

Olerup SSP[®] DPB1

| | |
|----------------------------------|---|
| Product number: | 101.311-24/04 – including <i>Taq</i> pol. |
| Lot number: | 47G |
| Expiry date: | 2011-November-01 |
| Number of tests: | 24 tests – Product No. 101.311-24 4 tests – Product No. 101.311-04 |
| Number of wells per test: | 48 |
| Storage - pre-aliquoted primers: | dark at -20°C |
| - PCR Master Mix: | -20°C |
| - Adhesive PCR seals | RT |
| - Product Insert | RT |

This Product Description is only valid for Lot No. 47G.

CHANGES COMPARED TO THE PREVIOUS OLERUP SSP[®] DPB1 LOT

The DPB1 specificity and interpretation tables have been updated for the DPB1 alleles described since the previous *Olerup SSP[®] DPB1* lot was made (**Lot No. 29F**).

The primers of the wells detailed below have been added, exchanged or modified.

| Well | 5'-primer | 3'-primer | rationale |
|------|-----------|-----------|--|
| 1 | Modified | - | Increased specificity of specific PCR product. |
| 12 | Exchanged | - | Decreased primer dimer formation. |
| 26 | - | - | Exchanged positive control primer pair. |
| 28 | - | Added | Exchanged positive control primer pair, primer added for the DPB1*2202 allele. |
| 33 | Added | - | Primer added for the DPB1*2602 allele. |
| 38 | Added | - | Primer added for the DPB1*2402 allele. |
| 40 | - | Modified | Increased specificity of specific PCR product. |
| 44 | Added | Added | Primer pair added for the DPB1*2302N allele. |
| 48 | - | Modified | Increased specificity of specific PCR product. |

PRODUCT DESCRIPTION

DPB1 SSP typing

CONTENT

The primer set contains 5'- and 3'-primers for identifying the DPB1*0101 to DPB1*9901 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 ‘DPB1’ in silver/gray ink.

Well No. 1 is marked with the Lot No. ‘47G’.

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

Only DPB1 alleles will be amplified by the DPB1 typing kit. Thus, the interpretation of DPB1 typings is not influenced by the DPB2 gene or other HLA class II genes.

UNIQUELY IDENTIFIED ALLELES

All the phenotypically different DPB1 alleles, i.e. **DPB1*0101 to DPB1*9901**, recognized by the HLA Nomenclature Committee in October 2009¹ will give rise to unique amplification patterns by the primers in the DPB1 typing kit.

The DPB1 typing kit cannot distinguish the DPB1*010101 to DP1*010103 alleles, the DPB1*020102, DP1*020104, DP1*020105 and DP1*020107 alleles, the DPB1*030101 and DPB1*030102 alleles, the DPB1*040101 and DPB1*040102 alleles, the DPB1*050101 and DPB1*050102 alleles, the DPB1*110101 and DPB1*110102 alleles, the DPB1*200101 and DPB1*200102 alleles or the DPB1*410101 and DPB1*410102 alleles.

¹DPB1 alleles listed on the IMGT/HLA web page 2009-October-19, release 2.27.0, www.ebi.ac.uk/imgt/hla.

RESOLUTION IN HOMO- AND HETEROZYGOTES

The 121 DPB1 alleles can be combined in 7 626 homozygous and heterozygous combinations. 1874 of these genotypes do not give rise to unique amplification patterns. (The different lengths of the specific PCR products in lanes 24, 25, 28, 32, 33, 37, 40 to 45, 47 and 48 were not considered in these calculations.)

+++++++ +-----+ +-----+ +-----+ +-----+ +-----+ 0802,260101 = 0802,260102
= 1901,260101
+++++++ +-----+ +-----+ +-----+ +-----+ +-----+ 0802,2102 = 1901,2102
+++++++ +-----+ +-----+ +-----+ +-----+ +-----+ 0402,2102 = 0602,2102
+++++++ +-----+ +-----+ +-----+ +-----+ +-----+ 0101,3801 = 0501,2102 =
2102,3801
+++++++ +-----+ +-----+ +-----+ +-----+ +-----+ 0801,260101 = 0801,260102
+++++++ +-----+ +-----+ +-----+ +-----+ +-----+ 260101,7501 = 260102,7501
+++++++ +-----+ +-----+ +-----+ +-----+ +-----+ 2102,5101 = 2302N,2502
+++++++ +-----+ +-----+ +-----+ +-----+ +-----+ 0101,5101 = 0401,2502
+++++++ +-----+ +-----+ +-----+ +-----+ +-----+ 0101,2302N = 0401,2102 =
2102,2302N
+++++++ +-----+ +-----+ +-----+ +-----+ +-----+ 0301,6501 = 0502,6501 =
6501,9201
+++++++ +-----+ +-----+ +-----+ +-----+ +-----+ 260101,6801 = 260102,6801
= 6501,7901
+++++++ +-----+ +-----+ +-----+ +-----+ +-----+ 0101,4901 = 2502,3901
+++++++ +-----+ +-----+ +-----+ +-----+ +-----+ 0101,6801 = 2502,6501
+++++++ +-----+ +-----+ +-----+ +-----+ +-----+ 0101,5301 = 2502,4001
+++++++ +-----+ +-----+ +-----+ +-----+ +-----+ 260101,6501 = 260101,8401
= 260102,6501 =
260102,8401
+++++++ +-----+ +-----+ +-----+ +-----+ +-----+ 2102,6501 = 2102,8401
+++++++ +-----+ +-----+ +-----+ +-----+ +-----+ 0101,6501 = 0101,8401 =
6501,9001
+++++++ +-----+ +-----+ +-----+ +-----+ +-----+ 0101,6401N = 0601,2102 =
2102,6401N
+++++++ +-----+ +-----+ +-----+ +-----+ +-----+ 260101,7301 = 260102,7301
+++++++ +-----+ +-----+ +-----+ +-----+ +-----+ 1401,2102 = 2102,7601
+++++++ +-----+ +-----+ +-----+ +-----+ +-----+ 0101,1402 = 0301,2102 =
0502,2102 = 1402,2102 =
2102,9201
+++++++ +-----+ +-----+ +-----+ +-----+ +-----+ 0101,2501 = 2502,5601
+++++++ +-----+ +-----+ +-----+ +-----+ +-----+ 260101,5701 = 260102,5701
+++++++ +-----+ +-----+ +-----+ +-----+ +-----+ 260101,5001 = 260102,5001
+++++++ +-----+ +-----+ +-----+ +-----+ +-----+ 0902,2502 = 1301,2502 =
1302,2502
+++++++ +-----+ +-----+ +-----+ +-----+ +-----+ 0101,7901 = 2502,260101 =
2502,260102
+++++++ +-----+ +-----+ +-----+ +-----+ +-----+ 0101,2502 = 2502,8901 =
2502,9001
+++++++ +-----+ +-----+ +-----+ +-----+ +-----+ 0902,2102 = 1301,2102 =
1302,2102
+++++++ +-----+ +-----+ +-----+ +-----+ +-----+ 0101,1302 = 0902,9001 =
1301,9001
+++++++ +-----+ +-----+ +-----+ +-----+ +-----+ 2102,260101 = 2102,260102
+++++++ +-----+ +-----+ +-----+ +-----+ +-----+ 260101,9001 = 260102,9001
+++++++ +-----+ +-----+ +-----+ +-----+ +-----+ 0101,2102 = 2102,2102 =
2102,8901 = 2102,9001
+++++++ +-----+ +-----+ +-----+ +-----+ +-----+ 0101,8901 = 0101,9001
+++++++ +-----+ +-----+ +-----+ +-----+ +-----+ 0802,5601 = 1901,5601
+++++++ +-----+ +-----+ +-----+ +-----+ +-----+ 0802,9001 = 1901,9001
+++++++ +-----+ +-----+ +-----+ +-----+ +-----+ 0402,9001 = 0602,9001
+++++++ +-----+ +-----+ +-----+ +-----+ +-----+ 1401,9001 = 7601,9001
+++++++ +-----+ +-----+ +-----+ +-----+ +-----+ 0301,9001 = 0502,9001 =
9001,9201

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|----------|-----------|--------|--------|--------|--------|--------------------------------|
| +++++-- | ----- | ----- | -----+ | -----+ | -----+ | 8901,9001 = 9001,9001 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 260101,4601 = 260102,4601 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 260101,2602 = 260102,2602 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 260101,3201 = 260102,3201 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 1802,260101 = 1802,260102 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 0201,260101 = 0201,260102 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 260101,4701 = 260102,4701 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 260101,7101 = 260102,7101 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 260101,4801 = 260102,4801 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 0203,260101 = 0203,260102 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 0202,260101 = 0202,260102 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 2201,260101 = 2201,260102 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 0403,260101 = 0403,260102 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 260101,8001 = 260102,8001 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 260101,7701 = 260102,7701 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 260101,8201 = 260102,8201 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 260101,6001 = 260102,6001 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 0602,260101 = 0602,260102 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 260101,9401 = 260102,9401 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 2301,260101 = 2301,260102 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 0102,260101 = 0102,260102 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 260101,9701 = 260102,9701 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 260101,3801 = 260102,3801 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 1902,260101 = 1902,260102 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 1502,260101 = 1502,260102 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 260101,6301 = 260102,6301 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 260101,6201 = 260102,6201 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 260101,8101 = 260102,8101 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 260101,3301 = 260102,3301 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 2401,260101 = 2401,260102 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 260101,9901 = 260102,9901 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 260101,5101 = 260102,5101 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 2302N,260101 = 2302N,260102 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 2402,260101 = 2402,260102 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 0401,260101 = 0401,260102 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 260101,4901 = 260102,4901 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 260101,5301 = 260102,5301 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 260101,9601 = 260102,9601 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 260101,3901 = 260102,3901 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 260101,4001 = 260102,4001 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 260101,4101 = 260102,4101 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 260101,9501 = 260102,9501 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 260101,8601 = 260102,8601 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 1602,260101 = 1602,260102 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 1102,260101 = 1102,260102 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 1002,260101 = 1002,260102 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 260101,5901 = 260102,5901 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 260101,8301 = 260102,8301 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 260101,6401N = 260102,6401N |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 1701,260101 = 1701,260102 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 260101,9301 = 260102,9301 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 260101,3601 = 260102,3601 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 2101,260101 = 2101,260102 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 260101,9101 = 260102,9101 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 260101,9801 = 260102,9801 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 260101,6901 = 260102,6901 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 260101,8701 = 260102,8701 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 260101,3401 = 260102,3401 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 260101,5801 = 260102,5801 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 260101,3001 = 260102,3001 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 260101,5501 = 260102,5501 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 260101,7201 = 260102,7201 |
| +++++--- | ++++----- | +----- | -----+ | -----+ | -----+ | 260101,6601 = 260102,6601 |



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|---------|-------|---------|--------|-------|-------|---------------------------|
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 260101,4401 = 260102,4401 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 260101,2901 = 260102,2901 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 1001,260101 = 1001,260102 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 260101,3701 = 260102,3701 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 1702,260101 = 1702,260102 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 260101,7001 = 260102,7001 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 2202,260101 = 2202,260102 |
| | | | | | | = 260101,7601 = |
| | | | | | | 260102,7601 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 260101,7801 = 260102,7801 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 0902,9201 = 1301,9201 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 1402,260101 = 1402,260102 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 260101,6101N = |
| | | | | | | 260102,6101N |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 260101,9201 = 260102,9201 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 0301,260101 = 0502,260101 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 0301,260102 = 0502,260102 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 260101,350101 = |
| | | | | | | 260102,350101 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 2501,260101 = 2501,260102 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 260101,2801 = 260102,2801 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 260101,7901 = 260102,7901 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 1101,260101 = 1101,260102 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 0902,5601 = 1301,5601 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 260101,6701 = 260102,6701 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 260101,7401 = 260102,7401 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 260101,5201 = 260102,5201 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 260101,5601 = 260102,5601 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 2002,260101 = 2002,260102 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 260101,3101 = 260102,3101 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 0302,260101 = 0302,260102 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 260101,5401 = 260102,5401 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 0902,2701 = 0902,8901 = |
| | | | | | | 1301,2701 = 1301,8901 = |
| | | | | | | 1302,260101 = 1302,260102 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 0902,260101 = 1301,260101 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 0902,8501 = 1301,8501 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 0902,260102 = 1301,260102 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 260101,2701 = 260101,8901 |
| | | | | | | = 260102,2701 = |
| | | | | | | 260102,8901 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 260101,260101 = |
| | | | | | | 260101,260102 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 0402,5601 = 0602,5601 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 2701,9201 = 350102,5601 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 1401,5601 = 5601,7601 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 1101,9201 = 5601,7801 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 0301,5601 = 0502,5601 = |
| | | | | | | 5601,9201 = 8901,9201 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 5601,5601 = 5601,8901 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 1302,2701 = 1302,8901 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 0301,9901 = 0502,9901 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 0301,2302N = 0401,1402 = |
| | | | | | | 0502,2302N = 1402,2302N |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 0301,2402 = 0502,2402 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 0401,5201 = 2402,5201 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 0301,9601 = 0502,9601 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 0301,3901 = 0502,3901 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 0301,4001 = 0502,4001 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 0301,6601 = 0502,6601 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 0301,7201 = 0502,7201 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 2701,8801 = 8801,8901 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 2701,3701 = 3701,8901 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 0301,3101 = 0502,3101 |
| +++++-- | ----- | +++++-- | ++-+-- | ----- | ----- | 0301,0302 = 0302,0502 |



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|-----------|----------|----------|----------|----------|----------|---------------------------|
| ++++----- | -----+ | +++++--- | ---+---+ | -----+ | -----+ | 2701, 6101N = 6101N, 8501 |
| ++++----- | -----+ | +++++--- | ---+---+ | -----+ | -----+ | 0301, 2701 = 0502, 2701 |
| ++++----- | -----+ | +++++--- | ---+---+ | -----+ | -----+ | 0301, 8501 = 0502, 8501 |
| ++++----- | -----+ | +++++--- | ---+---+ | -----+ | -----+ | 0301, 8901 = 0502, 8901 |
| ++++----- | -----+ | +++++--- | ---+---+ | -----+ | -----+ | 2701, 7901 = 7901, 8901 |
| +++++--- | -----+ | +---+--- | ---+---+ | +---+--- | -----+ | 0902, 5001 = 1301, 5001 |
| +++++--- | +---+--- | +---+--- | +---+--- | +---+--- | -----+ | 0902, 3601 = 1301, 3601 |
| +++++--- | +---+--- | +++++--- | ---+---+ | +---+--- | -----+ | 0902, 2001 = 1301, 2001 |
| +++++--- | +---+--- | +---+--- | ---+---+ | +---+--- | -----+ | 0902, 1801 = 1301, 1801 |
| +++++--- | +---+--- | +---+--- | ---+---+ | +---+--- | -----+ | 0902, 8701 = 1301, 8701 |
| +++++--- | -----+ | +---+--- | +---+--- | +---+--- | -----+ | 0902, 1702 = 1301, 1702 |
| +++++--- | -----+ | +++++--- | ---+---+ | +---+--- | -----+ | 0902, 7801 = 1301, 7801 |
| +++++--- | -----+ | +++++--- | ---+---+ | +---+--- | -----+ | 0902, 1402 = 1301, 1402 |
| +++++--- | -----+ | +++++--- | ---+---+ | +---+--- | -----+ | 0902, 6101N = 1301, 6101N |
| +++++--- | -----+ | +---+--- | ---+---+ | +---+--- | -----+ | 0902, 2501 = 1301, 2501 |
| +++++--- | -----+ | +---+--- | ---+---+ | +---+--- | -----+ | 0902, 7901 = 1301, 7901 |
| +++++--- | -----+ | +---+--- | ---+---+ | +---+--- | -----+ | 0902, 5201 = 1301, 5201 |
| +++++--- | -----+ | +++++--- | ---+---+ | +---+--- | -----+ | 0301, 1302 = 0502, 1302 |
| +++++--- | -----+ | +++++--- | ---+---+ | +---+--- | -----+ | 0301, 3301 = 0502, 3301 |
| +++++--- | -----+ | +++++--- | ---+---+ | +---+--- | -----+ | 0301, 2002 = 0502, 2002 |
| +++++--- | -----+ | +++++--- | -----+ | -----+ | -----+ | 0301, 1101 = 0502, 1101 = |
| | | | | | | 1101, 7801 |
| +++----- | -----+ | +++++--- | ---+---+ | -----+ | -----+ | 0301, 7401 = 0502, 7401 |
| +++++--- | +---+--- | -----+ | -----+ | -----+ | -----+ | 0802, 2502 = 1901, 2502 |
| +++++--- | +---+--- | -----+ | -----+ | -----+ | +---+--- | 2502, 7701 = 2502, 9401 |
| +++++--- | +---+--- | -----+ | -----+ | -----+ | -----+ | 0402, 2502 = 0602, 2502 |
| +++++--- | -----+ | -----+ | -----+ | -----+ | -----+ | 2502, 6801 = 2502, 8401 |
| +++++--- | +---+--- | +++----- | ---+---+ | -----+ | -----+ | 2001, 2502 = 2502, 6901 |
| +++++--- | -----+ | +++++--- | -----+ | +---+--- | -----+ | 1401, 2502 = 2502, 7601 |
| +++++--- | -----+ | +++++--- | -----+ | -----+ | -----+ | 0301, 2502 = 0502, 2502 = |
| | | | | | | 2502, 9201 |
| +++++--- | +---+--- | +++++--- | -----+ | -----+ | -----+ | 0802, 9201 = 1901, 9201 |
| +++++--- | -----+ | +++++--- | -----+ | -----+ | -----+ | 6801, 9201 = 8401, 9201 |
| +++++--- | +---+--- | +++++--- | -----+ | -----+ | +---+--- | 7701, 9201 = 9201, 9401 |
| +++++--- | +---+--- | +++++--- | -----+ | -----+ | -----+ | 0402, 9201 = 0602, 9201 |
| +++++--- | +---+--- | +++++--- | ---+---+ | -----+ | -----+ | 2001, 9201 = 6901, 9201 |
| +++++--- | -----+ | +++++--- | -----+ | +---+--- | -----+ | 0301, 7601 = 0502, 7601 = |
| | | | | | | 1401, 9201 = 7601, 9201 |
| +++++--- | -----+ | +++++--- | -----+ | -----+ | -----+ | 0301, 9201 = 0502, 9201 = |
| | | | | | | 9201, 9201 |
| +++++--- | ---+---+ | +++++--- | -----+ | -----+ | -----+ | 0301, 2401 = 0502, 2401 |
| +++++--- | ---+---+ | +++++--- | -----+ | -----+ | -----+ | 0301, 5101 = 0502, 5101 |
| +++++--- | -----+ | +++++--- | -----+ | -----+ | ---+---+ | 0301, 4901 = 0502, 4901 |
| +++++--- | -----+ | +++++--- | -----+ | -----+ | -----+ | 0301, 5301 = 0502, 5301 |
| +++++--- | -----+ | +++++--- | -----+ | -----+ | -----+ | 0301, 2801 = 0502, 2801 |
| +++++--- | +---+--- | +---+--- | +---+--- | -----+ | -----+ | 0802, 1702 = 1702, 1901 |
| +++++--- | +---+--- | +++++--- | -----+ | -----+ | -----+ | 0802, 7801 = 1901, 7801 |
| +++++--- | +---+--- | +++++--- | -----+ | -----+ | -----+ | 0802, 1402 = 1402, 1901 |
| +++++--- | +---+--- | +++++--- | -----+ | -----+ | -----+ | 0802, 6101N = 1901, 6101N |
| +++++--- | +---+--- | +++++--- | -----+ | -----+ | -----+ | 0301, 1901 = 0502, 1901 |
| +++++--- | +---+--- | +++++--- | -----+ | -----+ | -----+ | 0802, 2501 = 1901, 2501 |
| +++++--- | +---+--- | +---+--- | ---+---+ | -----+ | -----+ | 0802, 7901 = 1901, 7901 |
| +++++--- | +---+--- | -----+ | -----+ | -----+ | -----+ | 0802, 5001 = 1901, 5001 |
| +++++--- | +---+--- | +---+--- | -----+ | -----+ | -----+ | 0802, 5201 = 1901, 5201 |
| +++++--- | +---+--- | -----+ | -----+ | -----+ | +---+--- | 5001, 7701 = 5001, 9401 |
| +++++--- | +---+--- | -----+ | -----+ | -----+ | -----+ | 0402, 5001 = 0602, 5001 |
| +++++--- | +---+--- | +++++--- | -----+ | -----+ | -----+ | 0301, 0801 = 0502, 0801 |
| +++++--- | -----+ | +++++--- | -----+ | -----+ | -----+ | 0301, 7501 = 0502, 7501 |
| +++++--- | -----+ | +++++--- | -----+ | -----+ | -----+ | 6801, 7801 = 7801, 8401 |
| +++++--- | -----+ | +++++--- | -----+ | -----+ | -----+ | 1402, 6801 = 1402, 8401 |
| +++++--- | -----+ | +++++--- | -----+ | -----+ | -----+ | 6101N, 6801 = 6101N, 8401 |
| +++++--- | -----+ | +++++--- | -----+ | -----+ | -----+ | 0301, 6801 = 0301, 8401 = |
| | | | | | | 0502, 6801 = 0502, 8401 |
| +++++--- | -----+ | +---+--- | -----+ | -----+ | -----+ | 2501, 6801 = 2501, 8401 |
| +++++--- | -----+ | +---+--- | ---+---+ | -----+ | -----+ | 6801, 7901 = 7901, 8401 |



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|--------|-------|--------|-------|-------|-------|---|
| ++++++ | ----- | ----- | ----- | ----- | ----- | 5001, 6801 = 5001, 8401 |
| ++++++ | ----- | ++++-- | ----- | ----- | ----- | 2001, 5001 = 5001, 6901 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0301, 7301 = 0502, 7301 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0301, 5701 = 0502, 5701 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0301, 5001 = 0502, 5001 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0301, 4601 = 0502, 4601 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0301, 2602 = 0502, 2602 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0301, 3201 = 0502, 3201 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0301, 1802 = 0502, 1802 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0301, 4701 = 0502, 4701 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0301, 7101 = 0502, 7101 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0301, 4801 = 0502, 4801 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0301, 1601 = 0502, 1601 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0203, 0301 = 0203, 0502 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0301, 2201 = 0502, 2201 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0301, 0403 = 0403, 0502 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0402, 1702 = 0602, 1702 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0301, 8001 = 0502, 8001 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 7701, 7801 = 7801, 9401 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0402, 7801 = 0602, 7801 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 1402, 7701 = 1402, 9401 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 6101N, 7701 = 6101N, 9401 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0301, 7701 = 0301, 9401 = 0502, 7701 = 0502, 9401 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0301, 8201 = 0502, 8201 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0402, 1402 = 0602, 1402 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0301, 6001 = 0502, 6001 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0402, 6101N = 0602, 6101N |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0301, 2301 = 0502, 2301 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0402, 5201 = 0602, 5201 = 2301, 2501 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 2501, 7701 = 2501, 9401 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0402, 2501 = 0602, 2501 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 7701, 7901 = 7901, 9401 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0402, 7901 = 0602, 7901 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0102, 0301 = 0102, 0502 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0301, 9701 = 0502, 9701 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0301, 3801 = 0501, 1402 = 0502, 3801 = 1402, 3801 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0301, 0501 = 0501, 0502 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0301, 1502 = 0502, 1502 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0301, 1902 = 0502, 1902 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 1502, 2501 = 1902, 5201 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0301, 6301 = 0502, 6301 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0301, 6201 = 0502, 6201 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0301, 8101 = 0502, 8101 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0301, 4101 = 0502, 4101 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0301, 9501 = 0502, 9501 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0301, 8601 = 0502, 8601 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0301, 1602 = 0502, 1602 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0301, 1102 = 0502, 1102 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0301, 1002 = 0502, 1002 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0301, 5901 = 0502, 5901 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0301, 8301 = 0502, 8301 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 2901, 3601 = 3601, 4401 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0301, 1701 = 0502, 1701 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0301, 6401N = 0502, 6401N = 0601, 1402 = 1402, 6401N |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0301, 0601 = 0502, 0601 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0301, 9301 = 0502, 9301 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 3701, 8701 = 5201, 9301 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0301, 3601 = 0502, 3601 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 0301, 2101 = 0502, 2101 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 1702, 5501 = 1702, 5801 |
| ++++-- | ----- | ++++-- | ----- | ----- | ----- | 1702, 2101 = 1702, 3601 |



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|-------|-------|-------|-------|-------|-------|--|
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0301,3401 = 0502,3401 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0301,5801 = 0502,5801 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0301,9801 = 0502,9801 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0301,9101 = 0502,9101 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2001,7801 = 6901,7801 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 1402,2001 = 1402,6901 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2001,6101N = 6101N,6901 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0301,6901 = 0502,6901 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0301,2001 = 0502,2001 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0301,3001 = 0502,3001 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0301,5501 = 0502,5501 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0301,8701 = 0502,8701 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0301,1801 = 0502,1801 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2001,7901 = 6901,7901 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2001,2501 = 2501,6901 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 3001,5201 = 5201,5501 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 1702,2901 = 1702,4401 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0301,4401 = 0502,4401 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2501,8801 = 2901,7901 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0301,8801 = 0502,8801 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0301,2901 = 0502,2901 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0301,1001 = 0502,1001 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0301,3701 = 0502,3701 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0301,1702 = 0502,1702 = 1702,7001 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0301,7001 = 0502,7001 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0301,5401 = 0502,5401 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 1401,7901 = 2202,2501 = 2202,7901 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0301,2202 = 0502,2202 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0301,350101 = 0502,350101 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0301,7901 = 0502,7901 = 2501,350102 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0301,350102 = 0502,350102 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0301,6701 = 0502,6701 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0301,4501 = 0502,4501 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0301,5201 = 0502,5201 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0301,2501 = 0502,2501 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0301,7801 = 0502,7801 = 7801,7801 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0301,1402 = 0502,1402 = 1402,1402 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0301,6101N = 0502,6101N = 6101N,6101N |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0301,0502 = 0502,0502 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 2501,6701 = 4501,5201 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0902,6501 = 1301,6501 = 1302,6501 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0902,2401 = 1301,2401 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0902,9901 = 1301,9901 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0902,5101 = 1301,5101 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0902,2302N = 1301,2302N |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0902,2402 = 1301,2402 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0902,4901 = 1301,4901 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0902,5301 = 1301,5301 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0902,9601 = 1301,9601 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0902,3901 = 1301,3901 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0902,4001 = 1301,4001 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0902,7201 = 1301,7201 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0902,6601 = 1301,6601 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0902,7601 = 1301,7601 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0902,2801 = 1301,2801 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0902,3101 = 1301,3101 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0302,0902 = 0302,1301 |
| +++++ | +++++ | +++++ | +++++ | +++++ | +++++ | 0801,0902 = 0801,1301 |



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|--------|-------|------|-------|------|-------|-------------|---|-------------|
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,7501 | = | 1301,7501 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,6801 | = | 1301,6801 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,8401 | = | 1301,8401 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,7301 | = | 1301,7301 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,5701 | = | 1301,5701 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0802,1302 | = | 1302,1901 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,4601 | = | 1301,4601 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,3201 | = | 1301,3201 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,1802 | = | 1301,1802 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,2602 | = | 1301,2602 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,4701 | = | 1301,4701 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,7101 | = | 1301,7101 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,4801 | = | 1301,4801 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,1601 | = | 1301,1601 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0203,0902 | = | 0203,1301 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,2201 | = | 1301,2201 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0403,0902 | = | 0403,1301 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,8001 | = | 1301,8001 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,7701 | = | 1301,7701 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,8201 | = | 1301,8201 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,6001 | = | 1301,6001 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,9401 | = | 1301,9401 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,2301 | = | 1301,2301 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0102,0902 | = | 0102,1301 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,9701 | = | 1301,9701 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,3801 | = | 1301,3801 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,1902 | = | 1301,1902 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,1502 | = | 1301,1502 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,6301 | = | 1301,6301 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,6201 | = | 1301,6201 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,8101 | = | 1301,8101 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,3301 | = | 1301,3301 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,4101 | = | 1301,4101 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,9501 | = | 1301,9501 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,8601 | = | 1301,8601 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,1602 | = | 1301,1602 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,1102 | = | 1102,1301 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,1002 | = | 1002,1301 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,5901 | = | 1301,5901 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,8301 | = | 1301,8301 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,6401N | = | 1301,6401N |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0601,0902 | = | 0601,1301 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,1701 | = | 1301,1701 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,9301 | = | 1301,9301 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,2101 | = | 1301,2101 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,9101 | = | 1301,9101 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,9801 | = | 1301,9801 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,6901 | = | 1301,6901 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,3401 | = | 1301,3401 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,5801 | = | 1301,5801 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,3001 | = | 1301,3001 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,5501 | = | 1301,5501 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,4401 | = | 1301,4401 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,2901 | = | 1301,2901 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,8801 | = | 1301,8801 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,1001 | = | 1001,1301 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,3701 | = | 1301,3701 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,7001 | = | 1301,7001 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,2202 | = | 1301,2202 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,350101 | = | 1301,350101 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,350102 | = | 1301,350102 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,4501 | = | 1301,4501 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,1101 | = | 1101,1301 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,6701 | = | 1301,6701 |
| ++++++ | ----- | ++++ | ----- | ++++ | ----- | 0902,7401 | = | 1301,7401 |



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|---------|---------|---------|---------|---------|--------|--------------------------------------|
| +++++-- | ----- | +---+-- | ---+-- | +---+-- | ---+-- | 0902,2002 = 1301,2002 |
| +++++-- | ----- | +---+-- | ---+-- | +---+-- | ---+-- | 0902,5401 = 1301,5401 |
| +++++-- | ----- | +---+-- | ---+-- | +---+-- | ---+-- | 0902,1302 = 1301,1302 |
| +++++-- | ----- | +---+-- | ---+-- | +---+-- | ----- | 0902,0902 = 0902,1301 |
| +++++-- | +++++-- | +---+-- | ---+-- | +---+-- | ---+-- | 0201,1302 = 1302,2602 |
| +++++-- | +++++-- | +---+-- | ---+-- | +---+-- | ---+-- | 0402,1302 = 0602,1302 |
| +++++-- | ----- | +++++-- | ---+-- | +---+-- | ---+-- | 1302,1401 = 1302,2202 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 0802,4401 = 1901,4401 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 0802,2901 = 1901,2901 |
| +++++-- | +++++-- | +---+-- | ---+-- | ----- | ---+-- | 0802,3701 = 1901,3701 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 2201,2901 = 2201,4401 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 0402,4401 = 0602,4401 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 0402,2901 = 0602,2901 |
| +++++-- | +++++-- | +---+-- | ---+-- | ----- | ---+-- | 0402,3701 = 0602,3701 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 2901,9701 = 4401,9701 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 2901,3801 = 3801,4401 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 0501,2901 = 0501,4401 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 2901,6301 = 4401,6301 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 2101,2901 = 2101,4401 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 0601,4401 = 4401,6901 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 2901,5801 = 4401,5501 = 4401,5801 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 0601,2901 = 2901,6901 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 350102,4401 = 7001,8801 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 2901,7001 = 4401,7001 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 2202,2901 = 2202,8801 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 1401,3701 = 2202,3701 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 1001,4401 = 4401,5401 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 2901,4401 = 4401,4401 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 1001,2901 = 2901,5401 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 1001,8801 = 5401,8801 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 1001,3701 = 3701,5401 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 0802,2701 = 1901,2701 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 0802,8901 = 1901,8901 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 0402,2701 = 0602,2701 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 0402,8901 = 0602,8901 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 0401,8701 = 2402,8701 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 1701,2701 = 1701,8901 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 2701,9301 = 8901,9301 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 2701,3601 = 3601,8901 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 2101,2701 = 2101,8901 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 2701,9801 = 8901,9801 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 2701,5801 = 5801,8901 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 2701,5501 = 5501,8901 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 2701,3001 = 3001,8901 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 0901,2701 = 0901,8901 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 1001,2701 = 1001,8901 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 1401,2701 = 2202,2701 = 2202,8901 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 2701,350101 = 350101,8901 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 2701,350102 = 350102,8901 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 2701,5401 = 5401,8901 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 2701,8501 = 8501,8901 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 2701,2701 = 2701,8901 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 0802,3601 = 1901,3601 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 0802,8701 = 1901,8701 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 2001,6801 = 2001,8401 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 1801,6801 = 1801,8401 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 0402,3601 = 0602,3601 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 2001,7701 = 2001,9401 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 0402,8701 = 0602,8701 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 1801,7701 = 1801,9401 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 1401,3601 = 2202,3601 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 3601,5501 = 3601,5801 |
| +++++-- | +++++-- | +++++-- | +++++-- | ----- | ---+-- | 2101,3601 = 3601,3601 |



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| | | | | | | |
|--------|--------|--------|--------|--------|--------|---|
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 3001,8701 = 5501,8701 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 0202,6501 = 0203,6501 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 0802,6501 = 1901,6501 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 6001,6501 = 6501,8301 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 0402,6501 = 0602,6501 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 1401,6501 = 6501,7601 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 6501,6501 = 6501,8401 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 0802,9901 = 1901,9901 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 0802,6601 = 1901,6601 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 0802,7201 = 1901,7201 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 0802,2302N = 1901,2302N |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 0802,2402 = 1901,2402 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 0802,9601 = 1901,9601 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 0802,3901 = 1901,3901 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 0802,4001 = 1901,4001 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 0802,3101 = 1901,3101 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 0302,0802 = 0302,1901 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 0401,7301 = 7201,7501 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 0201,9901 = 0401,4801 = 4801,9901 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 0401,4601 = 3901,4601 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 0201,9601 = 1802,9601 = 3901,4101 = 4101,9601 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 0201,3901 = 0401,1802 = 1802,3901 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 0203,0401 = 0203,9901 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 0401,9501 = 2402,9501 = 9501,9901 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 0401,0403 = 0403,2402 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 0401,7101 = 2402,7101 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 0202,3101 = 0203,3101 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 0202,0302 = 0203,0302 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 0401,6401N = 0601,2302N = 2302N,6401N |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 0401,8601 = 3901,8601 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 0102,0401 = 0102,9901 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 0401,3801 = 0501,2302N = 2302N,3801 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 0401,1902 = 1902,9901 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 6001,9901 = 8301,9901 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 0402,9901 = 0602,9901 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 0401,1502 = 1502,2402 = 1502,9901 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 0401,1002 = 1002,3901 = 7201,8001 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 0401,8001 = 3901,8001 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 0402,6601 = 0602,6601 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 2402,6001 = 2402,8301 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 0401,5901 = 0402,7201 = 0602,7201 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 2302N,6001 = 2302N,8301 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 0402,2302N = 0602,2302N |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 0402,9601 = 0602,9601 = 3901,6001 = 3901,8301 = 6001,9601 = 8301,9601 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 0402,3901 = 0602,3901 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 0401,6001 = 0401,8301 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 0302,7701 = 0402,3101 = 0602,3101 = 3101,7701 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 0302,0402 = 0302,0602 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 4001,6001 = 4001,8301 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 0402,4001 = 0602,4001 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 0401,5801 = 2402,5801 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 0401,5501 = 2402,5501 |
| -----+ | -----+ | -----+ | -----+ | -----+ | -----+ | 0401,6301 = 2402,6301 |



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|-----------|---------|--------|-------|--------|--------|-------------|---|---------------|
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 0401,3401 | = | 2402,3401 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 0401,6201 | = | 2402,6201 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 0401,2301 | = | 2301,2402 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 0302,9401 | = | 3101,9401 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 0401,9901 | = | 9901,9901 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 0401,2801 | = | 5301,7201 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 0401,5301 | = | 4001,5101 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 0401,4901 | = | 3901,5101 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 0401,6701 | = | 2402,6701 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 0401,2302N | = | 2302N,2302N |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 0401,2402 | = | 2402,2402 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 3901,5301 | = | 4001,4901 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 3901,9601 | = | 9601,9601 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 0302,3401 | = | 3101,3401 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 1401,6601 | = | 2202,6601 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 0302,3101 | = | 3101,3101 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 0802,3301 | = | 1901,3301 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 0802,1101 | = | 1101,1901 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 0802,7401 | = | 1901,7401 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 0802,2002 | = | 1901,2002 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 0201,2002 | = | 1802,2002 = |
| | | | | | | 2002,2602 | | |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 0201,3301 | = | 2602,3301 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 3301,6001 | = | 3301,8301 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 0402,3301 | = | 0602,3301 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 2301,3301 | = | 3301,7101 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 0402,1101 | = | 0602,1101 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 0402,7401 | = | 0602,7401 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 0402,2002 | = | 0602,2002 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 1401,2002 | = | 2002,2202 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 0802,7601 | = | 1901,7601 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 6801,7601 | = | 7601,8401 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 0802,5101 | = | 1901,5101 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 0802,2401 | = | 1901,2401 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 0802,4901 | = | 1901,4901 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 0802,2801 | = | 1901,2801 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 0802,5301 | = | 1901,5301 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 5101,6801 | = | 5101,8401 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 2801,7501 | = | 5301,7301 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 4901,6801 | = | 4901,8401 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 2801,6801 | = | 2801,8401 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 5301,6801 | = | 5301,8401 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 7601,7701 | = | 7601,9401 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 0402,7601 | = | 0602,7601 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 6901,7601 | = | 7601,9101 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 2202,7601 | = | 350101,7601 = |
| | | | | | | 350102,7601 | | |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 1401,7601 | = | 7601,7601 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 4601,4901 | = | 4601,5101 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 0201,4901 | = | 1802,4901 = |
| | | | | | | 1802,5101 | | |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 4901,8601 | = | 5101,8601 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 2401,6001 | = | 2401,8301 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 0402,2401 | = | 0602,2401 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 1002,4901 | = | 1002,5101 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 4901,8001 | = | 5101,8001 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 4901,7701 | = | 4901,9401 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 5101,7701 | = | 5101,9401 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 4901,6001 | = | 4901,8301 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 0402,4901 | = | 0602,4901 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 5101,6001 | = | 5101,8301 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 0402,5101 | = | 0602,5101 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 1002,5301 | = | 2801,8001 |
| ---+----- | +-----+ | -----+ | ----- | -----+ | -----+ | 2801,7701 | = | 2801,9401 |



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|----------------------|-------|-----------|-----------------------------------|
| -----+ +-----+ ----- | ----- | -----+--+ | -----+ 0402,2801 = 0602,2801 = |
| | | | 5301,5901 |
| -----+ +-----+ ----- | ----- | -----+--+ | +-----+ 5301,7701 = 5301,9401 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 5301,6001 = 5301,8301 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0402,5301 = 0602,5301 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0802,8601 = 1901,8601 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0802,8101 = 1901,8101 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0802,4601 = 1901,4601 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0802,1602 = 1602,1901 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0802,1102 = 1102,1901 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0802,2602 = 1901,2602 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0802,3201 = 1901,3201 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0802,1802 = 1802,1901 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0802,4101 = 1901,4101 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0801,5901 = 1601,7301 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0801,8201 = 3201,6801 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0801,6001 = 0801,8301 = |
| | | | 4101,6801 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0201,6801 = 0402,0801 = |
| | | | 0602,0801 = 1601,7501 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0801,4601 = 4601,8401 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0801,2602 = 2602,8401 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0801,2301 = 0801,7101 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0801,3201 = 3201,8401 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0801,1802 = 1802,8401 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0801,4101 = 4101,8401 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0201,0801 = 0201,8401 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0802,1002 = 1002,1901 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0802,8001 = 1901,8001 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0802,5901 = 0802,7301 = |
| | | | 1901,5901 = 1901,7301 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0802,7701 = 1901,7701 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0802,8201 = 1901,8201 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0802,6001 = 0802,8301 = |
| | | | 1901,6001 = 1901,8301 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0802,7501 = 1901,7501 = |
| | | | 4701,6801 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0802,7101 = 1901,7101 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0802,9401 = 1901,9401 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0802,4701 = 1901,4701 = |
| | | | 4701,8401 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0802,2301 = 1901,2301 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0403,7501 = 6801,7101 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0202,0801 = 0203,0801 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0802,4801 = 1901,4801 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0802,6401N = 1901,6401N |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0802,1701 = 1701,1901 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0802,1001 = 1001,1901 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0802,9301 = 1901,9301 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0801,0802 = 0801,1901 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0801,4801 = 4801,8401 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0801,1601 = 1601,8401 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0202,5701 = 0203,5701 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0202,6801 = 0203,6801 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0102,0802 = 0102,1901 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0202,8401 = 0203,0802 = |
| | | | 0203,1901 = 0203,8401 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0802,2101 = 1901,2101 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0802,9701 = 1901,9701 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0802,3801 = 1901,3801 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0802,2201 = 1901,2201 = |
| | | | 2201,8401 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0802,1902 = 1901,1902 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0802,1502 = 1502,1901 |
| -----+ +-----+ ----- | ----- | -----+--+ | -----+--+ 0802,9501 = 1901,9501 |



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| | | | | | | |
|--------|----------|------------|---------|--------|--------|--|
| -----+ | ++-----+ | ++++-----+ | +-----+ | -----+ | -----+ | 0802,7001 = 1901,7001 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 0802,2202 = 1901,2202 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 0802,9101 = 1901,9101 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 0802,350101 = 1901,350101 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 0802,9801 = 1901,9801 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 0802,5701 = 1901,5701 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 0802,6801 = 1901,6801 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 0802,6901 = 1901,6901 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 0802,6701 = 1901,6701 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 0802,5401 = 1901,5401 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 0802,5801 = 1901,5801 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 0802,3001 = 1901,3001 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 0802,5501 = 1901,5501 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 0802,6301 = 1901,6301 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 0802,3401 = 1901,3401 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 0802,6201 = 1901,6201 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 0403,0802 = 0403,1901 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 0802,8401 = 1901,8401 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 5701,7701 = 5701,9401 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 0402,5701 = 0602,5701 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 1002,6801 = 1002,8401 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 6801,8001 = 8001,8401 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 5901,6801 = 5901,8401 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 6801,7701 = 6801,9401 = 7701,8401 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 6801,8201 = 8201,8401 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 6001,6801 = 6001,8401 = 6801,8301 = 8301,8401 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 0402,6801 = 0402,8401 = 0602,6801 = 0602,8401 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 1002,7501 = 7301,8001 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 7301,7701 = 7301,9401 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 0402,7301 = 0602,7301 = 5901,7501 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 7501,7701 = 7501,9401 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 6001,7501 = 7501,8301 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 0402,7501 = 0602,7501 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 1902,6801 = 1902,8401 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 6801,9101 = 8401,9101 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 6801,9801 = 8401,9801 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 0801,8101 = 8101,8401 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 0801,1001 = 0801,5401 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 0801,0801 = 0801,8401 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 6801,7301 = 7301,8401 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 6801,7501 = 7501,8401 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 6801,7001 = 7001,8401 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 2202,6801 = 2202,8401 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 1401,6801 = 1401,8401 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 350101,6801 = 350101,8401 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 350102,6801 = 350102,8401 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 4501,6801 = 4501,8401 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 5701,6801 = 5701,8401 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 6801,6801 = 6801,8401 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 0201,9701 = 0501,3201 = 3201,9701 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 4801,6001 = 4801,8301 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 0402,4801 = 0602,4801 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 2301,4801 = 4801,7101 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 6001,8101 = 8101,8301 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 0402,8101 = 0602,8101 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 1601,6001 = 1601,8301 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 1002,4601 = 4601,5901 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 4601,6001 = 4601,8301 |
| -----+ | ++-----+ | ++++-----+ | -----+ | -----+ | -----+ | 0402,4601 = 0602,4601 = 4601,8001 |



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| | | | | | | |
|--------|-----------|----------|----------|---------|---------|---|
| -----+ | ++++----- | ----- | --+----- | -----++ | -----+- | 0201,1002 = 1002,1802 |
| -----+ | ++++----- | ----- | --+----- | -----++ | -----+- | 0201,8001 = 1802,8001 |
| -----+ | ++++----- | ----- | ----- | +-----+ | -----+- | 2602,6001 = 2602,8301 |
| -----+ | ++++----- | ----- | ----- | -----+ | -----+- | 3201,6001 = 3201,8301 = 4101,8201 |
| -----+ | ++++----- | ----- | ----- | -----+ | -----+- | 0201,8201 = 0402,3201 = 0602,3201 = 3201,8201 |
| -----+ | ++++----- | ----- | ----- | -----+ | -----+- | 1802,6001 = 1802,8301 |
| -----+ | ++++----- | ----- | ----- | -----+ | -----+- | 0402,1802 = 0602,1802 |
| -----+ | ++++----- | ----- | ----- | -----+ | -----+- | 0201,6001 = 0201,8301 = 0402,4101 = 0602,4101 = 4101,6001 |
| -----+ | ++++----- | +++----- | --+----- | -----+ | -----+- | 1802,6401N = 4601,6401N |
| -----+ | ++++----- | +++----- | --+----- | -----+ | -----+- | 0601,1802 = 0601,4601 = 4601,6901 |
| -----+ | ++++----- | ++----- | ----- | -----+ | -----+- | 1701,1802 = 1701,4601 |
| -----+ | ++++----- | +----- | ----- | -----+ | -----+- | 1001,4601 = 4601,5401 |
| -----+ | ++++----- | +----- | ----- | -----+ | -----+- | 1001,2602 = 2602,5401 |
| -----+ | ++++----- | +----- | ----- | -----+ | -----+- | 1001,3201 = 3201,5401 |
| -----+ | ++++----- | +----- | ----- | -----+ | -----+- | 1001,1802 = 1802,5401 |
| -----+ | ++++----- | +----- | ----- | -----+ | -----+- | 0201,1001 = 0201,5401 |
| -----+ | ++++----- | +----- | ----- | -----+ | -----+- | 0201,8601 = 1802,8601 = 4601,8601 |
| -----+ | ++++----- | ----- | ----- | -----+ | -----+- | 2301,8101 = 7101,8101 |
| -----+ | ++++----- | ----- | ----- | -----+ | -----+- | 0201,8101 = 2602,8101 |
| -----+ | ++++----- | ----- | ----- | -----+ | -----+- | 0201,0403 = 1601,7101 |
| -----+ | ++++----- | ----- | ----- | -----+ | -----+- | 2301,4601 = 4601,7101 |
| -----+ | ++++----- | ----- | ----- | -----+ | -----+- | 0201,4601 = 1802,4601 = 4601,4601 |
| -----+ | ++++----- | ----- | ----- | -----+ | -----+- | 0201,2602 = 2602,2602 |
| -----+ | ++++----- | ----- | ----- | -----+ | -----+- | 2301,3201 = 3201,7101 |
| -----+ | ++++----- | ----- | ----- | -----+ | -----+- | 1802,2301 = 1802,7101 |
| -----+ | ++++----- | ----- | ----- | -----+ | -----+- | 2301,4101 = 4101,7101 |
| -----+ | ++++----- | ----- | ----- | -----+ | -----+- | 0201,3201 = 3201,3201 |
| -----+ | ++++----- | ----- | ----- | -----+ | -----+- | 0201,1802 = 1802,1802 |
| -----+ | ++++----- | ----- | ----- | -----+ | -----+- | 0203,6001 = 0203,8301 |
| -----+ | ++++----- | ----- | ----- | -----+ | -----+- | 0203,0402 = 0203,0602 |
| -----+ | ++++----- | ----- | ----- | -----+ | -----+- | 0202,6001 = 0202,8301 |
| -----+ | ++++----- | ----- | ----- | -----+ | -----+- | 0203,2301 = 0203,7101 |
| -----+ | ++++----- | ----- | ----- | -----+ | -----+- | 2201,6001 = 2201,8301 |
| -----+ | ++++----- | ----- | ----- | -----+ | -----+- | 0402,2201 = 0602,2201 |
| -----+ | ++++----- | ----- | ----- | -----+ | -----+- | 2201,2301 = 2201,7101 |
| -----+ | ++++----- | ----- | ----- | -----+ | -----+- | 4701,6001 = 4701,8301 |
| -----+ | ++++----- | ----- | ----- | -----+ | -----+- | 0402,4701 = 0602,4701 |
| -----+ | ++++----- | ----- | ----- | -----+ | -----+- | 2301,4701 = 4701,7101 |
| -----+ | ++++----- | ----- | ----- | -----+ | -----+- | 0402,9501 = 0602,9501 |
| -----+ | ++++----- | ----- | ----- | -----+ | -----+- | 2301,9501 = 7101,9501 |
| -----+ | ++++----- | ----- | ----- | -----+ | -----+- | 0403,6001 = 0403,8301 |
| -----+ | ++++----- | ----- | ----- | -----+ | -----+- | 0402,0403 = 0403,0602 |
| -----+ | ++++----- | ----- | ----- | -----+ | -----+- | 6001,7101 = 7101,8301 |
| -----+ | ++++----- | ----- | ----- | -----+ | -----+- | 0402,7101 = 0602,7101 |
| -----+ | ++++----- | +----- | ----- | -----+ | -----+- | 3001,7101 = 5501,7101 |
| -----+ | ++++----- | +----- | ----- | -----+ | -----+- | 0403,2301 = 0403,7101 |
| -----+ | ++++----- | ----- | ----- | -----+ | -----+- | 2301,7101 = 7101,7101 |
| -----+ | ++++----- | +----- | ----- | -----+ | -----+- | 1001,4801 = 4801,5401 |
| -----+ | ++++----- | +----- | ----- | -----+ | -----+- | 1001,1601 = 1601,5401 |
| -----+ | ++++----- | ----- | ----- | -----+ | -----+- | 0202,6301 = 0203,6301 = 1502,2201 |
| -----+ | ++++----- | ----- | ----- | -----+ | -----+- | 0202,9701 = 0203,9701 |
| -----+ | ++++----- | ----- | ----- | -----+ | -----+- | 0202,3801 = 0203,3801 |
| -----+ | ++++----- | ----- | ----- | -----+ | -----+- | 0102,2201 = 0203,0501 |
| -----+ | ++++----- | ----- | ----- | -----+ | -----+- | 0202,2201 = 0203,2201 |
| -----+ | ++++----- | ----- | ----- | -----+ | -----+- | 0202,0403 = 0203,0403 |
| -----+ | ++++----- | ----- | ----- | -----+ | -----+- | 0202,0203 = 0203,0203 |
| -----+ | ++++----- | +----- | ----- | -----+ | -----+- | 2201,5501 = 2201,5801 |



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|--------|-----------|-----------|-----------|---------|--------|-------------|---|-------------|
| -----+ | ++----- | -----++ | +-----+ | -----++ | -----+ | 0403,0501 | = | 2201,6301 |
| -----+ | ++----- | -----+ | ---++- | -----+ | -----+ | 0403,3001 | = | 0403,5501 |
| -----+ | ++++----- | ++++----- | ---+----- | -----+ | -----+ | 0402,6401N | = | 0602,6401N |
| -----+ | ++++----- | ++++----- | ---+----- | -----+ | -----+ | 0402,1001 | = | 0602,1001 |
| -----+ | ++++----- | ++++----- | ---+----- | -----+ | -----+ | 0402,9301 | = | 0602,9301 |
| -----+ | ++++----- | ++++----- | ---+----- | -----+ | -----+ | 0402,8601 | = | 0602,8601 = |
| | | | | | | 8001,8601 | | |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 0402,1602 | = | 0602,1602 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 0402,1102 | = | 0602,1102 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 0102,6001 | = | 0102,8301 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 0102,0402 | = | 0102,0602 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 6001,9701 | = | 8301,9701 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 0402,9701 | = | 0501,8201 = |
| | | | | | | 0602,9701 | = | 8201,9701 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 3801,6001 | = | 3801,8301 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 0402,3801 | = | 0602,3801 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 0501,6001 | = | 0501,8301 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 0402,2101 | = | 0602,2101 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 1502,6001 | = | 1502,8301 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 0402,1502 | = | 0602,1502 = |
| | | | | | | 1902,2301 | | |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 1902,7701 | = | 1902,9401 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 1902,6001 | = | 1902,8301 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 0402,1902 | = | 0602,1902 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 7001,7701 | = | 7001,9401 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 0402,7001 | = | 0602,7001 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 2202,7701 | = | 2202,9401 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 0402,2202 | = | 0602,2202 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 1401,7701 | = | 1401,9401 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 7701,9101 | = | 9101,9401 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 0402,9101 | = | 0602,9101 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 0402,6901 | = | 0602,6901 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 350101,7701 | = | 350101,9401 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 0402,350101 | = | 0602,350101 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 350102,7701 | = | 350102,9401 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 7701,9801 | = | 9401,9801 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 0402,9801 | = | 0602,9801 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 0402,6701 | = | 0602,6701 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 4501,7701 | = | 4501,9401 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 0402,5401 | = | 0602,5401 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 0402,5801 | = | 0602,5801 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 0402,3001 | = | 0602,3001 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 6001,6301 | = | 6301,8301 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 0402,6301 | = | 0602,6301 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 0402,3401 | = | 0602,3401 = |
| | | | | | | 3401,7701 | | |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 6001,6201 | = | 6201,8301 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 0402,6201 | = | 0602,6201 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 1002,7701 | = | 1002,9401 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 0402,1002 | = | 0602,1002 = |
| | | | | | | 1002,8001 | = | 5901,8001 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 7701,8001 | = | 8001,9401 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 6001,8001 | = | 8001,8301 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 0402,8001 | = | 0602,8001 = |
| | | | | | | 8001,8001 | | |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 2301,6001 | = | 2301,8301 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 5901,7701 | = | 5901,9401 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 0402,5901 | = | 0602,5901 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 7701,8201 | = | 8201,9401 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 6001,7701 | = | 6001,9401 = |
| | | | | | | 7701,8301 | = | 8301,9401 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 0402,7701 | = | 0402,9401 = |
| | | | | | | 0602,7701 | = | 0602,9401 = |
| | | | | | | 7701,7701 | = | 7701,9401 |
| -----+ | ++++----- | ----- | ---+----- | -----+ | -----+ | 6001,8201 | = | 8201,8301 |



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-----+ +-----+ ----- +-----+ -----+ +-----+ 0402,8201 = 0602,8201 =
8201,8201
-----+ +-----+ ----- +-----+ -----+ +-----+ 0402,6001 = 0402,8301 =
0602,6001 = 0602,8301 =
6001,6001 = 6001,8301
-----+ +-----+ -----+ +-----+ -----+ +-----+ 2301,3401 = 3401,9401
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 0501,6401N = 0601,3801 =
3801,6401N
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 0102,6301 = 0501,1502
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 5501,9701 = 5801,9701
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 3801,5501 = 3801,5801
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 0501,9701 = 9701,9701
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 0501,3801 = 3801,3801
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 1502,4501 = 1902,6701
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 1502,3001 = 1502,5501
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 3001,6301 = 5501,6301 =
5801,6301
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 3001,6201 = 5501,6201
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 1001,8101 = 5401,8101
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 1001,4101 = 4101,5401
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 3001,9501 = 5501,9501
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 1401,8601 = 2202,8601
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 1401,1602 = 1602,2202
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 1102,1401 = 1102,2202
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 350101,8601 = 350102,8601
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 1002,8601 = 5901,8601
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 0601,8601 = 6901,8601
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 0901,1102 = 0901,1602
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 1001,8601 = 5401,8601
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 3001,8601 = 8601,9301
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 1102,1701 = 1602,1701
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 1001,1102 = 1001,1602 =
1102,5401 = 1602,5401
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 1102,5801 = 1602,5801
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 1102,5501 = 1602,5501
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 1102,3001 = 1602,3001 =
1602,9301
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 1102,8601 = 1602,8601 =
8601,8601
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 1102,1602 = 1602,1602
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 1002,1002 = 1002,5901
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 0901,9101 = 1701,2202
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 1401,9301 = 2202,9301
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 0901,9801 = 1701,350101
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 1001,6401N = 5401,6401N
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 0601,1001 = 0601,5401
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 0601,6401N = 6401N,6401N
= 6401N,6901
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 0901,3001 = 0901,9301
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 1001,1701 = 1701,5401
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 1701,3001 = 1701,9301
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 1001,3001 = 1001,9301 =
5401,9301
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 1401,2101 = 2101,2202
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 2101,5501 = 2101,5801
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 1401,5801 = 2202,5801
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 5501,7001 = 5801,7001
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 1401,9801 = 2202,6901 =
2202,9101 = 2202,9801 =
350101,9101 = 350102,9101
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 1401,6901 = 1401,9101
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 1401,3001 = 2202,3001
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 6901,9101 = 9101,9101
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 350101,9801 = 350102,9801
-----+ +-----+ +-----+ +-----+ -----+ +-----+ 3001,6701 = 5501,6701



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----- +----- +-----+ ---+--+ ---+++++ +-+----- 3001,3401 = 3401,5501
----- +----- +-----+ ---+--+ ---+++++ -----+ 3001,5801 = 5501,5801 =
                                           5801,5801
----- ---+----- +++++--- ---+++++ -+-----+ -----+ 1001,1401 = 1001,2202
----- ---+----- +-+----- -+-----+ -----+ -----+ 0901,1001 = 0901,5401
----- ---+----- +-+----- -+-----+ -----+ -----+ 1001,1001 = 1001,5401
----- -----+ +++++--- ---+++++ -+-----+ -----+ 1401,5401 = 2202,5401
----- -----+ +++++--- ---+----- -+-----+ -----+ 2202,6701 = 350101,6701
----- -----+ +++++--- ---+----- -+-----+ -----+ 2202,4501 = 350101,4501
----- -----+ +++++--- ---+----- -+-----+ -----+ 1401,2202 = 1401,350101 =
                                           2202,2202 = 2202,350101 =
                                           2202,350102
----- -----+ +-+----- -+-----+ -----+ -----+ 350101,350101 =
                                           350101,350102
```

0101 = 010101 to 010103
0102 = 020102, 020104, 020105 and 020107
0301 = 030101 and 030102
0401 = 040101 and 040102
0501 = 050101 and 050102
1101 = 110101 and 110102
2001 = 200101 and 200102
4101 = 410101 and 410102

SPECIFICITY TABLE

DPB1 SSP typing

Specificities and sizes of the PCR products of the 48 primer mixes used for DPB1 SSP typing

| Primer Mix | Size of spec. PCR product ¹ | Size of control band ² | Amplified DPB1 alleles |
|--------------------------|--|-----------------------------------|--|
| 1 | 245 bp | 515 bp | *010101-010103, 030101, 030102, 0502, 0902, 1301, 1302, 1402, 1702, 2102, 2501, 2502, 260101, 260102, 2901, 3701, 4401, 5001, 5201, 5601, 6101N, 7801, 7901, 8801, 9001, 9201 |
| 2⁴ | 220 bp | 515 bp | *010101-010103, 030101, 030102, 0502, 1402, 1702, 1801, 200101, 200102, 2102, 2501, 2502, 260101, 260102, 2701, 3601, 5001, 5201, 5601, 6101N, 7801, 7901, 8501, 8701, 8901, 9001, 9201 |
| 3^{3,4,5} | 100 bp | 430 bp | *010101-010103, 0302, 040101, 040102, 0902, 110101, 110102, 1301, 1302, 1501, 2002, 2102, 2302N, 2402, 260101, 260102, 2701, 3101, 3301, 3901, 4001, 5601, 6501, 6601, 7201, 7401, 8501, 8901, 9001, 9601, 9901 |
| 4^{3,4} | 140 bp | 430 bp | *010101-010103, 0302, 040101, 040102, 2102, 2302N, 2401, 2402, 2502, 260101, 260102, 2701, 2801, 3101, 3901, 4001, 4901, 5101, 5301, 5601, 6501, 6601, 7201, 7601, 8501, 8901, 9001, 9201, 9601, 9901 |
| 5 | 235 bp | 515 bp | *010101-010103, 0801, 0802, 1901, 2102, 2502, 5001, 5701, 6501, 6801, 7301, 7501, 8401, 9001 |
| 6 | 165 bp | 430 bp | *010101-010103, 0902, 1301, 2102, 2502, 260101, 260102, 6501 |
| 7 | 160 bp | 430 bp | *010101-010103, 0902, 1301, 1302, 2102, 2502, 260101, 260102, 5601, 6501, 7601, 9001, 9201 |
| 8 | 210 bp | 515 bp | *0102, 020102-0203, 040101-0403, 050101, 050102, 0602, 0801, 0802, 1502, 1601, 1802, 1901, 1902, 2201, 2301, 2302N, 2401, 2402, 2602, 3201, 3301, 3801, 3901, 4001, 4601, 4701, 4801, 4901, 5101, 5301, 6001, 6201, 6301, 6501, 6801, 7101, 7501, 7701, 8001, 8101, 8201, 8401, 9401, 9601, 9701, 9901 |
| 9⁴ | 165 bp | 430 bp | *0102, 020102-020105, 020106 ^w , 020107-0203, 0402, 0403, 050101, 050102, 0601, 0602, 0802, |

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| | | | |
|-------------------------|--------|--------|---|
| | | | 1002, 1102, 1502, 1601, 1602, 1701, 1801, 1802, 1901, 1902, 200101, 200102, 2101, 2201, 2301, 2602, 3001, 3201, 3401, 3601, 3801, 410101, 410102, 4601, 4701, 4801, 5501, 5801, 5901, 6001, 6201, 6301, 6401N, 6901, 7101, 7701, 8001, 8201, 8301, 8601, 8701, 9101, 9301, 9401, 9501, 9701, 9801 |
| 10 | 220 bp | 515 bp | *020102-0203, 0403, 0801, 0802, 1601, 1802, 1901, 2201, 2602, 3201, 3301, 410101, 410102, 4601, 4701, 4801, 7101, 8101, 9501 |
| 11 | 190 bp | 515 bp | *020102-020107, 040101-0402, 0602, 1002, 1102, 1602, 1802, 2301, 2302N, 2401, 2402, 2602, 3201, 3301, 410101, 410102, 4601, 4701, 5101, 5901, 6001, 6601, 7101, 7201, 7301, 7501, 7701, 8001, 8101, 8201, 8301, 8601, 9401, 9901 |
| 12³ | 80 bp | 515 bp | *020102, 020103 ^w , 020104-020107, 0601, 0801, 0901, 1001, 1102, 1601, 1602, 1701, 1802, 2602, 2901, 3201, 3701, 410101, 410102, 4401, 4601, 4801, 6401N, 8101, 8601, 8801, 9301 |
| 13 | 180 bp | 430 bp | *0102, 0202, 0203, 050101, 050102, 0802, 1901, 2201, 2401, 3801, 4701, 9701 |
| 14³ | 105 bp | 430 bp | *0102, 0202, 0203, 050101, 050102, 1702, 2101, 2201, 3601, 3801, 9701 |
| 15 | 200 bp | 430 bp | *0102, 0202, 0203, 1502, 1902, 4801, 9501, 9901 |
| 16^{3,4} | 80 bp | 430 bp | *030101, 030102, 0402, 0502, 0602, 1002, 1401, 1402, 1801, 1902, 200101, 200102, 2202, 2501, 2502, 2801, 350101, 350102, 4501, 4901, 5001, 5101, 5301, 5701, 5901, 6001, 6101N, 6801, 7001, 7301, 7501, 7601, 7701, 7801, 7901, 8001, 8201, 8301, 9101, 9201, 9801 |
| 17 | 260 bp | 515 bp | *030101, 030102, 0502, 0601, 0901, 0902, 1001, 110101, 110102, 1301, 1302, 1401, 1402, 1701, 1702, 200101, 200102, 2101, 2202, 2501, 260101, 260102, 2701, 2901, 3001, 350101, 350102, 3601, 3701, 4401, 4501, 5201, 5401, 5501, 5601, 5801, 6101N, 6401N, 6701, 6901, 7001, 7601, 7801, 7901, 8501, 8701, 8801, 9101, 9201, 9301, 9801 |
| 18 | 180 bp | 430 bp | *030101, 030102, 0502, 0601, 0901, 1401, 1402, 1701, 200101, 200102, 2202, 2901, 350101, 350102, 4401, 6101N, 6401N, 6901, 7001, 7601, 7801, 8601, 8801, 9101, 9201, 9801 |
| 19 | 200 bp | 430 bp | *030101, 030102, 0502, 0601, 110101, 110102, 1401, 1402, 1702, 200101, 200102, 2202, 2501, |

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| | | | |
|--------------------------|-------------------|--------|--|
| | | | 2901, 4401, 4501, 5201, 5601, 6101N, 6401N, 6701, 6901, 7001, 7401, 7601, 7801, 8701, 9101, 9201 |
| 20 | 235 bp | 515 bp | *030101, 030102, 0502, 0901, 0902, 1001, 1301, 1302, 1401, 1402, 1702, 2202, 2501, 260101, 260102, 2901, 350101, 350102, 3701, 4401, 4501, 5201, 5401, 5601, 6101N, 6701, 7001, 7601, 7801, 7901, 8801, 9201 |
| 21^{3,4} | 100 bp | 430 bp | *030101, 030102, 0502, 0901, 1401, 1402, 2202, 2901, 350101, 350102, 4401, 5001, 5701, 6101N, 7001, 7601, 7801, 8801, 9201 |
| 22⁴ | 185 bp | 430 bp | *040101, 040102, 2002, 2302N, 2401, 2402, 3301, 3901, 4901, 5101, 6601, 7201, 8101, 9601, 9901 |
| 23³ | 145 bp | 430 bp | *0102, 050101, 050102, 1502, 1702, 1902, 3401, 3601, 3801, 6201, 6301, 9701 |
| 24⁷ | 195 bp, 265 bp | 515 bp | *0203, 0302, 0403, 050101, 050102, 0801, 0802, 1601, 1901, 2201, 3101, 3801, 5701, 6301, 6501, 6801, 8401, 9701 |
| 25⁸ | 190 bp, 265 bp | 515 bp | *050101, 050102, 1702, 2101, 2201, 3601, 3801, 4401, 5801, 6301, 7001, 9701 |
| 26^{3,5} | 75 bp | 515 bp | *0601, 0901, 1701, 2901, 4401, 4601, 6401N, 8601, 8801 |
| 27³ | 95 bp | 430 bp | *0601, 1002, 1701, 200101, 200102, 4601, 6401N, 6901, 8001, 8601, 9101, 9801 |
| 28⁹ | 200 bp, 260 bp | 430 bp | *0901, 0902, 1001, 1102, 1301, 1302, 1602, 1701, 2002, 2101, 2202, 260101, 260102, 2701, 3001, 350101, 350102, 3601, 3701, 5401, 5501, 5801, 6601, 7901, 8501, 8601, 8801, 9301, 9801 |
| 29 | 220 bp | 515 bp | *0901, 1001, 1602, 1701, 3001, 5401, 5501, 5801, 8601 |
| 30 | 185 bp | 430 bp | *0901, 1401, 1701, 2202, 350101, 7601, 8601, 9101, 9801 |
| 31^{3,6} | 120 bp | 430 bp | *010101-010103, 0302, 0403, 050101, 050102, 0801, 0802, 0902, 1001, 110101, 110102, 1301, 1302, 1601, 1702, 1901, 2101, 2102, 2201, 2501, 2502, 260101, 260102, 2701, 3001, 3101, 3601, 3701, 3801, 4501, 5201, 5401, 5501, 5601, 5801, 6301, 6501, 6701, 6801, 7901, 8401, 8501, 8701, 8901, 9001, 9301, 9701 |
| 32^{3,10} | 75 bp, 195 bp | 430 bp | *110101, 110102, 7801 |
| 33^{3,11} | 140 bp, 205 bp | 430 bp | *0902, 1301, 1302, 2002, 2602, 3301, 8101 |

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| | | | |
|----------------------------|------------------------------|--------|---|
| 34 | 210 bp | 515 bp | *1401, 2202, 4501, 6701, 7601, 9101 |
| 35 | 195 bp | 430 bp | *1501, 7401 |
| 36 | 260 bp | 515 bp | *1501, 1801, 2801, 3401, 4001, 5301, 6201 |
| 37^{6,12} | 185 bp, 255 bp | 515 bp | *0102 [?] , 0203 [?] , 0302 [?] , 0402, 0403 [?] , 0801 [?] , 1001 [?] , 1002 [?] , 110101 [?] -1102 [?] , 1302 [?] , 1402 [?] , 1501, 1502 [?] , 1602 [?] , 1702 [?] , 1802 [?] , 1902 [?] , 2002 [?] , 2101 [?] , 2102 [?] , 2201 [?] , 2202 [?] , 2302N [?] , 2401 [?] , 2501 [?] , 2502 [?] , 2701 [?] , 2801, 2901 [?] , 3001 [?] , 3101 [?] , 3201 [?] , 3301 [?] , 3401 [?] , 350101 [?] , 3601 [?] , 3701 [?] , 3801 [?] , 3901 [?] , 4001, 410101 [?] , 410102 [?] , 4401 [?] , 4601 [?] , 4701 [?] , 4801 [?] , 4901 [?] , 5001 [?] , 5101 [?] , 5201 [?] , 5301, 5401 [?] , 5601 [?] , 5701 [?] , 5801 [?] , 5901 [?] , 6001 [?] , 6101N [?] , 6201 [?] , 6301 [?] , 6401N [?] , 6501 [?] , 6601 [?] , 6701 [?] , 6801 [?] , 6901 [?] , 7001 [?] , 7101 [?] , 7201 [?] , 7301 [?] , 7401, 7501 [?] , 7601 [?] , 7701 [?] , 7801 [?] , 7901 [?] , 8001 [?] , 8101 [?] , 8201 [?] , 8301 [?] , 8401 [?] , 8601 [?] , 8701 [?] , 8901 [?] , 9001 [?] , 9101 [?] , 9201 [?] , 9301 [?] , 9401 [?] , 9501 [?] , 9601 [?] , 9701 [?] , 9801 [?] , 9901 [?] |
| 38³ | 100 bp | 515 bp | *0403, 1502, 2301, 2402, 3401, 5201, 5501, 5801, 6201, 6301, 6701, 7101, 8701, 9501 |
| 39 | 210 bp | 515 bp | *0302, 1002, 2801, 3101, 3401, 5701, 5901, 7201, 7301, 9501 |
| 40^{3,4,13} | 95 bp, 180 bp | 430 bp | *0102 [?] , 0203 [?] , 0302 [?] , 0403 [?] , 0601 [?] , 0801 [?] , 0902, 1001 [?] , 1002 [?] , 110101 [?] -1102 [?] , 1302 [?] , 1402 [?] , 1502 [?] , 1601 [?] , 1602 [?] , 1701 [?] , 1702 [?] , 1801 [?] , 1802 [?] , 1902 [?] , 200101 [?] -2002 [?] , 2101 [?] , 2102 [?] , 2201 [?] , 2202 [?] , 2301 [?] , 2302N [?] , 2401 [?] , 2402 [?] , 2501 [?] , 2502 [?] , 260101 [?] -2602 [?] , 2701 [?] , 2801 [?] , 2901 [?] , 3001, 3101 [?] , 3201 [?] , 3301 [?] , 3401 [?] , 350101 [?] , 350102 [?] , 3601 [?] , 3701 [?] , 3801 [?] , 3901 [?] , 4001 [?] , 410101 [?] , 410102 [?] , 4401 [?] , 4501 [?] , 4601 [?] , 4701 [?] , 4801 [?] , 4901 [?] , 5001 [?] , 5101 [?] , 5201 [?] , 5301 [?] , 5401, 5501 [?] , 5601 [?] , 5701 [?] , 5801 [?] , 5901 [?] , 6001 [?] , 6101N [?] , 6201 [?] , 6301 [?] , 6401N [?] , 6501 [?] , 6601 [?] , 6701 [?] , 6801 [?] , 6901 [?] , 7001 [?] , 7101 [?] , 7201 [?] , 7301 [?] , 7401 [?] , 7501 [?] , 7601 [?] , 7701 [?] , 7801 [?] , 7901 [?] , 8001 [?] , 8101 [?] , 8201 [?] , 8301 [?] , 8401 [?] , 8501 [?] , 8601 [?] , 8701 [?] , 8801 [?] , 8901 [?] , 9001 [?] , 9101 [?] , 9201 [?] , 9301 [?] , 9401 [?] , 9501 [?] , 9601 [?] , 9701 [?] , 9801 [?] , 9901 [?] |
| 41^{3,14} | 75 bp, 230 bp | 515 bp | *3101, 3401, 7701, 9401 |
| 42^{3,6,15} | 140 bp, 185 bp, 285 bp | 430 bp | *3201, 8201, 9701 |

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| | | | |
|-----------------------------|---|--------|---|
| 43 ^{3,16} | 65 bp 190 bp | 430 bp | *0102 [?] , 0203 [?] , 0302 [?] , 0403 [?] , 050101-0502, 0601 [?] , 0801 [?] , 1001 [?] , 1002 [?] , 110101 [?] -1102 [?] , 1302 [?] , 1402 [?] , 1502 [?] , 1601 [?] , 1602 [?] , 1701 [?] , 1702 [?] , 1801 [?] , 1802 [?] , 1901, 1902 [?] , 200101 [?] - 2002 [?] , 2101 [?] , 2102 [?] , 2201 [?] , 2202 [?] , 2301 [?] , 2302N [?] , 2401 [?] , 2402 [?] , 2501 [?] , 2502 [?] , 260101 [?] - 2602 [?] , 2701 [?] , 2801 [?] , 2901 [?] , 3001 [?] , 3101 [?] , 3201 [?] , 3301 [?] , 3401, 350101 [?] , 350102 [?] , 3601 [?] , 3701 [?] , 3801 [?] , 3901 [?] , 4001 [?] , 410101 [?] , 410102 [?] , 4401 [?] , 4501 [?] , 4601 [?] , 4701 [?] , 4801 [?] , 4901 [?] , 5001 [?] , 5101 [?] , 5201 [?] , 5301 [?] , 5401 [?] , 5501 [?] , 5601 [?] , 5701 [?] , 5801 [?] , 5901 [?] , 6001 [?] , 6101N [?] , 6201, 6301 [?] , 6401N [?] , 6501 [?] , 6601 [?] , 6701 [?] , 6801 [?] , 6901 [?] , 7001 [?] , 7101 [?] , 7201 [?] , 7301 [?] , 7401 [?] , 7501 [?] , 7601 [?] , 7701 [?] , 7801 [?] , 7901 [?] , 8001 [?] , 8101 [?] , 8201 [?] , 8301 [?] , 8401 [?] , 8501 [?] , 8601 [?] , 8701 [?] , 8801 [?] , 8901 [?] , 9001 [?] , 9101 [?] , 9201 [?] , 9301 [?] , 9401 [?] , 9501 [?] , 9601 [?] , 9701 [?] , 9801 [?] , 9901 [?] |
| 44 ^{3,6,17} | 110 bp, 185 bp, 245 bp, 270 bp | 430 bp | *1402, 2102, 2302N, 3801, 6401N |
| 45 ^{3,18} | 120 bp, 190 bp, 245 bp | 430 bp | *1002, 1802, 2002, 3901, 4601, 4901, 8001, 8601, 9601 |
| 46 | 205 bp | 515 bp | *410101, 410102, 6001, 8301, 9601 |
| 47 ¹⁹ | 165 bp, 255 bp | 515 bp | *0102 [?] , 020102-0202, 0203 [?] , 0302 [?] , 040101, 040102, 0403 [?] , 0602, 0801 [?] , 0802, 1001 [?] , 1002 [?] , 110101 [?] -1102 [?] , 1302 [?] , 1402 [?] , 1502 [?] , 1602 [?] , 1701, 1702, 1802 [?] , 1902 [?] , 2002 [?] , 2101 [?] , 2102 [?] , 2201 [?] , 2202 [?] , 2301, 2302N [?] , 2401 [?] , 2402, 2501 [?] , 2502 [?] , 260101 [?] , 2602, 2701 [?] , 2801, 2901 [?] , 3001 [?] , 3101 [?] , 3201 [?] , 3301 [?] , 3401 [?] , 350101 [?] , 3601 [?] , 3701 [?] , 3801 [?] , 3901 [?] , 4001 [?] , 410101 [?] , 410102 [?] , 4401, 4601 [?] , 4701 [?] , 4801 [?] , 4901 [?] , 5001 [?] , 5101 [?] , 5201 [?] , 5301 [?] , 5401 [?] , 5501, 5601 [?] , 5701 [?] , 5801 [?] , 5901 [?] , 6001 [?] , 6101N [?] , 6201 [?] , 6301 [?] , 6401N [?] , 6501 [?] , 6601 [?] , 6701 [?] , 6801 [?] , 6901 [?] , 7001 [?] , 7101 [?] , 7201 [?] , 7301 [?] , 7401 [?] , 7501 [?] , 7601 [?] , 7701 [?] , 7801 [?] , 7901 [?] , 8001 [?] , 8101 [?] , 8201 [?] , 8301 [?] , 8401 [?] , 8601 [?] , 8701 [?] , 8901 [?] , 9001 [?] , 9101 [?] , 9201 [?] , 9301 [?] , 9401 [?] , 9501 [?] , 9601 [?] , 9701 [?] , 9801 [?] , 9901 [?] |
| 48 ²⁰ | 210 bp, 280 bp | 515 bp | *6101N, 8501 |

¹Alleles are assigned by the presence of specific PCR product(s). However, the sizes of the specific PCR products may be helpful in the interpretation of DPB1 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.

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

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

²The internal positive control primer pairs amplify segments of the human growth hormone gene. The two different control primer pairs give rise to either an internal positive control band of 430 base pairs, for most wells, or a band of 515 base pairs, for some wells.

Well number 1 contains the primer pair giving rise to the longer, 515 bp, internal positive control band in order to help in the correct orientation of the DPB1 typing.

In addition, wells number 2, 5, 8, 10 to 12, 17, 20, 24 to 26, 29, 34, 36 to 39, 41 and 46 to 48 contain the primer pair giving rise to the longer, 515 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.

³Specific PCR fragments shorter than 150 base pairs are less intense and not as sharp as longer specific bands.

⁴Primer mixes 2, 3, 4, 9, 16, 21, 22 and 40 may yield less specific PCR products than the other DPB1 primer mixes.

⁵Primer mixes 3 and 26 may give rise to primer dimer formation, most pronounced in primer mix 3.

⁶Primer mixes 31, 37, 42 and 44 may give rise to non-specific amplifications.

⁷Primer mix 24: Specific PCR fragment of 195 bp in the DPB1*0203 allele. Specific PCR fragment of 265 bp in the DPB1*0302, 0403, 050101, 050102, 0801, 0802, 1601, 1901, 2201, 3101, 3801, 5701, 6301, 6501, 6801, 8401 and 9701 alleles.

⁸Primer mix 25: Specific PCR fragment of 190 bp in the DPB1*050101, 050102, 1702, 2101, 2201, 3601, 3801, 4401, 5801, 6301 and 9701 alleles. Specific PCR fragment of 265 bp in the DPB1*7001 allele.

⁹Primer mix 28: Specific PCR fragment of 200 bp in the DPB1*0901, 0902, 1001, 1102, 1301, 1302, 1602, 1701, 2002, 2101, 260101, 260102, 2701, 3001, 350101, 350102, 3601, 3701, 5401, 5501, 5801, 6601, 7901, 8501, 8601, 8801, 9301 and 9801 alleles. Specific PCR fragment of 260 bp in the DPB1*2202 allele.

¹⁰Primer mix 32: Specific PCR fragment of 75 bp in the DPB1*7801 allele. Specific PCR fragment of 195 bp in the DBB1*110101-110102 alleles.

¹¹Primer mix 33: Specific PCR fragment of 140 bp in the DPB1*0902, 1301, 1302, 2002, 3301, 8101 allele. Specific PCR fragment of 205 bp in the DBB1*2602 allele.

¹²Primer mix 37: Specific PCR fragment of 185 bp in the DPB1*1501, 2801, 4001, 5301 and 7401 alleles. Specific PCR fragment of 255 bp in the DPB1*0402 allele. The 3rd exon of many DPB1 alleles is not sequenced and thus the primer pair in primer mix 37 matching the DPB1*0402 sequence motif in the 3rd exon may amplify other DPB1 alleles.

¹³Primer mix 40: Specific PCR fragment of 95 bp in the DPB1*0902 allele. Specific PCR fragment of 180 bp in the DPB1*3001 and 5401 alleles. The 1st exon of most DPB1 alleles is not sequenced and thus the primer pair in primer mix 40 matching the DPB1*0902 sequence motif in the 1st exon may amplify other DPB1 alleles.

¹⁴Primer mix 41: Specific PCR fragment of 75 bp in the DPB1*7701 allele. Specific PCR fragment of 230 bp in the DPB1*3101, 3401 and 9401 alleles.

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¹⁵Primer mix 42: Specific PCR fragment of 140 bp in the DPB1*9701 allele. Specific PCR fragment of 185 bp in the DPB1*3201 allele. Specific PCR fragment of 285 bp in the DPB1*8201 allele.

¹⁶Primer mix 43: Specific PCR fragment of 65 bp in the DPB1*050101, 050102, 0502 and 1901 alleles. Specific PCR fragment of 190 bp in the DPB1*3401 and 6201 alleles. The 4th exon of most DPB1 alleles is not sequenced and thus the primer pair in primer mix 43 matching the DPB1*050101, 050102, 0502 and 1901 sequence motif in the 4th exon may amplify other DPB1 alleles.

¹⁷Primer mix 44: Specific PCR fragment of 185 bp in the DPB1*1402 allele. Specific PCR fragment of 245 bp in the DPB1*3801 allele. Specific PCR fragment of 270 bp in the DPB1*6401N allele. Specific PCR fragment of 110 and 185 bp in the DPB1* 2102 allele. Specific PCR fragment of 185 and 270 bp in the DPB1* 2302 allele.

¹⁸Primer mix 45: Specific PCR fragment of 120 bp in the DPB1*1002, 4601, 8001 and 8601 alleles. Specific PCR fragment of 190 bp in the DPB1*2002, 3901, 4901 and 9601 alleles. Specific PCR fragment of 245 bp in the DPB1*1802 allele.

¹⁹Primer mix 47: Specific PCR fragment of 165 bp in the DPB1*1702 and 4401 alleles. Specific PCR fragment of 255 bp in the DPB1*020102, 0202, 040101, 0602, 0802, 1701, 2301, 2402, 2602 and 2801 alleles. Specific PCR fragment of 165 and 255 bp in the DPB1*1701 allele.

The 3rd exon of many DPB1 alleles is not sequenced and thus the primer pair in primer mix 47 matching the DPB1*020102, 0202, 040101, 0602, 0802, 1701, 2301, 2402, 2602 and 2801 sequence motif in the 3rd exon may amplify other DPB1 alleles.

²⁰Primer mix 48: Specific PCR fragment of 210 bp in the DPB1*6101N allele. Specific PCR fragment of 280 bp in the DPB1*8501 allele.

'w', might be weakly amplified.

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

| INTERPRETATION TABLE | | | | | | | | | | | | | | | | | | | | | | | | |
|--|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| DPB1 SSP typing | | | | | | | | | | | | | | | | | | | | | | | | |
| Amplification patterns of the DPB1*0101 to DPB1*9901 alleles | | | | | | | | | | | | | | | | | | | | | | | | |
| | Well ⁶ | | | | | | | | | | | | | | | | | | | | | | | |
| | 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. PCR product | 245 | 220 | 100 | 140 | 235 | 165 | 160 | 210 | 165 | 220 | 190 | 80 | 180 | 105 | 200 | 80 | 260 | 180 | 200 | 235 | 100 | 185 | 145 | 195 |
| Length of int. pos. control ¹ | 515 | 515 | 430 | 430 | 515 | 430 | 430 | 515 | 430 | 515 | 515 | 515 | 430 | 430 | 430 | 430 | 515 | 430 | 430 | 515 | 430 | 430 | 430 | 515 |
| 5'-primer(s) ² | 5'-TgT 3' 9(112) | 5'-TgT 3' 9(112) | 5'-CgC 3' 36(194) | 5'-CgC 3' 36(194) | 5'-ggg 3' 11(119) | 5'-gTA 3' 35(191) | 5'-CgC 3' 36(194) | 5'-TTT 3' 9(113) | 5'-AgC 3' 35(190) | 5'-TTT 3' 9(113) | 5'-gTT 3' 35(191) | 5'-gAT 3' 55(252) | 5'-TTT 3' 9(113) | 5'-AgC 3' 35(190) | 5'-gAg 3' 28(169) | 5'-TgA 3' 56(254) | 5'-gTT 3' 11(119) | 5'-gTT 3' 11(119) | 5'-gTT 3' 11(119) | 5'-gTT 3' 11(119) | 5'-gAC 3' 57(258) | 5'-CgC 3' 36(194) | 5'-AgC 3' 35(190) | 5'-TTT 3' 9(113) |
| 3'-primer(s) ³ | 5'-CAT 3' 76(315) | 5'-CTT 3' 69(292) | 5'-CAg 3' 55(251) | 5'-CTT 3' 69(292) | 5'-CAT 3' 76(315) | 5'-CAT 3' 76(315) | 5'-CAT 3' 76(315) | 5'-gAT 3' 65(280) | 5'-TAT 3' 76(313) | 5'-CTC 3' 69(292) | 5'-CgC 3' 84(338) | 5'-CTC 3' 69(292) | 5'-gCC 3' 55(252) | 5'-gCC 3' 55(252) | 5'-CgC 3' 84(338) | 5'-CTT 3' 69(292) | 5'-CgT 3' 84(338) | 5'-TAg 3' 57(258) | 5'-gAg 3' 65(280) | 5'-CAT 3' 76(315) | 5'-CAT 3' 76(315) | 5'-CgC 3' 84(338) | 5'-CTT 3' 69(292) | 5'-gTg 3' 60(265) |
| 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 |



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| Length of spec. PCR product | 245 | 220 | 100 | 140 | 235 | 165 | 160 | 210 | 165 | 220 | 190 | 80 | 180 | 105 | 200 | 80 | 260 | 180 | 200 | 235 | 100 | 185 | 145 | 195 |
|---------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|
| 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 |
| DPB1 allele ⁴ | | | | | | | | | | | | | | | | | | | | | | | | |
| *010101-010103 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | | | | | | | | | | | | | | | | |
| *0102 | | | | | | | | 8 | 9 | | | | 13 | 14 | 15 | | | | | | | | 23 | |
| *020102, 020104, 020105, 020107 | | | | | | | | 8 | 9 | 10 | 11 | 12 | | | | | | | | | | | | |
| *020103 | | | | | | | | 8 | 9 | 10 | 11 | w | | | | | | | | | | | | |
| *020106 | | | | | | | | 8 | w | 10 | 11 | 12 | | | | | | | | | | | | |
| *0202 | | | | | | | | 8 | 9 | 10 | | | 13 | 14 | 15 | | | | | | | | | |
| *0203 | | | | | | | | 8 | 9 | 10 | | | 13 | 14 | 15 | | | | | | | | | 24 |
| *030101, 030102 | 1 | 2 | | | | | | | | | | | | | | 16 | 17 | 18 | 19 | 20 | 21 | | | |
| *0302 | | | 3 | 4 | | | | | | | | | | | | | | | | | | | | 24 |
| *040101, 040102 | | | 3 | 4 | | | | 8 | | | 11 | | | | | | | | | | | 22 | | |
| *0402 | | | | | | | | 8 | 9 | | 11 | | | | | 16 | | | | | | | | |
| *0403 | | | | | | | | 8 | 9 | 10 | | | | | | | | | | | | | | 24 |
| *050101, 050102 | | | | | | | | 8 | 9 | | | | 13 | 14 | | | | | | | | | 23 | 24 |
| *0502 | 1 | 2 | | | | | | | | | | | | | | 16 | 17 | 18 | 19 | 20 | 21 | | | |
| *0601 | | | | | | | | | 9 | | | 12 | | | | | 17 | 18 | 19 | | | | | |
| *0602 | | | | | | | | 8 | 9 | | 11 | | | | | 16 | | | | | | | | |
| *0801 | | | | | 5 | | | 8 | | 10 | | 12 | | | | | | | | | | | | 24 |
| *0802 | | | | | 5 | | | 8 | 9 | 10 | | | 13 | | | | | | | | | | | 24 |
| *0901 | | | | | | | | | | | | 12 | | | | | 17 | 18 | | 20 | 21 | | | |
| *0902 | 1 | | 3 | | | 6 | 7 | | | | | | | | | | 17 | | | 20 | | | | |
| *1001 | | | | | | | | | | | | 12 | | | | | 17 | | | 20 | | | | |
| *1002 | | | | | | | | | 9 | | 11 | | | | | 16 | | | | | | | | |
| *110101, 110102 | | | 3 | | | | | | | | | | | | | | 17 | | 19 | | | | | |
| *1102 | | | | | | | | | 9 | | 11 | 12 | | | | | | | | | | | | |
| *1301 | 1 | | 3 | | | 6 | 7 | | | | | | | | | | 17 | | | 20 | | | | |
| *1302 | 1 | | 3 | | | | 7 | | | | | | | | | | 17 | | | 20 | | | | |
| *1401 | | | | | | | | | | | | | | | | 16 | 17 | 18 | 19 | 20 | 21 | | | |
| *1402 | 1 | 2 | | | | | | | | | | | | | | 16 | 17 | 18 | 19 | 20 | 21 | | | |
| *1501 | | | 3 | | | | | | | | | | | | | | | | | | | | | |
| *1502 | | | | | | | | 8 | 9 | | | | | | 15 | | | | | | | | 23 | |
| *1601 | | | | | | | | 8 | 9 | 10 | | 12 | | | | | | | | | | | | 24 |
| *1602 | | | | | | | | | 9 | | 11 | 12 | | | | | | | | | | | | |
| *1701 | | | | | | | | | 9 | | | 12 | | | | | 17 | 18 | | | | | | |
| *1702 | 1 | 2 | | | | | | | | | | | 14 | | | | 17 | | 19 | 20 | | | 23 | |
| *1801 | | 2 | | | | | | | 9 | | | | | | | 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 |



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| 190 | 75 | 95 | 200 | 220 | 185 | 120 | 75 | 140 | 210 | 195 | 260 | 185 | 100 | 210 | 95 | 75 | 140 | 65 | 110 | 120 | 205 | 165 | 210 | Length of spec. PCR product | |
|-----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|-----|-----|-----|-----|-----|-----|-----|---------------------------------------|--|
| 265 | | | 260 | | | | 195 | 205 | | | | 255 | | 180 | | | 230 | 185 | 190 | 185 | 190 | 255 | 280 | | |
| | | | | | | | | | | | | | | | | | | 285 | 245 | 245 | | | | | |
| | | | | | | | | | | | | | | | | | | | 270 | | | | | | |
| 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. DPB1 allele ⁴ | |
| | | | | | | 31 | | | | | | | | | | | | | | | | | | *010101-010103 | |
| | | | | | | | | | | | | ? | | ? | | | | | | | | | ? | *0102 | |
| | | | | | | | | | | | | | | | | | | | | | | | 47 | *020102, 020104, 020105, 020107 | |
| | | | | | | | | | | | | | | | | | | | | | | | 47 | *020103 | |
| | | | | | | | | | | | | | | | | | | | | | | | 47 | *020106 | |
| | | | | | | | | | | | | | | | | | | | | | | | 47 | *0202 | |
| | | | | | | | | | | | | ? | | ? | | | | ? | | | | | ? | *0203 | |
| | | | | | | | | | | | | | | | | | | | | | | | | *030101, 030102 | |
| | | | | | | 31 | | | | | | ? | | 39 | ? | | | ? | | | | | ? | *0302 | |
| | | | | | | | | | | | | | | | | | | | | | | | 47 | *040101, 040102 | |
| | | | | | | | | | | | | 37 | | | | | | | | | | | | *0402 | |
| | | | | | | 31 | | | | | | ? | 38 | | ? | | | ? | | | | | ? | *0403 | |
| 25 | | | | | | 31 | | | | | | | | | | | | 43 | | | | | | *050101, 050102 | |
| | | | | | | | | | | | | | | | | | | 43 | | | | | | *0502 | |
| | 26 | 27 | | | | | | | | | | | | | ? | | | ? | | | | | | *0601 | |
| | | | | | | | | | | | | | | | | | | | | | | | 47 | *0602 | |
| | | | | | | 31 | | | | | | ? | | ? | | | | ? | | | | | ? | *0801 | |
| | | | | | | 31 | | | | | | | | | | | | | | | | | 47 | *0802 | |
| | 26 | | 28 | 29 | 30 | | | | | | | | | | | | | | | | | | | *0901 | |
| | | | 28 | | | 31 | | 33 | | | | | | | 40 | | | | | | | | | *0902 | |
| | | | 28 | 29 | 31 | | | | | | | ? | | ? | | | | ? | | | | | ? | *1001 | |
| | | 27 | | | | | | | | | | ? | 39 | ? | | | | ? | | | 45 | | ? | *1002 | |
| | | | | | | 31 | 32 | | | | | ? | | ? | | | | ? | | | | | ? | *110101, 110102 | |
| | | | 28 | | | | | | | | | ? | | ? | | | | ? | | | | | ? | *1102 | |
| | | | 28 | | | 31 | | 33 | | | | | | | | | | | | | | | | *1301 | |
| | | | 28 | | | 31 | | 33 | | | | ? | | ? | | | | ? | | | | | ? | *1302 | |
| | | | | | 30 | | | | 34 | | | ? | | ? | | | | | | | | | | *1401 | |
| | | | | | | | | | | | | ? | | ? | | | | ? | 44 | | | | ? | *1402 | |
| | | | | | | | | | 35 | 36 | 37 | | | | | | | | | | | | | *1501 | |
| | | | | | | | | | | | | ? | 38 | ? | | | | ? | | | | | ? | *1502 | |
| | | | | | | 31 | | | | | | | | ? | | | | ? | | | | | | *1601 | |
| | | | 28 | 29 | | | | | | | | ? | | ? | | | | ? | | | | | ? | *1602 | |
| | 26 | 27 | 28 | 29 | 30 | | | | | | | | | ? | | | | ? | | | | | 47 | *1701 | |
| 25 | | | | | | 31 | | | | | | ? | | ? | | | | ? | | | | | 47 | *1702 | |
| | | | | | | | | | | 36 | | | | ? | | | | ? | | | | | | *1801 | |
| 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. | |

| Length of spec. PCR product | 245 | 220 | 100 | 140 | 235 | 165 | 160 | 210 | 165 | 220 | 190 | 80 | 180 | 105 | 200 | 80 | 260 | 180 | 200 | 235 | 100 | 185 | 145 | 195 |
|--------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-------|-----|
| 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 |
| | | | | | | | | | | | | | | | | | | | | | | | 265 | |
| *1802 | | | | | | | | 8 | 9 | 10 | 11 | 12 | | | | | | | | | | | | |
| *1901 | | | | | 5 | | | 8 | 9 | 10 | | | 13 | | | | | | | | | | 24 | |
| *1902 | | | | | | | | 8 | 9 | | | | | 15 | 16 | | | | | | | | 23 | |
| *200101, 200102 | | 2 | | | | | | | 9 | | | | | | 16 | | 17 | 18 | 19 | | | | | |
| *2002 | | | 3 | | | | | | | | | | | | | | | | | | | 22 | | |
| *2101 | | | | | | | | | 9 | | | | 14 | | | | 17 | | | | | | | |
| *2102 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | | | | | | | | | | | | | | | | |
| *2201 | | | | | | | | 8 | 9 | 10 | | | 13 | 14 | | | | | | | | | 24 | |
| *2202 | | | | | | | | | | | | | | | 16 | | 17 | 18 | 19 | 20 | 21 | | | |
| *2301 | | | | | | | | 8 | 9 | | 11 | | | | | | | | | | | | | |
| *2302N | | | 3 | 4 | | | | 8 | | | 11 | | | | | | | | | | | 22 | | |
| *2401 | | | | 4 | | | | 8 | | | 11 | 13 | | | | | | | | | | 22 | | |
| *2402 | | | 3 | 4 | | | | 8 | | | 11 | | | | | | | | | | | 22 | | |
| *2501 | 1 | 2 | | | | | | | | | | | | | 16 | | 17 | | 19 | 20 | | | | |
| *2502 | 1 | 2 | | 4 | 5 | 6 | 7 | | | | | | | | 16 | | | | | | | | | |
| *260101 | 1 | 2 | 3 | 4 | | 6 | 7 | | | | | | | | | | 17 | | | 20 | | | | |
| *260102 | 1 | 2 | 3 | 4 | | 6 | 7 | | | | | | | | | | 17 | | | 20 | | | | |
| *2602 | | | | | | | | 8 | 9 | 10 | 11 | 12 | | | | | | | | | | | | |
| *2701 | | 2 | 3 | 4 | | | | | | | | | | | | | 17 | | | | | | | |
| *2801 | | | | 4 | | | | | | | | | | | 16 | | | | | | | | | |
| *2901 | 1 | | | | | | | | | | 12 | | | | | | 17 | 18 | 19 | 20 | 21 | | | |
| *3001 | | | | | | | | | 9 | | | | | | | | 17 | | | | | | | |
| *3101 | | | 3 | 4 | | | | | | | | | | | | | | | | | | | 24 | |
| *3201 | | | | | | | | 8 | 9 | 10 | 11 | 12 | | | | | | | | | | | | |
| *3301 | | | 3 | | | | | 8 | | 10 | 11 | | | | | | | | | | | 22 | | |
| *3401 | | | | | | | | | 9 | | | | | | | | | | | | | | 23 | |
| *350101 | | | | | | | | | | | | | | | 16 | | 17 | 18 | | 20 | 21 | | | |
| *350102 | | | | | | | | | | | | | | | 16 | | 17 | 18 | | 20 | 21 | | | |
| *3601 | | 2 | | | | | | | 9 | | | | 14 | | | | 17 | | | | | | 23 | |
| *3701 | 1 | | | | | | | | | | 12 | | | | | | 17 | | | 20 | | | | |
| *3801 | | | | | | | | 8 | 9 | | | | 13 | 14 | | | | | | | | | 23 24 | |
| *3901 | | | 3 | 4 | | | | 8 | | | | | | | | | | | | | | 22 | | |
| *4001 | | | 3 | 4 | | | | 8 | | | | | | | | | | | | | | | | |
| *410101, 410102 | | | | | | | | | 9 | 10 | 11 | 12 | | | | | | | | | | | | |
| *4401 | 1 | | | | | | | | | | 12 | | | | | | 17 | 18 | 19 | 20 | 21 | | | |
| *4501 | | | | | | | | | | | | | | | 16 | | 17 | | 19 | 20 | | | | |
| *4601 | | | | | | | | 8 | 9 | 10 | 11 | 12 | | | | | | | | | | | | |
| *4701 | | | | | | | | 8 | 9 | 10 | 11 | | 13 | | | | | | | | | | | |
| 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 |

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| 190 | 75 | 95 | 200 | 220 | 185 | 120 | 75 | 140 | 210 | 195 | 260 | 185 | 100 | 210 | 95 | 75 | 140 | 65 | 110 | 120 | 205 | 165 | 210 | Length of spec. PCR product | |
|-----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|--------------------------------|--|
| 265 | | | 260 | | | | 195 | 205 | | | | 255 | | | 180 | | 230 | 185 | 190 | 185 | 190 | | 255 | 280 | |
| | | | | | | | | | | | | | | | | | | 285 | | 245 | 245 | | | | |
| | | | | | | | | | | | | | | | | | | | | 270 | | | | | |
| 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. | |
| | | | | | | | | | | | | ? | | | ? | | | ? | | 45 | | ? | | *1802 | |
| | | | | | | 31 | | | | | | | | | | | | 43 | | | | | | *1901 | |
| | | | | | | | | | | | | ? | | | ? | | | ? | | | | | ? | *1902 | |
| | | 27 | | | | | | | | | | | | | ? | | | ? | | | | | | *200101, 200102 | |
| | | | 28 | | | | | 33 | | | | ? | | | ? | | | ? | | 45 | | ? | | *2002 | |
| 25 | | | 28 | | | 31 | | | | | | ? | | | ? | | | ? | | | | ? | | *2101 | |
| | | | | | | 31 | | | | | | ? | | | ? | | | ? | 44 | | | ? | | *2102 | |
| 25 | | | | | | 31 | | | | | | ? | | | ? | | | ? | | | | ? | | *2201 | |
| | | | 28 | | 30 | | | 34 | | | | ? | | | ? | | | ? | | | | ? | | *2202 | |
| | | | | | | | | | | | | | 38 | | ? | | | ? | | | | 47 | | *2301 | |
| | | | | | | | | | | | | ? | | | ? | | | ? | 44 | | | ? | | *2302N | |
| | | | | | | | | | | | | ? | | | ? | | | ? | | | | ? | | *2401 | |
| | | | | | | | | | | | | | 38 | | ? | | | ? | | | | 47 | | *2402 | |
| | | | | | | 31 | | | | | | ? | | | ? | | | ? | | | | ? | | *2501 | |
| | | | | | | 31 | | | | | | ? | | | ? | | | ? | | | | ? | | *2502 | |
| | | | 28 | | | 31 | | | | | | | | | ? | | | ? | | | | ? | | *260101 | |
| | | | 28 | | | 31 | | | | | | | | | ? | | | ? | | | | | | *260102 | |
| | | | | | | | | 33 | | | | | | | ? | | | ? | | | | 47 | | *2602 | |
| | | | | | | | | | | | | ? | | | ? | | | ? | | | | ? | | *2701 | |
| | | | | | | | | | | | 36 | 37 | | 39 | ? | | | ? | | | | 47 | | *2801 | |
| | 26 | | | | | | | | | | | ? | | | ? | | | ? | | | | ? | | *2901 | |
| | | | 28 | 29 | | 31 | | | | | | ? | | | 40 | | | ? | | | | ? | | *3001 | |
| | | | | | | 31 | | | | | | ? | | 39 | ? | 41 | | ? | | | | ? | | *3101 | |
| | | | | | | | | | | | | ? | | | ? | | 42 | ? | | | | ? | | *3201 | |
| | | | | | | | | 33 | | | | ? | | | ? | | | ? | | | | ? | | *3301 | |
| | | | | | | | | | | | 36 | ? | 38 | 39 | ? | 41 | | 43 | | | | ? | | *3401 | |
| | | | 28 | | 30 | | | | | | | ? | | | ? | | | ? | | | | ? | | *350101 | |
| | | | 28 | | | | | | | | | | | | ? | | | ? | | | | | | *350102 | |
| 25 | | | 28 | | | 31 | | | | | | ? | | | ? | | | ? | | | | ? | | *3601 | |
| | | | 28 | | | 31 | | | | | | ? | | | ? | | | ? | | | | ? | | *3701 | |
| 25 | | | | | | 31 | | | | | | ? | | | ? | | | ? | 44 | | | ? | | *3801 | |
| | | | | | | | | | | | | ? | | | ? | | | ? | | 45 | | ? | | *3901 | |
| | | | | | | | | | | | 36 | 37 | | | ? | | | ? | | | | ? | | *4001 | |
| | | | | | | | | | | | | ? | | | ? | | | ? | | | 46 | ? | | *410101, 410102 | |
| 25 | 26 | | | | | | | | | | | ? | | | ? | | | ? | | | | 47 | | *4401 | |
| | | | | | | 31 | | 34 | | | | | | | ? | | | ? | | | | | | *4501 | |
| | 26 | 27 | | | | | | | | | | ? | | | ? | | | ? | | | 45 | ? | | *4601 | |
| | | | | | | | | | | | | ? | | | ? | | | ? | | | | ? | | *4701 | |
| 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. | |

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Lot-specific Information

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| Length of spec. PCR product | 245 | 220 | 100 | 140 | 235 | 165 | 160 | 210 | 165 | 220 | 190 | 80 | 180 | 105 | 200 | 80 | 260 | 180 | 200 | 235 | 100 | 185 | 145 | 195 |
|--------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|
| 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 |
| | | | | | | | | | | | | | | | | | | | | | | | 265 | |
| *4801 | | | | | | | 8 | 9 | 10 | 12 | | | | 15 | | | | | | | | | | |
| *4901 | | | | 4 | | | 8 | | | | | | | | 16 | | | | | | 22 | | | |
| *5001 | 1 | 2 | | | 5 | | | | | | | | | | 16 | | | | | 21 | | | | |
| *5101 | | | | 4 | | | 8 | | 11 | | | | | | 16 | | | | | | 22 | | | |
| *5201 | 1 | 2 | | | | | | | | | | | | | | | 17 | | 19 | 20 | | | | |
| *5301 | | | | 4 | | | 8 | | | | | | | | 16 | | | | | | | | | |
| *5401 | | | | | | | | | | | | | | | | | 17 | | 20 | | | | | |
| *5501 | | | | | | | | 9 | | | | | | | | | 17 | | | | | | | |
| *5601 | 1 | 2 | 3 | 4 | | | 7 | | | | | | | | | | 17 | | 19 | 20 | | | | |
| *5701 | | | | | 5 | | | | | | | | | | 16 | | | | | 21 | | | 24 | |
| *5801 | | | | | | | | 9 | | | | | | | | | 17 | | | | | | | |
| *5901 | | | | | | | | 9 | 11 | | | | | | 16 | | | | | | | | | |
| *6001 | | | | | | | 8 | 9 | 11 | | | | | | 16 | | | | | | | | | |
| *6101N | 1 | 2 | | | | | | | | | | | | | 16 | 17 | 18 | 19 | 20 | 21 | | | | |
| *6201 | | | | | | | 8 | 9 | | | | | | | | | | | | | | 23 | | |
| *6301 | | | | | | | 8 | 9 | | | | | | | | | | | | | | 23 | 24 | |
| *6401N | | | | | | | | 9 | | 12 | | | | | | | 17 | 18 | 19 | | | | | |
| *6501 | | | 3 | 4 | 5 | 6 | 7 | 8 | | | | | | | | | | | | | | | 24 | |
| *6601 | | | 3 | 4 | | | | | 11 | | | | | | | | | | | | 22 | | | |
| *6701 | | | | | | | | | | | | | | | | | 17 | | 19 | 20 | | | | |
| *6801 | | | | | 5 | | 8 | | | | | | | | 16 | | | | | | | | 24 | |
| *6901 | | | | | | | | 9 | | | | | | | | | 17 | 18 | 19 | | | | | |
| *7001 | | | | | | | | | | | | | | | 16 | 17 | 18 | 19 | 20 | 21 | | | | |
| *7101 | | | | | | | 8 | 9 | 10 | 11 | | | | | | | | | | | | | | |
| *7201 | | | 3 | 4 | | | | | 11 | | | | | | | | | | | | | 22 | | |
| *7301 | | | | | 5 | | | | 11 | | | | | | 16 | | | | | | | | | |
| *7401 | | | 3 | | | | | | | | | | | | | | | 19 | | | | | | |
| *7501 | | | | | 5 | | 8 | | 11 | | | | | | 16 | | | | | | | | | |
| *7601 | | | | 4 | | | 7 | | | | | | | | 16 | 17 | 18 | 19 | 20 | 21 | | | | |
| *7701 | | | | | | | 8 | 9 | 11 | | | | | | 16 | | | | | | | | | |
| *7801 | 1 | 2 | | | | | | | | | | | | | 16 | 17 | 18 | 19 | 20 | 21 | | | | |
| *7901 | 1 | 2 | | | | | | | | | | | | | 16 | 17 | | 20 | | | | | | |
| *8001 | | | | | | | 8 | 9 | 11 | | | | | | 16 | | | | | | | | | |
| *8101 | | | | | | | 8 | | 10 | 11 | 12 | | | | | | | | | | 22 | | | |
| *8201 | | | | | | | 8 | 9 | 11 | | | | | | 16 | | | | | | | | | |
| *8301 | | | | | | | | 9 | 11 | | | | | | 16 | | | | | | | | | |
| *8401 | | | | | 5 | | 8 | | | | | | | | | | | | | | | | 24 | |
| *8501 | | 2 | 3 | 4 | | | | | | | | | | | | | 17 | | | | | | | |
| 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.: **47G**

Lot-specific Information

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| 190 | 75 | 95 | 200 | 220 | 185 | 120 | 75 | 140 | 210 | 195 | 260 | 185 | 100 | 210 | 95 | 75 | 140 | 65 | 110 | 120 | 205 | 165 | 210 | Length of spec. PCR product | |
|-----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|--------------------------------|--|
| 265 | | | 260 | | | | 195 | 205 | | | | 255 | | | 180 | | 230 | 185 | 190 | 185 | 190 | | 255 | 280 | |
| | | | | | | | | | | | | | | | | | | 285 | | 245 | 245 | | | | |
| | | | | | | | | | | | | | | | | | | | | 270 | | | | | |
| 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. | |
| | | | | | | | | | | | | ? | | | ? | | | ? | | | | ? | | *4801 | |
| | | | | | | | | | | | | ? | | | ? | | | ? | | | 45 | | ? | *4901 | |
| | | | | | | | | | | | | ? | | | ? | | | ? | | | | | ? | *5001 | |
| | | | | | | | | | | | | ? | | | ? | | | ? | | | | | ? | *5101 | |
| | | | | | | 31 | | | | | | ? | 38 | | ? | | | ? | | | | | ? | *5201 | |
| | | | | | | | | | | | 36 | 37 | | | ? | | | ? | | | | | ? | *5301 | |
| | | | 28 | 29 | | 31 | | | | | | ? | | | 40 | | | ? | | | | | ? | *5401 | |
| | | | 28 | 29 | | 31 | | | | | | 38 | | | ? | | | ? | | | | | 47 | *5501 | |
| | | | | | | 31 | | | | | | ? | | | ? | | | ? | | | | | ? | *5601 | |
| | | | | | | | | | | | | ? | | 39 | ? | | | ? | | | | | ? | *5701 | |
| 25 | | | 28 | 29 | | 31 | | | | | | ? | 38 | | ? | | | ? | | | | | ? | *5801 | |
| | | | | | | | | | | | | ? | | 39 | ? | | | ? | | | | | ? | *5901 | |
| | | | | | | | | | | | | ? | | | ? | | | ? | | | 46 | | ? | *6001 | |
| | | | | | | | | | | | | ? | | | ? | | | ? | | | | ? | 48 | *6101N | |
| | | | | | | | | | | | 36 | ? | 38 | | ? | | | 43 | | | | | ? | *6201 | |
| 25 | | | | | | 31 | | | | | | ? | 38 | | ? | | | ? | | | | | ? | *6301 | |
| | 26 | 27 | | | | | | | | | | ? | | | ? | | | ? | 44 | | | | ? | *6401N | |
| | | | | | | 31 | | | | | | ? | | | ? | | | ? | | | | | ? | *6501 | |
| | | | 28 | | | | | | | | | ? | | | ? | | | ? | | | | | ? | *6601 | |
| | | | | | | 31 | | 34 | | | | ? | 38 | | ? | | | ? | | | | | ? | *6701 | |
| | | | | | | 31 | | | | | | ? | | | ? | | | ? | | | | | ? | *6801 | |
| | | | | | | | | | | | | ? | | | ? | | | ? | | | | | ? | *6901 | |
| 25 | | 27 | | | | | | | | | | ? | | | ? | | | ? | | | | | ? | *7001 | |
| | | | | | | | | | | | | ? | 38 | | ? | | | ? | | | | | ? | *7101 | |
| | | | | | | | | | | | | ? | | 39 | ? | | | ? | | | | | ? | *7201 | |
| | | | | | | | | | | | | ? | | 39 | ? | | | ? | | | | | ? | *7301 | |
| | | | | | | | | | | 35 | | 37 | | | ? | | | ? | | | | | ? | *7401 | |
| | | | | | | | | | | | | ? | | | ? | | | ? | | | | | ? | *7501 | |
| | | | | | | 30 | | 34 | | | | ? | | | ? | | | ? | | | | | ? | *7601 | |
| | | | | | | | | | | | | ? | | | ? | 41 | | ? | | | | | ? | *7701 | |
| | | | | | | | 32 | | | | | ? | | | ? | | | ? | | | | | ? | *7801 | |
| | | | 28 | | | 31 | | | | | | ? | | | ? | | | ? | | | | | ? | *7901 | |
| | | | | | | | | | | | | ? | | | ? | | | ? | | | 45 | | ? | *8001 | |
| | | | | | | | | 33 | | | | ? | | | ? | | | ? | | | | | ? | *8101 | |
| | | | | | | | | | | | | ? | | | ? | | | 42 | ? | | | | ? | *8201 | |
| | | | | | | | | | | | | ? | | | ? | | | ? | | | 46 | | ? | *8301 | |
| | | | | | | 31 | | | | | | ? | | | ? | | | ? | | | | | ? | *8401 | |
| | | | 28 | | | 31 | | | | | | ? | | | ? | | | ? | | | | | 48 | *8501 | |
| 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. | |



| Length of spec. PCR product | 245 | 220 | 100 | 140 | 235 | 165 | 160 | 210 | 165 | 220 | 190 | 80 | 180 | 105 | 200 | 80 | 260 | 180 | 200 | 235 | 100 | 185 | 145 | 195 |
|--------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|
| 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 |
| *8601 | | | | | | | | | 9 | | 11 | 12 | | | | | | 18 | | | | | | |
| *8701 | | 2 | | | | | | | 9 | | | | | | | | 17 | 19 | | | | | | |
| *8801 | 1 | | | | | | | | | | | 12 | | | | | 17 | 18 | | 20 | 21 | | | |
| *8901 | | 2 | 3 | 4 | | | | | | | | | | | | | | | | | | | | |
| *9001 | 1 | 2 | 3 | 4 | 5 | | 7 | | | | | | | | | | | | | | | | | |
| *9101 | | | | | | | | | 9 | | | | | | | 16 | 17 | 18 | 19 | | | | | |
| *9201 | 1 | 2 | | 4 | | | 7 | | | | | | | | | 16 | 17 | 18 | 19 | 20 | 21 | | | |
| *9301 | | | | | | | | | 9 | | | 12 | | | | | 17 | | | | | | | |
| *9401 | | | | | | | | 8 | 9 | | 11 | | | | | | | | | | | | | |
| *9501 | | | | | | | | | 9 | 10 | | | | | 15 | | | | | | | | | |
| *9601 | | | 3 | 4 | | | | 8 | | | | | | | | | | | | | | 22 | | |
| *9701 | | | | | | | | 8 | 9 | | | | 13 | 14 | | | | | | | | | 23 | 24 |
| *9801 | | | | | | | | | 9 | | | | | | | 16 | 17 | 18 | | | | | | |
| *9901 | | | 3 | 4 | | | | 8 | | | 11 | | | | 15 | | | | | | | 22 | | |
| DPB1 allele ⁴ | | | | | | | | | | | | | | | | | | | | | | | | |
| 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 |

¹The 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 430 base pairs, for most wells, or a band of 515 base pairs, for some wells.

Well number 1 contains the primer pair giving rise to the longer, 515 bp, internal positive control band in order to help in the correct orientation of the DPB1 typing.

In addition, wells number 2, 5, 8, 10 to 12, 17, 20, 24 to 26, 29, 34, 36 to 39, 41 and 46 to 48 contain the primer pair giving rise to the longer, 515 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.

²The codon, and in parenthesis the nucleotide, in the 2nd or 3rd exon, matching the specificity-determining 3'-end of the primer is given. Codon and nucleotide numbering as on the on the www.ebi.ac.uk/imgt/hla web site. The sequence of the 3 terminal nucleotides of the primer is given.

³The codon, and in parenthesis the nucleotide, in the 2nd or 3rd exon, matching the specificity-determining 3'-end of the primer is given in the anti-sense direction. Codon and nucleotide numbering as on the www.ebi.ac.uk/imgt/hla web site. The sequence of the 3 terminal nucleotides of the primer is given.

⁴The sequence of the DPB1*02011 allele has been shown to be identical to DPB1*02012.

DPB1*0701 has never been assigned.

DPB1*1201 has never been assigned.

The sequence of the DPB1*4201 allele has been shown to be identical to DPB1*3101.

The sequence of the DPB1*4301 allele has been shown to be identical to DPB1*2801.

⁵Matching sequences within the 1st intron.

⁶Primer mix 24: Specific PCR fragment of 195 bp in the DPB1*0203 allele. Specific PCR fragment of 265 bp in the DPB1*0302, 0403, 050101, 050102, 0801, 0802, 1601, 1901, 2201, 3101, 3801, 5701, 6301, 6501, 6801, 8401 and 9701 alleles.

Primer mix 25: Specific PCR fragment of 190 bp in the DPB1*050101, 050102, 1702, 2101, 2201, 3601, 3801, 4401, 5801, 6301 and 9701 alleles. Specific PCR fragment of 265 bp in the DPB1*7001 allele.

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Lot-specific Information

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| 190 | 75 | 95 | 200 | 220 | 185 | 120 | 75 | 140 | 210 | 195 | 260 | 185 | 100 | 210 | 95 | 75 | 140 | 65 | 110 | 120 | 205 | 165 | 210 | Length of spec. PCR product | |
|-----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----------------------------|--|
| 265 | | | 260 | | | | 195 | 205 | | | | 255 | | | 180 | | 230 | 185 | 190 | 185 | 190 | 255 | 280 | | |
| | | | | | | | | | | | | | | | | | 285 | | 245 | 245 | | | | | |
| | | | | | | | | | | | | | | | | | | | 270 | | | | | | |
| 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. | |
| | 26 | 27 | 28 | 29 | 30 | | | | | | | ? | | | ? | | | ? | | 45 | | ? | | *8601 | |
| | | | | | 31 | | | | | | | ? | 38 | | ? | | | ? | | | | ? | | *8701 | |
| | 26 | | 28 | | | | | | | | | | | | ? | | | ? | | | | | | *8801 | |
| | | | | | 31 | | | | | | | ? | | | ? | | | ? | | | | ? | | *8901 | |
| | | | | | 31 | | | | | | | ? | | | ? | | | ? | | | | ? | | *9001 | |
| | 27 | | | 30 | | | | 34 | | | | ? | | | ? | | | ? | | | | ? | | *9101 | |
| | | | | | | | | | | | | ? | | | ? | | | ? | | | | ? | | *9201 | |
| | | 28 | | 31 | | | | | | | | ? | | | ? | | | ? | | | | ? | | *9301 | |
| | | | | | | | | | | | | ? | | | ? | 41 | | ? | | | | ? | | *9401 | |
| | | | | | | | | | | | | ? | 38 | 39 | ? | | | ? | | | | ? | | *9501 | |
| | | | | | | | | | | | | ? | | | ? | | | ? | | 45 | 46 | ? | | *9601 | |
| 25 | | | | 31 | | | | | | | | ? | | | ? | | 42 | ? | | | | ? | | *9701 | |
| | 27 | 28 | | 30 | | | | | | | | ? | | | ? | | | ? | | | | ? | | *9801 | |
| | | | | | | | | | | | | ? | | | ? | | | ? | | | | ? | | *9901 | |
| | | | | | | | | | | | | | | | | | | | | | | | | DPB1 allele ⁴ | |
| 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. | |

Primer mix 28: Specific PCR fragment of 200 bp in the DPB1*0901, 0902, 1001, 1102, 1301, 1302, 1602, 1701, 2002, 2101, 260101, 260102, 2701, 3001, 350101, 350102, 3601, 3701, 5401, 5501, 5801, 6601, 7901, 8501, 8601, 8801, 9301 and 9801 alleles. Specific PCR fragment of 260 bp in the DPB1*2202 allele.

Primer mix 32: Specific PCR fragment of 75 bp in the DPB1*7801 allele. Specific PCR fragment of 195 bp in the DBB1*110101-110102 alleles.

Primer mix 33: Specific PCR fragment of 140 bp in the DPB1*0902, 1301, 1302, 2002, 3301, 8101 allele. Specific PCR fragment of 205 bp in the DBB1*2602 allele.

Primer mix 37: Specific PCR fragment of 185 bp in the DPB1*1501, 2801, 4001, 5301 and 7401 alleles. Specific PCR fragment of 255 bp in the DPB1*0402 allele. The 3rd exon of many DPB1 alleles is not sequenced and thus the primer pair in primer mix 37 matching the DPB1*0402 sequence motif in the 3rd exon may amplify other DPB1 alleles.

Primer mix 40: Specific PCR fragment of 95 bp in the DPB1*0902 allele. Specific PCR fragment of 180 bp in the DPB1*3001 and 5401 alleles. The 1st exon of most DPB1 alleles is not sequenced and thus the primer pair in primer mix 40 matching the DPB1*0902 sequence motif in the 1st exon may amplify other DPB1 alleles.

Primer mix 41: Specific PCR fragment of 75 bp in the DPB1*7701 allele. Specific PCR fragment of 230 bp in the DPB1*3101, 3401 and 9401 alleles.

Primer mix 42: Specific PCR fragment of 140 bp in the DPB1*9701 allele. Specific PCR fragment of 185 bp in the DPB1*3201 allele. Specific PCR fragment of 285 bp in the DPB1*8201 allele.

Primer mix 43: Specific PCR fragment of 65 bp in the DPB1*050101, 050102, 0502 and 1901 alleles. Specific PCR fragment of 190 bp in the DPB1*3401 and 6201 alleles. The 4th exon of most DPB1 alleles is not sequenced and thus the primer pair in primer mix 43 matching the DPB1*050101, 050102, 0502 and 1901 sequence motif in the 4th exon may amplify other DPB1 alleles.

Primer mix 44: Specific PCR fragment of 185 bp in the DPB1*1402 allele. Specific PCR fragment of 245 in the DPB1*3801 allele. Specific PCR fragment of 270 bp in the DPB1*6401N allele. Specific PCR fragment of 110 and 185 bp in the DPB1* 2102 allele. Specific PCR fragment of 185 and 270 bp in the DPB1* 2302 allele.

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Primer mix 45: Specific PCR fragment of 120 bp in the DPB1*1002, 4601, 8001 and 8601 alleles. Specific PCR fragment of 190 bp in the DPB1*2002, 3901, 4901 and 9601 alleles. Specific PCR fragment of 245 bp in the DPB1*1802 allele.

Primer mix 47: Specific PCR fragment of 165 bp in the DPB1*1702 and 4401 alleles. Specific PCR fragment of 255 bp in the DPB1*020102, 0202, 040101, 0602, 0802, 1701, 2301, 2402, 2602 and 2801 alleles. Specific PCR fragment of 165 and 255 bp in the DPB1*1701 allele.

The 3rd exon of many DPB1 alleles is not sequenced and thus the primer pair in primer mix 47 matching the DPB1*020102, 0202, 040101, 0602, 0802, 1701, 2301, 2402, 2602 and 2801 sequence motif in the 3rd exon may amplify other DPB1 alleles.

Primer mix 48: Specific PCR fragment of 210 bp in the DPB1*6101N allele. Specific PCR fragment of 280 bp in the DPB1*8501 allele.

‘w’, might be weakly amplified.

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

| CELL LINE VALIDATION SHEET | | | | | | | | | | | | | | | | | | | |
|----------------------------|-----------------|-------|----------|-----------------|-----------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| DPB1 SSP kit | | | | | | | | | | | | | | | | | | | |
| | | | | Well | | | | | | | | | | | | | | | |
| | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| | | | | 200965501 | 200737502 | 200737503 | 200853204 | 200737505 | 200965506 | 200737507 | 200737508 | 200737509 | 200737510 | 200737511 | 200965512 | 200737513 | 200737514 | 200965515 | 200737516 |
| | IHWC cell line | DPB1 | Lot No.: | | | | | | | | | | | | | | | | |
| 1 | 9001 SA | *0402 | | - - - - - - - + | + - + - - - - + | | | | | | | | | | | | | | |
| 2 | 9280 LK707 | *0401 | | - - + + - - - + | - - + - - - - - | | | | | | | | | | | | | | |
| 3 | 9011 E4181324 | *0201 | *0401 | - - + + - - - + | + + + + - - - - | | | | | | | | | | | | | | |
| 4 | 9275 GU373 | *0402 | *1701 | - - - - - - - + | + - + + - - - + | | | | | | | | | | | | | | |
| 5 | 9009 KAS011 | *0401 | *1401 | - - + + - - - + | - - + - - - - + | | | | | | | | | | | | | | |
| 6 | 9353 SM | *0501 | | - - - - - - - + | + - - - + + - - | | | | | | | | | | | | | | |
| 7 | 9020 QBL | *0202 | | - - - - - - - + | + + - - - + + - | | | | | | | | | | | | | | |
| 8 | 9025 DEU | *0401 | | - - + + - - - + | - - + - - - - - | | | | | | | | | | | | | | |
| 9 | 9026 YAR | *0401 | | - - + + - - - + | - - + - - - - - | | | | | | | | | | | | | | |
| 10 | 9107 LKT3 | *0501 | | - - - - - - - + | + - - - + + - - | | | | | | | | | | | | | | |
| 11 | 9051 PITOUT | *0401 | | - - + + - - - + | - - + - - - - - | | | | | | | | | | | | | | |
| 12 | 9052 DBB | *0401 | | - - + + - - - + | - - + - - - - - | | | | | | | | | | | | | | |
| 13 | 9004 JESTHOM | *0401 | | - - + + - - - + | - - + - - - - - | | | | | | | | | | | | | | |
| 14 | 9071 OLGA | *0301 | *0402 | + + - - - - - + | + - + - - - - + | | | | | | | | | | | | | | |
| 15 | 9075 DKB | *0401 | | - - + + - - - + | - - + - - - - - | | | | | | | | | | | | | | |
| 16 | 9037 SWEIG007 | *0402 | | - - - - - - - + | + - + - - - - + | | | | | | | | | | | | | | |
| 17 | 9282 CTM3953540 | *0101 | *0201 | + + + + + + + + | + + + + - - - - | | | | | | | | | | | | | | |
| 18 | 9257 32367 | *0402 | *1801 | - + - - - - - + | + - + - - - - + | | | | | | | | | | | | | | |
| 19 | 9038 BM16 | *0201 | | - - - - - - - + | + + + + - - - - | | | | | | | | | | | | | | |
| 20 | 9059 SLE005 | *0301 | | + + - - - - - - | - - - - - - - + | | | | | | | | | | | | | | |
| 21 | 9064 AMALA | *0402 | | - - - - - - - + | + - + - - - - + | | | | | | | | | | | | | | |
| 22 | 9056 KOSE | *0201 | *1301 | + - + - - - + + | + + + + - - - - | | | | | | | | | | | | | | |
| 23 | 9124 IHL | *0201 | | - - - - - - - + | + + + + - - - - | | | | | | | | | | | | | | |
| 24 | 9035 JBUSH | *0401 | | - - + + - - - + | - - + - - - - - | | | | | | | | | | | | | | |
| 25 | 9049 IBW9 | *0101 | | + + + + + + - - | - - - - - - - - | | | | | | | | | | | | | | |
| 26 | 9285 WT49 | *0401 | | - - + + - - - + | - - + - - - - - | | | | | | | | | | | | | | |
| 27 | 9191 CH1007 | *0301 | *0902 | + + + - - - + - | - - - - - - - + | | | | | | | | | | | | | | |
| 28 | 9320 BEL5GB | *0201 | *0401 | - - + + - - - + | + + + + - - - - | | | | | | | | | | | | | | |
| 29 | 9050 MOU | *0201 | | - - - - - - - + | + + + + - - - - | | | | | | | | | | | | | | |
| 30 | 9021 RSH | *0101 | *0402 | + + + + + + + + | + - + - - - - + | | | | | | | | | | | | | | |
| 31 | 9019 DUCAF | *0202 | | - - - - - - - + | + + - - + + + - | | | | | | | | | | | | | | |
| 32 | 9297 HAG | *0201 | *0301 | + + - - - - - + | + + + + - - - + | | | | | | | | | | | | | | |
| 33 | 9098 MT14B | *0402 | | - - - - - - - + | + - + - - - - + | | | | | | | | | | | | | | |
| 34 | 9104 DHIF | *0401 | | - - + + - - - + | - - + - - - - - | | | | | | | | | | | | | | |
| 35 | 9302 SSTO | *0401 | | - - + + - - - + | - - + - - - - - | | | | | | | | | | | | | | |
| 36 | 9024 KT17 | *0501 | | - - - - - - - + | + - - - + + - - | | | | | | | | | | | | | | |
| 37 | 9065 HHKB | *0401 | | - - + + - - - + | - - + - - - - - | | | | | | | | | | | | | | |
| 38 | 9099 LZL | *0402 | | - - - - - - - + | + - + - - - - + | | | | | | | | | | | | | | |
| 39 | 9315 CML | *0401 | *1401 | - - + + - - - + | - - + - - - - + | | | | | | | | | | | | | | |
| 40 | 9134 WHONP199 | *0501 | | - - - - - - - + | + - - - + + - - | | | | | | | | | | | | | | |
| 41 | 9055 H0301 | *0501 | | - - - - - - - + | + - - - + + - - | | | | | | | | | | | | | | |
| 42 | 9066 TAB089 | *0202 | | - - - - - - - + | + + - - + + + - | | | | | | | | | | | | | | |
| 43 | 9076 T7526 | *0902 | | + - + - - - + - | - - - - - - - - | | | | | | | | | | | | | | |
| 44 | 9057 TEM | *0401 | | - - + + - - - + | - - + - - - - - | | | | | | | | | | | | | | |
| 45 | 9239 SHJO | *0301 | *0402 | + + - - - - - + | + - + - - - - + | | | | | | | | | | | | | | |
| 46 | 9013 SCHU | *0402 | | - - - - - - - + | + - + - - - - + | | | | | | | | | | | | | | |
| 47 | 9045 TUBO | *0201 | *0402 | - - - - - - - + | + + + + - - - + | | | | | | | | | | | | | | |
| 48 | 9303 TER-ND | *0201 | *0401 | - - + + - - - + | + + + + - - - - | | | | | | | | | | | | | | |



| CELL LINE VALIDATION SHEET | | | | | | | | | | | | | | | | | | | |
|-----------------------------------|-----------------|-------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| DPB1 SSP kit | | | | | | | | | | | | | | | | | | | |
| | | | Lot No.: | Well | | | | | | | | | | | | | | | |
| | | | | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 |
| | | | | 200737517 | 200737518 | 200737519 | 200737520 | 200737521 | 200737522 | 200737523 | 200737524 | 200737525 | 200965526 | 200737527 | 200965528 | 200737529 | 200737530 | 200737531 | 200737532 |
| | IHWC cell line | DPB1 | | | | | | | | | | | | | | | | | |
| 1 | 9001 SA | *0402 | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | |
| 2 | 9280 LK707 | *0401 | | - | - | - | - | - | + | - | - | - | - | - | - | - | - | | |
| 3 | 9011 E4181324 | *0201 | *0401 | - | - | - | - | - | + | - | - | - | - | - | - | - | - | | |
| 4 | 9275 GU373 | *0402 | *1701 | + | + | - | - | - | - | - | - | - | + | + | + | + | - | | |
| 5 | 9009 KAS011 | *0401 | *1401 | + | + | + | + | + | + | - | - | - | - | - | + | - | - | | |
| 6 | 9353 SM | *0501 | | - | - | - | - | - | - | + | + | + | - | - | - | - | - | | |
| 7 | 9020 QBL | *0202 | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | |
| 8 | 9025 DEU | *0401 | | - | - | - | - | - | + | - | - | - | - | - | - | - | - | | |
| 9 | 9026 YAR | *0401 | | - | - | - | - | - | + | - | - | - | - | - | - | - | - | | |
| 10 | 9107 LKT3 | *0501 | | - | - | - | - | - | - | + | + | + | - | - | - | - | + | | |
| 11 | 9051 PITOUT | *0401 | | - | - | - | - | - | + | - | - | - | - | - | - | - | - | | |
| 12 | 9052 DBB | *0401 | | - | - | - | - | - | + | - | - | - | - | - | - | - | - | | |
| 13 | 9004 JESTHOM | *0401 | | - | - | - | - | - | + | - | - | - | - | - | - | - | - | | |
| 14 | 9071 OLGA | *0301 | *0402 | + | + | + | + | + | + | - | - | - | - | - | - | - | - | | |
| 15 | 9075 DKB | *0401 | | - | - | - | - | - | + | - | - | - | - | - | - | - | - | | |
| 16 | 9037 SWEIG007 | *0402 | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | |
| 17 | 9282 CTM3953540 | *0101 | *0201 | - | - | - | - | - | - | - | - | - | - | - | - | - | + | | |
| 18 | 9257 32367 | *0402 | *1801 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | |
| 19 | 9038 BM16 | *0201 | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | |
| 20 | 9059 SLE005 | *0301 | | + | + | + | + | + | - | - | - | - | - | - | - | - | - | | |
| 21 | 9064 AMALA | *0402 | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | |
| 22 | 9056 KOSE | *0201 | *1301 | + | - | - | + | - | - | - | - | - | - | + | - | - | + | | |
| 23 | 9124 IHL | *0201 | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | |
| 24 | 9035 JBUSH | *0401 | | - | - | - | - | - | + | - | - | - | - | - | - | - | - | | |
| 25 | 9049 IBW9 | *0101 | | - | - | - | - | - | - | - | - | - | - | - | - | - | + | | |
| 26 | 9285 WT49 | *0401 | | - | - | - | - | - | + | - | - | - | - | - | - | - | - | | |
| 27 | 9191 CH1007 | *0301 | *0902 | + | + | + | + | + | - | - | - | - | - | + | - | - | + | | |
| 28 | 9320 BEL5GB | *0201 | *0401 | - | - | - | - | - | + | - | - | - | - | - | - | - | - | | |
| 29 | 9050 MOU | *0201 | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | |
| 30 | 9021 RSH | *0101 | *0402 | - | - | - | - | - | - | - | - | - | - | - | - | - | + | | |
| 31 | 9019 DUCAF | *0202 | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | |
| 32 | 9297 HAG | *0201 | *0301 | + | + | + | + | + | - | - | - | - | - | - | - | - | - | | |
| 33 | 9098 MT14B | *0402 | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | |
| 34 | 9104 DHIF | *0401 | | - | - | - | - | - | + | - | - | - | - | - | - | - | - | | |
| 35 | 9302 SSTO | *0401 | | - | - | - | - | - | + | - | - | - | - | - | - | - | - | | |
| 36 | 9024 KT17 | *0501 | | - | - | - | - | - | - | + | + | + | - | - | - | - | + | | |
| 37 | 9065 HHKB | *0401 | | - | - | - | - | - | + | - | - | - | - | - | - | - | - | | |
| 38 | 9099 LZL | *0402 | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | |
| 39 | 9315 CML | *0401 | *1401 | + | + | + | + | + | + | - | - | - | - | - | - | + | - | | |
| 40 | 9134 WHONP199 | *0501 | | - | - | - | - | - | - | + | + | + | - | - | - | - | + | | |
| 41 | 9055 H0301 | *0501 | | - | - | - | - | - | - | + | + | + | - | - | - | - | + | | |
| 42 | 9066 TAB089 | *0202 | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | |
| 43 | 9076 T7526 | *0902 | | + | - | - | + | - | - | - | - | - | - | + | - | - | + | | |
| 44 | 9057 TEM | *0401 | | - | - | - | - | - | + | - | - | - | - | - | - | - | - | | |
| 45 | 9239 SHJO | *0301 | *0402 | + | + | + | + | + | - | - | - | - | - | - | - | - | - | | |
| 46 | 9013 SCHU | *0402 | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | |
| 47 | 9045 TUBO | *0201 | *0402 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | | |
| 48 | 9303 TER-ND | *0201 | *0401 | - | - | - | - | - | + | - | - | - | - | - | - | - | - | | |



| CELL LINE VALIDATION SHEET | | | | | | | | | | | | | | | | | | | | |
|----------------------------|-----------------|-------|-------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| DPB1 SSP kit | | | | | | | | | | | | | | | | | | | | |
| | | | | Lot No.: | Well | | | | | | | | | | | | | | | |
| | | | | | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 |
| | | | | | 200965533 | 200737534 | 200737535 | 200737536 | 200737537 | 200965538 | 200737539 | 200965540 | 200737541 | 200737542 | 200737543 | 200965544 | 200737545 | 200737546 | 200853247 | 200965548 |
| | IHWC cell line | DPB1 | | | | | | | | | | | | | | | | | | |
| 1 | 9001 SA | *0402 | | | - | - | - | - | + | - | - | - | - | - | - | - | - | | | |
| 2 | 9280 LK707 | *0401 | | | - | - | - | - | - | - | - | - | - | - | - | - | + | | | |
| 3 | 9011 E4181324 | *0201 | *0401 | | - | - | - | - | - | - | - | - | - | - | - | - | + | | | |
| 4 | 9275 GU373 | *0402 | *1701 | | - | - | - | - | - | - | + | - | - | - | - | - | + | | | |
| 5 | 9009 KAS011 | *0401 | *1401 | | - | + | - | - | - | - | - | - | - | - | - | - | + | | | |
| 6 | 9353 SM | *0501 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| 7 | 9020 QBL | *0202 | | | - | - | - | - | - | - | - | - | - | - | - | - | + | | | |
| 8 | 9025 DEU | *0401 | | | - | - | - | - | - | - | - | - | - | - | - | - | + | | | |
| 9 | 9026 YAR | *0401 | | | - | - | - | - | - | - | - | - | - | - | - | - | + | | | |
| 10 | 9107 LKT3 | *0501 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| 11 | 9051 PITOUT | *0401 | | | - | - | - | - | - | - | - | - | - | - | - | - | + | | | |
| 12 | 9052 DBB | *0401 | | | - | - | - | - | - | - | - | - | - | - | - | - | + | | | |
| 13 | 9004 JESTHOM | *0401 | | | - | - | - | - | - | - | - | - | - | - | - | - | + | | | |
| 14 | 9071 OLGA | *0301 | *0402 | | - | - | - | - | + | - | - | - | - | - | - | - | - | | | |
| 15 | 9075 DKB | *0401 | | | - | - | - | - | - | - | - | - | - | - | - | - | + | | | |
| 16 | 9037 SWEIG007 | *0402 | | | - | - | - | - | + | - | - | - | - | - | - | - | - | | | |
| 17 | 9282 CTM3953540 | *0101 | *0201 | | - | - | - | - | - | - | - | - | - | - | - | - | + | | | |
| 18 | 9257 32367 | *0402 | *1801 | | - | - | - | + | - | - | - | - | - | - | - | - | + | | | |
| 19 | 9038 BM16 | *0201 | | | - | - | - | - | - | - | - | - | - | - | - | - | + | | | |
| 20 | 9059 SLE005 | *0301 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| 21 | 9064 AMALA | *0402 | | | - | - | - | - | + | - | - | - | - | - | - | - | - | | | |
| 22 | 9056 KOSE | *0201 | *1301 | | + | - | - | - | - | - | - | - | - | - | - | - | + | | | |
| 23 | 9124 IHL | *0201 | | | - | - | - | - | - | - | - | - | - | - | - | - | + | | | |
| 24 | 9035 JBUSH | *0401 | | | - | - | - | - | - | - | - | - | - | - | - | - | + | | | |
| 25 | 9049 IBW9 | *0101 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| 26 | 9285 WT49 | *0401 | | | - | - | - | - | - | - | - | - | - | - | - | - | + | | | |
| 27 | 9191 CH1007 | *0301 | *0902 | | + | - | - | - | - | - | + | - | - | + | - | - | - | | | |
| 28 | 9320 BEL5GB | *0201 | *0401 | | - | - | - | - | - | - | - | - | - | - | - | - | + | | | |
| 29 | 9050 MOU | *0201 | | | - | - | - | - | - | - | - | - | - | - | - | - | + | | | |
| 30 | 9021 RSH | *0101 | *0402 | | - | - | - | - | + | - | - | - | - | - | - | - | + | | | |
| 31 | 9019 DUCAF | *0202 | | | - | - | - | - | - | - | - | - | - | - | - | - | + | | | |
| 32 | 9297 HAG | *0201 | *0301 | | - | - | - | - | - | - | - | - | - | - | - | - | + | | | |
| 33 | 9098 MT14B | *0402 | | | - | - | - | - | + | - | - | - | - | - | - | - | - | | | |
| 34 | 9104 DHIF | *0401 | | | - | - | - | - | - | - | - | - | - | - | - | - | + | | | |
| 35 | 9302 SSTO | *0401 | | | - | - | - | - | - | - | - | - | - | - | - | - | + | | | |
| 36 | 9024 KT17 | *0501 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| 37 | 9065 HHKB | *0401 | | | - | - | - | - | - | - | - | - | - | - | - | - | + | | | |
| 38 | 9099 LZL | *0402 | | | - | - | - | - | + | - | - | - | - | - | - | - | - | | | |
| 39 | 9315 CML | *0401 | *1401 | | - | + | - | - | - | - | - | - | - | - | - | - | + | | | |
| 40 | 9134 WHONP199 | *0501 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| 41 | 9055 H0301 | *0501 | | | - | - | - | - | - | - | - | - | - | - | - | - | - | | | |
| 42 | 9066 TAB089 | *0202 | | | - | - | - | - | - | - | - | - | - | - | - | - | + | | | |
| 43 | 9076 T7526 | *0902 | | | + | - | - | - | - | - | + | - | - | - | - | - | - | | | |
| 44 | 9057 TEM | *0401 | | | - | - | - | - | - | - | - | - | - | - | - | - | + | | | |
| 45 | 9239 SHJO | *0301 | *0402 | | - | - | - | - | - | - | - | - | - | - | - | - | + | | | |
| 46 | 9013 SCHU | *0402 | | | - | - | - | - | + | - | - | - | - | - | - | - | - | | | |
| 47 | 9045 TUBO | *0201 | *0402 | | - | - | - | - | + | - | - | - | - | - | - | - | + | | | |
| 48 | 9303 TER-ND | *0201 | *0401 | | - | - | - | - | - | - | - | - | - | - | - | - | + | | | |

CERTIFICATE OF ANALYSIS

Olerup SSP® DPB1 SSP

Product number: 101.311-24/04 – including *Taq* pol.
Lot number: 47G
Expiry date: 2011-November-01
Number of tests: 24 tests – Product No. 101.311-24
4 tests – Product No. 101.311-04
Number of wells per test: 48

Well specifications:

| Well No. | Production No. | Well No. | Production No. | Well No. | Production No. |
|----------|----------------|----------|----------------|----------|----------------|
| 1 | 2009-655-01 | 17 | 2007-375-17 | 33 | 2009-655-33 |
| 2 | 2007-375-02 | 18 | 2007-375-18 | 34 | 2007-375-34 |
| 3 | 2007-375-03 | 19 | 2007-375-19 | 35 | 2007-375-35 |
| 4 | 2008-532-04 | 20 | 2007-375-20 | 36 | 2007-375-36 |
| 5 | 2007-375-05 | 21 | 2007-375-21 | 37 | 2007-375-37 |
| 6 | 2009-655-06 | 22 | 2007-375-22 | 38 | 2009-655-38 |
| 7 | 2007-375-07 | 23 | 2007-375-23 | 39 | 2007-375-39 |
| 8 | 2007-375-08 | 24 | 2007-375-24 | 40 | 2009-655-40 |
| | | | | | |
| 9 | 2007-375-09 | 25 | 2007-375-25 | 41 | 2007-375-41 |
| 10 | 2007-375-10 | 26 | 2009-655-26 | 42 | 2007-375-42 |
| 11 | 2007-375-11 | 27 | 2007-375-27 | 42 | 2007-375-43 |
| 12 | 2009-655-12 | 28 | 2009-655-28 | 43 | 2009-655-44 |
| 13 | 2007-375-13 | 29 | 2007-375-29 | 45 | 2007-375-45 |
| 14 | 2007-375-14 | 30 | 2007-375-30 | 46 | 2007-375-46 |
| 15 | 2009-655-15 | 31 | 2007-375-31 | 47 | 2008-532-47 |
| 16 | 2007-375-16 | 32 | 2007-375-32 | 48 | 2009-655-48 |

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

No DNAs carrying the alleles to be amplified by primer solutions 38, 41, 42, 44 and 46 were available. The primers in primer solution 38 were tested by separately adding one 5'-primers or one 3'-primer. In primer solutions 41, 42 and 46 it was only possible to test the 5'-primers, the 3'-primers were not possible to test. In primer solution 44 it was only possible to test the 3'-primers, the 5'-primers were not possible to test. In primer solutions 15, 25, 32, 33 and 38 one 5'-primer was not possible to test. In primer solutions 8, 24, 28 and 48 one 3'-primer was not possible to test. Additional primers in primer solutions 40, 43 and 47 were tested by separately adding one 5'-primers or one 3'-primer.

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

Date of approval: 2009-November-18

Approved by:

Quality Control, Supervisor

Lot No.: **47G**

Lot-specific Information

www.olerup.com

Declaration of Conformity

Product name: *Olerup* SSP® DPB1
Product number: 101.311-24/04
Lot number: 47G

Intended use: DPB1 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, ISO 17025:1999 and ISO 13485:2000, following the provisions of the 98/79/EC Directive on *in vitro* diagnostic medical devices, Annex III.

The Technical Construction 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
2009- November-18

Olle Olerup
Managing Director

Lot No.: **47G**

Lot-specific Information

www.olerup.com

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