



# CEL-FI<sup>®</sup> PRO

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



COVERAGE UNIT

NETWORK UNIT



The Cel-Fi PRO is designed to dramatically improve voice and data coverage in up to four bands for 3G, 4G and LTE.

## Features

- Plug and play, simple installation – no external cables, antennas, wires, or drills needed.
- Clean and compact industrial design.
- Integrated antennas.
- End-to-end cellular communication encryption without additional risk of vulnerability.
- Support for the Nextivity *Wave* mobile & desktop application.
- Unlocked: Cell phones do not need to be registered with Cel-Fi PRO to benefit.
- Peaceful coexistence with adjacent Cel-Fi systems.
- Intuitive LCD User Interface (UI).
- Patented 2-unit, 3-hop system.
- Remote software update capability.
- Engineering Mode
- 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.
- 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.

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

## Mobile Network Features

- Up to four (4) cellular bands supported.
- Cel-Fi PRO simultaneously supports multiple carriers with bandwidths anywhere from 5 to 20 MHz with a total system relay bandwidth of 35 MHz.
- Support for 3GPP Rel. 10 features.
- Support for E-UTRA bands 1, 2, 3, 4, 5, 7, 8, 12, 20, and 28.
- Seamless integration with the Macro networks. No handset registration, GPS signal requirements, or call handoff problems.
- Remote Access from the cloud to the Cel-Fi device.
- Cel-Fi PRO boosts service only for the PLMNIDs the device is authorized and configured for.
- Secure and ciphered provisioning.
- Software-managed system intelligence prevents uplink system gain from exceeding path loss, which eliminates 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.
- Location Lock, which ensures the device is only being used in the location it was deployed to.



## Benefits

- Anyone can install the device. No special tools or knowledge required. No external antennas needed. Simply plug-in to power.
- The unit can be proudly displayed, or easily placed in the background.
- No additional equipment or professional installation required for full performance.
- Users can be assured communications are secure, through the encrypted wireless link.
- The included mount allows for the system to be wall-mounted or ceiling mounted, for maximum spatial flexibility.
- Registration, Software Updates, and Engineering application support, with the *Wave* mobile app.
- Any subscriber in the coverage bubble will benefit from improved coverage.
- Multiple systems can be deployed without concern for mutual interference.
- Allows quick and easy set-up by end-user. Provides instant visual feedback, with each unit displaying the system info.
- 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 *Connex* cloud access.
- Tech Mode, allows technicians to collect information quickly and easy for support or configuration issues.

## Wireless Benefits

- Clear and reliable voice connections within coverage area — up to 13,000 Sq. Ft.
- Works on most cellular networks, globally.
- The highest performance, fully-certified, signal booster possible in the power class.
- 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.
- The three-hop two unit wireless system eliminates the requirements and restrictions associated with cabled connections.
- Cel-Fi remains fully functional, even when there are other RF emitters present.
- Ensures maximum gain - best coverage - at all times, without user intervention.
- Subscriber devices enjoy significant improvements in battery life.
- 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.
- Linearity virtually eliminates all IMD desense issues.
- Maximizes signal-to-noise (SNR) ratio, provides better data rates without negatively impacting macro cells.
- Allows for 30dB more gain than Safe Harbor I – which means more coverage, safely.
- A high-performance, six core processor, provides the engine to the Cel-Fi PRO.

## Mobile Network Benefits

- Easily support multiple band and frequency configurations on a cellular network with one device.
- Support most network configurations of LTE and UMTS/WCDMA.
- 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 PRO.
- Network operators can be assured Cel-Fi devices are being used as intended, with registration and location lock.
- Completely network safe, doesn't affect macro capacity.

## Environmental

- Operating temperature: 0° to 40°C
- Storage temperature: -25° to 60°C
- Relative humidity: 5% to 95%, noncondensing

## Power

- 12 VDC via external supply (two included)
- External supply: 100 to 240 VAC, 47 – 63Hz
- Power consumption less than 25W per unit

## Physical Specification

### NETWORK UNIT:

- 179 x 155 x 110mm
  - 540g (19oz)

### COVERAGE UNIT:

- 160 x 164 x 79mm
  - 450g (16oz)

## Certifications & Compliance

- CE
  - FCC Parts 15, 20, 22, 24, 27
  - RoHS (six of six) / WEEE (2002/96/EC)
  - IC (Industry Canada)
  - EAC (EurAsian Conformity Mark)
  - R&TTE 1999/5/EC
  - R&TTE 1999/519/EC
  - EN 60950-1:2006+ A11/A12/A1/A2
  - EN 301 489-23 v1.5.1
  - EN 301 489-17 v2.2.1
  - EN 301 908-1 v5.2.1
  - EN 301 908-11 v5.2.1\*
  - EN 301 908-15 v5.2.1\*
  - EN 301 893 v1.7.1\*
  - EN 62311 (2008)
- \* with deviation

## Note about Certification & Compliance:

Some certifications are regional; not all products need or have the same certifications. Please check the specific model number to determine exactly which certifications it features.

## Models (Band Class support) available

- P34-2/4/5/12: bands II, IV, V, XII
- P34-1/7/8/20: bands I, VII, VIII, XX
- P34-1/3/7/8: bands I, III, VII, VIII
- P34-1/3/5/28: bands I, III, V, XXVIII
- P34-1/3/8/20: bands I, III, VIII, XX

*Two (2) and (3) band sub-variants of the above models available.*

RF Specification	P34-2/4/5/12	P34-1/3/7/8	P34-1/7/8/20	P34-1/3/5/28	P34-1/3/8/20
<b>Certification</b>	FCC	CE	CE	CE	CE
<b>1st Channel</b>	B12	B8	B8	B5	B8
Frequency (MHz)	729-746 & 699-716	925-960 & 880-915	925-960 & 880-915	869-894 & 824-849	925-960 & 880-915
Duplex Distance (MHz)	30	45	45	45	45
Maximum Relay Bandwidth (MHz)	10	15	15	15	15
Uplink Power (dBm)	22	22	20	20	20
Downlink Power EIRP (dBm)	16	16	16	16	16
Uplink Minimum Antenna Gain (dB)	2	2	2	2	2
<b>2nd Channel</b>	B5	B3	B20	B3	B3
Frequency (MHz)	869-894 & 824-849	1805-1880 & 1710-1785	832-862 & 791-821	1805-1880 & 1710-1785	1805-1880 & 1710-1785
Duplex Distance (MHz)	45	95	41	95	95
Maximum Relay Bandwidth (MHz)	15	20	15	20	20
Uplink Power (dBm)	20	22	20	22	22
Downlink Power EIRP (dBm)	16	16	16	16	16
Uplink Minimum Antenna Gain (dB)	2	4	2	4	4
<b>3rd Channel</b>	B2	B1	B1	B1	B1
Frequency (MHz)	1930-1990 & 1850-1910	2110-2170 & 1920-1980	2110-2170 & 1920-1980	2110-2170 & 1920-1980	2110-2170 & 1920-1980
Duplex Distance (MHz)	80	190	190	190	190
Maximum Relay Bandwidth (MHz)	20	20	20	20	20
Uplink Power (dBm)	22	22	22	22	22
Downlink Power EIRP (dBm)	16	16	16	16	16
Uplink Minimum Antenna Gain (dB)	4	4	4	4	4
<b>4th Channel</b>	B4	B7	B7	B28	B20
Frequency (MHz)	2110-2155 & 1710-1755	2620-2690 & 2500-2570	2620-2690 & 2500-2570	758-788 & 703-733	832-862 & 791-821
Duplex Distance (MHz)	400	120	120	45	-41
Maximum Relay Bandwidth (MHz)	20	20	20	20	20
Uplink Power (dBm)	22	22	22	22	22
Downlink Power EIRP (dBm)	16	16	16	16	16
Uplink Minimum Antenna Gain (dB)	4	4	4	4	2

## Patents

This product is covered by Nextivity, Inc., US patents and patents pending.

Please refer to CEL-FI.com for details.

## Design

Designed by Nextivity, Inc., in San Diego, California, USA

## 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