GitHub URL: https://github.com/stanthemaker/EmbeddedSystem/tree/main/hw7
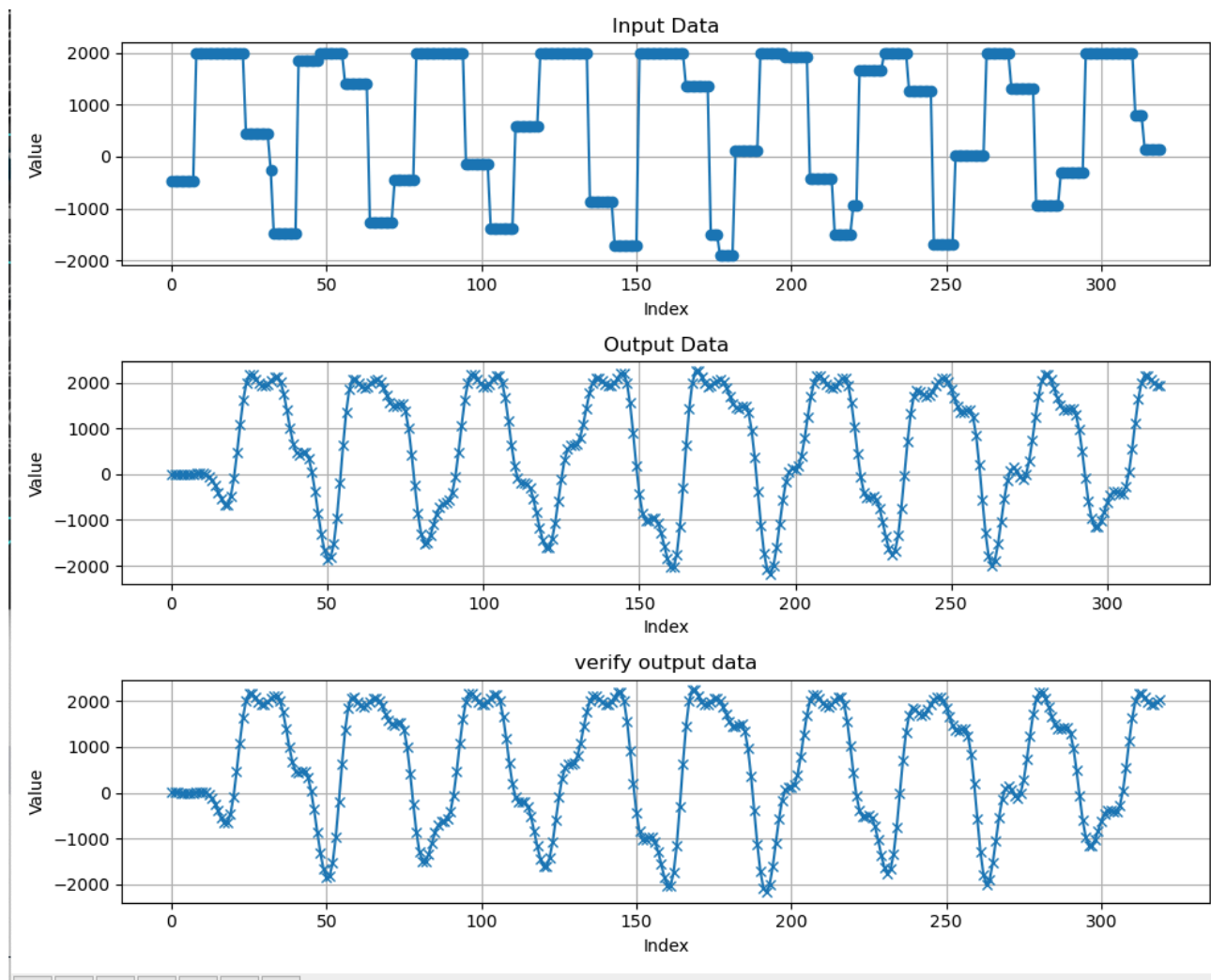
What is the Range of Representable Values in the ARM fixed point q15 (Q1.15) format?

The Q15 number has a decimal range between −1 and 0.9999 (0x8000 to 0x7FFF).

Discussion and approach

In this experiment, a 29−order FIR filter was implemented using the mbed−dsp library to process the input data. The output data, shown in the second row, was obtained after filtering. Additionally, the same input data was processed using a FIR filter in Python with matplotlib, with the results displayed in the last row. The outcome from the Python processing matched the results from the STM32 mbed−dsp library, demonstrating the accuracy of signal processing on the STM32 microcontroller.