MOBILE RADIO

MAINTENANCE MANUAL
406—512 MHz, 75 WATT POWER AMPLIFIER ASSEMBLY
I9D424888G9-12 & G26-29 (MOBILE AND STATION)
I9D424895G9-12 & G26-29 (CONTINUOUS DUTY STATION)

TABLE OF CONTENTS

DESCRIPTION

The PA assembly uses two amplifier modules to provide rated output power. The PA Driver module uses three RF Power Transistors to provide RF drive to the PA module. The Power Amplifier module consists of two paralleled RF Power Transistors connected by a transmission line splitter arrangement at the input and a combiner arrangement at the output. R213, located on the PA Driver module, is used to adjust the output power over a range of 20 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, driver current, 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 Drive 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 milliwatts, 50 ohm output of Q201 is coupled to the base of a second power 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 Driver 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.

GENERAL ELECTRIC

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

Following Driver amplifier Q203 is a 50-ohm matching network (C226, C227, C229, T203 and C259) that matches the 20-watt output of Q203 to the 50-ohm input of the PA module, through 50-ohm micro strip W204 and a 50-ohm cable W219.

On the PA module, the RF input is applied to the RF power splitter board. The RF power splitter consisting of micro strip transmission line W4205 and R4203, and has a 50-ohm input and output impedance. The outputs of the power splitter are applied to the two identical Class C power amplifiers (Q4205 and Q4206) through their respective identical matching networks.

Supply voltages for Q4205 and Q4206 are coupled through identical stabilizing networks and the collector feed networks. Supply voltage is measured in position G on the 15-volt range with the polarity switch in the (-) position (read as 15 volts full scale). The combined collector current for Q4205 and Q4206 is metered across paralleled tapped manganin resistors R210 and R211 located on the PA Driver module. The reading is taken in Position G in the Test 1 position on the 3-Volt scale with the "High" Sensitivity Button pressed, and read as 30 amperes full scale.

The outputs of Q4205 and Q4206 are coupled through identical matching networks to the RF power combiner board. The RF power combiner consists of micro strip transmission line W4206 and R4209, and has a 50-ohm input and output impedance. The combiner adds the outputs of Q4205 and Q4206, and applies the combined RF output to the Low Pass Filter/Antenna Switch module via W216. Capacitors C4243 through C4252 provide isolation for ± ground operation.

The input to the Low Pass Filter to the antenna switch K201 is coupled through the 50-ohm micro strip W4280. 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 Driver module, consists of CR201, Power Control IC (U201), RT201, 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 Q201 (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 20 Watts to rated power output.

Temperature protection is provided by Q3, Q4 in IC U201 and thermistor RT201 which is mounted on the PA heatsink. Under normal operating conditions, the circuit is inactive (Q3 is on and Q4 is off). When the heatsink temperature reaches approximately 115°C the resistance of RT201 decreases. This increases the base voltage applied to Q3, turning it off. Turning off Q3 allows Q4 to turn on, decreasing the voltage at Power Adjust potentiometer R213. This reduces the base voltage to Q5 which causes Q6 and Q215 to conduct less, reducing the collector voltage to Q202 (Ampl-2). This reduces the transmitter output power, keeping the heatsink at a maximum of approximately 115°C. When the heatsink temperature decreases below 115°C, the temperature control circuit turns off, allowing the normal transmitter power output.

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

GENERAL ELECTRIC*
U.S.A.

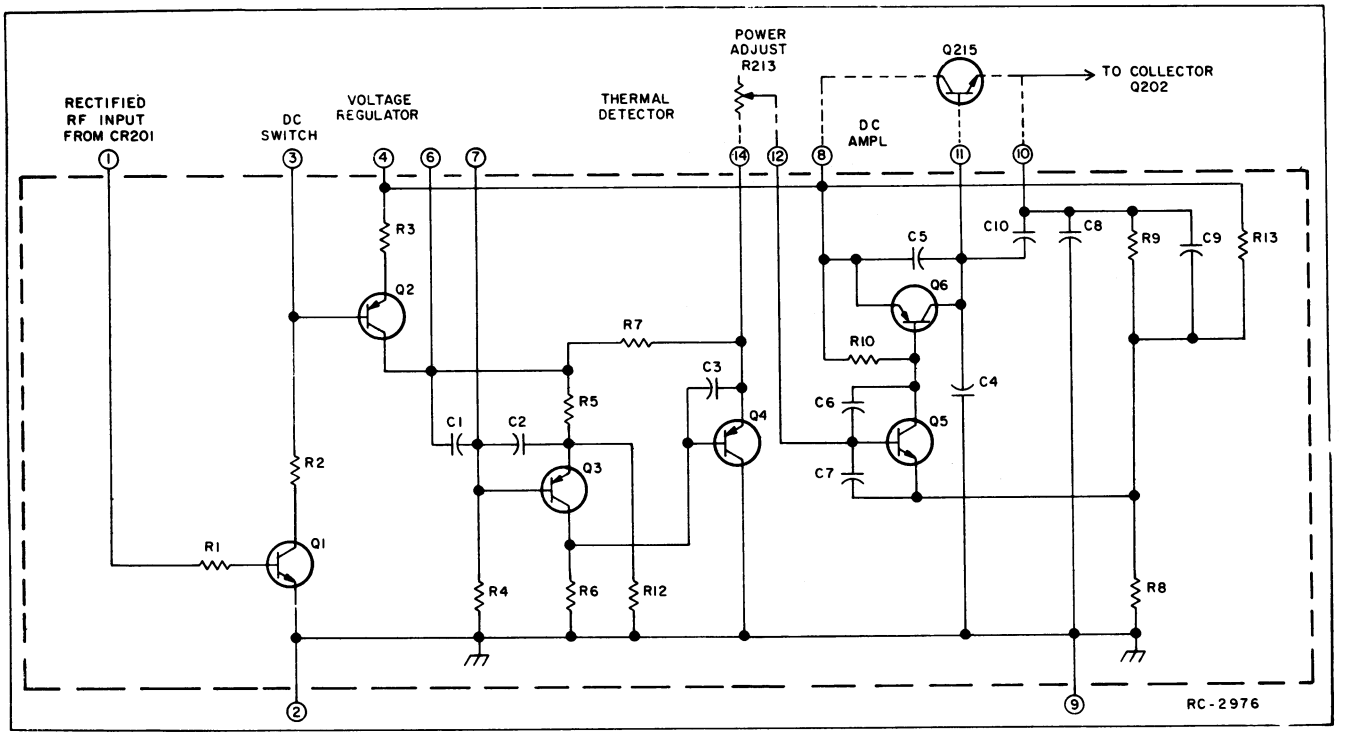
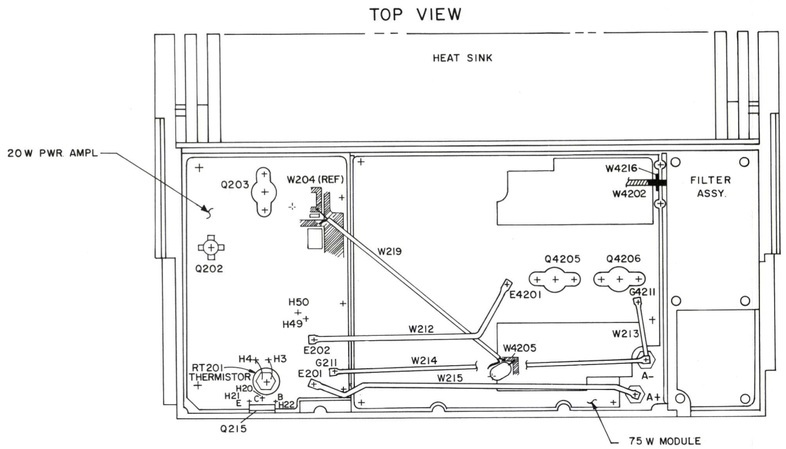


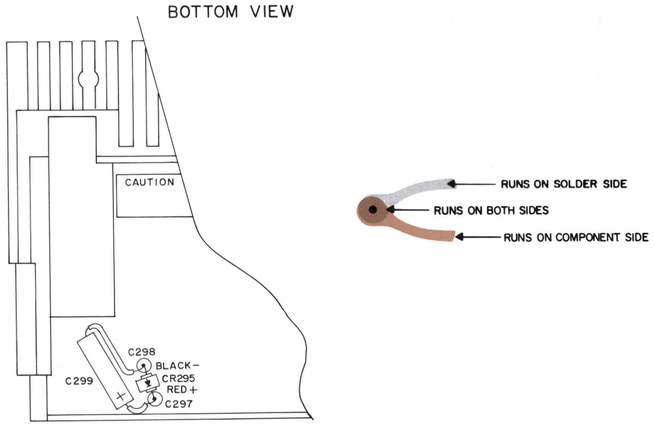
Figure 1 - Power Control IC - U201

PA ASSEMBLY

TOP VIEW



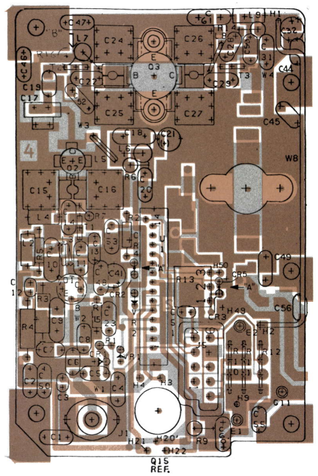
BOTTOM VIEW



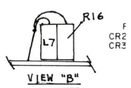
(19D424205, Rev. 2)

20 WATT MODULE

TOP

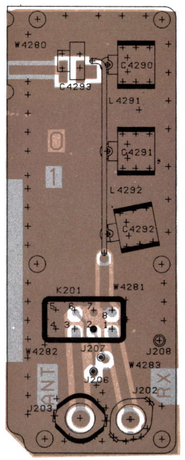


NOTES:
1. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN. FOR COMPLETE DESIGNATION, PREFIX WITH 200 SERIES. EXAMPLE: Q3 = Q203, R15 = R215, C47 = C247, ETC.
2. C9 USED IN GROUP I ONLY. DA JUMPER IN C9 MTG. HOLES FOR GROUPS 2,3 & 4



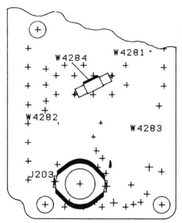
(19C327344, Rev. 9)
(19B226633, Sh. 1, Rev. 4)
(19B226633, Sh. 2, Rev. 2)

MOBILE & STATION FILTER BOARD

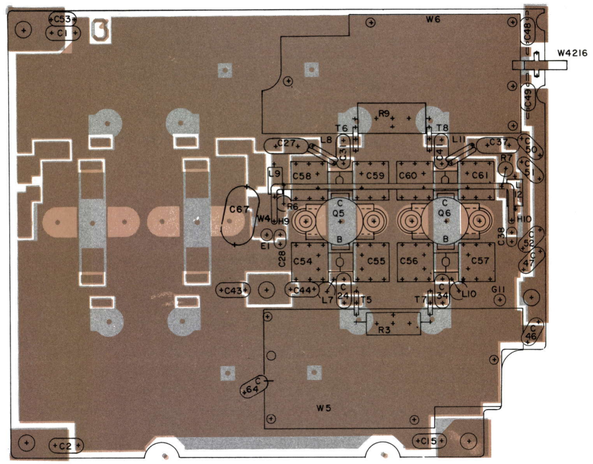


(19C327643, Rev. 1)
(19B227265, Sh. 1, Rev. 1)
(19B227265, Sh. 2, Rev. 0)

DUPLEX STATION FILTER BOARD

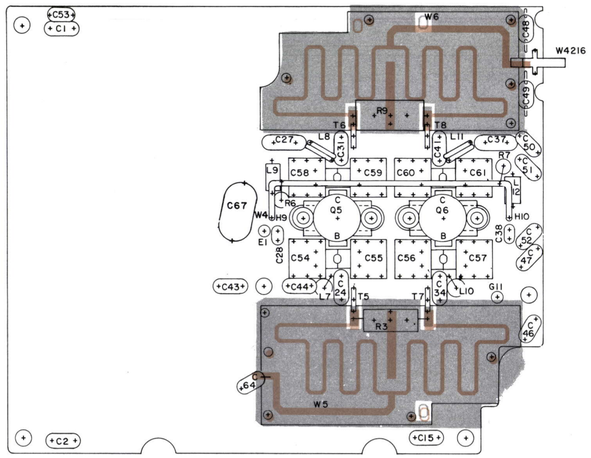


75 WATT MODULE



NOTE:
1. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN, FOR COMPLETE DESIGNATION PREFIX WITH 4200 SERIES.
EXAMPLE: Q5 = Q4205 ; C45 = C4245 , R3 = R4203 ETC.

(19D424214, Rev. 3)
(19B226639, Sh. 1, Rev. 3)
(19B226639, Sh. 2, Rev. 0)

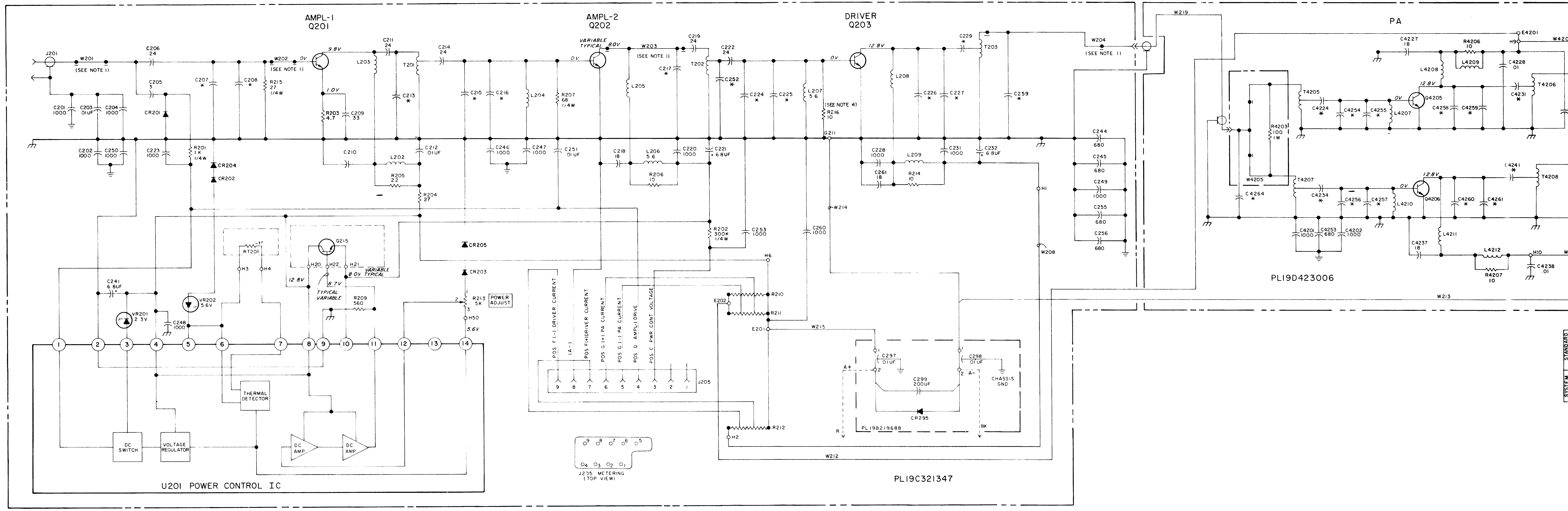
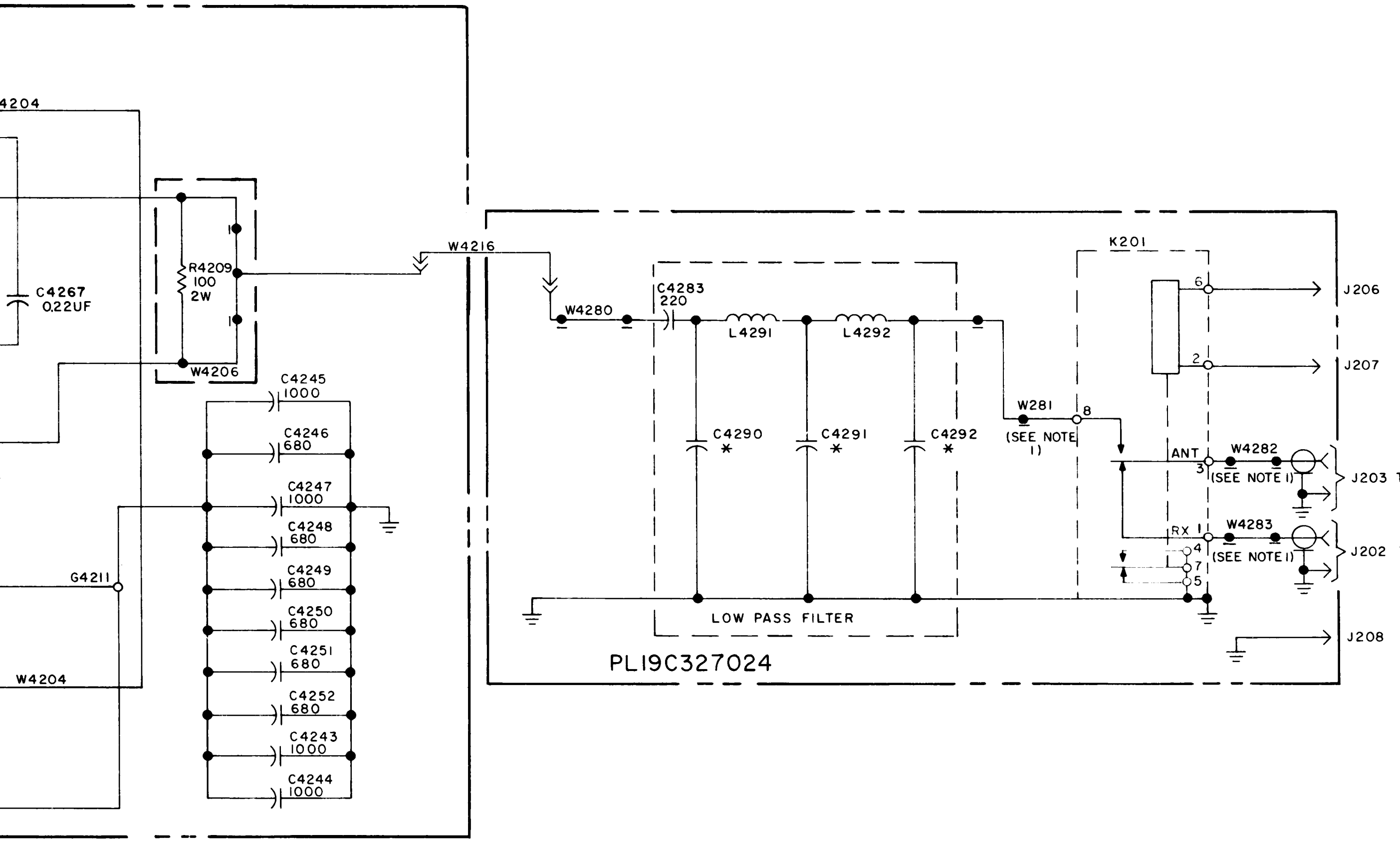


NOTE:
1. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN, FOR COMPLETE DESIGNATION PREFIX WITH 4200 SERIES.
EXAMPLE: Q5 = Q4205 ; C45 = C4245 , R3 = R4203 ETC.

(19D424214, Rev. 3)
(19B226713, Sh. 1, Rev. 0)
(19B226713, Sh. 2, Rev. 0)

OUTLINE DIAGRAM

75 WATT UHF MOBILE & INTERMITTENT DUTY STATION POWER AMPLIFIER

PA ASM	REV LTR	HEAT SINK ASSY	REV LTR	20 WATT MODULE	REV LTR	75 WATT MODULE	REV LTR		REV LTR	FREQUENCY
STANDARD PKG										
PL19D424888G9	A	PL19B219688G7		PL19C321347G1	D	PL19D423006G1	B	PL19C327024G3		406-450MHZ
PL19D424888G10	A	PL19B219688G7		PL19C321347G2	J	PL19D423006G2	B	PL19C327024G4		450-470 MHZ
PL19D424888G11	A	PL19B219688G7		PL19C321347G3	F	PL19D423006G3	B	PL19C327024G4		470-494 MHZ
PL19D424888G12	A	PL19B219688G7		PL19C321347G4	F	PL19D423006G4	B	PL19C327024G4		494-512 MHZ
SYSTEM PKG										
PL19D424888G26	A	PL19B219688G19		PL19C321347G1	D	PL19D423006G1	B	PL19C327024G3		406-450 MHZ
PL19D424888G27	A	PL19B219688G19		PL19C321347G2	J	PL19D423006G2	B	PL19C327024G4		450-470 MHZ
PL19D424888G28	A	PL19B219688G19		PL19C321347G3	F	PL19D423006G3	B	PL19C327024G4		470-494 MHZ
PL19D424888G29	A	PL19B219688G19		PL19C321347G4	F	PL19D423006G4	B	PL19C327024G4		494-512 MHZ

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 75 WATTS OUTPUT. THESE READINGS WILL VARY DEPENDING ON THE SETTING OF POWER ADJUST CONTROL R213

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.

NOTES:
1. MICROSTRIP PART OF P.W.
2. ALL COMPONENT MARKED WITH ASTERISK (*) SEE COMPONENT VALUE TABLE.
3. ⏊ INDICATES A−
   ⏚ INDICATES VEHICLE GROUND.
4. R216 USED ONLY IN 450-470MHZ RANGE.

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.

* COMPONENT VALUES

COMP IDENT	● LL 406-425 425-450	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	47	43	43
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
C259	6	4	4	2.2
C4224	33	24	24	24
C4231	33	24	24	24
C213	5			
C4234	33	24	24	24
C4241	33	24	24	24
C4254	43	33	33	32
C4255	43	33	33	28
C4256	43	33	33	32
C4257	43	33	33	28
C4258	47	43	37	32
C4259	47	37	37	33
C4260	47	43	37	32
C4261	47	37	37	33
C4264	6	5	1	
C4290	10	9	9	9
C4291	20	18	18	18
C4292	13	12	12	12

● C4264 NOT PRESENT IN 425 - 450 MHZ
SEE MOD INSTRUCTION 19A136813

(19B222152, Rev. 27)

SCHEMATIC DIAGRAM

75 WATT UHF MOBILE & INTERMITTENT DUTY STATION POWER AMPLIFIER

PARTS LIST

LBI30210D

406-512 MHz, 75 WATT POWER AMPLIFIER
19D424888G9-G12 ("M" SERIES MOBILE, INT. DUTY STATION)
19D424888G26-G29 ("E" SERIES MOBILE)

SYMBOL	GE PART NO.	DESCRIPTION
		- - - - - - - - - - TRANSISTORS - - - - - - - - -
Q215	19A116742P1	Silicon, NPN.
		- - - - - - - - - - THERMISTORS - - - - - - - - - -
RT201	19A129379G1	Thermistor: 40K ohms ±20%, color code white; sim to Carborundum Type M0806J-5.
		- - - - - - - - - - - CABLES - - - - - - - - - -
W212	19A130486G1	Jumper.
W213	19B227092P1	Jumper.
W214	19B226725G1	Jumper.
W215	19B227074G1	Jumper.
W219	19A130552G3	Cable, RF: approx 4-3/4 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 ±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.
C205	19A116656P3J0	Ceramic disc: 3 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C206*	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
		In REV B & earlier in G1, In REV D & earlier in G2-G4:
	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*	19A116656P9J0	Ceramic disc: 9 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
		In REV E & earlier:
	19A116656P6J0	Ceramic disc: 6 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C207M*	19A116656P7J0	Ceramic disc: 7 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
		In REV E & earlier:
	19A116656P6J0	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.
C209*	19A116656P33J0	Ceramic disc: 33 pf ±5%, 500 VDCW, temp coef 0 PPM. Added by REV F.
C209LL*	7489162P15	Silver mica: 33 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15. Added by REV A. Deleted by REV D.
C209L	7489162P11	Silver mica: 22 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15. Deleted by REV D.
C209M*	7489162P11	Silver mica: 22 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15. Deleted by REV D.
C209H	7489162P13	Silver mica: 27 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15. Deleted by REV D.
C210LL	7489162P13	Silver mica: 27 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C210L	7489162P9	Silver mica: 18 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C210M	7489162P9	Silver mica: 18 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C210H	7489162P9	Silver mica: 18 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
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.
C211M	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.
C213LL*	19A116656P5J0	Ceramic disc: 5 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
		In REV A & earlier:
	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.
C214M	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C214H	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C215LL	19A116952P47	Metallized teflon: 47 pf ±2%, 250 VDCW.
C215L	19A116952P47	Metallized teflon: 47 pf ±2%, 250 VDCW.
C215M	19A116952P43	Metallized teflon: 43 pf ±2%, 250 VDCW.
C215H	19A116952P43	Metallized teflon: 43 pf ±2%, 250 VDCW.
C216LL	19A116952P51	Metallized teflon: 51 pf ±2%, 250 VDCW.
C216L	19A116952P43	Metallized teflon: 43 pf ±2%, 250 VDCW.
C216M	19A116952P43	Metallized teflon: 43 pf ±2%, 250 VDCW.
C216H	19A116952P39	Metallized teflon: 39 pf ±2%, 250 VDCW.
C217LL	19A116679P18D	Metallized teflon: 18 pf ±.5 pf, 250 VDCW.
C217L	19A116679P16D	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	7489162P9	Silver mica: 18 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C219*	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap. Deleted by REV J.
C219L*	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM. Added by REV J.
C220	19A116655P20	Ceramic disc: 1000 pf ±10%, 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.
C222M	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 ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C224LL	19A116952P41	Metallized teflon: 41 pf ±2%, 250 VDCW.
C224L	19A116952P35	Metallized teflon: 35 pf ±2%, 250 VDCW.
C224M	19A116952P35	Metallized teflon: 35 pf ±2%, 250 VDCW.
C224H	19A116952P32	Metallized teflon: 32 pf ±2%, 250 VDCW.
C225LL	19A116952P43	Metallized teflon: 43 pf ±2%, 250 VDCW.
C225L	19A116952P35	Metallized teflon: 35 pf ±2%, 250 VDCW.
C225M	19A116952P33	Metallized teflon: 33 pf ±2%, 250 VDCW.
C225H	19A116952P32	Metallized teflon: 32 pf ±2%, 250 VDCW.
C226LL	19A116952P47	Metallized teflon: 47 pf ±2%, 250 VDCW.
C226L	19A116952P43	Metallized teflon: 43 pf ±2%, 250 VDCW.
C226M	19A116952P37	Metallized teflon: 37 pf ±2%, 250 VDCW.
C226H	19A116952P35	Metallized teflon: 35 pf ±2%, 250 VDCW.
C227LL	19A116952P43	Metallized teflon: 43 pf ±2%, 250 VDCW.
C227L	19A116952P37	Metallized teflon: 37 pf ±2%, 250 VDCW.
C227M	19A116952P37	Metallized teflon: 37 pf ±2%, 250 VDCW.
C227H	19A116952P35	Metallized teflon: 35 pf ±2%, 250 VDCW.
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.
C229M	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.
C231	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C232	19A134202P15	Tantalum: 6.8 µf ±20%, 35 VDCW.
C241	19A134202P15	Tantalum: 6.8 µf ±20%, 6 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	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 C-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 ±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.
C258L*	19A116656P3J0	Ceramic disc: 3 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM. Deleted by REV C.
C259LL	19A116656P6J0	Ceramic disc: 6 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.
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/°C.
C260	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C261	7489162P9	Silver mica: 18 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C262*	19A116114P2044	Ceramic: 27 pf ±5%, 100 VDCW; temp coef -80 PPM. Added to G2 by REV G. Deleted in G2 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 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 µh ±10%, 0.15 ohms DC res max; sim to Jeffers 4422-1K.
L207	7488079P13	Choke, RF: 5.60 µh ±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.
		In REV A & earlier:
	19A134239P1	Silicon, NPN.
Q203M*	19A134239P2	Silicon, NPN.
		In REV A & earlier:
	19A134239P1	Silicon, NPN.
Q203H*	19A134239P2	Silicon, NPN.
		In REV A & earlier:
	19A134239P1	Silicon, NPN.
		- - - - - - - - - - RESISTORS - - - - - - - - -
R201	3R152P102J	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. Deleted in G2-G4 by REV D. Added to G1 by REV A. Added to G2-G4 by REV F.
R204*	3R77P270J	Composition: 27 ohms ±5%, 1/2 w.
		Earlier than REV A in G1, in REV C & earlier in G2-G4:
	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.
R209	3R77P561J	Composition: 560 ohms ±5%, 1/4 w.
R210 thru 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.
R216*	3R77P100J	Composition: 10 ohms ±5%, 1/2 w. Added to G2 by REV G. Deleted in G2 by REV H.
		- - - - - - - - - - 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.
		75 WATT MODULE 19D423006G1 406-450 MHz (LL) 19D423006G9 425-450 MHz (LL) 19D423006G2 450-470 MHz (L) 19D423006G3 470-494 MHz (M) 19D423006G4 494-512 MHz (H)
		- - - - - - - - - - CAPACITORS - - - - - - - - -
C4201 and C4202	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C4224LL	19A116656P33J0	Ceramic disc: 33 pf ±5%, 500 VDCW, temp coef 0 PPM.
C4224L	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C4224M	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C4224H	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C4227	7489162P9	Silver mica: 18 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C4228	19A116192P1	Ceramic: 0.01 µf ±20%, 50 VDCW; sim to Erie 8121 SPECIAL.
C4231LL	19A116656P33J0	Ceramic disc: 33 pf ±5%, 500 VDCW, temp coef 0 PPM.
C4231L	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C4231M	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C4231H	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C4234LL	19A116656P33J0	Ceramic disc: 33 pf ±5%, 500 VDCW, temp coef 0 PPM.
C4234L	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C4234M	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C4234H	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C4237	7489162P9	Silver mica: 18 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C4238	19A116192P1	Ceramic: 0.01 µf ±20%, 50 VDCW; sim to Erie 8121 SPECIAL.
C4241LL	19A116656P33J0	Ceramic disc: 33 pf ±5%, 500 VDCW, temp coef 0 PPM.
C4241L	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C4241M	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C4241H	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C4243 thru C4245	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C4246	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C4247	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C4248 thru C4253	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C4254LL	19A116952P43	Metallized teflon: 43 pf ±2%, 250 VDCW.
C4254L	19A116952P33	Metallized teflon: 33 pf ±2%, 250 VDCW.
C4254M	19A116952P33	Metallized teflon: 33 pf ±2%, 250 VDCW.
C4254H	19A116952P32	Metallized teflon: 32 pf ±2%, 250 VDCW.
C4255LL	19A116952P43	Metallized teflon: 43 pf ±2%, 250 VDCW.
C4255L	19A116952P33	Metallized teflon: 33 pf ±2%, 250 VDCW.
C4255M	19A116952P33	Metallized teflon: 33 pf ±2%, 250 VDCW.
C4255H	19A116952P28	Metallized teflon: 28 pf ±2%, 250 VDCW.
C4256LL	19A116952P43	Metallized teflon: 43 pf ±2%, 250 VDCW.
C4256L	19A116952P33	Metallized teflon: 33 pf ±2%, 250 VDCW.
C4256M	19A116952P33	Metallized teflon: 33 pf ±2%, 250 VDCW.
C4256H	19A116952P32	Metallized teflon: 32 pf ±2%, 250 VDCW.
C4257LL	19A116952P43	Metallized teflon: 43 pf ±2%, 250 VDCW.
C4257L	19A116952P33	Metallized teflon: 33 pf ±2%, 250 VDCW.
C4257M	19A116952P33	Metallized teflon: 33 pf ±2%, 250 VDCW.
C4257H	19A116952P28	Metallized teflon: 28 pf ±2%, 250 VDCW.
C4258LL	19A116952P47	Metallized teflon: 47 pf ±2%, 250 VDCW.
C4258L	19A116952P43	Metallized teflon: 43 pf ±2%, 250 VDCW.
C4258M	19A116952P37	Metallized teflon: 37 pf ±2%, 250 VDCW.
C4258H	19A116952P32	Metallized teflon: 32 pf ±2%, 250 VDCW.
C4259LL	19A116952P47	Metallized teflon: 47 pf ±2%, 250 VDCW.
C4259L	19A116952P37	Metallized teflon: 37 pf ±2%, 250 VDCW.
C4259M	19A116952P37	Metallized teflon: 37 pf ±2%, 250 VDCW.
C4259H	19A116952P33	Metallized teflon: 33 pf ±2%, 250 VDCW.
C4260LL	19A116952P47	Metallized teflon: 47 pf ±2%, 250 VDCW.
C4260L	19A116952P43	Metallized teflon: 43 pf ±2%, 250 VDCW.
C4260M	19A116952P37	Metallized teflon: 37 pf ±2%, 250 VDCW.
C4260H	19A116952P32	Metallized teflon: 32 pf ±2%, 250 VDCW.
C4261LL	19A116952P47	Metallized teflon: 47 pf ±2%, 250 VDCW.
C4261L	19A116952P37	Metallized teflon: 37 pf ±2%, 250 VDCW.
C4261M	19A116952P37	Metallized teflon: 37 pf ±2%, 250 VDCW.
C4261H	19A116952P33	Metallized teflon: 33 pf ±2%, 250 VDCW.
C4264LL	19A116656P6J0	Ceramic disc: 6 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C4264L	19A116656P5J0	Ceramic disc: 5 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C4264M	19A134100P19	Ceramic disc: 1 pf ±0.1 pf, 100 VDCW.
C4267*	19A116080P109	Polyester: 0.22 µf ±10%, 50 VDCW. Added by REV A.
		- - - - - - - - - - TERMINALS - - - - - - - - -
E4201	19A134263P1	Contact, electrical: sim to Selectro 229-1082-00-0-590.
G4211	19A134263P1	Contact, electrical: sim to Selectro 229-1082-00-0-590.
		- - - - - - - - - - INDUCTORS - - - - - - - - -
L4207	7488079P13	Choke, RF: 5.60 µh ±10%, 0.30 ohms DC res max; sim to Jeffers 4421-4K.
L4208	19A130447G2	Coil.
L4209	19A129773G1	Coil.
L4210	7488079P13	Choke, RF: 5.60 µh ±10%, 0.30 ohms DC res max; sim to Jeffers 4421-4K.
L4211	19A130447G1	Coil.
L4212	19A129773G1	Coil.
		- - - - - - - - - - TRANSISTORS - - - - - - - - -
Q4205 and Q4206	19A134243P1	Silicon, NPN.
		- - - - - - - - - - RESISTORS - - - - - - - - -
R4203	3R78P101J	Composition: 100 ohms ±5%, 1 w.
R4206 and R4207	3R77P100J	Composition: 10 ohms ±5%, 1/2 w.
R4209*	3R79P101J	Composition: 100 ohms ±5%, 2 w.
		In REV A & earlier:
	3R78P101J	Composition: 100 ohms ±5%, 1 w.
		- - - - - - - - - - TRANSFORMERS - - - - - - - -
T4205 thru T4208	19A130446G1	Coil.
		- - - - - - - - - - - CABLES - - - - - - - - - -
W4201 and W4202		(Part of printed board 19C321425G1).
W4204	19B226708G1	Jumper.
W4216	19A130479P1	Strap.
		LOW PASS FILTER 19C327024G3 406-450 MHz (LL) 19C327024G4 450-512 MHz (H) (Added to 19D424888 by REV A)
		- - - - - - - - - - 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 ±5%, 250 VDCW.
		- - - - - - - - - - INDUCTORS - - - - - - - - - -
L4291LL	19B226709G2	Jumper. (Includes L4292LL).
L4291H	19B226709G1	Jumper. (Includes L4292H).
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 229-1071.
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 3SAV1760A2.
		- - - - - - - - - - CABLES - - - - - - - - - - -
W4280 thru W4283		(Part of printed board 19D424367P1).
		LOW PASS FILTER MODULE 19C321424G4 (Deleted from 19D424888 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 ±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 ±20%, 1 form C contact, 9.6 to 15.8 VDC (over the temp range indicated). (Includes J206 and J207).
		- - - - - - - - - - CABLES - - - - - - - - - - -
W4280 thru W4283		(Part of printed board 19D423111P1).
		HEAT SINK 19B219688G7 ("M" SERIES) 19B219688G19 ("E" SERIES)
		- - - - - - - - - - CAPACITORS - - - - - - - - -
C297 and C298	19A116708P1	Ceramic, feed-thru: 0.01 µf +100% -0%; sim to Erie Style 327050X5W0103P.
C299	19A115680P10	Electrolytic: 200 µf +150% -10%, 18 VDCW; sim to Mallory Type TTX.
		- - - - - - - - DIODES AND RECTIFIERS - - - - -
CR295	19A116783P1	Silicon.
		- - - - - - - - - MISCELLANEOUS - - - - - - - -
	5492178P2	Washer, spring tension: sim to Wallace Barnes 375-20. (Used with Q202).
	19A130465P1	Spacer. (Used with Q202).
	N207P15C6	Nut, hex: No. 8-32. (Used with Q202).
	N44P9010C6	Screw, machine: No. 4-40 x 5/8. (Used with Q203, Q4205, Q4206).
	19A134016P1	Insulator, bushing. (Used with Q215).
	19A116023P1	Insulator, plate. (Used with Q215).
	19B201074P320	Tap screw, Phillips POZIDRIV®: No. 6-32 x 1-1/4. (Secures Mobile Filter Assembly).
	19B201074P306	Tap screw, Phillips POZIDRIV®: No. 6-32 x 3/8. (Secures Filter Board in Mobile and at jumper between 75 Watt Module and Filter Board).
	19C321442P1	Insulator. (Located under 75 Watt Module).
	19C321441P1	Insulator. (Located under 20 Watt Module).
	19B209502P1	Terminal, stud. (Located at C4280-C4282).
	4036555P1	Insulator, washer: nylon. (Used with Q201).
	N80P9006C6	Machine screw: No. 4-40 x 3/8. (Secures Q215 in Mobile).
	7141225P2	Hex nut: No. 4-40. (Secures Q215).
	N402P35C6	Washer, steel: No. 4. (Secures Q215).
	N80P13010C6	Machine screw: No. 6-32 x 5/8. (Secures Mobile 20 Watt Module).
	19A129434P1	Washer, fiber. (Located on terminals of C297 & C298).
	19D416732G7	Heat sink. ("M" SERIES).
	19D417105G7	Heat sink. ("E" SERIES).
	19A129639P1	Cover. ("E" SERIES).

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

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 descriptions of parts affected by these revisions.

REV. A - Power Amplifier Assembly 19D424888G9-G13 and G26-G30

To incorporate new low pass filter. Deleted 19C321424. Added 19C327024.

REV. A - 20-Watt Module 19C321347G2-G4

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. 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 - 20-Watt Module 19C321347G1

REV. F - 20-Watt Module 19C321347G2-4

To decrease spurious outputs. Changed C207L, M and C209. Deleted C208L, M and H. Added R203 to Groups 2-4.

REV. A - 75-Watt Module 19D423006G1-4

To improve operation. Added C4267.

REV. B - To improve performance. Changed R4209.

REV. G - 20 Watt Module 19C321347G2

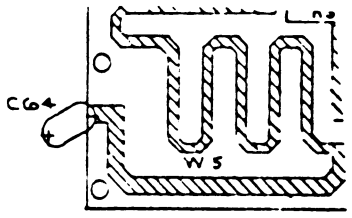
To improve performance. Added R216 and C262.

REV. H - 20 Watt Module 19C321347G2

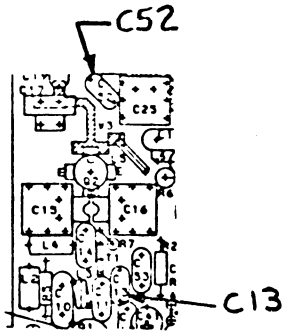
To improve operation. Deleted C262.

REV. J - 20 Watt Module 19C321347G2

To increase power at low end of 450-470 MHz range. Changed C219 and C252.



19D423006



19C321347

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

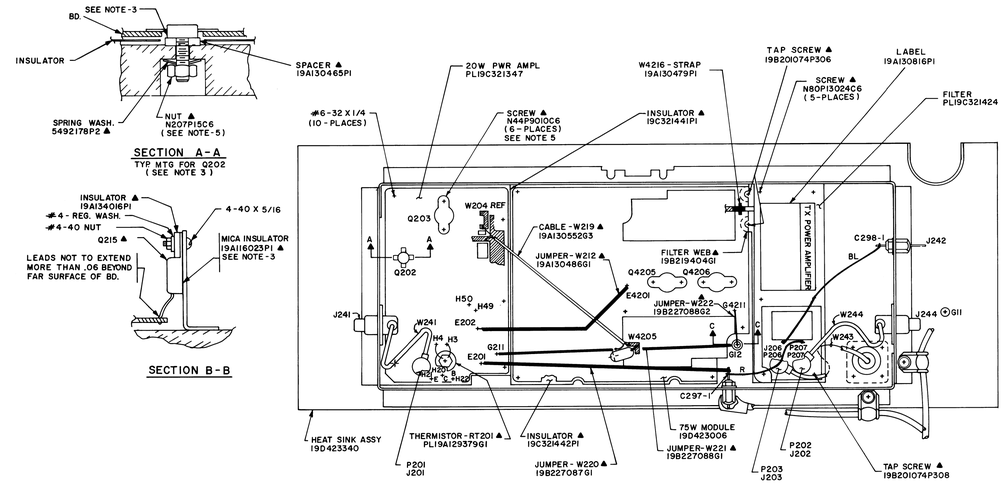
1. REMOVE C64 ON PWB 19D423006 AND C13 ON PWB 19C321347.
2. FOR FREQ BAND 440-450MHz, REMOVE C52 ON PWB 19C321347.
3. ATTACH LABEL NP280544 TO AN INSIDE SURFACE IN AN AREA THAT WILL BE VISIBLE ON THE ASSEMBLED P.A.

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

(19A136813, Rev. 2)

MODIFICATION INSTRUCTION

420—450 MHz



(190423350, Sh. 3, Rev. 5)

NOTES:

1. ▲ PART OF KIT 19A130484.
2. CENTER CONDUCTOR OF RG19 MUST BE SOLDERED TO W204 & W205 IN AREA INDICATED. NOTE: SOLDER OR BRAID TO GROUND ON 20W MODULE 19C321347 AND 75W MODULE 190423006 AS SHOWN.
3. APPLY SILICONE GREASE TO BOTH SURFACES OF TRANSISTOR INSULATOR (19A116023P1), BETWEEN BOTH MTG SURFACES OF SPACER (19A130465P1) & BETWEEN MTG. SURFACE OF RT201 Q4205, Q4206, 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.
7. RECOMMENDED INSTALLATION PROCEDURE OF 20 WATT MODULE (19C321347) IS: ASSEMBLE ALL HARDWARE LOOSE, THEN TORQUE Q202, THEN TORQUE Q203, THEN TIGHTEN MOUNTING HARDWARE.
8. RECOMMENDED INSTALLATION PROCEDURE OF 75 WATT MODULE (190423006) IS: ASSEMBLE ALL HARDWARE LOOSE, THEN TORQUE Q4205 AND Q4206, THEN TIGHTEN MOUNTING HARDWARE.
9. SEE INTERCONNECTION DIAG., 19R622187.

OUTLINE DIAGRAM

75 WATT UHF CONTINUOUS DUTY
STATION POWER AMPLIFIER

PA ASM	REV LTR	20 WATT MODULE	REV LTR	75 WATT MODULE	REV LTR	FILTER MODULE	REV LTR	FREQUENCY
PL19D424895G9	A	PL19C321347G1	D	PL19D423006G1	B	PL19C327024G3		406-450 MHZ
PL19D424895G10	A	PL19C321347G2	J	PL19D423006G2	B	PL19C327024G4		450-470 MHZ
PL19D424895G11	A	PL19C321347G3	F	PL19D423006G3	B	PL19C327024G4		470-494 MHZ
PL19D424895G12	A	PL19C321347G4	F	PL19D423006G4	B	PL19C327024G4		494-512 MHZ
DUPLEX PL19D424895G26	A	PL19C321347G1	D	PL19D423006G1	B	PL19C327024G5		406-450 MHZ
DUPLEX PL19D424895G27	A	PL19C321347G2	J	PL19D423006G2	B	PL19C327024G6		450-470 MHZ
DUPLEX PL19D424895G28	A	PL19C321347G3	F	PL19D423006G3	B	PL19C327024G6		470-494 MHZ
DUPLEX PL19D424895G29	A	PL19C321347G4	F	PL19D423006G4	B	PL19C327024G6		494-512 MHZ

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 75 WATTS OUTPUT. THESE READINGS WILL VARY DEPENDING ON THE SETTING OF POWER ADJUST CONTROL R213.

NOTES.

1. MICROSTRIP PART OF P.W.
2. ALL COMPONENTS MARKED WITH ASTERISK (*) SEE COMPONENT VALUE TABLE.
3. (symbol) INDICATES A-
   (symbol) INDICATES CHASSIS GROUND.
4. CALLED FOR ON 19D417526
5. CALLED FOR ON 19D424895.
6. R216 USED ONLY IN 450-470MHZ RANGE.

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.

* COMPONENT VALUES

COMP IDENT	● LL 406-425 425-450	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
C4224	33	24	24	24
C4231	33	24	24	24
C4234	33	24	24	24
C4241	33	24	24	24
C4254	43	33	33	32
C4255	43	33	33	28
C4256	43	33	33	32
C4257	43	33	33	28
C4258	47	43	37	32
C4259	47	37	37	33
C4260	47	43	37	32
C4261	47	37	37	33
C4264	6	5	1	
C4290	10	9	9	9
C4291	20	18	18	18
C4292	13	12	12	12

● C4264 NOT PRESENT IN 425-450 MHZ
SEE MOD INSTRUCTION 19A136313

(19R622187, Rev. 24)

SCHEMATIC DIAGRAM

75 WATT UHF CONTINUOUS DUTY
STATION POWER AMPLIFIER

PARTS LIST

LBI30521C

406-512 MHz, 75 WATT STATION POWER AMPLIFIER
19D424895G9-G12 (CONTINUOUS DUTY)
19D424895G26-G29 (CONTINUOUS DUTY - DUPLEX)

SYMBOL	GE PART NO.	DESCRIPTION
		- - - - - - - - - CAPACITORS - - - - - - - - -
C297 and C298	19A116708P1	Ceramic, feed-thru: 0.01 µf +100% -0%, 500 VDCW; sim to Erie Style 327050X5W0103P.
		- - - - - - - - - - PLUGS - - - - - - - - - -
P203 and P207	4036334P1	Contact, electrical; sim to AMP 42428-2.
		- - - - - - - - - - TRANSISTORS - - - - - - - - -
Q215	19A116742P1	Silicon, NPN.
		- - - - - - - - - - THERMISTORS - - - - - - - - -
RT201	19A129779G1	Thermistor: 40K ohms ±20%, color code white; sim to Carborundum Type M0530J-5.
		- - - - - - - - - - CABLES - - - - - - - - - -
W212	19A130486G1	Jumper.
W219	19A130552G3	Cable: 4.70 inches long.
W220	19B227087G1	Jumper.
W221	19B227088G1	Jumper.
W222	19B227088G2	Jumper.
W243		CABLE ASSEMBLY 19A129312G6
		- - - - - - - - - JACKS AND RECEPTACLES - - - - - -
J243	5491689P108	Connector, plug: includes 10 inch cable.
		- - - - - - - - - - PLUGS - - - - - - - - - -
P203		Connector, Includes receptacle and adaptor. (Order separately).
	4029493P1	Receptacle, coaxial: sim to Amphenol 83-79S.
	4029082P2	Adaptor.
W244	5491689P104	Cable, RF: approx 3-5/8 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 ±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.
C205	19A116656P3J0	Ceramic disc: 3 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C206*	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM. In REV B & earlier in G1, In REV D & earlier in G2-G4:
	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C207LL	19A116655P8J0	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:
	19A116656P8J0	Ceramic disc: 8 pf ±0.5 pf, 500 VDCW.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

SYMBOL	GE PART NO.	DESCRIPTION
C207M*	19A116656P7J0	Ceramic disc: 7 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM. In REV E & earlier:
	19A116656P6J0	Ceramic disc: 6 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C207N	19A116656P5J0	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.
C209*	19A116656P33J0	Ceramic disc: 33 pf ±5%, 500 VDCW, temp coef 0 PPM. Added to G1 by REV D, to G2-G4 by REV F.
C209LL*	7489162P15	Silver mica: 33 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15. Added by REV A. Deleted by REV D.
C209L*	7489162P11	Silver mica: 22 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15. Deleted by REV D.
C209M*	7489162P11	Silver mica: 22 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15. Deleted by REV D.
C209N*	7489162P13	Silver mica: 27 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15. Deleted by REV D.
C210LL	7489162P13	Silver mica: 27 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C210L	7489162P9	Silver mica: 18 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C210M	7489162P9	Silver mica: 18 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C210N	7489162P9	Silver mica: 18 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
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.
C211M	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C211N	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.
C213LL*	19A116656P5J0	Ceramic disc: 5 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM. In REV A & earlier:
	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.
C214M	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C214N	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C215LL	19A116952P47	Metallized teflon: 47 pf ±2%, 250 VDCW.
C215L	19A116952P47	Metallized teflon: 47 pf ±2%, 250 VDCW.
C215M	19A116952P43	Metallized teflon: 43 pf ±2%, 250 VDCW.
C215N	19A116952P43	Metallized teflon: 43 pf ±2%, 250 VDCW.
C216LL	19A116952P51	Metallized teflon: 51 pf ±2%, 250 VDCW.
C216L	19A116952P43	Metallized teflon: 43 pf ±2%, 250 VDCW.
C216M	19A116952P43	Metallized teflon: 43 pf ±2%, 250 VDCW.
C216N	19A116952P39	Metallized teflon: 39 pf ±2%, 250 VDCW.
C217LL	19A116679P18D	Metallized teflon: 18 pf ±.5 pf, 250 VDCW.
C217L	19A116679P16D	Metallized teflon: 16 pf ±.5 pf, 250 VDCW.
C217M	19A116679P15D	Metallized teflon: 15 pf ±.5 pf, 250 VDCW.
C217N	19A116679P13D	Metallized teflon: 13 pf ±.5 pf, 250 VDCW.

SYMBOL	GE PART NO.	DESCRIPTION
C218	7489162P9	Silver mica: 18 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C219*	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap. Deleted by REV J.
C219L*	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM. Added by REV J.
C220	19A116655P20	Ceramic disc: 1000 pf ±10%, 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.
C222M	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C222N	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C223	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C224LL	19A116952P41	Metallized teflon: 41 pf ±2%, 250 VDCW.
C224L	19A116952P35	Metallized teflon: 35 pf ±2%, 250 VDCW.
C224M	19A116952P35	Metallized teflon: 35 pf ±2%, 250 VDCW.
C224N	19A116952P32	Metallized teflon: 32 pf ±2%, 250 VDCW.
C225LL	19A116952P43	Metallized teflon: 43 pf ±2%, 250 VDCW.
C225L	19A116952P35	Metallized teflon: 35 pf ±2%, 250 VDCW.
C225M	19A116952P33	Metallized teflon: 33 pf ±2%, 250 VDCW.
C225N	19A116952P32	Metallized teflon: 32 pf ±2%, 250 VDCW.
C226LL	19A116952P47	Metallized teflon: 47 pf ±2%, 250 VDCW.
C226L	19A116952P43	Metallized teflon: 43 pf ±2%, 250 VDCW.
C226M	19A116952P37	Metallized teflon: 37 pf ±2%, 250 VDCW.
C226N	19A116952P35	Metallized teflon: 35 pf ±2%, 250 VDCW.
C227LL	19A116952P43	Metallized teflon: 43 pf ±2%, 250 VDCW.
C227L	19A116952P37	Metallized teflon: 37 pf ±2%, 250 VDCW.
C227M	19A116952P37	Metallized teflon: 37 pf ±2%, 250 VDCW.
C227N	19A116952P35	Metallized teflon: 35 pf ±2%, 250 VDCW.
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.
C229M	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C229N	19A116656P24J0	Ceramic disc: 24 pf ±5%, 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.
C241	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	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 C-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.
C252N*	19A116656P3J0	Ceramic disc: 3 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM. Added by REV C.
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.
C258L*	19A116656P3J0	Ceramic disc: 3 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM. Deleted by REV C.

SYMBOL	GE PART NO.	DESCRIPTION
C259LL	19A116656P6J0	Ceramic disc: 6 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.
C259M	19A116656P4J0	Ceramic disc: 4 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C259N	19A134100P20	Ceramic disc: 2.2 pf ±0.1 pf, 100 VDCW; temp coef 0 ±120 PPM/°C.
C260	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C261	7489162P9	Silver mica: 18 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C262*	19A116114P2044	Ceramic: 27 pf ±5%, 100 VDCW; temp coef -80 PPM. Added to G2 by REV G. Deleted in G2 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 by REV A.
		- - - - - - - - - - TERMINALS - - - - - - - - - -
E201 and E202	19A134263P1	Contact, electrical: sim to Selectro 229-1082-00-0-000.
G211	19A134263P1	Contact, electrical: sim to Selectro 229-1082-00-0-000.
		- - - - - - - JACKS AND RECEPTACLES - - - - -
J201	19A130924G1	Connector, receptacle: coaxial, jack type; sim to Cinch 14U1613.
J205	19B219374G1	Connector: 9 contacts.
		- - - - - - - - - - INDUCTORS - - - - - - - - - -
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 4422-1K.
L207	7488079P13	Choke, RF: 5.60 µh ±10%, 0.30 ohms DC res max; sim to Jeffers 4421-4K.
L208LL	19B219457P6	Coil.
L208L	19A130650P1	Coil.
L208M	19A130650P1	Coil.
L208N	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. In REV A & earlier:
	19A134239P1	Silicon, NPN.
Q203M*	19A134239P2	Silicon, NPN. In REV A & earlier:
	19A134239P1	Silicon, NPN.
Q203N*	19A134239P2	Silicon, NPN. In REV A & earlier:
	19A134239P1	Silicon, NPN.
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R201	3R152P102J	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. Deleted in G2-G4 by REV D, Added to G1 by REV A.

SYMBOL	GE PART NO.	DESCRIPTION
R204*	3R77P270J	Composition: 27 ohms ±5%, 1/2 w. Earlier than REV A in G1, in REV C & earlier in G2-G4:
	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.
R209	3R77P561J	Composition: 560 ohms ±5%, 1/4 w.
R210 thru 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.
R216*	3R77P100J	Composition: 10 ohms ±5%, 1/2 w. Added to G2 by REV C. Deleted in G2 by REV H.
		- - - - - - - - - - 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.
		75 WATT MODULE 19D423006G1 406-425 MHz (LL) 19D423406G9 425-450 MHz (LL) 19D423006G2 450-470 MHz (L) 19D423006G3 470-494 MHz (M) 19D423006G4 494-512 MHz (H)
		- - - - - - - - - - CAPACITORS - - - - - - - - -
C4201 and C4202	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C4224LL	19A116656P33J0	Ceramic disc: 33 pf ±5%, 500 VDCW, temp coef 0 PPM.
C4224L	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C4224M	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C4224N	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C4227	7489162P9	Silver mica: 18 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C4228	19A116192P1	Ceramic: 0.01 µf ±20%, 50 VDCW; sim to Erie 8121 SPECIAL.
C4231LL	19A116656P33J0	Ceramic disc: 33 pf ±5%, 500 VDCW, temp coef 0 PPM.
C4231L	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C4231M	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C4231N	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C4234LL	19A116656P33J0	Ceramic disc: 33 pf ±5%, 500 VDCW, temp coef 0 PPM.
C4234L	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C4234M	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C4234N	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C4237	7489162P9	Silver mica: 18 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.

SYMBOL	GE PART NO.	DESCRIPTION
C4238	19A116192P1	Ceramic: 0.01 µf ±20%, 50 VDCW; sim to Erie 8121 SPECIAL.
C4241LL	19A116656P33J0	Ceramic disc: 33 pf ±5%, 500 VDCW, temp coef 0 PPM.
C4241L	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C4241M	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C4241H	19A116656P24J0	Ceramic disc: 24 pf ±5%, 500 VDCW, temp coef 0 PPM.
C4243 thru C4245	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C4246	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C4247	19A116655P20	Ceramic disc: 1000 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C4248 thru C4253	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C4254LL	19A116952P43	Metallized teflon: 43 pf ±2%, 250 VDCW.
C4254L	19A116952P33	Metallized teflon: 33 pf ±2%, 250 VDCW.
C4254M	19A116952P33	Metallized teflon: 33 pf ±2%, 250 VDCW.
C4254H	19A116952P32	Metallized teflon: 32 pf ±2%, 250 VDCW.
C4255LL	19A116952P43	Metallized teflon: 43 pf ±2%, 250 VDCW.
C4255L	19A116952P33	Metallized teflon: 33 pf ±2%, 250 VDCW.
C4255M	19A116952P33	Metallized teflon: 33 pf ±2%, 250 VDCW.
C4255H	19A116952P28	Metallized teflon: 28 pf ±2%, 250 VDCW.
C4256LL	19A116952P43	Metallized teflon: 43 pf ±2%, 250 VDCW.
C4256L	19A116952P33	Metallized teflon: 33 pf ±2%, 250 VDCW.
C4256M	19A116952P33	Metallized teflon: 33 pf ±2%, 250 VDCW.
C4256H	19A116952P32	Metallized teflon: 32 pf ±2%, 250 VDCW.
C4257LL	19A116952P43	Metallized teflon: 43 pf ±2%, 250 VDCW.
C4257L	19A116952P33	Metallized teflon: 33 pf ±2%, 250 VDCW.
C4257M	19A116952P33	Metallized teflon: 33 pf ±2%, 250 VDCW.
C4257H	19A116952P28	Metallized teflon: 28 pf ±2%, 250 VDCW.
C4258LL	19A116952P47	Metallized teflon: 47 pf ±2%, 250 VDCW.
C4258L	19A116952P43	Metallized teflon: 43 pf ±2%, 250 VDCW.
C4258M	19A116952P37	Metallized teflon: 37 pf ±2%, 250 VDCW.
C4258H	19A116952P32	Metallized teflon: 32 pf ±2%, 250 VDCW.
C4259LL	19A116952P47	Metallized teflon: 47 pf ±2%, 250 VDCW.
C4259L	19A116952P37	Metallized teflon: 37 pf ±2%, 250 VDCW.
C4259M	19A116952P37	Metallized teflon: 37 pf ±2%, 250 VDCW.
C4259H	19A116952P33	Metallized teflon: 33 pf ±2%, 250 VDCW.
C4260LL	19A116952P47	Metallized teflon: 47 pf ±2%, 250 VDCW.
C4260L	19A116952P43	Metallized teflon: 43 pf ±2%, 250 VDCW.
C4260M	19A116952P37	Metallized teflon: 37 pf ±2%, 250 VDCW.
C4260H	19A116952P32	Metallized teflon: 32 pf ±2%, 250 VDCW.
C4261LL	19A116952P47	Metallized teflon: 47 pf ±2%, 250 VDCW.
C4261L	19A116952P37	Metallized teflon: 37 pf ±2%, 250 VDCW.
C4261M	19A116952P37	Metallized teflon: 37 pf ±2%, 250 VDCW.
C4261H	19A116952P33	Metallized teflon: 33 pf ±2%, 250 VDCW.
C4264LL	19A116656P6J0	Ceramic disc: 6 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C4264L	19A116656P5J0	Ceramic disc: 5 pf ±0.5 pf, 500 VDCW, temp coef 0 PPM.
C4264M	19A134100P19	Ceramic disc: 1 pf ±0.1 pf, 100 VDCW.
C4267*	19A116080P109	Polyester: 0.22 µf ±10%, 50 VDCW. Added by REV A.
		---------- TERMINALS ----------
E4201	19A134263P1	Contact, electrical: sim to Selectro 229-1082-00-0-590.
E4211	19A134263P1	Contact, electrical: sim to Selectro 229-1082-00-0-590.

SYMBOL	GE PART NO.	DESCRIPTION
		---------- INDUCTORS ----------
L4207	7488079P13	Choke, RF: 5.60 µh ±10%, 0.30 ohms DC res max; sim to Jeffers 4421-4K.
L4208	19A130447G2	Coil.
L4209	19A129773G1	Coil.
L4210	7488079P13	Choke, RF: 5.60 µh ±10%, 0.30 ohms DC res max; sim to Jeffers 4421-4K.
L4211	19A130447G1	Coil.
L4212	19A129773G1	Coil.
		---------- TRANSISTORS ----------
Q4205 and Q4206	19A134243P1	Silicon, NPN.
		---------- RESISTORS ----------
R4203	3R78P101J	Composition: 100 ohms ±5%, 1 w.
R4206 and R4207	3R77P100J	Composition: 10 ohms ±5%, 1/2 w.
R4209*	3R79P101J	Composition: 100 ohms ±5%, 2 w.
		In REV A & earlier:
	3R78P101J	Composition: 100 ohms ±5%, 1 w.
		---------- TRANSFORMERS ----------
T4205 thru T4208	19A130446G1	Coil.
		---------- CABLES ----------
W4201 and W4202		(Part of printed board 19C321425G1).
W4204	19B226708G1	Jumper.
W4216	19A130479P1	Strap.
		LOW PASS FILTER 19C327024G3 406-450 MHz (LL) 19C327024G4 450-512 MHz (H) 19C327024G5 406-450 MHz (LL) DUPLEX 19C327024G6 450-512 MHz (H) DUPLEX (Added to 19D424895 by REV A)
		---------- 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 ±5%, 250 VDCW.
		---------- INDUCTORS ----------
L4291LL	19B226709G2	Jumper. (Includes L4292LL).
L4291H	19B226709G1	Jumper. (Includes L4294H).
L4292LL		(Part of L4291LL).
L4292H		(Part of L4291H).
		------- JACKS AND RECEPTACLES -------
J202 and J203	19A130924G1	Connector, receptacle: coaxial, jack type; sim to Cinch 14H1613.
J206 and J207	19A134263P2	Contact, electrical: sim to Selectro 229-1071.
J208	403351 3P4	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 3SAV1760A2.

SYMBOL	GE PART NO.	DESCRIPTION
		---------- CABLES ----------
W4280 thru W4283		(Part of printed board 19D424367P1).
		LOW PASS FILTER MODULE 19C321424G6 (Deleted from 19D424895 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	19A116679P22OJ	Silver mica: 220 pf ±5%, 250 VDCW.
		---------- INDUCTORS ----------
L4281 and L4282	19B226709G1	Jumper.
		------- JACKS AND RECEPTACLES -------
J202 and J203	19A130924G1	Connector, receptacle: coaxial, jack type; sim to Cinch 14H1613.
J206 and J207		(Part of K201).
J208	403351 3P4	Contact, electrical: sim to Bead Chain L93-3.
		---------- RELAYS ----------
K201	19A116722P1	Hermetic sealed: 125 ohms ±20%, 1 form C contact, 9.6 to 15.8 VDC (over the temp range indicated). (includes J206 and J207).
		---------- CABLES ----------
W4280 thru W4283		(Part of printed board 19D423111P1).
		FRAME ASSEMBLY 19D417526G3
		---------- CABLES ----------
W241	5491689P104	Cable, RF: approx 3-5/8 inches long.
		---------- MISCELLANEOUS ----------
	5492178P2	Washer, spring tension: sim to Wallace Barnes 375-20. (Used with Q202).
	19A130465P1	Spacer. (Used with Q202).
	N207P15C6	Nut, hex: No. 8-32. (Used with Q202).
	N44P9010C6	Screw, machine: No. 4-40 x 5/8. (Used with Q203, Q4205, Q4206).
	19A134016P1	Insulator, bushing. (Used with Q215).
	19A116023P1	Insulator, plate. (Used with Q215).
	N80P13024C6	Machine screw, Phillips head: No. 6-32 x 1-1/2. (Secures Filter Assembly).
	19B201074P306	Tap screw, Phillips POZIDRIV®: No. 6-32 x 3/8. (Secures Filter Board and at Jumper between 75 Watt Module and Filter Board).
	19C321442P1	Insulator. (Located under 75 Watt Module).
	19C321441P1	Insulator. (Located under 20 Watt Module).
	19B209502P1	Terminal, stud. (Located at C4280-C4282).
	4036555P1	Insulator, washer: nylon. (Used with Q201).
	N80P9005C6	Machine screw: No. 4-40 x 5/16. (Secures Q215).
	7141225P2	Hex nut: No. 4-40. (Secures Q215).
	N402P35C6	Washer, steel: No. 4. (Secures Q215).
	19B201074P308	Tap screw, Phillips POZIDRIV®: No. 6-32 x 1/2. (Secures Filter Board).
	7150186P115	Spacer. (Located at junction of W221 and W222).

SYMBOL	GE PART NO.	DESCRIPTION
	19B219404G1	Filter web.
	19B201074P314	Tap screw, Phillips POZIDRIV®: No. 6-32 x 7/8. (Secures W221 and W222 to spacer).
	19B226212G1	Heat sink. (Center sections- Quantity 3).
	19B226212G2	Heat sink. (W241 end- Quantity 1).
	19B226212G3	Heat sink. (Caution nameplate end- Quantity 1).
	19D417513G1	Cover, Heat Sink Assembly.
	7139898P3	Hex nut: No. 1/4-28. (Secures C297 and C298).
	19B201074P204	Tap screw, Phillips POZIDRIV®: No. 4-40 x 1/4. (Secures W241).

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 descriptions of parts affected by these revisions.

REV. A - 20-Watt Module 19C321347G2-G4

To incorporate new low pass filter. Deleted 19C321424. Added 19C327024.

REV. A - 20-Watt Module 19C321347G2-G4

To improve power output at cold temperatures. Added C8204 and C8205.

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 E204.

REV. E - To improve operation. Changed C206.

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 - 20-Watt Module 19C321347G1

REV. F - 20-Watt Module 19C321347G2, 3 & 4

To decrease spurious outputs. Changed C207L, M and C209. Deleted C208L, M & H. Added R203 to Groups 2, 3 and 4.

REV. A - 75-Watt Module 19D423006G1-4

To improve operation. Added C4267.

REV. B - To improve performance. Changed R4209.

REV. G - 20 Watt Module 19C321347G2

To improve performance. Added R216 and C262.

REV. H - 20 Watt Module 19C321347G2

To improve operation. Deleted C262.

REV. J - 20 Watt Module 19C321347G2

To increase power at low end of 450-470 MHz range. Changed C219 and C252.