

# Annotated report for standard scheme (example)





# Summary of Results

## External Quality Assessment of Food Microbiology

### Standard Scheme

Distribution Number: 358

Sample Numbers: S0753, S0754

Distribution Date:	March 2023
Results Due:	21 April 2023
Report Date:	15 May 2023
Samples prepared and quality control tested by:	Divya George Nafeesa Hussain Zak Prior Jake Videlefsky
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Distribution and sample details

Details of FEPTU staff who prepared samples and report

FEPTU contact details

Number of pages in the report

Report generation date and time

Web links to key documents on our website

For further information on the scheme please refer to:  
**Scheme Guide:** <https://www.gov.uk/government/publications/food-and-water-proficiency-testing-schemes-scheme-guide>  
**Guide to Scoring and Statistics:** <https://www.gov.uk/government/publications/food-and-water-proficiency-testing-schemes-scoring-systems-and-statistics>

**General guidance for z-scores:**  
Participants' enumeration results are converted into z-scores using the following formula:  
$$Z = \frac{(x_i - X_{\mu})}{\sigma_{\mu}}$$
  
 $x_i$  = participants' result (expressed as a log<sub>10</sub> value)  
 $X_{\mu}$  = assigned value (participants' consensus median (expressed as a log<sub>10</sub> value))  
 $\sigma_{\mu}$  = the fixed standard deviation for the examination (calculated by FEPTU)

The opt-value expresses the acceptable difference between the individual participant's result and the participants' consensus median. The opt-value used for calculating z-scores for all parameters in the Standard Scheme is 0.35. A guide to interpreting z-scores follows, although laboratories must interpret their scores in the context of their own laboratory situation:

z = -1.00 to +1.00      **satisfactory**  
z = -2 to -2.00 or +2 to +2.00      **questionable**  
z = < -3.00 or > + 3.00      **unsatisfactory**

It is usually recommended that z-scores exceeding +/-2 are investigated to establish the possible cause. As a general rule, UKHSA recommends that all questionable and unsatisfactory results are investigated.

Guidance on z-scores

Information on quality control done in the FEPTU laboratory

**FEPTU Quality control:** To demonstrate homogeneity of the sample, a minimum of 10 freeze-dried vials, selected randomly from a batch, are tested in duplicate for parameters requiring enumeration and 10 freeze-dried vials are examined for pathogen detection.

To demonstrate stability of the sample, a minimum of six vials, selected randomly from a batch, are examined throughout the distribution period, either for enumeration or pathogen detection.

FEPTU results are determined using methods based on ISO methods and are included in the 'intended results' letters which provide guidance for participants regarding the assigned values.

The FEPTU results are used for guidance in the preliminary intended results notification, letters are posted on the website immediately after every distribution; electronic notification of their availability is sent to all participants

Refer to section 17.0 of the Scheme Guide if you have experienced difficulties with any of the examinations .  
<https://www.gov.uk/government/publications/food-and-water-proficiency-testing-schemes-scheme-guide>

All participants are reminded that reporting an incorrect or incomplete identification of pathogens from food samples could have serious public health implications. Similarly, the levels of micro-organisms reported in the sample may affect the subsequent outcome for the product.

Participants are reminded that the purpose of scoring is to draw attention to incorrect or outlying results. The results, as summarised in the performance assessment sheet included in this report, provide a more effective indication of on-going problems with food microbiology examinations.

The bar charts in this report are compiled using the processes outlined in the Guide to Scoring Systems and Statistics for the allocation of UKHSA scores. Z-scores are included on the sample-specific pages only; the relevant sections will be left blank if a z-score does not apply.

Details of FEPTU key personnel and accreditation details

Please contact FEPTU staff for advice and information:

<b>Repeat samples</b>	Carmen Gomes or Kermin Daruwalla	<b>Tel:</b> +44 (0)20 8327 7119
<b>Data Analysis</b>	Nita Patel	<b>Fax:</b>
<b>Microbiological advice</b>	Nita Patel or Zak Prior	<b>Email:</b>
<b>General comments and complaints</b>	Nita Patel or Zak Prior	<a href="#">FEPTU's website</a>
<b>Scheme consultants</b>	Melody Greenwood	
<b>Scheme Co-ordinator</b>	Nita Patel	

**Accreditation:** UKHSA Food EQA Scheme for Standard is accredited by the United Kingdom Accreditation Service (UKAS) to ISO/IEC 17043:2010.



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Sample number and contents

**Sample: S0753**

**Contents:** *Listeria innocua* (2.6x10<sup>2</sup> per disc) (wild strain), *Listeria monocytogenes* (1.4x10<sup>2</sup> per disc) (wild strain) - see comment on page 19, *Salmonella* Indiana 1,4,12:z:1,7 (70 per disc) (wild strain) - see comment on page 19, *Clostridium bifementans* (2.0x10<sup>2</sup>) (wild strain), *Lactococcus lactis* (2.4x10<sup>4</sup>) (wild strain), *Escherichia coli* (1.9x10<sup>2</sup>) (wild strain)

All levels are presented as colony forming units (cfu) per ml reconstituted sample

**Expected Results:**

Examination	Expected Result	Your Result	Score	Z-score
<i>Listeria</i> spp. (including <i>L.mono</i> )	Detected in 25g	Detected		0
<i>L.monocytogenes</i>	Detected in 25g	Detected		0
<i>Salmonella</i> spp.	Detected in 25g	Detected		
<i>Clostridium perfringens</i>	<10 cfu g <sup>-1</sup>	<10		
<b>Total Pathogen Score</b>			10 out of 10	100%
Aerobic colony count	7.9x10 <sup>2</sup> - 7.9x10 <sup>4</sup> cfu g <sup>-1</sup>	32000 (4.51 log <sub>10</sub> )	2	0.30
<i>Escherichia coli</i>	5.7x10 <sup>2</sup> - 5.7x10 <sup>3</sup> cfu g <sup>-1</sup>	1200 (3.08 log <sub>10</sub> )	2	-0.52

List of examinations and expected result for each parameter

Your results

Your UKHSA scores and z-scores

Additional results and z-scores information.

Examination	Result 2	Z-score
<i>Listeria</i> spp. (including <i>L.mono</i> )	Detected	0
<i>L.monocytogenes</i>	Detected	0
<i>Salmonella</i> spp.	Detected	
<i>Clostridium perfringens</i>	<10	
Aerobic colony count	19000	-0.35
<i>Escherichia coli</i>	890	-0.89

Examination	Result 3	Z-score
<i>Listeria</i> spp. (including <i>L.mono</i> )	Detected	0
<i>L.monocytogenes</i>	Detected	0
<i>Salmonella</i> spp.	Detected	
<i>Clostridium perfringens</i>	<10	
Aerobic colony count	33000	0.34
<i>Escherichia coli</i>	1900	0.05

<i>Listeria</i> spp. (including <i>L.mono</i> )	
Total participants reporting for <i>Listeria</i> spp. (including <i>L.mono</i> )	105
Participants reporting correctly	101 (96%)

<i>L.monocytogenes</i>	
Total participants reporting for <i>L.monocytogenes</i>	117
Participants reporting correctly	96 (82%)

<i>Salmonella</i> spp.	
Total participants reporting for <i>Salmonella</i> spp.	118
Participants reporting correctly	92 (78%)

<i>Clostridium perfringens</i>	
Total participants reporting for <i>Clostridium perfringens</i>	85
Participants reporting correctly	75 (88%)

Aerobic colony count	
Total participants reporting for Aerobic colony count	116
Assigned value (participants' median)	$2.5 \times 10^4$ cfu g <sup>-1</sup> (4.4 log <sub>10</sub> )
Uncertainty of assigned value ( $U(\chi_{(p)}) = \log_{10}$ cfu g <sup>-1</sup> )	0.01
No. of outlying counts	4 (2 low / 2 high)
Participants mean	$2.4 \times 10^4$ cfu g <sup>-1</sup> (4.38 log <sub>10</sub> )
Standard deviation of participants results *	0.13 log <sub>10</sub> cfu g <sup>-1</sup>
FEPTU QC median	$2.8 \times 10^4$ cfu g <sup>-1</sup> (4.45 log <sub>10</sub> )

<i>Escherichia coli</i>	
Total participants reporting for <i>Escherichia coli</i>	117
Assigned value (participants' median)	$1.8 \times 10^3$ cfu g <sup>-1</sup> (3.26 log <sub>10</sub> )
Uncertainty of assigned value ( $U(\chi_{(p)}) = \log_{10}$ cfu g <sup>-1</sup> )	0.02
No. of outlying counts	7 (4 low / 3 high)
Participants mean	$1.8 \times 10^3$ cfu g <sup>-1</sup> (3.25 log <sub>10</sub> )
Standard deviation of participants results *	0.16 log <sub>10</sub> cfu g <sup>-1</sup>
FEPTU QC median	$2.0 \times 10^3$ cfu g <sup>-1</sup> (3.3 log <sub>10</sub> )

Total sent samples	146
Non-returns	2
Not examined	16

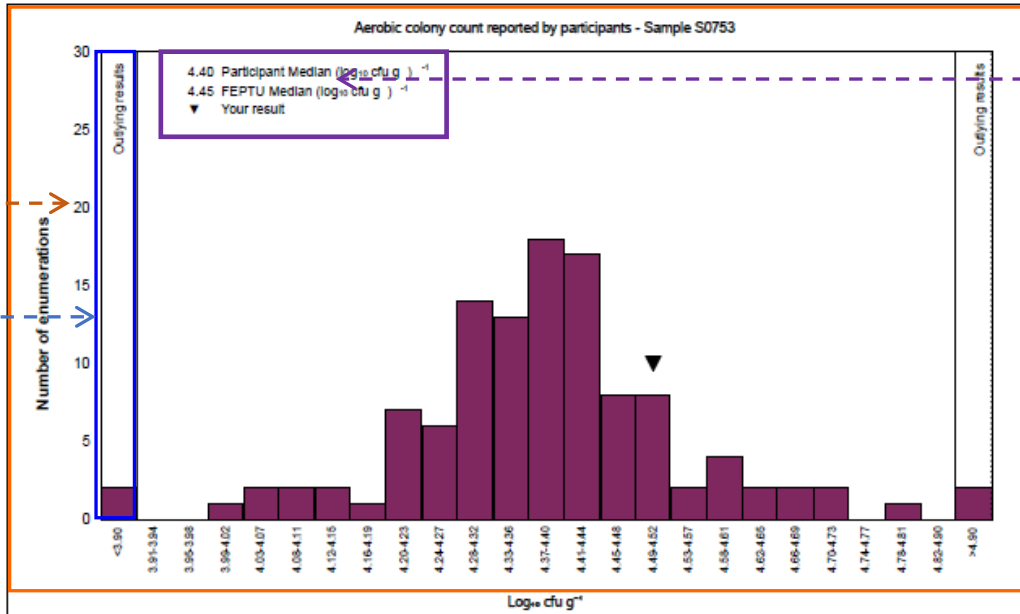
The fixed standard deviation value ( $\sigma_{pt}$  value) used for calculation of the z-scores is **0.36** for all parameters.  
 \* Robust  $S^*$  based on median absolute deviation about the participants' median (MAD<sub>0</sub>).

Detailed performance information on this parameter

Explanation of symbols in the table

Graph of the all the enumeration results reported by participants

Outliers for sample



Participants' and FEPTU's median results

Lists of methods used

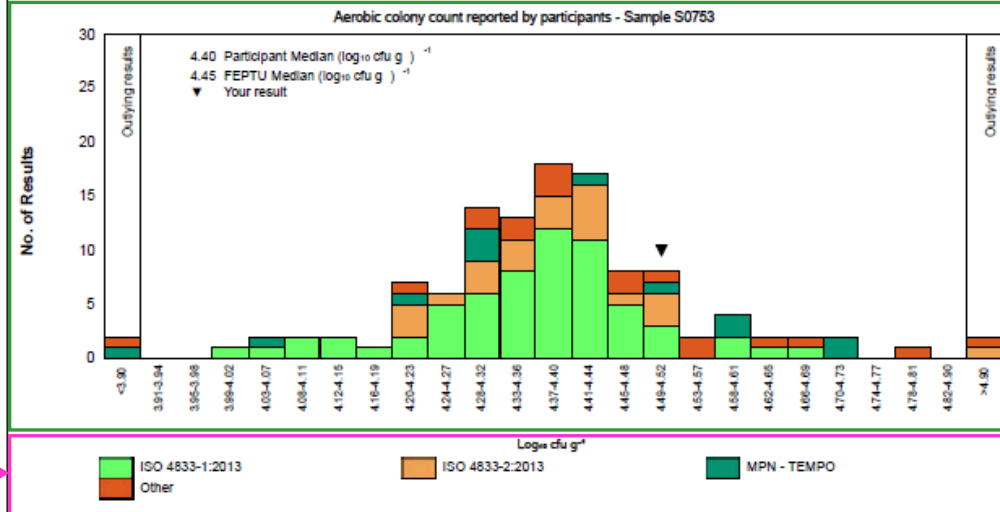
Method based presentation

S0753 : Aerobic colony count

FEPTU Method: ISO 4833-1:2013

Method	Number of Results	Excluded Results	Percentage of the total	Median (Log <sub>10</sub> cfu g <sup>-1</sup> )	Robust S* (Log <sub>10</sub> cfu g <sup>-1</sup> )	Range Reported (Log <sub>10</sub> cfu g <sup>-1</sup> )
ISO 4833-1:2013	63	0	54	4.40	0.10	4.02 - 4.65
ISO 4833-2:2013	23	0	19	4.36	0.11	4.20 - 6.14
MPN - TEMPO	12	0	10	4.36	0.27	3.47 - 4.70
Other	18	0	15	4.42	0.18	3.43 - 5.43

Table summarises the data for each method shown



Graph of all the results reported by method used

Sample S0753

Aerobic colony count Method	Aerobic colony count Media	Aerobic colony count Incubation	Count reported	Count censored values
ISO 4833-1:2013	Milk plate count agar	30°C/72h	1	0
ISO 4833-1:2013	Petrifilm TM	30°C/48h	1	0
ISO 4833-1:2013	Petrifilm TM	30°C/72h	1	0
ISO 4833-1:2013	Petrifilm TM	Other	1	0
ISO 4833-1:2013	Plate count agar	30°C/48h	7	0
ISO 4833-1:2013	Plate count agar	30°C/72h	61	0
ISO 4833-1:2013	Plate count agar	Other	1	0
ISO 4833-1:2013; ISO 4833-2:2013	Plate count agar	30°C/48h; 30°C/72h	0	1
ISO 4833-1:2013; ISO 4833-2:2013	Plate count agar	30°C/72h	0	0
ISO 4833-2:2013	Petrifilm TM; Plate count agar	30°C/48h	0	0
ISO 4833-2:2013	Plate count agar	30°C/48h	13	0
ISO 4833-2:2013	Plate count agar	30°C/72h	10	0
ISO 4833-2:2013; ISO 4833-1:2013	Plate count agar	30°C/48h	0	0
ISO 4833-2:2013; ISO 4833-1:2013	Plate count agar	30°C/72h	0	0
MPN - TEMPO	Other	30°C/48h	7	0
MPN - TEMPO	Other	30°C/72h	1	0
MPN - TEMPO	Other	Other	4	0
Other	Other	30°C/72h	1	0
Other	Other	37°C/24h	1	0
Other	Other	Other	1	0
Other	Petrifilm TM	30°C/48h	1	0
Other	Petrifilm TM	Other	2	0
Other	Plate count agar	30°C/48h	3	0
Other	Plate count agar	30°C/72h	4	0
Other	Plate count agar	Other	6	0
Other; ISO 4833-1:2013; ISO 4833-2:2013	Plate count agar; Petrifilm TM; Other	30°C/72h	0	1

Method used



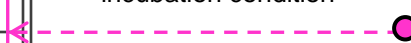
Incubation information



Media used



Count of results by method, media and incubation condition



Note:  
 The count shown in the 'Count censored values' column includes data from those laboratories that reported:

- a censored value
- a result reported as detected or not detected
- method data with no results reported

Notes on performance assessment

### Performance Assessment Sheet

Participants are reminded that to take advantage of the performance assessment overtime tool provided in the reports they need to take part in more than one distribution a year.

Performance assessments are designed to identify laboratories with on-going problems with their examinations and are undertaken after every distribution. Scores are allocated to results reported for every sample to help assess participants' performance.

Cumulative scores are calculated for every participant, for all examination types, for the current and previous five distributions. Participants' cumulative scores for each of the examination types are compared with the maximum possible scores after every distribution.

Overall performance of your results submitted

Your laboratory performed **12** examinations for the last six distributions.

#### Pathogen examinations

Your total score is 100 out of 122 (82.0%)

#### ACC

Your total score is 20 out of 24 (83.3%)

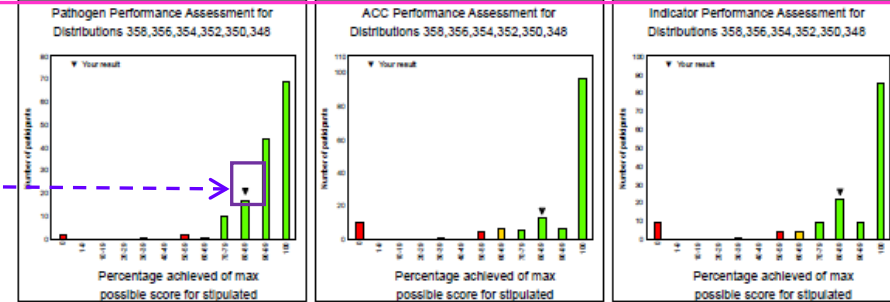
#### Indicator organisms

Your total score is 20 out of 24 (83.3%)

Results for your laboratory for the last six distributions

Distribution	Sample	Examination	Your score	Your %	Sample	Examination	Your score	Your %
358	S0753	Pathogen	10 out of 10	100	S0754	Pathogen	12 out of 12	100
	S0753	ACC	2 out of 2	100	S0754	ACC	2 out of 2	100
	S0753	Indicator	2 out of 2	100	S0754	Indicator	2 out of 2	100
356	S0749	Pathogen	10 out of 12	83.3	S0750	Pathogen	12 out of 12	100
	S0749	ACC	2 out of 2	100	S0750	ACC	2 out of 2	100
	S0749	Indicator	2 out of 2	100	S0750	Indicator	2 out of 2	100
354	S0745	Pathogen	10 out of 10	100	S0746	Pathogen	10 out of 10	100
	S0745	ACC	2 out of 2	100	S0746	ACC	2 out of 2	100
	S0745	Indicator	2 out of 2	100	S0746	Indicator	2 out of 2	100
352	S0741	Pathogen	10 out of 10	100	S0742	Pathogen	10 out of 10	100
	S0741	ACC	2 out of 2	100	S0742	ACC	2 out of 2	100
	S0741	Indicator	2 out of 2	100	S0742	Indicator	2 out of 2	100
350	S0737	Pathogen	0 out of 10	0.0	S0738	Pathogen	0 out of 10	0.0
	S0737	ACC	0 out of 2	0.0	S0738	ACC	0 out of 2	0.0
	S0737	Indicator	0 out of 2	0.0	S0738	Indicator	0 out of 2	0.0
348	S0733	Pathogen	8 out of 8	100	S0734	Pathogen	8 out of 8	100
	S0733	ACC	2 out of 2	100	S0734	ACC	2 out of 2	100
	S0733	Indicator	2 out of 2	100	S0734	Indicator	2 out of 2	100

Your overall performance



Overall performance graph for the last six distributions for all laboratories

Comments on performance Assessment and information on where get advice

#### Performance Assessment Comment:

Laboratories that achieve less than 70% of the maximum possible score are likely to be experiencing significant problems with their examinations and are advised to

- refer to the relevant sample reports for specific comments
- refer to the website guidance documents: <https://www.gov.uk/government/collections/external-quality-assessment-ega-and-proficiency-testing-pt-for-food-water-and-environmental-microbiology>
- contact the organisers for advice.

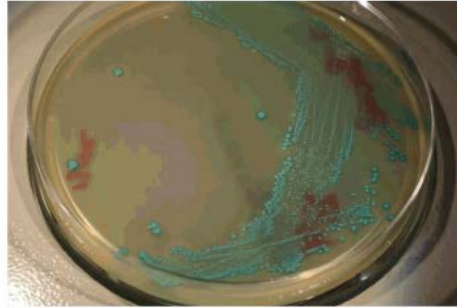


Sample specific comment

Sample specific comment

S0753 – *Listeria monocytogenes*

21/117 (18%) failed to recognise/isolate the *L. monocytogenes* in the sample. The level of *L. monocytogenes* was lower compared to the *Listeria innocua*. The colonies are distinguishable on Ottaviani and Agosti (ALOA) agar; *L. monocytogenes* produces a halo and *L. innocua* does not (see photos below). In the FEPTU laboratory there were very few colonies of *L. monocytogenes* growth on the ALOA agar both at half and full Fraser sub-cultures, therefore laboratories reporting a false negative result have been awarded the correct score when a detected result for the *Listeria* spp. has been reported.



Half-Fraser subculture on ALOA; incubated at 37°C for 48 hours



Full-Fraser subculture on ALOA; incubated at 37°C for 48 hours

General comments

General distribution comment:

Participants are reminded if you do not examine a specific parameter you must return your results as 'Not examined' as this impacts the overall scores awarded.

General comments on methods:

Participants that did not provide information on the method and testing conditions, their data is not included in the method graphs and tables. This information is useful; therefore, participants are encouraged to complete these details.

Method based presentation tables for enumeration results:

Participants are advised if less than 10 laboratories report an enumeration result for a method, no data is shown for the Median, Robust SD and the Range Reported. Numbers shown in the 'Excluded Results' column are laboratories that reported a censored value.