# Motor Control Quantitative Evaluation Sheet

This sheet is designed for numerical evaluation of the motor control system's performance based on measured data. Enter the numerical values obtained from logs or scope for each metric.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Test Case** | **Speed Error**  **(RPM)** | **Response Time (ms)** | **Speed Ripple (RPM)** | **Current Draw (mA)** | **Disturbance Recovery Time (ms)** |
| 1. **No-Load** |  |  |  |  |  |
| 1. **Ramp Speed** |  |  |  |  |  |
| 1. **Step Load** |  |  |  |  |  |
| 1. **Current Limit Stress** |  |  |  |  |  |
| 1. **Ramp Load** |  |  |  |  |  |
| 1. **Intermittent Load** |  |  |  |  |  |
| 1. **Reverse Load** |  |  |  |  |  |

## Evaluation Instructions

Use the following guidelines to evaluate the performance metrics for each test case:

1. Acceptable Values (Reference):

* - Speed Error: typically ≤ 5% of rated speed (based on IEC/IEEE control performance standards).
* - Response Time: ≤ 1 second for most industrial-grade motor control systems.
* - Speed Ripple: should be minimal; acceptable if ≤ 2% of nominal speed.
* - Current Draw: should remain within rated current of the motor (e.g., I\_rated).
* - Disturbance Recovery Time: ≤ 1.5 seconds from moment of load change.

2. Rating Scale (Optional if automation is applied):

* - Excellent: ≤ 50% of acceptable threshold
* - Good: 51%–80% of acceptable threshold
* - Borderline: 81%–100% of acceptable threshold
* - Poor: > 100% (exceeds acceptable range)

3. Notes:

* - Ensure consistent sampling rate for logging all tests.
* - Normalize units (PU or RPM) before comparing across tests.
* - For academic purposes, mention test environment (load type, control type, speed ref).