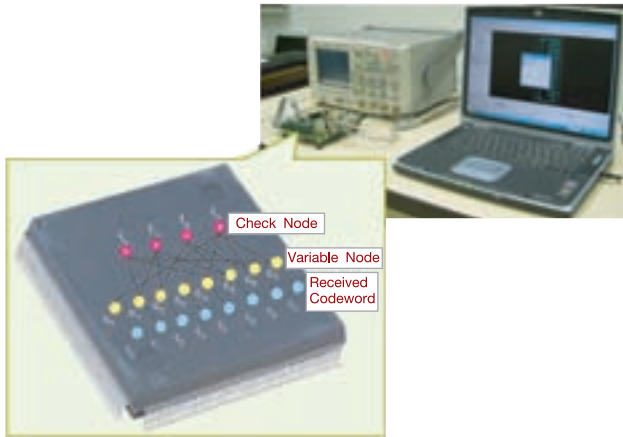


Error Control Coding for Security

This project is to conduct R&D on error control coding applications for QKD, WiMax, UAVs, and satellite modems by using convolution and low-density parity-check (LDPC) codes. In the area of communications, advantages of the project are as follows:

- Optimizing the use of limited resources
- Increasing the quality of products and services
- Increasing consumers' interest, especially in terms of reasonable price and accessibility



Development platform and facilities

Publications



Lab Members

There are full-time and part-time staffs as well as trainees coming from many parts of Thailand to conduct research in the lab every semester and vacation.

Collaborations



Contact Information

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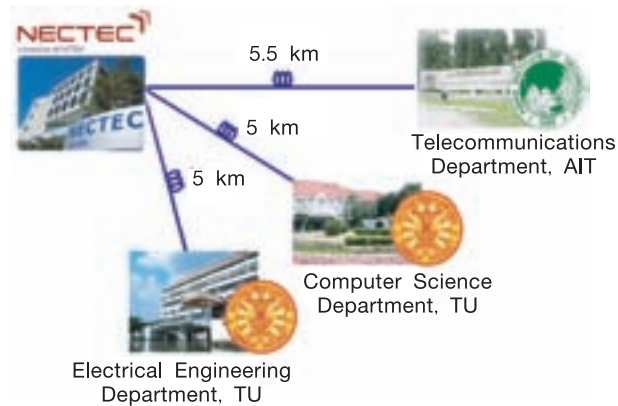
Optical & Quantum Communications Laboratory



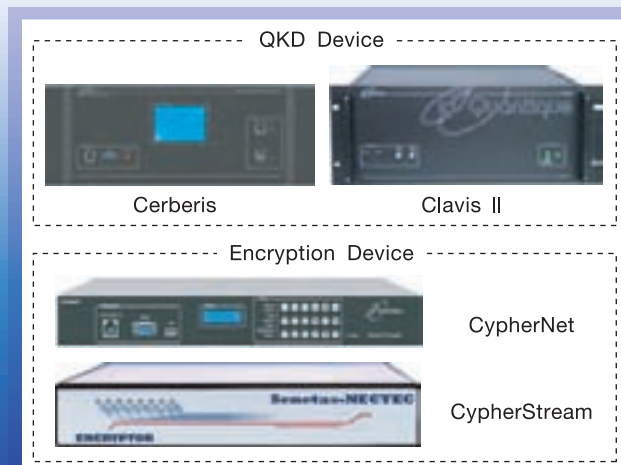
Optical and Quantum Communications Laboratory (OQC) was officially founded in 2005 under the National Electronics and Computer Technology Center (NECTEC), Thailand, in order to conduct research and development (R&D) on optical and quantum (O&Q) communications and to provide know-how for these emerging fields. The enhancement of network security and communication systems based on O&Q communication technologies are also in focus.

Thai Quantum Cryptography Testbed

This project focuses on creating a quantum cryptography (QC) testbed among Telecommunications Department at Asian Institute of Technology (AIT), Computer Science Department and Electrical Engineering Department at Thammasat University (TU) in Thailand. The system includes quantum key distribution (QKD), key management for data encryption and decryption, and data transmission. Also, a website named "Thai QKD Network" is developed to monitor, provide information about the developed system, and to bring confidence and awareness on QC technology to research communities, industries, and academia.



The network schematic of the Thai Quantum Cryptography testbed



Research facilities for the project

Thai Random Number Service (ThaiRand)

This project is to create a website named "ThaiRand" offering true random numbers generated by a quantum random number generator and a test suite based on the National Institute of Standards and Technology statistical test suite for random number generators. A random bit stream could be created at an average rate of 4 Mbps and its integrity could also be guaranteed.



ThaiRand and its applications

Visible Light Communication (VLC) System

This project researches and develops a prototype of up to 10 Mbps LAN using the VLC technology for Internet connections. The project scenario uses an array of LEDs as both the light source and data transmitter by flashing their light at undetectable speed to human eyes. An access point and an air card are also in the project development.



The project scenario

Vision

Develops expertise to drive research and applications of O&Q communications for academia and industries

Missions

- Collaborates with Thai Quantum Information (Q-Ti) Forum and international partners
- Conducts R&D in quantum communications, optical communications, and error control coding
- Steps along with the world's technology trends by focusing on the area of O&Q communications

Projects

OQC has on-going projects and start-up projects as follows:

- Thai Quantum Cryptography Testbed
- Thai Random Number Service (ThaiRand)
- Visible Light Communication System
- Error Control Coding for Security