

High quality transmission technology for wireless LAN based video surveillance systems

Surveillance camera frame loss rate improved to less than $1/100$

Tokyo, February 28, 2013 – Hitachi, Ltd. (TSE: 6501, "Hitachi") and Hitachi Kokusai Electric Inc. (TSE, OSE: 6756, "Hitachi Kokusai") announced the successful development of high quality wireless transmission technology with wireless LAN standards⁽¹⁾ for video surveillance systems requiring high quality images. In this development, the communication method set out in the IEEE standard, IEEE 802.11e for wireless LAN systems, was applied to a video surveillance system to allow control of radio wave interference from other wireless LAN devices. Further, high quality image transmission was achieved through a communication protocol which minimizes image degradation during communication error. Hitachi and Hitachi Kokusai applied the technology developed to a prototype wireless device, and using multiple surveillance cameras to conduct verification experiments, confirmed that the frame loss rate was reduced to less than $1/100$ compared to conventional systems. This technology will enable the achievement of economically efficient and highly reliable wireless video surveillance systems.

Video surveillance systems are being increasingly installed in companies and public facilities for increased security and disaster prevention, as part of a larger trend to establish a safe and secure society. Currently, the use of wired networks is mainstream in video surveillance systems which send images from several surveillance cameras to a security room or monitoring center to monitor or record. In order to cover a wider area or to enable greater freedom in camera locations, there is an increasing demand for wireless network systems which do not require communication wires. In order to connect surveillance cameras to a wireless network, it is necessary to connect the camera and access point with a broadband wireless LAN which will allow the transmission of large data volume video images. Wireless networks, however, are also widely used by other devices such as smartphones and PCs, and radiowave interference from such devices result frame loss and other degradation of surveillance images.

To overcome this issue, Hitachi and Hitachi Kokusai, applied the HCCA⁽²⁾ communication method outlined in the IEEE802.11e standard to video surveillance systems, as well as developing a new communication protocol to reduce image

degradation. By employing HCCA, the transmission timing from the various wireless devices is individually allocated to reduce radiowave interference between the different devices. Further, even in the event that communication errors should occur, the original communication protocol developed can prioritize the surveillance camera communication signals to be re-transmitted, thus reducing image degradation such as frame loss.

When the technology developed was applied to a wireless video surveillance system and verification experiments of video transmission were conducted, it was found that even in an environment where other wireless LAN devices were being operated, highly reliable high quality video could be transmitted. Compared to video surveillance systems based on conventional wireless transmission where frame loss occurs after a few minutes, no frame loss occurred even after 9 hours with the system employing the technology developed. Through this, it was confirmed that frame loss frequency can be reduced to less than $1/100$.⁽³⁾

These achievements will be presented at the Hitachi Kokusai booth at SECURITY SHOW 2013, to be held at Tokyo Big Sight from 3rd-8th March, as well as at the IEICE General Assembly to be held at Gifu University, Gifu-shi, Japan, from 19th-22nd March, 2013.

- (1) Wireless LAN standard: Wireless LAN method defined by IEEE standards IEEE 802.11a/b/g/n
- (2) HCCA: Hybrid coordination function Controlled Channel Access. A communication control function specified by IEEE 802.11e, whereby communication is controlled by polling from the base station rather than the carrier sense method previously used for autonomous communication by terminals.
- (3) Test environment: The video transmission error rate between the wireless camera devices and the access point was measured, in an experimental set-up with video signals at 3Mbps, 5 wireless camera devices and 1 wireless device for interference.

About Hitachi, Ltd.

Hitachi, Ltd. (TSE: 6501), headquartered in Tokyo, Japan, is a leading global electronics company with approximately 320,000 employees worldwide. Fiscal 2011 (ended March 31, 2012) consolidated revenues totaled 9,665 billion yen (\$117.8 billion). Hitachi is focusing more than ever on the Social Innovation Business, which includes information and telecommunication systems, power systems, industrial, transportation and urban development systems, as well as the sophisticated materials and key devices that support them. For more information on Hitachi, please visit the company's website at <http://www.hitachi.com>.

About Hitachi Kokusai Electric Inc.

Hitachi Kokusai Electric Inc. (TSE, OSE: 6756), headquartered in Tokyo, Japan, is a company that manufactures broadcasting systems, security and surveillance systems, wireless communications and information systems, and semiconductor manufacturing equipment. Fiscal 2012 (ended March 31, 2013) consolidated net sales totalled 138,801 million yen (\$1,476 million). Hitachi Kokusai Electric Inc. sets the goal of becoming the top global company in the two areas of “Video and Wireless Network System Solutions” and “Eco- and Thin Film Processing Solutions.” For more information on Hitachi Kokusai Electric Inc., please visit the company's website at <http://www.hitachi-kokusai.co.jp/global/index.html>.

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