User Manual

FP16204 Femtocell

3G Access Point for Offices & Indoor Spaces

Contents

1 Introduction

The FP16204 Femtocell Access Point from NEC is one of the most technically advanced 3G access points, yet installation is simple and straight forward.

Plugging the compact unit into your broadband router or cable modem will grant your existing 3G phone or data-card exclusive access to its own 3G access point. The Femtocell is like a low-power 3G equivalent of a Wi-Fi hotspot that works with all your 3G devices. It can be configured to handle four, eight or sixteen voice calls at the same time. There is no need to worry about dropped calls, poor voice quality or slow data connections, dependable multi-megabit speeds are now a reality whereas coverage concerns and network congestion are things of the past.

The Femtocell has no buttons to press and simply requires a power source and broadband data connection to operate. The Femtocell automatically communicates with a central management system over a secure Internet connection. It takes less than 10 minutes to register and download the latest software, after which point it will be ready to handle your first call.

It is important that you read each section of this manual before operating the Femtocell.

Please give particular attention to all operating instructions and retain them for future reference.

2   Getting started

2.1   Check what's in the box

Femtocell with free standing mount and
(optional) wall bracket

Ethernet data cable to connect the
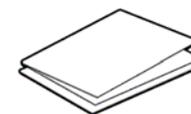Femtocell to your LAN, broadband
router or cable modem

Mains power supply adaptor and plug

External GPS antenna

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2.2   Location

The range of the Femtocell depends on a number of factors including its location,
the number and the construction of the walls, and the proximity to other Femtocells.

Firstly, locate your nearest LAN port, broadband data router or cable modem, as this
will need to be connected to the Femtocell.

It is worth spending a little time thinking about where to place your Femtocell.
Considerations should include where you are most likely to make or receive calls: If
you wanted to talk to everyone in your home or office without shouting too loudly
then where would you stand? That is probably a good location for the Femtocell.

Ideally, place your Femtocell somewhere central in an elevated location and close to a window.

For even better coverage throughout the home, the external GPS antenna can be connected and placed by a window to allow the Femtocell to be located in a more central location.

To avoid interference it is recommended that the Femtocell is placed at least 1m away from any cordless phone base unit or wireless LAN router.

Your Femtocell will generate a small amount of heat, so avoid positioning the unit in an enclosed space or in direct sunlight. Keep your device at least 2 inches (5 cm) from walls and other surfaces to ensure proper air flow.

The unit can be free standing or wall mounted.

(The optional stand is either included in your standard product packaging or it can be ordered as a separate accessory)

2.3   Configuration and power up

1. Insert the SIM card provided by your Network Operator with the Femtocell unit. The SIM card slot is accessed through the cover on the side of the device. The SIM card is inserted in the slot under the cover. An audible "click" will be heard when pushed in correctly. Please replace the cover when done.

2. Connect one end of the data cable to the Femtocell Ethernet port.

3. Connect the other end of the data cable to a spare Ethernet port on your Office LAN, broadband router or modem.

4. Connect the external GPS antenna (optional). Place the external GPS antenna horizontally on a flat surface as close to a window as possible. The antenna works best in an open area, so do not cover. Do not place the GPS antenna outdoors; it is not weatherproof.

5. Plug the power supply adaptor into a mains socket and the Femtocell before switching on at the mains

6. Leave the unit for about 10 minutes to allow it to configure itself and start to provide service.

7. The green indicator light will stop flashing when the Femtocell is ready to use. If after 30 minutes the indicator light has not stopped flashing then please refer to the Troubleshooting section of this User Manual.

3   Using your Femtocell

3.1   How it works

Traditionally your mobile phone provides service using a long-distance radio connection with a mobile phone network.

The Femtocell is a mobile access point that seamlessly replaces this service when you are indoors. It uses your broadband internet connection to communicate with the mobile network, and because it provides coverage indoors it is very low power - similar or lower than the power used by a regular cordless home phone, Wi-Fi router or even your mobile phone.

The result is outstanding 3G coverage including dependable, high-speed data services like music download and video. The 3G mobile network detects when you are moving between the outdoor network and your indoor Femtocell coverage area and automatically shifts between the two without any intervention required.

3.2   Broadband connection

Increases in broadband data speeds over telephone lines and cable TV now make it a viable means to transport other forms of data as well as the Internet and music downloads.

The Femtocell plugs into your broadband interface and accesses your Mobile Operator's network in a secure manner just like the mobile equipment you see outside. This ensures that it functions in exactly the same way, offering you all the latest 3G services. As with any mobile equipment, the Femtocell automatically connects to the network without you having to press any buttons to communicate with it via a computer.

Since the Femtocell shares your broadband interface with your PC Internet connection, it has to be able to support both simultaneously. If you frequently download large amounts of data such as music from the Internet, we recommend that your broadband speed is better than 1Mbps in the downlink direction and 512 kbps in the uplink direction. Additionally if your broadband router is capable of supporting Class of Service data prioritisation then you can configure it to prioritise your Femtocell data and provide a better quality of service to your mobile device.

3.3   Indicator Lights

The indicator light tells you what the Femtocell is doing and whether or not it is experiencing any problems. It can be either green to show it is operating properly, or red to highlight a problem. The Femtocell can take up to 10 minutes to configure itself after switching on for the first time. During this period, it carries out a number

of self-checks and configures itself to give best coverage in your home or office. All communications between the Femtocell and the central management system are secure and carried over your broadband data connection.

If for any reason the indicator light is red this means that there is a problem. Section 4 contains information about the state of the indicator light, what it means, and what actions need to be taken.

3.4 Privacy

The Femtocell ensures your privacy by not logging, recording or reporting phone calls, phone numbers, data files, web pages or any other information except as required by your Service Provider or Mobile Operator as a normal part of its legal commitments.

3.5 Emergency calls

Like other phones that require a power source but do not have a battery backup, the Femtocell should not be relied upon as an only means to make a 911 emergency call.

4   Troubleshooting

The Red Indicator light is used to signal a problem with the unit.

If the Red Indicator light is flashing this means that there is a problem which you can resolve yourself. The number of flashes indicates the type of problem as shown in the table below.

If the Red Indicator light is on but not flashing then please contact your customer care who will be able to assist you with the problem.

Number of flashes	Problem	Resolution
1	No connection to local broadband router	Check the connection between the broadband router and the Femtocell.
2	No internet connection	Check that the broadband router is connected to the Internet and is providing service.
3	Interference problem	There is interface with other systems. Try placing the Femtocell in a different place. If this persists please contact customer services.
4	Overheating	Check the Femtocell is located where there is good airflow.
5	SIM card problem	Check to see that the SIM card is inserted correctly and that it is the one provided with the Femtocell.

5   Safety and Product care

All instructions, warning and caution statements that accompany this equipment must be strictly followed at all times to ensure its safe use. Observe all warning and caution symbols that are fixed to this equipment.

This electrical equipment is designed with the utmost care for the safety of those who install and use it. However, when using this device, basic safety precautions should always be followed to reduce the risk of fire and injury to persons, and the dangers of electric shock and static electricity.

Do not cover the device or block the airflow to the device with any other objects.

Dust occasionally to keep air vents clear of debris. Do not use liquid cleaners.

This product was qualified under test conditions that included the use of the supplied cables between system components. To be in compliance with regulations, the user must use the cables supplied with the unit and install them properly. This includes the power adapter that is provided.

Operate this product only with the type of power source indicated on the marking label. If you are not sure of the type of power supplied to your property then please consult your dealer or local electricity company. Do not use this product outdoors or do not use this product near water. Keep the device away from excessive heat and humidity and keep the device free from vibration and dust. Wipe the unit with a clean, dry cloth. Never use cleaning fluid or similar chemicals. Do not spray cleaners directly on the unit or use forced air to remove dust. Avoid installing or using this product during an electrical storm, there may be a remote risk of electric shock from lightning. During an electrical storm, for added protection please unplug the unit from the wall outlet and disconnect all cables. This will prevent damage due to lightning and power surges. For safety reasons, only authorised service technicians should open the device. If the device is opened then the warranty will become void.

The device may affect medical equipment so please take account of any associated technology restrictions. This device, like other radio devices, emits radio frequency electromagnetic energy, but operates within the guidelines found in radio frequency safety standards and recommendations. It is recommended that the minimum operating distance from the installed Femtocell to persons is 20cm. Ensure the Femtocell is turned off when inserting or removing the SIM card. Do not bend or scratch the SIM card. Keep it away from static electricity, water and dirt.

6 Specifications

Model	FP16204
Radio Interface	3GPP WCDMA Band
Range	200m maximum (50m in a typical office)
Transmit power	20dBm maximum
Capacity	Up to 4, 8 or 16 users simultaneously using a mix of voice and data applications (subject to software licence)
Power Supply	Plugtop AC Adaptor with mains plug adapter. AC100 ~ 250V,50Hz/60Hz.
Power Consumption	10.5 Watts
Operating Temperature	0C to +40C
Storage Temperature	-5 to 45C
Operating Humidity	90% non-condensing

7 Conformance information

United States FCC Compliance

This device 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 such interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the instructions, it 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, if applicable.

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 service provider or an experienced radio/television technician for help.

Any changes or modifications not expressly approved by NEC could void the user's authority to operate the equipment.

The information shown in the FCC Declaration of Conformity paragraph below is a requirement of the FCC and is intended to supply you with information regarding the FCC approval of this device.

FC Declaration of Conformity

Description:	3G Femtocell
Model:	FP16204
FCC ID:	P27-FP16204

This device complies with Part 15 of FCC Rules. Operation is subject to the following two conditions:

- The device may not cause harmful interference.
- The device must accept any interference received, including interference that may cause undesired operation.

Canada EMI Regulation

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la class B est conforme à la norme NMB-003 du Canada.

Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

Radiation Exposure Statement

This device complies with FCC's RF radiation exposure limits set forth for an uncontrolled environment under the following conditions:

This device should be installed and operated such that a minimum separation distance of 8 inches (20 cm) is maintained between the radiator (antenna) and the user's or nearby person's body at all times.

This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.

For more information, see the publication "Femtocells and Health" at http://www.femtoforum.org or visit the FCC website at http://www.fcc.gov

Disclaimer

NEC assumes no responsibility for errors or omissions that may appear in this guide. We reserve the right to change this guide at any time without notice.

8 Glossary

3G	**Third Generation mobile radio technology using WCDMA and the successor to GSM.**
3GPP	Third Generation Partnership Project. A collaboration of telecommunication associations around the world responsible for defining the specifications for a worldwide 3G mobile network.
Broadband	Generic term used to describe a wide bandwidth data connection suitable for Internet browsing and downloading music.
Cable modem	Module that provides access to a data signal sent over the cable television network.
DECT	Digital Enhanced Cordless Telecommunications. Standard for digital portable phones that are used in the home or office.
DSL	Digital Subscriber Line. A broadband connection over existing telephone lines that is suitable for always-on Internet browsing.
Ethernet	The physical connection used in computer networks.
Femtocell	Another term for a miniature wireless access point for use in the home. The term femto, denoting a factor of 10^{-15}, is to highlight its small size.
GSM	Global System for Mobile communications. The most popular second generation (2G) mobile technology primarily designed for voice communications and widely used across Europe and the rest of the world.
Hotspot	A venue that provides wireless data access using Wi-Fi.
HSDPA	High-Speed Downlink Packet Access. It is an enhancement to the 3G standard to support higher data speeds over the interface between the base station and a mobile device.
HSPA	High-Speed Packet Access. Refers to both HSDPA and HSUPA.
HSUPA	High-Speed Uplink Packet Access. It is an enhancement to the 3G standard to support higher data rates between the mobile device and a base station.

SIM	Subscriber Identity Module. Removable smart card used in a mobile phone or datacard to hold network security data, identify the owner and store personal information.
Uplink	Wireless connection between the mobile device and the fixed base station.
WCDMA	Wideband Code Division Multiple Access. Fundamental technology for 3G networks used in Europe and the rest of the world.
Wi-Fi	Wireless technology to provide a local data connection between electronic products.

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