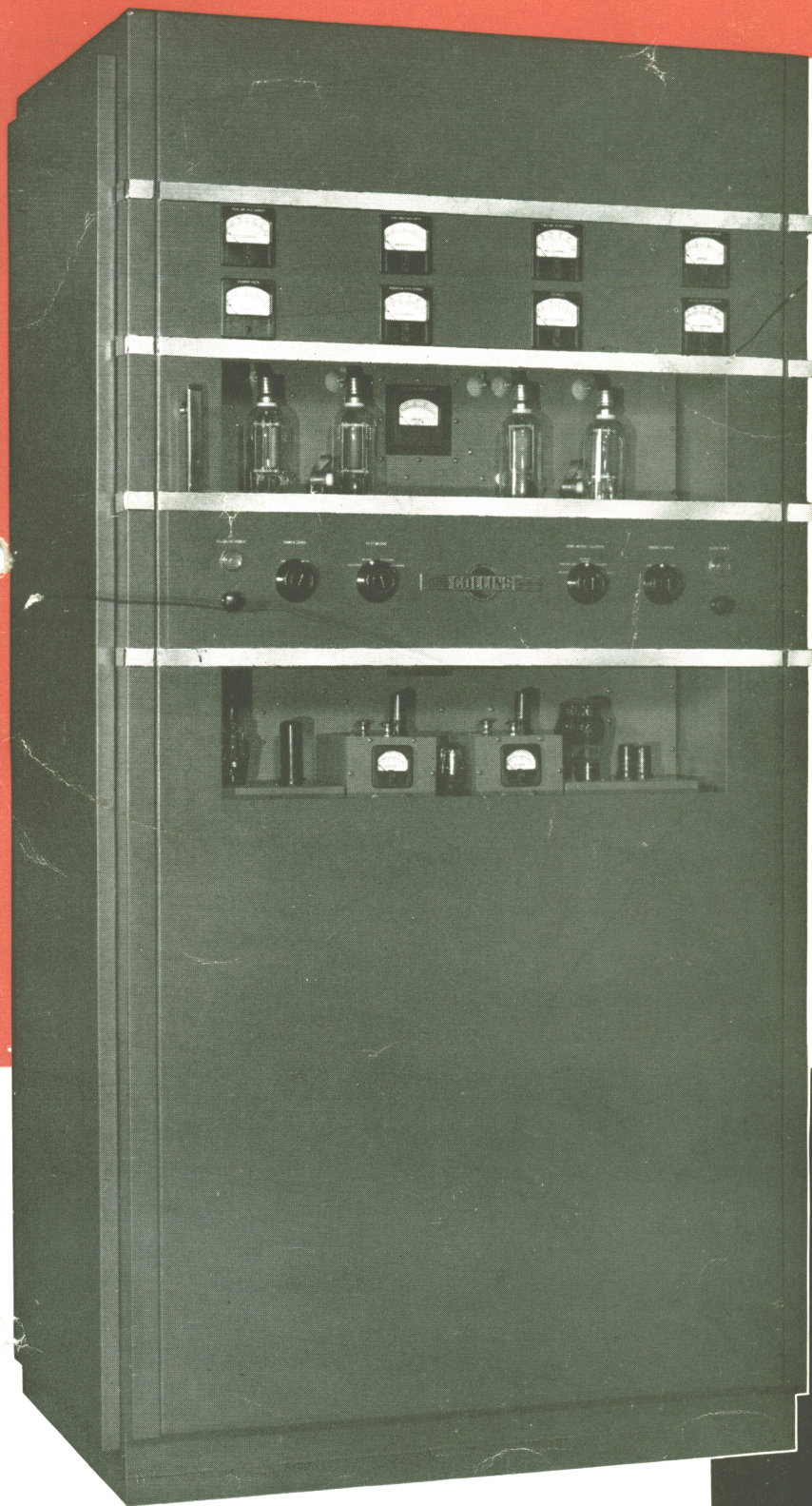


COLLINS

300G



complete accessibility

high fidelity

low noise and distortion

standby oscillator instantly available

instantaneous power reduction

high safety factors

reliable operation

only 8 tube types

low power consumption

250/100 Watt

AM

Broadcast Transmitter

f o r a 2 5 0 w a t t s t o f u n s u r p a s s e d p e r f o

The 300G is a completely reliable 250/100 watt broadcast transmitter designed for continuous high fidelity service. It is an embodiment of the forward-looking research and thorough development typical of all Collins radio equipment. Materials and components used in the design and construction of the 300G are of highest quality, and assure long life with trouble-free operation.

A single cabinet of modern design houses the entire transmitter circuit. All tubes can be reached from the front of the cabinet, and can be seen in operation through windows in the full-length front door. Double rear doors provide quick and easy access to the vertical chassis.

The power output can be reduced from 250 watts to 100 watts merely by actuating a switch on the control panel.

Frequency Control

Designed for use in the AM broadcast band, this transmitter delivers full rated power output on any frequency between 540 and 1600 kc. Two separate and complete oscillators are standard equipment, and by temperature control maintain the carrier frequency to within ± 10 cycles per second. Either oscillator may be selected conveniently and easily by means of a switch located on the r-f and audio driver

unit. Plug-in connections allow complete removal of a control unit for adjustment or repair.

Audio

The input impedance to the speech amplifier is 600 ohms, with an input level of +18 dbm* required for 100% modulation. High level



Either oscillator unit can be removed quickly. The selector switch is set to the second unit and transmitter operation continued while the removed oscillator is checked.

ation rformance

class B modulation is utilized, and terminals are provided for the attachment of modulation and frequency monitors. A feedback circuit incorporated in the audio system maintains a practically flat frequency response from 30-10,000 cps, with a maximum deviation of ± 1.0 db from the mean value of the two extremes of response.

Safety

Magnetic circuit breakers form an integral part of the principal power circuits, serving both as an isolation for the major circuits and as an overload device. Switching is accomplished in the primary circuits. All doors are provided with interlock switches in order to insure that high voltages are removed before maintenance personnel can gain entrance to the transmitter.

A special feature of the 300G is a voltage regulating transformer which is used to keep filament voltages constant over a $\pm 15\%$ fluctuation of a-c line voltage.

Audio Control

The Collins 6X line amplifier and monitor or the Collins 26W-1 limiting amplifier is recommended for use with the 300G transmitter.

OPERATING SPECIFICATIONS:

Temperature Range: $+15^{\circ}\text{C}$ to $+45^{\circ}\text{C}$.
Humidity Range: 0 to 95%.
Altitude Range: Up to 6000 ft.
Power Output: 250 watts or 100 watts.
Antenna Impedance: Any specified essentially resistive transmission line between 30 and 250 ohms.
Frequency Range: Any specified frequency between 540 kc and 1600 kc.
Frequency Stability: ± 10 cycles per second.

AUDIO CHARACTERISTICS:

Input Impedance: 600 ohms (150 ohms on special order).
Input Level (for 100% modulation): +18 dbm* (+8 dbm with input pad removed).
Frequency Response: ± 1 db from 30-10,000 cps.
Noise Level: More than 60 db below 100% modulation level.
Distortion: Less than 3% up to 95% modulation.
Power Source: 115 volts a-c, single phase, 60 cps, or 208/230 volts a-c, 60 cps, single phase neutral system.
Power Consumption: 1.5 kw in normal operation, 85% power factor.
Dimensions: 41" wide, 29 $\frac{3}{4}$ " deep, 78" high.
Weight: 1390 lbs. (approx.).
Shipping Weight and Volume (approx.):

	Weight	Volume	Cases
Domestic (less spares)	1725 lbs.	140 cu. ft.	11
Export (less spares)	1800 lbs.	150 cu. ft.	11

TUBE COMPLEMENT:

Oscillator (2)	6F6
Isolation Buffer	6L6
Int. Amplifier	2-807
R. F. Amplifier	2-810
1st Audio	2-6J5
Audio Driver	2-6A5G or 2-6B4G
Modulator	2-810
Rectifier	6-866A/866
Voltage Regulator	2-0C3/VR105

OTHER COLLINS HIGH FIDELITY AM TRANSMITTERS:

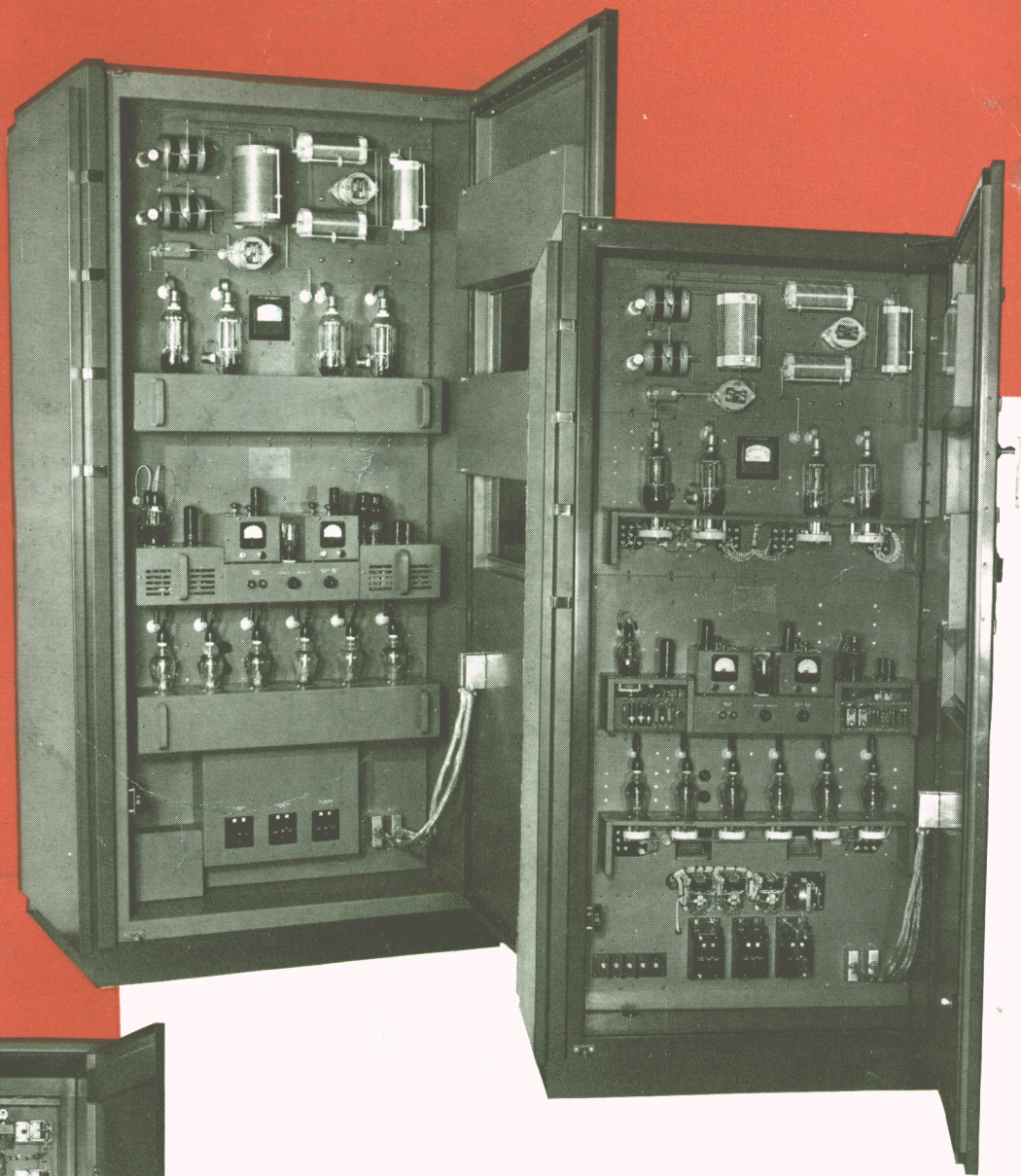
21A 5000/1000 watts, efficient and economical.
20T 1000/500 watts, reliability with low operating cost.

COLLINS STUDIO AND FIELD EQUIPMENT SUITABLE FOR EITHER AM OR FM HIGH FIDELITY APPLICATIONS:

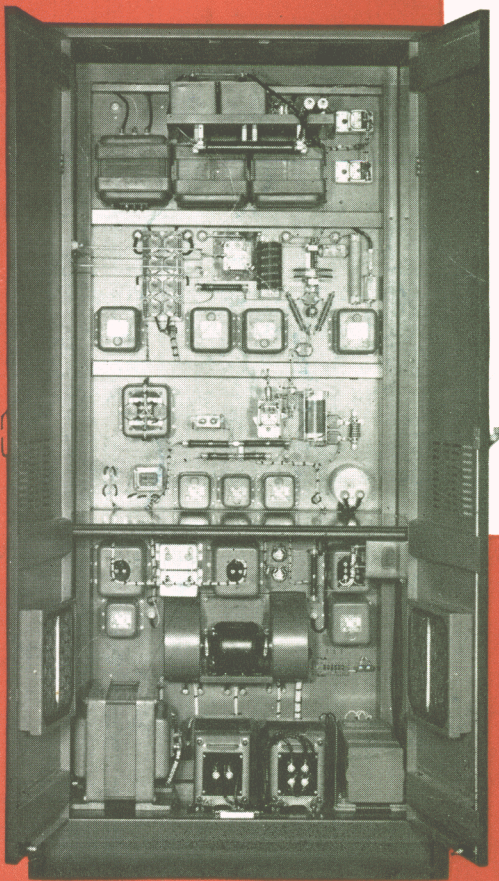
212A-1 Studio console, controls all studio functions.
6M Program amplifier, efficient, dependable service.
6P Preamplifier, low level input for high quality microphones.
6X Line amplifier and monitor, wide range of input level.
212Y Single channel a-c or battery operated remote amplifier for unattended operation.
12Z Four-channel a-c or battery operated remote amplifier for on-the-spot broadcasts.
26W-1 Limiting amplifier, positive audio control.

*1 milliwatt 600 ohm base

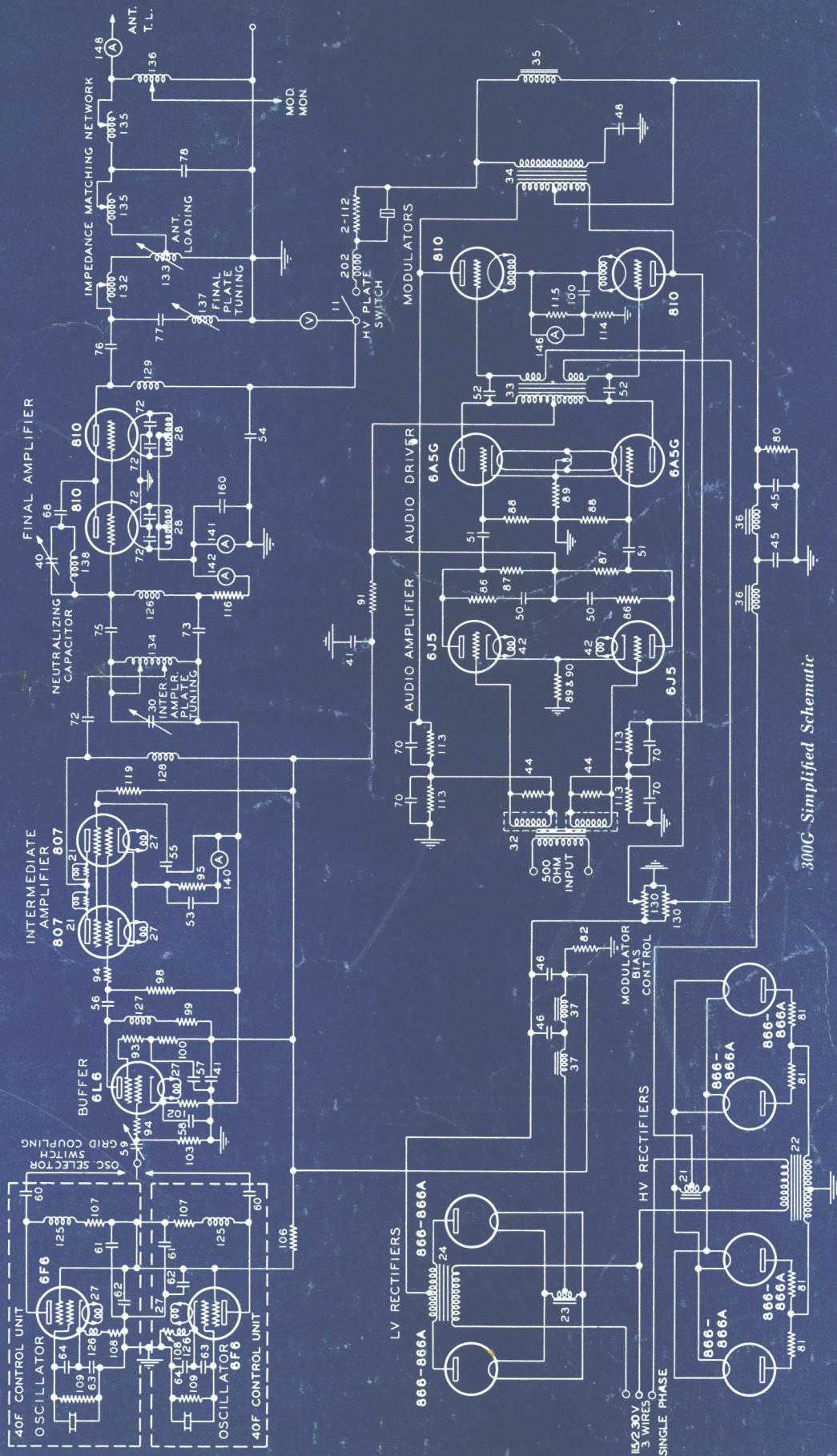
*Front view of 300G
with door open shows
workmanlike, symmet-
rical, vertical layout of
components and tubes.*



*The tube spar covers are readily
removed, giving complete access
to all components.*



*The rear view of the vertical chassis
shows the exceptional accessibility
which provides maintenance ease.*



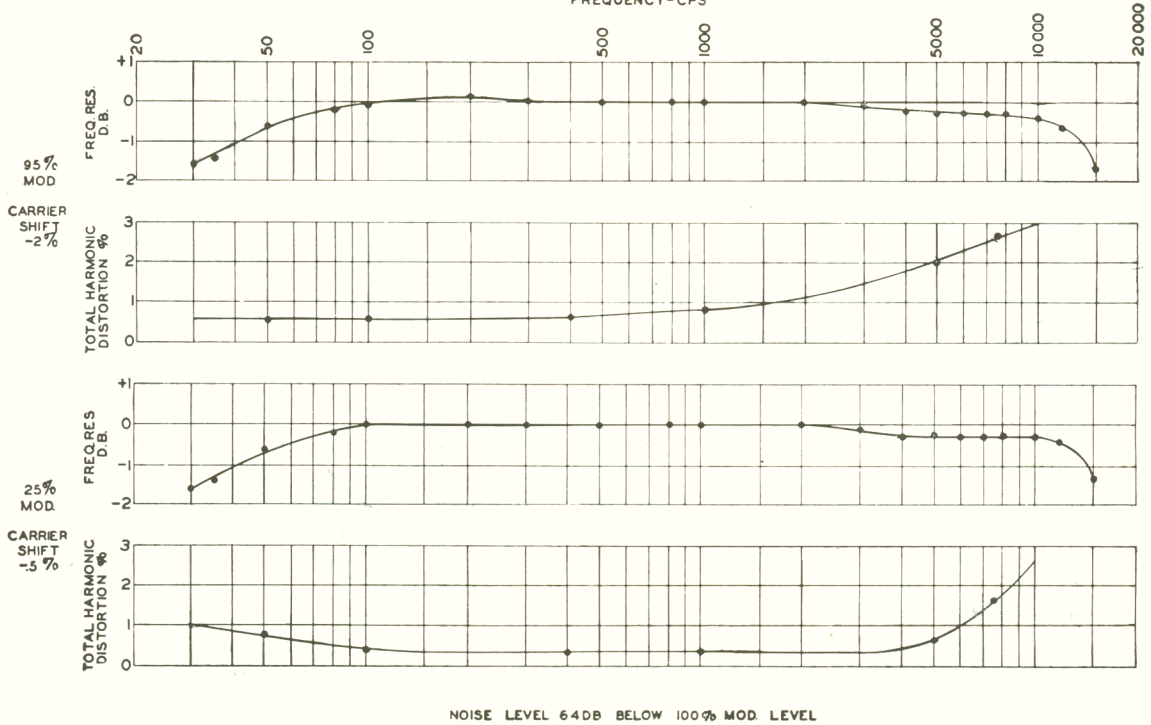
300G-Simplified Schematic

300G Performance Characteristics

COLLINS 300G

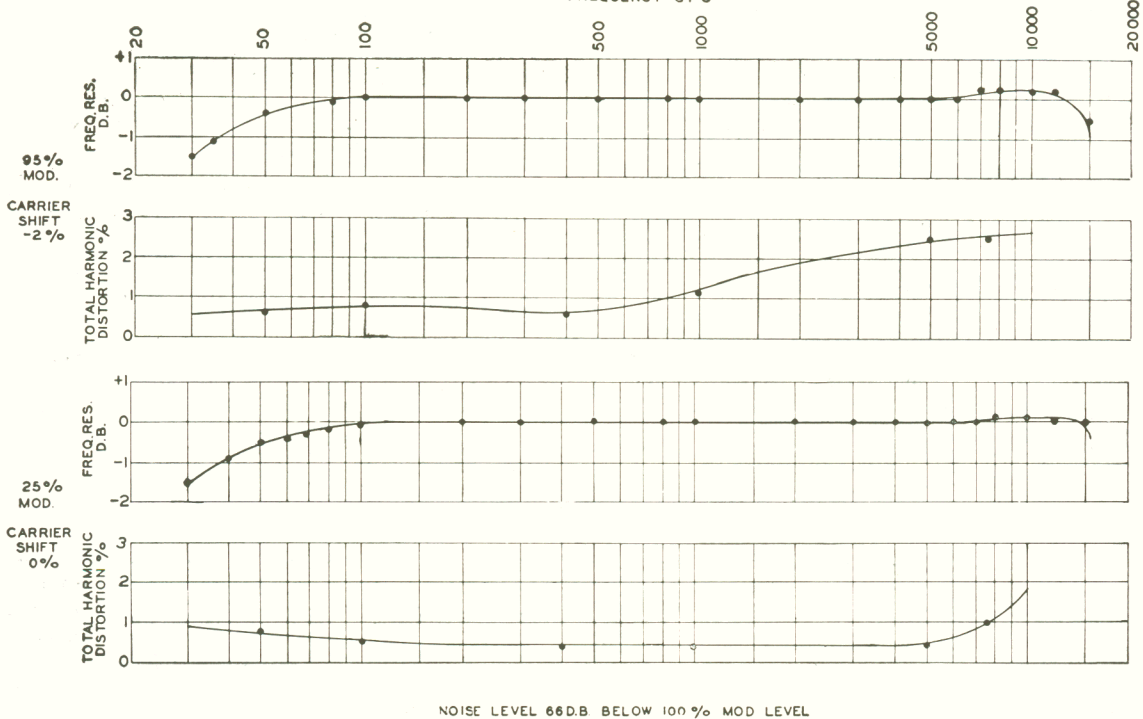
250 WATT OPERATION

FREQUENCY-CPS



100 WATT OPERATION

FREQUENCY-CPS



F. C. C. Filing Data

18. Description of transmitting apparatus proposed to be installed:

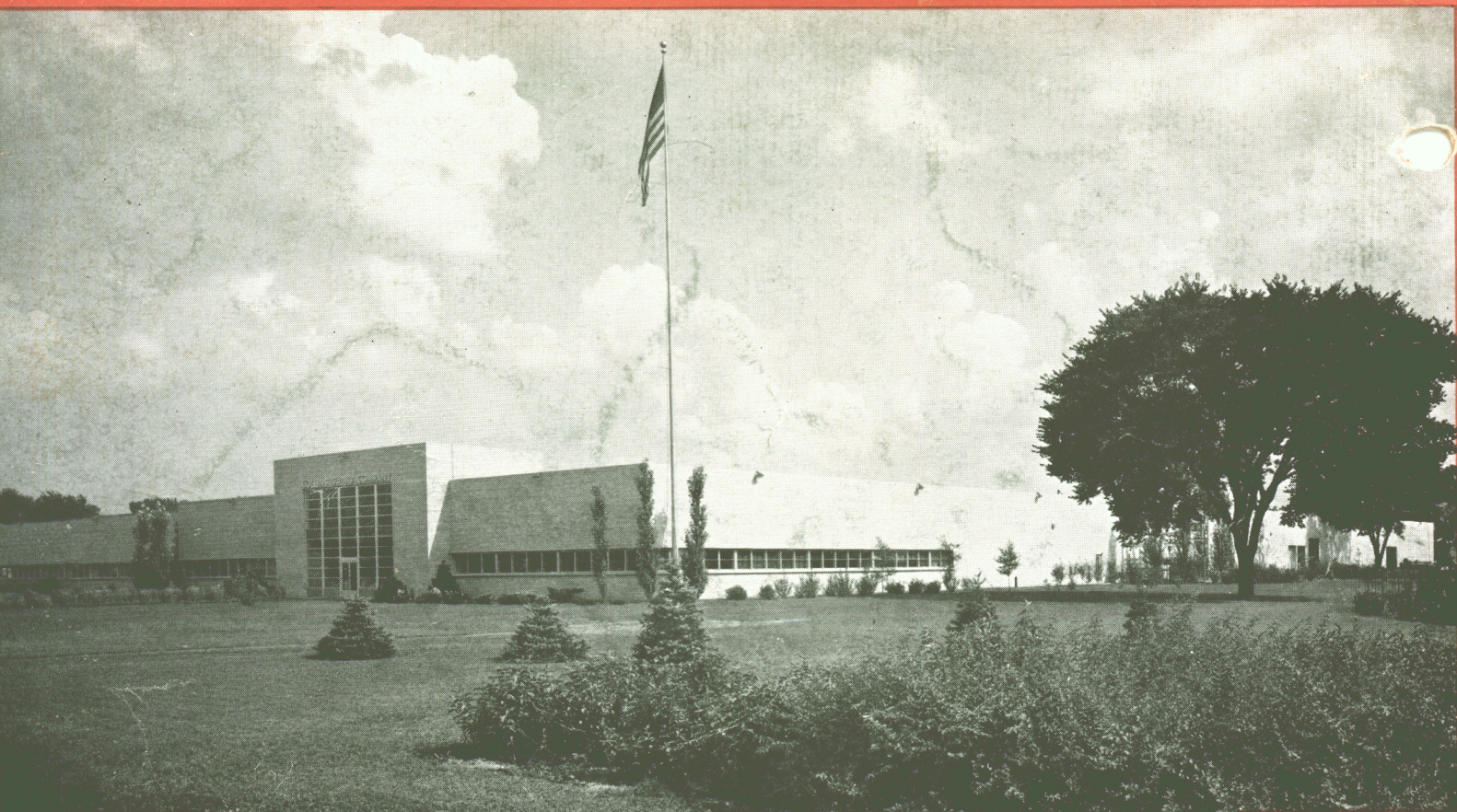
- (a) Make Collins Radio Co. Type No. 300G
- (b) Oscillator: Type of Circuit Direct Crystal Number, manufacturer's name, and type of tubes 1—RCA—6F6
Normal cathode current, per tube 22 ma.
Voltage 205
- (c) List buffer and intermediate power amplifier stages, by number and type of tubes in each stage. 1—6L6, 2—807
- (d) Last radio stage: Number, manufacturer's name, and type of tubes 2—RCA 810
Normal night operation for power requested: Plate current, per tube 55 ma.
Plate voltage 1150 if greater day power than night power is requested, specify the following:
Normal day operation: Plate current, per tube 110 ma.
Plate voltage 1470
Describe fully the proposed method and procedure of reducing power at sunset. Reduce final amplifier plate voltage and plate current by means of dropping resistor in plate lead.
- (e) Modulator or last audio stage: Number, manufacturer's name, and type of tubes and how operated (Class "A," "A" Prime, or "B")? 2—RCA 810 Class "B"
Normal plate current, per tube 125 ma. Plate voltage 1550
- (f) Which radio stage is modulated? Last
- (g) What system of modulation is employed (high level, low level, grid bias in last radio stage, etc.)? High level
- (h) If low-level modulation is employed, give for modulated radio stage: Number and type of tubes _____
Plate current, per tube _____ Plate voltage _____
- (i) The transmitter is designed for what maximum percentage of satisfactory modulation? 100%
- (j) State name and type number of modulation monitor.

- (k) Give Federal Communications Commission approval number. _____
- (l) Specify manufacturer's name, type, number, and full-scale reading of the following meters:
- (1) In last radio stage: Weston 731
Plate voltmeter 0-2000 volt
Plate ammeter 0-500 ma.
- (2) Antenna ammeter 0-3 amp. or 0-5 amp. depending upon antenna installation. Weston 735
- (m) Describe the plate power supply for last radio stage. Single phase, full wave, tube rectifier
Rating: Current 600 ma. Voltage 1550 v.
- (n) Maximum carrier output of transmitter for satisfactory operation is 275 watts.

(o) Maximum rated carrier power of transmitter as determined by orders of Federal Communications Commission is 250 watts.

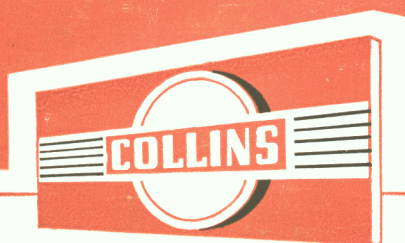
19. Description of automatic frequency control equipment:

- (a) Make Collins Radio Co. Type No. 40F
- (b) Give manufacturer's name, type of cut, and temperature coefficient in cycles per degrees centigrade of the quartz crystal. Type AT cut Temperature coefficient not to exceed 3 parts in one million per degree centigrade
- (c) By whom will unit be calibrated? Manufacturer
Calibrated frequency: _____ Kilocycles at _____ degrees centigrade.
Proposed operating frequency: _____ Kilocycles.
(Give exact figure, correct to third decimal place at _____ degrees centigrade.)
- (d) State guaranteed accuracy of the calibration: ±10 cycles.
- (e) State number of frequency control oscillators which will be maintained constantly at correct operating temperature and frequency in heat-controlled chambers. (2) Two
- (f) Is provision made for instantaneous connection of spare frequency control units? Yes
- (g) Manufacturer's name and type of automatic temperature control Collins #297
- (h) State within what limit automatic temperature control will hold the temperature: ±.3 degrees centigrade.
- (i) State temperature coefficient of the frequency control units: less than ±3 cycles per degree centigrade.
- (j) Is temperature coefficient positive or negative? Either
- (k) State manufacturer's name and rated accuracy of: Thermostat H. B. instrument ±.1 degree
Thermometer None
- (l) Attach the circuit diagram of automatic temperature-control system if not already on file with the Commission. On File
- (m) Attach a sketch or drawing of the automatic temperature-control chamber, if not already on file with the Commission. On File
- (n) Describe checking means for determining of transmitter retains assigned frequency. _____
- (o) State name and type number of separate frequency monitor. _____
- (p) Give Federal Communications Commission approval number. _____
20. Applicant states that there are attached hereto copies of an accurate schematic diagram of the fundamental radio and audio circuits of the transmitter proposed, including antenna and ground or counterpoise connections, antenna feed system, and that it indicates the type of tubes. (This diagram should be a blueprint or ink drawing, if possible the size of this application.) On File



The Collins main plant in Cedar Rapids is a modern, completely air and light controlled structure, containing 150,000 square feet of floor space. It is designed for the most efficient office, engineering and manufacturing use. The Collins management, organization and equipment are devoted entirely to the designing and production of radio communication equipment.

FOR BROADCAST QUALITY IT'S . . .



COLLINS RADIO COMPANY, Cedar Rapids, Iowa

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458 South Spring Street
Los Angeles 13, California