MOTOROLA INC.

instruction manual revision

GENERAL

This revision outlines changes that have occurred since the printing of your instruction manual. Use this information to update your instruction manual.

INSTRUCTION MANUAL AFFECTED:

68-80101W58-A Radius Two-Way Radio Service Manual

REVISION DETAILS:

This revision contains the schematic, circuit board diagrams and parts list for the HLE9310A UHF 449-470 MHz RF Board. This board is a direct replacement for the earlier versions HLE4425A and HLE4425B UHF 449-470 MHz RF Boards. The new version board provides simplified circuitry and mechanical construction while providing the same electrical performance and specifications as the earlier versions. Please mark the model charts on pages iv and v of your Service Manual to indicate that HLE9310A now replaces the listed HLE4425A UHF RF board.

This revision also contains the schematic, circuit board diagrams and parts list for the HLF3030A 35 Watt 806-821 MHz RF Power Amplifier. The HLF3030A consists of the HLF4098A PA Board (35 Watt, 806-821 MHz, Simplex, Talkaround) and the HLN9305A PA Hardware Kit. A model chart is included for the Radius model D45LRA7PA6AK (14 Frequency, 35 Watt, 800 MHz) in which this Power Amplifier is used.

The following pages contain additional information covering new kits. No pages in your existing manual should be discarded.

Radius Products Division
1411 E. Washington St., Mount Pleasant, IA 52641, (319) 385-9271

MMR016
5/01/89

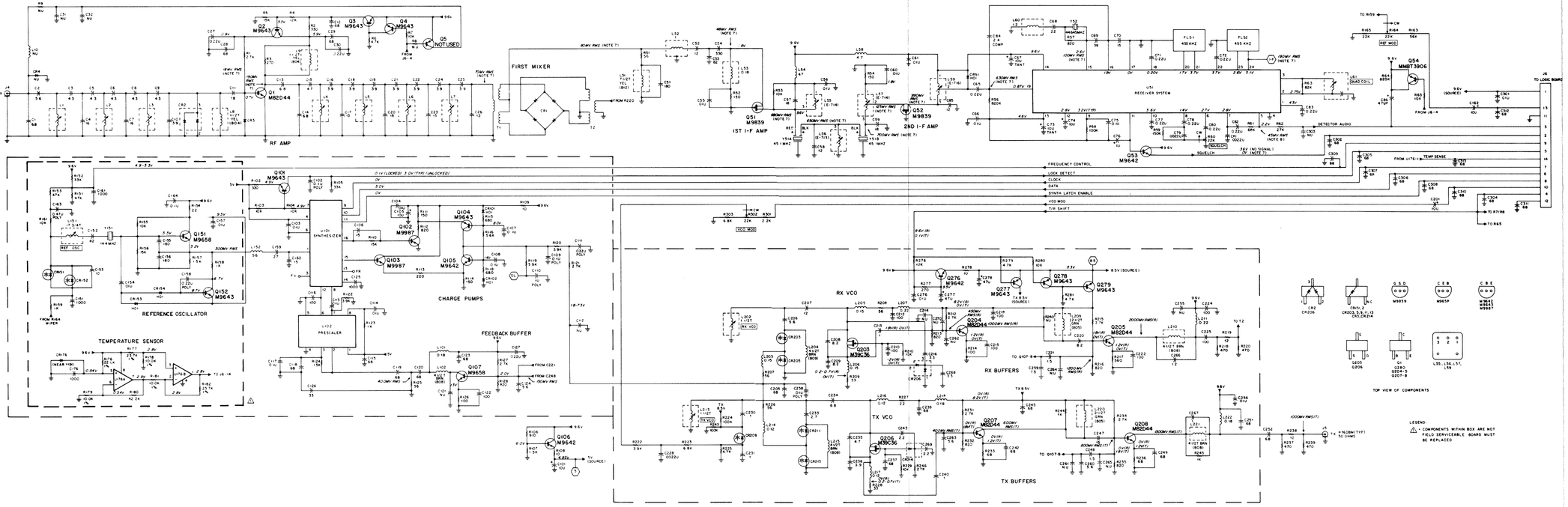
800 MHz Radius Mobile Radio
35 Watt RF Power
with Talkaround
TX: 806-821 or 851-870 MHz
RX: 851-870 MHz

X=ONE ITEM SUPPLIED.

MODEL	FREQ.	VERSION	ITEM	DESCRIPTION
D45LRA7PA6AK	14	Radius M214 (PL/DPL/CSQ, Scan)		
X	X	X	HUF1034A	UNIFIED CHASSIS 800 MHz (See Note)
X	X	X	HLF3030A	PA KIT 35 WATT 800 MHz (See Note)
X	X	X	HLN9411A	HEATSINK COVER & HDWR (See Note)
X	X	X	HCN3034A	FRONT PANEL 14 FREQ.
X	X	X	HLN9180A	NAMEPLATE
X	X	X	HHN4029A	HOUSING KIT
X	X	X	HMN1056A	MICROPHONE KIT
X	X	X	HLN9073A	MICROPHONE HANGUP CLIP
X	X	X	HKN9402A	POWER CABLE KIT
X	X	X	HLN9404A	INSTALLATION HDWR KIT
X	X	X	HBN9403A	PACKING KIT
X	X	X	HLN9277A	ROM KIT

ITEM	DESCRIPTION
HLF9122A	RF BOARD 800 MHz
HLN5173B	LOGIC BOARD
HLN5175A	DISPLAY BRD 6/14 FREQ.
HLN9143A	FRONT PANEL HDWR 14 FREQ.
HLN5184A	FRONT PANEL SWITCH BOARD
HLN9436A	CHASSIS HDWR KIT
HLF4098A	35W PA BOARD 800 MHz
HLN9305A	35W HEATSINK HDWR
HLN1245A	MICROPHONE
HLN5301A	COILED CORD

NOTE: HUF3191A "SUPER CHASSIS" CONSISTS OF HUF1034A, HLF3030A AND HLN9411A.

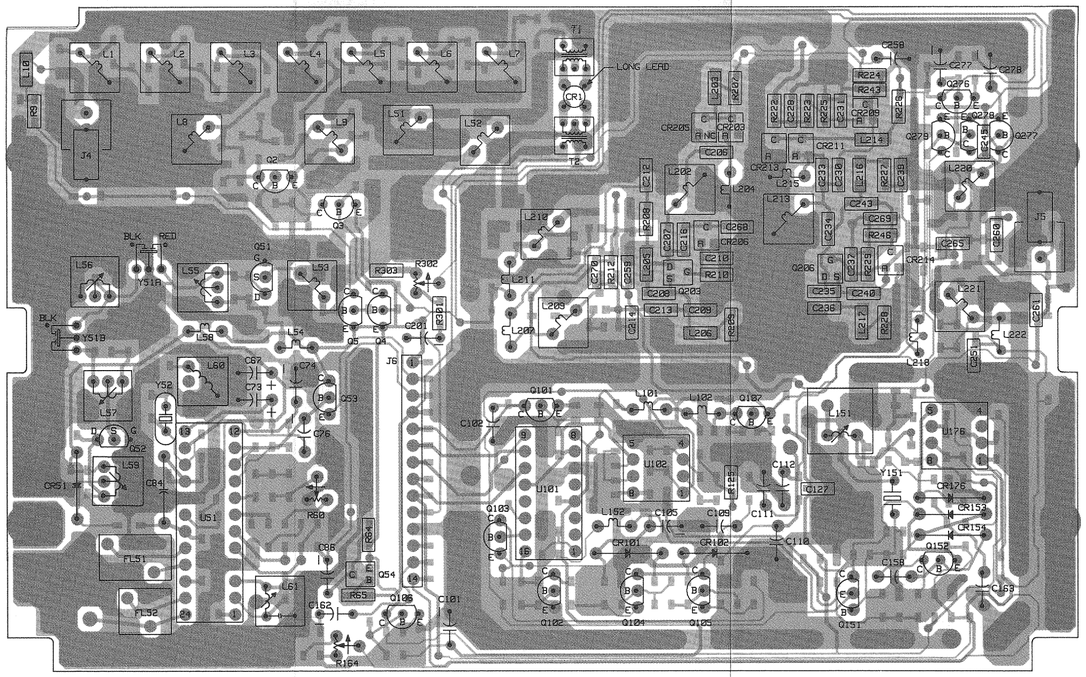


NOTES:

1. UNLESS OTHERWISE INDICATED, RESISTOR VALUES ARE IN OHMS, CAPACITOR VALUES ARE IN PICOFARADS, INDUCTOR VALUES ARE IN MICROHENRIES.
2. NON-POLARIZED CAPACITORS ARE CHIP TYPE UNLESS OTHERWISE INDICATED.
3. POLARIZED CAPACITORS ARE ALUMINUM ELECTROLYTIC TYPE UNLESS OTHERWISE INDICATED.
4. DC VOLTAGES ARE MEASURED WITH A HIGH IMPEDANCE (10 MEGOHM) DC VOLTMETER.
5. AC RF VOLTAGES ARE MEASURED WITH A HIGH-IMPEDANCE RF MILLIVOLTMETER.
6. ALL VOLTAGE MEASUREMENTS ARE IN THE RECEIVE MODE UNLESS INDICATED AS FOLLOWS:
   (R) RECEIVE MODE
   (T) TRANSMIT MODE
7. MEASURED IN THE RECEIVE MODE WITH AN ON-CHANNEL UNMODULATED SIGNAL AT A LEVEL OF -20 DBM.
8. MEASURED IN THE RECEIVE MODE WITH AN ON-CHANNEL SIGNAL AT A LEVEL OF -20 DBM, MODULATED WITH 1 KHZ AT 3 KHZ DEVIATION. MEASURED WITH AN AC RMS VOLTMETER.

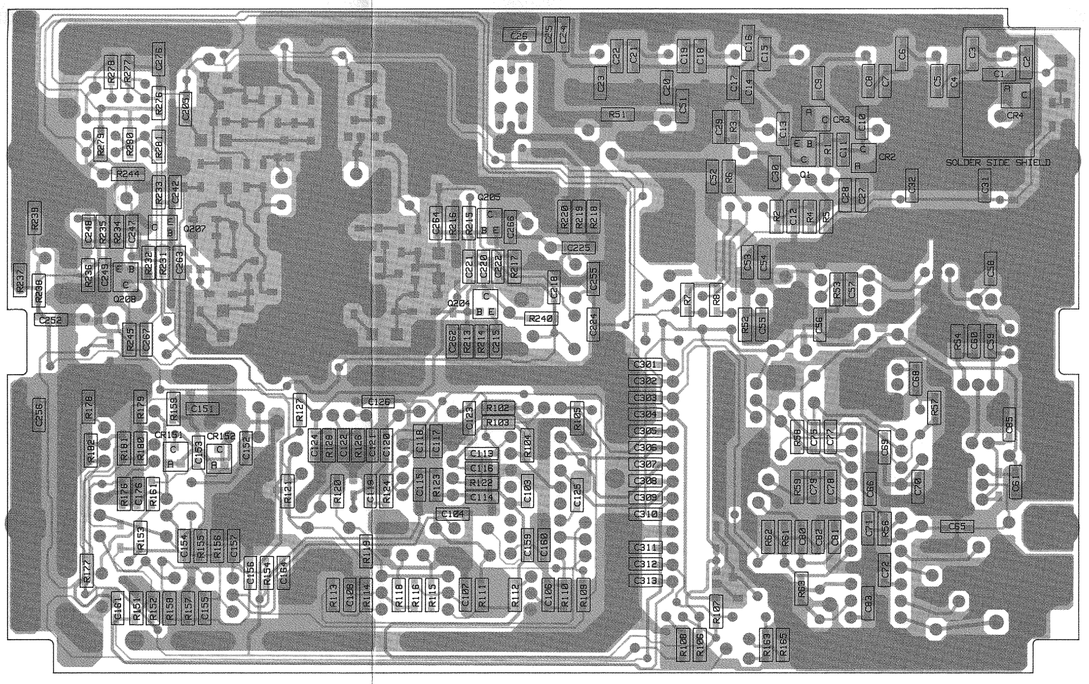
[MMR016 5/01/89]

HLE9310A UHF RF Board 449-470 MHz
Schematic Diagram
3



COMPONENT
SOLDER SIDE
OVERLAY

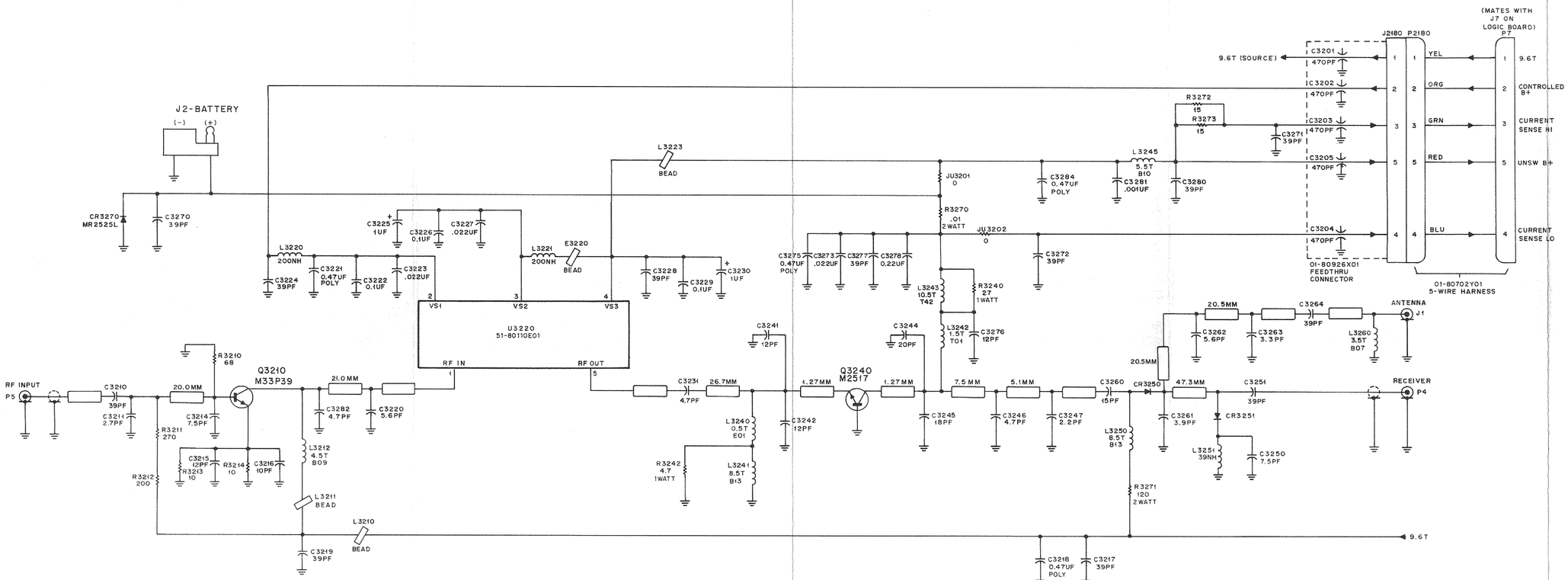
SHOWN FROM COMPONENT SIDE



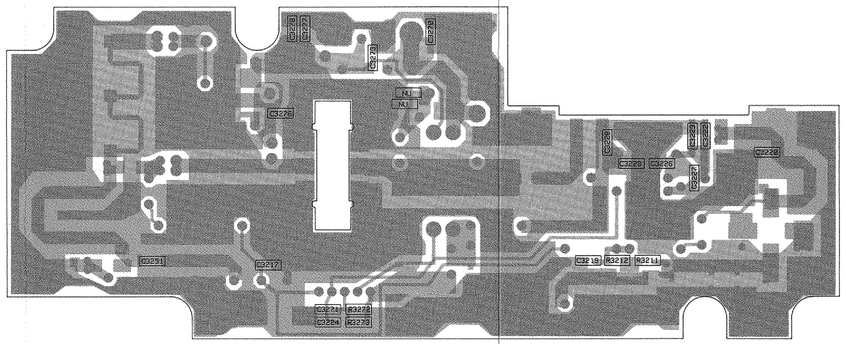
COMPONENT
SOLDER SIDE
OVERLAY

SHOWN FROM SOLDER SIDE

[MMR016 5/01/89]

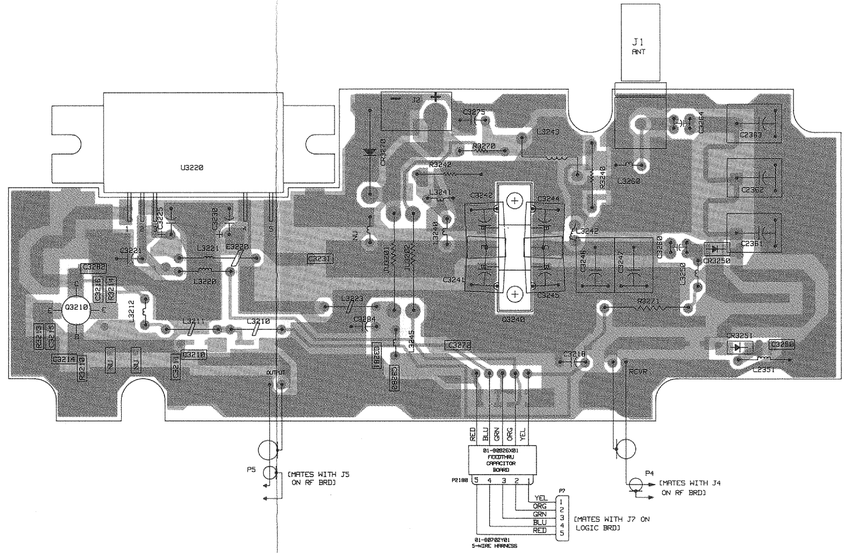


[MMR016 5/01/89]



COMPONENT
SOLDER SIDE
OVERLAY

SHOWN FROM SOLDER SIDE



COMPONENT
SOLDER SIDE
OVERLAY

SHOWN FROM COMPONENT SIDE

[MMR016 5/01/89]

HLF4098A PA Board, 35 Watt, 806-821 MHz, Simplex, Talkaround

REFERENCE NUMBER	MOTOROLA PART NO.	DESCRIPTION
Capacitor, chip, 5%, 50V unless otherwise indicated		
C3201-5		part of 01-80926X01
C3210	21-13740B39	39 pF
C3211	21-13740B11	2.7 pF
C3214	21-13740B22	7.5 pF
C3215	21-13740B27	12 pF
C3216	21-13740B25	10 pF
C3217	21-13740B39	39 pF
C3218	08-11051A17	poly .47 uF 63V
C3219	21-13740B39	39 pF
C3220	21-11078B07	5.6 +/-.25 pF 100V
C3221	08-11051A17	poly .47 uF 63V
C3222	21-13741B69	.1 uF +80/-20%
C3223	21-13741B53	.022 uF 10%
C3224	21-13740B39	39 pF
C3225	23-11048B05	lytic 1 uF 20% 50V
C3226	21-13741B69	.1 uF +80/-20%
C3227	21-13741B53	.022 uF 10%
C3228	21-13740B39	39 pF
C3229	21-13741B69	.1 uF +80/-20%
C3230	23-11048B05	lytic 1 uF 20% 50V
C3231	21-11078B05	4.7 +/-.25 pF 100V
C3246	21-80240G72	mica 4.7 +/-.25 pF 250V
C3247	21-80240G67	mica 2.2 +/-.25 pF 250V
C3250	21-11078B10	7.5 +/-.25 pF 100V
C3251	21-13740B39	39 pF
C3260	21-80240G35	mica 15 pF 250V
C3261	21-80240G70	mica 3.9 +/-.25 pF 250V
C3262	21-80240G79	mica 5.6 +/-.25 pF 250V
C3263	21-80240G69	mica 3.3 +/-.25 pF 250V
C3264	21-80240G03	mica 39 pF 250V
C3270	21-13740B39	39 pF
C3271	21-13740B39	39 pF
C3272	21-13740B39	39 pF
C3273	21-13741B53	.022 uF 10%
C3275	08-11051A17	poly .47 uF 63V
C3276	21-13740B27	12 pF
C3277	21-13740B39	39 pF
C3278	21-11032B15	.22 uF +80/-20%
C3280	21-13740B39	39 pF
C3281	21-13741B21	.001 uF 10%
C3282	21-11078B05	4.7 +/-.25 pF 100V
C3284	08-11051A17	poly .47 uF 63V
Diodes (see note)		
CR3250	48-80236E20	silicon PIN
CR3251	48-80236E20	silicon PIN
CR3270	48-80236E07	transient suppressor MR2525L
Ferrite Bead		
E3220	76-83960B01	core ferrite
Connector, receptacle		
J1	09-83228R01	mini UHF coax
J2180		part of 01-80926X01
Jumpers		
JU3201	31-80912W01	strip conductive
JU3202	31-80912W01	strip conductive
Coils		
L3210	24-80036A01	ferrite bead 1/2 turn
L3211	24-80036A01	ferrite bead 1/2 turn
L3212	24-11030B09	4-1/2 turns BRN
L3220	24-82723H46	200 nH
L3221	24-82723H46	200 nH
L3223	24-80036A01	ferrite bead 1/2 turn
L3240	21-11030E01	1/2 turn BRN
L3241	24-11030B13	8-1/2 turns GRN
L3242	24-80908T01	1-1/2 turn
L3243	24-80908T42	10-1/2 turns
L3245	24-11030B10	5-1/2 turns RED
L3250	24-11030B13	8-1/2 turns GRN
L3251	24-82723H44	39 nH
L3260	24-11030B07	3-1/2 turns WHT
Transistor (see note)		
Q3210	48-82233P39	NPN; type M33P39
Resistors, chip, 5%, 1/8 watt, unless otherwise indicated		
R3210	06-11077A46	68
R3211	06-11077A60	270
R3212	06-11077A57	200
R3213	06-11077A26	10
R3214	06-11077A26	10
R3240	06-11086A21	metal film 27 1 watt
R3242	06-11086A08	metal film 4.7 1 watt
R3270	06-80147M02	metal film .01 10% 2 watt
R3271	06-11086C37	metal film 120 2 watt
R3272	06-11077A30	15
R3273	06-11077A30	15
Non-referenced items		
	01-80926X01	feedthru connector assembly
	29-80014A01	clip coax terminal (2 used)

Note: For optimum performance, diodes, transistors and integrated circuits must be ordered by Motorola part numbers.

HLN9305A PA Hardware Kit (806-825 MHz, 35 Watt)

REFERENCE NUMBER	MOTOROLA PART NO.	DESCRIPTION
Capacitors, mica, 5%, 250V		
C3241	21-80240G20	12 pF
C3242	21-80240G20	12 pF
C3244	21-80240G24	20 pF
C3245	21-80240G23	18 pF
Connector, receptacle		
J2	09-80255E02	power (includes feedthru)
Connector, plug		
P4	30-80138M19	coaxial cable 135 mm with plug
P5	30-80138M19	coaxial cable 135 mm with plug
Transistor (see note)		
Q3240	48-80225C17	NPN; type M2517
Integrated Circuits and Modules		
U3220	51-80110E01	RF power 800 MHz 20W
Non-referenced items		
	03-10943M10	machine screw M3x8 (9 used for pcb mounting)
	03-10943M11	machine screw M3x10 (8 used, for U3220, Q3240, J2, and 01-80926X01)
	04-00131974	washer (2 used for J2)
	04-80943V01	lockwasher (for J1)
	26-80901V01	heatsink
	29-80921T01	ground lug (2 used for U3220)
	42-80281L01	ground clip (2 used for Q3240)
	42-80985T01	ground clip coax (2 used)

Note: For optimum performance, diodes, transistors and integrated circuits must be ordered by Motorola part numbers.

01-80702Y01 5 Wire Harness Assembly (part of HLN9305A)

REFERENCE NUMBER	MOTOROLA PART NO.	DESCRIPTION
Connector, plug		
P7	15-80075M01	housing, 5 position
P2180	15-80946W02	housing, 6 position
Non-referenced items		
	09-80133M01	receptacle, connector (5 used for P7)
	29-84249N01	receptacle, connector (5 used for P2180)
	38-80131N01	polarizing pin (for P2180)

HLE9310A RF Board, 449-470 MHz

REFERENCE NUMBER	MOTOROLA PART NO.	DESCRIPTION
Capacitor, chip, 5%, 50V unless otherwise indicated		
C1	21-11031A11	6.8 +/-.5 pF
C2	21-11031A10	5.6 +/-.5 pF
C3	21-11031A67	4.3 +/-.25 pF
C4	21-11031A20	16 pF
C5	21-11031A67	4.3 +/-.25 pF
C6	21-11031A67	4.3 +/-.25 pF
C7	21-11031A20	16 pF
C8	21-11031A67	4.3 +/-.25 pF
C9	21-11031A67	4.3 +/-.25 pF
C10	21-11031A08	3.9 +/-.25 pF
C11	21-11031A21	18 pF
C12	21-11031A35	68 pF
C13	21-11031A11	6.8 +/-.5 pF
C14	21-11031A11	6.8 +/-.5 pF
C15	21-11031A09	4.7 +/-.25 pF
C16	21-11031A08	3.9 +/-.25 pF
C17	21-11031A19	15 pF
C18	21-11031A08	3.9 +/-.25 pF
C19	21-11031A08	3.9 +/-.25 pF
C20	21-11031A21	18 pF
C21	21-11031A08	3.9 +/-.25 pF
C22	21-11031A08	3.9 +/-.25 pF
C23	21-11031A19	15 pF
C24	21-11031A08	3.9 +/-.25 pF
C25	21-11031A08	3.9 +/-.25 pF
C26	21-11031A17	12 pF
C27	21-11032B15	.22 uF +80/-20%
C28	21-11031A35	68 pF
C29	21-11031A35	68 pF
C30	21-11032B15	.22 uF +80/-20%
C31		not used
C32		not used
C51	21-11031A45	180 pF
C52	21-11031A17	12 pF
C53	21-11031A37	82 pF
C54	21-11031A51	330 pF
C55	21-11032A21	.01 uF 10%
C56	21-11032A21	.01 uF 10%
C57	21-11031A21	18 pF
C58	21-11031A17	12 pF
C59	21-11031A21	18 pF
C60	21-11032A21	.01 uF 10%
C61	21-11032A21	.01 uF 10%
C65	21-11032B15	.22 uF +80/-20%
C66	21-11032A21	.01 uF 10%
C67	23-11013D13	tantalum 10 uF 10% 20V
C68	21-11031A23	22 pF
C69	21-11031A29	39 pF
C70	21-11031A19	15 pF
C71	21-11032B15	.22 uF +80/-20%
C72	21-11032B15	.22 uF +80/-20%
C73	23-11013D13	tantalum 10 uF 10% 20V
C74	23-11048B13	lytic 10 uF 20% 16V
C75	21-11032B13	.1 uF +80/-20%
C76	23-11048B05	lytic 1 uF 20% 50V
C77	21-11032B15	.22 uF +80/-20%
C78	21-11032B15	.22 uF +80/-20%
C79	21-11032A13	.0022 uF 10%
C80	21-11032B15	.22 uF +80/-20%
C81	21-11032A13	.0022 uF 10%
C82	21-11032B15	.22 uF +80/-20%
C83	21-11032B15	.22 uF +80/-20%
C84	21-82450B14	composition 2.4 pF 500V
C85	21-11031A17	12 pF
C86	23-11048B19	lytic 47 uF 20% 16V
C101	23-11048B13	lytic 10 uF 20% 16V
C102	08-11051A13	poly .1 uF 63V
C103	21-11032A21	.01 uF 10%
C104	21-11032A21	.01 uF 10%
C105	23-11048B13	lytic 10 uF 20% 16V
C106	21-11031A19	15 pF
C107	21-11032B13	.1 uF +80/-20%
C108	21-11032B13	.1 uF +80/-20%
C109	08-11051A13	poly .1 uF 63V
C110	08-11051A19	poly 1 uF
C111	08-11051A09	poly .022 uF 63V
C112		not used
C113	21-11032A21	.01 uF 10%
C114	21-11032A21	.01 uF 10%
C115	21-11031A35	68 pF
C116	21-11031A39	100 pF
C117	21-11032B13	.1 uF +80/-20%
C118	21-11031A35	68 pF
C119	21-11031A35	68 pF
C120	21-11031A35	68 pF
C121		not used
C122	21-11031A39	100 pF
C123	21-11031A35	68 pF
C124	21-11031A10	5.6 +/-.5 pF
C125	21-11031A61	1000 pF
C126	21-11031A27	33 pF
C127	21-11032B15	.22 uF +80/-20%
C151	21-11031A61	1000 pF
C152	21-11031A37	82 pF
C153	21-11031A15	10 +/-.5 pF
C154	21-11032A21	.01 uF 10%
C155	21-11031A45	180 pF
C156	21-11031A45	180 pF
C157	21-11032A21	.01 uF 10%
C158	08-11051A15	poly .22 uF 63V
C159	21-11031A25	27 pF
C160	21-11031A19	15 pF
C161	21-11031A61	1000 pF
C162	23-11048B13	lytic 10 uF 20% 16V
C163	08-11051A17	poly .47 uF 63V
C164	21-11032B13	.1 uF +80/-20%
C176	21-11031A61	1000 pF
C201	23-11048B13	lytic 10 uF 20% 16V
C205	21-11031A35	68 pF
C206	21-11031A10	5.6 +/-.5 pF
C207	21-11031A17	12 +/-.5 pF
C208	21-11031A13	8.2 +/-.5 pF
C209	21-11031A13	8.2 +/-.5 pF
C210	21-11031A39	100 pF
C212	21-11031A39	100 pF
C213	21-11031A01	1 +/-.25 pF
C214		not used
C215	21-11031A39	100 pF
C216	21-11031A07	3.3 +/-.25 pF
C218	21-11031A39	100 pF
C220	21-11031A13	8.2 +/-.5 pF
C221	21-11031A03	1.5 +/-.25 pF
C222	21-11031A39	100 pF
C224	21-11031A39	100 pF
C225	21-11031A39	100 pF
C228	21-11032A13	.0022 uF 10%
C230	21-11031A01	1 +/-.25 pF
C231	21-11031A01	1 +/-.25 pF
C233	21-11031A06	2.7 +/-.25 pF
C234	21-11031A11	6.8 +/-.5 pF
C235	21-11031A09	4.7 +/-.25 pF
C236	21-11031A08	3.9 +/-.25 pF
C237	21-11031A35	68 pF
C239	21-11031A35	68 pF
C240	21-11031A01	1 +/-.25 pF
C242	21-11031A35	68 pF
C243	21-11031A05	2.2 +/-.25 pF
C245	21-11031A35	68 pF
C247	21-11031A19	15 pF
C248	21-11031A03	1.5 +/-.25 pF
C249	21-11031A35	68 pF
C251	21-11031A35	68 pF
C252	21-11031A35	68 pF
C255		not used
C256	21-11032A21	.01 uF 10%
C258	08-11051A07	poly .01 uF 63V
C259	21-11031A12	7.5 +/-.5 pF
C260	21-11031A10	5.6 +/-.5 pF

C261		not used
C262		not used
C263	21-11031A10	5.6 +/-.5 pF
C264		not used
C265		not used
C266	21-11031A02	1.2 +/-.25 pF
C267	21-11031A01	1 +/-.25 pF
C268	21-11031A07	3.3 +/-.25 pF
C269	21-11031A05	2.2 +/-.25 pF
C270		not used
C276	21-11032A21	.01 uF 10%
C277	23-11048B19	lytic 47 uF 20% 16V
C278	23-11048B19	lytic 47 uF 20% 16V
C301	21-11032A21	.01 uF 10%
C302	21-11031A35	68 pF
C303		not used
C304	21-11031A35	68 pF
C305	21-11031A35	68 pF
C306	21-11031A35	68 pF
C307	21-11031A35	68 pF
C308	21-11031A35	68 pF
C309	21-11031A35	68 pF
C310	21-11031A35	68 pF
C311	21-11031A35	68 pF
C312	21-11031A35	68 pF
C313	21-11031A35	68 pF

Diodes (see note)

CR1	48-80236E16	quad Schottky crossed
CR2	48-80154K02	dual Schottky SOT
CR3	48-80939T01	Schottky SOT
CR4		not used
CR51	48-83654H01	silicon
CR101	48-83654H01	silicon
CR102	48-83654H01	silicon
CR151	48-82190H54	silicon varactor SOT
CR152	48-82190H54	silicon varactor SOT
CR153	48-83654H01	silicon
CR154	48-83654H01	silicon
CR176	48-83654H02	silicon
CR203	48-84534N02	silicon varactor
CR205	48-84534N02	silicon varactor
CR206	48-80154K02	dual Schottky SOT
CR209	48-84534N02	silicon varactor
CR211	48-84534N02	silicon varactor
CR213	48-84534N02	silicon varactor
CR214	48-80939T01	Schottky SOT

Filters

FL51	91-80097D06	455 kHz, 6D
FL52	91-80098D06	455 kHz, 4D

Connectors, receptacle

J4	09-80135M01	coaxial (RX)
J5	09-80135M01	coaxial (TX)
J6	09-80130M02	14-pin socket (logic board)

Coils

L1	24-80148M01	tunable 1-1/2 turns BRN
L2	24-80148M01	tunable 1-1/2 turns BRN
L3	24-80148M01	tunable 1-1/2 turns BRN
L4	24-80148M01	tunable 1-1/2 turns BRN
L5	24-80148M01	tunable 1-1/2 turns BRN
L6	24-80148M01	tunable 1-1/2 turns BRN
L7	24-80148M01	tunable 1-1/2 turns BRN
L8	24-11030B04	1-1/2 turns YEL
L9	24-11030B04	1-1/2 turns YEL
L10		not used
L51	24-11030B12	7-1/2 turns YEL
L52	24-80063M13	1 uH
L53	24-80063M04	.18 uH
L54	24-80063M21	4.7 uH
L55	24-80164M04	tunable E714
L56	24-80164M01	tunable E713
L57	24-80164M04	tunable E714
L58	24-80063M21	4.7 uH
L59	24-80164M03	tunable E716
L60	24-80063M14	1.2 uH
L61	25-80000E01	tunable 455 kHz with cap
L101	24-80063M04	.18 uH
L102	24-11030B08	4-1/2 turns BRN
L151	24-80299D01	tunable 17-3/4 turns
L152	24-80063M22	5.6 uH
L202	24-80148M01	tunable 1-1/2 turns BRN
L203	24-80989T02	chip .15 uH
L204	24-11030B09	4-1/2 turns BRN
L205	24-80989T02	chip .15 uH
L206	24-80989T02	chip .15 uH
L207	24-80063M05	.22 uH
L209	24-11030B05	2-1/2 turns GRN
L210	24-11030B08	4-1/2 turns BRN
L211	24-80063M05	.22 uH
L213	24-80148M01	tunable 1-1/2 turns BRN
L214	24-80989T01	chip .12 uH
L215	24-11030B08	4-1/2 turns BRN
L216	24-80989T01	chip .12 uH
L217	24-80989T01	chip .12 uH
L218	24-80063M04	.18 uH
L220	24-11030B05	2-1/2 turns GRN
L221	24-11030B08	4-1/2 turns BRN
L222	24-80063M04	.18 uH

Transistors (see note)

Q1	48-80182D44	NPN; type M82D44
Q2	48-00869643	PNP; type M9643
Q3	48-00869643	PNP; type M9643
Q4	48-00869643	PNP; type M9643
Q5		not used
Q51	48-00869839	field effect; type M9839
Q52	48-00869839	field effect; type M9839
Q53	48-00869642	NPN; type M9642
Q54	48-05128M16	PNP; type MMBT3906
Q101	48-00869643	PNP; type M9643
Q102	48-00869987	NPN; type M9987
Q103	48-00869987	NPN; type M9987
Q104	48-00869643	PNP; type M9643
Q105	48-00869642	NPN; type M9642
Q106	48-00869642	NPN; type M9642
Q107	48-00869658	NPN; type M9658
Q151	48-00869658	NPN; type M9658
Q152	48-00869643	PNP; type M9643
Q203	48-84939C36	field effect; type M39C36
Q204	48-80182D44	NPN; type M82D44
Q205	48-80182D44	NPN; type M82D44
Q206	48-84939C36	field effect; type M39C36
Q207	48-80182D44	NPN; type M82D44
Q208	48-80182D44	NPN; type M82D44
Q276	48-00869642	NPN; type M9642
Q277	48-00869643	PNP; type M9643
Q278	48-00869643	PNP; type M9643
Q279	48-00869643	PNP; type M9643

Resistors, chip, 5%, 1/8 watt, unless otherwise indicated

R1	06-11024A59	2.7k
R2	06-11024A37	330
R3	06-11024A35	270
R4	06-11024A75	12k
R5	06-11024A77	15k
R6	06-11024A65	4.7k
R7	06-11024A73	10k
R8		not used
R9		not used
R51	06-11024A19	56
R52	06-11024A29	150
R53	06-11024A73	10k
R54	06-11024A29	150
R56	06-11024B20	820k
R57	06-11024A47	820
R58	06-11024A97	100k
R59	06-11024B02	150k

R60	18-05500L08	variable 22k
R61	06-11024A93	68k
R62	06-11024A83	27k
R63	06-11024A95	82k
R64	06-11024B20	820k
R65	06-11024A73	10k
R102	06-11024A37	330
R103	06-11024A73	10k
R104	06-11024A73	10k
R105	06-11024A85	33k
R106	06-11024A48	910
R107	06-11024A53	1.5k
R108	06-11024A01	10
R109	06-11024A01	10
R110	06-11024A77	15k
R111	06-11024A29	150
R112	06-11024A47	820
R113	06-11024A33	220
R114	06-11024A29	150
R115	06-11024A45	680
R116	06-11024A67	5.6k
R118	06-11024A45	680
R119	06-11024A63	3.9k
R120	06-11024A63	3.9k
R121	06-11024A59	2.7k
R122	06-11024A63	3.9k
R123	06-11024A49	1k
R124	06-11024A53	1.5k
R125	06-11024A19	56
R126	06-11024A25	100
R127	06-11024A59	2.7k
R128	06-11024A47	820
R151	06-11024A89	47k
R152	06-11024A85	33k
R153	06-11024A89	47k
R154	06-11024A09	22
R155	06-11024A73	10k
R156	06-11024A77	15k
R157	06-11024A53	1.5k
R158	06-11024A49	1k
R159	06-11024A49	1k
R161	06-11024A73	10k
R163	06-11024A91	56k
R164	18-05500L08	variable 22k
R165	06-11024A81	22k
R176	06-11024H26	22.6k 1%
R177	06-11024H28	23.7k 1%
R178	06-11024G91	10.0k 1%
R179	06-11024G91	10.0k 1%
R180	06-11024H52	42.2k 1%
R181	06-11024G91	10.0k 1%
R182	06-11024H28	23.7k 1%
R207	06-11024A19	56
R208	06-11024A19	56
R209	06-11024A13	33
R210	06-11024A73	10k
R212	06-11024A59	2.7k
R213	06-11024A47	820
R214	06-11024A25	100
R215	06-11024A59	2.7k
R216	06-11024A47	820
R217	06-11024A43	560
R218	06-11024A41	470
R219	06-11024A03	12
R220	06-11024A41	470
R222	06-11024A63	3.9k
R223	06-11024A69	6.8k
R224	06-11024A97	100k
R225	06-11024A65	4.7k
R226	06-11024A19	56
R227	06-11024A09	22
R228	06-11024A13	33
R229	06-11024A73	10k
R231	06-11024A59	2.7k
R232	06-11024A47	820
R233	06-11024A21	68
R234	06-11024A59	2.7k
R235	06-11024A47	820
R236	06-11024A21	68
R237	06-11024A41	470
R238	06-11024A03	12
R239	06-11024A41	470
R240		not used
R243	06-11024A97	100k
R244	06-11024A49	1k
R245	06-11024A49	1k
R246	06-11024A83	27k
R276	06-11024A73	10k
R277	06-11024A35	270
R278	06-11024A01	10
R279	06-11024A65	4.7k
R280	06-11024A73	10k
R281	06-11024A65	4.7k
R301	06-11024A57	2.2k
R302	18-05500L08	variable 22k
R303	06-11024A69	6.8k

Transformers

T1	25-80163M02	balun
T2	25-80163M02	balun

Integrated Circuits (see note)

U51	51-05479G05	receiver system
U101	51-84704M75	synthesizer
U102	51-83977M45	prescaler
U176	51-84621K89	dual op-amp

Crystals

Y51	91-80022M02	filter 45.1 MHz (includes Y51A, Y51B)
Y52	48-80008K02	44.645 MHz
Y151	48-80174D05	14.4 MHz

Non-Referenced Items

26-80097M01	shield coil can (for L151)
26-80098M01	shield coil can (10 used)
26-80228L01	shield can (2 used, for J4 and J5)
26-80229L02	shield VCO frame
75-05295B02	insulator (for Y151)
75-05295B07	insulator (3 used, for Y51A/B, Y52)

Note: For optimum performance, diodes, transistors and integrated circuits must be ordered by Motorola part numbers.

[MMR016 5/01/89]