

RCA

Radiola 46



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EG U S P'T OFF

"AC" Lighting Circuit Operated



Instructions

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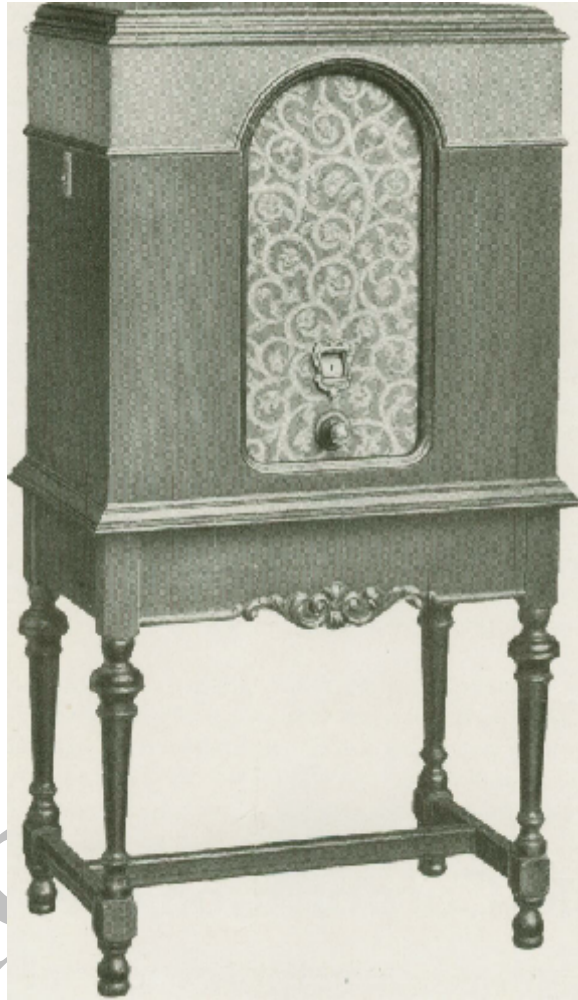


Fig. 1—RCA Radiola 46

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"AC" Lighting Circuit Operated

INTRODUCTION

RCA Radiola 46 is a lighting circuit operated, antenna type, shielded radio receiver, utilizing the new "AC" screen grid Radiotrons and a new power-amplifier Radiotron introduced by the Radio Corporation of America. The receiver, power unit, and RCA electro-dynamic loudspeaker are enclosed in a walnut finished cabinet, the front opening of which is covered with embroidered tapestry. The circuit used in this Radiola includes two stages of tuned radio-frequency amplification, a detector, and one stage of audio-frequency amplification.

The two stages of radio-frequency amplification employing "AC" screen grid Radiotrons, UY-224, give performance equal to that of four tubes used in ordinary tuned radio-frequency receivers. "AC" Radiotron UY-224 functions as the detector with a consequent increase in the efficiency of the circuit. Fine quality of reproduction and ample volume are insured by the use of the power-amplifier Radiotron, UX-245, in the single audio-frequency stage.

Radiotron UX-280 is used in the power unit to rectify the "AC" input for the plate and grid supply for all Radiotrons, also for the loudspeaker field supply.

This Radiola has a concentric tuning and volume control thereby insuring ease of operation. A Local-Distant Switch is provided to retain the maximum high quality operating characteristics of the Radiola for both strong local and weak distant stations.

A pilot lamp illuminates the selector dial when the power is on. As the Selector is rotated, magnified images of the scale markings together with approximate kilocycle (frequency) readings on the selector dial are projected upon a fixed translucent dial screen. Images of the scale markings pass by a fixed index pointer on the screen.

Excellent sensitivity and selectivity are provided over the broadcast range from 550 to 1500 kilocycles (545 to 200 meters). The powerful built-in RCA electro-dynamic loudspeaker furnishes excellent reproduction, the quality of which is equally good at reduced or full volume.

Part I—Installation and Operation

EQUIPMENT

1. One complete set of Radiotrons, as follows:
 - \ Three RCA Radiotrons UY-224
 - One RCA Radiotron UX-245
 - One RCA Radiotron UX-280
2. Two MAZDA No. 41 pilot lamps (one spare); T-3 bulb, miniature base, concentrated filament, 2.5 volts, 0.45 ampere (packed in instruction book envelope).
3. Antenna and ground equipment (see Part II).

INSTALLATION

Preliminary—After unpacking RCA Radiola 46 remove the rear cover. Unwrap the power cord and the antenna and ground leads and bring them out through the holes provided in the bottom of the cabinet, as shown in Fig. 2.

Locate the Radiola near an electrical outlet, where the antenna lead-in and ground connections will be as short as practicable.

Antenna and Ground—Satisfactory operation is dependent upon proper installation of the antenna and ground (see Part II).

Connect the antenna lead (blue) of the Radiola to the lead-in wire, and the ground lead (black with blue tracer) to the ground wire (see Figs. 2 and 6). Both connections should be soldered and insulated.

Loudspeaker—Make certain that all connections are secure at the loudspeaker terminals (see Figs. 4 and 6).

Power Supply—RCA Radiola 46 should never be connected to any circuit supplying other than alternating current, within the rated limits of voltage and frequency (cycles) specified on the rating plate of the power unit (see Fig. 4). Failure to observe this may result in damage to the Radiola. If there is any doubt about the rating of the house lighting circuit, consult the Electric Light and Power Company before connecting the Radiola. (See also "AC Line Voltage", Part II.)

No tube protector or line voltage reducer should be used with this Radiola. (See "Tube Protectors", Part II.)

Insert the attachment plug of the power cord in an electrical outlet.

Important— *Never apply power to RCA Radiola 4.6 unless all the Radiotrons are in the sockets.*

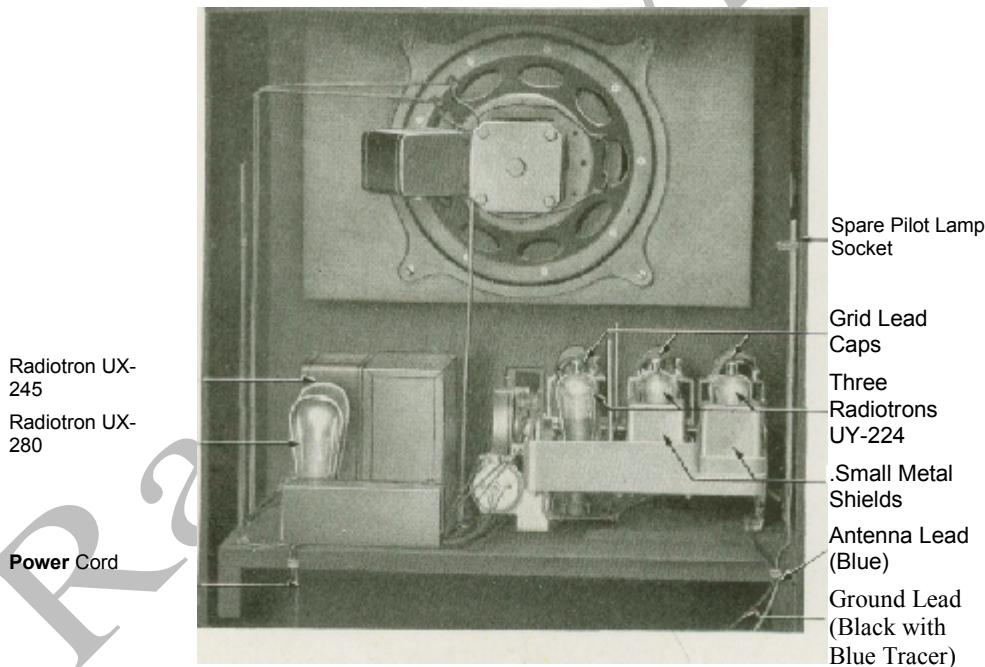


Fig. 2—Rear View of RCA Radiola 46 with Cover Removed Large Metal Shields Removed

Metal Shields and Radiotrons—Unscrew the knurled nuts holding the shield clamp (Fig. 4) in place. Remove the shield clamp and lift out the large metal shields. Handle these shields carefully.

Insert the five Radiotrons, which should always be handled carefully, in the proper sockets as shown in Fig. 2. Be sure that the "UX" Radiotrons are so faced that the two large pins enter the large holes, and that the base of each Radiotron rests squarely against the socket. After the Radiotrons are inserted, press the grid lead caps (see Fig. 2) firmly down over the grid contacts of the UY-224 Radiotrons.

Set the Power Switch (Fig. <:;) to the "ON" position, upward. Make sure that the five Radiotrons are lighted. Snap the Power Switch "OFF," downward.

Push down on the small metal shields to make certain that they are firmly in place. (See Fig. 2.)

Replace each large metal shield carefully in its proper compartment. The shield with one large and one small notch must be placed in the compartment to the left (facing the rear of the cabinet) and with the large notch next to the selector dial.

After both shields are firmly in place, replace the shield clamp over the clamp bolts, and replace the knurled nuts. These nuts should be tightened sufficiently to insure holding the shields firmly in place; but excessive pressure, which may bend the shields, is to be avoided.

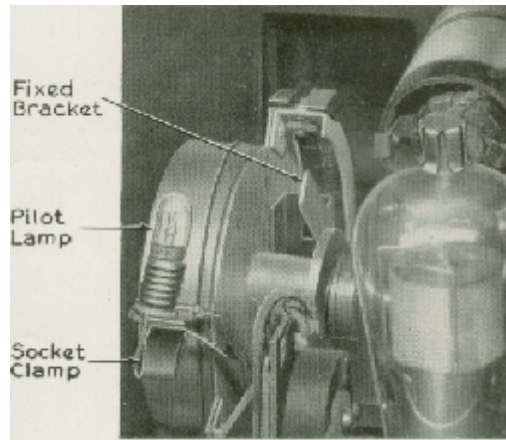


Fig. 3—Pilot Lamp Mounting
Showing Method of Installing Pilot Lamp Socket
Clamp Slide Over Fixed Bracket

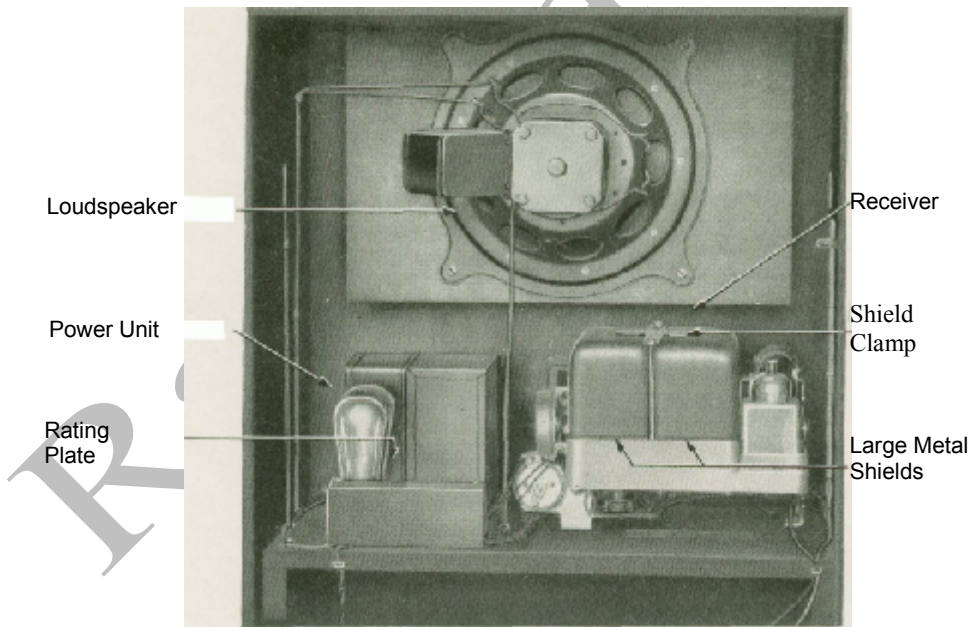


Fig. 4—Rear View of RCA Radiola 46 with Cover Removed Large Metal Shields in Place

Pilot Lamp—Turn the Selector (Fig. 5) counter-clockwise to the extreme position, so that the pilot lamp mounting will be accessible. Remove the socket clamp from the fixed bracket and screw one of the pilot lamps firmly into the socket (see Fig. 3). Replace the socket clamp on its bracket. Insert the extra bulb into the spare pilot lamp socket. Fig. .

Set the Power Switch to the "ON" position, upward. With the Selector in the extreme counter-clockwise position, adjust the socket clamp on the fixed bracket until the zero mark of the scale, projected on the translucent dial screen (Fig. 5), is approximately $\frac{1}{4}$ inch below the index pointer. Then switch off the power and replace the rear cover.

OPERATION

To operate RCA Radiola 46 refer to Fig. 5 and proceed as follows:

1. Set the Power Switch to the "ON" position, upward. The pilot lamp should light. An interval of approximately 30 seconds is required for Radiotrons UY-224 to heat before satisfactory reception is possible.
2. Set the Local-Distant Switch to the "DISTANT" position.
3. Set the Volume Control in approximately the middle position. Then turn the Selector slowly in either direction. If no station is heard at any point, advance the Volume Control in the clockwise direction slowly, while rotating the Selector, until a station is heard.
4. Adjust the Selector for maximum signal strength.
5. Adjust to the desired volume by means of the Volume Control. Because of the extreme sensitivity of Radiola 46, a more satisfactory adjustment is obtained, when receiving powerful nearby stations, by setting the Local-Distant Switch in the "LOCAL" position.
6. When through operating snap the Power Switch to the "OFF" position.

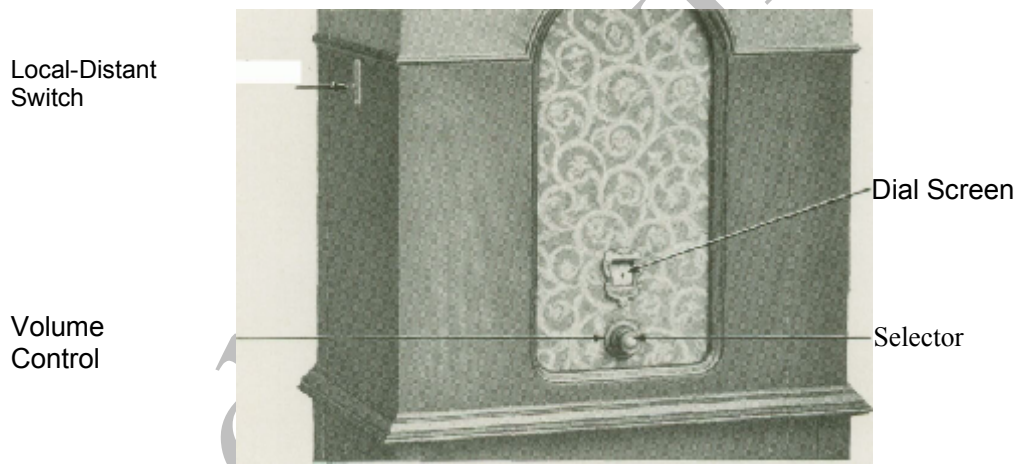


Fig. 5—RCA Radiola 46 Showing Controls
(Power Switch on Side Opposite Local-Distant Switch)

Note—If the Volume Control is too far advanced when receiving strong signals, it may occur that the station can be tuned in over a broad continuous range on the Selector dial. In general, best reception of any station is obtained if the tuning is done with the Volume Control set at the furthest counter-clockwise position at which the station can be heard. After the correct setting of the Selector is obtained, the volume may be increased as desired with the Volume Control.

Part II—General Information

The following suggestions are offered to assist the user in obtaining the best performance from RCA Radiola 46.

"AC" Line Voltage—The 105/125-volt models (both 50/60 and 25/ 40 cycles) of Radiola 46 are originally connected for normal operation on voltages above 115, and the 200/250-volt, 50/60-cycle model for voltages above 225. The original connection should be left unchanged unless it is definitely determined, by consulting the RCA Authorized Dealer or the Electric Light and Power Company, that the supply voltage is normally below this value. Provision is made for adapting the Radiola to voltages below 115 (or 225), by a simple wiring change within the Radiola. When such a change is required, it should be performed by the RCA Authorized Dealer.

Tube Protectors—The power transformer in this Radiola is designed to supply correct voltages to the Radiotrons, without the addition of a tube protector or line voltage reducer. A tube protective device of any kind, used in series with the power supply, will reduce the voltage supplied to the Radiola so that the Radiotrons will not receive their proper voltages and therefore will not operate at highest efficiency. For this reason it is recommended that no line voltage reducing device be used with this Radiola.

Power Supply—Reception may possibly be improved by reversing the plug (Fig. 6) at the electrical outlet.

Metal Shields—Be sure that the metal shields are always firmly in place.

Radiotrons—Improved results may sometimes be obtained by rearranging the UY-224 Radiotrons, all other Radiotrons remaining in their respective sockets. Before interchanging these Radiotrons, switch off the power. (See "Important", Part I.)

Volume—Adequate control of volume can be obtained with the Volume Control and the Local-Distant Switch. Reduction of volume should never be accomplished by adjustment of the Selector. The Local-Distant Switch should be set in the "LOCAL" position and the Volume Control advanced whenever by so doing the desired volume can be obtained.

Selector Dial—The selector scale is arbitrarily graduated from "0" to "100". Approximate kilocycle (frequency) values are indicated on the left side of the scale. The dial settings may be recorded on the Station Log, at the end of this book.

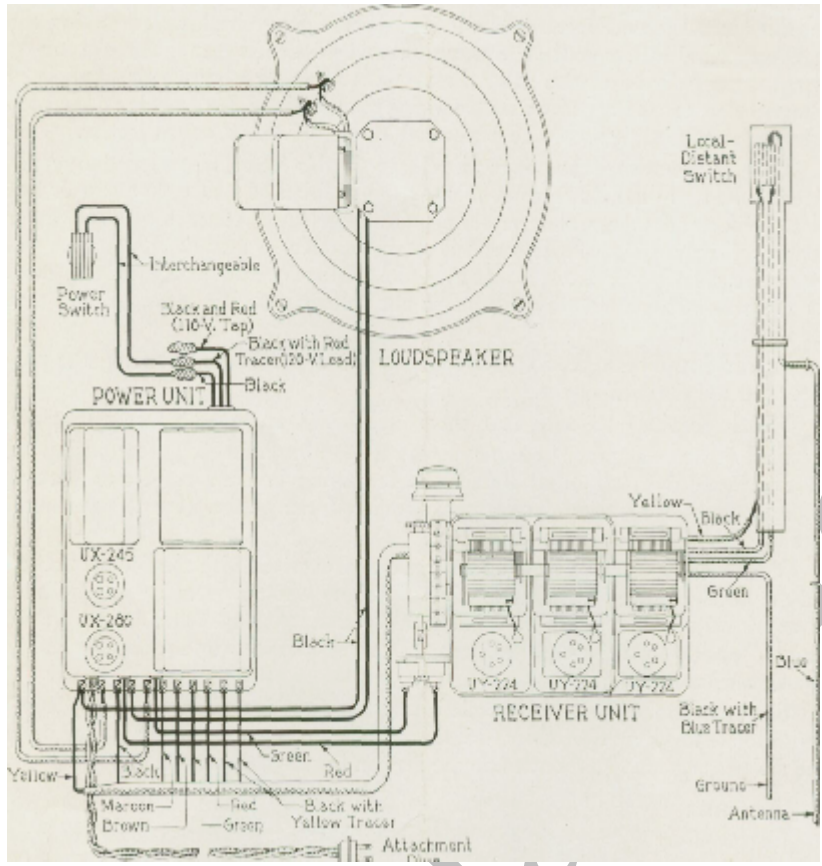
Antenna

(a) *Outdoor Type*—A single-wire (No. 14 bare copper is recommended) outdoor antenna 30 to 50 feet long will usually provide good reception. The shorter antenna is preferable in a locality near high-power broadcast stations. A longer antenna may give improved results in a locality distant from broadcast stations.

The antenna should be isolated from other objects. It should be erected as high as possible and at right angles to all electric light and power lines and must not cross either above or below such lines. The antenna and lead-in should be supported by high-grade glass or glazed porcelain insulators, and the lead-in should be spaced a foot or more from the building. All splices should be soldered.

The lead-in and ground connections should be separated from one another and be as short and direct as practicable. It is preferable that the lead-in wire be a continuation of the antenna itself, and where brought through the wall or window frame it should be insulated therefrom by some means, such as a porcelain tube.

An outdoor antenna should be protected by an approved lightning arrester, in accordance with the requirements of the National Board of Fire Underwriters.



Power Cord

Fig. 6—RCA Radiola 46 Cabinet Wiring

Radiola

(b) *Indoor Type*—An indoor antenna is not as effective for distant reception as a properly installed outdoor antenna. Where installation of an outdoor antenna is not practicable, satisfactory results may be obtained by using 30 to 50 feet of insulated wire inside the building. The size of the wire is not particularly important, though No. 18 bell wire is suggested. In buildings with metal lath, satisfactory results are not always possible with this type of antenna. Under such conditions, various arrangements of the indoor antenna may be tried.

Ground—A good connection to ground is as important as a well constructed antenna. Definite instructions cannot be given, as conditions vary in different locations. Water pipes or steam pipes generally make good grounds. The use of gas pipes should be avoided. The ground lead should be connected by means of an approved ground clamp to a section of the pipe that has been scraped thoroughly clean. If water or steam pipes are not available, a pipe or metal rod may be driven into the ground to a depth of several feet. The success of this type of ground depends upon the presence of moisture in the soil.

Part III—Maintenance

Radiotrons—Before inserting or removing Radiotrons always be sure that the current is switched off. (See "Important", Part I.)

The contact pins of all Radiotrons, also the grid contacts at the top of the UY-224 Radiotrons, should be inspected periodically and kept clean.

It is a good plan to have available at least one new RCA Radiotron of each type. Occasionally, the condition of each Radiotron in use should be checked by substituting a new one and comparing results in reception, both local and distant.

Power Supply—Should the pilot lamp and Radiotrons fail to light with the Power Switch in the "ON" position, it is probable that the Radiola is not properly connected to the power supply. Make sure that the attachment plug is properly inserted in the electrical outlet and that the current is not switched off at any point.

Volume Control—If the operation of the Volume Control should at times produce a grating sound in the loudspeaker, this may be remedied by turning the control back and forth between the extreme positions a few times in order to remove any foreign material which may have collected on the control resistance.

Antenna and Ground—A decrease in receiving range and volume may be caused by loose or corroded connections in the antenna and ground circuit, or by an accumulation of dirt or soot on the antenna insulators.

Pilot Lamp—Renewal bulbs (see "Equipment", Part I) may be purchased from any RCA Authorized Dealer. Before removing the pilot lamp from its bracket (see "Pilot Lamp", Part I) always switch off the power.

In order that station settings will not be changed when a new bulb is inserted, the socket clamp should be adjusted so that any one station (the previous setting for which is accurately known) is received at the same scale reading as before.

RCA Authorized Dealer—The RCA Authorized Dealer is required to test this Radiola and assure himself that it is in satisfactory operating condition when installed.

The Radiola is guaranteed to be free from defects as outlined on the guarantee tag accompanying the instrument. Should any part become defective within the guarantee period, the RCA Authorized Dealer will furnish a new part to replace the defective one. A reasonable charge may be made for installing such parts.

If any service on this Radiola is needed, either before or after expiration of the 90-day guarantee, the RCA Authorized Dealer from whom it was purchased should be consulted. If this Dealer cannot be reached because of change in location, or other reasons, the nearest RCA Authorized Dealer should be consulted. RCA Authorized Dealers are organized to handle customers' service needs either by their own service departments or by arrangement with their distributors.

IMPORTANT

The RCA 90-day guarantee on this Radiola is not effective unless the RCA Guarantee Tag is countersigned and dated at time of sale by the RCA Authorized Dealer from whom it was purchased. If you have not received the signed Guarantee Tag, be sure to have the RCA Authorized Dealer give it to you immediately.

NOTICE

The apparatus and devices which, or the use of which, are covered by patents are sold only under certain specified licenses set forth in a notice attached permanently to the said apparatus and devices, or if this is impracticable on account of size, then on tags or wrappers attached to the said apparatus and devices or on the cartons containing the same. This license notice is as follows:

"In connection with devices it sells, Radio Corporation of America has rights under patents having claims (a) on the devices themselves and (b) on combinations of the devices with other devices or elements, as for example in various circuits and hook-ups.

"The sale of the device carries a license under the patent claims of (a), but only for (1) talking machine uses, (2) radio amateur uses, (3) radio experimental uses and (4) radio broadcast reception; and only where no business features are involved.

"The sale does not carry a license under patent claim of (b) except only (1) for legitimate renewals and repairs in apparatus and systems already licensed for use under such patent claims on combinations, (2) for assembling by amateurs and experimenters, and not by others, with other licensed parts or devices, or with parts or devices made by themselves, but only for their own amateur and experimental radio uses where no business features are involved, and not for sale to or for use by others, and (3) for use with licensed talking machines and licensed radio broadcast receiving devices; and only where no business features are involved."

RADIO CORPORATION OF AMERICA

STATION LOG

Call
Letters

Location

Frequency
in
Kilocycles

Wave-
length

Selector
Dial
Setting

RadiolaVille