Flex User Guide

Vodafone Business Heat Detection

Flex User Manual

The future is exciting.

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vodafone business

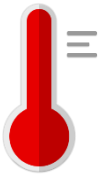
Contents

1. Introduction to Flex

The Flex service helps reassure your employees and customers, allowing you to spot higher heat readings as people pass by the camera. Using thermal imagery to scan your environment, the camera measures heat and alerts you to any higher than expected readings. As well as the using the device to detect readings, the service also includes a platform that collates all device logs in order to view trends and analyse your fleet of devices.

This user manual covers both functions (application and dashboard) of the service as detailed below.

1.1 Flex Application



Flex ("the app") works on the CAT S61 with integrated FLIR Lepton thermal sensor. The app will not function on other devices. Flex uses a dual screening methodology (relative temperature and thermal pattern analysis) to identify higher than usual heat in skin surface temperature.

1.1.1 Heat Patterning:

Vasodilation is the process of widening of blood vessels which causes increased blood flow to a part of the body. Vasodilation under the skin increases heat loss from the body and is a mechanism for lowering core body heat. When this occurs, it is typically synonymous with elevated surface skin heat and presents as a uniform heat pattern on the face. Flex detects differences in these heat patterns and alerts when the pattern is uniform.

1.1.2 Relative Temperature:

The Flex System is sensitive enough to identify temperature differences of just 0.1°C.
Each time it is activated a calibration is performed. This is always performed at the screening location and at a constant distance. The app calculates the average 'normal' skin temperature at any given time and continuously updates calibration through the screening session so that changes in ambient temperature are always reflected in the 'normal' baseline. The system will identify outliers and alerts you to higher than expected heat readings.

2. Flex Dashboard

The Flex Dashboard is a secure web-based dashboard that provides real time visibility of heat detection activities from all deployed Flex systems within an organisation. Anonymous, geo-located scan data is displayed on the dashboard, providing visibility of device location and scan session data (scan count and alert count), with real time alerts for any elevated heat alarms.

The dashboard provides reporting for statistical or regulatory requirements and trend analysis offers insight into heat alert incidents over time - enabling users to respond in real time to any concerning increases in alerts at any location.

3. Getting Started – Flex app

Prior to getting started please refer to the Vodafone Business Heat Detection Advisory Document for guidelines on policy, procedure, privacy and signage.

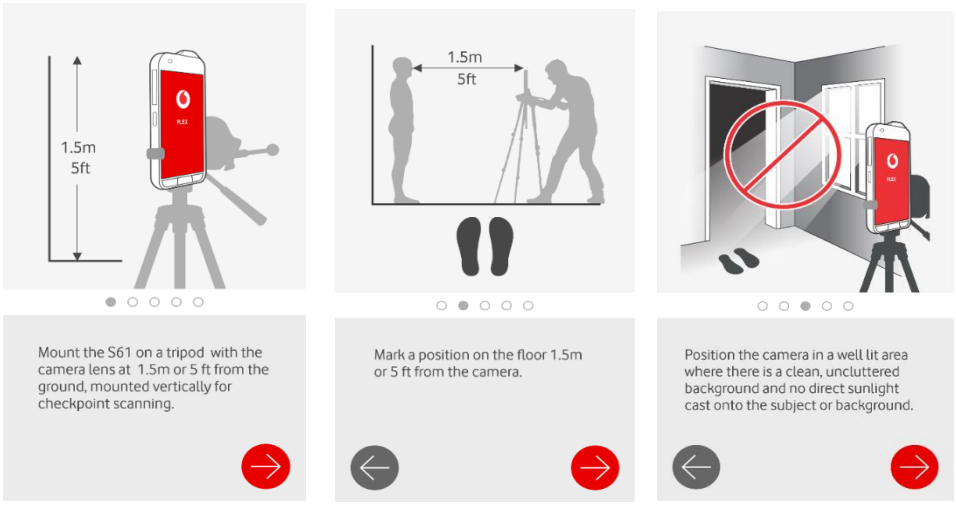
When initializing your Cat S61 device Flex will auto install from the Google Play Store and the App icon will be positioned centrally on your device home screen. Ensure that location services are enabled on your device at setup to allow for geo-location and device visibility on the Flex Dashboard. If for any reason this doesn't happen or you uninstall the application download the application from the Google Play store.

Physical setup

The Flex system is designed to be a fixed location screening tool. The system can be moved between physical locations, ensuring that setup guidelines and calibration steps are adhered to should relocation be required. The Flex kit includes:

- A Cat S61 mobile device with integrated FLIR thermal camera and Vodafone IoT SIM inserted.
- A tripod with mounting fixture.
- A 10 000mAh power bank.
- Charging accessories.

When initialising the Flex app, a visual setup instruction is shown. The step-by-step guide instructs on both physical device setup as well as standard scanning protocol. Setup instructions will always be displayed on start-up unless manually disabled through the Settings menu of the app.



Steps 1-3 describe the physical setup of the camera:

It is important to follow physical set-up instructions during initial installation or any time the system is moved.

It is recommended to use a background that is uniform (solid wall) that does not contain windows, paintings, mirrors, electronic panels, reflecting surfaces or doorways that might influence scanning results. An ideal screening environment consists of:

- Uniform background.
- Foot marking clearly visible indicating position for scanning.
- Controlled environment and no external temperature fluctuations or sources.
- Adequate lighting to ensure speedy head detection and scanning.
- It is NOT recommended that the system be used outdoors where environmental variables are not possible to control

3.1.1 Mobile device usage with Flex App installation

When deployed for Heat Detection it is not recommended that the device is used for any other mobile function. Additional mobile use may cause notifications to interrupt the Heat Screening of the App.

Note:

The Vodafone IOT SIM has a cap of 250 MB. The Vodafone IOT SIM is intended to be used for Flex app and establish communication to the platform to see dashboards. At 200 MB, you will receive an alert mail and at 250 MB, an alert will be sent and the service will be suspended.

Please do not use the device for any other services like YouTube, Facebook etc. If the device is used for other purposes with Vodafone IOT SIM, then 250 MB will be breached and SIM will be suspended for that month and you can't use the service for that month. Only from the next month, the service will be enabled. You can use Wi-Fi connection to download any other apps from Play store.

3.1.2 Battery usage

Flex utilizes the FLIR Lepton thermal camera constantly during operation and may drain the battery faster than normal usage. It is recommended that the provided portable power bank or wall socket charger be connected to the scanning device. It is further recommended that you activate Smart Charging (Settings/Battery/Smart Charging/Auto) when the device is constantly charging to ensure optimum battery life.

Scanning setup

3.1.3 Warm up

When first opening the Flex app, after completing the instruction guide, the sensor will begin a 10-minute warmup. This is important to ensure stable sensor temperature and consistent calibration and scanning results. Ensure that you allow for this 10-minute warmup period in the system initialisation.

3.1.4 Calibration

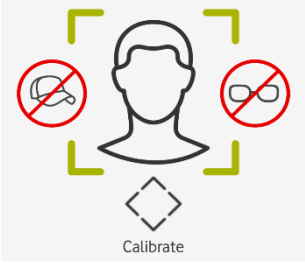
On first use, or after extended periods of inactivity, the app requires a manual calibration. This is done by scanning 5 (five) individuals who are known to have normal skin temperature. Ensure that all glasses are removed prior to scanning. Ensure too that, wherever possible, all headgear is removed prior to scanning.

A status bar at the top of the Flex screen will indicate successful calibration scans, with each successful scan accompanied by a confirmatory audio beep.

Once calibration is complete the app will prompt confirming calibration complete and to start scanning. Select scanning mode by clicking on this prompt. You can re-calibrate at any time by selecting the "Calibrate" icon in the bottom centre of the Flex screen.

3.1.5 Scanning

Ensure that all glasses are removed prior to scanning. Ensure too that, wherever possible, all headgear is removed prior to scanning.



Once scanning mode is selected (either by following the prompt after calibration or selecting the "Scan" icon in the bottom centre of the Flex screen) scanning will begin when a face is detected. A 'beeping' noise will be heard while scanning. Subject should stand still on the demarcated floor marking, directly facing the scanner. In the event of a high heat reading there will be an audio and visual indication.

3.1.6 Alarms

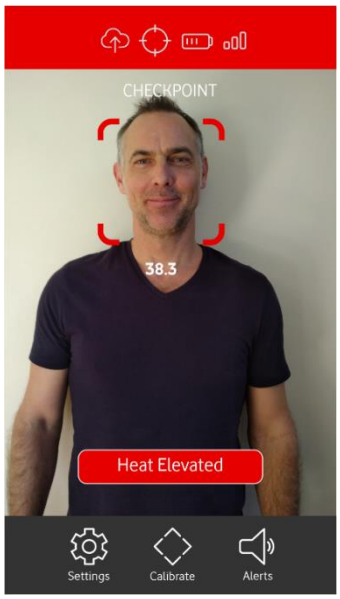
Once a scan is completed a steady beep will sound and the thermal image will alternate to an image of the subject for a temporary freeze frame displaying the scan status. Note that this image is NOT stored on the device or server. Successful scans are displayed with a green bar and the text "Heat OK".
When an alarm is triggered a red bar and the text "Heat Elevated" are displayed.

Alarms can be triggered based on either high relative heat or uniform heat pattern.

The nature of the alarm will be indicated on screen by an icon that displays either heat or pattern.

Heat alarm

Pattern alarm



3.1.7 Scanning with masks

The Flex app can detect whether a subject is wearing a face mask. While best results are achieved without a mask covering the face, Flex will modify its scanning protocol should a mask be identified. When a mask is detected the mask icon will appear and the heat pattern analysis will be temporarily disabled. Heat pattern analysis requires a full face to be visible for best results and cannot function optimally where the face is obscured by a mask.

3.1.8 Uploading scan data

The Flex application will automatically send session reports to the dashboard every 30 minutes, or at the termination of a scanning session. These session reports will comprise a geo-located and time stamped summary of all scans completed in the scanning period.

Should an alarm incident occur during a scanning session it will upload immediately to the dashboard.

If there is a communication issue the Data Sync icon will turn red. Please check that your device has data connectivity.

3.1.9 Recommended actions

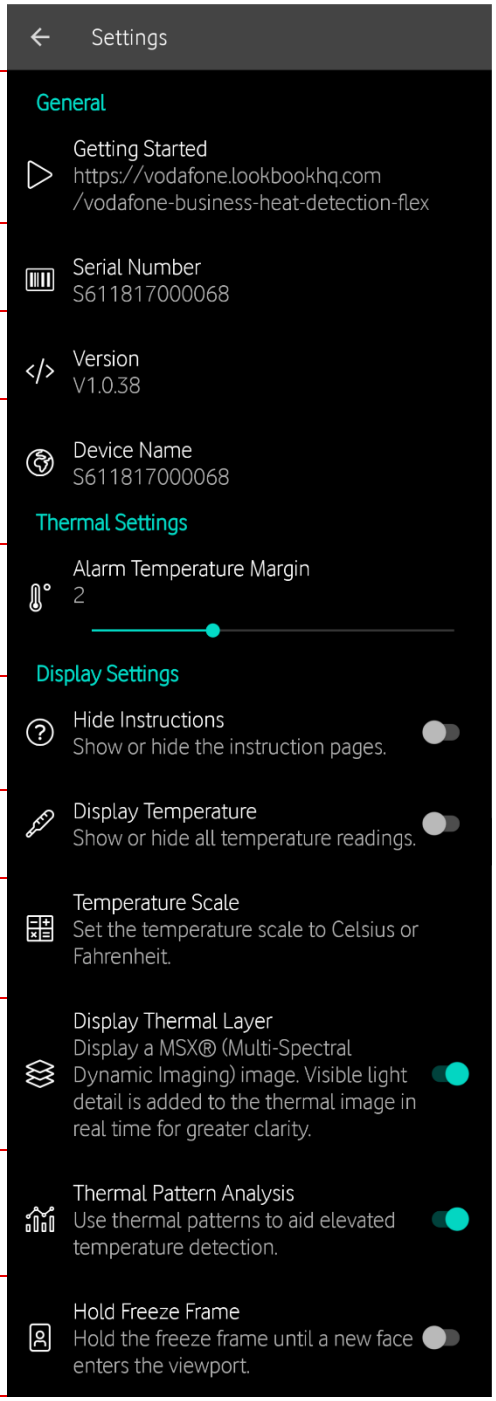
The following actions are recommended following each scan based on the scan result:

Scan result	Heat OK	Heat Elevated
Classification	Positive scan with no Heat alarm	Alarm triggered on either heat or pattern. **Proceed with caution**
Procedure	Subject may proceed	Direct subject to a waiting area rescans after 5 minutes. If positive again, follow applicable Health & Safety Protocols

Settings navigation and Status Icons

3.1.10 Settings navigation

The Settings menu offers user configurable options below:



Getting Started:
Links to the Vodafone Business Heat Detection Advisory Document

Serial number:
Displays the device / app serial number

Version:
Displays the release version of the Flex app

Device Name:
Edit this field to reflect the location that the device is deployed

Alarm Temperature Margin:
Adjust this to set the alarm temperature offset to normal temperature.

Hide Instructions:
Show or hide the setup instructions shown on app initialisation

Display Temperature:
Show or hide the temperature displayed in the scanning window

Temperature Scale:
Set temperature scale between Celsius and Fahrenheit

Display Thermal Layer:
View MSX overlay - blends thermal image and normal camera image.
Always ON recommended

Thermal Pattern Analysis:
Use pattern analysis to aid heat detection.
Always ON recommended

Hold Freeze Frame:
Hold the normal camera image freeze frame until a new subject is recognised for scanning.

3.1.11 Status Icons

The following icons are used in the Flex app and Dashboard

	**Flex** Settings		**Flex** Location On		**Dashboard** OK Scans		**Dashboard** Edit Devices
	**Flex** Calibrate		**Flex** Battery Level		**Dashboard** Heat Scans		**Dashboard** Search
	**Flex** Scan		**Flex** Signal Level		**Dashboard** Trend Graph		**Dashboard** Date range
	**Flex** Sounds On		**Flex** Heat Alarm		**Dashboard** Map View		**Dashboard** Print report
	**Flex** Sounds Muted		**Flex** Pattern Alarm		**Dashboard** Scan Location		**Dashboard** Download report
	**Flex** Data Sync		**Flex** Mask Detected		**Dashboard** Alarm Location		**Dashboard** Reset Device Key

4. Getting Started – Dashboard

You will receive an email confirming your login details. Follow the steps below to access your account.

4.1.1 Log In

Enter the username and password received via email from Vodafone.

4.1.2 Two-factor Authentication

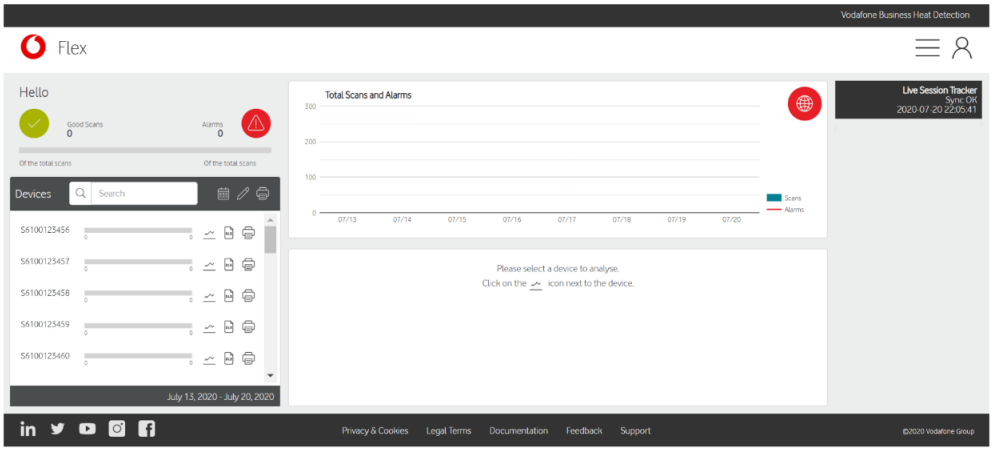
Using your mobile device download an authenticator application (like Microsoft Authenticator, Symantec VIP or Google authenticator). Follow the instructions to set up a Flex account on the app by scanning the displayed QR code.

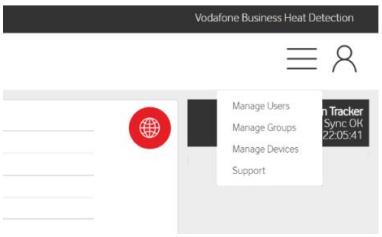
4.1.3 Enter your 6-digit code

Enter the 6-digit code generated by your preferred Authentication app.

4.1.4 Configuring the Dashboard

The Flex dashboard will be populated with the devices that have been shipped to your organisation. These devices will appear as a list of device serial numbers to the left of your dashboard screen.





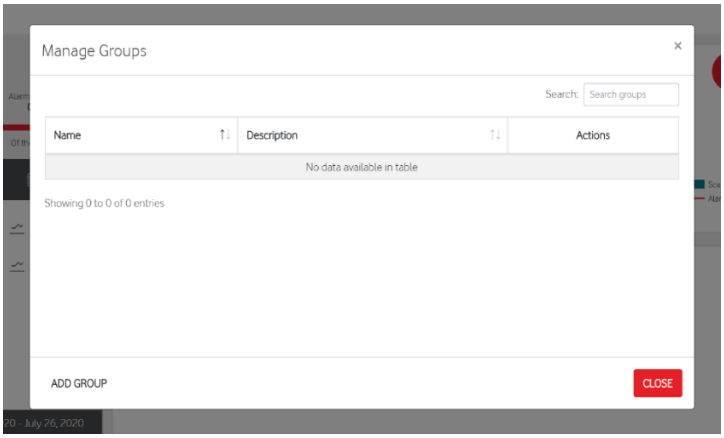
You have options to customise your dashboard for your organisation by using the Menu drop down. You will have the ability to manage Users, Groups and Devices.

4.1.5 Setting up Groups

Groups are typically created based on the organisational or geographic deployment of the Flex thermal cameras. This enables you to create a logical and efficient viewing, managing, and reporting system within your organisation.

Examples of a group include location derived (eg. a facility or a geographic area) or organisationally derived (eg. Manufacturing, Engineering etc.). Groups should align to the existing management structure of your organisation.

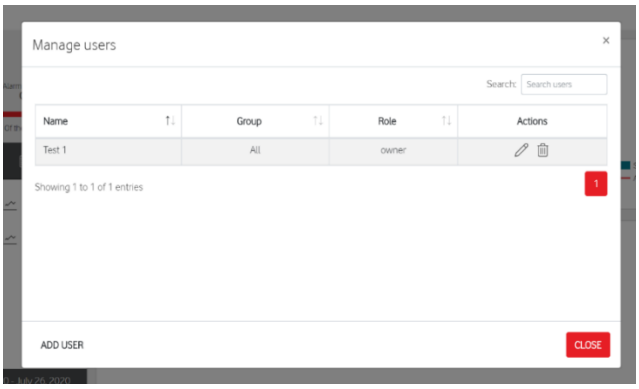
In the drop-down menu select “Manage Groups” to open the Manage Groups pop up. Select “Add Group” in the lower left corner to add new groups to your organisation.



4.1.6 Setting up and managing Users

The dashboard has three levels of access: Owner, Manager and User. All users need to be assigned a level of access and to a group (or groups). This will determine what each user is able to view and edit on the dashboard.

In the drop-down menu select “Manage Users” to open the Manage Users pop up. Select “Add User” in the lower left corner to add new users to your organisation.



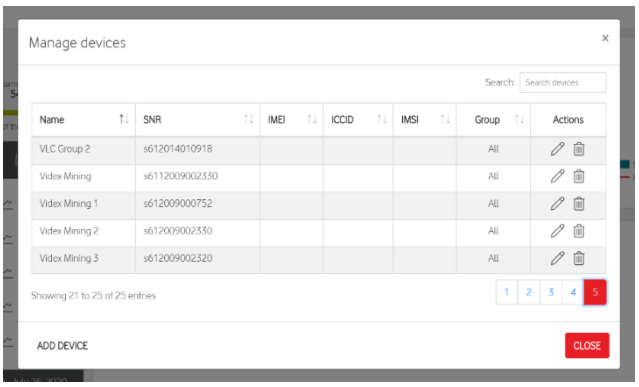
Dashboard permissions for each user are set as follows:

	Owner	Manager	User
Create/Delete **Groups**	✓	✗	✗
Add/Remove **Owners**	✓	✗	✗
Add/Remove **Managers**	✓	✗	✗
Add/Remove **Users**	✓	✗	✗
Add/Remove **Devices**	✓	✓	✗
Edit **Devices**	✓	✓	✗
View **Devices**	✓	✓	✓
Access **Reports**	✓	✓	✓

4.1.7 Setting up and managing Devices

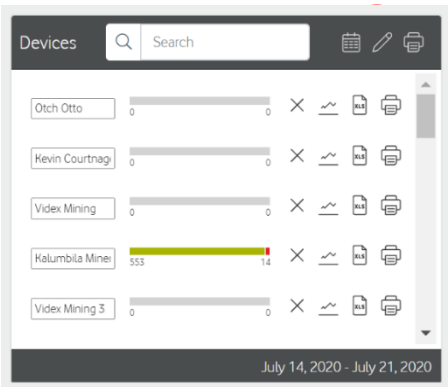
Devices need to be assigned to Groups; it is recommended that this is done prior to the physical deployment of devices. Subsequent device management options include:

- Add or Delete devices
- Rename devices (assigning a logical device name based on its location)
- Edit IMEI / Serial Number / SIM ID in the instance of SIM or Device replacement
- Re-assign device group



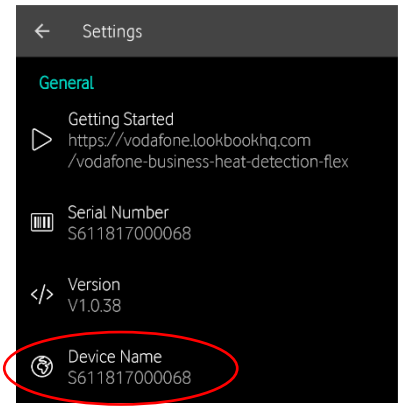
It is also possible to conduct limited device editing on the dashboard main screen (only available to Owner and Manager users) by selecting the Edit icon above the device list. This Quick edit feature will allow in dashboard rename or delete options for the devices.

This feature is helpful for renaming devices that have already been deployed. These devices can be easily identified by highlighting their location on the map and assigning names based on this location.



Devices can also be renamed in the Settings menu of the Flex application. Select the Device Name and enter the name preferred in your device deployment plan,

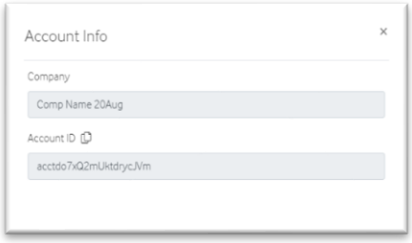
On connection to the Dashboard the device name will be automatically updated on the Dashboard. If the Dashboard is in an active session while the device-initiated renaming occurs, the changes will only display on the dashboard after logging out and back in again.



4.1.8 Account Info

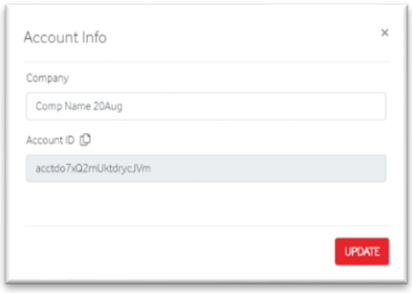
Details of the Account like Company Name & Account ID can be accessed from Menu – Account Info.

People with Manager and User access will not be able to edit the Company field.



People with Owner access will be able to edit the Company field and click on Update button to save the changes.

Account ID isn't editable for anyone.



5. Reporting

The Dashboard provides two levels of reporting. Reports can be accessed for individual devices in CSV or PDF format, or a consolidated report for all devices collectively. Consolidated reports are available in PDF format only.

Setting the reporting period

By clicking the Calendar icon in the Devices header bar, you can select the data timeframe to be viewed. A set of pre-determined date ranges can be selected, or a user defined custom range can be set.

Trend analysis

By clicking the Trend Graph icon to the right of each device a trend graph is displayed for the period selected. A bar graph with trend lines will show the daily scan count and daily heat alarms is displayed allowing users to track trends in heat alarms and respond quickly to any concerning trends as they develop.

Locating Heat Alarm Incidents

The session tracker on the right side of the Dashboard maintains session reports on completion of each scanning session, as well as real time alerts as soon as Heat Alarms are triggered in the field.

Selecting the Map View will show location icons in both Session Tracker and Device lists. By selecting the location icon, the queried device will be located and centred on the map.

Comma Separated Value (CSV) Reports

By clicking the “XLS” icon to the right of each device the CSV summary of the scanning sessions is downloaded. This file can be imported to Microsoft Excel or similar software packages for further analysis or manipulation.

PDF Graphic reports

By clicking the “Print” icon to the right of each device (for individual reports) or in the Devices header bar (for consolidated reports) an HTML pop up window will appear. Ensure pop ups are allowed for this site in your browser. The window provides a graphic summary of the scanning period selected and can be printed to paper or PDF for filing.

6. Miscellaneous

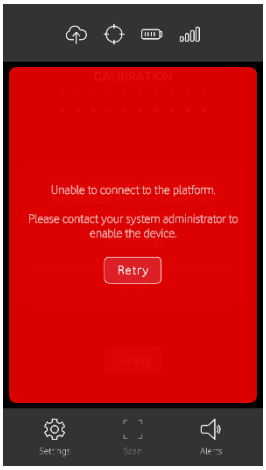
Support

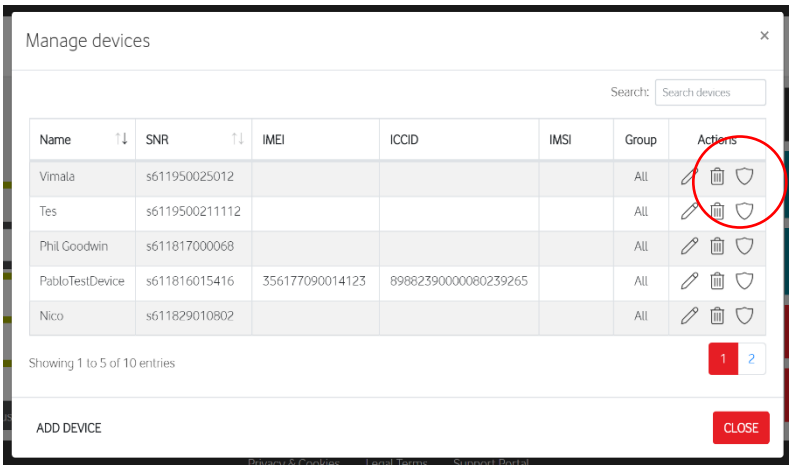
6.1.1 FAQs

To access platform and device FAQs, the dashboard has an inbuilt FAQ section in the drop-down menu under Support at https://flex.iot.vodafone.com/faq

6.1.2 Resetting Device Communications

Should a device on the platform lose connection to the dashboard an error message will be displayed directing the operator to contact the system administrator. This message will typically appear when the Flex application has been reset or uninstalled and re-installed and the dynamic device key is invalid. Reset the device key by clicking the shield icon in the Manage Devices tab in the dashboard. The error can also





indicate that the device is not loaded on the customer dashboard. Using the search function in the Manage Devices tab enter the device serial number (this is found in the settings menu of the Flex application). If the device is not found, you can use the Add Device tab in the Manage Devices menu to load the missing device to the dashboard. Once the device key is reset, or the device added to the dashboard, select Retry on the device error screen to re-establish communication.

Should the problem persist contact Vodafone support and confirm network connectivity.

Logging out

To log out of a Dashboard session select the "User" icon at the top right of the screen. Select "Log Out" to terminate your viewing session.

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