

ZEN 1900 User's Guide

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Technical Support

ZEN® serial numbers must be available to authorize technical support and/or to establish a return authorization for defective units. The serial numbers are located on the back of the Coverage Unit and the Network Access Unit, as well as on the box in which they were delivered. Additional support information may be obtained by accessing the Spotwave Wireless Inc. website at www.spotwave.com. To contact support by telephone, call your local Spotwave vendor; or if you are unable to reach your vendor, contact Spotwave Wireless at **866-704-9750**.

Important Safety Information



Warning! For your safety, beware of power lines and ensure appropriate safety measures are maintained at all times during the installation of the ZEN equipment. If equipment not shipped with the ZEN system is to be used during installation or mounting, follow all equipment manufacturer's instructions in proper use to ensure injury is avoided.

The Network Access Unit and Coverage Unit of the ZEN system are low power transmitters. As with a cell phone antenna, avoid unnecessary contact with the front of the units when they units are operating. Mount the units in a location where people will not approach within 1 foot of the front of the Network Access Unit or the Coverage Unit.



Warning! For your safety, do not connect or disconnect the RF coaxial cable from the Network Access Unit or Coverage Unit while the power is connected to the Coverage Unit. Power to the Network Access Unit is supplied from the Coverage Unit through the coaxial cable. Connecting or disconnecting the coaxial cable while the system is powered may result in electric shock or damage to the equipment.

Introduction

Congratulations! You have purchased one of the finest personal wireless coverage systems available on the market. The content of this manual complements the Spotwave® ZEN Quick Install Guide and provides specific details that may be referred to if necessary during installation of a ZEN coverage system.

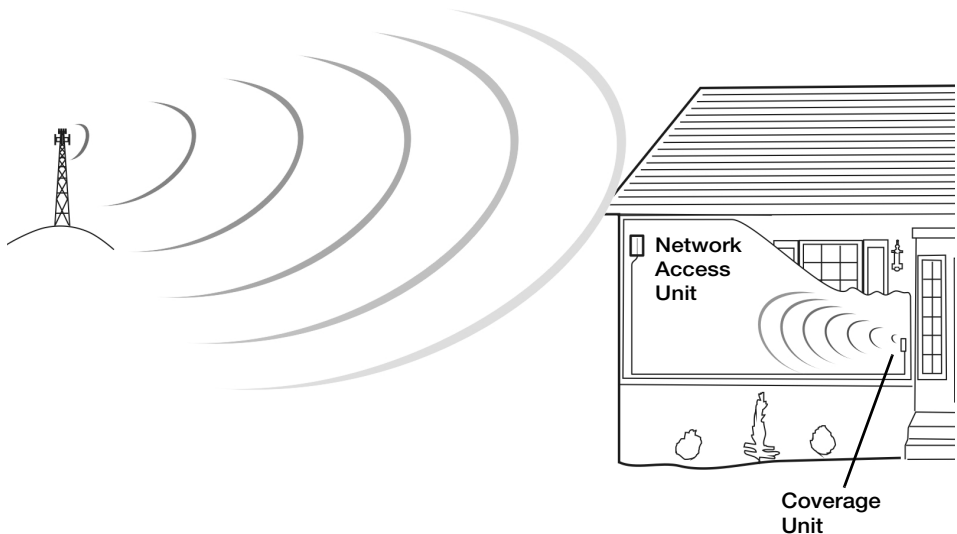
No Special Knowledge Or Equipment Needed

Installation of your ZEN system does not require any specialized technical knowledge. The system can be installed by any person(s) with the ability to use a screwdriver, and in some situations may require the use of a ladder, drill, and additional related tools.

ZEN System at a Glance

The purpose of the ZEN system is to enable personal wireless communications in specific locations within a wireless service area where cell phones do not work, or work poorly, for example inside a basement, or at the cell boundary.

The ZEN system receives signals from one or more wireless base stations and relays the signal to areas where cell phones do not work or work poorly due to obstructions or the remoteness of the location.

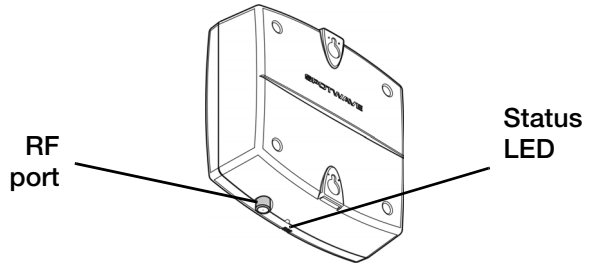


The basic ZEN intelligent coverage system is comprised of a Network Access Unit, a Coverage Unit and a power supply. The Network Access Unit is the outward facing part of the system that communicates with the base station or cell tower. The Network Access Unit is connected (via coaxial cable) to the Coverage Unit which provides wireless coverage to indoor areas.

INTRODUCTION

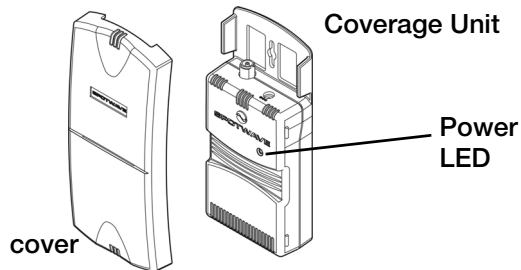
Network Access Unit

The Network Access Unit has a F-type coaxial port and a status LED on the bottom.



Coverage Unit

The Coverage Unit has a F-type coaxial port, a power adapter port and a status LED.



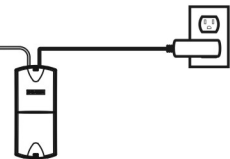
ZEN Configuration

The basic ZEN system configuration is one Network Access Unit connected with a coaxial cable to a Coverage Unit which is connected to an AC adapter that supplies power to both units.

Network Access Unit



Coverage Unit



Installation

ZEN is a simple-to-install system that includes everything you need. The basic steps for installing your system are to first locate the best signal within 35 feet of the area requiring coverage and then mounting the Network Access Unit and Coverage Unit.

Before you begin

The following are general considerations and preparations that should be looked at before installing the ZEN coverage system.

Signal Strength

The ZEN system brings signals from an area of adequate coverage to an area with poor or non-existent coverage. It is the Network Access Unit which captures a good signal, and the Coverage Unit that provides the signal to the area with poor cell phone coverage. The Network Access Unit can be mounted inside or outside, as long as it is in an area where your cell phone works.

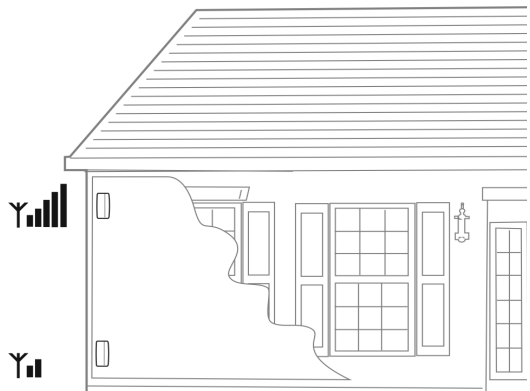
Generally, the better your cell phone works at the location the Network Access Unit is to be mounted, the better the system will perform.



Locate the Network Access Unit where your mobile phone works best

Network Access Unit Location and Height

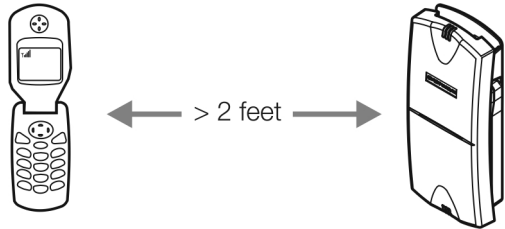
Locating the Network Access Unit on an exterior wall and as high as possible will usually provide better performance.



INSTALLATION

Coverage Unit proximity to mobile phone

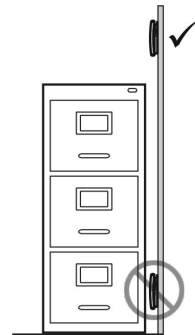
To maintain system integrity, the Coverage Unit will temporarily go into “Mute mode” if a mobile phone is closer than 2 feet. To avoid the ZEN system temporarily going mute, locate the Coverage Unit at least 2 feet away from where mobile phones are used.



Avoid obstructions

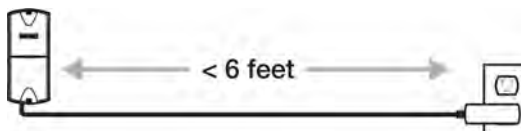
General placement of the Network Access Unit and Coverage Unit must be in unobstructed areas.

For example, the Coverage Unit should not be placed on a wall behind any type of furniture (behind items such as metal filing cabinets would be a particularly poor location). Similarly, the Network Access Unit should not be directly facing any type of metal structures.



Proximity to power source

The Coverage Unit must be located within 6 feet (2 meters) of a power source.

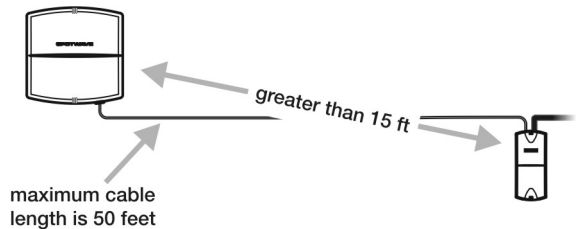


Distance between Network Access Unit and Coverage Unit

Although you should separate the Network Access Unit and Coverage Unit as much as possible (the minimum distance between the two units is 15 feet) you are limited by the length of coaxial cable that can be used.

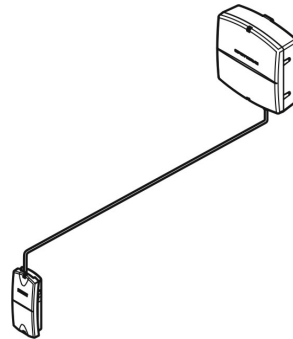
The ZEN system ships with 35 feet (10 meters) of coaxial cable, but up to 50 ft of coaxial shielded CATV coaxial cable can be used.

If the distance between the two units is less than 15 feet or coaxial cable longer than 50 ft is used, the coverage performance will be reduced.



Orientation of Network Access Unit relative to Coverage Unit

If possible face the Network Access Unit and Coverage Unit in opposite directions, and back to back while maintaining maximum separation. While not a requirement, some installations will perform better if the units are positioned in this manner. This is generally less important for an outside mounted Network Access Unit than one mounted inside.



Barrier between Network Access Unit and Coverage Unit

The greater the physical obstruction between the Network Access Unit and Coverage Unit, the better the performance. Dense obstructions such as brick, concrete or metal walls are better than wooden or plaster walls.

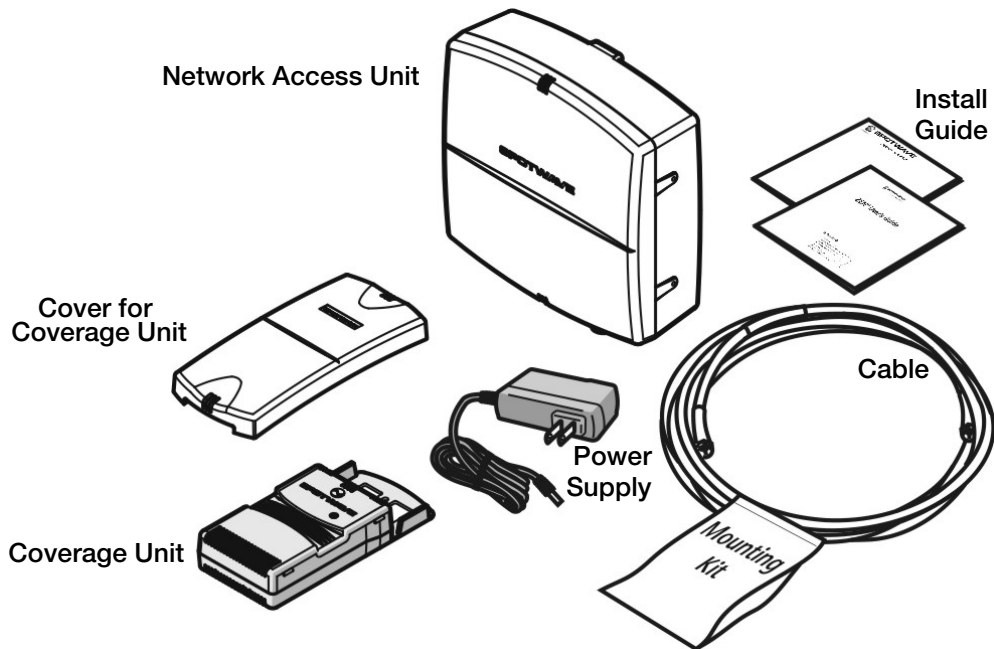


Warning! For your safety, do not connect or disconnect the RF coaxial cable from the Network Access Unit or Coverage Unit while the power is connected to the Coverage Unit. Power to the Network Access Unit is supplied from the Coverage Unit through the coaxial cable. Connecting or disconnecting the coaxial cable while the system is powered may result in electric shock or damage to the equipment.

Packing List

The ZEN system ships with the following components:

- Network Access Unit - this is the outward facing part of the system.
- Coverage Unit - this is the indoor part of the system.
- Power Adapter - to be plugged into an electrical outlet and connected to the Coverage Unit.
- Quick Installation Guide and User's Guide
- Mounting Kit for the Network Access and Coverage Units which includes:
 - screws (6)
 - drywall anchors (4)
 - concrete screws (2)
 - brackets (2)
 - 90° F connector & wrench
 - shelf stand (for Coverage Unit)



Choosing a location for the Network Access Unit

The Network Access Unit is the outward facing unit. It is the unit that picks up the signal from and communicates with the service providers base station network.

Positioning the Network Access Unit

The following outlines the procedure for locating a Network Access Unit.

1. Use your mobile phone to identify the inside location with the strongest received signal (usually near an outside facing wall). If no adequate signal is available indoors then it may be necessary to try an outside location (such as an outside roof or external wall) where a stronger signal is received.



Identify the location with the strongest signal

2. Position the Network Access Unit (but do not physically mount it) in the location that showed the strongest signal.

While not a requirement, it is highly recommended that the Network Access Unit be installed 3 to 4 feet away from the glass when facing a tinted window¹

3. Position the Coverage Unit (but do not physically mount it) in the area that requires coverage. The Coverage Unit must also be located at least 15 feet (5 meters) away from the Network Access Unit.



← greater than 15 ft →

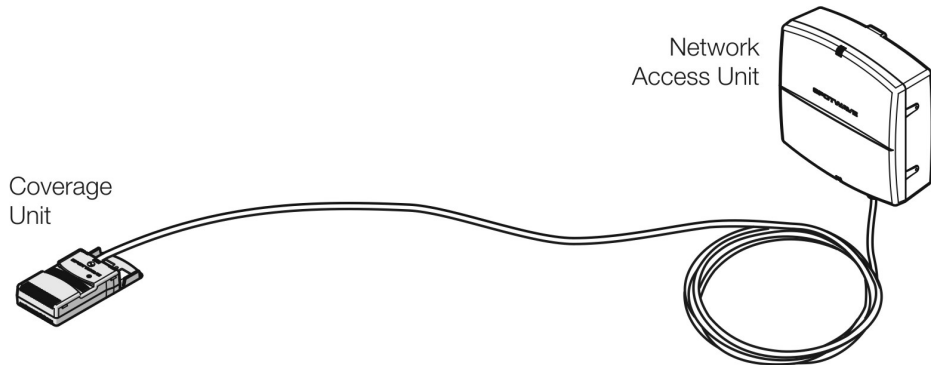


4. Use your mobile phone to note the signal level (number of bars) at the Coverage Unit.

1. Tinted windows may contain metallic particles which can degrade the signal more than the adjacent exterior wall.

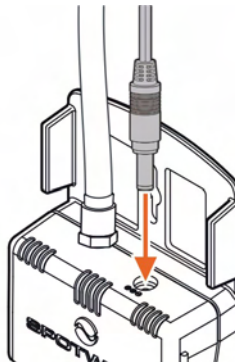
INSTALLATION

5. Connect the Coverage Unit to the Network Access Unit with the provided coax cable.



Note: To avoid potential signal loss, ensure there are no sharp bends or kinks in the cable. The minimum bend radius of the supplied coax cable is 1½ inches. Exceeding this limit may result in signal loss or cable damage that will impact system performance.

6. Connect the power supply to the Coverage Unit, and then plug the adapter into an AC outlet.



Note: Use only the power supply provided with the ZEN system. Connecting a power supply from another Spotwave system may damage the unit and cause it to fail.

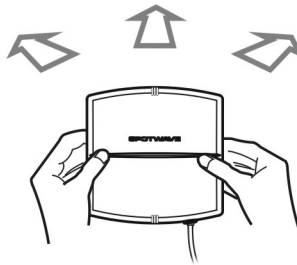


7. Verify that the ZEN system is working by measuring the signal level (number of bars) near the Coverage Unit and comparing it to that measured before the system was turned on in step 4.



Note: Your mobile phone must be at least 2 feet away from the Coverage Unit for the ZEN system to work properly. The system will temporarily go into mute mode if a mobile phone is brought within 2 feet of the Coverage Unit.

If there is no improvement in coverage, try pointing the Network Access Unit in a different direction (away from the Coverage Unit).



You may have to try several different directions before seeing improved coverage.

8. Proceed to *Mounting the Network Access Unit* in the location and direction that showed the best coverage.

Positioning the Network Access Unit Outdoors

It may not be possible to install the Network Access Unit indoors when installing the ZEN solution in remote areas. If you are installing the Network Access Unit outdoors in a remote area, then an effort should be made to mount the unit as high as possible.

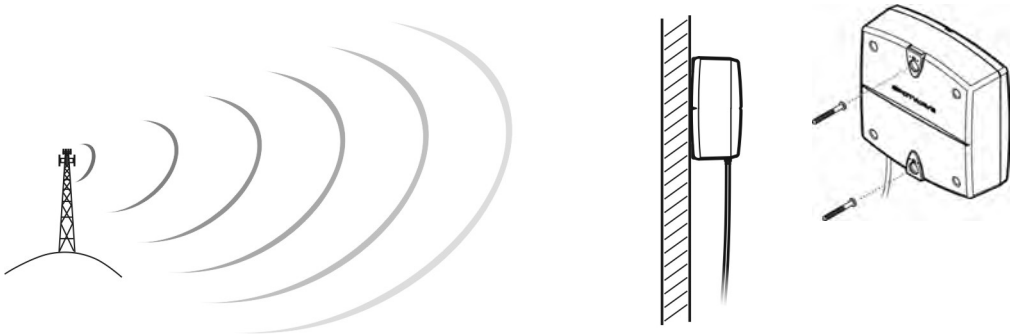


Warning! Failure to properly ground an **outdoor** mounted Network Access Unit will leave the unit and building vulnerable to damage from lightning strikes. Check local building and electrical code requirements and comply with both local and national regulations.

Mounting the Network Access Unit

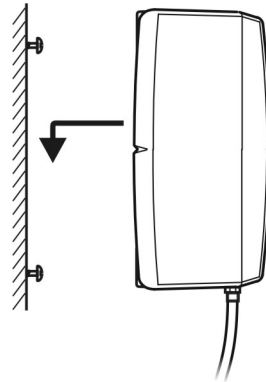
Mount the Network Access Unit only after the optimal location for the unit has been determined (see “Choosing a location for the Network Access Unit”). The ZEN system ships with basic hardware for mounting the Network Access Unit to an inside or outside wall.

Flush mounting the Network Access Unit to an inside wall



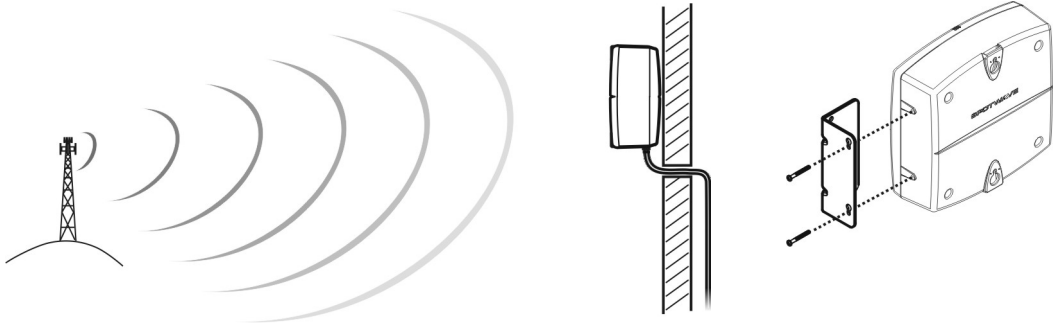
To mount the Network Access Unit flush to an inside wall.

1. Fasten two screws to the wall, 5½ inches vertically apart.
Leave approximately a ¼ inch gap between the head of the screws and the wall.
2. Align the Network Access Unit's two keyholes over the screws and slide the unit down until it snaps into place.



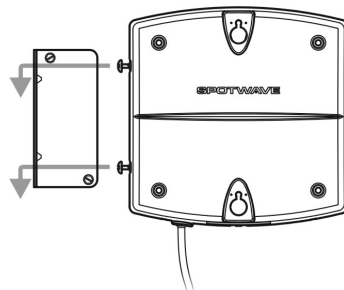
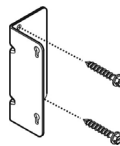
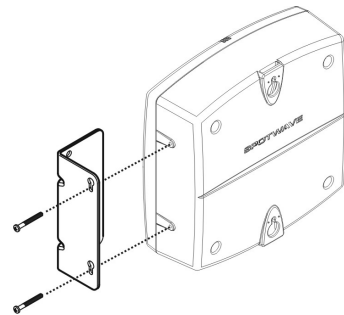
For easy drywall installation, you can locate where the drywall anchors need to be placed by pressing the Network Access Unit against the drywall. Tiny marks will be left in the wall and the screws or drywall anchors should be installed between these marks.

Flush mounting the Network Access Unit to an outside wall



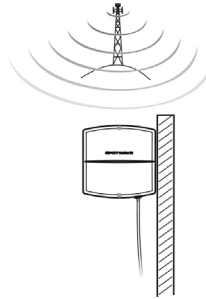
To mount the Network Access Unit flush to an outside wall

1. Fasten the angle bracket to the side of the Network Access Unit using the two provided screws.
2. Back-off the side screws to the point where the bracket can easily slide off the unit through the keyholes of the bracket.
3. Slide the angle bracket off the Network Access Unit.
4. Mount the bracket to the wall using the appropriate screws.
If mounting to cement or concrete, first use the bracket as a template to mark and drill the holes for the concrete screws.
5. Slide the Network Access Unit back into the keyhole slots on the bracket and tighten the two screws



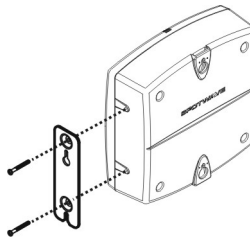
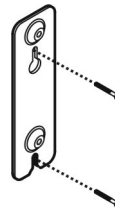
Edge Mounting the Network Access Unit (indoor or outdoor)

The Network Access Unit can be edge mounted to the inside of a window frame or to a wall when the unit needs to be aimed to receive a stronger signal.

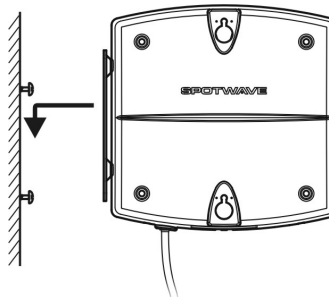


To edge mount the Network Access Unit

1. Mount the edge bracket to the wall through the keyholes.
If mounting to cement or concrete, first use the bracket as a template to mark and drill the holes for the concrete screws.
2. Back-off the screws to the point where the edge bracket can just slide off the wall and then remove the bracket from the wall.
3. Fasten the edge bracket the Network Access Unit.



4. Align the Network Access Unit/Bracket assembly keyholes over the two wall screws and slide down into place.



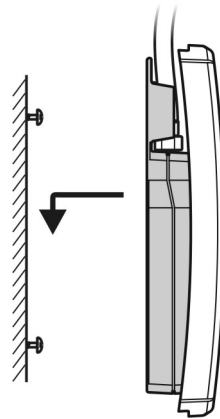
Mounting the Coverage Unit

The Coverage Unit can be mounted to a wall or placed on a desk or shelf using the included cradle. If it makes cable routing easier, you can also mount the Coverage Unit upside down with the cables extending downward.

Mount the Coverage Unit only after the optimal location for the Network Access Unit has been determined and the Network Access Unit has been mounted.

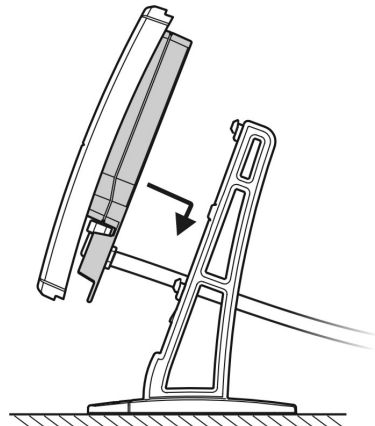
To mount the Coverage Unit on a wall

1. Find a suitable location to place the unit that will provide good signal coverage, not blocked by any obstructions and at least 2 feet away from where a mobile phone will be used.
2. Fasten two screws to the wall, 3¼ inches vertically apart. Leave approximately a ¼ inch gap between the head of the screws and the wall.
3. Align the Coverage Unit's two keyholes over the screws and slide the unit down until it snaps into place.
4. Fit the cover onto the Coverage Unit.



To place the Coverage Unit on a desk or shelf

1. Find a suitable location to place the unit that will provide good signal coverage, not on a metal surface, not blocked by any obstructions and at least 2 feet away from where a mobile phone will be used.
2. Disconnect the coax cable from the Coverage Unit.
3. Connect the 90° F-connector to the Coverage Unit and connect the coax cable to the F-connector.
4. Turn the Coverage Unit upside down and align the two keyholes over the pins on the stand.
5. Slide the unit down until it snaps into place.
6. Fit the cover onto the Coverage Unit.



Trouble-Shooting

- 1. Status:** The system is not providing any coverage and the LED on the bottom of the Network Access Unit is **flashing red**.
A flashing red LED indicates that the system is in mute mode, which can be caused by either a cell phone or the Network Access Unit being too close to the Coverage Unit.
Action: If possible, move the Coverage Unit farther away from the Network Access Unit and ensure that your cell phone is not closer than 2 feet from the Coverage Unit.
- 2. Status:** The system is not providing any coverage and the LED on the bottom of the Network Access Unit is **solid red**.
A solid red LED indicates a hardware fault condition.
Action: The ZEN system should be returned to the point of sale for exchange.
- 3. Status:** The LED on the Network Access Unit is not illuminating.
Action: Ensure the following:

 - The cable from the Network Access Unit is properly connected to the Coverage Unit.
 - The power supply is connected to the Coverage Unit.
 - The power supply is plugged into an electrical outlet.

If the LED is still not illuminating, then return the ZEN system to the point of sale for exchange.
- 4. Status:** My phone does not work around the location I would like to install the Network Access Unit.
Action: Try positioning the Network Access Unit outside as high as possible.
- 5. Status:** The Network Access Unit and Coverage Unit are installed properly, but your cell phone works poorly in the area that should be covered.
Action: There are three factors that may be affecting coverage as described below:

 - Visually inspect the area around the Coverage Unit. Ensure that there are not any large metallic objects directly between the Coverage Unit and the area where cell phone coverage is not adequate. Remount the Coverage Unit so that it is out in the open.
 - If the signal the Network Access Unit is receiving is very weak (although still strong enough to allow operation), the area around the Coverage Unit within which a cell phone can function will be relatively small. An effort can be made to improve system performance by raising or otherwise repositioning the Network Access Unit in an effort to obtain a stronger signal.
 - check with your vendor that your ZEN product is compatible with your cell phone service.
- 6. Status:** The coverage area around the Coverage Unit shrinks after a long period of reliable operation.
Action: This is most likely due to man made environmental influences such as a large building being erected somewhere in between the Network Access Unit and the location the Network Access Unit is receiving a signal from. Repeating the install procedure with the Network Access Unit in its current position may improve system performance (i.e. re-aligning and mounting it in the direction that provides greater signal strength). If this does not help, the Network Access Unit may have to be physically repositioned at a different location; going through the install procedure starting at *Choosing a location for the Network Access Unit* on page 7, is necessary at this point.

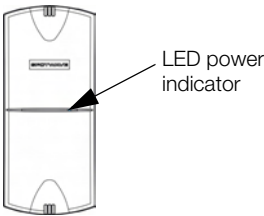
ZEN System Specifications



Note: Spotwave has the right to change specifications without notice.

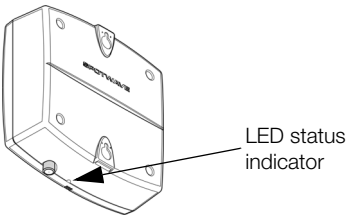
Coverage Unit indicators

The Coverage Unit has one blue LED power indicator on the front of the unit.



Network Access Unit indicators

The Network Access Unit has one multi-color LED status indicator on the bottom of the unit. The meaning of each status LED color is listed in the table below.



LED Color	Status
Off	No power or in mute mode. Mute mode can occur when a mobile phone or the Coverage Unit is too close to the Network Access unit. Product is not providing any coverage
Blue	Power on, no faults.
Blue flashing	Power on and system is functioning, but with reduced coverage due to poor isolation between the Network Access Unit and the Coverage Unit.
Red	Hardware fault condition. System needs to be replaced.
Red flashing	Mute mode, (could indicate that a mobile phone or the Coverage Unit is too close to the Network Access unit). Product is not providing any coverage.

ZEN SYSTEM SPECIFICATIONS

Architecture

Frequency Bands	PCS Uplink: 1850-1910 MHz Downlink: 1930-1990 MHz
Formats Supported	GSM / GPRS / EDGE / UMTS & IS-95 / CDMA / 1XRTT / 1XEVD0
Typical Coverage Area	2,500 sq. ft (230 m2)
System Gain (fully adaptive, includes antenna)	Uplink: 0 to +70 dB maximum Downlink: 0 to +70 dB maximum
System Stability Margin	> 10 dB
Downlink Operating Range	-85 to - 45 dBm
Maximum Input Level (receive isotropic power)	Uplink: -10 dBm maximum Downlink: -45 dBm maximum
Output Level -EIRP (fully adaptive)	Uplink: +30 dBm maximum (composite) Downlink: 0 dBm maximum (composite)
Third Order Intercept (EIRP, radiated)	PCS Uplink: +50 dBm Downlink: +27 dBm
Power Consumption	20 W

Physical

	Network Access Unit	COVERAGE UNIT
Operating Temperature	-40° to 131 F° (-40° to +55° C)	32° to +104° F (0° to +40° C)
Size	7 x 10 x 2.5 in.	2.75 x 6 x 1.25 in.
Weight	5 lbs.	0.5 lb.
RF Connectors	Type F: Coverage Port (weatherproof)	Type F: Network Access Port
RF Cable	Supports up to 60 ft RG-6 cable between Network Access & Coverage Units	
Power Supply	Universal power adapter (90 - 260 VAC, 47 -63 Hz)	

Installation

Installation Time	Less than one hour typical
Network Access (outward facing) Unit Alignment	No prior knowledge of base station location required. Customer's mobile phone is used to find strongest signal.
Test Equipment	None required. No RF knowledge required for installation.
User Controls	None, setup and operation is fully automatic.

Diagnostics

User Interface	Built-in power LED on Coverage Unit Built-in system status LED on Network Access Unit
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LIMITED WARRANTY AND LIMITATION OF LIABILITY:

1. What is Covered and for How Long? Spotwave Wireless Inc. ("Spotwave") warrants to the original Purchaser that the Spotwave ZEN System (the "System") is free from defects in material and workmanship under normal use and service for a period of 12 months from the date of shipment from Spotwave (the "Limited Warranty Period").

2. What is not covered? This Limited Warranty is conditioned upon proper use of the System by the Purchaser. This Limited Warranty does not cover (and will become null and void in the event of): (a) defects or damage resulting from accident, misuse, abuse, neglect, unusual physical, electrical or electromechanical stress, modification of the System or any part thereof, or cosmetic damage; (b) removal, alteration or defacing of the serial number or other identifying marks on the System; (c) all plastic surfaces and other externally exposed components that are scratched or damaged due to normal use; (d) malfunctions resulting from the use of the System in conjunction with accessories, products or (ancillary) or peripheral equipment not provided by Spotwave; or (e) defects or damage from unauthorized or improper testing, operation, maintenance, installation, servicing or adjustment of the System. Any repairs or replacements provided by Spotwave outside of the Limited Warranty Period (including repairs to or replacement after the end of the Warranty Period), or in excess of the services provided during the Limited Warranty Period, will subject to Spotwave's then prevailing rates.

3. What are Spotwave's Obligations and how do you make a claim? During the Limited Warranty Period, Spotwave will repair or replace, at Spotwave's sole option, without charge to Purchaser, any defective component of the System, provided that the System is returned promptly upon discovery of the defect and during the Limited Warranty Period. To obtain service, Systems must be returned to an authorized service facility in the original packaging or packaging adequate for shipping, accompanied by Purchaser's sales receipt or comparable substitute proof of sale showing the date of purchase and the serial number of the System. A valid RMA is required prior to any return.

To locate your nearest authorized service facility, call Spotwave Customer Service at 1-866-704-9750. Spotwave may, at Spotwave's sole option, use rebuilt, reconditioned, or new parts or components when repairing any System or replace a System with a rebuilt, reconditioned or new System. Repaired Systems will be warranted for a period equal to the remainder of the original Limited Warranty Period for the original System or for 90 days, whichever is longer. All replaced parts, components, boards or equipment shall become the property of Spotwave. If Spotwave determines that any System is not covered by this Limited Warranty, Purchaser must pay the costs for all parts, shipping, and labor charges for the repair or return of such System.

4. What are the Limits on Spotwave's Liability? EXCEPT FOR THE WARRANTY IN PARAGRAPH 1, THE SYSTEMS AND ANY ASSOCIATED SERVICES ARE PROVIDED BY SPOTWAVE ON AS 'AS IS' BASIS AND THERE ARE NO OTHER REPRESENTATIONS, WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, WRITTEN OR ORAL, ARISING BY STATUTE, OPERATION OF LAW, COURSE OF DEALING, USAGE OF TRADE OR OTHERWISE, REGARDING THEM OR ANY OTHER PRODUCT OR SERVICE PROVIDED HEREUNDER OR IN CONNECTION HERewith BY SPOTWAVE. SPOTWAVE DISCLAIMS ANY IMPLIED WARRANTIES OR CONDITIONS OF DURABILITY, MERCHANT ABILITY, MERCHANTABLE QUALITY, SATISFACTORY QUALITY, NON-INFRINGEMENT OR FITNESS FOR A PARTICULAR PURPOSE. SPOTWAVE DOES NOT REPRESENT OR WARRANT THAT THE SYSTEMS WILL MEET ANY OR ALL OF PURCHASERS' PARTICULAR REQUIREMENTS, THAT THE SYSTEMS WILL OPERATE ERROR-FREE OR UNINTERRUPTED OR THAT ALL ERRORS OR DEFECTS IN THE SYSTEMS CAN BE FOUND TO BE CORRECTED. System performance is dependant upon the performance and availability of services or technology provided by third parties and Spotwave is not responsible for service continuity and reliability, reception, or other performance related limitations associated with use of the Systems. NO AGREEMENTS VARYING OR EXTENDING THE TERMS OF THIS LIMITED WARRANTY WILL BE BINDING ON SPOTWAVE UNLESS IN WRITING AND SIGNED BY AN AUTHORIZED SIGNING OFFICER OF SPOTWAVE THIS LIMITED WARRANTY SHALL NOT EXTEND TO ANYONE OTHER THAN THE ORIGINAL PURCHASER OF THE SYSTEM. SPOTWAVE'S MAXIMUM AGGREGATE LIABILITY TO PURCHASER SHALL NOT EXCEED THE AMOUNTS PAID BY PURCHASER FOR THE SYSTEM GIVING RISE TO THE CLAIM. SPOTWAVE SHALL NOT BE LIABLE FOR ANY SPECIAL, INCIDENTAL, CONSEQUENTIAL, INDIRECT OR SIMILAR DAMAGES, LOSS OF USE, DATA OR PROFITS, DAMAGES TO PURCHASER'S PROPERTY, OR INJURY TO PURCHASER OR OTHERS ARISING OUT OF THE USE, MISUSE OR INABILITY TO USE ANY SYSTEM, WHETHER OR NOT SUCH DAMAGE ARISES OUT OF CONTRACT OR TORT (INCLUDING WITHOUT LIMITATION, NEGLIGENCE) OR CLAIMS BY A THIRD PARTY, EVEN IF SPOTWAVE HAS BEEN ADVISED OF SUCH DAMAGES OR THEY ARE FORESEEABLE

5. This Limited Warranty allocates risk between Purchaser and Spotwave, and the Spotwave System pricing reflects this allocation of risk and the limitations of liability contained in this Limited Warranty. The agents, employees, distributors, dealers or representative of Spotwave are not authorized to make modifications to this Limited Warranty, or make additional warranties binding on Spotwave. Accordingly, additional statements such as advertising or presentations, whether oral or written, do not constitute warranties by Spotwave and should not be relied upon.

OWNERSHIP AND RISK OF LOSS:

6. Who Owns the rights in the System? The System is protected by Canadian, US and international copyright law and other intellectual property protection laws and treaties. Purchaser acknowledges that Spotwave and its licensors are the owner of all intellectual property, including, without limitation, patents and copyright, relating to the System and the trademarks used in association with the System. Purchaser agrees that it will not (and will not attempt to) modify, prepare derivative works of, reverse engineer, decompile, disassemble, or other attempt to derive the source code of any software contained within the System.

LIMITED WARRANTY AND LIMITATION OF LIABILITY:

7. Who bears the Risk of Loss? Risk of loss for the System passes to Purchaser upon the delivery to Purchaser or to a carrier for shipment, whichever is earlier. Title to the Systems (excluding any software) will pass upon payment in full for the Systems. Title to any software shall always remain with Spotwave or its licensors. As security for payment, Purchaser grants to Spotwave a purchase money security interest in the Systems (together with any proceeds, including insurance proceeds) and agrees that a copy of this letter of agreement or any other appropriate document may be registered as required to perfect the security interest granted. Systems may be resold by Purchaser in normal course of business, but until paid for in full, Purchaser will not pledge or otherwise encumber the Systems. Purchaser agrees to immediately report to Spotwave, any seizure or attachment of the Systems by creditors; (ii) any petition in bankruptcy, insolvency, receivership or similar proceedings filed by, or against Purchaser; or (iii) any arrangement, composition or similar agreement for the benefit of creditors. Systems held for Purchaser by Spotwave are at Purchaser's sole risk and expense.

OTHER TERMS:

8. What terms govern our relationship? These terms and any software license or warranty documentation accompanying the Systems constitute the complete and exclusive statement of the terms and conditions between us regarding the Systems and cannot be altered, amended or modified except in writing executed by Spotwave. This letter of agreement and any disputes arising hereunder shall be governed by and interpreted in accordance with the laws of the Province of Ontario, Canada. The United Nations Convention on Contracts for the International Sale of Goods and any legislation implementing such Convention, if otherwise applicable is expressly excluded. Any terms and conditions of any purchase order or other instrument issued by Purchaser which are in addition to or inconsistent with the terms and conditions of this letter of agreement shall not be binding and shall not apply, even if accepted by Spotwave.

MANUAL DISCLAIMER

Product specifications, pricing, packaging, technical support and information ("Specifications") and all claims, features, representations, and/or comparisons provided are correct to the best of our knowledge of the date of publication, but may contain errors or omissions and are subject to change without notice.

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FCC Declaration of Conformity

This equipment complies with CFR 47, Part 15.19 of the FCC rules. Operation of the equipment is subject to the following conditions:

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

Information to the User for Class B Digital Equipment

This equipment has been tested and found to comply with 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 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.

FCC Regulatory Compliance

This equipment has been tested and complies with the following FCC requirements:

- FCC Part 24, subpart E: Broadband PCS.
- FCC Part 15, subpart C - Intentional radiators.

Industry Canada Compliance

This equipment has been tested and complies with the following requirements:

- RSS - 131 - Zone Enhancers for Land Mobile Service.
- ICES-003, Issue 4 - Interference Causing Equipment Standard - Digital Apparatus

Health and Authorization for Use

ZEN equipment emits radio frequency electromagnetic energy to enhance signals received by mobile devices for in-building coverage. However, the energy level of these emissions is by far much less than the electromagnetic energy emitted by other wireless devices.

Caution! To maintain compliance with the FCC's RF exposure guidelines, this equipment shall be installed and operated with a minimum distance of 20cm between the radiator and your body. Unauthorized modification of any hardware and attachment may violate FCC regulations.

Warning! The use of shielded-type power cord is required in order to meet FCC emission limits and to prevent interference to nearby radio or television reception. It is essential that only the supplied power cord be used. You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

Maximum Permissible Exposure Statement

The ZEN system is a low power repeater for in-door coverage. The electromagnetic radiation emitted is much less than what is specified by FCC. The products have been evaluated under the FCC Bulletin Office of Engineering Technology 65c - Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields. This equipment is compliant to the requirements as set forth in the Code of Federal Regulation 47, section 2.1091 (Radio frequency radiation exposure evaluation), section 1.1310 (Radio frequency Radiation Exposure Limits). Nevertheless, this equipment shall be installed and operated with a minimum distance of 20cm between the radiator and your body. Use of this equipment in a body-worn manner is strictly prohibited.

Safety Code 6 - Industry Canada Requirement

This equipment has been evaluated for radio frequency Radiation limits in accordance with the Safety Code 6 - Limits of Human Exposure to Radio frequency Electromagnetic Fields in the Frequency Range from 3KHz to 300GHz. The equipment is compliant to the safety code 6 requirements for the radiation limits as specified in sections 2.1 and sections 2.2.

Safety Information

The CSA mark indicates that this Equipment meets the CAN/CSA C22.2 N° 60950-00 and ANSI/UL Std N° 60950-00 - Safety of Information Technology Equipment.



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