Appendix I

CTCSS Tone Panel

Introduction

The Tone Panel option provides one remotely programmable CTCSS encode and up to eight programmable CTCSS decode frequencies. The board is supplied standard with provisions for one tone (encode *or* decode) and can accommodate up to seven additional decode tones by adding chips.

The '96 controller provides Control Op selectable CTCSS modes, requiring tone encoding on signals to access the repeater or to access different levels of commands (see Chapter 5 – Access / Control Commands). With the tone panel, the repeater ean recognize one or more programmable tone frequencies. Each tone can be enabled or disabled independently with Control Op commands, and the enable/disable status of each tone is stored in macro sets.

Tone #1 can be selected for decode *or* encode. If selected for encode, the programmed tone signal is available for injection into the repeater transmitter. Tones #2-8 are decode only.

Installation

The Tone Panel board installs easily into the RC-96 controller, with the four provided #4-40 screws and a 10-pin ribbon cable connecting J10 on the main board to J1 on the Tone Panel board. Of course, install the board with power off !

CTCSS tone from the receiver discriminator should be applied to Pin 5 of the REPEATER DIN connector. Lift Pin 4 of integrated circuit U5 on the large controller board (ULN2804A) to eliminate loading on your CTCSS signal by the logic IC input. Pull out U5 and bend the lead up, or cut it off, so that it does not make contact to the socket pin. (This is necessary because this

connector signal input may instead be used for a CTCSS *logic* signal if an external decoder, such as a TS-32, is used in place of the Tone Panel option.)

Encoded CTCSS tone output is available at the REPEATER DIN connector, Pin 8. The encode level is adjustable with pot R101 on the tone board. If CTCSS is expected to be present on user's signals, the receiver audio should be high-pass filtered externally before being applied to the controller's receiver audio input, or receiver audio should be taken from a point in the receiver where CTCSS has been filtered out. This will prevent repeated CTCSS from interfering with the internally generated encode tone.

Programming

The frequency of each tone may be set with Programming commands. Tone #1 may be selected for encode or decode. Tones #2-8 are decode only.

***5100x**	**Tone #1 ENCODE or DECODE** (x=1 ENCODE; x=0 DECODE)	TONE
***510T FF**	**Tone #T Frequency** (T=1-8; FF from table below)	TONE

Note The controller must then be reset for these commands to take effect. Enter (COP prefix)18 after locking the controller.

CTCSS FREQUENCIES

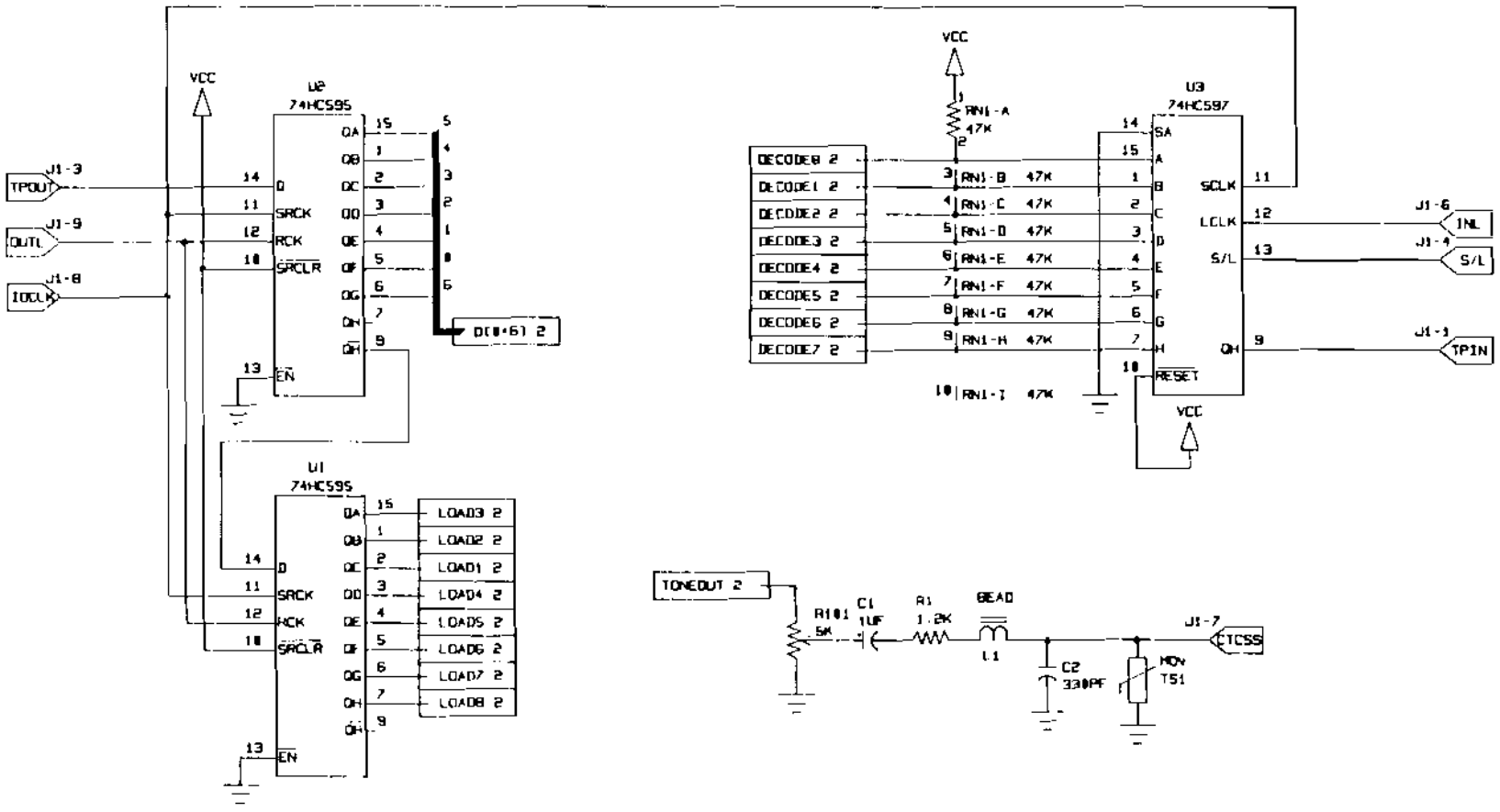
01	67.0	**11**	-	**21**	136.5	**31**	192.8
02	71.9	**12**	100.0	**22**	141.3	**32**	203.5
03	74.4	**13**	103.5	**23**	146.2	**33**	210.7
04	77.0	**14**	107.2	**24**	151.4	**34**	218.1
05	79.7	**15**	110.9	**25**	156.7	**35**	225.7
06	82.5	**16**	114.8	**26**	162.2	**36**	233.6
07	85.4	**17**	118.8	**27**	167.9	**37**	241.8
08	88.5	**18**	123.0	**28**	173.8	**38**	250.3
09	91.5	**19**	127.3	**29**	179.9		
10	94.8	**20**	131.8	**30**	186.2		

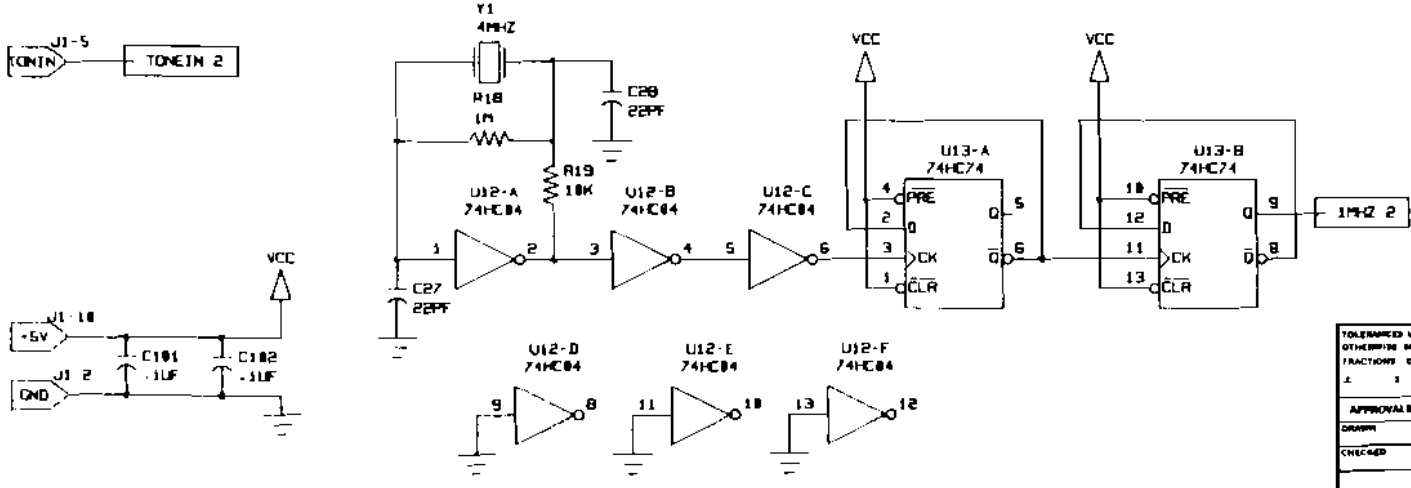
Control Operator Selection

The Control Op may enable or disable controller recognition of each of the decode tones. When any of the enabled tones are detected, the controller permits access or command of the repeater as selected by Access / Control commands. The selection information is stored in maero sets for easy change of setup.

81-88	**Enable Tone #1-8**	1E-8E
91-98	**Disable Tone #1-8**	1D-8D

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED





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APPROVALS	DATE	RC-96 Tone Panel Board	
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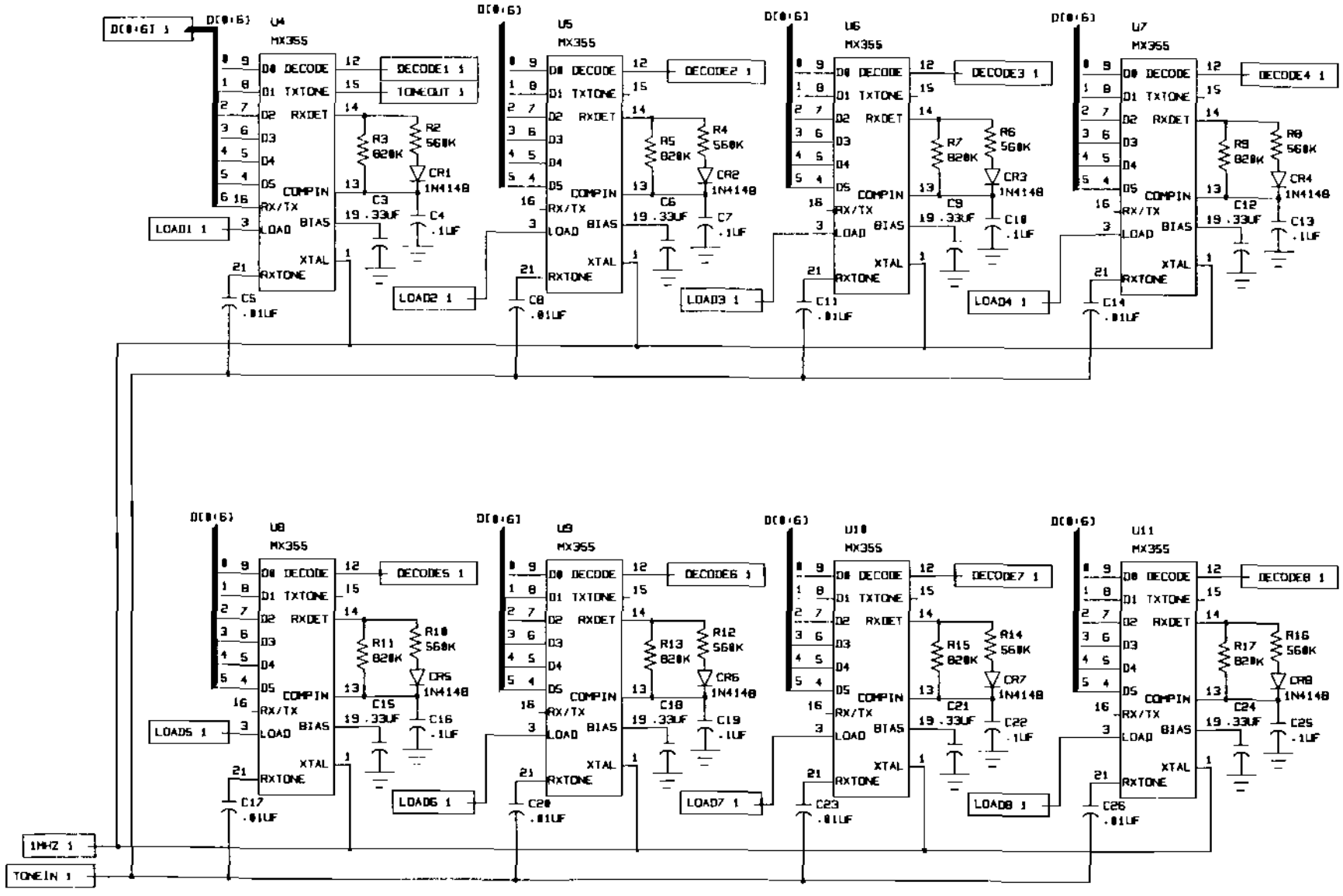
REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED



TOLERANCES UNLESS OTHERWISE SPECIFIED		
FRACTIONS	DEC	ANGLES
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RC-96 Tone Panel Board

SCALE	SIZE	DRAWING NO.
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