

101.612-12 – including *Taq* pol., IFU-01
101.612-12u – without *Taq* pol., IFU-02

Visit www.olerup-ssp.com for
“Instructions for Use” (IFU)

Lot No.: **5D7**

Lot-specific information
Olerup SSP® HLA-C*04

Product number:	101.612-12 – including <i>Taq</i> polymerase 101.612-12u – without <i>Taq</i> polymerase
Lot number:	5D7
Expiry date:	2018-08-01
Number of tests:	12
Number of wells per test:	59+1
Storage - pre-aliquoted primers:	dark at -20°C
- PCR Master Mix:	-20°C
- Adhesive PCR seals	RT
- Product Insert	RT

This Product Description is only valid for Lot No. 5D7.

Complete product documentation consists of generic Instructions for Use (IFU), lot specific Product Insert, Worksheet and Certificate.

**CHANGES COMPARED TO THE PREVIOUS OLERUP SSP®
HLA-C*04 Lot (42Y)**

The HLA-C*04 kit is updated for new alleles to enable separation of:

- Confirmed¹ alleles as listed in the IMGT/HLA database
- Polymorphisms in exons outside of the region encoding the peptide binding domain
- Null and Alternatively expressed alleles

A well containing Negative Control primer pairs has been added.

The format of the Product Insert and Worksheet have been changed.

Three wells have been added to HLA-C*04, wells **58 to 60**.

¹As described in section Uniquely Identified Alleles.

The HLA-C*04 primer set, specificity and interpretation tables have been updated for the HLA-C alleles described since the previous *Olerup SSP®* HLA-C*04 lot was made (**Lot No. 42Y**). The kit design is based on IMGT/HLA database 3.22.0.

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As of lot series V, the Specificity Table is included in the lot-specific Product Insert, and the Interpretation Table is included in the Worksheet.

The primers of the wells detailed below have been exchanged, added or modified compared to the previous lot.

Well	5'-primer	3'-primer	rationale
31	Added	-	5'-primer added for the C*04:145 allele.
33	-	Added	3'-primer added for the C*203N allele.
44	Added	-	5'-primer added for the C*04:202 allele.
45	Added	-	5'-primer added for the C*04:145 allele.
46	Added	-	5'-primer added for the C*04:205N allele.
48	Added	-	5'-primer added for the C*04:195 allele.
52	-	Added	3'-primer added for the C*04:203N allele.
55	-	Added	3'-primer added for the C*04:215N allele.
56	Added	-	5'-primer added for the C*04:195 allele.
57	Added	Added	Negative control moved to well 60. New primer pairs added for the C*04:182 and C*04:205N alleles.
58	New	New	New primer pairs added for the C*04:196 and C*04:217N alleles.
59	New	New	New primer pairs added for the C*04:202 and C*04:207 alleles.
60	-	-	Updated negative control added from well 57.

Change in revision R01 compared to R00:

1. Primer mixes 47 and 50 do not amplify the C*04:161 allele. This has been corrected in the Interpretation and Specificity Tables.

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Lot-specific information

Well **60** contains Negative Control primer pairs, that will amplify more than 95% of the *Olerup* SSP® HLA Class I, DRB, DQB1, DPB1 and DQA1 amplicons as well as all the amplicons generated by the control primer pairs matching the human growth hormone gene.

HLA-specific PCR product sizes range from 75 to 200 base pairs.
The PCR product generated by the positive control primer pair is 430 base pairs.

Length of PCR product	105	200	105	80	75	80	85
5'-primer¹	164	340	440	45	45	43	36
	5'-CAC ^{3'}	5'-Agg ^{3'}	5'-TTA ^{3'}	5'-Tgg ^{3'}	5'-Tgg ^{3'}	5'-Tgg ^{3'}	5'-TAC ^{3'}
							36
							5'-TAT ^{3'}
3'-primer²	231	2nd I	507	59	58	57	47
	5'-TgC ^{3'}	5'-AAA ^{3'}	5'-TTg ^{3'}	5'-CTC ^{3'}	5'-ggC ^{3'}	5'-CTC ^{3'}	5'-ACA ^{3'}
							48
							5'-gCA ^{3'}
							48
							5'-gCC ^{3'}
							52
							5'-TgT ^{3'}
A*	+	+	+				
B*	+	+	+				
C*	+	+	+				
DRB1				+	+		
DRB3				+	+		
DRB5				+			
DQB1					+		
DPB1						+	
DQA1							+

¹The nucleotide position for HLA class I genes and the codon for HLA class II genes, in the 2nd or 3rd exon, matching the specificity-determining 3'-end of the primer is given. Nucleotide and codon numbering as on the www.ebi.ac.uk/imgt/hla web site. The sequence of the 3 terminal nucleotides of the primer is given.

²The nucleotide position for HLA class I genes and the codon for HLA class II genes, in the 2nd or 3rd exon or the 2nd intron, matching the specificity-determining 3'-end of the primer is given in the anti-sense direction. Nucleotide and codon numbering as on the www.ebi.ac.uk/imgt/hla web site. The sequence of the 3 terminal nucleotides of the primer is given.

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Lot-specific information

PRODUCT DESCRIPTION

HLA-C*04 SSP subtyping

CONTENT

The primer set contains 5'- and 3'-primers for identifying the HLA-C*04:01 to HLA-C*04:217N alleles.

PLATE LAYOUT

Each test consists of 60 PCR reactions in a 64 well PCR plate. Wells 61 to 64 are empty.

1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32
33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48
49	50	51	52	53	54	55	56
57	58	59	NC	empty	empty	empty	empty

The 64 well cut PCR plate is marked with 'HLA-C*04' in silver/gray ink.

Well No. 1 is marked with the Lot No. '5D4'.

Wells 1 to 59 – HLA-C*04 high resolution primers.

Well 60 – Negative Control (NC).

A faint row of numbers is seen between wells 1 and 2 or wells 7 and 8 of the PCR trays. These stem from the manufacture of the trays, and should be disregarded.

The PCR plates are heat-sealed with a PCR-compatible foil.

INTERPRETATION

Due to the sharing of sequence motifs between HLA-C alleles non-HLA-C*04 alleles will be amplified by primer mixes 1 to 8, 10 to 20, 22 to 25, 27, 30, 33, 34, 38, 39, 41, 42, 44 to 48, 50, 53, 56, 57 and 59. In addition, a few HLA-A and HLA-B alleles will be amplified by primer mixes 7, 14 to 16, 18, 20, 25, 30, 32 to 34, 44 and 47.

For further details see Specificity Table.

UNIQUELY IDENTIFIED ALLELES

All the HLA-C*04 alleles, i.e. **C*04:01 to C*04:217N**, recognized by the HLA Nomenclature Committee in October 2015^{1,2} will be amplified by the primers in the HLA-C*04 kit³.

The HLA-C*04 kit enables separation of the confirmed HLA-C*04 alleles as listed in the IMGT/HLA database. An HLA allele is listed as confirmed by IMGT/HLA if it has been sequenced by more than a single laboratory or from multiple sources. Current allele confirmation status for HLA-C*04 alleles is listed below.

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The HLA-C*04 kit also enables identification of polymorphisms in exons outside of the region encoding the peptide binding domain and of null and alternatively expressed alleles.

The following HLA-C*04 alleles can be distinguished by the different sizes of the HLA-specific PCR product:

Alleles	Primer mix	Alleles	Primer mix
C*04:05, 04:112	6	C*04:61, 04:96	34
C*04:23, 04:38, 04:39	21	C*04:62, 04:76	35
C*04:25, 04:40, 04:41	23	C*04:65, 04:72	33
C*04:44, 04:47	20	C*04:67, 04:93N	46
C*04:46, 04:50	27	C*04:79, 04:113	39
C*04:48, 04:75	28	C*04:81, 04:88N	43
C*04:54, 04:105N	41	C*04:114, 04:146	47
C*04:56, 04:64:01-04:64:02	40	C*04:150, 04:155	52
C*04:59Q, 04:78	32		

The HLA-C*04 primer set cannot distinguish the following silent mutations: the C*04:01:01-04:01:09, 04:01:11-04:01:22, 04:01:24-04:01:27, 04:01:29-04:01:33 and 04:01:35-04:01:69 alleles, the C*04:01:10 and 04:01:23 alleles, the C*04:03:01-04:03:02 alleles, the C*04:04:01-04:04:02 alleles, the C*04:15:01 and 04:15:03 alleles, the C*04:42:01-04:42:02 alleles, the C*04:64:01-04:64:02 and the C*04:94:01-04:94:02 alleles.

¹HLA-C alleles listed on the IMGT/HLA web page 2015-October-10, release 3.22.0, www.ebi.ac.uk/imgt/hla.

²Alleles that have been deleted from or renamed in the official WHO HLA Nomenclature up to and including the last IMGT/HLA database release can be retrieved from web page <http://hla.alleles.org/alleles/deleted.html>.

³The HLA-C*04 primer set cannot separate the C*04:03:01-04:03:02, 04:190 and C*02:49 alleles, the C*04:107 and the C*02:12 and 02:55:01-02:55:02 alleles, or the C*04:213 and the C*02:75, C*05:25, 05:42, C*06:05, 06:76:02, C*08:28, C*12:28, C*12:132, 12:135, 12:146 and C*16:55 alleles. These alleles can be distinguished by the HLA-C low resolution kit and/or the HLA-C*02, HLA-C*05, HLA-C*06, HLA-C*08, HLAC*12 or C*16 high resolution kit, respectively.

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ALLELE CONFIRMATION STATUS

Allele	Status ¹	Allele	Status ¹	Allele	Status ¹	Allele	Status ¹
C*04:01:01:01	Confirmed	C*04:01:46	Confirmed	C*04:27	Confirmed	C*04:75	Confirmed
C*04:01:01:02	Unconfirmed	C*04:01:47	Unconfirmed	C*04:28	Unconfirmed	C*04:76	Unconfirmed
C*04:01:01:03	Unconfirmed	C*04:01:48	Unconfirmed	C*04:29	Confirmed	C*04:77	Confirmed
C*04:01:01:04	Unconfirmed	C*04:01:49	Unconfirmed	C*04:30	Unconfirmed	C*04:78	Unconfirmed
C*04:01:01:05	Unconfirmed	C*04:01:50	Unconfirmed	C*04:31	Unconfirmed	C*04:79	Unconfirmed
C*04:01:01:06	Confirmed	C*04:01:51	Unconfirmed	C*04:32	Confirmed	C*04:80	Unconfirmed
C*04:01:02	Unconfirmed	C*04:01:52	Unconfirmed	C*04:33	Confirmed	C*04:81	Confirmed
C*04:01:03	Unconfirmed	C*04:01:53	Unconfirmed	C*04:34	Unconfirmed	C*04:82	Confirmed
C*04:01:04	Confirmed	C*04:01:54	Unconfirmed	C*04:35	Unconfirmed	C*04:83	Confirmed
C*04:01:05	Unconfirmed	C*04:01:55	Unconfirmed	C*04:36	Confirmed	C*04:84	Unconfirmed
C*04:01:06	Unconfirmed	C*04:01:56	Unconfirmed	C*04:37	Confirmed	C*04:85	Unconfirmed
C*04:01:07	Unconfirmed	C*04:01:57	Unconfirmed	C*04:38	Confirmed	C*04:86	Confirmed
C*04:01:08	Confirmed	C*04:01:58	Unconfirmed	C*04:39	Confirmed	C*04:87	Unconfirmed
C*04:01:09	Confirmed	C*04:01:59	Unconfirmed	C*04:40	Confirmed	C*04:88N	Unconfirmed
C*04:01:10	Confirmed	C*04:01:60	Unconfirmed	C*04:41	Unconfirmed	C*04:89	Unconfirmed
C*04:01:11	Confirmed	C*04:01:61	Unconfirmed	C*04:42:01	Confirmed	C*04:90	Unconfirmed
C*04:01:12	Confirmed	C*04:01:62	Confirmed	C*04:42:02	Confirmed	C*04:91	Confirmed
C*04:01:13	Confirmed	C*04:01:63	Unconfirmed	C*04:43	Confirmed	C*04:92	Unconfirmed
C*04:01:14	Confirmed	C*04:01:64	Unconfirmed	C*04:44	Unconfirmed	C*04:93N	Confirmed
C*04:01:15	Confirmed	C*04:01:65	Unconfirmed	C*04:45	Confirmed	C*04:94:01	Confirmed
C*04:01:16	Confirmed	C*04:01:66	Unconfirmed	C*04:46	Confirmed	C*04:94:02	Unconfirmed
C*04:01:17	Unconfirmed	C*04:01:67	Unconfirmed	C*04:47	Confirmed	C*04:95N	Unconfirmed
C*04:01:18	Unconfirmed	C*04:01:68	Unconfirmed	C*04:48	Confirmed	C*04:96	Confirmed
C*04:01:19	Unconfirmed	C*04:01:69	Unconfirmed	C*04:49	Confirmed	C*04:97	Unconfirmed
C*04:01:20	Unconfirmed	C*04:03:01	Confirmed	C*04:50	Unconfirmed	C*04:98:01	Unconfirmed
C*04:01:21	Confirmed	C*04:03:02	Unconfirmed	C*04:51	Unconfirmed	C*04:98:02	Unconfirmed
C*04:01:22	Unconfirmed	C*04:04:01	Confirmed	C*04:52	Confirmed	C*04:99	Unconfirmed
C*04:01:23	Unconfirmed	C*04:04:02	Unconfirmed	C*04:53	Unconfirmed	C*04:100	Unconfirmed
C*04:01:24	Unconfirmed	C*04:05	Unconfirmed	C*04:54	Confirmed	C*04:101	Unconfirmed
C*04:01:25	Unconfirmed	C*04:06	Confirmed	C*04:55	Unconfirmed	C*04:102	Unconfirmed
C*04:01:26	Unconfirmed	C*04:07	Confirmed	C*04:56	Confirmed	C*04:103	Confirmed
C*04:01:27	Unconfirmed	C*04:08	Confirmed	C*04:57	Unconfirmed	C*04:104	Unconfirmed
C*04:01:28	Confirmed	C*04:09N	Confirmed	C*04:58	Confirmed	C*04:105N	Unconfirmed
C*04:01:29	Unconfirmed	C*04:10	Confirmed	C*04:59Q	Confirmed	C*04:106	Unconfirmed
C*04:01:30	Confirmed	C*04:11	Confirmed	C*04:60	Unconfirmed	C*04:107	Unconfirmed
C*04:01:31	Unconfirmed	C*04:12	Unconfirmed	C*04:61	Confirmed	C*04:108	Confirmed
C*04:01:32	Unconfirmed	C*04:13	Confirmed	C*04:62	Confirmed	C*04:109	Unconfirmed
C*04:01:33	Confirmed	C*04:14	Confirmed	C*04:63	Confirmed	C*04:110	Unconfirmed
C*04:01:34	Unconfirmed	C*04:15:01	Unconfirmed	C*04:64:01	Unconfirmed	C*04:111	Unconfirmed
C*04:01:35	Unconfirmed	C*04:15:02	Confirmed	C*04:64:02	Unconfirmed	C*04:112	Confirmed
C*04:01:36	Unconfirmed	C*04:15:03	Unconfirmed	C*04:65	Confirmed	C*04:113	Confirmed
C*04:01:37	Unconfirmed	C*04:16	Confirmed	C*04:66	Unconfirmed	C*04:114	Confirmed
C*04:01:38	Unconfirmed	C*04:17	Unconfirmed	C*04:67	Unconfirmed	C*04:115N	Unconfirmed
C*04:01:39	Unconfirmed	C*04:18	Unconfirmed	C*04:68	Confirmed	C*04:116	Unconfirmed
C*04:01:40	Unconfirmed	C*04:19	Confirmed	C*04:69	Confirmed	C*04:117	Confirmed
C*04:01:41	Unconfirmed	C*04:20	Unconfirmed	C*04:70	Unconfirmed	C*04:118	Unconfirmed
C*04:01:42	Unconfirmed	C*04:23	Confirmed	C*04:71	Unconfirmed	C*04:119	Unconfirmed
C*04:01:43	Unconfirmed	C*04:24	Unconfirmed	C*04:72	Confirmed	C*04:120	Confirmed
C*04:01:44	Confirmed	C*04:25	Unconfirmed	C*04:73	Unconfirmed	C*04:121	Confirmed
C*04:01:45	Unconfirmed	C*04:26	Confirmed	C*04:74	Confirmed	C*04:122	Unconfirmed

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Allele	Status ¹	Allele	Status ¹	Allele	Status ¹	Allele	Status ¹
C*04:123N	Unconfirmed	C*04:148	Unconfirmed	C*04:173N	Unconfirmed	C*04:197	Unconfirmed
C*04:124	Unconfirmed	C*04:149	Unconfirmed	C*04:174	Unconfirmed	C*04:198	Unconfirmed
C*04:125	Confirmed	C*04:150	Confirmed	C*04:175	Unconfirmed	C*04:199	Unconfirmed
C*04:126	Unconfirmed	C*04:151	Unconfirmed	C*04:176	Unconfirmed	C*04:200	Unconfirmed
C*04:127	Unconfirmed	C*04:152	Unconfirmed	C*04:177	Unconfirmed	C*04:201	Unconfirmed
C*04:128	Unconfirmed	C*04:153	Confirmed	C*04:178	Unconfirmed	C*04:202	Confirmed
C*04:129	Unconfirmed	C*04:154	Unconfirmed	C*04:179	Unconfirmed	C*04:203N	Unconfirmed
C*04:130	Unconfirmed	C*04:155	Confirmed	C*04:180:01	Unconfirmed	C*04:204	Unconfirmed
C*04:131	Confirmed	C*04:156	Unconfirmed	C*04:180:02	Unconfirmed	C*04:205N	Unconfirmed
C*04:132	Confirmed	C*04:157	Unconfirmed	C*04:181	Unconfirmed	C*04:206	Unconfirmed
C*04:133	Unconfirmed	C*04:158	Unconfirmed	C*04:182	Confirmed	C*04:207	Confirmed
C*04:134	Unconfirmed	C*04:159	Unconfirmed	C*04:183	Unconfirmed	C*04:208	Unconfirmed
C*04:135	Unconfirmed	C*04:160	Unconfirmed	C*04:184	Unconfirmed	C*04:209	Unconfirmed
C*04:136	Unconfirmed	C*04:161	Unconfirmed	C*04:185	Unconfirmed	C*04:210	Unconfirmed
C*04:137	Confirmed	C*04:162	Unconfirmed	C*04:186	Unconfirmed	C*04:211	Unconfirmed
C*04:138	Unconfirmed	C*04:163	Confirmed	C*04:187	Unconfirmed	C*04:212	Unconfirmed
C*04:139	Confirmed	C*04:164	Unconfirmed	C*04:188	Unconfirmed	C*04:213	Unconfirmed
C*04:140	Confirmed	C*04:165	Unconfirmed	C*04:189	Unconfirmed	C*04:214	Unconfirmed
C*04:141	Unconfirmed	C*04:166	Unconfirmed	C*04:190	Unconfirmed	C*04:215N	Unconfirmed
C*04:142	Unconfirmed	C*04:167	Unconfirmed	C*04:191N	Unconfirmed	C*04:216	Unconfirmed
C*04:143	Unconfirmed	C*04:168	Unconfirmed	C*04:192	Unconfirmed	C*04:217N	Unconfirmed
C*04:144	Confirmed	C*04:169	Unconfirmed	C*04:193	Unconfirmed		
C*04:145	Confirmed	C*04:170N	Unconfirmed	C*04:194	Unconfirmed		
C*04:146	Unconfirmed	C*04:171	Unconfirmed	C*04:195	Confirmed		
C*04:147	Unconfirmed	C*04:172	Unconfirmed	C*04:196	Unconfirmed		

¹Allele status “confirmed” or “unconfirmed” as listed on the IMGT/HLA web page 2015-October-10, release 3.22.0, www.ebi.ac.uk/imgt/hla.

RESOLUTION IN HOMO- AND HETEROZYGOTES

Results file with resolution in HLA-C*04 homo- and heterozygotes is available upon request.

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Lot-specific information
SPECIFICITY TABLE

HLA-C*04 SSP subtyping

Specificities and sizes of the PCR products of the 59+1 primer mixes used for HLA-C*04 SSP subtyping

Primer Mix	Size of spec. PCR product ¹	Size of control band ²	Amplified HLA-C*04 alleles ³	Other amplified HLA Class I alleles ⁴
1 ⁷	250 bp	800 bp	*04:01:01:01-04:01:33, 04:01:34 ^w , 04:01:35-04:01:69, 04:03:01-04:03:02, 04:05, 04:07-04:12, 04:15:01-04:18, 04:19 ^w , 04:20, 04:23-04:33, 04:35-04:57, 04:59Q-04:67, 04:69-04:94:02, 04:95N ^w , 04:96-04:109, 04:110 [?] , 04:112-04:121, 04:123N-04:159, 04:161-04:177, 04:179-04:187, 04:189-04:211, 04:213-04:217N	*01:02:01-01:07:01, 01:08-01:21, 01:23-01:34, 01:36-01:114, 02:02:01-02:02:03, 02:02:05-02:02:30, 02:04-02:15, 02:17, 02:19-02:40:02, 02:42-02:71, 02:73-02:108, 03:99, 05:01:01:01-05:01:31, 05:03-05:10, 05:12-05:16, 05:18:01-05:26, 05:28-05:50, 05:52-05:61, 05:63-05:67, 05:69, 05:71-05:78, 05:80-05:111, 05:113N-05:114, 05:116-05:124, 06:02:01:01-06:02:01:03, 06:02:03-06:03:02, 06:05-06:39, 06:41-06:78, 06:80-06:117, 06:119-06:152N, 06:154-06:166, 08:02:01:01-08:02:12, 08:05, 08:07, 08:12, 08:15:01-08:15:02, 08:17-08:19, 08:23, 08:25, 08:27-08:35, 08:37, 08:43, 08:45, 08:47-08:49, 08:51-08:53, 08:55N, 08:62-08:63, 08:67-08:71, 08:73-08:77, 08:90, 08:92, 08:94, 08:100, 08:103, 08:107-08:108, 08:110-08:112, 08:114-08:116, 08:118, 08:120, 08:123, 08:125, 12:02:01-12:13, 12:15-12:17, 12:21-12:82, 12:84N-12:136, 12:138-12:152, 12:154-12:167, 14:02:01-14:05, 14:07N-14:14, 14:16-14:52, 14:54-14:62, 14:64-14:72, 15:08, 15:74, 15:102, 16:04:01, 16:04:03, 16:29, 16:33, 16:42, 16:53, 16:55, 16:61, 16:66, 16:68, 16:78, 16:82, 17:17, 18:01-18:09
2	220 bp	1070 bp	*04:01:01:01-04:01:27, 04:01:29-04:01:69, 04:04:01-04:05, 04:07-04:09N, 04:13-04:15:03, 04:17-04:20, 04:23-04:35, 04:37-04:41, 04:43-04:54, 04:56-04:70, 04:72-04:79, 04:81-04:102, 04:104-04:106, 04:108-04:139, 04:141-04:146, 04:148-04:152, 04:154-04:159, 04:161-04:168, 04:170N, 04:172-04:189, 04:191N, 04:193, 04:195, 04:197-04:209, 04:211-04:212, 04:216-04:217N	*07:64, 07:402
3	150 bp	1070 bp	*04:01:01:01-04:01:69, 04:04:01-04:05, 04:08-04:15:03, 04:17-04:20,	*03:231

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			04:23-04:26, 04:28-04:41, 04:43-04:79, 04:81-04:86, 04:88N, 04:90-04:102, 04:104-04:106, 04:108- 04:139, 04:141-04:146, 04:148-04:152, 04:154- 04:156, 04:158, 04:161- 04:170N, 04:172-04:189, 04:191N-04:195, 04:197- 04:212, 04:214-04:215N, 04:217N	
4⁷	210 bp	1070 bp	*04:03:01-04:03:02, 04:06, 04:80, 04:107, 04:147, 04:160, 04:171, 04:190	*02:12, 02:49, 02:55:01-02:55:02
5⁷	250 bp	1070 bp	*04:04:01-04:04:02, 04:06, 04:13, 04:34, 04:58, 04:122, 04:160, 04:178, 04:212	*01:22, 01:35, 02:03, 02:16:01-02:16:02, 02:18, 05:11, 05:17, 05:27, 05:68, 05:79, 05:115, 06:04:01, 06:118, 06:153, 08:01:01-08:01:19, 08:03:01-08:04:03, 08:06, 08:08:01-08:11, 08:13-08:14, 08:16:01-08:16:02, 08:20-08:22, 08:24, 08:26N, 08:36N, 08:38-08:42, 08:44, 08:46, 08:50, 08:54, 08:56-08:61, 08:65-08:66, 08:72:01-08:72:02, 08:78-08:89N, 08:91, 08:93, 08:95-08:99, 08:101-08:102, 08:104- 08:106, 08:109, 08:113, 08:117, 08:119, 08:121N-08:122, 08:124, 12:14:01- 12:14:02, 12:18:01-12:18:02, 12:20, 12:83, 14:06, 14:15, 14:53, 15:02:01:01-15:07, 15:09-15:13, 15:15-15:19, 15:21-15:24, 15:26-15:50, 15:52-15:73, 15:76-15:83, 15:85-15:101, 15:103-15:117, 16:35, 16:40, 16:48, 17:01:01:01-17:16, 17:18-17:30
6⁵	95 bp 215 bp	1070 bp	*04:05 *04:112, 04:169	*15:36
7⁶	145 bp	1070 bp	*04:07, 04:27, 04:32, 04:77, 04:89, 04:153	*03:34, 03:142, 03:261, 03:272, 05:78, 07:64, 07:402, 14:25, 15:36, 18:03, B*13:13:02
8	270 bp	1070 bp	*04:08, 04:34, 04:147, 04:212	*01:35, 01:107, 02:58, 05:27, 05:39, 06:96, 08:41, 08:115, 12:83, 12:106, 12:122, 14:20, 15:15, 15:77, 17:07, 18:08
9⁵	110 bp 180 bp 220 bp	800 bp	*04:35 *04:30 *04:09N	
10	190 bp 220 bp	1070 bp	*04:31, 04:91 *04:10-04:11, 04:36, 04:55, 04:153, 04:169, 04:210, 04:214-04:215N	*03:231, 05:78, 15:36
11⁷	180 bp	1070 bp	*04:01:01:01-04:01:09, 04:01:11-04:01:22, 04:01:24- 04:01:69, 04:03:01-04:10, 04:12-04:20, 04:23-04:26, 04:28-04:32, 04:34-04:51, 04:53-04:54, 04:56-04:106, 04:108-04:115N, 04:117- 04:129, 04:131-04:168,	*02:49, 02:75, 05:25, 05:42, 06:05, 06:76:02, 07:02:09, 08:28, 12:28, 12:132, 12:135, 12:146, 15:25, 15:62, 16:26, 16:46, 16:55, 16:64

101.612-12 – including *Taq* pol., IFU-01
101.612-12u – without *Taq* pol., IFU-02

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Lot No.: **5D7**

Lot-specific information

			04:170N-04:171, 04:173N-04:217N	
12⁵	125 bp 165 bp	1070 bp	*04:11, 04:29, 04:36, 04:55, 04:172, 04:214 ^w *04:11, 04:33, 04:169, 04:172	*03:231, 03:248, 07:125, 07:356, 16:62 *02:104, 03:248, 15:100, 16:62
13	215 bp 270 bp	1070 bp	*04:12, 04:132 *04:52, 04:55	*03:231
14	155 bp 185 bp	1070 bp	*04:16, 04:163 *04:18	*02:104, 03:248, 15:100, A*24:52
15⁷	170 bp	1070 bp	*04:14, 04:68	*05:112, 16:45, A*24:96, A*24:146
16^{5,8}	85 bp 130 bp	1070 bp	*04:123N *04:15:01-04:15:03, 04:17, 04:37	*18:07N *03:05, 03:13:01-03:13:02, 03:25, 03:27, 03:35, 03:135, 03:167, 03:198, 03:296, 03:302, 08:01:07, 08:02:07, 08:33:02, 14:09, 14:45, B*15:78:03
17	320 bp	1070 bp	*04:17, 04:80, 04:100	*01:50, 14:54
18⁵	125 bp 220 bp	1070 bp	*04:70 *04:19, 04:94:01-04:94:02	*06:101, 12:10:01-12:10:02, 18:03, B*15:27:01-15:27:03, B*15:109, B*15:327, B*15:344
19⁵	110 bp 140 bp	1070 bp	*04:35 *04:20, 04:37	*03:135, 03:302, 14:45
20	165 bp 250 bp 545 bp	1070 bp	*04:44 *04:47, 04:170N *04:15:02, 04:17, 04:100, 04:178	*03:231, 05:78, 15:36, A*01:118, A*02:109, A*33:52
21⁵	85 bp 145 bp 240 bp	1070 bp	*04:23, 04:108 *04:38 *04:39, 04:121	
22⁵	120 bp 170 bp	1070 bp	*04:24, 04:139, 04:140, 04:166 *04:26	*07:125, 07:356
23^{5,7}	85 bp 145 bp 225 bp	1070 bp	*04:25 *04:40 *04:41, 04:144	*03:171, 03:211:01, 05:93, 06:73, 08:20, 08:40, 12:109
24⁶	170 bp	1070 bp	*04:30, 04:42:01-04:42:02	*07:125, 07:356
25	160 bp 200 bp	1070 bp	*04:163 *04:43, 04:94:01-04:94:02, 04:171	A*24:52 *06:101, 12:10:01-12:10:02, 18:03, B*15:27:01-15:27:03, B*15:109, B*15:327, B*15:344
26⁷	210 bp	800 bp	*04:45, 04:86	
27⁵	125 bp 280 bp	800 bp	*04:50 *04:46, 04:120	*05:64:01-05:64:02, 08:19, 08:101
28^{5,9}	120 bp 215 bp	1070 bp	*04:75 *04:48	
29⁵	105 bp 185 bp 205 bp 255 bp	1070 bp	*04:82, 04:159 *04:49 *04:132 *04:170N	
30⁵	75 bp	1070 bp	*04:53	*05:49, B*07:90
31^{5,6}	125 bp	1070 bp	*04:95N, 04:139	

101.612-12 – including *Taq* pol., IFU-01
101.612-12u – without *Taq* pol., IFU-02

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Lot No.: **5D7**

Lot-specific information

	180 bp		*04:51, 04:145	
32⁵	105 bp 240 bp 275 bp	1070 bp	*04:78 *04:59Q, 04:121 *04:77	B*40:100
33⁵	80 bp 180 bp	1070 bp	*04:72 *04:58, 04:65, 04:160, 04:203N	*07:08, 07:108:01-07:108:02, B*40:100
34⁵	75 bp 200 bp 275 bp	1070 bp	*04:96 *04:13, 04:58, 04:61, 04:68, 04:160 *04:120	*07:08, 07:108:01-07:108:02, 08:101, B*47:09 *05:64:01-05:64:02, 08:19, 08:101
35⁵	85 bp 145 bp 170 bp	1070 bp	*04:62 *04:115N *04:76, 04:137	
36^{5,6}	115 bp 150 bp	1070 bp	*04:57, 04:63 *04:117	
37⁵	110 bp 135 bp	1070 bp	*04:63, 04:73 *04:74, 04:125	
38^{5,6}	95 bp 140 bp	1070 bp	*04:83, 04:123N *04:74, 04:117	*03:232, 18:07N
39⁵	110 bp 140 bp 330 bp	1070 bp	*04:113 *04:71, 04:95N *04:79	*14:71 *01:02:34, 01:21
40	140 bp 205 bp 270 bp	800 bp	*04:56 *04:86 *04:64:01-04:64:02	
41⁶	135 bp 165 bp 280 bp	1070 bp	*04:105N *04:131 *04:54	*01:04, 01:54, 01:97, 01:102, 14:02:01- 14:24:01, 14:25, 14:27-14:53, 14:56-14:72
42⁵	95 bp	1070 bp	*04:69, 04:82, 04:159	*02:79, 16:12
43⁷	170 bp 260 bp	1070 bp	*04:81, 04:137 *04:88N	
44⁵	90 bp	1070 bp	*04:108, 04:202	*03:81, 03:175, 03:199, 03:245, 14:24:01 B*15:78:03
45	130 bp 135 bp 165 bp	1070 bp	*04:60, 04:125 *04:66 *04:16, 04:26, 04:103, 04:145	*02:104, 03:248, 15:100, 16:62
46⁵	125 bp 160 bp 300 bp	1070 bp	*04:93N *04:131, 04:205N *04:67	*06:128N
47^{5,7}	50 bp	800 bp	*04:114	*01:59, 02:65, 03:130, 03:140, 03:243, 05:20, 06:82, 07:49, 07:210, 07:238, 07:247, 07:403, 12:54, 14:04, 14:64, 15:85, 16:57, A*68:46, B*07:253 *03:205 ^w , 15:97
48⁷	295 bp 155 bp 185 bp	1070 bp	*04:146 *04:195 *04:84	*03:206, 03:212
49	190 bp	1070 bp	*04:91, 04:173N	
50	295 bp 335 bp	1070 bp	*04:162	*03:205 ^w

101.612-12 – including *Taq* pol., IFU-01
101.612-12u – without *Taq* pol., IFU-02

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Lot-specific information

51	260 bp	1070 bp	*04:165	
52⁵	110 bp	1070 bp	*04:150	
	185 bp		*04:203N	
	240 bp		*04:155	
53⁵	100 bp	1070 bp	*04:106	*03:236, 08:78
54	145 bp	1070 bp	*04:115N	
55	190 bp	1070 bp	*04:191N, 04:215N	
56	155 bp	1070 bp	*04:195	
	190 bp		*04:28	
	235 bp		*04:144	*03:171, 03:211:01, 05:93, 06:73, 08:20, 08:40, 12:109
57	150 bp	1070 bp	*04:205N	*06:128N
	235 bp		*04:182	*06:78, 07:309
58	170 bp	1070 bp	*04:217N	
	275 bp		*04:196	
59⁵	100 bp	1070 bp	*04:202, 04:207	*14:24:01
60¹⁰	-	-	Negative Control	

¹Alleles are assigned by the presence of specific PCR product(s). However, the sizes of the specific PCR products may be helpful in the interpretation of HLA-C*04 SSP typings.

When the primers in a primer mix can give rise to HLA-specific PCR products of more than one length this is indicated if the size difference is more than 20 base pairs. Size differences of 20 base pairs or less are not given. For high resolution SSP kits, the alleles listed are specified according to amplicon length.

Nonspecific amplifications, i.e. a ladder or a smear of bands, may sometimes be seen. GC-rich primers have a higher tendency of giving rise to nonspecific amplifications than other primers.

PCR fragments longer than the control bands may sometimes be observed. Such bands should be disregarded and do not influence the interpretation of the SSP typings.

PCR fragments migrating faster than the control bands, but slower than a 400 bp fragment may be seen in some gel read-outs. Such bands can be disregarded and do not influence the interpretation of the SSP typings.

Some primers may give rise to primer oligomer artifacts. Sometimes this phenomenon is an inherent feature of the primer pair(s) of a primer mix. More often it is due to other factors such as too low amount of DNA in the PCR reactions, taking too long time in setting up the PCR reactions, working at elevated room temperature or using thermal cyclers that are not pre-heated.

²The internal positive control primer pairs amplify segments of the human growth hormone gene. The internal positive control bands are 1070 or 800 base pairs respectively, well distribution as outlined in the table. Well number 1 contains the shorter, 800 bp, internal positive control band. The well distribution of the internal controls can help in orientation of the kit on gel photo, as well as allow for kit identification. In the presence of a specific amplification the intensity of the control band often decreases.

³For several HLA Class I alleles 1st and/or 4th exon(s) and beyond, as well as intron nucleotide sequences, are not available. In these instances it is not known whether some of the primers of the SSP sets are completely matched with the target sequences or not. Assumption is made that unknown sequences in these regions are conserved within allelic groups.

⁴Due to the sharing of sequence motifs between HLA-C alleles non-HLA-C*04 alleles will be amplified by primer mixes 1 to 8, 10 to 20, 22 to 25, 27, 30, 33, 34, 38, 39, 41, 42, 44 to 48, 50, 53, 56, 57 and 59. In addition, a few HLA-A and HLA-B alleles will be amplified by primer mixes 7, 14 to 16, 18, 20, 25, 30, 32 to 34, 44 and 47.

⁵HLA-specific PCR products shorter than 125 base pairs have a lower intensity and are less sharp than longer PCR products.

⁶Primer mixes 7, 24, 31, 36, 38 and 41 have a tendency to giving rise to primer oligomer formation.

101.612-12 – including *Taq* pol., IFU-01
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Lot-specific information

⁷Primer mixes 1, 4, 5, 11, 15, 23, 26, 43, 47 and 48 may have tendencies of unspecific amplification, most pronounced in primer mix 15.

⁸Primer mix 16 may give rise to a lower yield of HLA-specific PCR product than the other C*04 primer mixes.

⁹Primer mix 28 may give rise to a long unspecific amplification product of approximately 500 bp. This should be disregarded when interpreting the C*04 typings.

¹⁰Primer mix 60 contains a negative control, which will amplify more than 95% of HLA amplicons as well as the amplicons generated by the control primer pairs matching the human growth hormone gene. HLA-specific PCR product sizes range from 75 to 200 base pairs and the PCR product generated by the HGH positive control primer pair is 430 base pairs.

'w', may be weakly amplified.

'?', nucleotide sequence information not available for the primer matching sequence.

101.612-12 – including *Taq* pol., IFU-01
101.612-12u – without *Taq* pol., IFU-02

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Lot No.: **5D7**

Lot-specific information
PRIMER SPECIFICATION

Well No.	1	2	3	4	5	6	7	8	9	10	11	12
Length of spec.	250	220	150	210	250	95	145	270	110	190	180	125
PCR product						215			180	220		165
									220			
Length of int. pos. control ¹	800	1070	1070	1070	1070	1070	1070	1070	800	1070	1070	1070
5'-primer(s) ²	2 nd I	108	108	118	2 nd I	98	112	2 nd I	391	112	201	218
	5'-CCA 3'	5'-gTT 3'	5'-gTT 3'	5'-CCA 3'	5'-CCA 3'	5'-CTC 3'	5'-CCT 3'	5'-CCA 3'	5'-ACC 3'	5'-CCT 3'	5'-CCA 3'	5'-ggA 3'
		108	108				459		1018	368		
		5'-gTC 3'	5'-gTC 3'				5'-gAT 3'		5'-gTg 3'	5'-gTT 3'		
		112	112									
		5'-CCT 3'	5'-CCT 3'									
		112	112									
		5'-CTT 3'	5'-CTT 3'									
3'-primer(s) ³	539	289	218	289	539	154	218	559	459	262	341	302
	5'-TCC 3'	5'-AgC 3'	5'-gCT 3'	5'-AgC 3'	5'-TCA 3'	5'-CAG 3'	5'-gCg 3'	5'-CAG 3'	5'-AgA 3'	5'-Tgg 3'	5'-CgT 3'	5'-ggC 3'
		289	218	289		270	559		1052	289		341
		5'-AgC 3'	5'-gTT 3'	5'-AgC 3'		5'-TAG 3'	5'-CTC 3'		5'-Tgg 3'	5'-AgT 3'		5'-Cgg 3'
				291					1092	289		
				5'-TCg 3'					5'-TTA 3'	5'-AgT 3'		
										521		
										5'-ggA 3'		
Well No.	1	2	3	4	5	6	7	8	9	10	11	12

Well No.	13	14	15	16	17	18	19	20	21	22	23	24
Length of spec.	215	155	170	85	320	125	110	165	85	120	85	170
PCR product	270	185		130		220	140	250	145	170	145	
								545	240		225	
Length of int. pos. control ¹	1070	1070	1070	1070	1070	1070	1070	1070	1070	1070	1070	1070
5'-primer(s) ²	112	105	412	368	379	228	347	112	368	89	172	97
	5'-CCT 3'	5'-gCT 3'	5'-ATA 3'	5'-gTg 3'	5'-ACg 3'	5'-ATg 3'	5'-gTA 3'	5'-CCT 3'	5'-gTT 3'	5'-gAT 3'	5'-TCC 3'	5'-TCg 3'
		368		369		368	368			127	355	1018
		5'-gTT 3'		5'-TAC 3'		5'-gTT 3'	5'-gTg 3'			5'-ggA 3'	5'-CCT 3'	5'-gTg 3'
				415			391			133	652	
				5'-ACT 3'			5'-ACC 3'			5'-CCT 3'	5'-CCA 3'	
										142	670	
										5'-TCT 3'	5'-CCg 3'	
3'-primer(s) ³	278	218	539	459	3rd I	312	459	238	412	218	218	218
	5'-ggA 3'	5'-gCT 3'	5'-TCT 3'	5'-AgA 3'	5'-ACg 3'	5'-AgT 3'	5'-AgA 3'	5'-CCA 3'	5'-gTC 3'	5'-gCT 3'	5'-gCT 3'	5'-gCT 3'
	295	485				538		319	472		459	1052
	5'-TCC 3'	5'-CCA 3'				5'-CCA 3'		5'-gCT 3'	5'-ggC 3'		5'-AgA 3'	5'-Tgg 3'
	343	514				550		327	568		846	
	5'-T 3'	5'-CTT 3'				5'-CAT 3'		5'-TTT 3'	5'-CTg 3'		5'-CAC 3'	
								368	569			
								5'-CAT 3'	5'-ACA 3'			
Well No.	13	14	15	16	17	18	19	20	21	22	23	24

101.612-12 – including *Taq* pol., IFU-01
101.612-12u – without *Taq* pol., IFU-02

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Lot-specific information

Well No.	25	26	27	28	29	30	31	32	33	34	35	36
Length of spec.	160	210	125	120	105	75	125	105	80	75	85	115
PCR product	200		280	215	185		180	240	180	200	145	150
					205			275		275	170	
					255							
Length of int. pos. control ¹	1070	800	800	1070	1070	1070	1070	1070	1070	1070	1070	1070
5'-primer(s) ²	368	112	368	232	112	503	81	368	368	368	112	350
	5'-gTT 3'	5'-CCT 3'	5'-gTT 3'	5'-Agg 3'	5'-CCT 3'	5'-CCg 3'	5'-CAg 3'	5'-gTT 3'	5'-gTT 3'	5'-gTT 3'	5'-CCT 3'	5'-TCT 3'
				368	900		89					383
				5'-gTT 3'	5'-CCg 3'		5'-gAC 3'					5'-ggC 3'
							133					386
							5'-CCT 3'					5'-gCA 3'
							459					
3'-primer(s) ³							5'-gAT 3'					
	485	277	454	312	256	539	218	430	407	403	154	459
	5'-CCA 3'	5'-gCT 3'	5'-CTg 3'	5'-AgT 3'	5'-CCA 3'	5'-TCC 3'	5'-gCT 3'	5'-gCA 3'	5'-ACg 3'	5'-gCA 3'	5'-CAT 3'	5'-AgA 3'
	518	284	601	544	278		549	563	505	527	217	
	5'-CCA 3'	5'-gTA 3'	5'-CTT 3'	5'-ggg 3'	5'-ggA 3'		5'-AgT 3'	5'-CgT 3'	5'-gCT 3'	5'-CCg 3'	5'-CTA 3'	
	538		613		327			569	512	601	242	
	5'-CCA 3'		5'-gCA 3'		5'-TTT 3'			5'-ACA 3'	5'-CCA 3'	5'-CTT 3'	5'-CCC 3'	
					963			603	513		247	
					5'-gCT 3'			5'-TTg 3'	5'-TCT 3'		5'-ATT 3'	
Well No.	25	26	27	28	29	30	31	32	33	34	35	36

Well No.	37	38	39	40	41	42	43	44	45	46	47	48
Length of spec.	110	95	110	140	135	95	170	90	135	125	50	155
PCR product	135	140	140	205	165		260	130	165	160	295	185
			330	270	280					300		
Length of int. pos. control ¹	1070	1070	1070	800	1070	1070	1070	1070	1070	1070	800	1070
5'-primer(s) ²	364	350	98	112	215	256	112	364	89	83	302	704
	5'-ggT 3'	5'-TCT 3'	5'-CTT 3'	5'-CCT 3'	5'-gCA 3'	5'-ACg 3'	5'-CCT 3'	5'-ggg 3'	5'-gAT 3'	5'-CTA 3'	5'-gAA 3'	5'-TgT 3'
	371	364	459	368	249	900		371	89	215	3 rd I	731
	5'-TgA 3'	5'-ggT 3'	5'-gAT 3'	5'-gTT 3'	5'-TAG 3'	5'-CCg 3'		5'-TgA 3'	5'-gAC 3'	5'-gCA 3'	5'-Cgg 3'	5'-ggg 3'
	386	395	3 rd I		419			406	98	232		
	5'-gCA 3'	5'-gCT 3'	5'-Cgg 3'		5'-gTC 3'			5'-gCC 3'	5'-CTA 3'	5'-AgT 3'		
	392	415						409	124	375		
	5'-CgC 3'	5'-ACT 3'						5'-ggC 3'	5'-gCT 3'	5'-TgA 3'		
3'-primer(s) ³	459	459	201	212	341	302	239	459	218	341	312	846
	5'-AgA 3'	5'-AgA 3'	5'-CTT 3'	5'-gCC 3'	5'-CgT 3'	5'-ggT 3'	5'-gCT 3'	5'-AgA 3'	5'-gCT 3'	5'-CgT 3'	5'-Agg 3'	5'-CAC 3'
			527	277	3 rd I	963	242			459	845	
			5'-CCA 3'	5'-gCT 3'	5'-ACg 3'	5'-gCT 3'	5'-CCC 3'			5'-AgA 3'	5'-ACA 3'	
			549	595			331				845	
			5'-AgT 3'	5'-CCT 3'			5'-CTA 3'				5'-ACT 3'	
			878	595								
			5'-ggA 3'	5'-CCg 3'								
Well No.	37	38	39	40	41	42	43	44	45	46	47	48

101.612-12 – including *Taq* pol., IFU-01
101.612-12u – without *Taq* pol., IFU-02

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Lot No.: **5D7**

Lot-specific information

Well No.	49	50	51	52	53	54	55	56	57	58	59
Length of spec.	190	295	260	110	100	145	190	155	150	170	100
PCR product		335		185				190	235	275	
				240				235			
Length of int.	1070	1070	1070	1070	1070	1070	1070	1070	1070	1070	1070
pos. control ¹											
5'-primer(s) ²	112	3 rd I	862	368	787	112	112	652	149	109	400
	5'-CCT 3'	5'-Cgg 3'	5'-ACA 3'	5'-gTT 3'	5'-ATA 3'	5'-CCT 3'	5'-CCT 3'	5'-CCA 3'	5'-ggA 3'	5'-TgA 3'	5'-TCA 3'
								697	232	210	406
								5'-TCC 3'	5'-AgT 3'	5'-.Ag 3'	5'-gCC 3'
								731			
								5'-ggg 3'			
3'-primer(s) ³	262	845	956	435	846	217	251	846	341	341	459
	5'-Tgg 3'	5'-ACT 3'	5'-CAg 3'	5'-TCA 3'	5'-CAC 3'	5'-CTA 3'	5'-CCT 3'	5'-CAC 3'	5'-CgT 3'	5'-CgT 3'	5'-AgA 3'
	268	883		513			273				
	5'-CTA 3'	5'-ggC 3'		5'-TCT 3'			5'-TTC 3'				
				565							
				5'-CAT 3'							
Well No.	49	50	51	52	53	54	55	56	57	58	59

¹The internal positive control primer pairs amplify segments of the human growth hormone gene. The internal positive control bands are 1070 or 800 base pairs respectively, well distribution as outlined in the table. Well number 1 contains the shorter, 800 bp, internal positive control band. The well distribution of the internal controls can help in orientation of the kit on gel photo, as well as allow for kit identification. In the presence of a specific amplification the intensity of the control band often decreases.

²The nucleotide position matching the specificity-determining 3'-end of the primer is given. Nucleotide numbering as on the www.ebi.ac.uk/imgt/hla web site. The sequence of the 3 terminal nucleotides of the primer is given.

³The nucleotide position matching the specificity-determining 3'-end of the primer is given in the anti-sense direction. Nucleotide numbering as on the www.ebi.ac.uk/imgt/hla web site. The sequence of the 3 terminal nucleotides of the primer is given.

101.612-12 – including *Taq* pol., IFU-01
101.612-12u – without *Taq* pol., IFU-02

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Lot No.: **5D7**

Lot-specific information

CELL LINE VALIDATION SHEET																				
HLA-C*04 SSP subtyping kit²																				
				Well																
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
				Prod. No.:	201324701	201552302	201552303	201324704	201324705	201324706	201324707	201324708	201324709	201440310	201324711	201324712	201440313	201440314	201662715	201552316
IHC cell line ¹		C*																		
1	9001	SA	*07:02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	9280	LK707	*07:01	*15:05	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
3	9011	E4181324	*12:02		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	9275	GU373	*03:04	*04:01	+	+	+	-	-	-	-	-	-	-	+	-	-	-	-	-
5	9009	KAS011	*06:02		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	9353	SM	*03:04	*07:02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	9020	QBL	*05:01		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	9025	DEU	*04:01		+	+	+	-	-	-	-	-	-	-	+	-	-	-	-	-
9	9026	YAR	*12:03		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	9107	LKT3	*01:02		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	9051	PTOUT	*16:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	9052	DBB	*06:02		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	9004	JESTHOM	*01:02		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	9071	OLGA	*01:02	*03:04	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	9075	DKB	*03:04		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	9037	SWEIG007	*02:02		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	9282	CTM3953540	*03:03	*07:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	9257	32367	*01:02	*07:05	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	9038	BM16	*07:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	9059	SLE005	*03:04		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	9064	AMALA	*03:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	9056	KOSE	*12:03		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	9124	IHL	*01:02	*15:02	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
24	9035	JBUSH	*12:03		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	9049	IBW9	*08:02		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	9285	WT49	*07:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	9191	CH1007	*07:04	*15:05	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
28	9320	BEL5GB	*05:01	*16:01	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	9050	MOU	*16:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	9021	RSH	*17:01		-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
31	9019	DUCAF	*05:01		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	9297	HAG	*17:01	*17:03	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
33	9098	MT14B	*03:04		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	9104	DHIF	*12:03		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35	9302	SSTO	*05:01		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36	9024	KT17	*03:03	*04:01	+	+	+	-	-	-	-	-	-	-	+	-	-	-	-	-
37	9065	HHKB	*07:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38	9099	LZL	*03:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
39	9315	CML	*02:02	*07:01	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	9134	WHONP199	*01:02	*06:02	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41	9055	H0301	*08:02		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
42	9066	TAB089	*01:02		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43	9076	T7526	*01:02	*08:01	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
44	9057	TEM	*12:03		+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45	9239	SHJO	*06:02	*17:01	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
46	9013	SCHU	*07:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47	9045	TUBO	*07:04	*15:02	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-
48	9303	TER-ND	*04:01	*16:01	+	+	+	-	-	-	-	-	-	-	+	-	-	-	-	-

101.612-12 – including *Taq* pol., IFU-01
101.612-12u – without *Taq* pol., IFU-02

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Lot No.: **5D7**

Lot-specific information

CELL LINE VALIDATION SHEET				HLA-C*04 SSP subtyping kit²																
				Well																
				17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	
				Prod. No.:	201324717	201324718	201324719	201440320	201440321	201440322	201324723	201440324	201440325	201440326	201324727	201324728	201440329	201324730	201662731	201440332
	IHWC cell line¹		C*																	
1	9001 SA		*07:02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
2	9280 LK707		*07:01	*15:05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
3	9011 E4181324		*12:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
4	9275 GU373		*03:04	*04:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
5	9009 KAS011		*06:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
6	9353 SM		*03:04	*07:02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
7	9020 QBL		*05:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
8	9025 DEU		*04:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
9	9026 YAR		*12:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
10	9107 LKT3		*01:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
11	9051 PITOUT		*16:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
12	9052 DBB		*06:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
13	9004 JESTHOM		*01:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
14	9071 OLGA		*01:02	*03:04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
15	9075 DKB		*03:04		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
16	9037 SWEIG007		*02:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
17	9282 CTM3953540		*03:03	*07:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
18	9257 32367		*01:02	*07:05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
19	9038 BM16		*07:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
20	9059 SLE005		*03:04		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
21	9064 AMALA		*03:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
22	9056 KOSE		*12:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
23	9124 IHL		*01:02	*15:02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
24	9035 JBUSH		*12:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
25	9049 IBW9		*08:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
26	9285 WT49		*07:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
27	9191 CH1007		*07:04	*15:05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
28	9320 BEL5GB		*05:01	*16:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
29	9050 MOU		*16:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
30	9021 RSH		*17:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
31	9019 DUCAF		*05:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
32	9297 HAG		*17:01	*17:03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
33	9098 MT14B		*03:04		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
34	9104 DHIF		*12:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
35	9302 SSTO		*05:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
36	9024 KT17		*03:03	*04:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
37	9065 HHKB		*07:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
38	9099 LZL		*03:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
39	9315 CML		*02:02	*07:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
40	9134 WHONP199		*01:02	*06:02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
41	9055 H0301		*08:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
42	9066 TAB089		*01:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
43	9076 T7526		*01:02	*08:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
44	9057 TEM		*12:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
45	9239 SHJO		*06:02	*17:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
46	9013 SCHU		*07:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
47	9045 TUBO		*07:04	*15:02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
48	9303 TER-ND		*04:01	*16:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

101.612-12 – including *Taq* pol., IFU-01
101.612-12u – without *Taq* pol., IFU-02

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Lot No.: **5D7**

Lot-specific information

CELL LINE VALIDATION SHEET																				
HLA-C*04 SSP subtyping kit ²																				
				Well																
				33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	
				Prod. No.:	201662733	201324734	201440335	201440336	201440337	201440338	201440339	201440340	201440341	201324742	201552343	201662744	201662745	201662746	201440347	201662748
	IHWC cell line ¹		C*																	
1	9001 SA		*07:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
2	9280 LK707		*07:01	*15:05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
3	9011 E4181324		*12:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
4	9275 GU373		*03:04	*04:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
5	9009 KAS011		*06:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
6	9353 SM		*03:04	*07:02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
7	9020 QBL		*05:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
8	9025 DEU		*04:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
9	9026 YAR		*12:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
10	9107 LKT3		*01:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
11	9051 PITOUT		*16:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
12	9052 DBB		*06:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
13	9004 JESTHOM		*01:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
14	9071 OLGA		*01:02	*03:04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
15	9075 DKB		*03:04		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
16	9037 SWEIG007		*02:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
17	9282 CTM3953540		*03:03	*07:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
18	9257 32367		*01:02	*07:05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
19	9038 BM16		*07:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
20	9059 SLE005		*03:04		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
21	9064 AMALA		*03:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
22	9056 KOSE		*12:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
23	9124 IHL		*01:02	*15:02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
24	9035 JBUSH		*12:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
25	9049 IBW9		*08:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
26	9285 WT49		*07:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
27	9191 CH1007		*07:04	*15:05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
28	9320 BEL5GB		*05:01	*16:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
29	9050 MOU		*16:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
30	9021 RSH		*17:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
31	9019 DUCAF		*05:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
32	9297 HAG		*17:01	*17:03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
33	9098 MT14B		*03:04		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
34	9104 DHIF		*12:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
35	9302 SSTO		*05:01		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
36	9024 KT17		*03:03	*04:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
37	9065 HHKB		*07:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
38	9099 LZL		*03:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
39	9315 CML		*02:02	*07:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
40	9134 WHONP199		*01:02	*06:02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
41	9055 H0301		*08:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
42	9066 TAB089		*01:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
43	9076 T7526		*01:02	*08:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
44	9057 TEM		*12:03		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
45	9239 SHJO		*06:02	*17:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
46	9013 SCHU		*07:02		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
47	9045 TUBO		*07:04	*15:02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
48	9303 TER-ND		*04:01	*16:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

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101.612-12u – without *Taq* pol., IFU-02

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“Instructions for Use” (IFU)

Lot No.: **5D7**

Lot-specific information

CELL LINE VALIDATION SHEET															
HLA-C*04 SSP subtyping kit ²															
				Well											
				49	50	51	52	53	54	55	56	57	58	59	
				Prod. No.:	201662749	201440350	201440351	201662752	201552353	201552354	201662755	201662756	201662757	201662758	201662759
	IHCW cell line ¹		C*												
1	9001	SA	*07:02	-	-	-	-	-	-	-	-	-	-	-	-
2	9280	LK707	*07:01	*15:05	-	-	-	-	-	-	-	-	-	-	-
3	9011	E4181324	*12:02		-	-	-	-	-	-	-	-	-	-	-
4	9275	GU373	*03:04	*04:01	-	-	-	-	-	-	-	-	-	-	-
5	9009	KAS011	*06:02		-	-	-	-	-	-	-	-	-	-	-
6	9353	SM	*03:04	*07:02	-	-	-	-	-	-	-	-	-	-	-
7	9020	QBL	*05:01		-	-	-	-	-	-	-	-	-	-	-
8	9025	DEU	*04:01		-	-	-	-	-	-	-	-	-	-	-
9	9026	YAR	*12:03		-	-	-	-	-	-	-	-	-	-	-
10	9107	LKT3	*01:02		-	-	-	-	-	-	-	-	-	-	-
11	9051	PITOUT	*16:01		-	-	-	-	-	-	-	-	-	-	-
12	9052	DBB	*06:02		-	-	-	-	-	-	-	-	-	-	-
13	9004	JESTHOM	*01:02		-	-	-	-	-	-	-	-	-	-	-
14	9071	OLGA	*01:02	*03:04	-	-	-	-	-	-	-	-	-	-	-
15	9075	DKB	*03:04		-	-	-	-	-	-	-	-	-	-	-
16	9037	SWEIG007	*02:02		-	-	-	-	-	-	-	-	-	-	-
17	9282	CTM3953540	*03:03	*07:01	-	-	-	-	-	-	-	-	-	-	-
18	9257	32367	*01:02	*07:05	-	-	-	-	-	-	-	-	-	-	-
19	9038	BM16	*07:01		-	-	-	-	-	-	-	-	-	-	-
20	9059	SLE005	*03:04		-	-	-	-	-	-	-	-	-	-	-
21	9064	AMALA	*03:03		-	-	-	-	-	-	-	-	-	-	-
22	9056	KOSE	*12:03		-	-	-	-	-	-	-	-	-	-	-
23	9124	IHL	*01:02	*15:02	-	-	-	-	-	-	-	-	-	-	-
24	9035	JBUSH	*12:03		-	-	-	-	-	-	-	-	-	-	-
25	9049	IBW9	*08:02		-	-	-	-	-	-	-	-	-	-	-
26	9285	WT49	*07:01		-	-	-	-	-	-	-	-	-	-	-
27	9191	CH1007	*07:04	*15:05	-	-	-	-	-	-	-	-	-	-	-
28	9320	BEL5GB	*05:01	*16:01	-	-	-	-	-	-	-	-	-	-	-
29	9050	MOU	*16:01		-	-	-	-	-	-	-	-	-	-	-
30	9021	RSH	*17:01		-	-	-	-	-	-	-	-	-	-	-
31	9019	DUCAF	*05:01		-	-	-	-	-	-	-	-	-	-	-
32	9297	HAG	*17:01	*17:03	-	-	-	-	-	-	-	-	-	-	-
33	9098	MT14B	*03:04		-	-	-	-	-	-	-	-	-	-	-
34	9104	DHIF	*12:03		-	-	-	-	-	-	-	-	-	-	-
35	9302	SSTO	*05:01		-	-	-	-	-	-	-	-	-	-	-
36	9024	KT17	*03:03	*04:01	-	-	-	-	-	-	-	-	-	-	-
37	9065	HHKB	*07:02		-	-	-	-	-	-	-	-	-	-	-
38	9099	LZL	*03:03		-	-	-	-	-	-	-	-	-	-	-
39	9315	CML	*02:02	*07:01	-	-	-	-	-	-	-	-	-	-	-
40	9134	WHONP199	*01:02	*06:02	-	-	-	-	-	-	-	-	-	-	-
41	9055	H0301	*08:02		-	-	-	-	-	-	-	-	-	-	-
42	9066	TAB089	*01:02		-	-	-	-	-	-	-	-	-	-	-
43	9076	T7526	*01:02	*08:01	-	-	-	-	-	-	-	-	-	-	-
44	9057	TEM	*12:03		-	-	-	-	-	-	-	-	-	-	-
45	9239	SHJO	*06:02	*17:01	-	-	-	-	-	-	-	-	-	-	-
46	9013	SCHU	*07:02		-	-	-	-	-	-	-	-	-	-	-
47	9045	TUBO	*07:04	*15:02	-	-	-	-	-	-	-	-	-	-	-
48	9303	TER-ND	*04:01	*16:01	-	-	-	-	-	-	-	-	-	-	-

101.612-12 – including *Taq* pol., IFU-01
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Lot-specific information

¹The provided cell line HLA specificities are retrieved from the <http://www.ihwg.org/hla> web site. The specificity of an individual cell line may thus be subject to change.

²The specificity of each primer solution in the kit has been tested against 48 well characterized cell line DNAs and where applicable, additional cell line DNAs.

No DNAs carrying the alleles to be amplified by primer solutions 6, 8, 10, 12 to 15, 17, 19 to 24, 26 to 40 and 42 to 59 were available.

The specificity of the primers in primer solutions 6, 8, 10, 12 to 15, 17, 19 to 22, 24, 27, 28, 31 to 34, 39, 42, 44, 45, 47 and 53 were tested by separately adding one additional 5'-primer, respectively one additional 3'-primer.

In primer solutions 26, 29, 35, 40, 43, 49, 50, 52, 54 and 55 it was only possible to test the 5'-primers, the 3'-primers were not possible to test.

In primer solutions 23, 30, 36 to 38, 46, 48, 51 and 56 to 59 it was only possible to test the 3'-primers, the 5'-primers were not possible to test.

In primer solutions 2, 3, 9, 16, 18, 19, 22, 28, 31, 41, 44 and 45 one, two or three of the 5'-primers were not possible to test, and in primer solutions 3, 4, 6, 9, 10, 13, 14, 18, 20, 21, 24, 25, 27, 28, 31 to 34, 39, 42 and 47 one or two of the 3'-primers were not possible to test.

Additional primers in primer solutions 7, 9, 16, 18, 25 and 41 were tested by separately adding one 5'-primer and/or one 3'-primer.

101.612-12 – including *Taq* pol., IFU-01
101.612-12u – without *Taq* pol., IFU-02

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Lot No.: **5D7**

Lot-specific information

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