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Attorneys for Plaintiff
KARAMELION LLC, a Texas limited liability corporation

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA

KARAMELION LLC, Plaintiff, v. **AEON LABS LLC,** Defendant.	PATENT Case No. _____ **ORIGINAL COMPLAINT FOR PATENT INFRINGEMENT AGAINST AEON LABS LLC** **DEMAND FOR JURY TRIAL**

Plaintiff Karamelion LLC files this Original Complaint for Patent Infringement against Aeon Labs LLC and would respectfully show the Court as follows:

I. THE PARTIES

1. Plaintiff Karamelion LLC ("Karamelion" or "Plaintiff") is a Texas limited liability company with its principal place of business at 5570 FM 423, Suite 250 #2022, Frisco, TX 75034.

2. On information and belief, Defendant Aeon Labs LLC ("Defendant") is a limited liability company organized and existing under the laws of California, with a place of business at 1228 Norvell St, El Cerrito, CA 94530.

II. JURISDICTION AND VENUE

3. This action arises under the patent laws of the United States, Title 35 of the United States Code. This Court has subject matter jurisdiction of such action under 28 U.S.C. §§ 1331 and 1338(a).

4. On information and belief, Defendant is subject to this Court's specific and general personal jurisdiction, pursuant to due process and the California Long-Arm Statute, due at least to its business in this forum, including at least a portion of the infringements alleged herein. Furthermore, Defendant is subject to this Court's specific and general personal jurisdiction because Defendant is a California corporation and it has a place of business within this District.

5. Without limitation, on information and belief, within this State and this District, Defendant has used the patented inventions thereby committing, and continuing to commit, acts of patent infringement alleged herein. In addition, on information and belief, Defendant has derived revenues from its infringing acts occurring within California and the Northern District of California. Further, on information and belief, Defendant is subject to the Court's general jurisdiction, including from regularly doing or soliciting business, engaging in other persistent courses of conduct, and deriving substantial revenue from goods and services provided to persons or entities in California and the Northern District of California. Further, on information and belief, Defendant is subject to the Court's personal jurisdiction at least due to its sale of products and/or services within California and the Northern District of California. Defendant has committed such purposeful acts and/or transactions in California and the Northern District of California such that it reasonably should know and expect that it could be haled into this Court as a consequence of such activity.

6. Venue is proper in this district under 28 U.S.C. § 1400(b). On information and belief, Defendant is incorporated in California, and it has a place of business within this District. On information and belief, from and within this District Defendant has committed at least a portion of the infringements at issue in this case.

7. For these reasons, personal jurisdiction exists and venue is proper in this Court under 28 U.S.C. § 1400(b).

III. COUNT I
(PATENT INFRINGEMENT OF UNITED STATES PATENT NO. 6,275,166)

8. Plaintiff incorporates the above paragraphs herein by reference.

9. On August 14, 2001, United States Patent No. 6,275,166 ("the '166 Patent") was duly and legally issued by the United States Patent and Trademark Office. The application leading to the '166 patent was filed on January 19, 1999. (Ex. A at cover). The '166 Patent is titled "RF Remote Appliance Control/Monitoring System." A true and correct copy of the '166 Patent is attached hereto as Exhibit A and incorporated herein by reference.

10. Plaintiff is the assignee of all right, title and interest in the '166 patent, including all rights to enforce and prosecute actions for infringement and to collect damages for all relevant times against infringers of the '166 Patent. Accordingly, Plaintiff possesses the exclusive right and standing to prosecute the present action for infringement of the '166 Patent by Defendant.

11. The invention in the '166 Patent relates to control and monitoring of distributed systems in buildings such as systems for controlling and monitoring heating, air conditioning, lighting, security, occupancy, and usage of distributed facilities. (Ex. A at col. 1:5-12). Control of such distributed systems in the prior art commonly used computer networks and business software. (*Id.* at col. 1:11-13). A major difficult with such systems was the expense of wiring inter-connections between elements of the system, particularly when there are additions or changes to be made in the system. (*Id.* at col. 1:14-18). Prior art attempts to reduce the expense of the systems included using efficient network products such as using a widely known Ethernet standard, using AC power wiring to transmit RF communications to remove controllers, and using a combination of wired and wireless communications. (*Id.* at col. 1:18-27).

12. However, these centralized wireless control systems for building appliances have not been widely used mainly because systems that have a sufficient communication ranges are normally subject to regulations and licensing requirements that are prohibitively expensive. (*Id.* at col. 1:28-32). Also, systems that are powerful enough to be used in widely distributed installations are unnecessarily expensive to be used in smaller installations. (*Id.* at col. 1:32-34). With respect to wireless communication, there is limited availability of RF carrier frequencies, and potential interference with other nearby systems that might be operating in similar frequencies. (*Id.* at col. 1:34-37). Because of the continued deficiencies of the prior art solutions, there was a need for a wireless appliance control system that overcomes the disadvantages of the prior art solutions. (*Id.* at col. 1:38-39).

13. The inventors developed an invention that "meets this need by providing a wireless configuration that uses a distributed array of low power (short range) wireless controllers that are also functional as relay units for communicating with a headend control computer at long range." (*Id.* at col. 1:42-46).

14. The '166 patent discloses exemplary embodiments of the claimed invention. The claimed invention is typically implemented in a building or location that has an appliance control/monitoring system. (*Id.* at col. 3:64 – col. 4:7). For example, the following figure is of a building (11) having a distributed array of appliance management stations (12) that wirelessly communicate with a headend control station (14) (*Id.* at col. 3:66 – col. 4:4):

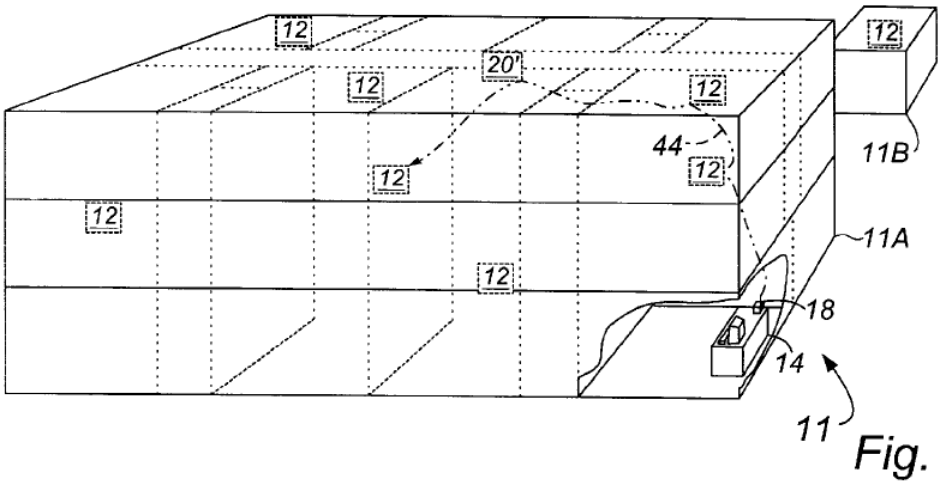
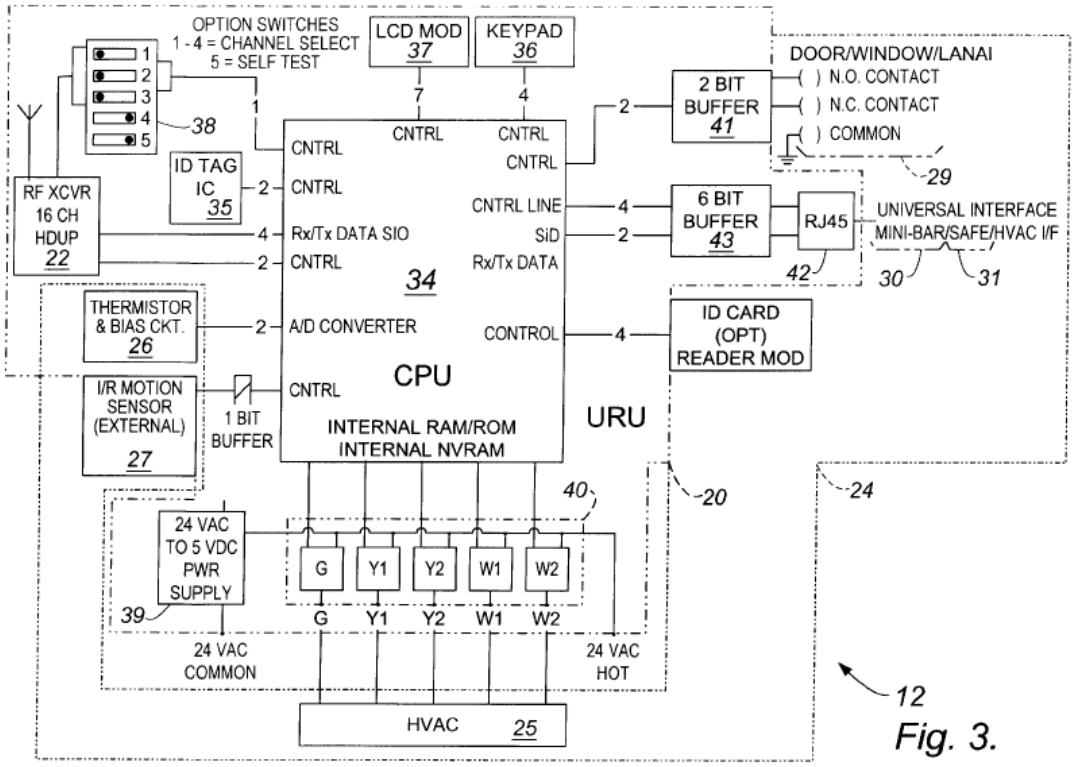


Fig. 2.

The typical appliances connected to the appliance control/monitoring system are heating, ventilation and air conditioning units (HVAC), temperature sensors, motion detectors, and audio/video devices. (*Id.* at col. 1:5-9, col. 4:54-61). The appliances are interfaced with relay units that have appliance interface/controllers to communicate with the appliance and satellite radio transceivers. (*Id.* at col. 4:62-66). The satellite radio transceivers of the relay units are operable at low power and have a limited wireless communications range that reaches only a portion of the building or location. (*Id.* at col. 4:62-66). In order to for the relay units to communicate beyond their limited wireless range, they communicate by relaying transmissions using intermediate relay units to the intended destination. (*Id.* at col. 4:66 – col. 5:1). An exemplary simplified circuit block diagram of the appliance controller portion of the relay unit, including a satellite radio transceiver, is shown in Figure 3 of the '166 patent:



(Ex. A). The microprocessor (34) is connected between a satellite transceiver (22) and the appliance device (24). (*Id.* at col. 5:13-15).

15. The '188 patent includes a diagram of an exemplary command protocol (Fig. 4) and exemplary return protocol (Fig. 5):

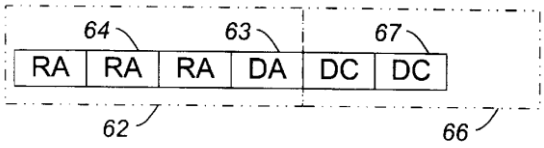


Fig. 4. 60

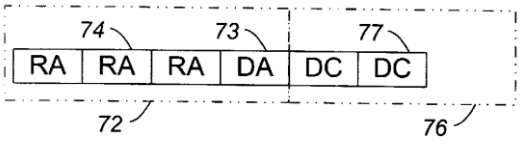


Fig. 5. 70

(Ex. A). The exemplary command protocol includes an address section (62) that includes a destination address (63) and may include relay addresses (64) so that the message may be relayed to another device. (*Id.* at col. 7:40-43). Following the address section is a command section (66) that includes device commands (67) that are directed to particular appliance devices at the destination relay unit. (*Id.* at col. 7:43-47). The exemplary return protocol includes a counterpart of the address section (72) that includes a destination address (73) and relay

addresses (74). (*Id.* at col. 7:48-51). Following the address section of the return protocol is a feedback section (76) that include feedback elements (77) that are responsive to the appliance devices at the destination relay unit. (*Id.* at col. 7:51-55).

16. A pictorial diagram showing an exemplary process for using a portion of the system is shown in Figure 6 of the '166 patent:

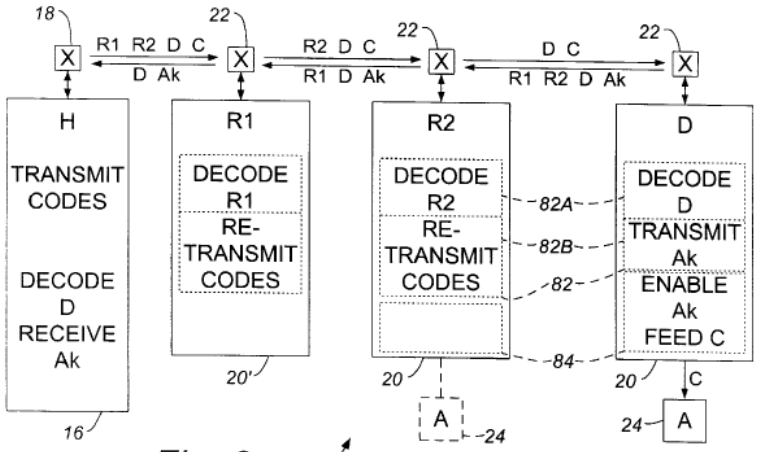


Fig. 6. 80

(Ex. A). A transmitter in the headend computer (H) signals the addresses of relay units (20), with one of the addresses being the destination address (D), and the other addresses include a first and second relay address (R1, R2), and a control signal (C) for appliance (A) being interfaced to the destination relay unit (D). (*Id.* at col. 7:56-65). The first relay unit decodes the first relay address, and transmits the control signal, the second relay address and the destination address from the first relay unit; the same steps occur at the second relay unit but with respect to decoding the second relay address. (*Id.* at col. 7:65 – col. 8:1). The destination relay unit decodes the destination address and feeds the control signal to the appliance; then the destination unit transmits the destination address, the first and second relay addresses, and an acknowledgement signal (Ak). (*Id.* at col. 8:2-6). The second relay unit decodes the second relay address, and then transmits the acknowledgement signal (Ak), the first relay address, and the destination address; the same steps occur at the first relay unit but with respect to decoding

the first relay address. (*Id.* at col. 8:6-9). The headend computer decodes the destination address and receives the acknowledgement signal (Ak). (*Id.* at col. 8:9-11). The decoding and transmitting in the relay units are implemented by first and second instruction portions (82A, 82B), respectively, of the relay program (82). (*Id.* at col. 8:11-14). The feeding of the control signal by the relay unit to the appliance and generating the acknowledgement signal occurs in the appliance program (84). (*Id.* at col. 8:14-16). Both the relay program and appliance program are in the microcomputer memory of each relay unit. (*Id.* at col. 8:16-18).

17. As explained during the prosecution history, the prior art did not teach a relay unit being an appliance controller that communicated with a headend computer using at least two other relay units. The invention therefore overcame the prior art, which were excessively expensive, had insufficient bandwidth, were ineffective in serving multiple devices, were unreliable, and were difficult to use. (Ex. B at col. 1:43-51).

18. **Direct Infringement.** Upon information and belief, Defendant has been directly infringing at least claim 1 of the '166 patent in California, the Northern District of California, and elsewhere in the United States, by performing actions comprising making, using, selling, and/or offering for sale an appliance controller for a distributed appliance system having a headend computer, a multiplicity of appliances, and a plurality of relay units that satisfies the limitations of at least claim 1, including without limitation the Z-Wave LED Bulb, Z-Wave LED Strip, Z-Wave Dimmer, Z-Wave Shutter, Z-Wave Switch, Z-Door/Window Sensor, Z-Wave Doorbell, Z-Wave Home Energy Meter, Z-Wave Multi-Sensor, Z-Wave Range Extender, Z-Wave Recessed Door Sensor, Z-Wave Siren, Z-Wave Water Sensor, Z-Wave Tri-Sensor, and Z-Wave Garage Door Controller ("Accused Instrumentality").

19. Accused Instrumentality provides an appliance controller (*e.g.*, Z-Wave LED Bulb, Z-Wave LED Strip, Z-Wave Dimmer, Z-Wave Shutter, Z-Wave Switch, Z-Door/Window

Sensor, Z-Wave Doorbell, Z-Wave Home Energy Meter, Z-Wave Multi-Sensor, Z-Wave Range Extender, Z-Wave Recessed Door Sensor, Z-Wave Siren, Z-Wave Water Sensor, Z-Wave Tri-Sensor and Z-Wave Garage Door Controller) for a distributed appliance system (*e.g.*, Z-Wave network) having a headend computer (*e.g.*, primary controller, in this case Vera Control Hub), a multiplicity of appliances (*e.g.*, appliances such as lights, garage doors, sirens, etc.), and a plurality of relay units (*e.g.*, repeaters), one of the relay units being the appliance controller (*e.g.*, Z-Wave node).

20. Each Accused Instrumentality is an appliance controller comprising a low power satellite radio transceiver (*e.g.*, radio frequency transceivers within the various Z-Wave devices) having a range being less than a distance to at least some of the appliances.

Z-Wave Home Automation.

At Aeotec it's our mission to help you build the home of tomorrow, today. We do this through what we specialise in: technology. Technology that can be applied to home automation. Technology that can be applied to a home's comforts. But most importantly, technology that is reliable, proven and standardised.

Z-Wave is one such technology, and we're specialists in it.

Like Wi-Fi, Z-Wave is a wireless communication technology. It allows all of Aeotec's Z-Wave devices to talk to each other, and to other approved Z-Wave devices no matter who has made them. All of that communication happens reliably, without interference, without consuming a lot of power, and it all happens securely.

(https://aeotec.com/z-wave-home-automation).[1]

[1] Red boxes and lines are added unless otherwise noted.

Wireless.
No cables. No complex installation. No fuss.

Z-Wave uses a low-frequency, high-range wireless technology allowing Aeotec's Z-Wave products to communicate over distances as great as 492 feet / 150 metres.

Low power.
Whether it's a Z-Wave product we've designed to help you save energy or one of our battery powered products, all our our devices utilise Z-Wave's low power capabilities with our Z-Wave Plus devices offering a further 50% reduction in battery use.

Secure.
Home automation needs to be secure but often isn't. Aeotec's range of Gen5 and S2 Z-Wave products set themselves apart by offering 3 different layers of security to avoid security breaches, hacking, and interference.

Interference free.
Little is worse than unreliability. Z-Wave avoids being affected by, as well as causing, wireless interference and weak signals by using low-frequency channels to communicate.

Mesh technology.
Wireless signals get lost. Z-Wave signals don't. That's because key Z-Wave devices act as part of a mesh network, receiving, amplifying and repeating signals intended for other Z-Wave devices.

Expandable.
Buy a device today and another in a year. Z-Wave is *the* expandable Z-Wave home automation standard, capable of being expanded and modified at any time, and to suit any budget.

Easy to use.
Whether they're DIY or professionally done, Aeotec's Z-Wave products have been designed to be easy to install and be even easier to use.

Cross compatible.
It's your home and your home control system. Aeotec's Z-Wave range are compatible with the broadest range of gateways, are backwards compatible with other Z-Wave device whether 300 or 400 series, and aren't susceptible to the wireless interface that plagues other standards such as Zigbee.

(*Id.*).

Gateway	Aeotec Tested	Notes	Source
CastleOS			
Home Assistant			[1]
HomeSeer	✓		
Hubitat			[1]
InControl	✓		
Indigo 7			
Jeedom			[1]
Open Z-Wave			
Prodea			
Universal Devices ISY994Zw	✓		
Vera	✓		
Wink-hub			[1]

(https://aeotec.com/z-wave-gateways).

(http://getvera.com/).

WORLD CLASS SUPPORT

With Vera, you're really in control, and we'll always be right behind you. Our support team is there to answer any questions you may have, no matter how simple or complex.

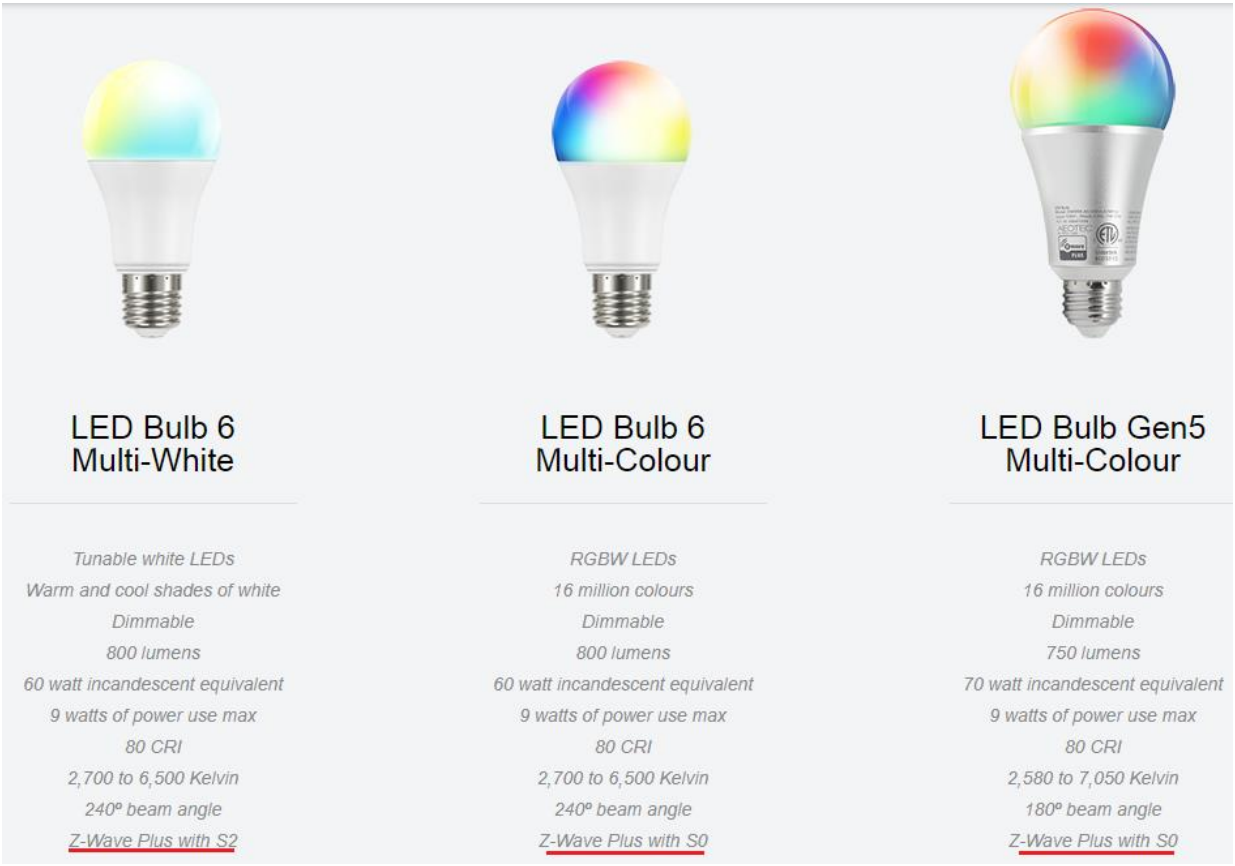
ROCK SOLID FRAMEWORK

The Vera system uses a proven and reliable world-standard wireless technology called Z-Wave. It works much like Wi-Fi does, but it is specifically designed for home automation.

POWERFUL CUSTOMIZATION

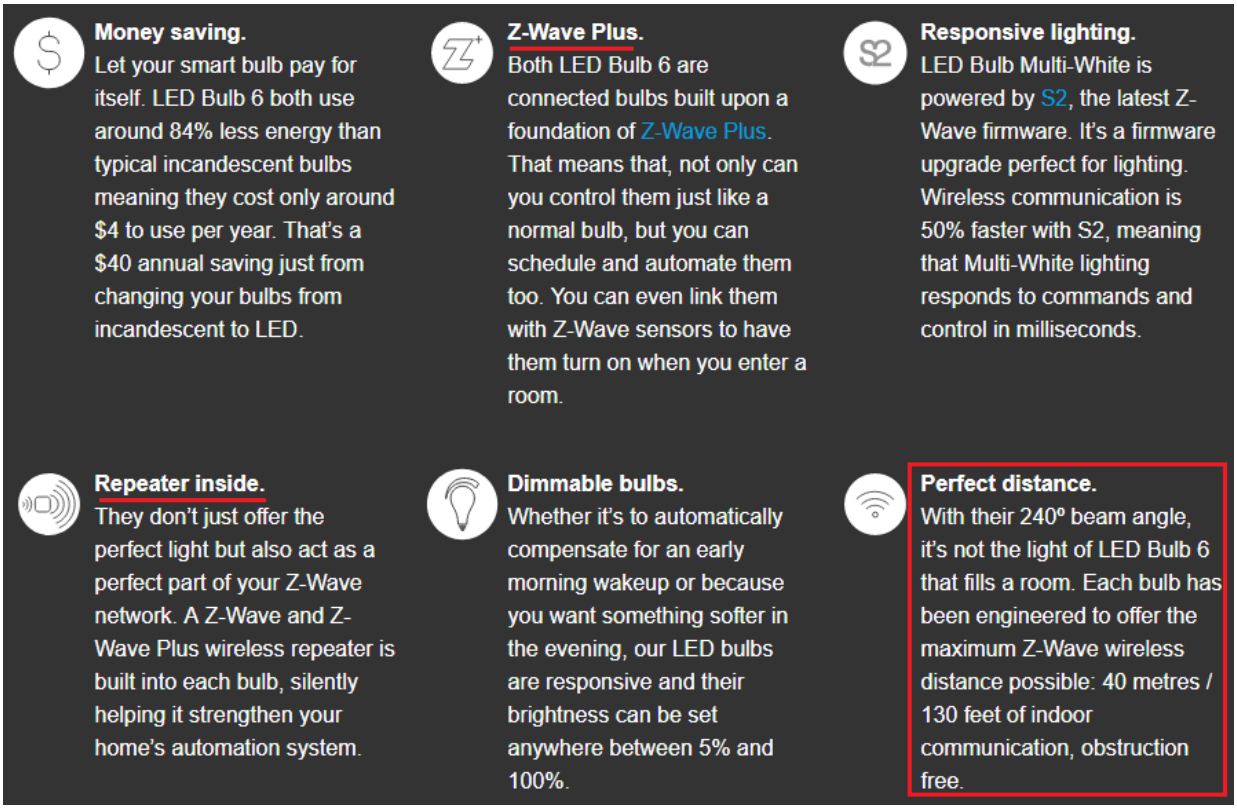
Vera lets you control all aspects of your system, so you can easily create the scenario that you desire. From basic to complex.

(*Id.*).



LED Bulb 6 Multi-White	LED Bulb 6 Multi-Colour	LED Bulb Gen5 Multi-Colour
Tunable white LEDs	*RGBW LEDs*	*RGBW LEDs*
Warm and cool shades of white	*16 million colours*	*16 million colours*
Dimmable	*Dimmable*	*Dimmable*
800 lumens	*800 lumens*	*750 lumens*
60 watt incandescent equivalent	*60 watt incandescent equivalent*	*70 watt incandescent equivalent*
9 watts of power use max	*9 watts of power use max*	*9 watts of power use max*
80 CRI	*80 CRI*	*80 CRI*
2,700 to 6,500 Kelvin	*2,700 to 6,500 Kelvin*	*2,580 to 7,050 Kelvin*
240º beam angle	*240º beam angle*	*180º beam angle*
Z-Wave Plus with S2	*Z-Wave Plus with S0*	*Z-Wave Plus with S0*

(https://aeotec.com/z-wave-led-lightbulb).



Money saving.
Let your smart bulb pay for itself. LED Bulb 6 both use around 84% less energy than typical incandescent bulbs meaning they cost only around $4 to use per year. That's a $40 annual saving just from changing your bulbs from incandescent to LED.

Z-Wave Plus.
Both LED Bulb 6 are connected bulbs built upon a foundation of Z-Wave Plus. That means that, not only can you control them just like a normal bulb, but you can schedule and automate them too. You can even link them with Z-Wave sensors to have them turn on when you enter a room.

Responsive lighting.
LED Bulb Multi-White is powered by S2, the latest Z-Wave firmware. It's a firmware upgrade perfect for lighting. Wireless communication is 50% faster with S2, meaning that Multi-White lighting responds to commands and control in milliseconds.

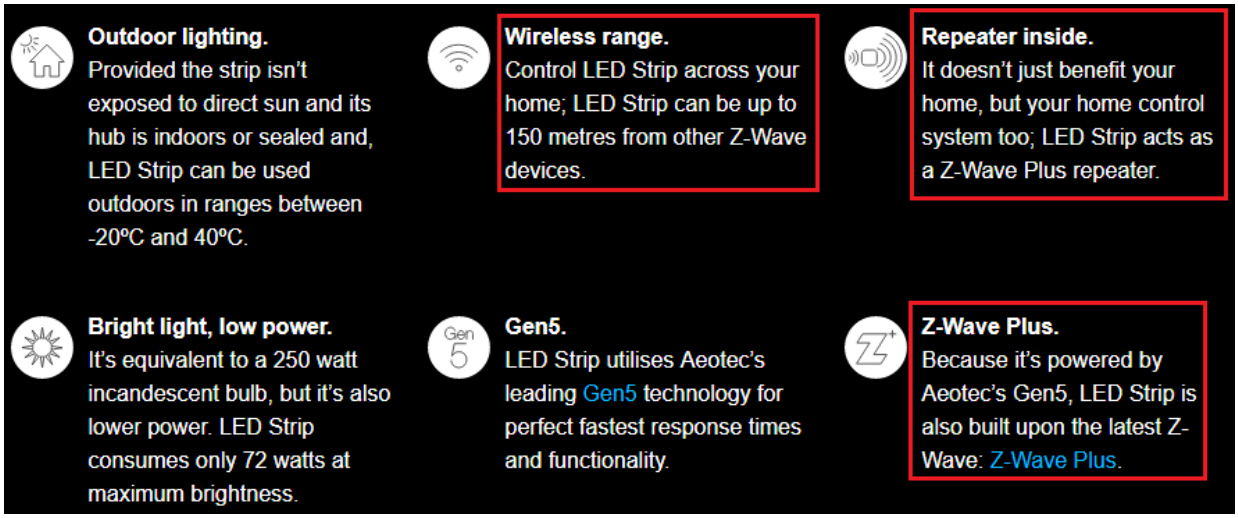
Repeater inside.
They don't just offer the perfect light but also act as a perfect part of your Z-Wave network. A Z-Wave and Z-Wave Plus wireless repeater is built into each bulb, silently helping it strengthen your home's automation system.

Dimmable bulbs.
Whether it's to automatically compensate for an early morning wakeup or because you want something softer in the evening, our LED bulbs are responsive and their brightness can be set anywhere between 5% and 100%.

Perfect distance.
With their 240º beam angle, it's not the light of LED Bulb 6 that fills a room. Each bulb has been engineered to offer the maximum Z-Wave wireless distance possible: 40 metres / 130 feet of indoor communication, obstruction free.

(*Id.*).

(https://aeotec.com/z-wave-led-light-strip).



(*Id.*).

The first Z-Wave in-wall dimmer? That was from Aeotec. We started engineering it in 2006 and then we followed up with the best-selling Micro Dimmer 2E. Now we're replacing it with our all new Nano range.

To make an in-wall lighting controller this perfect means working from the ground up. But despite now being 60% smaller than our original technology, every single millimetre of Nano Dimmer benefits from our 10 year's experience in making in-wall dimmers. That decade's worth of expertise makes Nano Dimmer compact without compromise.

Micro Dimmer 52 x 49 x 18 mm | Micro Dimmer 2E 51.4 x 49 x 18.5 mm | Nano Dimmer 42 x 39. 5 x 20 mm

(https://aeotec.com/z-wave-light-dimmer-switch).

Wireless control. Connected lighting has to work. It's that simple. Nano Dimmer offers a leading 150 metre point-to-point wireless range for flawless wireless performance.

Perfectly slim. Packed with technology but not bloated in size, Nano Dimmer's slim shell of just 20mm fits easily behind your homes existing wall switches.

See your spend. Along with control and dimming, Nano Dimmer includes Aeotec's energy metering technology for an accurate measurement of how much electricity your lights are spending.

Stronger signal. A wireless signal that goes further, stronger. Nano Dimmer's improved wireless technology is perfect for pass through walls now that it's 2.5dBM stronger.

DIN rail compatible. Want to use it with a DIN rail? Pair Nano Dimmer with a generic DIN housing or module box for DIN rail compatibility and use.

Secure lighting. Because it's built upon Z-Wave Gen5, Nano Dimmer features banking grade encryption perfectly suited to outdoor use.

(*Id.*).

From security shutters to skylights, motorised electronics and furnishings are part of a modern home. Now they can be part of your connected home.

Nano Shutter integrates with motors and converts them to Z-Wave. Instantly, whatever they're connected to can be wirelessly controlled and intelligently automated with Nano Shutter able to integrate with a broad selection of devices.

(https://aeotec.com/z-wave-motor-shutter-curtain-control).

Crafted with experience.

Nano Shutter is crafted from the same 10 years' experience that has been infused into Nano Dimmer and Nano Switch. Experience that includes the engineering of Z-Wave's first motor and shutter controller; Micro Motor Controller.

Building upon that experience, Nano Shutter offers 3 new enhancements crucial to such technology.

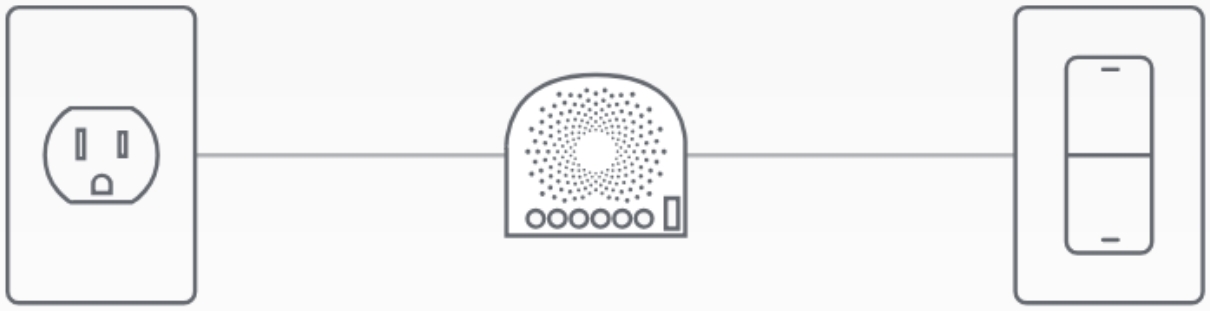
Best security.
For any motor that controls access points, such as gates and security shutters, Z-Wave S2 is crucial. S2 enhances Nano Shutter with next-generation anti-hacking features including AES-128 bit encryption and ECDH key exchange.

Z-Wave Plus.
Complementing its best-in-class security is Nano Shutter's Z-Wave Plus. The latest version of Z-Wave, it allows Nano Shutter to control connected accessories with a 250% faster response time and a 67% greater wireless range that's up 150 metres / 492 feet wide.

60% smaller.
Crafted to be simple to install, Nano Switch has also been crafted to be easier to install. At only 1.7" x 0.8", it's 60% smaller than Micro Motor Controller meaning that it's even easier to install in behind motor switches.

(*Id.*).

Nano Switch is a part of Aeotec's Z-Wave switch and dimming range and is compatible with light switches and power outlets.



Power outlets.
Install Nano Switch behind your wall's power sockets and you now have wireless control and scheduling of your electronics. With optional power metering, you can reduce how much those electronics are costing you.

Light switches.
If you have lighting that doesn't need dimming, install Nano Switch behind your existing wall switch to convert it to a wireless wall switch. You'll have full switch control, wireless control, along with intelligent automation and scheduling via Z-Wave.

(https://aeotec.com/z-wave-outlet-socket).

Gen5.
Nano Switch is a part of Aeotec's Gen5 range and is engineered upon the latest version of Z-Wave – Z-Wave Plus. From lower power consumption to a 250% faster response time, Nano Switch is laden with benefits you'll never see, only feel.

Stronger signal.
Without using any more energy, Nano Switch offers greater wireless reliability than all before it. Its wireless signal is now +2.5dBM more powerful so that Nano Switch can offer a 67% greater wireless range that's up 150 metres / 492 feet wide.

Wireless updates.
Technology changes and Nano Switch changes with it. Unlike previous models, Nano Switch allows for firmware updates to be wirelessly installed via Z-Wave Plus so that it remains at the cutting edge.

(*Id.*).

With Z-Wave your home is smarter. With Door / Window Sensor 6 your Z-Wave security system is also smarter. Monitoring your entrances 24/7, this tiny sensor can detect when a door or window has been opened. If your connected-alarm is armed, Door / Window Sensor 6 can trip it, control lights and sirens, and send notifications about a potential emergency direct to your mobile phone.

Intelligence for more than just security, Door / Window Sensor 6 can be used to manage your home in real-time. Able to control any other Z-Wave device, when something in your home is opened or closed you'll be able to control everything from welcome lights to thermostats, and to keep logs and send notifications.

(https://aeotec.com/smallest-door-window-sensor).

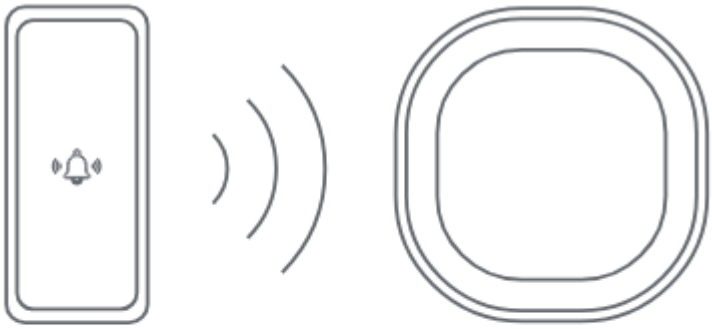
Wireless range
The better the wireless range, the more reliable the product, and Door / Window Sensor 6 offers a class-leading antenna. Optimised for reliability, this tiny sensor can wireless communicate over 150 metres / 492 feet.

Gen5
The best antenna. The best Z-Wave. Door / Window Sensor 6 is built upon Z-Wave Plus and Aeotec's leading Gen5 technology to offer you the fastest response times and optimal battery life between recharges.

Secure security
If you're using a sensor for security you want its communication to be secure. That's why Door / Window Sensor 6 utilises AES-128 wireless data encryption to keep it secure from prying eyes and hackers.

Wireless updates.
Whether used for home intelligence or security, you want your sensor to always stay up to date. Whenever firmware udpdates are made for it, you'll be able to upgrade Door / Window Sensor 6 via Microsoft Windows or select Z-Wave gateways.

(*Id.*).



Z-Wave's wireless doorbell.

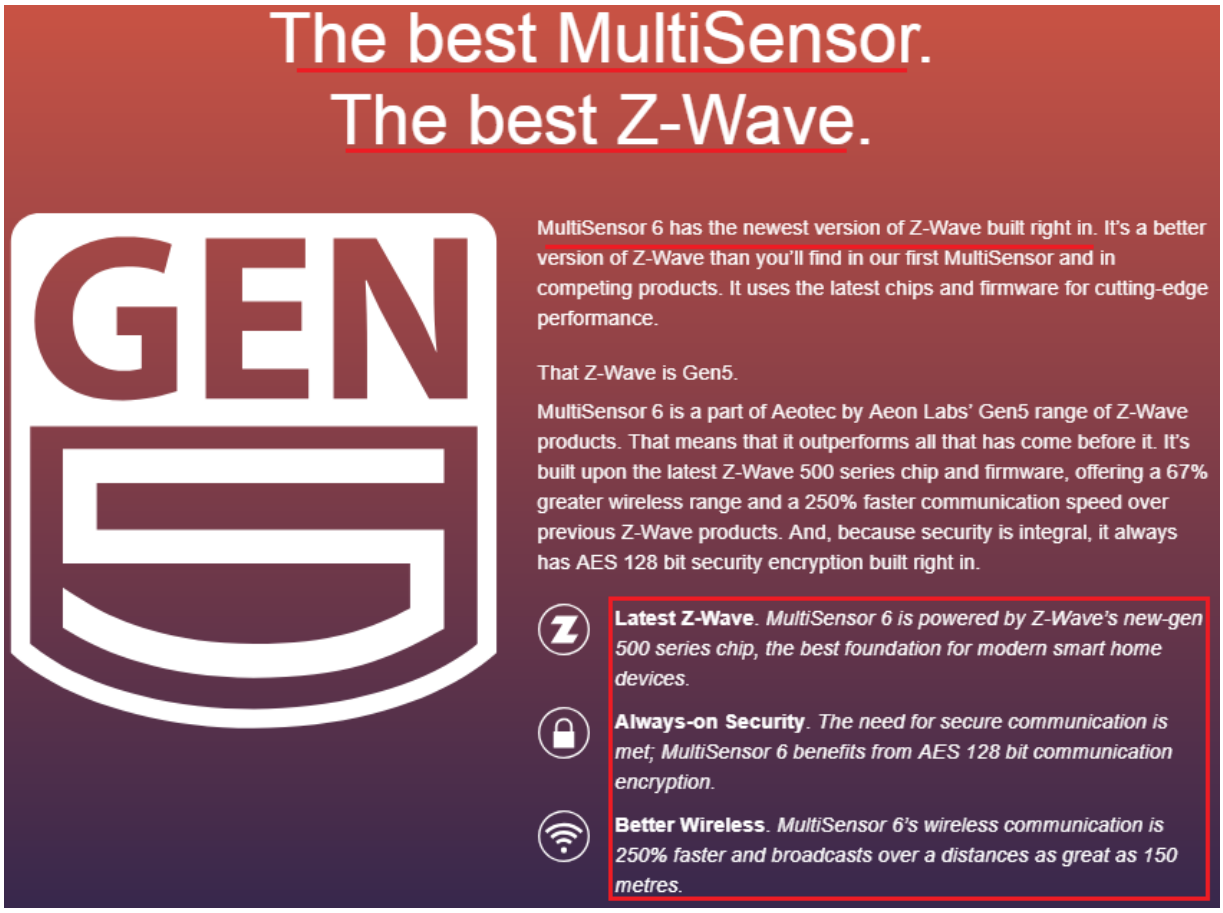
Doorbell 6 can be setup in minutes. It's indoor chime and outdoor button take advantage of the leading wireless home control standard, Z-Wave Plus, to make your home smarter in moments.

(https://aeotec.com/z-wave-doorbell).

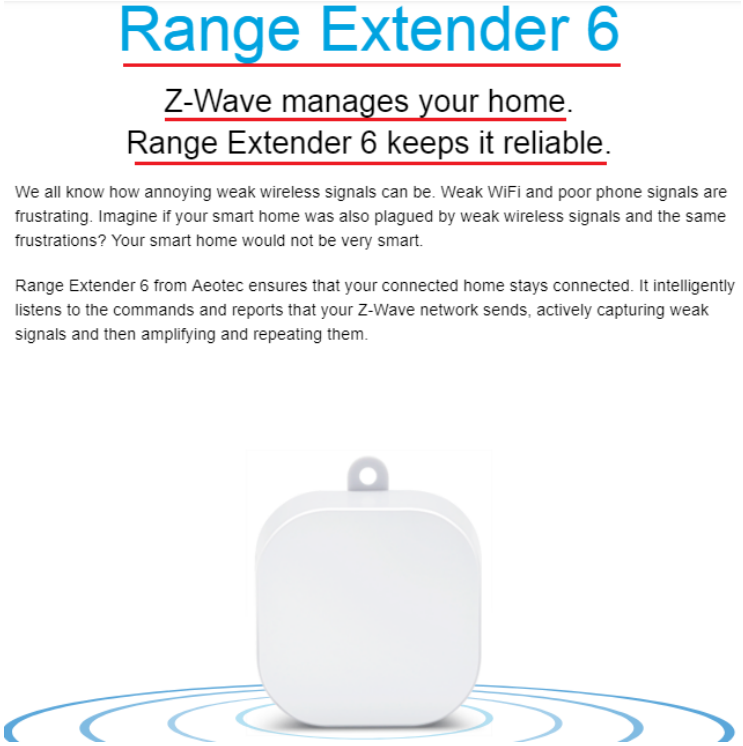
(*Id.*).

(https://aeotec.com/z-wave-home-energy-measure).

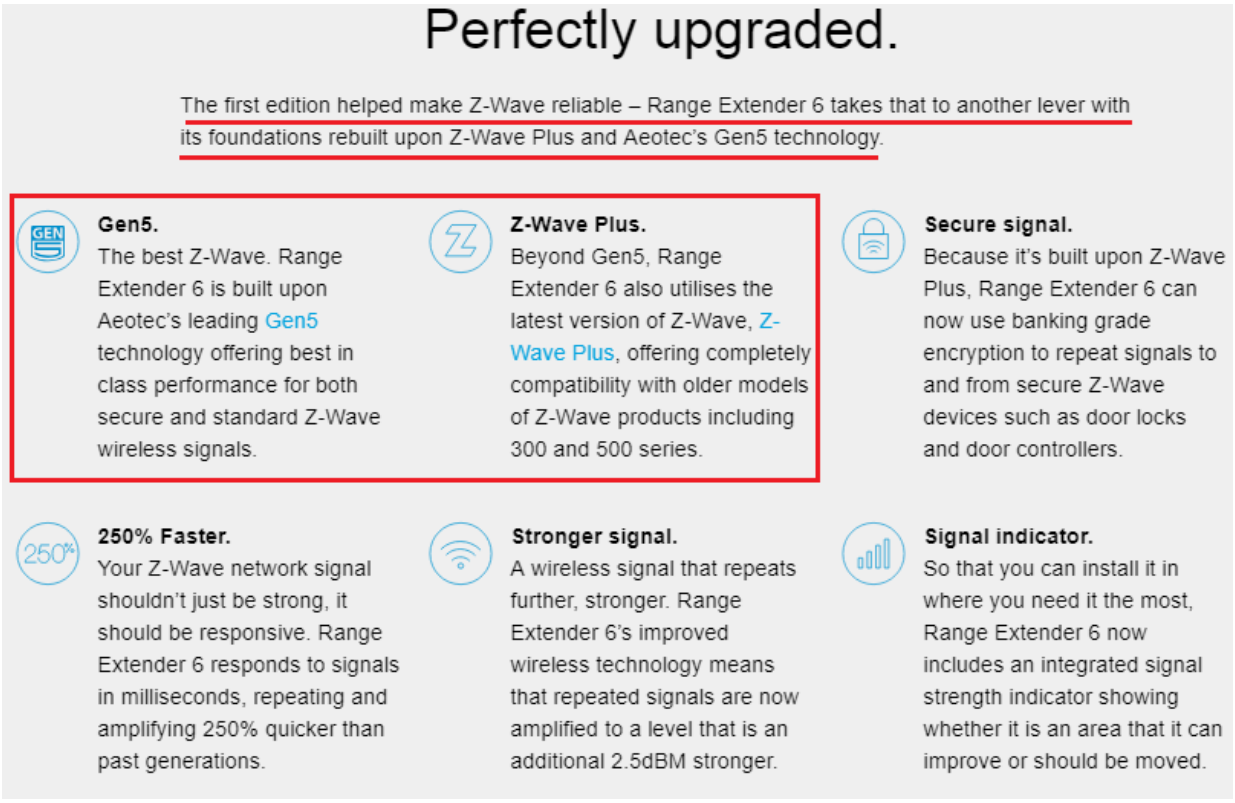
(https://aeotec.com/z-wave-sensor).


The best MultiSensor.
The best Z-Wave.
GEN
MultiSensor 6 has the newest version of Z-Wave built right in. It's a better version of Z-Wave than you'll find in our first MultiSensor and in competing products. It uses the latest chips and firmware for cutting-edge performance.
That Z-Wave is Gen5.
MultiSensor 6 is a part of Aeotec by Aeon Labs' Gen5 range of Z-Wave products. That means that it outperforms all that has come before it. It's built upon the latest Z-Wave 500 series chip and firmware, offering a 67% greater wireless range and a 250% faster communication speed over previous Z-Wave products. And, because security is integral, it always has AES 128 bit security encryption built right in.
Latest Z-Wave. MultiSensor 6 is powered by Z-Wave's new-gen 500 series chip, the best foundation for modern smart home devices.
Always-on Security. The need for secure communication is met; MultiSensor 6 benefits from AES 128 bit communication encryption.
Better Wireless. MultiSensor 6's wireless communication is 250% faster and broadcasts over a distances as great as 150 metres.

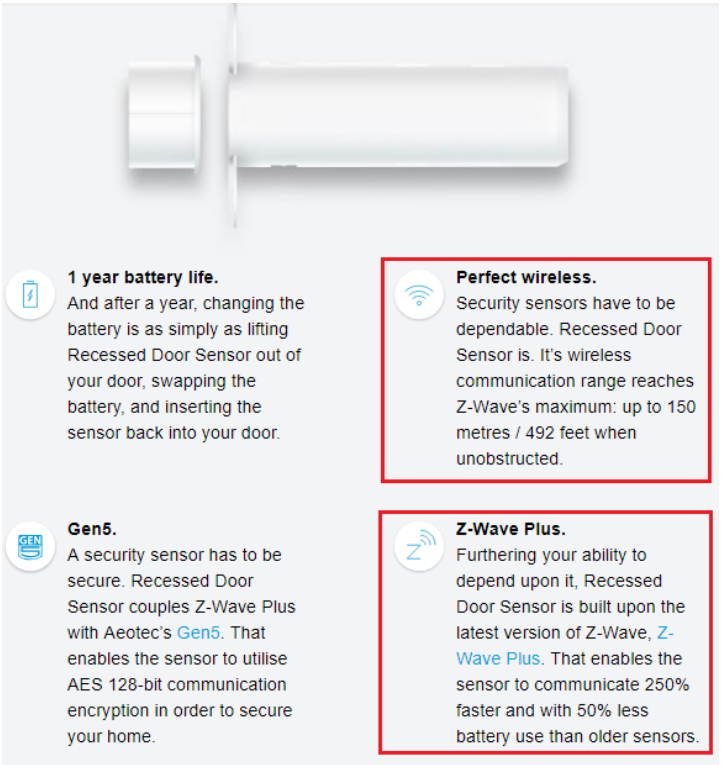
(*Id.*).


Range Extender 6
Z-Wave manages your home.
Range Extender 6 keeps it reliable.
We all know how annoying weak wireless signals can be. Weak WiFi and poor phone signals are frustrating. Imagine if your smart home was also plagued by weak wireless signals and the same frustrations? Your smart home would not be very smart.
Range Extender 6 from Aeotec ensures that your connected home stays connected. It intelligently listens to the commands and reports that your Z-Wave network sends, actively capturing weak signals and then amplifying and repeating them.

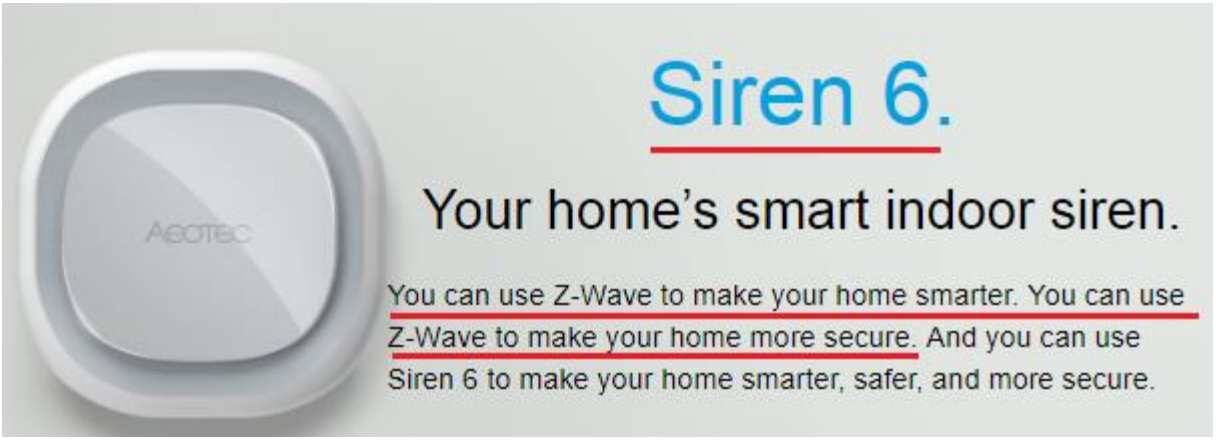
(https://aeotec.com/z-wave-repeater).



(*Id.*).



(https://aeotec.com/hidden-z-wave-door-sensor).



(https://aeotec.com/z-wave-siren).

(https://aeotec.com/z-wave-motion-sensor).

	TriSensor
Sensors	3 Motion, Temperature, Light intensity (lux)
Z-Wave	Z-Wave Plus
Z-Wave security	S2
Mains power	No
Battery power	1 x CR123A
Battery life	1 year
Max. wireless range	150m / 500ft
Size	1.77 x 1.77 x 1.46 in

(*Id.*).

Water Sensor 6 monitors your home.

Leaks & bursts.
Water Sensor 6 can detect minuscule amounts of water – as little as 0.5mm / 0.02" of water. That makes it your first line of defence against damaged plumbing.

Floods.
Whether a small amount or large, Water Sensor 6 also is perfect at protecting against the floods you can anticipate, such as sumps and in basements.

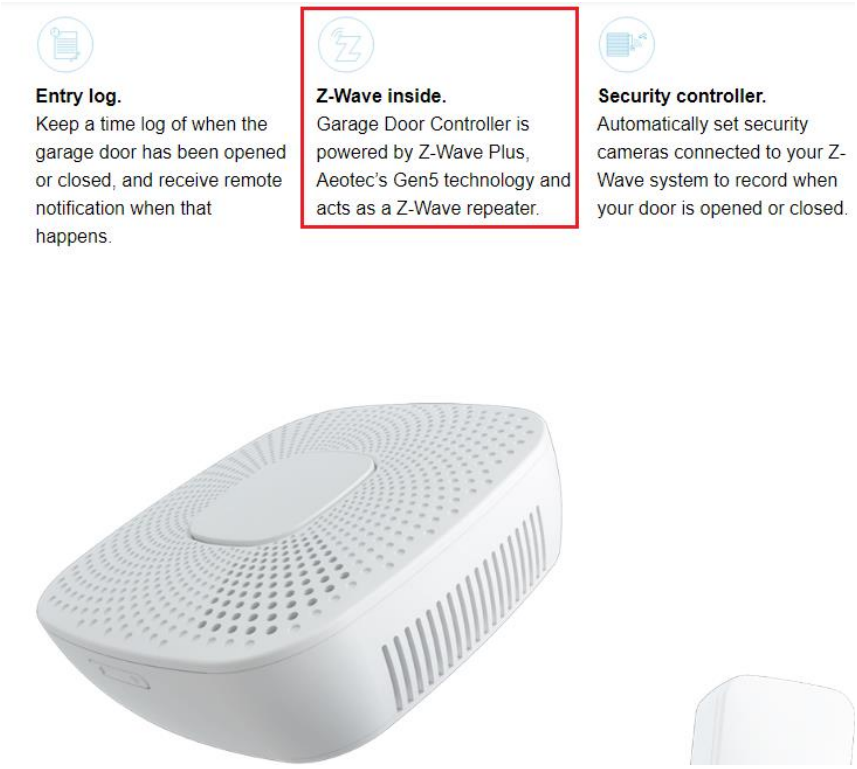
Overflows.
Accidents happen but that doesn't make the damage caused by forgotten taps any less expensive. Water Sensor 6 can alert you to the water you've forgotten to turn off before it's too late.

Water Sensor 6 helps protect your home.

Water Sensor 6 doesn't just monitor for when a pipe has burst or is leaking, it can take protective measures to help limit the amount of damage caused.

Using the power of Z-Wave you can put Water Sensor 6 in control of other Z-Wave devices so that, when the worst occurs, Water Sensor 6 do anything from sending alerts to turning off electricity and water valves in order to protect your home and your loved ones.

(https://aeotec.com/z-wave-water-sensor).

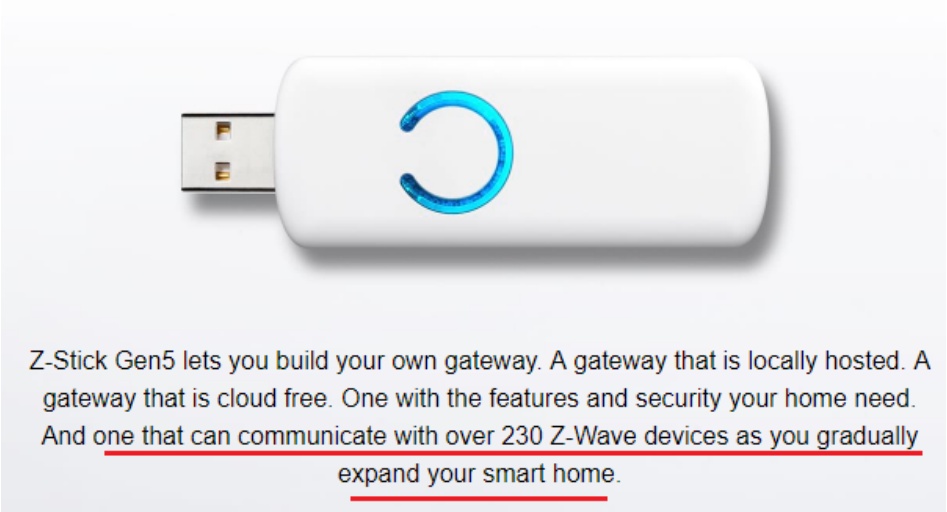


(https://aeotec.com/z-wave-garage-door-controller).

(https://aeotec.com/z-wave-garage-door-controller).

New-gen home automation doesn't have to be expensive – with a few key devices you can create a smart home. Step by step. Room by room. At your own pace, in your own time, and within your own budget.

Usually the most expensive part of any smart home is its gateway; that key hub that binds all your connected devices together to control and automate them. With Aeotec's Z-Stick Gen5 your gateway is no longer expensive.



Z-Stick Gen5 lets you build your own gateway. A gateway that is locally hosted. A gateway that is cloud free. One with the features and security your home need. And one that can communicate with over 230 Z-Wave devices as you gradually expand your smart home.

(https://aeotec.com/z-wave-usb-stick).

WallMote.

Wireless Z-Wave control. On tap.

(https://aeotec.com/z-wave-wireless-switch).

Wireless switch.
To be used anywhere in your home, WallMote and WallMote Quad need to be more than wireless. They need to be impressively wireless. Both switches offer a fine-tuned antenna capable of communicating over an open range of over 150 metres / 492 feet.

Secure switch.
Technology changes, now your wall switches change with it. WallMote and WallMote Quad are cutting-edge today and will be cutting-edge tomorrow. They are both capable of receiving wireless firmware updates via Z-Wave Plus so that they are always up to date.

Subtle switch.
Not just portable, but perfectly balanced. The minimalist design of both WallMote and WallMote Quad measures just 7.7cm wide and a slender 1.9cm deep (3.0 x 0.4 inches).

Simple recharging.
Battery powered but without the need to ever change a battery, WallMote and WallMote Quad are both powered by a rechargeable lithium battery designed for smartphones. It recharges just like a smartphone too via the provided micro USB cable.

Haptic feedback.
It is capable of controlling your whole home, so you may not even be present to see things change when you press WallMote's touch glass. But you will feel the change. WallMote's haptic engine confirms your every action via a click sensation.

Gen5 built in.
WallMote and WallMote Quad are part of Aeotec's Gen5 range of Z-Wave devices. Built upon the latest version of Z-Wave- Z-Wave Plus – cutting-edge performance and security is crafted into Z-Wave's most advanced battery-powered wall switch.

(*Id.*).

The Z-Wave Protocol handles transmissions to destinations all over the network. If necessary, other nodes are used as repeaters. This is called routing.

During bootstrapping, the Primary Controller asks the new node to discover its neighbors. Thanks to the neighbor nodes information, the Primary Controller builds a network map and knows the different possible routes to reach a node.

When using repeaters, the Sending node includes the route information in the frame. Each repeater parses the routing information and forwards the frame accordingly.

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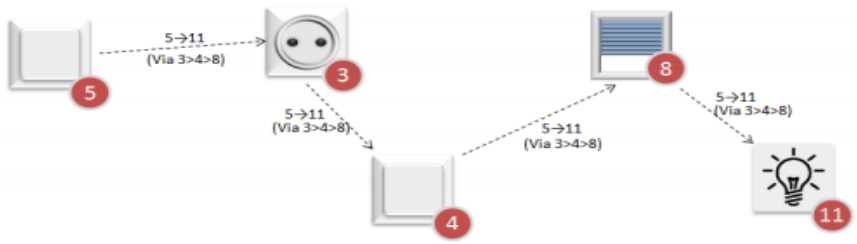


Example 4: Routing via repeaters

Routing may also be used during inclusion if a node is not within direct range of the Primary Controller.

(http://zwavepublic.com/sites/default/files/APL13031-2%20-%20Z-Wave%20Networking%20Basics.pdf).

Z-Wave Alliance Recommendation ZAD12837-1

Z-Wave Transceivers – Specification of Spectrum Related Components

(2014)

Scope

This Recommendation provides guidelines pertaining to spectrum usage of the short range narrowband digital radiocommunication transceivers complying with ITU-T Recommendation G.9959. ITU-T Recommendation G.9959 contains the system architecture, physical layer (PHY) and medium access control layer (MAC) specifications for G.9959 compliant transceivers.

References

[1] Recommendation ITU-T G.9959, *Short range narrowband digital radiocommunication transceivers – PHY & MAC layer specifications*

Definitions

This Recommendation uses the following definitions:

Channel: a transmission path between nodes. One channel is considered to be one transmission path. Logically a channel is an instance of the communications medium used for the purpose of passing data between two or more nodes.

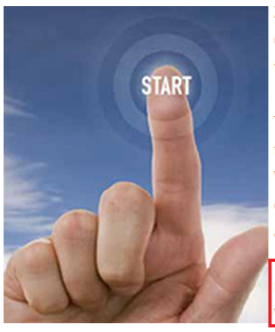
Node: any network device that contains a G.9959 transceiver. In the context of this Recommendation, use of the term 'node' without a qualifier means 'G.9959 node'.

(https://z-wavealliance.org/wp-content/uploads/2015/02/ZAD12837-1.pdf).

21. Each Accused Instrumentality has an appliance interface for communicating with the at least one local appliance (*e.g.*, an interface which connects and makes possible the transmission of a signal to the actual electrical appliance like light, doorbell, siren, water sensor). For example, the z-wave thermostat communicated with the HVAC to control the HVAC unit. (*Supra* ¶20).

22. Each Accused Instrumentality has a microcomputer connected between the satellite radio transceiver (*e.g.*, Z-Wave transceiver) and the appliance interface and having first program instructions for controlling the satellite transceiver (*e.g.*, the microcontroller controls the

transmission of signals from the transceiver to the other Z-Wave nodes in the network), and second program instructions for directing communication between the satellite transceiver and the appliance interface (*e.g.*, the microcontroller within the Z-Wave device enables the command received from the primary controller by the Z-Wave transceiver to be communicated to the appliance interface of the device so that the intended action can be executed such as turning on a light, dimming a light, sensing motion or water, opening a garage door). (*Supra* ¶20; https://standards.ieee.org/getieee802/download/802.15.4-2011.pdf).



Z-Wave's physical and media access layers (PHY/MAC) have been ratified by the International Telecommunication Union (ITU) as the international standard (G.9959). The Z-Wave Standard is administered by the Z-Wave Alliance which serves as the Standards Development Organization (SDO) for Z-Wave.

Together, Sigma Designs, the Z-Wave Alliance and the over 450 international companies that use Z-Wave technology in their products and services present the largest ecosystem of interoperable wireless control products in the world. The Z-Wave mesh communication protocol stack is embedded in the available chips and modules, and is accessed through a complete set of APIs. Z-Wave chips and modules provide Flash or OTP memory options for the manufacturer or OEM's application software.

For many products, the Z-Wave chip or module, with its on-board micro-controller, is all that is needed for a complete Z-Wave solution. For companies that choose chip-based over module-based solutions, a range of blueprints of the PCB circuitry surrounding the Z-Wave Single Chip is offered, including antenna circuitry and filters. Sigma Designs also licenses reference designs, stack software and APIs to chip manufacturers that are interested in entering the wireless control space, providing Z-Wave porting services that assure quality and accelerate product development. Z-Wave's industry-leading device specifications are available royalty free, based on a RAND model. The Z-Wave certification program ensures interoperability between all products.

(https://Z-Wavealliance.org/Z-Wave-oems-developers/).

The Version Command Class, version 2 is extended to report the version of various firmware images such as a host processor firmware, etc. in addition to the firmware image running in the Z-Wave chip.

As an example, one may construct a product comprising a Z-Wave chip and a secondary host processor that maintains a security certificate. With Firmware Update Meta Data Command Class, version 3 the Z-Wave chip, the host processor and the security certificate may all be updated via individual firmware IDs. Version 2 of the Version Command Class (this Command Class) allows a controlling node to request the corresponding version information for each firmware ID.

Commands not mentioned here remain the same as specified for Version Command Class, version 1.

4.20.1 Version Report Command

This command is used to report the library type, protocol version and application version from a node.

Version 2 of this command renames the fields Application Version and Application Sub Version to Firmware 0 Version and Firmware 0 Sub Version. The use remains the same.

A node MUST advertise the version of all firmware images which can be updated via the Firmware Update Command Class.

A one-chip system MUST comply with the following:

- The Firmware 0 Version MUST reflect the complete firmware implementing the Z-Wave protocol stack as well as the Z-Wave application.

A multi-processor system MUST comply with the following:

- The Firmware 0 Version MUST reflect the firmware implementing the Z-Wave protocol stack and the inter-chip interface module that enables the Z-Wave application to run in the host processor. Another firmware number (e.g. Firmware 1) version MUST reflect the Z-Wave application that runs in the host processor. Any firmware number larger than 0 MAY be used for this purpose.

(http://zwavepublic.com/sites/default/files/command_class_specs_2017A/SDS13782-4%20Z-Wave%20Management%20Command%20Class%20Specification.pdf).

23. Each Accused Instrumentality provides first program instructions including detecting communications directed by the headend computer (*e.g.*, primary controller) relative to the same appliance controller (*e.g.*, targeted Z-Wave node), signaling receipt of the directed communications (*e.g.*, sending acknowledgement signal through the Z-Wave transceiver), and directing communications to the headend computer relative to the same appliance controller (*e.g.*, sending status of an appliance or signal from a connected sensor). For example, a primary controller can send/receive messages to program various connected Z-Wave devices; the Z-wave switch can receive communications to turn on or off the light, the Z-wave dimmer can dim the lights, the Z-wave Garage Door Controller can control the garage door or convey its status. (*Supra* ¶20; https://standards.ieee.org/getieee802/download/802.15.4-2011.pdf).

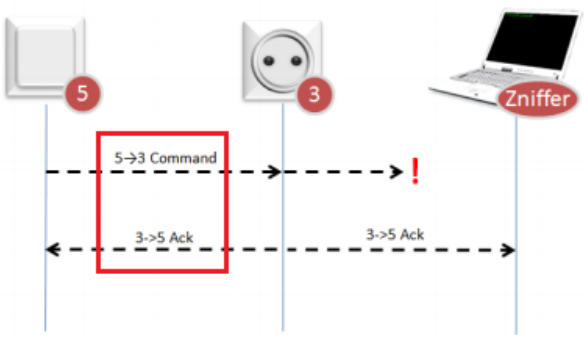
24. Each Accused Instrumentality has a second program instructions including detecting relay communications directed between the headend computer and a different relay unit, transmitting the relay communications, detecting a reply communication from the different relay unit, and transmitting the reply communication to the headend computer, wherein at least some of the relay units communicate with the headend computer by relay communications using at least two others of the relay units (*e.g.*, a Z-Wave node detects messages from primary controller and checks whether message is intended for itself, if not, then acting as a repeater, transmits it to next intended device in the route; the Z-Wave node detects messages from another Z-Wave node and forwards it to primary controller). The Accused Instrumentality work on Z-Wave technology which uses mesh network and would communicate with the headend computer by relay communications using at least two others of the relay units (*e.g.*, repeaters). (*Supra* ¶20; https://standards.ieee.org/getieee802/download/802.15.4-2011.pdf; https://www.zwaveproducts.com/learn/ask-an-expert/glossary/mesh-network; http://docslide.us/documents/Z-Wave-technical-basics-small.html; http://www.zwaveproducts.com/learn/Z-Wave).

Each frame carries a checksum. A Receiving node can verify the frame integrity thanks to this checksum. Invalid frames are discarded.

A Receiving node returns an Ack message in order to confirm that the frame has been received. If no Ack is received by the Sending node, it must assume that the transmission failed. The Sending node will then retransmit the same message until it gets feedback from the Receiving node. After three unsuccessful transmissions, the Sending node will consider the link to be down.

Ack messages are sent to confirm the frame integrity and do not imply that the Receiving node has understood or executed the command.

Local differences in wireless link quality may cause a Z-Wave network analyzer (known as a Zniffer) not to see the same transmissions as nodes participating in a transmission.



Example 3: Network analysis issues

(http://zwavepublic.com/sites/default/files/APL13031-2%20-%20Z-Wave%20Networking%20Basics.pdf).

This command is used to set the network route to use when sending commands to the specified NodeID.

The use of this command is NOT RECOMMENDED.

7	6	5	4	3	2	1	0
COMMAND_CLASS = NETWORK_MANAGEMENT_INSTALLATION_MAINTENANCE							
COMMAND = PRIORITY_ROUTE_SET							
NodeID							
Repeater 1 [First repeater]							
Repeater 2							
Repeater 3							
Repeater 4 [Last repeater]							
Speed							

NodeID (1 byte)

This field is used to specify the destination NodeID for which a last working route MUST be set.

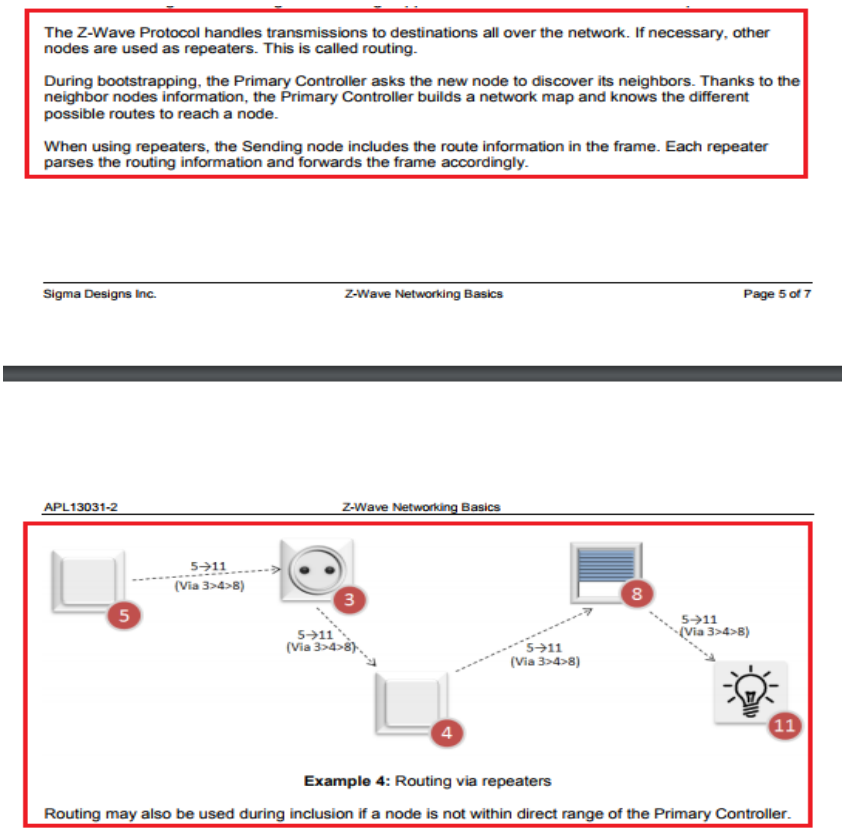
Repeater (4 bytes)

This field is used to specify repeaters for the route. Each byte represents a NodeID and the first field (Repeater 1) is the first repeater of the route.

The value 0x00 MUST indicate that the byte does not represent a repeater. If the route is shorter than four repeaters, unused repeaters fields MUST be set to 0x00. If Repeater 1 is set to 0x00, it means that the Last Working Route is direct (nodes are within direct reach).

(http://zwavepublic.com/sites/default/files/command_class_specs_2017A/SDS13784-4%20Z-

Wave%20Network-Protocol%20Command%20Class%20Specification.pdf).



The Z-Wave Protocol handles transmissions to destinations all over the network. If necessary, other nodes are used as repeaters. This is called routing.

During bootstrapping, the Primary Controller asks the new node to discover its neighbors. Thanks to the neighbor nodes information, the Primary Controller builds a network map and knows the different possible routes to reach a node.

When using repeaters, the Sending node includes the route information in the frame. Each repeater parses the routing information and forwards the frame accordingly.

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Example 4: Routing via repeaters

Routing may also be used during inclusion if a node is not within direct range of the Primary Controller.

(http://zwavepublic.com/sites/default/files/APL13031-2%20-%20Z-Wave%20Networking%20Basics.pdf).

III. COUNT II
(PATENT INFRINGEMENT OF UNITED STATES PATENT NO. 6,873,245)

25. Plaintiff incorporates the above paragraphs herein by reference.

26. On March 29, 2005, United States Patent No. 6,873,245 ("the '245 Patent") was duly and legally issued by the United States Patent and Trademark Office. The application leading to the '245 patent was filed on August 14, 2001, and is a continuation-in-part of the application leading to the '166 Patent. (Ex. B at cover). The '245 Patent is titled "RF Remote Appliance Control/Monitoring System." A true and correct copy of the '245 Patent is attached hereto as Exhibit B and incorporated herein by reference.

27. Plaintiff is the assignee of all right, title and interest in the '245 patent, including all rights to enforce and prosecute actions for infringement and to collect damages for all relevant times against infringers of the '245 Patent. Accordingly, Plaintiff possesses the exclusive right and standing to prosecute the present action for infringement of the '245 Patent by Defendant.

28. Because the '245 patent is a continuation in part of the application leading to the '166 patent, the '245 patent has a substantially overlapping specification and the background regarding the '166 patent is equally applicable and is incorporated by reference with respect to the '245 patent. (*Supra* ¶¶11-17).

29. **Direct Infringement.** Upon information and belief, Defendant has been directly infringing at least claim 1 of the '245 patent in California, the Northern District of California, and elsewhere in the United States, by performing actions comprising making, using, selling, and/or offering for sale an appliance controller for a distributed appliance systems having a multiplicity of appliances, and a plurality of relay units, that satisfies the limitations of at least claim 1, including without limitation the Z-Wave LED Bulb, Z-Wave LED Strip, Z-Wave Dimmer, Z-Wave Shutter, Z-Wave Switch, Z-Door/Window Sensor, Z-Wave Doorbell, Z-Wave Home Energy Meter, Z-Wave Multi-Sensor, Z-Wave Range Extender, Z-Wave Recessed Door Sensor, Z-Wave Siren, Z-Wave Water Sensor, Z-Wave Tri-Sensor, and Z-Wave Garage Door Controller ("Accused Instrumentality").

30. Each Accused Instrumentality provides an appliance controller (*e.g.*, Z-Wave LED Bulb, Z-Wave LED Strip, Z-Wave Dimmer, Z-Wave Shutter, Z-Wave Switch, Z-Door/Window Sensor, Z-Wave Doorbell, Z-Wave Home Energy Meter, Z-Wave Multi-Sensor, Z-Wave Range Extender, Z-Wave Recessed Door Sensor, Z-Wave Siren, Z-Wave Water Sensor, Z-Wave Tri-Sensor, and Z-Wave Garage Door Controller) for a distributed appliance system

(*e.g.*, Z-Wave network) having a multiplicity of appliances (*e.g.*, appliances such as lights, garage doors, sirens), and a plurality of relay units (*e.g.*, repeaters), one of the relay units being the appliance controller (*e.g.*, a Z-Wave Controller such as the Vera Control Hub). (*Supra* ¶20; http://zwavepublic.com/sites/default/files/command_class_specs_2017A/SDS13782-4%20Z-Wave%20Management%20Command%20Class%20Specification.pdf; http://zwavepublic.com/sites/default/files/APL13031-2%20-%20Z-Wave%20Networking%20Basics.pdf)

31. Each Accused Instrumentality has a low power satellite radio transceiver (*e.g.*, radio frequency transceivers within the various Z-Wave devices) having a range being less than a distance to at least some of the appliances. (*Supra* ¶20).

32. Each Accused Instrumentality has an appliance interface for communicating with the at least one local appliance (*e.g.*, an interface which connects and makes possible the transmission of signal to the actual electrical appliance like a light and plugged in appliances). (*Supra* ¶20).

33. Each Accused Instrumentality has a microcomputer (*e.g.*, microcontroller) connected between the satellite radio transceiver (*e.g.*, Z-Wave transceiver) and the appliance interface and having first program instructions for controlling the satellite transceiver (*e.g.*, the microcontroller controls the transmission of signals from the transceiver to the other Z-Wave nodes in the network) and second program instructions for directing communication between the satellite transceiver and the appliance interface (*e.g.*, the microcontroller within the Z-Wave device enables the command received from the appliance interface to be communicated to the local appliance by the Z-Wave transceiver so that the intended action can be executed such as turning on a light, dimming a light, sensing motion or water, opening a garage door). (*Supra* ¶¶20, 22; https://Z-Wavealliance.org/Z-Wave-oems-developers/;

http://zwavepublic.com/sites/default/files/command_class_specs_2017A/SDS13782-4%20Z-Wave%20Management%20Command%20Class%20Specification.pdf; http://www.rfwireless-world.com/Tutorials/Z-Wave-physical-layer.html).

34. Each Accused Instrumentality has a first program instructions including detecting communications directed by another of the relay units (*e.g.*, another Z-Wave node acting as a repeater) relative to the same appliance controller (*e.g.*, targeted Z-Wave node), signaling receipt of the directed communications (sending acknowledgement signal through the Z-Wave transceiver), and directing communications to the other of the relay units relative to the same appliance controller (*e.g.*, sending status of an appliance or signal from a connected sensor). For example, the Z-wave switch can receive communications to turn on or off the light, the Z-wave dimmer can dim the lights, the Z-wave Garage Door Controller can control the garage door or convey its status. (*Supra* ¶20; http://zwavepublic.com/sites/default/files/APL13031-2%20-%20Z-Wave%20Networking%20Basics.pdf; http://zwavepublic.com/sites/default/files/command_class_specs_2017A/SDS13784-4%20Z-Wave%20Network-Protocol%20Command%20Class%20Specification.pdf).

35. Each Accused Instrumentality has a second program instructions including detecting relay communications directed between the another of the relay units and a different relay unit, transmitting the relay communications, detecting a reply communication from the different relay unit, and transmitting the reply communication to the other of the relay units, wherein at least some of the relay units communicate with others of the relay units by relay communications using at least two others of the relay units (*e.g.*, a Z-Wave node detects messages from primary controller and checks whether message is intended for itself, if not, then acting as a repeater, transmits it to next intended device in the route. Also, the Z-Wave node detects messages from another Z-Wave node and forwards it to primary controller. N number of

nodes may be involved in the process acting as repeaters or relay units). The Accused Instrumentality works on Z-Wave technology which uses mesh network and would communicate with the other relay units by relay communications using at least two others of the relay units (*e.g.*, repeaters). (*Supra* ¶¶20, 24; http://zwavepublic.com/sites/default/files/APL13031-2%20-%20Z-Wave%20Networking%20Basics.pdf; http://zwavepublic.com/sites/default/files/command_class_specs_2017A/SDS13784-4%20Z-Wave%20Network-Protocol%20Command%20Class%20Specification.pdf; https://www.zwaveproducts.com/learn/ask-an-expert/glossary/mesh-network; http://docslide.us/documents/Z-Wave-technical-basics-small.html; http://www.zwaveproducts.com/learn/Z-Wave).

36. Plaintiff has been damaged because of Defendant's infringing conduct. Defendant is thus liable to Plaintiff for damages in an amount that adequately compensates Plaintiff for such Defendant's infringement of the '166 Patent and the '245 Patent, *i.e.*, in an amount that by law cannot be less than would constitute a reasonable royalty for the use of the patented technology, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

37. On information and belief, Defendant had at least constructive notice of the '166 Patent and the '245 Patent by operation of law, and there are no marking requirements that have not been complied with.

IV. PRAYER FOR RELIEF

WHEREFORE, Plaintiff respectfully requests that the Court find in its favor and against Defendant, and that the Court grant Plaintiff the following relief:

a. Judgment that one or more claims of United States Patent No. 6,275,166 have been infringed, either literally and/or under the doctrine of equivalents, by Defendant;

b. Judgment that one or more claims of United States Patent No. 6,873,245 have been infringed, either literally and/or under the doctrine of equivalents, by Defendant;

c. Judgment that Defendant account for and pay to Plaintiff all damages to and costs incurred by Plaintiff because of Defendant's infringing activities and other conduct complained of herein, and an accounting of all infringements and damages not presented at trial;

d. That Plaintiff be granted pre-judgment and post-judgment interest on the damages caused by Defendant's infringing activities and other conduct complained of herein;

e. That Plaintiff be granted such other and further relief as the Court may deem just and proper under the circumstances.

June 25, 2019

By /s/*Steven A. Nielsen*

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dbennett@directionip.com

JURY DEMAND

Plaintiff, under Rule 38 of the Federal Rules of Civil Procedure, requests a trial by jury of any issues so triable by right.

June 25, 2019

By /s/*Steven A. Nielsen*

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