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**Uniden PRO-520e Service Manual**

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**uniden®**

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***CB TRANSCEIVER***

**MODEL : PRO 520e**

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**SERVICE INFORMATION  
MANUAL**

UNIDEN CUSTOMER SERVICE  
9340 Castlegate Drive  
Indianapolis IN 46256  
(317) 842 - 2483

UNIDEN PARTS DEPT.  
9319 Castlegate Drive  
Indianapolis IN 46256  
(317) 842 - 1036

# **CB TRANSCEIVER**

**MODEL : PRO 520e**

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# 1. SPECIFICATIONS

CB AM TRANSCEIVER MODEL: PRO 520e (UT-317A)

## GENERAL

1. Channels : 40
2. Frequency Range : 26.965 MHz to 27.405 MHz
3. Semiconductors : 12 Transistors, 33 Diodes, 7 IC's  
1-19 Segments Hybrid Type LED
4. Crystal Oscillators : 1
5. Microphone : Electret Condenser Type
6. Speaker : 16 ohm 3 W Max
7. Antenna Connector : M-Type
8. Jacks & Connectors : Mic 5p Din  
EXT SP 3.5  $\phi$   
PA SP 3.5  $\phi$
9. Controls : Channel Selector, Volume/Power ON-OFF,  
Squelch, RF Gain, CH9/OFF, PA/CB,  
ANL/OFF
10. LED Bar Meter : RF Output Power, Signal Strength,
11. Illumination Indicators (LED) : Channel Readout, TX
12. Cabinet Size : W: 116 mm  
H: 36 mm  
D: 166.5 mm
13. Weight : 0.75 kg
14. Accessories : Microphone, Microphone Hanger,  
Mounting Bracket with Screws

MEASUREMENT CONDITIONS

1.	Standard DC Power	:	13.8V DC
2.	Test Temperature	:	25°C +5°C
3.	Standard Audio Frequency	:	1kHz
4.	Standard RF Input	:	1mV
5.	Standard Ref. Modulation	:	30%
6.	Standard Ref. Audio Output	:	0.5W
7.	Standard Ref. Audio Load	:	8 ohm Resistive
8.	Antenna Impedance	:	50 ohm
9.	Measurement Channel	:	19
10.	Standard Method of Measurement:	:	EIA RS-382 ( ISS : 8-26-86 )

NOTE: Limit specs. are for measurement on all channels.

RECEIVER (ANL OFF)

	<u>ITEMS</u>	<u>UNIT</u>	<u>NOMINAL</u>	<u>LIMIT</u>
1.	Usable Sensitivity (10dB S/N)	uV	0.5	1
2.	Max. Sensitivity	uV	0.5	1
3.	RF Gain Range	dB	30	20
4.	Audio Output @ 10% THD	W	4.0	2.0
5.	Max. Audio Output Power	W	7.0	3.0
6.	Max. S/N @ 1mV	dB	35	25
7.	Squelch Sensitivity:			
	Threshold	uV	0.5	1.0
	Tight	uV	1000	250 to 4000
8.	AGC Figure of Merit (50 mV for 10 dB Change)	dB	85	75
9.	Audio Response (Refer to 1kHz)			
	@ 6 dB down    Lower	Hz	300	400 Max
	Upper	Hz	2000	1600 Min
10.	Detector Linearity 1mV, 30% Mod.	%THD	4.0	7.0
11.	ANL Performance	dB	4	7
12.	Adjacent Ch. Rejection	dB	60	45
13.	"S" Indicator (4th LED just ON) (No Mod.)	uV	1000	500 Min
14.	Spurious Resp.			
	- 22.734MHz (Ch 40)	dB	50	40
	- All other freqs.	dB	55	45
15.	Image Rejection Ratio (900 kHz)	dB	80	60

	<u>ITEMS</u>	<u>UNIT</u>	<u>NOMINAL</u>	<u>LIMIT</u>
16.	i-f Rejection Ratio 1ST & 2ND	dB	70	60
17.	1/2 i-f Rejection Ratio	dB	55	45
18.	Oscillator Drop Out Voltage	V	9.0	11.0
19.	Public Address Output @ 10%THD	W	3.0	2.0
20.	Battery Drain - No Signal	mA	250	350
	- Max. Audio	mA	1400	1700

TRANSMITTER

1.	Carrier Power - No Mod.	W	4.0	3.6 to 4.4
2.	Frequency Tolerance after 5 min.	%	<u>+0.002</u>	<u>+0.003</u>
3.	Spurious Harmonic Emission	dB	-70	-60
4.	Battery Drain - No Mod.	mA	850	1300
	- 80% Mod.	mA	1300	1700
5.	Modulation Freq. Resp. (1kHz, 0dB Ref) 300Hz	dB	-6	0 to -12
	2500Hz	dB	-6	0 to -12
6.	Microphone Sensitivity 50% Mod.	mV	7	15
7.	AMC Range 50 to 100% Mod.	dB	36	30
8.	Transmit Hum & Noise	dB	50	40
9.	Relative Power Meter (No Mod.)		4th just ON	3 Min
10.	Transmit Distortion (1kHz, 80% Mod.)	%	4.0	7.0

#### OVERALL PERFORMANCE

1. Output Protection: Shall meet for 5 minutes for all VSWR'S (around the Smith Chart) of 20:1 without damage.
2. Output stability of all VSWR'S (around the Smith Chart) of up to 5:1 under continuous operation of a duty cycle of 5 minutes transmitting, and 1 minute receiving.
3. Reverse Polarity Protection: Shall have reverse polarity protection and be operable with positive and negative grounding.
4. Standard Operating Temperature:  $-30^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$
5. Storage Temperature:  $-40^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$
6. Electrostatic Discharge Protection: All external case and component parts shall withstand the application of 15kV ESD without causing failure or malfunction to the unit.

Test Conditions - Probe: 150 pF with 500 ohm in series  
Temp.:  $25^{\circ}\text{C}$

## 2. ALIGNMENT PROCEDURE

### ALIGNMENT OF P.L.L. PORTION

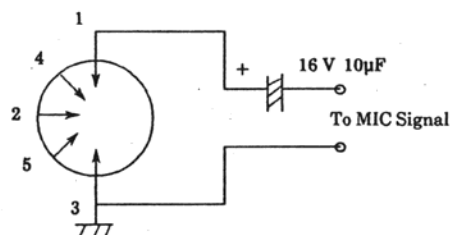
#### 1. Test Equipment Required

- a. Oscilloscope (0 - 50 MHz)
- b. DC Power Supply (13.8V)
- c. DC Voltmeter (10V maximum, 100 Kohm/V)

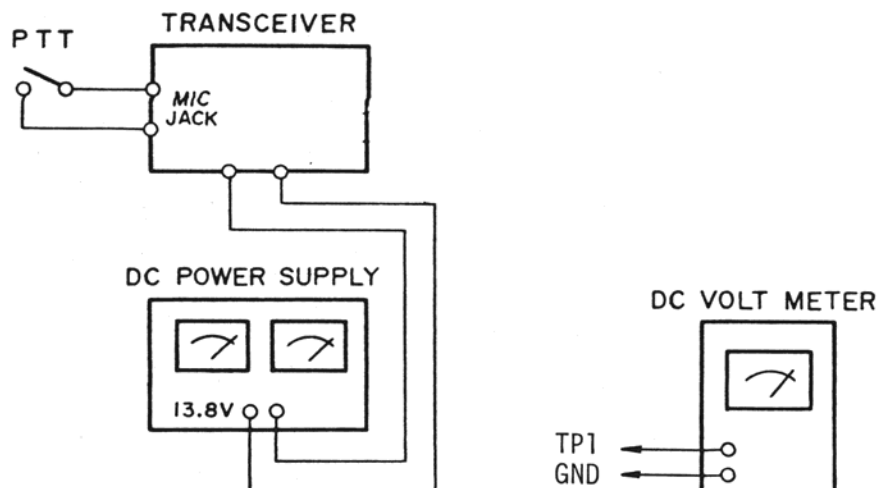
#### 2. Alignment Procedure

STEP	PRESET TO	ADJUSTMENT	REMARKS
1	TX Mode CH : 40 No Modulation	L702	Connect DC Voltmeter to TP1 (Lead of R77). Adjust for approx. 4.5V on DC Voltmeter
2	RX Mode CH : 40 No Modulation	L701	Same as step 1.

\* Note : MIC Signal Line of Dummy MIC requires electrolytic condenser due to MIC Jack J502's No. 1 pin added DC Voltage.



#### 3. Test Equipment Connection





## ALIGNMENT OF RECEIVER PORTION

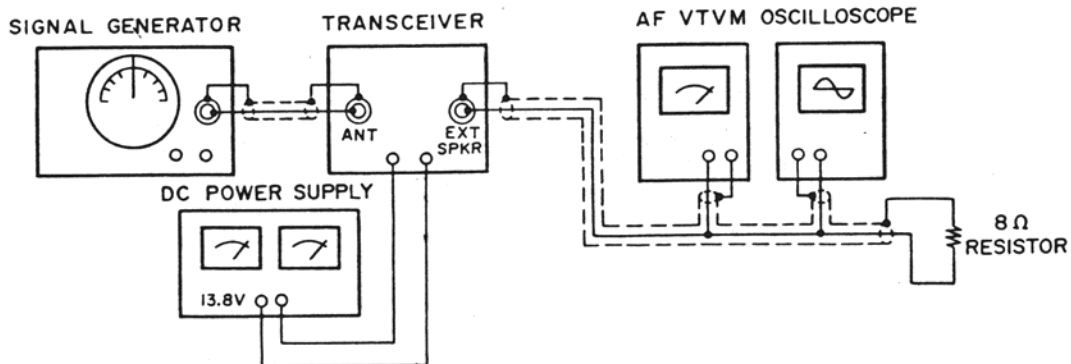
### 1. Test Equipment Required

- a. RF Signal Generator (27 MHz Band, 1000 Hz, 30% Modulation & Output Impedance 50 ohm)
- b. AF VTVM
- c. Oscilloscope (0 50 MHz)
- d. Dummy Load (8 ohm, 5 watts, resistive (General Output Power))
- e. DC Power Supply (13.8 V)
- f. DC Voltmeter

### 2. Alignment Procedure

STEP	PRESET TO	ADJUSTMENT	REMARKS
1	RX Mode CH : 19 VOL : MAX SQL : MIN ANL : OFF RF Gain : MAX CH9 : OFF PA : OFF	L1, L2, L3 L11	Connect RF SSG to ANT Connector (J501) and set it 27.185 MHz. Connect AF VTVM to EXT. SPK. Jack(J3). Adjust coils for maximum reading on AF VTVM.
2	Same as above.	VR4	Set the SSG Attenuator to 0.25uV and adjust the output power to normal position. If the output power is less than normal, keep resistance value of VR4 at minimum (CW) and keep it at maximum (CCW) if over normal to the contrary.
3	Same as Step 1 except SQL : Max	VR1 (Squelch)	Set the RF Signal Generator to 1000uV output level. Adjust VR1 for 2V on AF VTVM.
4	Same as step 1 No Modulation	VR3	Set the RF Signal Generator to 1000uV output level. Adjust VR3 so that 4th digit of LED meter of the unit just illuminates.

### 3. Test Equipment Connection



## ALIGNMENT OF TRANSMITTER PORTION

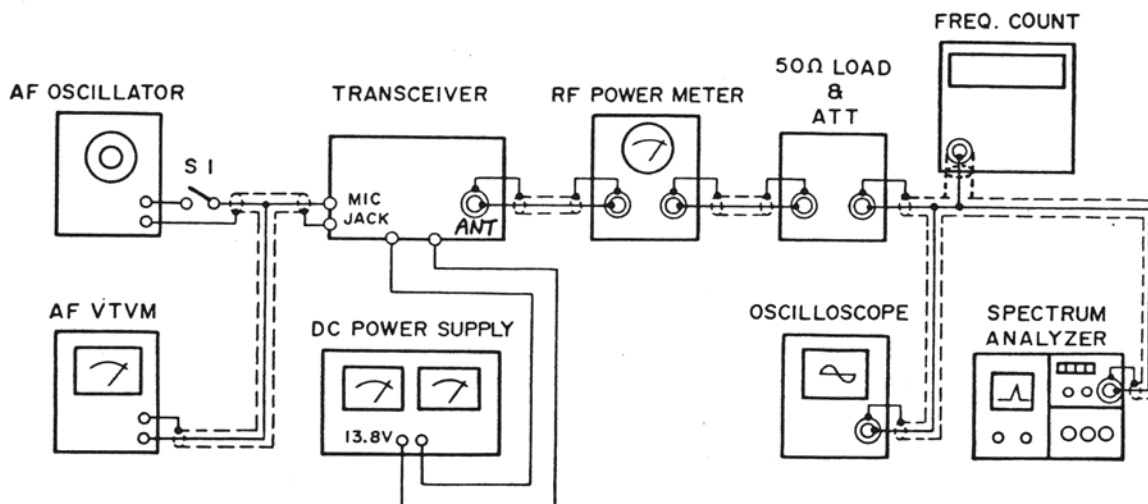
### 1. Test Equipment Required

- a. RF VTVM (Full Scale : 1V DC with RF Probe)
- b. RF Power Meter
- c. Field Strength Meter
- d. *Frequency Counter (0 - 50 MHz)*
- e. DC Power Supply (13.8 V)
- f. Oscilloscope (0 - 50 MHz)
- g. AF Oscillator

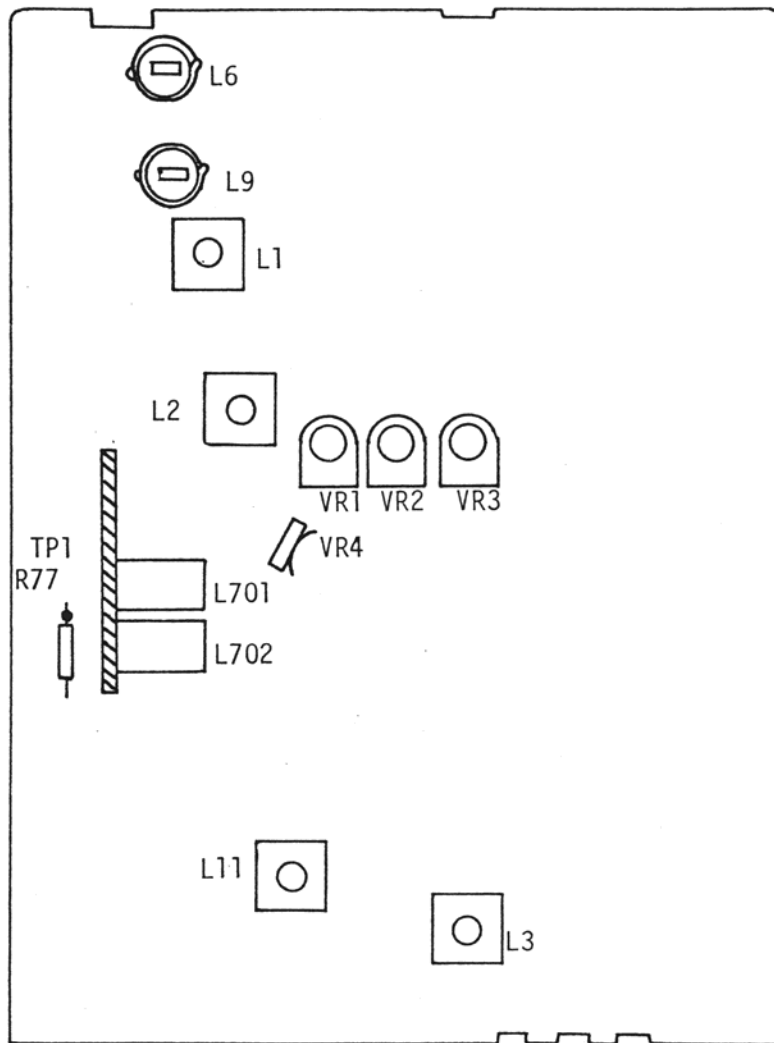
### 2. Alignment Procedure

STEP	PRESET TO	ADJUSTMENT	REMARKS
1	TX Mode CH : 19 1 KHz 80% Modulation	L6, L9	Connect RF Power Meter to ANT. Jack (J501). Adjust for maximum reading.
2	TX Mode CH : 19 No Modulation	L6	Adjust for 4.0W on RF Power Meter.
3	Same as step 2	VR2	Adjust VR2 so that 4th digit of LED meter of the unit just illuminates.

### 3. Test Equipment Connection



### 3. ALIGNMENT POINTS



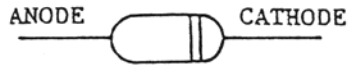
#### 4. IC VOLTAGE CHART

IC NO.	IC NAME	IC PIN NO.	R X (V)		TX (V)
				RF GAIN MIN	
1	LA 1185	1	0.8	1.2	0.8
		2	1.5	1.5	1.5
		3	8	8	8
		4	1.5	1.5	1.5
		5	0	0	0
		6	2.5	2.5	2.5
		7	2.2	2.2	2.2
		8	8	8	8
		9	8	8	8
2	TDA 1220 B	1	2.8		2.8
		2	1.4		1.4
		3	8		8
		4	1.4		1.4
		5	1.4		1.4
		6	2.4		2.4
		7	8		8
		8	0.8		0.8
		9	1.8		1.8
		10	2.9		2.9
		11	0		0
		12	0		0
		13	0		0
		14	2.4		2.4
		15	2.4		2.4
		16	0		0
3	MS223 L	1	0.2	SQ MAX 0.2	0.2
		2	1.2	1.2	1.2
		3	1.2	1.2	1.2
		4	0	0	0
		5	2	1.2	2
		6	1.6	1.6	1.6
		7	6.5	0	7
		8	8	8	8

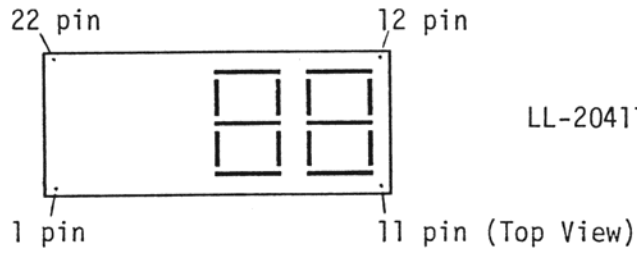
IC NO.	IC NAME	IC PIN NO.	RX (V)		TX (V)
4	TDA 1905	1	7	SQ MAX 7	7
		2	13.6	13.6	13.6
		3	13.6	13.6	13.6
		4	3	0	7.2
		5	0	0	0
		6	2.5	2.5	2.5
		7	2.5	2.5	2.5
		8	2.4	2.4	2.4
		9	0	0	0
		10	0	0	0
		11	0	0	0
		12	0	0	0
		13	0	0	0
		14	0	0	0
		15	0	0	0
		16	0	0	0
5	SM5124 A	1	2.6		2.6
		2	3		3
		3	6		6
		4	6		6
		5	3		3
		6	3		3
		7	3		3.6
		8	0.2		5.8
		9	2.9		2.9
		10	0.6		0.6
		11	0.6		0.6
		12	0.6		0.6
		13	6		6
		14	6.4		6.4
		15	0		0
		16	6.4		6.4
		17	6.4		6.4
		18	0		0
6	L7808 CV	1	13.6		13.6
		2	0		0
		3	8		8
7	LB1423	1	6		6
		2	6		6
		3	6		6
		4	6		6
		5	0		0
		6	0.2		0.2
		7	0.2		0.2
		8	0.2		0.2
		9	4		4

## 5. SEMICONDUCTOR LEAD IDENTIFICATION

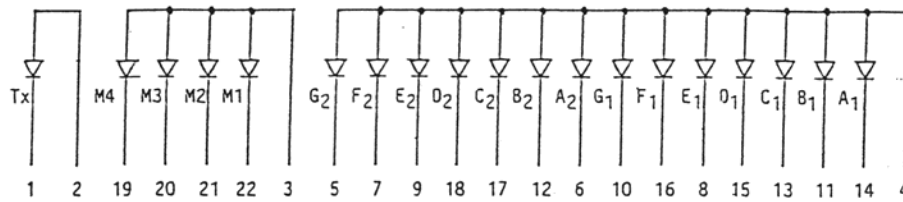
DIODE



1N60AM  
1N4003  
1S1555  
HZ-6C1  
1SV73-EB

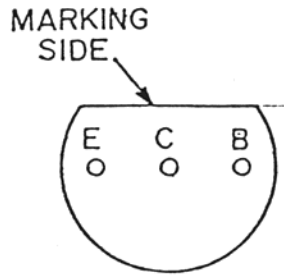


LL-2041T



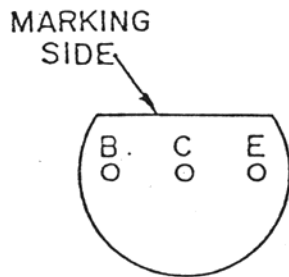
1. Tx	Cathode	12. B <sub>2</sub>	Cathode
2. Tx	Anode	13. C <sub>1</sub>	"
3. +8		14. A <sub>1</sub>	"
4. Digital 1. 2. Anode		15. D <sub>1</sub>	"
5. G <sub>2</sub>	Cathode	16. F <sub>1</sub>	"
6. A <sub>2</sub>	"	17. C <sub>2</sub>	"
7. F <sub>2</sub>	"	18. D <sub>2</sub>	"
8. E <sub>1</sub>	"	19. M <sub>4</sub>	"
9. E <sub>2</sub>	"	20. M <sub>3</sub>	"
10. G <sub>1</sub>	"	21. M <sub>2</sub>	"
11. B <sub>1</sub>	"	22. M <sub>1</sub>	"

TRANSISTOR



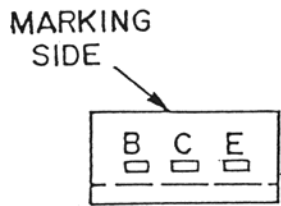
Bottom View

2SA733A-PB  
2SC941TM-0  
2SC945A-Q  
2SC1675-L



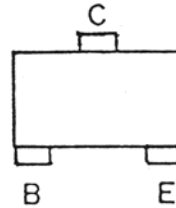
Bottom View

2SC2086-D



Bottom View

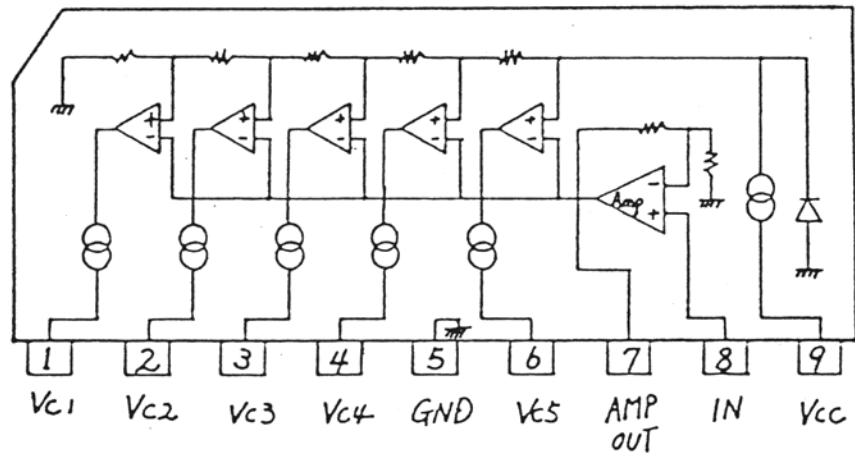
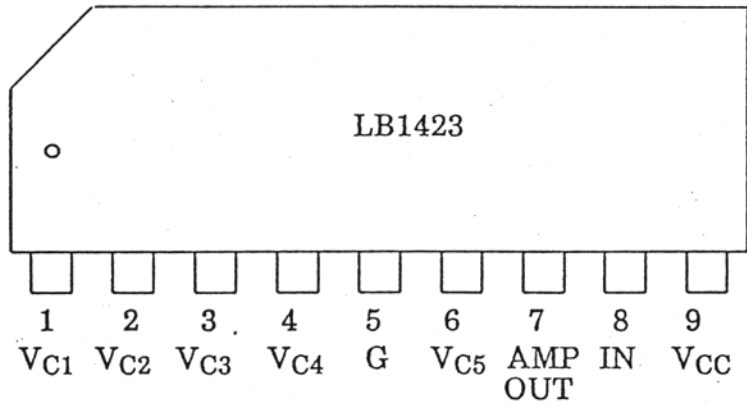
2SC2166-C



2SC2814-F5

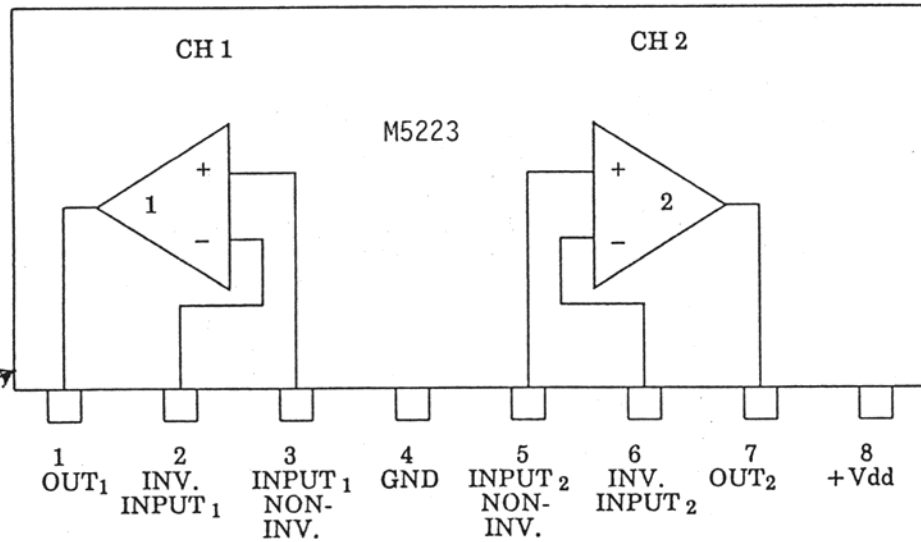
Top View

LB1423  
(LED METER DRIVE)



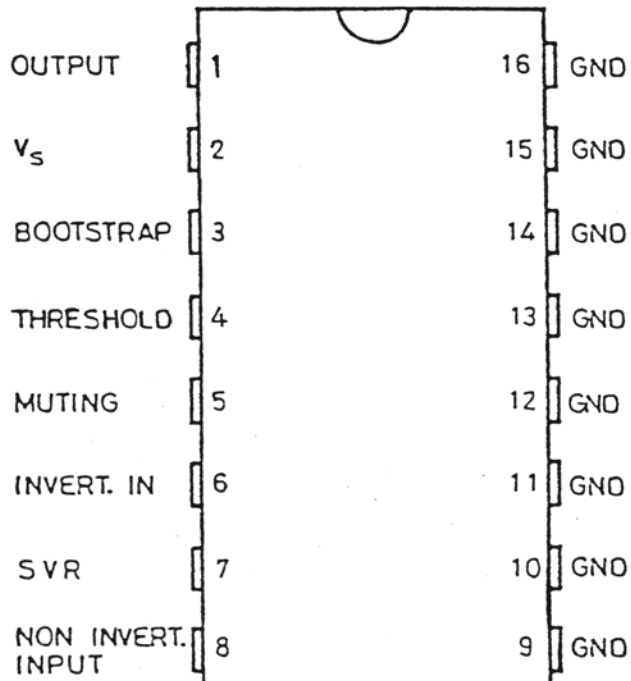
M5223  
(SQUELCH AND  
AGC AMP.)

Marking Side →



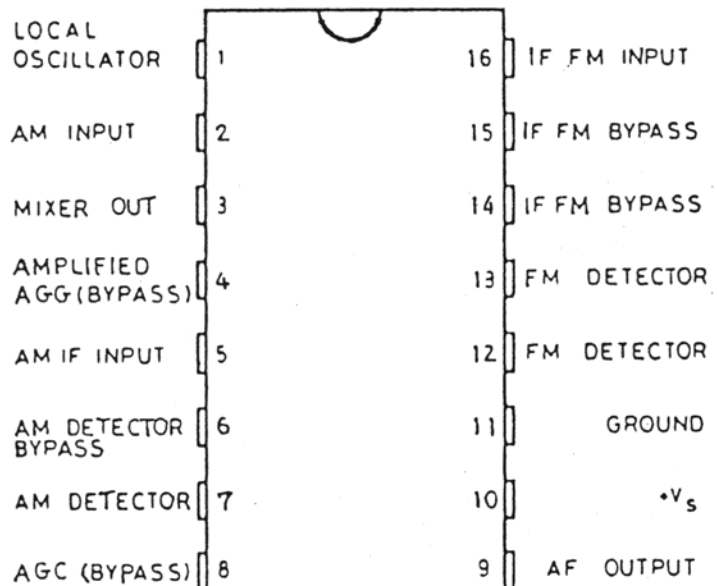


TDA1905  
(AUDIO AMPLIFIER)



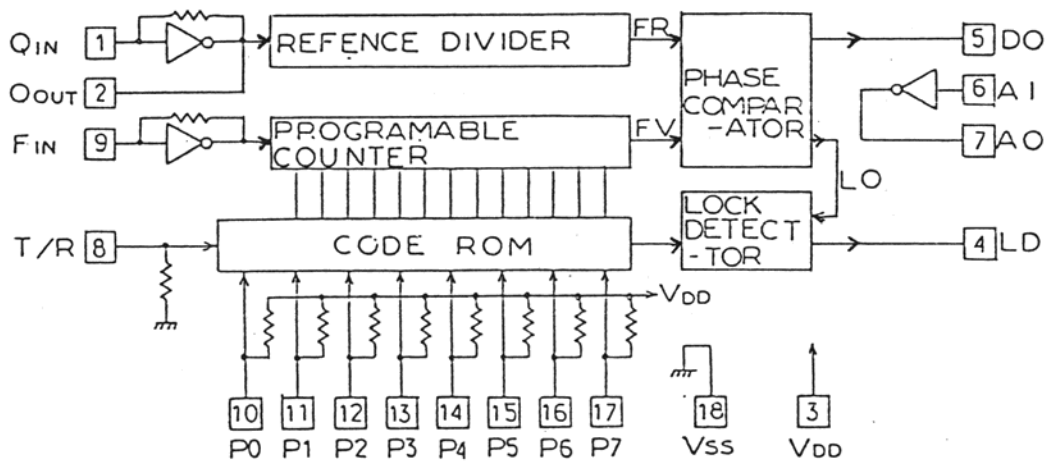
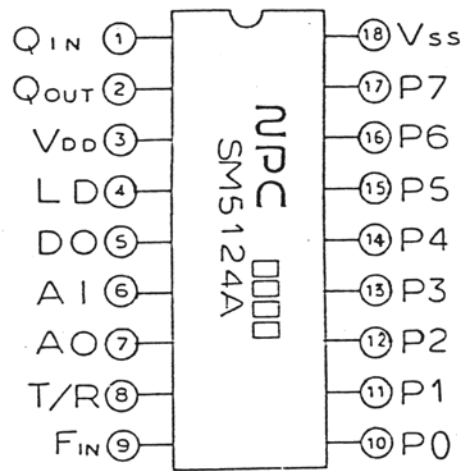
S-2913

TDA1220B  
(\* 2nd Mix.  
\* 2nd IF Amp.  
\* DET  
\* AGC)

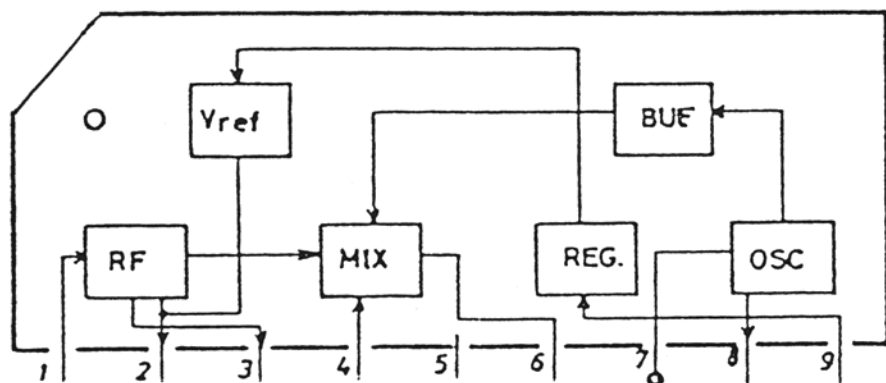


S-5185

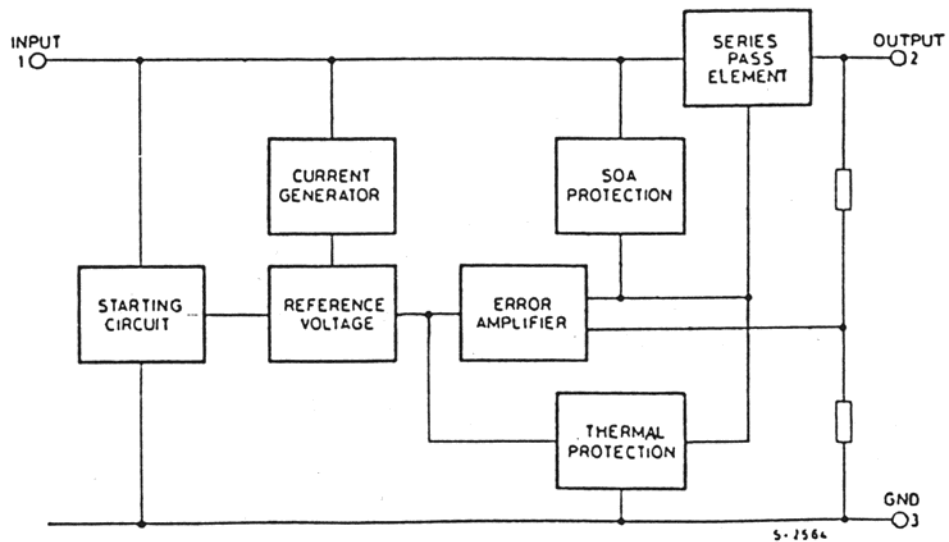
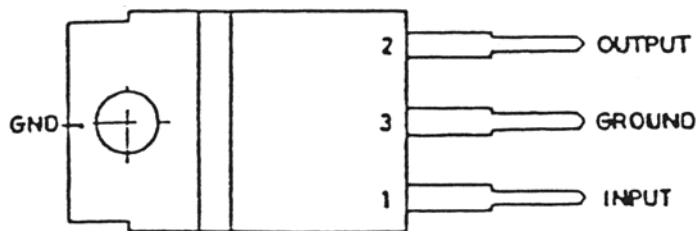
SM5124A  
 (PLL Frequency Synthesizer)



LA-1185  
 (\* RF Amp.  
 \* 1'st Mix.)



L7808  
(REGULATOR)



## **6. PARTS PRICE LIST**

(MODEL)  
UT317AT

PRO-520E

(PARTS CODE) (DESCRIPTION)	(SYMBOL)	(Q'TY)	(LIST PRICE)
BCCC811204Z CAPACITOR:CERAMIC	12PF 50V J CH	C065 1	\$ 0.145
BCCC812215Z CAPACITOR:CERAMIC	220PF 50V K CH	C033 1	\$ 0.304
		C035 1	\$ 0.304
BCCC813305Z CAPACITOR:CERAMIC	33PF 50V K CH	C034 1	\$ 0.145
BCCC815604Z CAPACITOR:CERAMIC	56PF 50V J CH	C068 1	\$ 0.158
BCCF812091Z CAPACITOR:CERAMIC	2PF 50V C CK	C040 1	\$ 0.145
BCCG811515Z CAPACITOR:CERAMIC	150PF 50V K SL	C501 1	\$ 0.139
BCCG815615Z CAPACITOR:CERAMIC	560PF 50V K SL	C069 1	\$ 0.297
BCCU811805Z CAPACITOR:CERAMIC	18PF 50V K UJ	C001 1	\$ 0.145
BCCU812215Z CAPACITOR:CERAMIC	220PF 50V K UJ	C041 1	\$ 0.205
BCCU813305Z CAPACITOR:CERAMIC	33PF 50V K UJ	C101 1	\$ 0.145
BCCU813315Z CAPACITOR:CERAMIC	330PF 50V K UJ	C036 1	\$ 0.238
BCCU814715Z CAPACITOR:CERAMIC	470PF 50V K UJ	C045 1	\$ 0.304
BCCU818205Z CAPACITOR:CERAMIC	82PF 50V K UJ	C007 1	\$ 0.145
BCEF114706Z CAPACITOR:ELECTROLYTIC	47UF 10V M C-059	C014 1	\$ 0.211
		C016 1	\$ 0.211
BCEF812296Z CAPACITOR:ELECTROLYTIC	2.2UF 50V M C-059	C032 1	\$ 0.185
BCEF814796Z CAPACITOR:ELECTROLYTIC	4.7UF 50V M C-059	C012 1	\$ 0.185
BCEL111010Z CAPACITOR:ELECTROLYTIC	100UF 10V	C082 1	\$ 0.389
BCEL112200Z CAPACITOR:ELECTROLYTIC	22UF 10V	C075 1	\$ 0.284
		C077 1	\$ 0.284
BCEL112210Z CAPACITOR:ELECTROLYTIC	220UF 10V	C066 1	\$ 0.449
BCEL114700Z CAPACITOR:ELECTROLYTIC	47UF 10V	C053 1	\$ 0.284
		C071 1	\$ 0.284
		C076 1	\$ 0.284
BCEL311000Z CAPACITOR:ELECTROLYTIC	10UF 16V	C073 1	\$ 0.284

(MODEL)  
UT317AT

PRO-520E

(PARTS CODE)	(DESCRIPTION)		(SYMBOL)	(Q'TY)	(LIST PRICE)
BCEL311000Z	CAPACITOR:ELECTROLYTIC	10UF 16V	C087	1	\$ 0.284
BCEL514710Z	CAPACITOR:ELECTROLYTIC	470UF 25V	C051	1	\$ 1.056
BCEL811090Z	CAPACITOR:ELECTROLYTIC	1UF 50V	C021	1	\$ 0.284
			C037	1	\$ 0.284
			C056	1	\$ 0.284
			C094	1	\$ 0.284
BCEL812280Z	CAPACITOR:ELECTROLYTIC	0.22UF 50V	C018	1	\$ 0.284
BCEL812290Z	CAPACITOR:ELECTROLYTIC	2.2UF 50V	C055	1	\$ 0.284
			C061	1	\$ 0.284
			C063	1	\$ 0.284
			C064	1	\$ 0.284
BCEL814780Z	CAPACITOR ELECTROLYTIC	0.47UF 50V	C072	1	\$ 0.284
BCEL814790Z	CAPACITOR:ELECTROLYTIC	4.7UF 50V	C026	1	\$ 0.284
			C028	1	\$ 0.284
			C070	1	\$ 0.284
BCER511026Z	CAPACITOR:ELECTROLYTIC	1000UF 25V M C-095	C052	1	\$ 1.855
BCGC511035Z	CAPACITOR:SEMI CONDUCTOR(SR)	0.01UF 25V K	C019	1	\$ 0.205
			C057	1	\$ 0.205
			C062	1	\$ 0.205
			C083	1	\$ 0.205
BCGC511045Z	CAPACITOR:SEMI-CONDUCTOR(SR)	0.1UF 25V K	C054	1	\$ 0.462
			C059	1	\$ 0.462
			C074	1	\$ 0.462
BCGC512235Z	CAPACITOR:SEMI-CONDUCTOR(SR)	0.022UF 25V K	C025	1	\$ 0.211
			C078	1	\$ 0.211
			C079	1	\$ 0.211

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(PARTS CODE)	(DESCRIPTION)	(SYMBOL)	(Q'TY)	(LIST PRICE)
BGGC514735Z	CAPACITOR:SEMI-CONDUCTOR(SR) 0.047UF 25V K	C011	1	\$ 0.304
		C023	1	\$ 0.304
		C024	1	\$ 0.304
		C058	1	\$ 0.304
		C081	1	\$ 0.304
		C089	1	\$ 0.304
		C092	1	\$ 0.304
BGGC518225Z	CAPACITOR:SEMI-CONDUCTOR(SR) 0.0082UF 25V K	C027	1	\$ 0.205
BCKB811025Z	CAPACITOR:CERAMIC 0.001UF 50V K YB(B)	C017	1	\$ 0.139
		C022	1	\$ 0.139
		C048	1	\$ 0.139
BCKC514730Z	CAPACITOR:CERAMIC 0.047UF 25V Z ZF	C004	1	\$ 0.218
		C067	1	\$ 0.218
		C105	1	\$ 0.218
BCKD811026Z	CAPACITOR:CERAMIC 0.001UF 50V M YD	C002	1	\$ 0.119
		C006	1	\$ 0.119
		C013	1	\$ 0.119
		C042	1	\$ 0.119
		C047	1	\$ 0.119
		C084	1	\$ 0.119
		C085	1	\$ 0.119
		C086	1	\$ 0.119
		C090	1	\$ 0.119
		C103	1	\$ 0.119
BCKD811036Z	CAPACITOR:CERAMIC 0.01UF 50V M YD	C044	1	\$ 0.218
		C096	1	\$ 0.218

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(PARTS CODE)	(DESCRIPTION)	(SYMBOL)	(Q'TY)	(LIST PRICE)
BCKD814726Z	CAPACITOR:CERAMIC	0.0047UF 50V M YD	C095	1 \$ 0.165
			C097	1 \$ 0.165
BCKG811030Z	CAPACITOR:CERAMIC	0.01UF 50V Z YF	C005	1 \$ 0.139
			C009	1 \$ 0.139
			C046	1 \$ 0.139
			C088	1 \$ 0.139
BCKG814720Z	CAPACITOR:CERAMIC	0.0047UF 50V Z YF	C003	1 \$ 0.125
			C008	1 \$ 0.125
			C031	1 \$ 0.125
			C043	1 \$ 0.125
			C060	1 \$ 0.125
			C104	1 \$ 0.125
			C551	1 \$ 0.125
			C552	1 \$ 0.125
BCVL813904Z	CAPACITOR:CERAMIC CHIP	39PF 50V J SL C-140 TAPE	C701	1 \$ 0.185
			C705	1 \$ 0.185
			C711	1 \$ 0.185
BCVL814704Z	CAPACITOR:CERAMIC CHIP	47PF 50V J SL C-140 TAPE	C707	1 \$ 0.185
BCVL816804Z	CAPACITOR:CERAMIC CHIP	68PF 50V J SL C-140 TAPE	C712	1 \$ 0.185
BCVM811504Z	CAPACITOR:CERAMIC CHIP	15PF 50V J CH C-140 TAPE	C706	1 \$ 0.205
BCVP811015Z	CAPACITOR:CERAMIC CHIP	100PF 50V K B C-140 TAPE	C708	1 \$ 0.185
BCVP811025Z	CAPACITOR:CERAMIC CHIP	0.001U 50V K B C-140 TAPE	C093	1 \$ 0.185
BCVP813315Z	CAPACITOR:CERAMIC CHIP	330PF 50V K B C-140 TAPE	C709	1 \$ 0.185
BCVQ311036Z	CAPACITOR:CERAMIC CHIP	0.01UF 16V M Y C-140 TAPE	C702	1 \$ 0.218
			C703	1 \$ 0.218
			C704	1 \$ 0.218



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(PARTS CODE) (DESCRIPTION)		(SYMBOL)	(Q'TY)	(LIST PRICE)
BCVQ311036Z CAPACITOR:CERAMIC CHIP	0.01UF 16V M Y C-140 TAPE	C713	1	\$ 0.218
		C714	1	\$ 0.218
BDAY0001001 DIODE	1N60 AM	D026	1	\$ 0.284
BDAY0133001 DIODE	1N4003	D007	1	\$ 0.165
		D018	1	\$ 0.165
		D001	1	\$ 0.125
		D002	1	\$ 0.125
		D003	1	\$ 0.125
		D004	1	\$ 0.125
		D005	1	\$ 0.125
		D006	1	\$ 0.125
		D008	1	\$ 0.125
		D009	1	\$ 0.125
		D011	1	\$ 0.125
		D012	1	\$ 0.125
		D013	1	\$ 0.125
		D014	1	\$ 0.125
		D015	1	\$ 0.125
		D016	1	\$ 0.125
D017	1	\$ 0.125		
D019	1	\$ 0.125		
D020	1	\$ 0.125		
D021	1	\$ 0.125		
D022	1	\$ 0.125		
D023	1	\$ 0.125		
D024	1	\$ 0.125		

BDAY0181001 DIODE

1S1555

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(PARTS CODE) (DESCRIPTION)		(SYMBOL)	(Q'TY)	(LIST PRICE)
BDAY0181001 DIODE	1S1555	D025	1	\$ 0.125
		D027	1	\$ 0.125
		D028	1	\$ 0.125
		D552	1	\$ 0.125
		D553	1	\$ 0.125
		D554	1	\$ 0.125
		D555	1	\$ 0.125
		D556	1	\$ 0.125
BDAY0220001 DIODE	1SV73-EB	D701	1	\$ 0.634
BDAY0269019 DIODE:ZENER	HZ-6C1	D010	1	\$ 0.257
BDAY0421001 DIODE:LED	LL-2041T	D551	1	\$ 7.973
BDBA0733541 TRANSISTOR	DB-027 2SA733A-PB	Q005	1	\$ 0.495
BDBC0941523 TRANSISTOR	DB-301 2SC941TM-0	Q003	1	\$ 0.462
BDBC0945507 TRANSISTOR	DB-224 2SC945A-Q	Q001	1	\$ 0.449
		Q006	1	\$ 0.449
		Q007	1	\$ 0.449
		Q008	1	\$ 0.449
BDBC1675111 TRANSISTOR	DB-259 2SC1675-L	Q004	1	\$ 0.535
BDBC2086104 TRANSISTOR	DB-228 2SC2086-D	Q002	1	\$ 2.033
BDBC2166103 TRANSISTOR	DB-331 2SC2166-C	Q501	1	\$ 4.561
BDBC2814641 TRANSISTOR	DB-744 2SC2814-F5 TAPING	Q701	1	\$ 0.356
		Q702	1	\$ 0.356
		Q703	1	\$ 0.356
BDEY0430001 INTEGRATED CIRCUIT	LB1423	IC007	1	\$ 2.812
BDEY0582001 INTEGRATED CIRCUIT	M5223L	IC003	1	\$ 1.822
BDEY0603001 INTEGRATED CIRCUIT	TDA1905	IC004	1	\$ 4.349

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(PARTS CODE)	(DESCRIPTION)		(SYMBOL)	(Q'TY)	(LIST PRICE)
BDEY0890001	INTEGRATED CIRCUIT	TDA1220B	IC002	1	\$ 3.161
BDEY0891001	INTEGRATED CIRCUIT	SM5124A	IC005	1	\$ 11.233
BDEY0902001	INTEGRATED CIRCUIT	LA-1185	IC001	1	\$ 1.888
BDEY0924001	INTEGRATED CIRCUIT	L7808CV	IC006	1	\$ 2.244
BFLY0048001	FILTER:CERAMIC	FL-048 SFE10.7MS2-M	FT001	1	\$ 1.399
BFLY0221001	FILTER	FL-221 CFW450HT 450KHZ	FT002	1	\$ 12.632
BJKY0089001	JACK	JK-089 HSJ0615	J003	1	\$ 1.023
			J004	1	\$ 1.023
BJKY0370001	JACK	JK-370	J501	1	\$ 1.855
BJKY0374001	JACK	JK-374	J502	1	\$ 1.729
BLAY0138001	COIL	LA-138 TKXC-16853N	L002	1	\$ 1.927
BLAY0204001	COIL	LA-204 RMC-41997N	L003	1	\$ 1.445
			L011	1	\$ 1.445
BLAY0279001	COIL	LA-279 TKXNF-25439N	L001	1	\$ 1.756
BLBY0537001	COIL	LB-537 V113CN-6851BS	L701	1	\$ 0.799
			L702	1	\$ 0.799
BLCY0072001	COIL	LC-072	L009	1	\$ 0.739
BLCY0074001	COIL	LC-074	L006	1	\$ 0.739
BLDY0087001	COIL	LD-087 BF04-3*5*1	L008	1	\$ 0.066
BLDY0168001	COIL	LD-168	L007	1	\$ 0.449
BLEY0096001	COIL	LE-096 8 1/2T	L004	1	\$ 0.145
			L005	1	\$ 0.145
BLEY0187001	COIL	LE-187 04.0 7T	L010	1	\$ 0.165
BMKY0356001	MICROPHONE	MK-356	MC951	1	\$ 16.790
BPAY0243AAZ	PC BOARD:VCO	PA-243AA	B701	1	\$ 0.515
BPAY0247AAZ	PC BOARD:MAIN	PA-247AA	B001	1	\$ 3.901

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(PARTS CODE)	(DESCRIPTION)		(SYMBOL)	(Q*TY)	(LIST PRICE)
BPAY0249AAZ	PC BOARD:LED	PA-249AA	B551	1	\$ 0.911
BQXY0250001	CRYSTAL	QX-250 10.2419M	X001	1	\$ 3.128
BRFD181014Z	RESISTOR:CARBON MELF CHIP	100 1/8W J TAPING	R702	1	\$ 0.073
			R706	1	\$ 0.073
BRFD181034Z	RESISTOR:CARBON MELF CHIP	10K 1/8W J TAPING	R704	1	\$ 0.073
BRFD181534Z	RESISTOR:CARBON MELF CHIP	15K 1/8W J TAPING	R707	1	\$ 0.073
BRFD183314Z	RESISTOR:CARBON MELF CHIP	330 1/8W J TAPING	R708	1	\$ 0.073
BRFD183334Z	RESISTOR:CARBON MELF CHIP	33K 1/8W J TAPING	R701	1	\$ 0.073
BRFD183914Z	RESISTOR:CARBON MELF CHIP	390 1/8W J TAPING	R703	1	\$ 0.073
BRFD183934Z	RESISTOR:CARBON MELF CHIP	39K 1/8W J TAPING	R705	1	\$ 0.073
BRFD185634Z	RESISTOR:CARBON MELF CHIP	56K 1/8W J TAPING	R709	1	\$ 0.073
BRPB181014Z	RESISTOR:CARBON AXIAL LEAD	100 1/8W J	R051	1	\$ 0.066
BRPB181024Z	RESISTOR:CARBON AXIAL LEAD	1K 1/8W J	R036	1	\$ 0.066
			R711	1	\$ 0.066
BRPB181234Z	RESISTOR:CARBON AXIAL LEAD	12K 1/8W J	R077	1	\$ 0.066
BRPB181504Z	RESISTOR:CARBON AXIAL LEAD	15 1/8W J	R048	1	\$ 0.066
BRPB181514Z	RESISTOR:CARBON AXIAL LEAD	150 1/8W J	R064	1	\$ 0.066
			R114	1	\$ 0.066
BRPB181534Z	RESISTOR:CARBON AXIAL LEAD	15K 1/8W J	R056	1	\$ 0.066
BRPB181544Z	RESISTOR:CARBON AXIAL LEAD	150K 1/8W J	R017	1	\$ 0.066
BRPB182224Z	RESISTOR:CARBON AXIAL LEAD	2.2K 1/8W J	R117	1	\$ 0.066
BRPB182734Z	RESISTOR:CARBON AXIAL LEAD	27K 1/8W J	R078	1	\$ 0.066
BRPB184754Z	RESISTOR:CARBON AXIAL LEAD	4.7M 1/8W J	R116	1	\$ 0.066
BRPB186814Z	RESISTOR:CARBON AXIAL LEAD	680 1/8W J	R106	1	\$ 0.066
BRPB611024Z	RESISTOR:CARBON AXIAL LEAD	1K 1/6W J	R554	1	\$ 0.066
			R556	1	\$ 0.066

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(PARTS CODE)	(DESCRIPTION)		(SYMBOL)	(Q'TY)	(LIST PRICE)
BRPB611034Z	RESISTOR:CARBON AXIAL LEAD	10K 1/6W J	R567	1	\$ 0.066
BRPB612724Z	RESISTOR:CARBON AXIAL LEAD	2.7K 1/6W J	R552	1	\$ 0.066
BRPB613314Z	RESISTOR:CARBON AXIAL LEAD	330 1/6W J	R551	1	\$ 0.066
BRPB613924Z	RESISTOR:CARBON AXIAL LEAD	3.9K 1/6W J	R553	1	\$ 0.066
BRPB614714Z	RESISTOR:CARBON AXIAL LEAD	470 1/6W J	R557	1	\$ 0.066
BRPB616814Z	RESISTOR:CARBON AXIAL LEAD	680 1/6W J	R558	1	\$ 0.066
			R562	1	\$ 0.066
			R565	1	\$ 0.066
BRSJ302794Z	RESISTOR:METAL OXIDE	2.7 3W J	R001	1	\$ 0.601
BRSJ308294Z	R:METAL OXIDE	8.2 3W J	R002	1	\$ 0.601
BRTY0182104	RESISTOR:SEMI-FIXED	RT-182 TT24R 100KB	VR003	1	\$ 0.871
BRTY0182203	RESISTOR:SEMI-FIXED	RT-182 TT24R 20KB	VR001	1	\$ 0.871
BRTY0182504	RESISTOR:SEMI-FIXED	RT-182 TT24R 500KB	VR002	1	\$ 0.871
BRTY0520102	RESISTOR:SEMI-FIXED	RT-520 B1K	VR004	1	\$ 0.317
BRUB181014Z	RESISTOR:CARBON FORMED VERT	100 1/8W J	R005	1	\$ 0.066
			R011	1	\$ 0.066
			R053	1	\$ 0.066
			R068	1	\$ 0.066
BRUB181024Z	RESISTOR:CARBON FORMED VERT	1K 1/8W J	R007	1	\$ 0.066
			R093	1	\$ 0.066
			R113	1	\$ 0.066
			R115	1	\$ 0.066
BRUB181034Z	RESISTOR:CARBON FORMED VERT	10K 1/8W J	R022	1	\$ 0.066
			R030	1	\$ 0.066
			R061	1	\$ 0.066
			R079	1	\$ 0.066

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(PARTS CODE)	(DESCRIPTION)		(SYMBOL)	(Q'TY)	(LIST PRICE)
BRUB181034Z	RESISTOR:CARBON FORMED VERT	10K 1/8W J	R083	1	\$ 0.066
			R101	1	\$ 0.066
			R109	1	\$ 0.066
BRUB181044Z	RESISTOR:CARBON FORMED VERT	100K 1/8W J	R094	1	\$ 0.066
			R098	1	\$ 0.066
BRUB181054Z	RESISTOR:CARBON FORMED VERT	1M 1/8W J	R021	1	\$ 0.066
			R037	1	\$ 0.066
BRUB181094Z	RESISTOR:CARBON FORMED VERT	1 1/8W J	R067	1	\$ 0.066
BRUB181224Z	RESISTOR:CARBON FORMED VERT	1.2K 1/8W J	R027	1	\$ 0.066
BRUB181514Z	RESISTOR:CARBON FORMED VERT	150 1/8W J	R082	1	\$ 0.066
BRUB181534Z	RESISTOR:CARBON FORMED VERT	15K 1/8W J	R059	1	\$ 0.066
			R087	1	\$ 0.066
BRUB181544Z	RESISTOR:CARBON FORMED VERT	150K 1/8W J	R018	1	\$ 0.066
BRUB181814Z	RESISTOR:CARBON FORMED VERT	180 1/8W J	R057	1	\$ 0.066
			R058	1	\$ 0.066
BRUB181824Z	RESISTOR:CARBON FORMED VERT	1.8K 1/8W J	R091	1	\$ 0.066
BRUB182204Z	RESISTOR:CARBON FORMED VERT	22 1/8W J	R004	1	\$ 0.066
BRUB182214Z	RESISTOR:CARBON FORMED VERT	220 1/8W J	R013	1	\$ 0.066
			R095	1	\$ 0.066
			R029	1	\$ 0.066
BRUB182224Z	RESISTOR:CARBON FORMED VERT	2.2K 1/8W J	R044	1	\$ 0.066
			R081	1	\$ 0.066
			R088	1	\$ 0.066
			R099	1	\$ 0.066
BRUB182244Z	RESISTOR:CARBON FORMED VERT	220K 1/8W J	R019	1	\$ 0.066
BRUB182254Z	RESISTOR:CARBON FORMED VERT	2.2M 1/8W J	R025	1	\$ 0.066

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(PARTS CODE)	(DESCRIPTION)			(SYMBOL)	(Q'TY)	(LIST PRICE)
BRUB182704Z	RESISTOR:CARBON FORMED VERT	27	1/8W J	R054	1	\$ 0.066
BRUB182734Z	RESISTOR:CARBON FORMED VERT	27K	1/8W J	R042	1	\$ 0.066
				R043	1	\$ 0.066
				R074	1	\$ 0.066
BRUB183304Z	RESISTOR:CARBON FORMED VERT	33	1/8W J	R085	1	\$ 0.066
BRUB183314Z	RESISTOR:CARBON FORMED VERT	330	1/8W J	R006	1	\$ 0.066
				R038	1	\$ 0.066
				R046	1	\$ 0.066
BRUB183324Z	RESISTOR:CARBON FORMED VERT	3.3K	1/8W J	R014	1	\$ 0.066
				R066	1	\$ 0.066
BRUB183344Z	RESISTOR:CARBON FORMED VERT	330K	1/8W J	R031	1	\$ 0.066
				R039	1	\$ 0.066
				R041	1	\$ 0.066
BRUB183924Z	RESISTOR:CARBON FORMED VERT	3.9K	1/8W J	R096	1	\$ 0.066
BRUB183934Z	RESISTOR:CARBON FORMED VERT	39K	1/8W J	R092	1	\$ 0.066
BRUB183944Z	RESISTOR:CARBON FORMED VERT	390K	1/8W J	R033	1	\$ 0.066
				R112	1	\$ 0.066
BRUB184714Z	RESISTOR:CARBON FORMED VERT	470	1/8W J	R108	1	\$ 0.066
BRUB184724Z	RESISTOR:CARBON FORMED VERT	4.7K	1/8W J	R071	1	\$ 0.066
BRUB184734Z	RESISTOR:CARBON FORMED VERT	47K	1/8W J	R032	1	\$ 0.066
				R097	1	\$ 0.066
BRUB184754Z	RESISTOR:CARBON FORMED VERT	4.7M	1/2W J	R023	1	\$ 0.066
				R110	1	\$ 0.066
BRUB185614Z	RESISTOR:CARBON FORMED VERT	560	1/8W J	R015	1	\$ 0.066
				R065	1	\$ 0.066
BRUB185624Z	RESISTOR:CARBON FORMED VERT	5.6K	1/8W J	R035	1	\$ 0.066

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(PARTS CODE)	(DESCRIPTION)	(SYMBOL)	(Q*TY)	(LIST PRICE)
BRUB185624Z	RESISTOR:CARBON FORMED VERT 5.6K 1/8W J	R062	1	\$ 0.066
		R072	1	\$ 0.066
		R073	1	\$ 0.066
		R086	1	\$ 0.066
		R111	1	\$ 0.066
BRUB185634Z	RESISTOR:CARBON FORMED VERT 56K 1/8W J	R076	1	\$ 0.066
BRUB185644Z	RESISTOR:CARBON FORMED VERT 560K 1/8W J	R034	1	\$ 0.066
BRUB185694Z	RESISTOR:CARBON FORMED VERT 5.6 1/8W J	R049	1	\$ 0.066
BRUB186814Z	RESISTOR:CARBON FORMED VERT 680 1/8W J	R045	1	\$ 0.066
		R102	1	\$ 0.066
		R103	1	\$ 0.066
		R104	1	\$ 0.066
		R105	1	\$ 0.066
		R107	1	\$ 0.066
BRUB186824Z	RESISTOR:CARBON FORMED VERT 6.8K 1/8W J	R028	1	\$ 0.066
		R075	1	\$ 0.066
		R084	1	\$ 0.066
BRUB186834Z	RESISTOR:CARBON FORMED VERT 68K 1/8W J	R026	1	\$ 0.066
BRUB188224Z	RESISTOR:CARBON FORMED VERT 8.2K 1/8W J	R055	1	\$ 0.066
		R089	1	\$ 0.066
BRUB188234Z	RESISTOR:CARBON FORMED VERT 82K 1/8W J	R069	1	\$ 0.066
BRUB612224Z	RESISTOR:CARBON FORMED VERT 2.2K 1/6W J	R555	1	\$ 0.066
BRUB612734Z	RESISTOR:CARBON FORMED VERT 27K 1/6W J	R003	1	\$ 0.066
BRUB616814Z	RESISTOR:CARBON FORMED VERT 680 1/6W J	R559	1	\$ 0.066
		R561	1	\$ 0.066
		R563	1	\$ 0.066



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(PARTS CODE)	(DESCRIPTION)		(SYMBOL)	(Q'TY)	(LIST PRICE)
BRUB616814Z	RESISTOR:CARBON FORMED VERT	680 1/6W J	R564	1	\$ 0.066
			R566	1	\$ 0.066
BRVY0650001	RESISTOR:VARIABLE	RV-650 VB12L B50K	VR502	1	\$ 2.270
BRVY0651001	RESISTOR:CEMENT	RV-651 RK1211111014-50KA	VR501	1	\$ 4.547
BRVY0652001	RESISTOR:VARIABLE	RV-652 VB12L B1K	VR503	1	\$ 2.270
BSPY0154001	SPEAKER	SP-154	SP501	1	\$ 3.874
BSRY0303001	SWITCH:ROTARY	SR-303 USW-0377	S501	1	\$ 12.283
BSWY0557001	SWITCH:SLIDE	SW-557 SSFYP22-14.5B	S553	1	\$ 0.818
			S554	1	\$ 0.818
			S556	1	\$ 0.818
BTFY0083001	TRANSFORMER:AF CHOKE	TF-083	T002	1	\$ 1.201
BTFY0215001	TRANSFORMER:OUTPUT	TF-215	T001	1	\$ 3.538
BWZY0246001	CORD:DC	WZ-246 1500MM	WA951	1	\$ 3.293
BYDY0019003	BUSHING:TRANSISTOR	YD-019 B3120-11-A	YI501	1	\$ 0.092
BYDY0058001	HEAT SINK	YD-058 TESS	YI001	1	\$ 0.000
BYYY0027001	INSULATION SHEET	YY-027	YI502	1	\$ 0.561
BYYY0052001	JUMPER WIRE	YY-052 5.0MM	JP003	1	\$ 0.020
			JPG12	1	\$ 0.020
			JP028	1	\$ 0.020
			JP038	1	\$ 0.020
			JP553	1	\$ 0.020
			JP557	1	\$ 0.020
			JP701	1	\$ 0.020
BYYY0052002	JUMPER WIRE	YY-052 7.5MM	JP002	1	\$ 0.026
			JP005	1	\$ 0.026
			JP006	1	\$ 0.026

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(PARTS CODE) (DESCRIPTION)		(SYMBOL)	(Q*TY)	(LIST PRICE)
BYYY0052002 JUMPER WIRE	YY-052 7.5MM	JP013	1	\$ 0.026
		JP014	1	\$ 0.026
		JP020	1	\$ 0.026
		JP022	1	\$ 0.026
		JP025	1	\$ 0.026
		JP030	1	\$ 0.026
		JP552	1	\$ 0.026
		JP554	1	\$ 0.026
		JP555	1	\$ 0.026
BYYY0052003 JUMPER WIRE	YY-052 10.0MM	JP011	1	\$ 0.026
		JP021	1	\$ 0.026
		JP029	1	\$ 0.026
		JP551	1	\$ 0.026
		JP702	1	\$ 0.026
BYYY0052004 JUMPER WIRE	YY-052 12.5MM	JP001	1	\$ 0.026
		JP004	1	\$ 0.026
		JP015	1	\$ 0.026
		JP017	1	\$ 0.026
		JP026	1	\$ 0.026
		JP034	1	\$ 0.026
		JP039	1	\$ 0.026
		JP008	1	\$ 0.026
BYYY0052005 JUMPER WIRE	YY-052 15.0MM	JP016	1	\$ 0.026
		JP018	1	\$ 0.026
		JP024	1	\$ 0.026
		JP037	1	\$ 0.026

(MODEL)  
UT317AT

PRO-520E

(PARTS CODE)	(DESCRIPTION)	(SYMBOL)	(Q'TY)	(LIST PRICE)
BYYY0052006	JUMPER WIRE	YY-052 17.5MM	JP009 1	\$ 0.026
			JP010 1	\$ 0.026
			JP019 1	\$ 0.026
			JP027 1	\$ 0.026
			JP035 1	\$ 0.026
			JP556 1	\$ 0.026
			JP703 1	\$ 0.026
BYYY0052007	JUMPER WIRE	YY-052 20.0MM	JP007 1	\$ 0.026
			JP032 1	\$ 0.026
			JP036 1	\$ 0.026
BYYY0052009	JUMPER WIRE	YY-052 25.0MM	JP031 1	\$ 0.026
CUAB008021Z	WIRE	UL 1007 #24 5- 80- 3 RED	1	\$ 0.086
CUAC008021Z	WIRE	UL 1007 #24 5- 80- 3 ORG	1	\$ 0.086
CUAH015021Z	WIRE	UL 1007 #24 5-150- 3 GRV	1	\$ 0.119
			1	\$ 0.119
CUAJ003041Z	WIRE	UL 1007 #24 10- 30- 3 WHT	1	\$ 0.073
CUAK011044Z	WIRE	UL 1007 #24 10-110-10 BLK	1	\$ 0.092
CUAV005011Z	WIRE	UL 1007 #24 3- 50- 3 PNK	1	\$ 0.073
CUKC004044Z	WIRE	UL 1007 #28 10- 40-10 ORG	1	\$ 0.073
GCMF218707Z	PANEL:FRONT	ABS DARK GRAY PAINT	1	\$ 3.346
GHDL418694Z	HOLDER:LED	ABS NATURAL	1	\$ 0.317
GMSC405736Z	SCREW:MOUNTING	ABS INST CLR BLACK	2	\$ 0.356
GNBC418695Z	KNOB:CHANNEL	ABS,BLACK	1	\$ 0.370
GNBY418593A	KNOB	ABS,BLACK	3	\$ 0.284
HBCT418696Z	MOUNTING BRACKET	SPCC,1.2T,MFZN3	1	\$ 0.000
HCMB318697Z	COVER:BOTTOM	VINYTOP E,0.75T BLACK	1	\$ 0.000

(MODEL)  
UT317AT

PRO-520E

(PARTS CODE)	(DESCRIPTION)	(SYMBOL)	(Q'TY)	(LIST PRICE)
HCMT318698Z	COVER:TOP	VINYTOP E,0.75T,BLACK	1	\$ 0.000
HCSY218708A	CHASSIS	SECC 1.0T NONOIL	1	\$ 0.000
HHDC418700A	HOLDER:JACK	SECC,1.0T	1	\$ 0.231
HHSK418924Z	HEAT:SINK	C5191R,0.5T	1	\$ 0.568
HMHG402919Z	HANGER:MICROPHONE	SPCC,1.0T,NI	1	\$ 0.356
HSDP403852Z	SHIELD PLATE	SPTE,0.3T,NON OIL	1	\$ 0.119
JDPF418709Z	ID PLATE:FCC	ALP 0.5T	1	\$ 0.422
KDPT418702Z	PLATE:WINDOW	POLYCARBO,0.5T,BLACK	1	\$ 0.515
PLBC419000Z	LABEL:WARNING,DC CORD	PAPER,PRINT	1	\$ 0.053
PLBZ412255B	LABEL:CHECK	PAPER PRINT	1	\$ 0.053
RUTC418435Z	WOOL-COATED PAPER:WOOL TACK	WOOL PAPER,100*5*0.3T	4	\$ 0.026
SSCW133005N	SCREW:FLAT HD +	M3X5 NI	2	\$ 0.020
SSCW193008B	SCREW:BIND HD +	M3X8 BNI	4	\$ 0.020
SSCW193008N	SCREW:BIND HD +	M3X8 NI	1	\$ 0.020
SSCW293508N	SCREW:TAPPING ROUND HD +	D3.5X8 NI	2	\$ 0.066
SSCW295010N	SCREW:TAPPING ROUND HD +	D5X10 NI	2	\$ 0.112
SSCW343006B	SCREW:TAPTIGHT BIND HD +	M3X6 BNI	8	\$ 0.066
SSCW343006N	SCREW:TAPTIGHT BIND HD +	M3X6 NI	4	\$ 0.066
SSCW430030N	HEX NUT	M3.0 NI	1	\$ 0.046
SSCW480030N	NUT:FLANGE	M3 NI	4	\$ 0.073
SSCW530035N	WASHER:LOCK	D3.5 NI	2	\$ 0.026
SSCW540050N	WASHER:STAR	D5 NI	2	\$ 0.046
SSCW803006N	SCREW:P TIGHT BIND HD +	D3X6 NI	1	\$ 0.066
TSTD0200003	SPRING PLATE:KNOB	D6.02XL9.53	4	\$ 0.389
TSTD0213232	RIVET:AL,ID PLATE	D3.2X3.2	2	\$ 0.158
UTUD01317AZ	OWNER'S MANUAL	**	1	\$ 0.000

(MODEL)  
UT317AT

PRO-52GE

(PARTS CODE)(DESCRIPTION)		(SYMBOL)	(Q'TY)	(LIST PRICE)
UTYY58000ZA FCC RULES RART 95	**		1	\$ 0.389
VNYL1081800 VINYL BAG		80X180X0.05T	1	\$ 0.026
VNYL1122800 VINYL BAG		120X280X0.05T	1	\$ 0.086
VNYL2323765 VINYL		320X370X650X0.07	0.08333	\$ 1.406
VNYL3101200 VINYL BAG		100X120X0.1T	1	\$ 0.053
VNYL3173200 VINYL BAG		170X320X0.1T	1	\$ 0.139
WBXC318710Z DISPLAY BOX	**		1	\$ 0.000
WCTZ418711Z SHIPPING CARTON BOX	**		0.08333	\$ 0.000
WSFC318705Z STYROFOAM PAD	**		2	\$ 0.851
WSLV418706Z SLEEVE	**		1	\$ 0.403
		TOTAL >>>>>>>>>		194.863

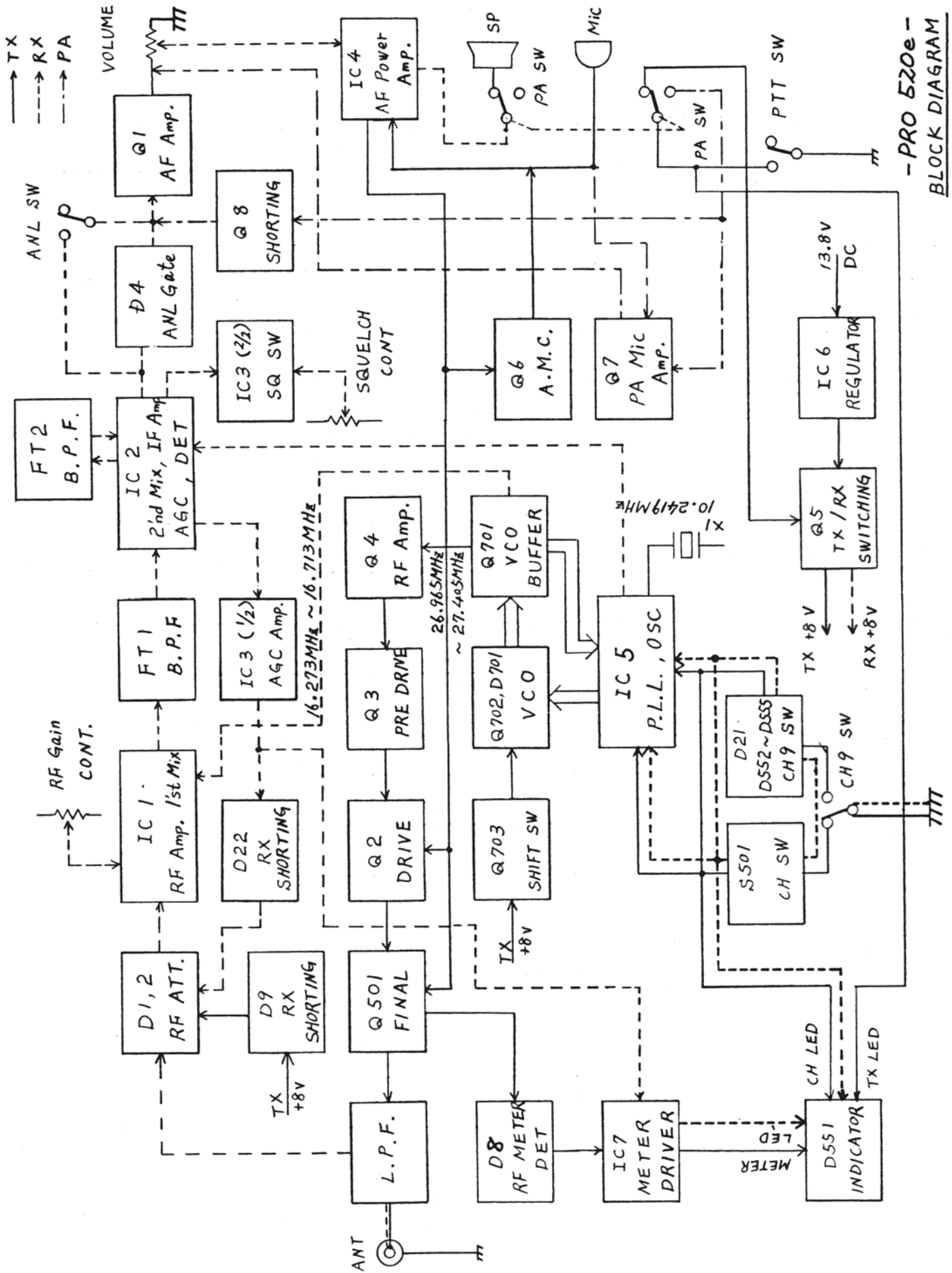
## 7. FREQUENCY CHART

Frequency Chart of Fvco and Divide Ratio N

Antenna Frequency (MHz)	Channel Number	For Trasmit (R/T=H) Divide Ratio (N)	VCO Frequency (MHz)	For Receive (R/T=L) Divide Ratio (N)	VCO Frequency (MHz)
26.965	1	2696	26.965	1627	16.273
26.975	2	2697	26.975	1628	16.283
26.985	3	2698	26.985	1629	16.293
27.005	4	2700	27.005	1631	16.313
27.015	5	2701	27.015	1632	16.323
27.025	6	2702	27.025	1633	16.333
27.035	7	2703	27.035	1634	16.343
27.055	8	2705	27.055	1636	16.363
27.065	9	2706	27.065	1637	16.373
27.075	10	2707	27.075	1638	16.383
27.085	11	2708	27.085	1639	16.393
27.105	12	2710	27.105	1641	16.413
27.115	13	2711	27.115	1642	16.423
27.125	14	2712	27.125	1643	16.433
27.135	15	2713	27.135	1644	16.443
27.155	16	2715	27.115	1646	16.463
27.165	17	2716	27.165	1647	16.473
27.175	18	2717	27.175	1648	16.483
27.185	19	2718	27.185	1649	16.493
27.205	20	2720	27.205	1651	16.513
27.215	21	2721	27.215	1652	16.523
27.225	22	2722	27.225	1653	16.533
27.255	23	2725	27.255	1656	16.563
27.233	24	2723	27.235	1654	16.543
27.245	25	2724	27.245	1655	16.553
27.265	26	2726	27.265	1657	16.573
27.275	27	2727	27.275	1658	16.583
27.285	28	2728	27.285	1659	16.593
27.295	29	2729	29.295	1660	16.603
27.305	30	2730	27.305	1661	16.613
27.315	31	2731	27.315	1662	16.623
27.325	32	2732	27.325	1663	16.633
27.335	33	2733	27.335	1664	16.643
27.345	34	2734	27.345	1666	16.663
27.365	36	2736	27.365	1667	16.673
27.375	37	2737	27.375	1668	16.683
27.385	38	2738	27.385	1669	16.693
27.395	39	2739	27.395	1670	16.703
27.405	40	2740	27.405	1671	16.713

## **8. TECHNICAL DRAWINGS**

# BLOCK DIAGRAM



- PRO 520e -  
BLOCK DIAGRAM



Q1	25C945AQ
Q2	25C2086D
Q3	25C941TH101
Q4	25C1675L
Q5	25A733A-PB
Q6	25C945AQ
Q7	25C945AQ
Q8	25C945AQ

L1	LA279
L2	LA138
L3	LA204
L4	LE096
L5	LE096
L6	LC074
L7	LD168
L8	LD087
L9	LC072
L10	LE187
L11	LA204

IC1	LA1185
IC2	TDA1220B
IC3	M5223L
IC4	TDA1905
IC5	SMS124A
IC6	L7808CV
IC7	LB1423

Y11	YD058
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D1	1S1555
D2	1S1555
D3	1S1555
D4	1S1555
D5	1S1555
D6	1S1555
D7	1N4003
D8	1S1555
D9	1S1555
D10	HZ6C1
D11	1S1555
D12	1S1555
D13	1S1555
D14	1S1555
D15	1S1555
D16	1S1555
D17	1S1555
D18	1N4003
D19	1S1555
D20	1S1555
D21	1S1555
D22	1S1555
D23	1S1555
D24	1S1555
D25	1S1555
D26	1N60AM

FT1	FL048
FT2	FL221

J3	JK089
J4	JK089

T1	TF215
T2	TF083

VR1	20KB
VR2	500KB
VR3	100KB
VR4	1KB

X1	QX250 10.2419MHz
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JP1	12.5
JP2	7.5
JP3	5
JP4	12.5
JP5	7.5
JP6	7.5
JP7	20
JP8	15
JP9	17.5
JP10	17.5
JP11	10
JP12	5
JP13	7.5
JP14	7.5
JP15	12.5
JP16	15
JP17	12.5
JP18	15
JP19	17.5
JP20	7.5
JP21	10
JP22	7.5
JP24	15
JP25	7.5
JP26	12.5
JP27	17.5
JP28	5
JP29	10
JP30	7.5
JP31	25
JP32	20
JP33	10
JP34	12.5
JP35	17.5
JP36	20
JP37	15
JP38	5
JP39	12.5

C1	18P/UJ
C2	0.001/YD
C3	0.0047
C4	0.047/ZF
C5	0.01
C6	0.001/YD
C7	82P/UJ
C8	0.0047
C9	0.01
C11	0.047/SR
C12	50V4.7
C13	0.001/YD
C14	10V47
C16	10V47
C17	0.001/YB
C18	50V0.22
C19	0.01/SR
C21	50V1
C22	0.001/YB
C23	0.047/SR
C24	0.047/SR
C25	0.022/SR
C26	50V4.7
C27	0.0082/SR
C28	50V4.7
C31	0.0047
C32	50V2.2
C33	220P/CH
C34	33P/CH
C35	220P/CH
C36	330P/UJ
C37	50V1
C40	2P/CK
C41	220P/UJ
C42	0.001/YD
C43	0.0047
C44	0.01/YD
C45	470P/UJ
C46	0.01
C47	0.001/YD
C48	0.001/YB

C51	25V470
C52	25V1000 C-095
C53	10V47
C54	0.1/SR
C55	50V2.2
C56	50V1
C57	0.01/SR
C58	0.047/SR
C59	0.1/SR
C60	0.0047
C61	50V2.2
C62	0.01/SR
C63	50V2.2
C64	50V2.2
C65	12P/UJ
C66	10V220
C67	0.047/ZF
C68	56P/CH
C69	560P
C70	50V4.7
C71	10V47
C72	50V0.47
C73	16V10
C74	0.1/SR
C75	10V22
C76	10V47
C77	10V22
C78	0.022/SR
C79	0.022/SR
C81	0.047/SR
C82	10V100
C83	0.01/SR
C84	0.001/YD
C85	0.001/YD
C86	0.001/YD
C87	16V10
C88	0.01
C89	0.047/SR
C90	0.001/YD
C92	0.047/SR
C94	50V1
C95	0.0047/YD
C96	0.01/YD

C97	0.0047/YD
C101	33P/UJ
C103	0.001/YD
C104	0.0047

R1	2.7 3W
R2	8.2 3W
R3	27K 1/6W
R4	22
R5	100
R6	330
R7	1K
R11	100
R13	220
R14	3.3K
R15	560
R17	150K
R18	150K
R19	220K
R21	1M
R22	10K
R23	4.7M
R25	2.2M
R26	68K
R27	1.2K
R28	6.8K
R29	2.2K
R30	10K
R31	330K
R32	47K
R33	390K
R34	560K
R35	5.6K
R36	1K
R37	1M
R38	330
R39	330K
R41	330K
R42	27K
R43	27K
R44	2.2K
R45	680
R46	330
R48	15
R49	5.6
R51	100
R53	100

R54	27
R55	8.2K
R56	15K
R57	180
R58	180
R59	15K
R61	10K
R62	5.6K
R64	150
R65	560
R66	3.3K
R67	1
R68	100
R69	82K
R71	4.7K
R72	5.6K
R73	5.6K
R74	27K
R75	6.8K
R76	56K
R77	12K
R78	27K
R79	10K
R81	2.2K
R82	150
R83	10K
R84	6.8K
R85	33
R86	5.6K
R87	15K
R88	2.2K
R89	8.2K
R91	1.8K
R92	39K
R93	1K
R94	100K
R95	220
R96	3.9K
R97	47K
R98	100K
R99	2.2K
R101	10K
R102	680

R103	680
R104	680
R105	680
R106	680
R107	680
R108	470
R109	10K
R110	4.7M
R111	5.6K
R112	390K
R113	1K
R114	150
R115	1K

- NOTES:
- RESISTANCE VALUES ARE SHOWN IN OHMS UNLESS OTHERWISE NOTED. 1K=KILO OHM, M=MEG OHM
  - RESISTOR WATTAGES ARE 1/8W UNLESS OTHERWISE NOTED.
  - CAPACITANCE VALUES ARE INDICATED IN MICRO FARADS UNLESS OTHERWISE NOTED.(P=MICRO-MICRO FARAD)
  - ALL CAPACITORS TEMPERATURE CHARACTERISTICS ARE SL (LESS THAN 1000PF) OR YF (MORE THAN 1000PF) UNLESS OTHERWISE NOTED.

DESIGN BY	DRAWN BY	UNIDEN NO.	MODEL NO.
8/11/3	61.11.10	UT-317A	PRO520e
Kenji	TANAKA	TITLE MAIN PCB	
CHECK BY	APPRO. BY	PARTS ASSEMBLY TOP VIEW	
		E22-6652	
		REV	MARE

C551	0.0047/YF
C552	0.0047/YF

R551	330
R552	2.7K
R553	3.9K
R554	1K
R555	2.2K

R556	1K
R557	470
R558	680
R559	680
R561	680
R562	680
R563	680
R564	680
R565	680
R566	680
R567	10K

JP551	10
JP552	7.5
JP553	5
JP554	7.5
JP555	7.5
JP556	17.5
JP557	5

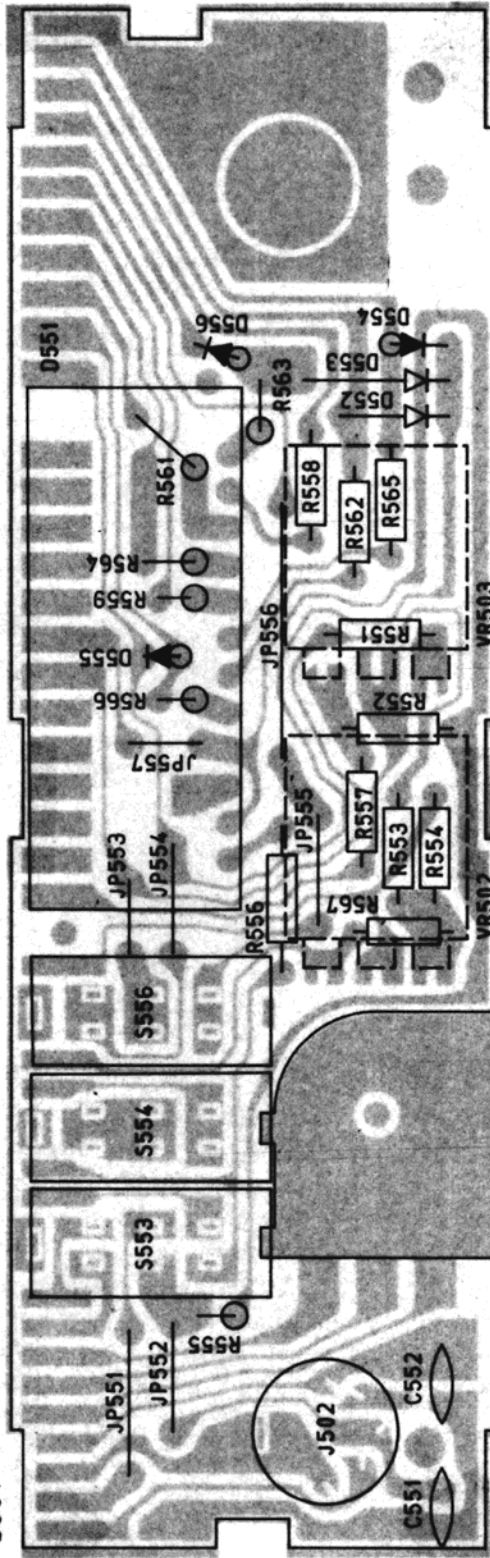
D551	LL2041T
D552	1S1555
D553	1S1555
D554	1S1555
D555	1S1555
D556	1S1555

S553	SW557
S554	SW557
S556	SW557

VR502	RV650
VR503	RV652

J502	JK374

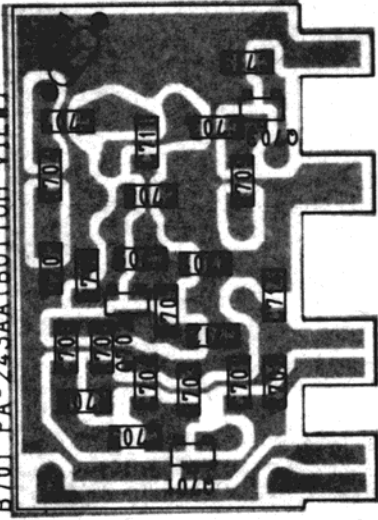
B551 PA249AA



- NOTES:
1. RESISTANCE VALUES ARE SHOWN IN OHMS UNLESS OTHERWISE NOTED. (K-KILO OHM, M-MEG OHM)
  2. RESISTOR WATTAGES ARE 1/6W UNLESS OTHERWISE NOTED.
  3. CAPACITANCE VALUES ARE INDICATED IN MICRO FARADS UNLESS OTHERWISE NOTED. (P-MICRO-MICRO FARAD)

DESIGN BY	UNIDEN NO.	MODEL NO.
86/11/3	UT-317A	PRO 520e
Yamaguchi	TITLE	FRONT PCB
CHECK BY	APPRO BY	PARTS ASSEMBLY TOP VIEW
		REV. MARK
		E24-6654

B701 PA-243AA (BOTTOM VIEW)



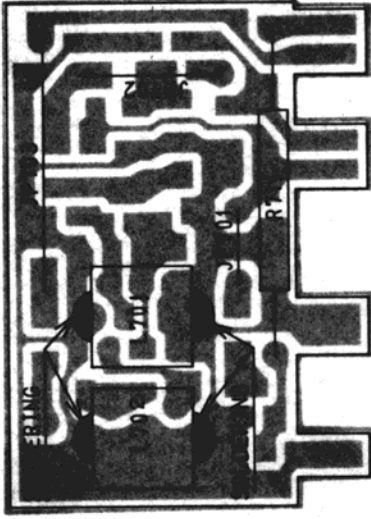
C701	39P/SL
C702	0.01/Y
C703	0.01/Y
C704	0.01/Y
C705	39P/SL
C706	15P/CH
C707	47P/SL
C708	100P/B
C709	330P/B
C711	39P/SL
C712	68P/SL
C713	0.01/Y
C714	0.01/Y

R701	33K
R702	100
R703	390
R704	10K
R705	39K
R706	100
R707	15K
R708	330
R709	56K

Q701	25C2814F5
Q702	25C2814F5
Q703	25C2814F5

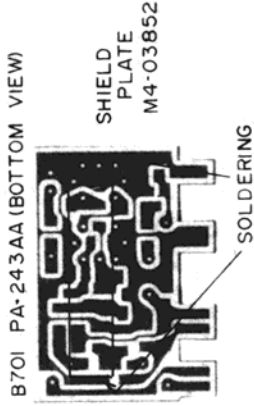
D701	15V73EB

B701 PA-243AA (TOP VIEW)



JP701	5
JP702	10
JP703	17.5
L701	LB537
L702	LB537

R711	1K



B701 PA-243AA (BOTTOM VIEW)



- NOTES:
1. RESISTANCE VALUES ARE SHOWN IN OHMS UNLESS OTHERWISE NOTED. (K=KILO OHM, M=MEG OHM)
  2. RESISTOR WATTAGES ARE 1/8W UNLESS OTHERWISE NOTED.
  3. CAPACITANCE VALUES ARE INDICATED IN MICRO FARADS UNLESS OTHERWISE NOTED. (P=MICRO-MICRO FARAD)

DESIGN BY	DRAWN BY	UNIDEN NO.	MODEL NO.
84/11/3	61.11.4	UT-317A	PRO520e
Tanaka	TANAKA	TITLE	VCO PCB
CHECK BY	APPRO BY	PARTS ASSEMBLY	
		REV. MARK	
		E24-6655	

UNIDEN CORP.