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### **IrDA Standardization**

The IrDA (Infrared Data Association) is a consortium established with the aim of the industry standardization of wireless interfaces using infrared rays with wavelengths between 850 and 900 nm. The method standardized by IrDA is one of the IEEE 802.11 PHY (physical layer) standards. Initially, this was used as an interface to realize information distribution between notebook computers and PDAs without contact and without cables. Later, with the rapid spread of mobile communications, the application of infrared communication technology to mobile communication terminals was examined, and at the October 1997 general meeting, the IrMC (Specifications for Ir Mobile Communications) standard, which is an infrared communication standard for mobile communication terminals, was standardized.

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### **Successful Wireless Photo Transmission between Germany and Japan at the Berlin Olympics, Establishment of Ultra-high Frequency Multiplex Line in Hachiojima, Tokyo (Mt. Fuji Relay)**

At the Berlin Olympics in 1936, a photo-electric transmission experiment was conducted between Berlin and Tokyo using NE-type transceivers, and the results were practical. This greatly contributed to the further development of fax technology. Some of the experimental equipment was lent from the German side, so there were restrictions on the duration of the experiment, etc., but engineers from Japan overcame this by making various improvements, such as quick repairs of equipment at the site, and in part achieved superior results compared to overseas technologies at the time. In addition to such technical results, having gained the know-how and confidence in joint experiments with overseas engineers was also a great achievement given the circumstances at the time.

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### **Phase Modulation Method for Confidential Communication**

Regarding research on phase modulation, in Japan, research on phase modulation for secret communication has been carried out by Tsunetaro Kujirai and Toshifusa Sakamoto since around 1932. This is a method of changing the phase of an electrode using an impedance bridge, and the manner in which the phase changes is generally discussed. The method of

using phase modulation for secret communication (secret telegraph telephone) has been described, and this has been confirmed in practice. Specifically, it was confirmed that a phase transformer in which the amplitude is constant and only the phase changes can be obtained by using the three sides of the bridge as resistors and using a storage battery on one side, and it has been demonstrated that secret communication can be achieved by using audio or radio frequency power.