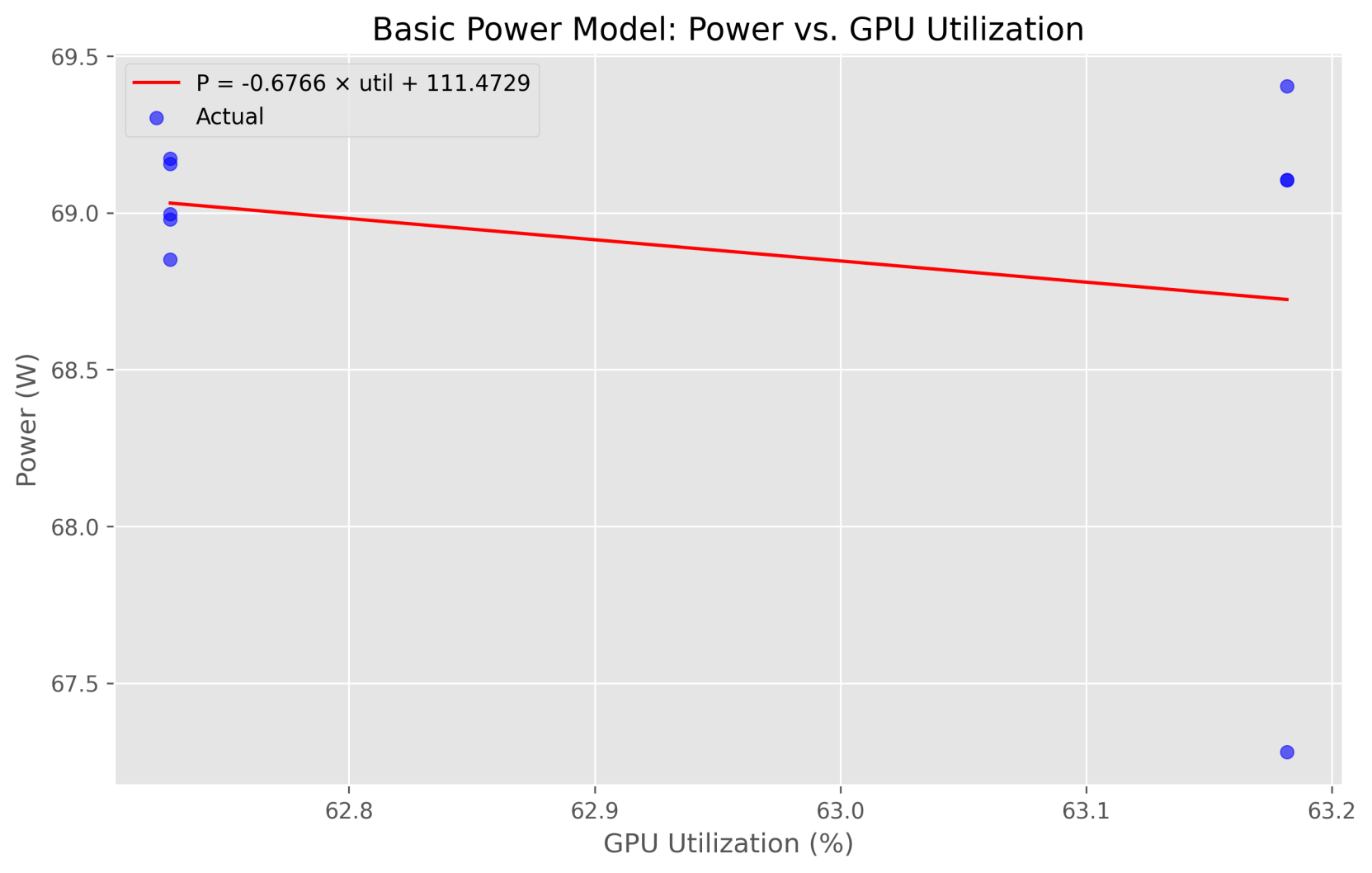
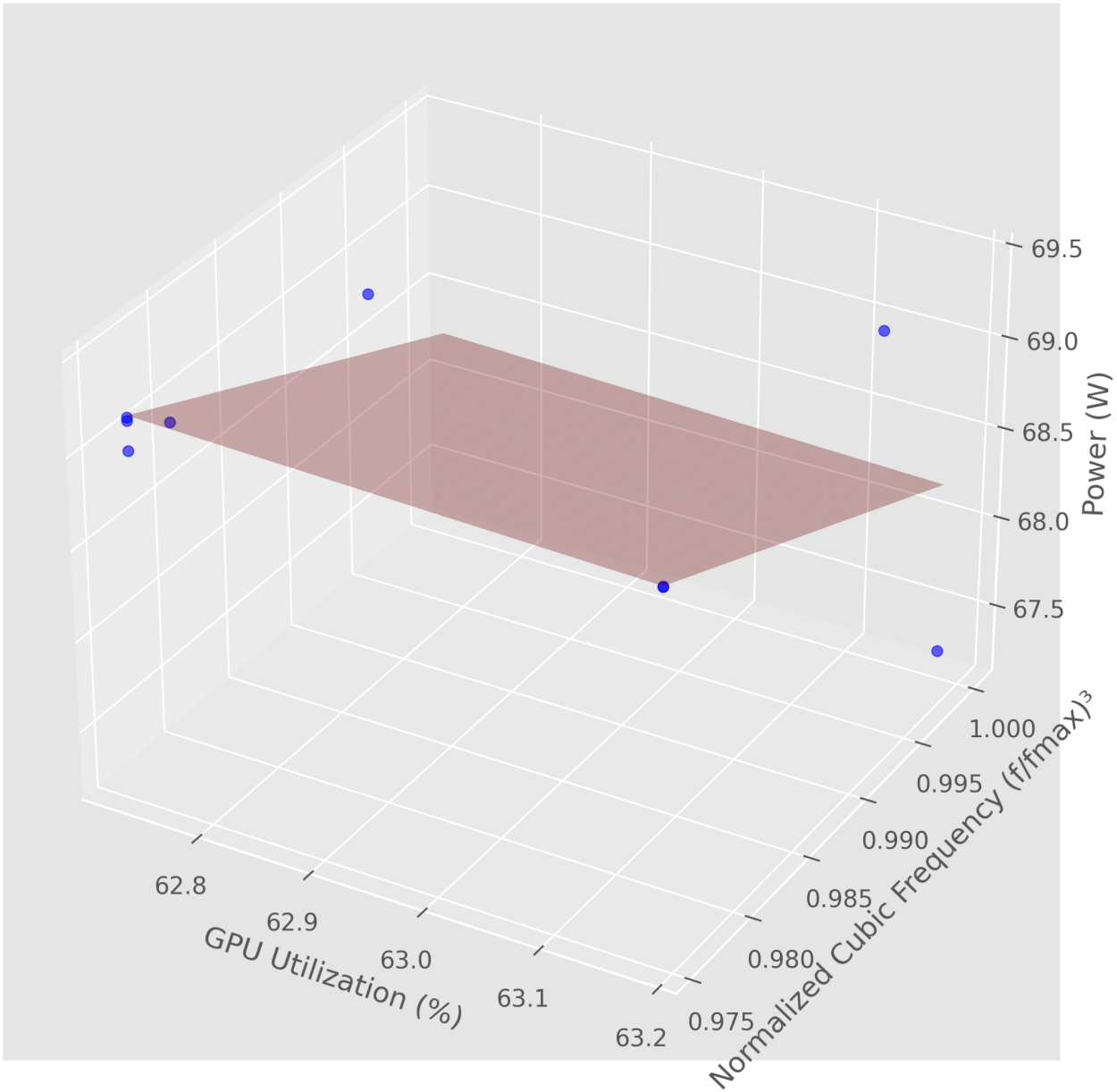
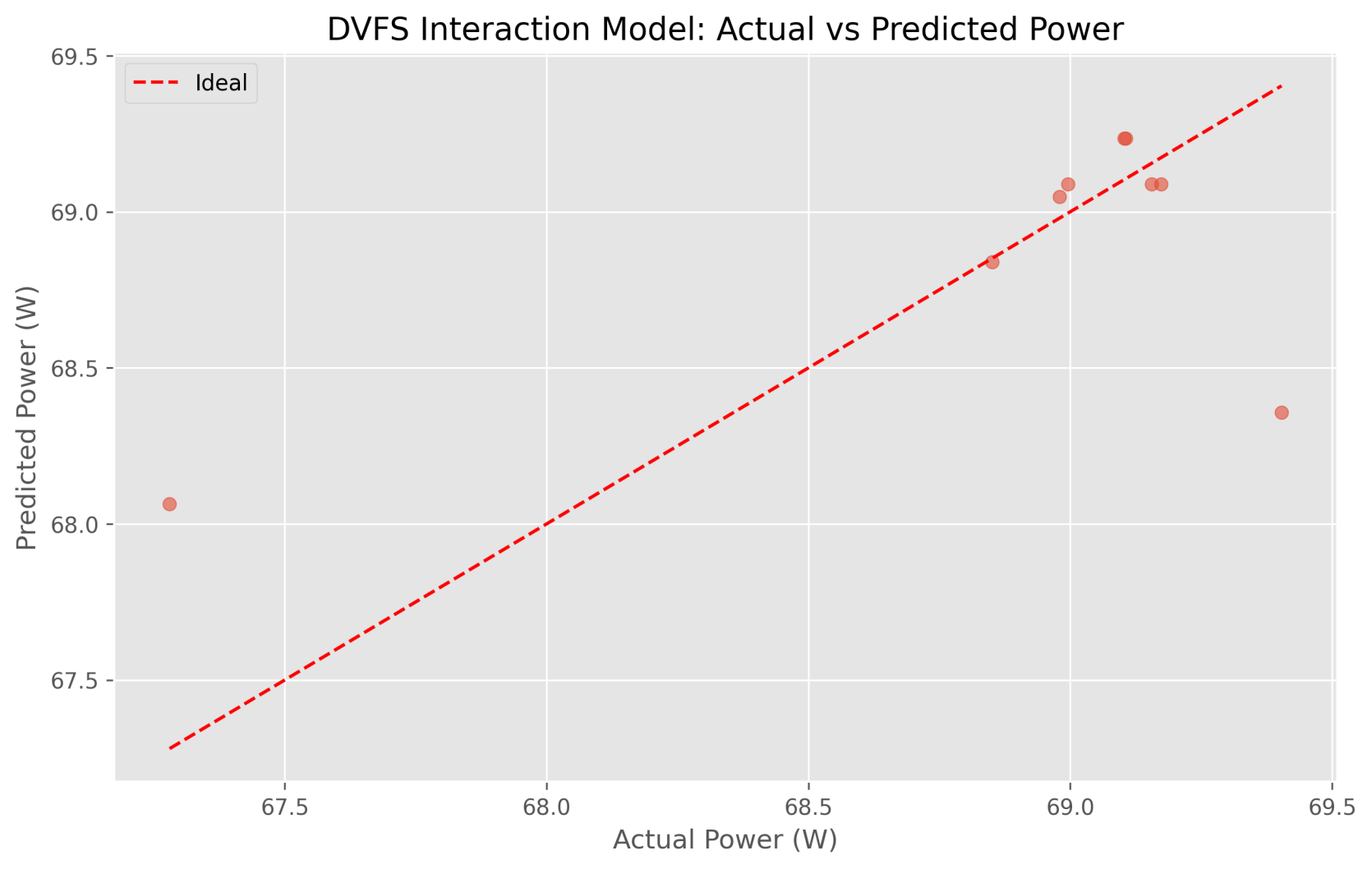
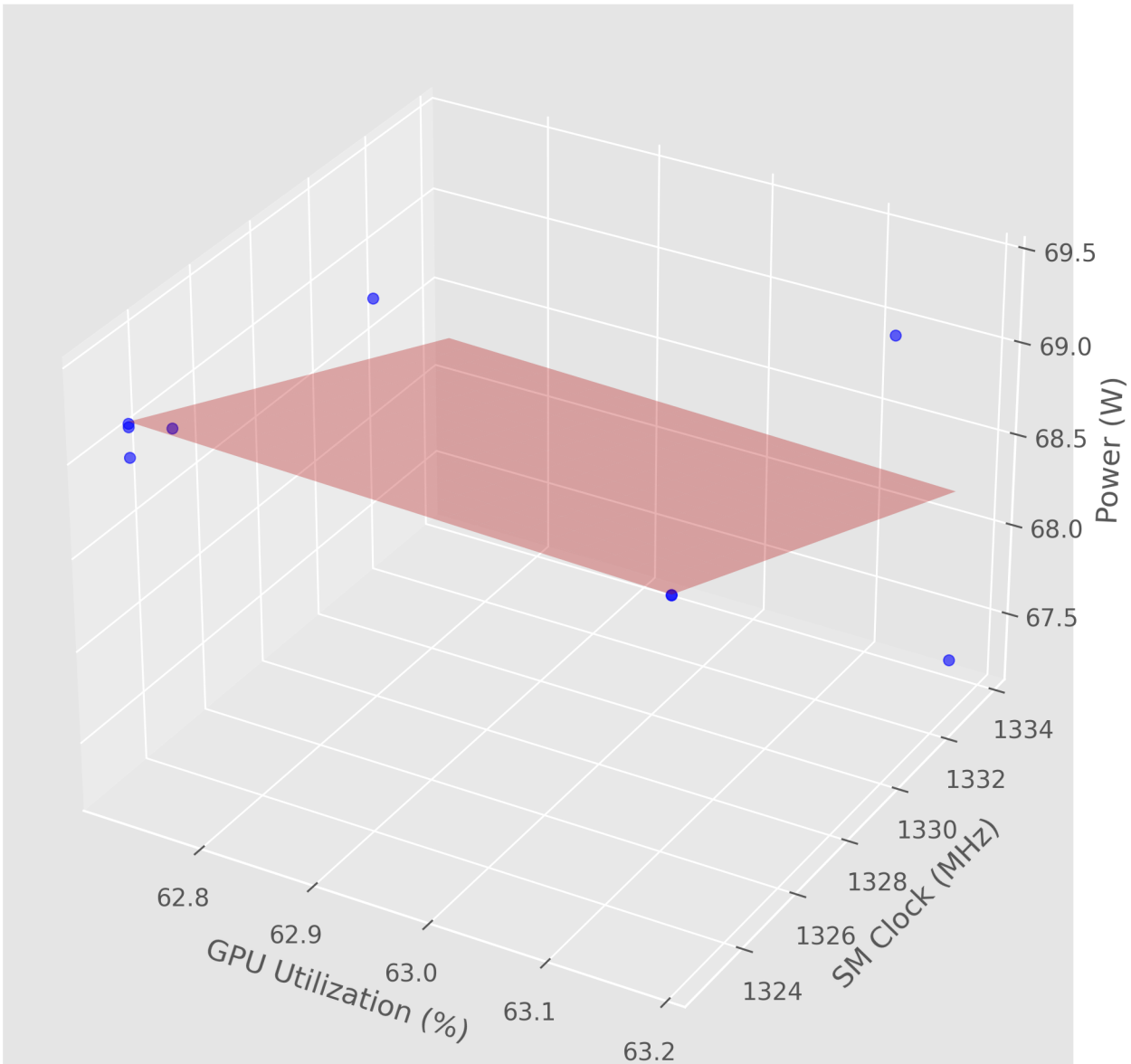
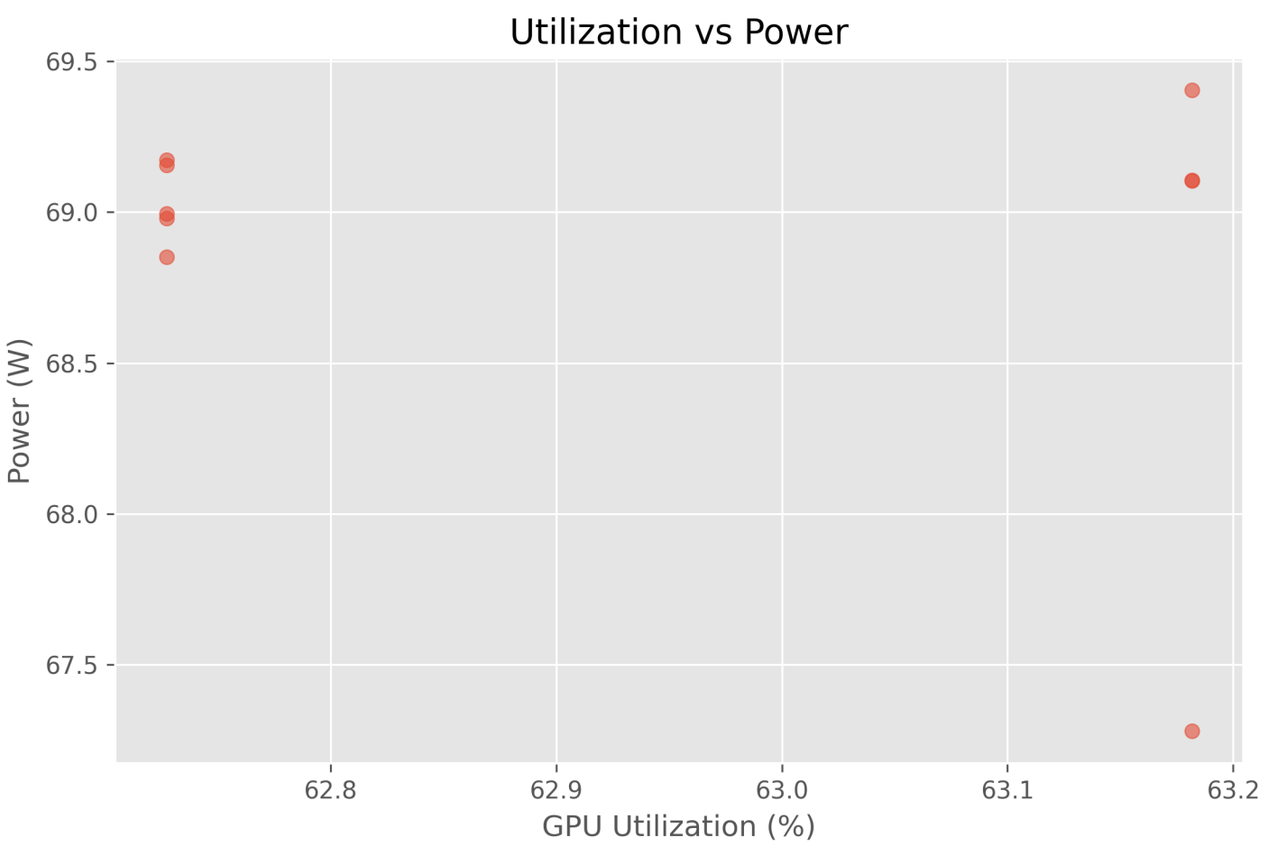
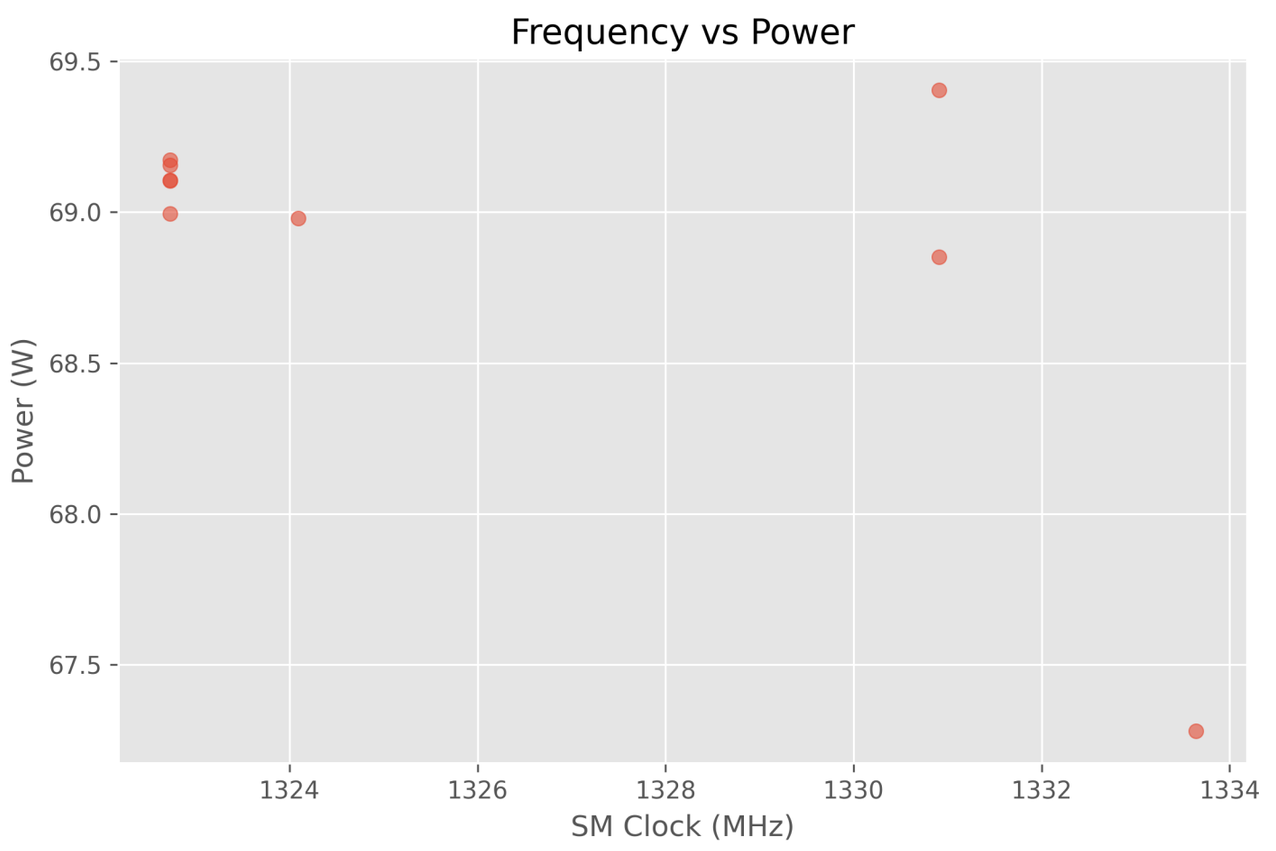

Basic Power Model: Power vs. GPU Utilization
P = -0.6766 × util + 111.4729
Actual
Power (W)
GPU Utilization (%)
69.5
69.0
68.5
68.0
67.5
62.8
62.9
63.0
63.1
63.2

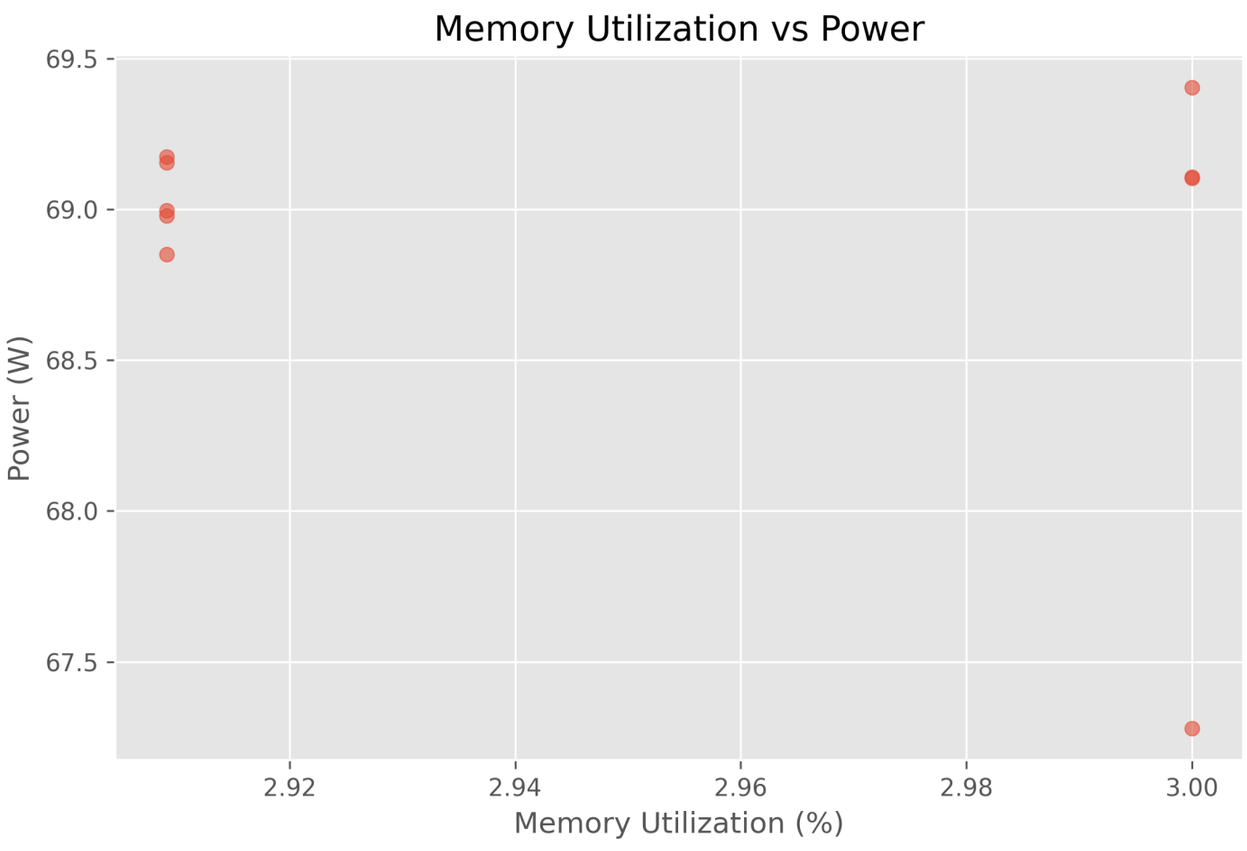

DVFS-Aware Cubic Power Model
Power (W)
69.5
69.0
68.5
68.0
67.5
GPU Utilization (%)
62.8
62.9
63.0
63.1
63.2
Normalized Cubic Frequency (f/fmax)³
1.000
0.995
0.990
0.985
0.980
0.975

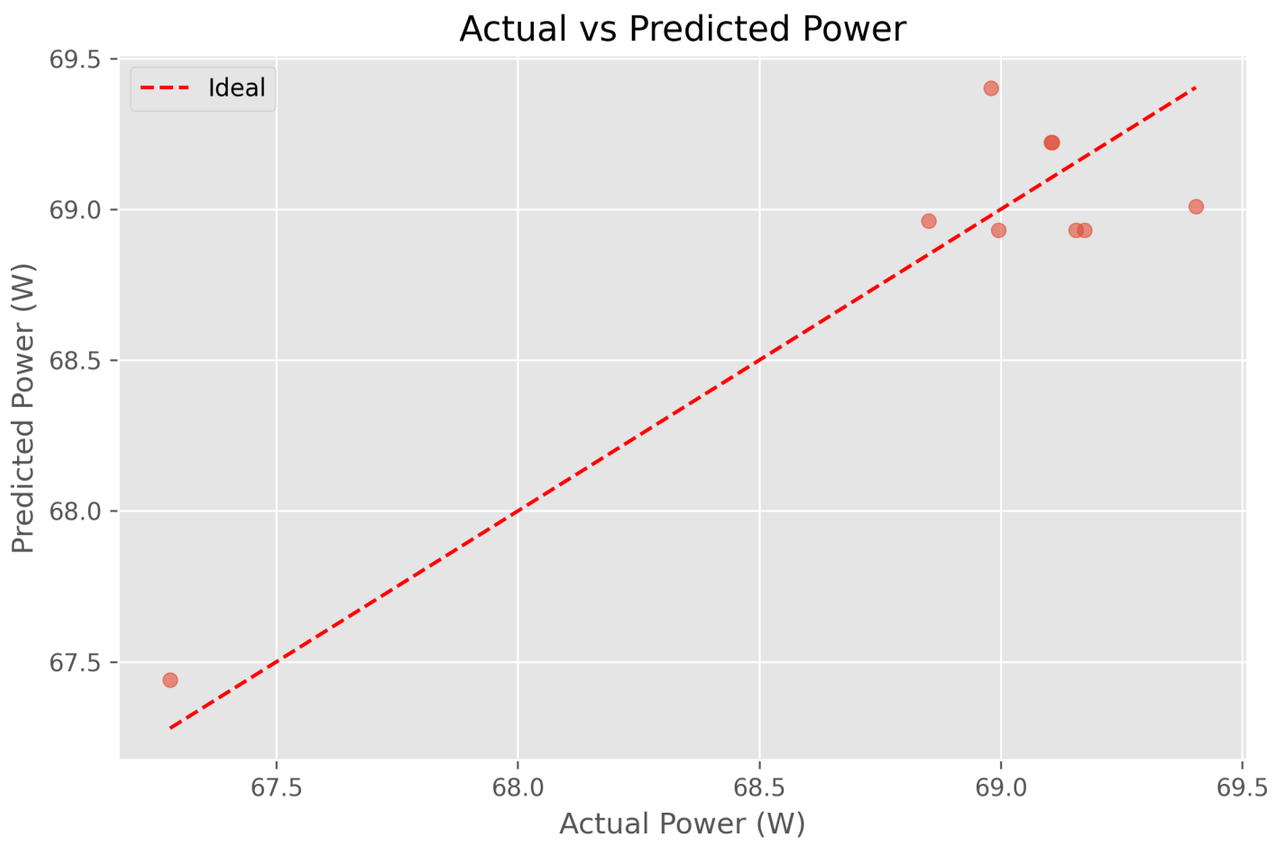

DVFS Interaction Model: Actual vs Predicted Power
Ideal
Predicted Power (W)
Actual Power (W)
69.5
69.0
68.5
68.0
67.5
67.5
68.0
68.5
69.0
69.5

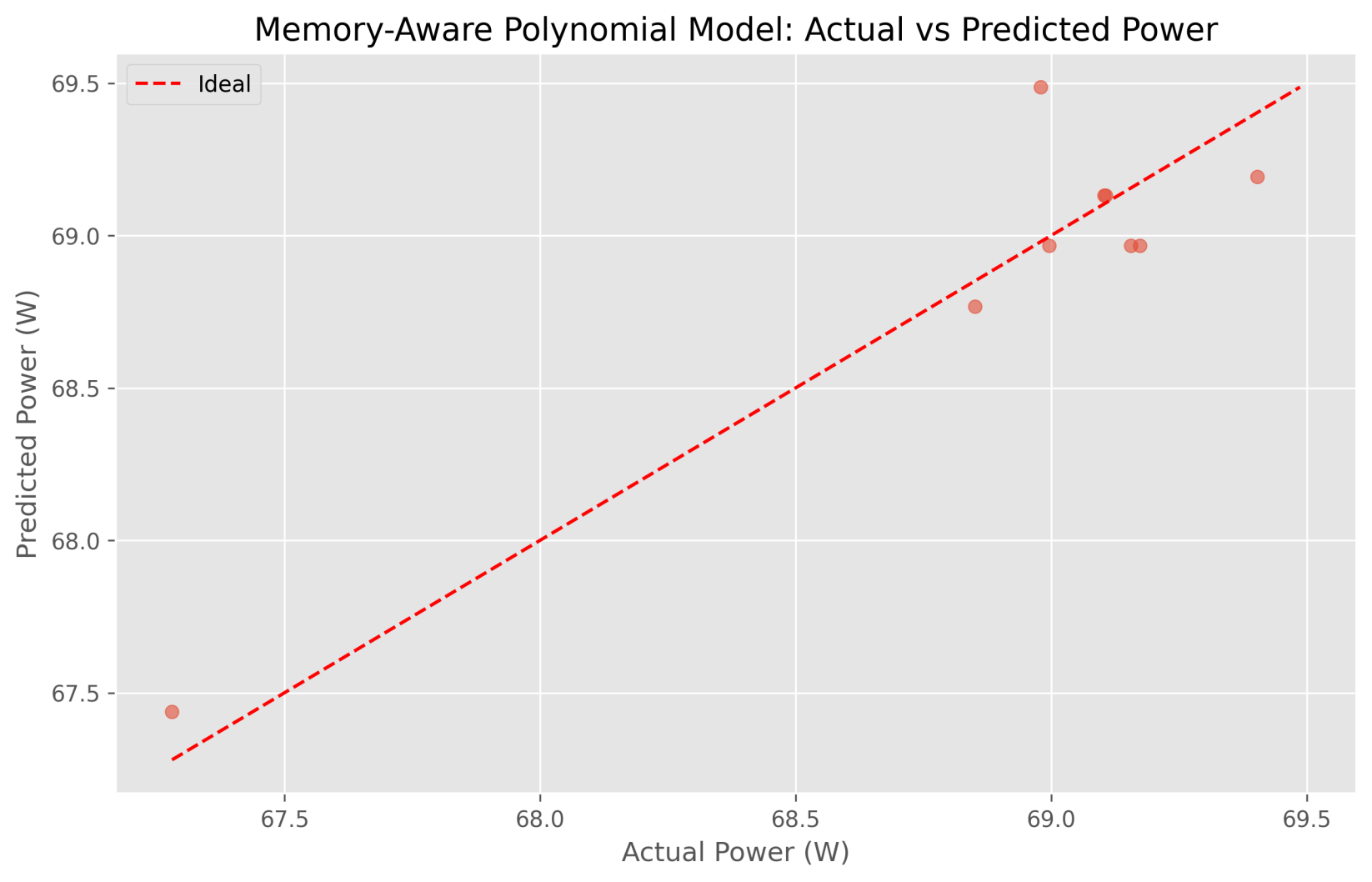

DVFS-Aware Linear Power Model
Power (W)
69.5
69.0
68.5
68.0
67.5
SM Clock (MHz)
1334
1332
1330
1328
1326
1324
GPU Utilization (%)
62.8
62.9
63.0
63.1
63.2

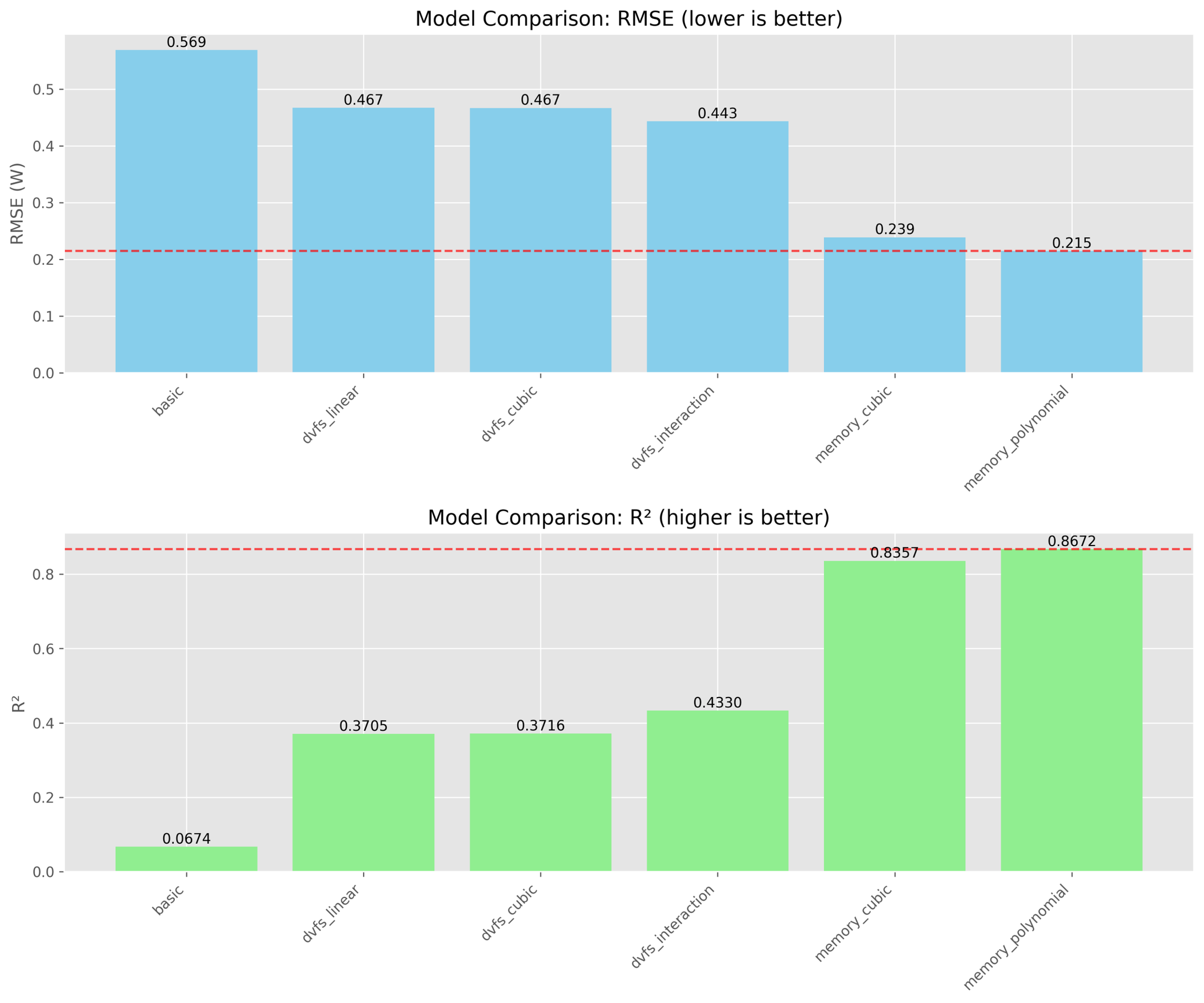

Utilization vs Power
Power (W)
GPU Utilization (%)
69.5
69.0
68.5
68.0
67.5
62.8
62.9
63.0
63.1
63.2


Frequency vs Power
Power (W)
SM Clock (MHz)
69.5
69.0
68.5
68.0
67.5
1324
1326
1328
1330
1332
1334


Memory Utilization vs Power
Power (W)
Memory Utilization (%)
69.5
69.0
68.5
68.0
67.5
2.92
2.94
2.96
2.98
3.00


Actual vs Predicted Power
Ideal
Predicted Power (W)
Actual Power (W)
69.5
69.0
68.5
68.0
67.5
67.5
68.0
68.5
69.0
69.5


Memory-Aware Polynomial Model: Actual vs Predicted Power
Ideal
Predicted Power (W)
Actual Power (W)
69.5
69.0
68.5
68.0
67.5
67.5
68.0
68.5
69.0
69.5


Model Comparison: RMSE (lower is better)
RMSE (W)
0.0
0.1
0.2
0.3
0.4
0.5
0.569
0.467
0.467
0.443
0.239
0.215
basic
dvfs_linear
dvfs_cubic
dvfs_interaction
memory_cubic
memory_polynomial
Model Comparison: R² (higher is better)
R²
0.0
0.2
0.4
0.6
0.8
0.0674
0.3705
0.3716
0.4330
0.8357
0.8672
basic
dvfs_linear
dvfs_cubic
dvfs_interaction
memory_cubic
memory_polynomial