

## Service Manual of Receiver/Scanner J.I.L. SX-400

### SX400 RECEIVER: PRE-DELIVERY CHECK/SERVICE PROCEDURE

NOTE: REFER TO MODIFICATION SCHEDULE; CHECK AND CARRY OUT ALL RECOMMENDED MODIFICATIONS.

- 1) Remove top and bottom covers. Remove 2 pairs of screws securing tuner and lift tuner clear of IF pcb, without disconnecting. Remove bottom cover of tuner and check integrity of all the grounding tabs and remake if necessary. Remove top cover of tuner and check integrity of soldering of screening plates. Replace both covers, fitting 4 wire grounding connections through holes in the top cover.
  - 2) Locate tuner to permit access to IF pcb, and switch on, allowing a few seconds for the Supercapacitor to charge. Operate RESET.
  - 3) Set frequency to 100MHz NFM and measure PLL oscillator frequency (84.3500MHz); adjust if necessary. (TP adjacent to L309/IC305)
  - 4) Set SG to 100MHz NFM and check alignment of NFM IF.
  - 5) Reset Rx and SG to AM and check alignment of AM IF.
  - 6) Reset Rx and SG to NFM, increase SG output to +40dB and check S-meter reads S9+. (Adjust: VR210)
  - 7) Set SG to +20dB, and swing SG tuning  $\pm 5$ kHz, check Centre Detector operation. (Adjust: VR203 HF, VR205 LF)
  - 8) Set SG and Rx to convenient frequency  $>300$ MHz and swing SG tuning  $\pm 7$ kHz, check Centre Detector operation. (Adjust: VR204 HF, VR206 LF)
  - 9) Set SG and Rx to 100MHz WFM, adjust IFT208 for minimum voltage at pin 19 of IC205. Swing SG tuning  $\pm 60$ kHz, check CD operation. (Adjust: VR211 HF, VR212 LF)
  - 10) Set SG and Rx to NFM, set MUTE switch to ON, reduce deviation and check operation of MUTE. Reset MUTE switch to OFF. (Adjust: VR207)
  - 11) Check operation of NARROW and WIDE SQUELCH.
  - 12) Refit tuner.
  - 13) Check PLL crystal frequencies:

500MHz	Rx = 101.32500MHz
88MHz	Rx = 84.35000MHz
140MHz	Rx = 64.35000MHz
50MHz	Rx = 46.35000MHz
- Note that the oscillators are readily pulled by slight adjustment of L314/316/318/310 respectively, and that sometimes a careful balance is required between correct frequency and maximum output level. CHECK VERY CAREFULLY BY SLIGHT SWINGING OF THE ABOVE-MENTIONED COILS THAT THE OSCILLATOR IS NOT ON THE POINT OF DROP-OUT. A good RF millivoltmeter is essential for these adjustments.
- 14) Set Rx and SG to 26MHz FM and check alignment of front end. (see also table of VCO voltages.)
  - 15) Check sensitivity and VCO voltages at all band-edges:

26, 33.995, 34, 49.995, 50, 67.995, 68, 87.995, 88, 107.995, 108, 139.995, 140, 179.995, 219.99, 220, 299.99, 300, 379.99, 380, 459.99, 460, 520.
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Treat with suspicion VCO voltages in excess of 13.5v.
  - 16) Check operation of SCAN, SQUELCH 2 and 3 modes.
  - 17) Check using off-air signals (FM broadcast and known PMR or similar signal). Enter 2 or 3 test frequencies into memory.
  - 18) Switch unit off and put to one side for a few hours. After standing, check memory voltage using Digital voltmeter. Consult Supercapacitor Time/Voltage graph. Confirm that memorised test frequencies are still intact.
  - 19) Refit outside covers.
  - 20) Check for satisfactory visual condition.

## SX-400 TUNER P.C.B. ALIGNMENT PROCEDURES

- CONDITIONS:
- a. SC Dev. 5 KHz (modulation 1 KHz), FM
  - b. Att. Sw. on the rear panel of SX-400 to be position at 0 db.
  - c. Digital tester to be connected to SX-400 through VC out (BNC) on the rear panel.

### ALIGNMENTS

- #1 block 26.000 - 33.995 MHz
- a. Align coil L198 at 26.000 MHz for VC voltage 1.0 V.
  - b. Align coils L193, L194, L195, IFT112 in sequence for each peak sensitivity.
- #2 block 34.000 - 49.995 MHz
- a. Align coils L191 at 34.000 MHz for VC voltage 0.39V.
  - b. Align coils L182, L185, L187, IFT111 in sequence for each peak sensitivity.
- #3 block 50.000 - 67.995 MHz
- a. Align coils L181 at 50.000 MHz for VC voltage 1.0v.
  - b. Align coils L175, L177, L178, IFT110 in sequence for each peak sensitivity.
- #4 block 68.000 - 87.995 MHz
- a. Align coils L167 at 68.000 MHz for VC voltage 1.36V.
  - b. Align coils L161, L163, L164, IFT108 in sequency for each peak sensitivity.
- #5 block 88.000 - 107.995 MHz
- a. Align coil L174 at 88.000 MHz for VC voltage 2.76V.
  - b. Align coils L168, L170, L171, IFT109 in sequence for each peak sensitivity.
- #6 block 108.000 - 139.995 MHz
- a. Align coil L160 at 108.000 MHz for VC voltage 1.80V.
  - b. Align coils L152, L153, L155, L156, L159, IFT107 in sequence for each peak sensitivity.
- #7 block 140.000 - 179.995 MHz
- a. Align coil L151 at 140.000 MHz for VC voltage 2.3V.
  - b. Align coils L143, L144, L146, L147, L150, IFT106 in sequence for each peak sensitivity.
- #8 block 180.000 - 219.990 MHz
- a. Align coil L42 at 180.000 MHz for VC voltage 4.7V.
  - b. Align coils L134, L135, L137, L138, L141, IFT105 in sequence for each peak sensitivity.
- #9 block 220.000 - 299.990 MHz
- a. Align coil L132 at 220.000 MHz for VC voltage 0.8V.
  - b. Align coils L24, L125, L127, L128, L131, IFT104 in sequence for each peak sensitivity.
- #10 block 300.000 - 379.990 MHz
- a. Align L123 at 300.000 MHz for VC voltage 0.67V.
  - b. Align coils TC107, TC108, TC109, IFT103 in sequence for each peak sensitivity.
- #11 block 380.000 - 459.990 MHz
- a. Align coil L116 at 380.000 MHz for VC voltage 3.55V.
  - b. Align coils TC104, TC105, TC106, IFT102 in sequence for each peak sensitivity.
- #12 block 460.000 - 520.000 MHz
- a. Align coil L108 at 460.000 MHz for VC voltage 0.6V.
  - b. Align coils TC101, TC102, TC103, IFT101 in sequence for each peak sensitivity.

CHANNEL STEP

RECEIVABLE FREQUENCIES AND DISPLAY OF THREE (3) DIGITS AFTER DECIMAL OF EACH CHANNEL STEP.

5 KHz STEP		6.25 KHz STEP		10 KHz STEP		12.5 KHz STEP	
FREQ. (KHz)	DISPLAY	FREQ. (KHz)	DISPLAY	FREQ. (KHz)	DISPLAY	FREQ. (KHz)	DISPLAY
0	000	0	000	0	000	0	000
5	050	6.25	062	10	100	12.5	125
10	100	12.5	125	20	200	25	250
15	150	18.75	187	30	300	37.5	375
20	200	25	250	40	400	50	500
25	250	31.25	312	50	500	62.5	625
30	300	37.5	375	60	600	75	750
35	350	43.75	437	70	700	87.5	875
40	400	50	500	80	800		
45	450	56.25	562	90	900		
50	500	62.5	625				
55	550	68.75	687				
60	600	75	750				
65	650	81.25	812				
70	700	87.5	875				
75	750	93.75	937				
80	800						
85	850						
90	900						
95	950						
20 channels/100 KHz		16 channels/100 KHz		10 channels/100 KHz		8 channels/100 KHz	

- \*\* Channel Step: 5 or 6.25 KHz -- Band No. 1 thru. 7  
10 or 12.5 KHz -- Band No. 8 thru. 12
- \*\* Channel step settings are changed, be sure to push CHANNEL RESET SWITCH.
- \*\* If frequencies other than above table are tried to be selected, nearest frequencies will be received and displayed in accordance with the channel step setting.

FREQUENCY AND VCO VOLTAGE OF EACH BAND (CHANNEL SPACE: 5 KHz/10 KHz)

BAND	FREQUENCY (MHz)	FREQ. OF LOCAL OSC. (MHz)	FREQ. OF VCO (MHz)	FREQ. OF SUB LOCAL OSC (MHz)	INPUT OF PRE-SCALER (MHz)	VCO VOLTAGE (V)
1	26	15.3	15.3		15.3	1.0
	33.995	23.295	23.295		23.295	12.36
2	34	23.3	23.3		23.3	0.395
	49.995	39.295	39.295		39.295	11.05
3	50	60.7	60.7	46.3	14.4	1.0
	67.995	78.695	78.695		32.395	9.77
4	68	57.3	57.3	46.3	11	1.36
	87.995	77.295	77.295		30.995	10.25
5	88	98.7	98.7	84.35	14.35	2.45
	107.995	118.695	118.695		34.345	10.35
6	108	118.7	59.35	46.3	13.05	1.8
	139.995	150.695	75.3475		29.0475	11.6
7	140	150.7	75.35	64.35	11	1.2
	179.995	190.695	95.3475		30.9975	7.8
8	180	190.7	95.35	84.35	11	4.7
	219.990	230.690	115.456		30.995	11.5
9	220	230.7	57.675	46.3	11.375	0.8
	299.990	310.690	77.6725		31.3725	13.0+0.5
10	300	310.7	77.675	64.35	13.325	0.67
	379.990	390.690	97.6725		33.3225	10.5
11	380	390.7	97.675	84.35	13.325	3.55
	459.990	470.690	117.6725		33.3225	13.65
12	460	449.3	112.325	101.325	11	0.6
	520	509.3	127.325		26	11.95

## 301 D7508AC-35 (in operation)

In #	FUNCTION	I/O	
1	Count Clock	OUT	2.4V 32.768 Khz (pin for test)
2	MUTE	OUT	OFF - Low ON - High
	AM/FM	OUT	AM - Low FM - High
4	D-1	OUT	OFF - Low ON - High (Pulse)
5	STROBE I	OUT	Normal - Low Output - High (one shot pulse of approx. 10 uS)
6	K-1	IN	Normal - Low Row I of Keypad is pushed - pulse of a-i IN
7	K-II	IN	Normal - Low Row II of Keypad is pushed - pulse of a-i IN
8	K-III	IN	Normal - Low Row III of Keypad is pushed - pulse of a-i IN
9	K-IV	IN	Normal - Low Row IV of Keypad is pushed - pulse of a-i IN
10	D-10	OUT	H (5V) L (-22.5V/-16V DIMMER - ON) Pulse
11	D-9	OUT	H (5V) L (-22.5V/-16V DIMMER - ON) Pulse
12	D-8	OUT	H (5V) L (-22.5V/-16V DIMMER - ON) Pulse
14	STROBE 2	OUT	Normal - Low ON - High (Pulse)
15	BAND 2 H/L	OUT	26 - 33.995/40-520 - Low 34-39.995 - High
16	KEYMATRIX	OUT	OFF - Low ON - High (Pulse)
17	D-2	OUT	OFF - Low ON - High (Pulse)
18	RESET	IN	Normal - Low Reset Sw. is pushed - High
19	SYSTEM CLOCK	IN	2.4V Approx. 190 Khz (test pin unavailable)
20	+B	IN	5.1V
21	SYSTEM CLOCK	OUT	2.2V Approx. 190 Khz (test pin)
22	K-V	IN	Normal - Low Row V of Keypad is pushed - pulse of a-i IN
23	STEP	IN	5/10 Khz - Low 6.25/12.5 Khz - High
24	CLOCK	OUT	Normal - High Output - Low (Pulse)
25	DATA	OUT	Normal - Low Output - High (Pulse)
26	STOP/START	IN	STOP - High START - Low
27	D-6	OUT	H (5V) L (-22.5V/-16V DIMMER ON) Pulse
28	D-5	OUT	H (5V) L (-22.5V/-16V DIMMER ON) Pulse
29	D-4	OUT	H (5V) L (-22.5V/-16V DIMMER ON) Pulse
30	D-3	OUT	H (5V) L (-22.5V/-16V DIMMER ON) Pulse
31	S.K - e	OUT	H (5V) L (-22.5V/-16V DIMMER ON) Pulse
32	S.K - f	OUT	H (5V) L (-22.5V/-16V DIMMER ON) Pulse
33	S.K - g	OUT	H (5V) L (-22.5V/-16V DIMMER ON) Pulse
34	S.K - h	OUT	H (5V) L (-22.5V/-16V DIMMER ON) Pulse
35	S.K - a	OUT	H (5V) L (-22.5V/-16V DIMMER ON) Pulse
36	S.K - b	OUT	H (5V) L (-22.5V/-16V DIMMER ON) Pulse
37	S.K - c	OUT	H (5V) L (-22.5V/-16V DIMMER ON) Pulse
38	S.K - d	OUT	H (5V) L (-22.5V/-16V DIMMER ON) Pulse
39	GDN	0V	
40	32.768 KHZ	IN	2.0V 32.6

C301 (STAND-BY)

Pin #	Voltage	Pin #	
1	2.5V 32.768 KHz	40	2.0V 32.768 KHz
2	L	39	L
3	1	38	L
4	L	37	L
5	L	36	L
6	L	35	L
7	Pulse, Twice/sec.	34	Pulse, Twice/sec.
8	L	33	L
9	L	32	L
10	L	31	L
11	L	30	L
12	L	29	L
13	L	28	L
14	L	27	L
15	L	26	L
16	L	25	L
17	L	24	L
18	L	23	L
19	5.2	22	L
20	5.2	21	5.2

When power is not supplied either or both through power or/and memory lead(s) of power supply unit, OR when power switch is turned off, CPU beomes "STAND-BY" condition.

TR340, TR341

TR340 2SA1175		TR341 2SA1175	
B	5 4.3 pulse	B	5 4.3V pulse
C	5 -22/-16V pulse	C	5 -22/-16V pulse
E	5.1V	4	5.1V

## External Interface Connector

D-1 -- D-10 -- Output for DIGIT for display  
 KSa - h -- Output for Segment for display/Key matrix  
 k.i ----- Output for Keymatrix  
 K-I -- K-V -- Input for Keymatrix  
 NARROW H/WIDE H -- Changeable when H is input  
 CLOCK/STROBE-1/2/3/4/5/6/7/8/9/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34  
 -- When shift register is externally connected, output of 12 bands available.

### CN114 OUTPUT

Pin #	I/O	Description
1	OUT	CLOCK Pulse
2	OUT	5/10 KHz step - LOW, 6/25/12.5 KHz step - OPEN
3	IN	NARROW - High
4	IN	Wide - High
5	OUT	L-1 Pulse
6	OUT	Narrow - Open, Wide - Low
7	OUT	D-7 Pulse
8	OUT	D-2 Pulse
9	OUT	D-9 Pulse
10	OUT	D-8 Pulse
11	IN	K. IV Pulse
12	OUT	D-10 Pulse
13	IN	K.II Pulse
14	IN	K.III Pulse
15	IN	K.V Pulse
16	IN	K.I Pulse
17	OUT	AM - Open, FM-Low
18	OUT	STROBE 1 Pulse
19	OUT	K.S.d Pulse
20	OUT	K.i Pulse
21	OUT	K.S.b Pulse
22	OUT	K.S.c Pulse
23	OUT	K.S.h Pulse
24	OUT	K.S.a Pulse
25	OUT	K.S.f Pulse
26	OUT	K.S.g Pulse
27	OUT	D-3 Pulse
28	OUT	K.S.e Pulse
29	OUT	D-5 Pulse
30	OUT	D-4 Pulse
31	OUT	STOP - Low, Start - Open
32	OUT	D-6 Pulse
33		GND
34	OUT	DATA Pulse

SHIFT REGISTERS

IC #	PIN #	FUNCTION	IN/ OUT	1	2	3	4	5	6	7	8	9	10	11	12	
IC 303	1	STROBE	IN	Normal - L	L	INPUT	ACTIVE - H	One-shot Pulse	from No. 5 pin of IC 301							
	2	DATA	IN	Normal - L	L	INPUT	ACTIVE - H	Pulse Train	from No. 25 pin of IC 301							
	3	CLOCK	IN	Normal - H	H	INPUT	ACTIVE - L	Pulse Train	from No. 24 pin of IC 301							
	4	BAND 1	OUT	L	L	L	L	L	L	L	L	L	L	L	L	L
	5	BAND 2	OUT	L	H	L	L	L	L	L	L	L	L	L	L	L
	6	BAND 3	OUT	L	L	H	L	L	L	L	L	L	L	L	L	L
	7	BAND 4	OUT	L	L	L	H	L	L	L	L	L	L	L	L	L
	8	GND								0 V						
	9	SERIAL OUT	OUT	Normal - H	H	OUTPUT	ACTIVE - L	Pulse Train	to No. 2 pin of IC 304							
	10	SERIAL OUT	OUT							NC						
	11	BAND 8	OUT	L	L	L	L	L	L	L	L	H	L	L	L	L
	12	BAND 7	OUT	L	L	L	L	L	L	L	H	L	L	L	L	L
	13	BAND 6	OUT	L	L	L	L	L	L	H	L	L	L	L	L	L
	14	BAND 5	OUT	L	L	L	L	L	H	L	L	L	L	L	L	L
	15	OUTPUT ENABLE	IN							H						
	16	+B								5.0 V						
IC 304	1	STROBE	IN	Normal - H	H	INPUT	ACTIVE - H	One-shot Pulse	from No. 5 pin of IC 301							
	2	DATA	IN	Normal - H	H	INPUT	ACTIVE - L	Pulse Train	from No. 9 pin of IC 303							
	3	CLOCK	IN	Normal - H	H	INPUT	ACTIVE - L	Pulse Train	from No. 24 pin of IC 301							
	4	BAND 9	OUT	L	L	L	L	L	L	L	L	L	L	L	L	L
	5	BAND 10	OUT	L	L	L	L	L	L	L	L	L	L	L	L	L
	6	BAND 11	OUT	L	L	L	L	L	L	L	L	L	L	L	L	L
	7	BAND 12	OUT	L	L	L	L	L	L	L	L	L	L	L	L	L
	8	GND								0 V						
	9	SERIAL OUT	OUT							NC						
	10	SERIAL OUT	OUT							NC						
	11	BAND 1-7/8-12	OUT	L	L	L	L	L	L	L	L	H	H	H	H	H
	12	84.35 MHz	OUT	H	H	H	H	L	L	H	H	L	H	H	L	H
	13	64.35 MHz	OUT	H	H	H	H	H	H	H	L	H	H	H	H	H
	14	46.30 MHz	OUT	H	H	L	L	L	H	L	H	H	L	H	H	H
	15	OUTPUT ENABLE	IN							H						
	16	+B								5.0 V						

BAND TR DIODE	1			2			3			5			5			6			7			8			9			10			11			12					
	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E			
TR316	.64	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
TR317	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
TR318	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
TR319	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
TR320	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
TR321	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
TR322	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
TR323	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
TR324	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
TR325	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
TR326	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
TR327	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
TR312	5.0	0	0	5.0	0	0	5.0	0	0	5.0	0	0	5.0	0	0	5.0	0	0	5.0	0	0	5.0	0	0	5.0	0	0	5.0	0	0	5.0	0	0	5.0	0	0	5.0	0	0
TR313	5.0	0	0	5.0	0	0	5.0	0	0	5.0	0	0	5.0	0	0	5.0	0	0	5.0	0	0	5.0	0	0	5.0	0	0	5.0	0	0	5.0	0	0	5.0	0	0	5.0	0	0
TR314	5.0	0	0	5.0	0	0	5.0	0	0	5.0	0	0	5.0	0	0	5.0	0	0	5.0	0	0	5.0	0	0	5.0	0	0	5.0	0	0	5.0	0	0	5.0	0	0	5.0	0	0
TR315	9.2	0	0	9.2	0	0	9.2	0	0	9.2	0	0	9.2	0	0	9.2	0	0	9.2	0	0	9.2	0	0	9.2	0	0	9.2	0	0	9.2	0	0	9.2	0	0	9.2	0	0
TR311	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
TR310	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
TR309	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
DIODE P312	A	C	A	C	A	C	A	C	A	C	A	C	A	C	A	C	A	C	A	C	A	C	A	C	A	C	A	C	A	C	A	C	A	C	A	C			
P311	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
P310	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
D309	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			

FUNCTION OF IC, TR, ETC. ON AM/FM, NARROW/WIDE mode

from CPU Pin3 IC 302 upD4001 BC										LED DRIVE																																																																						
A/F TR334					AM TR329					FM TR330					NAR TR331					WID TR332					A/F TR339					N/W TR335																																																		
2SC2785		NAR		WID		A/F		NFM		WFM		2SA1175		2SC2785		2SC2785		2SA1175		2SC2785		2SC2785		2SC2785		2SC2785		2SC2785		2SC2785																																																		
B	C	E	F	B	C	E	F	B	C	E	F	B	C	E	F	B	C	E	F	B	C	E	F	B	C	E	F	B	C	E	F																																																	
FM NAR	.64	.01	0	L	H	L	H	L	H	L	H	4.9	0	3.5	.76	.15	0	.08	0	.75	0	3.5	0	.64	.01	0	0	OPEN	0	0	0	0																																																
FM WIDE	.64	.01	0	H	L	H	L	H	L	H	L	4.9	0	3.5	.76	.15	0	4.1	0	3.9	0	.74	.15	0	.64	.01	0	.64	.01	0	0																																																	
AM (NAR)	.01	5.0	0	L	H	L	H	L	H	L	H	.05	0	.71	0	5.0	0	.07	0	.75	0	3.6	0	0	OPEN	0	0	OPEN	0	0	0	0																																																
AM (WID)	.01	5.0	0	H	L	H	L	H	L	H	L	.05	0	.71	0	5.0	0	.07	0	.75	0	3.6	0	0	OPEN	0	0	OPEN	0	0	0	0																																																
CONNECTION:	TR 335										CN305 1										CN305 2										CN309 4										CN309 5										CN309 6										CN114.17										CN117 6									

FUNCTIONS WITH NARROW/WIDE SWITCHING SIGNAL INPUT

Pin #	Function of Pin	from Keyboard		from CN114	
		NARROW	WIDE	NARROW	WIDE
1	NARROW - IN	L	L	L	L
6	WIDE - IN	L	L	L	L
Pin # 7 GND, Pin # 14 +B 5.1V					

301 - TR305, TR336 - TR337, TR393, D307 - D308 -- CHANNEL SPACE SWITCHING

STATION	CH.	+C307	TR336		TR337		TR304		TR303		TR302		TR301		TR305		TR304		D307		D308		OSC	MHz	
			2SC2785	2SA1175	2SC2785	2SC2785	2SC2785	2SC2785	2SC2785	2SC2785	2SC2785	2SC2785	2SC2785	2SC2785	2SC2785	2SC2785	2SC2785	2SC2785	2SC2785	2SC2785	2SC2785	2SC2785			
T SW.	13	II	B	C	E	F	B	C	E	F	B	C	E	F	B	C	E	F	B	C	E	F	CH114	2	
			.64	.01	0	4.4	5.0	5.1	.63	0	.64	.01	0	.64	.01	0	4.6	0	4.6	0	4.6	0			4.6
OUT	L	I	0	5.0	0	5.0	.16	OPEN	0	.15	4.5	0	.13	.65	0	.64	.01	0	4.8	0	4.8	0	Inside of Shield case	0	3.2
			0	5.0	0	5.1	.16	OPEN	0	.15	4.5	0	.13	.65	0	.64	.01	0	4.8	0	4.8	0			

TR306 - TR307 (1 KHz)

IC305	TR306 25C2785				CN310			
	B	C	E	F	B	C	F	Pin 2
Pin 6	0	4.9	.6	2.5	0	0V	Approx. 1.1 KHz	Osc.
I.	5.6	4.8	4.4	.67	.02	0	0V	
II								

STOP START

CN305	Pin 4	TR338				IC301	Pin 26	IC301	Pin 26	CN114
		B	C	F	I.					
STOP	H	.64	0	0	H					
START	I.	0	OPEN	0	I.				Open	

DC-DC CONVERTER

cn106

REGULATORS

AVR	IN	GND	OUT
301	78L05	13.5	0
302	78M04	13.0	0
303	78L05	13.7	0.64
304	78L15	22.1	1.3

TR333	E	C	F
2SD471	-1.4	13.0	0

DIMMER	1	2	3	4	5
ON	-22.7	-15.8	-15.8	-10.4	-9.5
OFF	-22.7	-20.9	-22.7	-17.2	-16.5

TAND-BY

POWER	MEMO	TR342				TR343				IC301			
		B	C	E	F	B	C	E	F	7	34	7	34
ON	ON	5.7	0	Pu1	5.0	0	Pu1	0	Pu1	0	Pu1	0	Pu1
ON	OFF	0	Pu2	Pu2	5.0	0	Pu2	0	Pu2	0	Pu2	0	Pu2
OFF	ON	5.7	0	Pu2	0	Pu2	0	Pu2	0	Pu2	0	Pu2	0
OFF	OFF	0	Pu2	Pu2	0	0	Pu2	0	Pu2	0	Pu2	0	Pu2

POWER - ON DELAY

POWER	TR501				TR502			
	B	C	E	F	B	C	E	F
OFF	0	0	0	0	0	0	0	0
ON	.04	3.5	0	.59	.04	0	.04	0

IC305 S042P MIXER

Pin	1	2	3	4	5	6	7	8	9	10	11	12	13	14
V	0	5.0	2.3	0	5.0	0	2.7	2.7	0	.56	1.3	.55	1.3	0

PLL IF AMP

TR344	B	C	E
2SC2785	.64	4.0	0

IC306 555C PRESCALER

Pin	1	2	3	4	5	6	7	8
V	5.0	4.3	0	0	3.6	5.0	0	0

IC308 CA3140E

Pin	1	2	3	4	5	6	7	8
NC	3.5	3.5	0	NC	VT	16.8	NC	NC

\*\* 2 - Refer to VCO Voltage Table for Input Frequency.

5 - Output demultiplied

6 - Pulse Input from UPD2833C

\*\*\* 6 (VT) VCO Voltage - Refer to VCO Voltage Table

IC307

uPD2833C

PIN	FUNCTION	I/O	TO
1	STROBE	IN	IC301 14 pin Normal - L INPUT - H (Approx. 100 uS One-shot pulse)
2	1/1024	IN	IC307 15 pin 2.5 / 3.125 KHz 2.5V
3	P-OUT	OUT	IC307 8 pin Pulse 5V
4	P-IN	IN	IC306 5 pin 2.5V
5	PSC		Pulse 4.8V
6	DATA	IN	IC301 25 pin Normal - L Input - H (Pulse)
7	CLOCK	IN	IC301 24 pin Normal - H Input - L (Pulse)
8	V	OUT	IC306 6 pin Pulse 5.0V
9	GND		0 V
10	NC		5.0V
11	EO	OUT	3.5V
12	EOD	OUT	5.0V
13	NC		0 V
14	NC		2.5V
15	1/1024	OUT	IC307 2 pin 2.5 / 3.125 KHz 2.5V
16	NC		2.5V
17	R-IN	IN +	2.56 / 3.2 MHz 2.6V
18	V DD		5.1V

SWITCHING AM/NFM/WFM

IC#	217		212		211		TR227		TR245		TR247		TR246		D222		D223		D224	
	4001	4001	4001	4093	8	8	2SC2785	2SC2785	2SC2785	2SC2785	2SC2785	2SC2785	2SC-2785	2SC-2785	IS953	IS953	IS953	IS953	IS953	
AM	H	L	L	L	0	*	0	0	2.2	0	0	.63	.01	0	2.3	2.2	2.3	2.2	2.3	1.8
NFM	LHL	L	L	L	0	*	0	0	.62	2.2	0	0	2.2	0	2.3	2.2	2.3	1.8	2.3	2.2
WFM	LLH	H	H	H	.66	0	0	0	.01	0	0	0	2.2	0	2.3	1.8	2.3	2.2	2.3	2.2

\* Depends on Narrow Squelch (Output of IC207 1 pin).

SWITCHING OF STOP MODE SW.

	IC216		IC214	
	4025	4011	4025	4011
STOP 1	H	L	L	H
STOP 2	L	L	L	H
STOP 3	L	H	L	L

VOLTAGES OF PLL PCB CONNECTORS

CN 301	
1	D-6
2	D-5
3	D-4
4	D-3
5	S.K.-e
6	S.K.-f
7	S.K.-g
8	S.K.-h
9	S.K.-a
10	S.K.-b
11	S.K.-c
12	S.K.-d
13	K-i

CN 302	
1	K-V
2	K-I
3	K-II
4	K-III
5	K-IV
6	D-10
7	D-9
8	D-8
9	D-7
10	D-2
11	D-1

CN 309	
1	5V
2	5V
3	Reset Push - H
4	FM-H, AM-L
5	WIDE - 0.15, NARROW - 3.6
6	WIDE - 3.9, NARROW - 0.75
7	FM - 0.15, AM 5.0
8	AM - 0.71, FM 3.5
9	WIDE Key pushed on FM mode - H
10	Narrow Key pushed on FM mode - H

CN 303	
1	0
2	13.8

CN 304	
1	
2	13.8

CN 305	
1	NAR. FM - H, WIDE FM - L, AM -L
2	NAR. FM - L, WIDE FM - H, AM- L
3	MUTE ON - H, OFF - L
4	STOP - H, START - L
5	BAND 1 - 7 - L, 8 - 12 - H
6	1 KHz Osc. ON - L, OFF - H
7	13.8v

CN 312	
1	0
2	13.8
3	13.8

CN 315	
1	13.8
2	13.8
3	13.8

CN 307	
1	Band 1 - H, Other bands - L
2	Band 2 - H, Other bands - L
3	Band 3 - H, Other bands - L
4	Band 4 - H, Other bands - L
5	Band 5 - H, other bands - L
6	Band 6 - H, Other bands - L
7	Band 7 - H, Other bands - L
8	Band 8 - H, Other bands - L
9	Band 9 - H, Other bands - L
10	Band 10 - H, Other bands - L
11	Band 11 - H, Other bands - L
12	Band 12 - H, Other bands - L
13	STEP 5/10K - H, 6.25/12.5 K - L

CN 308	
1	Band 1 - 0.02, other bands 9.2
2	Band 2 - 0.02, other bands 9.2
3	Band 3 - 0.02, other bands 9.2
4	Band 4 - 0.02, other bands 9.2
5	Band 5 - 0.02, other bands 9.2
6	Band 6 - 0.02, other bands 9.2
7	Band 7 - 0.02, other bands 9.2
8	Band 8 - 0.02, other bands 9.2
9	Band 9 - 0.02, other bands 9.2
10	Band 10 - 0.02, other bands 9.2
11	Band 11 - 0.02, other bands 9.2
12	Band 12 - 0.02, other bands 9.2

CN310	
1	0
2	0

**N** NARROW

TR201 2SC2787			TR202 2SC2878			IC201 BA401			IC202 BA401			IC203 BA401			IC204 uPC577H			TR214 2SC2785											
B	C	E	B	C	E	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	6	7	B	C	E				
.8	7.9	1.1	.78	7.6	.13	1.4	1.4	0	6.6	8.0	1.4	1.4	0	6.6	8.0	1.4	1.4	0	6.7	8.0	5.2	1.8	1.8	6.7	2.4	6.7	1.6	8.0	1.0

**5** 5 OUT

AGC

AM

TR223 2SF193		
S	D	O
7.2	0	0

TR203 2SC2785			TR204 2SC2785		
B	C	F	B	C	F
-20	dB	2.4	5.2	1.7	.62
60	dB	2.4	5.2	1.7	.59

TR205 2SC2787			TR206 2SC2787			TR213 2SC2785		
B	C	F	B	C	F	B	C	F
.78	7.9	.13	2.0	7.8	1.3	1.6	8.0	1.1

**ARROW SQUELCH**

NARROW SQ VOL POSITION LEFT RIGHT RIGHT	TR208 2SC2787			TR209 2SC2789			TR210 2SC2787			IC206 1251D			IC215 4584			IC212 4001		
	B	C	E	B	C	F	B	C	E	4	5	6	7	8	1	2	2	
	3.2	7.9	2.5	.7	1.1	0	4.7	5.1	4.0	0	.31	0	6.8	8.0	1	1	1	
	3.2	7.9	2.5	.7	1.1	0	4.6	5.1	4.0	0	.31	.11	6.8	8.0	1	1	1	
	3.2	7.9	2.5	.7	1.1	0	4.6	5.1	4.0	0	.31	.11	6.8	8.0	1	1	1	

Functions of pins of IC206  
 4 GND  
 5 Reference Voltage  
 6 Comparison Voltage  
 7 Output of Comparator  
 8 V dd

**M** WIDE

TR224 2SC2787			TR225 2SC2787			IC205 1245V			TR228 2SC2785																		
B	C	E	B	C	F	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	B	C	F
1.8	6.9	1.1	1.8	6.9	1.1	8.0	NC	.18	5.8	5.8	2.4	2.4	2.6	2.4	0	3.3	5.1	3.3	5.2	4.4	.97	3.7	5.1	1.6	5.8	1.0	

WIDE CENTER DETECTOR

	TR219 2SA1175			TR216 2SC2785			TR218 2SC2785			TR220 2SC2785			TR221 2SC2785			IC208 uPC1251D						IC211 4093			IC211 4001				
	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	1	2	3	4	5	6	7	8	5	6	4	1	2	3
26 MHz FM NARROW	4.4	5.0	5.1	.67	0	0	.10	1.8	0	.68	0	0	.10	2.9	0	3.01	2.97	0	3.01	1.86	4.0	5.1	4.0	0	0	H			
180 MHz FM NARROW	4.4	5.0	5.1	.67	0	0	.10	1.8	0	.68	0	0	.10	2.9	0	3.01	2.97	0	3.01	1.86	4.0	5.1	4.0	0	0	H			
	4.4	5.0	5.1	.67	0	0	.10	1.8	0	.68	0	0	.10	2.9	0	3.01	2.97	0	3.01	1.86	4.0	5.1	4.0	0	0	H			
	4.7	0	5.1	0	1.7	0	.67	0	0	3.2	0	0	.67	0	0	4.0	1.63	3.21	0	1.63	1.69	0	5.1	0	4.0	H			
	4.7	0	5.1	0	1.7	0	.67	0	0	3.2	0	0	.67	0	0	4.0	2.45	3.21	0	2.44	1.69	4.0	5.1	4.0	4.0	L			
	4.7	0	5.1	0	1.7	0	.67	0	0	3.2	0	0	.67	0	0	3.23	3.21	0	3.23	1.69	4.0	5.1	4.0	0	0	H			

WIDE CENTER DETECTOR

	IC207 1251D					IC211 4093					IC212 4001					
	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
+60 KHz CENTER	3.42	3.37	0	3.92	3.37	6.6	7.9	.03	5.6	H						
-60 KHz	3.42	3.6	0	3.92	3.6	6.6	7.9	5.6	5.6	L						
	3.42	3.9	0	3.92	3.89	0	7.9	5.6	.03	H						

Voltages of the pins of which numbers are circled shall be aligned using semi-fixed resistors. Voltages are aligned each set and not always corresponding to the table. Pay attention to the movement trend of voltage when frequencies are moved + side or - side from center and to the variation of output of voltage comparator (Pins 1 and 7).

10.7 MHz OUT

TR222 2SK193	
G	S D
0	0 7.2

WIDE SQUELCH

WIDE SQUELCH POSITION	IC205 1245V			IC206 1251D			IC211 4093		
	3	1	2	3	4	8	9		
LEFT	.28	6.8	0	.28	0	8.0	H		
Fight	.28	0	1.33	.28	0	8.0	L		
Right	60 dB	4.26	6.8	1.33	4.26	8.0	H		

WIDE SIGNAL CANCEL

26 MHz FM 60 dB Mod. Level 0 KHz 20 KHz	IC209 uPC451C						IC211 4093					
	4	8	9	10	11	12	13	14	12	13	14	12
	5.1	2.5	2.5	2.5	0	.019	.020	0	0	0	0	0
	5.1	2.5	2.5	2.5	0	.022	.020	3.8	3.8	3.8	3.8	3.8

AUDIO SQUELCH

26 MHz 60 dB Mod. Level	TR215 2SC2785			IC209 451C								IC215 4584	IC216 4025	IC214 4011		
	B	C	E	1	2	3	4	5	6	7	11	3	4	2	4	6
0.5 KHz	1.6	5.8	.95	3.9	.012	.01	5.1	2.5	2.5	2.5	0	3.9	L	L	L	L
1 KHz	1.6	5.8	.95	0	.095	.01	5.1	2.5	2.5	2.5	0	L	H	H	H	H

AUDIO AMP

TR231 2SC2785			IC210 uPC2002V				
B	C	E	1	2	3	4	5
1.6	8.0	1.0	.72	.72	.01	6.4	13.7

AVR201 78M05			TR232 2SC2785			TR233 2SC882			TR234 2SC2785		
IN	CND.	OUT	B	C	F	B	C	E	B	C	F
13.7	0	5.1	6.6	9.9	6.0	9.3	13.7	8.6	9.9	13.7	9.3

\*\* When mute switch is OFF,  
#6 pin of IC214 is always

NO SIGNAL INPUT

	B			ACC. (DLOAD)			RF. AMP				AGC. (RF AMP)			MIXER			LOCAL OSC.			MULTIPLIER			BUFFER		
	B	C	E	B	C	E	G2	G1	S	D	B	C	E	B	C	E	F	C	C	B	C	E	D	S	C
1	TR139	2SA1175		TR192	2SC2785	TR164	3SK74				TR165	2SC2785E	TR166	2SC2786M	TR167	2SC2786M							TR168	2SK193K	
26-33.995	8.4	9.1	9.2	3.9	9.1	3.3	4.0	0	.61	9.1	.03	4.0	0	1.6	9.1	1.91	2.9	8.9	12.2				2.1	0	0
2	TR194	2SA1175		TR191	2SC2785	TR159	3SK74				TR160	2SC2785E	TR161	2SC2786M	TR112	2SC2786M							TR113	2SK193K	
34-49.995	8.4	9.1	9.2	4.0	9.1	3.4	4.1	0	.61	9.1	.03	4.1	0	1.5	9.1	1.81	2.9	8.8	12.2				2.1	0	0
3	TR195	2SC1175		TR190	2SC2785	TR154	3SK74				TR155	2SC2785E	TR156	2SC2786M	TR112	2SC2786M							TR163	2SK193K	
50-67.995	8.4	9.1	9.2	4.0	9.1	3.4	4.1	0	.61	8.8	.03	4.1	9	1.5	9.1	1.4	5.4	8.6	14.1				4.5	0	0
4	TR100	2SA1175		TR188	2SC2785	TR144	3SK74				TR145	2SC2785E	TR146	2SC2786M	TR157	2SC2786M							TR158	2SK193K	
68-87.995	8.4	9.1	9.2	3.9	9.1	3.3	4.0	0	.6	8.8	.03	4.0	0	1.5	9.1	1.84	5.5	8.6	14.9				5.0	0	0
5	TR196	2SA1175		TR189	2SC2785	TR149	3SK74				TR150	2SC2785E	TR151	2SC2786M	TR152	2SC2786M							TR153	2SF193K	
88-107.995	8.4	9.1	9.2	4.0	9.1	3.4	4.0	0	.62	8.8	.03	4.1	0	1.5	9.1	1.6	5.0	8.3	14.8				4.6	0	0
6	TR199	2SA1175		TR187	2SC2785	TR138	3SK88				TR139	2SC2785E	TR140	2SC1730L	TR141	2SC2786M							TR142	2SC2786M	
108-139.995	8.4	9.1	9.2	4.0	9.1	3.5	1.4	0	0	9.1	.03	4.2	0	1.4	9.1	1.73	5.6	8.6	14.9				0	-2	0
7	TR198	2SA1175		TR186	2SC2785	TR132	3SK88				TR133	2SC2785E	TR143	2SC1730L	TR135	2SC2786M							TR136	2SC1730L	
140-179.995	8.4	9.1	9.2	4.0	9.1	3.4	4.1	0	0	9.1	.03	4.1	0	1.5	9.1	1.76	3.0	8.9	12.3				TR137	2SK193K	
8	TR197	2SA1175		TR185	2SC2785	TR126	3SK88				TR127	2SC2785E	TR128	2SC1730L	TR129	2SC2786M							TR130	2SC1730L	
180-219.99	8.4	9.1	9.2	4.0	9.1	3.4	4.1	0	0	9.1	.03	4.1	0	1.4	9.1	1.72	5.6	8.6	14.8				0	-5	0
9	TR104	2SA1175		TR184	2SC2785	TR120	3SK88				TR121	2SC2785E	TR122	2SC1730L	TR123	2SC2786M							TR124	2SC1730L	
220-299.99	8.4	9.1	9.2	3.8	9.1	3.2	4.0	0	0	9.1	.03	4.0	0	1.5	9.1	1.80	5.4	8.6	14.8				.32	3.5	0
10	TR103	2SA1175		TR183	2SC2785	TR114	2SC1070(2)				TR115	2SC2785E	TR116	2SC1730L	TR117	2SC2786M							TR118	2SC1730L	
300-379.99	8.4	9.1	9.2	1.9	9.1	1.3	1.9	1.2	1.9	9.0	.03	1.9	0	1.5	9.1	1.82	5.7	8.6	14.8				.31	3.7	0
11	TR102	2SA1175		TR182	2SC2785	TR107	2SC1070(2)				TR108	2SC2785E	TR109	2SC1730L	TR110	2SC2786M							TR111	2SC1730L	
380-459.99	8.4	9.1	9.2	1.8	9.1	1.3	1.9	1.1	1.9	9.1	.03	1.9	0	1.5	9.1	1.76	5.6	8.6	14.8				.11	4.2	0
12	TR101	2SA1175		TR181	2SC2785	TR101	2SC1070(2)				TR102	2SC2785E	TR103	2SC1730L	TR104	2SC2786M							TR105	2SC1730L	
460-520	8.4	9.1	9.2	1.9	9.1	1.3	1.9	1.2	1.9	9.1	.03	1.9	0	1.4	9.1	1.75	5.2	8.6	14.8				-56	-6	0

INPUT 60 dB 3 kHz Mod.

	AGC (DIOD)			RF AMP				AGC (RF AMP)		
	B	C	E	G2	G1	S	D	B	C	E
	B	C	E	B	E	B	C	B	C	E
1 26-33.995	TR192	2SC2785		TR164	3SK74			TR165	2SC2785	
	1.8	9.1	1.4	1.8	0	.53	9.1	.56	1.8	0
2 34-49.995	TR191	2SC2785		TR159	3SK74			TR160	2SC2785	
	1.9	9.1	1.4	1.8	0	.54	9.1	.57	1.8	0
3 50-67.995	TR190	2SC2785		TR154	3SK74			TR155	2SC2785	
	1.9	1.9	1.5	1.9	0	.54	8.8	.56	1.9	0
4 68-87.995	TR188	2SC2785		TR144	3SK74			TR145	2SC2785	
	1.9	9.1	1.5	1.9	0	.55	8.9	.56	1.9	0
5 88-107.995	TR189	2SC2785		TR149	3SK74			TR150	2SC2785	
	2.1	9.1	1.6	2.1	0	.55	8.9	.56	2.1	0
6 108-139.995	TR187	2SC2785		TR138	3SK88			TR139	2SC2785	
	2.1	9.1	1.6	2.1	0	0	9.1	.57	2.1	0
7 140-179.995	TR186	2SC2785		TR132	3SK88			TR133	2SC2785	
	1.8	9.1	1.4	1.8	0	0	9.1	.57	1.9	0
8 180-219.99	TR185	2SC2785		TR126	3SK88			TR127	2SC2785	
	2.1	9.1	1.7	2.1	0	0	9.1	.56	2.1	0
9 220-299.99	TR184	2SC2875		TR120	3SK88			TR121	2SC2875	
	1.0	9.1	.55	1.0	0	0	9.9	.57	1.0	0
10 300-379.99	TR183	2SC2785		TR114	2SC1070(2)			TR115	2SC2785	
	.78	9.1	.42	.77	.10	.76	9.1	.62	.84	0
11 380-459.99	TR182	2SC2785		TR107	2SC1070(2)			TR108	2SC2785	
	1.0	9.1	.54	.99	.27	.99	9.1	.61	1.0	0
12 460-520	TR181	2SC2785		TR101	2SC1070(2)			TR102	2SC2785	
	1.0	9.1	.56	.99	.26	.99	9.1	.61	1.0	0

REGULATOR

AVR101	78L09	
IN	GND	OUT
13.7	0	9.2

Voltages of other items, +B, MIXER, LOCAL OSC., MULTIPLIER, BUFFER are the same as those of "NO SIGNAL INPUT"

+B of other than 1-12 bands is always 0 volt.

RECORDING LEVEL AMP. (.UG TERMINAL)

TR254	B	C	E
2SC2785	1.7	4.4	1.1

BAND-PASS FILTER

TR255	B	C	E
2SC2785	4.2	8.1	3.6

MUTING

	TR230 2SC2785			TR247 2SC2785		
	B	C	E	B	C	E
MUTE OFF	.03	4.4	0	.61	0	0
MUTE ON	.60	.03	0	.04	0	0

WIDE SIGNAL CANCELLER

	IC209	TR253 2SC2785			TR252 2SC2785			IC211
	14	B	C	E	B	C	E	4093
NO SIGNAL IMPUT	3.8	.03	4.4	0	.61	0	0	0
MOD. OVER 7 KHz	0	.60	.03	0	.04	0	0	0
MOD. UNDER 7 KHz	3.8	.60	.03	0	.04	3.8	0	3.8

VOLTAGES OF IF PCB CONNECTORS

SP	
1	0
2	0

AUDIO IN	
1	0
2	0
3	0

REC	
1	0
2	0

AUX	
WITH SIGNAL	SHORT
W/O SIGNAL	OPEN

DELAY	
STOP	L
START	H

1. 3		
STOP	STOP	STOP
1	2	3
1	H	L
3	L	H

MUTE	
ON	OFF
1	*
2	*

\* With Mo. - H  
W/O Mod. - L

RESUME	
1	Key-Push -- H
2	H

SQ VR	
1	0
2	0

WIDE SQ	
1	0
2	Fully c.c.w - 0, Fully c.w. - 0.96

ANL	
ON	OFF
1	-.65
2	-1.0

METER	
1	W/o Signal - 0V 20 dB Input 0.1V
2	0

## SX400 MODIFICATION TO AUDIO RESPONSE

### Band Pass Filter PCB

1. Remove C 2175 (Brown .047 mfd) completely.
2. Lift positive leg of C 2170 (50v. 1 mfd) and extend with short wire 2½" long, and then connect to red lead of screened cable (AM-FM narrow out) on the large pad in corner of PCB.

### Main IF PCB

1. Remove C 297 (.047 mfd) completely.
2. Remove R 281 (2.2K) and replace with solid link.
3. Change C 269 (.047 mfd) to an electrolytic any value 2.2 to 10 mfd with + positive connection to emitter.
4. Remove C 2176 which is located approx. in middle of underside of IF Board.
5. Remove C 239 (Electrolytic 0.1 uf) and change to any value 2.2 to 10 mfd.
6. Remove R 244 (1K) and replace with link.

This completes the modification.