



Single-Carrier Hybrid Active DAS for  
3G/4G/5G Voice and Data



# Cel-Fi QUATRA 1000



Spotty cellular coverage, poor voice quality, dropped calls, and dead zones continue to plague employees and visitors in middleprise buildings. To solve that problem, Cel-Fi QUATRA 1000 is an affordable, all-digital active DAS hybrid solution that provides uniform, high quality cellular signal throughout any building. This industry-leading system is also carrier approved and guaranteed network safe.

Unlike older analog boosters and passive DAS technology, Cel-Fi QUATRA delivers a cellular signal that is up to 1000x stronger. The system utilises Cat5e cabling for RF and Power over Ethernet, with no signal attenuation right to the perimeter of the building. In addition to being the most powerful solution on the market, QUATRA is cost-effective and designed to be installed within days (compared to months typical of other solutions).

Perfect for creating the ideal system, Cel-Fi QUATRA 1000 is scalable to fit buildings of all sizes. Depending on the environment, size, and space, the system utilises one or multiple Network Units (NUs), with each one providing power and distributing signal to up to four Coverage Units (CUs). Together, the NUs and CUs support a single operator.



## IntelliBoost™ Chipset

The Nextivity IntelliBoost™ baseband processor is the first six-core processor designed specifically to optimise the indoor transmission and reception of 3G/4G/5G wireless signals. With advanced filtering, equalisation and echo-cancellation techniques, Nextivity has developed an architecture which delivers unprecedented in-building data rates and pervasive 3G/4G/5G connectivity. The IntelliBoost™ processor ensures that Cel-Fi products never negatively impact the macro network while providing maximum coverage.



100dB

Up to 100 dB Active DAS Hybrid (1000x Stronger)



Single Carrier Solution



3G / 4G / 5G for Voice and Data



Carrier-Approved and Unconditionally Network Safe

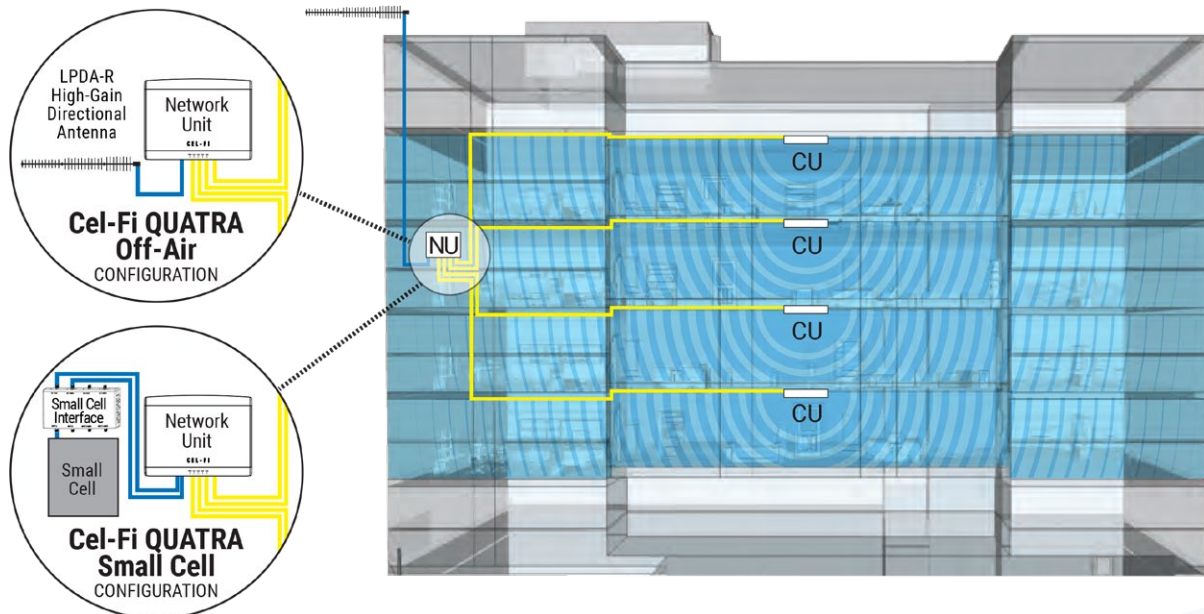


Scalable All-Digital PoE Cat5e Solution for Middleprise



Remote Monitoring and Management via WAVE Platform

## Cel-Fi QUATRA is designed to be scalable for installers



### CEL-FI WAVE COMPATIBILITY

Providing control and optimisation insight, the Cel-Fi WAVE Platform is a cloud-based portal that enables an operator or integrator to remotely monitor equipment and network KPI's, such as channel configurations, RSRP, RSCP, SINR, and systems gains.

### NETWORK SAFE

Self-organising edge intelligence ensures that Cel-Fi QUATRA does not interfere with other indoor wireless products such as Wi-Fi routers, Small Cells, and Distributed Antenna Systems (DAS). With high-speed Automatic Gain Control, Cel-Fi QUATRA is unconditionally network safe and enables more simultaneous calls and higher data speeds.

### OFF-AIR CONFIGURATION

Cel-Fi QUATRA can be installed off-air using a directional donor antenna to provide high quality in-building wireless connectivity. Cel-Fi QUATRA can be deployed by installers with Cat5e skills.

### SUPERCELL® CONFIGURATION

A Supercell is comprised of a Cel-Fi QUATRA system connected to a small cell. Multiple Cel-Fi QUATRA systems can be connected to a single small cell, or multiple small cells, to form a coordinated Supercell. A Supercell with Cel-Fi QUATRA is more efficient than multiple small cells, and the CUs of a Cel-Fi QUATRA system connected to a Supercell do not interfere with one another.

### FIBER EXTENSION

The Cel-Fi QUATRA 1000 Fiber Range Extender expands the distance between the Network Unit and Coverage Unit up to 2.0km (1.24m) for high rise, multi-building, or long distances.



## QUATRA 1000 Components



### QUATRA 1000 Network Unit (NU)

The QUATRA Network Unit (NU) is the hub of the system. The scalable design works with one to four Coverage Units to provide up to 50,000 ft<sup>2</sup> (5,000 m<sup>2</sup>) of coverage.

The QUATRA NU:

- Provides a donor signal to the QUATRA system
- Provides power to the Coverage Units (up to four)
- Connects to the Cel-Fi WAVE cloud platform for remote monitoring and management
- QUATRA 1000 only supports a single carrier MIMO
- Multiple QUATRA 1000 units can be deployed for a multi-carrier solution (for additional carrier support, see QUATRA 2000 and QUATRA 4000)

#### Model Numbers:

- Q34-2/12/14/66NU\_EXA
- Q34-3/5/7/28NU\_EXA
- Q34-1/3/8/20NU\_EXA
- Q34-2/5/12/66NU\_EXA
- Q34-2/5/13/66NU\_EXA
- Q34-1/3/7/8NU\_EXA
- Q34-1/7/8/20NU\_EXA



### QUATRA 1000 Coverage Unit (CU)

The Cel-Fi QUATRA Coverage Unit (CU) is the remote unit of the system that rebroadcasts the donor signal. The cost efficient and easy-to-deploy system leverages Power-Over-Ethernet (POE) for up to four CUs.

The QUATRA CU:

- Provides coverage for the QUATRA system (up to four per Network Unit)
- Power is delivered by Power-Over-Ethernet from the Network Unit
- Self-configuring and self-optimising
- Note: QUATRA 1000 CU's are only compatible with QUATRA 1000 NU's Cel-Fi QUATRA 4000e CU is only compatible with Cel-Fi QUATRA 4000e NU

#### Model Numbers:

- Q34-2/12/14/66CU\_EXA
- Q34-3/5/7/28CU\_EXA
- Q34-1/3/8/20CU\_EXA
- Q34-2/5/12/66CU\_EXA
- Q34-2/5/13/66CU\_EXA
- Q34-1/3/7/8CU\_EXA
- Q34-1/7/8/20CU\_EXA



### Cel-Fi WAVE Portal

The Cel-Fi WAVE Portal is a cloud-based, remote management platform, that allows users/operators to manage and maintenance Cel-Fi systems. The platform is mobile friendly which facilitates ease of use on site. Alerts and alarms can be used as configured out of the box or they can be customised however the owner or admin chooses.

The Cel-Fi WAVE Portal Features of the platform include:

- Cel-Fi device and asset management
- Data modeling and reporting
- Mobile and computer applications
- Globally trusted carrier-grade security
- Users can access the WAVE Portal through the web interface, or integrate it via API's.

## Accessories for the QUATRA 1000



### QUATRA Range Extender

The Cel-Fi QUATRA Range Extender (QRE) is a Power over Ethernet (PoE) device that extends the maximum distance between the Cel-Fi QUATRA Network Unit and the Coverage Unit.

### QUATRA Fiber Range Extender

The Cel-Fi QUATRA Range Extender (QRE) is a Power over Ethernet (PoE) device that extends the maximum distance between the Cel-Fi QUATRA Network Unit and the Coverage Unit.



### QUATRA Small Cell Interface

A Small Cell Interface (SCIF) may be used as the donor source for the QUATRA 1000. The SCIF simplifies RF connections between a small cell and Network Units.



## Specifications

<b>System Features</b>	Enterprise-class, carrier-grade, hybrid active DAS
	MIMO RF inputs for (a) small cell donor or (b) external off-air donor antenna
	Network Unit (NU) (Head End) attaches to Coverage Unit (CU) (Remote Unit) via Cat 5e cable
	A single NU and up to four (4) CUs may be attached (hub and spoke architecture) in a Cel-Fi QUATRA system
	Multiple Cel-Fi QUATRA systems may be deployed to scale with building size
	Up to 100m (Cat5e) or 150m (23AWG CAT6/7) CU cable length
	Cel-Fi QUATRA Range Extender (QRE) (optional) may be used to increase NU-to-CU distance to 300m (984 ft)
	Remote Management through Nextivity's Cel-Fi WAVE cloud platform
	Easiest installation in its class
	Glanceable LED User Interface (UI)
	Mounting hardware included
<b>Wireless Features</b>	Supports up to four (4) bands simultaneously from a single operator
	3G/4G/5G support (WCDMA / HSPA+ / LTE)
	Supports FDD
	MIMO (in two bands, see table below for specifics per model)
	Up to 100 dB system gain per band (in Off-Air mode)
	Peaceful coexistence with adjacent Wi-Fi (24 GHz & 5 GHz), femtocells, and cellular devices
	Advanced digital echo-cancellation (>30 dB) and channel select filtering algorithms
	Active management of the cellular link between the Base Station and user devices
	Automatic Gain Control (AGC) based on fast real-time echo-cancellation
	Linear RF front end
	Adaptive signal equalisation
Uses Nextivity's 3rd-generation "ARES" chipset	
<b>Mobile Network and Network Protection Features</b>	Global band combinations available for Americas, Europe, Asia, Oceania, and Africa
	Systems pre-configured for a single carrier (network operator)
	Seamless integration, handover, and handoff with the macro network
	Supports multiple channel bandwidths of 384/5/10/15/20 MHz per channel
	Works with any user equipment (UE) for the configured network (no whitelist/blacklist)
	Up to 75 MHz relay bandwidth
	Support for 3GPP Release 10 features
	Provider-specific system: Cel-Fi QUATRA distributes and boosts service only for the Operator PLMNIDs for which the device is authorised and configured
	Secure and ciphered provisioning
System intelligence accurately establishes proper safe uplink power in real time	



	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
<b>System Benefits</b>	Easiest to deploy Active DAS Hybrid
	Distribute and boost cellular coverage indoors, eliminates dead zones
	3G and 4G support, Voice and Data, network safe
	Coverage footprint provided via Power over Ethernet (PoE); no requirement for additional power source at CU (RU)
	System can accept various Donor signal inputs: Small Cell; OTA (off-air) via external antenna
<b>Wireless Benefits</b>	Clear and reliable cellular connections within coverage area
	Highest gain (100 dB) provides best coverage footprint
	Advanced Echo-Cancelation allows Cel-Fi QUATRA to transmit more power without interference or feedback
	Subscriber devices require less transmit power for improved battery life
	Linearity eliminates IMD desense issues
	Dynamic gain control ensures maximum gain—best coverage—at all times in ever changing RF environments, without user intervention
	Nextivity purpose-built, high-performance, six core ASIC processor, provides best performance at lowest cost
<b>Mobile Network Benefits</b>	Flexibly deploy in LTE, VoLTE, LTE-Advanced, and WCDMA networks, with multiple cellular bands, simultaneously
	Automatically adjusts channel bandwidths from 384 MHz to 20 MHz
	Sufficient relay bandwidth (75 MHz) to support SISO and MIMO in multiple bands
	Off-load the macro network in Supercell mode, or use to improve macro capacity and building propagation/penetration
	UE control is transparent and remains centralised in the network core (no gateways or third-party software)
<b>Small Cell Interface Kit (SCIF) #Q34-SCI</b>	The Cel-Fi QUATRA SCIF is designed to simplify connecting a Small Cell to up to two Cel-Fi QUATRA Network Units
	The SCIF may be ordered separately (a second NU requires purchase of two additional connection cables)
	Connects a small cell to up to four Cel-Fi QUATRAs (additional cables or splitters may apply)
	Provides port isolation and attenuation
	Supports small cells with up to one or two band dependent RF feeds per MIMO channel
	SMA connectors (50 ohm)
	Includes Input and Output cables
	699–2690 MHz
	1 watt max input power on all ports



<b>QUATRA Range Extender (QRE)</b> #Q34-E1000	The Cel-Fi QUATRA Range Extender is a Power over Ethernet (PoE) device that allows Cel-Fi QUATRA Network Unit (NU) to Coverage Unit (CU) interconnect cable lengths up to 650 ft (200 m)
	Plug and Play installation
	Power over Ethernet (PoE)
	Extends NU to CU cable to 200 meters
	Supports Cel-Fi QUATRA proprietary protocols
	Note: Will not support other (non Cel-Fi QUATRA) PoE device
<b>Wideband MIMO Panel Antenna</b> #A52-X12-100	The Wideband MIMO Panel Antenna may be used as an Off-Air (OTA) donor source
	MIMO Directional Panel Antenna
	Integrated antenna cables (200 cm)
	Mounting hardware included
<b>Cel-Fi Mounts</b> Indoor: #F66-100-000 Pole: #F26-100-000	Indoor/outdoor mounts designed to secure a donor signal antenna for Cel-Fi QUATRA and work with the Cel-Fi WAVE Antenna Positioning Application
	A rugged outdoor pole mount, designed for mounting antenna externally to a pole, and supporting the Antenna Positioning Application
<b>Power</b> (Network Unit only)	54 VDC @ 2.22 Amp via external supply (51.3 to 56.7 VDC tolerance)
	External supply: 100 to 240 VAC, 47– 63 Hz
	Power consumption less than 120W max
	Network Unit provides power to Coverage Units over Cat 5e (PoE)
<b>Environmental</b>	Operating temperature: 0° to 40°C
	Storage temperature: -25° to 60°C
	Convection Cooling
	Relative humidity: 0% to 95%, noncondensing
	RoHS II 2011/65/EU
	IP20
<b>Installation</b>	Mounting hardware included
	NU may be wall mounted
	CUs may be wall or ceiling mounted
	One (1) NU supports up to four (4) CUs
	iBwave VEX files and template available
<b>Physical Specifications</b>	Network Unit - Dimensions: 250×188×55 mm, Weight: 1.2 kg (40.8 oz.)
	Coverage Unit - Dimensions: 188×188×50 mm, Weight: 0.83 kg (29.2 oz.)





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

Band	Downlink	Uplink	Boost
1	2110-2170 MHz	1920-1980 MHz	Up to 20 MHz contiguous boost BW, HSPA or LTE SISO
2	1930-1990 MHz	1850-1910 MHz	Up to 20 MHz contiguous boost BW, HSPA or LTE SISO
3	1805-1880 MHz	1710-1785 MHz	Up to 20 MHz contiguous boost BW, HSPA or LTE MIMO
4	2110-2155 MHz	1710-1755 MHz	Up to 20 MHz contiguous boost BW, HSPA or LTE MIMO
5	869-894 MHz	824-849 MHz	Up to 15 MHz contiguous boost BW, HSPA or LTE SISO
7	2620-2690 MHz	2500-2570 MHz	Up to 20 MHz contiguous boost BW, LTE MIMO
8	925-960 MHz	880-915 MHz	Up to 15 MHz contiguous boost BW, LTE SISO
12	729-746 MHz	699-716 MHz	Up to 10 MHz contiguous boost BW, LTE MIMO
13	746-756 MHz	777-787 MHz	Up to 10 MHz contiguous boost BW, LTE MIMO
20	791-821 MHz	832-862 MHz	Up to 20 MHz contiguous boost BW, LTE MIMO
28	758-788 MHz	703-733 MHz	Up to 20 MHz contiguous boost BW, LTE MIMO
66	2110-2200 MHz	1710-1780 MHz	Up to 20 MHz contiguous boost BW, LTE MIMO

Total boost all-channel bandwidth 75 MHz (2x2 MIMO uses double bandwidth per channel)

DL Maximum NU in-band donor level -40 dBm

DL Maximum NU survival donor level 30 dBm

UL Maximum CU donor level -20 dBm

Maximum UL power 22 dBm bands 1, 2, 3, 4, 7

Maximum UL power 20 dBm bands 5, 8, 12, 13, 20, 28

Maximum DL power 10 dBm per 5 MHz bands 1, 2, 3, 4, 7

Maximum DL power 10 dBm per 5 MHz bands 5, 8, 12, 13, 20, 28

LTE 5/10/15/20 MHz and WCDMA 384/5MHz bandwidths

(Specific power settings may be influenced and/or modified for regulatory compliance Check specific model for power values)

**Connections**

4x CU RJ45 Proprietary Gigabit link

100 m max CU cable length Cat5e, or 150 m with 23AWG CAT6/7

Up to 300m max CU cable length with Cel-Fi QUATRA Range Extender and 23AWG CAT6/7

PoE IEEE 8023at

RJ45 LAN management port (10/100 Fast Ethernet)

RJ45 LAN management output port (10/100 Fast Ethernet)

2x MIMO External RF Input (QMA-Female 50 ohm)

**System Management**  
(Software)

Cel-Fi WAVE cloud portal

Cel-Fi WAVE Remote Management:

- Status (list and map)
- Commissioning
- Diagnostics
- Software Updates
- Settings
- Reporting
- Alarms & Notifications



<b>Compliance</b> (check individual product version for specific regional compliance)	3GPP TS 25143 Rel10
	3GPP TS 36143 Rel10
	CE
	FCC Part 15, 20, 22, 24, 27
	ISED Canada
	UL 62368-1/CSA C272
	Bluetooth BQB
	RCM
Note: Certifications are regional; not all products need or have the same certifications. Please check with Sales or Support, the specific model number to determine exactly which certifications it has, or are best for your region.	

## Configurations

Model Number (base)	Bands Supported	MIMO Supported	Crossover Supported
Q34-2/5/12/66	2, 4, 5, 12	4, 12	2, 5
Q34-2/5/13/66	2, 4, 5, 13	4, 13	2, 5
Q34-1/3/8/20	1, 3, 8, 20	3, 20	1, 8
Q34-1/3/7/8	1, 3, 7, 8	3, 7	1, 8
Q34-1/7/8/20	1, 7, 8, 20	7, 20	1, 8
Q34-3/5/7/28	3, 5, 7, 28	7, 28	3, 5
Q34-2/5/12/66	2, 5, 12, 66	12, 66	2, 5

### Why Rising Connection is using equipment designed and built by Nextivity?

- Designed and built for the most varied conditions in the world including Australian environment.
- Worldwide proven and respected Industry Experience including in the Australian Telecommunications Industry.
- Expertise support and customer focused staff.
- Up to date with technology and bringing to market the best quality technology available for Reliable Commercial use

This demonstrates to Rising Connection that you will have the Quality, Reliability and Product Support.