Echo Meter Touch Guide for iOS

2025-08-25

Contents

1. Overview

Echo Meter Touch app with an Echo Meter Touch Ultrasonic Module allows you to listen to, record, and identify bats with your smartphone or tablet. The Echo Meter Touch offers exclusive features and unprecedented ease-of-use for a handheld bat detector.

Echo Meter Touch Ultrasonic Modules are available from www.wildlifeacoustics.com/products/echo-meter-touch

Echo Meter Touch Ultrasonic Modules

Since the first Echo Meter Touch Module was released in 2014, there have been multiple different modules with different types of connectors.

Modules with Lightning connectors were produced between 2014 and 2022.

Modules with Micro-USB connectors were first released in 2017, and modules with USB-C connectors were released in 2022. These were initially labeled "for Android" and until 2024 were incompatible with all iOS devices.

In April 2024, a new firmware update for Echo Meter Touch modules with Micro-USB and USB-C connectors enabled compatibility with iOS devices that have USB-C ports. For instructions on installing this firmware update, see Module Firmware Updates .

Echo Meter Touch (original)

The original Echo Meter Touch was released in 2014 and discontinued in early 2017.

Echo Meter Touch 2

Echo Meter Touch 2 is intended for nature enthusiasts and batting hobbyists.

Versions of this module have been released with Lightning, Micro-USB, and USB-C connectors. The USB-C version is in current production.

Echo Meter Touch 2 Pro

The Echo Meter Touch 2 Pro is designed for bat professionals and features a higher quality microphone, adjustable gain, and higher sample rate.

Versions of this module have been released with Lightning, Micro-USB, and USB-C connectors. The USB-C version is in current production.

App Features

Listen to bat echolocations in real time

Echo Meter Touch translates bat echolocations into frequencies that are audible to humans using two technologies.

Wildlife Acoustics' patented Real Time Expansion (RTE) allows you to listen to bats in real time with unparalleled fidelity. RTE maintains the timing and tonality of the original echolocations.

Heterodyne (HET) listening is also available, for those accustomed to that way of hearing bats. Manual and automatic tuning is available.

View the echolocations on a spectrogram

A real-time spectrogram shows the frequencies and timing of the echolocations. Scroll back in time and zoom in on previous "bat passes."

See most likely bat species in real time

The Auto ID feature analyzes the echolocation calls and shows the two most likely bat species matches in real time. In North America, a portrait of each bat taken by renowned bat expert Merlin Tuttle will be show as well. This is the same technology used in our professional Kaleidoscope Pro Bat Auto Identification software. Currently, the app can identify 38 species in North America, 31 in Europe, 63 in the neotropics and 20 in South Africa. For more information on Kaleidoscope and a full list of species, visit our website.

> ⚠️ **Important:** The Echo Meter Touch Auto ID feature can misidentify species. Its results should not used, by themselves, as the basis for scientific claims. See Auto-ID Limitations *(on page 6)* for further details.

Record to WAV files

Use triggered recording to automatically save bat passes to full spectrum WAV files for analysis on a computer or to view on your mobile device. Or use manual record mode to control start and stop of recording. View the recording spectrogram and add voice or text notes. Listen to the recording using RTE, HET, or traditional Time Expansion Playback (playback at fractional speed to make the ultrasound audible).

See your path and recording locations

View your path, including recording locations in satellite or road map view. View identified species codes directly on the map. Go to the recording's spectrogram from the map view. Transfer to your computer to view in Google Earth. Your mobile device must have GPS capability or you must use a Bluetooth GPS receiver for this functionality.

Transfer recordings to your computer

The Echo Meter Touch can transfer full spectrum WAV recordings to your computer over a wireless network or through a USB cable. Using Wi-Fi, the app bundles the recordings in a .zip folder and allows download by entering a URL in any web browser.

Share recordings via email or MMS messaging

You can share recordings via email or MMS messaging and import and open files that have been shared with you.

Auto-ID Limitations

Because bats vary their echolocation calls in response to a wide variety of needs, **no automated call identification can achieve 100% accuracy in species identification.**

Nevertheless, in the hands of well-trained experts, bat detector recordings can be used to identify many species, providing invaluable discoveries. The Echo Meter Touch allows high quality recording suitable for analysis by experts.

The built-in Auto-ID feature also suggests the two most likely bat species for each recording, for the enjoyment of enthusiasts hoping to learn more about bats. These automated identifications, though largely accurate, **should not be relied on as a basis for scientific research**.

Auto-ID is intended for use in analyzing recordings of **single bats in free flight in low clutter environments**.

Recordings of roost emergence, multiple or captive bats, bats in high clutter environments, or bat social calls are not suitable for Auto-ID.

In addition, **the Auto-ID feature does not include every possible bat** for each of the covered regions. Therefore, if a bat that is not included is recorded, it will be identified by the app as a species with a similar echolocation call type.

Contact Us or Review the App

Please contact us with any suggestions, issues, questions, or comments. We are always looking for ways to improve the app for you. Tap **Contact Us** on the Information page of the app to send your feedback.

If you like the app, please let others know by selecting **Review this App** from the Information page.

2. Using Echo Meter Touch

This section describes how to use the Echo Meter Touch app to monitor bats.

> **Note:** The display examples in this guide were composed on iPhone in portrait orientation. You can also view the app in landscape mode. On iPad, there are minor differences in layout due to the larger display size. In addition, the app supports Apple's Split View which allows you to display two apps on an iPad's screen at the same time. You can view Echo Meter Touch at the same time as another app, for example a GPS app, a weather app, or a notes app.
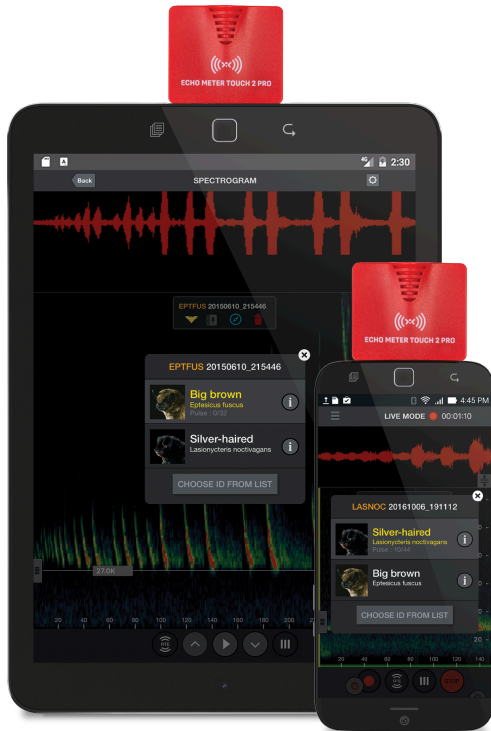
Connect the Ultrasonic Module

In order to monitor and record ultrasound in **Live Mode**, the EMT module must be connected to your smartphone or tablet via USB.

Procedure

1. Install the Echo Meter Touch app from your device's app store.

2. If the plug on your EMT module does not match the data port on your mobile device, connect an appropriate adapter *(on page 31)* to your EMT module.

3. If your mobile device has a case that prevents the EMT module from fully connecting, connect a USB extender to your module.
   Beginning in August 2025, EMT modules are sold with a USB-C extender.

4. Connect the EMT module to your mobile device.
   Your device will ask if you want to open the Echo Meter app if it is not already open.

5. Open the Echo Meter app and go to **Live Mode**.

*The **Live Mode** screen will display a green **START** button and the message "Ultrasonic module detected."*

Troubleshooting

If the **Live Mode** screen displays the message *"Please plug in the Echo Meter Touch,"* make sure the following are true:

- ◦ The EMT module is fully connected and not blocked by your device's case.

- ◦ If using an adapter, it is a compatible adapter *(on page 31)*.

6. Rotate your device so that the EMT module is pointed upwards.

Troubleshooting
If the app interface does not rotate to match your device's orientation, ensure that your device's screen rotation lock is disabled.

7. Tap **START** to begin monitoring in **Live Mode**.

Navigating the App

To navigate through the app, press the main menu symbol. You can go to other sections of the app while still hearing and recording bats. You can even continue to monitor and record bats in the background while using other apps.
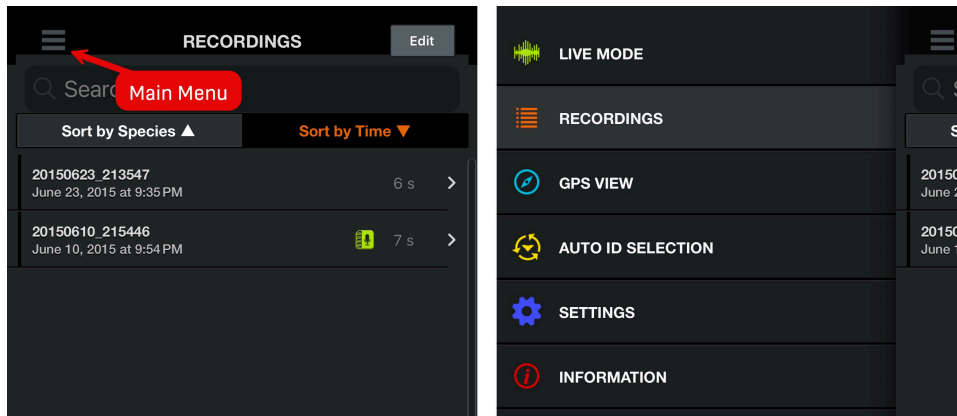
Monitoring in Live Mode

In **LIVE MODE**, ultrasonic data is streamed to your mobile device. The frequency and duration of the bat echolocation calls are visually represented in a scrolling spectrogram.

Waveform

Spectrogram

Frequency scale in kHz

Time scale in milliseconds
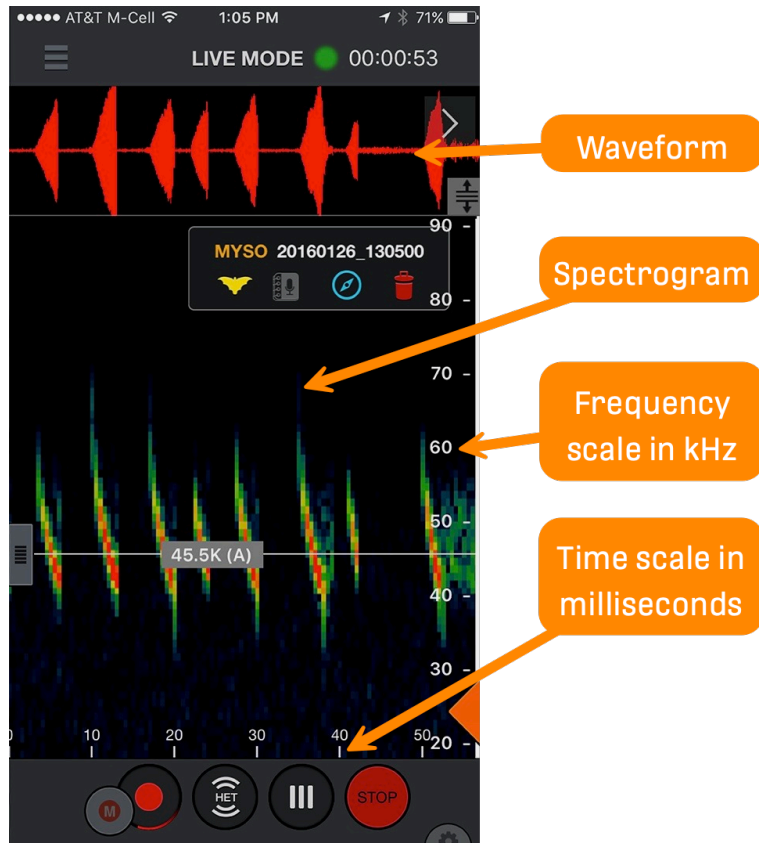
In **LIVE MODE** you can scroll back and zoom into portions of the scrolling spectrogram. After scrolling back in time, a "Return to real-time" button appears at the top right of the screen; press to jump forward to real-time. You can scroll back in time through up to 10 minutes of history. The app will intelligently reduce the history if the mobile device storage is nearly full. A frequency reference line allows viewing a specific frequency.
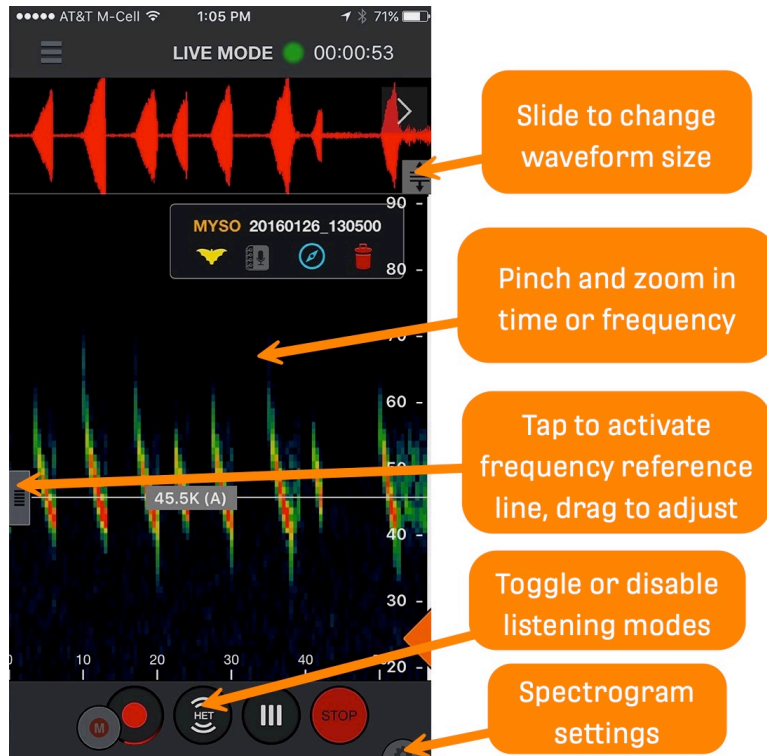
You can listen to bats using Wildlife Acoustics patented Real Time Expansion (RTE) or Heterodyne (HET). RTE translates the ultrasonic sounds to a range that is audible to humans by taking tiny snippets of the sound and slowing it down. Since there is quite a bit of space in between bat echolocation calls relative to the length of the call, the space in between is used to play back the slowed down call. When in HET mode, double tap the grey frequency reference control to go into auto-het mode. This will constantly tune to the frequency with the most energy above the Trigger Minimum Frequency setting (see below) or a minimum of 10 kHz for EMT1 and EMT2 Pro or 16 kHz for EMT2. Just drag the grey slider on the left side to manually tune.

A bandpass filter is implemented based on the zoom level of the frequency axis in all listening modes. If you zoom in frequency, you will only hear the frequencies visible on the screen. If there is a quite a bit of low frequency noise, or the recorder is picking up its own output, you can zoom such that the noise is not seen on the screen and filter for a cleaner sound. You can also filter out the higher frequency noise of the EMT2 if you do not have very high frequency bats. Auto-HET will only tune to frequencies visible on the spectrogram based on zoom level.

Tap the **Settings** icon to open the spectrogram settings panel. In portrait orientation, it appears as shown; in landscape orientation it appears at the top right of the screen. Here you can adjust the following settings:

Spectrogram Brightness

> Adjust the overall brightness of the spectrogram.

Spectrogram Contrast

> Adjust the level of visual contrast between loud signals and quiet signals.

Trigger Minimum Frequency

> Set the minimum frequency at which a signal will trigger recording.

Spectrogram FFT Size

> Adjusts the horizontal and vertical resolution of the spectrogram.

> The default setting of 256 is recommended for general use.

Smaller settings work well for short calls that sweep a wide frequency range, like the feeding buzzes of many species.

Larger settings are suited to calls with smaller or slower changes in frequency.

Spectrogram Smoothing

Applies visual smoothing to the spectrogram display.
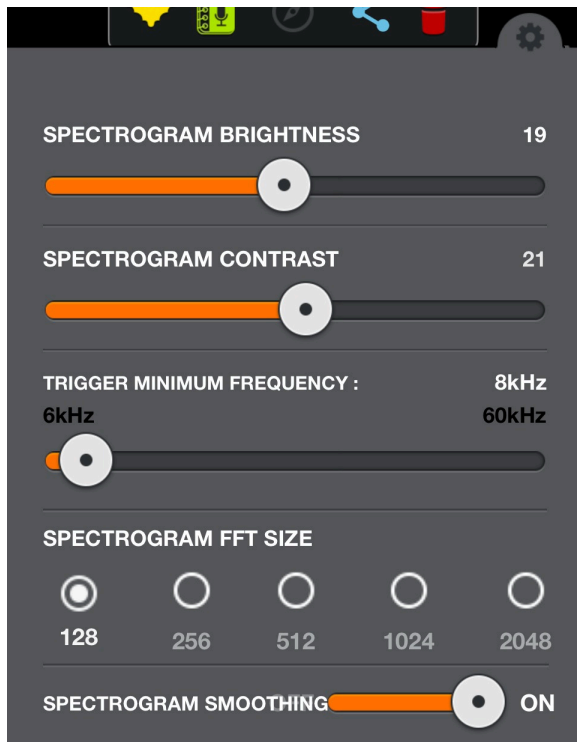
In Compressed mode, the Echo Meter Touch only shows spectrograms containing ultrasonic signals. The spectrogram does not scroll unless there is a signal such as bat echolocations. In Expanded mode, the spectrogram scrolls in real time. Use this mode to examine the timing between previous bat echolocations. Because the signals scroll too quickly, this mode is not recommended for monitoring.


Toggle between Compressed and Expanded mode (Expanded shown)

Tap the **STOP** button to stop streaming data and put the Ultrasonic Module into a low-power state. Press **START** to resume.

Configuring Auto-ID

Enter Auto ID mode to view a list of available regions. Current regions are North America, Europe and United Kingdom, and Neotropics. There is also a South African region that is in beta. Check a region to select all bats in that region. Tap a region to learn more about the species and to select only bats in your area.
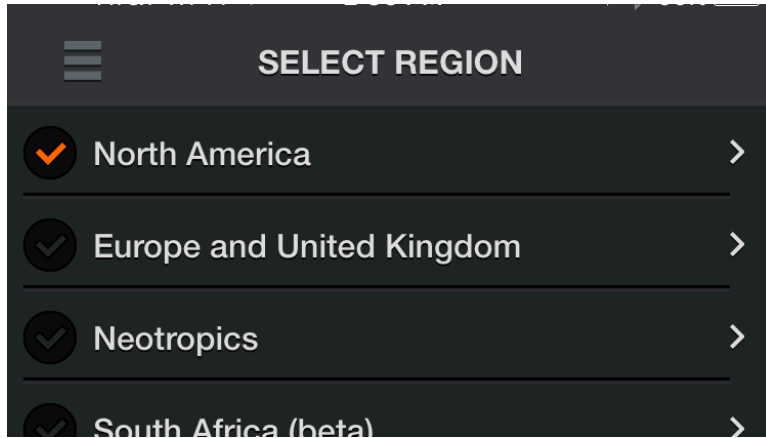
A dropdown menu allows you to easily select only bats in your North American state or Canadian province.
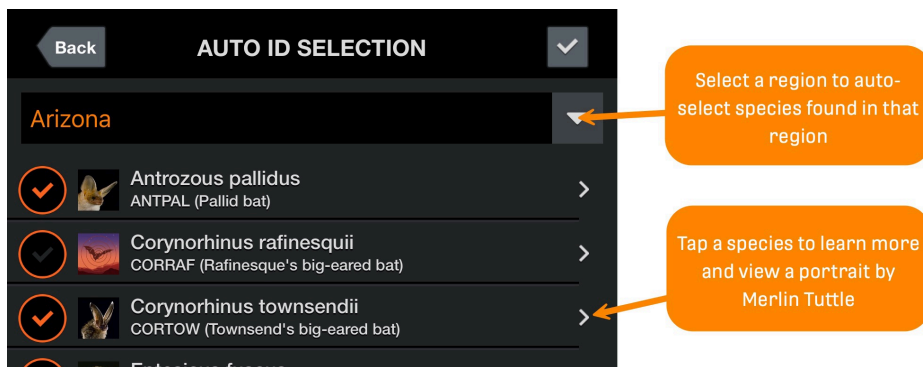
After you select the bats to identify, you can automatically identify them in **LIVE MODE.**

Recording in Live Mode

There are two methods of initiating a recording; using triggers and manually. Using triggered recording, a recording is triggered only when bat activity is detected and is ended when there is no activity or 15 seconds have elapsed, whichever comes first. As long as recording is turned on, the device records automatically when bats are present, even when the app is running in the background. There is also a small manual record button which you can use to initiate a recording. This can be used on its own or while triggered recording is activated if the trigger misses something. When you press the manual button, a recording starts 5 seconds back in time and continues until you hit the button again or 15 total minutes is reached. The NOISE filter will not act on manual recordings and Auto-ID will only run in real time if the length is under 60 seconds.

During triggered recording, the Trigger Minimum Frequency, in the Spectrogram **Settings panel**, should be set as high as possible but lower than any expected bat echolocation. For North America and the UK, 12 kHz works well. Lower frequency signals will not initiate a recording. The Threshold can be set between 6 kHz and 60 kHz.

During recording, animation appears around the **Record** button. A white outline forms around the recording on the spectrogram when a recording is in process. In addition, a glowing red orb appears on all title bars in the app when recording is activated and glows green when a recording is triggered. The duration of the current recording is shown to the right of the orb. Using triggered recording, the duration of the

current session is shown and using manual recording, the duration of the current recording is shown. At the conclusion of the recording, a label shows the filename. Tap appropriate icon in the label to:

- Identify the species of bat automatically, or override the species tag.

- Append voice or text notes to that recording.

- Navigate to the recording location in GPS view.

- Delete the recording.

Recordings with no bat detected are automatically tagged as "NOISE" and automatically deleted. You can choose to not auto-delete NOISE files in the **Advanced Settings** screen.

Using triggered recording, each time you press the Record button a session is started. The session is concluded when you toggle recording off. Each session is given a distinctive color bar in the recording List and as a path in GPS View. An option in the **Advanced Settings** screen organizes sessions into nightly sessions (noon to noon) regardless of the number of times recording is stopped and started. Each nightly session exports in its own folder with its own KML file.

Using manual recording, the app automatically uses nightly session mode for those recordings so as to avoid making a folder for every recording.

The recording timer at the top of the screen starts at the beginning of triggered recording session. Or at the beginning of a manual recording. If a manual recording is made during a triggered recording session, then after the manual recording is over, the timer returns to the elapsed time for the triggered session rather than restarting.

The top two bat's scientific and common names appear in the Auto-ID pop-up, which is shown for 10 seconds after identification. This is not intended to ID two species of bats that might appear simultaneously in a recording, though it might in some circumstances. It is intended to give more information in order to help you make the best ID possible and also to allow you to see common confusions so you can learn the ID's limitations. You can also get a sense of the accuracy ID from the pulse count. This shows the number of echolocation pulses that match the top bat and the number of total pulses. More matching pulses can indicate a stronger match. You can select the runner-up species on the Auto-ID pop-up to immediately tag the recording with that bat instead of the front-runner. Click on the "i" icon to learn more about that species. If you know that both species are incorrect, select "CHOOSE ID FROM LIST" to label the recording with any other selected species of bat or enter your own six letter species code. The Auto-ID pop-up also shows the ratio of echolocation calls of the top bat to the total detected calls. This helps give a sense of confidence in the identification.

You can also run ID on one or all recordings from the recording list or while viewing spectrograms from the icon in the recording label. Each recording takes a second or two to identify. If Real Time ID is set on, the app will not be able to trigger for a couple seconds following a recording while ID takes place.The species code or NoID is assigned as a prefix to the recording name. You can rerun Auto-ID if you should choose to select different bat species to ID. In addition, from the recording you can choose another label from your selected bat species by pressing the yellow bat in the recording label.

Recording timer

Pulse count

Tap to label recording with alternate bat

Learn more about bat species
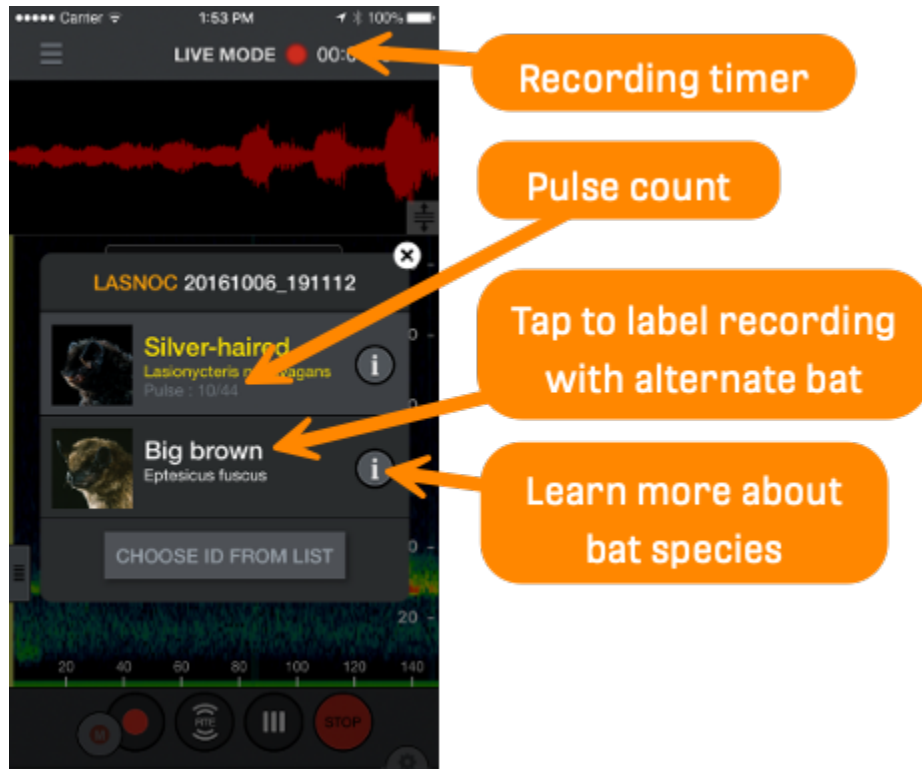
Tap the recording label icon to open the **NOTES** page. Voice and text notes are saved as metadata in the recording so they can be transferred with the recording to a computer.

Start/stop voice note

Write text note
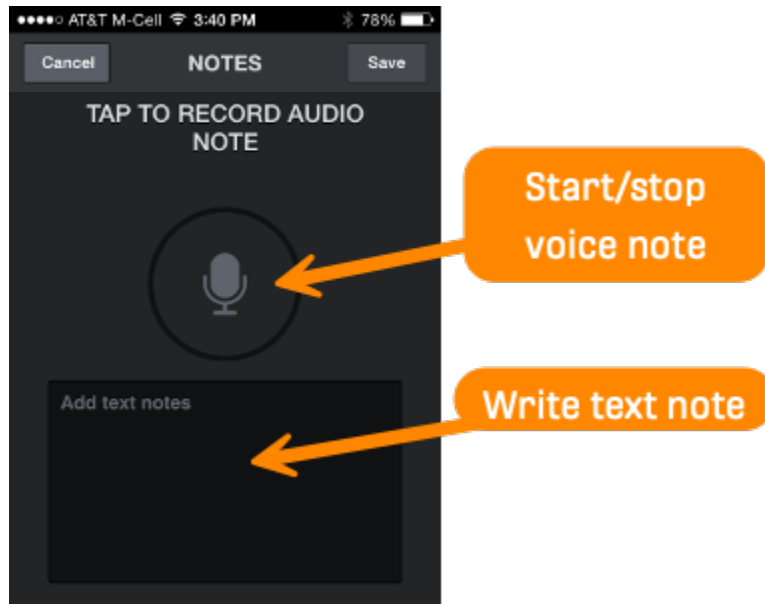
The Recording List

Here you can see a list of all of your recordings. The list can be sorted by Time or Species. The latter is useful to sort by species for identified recordings or to sort out noise or NoID recordings. **Tapping again will reverse the sort order.** Tap on a recording in the list to view the spectrogram or leave notes. If you are monitoring and recording in the background you will be advised that you are leaving Live Mode.

Tap the **Edit** button at the top right to delete recordings, transfer recordings to your computer via Wi-Fi, share recordings or identify the bat species in the recordings. Press a box to individually 'check it' in the list. You can select multiple recordings from the list by checking the box of any recording, then pressing and holding the checkbox of any recording above or below. This will check all boxes in between.
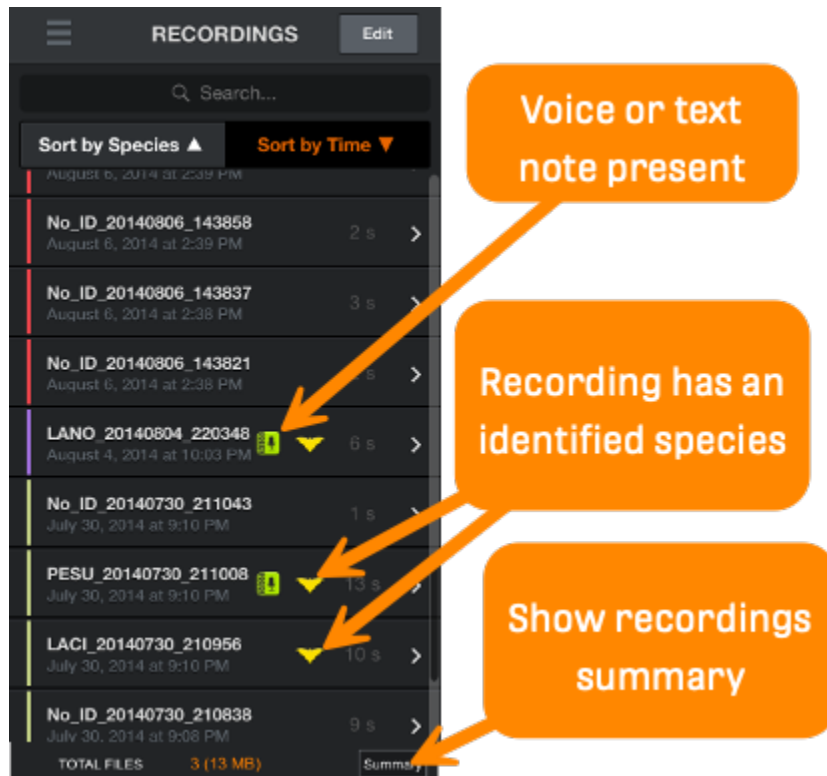
Press the Summary button to show a pop up screen with the number of recordings with each identified species, NoIDs, and the NOISE files. This will summarize all recordings if none are checked, or a subset if only some have been selected with the checkboxes.

Use the search bar to search for species IDs or to search the text of any text notes you have added.

In addition to running ID or manually labeling recordings, the Auto-ID button will also give the option to remove all IDs from the checked recording. This will remove the ID meta data as well as the filename prefix.

The app has a limit of 10,000 recordings and recordings will need to be transferred or deleted to activate recordings once that limit has been reached.

Viewing Spectrograms of Recordings

Tap a recording from the Recordings list or from GPS view to view the spectrogram of the recording, leave a voice or text note, identify the bat, and listen to the recording. You can listen using RTE, (HET), or Time Expansion (TE) playback. Use TE to play the recording at a slow speed that renders ultrasound into audible sound. In compressed view, you will only hear visible signals during playback, not the space in between echolocations. For HET and RTE, the playback occurs on all samples as though expanded view is selected, whether in compressed or expanded view. This lets you hear exactly how the bat would have sounded in live mode. As in Live Mode, heterodyne can be tuned automatically or manually.

Press the up or down buttons to go to the next or previous recording in the recording list. The order of the recordings will match the sorting chosen in the list. Colored vertical bars at the beginning of each recording show the corresponding recording session and match the color shown in the recording list as well as the path in GPS view.

You can filter the audio for better fidelity as in Live Mode by zooming to only the frequencies of interest.

Spectrograph settings are available as in **LIVE MODE**.

GPS View

In **GPS VIEW**, you can see the locations of recordings and species ID*and the track of your recording session* on a map. Each recording session is shown with a different path color. NOISE files and path lines can be shown or hidden..

A KML file is generated and stored with the session recordings in the session folder. If any recording from a recording session is transferred via Wi-Fi, a KML file will be included in the session folder with all recording's waypoints shown. You can also download the files through iTunes as described in this User Guide. KML files can be opened directly in Google Earth to show the recording locations, species IDs and recording path
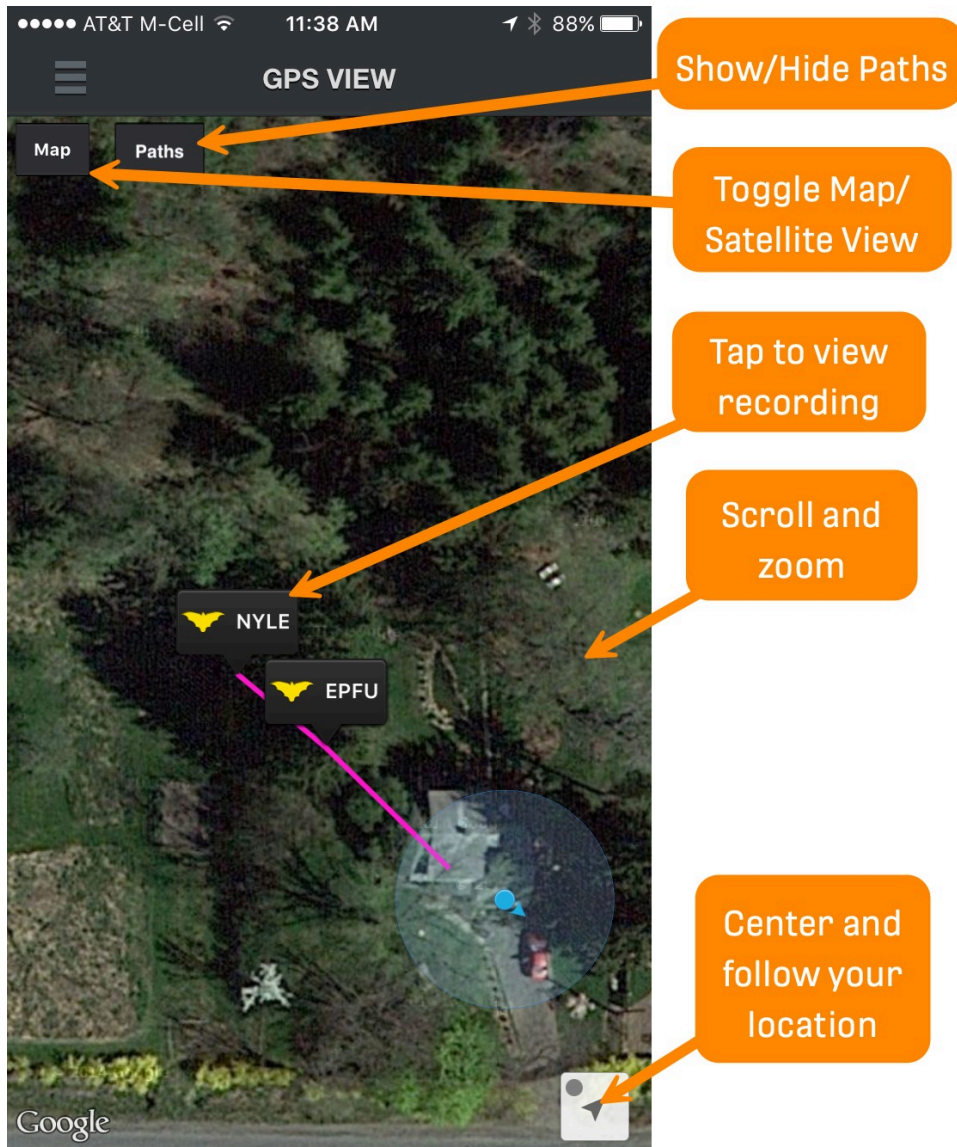
The **zoom to current location** triangle in the lower right of the GPS view zooms to your current location and scrolls the map as you move. The blue dot indicates it is in auto-scroll mode. If you scroll away from your location, the dot turns grey and auto-scroll turns off.

Settings Screen

The Setting screen is accessible from the Main menu.

Audio Division Ratio

Adjusts how the RTE sounds in **Live Mode** and how RTE and TE sound on a previously made recording. 1/10 is higher pitch and 1/20 is lower.

Values: 1/10, 1/20

Default: 1/20

Nightly Sessions Mode

Set to **ON** to organize sessions into nightly sessions (noon to noon) regardless of the number of times recording is stopped and started. Each nightly session exports in its own folder with its own KML file.

Using manual recording, the app automatically uses nightly session mode for those recordings so as to avoid making a folder for every recording.

Values: ON, OFF

Default: OFF

Save Noise Files?

Recordings with no bats detected are automatically tagged as "NOISE". You can choose whether to save these files or automatically delete them.

Values: ON, OFF

Default: OFF

Real-Time Auto ID

If **ON**, Auto-ID will run immediately after concluding a recording and the Auto-ID pop-up will be displayed.

Values: ON, OFF

Default: ON

Real-Time Auto ID Sensitivity

Adjusts how conservative the ID results will be. On **SENSITIVE**, more bats will be identified even if the algorithm is less confident of the result. On **ACCURATE**, only bats in which the algorithm is very confident will be shown. **BALANCED** is in between.

Values: SENSITIVE, BALANCED, ACCURATE

Default: SENSITIVE

Trigger Sensitivity

Adjusts the recording trigger sensitivity level. High is extremely sensitive and maximizes detection, but will also trigger from other noises resulting in NOISE files. Low will only trigger on stronger signals that are likely to be able to be identified. Medium is somewhere in between the two extremes. The trigger only applies to signals that are higher in frequency that the **Trigger Minimum Frequency** setting in the **Spectrogram Settings** panel.

Values: LOW, MEDIUM, HIGH

Default: MEDIUM

Trigger Window

The recording continues for this amount of time after the last signal that satisfies the trigger. (The recording is also truncated when it reaches the maximum recording duration set by **Max Trigger Length**.) Set the trigger window setting long enough to avoid a recording that ends after one echolocation call. For example, if bat echolocation calls occur every 0.5 seconds and trigger window is 0.1 seconds, you would get a new trigger with every single echolocation call.

> **Note:** Some standards describe a specific recording trigger window as a bat pass.

Values: 1 to 15 seconds in 1-second increments

Default: 3 seconds

Max Trigger Length

You can specify the maximum length (time duration) of recordings to comply with file size restrictions of your analysis software or to fulfill a specific recording protocol or definition of a bat pass.

Values: 1 second to 60 seconds in 1-second increments

Default: 15 seconds

Gain (Echo Meter Touch 2 Pro only)

The Echo Meter Touch 2 Pro has configurable gain. The HIGH setting roughly corresponds to the gain on the Echo Meter Touch 1 and the SM4BAT FS set to the default 12dB level. This can be useful for recording very distant or quiet bats. MEDIUM corresponds to the gain on the Echo Meter Touch or the 0dB gain setting on the SM4BAT FS and is a good setting for general recording. The LOW setting is 12 dB lower than MEDIUM and is useful for recording hand released bats or any other situation where the bats are close or loud.

Values: LOW, MEDIUM, HIGH

Default: MEDIUM

Sample Rate (Echo Meter Touch 2 Pro only)

The sample rate on the Echo Meter Touch 2 Pro can be set to 256k or 384k. 256k will record up to 128kHz which is sufficient for all North American and European bats. 384k will record up to 192kHz but will use proportionately more storage for recordings.

Values: 256k, 384k

Default: 256k

Advanced Settings

Clean Recording Database

This button will make sure that each recording in the list still points to a recording file on your device. Sometimes recordings can end up in this list with no associated file if the user deletes files in the file system of the device or through iTunes. Cleaning this up when the app is "initializing" on start up just takes too long so this is a way to clean house when needed without start-up delays.

Restore Defaults

Press the **Restore Defaults** button to restore the following to defaults: zoom level, spectrogram settings and advanced settings. It also unselects all bats on the AUTO-ID SELECTION screen.

Update Module Firmware

Firmware should only be updated as directed by Wildlife Acoustics support to address issues with some models of Android devices.

3. Recordings

This section describes the format of the recordings, how to transfer them to or from a computer, and how to share them with others.

Filenames for Recordings

Recordings use the following naming convention:

`ID_YYYYMMDD_HHMMSSWAV`

ID

The first three letters of the species and the first three letters of the genus for recordings that have been identified, NoID if Echo Meter Touch was unable to identify the recording or NOISE if the no bats are detected in the recording.

YYYYMMDD_HHMMSS

The full timestamp including the year, month, day, hour, minute, and second when the recording started.

Metadata Included in Recordings

Metadata is stored in the recording file in the standard GUANO format as well as Wildlife Acoustics' proprietary format. For more information om the format, visit www.wildlifeacoustics.com/SCHEMA/GUANO.html. Metadata is visible in Wildlife Acoustics Kaleidoscope free spectrogram viewer software and can be tabulated in spreadsheet form using Kaleidoscope's converter function. Kaleidoscope software has the ability to add further metadata relating to analysis of the recording. The following are some of the metadata stored in each recording:

Device Model: Displays the type of **Echo Meter Touch**.

Module Serial Number

App Version

Timestamp

GPS Coordinates: The location and elevation of the Echo Meter Touch when the recording started.

Voice and Text Notes

Species ID: Stores the Auto-ID species, if run, as well as any manual ID added by the user.

Settings: Including Gain, Sample Rate, Max Trigger Length, Trigger Window, Trigger Sensitivity, and Trigger Minimum Frequency.

Sharing Recordings via Email or Text Message

Recordings can be shared via Email or MMS text.

1. Tap the **Edit** button at the top right to make the edit bat appear.

2. Select one or more recordings (up to 20MB total).

3. Tap the **Share** button and select **Email** or **MMS**. A message composition window opens.

> **Note:** iMessage is not compatible with high sample rate WAV files natively so the file is actually sent as an EMTOUCH file and then converted back to a WAV file upon import.

Shared recordings can be imported into the app.

1. Press and hold the recording attachment in the email or text message.

2. Select the **Echo Meter Touch** app. The recording is imported into the app.

All imported files must have been recorded using Echo Meter Touch app (as opposed to another bat recorder) and will be stored in a session folder called **Imported Files**. Imported files have a white session color in the recording list.

Backing Up Recordings

If you have iCloud backup activated on your iOS device, the recordings will be backed up to that service. If you have many recordings this will use up a lot of your storage. If it exceeds your plan, you will get a pop-up warning that says "Not Enough Storage". If this is a problem, go to the Settings app then iCloud-->Storage-->Manage Storage and click on appropriate back up in the BACKUPS section. From there you can turn off Echo Meter Touch backups. Press "Show All Apps" if you don't see it listed. If you are not sure if you use iCloud backup, go to Settings-->iCloud and see if Backup shows "On" or "Off".

In addition, recordings can be transferred to any online storage service that is installed on the iOS device. They can be accessed with the **Share** button on the Recording List screen.

Using one of these strategies is advised since all your recordings can be lost if the app is accidently deleted or if your iOS device breaks.

Exporting Recordings to a Computer

There are multiple ways to export recordings from the app to a computer, depending on the operating systems of your mobile device and computer.

Wi-Fi Sync (Recommended)

If your mobile device and computer are connected to the same Wi-Fi network, the Echo Meter's Wi-Fi sync option is the simplest way to transfer recordings to your computer. This function is simple and compatible with most web browsers on most computers.

Cloud Storage Services

If you have a cloud storage service, such as iCloud, Google Drive, or Dropbox, set up on your mobile device, you can export your recordings to cloud storage, then retrieve the files from a different device connected to the same service.

External Storage Device

If you can connect an external storage device, such as a USB drive or SD card, to your mobile device, you can copy recordings to external storage, then retrieve them using a different device.

Depending on your mobile device, this may require an adapter.

USB Transfer

Some combinations of mobile OS and desktop OS allow you to transfer files between devices via a USB cable.

Transferring between Android and MacOS requires a third-party application installed on your Mac.

Transferring between iOS and Windows using this method is not recommended, as Apple's official Windows application for file transfer is prone to errors.

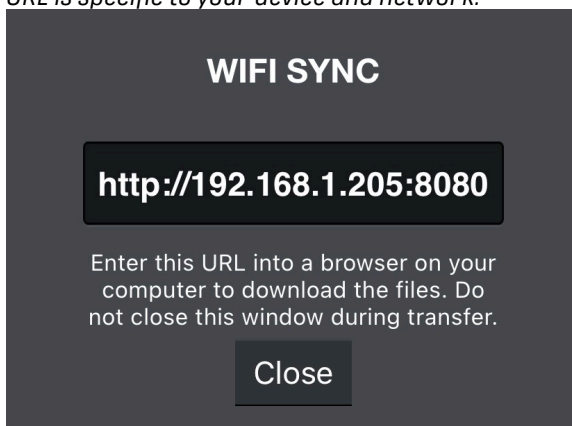## Export EMT Recordings to Another Device via Wi-Fi

The simplest way to transfer Echo Meter Touch recordings to a computer is to use the EMT app's built-in Wi-Fi transfer functionality.

About this task
Transferring files between mobile devices and desktop or laptop computers is not always straightforward, particularly between devices from different manufacturers. To make the process simple, the Echo Meter app provides an easy way to export your recordings to any other device that is on the same Wi-Fi network and has a web browser.

Procedure
1. Ensure your phone or tablet and your computer are connected to the same Wi-Fi network.

2. Open the Echo Meter app and go to **Recordings**.

3. Select **Edit**, then select or more recordings you want to transfer.
   To select all recordings in a range, tap the first selection bubble, then tap and hold the last selection bubble.

4. Select **Share** ⬦ **> Wi-Fi**.
   The app will display a URL containing your phone or tablet's local IP address and a port number. This URL is specific to your device and network.

   WIFI SYNC

   http://192.168.1.205:8080

   Enter this URL into a browser on your computer to download the files. Do not close this window during transfer.

   Close

5. Leave the **WiFi Sync** message open on your phone or tablet.

6. On your computer, open a web browser and enter the URL exactly as it appears on your phone or tablet.
   *Your web browser will display the **Echo Meter File Manager**.*
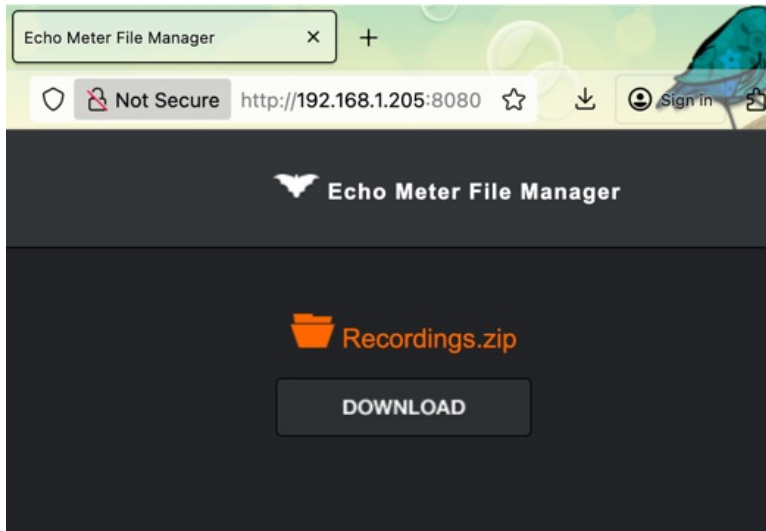
7. Select **Download**.
   Your recordings will be downloaded in the archive `Recordings.zip.`

Export EMT Recordings to iCloud

You can export recordings from the Echo Meter Touch app directly to iCloud storage. You can then retrieve recordings from iCloud using other devices.

Before you begin
To use iCloud storage, you must be signed into an Apple Account in the Settings app on your iPhone or iPad.

About this task
Uploading recordings to iCloud storage will use some of your allotted storage space until you delete recordings from iCloud.

Procedure
1. On your iPhone or iPad, open the Settings app and confirm that you are logged into an Apple account. If you are logged in, your account name will be listed at the top of the Settings app.
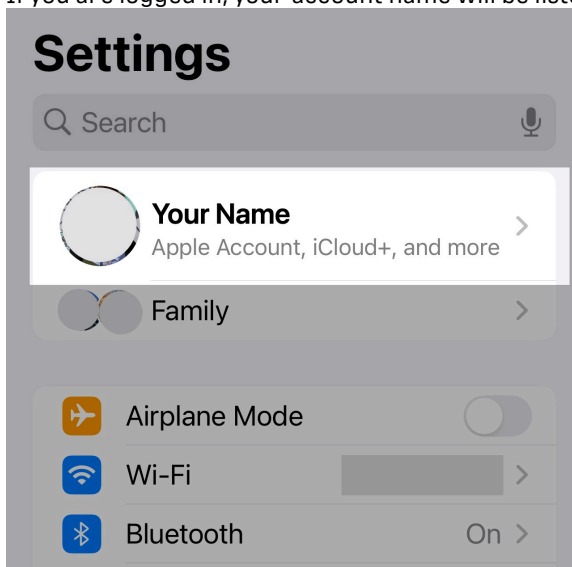
2. Open **Echo Meter** and go to **Recordings**.

3. Select **Edit**, then select or more recordings you want to transfer.
   To select all recordings in a range, tap the first selection bubble, then tap and hold the last selection bubble.

4. Select **Share** ⧉ **> Cloud**.
   A window will appear displaying the contents of the `Echo Meter` *folder in your iCloud storage.*

5. If desired, select ⊙ **> New Folder** to create a folder, then open that folder.

6. Select **Save**.

7. Access your iCloud storage from another device:

Platform	Steps
MacOS	a. On a Mac signed into the same Apple account, go to **Finder > iCloud Drive**. b. Open the `Echo Meter` folder. c. Copy any files or folders to another location on your Mac.
Any Platform	a. Using a web browser, go to www.icloud.com. b. Select **Drive > Browse**. c. Open the `Echo Meter` folder and any subfolder you may have created. d. Select one or more recordings, then select **Download** ⬇ .

Export EMT Recordings to USB Drive or SD Card

You can export Echo Meter Touch recordings to an SD card or USB drive connected to your iPhone or iPad.

About this task
Depending on your mobile device, you may need an adapter to connect external storage:

- If your iPhone or iPad has a Lightning port, you will need a Lightning to USB Camera Adapter from Apple. This adapter will allow you to plug in a USB drive or USB SD card reader.

- If your iPhone or iPad has a USB-C port, you will need a USB drive or SD card reader with a USB-C plug.

Procedure
1. Check that your storage device has sufficient available space for your recordings.

2. Connect your storage device to your iPhone or iPad.

3. Open Echo Meter and go to **Recordings**.

4. Select **Edit**, then select or more recordings you want to transfer.
   To select all recordings in a range, tap the first selection bubble, then tap and hold the last selection bubble.

5. Select **Share** ⧉ **> Apple > Save to Files**.
   The iOS file browser will appear.

6. Select **Back** to exit the default folder, and select **Browse** view all available storage locations.

7. Under **Locations**, select your external storage device.

8. If desired, select ⬤ **> New Folder** to create a folder, then open that folder.

9. Select **Save**.
   Your recordings will be saved to zip archive named `Recordings.zip`.

10. After the file browser closes, remove your external storage device.

Export EMT Recordings to a Mac via USB

You can transfer recordings from the Echo Meter Touch app on your iPhone or iPad to your Mac using your Mac's Finder app.

About this task
If your Mac is running MacOS Catalina (version 10.15) or later, you can access files on your iPhone or iPad directly from Finder on your Mac.

If your Mac is running an older version of MacOS, you can use iTunes to access files on your iPhone or iPad. See Apple Support's article on sharing files using iTunes for full instructions.

Procedure
1. Open a Finder window on your Mac.

2. Connect your iPhone or iPad to your Mac using a Lightning or USB-C cable.
   *Your device will appear in the Finder sidebar under **Locations***.
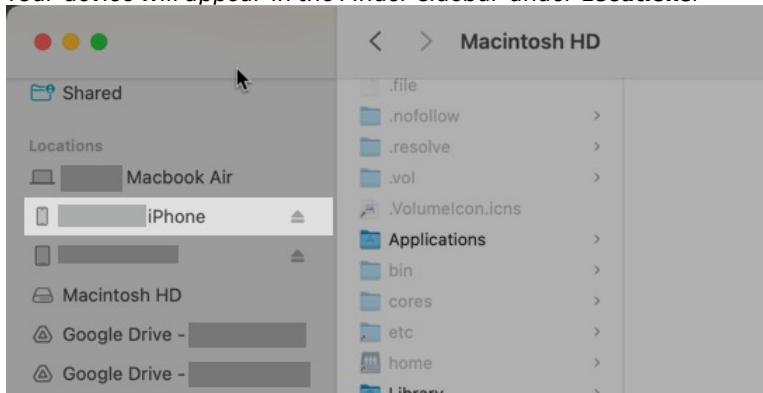
3. Select your iPhone or iPad, then go to **Files**.

4. In the list of apps on your iPhone or iPad, select **Echo Meter**.
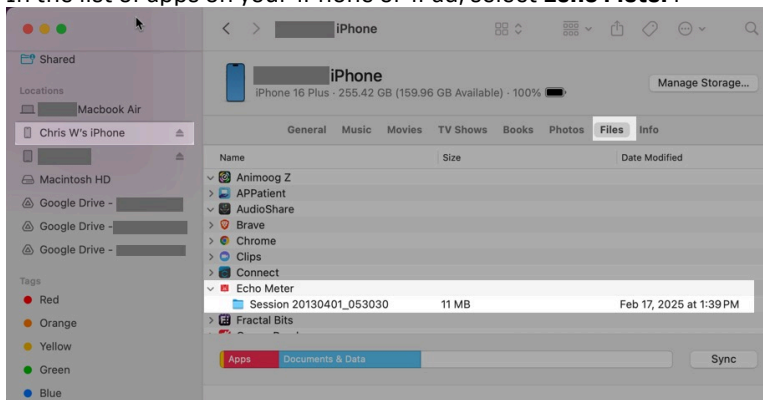
5. Select one or more Session folders from the **Echo Meter** app listing and drag them into a folder on your Mac in a different Finder window.

Import Recordings from a Computer

You can import recordings and/or session folders into the Echo Meter Touch 2 app directly from a computer desktop.

Import from Mac

1. On your computer desktop, create a folder named "import".

   "import" must be all lower case.

2. Copy all session folders and/or independent recordings that you wish to import into your EMT device into this folder.

   If the files were exported from an EMT device as a .zip file, you can drag the .zip file into the import folder.

3. Close the EMT app and connect your iPhone or iPad to the computer using a Lightning or USB-C cable (depending on the connection type of the iOS device).

4. Open a Finder window on the Mac desktop. The iOS device will appear in the Sidebar on the left

5. Select the iOS device. The Echo Meter Touch 2 app will be listed in the window.

6. Select and open the Echo Meter Touch 2 app.

7. Drag and drop the "import" folder that you created above into the Echo Meter Touch 2 app.

   If there is already an import folder inside the app, replace this old folder with the new import folder

8. On the iOS device, launch the Echo Meter Touch app. This will automatically import all of the session folders and recordings into the app on your device and they can then be found in the recordings list. Sessions will be shown with a unique color bar and the path will be imported into GPS view as well.

Import from Windows

iOS devices use iTunes software for direct file transfer under Windows OS.

1. Download and install Apple iTunes software from the Microsoft App store onto your PC.

2. Plug the iOS device into the computer using the charging cable

3. Launch iTunes

4. Select the attached device by clicking on the small iOS icon that will appear in the menu bar

5. Select File Sharing in the side tab

6. Select and open the Echo Meter Touch 2 app

7. Drag and drop the "import" folder that you created above into the Echo Meter Touch 2 app

   If there is already an import folder inside the app, replace this old folder with the new import folder

8. On the iOS device, launch the Echo Meter Touch 2 app. This will automatically import all of the session folders and recordings into the app on your device and they can then be found in the recordings list. Sessions will be shown with a unique color bar and the path will be imported into GPS view as well.

Analysis Software

Use the free Kaleidoscope Viewer to create a spreadsheet file showing your recording's metadata and notes and view spectrograms of your bat recordings on a computer. Upgrade to Kaleidoscope Pro to add automatic classification of bats. You can also use third party bat analysis software for your Echo Meter Touch recordings.

4. Testing the Microphone Element

Use the available Ultrasonic Calibrator to test the microphone element on the Echo Meter Touch. Since ultrasound is beyond the range of human hearing, verifying performance requires special equipment. The Ultrasonic Calibrator helps you test both the microphone and the full recording system.

The calibrator uses a 9V alkaline battery (included with the calibrator). When the battery is depleted, the calibrator can no longer provide a tone and its LED no longer illuminates. While the recorder may still emit sound at this point, it cannot be used as an accurate calibrator until the battery is replaced.

The calibrator offers two modes of operation. Calibration mode is used to test the microphone at close range and Chirp mode is used to test the entire system at a greater distance.

Calibration Mode Microphone Testing

1. Remove the clear calibrator microphone adapter by sliding it off the calibrator from the bottom.

2. Turn the calibrator ON and set the toggle switch to CAL (calibration). The calibrator generates a 40 kHz inaudible tone.

3. If you are using the Pro version of the EMT 2, set the gain to Medium in the Advanced Settings of the app.

4. Enter Live Mode on the Echo Meter Touch. Make sure you are in expanded view or the spectrogram will adapt to the calibration tone and stop scrolling. Also turn the volume on your phone or tablet down so as to avoid acoustic feedback affecting the test.

5. Drag the slider to maximize the size of the red waveform panel at the top of the screen.

6. Point the acoustic horn of the Echo Meter Touch directly at the calibrator speaker.

7. Observe the waveform level on the screen. Move the Echo Meter Touch around until the waveform is maximized. There is variation in microphone sensitivity between units an calibrators so you may see

a larger waveform, but a microphone is good if the waveform takes up more than ¼ of the waveform panel.

Chirp Mode System Testing

To test the entire system, use the Ultrasonic Calibrator in Chirp mode to emit loud ultrasonic signals that can be picked up by the Echo Meter Touch from some distance. This can be used to verify all triggering and recording functions.

⚠️ **Warning:** Do not place the Ultrasonic Calibrator near your ears. In CHIRP mode, the calibrator emits a 40 kHz signal at over 100 dB SPL. Prolonged exposure to high intensity ultrasonic signals may cause permanent hearing loss at audible frequencies.

1. Turn the calibrator ON and set the toggle switch to CHIRP. The calibrator emits a 100ms long tone at 40kHz (+/- 10Hz) every 500ms. The amplitude of the tone is 104dB SPL (+/- 3dB) at 10cm.

2. Enter Live Mode on the Echo Meter Touch and place the calibrator within 20 meters to assure the signal can be received.

3. With the calibrator chirping, you can test trigger settings and monitoring modes.

5. Compatibility and Firmware Updates

iOS Device Compatibility

View our website for up-to-date compatibility information.

Compatibility Table

As of April 2024, there is now limited cross-compatibility between Echo Meter Touch modules with Micro-USB or USB-C plugs, previously sold as Echo Meter Touch 2 for Android, with iOS devices. This table summarizes which Echo Meter Touch modules are compatible with categories of mobile devices based on their operating system (Android or iOS) and the type of data port they have (Lightning, USB-C, or Micro-USB). The table's footnotes indicate whether a firmware update and/or an adapter is required.

EMT Module Plug	iOS Devices		Android Devices	
	Lightning Port	USB-C Port	Micro-USB Port	USB-C Port
USB-C Plug	No	Yes (1)	Yes (2)	Yes
Micro-USB Plug	No	Yes (3,4)	Yes	Yes (3)
Lightning Plug	Yes	Yes (5)	No	No

1. Older units require a firmware update through the Android app.
2. Requires an OTG USB-C to Micro-USB adapter.
3. Requires an OTG Micro-USB to USB-C adapter.
4. Requires a firmware update through the Android app.
5. Requires Apple's official USB-C to Lightning Adapter.

Module Firmware Updates

The firmware on the Echo Meter Touch module can be updated through the app to improve compatibility with current or future mobile devices. If new firmware is available, a pop-up alert will be shown giving the option of updating or waiting. The update process takes under a minute. Do not remove the module during the process.

Update the Firmware on USB Modules to Add iOS Compatibility

About this task
In April 2024, we released a firmware update allowing Echo Meter Touch modules with Micro-USB and Lightning plugs to connect to iOS devices that have a USB-C port.

If you have an Echo Meter Touch module that has a Micro-USB or USB-C plug and was purchased prior to April 2024, you can use an Android device to update the module's firmware and enable this new compatibility.

Procedure
1. Update the Echo Meter app on your Android device to the latest version available from the Google Play store.
2. Connect your Ultrasonic Module to a compatible Android device.
3. Navigate to Settings > Advanced Settings.

4. Select Update Module Firmware.
   A progress bar will appear, then the Echo Meter Touch module will disconnect from the app.

5. Remove and re-insert the Ultrasonic Module.

Results
After the firmware has been updated, the Advanced Settings screen will display a message to indicate the module is up-to-date. Your module is now ready to use with USB-C-equipped iOS devices.

Required Adapters

If the plug on your Echo Meter Touch module and the data port on your smartphone or tablet are not of the same type, you need an adapter in order to connect the two.

Not all combinations of Echo Meter Touch module and Android or iOS device are compatible. If they are not compatible, it does not matter what type of adapter you use.

All adapters must support USB on-the-go (OTG). When shopping for adapters, look for models that specifically list OTG compatibility.

USB-C Module, USB-C Mobile Device

You do not need an adapter to connect a USB-C EMT module to an Android or iOS device with a USB-C port.

If your mobile device has a case that prevents the EMT module from sitting flush with the device, you can use a USB-C extender. Beginning in August 2025, new EMT modules ship with an included USB-C extender.

Micro-USB Module, USB-C Mobile Device

If you need to connect a Micro-USB-equipped Echo Meter Touch module with a USB-C-equipped phone or tablet, you will need a USB OTG adapter with a Micro-USB socket and a USB-C plug, also referred to as "Micro-USB female, USB-C male."

Lightning Module, USB-C iOS Device

If you need to connect a Lightning-equipped Echo Meter Touch module with a USB-C-equipped iOS device, you must use **Apple's official USB-C to Lightning Adapter**, available through Apple's website and at Apple stores.

We have tested adapters with the same physical connections from multiple manufacturers, but Apple's official adapter is the only option we have found to work.

Lightning iOS Device

iOS devices with Lightning ports are only compatible with Echo Meter Touch modules that have Lightning plugs. These modules ceased manufacture in 2022.

An EMT module with a USB-C or Micro-USB plug will not work with a Lightning-equipped iOS device, even with the use of an adapter.

6. Specifications

Physical

	Echo Meter Touch (original)	Echo Meter Touch 2 and 2 Pro
Length w/o Lightning:	1.8 inches (46 mm)	1.4 inches (35mm)
Width:	1.9 inches (48 mm)	1.9 inches (48 mm)
Thickness:	0.47 inches (12 mm)	.3-.6 inches(7-16mm)
Weight:	1.1 ounces (31 g)	0.7 ounces (20g)
Material:	Anodized Aluminum	Polycarbonate/ABS
Environmental:	Weather resistant but avoid rain	

Audio

	EMT 2	EMT 2 Pro
Recording Format:	16-bit WAV	16-bit WAV
Gain:	Fixed	3 settings
Sample Rate:	256kHz	256kHz/384kHz
Directionality:	Slightly Directional	Slightly Directional
Hi Pass Filter	None	2-pole at 8kHz

	EMT 1
Recording Format:	12-bit WAV
Gain:	Fixed
Sample Rate:	256kHz
Directionality:	Omnidirectional
Hi Pass Filter:	2-pole at 8kHz

Maximum Recording Frequency: Half of the sample rate (up to 128 kHz for 256 kHz sample rate and up to 192 kHz for 384 kHz sample rate)

Signal to Noise Ratio: This is a measure of quality within the recording bandwidth. A higher value is better.
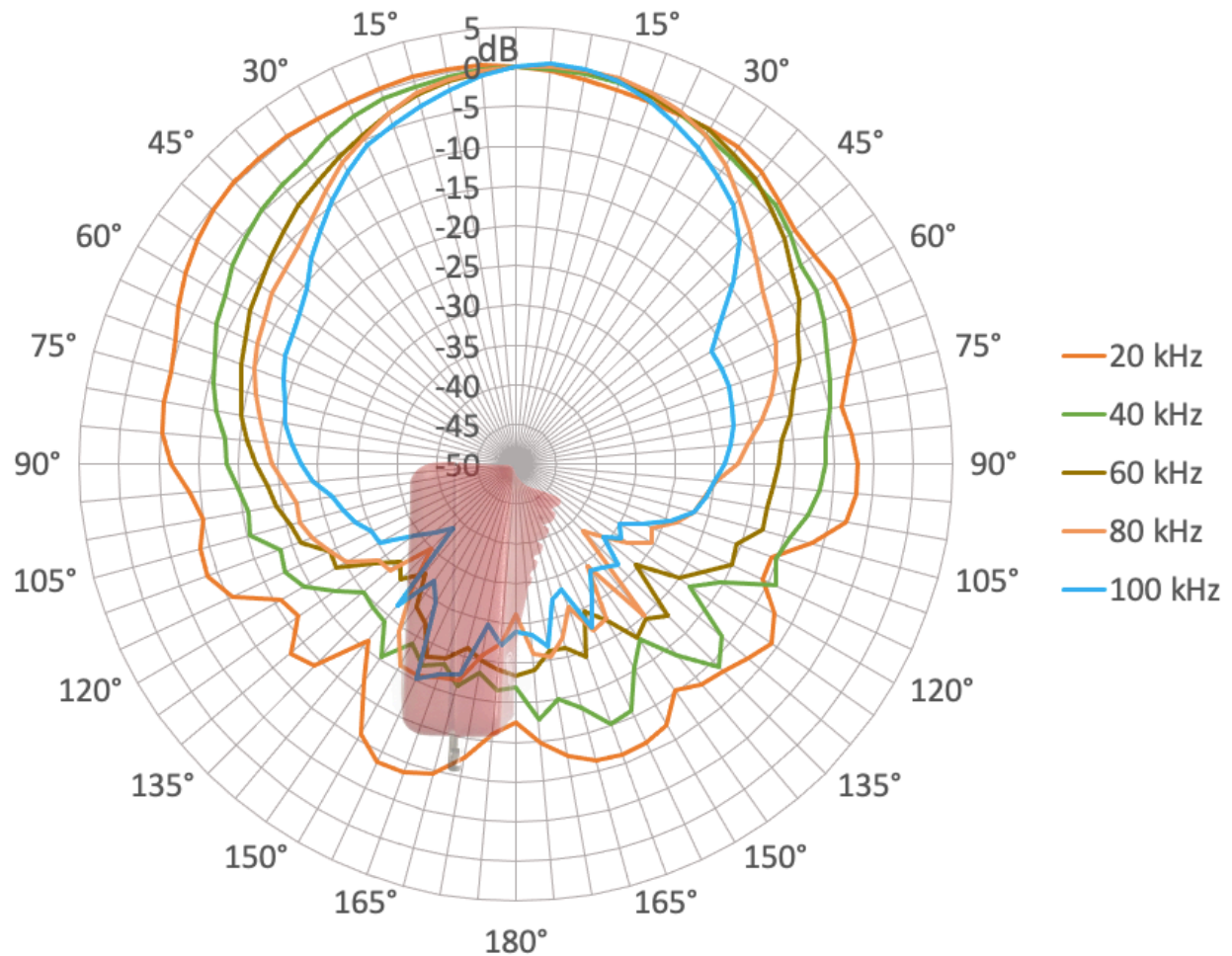
Echo Meter Touch Signal to Noise Ratio
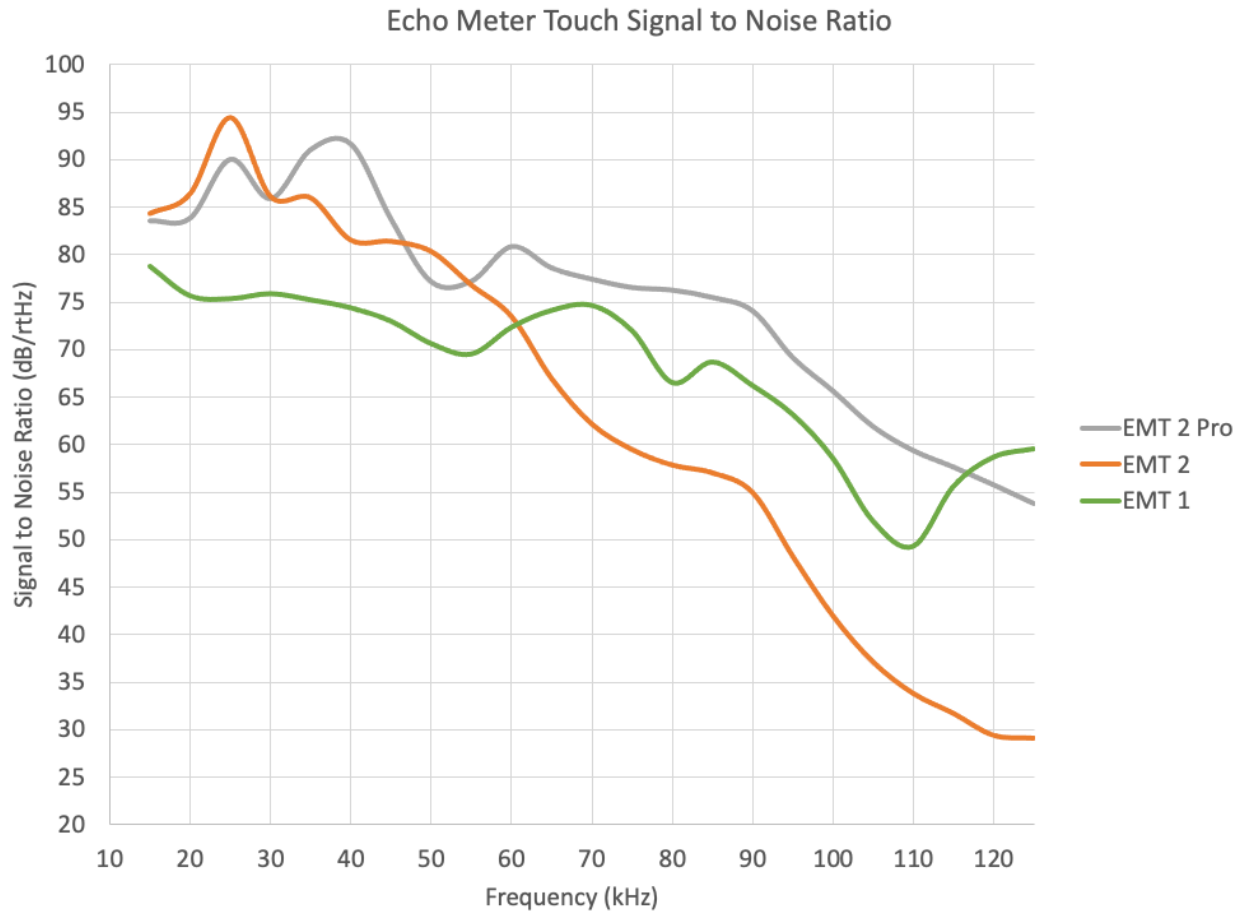
Directionality: The waveguide on the EMT 2 provides some directionality to reduce extraneous noise and echoes.

Echo Meter Touch 2 and Pro Directionality (Horizontal)
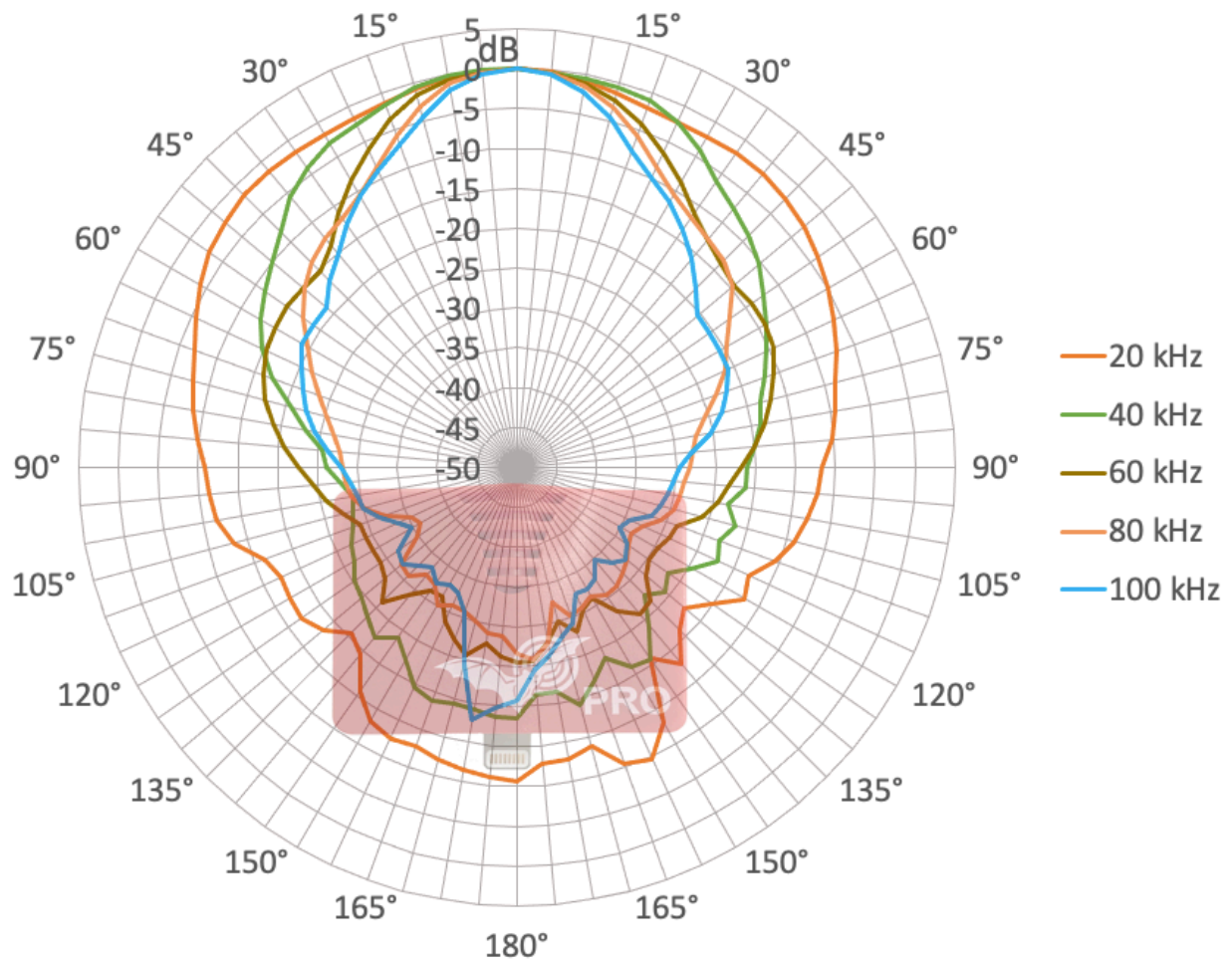
Echo Meter Touch 2 and Pro Directionality (Vertical)

Storage Requirements

How many recordings you can store on your device depends on the capacity of your device and how much memory is available. A 5.0-second recording uses 2.5 MB of storage. A 32 GB phone with 28 GB of storage available, for example, would be able to save over 10,000 recordings.

The app also needs at least 600mb of internal memory storage for sufficient buffering of Live Mode. The app will warn you if you have insufficient storage.

7. Patents

The Echo Meter Touch is covered under the following patents:

- United States
    - Pat. 7,454,334
    - Pat. 8,599,647
    - Pat. 10,612,967
    - Pat. D813,835
- United Kingdom
    - GB 2480358
    - GB 2559838

8. Copyright Notices

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