

FAO World Reference Laboratory for Foot-and-Mouth Disease (WRLFMD)

Genotyping Report

FMDV serotype: O
Country: Kenya
Year: 2017, 2018
Batch: WRLFMD/2018/00023
No. of sequences: 3
Report date: 24th September 2018
Report generated by: Nick Knowles
Report checked by: Kasia Bankowska



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Virus sample name:	KEN/11/2017
Sender reference:	K30/17
Location of origin:	Ruiru, Kiambu
Country of origin:	Kenya
Date of collection:	12/07/2017
Host species:	bovine
Serotype:	O
Topotype:	EA-2
Lineage:	
Sublineage:	
Sequence length:	633
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	05/09/2018
Primers:	O-1C244F/EUR-2B52R; O-1C272F/EUR-2B52R; FMD-3161F/FMD-4303R
Received for sequencing:	17/09/2018
Created:	24/09/2018
Last updated:	24/09/2018
VIBASys IDs: sample 37395, genome 37396, sequence viba_37397, sequencing info 37398	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_33162	TAN-CVL-2011-0039	bovine	94.6	0	O		EA-2	
viba_15522	KEN/137/2010	cattle	94.6	0	O		EA-2	
viba_15542	KEN/151/2010	cattle	94.6	0	O		EA-2	
viba_33166	TAN-CVL-2011-0046	bovine	94.6	0	O		EA-2	
viba_20142	TAN/39/2012	cattle	94.5	0	O		EA-2	
viba_20138	TAN/38/2012	cattle	94.5	0	O		EA-2	
viba_18438	KEN/16/2011	cattle	94.3	0	O		EA-2	
viba_33170	TAN-CVL-2011-0031	cattle	94.2	1	O		EA-2	
viba_18434	KEN/15/2011	cattle	94.0	0	O		EA-2	
viba_263	TAN/2/2004	bovine	93.8	0	O		EA-2	

Most Closely Related Prototype Sequences

see http://www.wrlfmd.org/fmd_genotyping/prototypes.htm

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_263	TAN/2/2004	bovine	93.8	0	O		EA-2	
viba_85	UGA/3/2002		89.9	0	O		EA-2	
viba_74	KEN/5/2002	bovine	89.4	0	O		EA-2	
viba_221	MAL/1/98		88.5	0	O		EA-2	
viba_293	BHU/3/2009	cattle	84.5	0	O	ME-SA	Ind-2001	d
viba_116	SUD/2/86	bovine	84.5	0	O		EA-3	
viba_523	K83/79		84.4	0	O		EA-1	
viba_854	ETH/1/2007	cattle	84.4	0	O		EA-3	
viba_617	IND/53/79	bovine	84.0	0	O	ME-SA		
viba_397	UAE/4/2008	gazelle	84.0	0	O	ME-SA	Ind-2001	c

Virus sample name:	KEN/15/2017
Sender reference:	K55/17
Location of origin:	Elgeyo-Marakwet
Country of origin:	Kenya
Date of collection:	17/10/2017
Host species:	bovine
Serotype:	O
Topotype:	EA-2
Lineage:	
Sublineage:	
Sequence length:	633
Ambiguities:	0
Material submitted for sequencing:	BTy1
Harvest date of material:	06/09/2018
Primers:	O-1C244F/EUR-2B52R; O-1C272F/EUR-2B52R; FMD-3161F/FMD-4303R
Received for sequencing:	17/09/2018
Created:	24/09/2018
Last updated:	24/09/2018
VIBASys IDs: sample 37399, genome 37400, sequence viba_37401, sequencing info 37402	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_35569	KEN/4/2017	cattle	99.4	0	O		EA-2	
viba_35577	KEN/6/2017	cattle	99.4	0	O		EA-2	
viba_35573	KEN/5/2017	cattle	99.2	0	O		EA-2	
viba_6715	UGA/1/2004	bovine	91.8	0	O		EA-2	
viba_6719	UGA/3/2004	bovine	91.8	0	O		EA-2	
viba_6731	UGA/6/2004	bovine	91.6	0	O		EA-2	
viba_85	UGA/3/2002		91.5	0	O		EA-2	
viba_6739	UGA/8/2004	bovine	91.5	0	O		EA-2	
viba_13056	TAN/44/2009	cattle	91.5	0	O		EA-2	
viba_6727	UGA/5/2004	bovine	91.5	0	O		EA-2	

Most Closely Related Prototype Sequences

see http://www.wrlfmd.org/fmd_genotyping/prototypes.htm

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_85	UGA/3/2002		91.5	0	O		EA-2	
viba_74	KEN/5/2002	bovine	89.9	0	O		EA-2	
viba_221	MAL/1/98		88.6	0	O		EA-2	
viba_263	TAN/2/2004	bovine	88.0	0	O		EA-2	
viba_116	SUD/2/86	bovine	85.2	0	O		EA-3	
viba_576	IND/R2/75		84.4	0	O	ME-SA		
viba_354	PAK/16/2010	cattle	84.2	0	O	ME-SA	PanAsia-2	PUN-10
viba_285	UKG/35/2001	porcine	84.2	0	O	ME-SA	PanAsia	
viba_617	IND/53/79	bovine	84.2	0	O	ME-SA		
viba_541	OMN/7/2001	bovine	84.0	0	O	ME-SA	Ind-2001	b

Virus sample name:	KEN/4/2018
Sender reference:	K43/18
Location of origin:	Lanet, Nakuru
Country of origin:	Kenya
Date of collection:	19/02/2018
Host species:	bovine
Serotype:	O
Topotype:	EA-2
Lineage:	
Sublineage:	
Sequence length:	633
Ambiguities:	0
Material submitted for sequencing:	BTy2
Harvest date of material:	08/09/2018
Primers:	O-1C244F/EUR-2B52R; O-1C272F/EUR-2B52R; FMD-3161F/FMD-4303R
Received for sequencing:	17/09/2018
Created:	24/09/2018
Last updated:	24/09/2018
VIBASys IDs: sample 37403, genome 37404, sequence viba_37405, sequencing info 37406	

Most Closely Related Sequences

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_15538	KEN/150/2010	cattle	94.5	0	O		EA-2	
viba_7455	KEN/10/2005	cattle	92.4	0	O		EA-2	
viba_6699	TAN/12/2004	bovine	92.4	0	O		EA-2	
viba_7467	KEN/27/2005	cattle	92.1	0	O		EA-2	
viba_263	TAN/2/2004	bovine	92.1	0	O		EA-2	
viba_6695	TAN/3/2004	bovine	92.1	0	O		EA-2	
viba_7459	KEN/14/2005	cattle	91.8	0	O		EA-2	
viba_33166	TAN-CVL-2011-0046	bovine	91.6	0	O		EA-2	
viba_15530	KEN/146/2010	cattle	91.3	0	O		EA-2	
viba_33162	TAN-CVL-2011-0039	bovine	91.3	0	O		EA-2	

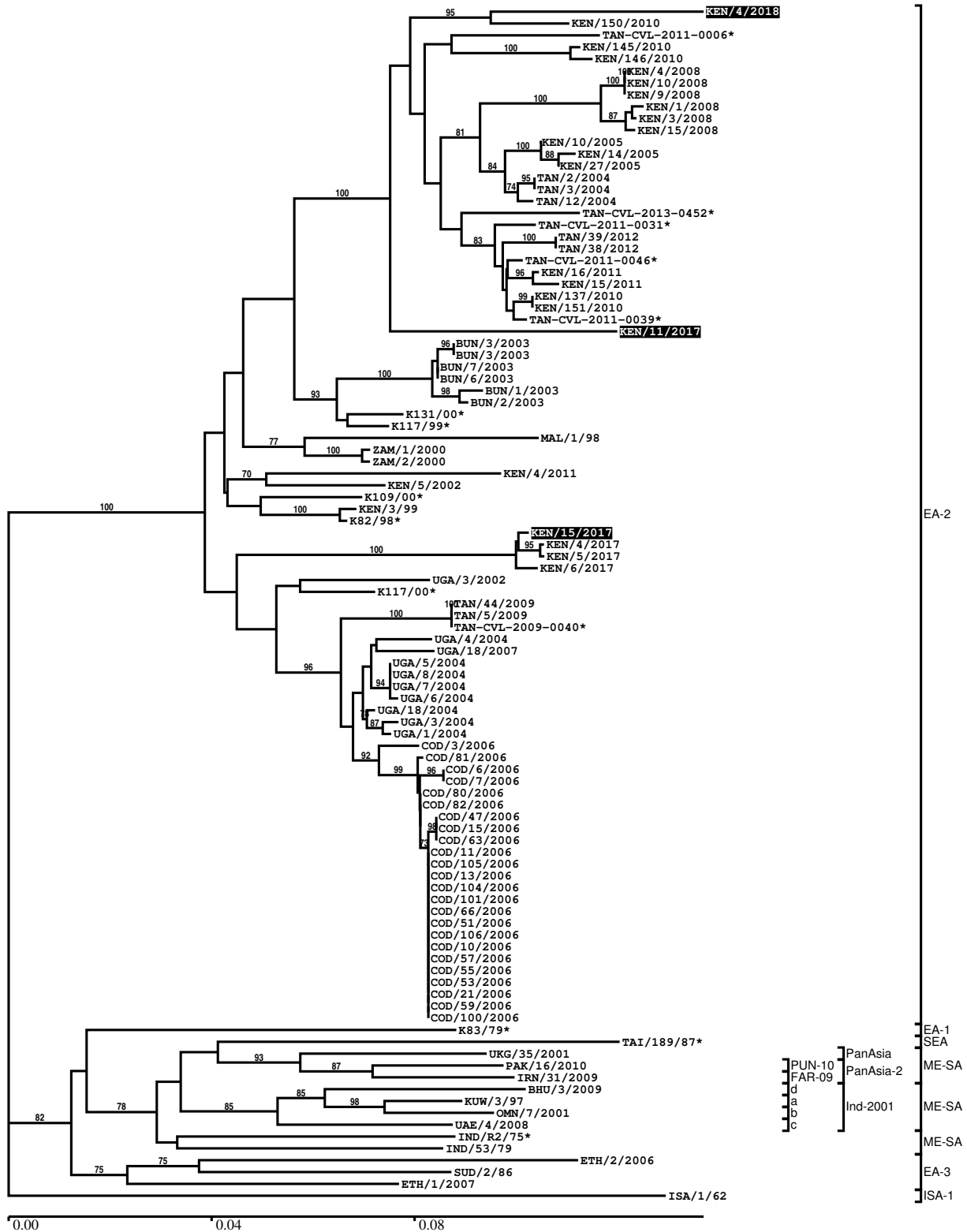
Most Closely Related Prototype Sequences

see http://www.wrlfmd.org/fmd_genotyping/prototypes.htm

sequence	virus name	Host	% Id.	# Ambig.	serotype	topotype	lineage	sublineage
viba_263	TAN/2/2004	bovine	92.1	0	O		EA-2	
viba_85	UGA/3/2002		87.9	0	O		EA-2	
viba_74	KEN/5/2002	bovine	87.5	0	O		EA-2	
viba_221	MAL/1/98		87.3	0	O		EA-2	
viba_523	K83/79		83.6	0	O		EA-1	
viba_397	UAE/4/2008	gazelle	83.3	0	O	ME-SA	Ind-2001	c
viba_705	KUW/3/97	bovine	83.0	0	O	ME-SA	Ind-2001	a
viba_541	OMN/7/2001	bovine	82.2	0	O	ME-SA	Ind-2001	b
viba_766	IRN/31/2009	cattle	82.2	0	O	ME-SA	PanAsia-2	FAR-09
viba_62	ETH/2/2006	bovine	82.0	0	O		EA-3	

Report on FMDV O in Kenya in 2017, 2018

Batch: WRLFMD/2018/00023



*, not a WRLFMD Reference Number

Analysis Parameters

VP1 subsequence extractor:	vp1_O
Query sequence set:	WRLFMD/2018/00023-Kenya-O (3 sequences)
Sequence database set:	allseqs_O (3855 sequences)
Prototype sequence set:	!prototypes_O (48 sequences)
Number of related sequences reported:	10
Minimal VP1 subsequence match length	600
Sequence alignment method:	muscle (default parameters)
Sequence alignment length:	636
Phylogeny reconstruction method:	fdnadist, fneighbor
Number of bootstrap samples:	1000
Random seed for bootstrapping:	1
Displaying bootstrap values above:	70.0%
Number of sequences in tree capped at:	100
Number of prototype sequences in tree:	17
VIBASys version:	reflabs-1.1.2

Sequences in the Phylogenetic Tree

All sequences in the tree are in taxonomic group FMDV/O

label	accession	host(s)	lab	country	taxonomic information
KEN/4/2018	n/a	bovine	WRLFMD	Kenya	EA-2
KEN/150/2010	KF135286	cattle	WRLFMD	Kenya	EA-2
TAN-CVL-2011-0006*	n/a	bovine	CVL	Tanzania	EA-2
KEN/145/2010	KF135283	cattle	WRLFMD	Kenya	EA-2
KEN/146/2010	KF135284	cattle	WRLFMD	Kenya	EA-2
KEN/4/2008	KF135277	cattle	WRLFMD	Kenya	EA-2
KEN/10/2008	n/a	cattle	WRLFMD	Kenya	EA-2
KEN/9/2008	n/a	cattle	WRLFMD	Kenya	EA-2
KEN/1/2008	n/a	cattle	WRLFMD	Kenya	EA-2
KEN/3/2008	KF135276	cattle	WRLFMD	Kenya	EA-2
KEN/15/2008	n/a	cattle	WRLFMD	Kenya	EA-2
KEN/10/2005	n/a	cattle	WRLFMD	Kenya	EA-2
KEN/14/2005	KF135273	cattle	WRLFMD	Kenya	EA-2
KEN/27/2005	KF135274	cattle	WRLFMD	Kenya	EA-2
TAN/2/2004	KF561679	bovine	WRLFMD	Tanzania	EA-2
TAN/3/2004	KF561680	bovine	WRLFMD	Tanzania	EA-2
TAN/12/2004	KF561681	bovine	WRLFMD	Tanzania	EA-2
TAN-CVL-2013-0452*	n/a	cattle	CVL, Tanzania	Tanzania	EA-2
TAN-CVL-2011-0031*	n/a	cattle	CVL, Tanzania	Tanzania	EA-2
TAN/39/2012	MF592624	cattle	WRLFMD	Tanzania	EA-2
TAN/38/2012	MF592623	cattle	WRLFMD	Tanzania	EA-2
TAN-CVL-2011-0046*	n/a	bovine	CVL	Tanzania	EA-2
KEN/16/2011	KF135293	cattle	WRLFMD	Kenya	EA-2
KEN/15/2011	KF135292	cattle	WRLFMD	Kenya	EA-2
KEN/137/2010	KF135282	cattle	WRLFMD	Kenya	EA-2
KEN/151/2010	KF135287	cattle	WRLFMD	Kenya	EA-2
TAN-CVL-2011-0039*	n/a	bovine	CVL	Tanzania	EA-2
KEN/11/2017	n/a	bovine	WRLFMD	Kenya	EA-2
BUN/3/2003	n/a	n/a	WRLFMD	Burundi	EA-2
BUN/3/2003	n/a	n/a	WRLFMD	Burundi	EA-2
BUN/7/2003	n/a	n/a	WRLFMD	Burundi	EA-2
BUN/6/2003	n/a	n/a	WRLFMD	Burundi	EA-2
BUN/1/2003	n/a	n/a	WRLFMD	Burundi	EA-2
BUN/2/2003	n/a	n/a	WRLFMD	Burundi	EA-2
K131/00*	HM756609	bovine	Makerere University	Kenya	EA-2

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label	accession	host(s)	lab	country	taxonomic information
K117/99*	HM625676	bovine	Makerere University	Kenya	EA-2
MAL/1/98	HM756603	n/a	WRLFMD	Malawi	EA-2
ZAM/1/2000	DQ165074	bovine	WRLFMD	Zambia	EA-2
ZAM/2/2000	n/a	bovine	WRLFMD	Zambia	EA-2
KEN/4/2011	n/a	cattle	WRLFMD	Kenya	EA-2
KEN/5/2002	DQ165073	bovine	WRLFMD	Kenya	EA-2
K109/00*	HM756606	bovine	Makerere University	Kenya	EA-2
KEN/3/99	HM625675	bovine	WRLFMD	Kenya	EA-2
K82/98*	n/a	bovine	WRLFMD	Kenya	EA-2
KEN/15/2017	HM756602	bovine	Makerere University	Kenya	EA-2
KEN/4/2017	n/a	cattle	WRLFMD	Kenya	EA-2
KEN/5/2017	n/a	cattle	WRLFMD	Kenya	EA-2
KEN/6/2017	n/a	cattle	WRLFMD	Kenya	EA-2
UGA/3/2002	DQ165077	n/a	WRLFMD	Uganda	EA-2
K117/00*	HM756607	bovine	Makerere University	Kenya	EA-2
TAN/44/2009	KF561686	cattle	WRLFMD	Tanzania	EA-2
TAN/5/2009	KF561685	cattle	WRLFMD	Tanzania	EA-2
TAN-CVL-2009-0040*	n/a	bovine	CVL	Tanzania	EA-2
UGA/4/2004	n/a	bovine	WRLFMD	Uganda	EA-2
UGA/18/2007	n/a	cattle	WRLFMD	Uganda	EA-2
UGA/5/2004	n/a	bovine	WRLFMD	Uganda	EA-2
UGA/8/2004	n/a	bovine	WRLFMD	Uganda	EA-2
UGA/7/2004	n/a	bovine	WRLFMD	Uganda	EA-2
UGA/6/2004	n/a	bovine	WRLFMD	Uganda	EA-2
UGA/18/2004	n/a	bovine	WRLFMD	Uganda	EA-2
UGA/3/2004	n/a	bovine	WRLFMD	Uganda	EA-2
UGA/1/2004	n/a	bovine	WRLFMD	Uganda	EA-2
COD/3/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/81/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/6/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/7/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/80/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/82/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/47/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/15/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/63/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/11/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/105/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/13/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2

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label	accession	host(s)	lab	country	taxonomic information
COD/104/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/101/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/66/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/51/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/106/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/10/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/57/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/55/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/53/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/21/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/59/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
COD/100/2006	n/a	cattle	WRLFMD	Democratic Republic of the Congo	EA-2
K83/79*	AJ303511	n/a	WRLFMD	Kenya	EA-1
TAI/189/87*	KY091288	bovine	TRRL	Thailand	SEA
UKG/35/2001	AJ539141	porcine	PIADC	United Kingdom	ME-SA/PanAsia
PAK/16/2010	KY091285	cattle	WRLFMD	Pakistan	ME-SA/PanAsia-2/PUN-10
IRN/31/2009	KY091284	cattle	WRLFMD	Iran	ME-SA/PanAsia-2/FAR-09
BHU/3/2009	KM921814	cattle	WRLFMD	Bhutan	ME-SA/Ind-2001/d
KUW/3/97	DQ164904	bovine	WRLFMD	Kuwait	ME-SA/Ind-2001/a
OMN/7/2001	DQ164941	bovine	WRLFMD	Oman	ME-SA/Ind-2001/b
UAE/4/2008	KM921876	gazelle	WRLFMD	United Arab Emirates	ME-SA/Ind-2001/c
IND/R2/75*	AF204276	n/a	PD-FMD	India	ME-SA
IND/53/79	AF292107	bovine	PD-FMD	India	ME-SA
ETH/2/2006	FJ798127	bovine	WRLFMD	Ethiopia	EA-3
SUD/2/86	DQ165075	bovine	WRLFMD	Sudan	EA-3
ETH/1/2007	FJ798137	cattle	WRLFMD	Ethiopia	EA-3
ISA/1/62	AJ303500	n/a	WRLFMD	Indonesia	ISA-1

*, not a WRLFMD Reference Number

n/a, not available