

MAINTENANCE MANUAL

406--512 MHz, MASTR® II 20 WATT POWER AMPLIFIER ASSEMBLY
 19D424888 G1-4 & G18-21 (MOBILE & STATION)
 19D424895 G1-4 & G18-21 (CONTINUOUS DUTY STATION)

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DESCRIPTION

The PA assembly uses three RF power transistors to provide rated output power. R213, located on the PA module, is used to adjust the output power over a range of 5 Watts to rated output power. The power control circuit consists of R213, Q215, and Power Control IC (U201). Included in the PA assembly, is a Low Pass Filter/Antenna Switch module used to suppress undesired harmonic frequency components and provide antenna switching for the receiver and the transmitter.

SUPPLY VOLTAGE

Supply voltage for the PA is connected through power leads from the system board to feed through capacitors C297 and C298 on the bottom of the PA assembly (See Schematic Diagram). 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.

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, PA current and PA voltage.

CIRCUIT ANALYSIS

RF POWER AMPLIFIER ASSEMBLY

The exciter output is coupled through a 50-ohm RF cable to the PA module 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. The rectified RF is also applied to the power control IC (U201).

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 500 milliwatt, 50-ohm output of Q201 is coupled to the base of a Driver amplifier Q202 through a matching network consisting of T201, C214, C215, C216 and L204.

Collector voltage to Q202 is controlled by power control IC (U201), Q215 and R213 and is applied through a collector stabilizing network L206 and R206 and collector feed network L205 and C218.

The 6 Watt, 50-ohm output of Q202 is coupled to the base of Power Amplifier Q203 through C219 and the matching network of T202, C222, 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. Supply voltage is measured in position F on the 15-volt range with the polarity switch

in the (-) position (read as 15 volts full scale).

Collector current for Q203 is metered across tapped manganin resistor R212. The reading taken in position F on the 15-V scale with the High Sensitivity button pressed and read as 0-15 amperes full scale.

Following power amplifier Q203 is a 50-ohm matching network (C226, C227, C229, T2C3, C259, C258) that matches the 20-watt, output of Q203 to the 50-ohm input of the Low Pass Filter module through 50-ohm micro strip W204 and a 50-ohm cable W217.

The input is coupled through the 50-ohm micro strip W4280 to the Low Pass Filter to the antenna switch K201. The output is applied to the antenna at J203.

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, located on the PA module, consists of CR201, Power Control IC (U201), Q215, and R213.

When the transmitter is keyed, rectified RF from CR201 is applied to Switch Q1 of Power Control IC (U201), turning it on (See Figure 1). Turning on Q1 turns on voltage regulator Q2, supplying a constant voltage via Pin 14 to Power Adjust potentiometer R213. R213 through Pin 12 connect to the base of Q5. Q5, Q6 and Q215 operate as an amplifier chain to supply voltage to the collector of Q202 (Ampl-2). The setting of R213 determines the voltage applied to the base of Q5. The higher the voltage at the base of Q5, the harder the amplifiers conduct, supplying more collector voltage to Q202. The lower the voltage at the base of Q5, the less collector voltage is supplied to Q202. Reducing the supply voltage to Q202 reduces the drive to Q203, thereby reducing the power output of the PA. The power output can be adjusted by R213 from 5 Watts to rated power output.

Temperature protection, normally provided by Q3, Q4 of IC U201 and an external thermistor, is not required.

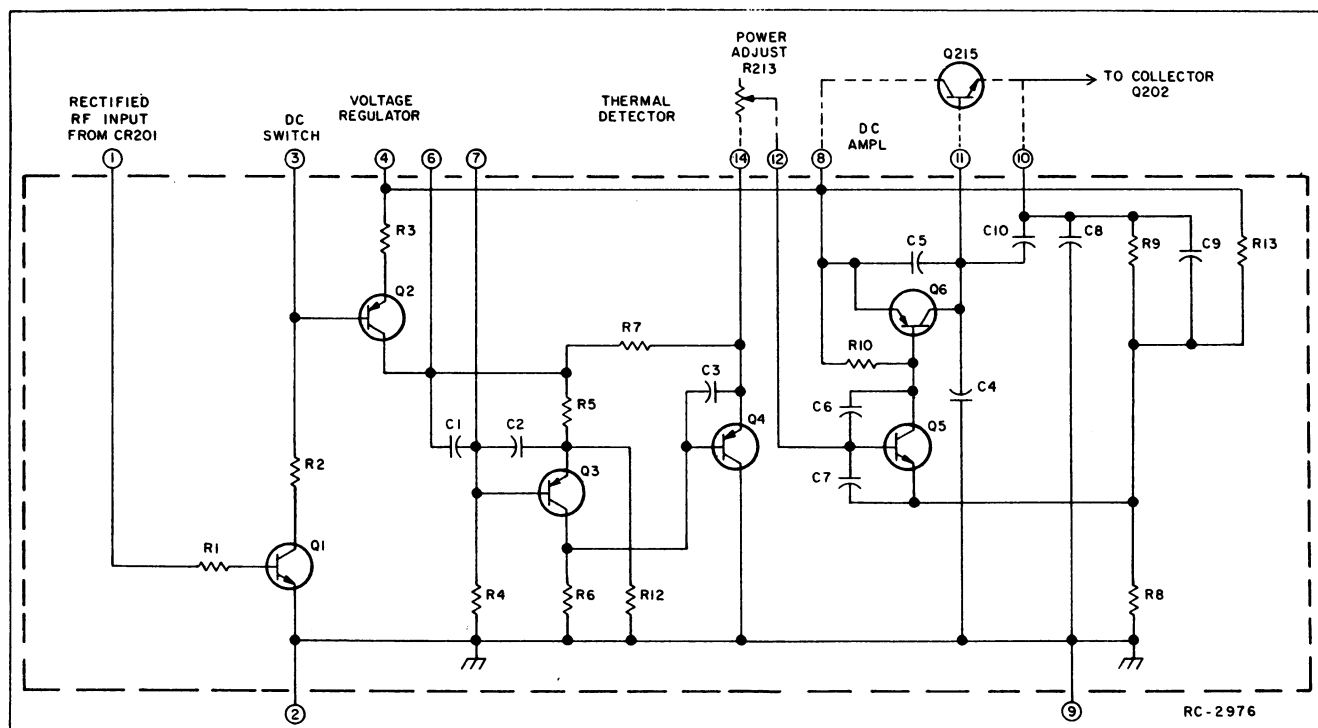
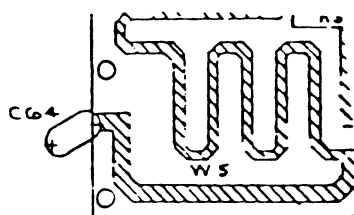
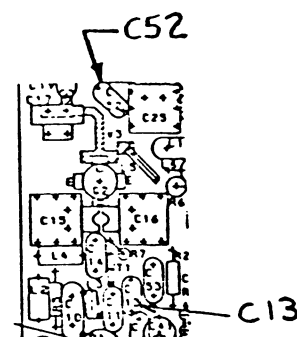


Figure 1 - Power Control IC - U201

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



19D423006



19C321347

IN ORDER TO COVER THE FREQ BAND FROM 420 TO 450MHz, THE FOLLOWING MODIFICATIONS MUST OCCUR:

1. REMOVE C64 ON PWB 19D423006 AND C13 ON PWB 19C321347.
2. FOR FREQ BAND 440-450MHz, REMOVE C52 ON PWB 19C321347.
3. ATTACH LABEL NP280544 TO AN INSIDE SURFACE IN AN AREA THAT WILL BE VISIBLE ON THE ASSEMBLED P.A.

NOTE: ALL COMPONENTS ARE OF 4200 SERIES. ON 19D423006 AND 200 SERIES ON 19C321347.

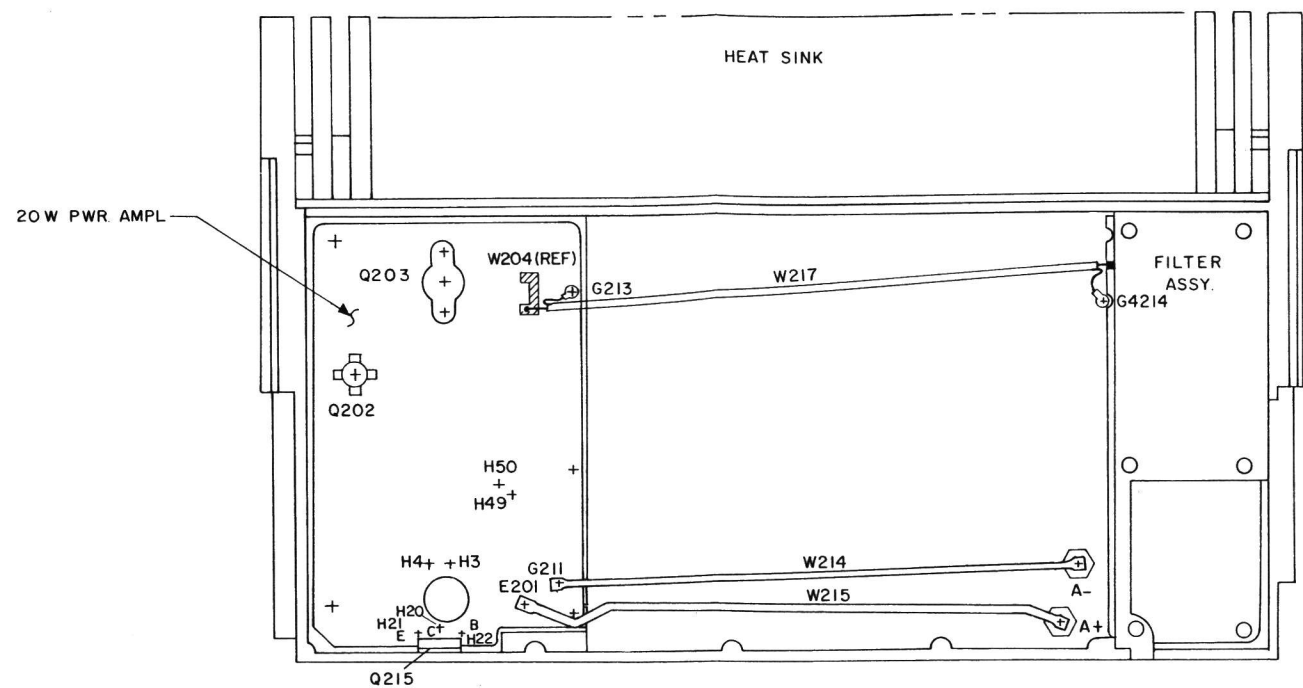
(19A136813, Rev. 2)

MODIFICATION INSTRUCTION

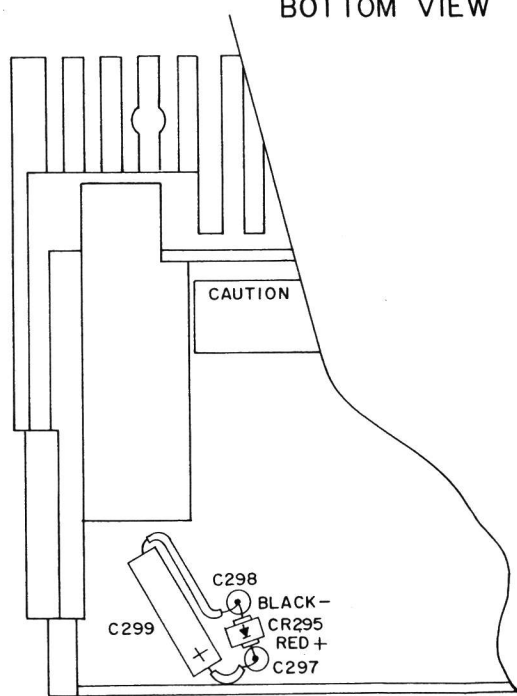
420—450 MHz

PA ASSEMBLY

TOP VIEW



BOTTOM VIEW



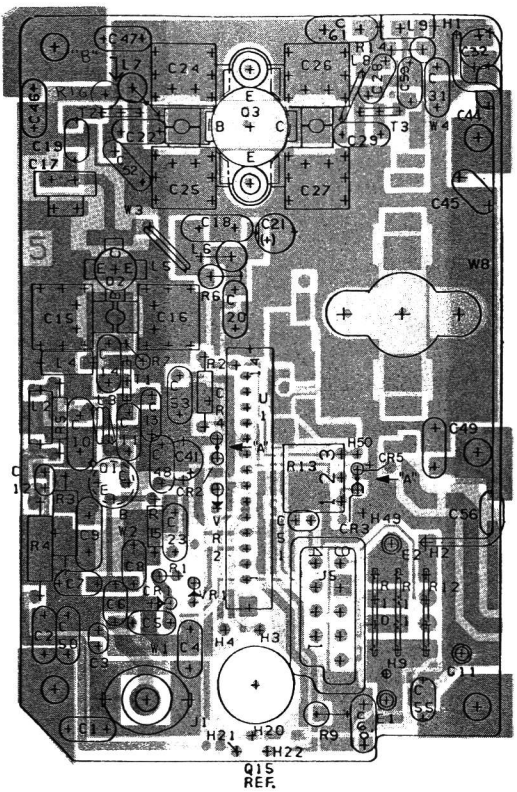
OUTLINE DIAGRAM

406—512 MHz,
20 WATT POWER AMPLIFIER

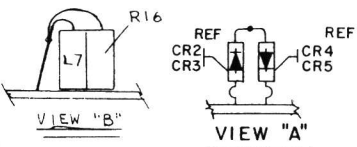
(19D424206, Rev. 1)

20 WATT PA MODULE

TOP

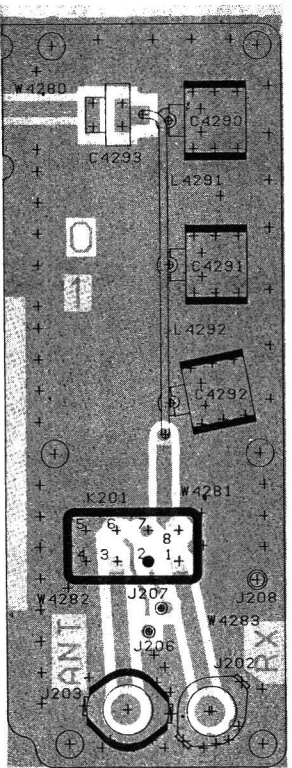


NOTES:
1. PARTIAL REFERENCE DESIGNATIONS
ARE SHOWN FOR COMPLETE
DESIGNATION. PREFIX WITH 200
SERIES. EXAMPLE:
Q3 = Q203, R15 = R215, C47 = C247, ETC.
2. C9 USED IN GROUP 1 ONLY. DA JUMPER
IN C9 MTG. HOLES FOR GROUPS 2, 3, & 4.



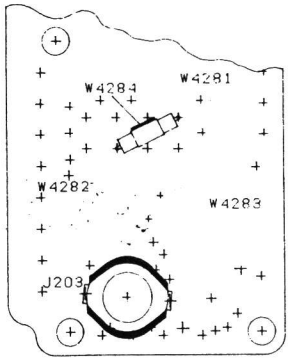
(19C327344, Rev. 9)
(19B226633, Sh. 1, Rev. 5)
(19B226633, Sh. 2, Rev. 2)

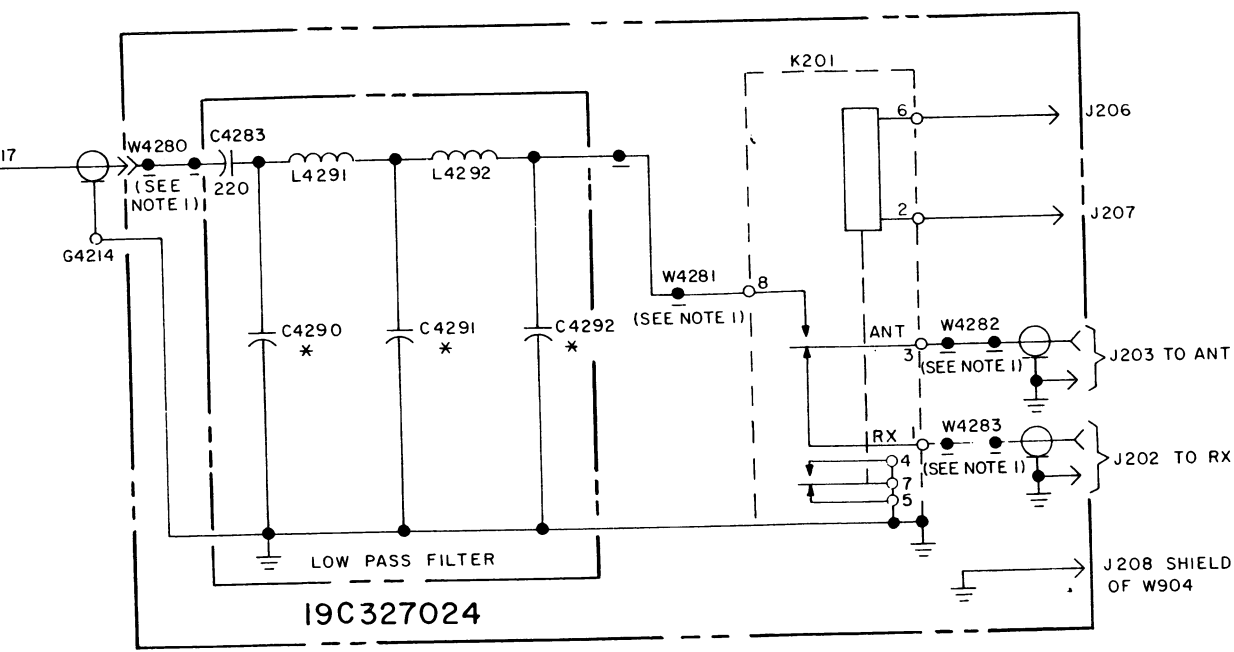
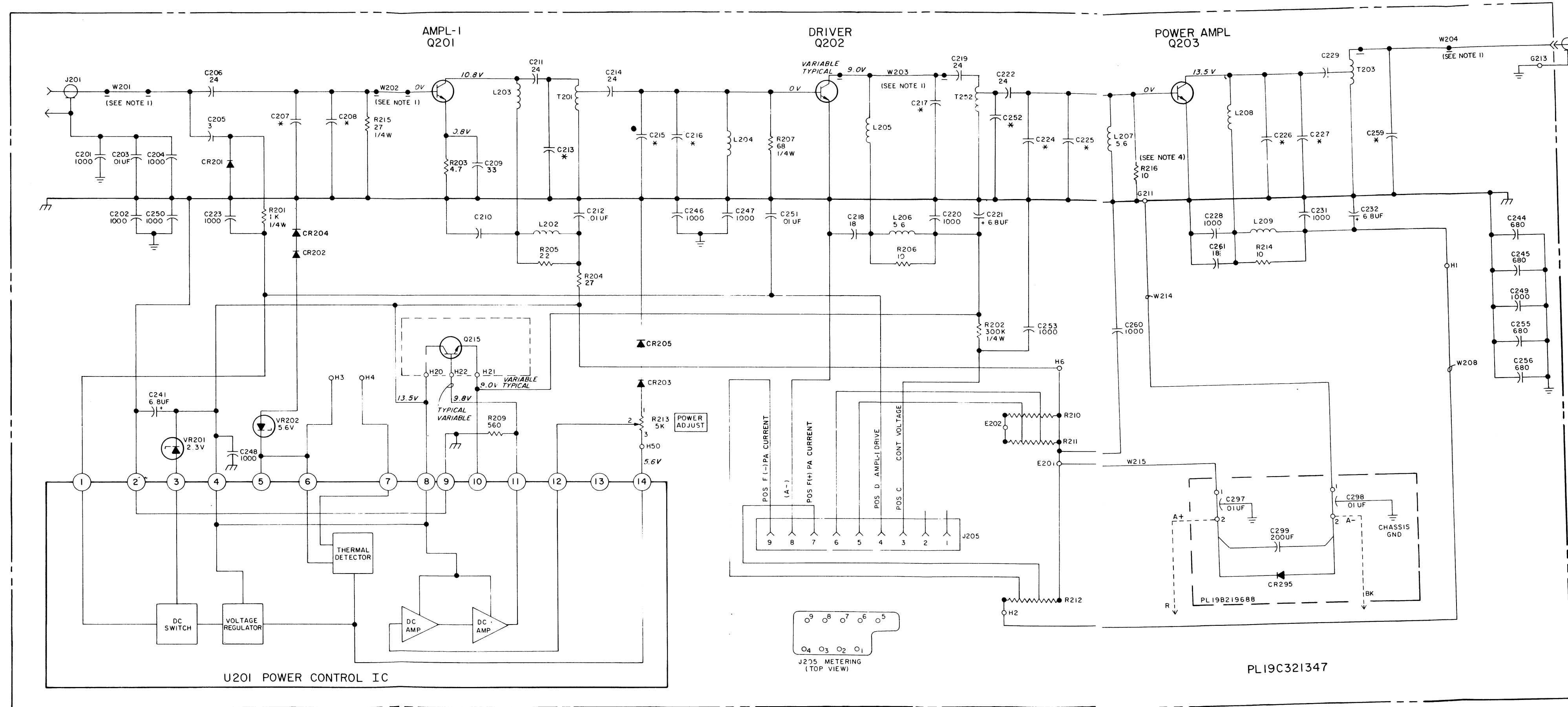
LOW PASS FILTER



(19C327643, Rev. 1)
(19B227265, Sh. 1, Rev. 1)
(19B227265, Sh. 2, Rev. 0)

DUPLEX FILTER





* COMPONENT VALUES

CPNT IDENT	LL 406-450	L 450-470 MHZ	M 470-494 MHZ	H 494-512 MHZ
C207	8	9	7	6
C208	8			
C210	27	18	18	18
C211	33	24	24	24
C214	33	24	24	24
C215	47	47	43	43
C216	51	43	43	39
C217	18	16	15	13
C222	33	24	24	24
C224	41	35	35	32
C225	43	35	33	32
C226	47	43	37	35
C227	43	37	37	35
C229	33	24	24	24
C252	8	7	4	3
C213	5			
C259	6	4	4	2.2
C4290	10	9	9	9
C4291	20	18	18	18
C4292	13	12	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 MICROFARADS (EQUAL TO MICROMICROFARADS) UNLESS FOLLOWED BY UF= MICROFARADS. INDUCTANCE VALUES IN MILLIHENRYS 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 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 20 WATTS OUTPUT. THESE READINGS WILL VARY DEPENDING ON THE SETTING OF POWER ADJUST CONTROL R213.

PA ASSEMBLY	REV LTR	20 WATT MODULE	REV LTR	FILTER MODULE	REV LTR	FREQUENCY	HEAT SINK ASSY	REV LTR
PL19C424888G1	A	PL19C321347G1	D	PL19C327024G1		406-450	PL19B219688G7	
PL19D424888G2	A	PL19C321347G2	J	PL19C327024G2		450-470 MHZ	PL19B219688G7	
PL19D424888G3	A	PL19C321347G3	F	PL19C327024G2		470-494 MHZ	PL19B219688G7	
PL19D424888G4	A	PL19C321347G4	F	PL19C327024G2		494-512 MHZ	PL19B219688G7	
PL19D424888G8	A	PL19C321347G1	D	PL19C327024G1		406-450	PL19B219688G9	
PL19D424888G9	A	PL19C321347G2	J	PL19C327024G2		450-470 MHZ	PL19B219688G9	
PL19D424888G20	A	PL19C321347G3	F	PL19C327024G2		470-494 MHZ	PL19B219688G9	
PL19D424888G21	A	PL19C321347G4	F	PL19C327024G2		494-512 MHZ	PL19B219688G9	

- NOTES:
1. 50.0 MICROSTRIP PART OF PWB.
 2. ALL COMPONENTS MARKED WITH (*) ASTERISK, SEE COMPONENT VALUE TABLE.
 3. A- INDICATES A-.
 4. R216 USED ONLY IN 450-470MHZ RANGE.

SCHEMATIC DIAGRAM

406-512 MHZ,
20 WATT POWER AMPLIFIER

PARTS LIST		
LBI30218C		
406-512 MHz, 20 WATT POWER AMPLIFIER 19D42488G1-C4 "M" SERIES MOBILE, INT. DUTY STATION 19D42488G18-C21 "E" SERIES MOBILE		
SYMBOL	GE PART NO.	DESCRIPTION
----- TERMINALS -----		
G213	7878455P2	Terminal, lug.
G4214	7878455P2	Terminal, lug.
----- TRANSISTORS -----		
Q215	19A116742P1	Silicon, NPN.
----- CABLES -----		
W214	19B226725G1	Jumper.
W215	19B227074G1	Jumper.
W217	19A130552G2	Cable, RF: approx 6-1/2 inches long.
20 WATT MODULE 19C321347G1 406-450 MHz (LL) 19C321347G2 450-470 MHz (L) 19C321347G3 470-494 MHz (M) 19C321347G4 494-512 MHz (H)		
----- CAPACITORS -----		
C201 and C202	19A116655P20	Ceramic disc: 1000 pf $\pm 10\%$, 1000 VDCW; sim to RMC Type JF Discap.
C203	19A116192P1	Ceramic: 0.01 μ f $\pm 20\%$, 50 VDCW; sim to Erie 8121 SPECIAL.
C204	19A116655P20	Ceramic disc: 1000 pf $\pm 10\%$, 1000 VDCW; sim to RMC Type JF Discap.
C205	19A116656P3J0	Ceramic disc: 3 pf ± 0.5 pf, 500 VDCW, temp coef 0 PPM.
C206*	19A116656P24J0	Ceramic disc: 24 pf $\pm 5\%$, 500 VDCW, temp coef 0 PPM. In G1 REV B & earlier: In G2-G4 REV D & earlier:
C207LL	19A116656P8J0	Ceramic disc: 8 pf ± 0.5 pf, 500 VDCW, temp coef 0 PPM.
C207L*	19A116656P9J0	Ceramic disc: 9 pf ± 0.5 pf, 500 VDCW, temp coef 0 PPM. In REV E & earlier:
C207M*	19A116656P6J0	Ceramic disc: 6 pf ± 0.5 pf, 500 VDCW, temp coef 0 PPM.
	19A116656P7J0	Ceramic disc: 7 pf ± 0.5 pf, 500 VDCW, temp coef 0 PPM.
	19A116656P8J0	Ceramic disc: 6 pf ± 0.5 pf, 500 VDCW, temp coef 0 PPM.
C207H	19A116656P6J0	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. Deleted by REV F.
C208M*	19A116656P6J0	Ceramic disc: 6 pf ± 0.5 pf, 500 VDCW, temp coef 0 PPM. Deleted by REV F.
C208H*	19A116656P6J0	Ceramic disc: 6 pf ± 0.5 pf, 500 VDCW, temp coef 0 PPM. Deleted by REV F.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

SYMBOL	GE PART NO.	DESCRIPTION
C209*	19A116656P33J0	Ceramic disc: 33 pf $\pm 5\%$, 500 VDCW, temp coef 0 PPM. Added by REV F.
C209LL*	7489162P15	Silver mica: 33 pf $\pm 5\%$, 500 VDCW; sim to Electro Motive Type DM-15. Deleted by REV A. Deleted by REV D.
C209L*	7489162P11	Silver mica: 22 pf $\pm 5\%$, 500 VDCW; sim to Electro Motive Type DM-15. Deleted by REV F.
C209M*	7489162P11	Silver mica: 22 pf $\pm 5\%$, 500 VDCW; sim to Electro Motive Type DM-15. Deleted by REV F.
C209H*	7489162P13	Silver mica: 27 pf $\pm 5\%$, 500 VDCW; sim to Electro Motive Type DM-15. Deleted by REV F.
C210LL	19A134666P3	Silver mica: 27 pf $\pm 5\%$, 500 VDCW; sim to Electro Motive Type DM154CR.
C210L	19A134666P1	Silver mica: 18 pf $\pm 5\%$, 500 VDCW; sim to Electro Motive Type DM154CR.
C210M	19A134666P1	Silver mica: 18 pf $\pm 5\%$, 500 VDCW; sim to Electro Motive Type DM154CR.
C210H	19A134666P1	Silver mica: 18 pf $\pm 5\%$, 500 VDCW; sim to Electro Motive Type DM154CR.
C211LL	19A116656P33J0	Ceramic disc: 33 pf $\pm 5\%$, 500 VDCW, temp coef 0 PPM.
C211L	19A116656P24J0	Ceramic disc: 24 pf $\pm 5\%$, 500 VDCW, temp coef 0 PPM.
C211M	19A116656P24J0	Ceramic disc: 24 pf $\pm 5\%$, 500 VDCW, temp coef 0 PPM.
C211H	19A116656P24J0	Ceramic disc: 24 pf $\pm 5\%$, 500 VDCW, temp coef 0 PPM.
C212	19A116192P1	Ceramic: 0.01 μ f $\pm 20\%$, 50 VDCW; sim to Erie 8121 SPECIAL.
C213*	19A116656P4J0	Ceramic disc: 4 pf ± 0.5 pf, 500 VDCW, temp coef 0 PPM. Deleted by REV B.
C213LL*	19A116656P5J0	Ceramic disc: 5 pf ± 0.5 pf, 500 VDCW, temp coef 0 PPM. Added by REV B.
C214LL	19A116656P33J0	Ceramic disc: 33 pf $\pm 5\%$, 500 VDCW, temp coef 0 PPM.
C214L	19A116656P24J0	Ceramic disc: 24 pf $\pm 5\%$, 500 VDCW, temp coef 0 PPM.
C214M	19A116656P24J0	Ceramic disc: 24 pf $\pm 5\%$, 500 VDCW, temp coef 0 PPM.
C214H	19A116656P24J0	Ceramic disc: 24 pf $\pm 5\%$, 500 VDCW, temp coef 0 PPM.
C215LL	19A116952P47	Metallized teflon: 47 pf $\pm 2\%$, 250 VDCW.
C215L	19A116952P47	Metallized teflon: 47 pf $\pm 2\%$, 250 VDCW.
C215M	19A116952P43	Metallized teflon: 43 pf $\pm 2\%$, 250 VDCW.
C215H	19A116952P43	Metallized teflon: 43 pf $\pm 2\%$, 250 VDCW.
C216LL	19A116952P51	Metallized teflon: 51 pf $\pm 2\%$, 250 VDCW.
C216L	19A116952P43	Metallized teflon: 43 pf $\pm 2\%$, 250 VDCW.
C216M	19A116952P43	Metallized teflon: 43 pf $\pm 2\%$, 250 VDCW.
C216H	19A116952P39	Metallized teflon: 39 pf $\pm 2\%$, 250 VDCW.
C217LL	19A116679P180	Metallized teflon: 18 pf ± 5 pf, 250 VDCW.
C217L	19A116679P16B	Metallized teflon: 16 pf ± 5 pf, 250 VDCW.
C217M	19A116679P15D	Metallized teflon: 15 pf ± 5 pf, 250 VDCW.
C217H	19A116679P13D	Metallized teflon: 13 pf ± 5 pf, 250 VDCW.
C218	19A134666P1	Silver mica: 18 pf $\pm 5\%$, 500 VDCW; sim to Electro Motive Type DM154CR.
C219	19A116655P18	Ceramic disc: 680 pf $\pm 10\%$, 1000 VDCW; sim to RMC Type JF Discap.
C219L*	19A116656P24J0	Ceramic disc: 24 pf $\pm 5\%$, 500 VDCW, temp coef 0 PPM. Added by REV J.
C220	19A116655P20	Ceramic disc: 1000 pf $\pm 10\%$, 1000 VDCW; sim to RMC Type JF Discap.
C221	19B209723P4	Tantalum: 6.8 μ f $\pm 20\%$, 35 VDCW.
C222LL	19A116656P33J0	Ceramic disc: 33 pf $\pm 5\%$, 500 VDCW, temp coef 0 PPM.
C222L	19A116656P24J0	Ceramic disc: 24 pf $\pm 5\%$, 500 VDCW, temp coef 0 PPM.

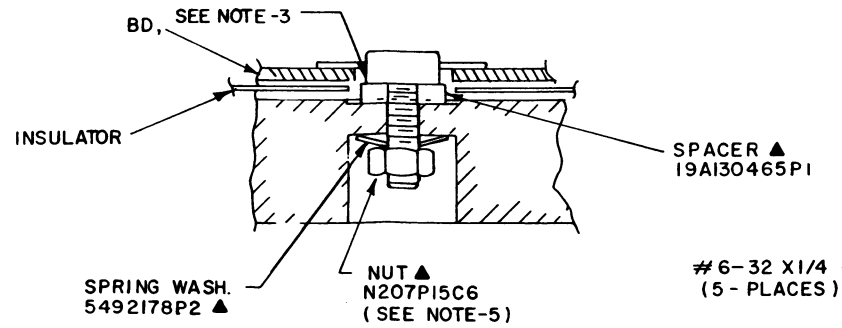
SYMBOL	GE PART NO.	DESCRIPTION
C222M	19A116656P24J0	Ceramic disc: 24 pf $\pm 5\%$, 500 VDCW, temp coef 0 PPM.
C222H	19A116656P24J0	Ceramic disc: 24 pf $\pm 5\%$, 500 VDCW, temp coef 0 PPM.
C223	19A116655P20	Ceramic disc: 1000 pf $\pm 10\%$, 1000 VDCW; sim to RMC Type JF Discap.
C224LL	19A116952P41	Metallized teflon: 41 pf $\pm 2\%$, 250 VDCW.
C224L	19A116952P35	Metallized teflon: 35 pf $\pm 2\%$, 250 VDCW.
C224M	19A116952P35	Metallized teflon: 35 pf $\pm 2\%$, 250 VDCW.
C224H	19A116952P32	Metallized teflon: 32 pf $\pm 2\%$, 250 VDCW.
C225LL	19A116952P43	Metallized teflon: 43 pf $\pm 2\%$, 250 VDCW.
C225L	19A116952P35	Metallized teflon: 35 pf $\pm 2\%$, 250 VDCW.
C225M	19A116952P33	Metallized teflon: 33 pf $\pm 2\%$, 250 VDCW.
C225H	19A116952P32	Metallized teflon: 32 pf $\pm 2\%$, 250 VDCW.
C226LL	19A1169952P47	Metallized teflon: 47 pf $\pm 2\%$, 250 VDCW.
C226L	19A1169952P43	Metallized teflon: 43 pf $\pm 2\%$, 250 VDCW.
C226M	19A116952P37	Metallized teflon: 37 pf $\pm 2\%$, 250 VDCW.
C226H	19A116952P35	Metallized teflon: 35 pf $\pm 2\%$, 250 VDCW.
C227LL	19A116952P43	Metallized teflon: 43 pf $\pm 2\%$, 250 VDCW.
C227L	19A116952P37	Metallized teflon: 37 pf $\pm 2\%$, 250 VDCW.
C227M	19A116952P37	Metallized teflon: 37 pf $\pm 2\%$, 250 VDCW.
C227H	19A116952P35	Metallized teflon: 35 pf $\pm 2\%$, 250 VDCW.
C228	19A116655P20	Ceramic disc: 1000 pf $\pm 10\%$, 1000 VDCW; sim to RMC Type JF Discap.
C229LL	19A116656P33J0	Ceramic disc: 33 pf $\pm 5\%$, 500 VDCW, temp coef 0 PPM.
C229L	19A116656P24J0	Ceramic disc: 24 pf $\pm 5\%$, 500 VDCW, temp coef 0 PPM.
C229M	19A116656P24J0	Ceramic disc: 24 pf $\pm 5\%$, 500 VDCW, temp coef 0 PPM.
C229H	19A116656P24J0	Ceramic disc: 24 pf $\pm 5\%$, 500 VDCW, temp coef 0 PPM.
C231	19A116655P20	Ceramic disc: 1000 pf $\pm 10\%$, 1000 VDCW; sim to RMC Type JF Discap.
C232	19B209723P4	Tantalum: 6.8 μ f $\pm 20\%$, 35 VDCW.
C241	19A134202P15	Tantalum: 6.8 μ f $\pm 20\%$, 35 VDCW.
C244 and C245	19A116655P18	Ceramic disc: 680 pf $\pm 10\%$, 1000 VDCW; sim to RMC Type JF Discap.
C246 thru C250	19A116655P20	Ceramic disc: 1000 pf $\pm 10\%$, 1000 VDCW; sim to RMC Type JF Discap.
C251	19A116192P1	Ceramic: 0.01 μ f $\pm 20\%$, 50 VDCW; sim to Erie 8121 SPECIAL.
C252LL	19A116656P8J0	Ceramic disc: 8 pf ± 0.5 pf, 500 VDCW, temp coef 0 PPM.
C252L*	19A116656P7J0	Ceramic disc: 7 pf ± 0.5 pf, 500 VDCW, temp coef 0 PPM. In REV D-H:
	19A116656P5J0	Ceramic disc: 5 pf ± 0.5 pf, 500 VDCW, temp coef 0 PPM. Added by REV C.
C252M*	19A116656P4J0	Ceramic disc: 4 pf ± 0.5 pf, 500 VDCW, temp coef 0 PPM. Added by REV C.
C252H*	19A116656P3J0	Ceramic disc: 3 pf ± 0.5 pf, 500 VDCW, temp coef 0 PPM. Added by REV C.
C253	19A116655P20	Ceramic disc: 1000 pf $\pm 10\%$, 1000 VDCW; sim to RMC Type JF Discap.
C255 and C256	19A116655P18	Ceramic disc: 680 pf $\pm 10\%$, 1000 VDCW; sim to RMC Type JF Discap.
C258L*	19A116656P3J0	Ceramic disc: 3 pf ± 0.5 pf, 500 VDCW, temp coef 0 PPM. Deleted by REV C.
C259LL	19A116656P8J0	Ceramic disc: 8 pf ± 0.5 pf, 500 VDCW, temp coef 0 PPM.
C259L	19A116656P4J0	Ceramic disc: 4 pf ± 0.5 pf, 500 VDCW, temp coef 0 PPM.

SYMBOL	GE PART NO.	DESCRIPTION
C259M	19A116656P4J0	Ceramic disc: 4 pf ± 0.5 pf, 500 VDCW, temp coef 0 PPM.
C259H	19A134100P20	Ceramic disc: 2.2 pf ± 0.1 pf, 100 VDCW; temp coef 0 ± 120 PPM/ $^{\circ}$ C.
C260	19A116655P20	Ceramic disc: 1000 pf $\pm 10\%$, 1000 VDCW; sim to RMC Type JF Discap.
C261	19A134666P1	Silver mica: 18 pf $\pm 5\%$, 500 VDCW; sim to Electro Motive Type DM154CR.
C262*	19A116114P2044	Ceramic: 27 pf $\pm 5\%$, 100 VDCW; temp coef -80 PPM. Added by REV G. Deleted by REV H.
		----- DIODES AND RECTIFIERS -----
CR201	19A116052P1	Silicon, hot carrier: Fwd. drop .350 volts max.
CR202 and CR203	19A115250P1	Silicon, fast recovery, 225 mA, 50 PIV.
CR204* and CR205*	19A115250P1	Silicon, fast recovery, 225 mA, 50 PIV. Added to G2-G4 by REV A.
		----- TERMINALS -----
E201 and E202	19A134263P1	Contact, electrical: sim to Selectro 229-1082-00-0-590.
G211	19A134263P1	Contact, electrical: sim to Selectro 229-1082-00-0-590.
		----- JACKS AND RECEPTACLES -----
J201	19A130924G1	Connector, receptacle: coaxial, jack type; sim to Cinch 14H11613.
J205	19B219374G1	Connector: 9 contacts.
		----- INDUCTORS -----
L202	19A129773G1	Coil.
L203	19A129774P1	Coil.
L204	19A129773G1	Coil.
L205	19B219457P6	Coil.
L206	7488079P40	Choke, RF: 5.60 μ h $\pm 10\%$, 0.15 ohms DC res max; sim to Jeffers 4422-1K.
L207	7488079P13	Choke, RF: 5.60 μ h $\pm 10\%$, 0.30 ohms DC res max; sim to Jeffers 4421-4K.
L208LL	19B219457P6	Coil.
L208L	19A130650P1	Coil.
L208M	19A130650P1	Coil.
L208H	19A130650P1	Coil.
L209	19A129773G1	Coil.
		----- TRANSISTORS -----
Q201	19A134237P1	Silicon, NPN.
Q202	19A134164P2	Silicon, NPN; sim to Type 2N5945.
Q203LL	19A134171P4	Silicon, NPN.
Q203L	19A134239P2	Silicon, NPN.
Q203M	19A134239P2	Silicon, NPN.
Q203H	19A134239P2	Silicon, NPN.
		----- RESISTORS -----
R201	3R152P102J	Composition: 1K ohms $\pm 5\%$, 1/4 w.
R202	3R152P304J	Composition: 300K ohms $\pm 5\%$, 1/4 w.
R203*	7147161P13	Composition: 4.7 ohms $\pm 5\%$, 1/2 w. Added to G1 by REV A. Deleted in G2-G4 by REV D. Added to G2-G4 by REV F.
R204*	3R77P270J	Composition: 27 ohms $\pm 5\%$, 1/2 w. G1 earlier than REV A, G2-G4 of REV C & earlier:
	3R77P220J	Composition: 22 ohms $\pm 5\%$, 1/2 w.

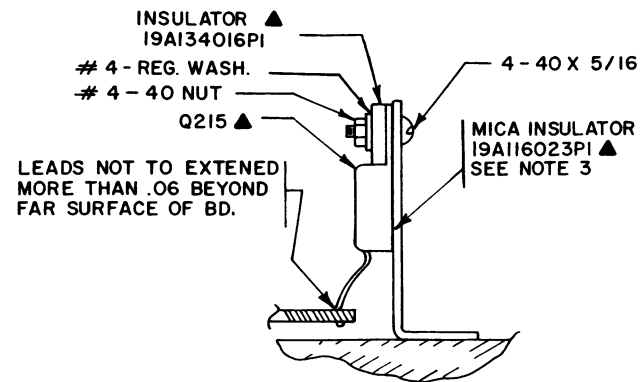
SYMBOL	GE PART NO.	DESCRIPTION
R205	3R152P220J	Composition: 22 ohms $\pm 5\%$, 1/4 w.
R206	3R77P100J	Composition: 10 ohms $\pm 5\%$, 1/2 w.
R207	3R152P680J	Composition: 68 ohms $\pm 5\%$, 1/4 w.
R209	3R77P561J	Composition: 560 ohms $\pm 5\%$, 1/2 w.
R210 thru R212	19C320212P1	Shunt resistor.
R213	19A116559P102	Variable, cermet: 5K ohms $\pm 20\%$, .5 w; sim to CTS Series 360.
R214	3R77P100J	Composition: 10 ohms $\pm 5\%$, 1/2 w.
R215	3R152P270J	Composition: 27 ohms $\pm 5\%$, 1/4 w.
R216*	3R77P100J	Composition: 10 ohms $\pm 5\%$, 1/4 w. Added by REV G.
		----- TRANSFORMERS -----
T201 thru T203	19A130446G1	Coil.
		----- 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).
W207		(Part of printed board 19D423005P1).
W208	19B226733G2	Jumper.
		----- CAPACITORS -----
C4290LL	19A116952P10	Metallized teflon: 10 pf ± 0.5 pf, 250 VDCW.
C4290H	19A116952P9	Metallized teflon: 9 pf ± 0.5 pf, 250 VDCW.
C4291LL	19A116952P20	Metallized teflon: 20 pf ± 0.5 pf, 250 VDCW.
C4291H	19A116952P18	Metallized teflon: 18 pf ± 0.5 pf, 250 VDCW.
C4292LL	19A116952P13	Metallized teflon: 13 pf ± 0.5 pf, 250 VDCW.
C4292H	19A116952P12	Metallized teflon: 12 pf ± 0.5 pf, 250 VDCW.
C4293	19A116679P220J	Silver mica: 220 pf $\pm 5\%$, 250 VDCW.
		----- INDUCTORS -----
L4291LL	19B226709G2	Jumper.
L4291H	19B226709G1	Jumper.
L4292LL		(Part of L4291LL).
L4292H		(Part of L4291H).
		----- JACKS AND RECEPTACLES -----
J202 and J203	19A130924G1	Connector, receptacle: coaxial, jack type; sim to Cinch 14H11613.
J206 and J207	19A134263P2	Contact, electrical: sim to Selectro 229-1082-00-0-590.
J208	4033513P4	Contact, electrical: sim to Bead Chain L93-3.
		----- RELAYS -----
K201	19B209558P1	Hermetic sealed: 180 to 341 ohms coil res, 2 form C contacts, 8.0 to 16.3 VDC; sim to GE 38AV1760A2. (Includes J206 & J207).

SYMBOL	GE PART NO.	DESCRIPTION
----- CABLES -----		
W4280 thru W4283		(Part of printed board 19D423812P1).
LOW PASS FILTER MODULE 19C321424G2 (Deleted by REV A)		
----- CAPACITORS -----		
C4280H	19A116952P9	Metallized teflon: 9 pf ± 0.5 pf, 250 VDCW.
C4281H	19A116952P18	Metallized teflon: 18 pf ± 0.5 pf, 250 VDCW.
C4282H	19A116952P12	Metallized teflon: 12 pf ± 0.5 pf, 250 VDCW.
C4283H	19A116679P220J	Silver mica: 220 pf $\pm 5\%$, 250 VDCW.
----- INDUCTORS -----		
L4281 and L4282	19B226709G1	Jumper.
----- JACKS AND RECEPTACLES -----		
J202 and J203	19A130924G1	Connector, receptacle: coaxial, jack type; sim to Cinch 14H11613.
J206 and J207		(Part of K201).
J208	4033513P4	Contact, electrical: sim to Bead Chain L93-3.
----- RELAYS -----		
K201	19A116722P1	Hermetic sealed: 125 ohms $\pm 20\%$, 1 form C contact, 9.6 to 15.8 VDC (over the temp range indicated). (includes J206 & J207).
----- CABLES -----		
W4280 thru W4283		(Part of printed board 19D423316P1).
HEAT SINK 19B219668G7 "M" SERIES 19B219688G19 "E" SERIES		
----- CAPACITORS -----		
C297 and C298	19A116708P1	Ceramic, feed-thru: $0.01 \mu\text{f}$ $\pm 100\%$ -0%; sim to Erie Style 327.
C299	19A115680P10	Electrolytic: $200 \mu\text{f}$ $\pm 50\%$ -10%, 18 VDCW; sim to Mallory Type TTX.
----- DIODES AND RECTIFIERS -----		
CR295	19A116783P1	Silicon.
POWER AMPLIFIER KIT 19A130484G1 MOBILE 19A130484G5 STATION (Deleted by REV A)		
----- TERMINALS -----		
G213	7878455P2	Terminal, lug.
G4214	7878455P2	Terminal, lug.
----- PLUGS -----		
P206 and P207	4036634P1	Contact, electrical; sim to AMP 42428-2.
----- TRANSISTORS -----		
Q215	19A116742P1	Silicon, NPN.

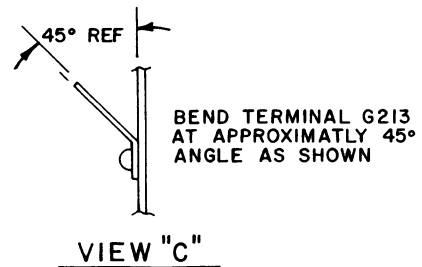
20W UHF PA



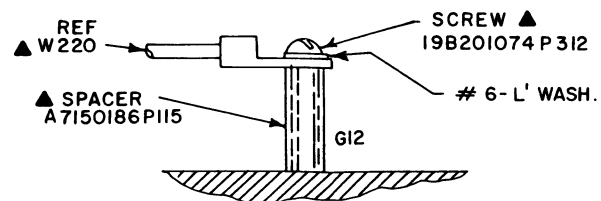
SECTION A-A
TYP. MTG FOR Q202
(SEE NOTE 3)



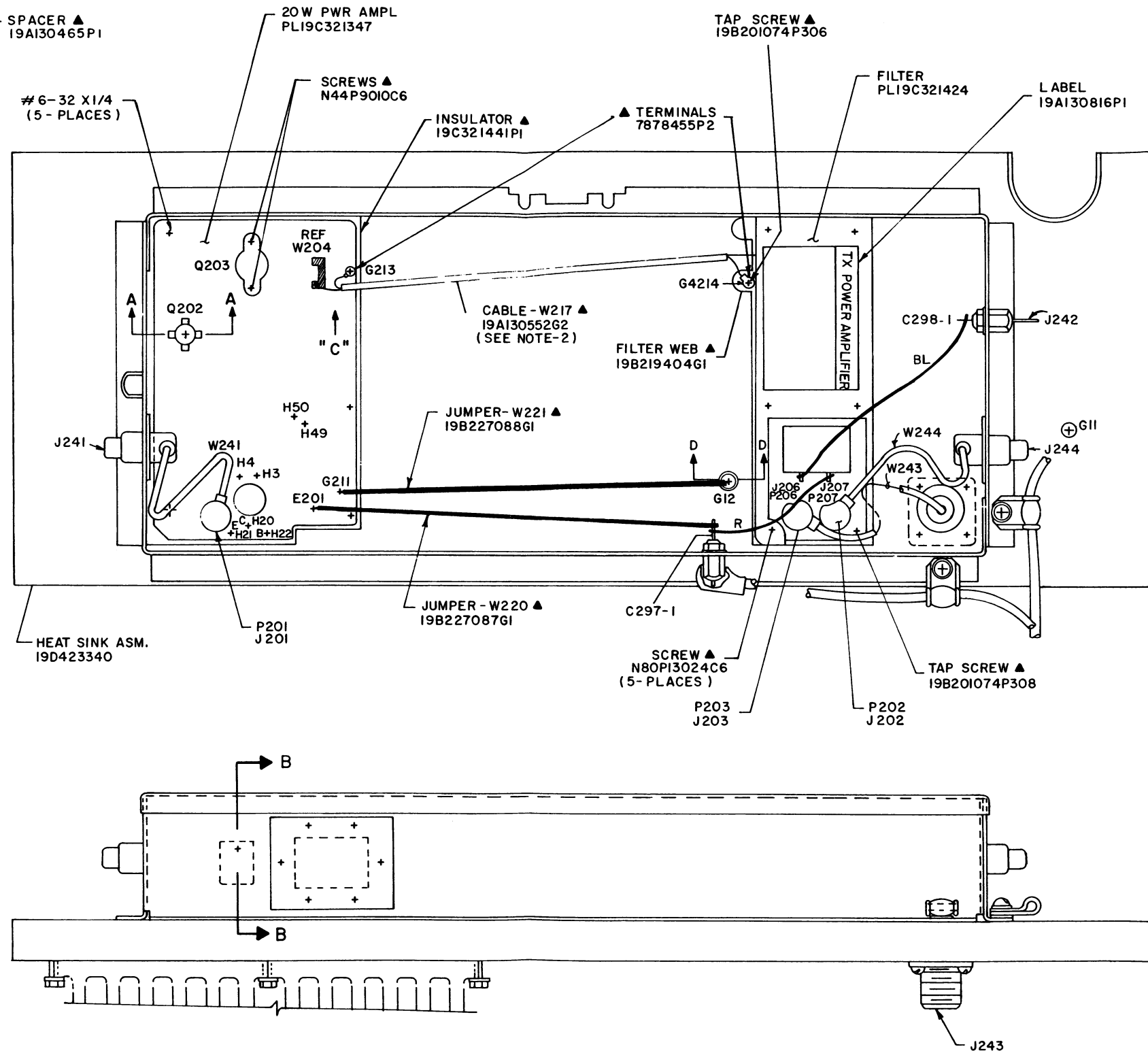
SECTION B-B



VIEW "C"



SECTION D-D

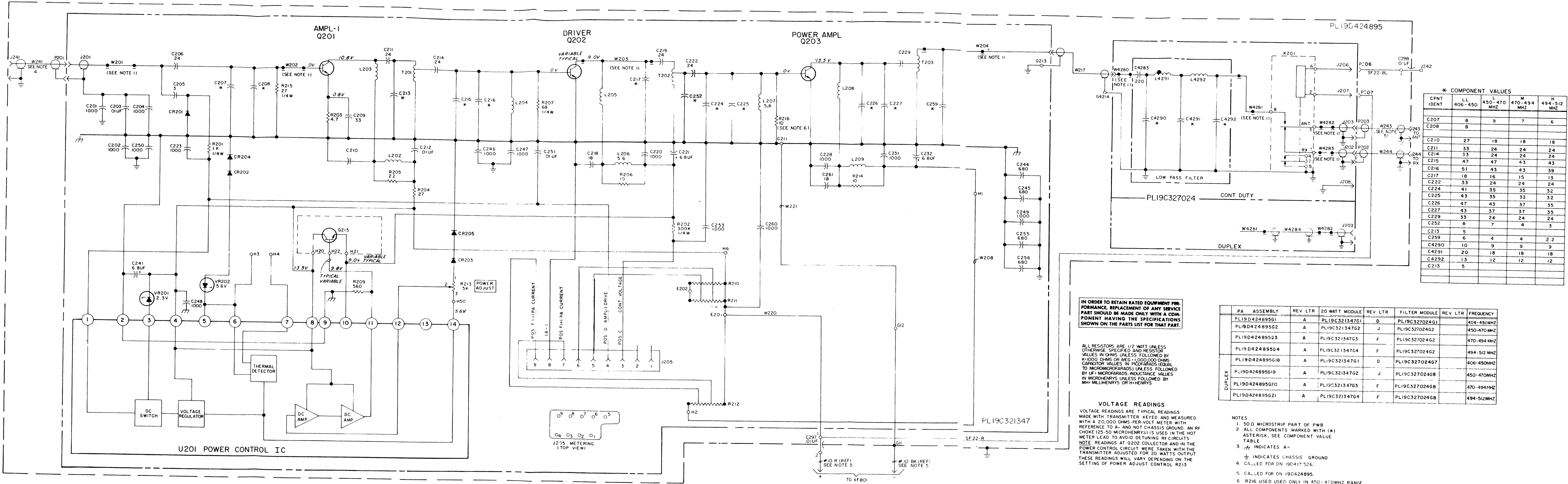


NOTES:

1. PART OF KIT 19A130484.
2. CENTER CONDUCTOR OF W217 MUST BE SOLDERED TO W204 IN AREA INDICATED. NOTE: GROUND BRAID OF W217 MUST NOT TOUCH GROUND ON 20W MODULE (19C321347).
3. APPLY SILICONE GREASE TO BOTH SURFACES OF TRANSISTOR INSULATOR (19A116023P1), BETWEEN BOTH MTG SURFACES OF SPACER (19A130465P1) & BETWEEN MTG SURFACE OF Q203 & HEAT SINK PER CPD PROCESS P6A-EA111. CARE MUST BE USED SO THAT NO GREASE IS APPLIED TO THE THREADED PORTION OF THE MTG. STUD OF Q202.
4. SOLDER ALL ELECTRICAL CONNECTIONS.
5. TIGHTEN TRANSISTOR MTG. HARDWARE TO WITHIN 8 ± 1 IN. LBS. FOR #8 HARDWARE & 6 ± 1 IN. LBS. FOR #4 HARDWARE.
6. RECOMMENDED INSTALLATION PROCEDURE OF 20W MODULE (19C321347) IS: ASSEMBLE ALL HARDWARE LOOSE, THEN TORQUE Q202, THEN TORQUE Q203, THEN TIGHTEN MOUNTING HARDWARE.
7. SEE INTERCONNECTION DIAG. 19B622185.

OUTLINE DIAGRAM

20 WATT UHF CONTINUOUS DUTY
STATION POWER AMPLIFIER



SCHEMATIC DIAGRAM

20 WATT UHF CONTINUOUS DUTY
STATION POWER AMPLIFIER

PARTS LIST		
LBI30661B		
406-512 MHz, 20 WATT STATION POWER AMPLIFIER 19D424895G1-G4 (CONTINUOUS DUTY) 19D424895G18-G21 (CONTINUOUS DUTY - DUPLEX)		
SYMBOL	GE PART NO.	DESCRIPTION
C297	19A116708P1	----- CAPACITORS ----- Ceramic, feed-thru: 0.01 μ f +100%-0%, 500 VDCW; sim to Erie 327050X5W0103P.
C298		
G213	7878455P2	
G4214	7878455P2	
		----- TERMINALS -----
		Terminal, lug.
		Terminal, lug.
		----- PLUGS -----
P206 and P207	4036634P1	Contact, electrical; sim to AMP 42428-2.
		----- TRANSISTORS -----
Q215	19A116742P1	Silicon, NPN.
		----- CABLES -----
W217	19A130552G2	Cable, RF: approx 6-1/2 inches long.
W220	19B227087G1	Jumper.
W221	19B227088G1	Jumper.
W243		CABLE ASSEMBLY 19A129312G6
		----- JACKS AND RECEPTACLES -----
J243	5491689P108	Connector, plug: includes 10 inch cable.
		----- PLUGS -----
P203		Connector. Includes receptacle and adapter. (Order separately).
	4029493P1	Receptacle, coaxial: sim to Amphenol 83-798.
	4029082P2	Adaptor.
W244	5491689P104	Cable, RF: approx 14 inches long.
		20 WATT MODULE 19C321347G1 406-450 MHz (LL) 19C321347G2 450-470 MHz (L) 19C321347G3 470-494 MHz (M) 19C321347G4 494-512 MHz (H)
		----- CAPACITORS -----
C201 and C202	19A116655P20	Ceramic disc: 1000 pf $\pm$ 10%, 1000 VDCW; sim to RMC Type JF Discap.
C203	19A116192P1	Ceramic: 0.01 μ f $\pm$ 20%, 50 VDCW; sim to Erie 8121 SPECIAL.
C204	19A116655P20	Ceramic disc: 1000 pf $\pm$ 10%, 1000 VDCW; sim to RMC Type JF Discap.
C205	19A116656P3J0	Ceramic disc: 3 pf $\pm$ 0.5 pf, 500 VDCW, temp coef 0 PPM.
C206*	19A116656P24J0	Ceramic disc: 24 pf $\pm$ 5%, 500 VDCW, temp coef 0 PPM.
	19A116655P18	G1 in REV B & earlier: G2-G4 in REV D & earlier: Ceramic disc: 680 pf $\pm$ 10%, 1000 VDCW; sim to RMC Type JF Discap.

SYMBOL	GE PART NO.	DESCRIPTION
C207LL	19A116656P8J0	Ceramic disc: 8 pf $\pm$ 0.5 pf, 500 VDCW, temp coef 0 PPM.
C207L*	19A116656P9J0	Ceramic disc: 9 pf $\pm$ 0.5 pf, 500 VDCW, temp coef 0 PPM.
	19A116656P6J0	In REV E & earlier: Ceramic disc: 6 pf $\pm$ 0.5 pf, 500 VDCW, temp coef 0 PPM.
C207M*	19A116656P7J0	Ceramic disc: 7 pf $\pm$ 0.5 pf, 500 VDCW, temp coef 0 PPM.
	19A116656P6J0	In REV E x earlier: Ceramic disc: 6 pf $\pm$ 0.5 pf, 500 VDCW, temp coef 0 PPM.
C207H	19A116656P6J0	Ceramic disc: 6 pf $\pm$ 0.5 pf, 500 VDCW, temp coef 0 PPM.
C208LL	19A116656P8J0	Ceramic disc: 8 pf $\pm$ 0.5 pf, 500 VDCW, temp coef 0 PPM.
C208L*	19A116656P6J0	Ceramic disc: 6 pf $\pm$ 0.5 pf, 500 VDCW, temp coef 0 PPM. Deleted by REV F.
C208M*	19A116656P6J0	Ceramic disc: 6 pf $\pm$ 0.5 pf, 500 VDCW, temp coef 0 PPM. Deleted by REV F.
C208H*	19A116656P6J0	Ceramic disc: 6 pf $\pm$ 0.5 pf, 500 VDCW, temp coef 0 PPM. Deleted by REV F.
C209*	19A116656P33J0	Ceramic disc: 33 pf $\pm$ 5%, 500 VDCW, temp coef 0 PPM. Added by REV F.
C209LL*	7489162P15	Silver mica: 33 pf $\pm$ 5%, 500 VDCW; sim to Electro Motive Type DM-15. Added by REV A. Deleted by REV D.
C209L*	7489162P11	Silver mica: 22 pf $\pm$ 5%, 500 VDCW; sim to Electro Motive Type DM-15. Deleted by REV F.
C209M*	7489162P11	Silver mica: 22 pf $\pm$ 5%, 500 VDCW; sim to Electro Motive Type DM-15. Deleted by REV F.
C209H*	7489162P13	Silver mica: 27 pf $\pm$ 5%, 500 VDCW; sim to Electro Motive Type DM-15. Deleted by REV F.
C210LL	19A134666P3	Silver mica: 27 pf $\pm$ 5%, 500 VDCW; sim to Electro Motive Type DM154CR.
C210L	19A134666P1	Silver mica: 18 pf $\pm$ 5%, 500 VDCW; sim to Electro Motive Type DM154CR.
C210M	19A134666P1	Silver mica: 18 pf $\pm$ 5%, 500 VDCW; sim to Electro Motive Type DM154CR.
C210H	19A134666P1	Silver mica: 18 pf $\pm$ 5%, 500 VDCW; sim to Electro Motive Type DM154CR.
C211LL	19A116656P33J0	Ceramic disc: 33 pf $\pm$ 5%, 500 VDCW, temp coef 0 PPM.
C211L	19A116656P24J0	Ceramic disc: 24 pf $\pm$ 5%, 500 VDCW, temp coef 0 PPM.
C211M	19A116656P24J0	Ceramic disc: 24 pf $\pm$ 5%, 500 VDCW, temp coef 0 PPM.
C211H	19A116656P24J0	Ceramic disc: 24 pf $\pm$ 5%, 500 VDCW, temp coef 0 PPM.
C212	19A116192P1	Ceramic: 0.01 μ f $\pm$ 20%, 50 VDCW; sim to Erie 8121 SPECIAL.
C213LL	19A116656P5J0	Ceramic disc: 5 pf $\pm$ 0.5 pf, 500 VDCW, temp coef 0 PPM.
C214LL	19A116656P33J0	Ceramic disc: 33 pf $\pm$ 5%, 500 VDCW, temp coef 0 PPM.
C214L	19A116656P24J0	Ceramic disc: 24 pf $\pm$ 5%, 500 VDCW, temp coef 0 PPM.
C214M	19A116656P24J0	Ceramic disc: 24 pf $\pm$ 5%, 500 VDCW, temp coef 0 PPM.
C214H	19A116656P24J0	Ceramic disc: 24 pf $\pm$ 5%, 500 VDCW, temp coef 0 PPM.
C215LL	19A116952P47	Metallized teflon: 47 pf $\pm$ 2%, 250 VDCW.
C215L	19A116952P47	Metallized teflon: 47 pf $\pm$ 2%, 250 VDCW.
C215M	19A116952P43	Metallized teflon: 43 pf $\pm$ 2%, 250 VDCW.
C215H	19A116952P43	Metallized teflon: 43 pf $\pm$ 2%, 250 VDCW.

SYMBOL	GE PART NO.	DESCRIPTION
C216LL	19A116952P51	Metallized teflon: 51 pf $\pm$ 2%, 250 VDCW.
C216L	19A116952P43	Metallized teflon: 43 pf $\pm$ 2%, 250 VDCW.
C216M	19A116952P43	Metallized teflon: 43 pf $\pm$ 2%, 250 VDCW.
C216H	19A116952P39	Metallized teflon: 39 pf $\pm$ 2%, 250 VDCW.
C217LL	19A116679P18D	Metallized teflon: 18 pf $\pm$ 5 pf, 250 VDCW.
C217L	19A116679P16D	Metallized teflon: 16 pf $\pm$ 5 pf, 250 VDCW.
C217M	19A116679P15D	Metallized teflon: 15 pf $\pm$ 5 pf, 250 VDCW.
C217H	19A116679P13D	Metallized teflon: 13 pf $\pm$ 5 pf, 250 VDCW.
C218	19A134666P1	Silver mica: 18 pf $\pm$ 5%, 500 VDCW; sim to Electro Motive Type DM154CR.
C219	19A116655P18	Ceramic disc: 680 pf $\pm$ 10%, 1000 VDCW; sim to RMC Type JF Discap.
C219L*	19A116656P24J0	Ceramic disc: 24 pf $\pm$ 5%, 500 VDCW, temp coef 0 PPM. Added by REV J.
C220	19A116655P20	Ceramic disc: 1000 pf $\pm$ 10%, 1000 VDCW; sim to RMC Type JF Discap.
C221	19B209723P4	Tantalum: 6.8 μ f $\pm$ 20%, 35 VDCW.
C222LL	19A116656P33J0	Ceramic disc: 33 pf $\pm$ 5%, 500 VDCW, temp coef 0 PPM.
C222L	19A116656P24J0	Ceramic disc: 24 pf $\pm$ 5%, 500 VDCW, temp coef 0 PPM.
C222M	19A116656P24J0	Ceramic disc: 24 pf $\pm$ 5%, 500 VDCW, temp coef 0 PPM.
C222H	19A116656P24J0	Ceramic disc: 24 pf $\pm$ 5%, 500 VDCW, temp coef 0 PPM.
C223	19A116655P20	Ceramic disc: 1000 pf $\pm$ 10%, 1000 VDCW; sim to RMC Type JF Discap.
C224LL	19A116952P41	Metallized teflon: 41 pf $\pm$ 2%, 250 VDCW.
C224L	19A116952P35	Metallized teflon: 35 pf $\pm$ 2%, 250 VDCW.
C224M	19A116952P35	Metallized teflon: 35 pf $\pm$ 2%, 250 VDCW.
C224H	19A116952P32	Metallized teflon: 32 pf $\pm$ 2%, 250 VDCW.
C225LL	19A116952P43	Metallized teflon: 43 pf $\pm$ 2%, 250 VDCW.
C225L	19A116952P35	Metallized teflon: 35 pf $\pm$ 2%, 250 VDCW.
C225M	19A116952P33	Metallized teflon: 33 pf $\pm$ 2%, 250 VDCW.
C225H	19A116952P32	Metallized teflon: 32 pf $\pm$ 2%, 250 VDCW.
C226LL	19A116952P47	Metallized teflon: 47 pf $\pm$ 2%, 250 VDCW.
C226L	19A116952P43	Metallized teflon: 43 pf $\pm$ 2%, 250 VDCW.
C226M	19A116952P37	Metallized teflon: 37 pf $\pm$ 2%, 250 VDCW.
C226H	19A116952P35	Metallized teflon: 35 pf $\pm$ 2%, 250 VDCW.
C227LL	19A116952P43	Metallized teflon: 43 pf $\pm$ 2%, 250 VDCW.
C227L	19A116952P37	Metallized teflon: 37 pf $\pm$ 2%, 250 VDCW.
C227M	19A116952P37	Metallized teflon: 37 pf $\pm$ 2%, 250 VDCW.
C227H	19A116952P35	Metallized teflon: 35 pf $\pm$ 2%, 250 VDCW.
C228	19A116655P20	Ceramic disc: 1000 pf $\pm$ 10%, 1000 VDCW; sim to RMC Type JF Discap.
C229LL	19A116656P33J0	Ceramic disc: 33 pf $\pm$ 5%, 500 VDCW, temp coef 0 PPM.
C229L	19A116656P24J0	Ceramic disc: 24 pf $\pm$ 5%, 500 VDCW, temp coef 0 PPM.
C229M	19A116656P24J0	Ceramic disc: 24 pf $\pm$ 5%, 500 VDCW, temp coef 0 PPM.
C229H	19A116656P24J0	Ceramic disc: 24 pf $\pm$ 5%, 500 VDCW, temp coef 0 PPM.
C231	19A116655P20	Ceramic disc: 1000 pf $\pm$ 10%, 1000 VDCW; sim to RMC Type JF Discap.
C232	19B209723P4	Tantalum: 6.8 μ f $\pm$ 20%, 35 VDCW.
C241	19A134202P15	Tantalum: 6.8 μ f $\pm$ 20%, 35 VDCW.

SYMBOL	GE PART NO.	DESCRIPTION
C244 and C245	19A116655P18	Ceramic disc: 680 pf $\pm$ 10%, 1000 VDCW; sim to RMC Type JF Discap.
C246 thru C250	19A116655P20	Ceramic disc: 1000 pf $\pm$ 10%, 1000 VDCW; sim to RMC Type JF Discap.
C251	19A116192P1	Ceramic: 0.01 μ f $\pm$ 20%, 50 VDCW; sim to Erie 8121 SPECIAL.
C252LL	19A116656P8J0	Ceramic disc: 8 pf $\pm$ 0.5 pf, 500 VDCW, temp coef 0 PPM.
C252L*	19A116656P7J0	Ceramic disc: 7 pf $\pm$ 0.5 pf, 500 VDCW, temp coef 0 PPM.
	19A116656P5J0	In REV D-H: Ceramic disc: 5 pf $\pm$ 0.5 pf, 500 VDCW, temp coef 0 PPM. Added by REV C.
C252M*	19A116656P4J0	Ceramic disc: 4 pf $\pm$ 0.5 pf, 500 VDCW, temp coef 0 PPM. Added by REV C.
C252H*	19A116656P3J0	Ceramic disc: 3 pf $\pm$ 0.5 pf, 500 VDCW, temp coef 0 PPM. Added by REV C.
C253	19A116655P20	Ceramic disc: 1000 pf $\pm$ 10%, 1000 VDCW; sim to RMC Type JF Discap.
C255 and C256	19A116655P18	Ceramic disc: 680 pf $\pm$ 10%, 1000 VDCW; sim to RMC Type JF Discap.
C258L*	19A116656P3J0	Ceramic disc: 3 pf $\pm$ 0.5 pf, 500 VDCW, temp coef 0 PPM. Deleted by REV C.
C259LL	19A116656P6J0	Ceramic disc: 6 pf $\pm$ 0.5 pf, 500 VDCW, temp coef 0 PPM.
C259L	19A116656P4J0	Ceramic disc: 4 pf $\pm$ 0.5 pf, 500 VDCW, temp coef 0 PPM.
C259M	19A116656P4J0	Ceramic disc: 4 pf $\pm$ 0.5 pf, 500 VDCW, temp coef 0 PPM.
C259H	19A134100P20	Ceramic disc: 2.2 pf $\pm$ 0.1 pf, 100 VDCW; temp coef 0 $\pm$ 120 PPM/ $^{\circ}$ C.
C260	19A116655P20	Ceramic disc: 1000 pf $\pm$ 10%, 1000 VDCW; sim to RMC Type JF Discap.
C261	19A134666P20	Silver mica: 18 pf $\pm$ 5%, 500 VDCW; sim to Electro Motive Type DM154CR.
C262*	19A116114P2044	Ceramic: 27 pf $\pm$ 5%, 100 VDCW; temp coef -80 PPM. Added by REV G. Deleted by REV H.
		----- DIODES AND RECTIFIERS -----
CR201	19A116052P1	Silicon, hot carrier: Fwd. drop .350 volts max.
CR202 and CR203	19A115250P1	Silicon, fast recovery, 225 mA, 50 PIV.
CR204* and CR205*	19A115250P1	Silicon, fast recovery, 225 mA, 50 PIV. Added to G2-G4 by REV A.
		----- TERMINALS -----
E201 and E202	19A134263P1	Contact, electrical: sim to Selectro 229-1082-00-0-590.
G211	19A134263P1	Contact, electrical: sim to Selectro 229-1082-00-0-590.
		----- JACKS AND RECEPTACLES -----
J201	19A130924G1	Connector, receptacle: coaxial, jack type; sim to Cinch 14H11613.
J205	19B219374G1	Connector: 9 contacts.
		----- INDUCTORS -----
L202	19A129773G1	Coil.
L203	19A129774P1	Coil.
L204	19A129773G1	Coil.
L205	19B219457P6	Coil.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

SYMBOL	GE PART NO.	DESCRIPTION	SYMBOL	GE PART NO.	DESCRIPTION	SYMBOL	GE PART NO.	DESCRIPTION
L206	7488079P40	Choke, RF: 5.60 μ h $\pm$ 10%, 0.15 ohms DC res max; sim to Jeffers 4422-1K.			LOW PASS FILTER MODULE 19C327024G1 406-450 MHz (LL) 19C327024G2 450-512 MHz (H) 19C327024G7 406-450 MHz (LL) DUPLEX 19C327024G8 450-512 MHz (H) DUPLEX (Added by REV A)	K201	19A116722P1	Hermetic sealed: 125 ohms $\pm$ 20%, 1 form C contact, 9.6 to 15.8 VDC (over the temp range indicated). (Includes J206 & J207).
L207	7488079P13	Choke, RF: 5.60 μ h $\pm$ 10%, 0.30 ohms DC res max; sim to Jeffers 4421-4K.			----- CAPACITORS -----	W4280 thru W4283		----- CABLES ----- (Part of printed board 19D423111P1).
L208LL	19B219457P6	Coil.						POWER AMPLIFIER KIT 19A130484G5 (Deleted by REV A)
L208L	19A130650P1	Coil.	C4290LL	19A116952P10	Metallized teflon: 10 pf $\pm$ 0.5 pf, 250 VDCW.			----- TERMINALS -----
L208M	19A130650P1	Coil.	C4290H	19A116952P9	Metallized teflon: 9 pf $\pm$ 0.5 pf, 250 VDCW.	G213	7878455P2	Terminal, lug.
L208H	19A130650P1	Coil.	C4291LL	19A116952P20	Metallized teflon: 20 pf $\pm$ 0.5 pf, 250 VDCW.	G4214	7878455P2	Terminal, lug.
L209	19A129773G1	Coil.	C4291H	19A116952P18	Metallized teflon: 18 pf $\pm$ 0.5 pf, 250 VDCW.			----- PLUGS -----
		----- TRANSISTORS -----	C4292LL	19A116952P13	Metallized teflon: 13 pf $\pm$ 0.5 pf, 250 VDCW.			----- TRANSISTORS -----
Q201	19A134237P1	Silicon, NPN.	C4292H	19A116952P12	Metallized teflon: 12 pf $\pm$ 0.5 pf, 250 VDCW.	P206 and P207	4036634P1	Contact, electrical; sim to AMP 42428-2.
Q202	19A134164P2	Silicon, NPN; sim to Type 2N5945.	C4293	19A116679P220J	Silver mica: 220 pf $\pm$ 5%, 250 VDCW.	Q215	19A116742P1	Silicon, NPN.
Q203LL	19A134171P4	Silicon, NPN.			----- INDUCTORS -----			----- CABLES -----
Q203L	19A134239P2	Silicon, NPN.	L4291LL	19B226709G2	Jumper.	W217	19A130552G2	Cable, RF: approx 6-1/2 inches long.
Q203M	19A134239P2	Silicon, NPN.	L4291H	19B226709G1	Jumper.	W220	19B227087G1	Jumper.
Q203H	19A134239P2	Silicon, NPN.	L4292LL	19B226709G2	Jumper.	W221	19B227088G1	Jumper.
		----- RESISTORS -----	L4292H	19B226709G1	Jumper.			----- MISCELLANEOUS -----
R201	3R152P102J	Composition: 1K ohms $\pm$ 5%, 1/4 w.			----- JACKS AND RECEPTACLES -----		5492178P2	Washer, spring tension: sim to Wallace Barnes 375-20. (Used with Q202).
R202	3R152P304J	Composition: 300K ohms $\pm$ 5%, 1/4 w.	J202 and J203	19A130924G1	Connector, receptacle: coaxial, jack type; sim to Cinch 14H11613.		19A130465P1	Spacer. (Used with Q202).
R203*	7147161P13	Composition: 4.7 ohms $\pm$ 5%, 1/2 w. Added to G1 by REV A. Deleted in G2-G4 by REV D. Added to G2-G4 by REV F.	J206 and J207	19A134263P2	Contact, electrical: sim to Selectro 229-1082-00-0-590.		N207P15C6	Nut, hex: No. 8-32. (Used with Q202).
R204*	3R77P270J	Composition: 27 ohms $\pm$ 5%, 1/2 w. G2-G4 of REV C $\times$ earlier:	J208	4033513P4	Contact, electrical: sim to Bead Chain L93-3.		N44P9010C6	Machine, screw: No. 4-40 x 5/8. (Used with Q203).
	3R77P220J	Composition: 22 ohms $\pm$ 5%, 1/2 w.					19A134016P1	Insulator, bushing. (Used with Q215).
R205	3R152P220J	Composition: 22 ohms $\pm$ 5%, 1/4 w.					19A116023P1	Insulator, plate. (Used with Q215).
							N80P13016C6	Machine screw, phillips head: No. 6-32 x 1. (Secures Filter Assembly- Quantity 5).
R206	3R77P100J	Composition: 10 ohms $\pm$ 5%, 1/2 w.	K201	19B209558P1	Hermetic sealed: 180 to 341 ohms coil res, 2 form C contacts, 8.0 to 16.3 VDC; sim to GE 3SAV1760A2. (Includes J206 & J207).		19B201074P306	Tap screw, Phillips POZIDRIV®: No. 6-32 x 3/8. (Secures Filter Board).
R207	3R152P680J	Composition: 68 ohms $\pm$ 5%, 1/4 w.			----- RELAYS -----		19C321441P1	Insulator. (Located under 20 Watt Module).
R209	3R77P561J	Composition: 560 ohms $\pm$ 5%, 1/2 w.			----- CABLES ----- (Part of printed board 19D423812P1 & 19D424367P1).		19B209502P1	Terminal, stud. (Located at C4290-C4292).
R210 thru R212	19C320212P1	Shunt resistor.	W4280 thru W4283				4036555P1	Insulator, washer: nylon. (Used with Q201).
R213	19A116559P102	Variable, cermet: 5K ohms $\pm$ 20%, .5 w; sim to CTS Series 360.			LOW PASS FILTER MODULE 19C321424G2 (Deleted by REV A)		N80P9005C6	Machine screw: No. 4-40 x 5/16. (Secures Q215).
R214	3R77P100J	Composition: 10 ohms $\pm$ 5%, 1/2 w.			----- CAPACITORS -----		7141225P2	Hex nut: No. 4-40. (Secures Q215).
R215	3R152P270J	Composition: 27 ohms $\pm$ 5%, 1/4 w.					N402P35C6	Washer, steel: No. 4. (Secures Q215).
R216*	3R77P100J	Composition: 10 ohms $\pm$ 5%, 1/2 w. Added by REV G.			----- INDUCTORS -----		19B201074P308	Tap screw, Phillips POZIDRIV®: No. 6-32 x 1/2. (Secures Filter Board- Quantity 1).
		----- TRANSFORMERS -----					7150186P115	Spacer. (Used with W221).
T201 thru T203	19A130446G1	Coil.	C4280H	19A116952P9	Metallized teflon: 9 pf $\pm$ 0.5 pf, 250 VDCW.		19B201074P312	Tap screw, Phillips POZIDRIV®: No. 6-32 x 3/4. (Secures W221 to spacer).
		----- INTEGRATED CIRCUITS -----	C4281H	19A116952P18	Metallized teflon: 18 pf $\pm$ 0.5 pf, 250 VDCW.		19B219404G1	Filter web.
U201	19D423127G1	Power Control.	C4282H	19A116952P12	Metallized teflon: 12 pf $\pm$ 0.5 pf, 250 VDCW.		19B226212G1	Heat sink. (Inside section).
		----- VOLTAGE REGULATORS -----	C4283H	19A116679P220J	Silver mica: 220 pf $\pm$ 5%, 250 VDCW.		19B226212G3	Heat sink. (Outside section).
VR201	4036887P1	Zener: 500 mW, 2.3 v. nominal.	L4281 and L4282	19B226709G1	Jumper.		19D417513G1	Cover, Heat Sink Assembly.
VR202	4036887P5	Zener: 500 mW, 5.4 v. nominal.			----- JACKS AND RECEPTACLES -----		7139898P3	Hex nut: No. 1/4-28. (Secures C297).
		----- CABLES ----- (Part of printed board 19D423005P1).	J202 and J203	19A130924G1	Connector, receptacle: coaxial, jack type; sim to Cinch 14H11613.		N80P13004C6	Machine screw: No. 6-32 x 1/4. (Secures 20 Watt Module).
W201 thru W205		(Part of printed board 19D423005P1).	J206 and J207		(Part of K201).			
W207		(Part of printed board 19D423005P1).	J208	4033513P4	Contact, electrical: sim to Bead Chain L93-3.			
W208	19B226733G2	Jumper.						

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 previous revisions. Refer to the Parts List for descriptions of parts affected by these revisions.

- REV. A - Power Amplifier Assembly 19D424895G1-4 & G18-21
To incorporate new low pass Filter. Deleted 19C321424. Added 19C327024.
- REV. A - 20 Watt Module 19C321347G2-4
To improve power output at cold temperatures. Added CR204 and CR205.
- REV. B - To improve power output. Changed Q203.
- REV. C - To improve operation. Deleted C258. Added C252.
- REV. D - To improve operation. Deleted C209 and R203. Changed R204.
- REV. E - To improve operation. Changed C206.
- REV. F - To improve operation. Changed C207-C209 and R203.
- REV. A - 20 Watt Module 19C321347G1
To improve operation. Added C209 and R203.
- REV. B - To improve station operation. Changed C213.
- REV. C - To improve operation. Changed C206.
- REV. D - To improve operation. Changed C207-C209 and R203.
- REV. G - 20 Watt Module 19C321347G2
To improve stability. Added R216 and C262.
- REV. H - To improve operation. Deleted C262.
- REV. J - To increase power output at low end of 450-470 MHz range. Changed C219 and C252LA.