01 Introduction
In the present society, data transmission is becoming more important. A fast data transfer device is required to reduce the waiting time process. Intra-Body Communication (IBC) gains increasing interest since this idea is newly developed and it is believed that it can help people a lot. For example, it can be applied in the biomedical field of patient monitoring and exchanging data.
In the project, a Transceiver Device will be developed to ensure that exchanging of signal data between the devices is stable.

02 Objective
- Study how noise affects the signal inside the body.
- Construct and study the interface of two development boards (Transmitter and Receiver).
- Gain experience in implementing different components.
- Learn how to cooperate in programs written by different programmers.

03 Methodology

<table>
<thead>
<tr>
<th>IBC Type</th>
<th>Electric Field IBC (EF-IBC)</th>
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<tbody>
<tr>
<td>Transmission Medium</td>
<td>Body Channel</td>
</tr>
<tr>
<td>Carrier Frequency</td>
<td>50MHz – 100MHz</td>
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<tr>
<td>Modulation Scheme</td>
<td>Quadrature Amplitude Modulation (QAM)</td>
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</tbody>
</table>

Hardware Specification
- Transmission Board
  - Microcontroller Unit (MCU)
  - Voltage-level Shifter
  - Low-Voltage Differential Signaling (LVDS)
  - Direct Digital Synthesizer (DDS)
  - Mixer
  - Electrode
- Receiving Board
  - Microcontroller Unit (MCU)
  - Direct Digital Synthesizer (DDS)
  - Analog to Digital Converter (ADC)
  - Mixer
  - Filter
  - Amplifier
  - Electrode

Software Specification
- Microcontroller Unit (MCU) programming – Assembly language

04 Results

Transmission Board  Receiving Board

05 Conclusion
The communication between transmitter and receiver is successful. Result shows that it is possible to achieve the data transmission through the human body and signal can be retrieved. In the future, IBC system can be applied in wide range of biomedical products and exchanging data from mobile devices. It creates a personal area networks with high levels of security.