Executive summary:

The report presents a brief overview of various tests carried out on FRDMKL25Z128 to determine its suitability for designing vortex flowmeter. The FRDMKL25Z has number of peripherals like UART, ADC, SPI that makes it very useful to design vortex flowmeter. Moreover, the price of FRDM board is about 13 dollars that makes it perfectly suitable for keeping the budget within constraint. The FRDM board is able to support all the requirements which are laid down by Sierra instrumentation , and one of the interesting feature being its small package size that allows the flowmeter to be as compact as possible. Another advantage of FRDM board been it is easy to program due to availability of all libraries of each of the peripherals present on board. Hence, the programmer doesn’t have to worry about details of every component that facilitates the software development and debugging process. The abstraction of each component in terms of libraries makes the FRDM board a good choice for the design of vortex flowmeter.

Based on the and requirements laid out by Sierra instrumentation , various test have been performed which proves the feasibility of FRDM board to be used in vortex flowmeter. The onchip ARM m0+ processor architecture makes it easy to support the arithmetic operations like performing squarerroot operation, handling the vibration sensor and accelerometer, controlling ADC,SPI with very great accuracy. Also, the FRDM board has low power consumption which is marks it as a good embedded system. Considering the ease of implementation due to wide availability of libraries , the development time that is required to make this product is also less , and hence satisfies the schedule within which the product must be developed.

Though the implementation looks to be nearly perfect in its initial stage , there are few optimisations regarding hardware and software which are yet to be done in order to make the productfollow the triple point constraint of budget vs performance vs schedule. To conclude, the FRDM board seems to be a viable alternative to implement the vortex flowmeter, the justification and details are presented in the detailed report below.

Problem statement and objectives:

Module test results