DOCUMENT VERIFICATION

Prior to using this document, the user is responsible for verifying that the revision and effective date are current.

REVISION HISTORY

Rev.	Effective Date	Changes Made to Document
1	04-Oct-2021	First issue

1. Content

2. Introduction

The purpose of this document is to summarise the post-market surveillance report for Innova LFD kits where DHSC is distributor or manufacturer. This report covers the period 28th August to 24th Sep 2021.

This report includes inputs from Intertek Inbound Testing, Product Complaints, Qualtrics survey, Real World Performance Monitoring, CAPAs, SCARs and Variants of Concern.

3. Methodology

The methodology for data collection was established in the PMS plan PMS-0001 Revision 2, dated 29-July-2021.

(Refer to Attachment 01)

4. Findings /Results

4.1 Intertek Testing

A total of 72 validation reports were received between 28th August to 24th Sep 2021 with a total of 6,223 Innova sample processed during the specified reporting period. These samples were against 65 lots of TK2193 product and correspond to 65,000,000 units produced. Of these, there were 7 instances of failure as below:

49 Inspection reports received between the reporting window of. 4,109 samples were Upon review of validation reports, it was noted that there were four instances of test line failure upon application of the positive control for lot number X2108701. This was raised as an incident to control tower 23/09/21 and the incident was opened under CSL-25062 with recommendation that the minimum action would be to place the lot in quarantine until further investigation on a greater sample size could be actioned.

In addition, there were three separate instances of test strip failure against lots X2107705, X2107753 and X2107755. These instances were one case of test strip failure across the batch of 105 samples analysed. Due to the batch acceptance criteria agreed with supplier, these fall within the acceptance limit.

(Refer to Attachment 02 for input report)

4.2 In-House manufacturing inspection

A total of 10 inspections were carried out between 28th August to 30th Sep 2021 at which point production concluded at Xiamen Biotime meaning no further inspections were carried out during this reporting period. These 10 inspections were reflective of 9,399,840 units of TK2193 produced. 9 lots contained 1,000,000 units whereas the final lot contained 399,840 units. All factory inspections found no faults beyond AQL standards and passed QC.

(Refer to Attachment 02 for input report)

4.3 Product complaints

- A rate of 0.27 per million product complaints has been received by DHSC. This is from a total of 17 complaints between 28th August – 24th September 2021. The number of kits distributed (3s, 7s and 25s) during this period was 61.8 million.
- There was only one reportable complaint Complaint-21-09-1177 (Yellow card: 2021/009/004/501/001) and MORE ref 2021/009/023/601/002, actual harm classified as Hypersensitivity/Allergic reaction. Investigation is ongoing
- Two complaints received for the same lot number X2011011. Although it seems to be a duplication entry 2021/009/006/401/004 and 2021/009/006/401/003
- Trending category shows 10 complaints for "Faulty test results" 5 have been identified as reader issue and for 5 complaints investigations on going.
- 11 out of 16 Complaints have had the investigation completed and are due for final review before the complaints can be closed.
- There was a new hazard identified and it needs require assessment to be added to the Hazard traceability matrix for Complaint-21-09-1168 (2021/008/025/501/003). The complaint was classified under Patient injury trending category. Complaint description refers to "Buffer container, when opened, produced droplets that came in touch with eyes and skin. After checking the remaining tubes, these were dilated, indicating the accumulation of gases which seem to have been produced by improper storage under high temperatures. MSDS is not provided to assess the seriousness of the situation, based on the ingredients of the buffer."

A summary of the received complaints is below

No	Complaint category	Reportability	Investigation	Investigation results
1	10 Faulty test results	No	5 complaints identified as reader issue/	Reader issue does not involve any defect in the kit. Investigations going on for

No	Complaint category	Reportability	Investigation	Investigation results
			5 complaints investigation going on	5 complaints to analyze the reason
2	3 Allergic reaction	2 not reportable 1 reportable	No trend	No further actions
3	2 Missing item	No	No Trend	No further action
4	1 Not a product complaint	N/A	N/A	N/A
5	1 Patient injury	Not reportable	No trend	No further action

(Refer to Attachment 03 for raw data)

4.4 Qualtrics survey

- A total of 2245 reports were recorded through the Qualtrics Survey for period 28th August to 24th Sep 2021. The number of kits distributed (3s, 7s and 25s) during this period was 61.8.3 million.
- 215 Injuries were reported.
- 37.8 % of the end user completing Qualtrics survey answered 100% of the survey questions during 28th August to 24th Sep 2021.
- 25 reports were recorded for Damage items and 46 reports for missing items.

- Qualtrics summary - User Experience

Question	Yes	No
Swab easy to use?	480	46
Test Strip easy to use?	494	32
Easy to get sample?	462	64
Test worked as instructed?	442	84
Manual easy and clear?	501	25

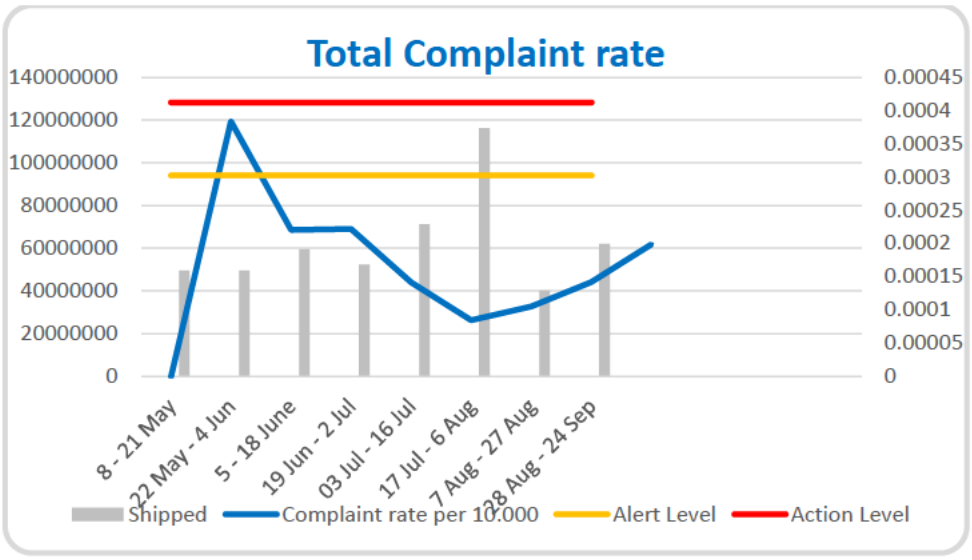
(Refer to Attachment 03, for data)

4.5 Combined Complaints Data (Yellow Card, Control Tower and Qualtrics Complaints) – Trending

This table shows the trending data for the combined LFD complaints (Yellow Card, Control Tower and Qualtrics Complaints) vs distributed LFD test kits for the last reporting periods.

Alert and Action thresholds have been established using an average derived from the last reporting periods. These thresholds will remain consistent. And will provide an ongoing benchmark for identifying trends through continual monitoring.

The data this 28th August to 24th Sep 2021 shows a rate of 2 complaints per million and well below the thresholds set.



(Refer to Attachment 03, for data)

4.6 Real World Performance Monitoring

This is the summary slide from the data provided in attachments 04 for 3 and 7 self-test

DHSC 3&7 self-test
28/08/2021 to 10/09/2021

Exec summary | Positivity rates | Void rates | Confirmatory rates | Variants | Appendix

NHS Test and Trace

DHSC 3/7 self-test: Summary for PSR reporting

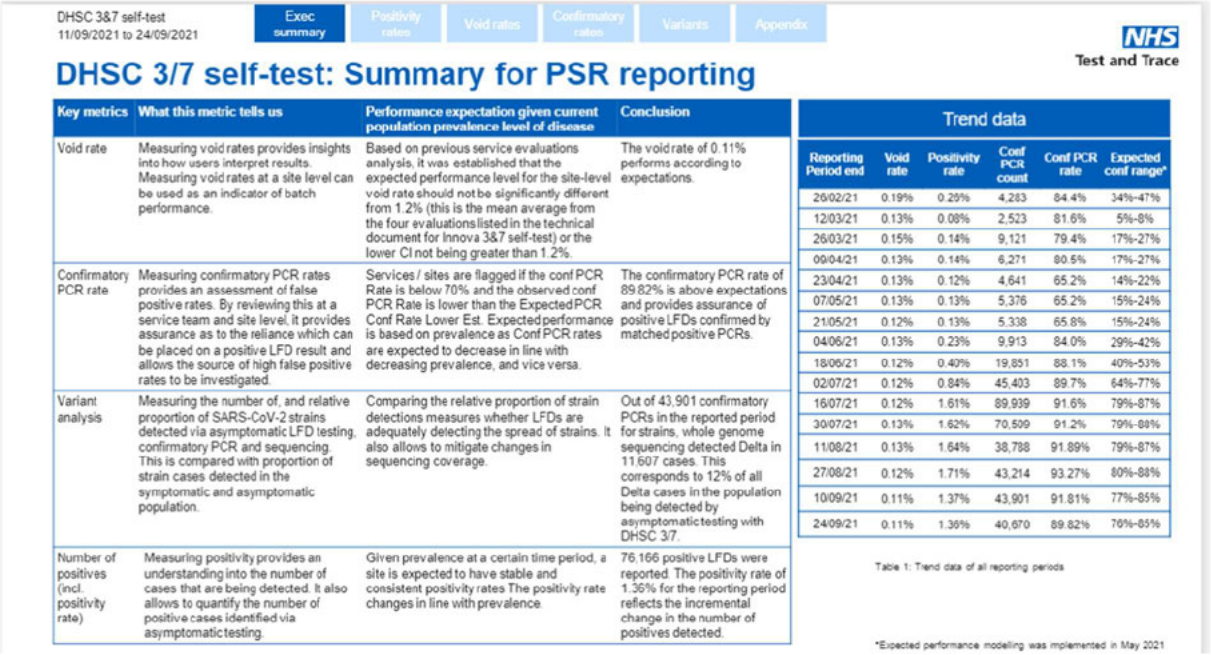
Key metrics	What this metric tells us	Performance expectation given current population prevalence level of disease	Conclusion
Void rate	Measuring void rates provides insights into how users interpret results. Measuring void rates at a site level can be used as an indicator of batch performance.	Based on previous service evaluations analysis, it was established that the expected performance level for the site-level void rate should not be significantly different from 1.2% (this is the mean average from the four evaluations listed in the technical document for Innova 3&7 self-test) or the lower CI not being greater than 1.2%.	The void rate of 0.11% performs according to expectations.
Confirmatory PCR rate	Measuring confirmatory PCR rates provides an assessment of false positive rates. By reviewing this at a service team and site level, it provides assurance as to the reliance which can be placed on a positive LFD result and allows the source of high false positive rates to be investigated.	Services / sites are flagged if the conf PCR Rate is below 70% and the observed conf PCR Rate is lower than the Expected PCR Conf Rate Lower Est. Expected performance is based on prevalence as Conf PCR rates are expected to decrease in line with decreasing prevalence, and vice versa.	The confirmatory PCR rate of 91.81% is above expectations and provides assurance of positive LFDs confirmed by matched positive PCRs.
Variant analysis	Measuring the number of, and relative proportion of SARS-CoV-2 strains detected via asymptomatic LFD testing, confirmatory PCR and sequencing. This is compared with proportion of strain cases detected in the symptomatic and asymptomatic population.	Comparing the relative proportion of strain detections measures whether LFDs are adequately detecting the spread of strains. It also allows to mitigate changes in sequencing coverage.	Out of 43,214 confirmatory PCRs in the reported period for strains, whole genome sequencing detected Delta in 11,585 cases. This corresponds to 11% of all Delta cases in the population being detected by asymptomatic testing with DHSC 3/7.
Number of positives (incl. positivity rate)	Measuring positivity provides an understanding into the number of cases that are being detected. It also allows to quantify the number of positive cases identified via asymptomatic testing.	Given prevalence at a certain time period, a site is expected to have stable and consistent positivity rates. The positivity rate changes in line with prevalence.	60,997 positive LFDs were reported. The positivity rate of 1.37% for the reporting period reflects the incremental change in the number of positives detected.

Trend data

Reporting Period end	Void rate	Positivity rate	Conf PCR count	Conf PCR rate	Expected conf range*
26/02/21	0.19%	0.26%	4,283	84.4%	n/a
12/03/21	0.13%	0.08%	2,523	81.5%	n/a
26/03/21	0.15%	0.14%	9,121	79.4%	n/a
09/04/21	0.13%	0.14%	6,271	80.5%	n/a
23/04/21	0.13%	0.12%	4,641	65.2%	n/a
07/05/21	0.13%	0.13%	5,376	65.2%	n/a
21/05/21	0.12%	0.13%	5,338	65.8%	n/a
04/06/21	0.13%	0.23%	9,913	84.0%	29%-42%
18/06/21	0.12%	0.40%	19,851	88.1%	40%-53%
02/07/21	0.12%	0.84%	45,403	89.7%	64%-77%
16/07/21	0.12%	1.61%	89,939	91.5%	79%-87%
30/07/21	0.13%	1.62%	70,509	91.2%	79%-88%
11/08/21	0.13%	1.64%	38,788	91.89%	79%-87%
27/08/21	0.12%	1.71%	43,214	93.27%	80%-88%
10/09/21	0.11%	1.37%	43,901	91.81%	77%-85%

Table 1: Trend data of all reporting periods

*Expected performance modelling was implemented in May 2021



DHSC 3&7 self-test
11/09/2021 to 24/09/2021

Exec summary | Positivity rates | Void rates | Confirmatory rates | Variants | Appendix

NHS Test and Trace

DHSC 3/7 self-test: Summary for PSR reporting

Key metrics	What this metric tells us	Performance expectation given current population prevalence level of disease	Conclusion
Void rate	Measuring void rates provides insights into how users interpret results. Measuring void rates at a site level can be used as an indicator of batch performance.	Based on previous service evaluations analysis, it was established that the expected performance level for the site-level void rate should not be significantly different from 1.2% (this is the mean average from the four evaluations listed in the technical document for Innova 3&7 self-test) or the lower CI not being greater than 1.2%.	The void rate of 0.11% performs according to expectations.
Confirmatory PCR rate	Measuring confirmatory PCR rates provides an assessment of false positive rates. By reviewing this at a service team and site level, it provides assurance as to the reliance which can be placed on a positive LFD result and allows the source of high false positive rates to be investigated.	Services / sites are flagged if the conf PCR Rate is below 70% and the observed conf PCR Rate is lower than the Expected PCR Conf Rate Lower Est. Expected performance is based on prevalence as Conf PCR rates are expected to decrease in line with decreasing prevalence, and vice versa.	The confirmatory PCR rate of 89.82% is above expectations and provides assurance of positive LFDs confirmed by matched positive PCRs.
Variant analysis	Measuring the number of, and relative proportion of SARS-CoV-2 strains detected via asymptomatic LFD testing, confirmatory PCR and sequencing. This is compared with proportion of strain cases detected in the symptomatic and asymptomatic population.	Comparing the relative proportion of strain detections measures whether LFDs are adequately detecting the spread of strains. It also allows to mitigate changes in sequencing coverage.	Out of 43,901 confirmatory PCRs in the reported period for strains, whole genome sequencing detected Delta in 11,607 cases. This corresponds to 12% of all Delta cases in the population being detected by asymptomatic testing with DHSC 3/7.
Number of positives (incl. positivity rate)	Measuring positivity provides an understanding into the number of cases that are being detected. It also allows to quantify the number of positive cases identified via asymptomatic testing.	Given prevalence at a certain time period, a site is expected to have stable and consistent positivity rates The positivity rate changes in line with prevalence.	76,166 positive LFDs were reported. The positivity rate of 1.36% for the reporting period reflects the incremental change in the number of positives detected.

Trend data

Reporting Period end	Void rate	Positivity rate	Conf PCR count	Conf PCR rate	Expected conf range*
26/02/21	0.19%	0.29%	4,283	84.4%	34%-47%
12/03/21	0.13%	0.08%	2,523	81.6%	5%-8%
26/03/21	0.15%	0.14%	9,121	79.4%	17%-27%
09/04/21	0.13%	0.14%	6,271	80.5%	17%-27%
23/04/21	0.13%	0.12%	4,641	65.2%	14%-22%
07/05/21	0.13%	0.13%	5,376	65.2%	15%-24%
21/05/21	0.12%	0.13%	5,338	65.8%	15%-24%
04/06/21	0.13%	0.23%	9,913	84.0%	29%-42%
18/06/21	0.12%	0.40%	19,851	88.1%	40%-53%
02/07/21	0.12%	0.84%	45,403	89.7%	64%-77%
16/07/21	0.12%	1.61%	89,939	91.6%	79%-87%
30/07/21	0.13%	1.62%	70,509	91.2%	79%-88%
11/08/21	0.13%	1.64%	38,788	91.89%	79%-87%
27/08/21	0.12%	1.71%	43,214	93.27%	80%-88%
10/09/21	0.11%	1.37%	43,901	91.81%	77%-85%
24/09/21	0.11%	1.36%	40,670	89.82%	76%-85%

Table 1: Trend data of all reporting periods

*Expected performance modelling was implemented in May 2021

(Refer to Attachment 04, 05, 06 for data)

4.7 CAPA

- 17 out of 25 CAPAs have overdue date
- A summary of the CAPA by Status is below

CAPA Status	No
Completed	3
Implementation	5
Investigation	10
VOE	7
Total	25

No	CAPA No	Start Date	Problem statement	Status/ progress	Due date
01	CAPA-21-04-0005	14-April-21	This CAPA is raised to address 3 yellow card complaints reported to DHSC by MHRA related to Latex allergy after using the LFD test kit.	Closed	30 July 2021
02	CAPA-21-04-0006	21-April-21	Process for investigating and following through the product quality related incidents by opening CAPAs across the test and trace programme.	Complete pending VOE	VOE due: 04-Nov-21
03	CAPA-21-06-0010	08-Jun-21	CAPA raised to address the discrepancies/inconsistencies between the IFUs, leaflets and online information.	Action implementation stage. 1 Action Overdue	08-Sep-21

No	CAPA No	Start Date	Problem statement	Status/ progress	Due date
				– Extension being requested until 31/10.	
04	CAPA-21-06-0011	08-Jun-21	CAPA raised to address the lack of unified complaints system for receiving direct complaints under the design and responsibility of DHSC	Complete Pending VOE	VOE due: 04-Nov-21
05	CAPA-21-06-0012	08-Jun-21	CAPA raised to address inconsistencies in the reporting criteria for the complaints which require clinical input.	Action implementation stage. 1 Action over due- Awaiting update	08-Sep-21
06	CAPA-21-06-0013	08-Jun-21	CAPA raised to strengthen the PMS plan and appropriate PMS activities	Complete pending VOE	Voe Due: 13-Nov-21
07	CAPA-21-06-0014	08-Jun-21	CAPA raised to address the lack of regulatory clinical performance resource and oversight of PMPF studies	Action implementation stage. 1 action is being re-assessed.	08-Sep-21
08	CAPA-21-06-0015	08-Jun-21	CAPA raised to address the non-conformities identified in LFD risk management process related to lack of communication between diff organization for risk assessment, lack of literature review for risk benefit evaluation and lack of risk control measure in Hazard traceability matrix	Complete Pending VOE	VOE Due: 13-Nov-21
09	CAPA-21-06-0016	08-Jun-21	CAPA raised to address the non-conformities identified in SCAR process related to poorly defined proposed corrective action plan and lack of effectiveness check for SCAR-2021-026	Complete pending VOE	Voe Due: 13-Nov-21
10	CAPA-21-06-0017	08-Jun-21	CAPA raised to address the lack of evidence identified in LFD technical file to demonstrate whether the tests continue to be fit for purpose and that they meet the intended performance stated by DHSC.	Action implementation stage. Overdue – Awaiting Sign off of documents.	08-Sep-21
11	CAPA-21-06-0018	09-Jun-21	CAPA raised to address the schools supply issues and schools are having to cease testing due to supply shortages	Root cause investigation stage	09-Sep-21
12	CAPA-21-06-0019	09-Jun-21	CAPA raised to address the high void test for LFD identified at [redacted]	Root cause investigation stage	09-Sep-21
13	CAPA-21-06-0020	09-Jun-21	CAPA raised to address the high void test for LFD identified at [redacted]	Root cause investigation stage	09-Sep-21
14	CAPA-21-06-0021	09-Jun-21	CAPA raised to address the high void test for LFD identified at [redacted]	Root cause investigation stage	09-Sep-21
15	CAPA-21-06-0022	09-Jun-21	CAPA raised to address the high void test for LFD identified at [redacted]	Root cause investigation stage	09-Sep-21

No	CAPA No	Start Date	Problem statement	Status/ progress	Due date
16	CAPA-21-06-0023	09-Jun-21	CAPA raised to address the high void test for LFD identified at [redacted]	Root cause investigation stage	09-Sep-21
17	CAPA-21-06-0024	09-Jun-21	CAPA raised to address the high false positive rate for LFD 25S identified at [redacted]	Root cause investigation stage	09-Sep-21
18	CAPA-21-06-0025	09-Jun-21	CAPA raised to address the high false positive rate for LFD 3s and 7s identified at [redacted]	Root cause investigation stage	09-Sep-21
19	CAPA-21-06-0026	09-Jun-21	CAPA raised to address the high false positive rate for LFD 3s and 7s identified at [redacted]	Root cause investigation stage	09-Sep-21
20	CAPA-21-06-0027	09-Jun-21	CAPA raised to address the issue of University LFD kits failing to flow	Out for closure- Has been sent back to owner for changes.	09-Sep-21
21	CAPA-21-06-0030	09-Jun-21	CAPA raised to address the issue registering the test results from OLT and schools	Root cause investigation stage	09-Sep-21
22	CAPA-21-06-0031	11-Jun-21	CAPA raised to demonstrate DHSC'S compliance towards nonconformity identified in Innova USA voluntary recall notice with regards to Public Health Risk Assessment and clinical performance data	Closed	11-Sep-21
23	CAPA-21-06-0032	11-Jun-21	CAPA raised to demonstrate DHSC's compliance towards nonconformity identified in Innova USA voluntary recall notice with regards to QMS requirements	Overdue, awaiting update on 1 action	11-Sep-21
24	CAPA-21-06-0033	11-Jun-21	CAPA raised to demonstrate DHSC's compliance towards nonconformity identified in Innova USA voluntary recall notice with regards to Supplier Management	Closed	11-Sep-21
25	CAPA-21-06-0034	18-Jun-21	CAPA raised to address the Non-conformity identified regarding the IFUs supplied with the LFD 25s kits	Linked to CAPA 21-06-0010.	28-Sep-21

4.8 SCAR – Supplier Corrective Action Report

No SCARs raised for LFD in this period 28th August to 24th Sep 2021. There are no open SCARs for LFD products.

4.9 Risk Management

Current DHSC Risk management File RMF-0001 Revision 5 and HTM Hazard traceability Matrix Rev4.

A new hazard was identified during the complaint's investigation.

5. Conclusion

Batch issues

- Two complaints received for the same lot number X2011011. Although it seems to be a duplication entry 2021/009/006/401/004 and 2021/009/006/401/003

User incidence

- A total of 17 complaints between 28th August – 24th September 2021. The number of kits distributed (3s, 7s and 25s) during this period was 61.8 million.
- There was only one reportable complaint: Complaint-21-09-1177 (Yellow card: 2021/009/004/501/001) and MORE ref 2021/009/023/601/002, actual harm classified as Hypersensitivity/Allergic reaction. Investigation is ongoing
- There was a new hazard identified and it needs require assessment to be added to the Hazard traceability matrix for Complaint-21-09-1168 (2021/008/025/501/003). The complaint was classified under Patient injury trending category. Complaint description refers to "Buffer container, when opened, produced droplets that came in touch with eyes and skin. After checking the remaining tubes, these were dilated, indicating the accumulation of gases which seem to have been produced by improper storage under high temperatures. MSDS is not provided to assess the seriousness of the situation, based on the ingredients of the buffer."

Trends and analysis

- Trending category shows 10 complaints for "Faulty test results" 5 have been identified as "reader issue" and for 5 complaints investigations is on-going.
- The Void Rate of 0.11 % for 3 & 7 during 28th August to 24th September.
- Confirmatory PCR Rate of 91.81% during 28th August to 10 September 2021 and 89.82 during period 11th September to 24th September.
- 17 out of 25 CAPAs have overdue date. 3 Completed CAPAs, 5 in Implementation, 10 Investigation and 7 VOE.
- No SCARs raised for LFD in this period 28th August to 24th Sep 2021. There are no open SCARs for LFD products.

PHCO: Public Health Clinical Oversight

- Public Health Clinical Oversight reviewed events for clinical input and clarification on the reportability during the PSP Patient Safety Panel only one report was considered reportable.

Recall

- DHSC has not instigated a recall.

6. Actions

No	Added	Action	Responsible Name/Email	Due Date	Status
1	04-Oct-2021	Risk management file HTM-0001 to be reviewed and updated as required to cover new hazard identified during this period 28th Aug to 24thSep.	[redacted]	26th Oct-2021	New Action
2	04-Oct-2021	Resolution within the QMS for CSL-25062 raised during the Intertek Testing.	[redacted]	26th Oct-2021	New Action
3	04-Oct-2021	Investigation and action needed on overdue CAPAs	[redacted]	26th Oct-2021	New Action

7. Attachments

Attachment 01: PMS-0001, PMS Plan for the DHSC Covit-19 LFD Devices (3 and 7 kit) Rev2, 29-July-2021

Attachment 02: Intertek testing Report
Attachment 03: DHSC PSR – Complaints & Qualtrics data
Attachment 04: RWPM Innova 3s and 7s
Attachment 05: RWPM Innova 25s
Attachment 06: RWPM Innova Assisted

	Job Title	Name	email
Compiled by	Regulatory Lead	[redacted]	[redacted]