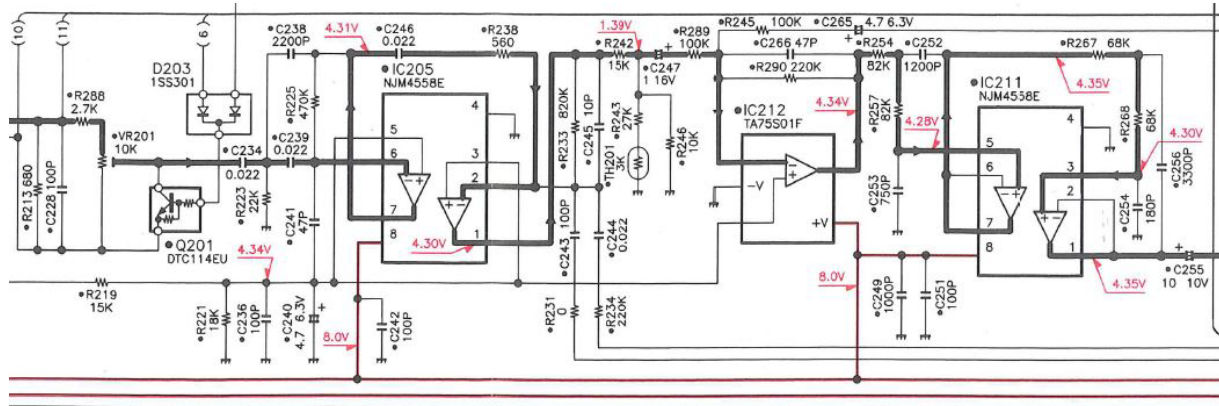
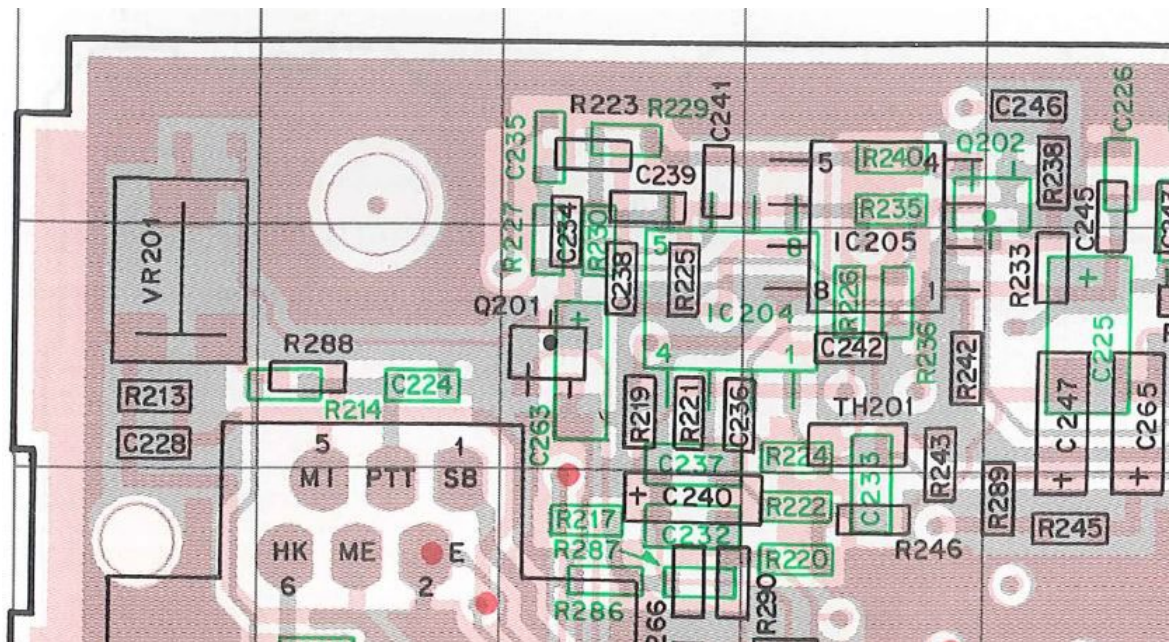


Purpose of modification: Removes Pre-Emphasis of MI transmit audio signal (mic input). Allows use in systems requiring 'flat audio'.

Pre-Emphasis is added by IC205, section A (output pin 1). Pre-Emphasis contour is determined by R238 (560 ohms) and C246 (0.022uF), between IC205 pin 7 and IC205 pin 2.



These components are located on the front panel PCB, next to the Mic jack, in the upper right corner of this view:



Modification:

1. Remove R238 (560 ohm 0603 SMT). Replace it with 22K 0603 SMT.
2. To C246, add a 0.1 uF 0603 SMT capacitor across it. This results in a total combined capacitance of 0.122 uF.

As a result, the MI input will not be as sensitive, on the order of 15mV, but that should pose no problem since we will be driving it from the repeater controller, not a 5mV microphone. You will probably still need to attenuate the signal from the controller, but not quite as much. Note that VR201 adjusts the MI level.

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I calculated the audio frequency response of this stage for before and after the modification.

The 'G(dB)' column shows the gain of the IC205-A stage in dB. The 'G(dB) 1KHz' column shows the gain at that frequency relative to the gain at 1KHz. After modification the gain is flat within 0.5 dB from <400 to >3000 Hz.

Stock values		Modified values		
R238	560 ohms	R238	22K	
C246	0.022u	C246	0.122u	
R233	820K	R233	820K	
C245	10p	C245	10p	
Mic Input MI:	MI@1KHz (mV)	5	MI@1KHz (mV)	14.9
Frequency (Hz)	G(dB)	G(dB) 1KHz	G(dB)	G(dB) 1KHz
100	21.0	-19.03	27.34	-3.15
200	26.9	-13.12	29.08	-1.41
300	30.3	-9.71	29.73	-0.76
400	32.7	-7.32	30.05	-0.44
500	34.5	-5.49	30.23	-0.26
600	36.0	-4.01	30.34	-0.15
700	37.2	-2.78	30.41	-0.08
800	38.3	-1.73	30.46	-0.04
900	39.2	-0.81	30.48	-0.01
1000	40.0	0.00	30.49	0.00
1100	40.7	0.72	30.49	0.00
1200	41.4	1.37	30.49	0.00
1300	42.0	1.97	30.48	-0.01
1400	42.5	2.51	30.46	-0.03
1500	43.0	3.01	30.44	-0.05
1600	43.5	3.46	30.42	-0.07
1700	43.9	3.89	30.40	-0.09
1800	44.3	4.29	30.38	-0.12
1900	44.7	4.66	30.35	-0.14
2000	45.0	5.00	30.32	-0.17
2100	45.3	5.33	30.29	-0.20
2200	45.6	5.63	30.26	-0.23
2300	45.9	5.92	30.23	-0.26
2400	46.2	6.20	30.20	-0.29
2500	46.5	6.45	30.17	-0.32
2600	46.7	6.70	30.14	-0.35
2700	46.9	6.93	30.11	-0.38
2800	47.2	7.15	30.08	-0.42
2900	47.4	7.36	30.04	-0.45
3000	47.6	7.56	30.01	-0.48
3100	47.8	7.76	29.98	-0.51
3200	47.9	7.94	29.94	-0.55
3300	48.1	8.11	29.91	-0.58
3400	48.3	8.28	29.88	-0.62
3500	48.4	8.44	29.84	-0.65
3600	48.6	8.60	29.81	-0.68
3700	48.7	8.74	29.77	-0.72
3800	48.9	8.89	29.74	-0.75
3900	49.0	9.02	29.71	-0.78
4000	49.2	9.15	29.67	-0.82