

Table S1 Type 1 error and power using tabulated and empirical thresholds for simulations based on a commercial pig pedigree using 2 or 5 generations of pedigree information.

The simulated QTL explains 1% of phenotypic variance.

heritability	Method of analysis											
	MG ¹			GRAMMAR			EBV ²			IF ³		
	Tab ⁴	FP ⁵	Emp ⁶	Tab	FP	Emp	Tab	FP	Emp	Tab	FP	Emp
	5-generation pedigree											
30%	0.80	0.05	0.81	0.70	0.02	0.81	0.79	0.42	0.42	0.80	0.11	0.67
40%	0.79	0.05	0.80	0.66	0.02	0.80	0.78	0.40	0.34	0.80	0.17	0.59
50%	0.80	0.05	0.80	0.68	0.02	0.80	0.75	0.36	0.33	0.79	0.18	0.56
60%	0.80	0.06	0.78	0.66	0.02	0.78	0.77	0.37	0.33	0.79	0.23	0.53
80%	0.83	0.04	0.84	0.70	0.01	0.84	0.73	0.31	0.37	0.75	0.25	0.45
	2-generation pedigree											
30%	0.85	0.06	0.82	0.76	0.03	0.81	0.82	0.35	0.40	0.85	0.13	0.72
40%	0.84	0.06	0.82	0.74	0.02	0.82	0.79	0.32	0.45	0.82	0.13	0.68
50%	0.82	0.05	0.80	0.70	0.01	0.83	0.79	0.32	0.44	0.82	0.18	0.63
60%	0.82	0.06	0.79	0.69	0.02	0.81	0.74	0.32	0.40	0.77	0.19	0.55
80%	0.84	0.05	0.85	0.71	0.02	0.83	0.76	0.28	0.45	0.79	0.23	0.54

¹MG: Measured Genotype. ²GRAMMAR: Genome-wide Rapid Association using Mixed Model and Regression ³EBV: Estimated Breeding Value. ⁴IF: Ignoring Family. ⁵Tab: Power using tabulated threshold. ⁶Emp: Empirical power using empirical threshold derived from the unlinked SNP. ⁷FP: False positive rate using tabulated threshold.