MOTOROLA

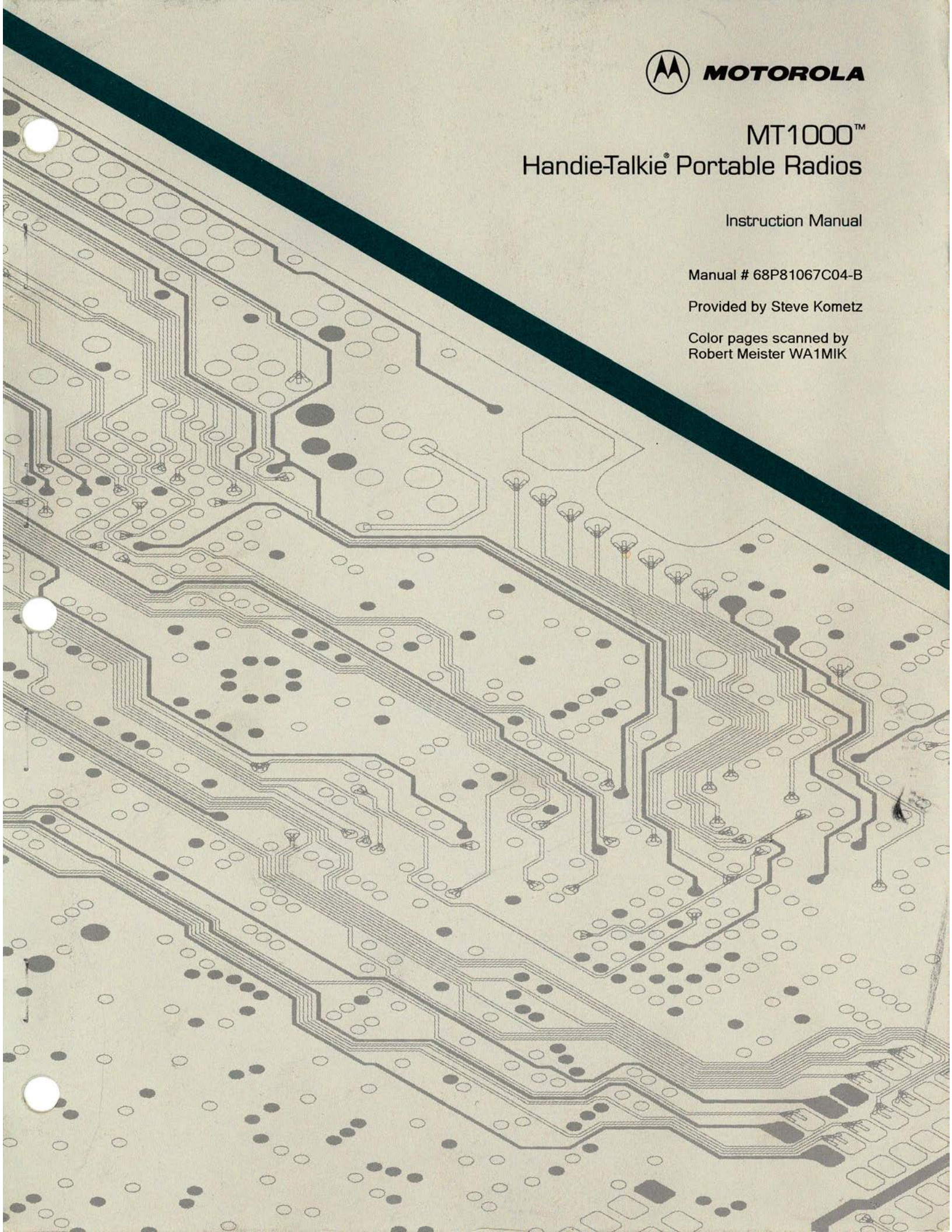
MT1000™
Handie-Talkie® Portable Radios

Instruction Manual

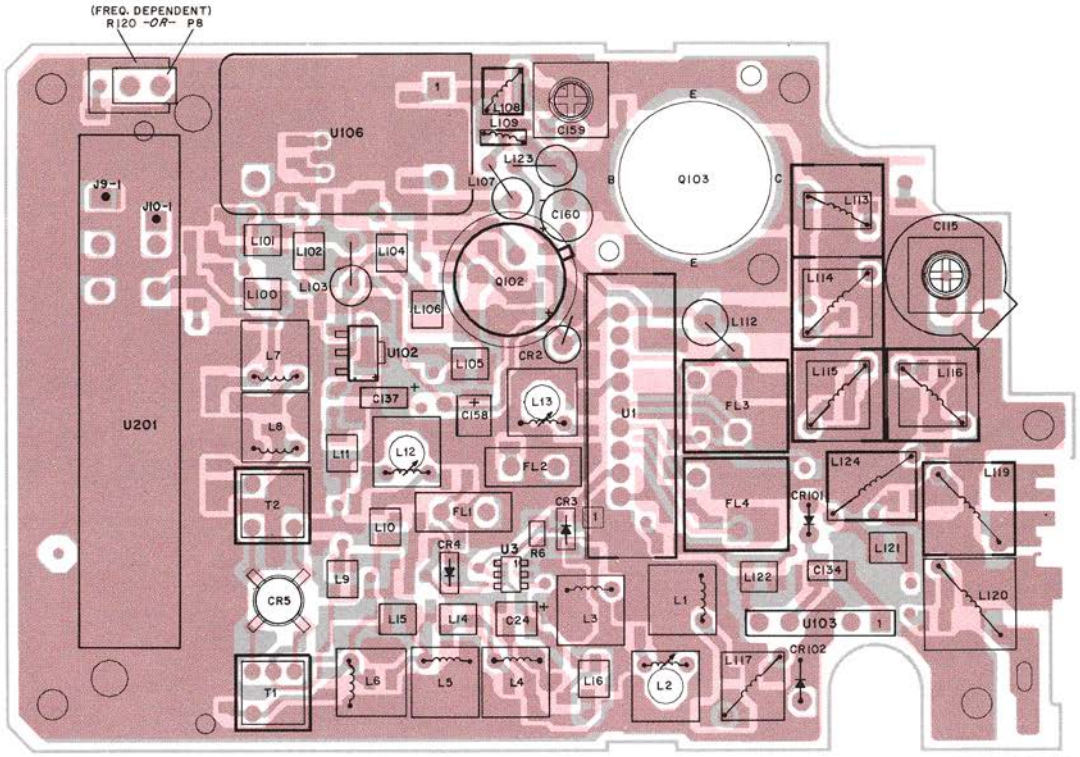
Manual # 68P81067C04-B

Provided by Steve Kometz

Color pages scanned by
Robert Meister WA1MIK

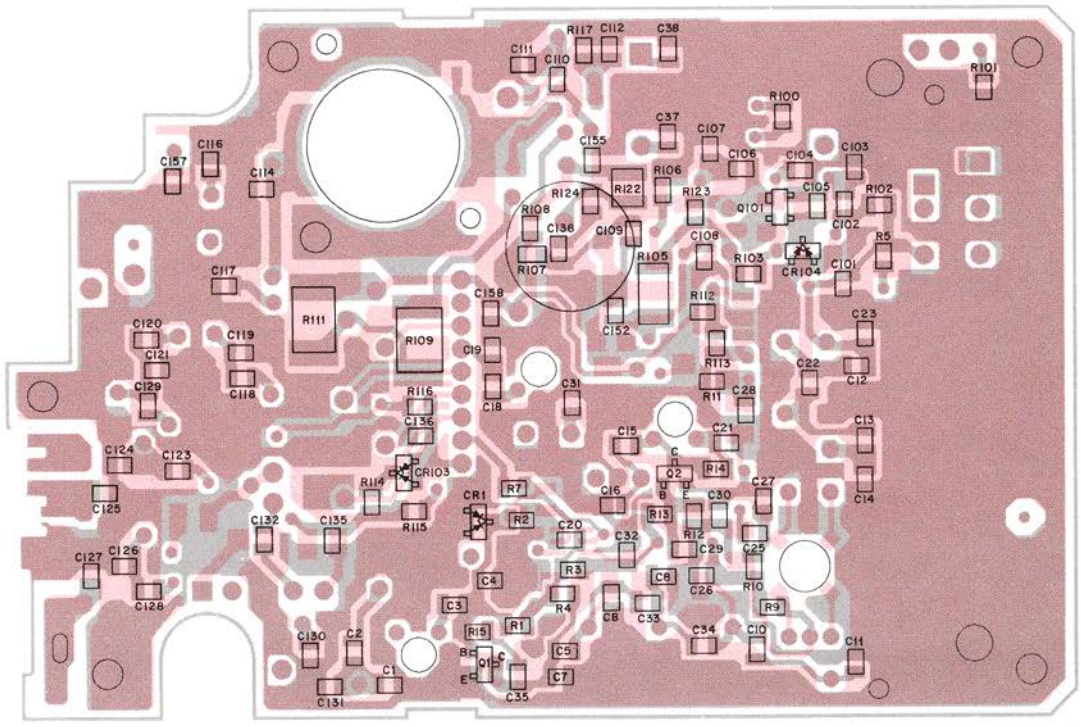


VIEWED FROM SIDE 1 (COMPONENT SIDE)



L4-CEPF-21251-O
L1-CEPF-21250-O
OL-CEPF-21252-A

VIEWED FROM SIDE 2 (SOLDER SIDE)



L1-CEPF-21254-O
L4-CEPF-21253-O
OL-CEPF-21255-A

SCHEMATIC AND CIRCUIT BOARD NOTES

1. UNLESS OTHERWISE STATED, RESISTANCES ARE IN OHMS (K=1000), CAPACITANCES ARE IN PICO FARADS UNLESS OTHERWISE STATED.
2. DC VOLTAGES ARE MEASURED FROM POINT INDICATED TO CHASSIS GROUND USING MOTOROLA DC MULTIMETER OR EQUIVALENT. TRANSMITTER MEASUREMENTS SHOULD BE MADE WITH A 1.2µH RF CHOKE IN SERIES WITH VOLTAGE PROBE TO PREVENT CIRCUIT LOADING.
3. REFERENCE DESIGNATIONS ARE ASSIGNED IN THE FOLLOWING MANNER:

   UNIT SERIES = RECEIVER
   100 SERIES = TRANSMITTER
   200 SERIES = VCO & SYNTHESIZER
   300 SERIES = MISCELLANEOUS
   400 SERIES = CONTROLLER FLEX
   500 SERIES = DISPLAY BOARD
   800 SERIES = SIGNALLING (CONTROLLER FLEX)

4. INTERCONNECT TIE POINT LEGEND:

   (5V REG) REGULATED 5V
   [M] TO MOTHER BOARD
   (M1) METERING POINT M1, M2, M3
   (R) RECEIVER 10V
   [S] TO SYNTHESIZER BOARD
   (T) TRANSMIT 10V
   [T] TO CONTROL TOP FLEX
   [U] TO UNIVERSAL CONNECTOR
   [F] TO FRONT COVER
   (V8) REGULATED 8V

VOLTAGE OVERLAY AND WAVEFORM NOTES

1. 7MV SIGNAL GENERATOR LEVEL. PLACE A 47Ω RESISTOR ACROSS L10 TO REDUCE 1ST L.O. INJECTION FEED THROUGH.
2. BASE OF Q102 SHORTED TO GROUND.
3. INJECT (AT SELECTED ANTENNA) AN ON CHANNEL SIGNAL AT 1MV, 1KHZ MODULATION AT 3KHZ DEVIATION.
4. VERIFY USING PROGRAMMER.
5. EXTERNAL SIGNAL FROM AUDIO SIGNAL GENERATOR AT MIC INPUT.

SCHEMATIC AND RCUIT BOARD NOTES

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GULATED 5V
MOTHER BOARD
TERING POINT M1, M2, M3
CEIVER 10V
SYNTHESIZER BOARD
ANSMIT 10V
CONTROL TOP FLEX
UNIVERSAL CONNECTOR
FRONT COVER
GULATED 8V

LTAGE OVERLAY AND WAVEFORM NOTES

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OF Q102 SHORTED TO D.

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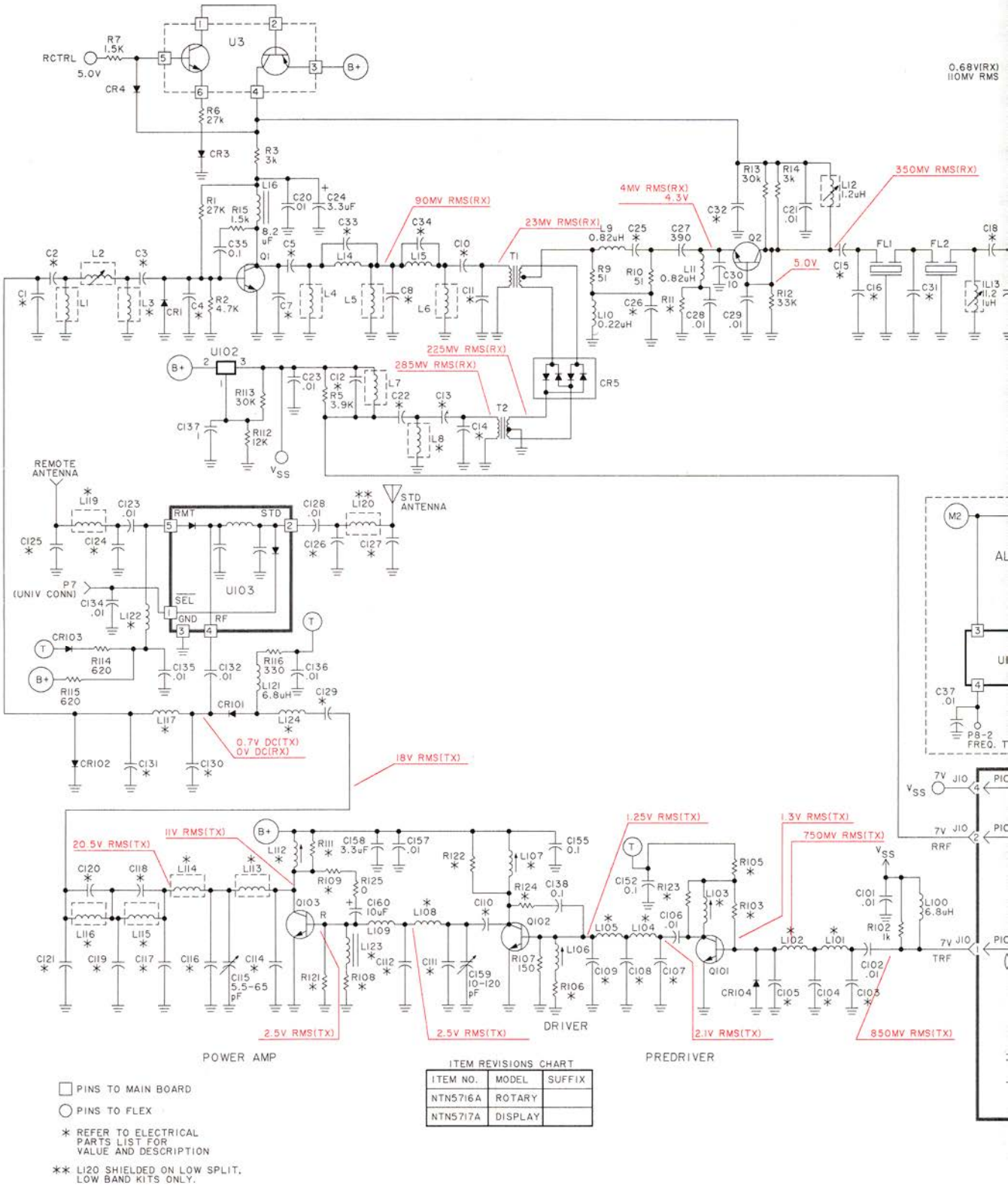
USING PROGRAMMER.

NAL SIGNAL FROM AUDIO GENERATOR AT MIC INPUT.



PINS TO MAIN BOARD

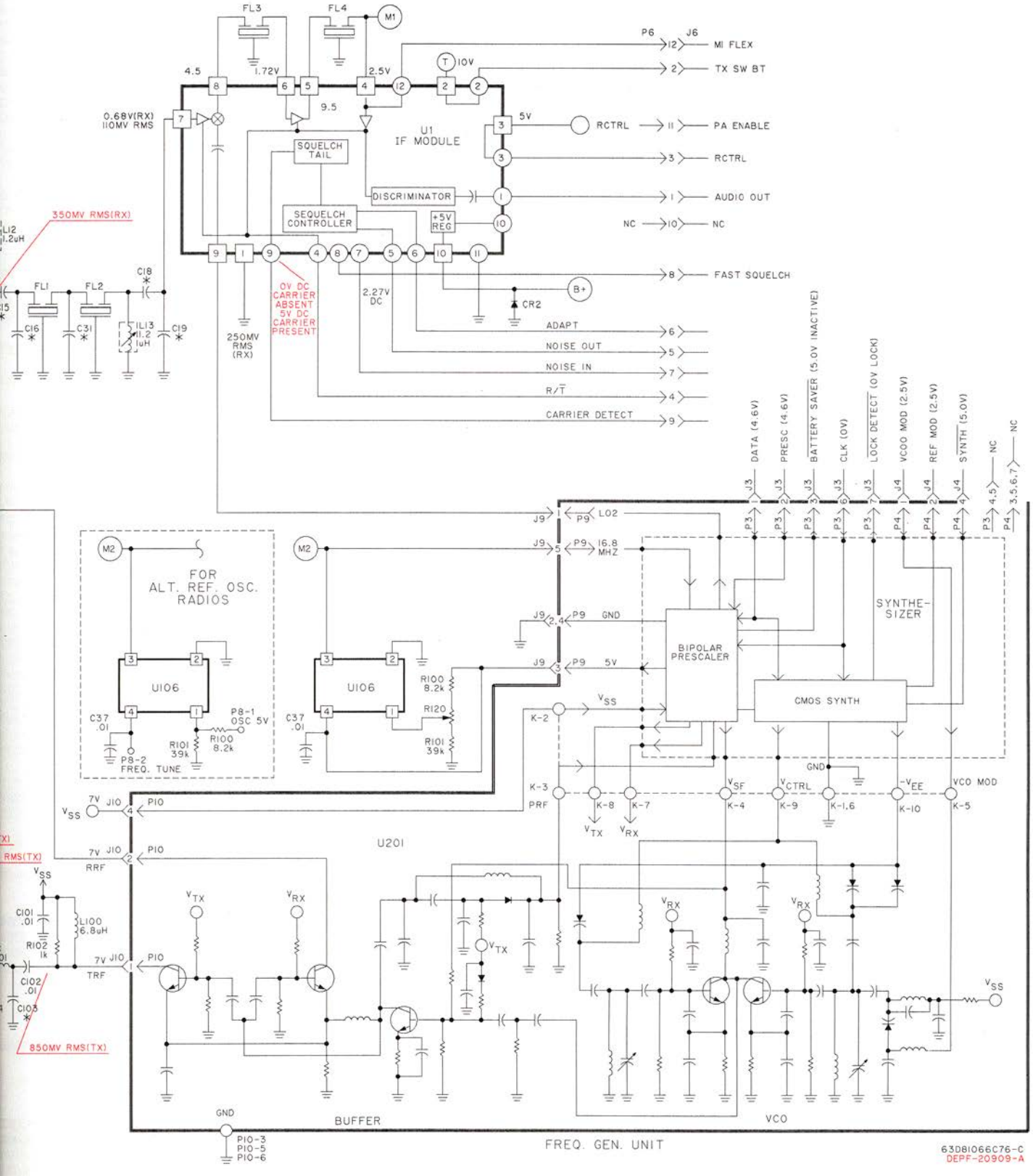
PINS TO FLEX

* REFER TO ELECTRICAL PARTS LIST FOR VALUE AND DESCRIPTION

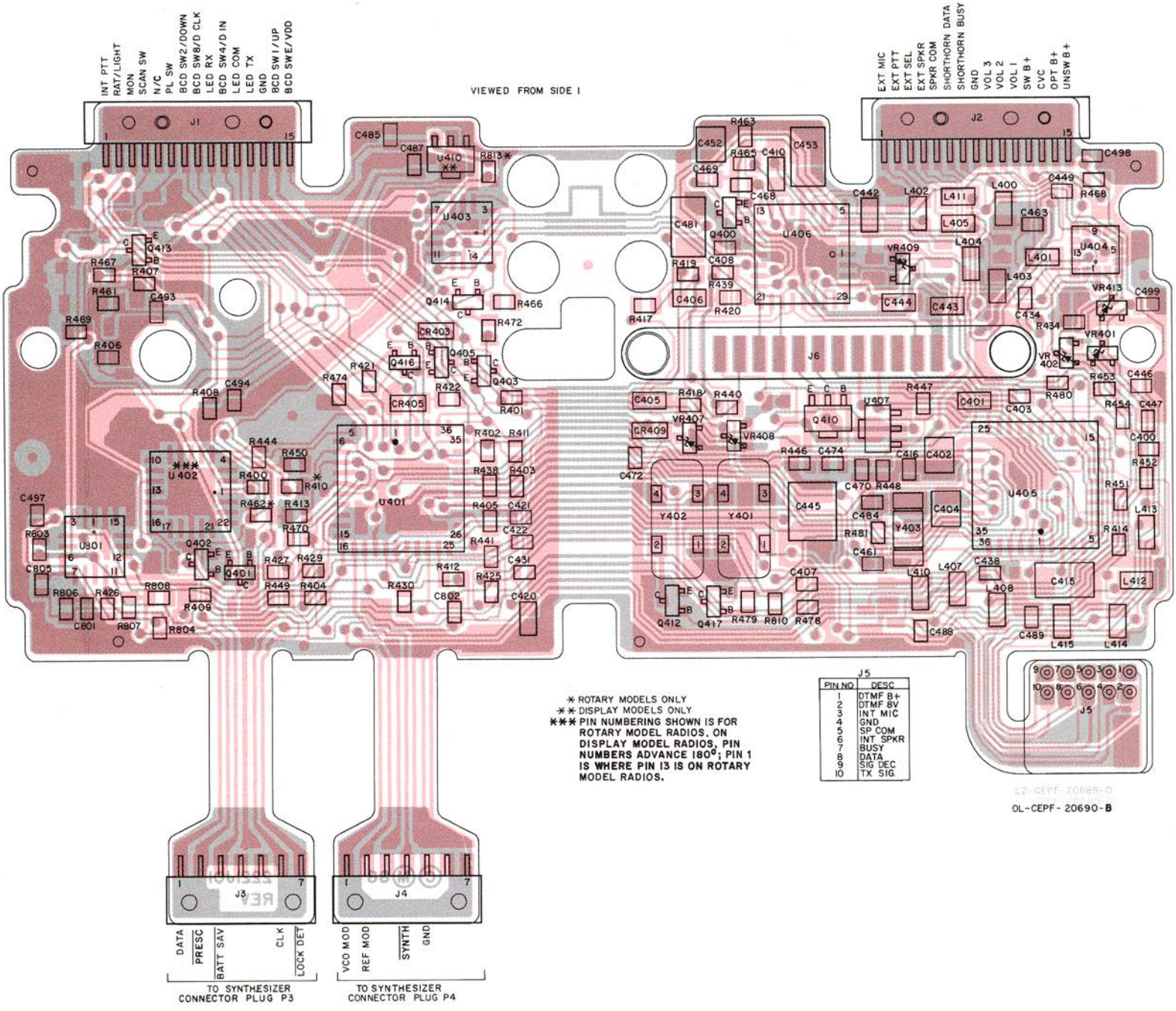
** L120 SHIELDED ON LOW SPLIT, LOW BAND KITS ONLY.

ITEM REVISIONS CHART

ITEM NO.	MODEL	SUFFIX
NTN5716A	ROTARY	
NTN5717A	DISPLAY	



LOWBAND TRANSCEIVER SCHEMATIC DIAGRAM AND COMPONENT LOCATION DIAGRAMS



LOWBAND TRANSCEIVER PARTS LIST AND LOWBAND CONTROLLER COMPONENT LOCATION DIAGRAM

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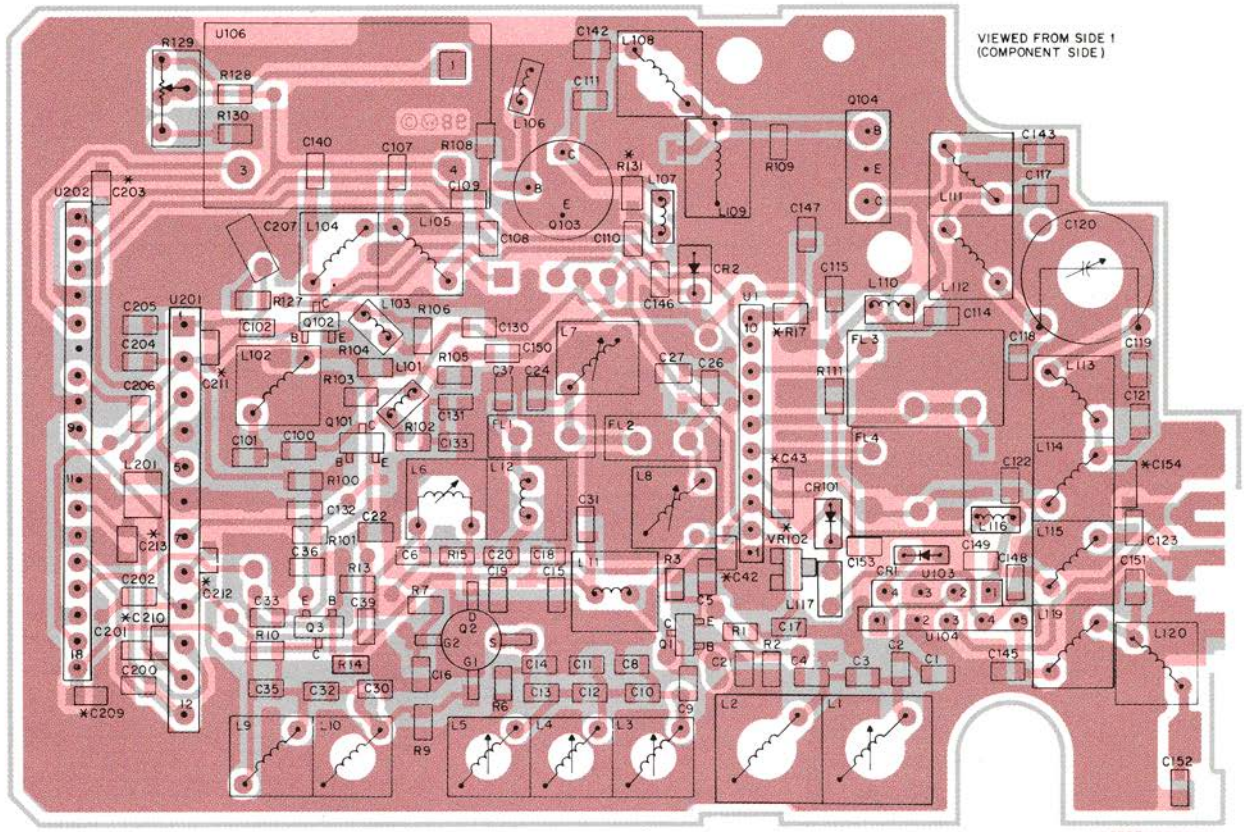
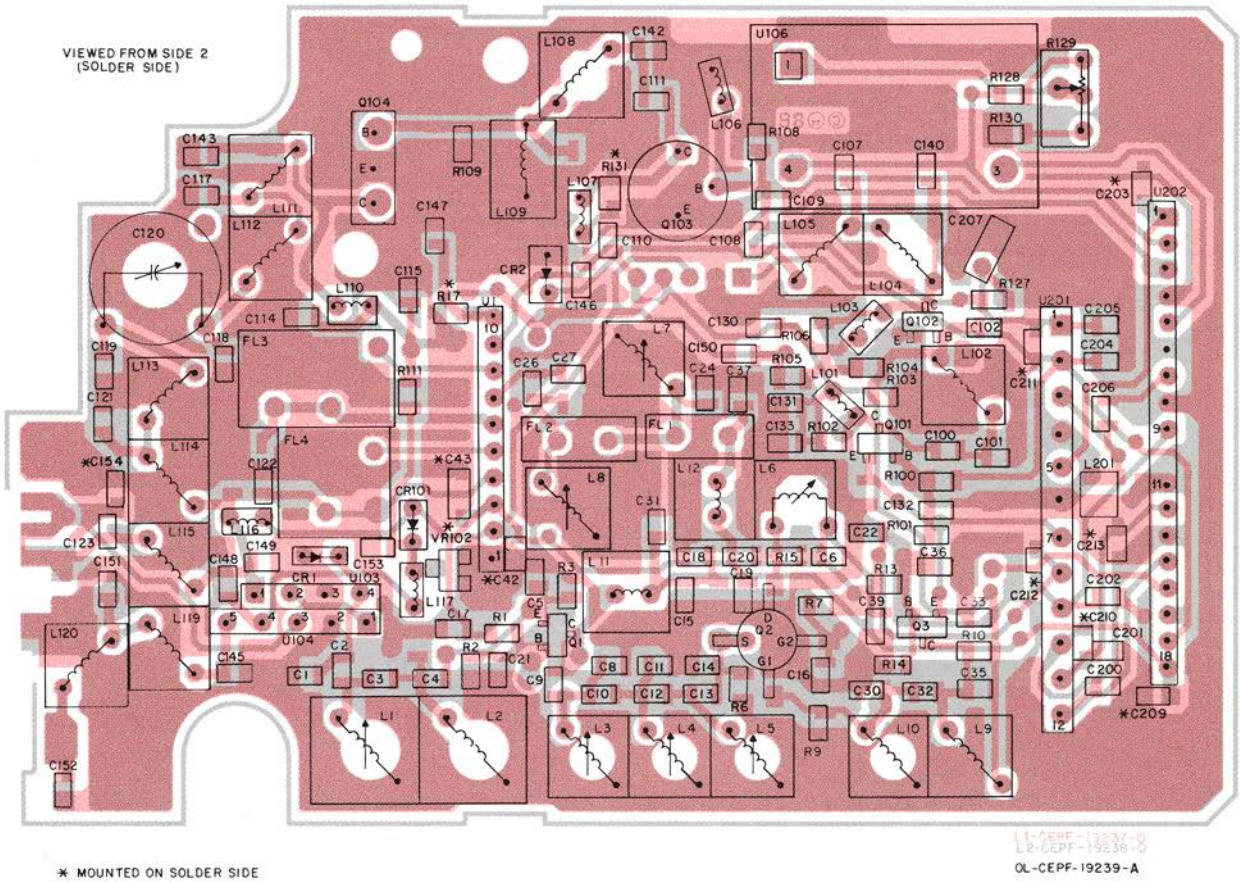
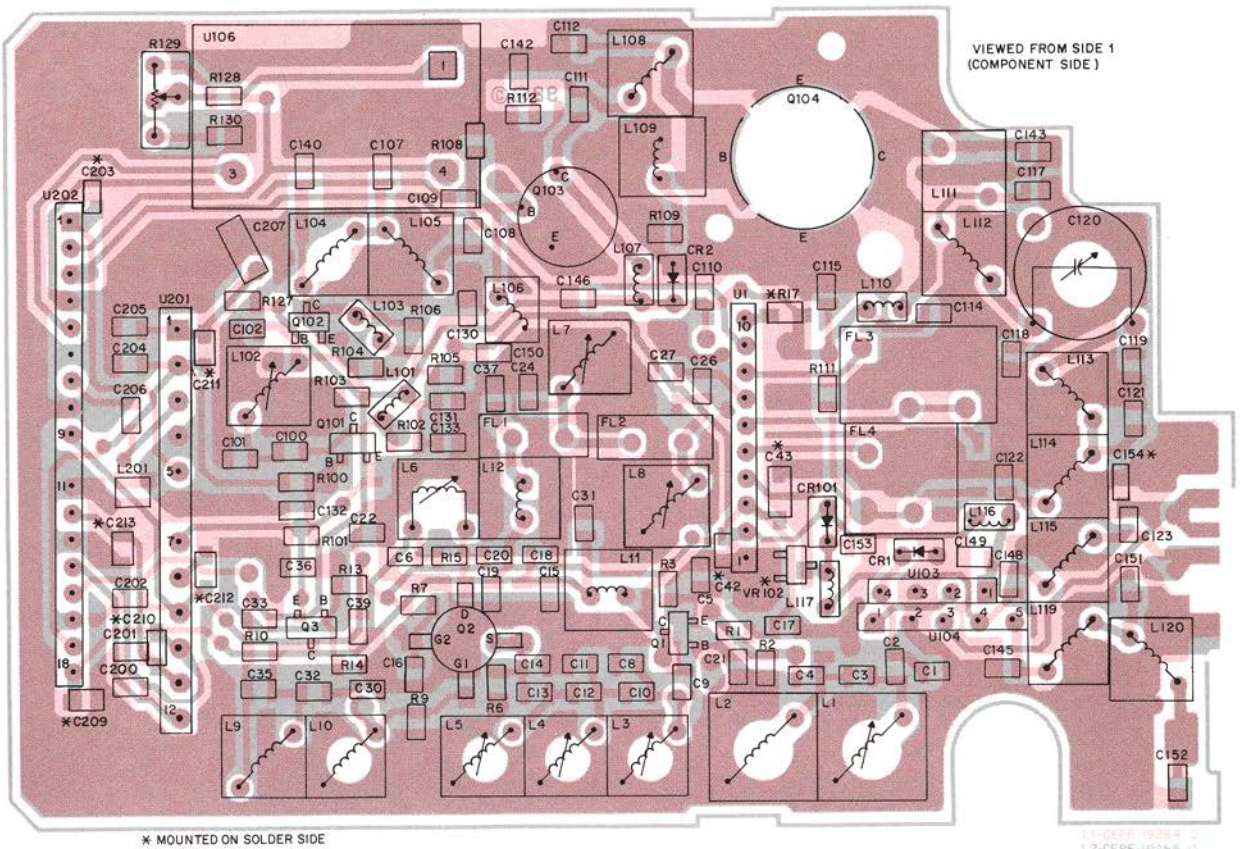


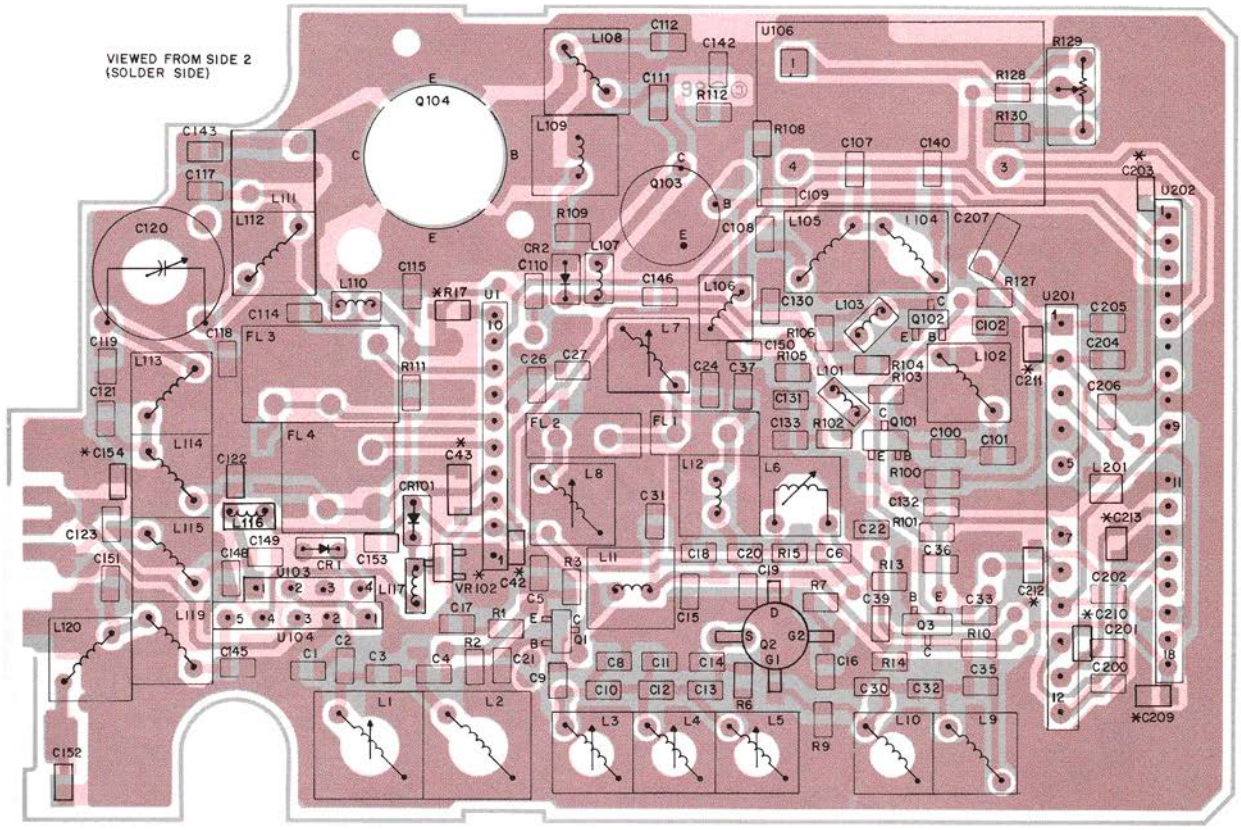


LOWBAND CONTROLLER FLEX PARTS LIST AND VHF TRANSCEIVER COMPONENT LOCATION DIAGRAMS (2W, 136-150.8MHz)

64

VHF 5-WATT RADIOS (136-150.8MHz)





SCHEMATIC AN

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PICOFARADS.
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OR EQUIVALENT. TRA
BE MADE WITH A 1.2uH
PROBE TO PREVENT C
3. REFERENCE DESI
FOLLOWING MANNER:

UNIT SERIES	=
100 SERIES	=
200 SERIES	=
300 SERIES	=
400 SERIES	=
500 SERIES	=
800 SERIES	=

4. INTERCONNECT TIE

A	B+ TO MOTHER BOARD
B	CONTROLLER FLEX B+
5V REG.	REGULATED 5V
M	TO MOTHER BOARD
M1	METERING POINT M1.
R	RECEIVER 10V
R5	RECEIVER 5V
S	TO SYNTHESIZER BOA
T	TRANSMIT 10V
T5	TRANSMIT 5V
T	TO CONTROL TOP FLE
U	TO UNIVERSAL CONNE
*	TO FRONT COVER
V1	REGULATED 8V

VOLTAGE OVE

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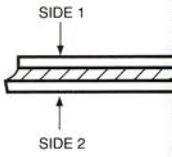
ACROSS L10 TO RE
THROUGH.
2. BASE OF Q102 SHO
3. INJECT (AT SELE
SIGNAL AT 1mV, 1kHz M
4. VERIFY USING PRO
5. EXTERNAL SIGNAL
MIC INPUT.

2-LAYER CIRCUIT
COPPER STEPS A
LAYER SEQUENCE



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4. INTERCONNECT TIE POINT LEGEND:

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- (B) CONTROLLER FLEX B+
- (5V REG) REGULATED 5V
- [M] TO MOTHER BOARD
- (M1) METERING POINT M1, M2, M3
- (R) RECEIVER 10V
- (R5) RECEIVER 5V
- [S] TO SYNTHESIZER BOARD
- (T) TRANSMIT 10V
- (T5) TRANSMIT 5V
- [T] TO CONTROL TOP FLEX
- [U] TO UNIVERSAL CONNECTOR
- [✳] TO FRONT COVER
- (V1) REGULATED 8V

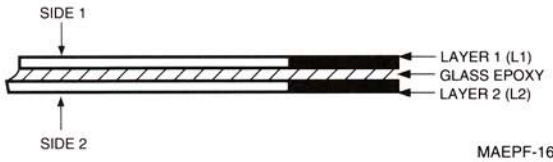
TEPF-18821-A

VOLTAGE OVERLAY AND WAVEFORM NOTES

1. 7mV SIGNAL GENERATOR LEVEL. PLACE A 47 Ω RESISTOR ACROSS L10 TO REDUCE 1ST L.O. INJECTION FEED THROUGH.
2. BASE OF Q102 SHORTED TO GROUND.
3. INJECT (AT SELECTED ANTENNA) AN ON CHANNEL SIGNAL AT 1mV, 1kHz MODULATION AT 3kHz DEVIATION.
4. VERIFY USING PROGRAMMER.
5. EXTERNAL SIGNAL FROM AUDIO SIGNAL GENERATOR AT MIC INPUT.

TEPF-18822-A

2-LAYER CIRCUIT BOARD COPPER DETAIL VIEWING COPPER STEPS AT EDGE OF BOARD IN PROPER LAYER SEQUENCE.



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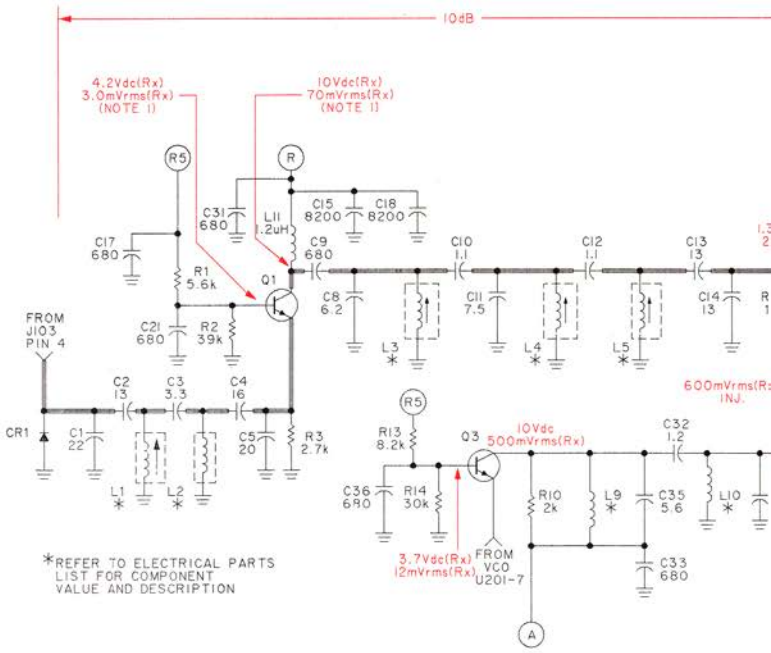
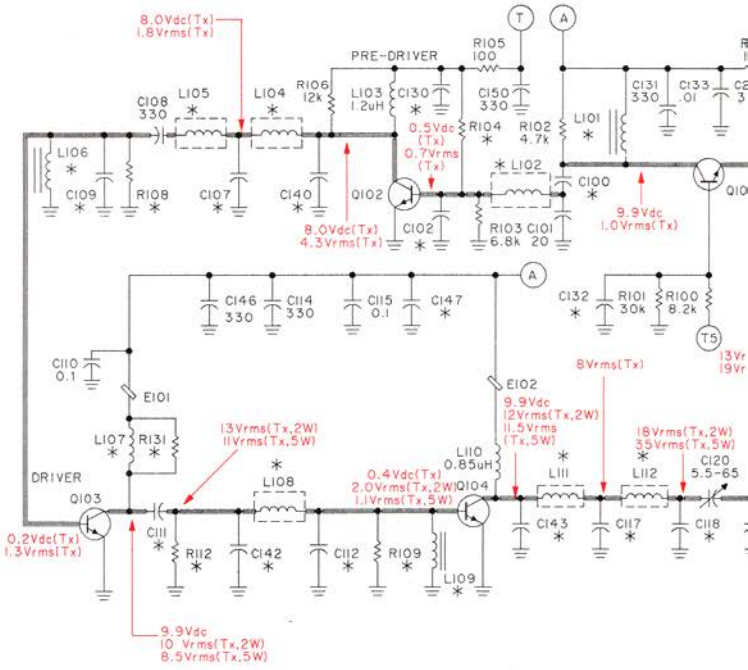
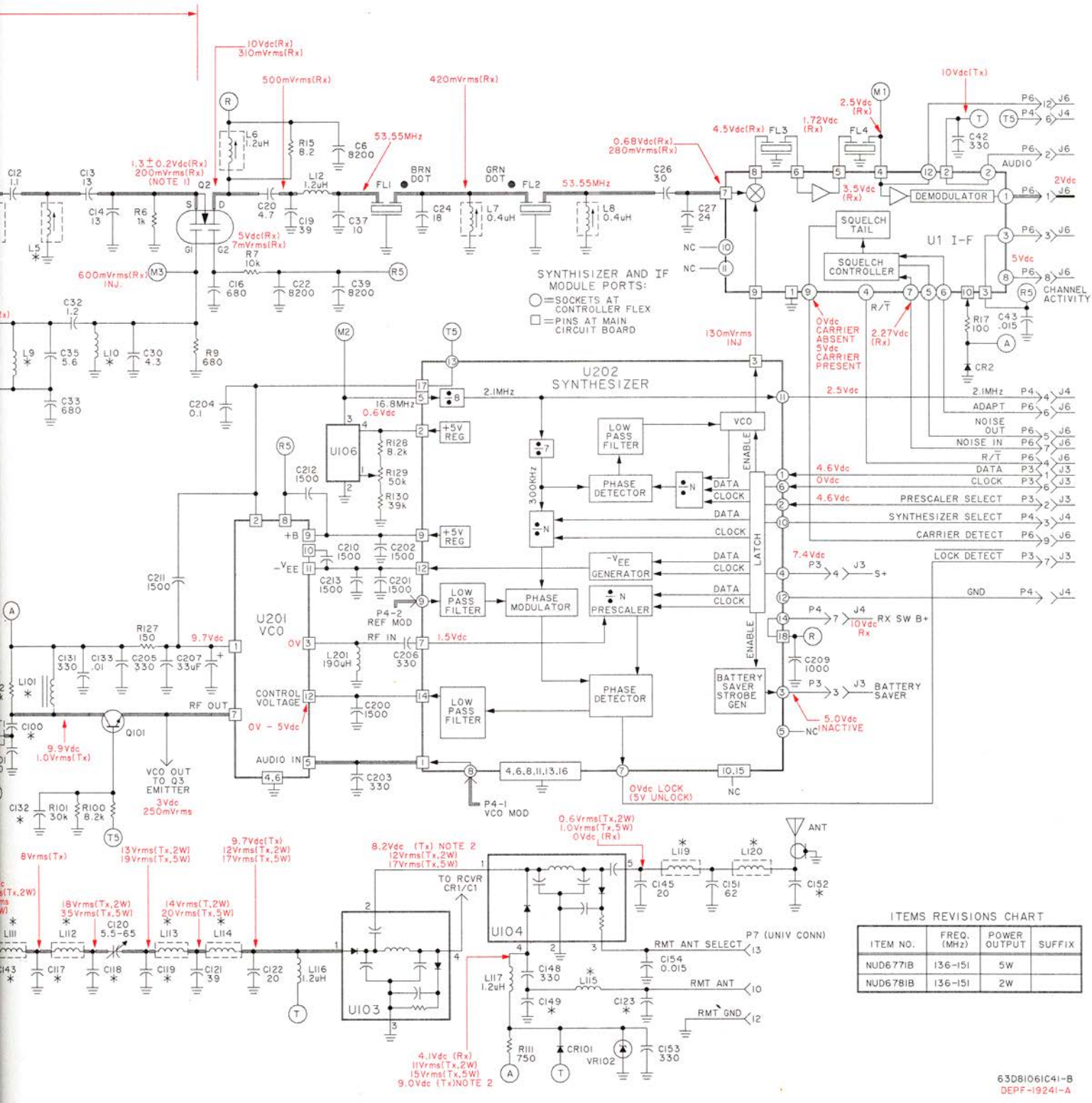






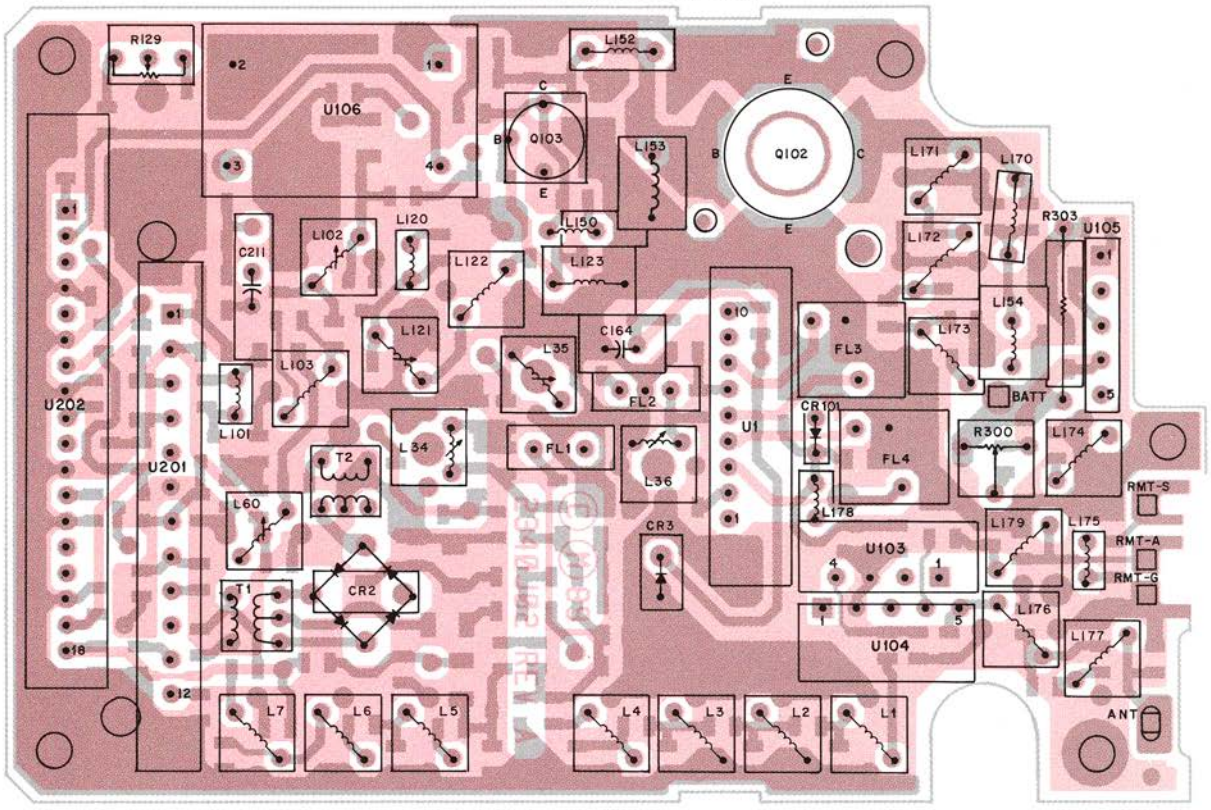
ITEMS REVISIONS CHART

ITEM NO.	FREQ. (MHz)	POWER OUTPUT	SUFFIX
NUD6771B	136-151	5W	
NUD6781B	136-151	2W	

VHF TRANSCEIVER COMPONENT LOCATION DIAGRAMS (5W. 136-150.8MHz)
VHF TRANSCEIVER SCHEMATIC DIAGRAM (2-W & 5W, 136-150.8MHz) 65

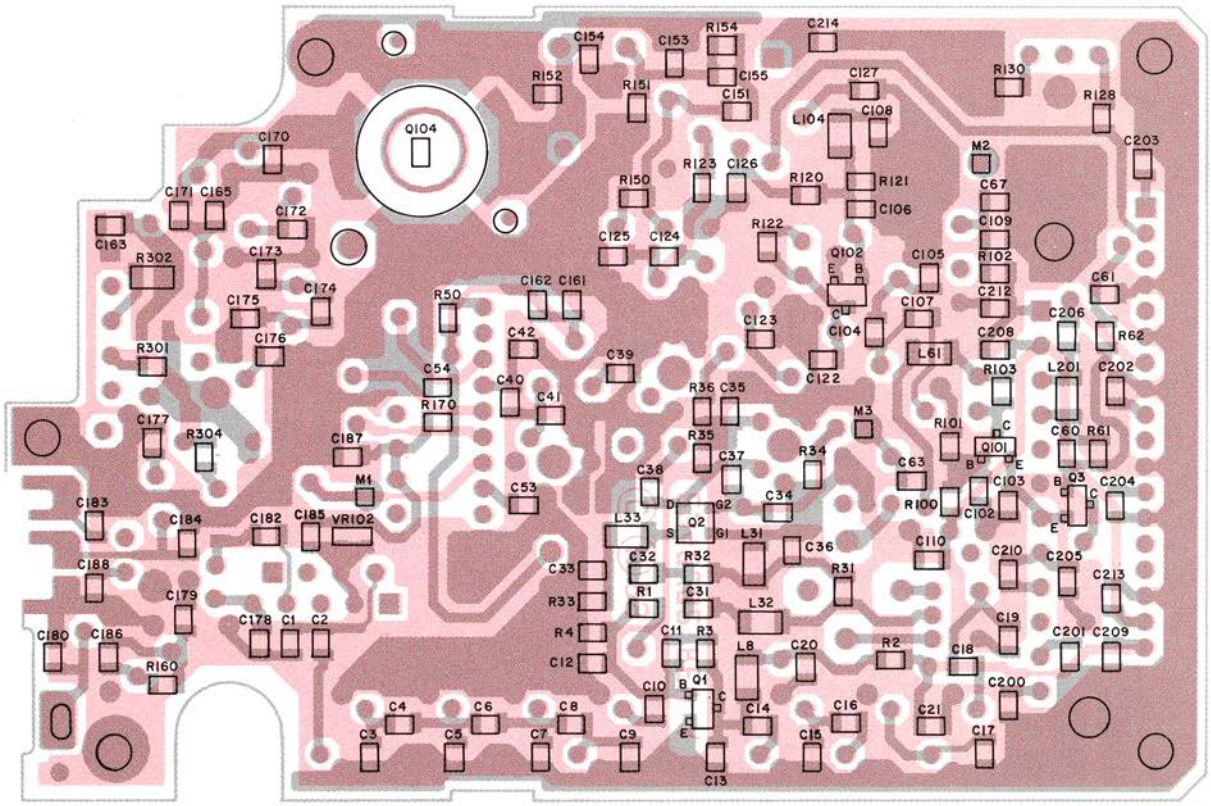
VHF (146-174MHZ)
TRANSCEIVER COMPONENT LOCATION DIAGRAMS

VIEWED FROM SIDE 1 (COMPONENT SIDE)



L4-CEPF-20707-A
OL-CEPF-20708-A

VIEWED FROM SIDE 2 (SOLDER SIDE)



L4-CEPF-20709-A
OL-CEPF-20710-A

SCHEMATIC AND CIRCUIT BOARD NOTES

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3. REFERENCE DESIGNATIONS ARE ASSIGNED IN THE FOLLOWING MANNER:

UNIT SERIES	=	RECEIVER
100 SERIES	=	TRANSMITTER
200 SERIES	=	VCO & SYNTHESIZER
300 SERIES	=	MISCELLANEOUS
400 SERIES	=	CONTROLLER FLEX
500 SERIES	=	DISPLAY BOARD
800 SERIES	=	SIGNALLING (CONTROLLER FLEX)

4. INTERCONNECT TIE POINT LEGEND:

- (A) B+ TO MOTHER BOARD
- (B) CONTROLLER FLEX B+
- (5V REG) REGULATED 5V
- [M] TO MOTHER BOARD
- (M1) METERING POINT M1, M2, M3
- (R) RECEIVER 10V
- (R5) RECEIVER 5V
- [S] TO SYNTHESIZER BOARD
- (T) TRANSMIT 10V
- (T5) TRANSMIT 5V
- [T] TO CONTROL TOP FLEX
- [U] TO UNIVERSAL CONNECTOR
- [*] TO FRONT COVER
- (V1) REGULATED 8V

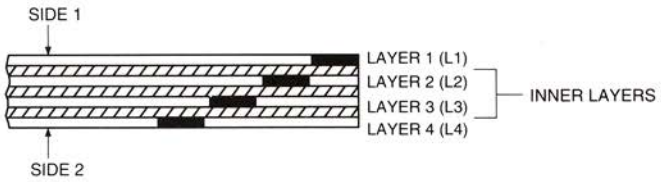
TEPF-18821-A

VOLTAGE OVERLAY AND WAVEFORM NOTES

1. 7mV SIGNAL GENERATOR LEVEL. PLACE A 47 Ω RESISTOR ACROSS L10 TO REDUCE 1ST L.O. INJECTION FEED THROUGH.
2. BASE OF Q102 SHORTED TO GROUND.
3. INJECT (AT SELECTED ANTENNA) AN ON CHANNEL SIGNAL AT 1mV, 1kHz MODULATION AT 3kHz DEVIATION.
4. VERIFY USING PROGRAMMER.
5. EXTERNAL SIGNAL FROM AUDIO SIGNAL GENERATOR AT MIC INPUT.

TEPF-18822-A

4-LAYER CIRCUIT BOARD DETAIL VIEWING COPPER STEPS IN PROPER LAYER SEQUENCE.



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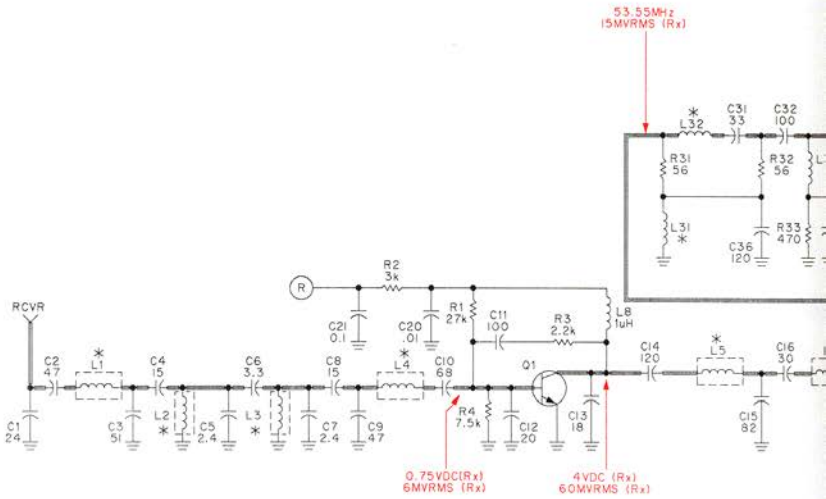
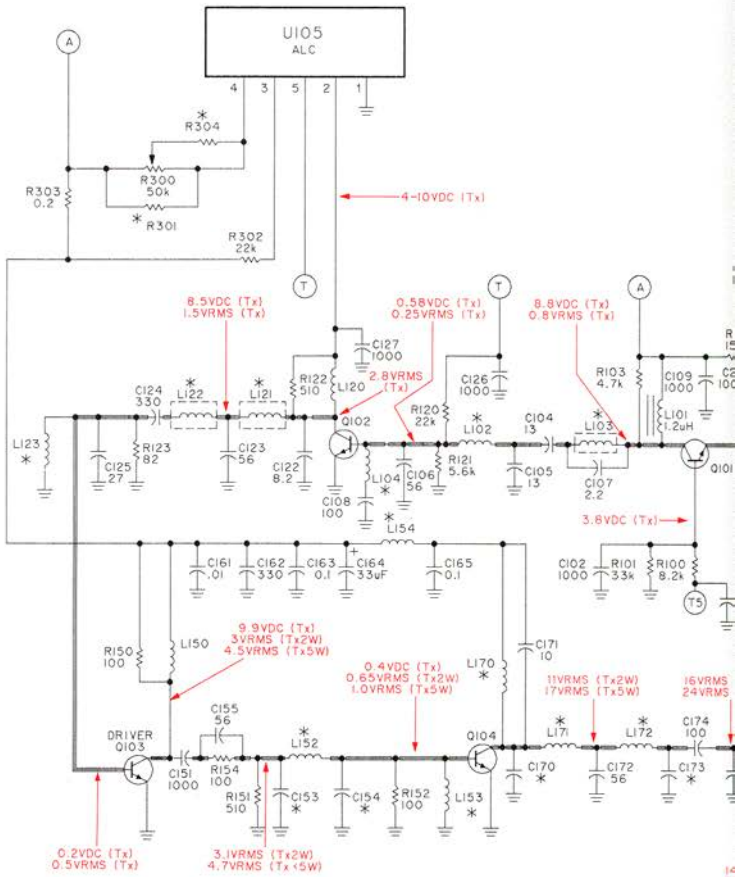
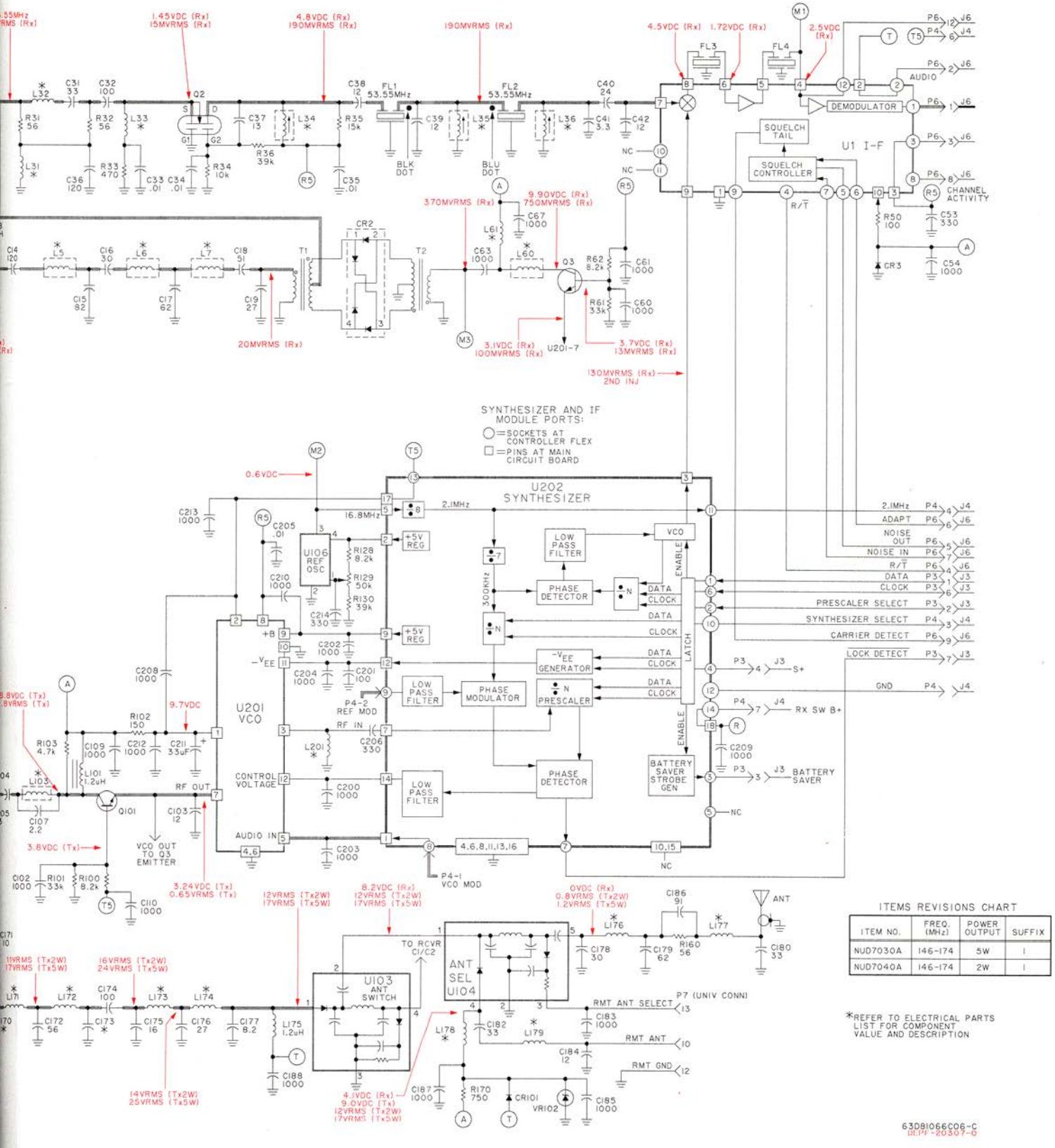
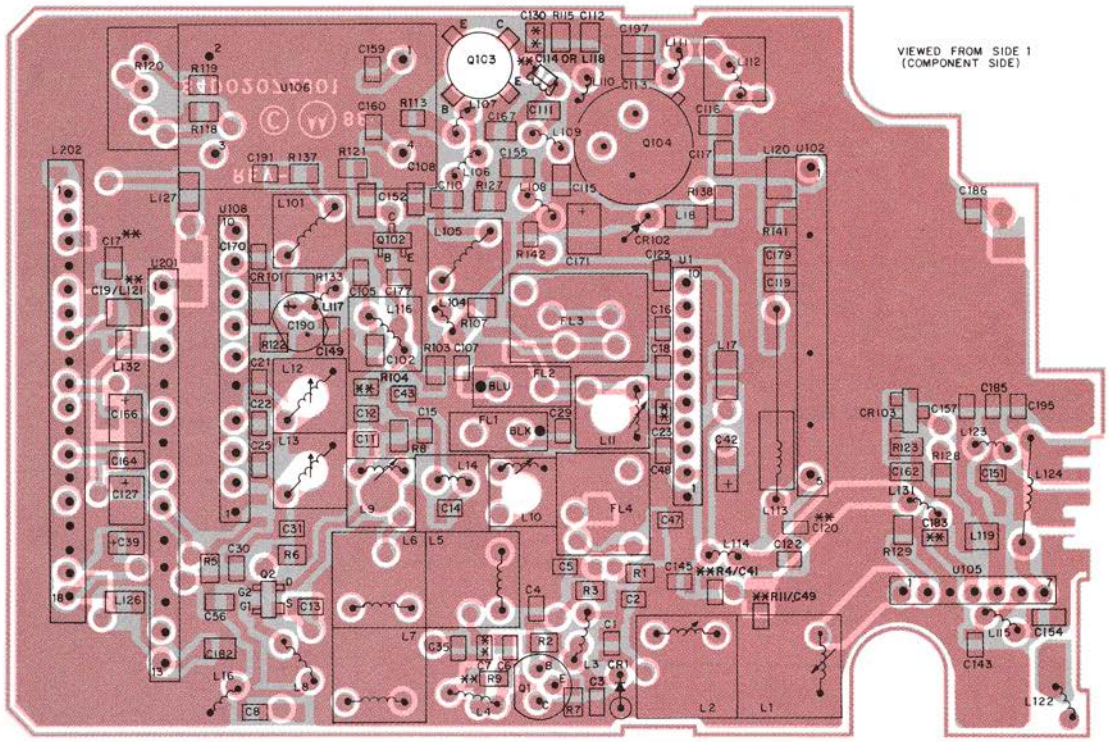
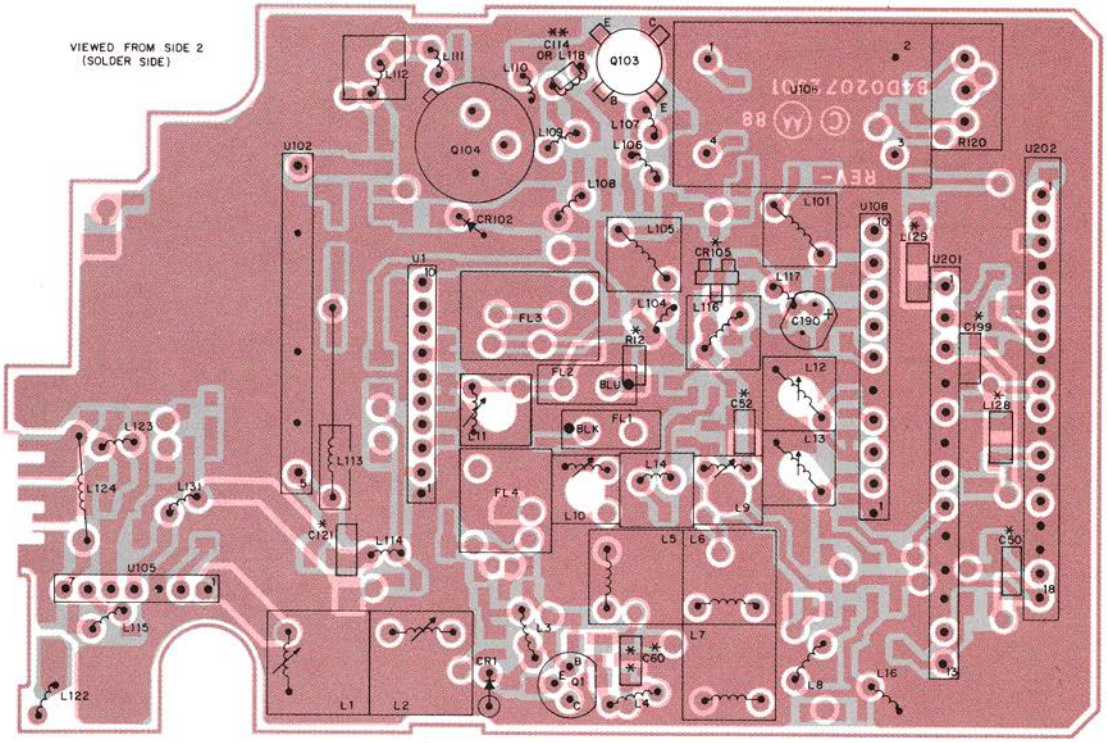






VHF TRANSCEIVER SCHEMATIC DIAGRAM
(2- AND 5-WATT RADIOS, 146-174MHz) 67





SCHEMATIC AND CIRCUIT

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VOLTAGE PROBE TO PREVENT CIRC
3. REFERENCE DESIGNATIONS
FOLLOWING MANNER:

UNIT SERIES	=	RECE
100 SERIES	=	TRAN
200 SERIES	=	VCO &
300 SERIES	=	MISCI
400 SERIES	=	CONT
500 SERIES	=	DISPL
800 SERIES	=	SIGNA (CONT

4. INTERCONNECT TIE POINT LEGE

- (A) B+ TO MOTHER BOARD
- (B) CONTROLLER FLEX B+
- (5V REG) REGULATED 5V
- (M1) METERING POINTS M1, M2, M3
- (M) TO MOTHER BOARD
- (R) RECEIVER 10V
- (R5) RECEIVER 5V
- [S] TO SYNTHESIZER BOARD
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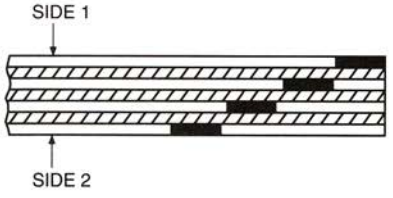
- (T5) TRANSMIT 5V
- [T] TO CONTROL TOP FLEX
- [U] TO UNIVERSAL CONNECTOR
- [*] TO FRONT COVER
- (V1) REGULATED 8V

VOLTAGE OVERLAY AND W

1. AC VOLTAGE READINGS IN dB
CAPACITOR INTO THE 50 OHM A
METER. RX READINGS ARE MADE
SIGNAL INTO REMOTE RF PORT. T
REMOTE RF PORT INTO 50 OHMS.
2. AC VOLTAGE READINGS IN mV
IMPEDANCE RF mV METER.
3. THIS READING IS OBTAINED BY SH
GROUND. (Q102-B ON ALIGNMENT/A
DIAGRAM).
4. THIS READING IS OBTAINED BY
RESISTOR ACROSS L13 TO REDUCE
THROUGH. (REFER TO ALIGNMENT/
DIAGRAM)

4-LAYER CIRCUIT BOARD DETAIL VIEW
COPPER STEPS IN PROPER LAYER SE



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EFERENCE DESIGNATIONS ARE ASSIGNED IN THE
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0 SERIES	=	TRANSMITTER
0 SERIES	=	VCO & SYNTHESIZER
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0 SERIES	=	CONTROLLER FLEX
0 SERIES	=	DISPLAY BOARD
0 SERIES	=	SIGNALLING (CONTROLLER FLEX)

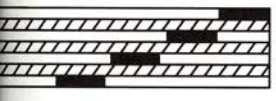
ITERCONNECT TIE POINT LEGEND:

- B+ TO MOTHER BOARD
- CONTROLLER FLEX B+
- REGULATED 5V
- METERING POINTS M1, M2, M3
- TO MOTHER BOARD
- RECEIVER 10V
- RECEIVER 5V
- TO SYNTHESIZER BOARD
- TRANSMIT 10V
- TRANSMIT 5V
- TO CONTROL TOP FLEX
- TO UNIVERSAL CONNECTOR
- TO FRONT COVER
- REGULATED 8V

VOLTAGE OVERLAY AND WAVEFORM NOTES

C VOLTAGE READINGS IN dBm ARE MADE VIA A 1pF
ACITOR INTO THE 50 OHM ADAPTER OF AN RF mV
ER. RX READINGS ARE MADE WITH -20dBm CARRIER
IAL INTO REMOTE RF PORT. TX READINGS MADE WITH
OTE RF PORT INTO 50 OHMS.
C VOLTAGE READINGS IN mV ARE MADE VIA A HIGH
EDANCE RF mV METER.
HIS READING IS OBTAINED BY SHORTING BASE OF Q102 TO
UND. (Q102-B ON ALIGNMENT/ADJUSTMENT LOCATIONS
RAM).
HIS READING IS OBTAINED BY SOLDERING A 47-OHM
STOR ACROSS L13 TO REDUCE 1ST L.O. INJECTION FEED
OUGH. (REFER TO ALIGNMENT/ADJUSTMENT LOCATIONS
RAM)

AYER CIRCUIT BOARD DETAIL VIEWING
PPER STEPS IN PROPER LAYER SEQUENCE.



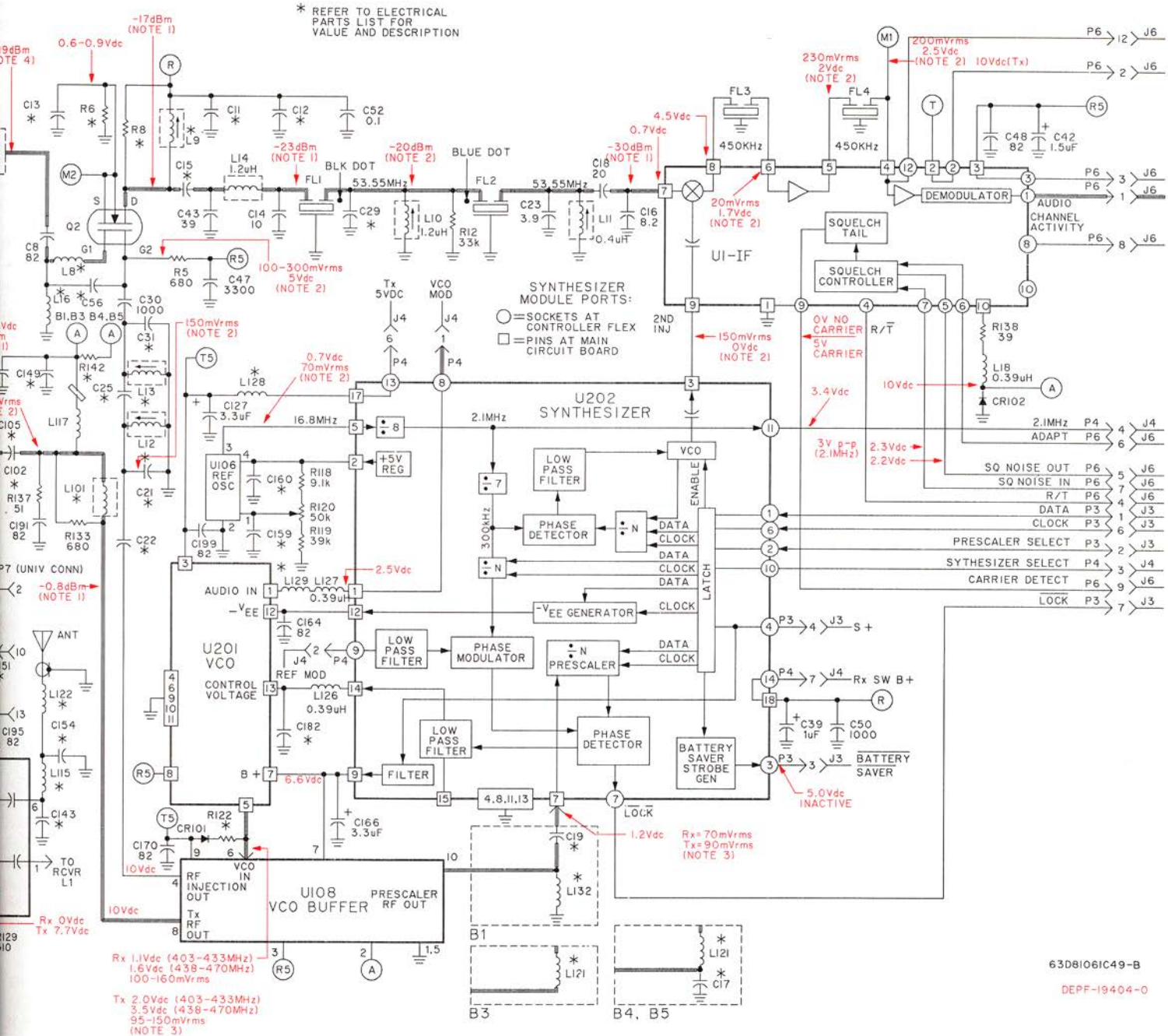
LAYER 1 (L1)
LAYER 2 (L2)
LAYER 3 (L3) — INNER LAYERS
LAYER 4 (L4)

MAEPF-18826-A

ITEM REVISIONS CHART

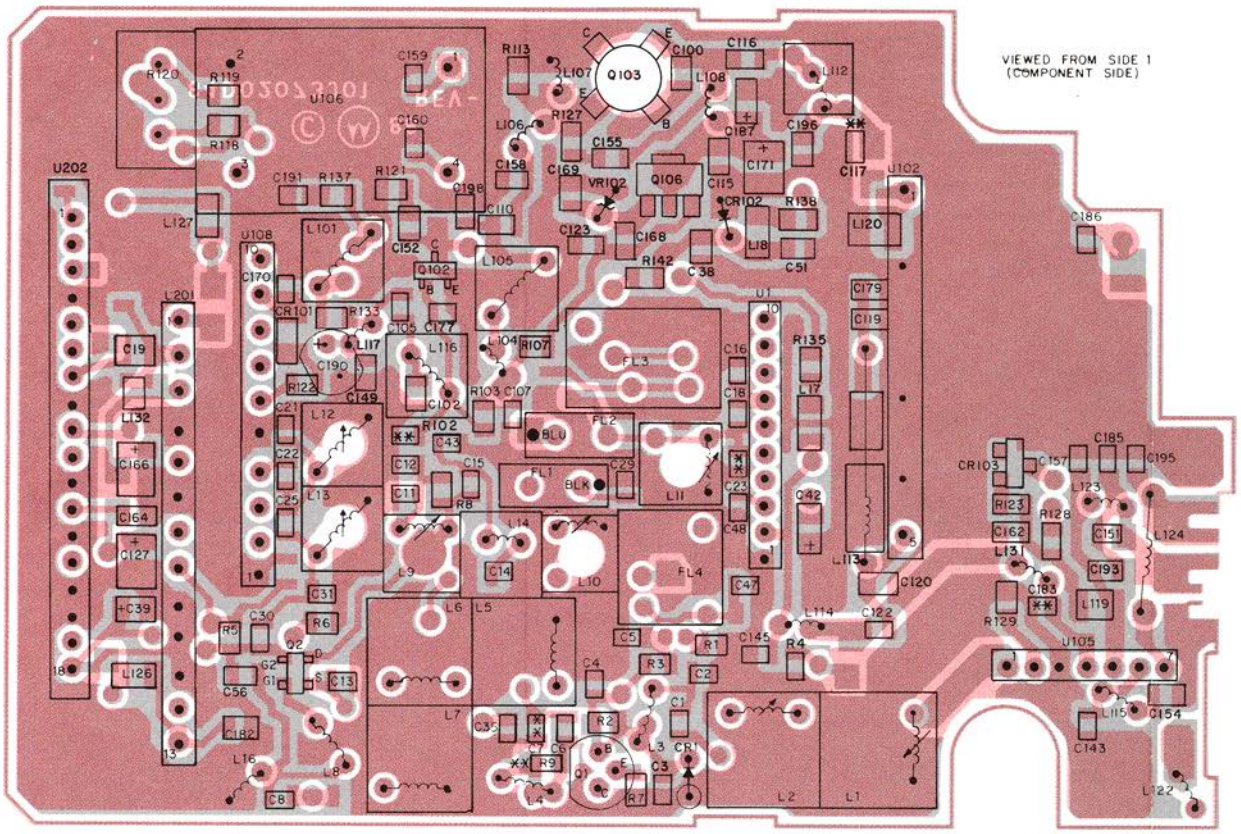
ITEM NO.	FREQ. (MHz)	POWER OUTPUT	SUFFIX
NUE6901C	403-433	4W	
NUE6902D	438-470	4W	
NUE6903A	470-500	4W	
NUE6904A	488-520	4W	

* REFER TO ELECTRICAL PARTS LIST FOR VALUE AND DESCRIPTION



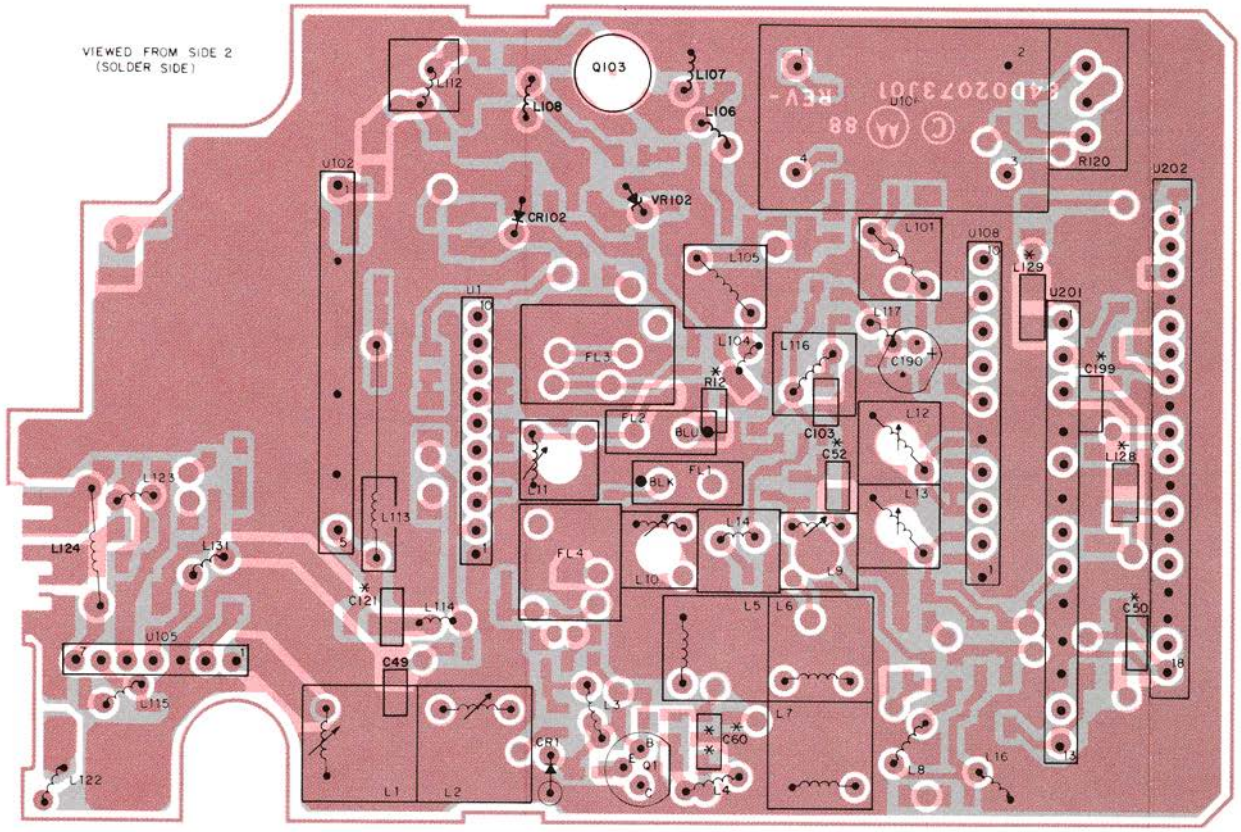
UHF COMPONENT LOCATION DIAGRAMS (4-W RADIOS) AND TRANSCEIVER SCHEMATIC DIAGRAM 69

2-WATT RADIOS



** REFER TO ELECTRICAL PARTS LIST FOR USAGE

OL-CEPF-20112-B



* BACK OF THE BOARD
** REFER TO ELECTRICAL PARTS LIST FOR USAGE

OL-CEPF-20115-A

SCHEMATIC AN

1. UNLESS OTHERW
OHMS (k=1000), CA
MICROFARADS, AND
PICOFARADS.
2. DC VOLTAGES ARE
TO CHASSIS GROUND
OR EQUIVALENT. TRA
BE MADE WITH A 0
VOLTAGE PROBE TO F
3. REFERENCE DES
FOLLOWING MANNER:

UNIT SERIES	=
100 SERIES	=
200 SERIES	=
300 SERIES	=
400 SERIES	=
500 SERIES	=
800 SERIES	=

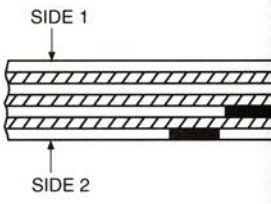
4. INTERCONNECT TI

- (A) B+ TO MOTHER BOAR
- (B) CONTROLLER FLEX B
- (5V REG) REGULATED 5V
- (M1) METERING POINTS M
- (M) TO MOTHER BOARD
- (R) RECEIVER 10V
- (R5) RECEIVER 5V
- [S] TO SYNTHESIZER BO
- (T) TRANSMIT 10V
- (T5) TRANSMIT 5V
- [T] TO CONTROL TOP FLE
- [U] TO UNIVERSAL CONN
- [*] TO FRONT COVER
- (V1) REGULATED 8V

VOLTAGE OVE

1. AC VOLTAGE REA
CAPACITOR INTO T
METER. RX READIN
SIGNAL INTO REMOT
REMOTE RF PORT IN
2. AC VOLTAGE REA
IMPEDANCE RF mV M
3. THIS READING IS O
GROUND. (Q102-B ON
DIAGRAM).
4. THIS READING IS
RESISTOR ACROSS L
THROUGH. (REFER T
DIAGRAM)

4-LAYER CIRCUIT BOA
COPPER STEPS IN PR



SCHEMATIC AND CIRCUIT BOARD NOTES

1. UNLESS OTHERWISE STATED, RESISTANCES ARE IN OHMS (k=1000), CAPACITANCES LESS THAN 1 ARE IN MICROFARADS, AND CAPACITANCES 1 OR GREATER ARE IN PICOFARADS.
2. DC VOLTAGES ARE MEASURED FROM POINT INDICATED TO CHASSIS GROUND USING MOTOROLA DC MULTIMETER OR EQUIVALENT. TRANSMITTER MEASUREMENTS SHOULD BE MADE WITH A 0.29uH RF CHOKE IN SERIES WITH VOLTAGE PROBE TO PREVENT CIRCUIT LOADING.
3. REFERENCE DESIGNATIONS ARE ASSIGNED IN THE FOLLOWING MANNER:

UNIT SERIES	=	RECEIVER
100 SERIES	=	TRANSMITTER
200 SERIES	=	VCO & SYNTHESIZER
300 SERIES	=	MISCELLANEOUS
400 SERIES	=	CONTROLLER FLEX
500 SERIES	=	DISPLAY BOARD
800 SERIES	=	SIGNALLING (CONTROLLER FLEX)

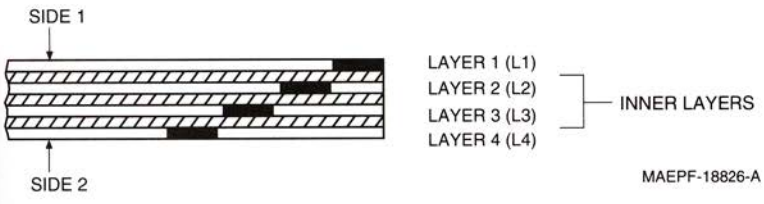
4. INTERCONNECT TIE POINT LEGEND:

- (A) B+ TO MOTHER BOARD
- (B) CONTROLLER FLEX B+
- (5V REG) REGULATED 5V
- (M1) METERING POINTS M1, M2, M3
- (M) TO MOTHER BOARD
- (R) RECEIVER 10V
- (R5) RECEIVER 5V
- [S] TO SYNTHESIZER BOARD
- (T) TRANSMIT 10V
- (T5) TRANSMIT 5V
- [T] TO CONTROL TOP FLEX
- [U] TO UNIVERSAL CONNECTOR
- [✳] TO FRONT COVER
- (V1) REGULATED 8V

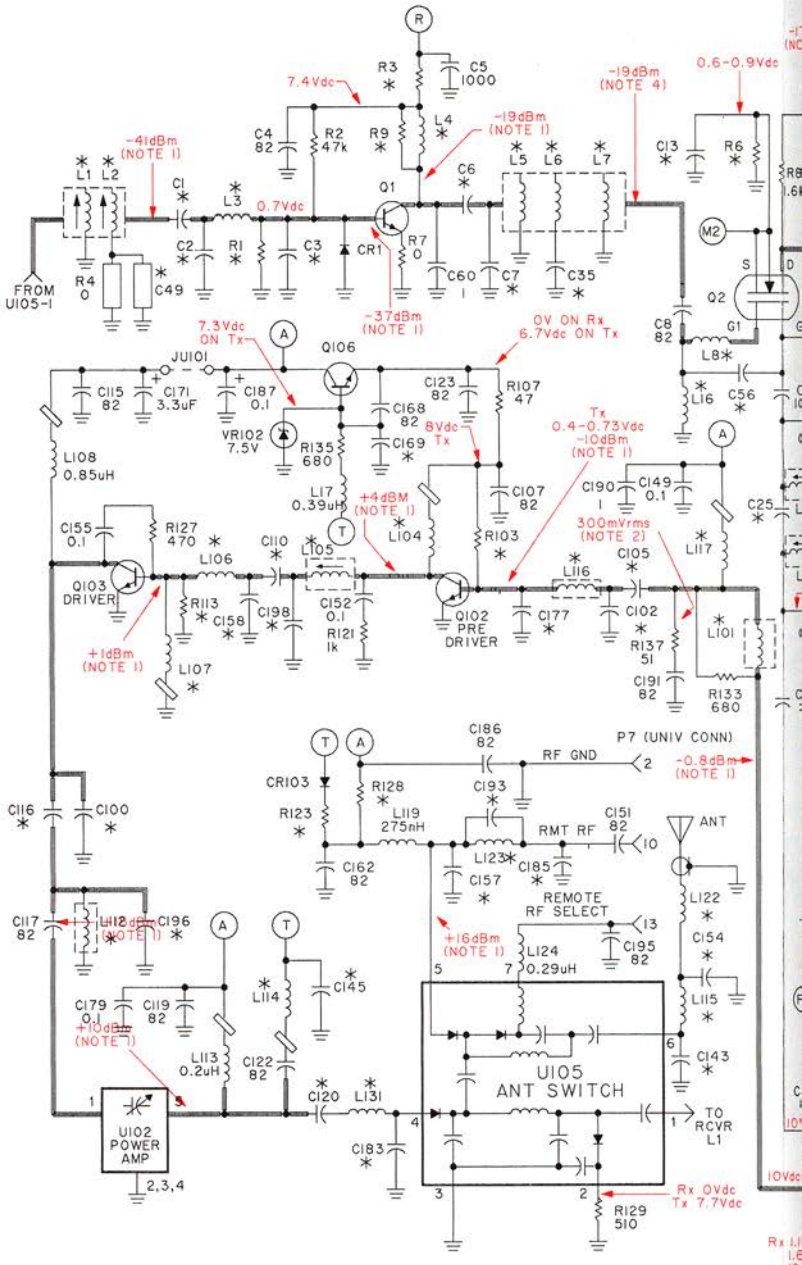
VOLTAGE OVERLAY AND WAVEFORM NOTES

1. AC VOLTAGE READINGS IN dBm ARE MADE VIA A 1pF CAPACITOR INTO THE 50 OHM ADAPTER OF AN RF mV METER. RX READINGS ARE MADE WITH -20dBm CARRIER SIGNAL INTO REMOTE RF PORT. TX READINGS MADE WITH REMOTE RF PORT INTO 50 OHMS.
2. AC VOLTAGE READINGS IN mV ARE MADE VIA A HIGH IMPEDANCE RF mV METER.
3. THIS READING IS OBTAINED BY SHORTING BASE OF Q102 TO GROUND. (Q102-B ON ALIGNMENT/ADJUSTMENT LOCATIONS DIAGRAM).
4. THIS READING IS OBTAINED BY SOLDERING A 47-OHM RESISTOR ACROSS L13 TO REDUCE 1ST L.O. INJECTION FEED THROUGH. (REFER TO ALIGNMENT/ADJUSTMENT LOCATIONS DIAGRAM)

4-LAYER CIRCUIT BOARD DETAIL VIEWING
COPPER STEPS IN PROPER LAYER SEQUENCE.



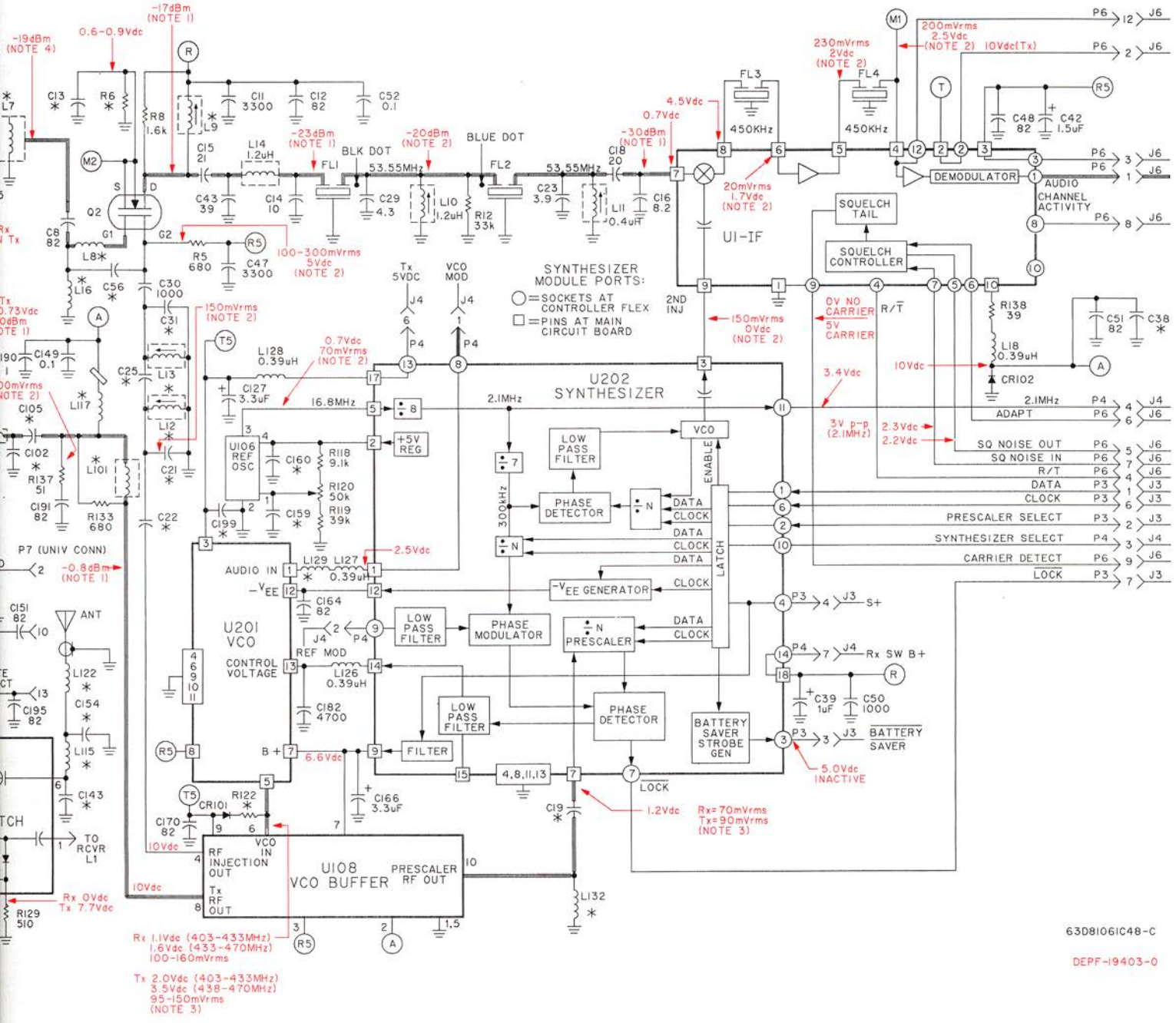
MAEPF-18826-A



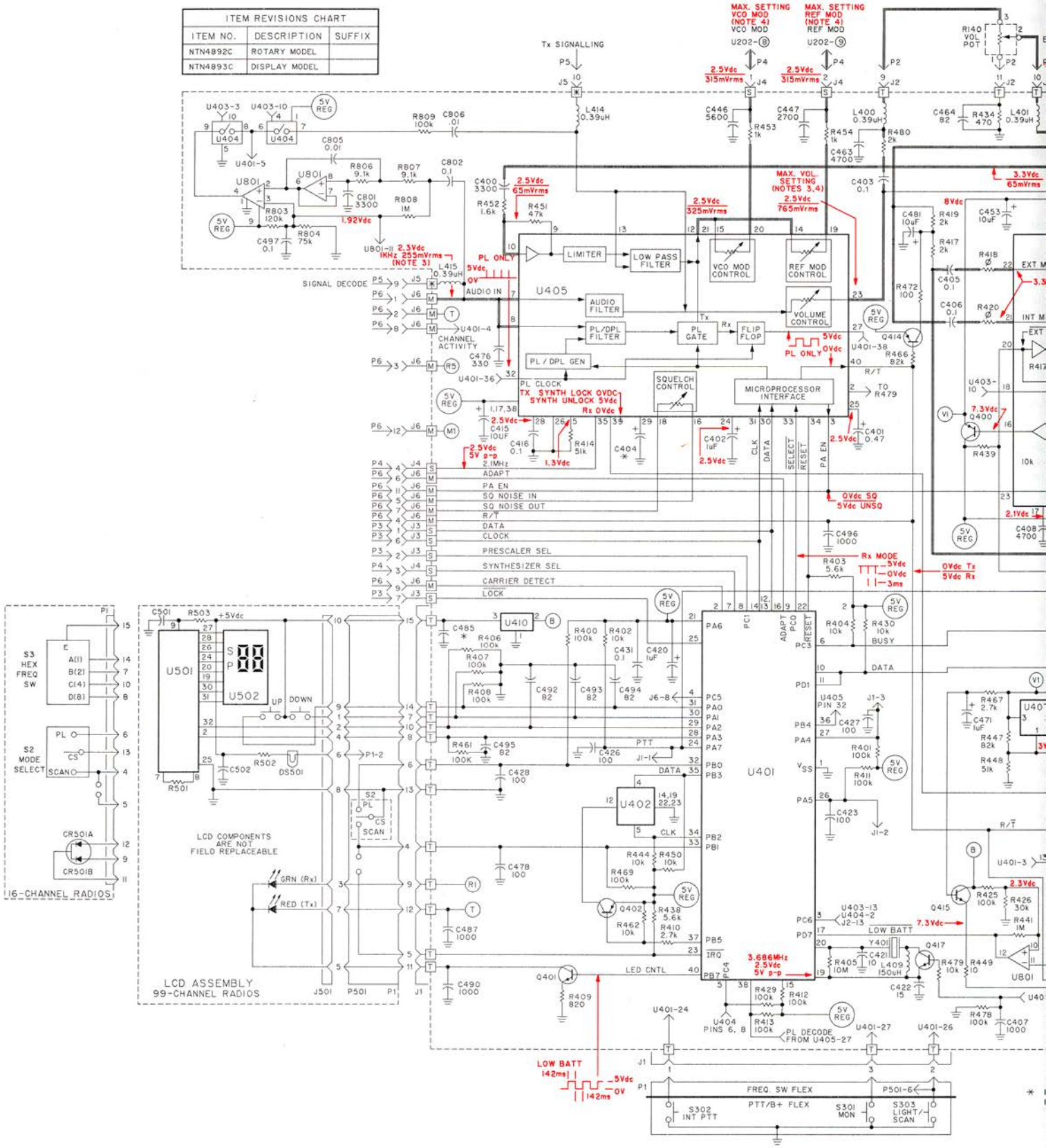
ITEM REVISIONS CHART

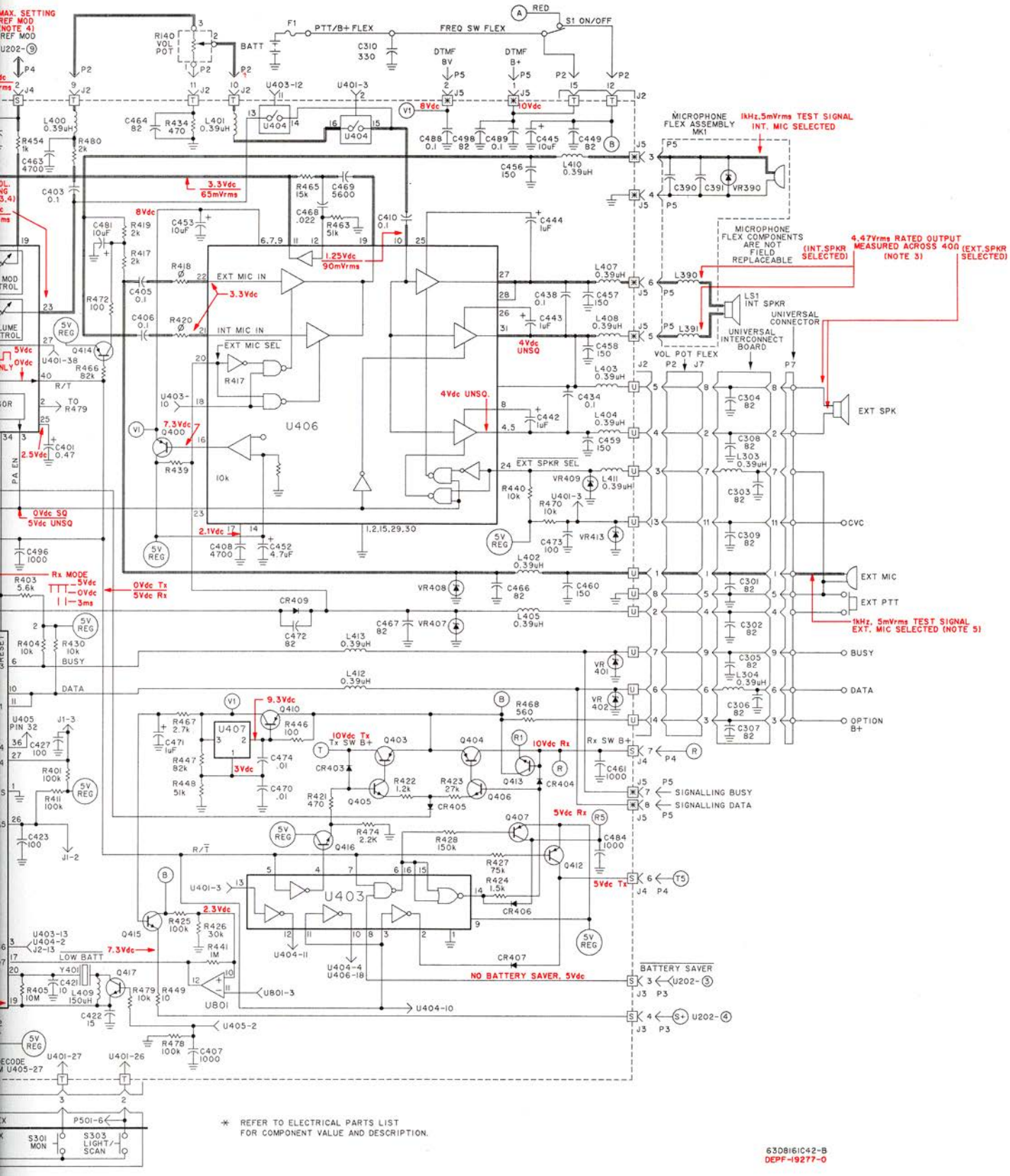
ITEM NO.	FREQ. (MHz)	POWER OUTPUT	SUFFIX
NUE6911B	403-433	2W	
NUE6912E	438-470	2W	

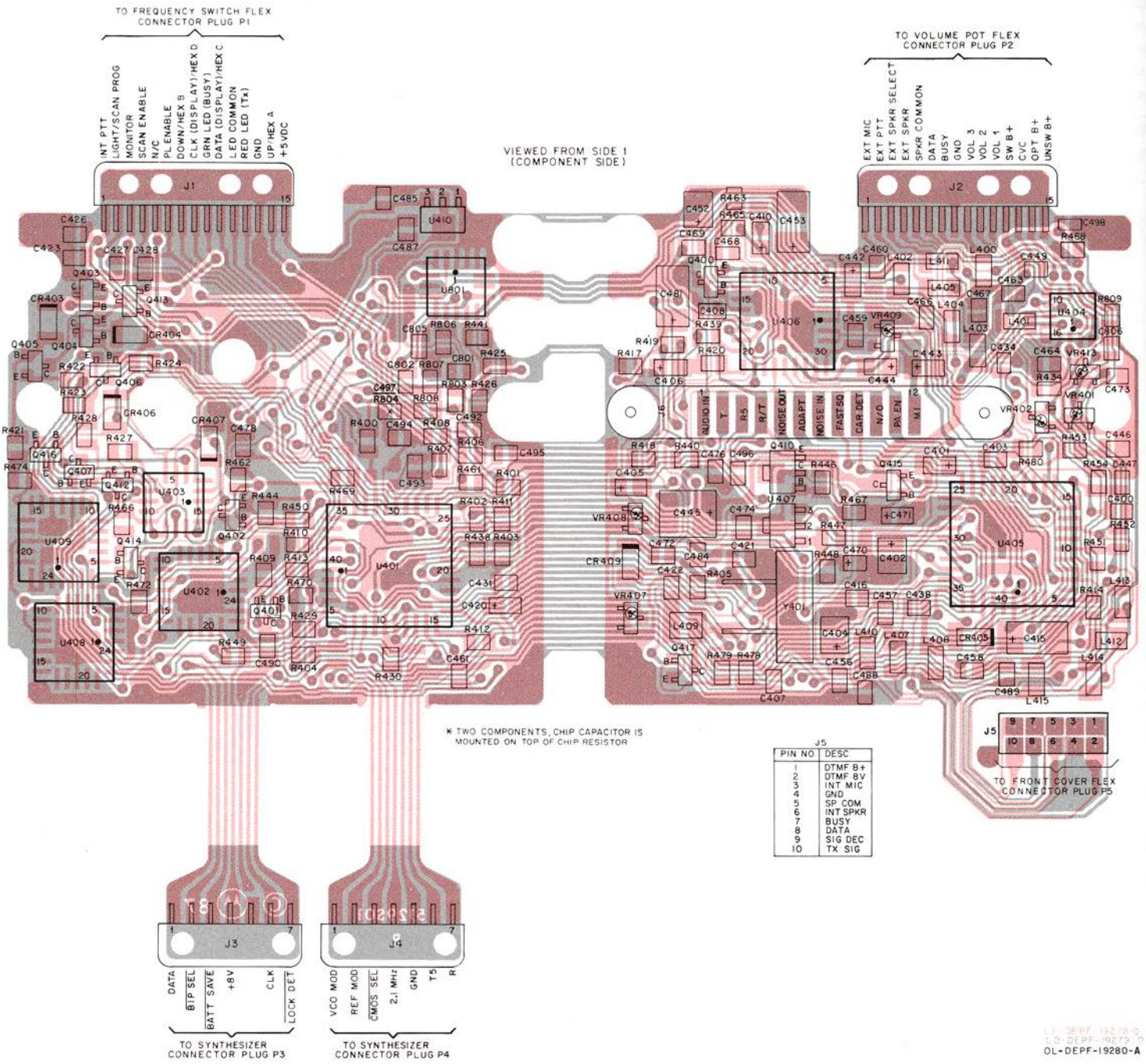
* REFER TO ELECTRICAL PARTS LIST FOR VALUE AND DESCRIPTION

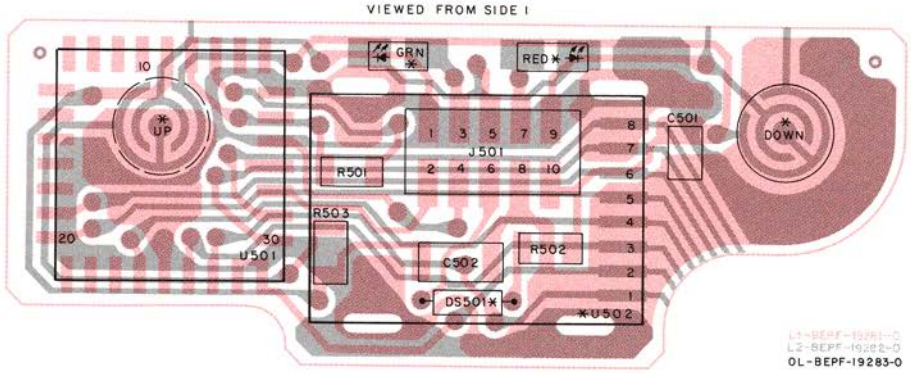


UHF 2-W, 4-LAYER TRANSCEIVER COMPONENT LOCATION DIAGRAMS AND SCHEMATIC DIAGRAM


ITEM REVISIONS CHART
ITEM NO. | DESCRIPTION | SUFFIX
NTN4892C | ROTARY MODEL |
NTN4893C | DISPLAY MODEL |
Tx SIGNALLING
MAX. SETTING VCO MOD (NOTE 4) VCO MOD
MAX. SETTING REF MOD (NOTE 4) REF MOD
MAX. VOL. SETTING (NOTES 3,4)
SIGNAL DECODE
AUDIO IN
LIMITER
LOW PASS FILTER
VCO MOD CONTROL
REF MOD CONTROL
VOLUME CONTROL
AUDIO FILTER
PL/DPL FILTER
PL GATE
FLIP FLOP
PL / DPL GEN
PL CLOCK
SQUELCH CONTROL
MICROPROCESSOR INTERFACE
CHANNEL ACTIVITY
PL ONLY
TX SYNTH LOCK OVDC SYNTH UNLOCK 5Vdc
Rx OVdc
ADAPT
PA EN
SQ NOISE IN
SQ NOISE OUT
R/T
DATA
CLOCK
PRESCALER SEL
SYNTHESIZER SEL
CARRIER DETECT
LOCK
Rx MODE
OVdc Tx 5Vdc Rx
OVdc SQ 5Vdc UNSQ
LOW BATT 142ms 5Vdc 0V 142ms
S3 HEX FREQ SW
S2 MODE SELECT
PL
CS
SCAN
CR501A
CR501B
16-CHANNEL RADIOS
U501
U502
UP
DOWN
DS501
LCD COMPONENTS ARE NOT FIELD REPLACEABLE
GRN (Rx)
RED (Tx)
LCD ASSEMBLY 99-CHANNEL RADIOS
U401
U402
U405
U410
Q401
Q402
Q414
Q415
Q417
3.686MHz 2.5Vdc 5V p-p
LED CNTL
PL DECODE FROM U405-27
FREQ. SW FLEX
PTT/B+ FLEX
S302 INT PTT
S301 MON
S303 LIGHT/ SCAN


MAX. SETTING
REF MOD
(NOTE 4)
REF MOD
U202-⑨
P4
P2
J4
J2
R140
VOL
POT
BATT
F1
PTT/B+ FLEX
FREQ SW FLEX
S1 ON/OFF
RED
C310
330
DTMF
8V
DTMF
B+
P5
J5
P2
J2
U403-12
U401-3
U404
U404
V1
8Vdc
10Vdc
L400
0.39uH
R454
1k
R480
2k
C463
4700
C464
82
R434
470
L401
0.39uH
C488
0.1
C498
82
C489
0.1
C445
10uF
C449
82
B
C456
150
L410
0.39uH
MICROPHONE
FLEX ASSEMBLY
MK1
1kHz, 5mVrms TEST SIGNAL
INT. MIC SELECTED
C390
C391
VR390
MICROPHONE
FLEX COMPONENTS
ARE NOT
FIELD
REPLACEABLE
4.47Vrms RATED OUTPUT
MEASURED ACROSS 40Ω (EXT.SPKR
(INT.SPKR
SELECTED)
(NOTE 3)
SELECTED)
L390
LS1
INT SPKR
UNIVERSAL
CONNECTOR
UNIVERSAL
INTERCONNECT
BOARD
VOL POT FLEX
P2
J7
P7
EXT SPK
3.3Vdc
65mVrms
C403
0.1
R465
15k
C469
5600
C468
.022
R463
51k
C410
0.1
C444
1uF
8Vdc
C453
10uF
R419
2k
R417
2k
C481
10uF
1.25Vdc
90mVrms
6,7,9
11
12
19
10
25
R418
Ø
EXT MIC IN
3.3Vdc
C405
0.1
R472
100
C406
0.1
R420
Ø
INT MIC IN
EXT MIC SEL
R417
5V
REG
Q414
R466
82k
U401-38
R/T
TO
R479
5Vdc
0Vdc
U403-
10
18
U406
7.3Vdc
Q400
R439
10k
2.5Vdc
C401
0.47
PA EN
0Vdc SQ
5Vdc UNSQ
2.1Vdc
17
14
C408
4700
C452
4.7uF
1,2,15,29,30
C496
1000
Rx MODE
5Vdc
0Vdc
3ms
R403
5.6k
0Vdc Tx
5Vdc Rx
R404
10k
R430
10k
BUSY
DATA
CR409
C472
82
L413
0.39uH
C467
82
VR407
VR408
C466
82
C460
150
L405
0.39uH
L412
0.39uH
U405
PIN 32
J1-3
C427
100
R401
100k
R411
100k
C423
100
J1-2
V1
9.3Vdc
Q410
U407
R467
2.7k
C471
1uF
R446
100
R447
82k
R448
51k
C474
.01
C470
.01
3Vdc
B
R468
560
10Vdc Tx
Tx SW B+
Q403
Q404
R1
10Vdc Rx
Rx SW B+
T
CR403
R422
1.2k
R423
27k
Q413
R
CR404
C461
1000
R421
470
Q405
CR405
Q406
SIGNALLING BUSY
SIGNALLING DATA
5Vdc Rx
Q407
R5
Q416
R474
2.2K
R428
150k
C484
1000
R427
75k
Q412
R424
1.5k
5Vdc Tx
CR406
U403
U401-3
2.3Vdc
Q415
R425
100k
R426
30k
R441
1M
7.3Vdc
U403-13
U404-2
J2-13
LOW BATT
Y401
C421
10
R405
10M
Q417
L409
150uH
R479
10k
R449
10
C422
15
U801
U801-3
U404-10
U405-2
R478
100k
C407
1000
U404-11
U404-4
U406-18
CR407
NO BATTERY SAVER, 5Vdc
BATTERY SAVER
U202-③
U202-④
J3
P3
U401-27
U401-26
P501-6
S301
MON
S303
LIGHT/
SCAN
* REFER TO ELECTRICAL PARTS LIST
FOR COMPONENT VALUE AND DESCRIPTION.
63D8161C42-B
DEPF-19277-0

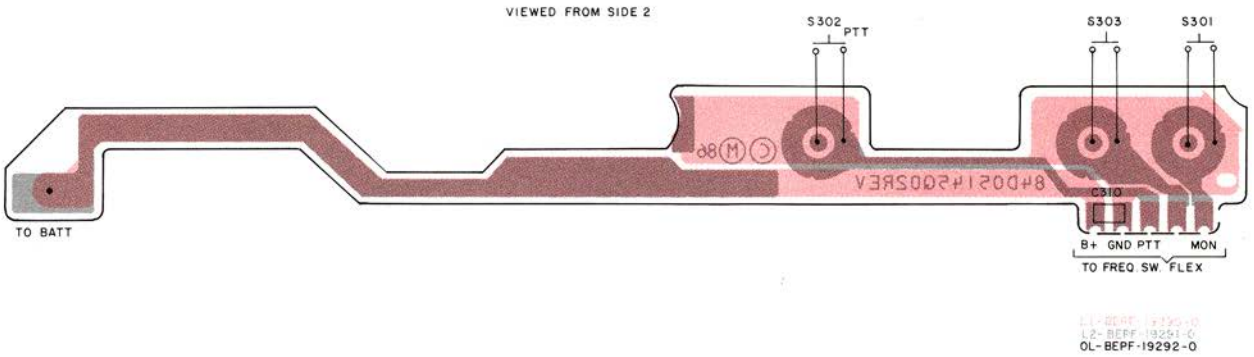




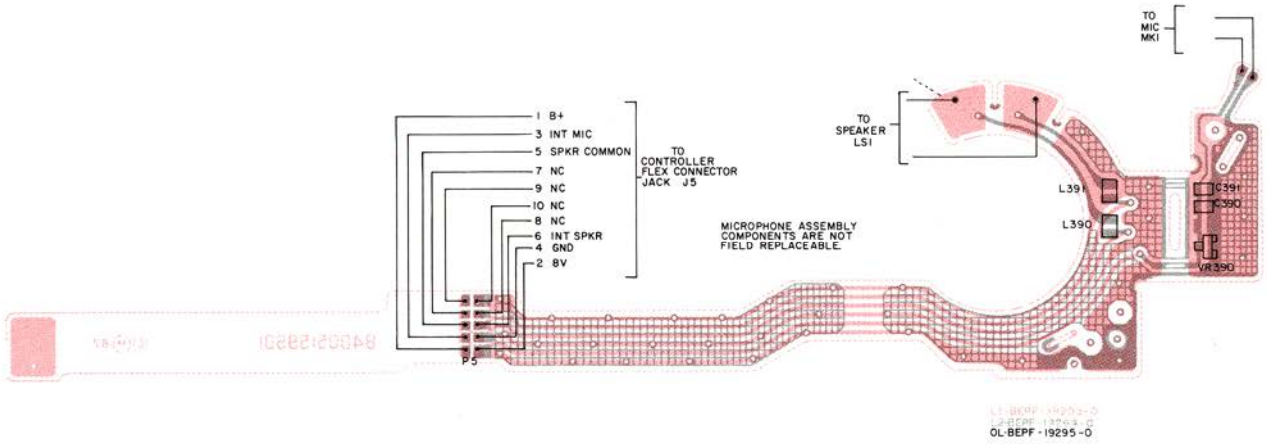
* = COMPONENTS MOUNTED ON SIDE 2

VHF AND UHF CONTROLLER FLEX SCHEMATIC DIAGRAM, COMPONENT LOCATION DIAGRAM, AND LCD ASSEMBLY

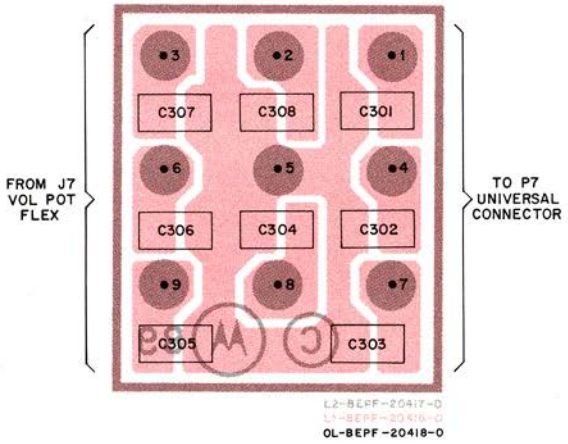
PTT/B+ FLEX



MICROPHONE FLEX ASSEMBLY MK1



UNIVERSAL INTERCONNECT BOARD



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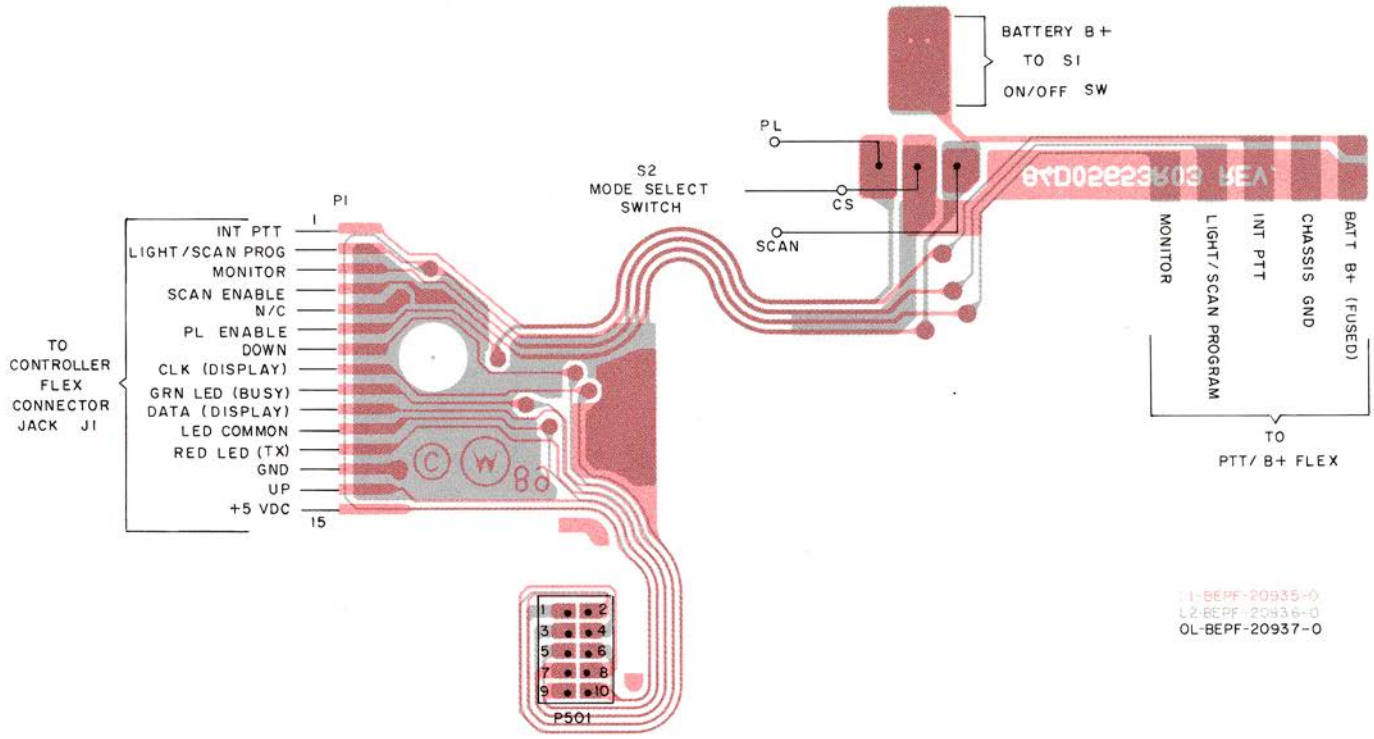
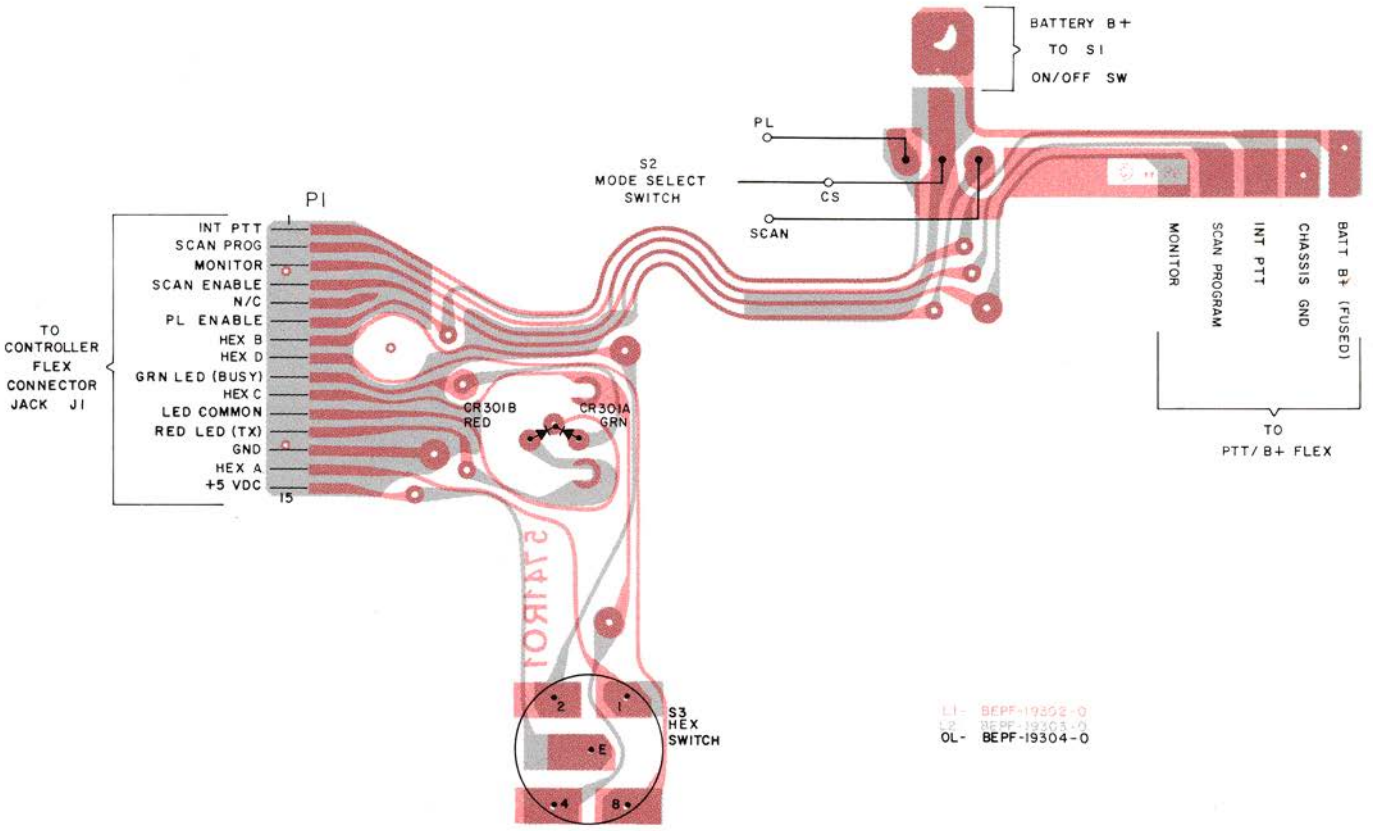
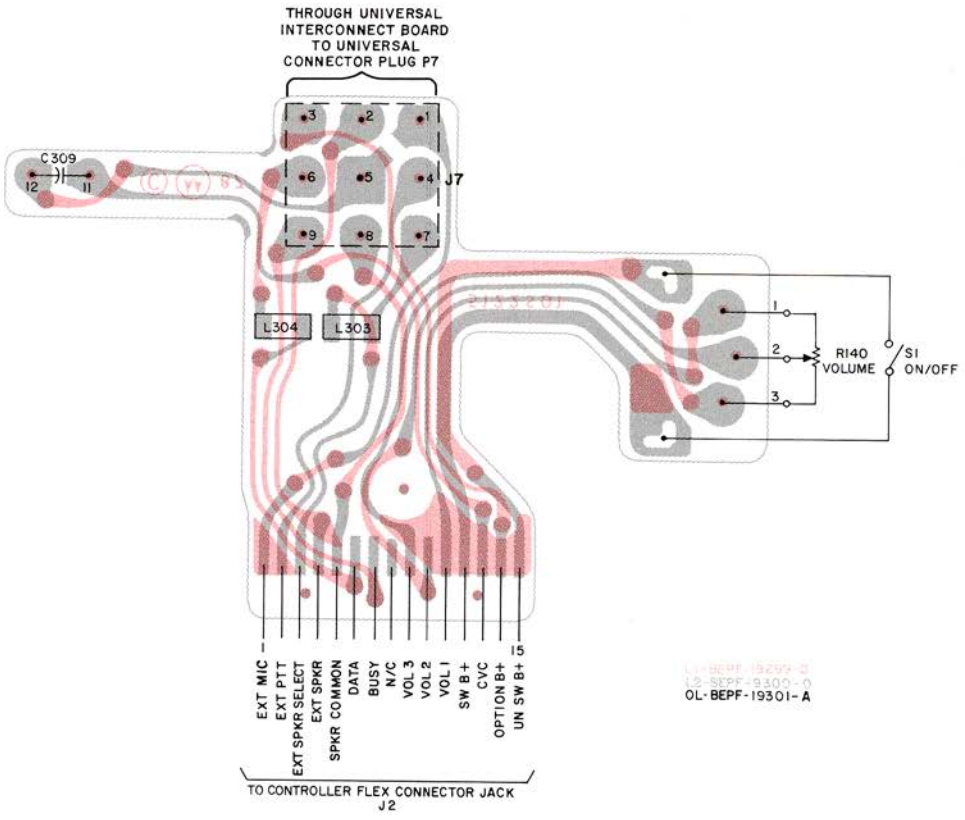
FREQUENCY SWITCH FLEX
DISPLAY RADIOS



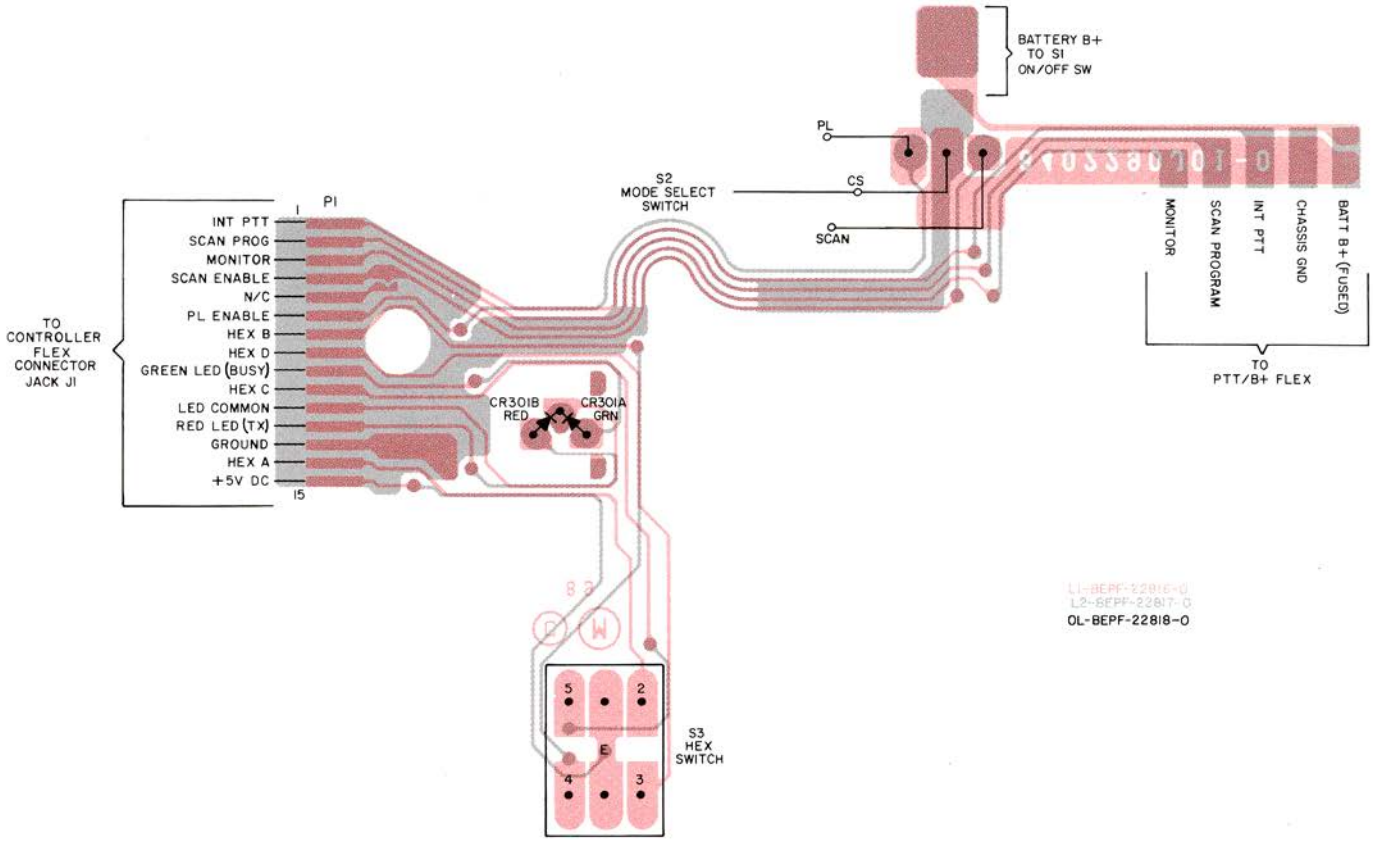
FREQUENCY SWITCH FLEX
ROTARY RADIOS (EARLY VERSION)



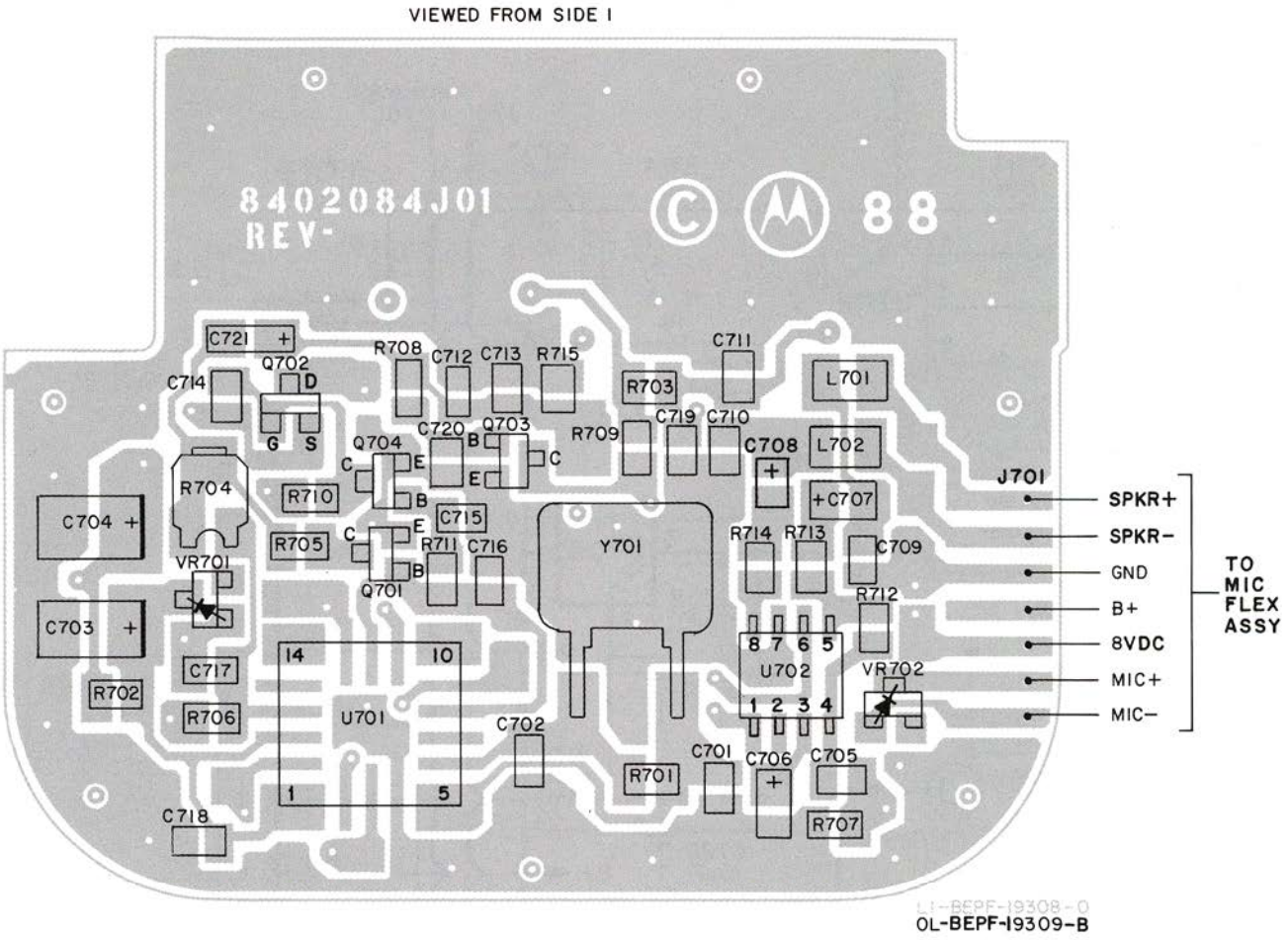
VOLUME POT FLEX



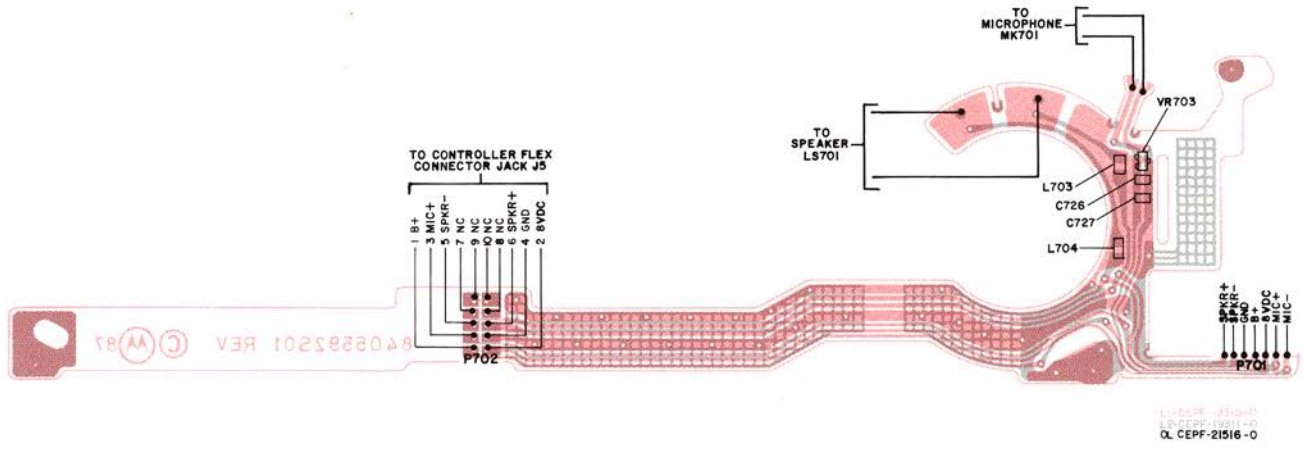
FREQUENCY SWITCH FLEX
ROTARY RADIOS (LATEST VERSION)



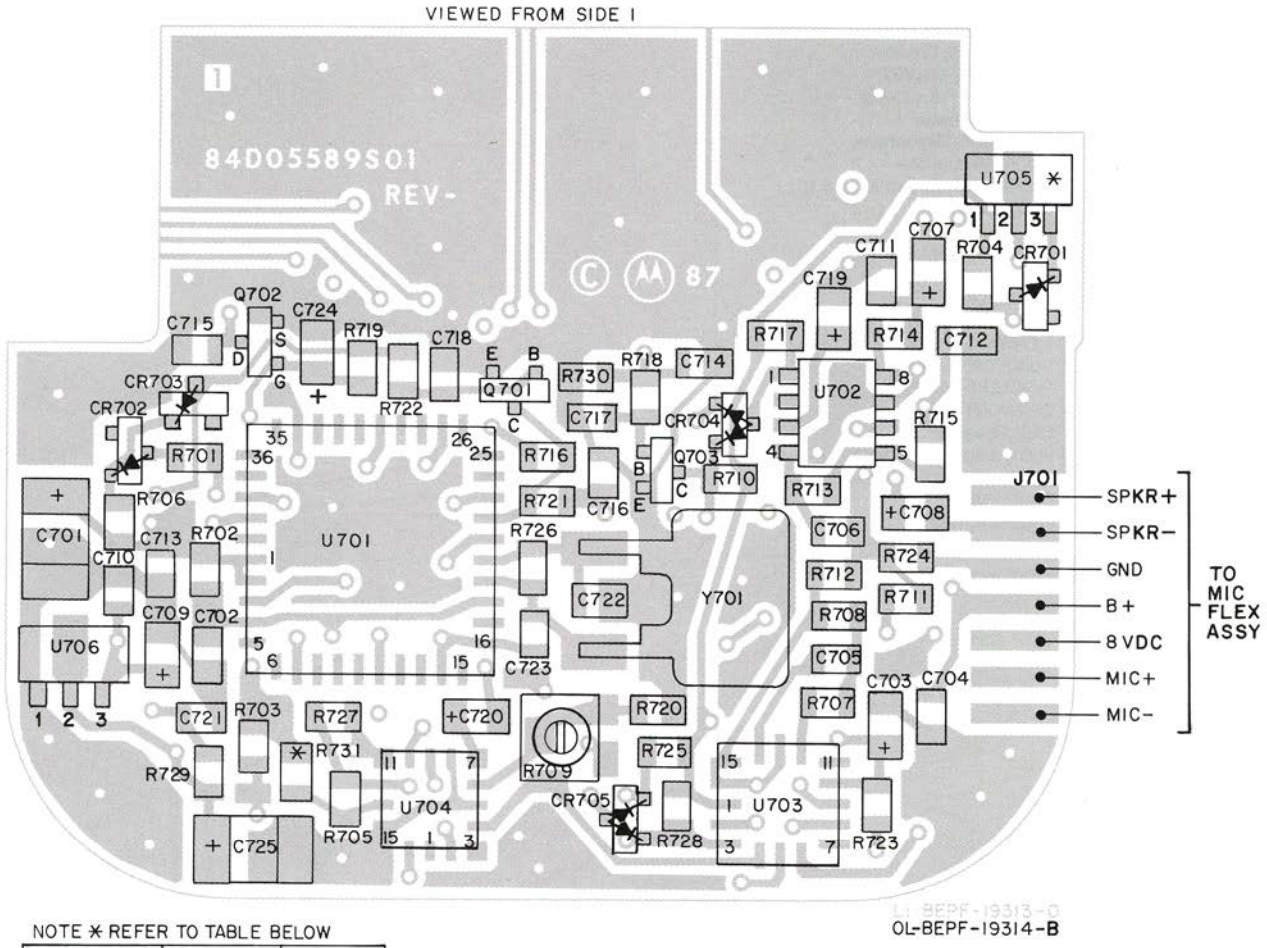
NTN5596A CIRCUIT BOARD COMPONENT LOCATION DETAIL



MICROPHONE FLEX ASSEMBLY



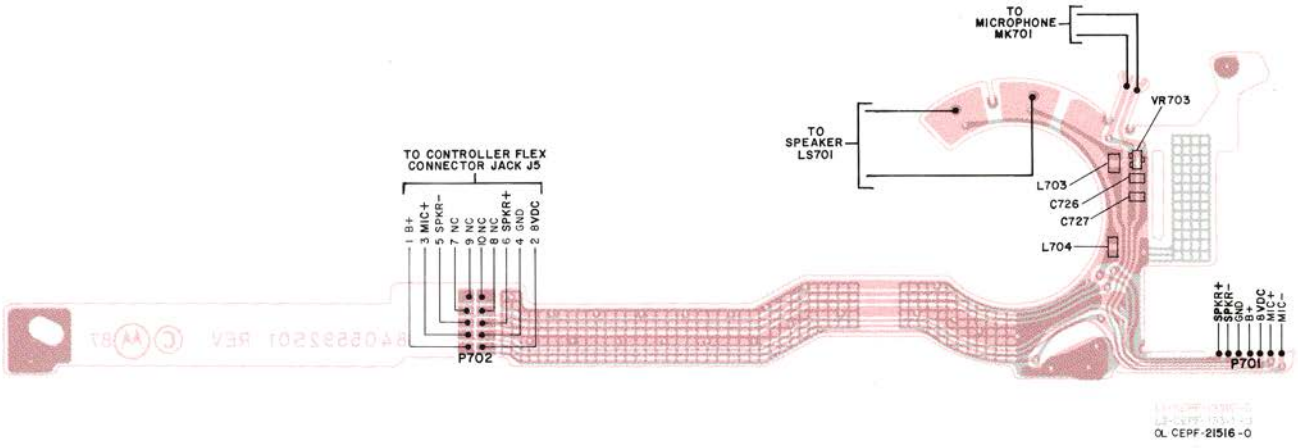
NTN5040A AND NTN5395A CIRCUIT BOARDS
COMPONENT LOCATION DETAIL



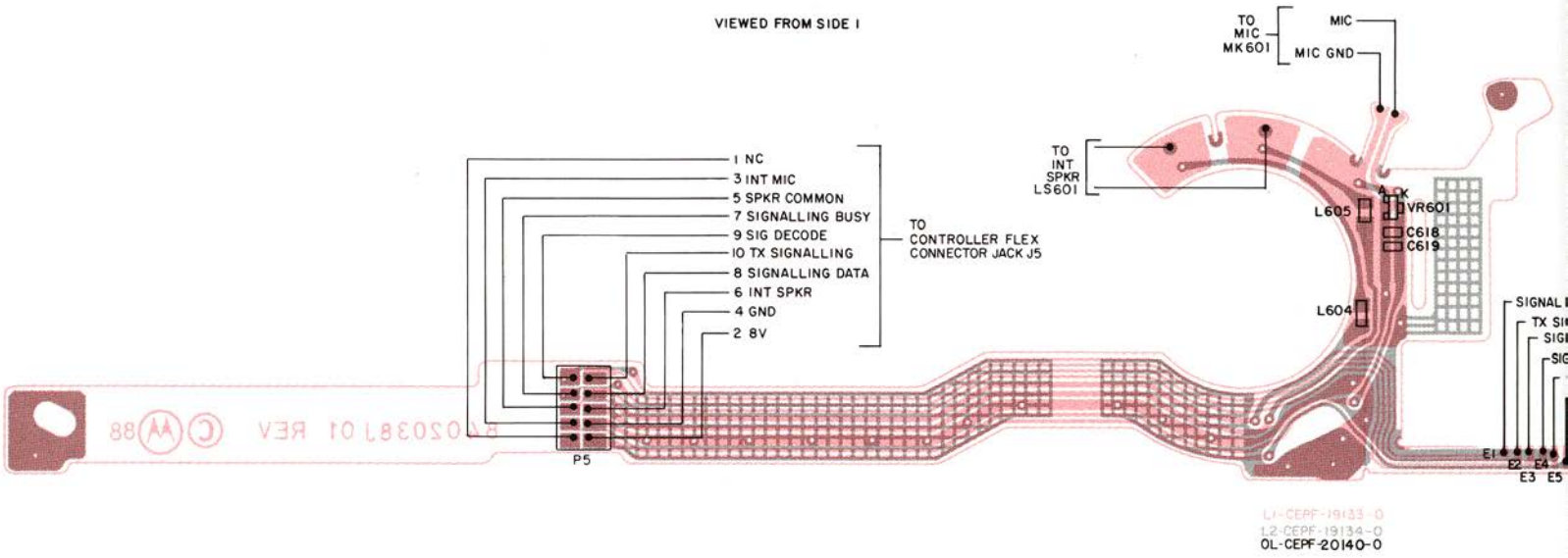
NOTE * REFER TO TABLE BELOW

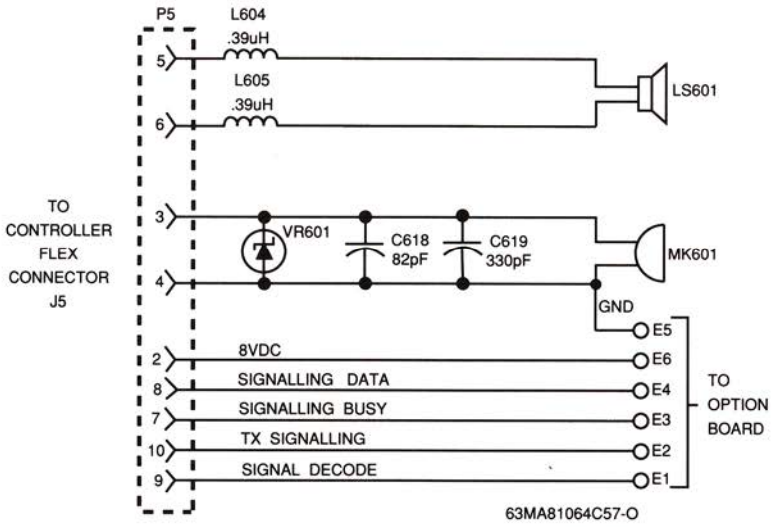
KIT NO	R731	U705
NTN5395A	NOT USED	USED
NTN5040A	USED	NOT USED

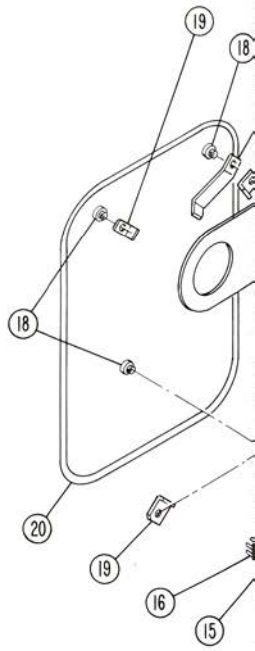
MICROPHONE FLEX ASSEMBLY



MICROPHONE FLEX ASSEMBLY





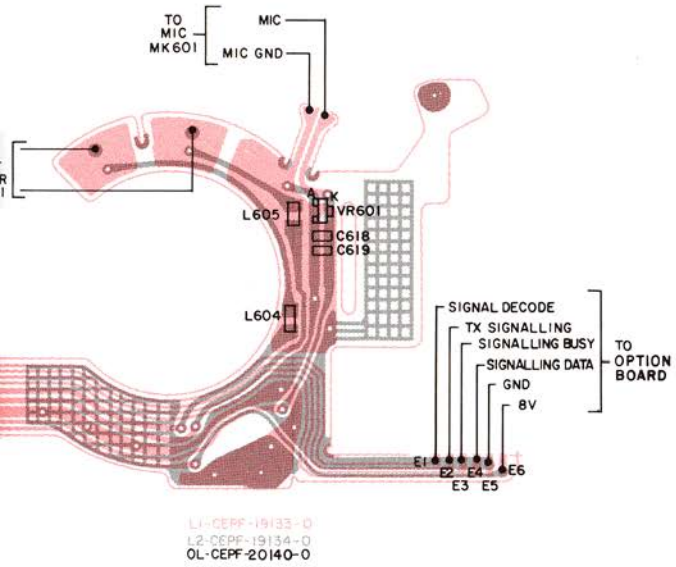


0102700J93 **TPLF-3737-A**

Microphone Flex Assembly

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
		CAPACITOR, Fixed:pF±5%; 50V, unless stated
C618	2113740A53	82
C619	2113740A67	330
		COIL, RF: unless stated
L604,L605	2462575A01	390nH
LS601	5005155Q03	**SPEAKER**
MK601	- - - -	**ASSEMBLY, Microphone** (Not field replaceable, order assembly 0102700J93).
		DIODE: See Note
VR601	4880140L09	6.2V Zener

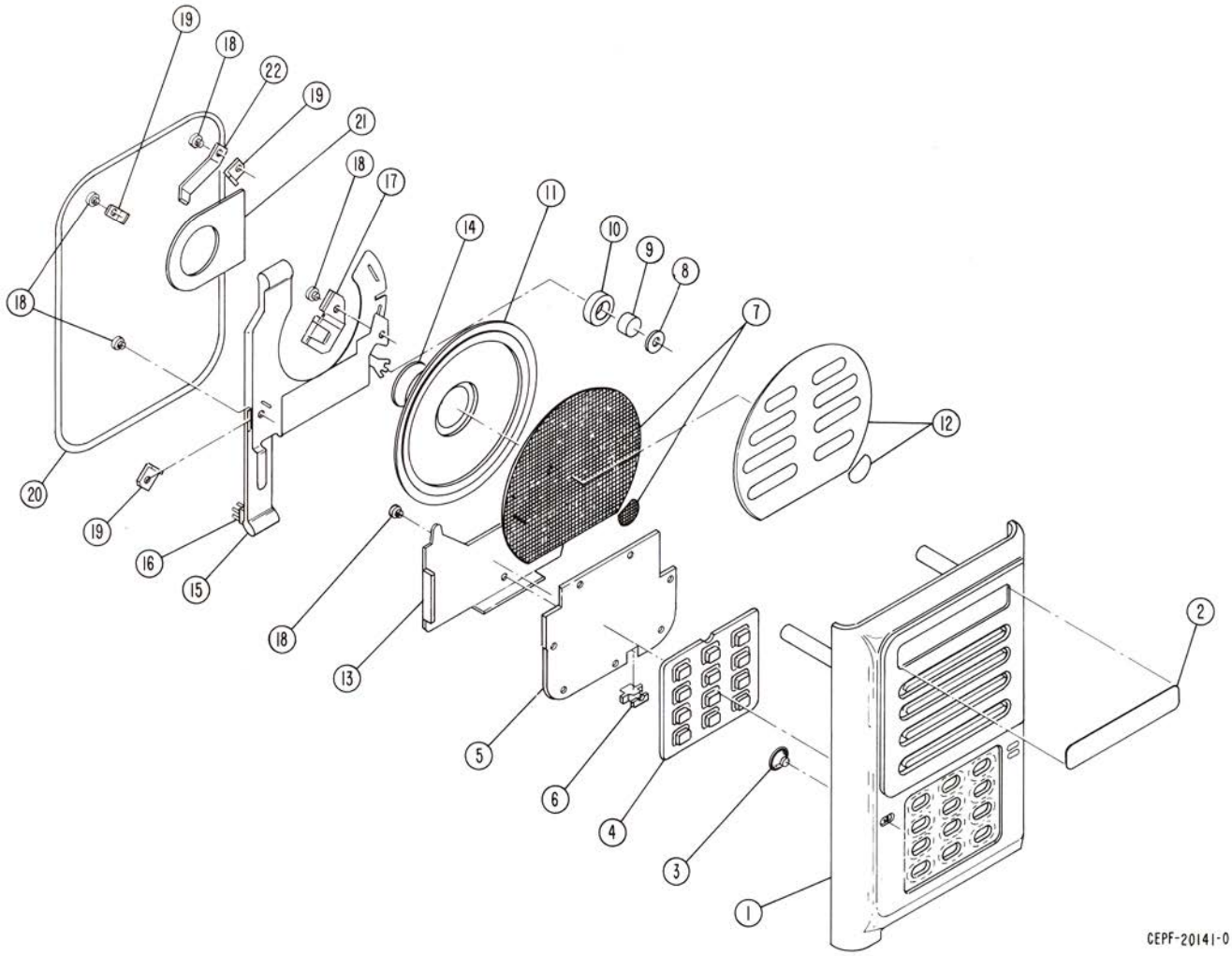
NOTE: For optimum performance, order replacement diodes, transistors, and circuit modules by Motorola part number only.



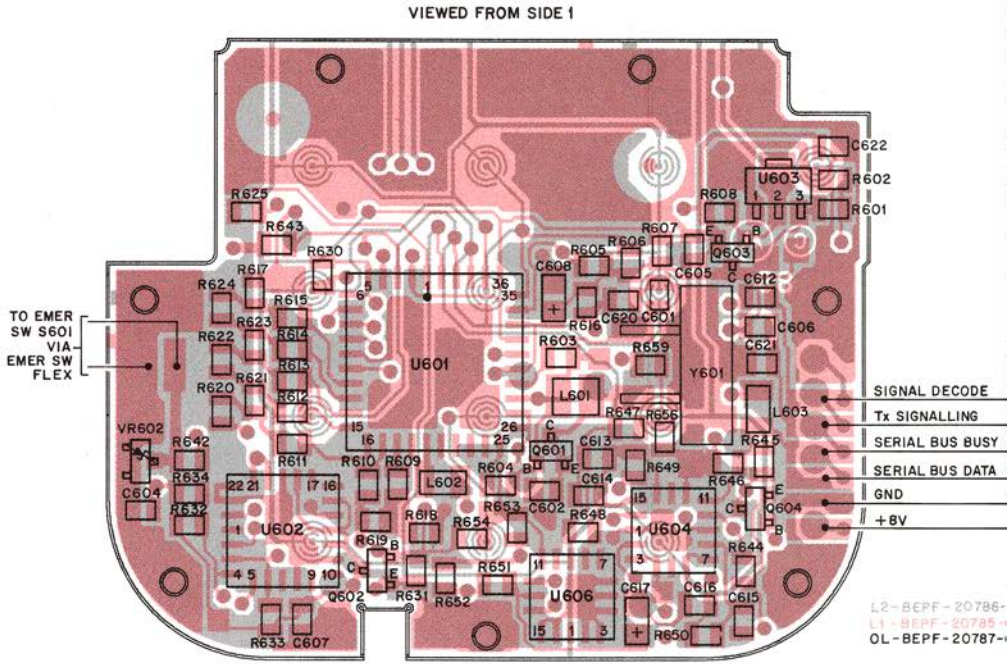
Exploded View Parts List TPLF-3811-O

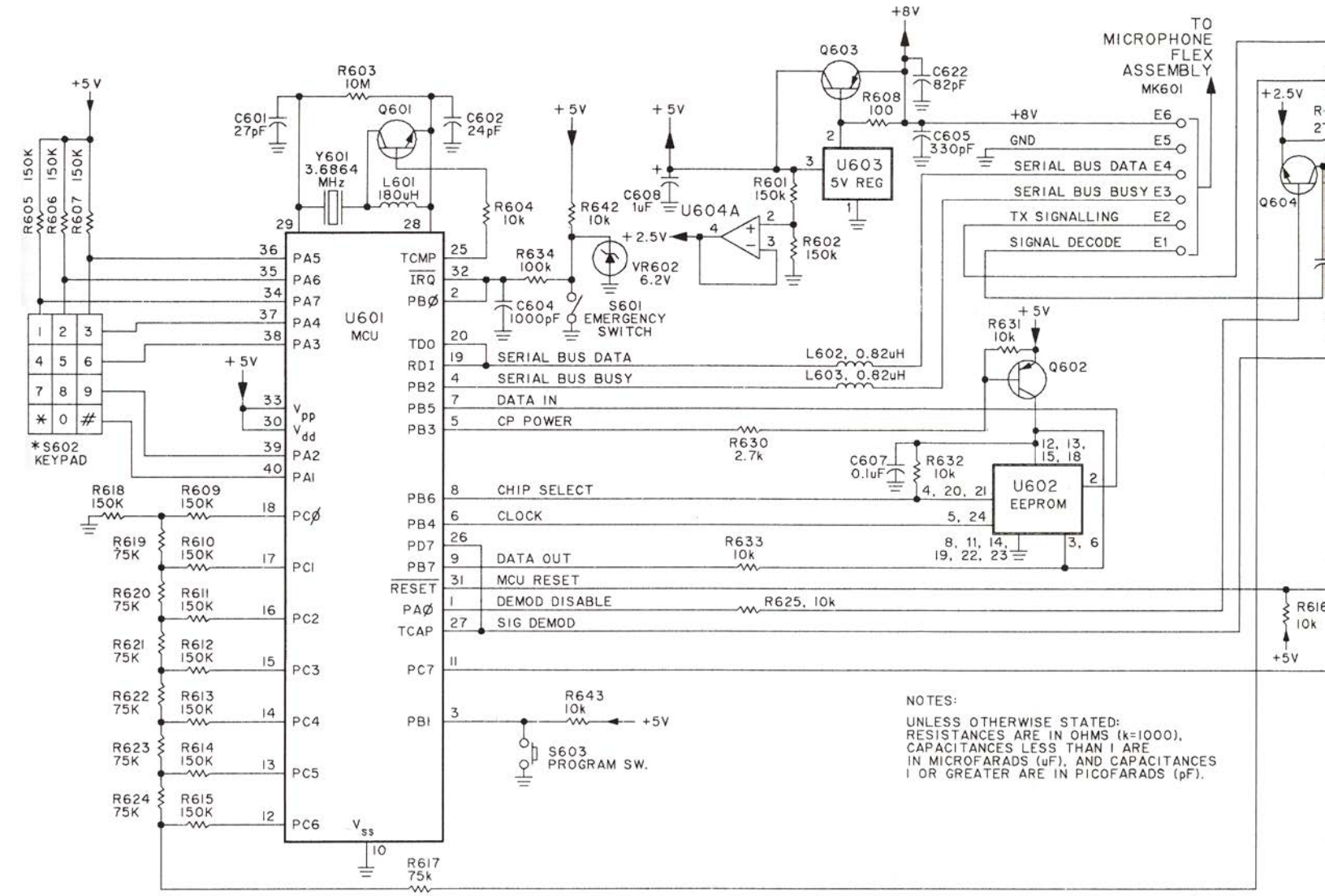
ITEM NO.	MOTOROLA PART NO.	DESCRIPTION
1	1505155S01	COVER, Front
2	3305260Q01	NAMEPLATE
3	- - - - -	KEYPAD, Single
4	- - - - -	KEYPAD, 3"X4"
5	- - - - -	BOARD, DTMF Encode/Decode
6	- - - - -	INSERT, Shield
7	- - - - -	FELT, Speaker
8	7505564S01	PAD, Microphone
9	See Note	MICROPHONE
10	1405299L01	BOOT, Microphone
11	See Note	SPEAKER (LS601)
12	- - - - -	ADHESIVE
13	2602042J02	SHIELD, PC Board
14	7505501R02	PAD, Speaker
15	See Note	ASSEMBLY, Microphone Fle (MK601) includes items 9 thru 11, 15, and 16
16	2805433R02	PLUG, 10-Position
17	4205167S01	RETAINER, Mic/Spkr.
18	0300139444	SCREW, 2-56" x 5/32"
19	4205166S01	CLAMP, Speaker
20	3205141Q01	O- Ring, Front Cover
21	1405299Q01	INSULATOR, Speaker
22	3905178S01	CONTACT, Front Cover

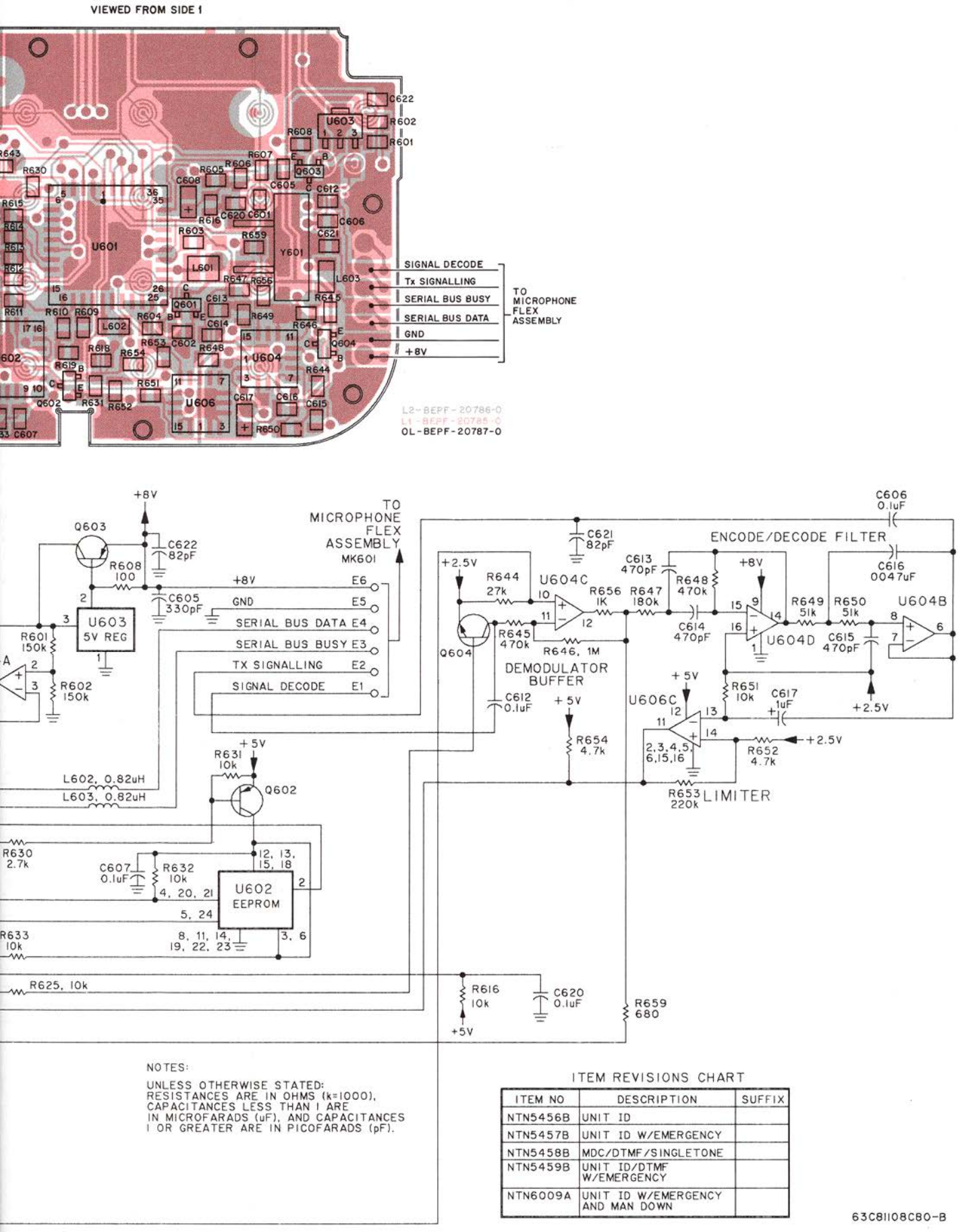
NOTE: Refer to Microphone Flex Assembly Parts list for part number and description.



MICROPHONE FLEX ASSEMBLY SCHEMATIC DIAGRAM, COMPONENT LOCATION DETAIL & PARTS LIST, AND EXPLODED VIEW & PARTS LIST 3


VIEWED FROM SIDE 1
TO EMER SW S601 VIA EMER SW FLEX
SIGNAL DECODE
Tx SIGNALLING
SERIAL BUS BUSY
SERIAL BUS DATA
GND
+8V
U601
U602
U603
U604
U606
L2-BEPF-20786-
L1-BEPF-20785-
OL-BEPF-20787-


U601 MCU
U602 EEPROM
U603 5V REG
U604A
Q601
Q602
Q603
Q604
VR602 6.2V
Y601 3.6864 MHz
L601 180uH
L602, 0.82uH
L603, 0.82uH
S601 EMERGENCY SWITCH
S602 KEYPAD
S603 PROGRAM SW.
TO MICROPHONE FLEX ASSEMBLY MK601
+8V
GND
SERIAL BUS DATA
SERIAL BUS BUSY
TX SIGNALLING
SIGNAL DECODE
SERIAL BUS DATA
SERIAL BUS BUSY
DATA IN
CP POWER
CHIP SELECT
CLOCK
DATA OUT
MCU RESET
DEMOD DISABLE
SIG DEMOD
NOTES:
UNLESS OTHERWISE STATED:
RESISTANCES ARE IN OHMS (k=1000),
CAPACITANCES LESS THAN 1 ARE
IN MICROFARADS (uF), AND CAPACITANCES
1 OR GREATER ARE IN PICOFARADS (pF).



NOTES:

UNLESS OTHERWISE STATED:
RESISTANCES ARE IN OHMS (k=1000),
CAPACITANCES LESS THAN 1 ARE
IN MICROFARADS (uF), AND CAPACITANCES
1 OR GREATER ARE IN PICOFARADS (pF).

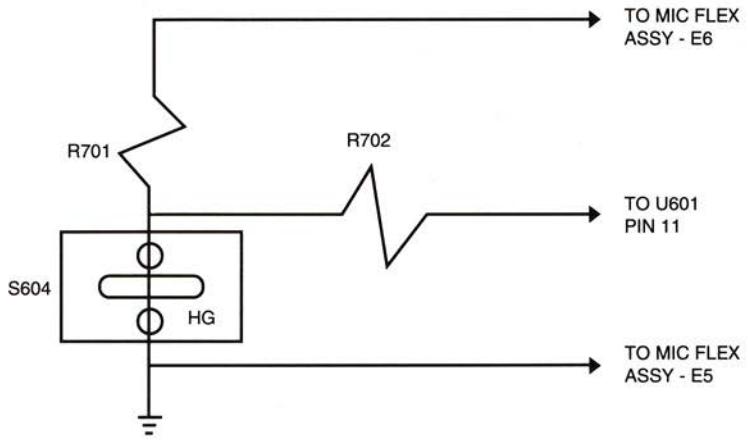
ITEM REVISIONS CHART

ITEM NO	DESCRIPTION	SUFFIX
NTN5456B	UNIT ID	
NTN5457B	UNIT ID W/EMERGENCY	
NTN5458B	MDC/DTMF/SINGLETONE	
NTN5459B	UNIT ID/DTMF W/EMERGENCY	
NTN6009A	UNIT ID W/EMERGENCY AND MAN DOWN	

63C81108C80-B

6 **NTN5457B, NTN5458B, NTN5459B, AND NTN6009A/B SIGNALLING CIRCUIT BOARD COMPONENT LOCATION DETAIL AND SCHEMATIC DIAGRAM**

NTN6009B SCHEMATIC DIAGRAM



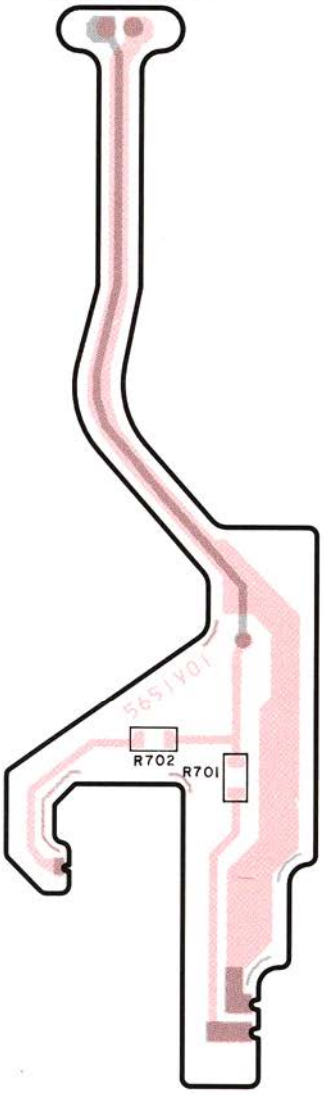
63MA81067C40-O

TO CONTROLLER FLEX CONNECTOR J5

P5
5
6
3
4
2
8
7
10
9

NTN6009B FLEX ASSEMBLY

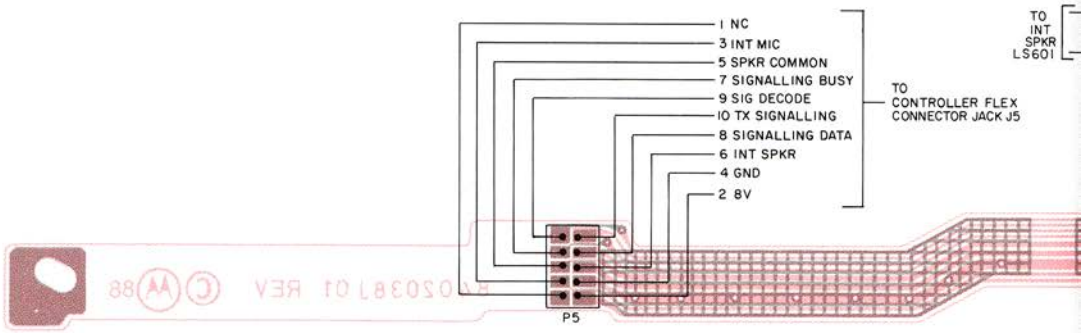
VIEWED FROM SIDE 1



L2-BEPF-21782-O
OL-BEPF-21780-O

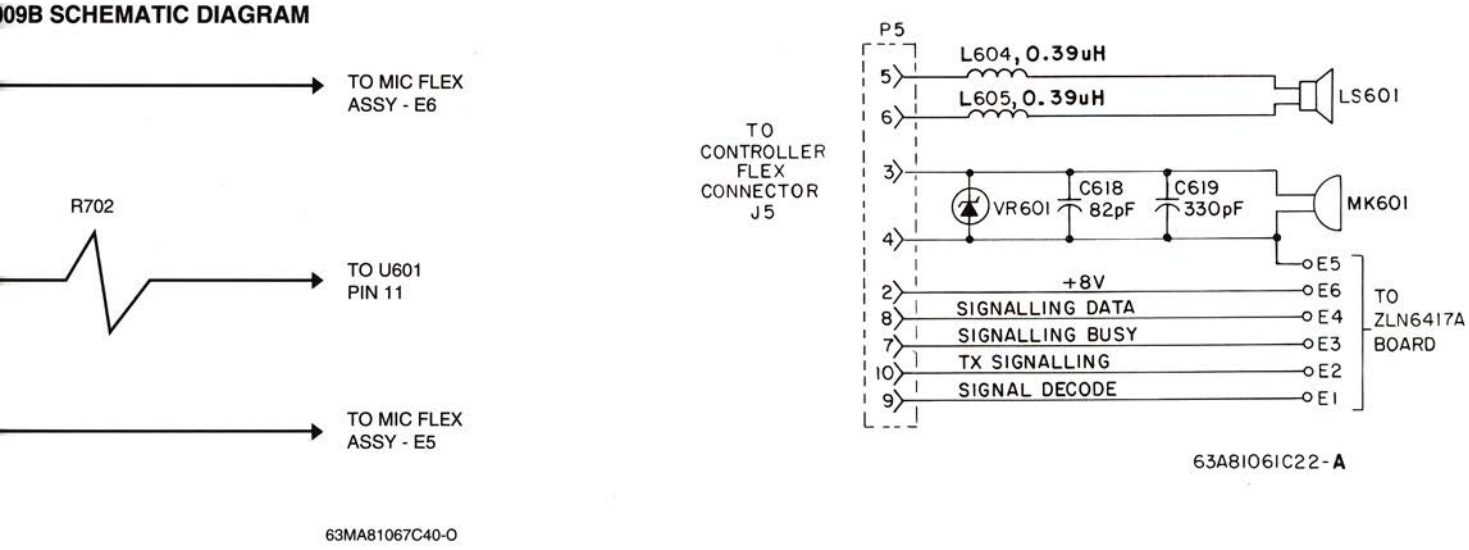
MICROPHONE FLEX ASSEMBLY

VIEWED FROM SIDE 1

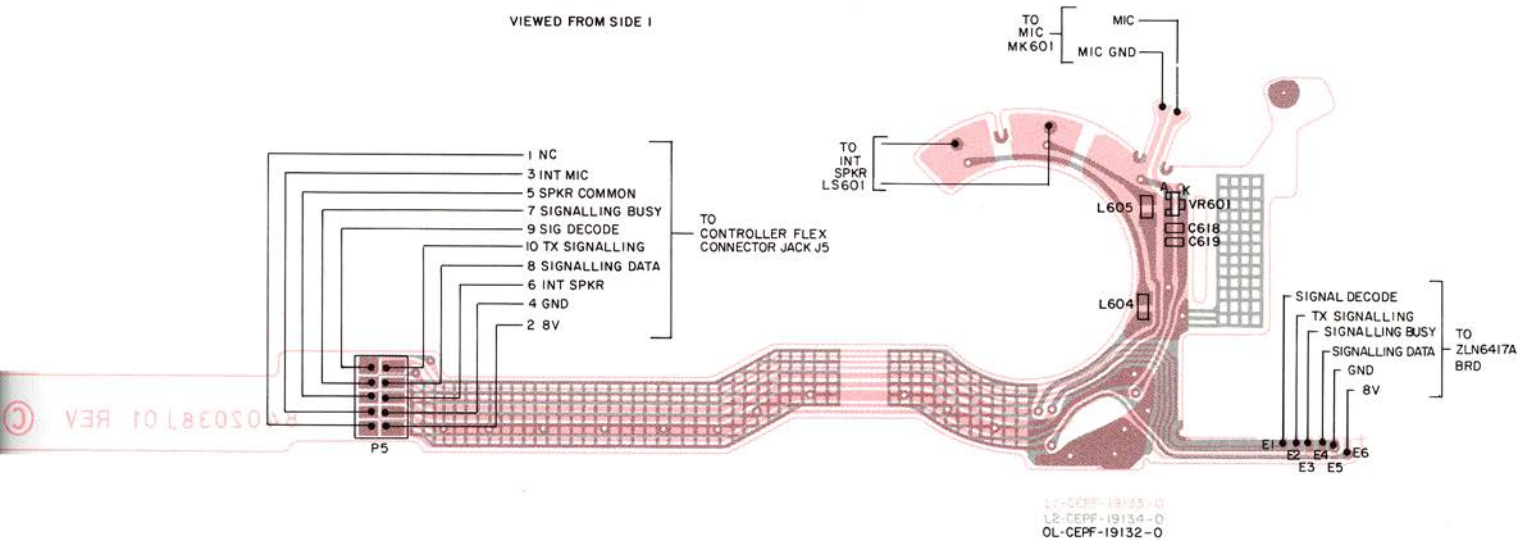


NTN54546B, NTN5457B, NTN5458B, NTN5459B, A
MI
COMPONENT LOCA

009B SCHEMATIC DIAGRAM



MICROPHONE FLEX ASSEMBLY



NTN 6009A Schematic Diagram