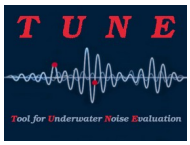
T U N E

Tool for Underwater Noise Evaluation



RELEASE NOTES

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V. 5.13 – 20-jan-2025

Program name changed from “UWNoiPro” to “TUNE – Tool fo Underwater Noise Evaluation”, code and documentation revised accordingly.

Removed normalization in subroutine (updated to v. 3.3) applied to last FFT subinterval, unnecessary as slideback does not change its length.

Applied workaround to Matlab bug which sends GUI window to background after file selection dialog (bug fixed in R2024).

Added header lines to output text files with column data names and units.

V. 5.12 – 6-dec-2024

Program now begins selecting input/output folders and calibration/setup files from last valid session. These are saved at the end of every succesful run to a *.mat initialization file in a subfolder of user’s home folder. If no such file is present, default folders are used.

Fixed bugs related to calibration file in SF units and error when FFT segment is longer than snapshot, due to slideback fail. Added error output when FFT points exceed snapshot samples.

V. 5.11 – 27-nov-2024

Fixed bugs causing hangs if only decidecade PSD with no broadband PSD option is selected and upon saving JPEG/text files.

Use different method to handle last FFT subinterval in snapshot (slideback instead of zeropad), to better handle low frequency components. Updated “evalPSDBBDD” subroutine to v. 3.2.

V. 5.10 – 20-nov-2024

Added optional lowpass filter; when combined with existing highpass, a single combined bandpass fiter is applied.

All GUI parameters may optionally be saved to a *.mat setup file, or loaded from an existing *.mat setup file. The only exceptions are input folder, output folder, and calibration file which are excluded from setup file and should always be set in current session manually.

V. 5.06 – 27-mar-2024

Changed frequency intervals from one-third octave bands centered in ISO preferred frequencies to decidecade bands, according to ISO 18405:2017 standard. Updated GUI accordingly, extending band range from 1 Hz to 800 kHz and FFT n. of points to 1.048.576.

Fixed decidecade bandwidth calculation and PSD element sum accounting for frequency bin width.

Merged subroutines for PSD and TOB calculation into single “evalPSDBBDD” v. 3.0 reducing processing time as spectra are now calculated only once for both representations.

Output JPEG and text files now include date-time in file name, making them unique.

V. 5.05 – 8-mar-2024

First version distributed as Windows standalone executable. Installer downloads Matlab runtime v. 9.5 (R2018b) if required.

Added linear interpolation to FFT zeropadding to remove jump discontinuities causing single FFT spectrum rising artificially.

Added floating message info box with processing details depending on file parameters.

Fixed focus stealing issue causing plot drawing on another figure if user clicks on it. Added option for keeping figure size and position on screen.

Calibration file now read ignoring blank lines or lines beginning with non-numeric character.

Requires subroutines “evalPSD” v. 2.6, “evalTOB” v. 2.7.

V. 5.04 - 4-mar-2024

First version packaged and deployed with Matlab application compiler under release R2018b on Windows.

Added message box on waveform figure during filtering.

Figures are automatically resized if exceeding screen top.

V. 5.03 – 1-mar-2024

First porting from Matlab R2023b under Linux to Matlab R2018b under Windows.

Graphical issue with GUI related to logo graphical image, not supported under R2018b.

V. 5.02 – 28-feb-2024

Added logging to text file, and return value of main function to GUI with exit status.

Rearranged items on GUI.

V. 5.01 – 27-feb-2024

First version with GUI – graphical user interface – created using Matlab App Designer R2023b under Linux, based on latest text-command version 4.7. Included option for SPL (RMS).

Original main m-file script changed to main function called by *.mlapp GUI.

Version numbering now in N.nn format.

Note: App Designer R2023b under Linux has a persisting bug affecting interface response to mouse and keyboard action. Development still possible but with difficulties (user needs to switch between currently open windows to gain focus on entry fields, and some menu items are inaccessible). This issue does not appear in the corresponding release under Windows.

V. 4.7 – 20-feb-2024

Last version based on m-file scripts and text commands, without graphical user interface (GUI).

Revised terminology using definitions of ISO 18405 standard (SPL, PSD, one-third-octave).

Added warning if FFT frequency resolution is unable to resolve lowest one-third-octave band, otherwise processing still proceeds but some points are missing in final plots.

Requires subroutines “evalPSD” v. 2.4, “evalTOB” v. 2.5.

V. 4.6 – 9-feb-2024

Added percentiles on final plots along with averages. Option for plotting all PSD curves for each snapshot.

V. 4.5 – 8-feb-2024

Substituted alternatives to library functions not supported under Matlab release R2015b and earlier.

Compared results using benchmark input data with Raven v. 1.6.1, agreement found.

V. 4.4 - 28-apr-2021

Switched to snapshot averaging on linear data instead of dB data, which is less correct.

Cross-validation of results with alternate Matlab scripts, general agreement found with some minor differences related to number of FFT points used in computation.

Requires subroutines “broadbandspl” v. 2.3, “tobspl” v. 2.4.

V. 4.3 – 15-apr-2021

Use of correct file separator under Windows or Linux to build file paths.

Added options for box plot or line plot with one-third-octave bands, and plot lines for max/min along with averages. Updated legends with additional lines.

Renamed axis labels according to processing type.

Reference pressure and verbose mode parameters now passed to subroutines.

V. 4.2 – 23-nov-2020

Added Knudsen’s curve overlay on PSD final plot.

V. 4.1 – 29-sep-2020

First version with batch mode processing, no user interaction needed during run.

Parameter setup defined as static values in main m-file script.

V. 3.3 – 28-sep-2020

Last interactive version, processing done on one file at a time.

Corrected issue with one-third-octave band numbering when selecting first (10 Hz) or last (80 kHz).

V. 3.2 – 11-may-2020

Added option for writing results on output text files for averages only or for all data.

Snapshots may be consecutive or separated by time intervals.

V. 3.1 – 5-may-2020

DC component removed from snapshot prior to processing.

Results now optionally written to text files.

Revised FFT and snapshot overlapping now accepting values in %.

Requires subroutines “broadbandspl” v. 2.0, “tobspl” v. 2.0.

V. 3.0 – 30-apr-2020

Added saving figures to JPEG files.

Requires subroutines “broadbandspl” v. 1.8, “tobspl” v. 2.0.

V. 2.6 – 20-apr-2020

Changed method to define one-third-octave band limits: from fixed proportional width with respect to center frequency, to geometric mean between adjacent bands (slightly more precise).

Requires subroutines “broadbandspl” v. 1.8, “tobspl” v. 1.4.

V. 2.5 – 14-apr-2020

Solved issue when computing FFT in last portion of snapshot, caused by incorrect zeropad normalization.

Requires subroutines “broadbandspl” v. 1.6, “tobspl” v. 1.2.

V. 2.4 – 3-apr-2020

Option for keeping last used parameters when processing files sequentially.

Requires subroutines “broadbandspl” v. 1.5, “tobspl” v. 1.1.

V. 2.3 – 23-mar-2020

Added box plot for one-third-octave band processing

V. 2.2 – 18-mar-2020

Added separate subroutine for one-third-octave band processing.

User may change parameters and options on each run.

Requires subroutines “broadbandspl” v. 1.4, “tobspl” v. 1.0.

V. 2.1 – 17-mar-2020

Frequency span of one-third-octave bands now passed to subroutine as indexes of a frequency vector defined by FFT.

V. 1.3 – 10-mar-2020

Calibration data in dB now passed to subroutines as equivalent scale factor in pascal.

Added zero padding at end of snapshot, with average accounting for it.

Requires subroutine “broadbandspl” v. 1.4.

V. 1.2 – 9-mar-2020

Revised normalization factors dealing with number of FFT points, sample rate, FFT windowing.

Requires subroutine “broadbandspl” v. 1.2.

V. 1.1 – 5-mar-2020

Added support of Matlab releases prior to R2012b by using substitutes to audio*() functions.

Loads calibration file: text, row-wise, first column = Hz, second column = dB

Requires subroutine “broadbandspl” v. 1.1.

V. 1.0 – 3-mar-2020

First working version: open WAV audio file, display info, then select time interval (start, stop, snapshot length) and processing type (broadband or one-third-octave).

Requires subroutine “broadbandspl” v. 1.0 developed from previous functions MSPSD, SPLTOB for broadband and one-third-octave processing.

Requires Matlab R2012 or later to support library functions audioread(), audioinfo().