

Erika Multi-Microphone System User Manual

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Operation of the Erika Mic System

When you first receive the Erika, please plug each Erika Mic into a USB power source using the supplied cable. To prevent battery drain, the Erika Mic ships in a special low-power mode. Plugging the Erika Mic into a USB power source the first time prepares it for use. You only need to perform this step once.

Erika Mic's LED flashes Blue when charging and solid Blue when fully charged. It will take less than 3 hours to complete a full charge. If you wish to use it right away, there will probably be enough battery power for many hours of operation or testing. Then charge it after using or testing it for the first time.

Powering On – When the Erika Mic is in a face-down position, it is muted and powered off. To power it on, pick it up or set it in any position other than face-down. With Erika, muting and powering off is the same thing as this saves battery power. When Erika powers on, it connects (pairs) to the Erika Receiver and unmutes. Anytime the Erika is not positioned face-down, it periodically turns on the wireless radio to search for the Erika Receiver. If not using Erika for a few days or more, it is best to store face-down, which prevents the wireless radio from activating. Face-down position uses the least amount of battery power.

If Erika is plugged into a USB power source, it will be muted and powered down, and as it is charging, the Blue LED will flash. When fully charged, the Blue LED will be on solid. Note that the Erika Mic cannot be over-charged or over-discharged. Thus, you can leave the Erika Mic on a USB power source, such as a computer or AC powered USB Power Supply. Most USB battery banks will not charge Erika due to the low charge current.

To use Erika Mic, first plug the white Erika Receiver into your computer's USB port via the supplied cable. If your computer is powered up, the Erika Receiver has USB power, an Erika Mic is in range and not in a face-down position, then the Erika Mic will power on automatically. If you power down your computer or remove the Receiver from the USB port, your Erika Mic(s) will automatically power down.

When the Erika Mic is powered up (unmuted), paired, and in range, the Receiver's LED will be solid Green. The Receiver's LED will be solid Red when all Erika Mic(s) are powered off (when it is in a face-down position), out of range, or unpaired with the Receiver. The Erika Mic(s) and matching Receiver are pre-paired at our factory.

A slowly flashing yellow LED on the Erika Mic indicates that the battery is low, with less than two hours remaining.

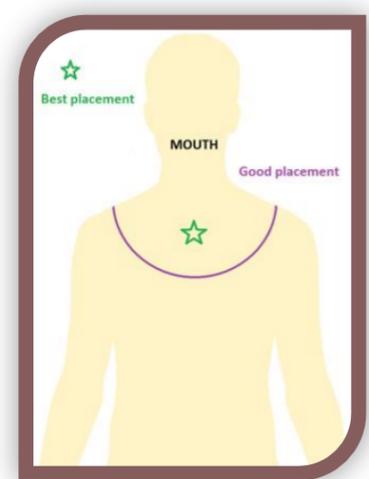
How to Wear the Erika Mic

When wearing Erika, we suggest keeping the microphone in a vertical orientation with the mic port facing forward and the USB port pointing down, as this helps prevent rain from entering the USB port.

Erika is typically worn in the center of the chest, over the sternum 4 to 5 inches down from the wearer's chin. Other positions can work well also. If you have an implanted medical device, observe all recommendations concerning these devices. For example, since the Erika Mic has an embedded magnet and a backing magnet, keep the magnets at least 6 inches from your implanted devices.

You may also use Erika as a conference room mic; just set it face-up on the table.

After using Erika, you may set the Erika Mic face-down. Or you may



disconnect the Erika Receiver from the USB port. Either way, the Erika Mic will power off. When appropriate, you may use the supplied cable to recharge Erika.

You may hide Erika behind a lapel, in a pocket, under clothing, or covered with a piece of matching fabric, with minimal effect on audio quality.

How to charge the Erika Microphone

You may use a computer USB port, or an AC Powered USB power supply/charger. Most USB power banks/batteries will not charge the Erika Mic, as Erika requires so little power that the power bank/battery will turn off the USB port. Note that attaching an Erika to a laptop, then closing the laptop will STOP the charging. The Blue LED will flash while charging, and a solid Blue LED indicates a full charge. While charging, the Erika microphone is muted. The Erika prevents overcharging and under-charge conditions of the battery to help maintain the life of the battery. The Erika can safely be left on the charger.

The Erika microphone enters a low power mode when placed microphone port side down. In this condition, it will not connect to a receiver. The battery charge will be maintained for a longer period of time in low power mode.

Dynamic Audio Switching

When more than one Erika microphone is connected to an Erika receiver, dynamic audio switching is employed to select the appropriate source microphone. The audio from each microphone is continuously analyzed to make the decision. Only one microphone channel at a time is transferred over the USB connection. Dynamic audio switching minimizes wireless traffic as well as making the audio easier to understand by allowing only one voice at a time.

Dynamic audio switching works optimally when each microphone is worn and each user is at least 3 feet apart. Close proximity reduces effectiveness of dynamic switching due to reverb and echoes. Loud background noises can affect operation.

Audio level adjustment

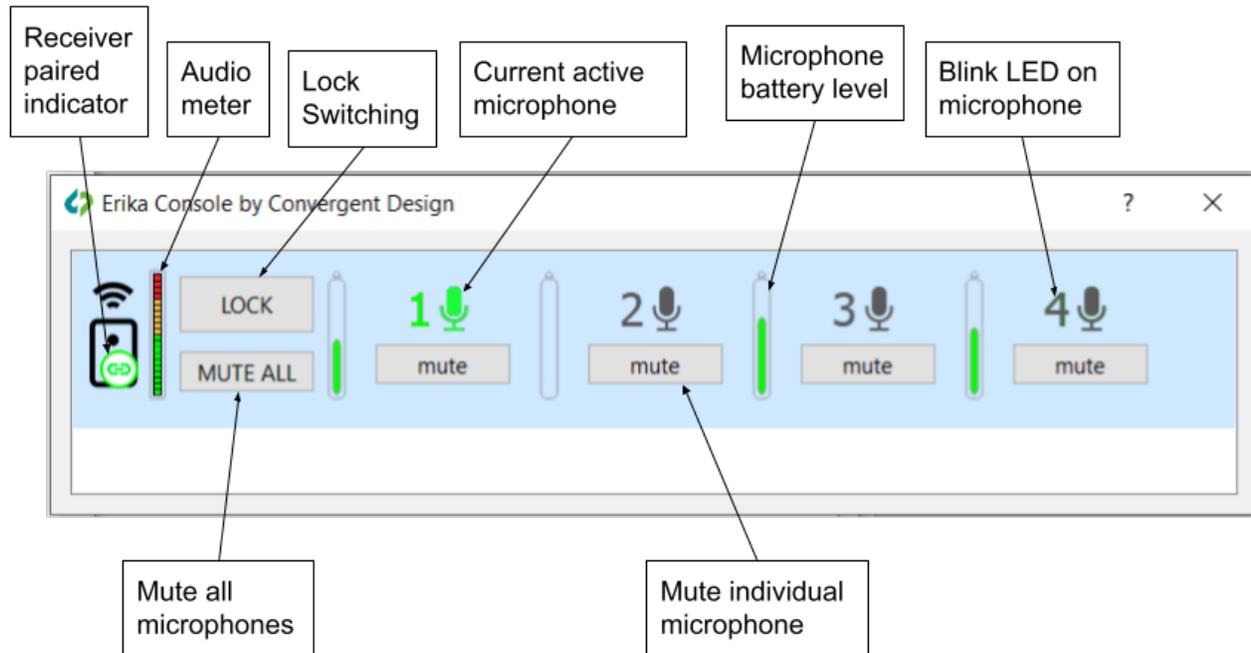
Each Erika microphone automatically adjusts the audio level gain as the user speaks. No manual gain adjustment is necessary. The gain for each microphone is adjusted independently so that loud and quiet speakers have the same audio level.



Erika Wireless Transmission Information

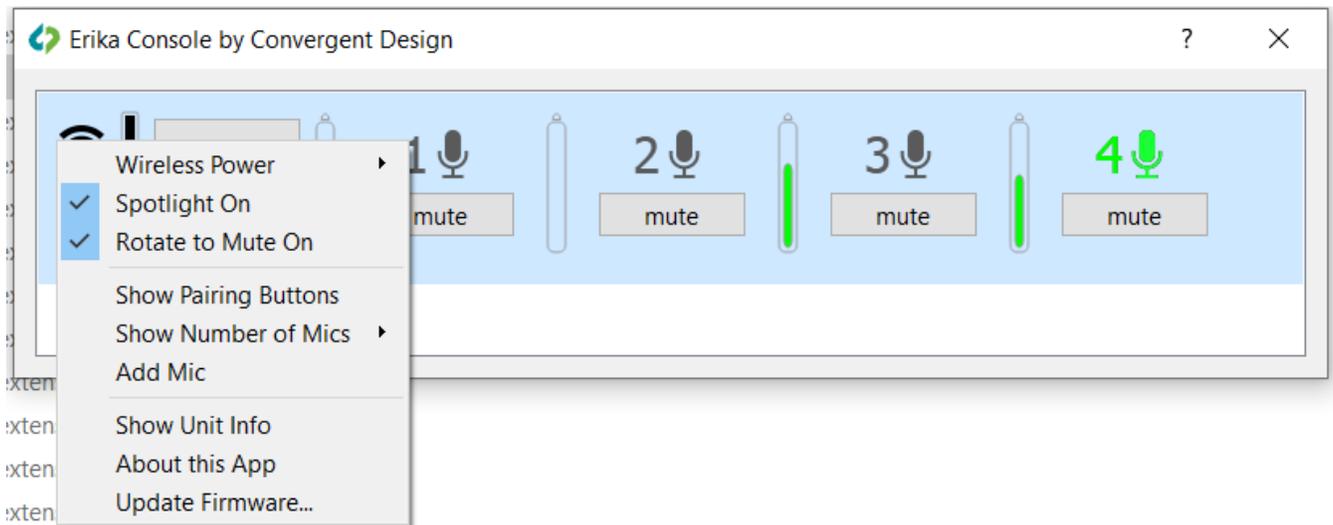
Erika uses 2.4 GHz radio spectrum to communicate between transmitter and Receiver. Erika utilizes random frequency hopping. This technique improves security and helps Erika to coexist with other 2.4 GHz devices. If interference does occur, Erika then avoids using frequencies with interference.

Erika Console App



Overview

The Erika Console App is used to apply firmware updates to the Erika microphone system, adjust settings, and monitor status. When an Erika Receiver is connected to the computer with the Erika app running, the app shows the receiver icon with a paired/unpaired symbol, audio level meter, lock button, mute all button, individual microphone mute buttons, microphone selection indicator, and battery level meter for each connected microphone. Firmware version information, FCC ID information, and manufacturing date/serial number are displayed by right clicking the receiver icon and selecting “Show Unit Info”. Individual microphones can be ID by clicking on the number for each microphone when it is connected. This causes the microphone to blink a blue LED for 3 seconds.



Power level

When right clicking on the receiver icon, the wireless power can be set. A setting of 5 is the longest range and shortest battery life. A setting of 1 is the shortest range and longest battery life. A setting of 3 is the default and gives about 24 hours of battery life in the microphone.

Spotlight mode

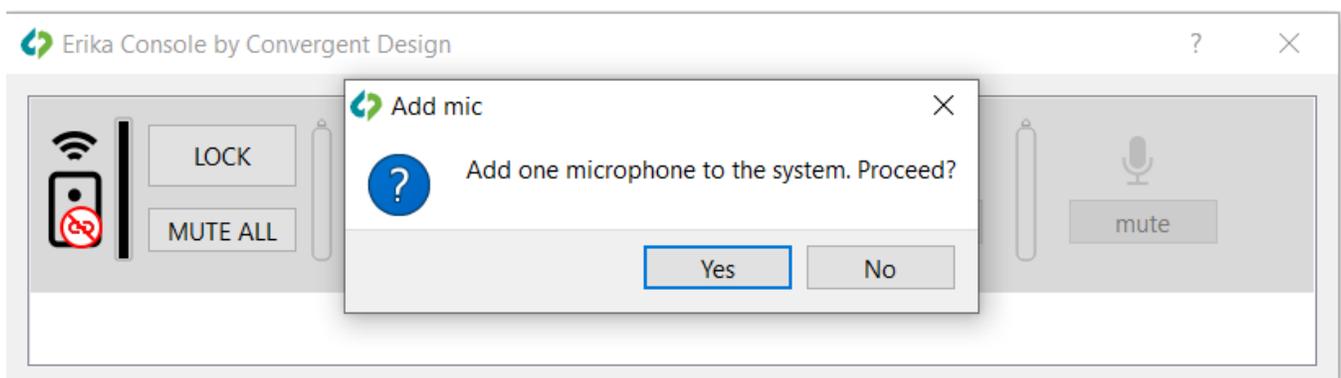
When spotlight mode is on, a white LED shines for 3 seconds when a microphone is newly selected. This gives an indicator of what microphone is currently selected.

Rotate to Mute

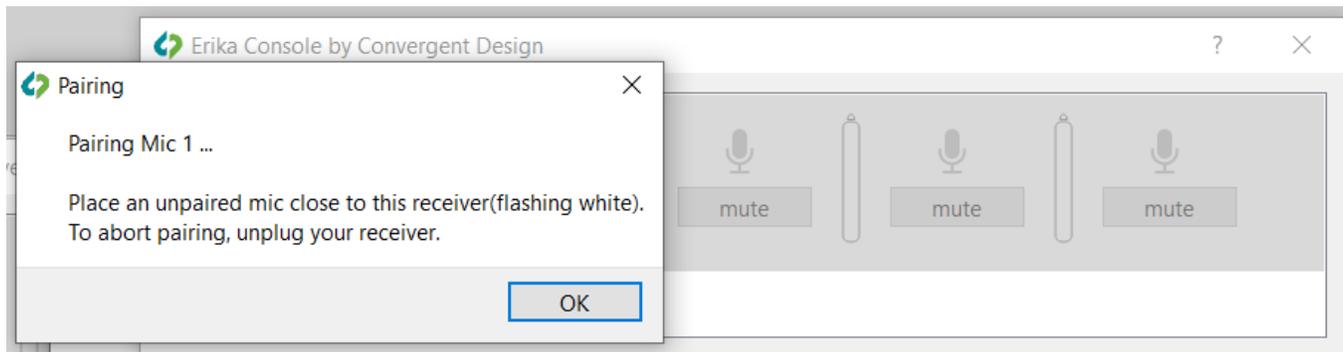
When the microphone is worn with USB port facing down, the microphone is muted. When rotated to USB port facing up, the microphone is un-muted. When rotated to mute mode, the red LED flashes for 2 seconds. When rotated to un-mute mode, the green LED flashed for 2 seconds.

Add Microphone

To add a microphone to the system, right click on the receiver icon and choose Add Mic.



Choose Yes to proceed.



The receiver will flash white. Bring the microphone next to the receiver to initiate pairing. If adding multiple microphones, place microphones microphone port down to put the microphone into low power mode and place one microphone at a time next to the receiver microphone port up. This prevents multiple microphones from being assigned the same ID.

Firmware Updates

Erika contains firmware, which is fully upgradeable in the field. This function enables us to add features over time and to fix issues that might occur. The firmware update process is easy.

1. Download the latest firmware update app from www.convergent-design.com to a Windows 10 or Mac OSX computer.
2. Install the app on the computer.
3. Open the app.
4. Connect each of your Erika Mics to your computer using the supplied USB cable.
5. Right-Click and choose Update Firmware. The process will take approximately 5 seconds.
6. Connect the Erika Receiver to your computer using the same USB cable.
7. Right-Click and choose Update Firmware. The process will take approximately 5 seconds.

Using Erika with Various Programs

With Windows 10, most programs, such as Zoom, Google Meet, and Microsoft Teams, will immediately recognize and use Erika as your audio source.

Specific advanced audio programs require you to select the Erika Mic as your audio source manually. One example is Audacity.

You may change your audio source in Windows 10 by typing “Sound Settings” in “Type Here to Search.” Scroll Down to “Input,” and then use the drop-down box: “Choose Your Input Device.”

In Mac’s, you may have to select Erika as your audio source manually.

WiFi

Erika coexists well with WiFi and other 2.4 GHz devices.

In some cases, we will recommend taking the following steps:

1. Switch from using 2.4 GHz to using 5 GHz WiFi. Switching has a side benefit as 5 GHz WiFi is much faster than 2.4 GHz WiFi. Your download and upload speeds should be faster with 5.0 GHz unless your service is the limiting factor. Note that the range of 5 GHz WiFi is shorter than 2.4 GHz WiFi
2. Ensure that the Erika Receiver is not located close to a WiFi Router or Extender.

3. Set your 2.4 GHz WiFi Bandwidth to 20 MHz versus 40 MHz.
4. If you have multiple WIFI routers/access points, you need to assign them to the same WIFI channel. Otherwise, the RF spectrum may be consumed with WiFi traffic.

Receiver Positioning

A clear line-of-sight path from the Erika Mic to the Erika Receiver is ideal.

However, this is not always possible.

1. If people are blocking the path, please elevate the Receiver above the height of the people. You may use a USB 2.0 Extension Cable to do so.
2. Other obstructions may interfere with transmission. Attempt to locate the Receiver in such a location that the obstructions are avoided. Note that this may not be a problem in many buildings since the 2.4 GHz signal bounces off objects.
3. If people wearing the Erika Mic will be turning around, so their back is to the Receiver, you may need to increase the Erika Power Level. Power Level 3, as opposed to Power Level 1 or 2, may solve this problem. Use the lowest Power Level that eliminates the problem.
4. If you are using multiple Erikas, keep each Erika Mic at least one foot or 1/3 of a meter from each other. Keep every Receiver at least 1 foot or 1/3 of a meter from each other. You will need longer USB-C to USB-A cables, which are widely available from many sources. Or you may use USB 2.0 Male to Female Extension cables. Always use the Receiver Stand or some other method to elevate the Erika Receiver off the table.



LED Indications

Microphone

Flashing Blue: Erika Mic's battery is charging.

Solid Blue: Erika Mic's battery is fully charged.

Single Blue Flash while USB is not connected: Flash is initiated using the app to identify specific microphones.

Flashing White when unplugged from USB: Microphone is in pairing mode looking for receiver to pair to.

Single green flash: Microphone has connected to the receiver

Spotlight mode on: White LED for 5 seconds: Specific microphone is the selected input.

Rotate to Mute on: Wearing the microphone and rotating the microphone to USB connector up: Green flash indicates microphone is active and can be switched to. Rotating the microphone to USB connector down: Red flash indicates microphone cannot be switched to and is muted.

Receiver - Green

Solid Green: One or more Erika Microphones are powered on, unmuted, paired, and within range of the Receiver. Audio from the Erika Mic is being sent to the Erika Receiver successfully. The Erika Mic and Receiver are operating normally, and the Erika Mic is unmuted. Flashing green on the receiver is an indication of poor connection quality. Increase the power of the system using the app.

Receiver - Red

Solid Red: The paired Erika Mic is powered off or out-of-range of the Receiver. In unusual cases, it may be that the Erika Mic is not paired with your Erika Receiver. No audio is being sent to the Receiver.

Receiver - Yellow

Slow Flashing Yellow: The Receiver starts flashing Yellow slowly when less than approximately two hours of Mic battery runtime remains. As conditions permit, maybe during a break, recharge the Erika Mic. Fifteen minutes of recharging provides two hours of runtime.

Fast Flashing Yellow: The Erika Mic's battery is nearly empty. Recharge your Erika Mic as soon as possible. You may have less than 15 minutes of runtime left.

Receiver – White

Flashing white indicates that the Erika receiver is in pairing mode and attempting to connect to an Erika microphone that is also in pairing mode.

Receiver – Purple

Flashing purple indicates that the Erika receiver and microphones have a different firmware version.



Technical Specifications

Size and Weight

Microphone: Black or White Plastic Enclosure (1.49 x 0.84 x 0.42 inches) or (37.79 x 21.44 x 10.56 mm)

Microphone: 0.56 ounce or 16 grams

Receiver: White Plastic Enclosure (1.49 x 0.84 x 0.32 inches) or (37.79 x 21.44 x 8.20 mm)

Receiver: 0.18 ounces or 5 grams

Microphone type: Digital MEMS (Micro Electrical-Mechanical System) Microphone Polar Pattern – Omnidirectional, SNR (Signal to Noise Ratio) - 65dB

Audio Transmission: 100% Digital End-to-End, Full Uncompressed Audio for the highest quality

Audio sampling: 16K, 16-Bit Audio, maximum audio frequency is 8 KHz

Battery Voltage: 3.7 volts nominal

Battery Runtime: Power Levels 1, 2, 3 about 24 hours

Power Levels 4 and 5, about 16 Hours

Power Levels 1, 2, and 3 are for short to normal range, and 4 and 5 are for long-range operation.

Battery Standby Time: Mic Powered Off about 60 Days

Max Distance between Mic and Receiver: Values are for a clear line-of-sight from Mic to Receiver

Outdoors: Approximately 300 feet (91 meters)

Indoors: Up to 75 feet (23 meters)

Latency – 30 ms

About 1/33 rd of a second or less than one frame of 1080p29.97 or 1080i59.94 video

Firmware Updates: Erika's firmware (internal software) is field updatable

Firmware Update takes about 10 seconds to load into Erika.

Computer Operating System Requirements

Android: OS Android 10 or higher and the Android device must have a USB-C port

Older Android Devices without a USB-C port do not accept digital audio.

PC: Windows 10 or newer

Mac: Mac OS 10.12 (Sierra) or higher

Chromebook: 86 or higher



Warranty Information

Convergent Design warrants Erika and all included accessories against defects in material and quality for one year, provided the Erika is register. Without registration, the warranty period is 90 days.

Convergent Design disclaims all other warranties.

Convergent Design will not be liable for damages of any kind, including, but not limited to, compensation or reimbursement on account of the failure of the Erika Mic, Receiver, or any of its accessories, or external storage systems, or any other media or storage systems to record or playback content of any type. Convergent Design's total liability, in all cases, is limited to the actual purchase price.

If you discover a defect, please contact Convergent Design, CDSupport@convergent-design.com

During the warranty period, Convergent Design, at its option, will repair or replace the product or product components, which in its opinion prove defective, provided the unit is returned, freight charges prepaid, to Convergent Design. Parts and components used in the repair process may be recycled or repaired at Convergent Design's sole discretion. Convergent Design will perform this warranty service at no charge to the registered owner, provided the product is shipped prepaid to Convergent Design.

Convergent Design reserves the right to determine whether a needed repair is subject to the warranty as per its provisions stated herein. Transit damage caused by inadequate packing voids the warranty. The warranty will be void if, in Convergent Design's opinion, the product exhibits damage through accident, misuse, misapplication, or as a result of service or modification not authorized in writing by Convergent Design.

Opening Erika voids the warranty unless specifically authorized in advance by Convergent Design.

THE FOLLOWING ARE NOT COVERED UNDER WARRANTY, AND ARE ITEMS FOR WHICH CONVERGENT

DESIGN DOES NOT ACCEPT ANY RESPONSIBILITY:

Damage due to overheating conditions

Damage due to exposure to water, other liquids, or excessive dust or sand

Damage caused by dropping or other rough handling

Damage caused by any over-voltage or reverse-voltage conditions

Physical damage caused to the Mic or Receiver, including damaged caused by cable connections

Damage to any connector by using excessive force or rough handling

Damage to the microphone due to object insertion or blowing into microphone port



Customer Support

Customer support for the Erika Microphone system is available during business hours from 8:00 AM to 5:00 PM Mountain Standard Time, USA

You may also email cdsupport@convergent-design.com with any questions, they will be answered during the same business hours.

Regulatory Information

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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

(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of more of the following measures:

- Reorient or relocate the Erika Receiver
- Increase separation between affected equipment and Erika Receiver
- Consult the dealer or an experienced Radio/Television technician for assistance.

FCC ID: 2AXWYERIKA



CAN ICES-3(A)/NMB-3(A)

This device complies with ISED Canada license-exempt RSS standard(s). Operation is subject to the following two conditions:

1. This device may not cause interference, and
2. This device must accept any interference, including interference that may cause undesired operation of the device.



Le présent appareil est conforme aux CNR d'ISDE Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

1. l'appareil ne doit pas produire de brouillage;
2. l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.



Online Resources

How do I survey my location for Wi-Fi 2.4GHz to check for heavily used channels?

A WiFi Analyzer is used to survey a location's WiFi channel usage. One example is the FREE Net Spot application, available here (<https://www.netspotapp.com/wlan-wifi-analyzer.html>). Net Spot has a beautiful, easy-to-use interface and is suitable for both beginners and experienced network administrators.

The Net Spot app runs on Windows, Mac, Android, iOS, providing you with a visual representation of what WiFi channels are in use, and each signal's relative strength. The more sources that send a WiFi signal out over a single channel, the less desirable it is for use because the other signals will cause interference with Erika. Erika will automatically block out channels with heavy interference. It is preferred to have as many channels available for Erika.

Another option to provide more channels for Erika is to move your local WiFi network up to the 5GHz band, turning off the 2.4GHz transmission. The Net Spot application does operate on the 5GHz channels as well, so you can see how populated those channels are.

Some other WiFi analyzers available (found through an Internet search, Apple App, or Google Play stores) include

InSSIDer – <https://www.metageek.com>

NetCut – <https://arcai.com>

Vistumbler – <https://www.vistumbler.net> – Windows only

WiFi Commander – <https://wifi3d.app>

Wireshark – <https://www.wireshark.org>

Intel's whitepaper on USB3.0 RF interference on 2.4 GHz Wireless devices – found here -

<https://www.intel.com/content/www/us/en/products/docs/io/universal-serial-bus/usb3-frequency-interference-paper.html>

Safety

CHOKING HAZARD

The Erika Microphone/Receiver are small devices capable of being swallowed by unsupervised children. Not suitable for children under age 3.

The Erika Microphone/Receiver is not a toy and should not be used by any child except under direct adult supervision.

MEDICAL DEVICE HAZARD

Implantable Cardioverter Defibrillators (ICD) and Pacemakers can be adversely affected by a magnetic field. The American Heart Association, Inc. recommends keeping all magnets at least 6 inches from these devices. Thus the



Erika Microphone and magnet should be kept away from these medical devices. The Erika mic will still work when placed over 6 inches from these devices.

Do not insert anything into the Erika Mic port, which is the opening on the front of the Erika Mic.

Do not immerse Erika in any liquid or allow any liquid to enter the Erika case.

Do not make unauthorized alterations to Erika or open the case.

Do not expose Erika to excessive heat. Examples are extended periods in direct sunlight, hot vehicles, or other heat.

Please dispose of it correctly, following local regulations. The Erika mic contains a small Lithium-Polymer battery. Do not incinerate.

	<p>This symbol means the product must not be discarded as household waste and delivered to an appropriate collection facility for recycling. Proper disposal and recycling help protect natural resources, human health, and the environment. For more information on the disposal and recycling of this product, contact your local municipality, disposal service, or the location where you purchased this product. The battery in this product is not removable or replaceable.</p>
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