USER'S MANUAL

AirQ Mobile

Turnkey Instruments Ltd.

August, 2015

User's Manual
Authorization Memorandum

I have carefully assessed the User's Manual for <u>AirQ Mobile</u>. This document has been completed in accordance with the requirements of the Turnkey Instruments Development Methodology.

MANAGEMENT CERTIFICATION - Please check the appropriate statement.

_____ The document is accepted.

_____ The document is accepted pending the changes noted.

_____ The document is not accepted.

We fully accept the changes as needed improvements and authorize initiation of work to proceed. Based on our authority and judgment, the continued operation of this system is authorized.

_____

Mike Leck   DATE
Managing Director

_____

Dave Brooks   DATE
General Manager

_____

Alan Taylor   DATE
Director

USER'S MANUAL

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1.0   GENERAL INFORMATION

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1.1   AirQ Mobile Overview

The purpose of this application is to collect air quality data in real time from the sensors installed in the moving vehicle. This data can then be visualized in the cab as well as viewed back at the base. The application collects the data from the sensor and GPS coordinates from the mobile's GPS in real time so the pollution plume can be tracked from an incident and evacuation can be advised if necessary.

The application stores the data in the local database and displays the live data on 3D maps. It also uploads the data to the AirQWeb central database which can then be visualized on the web application anywhere.

1.2   Authorized Use Permission

Usage of this software is limited to its owner via the terms of its development. AirQ Mobile is wholly owned by Turnkey Instruments Ltd. and may not be updated or amended without their express consent.

1.3   Points of Contact

1.3.1   Information/Help Desk

For additional information and/or support Turnkey Instruments Ltd. can be contacted via email rishad.ali@turnkey-instruments.com or phone (+44) 1606 339715.

1.4   Organization of the Manual

Section 2 describes the system architecture of the application including the data flow. Section 3 explains the log in/out operations and the main menu of the application. Section 4 gives details on how to use the application with the help of screenshots.

2.0   SYSTEM SUMMARY

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AirQ Mobile connects to the Turnkey Dongle to collect live data from Turnkey dust monitoring instruments. The data is displayed on the google maps in 3D view. The application can also be used to visualise the historic data from AirQWeb central database.
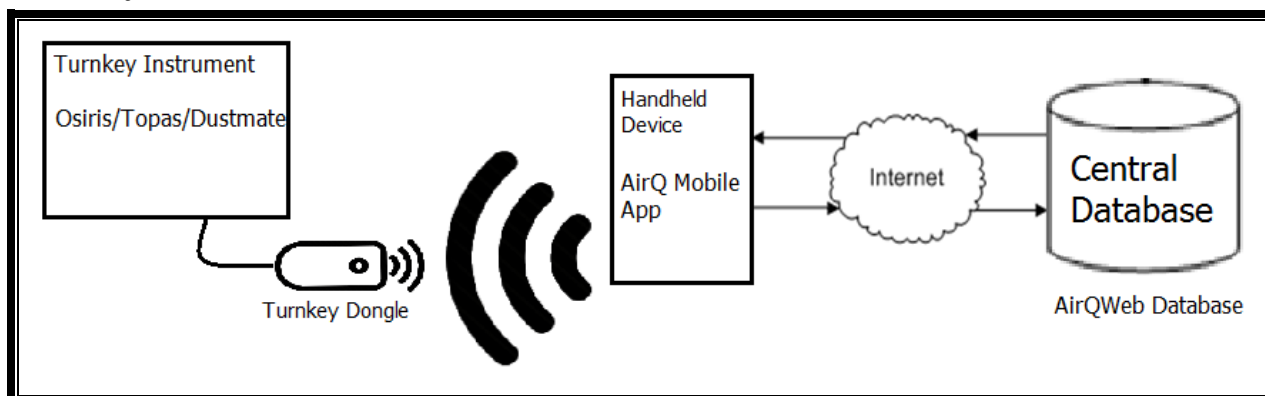
2.1 System Architecture

Figure 2.1

2.2 Data Flows

The above diagram shows how AirQ Mobile interacts with Turnkey Dongle and the AirQWeb data centre. The data flow in the architecture is as follows:

1. AirQ Mobile collects the login data from the central database to allow the user to login using their AirQWeb login details.
2. The application then shows the list of the registered instruments.
3. It starts wireless communication with the Turnkey Dongle to collect live data from Turnkey dust monitoring instruments.
4. Turnkey dongle reports back with the latest data from the instrument.
5. AirQ Mobile collects the GPS coordinates from the device and stores the data in the local database.
6. It then uploads the collected data to the central database.

2.3 User Access

AirQWeb login details can be used to log in to AirQ Mobile account. You must have an AirQWeb account to use this application as the data is uploaded into the central database and the instruments are registered in the AirQWeb account.

2.4 Contingencies and Alternate Modes of Operation

There are multiple applications running in the background, in case the application server goes down the background applications will stop, AirQ Mobile will not be able to upload the data to the central database but the instruments the application can continue to collect data and save into the local database and the local data can be uploaded to the central database later.

3.0   GETTING STARTED

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3.1   Logging On

When you are not logged in, the first window appears on the screen is the login window where you can enter AirQWeb login details to start using the application. The login screen shows two text boxes where you can enter user ID and password. It also allows you to make the password visible to make sure what you type is correct.

3.2   System Menu

There is a slide menu list on every screen. To open this menu touch this ▤ button on the top left corner of application or just slide from left to right.
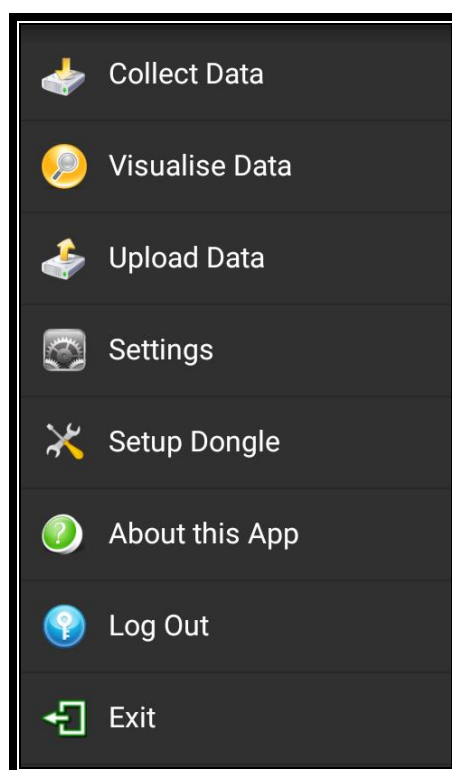

Figure 3.1

Each option is explained in detail in section 4.

3.3   Logout System

You can click **Log out** link in the left menu to logout from your account.

4.0   USING AIRQ MOBILE

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This section explains all the menu option in detail with the help of screenshots.

4.1   Collect Data

This option allows you to collect the live data from the instruments via a Turnkey Dongle. When you select this option, the application shows you the list of the instruments registered in your AirQWeb account as shown in figure 4.1
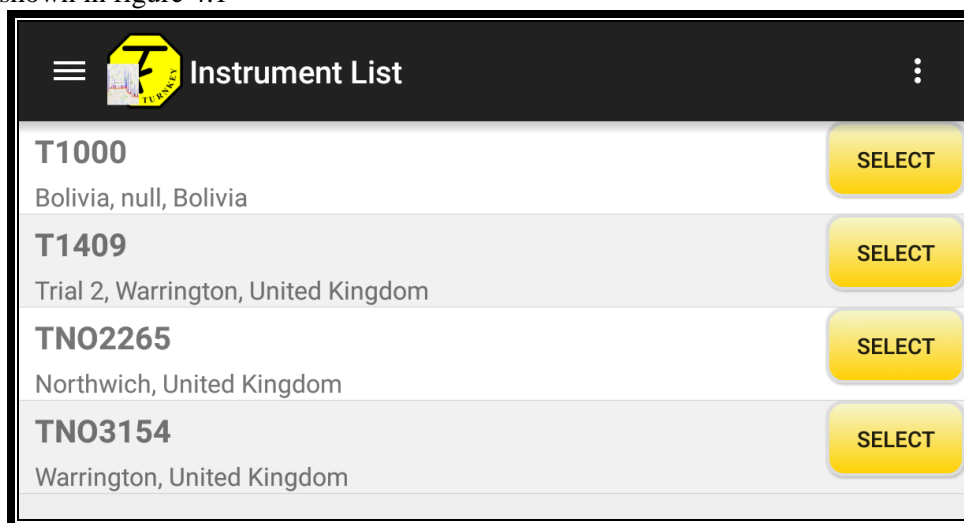

Figure 4.1

Turnkey dongle must be connected to the selected instrument and setup to advertise the data from the instrument. If the dongle is not setup for the instrument, please go to the Setup Dongle from the menu (explained in section 4.5). When you select an instrument from the list, the application opens the instrument configuration window and shows you the list of available Turnkey dongles within the range as shown in figure 4.2.
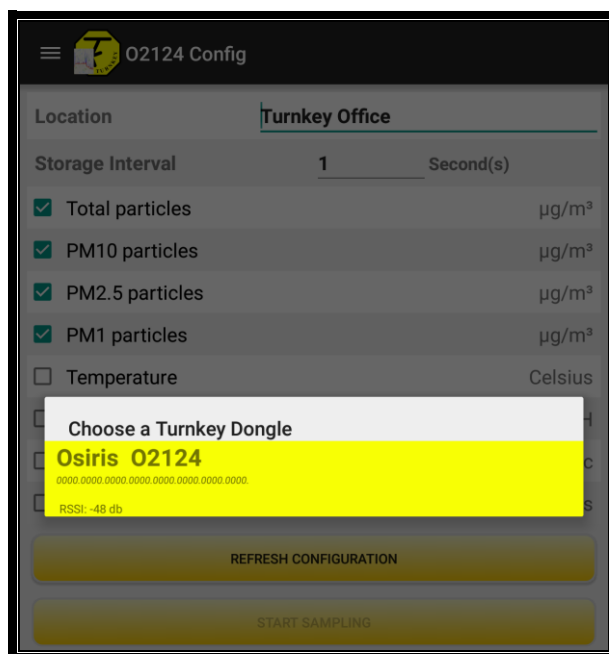

Figure 4.2

Select the dongle which is connected to the selected instrument. The application will connect your device to the Dongle wirelessly and collect the instrument's configuration. It gets the location using GPS and shows in the text box. The location text, data interval and instrument configuration can be changed. To save the configuration and start online sampling click the button at the bottom of the screen. The Online Sampling screen shows two tabs, one for 3D graph on the map and one for the table. The setting button on the top right corner of the screen allows you to start/stop sampling and select or deselect the channels you want to show on the map as shown in the figure below.
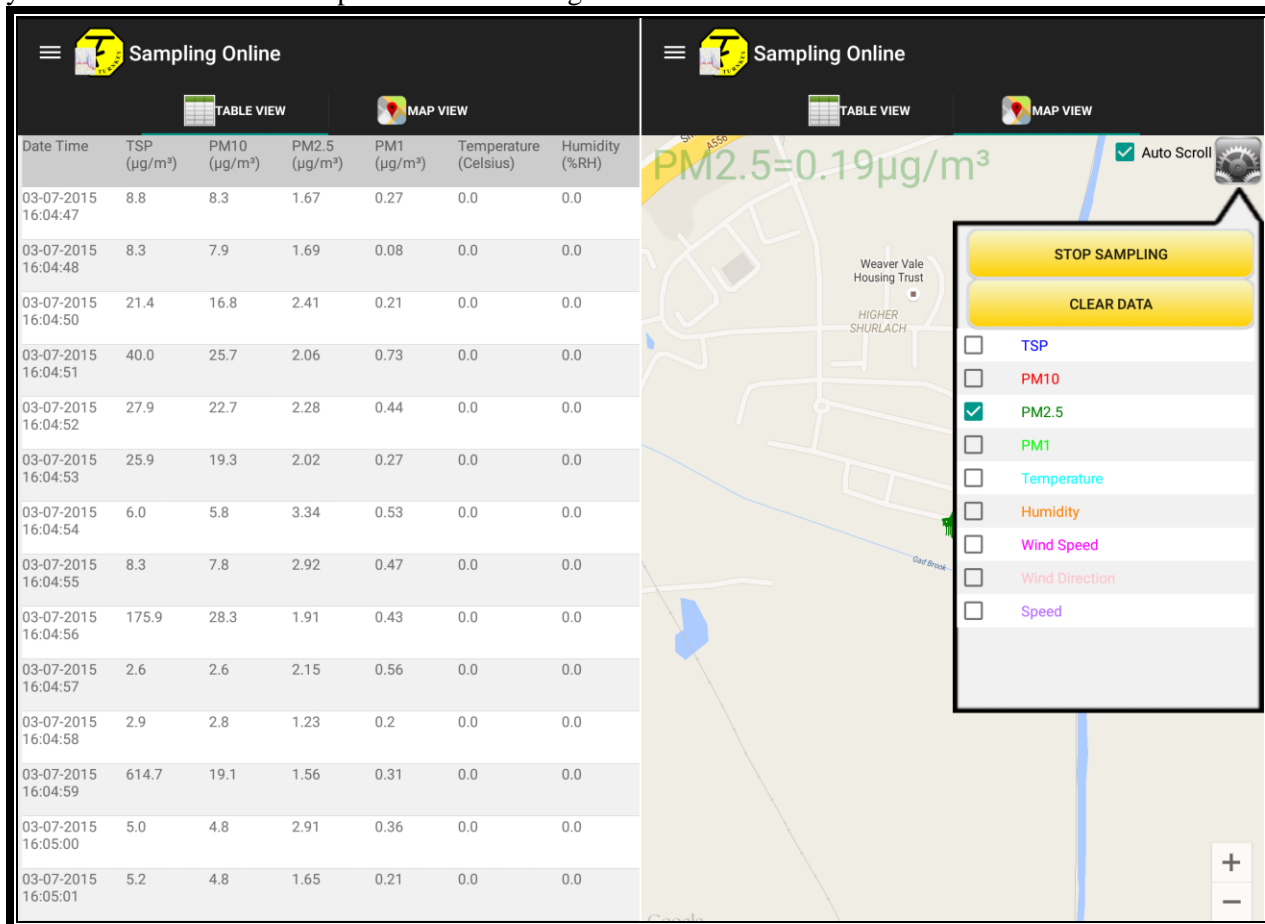

Figure 4.3

4.2   Visualise Data

This option allows you to visualise the historic data. You can visualise the local data from the device's memory as well as the online data available in the central database. When you select this option from the menu, it shows you the list of the instruments in your account. You can select an instrument which you want to view the data from. The next screen shows the options to search data by location or dates. It also gives you the option to search local data or the online data from the central database as shown in the figure 4.4.

Figure 4.4

When you select search by location, it shows all the data for the selected location. Choose search criteria and press ''Search data' button to plot the data on the 3D map and in tabular form as show in the figure below.
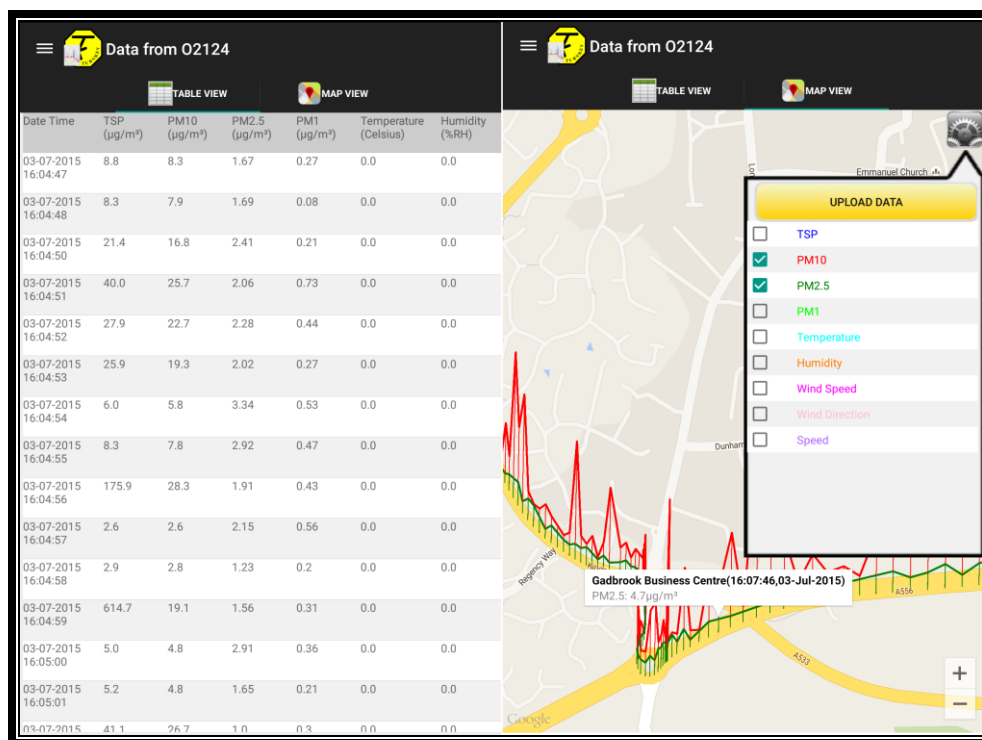

Figure 4.5

4.3   Upload Data

When you select this option, the application asks you to confirm to upload all the local data to the central database which you can visualise on AirQWeb. This uploads the entire local database (data which had not been uploaded before) to the central database.
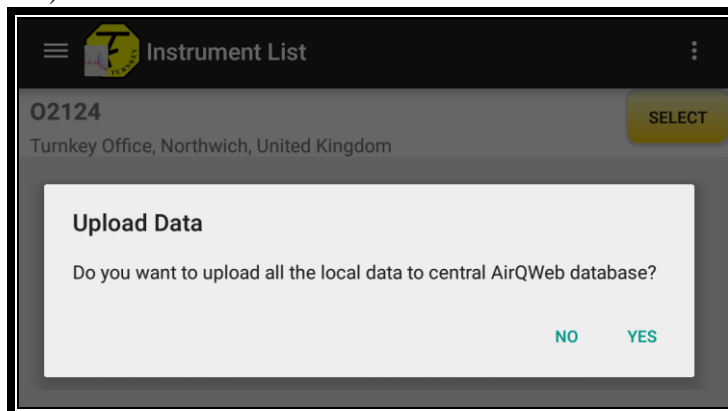

Figure 4.6

4.4   Settings

Apart from allowing you to enable location services, Internet connections and Bluetooth connections, this section allows you to enable/disable the auto upload data and set its interval, select map refresh interval, select speed unit and the colours of the channel shown on the graph figure 4.7 shows the settings screen.
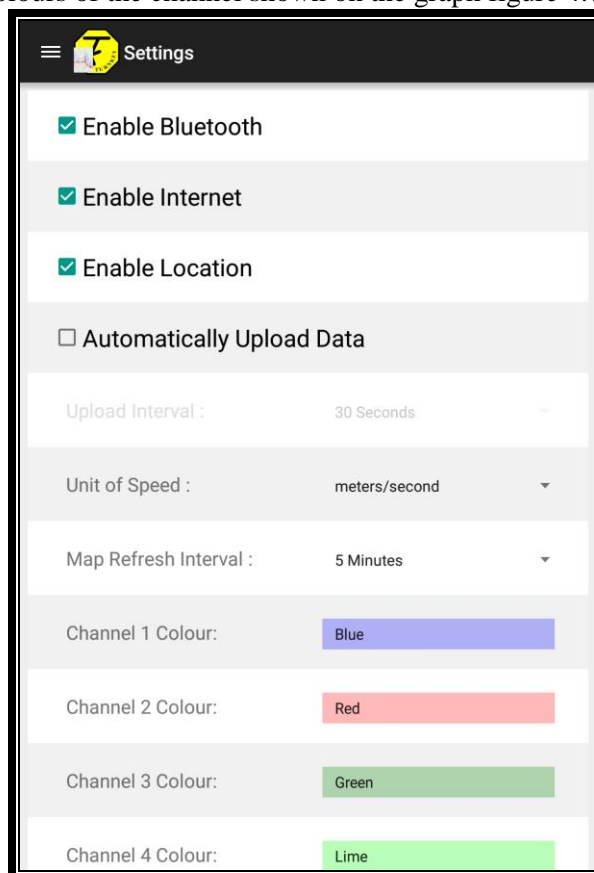

Figure 4.7

4.5   Setup Dongle

This option allows you to setup the Turnkey dongle for Turnkey dust monitoring instrument. The screen shows you the list of all the instruments registered in your account. Plug in the Turnkey Dongle in the instrument (Osiris/Topas). Press 'Search for Devices' button to show the list of the dongles. Select a dongle which is connected to the instrument. From the drop down list select the instrument ID which the dongle is connected to and set the advertisement interval. Press the 'Save Settings' button to setup the dongle. After the settings have been saved, unplug the dongle and plug it back again to apply the changes you have made.
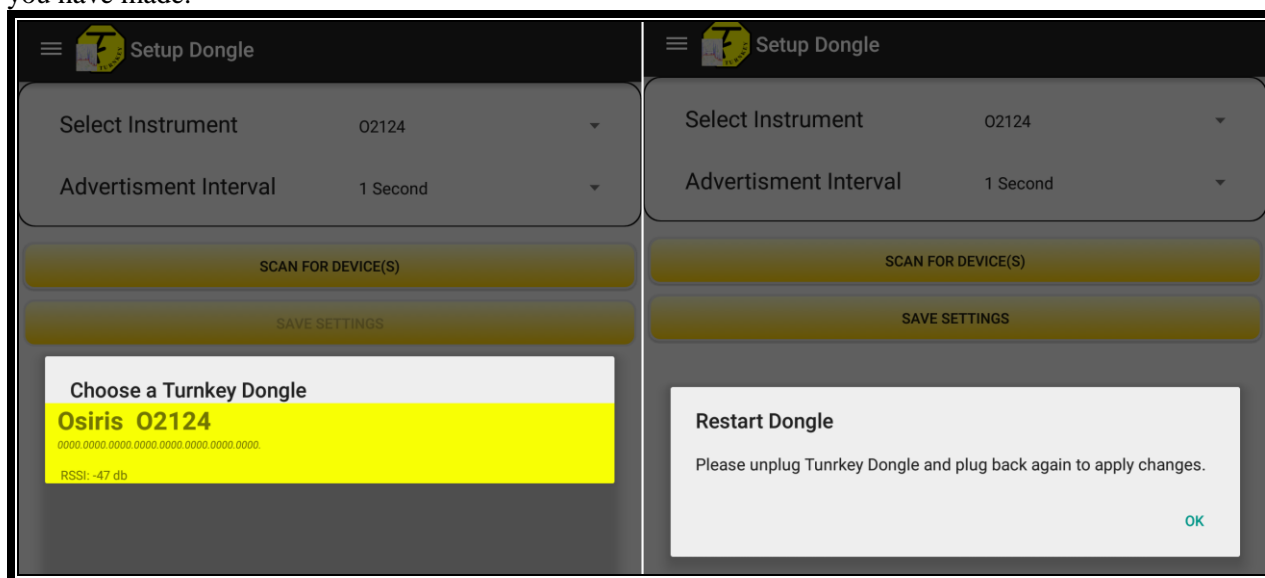

Figure 4.8

4.6   About App

This section shows you the basic information about the application.

4.7   Logout

When you select this option it will ask you to confirm to log out from your account. Logging out from the application does not clear the local data from the device. The data is stored in the local database which is only deleted when you clear the application memory from system settings.

4.8   Exit

This will exit the application and closes all the connection to the Turnkey dongle.

4.9   Caveats and Exceptions

If the application crashes or does not display the data please contact support.