

CEL-FI DUO+ +

3G / 4G / LTE

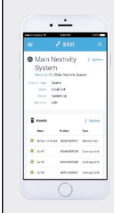
Smart Signal Booster™

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





Benefits:

- **5 Min Setup: Plug & Play**
- **Best Signal by 1000x**
- **Coverage and Capacity for Up to 15,000 ft² (1,400 m²) per System (Scalable)**
- **Wireless Solution—No External Antennas or Wiring**
- **Remote Monitoring and Management via Cel-Fi WAVE Platform**



Cel-Fi WAVE is a smartphone app that will help you get the best performance from your Cel-Fi DUO+.

Download on the  [App Store](#) or GET IT ON  [Google play](#)

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)
- System senses three (3) bands and relays any two
- Integrated antennas
- 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 Cel-Fi WAVE mobile & desktop applications
- End-to-end cellular communication encryption without additional risk of vulnerability
- Mounting brackets included with every unit

Wireless Features

- Supports 3G / 4G / LTE (FDD)
- Up to 100dB of system gain in each band, simultaneously
- Bluetooth Low-Energy (BT LE) communications with mobile handsets
- Max EIRP for Multiple carriers: 10dBm downlink and 22dBm uplink, per band
- Wirelessly (5GHz U-NII) linked Network and Coverage Units
- Peaceful coexistence with adjacent Wi-Fi (24 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
- Includes Nextivity's 3rd-generation six-core ARES chipset

Mobile Network and Network Protection Features

- Up to three (3) cellular bands supported; relays two (2) simultaneously
- Will work with any 3G or 4G carrier deploying 3G or 4G in Bands 2, 12, or 4
- 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
- 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 Registration options available
- Location Lock, which ensures the device is only being used in the location it was deployed (optional)

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 Cel-Fi WAVE mobile app
Any subscriber device on boosted network 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 Cel-Fi WAVE cloud access

Wireless Benefits

Clear and reliable voice connections within coverage area—up to 15,000 ft² (1,400 m²)
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 its power class
Maximizes signal-to-noise (SNR) ratio—provides better data rates without negatively impacting macro cells
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

Mobile Network Benefits

Supports most network configurations of LTE for maximum interoperability
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 unintended use
Ultimate control of the installed devices resides with the network operator

Variants

Model Number	Bands Supported
D32-2/13/66	2, 4, 12

Radio Performance *(check product version for specific band support)*

D32-2/13/66	Band 2	Band 12	Band 4
Frequency DL	1930-1990 MHz	729-746 MHz	2110-2155 MHz
Frequency UL	1850-1910 MHz	699-716 MHz	1710-1755 MHz
Duplex Distance	80 MHz	30 MHz	400 MHz
Maximum Relay BW	20 MHz	10 MHz	20 MHz
	35 MHz Combined		
UL TX Power Max EIRP	22dBm	20dBm	22dBm
DL TX Power Max EIRP	10dBm per 5 MHz	10dBm per 5 MHz	10dBm per 5 MHz

Environmental

Operating temperature: 0° to 40°C
Storage temperature: -25° to 60°C
Relative humidity: 5% to 95%, noncondensing
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	Coverage Unit
158.5x146x59mm	158.5x146x59mm
560g	390g

Compliance

(check individual product version for specific regional compliance)

FCC Parts: 15, 20, 22, 24, 27

EN 301 489 -1, 17, 23

EN 301 893

EN 301 908-1, 11, 15

EN 300-328

EN 62311

UL 62368-1

CSA C22.2#62368-1

IEC/EN 62368-1

3GPP TS 25.143 Rel.10

3GPP TS 36.143 Rel.10

EN 50566/62209-2/62479 (SAR)

Bluetooth SIG

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.

Patents & Design

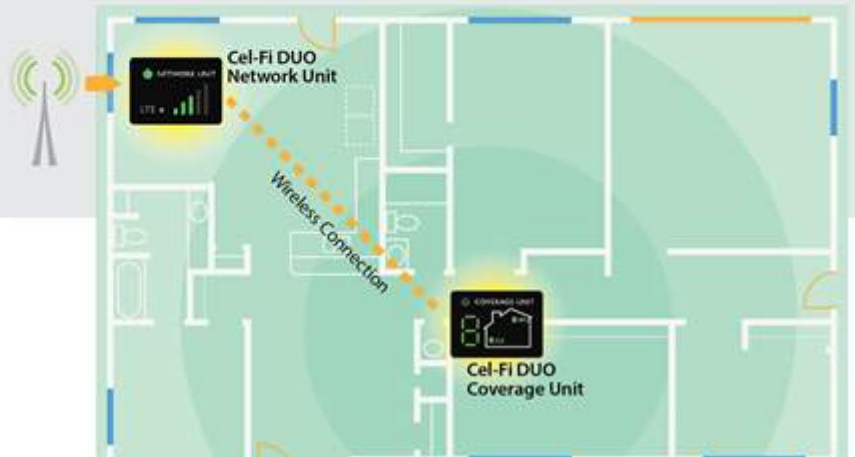
This product is covered by Nextivity, Inc., patents and patents pending. Designed by Nextivity, Inc., in San Diego, California, USA. Please refer to cel-fi.com for details.

Specifications subject to change without notice.



CEL-FI DUO+

Improve voice (VoLTE) and data coverage for 4G LTE



Cel-Fi DUO+ is designed to dramatically improve voice and data indoor coverage in up to three (3) bands for 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).
- System senses three (3) bands and relays any two.
- Integrated antennas.
- 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.
- End-to-end cellular communication encryption without additional risk of vulnerability.
- Mounting brackets included with every unit.

Wireless Features

- Supports LTE (FDD).
- **Up to 100dB of system gain in each band, simultaneously.**
- Bluetooth Low-Energy (BT LE) communications with mobile handsets.
- Max EIRP for Multiple carriers: 10 dBm downlink and 22 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.
- Includes Nextivity's 3rd-generation six-core ARES chipset.

Mobile Network and Network Protection Features

- Up to three (3) cellular bands supported; relays two (2) simultaneously.
- Will work with Verizon Wireless LTE and XLTE
- 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 2, 13, and 4 LTE.
(Other configurations are available)
- 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 Registration options available.
- Location Lock, which ensures the device is only being used in the location it was deployed (optional).

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.
- Any subscriber device on boosted network 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.

Wireless Benefits

- Clear and reliable voice connections within coverage area — up to 15,000 ft² (1,400 m²), or more.
- 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 its power class.
- Maximizes signal-to-noise (SNR) ratio - provides better data rates without negatively impacting macro cells.
- 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.

Mobile Network and Network Protection Benefits

- Supports most network configurations of LTE for maximum interoperability.
- 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 unintended use.
- Ultimate control of the installed devices resides with the network operator.

Environmental

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

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

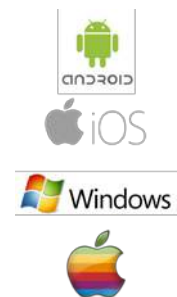
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NETWORK UNIT:

158.5x146x59mm
560g

COVERAGE UNIT:

158.5x146x59mm
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Get Cel-Fi WAVE at:
cel-fi.com/wave

Radio Specifications

RF Specification	Radio 1	Radio 2	Radio 3
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Standards**

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EN 50566/62209-2/62479 (SAR)
Bluetooth SIG

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Models (Band Class support) available

Some models also available as a single band device.

Patents & Design

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