

# Microwave Tubes and Radar Components

## Main Products

This division covers broadly the following two fields: electron tubes and radar components for defense and meteorology (governmental-use) field, and marine radars (consumer-use) field.

### [Business Results in Fiscal 2005]

Due to stable customers' demand, sales of "electron tubes and radar components for defense and meteorology" increased slightly from last year.

Sales of consumer-use "electron tubes and radar components for marine radars", remained unchanged.

As a result, total sales were ¥4,561 million (2.6% increase from last year).



M1466A is a magnetron for a LINAC (Linear Accelerator) mainly used for a radiation therapy for cancer. The peak output power is 2.6 MW and a high frequency stability is demanded.



M1555 is an S-band magnetron for a marine radar. The peak output power is 30kW. Its spurious emission level is decreased and it outputs a clean S-band microwave.

- **Governmental-use Products:**

Sales remained stable because of our high market share based on our long-established track record and few competitors, etc.

- **Consumer-use Products:**

We launched electron tubes and radar components that cope with "Spurious Regulations" to be effective from 2007 into the market to expand the share of the marine market. Especially, sales of electron tubes and radar components for pleasure boat radars has remained stable, enabling us to maintain its leading share of the global market. In fiscal 2006, we continue to strengthen the sales of mainly electron tubes and radar components that cope with stricter "Spurious Regulations". In addition, we will promote the development of modules for radars using semiconductor devices (silicon carbide) to reduce radar size and weight.

### [General Overview]

The products in this division are used worldwide as integral microwave parts for radars, ranging from large radars for governmental-use to small radars for consumer-use.

Recent international legislation of spurious interference from radars requires a reduction of spurious more strictly than before. To meet this need, we have continued to introduce new products ahead of the competition. This positive development has been well received by the market. While meeting the increasingly stringent regulations, we will continue to develop and introduce new products to expand market share. Although there was increasing demand for radars for small pleasure boats, such as 4-seater boat, we did not intend to market radars using existing electron tubes due to weight limitations. To enter this market, we now believe that development of smaller and lighter radars is necessary. We will start to develop radar modules using semiconductors (silicon carbide) and to commercialize them early, aiming to achieve sales growth. In addition, we have promoted medical applications using large electron tubes.



NJK2301 is an electron gun for a LINAC (Linear Accelerator) mainly used for a radiation therapy for cancer. An iridium-coated and Ba-impregnated cathode is installed into this electron gun and it achieves the operation with a high electron current density.



MAF1611B is an X-band magnetron for a marine radar. The peak output power is 4kW. Its spurious emission level is decreased and it outputs a clean X-band microwave.

