

# MAMOGO BEGINNERS GUIDE TO RINGTONES

There are currently three types of ringtones available in the marketplace today; monophonic, polyphonic and true or master tones; each of which has their own unique properties. In earlier cellular phones there existed only the boring 'ring ring' ringtone. But with the advancement of technology and widespread use of 3G mobile phones, the quality of rendering and availability of high quality ringtones has improved dramatically.

## Monophonic Ringtones

Monophonic ringtones have the capability to play one musical note or tone. These ringtones use what is known as MIDI (Musical Instrument Digital Interface) technology which is a combination of single notes played in serial or in sequence. Monophonic ringtones were the first ringtones introduced in the mobile ringtone marketplace and as such are primitive and very limited. Since a mono (meaning one) tone can only be played one note at a time, the resulting ringtone sounds very simple and basic in its design. However, the benefit of Monophonic ringtones is their widespread compatibility with older mobile phone models.

## Polyphonic Ringtones

Polyphonic ringtones are built on the same MIDI technology as monophonic ringtones but have the added capacity to play anywhere from 4 to 40 notes at a time or in sequence. As a result the musical quality of a polyphonic ringtone is much higher than a monophonic ringtone. With the ability to play more than one note at a time, the results are ringtones that can generate chords rather than single notes. The sound of polyphonic ringtones is fuller and more pleasing to the ear although they still sound very synthesized and "machine like" in nature when compared to normal traditional music. Polyphonic ringtones also have the benefit of being compatible with nearly every mobile phone in the market today.

### Polyphonic Ringtone Level-4

The polyphonic Level-4 capable phones can playback 4 simultaneous notes. The typical instrument bank for Level-4 phones includes 29 melodic and 14 percussive instruments.

### Polyphonic Ringtone Level-16

The polyphonic Level-16 capable phones can playback 16 simultaneous notes. The instrument bank for Level-16 phones includes 64 melodic and 27 percussive instruments. When building common polyphonic music, this is the most common format. Designing your ringtones at this level insures you can reach more than 99% of the mobile handsets in the marketplace today.

### Polyphonic Ringtone Level-24

The polyphonic Level-24 capable phones can playback 24 simultaneous notes. The instrument bank for level 24 phones includes 128 melodic and 47 percussive instruments. To achieve even better polyphonic ringtone sounds some mobile phones even have built-in synthesizers.

## Realtones

The highest quality in mobile phone ringers are the "traditional music" ringtones. You may see these ringtones referred to as Truetones, Mastertones, Realtones or other related descriptions, but they all refer to the .wav type of ringtone. These ringtones provide real audio quality and sound virtually identical to the original audio production. In fact, they are often developed from the original artist recording and do not need to be reconstructed like monophonic and polyphonic ringtones in order to sound like the original music. Realtones are the easiest to produce and are quickly becoming industry standard.

## **MIDI Overview**

The Musical Instrument Digital Interface (MIDI) protocol provides a standardized and efficient means of conveying musical performance information as electronic data. MIDI information is transmitted in "MIDI messages", which can be thought of as instructions which tell a music synthesizer how to play a piece of music. The synthesizer receiving the MIDI data must generate the actual sounds. The MIDI 1.0 Detailed Specification provides a complete description of the MIDI protocol. (<http://www.midi.org/>)

The MIDI data stream is a unidirectional asynchronous bit stream at 31.25 Kbits/sec. with 10 bits transmitted per byte (a start bit, 8 data bits, and one stop bit). The MIDI interface on a MIDI instrument will generally include three different MIDI connectors, labeled IN, OUT, and THRU. The MIDI data stream is usually originated by a MIDI controller, such as a musical instrument keyboard, or by a MIDI sequencer. A MIDI controller is a device which is played as an instrument, and it translates the performance into a MIDI data stream in real time (as it is played). A MIDI sequencer is a device which allows MIDI data sequences to be captured, stored, edited, combined, and replayed. The MIDI data output from a MIDI controller or sequencer is transmitted via the devices' MIDI OUT connector.

The recipient of this MIDI data stream is commonly a MIDI sound generator or sound module, which will receive MIDI messages at its MIDI IN connector, and respond to these messages by playing sounds.

The single physical MIDI Channel is usually divided into 16 logical channels by the inclusion of a 4 bit Channel number within many of the MIDI messages.

## **Tricks of the MIDI Trade**

When creating MIDI files of your own there are a number of tricks and techniques that you can use to improve the quality of your mono or polyphonic ringtone; some examples include the following:

### *Doubling*

Doubling is used to create a honky-tonk type sound. It is created by composing one track, then creating a second track identical to the first but slightly detuned. This is easily done with some off the shelf MIDI composer software.

### *ECHO*

The idea of an ECHO is to run two tracks simultaneously, but play one a few milliseconds behind the first and therefore create a MIDI delay. This delay makes the ringtone sound fuller and more complete in its playback.

### *Faking or Fooling*

Faking the Filter, Velocity and/or MIDI volumes can be used to achieve a kind of filter effect, by duplicating a track, picking sounds with very different timbres, and cross fading between the two tracks. The result is a unique sound that offers a rich sound and fuller sampling.

### *Pitch*

Big Bend, MIDI Pitch Bend Sensitivity can be altered and set to large intervals (e.g., two octaves) to simulate synthesizer effects. The SP-MIDI format can be used to stylize an entire phone with similar sounding tones from ringtones to alerts and alarms.

## Polyphonic Ringtone Formats

There are many types of ringtone formats and they vary depending upon the mobile handset. It is best to use some ringtone formatting software to create these formats for you since they vary depending upon the manufacturer and from time to time the handset itself.

A simple internet search will provide you with some additional details about some useful tools in creating polyphonic ringtones. We suggest a search for terms such as [Ringtone Converter](#) and [Mobile Music Polyphonic](#).

## Realtone Ringtone Formats

In designing a realtone format from an original music file there are a number of considerations that you must take into account; bit rate or quality, file size and frequency are the three most important variables in making ringtones from traditional digital audio files. It is currently best to provide MAMOGO with .mp3 files for your realtones.

Audio files made into ringtones should not be any larger than 5MB maximum. You should aim for the smallest possible size without sacrificing quality. It only makes good sense to conserve mobile phone storage space so you can collect lots of mobile media. As a general rule, ringtones should not be longer than approx 20 seconds as most mobile phone carriers will roll the call to voicemail after about 4 rings. Ringtones audio beyond the 20 to 30 second mark will not usually be heard and subsequently waste valuable phone memory. Please note that this duration will vary from phone to phone and carrier to carrier.

In general, 20-30 seconds is all that's required for a ringtone. **Good quality ringtones should originally be 128kbps .mp3 format files at no more than 4MB - 5MB in file size, and have a sampling frequency of 22,050 Hz.** It is also beneficial (but not mandatory) to convert to mono and save additional space without sacrificing sound quality. There is no sense in producing an audio file that is stereo or Dolby Digital quality since most Mobile devices simply can not make use of these additional elements with only one speaker. These files will be converted by MAMOGO into mp3 at a typical Bit Rate of 24kbps - 64kbps, and could be anywhere from 40K - 150K in file size, with a sampling frequency of 22.050 kHz for optimum delivery to mobile handsets.

Again, a simple internet search will provide you with some useful tools in creating high quality ringtones. We suggest a search for terms such as [Ringtone Maker](#) and [Professional Audio Editing](#).