

Instructions for recording vocal music on mobile phones

Recording app

Some good, recommended apps are:

1. Audio Recorder:

https://play.google.com/store/apps/details?id=com.dimowner.audiorecorder&hl=en_IN

2. Audio Recorder:

https://play.google.com/store/apps/details?id=com.github.axet.audiorecorder&hl=en_IN

(yes, both have the same name)

These are both free, simple in design, lite and contain no advertisements. They also allow the user to adjust recording settings. Recommended settings for good quality recordings are:

Sample rate: 44.1 kHz

Format: Wav or MP3

Channel: Mono

Although the default sound recording app in most new smartphones might work well too, sometimes they could apply unwanted filtering to limit the audio bandwidth to the human audible range (figure 2 below).

Microphone

The onboard microphone of a phone, especially if it's a recent model, is often better suited for music than the microphones present in earphones or headphones.

Most earphone/headphone mics are usually designed for speech and hence tend to apply filters to compress the audio bandwidth (figure 3 below). However, these can be better at not picking up background sounds, while onboard phone microphones tend to capture faint background sounds too.

Earphones manufactured recently by a good audio tech. company could have good microphones, but the ones that are shipped with mobile phones are generally not.

Note: *If the phone is an old, budget model, then its onboard mic is likely to be poor, and neither using good quality earphones nor a good recording app can give good recordings. It is best to use a different device in such a case.*

Place the phone mic neither too close to nor too far from the singer's mouth. About 3/4th - 1 foot away is good. Most phones have the mic at the bottom so keep the phone with its bottom pointing towards the singer. If unsure about the mic placement in the phone, it should be easy to find in the user manual or on the internet by looking up the model name.

To avoid signal saturation or clipping, try to move slightly away from the mic while singing loud phrases.

Recording environment

Ensure that it is quiet around you when recording, especially when using the phone's onboard mic. If possible, try not to record in a room that is too empty - that can add unwanted reverberation to the recording. And needless to say, switch the phone to the silent mode.

While earphone microphones can give cleaner recordings with relatively lesser background noise, they also tend to filter the audio. Hence it is better to ensure a quiet environment and use the phone's mic.

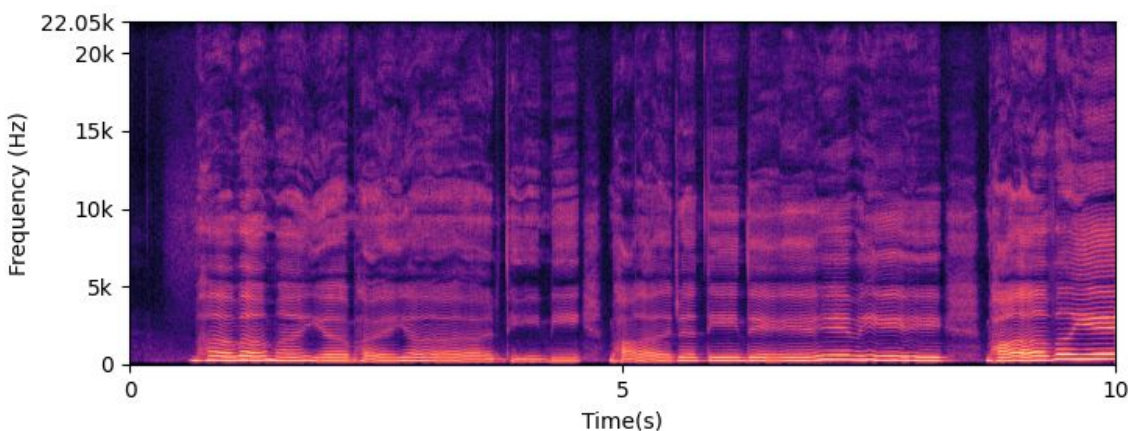
Some common noise sources to look out for: clock with a loud seconds hand, running fan, open window, a loud motor running outside.

Using a tanpura / metronome app for reference

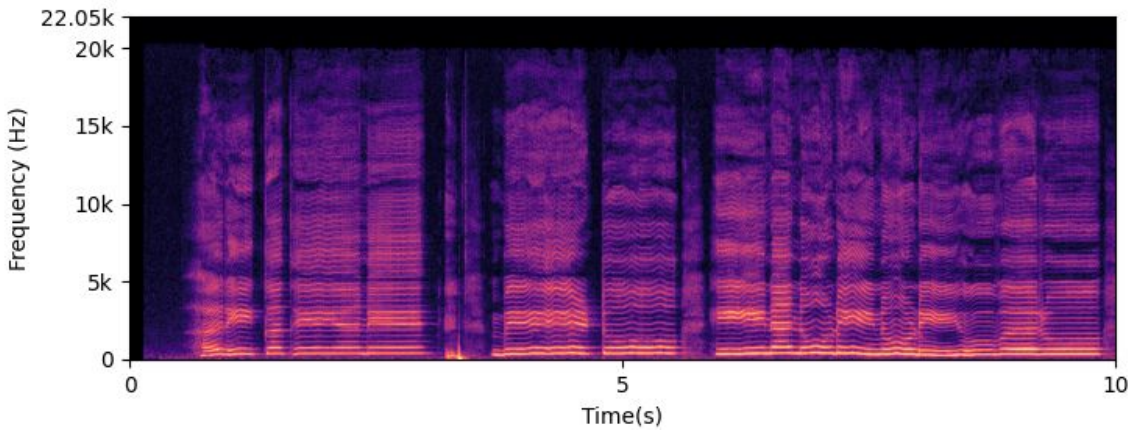
Use another device to play the tanpura / metronome and listen to it over earphones, but keep its volume low to avoid the risk of the recording mic picking that up.

Spectrogram images of some recordings (generated using librosa and matplotlib on python)

1. A good recording with full bandwidth and no filtering



- Empty region from 20 - 22.050 kHz for an audio sampled at 44.1kHz indicates abrupt bandwidth clipping



- Filtering by an earphone mic - signal severely attenuated beyond 5kHz

