## Control Methods
### Control loop
Patented adaptive control algorithm with separate control loops dedicated to controlling the shape of the drive spectrum and overall RMS level; optimized for control speed and stability. The exponential averaging used in the control loop supports a wide range of acoustic reverberation times.

## Control Performance
### Dynamic range
Greater than 80 dB.

### Output
Single output is pure Gaussian noise with smoothing filters and choice of Kaiser-Bessel or Half-Sine windows. Drive signal may be split via an external cross-over network (not supplied) to drive multiple horns.

### Equalization accuracy
Control to within ±1.0 dB for a flat reference spectrum with 120 DOF and 90% statistical confidence ("closed wire").

### Loop time
Less than 1.2 seconds typical for 4 control channels, 4 new frames per loop, 10000 Hz BW, 1600 lines, 4 spectrum averages and 120 DOF (dependent on host model).

## Reference Spectrum
### Definition
Easily defined by a combination of up to 100 frequency breakpoints (frequency value, PSD value) and slopes (dB/octave values).

### Units
Use EU label to support common units such as Pascal²/Hz or psal²/Hz for acoustic spectra or enter directly in dB SPL (displays OASPL).

### Alarm and abort limits
Independent positive and negative alarm and abort tolerances for each breakpoint.

### Frequency ranges
DC to 50, 80, 100, 200, 400, 500, 800, 1K, 2K, 4K, 5K, 10K and 20K Hz.

### Frequency resolution
1/n octave spacing (select n from 1 to 24).

### Re-scale reference
Automatic re-scale of the reference spectrum to achieve desired overall RMS level.

## Control Parameters
### Multiple channel control
1 to all available channels may be selected for control (maximum 98). Control strategies include average, minimum or maximum. For average, you may designate whether or not a channel is removed from the averaging process when a control signal loss is detected.

### Limit profiles
Supports driving limiting based on limit profiles entered via features described under Reference Spectrum. Overrides control, if needed.

### Mode of operation
User (manual) interaction during a test or automatic "hands-free" operation.

### Test duration
User defined up to 999:59:59 (h:m:s).

### Degrees of freedom
User defined from 8 to 10,000.

### Output level control
Automatic or manual (step up/down/full level).

## Startup Parameters
### Equalization start level
Selectable from -30 dB to 0.0 dB.

### Time at initial level
Off or timed in seconds or loops (0 to 10,000).

### Level increment
0.1 to 10 dB.

### Pre-stored drive startup
Skip equalization by selecting drive from Level increment 0.1 to 10 dB. Time at initial level Off or timed in seconds or loops (0 to 10,000).

### Equalization start level
Selectable from -30 dB to 0.0 dB.

### Startup/shutdown rates
Independent selections; 0.1 to 50 dB/sec.

## Test Automation
### Microphone Calibration
Uses analyzer mode to calculate channel sensitivities for selected microphones.

### Level scheduling
User defined levels, time at level, transition time to reach the level and number of cycles. User defined sequence of up to 100 independent tests run automatically.

### Test scheduling

## Channel Setup
### Channel type
Control, auxiliary (measurement) or limit.

### Transducers
Microphone or accelerometer (for auxiliary).

### Coupling
Select AC, DC or ICP with 24V supply.

### Sensitivity
Select as enabled or disabled (each channel). Up to 45 characters (2 labels each channel). Import from ASCII spreadsheet file or other applications.

## On-Line Displays
### Simultaneous displays
Up to 25 windows, each with up to 4 grids.

### Waveforms per grid
Up to 4 (up to 400 on 100 grids).

### Auxiliary monitor
Optional second monitor for test displays.

## On-Line Analysis
### Spectral functions
Control, reference, monitor, auxiliary, error and limit PSD may be displayed with FFT or 1/n octave spacing. The drive, H(f), coherence and limit number selections are displayed only with FFT spacing.

### Spectra averaging
Auxiliary measurement channels processed with linear or exponential averaging and user defined DOF (separate from control loop).

### Cursors
X and Y value readout, peak search, trace tagging and multi-window locked positioning.

### X-scaling
Linear, log or log-1/n for 1/n octave display.

### Y-scaling
Linear, log or dB (ref) for acoustic displays.

### Analyzer Mode Acquisition
Functions acquired Spectra (PSD) acquired in non-control mode. Also used for microphone calibration. Averaging Select linear or exponential average and the desired DOF with 1/n octave or FFT spacing.

## Host Data Storage & Review
### Setup & format
Automatic timed (any level) or timed at full level or manual mode. Binary files of narrow-band data (published format) converted to UFF or Matlab formats.

### Playback
Scan forward or backward through the entire test data file, with adjustable delay.

### Test overlay
Select files from multiple tests for overlay.

### Annotation
Test name, test time & level for each record.

## Documentation
### Test summary
Documented post-test summary; easily printed or incorporated into documents using standard word processing software.

### Message log
Text file records all system status messages that were displayed during the test.

### Automatic & batch plots
Automatic plot generation at test completion. Plot modes for sending all displays to the printer with single or multiple grids per page. Automatic conversion to UFF & Matlab format.

## Throughput Disk (TPD)
### General description
Supports 1-6 drives for storing all time domain data to disk during a test. Data may be replayed to recreate spectral test displays or may be replayed via Signal Analysis to also view time domain data. See separate TPD data sheet.

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