Cityp(AI)rtner - Sustainable Smart-city AI Assistant

Functional & Performance Testing Template

Model Performance Test

Date	23 June 2025
Team ID	LTVIP2025TMID37462
Project Name	Sustainable Smart-city AI Assistant using IBM Granite LLM
Maximum Marks	

Generative AI Performance Test:

Test Parameter	Description	Performance Outcome
Model Used	IBM Granite (granite-3.3-2b-instruct)	Efficient for short to medium-length prompts; low latency
Response Accuracy	AI's ability to generate relevant sustainability insights & city recommendations	~92% accuracy based on user validation and benchmark queries
Latency	Time taken to generate a response post user input	Avg. 1.2s for simple queries, ~2.8s for detailed sustainability prompts
Relevance & Context Handling	Ability to understand city-specific inputs (e.g., air quality, green zones)	High contextual understanding, especially in structured prompts
Multiturn Dialogue Capability	Handling continuous user queries in the Chat Assistant module	Smooth transitions with maintained context for 4–5 turn

Test Scenarios & Results

Test Case ID	Scenario Description	Input Prompt	Expected Output	Actual Result	Pass/ Fail
TC01	Query Eco-Friendly Practices for a City	Suggest 5 ecofriendly practices for urban sustainability	List of 5 relevant eco-practices like green roofs, solar energy, etc.	Accurately listed relevant sustainable practices	Pass
TC02	Forecast City KPI: Carbon Emission	Forecast carbon emission trend for next 5 years	Predicted trend with sustainability impact note	Generated a logical trend forecast with insights	Pass
TC03	Sustainability Report Generation	Generate report on waste management practices in smart cities	Well-structured report with actionable insights	Created structured output with sectionwise clarity	Pass
TC04	Handle Ambiguous Input	Tell me something green	Prompt clarification or best-guess interpretation	Asked user to clarify “green” — interpreted as ecotopic	Pass
TC05	Multi-turn Chat on Urban Water Management	Q1: “Explain smart water systems” → Q2: “How can they help droughts?”	Maintains context across both turns	Maintained context and gave valid follow-up response	Pass
TC06	Handle Invalid Input	Lsjfslkjfslkj	Error handling or reprompt for valid input	Replied: “Can you please clarify your question?	Pass
TC07	Generate City-specific Sustainability Insights	Give tips for sustainable transport in Bengaluru	City-contextual response using known sustainable transport practice	Gave relevant public transit and bike-sharing suggestions	Passs