The internal low-frequency timer can run while in System OFF mode.

All GRTC registers are reset during wakeup from System OFF mode. However, the SYSCOUNTER[m].SYSCOUNTERL and SYSCOUNTER[m].SYSCOUNTERH registers are restored automatically on wakeup from System OFF mode and after soft reset.

8.10.1 GRTC clock sources

The low frequency timer in GRTC will run off the LFCLK.

When the low frequency timer is started, the GRTC peripheral will automatically request the LFCLK source if the LFCLK is not already running.

The GRTC low frequency timer clock source can be selected using register CLKCFG.CLKSEL. The clock source cannot be changed after GRTC is started.

The clock source selection at GRTC is retained internally during System OFF mode, even though the CLKCFG.CLKSEL is reset on wakeup.

The SYSCOUNTER runs off the fast clock (16MHz clock), but uses only LFCLK while SYSCOUNTER is in sleep state.

See CLOCK for more information about clock sources.

8.10.2 SYSCOUNTER

The internal counter at SYSCOUNTER increments every 1 µs.

SYSCOUNTER is a 52-bit counter and is enabled using MODE.SYSCOUNTEREN register. The internal low frequency timer must be started for the proper operation of the SYSCOUNTER while SYSCOUNTER goes into sleep mode. It can be started by the TASKS_START task and can be stopped by the TASKS_STOP task when SYSCOUNTER is no more in use.

There are [m] registers SYSCOUNTER[m] providing access to SYSCOUNTER for each security attribute.

The current value of SYSCOUNTER can be read using corresponding SYSCOUNTER[m].SYSCOUNTERL and SYSCOUNTER[m].SYSCOUNTERH. But, the SYSCOUNTER[m].SYSCOUNTERL must be read before corresponding SYSCOUNTER[m].SYSCOUNTERH. The SYSCOUNTER[m].SYSCOUNTERH.OVERFLOW indicates if the SYSCOUNTER[m].SYSCOUNTERL is overflown after reading it.

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