**Functional & Performance Testing Template**

Team ID: LTVIP2025TMID20497

Project Name: Sustainable Smart City Assistant Using IBM Granite LLM

Model Performance Test:

| **Test Case ID** | **Scenario (What to test)** | **Test Steps (How to test)** | **Expected Result** | **Actual Result** | **Pass / Fail** |
| --- | --- | --- | --- | --- | --- |
| **FT‑01** | User Login & Registration | Attempt login / registration with valid and invalid credentials | Valid users sign in; invalid data shows error | As expected | Pass |
| **FT‑02** | Role‑Based Access | Log in as **Citizen** / **Administrator** and navigate dashboard | Pages, menus, and data shown are appropriate to the selected role | As expected | Pass |
| **FT‑03** | Policy Summarization | Upload a PDF policy and request AI summary | Concise, plain‑language summary returned | Works correctly | Pass |
| **FT‑04** | Citizen Feedback Submission & NLP Analysis | Submit feedback form → check that sentiment appears in admin panel | Feedback stored; sentiment & category displayed | Works correctly | Pass |
| **FT‑05** | Eco Tips Generation | Trigger daily eco‑tip for a sample location/role | Context‑aware sustainability tip displayed | Works correctly | Pass |
| **FT‑06** | KPI Forecasting Visualization | Load historical KPI dataset → view forecast charts | Line/area graphs render with forecast overlay | Works correctly | Pass |
| **FT‑07** | Anomaly Alert Notification | Inject outlier data (e.g., sudden spike in water usage) | Alert banner / notification generated | Works correctly | Pass |
| **FT‑08** | AI Chat Assistant Response | Ask “What are today’s traffic hotspots?” via chat UI | Assistant returns real‑time answer with sources | Works correctly | Pass |
| **PT‑01** | LLM Model Load Time | Measure time from cold start to Granite LLM ready | Model loads ≤ 5 s | 4.3 s | Pass |
| **PT‑02** | Policy Summary Response Time | Request 5 summaries back‑to‑back | Each summary generated ≤ 6 s | 5.2 s avg | Pass |
| **PT‑03** | KPI Dashboard Data Load | Open admin dashboard with 1‑year KPI history | Graphs and tables render smoothly (< 3 s) | 2.4 s | Pass |
| **PT‑04** | Anomaly Detection Processing Time | Stream 1 000 data points with anomalies | Detection & alert latency ≤ 2 s | 1.6 s | Pass |
| **PT‑05** | Chat Assistant Response Time | Send 10 sequential queries | Avg response ≤ 4 s | 3.1 s avg | Pass |