

## EDF Report

- System hyper-period =  $\text{LCM}(10,20,50,100) = 100 \text{ ms}$
- CPU load

From simulation the execution time of the tasks using GPIOs is:

Button monitor tasks = 17us

Periodic transmitter = 17us

UART receiver = 15us

$$\text{Calculated CPU load} = \frac{17\text{us}}{50} + \frac{17\text{us}}{50} + \frac{17\text{us}}{100} + \frac{15\text{us}}{20} + \frac{5}{10} + \frac{12}{100} = 62\%$$

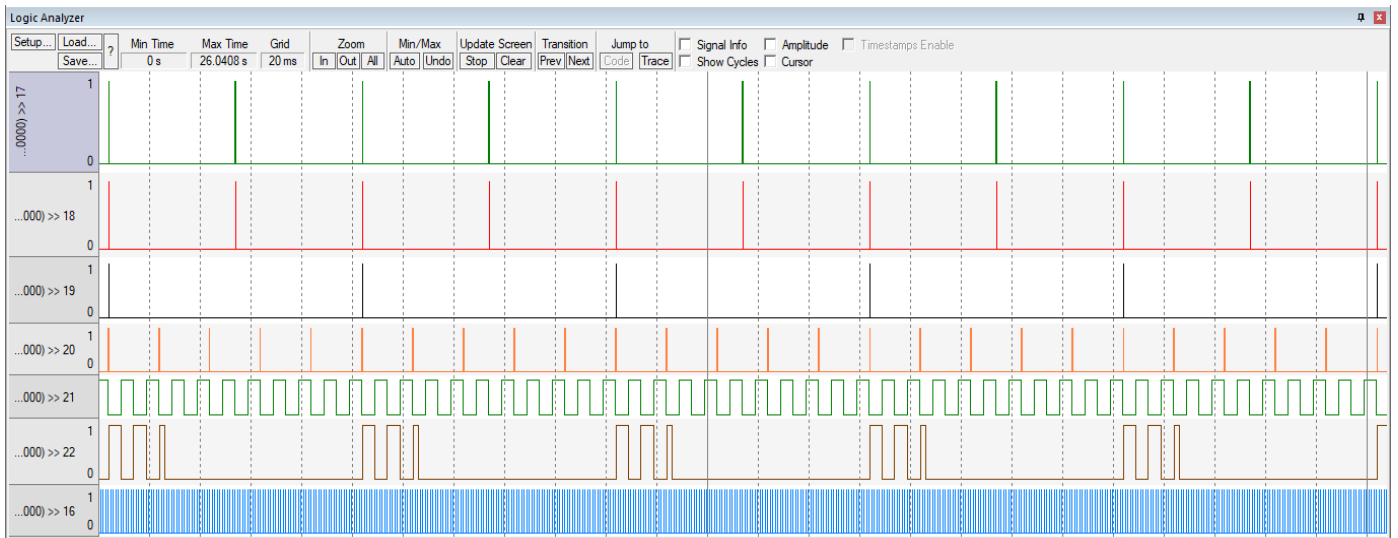
- Check system schedulability using URM

$$U = \sum_{i=1}^n \frac{C_i}{P_i} \leq n(2^{\frac{1}{n}} - 1)$$

$$n(2^{\frac{1}{n}} - 1) = 0.735$$

So, **U = 0.62 < 0.735**, the system is schedulable.

- Execution of all tasks using Keil simulator in run-time



- CPU usage time using timer 1 and trace macros

Simulated CPU load = 63%, and it's almost equal to the calculated CPU load value (62%)

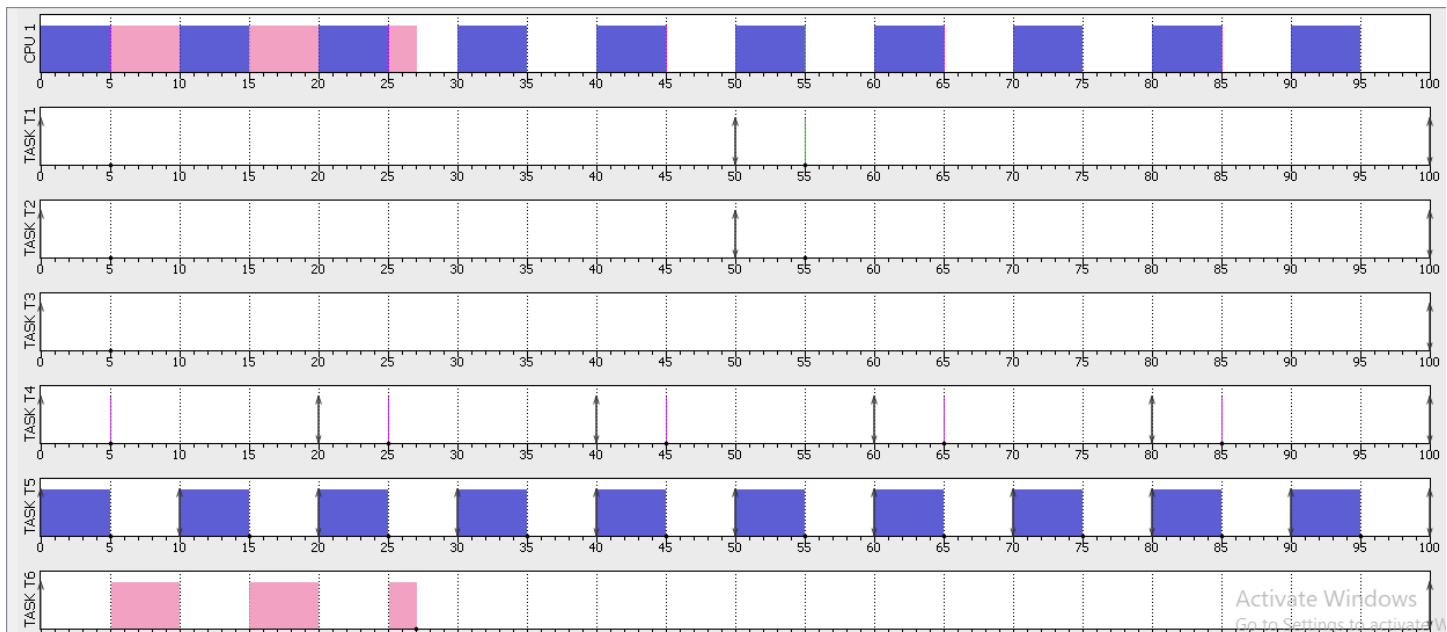


- Using Simso offline simulator

## 1. Tasks

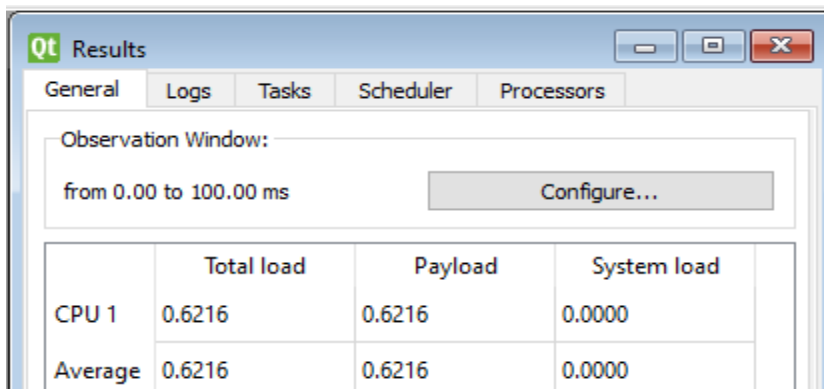
id	Name	Task type	Abort on miss	Act. Date (ms)	Period (ms)	List of Act. dates (ms)	Deadline (ms)	WCET (ms)	Followed by
1	TASK T1	Periodic	<input type="checkbox"/> No	0	50	-	50	0.017	▼
2	TASK T2	Periodic	<input type="checkbox"/> No	0	50	-	50	0.017	▼
3	TASK T3	Periodic	<input type="checkbox"/> No	0	100	-	100	0.017	▼
4	TASK T4	Periodic	<input type="checkbox"/> No	0	20	-	20	0.015	▼
5	TASK T5	Periodic	<input type="checkbox"/> No	0	10	-	10	5	▼
6	TASK T6	Periodic	<input checked="" type="checkbox"/> Yes	0	100	-	100	12	▼

## 2. Grantt



Comment: there is no task miss its deadline, so the system is schedulable

## 3. Results



Comment: The CPU load is almost the same as the calculated and the measured from the Kiel using trace hooks.