Testing summary

The Soundoff software will be able to read in the following types of files:

1. Wav files of 8-bit, 16-bit and 24-bit size
   1. 8 – taunt.wav
   2. 16 - any other file in test files folder
   3. 24- test files he sent
2. Wav files with between 1 and 5 channels
   1. 1 channel – SineWave.Wav
   2. 2 channel - 2\_Channel\_24\_48\_minus6db.wav
3. Mp4 files of 16-bit, 24-bit, and 48-bit size
   1. Still need to verify
4. Mp4 files with between 1 and 5 channels
   1. Still need to verify

Opening these files is tested for 1 and 2 channel 24-bit files in “Audio\_calculations\_test.py”

The Soundoff Software will then calculate the following values from types of files above:

1. The True Peak value in dbfs:
   1. Calculated by interpolating between sample peaks. We are using 3 different interpolation methods (with varying levels of conservatism) to find the true peak and then taking the median of these values. The three methods we are using are:
      1. Resampling using FFT
      2. Resampling using resampy
      3. Resampling using polynomial

Peak calculation is tested for 1 and 2 channel 24-bit files in “Audio\_calculations\_test.py”

1. The Integrated Loudness in LUFs:
   1. Calculated by the python library pyloudnorm which uses an algorithm that implements  [ITU-R BS.1770-4](https://www.itu.int/dms_pubrec/itu-r/rec/bs/R-REC-BS.1770-4-201510-I!!PDF-E.pdf)
   2. Note that pyloudnorm only works for up to 5 channels, in the case that a file with 6 channels is passed into the program, Soundoff will inform the user that 5 channels is the max input

LUFs calculation is tested for 1 and 2 channel 24-bit files in “Audio\_calculations\_test.py”

The Soundoff Software will produce a report that details the following information about the input file.

1. The LUFs and True Peak value
2. The difference between the LUFs and True Peak value of the file and the LUFs and True Peak value standards of selected platforms
   1. The difference will be Green and positive (indicating the amount of loudness can be increased by and still pass) if the input file would pass the platform’s standard and be accepted without adjustment by the platform,
   2. The difference will be Yellow if the input file is within a certain margin of the platform’s standards. The value will be positive if it is below the cutoff(indicating the amount of loudness can be increased by and still pass). The value will be negative if it exceeds the cutoff (indicating the amount of loudness will need to be decreased by in order to pass)
      1. Within .5 dbfs of the platform’s True Peak standard
      2. Within 2 LUFs of the platform’s LUFs standard
   3. The difference will be in Red and negative (indicating the amount of loudness will need to be decreased by in order to pass) if the input file would not pass the platform’s standard and would not be accepted without being adjusted (either by the platform or the user).

These are “tested” in the “User Interface Testing.doc” which verifies resulting output from given input.

The Soundoff Software will also have the following features:

1. The ability to add a new platform/standard for files to be compared against
2. The ability to modify/delete existing platforms/standards loaded into the software
3. The ability to view the existing platforms/standards loaded into the software

These are “tested” in the “User Interface Testing.doc” which verifies resulting output from given input

Testing

Audio\_calculations\_test.py

Tests open\_wav\_file for 1 and 2 channel files

Tests get\_lufs for 1 and 2 channel files

Tests get\_peak for 1 and 2 channel files

Coverage reports

audio\_calculations\_py.html

audio\_calculations\_test\_py.html