



Letter of Declaration

To whom it may concern,

We, HANGZHOU ALLTEST BIOTECH CO., LTD., located at #550, Yinhai Street, Hangzhou Economic & Technological Development Area, Hangzhou -310018, P.R. China

Declare that:

Alltest SARS-CoV-2 Antigen Rapid Test (COVID-19 Antigen Rapid Test) is designated to detect the nucleocapsid protein (NP) of SARS-CoV-2 virus. Epitope of capture antibody and detection antibody used in Alltest SARS-CoV-2 Antigen Rapid Test (COVID-19 Antigen Rapid Test) is not in the mutation area. Thus, above mentioned SARS-CoV-2 variants with spike protein mutation and nucleocapsid protein mutation of Alpha(B.1.1.7), Beta(B.1.351), Gamma(P.1), Delta(B.1.617.2), Lambda(C.37), Zeta(P.2), Kappa(B.1.617.1), Eta(B.1.525), Lota(B.1.526), Epsilon(B.1.427), Theta(P.3), Omicron(B.1.1.529), Omicron(BA.1), Omicron(BA.2), Omicron(BA.3), Omicron XE, Omicron BA.4, Omicron BA.5, Omicron BA.2.12.1, BA.2.75, BF.7, BJ.1, BA.2.75.2, BQ.1.1, XBB, BQ.1, XBB.1.5, BA.5.2, BN.1.2, BN.1.3, XBB.1.16, XBB.1.9.1, EU.1.1, EG.5.1, EG.5, BA.2.86, FL.1.5.1, XBB.2.3, HK.3, JN.1, JN.2, HV.1, XBB.1.16.6, XBB.1.16.11, KP.2, KP.1, KP.1.1, KP.3, KS.1, KP.3.1.1, LB.1, XEC, LF.7 and NB.1.8 do not affect the detection performance of Alltest SARS-CoV-2 Antigen Rapid Test (COVID-19 Antigen Rapid Test).

The Alltest's related product include:

ICOV-502, ICOV-802, ICOV-802H, ICOV-803H, INCP-502, INCP-502H, INCP-G502, ISIN-525H, ICIC-525, ISIC-525, ISIR-535, IRT-545, IRT-555, IRTA-555

Signature: 

R&D Director: Kael Chen

Date: May 20th, 2025

Hangzhou Alltest Biotech Co., Ltd

Add: #550 Yinhai Street, Hangzhou Economic and Technological Development Area
310018, P.R China

WHO label	Pango lineage	GISAID clade/lineage	Neststrain clade	Spike protein mutations	Nucleocapsid protein mutations
Alpha	B.1.1.7	GRY, GR/501Y.V1	20I/501Y.V1, 20B/501Y.V1	del69/70, del144/144, N501Y, A570D, D614G, P681H, T716I, S982A, D1118H	D3L, R203K, G204R, S235F
Beta	B.1.351	GH/501Y.V2	20H/501Y.V2	D80A, D215G, K417N, E484K, N501Y, D614G, A701V	T205I
Delta	B.1.617.2	G/452R.V3	21A/S:478K	T19R, G142D, E156G, del157/158, L452R, T478K, D614G, P681R, D950N	D63G, R203M, D377Y
Epsilon	B.1.427 & B.1.429	GH/452R.V1	20C/S.452R	S13I, W152C, L452R, D614G	T205I
Eta	B.1.525	G/484K.V3	20A/S484K	Q52R, A67V, del69/70, del144/144, E484K, D614G, Q677H, F888L	S2Y, del3/3, A12G, T205I
Gamma	P.1	GR/501Y.V3	20J/501Y.V3	L18F, T20N, P26S, D138Y, R190S, K417T, E484K, N501Y, D614G, H655Y, T1027I, V1176F	P80R, R203K, G204R
Kappa	B.1.617.1	G/452R.V3	21A/S:154K	L452R, E484Q, D614G, P681R, Q1071H	R203M, D377Y
Lambda	C.37	GR/452Q.V1	20D	G75V, T76I, R246N, del247/253, L452Q, F490S, D614G, T859N	P13L, R203K, G204R, G214C
Lota	B.1.526	GH	20C/S:484K	L5F, T95I, D253G, D614G	/
Omicron	B.1.1.529	GR/484A	21K	A67V, del69/70, T95I, G142D, del143/145, N211I, del1212/212, G339D, S371L, S373P, K417N, N440K, G446S, T547K, D614G, H655Y, N679K, P681H, N764K, D796Y, N856K, Q954H, N969K, L981F	P13L, del31/33, R203K, G204R
Theta	P.3	GR	20B/S:265C	E484K, N501Y, D614G, P681H, E1092K, H1101Y, V1176F	R203K, G204R
Zeta	P.2	GR	20B/S.484K	E484K, D614G, V1176F	A119S, R203K, G204R, M234I
Omicron	BA.1	n/a	n/a	A67V, del69/70, T95I, G142D, del143/145, N211I, del1212/212, G339D, S371L, S373P, S375F, K477N, T478K, E484A, Q493R, Q496S, Q498R, N510Y, Y505H, T547K, D614G, H655Y, N679K, P681H, N764K, D796Y, N856K, Q954H, N969K, L981F	P13L, del31/33, R203K, G204R
Omicron	BA.2	n/a	n/a	T95I, L24S, del25/27, G142D, V213G, G339D, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, S477N, T478K, E484A, Q493R, Q498R, N510Y, Y505H, T547K, D614G, H655Y, N679K, P681H, N764K, D796Y, Q954H, N969K	P13L, del31/33, R203K, G204R, S413R
Omicron	BA.3	n/a	n/a	A67V, del69/70, T95I, G142D, del143/145, N211I, del1212/212, T478K, D614G, H655Y, N679K, P681H, N764K, D796Y, Q954H, N969K	P13L, del31/33, R203K, G204R, S413R
Omicron	XE	n/a	n/a	T19I, L24del, P25del, P26del, A27S, G142D, V213G, G339D, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, S477N, T478K, E484A, Q493R, Q498R, N501Y, Y505H, D614G, H655Y, N679K, P681H, N764K, D796Y, Q954H, N969K	P13L, E31del, R32del, S33del, R203K, G204R, S413R
Omicron	BA.4	n/a	n/a	T95I, L24S, del25/27, del69/70, G142D, V213G, G339D, S371F, S373P, S375F, T376A, D405N, K417N, N440K, L452R, S477N, T478K	P13L, del31/33, P151S, R203K, G204R, S413R

WHO label	Pango lineage	GISAID clade/lineage	Neststrain clade	Spike protein mutations	Nucleocapsid protein mutations
				E484A, F486V, Q498R, N510Y, Y505H, D614G, H655Y, N679K, P681H, D796Y, Q954H, N969K	
Omicron	BA.5	n/a	n/a	T95I, L24S, del25/27, del69/70, G142D, V213G, G339D, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, L452R, S477N, T478K, E484A, F486V, Q498R, N510Y, Y505H, D614G, H655Y, N679K, N764K, P681H, D796Y, Q954H, N969K	P13L, del31/33, R203K, G204R, S413R
Omicron	BA.2.75	n/a	n/a	T19I, L24del, P25del, P26del, A27S, G142D, K147E, W152R, F157L, I210V, V213G, G257S, G339H, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, G446S, N460K, S477N, T478K, E484A, Q498R, N501Y, Y505H, D614G, H655Y, N679K, P681H, N764K, D796Y, Q954H, N969K	P13L, E31del, R32del, S33del, R203K, G204R, S413R
Omicron	BF.7	n/a	n/a	T19I, L24del, P25del, P26del, A27S, H69del, V70del, G142D, V213G, G339D, R346T, S371F, S373P, S375F, T376A, D405N, R408S, K417N, D614G, H655Y, N679K, P681H, N764K, D796Y, Q954H, N969K	P13L, G30del, E31del, R32del, S33F, R203K, G204R, S413R
Omicron	BJ.1	n/a	n/a	T19I, L24del, P25del, P26del, A27S, V83A, G142D, Y144del, H146Q, Q183E, V213E, G339H, R346T, L368I, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, V445P, G446S, S477N, T478K, V483A, E484A, F490V, Q493R, Q498R, N501Y, Y505H, D614G, H655Y, N679K, P681H, N764K, D796Y, G798D, Q954H, N969K, S1003I	P13L, E31del, R32del, S33del, R203K, G204R, T282I, S413R
Omicron	BA.2.75.2	n/a	n/a	T19I, L24del, P25del, P26del, A27S, G142D, K147E, W152R, F157L, I210V, V213G, G257S, G339H, R346T, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, G446S, N460K, S477N, T478K, E484A, F486S, Q498R, N501Y, Y505H, D614G, H655Y, N679K, P681H, N764K, D796Y, Q954H, N969K, D1199N	P13L, E31del, R32del, S33del, R203K, G204R, S413R
Omicron	BQ.1.1	n/a	n/a	T19I, L24del, P25del, P26del, A27S, H69del, V70del, G142D, V213G, G339D, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, L452R, S477N, T478K, E484A, F486V, Q498R, N501Y, Y505H, D614G, H655Y, N679K, P681H, N764K, D796Y, Q954H, N969K	P13L, E31del, R32del, S33del, E136D, R203K, G204R, S413R
Omicron	XBB	n/a	n/a	T19I, L24del, P25del, P26del, A27S, V83A, G142D, H146Q, Q183E, V213E, G339H, R346T, L368I, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, V445P, G446S, N460K, S477N, T478K, E484A, F486S, F490S, Q498R, N501Y, Y505H, D614G, H655Y, N679K, P681H, N764K, D796Y, Q954H, N969K	P13L, E31del, R32del, S33del, R203K, G204R, S413R
Omicron	BQ.1	n/a	n/a	T19I, L24del, P25del, P26del, A27S, G142D,	P13L, E31del,

WHO label	Pango lineage	GISAIID clade/lineage	Neststrain clade	Spike protein mutations	Nucleocapsid protein mutations
				V213G, G339D, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, K444T, L452R, N460K, S477N, T478K, E484A, F486V, Q498R, N501Y, Y505H, D614G, H655Y, N679K, P681H, N764K, D796Y, Q954H, N969K	R32del, S33del, E136D, R203K, G204R, S413R
Omicron	XBB.1.5	n/a	n/a	T19I, L24del, P25del, P26del, A27S, V83A, G142D, Y144del, H146Q, Q183E, V213E, G252V, G339H, R346T, L368I, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, V445P, G446S, N460K, S477N, T478K, E484A, F486P, F490S, Q498R, N501Y, Y505H, D614G, H655Y, N679K, P681H, N764K, D796Y, Q954H, N969K	P13L, E31del, R32del, S33del, R203K, G204R, S413R
Omicron	BA.5.2	n/a	n/a	T19I, L24del, P25del, P26del, A27S, H69del, V70del, G142D, V213G, G339D, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, L452R, S477N, T478K, E484A, F486V, Q498R, N501Y, Y505H, D614G, H655Y, N679K, P681H, N764K, D796Y, Q954H, N969K	P13L, E31del, R32del, S33del, R203K, G204R, S413R
Omicron	BN.1.2	n/a	n/a	T19I, L24del, P25del, P26del, A27S, G142D, K147E, W152R, F157L, I210V, V213G, G257S, G339H, R346T, K356T, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, G446S, N460K, S477N, T478K, E484A, F490S, Q498R, N501Y, Y505H, D614G, H655Y, N679K, P681H, N764K, D796Y, Q954H, N969K	P13L, E31del, R32del, S33del, R203K, G204R, S413R
Omicron	BN.1.3	n/a	n/a	T19I, L24del, P25del, P26del, A27S, G142D, K147E, W152R, F157L, I210V, V213G, G257S, G339H, R346T, K356T, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, G446S, N460K, S477N, T478K, E484A, F490S, Q498R, N501Y, Y505H, D614G, H655Y, N679K, P681H, N764K, D796Y, Q954H, N969K	P13L, E31del, R32del, S33del, R203K, G204R, S413R
Omicron	XBB.1.16	n/a	n/a	T19I, L24del, P25del, P26del, A27S, V83A, G142D, H146Q, E180V, Q183E, V213E, G339H, R346T, L368I, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, V445P, G446S, N460K, S477N, T478R, E484A, F486P, F490S, Q498R, N501Y, Y505H, D614G, H655Y, N679K, P681H, N764K, D796Y, Q954H, N969K	P13L, E31del, R32del, S33del, R203K, G204R, S413R
Omicron	XBB.1.9.1	n/a	n/a	T19I, L24del, P25del, P26del, A27S, V83A, G142D, H146Q, Q183E, V213E, G339H, R346T, L368I, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, V445P, G446S, N460K, S477N, T478R, E484A, F486P, F490S, Q498R, N501Y, Y505H, D614G, H655Y, N679K, P681H, N764K, D796Y, Q954H, N969K	P13L, E31del, R32del, S33del, R203K, G204R, S413R

WHO label	Pango lineage	GISAIID clade/lineage	Neststrain clade	Spike protein mutations	Nucleocapsid protein mutations
				S477N, T478K, E484A, F486P, F490S, Q498R, N501Y, Y505H, D614G, H655Y, N679K, P681H, N764K, D796Y, Q954H, N969K	
Omicron	EU.1.1	n/a	n/a	T19I, L24del, P25del, P26del, A27S, V83A, G142D, Y144del, H146Q, Q183E, V213E, G252V, G339H, R346T, L368I, S371F, S373P, S375F, T376A, D405N, R408S, I410V, K417N, N440K, V445P, G446S, N460K, S477N, T478K, E484A, F486P, F490S, Q498R, N501Y, Y505H, P521S, D614G, H655Y, N679K, P681H, N764K, D796Y, Q954H, N969K	P13L, E31del, R32del, S33del, R203K, G204R, S413R
Omicron	EG.5.1	n/a	n/a	T19I, L24del, P25del, P26del, A27S, Q52H, V83A, G142D, Y144del, H146Q, Q183E, V213E, G252V, G339H, R346T, L368I, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, V445P, G446S, F456L, N460K, S477N, T478K, E484A, F486P, F490S, Q498R, N501Y, Y505H, D614G, H655Y, N679K, P681H, N764K, D796Y, Q954H, N969K	P13L, E31del, R32del, S33del, R203K, G204R, S413R
Omicron	EG.5	n/a	n/a	T19I, L24del, P25del, P26del, A27S, V83A, G142D, Y144del, H146Q, Q183E, V213E, G252V, G339H, R346T, L368I, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, V445P, G446S, F456L, N460K, S477N, T478K, E484A, F486P, F490S, Q498R, N501Y, Y505H, D614G, H655Y, N679K, P681H, N764K, D796Y, Q954H, N969K	P13L, E31del, R32del, S33del, L161F, R203K, G204R, S413R
Omicron	BA.2.86	n/a	n/a	A27S, S50L, H69del, V70del, V127F, G142D, Y144del, F157S, R158G, N211del, L212I, V213G, L216F, H245N, A264D, I332V, G339H, K356T, S371F, S373P, S375F, T376A, R403K, D405N, R408S, K417N, N440K, V445H, G446S, N450D, L452W, N460K, S477N, T478K, N481K, E484K, F486P, Q498R, N501Y, Y505H, E554K, A570V, D614G, P621S, H655Y, N679K, P681R, N764K, D796Y, S939F, Q954H, N969K, P1143L	P13L, E31del, R32del, S33del, R203K, G204R, Q229K, S413R
Omicron	FL.1.5.1	n/a	n/a	T19I, L24S, del25/27, V83A, G142D, del144/144, H146Q, Q183E, V213E, G252V, G339H, R346T, L368I, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, V445P, G446S, F456L, N460K, S477N, T478R, E484A, F486P, F490S, Q498R, N501Y, Y505H, D614G, H655Y, N679K, P681H, A701V, N764K, D796Y, Q954H, N969K	P13L, del31/33, R203K, G204R, S413R
Omicron	XBB.2.3	n/a	n/a	T19I, L24S, del25/27, V83A, G142D, del144/144, H146Q, Q183E, V213E, D253G, G339H, R346T, L368I, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, V445P, G446S, N460K, S477N, T478K, E484A, F486P,	P13L, del31/33, R203K, G204R, S413R

WHO label	Pango lineage	GISAIID clade/lineage	Neststrain clade	Spike protein mutations	Nucleocapsid protein mutations
				F490S, Q498R, N501Y, Y505H, P521S, D614G, H655Y, N679K, P681H, N764K, D796Y, Q954H, N969K	
Omicron	HK.3	n/a	n/a	T19I, Q52H, V83A, G142D, H146Q, Q183E, V213E, G252V, G339H, R346T, L368I, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, V445P, G446S, L455F, F456L, N460K, S477N, T478K, E484A, F486P, F490S, Q498R, N501Y, Y505H, D614G, H655Y, N679K, P681H, N764K, D796Y, Q954H, N969K	P13L, R203K, G204R, S413R
Omicron	JN.1	n/a	n/a	ins16MPLF, T19I, R21T, L24del, P25del, P26del, A27S, S50L, H69del, V70del, V127F, G142D, Y144del, F157S, R158G, N211del, L212I, V213G, L216F, H245N, A264D, I332V, G339H, K356T, S371F, S373P, S375F, T376A, R403K, D405N, R408S, K417N, N440K, V445H, G446S, N450D, L452W, L455S, N460K, S477N, T478K, N481K, V483del, E484K, F486P, Q498R, N501Y, Y505H, E554K, A570V, D614G, P621S, H655Y, N679K, P681R, N764K, D796Y, S939F, Q954H, N969K, P1143L	P13L, E31del, R32del, S33del, R203K, G204R, Q229K, S413R
Omicron	JN.2	n/a	n/a	ins16MPLF, T19I, R21T, L24del, P25del, P26del, A27S, S50L, H69del, V70del, V127F, G142D, Y144del, F157S, R158G, N211del, L212I, V213G, L216F, H245N, A264D, I332V, G339H, K356T, S371F, S373P, S375F, T376A, R403K, D405N, R408S, K417N, N440K, V445H, G446S, N450D, L452W, N460K, S477N, T478K, N481K, V483del, E484K, F486P, Q498R, N501Y, Y505H, E554K, A570V, D614G, P621S, H655Y, N679K, P681R, N764K, D796Y, S939F, Q954H, N969K, P1143L	P13L, E31del, R32del, S33del, R203K, G204R, Q229K, S413R
Omicron	HV.1	n/a	n/a	T19I, L24del, P25del, P26del, A27S, Q52H, V83A, G142D, Y144del, H146Q, F157L, Q183E, V213E, G252V, G339H, R346T, L368I, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, V445P, G446S, L452R, F456L, N460K, S477N, T478K, E484A, F486P, F490S, Q498R, N501Y, Y505H, D614G, H655Y, N679K, P681H, N764K, D796Y, Q954H, N969K	P13L, E31del, R32del, S33del, R203K, G204R, S413R
Omicron	XBB.1.16.6	n/a	n/a	T19I, L24del, P25del, P26del, A27S, V83A, G142D, Y144del, H146Q, E180V, Q183E, V213E, G252V, G339H, R346T, L368I, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, V445P, G446S, F456L, N460K, S477N, T478R, E484A, F486P, F490S, Q498R, N501Y, Y505H, D614G, H655Y, N679K, P681H, N764K, D796Y, Q954H, N969K	P13L, E31del, R32del, S33del, R203K, G204R, S413R
Omicron	XBB.1.16.11	n/a	n/a	T19I, L24del, P25del, P26del, A27S, V83A,	P13L, E31del,

WHO label	Pango lineage	GISAID clade/lineage	Neststrain clade	Spike protein mutations	Nucleocapsid protein mutations
				G142D, Y144del, H146Q, E180V, Q183E, V213E, G252V, G339H, R346T, L368I, S371F, S373P, S375F, T376A, D405N, R408S, K417N, N440K, V445P, G446S, N460K, S477N, T478R, E484A, F486P, F490S, Q498R, N501Y, Y505H, P521T, D614G, H655Y, N679K, P681H, N764K, D796Y, Q954H, N969K	R32del, S33del, R203K, G204R, S413R
Omicron	KP.2	GRA	n/a	ins16MPLF, T19I, R21T, L24del, P25del, P26del, A27S, S50L, H69del, V70del, V127F, G142D, Y144del, F157S, R158G, N211del, L212I, V213G, L216F, H245N, A264D, I332V, G339H, R346T, K356T, S371F, S373P, S375F, T376A, R403K, D405N, R408S, K417N, N440K, V445H, G446S, N450D, L452W, L455S, F456L, N460K, S477N, T478K, N481K, V483del, E484K, F486P, Q498R, N501Y, Y505H, E554K, A570V, D614G, P621S, H655Y, N679K, P681R, N764K, D796Y, S939F, Q954H, N969K, V1104L, P1143L	P13L, E31del, R32del, S33del, R203K, G204R, Q229K, S413R
Omicron	KP.1	GRA	n/a	ins16MPLF, T19I, R21T, L24del, P25del, P26del, A27S, S50L, H69del, V70del, V127F, G142D, Y144del, F157S, R158G, N211del, L212I, V213G, L216F, H245N, A264D, I332V, G339H, K356T, S371F, S373P, S375F, T376A, R403K, D405N, R408S, K417N, N440K, V445H, G446S, N450D, L452W, L455S, F456L, N460K, S477N, T478K, N481K, V483del, E484K, F486P, Q498R, N501Y, Y505H, E554K, A570V, D614G, P621S, H655Y, N679K, P681R, N764K, D796Y, S939F, Q954H, N969K, K1086R, V1104L, P1143L	P13L, E31del, R32del, S33del, R203K, G204R, Q229K, S413R
Omicron	KP.1.1	GRA	n/a	ins16MPLF, T19I, R21T, L24del, P25del, P26del, A27S, S50L, H69del, V70del, V127F, G142D, Y144del, F157S, R158G, N211del, L212I, V213G, L216F, H245N, A264D, I332V, G339H, R346T, K356T, S371F, S373P, S375F, T376A, R403K, D405N, R408S, K417N, N440K, V445H, G446S, N450D, L452W, L455S, F456L, N460K, S477N, T478K, N481K, V483del, E484K, F486P, Q498R, N501Y, Y505H, E554K, A570V, D614G, P621S, H655Y, N679K, P681R, N764K, D796Y, S939F, Q954H, N969K, K1086R, V1104L, P1143L	P13L, E31del, R32del, S33del, R203K, G204R, Q229K, S413R
Omicron	KP.3	GRA	n/a	ins16MPLF, T19I, R21T, L24del, P25del, P26del, A27S, S50L, H69del, V70del, V127F, G142D, Y144del, F157S, R158G, N211del, L212I, V213G, L216F, H245N, A264D, I332V, G339H, K356T, S371F, S373P, S375F, T376A, R403K, D405N, R408S, K417N, N440K, V445H,	P13L, E31del, R32del, S33del, R203K, G204R, Q229K, S413R

WHO label	Pango lineage	GISAIID clade/lineage	Neststrain clade	Spike protein mutations	Nucleocapsid protein mutations
				G446S, N450D, L452W, L455S, F456L, N460K, S477N, T478K, N481K, V483del, E484K, F486P, Q493E, Q498R, N501Y, Y505H, E554K, A570V, D614G, P621S, H655Y, N679K, P681R, N764K, D796Y, S939F, Q954H, N969K, V1104L, P1143L	
Omicron	KS.1	GRA	n/a	ins16MPLF, T19I, R21T, L24del, P25del, P26del, A27S, S50L, F59S, H69del, V70del, V127F, G142D, Y144del, F157S, R158G, N211del, L212I, V213G, L216F, H245N, A264D, I332V, G339H, R346T, K356T, S371F, S373P, S375F, T376A, R403K, D405N, R408S, K417N, N440K, V445H, G446S, N450D, L452W, L455S, F456L, N460K, S477N, T478K, N481K, V483del, E484K, F486P, Q498R, N501Y, Y505H, E554K, A570V, D614G, P621S, H655Y, N679K, P681R, N764K, D796Y, S939F, Q954H, N969K, A1087S, P1143L	P13L, E31del, R32del, S33del, R203K, G204R, Q229K, S413R
Omicron	KP.3.1.1	GRA	n/a	ins16MPLF, T19I, R21T, L24del, P25del, P26del, A27S, S31del, S50L, H69del, V70del, V127F, G142D, Y144del, F157S, R158G, N211del, L212I, V213G, L216F, H245N, A264D, I332V, G339H, K356T, S371F, S373P, S375F, T376A, R403K, D405N, R408S, K417N, N440K, V445H, G446S, N450D, L452W, L455S, F456L, N460K, S477N, T478K, N481K, V483del, E484K, F486P, Q493E, Q498R, N501Y, Y505H, E554K, A570V, D614G, P621S, H655Y, N679K, P681R, N764K, D796Y, S939F, Q954H, N969K, V1104L, P1143L	P13L, E31del, R32del, S33del, R203K, G204R, Q229K, S413R
Omicron	LB.1	GRA	n/a	ins16MPLF, T19I, R21T, L24del, P25del, P26del, A27S, S31del, S50L, H69del, V70del, V127F, G142D, Y144del, F157S, R158G, Q183H, N211del, L212I, V213G, L216F, H245N, A264D, I332V, G339H, R346T, K356T, S371F, S373P, S375F, T376A, R403K, D405N, R408S, K417N, N440K, V445H, G446S, N450D, L452W, L455S, F456L, N460K, S477N, T478K, N481K, V483del, E484K, F486P, Q498R, N501Y, Y505H, E554K, A570V, D614G, P621S, H655Y, N679K, P681R, N764K, D796Y, S939F, Q954H, N969K, P1143L	P13L, E31del, R32del, S33del, R203K, G204R, Q229K, S413R

WHO label	Pango lineage	GISAID clade/lineage	Neststrain clade	Spike protein mutations	Nucleocapsid protein mutations
Omicron	XEC	n/a	n/a	T19I, R21T, T22N, L24S, P25del, P26del, A27S, S50L, F59S, H69del, V70del, V127F, G142D, Y144del, F157S, R158G, N211I, L212del, V213G, L216F, H245N, A264D, I332V, G339H, K356T, S371F, S373P, S375F, T376A, R403K, D405N, R408S, K417N, N440K, V445H, G446S, N450D, L452W, L455S, F456L, N460K, S477N, T478K, N481K, V483del, E484K, F486P, Q493E, Q498R, N501Y, Y505H, E554K, A570V, D614G, P621S, H655Y, N679K, P681R, N764K, D796Y, S939F, Q954H, N969K, V1104L, P1143L	P13L, E31del, R32del, S33del, R203K, G204P, Q229K, S413R
Omicron	XEC	n/a	n/a	ins16MPLF, T19I, R21T, T22N, L24del, P25del, P26del, A27S, S50L, F59S, H69del, V70del, V127F, G142D, Y144del, F157S, R158G, N211del, L212I, V213G, L216F, H245N, A264D, I332V, G339H, K356T, S371F, S373P, S375F, T376A, R403K, D405N, R408S, K417N, N440K, V445H, G446S, N450D, L452W, L455S, F456L, N460K, S477N, T478K, N481K, V483del, E484K, F486P, Q493E, Q498R, N501Y, Y505H, E554K, A570V, D614G, P621S, H655Y, N679K, P681R, N764K, D796Y, S939F, Q954H, N969K, V1104L, P1143L	P13L, E31del, R32del, S33del, R203K, G204P, Q229K, S413R
Omicron	LF.7	n/a	n/a	ins16MPLF, T19I, R21T, T22N, L24del, P25del, P26del, A27S, S31P, S50L, H69del, V70del, V127F, G142D, Y144del, F157S, R158G, K182R, R190S, N211del, L212I, V213G, L216F, H245N, A264D, I332V, G339H, R346T, K356T, S371F, S373P, S375F, T376A, R403K, D405N, R408S, K417N, N440K, K444R, V445H, G446S, N450D, L452W, L455S, F456L, N460K, S477N, T478K, N481K, V483del, E484K, F486P, Q498R, N501Y, Y505H, E554K, A570V, D614G, P621S, H655Y, N679K, P681R, N764K, D796Y, S939F, Q954H, N969K, P1143L	P13L, E31del, R32del, S33del, R203K, G204R, Q229K, S413R
Omicron	NB.1.8	n/a	n/a	ins16MPLF, T19I, R21T, T22N, L24del, P25del, P26del, A27S, S50L, F59S, H69del, V70del, V127F, G142D, Y144del, F157S, R158G, G184S, N211del, L212I, V213G, L216F, H245N, A264D, I332V, G339H, K356T, S371F, S373P, S375F, T376A, R403K, D405N, R408S, K417N, N440K, V445H, G446S, N450D, L452W, L455S, F456L, N460K, S477N, T478I, N481K, V483del, E484K, F486P, Q493E, Q498R, N501Y, Y505H, E554K, A570V, D614G, P621S, H655Y, N679K, P681R, N764K, D796Y, S939F, Q954H, N969K, P1143L	P13L, E31del, R32del, S33del, R203K, G204R, S413R