

Test Data Report of LM602015

qNTQX® Robust Multiplex qPCR PreMix (UDG Plus)

1. Robust Direct Swab Amplification

LM602015 incorporates a next-generation dual-blocked antibody-mediated hot-start Taq DNA polymerase, in which both the 5→3' polymerase activity and the 5→3' exonuclease activity are blocked simultaneously and released only upon activation. Combined with an optimised buffer system, the premix achieves strong tolerance to common PCR inhibitors and supports direct amplification from oral swab samples.

Three mixed-plasmid templates were diluted to matched concentrations using two different diluents — a nucleic-acid release reagent (simulating direct swab-release input) and a standard TE buffer — and amplified side by side with two competitor reagents (Supplier A, Supplier B). LM602015 produced consistent, overlapping amplification curves for both diluents across all three targets, while both competitor reagents showed a marked delay or drop-off for the swab-release-diluent group relative to their own TE-buffer group, indicating weaker inhibitor/matrix tolerance.

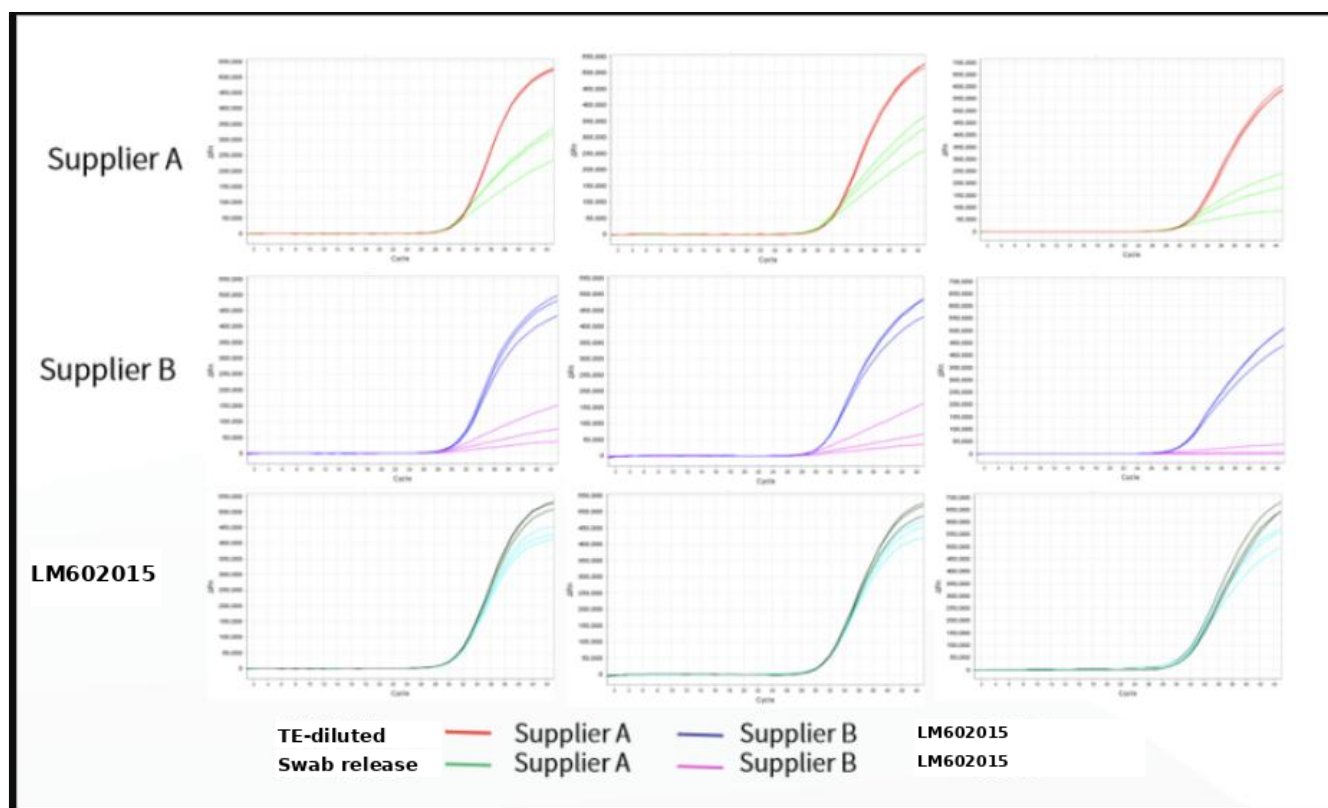


Fig. 1 — Direct swab-sample amplification performance of LM602015 versus two competitor reagents (TE-buffer-diluted template vs. swab-release-reagent-diluted template, 3 targets).

2. Superior Full-Premix Stability

To assess pre-mix stability, LM602015 was subjected to two accelerated-ageing conditions — storage at 37 °C for 7 days, and 20 repeated freeze-thaw cycles — and compared against a control group stored at the recommended –25 to –15 °C. Across both stress conditions, amplification performance remained stable and consistent with the control, confirming that the fully pre-mixed reagent tolerates both ambient-temperature transport and repeated freeze-thaw handling without loss of performance.

3. Clean Background — No Non-Specific Amplification

Specificity was evaluated using primer/probe sets for 11 common pathogenic bacteria together with a human genomic (GAPDH) target, each tested in 48 replicate wells with a no-template (water) input. No non-specific amplification signal ("false-start peaks") was observed for any of the 12 targets across all replicate wells, demonstrating a clean reaction background and low false-positive risk.

Primer/probe panel	Channel	Target	False-start count
B1	FAM	<i>Pseudomonas aeruginosa</i>	0/48
	VIC	<i>Acinetobacter baumannii</i>	0/48
	ROX	<i>Streptococcus pneumoniae</i>	0/48
	CY5	<i>Klebsiella pneumoniae</i>	0/48
B2	FAM	<i>Escherichia coli</i>	0/48
	VIC	<i>Staphylococcus aureus</i>	0/48
	ROX	<i>Candida albicans</i>	0/48
	CY5	<i>Enterococcus faecalis</i>	0/48
B3	FAM	<i>Stenotrophomonas maltophilia</i>	0/48
	ROX	<i>Serratia marcescens</i>	0/48
	CY5	<i>Enterococcus faecium</i>	0/48
GAPDH	CY5	Human genomic DNA	0/48

Table 1 — LM602015 specificity screen: 11 pathogenic bacteria + human genomic (GAPDH) target, 48 replicate wells each, 0 false-start events per target.

4. Amplification Efficiency and Linearity

Three representative pathogen targets (MMJ-M1, MMJ-M3, MMJ-M4) were tested across a ten-fold dilution series. Linear regression of Ct against log(concentration) gave amplification efficiencies of 98.5%, 98.9% and 96.8% respectively, with correlation coefficients $|r| \geq 0.997$ for all three targets, confirming excellent amplification linearity and efficiency across a wide dynamic range.

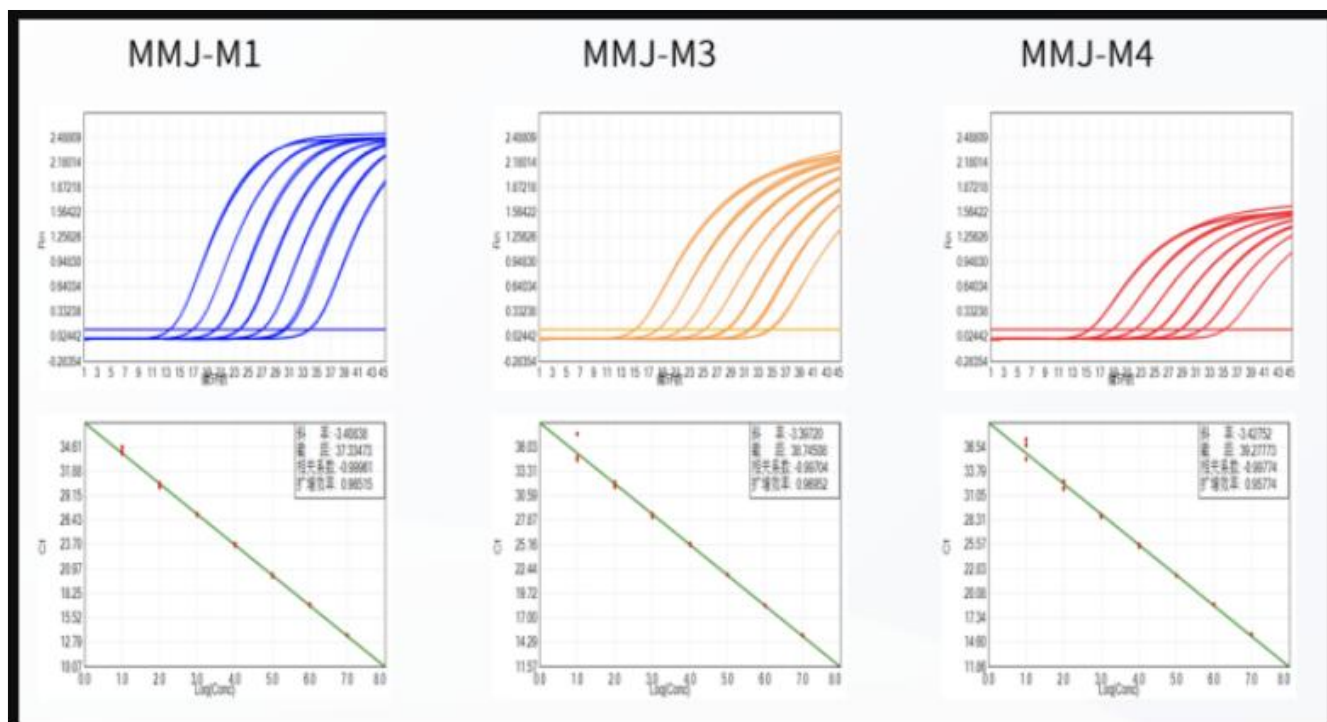


Fig. 3 — LM602015 amplification curves and Ct/log(concentration) standard curves for three representative pathogen targets across a ten-fold dilution series.

5. Full-Premix Stability — Real Pathogen Targets (Case 1)

Using customer-supplied primers/probes and samples, LM602015 was compared against a competitor reagent for two viral targets (ASFV, LSDV) under two conditions: control (−20 °C storage, red curve) and accelerated ageing (37 °C for 7 days, blue curve). For the competitor reagent, the accelerated-ageing curve showed a visible rightward shift (delayed Ct) relative to the control for both targets. For LM602015, the two curves remained closely overlapping for both targets, indicating substantially better full-premix storage stability.

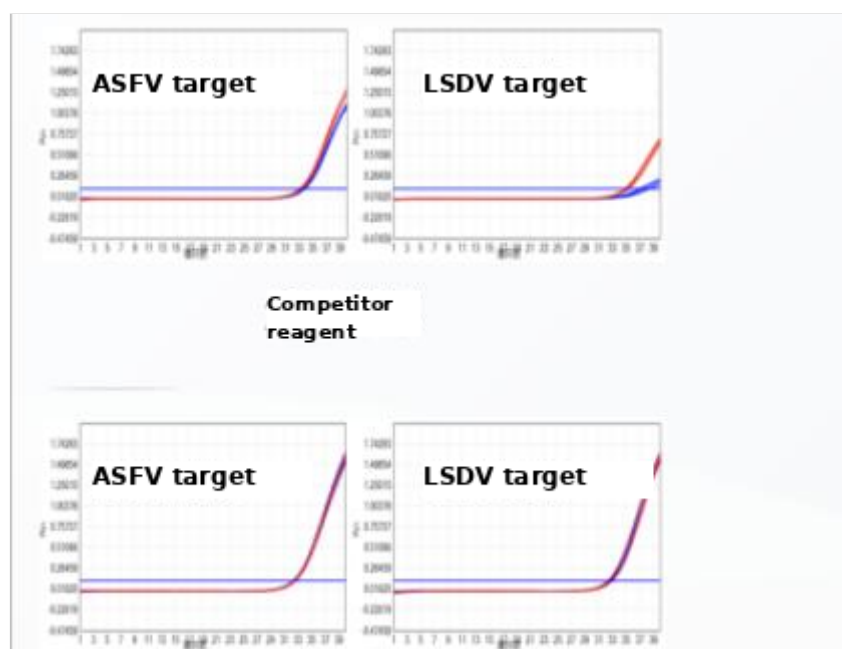


Fig. 4 — Full-premix stability comparison (–20 °C control vs. 37 °C / 7 days) for ASFV and LSDV targets: competitor reagent (top) vs. LM602015 (bottom).

6. Real Field-Sample Performance (Case 2) — African Swine Fever Samples

Eight real African swine fever (ASF) field samples were tested head-to-head against a competitor reagent. LM602015 detected all 8 samples (including one sample the competitor reagent failed to detect, "NoCt"), with a lower mean Ct value overall ($\Delta\text{Ct} = -0.88$), indicating higher amplification efficiency and sensitivity on authentic field-derived samples.

Sample	Competitor reagent Ct	LM602015 Ct
Sample 1	31.24	30.26
Sample 2	35.06	34.23
Sample 3	37.32	37.06
Sample 4	31.69	30.91
Sample 5	31.55	30.70
Sample 6	30.42	28.28
Sample 7	30.60	30.22
Sample 8	NoCt	37.09
Mean	32.55	31.67
ΔCt	–0.88	

Data summarised and figures adapted from third-party product testing of the corresponding source reagent (source cat. no. 16945ES); reagent labels have been updated to the Medino LM602015 designation. This product is for scientific research use only. Not for use in diagnostic or clinical procedures.