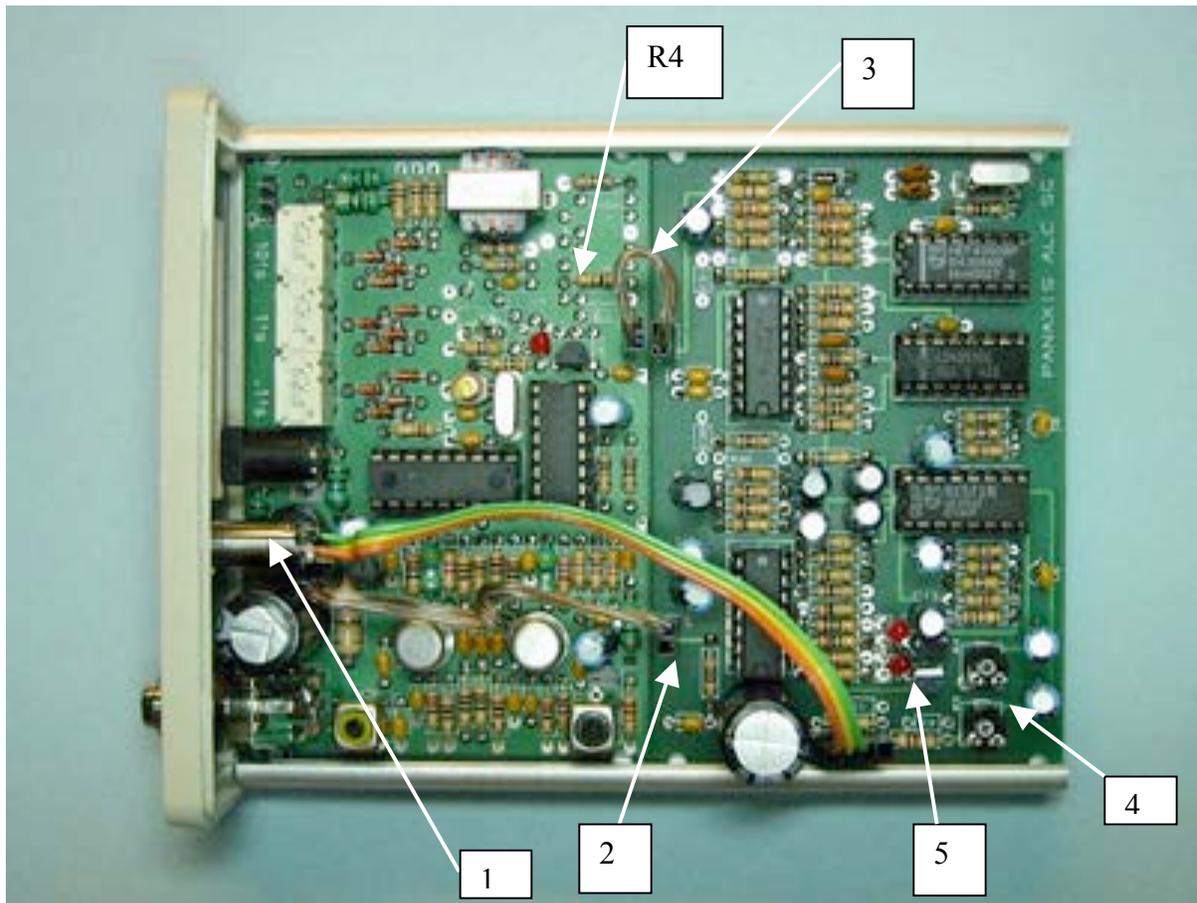


Retrofit Stereo Encoder *SG2/ALC* for FM Transmitters
(Stereo Generator 2 / Automatic Level Control)
Designed by Panaxis Productions



This photo shows our ALC/SG2 circuit board, along with our FMX transmitter circuit board, installed in our ENC3 enclosure chassis, however, the SG2 can be used with *ANY* FM Transmitter which has a composite or multiplex input. This installation also applies to our model ACC100 broadcaster. Component parts and workmanship have a one-year warranty. All of our products have free tech support. Repair services are also available.

Easy retrofit: Designed specifically for this application. Only three connections are required, and cut one lead of R4, and you have converted your FMX/ACC100 broadcaster into a full stereo transmitter with automatic audio level control.

The included ALC prevents “over modulation”, greatly reducing the possibility of distortion due to high audio source levels. When purchased to retrofit to our ENC3 and ACC100 enclosures this circuit board includes (1) mini stereo phone jack to replace the original RCA mono jack. (2) DC power is taken from the FMX/ACC100 power header. (3) The stereo encoded signal is injected at the wideband input header of the FMX/ACC100 circuit board.

Installation is included when purchased with an ACC100 or FMX with enclosure.

For Sales & Service contact: Progressive Concepts (630) 736-9822, (630) 736-0353FAX

Both the FMX and ALC/SG2 circuit boards have four mounting holes should you desire to install them in your own enclosure.

The ACC100 circuit board should not be removed from its enclosure. It will be necessary, however, to remove the “stop” screw holding the ACC100 circuit board in place. The ALC/SG2 circuit board will hold the ACC100 board tight.

The ALC/SG2 circuit board is quite versatile. It can supply up to 5 volts peak-to-peak of encoded signal to accommodate other transmitters. As supplied it has an output voltage divider to decrease level to the 20mV required by the FMX/ACC100 wideband input.

It may be configured for 75 microseconds pre-emphasis (American standard) or 50 microseconds pre-emphasis (European standard). The encoded output provides 100 % modulation in respect to a 10% pilot level. 100% modulation is obtained with an audio level of just 500 millivolts peak-to-peak. Higher input levels activate the ALC circuit so that modulation does not exceed 100%. The input levels can range from 500mV to 5 Volts p-p, without over modulating, when the input level controls are set to maximum. However, in actual practice, the onboard level controls should be adjusted to where the ALC is just beginning to activate evidenced by the red LED’s flickering on audio peaks.

If you have higher audio levels than are generally found with consumer grade equipment or are experiencing “breathing” noises between audio peaks you should adjust the input level controls. To do this first remove the screws from the enclosure’s blank panel. Then slide the cover off the chassis. Adjust the input level controls [4] so your audio peaks just cause the LED’s [5] to flicker. Be sure that both controls are set to the same location to assure your stereo channels both react the same (stereo balance). Replace the cover, bezel, panel and screws.

The ALC and/or the SG2 circuits may be used independently although they share the same circuit board. See “options” page.

Specifications: As normally supplied to purchaser.

Input impedance	50K Ohms
Frequency Response	20Hz – 15kHz
Active input levels	.5 to 5 volts p-p
Output impedance	47 Ohms (20mV p-p) for FMX
Power supply	12 Volts DC
Current requirement	16mA

The unit consists of two schematics, one for the ALC and one for the SG2. Part numbers shown in the schematics are referenced to the circuit board.

The FMX and ACC100 circuit boards were originally configured for monaural operation. For best performance with the ALC/SG2, the FMX/ACC100 monaural circuit should be disabled. Simply cutting one lead of resistor R4 does this.

Options

General:

ALC activity is indicated by left and right channel LED's. These are located on the circuit board but may be moved and installed on an enclosure's front panel if desired.

VU meters may be connected to R17 and R18. The other lead of each VU meter connects to circuit common. This point is referenced to circuit common, no DC voltage present. The level is a function of the ALC, which should be 2 volts p-p, or less. Your VU meter may require a series resistor for calibration.

Circuit configurations: Option 2 is normally supplied.

Option 1: Pre-emphasis takes place at the input to the ALC. The voltage divider action of R1, R4 and R2, R3 requires 20dBm (10x) the audio input level of option 2. This option should only be used where your audio source impedance is low. Pre-emphasis will be degraded as the source impedance increases above 1K.

Component values: R1, R2 = 9.1K; R3, R4 = 1K; C1, C1, C2 = .0082uF;
R7, R8 = 1K; C5, C6 = 2.2uF C22, C23 = 47pF

Option 2: RECOMMENDED. Pre-emphasis takes place in the feedback loops of the ALC, - R7, C5 and R10, C6. C22 and C23 of the SG2 circuit provide upper frequency roll-off and may range from 220pF to 470Pf depending on your desired roll-off. **This is the option used when Progressive Concepts installs the ALC/SG2 for you.**

Option 3: SG2 used separately from the ALC. ALC is either not installed on circuit board or is bypassed. Pre-emphasis takes place in the feedback loops of the amplifiers U5a and U5b, C21, R31 and C20, R30. C22 and C23 provide upper frequency roll-off. An increase in value of R27 and R29 provides more gain allowing a lower audio input level.

Component values: R27, 29 = 100K; R30, 31 = 470; C20, 21 = 6800pF; C22, 23 = 47pF

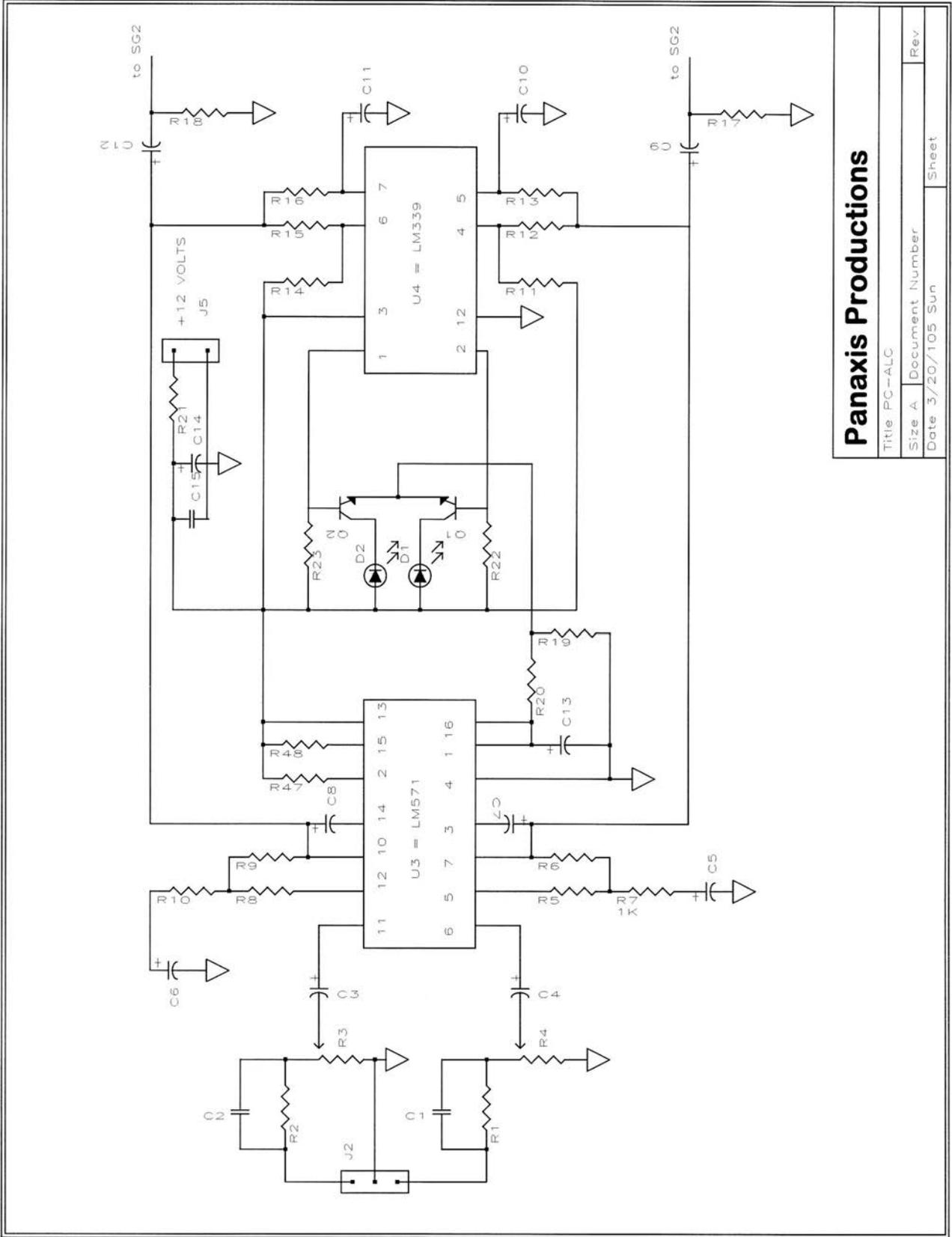
R1, R2 may be low value resistors or jumpers. Level controls R3, R4 may be 50K or lower if required to match your source impedance. Jumpers are installed between the negative pad of C3 and the negative pad of C12 (R18), also between the negative pad of C4 and the negative pad of C9 (R17).

For technical support contact:

Progressive Concepts Voice: (630) 736-9822
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Streamwood, IL 60107

Parts List

Part Number	Option 2 (Standard)	Option 1/Option 3
R1, 2,	1K	9.1K
R3, 4	50K	1.0K
R5, 8, 22, 23, 38, 44	47K	
R6, 9	4.7K	
R7, 10	470	1K
R12, 15, 17, 18, 42, 43, 49,50	100K	
R11, 14	1M	
R13, 16	10K	
R19	15K	
R20	470	
R30, 31	NONE	470
R21	22	
R24, 25, 26, 28, 34	10K	
R27, 29	18K	100K
R32, 33	1K	
R35, 40, 41	100	
R36, 37, 45	22K	
R39	1M	
R46	47	
R47, 48	680K	
C1, 2	NONE	8200PF
C3, 4, 7, 8, 10, 11, 30	10uF	
C5, 6	.01uF	2.2uF/16V
C9, 12, 13, 16, 17, 18	47uF	
C14	3300uF/16V	
C15, 19, 24, 27, 28, 29	.1uF	
C20, 21	NONE	6800pF
C22, 23	470pF	47pF
C25, 26	33 pF NPO	
Q1, 2	2N3904	
D1, 2	3MM RED LED	
D3	1N4148	
U3	LM571	
U4	LM339	
U5	TL074	
U6	C4053B	
U7	C4060B	
X1	4.864MHZ Xtal	
J1, 2	2 pin header	
J5	3 pin header	
(3)	16 pin IC sockets	
(2)	14 pin IC sockets	



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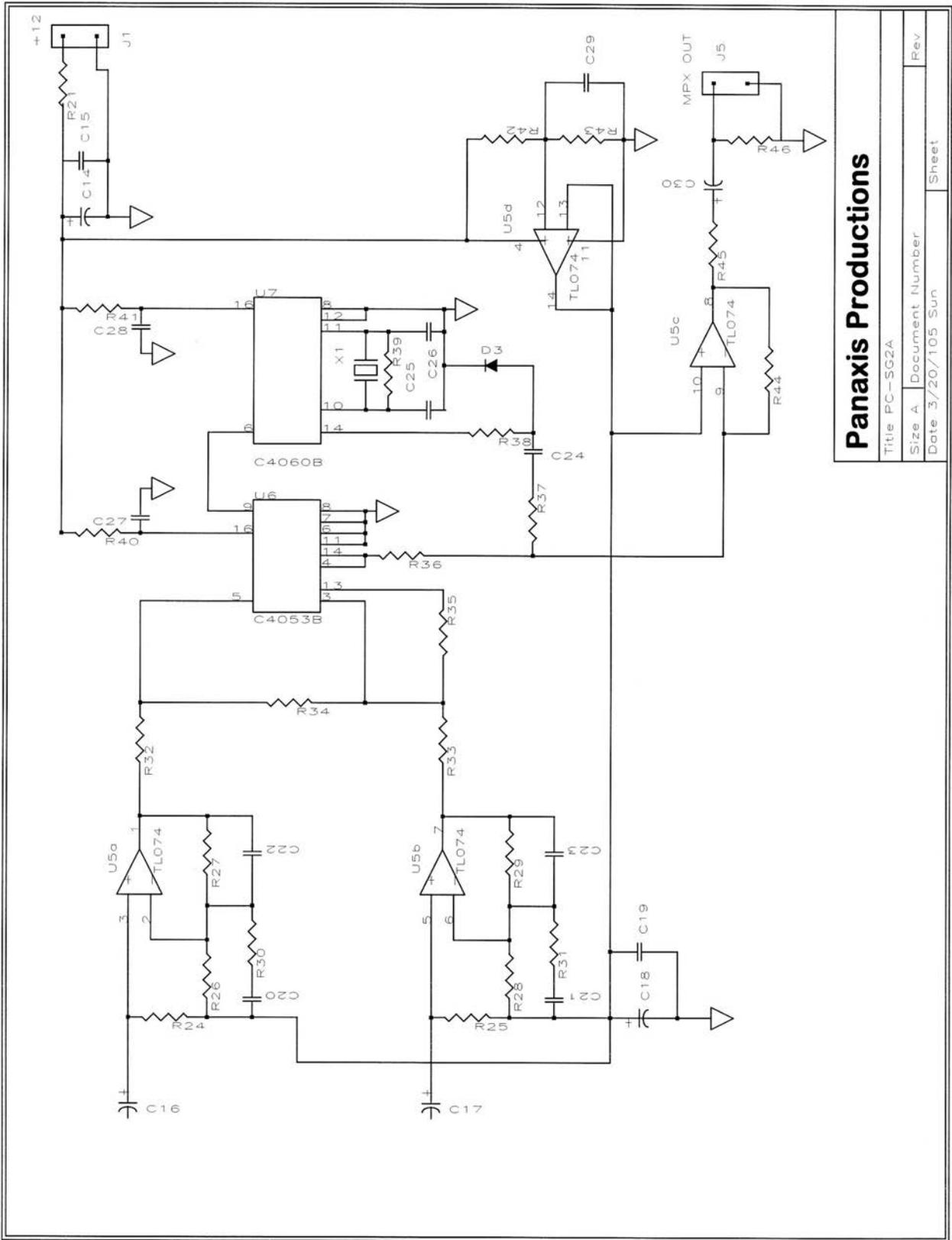
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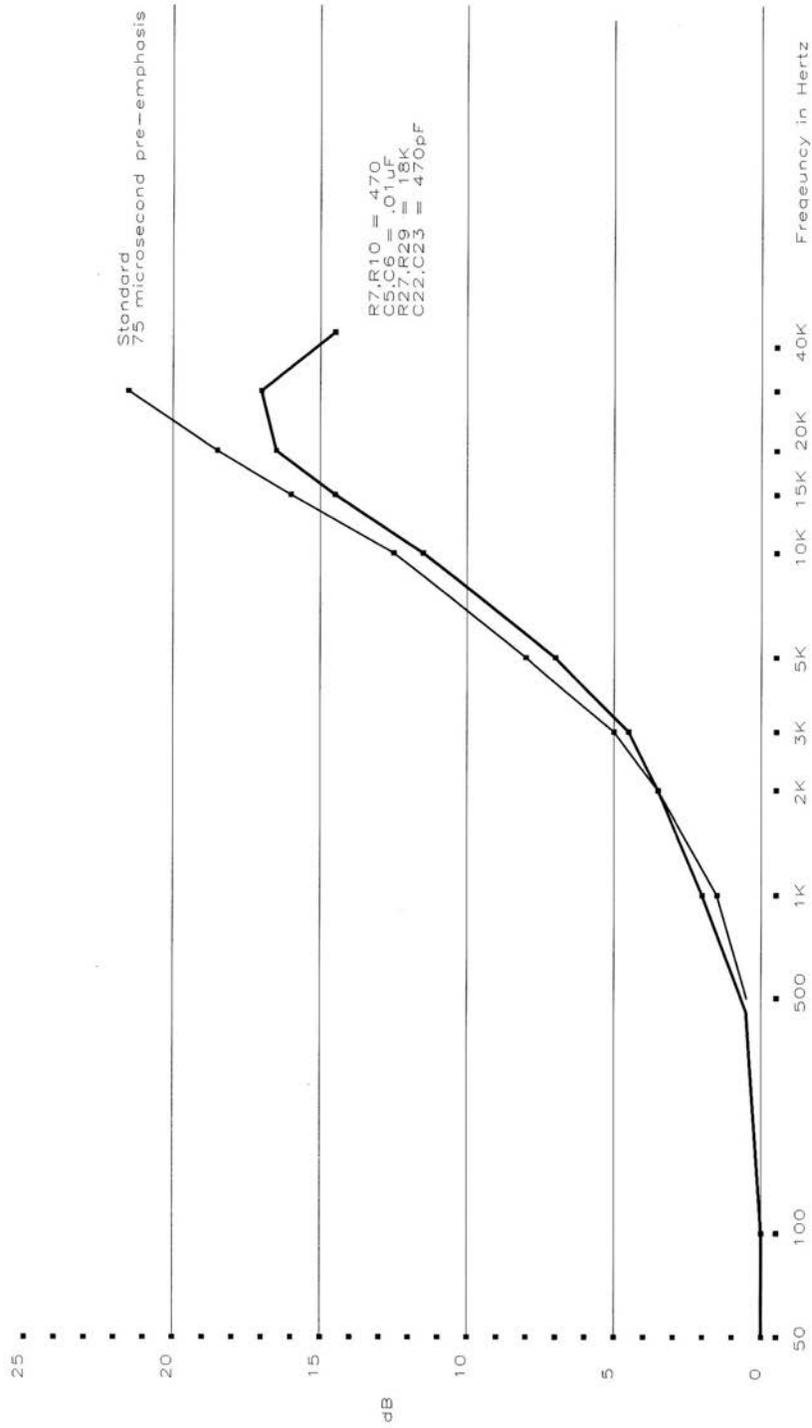
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