UK Health Security Agency

Summary of Results

External Quality Assessment for Food Microbiology

European Food Microbiology Legislation Scheme

Distribution Number: **EFL61**

Sample Numbers: **EFL181, EFL182 & EFL183**

Distribution Date:	**January 2023**
Results Due:	**3 March 2023**
Report Date:	**21 March 2023**
Samples prepared and quality control tested by:	**Divya George** **Nafeesa Hussain** **Cansev Katar** **Zak Prior** **Jake Videlefsky**
Data analysed by:	**Joanna Donn** **Nita Patel**
Report compiled by:	**Nita Patel**
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Lab no:

This Scheme provides external quality assessment samples for laboratories that examine foods products in accordance with European legislation specified in Regulation (EC) 2073/2005 Microbiological Criteria for Foodstuffs associated with Regulation (EC) 852/2004 and subsequent amendments

If you require further information about the scheme please refer to:

Scheme Guide: https://www.gov.uk/government/publications/food-and-water-proficiency-testing-schemes-scheme-guide

Guide to Scoring:
https://www.gov.uk/government/publications/food-and-water-proficiency-testing-schemes-scoring-systems-and-statistics

FEPTU Quality Control:

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

Intended results letters are published immediately after every distribution; electronic notification of their availability is sent to all participants.

If you experience difficulties with any of the examinations please refer to section 17.0 of the Scheme Guide

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. 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.

Please contact FEPTU staff for advice and information:

Repeat samples	Carmen Gomes or Kermin Daruwalla	**Tel: +44 (0)20 8327 7119**
Data analysis	Nita Patel	
Microbiological advice	Nita Patel or Zak Prior	**E-mail: foodeqa@ukhsa.gov.uk**
General comments and complaints	Nita Patel or Zak Prior	**FEPTU Website**
Scheme Consultant	Melody Greenwood, Nicola Elviss and Caroline Willis	
Scheme Co-ordinator	Nita Patel	

Accreditation: UKHSA European Food Microbiology Legislation Scheme is accredited by the United Kingdom Accreditation Service (UKAS) to ISO/IEC 17043:2010

UKAS PROFICIENCY TESTING
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Total number of participants sent distribution EFL61	**20**
Number of laboratories not returning a result for any samples in EFL61	**0**
Number of laboratories not examining any of the samples in EFL61	**1**

Sample: EFL181

Sample Details: Cut fruit salad sampled during the manufacturing process

Sample Request: Test to determine whether this sample complies with the relevant criteria stipulated in Commission Regulation (EC) No. 2073/2005 as amended

Applicable food categories are 1.2 and 2.5.1

Batch Conclusion: Unsatisfactory. The batch does not comply with the Legislation

Contents: *Escherichia coli* ($1.9x10^3$) (wild strain)
Enterococcus faecalis ($9.4x10^3$) (wild strain)
Providencia rettgeri (too low to determine levels) (NCTC 11801)
Pseudomonas putida ($2.6x10^6$) (wild strain)

All levels are presented as colony forming units (cfu) per g/ml reconstituted sample unless otherwise stated

Required examinations: *Listeria monocytogenes* and *Escherichia coli*

Examination 1- *Listeria monocytogenes*:

Examination	Expected Result	Your result	Your score
Applicable food category	1.2		
Name of examination	*Listeria monocytogenes*		
Stipulated method*	EN ISO 11290-1*		
Amount of sample examined	25		
No. of samples from a batch required for compliance	5		
Expected range	Not detected		
Limits for compliance	Not detected in 25g		
Conclusion about this examination from result obtained	Your conclusion has been scored in relation to your reported result		
* The most recent edition of the standard should be used		Total score out of	

Comments on Performance:

Number of participants correctly reporting not detected for *L. monocytogenes* as part of food category 1.2	14
Number of participants correctly reporting not detected, but provided an incorrect examination name for food category 1.2	2
Number of participants correctly stating that *L. monocytogenes* test is required as part of food category 1.2, but did not undertake the test	1
Number of participants correctly using EN ISO 11290-1	17

Number of participants not indicating that *L. monocytogenes* testing is required for compliance	2

Sample: EFL181 (continued)

Examination 2 – *Escherichia coli*

Examination	Expected Result	Your result	Your score
Applicable food category	2.5.1		
Name of examination	*Escherichia coli*		
Stipulated method*	EN ISO 16649-1 or 2*		
Amount of sample examined	-		
No. of samples from a batch required for compliance	5		
Expected range	$6.10x10^2$ - $6.10x10^3$		
Limits for compliance	m=100 cfu g^{-1}; M=1000 cfu g^{-1}; C=2		
Conclusion about this examination from result obtained	Your conclusion has been scored in relation to your reported result		
* The most recent edition of the standard should be used		Total score out of	

Comments on Performance:

Number of participants correctly reporting a count for *E. coli* as part of food category 2.5.1	18
Number of participants correctly stating that an *E. coli* test is required as part of food category 2.5.1, but did not undertake the test	1
Number of participants correctly using EN ISO 16649-1	6
Number of participants correctly using EN ISO 16649-2	12
Number of participants using an in-house method	1

Assigned value (participants' median)	$1.93x10^3$ cfu g^{-1} (3.29 $\log_{10}$)
Uncertainty of assigned value ($U(X_{pt})$= $\log_{10}$ cfu g^{-1})	0.03
Participants mean	$1.88x10^3$ cfu g^{-1} (3.27 $\log_{10}$)
Standard deviation of participants results *	0.10 $\log_{10}$ cfu g^{-1}
FEPTU QC median	$1.85x10^3$ cfu g^{-1} (3.27 $\log_{10}$)

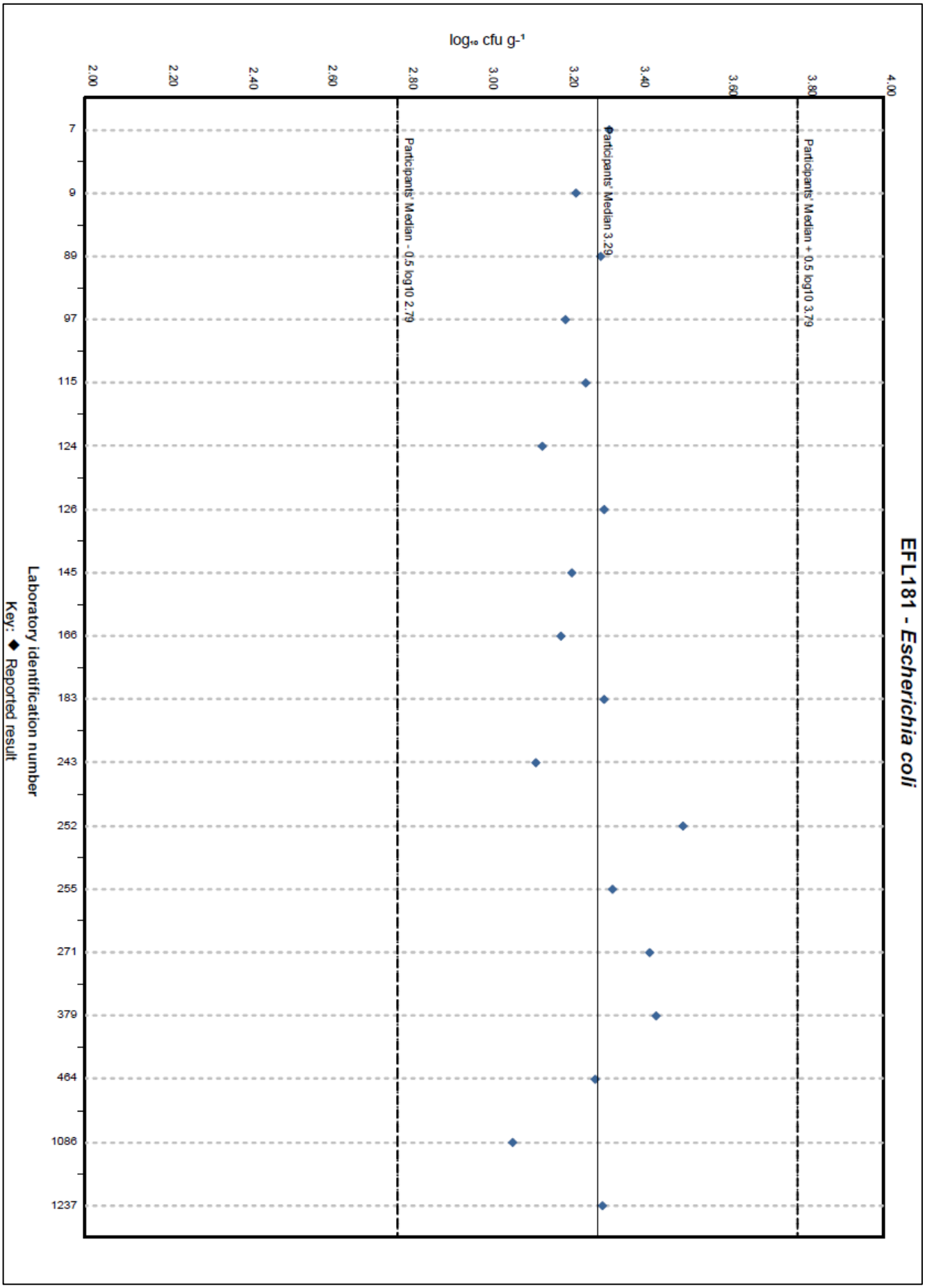
The fixed standard deviation value (σ_{pt} value) used for calculation of the z-scores is 0.35 for all parameters

* Robust *S** based on median absolute deviation about the participants' median (*MADe*)

Sample specific comment

Three laboratories additionally examined this sample for *Salmonella* spp. this test is not required to determine compliance with the legislation when sampled during the manufacturing process.

	Your result	Your score
Overall batch conclusion		
Bonus score		


EFL181 - Escherichia coli
log₁₀ cfu g-¹
2.00
2.20
2.40
2.60
2.80
3.00
3.20
3.40
3.60
3.80
4.00
Participants' Median - 0.5 log10 2.79
Participants' Median 3.29
Participants' Median + 0.5 log10 3.79
Laboratory identification number
7
9
89
97
115
124
126
145
166
183
243
252
255
271
379
464
1086
1237
Key: ◆ Reported result

Sample: EFL182

Sample Details: Cottage cheese made from raw milk sampled from a 4ºC refrigerator from a local supermarket

Sample Request: Test to determine whether this sample complies with the relevant criteria stipulated in Commission Regulation (EC) No. 2073/2005 as amended

Applicable food categories are 1.2 and 1.11

Batch conclusion Unsatisfactory. The batch does not comply with the Legislation

Contents: *Listeria monocytogenes* (80) (wild strain)
Salmonella Indiana (19 per disc) (NCTC 11304)
Lactococcus lactis ($2.0x10^4$) (wild strain)
Micrococcus sp. ($8.8x10^3$) (wild strain)

All levels are presented as colony forming units (cfu) per g/ml reconstituted sample unless otherwise stated

Required examinations: *Listeria monocytogenes* and *Salmonella* spp.

Examination 1 – *Listeria monocytogenes*

Examination	Expected Result	Your result	Your score
Applicable food category	1.2		
Name of examination	*Listeria monocytogenes*		
Stipulated method*	EN ISO 11290-2*		
Amount of sample examined	-		
No. of samples from a batch required for compliance	5		
Expected range	35 – $3.48x10^2$		
Limits for compliance	m=100 cfu g^{-1}; M=100 cfu g^{-1}; C=0		
Conclusion about this examination from result obtained	Your conclusion has been scored in relation to your reported result		
* The most recent edition of the standard should be used		Total score out of	

Comments on Performance:

Number of participants correctly reporting a count for *L. monocytogenes* as part of food category 1.2	17
Number of participants correctly reporting a count, but provided an incorrect examination name for food category 1.2	1
Number of participants correctly stating that a *L. monocytogenes* test is required as part of food category 1.2, but did not undertake the test	1
Number of participants correctly using EN ISO 11290-2	19

Assigned value (participants' median)	$1.09x10^2$ cfu g^{-1} (2.04 $\log_{10}$)
Uncertainty of assigned value ($U(X_{pt})$= $\log_{10}$ cfu g^{-1})	0.04
Participants mean	$1.03x10^2$ cfu g^{-1} (2.02 $\log_{10}$)
Standard deviation of participants results *	0.12 $\log_{10}$ cfu g^{-1}
FEPTU QC median	79 cfu g^{-1} (1.90 $\log_{10}$)

The fixed standard deviation value (σ_{pt} value) used for calculation of the z-scores is 0.35 for all parameters

* Robust *S** based on median absolute deviation about the participants' median (*MADe*)

Sample: EFL182 (continued)

Examination 2 – *Salmonella* spp.

Examination	Expected Result	Your result	Your score
Applicable food category	1.11		
Name of examination	*Salmonella* spp.		
Stipulated method*	EN ISO 6579-1*		
Amount of sample examined	25		
No. of samples from a batch required for compliance	5		
Expected range	Detected in 25g		
Limits for compliance	Not detected in 25g		
Conclusion about this examination from result obtained	Your conclusion has been scored in relation to your reported result		
* The most recent edition of the standard should be used		Total score out of	

Comments on Performance:

Number of participants correctly reporting detected for *Salmonella* spp. as part of food category 1.11	13
Number of participants reporting not detected for *Salmonella* spp. as part of food category 1.11	5
Number of participants correctly stating that a Salmonella spp. test is required as part of food category 1.11, but did not undertake the test	1
Number of participants correctly using EN ISO 6579-1	19

Sample specific comment

Five laboratories reported a not-detected result for this examination. The *Salmonella* Indiana in this sample was a non-hydrogen sulphide (H2S) producing and a lactose fermenting strain. In the FEPTU laboratory (following the enrichment process) this organism grew as small round yellow 1mm colonies on xylose lysine deoxycholate (XLD) agar following incubation at 37ºC for 24 hours. On brilliant green agar (BGA) this organism grew as round green-yellow 1mm colonies following incubation at 37ºC for 24 hours. ISO 6579-1 section 9.4.1 states to choose a second selective plating medium which is complementary to XLD agar and is based on different diagnostic characteristics to those of XLD agar to facilitate detection of, for instance, lactose positive or H2S negative *Salmonella.*

Laboratories using XLD and BGA media will have struggled to recognise that a *Salmonella* spp. was in the sample. A mini questionnaire was sent to laboratories who reported a result for this examination to determine the processes laboratories follow.

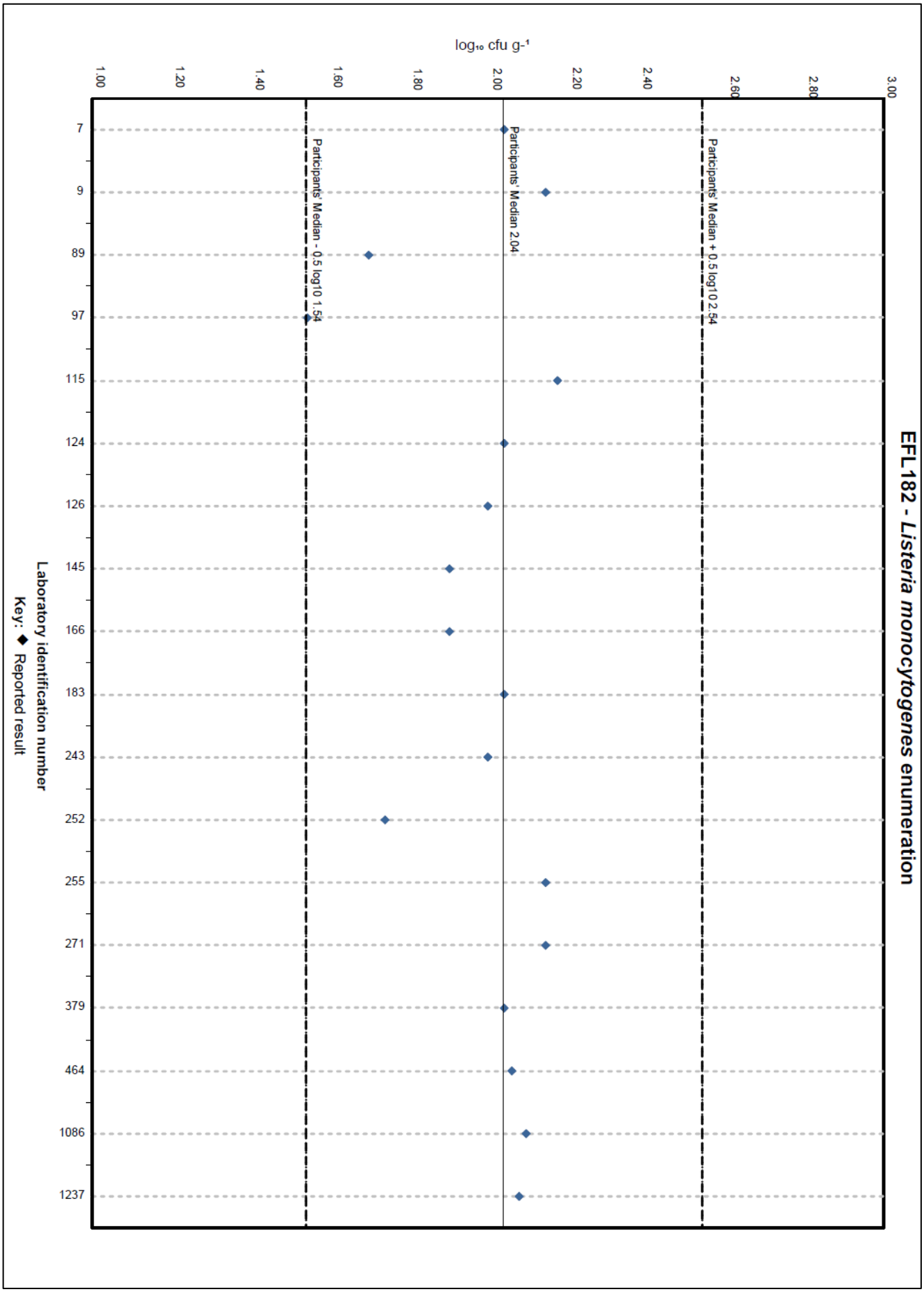
The following is a summary of the findings:

- 15/19 (79%) of the laboratories provided a response to some or all of the questions
- All 15 laboratories used XLD agar as their primary isolation medium
- The secondary isolation medium used varied, nine used BGA, four used a CHROMagar™ *Salmonella*, one used Bio-Rad RAPID *Salmonella* medium and one used IRIS *Salmonella* Biokar.
- 10 laboratories provided details on the colony description, six laboratories used a combination of XLD and BGA and reported that no typical colonies were observed, however three of these laboratories did go on to do further confirmation tests. The other four laboratories used a medium other than BGA, isolated a *Salmonella* and also went on to do further confirmation tests.
- The confirmation tests done on isolated colonies ranged from an API, MALDIToF, Vitex, serology tests using a *Salmonella* polyvalent for ‘O’ and ‘H’ antigens, molecular testing and various conventional tests.

Laboratories reporting a false negative result for this examination should request a repeat sample for their own investigation. This examination has been scored to raise awareness as official control laboratories that your laboratory should be aware of the limitation of media used and the impact on public health when false negative results are reported.

Six laboratories additionally examined this sample for coagulase positive staphylococci, and one laboratory for *Staphylococcus aureus;* these tests are not required to determine compliance with the legislation when sampled from the market.

	Your result	**Your score**
Overall batch conclusion		
Bonus score		


EFL182 - Listeria monocytogenes enumeration
log₁₀ cfu g⁻¹
1.00
1.20
1.40
1.60
1.80
2.00
2.20
2.40
2.60
2.80
3.00
Participants' Median - 0.5 log10 1.54
Participants' Median 2.04
Participants' Median + 0.5 log10 2.54
7
9
89
97
115
124
126
145
166
183
243
252
255
271
379
464
1086
1237
Laboratory identification number
Key: ◆ Reported result

Sample: EFL183

Sample Details: Cooked chilli and coriander king prawns sampled at the end of the manufacturing process

Sample Request: Test to determine whether this sample complies with the relevant criteria stipulated in Commission Regulation (EC) No. 2073/2005 as amended

Applicable food categories are 1.2 and 2.4.1

Batch Conclusion: The batch does not comply with the legislation

Contents: *Staphylococcus aureus* ($1.4x10^4$) (wild strain)
Escherichia coli ($1.6x10^4$) (wild strain)
Kocuria kristinae ($6.5x10^2$) (wild strain)

All levels are presented as colony forming units (cfu) per g/ml reconstituted sample unless otherwise stated

Required examinations: *Listeria monocytogenes, Escherichia coli and* Coagulase-positive staphylococci

Examination 1- *Listeria monocytogenes*

Examination	Expected Result	Your result	Your score
Applicable food category	1.2		
Name of examination	*Listeria monocytogenes*		
Stipulated method*	EN ISO 11290-1*		
Amount of sample examined	25g		
No. of samples from a batch required for compliance	5		
Expected range	Not detected in 25g		
Limits for compliance	Not detected in 25g		
Conclusion about this examination from result obtained	Your conclusion has been scored in relation to your reported result		
* The most recent edition of the standard should be used		Total score out of	

Comments on Performance:

Number of participants correctly reporting not detected for *L. monocytogenes* as part of food category 1.2	18
Number of participants correctly using EN ISO 11290-1	18

Number of participants not indicating that *L. monocytogenes* testing is required for compliance	1

Sample: EFL183 (continued)

Examination 2 – *Escherichia coli*

Examination	Expected Result	Your result	Your score
Applicable food category	2.4.1		
Name of examination	*Escherichia coli*		
Stipulated method*	EN ISO/TS 16649-3*		
Amount of sample examined	-		
No. of samples from a batch required for compliance	5		
Expected range	Not determined - see comment below		
Limits for compliance	m=1 MPN g^{-1}; M=10 MPN g^{-1}; C=2		
Conclusion about this examination from result obtained	Your conclusion has been scored in relation to your reported result		
		Total score out of	

* The most recent edition of the standard should be used

Comments on Performance:

Number of participants correctly reporting a count for *E. coli* as part of food category 2.4.1	15
Number of participants correctly stating that a *E. coli* test is required as part of food category 2.4.1, but did not undertake the test	3
Number of participants correctly using EN ISO/TS 16649-3	14
Number of participants incorrectly using EN ISO 16649-2	1
Number of participants using an in-house method	1
Number of participants using the TEMPO method	1

Number of participants not indicating that *E. coli* testing is required for compliance	1

Sample specific comment

The statistical analysis for this examination has not been calculated as most laboratories reported a high censored value.

Sample: EFL183 (continued)

Examination 3 – Coagulase-positive staphylococci

Examination	Expected Result	Your result	Your score
Applicable food category	2.4.1		
Name of examination	Coagulase-positive staphylococci		
Stipulated method*	EN ISO 6888-1*		
Amount of sample examined	-		
No. of samples from a batch required for compliance	5		
Expected range	$4.62x10^3$ - $4.62x10^4$		
Limits for compliance	m=100 cfu g^{-1}; M=1000 cfu g^{-1}; C=2		
Conclusion about this examination from result obtained	Your conclusion has been scored in relation to your reported result		
* The most recent edition of the standard should be used		Total score out of	

Comments on Performance:

Number of participants correctly reporting a count for Coagulase-positive staphylococci as part of food category 2.4.1	15
Number of participants correctly reporting a count, but provided an incorrect examination name for food category 2.4.1	2
Number of participants correctly stating that a Coagulase-positive staphylococci test is required as part of food category 2.4.1, but did not undertake the test	1
Number of participants correctly using EN ISO 6888-1	14
Number of participants correctly using EN ISO 6888-2	3
Number of participants using an in-house method	1

Number of participants not indicating that Coagulase-positive staphylococci testing is required for compliance	1

Assigned value (participants' median)	$1.46x10^4$ cfu g^{-1} (4.16 $\log_{10}$)
Uncertainty of assigned value ($U(X_{pt})$= $\log_{10}$ cfu g^{-1})	0.04
Number of outlying counts	2 low
Participants mean	$1.41x10^4$ cfu g^{-1} (4.15 $\log_{10}$)
Standard deviation of participants results *	0.15 $\log_{10}$ cfu g^{-1}
FEPTU QC median	$1.40x10^4$ cfu g^{-1} (4.15 $\log_{10}$)

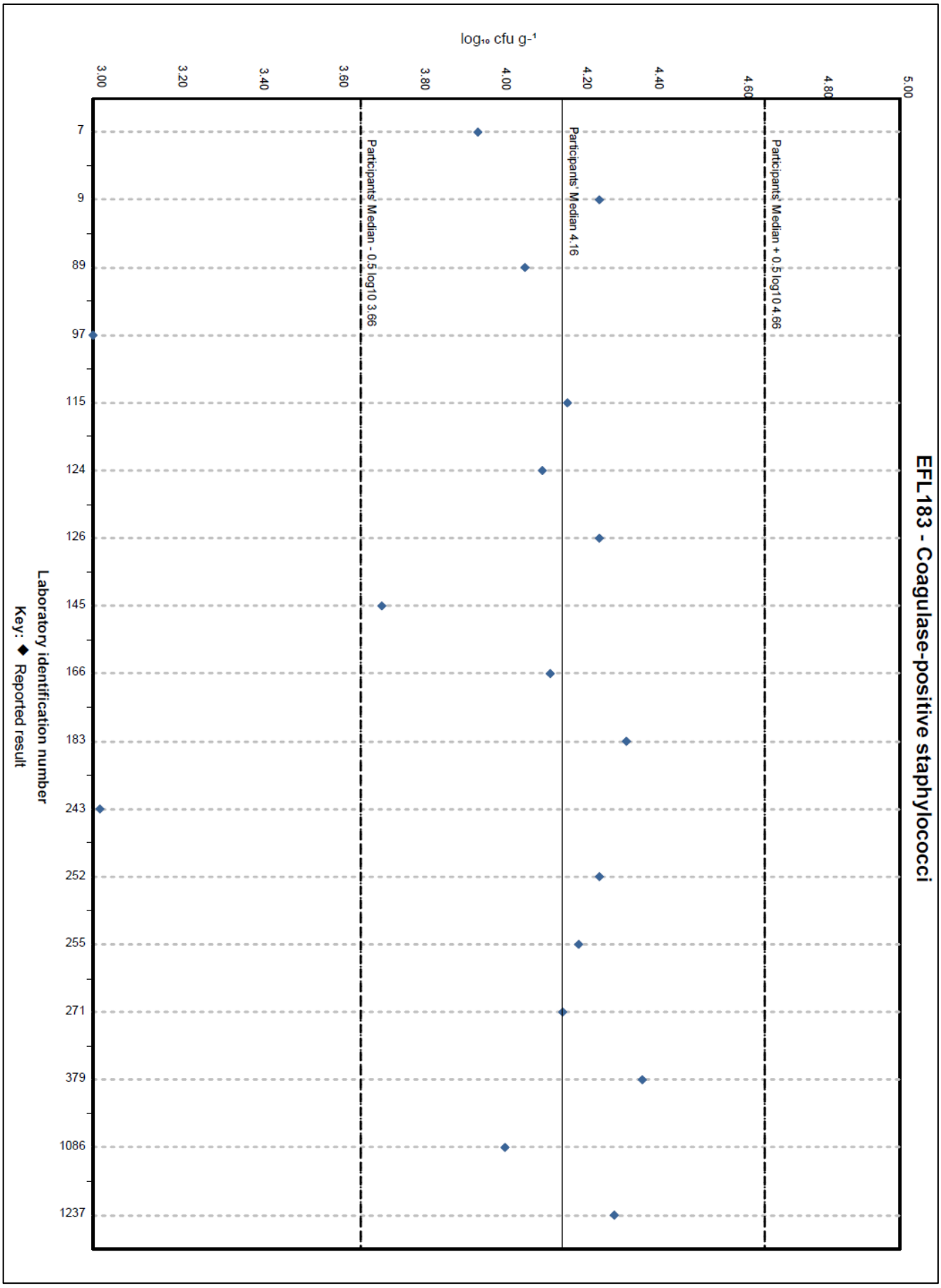
The fixed standard deviation value (σ_{pt} value) used for calculation of the z-scores is 0.35 for all parameters

* Robust *S** based on median absolute deviation about the participants' median (*MADe*)

Sample specific comment

One laboratory additionally examined this sample for *Salmonella* spp.; this test is not required to determine compliance with the legislation when sampled at the end of the manufacturing process.

	Your result	Your score
Overall batch conclusion		
Bonus score		


EFL183 - Coagulase-positive staphylococci
log₁₀ cfu g⁻¹
3.00
3.20
3.40
3.60
3.80
4.00
4.20
4.40
4.60
4.80
5.00
Participants' Median + 0.5 log10 4.66
Participants' Median 4.16
Participants' Median - 0.5 log10 3.66
7
9
89
97
115
124
126
145
166
183
243
252
255
271
379
1086
1237
Laboratory identification number
Key: ◆ Reported result

Performance Assessment Sheet

Previous distribution scores are provided in your previous scheme report.

Distribution	Sample	Examination	Your score	Your % score overall for the sample
EFL61	**EFL181**	*Listeria monocytogenes*		
	EFL181	*Escherichia coli*		
	EFL181	Overall batch conclusion		
	EFL181	Bonus score		
	EFL182	*Listeria monocytogenes*		
	EFL182	*Salmonella* spp.		
	EFL182	Overall Batch Conclusion Score		
	EFL182	Bonus Score		
	EFL183	*Listeria monocytogenes*		
	EFL183	*Escherichia coli*		
	EFL183	Coagulase positive staphylococci		
	EFL183	Overall Batch Conclusion Score		
	EFL183	Bonus Score		

Performance Assessment Comment:

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 three distributions. Participants' cumulative scores for each of the examination types are compared with the maximum possible scores after every distribution.

Performance Assessment Comment.

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

a) refer to the relevant sample reports for specific comments

b) refer to the website guidance documents:

https://www.gov.uk/government/collections/external-quality-assessment-eqa-and-proficiency-testing-pt-for-food-water-and-environmental-microbiology

c) contact the organisers for advice.

General comment:

Participants are reminded that decisions on appropriate testing should be based on fact, not assumptions.

Please refer to pages 13 and 14 of the guide to scoring document for more information.
https://www.gov.uk/government/publications/food-and-water-proficiency-testing-schemes-scoring-systems-and-statistics

It is important that when entering your results all fields where a score is applied are correctly completed.

Participants are reminded to at least record the applicable food category with the name of the organism / examination if you do not carry out a test. This will demonstrate your understanding of the legislation requirements and for your laboratory to be awarded the bonus scores.

If you do not return a result for a distribution, you will not be able to view all the participants' results data in your individualised report. To access the missing data contact us on foodeqa@ukhsa.gov.uk.

End of report.