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RCA's Intended Models for the 1923-1924 Season "What Might Have Been"

Web Edition

BY JOHN P. WOLKONOWICZ WITH ALAN DOUGLAS, John V. Terrey and RICHARD G. WOLVEN

Why RCA introduced its new line of radios in April 1924 rather than in time for the 1923 Christmas season has long been a mystery to radio historians. As a result of your Editor's find -- a 1923 RCA document outlining the 1924 broadcast receivers -- this article solves the mystery. (Editor)

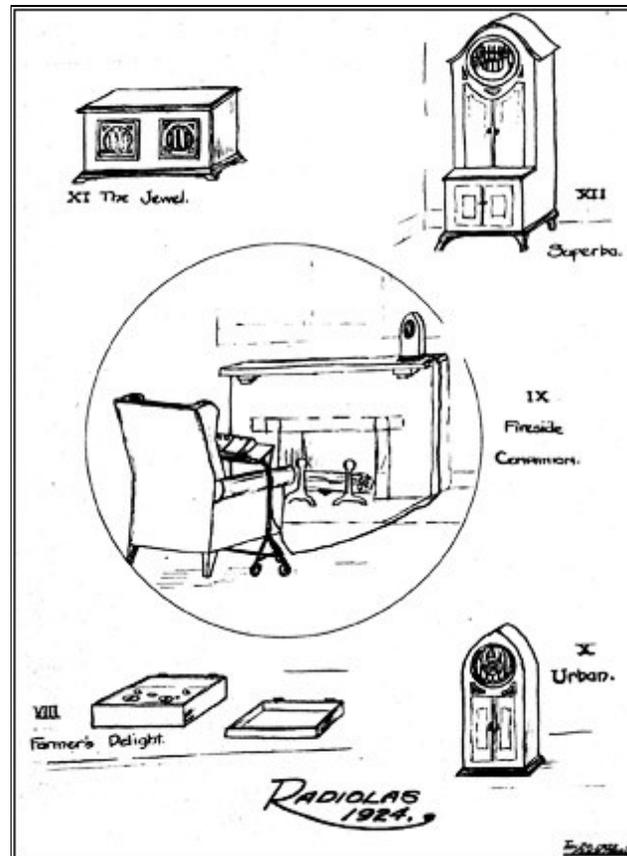
This is an article I've wanted to write for more than 20 years but the necessary background information was unavailable. During the late 1970s, I wrote a series of articles for *Radio Age* entitled "The Radiola Superheterodyne Story." While researching this series, I learned that RCA's entire Christmas season model range for 1923 was canceled to allow all resources to be devoted to the perfection of the Radiola Superheterodyne.

This explained why RCA had introduced its new model range in April 1924 instead of in October 1923 which would have been in time for the lucrative Christmas selling season. The question is: Were the sets which were introduced in April 1924 -- Radiolas III, IIIA, Regenoflex, X, Superheterodyne and Super VIII -- simply delayed from fall 1923, or, was there a whole range of receivers planned but never manufactured? Now we know the answer.

At the New England Antique Radio Club (NEARC) Fall Swap Meet in October 1998, John Terrey showed me a fascinating piece of literature that he had acquired at the meet. Bound in a General Electric binder, it was entitled "Specifications for Broadcast Receivers for 1924, Radio Corporation of America, Research Department, January 16, 1923."

In this document, RCA provided its initial thoughts on the 1923-1924 model range to its manufacturers -- General Electric, Westinghouse and Wireless Specialty Apparatus (WSA). Note, until 1929, when RCA acquired the Victor Talking Machine Company, 60 percent of RCA products were manufactured by GE, 40 percent by Westinghouse and the remaining shortfall by Wireless Specialty Apparatus.

A copy of the document was sent to Alan Douglas, historian and author of the classic, 3-volume, *Radio Manufacturers of the 1920's*. Alan was as excited as I was, since his collection included photographs from RCA engineer Arthur F. Van Dyck. Two of the sets in the proposed 1923-1924 line were there. As Alan said, "I always wondered what this monstrosity was." Here at last, was all the information necessary to complete the story on what RCA had intended as its 1923-1924 model line.



Historic Background 1920-1923

To begin this story, let's dial the clock back to December 1922, at RCA's corporate offices at 233 Broadway in New York. The year 1922 had been frustrating for RCA. During the early part of the year, radio broadcasting and associated receiver sales seemed to defy gravity after a slow start in 1920-1921. But by summer, the radio boom had turned into a radio bust. Many critics proclaimed the radio "fad" to be over.

RCA saw the situation somewhat differently. The company believed that radio broadcasting was an essential service to the public, not a fad. It held out great hopes for the future of broadcasting, and the receiver sales which broadcasting would bring. But RCA was disappointed with its own performance in receiver sales in 1922. By the time its three manufacturing concerns had geared up to volume production in summer 1922, the radio boom had subsided.

Worse still, RCA's 1922-1923 model range was expensive, disjointed, and obsolete. Smaller competitors like Grebe, Kennedy, Paragon and Clapp-Eastham were running rings around the cumbersome RCA. Its 1922-1923 line was a conglomeration of what GE, Westinghouse and WSA had already designed. Products overlapped -- for example, Westinghouse's Radiola RC with GE's Radiola V -- and showed no coherent concept across the range. RCA's 1922-1923 model range looked like what it was -- a collection of whatever was available from three formerly

competing manufacturers.

But, the 1923-1924 season would be different. By December 1922, meetings were being held to plan the 1923-24 radio line. On January 16, 1923, detailed specifications and a schedule were finalized and were provided to GE, Westinghouse and WSA in the document titled: "Specifications for Broadcast Receivers for 1924."

The line would consist of five receivers of conservative electrical design, housed in innovative cabinets. Preliminary models would be submitted from the manufacturers by April 1, 1923, orders would be placed with the manufacturers by July 15, production samples would be provided by October 1, and final production approval given by RCA by October 15. A logically ascending price schedule of \$75 to \$420 was planned.

A description of the line of radios as described in the report is presented in this article. But a sequence of events was about to occur which would derail this product line and send RCA off in a completely new direction.

A New Direction -- THE SUPERHETERODYNE

The first of these events occurred in February, 1923, when Major Edwin Howard Armstrong visited RCA's General Manager David Sarnoff. Armstrong showed Sarnoff a self-contained portable receiver of unusually high sensitivity and selectivity which contained a built-in loop antenna. In collaboration with Harry Houck, Armstrong had perfected a circuit, which he had invented earlier -- the superheterodyne. Sarnoff wasted no time in recognizing that here was a true advancement of the state-of-the-art in radio. But could it be commercialized?

The second event occurred in April 1923 with the introduction of Hazeltine's Neutrodyne receiver --- a nonradiating, tuned radio frequency circuit, which claimed equal gain across the broadcast band. Sales of the Neutrodyne took off immediately with Fada and Freed-Eisemann leading the charge. RCA would have to one-up the Neutrodyne and the proposed 1923-1924 product line was not up to the task.

In fact, the planned range lacked technical advancement and did not reach down low enough in price to match manufacturers like Crosley who were achieving great success by mid-1923. The only answer was to start again: (a) commercialize the superheterodyne as rapidly as possible, (b) design an innovative new midrange set (Regeno-flex), and (c) complete the range with a price-leader set -- Radiolas III and IIIA -- starting at \$35. And so, the original plans for the 1923-1924 range were scrapped, never to be seen by radio collectors of future generations -- until now!

The ORIGINAL 1923-1924 RCA Product Line

RCA had ambitious plans for its 1923-1924 range. As shown in [Table I](#), in addition to five radio receivers -- Radiolas VIII, IX, X, XI and XIII -- there were plans for a hotel set, a motor vehicle set and a public entertainment set. But plans for the last three concepts were quickly dropped due to the belief that the market was not yet ready for them. [Table II](#) lists the general specifications for the five receivers. There is interesting reading here, especially the sections on tubes, rheostats, automatic switching and distinguishing marks.

Radiola VIII -- "Farmer's Delight"
Radiola IX -- "Fireside Companion"

Radiola X -- "Urban"**Radiola XI -- "The Jewel"****Radiola XII -- "Superba"**

| Table I -- List of Contemplated Sets | | |
|--|-------|---|
| Radiola VIII | | Cheapest set, 2 tubes, headset operation. |
| Radiola IX | | Three tube set, in housing of distinctive character, separate loud speaker. |
| Radiola X | | Same as the Model IX but in a different cabinet containing a loudspeaker and batteries. |
| Radiola XI | | A 4- to 6-tube set of the same approximate quality as the Radiola IV and the Radiola Grand. |
| Radiola XII | | A set of superior quality in all respects, with a cabinet generally similar to the Radio Corporation Research Department model. |
| Amplifier | | 2-stage audio amplifier arranged to work with Radiola VIII and give satisfactory loud speaker operation. |
| Hotel, Apartment, Hospital Set* | | A set with the best performance features possible and with sufficient power output to feed a large number of loud speakers or headsets or both. |
| Motor Vehicle Set* | | A set suitable for installation in automobiles as regular equipment. |
| Public Entertainment Set* | | A set suitable for use in churches, auditoriums, clubs, restaurants, etc., with the best performance features possible. |
| <p>* The last three items are included to make a complete picture of the apparatus requirements of the whole field. However, the Radio Corporation does not expect to push or to develop the fields covered by these three during the coming year, in the belief that the art is not yet ready for them, and it is therefore recommended that major development be concentrated on the first five items, Radiola VIII to XII inclusive, and particularly on Radiola XI.</p> <p><i>Based on "Specifications for Broadcast Receivers for 1924," RCA Research Dept., Jan. 16, 1923.</i></p> | | |

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This article finally presents to the collector the RCA 1923 Christmas line. For each set, the

specifications and a concept drawing are included. And, there also is interesting reading, showing RCA's thought processes in several of the specifications for the receivers; for example, the cabinet and stand for the Radiola IX, the cabinets for the Radiolas XI and XII, and the wavelength range for the Radiola XII.

Analysis

The sets show great design ingenuity and would most likely be quite desirable today -- had they been manufactured. But, it is quite likely that their desirability today would be enhanced by relative scarcity, since they would probably have been priced too high for their outdated performance and for the radio market in general. [Table III](#) shows the estimated list prices for the sets.

Compared to competitive receivers available for the Christmas season of 1923, these Radiolas do not appear to offer competitive value. For example, the popular Freed-Eisemann NR-5, a Neutrodyne, had a list price of \$150. It is unlikely that the 3-tube, regenerative Radiola IX, at about the same price, would have come close to the NR-5 in performance.

It is interesting to note that RCA benchmarked performance goals for its new models against its old models; e.g. "Radiola XI to give performance superior to Radiola IV and Radiola Grand." This is a certain way to ensure obsolete design when products are introduced.

RCA did appear to be stretching a bit technically with the top of the line Radiola XII. However, except for the hope of AC operation, there was little substance behind the "hoped for" superiority.

But, if the mainly regenerative circuit designs for Radiolas VIII-XII were not exciting, the proposed cabinet designs were another matter. Here is some truly innovative thinking. With the exception of Radiola XI, which appears to be nothing more than an improved Radiola IV, some very creative concepts are evident:

Radiola VIII -- the beginning of miniaturized components yielding a shallow panel depth later used on Radiola VII, VII-B and IX; Radiola IX -- the matching stand, while not practical, was very innovative; Radiola X -- this would have been the first cathedral radio, seven years ahead of its time; Radiola XII -- a very early attempt to create a console cabinet of unique design whose form is dictated by the requirements of radio (loudspeaker above, batteries below).

Having the benefit of 75 years of hindsight, we find it easy to be critical of RCA's plans for the 1923 Christmas season. Yet, RCA definitely made the correct decision in scrapping the original Radiolas VIII-XII in favor of the now familiar April 1924 line. The Radiola Superheterodyne portable was a smashing success, even at its original list price of \$286. This radio established RCA as a technology leader --a reputation maintained for many years. The expensive Radiola Super VIII became America's first successful console radio, judging from the number of surviving examples.

Radiolas III and III-A offered value-conscious customers a way to move up to the now prestigious RCA brand. Only the Regenoflex and the derivative Radiola X seem to have missed the mark with the consumer.

Although RCA was correct in scrapping the original 1923-1924 sets in favor of the April 1924 line, as a collector, I can't help but wish that the original Radiolas VIII-XII could have made it to production. They certainly would have made interesting and desirable collectibles today.

References:

Douglas, Alan. *Radio Manufacturers of the 1920's, Vol. 3 -- RCA to Zenith*. Vestal, N. Y.: Vestal Press, 1991.

RCA Research Department. *Specifications for Broadcast Receivers for 1924*. Jan. 16, 1923.

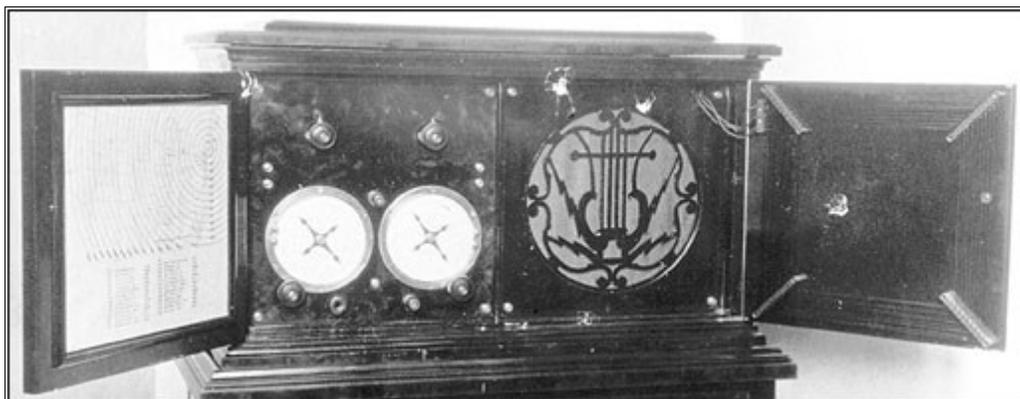
Wolkonowicz, John. "The Radiola Superheterodyne Story," *Radio Age*, 1977 to 1978.

Author's Acknowledgments:

Thanks to John Terrey for finding and sharing the RCA document upon which this article is based; to both Alan Douglas and Richard G. Wolven for their many years of stimulating discussion, which provided much of the background for this article; and to Alan Douglas for the photos, provided by John Milton Williams, who originally obtained them from the heirs of Arthur F. Van Dyck.

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John Wolkonowicz has been interested in early radios and their related literature for over 30 years. His previous writing includes articles on Atwater Kent and RCA, as well as a 100-page analysis of the Philco Corp. Of significance to this article, John's professional life involves product development in the automobile industry.



An RCA photograph taken July 20, 1923, appearing to be the Radiola XI The Jewel. The table designed for it is not shown here. (From the Alan Douglas collection of Arthur F. Van Dyck photos.)



An RCA photograph (probably taken October 10, 1922) of a cabinet appearing to be for the Radiola XII Superba. (From the Alan Douglas Collection of Arthur F. Van Dyck photos.)

Table II -- GENERAL SPECIFICATIONS

The following general specifications applied to all sets, Radiolas VIII through XII.

A few radically new features are introduced, where technically justified, in order to give sales advantage and marked characteristics to the new line. These features are judged desirable after close study of experience to date and the trend of the art.

Appearance. Cabinets and all features affecting appearance shall be correct artistically, and it is recommended that artists expert in matters of form be consulted in the design.

Battery Space. All sets are to have self-contained battery space with easy replacement by the novice. If means for using lighting circuit power are discovered before development of this line is completed, the battery space in sets XI and XII should be so arranged as to make it possible to replace the batteries with the lighting circuit supply apparatus.

Battery Supply. This shall be such that one set of batteries will give satisfactory service for at least three months of average use, defined as one hour per day.

Tubes. Tubes shall be Model UV-199. This choice is made because it is necessary to settle upon *one* type, and at the time, the UV-199 tube is the better choice, for the following reasons. It is a patented device, requires less filament power, has less variation in production, has smaller size, and will have greater sales advantage on account of being a newer type.

In Radiola XII, UV-201A tubes may be used if lighting circuit supply is used.

No fewer than two tubes shall be used in any set, nor more than eight. The performance capabilities of these receivers is based upon transmitting stations of relatively low power (1/2 to 1 KW.)

Antenna. Open aerial and ground system will be used in Radiolas VIII to XI. Radiola XII may use either open aerial or closed coil aerial, if the circuits are such as to give the requisite sensitivity. Aerials from 20 to 100 feet in length are to be accommodated.

Selectivity. An interfering signal of frequency 15,000 cycles per second or more higher than the desired signal, or lower, and of five times the field strength of the desired signal, shall not emerge from background noises, when the desired signal is giving normal full tube output. Selectivity shall not cause serious attenuation of speech or music up to 3,000 cycles per second.

Quality of Reproduction. This factor will be approximately the same in all sets, except that it may be improved in some sets by balanced tube circuits or very special loud speakers. Radiola XI and XII may be improved by special means if such are discovered.

Regeneration. All sets except Radiola XII may utilize regeneration.

Radiation. No receiver shall be capable, under any condition of adjustments, of causing signals or interference in any other receiver within a distance of 15 feet.

Tuning Methods. The number of controls shall be the minimum consistent with operating requirements and once each control is set, it is not affected by later adjustment of other controls.

Controls. Major controls such as wavelength and regeneration shall have only fine adjustment. The pointer shall be double ended with one end indexing a scale and the other end on either a factory wavelength calibration scale or a space for marking station settings.

Shielding. Means shall be provided such that wave field action upon any part of the receiver shall not produce responses to decrease the effectiveness of the provisions for selectivity.

Panels. Wood panels, suitably finished, are preferred. Radiola XII will be wood only.

Terminals. Terminals are to be like those used on the Radiola Grand antenna.

Rheostats. Exceptional care shall be used in the design and construction of rheostats. Trouble of one kind or another has been experienced in the past with every design of filament rheostat, the most common being noise due to varying contact drop.

A form which is strongly recommended for consideration is one in which the resistance is adjusted in steps by means of a point switch, five or six points are probably sufficient with one for the off position. Also it is thought that some sales argument can be had from this arrangement as virtue in the tube is indicated by the freedom from critical adjustment. Careful consideration of this scheme is requested, as it is believed to be the logical and timely step toward the eventual and desirable condition of non-adjustable tubes.

At any rate, manipulation of the rheostat shall not produce noise if continuously variable, or more than single clicks if the switch method is used.

Dials. Where dials are used, flat on a panel surface, they shall be outlined by a raised brass ring, similar to the bezels used to cover edges of holes in panels, or equivalent effect.

Loud Speakers. Loud speakers will be judged separately by expert analytical measurement by the Radio Corporation, and by performance in conjunction with the amplifiers used.

Telephone Jack. A telephone jack for headset operation is to be provided in all sets. It shall be so placed in the circuit that the headset will have comfortable loudness when the loud speaker (with further amplification) has normal full load signals.

Automatic Switching. Consideration shall be given to methods for automatically switching off filaments when cabinets are closed, or devices to prevent closing of cabinets with filaments on. Still more desirable is a prominently visible indicator that the filaments are on, but no means seem available which take sufficiently small power. Radiola XII must have the automatic switching feature.

Mechanical Design. The mechanical form, detail and workmanship of this line must be above criticism. Radio apparatus as a household utility must be as reliable as the phonograph, the telephone, the automobile or the typewriter, and there is no reason why it cannot be. It is therefore expected and will be required that every model show mechanical design of high order.

Patents. Other things being equal, those circuits will be favored which

afford patent protection.

Distinguishing Marks. Markings for identifying manufacturers will be decided upon later. They are to be such as not to be understandable to purchasers.

Antenna. For an indoor antenna, 100 feet of white double silk-covered copper wire, No. 28, shall be supplied with each set.

Based on "Specifications for Broadcast Receivers for 1924," RCA Research Dept., Jan. 16, 1923.

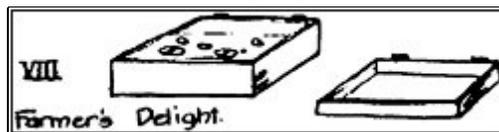
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| Table III -- 1923/24 Radio Price Estimates | | |
|---|-----------------|------------------|
| Model No. | Cost to RCA | Est. List Price* |
| Radiola XIII | \$25-\$30 | \$75-\$90 |
| Radiola IX | \$35 | \$105 |
| Radiola IX | \$42 with stand | \$125 |
| Radiola X | \$45-\$50 | \$135-\$150 |
| Radiola XI | \$70-\$80 | \$210-\$240 |
| Radiola XII | \$125-\$140 | \$375-\$420 |
| *Three-times RCA cost based on a cost to dealers of 2-times RCA cost and a 50% dealer markup. | | |

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Radiola VIII -- "Farmer's Delight"

This set is the lowest cost of the line. It is not provided with or intended for loud speaker use, and in general replaces the Radiola II of the present line, although it should have superior performance by virtue of more efficient (for example, reflex) use of tubes.



Cabinet. Similar in material and finish to the Type RS set and Radiola II. It should be possible to close the set when not in use to form a cabinet or box of good appearance. Operating panel is to be horizontal. Battery space

to be provided.

Tubes. Two UV-199 tubes. Probably not more than 45 volts plate battery should be used to economize on battery space.

Circuit. To give an output equal or superior to the Radiola II or the Type RS set for both high and low signal field strengths and to work satisfactorily with an external two-stage amplifier for loud speaker operation.

Telephone Jack. Provided.

Wavelength Range (useful). At least 285-540 meters; 200-540 meters is desirable.

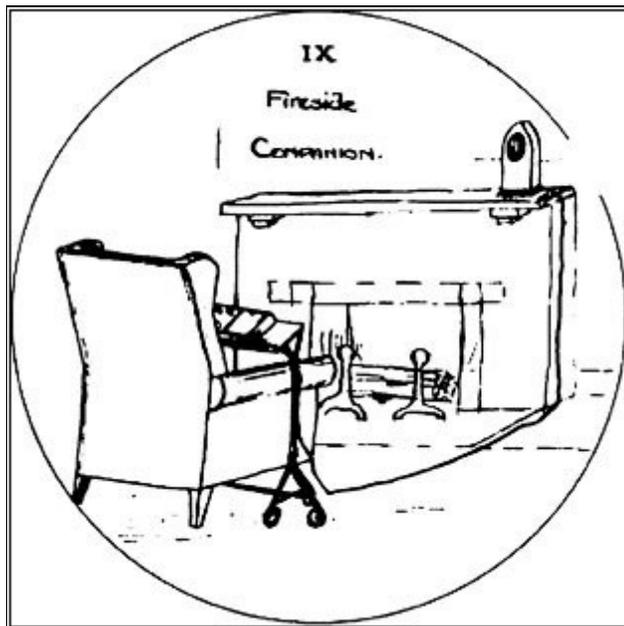
Volume Control. As described for the Radiola IX, unless undue complication is brought about.

Cost to Radio Corp. \$25 to \$30 including tubes but excluding batteries and headset.

Based on "Specifications for Broadcast Receivers for 1924," RCA Research Dept., Jan. 16, 1923.

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Radiola IX -- "Fireside Companion"



This set is the next higher class above the Radiola VIII. It is intended to be somewhat of a novelty set, and a tryout of the idea of greater convenience of operation.

Cabinet. Material and finish same as Radiola VIII. Operating panel is horizontal. The cabinet is to be shallow with batteries the determining factor. Overall height being about 4¹/₂" with the 2" cover removed. Battery compartment is on the right, operating panel on the left with tubes arranged at the back more or less as in the Radiola Sr. Overall dimensions about 18" x 11" x 4¹/₂" with cover off.

The idea in this design is to make the set usable in at least two ways: first, resting upon a table; second, set upon a special stand for use beside a chair, bed, etc. It is felt that the exercise of design ingenuity will bring out a form with such possibilities. Both the height and angle of the panel should be adjustable.

The set is to extend over the lap of the operator when seated comfortably in a chair, the battery side of the case forming a book rest. Loud speaker is not included in the cabinet, but is separate.

Tubes. Three UV-199 tubes. Probably not more than 66 volts plate battery should be used to economize on battery space.

Circuit. To give an output equal or superior to the Radiola IV and Radiola Grand for both high and low signal field strengths.

Telephone Jack. Provided for headset or loud speaker.

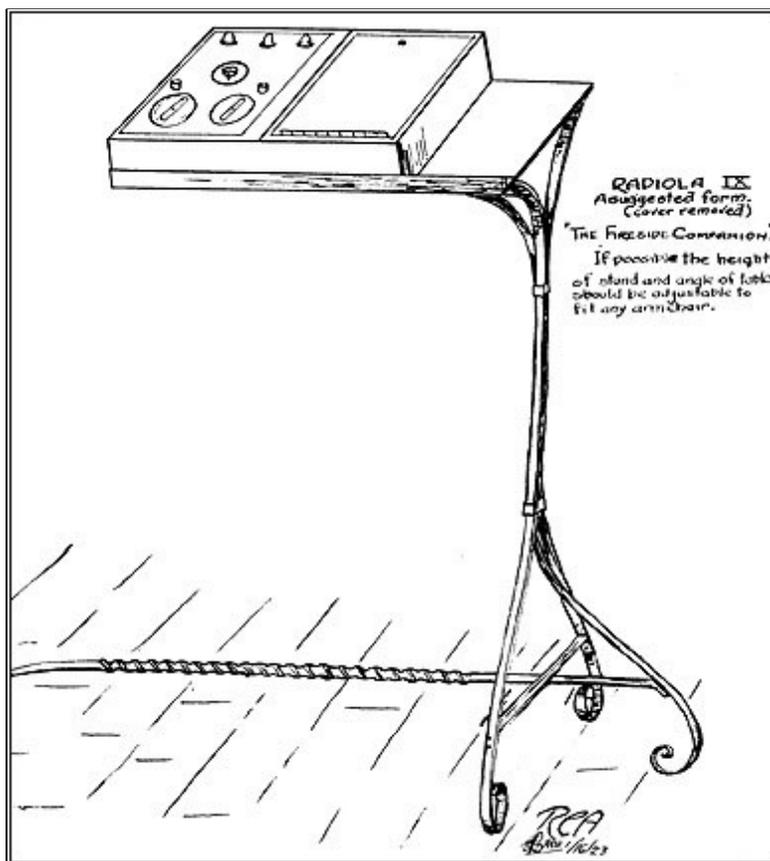
Wavelength Range (useful). At least 285-540 meters; 200-540 meters is desirable.

Volume Control. Separate means of volume control shall be provided if no other circuit control which operates without affecting quality (such as antenna coupling) is provided. This control shall govern the input to the first tube.

Cost to Radio Corp. Not to exceed \$35 including tubes but excluding batteries, loud speaker and headset.

Loud Speaker. A separate device, connected with the set by flexible cord about 20 feet long, which is supplied with the receiver. Loud speaker as a separate device is to have a cost to Radio Corp. not exceeding \$7.00.

Stand. This shall be as cheap as possible consistent with good appearance. Wood or wrought iron may be used. Cost to Radio Corp. not to exceed \$7.00.



Based on "Specifications for Broadcast Receivers for 1924," RCA Research Dept., Jan. 16, 1923.

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Radiola X -- "Urban"

This set is to be identical with the Radiola IX in mechanism except tube mounting perhaps, but to be housed in different cabinet, which is to contain batteries and loud speaker.

Cabinet. It is desired to make this set as inexpensive as possible, and the cabinet can therefore probably not be as high quality as Radiola IV, Radiola Grand, etc. The operating panel is to be vertical with the horn grille opening above. Small doors like Radiola IV are preferred to large covers like Radiola Grand.

Tubes. Same as Radiola IX.

Circuit. Same as Radiola IX.

Telephone Jack. Same as Radiola IX.

Wavelength Range. Same as Radiola IX.



Volume Control. Same as Radiola IX.

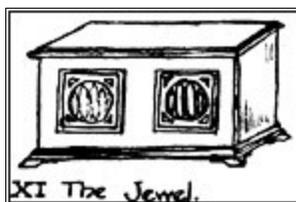
Cost to Radio Corp. Between \$45 and \$50 including tubes but excluding batteries, and headset.

Based on "Specifications for Broadcast Receivers for 1924," RCA Research Dept., Jan. 16, 1923.

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Radiola XI -- "The Jewel"

This receiver is to be intermediate in performance and in cost. It is to correspond in quality with Radiola IV and Radiola Grand except that performance should be somewhat superior to these.



Cabinet. Shall be similar to Radiola IV, except that internal appearance (when cover is lifted) shall be improved (perhaps by a secondary cover), and battery arrangements, especially from the replacement viewpoint, shall be improved. Cabinet houses batteries and loud speaker.

Tubes. Four to six UV-199 tubes.

Circuit. To be such as to give performance superior to Radiola IV and Radiola Grand in both sensitiveness and quality of reproduction.

Telephone Jack. Provided and shall cut off circuit to loud speaker.

Wavelength Range. Same as Radiola IX.

Volume Control. Same as Radiola IX.

Stand. Although primarily a table set, a separate stand may be optional with the purchaser, and the set should be arranged to mount on a suitable stand when desired. Cost to Radio Corp. not to exceed \$10.00.

Power Output Capacity. Sufficient to suit the larger sort of residence rooms. Balanced tube (push-pull) circuit may be used.

Quality of Reproduction. Superior to all present day sets and to the Radiolas VIII, IX and X.

Antenna Leads. Silk covered leads, about 10 feet long, are to be supplied.

Cost to Radio Corp. Between \$70 and \$80 including tubes but excluding batteries, stand, and headset.

Based on "Specifications for Broadcast Receivers for 1924," RCA Research Dept., Jan. 16, 1923.

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Radiola XII -- "Superba"

This is the highest class set of the line and is to be "de luxe" in all particulars.

Cabinet. One style shall be the standard product, but the mechanism shall be such that it will be possible to install it without serious change in other cabinets ordered especially. The design of cabinet shall be similar to the model on hand at the Radio Corp. unless a superior one can be found. The floor cabinet is self-supporting and the operating panel is vertical. There is space for a loud speaker horn four feet long.

Tubes. Five to eight UV-199 tubes may be used with battery supply, or five to eight UV-201A tubes with lighting circuit supply.

Circuit. Performance at least equal to or better than the Radiola XI in sensitiveness and to give quality of reproduction superior to the Radiola XI.

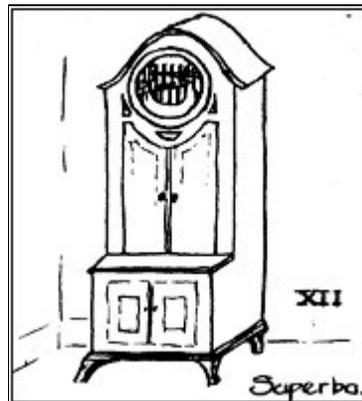
Telephone Jack. Provided.

Storage Space. Provided for headset, spare tubes, etc.

Wavelength Range (useful). At least 285-540 meters; 200-1,000 meters is desirable to anticipate future broadcast wavelength developments if it can be obtained without too great complication.

Volume Control. Same as Radiola IX.

Power Output Capacity. To suit the largest sort of residence rooms without overloading tubes or loss of quality.



Automatic Switching. This set shall have a door switch in addition to the regular filament switch, both of which will open the filament circuit when the doors are closed.

Cost to Radio Corp. Between \$125 and \$140 including tubes but excluding batteries, and headset.

Based on "Specifications for Broadcast Receivers for 1924," RCA Research Dept., Jan. 16, 1923.

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