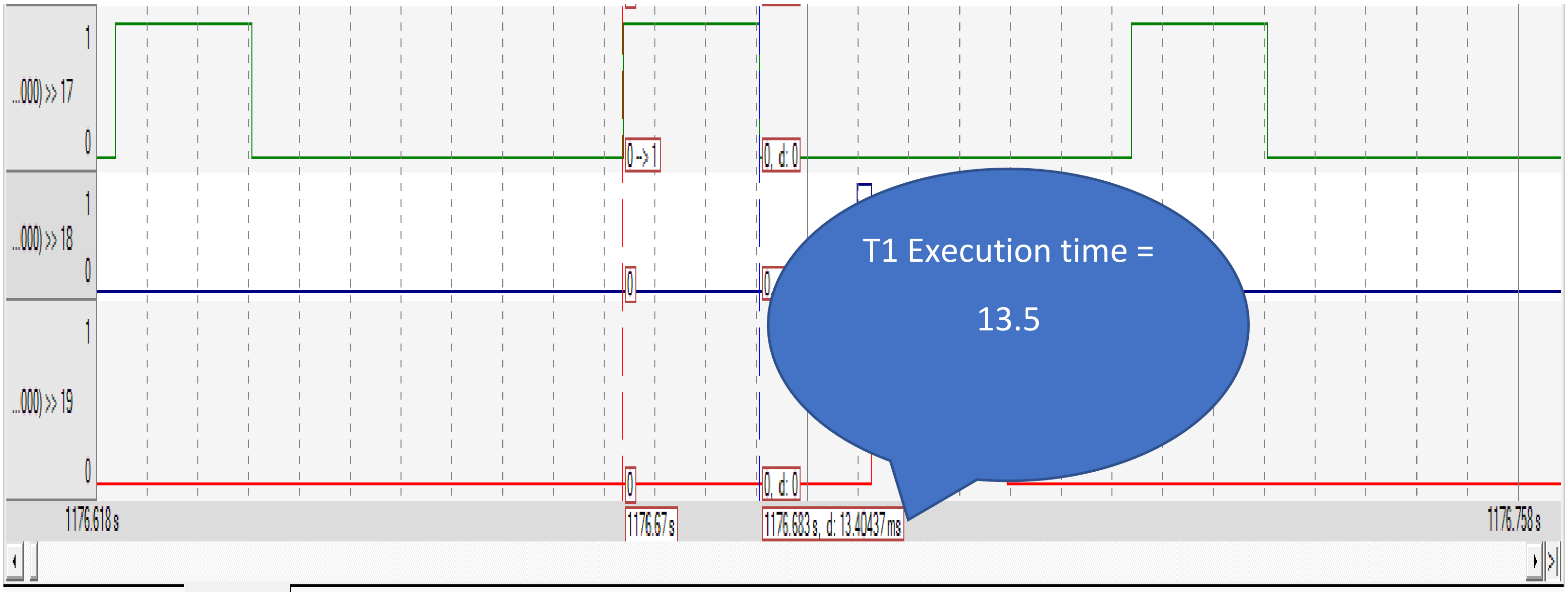
➢ Task Set:

Tasks	Priority	Periodicity	Deadline	Execution Time
Task 1	3	50	50	13.5 Milliseconds
Task 2	3	90	90	1.3 Milliseconds
Task 3	3	180	180	13.5 Milliseconds

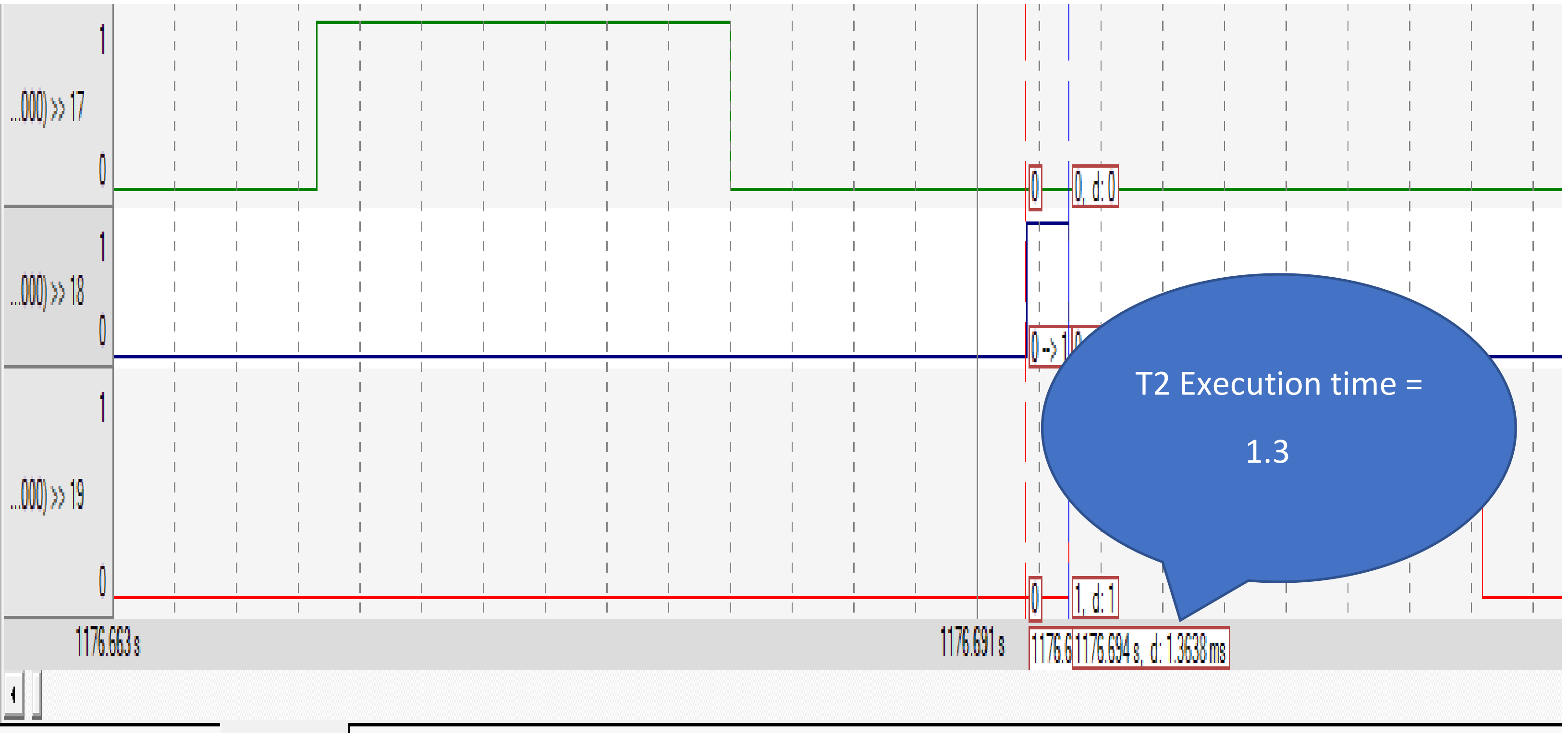
- Priority is not included here as a Task parameter as it`s useless and will not be used by the scheduling algorithm.

Validating our tasks` execution time:

Task 1 Execution time:

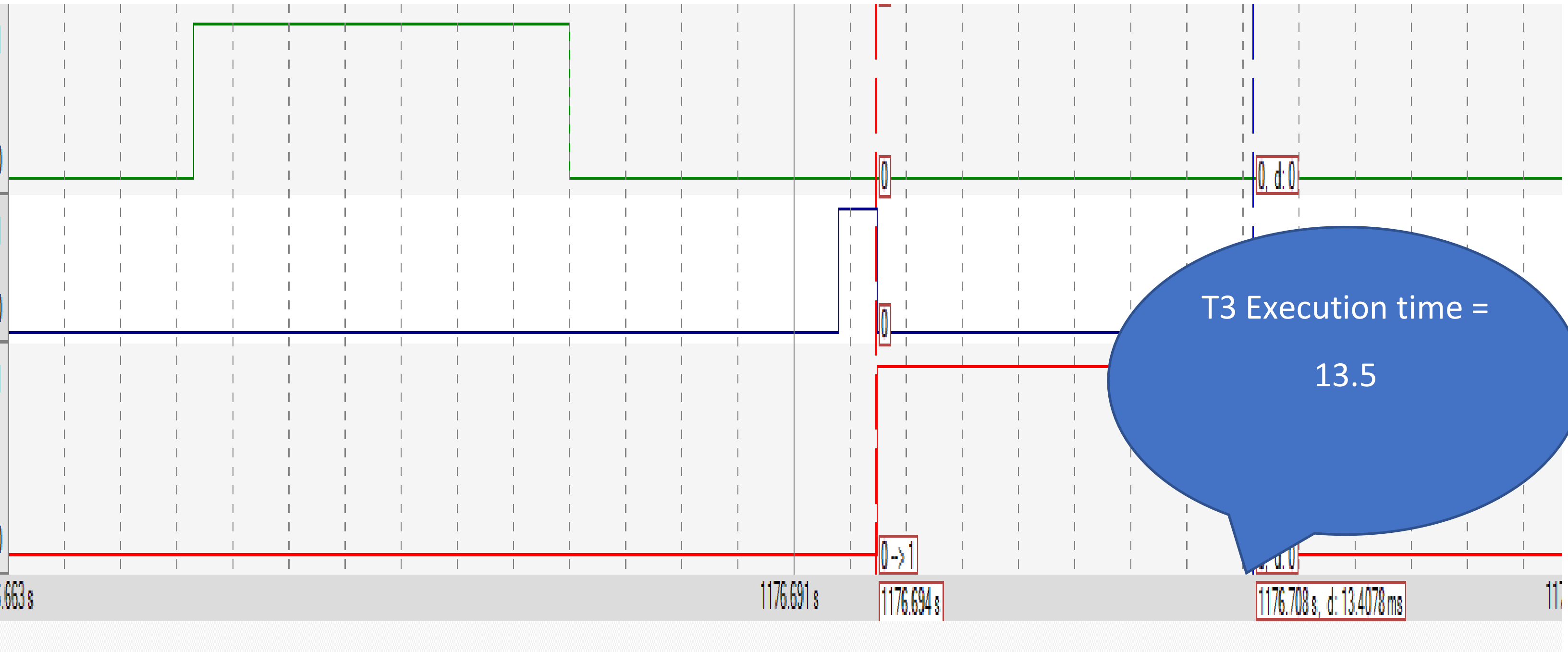


Task 2 Execution Time:



T2 Execution time = 1.3

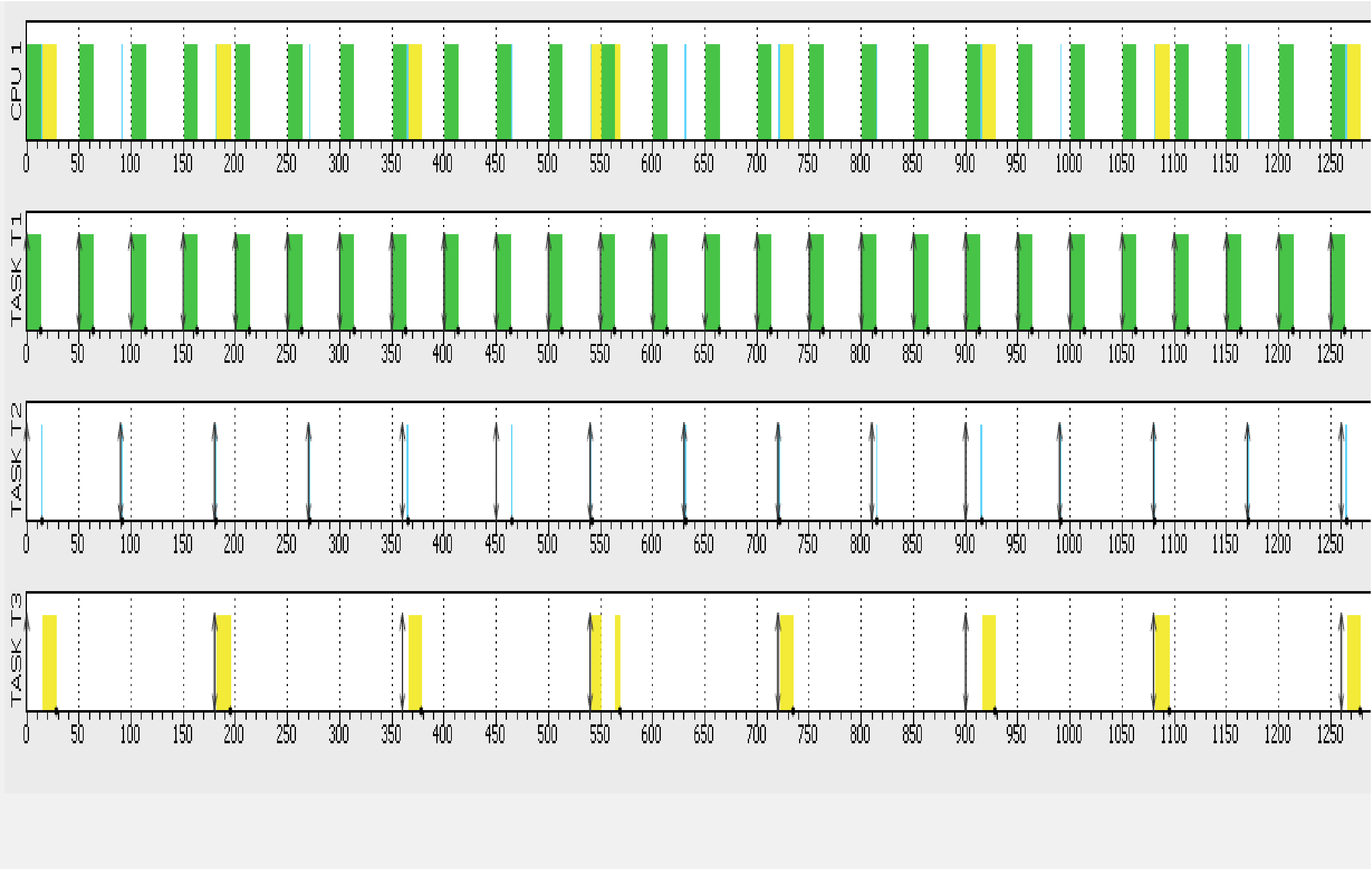
Task 3 Execution Time:



T3 Execution time = 13.5

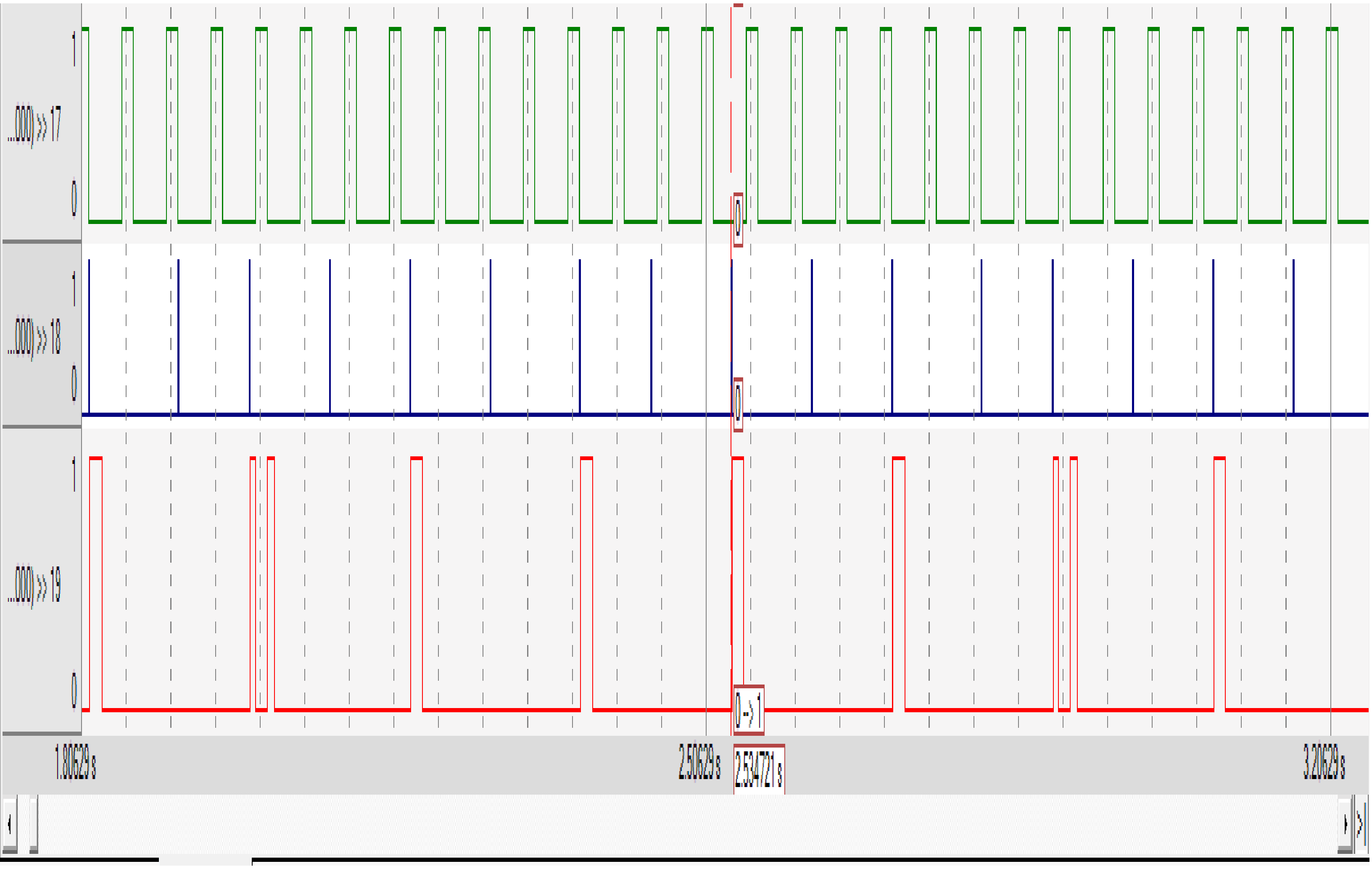
Validating System Schedulability:

1- Using Offline Simulator (SimSo):



According to SimSo`s output , system is schedulable (Feasible). Since no task misses it`s deadline.

2-Using online simulator:



Based on keil`s logic analyzer all tasks are scheduled and executes before it`s deadline.

- Now Let`s calculate the CPU load analytically:

First , let`s calculate the hyperperiod.

Hyperperiod = LCM(50,90,180) = 900

Let`t calculate the CPU Load

CPU Load = (((900/50) * 13.5) + (((900/90) * 1.3)) + (((900/180) * 13.5))) / 900 = 0.359 * 100 = 35.9%

Let`s check if our system is schedulable or not using analytical method.

1- Using Rate-monotonic utilization bound:

This method is used with Rate-monotonic schedulers , but since our EDF scheduler undergoes to the same RM assumptions as:

a- Periodicity = Deadline.

b- All tasks are periodic.

URM = 3 * ((2 ^ 1/3) - 1) = 0.799

Since , CPU Loade < URM , then our system is schedulable.

2- Using Time Demand Analysis:

starting with Task1 as it is the earliest deadline which is equivalent to highest priority task.

Task 1 :

W(50) = 13.5 + 0 = 13.5 < 50 → Task 1 is schedulable.

Task 2 :

W(90) = 1.3 + (90 / 50 * 13.5) = 28.3 < 90 →Task 2 is schedulable

Task 3:

W(180) = 13.5 + (180 / 50 * 13.5) + (180 / 90 * 1.3) = 70.1 < 180 →Task 3 is schedulable.

Since all tasks are schedulable then our system is schedulable.