

CEL-FI QUATRA

Enterprise Cellular Coverage

Installation Checklist

Training & Wave Portal Access



- Become familiar with product information at www.cel-fi.com/products
- Request portal access at www.cel-fi.com/account-request
- Complete the online CEL-FI University course (60 min) that is emailed to you.
- Upon course completion, you will receive your Portal login email invite.
- Obtain access to interact with your NU using the Request Access feature on the Options menu of the portal Access page. You will need the box label SKU and NU serial number. Contact your point of sale if you need help.

Site Survey & Planning



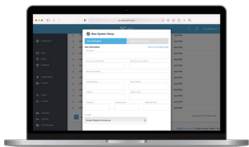
- Define the building: Address, size, interior wall materials (framed, concrete), ceiling (solid, suspended, open), and photos of areas (usage).
- Use the QUATRA Planner Tool (www.cel-fi.com/support/bom-estimator/) or iBwave to estimate HW needs (adjust later as plan details dictate).
- Decide which operators need better service and which CEL-FI QUATRA systems are needed.
- Ask the customer where service is good/ poor/ critical. They know! And they have expectations to meet.
- Measure existing cell service quality using COMPASS or another service measurement tool. Smartphones may be used for speed tests or with network signal apps.
- Choose donor antenna location(s) or other donor source for best signal quality and data rates.
- Choose locations for NU/CU equipment.
- Work with local IT staff to authorize NU internet access (send them the CEL-FI QUATRA Management Connection Guide).

Install



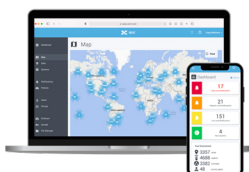
- Coordinate LAN/internet connectivity so it is ready when needed (permanent LAN is best; temporary at a minimum for commissioning).
- Run cables and mount all hardware.
- Connect all cables, connect NUs to the Internet, and power up the systems.
- If using a small cell or CBRS donor, follow product specific connection methods.

Commission



- On the Wave Portal, go to the New Systems list and select your system by NU serial number.
- Complete the guided steps.
- When completed, your system will appear on the Map, Site, and System pages for management.
- Use the Request Access feature under the Access tab menu to gain access to your NU if you don't see it on the portal.
- You may also use the tools on the WAVE Field Tool program if needed (software recovery, firewall test, and other tools). www.cel-fi.com/software/wavefieldtool

Evaluate & Optimize (if needed)



- Clear any alarms (visible on the Portal for the system, or indicated by NU/CU LEDs). Help is provided on Portal by selecting alarm history messages or Radio Page alert icons, the User Manual, and at www.cel-fi.com/support
- Select the NU to bring up the Radio Data page and check donor signal health and CU power and metrics.
- To improve signal quality, aim the donor antenna for better LTE SINR and RSRQ on all LTE radios.
- Follow Portal and documentation guidance for your product. Contact your point-of-sale for any questions.

Tips for Success

WAVE Portal Connection



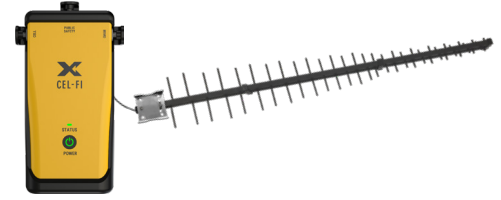
- Have a portal connection method ready before the install.
- The best option is a wired LAN connection in accordance with the Portal connections guide (firewall settings).
- Use the WAVE Field Tool to confirm the local network is ready for connection to the WAVE Portal.
- If a LAN connection is not available, use the NU built-in modem by connecting the supplied SMA antenna to the CELL port on the NU, or connect the CELL port to a donor cable feed with a coupler.
- To see your system on the Portal, input the NU serial # and SKU from the box label into the Access tab under the Options menu in the Request Access tool, and follow the New System page steps to commission the system.
- Always update your system software using the portal Options menu on the Systems page.

CU Cables



- Route CU cables according to standard IT Ethernet practices.
- Cables may be up to 100 m in length, 200 m with a mid-span QUATRA Range Extender, or 150-300 m if thicker gauge 22/23 AWG cable is used.
- For even longer cables, use the QUATRA Fiber Range Extender to add up to 2 km additional cable length.
- If the NU reports a CU alarm, check the cables to the CU. Is the cable too long or routed close to interference sources such as lighting or power lines? Try to re-crimp the RJ45 end connectors and reinsert them into the ports a few times to clean the connector contacts.

Donor Antenna Placement and Aiming



- Good donor antenna placement and aiming is the key to good signal quality.
- Perform a site survey using a signal measurement tool such as the Nextivity COMPASS to determine the best location by carrier for the donor antennas.
- Once the entire system is up and running, resolve any alarms and then fine-tune donor antenna aiming using the reported SINR on the Portal for each carrier.
- Once antenna aiming is complete, verify performance by observing the Radio Page signal quality, gain, and power metrics reported to the Portal.
- Finally, make test calls and run speed tests for each carrier. If any problems occur, re-aim the carrier donor antenna towards another cell tower and retry.

CEL-FI QUATRA, like all Nextivity systems, are much more capable than other systems because they have the ability to self-manage on a per-channel basis according to carrier network control mechanisms, much like a cell phone.

See QUATRA documentation for your model to determine best Internet connection options