LiveMic2 Wireless Bluetooth Microphone & Transmitter:
User Guide for the Speech Recognition Software User

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Contents

Introduction & Key Features

The LiveMIC2, a product of Alead, Inc., is a unique wireless transmitter which can connect to a variety of Bluetooth-equipped devices, including mobile devices, personal computers, audio receivers, PA systems and headphones. It includes built-in omni- and multi-directional microphones; in addition, it hosts an external microphone jack to allow use with any analog headset microphone using a 3.5 mm plug. In so doing, it allows a user to turn almost any wired analog microphone into a convenient wireless microphone.

Key features:

- Bluetooth connection using A2DP (Advanced Audio Distribution Profile) and HFP (Handsfree profile)
- Separate on-board omnidirectional and unidirectional microphones
- External microphone jack for attachment of most common microphones using a 3.5 mm plug
- User selectable microphone gain control (total of 8 steps from lowest to highest)
- Rechargeable Lithium ion battery supported with included mini USB cable which can access power via any USB charger or available USB port
- Two user-selectable pairing modes including "Type A" (audio receivers, speakers, PA systems and headphones) and "Type B" (iPhones, iPads, Android phones, other smartphones, tables, personal computers (Windows and Mac)
- Mic muting control
- Hinged clip for attachment to shirt, or laptop lid

Detailed Specifications:

- Rechargeable Li-Polymer battery with up to 8 hr of talk time and 100 hr of standby time
- Size: 5.5 cm x 2.8 cm x 1.7 cm (LxWxD)
- Weight: 21 gm (0.8 oz)
- Mic frequency range: 50-20KHz; sensitivity 55dB± 2dB
- Charging: Using included USB to micro-USB cable; 2 hr to maximum charge
- Wireless range: up to 20m (66 ft.)
- Supported Bluetooth profiles: Headset, Handsfree and A2DP

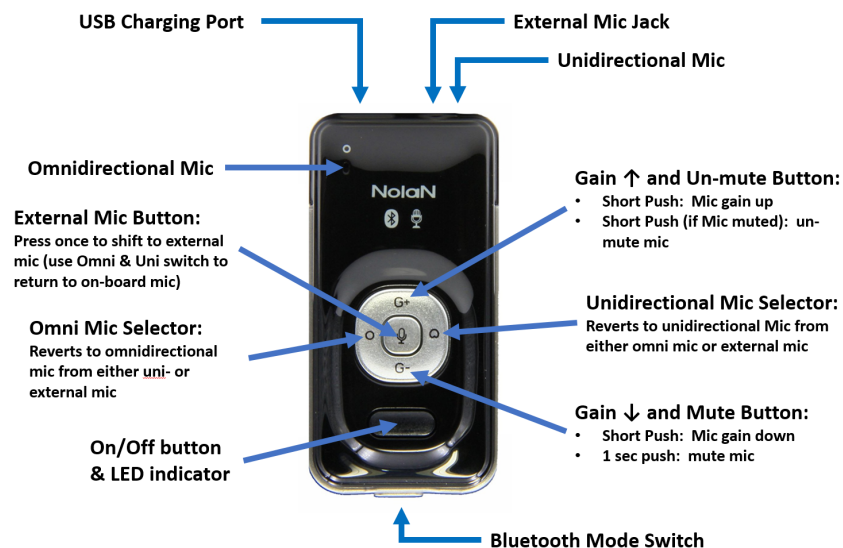**Included in the box:** The following parts are included within the box:

1. LiveMIC2 microphone/transmitter
2. USB to mini USB charging cable
3. Lapel microphone
4. Quick Start Guide

Getting started

Charging: Although your LiveMIC2 will arrive with a partially charged lithium ion battery, we highly recommend that you charge it for 2 hours before using it. Charging can be accomplished with the included charging cord which can be connected to either an AC to USB adapter or any available USB port on a computer. Charging status can be assessed as follows:

- During charging the LED will appear a bright amber
- When fully charged the LED will be dim or off

Overview of functions

USB Charging Port

External Mic Jack

Unidirectional Mic

Omnidirectional Mic

Gain ↑ and Un-mute Button:
- Short Push: Mic gain up
- Short Push (if Mic muted): un-mute mic

External Mic Button:
Press once to shift to external mic (use Omni & Uni switch to return to on-board mic)

Unidirectional Mic Selector:
Reverts to unidirectional Mic from either omni mic or external mic

Omni Mic Selector:
Reverts to omnidirectional mic from either uni- or external mic

Gain ↓ and Mute Button:
- Short Push: Mic gain down
- 1 sec push: mute mic

On/Off button & LED indicator

Bluetooth Mode Switch

Use of the on/off button

The LiveMIC2 is powered on and off with sequential long pushes of the power button as shown below:

Press 2 sec ➡ **Power On**

Press 2 sec ➡ **Power Off**
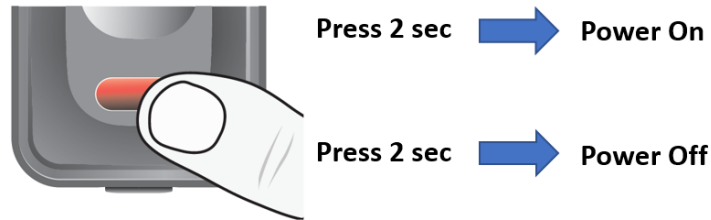
Pairing with your preferred device

First, you must consider the type of device you plan to connect with and set the sliding switch on the lower edge of the LiveMIC2 to the appropriate setting:

- Position A: Select this for use with Bluetooth equipped audio receivers, speakers, PA systems and headsets.
- Position B: Select this for use with personal computers, iPhones, iPads, Android devices and other small mobile devices.
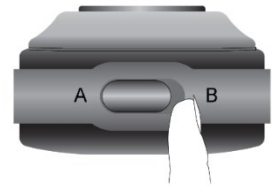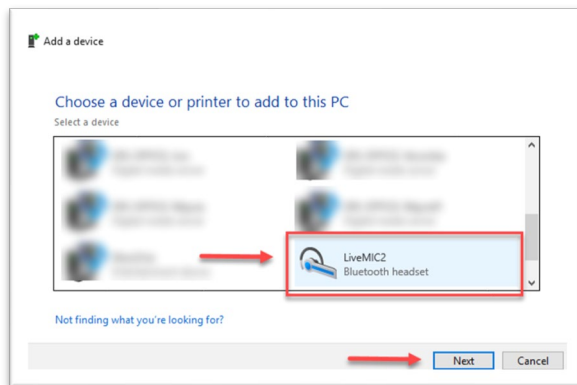
Pairing with a Type A Device (Speaker or Audio Receiver)

1. Set the sliding switch on the bottom edge of the LiveMIC2 to position "A"
2. With the LiveMIC2 turned off, press and hold the power button until it begins rapidly flashing blue. It is now in the Type A device pairing mode.
3. Initiate the pairing functionality on your remote audio receiver or other device
4. When the two devices are paired, the blue LED will change to flash slowly
5. Note: If your device requires that you enter a pin code, you can use any of the following: 0000, 1111, 1234, and 8888.

Pairing with a Type-B Device (Smartphone, personal computer, etc.)

1. Set the sliding switch on the bottom edge of the LiveMIC2 to the "B" position

2. Open the Bluetooth software on your mobile device or computer using the method appropriate for your device and initiate the pairing mode. Keep in mind that the exact method used to add a Bluetooth device is dependent upon your devices operating system and its installed software. If there is a small Bluetooth icon on your computer taskbar (very bottom of screen) you can right-click on this and select "Add a Bluetooth device". Alternatively, you can go to Control Panel > Devices and Printers and then click on "Add a device".

3. If currently on, turn off the LiveMIC2 by holding the power switch for about 3 seconds

4. Put the LiveMIC2 into the pairing mode by pressing and holding the power button until the LED begins alternately flashing blue and amber.

5. From your mobile device or PC, look for identification of "LiveMIC2" and select this. If a PIN code is requested, enter "0000".

6. For mobile devices, nothing more should be necessary; for a personal computer, you should go to the Sound control panel and select the LiveMIC2 as your default audio device (see adjacent image).
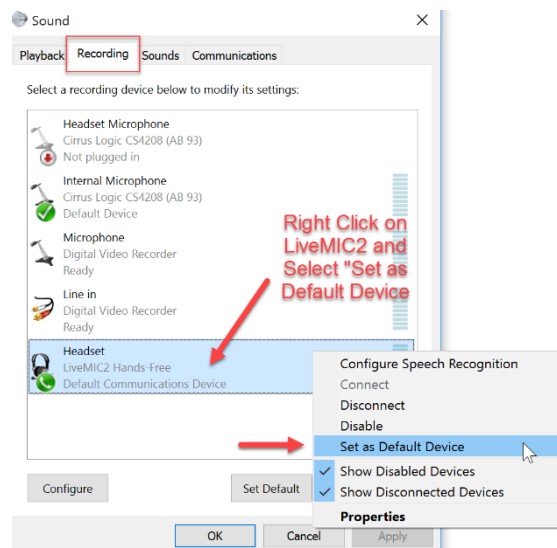
Basic Use of the LiveMIC2

General Set-up:

Basic use of the LiveMIC2 is straightforward. What follows relates solely to use with a computer or mobile device. In general terms, follow these steps:

1. Pair your LiveMIC2 with your chosen device using the methods shown above.
2. Decide whether you will be using the on-board mic(s) on the device or using an external mic and if the latter, connect the external microphone.
3. As needed, adjust the microphone gain as needed to optimize performance

Omni- versus Unidirectional Microphone Selection

Omnidirectional versus unidirectional microphone: the LiveMIC2 comes with two on-board microphones and these are designed for different purposes:


- **Omnidirectional Mic:** this is located on top left of the unit (above and to the left of "Alead"words and is designed to accept sound from all directions. This is ideal when recording a meeting and it is best to lay the microphone down when accepting sound in this mode.
- **Unidirectional Mic:** the unidirectional mic is located on the top edge of the LiveMIC2, just to the side of the external mic jack, and is designed to pick up sound directly at the microphone. This is the mode you would use when recording your own or someone else's voice and typically while being held in your hand and pointed toward your mouth or another intended sound source.

Changing between the on-board mics and an attached external microphone. This is as simple as a button push.

- To switch to an external microphone, simply give a single push to the central mic selector button. You won't see anything happen, but the external mic is now active.

- To switch back to either of the on-board microphones, simply give a single push to the omni or uni buttons that are to the left and right of the central external mic button. Again, you won't see any change, but the selection will take place.
- To switch between the omnidirectional and unidirectional mics, simply give a single push to the button associated with your desire mic.
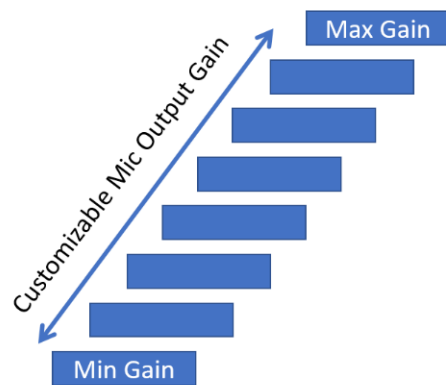
Adjusting the gain
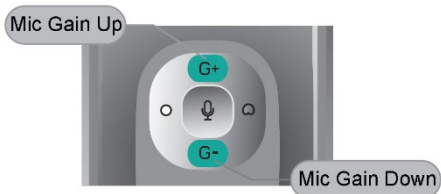
A unique and very helpful feature of the LiveMIC2 is the ability to set the mic output gain. Doing so allows a user to compensate for the relative sensitivity (or lack thereof) of any microphone being used with the LiveMIC2. Gain is adjusted up and down using the G+ and G- button on the device. There are 8 steps from highest to lowest setting and each step is initiated with a single brief touch of the gain-up or gain-down button. Unfortunately, there is no visual or other indication of the gain status.

Muting the LiveMIC2

Muting the LiveMIC2 is accomplished with a 1 second push of the gain-down button. Un-muting the device is accomplished with a single brief push of the gain-up button.
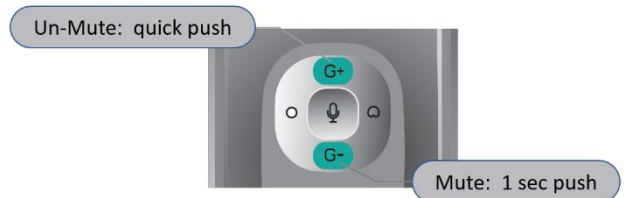
Using an External Microphone

As described above, directing the LiveMIC2 to use an external microphone requires nothing more than a single brief depression of the central external mic button and plugging the microphone into the mic jack. This scenario is the true beauty of the LiveMIC2 in that it converts any analog microphone with a suitable 3.5 mm plug into a Bluetooth wireless microphone. See adjacent image for wiring requirements.
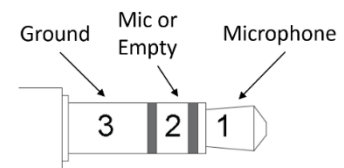
The general set-up for use of an external microphone is overviewed below:
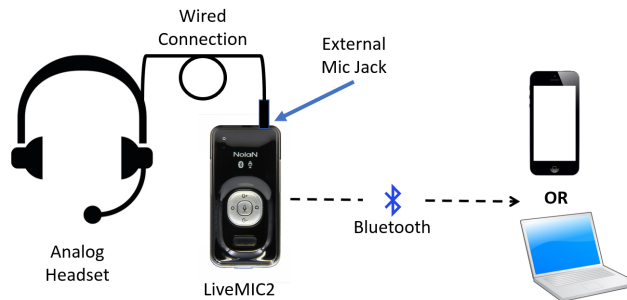
Compatible Microphones: Speech Recognition Solutions has tested the LiveMIC2 with a variety of microphones and have yet to find one with which it did not work. Some specific mics with which we can attest to excellent compatibility are the following:

Headset Mics	Other Mics
Andrea NC 181, NC 181MV	Olympus ME52W*
Andrea NC 185, NC 185MV	SpeechWare TabletMike*
Audio Technica 8HEmW	
Sennheiser ME3	*Both are "snub-nosed" mics and allow use
SpeechWare FlexyMike DEC	of the LiveMIC2 as hand-held microphone
SpeechWare FlexyMike SEC	

If you have problems with any microphone, be sure to try adjusting the microphone gain up or down as needed for the software application. Newer versions of the Sennheiser ME3 have a less sensitive mic capsule and require that you jack up the gain a bit.

Confirming Use of an External Microphone: If you ever find yourself in doubt about whether an external mic is being properly recognized by the LiveMIC2, it is suggested that you open the sound control panel on your Windows (Control Panel > Sound) or Mac machine and simply look to see if there is a visual indicator of sound input and whether this is impacted by unplugging the external mic. Remember that you must be viewing this from the "Recording" tab of the Sound control panel. See graphics below:

Indication when an external mic is the chosen with LiveMIC2 using the sound control panel on a Windows computer:

Talking with external mic connected	Headset LiveMIC2 Hands-Free Default Communications Device
Talking with external mic unplugged	Headset LiveMIC2 Hands-Free Default Communications Device

Indication when external mic is not the chosen mic with LiveMIC2:

Talking with external mic connected	Headset LiveMIC2 Hands-Free Default Communications Device
Talking with external mic disconnected	Headset LiveMIC2 Hands-Free Default Communications Device

Using the LiveMIC2 with Speech Recognition Software

Bluetooth and Speech Recognition: General Considerations

Frequency Range: Although earlier versions of Bluetooth used a narrow band audio signal and did not necessarily provide the best possible results with the demanding needs of speech recognition software, newer devices, including the LiveMIC2, use wide-band Bluetooth and will transmit the full range of human speech frequencies. Most human speech occurs in the range of 300 Hz to 3.4 KHz and the frequency range of the LiveMIC2 (20Hz – 50KHz) more than covers this.

Sampling Rate: At the heart of the LiveMIC2 is a process that converts the continues analog signal coming the chosen microphone into discrete digital samples. The frequency with which the device assesses the analog signal and turns it into a digital signal is the "sampling rate" and is expressed as a "samples per second" figure. In general, the higher sampling rate, the better in terms of recreating the original continuous sound signal. Practically speaking, though, there may be a limit in terms of what the human ear can perceive and therefore a point beyond which further increases in sampling rate does not result in an improved experience. The big question for the user of speech recognition software which has to interpret and convert the audio signal into text, is what is the ideal sampling rate and what impact does less than ideal sampling rates have on the process.

DNS 10.1 and below use 11.025 kHz 16 bit Mono
DNS 11 uses sampling rates of 11.025 kHz 16 bit Mono and 22.5 kHz 16 bit Mono
Dragon 15 states the need for a minimum of 16 Khz sampling
DMO: Any microphone that can record audio data in 16 kHz, 16-bit mono format is supported.

LiveMIC2: audio sample rate will be HFP 8K and A2DP 44.1K

Audio Latency: Another consideration is the lag time which occurs in the process of digitizing and transmitting a sound, a process termed audio latency. In the realm of Bluetooth, audio latency depends upon to factors: 1) the data format and 2) the Bluetooth codec. Long latency periods are most critical in the context of a combined audio and video scenario. If the sound is transmitted via Bluetooth and video seen in real-time, the lack of synchronization will be apparent and impair the experience. There are two reasons that latency is NOT an issue with the LiveMIC2, particularly when used with speech recognition software:

1. The LiveMIC2 employs the latest low latency Bluetooth technology
2. Unless extremely long, the latency is relatively meaningless to a speech recognition user since it is a one-directional audio-only signal and, after all, what does it matter if there is a 40 vs. 300 msec delay?

Reference on Bluetooth Audio topics:
1. http://plugable.com/2016/06/22/understanding-bluetooth-wireless-audio/
2.

Dragon NaturallySpeaking

 All versions of Dragon NaturallySpeaking, including the Home, Premium, Professional, Legal and Medical versions are fully compatible with a Bluetooth sound source, including the LiveMIC2. The set-up is straightforward and you should follow the Dragon instructions for adding a Bluetooth audio device as your sound source.

We add a few simple instructions to assure simplicity in setting up this device:

1. If you haven't done so already, start by adding the LiveMIC2 to your computer as a sound source. (If your computer does not have built in Bluetooth, an inexpensive Bluetooth dongle will serve the purpose. In this case, be sure to install any needed Bluetooth drivers.) Detailed instructions are provided earlier in this guide. Once your LiveMIC2 is paired and you have an active connection, proceed to the next step
2. Do some preliminary gain setting of your LiveMIC2 using either the external microphone or on-board unidirectional mic on the device (whichever you intend to use). We recommend opening the sound control panel, identifying the LiveMIC2 on the Recording tab, and doing some talking to confirm that the device is connected and a sound signal getting through. At this point you should adjust the gain up or down as needed until the sound deflections on your sound control panel is extending up about half way during ordinary speech into your microphone.

3. Open Dragon and add your Bluetooth source (the LiveMIC2) as a new source to your existing Dragon user profile (alternatively you can set up an entirely new user profile, but this is not necessary). Instructions for adding a new source vary based on the version and proceed as shown below:

Dragon 13,14 & 15:

1. Go to Profile > Manage Dictation Sources
2. From the "Manage Dictation Sources" window select your new audio source
3. Click "Add New Dictation Source"
4. Follow ensuing steps
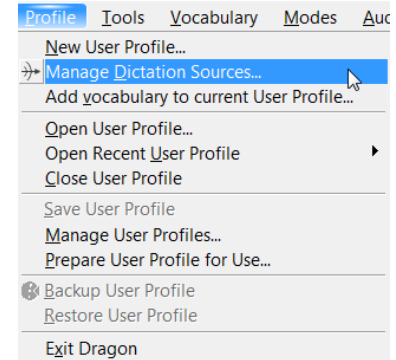
Dragon 12 (DMPE2) or Equivalent

1. Go to the Profile menu and select "Add dictation source to the current User Profile …"
2. On the next screen select the appropriate type of sound source from the drop-down menu
3. On the next screen select the actual sound source
4. Follow all subsequent instructions
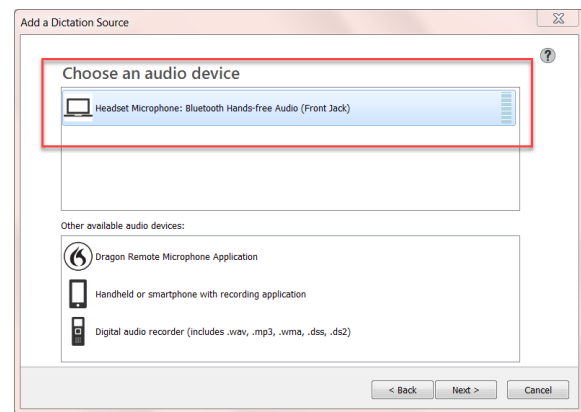
4. If you get any error messages during initial training indicating the mic volume is either too high or low, simply adjust the gain on the LiveMIC2 to adjust the output volume as needed (gain up and gain down button on the LiveMIC2) to make Dragon happy.
5. Once you've set up the LiveMIC2 as your sound source, you can alter the external mic or use the onboard mic (we recommend the unidirectional mic in this situation). We recommend, however, that if you change the mic, re-run the Sound Set-up Wizard (say "Check Audio")

Dragon Medical One (DMO)

DMO is the newest cloud-based speech recognition product aimed at the medical audience and use is growing rapidly in the hospital community. Although Nuance tends to discourage a Bluetooth microphones with this product, Speech Recognition Solutions has found the LiveMIC2 to be a very accurate and convenient means of connecting microphones to DMO. We offer the following advice:

- DMO Desktop Application: When using a locally run version of DMO, if the microphone is paired with the computer at the time DMO is opened, it will show up as "Headset (LiveMIC2 Hands-Free)" and should be chosen. Beyond this, there is nothing special to do.
- Server Based Application: When DMO is presented via virtualization software such as Citrix, DMO will present only two microphone options, 1) PowerMic Mobile and 2) the last on-board sound source used by the computer. It is essential, therefore, that you you set the LiveMIC2 as the default sound source for your computer BEFORE opening DMO. This is done from your sound control panel and requires that you follow these steps.
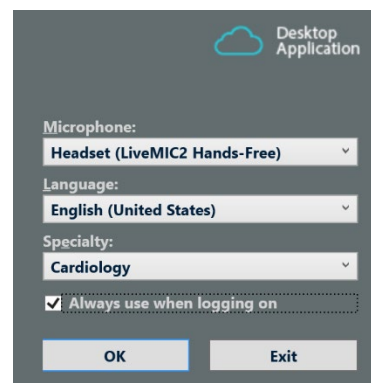
1. Make the Bluetooth connection between the LiveMIC2 and your computer
2. Open the Sound control panel by going to Control Panel > Sound
3. Go to the Recording tab on the Sound control panel
4. Identify the LiveMIC2 as a sound device
5. Right click over the LiveMIC2 and select "Set as Default Device" (see adjacent image)
6. Click "Apply" and close the sound control panel
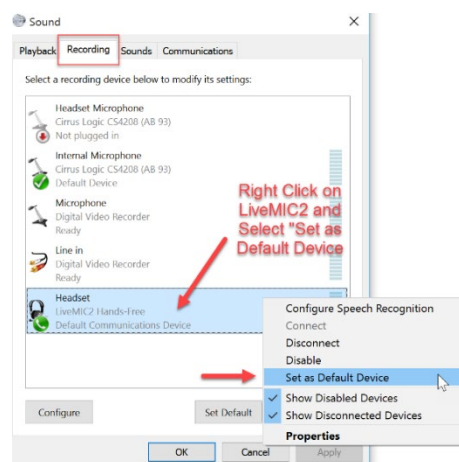
Speech Recognition on an iPhone or iPad

First, it is worth saying that for most applications, simply speaking into the on-board microphone is generally the easiest option. Situations in which you may benefit from a wireless connection to speech recognition on your mobile device(s) are the following:

1. Excessive external noise (connect with the LiveMIC2 and use a good noise cancelling headset)
2. Need to be a distance from the device (accuracy falls off quickly when moving away from the on-board mic on a mobile device)

Enabling speech recognition: navigate to Settings > General > Keyboards and be sure "Enable Dictation" is selected.

Pairing your mobile device with the LiveMIC2: Follow the procedure shown above. You will want to connect with the slider switch in the "B" position.
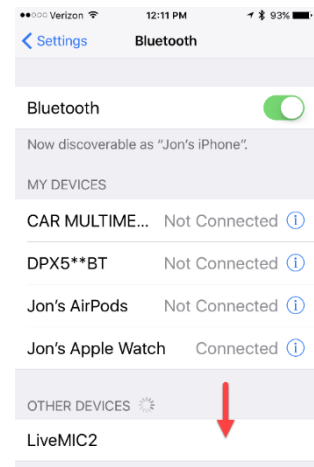
- The LiveMIC2 is put in the pairing mode by starting with the device off and a long depression of on/off button. You will see the LED alternately flashing blue/amber.
- If not already activated, enable Bluetooth on your mobile device by going to Settings > Bluetooth and turn it on
- Open the Bluetooth function to see all Bluetooth devices. If the LiveMIC2 is in the pairing mode it should show up in the "Other Device" category. Click on it to initiate the connection
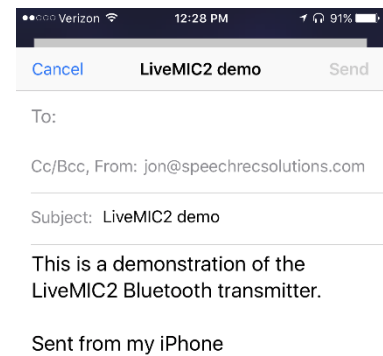
Using speech recognition on the mobile device: Once you've established and have an active Bluetooth connection between the LiveMIC2 and your mobile device, it will replace the on-board microphone and become the default with any speech input. Initiating speech recognition on your mobile device requires that you are within an application that will accept speech-to-text (most application do) and then that you touch the microphone icon on the iOS keyboard.
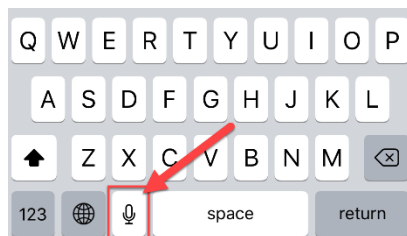
A few hints on using the speech recognition on your iOS device:

1. After clicking on the microphone icon on your virtual keyboard, wait for the sound indicator at the bottom of the screen to be visible and active (see image below).

2. Best accuracy is obtained if you enunciate carefully and speak in phrases and complete sentences.
3. You will need to say all punctuation such as "comma", "period", "new line", "new paragraph", etc.
4. Keep in mind that dictation will "time-out" on a regular basis (typically every minute or so) so you will need to keep an eye on the sound indicator at the bottom of the screen and re-initiate speech to text whenever it stops. Why does this happen? Apple offers the speech recognition as a free service and it is processor consuming, so they don't want users dictating the great American novel on their dime. If you want something less constraining, consider purchasing Dragon Dictation or Dragon Anywhere. Dragon Dictation is free but is not integrated into other iOS applications. With this application it creates the text independently and then allows you to conveniently store it in the clipboard or place it directly into a new SMS, email, or Twitter/Facebook post. Dragon Dictation works nearly flawlessly with dictation arising from the LiveMIC2.

References related to speech recognition on an iPhone or iPad:

https://turbofuture.com/consumer-electronics/How-to-use-Siri-voice-to-text-on-iPad-and-iPhone-to-dictate-articles-and-blogs

https://www.nuance.com/mobile/mobile-applications/dragon-dictation.html

Troubleshooting

Although the LiveMIC2 is very predictable and we have not observed actual device dysfunction, in a small device with lots of functionality, there is a lot of room user-related issues which may contribute to frustration.

Connection Problems

Although it has come a long way, Bluetooth connections can sometimes be a little tricky to get going in the first instance. Complicating matters is the variety of Bluetooth drivers seen on different computers and different presentations.

No Bluetooth on Computer

Although most modern computers arrive with Bluetooth installed, an occasional computer may be lacking Bluetooth capabilities. In this scenario, it is recommended that you obtain a simple USB Bluetooth adapter. These are inexpensive, easy to install, and work well with the LiveMIC2. One specific device we have tested and use is the Plugable 2.0 USB Adapter, available from our site and others.