U. S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS
WASHINGTON

IRPL-R29

Letter
Circular
LC-814
(Supersedes
Circular C385)

REVISED CLASSIFICATION OF RADIO SUBJECTS USED IN NATIONAL BUREAU OF STANDARDS

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Contents

I. Introduction

The present pamphlet is an expansion and revision of Bureau of Standards Circular C385, "Classification of Radio Subjects - An Extension of the Dewey Decimal System," published in 1930. The latter, in turn, was a revision of the Bureau's Circular C138, published in 1923. As indicated in the title of Circular C385, the classification was an extension of the general Dewey Decimal System, prepared by Doctor Melvin Dewey for classifying books, publications, references, and other material as found in reference and public libraries. The Dewey Classification at that time did not include a detailed classification for radio, and the Bureau's Circular C385 was designed to fill the need of organizations desiring a classification table covering radio science. The classification presumably could be expanded in any part where the user found it desirable to further subdivide a given topic. This possibility was not followed at the Bureau, so that as the years passed and hundreds of new topics appeared, it became difficult to file new references according to Circular C385. A revised classification was accordingly prepared.

II. The Dewey Decimal System of Classification

Under the Dewey decimal system, classification is by subject, numbers being used to show the relative positions of the books, cards, or other material. The numbers, therefore, show both what the material is (that is, its subject matter), and where the material is (that is, its location on the shelves or in the files). In the classification list the indentation and the figures prefixed to each item show the rank of each subject in the classification.

Accompanying the extended classification is an alphabetical index. The index is used in determining the number to assign to a given item or material, or to learn where to place it in the files. The index is also used by any person desiring to locate the material covering a given subject. The reference number tells immediately where all material on that and on related subjects can be found.

The whole subject of radio is given the number 621.38⁴ in the Dewey classification. The relation of this place to the general field of knowledge is shown by the following table:

Class	600	Useful arts
	20	Engineering
	1	Mechanical
	0.300	Electrical
	.080	Communication
	.00⁴	Radio

In a strictly radio library or office it is convenient to represent the figure 621.38⁴ by "R" and this abbreviation is used below in the further classification of radio. Thus, R211 indicates 621.38⁴.211.

III. Classification of Radio Subjects

In the classification of radio subjects the main features of the Dewey system as to subject and form classification are retained.

The class (R800) is anomalous. This space in the classification is actually used for nonradio subjects. Such material should, however, be given its regular class number according to the Dewey system. If it were arranged in strictly numerical order, some of this material would come before radio and some after radio. By choosing arbitrarily to use the space denoted by R800 for this purpose it is possible to arrange the nonradio material in classified order, but to keep it subordinate to a large volume of radio material. Accordingly, a number of nonradio items are included where R800 comes in the list under Section V below, but are given their number according to the complete classification.

In filing a specific paper under a given class or subdivision, a convenient file number for it can readily be made by using its subject classification number plus a small letter; the order chosen for the

letters used for subsequent papers can be according to author, chronological order of accession, or any other consideration depending on the circumstances.

In a card file of references to periodical literature, it is convenient to arrange the cards under each final class or subdivision either in chronological order or in alphabetical order by the names of authors. Cross references may be made conveniently in such a card file by preparing two or more cards and marking each card, after the file number, "X_____". For example, suppose an article on fading (R113.1) includes a method of measuring field intensity by the calibrated loop antenna method (R271.11); two cards should be made out, one marked R113.1 XR271.11 and the other R271.11 XR113.1.

The needs of individual collections of files vary widely, and expansions of the system can be made by any person using the system.

The former Circular was arranged so that the numbers used indicated the type of article, i.e., whether dealing chiefly with general radio material, radio principles, measurements, apparatus, communication systems, applications, stations, manufacturing, or nonradio subjects, as shown by number in the groups R000, R100, R200, R300, R400, R500, R600, R700, and R800*, respectively. This arrangement brought in a certain amount of duplication, particularly in the R100, R200, and R300 groups. Other difficulties were experienced in use; for example, it was found necessary to file some theoretical articles under the R300 group, and some descriptive articles under the R100 group, because of lack of classification numbers in the desired group.

In the revised classification the same general outline of the different hundreds groups has been used, but in certain sections numbers close together provide for theory, apparatus, and procedure. Likewise, the R100 group does not provide for theoretical articles on every subject and item in the table, so that if the reference relates to theory of an item found only in the R300 group, it must be filed under that number.

In order to overcome some of these inconsistencies, it appeared that a complete change would have to be made in the classification. This seemed undesirable because of the work involved in making a complete new system, and the work required to change files made in accordance with Circular C385 to agree with a new system. The changes made in the numbering have not been numerous, and it is hoped that users of the revised classification will not have difficulty.

It is expected that additions to the present system will be made (1) from suggestions received by users, (2) as the need develops, and (3) as secret material becomes unclassified.

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*The numbers in this group were taken directly from the Dewey Classification Tables and appeared with the numbers as given by Dewey, with a few additions.

The present revision, although based on Bureau of Standards Circular C385, which in turn was based upon the twelfth edition, 1927, of Doctor Melvin Dewey's book "Decimal Classification and Relative Index for Libraries, Clipping Notes, etc.", should not be confused with the fourteenth edition, 1942, of that book, which has devoted some space to radio. The subjects covered in that edition have numbers differing from those assigned in this Circular.

A preliminary draft of the present classification table was sent to a number of persons and organizations for suggestions. No index was provided with that draft so that it was quite difficult to determine whether particular items were included or not. The cooperation of those who gave suggestions for the present classification is gratefully acknowledged. The bureau will appreciate further suggestions on this revision.

IV. Revised Classification of Radio Subjects

R000 RADIO. (Material of a general nature for which no specific classification can be used and which relates to the field as a whole.)
R000.1 .....Developments in other countries.
R001 .....Statistics.
R004 .....Design.
R005 .....Executive; administrative; personnel.
R007 .....Laws; regulations.
R007.9 .....International radio conferences; treaties.
R009 .....Reports; bulletins.
R010 ....Research.
R020 ....Standards.
R030 ....Terminology.
R031 .....Symbols.
R032 .....Definitions.
R040 ....Lectures.
R050 ....Publications.
R051 .....Specifications.
R052 .....Textbooks.
R053 .....Periodicals.
R055 .....Bibliographies.
R060 ....Societies; meetings.
R070 ....Education; training.
R071 .....Engineer's relations with public.
R072 .....Research laboratories; experiment stations.
R074 .....Museums; exhibits.
R078 .....Accessories; slide rules; calculators.
R080 ....Collections; miscellanies.
R081 .....Tables.
R082 .....Nomograms; abacs.
R084 .....Maps and charts.
R090 ....History; reviews.
R091 .....Radiotelegraphy.
R094 .....Radiotelephony.
R094.1 .....Transmission.

R094.2 .....Reception.
R095 .....Television.
R096 .....Facsimile.
R097 .....Biographical.
R100 ..RADIO PRINCIPLES. (Material having to do with underlying theory.)
R110 ....Radio Waves (propagation phenomena and theory; atmospherics).
R111 .....Theory (includes propagation at highest frequencies used).
R111.1 .....Velocity of radio waves.
R111.2 .....Radiation.
R111.6 .....Reception.
R112 .....Radio wave propagation (See also R113).
R112.1 .....Ground-wave propagation.
R112.11 .....Direct-wave propagation.
R112.111 .....Refraction of ground wave.
R112.112 .....Propagation of ground wave through ground and sea.
R112.12 .....Surface-wave propagation.
R112.121 .....Surface-wave propagation over land path.
R112.122 .....Surface-wave propagation over sea path.
R112.123 .....Surface-wave propagation over mixed land and sea paths.
R112.124 .....Surface-wave propagation through jungles.
R112.125 .....Surface-wave diffraction.
R112.126 .....Surface-wave polarization.
R112.127 .....Surface-wave tilt.
R112.13 .....Ground-reflected wave propagation.
R112.131 .....Ground reflection coefficients.
R112.131.1 .....Brewster's angle.
R112.132 .....Ground constants.
R112.133 .....Antenna vertical patterns.
R112.14 .....Height-gain function for ground-wave propagation.
R112.15 .....Multipath transmission of ground wave.
R112.16 .....Absorption of ground wave in atmosphere.
R112.2 .....Tropospheric-wave propagation.
R112.21 .....Standard refraction of tropospheric wave.
R112.22 .....Reflection of tropospheric wave from atmospheric inversions.
R112.23 .....Superrefraction (anomalous propagation) of tropospheric wave.
R112.24 .....Atmospheric absorption of tropospheric wave.
R112.25 .....Effect of meteorological fronts on tropospheric wave.
R112.26 .....Meteorology of lower atmosphere as affecting tropospheric wave propagation.
R112.27 .....Height-gain function for tropospheric wave propagation.
R112.3 .....Guided-wave propagation.
R112.31 .....Guided-wave propagation at very low frequencies.
R112.32 .....Guided-wave propagation at low frequencies.
R112.33 .....Modes of guided-wave propagation.

R112.4 .....Sky-wave propagation.
R112.41 .....Ionosphere.
R112.42 .....Reflection and refraction of sky wave.
R112.43 .....Modes of sky-wave propagation.
R112.5 .....Skip distance and maximum usable frequency (muf).
R112.51 .....Oblique-vertical incidence relations for maximum usable frequency.
R112.52 .....Maximum usable frequency (muf).
R112.521 .....Maximum usable frequency by regular layers.
R112.522 .....Maximum usable frequency by irregular or sporadic reflection.
R112.523 .....Maximum usable frequency by long scatter.
R112.524 .....Maximum usable frequency by short scatter.
R112.525 .....Maximum usable frequency as affected by bursts.
R112.526 .....Maximum usable frequency as affected by spread echoes.
R112.53 .....Calculation of maximum usable frequency.
R112.531 .....Calculation of maximum usable frequency for single-hop propagation.
R112.532 .....Calculation of maximum usable frequency for multi-hop propagation.
R112.54 .....Prediction of maximum usable frequency.
R112.55 .....Transmission above maximum usable frequency.
R112.6 .....Sky-wave field intensities.
R112.61 .....Unabsorbed sky-wave field intensity.
R112.62 .....Ionospheric absorption of sky-wave field intensity.
R112.621 .....Ionospheric absorption of sky-wave field intensity for short distances.
R112.622 .....Ionospheric absorption of sky-wave field intensity for medium distances.
R112.623 .....Ionospheric absorption of sky-wave field intensity for long distances.
R112.624 .....Oblique-vertical incidence relations for ionospheric absorption.
R112.63 .....Sky-wave field intensity variations.
R112.631 .....Diurnal variations of sky-wave field intensity.
R112.632 .....Seasonal variations of sky-wave field intensity.
R112.633 .....Long-time variations of sky-wave field intensity.
R112.64 .....Prediction of sky-wave field intensities.
R112.65 .....Radiated power as affecting sky-wave field intensity.
R112.7 .....Propagation of atmospheric radio noise.
R112.71 .....Source of atmospheric radio noise.
R112.72 .....Diurnal variations of atmospheric radio noise.
R112.73 .....Geographical variations of atmospheric radio noise.
R112.74 .....Frequency variations of atmospheric radio noise.
R112.75 .....Seasonal variations of atmospheric radio noise.
R112.751 .....Atmospheric radio noise grades.
R112.76 .....Required radio field intensities.
R112.761 .....Atmospheric noise as affecting required radio field intensity.
R112.762 .....Receiving set noise as affecting required radio field intensity.
R112.763 .....Directional properties of antennas as affecting required radio field intensity.

R112.8 .....Lowest useful high frequency (luhf).
R112.9 .....Polarization of sky waves.
R112.91 .....Ordinary-wave polarization.
R112.92 .....Extraordinary-wave polarization.
R112.93 .....Downcoming-wave polarization.
R112.94 .....Ground reflection phenomena.
R112.95 .....Effect of ionosphere on polarization.
R113 .....Radio wave propagation (continued), (See also R112).
R113.1 .....Fading.
R113.101 .....Interference fading.
R113.102 .....Polarization fading.
R113.103 .....Absorption fading.
R113.103.1 .....Sudden ionosphere disturbances.
R113.104 .....Flutter fading.
R113.105 .....Skip fading.
R113.106 .....Sunrise-sunset fading.
R113.107 .....Selective fading.
R113.108 .....Rayleigh distribution of field intensities.
R113.109 .....Scintillations of field intensities.
R113.110 .....Multipath transmission fading.
R113.111 .....Shadows of objects.
R113.2 .....Propagation variations.
R113.21 .....Skip distance and maximum usable frequency (muf).
R113.211 .....Diurnal variations.
R113.212 .....Seasonal variations.
R113.213 .....Latitude variations.
R113.214 .....Longitude variations.
R113.215 .....Annual variations.
R113.216 .....Solar cycle variations.
R113.217 .....Random variations.
R113.218 .....Prediction of skip distance and muf.
R113.22 .....Field intensity and ionospheric absorption.
R113.221 .....Diurnal variations of field intensity and ionospheric absorption.
R113.222 .....Seasonal variations of field intensity and ionospheric absorption.
R113.223 .....Latitude variations of field intensity and ionospheric absorption.
R113.224 .....Longitude variations of field intensity and ionospheric absorption.
R113.225 .....Annual variations of field intensity and ionospheric absorption.
R113.226 .....Solar cycle variations of field intensity and ionospheric absorption.
R113.227 .....Random variations of field intensity and ionospheric absorption.
R113.228 .....Prediction of field intensity and ionospheric absorption.
R113.23 .....Tropospheric wave variations.
R113.230.1 .....Diurnal variations of tropospheric wave.
R113.230.2 .....Seasonal variations of tropospheric wave.

R113.230.3 .....Latitude variations of tropospheric wave.
R113.230.4 .....Longitude variations of tropospheric wave.
R113.230.5 .....Annual variations of tropospheric wave.
R113.230.6 .....Solar cycle variations of tropospheric wave.
R113.230.7 .....Random variations of tropospheric wave.
R113.230.8 .....Prediction of tropospheric wave variations.
R113.230.9 .....Standard refraction of tropospheric wave.
R113.231.0 .....Superrefraction of tropospheric wave.
R113.231.1 .....Atmospheric absorption of tropospheric wave.
R113.231.2 .....Meteorological effects on tropospheric wave.
R113.24 .....Irregularities of radio wave propagation.
R113.241 .....Sudden ionosphere disturbances.
R113.242 .....Scatter.
R113.242.1 .....Short scatter.
R113.242.2 .....Long scatter.
R113.242.3 .....Auroral zone scatter.
R113.243 .....Ionosphere storms.
R113.244 .....Sporadic E reflection.
R113.245 .....Cross modulation in ionosphere.
R113.246 .....Cross modulation of radio waves by objects.
R113.3 .....Directional variations of radio wave propagation.
R113.301 .....Non-great-circle propagation.
R113.302 .....Vertical angles of arrival.
R113.303 .....Heiligtag effect.
R113.304 .....Direction-finder errors.
R113.305 .....Ionosphere layer tilt.
R113.306 .....Reflections from ionosphere clouds.
R113.307 .....Reflections from objects.
R113.308 .....Scattering.
R113.309 .....Auroral-zone reflections.
R113.4 .....Solar and cosmic effects on radio wave propagation.
R113.401 .....Normal ionizing radiation effect on radio wave propagation.
R113.402 .....Sunspots effect on radio-wave propagation.
R113.403 .....Solar-cycle variations.
R113.404 .....Solar corona.
R113.405 .....Solar flocculi and faculae.
R113.406 .....Solar prominences.
R113.407 .....Solar flares.
R113.408 .....Ultra-violet radiation from sun, effect on radio wave propagation.
R113.409 .....Corpuscular radiation from sun, effect on radio wave propagation.
R113.409.1 .....Charged corpuscles from sun, effect on radio wave propagation.
R113.409.2 .....Neutral corpuscles from sun, effect on radio wave propagation.
R113.410 .....Lunar effects on radio wave propagation.
R113.411 .....Solar radio noise.
R113.412 .....Eclipses.
R113.413 .....Cosmic radiation, effect on radio wave propagation.
R113.414 .....Cosmic noise.
R113.415 .....Meteors and meteoric matter.

R113.5 .....Geophysical effects on radio wave propagation.
R113.501 .....Meteorological effects on radio wave propagation.
R113.501.1 .....Meterological effects on tropospheric propagation.
R113.501.2 .....Meterological effects on atmospheric radio noise.
R113.501.3 .....Meterological effects on ionosphere.
R113.502 .....Constitution of atmosphere.
R113.502.1 .....Ionization processes in atmosphere.
R113.502.2 .....Recombination processes in atmosphere.
R113.502.3 .....Light of night sky.
R113.502.4 .....Causes of ionosphere layer formation.
R113.502.41 .....Ozone layer of atmosphere.
R113.502.42 .....D layer of atmosphere.
R113.502.43 .....E layer of atmosphere.
R113.502.44 .....F1 layer of atmosphere.
R113.502.45 .....F2 layer of atmosphere.
R113.502.46 .....Sporadic-E layer of atmosphere.
R113.502.49 .....Other layers of atmosphere.
R113.503 .....Ionosphere storms.
R113.503.1 .....Auroral zone.
R113.503.2 .....Auroras.
R113.503.3 .....Magnetic storms.
R113.503.4 .....Earth current variations.
R113.503.5 .....Radio propagation disturbances.
R113.503.6 .....Recurrence effects.
R113.504 .....Sudden ionosphere disturbances.
R113.505 .....Latitude variations of ionosphere.
R113.506 .....Longitude variations of ionosphere.
R113.507 .....Geomagnetic variations of ionosphere.
R113.508 .....Magneto-ionic effects on ionosphere.
R113.509 .....Ground constants.
R113.509.1 .....Ground reflection coefficients.
R113.6 .....Ionosphere.
R113.601 .....Description of ionosphere.
R113.602 .....Characteristics of ionosphere.
R113.602.1 .....Critical frequency of ionosphere.
R113.602.2 .....Heights of ionosphere.
R113.602.21 .....Virtual height of ionosphere.
R113.602.22 .....Actual height of ionosphere.
R113.602.3 .....Ion distribution in ionosphere.
R113.602.4 .....Reflection coefficients of ionosphere.
R113.602.5 .....Maximum usable frequencies (muf) and skip distance.
R113.602.6 .....Maximum usable frequency factors.
R113.602.7 .....Absorption and reflection coefficients.
R113.602.8 .....Lowest usable high frequency (luhf).
R113.602.9 .....Polarization.
R113.603 .....F1 layer of ionosphere.
R113.604 .....F2 layer of ionosphere.
R113.605 .....E layer of ionosphere.
R113.606 .....E2 layer of ionosphere.
R113.607 .....D layer of ionosphere.
R113.608 .....Sporadic-E layer of ionosphere.

R113.609 .....Sporadic E2 layer of ionosphere.
R113.610 .....Stratification of ionosphere.
R113.611 .....Other layers of the ionosphere.
R113.612 .....Polar spur on ionosphere records.
R113.613 .....Magneto-ionic effects on ionosphere.
R113.613.1 .....Magneto-ionic effects on ordinary wave propagation.
R113.613.2 .....Magneto-ionic effects on extraordinary wave propagation.
R113.613.3 .....Magneto-ionic effects on "Z" wave propagation.
R113.614 .....Gyrofrequency for radio waves.
R113.615 .....Normal variations of ionosphere.
R113.615.1 .....Diurnal variations of ionosphere.
R113.615.2 .....Seasonal variations of ionosphere.
R113.615.3 .....Solar cycle variations of ionosphere.
R113.615.4 .....Latitude variations of ionosphere.
R113.615.5 .....Longitude variations of ionosphere.
R113.615.6 .....Random day-to-day variations of ionosphere.
R113.616 .....Predictions of ionosphere conditions.
R113.616.1 .....Critical frequencies of ionosphere.
R113.616.2 .....Heights of ionosphere.
R113.616.3 .....Muf and skip distance for sky-wave propagation.
R113.616.4 .....Absorption in sky-wave propagation.
R113.616.5 .....Luhf for sky-wave propagation.
R113.617 .....Anomalies and disturbances of ionosphere.
R113.617.1 .....Ionosphere storms.
R113.617.2 .....Forecasting of ionosphere storms.
R113.617.3 .....Sudden ionosphere disturbances.
R113.617.4 .....Lower layer absorption.
R113.617.5 .....Scatter.
R113.617.51 .....Long scatter.
R113.617.52 .....Short scatter.
R113.617.53 .....Auroral zone scatter.
R113.617.6 .....Bursts in ionosphere.
R113.617.7 .....Spread echoes from ionosphere.
R113.617.8 .....Ionosphere layer tilt.
R113.7 .....Calculation of propagation conditions.
R113.71 .....Handbooks on propagation conditions.
R113.72 .....Sets of graphs on propagation conditions.
R113.73 .....Nomograms on propagation conditions.
R113.74 .....Tables on propagation conditions.
R113.75 .....Transmission formulas and radio propagation.

Add following numbers to any of classes of R113.7 group to indicate frequency ranges. (Example, R113.721 Set of graphs for very low frequencies.)

R113
.001 .....Very low frequencies (below 30 kc).
.002 .....Low frequencies (30 to 300 kc).
.003 .....Medium frequencies (300 to 3000 kc).
.004 .....High frequencies (3000 to 30,000 kc).
.005 .....Very high frequencies (30 to 300 Mc).
.006 .....Ultra-high frequencies (300 to 3000 Mc).
.007 .....Super-high frequencies (3000 to 30,000 Mc and above).

R11^{4} ..... Atmospheric radio noise
R11^{4}.1 ..... Atmospheric radio noise sources.
R11^{4}.11 ..... Diurnal variations in atmospheric radio noise.
R11^{4}.12 ..... Seasonal variations in atmospheric radio noise.
R11^{4}.13 ..... Geographical variations in atmospheric radio noise.
R11^{4}.14 ..... Meteorological variations, effect on atmospheric radio noise.
R11^{4}.2 ..... Propagation of atmospheric radio noise.
R11^{4}.3 ..... Calculation of atmospheric radio noise.
R11^{4}.4 ..... Prediction of atmospheric radio noise.
R11^{4}.5 ..... Precipitation radio noise.
R11^{4}.6 ..... Whistlers.
R11^{4}.7 ..... Required field intensities to overcome atmospheric radio noise.
R11^{4}.8 ..... Effects of receiving antennas on atmospheric radio noise.
R115 ..... Directional properties of radio waves.
R115.1 ..... Great-circle path calculations of radio waves.
R115.11 ..... Distance calculations.
R115.12 ..... Bearing and azimuth calculations.
R115.2 ..... Non-great-circle path propagation of radio waves.
R115.21 ..... Ionosphere layer tilt effect on propagation.
R115.22 ..... Reflections of radio waves from ionosphere clouds.
R115.23 ..... Reflections of radio waves from objects.
R115.2^{4} ..... Long scatter of radio waves.
R115.25 ..... Short scatter of radio waves.
R115.26 ..... Auroral scatter of radio waves.
R115.3 ..... Bearing deviations of radio waves.
R115.31 ..... Long-route bearings.
R115.32 ..... Scatter as cause of bearing deviations.
R115.33 ..... Ionosphere storm effects on bearing deviations.
R115.3^{4} ..... Sporadic-E effects on bearing deviations.
R115.35 ..... Heiligtag effects on bearing deviations.
R115.36 ..... Polarization effects on bearing deviations.
R115.361 ..... Night effects on bearings.
R115.4 ..... Vertical angles of arrival of radio waves.
R115.5 ..... Ground reflection effects of radio waves.
R115.6 ..... Radio wave tilt.
R115.7 ..... Polarization effects on directional properties of radio waves.
R116 ..... Radar principles.
R117 ..... Waves on wires; transmission lines; parallel wires or concentric conductors.
R117.1 ..... Properties of transmission lines.
R117.11 ..... Conduction of r-f and a-f by transmission lines.
R117.111 ..... Non-resonant lines.
R117.112 ..... Resonant lines.
R117.12 ..... Impedance and impedance matching.
R117.121 ..... Impedance matching by network.
R117.122 ..... Impedance matching by resonant line coupling.
R117.123 ..... Impedance matching by quarter-wave coupling line.
R117.12^{4} ..... Impedance matching by stub-line.
R117.125 ..... Impedance matching by reentrant transmission line section.

R117.13 .....Irregularities in transmission lines.
R117.14 .....Balanced and unbalanced lines.
R117.15 .....Radiation from transmission lines.
R117.16 .....Loaded lines.
R117.17 .....Tapered lines.
R117.18 .....Pressurizing r-f lines.
R117.2 .....High-frequency cable.
R118 .....Wave guides.
R118.1 .....Rectangular wave guides.
R118.2 .....Nonrectangular wave guides.
R118.3 .....Transverse magnetic waves, TM or E.
R118.4 .....Transverse electric waves, TE or H.
R118.5 .....Cut-off frequency of wave guides.
R118.6 .....Excitation of modes of wave guides.
R118.7 .....Attenuation of wave guides.
R119 .....Cavity resonators.
R119.1 .....Nonreentrant-type cavity resonator.
R119.2 .....Reentrant-type cavity resonator.
R119.3 .....Properties of cavity resonators.
R119.31 .....Modes of oscillation of cavity resonator.
R119.32 .....Resonance frequency of cavity resonator.
R119.33 .....Q of cavity resonator.
R119.34 .....Impedance of cavity resonator.
R119.35 .....Coupling to cavity resonator.
R119.39 .....Other properties of cavity resonators.
R120 .....Antennas (See also R320).
R120.1 .....Vertical directional patterns of antennas.
R120.11 .....Ground reflection as affecting vertical directional patterns of antennas.
R120.2 .....Radiation efficiency of antennas.
R120.21 .....Radiated power from antennas.
R121 .....Condenser type antennas (ordinary elevated type) with ground or the usual type counterpoise.
R122 .....Linear antennas - not connected to ground or to the ordinary type of counterpoise.
R125 .....Directional antennas (transmitting in, or receiving from, a particular direction).
R125.1 .....Beam antennas, antenna arrays.
R125.2 .....Wave antennas.
R125.3 .....Coil antennas.
R125.31 .....Direction-finding antennas.
R125.4 .....Adcock antennas.
R125.5 .....Transmission-line antennas.
R125.6 .....Vertically radiating antennas.
R125.61 .....Resonant radiating antennas.
R125.62 .....Nonresonant radiating antennas.
R125.7 .....High-angle antennas for short-distance work.
R125.8 .....Low-angle antennas for long-distance work.
R126 .....Ground systems.
R127 .....Image antennas.
R128 .....Feeders for antennas (transmission lines, etc.).
R129 .....Other types of antennas (quarter-wave antennas; half-wave antennas).

R129.1 .....Multiple-tuned antennas.
R130 ....Vacuum tubes.
R131 .....General properties; characteristic curves of vacuum tubes.
R132 .....Amplifying action of vacuum tube; amplifier theory.
R133 .....Generating action of vacuum tube.
R133.1 .....Generating action of vacuum tube with negative grid.
R133.2 .....Generating action of vacuum tube with positive grid.
R133.3 .....Generating action of vacuum tube, relaxation oscillation.
R134 .....Detector action of vacuum tube.
R135 .....Modulating action of vacuum tube.
R136 .....Trigger action in vacuum tube.
R138 .....Electron emission; ionization; electron theory.
R138.1 .....Space charge effects in vacuum tube.
R138.2 .....Shot effect.
R138.3 .....Electron optics.
R138.31 .....Cathode-ray tubes.
R138.311 .....Electron gun.
R138.312 .....Deflection of electron beam.
R138.313 .....Fluorescent screen.
R138.4 .....Electron oscillations.
R138.5 .....Electron transit-time.
R139 .....Other vacuum-tube principles.
R139.1 .....Vacuum-tube circuit analysis.
R139.2 .....Special vacuum-tube circuit arrangements.
R139.21 .....Cathode follower circuit.
R140 ....Circuit theory and effects; transient effect; relaxation oscillations; parasitic oscillations.
R141 .....Simple radio circuits.
R141.1 .....Frequency of radio circuit.
R141.2 .....Resonance, tuning of radio circuit.
R141.21 .....Series resonance of radio circuit.
R141.22 .....Parallel resonance of radio circuit.
R141.23 .....Time constant of radio circuit.
R141.3 .....Impulse excitation.
R141.4 .....Relaxation oscillations.
R141.5 .....Parasitic oscillations.
R142 .....Coupled circuits.
R142.1 .....Direct coupling.
R142.3 .....Inductive coupling.
R142.5 .....Capacitive coupling.
R143 .....Networks.
R143.1 .....Resistance-type attenuators.
R143.2 .....Filters.
R143.3 .....Equalizers.
R143.4 .....Time-delay networks.
R143.5 .....Pulse-forming networks.
R144 .....Radio-frequency resistance; contact resistance theory.
R144.1 .....Damping; decrement.
R144.2 .....Skin effect.
R145 .....Impedance; reactance.
R145.3 .....Inductive reactance.
R145.5 .....Capacitive reactance.

R146 .....Harmonics; sub-harmonics.
R146.1 .....Harmonic amplification.
R146.2 .....Multivibrator.
R146.3 .....Harmonic radiation suppression.
R147 .....Beats.
R148 .....Modulation; modulated waves.
R148.1 .....Amplitude modulation.
R148.11 .....Modulation distortion.
R148.12 .....Modulation factor; percentage of modulation.
R148.13 .....Modulation side frequencies.
R148.14 .....Band width.
R148.15 .....Carrier suppression.
R148.16 .....Single side-band.
R148.17 .....Vestigial side-band.
R148.18 .....Intermodulation.
R148.19 .....Cross modulation.
R148.2 .....Frequency modulation.
R148.3 .....Phase modulation.
R148.4 .....Double modulation.
R148.41 .....Frequency conversion.
R148.5 .....Modulating methods.
R148.51 .....Grid modulation.
R148.511 .....Grid-current modulation.
R148.512 .....Grid-bias modulation.
R148.513 .....Low-level modulation.
R148.514 .....High-level modulation.
R148.52 .....Plate modulation.
R148.521 .....Heising or constant-current system of plate modulation.
R148.522 .....Modified constant-current system of plate modulation.
R148.523 .....Low-level modulation.
R148.524 .....High-level modulation.
R148.6 .....Pulse time modulation.
R148.7 .....Noise and hum effects.
R149 .....Rectification.
R150 ....Generating (transmitting) apparatus (except vacuum tubes).
R152 .....Spark transmitting apparatus.
R153 .....Arc transmitting apparatus.
R154 .....Alternator.
R160 ....Receiving apparatus, reception.
R161 .....Radio receiving sets.
R161.1 .....Selectivity of radio receiver.
R161.2 .....Sensitivity of radio receiver.
R161.3 .....Fidelity of radio receiver.
R161.4 .....Normal output of radio receiver.
R161.5 .....Interference output of radio receiver.
R161.6 .....Radio receiver noise.
R161.7 .....Distortion in radio receivers.
R162 .....Receiving-set circuit arrangements.
R163 .....Heterodyne reception.
R164 .....Superregenerative reception.
R165 .....Telephone receivers; loudspeakers.

R170 ....Interference.
R171 .....Beat interference.
R190 ....Other radio principles.
R191 .....Principles of piezo-electricity applied to radio.
R200 ..RADIO MEASUREMENTS AND STANDARDIZATION (Methods and use of apparatus for measurement, reports of measurements or tests).
R201 .....General methods and apparatus.
R201.5 .....Shielding and grounding.
R201.7 .....Use of cathode-ray oscillograph.
R202 .....Resonance methods.
R203 .....Harmonic methods.
R204 .....Null methods.
R204,5 .....Susceptance variation method.
R205 .....Substitution methods.
R206 .....Use of beat notes in measurements.
R206.1 .....Beat indicators.
R207 .....High-frequency bridge methods.
R207.1 .....Radio-frequency bridges.
R207.2 .....Audio-frequency bridges.
R207.3 .....Bridge balance indicators.
R208 .....Coaxial conductor methods.
R209 .....Resonant-cavity methods.
R210 ....Frequency, capacitance, dielectric constant, inductance.
R211 .....Frequency meters; circuit resonance method.
R211.1 .....Radio-frequency meter.
R211.11 .....Absorption-type frequency meter.
R211.111 .....Cavity frequency meter.
R211.112 .....Echo box.
R211.12 .....Generating-type frequency meter.
R211.121 .....Buzzer-driven type frequency meter.
R211.122 .....Heterodyne-type frequency meter.
R211.123 .....Dynatron-type frequency meter.
R211.124 .....Frequency monitor.
R211.2 .....Audio-frequency meter.
R211.21 .....Tuned-circuit frequency meter.
R211.22 .....Beat-frequency meter.
R211.23 .....Electronic frequency meter.
R212 .....Parallel-wire methods of frequency measurement.
R213 .....Harmonic methods of frequency measurement.
R213.1 .....Harmonic amplifiers; harmonic generators.
R213.2 .....Multivibrators; fractional-frequency generators; frequency dividers.
R213.3 .....Lissajou figures on cathode-ray oscillograph.
R214 .....Piezo-electric frequency standards.
R214.1 .....Piezo oscillators.
R214.11 .....Temperature-controlled cabinets.
R214.2 .....Piezo resonators.
R214.21 .....Equivalent electrical characteristics of piezo resonator.
R214.22 .....Mechanical overtone operation of piezo resonator.
R215 .....Capacitance.
R215.1 .....Capacitors (condensers).

R215.11 .....Air dielectric capacitors.
R215.111 ..... Neutralizing capacitors.
R215.12 .....Mica dielectric capacitors.
R215.13 .....Paper dielectric capacitors.
R215.14 .....Gas dielectric capacitors.
R215.15 .....Ceramic dielectric capacitors.
R215.16 .....Vacuum-type capacitors.
R215.19 .....Capacitors with other types of dielectric.
R215.2 .....Distributed capacitance of coils.
R215.3 .....Q of capacitors.
R215.4 .....Capacitance meters; microfarad meters.
R216 .....Dielectric constant, specific inductive capacity, permittivity.
R216.1 .....Dielectric constant of solids.
R216.2 .....Dielectric constant of liquids.
R216.3 .....Dielectric constant of gases.
R217 .....Inductance.
R217.1 .....Self-inductance.
R217.11 .....Air-cored inductors.
R217.111 .....Radio-frequency choke coils.
R217.12 .....Iron-cored inductors.
R217.121 .....Audio-frequency choke coils.
R217.122 .....Powdered-iron cores.
R217.2 .....Mutual inductance.
R217.3 .....Q of coils.
R217.4 .....Coil comparators.
R221 .....Measurements on antennas.
R240 ....Resistance; current; voltage; impedance; power; phase; attenuation.
R241 .....Resistance; power factor.
R241.1 .....Resistance-variation method.
R241.2 .....Reactance-variation method.
R241.3 .....Substitution method.
R241.4 .....Calorimeter method.
R241.5 .....Bridge method.
R242 .....Current measurements.
R242.1 .....Ammeters.
R242.11 .....Hot-wire ammeter.
R242.12 .....Thermoelement.
R242.14 .....Electrodynamometer.
R242.15 .....String galvanometer.
R242.2 .....Current transformer.
R242.3 .....Bolometer bridge.
R243 .....Voltage measurements.
R243.1 .....Vacuum-tube voltmeters.
R243.2 .....Sparking distance.
R243.3 .....Electrostatic voltmeters.
R243.4 .....Thermoelement-type voltmeters.
R243.5 .....Copper-oxide rectifier-type voltmeters.
R243.6 .....Crystal-rectifier type voltmeters.
R243.7 .....Voltage divider.
R243.71 .....Resistor-type voltage divider.
R243.72 .....Capacitive-type voltage divider.

R244 .....Impedance measurements.
R244.1 .....Substitution method of impedance measurement.
R244.11 .....Series-resonance method of impedance measurement.
R244.12 .....Parallel-resonance method of impedance measurement.
R244.2 .....Radio-frequency bridges.
R244.3 .....Special instruments for impedance measurement.
R244.4 .....Transmission lines in impedance measurement.
R244.5 .....Concentric conductors in impedance measurement.
R245 .....Power measurements.
R245.1 .....I^2R method of power measurement.
R245.2 .....Bolometer method of power measurement.
R245.3 .....Vacuum-tube wattmeters.
R245.4 .....Incandescent-filament method of power measurement.
R245.5 .....Thermistor method of power measurement.
R245.6 .....Calorimeter method of power measurement.
R246 .....Phase measurements.
R246.1 .....Phase measurement by cathode-ray tube method.
R246.2 .....Phase shifters.
R246.21 .....Phase shift by circuit changes of resistance.
R246.22 .....Phase shift by rotating magnetic field.
R246.23 .....Phase shift by electrostatic method.
R246.24 .....Phase shift by vacuum-tube method.
R246.3 .....Phase monitor; phase-angle meter.
R247 .....Attenuation measurements.
R248 .....Ionosphere measurements.
R248.1 .....Manual ionosphere measurements.
R248.11 .....Fixed-frequency (h't) ionosphere measurement.
R248.12 .....Multifrequency (h'f) ionosphere measurement.
R248.13 .....Pulse methods of ionosphere measurement.
R248.14 .....Phase methods of ionosphere measurement.
R248.2 .....Interpretation of ionosphere records.
R250 ....Generating (transmitting) apparatus.
R251 .....Transmitting sets.
R251.1 .....Power rating of transmitting set.
R252 .....Transmitting vacuum tubes (oscillator, amplifier).
R252.1 .....Characteristic curves of transmitting tubes.
R252.2 .....Grid-conductance of transmitting tubes.
R252.3 .....Plate conductance, plate resistance of transmitting tubes.
R252.4 .....Amplification factor of transmitting tubes.
R252.5 .....Transconductance (mutual conductance) of transmitting tubes.
R252.6 .....Internal capacitance of transmitting tubes.
R252.7 .....Life tests of transmitting tubes.
R252.8 .....Power output of transmitting tubes.
R252.9 .....Other transmitter vacuum-tube measurements.
R253 .....Transmitting capacitors.
R254 .....Modulators.
R254.1 .....Modulation measurements.
R254.11 .....Measurement of amplitude modulation.
R254.111 .....Amplitude modulation measurement by modulation meter.
R254.112 .....Amplitude modulation measurement by cathode-ray oscillograph.
R254.12 .....Measurement of frequency modulation.
R254.13 .....Measurement of phase modulation.

R254.2 .....Microphones.
R255 .....Amplifiers.
R255.1 .....Amplifier measurements.
R255.11 .....Measurement of voltage amplification.
R255.12 .....Measurement of amplitude distortion.
R255.13 .....Measurement on amplifiers using square waves.
R255.2 .....Distortion meter.
R255.3 .....Intermediate amplifiers.
R255.4 .....Speech amplifiers.
R255.5 .....Power amplifiers.
R257 .....Switching equipment.
R257.1 .....Relays.
R257.11 .....Time-delay relays.
R257.2 .....Electronic switching.
R258 .....Power-supply measurements.
R258.1 .....Measurements on rectifiers.
R258.2 .....Measurements on power-supply transformers.
R258.3 .....Measurements on water-cooled power-supply systems.
R259 .....Measurements on other types of generating equipment.
R260 ....Receiving apparatus measurements.
R261 .....Receiving set measurements.
R261.1 .....Selectivity measurement.
R261.2 .....Sensitivity measurement.
R261.3 .....Fidelity measurement.
R261.4 .....Normal output measurement.
R261.5 .....Interference output measurement.
R261.51 .....Hum and noise level measurement.
R261.52 .....Cross-talk measurement.
R261.53 .....Spurious response measurement.
R261.6 .....Measurements on power supply for radio receiver.
R261.7 .....Measurement of automatic volume-control characteristics.
R261.8 .....Performance of individual units of receiver.
R261.9 .....Alignment measurements.
R262 .....Receiving vacuum-tube measurements.
R262.1 .....Characteristic curves of receiving tubes.
R262.2 .....Grid conductance of receiving tubes.
R262.3 .....Plate conductance; plate resistance of receiving tubes.
R262.4 .....Amplification factor of receiving tubes.
R262.5 .....Transconductance (mutual conductance) of receiving tubes.
R262.6 .....Internal capacitance of receiving tubes.
R262.7 .....Life tests of receiving tubes.
R262.8 .....Power output of receiving tubes.
R262.9 .....Other receiving vacuum tube measurements.
R262.91 .....Screen resistance of receiving tubes.
R262.92 .....Screen mu factor of receiving tubes.
R262.93 .....Distortion in receiving tubes.
R263 .....Receiver amplifying apparatus; sound equipment.
R264 .....Measurements on other component parts of radio receivers.
R264.1 .....Capacitors for radio receivers.
R264.2 .....Coils for radio receivers.
R264.3 .....Transformers for radio receivers.
R264.4 .....Resistors (fixed and variable) for radio receivers.

R265 .....Measurements on electroacoustic transducers.
R265.1 .....Telephone receiver measurements.
R265.2 .....Loudspeaker measurements.
R270 ....Measurement of radio field intensity, atmospheric radio noise, man-made electrical noise.
R271 .....Radio field-intensity measurements.
R271.1 .....Standard antenna methods of field-intensity measurement.
R271.11 .....Calibrated loop-antenna method of field-intensity measurement.
R271.111 .....Substitution method of field-intensity measurement.
R271.12 .....Standard dipole antenna method of field-intensity measurement.
R271.2 .....Standard field generator method of field-intensity measurement.
R271.3 .....Continuous recorder of radio field intensity.
R271.31 .....Potentiometer-type field-intensity recorder.
R271.32 .....Meter-type field-intensity recorder.
R271.4 .....Interpretation of field-intensity records.
R272 .....Atmospheric radio noise (See also R114).
R272.1 .....Atmospheric radio noise intensity measurement.
R272.2 .....Atmospheric radio noise direction measurement.
R273 .....Man-made electrical noise measurement.
R273.1 .....Radio noise meter.
R280 ....Properties of materials.
R281 .....Properties of electrical insulating materials.
R281.1 .....Insulation tester.
R282 .....Properties of electrical conducting materials.
R282.1 .....Properties of metallic conductors.
R282.11 .....Superconductivity.
R282.2 .....Properties of electrolytes.
R282.21 .....Properties of sea water.
R282.22 .....Properties of fresh water.
R282.3 .....Properties of magnetic materials.
R282.4 .....Properties of earth, soil.
R282.9 .....Properties of other electrical conducting materials.
R283 .....Effects of temperature on radio equipment.
R283.1 .....Test cabinets for use at varied temperatures, pressures and humidities.
R284 .....Effects of high humidity on radio equipment.
R284.1 .....Fungus growth deterents, tropicalization.
R290 ....Other radio measurements.
R300 ..RADIO APPARATUS AND EQUIPMENT (description, design, construction and calculation on component parts).
R310 ....UHF equipment.
R320 ....Antenna systems.
R320.3 .....Antenna grounds.
R320.4 .....Antenna feeders.
R320.41 .....Transmission lines.
R320.411 .....Parallel wires.
R320.412 .....Coaxial lines.
R320.5 .....Antenna phasing equipment.
R320.51 .....Antenna coupling and phasing units.

R320.6 .....Antenna switches.
R320.7 .....Antenna markers.
R320.8 .....Antenna towers.
R321 .....Condenser-type antenna system (non-directional horizontally)
R321.1 .....Low-frequency (long-wave) antennas.
R321.11 .....Multiple-tuned antenna.
R321.2 .....Single-wire antenna.
R321.21 .....Grounded vertical-wire antenna.
R321.211 .....Capacitance-top antenna.
R321.212 .....Antenna with inductance top.
R321.22 .....Ring-antenna system.
R321.3 .....Half-wave antenna.
R321.31 .....Doublet antenna.
R321.32 .....Turnstile antenna.
R321.33 .....Polyphase array.
R321.34 .....Parasitic antenna.
R321.341 .....Yagi array.
R321.4 .....Flag-pole type antenna.
R321.5 .....Tower-type antenna.
R325 .....Directional antenna systems (transmitting in or receiving from a particular horizontal direction).
R325.1 .....Beam antennas.
R325.11 .....Antenna arrays.
R325.111 .....Rectangular array.
R325.112 .....Broadside array.
R325.113 .....End-fire array.
R325.113.1 .....Fishbone antenna.
R325.114 .....Two-element array.
R325.115 .....Multiple array.
R325.2 .....Wave antennas.
R325.21 .....Beverage antenna.
R325.3 .....Coil antennas.
R325.31 .....Direction finder.
R325.311 .....Null-type direction finder.
R325.312 .....Electrically-switched type direction finder.
R325.32 .....Combined coil and vertical antenna.
R325.4 .....Adcock antenna.
R325.5 .....Rhombic antenna.
R325.51 .....Multiple-unit steerable antenna (Musa).
R325.6 .....Resonant V-antenna, nonresonant V-antenna.
R325.7 .....Antenna systems with reflectors.
R325.71 .....Antenna with corner reflector.
R325.72 .....Antenna with parabolic reflector.
R325.8 .....Horn radiators.
R325.81 .....Sectoral-type radiator.
R325.82 .....Pyramidal-type radiator.
R325.83 .....Conical-type radiator.
R325.84 .....Biconical-type radiator.
R326 .....Other antenna classifications.
R326.1 .....All-wave antenna.
R326.2 .....Mobile antenna systems.
R326.21 .....Aircraft antenna.
R326.22 .....Automobile antenna.

R326.23 .....Ship antenna.
R326.24 .....Tank antenna.
R326.25 .....Multifrequency tuned antenna.
R326.3 .....Long-wave antennas.
R326.4 .....Broadcast antennas.
R326.5 .....Short-wave antennas.
R326.6 .....Television antennas.
R326.61 .....Wide-band antenna.
R326.611 .....Cylindrical antenna.
R326.612 .....Conical antenna.
R326.613 .....Spheroidal antenna.
R326.614 .....Diamond antenna.
R326.615 .....Double-diamond antenna.
R326.7 .....Ultra-high-frequency antennas.
R326.8 .....Microwave antennas.
R326.81 .....Wave-guide antennas.
R327 .....Artificial antennas.
R329 .....Other types of antennas.
R330 ....Vacuum tubes (transmitting, receiving, special-purpose types).
R331 .....Construction; evacuation of vacuum tubes.
R331.5 .....Operation of vacuum tubes.
R332 .....Detector tubes.
R333 .....Voltage amplifier tubes.
R334 .....Power amplifier tubes.
R335 .....Converter and mixer tubes.
R336 .....Oscillator tubes.
R337 .....Rectifier tubes.
R337.1 .....Gas tubes.
R337.11 .....Hot-cathode gaseous rectifier tubes.
R337.12 .....Grid-controlled gaseous rectifier tubes (thyratrons).
R338 .....Regulator tubes.
R338.1 .....Current regulator tubes.
R338.2 .....Voltage regulator tubes.
R339 .....Special-purpose tubes.
R339.1 .....Cold-cathode tubes.
R339.11 .....Cold-cathode diodes.
R339.12 .....Cold-cathode triodes.
R339.2 .....Ultra-high-frequency tubes.
R350 ....Generating apparatus; transmitters.
R351 .....Pulse transmitters.
R352 .....Spark transmitters.
R353 .....Arc transmitters.
R354 .....Radio-frequency alternators.
R355 .....Vacuum-tube transmitters.
R355.11 .....Very low-frequency transmitter (below 30 kc).
R355.12 .....Low-frequency transmitter (30 to 300 kc).
R355.13 .....Medium-frequency transmitter (300 to 3000 kc).
R355.131 .....Broadcast-frequency transmitter (550 to 1600 kc).
R355.14 .....High-frequency transmitter (3000 to 30,000 kc).
R355.15 .....Very high-frequency transmitter (30 to 300 Mc).
R355.16 .....Ultra-high-frequency transmitter(300 to 3000 Mc).
R355.17 .....Super-high-frequency transmitter (3000 to 30,000 Mc and above).

R355.6 .....Frequency control of transmitters.
R355.65 .....Piezo oscillators.
R355.66 .....Magnetostriction oscillators.
R355.7 .....Transmitter power amplifiers.
R355.8 .....Transmitter modulators.
R355.81 .....Amplitude-type modulator.
R355.811 .....Absorption-type modulator.
R355.812 .....Grid modulator.
R355.813 .....Plate modulator.
R355.814 .....Balanced modulator.
R355.815 .....Bridge modulator.
R355.815.1 .....Copper-oxide rectifier-type modulator.
R355.815.2 .....Double-balanced or ring modulator.
R355.82 .....Phase-type modulator.
R355.83 .....Frequency-type modulator.
R355.9 .....Generating sets for special purposes; (musical instruments R593; therapeutic uses R594).
R355.91 .....Vacuum-tube oscillators.
R355.911 .....Radio-frequency oscillators.
R355.911.1 .....Feed-back oscillator.
R355.911.11 .....Hartley oscillator.
R355.911.12 .....Meissner oscillator.
R355.911.13 .....Colpitts oscillator.
R355.911.14 .....Tuned-grid oscillator.
R355.911.15 .....Tuned-plate oscillator.
R355.911.16 .....Tuned-grid - tuned-plate oscillator.
R355.911.17 .....Electron-coupled oscillator.
R355.911.18 .....Magnetostriction oscillator.
R355.911.2 .....Negative-resistance oscillator.
R355.911.21 .....Dynatron oscillator.
R355.911.22 .....Transitron oscillator.
R355.911.23 .....Negative-resistance push-pull oscillator.
R355.911.24 .....Negative grid-resistance oscillator.
R355.911.3 .....Beat-frequency oscillator.
R355.911.4 .....Constant-frequency oscillator.
R355.911.41 .....Piezo oscillator.
R355.911.411 .....Bridge-stabilized oscillator.
R355.911.42 .....Magnetostriction oscillator.
R355.911.5 .....Polyphase oscillator.
R355.912 .....Ultra-high-frequency oscillators.
R355.912.1 .....Magnetron oscillator.
R355.912.11 .....Electronic-type magnetron.
R355.912.12 .....Negative-resistance type magnetron.
R355.912.2 .....Barkhausen-Kurtz oscillator.
R355.912.3 .....Klystron oscillator (velocity modulation).
R355.912.4 .....Heil tube oscillator.
R355.912.5 .....Inductive-output tube oscillator.
R355.913 .....Laboratory oscillators.
R355.913.1 .....Standard frequency oscillator.
R355.913.2 .....Standard voltage generator.
R355.913.3 .....Standard pulse generator.
R355.913.4 .....Square-wave generator.
R355.913.5 .....Time-base generator.

R355.914 .....Audio-frequency oscillators.
R355.914.1 .....Feed-back oscillator.
R355.914.2 .....Beat-frequency oscillator.
R355.914.3 .....Resistor-capacitor type oscillator.
R355.914.31 .....Phase-shift type oscillator.
R355.914.4 .....Relaxation oscillators.
R355.914.41 .....Multivibrators.
R355.914.42 .....Van der Pol oscillator.
R355.914.43 .....Gas-filled tube oscillator.
R355.914.431 .....Sweep-circuit oscillator.
R355.914.432 .....Saw-tooth generator.
R355.914.433 .....Time-interval generator.
R355.914.5 .....Tuning-fork stabilized oscillator.
R355.914.6 .....Code-training oscillator.
R356 .....Transmitter power supply.
R356.1 .....Direct-current supply.
R356.11 .....D-c power line.
R356.12 .....Batteries.
R356.13 .....Vibrator-system power supply.
R356.14 .....Generators.
R356.141 .....Dynamotors.
R356.2 .....Alternating-current power supply.
R356.21 .....A-c power line.
R356.22 .....A-c generator.
R356.23 .....Rectified a-c power supply.
R356.231 .....Rectifier filters.
R357 .....Frequency changers, multipliers, dividers, mixers.
R357.1 .....Harmonic amplifiers, harmonic generators.
R357.2 .....Frequency multipliers.
R357.21 .....Multivibrators.
R357.22 .....Doublers; triplers.
R357.3 .....Frequency dividers.
R357.31 .....Multivibrators.
R357.32 .....Demodulating dividers.
R357.33 .....Fractional-frequency generators.
R357.4 .....Frequency mixers.
R358 .....Protective devices.
R358.1 .....Lightning arrestors.
R358.4 .....High-voltage interlocks.
R358.5 .....Fuses.
R359 .....Automatic transmitters.
R359.1 .....SOS transmitters.
R359.2 .....Telegraph transmitters.
R359.3 .....Teletype transmitters.
R359.4 .....Fire-alarm transmitters.
R359.5 .....High-water alarm transmitters.
R360 ....Radio receiving apparatus.
R361 .....Receiving sets.
R361.1 .....Receiving set types.
R361.101 .....Tuned r-f receiver.
R361.102 .....Superheterodyne receiver.
R361.102.1 .....Radio-frequency section.

R361.102.2 .....Converter-oscillator section.
R361.102.3 .....Intermediate-frequency section.
R361.102.4 .....Detector section.
R361.102.5 .....Audio-frequency section.
R361.103 .....Regenerative receiver.
R361.104 .....Superregenerative receiver.
R361.104.1 .....Separate quenching receiver.
R361.104.2 .....Self-quenching receiver.
R361.105 .....Single-signal receiver.
R361.106 .....Single side-band receiver.
R361.107 .....Diversity receiver.
R361.107.1 .....Frequency diversity receiver.
R361.107.2 .....Space diversity receiver.
R361.107.3 .....Polarization diversity receiver.
R361.108 .....Musa receiver.
R361.109 .....Tone-corrected (stenode) receiver.
R361.110 .....Triple detection receiver.
R361.111 .....Frequency modulation receiver.
R361.112 .....Transmission-line tuned receiver.
R361.113 .....Very high-frequency (30 to 300 Mc) receiver.
R361.114 .....Ultra-high-frequency (300-3000 Mc) receiver.
R361.115 .....Super-high-frequency (3000-30,000 Mc) receiver.
R361.116 .....Broadcast receiver.
R361.117 .....Communications receiver.
R361.118 .....Automobile receiver.
R361.119 .....Airways receiver.
R361.120 .....Transceivers.
R361.121 .....Panoramic receiver.
R361.122 .....Phase-modulation receiver.
R361.123 .....Pulse receiver.
R361.2 .....Radio receiving-set features.
R361.201 .....Automatic volume control (AVC).
R361.201.1 .....Muting system, quieting or squelch, tuning silencers, interchannel noise suppressors, codans.
R361.202 .....Manual volume control.
R361.203 .....Tone control.
R361.204 .....High fidelity reproduction.
R361.205 .....Push-button tuning.
R361.206 .....Frequency-range change.
R361.207 .....Frequency band-spread.
R361.208 .....Spurious response.
R361.209 .....Crystal-controlled receivers.
R361.210 .....Cross-talk, cross-modulation.
R361.211 .....Noise, signal-to-noise ratio.
R361.212 .....Microphonics.
R361.213 .....Tracking and alignment of tuned circuits.
R361.214 .....Tuning indicator.
R361.215 .....Automatic frequency control for receivers.
R362 .....Detectors.

R362.1 .....Crystal detector.
R362.2 .....Vacuum-tube detector.
R362.21 .....Diode detector.
R362.22 .....Grid-leak power detector.
R362.23 .....Square-law (weak-signal) detector.
R362.3 .....Magnetic detector.
R362.4 .....Electrolytic detector.
R362.9 .....Other types of detectors.
R363 .....Amplifiers (for power and receiving applications).
R363.1 .....Radio-frequency amplifiers.
R363.11 .....Tuned-voltage amplifier.
R363.12 .....Band-pass amplifier.
R363.13 .....Intermediate-frequency (I.F.) amplifier.
R363.14 .....Class B amplifier.
R363.141 .....Linear amplifier.
R363.15 .....Class C amplifier.
R363.16 .....Velocity modulation amplifier.
R363.2 .....Audio-frequency amplifiers.
R363.21 .....A-F voltage amplifier.
R363.211 .....Resistance-coupled amplifier.
R363.212 .....Transformer-coupled amplifier.
R363.212.1 .....Shunt-feed amplifier.
R363.213 .....Impedance-coupled amplifier.
R363.22 .....A-F power amplifier.
R363.221 .....Class A amplifier.
R363.222 .....Push-pull amplifier.
R363.222.1 .....Class AB amplifier.
R363.222.2 .....Class B amplifier.
R363.23 .....Feed-back amplifier.
R363.3 .....Direct-current amplifier.
R363.4 .....Video amplifier (wide-band).
R363.41 .....Video voltage amplifier.
R363.42 .....Video power amplifier.
R365 .....Electroacoustic transducers.
R365.1 .....Telephone receivers.
R365.2 .....Loudspeakers.
R365.21 .....Permanent-magnet type speaker.
R365.22 .....Dynamic speaker.
R365.23 .....Magnetic-armature type speaker.
R365.24 .....Condenser-type speaker.
R365.25 .....Piezoelectric-type speaker.
R365.29 .....Other types of loud speakers.
R365.3 .....Recorders.
R365.31 .....Time-signal recorder.
R365.32 .....Signal-intensity recorder.
R365.33 .....Ionosphere recorders.
R365.331 .....Manual ionosphere recorder.
R365.332 .....Fixed-frequency (h't) recorder.
R365.333 .....Multifrequency (h'f) recorder.
R365.334 .....Absorption recorder.
R365.335 .....Scatter recorder.
R365.34 .....Radio-frequency recorder.

R365.35 .....Magnetic recorder.
R365.36 .....Meteorological recorder.
R365.37 .....Wave direction recorder.
R366 .....Radio receiver power supply.
R366.1 .....Direct-current power supply.
R366.11 .....Power-line supply.
R366.12 .....Batteries.
R366.13 .....Vibrators.
R366.14 .....Generators.
R366.15 .....Regulated d-c voltage supply.
R366.151 .....Electronic voltage regulator.
R366.152 .....Neon-tube regulator.
R366.153 .....Ballast-resistance regulator.
R366.2 .....Alternating-current power supply.
R366.21 .....25-60 cycle power line.
R366.22 .....Rotary dc to ac.
R366.23 .....A-c voltage regulator.
R366.231 .....Magnetic saturation regulator.
R366.3 .....Rectifiers.
R366.31 .....Rotary ac to dc rectifier.
R366.32 .....Vacuum-tube rectifier.
R366.33 .....Vibrator-type rectifier.
R366.34 .....Copper-oxide rectifier.
R366.35 .....Selenium rectifier.
R366.36 .....Magnesium-copper sulphide rectifier.
R366.37 .....Rectifier filters.
R367 .....Remote control of radio receiving equipment.
R370 .....Instruments.
R371.1 .....Wave analyzer.
R371.11 .....Heterodyne-type wave analyzer.
R371.2 .....Spectrum analyzer.
R371.3 .....Time-interval meter.
R371.4 .....Q-meter.
R371.5 .....Cathode-ray oscillograph; oscilloscope.
R371.51 .....Electronic switch.
R371.6 .....Range calibrator.
R371.7 .....Standing-wave indicator.
R372 .....Electrical indicating instruments.
R372.1 .....Ohmmeter, volt-ohmmeter.
R374 .....Frequency meters.
R374.1 .....Radio-frequency meter.
R374.11 .....Absorption-type frequency meter.
R374.111 .....Cavity frequency meter.
R374.112 .....Echo box.
R374.12 .....Generating-type frequency meter.
R374.121 .....Buzzer-driven frequency meter.
R374.122 .....Heterodyne-type frequency meter.
R374.123 .....Dynatron-type frequency meter.
R374.124 .....Frequency monitor.
R374.2 .....Audio-frequency meter.
R374.21 .....Tuned-circuit frequency meter.
R374.22 .....Beat-frequency meter.
R374.23 .....Electronic-type a-f meter.

R374.5 .....Decrameter.
R380 ....Component parts.
R381 .....Capacitors.
R381.1 .....Fixed capacitors.
R381.11 .....Mica capacitors.
R381.12 .....Ceramic capacitors.
R381.13 .....Air capacitors.
R381.14 .....Electrolytic capacitors.
R381.15 .....Paper capacitors.
R381.16 .....Vacuum capacitors.
R381.2 .....Variable capacitors.
R381.21 .....Variable air capacitors.
R381.22 .....Padder capacitors.
R382 .....Inductors.
R382.1 .....Transformers for communications equipment.
R382.11 .....Radio-frequency transformers.
R382.12 .....Audio-frequency transformers.
R383 .....Resistors.
R383.1 .....Fixed resistors.
R383.11 .....Wire-wound resistors.
R383.12 .....Composition resistors.
R383.121 .....Carbon resistors.
R383.122 .....Metallized resistors.
R383.2 .....Variable resistors.
R383.21 .....Attenuator network.
R383.22 .....Impedance-matching network.
R383.23 .....Decade resistance box.
R385 .....Modulation and keying devices.
R385.1 .....Keys.
R385.2 .....Buzzers.
R385.3 .....Interruptors (tone wheels, choppers).
R385.4 .....Vacuum-tube modulation devices.
R385.5 .....Microphones.
R385.51 .....Carbon microphone.
R385.52 .....Dynamic or moving-coil type microphone.
R385.53 .....Condenser microphone.
R385.54 .....Unidirectional ribbon microphone.
R385.55 .....Velocity-type ribbon microphone.
R385.56 .....Piezoelectric (crystal) microphone.
R385.59 .....Other speech equipment.
R386 .....Filters.
R386.1 .....Band-pass filter.
R386.2 .....Low-pass filter.
R386.21 .....Scratch-eliminator filter.
R386.3 .....High-pass filter.
R386.4 .....Band-eliminator filter.
R386.41 .....Power-line noise-eliminator filter.
R386.5 .....Piezoelectric (crystal) filter.
R386.6 .....Power-pack-type filter.
R387 .....Protective equipment.
R387.1 .....Shields.
R387.5 .....Grounds.
R387.7 .....Insulators.

R389 .....Other components.
R389.1 .....Relays.
R389.11 .....Plug-in relay.
R389.12 .....Small-switching relay.
R389.13 .....Small-telephone-type relay.
R389.14 .....Stepping relay.
R389.15 .....Time-delay relay.
R389.16 .....Transitter-switching and keying r elay.
R389.17 .....Vacuum relay.
R389.18 .....Overload relay.
R390 ....Other radio apparatus and equipment (public-address systems)
R391 .....Public-address systems.
R391.1 .....Phonographic recorder.
R391.11 .....Transcription turn tables.
R392 .....Volume indicators.
R396 .....Attenuators.
R396.1 .....Resistance-type attenuator.
R396.2 .....Mutual inductance type attenuator.
R396.3 .....Mutual capacitance type attenuator.
R396.9 .....Miscellaneous types of attenuators.
R400 ..RADIO COMMUNICATION SYSTEMS (Complete communication systems, or parts of a system which are considered in relation to the complete system).
R410 ....Damped-wave (transmitting) systems.
R411 .....Spark communication system.
R412 .....Timed-spark communication system.
R413 .....Impulse-excitation communication system.
R420 ....Continuous-wave (transmitting) systems.
R421 .....High-frequency alternator.
R421.1 .....Alexanderson alternator.
R421.2 .....Goldschmidt alternator.
R421.3 .....Static-frequency multiplier.
R422 .....Arc communication system.
R423 .....Vacuum-tube systems (transmitting).
R423.11 .....Very low-frequency system (below 30 kc).
R423.12 .....Low-frequency system (30 to 300 kc).
R423.13 .....Medium-frequency system (300 to 3000 kc).
R423.131 .....Broadcast-frequency system (550 to 1600 kc).
R423.132 .....Synchronization of broadcast stations.
R423.14 .....High-frequency system (3000 to 30,000 kc).
R423.15 .....Very high-frequency system (30 to 300 Mc).
R423.16 .....Ultra-high-frequency system (300 to 3000 Mc).
R423.17 .....Super-high-frequency system (3000 to 30,000 Mc and higher).
R423.2 .....Telegraph code transmitters.
R423.21 .....Frequency diversity transmitter.
R423.22 .....Space diversity tran smitter.
R423.23 .....Polarization diversity tran smitter.
R423.3 .....Variable-carrier transmitter.
R423.4 .....Suppressed-carrier transmitter.
R423.5 .....Single side-band (asymmetric or vestigial side-band) transmitter.
R423.51 .....Single side-band by filter system.
R423.52 .....Single side-band by phase-shift system.

R423.6 .....Single side-band plus carrier transmitter.
R423.7 .....Amplitude-modulation transmitter.
R423.8 .....Frequency-modulation transmitter.
R423.81 .....Armstrong system of FM.
R423.82 .....Automatic frequency-control system of FM.
R423.83 .....Morrison system of FM.
R423.9 .....Secrecy equipment.
R426 .....Beat reception.
R427 .....Use of receiving interruptors and tone wheels.
R428 .....Diversity receiving systems.
R429 .....Other continuous-wave systems.
R430 ....Interference elimination.
R430.1 .....Radio interference.
R430.11 .....Station interference.
R430.2 .....Man-made electrical interference.
R430.21 .....Power-line interference.
R430.22 .....Household-appliance interference.
R430.23 .....Therapeutic-appliance interference.
R430.231 .....Diathermy interference.
R430.232 .....Electrosurgical-appliance interference.
R430.232.1 .....Spark electrosurgical-appliance interference.
R430.232.2 .....Vacuum-tube electrosurgical-appliance interference.
R430.24 .....Automobile-ignition interference (see also R521.2 aircraft ignition shielding).
R430.25 .....Industrial-heating equipment interference.
R440 ....Remote control (by wire).
R450 ....Connection of radio systems to wire systems (vodas).
R460 ....Duplex and multiplex systems.
R470 ....Radio-frequency carrier wire systems.
R480 ....Radio relay systems.
R490 ....Other systems.
R500 ..APPLICATIONS OF RADIO (Radio as an instrument in other arts, fields, industries, etc.).
R510 ....Marine applications of radio.
R511 .....Marine distress signals.
R512 .....Radio marine navigation aid systems.
R512.1 .....Marine position finding.
R512.11 .....Marine radio beacons.
R512.12 .....Marine fog signalling.
R512.13 .....Marine radio compass (direction finding).
R512.14 .....Marine distance finding.
R512.2 .....Long-range navigation system, Loran.
R512.3 .....Marine collision prevention.
R513 .....Fishing boats.
R514 .....Tow-boat devices.
R515 .....Submarine signalling.
R516 .....Marine life-saving service.
R517 .....Lighthouse service.
R520 ....Aeronautic applications of radio.
R521 .....Receiving on aircraft.
R521.1 .....Receiving sets for aircraft.
R521.2 .....Ignition shielding on aircraft.
R521.3 .....Static suppressors for aircraft.
R522 .....Transmitting from aircraft.

R522.1 .....Transmitters for aircraft.
R522.2 .....Bonding of aircraft.
R523 .....Receiving from aircraft.
R524 .....Transmitting to aircraft.
R525 .....Airplane antennas (See also R326.21).
R526 .....Radio as navigation aid to aircraft.
R526.1 .....Beacon systems for aircraft.
R526.11 .....Equi-signal beacon system (radio range).
R526.111 .....Coded beacon system.
R526.112 .....Audio-modulated beacon system.
R526.113 .....Simultaneous-phone beacon system.
R526.114 .....Course-identification beacon system.
R526.12 .....Omni-directional beacon system.
R526.13 .....Non-directional beacon system (for direction finding).
R526.14 .....Timed-rotating beacon system.
R526.15 .....Beacon-system markers.
R526.151 .....Beacon-system route marker.
R526.152 .....Beacon-system obstruction marker.
R526.153 .....Beacon-system fan marker.
R526.154 .....Beacon-system cone of silence marker.
R526.2 .....Instrument landing of aircraft.
R526.21 .....Instrument-landing beam
R526.22 .....Instrument-landing marker
R526.23 .....Instrument-landing runway-localizer.
R526.3 .....Direction finders for aircraft.
R526.4 .....Collision-prevention devices for aircraft.
R526.5 .....Radio altimeters for aircraft.
R527 .....Automatic control of aircraft.
R530 ....Commercial and miscellaneous radio services.
R531 .....Traffic.
R531.1 .....Code and ciphers.
R531.2 .....Station call letters.
R531.3 .....Abbreviations.
R531.4 .....Alphabets, Morse and Continental (international) code.
R531.5 .....Traffic relations with land lines.
R531.6 .....Traffic relations with cables.
R531.7 .....Message rates.
R531.8 .....Operating data for radio propagation analysis
R531.81 .....Traffic logs.
R531.82 .....Frequency usage on traffic circuits.
R531.83 .....Figures of merit on traffic circuits.
R531.84 .....Predictions of frequency usage for traffic circuits.
R531.85 .....Comparison of frequency usage with ionosphere conditions.
R532 .....Press services.
R533 .....Railroad communications.
R534 .....Radio applications in agriculture.
R535 .....Radio applications in forestry.
R536 .....Radio applications in mining and geophysical prospecting.
R537 .....Radar
R537.1 .....Radar sets.
R537.11 .....Radar antenna and scanning mechanism.
R537.12 .....Radar transmitter.

R537.121 ....Radar r-f oscillator.
R537.122 ....Radar modulator.
R537.13 ....Radar receiver.
R537.131 ....Radar indicator.
R537.2 .....Radar beacons.
R537.3 .....Radar power.
R537.4 .....Radar tests.
R537.9 .....Radar countermeasures.
R538 ....Police radio.
R538.1 .....Radio applications in Department of Justice.
R538.2 .....Radio applications in prisons.
R538.3 .....State and county police radio.
R538.4 .....City and metropolitan police radio.
R539 ....Miscellaneous radio services.
R539.1 .....Data exchange by radio.
R539.11 ....Synoptic code systems for data exchange.
R539.12 ....Cipher systems for data exchange.
R540 ...Utilities, special services.
R541 ....Use of radio by public utilities.
R542 ....General mobile radio, taxicab radio.
R543 ....Fire-service radio.
R544 ....Citizens radio communications (walkie-talkie).
R545 ....Amateur radio.
R546 ....Rural radio telephone.
R547 ....Use of radio in special emergency services.
R547.1 .....Doctor's radio call service.
R549 ....Other special services.
R550 ...Broadcasting.
R551 ....Time signals.
R551.1 .....Longitudinal determinations.
R553 ....Meteorological radio signals.
R553.1 .....Radio meteorographs (radiosondes).
R553.2 .....Reemitters.
R555 ....Standard frequency signals.
R557 ....Education by radio.
R560 ...Military radio.
R561 ....Army radio.
R565 ....Navy radio.
R568 ....Coast Guard radio.
R570 ...Remote control by radio.
R570.1 .....Remote control of aircraft.
R570.2 .....Remote control of marine craft.
R570.3 .....Remote control of land craft.
R570.4 .....Remote control of missiles (See also R560).
R570.5 .....Remote control by radio at a fixed point.
R580 ...Picture transmission (television); teletype.
R581 ....Facsimile (including photographs).
R582 ....Motion pictures.
R583 ....Television.
R583.1 .....Basic theory of television.
R583.11 ....Television image analysis.
R583.12 ....Television camera action.
R583.13 ....Scanning beam formation, deflection and synchronization.

R583.14 .....Video signal amplification and transmission.
R583.15 .....Television image reproduction.
R583.16 .....Television propagation and coverage.
R583.17 .....Television progress and plans.
R583.2 .....Television studio technique.
R583.3 .....Television studio equipment
R583.4 .....Television transmitters.
R583.5 .....Television receivers.
R583.6 .....Television tubes.
R584 .....Teletype.
R590 ....Other applications of radio.
R591 .....Transmission of power by radio.
R593 .....Musical instruments.
R594 .....Therapeutics.
R594.1 .....Diathermy.
R594.11 .....Condenser field application of diathermy.
R594.12 .....Induction field application of diathermy.
R594.2 .....Electrosurgery.
R594.21 .....Surgeon's metal locator.
R594.3 .....Electrocardiography.
R594.4 .....Hearing aids.
R596 .....Use of radio in engineering construction.
R596.1 .....Use of radio in surveying.
R597 .....Burglar alarms.
R598 .....Industrial heating by r-f currents.
R600 ..RADIO STATIONS: EQUIPMENT, REGULATIONS, DESIGN, OPERATION, MANAGEMENT, AND MAINTENANCE.
R610 ....Radio station equipment.
R611 .....Very low-frequency station (below 30 kc).
R612 .....Low-frequency station (30-300 kc).
R613 .....Medium-frequency station (300-3000 kc).
R613.1 .....Broadcast frequency station (550-1600 kc).
R613.11 .....Radio broadcast studios.
R613.111 .....Studio acoustics.
R614 .....High-frequency station (3000 to 30,000 kc).
R615 .....Very high-frequency station (30-300 Mc).
R616 .....Ultra-high frequency station (300 to 3000 Mc).
R617 .....Super-high-frequency station (3000 to 30,000 Mc and higher).
R618 .....Ship radio stations.
R619 .....Direction-finding stations.
R620 ....Radio station regulations, design, operation, maintenance and management.
R621 .....Regulations for radio stations.
R621.1 .....Radio station construction applications and permits.
R621.2 .....Radio station licenses.
R621.21 .....Radio station operator's licenses.
R622 .....Radio station design and planning.
R622.1 .....Radio station site selection.
R623 .....Radio station operation.
R624 .....Radio station maintenance.
R625 .....Radio station management.
R630 ....Frequency modulation broadcasting (FM).
R630.1 .....Theory of frequency modulation.

R630.11 .....Frequency modulation propagation and coverage.
R630.12 .....Frequency modulation progress and plans.
R630.2 .....Frequency modulation stations.
R630.21 .....Frequency modulation transmitters.
R630.22 .....Frequency modulation studio equipment.
R630.23 .....Frequency modulation studio-transmitter links.
R630.24 .....Frequency modulation networks.
R630.25 .....Frequency modulation receivers.
R700 ..RADIO MANUFACTURING AND REPAIRING.
R710 ....Factories.
R720 ....Processes, methods.
R730 ....Radio servicing and repairing.
R740 ....Sales, merchandising.
(R800)* ..NON-RADIO SUBJECTS (material of interest, but not a part of radio).
347.7 .....Patent service.
353.821* .....National Bureau of Standards.
383 .....Postal service, air mail service (See also Aeronautics 629.13).
507.2 .....General Science.
510 ....Mathematics.
520 ....Astronomy.
523.74 .....Sun spots.
523.78 .....Eclipses of the sun.
525 .....Earth.
526 .....Geodesy.
526.8 .....Map projections.
529.78 .....Instruments for measuring time (watches, clocks).
530 ....Physics.
531 .....Mechanics.
532 .....Liquids, hydrostatics.
533 .....Gases, pneumatics.
533.85 .....Vacuum apparatus.
534 .....Sound.
534.3 .....Tuning forks.
534.83 .....Signals in navigation.
535 .....Light (Light signaling see 623.731).
535.3 .....Photo-electric phenomena.
535.38* .....Photo-electric tubes; cells and applications; Kerr cell; selenium cell.
536 .....Heat.
536.33 .....Radiation; general theory.
536.83 .....Heating by induction.
537 .....Electricity.
537.1 .....Theory of electricity, A.C. theory.
537.23 .....Electrostatic generators.
537.26* .....Corona discharge.
537.4 .....Lightning.
537.6 .....Electrodynamics.
537.65* .....Piezoelectric phenomena. (See also R191, R214, R355.65, and R355.911.41).

*The numbers marked with an asterisk (*) are not found in the Dewey decimal classification, but are inserted here for convenience.

537.67* .....Experimental plotting of electrical fields.
537.7 .....Wave form analysis.
537.87 .....Physiological electrical phenomena.
538 .....Magnetism.
538.11* .....Magnetostriction.
539 .....Molecular physics; atomic physics.
539.7 .....Radioactivity.
540 ....Chemistry.
541.3 .....Physical chemistry.
550 ....Geology.
551.5 .....Weather; meterology.
621 .....Mechanical engineering.
621.3 .....Electrical engineering.
621.313 .....Electric generators; electric motors.
621.313.2 .....Direct-current machinery.
621.313.23 .....Direct-current generators.
621.313.24 .....Direct-current motors.
621.313.25 .....Motor generators.
621.313.26 .....Dynamotors.
621.313.3 .....Alternating-current machinery.
621.313.43 .....Alternating-current generators.
621.313.44 .....Synchronous motors.
621.313.63 .....Induction motors.
621.313.66 .....Repulsion motors.
621.313.68 .....Phase converter or adaptor.
621.313.7 .....Rectifiers.
621.314.3 .....Transformers.
621.314.5 .....Voltage regulators.
621.314.51* .....Voltage control equipment.
621.314.6 .....Choke coils.
621.314.7 .....Induction coils.
621.317 .....Switchboards.
621.317.3 .....Switches.
621.317.4 .....Rheostats.
621.319.2 .....Transmission lines.
621.325 .....Incandescent arcs.
621.326 .....Incandescent filament lamps.
621.327.4 .....Mercury vapor tubes (lamps).
621.327.7 .....X-ray tubes.
621.353 .....Batteries, primary.
621.354 .....Batteries, secondary (storage).
621.354.7 .....Battery-charging devices.
621.37 .....Electrical measurements, meters and testing.
621.371 .....General.
621.372 .....Standards, Calibration of instruments.
621.373 .....Meters. General types.
621.374 .....Special meters and measurements.
621.374.2 .....Wheatstone bridges, ohmmeters, resistance boxes, inductance, capacitance.
621.374.3 .....Voltmeters, electrometers, standard cells, volt-ohmmeters.
621.374.4 .....Current, galvanometers, ammeters, coulometers, ampere-hour meters.

621.37[4].5 .....Watt-hour meters.
621.37[4].6 .....Wattmeters.
621.37[4].7 .....Frequency meters. Oscillographs.
621.37[4].9 .....Other meters and measurements.
621.37[4].91 .....Phase meters. Power-factor meters. Synchronizers.
621.375* .....Vacuum tubes, special applications other than radio.
621.375.1 .....Control of conditions.
621.375.101 .....Electric load.
621.375.102 .....Humidity, moisture content.
621.375.103 .....Illumination.
621.375.10[4] .....Motion.
621.375.105 .....Pressure.
621.375.106 .....Switching.
621.375.107 .....Synchronization.
621.375.108 .....Temperature.
621.375.109 .....Traffic.
621.375.13 .....Control of devices.
621.375.131 .....Doors.
621.375.132 .....Elevator levelling.
621.375.133 .....Motors.
621.375.15 .....Control of processes.
621.375.151 .....Chemical.
621.375.152 .....Combustion.
621.375.153 .....Electroplating.
621.375.15[4] .....Welding.
621.375.2 .....Counting process.
621.375.3 .....Grading, sorting process.
621.375.[4] .....Heating control.
621.375.41 .....Food sterilization, dehydration.
621.375.42 .....Gluing.
621.375.43 .....Metal hardening, tempering.
621.375.44 .....Plastics industry.
621.375.45 .....Wood drying.
621.375.5 .....Ignition systems.
621.375.6 .....Measurements, tests.
621.375.601 .....Color.
621.375.602 .....Conductivity of solutions.
621.375.603 .....Density, opacity.
621.375.60[4] .....Electron microscope.
621.375.605 .....Gas detection and analysis.
621.375.606 .....Hardness.
621.375.607 .....Light intensity.
621.375.608 .....Metallurgy, cyclograph.
621.375.609 .....Miscellaneous chemical tests.
621.375.610 .....pH determination.
621.375.611 .....Photography (high-speed).
621.375.612 .....Reflection.
621.375.613 .....Smoke detection, recording.
621.375.61[4] .....Speed, velocity.
621.375.615 .....Strain.
621.375.616 .....Telemetering.

621.375.617 .....Thickness.
621.375.618 .....Time.
621.375.619 .....Titration.
621.375.620 .....Turbidity.
621.375.621 .....Vacuum and ionization gages.
621.375.622 .....Vibration.
621.375.623 .....X-rays.
621.375.624 .....Fluxmeter, magnetic field measurement.
621.375.7 .....Weighing.
621.379 .....Other electrical measuring instruments.
621.38 .....Electric communication.
621.382 .....Telegraphy.
621.382.4 .....High-speed telegraphy.
621.382.5 .....Printing telegraph.
621.382.7 .....Picture transmission, facsimile (by wire) (See also R581).
621.382.8 .....Submarine cable.
621.382.92* .....Ground telegraphy.
621.382.94 .....Induction signaling.
621.383.21 .....Relays.
621.385 .....Telephony.
621.385.91* .....Program distribution.
621.385.95* .....Condenser transmitters.
621.385.97* .....Electroacoustic devices; telephone units (See also R594.4).
621.385.971* .....Electric phonograph.
621.388 .....Television (by wire).
621.39 .....Other applications of electricity.
622.12 .....Prospecting, electrical methods.
623.731 .....Light signals.
623.823 .....Steamships.
629.13 .....Aeronautics.
629.132.5 .....Aerial navigation.
629.134 .....Airplane construction.
629.136 .....Airports, airdromes, seadromes.
658 .....Business methods.
681.114.4 .....Chronometers.
681.116 .....Electric clocks.
681.134 .....Moving picture apparatus.
681.134.96* .....Sound motion pictures.
681.135 .....Sound producers.
681.843 .....Sound recording.
R900 ..MISCELLANEOUS RADIO (Material which has no specific place. See also R000).

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