Name of Certifying Engineer(s): Benjamin Hawks
Email of Certifying Engineer(s): bhawks@fnal.gov
Name(s) of System Under Test: Pynq-Z2, Arty A7-100T

Division (check one):
- ☑ Open
- ❑ Closed

Category (check one):
- ☑ Available
- ❑ Preview
- ❑ Research, Development, and Internal (RDI)

Benchmark(s) (check all that apply):
- ❑ Visual Wake Words
- ☑ Keyword Spotting
- ☑ Anomaly Detection
- ☑ Image Classification

Please fill in the following table adding lines as necessary:

System Under Test Name	Benchmark	Accuracy/AUC
Pynq-Z2	AD – hls4ml	77.8%/0.83
Pynq-Z2	KWS – FINN	82.5%/0.91
Pynq-Z2	IC - hls4ml	83.5%/0.91
Pynq-Z2	IC - FINN	84.5%/0.91
Arty A7-100T	AD – hls4ml	77.8%/0.83
Arty A7-100T	KWS - FINN	82.5%/0.91
Arty A7-100T	IC - hls4ml	83.5%/0.91
Arty A7-100T	IC - FINN	84.5%/0.91

For each SUT, is the benchmark Accuracy/AUC target met? (Not a requirement for the Open division) (check all that apply):
- ❑ Yes (Visual Wake Words … 80% Accuracy)
- ❑ Yes (Keyword Spotting … 90% Accuracy)
- ❑ Yes (Anomaly Detection … 0.85 AUC)

- ❏ Yes (Image Classification ... 85% Accuracy)
- ❏ No, for some combination of benchmark, scenario and SUT

For each SUT and benchmark, did the submission run on the whole validation set in accuracy mode? (check one):
- ☑ Yes
- ❏ No

For each SUT and benchmark, does the submission use the EEMBC Runner? (check one)
- ☑ Yes
- ❏ No

For each SUT and benchmark, is the same code run in accuracy and performance modes? (check one)
- ☑ Yes
- ❏ No

Are the weights calibrated using data outside of the official calibration set? (check one)
- ❏ Yes
- ☑ No

What numerics does the submission use? (check all that apply)
- ❏ INT4
- ❏ INT8
- ❏ INT16
- ❏ UINT8
- ❏ UINT16
- ❏ FP11
- ❏ FP16
- ❏ BF16
- ❏ FP32
- ☑ Other, please specify: INT1, INT3, Fixed-point 8-12 bits

What backend does the submission use? (check all that apply)
- ❏ Vendor backend, please name:
- ❏ TF-Lite Micro
- ❏ Micro TVM
- ☑ Other, please specify: hls4ml, FINN

Which of the following caching techniques does the submission use? (check all that apply, ideally none):
- ❏ Caching Inputs between iterations

- ❏ Caching responses between iterations
- ❏ Caching intermediate computations between iterations

Which of the following techniques does the submission use? (check all that apply, ideally none if submitting to the closed division.)
- ☑ Quantization aware training
- ☑ Wholesale weight replacement
- ❏ Weight supplements
- ❏ Discarding non-zero weight elements
- ❏ Pruning
- ❏ Modifying weights during the timed portion of an inference run
- ❏ Hard coding the total number of queries
- ❏ None of the above

Is the submission congruent with all relevant MLPerf rules?
- ☑ Yes
- ❏ No

If the answer to the above question is no, please explain:

For each SUT, have you filled out the JSON system description file?
- ☑ Yes
- ❏ No

For each SUT, does the submission accurately reflect the real-world performance of the SUT?
- ☑ Yes
- ❏ No

Does your submission include the following: (check all that apply)
- ❏ System description file
- ❏ Code that implements the benchmarks
- ❏ Code/scripts that train the model(s) (Open Division)
- ❏ Metadata that describes each system-implementation combination tested
- ❏ Scripts that set up and execute each system implementation tested
- ❏ Result logs for each system implementation tested
- ☑ This Checklist