## SP Industrial SSD: The latest generation control mechanism of Thermal Throttling

## Control Mechanism of Thermal Throttling

SP Industrial SSD started implementing a new generation control mechanism of thermal throttling with multiple levels of temperature control. The major benefit of new generation control mechanisms avoids sudden change of SSD performance to get the better balance between performance and thermal management.

	Normal State No Thermal Throttling	Warm up State TT1	High Temp State TT2	Protect State
SSD Controller CPU Speed	100%	100%	50%	Sleep
Flash Clock	100%	80% (depend on FW setting)	50%	Sleep
PMIC	100%	100%	100%	Shutdown
Enable threshold (Tj) when Ta is increasing		80 °C	100°C	120°C
Disable threshold (Tj) when Ta is decreasing		70°C	85°C	NA

## Performance Driven thermal throttling control mechanism

- The higher Ta is, the higher Tj is. The heavier loading is , the higher Tj is.
- SSD3K0EV series:
  - TT1 enables it to enter Warm up state but CPU is still under 100% loading pattern process.
  - Only adjusting Flash Clock to 80% could make Tj be balanced between TT1 (80°C threshold) and TT2 (100°C threshold). Tj may be possible to reach 90°C depending on loading pattern and Ta.

## Used case of SP Industrial SSD SSD3K0 series



Time sequence

