



TYPE 212-E

MODULATOR, A-F AND R-F POWER AMPLIFIER, OSCILLATOR

ENGINEERING INFORMATION

GENERAL RATINGS

Number of electrodes 3
 Filament Voltage 14 volts
 Current 6 amperes
 Type Thoriated Tungsten

Average Characteristic Values Calculated at:

$E_b = 2000$ $E_c = -90$

Plate Current 170 ma.
 Amplification Factor 16
 Plate Resistance 1900 ohms
 Mutual Conductance 8500 micromhos

Average Direct Interelectrode Capacities:

Grid to Plate 18.8 uuf
 Grid to Filament 14.9 uuf
 Plate to Filament 8.6 uuf

Maximum Overall Dimensions:

Length 13 5/8 inches
 Diameter 3 5/8 inches
 Bulb T-28
 Base Large 4-Pin
 Type of Cooling Air
 Net Weight 21 1/2 oz.

MAXIMUM RATINGS

Maximum D-C Plate Voltage Modulated 1500 volts
 Maximum D-C Plate Voltage Unmodulated 3000 volts
 Maximum D-C Plate Current Modulated 325 ma.
 Maximum D-C Plate Current Unmodulated 350 ma.
 Maximum Plate Dissipation 350 watts
 Maximum D-C Grid Current 125 ma.
 Maximum R-F Grid Current 10 amp.

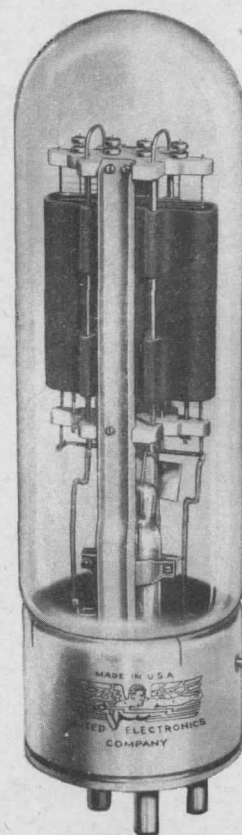
Frequency Rating for Operating Conditions with Maximum
 Rated Power Input and Nominal Output:

Below 1.5 megacycles
 Above 200 meters

*Maximum Frequency Rating with Reduced Power Input
 and Output:

Below*4.5 megacycles
 Above*67 meters

* For operation at the higher frequencies, the plate voltage, plate current, plate dissipation, and d-c grid current should not exceed 50% of the Maximum Ratings. The R-F grid current should never exceed the maximum rated value.



REPLACES UNITED TYPE 312-E

This sturdy triode has a plate dissipation rating of 325 watts for class B and class C service. A pair of these tubes in class B audio service will deliver 650 watts.

INSTALLATION

The base of the UNITED 212-E is designed to fit a Western Electric 113A or similar type socket. The tube may be mounted either in a vertical position, or in a horizontal position with the plate on edge. Ample air space should be provided for ventilation.

The filament of the 212-E should be operated at the rated value of 14 volts. Operation at other than rated value may result in loss of filament emission and short life. Except in cases where freedom from hum is essential the filament of the 212-E should be operated preferably from an a-c source.

The plate dissipation of the 212-E should never exceed the values given under Maximum Ratings and Typical Operation Conditions.

GRAPHITE ANODE

A specially processed graphite anode is used in this tube type because of several specific advantages over metals such as tantalum, molybdenum, and nickel. The radiating area of graphite is approximately twice the projected anode area because of its surface porosity and it will dissipate at least four times more heat than metal.

Graphite, being infusible will not warp or twist. The exact form of graphite is maintained under all temperatures; hence constant inter-element relationships and uniform characteristics result. The inherent advantages of graphite over metal are of primary importance in designing tubes of this type for long and satisfactory service.

All ratings given are for continuous service. Higher ratings are permissible for intermittent operation. Additional data will be furnished upon request.

A. F. POWER AMPLIFIER AND MODULATOR—CLASS A

Maximum D. C. Plate Voltage.....	1500	volts
Maximum Plate Dissipation	275	watts

Typical Operation:

Filament Voltage	14	14 a-c volts
D. C. Plate Voltage	1250	1500 volts
D. C. Grid Voltage	-40	-57 volts
Peak Grid Swing	35	52 volts
D. C. Plate Current	200	170 ma.
Plate Input	250	255 watts
Load Resistance	3000	5000 ohms
Power Output	40	50 watts

GRID BIAS MODULATOR

Maximum D. C. Plate Voltage.....	3000	volts
Maximum Plate Dissipation	200	watts

Typical Operation:

Filament Voltage	14	14 a-c volts
D. C. Plate Voltage	3000	volts
D. C. Grid Voltage	-260	volts
Load Impedance	8000	ohms
Peak Power Output	200	watts

A. F. POWER AMPLIFIER AND MODULATOR—CLASS B

Maximum D. C. Plate Voltage.....	2000	volts
Maximum D. C. Plate Current { Averaged over any	325	ma.
Maximum Plate Dissipation { audio-freq. cycle.....	300	watts

Typical Operation (2 tubes):

Filament Voltage	14	14 a-c volts
D. C. Plate Voltage	1500	2000 volts
D. C. Grid Voltage	-75	-105 volts
Zero-Sig. Plate Cur. (per tube).....	50	40 ma.
Max.-Sig. Plate Cur. (per tube).....	300	300 ma.
Load Resistance (per tube).....	1475	2000 ohms
Effective Load Res. (plate to plate).....	5900	8000 ohms
Power Output	500	650 watts

R. F. POWER AMPLIFIER—CLASS B TELEPHONY

(Carrier Conditions — Modulation Factor = 1.0)

Maximum D. C. Plate Voltage.....	2000	volts
Maximum D. C. Plate Current.....	300	ma.
Maximum Plate Dissipation	325	watts
Maximum R. F. Grid Current.....	8	amp.

Typical Operation:

Filament Voltage	14	14 a-c volts
D. C. Plate Voltage	1500	2000 volts
D. C. Grid Voltage	-90	-120 volts
D. C. Plate Current	300	300 ma.
Power Output	150	200 watts

PLATE MODULATED R. F. POWER AMPLIFIER**CLASS C TELEPHONY**

(Carrier Conditions — Modulation Factor = 1.0)

Maximum D. C. Plate Voltage.....	1500	volts
Maximum D. C. Plate Current.....	300	ma.
Maximum Plate Dissipation	325	watts
Maximum R. F. Grid Current.....	8	amp.
Maximum D. C. Grid Current.....	80	ma.

Typical Operation:

Filament Voltage	14	14 a-c volts
D. C. Plate Voltage	1000	1500 volts
D. C. Grid Voltage	-125	-200 volts
D. C. Plate Current	300	300 ma.
D. C. Grid Current†	30	16 ma.
Driving Power†	12	7 watts
Power Output	200	300 watts

† Subject to wide variations depending on the impedance of the load circuit. The driver stage should have a tank circuit of good regulation and should be capable of delivering considerably more than the required driving power.

