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Cell Phone Adapted to TypeB IC Chip — Field Trial at Expo 2005 AICHI

NTT Service Integration Laboratories

Inserting a miniSD card*1 that is equipped with the TypeB*2 IC chip (hereafter “miniSD ELWISE”) developed in 2004 into the miniSD slot of a cell phone adapted to TypeB IC chip (developed by NTT DoCoMo) allows contact communication between i-αppli and the IC chip via the SD interface and contactless communication with an external terminal in addition to large-capacity, removable storage. We tested and evaluated an experimental system that makes use of these features for services that involve cooperation between a miniSD ELWISE and a cell phone adapted to TypeB IC chip.

In collaboration with a commercial enterprise, we conducted verification experiments from July 28 to July 30 2005 at the Aichi Expo 2005 using a miniSD ELWISE and a cell phone adapted to TypeB IC chip. To test the multi-purpose use of these two devices in combination, we lent them out to people visiting a photograph exhibition so that they could experience a content replay service and electronic ticket service, etc. We used the results of a visitor questionnaire to evaluate the operability of the system with respect to invoking i-αppli by making use of the removability and contactless features of the miniSD ELWISE. This trial was also picked up by the mass media and appeared in 16 articles, demonstrating the broad appeal of these research results.

Combining these two devices creates the possibility of content distribution by using the system together with personal computers or digital appliances or the possibility of using of cell phones for services that require conformance to international standard contactless IC card communication specifications. It is also possible to add services to the IC chip by using the i-mode network function.

In future work, we intend to continue investigating services for the development of the ELWISE multi-purpose IC card on the basis of these evaluation results.

*1 miniSD card: A compact SD card that is incorporated into cell phones and other such devices. The specifications are standardized by the SD Association.

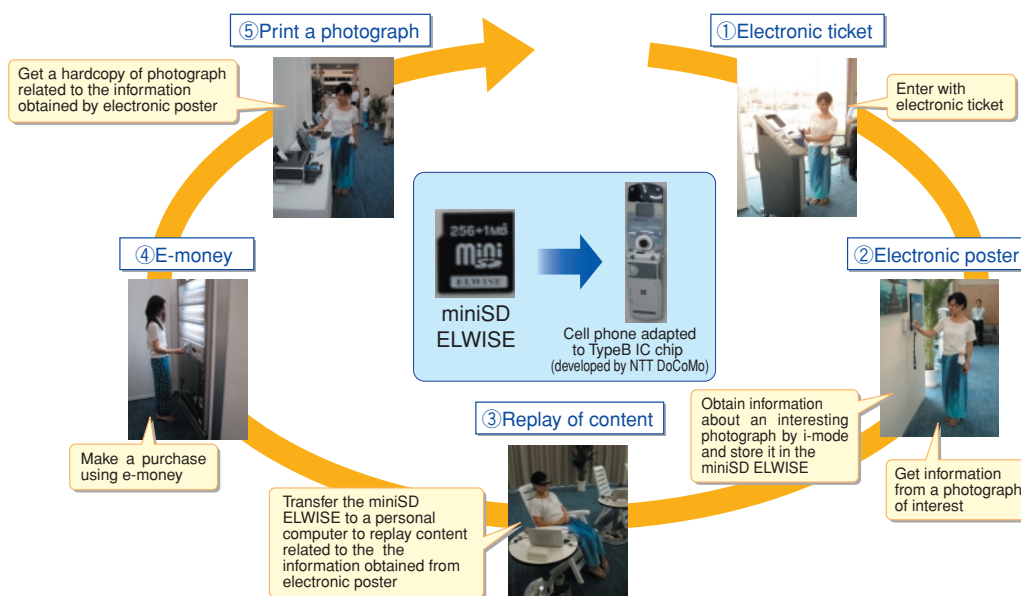
*2 TypeB: A contactless communication protocol for IC cards specified by ISO14443.

miniSD is a trademark of SD Association.

i-αppli and i-mode are registered trademarks of NTT DoCoMo, Inc.

ELWISE is a registered trademark of Nippon Telegraph and Telephone Corporation.

Field trial overview



Ozone Sampler

NTT Energy and Environment Systems Laboratories

Owing to ozone's excellent cleaning and sterilization power (which was first utilized at food-processing plants, cleaning, and laundry businesses), it has become a widely used material at water-purification plants as a disinfectant in place of chlorine. However, unlike the ozone layer in the stratosphere, ozone surrounding us in the environment is regulated by environmental standards, and it is being regarded as an atmospheric pollution. In the USA, ozone is already regarded as a substance that will cause alarm in the future. In Japan as well, the National Institute for Environmental Studies is sounding the alarm in regarding the 21st century as "the century of photochemical oxidants", and a sense of crisis regarding increased concentration of ozone at ground level is increasing. NTT Laboratories, we have developed a method for measuring ozone present in the environment by means of a simple accumulation-type sampler.

NTT Laboratories, we have developed a quantifying sensor in which nitrogen dioxides is absorbed by porous glass* inlaid with a certain dye, and the change in transmissivity of the glass is measured. Utilizing this principle, in particular, focusing on the dye reacting with the ozone and the bleaching reaction that occurs, we confirmed that the ozone can be measured.

The porous glass has a huge surface area; therefore, even at extremely low concentrations of ozone, color fading that can be visualized by eye occurs. According to this fading, the extent of exposure to ozone can be easily understood. Moreover, the glass sensor is in the form of a lightweight, compact badge, so it can be attached to anyone's breast pocket as a device for evaluating individual ozone exposures. In the USA, eight hours of ozone exposure per day is set as the regulation for people working in ozone environments such as waterworks departments as well as food-packaging and cleaning businesses. And this sensor is gaining attention as a method for quickly confirming exposure according to the fading of each person's badge, and has received good reviews in a previous test sale.

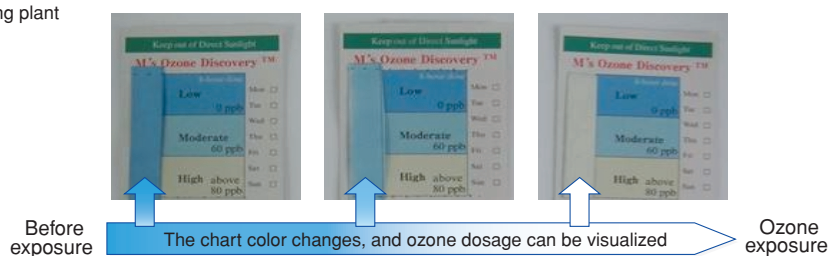
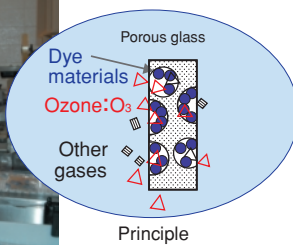
From now onwards, it is considered that ozone will be used more in industrial and commercial applications, and the concentration of ozone in the environment will get higher, making ozone into an environmental pollutant. The developed ozone sampler will be expanded commercially, and unseen dangers will be made "visible". Moreover, by incorporating users' comments into our research and development, we plan to develop products that meet the needs of the market. In addition, we plan to expand our research on harmful pollutants other than ozone.

* porous glass: The glass with enormous numbers of pores.

Fading, usage example, and principle of ozone sampler



Example of use at a cheese-processing plant



Electromagnetic-interference Suppression Technology for High-frequency-inverter Systems for Fluorescent Lighting NTT Energy and Environment Systems Laboratories

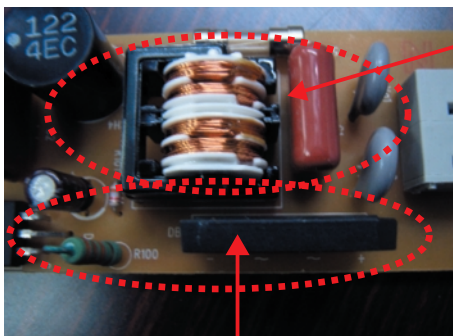
In environments containing precision devices, such as medical instruments, sensitive to electromagnetic-interference irradiated from electrical equipment, the influence of such interference on the operation of these instruments is a cause of great concern. Accordingly, techniques for suppressing this electromagnetic interference are vital. In recent times, with the advances in power-electronics technology, devices (such as fluorescent lights) incorporating inverter technology—which brings about energy saving by switching at relatively high frequency—are appearing in multiple markets. However, it is a problem that a considerable amount of electromagnetic interference is generated; thus, it is necessary to prevent the problem of electromagnetic compatibility (EMC) from occurring.

Although it is known that rapid-start-technology fluorescent-lighting fixtures utilized for conventional illumination produce relatively low electromagnetic noise and have little influence on sensitive instruments, they have the drawback of having no energy-saving effect. At the same time, inverter fluorescent lighting on the market causes a high level of electromagnetic noise, and significant transitional electromagnetic noise generated by switching. As a result, if conventional lighting and fixtures are replaced for the purpose of energy saving, there is the danger of generating EMC problems. In light of these circumstances, electromagnetic-interference and transitional-electromagnetic-noise suppression technologies have been developed, energy saving of 35% have been achieved, and lighting fixtures equipped with a high-frequency inverter electronic stabilizer—featuring fine fluorescent tubes utilizing non-mercury materials in line with RoHS regulations—have been developed (single-phase 100 V or 200 V).

These technologies have transferred to NTT East, NTT West, and NTT Communications, and commercialization expansion is being undertaken by NTT Advanced Technology (NTT-AT). At each NTT business organization as well, these technologies will be introduced during the planned renewal of the wall lighting for telecommunication equipment rooms. Furthermore, as regards suspended telecommunication-equipment lighting, introduction of these technologies at NTT group companies is being investigated. On top of that, NTT-AT is planning to market these technologies for lighting fixtures in environments where medical instruments susceptible to electromagnetic interference are located (such as hospitals).

Implementation of developed technology

Interior of electrical stabilizer



LC filter
(continuous electromagnetic-noise control)

Transitional electromagnetic-noise control

External view of product

