



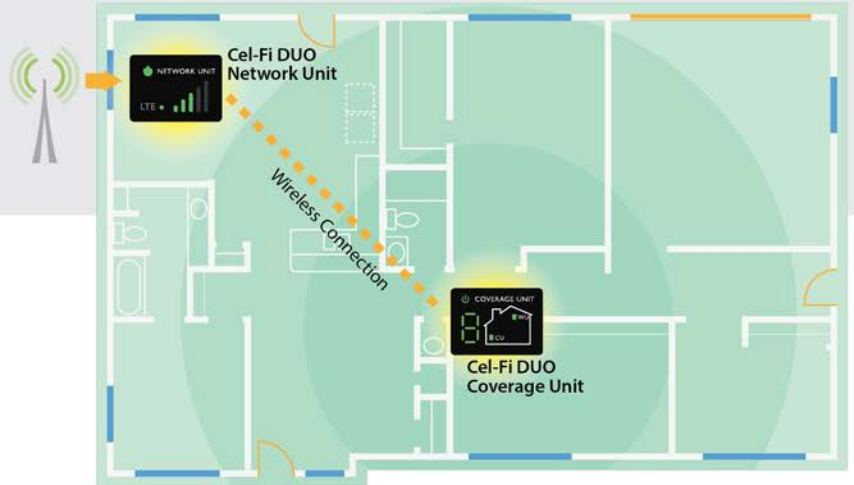
CEL-FI[®] DUO

Improve voice and data coverage for 3G/4G/LTE



NETWORK UNIT

COVERAGE UNIT



Cel-Fi DUO D34 is designed to dramatically improve voice and data indoor coverage in up to two (2) bands for 3G/4G/LTE.

System Features

- Plug and play, simple installation – no external cables, antennas, wires, or drills needed.
- Clean and compact industrial design.
- Intuitive LED User Interface (UI).
- Integrated antennas (external donor antenna port optional).
- Auto-configured & Self-Contained.
- Unlocked: Cell phones do not need to be registered with Cel-Fi to benefit.
- Peaceful coexistence with adjacent Cel-Fi systems.
- Patented 2-unit, 3-hop system.
- Remote software update capability.
- Support for the Nextivity WAVE mobile & desktop applications.
- Tech Mode via WAVE application.
- End-to-end cellular communication encryption without additional risk of vulnerability.
- Mounting brackets included with every unit.

Wireless Features

- Supports WCDMA/HSPA+/LTE (FDD).
- **Up to 100dB of system gain in each band, simultaneously.**
- Bluetooth Low-Energy (BT LE) communications with mobile handsets (optional).
- Max EIRP for Multiple carriers: 18 dBm downlink and 24 dBm uplink, per band.
- Wirelessly (5GHz U-NII) linked Network and Coverage Units.
- Peaceful coexistence with adjacent Wi-Fi (2.4 GHz & 5 GHz), femtocell, and cellular devices.
- Software-based optimization of integrated antenna coverage pattern which maximizes system gain and provides improved coverage and signal quality.
- Automatic Gain Control (AGC) based on fast real-time echo-cancellation.

- Advanced digital echo-cancellation (>30dB) and channel select filtering algorithms.
- Cel-Fi manages the power levels between the cell tower and user devices.
- Extremely linear RF front end.
- Adaptive signal equalization.
- Cel-Fi design is FCC Safe Harbor II approved.
- Includes Nextivity's 3rd-generation ARES chipset.
- External Donor antenna port option.

Mobile Network and Network Protection Features

- Up to two (2) cellular bands supported.
- Cel-Fi DUO simultaneously supports multiple channels with bandwidths anywhere from 5 to 20 MHz per radio with a total system relay bandwidth of 35 MHz.
- Support for 3GPP Rel. 10 features.
- Support for E-UTRA bands 1, 2, 3 and 4.
- Seamless integration with the Macro networks.
- Cel-Fi boosts service only for the Operator PLMNIDs the device is authorized and configured for.
- Remote Access from the cloud to the Cel-Fi device (optional).
- Secure and ciphered provisioning.
- Software-managed system intelligence prevents uplink system gain from exceeding path loss, eliminating unnecessary rise in base station noise level.
- Uplink Muting Mode automatically shuts down uplink cellular transmissions when no active user equipment is detected.
- System shuts down upon Operator's network command or failure detection.
- System Registration options available.
- Location Lock, which ensures the device is only being used in the location it was deployed to (optional).

Optional External Antenna Requirements

- Impedance must be 50 ohms, SMA-Female port
- VSWR <2:1
- Antenna should support all device band frequencies.

System Benefits

- Indoor cellular coverage!
- Anyone can install the device. No special tools or knowledge required. No external antennas needed. Simply plug-in to power.
- Attractive design can be displayed, or easily placed into the background.
- No setup or ongoing maintenance needed, nor reliance upon internet, GPS, or handsets to be registered with the system.
- No additional equipment or professional installation required for full performance.
- The three-hop two unit wireless system eliminates the requirements and installation restrictions associated with cabled connections.
- Users can be assured communications are secure, through the encrypted wireless link.
- The included mounts allow for the system to be wall-mounted for maximum spatial flexibility.
- Registration, Software Updates, and Engineering application support, with the Wave mobile app. (Not available on all systems.)
- Any subscriber device will benefit from improved coverage.
- Multiple systems can be deployed without concern for mutual interference.
- User Interface (UI) display allows quick and easy set-up by end-user. Provides instant visual feedback, with each unit displaying system information.
- Architecture allows user to place the Coverage Unit where it's needed and the Network Unit where it gets the best donor signal.
- Simplified remote maintenance of devices in the field, with Nextivity Wave cloud access. (Not available on all systems).
- Tech Mode allows technicians to collect information quickly and easily for support or configuration needs.

Wireless Benefits

- Clear and reliable voice connections within coverage area — up to 1200 Sq. m (13,000 Sq. ft.), or more for open commercial.
- Works on most cellular networks, globally.
- Bluetooth enables the system to communicate with smart phones and the Cel-Fi WAVE mobile app, improving the user experience and adding capability to the product.
- Cel-Fi remains fully functional, even when there are other RF emitters present.
- Ensures maximum gain - best coverage - at all times in ever changing RF environments, without user intervention.
- Subscriber devices enjoy improvements in battery life.
- Linearity virtually eliminates all IMD desense issues.
- The highest performance, fully-certified, signal booster possible in the power class.
- Ensures maximum gain - best coverage - at all times, without user intervention.
- Maximizes signal-to-noise (SNR) ratio - provides better data rates without negatively impacting macro cells.
- Allows for 30dB more gain than Safe Harbor I devices (traditional

boosters) – which means more coverage, safely.

- Real-time adapting capability ensures the best possible user experience, in actual user environments, which are constantly changing, and have a variety of Wi-Fi types and cellular signals present.
- Cel-Fi uses a high-performance, six core purpose-built processor to do what no other device on the market can do.

Mobile Network and Network Protection Benefits

- Supports most network configurations of LTE and UMTS/WCDMA.
- Seamless call handoff between Cel-Fi systems or the macro.
- Easily supports multiple band and frequency configurations on a cellular network with one device.
- Reduce returns, customer care calls, and provide the best product experience to users.
- Unlike wideband amplifiers, ensure the equipment capex benefits only your network – third-party macro cells are completely unaffected by Cel-Fi DUO.
- Network operators can be assured Cel-Fi devices are being used as intended, with registration and location lock options.
- Completely network safe, doesn't degrade macro capacity.
- Registration options allow control over device deployment and may be used to prevent unauthorized use.
- Ultimate control of the devices in the field resides with the network operator.

RF Specifications

RF Specification	Radio 1	Radio 2
D32-1_3	Band 1	Band 3
Frequency DL	2110-2170 MHz	1805-1880 MHz
Frequency UL	1920-1980 MHz	1710-1785 MHz
Duplex Distance	190 MHz	95 MHz
Maximum Relay BW	20 MHz	20 MHz
	35 MHz Combined	
UL TX Power Max EIRP	23 dBm	24 dBm
	27 dBm Combined	
UL TX Power Max Conducted	22 dBm	22 dBm
	25 dBm Combined	
DL TX Power Max EIRP	10 dBm per 5 MHz	10 dBm per 5 MHz
	18.5 dBm maximum	

RF Specification	Radio 1	Radio 2
D32-2_4	Band 2 (or 4)*	Band 4 (or 2)*
Frequency DL	1930-1990 MHz	2110-2155 MHz
Frequency UL	1850-1910 MHz	1710-1755 MHz
Duplex Distance	80 MHz	400 MHz
Maximum Relay BW	20 MHz	20 MHz
	35 MHz Combined	
UL TX Power Max EIRP	24 dBm	23 dBm
	27 dBm Combined	
UL TX Power Max Conducted	22 dBm	22 dBm
	25 dBm Combined	
DL TX Power Max EIRP	12 dBm per 5 MHz	10 dBm per 5 MHz
	20 dBm maximum	

* This radio may support other bands as indicated, for example allowing the device to support both LTE and WCDMA in a single band

Environmental

- Operating temperature: 0° to 40°C
- Storage temperature: -25° to 60°C
- Relative humidity: 5% to 95%, noncondensing
- RoHS (2002/95/EC) six of six compliant
- RoHS II 2011/65/EU
- WEEE (2002/96/EC)
- ErP 2009/125/EC

Power

- 12 VDC via external supply (two included)
- External supply: 100 to 240 VAC, 47 – 63Hz
- Power consumption less than 15W per unit

Physical Specifications

NETWORK UNIT:

158.5x146x59mm
560g

COVERAGE UNIT:

158.5x146x59mm
390g

Standards**

EN 301 489 -1, 17, 23	EN 60950-1:2006+A11/A12/A1/A2
EN 301 893	3GPP TS 25.143 Rel.10
EN 301 908-1, 11, 15	3GPP TS 36.143 Rel.10
EN 300-328	EN 62209-2 (SAR)
EN 62311	Bluetooth SIG
FCC Parts 15, 20, 24, 27	

**** Note:** Certifications are regional; not all products need or have the same certifications. Please check the specific model number to determine exactly which certifications it has.

Models (Band Class support) available

Some models also available as a single band device.

Patents & Design

This product is covered by Nextivity, Inc., patents and patents pending. Designed by Nextivity, Inc., in San Diego, California, USA Please refer to CEL-FI.com for details.

FCC Statement (Applicable in US only)

This is a CONSUMER device.

BEFORE USE YOU MUST REGISTER THIS DEVICE with your wireless provider and have your provider's consent. Most wireless providers consent to the use of signal boosters. Some providers may not consent to the use of this device on their network. If you are unsure, contact your provider.

You **MUST** operate this device with approved antennas and cables as specified by the manufacturer. Antennas **MUST** be installed at least 20 cm (8 inches) from any person.

You **MUST** cease operating this device immediately if requested by the FCC or a licensed wireless service provider.

WARNING. E911 location information may not be provided or may be inaccurate for calls served by using this device.

When used with any mobile device utilizing the 1710-1755 MHz band, the FCC limits booster equipment placement to a maximum of 10 meters above ground level. Installation of this equipment which does not comply with federal requirements may subject the owner to FCC enforcement action.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help

