings in the city, the Moxy Chelsea is situated on a relatively small parcel of land, which means the only way to build is up. Concrete is used to pour walls, providing the support needed to create a sound structure. This often means a cellular signal that is less than optimal in the best of cases—or altogether non-existent in the hotel's cellar and sub-cellar levels, where the business center, fitness area, offices, and the kitchen are located. In addition, there was minimal coverage on the first and second floors of the hotel due to the cellular signals being blocked by neighboring four and five-storey buildings.

Lightstone wanted to remedy this before the Chelsea hotel construction was complete, and certainly in advance of the hotel's opening.

"Guests rely on their phones, so we need to be able to accommodate them," explains Lowell Beebe-Center, the Lightstone Director of Operations responsible for pre-opening construction. "In the city we go below grade at least two sub-cellars and sometimes further, creating an issue for cell reception. A full-blown distributed antenna system is an option, but it's costly and takes up a lot of space."



Hotel cellar



Moxy Chelsea, 37-storey hotel

## THE SOLUTION

### A NEW OFFERING IN A PROVEN FAMILY OF PRODUCTS

Lightstone turned to Steve Klingensmith, founder of VAST Signals. Klingensmith chose to install the Cel-Fi QUATRA active DAS hybrid from Nextivity, rather than a passive DAS system that he had installed at other hotels in the past before QUATRA was available.

"There is so much pilot pollution with passive DAS that the system must compensate for it, resulting in a reduction in signal strength. But with Cel-Fi QUATRA, the incoming signal is much stronger, resulting in more bars of coverage," explains Klingensmith. "If I were to try and duplicate the coverage and signal strength that Cel-Fi QUATRA provides using passive DAS technology, it would have been double the cost."

### 1,000X MORE SIGNAL STRENGTH THAN PASSIVE DAS

During an in-building walk test of all the floors, Klingensmith determined the signal was fine from the third through 37th floor. However, the first and second floors, as well as the cellar and sub-cellar had insufficient signal.



### VAST Signals

- Based in Winston-Salem, North Carolina
- Offers a range of signal solutions, including those for IoT applications
- Partners with manufacturers to stay up to date on the latest technological advancements
- Collaborates with customers to understand their needs and provide thoroughly researched solutions

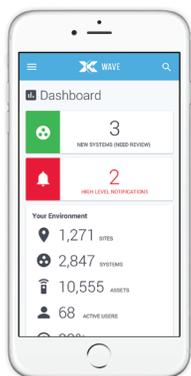
"The Moxy is one of the tallest buildings in that immediate area. The buildings surrounding it are four to five stories so were blocking the signal from getting to the lower floors, but there was a 360-degree view on the upper floors and the signal was good," says Klingensmith. "The sub-cellar and the cellar are obviously below-grade so you had zero signal coming into those floors. When you looked at your phone, it actually had the little line going through it saying NO SERVICE."

So Klingensmith designed a layout for Cel-Fi QUATRA that would provide optimal coverage for all four major carriers for the first and second floors, and the cellar and sub-cellar. Each level was 6400 square feet. In total, he installed four Network Units (NUs) and 16 Coverage Units (CUs): two NUs to supply Verizon and AT&T coverage to eight CUs, and two NUs to supply T-Mobile and Sprint coverage to an additional eight CUs. The CUs were placed at both the front and the back of each of the four floors.

"The concrete walls and the elevator shaft right up the middle of the floor reduce horizontal signal propagation, which is typical in a Manhattan building of this size," explains Klingensmith. "As a result, each NU served 3,200 square feet per floor. QUATRA provided up to 100dB gain, compared with the 70dB gain provided by passive DAS systems. The difference of 30dB translates to a signal that is 1,000 times stronger."

To capture the donor signal, Klingensmith installed the dual-feed Cel-Fi wideband omni donor antenna on the ledge outside the third floor.

"Through trial and error, we discovered that we needed to be at ground level, or as low as possible to pull in the donor signal due to the density of macro sites," he says. "This minimizes the number of sites that you can see. The NUs were located in the sub-cellar, so we ran two donor cable runs from the outside into the mechanical room on the third floor, and then we ran them all the way into the sub-cellar."



Cel-Fi WAVE remote monitoring and management platform

## CEL-FI WAVE SAVES HOURS OF TROUBLESHOOTING TIME

The installation took place in two stages. In the earlier phase of construction, Klingensmith and his team of five installers ran Cat6 cable through the open walls and ceilings. As construction evolved, they returned to install the CUs, NUs, and donor antenna. The [Cel-Fi WAVE remote monitoring and management platform](#) proved to be invaluable during the installation process.

"When we lit up the system, we discovered that one of the Cat6 cables had been nicked during construction. Cel-Fi WAVE enabled us to quickly diagnose the problem," says Klingensmith. "With passive DAS technology, we have to take a reactive approach and wait for the client to tell us it's not working. From there, we could have 100 possible points of failure, and we have to troubleshoot them one by one. With Cel-Fi QUATRA, we know exactly where the problem originates and we can fix it immediately. This saves us hours of troubleshooting time."

In total, Klingensmith estimates the entire installation took 18 manhours to install QUATRA after the cables were laid. A Passive DAS system could have easily taken double the amount of time to install.

## THE RESULTS

### A MARKET GAME CHANGER

Thanks to the quality signal powered by Cel-Fi QUATRA, cell phone users can now get four to five bars on their phone.

"It was like night and day," says Beebe-Center. "When Cel-Fi QUATRA was powered on, I watched the tradespeople walk around in amazement. For the first time in 18 months, they could get a signal. Everyone was commenting on it."

In addition, the team is experiencing phenomenal video upload and download speeds in the sub-cellar with no buffering, which is an excellent indicator of quality signal.

The successful implementation and subsequent results have caused Lightstone to reconsider the passive DAS that was installed earlier at the Moxy Times Square hotel. There is a 20dB difference in signal strength between the two properties—which equates to a signal that is 100 times stronger in Chelsea.

"With Cel-Fi QUATRA we are getting strong signals where none existed before," says Klingensmith. "It's a market game changer."

Lightstone is also considering installing Cel-Fi QUATRA at other properties where they have poor cellular signal, says Beebe-Center.



# CEL-FI QUATRA

## IN-BUILDING ENTERPRISE CELLULAR SYSTEM

- High-quality solution for the middleprise
- Supports multi-carrier 3G/4G/LTE voice and data
- Carrier-approved and unconditionally network safe
- Can be monitored and managed using Cel-Fi WAVE