MOBILE RADIO

MAINTENANCE MANUAL

406—512 MHz POWER AMPLIFIER BOARD 19D423445G5-G7

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DESCRIPTION

The PA assembly for MASTR® Executive II uses four RF power transistors to provide a power output of 40 Watts. The output power is adjustable using power control R213 and is type accepted with the FCC to operate over a range of 10 to 40 Watts (Mobile) or 1 to 40 Watts (Station). A single transistor is used in the power control circuit.

Supply voltage for the PA is connected through power leads from the system-audio-squelch board (SAS) to feed through capacitors C297 and C298 on the side of the PA assembly. C297, C298, and C299 prevent RF from getting on the power leads. Diode CR295 will cause the main fuse assembly to blow if the polarity of the power leads is reversed, providing reverse voltage protection for the radio.

The PA assembly is insulated from vehicle ground to permit operation in positive or negative ground vehicles.

NOTE

In positive ground vehicles, A- is "hot" with respect to vehicle ground. Shorting the transmitter PA printed wiring board ground pattern to the radio case may cause one of the in-line fuses to blow.

The hinged PA heatsink assembly pivots 90° to provide access to the power amplifier board, low pass filter and centralized metering jack J205.

Centralized metering jack J205 is provided for use with GE Test Set Model 4EX3A11 or Test Kit 4EX8K12. The Test Set meters the Ampl-1 drive (exciter output), power control voltage, driver current, and PA current.

CIRCUIT ANALYSIS

RF POWER AMPLIFIERS

The exciter output is coupled through RF cable W216 to PA input jack J201. The 50 ohm RF input is coupled through a matching network comprised of C206, C207, C208 and W202 to the base of power amplifier Q201.

Part of the RF input is rectified by CR201 and metered at J205-4 through resistor R201.

Collector voltage for Q201 is applied direct from the DC power input through collector stabilizing network R205 and L202 and collector feed network L203 and C210.

The output of Q201 is coupled to the base of a second power amplifier Q202 through a matching network consisting of T201, C215 and C216.

Collector voltage to Q202 is controlled by power control circuit, Q215, and is applied through a collector stabilizing network L206 and R206 and collector feed network L205 and C218.

The output of Q202 is coupled to the base of driver Q203 through C219 and a matching network of T202, C222, C252, C224, C225, and L207. The collector voltage to Q203 is coupled through collector stabilizing network L209 and R214 and collector feed network L208 and C228.

Collector current for Q203 is metered across tapped manganin resistor R12. The reading is taken in position F on the 1-Volt scale with the High Sensitivity button pressed, and read as 0-15 amperes full scale.

The output of driver Q203 is coupled through an impedance matching network

(C229, C230, C233 and T203) that matches the output impedance of Q203 to the input impedance of power amplifier Q204 through a 50 ohm micro strip (W204) and input impedance matching network T204, C234, C235 and C236.

Collector current for Q204 is metered across tapped manganin resistor R210. The reading taken in position G on the 1-Volt scale with the High Sensitivity button pressed and read as 0-15 amperes full scale.

Following power amplifier Q204 is a matching network C237, C238, and T205) that matches the output of Q204 to the 50-ohm input of low pass filter, through 50 ohm micro strip W205 and a 50 ohm cable W214. C1 on the low pass filter board provides DC isolation between the transmitter and the antenna.

The PA output is coupled through the low-pass filter to the antenna through antenna transfer relay K1901.

Capacitors C244 through C247, C249, C255, and C256 provide ground isolation for positive or negative ground operation.

WARNING

The RF Power Transistors used in the transmitter contain Beryllium Oxide, a TOXIC substance. If the ceramic, or other encapsulation is opened, crushed, broken or abraded, the dust may be hazardous if inhaled. Use care in replacing transistors of this type.

POWER CONTROL CIRCUIT

The power control circuit consists of R213 and Q215. R213 controls the base voltage, and conduction of Q215. Q215 is connected in series with the collector feed network for Q202 thereby controlling the drive to Q203 and the output power. R213 is adjusted to provide the desired output power. The control voltage on Q202 is measured on position C on 1 volt scale and read as 0-15 volts full scale.

GENERAL ELECTRIC COMPANY • MOBILE COMMUNICATIONS DIVISION
WORLD HEADQUARTERS • LYNCHBURG, VIRGINIA 24502 U.S.A.

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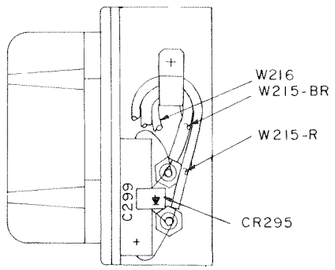
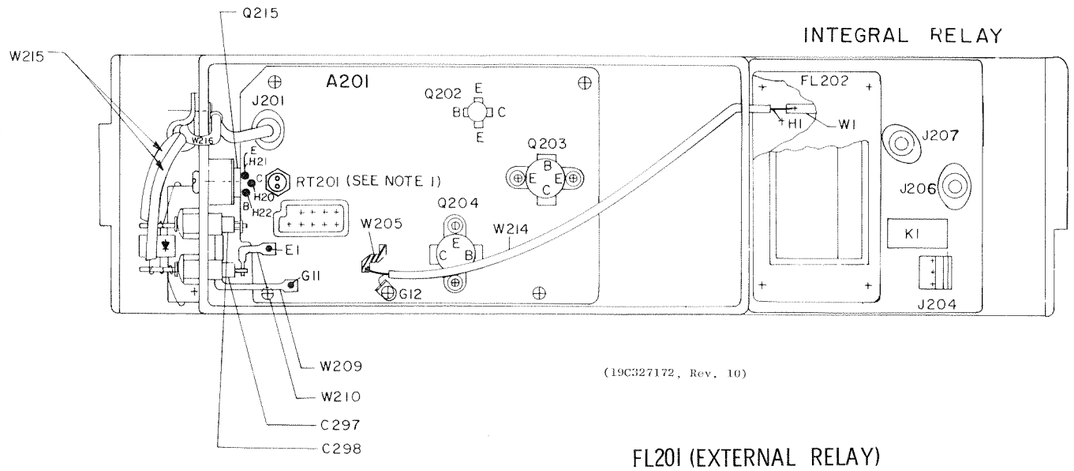
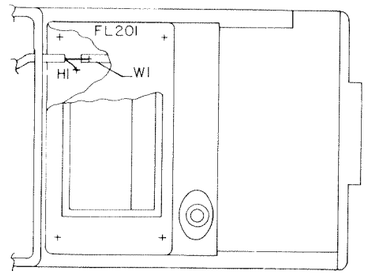
PA ASSEMBLY





INTEGRAL RELAY

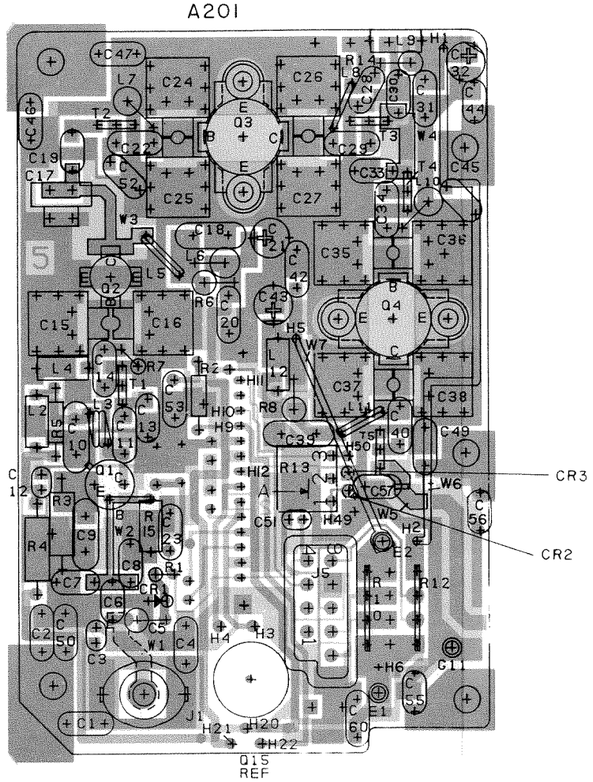
EXTERNAL RELAY



(19C327172, Rev. 10)

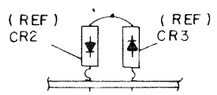
END VIEW

A201



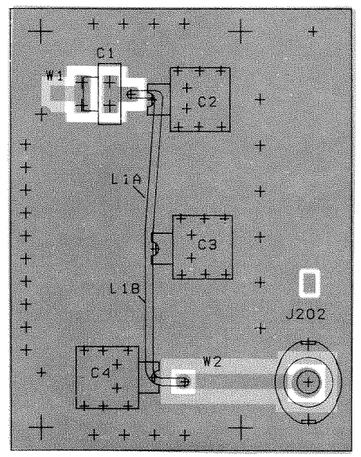
(19C327156, Rev. 4)
(19B226635, Sh. 1, Rev. 5)
(19B226633, Sh. 2, Rev. 2)

PARTIAL REFERENCE DESIGNATIONS ARE SHOWN. FOR COMPLETE DESIGNATION, PREFIX WITH 200 SERIES. EXAMPLE: C1-C201, R1-R201, ETC.



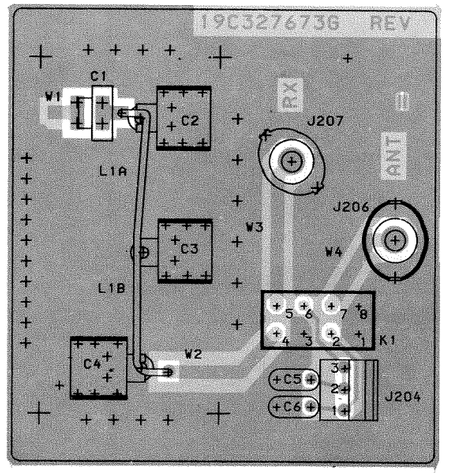
VIEW "A"
ROTATED 90° CCW

FL201 (EXTERNAL RELAY)

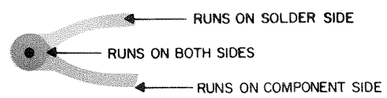


(19B227400, Rev. 1)
(19B226858, Sh. 2, Rev. 0)
(19B226858, Sh. 3, Rev. 0)

FL202 (INTERNAL RELAY)



(19C327918, Rev. 1)
(19B227882, Sh. 1, Rev. 1)
(19B227882, Sh. 2, Rev. 0)

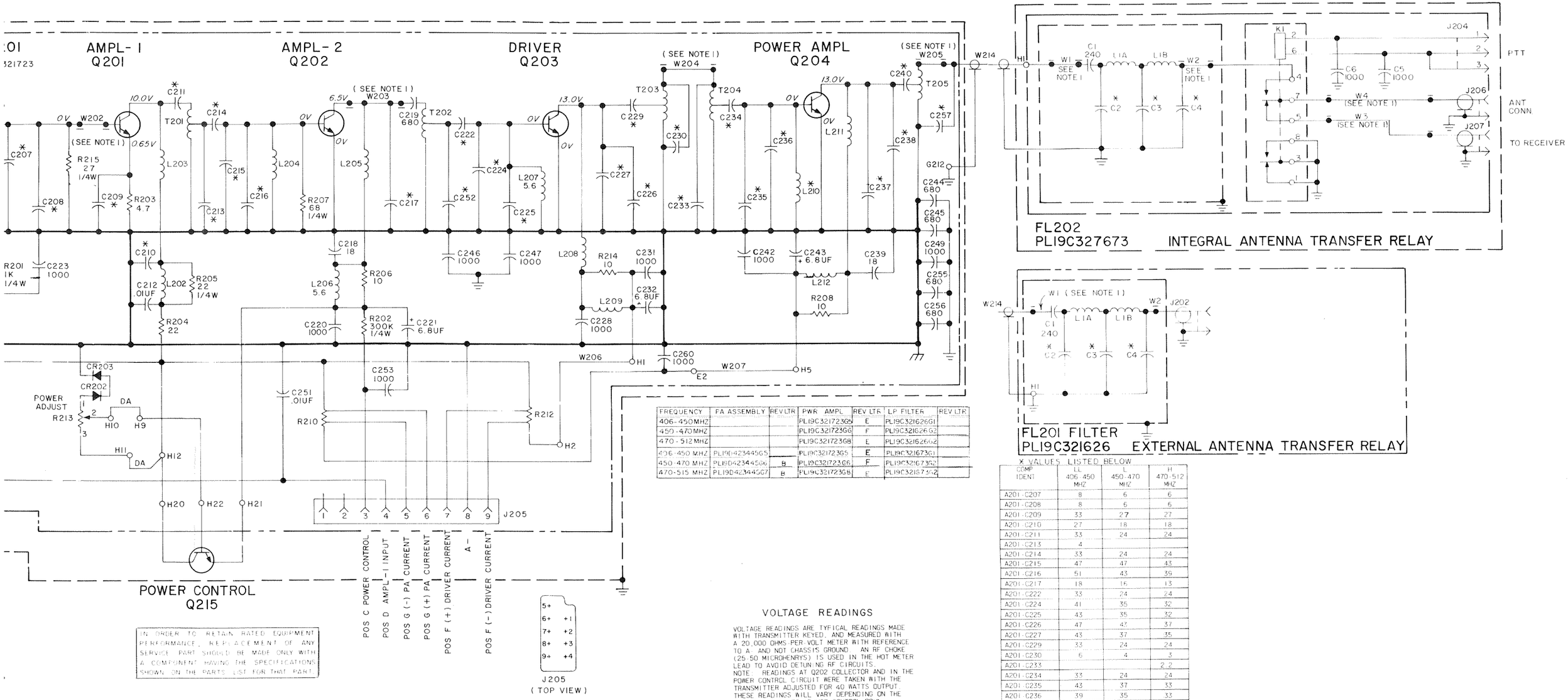


— NOTE —

Partial component designations for PA board are shown. For complete designations, prefix component designations with "200". Ex. R12 is R212.

OUTLINE DIAGRAM

406—512 MHz, 40 WATT
POWER AMPLIFIER



FREQUENCY	PA ASSEMBLY	REV LTR	PWR AMPL	REV LTR	LP FILTER	REV LTR
406-450MHZ			PLI9C321723G5	E	PLI9C321626G1	
450-470MHZ			PLI9C321723G6	F	PLI9C321626G2	
470-512MHZ			PLI9C321723G8	E	PLI9C321626G2	
406-450 MHZ	PLI9D4234456G5	B	PLI9C321723G5	E	PLI9C321673G1	
450-470 MHZ	PLI9D4234456G6	B	PLI9C321723G6	F	PLI9C321673G2	
470-515 MHZ	PLI9D4234456G7	B	PLI9C321723G8	E	PLI9C321673G2	

X VALUES LISTED BELOW

COMP IDENT	LL 406-450 MHZ	L 450-470 MHZ	H 470-512 MHZ
A201-C207	8	6	6
A201-C208	8	6	6
A201-C209	33	27	27
A201-C210	27	18	18
A201-C211	33	24	24
A201-C213	4		
A201-C214	33	24	24
A201-C215	47	47	43
A201-C216	51	43	39
A201-C217	18	16	13
A201-C222	33	24	24
A201-C224	41	35	32
A201-C225	43	35	32
A201-C226	47	42	37
A201-C227	43	37	35
A201-C229	33	24	24
A201-C230	6	4	3
A201-C233			2.2
A201-C234	33	24	24
A201-C235	43	37	33
A201-C236	39	35	33
A201-C237	51	47	37
A201-C238	51	47	39
A201-C240	33	24	24
A201-C252	5	4	4
A201-C257	5		2.2
A201-L210	15	5.6	5.6
FL201,202-C2	10	9	9
FL201,202-C3	20	18	18
FL201-C4	11	10	10
FL202-C4	13	12	12

IN ORDER TO RETAIN RATED EQUIPMENT PERFORMANCE, REPLACEMENT OF ANY SERVICE PART SHOULD BE MADE ONLY WITH A COMPONENT HAVING THE SPECIFICATIONS SHOWN ON THE PARTS LIST FOR THAT PART.

ALL RESISTORS ARE 1/2 WATT UNLESS OTHERWISE SPECIFIED AND RESISTOR VALUES IN OHMS UNLESS FOLLOWED BY K=1000 OHMS OR MEG=1,000,000 OHMS. CAPACITOR VALUES IN PICOFARADS (EQUAL TO MICROMICROFARADS) UNLESS FOLLOWED BY UF= MICROFARADS. INDUCTANCE VALUES IN MICROHENRYS UNLESS FOLLOWED BY MH= MILLIHENRYS OR H=HENRYS.

VOLTAGE READINGS

VOLTAGE READINGS ARE TYPICAL READINGS MADE WITH TRANSMITTER KEYED, AND MEASURED WITH A 20,000 OHMS PER VOLT METER WITH REFERENCE TO A- AND NOT CHASSIS GROUND. AN RF CHOKE (25-50 MICROHENRYS) IS USED IN THE HOT METER LEAD TO AVOID DETUNING RF CIRCUITS. NOTE: READINGS AT Q202 COLLECTOR AND IN THE POWER CONTROL CIRCUIT WERE TAKEN WITH THE TRANSMITTER ADJUSTED FOR 40 WATTS OUTPUT. THESE READINGS WILL VARY DEPENDING ON THE SETTING OF POWER ADJUST CONTROL R213.

NOTE:
1. MICROSTRIP (PART OF PW BD)
2. ⏚ INDICATES A-
   ⏚ INDICATES VEHICLE GROUND

(19R622294, Rev. 10)

SCHEMATIC DIAGRAM

406—512 MHz, 40 WATT
POWER AMPLIFIER

PARTS LIST

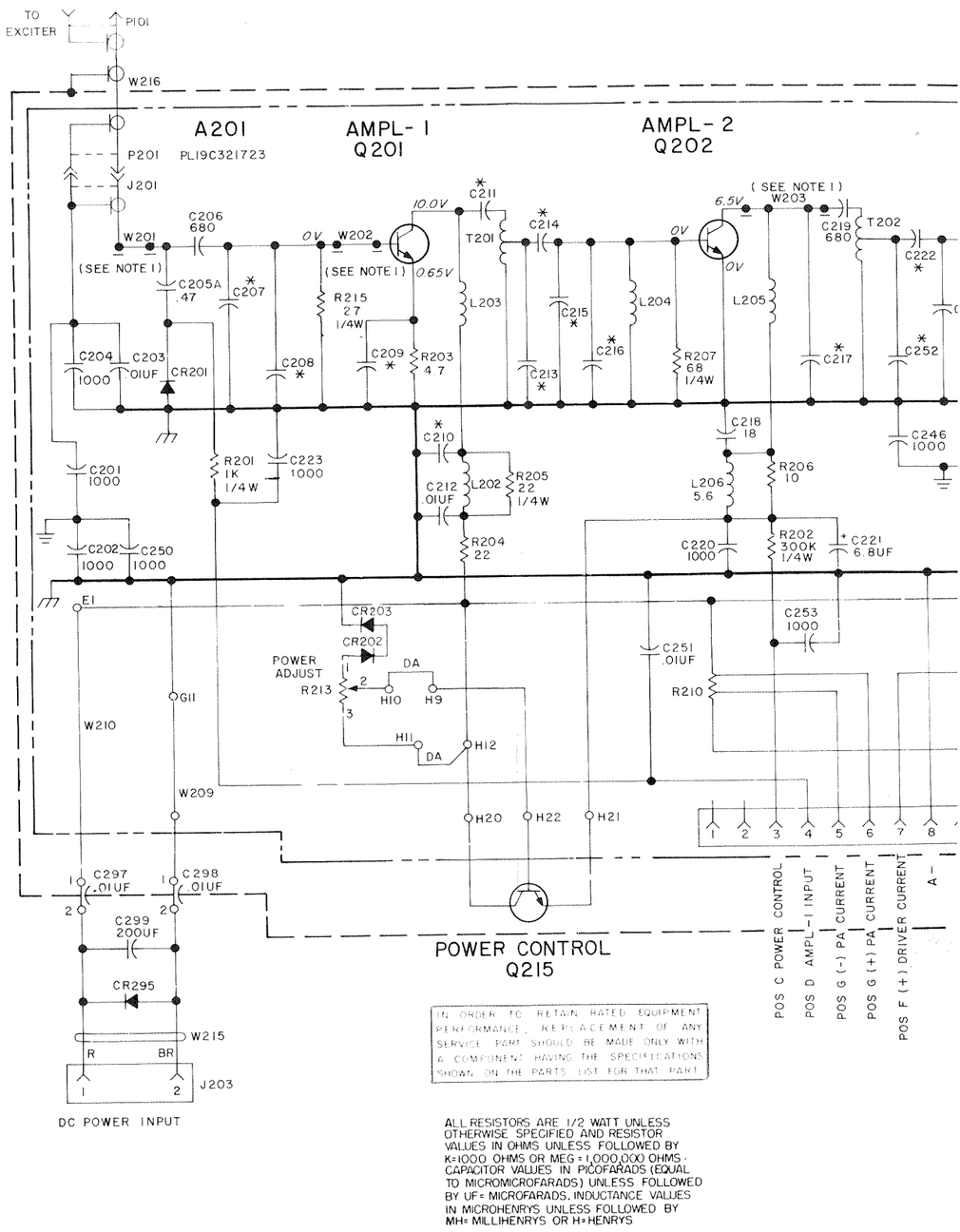
LB130089E

408-512 MHz, 40 WATT
POWER AMPLIFIER

19D423445G1	406-450 MHz	(LL)	EXTERNAL RELAY
19D423445G2	450-470 MHz	(L)	EXTERNAL RELAY
19D423445G4	470-512 MHz	(H)	EXTERNAL RELAY
19D423445G5	406-450 MHz	(LL)	INTEGRAL RELAY
19D423445G6	450-470 MHz	(L)	INTEGRAL RELAY
19D423445G7	470-512 MHz	(H)	INTEGRAL RELAY

SYMBOL	GE PART NO.	DESCRIPTION
A201*		PA BOARD 19C321723G1 406-450 MHz (LL) EXT. (Earlier than REV A 19C32172365) 19C321723G2 450-470 MHz (L) EXT. (In REV B & earlier: 19C321723G6) 19C321723G4 470-512 MHz (H) EXT. (In REV B & earlier: 19C321723G8) 19C321723G5 406-450 MHz (LL) INT. 19C321723G6 450-470 MHz (L) INT. 19C321723G8 470-512 MHz (H) INT.
		- - - - - - - - - CAPACITORS - - - - - - - - -
C201 and C202	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C203	19A116192P1	Ceramic: 0.01 µf ±20%, 50 VDCW; sim to Erie 8121 SPECIAL.
C204	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C205A*	5491601P113	Phenolic: 0.47 pf ±5%, 500 VDCW. Deleted in G1, G2, G4 by REV A.
		In G5 of REV A & earlier: In G6, G8 of REV B & earlier:
	19A116656P3J0	Ceramic disc: 3 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C205B*	19A116656P3J0	Ceramic disc: 3 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM. Added to G1, G2, G4 by REV A.
C206	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C207LL	19A116656P8J0	Ceramic disc: 8 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C207L	19A116656P6J0	Ceramic disc: 6 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C207H	19A116655P6J0	Ceramic disc: 6 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C208LL	19A116656P8J0	Ceramic disc: 8 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C208L	19A116656P6J0	Ceramic disc: 6 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C208H	19A116656P6J0	Ceramic disc: 6 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C209LL	19A134666P4	Silver mica: 33 pf ±5%, 500 VDCW; sim to Electro Motive Type DM154CR.
C209L*	19A134666P3	Silver mica: 27 pf ±5%, 500 VDCW; sim to Electro Motive Type DM154CR.
		In REV E & earlier:
	19A134666P2	Silver mica: 22 pf ±5%, 500 VDCW; sim to Electro Motive Type DM154CR.
C209H	19A134666P3	Silver mica: 27 pf ±5%, 500 VDCW; sim to Electro Motive Type DM154CR.
C210LL	19A134666P3	Silver mica: 27 pf ±5%, 500 VDCW; sim to Electro Motive Type DM154CR.
C210L	19A134666P1	Silver mica: 18 pf ±5%, 500 VDCW; sim to Electro Motive Type DM154CR.
C210H	19A134666P1	Silver mica: 18 pf ±5%, 500 VDCW; sim to Electro Motive Type DM154CR.
C211LL	19A116656P33J0	Ceramic disc: 33 pf ±5%, 500 VDCW, temp coef 0 PPM.
C211L	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C211H	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C212	19A116192P1	Ceramic: 0.01 µf ±20%, 50 VDCW; sim to Erie 8121 SPECIAL.
C213	19A116656P4J0	Ceramic disc: 4 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C214LL	19A116656P33J0	Ceramic disc: 33 pf ±5%, 500 VDCW, temp coef 0 PPM.
C214L	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C214H	19A116655P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C215LL	19A116952P47	Metallized teflon: 47 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C215L	19A116952P47	Metallized teflon: 47 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C215H	19A116952P43	Metallized teflon: 43 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C216LL	19A116952P51	Metallized teflon: 51 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C216L	19A116952P43	Metallized teflon: 43 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C216H	19A116952P39	Metallized teflon: 39 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C217LL	19A116679P18D	Mica: 18 pf ±.5 pf, 250 VDCW.
C217L	19A116679P16D	Mica: 16 pf ±.5 pf, 250 VDC#.
C217H	19A116679P13D	Mica: 13 pf ±.5 pf, 250 VDCW.
C218	19A134666P1	Silver mica: 18 pf ±5%, 500 VDCW; sim to Electro Motive Type DM154CR.
C219	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C220	19A116655P20	Ceramic disc: 1000 pf ±20%, 1000 VDCW; sim to RMC Type JF Discap.
C221	19A134202P15	Tantalum: 6.8 µf ±20%, 35 VDCW.
C222LL	19A116656P33J0	Ceramic disc: 33 pf ±5%, 500 VDCW, temp coef 0 PPM.
C222L	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C222H	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C223	19A116655P20	Ceramic disc: 1000 pf ±20%, 1000 VDCW; sim to RMC Type JF Discap.
C224LL	19A116952P41	Metallized teflon: 41 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C224L	19A116952P35	Metallized teflon: 35 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C224H	19A116952P32	Metallized teflon: 32 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C225LL	19A116952P43	Metallized teflon: 43 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C225L	19A116952P35	Metallized teflon: 35 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C225H	19A116952P32	Metallized teflon: 32 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C226LL	19A116952P47	Metallized teflon: 47 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C226L	19A116952P43	Metallized teflon: 43 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C226H	19A116952P37	Metallized teflon: 37 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C227LL	19A116952P43	Metallized teflon: 43 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C227L	19A116952P37	Metallized teflon: 37 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C227H	19A116952P35	Metallized teflon: 35 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C228	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C229LL	19A116656P33J0	Ceramic disc: 33 pf ±5%, 500 VDCW, temp coef 0 PPM.
C229L	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C229H	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C230LL*	19A116656P6J0	Ceramic disc: 6 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
		In REV B & earlier:
	19A116656P8J0	Ceramic disc: 8 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C230L	19A116656P4J0	Ceramic disc: 4 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES



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ALL RESISTORS ARE 1/2 WATT UNLESS OTHERWISE SPECIFIED AND RESISTOR VALUES IN OHMS UNLESS FOLLOWED BY K=1000 OHMS OR MEG=1,000,000 OHMS. CAPACITOR VALUES IN PICOFARADS (EQUAL TO MICROMICROFARADS) UNLESS FOLLOWED BY UF= MICROFARADS. INDUCTANCE VALUES IN MICROHENRYS UNLESS FOLLOWED BY MH= MILLIHENRYS OR H=HENRYS

SYMBOL	GE PART NO.	DESCRIPTION
C230H	19A116656P3J0	Ceramic disc: 3 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C231	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C232	19A134202P15	Tantalum: 6.8 µf ±20%, 35 VDCW.
C233LL*	19A134100P20	Ceramic: 2.2 pf ±0.1 pf, 100 VDCW. Deleted by REV C.
C233H	19A134100P20	Ceramic: 2.2 pf ±0.1 pf, 100 VDCW.
C234LL	19A116656P33J0	Ceramic disc: 33 pf ±5%, 500 VDCW, temp coef 0 PPM.
C234L	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C234H	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C235LL	19A116952P43	Metallized teflon: 43 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C235L	19A116952P37	Metallized teflon: 37 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C235H	19A116952P33	Metallized teflon: 33 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C236LL	19A116952P39	Metallized teflon: 39 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C236L	19A116952P35	Metallized teflon: 35 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C236H	19A116952P33	Metallized teflon: 33 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C237LL*	19A116952P51	Metallized teflon: 51 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
		In G5 of REV D & earlier:
	19A116952P47	Metallized teflon: 47 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C237L*	19A116952P47	Metallized teflon: 47 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
		In G6 of REV D & earlier:
	19A116952P43	Metallized teflon: 43 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C237H*	19A116952P37	Metallized teflon: 37 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
		In G8 of REV D & earlier:
	19A116952P33	Metallized teflon: 33 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C238LL*	19A116952P51	Metallized teflon: 51 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
		In G5 of REV D & earlier:
	19A116952P47	Metallized teflon: 47 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C238L*	19A116952P47	Metallized teflon: 47 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
		In G6 of REV D & earlier:
	19A116952P43	Metallized teflon: 43 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C238H*	19A116952P39	Metallized teflon: 39 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
		In G8 of REV D & earlier:
	19A116952P35	Metallized teflon: 35 pf ±2%, 250 VDCW; sim to Underwood Type J1HF.
C239	19A134666P1	Silver mica: 18 pf ±5%, 500 VDCW; sim to Electro Motive Type DM154CR.
C240LL	19A116656P33J0	Ceramic disc: 33 pf ±5%, 500 VDCW, temp coef 0 PPM.
C240L	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C240H	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C241	19A134202P15	Tantalum: 6.8 µf ±20%, 35 VDCW.
C242	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C243	19A134202P15	Tantalum: 6.8 µf ±20%, 35 VDCW.
C244 and C245	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C246 thru C250	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C251	19A116192P1	Ceramic: 0.01 µf ±20%, 50 VDCW; sim to Erie 8121 SPECIAL.
C252LL*	19A116656P5J0	Ceramic disc: 5 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
		In REV B:
	19A116656P4J0	Ceramic disc: 4 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM. Added to G6, G8 by REV B.
C252L	19A116656P4J0	Ceramic disc: 4 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C252H	19A116656P4J0	Ceramic disc: 4 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C253	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C255 and C256	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C257LL	19A116656P5J0	Ceramic disc: 5 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C257H	19A134100P20	Ceramic: 2.2 pf ±0.1 pf, 100 VDCW.
C260	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
		- - - - - - - DIODES AND RECTIFIERS - - - - - - -
CR201	19A116052P1	Silicon, hot carrier: Forward drop .350 volts max.
CR202* and CR203*	19A115250P1	Silicon, fast recovery, 225 mA, 50 PIV. Added by REV D.
CR204 and CR205	19A115250P1	Silicon, fast recovery, 225 mA, 50 PIV.
		- - - - - - - - - - TERMINALS - - - - - - - - -
E1 and E2	19A134263P1	Contact, electrical; sim to Selectro X-L-070174-1.
G11	19A134263P1	Contact, electrical; sim to Selectro X-L-070174-1.
		- - - - - - - JACKS AND RECEPTACLES - - - - - - -
J201	19A130924G1	Receptacle, coaxial: jack type; sim to Cinch 14H11613.
J205	19B219374G1	Connector: 9 contacts.
		- - - - - - - - - - INDUCTORS - - - - - - - - -
L201*	19A129773G1	Coil. Deleted by REV A.
L202	19A129773G1	Coil.
L203	19A129774P1	Coil.
L204	19A129773G1	Coil.
L205	19B219457P6	Coil.
L206	7488079P40	Choke, RF: 5.60 µh ±10%, 0.15 ohms DC res max; sim to Jeffers 4421-4K.
L207	7488079P13	Choke, RF: 5.60 µh ±10%, 0.40 ohms DC res max; sim to Jeffers 4421-4K.
L208LL	19B219457P6	Coil.
L208L	19A130650P1	Coil.
L208H	19A130650P1	Coil.
L209	19A129773G1	Coil.
L210LL	7488079P18	Choke, RF: 15.0 µh ±10%, 1.20 ohms DC res max; sim to Jeffers 4421-9K.
L210L	7488079P13	Choke, RF: 5.60 µh ±10%, 0.40 ohms DC res max; sim to Jeffers 4421-4K.
L210H	7488079P13	Choke, RF: 5.60 µh ±10%, 0.40 ohms DC res max; sim to Jeffers 4421-4K.
L211	19B219457P6	Coil.
L212	19A129773G1	Coil.
		- - - - - - - - - - TRANSISTORS - - - - - - - - - -
Q201	19A134237P1	Silicon, NPN.
R201	3R152P102J	- - - - - - - - - - RESISTORS - - - - - - - - - - Composition: 1K ohms ±5%, 1/4 w.
R202	3R152P304J	Composition: 300K ohms ±5%, 1/4 w.
R203	7147161P13	Composition: 4.7 ohms ±5%, 1/2 w.
R204	3R77P220J	Composition: 22 ohms ±5%, 1/2 w.
R205	3R152P220J	Composition: 22 ohms ±5%, 1/4 w.
R206	3R77P100J	Composition: 10 ohms ±5%, 1/2 w.
R207	3R152P680J	Composition: 68 ohms ±5%, 1/4 w.
R208	3R77P100J	Composition: 10 ohms ±5%, 1/2 w.
R209	3R77P561J	Composition: 560 ohms ±5%, 1/2 w.
R210	19C320212P1	Shunt resistor.
R212	19C320212P1	Shunt resistor.
R213	19A116559P102	Variable, cermet: 5K ohms ±20%, .5 w; sim to CTS Series 360.
R214	3R77P100J	Composition: 10 ohms ±5%, 1/2 w.
R215*	3R152P270J	Composition: 27 ohms ±5%, 1/4 w. Added by REV A.
		- - - - - - - - - - TRANSFORMERS - - - - - - - - -
T201 thru T205	19A130146P1	Transformer.
		- - - - - - - - INTEGRATED CIRCUITS - - - - - - -
U201	19D423127G1	Power Control.
		- - - - - - - - VOLTAGE REGULATORS - - - - - - -
VR201	4036887P1	Zener: 500 mW, 2.3 v. nominal.
VR202	4036887P5	Zener: 500 mW, 5.4 v. nominal.
		- - - - - - - - - - CABLES - - - - - - - - - -
W201 thru W205		(Part of printed board 19D423005P1).
W206	19B226971G1	Jumper.
W207	19A130791G1	Jumper.
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C297 and C298	19A116708P1	Ceramic, feed-thru: 0.01 µf +100-0%, 500 VDCW; sim to Erie Style 327.
C299	19A115680P10	Electrolytic: 200 µf +150% -10%, 18 VDCW; sim to Mallory Type TTX.
		- - - - - - - DIODES AND RECTIFIERS - - - - - - -
CR295	19A116783P1	Rectifier: silicon, 100 VDC blocking, 6 amps.
		- - - - - - - - - - FILTERS - - - - - - - - - -
FL201LL		COMPONENT BOARD 406-450 MHz MED POWER 19C321626G1
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C1LL	19A700015P38	Teflon/mica: 240 pf ±5%, 250 VDCW.
C2LL	19A700014P4	Metallized teflon: 10 pf ±5%, 250 VDCW.
C3LL	19A116952P20	Metallized teflon: 20 pf ±0.5 pf, 250 VDCW.
C4LL	19A116952P11	Metallized teflon: 11 pf ±0.5 pf, 250 VDCW.
		- - - - - - - JACKS AND RECEPTACLES - - - - - - -
J202	19A130924G1	Receptacle, coaxial: jack type; sim to Cinch 14H11613.
		- - - - - - - - - - INDUCTORS - - - - - - - - - -
L1LL	19B227084P1	Jumper.
FL201H		COMPONENT BOARD 450-512 MHz MED POWER 19C321626G2
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C1H	19A700015P38	Teflon/mica: 240 pf ±5%, 250 VDCW.
C2H	19A116952P9	Metallized teflon: 9 pf ±0.5 pf, 250
C3H	19A116952P18	Metallized teflon: 18 pf ±0.5 pf, 250
C4H	19A700014P4	Teflon/mica: 10 pf ±5%, 250 VDCW.
		- - - - - - - JACKS AND RECEPTACLES -
J202	19A130924G1	Receptacle, coaxial: jack type; sim t 14H11613.
		- - - - - - - - - - INDUCTORS - - - -
L1H	19B227130G1	Jumper.
		- - - - - - - - - - CABLES - - - - -
W1 and W2		(Part of printed board 19C321625P1).
FL202LL		COMPONENT BOARD 406-450 MHz MED POWER 19C327673G1
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C1LL	19A700015P38	Teflon/mica: 240 pf ±5%, 250 VDCW.
C2LL	19A700014P4	Teflon/mica: 10 pf ±5%, 250 VDCW.
C3LL	19A116952P20	Metallized teflon: 20 pf ±0.5 pf, 25
C4LL	19A116952P13	Metallized teflon: 13 pf ±0.5 pf, 250
C5 and C6	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW RMC Type JF Discap.
		- - - - - - - JACKS AND RECEPTACLES -
J204	19A116659P55	Connector, printed wiring: 3 contacts Molex 09-65-1031.
J206 and J207	19A130924G1	Receptacle, coaxial: jack type; sim t 14H11613.
		- - - - - - - - - - RELAYS - - - -
K1	19B209558P1	Hermetic sealed: 180 to 341 ohms coil C contacts, 8.0 to 16.3 VDC; sim to GE
		- - - - - - - - - - INDUCTORS - - - -
L1LL	19B227084P1	Jumper.
		- - - - - - - - - - CABLES - - - - -
W1 thru W4		(Part of printed board 19C327674P1).
FL202H		COMPONENT BOARD 450-512 MHz MED POWER 19C327673G2
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C1H	19A700015P38	Teflon/mica: 240 pf ±5%, 250 VDCW.
C2H	19A116952P9	Metallized teflon: 9 pf ±0.5 pf, 250
C3H	19A116952P18	Metallized teflon: 18 pf ±0.5 pf, 250
C4H	19A116952P12	Metallized teflon: 12 pf ±0.5 pf, 250
C5 and C6	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW RMC Type JF Discap.
		- - - - - - - JACKS AND RECEPTACLES -
J204	19A116659P55	Connector, printed wiring: 3 contacts Molex 09-65-1031.
J206 and J207	19A130924G1	Receptacle, coaxial: jack type; sim t 14H11613.

DESCRIPTION
- - RESISTORS - - - - - - - - -
K ohms ±5%, 1/4 w.
00K ohms ±5%, 1/4 w.
.7 ohms ±5%, 1/2 w.
2 ohms ±5%, 1/2 w.
2 ohms ±5%, 1/4 w.
0 ohms ±5%, 1/2 w.
8 ohms ±5%, 1/4 w.
0 ohms ±5%, 1/2 w.
60 ohms ±5%, 1/2 w.
t: 5K ohms ±20%, .5 w; sim to
0 ohms ±5%, 1/2 w.
7 ohms ±5%, 1/4 w. Added by REV A.
- - TRANSFORMERS - - - - - - - -
INTEGRATED CIRCUITS - - - - - - - -
VOLTAGE REGULATORS - - - - - - -
2.3 v. nominal.
5.4 v. nominal.
- - - CABLES - - - - - - - - - -
d board 19D423005P1).
- - CAPACITORS - - - - - - - - -
hru: 0.01 µf +100-0%, 500 VDCW; le 327.
200 µf +150% -10%, 18 VDCW; sim TTX.
IODES AND RECTIFIERS - - - - - - - -
icon, 100 VDC blocking, 6 amps.
- - FILTERS - - - - - - - - - -
COMPONENT BOARD 450 MHz MED POWER 19C321626G1
- - CAPACITORS - - - - - - - -
10 pf ±5%, 250 VDCW.
on: 10 pf ±5%, 250 VDCW.
on: 20 pf ±0.5 pf, 250 VDCW.
on: 11 pf ±0.5 pf, 250 VDCW.
ACKS AND RECEPTACLES - - - - - -
xial: jack type; sim to Cinch
- - INDUCTORS - - - - - - - - -

SYMBOL	GE PART NO.	DESCRIPTION
FL201H		COMPONENT BOARD 450-512 MHz MED POWER 19C321626G2
		- - - - - - - - - - CAPACITORS - - - - - - - -
C1H	19A700015P38	Teflon/mica: 240 pf ±5%, 250 VDCW.
C2H	19A116952P9	Metallized teflon: 9 pf ±0.5 pf, 250 VDCW.
C3H	19A116952P18	Metallized teflon: 18 pf ±0.5 pf, 250 VDCW.
C4H	19A700014P4	Teflon/mica: 10 pf ±5%, 250 VDCW.
		- - - - - - - JACKS AND RECEPTACLES - - - - - -
J202	19A130924G1	Receptacle, coaxial: jack type; sim to Cinch 14H11613.
		- - - - - - - - - - INDUCTORS - - - - - - - - -
L1H	19B227130G1	Jumper.
		- - - - - - - - - - - CABLES - - - - - - - - - -
W1 and W2		(Part of printed board 19C321625P1).
FL202LL		COMPONENT BOARD 406-450 MHz MED POWER 19C327673G1
		- - - - - - - - - - CAPACITORS - - - - - - - -
C1LL	19A700015P38	Teflon/mica: 240 pf ±5%, 250 VDCW.
C2LL	19A700014P4	Teflon/mica: 10 pf ±5%, 250 VDCW.
C3LL	19A116952P20	Metallized teflon: 20 pf ±0.5 pf, 250 VDCW.
C4LL	19A116952P13	Metallized teflon: 13 pf ±0.5 pf, 250 VDCW.
C5 and C6	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
		- - - - - - - JACKS AND RECEPTACLES - - - - - -
J204	19A116659P55	Connector, printed wiring: 3 contacts; sim to Molex 09-65-1031.
J206 and J207	19A130924G1	Receptacle, coaxial: jack type; sim to Cinch 14H11613.
		- - - - - - - - - - RELAYS - - - - - - - - - -
K1	19B209558P1	Hermetic sealed: 180 to 341 ohms coil res, 2 form C contacts, 8.0 to 16.3 VDC; sim to GE 3SAV1760A2.
		- - - - - - - - - - INDUCTORS - - - - - - - - -
L1LL	19B227084P1	Jumper.
		- - - - - - - - - - - CABLES - - - - - - - - - -
W1 thru W4		(Part of printed board 19C327674P1).
FL202H		COMPONENT BOARD 450-512 MHz MED POWER 19C327673G2
		- - - - - - - - - - CAPACITORS - - - - - - - -
C1H	19A700015P38	Teflon/mica: 240 pf ±5%, 250 VDCW.
C2H	19A116952P9	Metallized teflon: 9 pf ±0.5 pf, 250 VDCW.
C3H	19A116952P18	Metallized teflon: 18 pf ±0.5 pf, 250 VDCW.
C4H	19A116952P12	Metallized teflon: 12 pf ±0.5 pf, 250 VDCW.
C5 and C6	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
		- - - - - - - JACKS AND RECEPTACLES - - - - - -
J204	19A116659P55	Connector, printed wiring: 3 contacts; sim to Molex 09-65-1031.
J206 and J207	19A130924G1	Receptacle, coaxial: jack type; sim to Cinch 14H11613.

SYMBOL	GE PART NO.	DESCRIPTION
		- - - - - - - - - - RELAYS - - - - - - - - - -
K1	19B209558P1	Hermetic sealed: 180 to 341 ohms coil res, 2 form C contacts, 8.0 to 16.3 VDC; sim to GE 3SAV1760A2.
		- - - - - - - - - - INDUCTORS - - - - - - - - -
L1H	19B227130G1	Jumper.
		- - - - - - - - - - - CABLES - - - - - - - - - -
W1 thru W4		(Part of printed board 19C327674P1).
		- - - - - - - - - - TRANSISTORS - - - - - - - - -
Q202	19A134164P2	Silicon, NPN; sim to Type 2N5945.
Q203LL	19A134171P2	Silicon, NPN.
Q203L	19A134239P1	Silicon, NPN.
Q203H	19A134239P1	Silicon, NPN.
Q204	19A134242P1	Silicon, NPN.
Q215	19A116742P1	Silicon, NPN.
		- - - - - - - - - - THERMISTORS - - - - - - - - - -
RT201*	19A129379G1	Thermistor: 40K ohms ±20%, color code white; sim to Carborundum M080-6J-5. Added to G1 by REV A. G2, G4 by REV C.
		- - - - - - - - - - - CABLES - - - - - - - - - -
W209	19B227025G1	Jumper.
W210	19B227024P1	Jumper.
W214	19A130831G1	Cable.
W215	19B227058G1	Cable: approx 11-1/2 inches long.
W216	19A130909G1	Cable, RF: approx 7-1/2 inches long.
		- - - - - - - - - - MISCELLANEOUS - - - - - - - - -
	19C321591G3	Heat sink, casting. (INTERNAL RELAY).
	19C321591G10	Heat sink, casting. (EXTERNAL RELAY).
	19B226952G1	P. A. cover.
	19B226906G1	Housing, plate.
	19C321441P1	Insulator. (Located under A201).
	7878455P2	Solderless terminal. (Located on A201 at G12).
	19B201074P305	Tap screw, Phillips POZIDRIV®: No. 6-32 x 5/16. (Secures A201).
	N44P9006C6	Machine screw: No. 4-40 x 3/8. (Secures Q203, Q204).
	N207P15C6	Nut, hex: No. 8-32. (Secures Q202).
	5492178P2	Washer, spring tension: sim to Wallace Barnes 375-20. (Secures Q202).
	19A130465P1	Spacer. (Used with Q202).
	N80P9010C6	Screw, machine: No. 4-40 x 5/8. (Secures Q215).
	19A130568P1	Plate. (Used with Q215).
	19A116023P1	Insulator, plate. (Used with Q215).
	19A134016P1	Insulator, bushing. (Used with Q215).
	19A129434P1	Washer. (Used with CR295).
	4029851P6	Clip loop. (Secures W215).
	N80P9007C6	Machine screw, phillips: No. 4-40 x 7/16. (Secures 4029851P6 clip loop).
	19B201074P320	Tap screw, Phillips POZIDRIV®: No. 6-32 x 1-1/4. (Secures housing plate).
	19B209502P1	Terminal stud. (Used with FL202).
	4036555P1	Insulator, washer: nylon. (Used with Q1 on A201).

PRODUCTION CHANGES

Changes in the equipment to improve performance or to simplify circuits are identified by a "Revision Letter", which is stamped after the model number of the unit. The revision stamped on the unit includes all previous revisions. Refer to the Parts List for description of parts affected by these revisions.

REV. A - PA board 19C321723G5, 6 & 8
To improve stability. Deleted L201. Added R215.

REV. B - PA board 19C321723G6, 8
To improve power output. Added C252.

REV. B - PA board 19C321723G5

REV. C - PA board 19C321723G6 & 8
To improve power output. Changed C205.

REV. C - PA board 19C321723G5
To improve power output. Changed C230LL and C252. Deleted C233LL.

REV. D - PA board 19C321723G5, 6 & 8
To improve power output at cold temperatures. Added CR2 and CR3.

REV. A - PA Assembly 19D423445G2, 6
To increase power output. Added C300 from Q4-C to ground.

REV. A - PA Assembly 19D423445G4, 7
To increase power output. Added C261 from Q4-C to ground.

REV. E - PA board 19C321723G5, 6 & 8
To increase power output. Changed C237 and C238.

REV. B - PA Assembly 19D423445G2 & 6
To increase power output. Deleted C300.

REV. B - PA Assembly 19D423445G4, 7
To increase power output. Deleted C261.

REV. F - PA Board 19C321723G6
To improve operation. Changed A207-C209L.