MAINTENANCE MANUAL

403-512 MHz 25-WATT TRANSMIT/RECEIVE BOARD 19D901003G21,22,25-28
440-470 MHz 5-WATT TRANSMIT/RECEIVE BOARD 19D901003G23,24
(PHOENIX-SX WIDEBAND - SYNTHESIZED)

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DESCRIPTION

The 403-512 MHz wideband-synthesized transmit/receiver boards (Tx Rx) for PHOENIX-SX contains the receiver, exciter and power amplifier. The audio processor circuitry for the transmit (microphone) audio is included on the synthesizer/ interconnect board. Transmit/receiver RF frequency injection (5-15 milliwatts) is provided by a common VCO on the synthesizer/interconnect board. The output of the VCO is tripled by the exciter to generate the transmit frequency and by the receiver to generate the correct Rx injection frequency for the receiver first mixer. A block diagram of the TRS board is shown in Figure 1.

The transmit/receiver board assembly is located on the bottom side of the radio and is provided in eight groups. The characteristics of these groups are identified in the table below.

CIRCUIT ANALYSIS

EXCITER

The exciter consists of an amplifier, a tripler and final amplifier. The transmit/receiver component board is provided in three groups: 19D8901043G14 operates in the 440-470 MHz range G17 on the 470-512 MHz range and G18 in the 403-440 MHz range. The exciter receives the Tx injection frequency from the synthesizer VCO (5 milliwatts minimum) and amplifies multiplies and amplifies it again to provide 60 milliwatts minimum drive to the power amplifier circuitry. In addition to these functions, the exciter contains the filters that determine the bandwidth and spurious characteristics (exclusive of harmonics) of the transmitter.

RF injection from the synthesizer/ interconnect board is applied to the base of Class A Ampl Q101 through J151, a 2 dB resistive pad, and an impedance matching network consisting of C101, C102 and L101. This network matches the base of Q101 to 50 ohms. The 2 dB attenuator pad (R101-R103) provides a constant load for the VCO output to maintain frequency stability when switching to or from the transmit or receive mode. 8.5V TX is applied to Class A Amplifier Q101 through a collector feed network consisting of L102, R106, and R107. C104 and C105 provide decoupling for the 8.5V Tx supply. 8.5V Tx is used to control the supply voltage to Ampl 1 to assure that the exciter is turned on only in the transmit mode. Base bias is set by R104 and R105. 8.5V Tx also provides the bias voltage for final amplifier Q103.

Tx/Rx Board	Freq. Range (MHz)	Mode Switch	Power Output
19D901003G21	440-470	No	25 Watt
19D901003G22	440-470	Yes	25 Watt
19D901003G23	440-470	No	5 Watt
19D901003G24	440-470	Yes	5 Watt
19D901003G25	470-512	No	22 Watt
19D901003G26	470-512	Yes	22 Watt
19D901003G27	403-440	No	25 Watt
19D901003G28	403-440	Yes	25 Watt

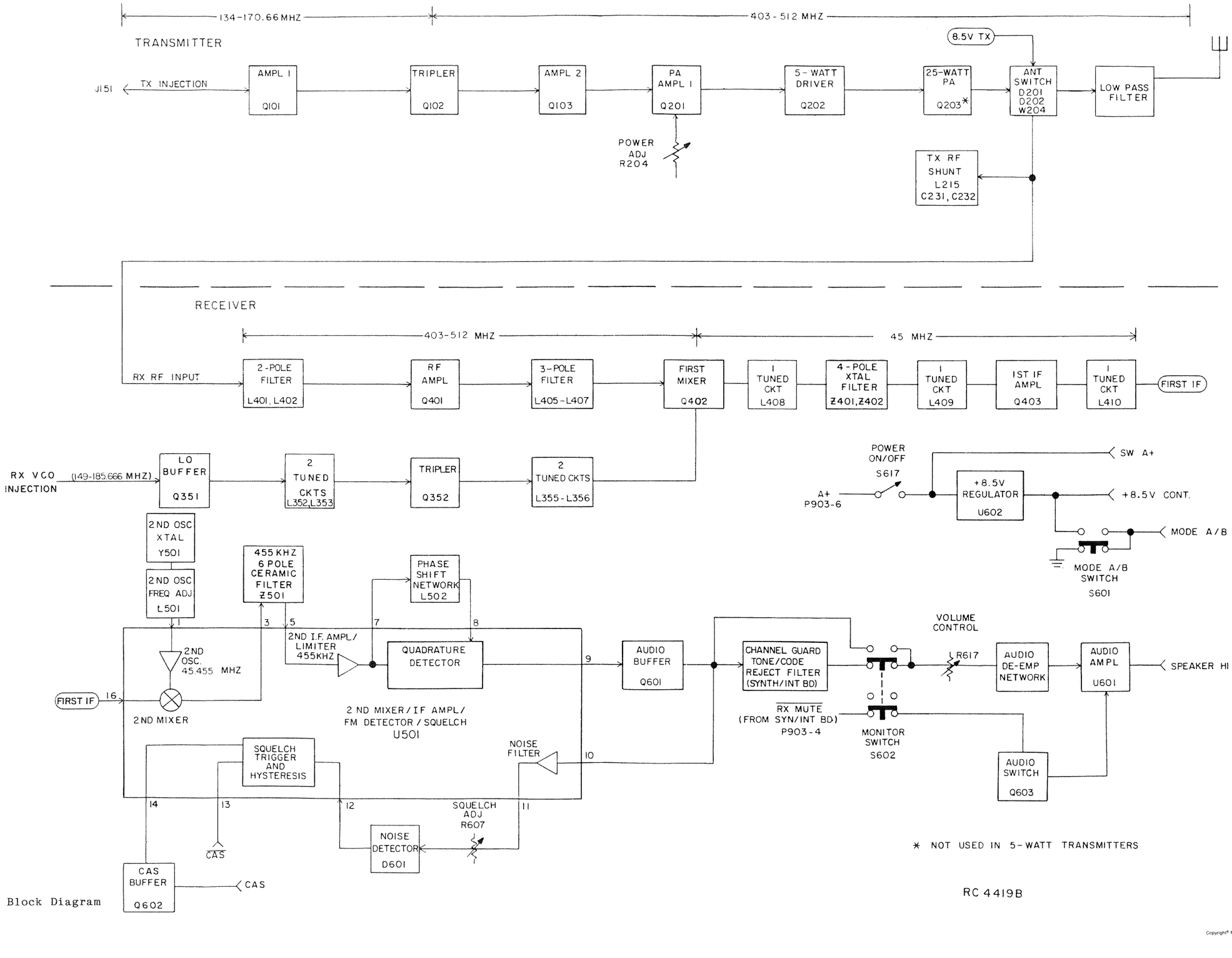

Figure 1 - TRS Board Block Diagram

The output of Q101 is direct coupled to tripler Q102 through C106 and C107. 8.5V CONT is supplied to the tripler through a collector feed network consisting of R111, L104 and L103. Decoupling is provided by C108 and C109. For tuning purposes the collector voltage may be metered at TP101. A matching network consisting of L103, C110, and R112-R114 match the output of the tripler to a two-pole helical filter, L105 and L106. The output of this filter is then matched by L107 and C111-C113 to a single stage broadbanded Class B amplifier Q103. Bias voltage is supplied by the 8.5V Tx source and is set by R115 and R116. Collector voltage is taken from the 8.5V CONT supply and applied to Q103 collector through collector feed network R117, C115, and L108. C118 and C119 provide decoupling for the 8.5V CONT supply. For tuning purposes the collector voltage is measured at TP102. An impedance matching network consisting of C116, L109 and C117 match the collector Q103 to 50 ohms. The exciter provides 60 milliwatts to the power amplifier.

NOTE

There are 5 points in the exciter with an impedance of approximately 50 ohms. They are W101, W102, W104, W105, and W106. These points can conveniently be used to monitor or inject signals for troubleshooting and testing using 50 ohm sources and terminations.

25-WATT POWER AMPLIFIER

The broadband three stage power amplifier consists of amplifier Q201, driver Q202 and power amplifier Q203, and associated circuitry. The 60 milliwatt output of the exciter is amplified to provide 25 watts RF output from the radio (22 Watts from 470-512 MHz). No tuning is required.

The 50 ohm output of the exciter is applied to the base of AMPL Q201 through an impedance matching network consisting of L201, C201-C203, and 50 ohm microstrip W201. L203, L204, C206, and C207 match the collector of Q201 to 50 ohms. W202, L205, C208 and C209 match the 50 ohms at W202 to the base of driver Q202. Collector voltage for Q201 is supplied through collector feed network R203-R205, L202, and C205.

The output power of the driver Q202 is coupled to the final power amplifier Q203 through impedance matching network consisting of W203, C212, C215, C220, and C221. The 25 watt output of Q203 is coupled to the antenna through and impedance matching network (C222-C225, C227, and L212), Tx/Rx switch (D201,D202) and the low pass filter to J601. The low pass filter consists of L214, C230, C229. W205 is a 50 ohm microstrip.

Collector voltage for Q202 and Q203 is provided by the A+ line through P251-3 and collector feed networks consisting of L207, L208, R207, and C210 for Q202 and L216, L211, C218 and C219 for Q203. Decoupling is provided by C211, C216, and C217.

Tx/Rx Antenna Switch

The antenna switch is controlled by 8.5V Tx (present when PTT is pressed) and connects either the PA output or receiver to the antenna. The antenna switch consists of diode D201 quarter wave stub W204, diode D202, C231, C232, and L215.

When the microphone is keyed, 8.5V Tx is applied to D201 through R210 and L213 forward biasing D201 and D202 and passing the PA output directly to the antenna through the low pass filter. At the same time the 1/4 wave stub W204 and forward biased diode D202 presents an open circuit to the receiver preventing any possible damage to the receiver. C235 is a DC blocking capacitor.

In the receive mode D201 and D202 are turned off, the AC short is removed and the 1/4 wave stub now presents a 50 ohm impedance to the receiver, allowing the received RF to pass through the low pass filter to the receiver.

RF POWER ADJUST

RF output power is set by adjusting the collector voltage to Q201. Collector voltage for Ampl Q201 is supplied by the 8.5V CONT source and set by RF Power Adjust control R204. R204 is set for rated output power.

2 TO 5-WATT POWER AMPLIFIER

The 2 to 5-Watt Power Amplifier is capable of providing 5-watts RF output power over the 440-470 MHz operating range. The output power level, however, is restricted to 2-watts maximum in offset channel applications where the operating frequency is within the 440-470 MHz range.

The 5-watt transmitter is derived from the 25-watt transmitter, using Q202 as the final amplifier. Q203 is replaced by L217. L217 couples the output of final amplifier Q202 to the antenna switch.

The power control circuitry is the same. R204 may be set to provide from 2 to 5-watts RF output power as required.

RECEIVER

The FM dual conversion, superheterodyne receiver is designed for operation in the 403-512 MHz frequency range. A regulated 8.5 volts is provided to all receiver stages except for the audio PA IC, which operates from the switched A+ supply.

The receiver has intermediate frequencies of 45 MHz and 455 kHz. Adjacent channel selectivity is obtained by using two band-pass filters: a 45 MHz crystal filter and a 455 kHz ceramic filter.

All of the receiver circuitry except the synthesizer is mounted on the Tx/Rx board. The receiver consists of:

- Front End and Mixer
- 45 MHz 1st IF o 455 kHz 2nd IF and FM Detector
- Audio PA
- Squelch

RECEIVER FRONT END

An RF signal from the antenna is coupled through the low pass filter, antenna switch, and two helical resonators (L401 and L402) to the base of RF amplifier Q401. The output of Q401 is coupled through three more helical resonators consisting of L405-L407 to the gate of 1st mixer Q402. Front end selectivity is provided by these five helical resonators.

RECEIVER INJECTION

Receiver RF Injection (149.33-170.666 MHz) from the synthesizer VCO is applied to L.O. Buffer Q351 through J351. The input level at J351 will be between 5 and 15 milliwatts, 5 milliwatts minimum. R351-R353 and C351 match the source impedance of Q351 to the VCO output transmit/receive switching circuitry on the synthesizer/interconnect board.

The output of L.O. Buffer Q351 is coupled to the base of tripler Q352 through a two-pole LC filter L352, L353, and C352-C355. The LC filter will pass only those frequencies in the 149-185 MHz band, shunting all other frequencies to ground. Tripler Q352 multiplies the Rx injection frequency by 3 to provide a mixer injection frequency 45 MHz above the received RF frequency to First mixer Q402. The output of tripler Q352 is filtered by a two section helical filter consisting of L355 and L356. These filters are tuned to pass frequencies in the 447-555 MHz passband.

TP351 provides metering for the tripler Q352. The correct voltages with and without L.O. injection are shown on the Schematic Diagram.

1st MIXER

The 1st mixer uses a FET (Q402) as the active device. The FET mixer provides a high input impedance, high power gain and an output relatively free of intermodulation products.

In the mixer stage, RF from the front end helical filter is applied to the gate of the mixer. Injection voltage from the multiplier stages is applied to the source of the mixer. The 45 MHz mixer 1st IF output signal is coupled from the drain of Q402 through an impedance matching network (L408 and C410-C411) to a 4-pole crystal filter consisting of Z401 and Z402.

1st IF

The highly-selective crystal filters Z401 and Z402 provide the first portion of the receiver IF selectivity. The output of the filters is coupled through impedance matching network L409, C414, and R410 to the 1st IF amplifier Q403.

1st IF Amplifier Q403 is a dual-gate MOSFET transistor. The crystal filter output of Z402 is applied to Gate 1 of the amplifier, and the amplified signal is taken from the drain. The biasing on Gate 2 and the drain load determines the gain of the stage. The amplifier provides approximately 20 dB of IF gain. The output of Q403 is coupled through an impedance matching network, L410, C417, C418, and R415 that matches the amplifier output to the input of IC U501. Diodes D401 and D402 provide limiting for the 45 MHz IF signal (1.4 VPP) to prevent high level overload of U501.

2nd IF and DETECTOR

U501 and associated circuitry consists of the 2nd oscillator/mixer, IF amplifier, FM detector, and squelch circuit. The 45 MHz IF input is applied to pin 16 or U501 and mixed with a 45.455 MHz frequency supplied by crystal oscillator Y501. L501 sets the frequency of Y501. High side injection is used. The output of the internal mixer is amplified and applied to a 6-pole ceramic filter, Z501, which provides the 455 kHz selectivity. The output of the 455 kHz filter is reapplied to U501-5. The 2nd IF signal is amplified and limited. L502 shifts the IF signal by 90° and reapplies it to the internal FM detector. The FM detector compares the shifted IF signal to the internal IF signal to recover the audio modulation.

AUDIO AND SQUELCH

The audio output of U501 is applied to the base of audio buffer Q601. The output of the audio buffer is applied to the Channel Guard Tone/Code Reject filter on the synthesizer/interconnect board, the MONITOR switch, and to the squelch input U501-10.

Squelch Circuit

The squelch circuit senses the noise components contained in the FM detector audio output. The squelch input is applied to pin 10 of U501 from audio buffer Q601. Circuits internal to U501 provide filtering and apply received noise in the 6-8 kHz frequency band to potentiometer R607 (squelch adjust). The output of the squelch adjust potentiometer is connected to the noise detector. The noise detector consists of R608, C606, C607, C621 and diode D601. As the noise increases in magnitude in a negative direction, negative spikes cause D601 to conduct and charge C607 and C621 to a DC level proportional to the noise power. The output of the noise detector is applied to the input of squelch trigger (U501-12). The squelch trigger has approximately 3 dB of hysteresis to prevent sudden noise level changes from effecting the squelch threshold setting. R634 provides temperature compensation for the Squelch Circuit. The outputs of squelch trigger are CAS and CAS. The CAS output is applied to Q602 to provide sufficient drive to operate an optional channel busy light or external relay control.

Audio Circuits

Detected audio from audio buffer Q601 is applied to the Channel Guard Tone/Code Reject filter on the synthesizer/interconnect board and returned as filtered volume squelch high through P903-7. Filtered audio is then applied through MONITOR switch S602 and VOLUME control R617 to the deemphasis network (R618 and C615) and audio amplifier U601. Switched A+ is applied to U601 through S617. The RX MUTE line is high when a message is received and accompanied by a correct Channel Guard Tone/Code, keeping audio switch Q603 turned off. This enables audio amplifier U601 which provides up to 3 watts of audio output power into a 4 ohm speaker. The feedback loop consisting of R615, R616, and C611 determine the amplifier closed loop gain. R614 and C612 provide the high audio frequency roll-off above 6 kHz.

The audio amplifier is muted (switched off) when RX MUTE is low. When this occurs (no messages being received) audio switch Q603 is turned on, applying additional bias current to the reference input pin 2 of audio amplifier U601. This turns U601 off causing its output to be grounded.

Monitor

When the MONITOR switch is pressed, detected audio from audio buffer Q601 is applied directly to the audio amplifier through S602-5 and R617, bypassing the Channel Guard Tone/Code Reject Filter. S602 also opens the RX MUTE line to Q603, causing it to be turned off and allowing audio amplifier U601 to operate. The detected audio is amplified and applied to the speaker. Channel Guard Tones/Codes may be audible when present.

MODE A/B

Mode A/B Switch S601 doubles the channel selection capability of the radio by controlling the 8.5V CONT line applied to the Mode A/B input of the microcomputer. The microcomputer input (P912-2 is grounded in Mode A or has 8.5 VDC cont. applied for Mode B. Mode B is indicated on the 7 segment display by an illuminated decimal point.

In earlier model single frequency radios the MODE A/B switch is not provided. A pull down resistor, R914 on the synthesizer/interconnect board, holds the MODE A/B input to the microcomputer low, preventing it from selecting a different channel. No jumpers or other connections are required.

In two frequency radios, the MODE A/B switch is provided. Channel selection (MODE A/B) is controlled by the MODE switch which toggles the MODE A/B input to the microcomputer. When MODE A is selected the input to the microcomputer is held low by the ground connection between S601-2 and 4. In MODE B, pull-up resistor R628 applies +8.5 VDC to the MODE A/B input through S601-5 and 6, holding it high and causing MODE B (second channel) to be selected.

8.5 VOLT REGULATOR

8.5 Volt regulator U602 receives switched A+ from S617 and P903-6 and provides 8.5 Volts regulated to the radio. Switched A+ is available from S617.

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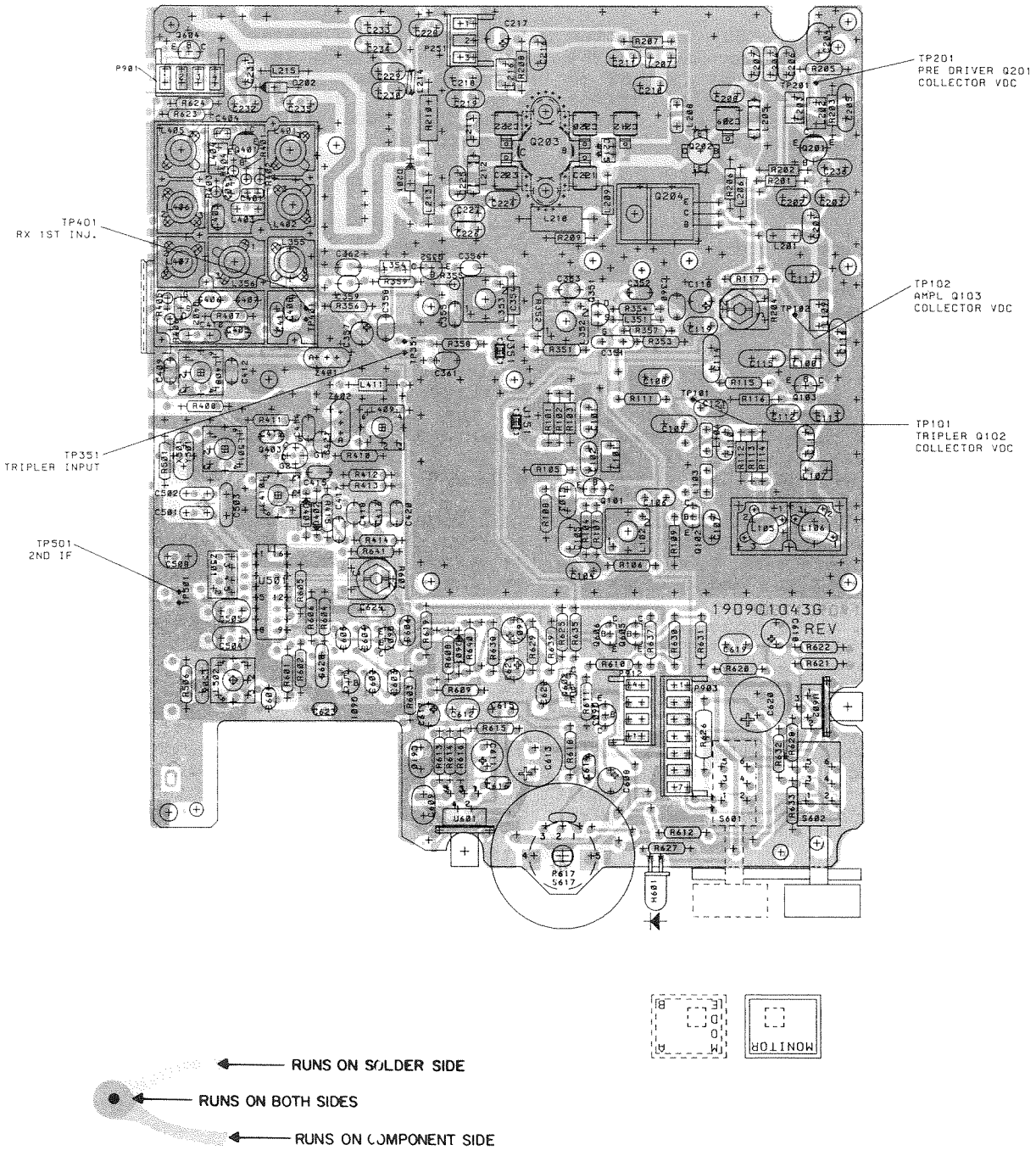


(19D901704, Rev. 2)
(19A704793, Sh. 1, Rev. 0)
(19A704793, Sh. 2, Rev. 0)

OUTLINE DIAGRAM

403-512 MHz, 25 WATT WIDEBAND
TRANSMIT/RECEIVE BOARD

TABLE OF CONTENTS

FUNCTION	CPNT SERIES
EXCITER	100
TX PWR AMP	200
TX 8.5V SWITCH	600

FUNCTION	CPNT SERIES
1ST LO INJECTION	350
RF/MIXER/1ST IF	400

FUNCTION	CPNT SERIES
2ND IF	500
AUDIO/SQUELCH/SYSTEM	600

△ COMPONENT IDENTIFICATION CHART

PART	043G2 & G14 440-470 MHZ	043G5 & G17 470-512 MHZ	043G6 & G18 403-440 MHZ
C107	10P	8P	15P
C109	39P	36P	39P
C110	3P	3P	4P
C111	10P	7P	7P
C116	56P	56P	1n
C117	6P	6P	5P
C202	10P	10P	12P
C208	10P	10P	15P
C209	62P	51P	68P
C212	10P	10P	12P
C220	33P	30P	33P
C222	43P	39P	47P
C223	39P	39P	47P
C224	5P	6P	7P
C225	5P	6P	7P
C226	7P	7P	8P
C227	7P	7P	8P
C229	4P	4P	5P
C230	6P	6P	8P
C231	10P	8P	12P
C232	10P	8P	12P
C235	470P	20P	470P
C236	5P	5P	7P
C352	12P	6.8P	10P
C353	8.2P	6.8P	15P
C354	0.56P	0.56P	0.82P
C355	12P	8.2P	10P
C356	10P	8.2P	12P
C359	2.7P	5.6P	39P
C401	18P	18P	39P
C404	18P	3.9P	4.7P
C406	4.7P	10P	4.7P
C407	2.2P	2.2P	5.6P

NOTES:

1. PART OF PWB.

2. VALUE OF R621 DEPENDS ON COLOR CODE OF U602.

U602 COLOR CODE	R621 VALUE
BROWN	OMIT R621
RED	270
ORANGE	100
YELLOW	47
GREEN	22
BLUE	6.8

3. SWITCH PRESENT ON 19D901003G14,G16,G18,G20, G22,G24,G26 & G28 ONLY.

4. VOLTAGE READINGS:

ALL VOLTAGES ARE TYPICAL. VOLTAGES ARE MEASURED WITH A 20,000 OHM PER VOLT DC METER, REFERENCE TO A-, UNLESS OTHERWISE INDICATED.

SHEET 2,2A:
ALL VOLTAGES ARE DC
ALL VOLTAGES ARE IN THE TRANSMIT CONDITION.

SHEET 3:
RF VOLTAGES MEASURED WITH RF VOLTMETER
W INJ - WITH L.O. INJECTION
W/O INJ - WITHOUT L.O. INJECTION

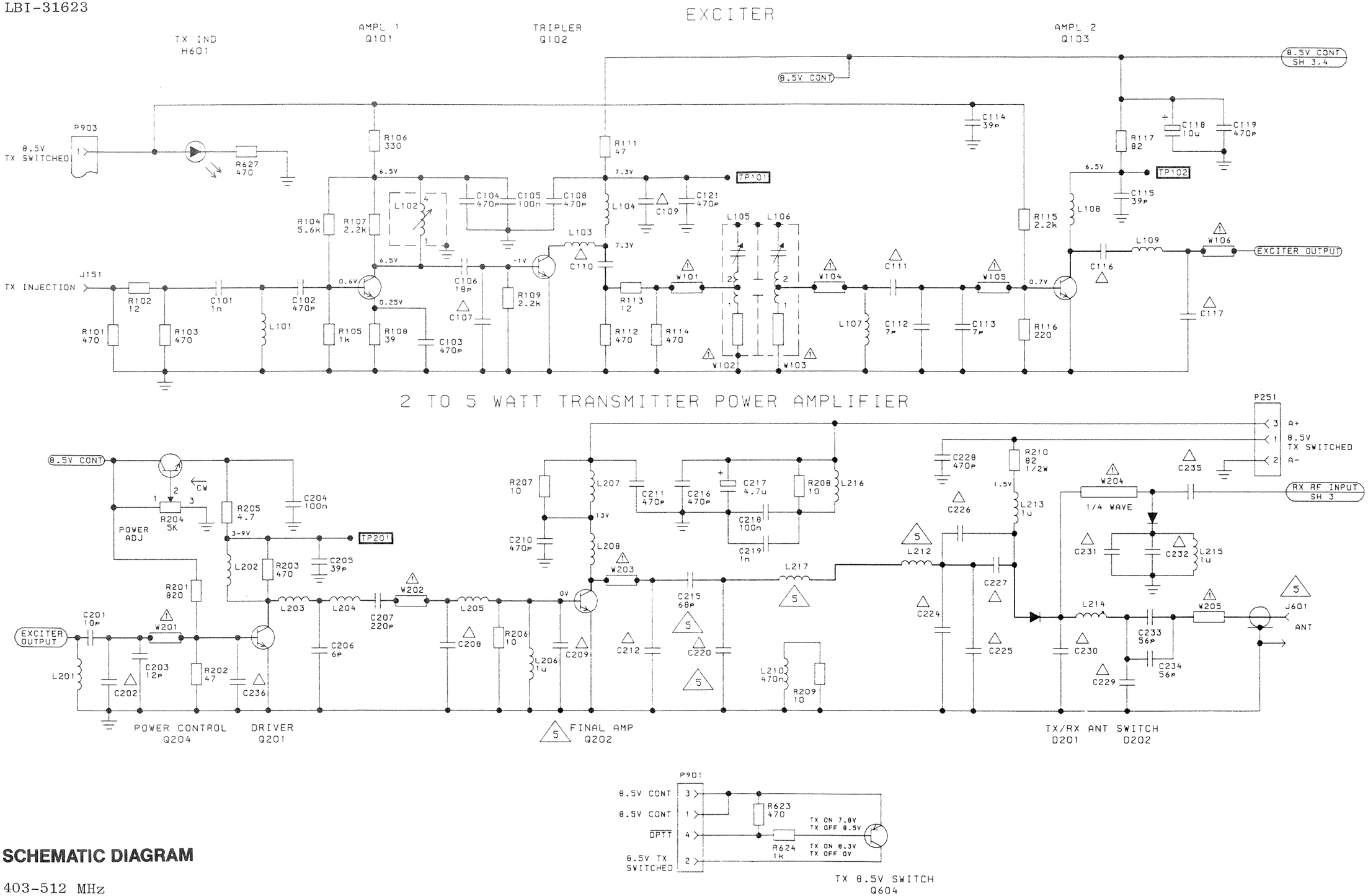
SHEET 4:
VOLTAGES AT U501 AND U601 ARE MEASURED WITH 1 M OHM DC VOLTMETER AND NO SIGNAL INPUT.
S - SQUELCHED RECEIVER
US - UNSQUELCHED RECEIVER

5. CALLED FOR AT HIGHER ASM.

(19D901701, Sh. 1, Rev. 2)

ALL RESISTORS ARE 1/4 WATT UNLESS OTHERWISE SPECIFIED.
RESISTOR VALUES IN Ω UNLESS FOLLOWED BY MULTIPLIER k OR M.
CAPACITOR VALUES IN F UNLESS FOLLOWED BY MULTIPLIER μ,n OR P.
INDUCTANCE VALUES IN H UNLESS FOLLOWED BY MULTIPLIER m OR μ.

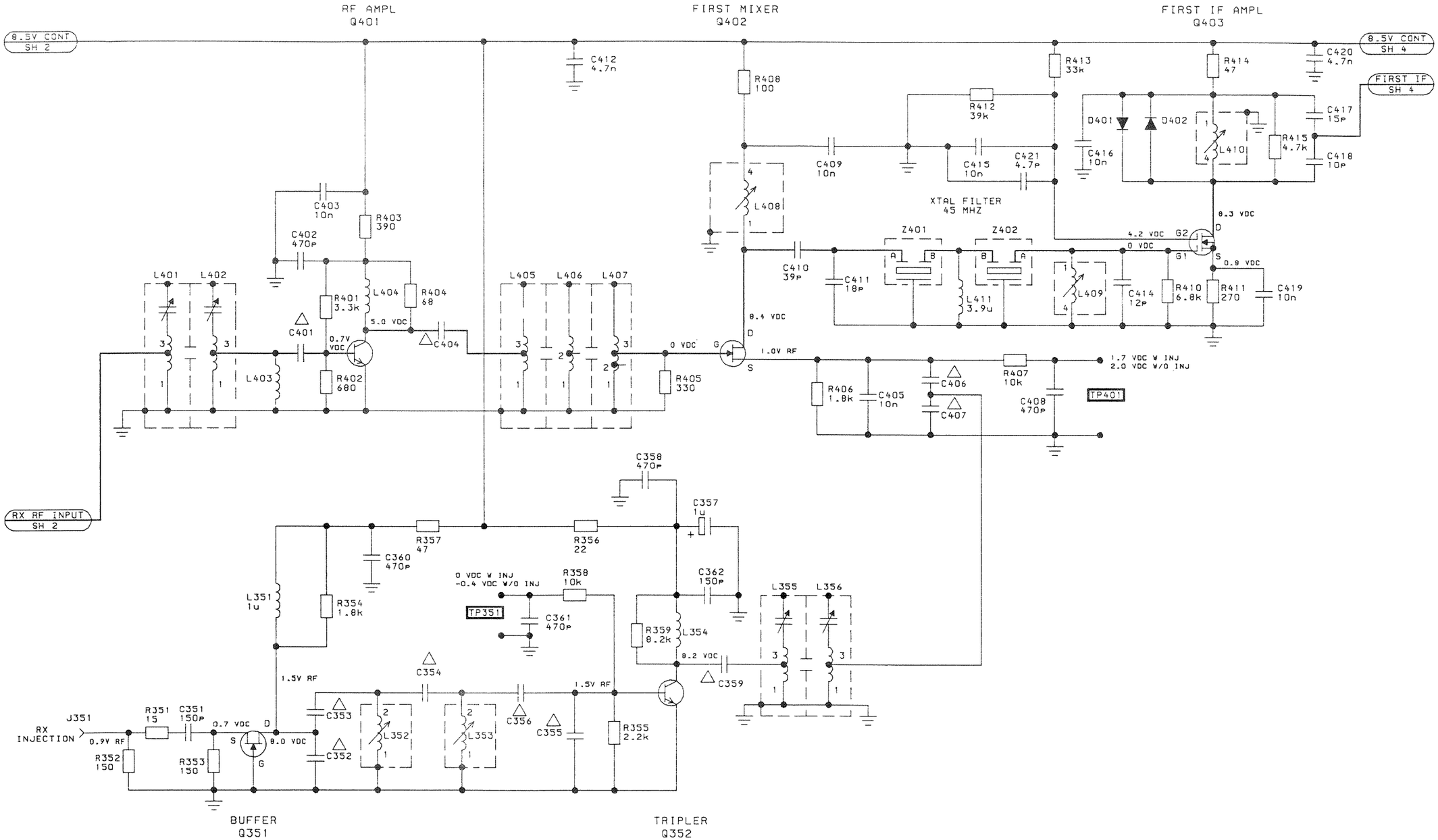
MODEL NO.	REV. LTR	FREQ RANGE	TX POWER
PL19D90104362	A	440-470 MHZ	25W/5W
PL19D901043G14			25W/5W
PL19D901003G13			25W
PL19D901003G14			25W
PL19D901003G15			5W
PL19D901003G16			5W
PL19D901003G21			25W
PL19D901003G22			25W
PL19D901003G23			5W
PL19D901003G24			5W
PL19D90104365	A	470-512 MHZ	22W
PL19D901043G17			22W
PL19D901003G17			22W
PL19D901003G18			22W
PL19D901003G25			22W
PL19D901003G26			22W
PL19D90104366	A	403-440 MHZ	25W
PL19D901043G18			25W
PL19D901003G19			25W
PL19D901003G20			25W
PL19D901003G27			25W
PL19D901003G28			25W



SCHEMATIC DIAGRAM

403-512 MHz
WIDEBAND EXCITER/POWER AMPLIFIER

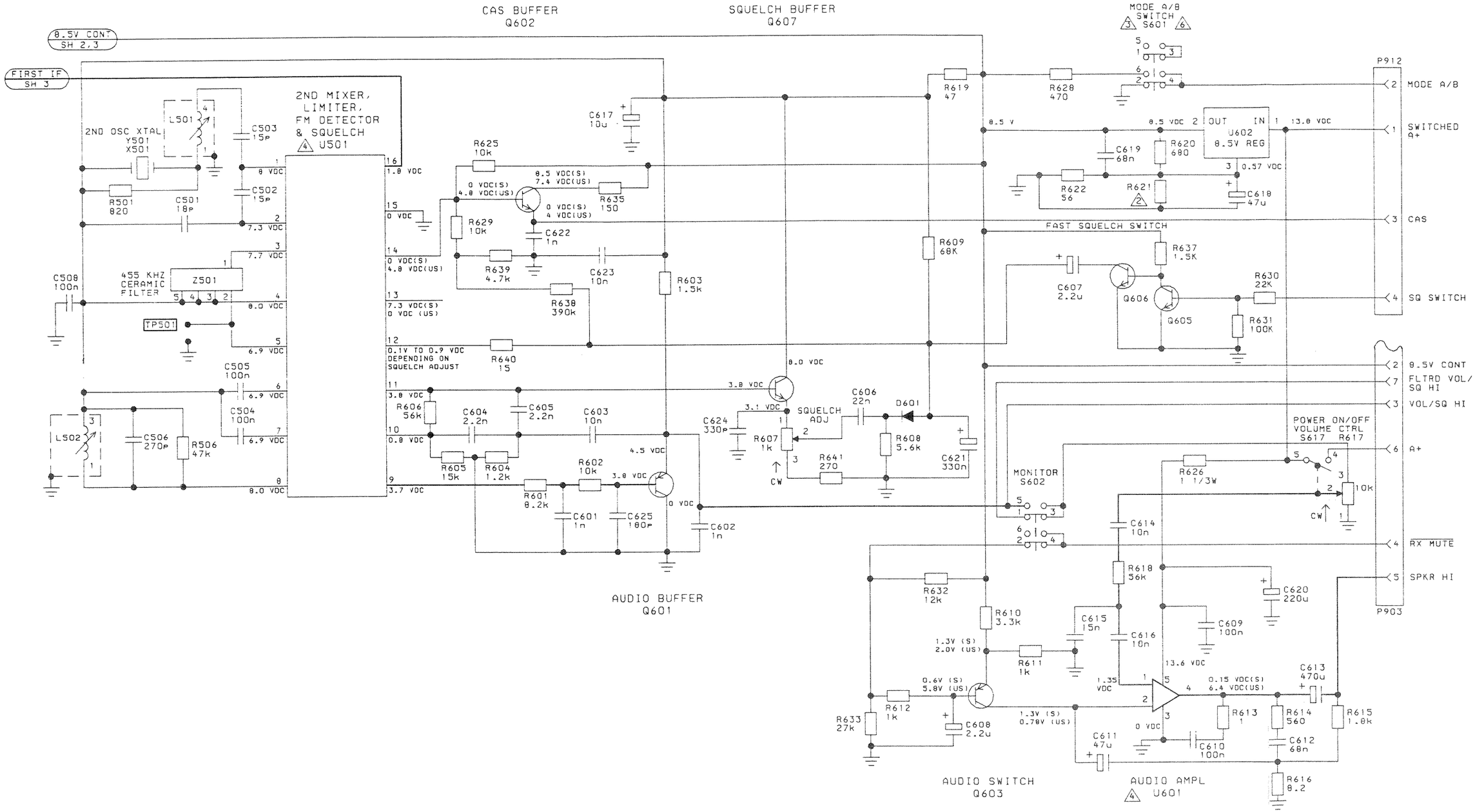
(19D901701, Sh. 2, Rev. 1)



(19D901701, Sh. 3, Rev. 1)

SCHEMATIC DIAGRAM

403-512 MHz WIDEBAND RECEIVER,
FRONT END & FIRST MIXER/IF

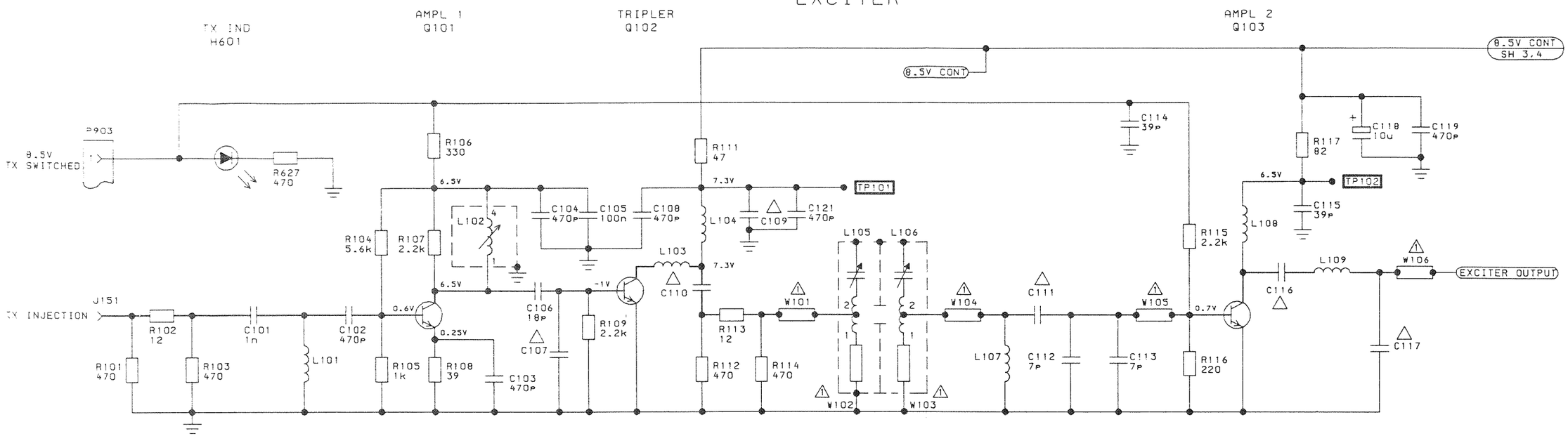


(19D901701, Sh. 4, Rev. 1)

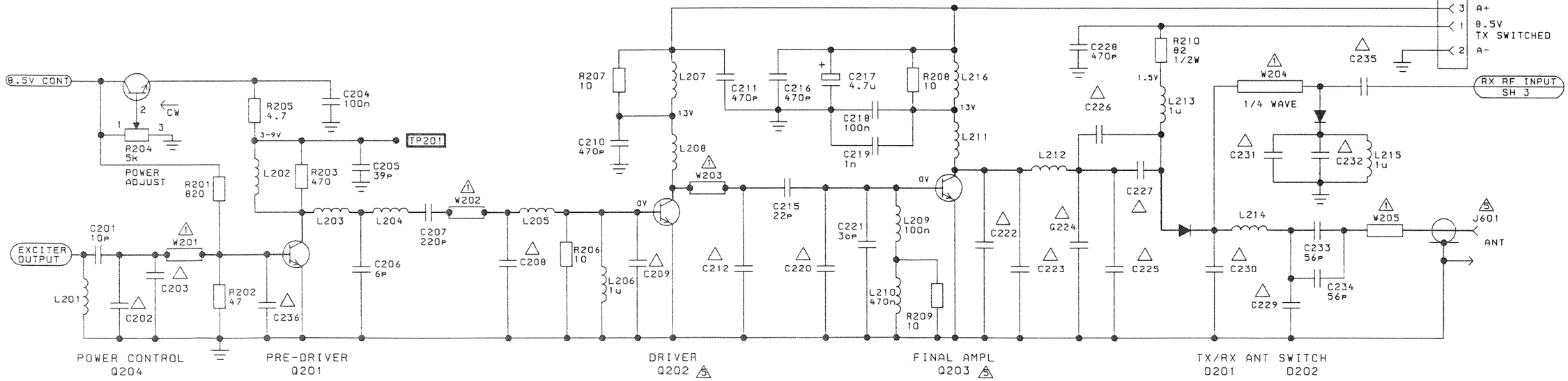
SCHEMATIC DIAGRAM

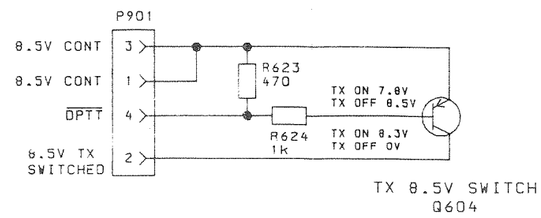
403-512 MHz WIDEBAND RECEIVER,
SECOND IF & AUDIO

EXCITER



25 WATT TRANSMITTER POWER AMPLIFIER





(19D901701, Sh. 2A, Rev. 1)

SCHEMATIC DIAGRAM

440-470 MHz
5-WATT TRANSMITTER

PARTS LIST

403-512 MHz
TRANSMIT/RECEIVE BOARD
(WIDEBAND)
19D901003G21-28

ISSUE 1

SYMBOL	GE PART NO.	DESCRIPTION
		19D901003G21 440-470 MHz STD - 25 WATT 19D901003G22 440-470 MHz 25 WATT W MODE SWITCH 19D901003G23 440-470 MHz 5 WATT 19D901003G24 440-470 MHz 5 WATT W MODE SWITCH 19D901003G25 470-512 MHz 22 WATT 19D901003G26 470-512 MHz 22 WATT W MODE SWITCH 19D901003G27 403-440 MHz 25 WATT 19D901003G28 403-440 MHz 25 WATT W MODE SWITCH
A1		COMPONENT BOARD 19D901043G14 440-470 MHz 25 WATTS 19D901043G17 470-512 MHz 22 WATTS 19D901043G18 403-440 MHz 25 WATTS
		EXCITER
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C101	19A701602P20	Ceramic: 1000 pF ±10%, 1000 VDCW.
C102 thru C104	19A701602P14	Ceramic: 470 pF ±10%, 1000 VDCW.
C105	19A702250P113	Polyester: .1 uF ±10%, 50 VDCW.
C106	19A701624P14	Ceramic disc: 18 pF ±5%, 500 VDCW, temp coef 0 PPM ±30/°C.
C107	19A701624P8	Ceramic, disc: 10 pF ±0.5 pF, 500 VDCW, temp coef 0 PPM ±30/°C. (Used in G14).
C107	19A701624P12	Ceramic, disc: 15 pF ±5%, 500 VDCW, temp coef 0 PPM ±30/°C. (Used in G18).
C107	19A701624P6	Ceramic, disc: 8 pF ±0.5 pF, 500 VDCW, temp coef 0 PPM ±60/°C. (Used in G17).
C108	19A701602P14	Ceramic: 470 pF ±10%, 1000 VDCW.
C109	19A701624P122	Ceramic, disc: 39 pF ±5%, 500 VDCW, temp coef N80 PPM ±30/°C. (Used in G14 & G18).
C109	19A701624P121	Ceramic, disc: 36 pF ±5%, 500 VDCW, temp coef N80 PPM ±30/°C. (Used in G17).
C110	19A701624P1	Ceramic, disc: 3 pF ±0.5 pF, 500 VDCW, temp coef 0 PPM ±120/°C. (Used in G14 & G17).
C110	19A701624P2	Ceramic, disc: 4 pF ±0.5 pF, 500 VDCW, temp coef 0 PPM ±60/°C. (Used in G18).
C111	19A701624P8	Ceramic, disc: 10 pF ±0.5 pF, 500 VDCW, temp coef 0 PPM ±30/°C. (Used in G14).
C111	19A701624P5	Ceramic, disc: 7 pF ±0.5 pF, 500 VDCW, temp coef 0 PPM ±60/°C. (Used in G17 & G18).
C112 and C113	19A701624P5	Ceramic, disc: 7 pF ±0.5 pF, 500 VDCW, temp coef 0 PPM ±60/°C.
C114 and C115	19A701624P122	Ceramic, disc: 39 pF ±5%, 500 VDCW, temp coef N80 PPM ±30/°C.
C116	19A701624P326	Ceramic, disc: 56 pF ±5%, 500 VDCW, temp coef N220 PPM ±30/°C. (Used in G14 & G17).
C116	19A701602P20	Ceramic: 1000 pF ±10%, 1000 VDCW. (Used in G18).
C117	19A701624P4	Ceramic, disc: 6 pF ±0.5 pF, 500 VDCW, temp coef 0 PPM ±60/°C. (Used in G14 & G17).
C117	19A701624P3	Ceramic, disc: 5 pF ±0.5 pF, 500 VDCW, temp coef 0 PPM ±60/°C. (Used in G18).
C118	19A703314P10	Electrolytic: 10 uF -10+50% tol, 50 VDCW; sim to Panasonic LS Series.
C119	19A701602P14	Ceramic: 470 pF ±10%, 1000 VDCW.
C121	19A701602P14	Ceramic: 470 pF ±10%, 1000 VDCW.
		- - - - - - - - - - JACKS - - - - - - - - - -
J151	19A701883P1	Contact, electrical.
		- - - - - - - - - - COILS - - - - - - - - - -
L101	19B800891P5	Coil, RF: .064 uH; sim to Paul Smith SK-890-1.
L102	19B800965P223	Coil, RF: variable; sim to Paul Smith SK767-2.
L103	19B800890P5	Coil, RF: sim to Paul Smith SK-891-1. (Used in G14).
L103	19B800890P4	Coil, RF: sim to Paul Smith SK896-1. (Used in G17).
L103	19B800890P7	Coil, RF: 15.8 nH ±5%; sim to Paul Smith SK-891-1. (Used in G18).
L104	19B800890P6	Coil, RF: 14.7 nH ±5%, sim to Paul Smith SK-891-1. (Used in G14).
L104	19B800890P4	Coil, RF: sim to Paul Smith SK896-1. (Used in G17).
L104	19B800890P8	Coil, RF: sim to Paul Smith SK-891-1. (Used in G18).
L105 and L106	19J706154P8	RF Coil: sim to Paul Smith SK802-1. (Used in G14).
L105 and L106	19J706154P6	RF Coil: sim to Paul Smith SK-802-1. (Used in G17).
L105 and L106	19J706154P2	RF Coil: sim to Paul Smith SK-802-1. (Used in G18).
L107	19B800891P2	Coil, RF Choke: sim to Paul Smith SK-890-1.
L108	19B800891P6	Coil, RF: .084 uH; sim to Paul Smith SK-890-1.
L109	19B800891P2	Coil, RF Choke: sim to Paul Smith SK-890-1.
		- - - - - - - - - - TRANSISTORS - - - - - - - - - -
Q101	19A702084P2	Silicon, NPN; sim to MPS 2369.
Q102 and Q103	19A703027P2	Silicon, NPN; sim to MPS 3866.
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R101	19A700106P55	Composition: 470 ohms ±5%, 1/4 w.
R102	19A700106P17	Composition: 12 ohms ±5%, 1/4 w.
R103	19A700106P55	Composition: 470 ohms ±5%, 1/4 w.
R104	H212CRP256C	Deposited carbon: 5.6K ohms ±5%, 1/4 w.
R105	H212CRP210C	Deposited carbon: 1K ohms ±5%, 1/4 w.
R106	H212CRP133C	Deposited carbon: 330 ohms ±5%, 1/4 w.
R107	19A700106P71	Composition: 2.2K ohms ±5%, 1/4 w.
R108	H212CRP039C	Deposited carbon: 39 ohms ±5%, 1/4 w.
R109	19A700106P71	Composition: 2.2K ohms ±5%, 1/4 w.
R111	H212CRP047C	Deposited carbon: 47 ohms ±5%, 1/4 w.
R112	19A700106P55	Composition: 470 ohms ±5%, 1/4 w.
R113	19A700106P17	Composition: 12 ohms ±5%, 1/4 w.
R114	19A700106P55	Composition: 470 ohms ±5%, 1/4 w.
R115	H212CRP222C	Deposited carbon: 2.2K ohms ±5%, 1/4 w.
R116	19A700106P47	Composition: 220 ohms ±5%, 1/4 w.
R117	H212CRP082C	Deposited carbon: 82 ohms ±5%, 1/4 w.
		- - - - - - - - - - CABLES - - - - - - - - - -
W101 thru W106		Part of Printed Board 19D901606P1.
		POWER AMPLIFIER
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C201 and C202	19A701624P8	Ceramic, disc: 10 pF ±0.5 pF, 500 VDCW, temp coef 0 PPM ±30/°C. (Used in G14 & G17).
C202 and C203	19A701624P10	Ceramic, disc: 12 pF ±5%, 500 VDCW, temp coef 0 PPM ±30/°C.
C204	19A702250P113	Polyester: .1 uF ±10%, 50 VDCW.
C205	19A701624P122	Ceramic, disc: 39 pF ±5%, 500 VDCW, temp coef N80 PPM ±30/°C.
C206	19A701624P4	Ceramic, disc: 6 pF ±0.5 pF, 500 VDCW, temp coef 0 PPM ±60/°C.
C207	19A701602P9	Ceramic: 220 pF ±20%, 1000 VDCW; sim to Radio Materials Type JF DISCAPS.
C208	19A701624P8	Ceramic, disc: 10 pF ±0.5 pF, 500 VDCW, temp coef 0 PPM ±30/°C. (Used in G14 & G17).
C208	19A701624P12	Ceramic, disc: 15 pF ±5%, 500 VDCW, temp coef 0 PPM ±30/°C. (Used in G18).
C209	19A700006P29	Mica: 62 pF ±5%, 100 VDCW; sim to Underwood 3HS0020. (Used in G14).
C209	19A700006P27	Mica: 51 pF ±5%, 100 VDCW; sim to Underwood 3HS0020. (Used in G17).
C209	19A700006P30	Mica: 68 pF ±5%, 100 VDCW; sim to Underwood 3HS0020. (Used in G18).
C210 and C211	19A701602P14	Ceramic: 470 pF ±10%, 1000 VDCW.
C212	19A700006P6	Mica: 10 pF ±5%, 100 VDCW; sim to Underwood 3HS0020. (Used in G14 & G17).
C212	19A700006P8	Mica: 68 pF ±5%, 100 VDCW; sim to Underwood 3HS0020. (Used in G18).
C215	19A701413P17	Mica: 22 pF ±5%, 100 VDCW.
C216	19A701602P14	Ceramic: 470 pF ±10%, 1000 VDCW.
C217	19A703314P9	Electrolytic: 4.7 uF -10+50% tol, 50 VDCW; sim to Panasonic LS Series.
C218	19A702250P113	Polyester: .1 uF ±10%, 50 VDCW.
C219	19A701602P20	Ceramic: 1000 pF ±10%, 1000 VDCW.
C220	19A700006P21	Mica: 33 pF ±5%, 100 VDCW; sim to Underwood 3HS0020. (Used in G14 & G18).
C220	19A700006P20	Mica: 30 pF ±5%, 100 VDCW; sim to Underwood 3HS0020. (Used in G17).
C221	19A700006P20	Mica: 30 pF ±5%, 100 VDCW; sim to Underwood 3HS0020.
C222	19A700006P24	Mica: 43 pF ±5%, 100 VDCW; sim to Underwood 3HS0020. (Used in G14).
C222	19A700006P23	Mica: 39 pF ±5%, 100 VDCW; sim to Underwood 3HS0020. (Used in G17).
C222	19A700006P26	Mica: 47 pF ±5%, 100 VDCW; sim to Underwood 3HS0020. (Used in G18).
C223	19A700006P23	Mica: 39 pF ±5%, 100 VDCW; sim to Underwood 3HS0020. (Used in G14 & G17).
C223	19A700006P26	Mica: 47 pF ±5%, 100 VDCW; sim to Underwood 3HS0020. (Used in G18).
C224 and C225	19A701624P3	Ceramic, disc: 5 pF ±0.5 pF, 500 VDCW, temp coef 0 PPM ±60/°C. (Used in G14).
C224 and C225	19A701624P4	Ceramic, disc: 6 pF ±0.5 pF, 500 VDCW, temp coef 0 PPM ±60/°C. (Used in G17).
C224 and C225	19A701624P5	Ceramic, disc: 7 pF ±0.5 pF, 500 VDCW, temp coef 0 PPM ±60/°C. (Used in G18).
C226 and C227	19A701624P5	Ceramic, disc: 7 pF ±5%, 500 VDCW, temp coef 0 PPM ±60/°C. (Used in G14 & G17).
C226 and C227	19A701624P6	Ceramic, disc: 15 pF ±5%, 500 VDCW, temp coef 0 PPM ±30/°C. (Used in G18).
C228	19A701602P14	Ceramic: 470 pF ±10%, 1000 VDCW.
C229	19A701624P2	Ceramic, disc: 4 pF ±0.5 pF, 500 VDCW, temp coef 0 PPM ±60/°C. (Used in G14 & G17).
C229	19A701624P3	Ceramic, disc: 5 pF ±0.5 pF, 500 VDCW, temp coef, 0 PPM ±60/°C. (Used in G18).
C230	19A701624P4	Ceramic, disc: 6 pF ±0.5 pF, 500 VDCW, temp coef 0 PPM ±60/°C. (Used in G14 & G17).
C230	19A701624P6	Ceramic, disc: 15 pF ±5%, 500 VDCW, temp coef 0 PPM ±30/°C. (Used in G18).
C231 and C232	19A701624P8	Ceramic, disc: 10 pF ±0.5 pF, 500 VDCW, temp coef 0 PPM ±30/°C. (Used in G14).
C231 and C232	19A701624P6	Ceramic, disc: 15 pF ±5%, 500 VDCW, temp coef 0 PPM ±30/°C. (Used in G17).
C231 and C232	19A701624P10	Ceramic, disc: 12 pF ±5%, 500 VDCW, temp coef, 0 PPM ±30/°C. (Used in G18).
C233 and C234	19A701624P326	Ceramic, disc: 56 pF ±5%, 500 VDCW, temp coef N220 PPM ±30/°C.
C235	19A701602P14	Ceramic: 470 pF ±10%, 1000 VDCW. (Used in G14 & G18).
C235	19A701624P15	Ceramic, disc: 20 pF ±5%, 500 VDCW, temp coef, 0 PPM ±30/°C. (Used in G17).
C236	19A701624P3	Ceramic, disc: 5 pF ±0.5 pF, 500 VDCW, temp coef 0 PPM ±60/°C. (Used in G14 & G17).
C236	19A701624P5	Ceramic, disc: 7 pF ±0.5 pF, 500 VDCW, temp coef 0 PPM ±60/°C. (Used in G18).
		- - - - - - - - - - DIODES - - - - - - - - - -
D201 and D202	19J706892P2	Silicon.
		- - - - - - - - - - COILS - - - - - - - - - -
L201	19B800890P8	Coil, RF: sim to Paul Smith SK-891-1. (Used in G14).
L201	19B800890P5	Coil, RF: sim to Paul Smith SK-891-1. (Used in G17).
L201	19B800890P6	Coil, RF: 14.7 nH ±5%, sim to Paul Smith SK-891-1. (Used in G18).
L202	19B800891P6	Coil, RF: .084 uH; sim to Paul Smith SK-890-1.
L203	19B800891P1	Coil, RF Choke: sim to Paul Smith SK-890-1.
L204	19B800890P7	Coil, RF: 15.8 nH ±5%; sim to Paul Smith SK-891-1.
L205	19A701006P5	Strap. (Used in G14 & G17).
L205	19A701006P4	Strap. (Used in G18).
L206	H343CLP10922	Coil, RF: 1.0 uH ±10%.
L207	19B800891P6	Coil, RF: .084 uH; sim to Paul Smith SK-890-1.
L208	19B800890P6	Coil, RF: 14.7 nH ±5%; sim to Paul Smith SK-891-1. (Used in G14).
L208	19B800890P8	Coil, RF: sim to Paul Smith SK-891-1. (Used in G17).
L208	19B800891P2	Coil, RF Choke: sim to Paul Smith SK-890-1. (Used in G18).
L209	19A700024P1	Coil, RF: 100 nH ±10%, 0.08 ohms DC res max, 100 v.
L210	19A700000P8	Coil, RF: 470 nH ±12%; sim to Jeffers 4411-4K.
L211	19B800890P6	Coil, RF: 14.7 nH ±5%, sim to Paul Smith SK-891-1. (Used in G14 & G17).
L211	19B800890P8	Coil, RF: sim to Paul Smith SK-891-1. (Used in G18).
L212	19A701006P5	Strap. (Used in G14 & G18).
L212	19A701006P4	Strap. (Used in G17).
L213	19A700024P13	Coil, RF: 1.0 uH ±10%.
L214	19A701237P1	Coil. (Used in G14 & G18).
L214	19A701237P3	Coil. (Used in G17).
L215	H343CLP10922	Coil, RF: 1.0 uH ±10%.
L216	19B800891P6	Coil, RF: .084 uH; sim to Paul Smith SK-890-1.
		- - - - - - - - - - PLUGS - - - - - - - - - -
P251	19A700102P10	Printed wire: 3 contacts; sim to Molex 09-52-3032.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

SYMBOL	GE PART NO.	DESCRIPTION
		- - - - - - - - - - TRANSISTORS - - - - - - - - - -
Q201	19A701940P1	Silicon, NPN; sim to MRF-559.
Q202	19A134164P2	Silicon, NPN; sim to Type 2N5945. (NOT PART OF A1)
Q203	19A134239P2	Silicon, NPN. (Used in G21,22,25,26,27,28 - NOT PART OF A1).
Q204	19A700054P1	Silicon, NPN, 60w; sim to BD-201.
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R201	19A700106P61	Composition: 820 ohms ±5%, 1/4 w.
R202	19A700106P31	Composition: 47 ohms ±5%, 1/4 w.
R203	19A700106P55	Composition: 470 ohms ±5%, 1/4 w.
R204	19B800784P106	Variable: 5 ohms ±20%, 1/2 w.
R205	H212CRP947C	Deposited carbon: 4.7 ohms ±5%, 1/4 w.
R206 thru R209	19A700106P15	Composition: 10 ohms ±5%, 1/4 w.
R210	19A700113P37	Composition: 82 ohms ±5%, 1/2 w.
		- - - - - - - - - - CABLES - - - - - - - - - -
W201 thru W205		Part of Printed Board 19D901606P1.
		RECEIVER-INJECTION
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C351	19A700235P27	Ceramic: 150 pF ±5%, 50 VDCW.
C352	19A700235P14	Ceramic, disc: 12 pF ±5%, 50 VDCW. (Used in G14).
C352	19A700235P11	Ceramic: 6.8 pF ±0.25 pF, 50 VDCW, temp coef N150 PPM/°C. (Used in G17).
C352	19A700235P13	Ceramic: 10 pF ±5%, 500 VDCW. (Used in G18).
C353	19A700235P12	Ceramic: 8.2 pF ±0.25 pF, 50 VDCW. (Used in G14).
C353	19A700235P11	Ceramic: 6.8 pF ±0.25 pF, 50 VDCW, temp coef N150 PPM/°C. (Used in G17).
C353	19A700235P15	Ceramic: 15 pF ±5%, 50 VDCW. (Used in G18).
C354	19A700013P10	Phenolic: 0.56 pF ±5%, 500 VDCW. (Used in G14 & G17).
C354	19A700013P12	Phenolic: 0.82 pF ±5%, 500 VDCW. (Used in G18).
C355	19A700235P14	Ceramic, disc: 12 pF ±5%, 50 VDCW. (Used in G14).
C355	19A700235P12	Ceramic: 8.2 pF ±0.25 pF, 50 VDCW. (Used in G17).
C355	19A700235P13	Ceramic: 10 pF ±5%, 50 VDCW. (Used in G18).
C356	19A700235P13	Ceramic: 10 pF ±5%, 50 VDCW. (Used in G14).
C356	19A700235P12	Ceramic: 8.2 pF ±.25pF, 50 VDCW. (Used in G17).
C356	19A700235P14	Ceramic, disc: 12 pF ±5%, 50 VDCW. (Used in G18).
C357	19A703314P6	Electrolytic: 1 uF -10+50% tol, 50 VDCW; sim to Panasonic LS Series.
C358	19A700233P5	Ceramic: 470 pF ±20%, 50 VDCW.
C359	19A700235P6	Ceramic: 3.3 pF ±0.25 pF, 50 VDCW, temp coef N150 PPM/°C. (Used in G14).
C359	19A700235P10	Ceramic: 5.6 pF ±0.25 pF, 500 VDCW. (Used in G17).
C359	19A700235P20	Ceramic: 39 pF ±5%, 50 VDCW. (Used in G18).
C360 and C361	19A700233P5	Ceramic: 470 pF ±20%, 50 VDCW.
C362	19A700233P2	Ceramic, disc: 100 pF ±20%, 50 VDCW.
		- - - - - - - - - - JACKS - - - - - - - - - -
J351	19A701883P1	Contact, electrical.

SYMBOL	GE PART NO.	DESCRIPTION
		- - - - - - - - - - COILS - - - - - - - - - -
L351	H343CLP10922	Coil, RF: 1.0 uH ±10%.
L352 and L353	19B800965P323	Coil, RF: variable; sim to Paul Smith SK767-2.
L354	19B800891P2	Coil, RF Choke: sim to Paul Smith SK-890-1. (Used in G14 & G17).
L354	19B800891P3	Coil, RF Choke: sim to Paul SK-890-1. (Used in G18).
L355	19B209728P9	Coil, RF: sim to Paul Smith SK801-1. (Used in G14).
L355	19B209728P11	Coil, RF: sim to Paul Smith SK801-1. (Used in G17).
L355	19B209728P8	Coil, RF: sim to Paul Smith SK801-1. (Used in G18).
L356	19B209728P6	Coil, RF: sim to Paul Smith SK801-1. (Used in G14).
L356	19B209728P11	Coil, RF: sim to Paul Smith SK801-1. (Used in G17).
L356	19B209728P12	Coil, RF: sim to Paul Smith SK801-1. (Used in G18).
		- - - - - - - - - - TRANSISTORS - - - - - - - - - -
Q351	19A700060P3	N Type, field effect; sim to J310.
Q352	19A701808P3	Silicon, NPN; sim to MPS 6595.
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R351	H212CRP015C	Deposited carbon: 15 ohms ±5%, 1/4 w.
R352 and R353	H212CRP115C	Deposited carbon: 150 ohms ±5%, 1/4 w.
R354	H212CRP218C	Deposited carbon: 1.8K ohms ±5%, 1/4 w.
R355	19A700019P41	Deposited carbon: 2.2K ohms ±5%, 1/4 w.
R356	H212CRP022C	Deposited carbon: 22 ohms ±5%, 1/4 w.
R357	H212CRP047C	Deposited carbon: 47 ohms ±5%, 1/4 w.
R358	H212CRP310C	Deposited carbon: 10K ohms ±5%, 1/4 w.
R359	H212CRP282C	Deposited carbon: 8.2K ohms ±5%, 1/4 w.
		RECEIVER - FRONT END
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C401	19A700219P38	Ceramic: 18 pF ±10%, 100 VDCW, temp coef 0 PPM/°C. (Used in G14 & G17).
C401	19A700219P50	Ceramic: 39 pF ±5%, 100 VDCW, temp coef 0 PPM/°C. (Used in G18).
C402	19A700001P5	Ceramic: 470 pF ±20%, 50 VDCW.
C403	T644ACP310K	Polyester: .010 uF ±10%, 50 VDCW.
C404	19A700219P38	Ceramic: 18 pF ±10%, 100 VDCW, temp coef 0 PPM/°C. (Used in G14).
C404	19A700219P16	Ceramic: 3.9 pF ±5%, 100 VDCW, temp coef 0 PPM/°C. (Used in G17).
C404	19A700219P18	Ceramic: 4.7 pF ±5%, 100 VDCW, temp coef 0 PPM/°C. (Used in G18).
C405	T644ACP310K	Polyester: .010 uF ±10%, 50 VDCW.
C406	19A700235P9	Ceramic: 4.7 pF ±5%, 50 VDCW, temp coef -150 PPM/°C. (Used in G14 & G18).
C406	19A700235P13	Ceramic: 10 pF ±5%, 50 VDCW. (Used in G17).
C407	19A700235P5	Ceramic: 2.2 pF ±0.25 pF, 50 VDCW, temp coef -150 PPM/°C. (Used in G14 & G17).
C407	19A700235P10	Ceramic: 5.6 pF ±0.25pF, 50 VDCW. (Used in G18).
C408	19A700233P5	Ceramic: 470 pF ±20%, 50 VDCW.
C409	T644ACP310K	Polyester: .010 uF ±10%, 50 VDCW.
C410	19A700235P20	Ceramic: 39 pF ±5%, 50 VDCW.
C411	19A700235P16	Ceramic: 18 pF ±5%, 50 VDCW.

SYMBOL	GE PART NO.	DESCRIPTION
C412	T644ACP247K	Polyester: .0047 uF ±10%, 50 VDCW.
C414	19A700235P14	Ceramic, disc: 12 pF ±5%, 50 VDCW.
C415 and C416	T644ACP310K	Polyester: .010 uF ±10%, 50 VDCW.
C417	19A700235P15	Ceramic: 15 pF ±5%, 50 VDCW.
C418	19A700235P13	Ceramic: 10 pF ±5%, 50 VDCW.
C419	T644ACP310K	Polyester: .010 uF ±10%, 50 VDCW.
C420	T644ACP247K	Polyester: .0047 uF ±10%, 50 VDCW.
C421	19A700235P9	Ceramic: 4.7 pF ±0.25 pF, 50 VDCW, temp coef N150 PPM/°C.
		- - - - - - - - - - DIODES - - - - - - - - - -
D401 and D402	19A700028P1	Silicon, fast recovery: fwd current 75 mA, 75 PIV; sim to Type 1N4148.
		- - - - - - - - - - COILS - - - - - - - - - -
L401 and L402	19B209728P8	Coil, RF: sim to Paul Smith SK801-1. (Used in G14).
L401 and L402	19B209728P9	Coil, RF: sim to Paul Smith SK801-1. (Used in G17).
L401 and L402	19B209728P13	Coil, RF: sim to Paul Smith SK801-1. (Used in G18).
L403	19B800890P5	Coil, RF: sim to Paul Smith SK-891-1. (Used in G14).
L403	19B800890P7	Coil, RF: 15.8 nH ±5%; sim to Paul Smith SK-891-1. (Used in G17).
L403	19B800891P3	Coil, RF Choke; sim to Paul Smith SK-890-1. (Used in G18).
L404	19B800891P3	Coil, RF Choke; sim to Paul Smith SK890-1.
L405	19B209728P8	Coil, RF: sim to Paul Smith SK801-1. (Used in G14).
L405	19B209728P9	Coil, RF: sim to Paul Smith SK801-1. (Used in G17).
L405	19B209728P13	Coil, RF: sim to Paul Smith SK801-1. (Used in G18).
L406	19J706154P2	RF Coil: sim to Paul Smith SK802-1. (Used in G14).
L406	19J706154P15	RF Coil: sim to Paul Smith SK802-1. (Used in G17).
L406	19J706154P18	RF Coil: sim to Paul Smith SK802-1. (Used in G18).
L407	19B209728P5	Coil, RF: sim to Paul Smith SK801-1. (Used in G14).
L407	19B209728P3	Coil, RF: sim to Paul Smith SK801-1. (Used in G17).
L407	19B209728P13	Coil, RF: sim to Paul Smith SK801-1. (Used in G18).
L408 thru L410	19A703311P1	Coil, RF: sim to TOKO American KON-K6572BA.
L411	19A700024P20	Coil, RF: 3.9 uH ±10%.
		- - - - - - - - - - TRANSISTORS - - - - - - - - - -
Q401	19A702062P1	Silicon, NPN.
Q402	19J706038P1	N Type, field effect.
Q403	19A116818P3	N-Channel, field effect; sim to Type 3N1877.
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R401	19A700019P43	Deposited carbon: 3.3K ohms ±5%, 1/4 w.
R402	19A700019P35	Deposited carbon: 680 ohms ±5%, 1/4 w.
R403	19A700019P32	Deposited carbon: 390 ohms ±5%, 1/4 w.
R404	19A700019P23	Deposited carbon: 68 ohms ±5%, 1/4 w.
R405	19A700019P31	Deposited carbon: 330 ohms ±5%, 1/4 w.
R406	19A700019P40	Deposited carbon: 1.8K ohms ±5%, 1/4 w.

SYMBOL	GE PART NO.	DESCRIPTION
R407	H212CRP310C	Deposited carbon: 10K ohms ±5%, 1/4 w.
R408	H212CRP110C	Deposited carbon: 100 ohms ±5%, 1/4 w.
R410	H212CRP268C	Deposited carbon: 6.8K ohms ±5%, 1/4 w.
R411	H212CRP127C	Deposited carbon: 270 ohms ±5%, 1/4 w.
R412	H212CRP339C	Deposited carbon: 39K ohms ±5%, 1/4 w.
R413	H212CRP333C	Deposited carbon: 33K ohms ±5%, 1/4 w.
R414	H212CRP047C	Deposited carbon: 47 ohms ±5%, 1/4 w.
R415	H212CRP247C	Deposited carbon: 4.7K ohms ±5%, 1/4 w.
		- - - - - - - - - - NETWORKS - - - - - - - - - -
Z401	19A702166G2	Crystal pair, quartz: 45 MHz reference frequency
Z402		Part of Z401.
		RECEIVER - IF/DETECTOR
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C501 and C502	19A700235P19	Ceramic: 33 pF ±5%, temp coef -150 PPM/°C.
C503	19A700235P15	Ceramic: 15 pF ±5%, 50 VDCW.
C504 and C505	19A702250P113	Polyester: .1 uF ±10%, 50 VDCW.
C506	19A700235P30	Ceramic: 270 pF ±5%, 50 VDCW.
C507	19A700235P15	Ceramic: 15 pF ±5%, 50 VDCW.
C508	19A702250P113	Polyester: .1 uF ±10%, 50 VDCW.
		- - - - - - - - - - COILS - - - - - - - - - -
L501	19A703311P2	Coil, RF: sim to TOKO AMERICA KON-K6672BA.
L502	19B801023P1	Coil, RF: 450 uH ±6%, sim to TOKO AMERICAN 124LN-A064HM.
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R501	H212CRP182C	Deposited carbon: 820 ohms ±5%, 1/4 w.
R502	H212CRP318C	Deposited carbon: 18K ohms ±5%, 1/4 w.
R506	H212CRP347C	Deposited carbon: 47K ohms ±5%, 1/4 w.
		- - - - - - - - - - INTEGRATED CIRCUITS - - - - - - - - - -
U501	19A704619P1	Linear: IF AMPLIFIER AND DETECTOR.
		- - - - - - - - - - SOCKETS - - - - - - - - - -
X501	19A702742P1	Crystal socket. (Quantity 2).
		- - - - - - - - - - CRYSTALS - - - - - - - - - -
Y501	19B233066G8	Crystal: freq range 44 to 58 MHz.
		- - - - - - - - - - NETWORKS - - - - - - - - - -
Z501	19B801021P2	Bandpass filter: 455 kHz ±1.5, sim to Murata CFW-455E.
		RECEIVER - AUDIO
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C601 and C602	T644ACP210K	Polyester: .0010 uF ±10%, 50 VDCW.
C603	T644ACP310J	Polyester: .010 uF ±10%, 50 VDCW.
C604 and C605	T644ACP222J	Polyester: .0022 uF ±10%, 50 VDCW.
C606	T644ACP322K	Polyester: 0.022 uF ±10%, 50 VDCW..
C607 and C608	315A6047P225U	Tantalum: 2.2 uF ±20%, 35 VDCW.
C609 and C610	19A702250P113	Polyester: .1 uF ±10%, 50 VDCW.

SYMBOL	GE PART NO.	DESCRIPTION
C611	315A6047P476M	Tantalum: 47 uF ±20%, 6.3 VDCW.
C612	19A702250P112	Polyester: .068 uF ±10%, 50 VDCW; sim to NISSEI TYPE AMZ.
C613	19A701225P8	Electrolytic: 470 uF -10+75%, 16 VDCW; sim to Sprague 5002D477-G016DGIC.
C614	T644ACP310K	Polyester: .010 uF ±10%, 50 VDCW.
C615	T644ACP315K	Polyester: .015 uF ±10%, 50 VDCW; sim to NISSEI AMXV or AMZV.
C616	T644ACP310K	Polyester: .010 uF ±10%, 50 VDCW.
C617	19A703314P10	Electrolytic: 10 uF -10+50% tol, 50 VDCW; sim to Panasonic LS Series.
C618	19A703314P4	Electrolytic: 47 uF -10+50% tol, 16 VDCW; sim to Panasonic LS Series.
C619	19A702250P112	Polyester: .068 uF ±10%, 50 VDCW; sim to NISSEI TYPE AMZ.
C620	19A701225P3	Electrolytic: 220 uF, -10+50%, 25 VDCW.
C621	315A6047P334U	Tantalum: 0.33 uF ±20%, 35 VDCW.
C622	T644ACP210K	Polyester: .0010 uF ±10%, 50 VDCW.
C623	T644ACP310K	Polyester: .010 uF ±10%, 50 VDCW.
C624	19A700235P31	Ceramic, disc: 330 pF ±5%, 50 VDCW.
C625	19A700235P28	Ceramic: 180 pF ±5%, 50 VDCW.
		- - - - - - - - - - DIODES - - - - - - - - - -
D601	19A700028P1	Silicon, fast recovery: fwd current 75 mA, 75 PIV; sim to Type 1N4148.
		- - - - - - - - - - INDICATORS - - - - - - - - -
H601	19A134354P1	Diode, optoelectronic: red; sim to Hewlett Packard 5082-4655.
		- - - - - - - - - - TRANSISTORS - - - - - - - - -
Q601	19A700022P2	Silicon, PNP; sim to Type 2N3906.
Q602	19A700023P2	Silicon, NPN; sim to Type 2N3904.
Q603	19A700022P2	Silicon, PNP: sim to 2N3906.
Q604	19A702504P2	Silicon, PNP; sim to Type 2N4403.
Q605 and Q606	19A700023P2	Silicon, NPN; sim to Type 2N3904.
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R601	H212CRP282C	Deposited carbon: 8.2K ohms ±5%, 1/4 w.
R602	H212CRP310C	Deposited carbon: 10K ohms ±5%, 1/4 w.
R603	H212CRP215C	Deposited carbon: 1.5K ohms ±5%, 1/4 w.
R604	H212CRP212C	Deposited carbon: 1.2K ohms ±5%, 1/4 w.
R605	H212CRP315C	Deposited carbon: 15K ohms ±5%, 1/4 w.
R606	H212CRP356C	Deposited carbon: 56K ohms ±5%, 1/4 w.
R607	19B800784P105	Variable: 1K ohms ±20%, 350 VDCW, .5 w.
R608	H212CRP256C	Deposited carbon: 5.6K ohms ±5%, 1/4 w.
R609	H212CRP368C	Deposited carbon: 68K ohms ±5%, 1/4 w.
R610	H212CRP233C	Deposited carbon: 3.3K ohms ±5%, 1/4 w.
R611 and R612	H212CRP210C	Deposited carbon: 1K ohms ±5%, 1/4 w.
R613	H212CRP910C	Deposited carbon: 1 ohms ±5%, 1/4 w.
R614	H212CRP156C	Deposited carbon: 560 ohms ±5%, 1/4 w.
R615	H212CRP218C	Deposited carbon: 1.8K ohms ±5%, 1/4 w.
R616	H212CRP982C	Deposited carbon: 8.2 ohms ±5%, 1/4 w.
R617	19A703313P3	Variable: 10K ohms ±20%, .1 watt.
R618	H212CRP356C	Deposited carbon: 56K ohms ±5%, 1/4 w.
R619	H212CRP047C	Deposited carbon: 47 ohms ±5%, 1/4 w.
R620	H212CRP168C	Deposited carbon: 680 ohms ±5%, 1/4 w.
R621A	H212CRP127C	Deposited carbon: 270 ohms ±5%, 1/4 w.
R621B	H212CRP110C	Deposited carbon: 100 ohms ±5%, 1/4 w.
R621C	H212CRP047C	Deposited carbon: 47 ohms ±5%, 1/4 w.
R621D	H212CRP022C	Deposited carbon: 22 ohms ±5%, 1/4 w.
R621E	H212CRP968C	Deposited carbon: 6.8 ohms ±5%, 1/4 w.
R622	H212CRP056C	Deposited carbon: 56 ohms ±5%, 1/4 w.
R623	H212CRP147C	Deposited carbon: 470 ohms ±5%, 1/4 w.
R624	H212CRP210C	Deposited carbon: 1K ohms ±5%, 1/4 w.
R625	H212cRP310C	Deposited carbon: 10K ohms ±5%, 1/4 w.
R626	19A700018P1	Deposited carbon: 1 ohm ±5%, 1/3 w.
R627 and R628	H212CRP147C	Deposited carbon: 470 ohms ±5%, 1/4 w.
R629	H212CRP310C	Deposited carbon: 10K ohms ±5%, 1/4 w.
R630	H212CRP322C	Deposited carbon: 22K ohms ±5%, 1/4 w.
R631	H212CRP410C	Deposited carbon: 0.1M ohms ±5%, 1/4 w.
R632	H212CRP312C	Deposited carbon: 12K ohms ±5%, 1/4 w.
R633	H212CRP327C	Deposited carbon: 27K ohms ±5%, 1/4 w.
R634	5490828P9	Thermal: 10K ohms ±10%; sim to Carborundum 551J-8.
R635	H212CRP115C	Deposited carbon: 150 ohms ±5%, 1/4 w.
R637	H212CRP215C	Deposited carbon: 1.5K ohms ±5%, 1/4 w.
R638	H212CRP439C	Deposited carbon: 0.39M ohms ±5%, 1/4 w.
R639	H212CRP247C	Deposited carbon: 4.7K ohms ±5%, 1/4 w.
R640	H212CRP015C	Deposited carbon: 15 ohms ±5%, 1/4 w.
R641	H212CRP127C	Deposited carbon: 270 ohms ±5%, 1/4 w.
		- - - - - - - - - - SWITCHES - - - - - - - - - -
S602	19B800563P8	Push: DPDT, contacts rated 15 mA at 130 VDC; sim to IEEE/SCHADOW F2UOA.
S617		Part of R617.
		- - - - - - - - INTEGRATED CIRCUITS - - - - - - -
U601	19A701830P1	Linear, Audio AMPLIFIER; sim to TDA 2003.
U602	19A138414G1	Regulator: 8.5 V.
		SYSTEM INTERCONNECT
		- - - - - - - - - - - PLUGS - - - - - - - - - - -
P901	19A116659P187	Connector, printed wiring: 4 contacts rated at 5 amps; sim to Molex 09-62-3042. (Gold Plated Contacts).
P903	19A116659P188	Connector, printed wiring: 7 contacts rated at 5 amps; sim to Molex 09-62-3072. (Gold Plated Contacts).
P912	19A116659P187	Connector, printed wiring: 4 contacts rated at 5 amps; sim to Molex 09-62-3042. (Gold Plated Contacts).
		- - - - - - - - - - TRANSISTORS - - - - - - - - -
Q202	19A134164P2	Silicon, NPN: sim to Type 2N5945.
Q203	19A134239P2	Silicon, NPN.
		- - - - - - - - - - SWITCHES - - - - - - - - - -
S601	19B800563P1	Push: DPDT, 1 station, alternate action; sim to IEEE/SCHADOW 51281 (F2UEE).
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
	19A130465P1	Spacer, inner. (Used with Q202).
	7142162P137	Spacer, outer: No. 8-32. (Used with Q202).
	5492178P2	Washer, spring tension: sim to Wallace Barnes 375-20. (Used with Q202).
	19C328587P1	Pushbutton. (S601 & S602).
	NP280878P15	Nameplate. (MODE A, B - Used with S601).
	NP280878P17	Nameplate. (MONITOR - Used with S602).
	19A702381P508	Screw, thd. forming: No. 3.5-0.6 x 8. (Secures A1).
	19A701886P1	Spring. (Used with L105, L106, L355, L356, L401, L402, L405-L407).
	19A700068P1	Insulator, bushing. (Used with U601 & U602).
	19A700115P3	Insulator, plate. (Used with U601 & U602).
	19A701905P3	Tuning screw. (Used with L105, L106, L355, L356, L401, L402, L405-L407).
	19C851075P1	Knob. (R617).
	19A701743P1	Pad. (Located behind S602 knob).
	19D429946P4	Casting. (Located at L401 & L407).
	19C850619G6	Casting. (Located at L105 & L106).
	19A121175P46	Insulator, plate. (Located at L404).
	19B801338P1	Shield, dust.