Research Abstract

The Renaissance of vinyl records in the marketplace has been remarkable. Reasons for this re-emergence are not clear; there are psychoacoustic, psychological, artistic and human factors involved. In some quarters there is lingering doubt that a digital signal with discrete numbers cannot represent an analogue audio stream, although this has long been proven false [res below LSB]. Perhaps the attractive record jacket, the gleaming reflective disc, and the ritual of putting the record carefully into play are important aspects. Whatever the reason, old cutting lathes and aging record presses are back in vogue. This project seeks to study the optimization of mastering and pressing of records *using new instruments and presses* manufactured by Viryl Technologies.

The quality of a record pressing is determined by the characteristic of the vinyl used, its temperature, the force used to stamp the record, the final thickness of the pressing, the cycle time of the press, the efficacy of the flash cooling incorporated in the press, and possibly other factors. It is the aim of this research to study the effects of such parameters on the final quality of the pressed discs. This quality will be assessed by the surface noise, the frequency and severity of clicks and pops, the bandwidth and distortion of the recovered audio, and the morphology and warping of the final product. It is hoped that Viryl Technologies will be able to supply a series of music or test pressings that span the range of parameters required for a reasonable statistical analysis of the quality factors.

It is expected that the assessment of the record pressing can be accomplished by recording the audio output of test pressings on reference equipment. This recording will be digital and its quality must significantly exceed that of the record, so that the quality of the record pressing dominates.

This research project may lead to intellectual property that needs to be treated with respect. Viryl Technologies may wish to vet the publication of the thesis or interim reports. This must be balanced against the desire of the research personnel to publish the findings.

A major concern for the project is that a sufficient range of pressings with defined manufacturing parameters must be supplied to allow a proper analysis of the influence of these parameters.

While this research is focused on the parameters used for the record presses themselves, it must be recognized that the mastering process is perhaps as important for the quality of the final product.