APPENDIX H: DESCRIPTION OF TECHNOLOGY READINESS LEVELS

Level	Level Description
TRL 1	▪ Basic principles observed and reported ▪ Transition from scientific research to applied research. ▪ Essential characteristics and behaviours of systems and architectures. ▪ Descriptive tools are mathematical formulations or algorithms.
TRL 2	▪ Technology concept and/or application formulated ▪ Applied research. Theory and scientific principles are focused on specific application area to define the concept. ▪ Characteristics of the application are described. ▪ Analytical tools are developed for simulation or analysis of the application.
TRL 3	▪ Analytical and experimental critical function and/or characteristic proof-of concept ▪ Proof of concept validation. ▪ Active R&D is initiated with analytical and laboratory studies. ▪ Demonstration of technical feasibility that are exercised with representative data.
TRL 4	▪ Component / subsystem validation in laboratory environment ▪ Standalone prototyping implementation and test. ▪ Integration of technology elements. ▪ Experiments with full-scale problems or data sets.
TRL 5	▪ System / subsystem / component validation in relevant environment ▪ Thorough testing of prototyping in representative environment. ▪ Basic technology elements integrated with reasonably realistic supporting elements. ▪ Prototyping implementations conform to target environment and interfaces

Level	Level Description
TRL 6	▪ System / subsystem model or prototyping demonstration ina relevant end-to-end environment ▪ Prototyping implementations on full-scale realistic problems. ▪ Partially integrated with existing systems. ▪ Limited documentation available. ▪ Engineering feasibility fully demonstrated in actual system application.
TRL 7	▪ System prototyping demonstration in an operational environment ▪ System prototyping demonstration in operational environment. ▪ System is at or near scale of the operational system, with most functions available for demonstration and test. ▪ Well integrated with collateral and ancillary systems. ▪ Limited documentation available.
TRL 8	▪ Actual system completed through test and demonstration in an operational environment ▪ End of system development. ▪ Fully integrated with operational hardware and software systems. ▪ Most user documentation, training documentation, and maintenance documentation completed. ▪ All functionality tested in simulated and operational scenarios. Verification and validation completed.
TRL 9	▪ Actual system proven through successful mission operations ▪ Fully integrated with operational hardware / software systems. ▪ Actual system has been thoroughly demonstrated and tested in its operational environment. ▪ All documentation completed. ▪ Successful operational experience. Sustaining engineering support in place.