



RELAY AND RELAY DRIVER TEST PROCEDURE

1. GROUND TP12 (RUN/TEST). VERIFY THAT RELAYS K1-K5, AND K22 FOR 30 MHz TUNERS, ARE CLOSED.
2. GROUND TP11 (ELEMENTS IN/OUT) AND TP12 (RUN/TEST). VERIFY THAT RELAYS K6-K21, AND K23 FOR 30 MHz TUNERS, ARE CLOSED. VERIFY THAT RELAYS K1-K5 ARE OPEN.
3. INDIVIDUALLY CHECK EACH RELAY BY:
 - DISCONNECTING EITHER END OF L9.
 - APPLYING 13.8 V TO THE SWITCHED A+ INPUT (GRN).
 - GROUNDING THE APPROPRIATE TEST POINT TO ACTIVATE RELAY (TP1-TP8, TP17-TP28).
4. RECONNECT AND SOLDER L9. REMOVE GROUND FROM TP11 AND TP12.

VSWR DETECTOR TEST PROCEDURE

1. CONNECT RF OUT TERMINAL TO ANTENNA OR DUMMY LOAD.
2. APPLY +5 V TO TP13 TO ENABLE SLOW TUNING MODE (SWITCHING AT 2 Hz RATE).
3. TURN ON RADIO TO APPLY SWITCHED A+ TO TUNER.
4. MONITOR VOLTAGE AT U6-11 AND J8-39. VOLTAGE AT U6-11 SHOULD GRADUALLY DROP DURING THE TUNING SEQUENCE AS THE MATCHED CONDITION IS APPROACHED. U8-39 SHOULD BE LOW FOR APPROXIMATELY ONE SECOND DURING THE TUNING SEQUENCE.

PHASE DETECTOR TEST PROCEDURE

1. DISCONNECT ANTENNA FROM RF OUT TERMINAL.
2. (T1960A AND T1962A MODELS ONLY.) CONNECT A 560 PF CAPACITOR FROM RF OUT TERMINAL TO GROUND.
3. GROUND TP11 AND TP12. UNSOLDER AND REMOVE EITHER END OF R112.
4. APPLY 3 WATT RF SIGNAL TO RF INPUT TERMINAL.
5. VARY FREQUENCY OF RF INPUT. MEASURE VOLTAGE AT U8-1. VOLTAGE SHOULD BE LOW WHEN INPUT FREQUENCY IS ABOVE 7.5 MHz.
6. RECONNECT AND SOLDER R112. REMOVE GROUND FROM TP11 AND TP12.

*EEPS-30866-0

parts list

TLA6102A RF Board
TLA6112A RF Board
PL-6966-A

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
		capacitor, fixed: +80-20%; 25 V unless otherwise stated:
C1	21-82372C07	05 uF
C3	21-82133G22	8 pF ± 5 pF; 500 V
C4	21-82372C07	05 uF
C5	21-82133G22	8 pF ± 5 pF; 500 V
C6, 7	21-82372C07	05 uF
C8, 9	21-84493B56	47 pF ± 5%; 100 V
C11, 12	21-82187B20	001 uF ± 10%; 100 V
C13, 17	21-82372C07	05 uF
C19 thru 29	21-82372C07	05 uF
C30, 31	21-82204B37	20 pF ± 5%; 100 V
C32	21-840846	15 pF ± 5%; 100 V
C33	23-82783B14	1 uF ± 10%; 15 V
C34	21-82187B20	001 uF ± 10%; 100 V
C35, 36	21-82372C07	05 uF
C38 thru 40	21-82372C07	05 uF
C41	21-82187B20	001 uF ± 10%; 100 V
C42	21-82372C07	05 uF
C43	21-82187B20	001 uF ± 10%; 100 V
C44	21-82372C07	05 uF
C48	21-82187B08	220 pF ± 10%; 500 V
C49	21-82187B07	05 uF
C50	21-82187B08	220 pF ± 10%; 500 V
C51	21-83596E21	01 uF; 200 V
C52 thru 54	21-82372C07	05 uF
C55	21-83596E21	01 uF; 200 V
C56, 57	21-82372C07	05 uF
C60	23-84858C01	15 uF ± 20%; 25 V
C61	21-82187B08	220 pF ± 10%; 500 V
C62	21-82372C07	05 uF
C64 thru 68	21-82372C07	05 uF
C69	23-84858C01	15 uF ± 20%; 25 V
C70, 71	21-82372C07	05 uF
C72	23-84858C01	15 uF ± 20%; 25 V
C75, 78	21-82372C07	05 uF
C81	8-868594	0.22 uF ± 10%; 100 V
C84, 85	21-82372C07	05 uF
C88, 89	21-82372C07	05 uF
C90, 91	21-84494B98	1000 pF ± 5%; 500 V
C92	21-84494B99	510 pF ± 3%; 500 V
C93	21-82372C07	05 uF
C94	21-84494B99	510 pF ± 3%; 500 V
C95	21-84857K29	250 pF ± 5%; 500 V
C96	21-82372C07	05 uF
C97, 98	21-84857K29	250 pF ± 5%; 500 V
C99	21-82372C07	05 uF
C100	21-84494B06	120 pF ± 5%; 500 V
C101	21-82372C07	05 uF
C106 thru 109	21-82372C07	05 uF
C111 thru 113	21-82372C07	05 uF
C116, 119, 122	21-82372C07	05 uF (TLA6102A only)
C125 thru 127	21-82372C07	05 uF
C128 thru 130	21-82372C03	1.0 uF
C131	21-82372C03	0.1 uF (TLA6102A only)
C132	21-82372C07	05 uF (TLA6102A only)
C133	21-82372C03	0.1 uF (TLA6102A only)
C134	21-82372C07	05 uF
C135	21-82372C03	0.1 uF
C144	21-82204B42	27 pF ± 10%; 3000 V (TLA6102A)
	or 21-82204B57	50 pF ± 10%; 3000 V (TLA6112A)
C145	21-82204B57	50 pF ± 10%; 3000 V (TLA6102A)
	or 21-82204B56	100 pF ± 5%; 3000 V (TLA6112A)
C146	21-82204B56	100 pF ± 5%; 3000 V (TLA6102A)
C147 thru 149	21-82204B55	200 pF ± 5%; 3000 V (TLA6102A)
C150	21-82372C07	05 uF
C162 thru 165	21-82428B35	01 uF; 500 V
C166 thru 175	21-82372C07	05 uF
C176, 177	23-84538G02	4.7 uF ± 20%; 20 V
C178 thru 181	21-82204B85	50 pF ± 5%; 5000 V
C182	23-84538G02	4.7 uF ± 20%; 20 V
C183	21-82372C03	0.1 uF
C184	21-82372C07	05 uF
		crystal:
Y1	48-82141M01	3.58 MHz crystal
		diode: (see note)
CR1, 2, 3	48-83654H01	silicon
CR4	48-82466H13	silicon
		fuse:
F1	65-83770F01	3/4 amp; 125 V
		relay:
K1, 2, 3	80-83290M04	2 form "A"; 250 V
K4, 5	80-83290M01	1 form "A"; 250 V
K6, 7, 8	80-83290M04	2 form "A"; 250 V
K10	80-83290M05	2 form "A"; 400 V
K11	80-84803F02	1 form "A"; 800 V
K12 thru 15	80-84803F05	1 form "A"; 2500 V
K16, 17, 21	80-84803F01	1 form "A"; 5000 V
K18, 19, 20	80-84803F01	1 form "A"; 5000 V (TLA6102A only)
		coil, rf: microhenries: unless otherwise stated
L1 thru 7	24-82549D37	choke: 100 uH
L8, 9	24-83397L01	choke: 30 uH
L21 thru 23	24-82549D37	choke: 100 uH

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
L24	24-84388M01	choke: 0.08 uH
L25	24-84388M02	choke: 0.15 uH
L26	24-84388M03	choke: 0.29 uH
L27	24-84388M04	choke: 0.55 uH
L28	24-84388M05	choke: 1.05 uH
L29	24-84388M06	choke: 1.99 uH
L30	24-84882M01	choke: 3.80 uH
L31	24-84882M02	choke: 7.24 uH
L32	24-84882M03	choke: 13.78 uH
L33	24-84882M04	choke: 26.25 uH
L38 thru 41	24-82549D37	choke: 100 uH
L42, 43	24-82549D09	choke: 15 uH
L44	24-82549D37	choke: 100 uH
		transistor: (see note)
Q1 thru 15	48-869706	NPN: Darlington
Q16, 17	48-869680	NPN: type M9680
Q18 thru 20	48-869706	NPN: Darlington
Q21, 22, 23	48-869706	NPN: Darlington (TLA6102A only)
Q24 thru 31	48-869642	NPN: type M9642
Q32, 33	48-869643	PNP: type M9643
		resistor, fixed ± 5%; 1/4 W: unless otherwise stated
R1	6-124A65	4.7k
R3, 4	6-124A31	180
R6, 7	6-124A73	10k
R8	6-124A25	100
R10, 11	6-124A57	2.2k
R12	6-124A49	1k
R14	6-124A57	2.2k
R16, 17	6-124A57	2.2k
R19	6-124A57	2.2k
R20	6-124A49	1k
R21	6-124A81	22k
R22, 23	6-124A65	4.7k
R24	6-124A93	68k
R25, 26, 27	6-124A65	4.7k
R28 thru 30	6-124C73	10k ± 10%
R31	6-124A31	180
R32	6-124A53	1.5k
R33	6-124A85	33k
R35	6-124A85	33k
R38	6-124C73	10k ± 10%
R39	6-124A53	1.5k
R40	6-124A49	1k
R41, 42	6-124C37	330 ± 10%
R43	6-124A49	1k
R44	6-124C37	330 ± 10%
R45	6-124A49	1k
R46	6-125A29	150; 1/2 W
R47	6-124A73	10k
R49	6-124A49	1k
R50	6-124A41	420
R51	6-124C89	47k ± 10%
R57	6-124A69	6.8k
R58	6-124A61	3.3k
R61	6-124C89	47k ± 10%
R62	6-124A31	180
R63	6-124A91	56k
R64	6-124A77	15k
R65, 66	6-124A73	10k
R67, 68	6-124A49	1k
R69	6-124C89	47k ± 10%
R70 thru 74	6-124C73	10k
R75	6-125C97	100k ± 10%; 1/2 W
R80, 81	6-124C51	1.2k ± 10%
R82, 83	6-124A65	4.7k
R84, 85, 86	6-124A65	4.7k (TLA6102A only)
R87, 88, 89	6-124C51	1.2k ± 10%
R90, 91, 95	6-125C43	560 ± 10%; 1/2 W
R92, 93, 94	6-125C43	560 ± 10%; 1/2 W (TLA6102A only)
R96	6-124A09	22
R97 thru 101	6-124A49	1k
R102	6-124A25	100
R103 thru 106	6-124C73	10k ± 10%
R107, 108	6-124A49	1k
R109	6-124A61	3.3k
R110	6-124C89	47k ± 10%
R111, 112, 113	6-124C73	10k
R114, 115	6-124A43	560
R116	6-124A65	4.7k
R118	6-124C97	100k ± 10%
R119 thru 122	6-124C73	10k ± 10%
R123, 124	6-124A81	22k
R125	6-124A17	47
R126	6-124A89	47k
R127	6-124A83	27k
R128	6-124A65	4.7k
		transformer:
T1, 2	25-83727K01	25 turns
		integrated circuit: (see note)
U1, 2	51-84561L54	type MC10115
U3	51-84561L55	type MC10131
U4	51-84561L76	type MC7805
U5	51-84561L65	type CA3081
U6	51-84371K74	type MC3302

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
U7	51-82884L02	type MC14049B
U8	51-82848M40	type 8048
U9	51-82884L74	type MC14503
		voltage regulator:
VR1	48-82256C26	Zener: 3.3 V
VR2, 14 thru 16	48-82256C39	Zener: 20 V
VR17	48-82256C12	Zener: 5.6 V
VR18, 19	48-82256C15	Zener: 5.1 V
		mechanical parts
	3-134169	SCREW, tapping: 4-40 x 1/4"
	9-84186L01	SOCKET (IC) 40 contact
	42-10217A20	STRAP, tie, 2 used
	29-83883C09	LUG, crimp terminal: 6 used
	14-83967A05	WASHER, shoulder: 2 used
	26-84354M01	SHIELD, plate
	26-84352M01	SHIELD, detector
	26-84354M01	SHIELD, PC board

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

THN6410A Housing Antenna Tuner PL-6967-A

ITEM NO.	MOTOROLA PART NO.	DESCRIPTION
1	26-84354M01	SHIELD, plate (p/o TLA6102A)
2	32-83756K01	GASKET, housing
3	26-84352M01	SHIELD, detector (p/o TLA6102A)
4	33-84560L01	NAMEPLATE, antenna tuner
5	15-83578K03 or 15-83578K06 or 15-84363M03	HOUSING, top
6	3-129955	SCREW, machine: 8-18 x 7/8"; 3 used
7	4-129364	WASHER, flat #8: 8 used
8	3-134169	SCREW, tapping: 4-40 x 1/4"; 2 used
9	15-84355M01	SHIELD, cover
10	26-84353M01	SHIELD, PC board (p/o TLA6102A)
11	3-82898M01	SCREW, machine: 4-40 x 1/2"; 2 used
12	32-84647D01	GASKET, UHF, cable
13	1-80733D97	CABLE and CONNECTOR ASSEMBLY includes: RECEPTACLE, female single contact LUG, soldering CABLE, coaxial RG58/AU; 10.5"
14	84-82055M01	BOARD, printed circuit (p/o TLA6102A)
15	3-139946	SCREW, tapping: 8-18 x 1"; 9 used
16	4-114970	WASHER, flat; #4; 2 ea.
17	4-139952	LOCKWASHER; #6 split; 2 used
18	2-120486	NUT, 4-40 x 1/4 x 3/16"; 2 used
19	3-139343	SCREW, machine: 10-32 x 3/4"; 4 used
20	2-9644	NUT, 1/4-20 x 3/16"; 5 used
21	47-83033M01	ROD, threaded, 1/4 x 20
22	3-82898M02	SCREW, machine: 10-32 x 3/8"; 4 used
23	4-11008A02	WASHER, sealing: 4 used
24	14-82884M01	INSULATOR, feed-thru
25	32-82894M01	GASKET, standoff; 2 used
27	4-139951	LOCKWASHER, 1/4 external: 4 used
28	29-835302	LUG, ring tongue
29	2-138684	NUT, 10-32 x 5/16 x 1/8"; 8 used
30	4-11007A04	WASHER, nylon #10; 4 used
31	3-139102	SCREW, tapping 8-18 x 1/2"; 3 used
32	14-84495M01	INSULATOR, cable
33	42-10283A20	CLAMP, cable
34	4-8285	WASHER, flat; #10; 8 used
35	4-400368	LOCKWASHER, #10; 8 used
36	42-10128A10	"O" RING; 2 used
37	3-138419	SCREW, tapping: 1/4-20 x 7/8"
38	15-84363M01	HOUSING, antenna tuner
39	7-84362M01	BRACKET, antenna mounting; 2 used
40	14-84960M01	INSULATOR

TKN8119A Mobile Antenna Matching Harness PL-6968-A

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
	5-7889	EYELET
	29-5238	LUG, soldering
	29-10210A05	TERMINAL, 1/4"
	29-835302	LUG, ring tongue; 1/4"
	29-847817	LUG, ring tongue; 3/8"
	10-9401	BRAID, 22"
	30-82345	CABLE, coaxial RG-8/u; 20"

