# Code Review Checklist for FKST.VVSS.2020.SHAKE-256(Output bits 512)

## Documentation

* All methods are written in clear language. If it is unclear to the reader, it is unclear to the user.
* @version should be included as required.
* Complex algorithms should be explained with references. For example document the reference that identifies the equation, formula, or pattern. In all cases, examine the algorithm and determine if it can be simplified.
* All class, variable, and method modifiers should be examined for correctness.
* Describe behavior for known input corner-cases.
* Confirm that the code does not depend on a bug in an external framework which may be fixed later, and result in an error condition. If you find a bug in an external library, open an issue, and document it in the code as necessary.
* Units of measurement are documented for numeric values.

## Testing

* Unit tests **must** cover error conditions and invalid parameter cases.
* Unit tests are added for each code path, and behavior.
* Ensure that the code fixes the issue, or implements the requirement, and that the unit test confirms it. If the unit test confirms a fix for issue, add the issue number to the documentation.

## Error Handling

* Invalid parameter values are handled properly early in methods (Fast Fail).
* Avoid using RuntimeException, or sub-classes to avoid making code changes to implement correct error handling.
* Define and create custom Exception sub-classes to match your specific exception conditions. Document the exception in detail with example conditions so the developer understands the conditions for the exception.
* **Pass the buck!** Create classes which throw Exception.
* **Swallow exceptions!** For example catch (Exception ignored) {}.

## Performance

* No busy-wait loops. For example, avoid while (true) {... sleep (10); ...}
* Avoid large objects in memory, or using String to hold large documents which should be handled with better tools. For example, don't read a large XML document into a String, or DOM.
* Do not leave debugging code in production code.