

High-Precision Performance in Compact Body

ASA-10 Audio Sound Analyzer

- *Accurate Sound Measurement*

Measurement in itself does not improve sound but it is a start to getting an insight into sound. Repeating analysis, tuning and listening will enable you to acquire your ideal sound.

NEW!
*Professional
Version also
available*

- *Compact & Light*

Operates on USB bus power.
Easy to carry around and use anywhere you like.



For Car Audio Tuning



For Listening Room Tuning

Various Measurements You Need! It's Wonderful!

ASA-10 Can Carry Out Various Types of Measurements

The ASA-10 can perform 2-channel measurements simultaneously in realtime with accuracy.

■ Sweep Measurement

Performs accurate frequency analysis using sinusoidal sweep.

■ Realtime Spectrum Analyzer (RTA)

1/1 (professional version), 1/3, 1/6 and 1/12 octave step precision without loss.

■ Impulse Response Measurement

Enables you to observe differences in sound arrival as well as speaker polarity.

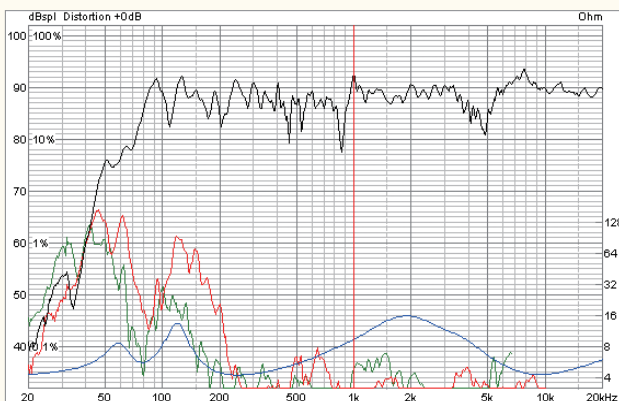
■ Graph Print

Allows you to print results of sweep and RTA on A4 sized paper.

Various data curves can be printed in layered view.

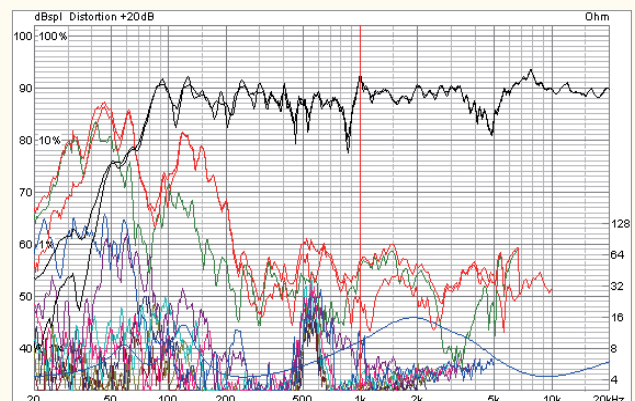
Sinusoidal Sweep Measurement

- Precise and fast measurement of frequency response in approximately 15 seconds.
- Simultaneous measurement of frequency level and distortion.
- In SPL, user can choose from all power or fundamental wave.
- THD and 2nd to 10th harmonic distortion analysis.
- In % display, user can choose from all power or fundamental wave.
- In echoic room measurement, moving average can be used.
- Impedance measurement (impedance adapter option required).



Sweep Measurement Example

Most used curves are shown:
SPL, 2nd harmonic, 3rd harmonic and impedance



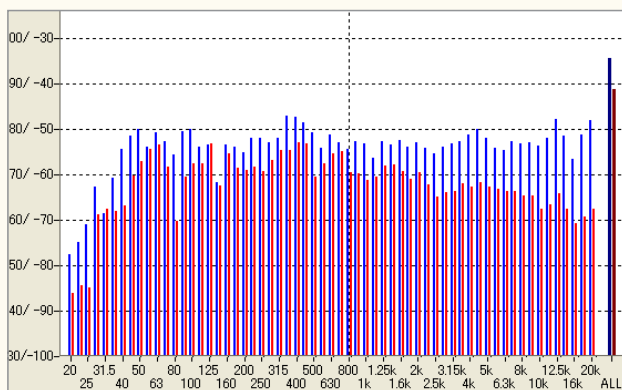
Sweep Measurement Example

All data curves are shown
(Distortion is shown 20dB above)

Great Power in Compact Package!

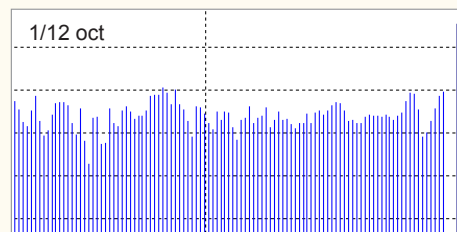
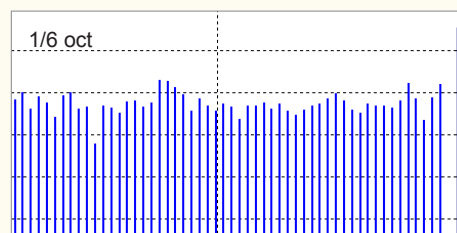
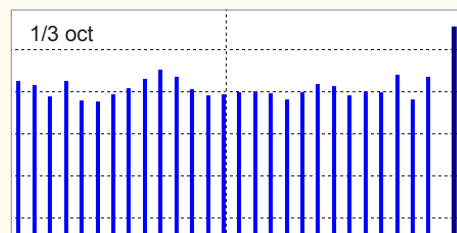
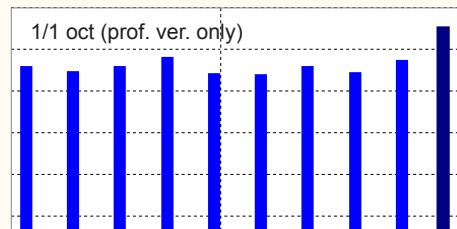
Realtime Spectrum Analyzer (RTA)

- 2-channel: 1/1 (professional version), 1/3, 1/6 and 1/12. Pink noise and sine wave can be used
- Max/min hold function. Response speed is changeable. A-curve can be used (professional version only).
- 2 channel view. Differences in channels can be shown, useful for comparative observation.
- Realtime capability is useful for observing standing wave, SPL distribution and noise source.



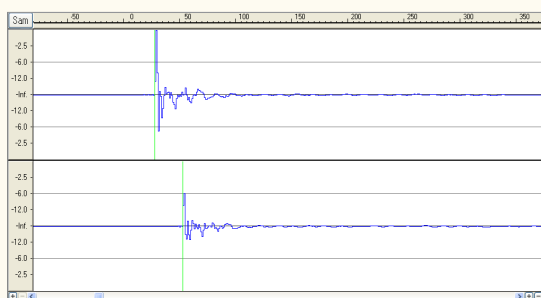
Measurement Window Example

SP-MIC distance: Simultaneous 2ch measurement at hearing positions of 0.5m (front) and 2m (not front)

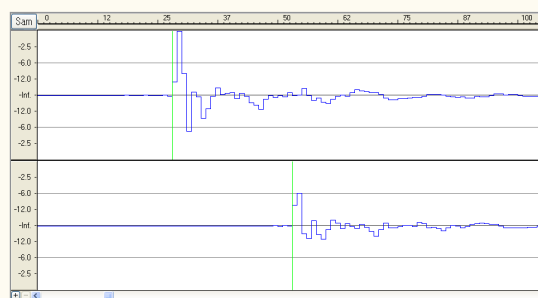


Impulse Response, Sound Delay & Wave Measurement

- Measuring signals of time domain by impulse response: TSP, sine sweep and sine spot.
- Wave recordings of program source and noise.
- Time delay of sound space for time alignment.
- Speaker polarity examination. ** Functions can be strengthened with help of useful options.*



Wave Measurement Window: All View



Wave Zoom

** Examples of measured data are available on our website. Please see <http://www.etani.co.jp/eng/asa10.html>*

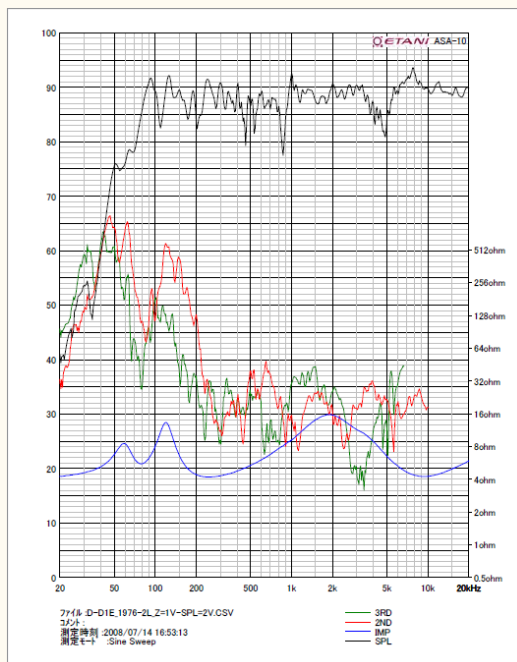
Higher Performance for Professionals!

More Powerful Professional Version Available

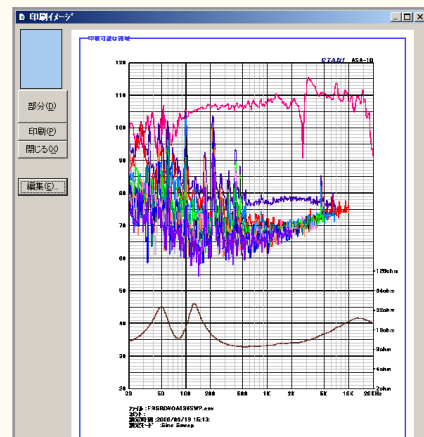
- Enhanced minimal range error and impedance measurement accuracy. * *Specifications at the back.*
- Recommend you to use in combination with high-precision 1/2 inch measurement microphones.

Graph Printing Feature

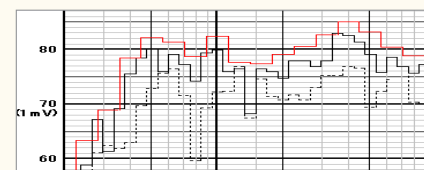
- Sweep and RTA test results can shown in layered view and color printed beautifully on A4 sized paper.
 - Scale and size of graph is always the same and you can compare graphs easily.
- Gives you the flexibility to choose your desired color and line type.



A4 Printout Sample: Sweep

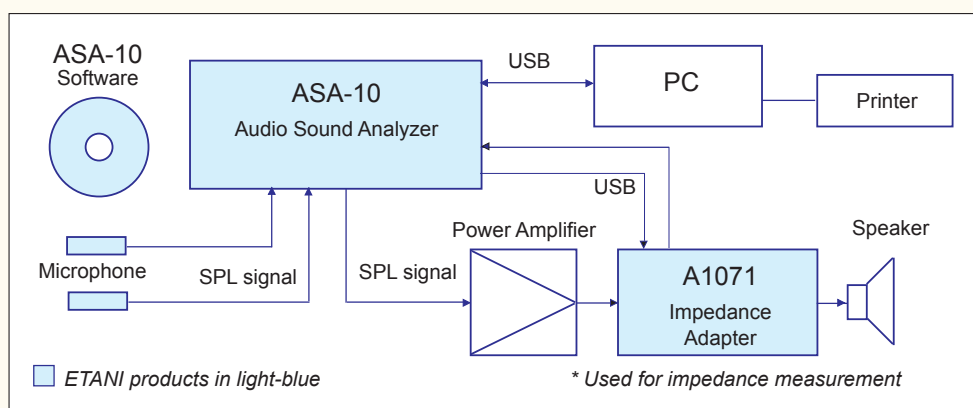


Print Image in Layered Mode: Sweep



Sectional Zoom in Layered Mode: RTA
(Data can be automatically converted into polygonal curve)

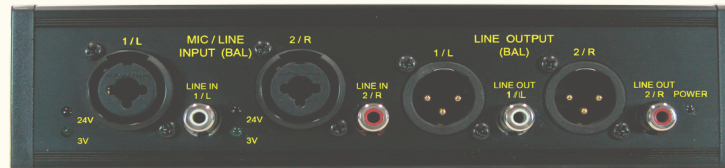
System Composition



System Diagram

Useful Input/Output Connectors

Wide range of input/output connections are supported. Automation of SPL settings: Impedance adapter or SPL measuring cable, volume can be adjusted automatically in precision of 3 figures.



Mic / Line Input (BAL) 1/L 2/R Line Input 1/L 2/R Line Output (BAL) 1/L 2/R Power Indicator



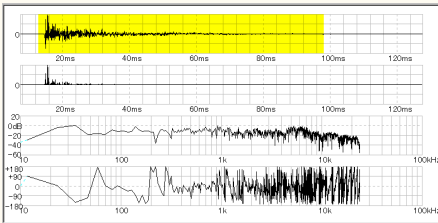
USB Connector Digital Input / Output COAX Optical x 2 Monitor Output 2/R 1/L Mic Power Switch

High Precision with User-Friendly Operation

- **Absolute Accuracy** Guaranteed as a result of its sophisticated hardware and software design. Whereby, this would be difficult to achieve with a PC based sound system. Measurements can be easily reproduced and greatly aids works of professionals.
- **Microphone** Supplied with calibration data. Accurate measurements with automatic calibration.
- **Automatic Measuring Range** In sweep measurement, auto range function allows you to set ranges appropriately and automatically. In impulse response, appropriateness of level will be indicated.
- **High S/N Measurement** High S/N measurement is achieved with use of synchronous averaging (except RTA). In sweep measurement, steep filter is incorporated in SPL frequency responses. In impulse response, higher S/N measurement is possible with use of TSP signals.
- **Exclusive CD** In RTA, signals are not connected to under-test-device but its frequency response can be measured using special CD.
- **Time Measurement** Apart from impulse response, sine sweep and spot sine waves can also be used. Sine wave is useful in observing various noises, such as rub and buzz (with combined use of FFT and sonar graph options) Ordinary sound can also be recorded. Measured wave data can be saved in WAV format.
- **Reference Data Shown** In sweep and RTA, reference data can be viewed in layered mode for observation.
- **Hardcopy of Window Image** Hardcopy of window image can be taken by a single click.
- **Export of Text Data** Can be utilized later in spreadsheet programs.

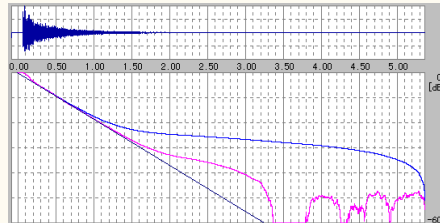
Variety of Useful Functions!

Various Analyzing Software Options



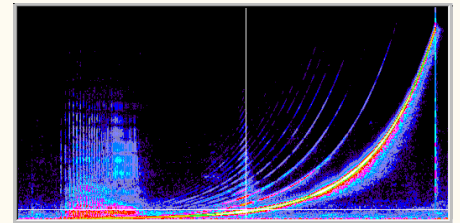
• FFT Analysis

- Frequency response and transient response can be analyzed.
- Energy, frequency level and phase can be analyzed while observing waveform patterns.
- Large number of FFT points (max. 1,048,576 point) facilitates more accurate analysis.
- 3D analysis enables you to examine frequency changes against time and helps you to observe transient response.



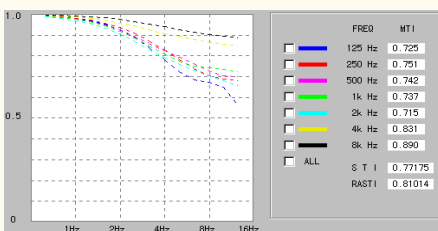
• Reverberant Analysis

- Reverberation time (RT-60), D, C, R, EDT and other values.
- Power level, initial power level and difference between 2 power levels, etc.
- Echo time pattern can be shown and interfering reflections e.g. flatter echo can be seen on display.
- Frequency response graph, power level bar graph and numerical list of each frequency are shown.



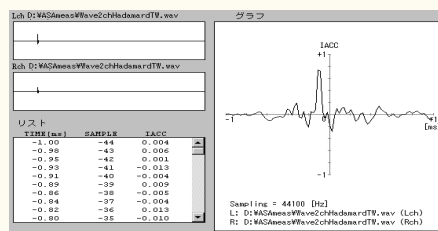
• Sonar Graph

- 3D frequency spectrum display in color.
- Frequency level change can be seen in 3D against time variable.
- Fluctuating low level noise, e.g. background noise and speaker harmonic distortion can be studied and analyzed.
- Aids you to gain data from a new perspective.



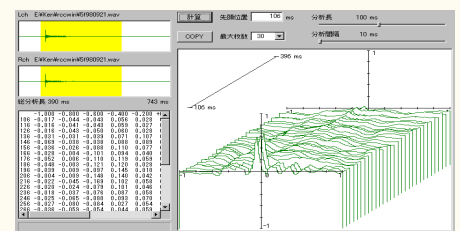
• MTF / STI (voice clarity)

- MTF / STI / RASTI.
- RASTI as well as more detailed STI and MTF can be calculated automatically.
- Results are shown on graph and on list of values.



• IACC

- Sound diffusion and orientation by binaural correlation.
- Assists your evaluation.



• RCC

- Evaluation of spread of sound and interaural cross correlation.

Wide Selection of Accessories

Accessories

No	Product	References
1	High-Precision 1/2 inch Measurement Microphone	De facto standard 1/2 inch microphone. 200V polarization power supply required.
2	Microphone Power Supply (2ch) with AC Adapter for 1)	Used for microphone 1).
3	Hi-Precision 1/2 inch Electret Measurement Microphone	Electret type of 1).
4	1/2 inch Electret Measurement Microphone	Cheaper version of microphone 3).
5	Microphone Power Supply (2ch) for 3) & 4)	Power supply used for microphones 3) & 4).
6	1/2 inch Microphone Holder (for 1 microphone)	For microphones 1), 3) & 4).
7	1/2 inch Microphone Holder (for 2 channels)	For microphones 1), 3) & 4).
8	Stereo Miniature Microphone (2ch)	Compact & light: Only 100g even with 6m cable.
9	Rod-Shaped Microphone	ECM-8000 type made by Behringer with our calibration data.
10	Microphone Cable for ECM-8000	Length: 5m.
11	Stereo Arm for Rod-Shaped Microphone	For use two microphones of type 9).
12	Adapter for Rod-Shaped Microphone Screw to Tripod Camera Screw	Required when using camera tripod for microphone stand for 7) & 9).
13	Compact Elevator Tripod for Microphone	SLIK 500G-7 model designed for camera tripod.
14	Medium-Sized Elevator Tripod for microphone	SLIK U9800 model designed for camera tripod.
15	Impedance Adapter	Used for impedance measurement of speaker.
16	Connection Cable for Impedance Adapter	To connect 15) and ASA-10. (same as ordinary pin cable or USB cable)
17	Speaker Cable for Impedance Adapter	To connect 15) to speaker. (ordinary speaker cable may also be used)
18	Speaker Voltage Measuring Cable	Attenuator built-in cable for measuring speaker terminal voltage. Not necessary if you have impedance adapter.



A1501
High-Precision 1/2" Microphone



A1068
Power Supply for High-Precision 1/2" Microphone



A1070
Power Supply for 1/2" Electret Microphone



A1067
Miniature Microphone



A1071
Impedance Adapter

* Tripod is used for holding microphones. You can also use your own tripod.

* For details, please refer to our website.

ASA-10 Specifications

HARDWARE (PERFORMANCE)

Frequency Range	20Hz ~ 20kHz (frequency of harmonic distortion included)
Sampling	44.1kHz 16bit
Channel	2
Input Range	3mV ~ 10V / Full Scale 10dB step 8 ranges 80dBSPL ~ 150dBSPL SPL conversion (with standard microphone sensitivity)
Input Sensitivity Accuracy	±0.5dB ±0.1dB (Professional Version)
Input Frequency	±0.3dB/50Hz ~ 15kHz at 1kHz ±1.0dB: 20Hz ~ 20kHz at 1kHz
S/N Ratio	64dB or more / Full Scale 10mV or above 54dB or more / Full Scale 3mV range
Input Impedance	Balance: 5.5kΩ Unbalance: 8.2kΩ ±5%
Output Voltage	Balance: Max. 2Vrms Unbalance: Max. 1Vrms Level adjusted via software
Output Voltage Accuracy	±0.5dB ±0.1dB (Professional Version)
Output Setup Accuracy	±0.1dB Full Scale down to -30dB ±0.3dB Full Scale down to -30dB ~ -40dB Value adjusted automatically in sweep measurement (at 1kHz) In RTA, adjusted in 1dB step
Output Wave Distortion	THD: 0.1% or below / max. -2dB
Output Impedance	Balance: 600Ω Unbalance: 300Ω ±5%
Impedance Measuring Range	1Ω ~ 200Ω When Impedance Adapter is used in Sweep Measurement
Measuring Accuracy	±3% / 1Ω ~ 60Ω 20Hz ~ 20kHz ±1% / 1Ω ~ 16Ω 400Hz (Professional Version) ±1.5% / 1Ω ~ 16Ω at 50Hz ~ 5kHz ±3% / 1Ω ~ 60Ω at 20Hz ~ 20kHz 16bit 2 channels
A/D D/A	
Power Supply	USB bus power (max 440 mA)
Dimensions	W200mm x H 53mm x D135mm (including projective parts)
Weight	Aprox. 530g
Temperature	10 ~ 35°C
Humidity	20 ~ 80%RH
Accessories	USB cable & Installation CD (with PDF User Manual)
Computer	OS: Microsoft Windows Vista/XP/2000

OPTIONAL HARDWARE

A1501	High-Precision 1/2 inch Measurement Microphone
A1068	Microphone Power Supply (2ch) with AC adapter for A1501
A1075	Car Cigar Lighter Socket Cable for A1068
A1066	High-Precision 1/2 inch Electret Measurement Microphone
A1069	1/2 inch Electret Measurement Microphone
A1070	Microphone Power Supply (2ch) for A1066
A1035	1/2 inch Microphone Holder (for 1 microphone)
A1021	1/2 inch Microphone Holder (for 2 channels)
A1067	Stereo Miniature Microphone (2ch)
ECM-8000	Rod-Shaped Microphone
A1513	Microphone Cable for ECM-8000
ST2	Stereo Arm for ECM-8000 (for 2 channels)
A1514	Adapter for ECM-8000 screw to Tripod Camera Screw
500G-7	Compact Elevator Tripod for Microphone
U9800	Medium-Sized Elevator Tripod for microphone
A1071	Impedance Adapter (for measuring impedance)
A1072	Connection Cable for Impedance Adapter
A1073	Speaker Cable for Impedance Adapt
A1074	Speaker Voltage Measuring Cable
A1077	Audio Test CD (self-producible)
Carrying Case	Under plan. Please inquire.

SOFTWARE (MEASUREMENT FUNCTION)

SINUSOIDAL SWEEP MEASUREMENT

Frequency Range	20Hz ~ 20kHz approx. 15 sec. User settable
Measuring Range	SPL: 80 ~ 150dBSPL (with standard microphone sensitivity) (limitations depending on microphone) Impedance: 1 ~ 200Ω / 1V
Auto Range	Supported
Level Display Range	70dB x 2 & x 4 zoom
Measurements	SPL characteristics: 2 types: All power & fundamental wave SPL harmonic distortion: 2nd ~ 10th order Total harmonic distortion: Range is specifiable Distortion level view: Absolute level / % display selectable Moving average is possible along frequency axis for SPL & distortion Impedance freq. response: Impedance adapter option necessary Speaker cable resistance correctable
SP Voltage Setting	Automatically adjustable using impedance adapter option & measuring cable
Layered Graph View	Reference data: ON/OFF Previous curves (continuation) possible

REALTIME SPECTRUM ANALYZER (RTA)

Channel	2-channel Simultaneous display
Frequency Range	20Hz ~ 20kHz
Resolution	1/1 octave (Professional Version) 1/3 octave 1/6 octave 1/12 octave selectable All power level display A-curve layered view (Professional Version)
Measuring Input	Microphone / Line changeable
View	Comparison with reference data Max. Hold / Min. Hold L/R difference
Level Range View	-110dBV ~ 30dBV: Line input 10dBSPL ~ 150dBSPL: Mic input (with standard mic. sensitivity)
Measuring Input Signal	Pink noise Spot sine wave
Integral Time	Sine wave / Pink wave / Slow (Slow Professional Version only)
Filter	Based on JIS standards & ANSI standard (including A-curve)

IMPULSE RESPONSE / TIME DELAY / WAVE RECORDING

Time Delay / Polarity / Impulse Response / Wave Recording	
Measuring Channel	1 or 2 channels selectable Input Microphone / Line changeable Output signal type TSP signal (time stretch pulse for impulse) Sine wave below is also selectable (Professional Version) - Sweep sine wave: Frequency range specifiable - Spot sine wave: Frequency range specifiable
Synchronous Averaging	1 ~ max. 256 times
Recording Duration	0.72, 1.45, 2.9, 5.18 or 11.6 sec.
Signal / Total Time Ratio	1/2, 1/4, 1/8 or 1/16
Measuring Range	Distance: max. 3700m
Polarity	Can be observed by magnifying waveform view Time axis: x 2, 4, 8 or 16 times Amplitude axis: x 2, 4, 8 or 16 times Amplitude display can be automatically fit into maximum view
Data Storage	WAV format file

GRAPH PRINT

Sweep / RTA	Measured results can be printed on A4 sized paper
Layered Print	Several curves can be layered and printed
Scale	Uniform scale
Line Color	Color settings and user-modifications can be saved

OPTIONAL SOFTWARE

REVERBRATION PARAMETER

1/1 oct. band width, 1/3 oct. band width
Reverberation time (RT60)
Reverberation curve (for each band)
Echo time pattern (for each band)
All power level
50ms power level
R, D, C, TS and EDT values
Noise range Slope level
Numerical list & frequency response graph
Energy level frequency response

VOICE CLARITY

MTF	Fundamental wave: WQ125 / 250 / 500 / 1k / 2k / 4k / 8kHz
	Modulation frequency: 0.63 ~ 12.7Hz analyzed for 1/3 oct. each
	Graph view, STI (calculation based on MTF), RASTI & numerical list

FFT ANALYSIS

Wave View	Energy Graph
Power characteristics	Phase characteristics
Group delay time characteristics	Nyquist
Point No. (FFT)	4k ~ 1M (* Point numbers are saved to PC memory)
(3D)	256 ~ 32k
Window	Rectangle / Humming / Hanning Graph level spill-over 1/1 oct. & 1/3 oct. frequency responses Scale changeable

SONAR GRAPH

Level Color / Range Setting	
Frequency Axis	Logarithm / straight line changeable
Wave View	

Point No. (FFT)	128 ~ 2048
Graph View	Wave display Table
IACC	Graph view Wave view Numerical list
RCC Analysis	Graph view Wave view Numerical list

* For purchasing method and prices, please inquire using our enquiry form on our website.

* Specifications may be subject to change without notice.



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