**The RGB comparators**

The test comparator is a defined RGB colour for each E.Coli and Total Coliforms. We need to save the type of test media to the RFID tag using our mobile app. This will be “Colitag”, “Colilert”, or “Colilert18”. Each media will have different RGB colour values as the test comparator.

We will use the device to find the exact RGB colours but for the time being use the following RGB as the following RGB values for all media types:

E. Coli (UVA LED): 172,55,238

Total Coliforms (White LED): 241,235,156

Assuming that the sample was completely clear (which is unlikely), the RGB will start at 255,255,255 and each RGB value will decrease until they reach the comparator value. Once each RGB value is ≤ the comparator value

**Posting JSON data**

*Detailed values*

Every minute the Unique ID of the RFID tag, millis(), Date/Time, RGB values, and E.coli/Total Coliforms indicator need to be posted to the following endpoint:

<https://bactosure-dev-default-rtdb.firebaseio.com/detail.json?auth=8JZWaLRXmT9y4JHxqs3jjjpiQyzAkpji17qiJxma>

Example of JSON body is below:

{

    "UID": "8628FE7C-A4E9-4056-91BD-FD6AA7817E39",

    "Red": "255",

    "Green": "253",

    "Blue": "251",

    "Millis": "123456",

    "Test": "EC",

    "Datetime": "2023-01-11 23:21:01"

}

This process needs to continue until the test is completed hours. The test will be completed in 16 hours if the media is “Colitag” or 24 hours if the media is “Colilert” or 18 hours if the media is “Colilert18”.

*Summary data*

Once the test is confirmed as positive for EC or TC according to the RGB values then the result and all data stored in the RFID tag must be posted to the following endpoint.

<https://bactosure-dev-default-rtdb.firebaseio.com/summary.json?auth=8JZWaLRXmT9y4JHxqs3jjjpiQyzAkpji17qiJxma>

There may be up to 2 summary reports posted as E. Coli and Total Coliforms may be detected at different times. At the end of the test period, if no positive test for E. Coli or Total Coliforms is detected then the summary report must be posted with the negative result.

Example of JSON body is below:

{

    "UID": "8628FE7C-A4E9-4056-91BD-FD6AA7817E39",

"UID\_hash": "D952EB9F-7AD2-4B1B-B3CE-386735205990"

    "Red": "255",

    "Green": "253",

    "Blue": "251",

    "Millis": "123456",

    "Test": "EC",

    "Test\_status": "E",

    "Media": "Colitag",

    "Datetime": "2023-01-11 23:21:01"

    "Red": "171",

    "Green": "55",

    "Blue": "238",

    "Longitude": "-41.292",

    "Latitude": "174.762”,

    "User": "bishopc"

    "Sample\_datetime": "2023-01-10 13:21:01",

    "Receipt\_location": "",

    "Receipt\_datetime": "",

    "Test\_start\_datetime": "2023-01-10 17:32:11"

}

## Errors

The user should be alerted by the RGB LED button on the front of the device flashing red continuously. At the same time, a report should be posted to the following endpoint.

<https://bactosure-dev-default-rtdb.firebaseio.com/error.json?auth=8JZWaLRXmT9y4JHxqs3jjjpiQyzAkpji17qiJxma>

Example of JSON body is below:

{

    "UID": "8628FE7C-A4E9-4056-91BD-FD6AA7817E39",

    "Error\_code": "LowTemp",

    "Datetime": "2023-01-11 23:21:01"

}