

**Olerup SSP<sup>®</sup> HLA-Cw\*07**

Product number:	101.615-24u/04u – without <i>Taq</i> pol.
Lot number:	<b>04H</b>
Expiry date:	<b>2012-April-01</b>
Number of tests:	<b>24 tests – Product No. 101.615-24u</b> <b>4 tests – Product No. 101.615-04u</b>
Number of wells per test:	<b>48</b>
Storage - pre-aliquoted primers:	<b>dark at -20°C</b>
- PCR Master Mix:	<b>-20°C</b>
- Adhesive PCR seals	<b>RT</b>
- Product Insert	<b>RT</b>

**This Product Description is only valid for Lot No. 04H.**

**CHANGES COMPARED TO THE PREVIOUS *OLERUP SSP<sup>®</sup>*  
HLA-Cw\*07 LOT**

The HLA-Cw\*07 specificity and interpretation tables have been updated for the HLA-Cw alleles described since the previous *Olerup SSP<sup>®</sup>* HLA-Cw\*07 lot was made (**Lot No. 49G**).

Eight wells have been added to the HLA-Cw\*07 kit,  
wells **41 to 48**.

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

Well	5'-primer	3'-primer	rationale
3	Modified	-	Increased yield of specific PCR product.
15	Added	Added	Primer pair added for the Cw*0789 allele.
16	Exchanged	Exchanged	Improved specificity of primer pair, exchanged positive control primer pair.
17	Modified	Modified	Increased yield of specific PCR product.
19	-	Added	Primer added for the Cw*0780 allele.
20	Added	-	Primer added for the Cw*0781 allele.
22	Added	-	Primer added for the Cw*0784 allele.
24	-	-	Exchanged positive control primer pair.
28	Added	-	Primer added for the Cw*0744 allele.
30	Moved, new	Moved, new	Primer pair moved to well 37, new primer pair for the Cw*0775 allele.

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32	-	Added	Primer added for the Cw*0779 allele.
33	Added	Added	Primer pair added for the Cw*0782 allele.
35	-	Added	Primer added for the Cw*0780 allele.
37	Added	Added	Primer pair from well 30.
38	Added	-	Primer from well 40.
39	-	-	Exchanged positive control primer pair.
40	Moved	Added	Primer moved to well 38 and 44, primers added for the Cw*0776 and Cw*0778 alleles.
41	New	New	New primer pairs for the Cw*0788 and Cw*0791 alleles.
42	New	New	New primer pairs for the Cw*0777 and Cw*0793 alleles.
43	New	New	New primer pairs for the Cw*0794 and Cw*0799 alleles.
44	New, added	New	Primer from well 40, new primer pairs for the Cw*0777 and Cw*0798N alleles.
45	New	New	New primer pair for the Cw*0795 allele.
46	New	New	New primer pairs for the Cw*0783 and Cw*0790 alleles.
47	New	New	New primer pairs for the Cw*0786 and Cw*0797 alleles.
48	New	New	New primer pairs for the Cw*0785 and Cw*0787 alleles.

Change in revision R01 compared to R00:

1. The Cw\*0766 allele is weakly amplified by primer mix 33.

Change in revision R02 compared to R01:

1. Correction of foot note numbering in the specificity table.

## PRODUCT DESCRIPTION

### HLA-Cw\*07 SSP subtyping

#### CONTENT

The primer set contains 5'- and 3'-primers for identifying the HLA-Cw\*0701 to HLA-Cw\*0799 alleles.

#### PLATE LAYOUT

Each test consists of 48 PCR reactions in a 48 well cut PCR plate.

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

The 48 well cut PCR plate is marked with ‘HLA-Cw\*07’ in silver/gray ink.

Well No. 1 is marked with the Lot No. ‘04H’.

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.

**Please note:** When removing each 48 well PCR plate, make sure that the remaining plates stay sealed. Use a scalpel or a similar instrument to carefully cut the foil between the plates.

#### INTERPRETATION

The interpretation of HLA-Cw\*07 SSP subtypings will be influenced by the Cw\*0214 allele, eight Cw\*03 alleles, eight Cw\*04 alleles, the Cw\*05, most Cw\*06 alleles, most Cw\*08 alleles, two Cw\*12 alleles, two Cw\*15 alleles, the Cw\*17 and the Cw\*18 alleles when present on the other haplotype. In addition, the A\*2910 allele will be amplified by primer mix 12, the B\*0777 allele will be amplified by primer mixes 18 and 37, the B\*0806, B\*0817, B\*0839 and B\*0847 alleles by primer mix 32, the B\*2736 and B\*4812 alleles by primer mix 7, the B\*350804 allele by primer mixes 2, 11, 20 and 27, the B\*4060 allele by primer mixes 4, 18 and 37, the B\*4606 allele by primer mix 16, the B\*5608 and B\*5614 alleles by primer mix 25 and the B\*7301 allele will be amplified by primer mix 45.

#### UNIQUELY IDENTIFIED ALLELES

All the HLA-Cw\*07 alleles, i.e. **Cw\*0701 to Cw\*0799**, recognized by the HLA Nomenclature Committee in January 2010<sup>1</sup> will give rise to unique amplification patterns by the primers in the HLA-Cw\*07 subtyping kit.

The HLA-Cw\*07 subtyping kit cannot distinguish the Cw\*070101 to Cw\*070104 and Cw\*070106 to Cw\*070111 alleles, the Cw\*07020101 to Cw\*070213 alleles, the Cw\*070401 to Cw\*070403, the Cw\*072701 and Cw\*072702 or the Cw\*075601 and Cw\*075602 alleles.

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<sup>1</sup>HLA-Cw alleles listed on the IMGT/HLA web page 2010-January-15, release 2.28.0, [www.ebi.ac.uk/imgt/hla](http://www.ebi.ac.uk/imgt/hla).

### RESOLUTION IN HOMO- AND HETEROZYGOTES

The 98 HLA-Cw\*07 alleles give rise to 99 amplification patterns, as the Cw\*070105 has a different amplification patterns than the other Cw\*0701xx alleles. These can be combined in 4 950 homozygous and heterozygous combinations. 1678 of these genotypes do not give rise to unique amplification patterns. (The different lengths of the specific PCR products in lanes 1, 5, 8, 9, 11, 15, 18 to 23, 25, 26, 28, 32 to 35, 38 to 41, 43, 44 and 46 to 48 were not considered in these calculations.)

+++++---+	-----+	----+---	-----	-----	-----	0702,0706 = 0706,0754
+++++---+	+---+---	-----	-----+	-----+	-----	0709,0710 = 0724,0776
+++++---	+---+---	-----	-----+	-----+	-----	0709,0756 = 0709,0779
+++++---	+---+---	-----	-----+	-----+	-----	0709,0713 = 0728,0776
+++++---	+-----+	-----	-----+	-----+	-----	0709,0750 = 0776,0789
+++++---	+-----+	-+-----	-----+	-----+	-----	0709,0715 = 0752,0776
+++++---	+-----+	-+-----	-----	-----	-----	0720,0733N = 0729,0796 = 0733N,0796
+++++---	+-----+	-+-----	-----+	-----+	-----	0709,0733N = 0709,0751 = 0726,0776
+++++---	+-----+	-+-----	-----	-----	-----	0729,0792 = 0733N,0773 = 0733N,0792
+++++---	+-----+	-+-----	-----	-----	-----	0701,0733N = 0726,0729 = 0726,0733N
+++++---	+-----+	-+-----	-----+	-----+	-----	0709,0748 = 0776,0781
+++++---	+-----+	-+-----	-----+	-----+	-----	0709,0754 = 0718,0776
+++++---	+-----+	-+-----	-----+	-----+	-----	0709,0723 = 0721,0776
+++++---	+-----+	-+-----	-----+	-----+	-----	0709,0725 = 0722,0776
+++++---	+-----+	-+-----	-----+	-----+	-----	0709,0746 = 0730,0776
+++++---	+-----+	-+-----	-+-----	-----+	-----	0709,0732N = 0755N,0776
+++++---	+-----+	-+-----	-+-----	-----+	-----	0709,0737 = 0769,0776
+++++---	+-----+	-+-----	-+-----	-----+	-----	0709,0747 = 0735,0776
+++++---	+-----+	-+-----	-+-----	-----+	-----	0709,0742 = 0736,0776
+++++---	+-----+	-+-----	-+-----	-----+	-----	0709,0739 = 0740,0776
+++++---	+-----+	-+-----	-+-----	+-----+	-----	0709,0766 = 0776,0782
+++++---	+-----+	-+-----	-+-----	+-----+	-----	0709,0767 = 0770,0776
+++++---	+-----+	-+-----	-+-----	-+-----	-----	0709,0772 = 0771,0776
+++++---	+-----+	-+-----	-+-----	-+-----	-----	0709,0764 = 0773,0776
+++++---	+-----+	-+-----	-+-----	-+-----	-----	0709,0761N = 0758,0776
+++++---	+-----+	-+-----	-+-----	-+-----	-----	0709,0774 = 0759,0776
+++++---	+-----+	-+-----	-+-----	-+-----	+-----	0709,0788 = 0776,0791
+++++---	+-----+	-+-----	-+-----	-+-----	-+-----	0709,0799 = 0776,0794
+++++---	+-----+	-+-----	-+-----	-+-----	-+-----	0709,0790 = 0776,0783
+++++---	+-----+	-+-----	-+-----	-+-----	-+-----	0709,0797 = 0776,0786
+++++---	+-----+	-+-----	-+-----	-+-----	-+-----	0709,0787 = 0776,0785
+++++---	+-----+	-+-----	-+-----	-+-----	-+-----	0701,0776 = 0702,0709 = 0709,0729 =
						0709,0749 = 0709,0762 = 0709,0776 =
						0749,0778 = 0776,0778
+++++---	-+-----+	-----	-----	-----	-----	0710,0728 = 0713,0724
+++++---	-+-----+	-----	-----	-----	-----	0710,0789 = 0724,0750
+++++---	-+-----+	-+-----	-----	-----	-----	0710,0752 = 0715,0724
+++++---	-+-----+	-+-----	-----	-----	-----	0710,0726 = 0724,0751
+++++---	-+-----+	-+-----	-----	-----	-----	0710,0781 = 0724,0748
+++++---	-+-----+	-+-----	-----	-----	-----	0710,0718 = 0719,0743 = 0724,0754
+++++---	-+-----+	-+-----	-----	-----	-----	0710,0721 = 0723,0724
+++++---	-+-----+	-+-----	-----	-----	-----	0710,0722 = 0724,0725
+++++---	-+-----+	-+-----	+-----	-----	-----	0710,0730 = 0724,0746
+++++---	-+-----+	-+-----	-+-----	-----	-----	0710,0755N = 0724,0732N
+++++---	-+-----+	-+-----	-+-----	-----	-----	0710,0769 = 0724,0737
+++++---	-+-----+	-+-----	-+-----	-----	-----	0710,0735 = 0724,0747
+++++---	-+-----+	-+-----	-+-----	-----	-----	0710,0736 = 0724,0742
+++++---	-+-----+	-+-----	-+-----	-----	-----	0710,0740 = 0724,0739
+++++---	-+-----+	-+-----	-+-----	+-----	-----	0710,0782 = 0724,0766
+++++---	-+-----+	-+-----	-+-----	+-----	-----	0710,0770 = 0724,0767
+++++---	-+-----+	-+-----	-+-----	-+-----	-----	0710,0771 = 0724,0772
+++++---	-+-----+	-+-----	-+-----	-+-----	-----	0710,0773 = 0724,0764
+++++---	-+-----+	-+-----	-+-----	-+-----	-----	0710,0758 = 0724,0761N
+++++---	-+-----+	-+-----	-+-----	-+-----	-----	0710,0759 = 0724,0774
+++++---	-+-----+	-+-----	-+-----	-+-----	-----	0710,0778 = 0724,0762
+++++---	-+-----+	-+-----	-+-----	-+-----	+-----	0710,0791 = 0724,0788
+++++---	-+-----+	-+-----	-+-----	-+-----	-+-----	0710,0794 = 0724,0799

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++++----	--+-----+	-----	-----	-----	-----+--	0710,0783 = 0724,0790
++++----	--+-----+	-----	-----	-----	-----+--	0710,0786 = 0724,0797
++++----	--+-----+	-----	-----	-----	-----+--	0710,0785 = 0724,0787
++++----	--+-----+	-----	-----	-----	-----+--	0701,0710 = 0702,0724 = 0710,0724
++++----	-----++	-----	-----	-----	-----	0713,0789 = 0728,0750
++++----	-----++	-----	-----	-----	-----	0713,0752 = 0715,0728
++++----	-----++	-----	-----	-----	-----	0713,0726 = 0728,0751
++++----	-----++	-----	-----	-----	-----	0713,0781 = 0728,0748
++++----	-----++	-----	-----	-----	-----	0713,0718 = 0728,0754
++++----	-----++	-----	-----	-----	-----	0713,0721 = 0723,0728
++++----	-----++	-----	-----	-----	-----	0713,0722 = 0725,0728
++++----	-----++	-----	-----	-----	-----	0713,0730 = 0728,0746
++++----	-----++	-----	-----	-----	-----	0713,0755N = 0728,0732N
++++----	-----++	-----	-----	-----	-----	0713,0769 = 0728,0737
++++----	-----++	-----	-----	-----	-----	0713,0735 = 0728,0747
++++----	-----++	-----	-----	-----	-----	0713,0736 = 0728,0742
++++----	-----++	-----	-----	-----	-----	0713,0740 = 0728,0739
++++----	-----++	-----	-----	-----	-----	0713,0782 = 0728,0766
++++----	-----++	-----	-----	-----	-----	0713,0770 = 0728,0767
++++----	-----++	-----	-----	-----	-----	0713,0771 = 0728,0772
++++----	-----++	-----	-----	-----	-----	0713,0773 = 0728,0764
++++----	-----++	-----	-----	-----	-----	0713,0758 = 0728,0761N
++++----	-----++	-----	-----	-----	-----	0713,0759 = 0728,0774
++++----	-----++	-----	-----	-----	-----	0713,0778 = 0728,0762
++++----	-----++	-----	-----	-----	-----	0713,0791 = 0728,0788
++++----	-----++	-----	-----	-----	-----	0713,0794 = 0728,0799
++++----	-----++	-----	-----	-----	-----	0713,0783 = 0728,0790
++++----	-----++	-----	-----	-----	-----	0713,0786 = 0728,0797
++++----	-----++	-----	-----	-----	-----	0713,0785 = 0728,0787
++++----	-----++	-----	-----	-----	-----	0701,0713 = 0702,0728 = 0713,0728
++++----	-----++	-----	-----	-----	-----	0715,0789 = 0750,0752
++++----	-----++	-----	-----	-----	-----	0726,0750 = 0751,0789
++++----	-----++	-----	-----	-----	-----	0748,0789 = 0750,0781
++++----	-----++	-----	-----	-----	-----	0714,0719 = 0718,0750 = 0754,0789
++++----	-----++	-----	-----	-----	-----	0721,0750 = 0723,0789
++++----	-----++	-----	-----	-----	-----	0722,0750 = 0725,0789
++++----	-----++	-----	-----	-----	-----	0730,0750 = 0746,0789
++++----	-----++	-----	-----	-----	-----	0732N,0789 = 0750,0755N
++++----	-----++	-----	-----	-----	-----	0737,0789 = 0750,0769
++++----	-----++	-----	-----	-----	-----	0735,0750 = 0747,0789
++++----	-----++	-----	-----	-----	-----	0736,0750 = 0742,0789
++++----	-----++	-----	-----	-----	-----	0739,0789 = 0740,0750
++++----	-----++	-----	-----	-----	-----	0750,0782 = 0766,0789
++++----	-----++	-----	-----	-----	-----	0750,0770 = 0767,0789
++++----	-----++	-----	-----	-----	-----	0750,0771 = 0772,0789
++++----	-----++	-----	-----	-----	-----	0750,0773 = 0764,0789
++++----	-----++	-----	-----	-----	-----	0750,0758 = 0761N,0789
++++----	-----++	-----	-----	-----	-----	0750,0759 = 0774,0789
++++----	-----++	-----	-----	-----	-----	0750,0778 = 0762,0789
++++----	-----++	-----	-----	-----	-----	0750,0791 = 0788,0789
++++----	-----++	-----	-----	-----	-----	0750,0794 = 0789,0799
++++----	-----++	-----	-----	-----	-----	0750,0783 = 0789,0790
++++----	-----++	-----	-----	-----	-----	0750,0786 = 0789,0797
++++----	-----++	-----	-----	-----	-----	0750,0785 = 0787,0789
++++----	-----++	-----	-----	-----	-----	0701,0750 = 0702,0789 = 0750,0789
++++----	-----++	-----	-----	-----	-----	0715,0726 = 0751,0752
++++----	-----++	-----	-----	-----	-----	0715,0781 = 0748,0752
++++----	-----++	-----	-----	-----	-----	0715,0718 = 0752,0754
++++----	-----++	-----	-----	-----	-----	0715,0721 = 0723,0752
++++----	-----++	-----	-----	-----	-----	0715,0722 = 0725,0752
++++----	-----++	-----	-----	-----	-----	0715,0730 = 0746,0752
++++----	-----++	-----	-----	-----	-----	0715,0755N = 0732N,0752
++++----	-----++	-----	-----	-----	-----	0715,0769 = 0737,0752
++++----	-----++	-----	-----	-----	-----	0715,0735 = 0747,0752
++++----	-----++	-----	-----	-----	-----	0715,0736 = 0742,0752
++++----	-----++	-----	-----	-----	-----	0715,0740 = 0739,0752
++++----	-----++	-----	-----	-----	-----	0715,0782 = 0752,0766
++++----	-----++	-----	-----	-----	-----	0715,0770 = 0752,0767
++++----	-----++	-----	-----	-----	-----	0715,0771 = 0752,0772
++++----	-----++	-----	-----	-----	-----	0715,0773 = 0752,0764
++++----	-----++	-----	-----	-----	-----	0715,0758 = 0752,0761N
++++----	-----++	-----	-----	-----	-----	0715,0759 = 0752,0774
++++----	-----++	-----	-----	-----	-----	0715,0778 = 0752,0762
++++----	-----++	-----	-----	-----	-----	0715,0791 = 0752,0788

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++++----	-----+	-+-----	-----	-----	---+-----	0715,0794 = 0752,0799
++++----	-----+	-+-----	-----	-----	-----+--	0715,0783 = 0752,0790
++++----	-----+	-+-----	-----	-----	-----+--	0715,0786 = 0752,0797
++++----	-----+	-+-----	-----	-----	-----+--	0715,0785 = 0752,0787
++++----	-----+	-+-----	-----	-----	-----+--	0701,0715 = 0702,0752 = 0715,0752
++++----	-----+	-+-----	-----	-----	-----+--	0726,0748 = 0751,0781
++++----	-----+	-+-----	-----	-----	-----+--	0718,0751 = 0726,0754
++++----	-----+	-+-----	-----	-----	-----+--	0720,0780 = 0772,0796 = 0780,0796
++++----	-----+	-+-----	-----	-----	-----+--	0702,0796 = 0720,0751 = 0751,0796 =
++++----	-----+	-+-----	-----	-----	-----+--	0764,0796 = 0784,0792 = 0784,0796
++++----	-----+	-+-----	-----	-----	-----+--	0721,0751 = 0723,0726
++++----	-----+	-+-----	-----	-----	-----+--	0722,0751 = 0725,0726
++++----	-----+	-+-----	-----	-----	-----+--	0726,0746 = 0730,0751
++++----	-----+	-+-----	-----	-----	-----+--	0726,0732N = 0751,0755N
++++----	-----+	-+-----	-----	-----	-----+--	0726,0737 = 0751,0769
++++----	-----+	-+-----	-----	-----	-----+--	0726,0747 = 0735,0751
++++----	-----+	-+-----	-----	-----	-----+--	0726,0742 = 0736,0751
++++----	-----+	-+-----	-----	-----	-----+--	0726,0739 = 0740,0751
++++----	-----+	-+-----	-----	-----	-----+--	0726,0766 = 0751,0782
++++----	-----+	-+-----	-----	-----	-----+--	0726,0767 = 0751,0770
++++----	-----+	-+-----	-----	-----	-----+--	0772,0792 = 0773,0780 = 0780,0792
++++----	-----+	-+-----	-----	-----	-----+--	0701,0780 = 0726,0772 = 0726,0780 =
++++----	-----+	-+-----	-----	-----	-----+--	0751,0771 = 0771,0780
++++----	-----+	-+-----	-----	-----	-----+--	0702,0792 = 0726,0764 = 0751,0773 =
++++----	-----+	-+-----	-----	-----	-----+--	0751,0792 = 0764,0792
++++----	-----+	-+-----	-----	-----	-----+--	0726,0761N = 0751,0758
++++----	-----+	-+-----	-----	-----	-----+--	0726,0774 = 0751,0759
++++----	-----+	-+-----	-----	-----	-----+--	0726,0762 = 0751,0778
++++----	-----+	-+-----	-----	-----	-----+--	0726,0788 = 0751,0791
++++----	-----+	-+-----	-----	-----	-----+--	0726,0799 = 0751,0794
++++----	-----+	-+-----	-----	-----	-----+--	0726,0790 = 0751,0783
++++----	-----+	-+-----	-----	-----	-----+--	0726,0797 = 0751,0786
++++----	-----+	-+-----	-----	-----	-----+--	0726,0787 = 0751,0785
++++----	-----+	-+-----	-----	-----	-----+--	0701,0751 = 0702,0726 = 0726,0751
++++----	-----+	-+-----	-----	-----	-----+--	0718,0748 = 0754,0781
++++----	-----+	-+-----	-----	-----	-----+--	0721,0748 = 0723,0781
++++----	-----+	-+-----	-----	-----	-----+--	0722,0748 = 0725,0781
++++----	-----+	-+-----	-----	-----	-----+--	0730,0748 = 0746,0781
++++----	-----+	-+-----	-----	-----	-----+--	0732N,0781 = 0748,0755N
++++----	-----+	-+-----	-----	-----	-----+--	0737,0781 = 0748,0769
++++----	-----+	-+-----	-----	-----	-----+--	0702,0744 = 0735,0748 = 0744,0747 =
++++----	-----+	-+-----	-----	-----	-----+--	0744,0748 = 0747,0781
++++----	-----+	-+-----	-----	-----	-----+--	0736,0748 = 0742,0781
++++----	-----+	-+-----	-----	-----	-----+--	0739,0781 = 0740,0748
++++----	-----+	-+-----	-----	-----	-----+--	0748,0782 = 0766,0781
++++----	-----+	-+-----	-----	-----	-----+--	0748,0770 = 0767,0781
++++----	-----+	-+-----	-----	-----	-----+--	0748,0771 = 0772,0781
++++----	-----+	-+-----	-----	-----	-----+--	0748,0773 = 0764,0781
++++----	-----+	-+-----	-----	-----	-----+--	0748,0758 = 0761N,0781
++++----	-----+	-+-----	-----	-----	-----+--	0748,0759 = 0774,0781
++++----	-----+	-+-----	-----	-----	-----+--	0748,0778 = 0762,0781
++++----	-----+	-+-----	-----	-----	-----+--	0748,0791 = 0781,0788
++++----	-----+	-+-----	-----	-----	-----+--	0748,0794 = 0781,0799
++++----	-----+	-+-----	-----	-----	-----+--	0748,0783 = 0781,0790
++++----	-----+	-+-----	-----	-----	-----+--	0748,0786 = 0781,0797
++++----	-----+	-+-----	-----	-----	-----+--	0748,0785 = 0781,0787
++++----	-----+	-+-----	-----	-----	-----+--	0701,0748 = 0702,0781 = 0748,0781
++++----	-----+	-+-----	-----	-----	-----+--	0718,0723 = 0721,0754
++++----	-----+	-+-----	-----	-----	-----+--	0718,0725 = 0722,0754
++++----	-----+	-+-----	-----	-----	-----+--	0718,0746 = 0730,0754
++++----	-----+	-+-----	-----	-----	-----+--	0718,0732N = 0719,0731 = 0754,0755N
++++----	-----+	-+-----	-----	-----	-----+--	0718,0737 = 0754,0769
++++----	-----+	-+-----	-----	-----	-----+--	0718,0747 = 0735,0754
++++----	-----+	-+-----	-----	-----	-----+--	0718,0742 = 0736,0754
++++----	-----+	-+-----	-----	-----	-----+--	0718,0739 = 0740,0754
++++----	-----+	-+-----	-----	-----	-----+--	0718,0766 = 0754,0782
++++----	-----+	-+-----	-----	-----	-----+--	0718,0767 = 0754,0770
++++----	-----+	-+-----	-----	-----	-----+--	0718,0772 = 0754,0771
++++----	-----+	-+-----	-----	-----	-----+--	0718,0764 = 0754,0773
++++----	-----+	-+-----	-----	-----	-----+--	0718,0761N = 0754,0758
++++----	-----+	-+-----	-----	-----	-----+--	0718,0774 = 0754,0759
++++----	-----+	-+-----	-----	-----	-----+--	0718,0762 = 0754,0778
++++----	-----+	-+-----	-----	-----	-----+--	0718,0788 = 0754,0791
++++----	-----+	-+-----	-----	-----	-----+--	0718,0799 = 0754,0794

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++++----	-----+	----+---	-----	-----	-----+-	0718,0790 = 0754,0783
++++----	-----+	----+---	-----	-----	-----+-	0718,0797 = 0754,0786
++++----	-----+	----+---	-----	-----	-----+	0718,0787 = 0754,0785
++++----	-----+	----+---	-----	-----	-----	0701,0754 = 0702,0718 = 0718,0754 = 0719,0727
++++----	-----+	----+---	-----	---+----	-----	0702,0720 = 0720,0764 = 0720,0784 = 0773,0784
++++----	-----+	-----++	-----	-----	-----	0721,0725 = 0722,0723
++++----	-----+	-----+	+-----	-----	-----	0721,0746 = 0723,0730
++++----	-----+	-----+	-+-----	-----	-----	0721,0732N = 0723,0755N
++++----	-----+	-----+	--+-----	-----	-----	0721,0737 = 0723,0769
++++----	-----+	-----+	---+-----	-----	-----	0721,0747 = 0723,0735
++++----	-----+	-----+	----+---	-----	-----	0721,0742 = 0723,0736
++++----	-----+	-----+	-----+	-----	-----	0721,0739 = 0723,0740
++++----	-----+	-----+	-----	+-----	-----	0721,0766 = 0723,0782
++++----	-----+	-----+	-----	-+-----	-----	0721,0767 = 0723,0770
++++----	-----+	-----+	-----	--+-----	-----	0721,0772 = 0723,0771
++++----	-----+	-----+	-----	---+-----	-----	0721,0764 = 0723,0773
++++----	-----+	-----+	-----	----+---	-----	0721,0761N = 0723,0758
++++----	-----+	-----+	-----	-----+	-----	0721,0774 = 0723,0759
++++----	-----+	-----+	-----	-----+	-----	0721,0762 = 0723,0778
++++----	-----+	-----+	-----	-----	+-----	0721,0788 = 0723,0791
++++----	-----+	-----+	-----	-----	--+-----	0721,0799 = 0723,0794
++++----	-----+	-----+	-----	-----	-----+--	0721,0790 = 0723,0783
++++----	-----+	-----+	-----	-----	-----+--	0721,0797 = 0723,0786
++++----	-----+	-----+	-----	-----	-----+	0721,0787 = 0723,0785
++++----	-----+	-----+	-----	-----	-----	0701,0723 = 0702,0721 = 0721,0723
++++----	-----+	-----+	-----	-----	-----	0722,0746 = 0725,0730
++++----	-----+	-----+	+-----	-----	-----	0722,0732N = 0725,0755N
++++----	-----+	-----+	--+-----	-----	-----	0722,0737 = 0725,0769
++++----	-----+	-----+	---+-----	-----	-----	0722,0747 = 0725,0735
++++----	-----+	-----+	----+---	-----	-----	0722,0742 = 0725,0736
++++----	-----+	-----+	-----+	-----	-----	0722,0739 = 0725,0740
++++----	-----+	-----+	-----	+-----	-----	0722,0766 = 0725,0782
++++----	-----+	-----+	-----	-+-----	-----	0722,0767 = 0725,0770
++++----	-----+	-----+	-----	---+-----	-----	0722,0772 = 0725,0771
++++----	-----+	-----+	-----	----+---	-----	0722,0764 = 0725,0773
++++----	-----+	-----+	-----	-----+	-----	0722,0761N = 0725,0758
++++----	-----+	-----+	-----	-----+	-----	0722,0774 = 0725,0759
++++----	-----+	-----+	-----	-----	-----	0722,0762 = 0725,0778
++++----	-----+	-----+	-----	-----	+-----	0722,0788 = 0725,0791
++++----	-----+	-----+	-----	-----	--+-----	0722,0799 = 0725,0794
++++----	-----+	-----+	-----	-----	-----+--	0722,0790 = 0725,0783
++++----	-----+	-----+	-----	-----	-----+--	0722,0797 = 0725,0786
++++----	-----+	-----+	-----	-----	-----+	0722,0787 = 0725,0785
++++----	-----+	-----+	-----	-----	-----	0701,0725 = 0702,0722 = 0722,0725
++++----	-----+	-----+	++-----	-----	-----	0730,0732N = 0746,0755N
++++----	-----+	-----+	+-----	-----	-----	0730,0737 = 0746,0769
++++----	-----+	-----+	+-----	-----	-----	0730,0747 = 0735,0746
++++----	-----+	-----+	+-----	-----	-----	0730,0742 = 0736,0746
++++----	-----+	-----+	+-----+	-----	-----	0730,0739 = 0740,0746
++++----	-----+	-----+	+-----	+-----	-----	0730,0766 = 0746,0782
++++----	-----+	-----+	+-----	+-----	-----	0730,0767 = 0746,0770
++++----	-----+	-----+	+-----	--+-----	-----	0730,0772 = 0746,0771
++++----	-----+	-----+	+-----	---+-----	-----	0730,0764 = 0746,0773
++++----	-----+	-----+	+-----	-----+	-----	0730,0761N = 0746,0758
++++----	-----+	-----+	+-----	-----+	-----	0730,0774 = 0746,0759
++++----	-----+	-----+	+-----	-----	-----	0730,0762 = 0746,0778
++++----	-----+	-----+	+-----	-----	+-----	0730,0788 = 0746,0791
++++----	-----+	-----+	+-----	-----	--+-----	0730,0799 = 0746,0794
++++----	-----+	-----+	+-----	-----	-----+--	0730,0790 = 0746,0783
++++----	-----+	-----+	+-----	-----	-----+--	0730,0797 = 0746,0786
++++----	-----+	-----+	+-----	-----	-----+	0730,0787 = 0746,0785
++++----	-----+	-----+	+-----	-----	-----	0701,0746 = 0702,0730 = 0730,0746
++++----	-----+	-----+	+-----	-----	-----	0732N,0769 = 0737,0755N
++++----	-----+	-----+	-+-----	-----	-----	0732N,0735 = 0747,0755N
++++----	-----+	-----+	---+-----	-----	-----	0732N,0736 = 0742,0755N
++++----	-----+	-----+	----+---	-----	-----	0732N,0740 = 0739,0755N
++++----	-----+	-----+	-----	+-----	-----	0732N,0782 = 0755N,0766
++++----	-----+	-----+	-+-----	+-----	-----	0732N,0770 = 0755N,0767
++++----	-----+	-----+	-+-----	--+-----	-----	0732N,0771 = 0755N,0772
++++----	-----+	-----+	-+-----	---+-----	-----	0732N,0773 = 0755N,0764
++++----	-----+	-----+	-+-----	-----+	-----	0732N,0758 = 0755N,0761N
++++----	-----+	-----+	-+-----	-----+	-----	0732N,0759 = 0755N,0774

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++++-----	-----+	-----	-+-----	-----+	-----	0732N,0778 = 0755N,0762
++++-----	-----+	-----	-+-----	-----	+-----	0732N,0791 = 0755N,0788
++++-----	-----+	-----	-+-----	-----	--+-----	0732N,0794 = 0755N,0799
++++-----	-----+	-----	-+-----	-----	-----+--	0732N,0783 = 0755N,0790
++++-----	-----+	-----	-+-----	-----	-----+--	0732N,0786 = 0755N,0797
++++-----	-----+	-----	-+-----	-----	-----+--	0732N,0785 = 0755N,0787
++++-----	-----+	-----	-+-----	-----	-----	0701,0732N = 0702,0755N = 0732N,0755N
++++-----	-----+	-----	-+-----	-----	-----	0735,0737 = 0747,0769
++++-----	-----+	-----	-+-----	-----	-----	0736,0737 = 0742,0769
++++-----	-----+	-----	-+-----	-----	-----	0737,0740 = 0739,0769
++++-----	-----+	-----	-+-----	-----	-----	0737,0782 = 0766,0769
++++-----	-----+	-----	-+-----	-----	-----	0737,0770 = 0767,0769
++++-----	-----+	-----	-+-----	-----	-----	0737,0771 = 0769,0772
++++-----	-----+	-----	-+-----	-----	-----	0737,0773 = 0764,0769
++++-----	-----+	-----	-+-----	-----	-----	0737,0758 = 0761N,0769
++++-----	-----+	-----	-+-----	-----	-----	0737,0759 = 0769,0774
++++-----	-----+	-----	-+-----	-----	-----	0737,0778 = 0762,0769
++++-----	-----+	-----	-+-----	-----	-----	0737,0791 = 0769,0788
++++-----	-----+	-----	-+-----	-----	-----	0737,0794 = 0769,0799
++++-----	-----+	-----	-+-----	-----	-----	0737,0783 = 0769,0790
++++-----	-----+	-----	-+-----	-----	-----	0737,0786 = 0769,0797
++++-----	-----+	-----	-+-----	-----	-----	0737,0785 = 0769,0787
++++-----	-----+	-----	-+-----	-----	-----	0701,0737 = 0702,0769 = 0737,0769
++++-----	-----+	-----	-+-----	-----	-----	0735,0742 = 0736,0747
++++-----	-----+	-----	-+-----	-----	-----	0735,0739 = 0740,0747
++++-----	-----+	-----	-+-----	-----	-----	0735,0766 = 0747,0782
++++-----	-----+	-----	-+-----	-----	-----	0735,0767 = 0747,0770
++++-----	-----+	-----	-+-----	-----	-----	0735,0772 = 0747,0771
++++-----	-----+	-----	-+-----	-----	-----	0735,0764 = 0747,0773
++++-----	-----+	-----	-+-----	-----	-----	0735,0761N = 0747,0758
++++-----	-----+	-----	-+-----	-----	-----	0735,0774 = 0747,0759
++++-----	-----+	-----	-+-----	-----	-----	0735,0762 = 0747,0778
++++-----	-----+	-----	-+-----	-----	-----	0735,0788 = 0747,0791
++++-----	-----+	-----	-+-----	-----	-----	0735,0799 = 0747,0794
++++-----	-----+	-----	-+-----	-----	-----	0735,0790 = 0747,0783
++++-----	-----+	-----	-+-----	-----	-----	0735,0797 = 0747,0786
++++-----	-----+	-----	-+-----	-----	-----	0735,0787 = 0747,0785
++++-----	-----+	-----	-+-----	-----	-----	0701,0747 = 0702,0735 = 0735,0747
++++-----	-----+	-----	-+-----	-----	-----	0736,0739 = 0740,0742
++++-----	-----+	-----	-+-----	-----	-----	0736,0766 = 0742,0782
++++-----	-----+	-----	-+-----	-----	-----	0736,0767 = 0742,0770
++++-----	-----+	-----	-+-----	-----	-----	0736,0772 = 0742,0771
++++-----	-----+	-----	-+-----	-----	-----	0736,0764 = 0742,0773
++++-----	-----+	-----	-+-----	-----	-----	0736,0761N = 0742,0758
++++-----	-----+	-----	-+-----	-----	-----	0736,0774 = 0742,0759
++++-----	-----+	-----	-+-----	-----	-----	0736,0762 = 0742,0778
++++-----	-----+	-----	-+-----	-----	-----	0736,0788 = 0742,0791
++++-----	-----+	-----	-+-----	-----	-----	0736,0799 = 0742,0794
++++-----	-----+	-----	-+-----	-----	-----	0736,0790 = 0742,0783
++++-----	-----+	-----	-+-----	-----	-----	0736,0797 = 0742,0786
++++-----	-----+	-----	-+-----	-----	-----	0736,0787 = 0742,0785
++++-----	-----+	-----	-+-----	-----	-----	0701,0742 = 0702,0736 = 0736,0742
++++-----	-----+	-----	-+-----	-----	-----	0739,0782 = 0740,0766
++++-----	-----+	-----	-+-----	-----	-----	0739,0770 = 0740,0767
++++-----	-----+	-----	-+-----	-----	-----	0739,0771 = 0740,0772
++++-----	-----+	-----	-+-----	-----	-----	0739,0773 = 0740,0764
++++-----	-----+	-----	-+-----	-----	-----	0739,0758 = 0740,0761N
++++-----	-----+	-----	-+-----	-----	-----	0739,0759 = 0740,0774
++++-----	-----+	-----	-+-----	-----	-----	0739,0778 = 0740,0762
++++-----	-----+	-----	-+-----	-----	-----	0739,0791 = 0740,0788
++++-----	-----+	-----	-+-----	-----	-----	0739,0794 = 0740,0799
++++-----	-----+	-----	-+-----	-----	-----	0739,0783 = 0740,0790
++++-----	-----+	-----	-+-----	-----	-----	0739,0786 = 0740,0797
++++-----	-----+	-----	-+-----	-----	-----	0739,0785 = 0740,0787
++++-----	-----+	-----	-+-----	-----	-----	0701,0739 = 0702,0740 = 0739,0740
++++-----	-----+	-----	-+-----	-----	-----	0766,0770 = 0767,0782
++++-----	-----+	-----	-+-----	-----	-----	0766,0771 = 0772,0782
++++-----	-----+	-----	-+-----	-----	-----	0764,0782 = 0766,0773
++++-----	-----+	-----	-+-----	-----	-----	0758,0766 = 0761N,0782
++++-----	-----+	-----	-+-----	-----	-----	0759,0766 = 0774,0782
++++-----	-----+	-----	-+-----	-----	-----	0762,0782 = 0766,0778
++++-----	-----+	-----	-+-----	-----	-----	0766,0791 = 0782,0788
++++-----	-----+	-----	-+-----	-----	-----	0766,0794 = 0782,0799
++++-----	-----+	-----	-+-----	-----	-----	0766,0783 = 0782,0790



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++++--	-----+	-----	-----	+-----	-----+	0766,0786 = 0782,0797
++++--	-----+	-----	-----	+-----	-----+	0766,0785 = 0782,0787
++++--	-----+	-----	-----	+-----	-----	0701,0766 = 0702,0782 = 0766,0782
++++--	-----+	-----	-----	+-----	-----	0767,0771 = 0770,0772
++++--	-----+	-----	-----	+-----	-----	0764,0770 = 0767,0773
++++--	-----+	-----	-----	+-----	-----	0758,0767 = 0761N,0770
++++--	-----+	-----	-----	+-----	-----	0759,0767 = 0770,0774
++++--	-----+	-----	-----	+-----	-----	0762,0770 = 0767,0778
++++--	-----+	-----	-----	+-----	-----	0767,0791 = 0770,0788
++++--	-----+	-----	-----	+-----	-----	0767,0794 = 0770,0799
++++--	-----+	-----	-----	+-----	-----	0767,0783 = 0770,0790
++++--	-----+	-----	-----	+-----	-----	0767,0786 = 0770,0797
++++--	-----+	-----	-----	+-----	-----	0767,0785 = 0770,0787
++++--	-----+	-----	-----	+-----	-----	0701,0767 = 0702,0770 = 0767,0770
++++--	-----+	-----	-----	+-----	-----	0764,0771 = 0772,0773
++++--	-----+	-----	-----	+-----	-----	0758,0772 = 0761N,0771
++++--	-----+	-----	-----	+-----	-----	0759,0772 = 0771,0774
++++--	-----+	-----	-----	+-----	-----	0762,0771 = 0772,0778
++++--	-----+	-----	-----	+-----	-----	0771,0788 = 0772,0791
++++--	-----+	-----	-----	+-----	-----	0771,0799 = 0772,0794
++++--	-----+	-----	-----	+-----	-----	0771,0790 = 0772,0783
++++--	-----+	-----	-----	+-----	-----	0771,0797 = 0772,0786
++++--	-----+	-----	-----	+-----	-----	0771,0787 = 0772,0785
++++--	-----+	-----	-----	+-----	-----	0701,0772 = 0702,0771 = 0771,0772
++++--	-----+	-----	-----	+-----	-----	0758,0764 = 0761N,0773
++++--	-----+	-----	-----	+-----	-----	0759,0764 = 0773,0774
++++--	-----+	-----	-----	+-----	-----	0762,0773 = 0764,0778
++++--	-----+	-----	-----	+-----	-----	0764,0791 = 0773,0788
++++--	-----+	-----	-----	+-----	-----	0764,0794 = 0773,0799
++++--	-----+	-----	-----	+-----	-----	0764,0783 = 0773,0790
++++--	-----+	-----	-----	+-----	-----	0764,0786 = 0773,0797
++++--	-----+	-----	-----	+-----	-----	0764,0785 = 0773,0787
++++--	-----+	-----	-----	+-----	-----	0701,0764 = 0702,0773 = 0764,0773
++++--	-----+	-----	-----	+-----	-----	0758,0774 = 0759,0761N
++++--	-----+	-----	-----	+-----	-----	0758,0762 = 0761N,0778
++++--	-----+	-----	-----	+-----	-----	0758,0788 = 0761N,0791
++++--	-----+	-----	-----	+-----	-----	0758,0799 = 0761N,0794
++++--	-----+	-----	-----	+-----	-----	0702,0765 = 0761N,0765 = 0761N,0798N
++++--	-----+	-----	-----	+-----	-----	0758,0790 = 0761N,0783
++++--	-----+	-----	-----	+-----	-----	0758,0797 = 0761N,0786
++++--	-----+	-----	-----	+-----	-----	0758,0787 = 0761N,0785
++++--	-----+	-----	-----	+-----	-----	0701,0761N = 0702,0758 = 0758,0761N
++++--	-----+	-----	-----	+-----	-----	0759,0762 = 0774,0778
++++--	-----+	-----	-----	+-----	-----	0759,0788 = 0774,0791
++++--	-----+	-----	-----	+-----	-----	0759,0799 = 0774,0794
++++--	-----+	-----	-----	+-----	-----	0759,0790 = 0774,0783
++++--	-----+	-----	-----	+-----	-----	0759,0797 = 0774,0786
++++--	-----+	-----	-----	+-----	-----	0759,0787 = 0774,0785
++++--	-----+	-----	-----	+-----	-----	0701,0774 = 0702,0759 = 0759,0774
++++--	-----+	-----	-----	+-----	-----	0762,0791 = 0778,0788
++++--	-----+	-----	-----	+-----	-----	0762,0794 = 0778,0799
++++--	-----+	-----	-----	+-----	-----	0762,0783 = 0778,0790
++++--	-----+	-----	-----	+-----	-----	0762,0786 = 0778,0797
++++--	-----+	-----	-----	+-----	-----	0762,0785 = 0778,0787
++++--	-----+	-----	-----	+-----	-----	0701,0762 = 0702,0778 = 0762,0778
++++--	-----+	-----	-----	+-----	-----	0788,0794 = 0791,0799
++++--	-----+	-----	-----	+-----	-----	0783,0788 = 0790,0791
++++--	-----+	-----	-----	+-----	-----	0786,0788 = 0791,0797
++++--	-----+	-----	-----	+-----	-----	0785,0788 = 0787,0791
++++--	-----+	-----	-----	+-----	-----	0701,0788 = 0702,0791 = 0788,0791
++++--	-----+	-----	-----	+-----	-----	0783,0799 = 0790,0794
++++--	-----+	-----	-----	+-----	-----	0786,0799 = 0794,0797
++++--	-----+	-----	-----	+-----	-----	0785,0799 = 0787,0794
++++--	-----+	-----	-----	+-----	-----	0701,0799 = 0702,0794 = 0794,0799
++++--	-----+	-----	-----	+-----	-----	0783,0797 = 0786,0790
++++--	-----+	-----	-----	+-----	-----	0783,0787 = 0785,0790
++++--	-----+	-----	-----	+-----	-----	0701,0790 = 0702,0783 = 0783,0790
++++--	-----+	-----	-----	+-----	-----	0785,0797 = 0786,0787
++++--	-----+	-----	-----	+-----	-----	0701,0797 = 0702,0786 = 0786,0797
++++--	-----+	-----	-----	+-----	-----	0701,0787 = 0702,0785 = 0785,0787
++++--	-----+	-----	-----	+-----	-----	0716,0719 = 0719,0726
++++--	-----+	-----	-----	+-----	-----	0701,0719 = 0718,0719
++++--	-----+	-----	-----	+-----	-----	0705,0753 = 0705,0757
++++--	-----+	-----	-----	+-----	-----	0706,0753 = 0706,0757

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+++-----	+-----	---+-----	-----+	-----+	-----	0707,0753 = 0707,0757
+++-----	+-----	-----	-----+	-----+	-----	0709,0753 = 0709,0757
+++-----	---+-----	-----	-----	-----	-----	0743,0753 = 0743,0757
+++-----	---+-----	-----	-----	-----	-----	0724,0753 = 0724,0757
+++-----	-----+	-----	-----+	-----	-----	0753,0760 = 0757,0760
+++-----	-----+	-----	-----	-----	-----	0728,0753 = 0728,0757
+++-----	-----++	-----	-----	-----	-----	0714,0753 = 0714,0757
+++-----	-----+	-----	-----	-----	-----	0753,0789 = 0757,0789
+++-----	-----+	-----	-+-----	-----	-----	0731,0753 = 0731,0757
+++-----	-----+	-----	-----	-----	-----	0727,0753 = 0727,0757
+++-----	-----	-+-----	-----	-----	-----	0752,0753 = 0752,0757
+++-----	-----	---+---	-----	---+---	-----	0753,0796 = 0757,0796
+++-----	-----	---+---	-----	---+---	-----	0753,0792 = 0757,0792
+++-----	-----	---+---	-----	-----	-----	0716,0753 = 0716,0757 = 0726,0753 = 0726,0757
+++-----	-----	---+---	---+---	-----	-----	0703,0735 = 0703,0744 = 0744,0753 = 0744,0757
+++-----	-----	---+---	-----	-----	-----	0701,0703 = 0703,0753 = 0703,0781 = 0717,0753 = 0753,0781 = 0757,0781
+++-----	-----	---+---	-----	-----	-----	0718,0753 = 0718,0757
+++-----	-----	---+---	---+---	-----	-----	0720,0753 = 0720,0757
+++-----	-----	---+---	-----	-----	-----	0721,0753 = 0721,0757
+++-----	-----	---+---	-----	-----	-----	0722,0753 = 0722,0757
+++-----	-----	-----	+-----	-----	-----	0730,0753 = 0730,0757
+++-----	-----	-----	-+-----	-----	-----	0753,0755N = 0755N,0757
+++-----	-----	-----	---+---	-----	-----	0753,0769 = 0757,0769
+++-----	-----	-----	---+---	-----	-----	0735,0753 = 0735,0757
+++-----	-----	-----	---+---	-----	-----	0736,0753 = 0736,0757
+++-----	-----	-----	---+---	-----	-----	0740,0753 = 0740,0757
+++-----	-----	-----	-----	+-----	-----	0753,0782 = 0757,0782
+++-----	-----	-----	-----	+-----	-----	0753,0770 = 0757,0770
+++-----	-----	-----	-----	---+---	-----	0753,0771 = 0757,0771
+++-----	-----	-----	-----	---+---	-----	0753,0773 = 0757,0773
+++-----	-----	-----	-----	---+---	-----	0753,0765 = 0757,0765
+++-----	-----	-----	-----	---+---	-----	0753,0758 = 0757,0758
+++-----	-----	-----	-----	---+---	-----	0753,0759 = 0757,0759
+++-----	-----	-----	-----	---+---	-----	0753,0778 = 0757,0778
+++-----	-----	-----	-----	-----	+-----	0753,0791 = 0757,0791
+++-----	-----	-----	-----	-----	+-----	0753,0777 = 0757,0777
+++-----	-----	-----	-----	-----	+-----	0753,0793 = 0757,0793
+++-----	-----	-----	-----	-----	+-----	0753,0794 = 0757,0794
+++-----	-----	-----	-----	-----	+-----	0753,0798N = 0757,0798N
+++-----	-----	-----	-----	-----	+-----	0753,0795 = 0757,0795
+++-----	-----	-----	-----	-----	+-----	0753,0783 = 0757,0783
+++-----	-----	-----	-----	-----	+-----	0753,0786 = 0757,0786
+++-----	-----	-----	-----	-----	+-----	0753,0785 = 0757,0785
+++-----	-----	-----	-----	-----	-----	0701,0753 = 0701,0757 = 070105,0753 = 0753,0753 = 0753,0757
+++-----	-----	-----	-----	-----	-----	0701,0705 = 070105,0705
+++-----	-----	-----	-----	-----	-----	0706,0727 = 0706,0745 = 0718,0745
+++-----	-----	-----	-----	-----	-----	0706,0716 = 0706,0726
+++-----	-----	-----	-----	-----	-----	0706,0717 = 0706,0781
+++-----	-----	-----	-----	-----	-----	0701,0706 = 070105,0706 = 0706,0706 = 0706,0718
+++-----	-----	-----	-----	-----	-----	0707,0720 = 0707,0796 = 0709,0796
+++-----	-----	-----	-----	-----	-----	0707,0773 = 0707,0792 = 0709,0792
+++-----	-----	-----	-----	-----	-----	0701,0707 = 070105,0707 = 0707,0709 = 0707,0726 = 0707,0778 = 0709,0716 = 0709,0726
+++-----	-----	-----	-----	-----	-----	0709,0717 = 0709,0781
+++-----	-----	-----	-----	-----	-----	0701,0709 = 070105,0709 = 0709,0709 = 0709,0778
+++-----	-----	-----	-----	-----	-----	0714,0724 = 0743,0789
+++-----	-----	-----	-----	-----	-----	0724,0731 = 0743,0755N
+++-----	-----	-----	-----	-----	-----	0701,0743 = 070105,0743 = 0724,0727 = 0724,0743
+++-----	-----	-----	-----	-----	-----	0716,0724 = 0724,0726
+++-----	-----	-----	-----	-----	-----	0717,0724 = 0724,0781
+++-----	-----	-----	-----	-----	-----	0701,0724 = 070105,0724 = 0724,0724
+++-----	-----	-----	-----	-----	-----	0701,0760 = 070105,0760
+++-----	-----	-----	-----	-----	-----	0716,0728 = 0726,0728
+++-----	-----	-----	-----	-----	-----	0717,0728 = 0728,0781
+++-----	-----	-----	-----	-----	-----	0701,0728 = 070105,0728 = 0728,0728
+++-----	-----	-----	-----	-----	-----	0714,0755N = 0731,0789

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+++-----	-----++	-----	-----	-----	-----	0701,0714 = 070105,0714 = 0714,0789 = 0727,0789
+++-----	-----+-	---+-----	-----	-----	-----	0716,0789 = 0726,0789
+++-----	-----+-	---+-----	-----	-----	-----	0717,0789 = 0781,0789
+++-----	-----+-	-----	-----	-----	-----	0701,0789 = 070105,0789 = 0789,0789
+++-----	-----+	-----	-+-----	-----	-----	0701,0731 = 070105,0731 = 0727,0755N = 0731,0755N
+++-----	-----+	-----	-----	-----	-----	0701,0727 = 070105,0727
+++-----	-----	---+-----	-----	-----	-----	0716,0752 = 0726,0752
+++-----	-----	---+-----	-----	-----	-----	0717,0752 = 0752,0781
+++-----	-----	---+-----	-----	-----	-----	0701,0752 = 070105,0752 = 0752,0752
+++-----	-----	---+++-	-----	---+-----	-----	0717,0796 = 0781,0796
+++-----	-----	---+++-	---+-----	-----	-----	0716,0744 = 0726,0744
+++-----	-----	---+++-	---+-----	-----	-----	0717,0792 = 0781,0792
+++-----	-----	---+++-	-----	-----	-----	0716,0781 = 0717,0726 = 0726,0781
+++-----	-----	---+++-	-----	-----	-----	0716,0718 = 0718,0726
+++-----	-----	---+++-	-----	---+-----	-----	0701,0796 = 070105,0796 = 0716,0720 = 0716,0796 = 0720,0726 = 0720,0792 = 0720,0796 = 0726,0796 = 0773,0796 = 0792,0796 = 0796,0796
+++-----	-----	---+++-	-----	-----	-----	0716,0721 = 0721,0726
+++-----	-----	---+++-	-----	-----	-----	0716,0722 = 0722,0726
+++-----	-----	---+++-	+-----	-----	-----	0716,0730 = 0726,0730
+++-----	-----	---+++-	+-----	-----	-----	0716,0755N = 0726,0755N
+++-----	-----	---+++-	---+-----	-----	-----	0716,0769 = 0726,0769
+++-----	-----	---+++-	---+-----	-----	-----	0716,0735 = 0726,0735
+++-----	-----	---+++-	---+-----	-----	-----	0716,0736 = 0726,0736
+++-----	-----	---+++-	---+++-	-----	-----	0716,0740 = 0726,0740
+++-----	-----	---+++-	-----	+-----	-----	0716,0782 = 0726,0782
+++-----	-----	---+++-	-----	---+-----	-----	0716,0770 = 0726,0770
+++-----	-----	---+++-	-----	---+-----	-----	0716,0771 = 0726,0771
+++-----	-----	---+++-	-----	---+-----	-----	0701,0792 = 070105,0792 = 0716,0773 = 0716,0792 = 0726,0773 = 0726,0792 = 0773,0792 = 0792,0792
+++-----	-----	---+-----	-----	---+-----	---+-----	0716,0765 = 0726,0765
+++-----	-----	---+-----	-----	---+-----	---+-----	0716,0758 = 0726,0758
+++-----	-----	---+-----	-----	---+-----	---+-----	0716,0759 = 0726,0759
+++-----	-----	---+-----	-----	---+-----	---+-----	0716,0778 = 0726,0778
+++-----	-----	---+-----	-----	---+-----	---+-----	0716,0791 = 0726,0791
+++-----	-----	---+-----	-----	---+-----	---+-----	0716,0777 = 0726,0777
+++-----	-----	---+-----	-----	---+-----	---+-----	0716,0793 = 0726,0793
+++-----	-----	---+-----	-----	---+-----	---+-----	0716,0794 = 0726,0794
+++-----	-----	---+-----	-----	---+-----	---+-----	0716,0798N = 0726,0798N
+++-----	-----	---+-----	-----	---+-----	---+-----	0716,0795 = 0726,0795
+++-----	-----	---+-----	-----	---+-----	---+-----	0716,0783 = 0726,0783
+++-----	-----	---+-----	-----	---+-----	---+-----	0716,0786 = 0726,0786
+++-----	-----	---+-----	-----	---+-----	---+-----	0716,0785 = 0726,0785
+++-----	-----	---+-----	-----	---+-----	---+-----	0701,0716 = 0701,0726 = 070105,0716 = 070105,0726 = 0716,0726 = 0726,0726
+++-----	-----	---+-----	-----	---+-----	---+-----	0717,0718 = 0718,0781
+++-----	-----	---+-----	-----	---+-----	---+-----	0717,0720 = 0720,0781
+++-----	-----	---+-----	---+-----	-----	-----	0717,0721 = 0721,0781
+++-----	-----	---+-----	---+-----	-----	-----	0717,0722 = 0722,0781
+++-----	-----	---+-----	+-----	-----	-----	0717,0730 = 0730,0781
+++-----	-----	---+-----	+-----	-----	-----	0717,0755N = 0755N,0781
+++-----	-----	---+-----	---+-----	-----	-----	0717,0769 = 0769,0781
+++-----	-----	---+-----	---+-----	-----	-----	0701,0744 = 070105,0744 = 0717,0735 = 0717,0744 = 0735,0744 = 0735,0781 = 0744,0744 = 0744,0781
+++-----	-----	---+-----	---+-----	-----	-----	0717,0736 = 0736,0781
+++-----	-----	---+-----	---+-----	-----	-----	0717,0740 = 0740,0781
+++-----	-----	---+-----	-----	+-----	-----	0717,0782 = 0781,0782
+++-----	-----	---+-----	-----	+-----	-----	0717,0770 = 0770,0781
+++-----	-----	---+-----	-----	---+-----	-----	0717,0771 = 0771,0781
+++-----	-----	---+-----	-----	---+-----	-----	0717,0773 = 0773,0781
+++-----	-----	---+-----	-----	---+-----	---+-----	0717,0765 = 0765,0781
+++-----	-----	---+-----	-----	---+-----	---+-----	0717,0758 = 0758,0781
+++-----	-----	---+-----	-----	---+-----	---+-----	0717,0759 = 0759,0781
+++-----	-----	---+-----	-----	---+-----	---+-----	0717,0778 = 0778,0781
+++-----	-----	---+-----	-----	---+-----	---+-----	0717,0791 = 0781,0791
+++-----	-----	---+-----	-----	---+-----	---+-----	0717,0777 = 0777,0781
+++-----	-----	---+-----	-----	---+-----	---+-----	0717,0793 = 0781,0793
+++-----	-----	---+-----	-----	---+-----	---+-----	0717,0794 = 0781,0794
+++-----	-----	---+-----	-----	---+-----	---+-----	0717,0798N = 0781,0798N

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+++-----	-----	---+-----	-----	-----	-----+---	0717,0795 = 0781,0795
+++-----	-----	---+-----	-----	-----	-----+---	0717,0783 = 0781,0783
+++-----	-----	---+-----	-----	-----	-----+---	0717,0786 = 0781,0786
+++-----	-----	---+-----	-----	-----	-----+---	0717,0785 = 0781,0785
+++-----	-----	---+-----	-----	-----	-----+---	0701,0717 = 0701,0781 = 070105,0781 = 0717,0781 = 0781,0781
+++-----	-----	---+-----	-----	-----	-----+---	0701,0718 = 070105,0718 = 0718,0718
+++-----	-----	---+-----	-----	-----	-----+---	0701,0720 = 070105,0720 = 0720,0720 = 0720,0773
+++-----	-----	---+-----	-----	-----	-----+---	0701,0721 = 070105,0721 = 0721,0721
+++-----	-----	---+-----	-----	-----	-----+---	0701,0722 = 070105,0722 = 0722,0722
+++-----	-----	---+-----	-----	-----	-----+---	0701,0730 = 070105,0730 = 0730,0730
+++-----	-----	---+-----	-----	-----	-----+---	0701,0755N = 070105,0755N = 0755N,0755N
+++-----	-----	---+-----	-----	-----	-----+---	0701,0769 = 070105,0769 = 0769,0769
+++-----	-----	---+-----	-----	-----	-----+---	0701,0735 = 070105,0735 = 0735,0735
+++-----	-----	---+-----	-----	-----	-----+---	0701,0736 = 070105,0736 = 0736,0736
+++-----	-----	---+-----	-----	-----	-----+---	0701,0740 = 070105,0740 = 0740,0740
+++-----	-----	---+-----	-----	-----	-----+---	0701,0782 = 070105,0782 = 0782,0782
+++-----	-----	---+-----	-----	-----	-----+---	0701,0770 = 070105,0770 = 0770,0770
+++-----	-----	---+-----	-----	-----	-----+---	0701,0771 = 070105,0771 = 0771,0771
+++-----	-----	---+-----	-----	-----	-----+---	0701,0773 = 070105,0773 = 0773,0773
+++-----	-----	---+-----	-----	-----	-----+---	0758,0777 = 0765,0777 = 0765,0793
+++-----	-----	---+-----	-----	-----	-----+---	0701,0765 = 070105,0765 = 0758,0765 = 0758,0798N = 0765,0765 = 0765,0798N
+++-----	-----	---+-----	-----	-----	-----+---	0701,0758 = 070105,0758 = 0758,0758
+++-----	-----	---+-----	-----	-----	-----+---	0701,0759 = 070105,0759 = 0759,0759
+++-----	-----	---+-----	-----	-----	-----+---	0701,0778 = 070105,0778 = 0778,0778
+++-----	-----	---+-----	-----	-----	-----+---	0701,0791 = 070105,0791 = 0791,0791
+++-----	-----	---+-----	-----	-----	-----+---	0701,0777 = 070105,0777 = 0777,0777 = 0777,0793 = 0777,0798N = 0793,0798N
+++-----	-----	---+-----	-----	-----	-----+---	0701,0793 = 070105,0793 = 0793,0793
+++-----	-----	---+-----	-----	-----	-----+---	0701,0794 = 070105,0794 = 0794,0794
+++-----	-----	---+-----	-----	-----	-----+---	0701,0798N = 070105,0798N = 0798N,0798N
+++-----	-----	---+-----	-----	-----	-----+---	0701,0795 = 070105,0795 = 0795,0795
+++-----	-----	---+-----	-----	-----	-----+---	0701,0783 = 070105,0783 = 0783,0783
+++-----	-----	---+-----	-----	-----	-----+---	0701,0786 = 070105,0786 = 0786,0786
+++-----	-----	---+-----	-----	-----	-----+---	0701,0785 = 070105,0785 = 0785,0785
+++-----	-----	---+-----	-----	-----	-----+---	0701,0701 = 0701,070105
+++-----	-----	---+-----	-----	-----	-----+---	0707,0756 = 0707,0779
+++-----	-----	---+-----	-----	-----	-----+---	0729,0760 = 0749,0760
+++-----	-----	---+-----	-----	-----	-----+---	0707,0772 = 0707,0780
+++-----	-----	---+-----	-----	-----	-----+---	0702,0707 = 0707,0729 = 0707,0733N = 0707,0749 = 0707,0751 = 0707,0762 = 0707,0776 = 0716,0776
+++-----	-----	---+-----	-----	-----	-----+---	0716,0729 = 0716,0733N = 0727,0733N
+++-----	-----	---+-----	-----	-----	-----+---	0710,0760 = 0743,0779
+++-----	-----	---+-----	-----	-----	-----+---	0710,0714 = 0743,0750
+++-----	-----	---+-----	-----	-----	-----+---	0710,0716 = 0743,0751
+++-----	-----	---+-----	-----	-----	-----+---	0710,0731 = 0732N,0743
+++-----	-----	---+-----	-----	-----	-----+---	0702,0743 = 0710,0727 = 0710,0743
+++-----	-----	---+-----	-----	-----	-----+---	0714,0779 = 0750,0760
+++-----	-----	---+-----	-----	-----	-----+---	0716,0779 = 0751,0760
+++-----	-----	---+-----	-----	-----	-----+---	0731,0779 = 0732N,0760
+++-----	-----	---+-----	-----	-----	-----+---	0702,0760 = 0727,0779 = 0756,0760 = 0760,0779
+++-----	-----	---+-----	-----	-----	-----+---	0714,0751 = 0716,0750
+++-----	-----	---+-----	-----	-----	-----+---	0714,0732N = 0731,0750
+++-----	-----	---+-----	-----	-----	-----+---	0702,0714 = 0714,0750 = 0727,0750
+++-----	-----	---+-----	-----	-----	-----+---	0716,0732N = 0731,0751
+++-----	-----	---+-----	-----	-----	-----+---	0716,0772 = 0716,0780 = 0727,0780
+++-----	-----	---+-----	-----	-----	-----+---	0702,0716 = 0716,0751 = 0727,0751
+++-----	-----	---+-----	-----	-----	-----+---	0702,0731 = 0727,0732N = 0731,0732N
+++-----	-----	---+-----	-----	-----	-----+---	0704,0760 = 0711,0760
+++-----	-----	---+-----	-----	-----	-----+---	0705,0705 = 0705,0727
+++-----	-----	---+-----	-----	-----	-----+---	0707,0707 = 0707,0716
+++-----	-----	---+-----	-----	-----	-----+---	0727,0743 = 0743,0743
+++-----	-----	---+-----	-----	-----	-----+---	0714,0714 = 0714,0727
+++-----	-----	---+-----	-----	-----	-----+---	0727,0731 = 0731,0731
+++-----	-----	---+-----	-----	-----	-----+---	0719,0763 = 0719,0768
+++-----	-----	---+-----	-----	-----	-----+---	070105,0754 = 0702,0719 = 0719,0754
+++-----	-----	---+-----	-----	-----	-----+---	070105,0719 = 0719,0719
+++-----	-----	---+-----	-----	-----	-----+---	070105,0703 = 0703,0757 = 0717,0757
+++-----	-----	---+-----	-----	-----	-----+---	070105,0757 = 0757,0757
+++-----	-----	---+-----	-----	-----	-----+---	0702,0703 = 0703,0748

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+++++--	+-----+	++++---	-----	----+---	-----	0733N,0763 = 0733N,0768
+++++--	+-----+	+-----+	-----+	----+--+	-----	0763,0776 = 0768,0776
+++++--	+-----+	+-----+	-----+	----+---	-----	0749,0763 = 0749,0768
+++++--	+-----+	+-----+	-----	----+---	-----	0729,0763 = 0729,0768
+++++--	+-----+	+-----+	-----	----+---	-----	0710,0763 = 0710,0768
+++++--	+-----+	+-----+	-----	----+---	-----	0712,0768 = 0741,0768
+++++--	+-----+	+-----+	-----	----+---	-----	0763,0779 = 0768,0779
+++++--	+-----+	+-----+	-----	----+---	-----	0704,0779 = 0711,0779
+++++--	+-----+	+-----+	-----	----+---	-----	0711,0738 = 0711,0768 = 0756,0763 = 0756,0768
+++++--	+-----+	+-----+	-----	----+---	-----	0702,0711 = 0704,0756 = 0711,0756
+++++--	+-----+	+-----+	-----	----+---	-----	0713,0763 = 0713,0768
+++++--	+-----+	+-----+	-----	----+---	-----	0750,0763 = 0750,0768
+++++--	+-----+	+-----+	-----	----+---	-----	0715,0763 = 0715,0768
+++++--	+-----+	+-----+	-----	----+---	-----	0763,0780 = 0768,0780
+++++--	+-----+	+-----+	-----	----+---	-----	0751,0763 = 0751,0768
+++++--	+-----+	+-----+	-----	----+---	-----	0717,0768 = 0748,0763 = 0748,0768
+++++--	+-----+	+-----+	-----	----+---	-----	0754,0763 = 0754,0768
+++++--	+-----+	+-----+	-----	----+---	-----	0763,0784 = 0768,0784
+++++--	+-----+	+-----+	-----	----+---	-----	0723,0763 = 0723,0768
+++++--	+-----+	+-----+	-----	----+---	-----	0725,0763 = 0725,0768
+++++--	+-----+	+-----+	-----	----+---	-----	0746,0763 = 0746,0768
+++++--	+-----+	+-----+	-----	----+---	-----	0732N,0763 = 0732N,0768
+++++--	+-----+	+-----+	-----	----+---	-----	0737,0763 = 0737,0768
+++++--	+-----+	+-----+	-----	----+---	-----	0747,0763 = 0747,0768
+++++--	+-----+	+-----+	-----	----+---	-----	0742,0763 = 0742,0768
+++++--	+-----+	+-----+	-----	----+---	-----	0763,0775 = 0768,0775
+++++--	+-----+	+-----+	-----	----+---	-----	0739,0763 = 0739,0768
+++++--	+-----+	+-----+	-----	----+---	-----	0763,0766 = 0766,0768
+++++--	+-----+	+-----+	-----	----+---	-----	0763,0767 = 0767,0768
+++++--	+-----+	+-----+	-----	----+---	-----	0763,0772 = 0768,0772
+++++--	+-----+	+-----+	-----	----+---	-----	0763,0764 = 0764,0768
+++++--	+-----+	+-----+	-----	----+---	-----	0761N,0763 = 0761N,0768
+++++--	+-----+	+-----+	-----	----+---	-----	0763,0774 = 0768,0774
+++++--	+-----+	+-----+	-----	----+---	-----	0762,0763 = 0762,0768
+++++--	+-----+	+-----+	-----	----+---	-----	0763,0788 = 0768,0788
+++++--	+-----+	+-----+	-----	----+---	-----	0763,0799 = 0768,0799
+++++--	+-----+	+-----+	-----	----+---	-----	0763,0790 = 0768,0790
+++++--	+-----+	+-----+	-----	----+---	-----	0763,0797 = 0768,0797
+++++--	+-----+	+-----+	-----	----+---	-----	0763,0787 = 0768,0787
+++++--	+-----+	+-----+	-----	----+---	-----	0702,0763 = 0702,0768 = 0704,0738 = 0704,0768 = 0738,0763 = 0738,0768 = 0763,0768 = 0768,0768
+++++--	+-----+	+-----+	-----	----+---	-----	0756,0776 = 0776,0779
+++++--	+-----+	+-----+	-----	----+---	-----	0729,0779 = 0749,0756 = 0749,0779
+++++--	+-----+	+-----+	-----	----+---	-----	0717,0733N = 0733N,0748
+++++--	+-----+	+-----+	-----	----+---	-----	0733N,0776 = 0751,0776
+++++--	+-----+	+-----+	-----	----+---	-----	0733N,0749 = 0749,0751
+++++--	+-----+	+-----+	-----	----+---	-----	0729,0780 = 0733N,0772 = 0733N,0780
+++++--	+-----+	+-----+	-----	----+---	-----	0702,0733N = 0729,0733N = 0729,0751 = 0733N,0733N = 0733N,0751
+++++--	+-----+	+-----+	-----	----+---	-----	0717,0776 = 0748,0776
+++++--	+-----+	+-----+	-----	----+---	-----	0717,0749 = 0748,0749
+++++--	+-----+	+-----+	-----	----+---	-----	0717,0729 = 0729,0748
+++++--	+-----+	+-----+	-----	----+---	-----	0702,0776 = 0729,0776 = 0749,0762 = 0749,0776 = 0762,0776 = 0776,0776
+++++--	+-----+	+-----+	-----	----+---	-----	0702,0749 = 0729,0749 = 0749,0749
+++++--	+-----+	+-----+	-----	----+---	-----	0702,0729 = 0729,0729
+++++--	+-----+	+-----+	-----	----+---	-----	0710,0717 = 0710,0748
+++++--	+-----+	+-----+	-----	----+---	-----	0702,0710 = 0710,0710
+++++--	+-----+	+-----+	-----	----+---	-----	0717,0779 = 0748,0779
+++++--	+-----+	+-----+	-----	----+---	-----	0717,0756 = 0748,0756
+++++--	+-----+	+-----+	-----	----+---	-----	0702,0779 = 0756,0779 = 0779,0779
+++++--	+-----+	+-----+	-----	----+---	-----	0702,0756 = 0756,0756
+++++--	+-----+	+-----+	-----	----+---	-----	0713,0717 = 0713,0748
+++++--	+-----+	+-----+	-----	----+---	-----	0702,0713 = 0713,0713
+++++--	+-----+	+-----+	-----	----+---	-----	0717,0750 = 0748,0750
+++++--	+-----+	+-----+	-----	----+---	-----	0702,0750 = 0750,0750
+++++--	+-----+	+-----+	-----	----+---	-----	0715,0717 = 0715,0748
+++++--	+-----+	+-----+	-----	----+---	-----	0702,0715 = 0715,0715
+++++--	+-----+	+-----+	-----	----+---	-----	0717,0780 = 0748,0780
+++++--	+-----+	+-----+	-----	----+---	-----	0717,0751 = 0748,0751
+++++--	+-----+	+-----+	-----	----+---	-----	0702,0780 = 0751,0772 = 0751,0780 = 0772,0780 = 0780,0780

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+++-----	-----+	---+-----	-----	-----	-----	0702,0751 = 0751,0751
+++-----	-----+	---++---	-----	-----	-----	0717,0754 = 0748,0754
+++-----	-----+	---++---	-----	-----	-----	0717,0784 = 0748,0784
+++-----	-----+	---+-----	-----	-----	-----	0717,0723 = 0723,0748
+++-----	-----+	---+-----	-----	-----	-----	0717,0725 = 0725,0748
+++-----	-----+	---+-----	-----	-----	-----	0717,0746 = 0746,0748
+++-----	-----+	---+-----	-----	-----	-----	0717,0732N = 0732N,0748
+++-----	-----+	---+-----	-----	-----	-----	0717,0737 = 0737,0748
+++-----	-----+	---+-----	-----	-----	-----	0717,0747 = 0747,0748
+++-----	-----+	---+-----	-----	-----	-----	0717,0742 = 0742,0748
+++-----	-----+	---+-----	-----	-----	-----	0717,0775 = 0748,0775
+++-----	-----+	---+-----	-----	-----	-----	0717,0739 = 0739,0748
+++-----	-----+	---+-----	-----	-----	-----	0717,0766 = 0748,0766
+++-----	-----+	---+-----	-----	-----	-----	0717,0767 = 0748,0767
+++-----	-----+	---+-----	-----	-----	-----	0717,0772 = 0748,0772
+++-----	-----+	---+-----	-----	-----	-----	0717,0764 = 0748,0764
+++-----	-----+	---+-----	-----	-----	-----	0717,0738 = 0738,0748
+++-----	-----+	---+-----	-----	-----	-----	0717,0761N = 0748,0761N
+++-----	-----+	---+-----	-----	-----	-----	0717,0774 = 0748,0774
+++-----	-----+	---+-----	-----	-----	-----	0717,0762 = 0748,0762
+++-----	-----+	---+-----	-----	-----	-----	0717,0788 = 0748,0788
+++-----	-----+	---+-----	-----	-----	-----	0717,0799 = 0748,0799
+++-----	-----+	---+-----	-----	-----	-----	0717,0790 = 0748,0790
+++-----	-----+	---+-----	-----	-----	-----	0717,0797 = 0748,0797
+++-----	-----+	---+-----	-----	-----	-----	0717,0787 = 0748,0787
+++-----	-----+	---+-----	-----	-----	-----	0702,0717 = 0702,0748 = 0717,0748 = 0748,0748
+++-----	-----+	---+-----	-----	-----	-----	0702,0754 = 0754,0754
+++-----	-----+	---+-----	-----	-----	-----	0702,0784 = 0784,0784
+++-----	-----+	---+-----	-----	-----	-----	0702,0723 = 0723,0723
+++-----	-----+	---+-----	-----	-----	-----	0702,0725 = 0725,0725
+++-----	-----+	---+-----	-----	-----	-----	0702,0746 = 0746,0746
+++-----	-----+	---+-----	-----	-----	-----	0702,0732N = 0732N,0732N
+++-----	-----+	---+-----	-----	-----	-----	0702,0737 = 0737,0737
+++-----	-----+	---+-----	-----	-----	-----	0702,0747 = 0747,0747
+++-----	-----+	---+-----	-----	-----	-----	0702,0742 = 0742,0742
+++-----	-----+	---+-----	-----	-----	-----	0702,0775 = 0775,0775
+++-----	-----+	---+-----	-----	-----	-----	0702,0739 = 0739,0739
+++-----	-----+	---+-----	-----	-----	-----	0702,0766 = 0766,0766
+++-----	-----+	---+-----	-----	-----	-----	0702,0767 = 0767,0767
+++-----	-----+	---+-----	-----	-----	-----	0702,0772 = 0772,0772
+++-----	-----+	---+-----	-----	-----	-----	0702,0764 = 0764,0764
+++-----	-----+	---+-----	-----	-----	-----	0702,0738 = 0738,0738
+++-----	-----+	---+-----	-----	-----	-----	0702,0761N = 0761N,0761N
+++-----	-----+	---+-----	-----	-----	-----	0702,0774 = 0774,0774
+++-----	-----+	---+-----	-----	-----	-----	0702,0762 = 0762,0762
+++-----	-----+	---+-----	-----	-----	-----	0702,0788 = 0788,0788
+++-----	-----+	---+-----	-----	-----	-----	0702,0799 = 0799,0799
+++-----	-----+	---+-----	-----	-----	-----	0702,0790 = 0790,0790
+++-----	-----+	---+-----	-----	-----	-----	0702,0797 = 0797,0797
+++-----	-----+	---+-----	-----	-----	-----	0702,0787 = 0787,0787
+++-----	-----+	---+-----	-----	-----	-----	0703,0703 = 0703,0717
+++-----	-----+	---+-----	-----	-----	-----	0711,0712 = 0711,0741
+++-----	-----+	---+-----	-----	-----	-----	0712,0763 = 0741,0763
+++-----	-----+	---+-----	-----	-----	-----	0704,0712 = 0704,0741
+++-----	-----+	---+-----	-----	-----	-----	0712,0712 = 0712,0741
+++-----	-----+	---+-----	-----	-----	-----	0704,0711 = 0711,0711
+++-----	-----+	---+-----	-----	-----	-----	0704,0763 = 0763,0763

0701 = 070101-070104 and 070106-070111  
0702 = 07020101 - 0702013  
0704 = 070401 - 070403  
0727 = 072701 - 072702  
0756 = 075601 - 075602

## SPECIFICITY TABLE

### HLA-Cw\*07 SSP subtyping

Specificities and sizes of the PCR products of the 48 primer mixes used for HLA-Cw\*07 SSP subtyping

Primer Mix	Size of spec. PCR product <sup>1</sup>	Size of control band <sup>2</sup>	Amplified HLA-Cw*07 alleles <sup>3</sup>	Other amplified HLA-Class I alleles <sup>4</sup>
<b>1<sup>9</sup></b>	245 bp , 425 bp	<b>800 bp</b>	*070101-0733N, 0735-0799	
<b>2</b>	290 bp	<b>800 bp</b>	*070101-070104, 070106-070111, 0705-0707, 0709, 0714, 0716, 0718, 0720-0722, 0724, 0726-0728, 0730, 0731, 0735, 0736, 0740, 0743, 0744, 0752, 0753, 0755N, 0758-0760, 0765, 0769-0771, 0773, 0777, 0778, 0781-0783, 0785, 0786, 0789, 0791-0796, 0798N	*0517, <b>B*350804</b>
<b>3<sup>5</sup></b>	110 bp	<b>800 bp</b>	*070101-070111, 0706, 0709, 0718-0722, 0724, 0726, 0728, 0730, 0735, 0736, 0740, 0744, 0752, 0753, 0755N, 0757-0759, 0765, 0769-0771, 0773, 0777, 0778, 0781-0783, 0785, 0786, 0789, 0791-0796, 0798N	
<b>4</b>	185 bp	1070 bp	*07020101-070213, 0710, 0713, 0715, 0719, 0723, 0725, 0729, 0732N, 0733N, 0737-0739, 0742, 0746-0751, 0754, 075601, 075602, 0761N, 0762, 0764, 0766-0768, 0772, 0774-0776, 0779, 0780, 0784, 0787, 0788, 0790, 0797, 0799	<b>B*4060</b>
<b>5<sup>5,10</sup></b>	70 bp, 145 bp, 245 bp	<b>800 bp</b>	*0703, 0753, 0757	
<b>6<sup>5</sup></b>	100 bp	1070 bp	*070401-070403, 0711,	

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			0712, 0763, 0768	
<b>7</b>	190 bp	1070 bp	*0705	<b>B*2736, B*4821</b>
<b>8<sup>11</sup></b>	285 bp, 505 bp	1070 bp	*0706, 0745	*0440
<b>9<sup>6,12</sup></b>	215 bp, 240 bp, 425 bp	<b>800 bp</b>	*0707, 0709, 0729, 0733N, 0749, 0776	*0617, 1801-1803
<b>10</b>	185 bp	1070 bp	*0708	
<b>11<sup>13</sup></b>	275 bp, 305 bp	<b>800 bp</b>	*0710, 0724, 0743	<b>B*350804</b>
<b>12<sup>5</sup></b>	130 bp	1070 bp	*0712, 0741	*05010101-050111, 0503-0508, 0510-0516, 0518-0522, 0524-0534, 080101-0806, 0808-0814, 0816-0831, <b>A*2910</b>
<b>13<sup>5,7</sup></b>	90 bp	1070 bp	*0711, 075601, 075602, 0760, 0779	*0369, 0427, 0452
<b>14</b>	240 bp	<b>800 bp</b>	*0713, 0728	*0517
<b>15<sup>5,14</sup></b>	80 bp, 290 bp, 460 bp	<b>800 bp</b>	*0714, 0750, 0789	
<b>16</b>	535 bp	1070 bp	*07020101-070213, 070401-0705, 0708, 0710, 0711, 0713-0715, 0723, 0725, 072701, 072702, 0729, 0731-0733N, 0737-0739, 0742, 0743, 0745-0751, 0754, 075601, 075602, 0761N-0764, 0766-0768, 0772, 0774-0776, 0779, 0780, 0784, 0787, 0788, 0790, 0797, 0799	0314, 0523, 0807, 121401, 121402, 17010101-1706, <b>B*4606</b>
<b>17<sup>5,7</sup></b>	130 bp	1070 bp	*070401-070403, 0711, 0763, 0768	*0523, 0807
<b>18<sup>5,15</sup></b>	120 bp, 230 bp	<b>800 bp</b>	*0715, 0752	*0503, <b>B*0777, B*4060</b>
<b>19<sup>16</sup></b>	220 bp, 355 bp, 465 bp	<b>800 bp</b>	*0707, 0716, 0726, 0733N, 0751, 0780, 0792, 0796	
<b>20<sup>17</sup></b>	145 bp, 170 bp, 195 bp	1070 bp	*0703, 0717, 0744, 0748, 0781	*0517, <b>B*350804</b>
<b>21<sup>5,18</sup></b>	100 bp, 225 bp	<b>800 bp</b>	*0706, 0718, 0719, 0754	
<b>22<sup>19</sup></b>	205 bp, 250 bp	<b>800 bp</b>	*0720, 0784, 0796	*0315, 0332, 0345, 0360, 0403, 0406, 0416, 1525
<b>23<sup>20</sup></b>	155 bp, 185 bp	1070 bp	*0721, 0723	



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<b>24</b> <sup>5</sup>	130 bp	1070 bp	*0722, 0725	
<b>25</b> <sup>5,21</sup>	105 bp, 150 bp	1070 bp	*0730, 0746	<b>B*5608<sup>w</sup>, B*5614</b>
<b>26</b> <sup>5,22</sup>	100 bp, 250 bp, 300 bp	1070 bp	*0731, 0732N, 0755N	
<b>27</b> <sup>5</sup>	130 bp	1070 bp	*0737, 0769	<b>B*350804</b>
<b>28</b> <sup>23</sup>	175 bp, 260 bp	<b>800 bp</b>	*0735, 0744, 0747	
<b>29</b>	255 bp	1070 bp	*0736, 0742	
<b>30</b> <sup>5</sup>	60 bp	1070 bp	*0775	
<b>31</b>	415 bp	1070 bp	*0739, 0740	
<b>32</b> <sup>24</sup>	245 bp, 285 bp	1070 bp	*0707, 0709, 0749, 0760, 0776, 0779	*0214, 0339, 0367, 0442, 06020101-060205, 0604-0610, 0612-0629, 1523, 1801-1803, <b>B*0806, B*0817, B*0839, B*0847</b>
<b>33</b> <sup>25</sup>	205 bp, 230 bp	1070 bp	*0766 <sup>w</sup> , 0782	
<b>34</b> <sup>5,26</sup>	105 bp, 270 bp	1070 bp	*0767, 0770	
<b>35</b> <sup>6,27</sup>	320 bp, 360 bp	<b>800 bp</b>	*0771, 0772, 0780	
<b>36</b> <sup>6</sup>	265 bp	1070 bp	*0720, 0764, 0773, 0792, 0796	
<b>37</b>	265 bp	1070 bp	*0738, 0763, 0768	<b>B*0777, B*4060</b>
<b>38</b> <sup>8,28</sup>	135 bp, 195 bp, 405 bp	1070 bp	*0758, 0761N, 0765	
<b>39</b> <sup>5,29</sup>	100 bp, 255 bp	<b>800 bp</b>	*0759, 0774	
<b>40</b> <sup>30</sup>	205 bp, 440 bp	1070 bp	*0707, 0709, 0762, 0776, 0778	*0617, 1801-1803
<b>41</b> <sup>31</sup>	140 bp, 255 bp	1070 bp	*0788, 0791	
<b>42</b>	205 bp	1070 bp	*0777, 0793	
<b>43</b> <sup>5,32</sup>	105 bp, 140 bp	1070 bp	*0794, 0799	
<b>44</b> <sup>6,33</sup>	165 bp, 195 bp	1070 bp	*0765, 0777, 0798N	
<b>45</b>	475 bp	1070 bp	*0795	<b>*0434, B*7301</b>
<b>46</b> <sup>34</sup>	200 bp, 350 bp	1070 bp	*0783, 0790	
<b>47</b> <sup>35</sup>	200 bp, 455 bp	1070 bp	*0786, 0797	
<b>48</b> <sup>36</sup>	220 bp, 400 bp	1070 bp	*0785, 0787	

<sup>1</sup> Alleles 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-Cw\*07 SSP typings.

When the primers in a primer mix can give rise to specific PCR products of more than one length this is indicated if the size difference is 20 base pairs or more. Size differences shorter than 20 base pairs are not given. For high resolution SSP kits the respective lengths of the specific PCR product(s) of the alleles amplified by these primer mixes are given.

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.

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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.

<sup>2</sup>The internal positive control primer pairs amplify segments of the human growth hormone gene. The two different control primer pairs give rise to either an internal positive control band of 1070 base pairs, for most wells, or a band of 800 base pairs, for some wells.

Well number 1 contains the primer pair giving rise to the shorter, 800 bp, internal positive control band in order to help in the correct orientation of the HLA-Cw\*07 subtyping.

In addition, wells number 2, 3, 5, 9, 11, 14, 15, 18, 19, 21, 22, 28, 35 and 39 contain the primer pair giving rise to the shorter, 800 bp, internal positive control band in order to allow kit identification.

In the presence of a specific amplification the intensity of the control band often decreases.

<sup>3</sup>For several HLA-Cw\*07 alleles 1<sup>st</sup>, 5<sup>th</sup>, 6<sup>th</sup> and 7<sup>th</sup> exon 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. We assume that unknown sequences in the 1<sup>st</sup>, 5<sup>th</sup>, 6<sup>th</sup> and 7<sup>th</sup> exons are conserved within allelic groups.

<sup>4</sup>Due to the sharing of sequence motifs between HLA-Cw alleles non-HLA-Cw\*07 alleles will be amplified by primer mixes 2, 8, 9, 12 to 14, 16 to 18, 20, 22, 32, 40 and 45. In addition, the A\*2910 allele will be amplified by primer mix 12, the B\*0777 allele will be amplified by primer mixes 18 and 37, the B\*0806, B\*0817, B\*0839 and B\*0847 alleles by primer mix 32, the B\*2736 and B\*4812 alleles by primer mix 7, the B\*350804 allele by primer mixes 2, 11, 20 and 27, the B\*4060 allele by primer mixes 4, 18 and 37, the B\*4606 allele by primer mix 16, the B\*5608 and B\*5614 alleles by primer mix 25 and the B\*7301 allele will be amplified by primer mix 45.

<sup>5</sup>Short specific PCR fragments are less intense and not as sharp as longer specific bands.

<sup>6</sup>Primer mixes 9, 35, 36 and 44 have a tendency of primer oligomer formation.

<sup>7</sup>Primer mixes 13 and 17 have a tendency of giving rise to nonspecific amplifications.

<sup>8</sup>Primer mix 38 may generate a false band of about 900 base pairs. This band should be disregarded when interpreting HLA-Cw\*07 SSP typings.

<sup>9</sup>Primer mix 1: Specific PCR fragment of 245 bp in the Cw\*0707, 0709, 0746 and 0776 alleles. Specific PCR fragment of 425 bp in the Cw\*0741 allele. Specific PCR fragment of 245 and 425 bp in the Cw\*070101-0706, 0708, 0710-0733N, 0735-0740, 0742-0748, 0750-0775 and 0777-0799 alleles.

<sup>10</sup>Primer mix 5: Specific PCR fragment of 70 bp in the Cw\*0753 allele. Specific PCR fragment of 145 bp in the Cw\*0757 allele. Specific PCR fragment of 245 bp in the Cw\*0703 allele.

<sup>11</sup>Primer mix 8: Specific PCR fragment of 285 bp in the Cw\*0745 and the Cw\*0440 alleles. Specific PCR fragment of 505 bp in the Cw\*0706 allele.

<sup>12</sup>Primer mix 9: Specific PCR fragment of 215 bp in the Cw\*0733N allele. Specific PCR fragment of 240 bp in the Cw\*0729 allele. Specific PCR fragment of 425 bp in the Cw\*0707, 0709, 0749 and 0776 and the Cw\*0617 and 1801-1803 alleles.

<sup>13</sup>Primer mix 11: Specific PCR fragment of 275 bp in the Cw\*0724 allele. Specific PCR fragment of 305 bp in the Cw\*0710 and 0743 and the B\*350804 alleles.

<sup>14</sup>Primer mix 15: Specific PCR fragment of 80 bp in the Cw\* 0750 allele. Specific PCR fragment of 290 bp in the Cw\*0714 allele. Specific PCR fragment of 460 bp in the Cw\*0789 allele.

<sup>15</sup>Primer mix 18: Specific PCR fragment of 120 bp in the Cw\* 0752 and the Cw\*0503 alleles. Specific PCR fragment of 230 bp in the Cw\*0715 and in the B\*0777 and B\*4060 alleles.

<sup>16</sup>Primer mix 19: Specific PCR fragment of 220 bp in the Cw\*0726, 0733N, 0792 and 0796 alleles. Specific PCR fragment of 355 bp in the Cw\*0780 allele. Specific PCR fragment of 465 bp in the Cw\* 0707, 0716 and 0751 alleles.

<sup>17</sup>Primer mix 20: Specific PCR fragment of 145 bp in the Cw\*0703 and 0717 and Cw\*0517 alleles. Specific PCR fragment of 170 bp in the 0744 and 0748 alleles. Specific PCR fragment of 195 bp in the Cw\*0781 allele. Specific PCR fragment of 145 bp and 195 bp in the B\*350804 allele.

<sup>18</sup>Primer mix 21: Specific PCR fragment of 100 bp in the Cw\*0754 allele. Specific PCR fragment of 225 bp in the Cw\*0706, 0718 and 0719 alleles.

<sup>19</sup>Primer mix 22: Specific PCR fragment of 205 bp in the Cw\*0784 allele. Specific PCR fragment of 250 bp in the Cw\*0720 and 0796 and the Cw\*0315, 0332, 0345, 0360, 0403, 0406, 0416 and 1525 alleles.

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<sup>20</sup>Primer mix 23: Specific PCR fragment of 155 bp in the Cw\*0723 allele. Specific PCR fragment of 185 bp in the Cw\*0721 allele.

<sup>21</sup>Primer mix 25: Specific PCR fragment of 105 bp in the Cw\*0746 and B\*5606<sup>w</sup> and B\*5614 alleles. Specific PCR fragment of 150 bp in the Cw\*0730 allele.

<sup>22</sup>Primer mix 26: Specific PCR fragment of 100 bp in the Cw\*0732N allele. Specific PCR fragment of 250 bp in the Cw\*0755N allele. Specific PCR fragment of 300 bp in the Cw\*0731 allele.

<sup>23</sup>Primer mix 28: Specific PCR fragment of 175 bp in the Cw\*0744 allele. Specific PCR fragment of 260 bp in the Cw\*0735 and 0747 alleles.

<sup>24</sup>Primer mix 32: Specific PCR fragment of 245 bp in the Cw\*0707, 0709, 0749 and 0776 and the Cw\*0214, 0367, 0442, 06020101-060205, 0604-0610, 0612-0629, 1523, 1801-1803 and the B\*0806, B\*0817 and B\*0847 alleles. Specific PCR fragment of 285 bp in the Cw\*0760 and 0779 and the Cw\*0339 and 0367 and the B\*0839 alleles.

<sup>25</sup>Primer mix 33: Specific PCR fragment of 205 bp in the Cw\*0766 allele. Specific PCR fragment of 230 bp in the Cw\*0782 allele.

<sup>26</sup>Primer mix 34: Specific PCR fragment of 105 bp in the Cw\*0767 allele. Specific PCR fragment of 270 bp in the Cw\*0770 allele.

<sup>27</sup>Primer mix 35: Specific PCR fragment of 320 bp in the Cw\*0772 allele. Specific PCR fragment of 360 bp in the Cw\*0771 and 0780 alleles.

<sup>28</sup>Primer mix 38: Specific PCR fragment of 135 bp in the Cw\*0758 allele. Specific PCR fragment of 195 bp in the Cw\*0765 allele. Specific PCR fragment of 405 bp in the Cw\*0761N allele.

<sup>29</sup>Primer mix 39: Specific PCR fragment of 100 bp in the Cw\*0774 allele. Specific PCR fragment of 255 bp in the Cw\*0759 allele.

<sup>30</sup>Primer mix 40: Specific PCR fragment of 205 bp in the Cw\*0762 allele. Specific PCR fragment of 440 bp in the Cw\*0707, 0709, 0776 and 0778 and the Cw\*0617 and 1801-1803 alleles.

<sup>31</sup>Primer mix 41: Specific PCR fragment of 140 bp in the Cw\*0791 allele. Specific PCR fragment of 255 bp in the Cw\*0788 allele.

<sup>32</sup>Primer mix 43: Specific PCR fragment of 105 bp in the Cw\*0794 allele. Specific PCR fragment of 140 bp in the Cw\*0799 allele.

<sup>33</sup>Primer mix 44: Specific PCR fragment of 165 bp in the Cw\*0798N allele. Specific PCR fragment of 195 bp in the Cw\*0765 and 0777 alleles.

<sup>34</sup>Primer mix 46: Specific PCR fragment of 200 bp in the Cw\*0783 allele. Specific PCR fragment of 350 bp in the Cw\*0790 allele.

<sup>35</sup>Primer mix 47: Specific PCR fragment of 200 bp in the Cw\*0786 allele. Specific PCR fragment of 455 bp in the Cw\*0797 allele.

<sup>36</sup>Primer mix 48: Specific PCR fragment of 220 bp in the Cw\*0787 allele. Specific PCR fragment of 400 bp in the Cw\*0785 allele.

'w', may be weakly amplified.

INTERPRETATION TABLE																								
HLA-Cw*07 SSP subtyping																								
Amplification patterns of the Cw*0701 to Cw*0799 alleles																								
	Well <sup>5</sup>																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Length of spec.	245	290	110	185	70	100	190	285	215	185	275	130	90	240	80	535	130	120	220	145	100	205	155	130
PCR product(s)	425				145			505	240		305				290				355	170	225	250	185	
Length of int.					245				425						460				465	195				
pos. control <sup>1</sup>	800	800	800	1070	800	1070	1070	1070	800	1070	800	1070	1070	800	800	1070	1070	800	800	1070	800	800	1070	1070
5'-primer(s) <sup>2</sup>	47	368	270	368	47	540	363	355	47	368	355	512	289	419	47	270	512	368	47	463	368	134	199	524
	5'-Agg 3'	5'-gTA 3'	5'-AAC 3'	5'-gTC 3'	5'-Agg 3'	5'-gAC 3'	5'-AAT 3'	5'-CCT 3'	5'-Agg 3'	5'-gTT 3'	5'-TCA 3'	5'-gTg 3'	5'-Agg 3'	5'-gTT 3'	5'-Agg 3'	5'-AAg 3'	5'-gTT 3'	5'-gTC 3'	5'-Agg 3'	5'-Tga 3'	5'-gTC 3'	5'-CCA 3'	5'-gTT 3'	5'-CCA 3'
	648			368	512			992	419		385		1049		369			3 <sup>rd</sup> I		486	5 <sup>th</sup> I	176	504	538
	5'-CAC 3'			5'-gTC 3'	5'-gTT 3'			5'-TAA 3'	5'-gTA 3'		5'-ggT 3'		5'-g 3'		5'-TAC 3'			5'-TgT 3'		5'-TAC 3'	5 <sup>th</sup> I	5'-gCC 3'	5'-CAC 3'	5'-AgT 3'
															1049					490				
															5'-C 3'					512				
3'-primer(s) <sup>3</sup>	302	618	341	512	121	601	512	601	90	512	618	601	343	618	337	512	601	559	90	618	427	341	341	618
	5'-ggC 3'	5'-CT 3'	5'-CgT 3'	5'-CCA 3'	5'-ggC 3'	5'-CTT 3'	5'-CCA 3'	5'-CTC 3'	5'-Ag 3'	5'-CCA 3'	5'-CT 3'	5'-CTT 3'	5'-T 3'	5'-CT 3'	5'-CTT 3'	5'-CCA 3'	5'-CTT 3'	5'-CTC 3'	5'-Ag 3'	5'-CT 3'	5'-gTg 3'	5'-CgT 3'	5'-CgT 3'	5'-CT 3'
	853				539			1016	302				343		616			668	97		1043			
	5'-CAT 3'				5'-TCT 3'			5'-CAC 3'	5'-ggT 3'				5'-g 3'		5'-TgT 3'			5'-TgA 3'	5'-gTA 3'		5'-CAA 3'			
					616				618				1087		1087				233					
															5'-AgT 3'				341					
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
HLA-Cw allele <sup>4</sup>																								
*070101-070104, 070106-070111	1	2	3																					
*070105	1		3																					
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24

INTERPRETATION TABLE																																																
HLA-Cw*07 SSP subtyping																																																
Amplification patterns of the Cw*0701 to Cw*0799 alleles																																																
Well <sup>5</sup>																																																
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48																									
105	100	130	175	255	60	415	245	205	105	320	265	265	135	100	205	140	105	195	165	475	200	200	220	Length of spec.																								
150	250		260				285	230	270	360			405	255	440	255	205	140	195		350	455	400	PCR product(s)																								
1070	1070	1070	800	1070	1070	1070	1070	1070	1070	800	1070	1070	1070	800	1070	1070	1070	1070	1070	1070	1070	1070	1070	Length of int.																								
206	361	193	390	122	322	47	97	431	388	47	47	368	47	125	47	125	445	512	463	341	47	47	47	pos. control <sup>1</sup>																								
5'-AgA <sup>3'</sup>	5'-AgT <sup>3'</sup>	5'-CCA <sup>3'</sup>	5'-gAA <sup>3'</sup>	5'-CCA <sup>3'</sup>	5'-GCC <sup>3'</sup>	5'-Agg <sup>3'</sup>	5'-TCg <sup>3'</sup>	5'-CgT <sup>3'</sup>	5'-CCA <sup>3'</sup>	5'-Agg <sup>3'</sup>	5'-Agg <sup>3'</sup>	5'-gTC <sup>3'</sup>	5'-Agg <sup>3'</sup>	5'-CgT <sup>3'</sup>	5'-Agg <sup>3'</sup>	5'-CgA <sup>3'</sup>	5'-TCA <sup>3'</sup>	5'-gTT <sup>3'</sup>	5'-TgT <sup>3'</sup>	5'-gGA <sup>3'</sup>	5'-Agg <sup>3'</sup>	5'-Agg <sup>3'</sup>	5'-Agg <sup>3'</sup>	5'-primer(s) <sup>2</sup>																								
419	411	539	410	410				688	554			388	464	794		520	463		464		458	457	439																									
5'-gTC <sup>3'</sup>	5'-TAG <sup>3'</sup>	5'-gCg <sup>3'</sup>	5'-gTg <sup>3'</sup>	5'-gTT <sup>3'</sup>				5'-CCA <sup>3'</sup>	5'-ggT <sup>3'</sup>			5'-CCT <sup>3'</sup>	5'-gCT <sup>3'</sup>	5'-CTC <sup>3'</sup>		5'-CgA <sup>3'</sup>	5'-TgT <sup>3'</sup>		5'-gCT <sup>3'</sup>		5'-ggg <sup>3'</sup>	5'-AgC <sup>3'</sup>	5'-ATC <sup>3'</sup>																									
560			486										524						493																													
5'-CAC <sup>3'</sup>			5'-TAC <sup>3'</sup>										5'-CCC <sup>3'</sup>						5'-CTT <sup>3'</sup>																													
270	618	289	618	341	341	289	302	618	618	197	142	601	280	341	79	341	618	578	618	527	226	330	275	3'-primer(s) <sup>3</sup>																								
5'-TAC <sup>3'</sup>	5'-CT <sup>3'</sup>	5'-AgC <sup>3'</sup>	5'-CT <sup>3'</sup>	5'-CgT <sup>3'</sup>	5'-CgT <sup>3'</sup>	5'-AgT <sup>3'</sup>	5'-ggT <sup>3'</sup>	5'-CT <sup>3'</sup>	5'-CT <sup>3'</sup>	5'-gAT <sup>3'</sup>	5'-TgC <sup>3'</sup>	5'-CTT <sup>3'</sup>	5'-CTA <sup>3'</sup>	5'-CgT <sup>3'</sup>	5'-gTA <sup>3'</sup>	5'-CgT <sup>3'</sup>	5'-CT <sup>3'</sup>	5'-TgT <sup>3'</sup>	5'-CT <sup>3'</sup>	5'-CCA <sup>3'</sup>	5'-CAA <sup>3'</sup>	5'-TgT <sup>3'</sup>	5'-gCC <sup>3'</sup>																									
527		618		618			341	853		233		603	618	853	312	618		613			618	618	618																									
5'-CCC <sup>3'</sup>		5'-CT <sup>3'</sup>		5'-CT <sup>3'</sup>			5'-Tgg <sup>3'</sup>	5'-CAT <sup>3'</sup>		5'-CCC <sup>3'</sup>		5'-TTg <sup>3'</sup>	5'-CT <sup>3'</sup>	5'-CAT <sup>3'</sup>	5'-AgT <sup>3'</sup>	5'-CT <sup>3'</sup>		5'-gCC <sup>3'</sup>			5'-CT <sup>3'</sup>	5'-CT <sup>3'</sup>	5'-CT <sup>3'</sup>																									
										235					317																																	
										5'-CTg <sup>3'</sup>					5'-CgA <sup>3'</sup>																																	
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	Well No.																								
																								HLA-Cw allele <sup>4</sup>																								
																								*070101-070104, 070106-070111																								
																								*070105																								
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	Well No.																								

Lot No.: **04H**

Lot-specific Information

[www.olerup-ssp.com](http://www.olerup-ssp.com)

Length of spec.	425	245	290	110	185	70	100	190	285	215	185	275	130	90	240	80	535	130	120	220	145	100	205	155	130	
PCR product(s)						245	145		505	425	240	215				460	290			230	355	195	170	225	250	185
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
*07020101-070213	1			4												16										
*0703	1				5															20						
*070401-070403	1					6										16	17									
*0705	1	2					7									16										
*0706	1	2	3					8															21			
*0707	1	2							9										19							
*0708	1									10						16										
*0709	1	2	3						9																	
*0710	1			4							11					16										
*0711	1					6							13			16	17									
*0712	1					6						12														
*0713	1			4										14		16										
*0714	1	2													15	16										
*0715	1			4												16		18								
*0716	1	2																	19							
*0717	1																			20						
*0718	1	2	3																			21				
*0719	1		3	4																		21				
*0720	1	2	3																				22			
*0721	1	2	3																					23		
*0722	1	2	3																						24	
*0723	1			4												16								23		
*0724	1	2	3								11															
*0725	1			4												16									24	
*0726	1	2	3																19							
*072701, 072702	1	2														16										
*0728	1	2	3												14											
*0729	1			4					9							16										
*0730	1	2	3																							
*0731	1	2														16										
*0732N	1			4												16										
*0733N	1			4					9							16			19							
*0735	1	2	3																							
*0736	1	2	3																							
*0737	1			4												16										
*0738	1			4												16										
*0739	1			4												16										
*0740	1	2	3																							
*0741	1											12														
*0742	1			4												16										
*0743	1	2									11					16										
*0744	1	2	3																	20						
*0745	1							8								16										
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		

Lot No.: **04H**

Lot-specific Information

[www.olerup-ssp.com](http://www.olerup-ssp.com)

150 105	250 100	130	175	255	60	415	245	205	105	320	265	265	135	100	205	140	205	105	165	475	200	200	220	Length of spec.
300		260					285	230	270	360			405	255	440	255		140	195		350	455	400	PCR product(s)
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	Well No.
																								*07020101-070213
																								*0703
																								*070401-070403
																								*0705
																								*0706
							32								40									*0707
																								*0708
							32								40									*0709
																								*0710
																								*0711
																								*0712
																								*0713
																								*0714
																								*0715
																								*0716
																								*0717
																								*0718
											36													*0719
																								*0720
																								*0721
																								*0722
																								*0723
																								*0724
																								*0725
																								*0726
																								*072701, 072702
																								*0728
																								*0729
25																								*0730
	26																							*0731
	26																							*0732N
																								*0733N
			28																					*0735
				29																				*0736
		27																						*0737
												37												*0738
							31																	*0739
							31																	*0740
																								*0741
				29																				*0742
																								*0743
			28																					*0744
																								*0745
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	Well No.

Lot No.: **04H**

Lot-specific Information

[www.olerup-ssp.com](http://www.olerup-ssp.com)

Length of spec.	425	245	290	110	185	70	100	190	285	215	185	275	130	90	240	80	535	130	120	220	145	100	205	155	130	
PCR product(s)	425	245				145			505	240		305				290			230	355	170		225	250	185	
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
*0746	1			4												16										
*0747	1			4												16										
*0748	1			4												16				20						
*0749	1			4					9							16										
*0750	1			4											15	16										
*0751	1			4												16			19							
*0752	1	2	3															18								
*0753	1	2	3		5																					
*0754	1			4												16						21				
*0755N	1	2	3																							
*075601, 075602	1			4									13			16										
*0757	1		3		5																					
*0758	1	2	3																							
*0759	1	2	3																							
*0760	1	2											13													
*0761N	1			4												16										
*0762	1			4												16										
*0763	1				6											16	17									
*0764	1			4												16										
*0765	1	2	3																							
*0766	1			4												16										
*0767	1			4												16										
*0768	1			4	6											16	17									
*0769	1	2	3																							
*0770	1	2	3																							
*0771	1	2	3																							
*0772	1			4												16										
*0773	1	2	3																							
*0774	1			4												16										
*0775	1			4												16										
*0776	1			4					9							16										
*0777	1	2	3																							
*0778	1	2	3																							
*0779	1			4										13		16										
*0780	1			4												16			19							
*0781	1	2	3																	20						
*0782	1	2	3																							
*0783	1	2	3																							
*0784	1			4												16							22			
*0785	1	2	3																							
*0786	1	2	3																							
*0787	1			4												16										
*0788	1			4												16										
*0789	1	2	3												15											
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		



Lot No.: **04H**

Lot-specific Information

[www.olerup-ssp.com](http://www.olerup-ssp.com)

150	105	100	130	175	255	60	415	245	205	105	320	265	265	135	100	205	140	205	105	165	475	200	200	220	Length of spec.	PCR product(s)
		300		260				285	230	270	360			405	255	440	255		140	195		350	455	400		
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	Well No.		
25																									*0746	
			28																						*0747	
																									*0748	
							32																		*0749	
																									*0750	
																									*0751	
																									*0752	
																									*0753	
	26																								*0754	
																									*0755N	
																									*075601, 075602	
																									*0757	
													38												*0758	
														39											*0759	
							32																		*0760	
																									*0761N	
															40										*0762	
												37													*0763	
											36														*0764	
													38									44			*0765	
								w																	*0766	
									34																*0767	
												37													*0768	
	27																								*0769	
										34															*0770	
											35														*0771	
											35														*0772	
												36													*0773	
														39											*0774	
				30																					*0775	
							32								40										*0776	
																	42				44				*0777	
															40										*0778	
							32																		*0779	
										35															*0780	
																									*0781	
								33																	*0782	
																						46			*0783	
																									*0784	
																							48		*0785	
																							47		*0786	
																								48	*0787	
																41									*0788	
																									*0789	
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	Well No.		

Lot No.: **04H**

Lot-specific Information

[www.olerup-ssp.com](http://www.olerup-ssp.com)

Length of spec.	245	290	110	185	70	100	190	285	215	185	275	130	90	240	80	535	130	120	220	145	100	205	155	130	
PCR product(s)	425				245	145		505	425	240	215	305			460	290		230	355	195	170	225	250	185	
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
*0790	1			4												16									
*0791	1	2	3																						
*0792	1	2	3																19						
*0793	1	2	3																						
*0794	1	2	3																						
*0795	1	2	3																						
*0796	1	2	3																19			22			
*0797	1			4												16									
*0798N	1	2	3																						
*0799	1			4												16									
*0214, 0339, 0367, 0442, 06020101, 06020102, 060203-060205, 0604- 0610, 0612-0616N, 0618- 0629, 1523, <i>B*0806</i> , <i>B*0817</i> , <i>B*0839</i> , <i>B*0847</i>																									
*0314, 121401, 121402, 17010101-1706, <i>B*4606</i>																16									
*0315, 0332, 0345, 0360, 0403, 0406, 0416, 1525 *0369, 0427, 0452																							22		
*0434, <i>B*7301</i>																									
*0440								8																	
*05010101-050111, 0504- 0508, 0510-0516, 0518- 0522, 0524-0534, 080101- 0806, 0808-0814, 0816- 0831, <i>A*2910</i>												12													
*0503												12							18						
*0517		2												14						20					
*0523, 0807																16	17								
*0617, 1801-1803									9																
<i>B*0777</i>																			18						
<i>B*2736</i> , <i>B*4821</i>							7																		
<i>B*350804</i>		2									11									20					
<i>B*4060</i>				4														18							
<i>B*5608</i>																									
<i>B*5614</i>																									
Well No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	

Lot No.: **04H**

Lot-specific Information

[www.olerup-ssp.com](http://www.olerup-ssp.com)

150	105	130	175	255	60	415	245	205	105	320	265	265	135	100	205	140	205	105	165	475	200	200	220	Length of spec.	
150	250	260	260	260	260	260	260	260	260	260	260	260	260	260	260	260	260	260	260	260	260	260	260	260	PCR product(s)
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	Well No.	
																					46			*0790	
																41								*0791	
											36													*0792	
																42								*0793	
																		43						*0794	
											36									45				*0795	
																						47		*0796	
																								*0797	
																			44					*0798N	
																			43					*0799	
							32																	*0214, 0339, 0367, 0442, 06020101, 06020102, 060203-060205, 0604-0610, 0612-0616N, 0618-0629, 1523, B*0806, B*0817, B*0839, B*0847	
																								*0314, 121401, 121402, 17010101-1706, B*4606	
																								*0315, 0332, 0345, 0360, 0403, 0406, 0416, 1525	
																								*0369, 0427, 0452	
																				45				*0434, B*7301	
																								*0440	
																								*05010101-050111, 0504-0508, 0510-0516, 0518-0522, 0524-0534, 080101-0806, 0808-0814, 0816-0831, A*2910	
																								*0503	
																								*0517	
							32								40									*0523, 0807	
													37											*0617, 1801-1803	
																								B*0777	
		27																						B*2736, B*4821	
													37											B*350804	
																								B*4060	
w																								B*5608	
25																								B*5614	
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	Well No.	

<sup>1</sup>The internal positive control primer pairs amplify segments of the human growth hormone gene. The two different control primer pairs give rise to either an internal positive control band of 1070 base pairs, for most wells, or a band of 800 base pairs, for some wells.

Well number 1 contains the primer pair giving rise to the shorter, 800 bp, internal positive control band in order to help in the correct orientation of the HLA-Cw\*07 subtyping.

In addition, wells number 2, 3, 5, 9, 11, 14, 15, 18, 19, 21, 22, 28, 35 and 39 contain the primer pair giving rise to the shorter, 800 bp, internal positive control band in order to allow kit identification.

In the presence of a specific amplification the intensity of the control band often decreases.

<sup>2</sup>The nucleotide position, in the 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> or 7<sup>th</sup> exon or the 3<sup>rd</sup> or 6<sup>th</sup> intron, matching the specificity-determining 3'-end of the primer is given. Nucleotide numbering as on the [www.ebi.ac.uk/imgt/hla](http://www.ebi.ac.uk/imgt/hla) web site. The sequence of the 3 terminal nucleotides of the primer is given.

<sup>3</sup>The nucleotide position, in the 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup> or 7<sup>th</sup> exon, 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](http://www.ebi.ac.uk/imgt/hla) web site. The sequence of the 3 terminal nucleotides of the primer is given.

<sup>4</sup>The HLA-Cw\*0734 allele has been renamed to HLA-Cw\*072702.

<sup>5</sup>Primer mix 1: Specific PCR fragment of 245 bp in the Cw\*0707, 0709, 0749 and 0776 alleles. Specific PCR fragment of 425 bp in the Cw\*0741 and 0776 alleles. PCR fragment of 245 and 425 bp in the Cw\*070101-0706, 0708, 0710-0733N, 0735-0740, 0742-0748, 0750-0775 and 0777-0799 alleles.

Primer mix 5: Specific PCR fragment of 70 bp in the Cw\*0753 allele. Specific PCR fragment of 145 bp in the Cw\*0757 allele. Specific PCR fragment of 245 bp in the Cw\*0703 allele.

Primer mix 8: Specific PCR fragment of 285 bp in the Cw\*0745 and the Cw\*0440 alleles. Specific PCR fragment of 505 bp in the Cw\*0706 allele.

Primer mix 9: Specific PCR fragment of 215 bp in the Cw\*0733N allele. Specific PCR fragment of 240 bp in the Cw\*0729 allele. Specific PCR fragment of 425 bp in the Cw\*0707, 0709, 0749 and 0776 and the Cw\*0617 and 1801-1803 alleles.

Primer mix 11: Specific PCR fragment of 275 bp in the Cw\*0724 allele. Specific PCR fragment of 305 bp in the Cw\*0710 and 0743 and the B\*350804 alleles.

Primer mix 15: Specific PCR fragment of 80 bp in the Cw\* 0750 allele. Specific PCR fragment of 290 bp in the Cw\*0714 allele. Specific PCR fragment of 460 bp in the Cw\*0789 allele.

Primer mix 18: Specific PCR fragment of 120 bp in the Cw\* 0752 and the Cw\*0503 alleles. Specific PCR fragment of 230 bp in the Cw\*0715 and in the B\*0777 and B\*4060 alleles.

Primer mix 19: Specific PCR fragment of 220 bp in the Cw\*0726, 0733N, 0792 and 0796 alleles. Specific PCR fragment of 355 bp in the Cw\*0780 allele. Specific PCR fragment of 465 bp in the Cw\* 0707, 0716 and 0751 alleles.

Primer mix 20: Specific PCR fragment of 145 bp in the Cw\*0703 and 0717 and Cw\*0517 alleles. Specific PCR fragment of 170 bp in the 0744 and 0748 alleles. Specific PCR fragment of 195 bp in the Cw\*0781 allele. Specific PCR fragment of 145 bp and 195 bp in the B\*350804 allele.

Primer mix 21: Specific PCR fragment of 100 bp in the Cw\*0754 allele. Specific PCR fragment of 225 bp in the Cw\*0706, 0718 and 0719 alleles.

Primer mix 22: Specific PCR fragment of 205 bp in the Cw\*0784 allele. Specific PCR fragment of 250 bp in the Cw\*0720 and 0796 and the Cw\*0315, 0332, 0345, 0360, 0403, 0406, 0416 and 1525 alleles.

Primer mix 23: Specific PCR fragment of 155 bp in the Cw\*0723 allele. Specific PCR fragment of 185 bp in the Cw\*0721 allele.

Primer mix 25: Specific PCR fragment of 105 bp in the Cw\*0746 and B\*5606<sup>w</sup> and B\*5614 alleles. Specific PCR fragment of 150 bp in the Cw\*0730 allele.

Primer mix 26: Specific PCR fragment of 100 bp in the Cw\*0732N allele. Specific PCR fragment of 250 bp in the Cw\*0755N allele. Specific PCR fragment of 300 bp in the Cw\*0731 allele.

Primer mix 28: Specific PCR fragment of 175 bp in the Cw\*0744 allele. Specific PCR fragment of 260 bp in the Cw\*0735 and 0747 alleles.

Primer mix 32: Specific PCR fragment of 245 bp in the Cw\*0707, 0709, 0749 and 0776 and the Cw\*0214, 0367, 0442, 06020101-060205, 0604-0610, 0612-0629, 1523, 1801-1803 and the B\*0806, B\*0817 and B\*0847 alleles. Specific PCR fragment of 285 bp in the Cw\*0760 and 0779 and the Cw\*0339 and 0367 and the B\*0839 alleles.

Primer mix 33: Specific PCR fragment of 205 bp in the Cw\*0766 allele. Specific PCR fragment of 230 bp in the Cw\*0782 allele.

Primer mix 34: Specific PCR fragment of 105 bp in the Cw\*0767 allele. Specific PCR fragment of 270 bp in the Cw\*0770 allele.

Primer mix 35: Specific PCR fragment of 320 bp in the Cw\*0772 allele. Specific PCR fragment of 360 bp in the Cw\*0771 and 0780 alleles.

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Primer mix 38: Specific PCR fragment of 135 bp in the Cw\*0758 allele. Specific PCR fragment of 195 bp in the Cw\*0765 allele. Specific PCR fragment of 405 bp in the Cw\*0761N allele.

Primer mix 39: Specific PCR fragment of 100 bp in the Cw\*0774 allele. Specific PCR fragment of 255 bp in the Cw\*0759 allele.

Primer mix 40: Specific PCR fragment of 205 bp in the Cw\*0762 allele. Specific PCR fragment of 440 bp in the Cw\*0707, 0709, 0776 and 0778 and the Cw\*0617 and 1801-1803 alleles.

Primer mix 41: Specific PCR fragment of 140 bp in the Cw\*0791 allele. Specific PCR fragment of 255 bp in the Cw\*0788 allele.

Primer mix 43: Specific PCR fragment of 105 bp in the Cw\*0794 allele. Specific PCR fragment of 140 bp in the Cw\*0799 allele.

Primer mix 44: Specific PCR fragment of 165 bp in the Cw\*0798N allele. Specific PCR fragment of 195 bp in the Cw\*0765 and 0777 alleles.

Primer mix 46: Specific PCR fragment of 200 bp in the Cw\*0783 allele. Specific PCR fragment of 350 bp in the Cw\*0790 allele.

Primer mix 47: Specific PCR fragment of 200 bp in the Cw\*0786 allele. Specific PCR fragment of 455 bp in the Cw\*0797 allele.

Primer mix 48: Specific PCR fragment of 220 bp in the Cw\*0787 allele. Specific PCR fragment of 400 bp in the Cw\*0785 allele.

'w', may be weakly amplified.

<b>CELL LINE VALIDATION SHEET</b>																				
<b>HLA-Cw*07 SSP subtyping kit</b>																				
					Well															
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
					Prod. No.:															
					201069801	201069802	201069803	201069804	201069805	201069806	201069807	201069808	201069809	201069810	201069811	201069812	201069813	201069814	201069815	201069816
IHWC cell line			Cw*																	
1	9001	SA	*0702		+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	+
2	9280	LK707	*0701	*1505	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-
3	9011	E4181324	*1202		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	9275	GU373	*0304	*0401	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	9009	KAS011	*0602		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	9353	SM	*0304	*0702	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	+
7	9020	QBL	*0501		-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
8	9025	DEU	*0401		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	9026	YAR	*1203		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	9107	LKT3	*0102		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	9051	PITOUT	*1601		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	9052	DBB	*0602		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	9004	JESTHOM	*0102		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	9071	OLGA	*0102	*0304	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	9075	DKB	*0304		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	9037	SWEIG007	*0202		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	9282	CTM3953540	*0303	*0701	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-
18	9257	32367	*0102	*0705	+	+	-	-	-	-	+	-	-	-	-	-	-	-	-	+
19	9038	BM16	*0701		+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-
20	9059	SLE005	*0304		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	9064	AMALA	*0303		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	9056	KOSE	*1203		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	9124	IHL	*0102	*1502	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	9035	JBUSH	*1203		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	9049	IBW9	*0802		-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
26	9285	WT49	*0701		+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-
27	9191	CH1007	*0704	*1505	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	+
28	9320	BEL5GB	*0501	*1601	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-
29	9050	MOU	*1601		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	9021	RSH	*1701		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
31	9019	DUCAF	*0501		-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
32	9297	HAG	*1701	*1703	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
33	9098	MT14B	*0304		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	9104	DHIF	*1203		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35	9302	SSTO	*0501		-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
36	9024	KT17	*0303	*0401	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
37	9065	HHKB	*0702		+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	+
38	9099	LZL	*0303		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
39	9315	CML	*0202	*0701	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-
40	9134	WHONP199	*0602		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41	9055	H0301	*0802		-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
42	9066	TAB089	*0102		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43	9076	T7526	*0102	*0801	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
44	9057	TEM	*1203		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45	9239	SHJO	*0602	*1701	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46	9013	SCHU	*0702		+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	+
47	9045	TUBO	*0704	*1502	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	+
48	9303	TER-ND	*0401	*1601	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

CELL LINE VALIDATION SHEET																			
HLA-Cw*07 SSP subtyping kit																			
				Well															
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	IHWC cell line	Cw*																	
1	9001 SA	*0702		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	9280 LK707	*0701	*1505	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	9011 E4181324	*1202		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	9275 GU373	*0304	*0401	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	9009 KAS011	*0602		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	9353 SM	*0304	*0702	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
7	9020 QBL	*0501		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	9025 DEU	*0401		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	9026 YAR	*1203		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	9107 LKT3	*0102		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	9051 PITOUT	*1601		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	9052 DBB	*0602		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
13	9004 JESTHOM	*0102		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	9071 OLGA	*0102	*0304	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	9075 DKB	*0304		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	9037 SWEIG007	*0202		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	9282 CTM3953540	*0303	*0701	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	9257 32367	*0102	*0705	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	9038 BM16	*0701		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	9059 SLE005	*0304		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	9064 AMALA	*0303		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	9056 KOSE	*1203		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	9124 IHL	*0102	*1502	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	9035 JBUSH	*1203		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	9049 IBW9	*0802		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	9285 WT49	*0701		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	9191 CH1007	*0704	*1505	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28	9320 BEL5GB	*0501	*1601	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	9050 MOU	*1601		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	9021 RSH	*1701		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31	9019 DUCAF	*0501		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	9297 HAG	*1701	*1703	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
33	9098 MT14B	*0304		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	9104 DHIF	*1203		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35	9302 SSTO	*0501		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36	9024 KT17	*0303	*0401	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
37	9065 HHKB	*0702		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38	9099 LZL	*0303		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
39	9315 CML	*0202	*0701	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	9134 WHONP199	*0602		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
41	9055 H0301	*0802		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
42	9066 TAB089	*0102		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43	9076 T7526	*0102	*0801	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
44	9057 TEM	*1203		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45	9239 SHJO	*0602	*1701	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
46	9013 SCHU	*0702		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47	9045 TUBO	*0704	*1502	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
48	9303 TER-ND	*0401	*1601	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Lot No.: **04H**

Lot-specific Information

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<b>CELL LINE VALIDATION SHEET</b>																			
<b>HLA-Cw*07 SSP subtyping kit</b>																			
				Well															
				33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
				Prod. No.:															
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IHWC cell line		Cw*																	
1	9001	SA	*0702		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	9280	LK707	*0701	*1505	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
3	9011	E4181324	*1202		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	9275	GU373	*0304	*0401	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	9009	KAS011	*0602		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	9353	SM	*0304	*0702	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	9020	QBL	*0501		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	9025	DEU	*0401		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9	9026	YAR	*1203		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	9107	LKT3	*0102		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	9051	PITOUT	*1601		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	9052	DBB	*0602		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13	9004	JESTHOM	*0102		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14	9071	OLGA	*0102	*0304	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15	9075	DKB	*0304		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16	9037	SWEIG007	*0202		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	9282	CTM3953540	*0303	*0701	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18	9257	32367	*0102	*0705	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19	9038	BM16	*0701		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	9059	SLE005	*0304		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21	9064	AMALA	*0303		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22	9056	KOSE	*1203		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23	9124	IHL	*0102	*1502	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24	9035	JBUSH	*1203		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25	9049	IBW9	*0802		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26	9285	WT49	*0701		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27	9191	CH1007	*0704	*1505	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28	9320	BEL5GB	*0501	*1601	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29	9050	MOU	*1601		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	9021	RSH	*1701		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31	9019	DUCAF	*0501		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
32	9297	HAG	*1701	*1703	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
33	9098	MT14B	*0304		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
34	9104	DHIF	*1203		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35	9302	SSTO	*0501		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
36	9024	KT17	*0303	*0401	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
37	9065	HHKB	*0702		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
38	9099	LZL	*0303		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
39	9315	CML	*0202	*0701	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	9134	WHONP199	*0602		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
41	9055	H0301	*0802		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
42	9066	TAB089	*0102		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
43	9076	T7526	*0102	*0801	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
44	9057	TEM	*1203		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45	9239	SHJO	*0602	*1701	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
46	9013	SCHU	*0702		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
47	9045	TUBO	*0704	*1502	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
48	9303	TER-ND	*0401	*1601	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



## CERTIFICATE OF ANALYSIS

### Olerup SSP® HLA-Cw\*07 SSP

Product number: 101.615-24u/04u – without *Taq* pol.

Lot number: 04H

Expiry date: 2012-April-01

Number of tests: 24 tests – Product No. 101.615-24u

4 tests – Product No. 101.615-04u

Number of wells per test: 48

#### Well specifications:

Well No.	Production No.	Well No.	Production No.	Well No.	Production No.
1	2010-698-01	17	2010-698-17	33	2010-698-33
2	2010-698-02	18	2010-698-18	34	2010-698-34
3	2010-698-03	19	2010-698-19	35	2010-698-35
4	2010-698-04	20	2010-698-20	36	2010-698-36
5	2010-698-05	21	2010-698-21	37	2010-698-37
6	2010-698-06	22	2010-698-22	38	2010-698-38
7	2010-698-07	23	2010-698-23	39	2010-698-39
8	2010-698-08	24	2010-698-24	40	2010-698-40
9	2010-698-09	25	2010-698-25	41	2010-698-41
10	2010-698-10	26	2010-698-26	42	2010-698-42
11	2010-698-11	27	2010-698-27	43	2010-698-43
12	2010-698-12	28	2010-698-28	44	2010-698-44
13	2010-698-13	29	2010-698-29	45	2010-698-45
14	2010-698-14	30	2010-698-30	46	2010-698-46
15	2010-698-15	31	2010-698-31	47	2010-698-47
16	2010-698-16	32	2010-698-32	48	2010-698-48

The specificity of each primer solution of the kit has been tested against 48 well characterized cell line DNAs.

No DNAs carrying the alleles to be amplified by primer solutions 5, 10, 11, 13 to 15, 18 to 20, 23 to 31, 33 to 39, 41 to 44 and 46 to 48 were available. The specificities of the primers in primer solutions 5, 10, 11, 13 to 15, 18 to 20, 24 to 27, 31, 35 to 38, 44 and 46 to 48 were tested by separately adding one additional 5'-primer, respectively one additional 3'-primer. In primer solution 43 it was only possible to test the 5'-primer, the 3'-primer were not possible to test. In primer solutions 23, 28 to 30, 33, 34, 39, 41 and 42 it was only possible to test the 3'-primers, the 5'-primers were not possible to test. In primer solutions 8, 11, 20, 22, 24, 26, 37, 38, 44 and 46 to 48 one or more 5'-primers were not possible to test, and in primer solutions 5, 9, 13, 15, 18, 19, 21, 25, 32, 35, 38, 40 and 46 to 48 one or two 3'-primers were not possible to test. Additional primers in primer solutions 2, 8, 9 and 21 were tested by separately adding either one 5'-primer or one 3'-primer.

Lot No.: **04H**

Lot-specific Information

[www.olerup-ssp.com](http://www.olerup-ssp.com)

**Results:** No false positive or false negative amplifications were obtained.

**Date of approval:** 2011-March-17

**Approved by:**

**Quality Control, Supervisor**

Lot No.: **04H**

Lot-specific Information

[www.olerup-ssp.com](http://www.olerup-ssp.com)

## Declaration of Conformity

**Product name:** *Olerup* SSP® HLA-Cw\*07  
**Product number:** 101.615-24u/04u  
**Lot number:** 04H

**Intended use:** HLA-Cw\*07 high resolution histocompatibility testing

**Manufacturer:** *Olerup* SSP AB  
Hasselstigen 1  
SE-133 33 Saltsjöbaden, Sweden  
**Phone:** +46-8-717 88 27  
**Fax:** +46-8-717 88 18

We, *Olerup* SSP AB, hereby declare that this product, to which this Declaration of Conformity relates is in conformity with the following Standard(s) and other normative document(s) ISO 9001:2008 and ISO 13485:2003, following the provisions of the 98/79/EC Directive on *in vitro* diagnostic medical devices, Annex III, as transposed into the national laws of the Member States of the European Union.

The Technical Documentation File is maintained at *Olerup* SSP AB, Hasselstigen 1, SE-133 33 Saltsjöbaden, Sweden.

The Authorized Representative located within the Community is: *Olerup* SSP AB.

Saltsjöbaden, Sweden  
2011-March-17

Olle Olerup  
Managing Director

Lot No.: **04H**

Lot-specific Information

[www.olerup-ssp.com](http://www.olerup-ssp.com)

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