

BIOFIRE® Respiratory Panels (RP2.1, RP2.1*plus*, RP2.1-EZ, SPOTFIRE R Panel, SPOTFIRE R Panel Mini, SPOTFIRE R/ST and SPOTFIRE R/ST Panel Mini) SARS-CoV-2 Reactivity

1. Introduction

The BIOFIRE® Respiratory Panel 2.1 (RP2.1), BIOFIRE® Respiratory Panel 2.1 *plus* (RP2.1*plus*), BIOFIRE® Respiratory Panel 2.1-EZ (RP2.1-EZ), BIOFIRE® SPOTFIRE® Respiratory (R) Panel, BIOFIRE® SPOTFIRE® Respiratory (R) Panel Mini, BIOFIRE® SPOTFIRE® Respiratory/Sore Throat (R/ST) Panel and BIOFIRE® SPOTFIRE® Respiratory/Sore Throat (R/ST) Panel Mini are multiplexed nucleic acid tests intended for use with BIOFIRE® FILMARRAY® Systems or BIOFIRE® SPOTFIRE® System, respectively, for the simultaneous, qualitative detection and identification of multiple respiratory pathogen nucleic acids in nasopharyngeal swabs (NPS) obtained from individuals with signs and symptoms or suspected of respiratory tract infections. This includes the detection of SARS-CoV-2 which is identified with two independent assays: SARSCoV2-1 which targets the S (Spike) gene and SARSCoV2-2 which targets the M (Membrane) gene. A positive result from either assay will result in a SARS-CoV-2 Detected result.

Note: BIOFIRE tests do not report cycle threshold (Ct) values and the BIOFIRE SARS-CoV-2 assays are not intended to monitor for novel mutations.

Note: Coronavirus SARS-CoV-2 is not reported on the SPOTFIRE R/ST Panel or SPOTFIRE R/ST Panel Mini when the Throat Swab protocol is selected in countries where the analyte has not been cleared/registered.

2. Global in silico SARS-CoV-2 Variant Analysis

bioMérieux has continued its proactive monitoring of assay performance through periodic in silico analyses of the sequences available in the GISAID database. These evaluations support the Instructions for Use (IFU) for the following products: BIOFIRE RP2.1, RP2.1*plus*, RP2.1-EZ, SPOTFIRE R Panel, SPOTFIRE R Panel Mini, SPOTFIRE R/ST Panel and SPOTFIRE R/ST Panel Mini. The most recent full analysis was completed on June 21, 2025 as shown in Table 1.



In addition, a focused one-month in silico analysis was performed using the most recently deposited GISAID sequences from May 22, 2025 to June 21, 2025 as shown in Table 2. These ongoing evaluations reflect our commitment to transparency and continuous improvement in assay performance monitoring.

Table 1. In silico Prediction of SARS-CoV-2 Detection by BIOFIRE SARSCoV2-1 and SARSCoV2-2 Assays (December 2019 to June 21, 2025)

+/+ indicates detected by both assays with no impairment, +/- indicates detection by one assay with no impairment and potential for impaired detection by the other assay, -/- indicates potential for impaired detection by both assays

Predicted Assay Result		SARSCoV2-1 (S-gene)		# (%) sequences predicted to be detected with no limitations (one or both assays positive)
		+	-	
SARSCoV2-2 (M-gene)	+	13,814,190	495,294	14,364,796/14,366,238 (99.9900%)*
	-	55,312	1,442*	

* One thousand four hundred and forty two (233 unique) sequences have mismatches in the 3' half of primer(s) for both the SARSCoV2-1 and SARSCoV2-2 assays or mismatches in the 3' half of the SARSCoV2-1 assay and a 9 base pair deletion in the SARSCoV2-2 assay. The mismatches are predicted to impair detection at low analyte concentration.

Table 2. Single Month in silico Prediction of SARS-CoV-2 Detection by BIOFIRE SARSCoV2-1 and SARSCoV2-2 Assays (May 22, 2025 to June 21, 2025)

+/+ indicates detected by both assays with no impairment, +/- indicates detection by one assay with no impairment and potential for impaired detection by the other assay, -/- indicates potential for impaired detection by both assays

Predicted Assay Result		SARSCoV2-1 (S-gene)		# (%) sequences predicted to be detected with no limitations (one or both assays positive)
		+	-	
SARSCoV2-2 (M-gene)	+	10,382	8,021	18,476/18,503 (99.8541%)*
	-	73	27*	

*Twenty-seven (six unique) sequences have mismatches in the 3' half of primer(s) for both the SARSCoV2-1 and SARSCoV2-2 assays. The mismatches are predicted to impair detection at low analyte concentration.

NOTE: The percentage of sequences that are predicted to impair detection at low analyte concentrations in the May 22, 2025 to June 21, 2025 single month analysis are comparable to the June 22, 2024 to July 21, 2024 percentages, suggesting stable performance.

Emerging Variant BA.3.2

An in silico analysis was conducted to evaluate the reactivity of the SARS-CoV-2 assays (SARS-CoV-2 1 and SARS-CoV-2 2) included in the BIOFIRE Respiratory Panels (RP2.1, RP2.1plus, SPOTFIRE R Panel, SPOTFIRE R Panel Mini, SPOTFIRE R/ST, and SPOTFIRE R/ST Panel Mini) against the emerging SARS-CoV-2 BA.3.2 (Cicada) lineage. No predicted impact on detection was identified for any of the BA.3.2 lineage sequences evaluated.

This analysis indicates that the BIOFIRE Respiratory family of products will be able to amplify and detect >99.9% of sequences retrieved on June 21, 2025. The analysis includes sequences from the lineages listed below:



A.23 lineage (Uganda)
 A.27 (France) / HMN.19B
 AV.1 / VUI-21MAY-01
 B.1 + 214insQAS
 B.1.1.7 / VOC-20DEC-01 / Alpha (United Kingdom)
 B.1.1.7 + S494P (United Kingdom)
 B.1.1.7 + Q677H (United Kingdom)
 B.1.1.28 and descendants
 B.1.1.28 + N501T + E484Q (Brazil)
 B.1.1.318 lineage / VUI-21FEB-04 variant (UK)
 B.1.1.529 lineage / Omicron
 B.1.214 lineage / Belgium variant (Belgium)
 B.1.214.2 (Belgium)
 B.1.243.1 / Arizona variant (United States)
 B.1.351 lineage / VOC-20DEC-02 variant / Beta (South Africa)

B.1.427/B.1.429 lineage / CAL.20C variant / Epsilon (United States)
 B.1.525 / VUI-21FEB-03 variant / Eta (UK)
 B.1.526 / Iota (United States)
 B.1.526.1 (United States)
 B.1.616 / Breton variant (France)
 B.1.617.1 / VUI-21APR-02 / Kappa (India)
 B.1.617.2 / VOC-21APR-02 / Delta (India)
 B.1.1.529 / BA.1 / Omicron
 B.1.617.3 / VUI-21APR-03 (India)
 C.36.3 / VUI-21MAY-02 (Thailand ex Egypt)
 C.37 / B.1.1.1 + L452Q + F490S / Lambda
 P.1 lineage / VOC-21JAN-02 variant / Gamma (Brazil)
 P.2 lineage / VUI-21JAN-01 variant / Zeta (Brazil)
 P.3 lineage / VUI-21MAR-02 / Theta (Philippines/Japan)

AY.1	AY.112.3	AY.122.2	AY.130
AY.10	AY.113	AY.122.3	AY.131
AY.100	AY.114	AY.122.4	AY.132
AY.101	AY.115	AY.122.5	AY.133
AY.102	AY.116	AY.122.6	AY.134
AY.103	AY.116.1	AY.123	AY.14
AY.103.1	AY.117	AY.123.1	AY.15
AY.103.2	AY.118	AY.124	AY.16
AY.104	AY.119	AY.124.1	AY.16.1
AY.105	AY.119.1	AY.124.1.1	AY.17
AY.106	AY.119.2	AY.125	AY.18
AY.107	AY.12	AY.125.1	AY.19
AY.108	AY.120	AY.126	AY.2
AY.109	AY.120.1	AY.127	AY.20
AY.11	AY.120.2	AY.127.1	AY.20.1
AY.110	AY.120.2.1	AY.127.2	AY.21
AY.111	AY.121	AY.127.3	AY.22
AY.112	AY.121.1	AY.128	AY.23
AY.112.1	AY.122	AY.129	AY.23.1
AY.112.2	AY.122.1	AY.13	AY.23.2



AY.24	AY.39.1.1	AY.43.3	AY.59
AY.24.1	AY.39.1.2	AY.43.4	AY.6
AY.25	AY.39.1.3	AY.43.5	AY.60
AY.25.1	AY.39.1.4	AY.43.6	AY.61
AY.25.1.1	AY.39.2	AY.43.7	AY.62
AY.25.1.2	AY.39.3	AY.43.8	AY.63
AY.25.2	AY.39.4	AY.43.9	AY.64
AY.25.3	AY.4	AY.44	AY.65
AY.26	AY.4.1	AY.45	AY.66
AY.26.1	AY.4.10	AY.46	AY.67
AY.27	AY.4.11	AY.46.1	AY.68
AY.28	AY.4.12	AY.46.2	AY.69
AY.29	AY.4.13	AY.46.3	AY.7
AY.29.1	AY.4.14	AY.46.4	AY.7.1
AY.29.2	AY.4.15	AY.46.5	AY.7.2
AY.3	AY.4.16	AY.46.6	AY.70
AY.3.1	AY.4.17	AY.46.6.1	AY.71
AY.3.2	AY.4.2	AY.47	AY.72
AY.3.3	AY.4.2.1	AY.48	AY.73
AY.3.4	AY.4.2.2	AY.49	AY.74
AY.30	AY.4.2.3	AY.5	AY.75
AY.31	AY.4.2.4	AY.5.1	AY.75.2
AY.32	AY.4.2.5	AY.5.2	AY.75.3
AY.33	AY.4.3	AY.5.3	AY.76
AY.33.1	AY.4.4	AY.5.4	AY.77
AY.33.2	AY.4.5	AY.5.5	AY.78
AY.34	AY.4.6	AY.5.6	AY.79
AY.34.1	AY.4.7	AY.5.7	AY.8
AY.34.1.1	AY.4.8	AY.50	AY.80
AY.34.2	AY.4.9	AY.51	AY.81
AY.35	AY.40	AY.52	AY.82
AY.36	AY.41	AY.53	AY.83
AY.36.1	AY.42	AY.54	AY.84
AY.37	AY.42.1	AY.55	AY.85
AY.38	AY.43	AY.56	AY.86
AY.39	AY.43.1	AY.57	AY.87
AY.39.1	AY.43.2	AY.58	AY.88



AY.89	BA.1.1.5	BA.1.7	BA.2.3.10
AY.9	BA.1.1.6	BA.1.8	BA.2.3.11
AY.9.1	BA.1.1.7	BA.1.9	BA.2.3.12
AY.9.2	BA.1.1.8	BA.2	BA.2.3.13
AY.9.2.1	BA.1.1.9	BA.2.1	BA.2.3.14
AY.9.2.2	BA.1.10	BA.2.10	BA.2.3.15
AY.90	BA.1.12	BA.2.10.1	BA.2.3.16
AY.91	BA.1.13	BA.2.10.2	BA.2.3.17
AY.91.1	BA.1.13.1	BA.2.10.3	BA.2.3.18
AY.92	BA.1.14	BA.2.11	BA.2.3.19
AY.93	BA.1.14.1	BA.2.12	BA.2.3.2
AY.94	BA.1.14.2	BA.2.12.1	BA.2.3.20
AY.95	BA.1.15	BA.2.12.2	BA.2.3.3
AY.96	BA.1.15.1	BA.2.13	BA.2.3.4
AY.97	BA.1.15.2	BA.2.13.1	BA.2.3.5
AY.98	BA.1.15.3	BA.2.14	BA.2.3.6
AY.99	BA.1.16	BA.2.15	BA.2.3.7
B.1.351.2	BA.1.16.1	BA.2.16	BA.2.3.8
B.1.351.3	BA.1.16.2	BA.2.17	BA.2.3.9
B.1.620	BA.1.17	BA.2.18	BA.2.30
B.1.621	BA.1.17.1	BA.2.19	BA.2.31
B.1.621.1	BA.1.17.2	BA.2.2	BA.2.31.1
BA.1	BA.1.18	BA.2.2.1	BA.2.32
BA.1.1	BA.1.19	BA.2.20	BA.2.33
BA.1.1.1	BA.1.2	BA.2.21	BA.2.34
BA.1.1.10	BA.1.20	BA.2.22	BA.2.35
BA.1.1.11	BA.1.21	BA.2.23	BA.2.36
BA.1.1.12	BA.1.21.1	BA.2.23.1	BA.2.37
BA.1.1.13	BA.1.22	BA.2.24	BA.2.38
BA.1.1.14	BA.1.23	BA.2.25	BA.2.38.1
BA.1.1.15	BA.1.24	BA.2.25.1	BA.2.39
BA.1.1.16	BA.1.3	BA.2.26	BA.2.4
BA.1.1.17	BA.1.4	BA.2.27	BA.2.40
BA.1.1.18	BA.1.4.6	BA.2.28	BA.2.40.1
BA.1.1.2	BA.1.4.8	BA.2.29	BA.2.41
BA.1.1.3	BA.1.5	BA.2.3	BA.2.42
BA.1.1.4	BA.1.6	BA.2.3.1	BA.2.43



BA.2.44	BA.2.75.10	BA.4.1.4	BA.5.10.1
BA.2.45	BA.2.75.2	BA.4.1.9	BA.5.11
BA.2.46	BA.2.75.3	BA.4.2	BA.5.2
BA.2.47	BA.2.75.4	BA.4.3	BA.5.2.1
BA.2.48	BA.2.75.5	BA.4.4	BA.5.2.10
BA.2.49	BA.2.75.6	BA.4.5	BA.5.2.11
BA.2.5	BA.2.75.7	BA.4.6	BA.5.2.12
BA.2.50	BA.2.75.9	BA.4.6.1	BA.5.2.13
BA.2.51	BA.2.76	BA.4.6.2	BA.5.2.14
BA.2.52	BA.2.77	BA.4.6.3	BA.5.2.16
BA.2.53	BA.2.78	BA.4.6.4	BA.5.2.18
BA.2.54	BA.2.79	BA.4.6.5	BA.5.2.19
BA.2.55	BA.2.79.1	BA.4.7	BA.5.2.2
BA.2.56	BA.2.8	BA.5	BA.5.2.20
BA.2.56.1	BA.2.80	BA.5.1	BA.5.2.21
BA.2.57	BA.2.81	BA.5.1.1	BA.5.2.22
BA.2.58	BA.2.82	BA.5.1.15	BA.5.2.23
BA.2.59	BA.2.85	BA.5.1.16	BA.5.2.24
BA.2.6	BA.2.86	BA.5.1.17	BA.5.2.25
BA.2.60	BA.2.86.1	BA.5.1.18	BA.5.2.26
BA.2.61	BA.2.86.1	BA.5.1.19	BA.5.2.27
BA.2.62	BA.2.9	BA.5.1.2	BA.5.2.28
BA.2.63	BA.2.9.1	BA.5.1.20	BA.5.2.29
BA.2.64	BA.2.9.2	BA.5.1.21	BA.5.2.3
BA.2.65	BA.2.9.3	BA.5.1.22	BA.5.2.30
BA.2.66	BA.2.9.4	BA.5.1.23	BA.5.2.31
BA.2.67	BA.2.9.5	BA.5.1.24	BA.5.2.32
BA.2.68	BA.2.9.7	BA.5.1.25	BA.5.2.33
BA.2.69	BA.3	BA.5.1.26	BA.5.2.34
BA.2.7	BA.3.1	BA.5.1.27	BA.5.2.35
BA.2.70	BA.3.2	BA.5.1.28	BA.5.2.36
BA.2.71	BA.4	BA.5.1.3	BA.5.2.37
BA.2.72	BA.4.1	BA.5.1.30	BA.5.2.38
BA.2.73	BA.4.1.1	BA.5.1.31	BA.5.2.39
BA.2.74	BA.4.1.10	BA.5.1.4	BA.5.2.4
BA.2.75	BA.4.1.2	BA.5.1.5	BA.5.2.42
BA.2.75.1	BA.4.1.3	BA.5.10	BA.5.2.43



BA.5.2.44	BE.1.4.2	BF.29	BG.4
BA.5.2.45	BE.10	BF.3	BL.1
BA.5.2.46	BE.2	BF.30	BL.1.1
BA.5.2.47	BE.3	BF.31	BL.1.4
BA.5.2.48	BE.4	BF.31.1	BL.2
BA.5.2.49	BE.4.1	BF.32	BL.3
BA.5.2.5	BE.4.1.1	BF.34	BL.4
BA.5.2.6	BE.4.2	BF.4	BL.6
BA.5.2.7	BE.5	BF.5	BM.1
BA.5.2.8	BE.6	BF.5.1	BM.1.1
BA.5.2.9	BE.7	BF.5.2	BM.1.1.1
BA.5.3	BE.8	BF.6	BM.1.1.3
BA.5.3.1	BE.9	BF.7	BM.1.1.4
BA.5.3.2	BF.1	BF.7.1	BM.1.1.5
BA.5.3.4	BF.1.1	BF.7.10	BM.2
BA.5.3.5	BF.10	BF.7.11	BM.2.1
BA.5.5	BF.10.1	BF.7.12	BM.4
BA.5.5.2	BF.11	BF.7.13	BM.4.1
BA.5.5.3	BF.11.1	BF.7.13.2	BM.4.1.1
BA.5.6	BF.11.2	BF.7.14	BN.1
BA.5.6.2	BF.11.3	BF.7.15	BN.1.1
BA.5.6.3	BF.11.4	BF.7.2	BN.1.1.1
BA.5.6.4	BF.11.5	BF.7.3	BN.1.2
BA.5.7	BF.16	BF.7.4	BN.1.2.1
BA.5.8	BF.17	BF.7.4.1	BN.1.3
BA.5.9	BF.18	BF.7.4.2	BN.1.3.1
BC.1	BF.19	BF.7.5	BN.1.3.2
BC.2	BF.2	BF.7.5.1	BN.1.3.3
BD.1	BF.20	BF.7.6	BN.1.3.4
BE.1	BF.21	BF.7.7	BN.1.4
BE.1.1	BF.22	BF.7.8	BN.1.4.1
BE.1.1.1	BF.23	BF.7.9	BN.1.5
BE.1.1.2	BF.24	BF.8	BN.1.6
BE.1.2.1	BF.25	BF.9	BN.1.7
BE.1.3	BF.26	BG.1	BN.1.8
BE.1.4	BF.27	BG.2	BN.1.9
BE.1.4.1	BF.28	BG.3	BN.2



BN.2.1	BQ.1.1.7	BR.1.2	CH.1.1.5
BN.3	BQ.1.1.8	BR.2	CH.3
BN.3.1	BQ.1.1.9	BR.2.1	CJ.1
BN.5	BQ.1.10	BR.3	CJ.1.1
BN.6	BQ.1.10.1	BR.4	CK.1
BQ.1	BQ.1.11	BS.1	CK.1.1
BQ.1.1	BQ.1.12	BS.1.1	CK.1.2
BQ.1.1.1	BQ.1.13	BT.1	CK.2
BQ.1.1.10	BQ.1.13.1	BT.2	CK.2.1
BQ.1.1.11	BQ.1.14	BU.1	CK.2.1.1
BQ.1.1.12	BQ.1.15	BU.2	CK.3
BQ.1.1.13	BQ.1.16	BU.3	CL.1
BQ.1.1.14	BQ.1.17	BV.1	CM.1
BQ.1.1.15	BQ.1.18	BV.2	CM.10
BQ.1.1.16	BQ.1.19	BW.1	CM.11
BQ.1.1.17	BQ.1.2	BW.1.1	CM.12
BQ.1.1.18	BQ.1.20	BY.1	CM.2
BQ.1.1.19	BQ.1.21	BY.1.1.1	CM.2.1
BQ.1.1.2	BQ.1.22	C.36	CM.3
BQ.1.1.20	BQ.1.23	CA.1	CM.4
BQ.1.1.21	BQ.1.24	CA.2	CM.4.1
BQ.1.1.22	BQ.1.25	CA.3	CM.5
BQ.1.1.23	BQ.1.25.1	CA.3.1	CM.5.1
BQ.1.1.24	BQ.1.26	CA.5	CM.5.2
BQ.1.1.25	BQ.1.26.1	CA.7	CM.6
BQ.1.1.26	BQ.1.27	CB.1	CM.6.1
BQ.1.1.27	BQ.1.28	CC.1	CM.7
BQ.1.1.28	BQ.1.3	CD.1	CM.8
BQ.1.1.29	BQ.1.4	CD.2	CM.8.1
BQ.1.1.3	BQ.1.5	CE.1	CM.9
BQ.1.1.30	BQ.1.6	CG.1	CN.1
BQ.1.1.31	BQ.1.7	CH.1	CN.2
BQ.1.1.32	BQ.1.8	CH.1.1	CP.1
BQ.1.1.34	BQ.1.8.2	CH.1.1.1	CP.1.1
BQ.1.1.4	BQ.1.9	CH.1.1.2	CP.1.2
BQ.1.1.5	BQ.2	CH.1.1.3	CP.1.3
BQ.1.1.6	BR.1	CH.1.1.4	CP.2

CP.3	DV.7	FL.1.5.1	HK.11
CP.4	DV.7.1	FL.1.5.1	HK.11
CP.5	DV.7.1.1	FL.1.5.2	HK.2
CP.6	DV.7.1.2	FL.1.5.2	HK.2
CQ.1	DV.7.1.3	FL.2	HK.3
CQ.1.1	DY.2	FL.3	HK.3
CQ.2	EG.1	FL.3.1	HK.3.1
CR.1	EG.1.2	FL.4	HK.3.1
CR.1.1	EG.1.3	FL.9	HK.3.2
CR.1.3	EG.1.4	FS.1	HK.3.2
CR.2	EG.10.1	FU.1	HK.6
CT.1	EG.10.1	FU.2	HK.6
CV.1	EG.2	FU.3	HK.7
CV.2	EG.5	FU.4	HK.7
CY.1	EG.5.1	FW.1.1	HK.9
CZ.2	EG.5.1	FY.1.1	HN.1
DA.1	EG.5.1.1	FY.1.2	HN.1
DB.1	EG.5.1.1	FY.4.1	HV.1
DB.2	EG.5.1.2	GE.1	HV.1
DC.1	EG.5.1.3	GE.1	JD.1.1
DE.2	EG.5.1.3	GE.1.1	JD.1.1
DF.1	EG.5.1.4	GE.1.1	JD.1.1.1
DF.1.1	EG.5.1.4	GE.1.2	JD.1.1.1
DG.1	EG.5.1.5	GE.1.2	JD.1.1.2
DJ.1	EG.5.1.5	GE.1.2.1	JD.1.1.2
DJ.1.1	EG.5.1.6	GE.1.2.1	JD.1.1.3
DK.1	EG.5.1.6	GE.1.3	JD.1.1.3
DL.1	EG.5.1.7	GE.1.3	JF.1
DM.1	EG.5.1.7	GS.1	JF.1
DN.1	EG.5.1.8	GS.4.1	JG.1
DN.1.1	EG.5.1.8	GS.4.1	JG.1
DQ.1	EG.5.1.9	GW.5.1.1	JG.2
DR.1	EG.5.2	GW.5.1.1	JG.2
DS.1	EG.6.1	HF.1	JG.3
DT.1	EG.7	HF.1.1	JG.3
DU.1	FD.1.1	HK.1	JM.1
DV.6	FL.1.5	HK.1	JM.1



JM.2	JN.1.7.2	LB.1.3	XAY.1.1
JM.2	JN.1.8	LB.1.3	XAY.2
JN.1	JN.1.8	LP.8.1	XAY.3
JN.1	JN.1.8.1	LP.8.1.1	XAZ
JN.1.1	JN.1.8.1	MC.1	XBB
JN.1.1	JN.1.9	MC.10.1	XBB.1
JN.1.1.1	JN.1.9	MC.13.2	XBB.1.1
JN.1.1.1	JN.10	MC.13.2.4	XBB.1.11.1
JN.1.1.2	JN.2	NY.12	XBB.1.16
JN.1.1.2	JN.2.1	NY.13	XBB.1.16
JN.1.1.3	JN.2.2	P.1.1	XBB.1.16.1
JN.1.1.3	JN.2.4	P.1.2	XBB.1.16.1
JN.1.11	JN.2.5	P.1.4	XBB.1.16.10
JN.1.11.1	JN.3	P.1.6	XBB.1.16.11
JN.1.11.1	JN.4	P.1.7	XBB.1.16.11
JN.1.16	JN.6	Q.1	XBB.1.16.15
JN.1.16.1	KP.1	Q.2	XBB.1.16.15
JN.1.18	KP.1.1	Q.3	XBB.1.16.17
JN.1.18.3	KP.2	Q.4	XBB.1.16.17
JN.1.18.6	KP.2.2	Q.5	XBB.1.16.19
JN.1.19	KP.2.3	Q.6	XBB.1.16.2
JN.1.2	KP.2.6	Q.7	XBB.1.16.2
JN.1.22	KP.3	Q.8	XBB.1.16.21
JN.1.4	KP.3.1	R.1	XBB.1.16.3
JN.1.4	KP.3.1.1	XAA	XBB.1.16.4
JN.1.4.1	KP.3.1.4	XAB	XBB.1.16.5
JN.1.4.1	KP.3.2.2	XAC	XBB.1.16.6
JN.1.4.2	KP.3.2.3	XAD	XBB.1.16.6
JN.1.4.2	KP.3.2.3	XAE	XBB.1.16.9
JN.1.4.3	KP.3.2.4	XAF	XBB.1.16.9
JN.1.5	KP.3.2.4	XAG	XBB.1.17.1
JN.1.5	KP.3.3	XAH	XBB.1.2
JN.1.7	KP.3.3	XAJ	XBB.1.22.1
JN.1.7	KP.4.1	XAN	XBB.1.3
JN.1.7.1	KP.4.1	XAW	XBB.1.4
JN.1.7.1	LB.1	XAY	XBB.1.4.1
JN.1.7.2	LB.1	XAY.1	XBB.1.5



XBB.1.5.11	XBB.2.3.1	XBG	XG
XBB.1.5.12	XBB.2.3.11	XBJ	XH
XBB.1.5.13	XBB.2.3.2	XBK	XJ
XBB.1.5.18	XBB.3	XBL	XK
XBB.1.5.28	XBB.3.1	XBM	XL
XBB.1.5.59	XBB.3.2	XD	XM
XBB.1.5.7	XBB.4	XDK	XN
XBB.1.5.71	XBB.5	XDK.1	XP
XBB.1.6	XBB.6	XE	XQ
XBB.1.7	XBB.6.1	XEC	XR
XBB.1.8	XBC	XEC.15	XT
XBB.1.9	XBC.1	XEC.2	XU
XBB.1.9	XBC.1.1	XEC.23	XV
XBB.1.9.1	XBC.1.2.1	XEC.4	XW
XBB.1.9.2	XBC.2	XEC.8	XY
XBB.2	XBD	XF	XZ
XBB.2.2	XBE	XFG	
XBB.2.3	XBF	XFG.3	



The one thousand four hundred and forty two (1,442) very rare sequences represent only two hundred and thirty three (233) unique sequences that indicate a potential for impaired detection by both assays (indicated in Table 1). One hundred and nine (109) sequences have been evaluated using synthetic nucleic acid template to estimate the impact of the observed mismatches on amplification and detection by both assays. Table 3 below shows the observed effect of the mismatches found in the 109 unique sequences tested with synthetic templates. The BIOFIRE RP2.1, RP2.1*plus*, RP2.1-EZ, SPOTFIRE R Panel, SPOTFIRE R Panel Mini, SPOTFIRE R/ST Panel and SPOTFIRE R/ST Panel Mini SARS-CoV-2 test only requires one assay to be positive in order to report “SARS-CoV-2 Detected” therefore these 1,442 very rare sequences are expected to be detected by the BIOFIRE Respiratory family of products but could demonstrate a reduction in analytical sensitivity near the limit of detection.

Effect on pouch	Number of unique sequences tested	Total number of sequences
No effect	61/109	612/ 14,366,238
Minor (2-10 fold reduction)	39/109	176/ 14,366,238
Mild (10-100 fold reduction)	8 / 109	14 / 14,366,238
Moderate (≥ 100 fold reduction)	1 / 109	1 / 14,366,238

This analysis supports the conclusion that all of the 14,366,238 sequences evaluated as of June 21, 2025 can be amplified and detected by the BIOFIRE Respiratory family of tests, though a limitation or impairment on detection is predicted at low concentrations ($\leq 10x$ the limit of detection) for less than 0.01% of the sequences (1,442/ 14,366,238) with only nine unique sequences identified with detection likely affected greater than 10 fold.



3. Conclusions

- 3.1. The BIOFIRE Respiratory 2.1 Panels (RP2.1, RP2.1*plus* and RP2.1-EZ) and the SPOTFIRE Respiratory Panels (R Panel, R Panel Mini, R/ST Panel and R/ST Panel Mini) SARSCoV2-1 assay may exhibit reduced reactivity with certain sequence variants. This reduction does not impact the overall detection capability for circulating SARS-CoV-2 lineages identified as of June 21, 2025.
- 3.2. Global in silico analysis (as of June 21, 2025) predicts that the BIOFIRE Respiratory Panels (RP2.1, RP2.1*plus*, RP2.1-EZ, SPOTFIRE R Panel, SPOTFIRE R Panel Mini, SPOTFIRE R/ST Panel and SPOTFIRE R/ST Panel Mini) SARS-CoV-2 assays will detect all sequences evaluated, including FLIRT variant sequences.
- 3.3. BIOFIRE tests do not report cycle threshold (Ct) values and the BIOFIRE Respiratory Panels SARS-CoV-2 assays are not intended to monitor for novel mutations.

Bioinformatics for the SARS-CoV-2 virus is expanding at a rapid rate since the emergence of the virus in human infection in late 2019. Thousands of viral whole genome sequences are being evaluated and submitted to public and private databases. As viral genomes evolve, monitoring of assay reactivity with new sequences is important for understanding the state-of-the-art for performance of the SARS-CoV-2 assays in the BIOFIRE Respiratory family of products (RP2.1, RP2.1*plus*, RP2.1-EZ, SPOTFIRE R Panel, SPOTFIRE R Panel Mini, SPOTFIRE R/ST Panel and SPOTFIRE R/ST Panel Mini).

bioMérieux continues to monitor these new sequences and is performing regular in silico analyses of the BIOFIRE Respiratory Panels SARS-CoV-2 assays.

Note: The BIOFIRE RP2.1-EZ test is for in vitro diagnostic use under Emergency Use Authorization only.

BIOFIRE RP2.1-EZ has not been FDA cleared or approved but has been authorized for emergency use by FDA under an Emergency Use Authorization (EUA) for use by laboratories certified under the Clinical Laboratory Improvement Amendments of 1988 (CLIA), 42 U.S.C. §263a, that meet requirements to perform high, moderate, or waived complexity tests. This product is for use at the Point of Care (POC), i.e., in patient care settings operating under a CLIA Certificate of Waiver, Certificate of Compliance, or Certificate of Accreditation.

BIOFIRE RP2.1-EZ has been authorized only for the detection and differentiation of nucleic acid of SARS-CoV-2 from multiple respiratory viral and bacterial organisms.

The emergency use of BIOFIRE RP2.1-EZ is only authorized for the duration of the declaration that circumstances exist justifying the authorization of emergency use of in vitro diagnostics under Section 564(b)(1) of the Federal Food, Drug, and Cosmetic Act, 21 U.S.C. § 360bbb-3(b)(1), unless the declaration is terminated, or authorization is revoked sooner.

Technical Support Contact Information

bioMérieux is dedicated to providing the best customer support available. If you have questions or concerns about this process, please contact your local bioMérieux representative or your authorized distributor.

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