CLIO FEATURES - GENERAL

• PC-IBM BASED INSTRUMENT
• PROPRIETARY HARDWARE DESIGN
• TWO CHANNELS IN ANALYZER
• TWO CHANNELS OUT GENERATOR
• <1 Hz - 22 KHz FREQUENCY BAND
• 16-BIT RESOLUTION
CLIO FEATURES - HARDWARE

• PRECISE OUTPUT SIGNAL CONTROL:
  FROM +12 dBU TO FULL MUTE IN 0.1 dB STEPS (SINE)

• HIGH INPUT ACCEPTANCE:
  FROM +30 dBV TO -40 dBV FULL SCALE

• SINGLE-ENDED OR BALANCED ACQUISITION

• VARIABLE SAMPLING: 51.2 KHz TO 3.2 KHz

• DUAL DMA TRANSFER TO PC (OR I/O)

• ON-BOARD MICROPHONE POWERING
CLIO FEATURES - HARDWARE

HOW DOES HARDWARE DESIGN REFLECT ON YOUR INSTRUMENT?

• GENERAL PERFORMANCE AND ACCURACY
• EASY POSSIBILITY OF INTERFACING
• OPERATION LIKE ITS ANALOG COUNTERPART
• THE GENERATOR IS FULLY PROGRAMMABLE
• THE ANALYZER AND GENERATOR OPERATE SEPARATELY (GENERATOR IN BACKGROUND)
CLIO FEATURES - SOFTWARE

- WINDOWS-LIKE USER INTERFACE
- CUSTOM CONTROL PANELS
- CONTEXT SENSITIVE HELP ON-LINE
- POWERFUL EDITING AND EXPORT
- ON-THE-FLY HW SETTINGS CONTROL
- CONTROLS FOR EXTERNAL HARDWARE
CLIO FEATURES - SOFTWARE

HOW DOES SOFTWARE DESIGN REFLECT ON YOUR INSTRUMENT?

• IT’S EASY TO LEARN

• IT’S EASY TO USE IN EVERYDAY WORK

• GIVES YOU THE IMPRESSION OF FACING AND OPERATING A REAL INSTRUMENT

• GIVES YOU INTEROPERABILITY BETWEEN DIFFERENT MEASUREMENTS
CLIO MEASUREMENT TECHNIQUES

- MAXIMUM LENGTH SEQUENCES (MLS)
- SINUSOIDAL ANALYSIS
- FFT ANALYSIS
- THIRD OF OCTAVE ANALYSIS
- ACOUSTICAL ANALYSIS
- LEVEL, L-C METER AND OSCILLOSCOPE
MAXIMUM LENGTH SEQUENCES (MLS)

- FREQUENCY AND PHASE RESPONSE
- IMPULSE RESPONSE
- ANECHOIC ANALYSIS
- ENERGY TIME CURVE (ETC)
- WATERFALL
MLS ANALYSIS TECHNIQUE

MLS

D.U.T.

DUT RESPONSE

CROSS-CORRELATION

TRANSFER FUNCTION

FFT

IMPULSE RESPONSE
IMPULSE RESPONSE

Graph showing impulse response with markers and values:
- LEVEL [Volts]: 0.00057
- TIME [ms]: 6.46
- DISTANCE [m]: 2.224
- START [ms]: 2.62
- STOP [ms]: 7.99
- LENGTH [ms]: 5.37
- LOFREQ [Hz]: 186

File: THIELTOTT REFERENCE: NONE
FREQUENCY AND PHASE RESPONSE

CLIO - MLS ANALYSIS

FILE: L3-5TOT Reference: NONE
Freq: 236.19Hz  Mod: 88.04dB
SINUSOIDAL ANALYSIS

• FREQUENCY AND PHASE RESPONSE

• POSSIBILITY OF GATED ACQUISITION

• HARMONIC ANALYSIS VS. FREQUENCY

• DISTORTION VS. LEVEL (THD, SMPTE, CCIF, DIN)

• IMPEDANCE & THIELE-SMALL PARAMETERS

• POLAR PLOTS
SINUSOIDAL ANALYSIS TECHNIQUE

D.U.T.

SYNCHRO & GATING

DIGITAL FILTER

HARMONIC SELECTION

YES

NO
HARMONIC ANALYSIS VS FREQUENCY

The graph shows the frequency response of a system with a focus on the 2nd and 3rd harmonics. The x-axis represents frequency (Hz) ranging from 1K to 20K Hz, while the y-axis represents Decibels (db) from -180 to 180. The graph displays the 2nd and 3rd harmonics with their respective levels indicated by the lines. The 2nd harmonic is shown with a line labeled "2nd" and the 3rd harmonic with a line labeled "3rd." The graph also includes a file path "FILE: L3-5THD," a frequency "FREQ: 4497.2Hz," a modulation level "MOD: 92.08dB," and harmonic levels "2nd: -51.0dB," "3rd: -50.85dB."
IMPEDANCE MODE - CONSTANT CURRENT

PC-IBM

CLIO

INPUT A

INPUT B

OUTPUT A

OUTPUT B

RS

ZX

AMPLI

BLACK

RED
**THIELE - SMALL PARAMETERS**

CLIO - SPEAKER PARAMETERS EVALUATION

MANUFACTURER: KEF  
MODEL: B110-B

D: 88.00 [mm]  
Qms: 2.28  
Mms: 10.39 [g]  
Bl: 8.28 [N/A]

Re: 7.20 [Ω]  
Qes: 0.38  
Cms: 0.84 [mm/N]  
L1K: 0.00 [mH]

Fs: 52.74 [Hz]  
Qts: 0.32  
Vas: 4.32 [l]  
L10K: 0.00 [mH]

FILE: KEF-B110
POLAR PLOTS
FFT ANALYSIS

• DUAL CHANNEL ANALYSIS AND DISPLAY
• TRANSFER FUNCTION
• INTERNAL TRIGGER
• REAL-TIME THD CALCULATOR
• ALLTONE AND MULTITONE GENERATION
THIRD OF OCTAVE AND ACOUSTICAL ANALYSIS

• CLASSICAL 1/3 OCTAVE MEASUREMENT AND DISPLAY WITH PSEUDO-RANDOM PINK NOISE EXCITATION

• REVERBERATION TIME RT60 WITH MLS AND SCHROEDER REVERSE INTEGRATION

• REAL-TIME EQUIVALENT LEVEL (Leq)

• IASCA CALCULATOR
THIRD OF OCTAVE ANALYSIS

AVERAGES
ACTUAL
11
TARGET
300

LEVEL [dB]
LINEAR
121.0
A-WEIGHTED
119.0

REFERENCE
NONE

Load Clear

MARKER
FREQUENCY [Hz]
200

LEVEL [dB]
108.18
DIFFERENCE [dB]
0

FILE: IASCA
REVERBERANT DECAY (RT60)
TIME HISTORY AND Leq

Graph showing a time history analysis with various levels and Leq values.
MILLIVOLTMETER AND SPL METER

CAPACITORS AND INDUCTORS METER
CLIO AND QUALITY CONTROL
CLIO AND QUALITY CONTROL

- “ON-FIELD” DEVELOPED QC SOLUTION
- SIMPLE “GO-NO GO” MASKS
- ASCII FILE DRIVEN QC PROCESSOR
- SWEEPS, FFT, MLS, IMPEDANCE AND POLARITY TESTS
- INTERACTION WITH EXTERNAL HARDWARE TO REALIZE A FULLY AUTOMATIC SYSTEM
Audiomatica S.r.l. Firenze Italy
Loudspeakers Quality Control

Test No.: 2

Good
Ready

Fft Response
Polarity
Impedance

Date: 26/03/97
Setup file: SAMPLE.STP
Total: 1
Good: 1

Out Of Phase: 0
Bad Fft: 0
Bad Response: 0
Bad Impedance: 0

Start  Sweep  Interactive  Setup

File:
CLIO AND QUALITY CONTROL

START

WAIT FOR USER OR EXTERNAL SIGNAL

PERFORM OPTIONAL SWEEP

PERFORM QC TEST N

QC TESTS ENDED?

ALL TESTS GOOD?

GLOBAL RESULT = GOOD

GLOBAL RESULT = BAD

UPDATE DISPLAY AND STATISTICS

YES

YES

NO

NO
MICROPHONES MIC-01 AND MIC-02
CLIOQC AMPLIFIER & SWITCHBOX

- 10 W POWER AMPLIFIER
- INTERNAL SWITCHES FOR IMPEDANCE OR RESPONSE MODES
- ALL FUNCTIONS ARE PC CONTROLLED
- TWO LINE / MICROPHONE INPUTS
CLIO QC - CONNECTION FOR RESPONSE

PC-IBM

CLIO

LPT PORT

OUTPUT (A OR B)

INPUT (A OR B)

CLIO QC AMPLIFIER & SWITCHBOX

INPUT 1

INPUT 2

SPEAKER TERMINALS

RED

BLACK

10 dB
CLIOQC - CONNECTION FOR IMPEDANCE

PC-IBM

CLIO

INPUT (A OR B)

LPT PORT

CLIOQC AMPLIFIER&SWITCHBOX

INPUT 1

INPUT 2

SPEAKER TERMINALS

RED

BLACK

10 dB
CLIO - SOFTWARE VERSIONS

• **CLIO Lite**
  THE ENTRY POINT IN THE CLIO WORLD AT AN UNBEATABLE PRICE!

• **CLIO Standard**
  THE COMPLETE AND PROFESSIONAL SOLUTION TO YOUR NEEDS

• **CLIO QC**
  THE READY-TO-GO QUALITY CONTROL FOR ANY PRODUCTION FACILITY
CLIOLite

- **light** in cost.
- **light** in weight
- **light** in the User’s Manual (in Acrobat format)
- **light**, but not too much, in the Software Lite
- **light** in the optional Microphone Lite
THE END