Project Title: Research and development on short distance communication and imaging for applications in ASEAN region

ASEAN IVO Final Report

Project Leader: Vo Nguyen Quoc Bao, Posts and Telecommunications Institute of Technology, Vietnam
Project members: Japan (NICT), Vietnam (PTIT, DIC, RFD), Thailand (CMU, CU), Malaysia (UTM, TMRD), and Indonesia (LIPI, TI)
Budget: USD 87,000 (First year: USD 30,000, Second year: USD 30,000, Third year: 27,000 USD)
Duration: (Start date and Duration): 36 months starting from April 2016 with project funding USD 90K.

Target of this project:

- Target #1: Evaluation of the short-distance communication and imaging technologies independently first.
- Target #2: Design, evaluation, testing and demonstration of developed devices and subsystems are performed by each institute with their expertise.
- Target #3: Integration of these technologies will be also discussed in the project through the meetings, the seminars or the workshops.
- Target #4: Sharing the knowledge by publishing the paper and presenting the advanced research results in conferences:
- Target #5: Providing contributions to international standardization bodies for societies in the ASEAN region

Findings and Outcomes:

- Measurement at distance less than 50m is available using omni-directional antenna as a receiver antenna.
- Omin-antenna has a small directivity (sensitivities are slightly different at some input angles).
- Distance greater than 50m will require a standard gain horn antenna (24 dBi) in a receiver side.

Broader Impact and Future Developments:

- The effective collaboration on academies and operators helps harmonizing the fundamental research based on seeds for innovative technologies and strong demands from the operators, and finally, the institutes and governments can collaborate each other for international standardizations by these outputs.
- Short-distance communication and imaging technologies are very potential with many future applications and networks. Their applications and performance can be improved if can be combined with other advanced technologies, such as AI and ML .
- More research collaboration activities are expected to make the project cooperation more efficient, i.e., trial tests and workshops are not enough.

Collaborations:

The R&D items that the institutes contribute in the project are as follows:

- PTIT, HCMC DIC: field trial on railway communication system
- NICT: field trial test collaborated with ASEAN institutes
- UTM, TMRD: radio over fiber system implemented to PON network (frequency subject to change)
- CMU: IQ modulation by integrated LD without any external modulator
- Chula-U: evaluation of device/subsystem with integrated optical circuits
- LIPI: optimization of E/O converter for MWP link
- TI: Survey and input to standardization bodies related on FWS under severe weather conditions

Social Contribution:

- Publication: 10 international conference papers
- Report for international standardization: 02
- Patent (international or domestic): None
- Exhibition of the application or system the project developed: 02