**User Acceptance Testing (UAT) Template**

|  |  |
| --- | --- |
| Date | 30/06/2025 |
| Team ID | LTVIP2025TMID34374 |
| Project Name | Sustainable smart city assistant using IBM granite LLM |
| Maximum Marks |  |

**Smart City Assistant Test Plan (IBM Granite LLM)**

**Project Overview**

* **Project Name**: [Enter Project Name]
* **Project Description**: [Brief description of the assistant—e.g., “Citizen helpdesk for waste collection, energy usage alerts, pollution monitoring.”]
* **Project Version**: [Version Number]
* **Testing Period**: [Start Date]–[End Date]

**Testing Scope**

* Features: e.g., real-time sensor data ingestion, sustainability suggestions, citizen reporting interface
* User stories: e.g., “As a resident, I want to see AQI alerts for my neighborhood”, “As a planner, I want energy trend forecasts”

**Testing Environment**

* **URL/Location**: [Web app URL or system environment]
* **Credentials**: [Username/Password if needed]

**Test Case Template**

| **Test Case ID** | **Test Scenario** | **Test Steps** | **Expected Result** | **Actual Result** | **Pass/Fail** |
| --- | --- | --- | --- | --- | --- |
| TC-001 | Ingest and display air quality sensor data | 1. Upload sensor feed<br>2. Apply region filter<br>3. Check map | Data renders correctly, filtered map shows AQI color gradation |  |  |
| TC-002 | Generate energy usage forecast | 1. Select district & timeframe<br>2. Trigger forecast<br>3. Review output | Granite LLM returns plausible forecast with reasoning |  |  |
| … | … | … | … | … | … |

**Bug Tracking Template**

| **Bug ID** | **Bug Description** | **Steps to Reproduce** | **Severity** | **Status** | **Additional Feedback** |
| --- | --- | --- | --- | --- | --- |
| BG-001 | Incorrect district-level energy forecast | 1. Choose District B<br>2. Forecast next week<br>3. Check values | High | Open | Forecast off by 30% vs historical baseline |
| … | … | … | … | … | … |

**️ Sign-Off**

* **Tester Name**: [Name]
* **Date**: [Test Completion Date]
* **Signature**: [Tester’s Signature]
* *Note: Obtain final sign-off from Project Manager & Product Owner before deployment.*

**Integration with IBM Granite LLM**

1. **Data Rendering & Preprocessing**
   * The assistant loads real-time IoT feeds (energy, traffic, air quality) then normalizes and geo-aligns them using Granite’s geospatial/time-series capabilities (e.g., *Granite-EarthObservation*, *TimeSeries-TTM*) [forbes.com+7ibm.com+7news.sap.com+7](https://www.ibm.com/architectures/product-guides/granite?utm_source=chatgpt.com)[community.ibm.com](https://community.ibm.com/community/user/discussion/use-case-specific-prompt-templates-for-granite-32?utm_source=chatgpt.com)[news.sap.com](https://news.sap.com/uk/2024/10/ibm-granite-llm-now-available-through-the-generative-ai-hub-in-sap-ai-core/?utm_source=chatgpt.com)[github.com](https://github.com/IBM/wx-llms-powered-examples?utm_source=chatgpt.com).
2. **Filters & Calculations**
   * District, timeframe, pollutant threshold filters—user choices feed into DAX-like queries or LLM logic.
   * Calculation fields include “AvgEnergyPerCapita”, “EmissionScore”, etc., computed via LLM-generated formulas or Power BI DAX.
3. **Granite LLM Tasks**
   * **Forecasting**: Use *Granite-TimeSeries* models to predict energy or pollution trends.
   * **RAG & Reasoning**: Leverage Retrieval-Augmented Generation with chain-of-thought prompting to explain anomalies or suggest sustainability actions [github.com+1reddit.com+1](https://github.com/IBM/wx-llms-powered-examples?utm_source=chatgpt.com).
   * **Vision & Detection** (if applicable): Use *Granite-EarthObservation* for multimodal tasks like detecting traffic congestion or waste bin status.
4. **Dashboard & Story Design**
   * Visualizations (maps, trends, gauge KPIs) paired with LLM-generated narrative commentary for context and insight.
   * Story pages synthesize key indicators—e.g., monthly air quality summary or energy reduction recommendations.
5. **Guardrail & Safety**
   * Granite Guardian ensures data integrity, prevents misinformation, and validates RAG-generated content [ibm.com+1community.ibm.com+1](https://www.ibm.com/granite/docs/models/guardian/?utm_source=chatgpt.com).

**✅ Example Filled Values**

* **TC-001** – Map displays live AQI correctly; pass.
* **Bug BG-001** – Energy forecast off by 30%; logged high-severity, open.
* **Dashboard** – 6 visuals: map, trend chart, gauge, KPI card, alert table, narrative text.
* **Story** – 4 visuals: monthly emissions, policy impact chart, forecast, citizen request breakdown.