KITCHEN MASTERING — MFiT (MASTERED FOR iTUNES)

MFiT

Anyone who purchases media from the iTunes Store has probably noticed the Mastered for iTunes (MFiT) logo next to certain prestigious artist tracks and albums. But what, exactly, does Mastered For iTunes mean?

"Mastered for iTunes" involves a specific process and a subjective evaluation of the impact that the iTunes encoder has upon a particular master file. Before addressing the details, it is important to understand what impact encoding music files may have when ultimately decoded by the end user/listener's playback system.

CD quality music files are approximately 10MB in size per stereo minute. Therefore, a four-minute song would be 40MB in size. The issue with this, particularly in the past when internet speeds were, on average, much slower, is that it was not feasible to offer full resolution files to customers due to the inordinate amount of time that it would take to download the file, as well as the amount of space required to store that file on the older, smaller and more costly hard drives available at the time. Additionally, the content owners (record companies in particular) were not too keen on letting their customers have access to the full resolution files that were easily shared, and potentially dissuade their customers from purchasing more profitable physical CDs.

Therefore, compressed/encoded music files became the norm for distributing audio media online. Compressed audio codecs fall into one of two camps: 'Lossless' or 'Lossy'. 'Lossless' codecs such as Meridian Lossless Packing (MLP) and Apple Lossless (ALE) offer higher quality audio at the expense of a larger file size. 'Lossy' compressed audio formats such as the ubiquitous mp3, m4a, and iTunes adopted AAC formats all yield smaller file sizes (12x smaller in some instances) at the expense of higher compression rates that discard data based upon specific algorithms that attempt to minimize the deleterious effects this has on the music when decoded and played back.

The MFiT process was created by iTunes to combat the common negative audible effect that the AAC codec can have on , in particular, loudly mastered audio files. Generally speaking, all of the lossy codecs perform their 'magic' by taking advantage the way the humans perceive sound, and in particular, how sensitive or insensitive that we are at hearing all of the data present in an audible musical signal. Specifically, the concept of 'masking' is taken advantage of to reduce the amount of data present in an audio stream at any given time. Essentially, our brains filter out 'unnecessary' audible information when listening, focusing on the pertinent components of the audio stream at any one time. Relative to masking, there are two types that are addressed by these codecs: frequency masking (frequency based) and temporal masking (which is time based). The crux of the issue is that during encoding, compression algorithms split the audio into up to 32 discrete equally spaced frequency filter bands to which, in combination with the implementation of a psychoacoustic modeling algorithm (which attributes weighting to specific frequencies and audible threshold levels) and the implementation of the aforementioned masking techniques, yields a data compressed file, that upon decoding, can generate non-linear and audible distortions, and in particular, with source material with peak levels approaching 0dBFS.

In an attempt to rid these distortions from media sold within the iTunes store, Apple developed and implemented the Mastered For iTunes process which provides both procedural guidelines and recommendations relative to preparing masters for encoding as well as a suite of tools to test the encoding to iTunes Plus and subsequent decoding back to PCM audio, along with an analysis

application that verifies that no clipping occurs during the entire encode/decode process. This suite of tools, along with the ultimate 32-bit processing by approved iTunes aggregators from high-resolution source material, does indeed yield better sounding files than those typically encoded from a typical audio CD or CD resolution data file.

Here is a link to an iTunes managed list of internationally accredited iTunes aggregators:

https://itunespartner.apple.com/en/music/partnersearch

We are proud to offer MFiT encoding as a service to our customers as an iTunes certified mastering facility.

— *Brent Lambert*