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| ID | Requirement | Ver dom alloc |
| SysReq\_1 | The EMSC **shall** control the speed of a DC motor by applying a pulse train which fixed frequency is equal to 10kHz. With a tolerance of +/- 500Hz | Systems |
| SysReq\_2 | The EMSC **shall** aqcuire data from the hall-effect sensor which will be embedded in the DC motor. | Systems |
| SysReq\_3 | The hall-effect sensor **shall** generate 15 pulses per turn. | Systems |
| SysReq\_4 | The power supply of the DC motor **shall** be equal to 12VCC +/- 1V. | HW |
| SysReq\_5 | The EMSC shall establish a setpoint using a variable resistor | HW |
| SysReq\_6 | The DC motor speed **shall** variate directly according to the duty cycle of the pulses train. | Systems |
| SysReq\_7 | The EMSC **shall** display the actual speed in RPMs. | Systems |
| SysReq\_8 | The EMSC **shall** display the setpoint in RMPs. | Systems |
| SysReq\_9 | The EMSC **shall** display the Pulse Width Modulation duty cycle in percentage. | Systems |
| SysReq\_10 | The positive terminal of the power supply **shall** be conected to "A" terminal of the potentiometer as stated in Figure 01 | HW |
| SysReq\_11 | The negative terminal of the power supply **shall** be conected to "B" terminal of the potentiometer as stated in Figure 01 | HW |
| SysReq\_12 | The EMSC **shall** use the typography as stated in figure 02. | Systems |
| SysReq\_13 | The EMSC **shall** use DRV8848-2A Dual H-Bridge Motor Driver | HW |
| SysReq\_14 | The EMSC **shall** use DRV8848-2A Motor Driver as a half H-Bridge | HW |
| SysReq\_15 | The EMSC **shall** couple a general purpose diode 1N4001 as a free-spinning diode with inverse polarization. | HW |
| SysReq\_16 | The Hall-effect sensor **shall** be powered by the DC motor. | HW |
| SysReq\_17 | The EMSC **shall** couple two diagnostic resistor as per Figure 3. | HW |
| SysReq\_18 | The EMSC display **shall** follow the display graphic configiration as per Figure 4 | Systems |
| SysReq\_19 | The EMSC **shall** implement a Proporcional-Integral control scheme as a control method. | SW |
| SysReq\_20 | The EMSC **shall** implement a state machine as Operating System | SW |
| SysReq\_21 | The EMSC **shall** detect a battery short-circuit | HW |
| SysReq\_22 | The EMSC **shall** detect a ground short-circuit | HW |
| SysReq\_23 | The EMCS **shall** have EEPROM memory | HW |
| SysReq\_24 | The EMCS **shall** have interrupt mode timer | SW |
| SysReq\_25 | The EMCS **shall** have Analog to Digital Converter | SW |
| SysReq\_26 | The EMCS **shall** have a Pulse Width Modulation module. | SW |
| SysReq\_27 | The EMCS **shall** have digital ports | HW |
| SysReq\_28 | The EMCS **shall** have watchdog | SW |
| SysReq\_29 | The EMCS **shall** have an LCD Display | HW |
| SysReq\_30 | The EMCS **shall** have a throughtput lower than 70% | SW |
| SysReq\_31 | The EMCS **shall** have a cyclomatic complexity less than 19. | SW |
| SysReq\_32 | The EMCS **shall** be implemented on a SK-S7G2 Renesas Synergy development board. | HW |