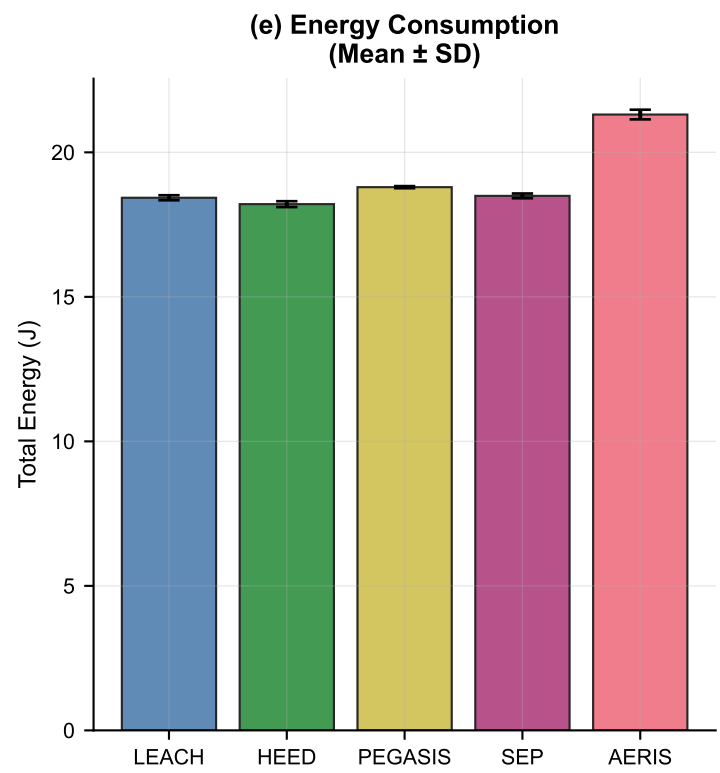
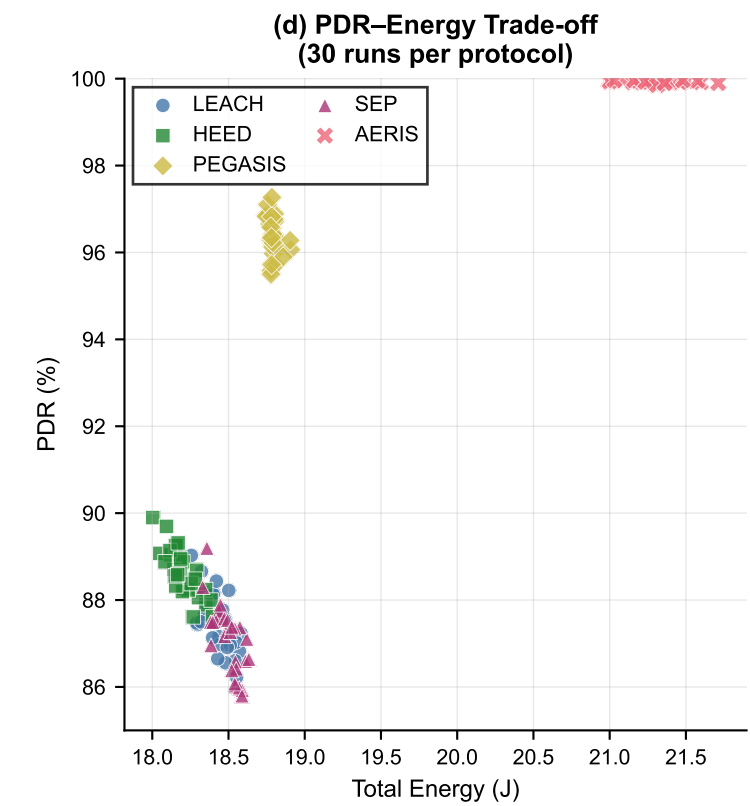
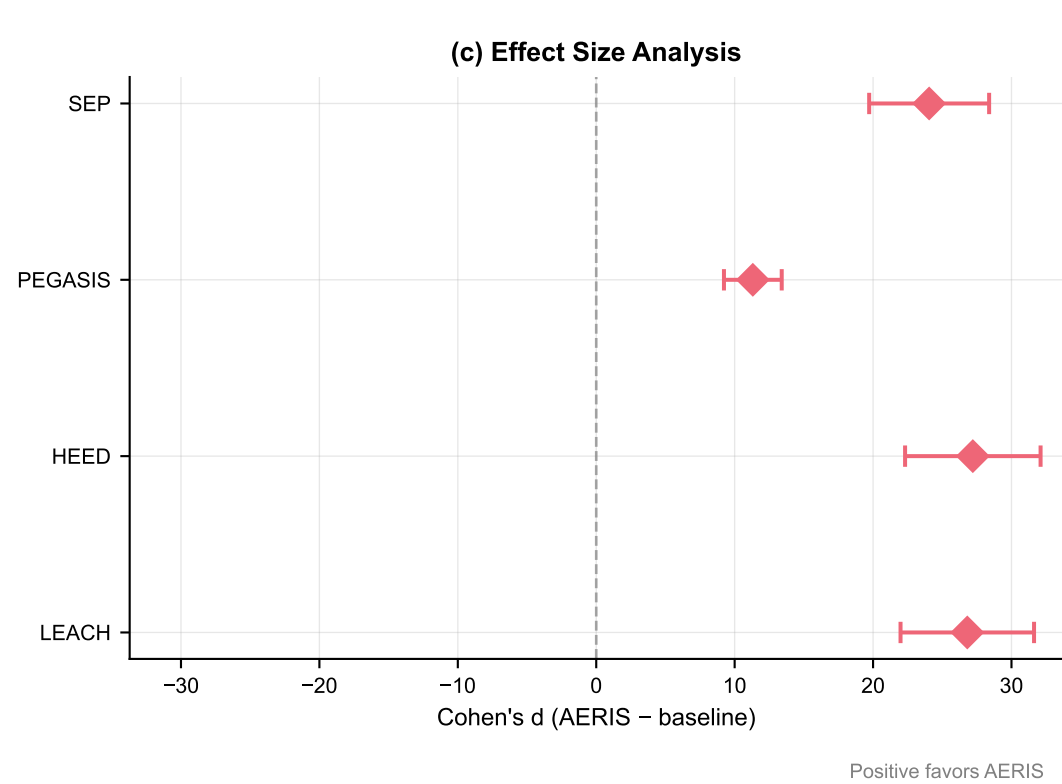
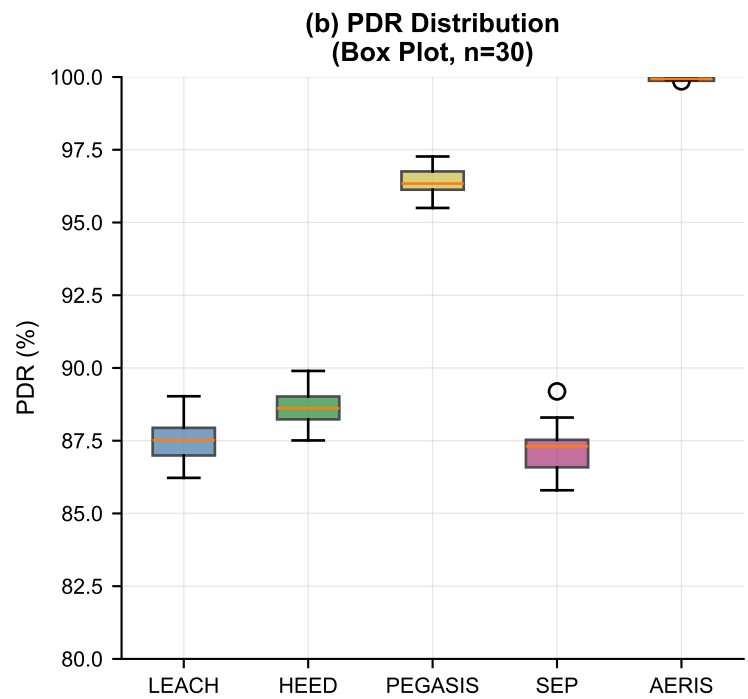
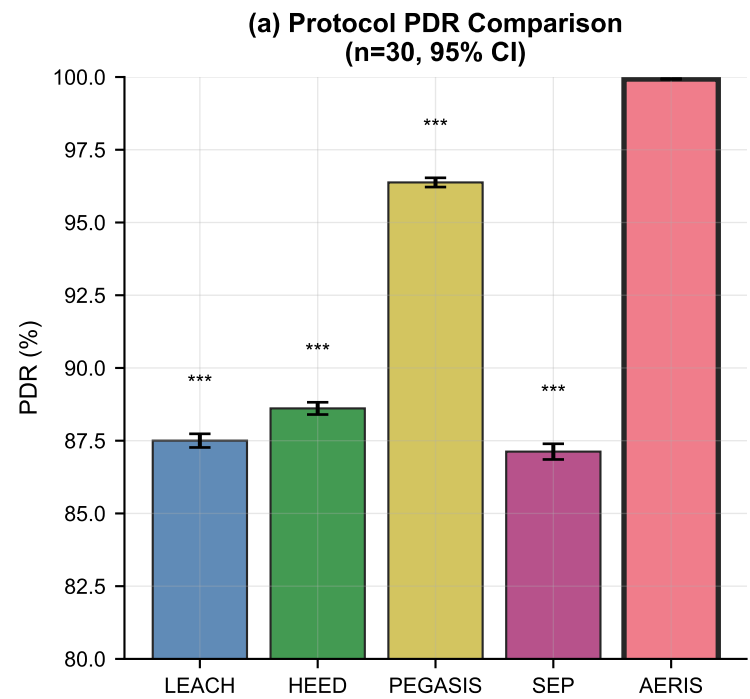


**AERIS: SOTA Protocol Comparison with Rigorous Statistical Testing**  
(Fair comparison: all protocols use identical channel models, n=30 runs each)



**(f) Statistical Validation Summary**  
(Shapiro-Wilk  $\rightarrow$  Levene  $\rightarrow$  t-test)

| Baseline | Test           | p       | d     | Outcome    |
|----------|----------------|---------|-------|------------|
| LEACH    | Welch's t-test | 1.0e-38 | 26.81 | AERIS wins |
| HEED     | Welch's t-test | 6.2e-39 | 27.21 | AERIS wins |
| PEGASIS  | Welch's t-test | 5.6e-28 | 11.31 | AERIS wins |
| SEP      | Welch's t-test | 2.5e-37 | 24.05 | AERIS wins |