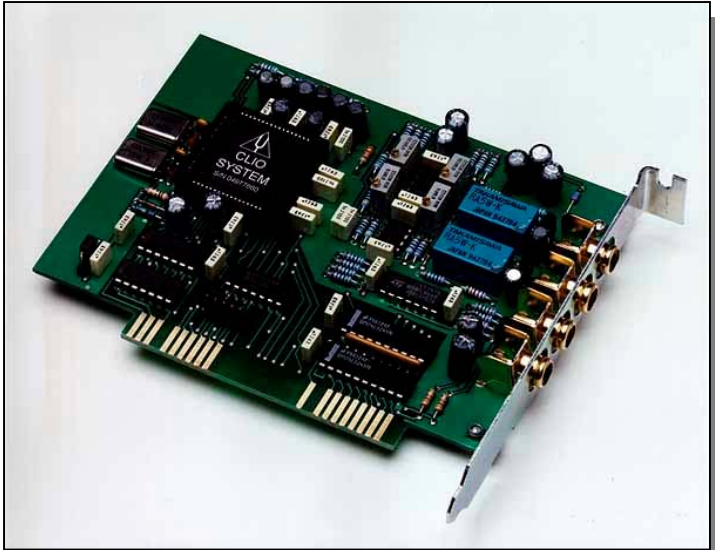


# THE CLIO SYSTEM



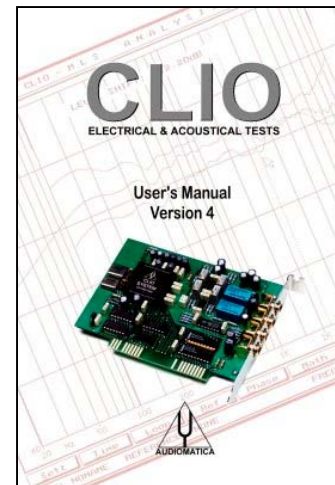
THE HR-2000 PC BOARD



MICROPHONES MIC-01 & MIC-02



THE CLIOQC AMPLIFIER & SWITCHBOX



THE USER'S MANUAL



THE "ELECTRONIC"  
USER'S MANUAL

# CLIO

ELECTRICAL & ACOUSTICAL TESTS

## AUDIO ANALYZER

### VERSION 4



## **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**

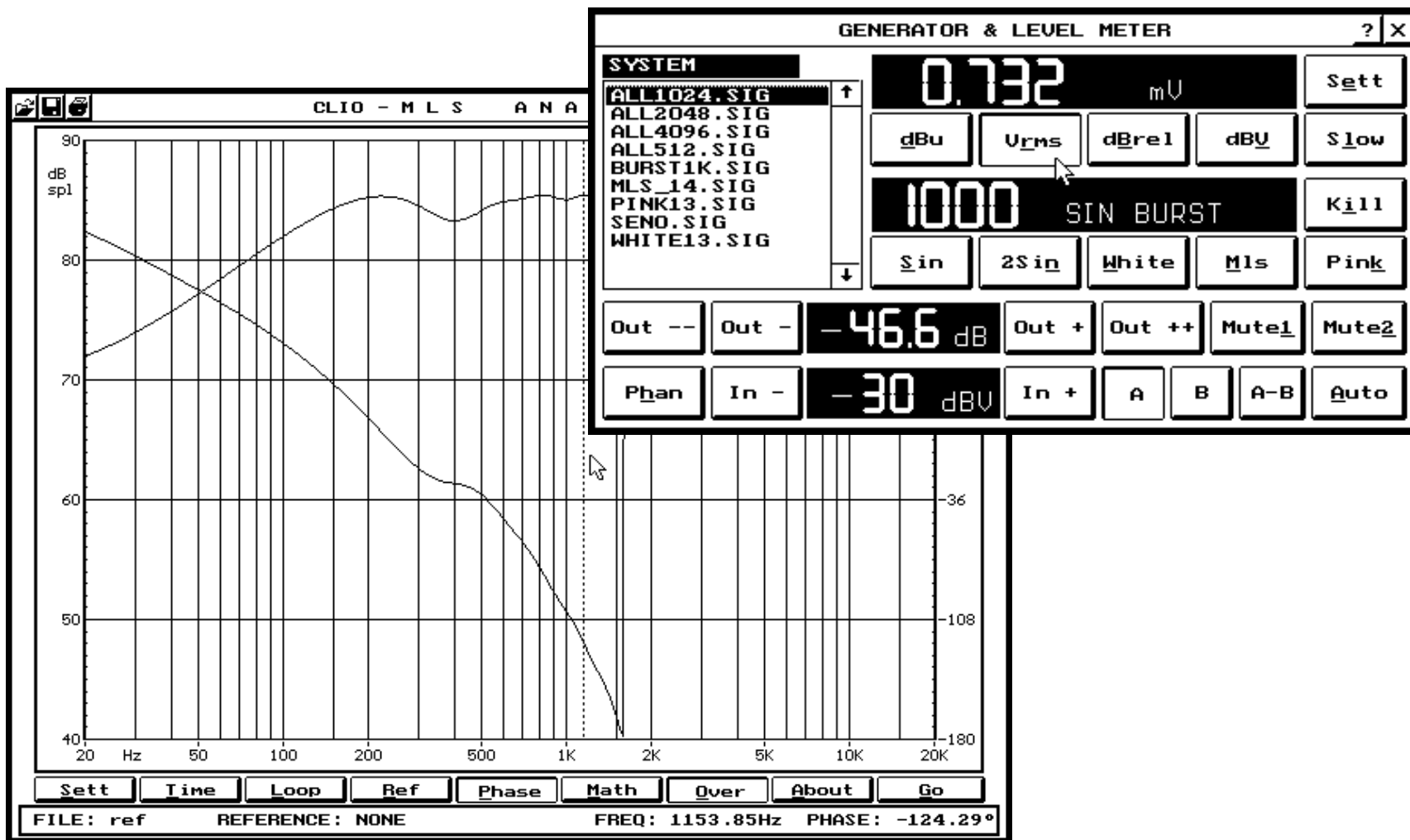
- WINDOWS-LIKE USER INTERFACE**
- CUSTOM CONTROL PANELS**
- CONTEXT SENSITIVE HELP ON-LINE**
- POWERFUL EDITING AND EXPORT**
- ON-THE-FLY HW SETTINGS CONTROL**
- CONTROLS FOR EXTERNAL HARDWARE**

## **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 FEATURES - CONTROL PANELS





# **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**

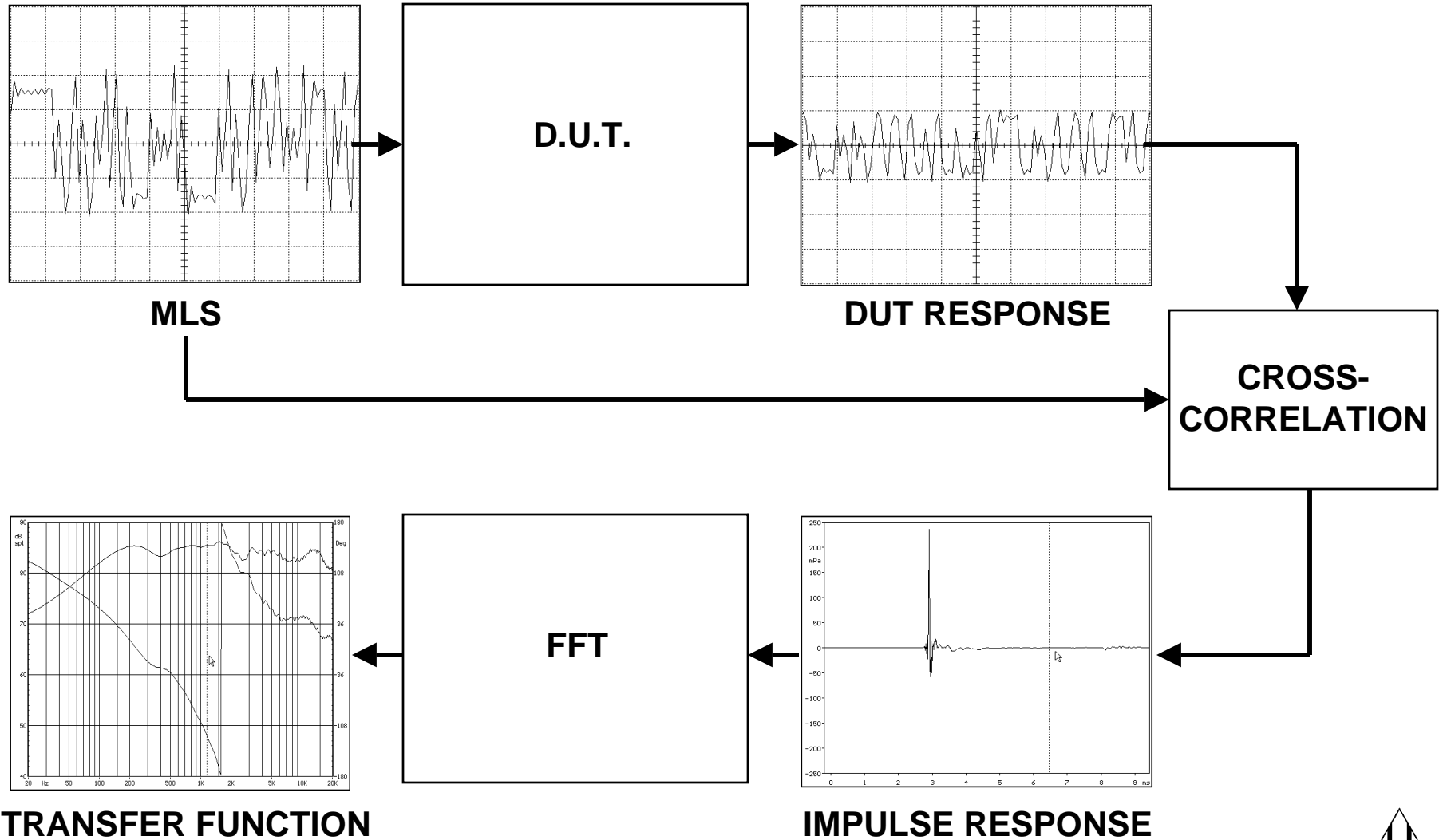
- **IMPULSE RESPONSE**

- **ANECHOIC ANALYSIS**

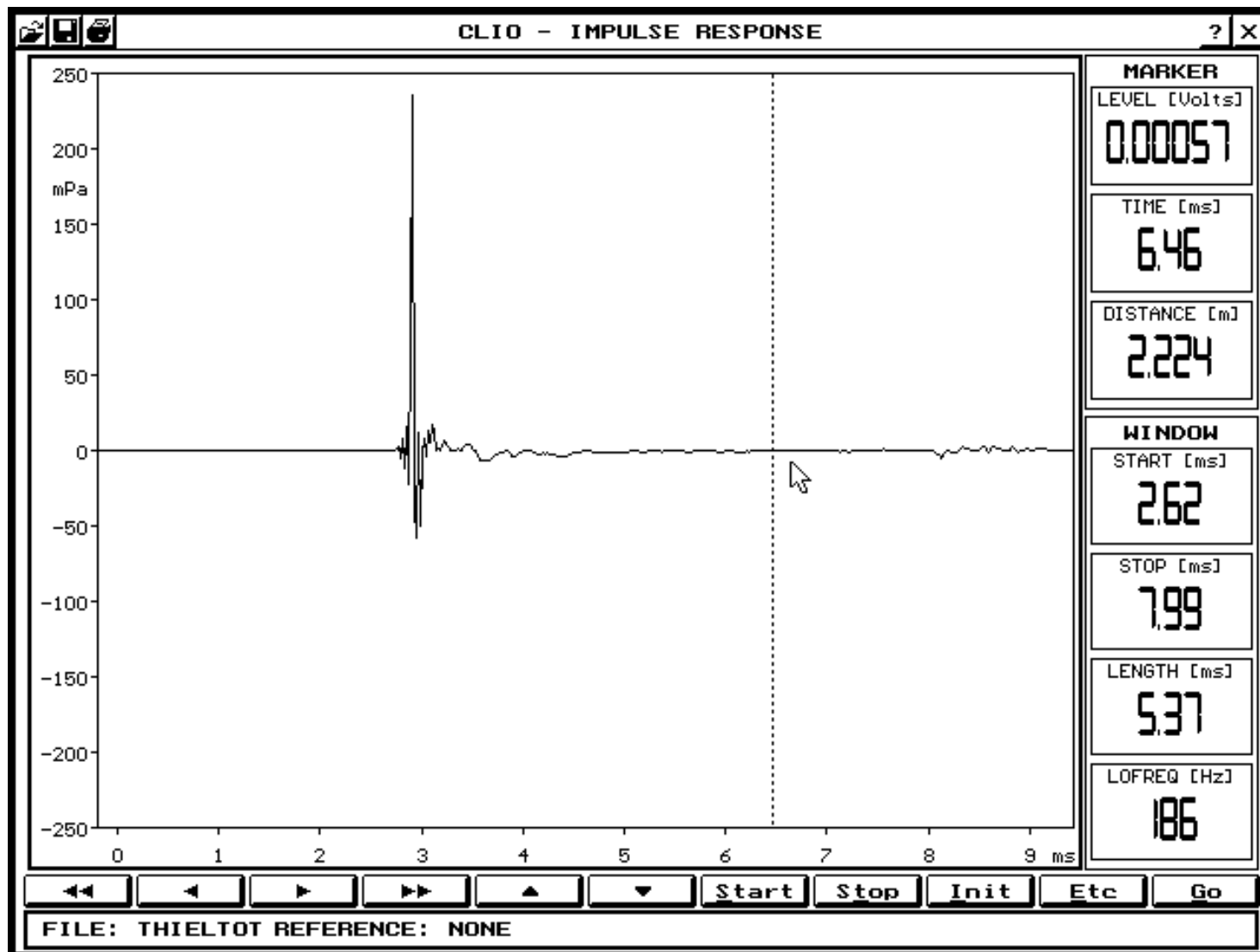
- **ENERGY TIME CURVE (ETC)**

- **WATERFALL**

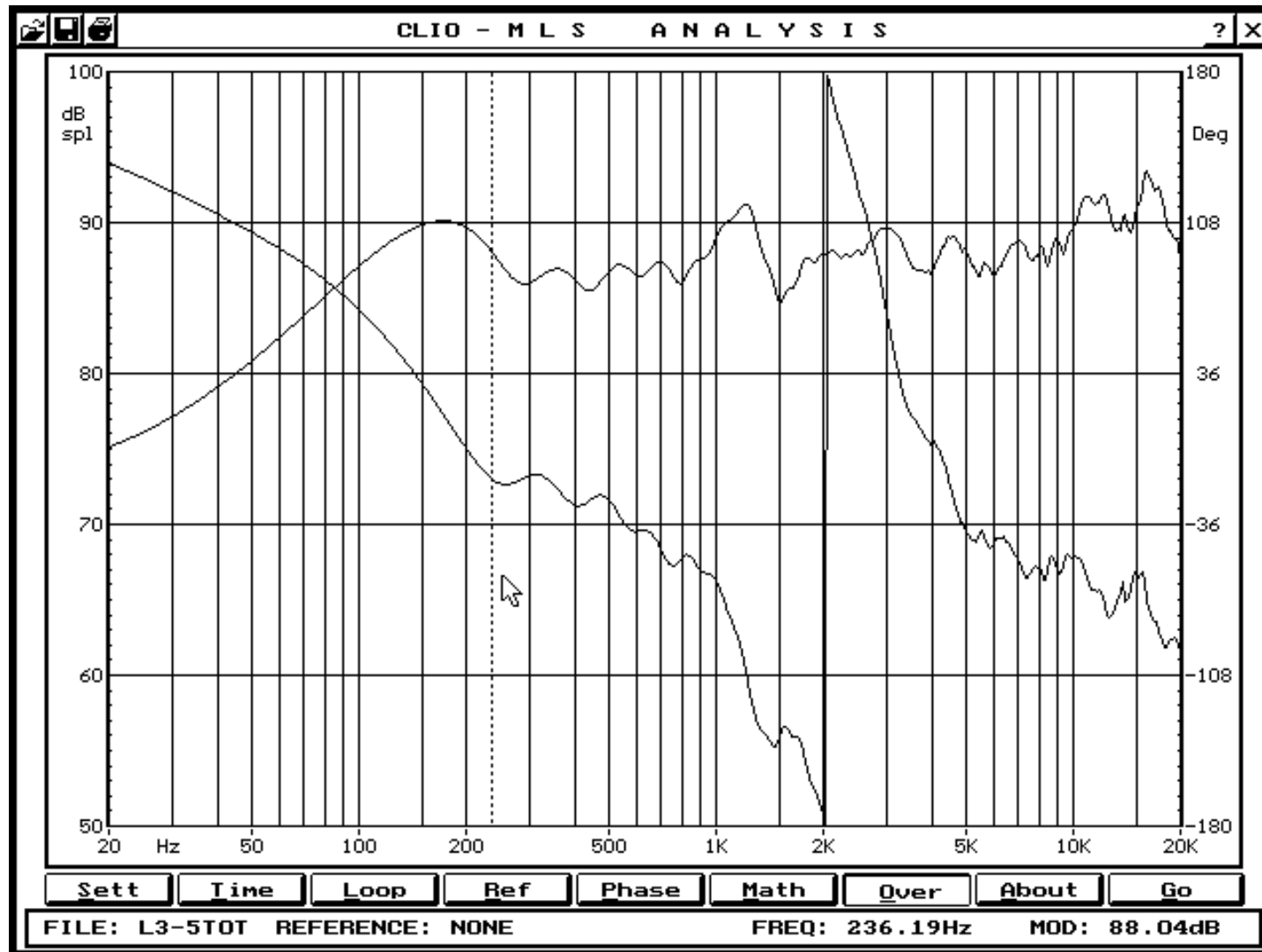
# MLS ANALYSIS TECHNIQUE



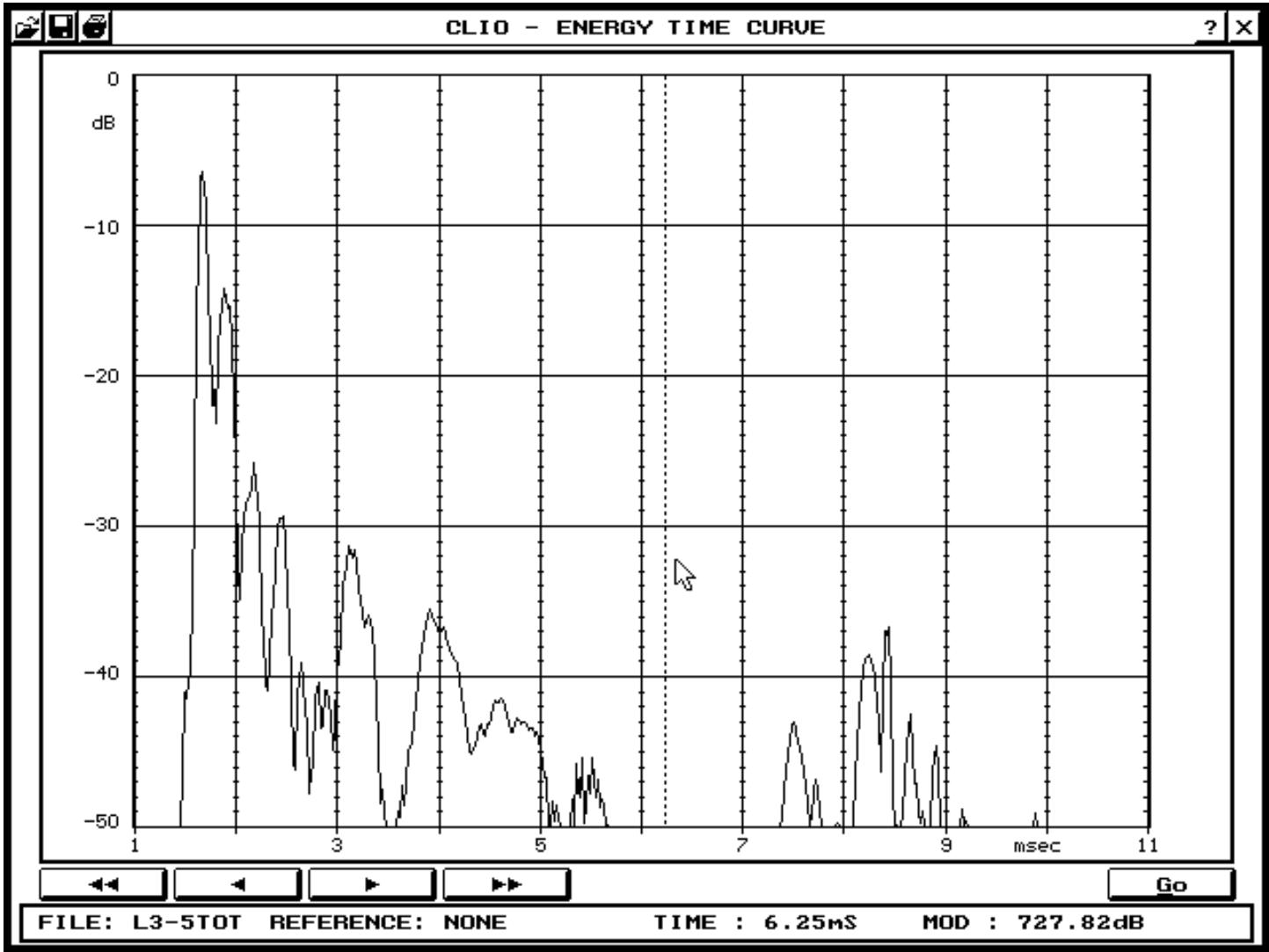
# IMPULSE RESPONSE



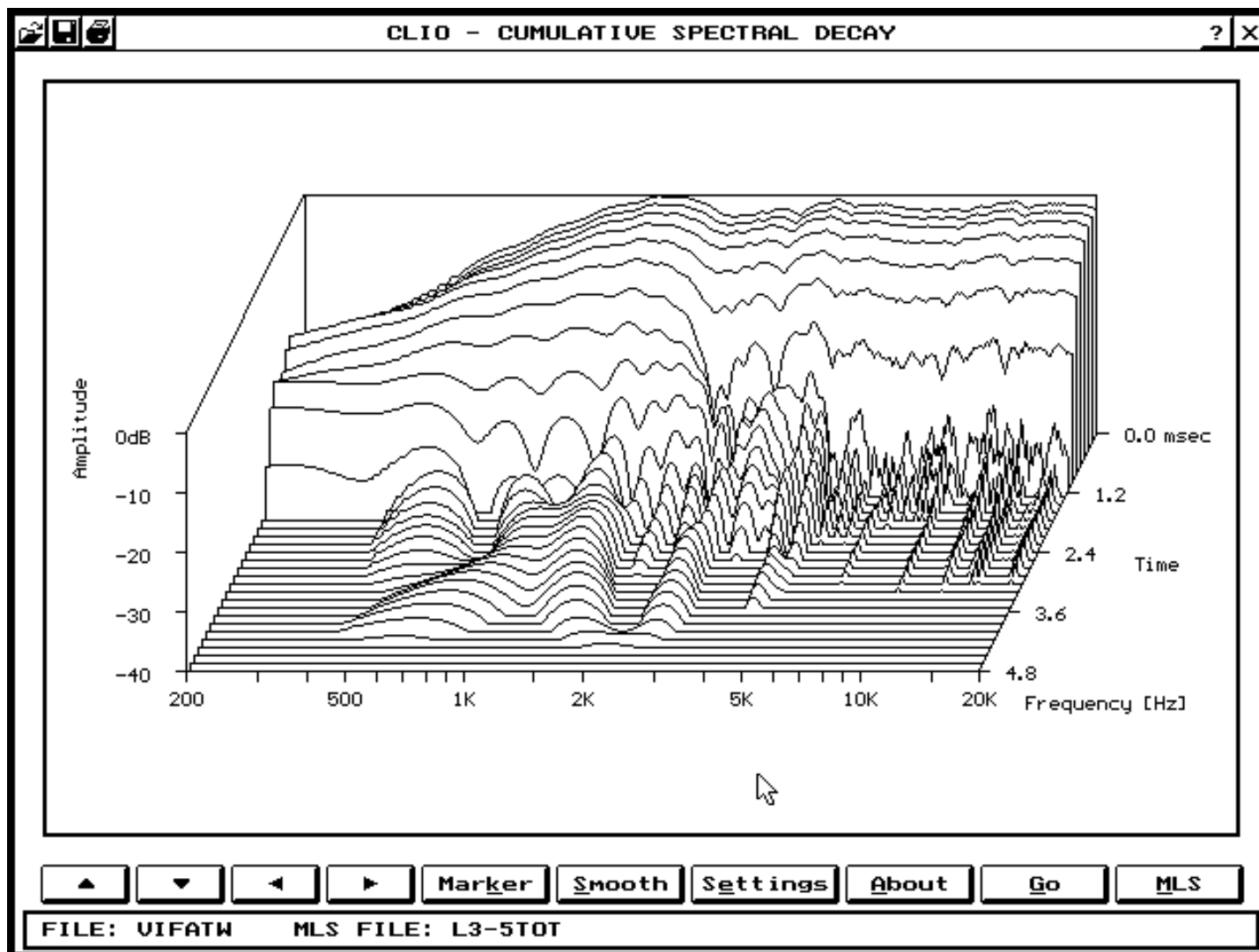
# FREQUENCY AND PHASE RESPONSE



# ENERGY TIME CURVE (ETC)



# WATERFALL



## **SINUSOIDAL ANALYSIS**

- **FREQUENCY AND PHASE RESPONSE**

- **POSSIBILITY OF GATED ACQUISITION**

- **HARMONIC ANALYSIS VS. FREQUENCY**

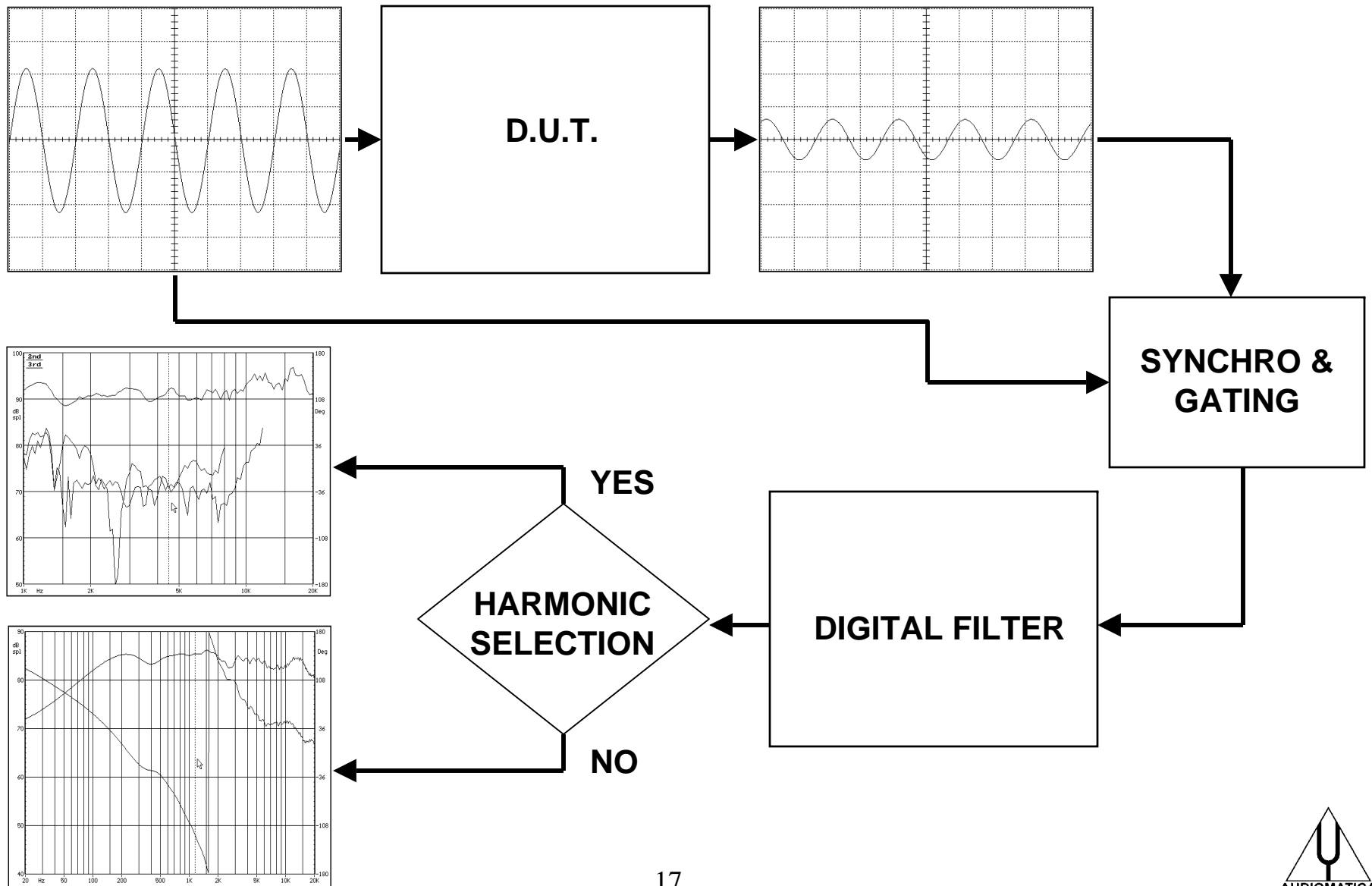
- **DISTORTION VS. LEVEL (THD, SMPTE, CCIF, DIN)**

- **IMPEDANCE & THIELE-SMALL PARAMETERS**

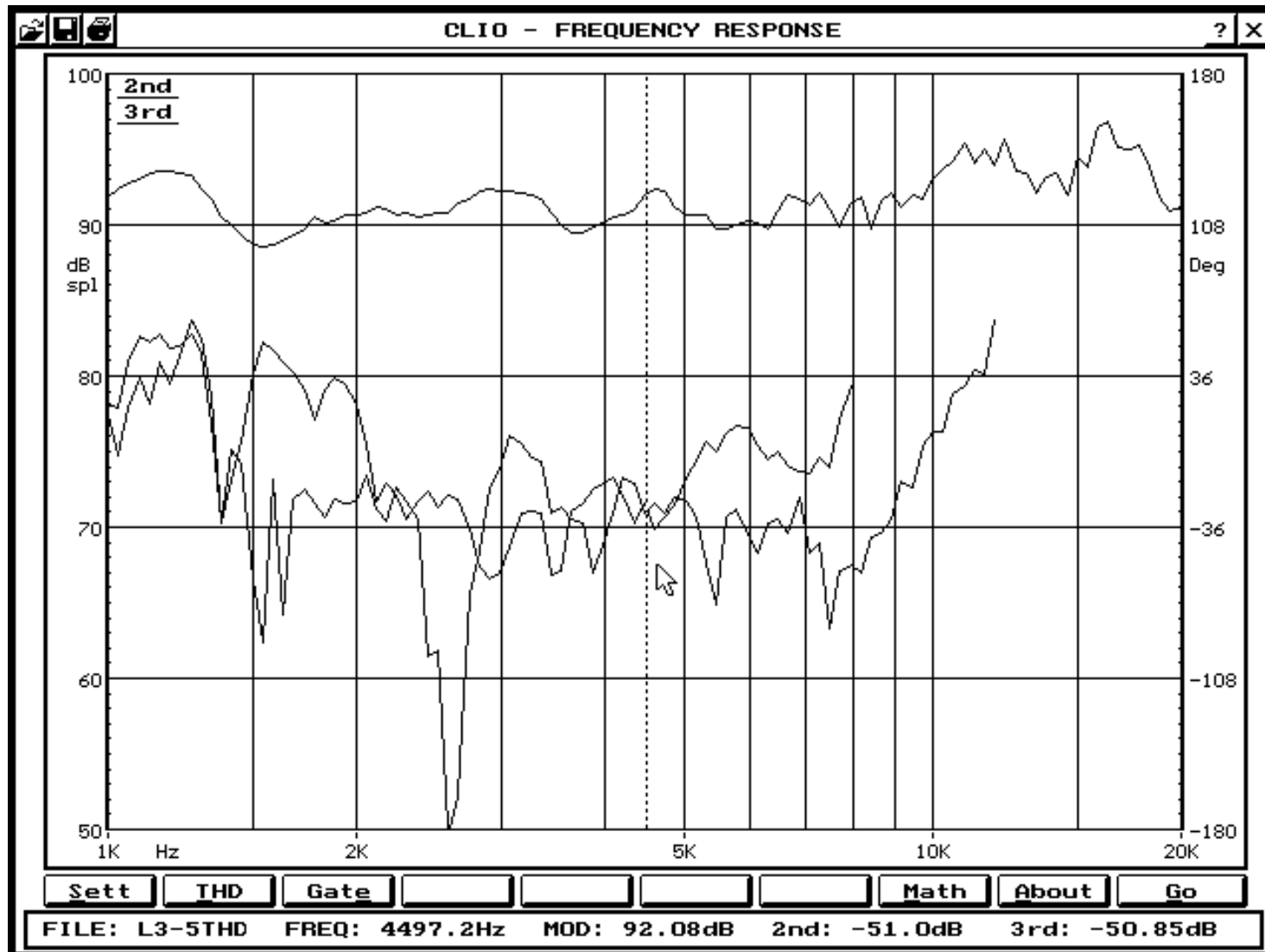
- **POLAR PLOTS**



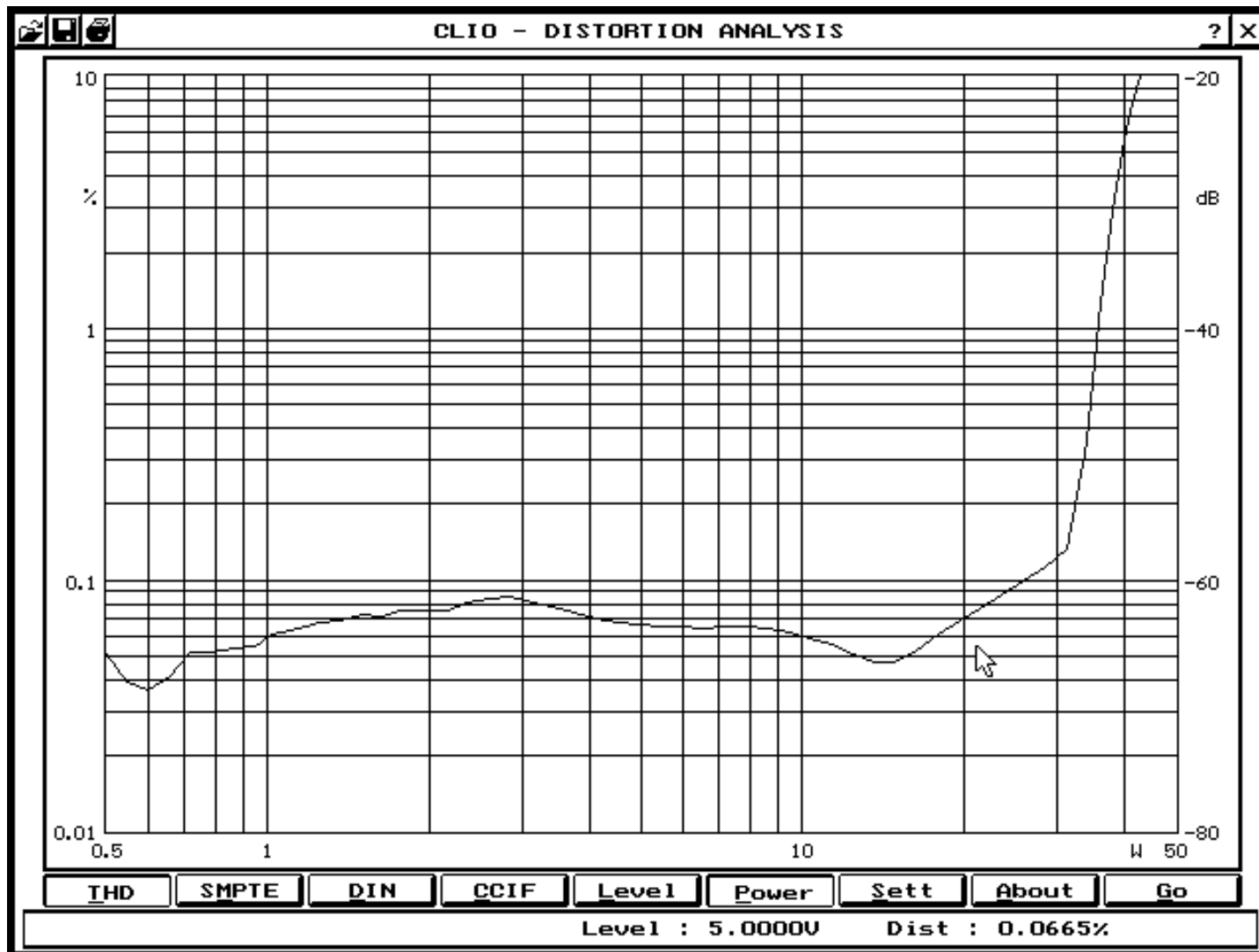
# SINUSOIDAL ANALYSIS TECHNIQUE



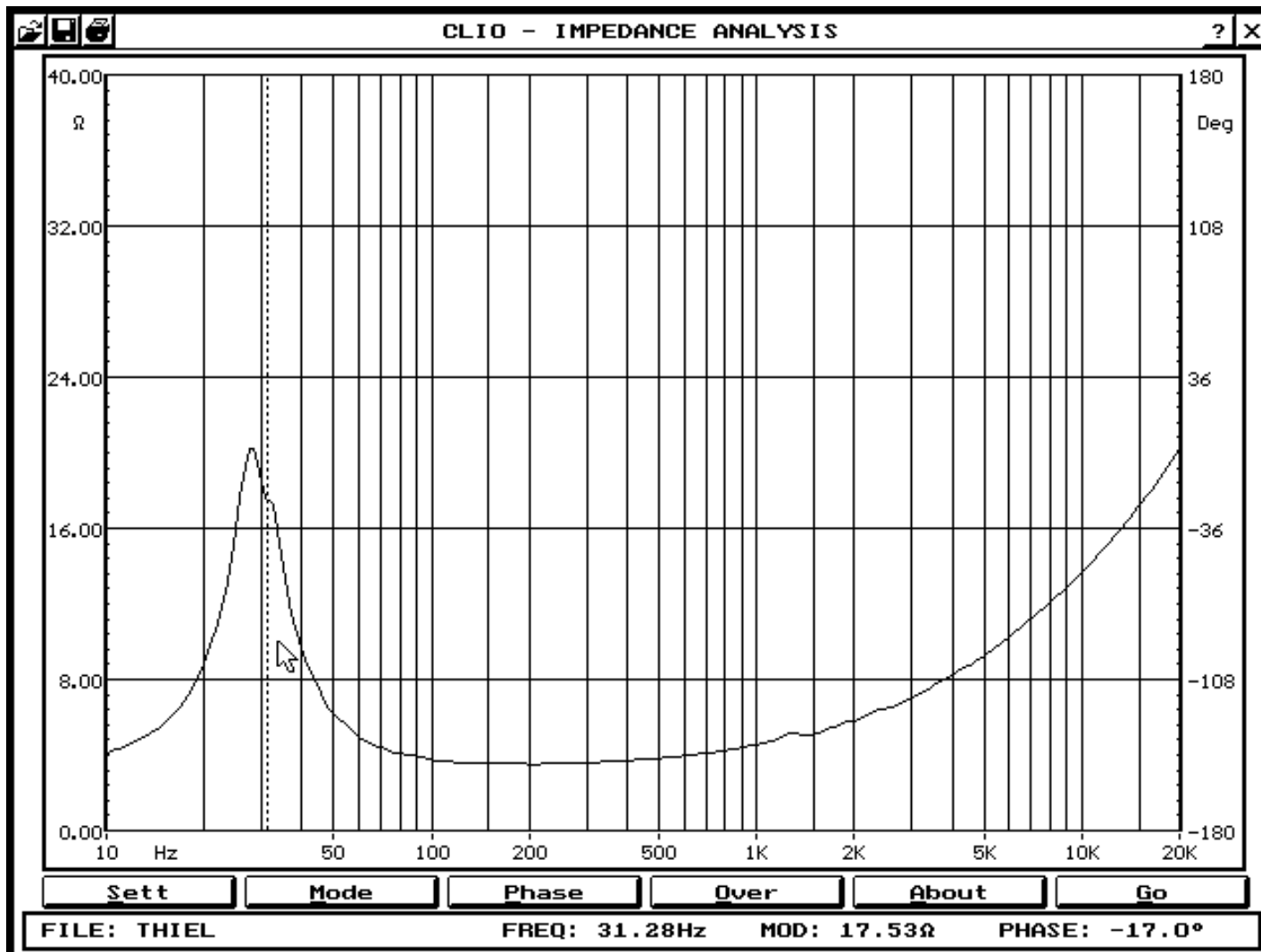
# HARMONIC ANALYSIS VS.FREQUENCY



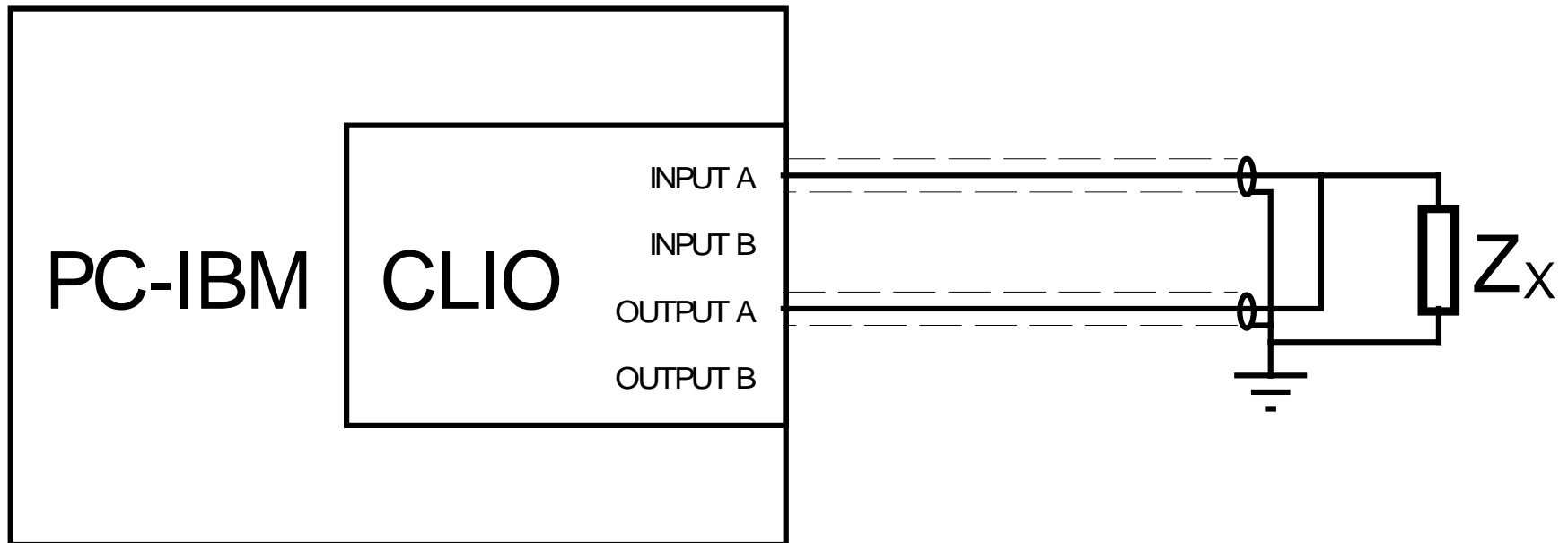
# DISTORTION VS. LEVEL



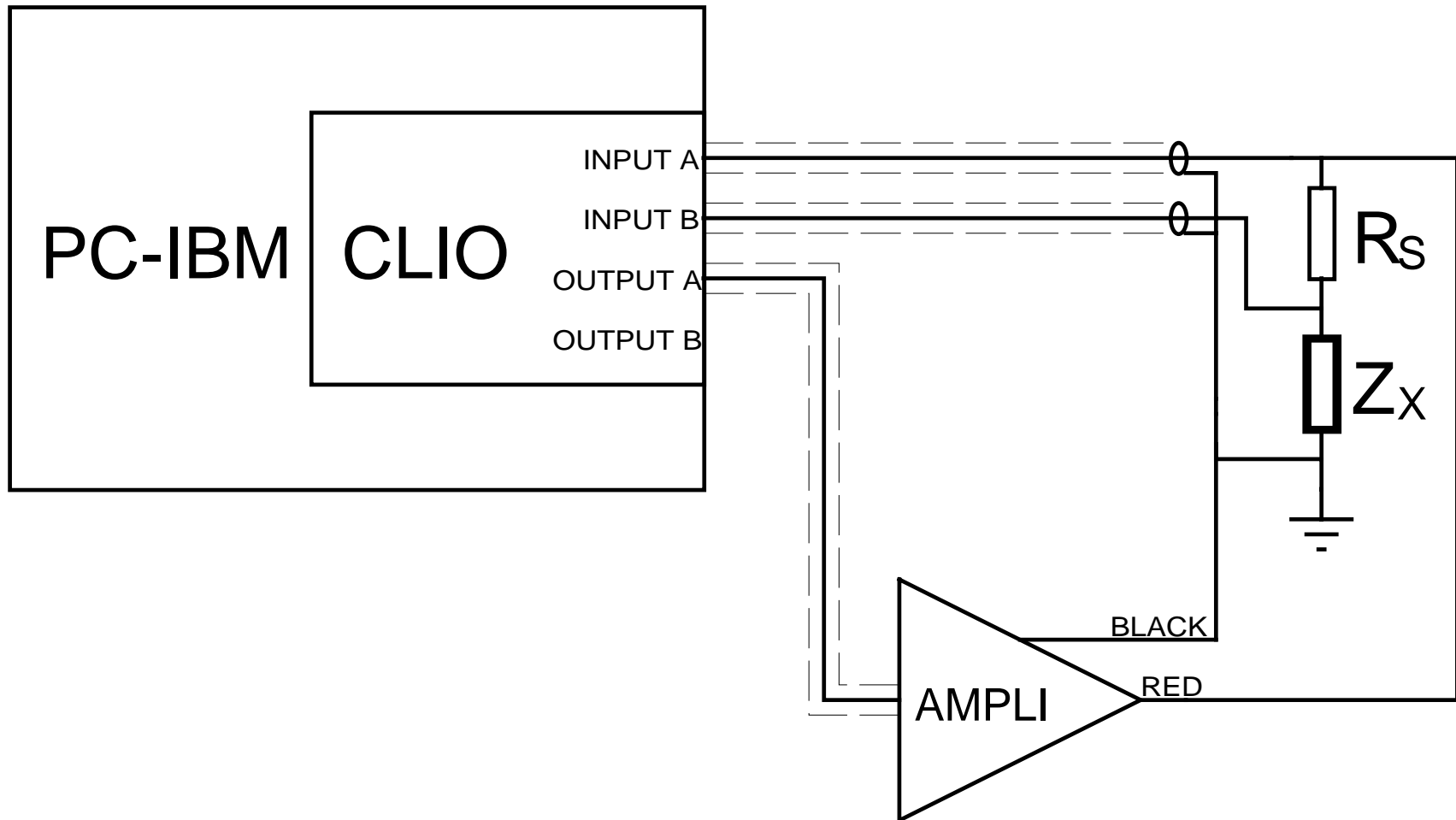
# IMPEDANCE



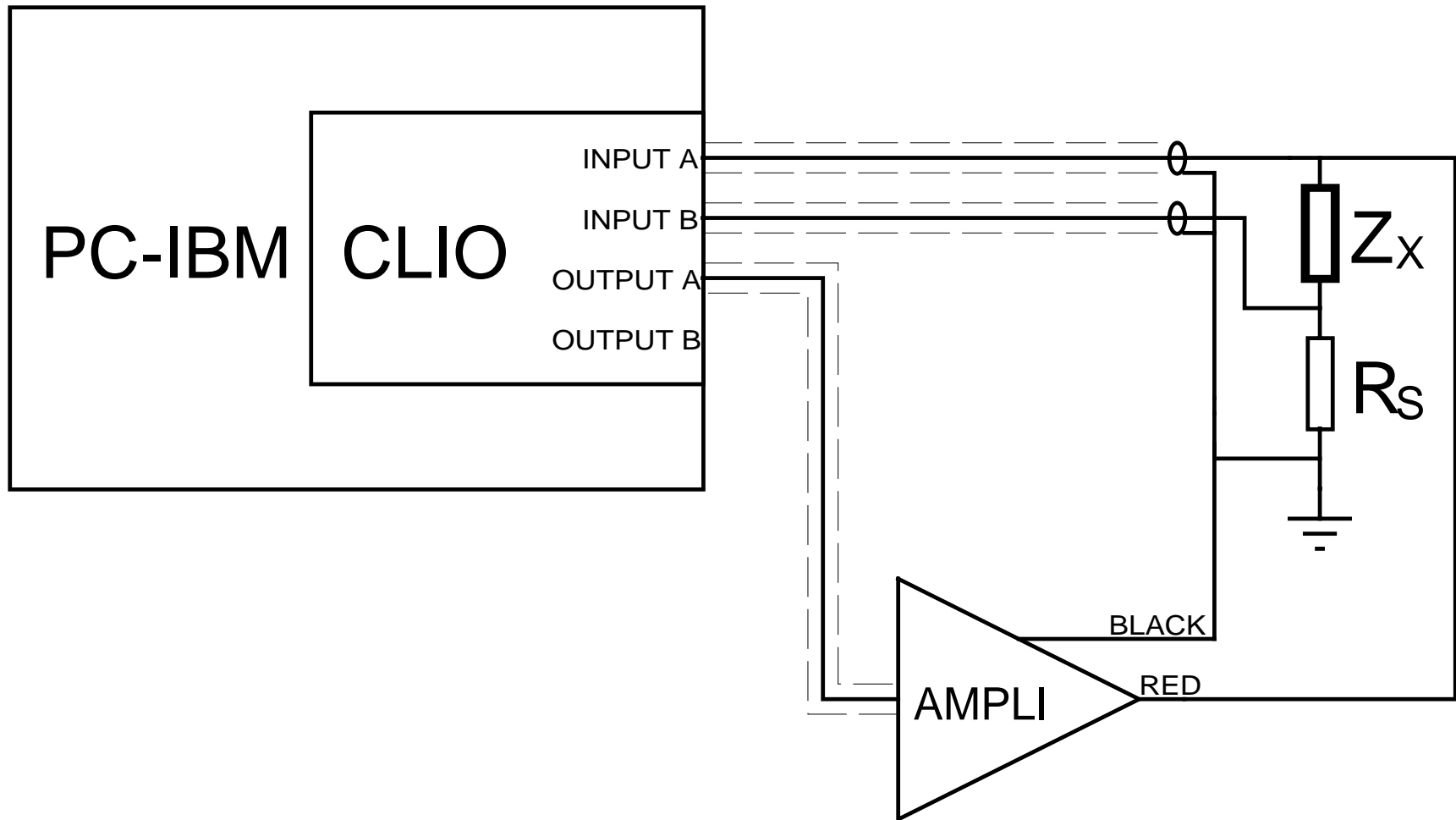
# IMPEDANCE MODE - INTERNAL



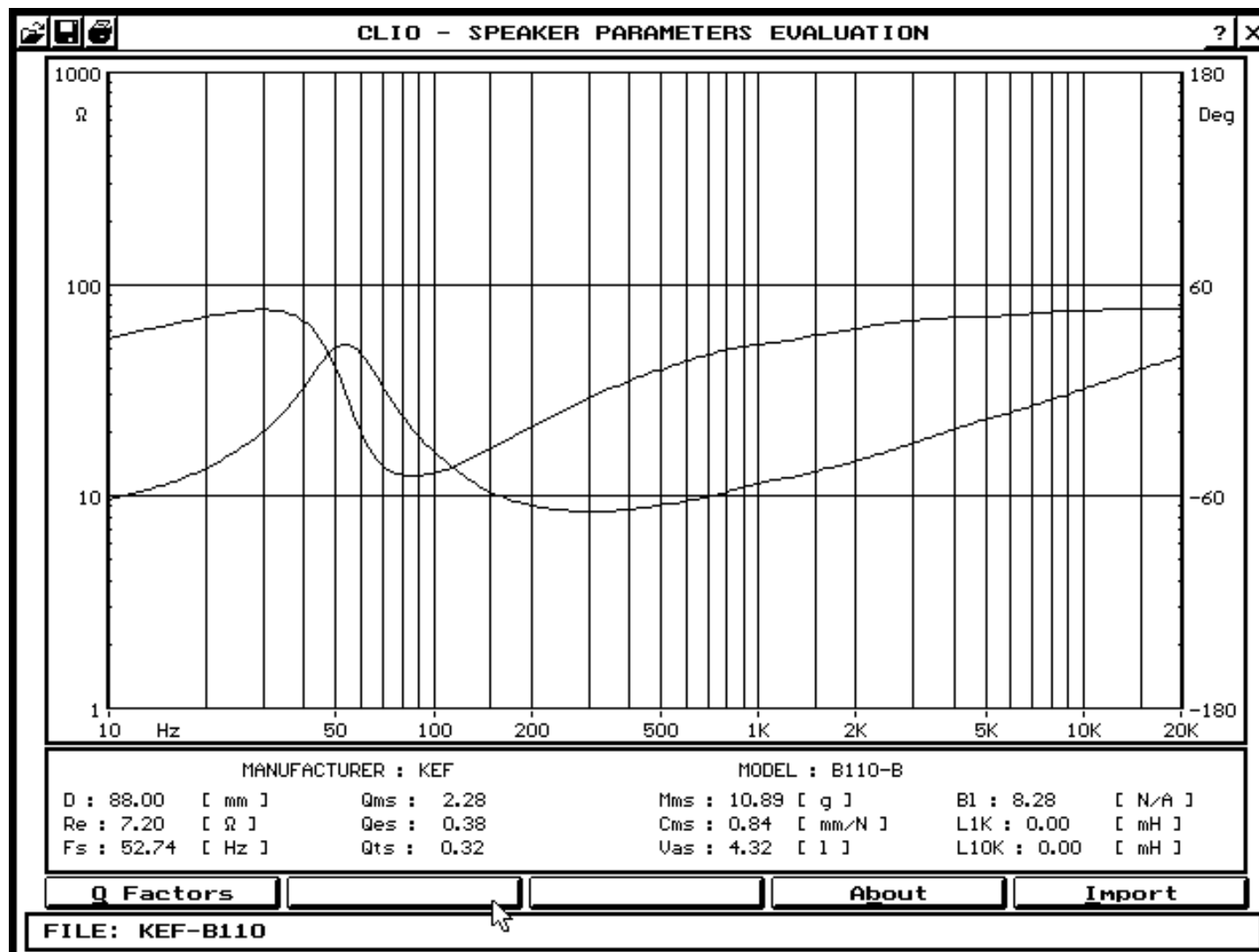
# IMPEDANCE MODE - CONSTANT CURRENT



# IMPEDANCE MODE - CONSTANT VOLTAGE

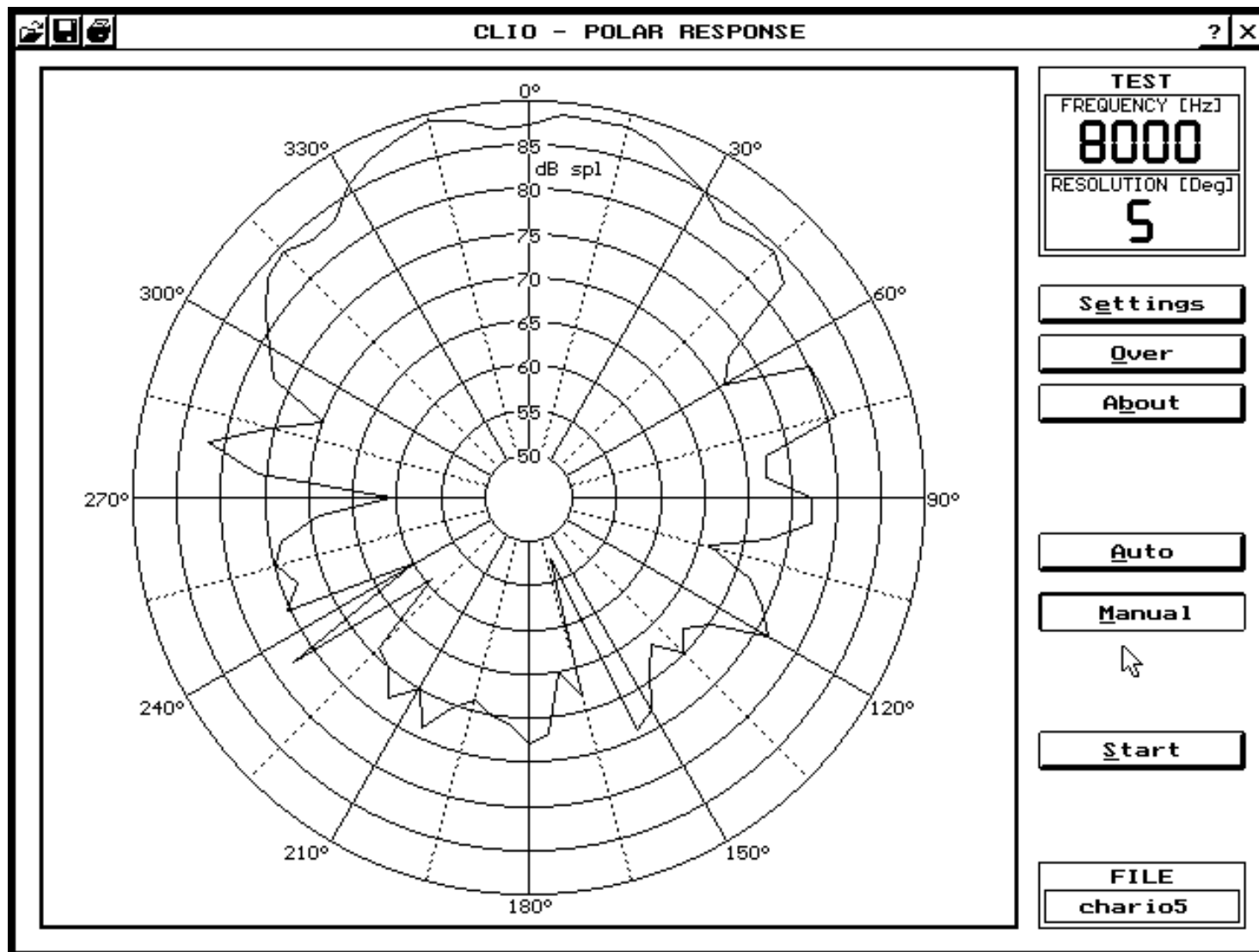


# THIELE - SMALL PARAMETERS





# POLAR PLOTS



# FFT ANALYSIS

- DUAL CHANNEL ANALYSIS AND DISPLAY

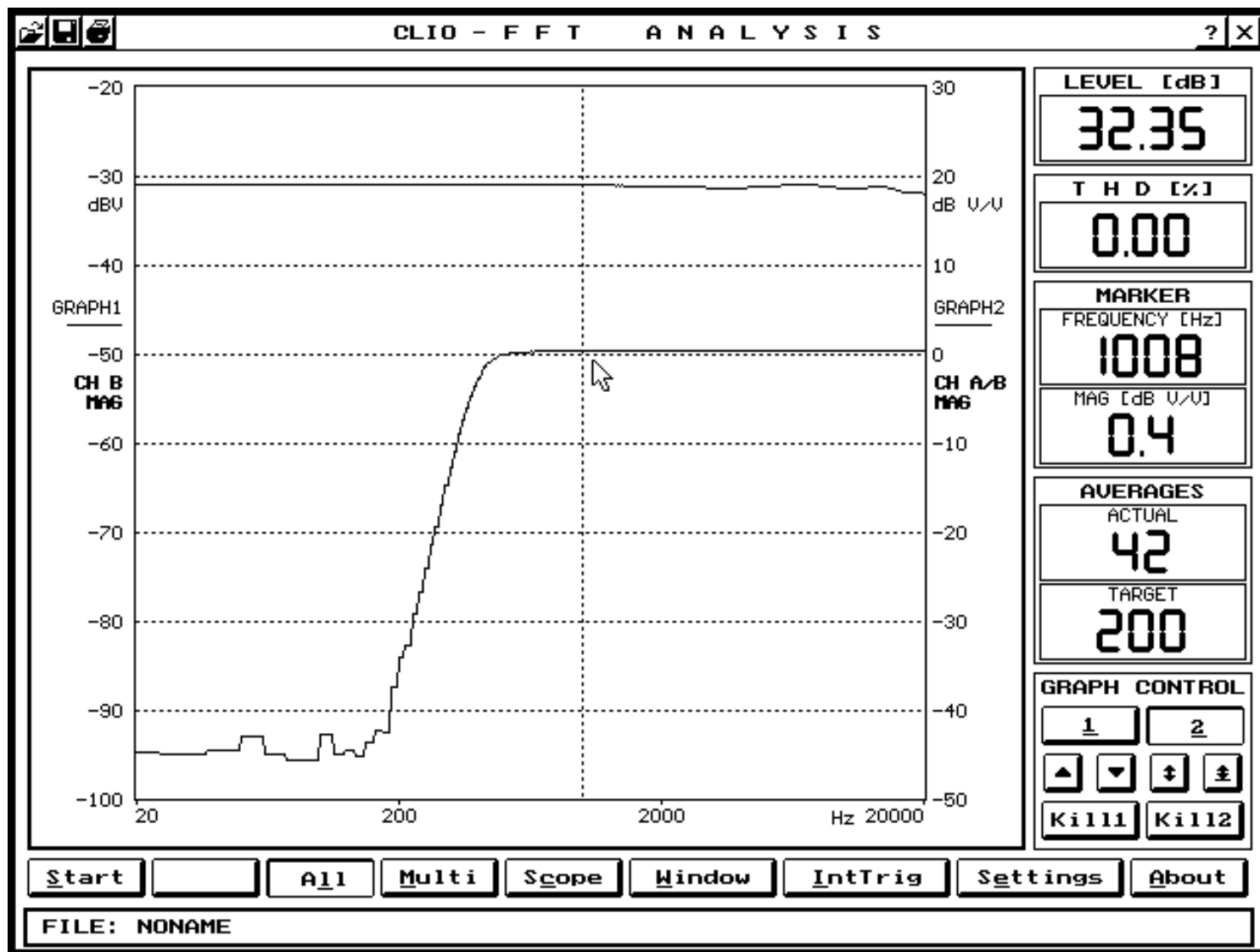
- TRANSFER FUNCTION

- INTERNAL TRIGGER

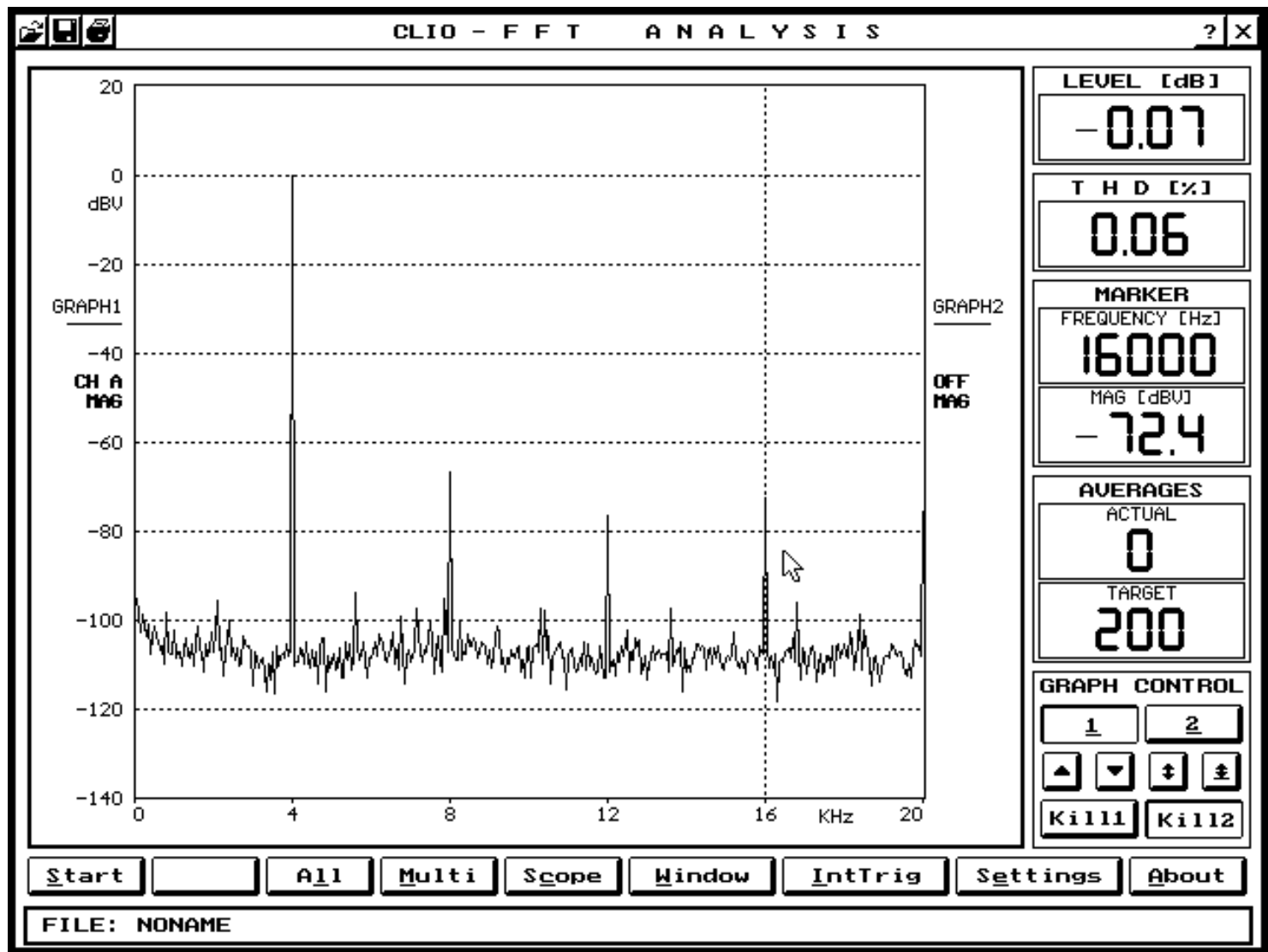
- REAL-TIME THD CALCULATOR

- ALLTONE AND MULTITONE GENERATION

# FFT ANALYSIS



# FFT ANALYSIS



## **THIRD OF OCTAVE AND ACOUSTICAL ANALYSIS**

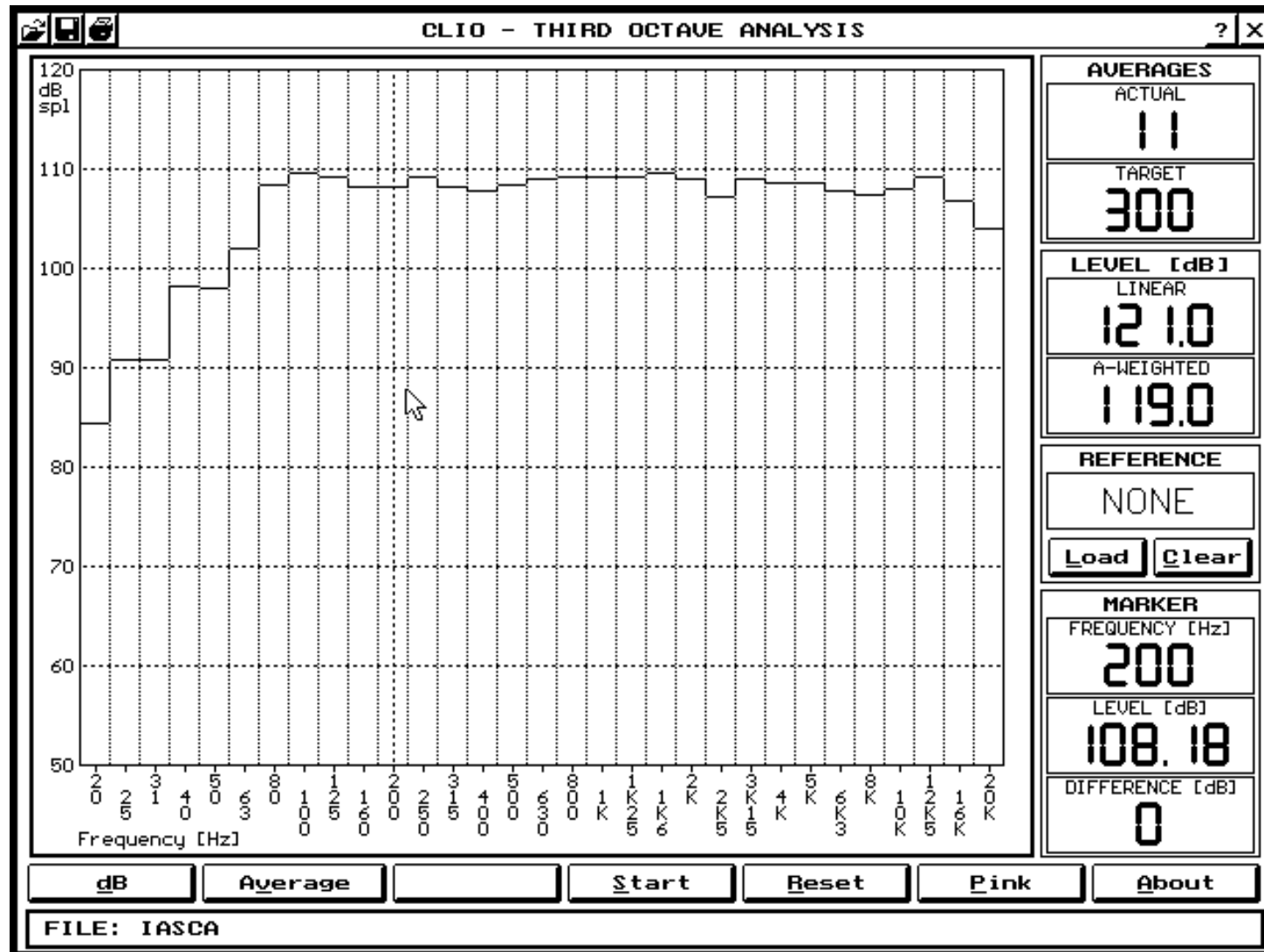
- **CLASSICAL 1/3 OCTAVE MEASUREMENT AND DISPLAY WITH PSEUDO-RANDOM PINK NOISE EXCITATION**

- **REVERBERATION TIME RT60 WITH MLS AND SCHROEDER REVERSE INTEGRATION**

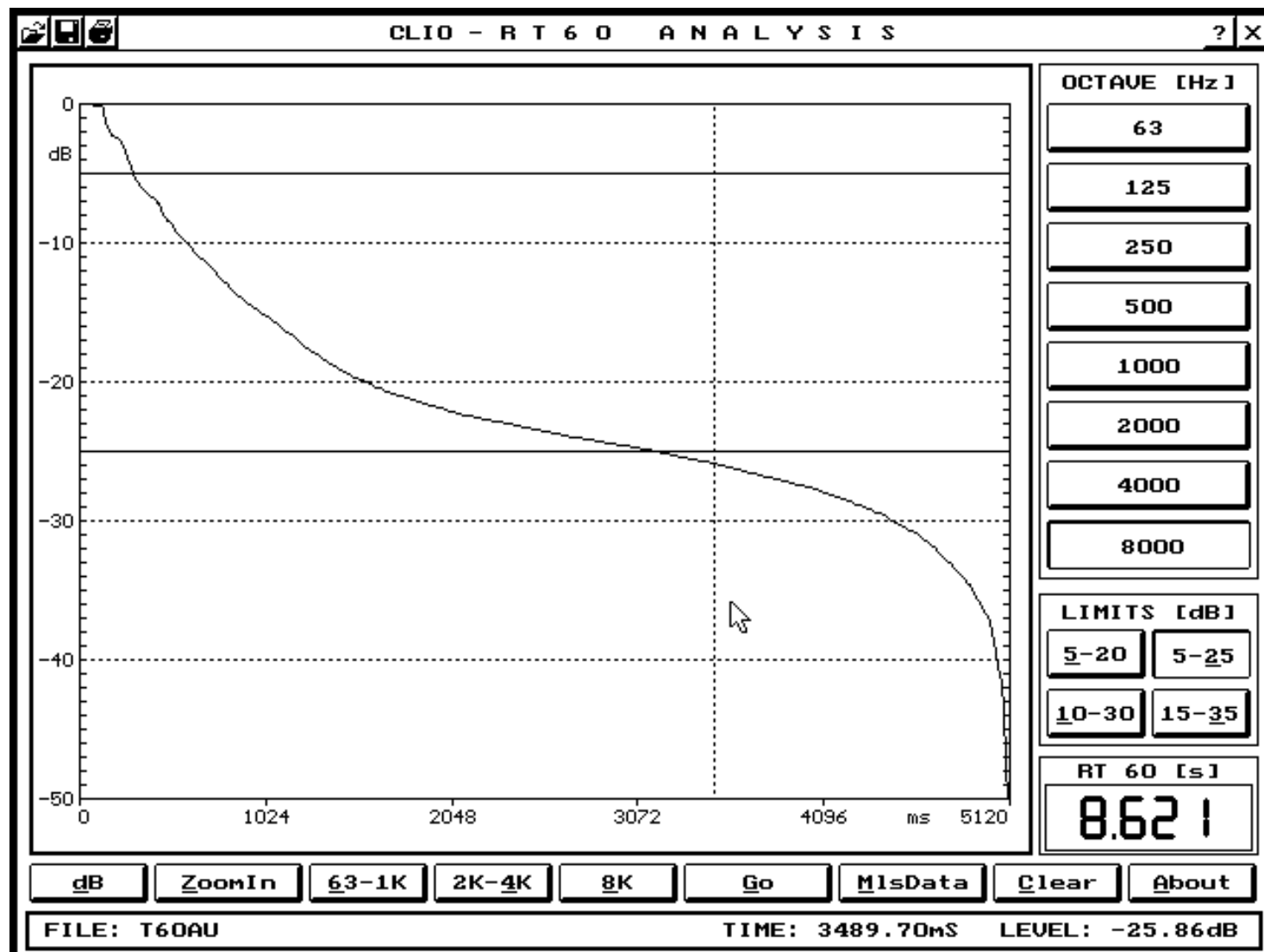
- **REAL-TIME EQUIVALENT LEVEL ( $L_{eq}$ )**

- **IASCA CALCULATOR**

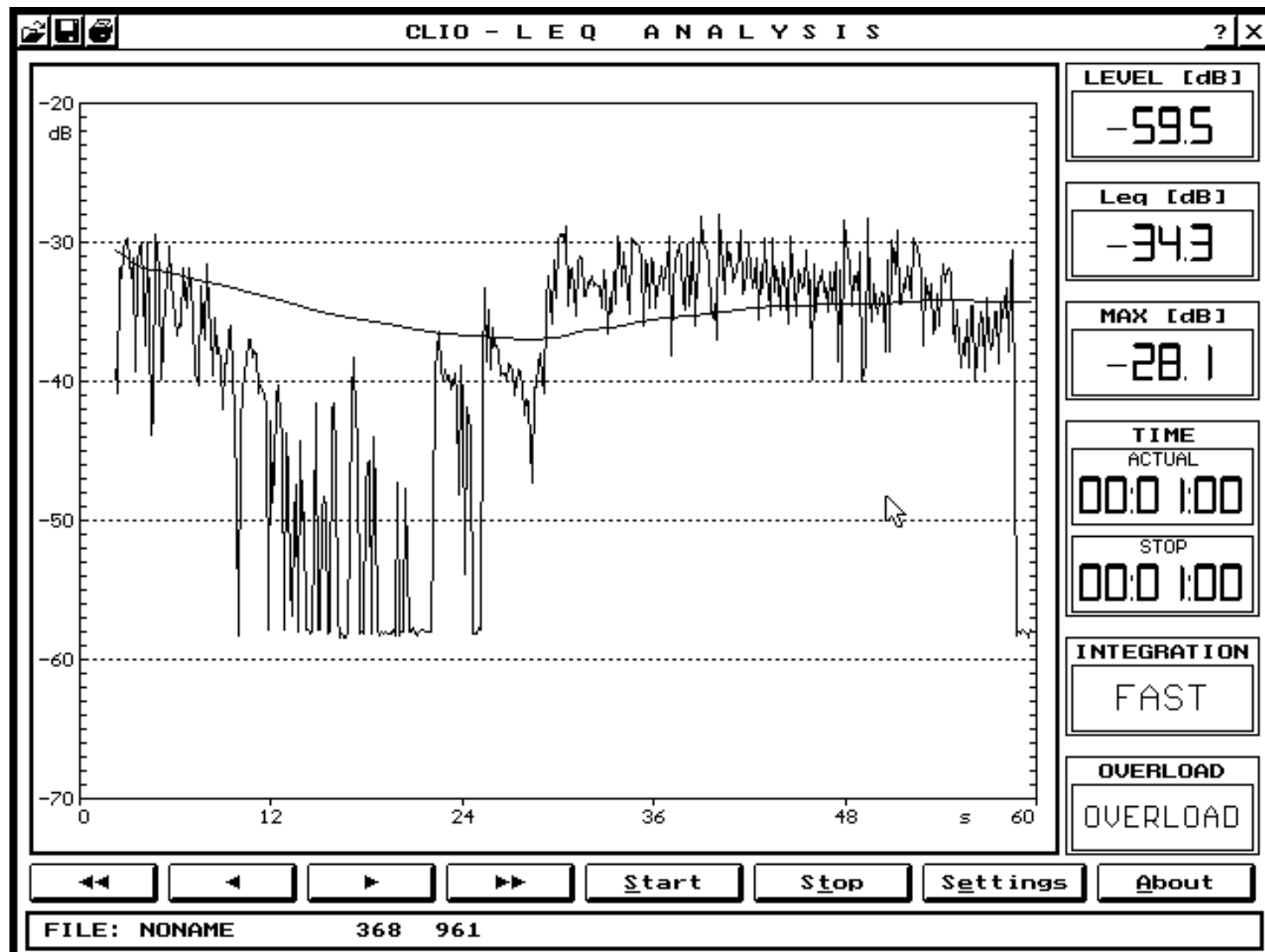
# THIRD OF OCTAVE ANALYSIS



# REVERBERANT DECAY (RT60)

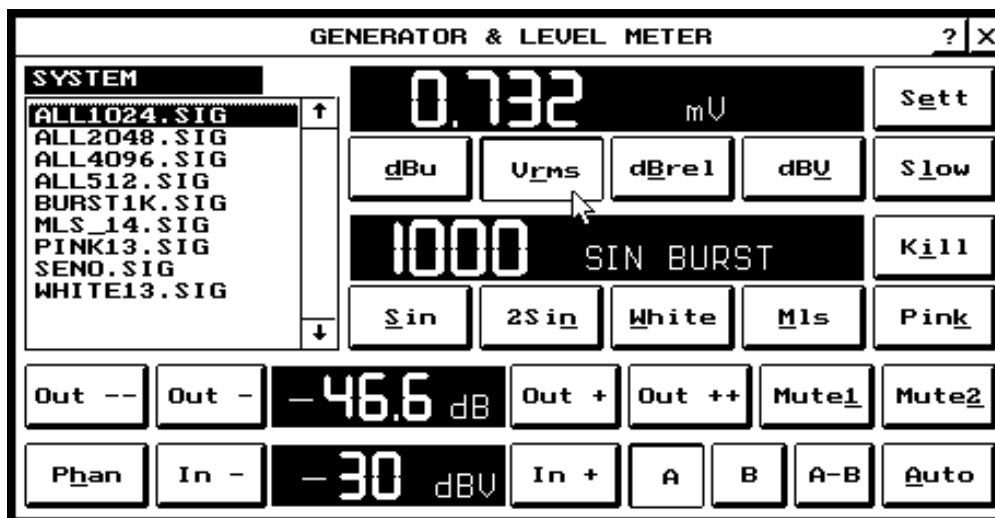


# TIME HISTORY AND Leq

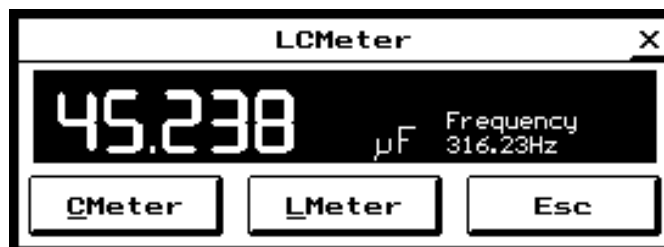




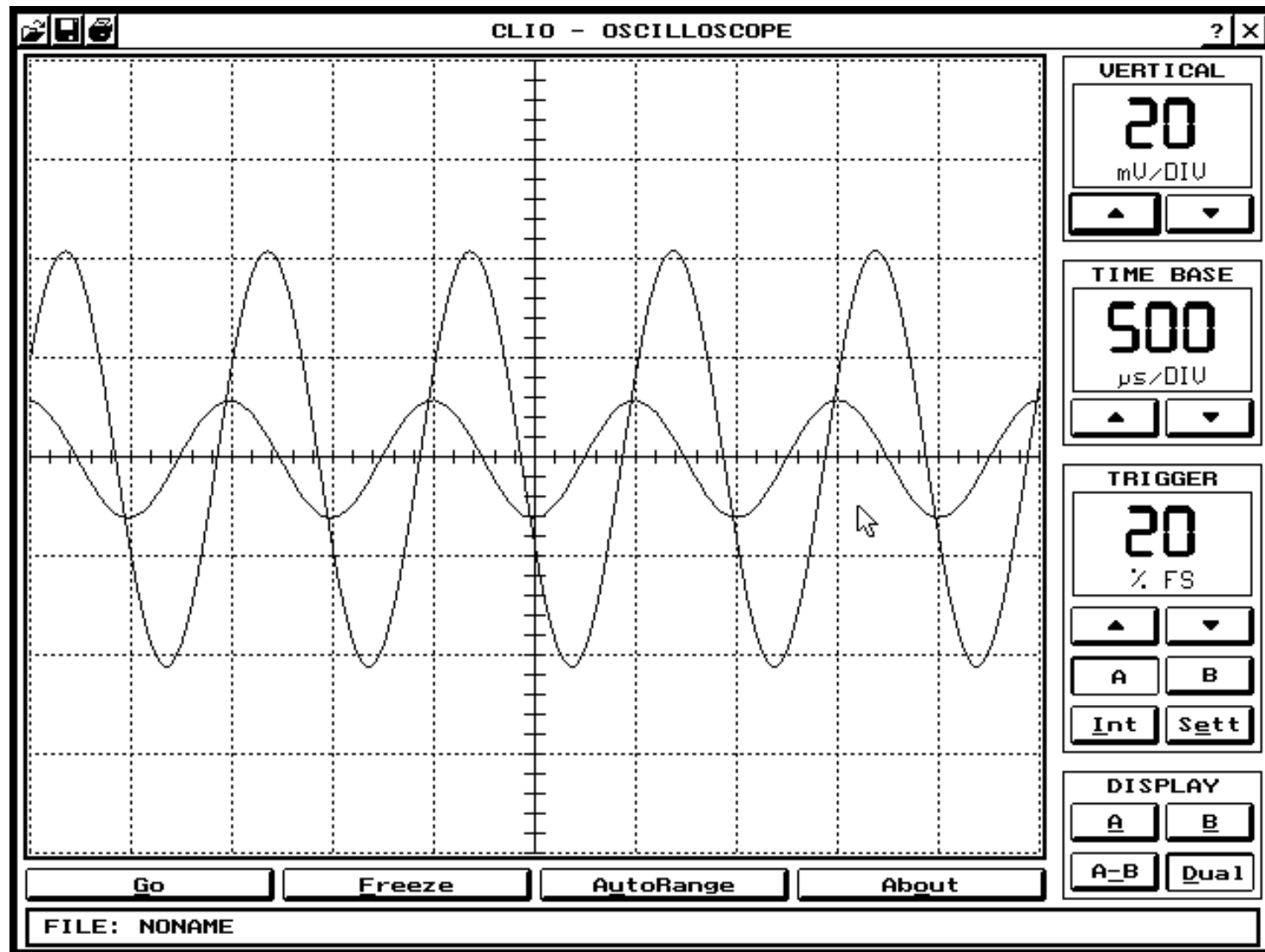
# MILLIVOLTMETER AND SPL METER



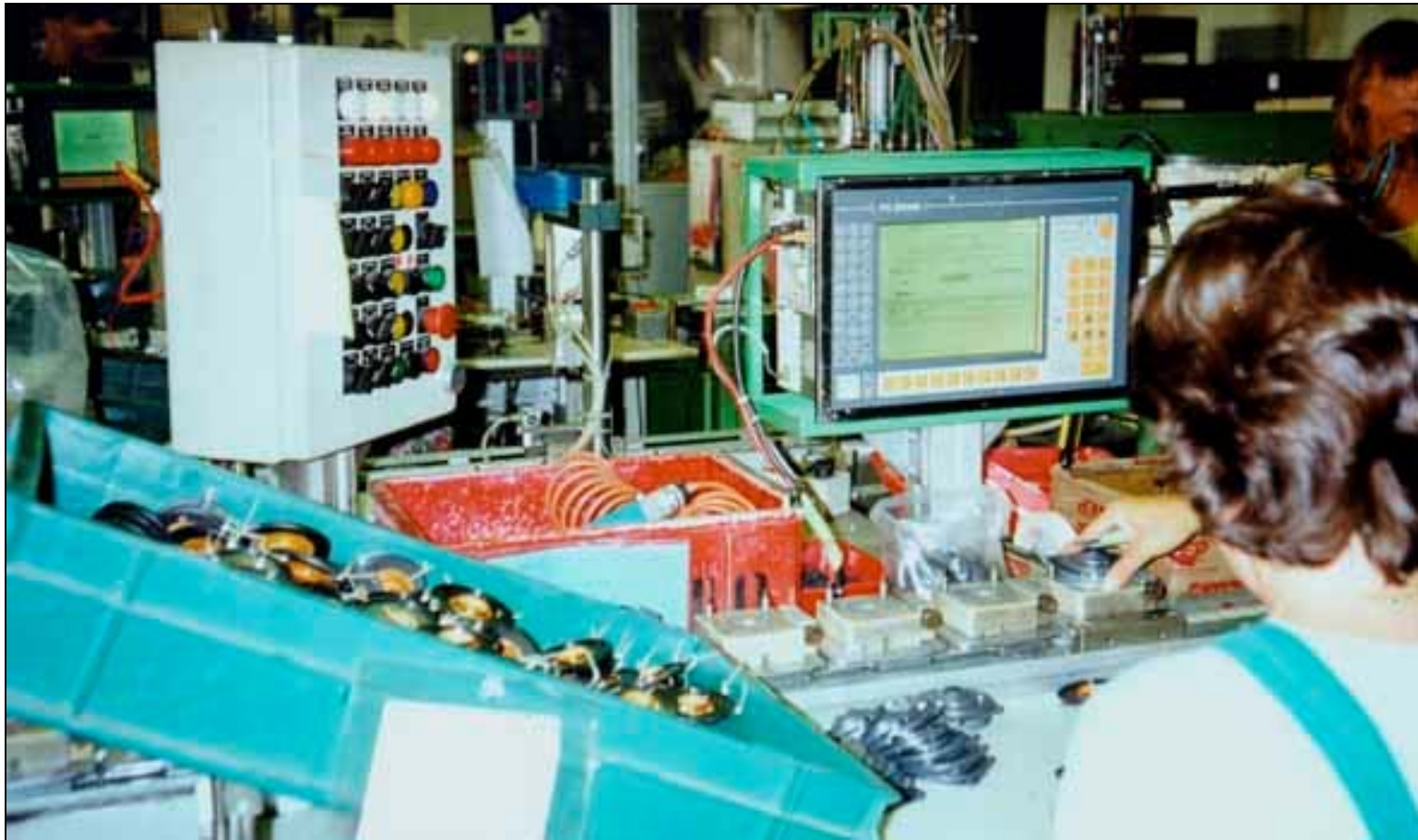
# CAPACITORS AND INDUCTORS METER



# DUAL CHANNEL OSCILLOSCOPE



# 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**

# THE QC CONTROL PANEL

AUDIOMATICA CLIO - PRODUCTION LINES QUALITY CONTROL

AUDIOMATICA S.R.L. FIRENZE ITALY  
LOUDSPEAKERS QUALITY CONTROL

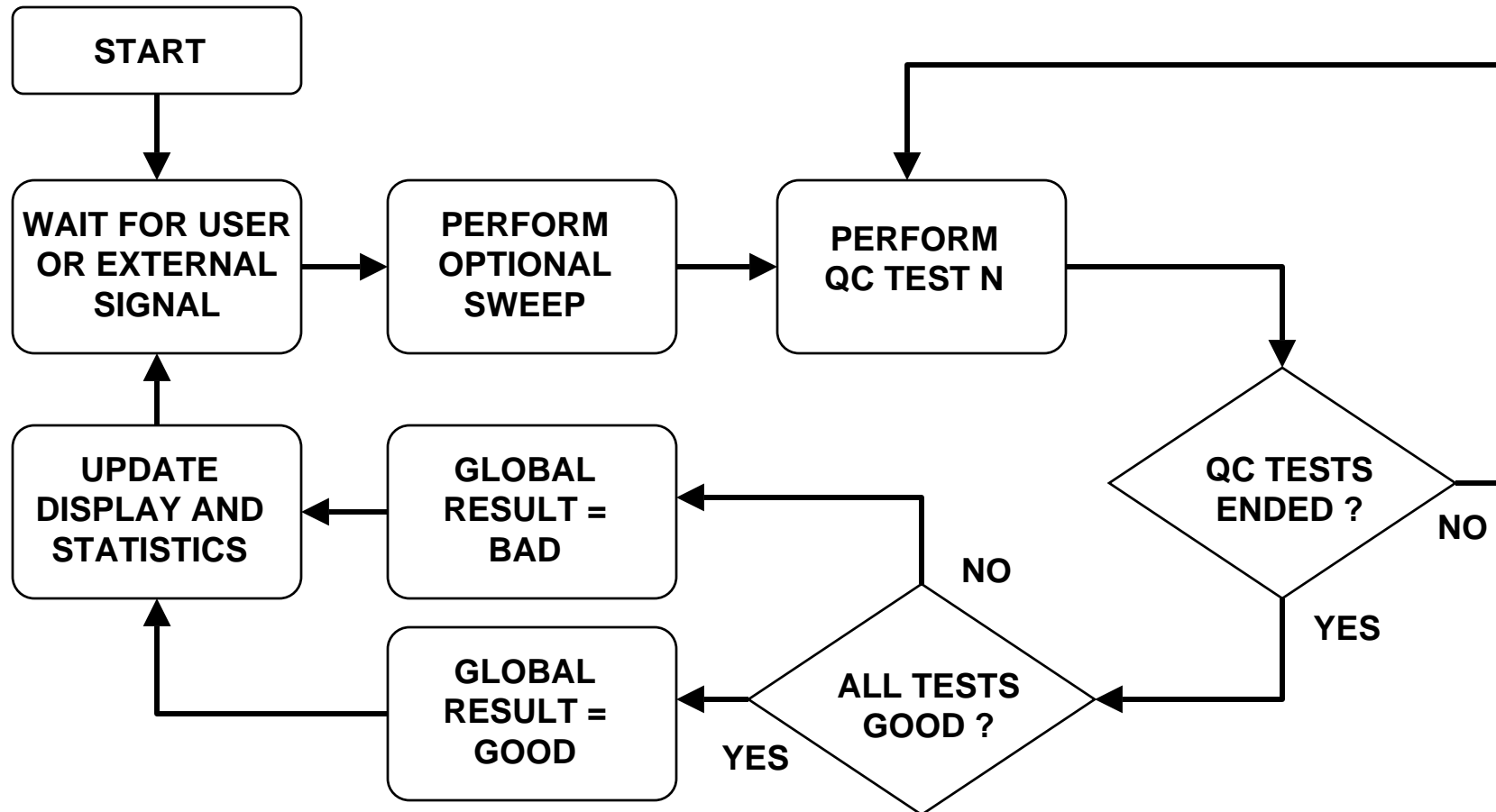
TEST N°:		FFT
2	<b>GOOD</b>	RESPONSE
READY		POLARITY
		IMPEDANCE

Date	: 26/03/97	Out Of Phase	: 0
Setup file	: SAMPLE.STP	Bad FFT	: 0
Total	: 1	Bad Response	: 0
Good	: 1	Bad Impedance	: 0

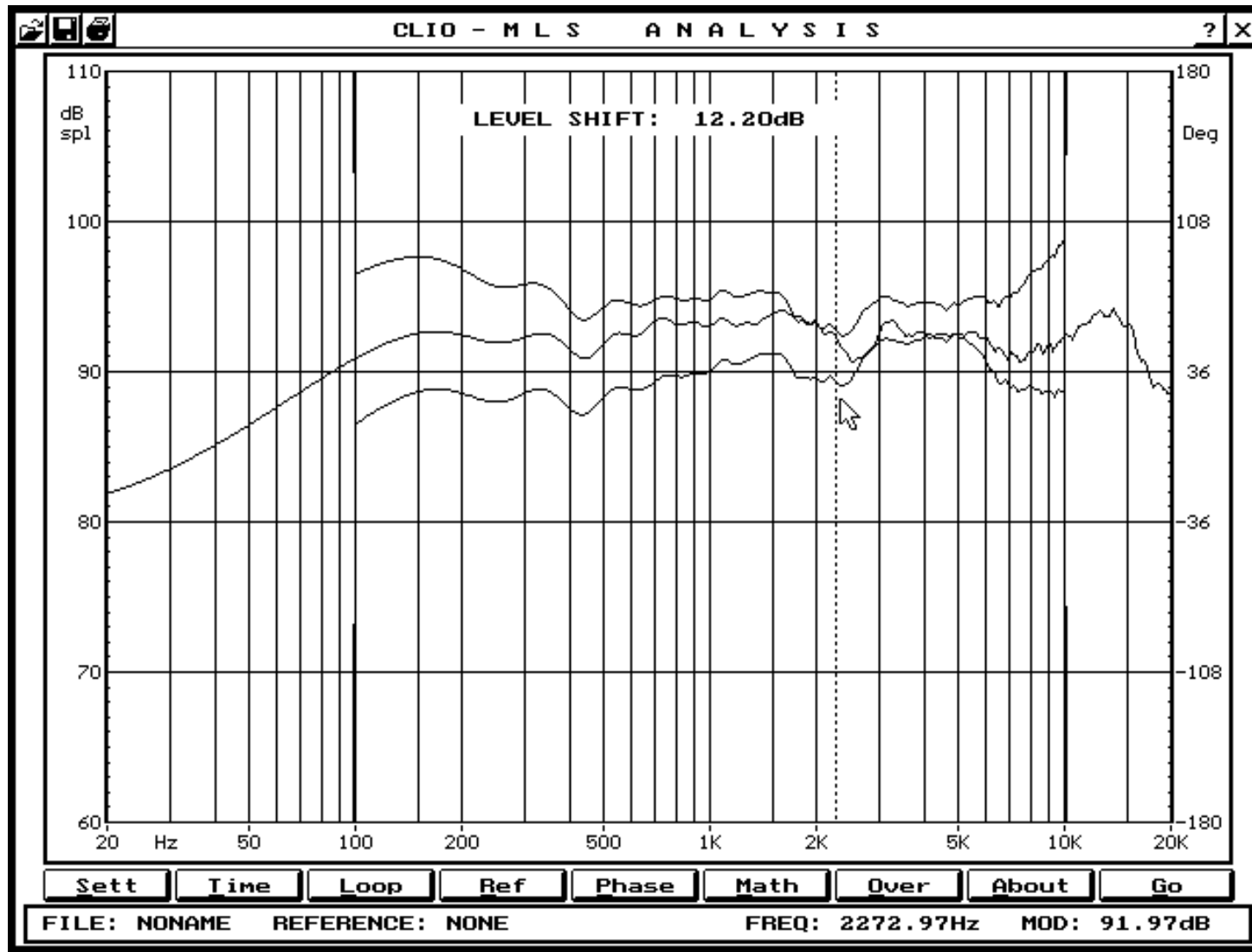
FILE: \_\_\_\_\_



# CLIO AND QUALITY CONTROL



# MLS RESPONSE WITH QC MASK



# MICROPHONES MIC-01 AND MIC-02





# CLIOQC AMPLIFIER & SWITCHBOX



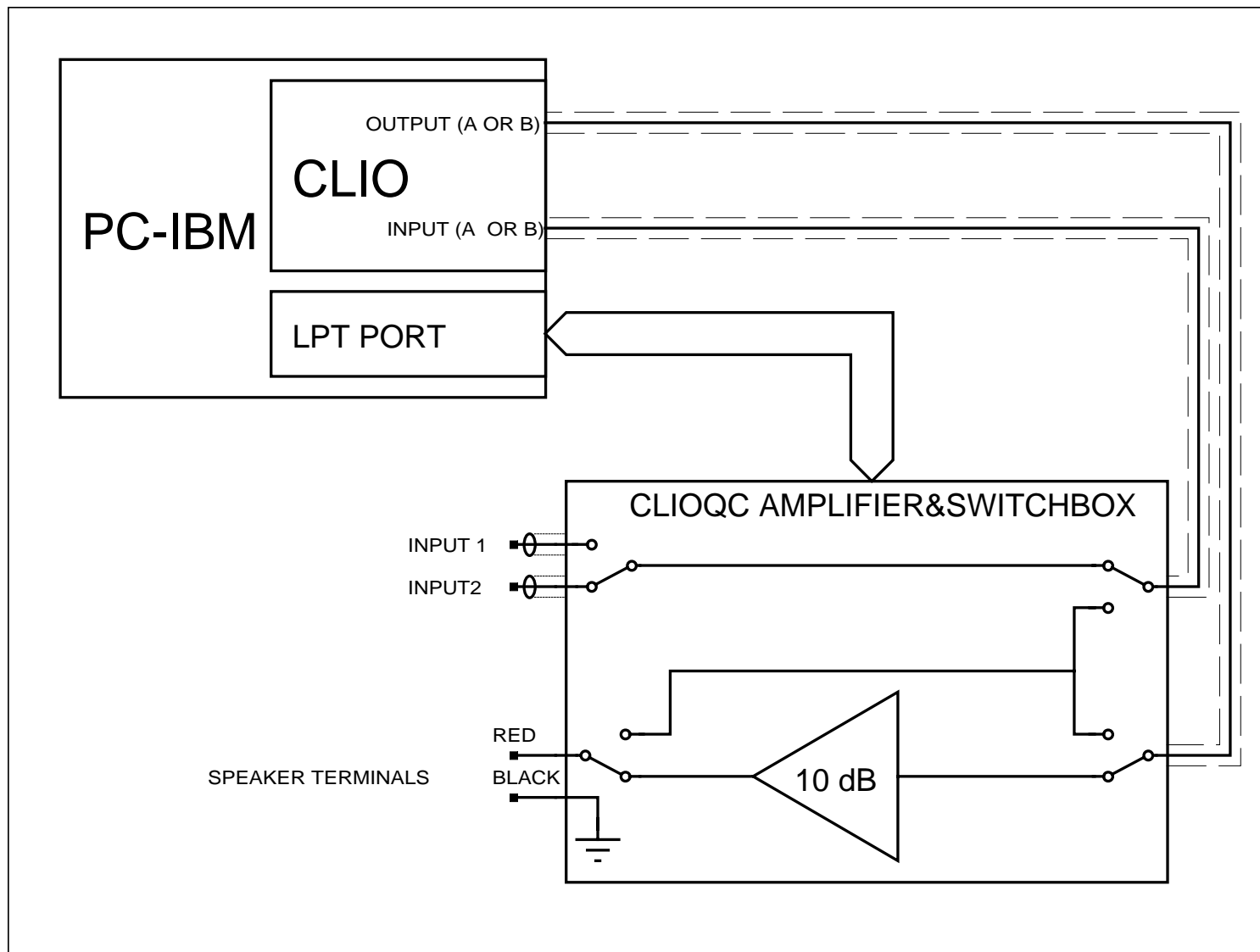
- 10 W POWER AMPLIFIER

- INTERNAL SWITCHES FOR IMPEDANCE OR RESPONSE MODES

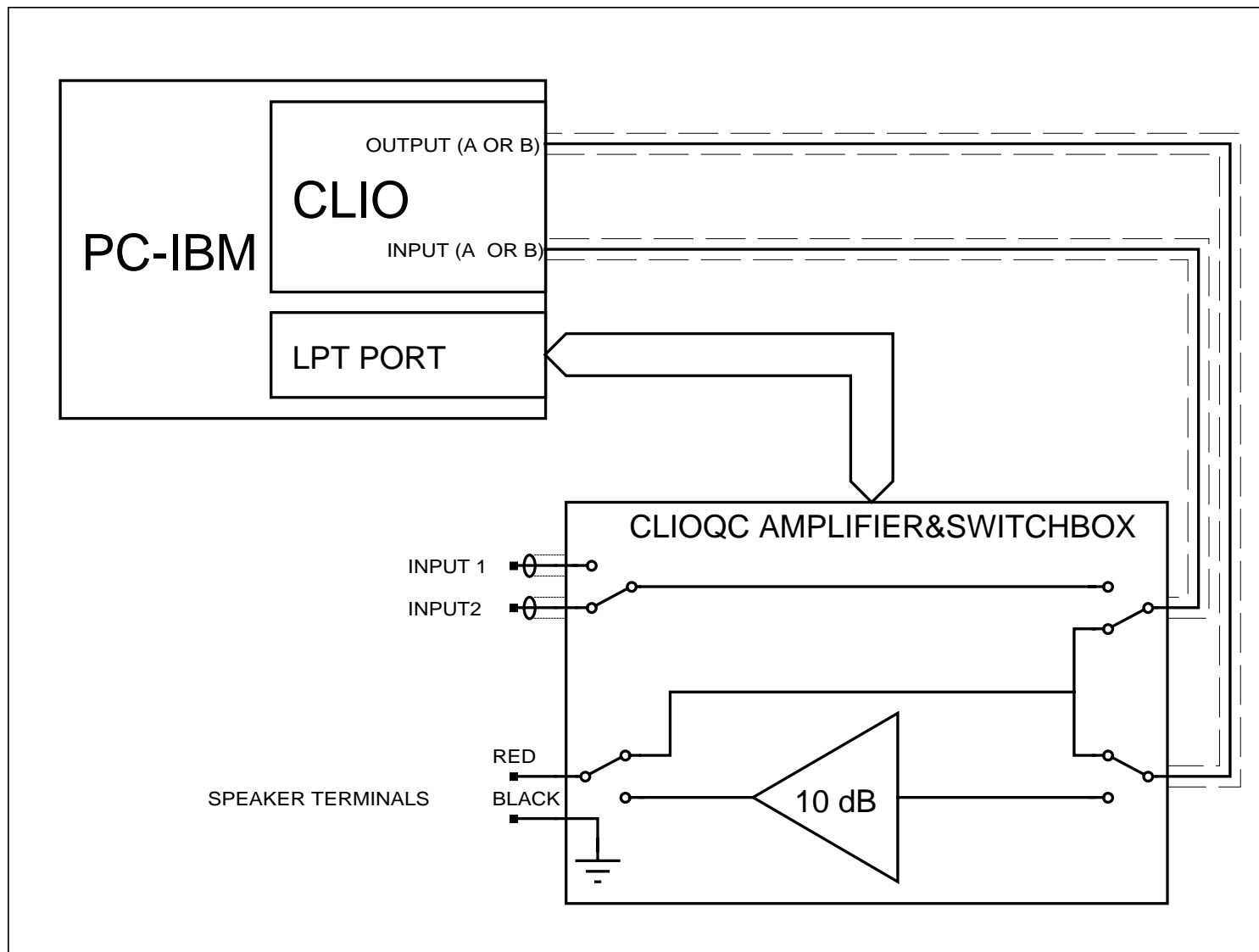
- ALL FUNCTIONS ARE PC CONTROLLED

- TWO LINE / MICROPHONE INPUTS

# CLIOQC - CONNECTION FOR RESPONSE



# CLIOQC - CONNECTION FOR IMPEDANCE



# **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**, but not too much, in the Software Lite

- **light** in cost.

- **light** in weight

- **light** in the User's Manual (in Acrobat format)

- **light** in the optional Microphone Lite

**THE END**