NS5 Environmental Noise Module

Data processing software for noise sources evaluation

Tonal and Impulsive noise components assessment

Reference standards: ISO226-1987 - ISO226-2003 - D.M.16/03/1998

Immission, emission, background levels (differential source - background)

Direct comparison of noise levels to area of destination use

Partial Leq referred to TM (Measurement time), TR (Reference time period) or TUser (selectable)

Background noise time period calculation customizable

Running Leq

Leq and Lp per period recalculation; AVG, MAX and MIN values

Tonal and Impulsive components calculation parameters user editable

Automatic report of numerical and graphic data in Word and PDF format

Sound level meter setup customizable using Noise Studio

Calculation and representation of tonal components using persistency graphs

Calculation and display of MIN spectrum for selected source

Calculation and display of AVG spectrum for selected source

Calcolo e visualizzazione dello spettro istantaneo

Display of instantaneous spectrum

Multi-spectral display (time history of frequency bands)

Sonogram display

Environmental Noise Assessment

Npise nuisance

Tonal Components

Impulsive Components

Penalty for LAeq,$_{TR}$

Bonus for short duration noises (partial time)

Statutory limits comparison

Sources levels

Anomalous events masking

Automatic Word or Pdf reports

Export pdf, excel, txt

Export chart

Environmental Noise module of Noise Studio allows to evaluate emission, immission and background (differential) noise level produced by annoying sound sources.

Calculations are made according to national and international technical standards. An advanced processing function provides automatic search and identification of tonal and impulsive noise components. Unwanted noise events can be excluded from calculation; specific sources of noise can be identified in the data file using coloured markers, enabling to recalculate their specific levels.

TONAL COMPONENTS IDENTIFICATION:
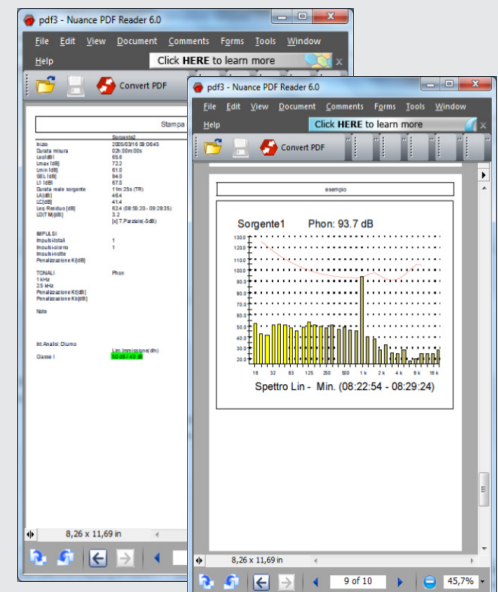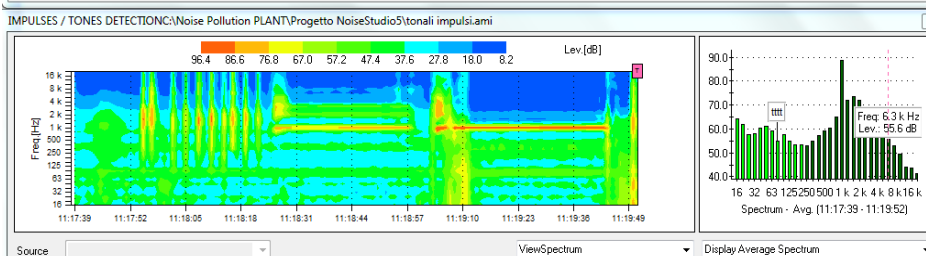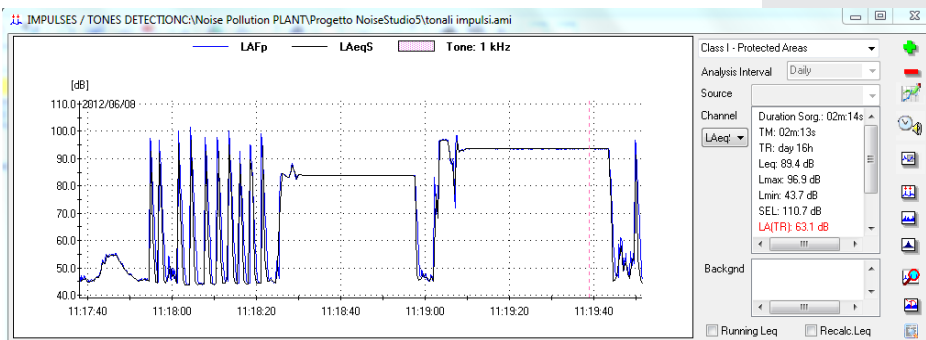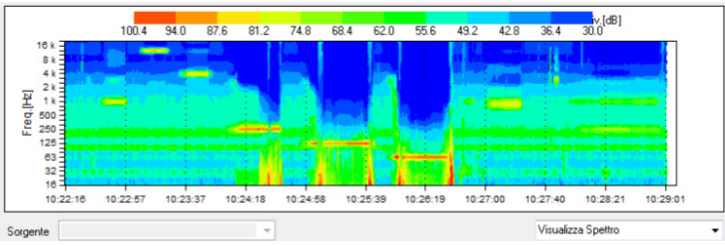
TONAL COMPONENTS IDENTIFICATION: Noise Studio NS5 starting from multi-spectrum noise acquisitions, allows to perform automatic detection for the presence of tonal components into the measurement data. Search for tonal components can be made both on the entire measurement duration or for specific sources, as soon as they have been marked using source identification function. The time period for tonal components scanning (sliding window) and the level difference beetween adjacent bands can be modified by the user. Also the MIN spectrum calculation can be customized by inserting the starting and ending time for analysis. Tonal components can alternatively be analyzed using special 1/3 octave filters having the center frequencies shifted by 1/2 band (only for HD2110L sound level meter with option HD2110.O1); such "shifted" spectrum allows to detect noise tones crossing two third octave standard filters.
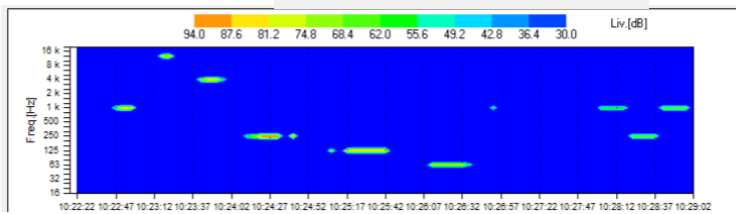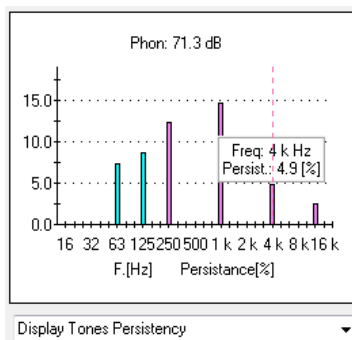

PERSISTENCY GRAPH: when detected, tonal components are displayed on a color chart where all other noise components without tonality, audibility and sufficient persistency are hidden. Are highlighted only specific frequency components of interest, having attributes of annoyance and tonality.

Persistency of each tonal component, expressed as a time percentage, is synthesized in a chart frequency/amplitude. The components detected are listed in a table from which you can select one or more than one for additional calculation.

On selected components can be extracted the MIN, INST or AVG spectrum; obtained spectrum is compared to ISO 226 equal-loudness contours to check audibility of tonal component under investigation. If a tonal component is found, a penalty of 3 or 6 dB (for components below 200Hz) is applied to global noise level $LAeq,TR$ (Leq on Reference Time).

TONAL COMPONENTS

Real Time modifications display

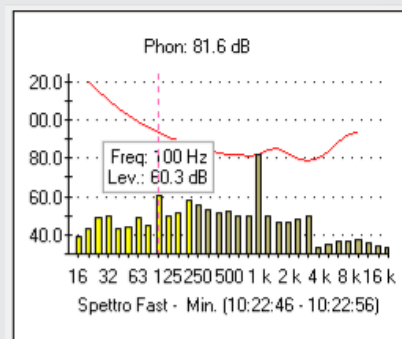Tonal components automatic detection

ISO226 curves

Persistence graph

$LAeq_{,TR}$ penalty

Comparison of spectra with isophonic curves for frequency audibility check

Equal-Loudness Contours: minimum spectrum of one or more components found, is compared to equalloudness contours. Only the band "touching" the higher isophonic curve is taken into account for calculation to apply penalty.

Persistency-Frequency graph: tonal components displayed as a function of their persistency
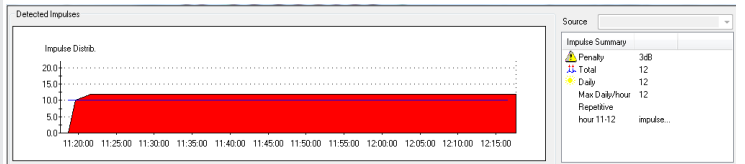
IMPULSIVE COMPONENTS

Real Time modifications display

Impulses automatic detection

Impulses count (day and night)

Hourly impulses distribution

LAeq,TR (reference time) penalty for impulses detection

Impulses details

Editable calculation parameters
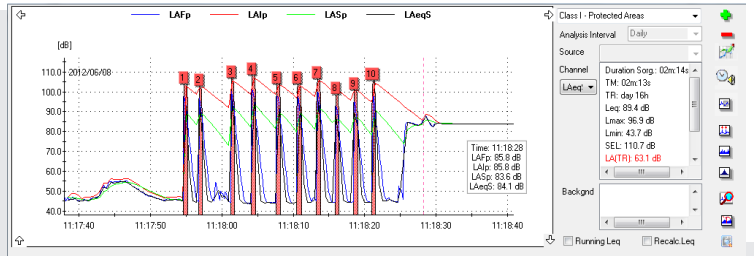
IMPULSES DETECTION: identification of individual impulses during Day and Night periods.

Count associated to specific source or to the full measurement. Detected impulses are identified using markers and numbers on the time history and even in detailed tables. If the allowed number of impulses is excedeed, the LAeq,TR (Reference Period) will be added a 3dB penalty.

Possibility to customize detection parameters.

IMPULSES HOURLY DISTRIBUTION: distribution of detected impulses on 1h periods with indication of exceeding number of impulses both for day and night period. Detailed indication of time for each impulse. Possibility to insert user defined start time for detection.

IMPULSES TABULAR LIST:

detected impulses are displayed in tabular format. For each event are listed the exact time, LAI_{max} - LAS_{max} level, LAFmax and duration. Selecting the impulse will accordingly synchronize and zoom the time history on wanted event.

SHORT PERIOD NOISES: the presence of disturbing noises having a limited duration compared to the daily reference period duration (for example a disturbing noise having only 15' emission duration) is automatically detected for each source or combination of sources. A bonus is automatically applied to overall level LAeq,TR (3 dB or 5 dB); if not applicable it can be disabled by the user.

BACKGROUND NOISE TIME PERIOD:

it's possible to select precisely the time period for Background noise calculation. Background noise will be used for differential limit check (Lsource - Lbgnd) and evaluation of annoying source compared to environmental noise.

DIFFERENTIAL LEVEL: differencial level is calculated as the difference beetween source emission level and background noise level. Time period chosen for background level calculation can be selected and modified by the user.
Two markers on the sound pressure level time history, indicate the starting and ending time of the period choosen for evaluation.

Exceeded differential limits are displayed with the value in red.

The limits are specific for night and day.

NOISE SOURCES IDENTIFICATION

Different noise sources can be entered and identified with customizable names. Individual source levels are then calculated and inserted in the measurement report. Different types of sources can be combined and overall level recalculated. Sources noise levels can be referred to presence time, to statutory periods or to custom time periods. Sections of the time history can be eliminated by the insertion of masks; masked data will not be taken into account in the calculations. The selection of the sources working periods can be done with the mouse or with a direct input of beginning and ending times.

Spectra calculations: processing and display of MINIMUM, AVERAGE and INSTANTANEOUS spectra within a temporal interval.
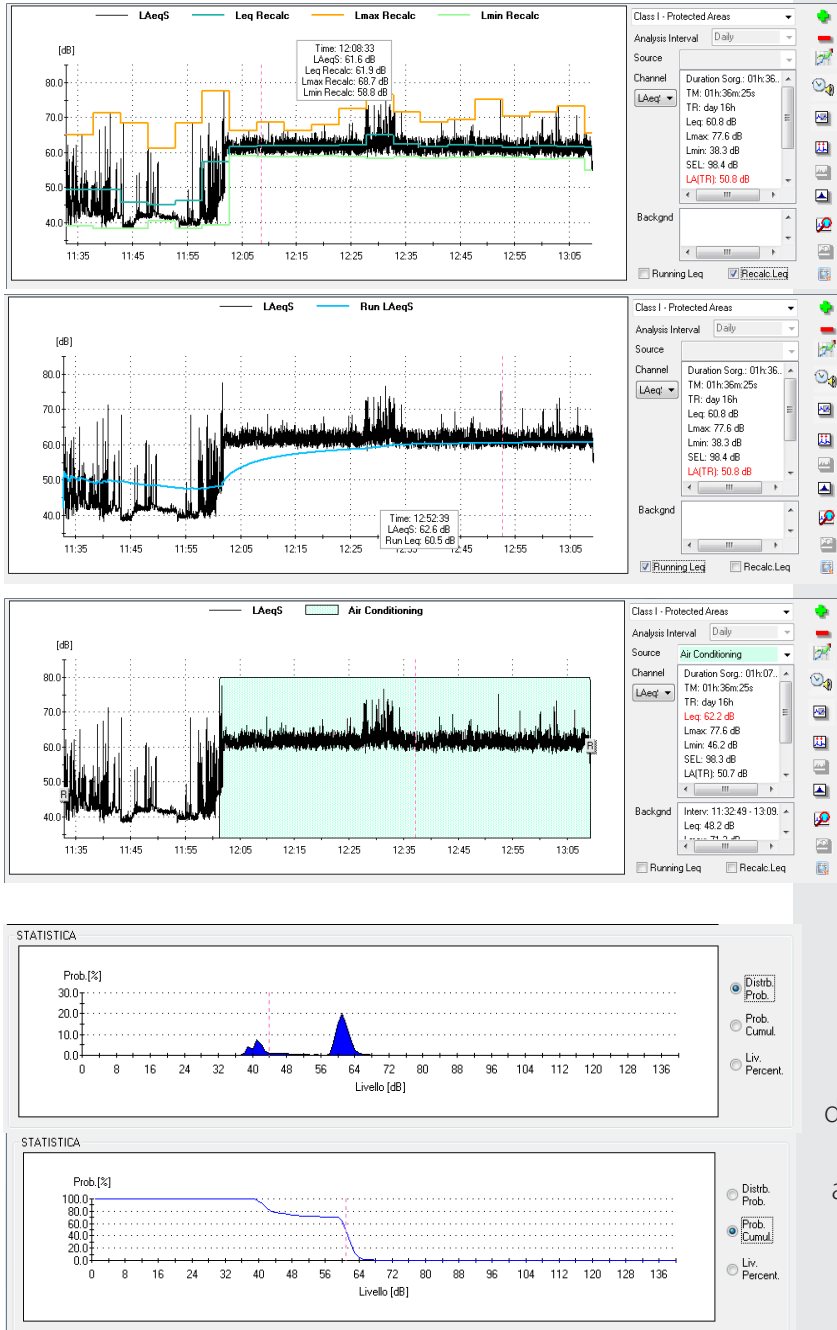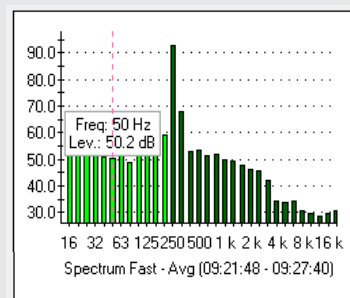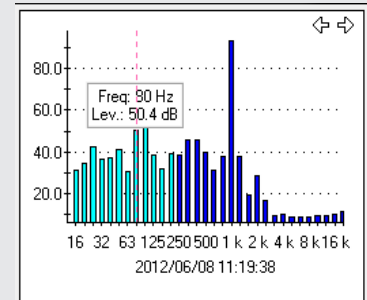

RAPPRESENTAZIONI GRAFICHE ED ELABORAZIONI STATISTICHE

Ricalcolo L_{eq} per periodi utente

Calcolo running L_{eq}

Inserimento sorgenti multiple

Calcoli su spettri
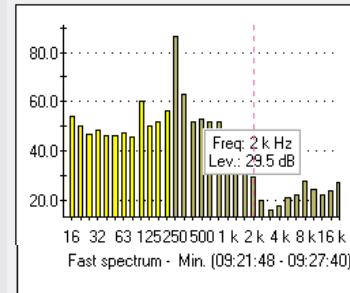
STATISTICS: from the measurement data, it's possible to produce statistics as cumulative distribution, probability distribution and percentile levels. Statistical levels calculations are available as numerical and graphic format. Statistics can be processed also by individual sources.

Available languages: inglese, italiano - Software compatibility: Win98, 2000, Vista, XP, Win7 (32-64), Win8, Win10