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## Former NTT Laboratory Leader Wins U.S. National Academy of Engineering Award -Dr. Yoshihisa Okumura Becomes First Japanese Scholar to Receive Charles Stark Draper Prize-

Dr. Yoshihisa Okumura, a former leader of the mobile radio laboratory at then Nippon Telegraph and Telephone Public Corp. (NTT Public Corp.) and currently professor emeritus at Kanazawa Institute of Technology, became the first Japanese individual to win the 2013 Charles Stark Draper Prize for pioneering contributions to the world's first cellular telephone networks, systems and standards.

The Charles Stark Draper Prize, often referred to as the Nobel Prize of engineering, has been awarded for outstanding achievements in engineering since 1989. Along with Dr. Okumura, four others were awarded for contributions to the development of cellular telephony this year. They received their awards in a ceremony at Union Station in Washington, D.C. on February 19, 2013 (U.S. time).

Among Dr. Okumura's significant contributions during his tenure at the Electrical Communications Laboratory of NTT Public Corp., he helped elucidate radio propagation characteristics in mobile communications and formulate the basic cellular telephone network and system concept leading to a high-capacity automobile communication system on the 800 MHz frequency band.

In work concerning radio propagation characteristics, he experimented extensively with the transmission and reception of radio signals in various field environments using different frequencies on a broad range of VHF and UHF bands.



Based on data he obtained in these field experiments, he established methods to estimate curves of the received field strength and service areas with respect to distances in the range of 1-100 kilometers in 1968.

His highly acclaimed field strength curves were adopted as a Comité Consultatif Internationale des Radiocommunications (CCIR) recommendation by the International Telecommunication Union (ITU). The "Okumura Curves" have been used for the practical design and establishment of various mobile radio systems the world over (see **figure below**). Propagation prediction formulae based on the Okumura Curves are used in the radio link design for current mobile phone systems. Also, his methods for analyzing data from field experiments are widely used for area-quality assessment and optimization.



Electrical field strength curves published by Mr. Okumura (Okumura Curves)