

---

**MODEL 625**

---

**AMBIENT ANALYSIS SYSTEM SETUP SOFTWARE - VER. 1.6**

---

---

**DESCRIPTION**

---

The Model 540 Ambient Analysis System is a versatile, flexible system which controls sound system channel levels in response to ambient or background noise levels. All parameters governing the manner in which the system responds to noise and adjusts the program signal may be individually set for each channel. The Model 625 software package is provided to set up the system, observe and tailor its operation, permanently save the setup parameters, and produce a printed record of them.

The Model 590 or 590X Microcomputer System is used to run the software package. The computer is required only for setup and monitoring. Once this procedure is completed and the setup parameters are saved in non-volatile memory in the 540, the computer may be removed. The Model 540 will then operate without the use of a computer.

---

**FEATURES AND OPTIONS**

---

- 3 Modes of operation
  - Fixed Attenuation
  - Automatic - changes attenuation in response to sensor signal
  - Controlled - follows attenuation changes of another channel
- Each channel may be set to any mode
- One channel may be controlled by multiple sensors
- One sensor may control multiple channels
- Minimum and maximum attenuation limits are individually settable for each channel
- Attack and Release time are individually settable for each channel from 1 second to 5.25 hours
- Scaling Constant may be set individually for each channel
- Remote Threshold (noise level at which signal level begins to increase) may be individually set for each channel
- Automatic calibration of Feedback Constant, may be set individually for each channel
- Controlled Channel attenuation may be offset from controlling channel attenuation
- Separate, fixed settings for Emergency announcements
- Accurate, dual, real time monitoring on computer screen - bar graph and digital displays of:
  - Channel Input Level in dBv
  - Remote Sensor Level, SPL in dB



Computed Attenuation in dB  
Channel Attenuation in dB

- All settings saved in non-volatile (permanent) memory
- Password protection for security
- Printer output for hard copy record of all settings and operating parameters.

---

## DEFINITIONS

---

The following definitions pertain to usage in or with IED equipment. Although we have attempted to adhere to the classical definitions, in some instances there may be differences.

### ADDRESS

---

The numerical identification or location of a piece of equipment which is used to direct communications or commands to it. Each address on a given port must be unique, as with house numbers on a given street. See Port.

### ATTACK TIME (ATTACK TIME CONSTANT)

---

The time constant used by the system to respond to sudden large increases in ambient noise. The magnitude of a large increase is defined by the Attack Window. When the Computed Attenuation subtracted from the Channel Attenuation exceeds the Attack Window, the Channel Attenuation is adjusted at a rate determined by the Attack Time Constant. See Attack Window, Channel Attenuation, and Computed Attenuation.

### ATTACK WINDOW

---

The Attack Window is the parameter which, when exceeded by the value of the Channel Attenuation minus the Computed Attenuation, causes the system to increase attenuation at a rate determined by the Attack Time Constant. See Attack Time Constant, Computed Attenuation, and Channel Attenuation.

### ATTENUATION OFFSET

---

The Attenuation Offset is the value of attenuation (including sign) by which a Controlled Channel is offset from its Controlling Channel, as long as it does not exceed its Minimum and Maximum Attenuation limits.

*Innovative Electronic Designs, Inc. • 9701 Taylorsville Road • Louisville, Kentucky 40299 • USA  
Phone: (502) 267-7436 • Fax: (502) 267-9070 • Internet: <http://www.iedaudio.com>*

---

**AUTOMATIC CHANNEL**

---

A channel in the Automatic configuration accepts an input from one or more ambient noise sensors and compensates the signal level accordingly. See Configuration.

---

**AUTOMATIC CALIBRATION**

---

The Automatic Calibration function performs an automatic measurement which determines the proper value of the Feedback Constant. To use this function it is necessary to first introduce a signal from an external source. Either pink noise or program may be used. See Feedback Constant.

---

**CHANNEL ATTENUATION**

---

The Channel Attenuation is the value of attenuation applied to the program signal by the system to adjust its level. The Channel Attenuation is arrived at by the system by smoothing the changes in the Computed Attenuation with the Attack or Release Time Constants, as appropriate. See Computed Attenuation, Attack Time, and Release Time.

---

**COMPUTED ATTENUATION**

---

The Computed Attenuation is the instantaneous value of attenuation which is computed by the system. See Channel Attenuation, Attack Time, and Release Time.

---

**CONFIGURATION**

---

The Configuration of a channel is the operating mode. There are three configurations: Fixed, Automatic, and Controlled.

---

**CONTROLLED CHANNEL**

---

A Channel which is in the Controlled mode is slaved to an Automatic channel, and changes attenuation as the Automatic channel changes, with or without an offset, and not exceeding its Minimum or Maximum attenuation limits. See Automatic channel, Minimum Attenuation, Maximum Attenuation, Attenuation Offset, and Controlling Channel.

---

**CONTROLLING CHANNEL**

---

A Controlling Channel is an Automatic Channel to which a Controlled Channel is slaved. See Automatic Channel and Controlled Channel.



---

**FEEDBACK CONSTANT**

---

The Feedback Constant is the correction factor which allows the system to compensate for program signal which is detected by the sensor(s) in combination with the ambient noise.

---

**FIXED CHANNEL**

---

A Fixed Channel is a channel which has a fixed or non-varying value of attenuation.

---

**LINK FAULT**

---

A Link Fault is a condition which exists in an RS422 Communications Link which impedes correct data transmission.

---

**LOAD FILE**

---

Loading a file means transferring a copy of its contents from non-volatile memory into the hardware, where it can be used to govern system operation. See Save File.

---

**MAXIMUM ATTENUATION**

---

The Maximum Attenuation is the highest value of attenuation which an Automatic or Controlled Channel is permitted to attain.

---

**MINIMUM ATTENUATION**

---

The Minimum Attenuation is the lowest value of attenuation which an Automatic or Controlled Channel is permitted to attain.

---

**OFFSET (BAR GRAPH SCALE OFFSET)**

---

The Bar Graph Scale Offset is the value of the right hand scale limit. It may be varied in order to better accommodate the readings which are currently being displayed.

---

**PORT**

---

A port is an input and/or output, usually used for data communications. Each port of a given piece of equipment must have a unique identification (Port number). See Address.

*Innovative Electronic Designs, Inc. • 9701 Taylorsville Road • Louisville, Kentucky 40299 • USA  
Phone: (502) 267-7436 • Fax: (502) 267-9070 • Internet: <http://www.iedaudio.com>*

---

**RACK**

---

A rack in the Model 540 context is a 540 Mainframe which may house 1 - 11 Model 540 cards, each having 4 channels, and a power supply card.

---

**RELEASE TIME**

---

The Release Time, as used in the Model 540 Ambient Analysis System, is the time constant used for smoothing small changes in the average signal level (changes which are smaller in magnitude than the Attack Window).

---

**RELEASE LIMIT**

---

The Release Limit is the maximum value which will be used by the system in calculating Channel Attenuation when responding to sudden drops in ambient noise. It is not a limit on attenuation, but a limit on the value used in calculating system response to a sudden decrease in noise. It therefore exerts a smoothing effect on attenuation changes. See Attack Time, Release Time, and Attack Window.

---

**REMOTE SENSOR**

---

A Remote Sensor is an ambient noise sensor which is usually mounted in a location remote from the system for the purpose of sensing and transmitting ambient noise information to the system.

---

**REMOTE THRESHOLD**

---

The Remote Threshold is the signal level from a Remote Sensor above which the system begins to increase the output signal for its associated channel(s).

---

**SAVE FILE**

---

Saving a file means transferring a copy of its contents from the system hardware into non-volatile memory for permanent storage and later recall. A file saved in non-volatile memory will be retained, even when power to the system is lost.

---

**SCALING CONSTANT**

---

The Scaling Constant is the ratio of the change in noise level to the resultant change in program level. This constant may be set by the software as appropriate for each channel.



## SPECIFICATIONS

1. Fixed Mode Channel Attenuation range . . . . . 0 - 85 dB
2. Fixed Mode Channel Attenuation increments . . . . . 1/3 dB
3. Emergency Mode Channel Attenuation range . . . . . 0 - 85 dB
4. Emergency Mode Channel Increment . . . . . 1/3 dB
5. Channel Input Level display (dBv)
  - Analog . . . . . -60 to +20 dBv
  - Digital . . . . . -56 to +29 dBv
  - Increments . . . . . 0.3 dB
6. Remote Sensor (SPL)
  - Analog . . . . . 50 to 120 dB
  - Digital . . . . . 50 to 130 dB
  - Increments . . . . . 0.3 dB
7. Computed Attenuation (dB)
  - Analog . . . . . 0 to 90 dB
  - Digital . . . . . 0 to 90 dB
  - Increments . . . . . 0.01 dB
8. Channel Attenuation (dB)
  - Analog . . . . . 0 to 90 dB
  - Digital . . . . . 0 to 90 dB
  - Increments . . . . . 0.0001 dB
9. Scaling Constant . . . . . 1.0 to 3.0
  - Increments . . . . . 0.1
10. Feedback Constant . . . . . -85 to +85 dB
  - Increments . . . . . 1 dB
11. Attenuation Offset . . . . . -85 to +85 dB
  - Increments . . . . . 1 dB
12. Channels per rack . . . . . 44, Max
13. Racks per system . . . . . 1 to 7
14. Address range . . . . . 0 - 255
15. Port Range . . . . . 0 - 15
16. Attack Time . . . . . 1 to 18900 seconds (5.25 Hours)
17. Release Time . . . . . 1 to 18900 seconds (5.25 hours)
18. Attack Window . . . . . 0 - 127 dB
19. Release Limit . . . . . 0 - 127 dB
20. Clock (24 Hour format) . . . . . Month, Day, Year, Hours, Minutes, Seconds
21. Printout data

<u>Rack Information</u>	<u>Channel Information</u>	
Date	Channel Number	Maximum Attenuation
Time	Controlling Sensor Number	Remote Threshold
Rack Number	Normal Mode Attenuation	Feedback Constant
Attack Window	Emergency Mode Attenuation	Attack Time
Release Limit	Configuration	Release Time
Port	Minimum Attenuation	Scaling Constant
Address		

*Innovative Electronic Designs, Inc. • 9701 Taylorsville Road • Louisville, Kentucky 40299 • USA*  
*Phone: (502) 267-7436 • Fax: (502) 267-9070 • Internet: <http://www.iedaudio.com>*

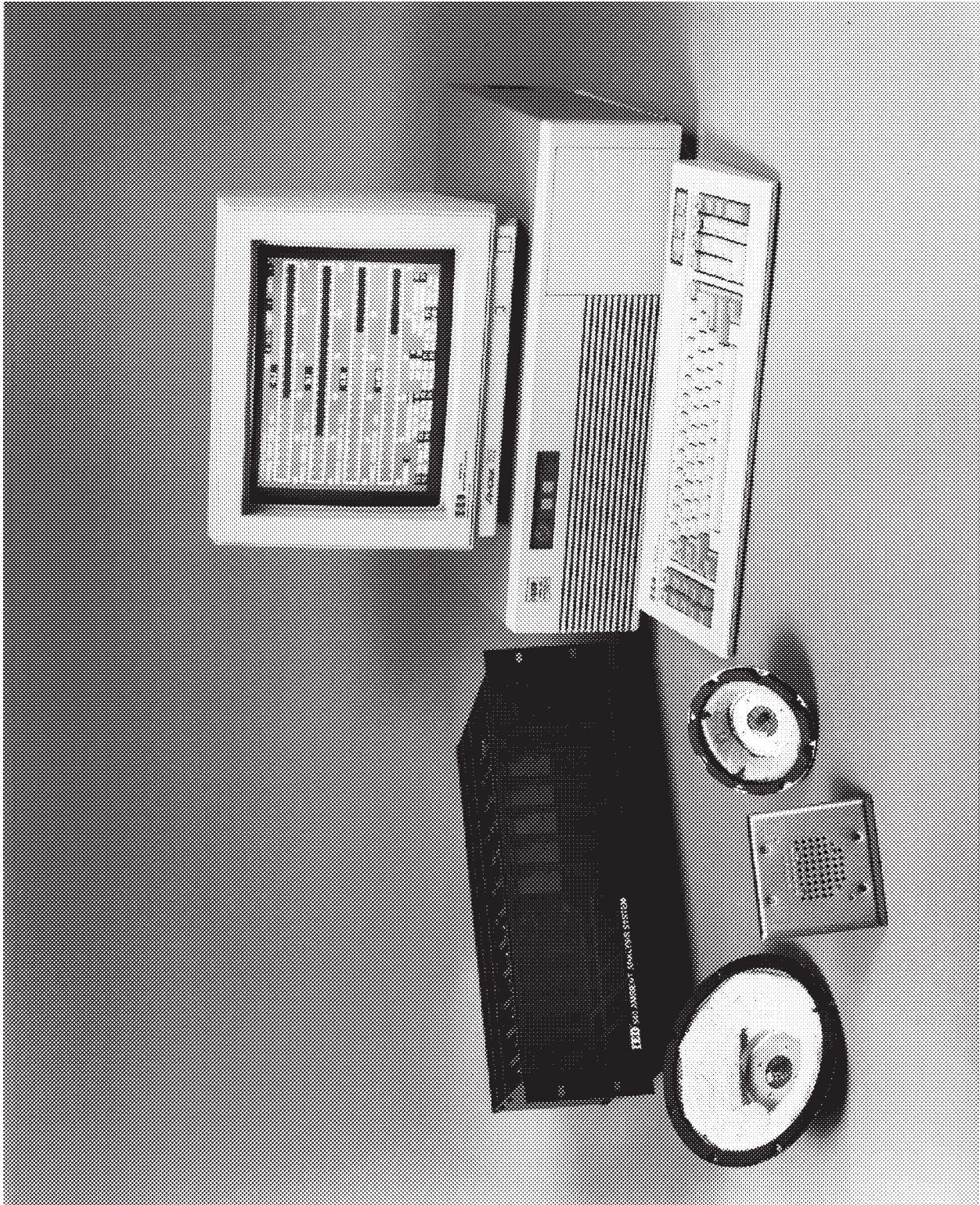


Figure 1 - Model 540 Ambient Analysis System components



```

IED 540 Ambient Analysis System - V1.6      PORT: 0 (2C1)  ADDR: 1  RACK: 1
CH  INP  REM  CREM  ATTN  CH  INP  REM  CREM  ATTN  CH  INP  REM  CREM  ATTN
1  -18  70  71  15.0  17  -56  50  50  0.0  33  -56  50  50  0.0
2  -18  62  62  20.0  18  -56  50  50  0.0  34  -56  50  50  0.0
3  -17  62  50  15.0  19  -56  50  50  0.0  35  -56  50  50  0.0
4  -17  62  50  10.0  20  -56  50  50  0.0  36  -56  50  50  0.0

5  -56  50  50  15.0  21  -56  50  50  0.0  37  -56  50  50  0.0
6  -56  50  50  15.0  22  -56  50  50  0.0  38  -56  50  50  0.0
7  -56  50  50  0.0   23  -56  50  50  0.0  39  -56  50  50  0.0
8  -56  50  50  6.0   24  -56  50  50  0.0  40  -56  50  50  0.0

9  -56  50  50  15.0  25  -56  50  50  0.0  41  -56  50  50  0.0
10 -56  50  50  15.0  26  -56  50  50  0.0  42  -56  50  50  0.0
11 -56  50  50  15.0  27  -56  50  50  0.0  43  -56  50  50  0.0
12 -56  50  50  15.0  28  -56  50  50  0.0  44  -56  50  50  0.0

13 -56  50  50  15.0  29  -56  50  50  0.0
14 -56  50  50  20.0  30  -56  50  50  0.0
15 -56  50  50  25.0  31  -56  50  50  0.0
16 -56  50  50  15.0  32  -56  50  50  0.0

                                LINK OK
                                +30v OK
                                +15v OK
                                -15v OK

F1: Set Attn  F3: Atck/Rel  F5: Find Addr  F7: Next Rack  F9: Emergency
F2: Configure F4: Calibrate F6:              F8: Go to Rack F10: Exit
    
```

Figure 2 - Main screen

```

View/Edit Configuration      PORT: 0 (2C1)  ADDR: 1  RACK: 1
CH  CONF  MN  MX  RTH  FBC  SN  CH  CONF  MN  MX  RTH  FBC  SN  CH  CONF  MN  MX  RTH  FBC  SN
1  AUTO  0  20  65  17  1  17  FIXD  0  85  0  0  0  NU  33  FIXD  0  85  0  0  0  NU
2  AUTO  5  20  70  12  2  18  FIXD  0  85  0  0  0  NU  34  FIXD  0  85  0  0  0  NU
3  C  1  0  15  5  0  2  19  FIXD  0  85  0  0  0  NU  35  FIXD  0  85  0  0  0  NU
4  C  1  0  15  -5  5  2  20  FIXD  0  85  0  0  0  NU  36  FIXD  0  85  0  0  0  NU

5  AUTO  0  15  80  -2  6  21  FIXD  0  85  0  0  0  NU  37  FIXD  0  85  0  0  0  NU
6  AUTO  0  15  75  5  5  22  FIXD  0  85  0  0  0  NU  38  FIXD  0  85  0  0  0  NU
7  FIXD  0  15  0  0  12  23  FIXD  0  85  0  0  0  NU  39  FIXD  0  85  0  0  0  NU
8  FIXD  0  15  0  0  12  24  FIXD  0  85  0  0  0  NU  40  FIXD  0  85  0  0  0  NU

9  C  12  0  15  0  0  12  25  FIXD  0  85  0  0  0  NU  41  FIXD  0  85  0  0  0  NU
10 C  12  0  15  0  0  12  26  FIXD  0  85  0  0  0  NU  42  FIXD  0  85  0  0  0  NU
11 C  12  0  15  0  0  12  27  FIXD  0  85  0  0  0  NU  43  FIXD  0  85  0  0  0  NU
12 AUTO  0  15  72  8  12  28  FIXD  0  85  0  0  0  NU  44  FIXD  0  85  0  0  0  NU

13 C  12  0  20  0  0  0  29  FIXD  0  85  0  0  0  NU
14 C  12  0  25  5  0  0  30  FIXD  0  85  0  0  0  NU
15 C  12  0  30  10  0  0  31  FIXD  0  85  0  0  0  NU
16 C  12  0  30  0  0  0  32  FIXD  0  85  0  0  0  NU

                                Attack Window: 6
                                Release Limit: 12

F1: Edit Conf  F5: Load File  F7: Next Rack  F9: Prnt Config
F2: Edit Wind  F6: Save File   F8: Go to Rack F10: Main Menu
    
```

Figure 3 - Configure screen

*Innovative Electronic Designs, Inc. • 9701 Taylorsville Road • Louisville, Kentucky 40299 • USA  
 Phone: (502) 267-7436 • Fax: (502) 267-9070 • Internet: <http://www.iedaudio.com>*

View/Edit Attack/Release Times      PORT: 0 (2C1)   ADDR: 1   RACK: 1

CH	ATTACK	REL	SCALE	CH	ATTACK	REL	SCALE	CH	ATTACK	REL	SCALE
1	2.0	4.0	1.0	17	1.5	3.0	1.0	33	1.5	3.0	1.0
2	1.0	2.0	1.0	18	1.5	3.0	1.0	34	1.5	3.0	1.0
3	1.5	3.0	1.0	19	1.5	3.0	1.0	35	1.5	3.0	1.0
4	1.5	3.0	1.0	20	1.5	3.0	1.0	36	1.5	3.0	1.0
5	1.5	3.0	1.0	21	1.5	3.0	1.0	37	1.5	3.0	1.0
6	1.5	3.0	1.0	22	1.5	3.0	1.0	38	1.5	3.0	1.0
7	1.5	3.0	1.0	23	1.5	3.0	1.0	39	1.5	3.0	1.0
8	1.5	3.0	1.0	24	1.5	3.0	1.0	40	1.5	3.0	1.0
9	1.5	3.0	1.0	25	1.5	3.0	1.0	41	1.5	3.0	1.0
10	1.5	3.0	1.0	26	1.5	3.0	1.0	42	1.5	3.0	1.0
11	1.5	3.0	1.0	27	1.5	3.0	1.0	43	1.5	3.0	1.0
12	1.5	3.0	1.0	28	1.5	3.0	1.0	44	1.5	3.0	1.0
13	1.5	3.0	1.0	29	1.5	3.0	1.0				
14	1.5	3.0	1.0	30	1.5	3.0	1.0				
15	1.5	3.0	1.0	31	1.5	3.0	1.0				
16	1.5	3.0	1.0	32	1.5	3.0	1.0				

F1: Edit      F3:      F5: Load File    F7: Next Rack    F9:  
 F2: Set All    F4:      F6: Save File    F8: Go to Rack   F10: Main Menu

Figure 4 - Attack/release screen

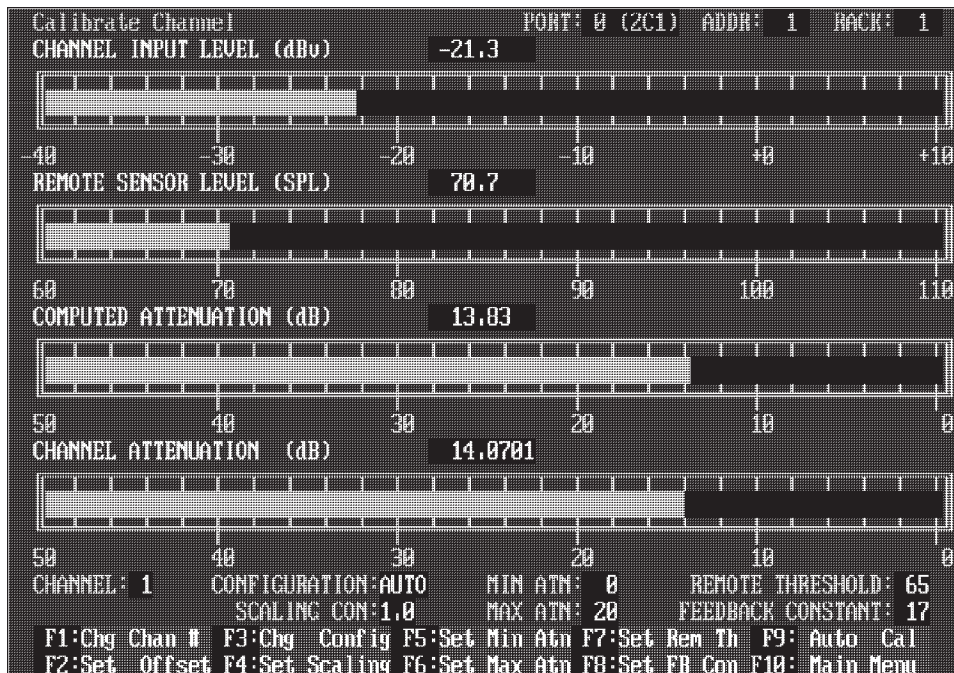


Figure 5 - Calibrate channel screen



This page left blank intentionally

*Innovative Electronic Designs, Inc. • 9701 Taylorsville Road • Louisville, Kentucky 40299 • USA  
Phone: (502) 267-7436 • Fax: (502) 267-9070 • Internet: <http://www.iedaudio.com>*