

# AmpliSens® Escherichioses–FRT PCR kit



For Professional Use Only

## Instruction Manual

### KEY TO SYMBOLS USED

	Catalogue number		Caution
	Batch code		Sufficient for
	<i>In vitro</i> diagnostic medical device		Use-by Date
	Version		Consult instructions for use
	Temperature limit		Keep away from sunlight
	Manufacturer		Negative control of amplification
	Date of manufacture		Negative control of extraction
	Authorized representative in the European Community		Positive control of amplification
	Enterotoxigenic <i>E. coli</i>		Internal control
	Enterohemorrhagic <i>E. coli</i>		Enteropathogenic <i>E. coli</i>
	Enteraggregative <i>E. coli</i>		Enteroinvasive <i>E. coli</i>

### 1. INTENDED USE

AmpliSens® Escherichioses-FRT PCR kit is an *in vitro* nucleic acid amplification test for qualitative detection and differentiation of diarrheagenic *E. coli* (*EPEC*, *ETEC*, *EIEC* (in conjunction with *Shigella* spp.), *EHEC*, *EAgEC*) DNA in environmental samples and clinical material by real-time hybridization-fluorescence detection of amplified products.

**NOTE:** The results of PCR analysis are taken into account in complex diagnostics of disease.

### 2. PRINCIPLE OF PCR DETECTION

Detection of different groups of diarrheagenic *E. coli* (*EPEC*, *ETEC*, *EIEC* (in conjunction with *Shigella* spp.), *EHEC*, *EAgEC*) by the polymerase chain reaction (PCR) is based on the amplification of pathogen genome specific region using specific primers. In real-time PCR, the amplified product is detected with the use of fluorescent dyes. These dyes are linked to oligonucleotide probes which bind specifically to the amplified product during thermocycling. The real-time monitoring of fluorescence intensities during the real-time PCR allows the detection of accumulating product without re-opening the reaction tubes after the PCR run.

AmpliSens® Escherichioses-FRT PCR kit is a qualitative test that contains the Internal Control (IC). It must be used in the isolation procedure in order to control the isolation process of each individual sample and to identify possible reaction inhibition.

AmpliSens® Escherichioses-FRT PCR kit uses "hot-start," which greatly reduces the frequency of nonspecifically primed reactions. "Hot-start" is guaranteed by separation of nucleotides and Taq-polymerase by using a chemically modified polymerase (TaqF). The chemically modified polymerase (TaqF) is activated by heating at 95 °C for 15 min. The results of amplification are registered in the following fluorescence channels:

Table 1

Channel for fluorophore	FAM	JOE	ROX
<b>PCR-mix-1-FEP/FRT <i>EIEC</i> / <i>EHEC</i> / <i>STI</i></b>			
DNA-target	Internal Control-FL (IC) DNA	<i>EHEC</i> DNA	<i>EIEC</i> DNA
Target gene	Artificially synthesized sequence	Stx1/2 (Shiga Toxin type 1 and 2 genes)	ipaH (Invasion plasmid antigen)
<b>PCR-mix-1-FEP/FRT <i>EPEC</i> / <i>ETEC</i> / <i>EAgEC</i></b>			
DNA-target	<i>EAgEC</i> DNA	<i>EPEC</i> DNA	<i>ETEC</i> DNA
Target gene	aggR transcriptional activator of fimbria gene	eae intimin protein gene	LT (Heat-labile enterotoxin gene)

### 3. CONTENT

AmpliSens® Escherichioses-FRT PCR kit is produced in 1 form:

variant FRT-50 F, R-B62(RG,iQ)-CE.

Variant FRT-50 F includes:

Reagent	Description	Volume, ml	Quantity
PCR-mix-1-FEP/FRT <i>EIEC</i> / <i>EHEC</i> / <i>STI</i>	clear liquid from colorless to light lilac colour	0.6	1 tube
PCR-mix-1-FEP/FRT <i>EPEC</i> / <i>ETEC</i> / <i>EAgEC</i>	clear liquid from colorless to light lilac colour	0.6	1 tube
PCR-mix-2-FRT	colorless clear liquid	0.3	2 tubes
Polymerase (TaqF)	colorless clear liquid	0.03	2 tubes
Positive Control DNA <i>EIEC</i> / <i>EHEC</i> / <i>STI</i> (C+ <i>EIEC</i> / <i>EHEC</i> / <i>STI</i> )	colorless clear liquid	0.1	1 tube
Positive Control DNA <i>EPEC</i> / <i>ETEC</i> / <i>EAgEC</i> (C+ <i>EPEC</i> / <i>ETEC</i> / <i>EAgEC</i> )	colorless clear liquid	0.1	1 tube
DNA-buffer	colorless clear liquid	0.5	1 tube
Negative Control (C-)*	colorless clear liquid	1.2	1 tube
Internal Control-FL (IC)**	colorless clear liquid	1.0	1 tube

\* must be used in the extraction procedure as Negative Control of Extraction.

\*\* add 10 µl of Internal Control-FL (IC) during the DNA extraction procedure directly to the sample/lysis mixture (see DNA-sorb-B, K1-2-50-CE, RIBO-sorb K1-1-Et-50-CE, or RIBO-prep K2-9-Et-50-CE protocols).

Variant FRT-50 F is intended for 55 reactions (including controls).

### 4. ADDITIONAL REQUIREMENTS

- DNA extraction kit.
- Disposable powder-free gloves and laboratory coat.
- Pipettes (adjustable).
- Sterile pipette tips with aerosol barriers (up to 200 µl).
- Tube racks.
- Vortex mixer.
- Desktop centrifuge with rotor for 2-ml reaction tubes.
- PCR box.
- Personal thermocyclers (for example, Rotor-Gene 3000 or Rotor-Gene 6000 (Corbett Research, Australia), iCycler iQ or iQ5 (Bio-Rad, USA), or equivalent).
- Disposable polypropylene microtubes for PCR (0.5- or 0.2-ml; for example, Axygen, USA).
- Refrigerator for 2–8 °C.
- Deep-freezer at the temperature from minus 24 to minus 16 °C.
- Reservoir for used tips.

### 5. GENERAL PRECAUTIONS

The user should always pay attention to the following:

- Use sterile pipette tips with aerosol filters and use a new tip for every procedure.
- Store all extracted positive material (specimens, controls and amplicons) away from all other reagents and add it to the reaction mix in a distantly separated facility.
- Thaw all components thoroughly at room temperature before starting an assay.
- When thawed, mix the components and centrifuge briefly.
- Use disposable protective gloves and laboratory cloths, and protect eyes while samples and reagents handling. Thoroughly wash hands afterwards.
- Do not eat, drink, smoke, apply cosmetics, or handle contact lenses in laboratory work areas.
- Do not use a kit after its expiration date.
- Dispose of all specimens and unused reagents in accordance with local regulations.
- Samples should be considered potentially infectious and handled in biological cabinet in compliance with appropriate biosafety practices.
- Clean and disinfect all samples or reagents spills using a disinfectant, such as 0.5 % sodium hypochlorite or another suitable disinfectant.
- Avoid inhalation of vapors, samples and reagents contact with the skin, eyes, and mucous membranes. Harmful if swallowed. If these solutions come into contact, rinse the injured area immediately with water and seek medical advice if necessary.
- Safety Data Sheets (SDS) are available on request.
- Use of this product should be limited to personnel trained in DNA amplification techniques.
- Workflow in the laboratory must be one-directional, beginning in the Extraction Area and moving to the Amplification and Detection Area. Do not return samples, equipment and reagents in the area where the previous step was performed.



Some components of this kit contain sodium azide as a preservative. Do not use metal tubing for reagent transfer.

## 6. SAMPLING AND HANDLING

Obtaining samples of biological materials for PCR-analysis, transportation and storage are described in the manufacturer's handbook [1]. It is recommended that this handbook is read before starting work.

AmpliSens® Escherichioses-FRT PCR kit is intended for the analysis of DNA extracted with DNA extraction kits from the environmental samples and clinical material:

- water samples (pretreatment is not required);
- feces (pretreatment should be carried out as described in manufacturer's handbook [1]).

## 7. WORKING CONDITIONS

AmpliSens® Escherichioses-FRT PCR kit should be used at 18–25 °C.

## 8. PROTOCOL

### 8.1. DNA extraction

It is recommended to use the following nucleic acid extraction kits:

- DNA-sorb-B, REF K1-2-50-CE.
- RIBO-sorb, REF K2-1-Et-50-CE.
- RIBO-prep, REF K2-9-Et-50-CE.

NOTE: Extract DNA according to the manufacturer's instructions.

### 8.2. Preparing PCR

The total reaction volume is 25 µl, the volume of DNA sample is 10 µl.

The reaction mixture components should be mixed just before the analysis with respect to the required number of reaction tubes, including test and control samples according to the Table 2.

NOTE: Note that even for the analysis of one test or control DNA sample it is necessary to run all controls of the PCR amplification stage (Positive Control of Amplification (C+), Negative Control of Amplification (NCA) for each type of mixture. It is recommended to mix the reagents for an even number of reactions for the purpose of a more exact dosage.

#### 8.2.1. Preparing tubes for PCR

1. Thaw the reagents and vortex the tubes thoroughly. Make sure that there are no drops on the tube caps.
2. Prepare the required number of tubes (including controls).  
Mix PCR-mix-1-FEP/FRT EIEC/EHEC/STI with PCR-mix-2-FRT and polymerase (TaqF) as well as PCR-mix-1-FEP/FRT EPEC/ETEC/EAgEC with PCR-mix-2-FRT and polymerase (TaqF) (see Table 2). Thoroughly vortex the tubes. Make sure that there are no drops on the tube caps.

Table 2

Scheme of reaction mixture preparation			
Reagent volume per Number of reactions	Reagent volume per specified number of reactions (µl)		
	10.00	5.00	0.50
	PCR-mix-1-FRT	PCR-mix-2-FRT	Polymerase (TaqF)
6	60	30	3.0
8	80	40	4.0
10	100	50	5.0
12	120	60	6.0
14	140	70	7.0
16	160	80	8.0
18	180	90	9.0
20	200	100	10.0
22	220	110	11.0
24	240	120	12.0
26	260	130	13.0
28	280	140	14.0
30	300	150	15.0
32	320	160	16.0

3. Transfer 15 µl of the resultant mixture to the prepared tubes.
4. Add 10 µl of DNA obtained from clinical or control samples using tips with aerosol barrier. Dispose the unused reaction mixture.

NOTE: Avoid transferring sorbent together with the DNA sample in case of extraction by RIBO-sorb or DNA-sorb-B kits.

5. Carry out the control amplification reactions:

- NCA** – Add 10 µl of DNA-buffer to the tube labeled NCA (Negative Control of Amplification).
- C–** – Add 10 µl of the sample extracted from the Negative Control of Extraction to the tube labelled C–.
- C+ EIEC/EHEC/STI** – Add 10 µl of Positive Control DNA EIEC/EHEC/STI to the tube labeled C+ EIEC/EHEC/STI (Positive Control of Amplification) for PCR-mix-1 EIEC/EHEC/STI.
- C+EPEC/ETEC/EAgEC** – Add 10 µl of Positive Control DNA EPEC/ETEC/EAgEC to the tube labeled C+ EPEC/ETEC/EAgEC (Positive Control of Amplification) for PCR-mix-1 EPEC/ETEC/EAgEC.

## 8.2.2. Amplification

1. Program the real-time amplification instrument according to manufacturer's manual. Create a temperature profile on your instrument as follows:

Table 3

Amplification program						
Step	Rotor-type Instruments <sup>2</sup>			Plate-type Instruments <sup>3</sup>		
	Temperature, °C	Time	Cycles	Temperature, °C	Time	Cycles
Hold	95	15 min	1	95	15 min	1
Cycling 1	95	10 s	45	95	10 s	45
	60	25 s fluorescent signal detection		60	25 s fluorescent signal detection	
	72	10 s		72	10 s	

- Fluorescent signal is detected in the channels for the FAM, JOE and ROX fluorophores.
2. Adjust the fluorescence channel sensitivity according to the Important Product Information Bulletin.
  3. Insert tubes into the reaction module of the device.
  4. Run the amplification program with fluorescence detection.
  5. Analyze results after the amplification program is completed.

## 9. DATA ANALYSIS

### 9.1 Results interpretation

Analysis of results is performed by the software of the real-time PCR instrument used by measuring fluorescence signal accumulation in three channels: for FAM, JOE and ROX fluorophores.

The results are interpreted by the presence (or absence) of an intercept between the fluorescence curve and the threshold line set at the specific level that corresponds to the presence (or absence) of a Ct value of the DNA sample in the corresponding column of the results grid.

The principle of interpretation is presented in Table 4.

Table 4

PCR-mix-1	Ct value in the channel for fluorophore			Interpretation
	FAM	JOE	ROX	
PCR-mix-1-FEP/FRT EIEC/EHEC/STI	< boundary value	> boundary value	> boundary value	EIEC/ Shigella spp. and EHEC DNA is not detected
	> or < boundary value	< boundary value	> or < boundary value	EHEC DNA is detected
	> or < boundary value	> or < boundary value	< boundary value	EIEC/ Shigella spp. DNA is detected
	> boundary value	> boundary value	> boundary value	invalid
PCR-mix-1-FEP/FRT EPEC/ETEC/EAgEC	< boundary value	> or < boundary value	> or < boundary value	EAgEC DNA is detected
	> or < boundary value	< boundary value	> or < boundary value	EPEC DNA is detected*
	> or < boundary value	> or < boundary value	< boundary value	ETEC DNA is detected
	> boundary value*	> boundary value	> boundary value	EPEC/ETEC/EAgEC <sup>4</sup> DNA are not detected

\* If Ct value of a sample obtained in the channel for JOE fluorophore is less than the boundary value in case PCR-mix-1-FEP/FRT EIEC/EHEC/STI was used, the "DNA EHEC is detected" result will be displayed.

NOTE: Boundary Ct values are specified in the Important Product Information enclosed to the PCR kit. See also Guidelines [2]

The result of the analysis is considered reliable only if the results obtained for both Positive and Negative Controls of amplification as well as for the Negative Control of extraction are correct (see Table 5).

Table 5

PCR-mix-1	Control	Stage for control	Ct value in the channel for fluorophore		
			FAM	HEX	ROX
PCR-mix-1-FEP/FRT EIEC/EHEC/STI	C-	DNA extraction	< boundary value	> boundary value or absent	> boundary value or absent
	NCA	PCR	> boundary value or absent	> boundary value or absent	> boundary value or absent
	C+ EIEC/EHEC/STI	PCR	< boundary value	< boundary value	< boundary value
PCR-mix-1-FEP/FRT EPEC/ETEC/EAgEC	C-	DNA extraction	> boundary value or absent	> boundary value or absent	> boundary value or absent
	NCA	PCR	> boundary value or absent	> boundary value or absent	> boundary value or absent
	C+ EPEC/ETEC/EAgEC	PCR	< boundary value	< boundary value	< boundary value

## 10. TROUBLESHOOTING

Results of analysis are not taken into account in the following cases:

1. If the signal determined for the Positive Control of Amplification (C+) in the channels for JOE, FAM or ROX is greater than the boundary Ct value, the amplification and detection should be repeated for all samples in which DNA of different groups of diarrheagenic E.coli was not detected in the respective channel with the corresponding PCR-mix-1-FEP/FRT.
2. If the signal determined for the Negative Control of Extraction (C–) (except for PCR-mix-1-FEP/FRT EIEC/EHEC/STI in the channel for FAM fluorophore) and/or the Negative Control of Amplification (NCA) in the all channels less than the boundary Ct value, the PCR analysis should be repeated starting from the DNA extraction stage for all samples in which DNA of pathogens was detected in the corresponding channel.

If you have any further questions or if you encounter problems, please contact our Authorized representative in the European Community.

<sup>1</sup> The number of samples and IC (N), controls of amplification, and one extra sample (N+3+1)

<sup>2</sup> For example, Rotor-Gene 3000, Rotor-Gene 6000, Rotor-Gene Q, or equivalent.

<sup>3</sup> For example, iCycler iQ, iQ5, Mx3000P, Mx3000, or equivalent.

<sup>4</sup> If the result is positive for PCR-mix-1-FEP/FRT EIEC/EHEC/STI in the FAM channel.

## 11. TRANSPORTATION

**AmpliSens® Escherichioses-FRT** PCR kit should be transported at 2–8 °C for no longer than 5 days.

## 12. STABILITY AND STORAGE

All components of the **AmpliSens® Escherichioses-FRT** PCR kit (except for PCR-mix-1-FEP/FRT *EIEC* / *EHEC* / *STI*, PCR-mix-1-FEP/FRT *EPEC* / *ETEC* / *EAgEC*, PCR-mix-2-FRT, and polymerase (TaqF)) are to be stored at 2–8 °C when not in use. All components of the **AmpliSens® Escherichioses-FRT** PCR kit are stable until the expiration date stated on the label. The shelf life of reagents before and after the first use is the same, unless otherwise stated.

**NOTE:** PCR-mix-1-FEP/FRT *EIEC* / *EHEC* / *STI*, PCR-mix-1-FEP/FRT *EPEC* / *ETEC* / *EAgEC*, PCR-mix-2-FRT and polymerase (TaqF) are to be stored at the temperature from minus 24 to minus 16 °C

**NOTE:** PCR-mix-1-FEP/FRT *EIEC* / *EHEC* / *STI* and PCR-mix-1-FEP/FRT *EPEC* / *ETEC* / *EAgEC* are to be kept away from light.

## 13. SPECIFICATIONS

### 13.1. Sensitivity

Pathogen	Clinical material	Nucleic acid extraction kit	PCR kit	Sensitivity, GE/ml <sup>5</sup>
<i>EPEC</i>	Feces	RIBO-prep	Variant FRT-50 F	1x10 <sup>3</sup>
<i>ETEC</i>				
<i>EIEC</i> / <i>Shigella</i> spp				
<i>EHEC</i>				
<i>EAgEC</i>				

The claimed analytical performance characteristics of **AmpliSens® Escherichioses-FRT** PCR kit are guaranteed only when additional reagent kits DNA-sorb-B, RIBO-sorb, or RIBO-prep (manufactured by FBIS CRIE) are used.

### 13.2. Specificity

The analytical specificity of **AmpliSens® Escherichioses-FRT** PCR kit is ensured by application of specific primers and probes as well as stringent reaction conditions. The primers and probes were checked for possible homologies to all sequences published in gene banks by sequence comparison analysis. Nonspecific responses were absent during examination of human DNA as well as a DNA panel of the following microorganisms:

- *E.coli* strains: O157H7 No. 4, O157H7 No. 23, O157H7 No. 212, O157H7 No. 214, O157H7 No. 1330, O143, O124 No. 227, O144, O86 No. 990, O125 Carioni, O85, O61 No. 10167b/41, O59 No. 9095/41, No. 409 (O34), K12, 3912/41, Krym No. 56, O148H28 B7a, O6 No. 3091, 113/3, 675, O111 No. 153, O62 10524/41, O126 No. 611, M17, Krym No. 1274, 168/59, O57 8198/41, Krym No. 14169, O48, NCTC 9001.
- Strains of other microorganisms (American Type Culture Collection): *Acinetobacter baumannii* ATCC® 19606™, *Bacteroides fragilis* ATCC® 25285™, *Bordetella bronchiseptica* ATCC® 10580™, *Bordetella bronchiseptica* ATCC® 4617™, *Bordetella pertussis* ATCC® 9340™, *Candida albicans* ATCC® 14053™, *Candida guilliermondii* ATCC® 6260™, *Candida krusei* ATCC® 14243™, *Clostridium difficile* ATCC® 9689™, *Clostridium septicum* ATCC® 12464™, *Corynebacterium jeikeium* ATCC® 43734™, *Corynebacterium xerosis* ATCC® 373™, *Eggerthella lenta* (*Eubacterium lentum*) ATCC® 43055™, *Enterobacter aerogenes* ATCC® 13048™, *Enterobacter cloacae* ATCC® 13047™, *Enterococcus faecalis* ATCC® 29212™, *Enterococcus faecalis* (vancomycin resistant) ATCC® 51299™, *Enterococcus faecium* ATCC® 35667™, *Erysipelothrix rhusiopathiae* ATCC® 19414™, *Escherichia coli* ATCC® 25922™, *Escherichia coli* ATCC® 35218™, *Fluoribacter* (*Legionella*) *dumoffii* ATCC® 33279™, *Haemophilus influenzae* ATCC® 33930™, *Haemophilus influenzae* ATCC® 9006™, *Haemophilus influenzae* ATCC® 10211™, *Haemophilus parainfluenzae* ATCC® 7901™, *Klebsiella oxytoca* ATCC® 49131™, *Klebsiella pneumoniae* ATCC® 27736™, *Legionella pneumophila* ATCC® 33152™, *Listeria grayi* (*murrayi*) ATCC® 25401™, *Listeria innocua* ATCC® 33090™, *Listeria monocytogenes* ATCC® 7644™, *Moraxella* (*Branhamella*) *catarrhalis* ATCC® 25238™, *Moraxella* (*Branhamella*) *catarrhalis* ATCC® 8176™, *Neisseria meningitidis* ATCC® 13102™, *Neisseria meningitidis* ATCC® 13090™, *Neisseria lactamica* ATCC® 23970™, *Neisseria gonorrhoeae* ATCC® 19424™, *Neisseria gonorrhoeae* ATCC® 49926™, *Peptoniphilus* (*Peptostreptococcus*) *anaerobius* ATCC® 27337™, *Proteus mirabilis* ATCC® 12453™, *Proteus vulgaris* ATCC® 6380™, *Propionibacterium acnes* ATCC® 11827™, *Pseudomonas aeruginosa* ATCC® 15442™, *Rhodococcus equi* ATCC® 6939™, *Salmonella enterica* subsp. *enterica* serovar *Typhimurium* ATCC® 14028™, *Serratia marcescens* ATCC® 14756™, *Staphylococcus aureus* ATCC® 6538P™, *Staphylococcus aureus* (*MRSA*) ATCC® 43300™, *Staphylococcus aureus* ATCC® 29213™, *Staphylococcus aureus* ATCC® 25923™, *Staphylococcus aureus* ATCC® 33862™, *Staphylococcus aureus* (*MRSA*) ATCC® 33591™, *Staphylococcus aureus* subsp. *aureus* ATCC® 12600™, *Staphylococcus epidermidis* ATCC® 12228™, *Staphylococcus haemolyticus* ATCC® 29970™, *Staphylococcus saprophyticus* ATCC® 49907™, *Stenotrophomonas maltophilia* ATCC® 13637™, *Stenotrophomonas maltophilia* ATCC® 13637™, *Streptococcus agalactiae* ATCC® 12386™, *Streptococcus agalactiae* ATCC® 13813™, *Streptococcus equisimilis* ATCC® 12388™, *Streptococcus equi* subsp. *equi* ATCC® 9528™, *Streptococcus bovis* (Group D) ATCC® 9809™, *Streptococcus mutans* ATCC® 35668™, *Streptococcus pneumoniae* ATCC® 49619™, *Streptococcus pneumoniae* ATCC® 6303™, *Streptococcus pneumoniae* ATCC® 27336™, *Streptococcus pneumoniae* ATCC® 6305™, *Streptococcus pyogenes* ATCC® 19615™, *Streptococcus salivarius* ATCC® 13419™, *Streptococcus uberis* ATCC® 700407™, *Vibrio parahaemolyticus* ATCC® 17802™, *Vibrio vulnificus* ATCC® 27562™, *Moraxella catarrhalis* ATCC® 25240™.

The specificity of diarrheagenic *E.coli* strains was confirmed by sequence analysis of the studied genome fragments.

The clinical specificity of **AmpliSens® Escherichioses-FRT** PCR kit was confirmed in laboratory clinical trials.

## 14. REFERENCES

1. Handbook "Sampling, Transportation, and Storage of Clinical Material for PCR Diagnostics", developed by Federal Budget Institute of Science "Central Research Institute for Epidemiology" of Federal Service for Surveillance on Consumers' Rights Protection and Human Well-Being.
2. Guidelines to the **AmpliSens® Escherichioses-FRT** PCR kit for qualitative detection and differentiation of diarrheagenic *E.coli* DNA in environmental samples and clinical material by the polymerase chain reaction (PCR) with real-time hybridization-fluorescence detection, developed by Federal Budget Institute of Science "Central Research Institute for Epidemiology".

## 15. QUALITY CONTROL

In compliance with Federal Budget Institute of Science "Central Research Institute for Epidemiology" ISO 13485-Certified Quality Management System, each lot of **AmpliSens® Escherichioses-FRT** PCR kit has been tested against predetermined specifications to ensure consistent product quality.

List of Changes Made in the Instruction Manual

VER	Location of changes	Essence of changes
18.06.11 RT	Cover page, text	The name of Institute was changed to Federal Budget Institute of Science "Central Research Institute for Epidemiology"
11.11.12 LA	Table 2 "Interpretation of Results for PCR analysis"	For the result "EPEC DNA is detected" a footnote was added: If Ct value of a sample obtained in HEX channel is less than the boundary value in case PCR-mix-1-FEP/FRT <i>EIEC</i> / <i>EHEC</i> / <i>STI</i> was used, the "DNA EHEC detected" result will be displayed.
28.10.14 PM	Through the text	Corrections according the template and Russian instruction manual
	8.2.1 Preparing tubes for PCR	Appendix 1 was integrated into the text of the instruction manual as Table 1
	13.2 Specifications	Strains of microorganisms (American Type Culture Collection) were added
26.12.17 PM	3. Content	The colour of the reagent was specified
07.05.20 MA	Through the text	The text formatting was changed
	Footer	The phrase "Not for use in the Russian Federation" was added
	2. Principle of PCR detection	The table with targets was added
16.03.21 EM	—	The name, address and contact information for Authorized representative in the European Community was changed

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<sup>5</sup> Genome equivalents (GE) of the pathogen agent per 1 ml of a sample.