

TIME ALIGNED™ STUDIO MONITOR SYSTEM

MODEL
815A

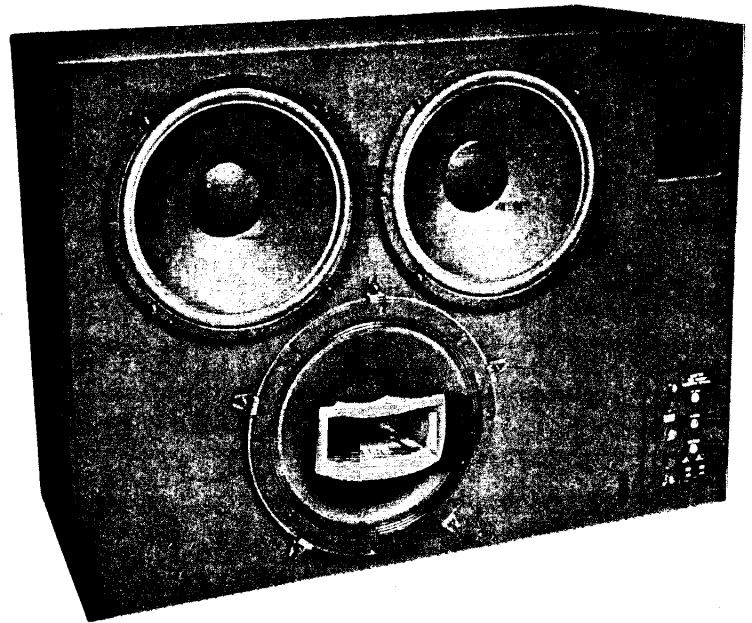
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FEATURES:

- The 815A uses a newly developed* high frequency horn utilizing UREI's Diffraction Buffer plus other new techniques. This results in smoother response, extended H.F. range, and improved off-axis response.
 - Provides reduction in transient distortion.
 - The new 800H-A H.F. horn incorporates many unique features which afford improved matching of the horn driver throat to free air and substantially reduce the "Shadow Effect" common to some coaxial type loudspeakers. In addition, other acoustic techniques have been employed to significantly reduce transient distortion (ringing). These features improve the combining of the low and high frequency drivers in a smooth time and magnitude relationship.
 - Low loss crossover network allows maximum power transfer to the transducers and corrects the spatial alignment of acoustic centers.
 - BNC connector on the crossover network allows the use of Conductor Compensation as available on the UREI Model 6500 Power Amplifier. This reduces the reactive effects of the speaker cable and improves damping.
 - 604 ceramic duplex with UREI custom H. F. horn for extended and more uniform H.F. response.
 - Two L.F. 15" direct radiating drivers fed from 3-way TA network for extended L.F. response and higher power handling capability at low frequencies.
 - 13 cu. ft. enclosure with pressure control aperture for excellent L.F. damping, good efficiency and low distortion.
 - Unique enclosure damping method provides high efficiency conversion of low frequency sound pressure to adiabatic energy.
- * Patent pending.

The 815A Studio Monitor System is a joint R & D effort of UREI and E. M. Long Associates. The TIME-ALIGNED™ TECHNIQUE is a real-time design method, utilizing proprietary instrumentation developed by Long which allows the driver placements and network parameters to be adjusted simultaneously, achieving near perfect alignment of the frequency components of a complex transient waveform as heard by a listener.


The importance of time (phase) parameters of loudspeaker systems, in addition to smooth frequency response, has been postulated for many years. These group time delay anomalies may be severe in some multi transducer sys-



tems, although they may exhibit satisfactory or even excellent frequency response.

Within the last decade, many advocates have presented outstanding scientific papers on this subject. Richard C. Heyser, among others, has contributed magnificent research dealing with the importance of time (phase) correlation.

Quoting from Heyser in *Audio*, June 1976: "We realize that the concept of time response of a speaker is a whole new ballgame to many people and is probably a bit confusing if all you ever considered before was steady state frequency measurements."

Edward M. Long presented a paper before the Audio Engineering Society in May of 1976, entitled "A Time Align Technique for Loudspeaker System Design." UREI is a licensee of E. M. Long Associates, for the instrumentation methods and the use of the Trademark .

For stereo applications the model 815 Studio Monitor System is built in "mirror-image" (815 L, 815 R) to produce identical dispersion towards the listening position between two systems.

UNITED RECORDING ELECTRONICS INDUSTRIES

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 UREI company

MODEL
815A

SPECIFICATIONS:

Type: Triple woofer coaxial with Model 849
three way TA network

Power Rating: 75 watts 40 Hz to 20 kHz, with
pink noise

Frequency response: ± 3 dB, 40 Hz to 15 kHz
measured "freespace"
 4π steradians ($h = 5$ m, $d = 1$ m)

Sensitivity: 91 dB SPL/volt/meter

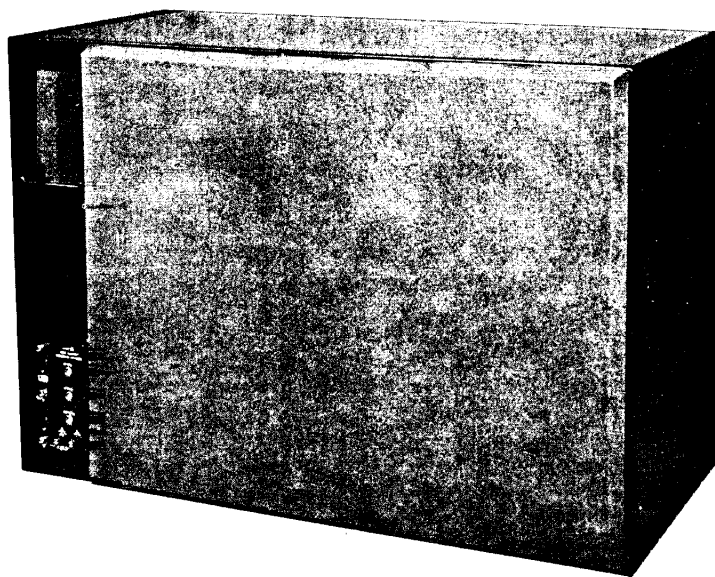
Impedance: 8 ohms, nominal
(minimum impedance > 4 ohms)

Network: UREI 849, 3-way

Cabinet: Utility flat black painted

Weight: 107 kg (235 pounds)

Dimensions: Height = 0.813 m (32")
Width = 1.105 m (43½")
Depth = 0.533 m (21") without
grille
0.610 m (24") with grille



**UREI 815A SYSTEM
WITH ACCESSORY GRILLE 815AG**

BEFORE PROCEEDING WITH COMPLETE UNPACKING AND SETUP,
CONSULT UNPACKING AND INSPECTION INSTRUCTIONS ON PAGE

model 815A

TIME ALIGNEDTM STUDIO MONITOR

LOUDSPEAKER SYSTEM



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Printed in U.S.A.

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INTRODUCTION

The Model 815A Studio Monitor System is designed for use in professional sound monitoring installations. Typical 4 pi steradian "free space" frequency response (measured at a distance of 1 meter at a height of 5 meters above the ground) is shown in Figure 1, curve A. The increase in response below 150 Hz to be expected when the 815A system is coupled into a control room is shown in curve B, which is the unequalized response measured with a UREI Sonipulse in a commercial recording studio control room, (the 815A system mounted in a quarter-space configuration). References which may be helpful to the user in determining the optimum installation configuration are listed at the end of this instruction data.

The Model 815A systems are supplied in mirror-image "stereo pairs". It is recommended that the cabinets be mounted in the control room with the control boxes on the lower, outside edge of the cabinet (away from the center of the control room). This is essential when the accessory grille is attached to the front of the cabinet in order to avoid diffraction of the high frequencies at the mixer's position.

AMPLIFIER INTERFACE

The Model 815A system is power rated at 85 watts (40 Hz to 20 kHz, with pink noise). However, to accommodate the peak power demands of contemporary music at the high levels usually desired in recording studio control rooms, an amplifier rated at 300 watts into 8 ohms is recommended. The 815A system presents its minimum load impedance (4 ohms) at 125 Hz. This provides maximum power transfer from many popular solid state amplifiers in the frequency range normally requiring the greatest acoustical output (fundamentals of bass guitar, etc.) Also, in this frequency range, the 815A's power factor is near unity, which additionally enhances its acoustic power output. Some amplifiers with transformer outputs offer a selection of output impedances. We recommend to connect the 815A system to the "4 ohm" output.

It has been found that certain of the new solid state amplifiers employing power field-effect transistors (FET's) are quite critical of load impedance at high power-output levels. To protect these expensive power transistors from damage, fairly sophisticated protective systems are usually included in the amplifier, resulting in a highly objectionable "cycling" or oscillating of the protective cut-out circuitry when overload occurs. This phenomenon was encountered with the 815A system only when operating at extremely high monitoring levels.

MODEL 839 CONTROL PANEL

Model 839 contains the mid-range, high frequency drive, and high frequency trim controls. The operating range of these controls is shown in Figure 2, curves C, D, and E. The 839 control panel contains current limiting incandescent lamps and the low and high frequency drivers are fused separately:

	<u>LAMP TYPE</u>	<u>FUSE TYPE</u>
800W L.L.F. Woofer	#1723 or #1133	7 amp 3 AG
604-8G L.F. Woofer	#1133	
604-8G H.F. Driver	#81	1 amp 3 AG

The current limiting lamps are selected to indicate excessive current peaks which occur near the system overload conditions. The passive Time-Align™ delay and crossover network is connected by a multi-conductor cable to a terminal strip at the rear of the control box. Correct connection of the cable to the control box is assured by aligning the red dot on the cable-connector fanning strip alongside the dot on the back of the control box. The light panel cover may be conveniently removed for the replacement of the incandescent lamps.

NOTE: When operating the 839 Crossover Network it must always be loaded properly. If the system is driven with high signal levels while a speaker is disconnected, (or a voice coil is open), voltages may be developed which exceed the ratings of the capacitors in the network. The warranty is void if the network is operated unloaded.

The following is a schedule of the color code for the connecting wires to the individual speakers"

<u>WIRE COLOR FROM CONTROL PANEL</u>	<u>TERMINALS AT SPEAKER</u>
Black	6048G H.F. Black
Red	604-8G H.F. Red
White	604-8G L.F. Black
Green	604-8G L.F. Red
Brown	800 W Nor Mark
Yellow	800 W Purple Dot

The 815A uses a newly developed high frequency horn utilizing UREI's Diffraction Buffer plus other new techniques. This results in smoother response, extended H.F. range, and improved off-axis response.

NOTE: When handling the Speaker System be careful not to damage the blue foam material which is part of the H.F. Horn Assembly.

REPAIRS AND WARRANTY

This product is factory warranted to the original purchaser against defects in material and workmanship for one-year after initial purchase. This limited warranty must be activated at the time of purchase by returning the registry portion of the Warranty Card to the factory. Should a malfunction ever occur, the dealer from whom the unit was purchased will be glad to handle return for factory repair. Please call or write to the factory for a Return Authorization Number which must accompany all repairs. For prompt service ship the unit prepaid directly to the factory with the RA Number visible on the shipping label. Be sure it is well packed in a sturdy carton, with shock-absorbing material such as foam rubber, styrofoam pellets or "bubble-pack" completely filling the remaining space. Particular attention should be paid to protecting the controls, switches, etc. Tape a note to the top of the unit describing the malfunction, and instructions for return. We will pay one-way return shipping costs on any in-warranty repair.

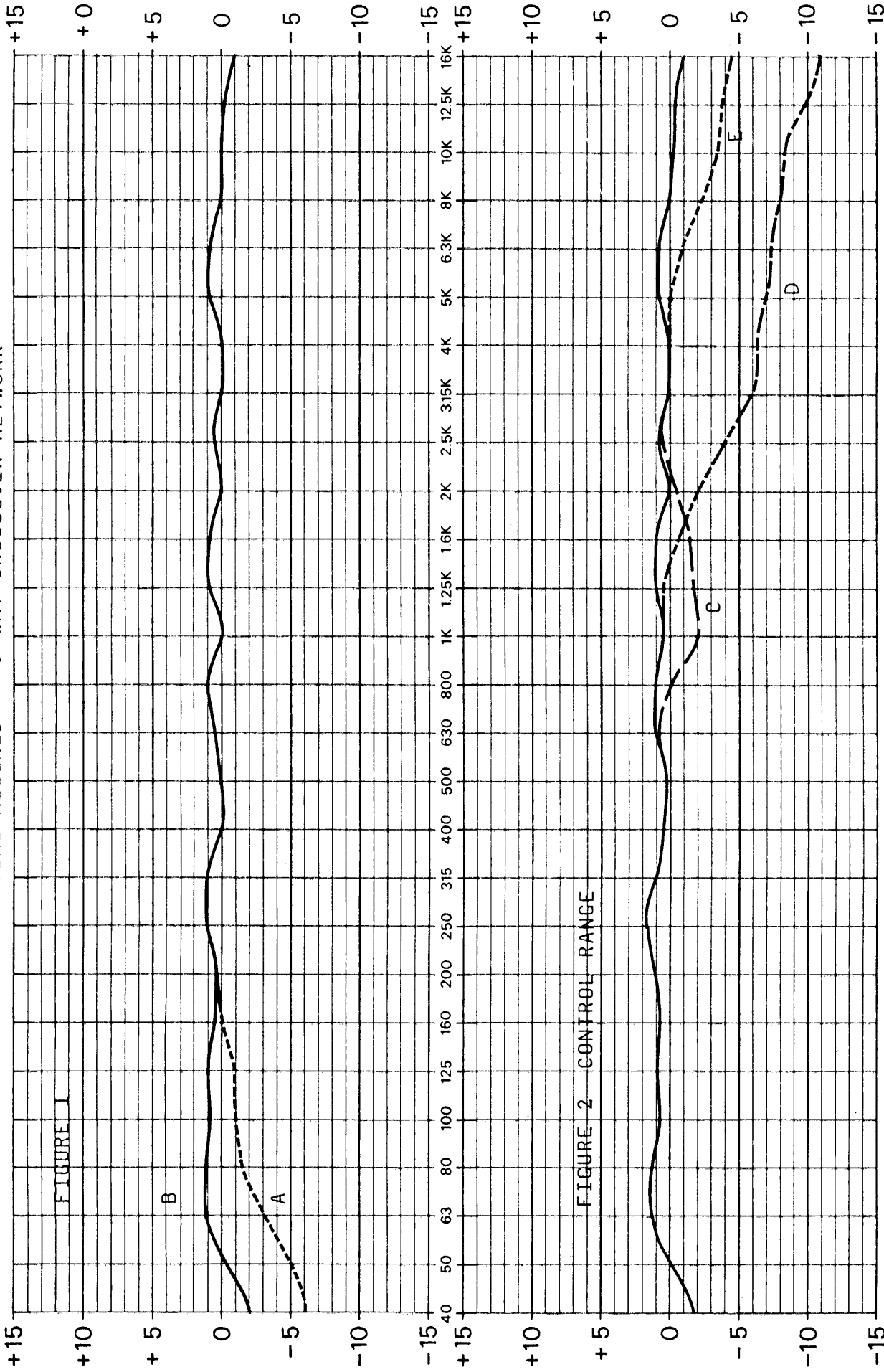
Because of specially selected components in this product, field repairs are not authorized during the warranty period, and attempts to perform repairs may invalidate the warranty.

References:

1. "Determination of Loudspeaker Signal Arrival Times" by Richard C. Heyser, Parts I and II, October and November 1971 Journal of the Audio Engineering Society.
2. "Geometry of Sound Perception" by Richard C. Heyser, Technical Paper at May 1975 AES Convention.
3. "A Time-Align Technique for Loudspeaker System Design" by Edward M. Long, Technical Paper at May 1976 AES Convention.
4. "Elements of Acoustical Engineering" by Harry F. Olson, Chapter I "Standing Waves in Rooms" by Michael Rettinger, Recording Engineer Producer, December 1976.



SONIPULSE SYSTEM ANALYSIS
 MODEL 813A TIME ALIGNED™ MONITOR SYSTEM
 MODEL 839 TIME ALIGNED™ 3-WAY CROSSOVER NETWORK



FREQUENCY IN CYCLES PER SECOND

United Recording Electronics Industries
 8460 SAN FERNANDO RD., SUN VALLEY
 CALIFORNIA 91352 (213) 767-1000

REMARKS Figure 1: A = 4 pi steradian (free space) response,

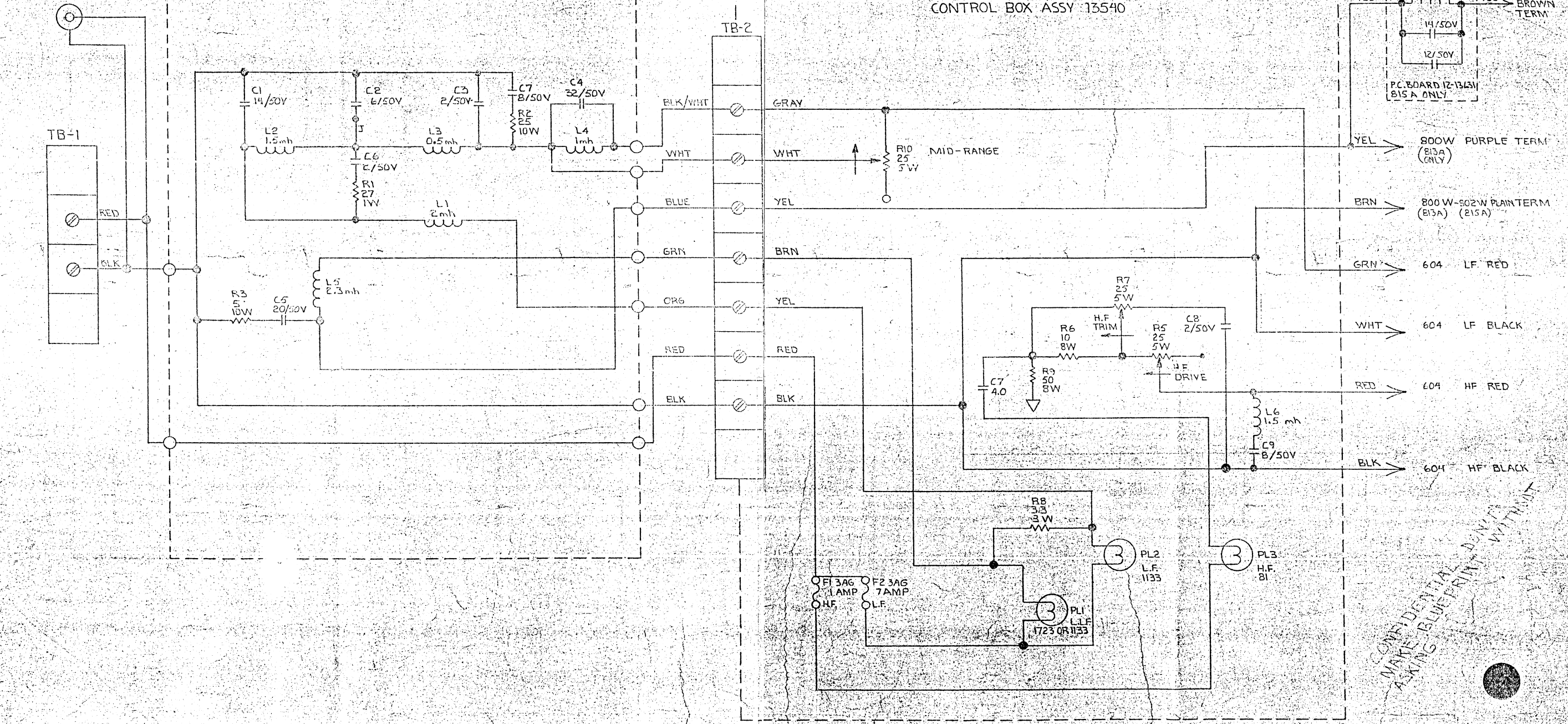
Figure 2: Control range of; C = Mid range, D = High frequ. drive, E = High frequ. trim.

ZONE	LTR	DESCRIPTION	DATE	APPROVED
A		PER ELD-081-005	11-20-81	R.P.M.
B		ADD R.C.FORD 12-11-81	12-11-81	R.P.M.

NETWORK BOX ASSY 13541

POWER AMPLIFIER
CONNECTOR

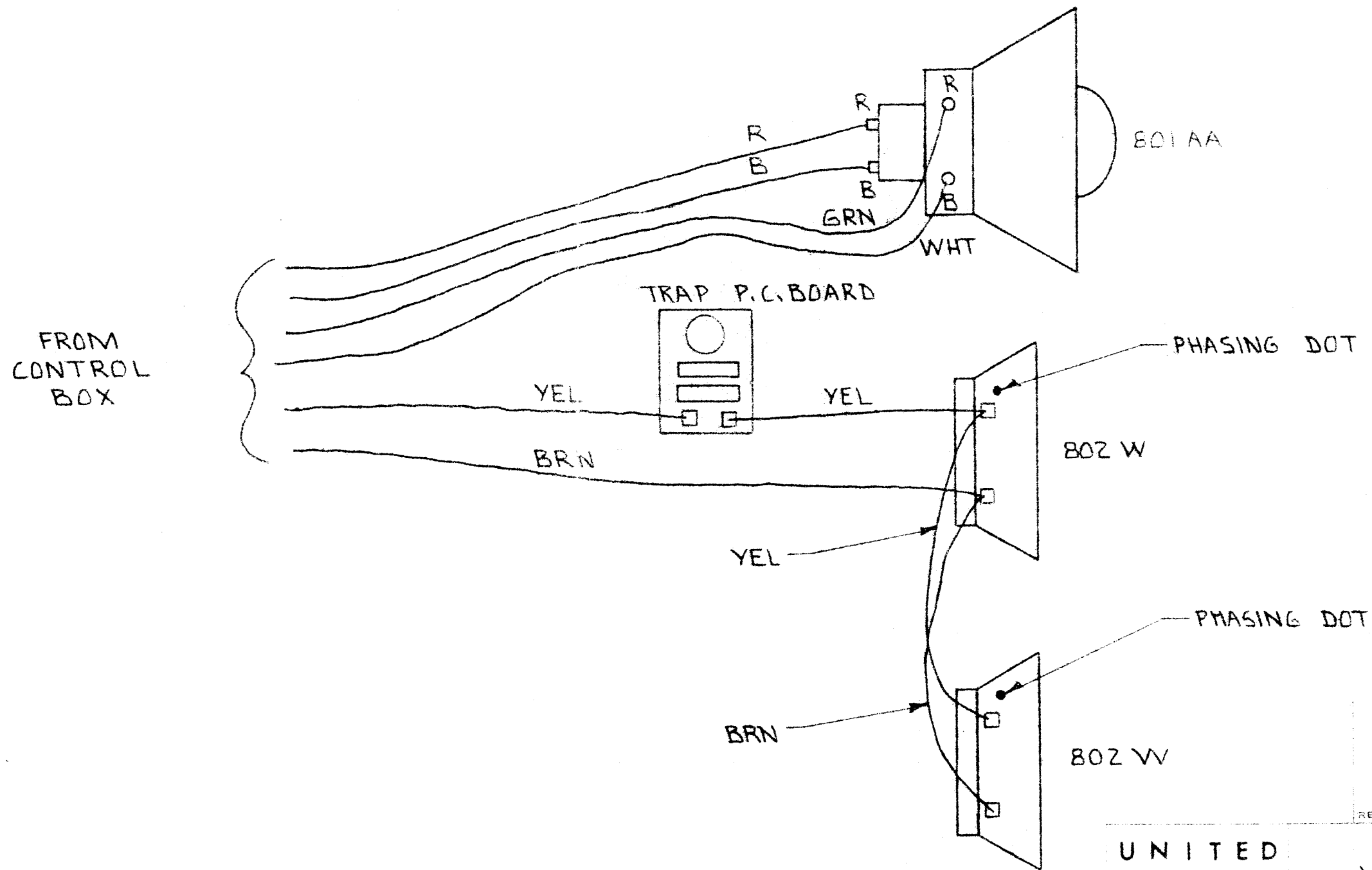
CONTROL BOX ASSY 13540



- 4. ○ INDICATES WIRE TERMINATION ON P.C. BOARD
 - 3. ARROW ON POTENTIOMETER INDICATES CLOCKWISE DIRECTION
 - 2. CAPACITOR VALUES ARE IN MICROFARADS
 - 1. RESISTOR VALUES ARE IN OHMS ± 5%
- NOTES: UNLESS OTHERWISE SPECIFIED

CONFIDENTIAL DESIGN
 MAKE BLUEPRINT WITHOUT
 ALLOWING

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:		CONTRACT NO.		UNITED RECORDING ELECTRONICS INDUSTRIES 11922 VALERIO STREET, NO HOLLYWOOD, CALIFORNIA 91605	
FRACTIONS	DECIMALS	ANGLES	APPROVALS	DATE	DRAWN R.P.M. 1-12-81
XX ±	XX ±	XX ±	CHECKED		
XXX ±	XXX ±	XXX ±			
MATERIAL			SIZE MODEL NO. DRAWING NO.		
			D 839 13545 B		
FINISH			SCALE		
SCALE			SHEET 1 OF 1		



UNITED
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INDUSTRIES

WIRING

MODEL
815 A

DATE
6-1-82

ISSUE

DEPARTMENT
LOS ANGELES
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R.P. MARIN

APPROVED

B13861

REVISIONS