Key:
Task
ISR
Queue
Global variable

Direction of arrow shows direction of control

Higher priority number corresponds to higher task priority

FreqAnalyserISR
Reads the frequency on interrupt

newFreqQ

SwitchPollingTask
Polls for the status of manual switches

Priority: 1
Executes periodically (100ms)

StabilityMonitorTask
Checks if stability condition has been violated

Priority: 5
Executes on newFreqQ message

- *switch ON load n (enum: 0x0n)*
- *switch OFF load n (enum: 0x1n)*

loadCtrlQ

Stable → unstable condition (enum: 0xFF)

Read & write

LoadCtrlTask
Switches loads ON/OFF depending on loadCtrlQ message

Priority: 4
Executes on loadCtrlQ message

Read

systemStatusFlg
Reflects whether the loads are being actively regulated

Mutex guarded