Motorola INCORPORATED

annual report 1953
television • car radios • home and portable radios

DR. KURT SCHLESINGER, MOTOROLA RESEARCH PHYSICIST, EXAMINES DEMOUNTABLE VACUUM SYSTEM FOR CATHODE RAY TUBE RESEARCH

Motorola, Inc., 4545 AUGUSTA BOULEVARD • CHICAGO 51, ILLINOIS
THE COVER—Electronics is a dynamic industry, whether it be viewed from the standpoint of marketing, production or engineering and design. This year, our cover emphasizes symbolically five of the principal technical revolutions in which Motorola is participating.

The tower at the top represents a microwave relay tower. Motorola microwave systems provide point-to-point radio communication and control over long distances with economy, flexibility and dependability. They obsolete present methods of transmitting voice, teletype, telegraph and telemetering in many cases.

The electron symbol represents research and development of wholly new and amazing electronic devices for military purposes.

The plated circuit in the center represents mechanization of the complex production process for electronic circuits. Wiring is replaced by copper lines plated on a flat surface and components are soldered to the circuit automatically.

The transistor is pictured superimposed on a vacuum tube. The transistor is destined to replace most vacuum tubes in electronic circuits, providing important savings in space, power and cost as well as added reliability and endurance.

The tri-colored circle symbolizes color television.

The electronic age is just dawning: with each added ray of light the horizon stretches further out.

The annual meeting will be held on Monday, May 3, 1954. A notice of the meeting, together with a form of proxy and a proxy statement, will be mailed to shareholders on or about April 12, 1954, at which time proxies will be solicited by the management.
## 10 year financial summary

<table>
<thead>
<tr>
<th>Year</th>
<th>Net Sales</th>
<th>Earnings Before Taxes on Income</th>
<th>Net Earnings</th>
<th>Net Earnings Per Share&lt;sup&gt;1&lt;/sup&gt;</th>
<th>Working Capital</th>
<th>Investment in Plant and Equipment&lt;sup&gt;2&lt;/sup&gt;</th>
<th>Shareholders' Equity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1944</td>
<td>$86,946,631</td>
<td>$5,281,095</td>
<td>$1,448,351</td>
<td>$0.75</td>
<td>$3,133,942</td>
<td>$1,913,486</td>
<td>$5,672,512</td>
</tr>
<tr>
<td>1945</td>
<td>67,896,597</td>
<td>3,133,647</td>
<td>851,882</td>
<td>0.44</td>
<td>4,671,851</td>
<td>1,273,523</td>
<td>6,311,719</td>
</tr>
<tr>
<td>1946</td>
<td>23,201,107</td>
<td>993,786</td>
<td>656,286</td>
<td>0.34</td>
<td>5,862,933</td>
<td>2,464,598</td>
<td>8,733,345</td>
</tr>
<tr>
<td>1947</td>
<td>46,679,148</td>
<td>4,179,110</td>
<td>2,510,410</td>
<td>1.30</td>
<td>7,028,844</td>
<td>2,811,211</td>
<td>10,635,345</td>
</tr>
<tr>
<td>1949&lt;sup&gt;4&lt;/sup&gt;</td>
<td>81,803,358</td>
<td>8,585,696</td>
<td>5,280,196</td>
<td>2.73</td>
<td>14,558,505</td>
<td>4,071,987</td>
<td>17,165,391</td>
</tr>
<tr>
<td>1950</td>
<td>177,104,669</td>
<td>27,368,061</td>
<td>13,130,246</td>
<td>6.78</td>
<td>20,731,871</td>
<td>5,794,309</td>
<td>26,895,638</td>
</tr>
<tr>
<td>1951</td>
<td>135,285,086</td>
<td>14,020,739</td>
<td>7,240,452</td>
<td>3.74</td>
<td>29,851,003</td>
<td>9,005,880</td>
<td>31,920,882</td>
</tr>
<tr>
<td>1952</td>
<td>168,734,653</td>
<td>15,576,165</td>
<td>7,012,700</td>
<td>3.62</td>
<td>38,007,247</td>
<td>11,429,532</td>
<td>41,755,780</td>
</tr>
<tr>
<td>1953</td>
<td>217,964,074</td>
<td>15,512,489</td>
<td>7,076,335</td>
<td>3.66</td>
<td>38,222,001</td>
<td>14,301,004</td>
<td>45,929,419</td>
</tr>
</tbody>
</table>

<sup>1</sup>Earnings per share of common stock based upon the 1,935,131 shares outstanding at December 31, 1953.

<sup>2</sup>Net investment after deduction of depreciation reserves.

<sup>3</sup>Thirteen month period ended December 31, 1948.

<sup>4</sup>Consolidated information including financial data of wholly-owned subsidiaries in 1949 and subsequent years.
To the shareholders of Motorola

It is a pleasure to report again that Motorola sales surpassed all previous marks and set a record in 1953 of $217,964,074. This is a gain of 29% over 1952 sales and all five divisions of the business contributed to the increase. Industry figures for 1953 show our company sold a higher proportion of all radio and television sets sold than in 1952.

The first three quarters showed substantial sales gains but fourth quarter sales were lower than expected. This was due in part to the general slackening in demand for many consumer durable products. At the same time the publicity given to color television probably resulted in deferment in purchases of black and white television on the assumption that color sets would soon be available. In fact very few color sets will be on the market in 1954 and they will be priced generally in excess of $1000 initially.

Consolidated earnings before provision for federal taxes were $15,512,489 in 1953 and $15,576,165 in 1952. Net earnings of $7,076,335 or $3.66 per share in 1953 compared with $7,012,700 or $3.62 per share in 1952.

The year 1953 was one of preparation in many ways. Expenses were incurred to gain more efficient facilities and operations in the future. Sales promotion activities were expanded. Engineering development was stressed, particularly in the fields of color television, plated circuitry and transistors. Since earnings in excess of the base credit for excess profits tax purposes were taxed at the rate of 82%, these added expenditures had relatively little effect on the net earnings of the company but will result in an improved position in the future.
**plant facilities** Four major improvements in facilities were under way in 1953. A television assembly plant with 278,000 square feet of factory and warehouse space was completed and in operation in September. Picture tubes, cabinets and chassis are assembled into finished sets, packed, stored and shipped from this location in Franklin Park, just outside of Chicago. The increase in size of sets and the increasing volume of production required this expansion and at the same time it was an opportunity to introduce a high degree of mechanization. Space made available by this move has permitted a realignment of older facilities, also aimed at greater efficiency.

A leased warehouse and parts depot of 135,000 square feet on Halsted Street in Chicago was vacated and the activities it contained were transferred to a new building under lease on Cicero Avenue in Chicago, having 150,000 square feet of more convenient and usable space. This move has been completed and has resulted in a more economical operation.

Machining, stamping and plating operations, antenna assembly and a tool and die shop, formerly housed in a leased building of 93,000 square feet on Washington Boulevard in Chicago have also been transferred to the new Cicero Avenue location. It is planned to move remaining activities in the Washington plant to the main Augusta Boulevard plant, thereupon vacating the Washington plant.

The building area of the research and development laboratory located in Phoenix, Arizona, was doubled by an addition of 40,000 square feet, recently completed. This laboratory is devoted exclusively to military work.

These and many other smaller changes have served to bring production facilities up to a standard of efficiency that was our goal for 1953. The company has also purchased about forty acres of land on the northwest border of Chicago which in time will be used as a site for an engineering and possibly an administration building, thereby releasing space in the Augusta plants for the expanding requirements of the communications and electronics division.

**television** Industry television set sales were the second largest on record resulting, in part, from the opening of many new telecasting stations. At the end of 1953 there were 356 stations in operation compared with 125 at the beginning of the year. Many more stations are in prospect. Additional sales resulted from the increase in power and scope of existing stations, extending the fringe areas. The improving quality and variety of educational and entertainment programs induced many others to buy.
The Federal Communications Commission in December approved the proposal of the National Television Systems Committee for standards for color television and Motorola has produced a number of color receivers. It is estimated the industry will produce some 100,000 color sets in 1954 but we believe further advances in the art, particularly with respect to production of color picture tubes, will be needed before color television will be ready for mass sales.

It has been our policy to stress development of color circuitry and to embark on a service training program to prepare for volume sales, but we have not attempted to press for production and sales of color sets up to this time.

**auto radio** The substantial increase in automobile production in 1953 over 1952 resulted in an increase in auto radio sales for installation on new cars at the factory.

**table, clock and portable radios** An increasing number of our radios contained two important Motorola developments in 1953: plated circuitry and the large sized, inverted speaker. The plated circuit is important to the consumer because of its reliability. The inverted speaker is important because, by inverting the magnet from the outside to the inside of the speaker cone, considerable space is saved and the speaker cone area can be enlarged economically, thereby improving tonal quality.

**communications and electronics** Civilian sales of the communications and electronics division set another record in 1953. Considerable advances were made in organization of the nation-wide service facilities for two-way mobile and point-to-point radio communications systems. Notable during 1953 was the increased use of mobile, two-way radio systems for industrial concerns, both large and small. Internal organization of this division has also been strengthened by decentralizing responsibility for development of each line of products.

**military electronics** Military laboratory services and sales of equipment reached new highs and contracts in hand indicate that these records may again be exceeded in 1954. It is our belief that, regardless of national budget problems and international developments, our country’s outlay for electronic development and products must remain at a high level.

As evidence of our interest in continued service in this field we maintain a high level of research and development in specialized laboratories in Phoenix and Chicago. As mentioned before, the Phoenix laboratory has just recently been doubled in size.
financial On December 31, 1953, the consolidated working capital of the company was $38,222,000, an increase of $214,000 over the year. The shareholders’ equity increased to $45,929,000, up $4,173,000 for the year.

At the year-end $18,230,000 of current assets were used to finance receivables and contracts in process for military work and no bank loans were necessary for this purpose.

Current assets were 215% of current liabilities and long term debt was reduced by $763,000 during the year to $7,857,000. At the year-end the company’s trade receivables and inventories were in good order.

Dividends of $1.50 per share of common stock were paid in 1953. At the close of the year there were 4606 Motorola shareholders. Directors, officers and their immediate families owned directly or beneficially 575,539 shares of Motorola stock.

employees Perhaps the most important factor in our operations is the quality of our human relations. Being human, they are never perfect but within the obvious limitations of economics and of a large organization we endeavor to conduct our internal affairs so that people find satisfaction in their work and perform skillfully.

Wage and salary rates are tied to a cost-of-living adjustment plan and are supplemented by the profit sharing plan which at year-end contained net assets at market value in excess of $17,600,000.

Training programs have been supplemented by a new executive development program, aimed at improving the capacity of all management personnel for greater responsibility and improved performance. The Advisory Council to the Board of Directors is made up of executives who study and make all manner of recommendations for improvement of operations. The suggestion program, in which nearly all employees may participate, provides opportunity to apply imagination to devise new and better ways of doing things.

Many activities are carried on by employees in a lively fashion through several choral groups, various athletic groups, the Sportsmen’s Club, the Service Club, Foreman’s Club, the Voice of Motorola newspaper, the Eyes of Motorola (quality inspection personnel), the Engineering Club and others. During our twenty-fifth anniversary year a “Jubilee Picnic”, held at Chicago’s
largest recreation park, drew 30,000 employees, their families and friends. Through these means we join together in play and recreation to accent the human values in working together.

**the future** While 1954 is a difficult year to classify at this early time, it appears it may be Motorola's second best year in terms of sales volume. From an operating point of view we are looking on it as a year for consolidating our forces for the next major advance. We have reviewed budgets and operating methods to reach a new goal of efficiency.

The principal hurdle in the way of color television continues to be the cathode ray picture tube. While considerable advance was made in 1953, a satisfactory, large screen tube is not yet available commercially, at a practical cost. From the rate of advance to date it is possible that the solution will appear in 1954 and color television may, sometime in 1955, begin to constitute a significant portion of our sales. In the meantime it is likely that the prospect for color will result in some deferred demand for television, but primarily for the more expensive sets. Color television receivers for some years will be substantially more expensive than black and white and it is therefore probable that the shift to color will take place over a long period.

To the degree that automobile production declines in 1954, our sales of auto radios may be affected. But as car manufacturers, for price reasons, may not press the sale of radios as new equipment, our sales to the so-called "after-market" may increase.

I see no significant change in the continued high sales rate for home and portable radios.

The growth of the civilian end of the communications and electronics division should continue and I believe that military business will reach a new high in 1954 and then level off unless international tension increases.

The year 1954 should provide both a satisfactory sales and earnings record for your company.

As always, it is a real pleasure for me to acknowledge with thanks the cooperation and confidence in Motorola of customers, dealers, distributors, suppliers, employees and shareholders.

Sincerely,

March 9, 1954

President,

For the Board of Directors
### CONSOLIDATED BALANCE SHEET

<table>
<thead>
<tr>
<th>ASSETS</th>
<th>DECEMBER 31, 1953</th>
<th>1952</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current assets:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash</td>
<td>$ 9,052,298</td>
<td>$ 7,094,304</td>
</tr>
<tr>
<td>United States Government obligations—short term, at cost</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accounts receivable:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>United States Government</td>
<td>8,942,768</td>
<td>4,455,802</td>
</tr>
<tr>
<td>Other trade accounts (less reserve for bad debts—1953, $381,058; 1952, $295,000)</td>
<td>19,307,601</td>
<td>19,220,045</td>
</tr>
<tr>
<td>Other current receivables</td>
<td>1,769,691</td>
<td>531,157</td>
</tr>
<tr>
<td>Costs recoverable under United States Government contracts, less progress billings</td>
<td>9,288,036</td>
<td>10,697,549</td>
</tr>
<tr>
<td>Inventories—at the lower of cost or market</td>
<td>22,519,019</td>
<td>18,892,581</td>
</tr>
<tr>
<td>Prepaid expenses</td>
<td>426,581</td>
<td>411,924</td>
</tr>
<tr>
<td><strong>TOTAL CURRENT ASSETS</strong></td>
<td>$71,305,994</td>
<td>$68,793,295</td>
</tr>
<tr>
<td>Other assets</td>
<td>1,134,954</td>
<td>831,709</td>
</tr>
<tr>
<td>Plant, equipment and leasehold improvements (less reserve for depreciation—1953, $2,994,834; 1952, $2,261,511)</td>
<td>14,301,004</td>
<td>11,429,532</td>
</tr>
<tr>
<td>Patents and trademarks—less amortization</td>
<td>129,261</td>
<td>108,311</td>
</tr>
<tr>
<td><strong>$86,871,213</strong></td>
<td><strong>$81,162,847</strong></td>
<td></td>
</tr>
</tbody>
</table>

### CONSOLIDATED STATEMENT OF INCOME AND RETAINED EARNINGS

<table>
<thead>
<tr>
<th>Year Ended December 31, 1953</th>
<th>1952</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>$217,964,074</td>
</tr>
<tr>
<td>Other income</td>
<td>1,125,164</td>
</tr>
<tr>
<td><strong>Total income</strong></td>
<td>$219,089,238</td>
</tr>
<tr>
<td>Manufacturing and other costs of sales</td>
<td>$170,709,414</td>
</tr>
<tr>
<td>Selling, service and administrative expenses</td>
<td>28,070,626</td>
</tr>
<tr>
<td>Depreciation and amortization of leasehold improvements</td>
<td>1,125,964</td>
</tr>
<tr>
<td>Contribution to employees' profit-sharing fund</td>
<td>2,914,095</td>
</tr>
<tr>
<td>Interest and other expenses</td>
<td>756,650</td>
</tr>
<tr>
<td><strong>Total costs and other expenses</strong></td>
<td>$203,576,749</td>
</tr>
<tr>
<td>Net income before provision for taxes on income</td>
<td>$ 15,512,489</td>
</tr>
<tr>
<td>Provision for taxes on income:</td>
<td></td>
</tr>
<tr>
<td>Federal, state and Canadian income taxes</td>
<td>$ 8,416,154</td>
</tr>
<tr>
<td>Federal excess profits tax</td>
<td>20,000</td>
</tr>
<tr>
<td><strong>Total provision for taxes on income</strong></td>
<td>$ 8,436,154</td>
</tr>
<tr>
<td><strong>Earnings</strong></td>
<td>$ 7,076,335</td>
</tr>
<tr>
<td>Retained earnings, beginning of year</td>
<td>26,931,881</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$34,008,216</td>
</tr>
<tr>
<td>Deduct:</td>
<td></td>
</tr>
<tr>
<td>Cash dividends declared—$1.50 per share</td>
<td>2,902,696</td>
</tr>
<tr>
<td>Share-for-share distribution—par value of 879,605 shares issued</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>2,902,696</td>
</tr>
<tr>
<td>Retained earnings, end of year</td>
<td>$ 31,105,520</td>
</tr>
</tbody>
</table>
## LIABILITIES

<table>
<thead>
<tr>
<th></th>
<th>DECEMBER 31, 1953</th>
<th>DECEMBER 31, 1952</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current liabilities:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current maturities of long-term debt, and short-term borrowings of subsidiaries</td>
<td>$2,192,980</td>
<td>$1,453,870</td>
</tr>
<tr>
<td>Accounts payable—trade</td>
<td>7,752,518</td>
<td>12,023,030</td>
</tr>
<tr>
<td>Accrued taxes</td>
<td>9,450,270</td>
<td>9,795,887</td>
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<tr>
<td>Reserves for service and product warranties</td>
<td>1,011,504</td>
<td>1,091,591</td>
</tr>
<tr>
<td>Other current liabilities</td>
<td>12,676,721</td>
<td>6,421,670</td>
</tr>
<tr>
<td><strong>TOTAL CURRENT LIABILITIES</strong></td>
<td><strong>$33,083,993</strong></td>
<td><strong>$30,786,048</strong></td>
</tr>
</tbody>
</table>

Long-term debt, less current maturities above:

- 3³⁄₄% note, due November 1, 1966, with annual prepayment requirements of $500,000 | $6,500,000 | $7,000,000 |
- 3% note issued under contract to purchase land and building, payable in annual installments to 1956 | $781,900 | $1,340,400 |
- Real estate mortgages, subsidiaries, principally maturing after 1965 | $575,901 | $280,619 |

**Total liabilities** | **$40,941,794** | **$39,407,067**

## SHAREHOLDERS' EQUITY

- Capital stock, $3.00 par value—authorized, 3,000,000 shares; issued and outstanding, 1,935,131 shares | $5,805,393 | $5,805,393 |
- Capital surplus | $9,018,506 | $9,018,506 |
- Retained earnings | $31,105,520 | $26,931,881 |

**Total shareholders' equity** | **$45,929,419** | **$41,755,780** |

**$86,871,213** | **$81,162,847**

### NOTES TO FINANCIAL STATEMENTS

**A**—Principles of consolidation: all of the company’s subsidiaries are wholly owned and all are included in the consolidated financial statements. The accounts of Canadian subsidiaries are included in terms of United States funds, at appropriate rates of exchange; the amounts pertaining to Canadian companies are relatively inconsequential.

**B**—The company's business under United States Government contracts is subject to price renegotiation, in accordance with federal statute. The company's renegotiation status has been reviewed by the Government for the years 1950 and 1951, and no refund was required. It is believed that no excessive profits were realized in 1952 and 1953 which would be required to be refunded under general price renegotiation.

**C**—No material adjustment of reported income taxes is anticipated with respect to returns which are subject to examination. There is no pending litigation against the companies which, in the opinion of counsel, may materially affect the companies' operations or financial condition. In connection with the financing of sales of products to consumers in the ordinary course of business the companies are contingently liable on discounted, secured notes receivable and have an obligation to repurchase products under certain circumstances. It is believed that these obligations will have no material effect on the business of the companies.

**D**—Retained earnings on December 31, 1953 is after transfer therefrom in prior years of $2,945,385 to capital surplus and $5,034,625 to the capital stock account, in connection with stock dividends, share distributions and increase in par value of capital stock. Capital surplus consists of $6,073,121 of paid-in capital and the above-mentioned transfer from the Retained Earnings account.

**E**—Under terms of the 3³⁄₄% note agreement, retained earnings of the parent company in the amount of approximately $7,263,000 were available on December 31, 1953 for the payment of cash dividends or acquisition of the company's stock.
To the Board of Directors and Stockholders of Motorola, Inc.

We have made examinations, for the year ended December 31, 1953, of the accounts of Motorola, Inc. and its subsidiaries, all wholly owned.

Our examinations were made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances. It was not practicable to attempt to obtain confirmations of certain receivables from the United States Government, but we satisfied ourselves as to their substantial accuracy by means of other auditing procedures.

In our opinion, the accompanying balance sheet and related statement of income and retained earnings, as footnoted, present fairly the consolidated financial condition of Motorola, Inc. and its subsidiaries on December 31, 1953 and the results of their operations for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

Baumann, Finney & Co.
At Motorola, engineering is emphasized as the key to advance design and economical production of high quality electronic products. It has been responsible for a record of outstanding achievement in electronic research and development of new products and methods.

Motorola engineering is, of course, specialized in electronics, for the company's activities are limited to this field. Five separate engineering groups are working in special types of development, with liaison among them to coordinate work on similar problems.

UHF ENGINEERING LABORATORY
This is a section of the laboratory where the Motorola "Super-Strata" UHF tuners have been developed. These tuners may be installed in set at factory, locally or attached to the set through the use of a compact converter.

TRANSMITTER LABORATORY
Laboratory from which signals are transmitted for purposes of achieving "on the air" test signals. This is necessary in order for the engineering staff to develop circuitry design for clear, sharp and stable television pictures, both black and white and color.
Although the basic methods of assembly and test are similar, techniques of production vary among products. Costs are an important consideration in determining the type of production operation and varying volume makes it necessary to provide production facilities tailored to meet specific tasks.

Television production facilities comprise three plants: a tuner production building and the main chassis production plant both in Chicago, and the new Franklin Park plant where chassis, tube, and cabinet are assembled to form the complete television unit.

Since home and auto radio products are smaller units, they are produced on continuous lines in three plants located in Chicago and Quincy, Illinois.

Military production, on the other hand, encompasses many types and sizes of products but in smaller production volumes. It is housed in one Chicago plant, where special skills and facilities adapted specifically to military production needs are concentrated.

Production of two-way and point-to-point communication and control systems is being consolidated in a single building in Chicago adjoining the main plant.
Throughout 1953 Motorola continued a broad program of vigorous merchandising, advertising, and promotion.

In addition to newspaper, magazine and radio media, the company began sponsorship in December of the Motorola TV Hour, an hour-long dramatic show on an alternate week participation with U. S. Steel over the ABC television network. The Motorola TV Hour has received very favorable comment in press reviews for its general excellence and the informal talks by Motorola's executive vice-president which have served to introduce TV viewers to many activities of the company not generally known to the public.

Last year Motorola built the world's largest electric sign on Chicago's Lake Shore Drive. Its height is equal to a thirteen story building and its largest letters are 34 feet high. The gigantic TV set with a clock in the screen measures 90 feet by 80 feet.

In addition to continuing the “Better See Motorola TV” slogan, Motorola introduced in 1953 the theme, “Double-Power Picture with Concentrated Power Chassis and Patented Pictron Unit”. Based on leadership in radio and 2-way communications, Motorola utilized the strong advertising theme of—first in radio sales, first in features and first in styling.

A scene from Thurber's Fantasy, "The Thirteen Clocks", recently presented on the Motorola TV Hour.

A night view of the new Motorola spectacular sign on Chicago's Lake Shore Drive.
Television

The 1954 line of TV receivers featured new engineering developments including the "Double-Power Picture," the new UHF-VHF "Robot 82" Tuner, the built-in "Roto-tenna," the life-time focus picture tube, channel light dial, improved "Miracle Interlace," distance selector switch, improved servicing control panel, and new modern styling. All tubes and parts continued to benefit from the one-year warranty.

Radios

The new radio models included a low cost Hi-Fi table radio-phonograph, a new portable radio-clock combination and a "VIP" desk clock radio combined with a set of pens. Some new radio models featured the Motorola developed PLAcir Chassis and Extended-Tone Speaker. Other features included new sub-miniature tubes, new long-life portable radio batteries, new shortwave radio combination, new battery saving circuits and, of course, new styling.
Communication and control equipment

Principal civilian products are FM mobile two-way radio systems, microwave point-to-point relay systems, power line carrier systems, and supervisory control apparatus.

Users of this equipment include public safety services, railroads, public utilities, taxicab companies, truckers, construction firms, highway maintenance departments, television stations, oil and gas pipelines and others.

Military electronic products include radar, guided missile controls, weapons fusing, and mobile communications, including transmission and reception of signals for information and control purposes.
board of directors

Paul V. Galvin
Robert W. Galvin
Matthew J. Hickey, Jr.
George R. MacDonald
Daniel E. Noble
Frank J. O'Brien
Edwin P. Vanderwicken
Elmer H. Wavering

officers

Paul V. Galvin
President

Robert W. Galvin
Executive Vice President

Daniel E. Noble
Vice President in Charge of Communications and Electronics Division

Frank J. O'Brien
Vice President for Purchasing

Walter B. Scott
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