

# ***Hearing the York Mystery Plays: Acoustics, Staging and Performance***

**2 Volumes**

**Volume 2: Appendices**

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## Appendix – Chapter 2

GUILDS	PLAYS
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III The Cardmakers	<i>The Creation of Adam and Eve</i>
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VII The Glovers	<i>Cain and Abel</i>
VIII The Shipwrights	<i>The Building of the Ark</i>
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X The Parchmentmakers and Bookbinders	<i>Abraham and Isaac</i>
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XVI The Masons / The Goldsmiths	<i>Herod / The Magi</i>
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XIX The Girdlers and Nailers	<i>The Slaughter of the Innocents</i>
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XXII The Smiths	<i>The Temptation</i>
XXIII The Vintners	<i>The Marriage at Cana*</i>
XXIII The Curriers	<i>The Transfiguration</i>
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XXIV The Cappers	<i>The Woman Taken in Adultery / The Raising of Lazarus</i>
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XXVI The Cutlers	<i>The Conspiracy</i>
XXVII The Bakers	<i>The Last Supper</i>
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XXXI The Litsters	<i>Christ before Herod</i>
XXXII The Cooks and Waterleaders	<i>The Remorse of Judas</i>
XXXIII The Tilemakers	<i>Christ before Pilate 2: The Judgement</i>
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XXXV The Pinners	<i>The Crucifixion</i>
XXXVI The Butchers	<i>The Death of Christ</i>
XXXVII The Saddlers	<i>The Harrowing of Hell</i>
XXXVIII The Carpenters	<i>The Resurrection</i>
XXXIX The Winedrawers	<i>Christ's Appearance to Mary Magdalene</i>
XL The Woolpackers and Woolbrokers	<i>The Supper of Emmaus</i>
XLI The Scriveners	<i>The Incredulity of Thomas</i>
XLII The Tailors	<i>The Ascension</i>
XLIII The Potters	<i>Pentecost</i>
XLIV The Drapers	<i>The Death of the Virgin</i>
XLIVA The Linenweavers	<i>The Funeral of the Virgin*</i>
XLV The Weavers	<i>The Assumption of the Virgin</i>
XLVI The Hostelers	<i>The Coronation of the Virgin</i>
XLVII The Mercers	<i>The Last Judgement</i>

**Table 2.1** - List of guilds and their corresponding plays. The list is based on Beadle (1982). The asterisk indicates the plays that were not included in *The Register*.

<b>Station Number</b>	<b>1399</b>	<b>Station Number</b>	<b>1569</b>	<b>Approximate Width</b>
1	Trinity Gates	1	Trinity Gates	13.72m
2	Robert Harpham's House - Micklegate	2	Mr Henrison/Harrison's House - Micklegate	13.72m
3	John de Gyseburn's door - Micklegate	3	The Cowper - Micklegate	10.67-12.19m
4	About St. John's Church - Micklegate-junction North Street-Skeldergate	4	About St. John's Church - Micklegate-junction North Street-Skeldergate	7.31-8.84m
		5	Mr Paycock's Door - Ouse Bridge and Ousegate	5.64 m (bridge) 7.01-8.23m along Low Ousegate by Mr Paycock's house
5	Castlegate – end of Coney Street / at the crossroads where Coney Street and Castlegate meet Ousegate	6	Ousegate Corner	6.40m
6	End of Jubbergate in Coney Street and Spurriergate	7	Mr Appleyard's House	7.01m
7	Henry Wyman's Door in Coney Street - halfway between Jubbergate and the Common Hall	8	Mr Fawkes in Coney Street - halfway between Jubbergate and the Common Hall	10.06m
8	End of Coney Street next to the Common Hall	9	Common Hall Gates	6.70 – 7.62m
9	Adam del Brigg's Door - Stonegate	10	About Christopher Willoughby's House - Stonegate	7.62m
10	Minster Gates, Petergate - top of Stonegate	11	Minster Gates, Petergate - top of Stonegate	Stonegate – 7.62m Petergate – 8.53m
		12	Mr Birnard's House - Petergate	8.53m
11	End of Girdlegate in Petergate	13	Hutton's House	8.53m
		14	John Chamber in Colliergate (top of Colliergate)	6.70-8.53m
		15	William Beckwith's house - where Colliergate turned into Fossgate / Hosier Lane (narrow entry into the Pavement)	9.14m
12	Pavement	16	On the Pavement between Mr Harbert's (Herbert House) and the Sheriff's House (opposite sides of the road) (Sheriff's house was near the end of the Shambles)	13.72m
		17	On the Pavement between Mr Paycock's and Mr Allen's places (opposite each other)	13.72m

**Table 2.2** - This table is adapted from the one included in White (1987: 26-27). Information added was sourced from Jones (2007) and White (1984, 1987).

## Appendix – Chapter 4

Playing Stations in Stonegate		
Year	Stonegate	Stonegate-Petergate / Minster Gates
1399	Adam del Brigg	Minster Gates
1417	Adam del Brigg	Minster Gates
1454	Richard Cay	
1462	Richard Key	
1468	William Gilmyne	John Wilkynson – Minster Gates
1475	John Barbour	John Wilkynson and John Tirry
1486		Milo Arwom
1499	William Sharp	Nicholas Caton
1501	William Couke	William Catterton
1506		William Caton and the wife of Wharton
1508	William Couke	William Caton
1516		
1520	John Bower	John Lytster
1521	Richard Styrlay	John Lytster
1522	Richard Stirley	John Lytster
1523	Matthew Hartley	John Lyster
1524	John Clerk	John Lyster and Robert Cooke
1525	Matthew Hartley	John Lyster
1526	Matthew Hartley	John Lyster
1527	Matthew Hartley	John Lyster and William Mullans
1528	Matthew Hartley and Humphrey Stevynson	John Lyster
1538	Matthew Hartley	John Lyster and William Mullans
1542	Matthew Hartley	Trestram Lyster, Laurence Thomlynson, Minster Gates
	Mr Cook and Jamys Wad	
1551	Matthew Hartley	Minster Gates
1554	Robert Bylbowe	Anthony Dyccanson and Robert Staynburne, Minter Gates
1569	Christopher Willoughby's	Minster Gates
1572 (Pater Noster Play)	William Gilmyne	Minster Gates

**Table 4.1** – List of playing stations in Stonegate throughout the life of the Cycle. The names included indicate how they were referred to at the time of the performances. Cells in green indicate that there is a record for a playing station in Stonegate, cells in red indicate there is no record of a playing station in that street space (REED 1979; Twycross 1978; White 1984, 1987).

Mean Values across S-R combinations								
Parameter	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16 kHz
T20	0.85s	1.01s	0.9s	0.85s	0.82s	0.67s	0.5s	0.35s
T30	0.74s	--	1.12s	0.89s	0.9s	0.71s	0.52s	0.37s

**Table 4.2** - Acoustic Measurements in Stonegate.  
Mean Values of T<sub>20</sub> and T<sub>30</sub> across all S-R combinations.

S1-R1 Mean Values								
Parameter	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
EDT	0.93s	0.74s	0.65s	0.53s	0.66s	0.53s	0.5s	0.4s
S1-R2 Mean Values								
EDT	0.64s	0.61s	0.62s	0.77s	0.8s	0.57s	0.35s	0.27s
S1-R3								
EDT	0.76s	0.78s	0.56s	0.49s	0.52s	0.50s	0.31s	0.15s

**Table 4.3 - Acoustic Measurements in Stonegate.**  
EDT values at all S-R combinations.

Mean Values across all S-R combinations								
Parameter	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
C50	3.03 dB	5.2 dB	6.75 dB	6.62 dB	5.40 dB	7.76 dB	9.79 dB	11.35 dB
C80	6.24 dB	7.92 dB	9.53 dB	9.53 dB	8.51 dB	10.67 dB	14.64 dB	17.14 dB

**Table 4.4 - Acoustic Measurements in Stonegate.**  
Mean C<sub>50</sub> and C<sub>80</sub> values across all S-R combinations.

S1-R1								
Parameter	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	16 kHz
IACC <sub>E</sub>	0.91	0.89	0.73	0.45	0.27	0.48	0.31	0.24
S1-R2 Mean Values								
IACC <sub>E</sub>	0.98	0.89	0.69	0.35	0.26	0.16	0.17	0.22
S1-R3								
IACC <sub>E</sub>	0.96	0.84	0.79	0.64	0.36	0.52	0.27	0.18

**Table 4.5 – Acoustic Measurements in Stonegate.**  
IACC<sub>E</sub> results at all S-R combinations.

S-R Combination	IACC <sub>E3</sub>
S1-R1	0.48
S1-R2	0.43
S1-R3	0.59

**Table 4.6 - Acoustic Measurements in Stonegate.**  
IACC<sub>E3</sub> values at all S-R combinations.

S1-R1 Mean Values								
Parameter	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
LF	0.12	0.06	0.05	0.06	0.08	0.09	0.16	0.22
S1-R2 Mean Values								
LF	0.13	0.08	0.12	0.14	0.20	0.31	0.30	0.51
S1-R3								
LF	0.16	0.13	0.08	0.13	0.13	0.4	0.30	0.43

**Table 4.7 – Acoustic Measurements in Stonegate.**  
LF values at all S-R combinations.

S-R Combination	LF <sub>E4</sub>
S1-R1	0.07
S1-R2	0.12
S1-R3	0.13

**Table 4.8 – Acoustic Measurements in Stonegate.**  
LF<sub>E4</sub> values at all S-R combinations.

S1-R1								
Parameter	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	16 kHz
IACC <sub>L</sub>	0.92	0.81	0.14	0.13	0.19	0.13	0.21	0.13
S1-R2 Mean Values								
IACC <sub>L</sub>	0.92	0.66	0.36	0.25	0.20	0.14	0.12	0.38
S1-R3								
IACC <sub>L</sub>	0.61	0.53	0.15	0.30	0.11	0.16	0.10	0.46

**Table 4.9 – Acoustic Measurements in Stonegate.**  
IACC<sub>L</sub> values at all S-R combinations.

S-R Combination	IACC <sub>L3</sub>
S1-R1	0.15
S1-R2	0.27
S1-R3	0.18

**Table 4.10 - Acoustic Measurements in Stonegate.**  
IACC<sub>L3</sub> values at all S-R combinations.

	Frequency							
	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16 kHz
<b>Brick</b>								
Absorption	1%	2%	2%	2%	3%	3%	3%	3%
Scattering	13%	13%	13%	13%	13%	13%	13%	13%
<b>Plastered Brick</b>								
Absorption	1%	2%	2%	2%	3%	3%	3%	3%
Scattering	17%	17%	17%	17%	17%	17%	17%	17%
<b>Rendered Brick</b>								
Absorption	1%	2%	2%	2%	3%	3%	3%	3%
Scattering	17%	17%	17%	17%	17%	17%	17%	17%
<b>Marble</b>								
Absorption	1%	1%	1%	1%	2%	2%	2%	2%
Scattering	8%	8%	8%	8%	8%	8%	8%	8%
<b>Concrete</b>								
Absorption	1%	1%	2%	2%	2%	2%	2%	2%
Scattering	10%	10%	10%	10%	10%	10%	10%	10%
<b>Stone</b>								
Absorption	1%	1%	1%	1%	1%	1%	1%	1%
Scattering	35%	35%	35%	35%	35%	35%	35%	35%
<b>Wooden Door</b>								
Absortion	14%	10%	6%	8%	10%	10%	10%	10%
Scattering	10%	10%	10%	10%	10%	10%	10%	10%
<b>Wooden Frame</b>								
Absortion	11%	7%	3%	1%	1%	2%	3%	4%
Scattering	10%	10%	10%	10%	10%	10%	10%	10%
<b>Wood Cornice</b>								
Absortion	19%	14%	9%	6%	6%	5%	4%	3%
Scattering	10%	10%	10%	10%	10%	10%	10%	10%
<b>Glass / Windows</b>								
Absortion	18%	6%	4%	3%	2%	2%	2%	2%
Scattering	10%	10%	10%	10%	10%	10%	10%	10%

**Table 4.11 – Absorption and Scattering Values used in the Virtual Model of Modern Stonegate expressed in percentage (%).**

T20										
	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	16 kHz	Mean	St. Dev.
S1-R1	4.23	7.9	2.45	1.13	0.8	1.67	0.37	0.03	2.32	2.62
S1-R2	5.63	-	4.16	0.92	2	2.35	2.53	0.83	2.63	1.73
S1-R3	-	-	-	0.35	1.2	0.7	0.43	1.27	0.79	0.43
T30										
	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	16 kHz	Mean	St. Dev.
S1-R1	5.05	-	6.88	2.5	1.43	0.27	0.17	0.4	2.39	2.63
S1-R2	1.47	-	5.38	1.82	3.76	1.38	0.86	0.63	2.19	1.74
S1-R3	-	-	-	0.9	0.38	0.98	0.8	0.7	0.75	0.23
EDT										
	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	16 kHz	Mean	St. Dev.
S1-R1	1.98	2.5	3.7	1.4	2.2	1.27	7.37	1.6	2.75	2.02
S1-R2	0.73	0.4	1.93	7.55	1.13	2.93	2.4	1.63	2.34	2.27
S1-R3	0.25	6.83	4.8	2.77	1.13	1.67	6.5	3.03	3.37	2.64

**Table 4.12** - Differences in JNDs between the results of the on-site acoustic measurements and the virtual model of modern Stonegate.

C50										
	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	16 kHz	Mean	St. Dev.
S1-R1	2.60	1.38	0.27	1.15	1.86	1.71	4.20	4.15	2.17	1.40
S1-R2	1.24	1.52	1.43	2.21	1.72	0.92	1.97	2.84	1.73	0.60
S1-R3	0.21	2.37	1.92	1.97	2.27	1.72	1.07	3.29	1.85	0.91
C80										
	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	16 kHz	Mean	St. Dev.
S1-R1	4.87	0.70	0.86	0.46	1.35	1.09	2.78	3.87	2	1.65
S1-R2	0.87	0.12	0.60	2.90	0.48	0.71	0.44	1.23	0.92	0.86
S1-R3	0.38	3.63	2.21	1.49	0.66	0.41	1.75	1.17	1.46	1.09

**Table 4.13** - Differences in JNDs between the results of the on-site acoustic measurements and the virtual model of modern Stonegate.

IACC <sub>E</sub>										
	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	16 kHz	Mean	St. Dev.
S1-R1	0.01	0.36	1.11	1.43	6.04	0.95	3.04	3.65	2.07	2.03
S1-R2	0.13	1.45	0.29	0.39	0.16	1.61	0.28	0.20	0.56	0.60
S1-R3	0.81	1.05	0.16	1.01	1.70	0.45	2.87	2.47	1.32	0.96
LF										
	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	16 kHz	Mean	St. Dev.
S1-R1	0.22	0.36	0.26	0.68	1.28	1.56	3.02	4.32	1.46	1.49
S1-R2	1	0.42	1.06	1.34	1.78	4.68	4.26	8.34	2.86	2.71
S1-R3	0.5	1.1	0.42	1.82	1.66	6.8	5.02	7.66	3.12	2.92
IACC <sub>L</sub>										
	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	16 kHz	Mean	St. Dev.
S1-R1	0.04	0.59	5.77	5.03	5.69	10.25	6.31	9.2	5.36	3.61
S1-R2	0.75	1.95	3.17	3.05	5.52	9.77	9.45	6.48	5.02	3.37
S1-R3	4.24	3.73	4.15	3.13	5.12	9.35	8.16	4.92	5.35	2.22

**Table 4.14** - Differences in JNDs between the results of the on-site acoustic measurements and the virtual model of modern Stonegate.

T20	
Results within 1JND	40%
Results within 2JNDs	65%
Results above 2JNDs	35%
T30	
Results within 1JND	53%
Results within 2JNDs	74%
Results above 2JNDs	26%
EDT	
Results within 1JND	12.5%
Results within 2JNDs	50%
Results above 2JNDs	50%
C50	
Results within 1JND	12.5%
Results within 2JNDs	66.5%
Results above 2JNDs	33%
C80	
Results within 1JND	50%
Results within 2JNDs	75%
Results above 2JNDs	25%
IACC (Early)	
Results within 1JND	50%
Results within 2JNDs	79%
Results above 2JNDs	21%
LF	
Results within 1JND	33%
Results within 2JNDs	66%
Results above 2JNDs	33%
IACC (Late)	
Results within 1JND	12.5%
Results within 2JNDs	17.5%
Results above 2JNDs	83%

**Table 4.15** - Results from the comparison between acoustic measurements and the virtual model of modern Stonegate, considered across all frequency bands and all source-receiver combinations.

Extract	Statistic	df	Sig.
Pentecost Receiver 1 - AM	0.539	26	0.000
Pentecost Receiver 1 - VM	0.147	26	0.154
Pentecost Receiver 2 - AM	0.535	26	0.000
Pentecost Receiver 2 - VM	0.155	26	0.111
Pentecost Receiver 3 - AM	0.539	26	0.000
Pentecost Receiver 3 - VM	0.101	26	0.952
The Resurrection Receiver 1 - VM	0.149	26	0.141
The Resurrection Receiver 2 - AM	0.539	26	0.000
The Resurrection Receiver 2 - VM	0.143	26	0.185
The Resurrection Receiver 3 - AM	0.527	26	0.000
The Resurrection Receiver 3 - VM	0.085	26	0.200*
Veni Creator Receiver 1 - VM	0.125	26	0.200*
Veni Creator Receiver 2 - AM	0.507	26	0.000
Veni Creator Receiver 2 - VM	0.219	26	0.002
Veni Creator Receiver 3 - AM	0.539	26	0.000
Veni Creator Receiver 3 - VM	0.067	26	0.200*
Christus Resurgens Receiver 1 - AM	0.539	26	0.000
Christus Resurgens Receiver 1 - VM	0.128	26	0.200*
Christus Resurgens Receiver 2 - AM	0.539	26	0.000
Christus Resurgens Receiver 2 - VM	0.179	26	0.031
Christus Resurgens Receiver 3 - VM	0.187	26	0.020

Alleluia Christus Resurgens Receiver 1 - VM	0.084	26	0.200*
Alleluia Christus Resurgens Receiver 2 - AM	0.515	26	0.000
Alleluia Christus Resurgens Receiver 2 - VM	0.141	26	0.196
Alleluia Christus Resurgens Receiver 3 - AM	0.539	26	0.000
Alleluia Christus Resurgens Receiver 3 - VM	0.179	26	0.032
Veni de Libano Receiver 1 - AM	0.539	26	0.000
Veni de Libano Receiver 1 - VM	0.122	26	0.200*
Veni de Libano Receiver 2 - AM	0.500	26	0.000
Veni de Libano Receiver 2 - VM	0.160	26	0.086
Veni de Libano Receiver 3 - VM	0.113	26	0.200*

**Table 4.16** - Kolmogorov-Smirnov Test Results. AM stands for acoustic measurements and VM stands for virtual model

\*This is a lower bound of the true significance.

Extract The Resurrection Receiver 1 – AM is constant. It has been omitted.

Veni Creator Receiver 1 – AM is constant. It has been omitted.

Christus Resurgens Receiver 3 – AM is constant. It has been omitted.

Alleluia Christus Resurgens Receiver 1 – AM is constant. It has been omitted.

Veni de Libano Receiver 3 – AM is constant. It has been omitted.

Extract	Rec.	IR	Mean	Std. Deviation	Min.	Max.
Pentecost	1	AM	4.873	0.6472	1.7	5.0
		VM	2.027	0.8870	1.0	5.0
	2	AM	4.962	0.1359	4.5	5.0
		VM	3.262	1.1125	1.2	5.0
	3	AM	4.942	0.2942	3.5	5.0
		VM	2.712	1.1068	1.1	5.0
The Resurrection	1	AM	5.000	0.0000	5.0	5.0
		VM	2.165	0.7704	1.0	4.3
	2	AM	4.912	0.4511	2.7	5.0
		VM	3.785	0.8624	1.8	5.0
	3	AM	4.938	0.2334	3.9	5.0
		VM	2.838	1.1150	1.0	5.0
Veni Creator	1	AM	5.000	0.0000	5.0	5.0
		VM	3.038	0.8593	1.4	4.7
	2	AM	4.877	0.3953	3.5	5.0
		VM	4.081	0.8958	1.7	5.0
	3	AM	4.962	0.1961	4.0	5.0
		VM	3.250	0.9454	1.0	5.0
Communion Christus Resurgens	1	AM	4.988	0.0588	4.7	5.0
		VM	2.704	1.1615	1.0	5.0
	2	AM	4.988	0.0588	4.7	5.0
		VM	3.538	1.0012	1.1	5.0
	3	AM	5.000	0.0000	5.0	5.0
		VM	2.450	0.8150	1.0	4.4
Alleluia Christus Resurgens	1	AM	5.000	0.0000	5.0	5.0
		VM	2.696	1.0566	1.0	4.5
	2	AM	4.954	0.1985	4.0	5.0
		VM	3.865	0.9006	1.2	5.0
	3	AM	4.908	0.4707	2.6	5.0
		VM	3.169	0.9199	1.0	5.0
Veni de Libano	1	AM	4.981	0.0981	4.5	5.0
		VM	2.331	1.1001	1.0	5.0
	2	AM	4.969	0.1050	4.5	5.0
		VM	4.004	1.0006	1.0	5.0
	3	AM	5.000	0.0000	5.0	5.0
		VM	3.081	1.1514	1.0	4.8

**Table 4.17** - Descriptive Statistics. Scores highlighted in red indicate that they are within 1.0-3.0 and therefore represent a low level of accuracy. Scores highlighted in green indicate scores within 3.0-5.0 indicating a higher level of accuracy.

<b>Extract</b>	<b>Type of Rank</b>	<b>N</b>	<b>Mean Rank</b>	<b>Sum of Ranks</b>
Pentecost Receiver 1 AM - 5.0	Negative Ranks	1	1.00	1.00
	Positive Ranks	0	0.00	0.00
	Ties	25		
	Total	26		

Negative Ranks: Pentecost Receiver 1 AM < 5.0

Positive Ranks: Pentecost Receiver 1 AM > 5.0

Ties: Pentecost Receiver 1 AM = 5.0

<b>Pentecost Receiver 1 AM - 5.0</b>	
Z	-1.000
Asymp. Sig. (2-tailed)	0.317

(Test statistics based on positive ranks)

**Effect Size (r) = -0.14 (small to medium effect)**

<b>Extract</b>	<b>Type of Rank</b>	<b>N</b>	<b>Mean Rank</b>	<b>Sum of Ranks</b>
Pentecost Receiver 2 AM - 5.0	Negative Ranks	2	1.50	3.00
	Positive Ranks	0	0.00	0.00
	Ties	24		
	Total	26		

Negative Ranks: Pentecost Receiver 2 AM < 5.0

Positive Ranks: Pentecost Receiver 2 > 5.0

Ties: Pentecost Receiver 2 = 5.0

<b>Pentecost Receiver 2 AM - 5.0</b>	
Z	-1.414
Asymp. Sig. (2-tailed)	0.157

(Test statistics based on positive ranks)

**Effect Size (r) = -0.20 (small to medium effect)**

<b>Extract</b>	<b>Type of Rank</b>	<b>N</b>	<b>Mean Rank</b>	<b>Sum of Ranks</b>
Pentecost Receiver 3 AM - 5.0	Negative Ranks	1	1.00	1.00
	Positive Ranks	0	0.00	0.00
	Ties	25		
	Total	26		

Negative Ranks: Pentecost Receiver 3 < 5.0

Positive Ranks: Pentecost Receiver 3 AM > 5.0

Ties: Pentecost Receiver 3 AM = 5.0

<b>Pentecost Receiver 3 AM - 5.0</b>	
Z	-1.000
Asymp. Sig. (2-tailed)	0.317

(Test statistics based on positive ranks)

**Effect Size (r) = -0.14 (small to medium effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
The Resurrection Receiver 1 AM – 5.0	Negative Ranks	0	0.00	0.00
	Positive Ranks	0	0.00	0.00
	Ties	26		
	Total	26		

Negative Ranks: The Resurrection Receiver 1 AM < 5.0

Positive Ranks: The Resurrection Receiver 1 > 5.0

Ties: The Resurrection Receiver 1 = 5.0

The Resurrection Receiver 1 AM – 5.0	
Z	0.000
Asymp. Sig. (2-tailed)	1.000

(The sum of negative ranks equals the sum of positive ranks)

**Effect Size (r) = 0 (no effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
The Resurrection Receiver 2 AM – 5.0	Negative Ranks	1	1.00	1.00
	Positive Ranks	0	0.00	0.00
	Ties	25		
	Total	26		

Negative Ranks: The Resurrection Receiver 2 AM < 5.0

Positive Ranks: The Resurrection Receiver 2 AM > 5.0

Ties: The Resurrection Receiver 2 AM = 5.0

The Resurrection Receiver 2 AM – 5.0	
Z	-1.000
Asymp. Sig. (2-tailed)	0.317

(Test statistics based on positive ranks)

**Effect Size (r) = -0.14 (small to medium effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
The Resurrection Receiver 3 VM – 5.0	Negative Ranks	2	1.50	3.00
	Positive Ranks	0	0.00	0.00
	Ties	24		
	Total	26		

Negative Ranks: The Resurrection Receiver 3 AM < 5.0

Positive Ranks: The Resurrection Receiver 3 AM > 5.0

Ties: The Resurrection Receiver 3 AM = 5.0

The Resurrection Receiver 3 VM – 5.0	
Z	-1.342
Asymp. Sig. (2-tailed)	0.180

(Test statistics based on positive ranks)

**Effect Size (r) = -0.19 (small to medium effect)**

<b>Extract</b>	<b>Type of Rank</b>	<b>N</b>	<b>Mean Rank</b>	<b>Sum of Ranks</b>
Veni Creator Receiver 1 AM – 5.0	Negative Ranks	0	0.00	0.00
	Positive Ranks	0	0.00	0.00
	Ties	26		
	Total	26		

Negative Ranks: Veni Creator Receiver 1 AM < 5.0

Positive Ranks: Veni Creator Receiver 1 AM > 5.0

Ties: Veni Creator Receiver 1 AM = 5.0

	Veni Creator Receiver 1 AM – 5.0
Z	0.000
Asymp. Sig. (2-tailed)	1.000

(The sum of negative ranks equals the sum of positive ranks)

**Effect Size (r) = 0 (no effect)**

<b>Extract</b>	<b>Type of Rank</b>	<b>N</b>	<b>Mean Rank</b>	<b>Sum of Ranks</b>
Veni Creator Receiver 2 AM – 5.0	Negative Ranks	3	2.00	6.00
	Positive Ranks	0	0.00	0.00
	Ties	23		
	Total	26		

Negative Ranks: Veni Creator Receiver 2 AM < 5.0

Positive Ranks: Veni Creator Receiver 2 AM > 5.0

Ties: Veni Creator Receiver 2 AM = 5.0

	Veni Creator Receiver 2 AM – 5.0
Z	-1.604
Asymp. Sig. (2-tailed)	0.109

(Test statistics based on positive ranks)

**Effect Size (r) = -0.22 (small to medium effect)**

<b>Extract</b>	<b>Type of Rank</b>	<b>N</b>	<b>Mean Rank</b>	<b>Sum of Ranks</b>
Veni Creator Receiver 3 AM – 5.0	Negative Ranks	1	1.00	1.00
	Positive Ranks	0	0.00	0.00
	Ties	25		
	Total	26		

Negative Ranks: Veni Creator Receiver 3 AM < 5.0

Positive Ranks: Veni Creator Receiver 3 AM > 5.0

Ties: Veni Creator Receiver 3 AM = 5.0

	Veni Creator Receiver 3 AM – 5.0
Z	-1.000
Asymp. Sig. (2-tailed)	0.317

(Test statistics based on positive ranks)

**Effect Size (r) = -0.14 (small to medium effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Christus Resurgens Receiver 1 AM – 5.0	Negative Ranks	1	1.00	1.00
	Positive Ranks	0	0.00	0.00
	Ties	25		
	Total	26		

Negative Ranks: Christus Resurgens Receiver 1 AM < 5.0

Positive Ranks: Christus Resurgens Receiver 1 AM > 5.0

Ties: Christus Resurgens Receiver 1 AM = 5.0

Christus Resurgens Receiver 1 AM – 5.0	
Z	-1.000
Asymp. Sig. (2-tailed)	0.317

(Test statistics based on positive ranks)

**Effect Size (r) = -0.14 (small to medium effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Christus Resurgens Receiver 2 AM – 5.0	Negative Ranks	1	1.00	1.00
	Positive Ranks	0	0.00	0.00
	Ties	25		
	Total	26		

Negative Ranks: Christus Resurgens Receiver 2 AM < 5.0

Positive Ranks: Christus Resurgens Receiver 2 AM > 5.0

Ties: Christus Resurgens Receiver 2 AM = 5.0

Christus Resurgens Receiver 2 AM – 5.0	
Z	-1.000
Asymp. Sig. (2-tailed)	0.317

(Test statistics based on positive ranks)

**Effect Size (r) = -0.14 (small to medium effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Christus Resurgens Receiver 3 AM - 5.0	Negative Ranks	0	0.00	0.00
	Positive Ranks	0	0.00	0.00
	Ties	26		
	Total	26		

Negative Ranks: Christus Resurgens Receiver 3 AM < 5.0

Positive Ranks: Christus Resurgens Receiver 3 AM > 5.0

Ties: Christus Resurgens Receiver 3 AM = 5.0

Christus Resurgens Receiver 3 AM - 5.0	
Z	0.000
Asymp. Sig. (2-tailed)	1.000

(The sum of negative ranks equals the sum of positive ranks)

**Effect Size (r) = 0 (no effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Alleluia Christus Resurgens Receiver 1 AM – 5.0	Negative Ranks	0	0.00	0.00
	Positive Ranks	0	0.00	0.00
	Ties	26		
	Total	26		

Negative Ranks: Christus Resurgens Receiver 3 AM < 5.0

Positive Ranks: Christus Resurgens Receiver 3 AM > 5.0

Ties: Christus Resurgens Receiver 3 AM = 5.0

Alleluia Christus Resurgens Receiver 1 AM – 5.0	
Z	0.000
Asymp. Sig. (2-tailed)	1.000

(The sum of negative ranks equals the sum of positive ranks)

**Effect Size (r) = 0 (no effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Alleluia Christus Resurgens Receiver 2 AM – 5.0	Negative Ranks	2	1.50	3.00
	Positive Ranks	0	0.00	0.00
	Ties	24		
	Total	26		

Negative Ranks: Alleluia Christus Resurgens Receiver 1 AM < 5.0

Positive Ranks: Alleluia Christus Resurgens Receiver 1 AM > 5.0

Ties: Alleluia Christus Resurgens Receiver 1 AM = 5.0

Alleluia Christus Resurgens Receiver 2 AM – 5.0	
Z	-1.342
Asymp. Sig. (2-tailed)	0.180

(Test statistics based on positive ranks)

**Effect Size (r) = -0.19 (small to medium effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Alleluia Christus Resurgens Receiver 3 AM – 5.0	Negative Ranks	1	1.00	1.00
	Positive Ranks	0	0.00	0.00
	Ties	25		
	Total	26		

Negative Ranks: Alleluia Christus Resurgens Receiver 2 AM < 5.0

Positive Ranks: Alleluia Christus Resurgens Receiver 2 AM > 5.0

Ties: Alleluia Christus Resurgens Receiver 2 AM = 5.0

Alleluia Christus Resurgens Receiver 3 AM – 5.0	
Z	-1.000
Asymp. Sig. (2-tailed)	0.317

(Test statistics based on positive ranks)

**Effect Size (r) = -0.14 (small to medium effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Veni de Libano Receiver 1 AM – 5.0	Negative Ranks	1	1.00	1.00
	Positive Ranks	0	0.00	0.00
	Ties	25		
	Total	26		

Negative Ranks: Alleluia Christus Resurgens Receiver 3 AM < 5.0

Positive Ranks: Alleluia Christus Resurgens Receiver 3 AM > 5.0

Ties: Alleluia Christus Resurgens Receiver 3 AM = 5.0

Veni de Libano Receiver 1 AM – 5.0	
Z	-1.000
Asymp. Sig. (2-tailed)	0.317

(Test statistics based on positive ranks)

**Effect Size (r) = -0.14 (small to medium effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Veni de Libano Receiver 2 AM – 5.0	Negative Ranks	3	2.00	6.00
	Positive Ranks	0	0.00	0.00
	Ties	23		
	Total	26		

Negative Ranks: Veni de Libano Receiver 1 AM < 5.0

Positive Ranks: Veni de Libano Receiver 1 AM > 5.0

Ties: Veni de Libano Receiver 1 AM = 5.0

Veni de Libano Receiver 2 AM – 5.0	
Z	-1.604
Asymp. Sig. (2-tailed)	0.109

(Test statistics based on positive ranks)

**Effect Size (r) = -0.22 (small to medium effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Veni de Libano Receiver 3 AM – 5.0	Negative Ranks	0	0.00	0.00
	Positive Ranks	0	0.00	0.00
	Ties	26		
	Total	26		

Negative Ranks: Veni de Libano Receiver 2 AM < 5.0

Positive Ranks: Veni de Libano Receiver 2 AM > 5.0

Ties: Veni de Libano Receiver 2 AM = 5.0

Veni de Libano Receiver 3 AM – 5.0	
Z	0.000
Asymp. Sig. (2-tailed)	1.000

(The sum of negative ranks equals the sum of positive ranks)

**Effect Size (r) = 0 (no effect)**

**Tables 4.18 - Wilcoxon Signed-Ranks Test Results. Results of hidden reference (AM) compared to 5.0.**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Pentecost Receiver 1 VM-AM	Negative Ranks	25	13.34	333.50
	Positive Ranks	1	17.50	17.50
	Ties	0		
	Total	26		

Negative Ranks: Pentecost Receiver 1 VM < Pentecost Receiver 1 AM

Positive Ranks: Pentecost Receiver 1 VM > Pentecost Receiver 1 AM

Ties: Pentecost Receiver 1 VM = Pentecost Receiver 1 AM

Pentecost R1 VM-AM	
Z	-4.017
Asymp. Sig. (2-tailed)	0.000

(Test statistics based on positive ranks)

**Effect Size (r) = -0.56 (large effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Pentecost Receiver 2 VM-AM	Negative Ranks	24	14.21	341.00
	Positive Ranks	2	5.00	10.00
	Ties	0		
	Total	26		

Negative Ranks: Pentecost Receiver 2 VM < Pentecost Receiver 2 AM

Positive Ranks: Pentecost Receiver 2 VM > Pentecost Receiver 2 AM

Ties: Pentecost Receiver 2 VM = Pentecost Receiver 2 AM

Pentecost R2 VM-AM	
Z	-4.206
Asymp. Sig. (2-tailed)	0.000

(Test statistics based on positive ranks)

**Effect Size (r) = -0.58 (large effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Pentecost Receiver 3 VM-AM	Negative Ranks	25	13.80	345.00
	Positive Ranks	1	6.00	6.00
	Ties	0		
	Total	26		

Negative Ranks: Pentecost Receiver 3 VM < Pentecost Receiver 3 AM

Positive Ranks: Pentecost Receiver 3 VM > Pentecost Receiver 3 AM

Ties: Pentecost Receiver 3 VM = Pentecost Receiver 3 AM

Pentecost Receiver 3 VM-AM	
Z	-4.306
Asymp. Sig. (2-tailed)	0.000

(Test statistics based on positive ranks)

**Effect Size (r) = -0.60 (large effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
The Resurrection Receiver 1 VM-AM	Negative Ranks	26	13.50	351.00
	Positive Ranks	0	0.00	0.00
	Ties	0		
	Total	26		

Negative Ranks: The Resurrection Receiver 1 VM < The Resurrection Receiver 1 AM

Positive Ranks: The Resurrection Receiver 1 VM > The Resurrection Receiver 1 AM

Ties: The Resurrection Receiver 1 VM = The Resurrection Receiver 1 AM

The Resurrection Receiver 1 VM-AM	
Z	-4.459
Asymp. Sig. (2-tailed)	0.000

(Test statistics based on positive ranks)

**Effect Size (r) = -0.62 (large effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
The Resurrection Receiver 2 VM-AM	Negative Ranks	25	13.12	328.00
	Positive Ranks	1	23.00	23.00
	Ties	0		
	Total	26		

Negative Ranks: The Resurrection Receiver 2 VM < The Resurrection Receiver 2 AM

Positive Ranks: The Resurrection Receiver 2 VM > The Resurrection Receiver 2 AM

Ties: The Resurrection Receiver 2 VM = The Resurrection Receiver 2 AM

The Resurrection Receiver 2 VM-AM	
Z	-3.874
Asymp. Sig. (2-tailed)	0.000

(Test statistics based on positive ranks)

**Effect Size (r) = -0.54 (large effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
The Resurrection Receiver 3 VM-AM	Negative Ranks	24	14.38	345.00
	Positive Ranks	2	3.00	6.00
	Ties	0		
	Total	26		

Negative Ranks: The Resurrection Receiver 3 VM < The Resurrection Receiver 3 AM

Positive Ranks: The Resurrection Receiver 3 VM > The Resurrection Receiver 3 AM

Ties: The Resurrection Receiver 3 VM <= The Resurrection Receiver 3 AM

The Resurrection Receiver 3 VM-AM	
Z	-4.307
Asymp. Sig. (2-tailed)	0.000

(Test statistics based on positive ranks)

**Effect Size (r) = -0.60 (large effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Veni Creator Receiver 1 VM-AM	Negative Ranks	26	13.50	351.00
	Positive Ranks	0	0.00	0.00
	Ties	0		
	Total	26		

Negative Ranks: Veni Creator Receiver 1 VM < Veni Creator Receiver 1 AM

Positive Ranks: Veni Creator Receiver 1 VM > Veni Creator Receiver 1 AM

Ties: Veni Creator Receiver 1 VM = Veni Creator Receiver 1 AM

Veni Creator Receiver 1 VM-AM	
Z	-4.460
Asymp. Sig. (2-tailed)	0.000

(Test statistics based on positive ranks)

**Effect Size (r) = -0.62 (large effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Veni Creator Receiver 2 VM-AM	Negative Ranks	23	13.28	305.50
	Positive Ranks	3	15.17	45.50
	Ties	0		
	Total	26		

Negative Ranks: Veni Creator Receiver 2 VM < Veni Creator Receiver 2 AM

Positive Ranks: Veni Creator Receiver 2 VM > Veni Creator Receiver 2 AM

Ties: Veni Creator Receiver 2 VM = Veni Creator Receiver 2 AM

Veni Creator Receiver 2 VM-AM	
Z	-3.305
Asymp. Sig. (2-tailed)	0.001

(Test statistics based on positive ranks)

**Effect Size (r) = -0.46 (medium to large effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Veni Creator Receiver 3 VM-AM	Negative Ranks	25	13.84	346.00
	Positive Ranks	1	5.00	5.00
	Ties	0		
	Total	26		

Negative Ranks: Veni Creator Receiver 3 VM < Veni Creator Receiver 3 AM

Positive Ranks: Veni Creator Receiver 3 VM > Veni Creator Receiver 3 AM

Ties: Veni Creator Receiver 3 VM = Veni Creator Receiver 3 AM

Veni Creator Receiver 3 VM-AM	
Z	-4.332
Asymp. Sig. (2-tailed)	0.000

(Test statistics based on positive ranks)

**Effect Size (r) = -0.60 (large effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Christus Resurgens Receiver 1 VM-AM	Negative Ranks	25	13.96	349.00
	Positive Ranks	1	2.00	2.00
	Ties	0		
	Total	26		

Negative Ranks: Christus Resurgens Receiver 1 VM < Christus Resurgens Receiver 1 AM

Positive Ranks: Christus Resurgens Receiver 1 VM > Christus Resurgens Receiver 1 AM

Ties: Christus Resurgens Receiver 1 VM = Christus Resurgens Receiver 1 AM

	Christus Resurgens Receiver 1 VM-AM
Z	-4.408
Asymp. Sig. (2-tailed)	0.000

(Test statistics based on positive ranks)

**Effect Size (r) = -0.61 (large effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Christus Resurgens Receiver 2 VM-AM	Negative Ranks	25	14.00	350.00
	Positive Ranks	1	1.00	1.00
	Ties	0		
	Total	26		

Negative Ranks: Christus Resurgens Receiver 2 VM < Christus Resurgens Receiver 2 AM

Positive Ranks: Christus Resurgens Receiver 2 VM > Christus Resurgens Receiver 2 AM

Ties: Christus Resurgens Receiver 2 VM = Christus Resurgens Receiver 2 AM

	Christus Resurgens Receiver 2 VM-AM
Z	-4.434
Asymp. Sig. (2-tailed)	0.000

(Test statistics based on positive ranks)

**Effect size (r) = -0.61 (large effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Christus Resurgens Receiver 3 VM-AM	Negative Ranks	26	13.50	351.00
	Positive Ranks	0	0.00	0.00
	Ties	0		
	Total	26		

Negative Ranks: Christus Resurgens Receiver 3 VM < Christus Resurgens Receiver 3 AM

Positive Ranks: Christus Resurgens Receiver 3 VM > Christus Resurgens Receiver 3 AM

Ties: Christus Resurgens Receiver 3 VM = Christus Resurgens Receiver 3 AM

Christus Resurgens Receiver 3 VM-AM	
Z	-4.461
Asymp. Sig. (2-tailed)	0.000

(Test statistics based on positive ranks)

**Effect size (r) = -0.62 (large effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Alleluia Christus Resurgens Receiver 1 VM-AM	Negative Ranks	26	13.50	351.00
	Positive Ranks	0	0.00	0.00
	Ties	0		
	Total	26		

Negative Ranks: Alleluia Christus Resurgens Receiver 3 VM < Alleluia Christus Resurgens Receiver 3 AM

Positive Ranks: Alleluia Christus Resurgens Receiver 3 VM > Alleluia Christus Resurgens Receiver 3 AM

Ties: Alleluia Christus Resurgens Receiver 3 VM = Alleluia Christus Resurgens Receiver 3 AM

Alleluia Christus Resurgens Receiver 1 VM-AM	
Z	-4.459
Asymp. Sig. (2-tailed)	0.000

(Test statistics based on positive ranks)

**Effect size (r) = -0.62 (large effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Alleluia Christus Resurgens Receiver 2 VM-AM	Negative Ranks	24	13.98	335.50
	Positive Ranks	2	7.75	15.50
	Ties	0		
	Total	26		

Negative Ranks: Alleluia Christus Resurgens Receiver 2 VM < Alleluia Christus Resurgens Receiver 2 AM

Positive Ranks: Alleluia Christus Resurgens Receiver 2 VM > Alleluia Christus Resurgens Receiver 2 AM

Ties: Alleluia Christus Resurgens Receiver 2 VM = Alleluia Christus Resurgens Receiver 2 AM

Alleluia Christus Resurgens Receiver 2 VM-AM	
Z	-4.065
Asymp. Sig. (2-tailed)	0.000

(Test statistics based on positive ranks)

**Effect Size (r) = -0.56 (large effect)**

<b>Extract</b>	<b>Type of Rank</b>	<b>N</b>	<b>Mean Rank</b>	<b>Sum of Ranks</b>
Alleluia Christus Resurgens Receiver 3 VM-AM	Negative Ranks	25	13.22	330.50
	Positive Ranks	1	20.50	20.50
	Ties	0		
	Total	26		

Negative Ranks: Alleluia Christus Resurgens Receiver 3 VM < Alleluia Christus Resurgens Receiver 3 AM

Positive Ranks: Alleluia Christus Resurgens Receiver 3 VM > Alleluia Christus Resurgens Receiver 3 AM

Ties: Alleluia Christus Resurgens Receiver 3 VM = Alleluia Christus Resurgens Receiver 3 AM

Alleluia Christus Resurgens Receiver 3 VM-AM	
Z	-3.940
Asymp. Sig. (2-tailed)	0.000

(Test statistics based on positive ranks)

**Effect Size (r) = -0.55 (large effect)**

<b>Extract</b>	<b>Type of Rank</b>	<b>N</b>	<b>Mean Rank</b>	<b>Sum of Ranks</b>
Veni de Libano Receiver 1 VM-AM	Negative Ranks	25	13.96	349.00
	Positive Ranks	1	2.00	2.00
	Ties	0		
	Total	26		

Negative Ranks: Veni de Libano Receiver 1 VM < Veni de Libano Receiver 1 AM

Positive Ranks: Veni de Libano Receiver 1 VM > Veni de Libano Receiver 1 AM

Ties: Veni de Libano Receiver 1 VM = Veni de Libano Receiver 1 AM

Veni de Libano Receiver 1 VM-AM	
Z	-4.410
Asymp. Sig. (2-tailed)	0.000

(Test statistics based on positive ranks)

**Effect Size (r) = -0.61 (large effect)**

<b>Extract</b>	<b>Type of Rank</b>	<b>N</b>	<b>Mean Rank</b>	<b>Sum of Ranks</b>
Veni de Libano Receiver 2 VM-AM	Negative Ranks	22	14.11	310.50
	Positive Ranks	33	4.83	14.50
	Ties	1		
	Total	26		

Negative Ranks: Veni de Libano Receiver 2 VM < Veni de Libano Receiver 2 AM

Positive Ranks: Veni de Libano Receiver 2 VM > Veni de Libano Receiver 2 AM

Ties: Veni de Libano Receiver 2 VM = Veni de Libano Receiver 2 AM

Veni de Libano Receiver 2 VM-AM	
Z	-3.984
Asymp. Sig. (2-tailed)	0.000

(Test statistics based on positive ranks)

**Effect Size (r) = -0.55 (large effect)**

<b>Extract</b>	<b>Type of Rank</b>	<b>N</b>	<b>Mean Rank</b>	<b>Sum of Ranks</b>
Veni de Libano Receiver 3 VM-AM	Negative Ranks	26	13.50	351.00
	Positive Ranks	0	0.00	0.00
	Ties	0		
	Total	26		

Negative Ranks: Veni de Libano Receiver 3 VM < Veni de Libano Receiver 3 AM

Positive Ranks: Veni de Libano Receiver 3 VM > Veni de Libano Receiver 3 AM

Ties: Veni de Libano Receiver 3 VM = Veni de Libano Receiver 3 AM

<b>Veni de Libano Receiver 3 VM-AM</b>	
Z	-4.459
Asymp. Sig. (2-tailed)	0.000

(Test statistics based on positive ranks)

**Effect Size (r) = -0.62 (large effect)**

**Tables 4.19** - Wilcoxon Signed-Rank Test Results. Comparison between scores given to the virtual model and those given to the acoustic measurements.

<b>Pentecost - Receiver</b>	<b>Mean Rank</b>
1	1.44
2	2.54
3	2.02
<b>Pentecost - Receivers</b>	
Chi-Square	18.477
df	2
Asymp. Sig.	0.000
<b>The Resurrection - Receiver</b>	<b>Mean Rank</b>
1	1.44
2	2.65
3	1.90
<b>The Resurrection - Receivers</b>	
Chi-Square	23.241
df	2
Asymp. Sig.	0.000
<b>Veni Creator - Receiver</b>	<b>Mean Rank</b>
1	1.63
2	2.50
3	1.87
<b>Veni Creator- Receivers</b>	
Chi-Square	12.341
df	2
Asymp. Sig.	0.002
<b>Christus Resurgens - Receiver</b>	<b>Mean Rank</b>
1	1.85
2	2.48
3	1.67

Christus Resurgens- Receivers	
Chi-Square	10.295
df	2
Asymp. Sig.	0.006
<b>Alleluia Christus Resurgens - Receiver</b>	
1	1.56
2	2.52
3	1.92
Alleluia Christus Resurgens- Receivers	
Chi-Square	14.477
df	2
Asymp. Sig.	0.001
<b>Veni de Libano – Receiver</b>	
1	1.40
2	2.67
3	1.92
Veni de Libano- Receivers	
Chi-Square	25.023
df	2
Asymp. Sig.	0.000

**Tables 4.20** - Friedman's ANOVA: Comparison of results for different receiver positions calculated per extract.

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Pentecost Receiver 2 VM – Pentecost Receiver 1 VM	Negative Ranks	2	7.75	15.50
	Positive Ranks	20	11.88	237.50
	Ties	4		
	Total	26		

Negative Ranks: Pentecost Receiver 2 VM < Pentecost Receiver 1 VM

Positive Ranks: Pentecost Receiver 2 VM > Pentecost Receiver 1 VM

Ties: Pentecost Receiver 2 VM = Pentecost Receiver 1 VM

Pentecost Receiver 2 VM – Pentecost Receiver 1 VM	
Z	-3.604
Asymp. Sig. (2-tailed)	0.000

(Test statistics based on negative ranks)

**Effect Size (r) = -0.50 (large effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Pentecost Receiver 3 VM – Pentecost Receiver 1 VM	Negative Ranks	6	9.08	54.50
	Positive Ranks	17	13.03	221.50
	Ties	3		
	Total	26		

Negative Ranks: Pentecost Receiver 3 VM < Pentecost Receiver 1 VM

Positive Ranks: Pentecost Receiver 3 VM > Pentecost Receiver 1 VM

Ties: Pentecost Receiver 3 VM = Pentecost Receiver 1 VM

Pentecost Receiver 3 VM – Pentecost Receiver 1 VM	
Z	-2.542
Asymp. Sig. (2-tailed)	0.011

(Test statistics based on negative ranks)

**Effect Size (r) = -0.35 (medium to large effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Pentecost Receiver 3 VM – Pentecost Receiver 2 VM	Negative Ranks	15	11.20	168.00
	Positive Ranks	5	8.40	42.00
	Ties	6		
	Total	26		

Negative Ranks: Pentecost Receiver 3 VM < Pentecost Receiver 2 VM

Positive Ranks: Pentecost Receiver 3 VM > Pentecost Receiver 2 VM

Ties: Pentecost Receiver 3 VM = Pentecost Receiver 2 VM

Pentecost Receiver 3 VM – Pentecost Receiver 2 VM	
Z	-2.354
Asymp. Sig. (2-tailed)	0.019

(Test statistics based on positive ranks)

**Effect Size (r) = -0.33 (medium to large effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
The Resurrection Receiver 2 VM – The Resurrection Receiver 1 VM	Negative Ranks	2	2.50	5.00
	Positive Ranks	21	12.90	271.00
	Ties	3		
	Total	26		

Negative Ranks: The Resurrection Receiver 2 VM < The Resurrection Receiver 1 VM

Positive Ranks: The Resurrection Receiver 2 VM > The Resurrection Receiver 1 VM

Ties: The Resurrection Receiver 2 VM = The Resurrection Receiver 1 VM

The Resurrection Receiver 2 VM – The Resurrection Receiver 1 VM	
Z	-4.048
Asymp. Sig. (2-tailed)	0.000

(Test statistics based on negative ranks)

**Effect Size (r) = -0.56 (large effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
The Resurrection Receiver 3 VM – The Resurrection Receiver 1 VM	Negative Ranks	5	7.90	39.50
	Positive Ranks	15	11.37	170.50
	Ties	6		
	Total	26		

Negative Ranks: The Resurrection Receiver 3 VM < The Resurrection Receiver 1 VM

Positive Ranks: The Resurrection Receiver 3 VM > The Resurrection Receiver 1 VM

Ties: The Resurrection Receiver 3 VM = The Resurrection Receiver 1 VM

The Resurrection Receiver 3 VM – The Resurrection Receiver 1 VM	
Z	-2.447
Asymp. Sig. (2-tailed)	0.014

(Test statistics based on negative ranks)

**Effect Size (r) = -0.34 (medium to large effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
The Resurrection Receiver 3 VM – The Resurrection Receiver 2 VM	Negative Ranks	18	11.64	209.50
	Positive Ranks	3	7.17	21.50
	Ties	5		
	Total	26		

Negative Ranks: The Resurrection Receiver 3 VM < The Resurrection Receiver 2 VM

Positive Ranks: The Resurrection Receiver 3 VM > The Resurrection Receiver 2 VM

Ties: The Resurrection Receiver 3 VM = The Resurrection Receiver 2 VM

The Resurrection Receiver 3 VM – The Resurrection Receiver 2 VM	
Z	-3.268
Asymp. Sig. (2-tailed)	0.001

(Test statistics based on positive ranks)

**Effect Size (r) = -0.45 (medium to large effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Veni Creator Receiver 2 VM – Veni Creator Receiver 1 VM	Negative Ranks	3	3.00	9.00
	Positive Ranks	17	11.82	201.00
	Ties	6		
	Total	26		

Negative Ranks: Veni Creator Receiver 2 VM < Veni Creator Receiver 1 VM

Positive Ranks: Veni Creator Receiver 2 VM > Veni Creator Receiver 1 VM

Ties: Veni Creator Receiver 2 VM = Veni Creator Receiver 1 VM

Veni Creator Receiver 2 VM – Veni Creator Receiver 1 VM	
Z	-3.586
Asymp. Sig. (2-tailed)	0.000

(Test statistics based on negative ranks)

**Effect Size (r) = -0.50 (large effect)**

<b>Extract</b>	<b>Type of Rank</b>	<b>N</b>	<b>Mean Rank</b>	<b>Sum of Ranks</b>
Veni Creator Receiver 3 VM – Veni Creator Receiver 1 VM	Negative Ranks	8	10.75	86.00
	Positive Ranks	13	11.15	145.00
	Ties	5		
	Total	26		

Negative Ranks: Veni Creator Receiver 3 VM < Veni Creator Receiver 1 VM

Positive Ranks: Veni Creator Receiver 3 VM > Veni Creator Receiver 1 VM

Ties: Veni Creator Receiver 3 VM = Veni Creator Receiver 1 VM

<b>Veni Creator Receiver 3 VM – Veni Creator Receiver 1 VM</b>	
Z	-1.027
Asymp. Sig. (2-tailed)	0.304

(Test statistics based on negative ranks)

**Effect Size (r) = -0.14 (small to medium effect)**

<b>Extract</b>	<b>Type of Rank</b>	<b>N</b>	<b>Mean Rank</b>	<b>Sum of Ranks</b>
Veni Creator Receiver 3 VM – Veni Creator Receiver 2 VM	Negative Ranks	17	12.59	214.00
	Positive Ranks	5	7.80	39.00
	Ties	4		
	Total	26		

Negative Ranks: Veni Creator Receiver 3 VM < Veni Creator Receiver 2 VM

Positive Ranks: Veni Creator Receiver 3 VM > Veni Creator Receiver 2 VM

Ties: Veni Creator Receiver 3 VM = Veni Creator Receiver 2 VM

<b>Veni Creator Receiver 3 VM – Veni Creator Receiver 2 VM</b>	
Z	-2.843
Asymp. Sig. (2-tailed)	0.004

(Test statistics based on positive ranks)

**Effect Size (r) = -0.39 (medium to large effect)**

<b>Extract</b>	<b>Type of Rank</b>	<b>N</b>	<b>Mean Rank</b>	<b>Sum of Ranks</b>
Christus Resurgens Receiver 2 VM – Christus Resurgens Receiver 1 VM	Negative Ranks	8	9.75	78.00
	Positive Ranks	18	15.17	273.00
	Ties	0		
	Total	26		

Negative Ranks: Christus Resurgens Receiver 2 VM < Christus Resurgens Receiver 1 VM

Positive Ranks: Christus Resurgens Receiver 2 VM > Christus Resurgens Receiver 1 VM

Ties: Christus Resurgens Receiver 2 VM = Christus Resurgens Receiver 1 VM

<b>Christus Resurgens Receiver 2 VM – Christus Resurgens Receiver 1 VM</b>	
Z	-2.477
Asymp. Sig. (2-tailed)	0.013

(Test statistics based on negative ranks)

**Effect Size (r) = -0.34 (medium to large effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Christus Resurgens Receiver 3 VM – Christus Resurgens Receiver 1 VM	Negative Ranks	11	11.68	128.50
	Positive Ranks	9	9.06	81.50
	Ties	6		
	Total	26		

Negative Ranks: Christus Resurgens Receiver 3 VM < Christus Resurgens Receiver 1 VM

Positive Ranks: Christus Resurgens Receiver 3 VM > Christus Resurgens Receiver 1 VM

Ties: Christus Resurgens Receiver 3 VM = Christus Resurgens Receiver 1 VM

Christus Resurgens Receiver 3 VM – Christus Resurgens Receiver 1 VM	
Z	-0.878
Asymp. Sig. (2-tailed)	0.380

(Test statistics based on positive ranks)

**Effect Size (r) = -0.12 (small to medium effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Christus Resurgens Receiver 3 VM – Christus Resurgens Receiver 2 VM	Negative Ranks	19	12.50	237.50
	Positive Ranks	4	9.63	38.50
	Ties	3		
	Total	26		

Negative Ranks: Christus Resurgens Receiver 3 VM < Christus Resurgens Receiver 2 VM

Positive Ranks: Christus Resurgens Receiver 3 VM > Christus Resurgens Receiver 2 VM

Ties: Christus Resurgens Receiver 3 VM = Christus Resurgens Receiver 2 VM

Christus Resurgens Receiver 3 VM – Christus Resurgens Receiver 2 VM	
Z	-3.028
Asymp. Sig. (2-tailed)	0.002

(Test statistics based on positive ranks)

**Effect Size (r) = -0.42 (medium to large effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Alleluia Christus Resurgens Receiver 2 VM – Alleluia Christus Resurgens Receiver 1 VM	Negative Ranks	3	4.67	14.00
	Positive Ranks	19	12.58	239.00
	Ties	4		
	Total	26		

Negative Ranks: Alleluia Christus Resurgens Receiver 2 VM < Alleluia Christus Resurgens Receiver 1 VM

Positive Ranks: Alleluia Christus Resurgens Receiver 2 VM > Alleluia Christus Resurgens Receiver 1 VM

Ties: Alleluia Christus Resurgens Receiver 2 VM = Alleluia Christus Resurgens Receiver 1 VM

Alleluia Christus Resurgens Receiver 2 VM – Alleluia Christus Resurgens Receiver 1 VM	
Z	-3.655
Asymp. Sig. (2-tailed)	0.000

(Test statistics based on negative ranks)

**Effect Size (r) = -0.51 (large effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Alleluia Christus Resurgens Reciever 3 VM – Alleluia Christus Resurgens Receiver 1 VM	Negative Ranks	6	9.33	56.00
	Positive Ranks	13	10.31	134.00
	Ties	7		
	Total	26		

Negative Ranks: Alleluia Christus Resurgens Receiver 3 VM < Alleluia Christus Resurgens Receiver 1 VM

Positive Ranks: Alleluia Christus Resurgens Receiver 3 VM > Alleluia Christus Resurgens Receiver 1 VM

Ties: Alleluia Christus Resurgens Receiver 3 VM = Alleluia Christus Resurgens Receiver 1 VM

Alleluia Christus Resurgens Reciever 3 VM – Alleluia Christus Resurgens Receiver 1 VM	
Z	-1.570
Asymp. Sig. (2-tailed)	0.116

(Test statistics based on negative ranks)

**Effect Size (r) = -0.22 (small to large effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Alleluia Christus Resurgens Receiver 3 VM – Alleluia Christus Resurgens Receiver 2 VM	Negative Ranks	17	13.53	230.00
	Positive Ranks	6	7.67	46.00
	Ties	3		
	Total	26		

Negative Ranks: Alleluia Christus Resurgens Receiver 3 VM < Alleluia Christus Resurgens Receiver 2 VM

Positive Ranks: Alleluia Christus Resurgens Receiver 3 VM > Alleluia Christus Resurgens Receiver 2 VM

Ties: Alleluia Christus Resurgens Receiver 3 VM = Alleluia Christus Resurgens Receiver 2 VM

Alleluia Christus Resurgens Reciever 3 VM – Alleluia Christus Resurgens Receiver 2 VM	
Z	-2.800
Asymp. Sig. (2-tailed)	0.005

(Test statistics based on positive ranks)

**Effect Size (r) = -0.39 (medium to large effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Veni de Libano Receiver 2 VM – Veni de Libano Receiver 1 VM	Negative Ranks	0	0.00	0.00
	Positive Ranks	23	12.00	276.00
	Ties	3		
	Total	26		

Negative Ranks: Veni de Libano Receiver 2 VM < Veni de Libano Receiver 1 VM

Positive Ranks: Veni de Libano Receiver 2 VM > Veni de Libano Receiver 1 VM

Ties: Veni de Libano Receiver 2 VM = Veni de Libano Receiver 1 VM

	Veni de Libano Receiver 2 VM – Veni de Libano Receiver 1 VM
Z	-4.198
Asymp. Sig. (2-tailed)	0.000

(Test statistics based on negative ranks)

**Effect Size (r) = -0.58 (very large effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Veni de Libano Receiver 3 VM – Veni de Libano Receiver 1 VM	Negative Ranks	5	6.60	33.00
	Positive Ranks	13	10.62	138.00
	Ties	8		
	Total	26		

Negative Ranks: Veni de Libano Receiver 3 VM < Veni de Libano Receiver 1 VM

Positive Ranks: Veni de Libano Receiver 3 VM > Veni de Libano Receiver 1 VM

Ties: Veni de Libano Receiver 3 VM = Veni de Libano Receiver 1 VM

	Veni de Libano Receiver 3 VM – Veni de Libano Receiver 1 VM
Z	-2.287
Asymp. Sig. (2-tailed)	0.022

(Test statistics based on negative ranks)

**Effect Size (r) = -0.32 (medium to large effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Veni de Libano Receiver 3 VM – Veni de Libano Receiver 2 VM	Negative Ranks	17	12.59	214.00
	Positive Ranks	5	7.80	39.00
	Ties	4		
	Total	26		

Negative Ranks: Veni de Libano Receiver 3 VM < Veni de Libano Receiver 2 VM

Positive Ranks: Veni de Libano Receiver 3 VM > Veni de Libano Receiver 2 VM

Ties: Veni de Libano Receiver 3 VM = Veni de Libano Receiver 2 VM

	Veni de Libano Receiver 3 VM – Veni de Libano Receiver 2 VM
Z	-2.842
Asymp. Sig. (2-tailed)	0.004

(Test statistics based on positive ranks)

**Effect Size (r) = -0.39 (medium to large effect)**

**Tables 4.21** - Wilcoxon Signed-Rank Test: Differences per extract between receivers.

Extracts – Receiver 1	Mean Rank
Pentecost	2.56
The Resurrection	2.92
Veni Creator	4.52
Christus Resurgens	3.85
Alleluia Christus Resurgens	4.04
Veni de Libano	3.12

Extracts – Receiver 1	
Chi-Square	25.495
df	5
Asymp. Sig.	0.000
Extracts - Receiver 2	Mean Rank
Pentecost	2.52
The Resurrection	3.38
Veni Creator	4.13
Christus Resurgens	3.12
Alleluia Christus Resurgens	3.75
Veni de Libano	4.10
Extracts – Receiver 2	
Chi-Square	15.966
df	5
Asymp. Sig.	0.007
Extracts - Receiver 3	Mean Rank
Pentecost	3.08
The Resurrection	3.42
Veni Creator	4.10
Christus Resurgens	2.71
Alleluia Christus Resurgens	3.96
Veni de Libano	3.73
Extracts – Receiver 3	
Chi-Square	12.145
df	5
Asymp. Sig.	0.033

**Tables 4.22** - Friedman's ANOVA: Comparison of scores of the virtual model for different programme material calculated per receiver.

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
The Resurrection Receiver 1 VM – Pentecost Receiver 1 VM	Negative Ranks	6	8.58	51.50
	Positive Ranks	10	8.45	84.50
	Ties	10		
	Total	26		

Negative Ranks: The Resurrection Receiver 1 VM < Pentecost Receiver 1 VM

Positive Ranks: The Resurrection Receiver 1 VM > Pentecost Receiver 1 VM

Ties: The Resurrection Receiver 1 VM = Pentecost Receiver 1 VM

The Resurrection Receiver 1 VM – Pentecost Receiver 1 VM	
Z	-0.853
Asymp. Sig. (2-tailed)	0.393

(Test statistics based on negative ranks)

**Effect Size (r) = -0.12 (small to medium effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Veni Creator Receiver 1 VM – Pentecost Receiver 1 VM	Negative Ranks	2	10.00	20.00
	Positive Ranks	18	10.56	190.00
	Ties	6		
	Total	26		

Negative Ranks: Veni Creator Receiver 1 VM < Pentecost Receiver 1 VM

Positive Ranks: Veni Creator Receiver 1 VM > Pentecost Receiver 1 VM

Ties: Veni Creator Receiver 1 VM = Pentecost Receiver 1 VM

Veni Creator Receiver 1 VM – Pentecost Receiver 1 VM	
Z	-3.175
Asymp. Sig. (2-tailed)	0.001

(Test statistics based on negative ranks)

**Effect Size (r) = -0.44 (medium to large effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Christus Resurgens Receiver 1 VM – Pentecost Receiver 1 VM	Negative Ranks	3	11.50	34.50
	Positive Ranks	16	9.72	155.50
	Ties	7		
	Total	26		

Negative Ranks: Christus Resurgens Receiver 1 VM < Pentecost Receiver 1 VM

Positive Ranks: Christus Resurgens Receiver 1 VM > Pentecost Receiver 1 VM

Ties: Christus Resurgens Receiver 1 VM = Pentecost Receiver 1 VM

Christus Resurgens Receiver 1 VM – Pentecost Receiver 1 VM	
Z	-2.436
Asymp. Sig. (2-tailed)	0.015

(Test statistics based on negative ranks)

**Effect Size (r) = -0.34 (medium to large effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Alleluia Christus Resurgens Receiver 1 VM- Pentecost Receiver 1 VM	Negative Ranks	4	12.00	48.00
	Positive Ranks	16	10.13	162.00
	Ties	6		
	Total	26		

Negative Ranks: Alleluia Christus Resurgens Receiver 1 VM < Pentecost Receiver 1 VM

Positive Ranks: Alleluia Christus Resurgens Receiver 1 VM > Pentecost Receiver 1 VM

Ties: Alleluia Christus Resurgens Receiver 1 VM = Pentecost Receiver 1 VM

Alleluia Christus Resurgens Receiver 1 VM- Pentecost Receiver 1 VM	
Z	-2.131
Asymp. Sig. (2-tailed)	0.033

(Test statistics based on negative ranks)

**Effect Size (r) = -0.30 (medium effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Veni de Libano Receiver 1 VM – Pentecost Receiver 1 VM	Negative Ranks	8	10.06	80.50
	Positive Ranks	12	10.79	129.50
	Ties	6		
	Total	26		

Negative Ranks: Veni de Libano Receiver 1 VM < Pentecost Receiver 1 VM

Positive Ranks: Veni de Libano Receiver 1 VM > Pentecost Receiver 1 VM

Ties: Veni de Libano Receiver 1 VM = Pentecost Receiver 1 VM

Veni de Libano Receiver 1 VM – Pentecost Receiver 1 VM	
Z	-0.915
Asymp. Sig. (2-tailed)	0.360

(Test statistics based on negative ranks)

**Effect Size (r) = -0.13 (small to medium effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Veni Creator Receiver 1 VM – The Resurrection Receiver 1 VM	Negative Ranks	4	7.38	29.50
	Positive Ranks	18	12.42	223.50
	Ties	4		
	Total	26		

Negative Ranks: Veni Creator Receiver 1 VM < The Resurrection Receiver 1 VM

Positive Ranks: Veni Creator Receiver 1 VM > The Resurrection Receiver 1 VM

Ties: Veni Creator Receiver 1 VM = The Resurrection Receiver 1 VM

Veni Creator Receiver 1 VM – The Resurrection Receiver 1 VM	
Z	-3.152
Asymp. Sig. (2-tailed)	0.002

(Test statistics based on negative ranks)

**Effect Size (r) = -0.44 (medium to large effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Christus Resurgens Receiver 1 VM - The Resurrection Receiver 1 VM	Negative Ranks	6	6.92	41.50
	Positive Ranks	13	11.42	148.50
	Ties	7		
	Total	26		

Negative Ranks: Christus Resurgens Receiver 1 VM < The Resurrection Receiver 1 VM

Positive Ranks: Christus Resurgens Receiver 1 VM > The Resurrection Receiver 1 VM

Ties: Christus Resurgens Receiver 1 VM = The Resurrection Receiver 1 VM

Christus Resurgens Receiver 1 VM - The Resurrection Receiver 1 VM	
Z	-2.154
Asymp. Sig. (2-tailed)	0.031

(Test statistics based on negative ranks)

**Effect Size (r) = -0.30 (medium effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Alleluia Christus Resurgens Receiver 1 VM – The Resurrection Receiver 1 VM	Negative Ranks	5	9.50	47.50
	Positive Ranks	15	10.83	162.50
	Ties	6		
	Total	26		

Negative Ranks: Alleluia Christus Resurgens Receiver 1 VM < The Resurrection Receiver 1 VM

Positive Ranks: Alleluia Christus Resurgens Receiver 1 VM > The Resurrection Receiver 1 VM

Ties: Alleluia Christus Resurgens Receiver 1 VM = The Resurrection Receiver 1 VM

Alleluia Christus Resurgens Receiver 1 VM – The Resurrection Receiver 1 VM	
Z	-2.148
Asymp. Sig. (2-tailed)	0.032

(Test statistics based on negative ranks)

**Effect Size (r) = -0.30 (medium effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Veni de Libano Receiver 1 VM – The Resurrection Receiver 1 VM	Negative Ranks	8	10.13	81.00
	Positive Ranks	11	9.91	109.00
	Ties	7		
	Total	26		

Negative Ranks: Veni de Libano Receiver 1 VM < The Resurrection Receiver 1 VM

Positive Ranks: Veni de Libano Receiver 1 VM > The Resurrection Receiver 1 VM

Ties: Veni de Libano Receiver 1 VM = The Resurrection Receiver 1 VM

Veni de Libano Receiver 1 VM – The Resurrection Receiver 1 VM	
Z	-0.564
Asymp. Sig. (2-tailed)	0.573

(Test statistics based on negative ranks)

**Effect Size (r) = -0.08**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Christus Resurgens Receiver 1 VM – Veni Creator Receiver 1 VM	Negative Ranks	13	10.69	139.00
	Positive Ranks	7	10.14	71.00
	Ties	6		
	Total	26		

Negative Ranks: Christus Resurgens Receiver 1 VM < Veni Creator Receiver 1 VM

Positive Ranks: Christus Resurgens Receiver 1 VM > Veni Creator Receiver 1 VM

Ties: Christus Resurgens Receiver 1 VM = Veni Creator Receiver 1 VM

Christus Resurgens Receiver 1 VM – Veni Creator Receiver 1 VM	
Z	-1.270
Asymp. Sig. (2-tailed)	0.240

(Test statistics based on positive ranks)

**Effect Size (r) = -0.18 (small to medium effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Alleluia Christus Resurgens Receiver 1 VM – Veni Creator Receiver 1 VM	Negative Ranks	11	11.50	126.50
	Positive Ranks	8	7.94	63.50
	Ties	7		
	Total	26		

Negative Ranks: Alleluia Christus Resurgens Receiver 1 VM < Veni Creator Receiver 1 VM

Positive Ranks: Alleluia Christus Resurgens Receiver 1 VM > Veni Creator Receiver 1 VM

Ties: Alleluia Christus Resurgens Receiver 1 VM = Veni Creator Receiver 1 VM

	Alleluia Christus Resurgens Receiver 1 VM – Veni Creator Receiver 1 VM
Z	-1.268
Asymp. Sig. (2-tailed)	0.205

(Test statistics based on positive ranks)

**Effect Size (r) = -0.18 (small to medium effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Veni de Libano Receiver 1 VM – Veni Creator Receiver 1 VM	Negative Ranks	18	11.39	205.00
	Positive Ranks	4	12.00	48.00
	Ties	4		
	Total	26		

Negative Ranks: Veni de Libano Receiver 1 VM < Veni Creator Receiver 1 VM

Positive Ranks: Veni de Libano Receiver 1 VM > Veni Creator Receiver 1 VM

Ties: Veni de Libano Receiver 1 VM = Veni Creator Receiver 1 VM

	Veni de Libano Receiver 1 VM – Veni Creator Receiver 1 VM
Z	-2.550
Asymp. Sig. (2-tailed)	0.011

(Test statistics based on positive ranks)

**Effect Size (r) = -0.35 (medium to large effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Alleluia Christus Resurgens Receiver 1 VM – Christus Resurgens Receiver 1 VM	Negative Ranks	9	11.11	100.00
	Positive Ranks	11	10.00	110.00
	Ties	6		
	Total	26		

Negative Ranks: Alleluia Christus Resurgens Receiver 1 VM < Christus Resurgens Receiver 1 VM

Positive Ranks: Alleluia Christus Resurgens Receiver 1 VM > Christus Resurgens Receiver 1 VM

Ties: Alleluia Christus Resurgens Receiver 1 VM = Christus Resurgens Receiver 1 VM

	Alleluia Christus Resurgens Receiver 1 VM – Christus Resurgens Receiver 1 VM
Z	-0.187
Asymp. Sig. (2-tailed)	0.852

(Test statistics based on negative ranks)

**Effect Size (r) = -0.03 (very small effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Veni de Libano Receiver 1 VM – Christus Resurgens Receiver 1 VM	Negative Ranks	12	9.33	112.00
	Positive Ranks	6	9.83	59.00
	Ties	8		
	Total	26		

Negative Ranks: Veni de Libano Receiver 1 VM < Christus Resurgens Receiver 1 VM

Positive Ranks: Veni de Libano Receiver 1 VM > Christus Resurgens Receiver 1 VM

Ties: Veni de Libano Receiver 1 VM = Christus Resurgens Receiver 1 VM

Veni de Libano Receiver 1 VM – Christus Resurgens Receiver 1 VM	
Z	-1.154
Asymp. Sig. (2-tailed)	0.248

(Test statistics based on positive ranks)

**Effect Size (r) = -0.16 (small to medium effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Veni de Libano Receiver 1 VM – Alleluia Christus Resurgens Receiver 1 VM	Negative Ranks	14	11.79	165.00
	Positive Ranks	7	9.43	66.00
	Ties	5		
	Total	26		

Negative Ranks: Veni de Libano Receiver 1 VM < Christus Resurgens Receiver 1 VM

Positive Ranks: Veni de Libano Receiver 1 VM > Christus Resurgens Receiver 1 VM

Ties: Veni de Libano Receiver 1 VM = Christus Resurgens Receiver 1 VM

Veni de Libano Receiver 1 VM – Alleluia Christus Resurgens Receiver 1 VM	
Z	-1.722
Asymp. Sig. (2-tailed)	0.085

(Test statistics based on positive ranks)

**Effect Size (r) = -0.24 (small to medium effect)**

**Tables 4.23 - Wilcoxon Signed-Rank Test: Comparison of Auralizations derived from the Virtual Model with Different Programme Material (Receiver 1)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
The Resurrection Receiver 2 VM – Pentecost Receiver 2 VM	Negative Ranks	3	10.17	30.50
	Positive Ranks	16	9.97	159.50
	Ties	7		
	Total	29		

Negative Ranks: The Resurrection Receiver 2 VM < Pentecost Receiver 2 VM

Positive Ranks: The Resurrection Receiver 2 VM > Pentecost Receiver 2 VM

Ties: The Resurrection Receiver 2 VM = Pentecost Receiver 2 VM

The Resurrection Receiver 2 VM – Pentecost Receiver 2 VM	
Z	-2.597
Asymp. Sig. (2-tailed)	0.009

(Test statistics based on negative ranks)

**Effect Size (r) = -0.36 (medium to large effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Veni Creator Receiver 2 VM – Pentecost Receiver 2 VM	Negative Ranks	5	5.70	28.50
	Positive Ranks	15	12.10	181.50
	Ties	6		
	Total	26		

Negative Ranks: Veni Creator Receiver 2 VM < Pentecost Receiver 2 VM

Positive Ranks: Veni Creator Receiver 2 VM > Pentecost Receiver 2 VM

Ties: Veni Creator Receiver 2 VM = Pentecost Receiver 2 VM

Veni Creator Receiver 2 VM – Pentecost Receiver 2 VM	
Z	-2.858
Asymp. Sig. (2-tailed)	0.004

(Test statistics based on negative ranks)

**Effect Size (r) = -0.40 (medium to large effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Christus Resurgens Receiver 2 VM – Pentecost Receiver 2 VM	Negative Ranks	9	12.67	114.00
	Positive Ranks	15	12.40	186.00
	Ties	2		
	Total	26		

Negative Ranks: Christus Resurgens Receiver 2 VM < Pentecost Receiver 2 VM

Positive Ranks: Christus Resurgens Receiver 2 VM > Pentecost Receiver 2 VM

Ties: Christus Resurgens Receiver 2 VM = Pentecost Receiver 2 VM

Christus Resurgens Receiver 2 VM – Pentecost Receiver 2 VM	
Z	-1.029
Asymp. Sig. (2-tailed)	0.304

(Test statistics based on negative ranks)

**Effect Size (r) = -0.14 (small to medium effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Alleluia Christus Resurgens Receiver 2 VM – Pentecost Receiver 2 VM	Negative Ranks	7	8.71	61.00
	Positive Ranks	15	12.80	192.00
	Ties	5		
	Total	26		

Negative Ranks: Alleluia Christus Resurgens Receiver 2 VM < Pentecost Receiver 2 VM

Positive Ranks: Alleluia Christus Resurgens Receiver 2 VM > Pentecost Receiver 2 VM

Ties: Alleluia Christus Resurgens Receiver 2 VM = Pentecost Receiver 2 VM

Alleluia Christus Resurgens Receiver 2 VM – Pentecost Receiver 2 VM	
Z	-2.129
Asymp. Sig. (2-tailed)	0.033

(Test statistics based on negative ranks)

**Effect Size (r) = -0.30 (medium effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Veni de Libano Receiver 2 VM – Pentecost Receiver 2 VM	Negative Ranks	6	15.83	95.00
	Positive Ranks	20	12.80	256.00
	Ties	0		
	Total	26		

Negative Ranks: Veni de Libano Receiver 2 VM < Pentecost Receiver 2 VM

Positive Ranks: Veni de Libano Receiver 2 VM > Pentecost Receiver 2 VM

Ties: Veni de Libano Receiver 2 VM = Pentecost Receiver 2 VM

Veni de Libano Receiver 2 VM – Pentecost Receiver 2 VM	
Z	-2.045
Asymp. Sig. (2-tailed)	0.041

(Test statistics based on negative ranks)

**Effect Size (r) = -0.28 (small to medium effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Veni Creator Receiver 2 VM – The Resurrection Receiver 2 VM	Negative Ranks	7	11.64	81.50
	Positive Ranks	15	11.43	171.50
	Ties	4		
	Total	26		

Negative Ranks: Veni Creator Receiver 2 VM < The Resurrection Receiver 2 VM

Positive Ranks: Veni Creator Receiver 2 VM > The Resurrection Receiver 2 VM

Ties: Veni Creator Receiver 2 VM = The Resurrection Receiver 2 VM

Veni Creator Receiver 2 VM – The Resurrection Receiver 2 VM	
Z	-1.462
Asymp. Sig. (2-tailed)	0.144

(Test statistics based on negative ranks)

**Effect Size (r) = -0.20 (small to medium effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Christus Resurgens Receiver 2 VM – The Resurrection Receiver 2 VM	Negative Ranks	9	12.11	109.00
	Positive Ranks	10	8.10	81.00
	Ties	7		
	Total	26		

Negative Ranks: Christus Resurgens Receiver 2 VM < The Resurrection Receiver 2 VM

Positive Ranks: Christus Resurgens Receiver 2 VM > The Resurrection Receiver 2 VM

Ties: Christus Resurgens Receiver 2 VM = The Resurrection Receiver 2 VM

Christus Resurgens Receiver 2 VM – The Resurrection Receiver 2 VM	
Z	-0.564
Asymp. Sig. (2-tailed)	0.573

(Test statistics based on positive ranks)

**Effect Size (r) = -0.08 (very small effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Alleluia Christus Resurgens Receiver 2 VM – The Resurrection Receiver 2 VM	Negative Ranks	10	11.85	118.50
	Positive Ranks	13	12.12	157.50
	Ties	3		
	Total	26		

Negative Ranks: Alleluia Christus Resurgens Receiver 2 VM < The Resurrection Receiver 2 VM

Positive Ranks: Alleluia Christus Resurgens Receiver 2 VM > The Resurrection Receiver 2 VM

Ties: Alleluia Christus Resurgens Receiver 2 VM = The Resurrection Receiver 2 VM

Alleluia Christus Resurgens Receiver 2 VM – The Resurrection Receiver 2 VM	
Z	-0.594
Asymp. Sig. (2-tailed)	0.553

(Test statistics based on negative ranks)

**Effect Size (r) = -0.08 (very small effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Veni de Libano Receiver 2 VM – The Resurrection Receiver 2 VM	Negative Ranks	8	13.50	108.00
	Positive Ranks	15	11.20	168.00
	Ties	3		
	Total	26		

Negative Ranks: Veni de Libano Receiver 2 VM < The Resurrection Receiver 2 VM

Positive Ranks: Veni de Libano Receiver 2 VM > The Resurrection Receiver 2 VM

Ties: Veni de Libano Receiver 2 VM = The Resurrection Receiver 2 VM

Veni de Libano Receiver 2 VM – The Resurrection Receiver 2 VM	
Z	-0.913
Asymp. Sig. (2-tailed)	0.361

(Test statistics based on negative ranks)

**Effect Size (r) = -0.13 (small effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Christus Resurgens Receiver 2 VM – Veni Creator Receiver 2 VM	Negative Ranks	18	12.47	224.50
	Positive Ranks	6	12.58	75.50
	Ties	2		
	Total	26		

Negative Ranks: Christus Resurgens Receiver 2 VM < Veni Creator Receiver 2 VM

Positive Ranks: Christus Resurgens Receiver 2 VM > Veni Creator Receiver 2 VM

Ties: Christus Resurgens Receiver 2 VM = Veni Creator Receiver 2 VM

Christus Resurgens Receiver 2 VM – Veni Creator Receiver 2 VM	
Z	-2.130
Asymp. Sig. (2-tailed)	0.033

(Test statistics based on positive ranks)

**Effect Size (r) = -0.30 (medium effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Alleluia Christus Resurgens Receiver 2 VM – Veni Creator Receiver 2 VM	Negative Ranks	11	10.64	117.00
	Positive Ranks	8	9.13	73.00
	Ties	7		
	Total	26		

Negative Ranks: Alleluia Receiver 2 VM < Veni Creator Receiver 2 VM

Positive Ranks: Alleluia Receiver 2 VM > Veni Creator Receiver 2 VM

Ties: Alleluia Receiver 2 VM = Veni Creator Receiver 2 VM

Alleluia Christus Resurgens Receiver 2 VM – Veni Creator Receiver 2 VM	
Z	-0.886
Asymp. Sig. (2-tailed)	0.375

(Test statistics based on positive ranks)

**Effect Size (r) = -0.12 (small to medium effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Veni de Libano Receiver 2 VM – Veni Creator Receiver 2 VM	Negative Ranks	12	13.21	158.50
	Positive Ranks	12	11.79	141.50
	Ties	2		
	Total	26		

Negative Ranks: Veni de Libano Receiver 2 VM < Veni Creator Receiver 2 VM

Positive Ranks: Veni de Libano Receiver 2 VM > Veni Creator Receiver 2 VM

Ties: Veni de Libano Receiver 2 VM > Veni Creator Receiver 2 VM

Veni de Libano Receiver 2 VM – Veni Creator Receiver 2 VM	
Z	-0.243
Asymp. Sig. (2-tailed)	0.808

(Test statistics based on positive ranks)

**Effect Size (r) = -0.03 (very small effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Alleluia Christus Resurgens Receiver 2 VM – Christus Resurgens Receiver 2 VM	Negative Ranks	6	10.92	65.50
	Positive Ranks	14	10.32	144.50
	Ties	6		
	Total	26		

Negative Ranks: Alleluia Christus Resurgens Receiver 2 VM < Christus Resurgens Receiver 2 VM

Positive Ranks: Alleluia Christus Resurgens Receiver 2 VM > Christus Resurgens Receiver 2 VM

Ties: Alleluia Christus Resurgens Receiver 2 VM > Christus Resurgens Receiver 2 VM

	Alleluia Christus Resurgens Receiver 2 VM – Christus Resurgens Receiver 2 VM
Z	-1.475
Asymp. Sig. (2-tailed)	0.140

(Test statistics based on negative ranks)

**Effect Size (r) = -0.20 (small to medium effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Veni de Libano Receiver 2 VM – Christus Resurgens Receiver 2 VM	Negative Ranks	8	9.19	73.50
	Positive Ranks	15	13.50	202.50
	Ties	3		
	Total	26		

Negative Ranks: Veni de Libano Receiver 2 VM < Christus Resurgens Receiver 2 VM

Positive Ranks: Veni de Libano Receiver 2 VM > Christus Resurgens Receiver 2 VM

Ties: Veni de Libano Receiver 2 VM > Christus Resurgens Receiver 2 VM

	Veni de Libano Receiver 2 VM – Christus Resurgens Receiver 2 VM
Z	-1.963
Asymp. Sig. (2-tailed)	0.050

(Test statistics based on negative ranks)

**Effect Size (r) = -0.27 (small to medium effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Veni de Libano Receiver 2 VM – Alleluia Christus Resurgens Receiver 2 VM	Negative Ranks	8	9.44	75.50
	Positive Ranks	11	10.41	114.50
	Ties	7		
	Total	26		

Negative Ranks: Veni de Libano Receiver 2 VM < Alleluia Christus Resurgens Receiver 2 VM

Positive Ranks: Veni de Libano Receiver 2 VM > Alleluia Christus Resurgens Receiver 2 VM

Ties: Veni de Libano Receiver 2 VM = Alleluia Christus Resurgens Receiver 2 VM

	Veni de Libano Receiver 2 VM – Alleluia Christus Resurgens Receiver 2 VM
Z	-0.785
Asymp. Sig. (2-tailed)	0.432

(Test statistics based on negative ranks)

**Effect Size (r) = -0.11 (small to medium effect)**

**Tables 4.24 - Wilcoxon Signed-Rank Test: Comparison of Auralizations derived from the Virtual Model with Different Programme Material (Receiver 2).**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
The Resurrection Receiver 3 VM – Pentecost Receiver 3 VM	Negative Ranks	8	9.50	76.00
	Positive Ranks	10	9.50	95.00
	Ties	8		
	Total	26		

Negative Ranks: The Resurrection Receiver 3 VM < Pentecost Receiver 3 VM

Positive Ranks: The Resurrection Receiver 3 VM > Pentecost Receiver 3 VM

Ties: The Resurrection Receiver 3 VM = Pentecost Receiver 3 VM

The Resurrection Receiver 3 VM – Pentecost Receiver 3 VM	
Z	-0.414
Asymp. Sig. (2-tailed)	0.679

(Test statistics based on negative ranks)

**Effect Size (r) = -0.06 (very small effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Veni Creator Receiver 3 VM – Pentecost Receiver 3 VM	Negative Ranks	7	10.71	75.00
	Positive Ranks	16	12.56	201.00
	Ties	3		
	Total	26		

Negative Ranks: Veni Creator Receiver 3 VM < Pentecost Receiver 3 VM

Positive Ranks: Veni Creator Receiver 3 VM > Pentecost Receiver 3 VM

Ties: Veni Creator Receiver 3 VM = Pentecost Receiver 3 VM

Veni Creator Receiver 3 VM – Pentecost Receiver 3 VM	
Z	-1.917
Asymp. Sig. (2-tailed)	0.055

(Test statistics based on negative ranks)

**Effect Size (r) = -0.27 (small to medium effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Christus Resurgens Receiver 3 VM – Pentecost Receiver 3 VM	Negative Ranks	12	11.63	139.50
	Positive Ranks	9	10.17	91.50
	Ties	5		
	Total	26		

Negative Ranks: Christus Resurgens Receiver 3 VM < Pentecost Receiver 3 VM

Positive Ranks: Christus Resurgens Receiver VM > Pentecost Receiver 3 VM

Ties: Christus Resurgens Receiver VM = Pentecost Receiver 3 VM

Christus Resurgens Receiver 3 VM – Pentecost Receiver 3 VM	
Z	-0.834
Asymp. Sig. (2-tailed)	0.404

(Test statistics based on positive ranks)

**Effect Size (r) = -0.12 (small to medium effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Alleluia Christus Resurgens Receiver 3 VM – Pentecost Receiver 3 VM	Negative Ranks	6	59.50	59.50
	Positive Ranks	14	10.75	150.50
	Ties	6		
	Total	26		

Negative Ranks: Alleluia Christus Resurgens Receiver 3 VM < Pentecost Receiver 3 VM

Positive Ranks: Alleluia Christus Resurgens Receiver 3 VM > Pentecost Receiver 3 VM

Ties: Alleluia Christus Resurgens Receiver 3 VM = Pentecost Receiver 3 VM

Alleluia Christus Resurgens Receiver 3 VM – Pentecost Receiver 3 VM	
Z	-1.700
Asymp. Sig. (2-tailed)	0.089

(Test statistics based on negative ranks)

**Effect Size (r) = -0.24 (small to medium effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Veni de Libano Receiver 3 VM – Pentecost Receiver 3 VM	Negative Ranks	8	10.75	86.00
	Positive Ranks	14	11.93	167.00
	Ties	4		
	Total	26		

Negative Ranks: Veni de Libano Receiver 3 VM < Pentecost Receiver 3 VM

Positive Ranks: Veni de Libano Receiver 3 VM > Pentecost Receiver 3 VM

Ties: Veni de Libano Receiver 3 VM = Pentecost Receiver 3 VM

Veni de Libano Receiver 3 VM – Pentecost Receiver 3 VM	
Z	-1.315
Asymp. Sig. (2-tailed)	0.188

(Test statistics based on negative ranks)

**Effect Size (r) = -0.18 (small to medium effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Veni Creator Receiver 3 VM – The Resurrection Receiver 3 VM	Negative Ranks	8	12.94	103.50
	Positive Ranks	16	12.28	196.50
	Ties	2		
	Total	26		

Negative Ranks: Veni Creator Receiver 3 VM < The Resurrection Receiver 3 VM

Positive Ranks: Veni Creator Receiver 3 VM > The Resurrection Receiver 3 VM

Ties: Veni Creator Receiver 3 VM = The Resurrection Receiver 3 VM

Veni Creator Receiver 3 VM – The Resurrection Receiver 3 VM	
Z	-1.329
Asymp. Sig. (2-tailed)	0.184

(Test statistics based on negative ranks)

**Effect Size (r) = -0.18 (small to medium effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Christus Resurgens Receiver 3 VM – The Resurrection Receiver 3 VM	Negative Ranks	12	10.63	127.50
	Positive Ranks	7	8.93	62.50
	Ties	7		
	Total	26		

Negative Ranks: Christus Resurgens Receiver 3 VM < The Resurrection Receiver 3 VM

Positive Ranks: Christus Resurgens Receiver 3 VM > The Resurrection Receiver 3 VM

Ties: Christus Resurgens Receiver 3 VM = The Resurrection Receiver 3 VM

Christus Resurgens Receiver 3 VM – The Resurrection Receiver 3 VM	
Z	-1.310
Asymp. Sig. (2-tailed)	0.190

(Test statistics based on positive ranks)

**Effect Size (r) = -0.18 (small to medium effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Alleluia Christus Resurgens Receiver 3 VM – The Resurrection Receiver 3 VM	Negative Ranks	9	9.72	87.50
	Positive Ranks	12	11.96	143.50
	Ties	5		
	Total	26		

Negative Ranks: Alleluia Christus Resurgens Receiver 3 VM < The Resurrection Receiver 3 VM

Positive Ranks: Alleluia Christus Resurgens Receiver 3 VM > The Resurrection Receiver 3 VM

Ties: Alleluia Christus Resurgens Receiver 3 VM = The Resurrection Receiver 3 VM

Alleluia Christus Resurgens Receiver 3 VM – The Resurrection Receiver 3 VM	
Z	-0.974
Asymp. Sig. (2-tailed)	0.330

(Test statistics based on negative ranks)

**Effect Size (r) = -0.14 (small to medium effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Veni de Libano Receiver 3 VM – The Resurrection Receiver 3 VM	Negative Ranks	12	10.63	127.50
	Positive Ranks	12	14.38	172.50
	Ties	2		
	Total	26		

Negative Ranks: Veni de Libano Receiver 3 VM < The Resurrection Receiver 3 VM

Positive Ranks: Veni de Libano Receiver 3 VM > The Resurrection Receiver 3 VM

Ties: Veni de Libano Receiver 3 VM = The Resurrection Receiver 3 VM

Veni de Libano Receiver 3 VM – The Resurrection Receiver 3 VM	
Z	-0.643
Asymp. Sig. (2-tailed)	0.520

(Test statistics based on negative ranks)

**Effect Size (r) = -0.09 (very small effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Christus Resurgens Receiver 3 VM – Veni Creator Receiver 3 VM	Negative Ranks	17	13.15	223.50
	Positive Ranks	5	5.90	29.50
	Ties	4		
	Total	26		

Negative Ranks: Christus Resurgens Receiver 3 VM < Veni Creator Receiver 3 VM

Positive Ranks: Christus Resurgens Receiver 3 VM > Veni Creator Receiver 3 VM

Ties: Christus Resurgens Receiver 3 VM = Veni Creator Receiver 3 VM

Christus Resurgens Receiver 3 VM – Veni Creator Receiver 3 VM	
Z	-3.152
Asymp. Sig. (2-tailed)	0.002

(Test statistics based on positive ranks)

**Effect Size (r) = -0.22.73 (small to medium effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Alleluia Christus Resurgens Receiver 3 VM – Veni Creator Receiver 3 VM	Negative Ranks	11	11.77	129.50
	Positive Ranks	10	10.15	101.50
	Ties	5		
	Total	26		

Negative Ranks: Alleluia Christus Resurgens Receiver 3 VM < Veni Creator Receiver 3 VM

Positive Ranks: Alleluia Christus Resurgens Receiver 3 VM > Veni Creator Receiver 3 VM

Ties: Alleluia Christus Resurgens Receiver 3 VM = Veni Creator Receiver 3 VM

Alleluia Christus Resurgens Receiver 3 VM – Veni Creator Receiver 3 VM	
Z	-0.487
Asymp. Sig. (2-tailed)	0.626

(Test statistics based on positive ranks)

**Effect Size (r) = -0.07 (very small effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Veni de Libano Receiver 3 VM – Veni Creator Receiver 3 VM	Negative Ranks	11	11.73	129.00
	Positive Ranks	10	10.20	102.00
	Ties	5		
	Total	26		

Negative Ranks: Veni de Libano Receiver 3 VM < Veni Creator Receiver 3 VM

Positive Ranks: Veni de Libano Receiver 3 VM > Veni Creator Receiver 3 VM

Ties: Veni de Libano Receiver 3 VM = Veni Creator Receiver 3 VM

Veni de Libano Receiver 3 VM – Veni Creator Receiver 3 VM	
Z	-0.469
Asymp. Sig. (2-tailed)	0.639

(Test statistics based on positive ranks)

**Effect Size (r) = -0.07 (very small effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Alleluia Christus Resurgens Receiver 3 VM – Christus Resurgens Receiver 3 VM	Negative Ranks	3	12.67	38.00
	Positive Ranks	17	10.12	172.00
	Ties	6		
	Total	26		

Negative Ranks: Alleluia Christus Resurgens Receiver 3 VM < Christus Resurgens Receiver 3 VM

Positive Ranks: Alleluia Christus Resurgens Receiver 3 VM > Christus Resurgens Receiver 3 VM

Ties: Alleluia Christus Resurgens Receiver 3 VM = Christus Resurgens Receiver 3 VM

Alleluia Christus Resurgens Receiver 3 VM – Christus Resurgens Receiver 3 VM	
Z	-2.505
Asymp. Sig. (2-tailed)	0.012

(Test statistics based on negative ranks)

**Effect Size (r) = -0.35 (medium to large effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Veni de Libano Receiver 3 VM – Christus Resurgens Receiver 3 VM	Negative Ranks	7	8.43	59.00
	Positive Ranks	14	12.29	172.00
	Ties	5		
	Total	26		

Negative Ranks: Veni de Libano Receiver 3 VM < Christus Resurgens Receiver 3 VM

Positive Ranks: Veni de Libano Receiver 3 VM > Christus Resurgens Receiver 3 VM

Ties: Veni de Libano Receiver 3 VM = Christus Resurgens Receiver 3 VM

Veni de Libano Receiver 3 VM – Christus Resurgens Receiver 3 VM	
Z	-1.965
Asymp. Sig. (2-tailed)	0.049

(Test statistics based on negative ranks)

**Effect Size (r) = -0.27 (small to medium effect)**

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Veni de Libano Receiver 3 VM – Alleluia Christus Resurgens Receiver 3 VM	Negative Ranks	11	12.14	133.50
	Positive Ranks	11	10.86	119.50
	Ties	4		
	Total	26		

Negative Ranks: Veni de Libano Receiver 3 VM < Alleluia Christus Resurgens Receiver 3 VM

Positive Ranks: Veni de Libano Receiver 3 VM > Alleluia Christus Resurgens Receiver 3 VM

Ties: Veni de Libano Receiver 3 VM = Alleluia Christus Resurgens Receiver 3 VM

Veni de Libano Receiver 3 VM – Alleluia Christus Resurgens Receiver 3 VM	
Z	-0.227
Asymp. Sig. (2-tailed)	0.820

(Test statistics based on positive ranks)

**Effect Size (r) = -0.03 (very small effect)**

**Tables 4.25 - Wilcoxon Signed-Rank Test: Comparison of Auralizations derived from the Virtual Model with Different Programme Material (Receiver 3).**

Extract	Rec.	IR	Mean	Std. Dev.	Min.	Max.
Speech Samples	1	VM	2.096	0.8256	1.0	5.0
Music Samples Pair (Veni Creator+Christus Resurgens)	1	VM	2.871	1.0256	1.0	5.0

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Music Samples Receiver 1 VM (Veni Creator+Christus Resurgens) – Speech Samples Receiver 1 VM	Negative Ranks	8	14.75	118.00
	Positive Ranks	31	21.35	662.00
	Ties	13		
	Total	52		

Negative Ranks: Music Sample Receiver 1 VM (Veni Creator+Christus Resurgens) < Speech Samples Receiver 1 VM

Positive Ranks: Music Sample Receiver 1 VM (Veni Creator+Christus Resurgens) > Speech Samples Receiver 1 VM

Ties: Music Sample Receiver 1 VM (Veni Creator+Christus Resurgens) = Speech Samples Receiver 1 VM

Music Samples Receiver 1 VM (Veni Creator+Christus Resurgens) – Speech Samples Receiver 1 VM	
Z	-3.798
Asymp. Sig. (2-tailed)	0.000

(Test statistics based on negative ranks)

**Effect Size (r) = -0.37 (medium to large effect)**

**Tables 4.26** - Wilcoxon Singed-Ranks Test: Comparison Speech (Combination of Pentecost and The Resurrection) vs. Music (Veni Creator and Christus Resurgens) / Receiver 1.

Extract	Rec.	IR	Mean	Std. Deviation	Min.	Max.
Speech Samples	1	VM	2.096	0.8256	1.0	5.0
Music Samples Pair (Veni Creator+Alleluia Christus Resurgens)	1	VM	2.867	0.9691	1.0	5.0

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Music Samples Receiver 1 VM (Veni Creator+Alleluia Christus Resurgens) - Speech Samples Receiver 1 VM	Negative Ranks	7	17.14	120.00
	Positive Ranks	33	21.21	700.00
	Ties	12		
	Total	52		

Negative Ranks: Music Samples Receiver 1 VM (Veni Creator+Alleluia Christus Resurgens) < Speech Samples Receiver 1 VM  
Positive Ranks: Music Samples Receiver 1 VM (Veni Creator+Alleluia Christus Resurgens) > Speech Samples Receiver 1 VM  
Ties: Music Samples Receiver 1 VM (Veni Creator+Alleluia Christus Resurgens) = Speech Samples Receiver 1 VM

		Music Samples Receiver 1 VM (Veni Creator+Alleluia Christus Resurgens) - Speech Samples Receiver 1 VM
Z		-3.900
Asymp. Sig. (2-tailed)		0.000

(Test statistics based on negative ranks)

**Effect Size (r) = -0.38 (medium to large effect)**

**Tables 4.27** - Wilcoxon Singed-Ranks Test: Comparison Speech (Combination of Pentecost and The Resurrection) vs. Music (Veni Creator and Alleluia) / Receiver 1.

Extract	Rec.	IR	Mean	Std. Deviation	Min.	Max.
Speech Samples	1	VM	2.096	0.8256	1.0	5.0
Music Samples Pair (Veni Creator+Veni de Libano)	1	VM	2.685	1.0406	1.0	5.0

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Music Samples Receiver 1 VM (Veni Creator+Veni de Libano) - Speech Samples Receiver 1 VM	Negative Ranks	10	19.20	192.00
	Positive Ranks	29	20.28	588.00
	Ties	13		
	Total	52		

Negative Ranks: Music Samples Receiver 1 VM (Veni Creator+Veni de Libano) < Speech Samples Receiver 1 VM

Positive Ranks: Music Samples Receiver 1 VM (Veni Creator+Veni de Libano) > Speech Samples Receiver 1 VM

Ties: Music Samples Receiver 1 VM (Veni Creator+Veni de Libano) = Speech Samples Receiver 1 VM

		Music Samples Receiver 1 VM (Veni Creator+Veni de Libano) - Speech Samples Receiver 1 VM
Z		-2.764
Asymp. Sig. (2-tailed)		0.006

(Test statistics based on negative ranks)

**Effect Size (r) = -0.27 (small to medium effect)**

**Tables 4.28** - Wilcoxon Singed-Ranks Test: Comparison Speech (Combination of Pentecost and The Resurrection) vs. Music (Veni Creator and Veni de Libano) / Receiver 1.

Extract	Rec.	IR	Mean	Std. Deviation	Min.	Max.
Speech Samples	1	VM	2.096	0.8256	1.0	5.0
Music Samples Pair (Christus Resurgens+Alleluia Christus Resurgens)	1	VM	2.700	1.0994	1.0	5.0

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Music Samples Receiver 1 VM (Christus Resurgens+Alleluia Christus Resurgens) - Speech Samples Receiver 1 VM	Negative Ranks	8	19.19	153.50
	Positive Ranks	31	20.21	626.50
	Ties	13		
	Total	52		

Negative Ranks: Music Samples Receiver 1 VM (Christus Resurgens+Alleluia Christus Resurgens) < Speech Samples Receiver 1 VM

Positive Ranks: Music Samples Receiver 1 VM (Christus Resurgens+Alleluia Christus Resurgens) > Speech Samples Receiver 1 VM

Ties: Music Samples Receiver 1 VM (Christus Resurgens+Alleluia Christus Resurgens) > Speech Samples Receiver 1 VM

Music Samples Receiver 1 VM (Christus Resurgens+Alleluia Christus Resurgens) - Speech Samples Receiver 1 VM	
Z	-3.302
Asymp. Sig. (2-tailed)	0.001

(Test statistics based on negative ranks)

**Effect Size (r) = -0.32 (medium to large effect)**

**Tables 4.29 - Wilcoxon Singed-Ranks Test: Comparison Speech (Combination of Pentecost and The Resurrection) vs. Music (Christus Resurgens and Alleluia Christus Resurgens) / Receiver 1.**

Extract	Rec.	IR	Mean	Std. Deviation	Min.	Max.
Speech Samples	1	VM	2.096	0.8256	1.0	5.0
Music Samples Pair (Christus Resurgens+Veni de Libano)	1	VM	2.517	1.1358	1.0	5.0

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Music Samples Receiver 1 VM (Christus Resurgens+Veni de Libano) - Speech Samples Receiver 1 VM	Negative Ranks	11	20.55	226.00
	Positive Ranks	27	19.07	515.00
	Ties	14		
	Total	52		

Negative Ranks: Music Samples Receiver 1 VM (Christus Resurgens+Veni de Libano) < Speech Samples Receiver 1 VM

Positive Ranks: Music Samples Receiver 1 VM (Christus Resurgens+Veni de Libano) > Speech Samples Receiver 1 VM

Ties: Music Samples Receiver 1 VM (Christus Resurgens+Veni de Libano) = Speech Samples Receiver 1 VM

Music Samples Receiver 1 VM (Christus Resurgens+Veni de Libano) - Speech Samples Receiver 1 VM	
Z	-2.096
Asymp. Sig. (2-tailed)	0.036

(Test statistics based on negative ranks)

**Effect Size (r) = -0.21 (small to medium effect)**

**Tables 4.30** - Wilcoxon Singed-Ranks Test: Comparison Speech (Combination of Pentecost and The Resurrection) vs. Music (Christus Resurgens and Veni de Libano) / Receiver 1.

Extract	Rec.	IR	Mean	Std. Deviation	Min.	Max.
Speech Samples	1	VM	2.096	0.8256	1.0	5.0
Music Samples Pair (Alleluia Christus Resurgens+Veni de Libano)	1	VM	2.513	1.0838	1.0	5.0

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Music Samples Receiver 1 VM (Alleluia Christus Resurgens+Veni de Libano) - Speech Samples Receiver 1 VM	Negative Ranks	12	21.08	253.00
	Positive Ranks	27	19.52	527.00
	Ties	13		
	Total	52		

Negative Ranks: Music Samples Receiver 1 VM (Alleluia Christus Resurgens+Veni de Libano) < Speech Samples Receiver 1 VM

Positive Ranks: Music Samples Receiver 1 VM (Alleluia Christus Resurgens+Veni de Libano) > Speech Samples Receiver 1 VM

Ties: Music Samples Receiver 1 VM (Alleluia Christus Resurgens+Veni de Libano) = Speech Samples Receiver 1 VM

		Music Samples Receiver 1 VM (Alleluia Christus Resurgens+Veni de Libano) - Speech Samples Receiver 1 VM
Z	-1.913	
Asymp. Sig. (2-tailed)	0.056	

(Test statistics based on negative ranks)

**Effect Size (r) = -0.19 (small to medium effect)**

**Tables 4.31** - Wilcoxon Singed-Ranks Test: Comparison Speech (Combination of Pentecost and The Resurrection) vs. Music (Alleluia Christus Resurgens and Veni de Libano) / Receiver 1.

Extract	Rec.	IR	Mean	Std. Deviation	Min.	Max.
Speech Samples	2	VM	2.096	0.8256	1.0	5.0
Music Samples Pair (Veni Creator+Christus Resurgens)	2	VM	3.810	0.9796	1.1	5.0

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Music Samples Receiver 2 VM (Veni Creator+Christus Resurgens) - Speech Samples Receiver 2 VM	Negative Ranks	3	16.67	50.00
	Positive Ranks	46	25.54	1175.00
	Ties	3		
	Total	52		

Negative Ranks: Music Samples Receiver 2 VM (Veni Creator+Christus Resurgens) < Speech Samples Receiver 2 VM

Positive Ranks: Music Samples Receiver 2 VM (Veni Creator+Christus Resurgens) > Speech Samples Receiver 2 VM

Ties: Music Samples Receiver 2 VM (Veni Creator+Christus Resurgens) = Speech Samples Receiver 2 VM

Music Samples Receiver 2 VM (Veni Creator+Christus Resurgens) - Speech Samples Receiver 2 VM	
Z	-5.597
Asymp. Sig. (2-tailed)	0.000

(Test statistics based on negative ranks)

**Effect Size (r) = -0.55 (very large effect)**

**Tables 4.32** - Wilcoxon Singed-Ranks Test: Comparison Speech (Combination of Pentecost and The Resurrection) vs. Music (Veni Creator+Christus Resurgens) / Receiver 2.

Extract	Rec.	IR	Mean	Std. Deviation	Min.	Max.
Speech Samples	2	VM	2.096	0.8256	1.0	5.0
Music Samples Pair (Veni Creator+Alleluia Christus Resurgens)	2	VM	3.973	0.8960	1.2	5.0

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Music Samples Receiver 2 VM (Veni Creator+Alleluia Christus Resurgens) - Speech Samples Receiver 2 VM	Negative Ranks	2	18.00	36.00
	Positive Ranks	46	24.78	1140.00
	Ties	4		
	Total	52		

Negative Ranks: Music Samples Receiver 2 VM (Veni Creator+Alleluia Christus Resurgens) < Speech Samples Receiver 2 VM

Positive Ranks: Music Samples Receiver 2 VM (Veni Creator+Alleluia Christus Resurgens) > Speech Samples Receiver 2 VM

Music Samples Receiver 2 VM (Veni Creator+Alleluia Christus Resurgens) - Speech Samples Receiver 2 VM
Z
Asymp. Sig. (2-tailed)

(Test statistics based on negative ranks)

**Effect Size (r) = -0.55 (very large effect)**

**Tables 4.33 - Wilcoxon Singed-Ranks Test: Comparison Speech (Combination of Pentecost and The Resurrection) vs. Music (Veni Creator+Alleluia Christus Resurgens) / Receiver 2.**

Extract	Rec.	IR	Mean	Std. Deviation	Min.	Max.
Speech Samples	2	VM	2.096	0.8256	1.0	5.0
Music Samples Pair (Veni Creator+Veni de Libano)	2	VM	4.042	0.9411	1.0	5.0

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Music Samples Receiver 2 VM (Veni Creator+Veni de Libano) - Speech Samples Receiver 2 VM	Negative Ranks	2	29.50	59.00
	Positive Ranks	46	24.28	1117.00
	Ties	4		
	Total	52		

Negative Ranks: Music Samples Receiver 2 VM (Veni Creator+Veni de Libano) < Speech Samples Receiver 2 VM

Positive Ranks: Music Samples Receiver 2 VM (Veni Creator+Veni de Libano) > Speech Samples Receiver 2 VM

		Music Samples Receiver 2 VM (Veni Creator+Veni de Libano) - Speech Samples Receiver 2 VM				
Z		-5.428				
Asymp. Sig. (2-tailed)		0.000				

(Test statistics based on negative ranks)

**Effect Size (r) = -0.53 (very large effect)**

**Tables 4.34** - Wilcoxon Singed-Ranks Test: Comparison Speech (Combination of Pentecost and The Resurrection) vs. Music (Veni Creator+Veni de Libano) / Receiver 2.

Extract	Rec.	IR	Mean	Std. Deviation	Min.	Max.
Speech Samples	2	VM	2.096	0.8256	1.0	5.0
Music Samples Pair (Christus Resurgens +Alleluia Christus Resurgens)	2	VM	3.702	0.9572	1.1	5.0

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Music Samples Receiver 2 VM (Christus Resurgens+Alleluia Christus Resurgens) - Speech Samples Receiver 2 VM	Negative Ranks	4	12.88	51.50
	Positive Ranks	45	26.08	1173.50
	Ties	3		
	Total	52		

Negative Ranks: Music Samples Receiver 2 VM (Christus Resurgens+Alleluia Christus Resurgens) < Speech Samples Receiver 2 VM

Positive Ranks: Music Samples Receiver 2 VM (Christus Resurgens+Alleluia Christus Resurgens) > Speech Samples Receiver 2 VM

		Music Samples Receiver 2 VM (Christus Resurgens+Alleluia Christus Resurgens) - Speech Samples Receiver 2 VM				
Z		-5.583				
Asymp. Sig. (2-tailed)		0.000				

(Test statistics based on negative ranks)

**Effect Size (r) = -0.55 (very large effect)**

**Tables 4.35** - Wilcoxon Singed-Ranks Test: Comparison Speech (Combination of Pentecost and The Resurrection) vs. Music (Christus Resurgens+Alleluia Christus Resurgens) / Receiver 2.

Extract	Rec.	IR	Mean	Std. Deviation	Min.	Max.
Speech Samples	2	VM	2.096	0.8256	1.0	5.0
Music Samples Pair (Christus Resurgens+Veni de Libano)	2	VM	3.771	1.0185	1.0	5.0

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Music Samples Receiver 2 VM (Christus Resurgens+Veni de Libano) - Speech Samples Receiver 2 VM	Negative Ranks	4	16.25	65.00
	Positive Ranks	45	25.78	1160.00
	Ties	3		
	Total	52		

Negative Ranks: Music Samples Receiver 2 VM (Christus Resurgens+Veni de Libano) < Speech Samples Receiver 2 VM

Positive Ranks: Music Samples Receiver 2 VM (Christus Resurgens+Veni de Libano) > Speech Samples Receiver 2 VM

Music Samples Receiver 2 VM (Christus Resurgens+Veni de Libano) - Speech Samples Receiver 2 VM
Z
Asymp. Sig. (2-tailed)

(Test statistics based on negative ranks)

**Effect Size (r) = -0.54 (very large effect)**

**Tables 4.36** - Wilcoxon Singed-Ranks Test: Comparison Speech (Combination of Pentecost and The Resurrection) vs. Music (Christus Resurgens+Veni de Libano) / Receiver 2.

Extract	Rec.	IR	Mean	Std. Deviation	Min.	Max.
Speech Samples	2	VM	2.096	0.8256	1.0	5.0
Music Samples Pair (Alleluia Christus Resurgens+Veni de Libano)	2	VM	3.935	0.9451	1.0	5.0

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Music Samples Receiver 2 VM (Alleluia Christus Resurgens+Veni de Libano) - Speech Samples Receiver 2 VM	Negative Ranks	3	18.00	54.00
	Positive Ranks	4	25.46	1171.00
	Ties	6		
	Total	5		

Negative Ranks: Music Samples Receiver 2 VM (Alleluia Christus Resurgens+Veni de Libano) < Speech Samples Receiver 2 VM

Positive Ranks: Music Samples Receiver 2 VM (Alleluia Christus Resurgens+Veni de Libano) > Speech Samples Receiver 2 VM

		Music Samples Receiver 2 VM (Alleluia Christus Resurgens+Veni de Libano) - Speech Samples Receiver 2 VM
Z		-5.557
Asymp. Sig. (2-tailed)		0.000

(Test statistics based on negative ranks)

**Effect Size (r) = -0.54 (very large effect)**

**Tables 4.37** - Wilcoxon Singed-Ranks Test: Comparison Speech (Combination of Pentecost and The Resurrection) vs. Music (Alleluia Christus Resurgens+Veni de Libano) / Receiver 2.

Extract	Rec.	IR	Mean	Std. Deviation	Min.	Max.
Speech Samples	3	VM	2.096	0.8256	1.0	5.0
Music Samples Pair (Veni Creator+Christus Resurgens)	3	VM	2.850	0.9627	1.0	5.0

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Music Samples Receiver 3 VM (Veni Creator+Christus Resurgens) - Speech Samples Receiver 3 VM	Negative Ranks	6	20.92	125.50
	Positive Ranks	33	19.83	654.50
	Ties	13		
	Total	52		

Negative Ranks: Music Samples Receiver 3 VM (Veni Creator+Christus Resurgens) < Speech Samples Receiver 3 VM

Positive Ranks: Music Samples Receiver 3 VM (Veni Creator+Christus Resurgens) > Speech Samples Receiver 3 VM

Music Samples Receiver 3 VM (Veni Creator+Christus Resurgens) - Speech Samples Receiver 3 VM	
Z	-3.693
Asymp. Sig. (2-tailed)	0.000

(Test statistics based on negative ranks)

**Effect Size (r) = -0.36 (medium to large effect)**

**Tables 4.38** - Wilcoxon Singed-Ranks Test: Comparison Speech (Combination of Pentecost and The Resurrection) vs. Music (Veni Creator+Christus Resurgens) / Receiver 3.

Extract	Rec.	IR	Mean	Std. Deviation	Min.	Max.
Speech Samples	3	VM	2.096	0.8256	1.0	5.0
Music Samples Pair (Veni Creator+Alleluia Christus Resurgens)	3	VM	3.210	0.9245	1.0	5.0

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Music Samples Receiver 3 VM (Veni Creator+Alleluia Christus Resurgens) - Speech Samples Receiver 3 VM	Negative Ranks	4	23.63	94.50
	Positive Ranks	39	21.83	851.50
	Ties	9		
	Total	52		

Negative Ranks: Music Samples Receiver 3 VM (Veni Creator+Alleluia Christus Resurgens) < Speech Samples Receiver 3 VM

Positive Ranks: Music Samples Receiver 3 VM (Veni Creator+Alleluia Christus Resurgens) > Speech Samples Receiver 3 VM

Music Samples Receiver 3 VM (Veni Creator+Alleluia Christus Resurgens) - Speech Samples Receiver 3 VM
Z
Asymp. Sig. (2-tailed)

(Test statistics based on negative ranks)

**Effect Size (r) = -0.45 (medium to large effect)**

**Tables 4.39 - Wilcoxon Singed-Ranks Test: Comparison Speech (Combination of Pentecost and The Resurrection) vs. Music (Veni Creator+Alleluia Christus Resurgens) / Receiver 3.**

Extract	Rec.	IR	Mean	Std. Deviation	Min.	Max.
Speech Samples	3	VM	2.096	0.8256	1.0	5.0
Music Samples Pair (Veni Creator+ Veni de Libano)	3	VM	3.165	1.0465	1.0	5.0

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Music Samples Receiver 3 VM (Veni Creator+Veni de Libano) - Speech Samples Receiver 3 VM	Negative Ranks	6	17.25	103.50
	Positive Ranks	35	21.64	757.50
	Ties	11		
	Total	52		

Negative Ranks: Music Samples Receiver 3 VM (Veni Creator+Veni de Libano) < Speech Samples Receiver 3 VM

Positive Ranks: Music Samples Receiver 3 VM (Veni Creator+Veni de Libano) > Speech Samples Receiver 3 VM

Music Samples Receiver 3 VM (Veni Creator+Veni de Libano) - Speech Samples Receiver 3 VM	
Z	-4.239
Asymp. Sig. (2-tailed)	0.000

(Test statistics based on negative ranks)

**Effect Size (r) = -0.42 (medium to large effect)**

**Tables 4.40** - Wilcoxon Singed-Ranks Test: Comparison Speech (Combination of Pentecost and The Resurrection) vs. Music (Veni Creator+Veni de Libano) / Receiver 3.

Extract	Rec.	IR	Mean	Std. Deviation	Min.	Max.
Speech Samples	3	VM	2.096	0.8256	1.0	5.0
Music Samples Pair (Christus Resurgens+Alleluia Christus Resurgens)	3	VM	2.810	0.9339	1.0	5.0

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Music Samples Receiver 3 VM (Christus Resurgens+Alleluia Christus Resurgens) - Speech Samples Receiver 3 VM	Negative Ranks	6	25.00	150.00
	Positive Ranks	36	20.92	753.00
	Ties	10		
	Total	52		

Negative Ranks: Music Samples Receiver 3 VM (Christus Resurgens+Alleluia Christus Resurgens) < Speech Samples Receiver 3 VM

Positive Ranks: Music Samples Receiver 3 VM (Christus Resurgens+Alleluia Christus Resurgens) > Speech Samples Receiver 3 VM

		Music Samples Receiver 3 VM (Christus Resurgens+Alleluia Christus Resurgens) - Speech Samples Receiver 3 VM
Z		-3.772
Asymp. Sig. (2-tailed)		0.000

(Test statistics based on negative ranks)

**Effect Size (r) = -0.37 (medium to large effect)**

**Tables 4.41** - Wilcoxon Singed-Ranks Test: Comparison Speech (Combination of Pentecost and The Resurrection) vs. Music (Christus Resurgens+Alleluia Christus Resurgens) / Receiver 3.

Extract	Rec.	IR	Mean	Std. Deviation	Min.	Max.
Speech Samples	3	VM	2.096	0.8256	1.0	5.0
Music Samples Pair (Christus Resurgens+Veni de Libano)	3	VM	2.765	1.0377	1.0	4.8

Extract	Type of Rank	N	Mean Rank	Sum of Ranks
Music Samples Receiver 3 VM (Christus Resurgens+Veni de Libano) - Speech Samples Receiver 3 VM	Negative Ranks	8	21.75	174.00
	Positive Ranks	32	20.19	646.00
	Ties	12		
	Total	52		

Negative Ranks: Music Samples Receiver 3 VM (Christus Resurgens+Veni de Libano) < Speech Samples Receiver 3 VM

Positive Ranks: Music Samples Receiver 3 VM (Christus Resurgens+Veni de Libano) > Speech Samples Receiver 3 VM

		Music Samples Receiver 3 VM (Christus Resurgens+Veni de Libano) - Speech Samples Receiver 3 VM
Z		-3.174
Asymp. Sig. (2-tailed)		0.002

(Test statistics based on negative ranks)

**Effect Size (r) = -0.31 (medium to large effects)**

**Tables 4.42** - Wilcoxon Singed-Ranks Test: Comparison Speech (Combination of Pentecost and The Resurrection) vs. Music (Christus Resurgens+Veni de Libano) / Receiver 3.

<b>Extract</b>	<b>Rec.</b>	<b>IR</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Min.</b>	<b>Max.</b>
Speech Samples	3	VM	2.096	0.8256	1.0	5.0
Music Samples Pair (Alleluia Christus Resurgens+Veni de Libano)	3	VM	3.125	1.0328	1.0	5.0

<b>Extract</b>	<b>Type of Rank</b>	<b>N</b>	<b>Mean Rank</b>	<b>Sum of Ranks</b>
Music Samples Receiver 3 VM (Alleluia Christus Resurgens+Veni de Libano) - Speech Samples Receiver 3 VM	Negative Ranks	5	14.00	70.00
	Positive Ranks	36	21.97	791.00
	Ties	11		
	Total	52		

Negative Ranks: Music Samples Receiver 3 VM (Alleluia Christus Resurgens+Veni de Libano) < Speech Samples Receiver 3 VM

Positive Ranks: Music Samples Receiver 3 VM (Alleluia Christus Resurgens+Veni de Libano) > Speech Samples Receiver 3 VM

	Music Samples Receiver 3 VM (Alleluia Christus Resurgens+Veni de Libano) - Speech Samples Receiver 3 VM
Z	-4.673
Asymp. Sig. (2-tailed)	0.000

(Test statistics based on negative ranks)

**Effect Size (r) = -0.46 (medium to large effect)**

**Tables 4.43** - Wilcoxon Singed-Ranks Test: Comparison Speech (Combination of Pentecost and The Resurrection) vs. Music (Alleluia Christus Resurgens+Veni de Libano) / Receiver 3.

<b>Music-Text Relation for All Receivers</b>	<b>IR</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Min.</b>	<b>Max.</b>
Syllabic Chant	VM	3.456	0.9977	1.0	5.0
Neumatic Chant	VM	2.897	1.0946	1.0	5.0
Melismatic Chant	VM	3.244	1.0650	1.0	5.0

**Tables 4.44** - Descriptive Statistics: Analysis of Music-Text Relation for All Receivers.

<b>Music-Text Relation for All Receivers</b>	<b>Type of Rank</b>	<b>N</b>	<b>Mean Rank</b>	<b>Sum of Ranks</b>
Neumatic Chant All Receivers- Syllabic Chant All Receivers	Negative Ranks	48	35.29	1694.00
	Positive Ranks	18	28.72	517.00
	Ties	12		
	Total	78		

Negative Ranks: Neumatic Chant All Receivers < Syllabic Chant All Receivers

Positive Ranks: Neumatic Chant All Receivers > Syllabic Chant All Receivers

Ties: Neumatic Chant All Receivers = Syllabic Chant All Receivers

		Neumatic Chant All Receivers – Syllabic Chant All Receivers
Z		-3.761
Asymp. Sig. (2-tailed)		0.000

(Test statistics based on positive ranks)

**Effect Size (r) = -0.30 (medium effect)**

Music-Test Relation for All Receivers	Type of Rank	N	Mean Rank	Sum of Ranks
Melismatic Chant All Receivers – Syllabic Chant All Receivers	Negative Ranks	33	33.11	1092
	Positive Ranks	26	26.06	677.50
	Ties	19		
	Total	78		

Negative Ranks: Melismatic Chant All Receivers < Syllabic Chant All Receivers

Positive Ranks: Melismatic Chant All Receivers > Syllabic Chant All Receivers

Ties: Melismatic Chant All Receivers = Syllabic Chant All Receivers

		Melismatic Chant All Receivers – Syllabic Chant All Receivers
Z		-1.567
Asymp. Sig. (2-tailed)		0.117

(Test statistics based on positive ranks)

**Effect Size (r) = -0.13 (small to medium effect)**

Music-Test Relation for All Receivers	Type of Rank	N	Mean Rank	Sum of Ranks
Melismatic Chant All Receivers – Neumatic Chant All Receivers	Negative Ranks	18	33.19	597.50
	Positive Ranks	42	29.35	1232.50
	Ties	18		
	Total	78		

Negative Ranks: Melismatic Chant All Receivers < Neumatic Chant All Receivers

Positive Ranks: Melismatic Chant All Receivers > Neumatic Chant All Receivers

Ties: Melismatic Chant All Receivers = Neumatic Chant All Receivers

		Melismatic Chant All Receivers – Neumatic Chant All Receivers
Z		-2.338
Asymp. Sig. (2-tailed)		0.019

(Test statistics based on negative ranks)

**Effect Size (r) = -0.19 (small to medium effect)**

**Tables 4.45 - Wilcoxon Signed-Rank Test: Analysis of Music-Text Relation for All Receivers.**

Surface Material	Frequency							
	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Plastered Brick								
Absorption	1%	2%	2%	2%	3%	3%	3%	3%
Scattering	17%	17%	17%	17%	17%	17%	17%	17%
Stone								
Absorption	1%	1%	1%	1%	1%	1%	1%	1%
Scattering	38%	38%	38%	38%	38%	38%	38%	38%

<b>Stone Step</b>								
Absorption	1%	1%	1%	1%	1%	1%	1%	1%
Scattering	10%	10%	10%	10%	10%	10%	10%	10%
<b>Wooden Door</b>								
Absorption	14%	10%	6%	8%	10%	10%	10%	10%
Scattering	10%	10%	10%	10%	10%	10%	10%	10%
<b>Wooden Frame</b>								
Absorption	11%	7%	3%	1%	1%	2%	3%	4%
Scattering	10%	10%	10%	10%	10%	10%	10%	10%
<b>Wood Cornice</b>								
Absorption	19%	14%	9%	6%	6%	5%	4%	3%
Scattering	10%	10%	10%	10%	10%	10%	10%	10%
<b>Glass / Windows</b>								
Absorption	18%	6%	4%	3%	2%	2%	2%	2%
Scattering	10%	10%	10%	10%	10%	10%	10%	10%
<b>Open</b>								
Absorption	99%	99%	99%	99%	99%	99%	99%	99%
Scattering	10%	10%	10%	10%	10%	10%	10%	10%

**Table 4.46 – Absorption and Scattering Values used in the Virtual Models of sixteenth-century Stonegate, expressed in percentages (%).**

T <sub>20</sub> (s) and T <sub>30</sub> (s)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1	T20	0.73	0.66	0.7	0.73	0.64	0.56	0.41	0.33
	T30	0.69	0.66	0.7	0.76	0.73	0.6	0.44	0.33
Model 2	T20	0.45	0.52	0.51	0.48	0.45	0.42	0.34	0.28
	T30	0.48	0.55	0.52	0.51	0.47	0.43	0.34	0.28
Model 3	T20	0.71	0.81	0.82	0.82	0.78	0.63	0.46	0.36
	T30	0.76	0.8	0.81	0.87	0.82	0.67	0.5	0.37
Model 4	T20	0.62	0.54	0.6	0.58	0.55	0.48	0.39	0.32
	T30	0.58	0.56	0.59	0.6	0.55	0.49	0.4	0.31
Model 5	T20	0.69	0.7	0.75	0.76	0.66	0.57	0.42	0.33
	T30	0.7	0.71	0.74	0.78	0.74	0.62	0.45	0.34
Model 6	T20	0.45	0.47	0.49	0.49	0.45	0.43	0.36	0.28
	T30	0.47	0.5	0.5	0.5	0.46	0.41	0.34	0.28
Model 7	T20	0.77	0.82	0.88	0.87	0.81	0.64	0.46	0.36
	T30	0.75	0.83	0.87	0.88	0.84	0.69	0.51	0.37
Model 8	T20	0.56	0.58	0.53	0.53	0.5	0.46	0.38	0.31
	T30	0.58	0.56	0.58	0.56	0.51	0.47	0.38	0.3
Modern Model	T20	0.66	0.67	0.76	0.82	0.76	0.65	0.47	0.36
	T30	0.63	0.68	0.75	0.83	0.82	0.68	0.5	0.37

**Table 4.47 – Simulations of sixteenth-century Stonegate. Mean Values of T<sub>20</sub> and T<sub>30</sub> across S-R combinations.**

T <sub>20</sub> (JNDs) and T <sub>30</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
V.1-V.2	T20	7	4.67	6.33	6.25	6.33	4.67	2.33	1.67
	T30	7	3.67	6	6.25	6.5	5.67	3.33	1.67
V.3-V.4	T20	2.25	6.75	5.5	6	5.75	5	2.33	1.33
	T30	4.5	6	5.5	6.75	6.75	6	3.33	2

V.5-V.6	T20	8	7.67	6.5	6.75	7	4.67	2	1.67
	T30	7.67	5.25	6	7	7	3.67	2	
V.7-V.8	T20	5.25	6	8.75	8.5	7.75	6	2.67	1.67
	T30	4.25	6.75	7.25	8	8.25	7.33	4.33	2.33
V.1-V.3	T20	0.5	5	4	2.25	4.67	2.33	1.67	1
	T30	2.33	4.67	3.67	2.75	2.25	2.33	2	1.33
V.2-V.4	T20	5.67	0.67	3	3.33	3.33	2	1.67	1.33
	T30	3.33	0.33	2.33	3	2.67	2	2	1
V.5-V.7	T20	2.67	4	3.25	2.75	5	2.33	1.33	1
	T30	1.67	3	3.25	2.5	2.5	2.33	2	1
V.6-V.8	T20	3.67	3.67	1.33	1.33	1.67	1	0.67	1
	T30	3.67	2	2.67	2	1.67	2	1.33	0.67
V.1-V.5	T20	1	1.33	1.67	0.75	0.67	0.33	0.33	0
	T30	0.33	1.67	1.33	0.5	0.25	0.67	0.33	0.33
V.2-V.6	T20	0	1.67	0.67	0.33	0	0.33	0.67	0
	T30	0.33	1.67	0.67	0.33	0.33	0.67	0	0
V.3-V.7	T20	1.5	0.25	1.5	1.25	0.75	0.33	0	0
	T30	0.25	0.75	1.5	0.25	0.5	0.67	0.33	0
V.4-V.8	T20	2	1.33	2.33	1.67	1.67	0.67	0.33	0.33
	T30	0	0	0.33	1.33	1.33	0.67	0.67	0.33
Modern-V1	T20	2.33	0.33	1.5	2.25	3	3	2	1
	T30	2	0.67	1.25	1.75	2.25	2.67	2	1.33
Modern-V2	T20	7	5	6.25	8.5	7.75	7.67	4.33	2.67
	T30	5	4.33	5.75	8	8.75	8.33	5.33	3
Modern-V3	T20	1.67	4.67	1.5	0	0.5	0.67	0.33	0
	T30	4.33	4	1.5	1	0	0.33	0	0
Modern-V4	T20	1.33	4.33	4	6	5.25	5.67	2.67	1.33
	T30	1.67	4	4	5.75	6.75	6.33	3.33	2
Modern-V5	T20	1	1	0.25	1.5	2.5	2.67	1.67	1
	T30	2.33	1	0.25	1.25	2	2	1.67	1
Modern-V6	T20	7	6.67	6.75	8.25	7.75	7.33	3.67	2.67
	T30	5.33	6	6.25	8.25	9	9	5.33	3
Modern-V7	T20	3.67	5	3	1.25	1.25	0.33	0.33	0
	T30	4	5	3	1.25	0.5	0.33	0.33	0
Modern-V8	T20	3.33	3	5.75	7.25	6.5	6.33	3	1.67
	T30	1.67	4	4.25	6.75	7.75	7	4	2.33

**Table 4.48** - Simulations of sixteenth-century Stonegate.  
Differences in T<sub>20</sub> and T<sub>30</sub> values between models.

C <sub>50</sub> (dB) and C <sub>80</sub> (dB)									
Model / Parameter	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz	
Model 1	C50	6.12	6.68	7.15	7.12	6.45	9.35	12.62	13.19
	C80	9.51	9.85	10.05	10.81	9.53	12.49	15.91	18.43
Model 2	C50	9.34	8.43	10.72	10.96	11.87	14.44	17.07	17.28
	C80	12.79	14.36	15.27	15.15	16.02	18.35	21.54	24.11
Model 3	C50	3.8	2.91	5.41	5.46	6.11	7.6	11.06	11.91
	C80	7.29	6.48	7.87	8.47	8.89	10.63	14.45	16.49
Model 4	C50	4.45	4.45	7.71	8.78	9.52	11.86	14.61	15.49
	C80	9.15	7.4	10.88	12.12	13.01	15.48	18.49	21.09
Model 5	C50	5.05	4.87	7.32	7.13	6.45	9.54	12.73	13.13
	C80	8.99	7.81	9.81	10.57	9.26	12.59	15.92	18.23
Model 6	C50	9.57	8.2	10.18	11.39	11.37	13.81	16.37	17.09
	C80	13.77	13.25	13.69	15.68	15.95	17.41	20.8	23.91
Model 7	C50	2.24	3.18	4.61	5.74	5.61	7.89	11.06	11.71
	C80	5.17	6.68	8.16	8.6	8.49	10.36	14.23	16.23

Model 8	C50	8.09	7.98	8.59	9.52	10.85	12.52	15.31	15.4
	C80	11.7	12.32	12.96	13.41	14.41	16.42	19.06	21.6
Modern Model	C50	4.36	5	8.08	8.58	7.55	9.36	12.45	15.12
	C80	7.7	9.4	10.75	11.15	9.34	11.41	15.13	19.23

**Table 4.49 - Simulations of sixteenth-century Stonegate.**  
Mean Values of C<sub>50</sub> and C<sub>80</sub> across S-R combinations.

		C <sub>50</sub> (JNDs) and C <sub>80</sub> (JNDs)							
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
V.1-V.2	C50	2.93	1.59	3.25	3.49	4.93	4.63	4.05	3.72
	C80	3.28	4.51	5.22	4.34	6.49	5.86	5.63	5.68
V.3-V.4	C50	0.59	1.4	2.09	3.02	3.1	3.87	3.23	3.25
	C80	1.86	0.92	3.01	3.65	4.12	4.85	4.04	4.6
V.5-V.6	C50	4.11	3.03	2.6	3.87	4.47	3.88	3.31	3.6
	C80	4.78	5.44	3.88	5.11	6.69	4.82	4.88	5.68
V.7-V.8	C50	5.32	4.36	3.62	3.44	4.76	4.21	3.86	3.35
	C80	6.53	5.64	4.8	4.81	5.92	6.06	4.83	5.37
V.1-V.3	C50	2.11	3.43	1.58	1.51	0.31	1.59	1.42	1.16
	C80	2.22	3.37	2.18	2.34	0.64	1.86	1.46	1.94
V2-V4	C50	4.45	3.62	2.74	1.98	2.14	2.35	2.24	1.63
	C80	3.64	6.96	4.39	3.03	3.01	2.87	3.05	3.02
V.5-V.7	C50	2.55	1.54	2.46	1.26	0.76	1.5	1.52	1.29
	C80	3.82	1.13	1.65	1.97	0.77	2.23	1.69	2
V6-V8	C50	1.35	0.2	1.45	1.7	0.47	1.17	0.96	1.54
	C80	2.07	0.93	0.73	2.27	1.54	0.99	1.74	2.31
V.1-V.5	C50	0.97	1.65	0.15	0	0	0.17	0.1	0.05
	C80	0.52	2.04	0.24	0.24	0.27	0.1	0.01	0.2
V2-V6	C50	0.21	0.21	0.49	0.39	0.45	0.57	0.64	0.17
	C80	0.98	1.11	1.58	0.53	0.07	0.94	0.74	0.2
V.3-V.7	C50	1.42	0.25	0.73	0.25	0.45	0.26	0	0.18
	C80	2.12	0.2	0.29	0.13	0.4	0.27	0.22	0.26
V4-V8	C50	3.31	3.21	0.8	0.67	1.21	0.6	0.64	0.08
	C80	2.55	4.92	2.08	1.29	1.4	0.94	0.57	0.51
Modern-V1	C50	1.6	1.53	0.85	1.33	1	0	0.15	1.75
	C80	1.81	0.45	0.7	0.34	0.19	1.08	0.78	0.8
Modern-V2	C50	4.53	3.12	2.4	2.16	3.93	4.62	4.2	1.96
	C80	5.09	4.96	4.52	4	6.68	6.94	6.41	4.88
Modern-V3	C50	0.51	1.9	2.43	2.84	1.31	1.6	1.26	2.92
	C80	0.41	2.92	2.88	2.68	0.45	0.78	0.68	2.74
Modern-V4	C50	0.08	0.5	0.34	0.18	1.79	2.27	1.96	0.34
	C80	1.45	2	0.13	0.97	1.45	1.45	1.45	1.45
Modern-V5	C50	0.63	0.12	0.69	1.32	1	0.16	0.25	1.81
	C80	1.29	1.59	0.94	0.58	0.08	1.18	0.79	1
Modern-V6	C50	4.74	2.91	1.91	2.55	3.47	4.05	3.56	1.79
	C80	6.07	3.85	2.94	4.53	6.61	6	5.67	4.68
Modern-V7	C50	1.93	1.65	3.15	2.58	1.76	1.34	1.26	3.1
	C80	2.53	2.72	2.59	2.55	0.85	1.05	0.9	3
Modern-V8	C50	3.39	2.71	0.46	0.85	3	2.87	2.6	0.25
	C80	4	2.92	2.21	2.26	5.07	5.01	3.93	2.37

**Table 4.50 - Simulations of sixteenth-century Stonegate.**  
Differences in C<sub>50</sub> and C<sub>80</sub> values between models.

		IACC <sub>E</sub>							
Model/Receiver		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
V.1	Rec.1	0.97	0.94	0.81	0.52	0.60	0.44	0.44	0.43
	Rec.2	0.94	0.88	0.75	0.44	0.28	0.11	0.08	0.17
	Rec.3	0.96	0.90	0.74	0.63	0.40	0.36	0.33	0.36
V.2	Rec.1	0.98	0.96	0.84	0.55	0.76	0.46	0.26	0.40
	Rec.2	0.96	0.81	0.5	0.41	0.31	0.37	0.11	0.16
	Rec.3	0.98	0.88	0.86	0.81	0.83	0.52	0.25	0.33
V.3	Rec.1	0.96	0.88	0.72	0.47	0.62	0.39	0.49	0.42
	Rec.2	0.97	0.80	0.59	0.35	0.27	0.20	0.11	0.21
	Rec.3	0.96	0.86	0.69	0.55	0.23	0.45	0.36	0.38
V.4	Rec.1	0.95	0.88	0.73	0.49	0.63	0.39	0.28	0.49
	Rec.2	0.97	0.83	0.59	0.35	0.31	0.36	0.07	0.28
	Rec.3	0.75	0.84	0.63	0.56	0.55	0.54	0.31	0.49
V.5	Rec.1	0.94	0.94	0.77	0.53	0.60	0.43	0.38	0.43
	Rec.2	0.95	0.77	0.68	0.33	0.27	0.14	0.09	0.19
	Rec.3	0.95	0.87	0.78	0.63	0.44	0.45	0.35	0.38
V.6	Rec.1	0.97	0.93	0.82	0.59	0.80	0.51	0.29	0.41
	Rec.2	0.98	0.86	0.66	0.33	0.42	0.30	0.09	0.17
	Rec.3	0.96	0.85	0.83	0.66	0.80	0.46	0.24	0.39
V.7	Rec.1	0.90	0.94	0.78	0.50	0.61	0.39	0.48	0.50
	Rec.2	0.90	0.63	0.59	0.31	0.21	0.22	0.13	0.19
	Rec.3	0.93	0.86	0.73	0.59	0.30	0.41	0.32	0.38
V.8	Rec.1	0.96	0.90	0.80	0.56	0.82	0.49	0.33	0.38
	Rec.2	0.94	0.83	0.57	0.42	0.26	0.25	0.12	0.27
	Rec.3	0.97	0.82	0.69	0.66	0.62	0.41	0.20	0.38
Modern	Rec.1	0.92	0.92	0.81	0.56	0.72	0.56	0.54	0.52
	Rec.2	0.97	0.78	0.67	0.32	0.25	0.29	0.16	0.24
	Rec.3	0.90	0.92	0.78	0.72	0.23	0.49	0.49	0.37

**Table 4.51 - Simulations of sixteenth-century Stonegate.**  
IACC<sub>E</sub> per S-R combination.

IACC <sub>E3</sub>		
V.1	Rec.1	0.64
	Rec.2	0.49
	Rec.3	0.59
V.2	Rec.1	0.72
	Rec.2	0.41
	Rec.3	0.83
V.3	Rec.1	0.60
	Rec.2	0.40
	Rec.3	0.49
V.4	Rec.1	0.61
	Rec.2	0.42
	Rec.3	0.58
V.5	Rec.1	0.63
	Rec.2	0.43
	Rec.3	0.62
V.6	Rec.1	0.73
	Rec.2	0.47
	Rec.3	0.77
V.7	Rec.1	0.63
	Rec.2	0.37
	Rec.3	0.54
V.8	Rec.1	0.73
	Rec.2	0.42

	Rec.3	0.66
Modern	Rec.1	0.70
	Rec.2	0.41
	Rec.3	0.58

**Table 4.52** - Simulations of sixteenth-century Stonegate.  
IACC<sub>E3</sub> per S-R combination.

IACC <sub>E3</sub> (JNDs)		
V.1-V.2	Rec.1	1.07
	Rec.2	1.07
	Rec.3	3.2
V.3-V.4	Rec.1	0.13
	Rec.2	0.27
	Rec.3	1.2
V.5-V.6	Rec.1	1.33
	Rec.2	0.53
	Rec.3	2
V.7-V.8	Rec.1	1.33
	Rec.2	0.67
	Rec.3	1.6
V.1-V.3	Rec.1	0.53
	Rec.2	1.2
	Rec.3	1.33
V2.-V4	Rec.1	1.47
	Rec.2	0.13
	Rec.3	3.33
V.5-V.7	Rec.1	0
	Rec.2	0.8
	Rec.3	1.07
V.6-V.8	Rec.1	0
	Rec.2	0.67
	Rec.3	1.47
V.1-V.5	Rec.1	0.13
	Rec.2	0.8
	Rec.3	0.4
V.2-V.6	Rec. 1	0.13
	Rec. 2	0.8
	Rec. 3	0.8
V.3-V.7	Rec.1	0.4
	Rec.2	0.4
	Rec.3	0.67
V4.-V.8	Rec. 1	1.6
	Rec. 2	0
	Rec. 3	1.07
Modern -V.1	Rec.1	0.8
	Rec.2	1.07
	Rec.3	0.13
Modern -V.2	Rec. 1	0.27
	Rec. 2	0
	Rec. 3	3.33
Modern -V.3	Rec.1	1.33
	Rec.2	0.13
	Rec.3	1.2
Modern -0.13V.4	Rec. 1	1.2
	Rec. 2	0.13
	Rec. 3	0
Modern -V.5	Rec.1	0.93
	Rec.2	0.27
	Rec.3	0.53
Modern -V.6	Rec. 1	0.4
	Rec. 2	0.8

	Rec. 3	2.53
Modern -V.7	Rec.1	0.93
	Rec.2	0.53
	Rec.3	0.53
Modern -V.8	Rec. 1	0.4
	Rec. 2	0.13
	Rec. 3	1.07

**Table 4.53** - Simulations of sixteenth-century Stonegate. IACC<sub>E3</sub> per S-R combination.

		LF							
Model/Receiver		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
V.1	Rec.1	0.04	0.02	0.02	0.02	0.01	0.01	0.01	0.01
	Rec.2	0.06	0.09	0.07	0.07	0.09	0.09	0.08	0.08
	Rec.3	0.09	0.14	0.08	0.04	0.04	0.05	0.04	0.04
V.2	Rec.1	0.05	0.03	0.01	0.01	0.01	0.01	0.01	0.01
	Rec.2	0.05	0.10	0.06	0.08	0.10	0.08	0.09	0.08
	Rec.3	0.13	0.11	0.07	0.05	0.05	0.05	0.04	0.05
V.3	Rec.1	0.07	0.08	0.03	0.02	0.01	0.01	0.01	0.01
	Rec.2	0.06	0.10	0.08	0.11	0.09	0.08	0.08	0.09
	Rec.3	0.09	0.11	0.07	0.06	0.05	0.05	0.05	0.06
V.4	Rec.1	0.07	0.04	0.02	0.02	0.01	0.01	0.01	0.01
	Rec.2	0.04	0.15	0.09	0.09	0.09	0.09	0.09	0.09
	Rec.3	0.60	0.08	0.08	0.06	0.08	0.04	0.05	0.06
V.5	Rec.1	0.05	0.03	0.02	0.02	0.01	0.01	0.01	0.01
	Rec.2	0.06	0.11	0.08	0.07	0.11	0.09	0.08	0.09
	Rec.3	0.03	0.05	0.07	0.10	0.10	0.09	0.09	0.08
V.6	Rec.1	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01
	Rec.2	0.03	0.05	0.07	0.10	0.10	0.09	0.09	0.08
	Rec.3	0.08	0.07	0.07	0.05	0.05	0.05	0.04	0.05
V.7	Rec.1	0.131	0.03	0.02	0.02	0.02	0.01	0.01	0.01
	Rec.2	0.21	0.18	0.09	0.08	0.08	0.09	0.09	0.12
	Rec.3	0.15	0.1	0.08	0.06	0.05	0.06	0.05	0.06
V.8	Rec.1	0.05	0.04	0.02	0.01	0.01	0.01	0.01	0.01
	Rec.2	0.08	0.08	0.06	0.11	0.10	0.11	0.09	0.10
	Rec.3	0.05	0.09	0.08	0.06	0.06	0.05	0.05	0.06
Modern	Rec.1	0.13	0.04	0.04	0.03	0.02	0.01	0.01	0.01
	Rec.2	0.08	0.10	0.07	0.07	0.11	0.08	0.09	0.09
	Rec.3	0.18	0.07	0.06	0.04	0.04	0.06	0.05	0.05

**Table 4.54** - Simulations of sixteenth-century Stonegate.  
LF per S-R combination.

LF <sub>E4</sub>		
V.1	Rec.1	0.03
	Rec.2	0.07
	Rec.3	0.09
V.2	Rec.1	0.03
	Rec.2	0.07
	Rec.3	0.09
V.3	Rec.1	0.05
	Rec.2	0.09
	Rec.3	0.08
V.4	Rec.1	0.04
	Rec.2	0.09
	Rec.3	0.20
V.5	Rec.1	0.03
	Rec.2	0.08
	Rec.3	0.06

V.6	Rec.1	0.02
	Rec.2	0.06
	Rec.3	0.07
V.7	Rec.1	0.05
	Rec.2	0.14
	Rec.3	0.10
V.8	Rec.1	0.03
	Rec.2	0.08
	Rec.3	0.07
Modern	Rec.1	0.06
	Rec.2	0.08
	Rec.3	0.09

**Table 4.55 - Simulations of sixteenth-century Stonegate.  
LF<sub>E4</sub> per S-R combination.**

LF(E4) JNDs		
V.1-V.2	Rec.1	0
	Rec.2	0
	Rec.3	0
V.3-V.4	Rec.1	0.2
	Rec.2	1
	Rec.3	2.4
V.5-V.6	Rec.1	0.2
	Rec.2	0.4
	Rec.3	0.2
V.7-V.8	Rec.1	0.4
	Rec.2	1.2
	Rec.3	0.6
V.1-V.3	Rec.1	0.4
	Rec.2	0.4
	Rec.3	0.2
V2.-V4	Rec.1	0.2
	Rec.2	0.4
	Rec.3	2.2
V.5-V.7	Rec.1	0.4
	Rec.2	1.2
	Rec.3	0.8
V.6-V.8	Rec.1	0.2
	Rec.2	0.4
	Rec.3	0
V.1-V.5	Rec.1	0
	Rec.2	0.2
	Rec.3	0.6
V.2-V.6	Rec.1	0.2
	Rec.2	0.2
	Rec.3	0.4
V.3-V.7	Rec.1	0
	Rec.2	1
	Rec.3	0.4
V4.-V.8	Rec.1	0.2
	Rec.2	0.2
	Rec.3	2.6
Modern -V.1	Rec.1	0.6
	Rec.2	0.2
	Rec.3	0
Modern -V.2	Rec.1	0.6
	Rec.2	0.2
	Rec.3	0
Modern -V.3	Rec.1	0.2
	Rec.2	0.2
	Rec.3	0.2

Modern - V.4	Rec. 1	0.4
	Rec. 2	0.2
	Rec. 3	2.2
Modern -V.5	Rec.1	0.6
	Rec.2	0
	Rec.3	0.6
Modern -V.6	Rec. 1	0.8
	Rec. 2	0.4
	Rec. 3	0.4
Modern -V.7	Rec.1	0.2
	Rec.2	1.2
	Rec.3	0.2
Modern -V.8	Rec. 1	0.6
	Rec. 2	0
	Rec. 3	0.4

**Table 4.56** - Simulations of sixteenth-century Stonegate. LF<sub>E4</sub> per S-R combination.

## Appendix – Chapter 5

Surface Materials	Frequency							
	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
<b>Curtains</b>								
Absorption	5%	12%	15%	27%	37%	50%	63%	76%
Scattering	10%	10%	10%	10%	10%	10%	10%	10%
<b>Wooden Surfaces</b>								
Absorption	11%	7%	3%	1%	1%	2%	3%	4%
Scattering	10%	10%	10%	10%	10%	10%	10%	10%

**Table 5.1** – Absorption and Scattering Values used for the wagon structures, expressed in percentages (%). Values sourced from the Surface Properties Library in CATT-A.

	Frequency							
	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
<b>Wooden Surfaces</b>								
Absorption	11%	7%	3%	1%	1%	2%	3%	4%
Scattering	10%	10%	10%	10%	10%	10%	10%	10%
<b>Standing Audience</b>								
Absorption	26%	46%	87%	99%	99%	99%	99%	99%
Scattering	30%	40%	50%	60%	70%	70%	70%	70%
<b>Seated Audience (on wooden chairs)</b>								
Absorption	24%	40%	78%	98%	96%	87%	78%	69%
Scattering	30%	40%	50%	60%	70%	70%	70%	70%

**Table 5.2** – Absorption and Scattering Values used for the audience areas expressed in percentages (%). Values sourced from the Surface Properties Library in CATT-A.

Virtual Model		Percentage of results with significant differences between model with and without a wagon structure	
		T <sub>20</sub>	T <sub>30</sub>
Stonegate 1	Wagon Cl.Si.	63%	75%
	Wagon Cl.Fr.	95%	95%
	Wagon Op.Si.	63%	63%
	Wagon Op.Fr.	96%	92%
Stonegate 2	Wagon Cl.Si.	33%	28%
	Wagon Cl.Fr.	75%	73%
	Wagon Op.Si.	38%	38%
	Wagon Op.Fr.	88%	83%
Stonegate 3	Wagon Cl.Si.	63%	63%
	Wagon Cl.Fr.	88%	90%
	Wagon Op.Si.	46%	67%
	Wagon Op.Fr.	96%	96%
Stonegate	Wagon Cl.Si.	73%	57%
	Wagon Cl.Fr.	93%	80%

4	Wagon Op.Si.	42%	13%
	Wagon Op.Fr.	88%	75%

**Table 5.3 – Impact of the inclusion of the wagon structures on T<sub>20</sub> and T<sub>30</sub> values, expressed in percentages. The percentages are calculated across all source positions and frequency bands after averaging the results for receivers 1-3.**

Stonegate 1 - T <sub>20</sub> (s) and T <sub>30</sub> (s)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Without wagon	T20	0.73	0.66	0.70	0.73	0.64	0.56	0.41	0.33
	T30	0.69	0.66	0.70	0.76	0.73	0.60	0.44	0.33
Cl.Si. Src. B0	T20	0.58	0.63	0.67	0.64	0.61	0.52	0.39	0.28
	T30	0.61	0.60	0.67	0.66	0.63	0.53	0.40	0.31
Cl.Fr. Src. B0	T20	0.53	0.57	0.54	0.56	0.51	0.42	0.34	0.27
	T30	0.57	0.57	0.56	0.57	0.54	0.45	0.36	0.29
Op.Si. Src. B0	T20	0.58	0.65	0.64	0.66	0.62	0.56	0.40	0.31
	T30	0.62	0.64	0.63	0.66	0.65	0.57	0.42	0.32
Op.Fr. Src. B0	T20	0.60	0.59	0.64	0.61	0.58	0.48	0.36	0.28
	T30	0.63	0.62	0.62	0.65	0.62	0.51	0.39	0.30
Cl.Si. Src. B1	T20	0.61	0.63	0.64	0.67	0.66	0.55	0.42	0.33
	T30	0.61	0.62	0.65	0.68	0.65	0.57	0.43	0.33
Cl.Fr. Src. B1	T20	0.61	0.60	0.56	0.61	0.52	0.49	0.39	0.33
	T30	0.58	0.60	0.58	0.62	0.58	0.49	0.39	0.32
Op.Si. Src. B1	T20	0.68	0.64	0.65	0.67	0.67	0.59	0.46	0.34
	T30	0.64	0.67	0.65	0.70	0.68	0.60	0.45	0.35
Op.Fr. Src. B1	T20	0.64	0.55	0.60	0.62	0.58	0.48	0.38	0.32
	T30	0.63	0.60	0.62	0.63	0.61	0.50	0.40	0.32
Cl.Si. Src. B2	T20	0.58	0.60	0.66	0.64	0.58	0.51	0.38	0.31
	T30	0.60	0.62	0.65	0.67	0.63	0.53	0.40	0.31
Cl.Fr. Src. B2	T20	0.64	0.55	0.63	0.57	0.50	0.41	0.31	0.26
	T30	0.59	0.60	0.61	0.60	0.55	0.45	0.35	0.27
Op.Si. Src. B2	T20	0.59	0.64	0.61	0.64	0.61	0.52	0.38	0.31
	T30	0.63	0.65	0.63	0.67	0.65	0.55	0.41	0.32
Op.Fr. Src. B2	T20	0.66	0.63	0.65	0.59	0.53	0.44	0.34	0.29
	T30	0.61	0.65	0.63	0.62	0.58	0.49	0.37	0.30
Cl.Si. Src. B3	T20	0.75	0.68	0.71	0.67	0.63	0.56	0.42	0.32
	T30	0.72	0.66	0.69	0.67	0.65	0.55	0.43	0.33
Cl.Fr. Src. B3	T20	0.60	0.59	0.63	0.61	0.55	0.46	0.37	0.30
	T30	0.58	0.60	0.63	0.65	0.59	0.49	0.38	0.31
Op.Si. Src. B4	T20	0.62	0.70	0.64	0.63	0.59	0.51	0.40	0.31
	T30	0.59	0.68	0.64	0.66	0.61	0.52	0.41	0.32
Op.Fr.	T20	0.57	0.61	0.57	0.56	0.55	0.45	0.36	0.29

Src. B4	T30	0.57	0.61	0.60	0.61	0.58	0.48	0.38	0.30
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**Table 5.4 -  $T_{20}$  and  $T_{30}$  values for Stonegate 1 combined with the different wagons.**

Stonegate 1 - $T_{20}$ (JNDs) and $T_{30}$ (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
No Wagon-Cl.Si. B0	T20	<b>3.75</b>	<b>1</b>	<b>1</b>	2.25	<b>1</b>	<b>1.33</b>	0.67	<b>1.67</b>
	T30	<b>2.67</b>	<b>2</b>	<b>1</b>	2.5	<b>2.5</b>	<b>2.33</b>	<b>1.33</b>	0.67
No Wagon-Cl.Si. 1 B1	T20	<b>3</b>	<b>1</b>	<b>2</b>	<b>1.5</b>	0.67	0.33	0.33	0
	T30	<b>2.67</b>	<b>1.33</b>	<b>1.67</b>	2	2	<b>1</b>	0.33	0
No Wagon-Cl.Si. B2	T20	<b>3.75</b>	<b>2</b>	<b>1.33</b>	2.25	2	<b>1.67</b>	<b>1</b>	0.67
	T30	<b>3</b>	<b>1.33</b>	<b>1.67</b>	<b>2.25</b>	<b>2.5</b>	<b>2.33</b>	<b>1.33</b>	0.67
No Wagon-Cl.Si. B3	T20	0.5	0.67	0.33	<b>1.5</b>	0.33	0	0.33	0.33
	T30	<b>1</b>	0	0.33	<b>2.25</b>	2	<b>1.67</b>	0.33	0
No Wagon-Cl.Si. B4	T20	<b>2.75</b>	<b>1.33</b>	<b>2</b>	<b>2.5</b>	<b>1.67</b>	<b>1.67</b>	0.33	0.67
	T30	<b>3.33</b>	0.67	<b>2</b>	2.5	3	<b>2.67</b>	<b>1</b>	0.33
No Wagon-Cl.Fr. B0	T20	<b>5</b>	<b>3</b>	<b>5.33</b>	<b>4.25</b>	<b>4.33</b>	<b>4.67</b>	<b>2.33</b>	2
	T30	<b>4</b>	<b>3</b>	<b>4.67</b>	<b>4.75</b>	<b>4.75</b>	5	<b>2.67</b>	<b>1.33</b>
No Wagon-Cl.Fr. B1	T20	<b>3</b>	<b>2</b>	<b>4.67</b>	3	4	<b>2.33</b>	0.67	0
	T30	<b>3.67</b>	<b>2</b>	<b>4</b>	3.5	<b>3.75</b>	<b>3.67</b>	<b>1.67</b>	0.33
No Wagon-Cl.Fr. B2	T20	<b>2.25</b>	<b>3.67</b>	<b>2.33</b>	4	<b>4.67</b>	5	<b>3.33</b>	<b>2.33</b>
	T30	<b>3.33</b>	<b>2</b>	<b>3</b>	4	<b>4.5</b>	5	<b>3</b>	2
No Wagon-Cl.Fr. B3	T20	<b>3.25</b>	<b>2.33</b>	<b>2.33</b>	3	3	<b>3.33</b>	<b>1.33</b>	<b>1</b>
	T30	<b>3.67</b>	<b>2</b>	<b>2.33</b>	2.75	3.5	<b>3.67</b>	2	0.67
No Wagon-Cl.Fr. B4	T20	<b>4</b>	<b>1.67</b>	<b>4.33</b>	4.25	3	<b>3.67</b>	<b>1.67</b>	<b>1.33</b>
	T30	<b>4</b>	<b>1.67</b>	<b>3.33</b>	3.75	<b>3.75</b>	4	2	<b>1</b>
No Wagon-Op.Si. B0	T20	<b>3.75</b>	0.33	<b>2</b>	<b>1.75</b>	0.67	0	0.33	0.67
	T30	<b>2.33</b>	0.67	<b>2.33</b>	2.5	<b>2</b>	<b>1</b>	0.67	0.33
No Wagon-Op.Si. B1	T20	<b>1.25</b>	0.67	<b>1.67</b>	<b>1.5</b>	<b>1</b>	<b>1</b>	<b>1.67</b>	0.33
	T30	<b>1.67</b>	0.33	<b>1.67</b>	<b>1.5</b>	<b>1.25</b>	0	0.33	0.67
No Wagon-Op.Si. B2	T20	<b>3.5</b>	0.67	<b>3</b>	<b>2.25</b>	<b>1</b>	<b>1.33</b>	<b>1</b>	0.67
	T30	<b>2</b>	0.33	<b>2.33</b>	<b>2.25</b>	2	<b>1.67</b>	<b>1</b>	0.33
No Wagon-Op.Fr. B0	T20	<b>3.25</b>	<b>2.33</b>	<b>2</b>	3	2	<b>2.67</b>	<b>1.67</b>	<b>1.67</b>
	T30	<b>2</b>	<b>1.33</b>	<b>2.67</b>	2.75	<b>2.75</b>	3	<b>1.67</b>	<b>1</b>
No Wagon-Op.Fr. B1	T20	<b>2.25</b>	<b>3.67</b>	<b>3.33</b>	2.75	2	<b>2.67</b>	<b>1</b>	0.33
	T30	<b>2</b>	<b>2</b>	<b>2.67</b>	3.25	3	<b>3.33</b>	<b>1.33</b>	0.33
No Wagon-Op.Fr. B2	T20	<b>1.75</b>	<b>1</b>	<b>1.67</b>	3.5	<b>3.67</b>	4	<b>2.33</b>	<b>1.33</b>
	T30	<b>2.67</b>	0.33	<b>2.33</b>	3.5	<b>3.75</b>	<b>3.67</b>	2.33	<b>1</b>

**Table 5.5 - Differences in  $T_{20}$  and  $T_{30}$  results between Stonegate 1 with and without wagons. Values in bold indicate significant differences. Cells in orange indicate an increase in reverberation time values and cells in blue**

indicate a drop in reverberation time when a wagon structure is added. The cells that are not highlighted indicate that the difference is below 1JND.

		Stonegate 2 - T <sub>20</sub> (s) and T <sub>30</sub> (s)							
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Without wagon	T20	0.45	0.52	0.51	0.48	0.45	0.42	0.34	0.28
	T30	0.48	0.55	0.52	0.51	0.47	0.43	0.34	0.28
Cl.Si. Src. B0	T20	0.46	0.48	0.50	0.48	0.45	0.42	0.30	0.23
	T30	0.46	0.49	0.48	0.5	0.47	0.43	0.32	0.26
Cl.Fr. Src. B0	T20	0.46	0.45	0.48	0.44	0.41	0.35	0.28	0.25
	T30	0.48	0.47	0.50	0.47	0.45	0.38	0.30	0.26
Op.Si. Src. B0	T20	0.49	0.52	0.51	0.49	0.45	0.40	0.31	0.25
	T30	0.50	0.50	0.52	0.51	0.49	0.43	0.33	0.27
Op.Fr. Src. B0	T20	0.50	0.43	0.46	0.44	0.42	0.36	0.28	0.23
	T30	0.51	0.45	0.47	0.46	0.44	0.39	0.30	0.25
Cl.Si. Src. B1	T20	0.56	0.49	0.49	0.49	0.48	0.44	0.35	0.28
	T30	0.51	0.48	0.50	0.51	0.48	0.44	0.35	0.29
Cl.Fr. Src. B1	T20	0.47	0.48	0.45	0.45	0.42	0.37	0.30	0.27
	T30	0.44	0.48	0.47	0.47	0.43	0.38	0.31	0.26
Op.Si. Src. B1	T20	0.54	0.47	0.47	0.47	0.48	0.44	0.36	0.29
	T30	0.52	0.46	0.47	0.48	0.49	0.45	0.37	0.30
Op.Fr. Src. B1	T20	0.51	0.47	0.46	0.47	0.47	0.37	0.31	0.27
	T30	0.52	0.49	0.49	0.48	0.46	0.40	0.32	0.28
Cl.Si. Src. B2	T20	0.6	0.53	0.55	0.5	0.47	0.43	0.34	0.28
	T30	0.56	0.53	0.52	0.50	0.48	0.42	0.35	0.28
Cl.Fr. Src. B2	T20	0.53	0.47	0.54	0.45	0.43	0.38	0.31	0.27
	T30	0.50	0.48	0.49	0.45	0.44	0.38	0.31	0.26
Op.Si. Src. B2	T20	0.49	0.47	0.50	0.49	0.46	0.42	0.34	0.29
	T30	0.47	0.49	0.49	0.48	0.47	0.44	0.34	0.28
Op.Fr. Src. B2	T20	0.48	0.40	0.48	0.44	0.41	0.35	0.29	0.23
	T30	0.50	0.43	0.47	0.46	0.44	0.37	0.30	0.25
Cl.Si. Src. B3	T20	0.5	0.47	0.52	0.54	0.48	0.42	0.33	0.27
	T30	0.51	0.44	0.53	0.51	0.50	0.43	0.35	0.27
Cl.Fr. Src. B3	T20	0.52	0.49	0.46	0.46	0.39	0.36	0.30	0.25
	T30	0.52	0.51	0.46	0.47	0.43	0.38	0.30	0.25
Op.Si. Src. B4	T20	0.48	0.5	0.51	0.46	0.45	0.42	0.36	0.29
	T30	0.48	0.50	0.49	0.47	0.46	0.42	0.35	0.29
Op.Fr. Src. B4	T20	0.51	0.53	0.47	0.51	0.44	0.38	0.32	0.28
	T30	0.48	0.51	0.49	0.51	0.44	0.38	0.32	0.27

**Table 5.6** - T<sub>20</sub> and T<sub>30</sub> values for Stonegate 2, combined with the different wagons.

		Stonegate 2 - T <sub>20</sub> (JNDs) and T <sub>30</sub> (JNDs)							
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
No Wagon-Cl.Si. B0	T20	0.33	<b>1.33</b>	0.33	0	0	0	<b>1.33</b>	<b>1.67</b>
	T30	0.67	<b>2</b>	<b>1.33</b>	0.33	0	0	0.67	0.67
No Wagon-Cl.Si. 1 B1	T20	<b>3.67</b>	<b>1</b>	0.67	0.33	<b>1</b>	0.67	0.33	0
	T30	<b>1</b>	<b>2.33</b>	0.67	0	0.33	0.33	0.33	0.33
No Wagon-Cl.Si. B2	T20	<b>5</b>	0.33	<b>1.33</b>	0.67	0.67	0.33	0	0
	T30	<b>2.67</b>	0.67	0	0.33	0.33	0.33	0.33	0
No Wagon-	T20	<b>1.67</b>	<b>1.67</b>	0.33	<b>2</b>	<b>1</b>	0	0.33	0.33
	T30	<b>1</b>	<b>3.67</b>	0.33	0	<b>1</b>	0	0.33	0.33

Cl.Si. B3									
No Wagon-Cl.Si. B4	T20	<b>1</b>	0.67	0	0.67	0	0	0.67	0.33
	T30	0	<b>1.67</b>	<b>1</b>	<b>1.33</b>	0.33	0.33	0.33	0.33
No Wagon-Cl.Fr. B0	T20	0.33	<b>2.33</b>	<b>1</b>	<b>1.33</b>	<b>1.33</b>	<b>2.33</b>	<b>2</b>	<b>1</b>
	T30	0	<b>2.67</b>	0.67	<b>1.33</b>	0.67	<b>1.67</b>	<b>1.33</b>	0.67
No Wagon-Cl.Fr. B1	T20	0.67	<b>1.33</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1.67</b>	<b>1.33</b>	0.33
	T30	<b>1.33</b>	<b>2.33</b>	<b>1.67</b>	<b>1.33</b>	<b>1.33</b>	<b>1.67</b>	<b>1</b>	0.67
No Wagon-Cl.Fr. B2	T20	<b>2.67</b>	<b>1.67</b>	<b>1</b>	<b>1</b>	0.67	<b>1.33</b>	<b>1</b>	0.33
	T30	0.67	<b>2.33</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>1.67</b>	<b>1</b>	0.67
No Wagon-Cl.Fr. B3	T20	<b>2.33</b>	<b>1</b>	<b>1.67</b>	0.67	<b>2</b>	<b>2</b>	<b>1.33</b>	<b>1</b>
	T30	<b>1.33</b>	<b>1.33</b>	<b>2</b>	<b>1.33</b>	<b>1.33</b>	<b>1.67</b>	<b>1.33</b>	<b>1</b>
No Wagon-Cl.Fr. B4	T20	<b>2</b>	0.33	<b>1.33</b>	<b>1</b>	0.33	<b>1.33</b>	0.67	0
	T30	0	<b>1.33</b>	<b>1</b>	0	<b>1</b>	<b>1.67</b>	0.67	0.33
No Wagon-Op.Si. B0	T20	<b>1.33</b>	0	0	0.33	0	0.67	<b>1</b>	<b>1</b>
	T30	0.67	<b>1.67</b>	0	0	0.67	0	0.33	0.33
No Wagon-Op.Si. B1	T20	<b>3</b>	<b>1.67</b>	<b>1.33</b>	0.33	<b>1</b>	0.67	0.67	0.33
	T30	<b>1.33</b>	<b>3</b>	<b>1.67</b>	<b>1</b>	0.67	0.67	<b>1</b>	0.67
No Wagon-Op.Si. B2	T20	<b>1.33</b>	<b>1.67</b>	0.33	0.33	0.33	0	0	0.33
	T30	0.33	<b>2</b>	<b>1</b>	<b>1</b>	0	0.33	0	0
No Wagon-Op.Fr. B0	T20	<b>1.67</b>	<b>3</b>	<b>1.67</b>	<b>1.33</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>1.67</b>
	T30	<b>1</b>	<b>3.33</b>	<b>1.67</b>	<b>1.67</b>	<b>1</b>	<b>1.33</b>	<b>1.33</b>	<b>1</b>
No Wagon-Op.Fr. B1	T20	<b>2</b>	<b>1.67</b>	<b>1.67</b>	0.33	0.67	<b>1.67</b>	<b>1</b>	0.33
	T30	<b>1.33</b>	<b>2</b>	<b>1</b>	<b>1</b>	0.33	<b>1</b>	0.67	0
No Wagon-Op.Fr. B2	T20	<b>1</b>	<b>4</b>	<b>1</b>	<b>1.33</b>	<b>1.33</b>	<b>2.33</b>	<b>1.67</b>	<b>1.67</b>
	T30	0.67	<b>4</b>	<b>1.67</b>	<b>1.67</b>	<b>1</b>	<b>2</b>	<b>1.33</b>	<b>1</b>

**Table 5.7** - Differences in T<sub>20</sub> and T<sub>30</sub> results between Stonegate 2 with and without wagons. Values in bold indicate significant differences. Cells in orange indicate an increase in reverberation time values when a wagon structure is added whereas blue cells indicate a decrease in reverberation time. The cells that are not highlighted indicate that the difference is below 1JND.

Stonegate 3 - T <sub>20</sub> (s) and T <sub>30</sub> (s)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Without wagon	T20	0.71	0.81	0.82	0.82	0.78	0.63	0.46	0.36
	T30	0.76	0.80	0.81	0.87	0.82	0.67	0.50	0.37
Cl.Si. Src. B0	T20	0.74	0.74	0.78	0.77	0.73	0.62	0.43	0.31
	T30	0.76	0.73	0.78	0.77	0.76	0.64	0.47	0.35
Cl.Fr. Src. B0	T20	0.61	0.58	0.65	0.64	0.61	0.50	0.38	0.31
	T30	0.69	0.64	0.66	0.68	0.65	0.53	0.41	0.32
Op.Si. Src. B0	T20	0.73	0.74	0.76	0.76	0.73	0.62	0.46	0.33
	T30	0.75	0.74	0.77	0.77	0.75	0.63	0.48	0.36
Op.Fr. Src. B0	T20	0.75	0.74	0.77	0.71	0.68	0.57	0.41	0.33
	T30	0.74	0.72	0.74	0.74	0.69	0.59	0.44	0.34
Cl.Si. Src. B1	T20	0.81	0.77	0.77	0.81	0.77	0.67	0.51	0.39
	T30	0.76	0.76	0.76	0.79	0.75	0.64	0.51	0.39
Cl.Fr. Src. B1	T20	0.68	0.67	0.66	0.68	0.67	0.58	0.46	0.38
	T30	0.75	0.68	0.71	0.71	0.66	0.57	0.45	0.37
Op.Si.	T20	0.76	0.72	0.85	0.82	0.75	0.65	0.48	0.37

Src. B1	T30	0.79	0.75	0.77	0.79	0.77	0.65	0.50	0.38
Op.Fr. Src. B1	T20	0.69	0.73	0.74	0.71	0.69	0.58	0.42	0.32
	T30	0.69	0.74	0.75	0.74	0.70	0.59	0.45	0.34
Cl.Si. Src. B2	T20	0.76	0.73	0.77	0.80	0.75	0.61	0.45	0.32
	T30	0.76	0.72	0.76	0.83	0.75	0.63	0.47	0.35
Cl.Fr. Src. B2	T20	0.71	0.63	0.74	0.69	0.62	0.50	0.36	0.30
	T30	0.68	0.65	0.72	0.71	0.65	0.53	0.40	0.31
Op.Si. Src. B2	T20	0.77	0.75	0.81	0.74	0.73	0.61	0.44	0.35
	T30	0.72	0.74	0.77	0.76	0.75	0.62	0.47	0.36
Op.Fr. Src. B2	T20	0.61	0.69	0.75	0.69	0.62	0.50	0.38	0.31
	T30	0.67	0.69	0.74	0.72	0.67	0.55	0.41	0.32
Cl.Si. Src. B3	T20	0.74	0.75	0.78	0.86	0.79	0.69	0.55	0.42
	T30	0.75	0.75	0.80	0.83	0.77	0.68	0.54	0.41
Cl.Fr. Src. B3	T20	0.80	0.76	0.76	0.72	0.67	0.55	0.42	0.33
	T30	0.73	0.72	0.77	0.77	0.7	0.58	0.44	0.34
Op.Si. Src. B4	T20	0.70	0.79	0.84	0.82	0.79	0.69	0.52	0.39
	T30	0.74	0.75	0.84	0.82	0.77	0.68	0.52	0.40
Op.Fr. Src. B4	T20	0.78	0.74	0.71	0.70	0.69	0.55	0.43	0.34
	T30	0.72	0.70	0.71	0.72	0.71	0.58	0.45	0.35

**Table 5.8 -** T<sub>20</sub> and T<sub>30</sub> values for Stonegate 3, combined with the different wagons.

Stonegate 3 - T <sub>20</sub> (JNDs) and T <sub>30</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
No Wagon-Cl.Si. B0	T20	0.75	<b>1.75</b>	<b>1</b>	<b>1.25</b>	<b>1.25</b>	0.33	<b>1</b>	<b>1.67</b>
	T30	0	<b>1.75</b>	0.75	<b>2.50</b>	<b>1.50</b>	<b>1</b>	<b>1</b>	0.67
No Wagon-Cl.Si. 1 B1	T20	<b>2.5</b>	<b>1</b>	<b>1.25</b>	0.25	0.25	<b>1.33</b>	<b>1.67</b>	<b>1</b>
	T30	0	<b>1</b>	<b>1.25</b>	<b>2</b>	<b>1.75</b>	<b>1</b>	0.33	0.67
No Wagon-Cl.Si. B2	T20	<b>1.25</b>	<b>2</b>	<b>1.25</b>	0.5	0.75	0.67	0.33	<b>1.33</b>
	T30	0	<b>2</b>	<b>1.25</b>	<b>1</b>	<b>1.75</b>	<b>1.33</b>	<b>1</b>	0.67
No Wagon-Cl.Si. B3	T20	0.75	<b>1.5</b>	<b>1</b>	<b>1</b>	0.25	<b>2</b>	<b>3</b>	<b>2</b>
	T30	0.25	<b>1.25</b>	0.25	<b>1</b>	<b>1.25</b>	0.33	<b>1.33</b>	<b>1.33</b>
No Wagon-Cl.Si. B4	T20	0.25	0.5	0.5	0	0.25	<b>2</b>	<b>2</b>	<b>1</b>
	T30	0.5	<b>1.25</b>	0.75	<b>1.25</b>	<b>1.25</b>	0.33	0.67	<b>1</b>
No Wagon-Cl.Fr. B0	T20	<b>2.5</b>	<b>5.75</b>	<b>4.25</b>	<b>4.5</b>	<b>4.25</b>	<b>4.33</b>	<b>2.67</b>	<b>1.67</b>
	T30	<b>1.75</b>	<b>4</b>	<b>3.75</b>	<b>4.75</b>	<b>4.25</b>	<b>4.67</b>	<b>3</b>	<b>1.67</b>
No Wagon-Cl.Fr. B1	T20	0.75	<b>3.5</b>	<b>4</b>	<b>3.5</b>	<b>2.75</b>	<b>1.67</b>	0	0.67
	T30	0.25	<b>3</b>	2.5	<b>4</b>	<b>4</b>	<b>3.33</b>	<b>1.67</b>	0
No Wagon-Cl.Fr. B2	T20	0	<b>4.5</b>	<b>2</b>	<b>3.25</b>	<b>4</b>	<b>4.33</b>	<b>3.33</b>	<b>2</b>
	T30	<b>2</b>	<b>3.75</b>	<b>2.25</b>	<b>4</b>	<b>4.25</b>	<b>4.67</b>	<b>3.33</b>	<b>2</b>
No Wagon-Cl.Fr. B3	T20	<b>2.25</b>	<b>1.25</b>	<b>1.5</b>	<b>2.5</b>	<b>2.75</b>	<b>2.67</b>	<b>1.33</b>	<b>1</b>
	T30	0.75	<b>2</b>	<b>1</b>	<b>2.5</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>1</b>
No Wagon-Cl.Fr. B4	T20	<b>1.75</b>	<b>1.75</b>	<b>2.75</b>	<b>3</b>	<b>2.25</b>	<b>2.67</b>	<b>1</b>	0.67
	T30	<b>1</b>	2.5	2.5	3.75	2.75	3	<b>1.67</b>	0.67
No Wagon-Op.Si. B0	T20	0.5	<b>1.75</b>	<b>1.50</b>	<b>1.50</b>	<b>1.25</b>	0.33	0	<b>1</b>
	T30	0.25	<b>1.5</b>	<b>1</b>	<b>2.50</b>	<b>1.75</b>	<b>1.33</b>	0.67	0.33
No Wagon-	T20	<b>1.25</b>	<b>2.25</b>	0.75	0	0.75	0.67	0.67	0.33
	T30	0.75	<b>1.25</b>	<b>1</b>	<b>2</b>	<b>1.25</b>	0.67	0	0.33

Op.Si. B1									
No Wagon- Op.Si. B2	T20	<b>1.5</b>	<b>1.5</b>	0.25	<b>2</b>	<b>1.25</b>	0.67	0.67	0.33
	T30	<b>1</b>	<b>1.50</b>	<b>1</b>	<b>2.75</b>	<b>1.75</b>	<b>1.67</b>	<b>1</b>	0.33
No Wagon- Op.Fr. B0	T20	<b>1</b>	<b>1.75</b>	<b>1.25</b>	<b>2.75</b>	<b>2.50</b>	<b>2</b>	<b>1.67</b>	<b>1</b>
	T30	0.50	<b>2</b>	<b>1.75</b>	<b>3.25</b>	<b>3.25</b>	<b>2.67</b>	<b>2</b>	<b>1</b>
No Wagon- Op.Fr. B1	T20	0.5	<b>2</b>	<b>2</b>	<b>2.75</b>	<b>2.25</b>	<b>1.67</b>	<b>1.33</b>	<b>1.33</b>
	T30	<b>1.75</b>	<b>1.50</b>	<b>1.50</b>	<b>3.25</b>	<b>3</b>	<b>2.67</b>	<b>1.67</b>	<b>1</b>
No Wagon- Op.Fr. B2	T20	<b>2.50</b>	<b>3</b>	<b>1.75</b>	<b>3.25</b>	<b>4</b>	<b>4.33</b>	<b>2.67</b>	<b>1.67</b>
	T30	<b>2.25</b>	<b>2.75</b>	<b>1.75</b>	<b>3.75</b>	<b>3.75</b>	<b>4</b>	<b>3</b>	<b>1.67</b>

**Table 5.9** - Differences in T<sub>20</sub> and T<sub>30</sub> results between Stonegate 3 with and without wagon structures. Values in bold indicate significant differences. Cells in orange indicate an increase in reverberation time values when a wagon structure is added whereas blue cells indicate a decrease in reverberation time. The cells that are not highlighted indicate that the difference is below 1JND.

Stonegate 4 - T <sub>20</sub> (s) and T <sub>30</sub> (s)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Without wagon	T20	0.62	0.54	0.60	0.58	0.55	0.48	0.39	0.32
	T30	0.58	0.56	0.59	0.60	0.55	0.49	0.40	0.31
Cl.Si. Src. B0	T20	0.53	0.56	0.60	0.54	0.53	0.47	0.35	0.26
	T30	0.58	0.59	0.60	0.57	0.56	0.49	0.39	0.30
Cl.Fr. Src. B0	T20	0.53	0.49	0.56	0.51	0.48	0.39	0.32	0.28
	T30	0.55	0.52	0.53	0.53	0.48	0.42	0.34	0.28
Op.Si. Src. B0	T20	0.55	0.57	0.61	0.59	0.55	0.50	0.37	0.29
	T30	0.56	0.57	0.57	0.60	0.57	0.50	0.40	0.31
Op.Fr. Src. B0	T20	0.62	0.60	0.57	0.52	0.53	0.43	0.33	0.27
	T30	0.64	0.58	0.56	0.56	0.54	0.46	0.36	0.28
Cl.Si. Src. B1	T20	0.68	0.62	0.65	0.62	0.58	0.53	0.43	0.35
	T30	0.68	0.60	0.63	0.61	0.58	0.52	0.42	0.35
Cl.Fr. Src. B1	T20	0.60	0.51	0.51	0.50	0.47	0.41	0.32	0.28
	T30	0.58	0.51	0.53	0.53	0.48	0.42	0.53	0.27
Op.Si. Src. B1	T20	0.57	0.57	0.55	0.57	0.57	0.51	0.42	0.32
	T30	0.61	0.57	0.57	0.57	0.55	0.50	0.41	0.33
Op.Fr. Src. B1	T20	0.41	0.58	0.55	0.53	0.48	0.43	0.34	0.29
	T30	0.48	0.57	0.56	0.55	0.51	0.44	0.36	0.30
Cl.Si. Src. B2	T20	0.66	0.58	0.59	0.57	0.52	0.48	0.37	0.28
	T30	0.61	0.58	0.57	0.59	0.56	0.50	0.39	0.29
Cl.Fr. Src. B2	T20	0.49	0.54	0.57	0.49	0.45	0.38	0.31	0.27
	T30	0.48	0.54	0.53	0.50	0.49	0.40	0.33	0.27
Op.Si. Src. B2	T20	0.54	0.54	0.57	0.58	0.56	0.48	0.38	0.30
	T30	0.59	0.58	0.55	0.59	0.57	0.50	0.40	0.31
Op.Fr. Src. B2	T20	0.52	0.54	0.52	0.51	0.47	0.40	0.32	0.28
	T30	0.55	0.55	0.54	0.53	0.52	0.44	0.35	0.29
Cl.Si. Src. B3	T20	0.65	0.62	0.62	0.67	0.63	0.56	0.45	0.34
	T30	0.62	0.55	0.62	0.66	0.61	0.54	0.44	0.34
Cl.Fr. Src. B3	T20	0.55	0.59	0.57	0.54	0.51	0.44	0.35	0.29
	T30	0.53	0.61	0.60	0.56	0.53	0.46	0.36	0.29
Op.Si. Src. B4	T20	0.62	0.62	0.66	0.67	0.64	0.57	0.45	0.35
	T30	0.60	0.60	0.64	0.64	0.63	0.55	0.45	0.35
Op.Fr. Src. B4	T20	0.55	0.56	0.55	0.55	0.50	0.43	0.36	0.29
	T30	0.59	0.57	0.56	0.56	0.52	0.44	0.36	0.29

**Table 5.10** - T<sub>20</sub> and T<sub>30</sub> values for Stonegate 4, combined with the different wagons.

Stonegate 4 - T <sub>20</sub> (JNDs) and T <sub>30</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
No Wagon-Cl.Si. B0	T20	<b>3</b>	0.67	0	<b>1.33</b>	0.67	0.33	<b>1.33</b>	<b>2</b>
	T30	0	<b>1</b>	0.33	<b>1</b>	0.33	0	0.33	0.33
No Wagon-Cl.Si. B1	T20	<b>2</b>	<b>2.67</b>	<b>1.67</b>	<b>1.33</b>	<b>1</b>	<b>1.67</b>	<b>1.33</b>	<b>1</b>
	T30	<b>3.33</b>	<b>1.33</b>	<b>1.33</b>	0.33	<b>1</b>	<b>1</b>	0.67	<b>1.33</b>
No Wagon-Cl.Si. B2	T20	<b>1.33</b>	<b>1.33</b>	0.33	0.33	<b>1</b>	0	0.67	<b>1.33</b>
	T30	<b>1</b>	0.67	0.67	0.33	0.33	0.33	0.33	0.67
No Wagon-Cl.Si. B3	T20	<b>1</b>	<b>2.67</b>	0.67	<b>3</b>	<b>2.67</b>	<b>2.67</b>	<b>2</b>	0.67
	T30	<b>1.33</b>	0.33	<b>1</b>	<b>2</b>	<b>2</b>	<b>1.67</b>	<b>1.33</b>	<b>1</b>
No Wagon-Cl.Si. B4	T20	0	<b>2.67</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>1</b>
	T30	0.67	<b>1.33</b>	<b>1.67</b>	<b>1.33</b>	<b>2.67</b>	<b>2</b>	<b>1.67</b>	<b>1.33</b>
No Wagon-Cl.Fr. B0	T20	<b>3</b>	<b>1.67</b>	<b>1.33</b>	<b>2.33</b>	<b>2.33</b>	<b>3</b>	<b>2.33</b>	<b>1.33</b>
	T30	<b>1</b>	<b>1.33</b>	<b>2</b>	<b>2.33</b>	<b>2.33</b>	<b>2.33</b>	<b>2</b>	<b>1</b>
No Wagon-Cl.Fr. B1	T20	0.67	<b>1</b>	<b>3</b>	<b>2.67</b>	<b>2.67</b>	<b>2.33</b>	<b>2.33</b>	<b>1.33</b>
	T30	0	<b>1.67</b>	<b>2</b>	<b>2.33</b>	<b>2.33</b>	<b>2.33</b>	<b>4.33</b>	<b>1.33</b>
No Wagon-Cl.Fr. B2	T20	<b>4.33</b>	0	<b>1</b>	<b>3</b>	<b>3.33</b>	<b>3.33</b>	<b>2.67</b>	<b>1.67</b>
	T30	<b>3.33</b>	0.67	<b>2</b>	<b>3.33</b>	<b>2</b>	<b>3</b>	<b>2.33</b>	<b>1.33</b>
No Wagon-Cl.Fr. B3	T20	<b>2.33</b>	<b>1.67</b>	<b>1</b>	<b>1.33</b>	<b>1.33</b>	<b>1.33</b>	<b>1.33</b>	<b>1</b>
	T30	<b>1.67</b>	<b>1.67</b>	0.33	<b>1.33</b>	0.67	<b>1</b>	1.33	0.67
No Wagon-Cl.Fr. B4	T20	<b>2.33</b>	0.67	<b>1.67</b>	<b>1</b>	<b>1.67</b>	<b>1.67</b>	<b>1</b>	<b>1</b>
	T30	0.33	0.33	<b>1</b>	<b>1.33</b>	<b>1</b>	<b>1.67</b>	<b>1.33</b>	0.67
No Wagon-Op.Si. B0	T20	<b>2.33</b>	<b>1</b>	0.33	0.33	0	0.67	0.67	<b>1</b>
	T30	0.67	0.33	0.67	0	0.67	0.33	0	0
No Wagon-Op.Si. B1	T20	<b>1.67</b>	<b>1</b>	<b>1.67</b>	0.33	0.67	<b>1</b>	<b>1</b>	0
	T30	<b>1</b>	0.33	0.67	<b>1</b>	0	0.33	0.33	0.67
No Wagon-Op.Si. B2	T20	<b>2.67</b>	0	<b>1</b>	0	0.33	0	0.33	0.67
	T30	0.33	0.67	1.33	0.33	0.67	0.33	0	0
No Wagon-Op.Fr. B0	T20	0	<b>2</b>	<b>1</b>	<b>2</b>	0.67	<b>1.67</b>	<b>2</b>	<b>1.67</b>
	T30	<b>2</b>	0.67	<b>1</b>	<b>1.33</b>	0.33	<b>1</b>	<b>1.33</b>	<b>1</b>
No Wagon-Op.Fr. B1	T20	<b>7</b>	<b>1.33</b>	<b>1.67</b>	<b>1.67</b>	<b>2.33</b>	<b>1.67</b>	<b>1.67</b>	<b>1</b>
	T30	<b>3.33</b>	0.33	<b>1</b>	<b>1.67</b>	<b>1.33</b>	<b>1.67</b>	<b>1.33</b>	0.33
No Wagon-Op.Fr. B2	T20	<b>3.33</b>	0	<b>2.67</b>	<b>2.33</b>	<b>2.67</b>	<b>2.67</b>	<b>2.33</b>	<b>1.33</b>
	T30	<b>1</b>	0.33	<b>1.67</b>	<b>2.33</b>	<b>1</b>	<b>1.67</b>	<b>1.67</b>	0.67

**Table 5.11** - Differences in T<sub>20</sub> and T<sub>30</sub> results between Stonegate 4 with and without wagons. Values in bold indicate significant differences. Cells in orange indicate an increase in reverberation time values when a wagon structure is added whereas blue cells indicate a decrease in reverberation time. The cells that are not highlighted indicate that the difference is below 1JND.

Virtual Model		Percentage of results with significant differences between model with and without a wagon structure	
		C50	C80
Stonegate 1	Wagon Cl.Si.	25%	40%
	Wagon Cl.Fr.	60%	70%
	Wagon Op.Si.	33%	33%
	Wagon Op.Fr.	67%	79%
Stonegate 2	Wagon Cl.Si.	63%	78%
	Wagon Cl.Fr.	63%	70%
	Wagon Op.Si.	71%	63%
	Wagon Op.Fr.	46%	50%
Stonegate 3	Wagon Cl.Si.	73%	80%
	Wagon Cl.Fr.	60%	58%
	Wagon Op.Si.	25%	42%
	Wagon Op.Fr.	71%	79%
Stonegate 4	Wagon Cl.Si.	78%	83%
	Wagon Cl.Fr.	63%	73%
	Wagon Op.Si.	50%	42%
	Wagon Op.Fr.	58%	71%

**Table 5.12 – Impact of the inclusion of the wagon structures on C<sub>50</sub> and C<sub>80</sub> values, expressed in percentages. The percentages are calculated across all source positions and frequency bands after averaging the results for receivers 1-3.**

		Stonegate 1 - C <sub>50</sub> (dB) and C <sub>80</sub> (dB)							
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Without wagon	C50	6.12	6.68	7.15	7.12	6.45	9.35	12.62	13.19
	C80	9.51	9.85	10.05	10.81	9.53	12.49	15.91	18.43
Cl.Si. Src. B0	C50	6.79	5.76	7.26	7.92	8.37	10.52	13.32	14.89
	C80	10.20	10.09	11.13	11.34	12.13	14.07	18.11	21.77
Cl.Fr. Src. B0	C50	4.68	3.77	6.28	9.14	11.40	13.57	16.91	19.04
	C80	7.68	7.84	9.77	12.28	15.36	17.22	21.33	24.49
Op.Si. Src. B0	C50	2.88	7.17	5.74	6.65	7.64	9.07	11.60	13.09
	C80	5.94	10.63	9.93	10.43	10.75	12.63	16.39	19.66
Op.Fr. Src. B0	C50	5.62	6.39	6.44	7.65	9.06	9.98	13.13	15.86
	C80	9.29	10.56	9.70	11.54	12.44	14.16	18.10	21.78
Cl.Si. Src. B1	C50	6.82	5.66	5.95	5.72	7	9.20	12.05	13.68
	C80	8.93	10.58	8.83	9.25	10.53	12.31	16.09	19.21
Cl.Fr. Src. B1	C50	4.21	3.63	4.53	7.01	8.57	9.91	12.90	14.27
	C80	7.68	8.15	8.36	10.45	11.67	13.47	17.30	19.88
Op.Si. Src. B1	C50	5.86	8.27	6.21	6.35	6.24	8.68	11.39	12.72
	C80	9.43	12.04	8.60	10.01	9.19	11.44	15.20	18.12
Op.Fr. Src. B1	C50	7.95	7	6.99	8.29	9.47	10.88	14.01	16
	C80	11.50	11.28	10.42	11.92	12.93	14.30	18.37	21.21
Cl.Si. Src. B2	C50	7.13	5.75	7.12	7.40	7.37	8.97	11.82	13.29
	C80	10.32	9.87	10.91	11.03	11.03	13	16.9	19.81
Cl.Fr. Src. B2	C50	7.79	9.16	9.85	11.51	12.73	14.49	17.57	19.05
	C80	10.37	12.90	13.90	14.90	16.27	18.16	22.32	24.94
Op.Si. Src. B2	C50	9.03	7.85	6.78	7.67	7.13	8.30	10.70	12.51
	C80	12.87	10.53	10.05	11.35	10.70	12.75	16.26	18.69
Op.Fr. Src. B2	C50	8.08	8.53	9.94	11.31	13.31	14.32	17.15	19.11
	C80	10.83	12.67	12.43	14.66	16.29	18.22	21.66	24.28
Cl.Si. Src. B3	C50	8.22	5.61	6.62	6.06	7	8.75	11.91	13.37
	C80	11.03	8.81	9.73	8.19	10.12	12.08	15.92	18.68
Cl.Fr.	C50	8.03	7.76	7.36	7.81	8.46	8.79	11.05	12.45

Src. B3	C80	10.97	10.54	10.78	11.65	12.39	13.80	16.76	19.15
Op.Si.	C50	4.16	8.32	6.83	6.87	6.98	8.47	10.74	11.93
	C80	7.07	11.43	10.81	10.97	10.77	12.86	15.84	18.34
Src. B4	C50	7.33	7.44	7.65	7.65	9.16	10.14	12.06	12.11
	C80	10.79	11.03	10.32	11.66	13.08	14.52	17.18	18.79

**Table 5.13 - C<sub>50</sub> and C<sub>80</sub> values for Stonegate 1, combined with the different wagons.**

Stonegate 1 - C <sub>50</sub> (JNDs) and C <sub>80</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
No Wagon-Cl.Si. B0	C50	0.61	0.84	0.1	0.73	<b>1.75</b>	<b>1.06</b>	0.64	<b>1.55</b>
	C80	0.69	0.24	<b>1.08</b>	0.53	<b>2.6</b>	<b>1.58</b>	<b>2.2</b>	<b>3.34</b>
No Wagon-Cl.Si. B1	C50	0.64	0.93	<b>1.09</b>	<b>1.27</b>	0.5	0.14	0.52	0.45
	C80	0.58	0.73	<b>1.22</b>	<b>1.56</b>	<b>1</b>	0.18	0.18	0.78
No Wagon-Cl.Si. B2	C50	0.92	0.85	0.03	0.25	0.84	0.35	0.73	0.09
	C80	0.81	0.02	0.86	0.22	<b>1.5</b>	0.51	0.99	<b>1.38</b>
No Wagon-Cl.Si. B3	C50	<b>1.91</b>	0.97	0.48	0.96	0.50	0.55	0.65	0.16
	C80	<b>1.52</b>	<b>1.04</b>	0.32	<b>2.62</b>	0.59	0.41	0.01	0.25
No Wagon-Cl.Si. B4	C50	<b>1.78</b>	<b>1.49</b>	0.29	0.23	0.48	0.80	<b>1.71</b>	<b>1.15</b>
	C80	<b>2.44</b>	<b>1.58</b>	0.76	0.16	<b>1.24</b>	0.37	0.07	0.09
No Wagon-Cl.Fr. B0	C50	<b>1.31</b>	<b>2.65</b>	0.79	<b>1.84</b>	<b>4.50</b>	<b>3.84</b>	<b>3.9</b>	<b>5.32</b>
	C80	<b>1.83</b>	<b>2.01</b>	0.28	<b>1.47</b>	<b>5.83</b>	<b>4.73</b>	<b>5.42</b>	<b>6.06</b>
No Wagon-Cl.Fr. B1	C50	<b>1.74</b>	<b>2.77</b>	<b>2.38</b>	0.10	<b>1.93</b>	0.51	0.25	0.98
	C80	<b>1.83</b>	<b>1.70</b>	<b>1.69</b>	0.36	<b>2.14</b>	0.98	<b>1.39</b>	<b>1.45</b>
No Wagon-Cl.Fr. B2	C50	<b>1.52</b>	<b>2.25</b>	<b>2.45</b>	<b>3.99</b>	<b>5.71</b>	<b>4.67</b>	<b>4.50</b>	<b>5.33</b>
	C80	0.86	<b>3.05</b>	<b>3.85</b>	<b>4.09</b>	<b>6.74</b>	<b>5.67</b>	<b>6.41</b>	<b>6.51</b>
No Wagon-Cl.Fr. B3	C50	<b>1.74</b>	0.98	0.19	0.63	<b>1.83</b>	0.51	1.43	0.67
	C80	<b>1.46</b>	0.69	0.73	0.84	<b>2.86</b>	<b>1.31</b>	0.85	0.72
No Wagon-Cl.Fr. B4	C50	<b>1.10</b>	0.69	0.45	0.48	<b>2.46</b>	0.72	0.51	0.98
	C80	<b>1.28</b>	<b>1.18</b>	0.27	0.85	<b>3.55</b>	<b>2.03</b>	<b>1.27</b>	0.36
No Wagon-Op.Si. B0	C50	<b>2.95</b>	0.45	<b>1.28</b>	0.43	<b>1.08</b>	0.25	0.93	0.09
	C80	<b>3.57</b>	0.78	0.12	0.38	<b>1.22</b>	0.14	0.48	<b>1.23</b>
No Wagon-Op.Si. B1	C50	0.24	<b>1.45</b>	0.85	0.70	0.19	0.61	<b>1.12</b>	0.43
	C80	0.08	<b>2.19</b>	<b>1.45</b>	0.80	0.34	<b>1.05</b>	0.71	0.31
No Wagon-Op.Si. B2	C50	<b>2.65</b>	<b>1.06</b>	0.34	0.50	0.62	0.95	<b>1.75</b>	0.62
	C80	<b>3.36</b>	0.68	0	0.54	<b>1.17</b>	0.26	0.35	0.26
No Wagon-Op.Fr. B0	C50	0.45	0.26	0.65	0.48	<b>2.37</b>	0.57	0.46	<b>2.43</b>
	C80	0.22	0.71	0.35	0.73	<b>2.91</b>	<b>1.67</b>	<b>2.19</b>	<b>3.35</b>
No Wagon-Op.Fr. B1	C50	<b>1.66</b>	0.29	0.15	<b>1.06</b>	<b>2.75</b>	<b>1.39</b>	<b>1.26</b>	<b>2.55</b>
	C80	<b>1.99</b>	<b>1.43</b>	0.37	<b>1.11</b>	<b>3.40</b>	<b>1.81</b>	<b>2.46</b>	<b>2.78</b>
No Wagon-Op.Fr. B2	C50	<b>1.78</b>	<b>1.68</b>	<b>2.54</b>	<b>3.81</b>	<b>6.24</b>	<b>4.52</b>	<b>4.12</b>	<b>5.38</b>
	C80	<b>1.32</b>	<b>2.82</b>	<b>2.38</b>	<b>3.85</b>	<b>6.76</b>	<b>5.73</b>	<b>5.75</b>	<b>5.85</b>

**Table 5.14 - Differences in C<sub>50</sub> and C<sub>80</sub> results between Stonegate 1 with and without wagons. Values in bold indicate significant differences. Cells in**

orange indicate an increase in clarity values when a wagon structure is added whereas blue cells indicate a decrease in clarity. The cells that are not highlighted indicate that the difference is below 1JND.

Stonegate 2 - C <sub>50</sub> (dB) and C <sub>80</sub> (dB)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Without wagon	C50	9.34	8.43	10.72	10.96	11.87	14.44	17.07	17.28
	C80	12.79	14.36	15.27	15.15	16.02	18.35	21.54	24.11
Cl.Si. Src. B0	C50	7.82	8.59	10.26	10.98	11.91	13.62	16.64	18.63
	C80	13.32	13.15	14.11	15.59	16.56	18.20	22.60	25.50
Cl.Fr. Src. B0	C50	5.55	5.50	8.73	11	12.28	14.64	17.72	19.62
	C80	9.94	9.54	12.90	14.87	17.05	19.19	23.17	25.61
Op.Si. Src. B0	C50	7.94	10.38	9.65	9.55	10.60	11.41	14.10	15.53
	C80	13.05	14.41	13.49	14.59	15.16	16.57	20.13	23.03
Op.Fr. Src. B0	C50	10.18	9.77	9.43	10.67	10.95	12.07	14.65	16.64
	C80	15.08	12.80	13.39	14.78	15.63	16.95	20.73	23.69
Cl.Si. Src. B1	C50	7.15	8.10	7.72	8.35	9.75	11.72	14.43	15.58
	C80	12.54	14	12.30	12.44	13.81	16.10	19.61	22.41
Cl.Fr. Src. B1	C50	6.43	6.77	6.86	9.35	11.15	12.86	15.34	16.68
	C80	9.58	10.82	11.66	13.51	15.58	17.72	20.94	23.15
Op.Si. Src. B1	C50	9.76	10.67	9.11	8.51	9.54	11.26	13.85	15.28
	C80	13.86	14.95	13.85	13.35	14.64	16.70	20.16	22.59
Op.Fr. Src. B1	C50	9.30	8.73	10.68	11.14	12.34	13.53	16.39	18.18
	C80	14.76	13.87	14.25	15.58	16.78	18.17	21.61	24.24
Cl.Si. Src. B2	C50	8.8	6.04	8.86	8.57	9.25	10.36	12.76	13.82
	C80	12.51	9.63	13.02	12.78	13.83	15.08	18.54	20.80
Cl.Fr. Src. B2	C50	8.25	11.13	11.65	11.48	13.43	14.57	17.23	18.52
	C80	13.25	15.51	14.88	16.03	17.66	18.99	22.49	25.18
Op.Si. Src. B2	C50	8.50	6.94	10.70	10.41	11.66	12.85	15.13	16.31
	C80	13.21	11.68	14.64	14.22	15.12	17.08	20.17	22.27
Op.Fr. Src. B2	C50	10.58	11.01	11.28	14.11	15.13	16.07	18.76	20.24
	C80	15.08	15.31	15.21	17.92	18.98	20.28	24.09	26.68
Cl.Si. Src. B3	C50	7.71	7.83	9.56	10.28	10.84	11.98	14.91	16.34
	C80	11.76	11.12	13.34	13.26	14.49	16.31	20.05	23.26
Cl.Fr. Src. B3	C50	9.81	8.49	8.50	9.37	10.08	11.40	13.09	14.14
	C80	14.64	12.52	12.93	13.47	14.99	16.36	19.11	21.20
Op.Si. Src. B4	C50	8.26	10.62	9.75	9.98	9.71	11.35	13.59	14.38
	C80	12.44	13.36	13.05	13.94	14.92	16.46	19.08	21.86
Op.Fr. Src. B4	C50	10.49	8.04	9.69	9.57	10.48	11.07	12.54	12.89
	C80	13.52	12.89	13.81	12.91	14.65	16.20	18.72	19.95

**Table 5.15** - C<sub>50</sub> and C<sub>80</sub> values for Stonegate 2, combined with the different wagons.

Stonegate 2 - C <sub>50</sub> (JNDs) and C <sub>80</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
No Wagon-Cl.Si. B0	C50	<b>1.38</b>	0.15	0.42	0.02	0.04	0.75	0.39	<b>1.23</b>
	C80	0.53	<b>1.21</b>	<b>1.16</b>	0.44	0.54	0.15	<b>1.06</b>	<b>1.39</b>
No Wagon-Cl.Si. B1	C50	<b>1.99</b>	0.3	<b>2.73</b>	<b>2.37</b>	<b>1.93</b>	<b>2.47</b>	<b>2.4</b>	<b>1.55</b>
	C80	0.25	0.36	<b>2.97</b>	<b>2.71</b>	<b>2.21</b>	<b>2.25</b>	<b>1.93</b>	<b>1.70</b>
No Wagon-Cl.Si. B2	C50	0.49	<b>2.17</b>	<b>1.69</b>	<b>2.17</b>	<b>2.38</b>	<b>3.71</b>	<b>3.92</b>	<b>3.15</b>
	C80	0.28	<b>4.73</b>	<b>2.25</b>	<b>2.37</b>	<b>2.19</b>	<b>3.27</b>	<b>3</b>	<b>3.31</b>
No Wagon-Cl.Si. B3	C50	<b>1.48</b>	0.55	<b>1.05</b>	0.62	0.94	<b>2.24</b>	<b>1.96</b>	0.85
	C80	<b>1.03</b>	<b>3.24</b>	<b>1.93</b>	<b>1.89</b>	<b>1.53</b>	<b>2.04</b>	<b>1.49</b>	0.85
No	C50	0.98	<b>1.99</b>	0.88	0.89	<b>1.96</b>	<b>2.81</b>	<b>3.16</b>	<b>2.64</b>

Wagon-Cl.Si. B4	C80	0.35	<b>1</b>	<b>2.22</b>	<b>1.21</b>	<b>1.1</b>	<b>1.89</b>	<b>2.46</b>	<b>2.25</b>
No Wagon-Cl.Fr. B0	C50	<b>3.45</b>	<b>2.66</b>	<b>1.81</b>	0.04	0.37	0.18	0.59	<b>2.13</b>
	C80	<b>2.85</b>	<b>4.82</b>	<b>2.37</b>	0.28	<b>1.03</b>	0.84	<b>1.63</b>	<b>1.50</b>
No Wagon-Cl.Fr. B1	C50	<b>2.65</b>	<b>1.51</b>	<b>3.51</b>	<b>1.46</b>	0.65	<b>1.44</b>	<b>1.57</b>	0.55
	C80	<b>3.21</b>	<b>3.54</b>	<b>3.61</b>	<b>1.64</b>	0.44	0.63	0.60	0.96
No Wagon-Cl.Fr. B2	C50	0.99	<b>2.45</b>	0.85	0.47	<b>1.42</b>	0.12	0.15	<b>1.13</b>
	C80	0.46	<b>1.15</b>	0.39	0.88	<b>1.64</b>	0.64	0.95	<b>1.07</b>
No Wagon-Cl.Fr. B3	C50	0.43	0.05	<b>2.02</b>	<b>1.45</b>	<b>1.63</b>	<b>2.76</b>	<b>3.62</b>	<b>2.85</b>
	C80	<b>1.85</b>	<b>1.84</b>	<b>2.34</b>	<b>1.68</b>	<b>1.03</b>	<b>1.99</b>	<b>2.43</b>	<b>2.91</b>
No Wagon-Cl.Fr. B4	C50	<b>1.05</b>	0.35	0.94	<b>1.26</b>	<b>1.26</b>	<b>3.06</b>	<b>4.12</b>	<b>3.99</b>
	C80	0.73	<b>1.47</b>	<b>1.46</b>	<b>2.24</b>	<b>1.37</b>	<b>2.15</b>	<b>2.82</b>	<b>4.16</b>
No Wagon-Op.Si. B0	C50	<b>1.27</b>	<b>1.77</b>	0.97	<b>1.28</b>	<b>1.15</b>	<b>2.75</b>	<b>2.70</b>	<b>1.59</b>
	C80	0.26	0.05	<b>1.78</b>	0.56	0.86	<b>1.78</b>	<b>1.41</b>	<b>1.08</b>
No Wagon-Op.Si. B1	C50	0.38	<b>2.04</b>	<b>1.46</b>	<b>2.23</b>	<b>2.12</b>	<b>2.89</b>	<b>2.93</b>	<b>1.82</b>
	C80	<b>1.07</b>	0.59	<b>1.42</b>	<b>1.80</b>	<b>1.38</b>	<b>1.65</b>	<b>1.38</b>	<b>1.52</b>
No Wagon-Op.Si. B2	C50	0.76	<b>1.35</b>	0.02	0.5	0.19	<b>1.45</b>	<b>1.76</b>	0.88
	C80	0.42	<b>2.68</b>	0.63	0.93	0.90	<b>1.27</b>	<b>1.37</b>	<b>1.84</b>
No Wagon-Op.Fr. B0	C50	0.76	<b>1.22</b>	<b>1.17</b>	0.26	0.84	<b>2.15</b>	<b>2.2</b>	0.58
	C80	<b>2.29</b>	<b>1.56</b>	<b>1.88</b>	0.37	0.39	<b>1.40</b>	0.81	0.42
No Wagon-Op.Fr. B1	C50	0.04	0.27	0.04	0.16	0.43	0.83	0.62	0.82
	C80	<b>1.97</b>	0.49	<b>1.02</b>	0.43	0.76	0.18	0.07	0.13
No Wagon-Op.Fr. B2	C50	<b>1.13</b>	<b>2.35</b>	0.51	<b>2.86</b>	<b>2.96</b>	<b>1.48</b>	<b>1.54</b>	<b>2.69</b>
	C80	<b>2.29</b>	0.95	0.06	<b>2.77</b>	<b>2.96</b>	<b>1.93</b>	<b>2.55</b>	<b>2.57</b>

**Table 5.16** - Differences in C<sub>50</sub> and C<sub>80</sub> results between Stonegate 2 with and without wagons. Values in bold indicate significant differences. Cells in orange indicate an increase in clarity values when a wagon structure is added whereas blue cells indicate a decrease in clarity. The cells that are not highlighted indicate that the difference is below 1JND.

Stonegate 3 - C <sub>50</sub> (dB) and C <sub>80</sub> (dB)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Without wagon	C50	3.8	2.91	5.41	5.46	6.11	7.6	11.06	11.91
	C80	7.29	6.48	7.87	8.47	8.89	10.63	14.45	16.49
Cl.Si. Src. B0	C50	5.16	<b>5.37</b>	6.56	7.26	8.22	9.97	12.8	15.22
	C80	9.34	8.34	9.7	10.07	11.43	13.37	17.18	20.77
Cl.Fr. Src. B0	C50	4.16	2.6	5.29	7.82	9.62	11.96	15.6	17.63
	C80	7.18	7.6	8.54	11.31	13.23	15.37	19.7	22.55
Op.Si. Src. B0	C50	6.23	<b>6.31</b>	4.75	5.99	6.53	8.25	10.71	12.51
	C80	9.67	9.07	7.99	8.5	9.62	11.37	15.51	18.94
Op.Fr. Src. B0	C50	4.52	6.55	5.52	5.53	6.53	7.96	11.36	13.97
	C80	7.94	9.81	8.67	8.57	9.81	11.52	15.97	19.48
Cl.Si. Src. B1	C50	3.84	<b>4.77</b>	3.51	4.33	4.46	6.48	9.42	11.32
	C80	7.39	7.47	6.64	7.56	7.71	9.49	13.41	16.49
Cl.Fr. Src. B1	C50	2.7	4	4.05	6.31	7.67	9.52	12.51	14.89
	C80	8.28	7.42	7.02	8.91	10.04	12.3	16.06	18.77
Op.Si. Src. B1	C50	6.39	<b>7.09</b>	5.71	4.9	5.66	7.38	10.34	11.68
	C80	9.22	9.61	8.12	8.11	8.26	10.14	13.78	16.65
Op.Fr. Src. B1	C50	6.18	6.05	6.35	7.12	8.68	9.9	12.82	14.86
	C80	9.49	10.02	9.73	9.71	11.77	13.46	17.09	20.15

Cl.Si.	C50	5.81	5.38	5.18	5.93	6.47	8.52	11.45	12.95
Src. B2	C80	8.54	9.12	8.15	9.20	9.41	11.96	15.89	18.22
Cl.Fr.	C50	6.83	7.02	8.7	10.08	12.06	13.95	16.96	18.13
Src. B2	C80	8.88	9.65	10.94	13.48	15.06	17.22	21.07	23.39
Op.Si.	C50	4.19	5.09	6.89	5.7	6.63	7.75	10.02	12.22
Src. B2	C80	8.26	7.97	9.37	8.55	9.44	11.65	14.71	17.73
Op.Fr.	C50	6.54	7.64	8.27	9.27	10.86	12.86	15.63	16.61
Src. B2	C80	10.58	10.77	10.82	11.92	14.18	16.06	19.71	22.07
Cl.Si.	C50	2.97	0.42	3.81	2.83	3.68	4.83	8.3	10.75
Src. B3	C80	5.72	3.84	6.35	5.88	5.83	7.37	11.58	15.31
Cl.Fr.	C50	3.44	4.61	5.4	4.76	6.28	6.96	9.22	10.84
Src. B3	C80	7.76	7.8	8.02	7.49	9.51	11.12	14.23	17.2
Op.Si.	C50	3.15	4	3.53	3.1	3.11	4.44	6.84	8.55
Src. B4	C80	5.53	6.36	6.11	5.77	6.16	7.89	11.02	13.79
Op.Fr.	C50	6.09	4.81	5.66	5.42	6.88	7.92	9.78	11.2
Src. B4	C80	8.68	7.91	8.77	8.77	10.39	11.65	14.39	16.77

**Table 5.17 - C<sub>50</sub> and C<sub>80</sub> values for Stonegate 3, combined with the different wagons.**

Stonegate 3- C <sub>50</sub> (JNDs) and C <sub>80</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
No Wagon-Cl.Si. B0	C50	<b>1.24</b>	<b>2.24</b>	<b>1.05</b>	<b>1.64</b>	<b>1.92</b>	<b>2.15</b>	<b>1.58</b>	<b>3.01</b>
	C80	<b>2.05</b>	<b>1.86</b>	<b>1.83</b>	<b>1.6</b>	<b>2.54</b>	<b>2.74</b>	<b>2.73</b>	<b>4.28</b>
No Wagon-Cl.Si. B1	C50	0.04	<b>1.69</b>	<b>1.73</b>	<b>1.03</b>	<b>1.5</b>	<b>1.02</b>	<b>1.49</b>	0.54
	C80	0.1	0.99	<b>1.23</b>	0.91	<b>1.18</b>	<b>1.14</b>	<b>1.04</b>	0
No Wagon-Cl.Si. B2	C50	<b>1.83</b>	<b>2.25</b>	0.21	0.43	0.33	0.84	0.35	0.95
	C80	<b>1.25</b>	<b>2.64</b>	0.28	0.73	0.52	<b>1.33</b>	<b>1.44</b>	<b>1.73</b>
No Wagon-Cl.Si. B3	C50	0.75	2.26	<b>1.45</b>	<b>2.39</b>	<b>2.21</b>	<b>2.52</b>	<b>2.51</b>	<b>1.05</b>
	C80	<b>1.57</b>	<b>2.64</b>	<b>1.52</b>	<b>2.59</b>	<b>3.06</b>	<b>3.26</b>	<b>2.87</b>	<b>1.18</b>
No Wagon-Cl.Si. B4	C50	0.59	0.99	<b>1.71</b>	<b>2.15</b>	<b>2.73</b>	<b>2.87</b>	<b>3.84</b>	<b>3.05</b>
	C80	<b>1.76</b>	0.12	<b>1.76</b>	2.7	<b>2.73</b>	<b>2.74</b>	<b>3.43</b>	2.7
No Wagon-Cl.Fr. B0	C50	0.33	0.28	0.11	<b>2.15</b>	<b>3.19</b>	<b>3.96</b>	<b>4.13</b>	<b>5.2</b>
	C80	0.11	<b>1.12</b>	0.67	<b>2.84</b>	<b>4.34</b>	<b>4.74</b>	<b>5.25</b>	<b>6.06</b>
No Wagon-Cl.Fr. B1	C50	<b>1</b>	0.99	<b>1.24</b>	0.77	<b>1.42</b>	<b>1.75</b>	<b>1.32</b>	<b>2.71</b>
	C80	0.99	0.94	0.85	0.44	<b>1.15</b>	<b>1.67</b>	<b>1.61</b>	<b>2.28</b>
No Wagon-Cl.Fr. B2	C50	<b>2.75</b>	<b>3.74</b>	<b>2.99</b>	<b>4.2</b>	<b>5.41</b>	<b>5.77</b>	<b>5.36</b>	<b>5.65</b>
	C80	<b>1.59</b>	<b>3.17</b>	<b>3.07</b>	<b>5.01</b>	<b>6.17</b>	<b>6.59</b>	<b>6.62</b>	<b>6.9</b>
No Wagon-Cl.Fr. B3	C50	0.33	<b>1.55</b>	0.01	0.64	0.15	0.58	<b>1.67</b>	0.97
	C80	0.47	<b>1.32</b>	0.15	0.98	0.62	0.49	0.22	0.71
No Wagon-Cl.Fr. B4	C50	<b>2.08</b>	<b>1.73</b>	0.23	0.04	0.7	0.29	<b>1.16</b>	0.65
	C80	<b>1.39</b>	<b>1.43</b>	0.9	0.3	<b>1.5</b>	<b>1.02</b>	0.06	0.28
No Wagon-Op.Si. B0	C50	<b>2.21</b>	<b>3.09</b>	0.6	0.48	0.38	0.59	0.32	0.55
	C80	<b>2.38</b>	<b>2.59</b>	0.12	0.03	0.73	0.74	<b>1.06</b>	<b>2.45</b>
No Wagon-Op.Si. B1	C50	<b>2.35</b>	<b>3.8</b>	0.27	0.51	0.41	0.2	0.65	0.21
	C80	<b>1.93</b>	<b>3.13</b>	0.25	0.36	0.63	0.49	0.67	0.16
No Wagon-Op.Si. B2	C50	0.35	<b>1.98</b>	<b>1.35</b>	0.22	0.47	0.14	0.95	0.28
	C80	0.97	<b>1.49</b>	<b>1.5</b>	0.08	0.55	<b>1.02</b>	0.26	<b>1.24</b>
No	C50	0.65	<b>3.31</b>	0.1	0.06	0.38	0.33	0.27	<b>1.87</b>

Wagon- Op.Fr. B0	C80	0.65	<b>3.33</b>	0.8	0.1	0.92	0.89	<b>1.52</b>	<b>2.99</b>
No Wagon- Op.Fr. B1	C50	<b>2.16</b>	<b>2.85</b>	0.85	<b>1.51</b>	<b>2.34</b>	<b>2.09</b>	<b>1.6</b>	<b>2.68</b>
	C80	<b>2.2</b>	<b>3.54</b>	<b>1.86</b>	<b>1.24</b>	<b>2.88</b>	<b>2.83</b>	<b>2.64</b>	<b>3.66</b>
No Wagon- Op.Fr. B2	C50	<b>2.49</b>	<b>4.3</b>	<b>2.6</b>	<b>3.46</b>	<b>4.32</b>	<b>4.78</b>	<b>4.15</b>	<b>4.27</b>
	C80	<b>3.29</b>	<b>4.29</b>	<b>2.95</b>	<b>3.45</b>	<b>5.29</b>	<b>5.43</b>	<b>5.26</b>	<b>5.58</b>

**Table 5.18** - Differences in  $C_{50}$  and  $C_{80}$  results between Stonegate 3 with and without wagons. Values in bold indicate significant differences. Cells in orange indicate an increase in clarity values when a wagon structure is added whereas blue cells indicate a decrease in clarity. The cells that are not highlighted indicate that the difference is below 1JND.

Stonegate 4 - $C_{50}$ (dB) and $C_{80}$ (dB)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Without wagon	C50	4.45	4.45	7.71	8.78	9.52	11.86	14.61	15.49
	C80	9.15	7.4	10.88	12.12	13.01	15.48	18.49	21.09
Cl.Si. Src. B0	C50	7.3	7.95	9.43	9.73	<b>11.46</b>	12.4	15.33	17.13
	C80	<b>10.56</b>	<b>11.4</b>	<b>12.52</b>	<b>13.31</b>	<b>15.52</b>	<b>16.93</b>	<b>20.74</b>	<b>23.77</b>
Cl.Fr. Src. B0	C50	5.53	4.52	6.86	9.38	<b>11.42</b>	<b>13.73</b>	<b>17.08</b>	<b>18.41</b>
	C80	9.56	9.99	10.35	13.22	<b>15.17</b>	<b>17.92</b>	<b>21.77</b>	<b>24.53</b>
Op.Si. Src. B0	C50	<b>8.45</b>	<b>7.18</b>	<b>7.39</b>	<b>8.6</b>	<b>10.02</b>	<b>11.31</b>	<b>13.9</b>	<b>15.44</b>
	C80	<b>12.84</b>	<b>10.06</b>	<b>10.63</b>	<b>12.24</b>	<b>13.5</b>	<b>14.8</b>	<b>18.52</b>	<b>21.18</b>
Op.Fr. Src. B0	C50	7.63	8.56	7.41	8.45	9.66	10.4	13.86	19.06
	C80	11.99	11.44	10.76	12.5	<b>13.41</b>	<b>15.16</b>	<b>19.42</b>	<b>22.47</b>
Cl.Si. Src. B1	C50	3.28	6.01	5.69	6.85	6.79	8.42	10.98	12.73
	C80	6.25	8.96	9.75	10.9	<b>10.52</b>	<b>12.61</b>	<b>15.85</b>	<b>18.49</b>
Cl.Fr. Src. B1	C50	3.83	6.43	7.14	8.92	<b>10.68</b>	<b>12.48</b>	<b>15.22</b>	<b>15.98</b>
	C80	9.8	9.62	<b>10.11</b>	<b>12.96</b>	<b>14.49</b>	<b>16.65</b>	<b>20.61</b>	<b>22.58</b>
Op.Si. Src. B1	C50	6.36	6.61	5.7	6.91	7.84	9.12	11.27	12.68
	C80	10.03	10	<b>10.47</b>	<b>10.75</b>	<b>11.51</b>	<b>12.91</b>	<b>16.23</b>	<b>19.06</b>
Op.Fr. Src. B1	C50	6.98	8.28	8.25	8.97	<b>10.14</b>	<b>11.81</b>	<b>14.53</b>	<b>16.35</b>
	C80	12.21	12.56	12.23	12.8	<b>14.55</b>	<b>15.89</b>	<b>19.78</b>	<b>22.52</b>
Cl.Si. Src. B2	C50	9.72	7.44	8.02	9.24	9.6	11.97	13.75	15.39
	C80	13.34	11.44	11.89	12.7	<b>13.48</b>	<b>15.56</b>	<b>18.85</b>	<b>20.91</b>
Cl.Fr. Src. B2	C50	5.71	10.36	11.12	11.72	<b>14.06</b>	<b>15.33</b>	<b>18.16</b>	<b>19.16</b>
	C80	<b>13.66</b>	<b>14.92</b>	<b>13.99</b>	<b>15.18</b>	<b>17.79</b>	<b>19.27</b>	<b>22.89</b>	<b>25.23</b>
Op.Si. Src. B2	C50	7.99	8.79	8.28	9.68	<b>10.28</b>	<b>11.44</b>	<b>14.25</b>	<b>15.54</b>
	C80	<b>11.64</b>	<b>12.48</b>	<b>11.31</b>	<b>13.01</b>	<b>13.83</b>	<b>15.9</b>	<b>18.97</b>	<b>21.32</b>
Op.Fr. Src. B2	C50	7.65	8.9	9.48	11.53	<b>13.44</b>	<b>15.03</b>	<b>17.38</b>	<b>18.62</b>
	C80	12.22	13.52	13.71	14.96	<b>16.92</b>	<b>18.8</b>	<b>22.01</b>	<b>24.14</b>
Cl.Si. Src. B3	C50	5.9	2.18	6.19	6.57	7.07	7.96	11.24	13.41
	C80	9	6.32	9.77	9.54	<b>10.13</b>	<b>11.32</b>	<b>15.04</b>	<b>18.82</b>
Cl.Fr. Src. B3	C50	4.41	6.78	6.94	7.34	<b>8.75</b>	<b>9.46</b>	<b>11.25</b>	<b>12.23</b>
	C80	6.98	9.8	<b>10.74</b>	10.7	<b>12.74</b>	<b>13.57</b>	<b>16.95</b>	<b>18.66</b>
Op.Si. Src. B4	C50	6.03	5.64	5.2	6.49	5.7	6.91	8.76	9.65
	C80	8.19	8.79	9.22	9.65	<b>9.32</b>	<b>10.67</b>	<b>13.75</b>	<b>15.82</b>
Op.Fr. Src. B4	C50	8.02	6.28	7.59	7.58	<b>9.38</b>	<b>10.3</b>	<b>11.6</b>	<b>12.75</b>
	C80	11.73	10.88	10.99	11.35	<b>13.24</b>	<b>14.99</b>	17	19.28

**Table 5.19** -  $C_{50}$  and  $C_{80}$  values for Stonegate 4, combined with the different wagons.

Stonegate 4 - C <sub>50</sub> (JNDs) and C <sub>80</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
No Wagon-Cl.Si. B0	C50	<b>2.59</b>	<b>3.18</b>	<b>1.56</b>	0.86	<b>1.76</b>	0.49	0.65	<b>1.49</b>
	C80	<b>1.41</b>	4	<b>1.64</b>	<b>1.19</b>	<b>2.51</b>	<b>1.45</b>	<b>2.25</b>	<b>2.68</b>
No Wagon-Cl.Si. B1	C50	<b>1.06</b>	<b>1.42</b>	<b>1.84</b>	<b>1.75</b>	<b>2.48</b>	<b>3.13</b>	3.3	<b>2.51</b>
	C80	<b>2.9</b>	<b>1.56</b>	<b>1.13</b>	<b>1.22</b>	<b>2.49</b>	<b>2.87</b>	<b>2.64</b>	2.6
No Wagon-Cl.Si. B2	C50	<b>4.79</b>	<b>2.72</b>	0.28	0.42	0.07	0.1	0.78	0.09
	C80	<b>4.19</b>	<b>4.04</b>	<b>1.01</b>	0.58	0.47	0.08	0.36	0.18
No Wagon-Cl.Si. B3	C50	<b>1.32</b>	<b>2.06</b>	<b>1.38</b>	<b>2.01</b>	<b>2.23</b>	<b>3.55</b>	<b>3.06</b>	<b>1.89</b>
	C80	0.15	<b>1.08</b>	<b>1.11</b>	<b>2.58</b>	<b>2.88</b>	<b>4.16</b>	<b>3.45</b>	<b>2.27</b>
No Wagon-Cl.Si. B4	C50	<b>1.44</b>	<b>1.08</b>	<b>2.28</b>	<b>2.08</b>	<b>3.47</b>	<b>4.5</b>	<b>5.32</b>	<b>5.31</b>
	C80	0.96	<b>1.39</b>	<b>1.66</b>	<b>2.47</b>	<b>3.69</b>	<b>4.81</b>	<b>4.74</b>	<b>5.27</b>
No Wagon-Cl.Fr. B0	C50	0.98	0.06	0.77	0.55	<b>1.73</b>	<b>1.7</b>	<b>2.25</b>	<b>2.65</b>
	C80	0.41	<b>2.59</b>	0.53	<b>1.1</b>	<b>2.16</b>	<b>2.44</b>	<b>3.28</b>	<b>3.44</b>
No Wagon-Cl.Fr. B1	C50	0.56	<b>1.8</b>	0.52	0.13	<b>1.05</b>	0.56	0.55	0.45
	C80	0.65	<b>2.22</b>	0.77	0.84	<b>1.48</b>	<b>1.17</b>	<b>2.12</b>	<b>1.49</b>
No Wagon-Cl.Fr. B2	C50	<b>1.15</b>	<b>5.37</b>	<b>3.1</b>	<b>2.67</b>	<b>4.13</b>	<b>3.15</b>	<b>3.23</b>	<b>3.34</b>
	C80	<b>4.51</b>	<b>7.52</b>	<b>3.11</b>	<b>3.06</b>	<b>4.78</b>	<b>3.79</b>	<b>4.4</b>	<b>4.14</b>
No Wagon-Cl.Fr. B3	C50	0.04	<b>2.12</b>	0.7	<b>1.31</b>	0.7	<b>2.18</b>	<b>3.05</b>	<b>2.96</b>
	C80	<b>2.17</b>	<b>2.4</b>	0.14	<b>1.42</b>	0.27	<b>1.91</b>	<b>1.54</b>	<b>2.43</b>
No Wagon-Cl.Fr. B4	C50	<b>3.25</b>	<b>1.66</b>	0.11	<b>1.09</b>	<b>0.13</b>	<b>1.42</b>	<b>2.74</b>	<b>2.49</b>
	C80	<b>2.58</b>	<b>3.48</b>	0.11	0.77	0.23	0.49	<b>1.49</b>	<b>1.81</b>
No Wagon-Op.Si. B0	C50	<b>3.64</b>	<b>2.48</b>	0.29	0.16	0.45	0.5	0.65	0.05
	C80	<b>3.69</b>	<b>2.66</b>	0.25	0.12	0.49	0.68	0.03	0.09
No Wagon-Op.Si. B1	C50	<b>1.74</b>	<b>1.96</b>	<b>1.83</b>	<b>1.7</b>	<b>1.53</b>	<b>2.49</b>	<b>3.04</b>	<b>2.55</b>
	C80	0.88	<b>2.6</b>	0.41	<b>1.37</b>	<b>1.5</b>	<b>2.57</b>	<b>2.26</b>	<b>2.03</b>
No Wagon-Op.Si. B2	C50	<b>3.22</b>	<b>3.95</b>	0.52	0.82	0.69	0.38	0.33	0.05
	C80	<b>2.49</b>	<b>5.08</b>	0.43	0.89	0.82	0.42	0.48	0.23
No Wagon-Op.Fr. B0	C50	<b>2.89</b>	<b>3.74</b>	0.27	0.3	0.13	<b>1.33</b>	0.68	<b>3.25</b>
	C80	<b>2.84</b>	<b>4.04</b>	0.12	0.38	0.4	0.32	0.93	<b>1.38</b>
No Wagon-Op.Fr. B1	C50	<b>2.3</b>	<b>3.48</b>	0.49	0.17	0.56	0.05	0.07	0.78
	C80	<b>3.06</b>	<b>5.16</b>	<b>1.35</b>	0.68	<b>1.54</b>	0.41	<b>1.29</b>	<b>1.43</b>
No Wagon-Op.Fr. B2	C50	<b>2.91</b>	<b>4.05</b>	<b>1.61</b>	<b>2.5</b>	<b>3.56</b>	<b>2.88</b>	<b>2.52</b>	<b>2.85</b>
	C80	<b>3.07</b>	<b>6.12</b>	<b>2.83</b>	<b>2.84</b>	<b>3.91</b>	<b>3.32</b>	<b>3.52</b>	<b>3.05</b>

**Table 5.20** - Differences in C<sub>50</sub> and C<sub>80</sub> results between Stonegate 4 with and without wagons. Values in bold indicate significant differences. Cells in orange indicate an increase in clarity values when a wagon structure is added whereas blue cells indicate a decrease in clarity. The cells that are not highlighted indicate that the difference is below 1JND.

Virtual Model		Percentage of results with significant differences between model with and without a wagon structure	
		IACC <sub>E3</sub>	LF <sub>E4</sub>
Stonegate 1	Wagon Cl.Si.	60%	13%
	Wagon Cl.Fr.	87%	73%
	Wagon Op.Si.	33%	11%
	Wagon Op.Fr.	53%	78%
Stonegate 2	Wagon Cl.Si.	67%	20%
	Wagon Cl.Fr.	93%	67%
	Wagon Op.Si.	67%	0%
	Wagon Op.Fr.	89%	56%
Stonegate 3	Wagon Cl.Si.	53%	13%
	Wagon Cl.Fr.	73%	80%
	Wagon Op.Si.	56%	0%
	Wagon Op.Fr.	67%	67%
Stonegate 4	Wagon Cl.Si.	40%	53%
	Wagon Cl.Fr.	80%	73%
	Wagon Op.Si.	33%	22%
	Wagon Op.Fr.	78%	56%

**Table 5.21** - Impact of the inclusion of the wagon structures on IACC<sub>E3</sub> and LF<sub>E4</sub> values. No averaging across receiver positions was conducted prior to the analysis and comparisons were made per receiver.

Stonegate 1		
Receiver	IACC <sub>E3</sub>	LF <sub>E4</sub>
<b>Without wagon</b>		
1	0.64	0.03
2	0.49	0.07
3	0.59	0.09
<b>Cl.Si.-Src. B0</b>		
1	0.59	0.09
2	0.38	0.11
3	0.66	0.10
<b>Cl.Fr.-Src. B0</b>		
1	0.40	0.15
2	0.50	0.10
3	0.47	0.20
<b>Op.Si.-Src. B0</b>		
1	0.67	0.06
2	0.38	0.21
3	0.56	0.08
<b>Op.Fr.-Src. B0</b>		
1	0.38	0.17
2	0.25	0.15
3	0.25	0.23
<b>Cl.Si.-Src. B1</b>		
1	0.50	0.05
2	0.32	0.12
3	0.64	0.09
<b>Cl.Fr.-Src. B1</b>		
1	0.45	0.13
2	0.46	0.08
3	0.28	0.20
<b>Op.Si.-Src. B1</b>		
1	0.55	0.05
2	0.38	0.09

3	0.54	0.09
<b>Op.Fr.-Src. B1</b>		
1	0.41	0.12
2	0.41	0.09
3	0.24	0.19
<b>Cl.Si.-Src. B2</b>		
1	0.50	0.04
2	0.28	0.11
3	0.68	0.08
<b>Cl.Fr.-Src. B2</b>		
1	0.42	0.14
2	0.59	0.07
3	0.39	0.17
<b>Op.Si.-Src. B2</b>		
1	0.51	0.06
2	0.38	0.08
3	0.59	0.07
<b>Op.Fr.-Src. B2</b>		
1	0.56	0.11
2	0.56	0.07
3	0.46	0.16
<b>Cl.Si.-Src. B3</b>		
1	0.76	0.05
2	0.55	0.08
3	0.56	0.08
<b>Cl.Fr.-Src. B3</b>		
1	0.27	0.13
2	0.26	0.17
3	0.33	0.13
<b>Cl.Si.-Src. B4</b>		
1	0.74	0.05
2	0.35	0.08
3	0.62	0.07
<b>Cl.Fr.-Src. B4</b>		
1	0.24	0.19
2	0.27	0.12
3	0.35	0.14

**Table 5.22 – IACC<sub>E3</sub> and LF<sub>E4</sub> values for Stonegate 1, combined with the different wagons.**

Stonegate 1		
Receiver	IACC <sub>E3</sub> (JNDs)	LF <sub>E4</sub> (JNDs)
<b>No Wagon- Cl.Si.-B0</b>		
1	0.67	1.2
2	1.47	0.8
3	0.93	0.2
<b>No Wagon- Cl.Si.-B1</b>		
1	1.87	0.4
2	2.27	1
3	0.67	0
<b>No Wagon- Cl.Si.-B2</b>		
1	1.87	0.2
2	2.8	0.8
3	1.2	0.2
<b>No Wagon- Cl.Si.-B3</b>		
1	1.6	0.4
2	0.8	0.2
3	0.4	0.2
<b>No Wagon- Cl.Si.-B4</b>		
1	1.33	0.4
2	1.87	0.2

3	0.4	0.4
<b>No Wagon- Cl.Fr.- B0</b>		
1	<b>3.2</b>	<b>2.4</b>
2	0.13	0.6
3	<b>1.6</b>	<b>2.2</b>
<b>No Wagon- Cl.Fr.- B1</b>		
1	<b>2.53</b>	<b>2</b>
2	0.4	0.2
3	<b>4.13</b>	<b>2.2</b>
<b>No Wagon- Cl.Fr.- B2</b>		
1	<b>2.93</b>	<b>2.2</b>
2	<b>1.33</b>	0
3	<b>2.67</b>	<b>1.6</b>
<b>No Wagon- Cl.Fr.- B3</b>		
1	<b>4.93</b>	<b>2</b>
2	<b>3.07</b>	<b>2</b>
3	<b>3.47</b>	0.8
<b>No Wagon- Cl.Fr.- B4</b>		
1	<b>5.33</b>	<b>3.2</b>
2	<b>2.93</b>	<b>1</b>
3	<b>3.2</b>	<b>1</b>
<b>No Wagon- Op.Si.-B0</b>		
1	0.4	0.6
2	<b>1.47</b>	<b>2.8</b>
3	0.4	0.2
<b>No Wagon- Op.Si.-B1</b>		
1	<b>1.2</b>	0.4
2	<b>1.47</b>	0.4
3	0.67	0
<b>No Wagon- Op.Si.-B2</b>		
1	<b>1.73</b>	0.6
2	<b>1.47</b>	0.2
3	0	0.4
<b>No Wagon- Op.Fr.-B0</b>		
1	<b>3.47</b>	<b>2.8</b>
2	3.2	1.6
3	<b>4.53</b>	<b>2.8</b>
<b>No Wagon- Op.Fr.-B1</b>		
1	<b>3.07</b>	<b>1.8</b>
2	<b>1.07</b>	0.4
3	<b>4.67</b>	<b>2</b>
<b>No Wagon- Op.Fr.-B2</b>		
1	<b>1.07</b>	<b>1.6</b>
2	0.93	0
3	<b>1.73</b>	<b>1.4</b>

**Table 5.23** - Differences in IACC<sub>E3</sub> and LF<sub>E4</sub> results between Stonegate 1 with and without wagons. Values in bold indicate significant differences. Cells in orange indicate an increase in values when a wagon structure is added whereas blue cells indicate a decrease in values. The cells that are not highlighted indicate that the difference is below 1JND.

Stonegate 2		
Receiver	IACC <sub>E3</sub>	LF <sub>E4</sub>
<b>Without wagon</b>		
1	0.72	0.03
2	0.41	0.07
3	0.83	0.09
<b>Cl.Si.-Src. B0</b>		
1	0.62	0.10
2	0.38	0.09
3	0.66	0.09

<b>Cl.Fr.-Src. B0</b>		
1	0.48	0.15
2	0.52	0.07
3	0.45	0.15
<b>Op.Si.-Src. B0</b>		
1	0.67	0.06
2	0.44	0.11
3	0.62	0.08
<b>Op.Fr.-Src. B0</b>		
1	0.35	0.14
2	0.31	0.10
3	0.20	0.19
<b>Cl.Si.-Src. B1</b>		
1	0.47	0.07
2	0.40	0.13
3	0.73	0.09
<b>Cl.Fr.-Src. B1</b>		
1	0.46	0.17
2	0.46	0.07
3	0.35	0.15
<b>Op.Si.-Src. B1</b>		
1	0.60	0.05
2	0.43	0.10
3	0.72	0.06
<b>Op.Fr.-Src. B1</b>		
1	0.53	0.15
2	0.48	0.07
3	0.37	0.14
<b>Cl.Si.-Src. B2</b>		
1	0.50	0.04
2	0.29	0.13
3	0.71	0.07
<b>Cl.Fr.-Src. B2</b>		
1	0.57	0.09
2	0.61	0.07
3	0.58	0.13
<b>Op.Si.-Src. B2</b>		
1	0.53	0.05
2	0.32	0.10
3	0.66	0.09
<b>Op.Fr.-Src. B2</b>		
1	0.52	0.10
2	0.66	0.05
3	0.43	0.10
<b>Cl.Si.-Src. B3</b>		
1	0.72	0.05
2	0.55	0.06
3	0.63	0.06
<b>Cl.Fr.-Src. B3</b>		
1	0.33	0.17
2	0.25	0.18
3	0.36	0.16
<b>Cl.Si.-Src. B4</b>		
1	0.73	0.03
2	0.34	0.10
3	0.69	0.06
<b>Cl.Fr.-Src. B4</b>		
1	0.28	0.18
2	0.31	0.11
3	0.36	0.15

**Table 5.24 – IACC<sub>E3</sub> and LF<sub>E4</sub> values for Stonegate 2, combined with the different wagons.**

Stonegate 2		
Receiver	IACC <sub>E3</sub> (JNDs)	LF <sub>E4</sub> (JNDs)
<b>No Wagon- Cl.Si.-B0</b>		
1	<b>1.33</b>	<b>1.4</b>
2	0.4	0.4
3	<b>2.27</b>	0
<b>No Wagon- Cl.Si.-B1</b>		
1	<b>3.33</b>	0.8
2	0.13	<b>1.2</b>
3	<b>1.33</b>	0
<b>No Wagon- Cl.Si.-B2</b>		
1	<b>2.93</b>	0.2
2	<b>1.6</b>	<b>1.2</b>
3	<b>1.6</b>	0.4
<b>No Wagon- Cl.Si.-B3</b>		
1	0	0.4
2	<b>1.86</b>	0.2
3	<b>2.67</b>	0.6
<b>No Wagon- Cl.Si.-B4</b>		
1	0.13	0
2	0.93	0.6
3	<b>1.87</b>	0.6
<b>No Wagon- Cl.Fr.- B0</b>		
1	<b>3.2</b>	<b>2.4</b>
2	<b>1.47</b>	0
3	<b>5.07</b>	<b>1.2</b>
<b>No Wagon- Cl.Fr.- B1</b>		
1	<b>3.47</b>	<b>2.8</b>
2	0.67	0
3	<b>6.4</b>	<b>1.2</b>
<b>No Wagon- Cl.Fr.- B2</b>		
1	<b>2</b>	<b>1.2</b>
2	<b>2.67</b>	0
3	<b>3.33</b>	0.8
<b>No Wagon- Cl.Fr.- B3</b>		
1	<b>5.2</b>	<b>2.8</b>
2	<b>2.13</b>	<b>2.2</b>
3	<b>6.27</b>	<b>1.4</b>
<b>No Wagon- Cl.Fr.- B4</b>		
1	<b>5.87</b>	<b>3</b>
2	<b>1.33</b>	0.8
3	<b>6.27</b>	<b>1.2</b>
<b>No Wagon- Op.Si.-B0</b>		
1	0.67	0.6
2	0.4	0.8
3	<b>2.8</b>	0.2
<b>No Wagon- Op.Si.-B1</b>		
1	<b>1.6</b>	0.4
2	0.27	0.6
3	<b>1.47</b>	0.6
<b>No Wagon- Op.Si.-B2</b>		
1	<b>2.53</b>	0.4
2	<b>1.2</b>	0.6
3	<b>2.27</b>	0
<b>No Wagon- Op.Fr.-B0</b>		
1	<b>4.93</b>	<b>2.2</b>
2	<b>1.33</b>	0.6
3	<b>8.4</b>	<b>2</b>
<b>No Wagon- Op.Fr.-B1</b>		
1	<b>2.53</b>	<b>2.4</b>
2	0.93	0
3	<b>6.13</b>	<b>1</b>

No Wagon- Op.Fr.-B2		
1	<b>2.67</b>	<b>1.4</b>
2	<b>3.33</b>	0.4
3	<b>5.33</b>	0.2

**Table 5.25** - Differences in IACC<sub>E3</sub> and LF<sub>E4</sub> results between Stonegate 2 with and without wagons. Values in bold indicate significant differences. Cells in orange indicate an increase in values when a wagon structure is added whereas blue cells indicate a decrease in values. The cells that are not highlighted indicate that the difference is below 1JND.

Stonegate 3		
Receiver	IACC <sub>E3</sub>	LF <sub>E4</sub>
<b>Without wagon</b>		
1	0.6	0.05
2	0.4	0.09
3	0.49	0.08
<b>Cl.Si.-Src. B0</b>		
1	0.58	0.11
2	0.44	0.13
3	0.58	0.09
<b>Cl.Fr.-Src. B0</b>		
1	0.47	0.19
2	0.49	0.08
3	0.45	0.13
<b>Op.Si.-Src. B0</b>		
1	0.68	0.05
2	0.43	0.09
3	0.53	0.08
<b>Op.Fr.-Src. B0</b>		
1	0.28	0.16
2	0.37	0.13
3	0.25	0.14
<b>Cl.Si.-Src. B1</b>		
1	0.51	0.08
2	0.30	0.12
3	0.63	0.08
<b>Cl.Fr.-Src. B1</b>		
1	0.44	0.14
2	0.44	0.10
3	0.35	0.15
<b>Op.Si.-Src. B1</b>		
1	0.50	0.05
2	0.42	0.09
3	0.54	0.06
<b>Op.Fr.-Src. B1</b>		
1	0.37	0.11
2	0.41	0.08
3	0.28	0.18
<b>Cl.Si.-Src. B2</b>		
1	0.50	0.05
2	0.30	0.09
3	0.51	0.07
<b>Cl.Fr.-Src. B2</b>		
1	0.57	0.16
2	0.61	0.06
3	0.61	0.13
<b>Op.Si.-Src. B2</b>		
1	0.47	0.05
2	0.43	0.10
3	0.58	0.11

Op.Fr.-Src. B2		
1	0.50	0.14
2	0.55	0.08
3	0.50	0.13
Cl.Si.-Src. B3		
1	0.65	0.05
2	0.49	0.08
3	0.50	0.07
Cl.Fr.-Src. B3		
1	0.33	0.13
2	0.27	0.19
3	0.33	0.15
Cl.Si.-Src. B4		
1	0.68	0.07
2	0.40	0.15
3	0.50	0.08
Cl.Fr.-Src. B4		
1	0.25	0.17
2	0.33	0.18
3	0.28	0.15

**Table 5.26 – IACC<sub>E3</sub> and LF<sub>E4</sub> values for Stonegate 3, combined with the different wagons.**

Stonegate 3		
Receiver	IACC <sub>E3</sub> (JNDs)	LF <sub>E4</sub> (JNDs)
<b>No Wagon- Cl.Si.-B0</b>		
1	0.27	<b>1</b>
2	0.53	0.8
3	<b>1.2</b>	0.2
<b>No Wagon- Cl.Si.-B1</b>		
1	<b>1.2</b>	0.6
2	<b>1.33</b>	0.6
3	<b>1.87</b>	0
<b>No Wagon- Cl.Si.-B2</b>		
1	<b>1.33</b>	0
2	<b>1.33</b>	0
3	0.27	0.2
<b>No Wagon- Cl.Si.-B3</b>		
1	0.67	0
2	<b>1.2</b>	0.2
3	0.13	0.2
<b>No Wagon- Cl.Si.-B4</b>		
1	<b>1.07</b>	0.4
2	0	<b>1.2</b>
3	0.13	0
<b>No Wagon- Cl.Fr.- B0</b>		
1	<b>1.73</b>	<b>2.8</b>
2	<b>1.2</b>	0.2
3	0.53	<b>1</b>
<b>No Wagon- Cl.Fr.- B1</b>		
1	<b>2.13</b>	<b>1.8</b>
2	0.53	0.2
3	<b>1.87</b>	<b>1.4</b>
<b>No Wagon- Cl.Fr.- B2</b>		
1	0.4	<b>2.2</b>
2	<b>2.8</b>	0.6
3	<b>1.6</b>	<b>1</b>
<b>No Wagon- Cl.Fr.- B3</b>		
1	<b>3.6</b>	<b>1.6</b>
2	<b>1.73</b>	<b>2</b>
3	<b>2.13</b>	<b>1.4</b>

No Wagon- Cl.Fr.- B4		
1	<b>4.67</b>	2.4
2	0.93	<b>1.8</b>
3	<b>2.8</b>	1.4
No Wagon- Op.Si.-B0		
1	<b>1.07</b>	0
2	<b>1.33</b>	0
3	0.27	0
No Wagon- Op.Si.-B1		
1	<b>2.27</b>	0
2	0.27	0
3	0.8	0.4
No Wagon- Op.Si.-B2		
1	0.93	0
2	<b>1.87</b>	0.2
3	<b>1.2</b>	0.6
No Wagon- Op.Fr.-B0		
1	<b>4.27</b>	2.2
2	0.4	0.8
3	<b>3.2</b>	<b>1.2</b>
No Wagon- Op.Fr.-B1		
1	<b>3.07</b>	<b>1.2</b>
2	0.13	0.2
3	<b>2.8</b>	<b>2</b>
No Wagon- Op.Fr.-B2		
1	<b>1.33</b>	<b>1.8</b>
2	<b>2</b>	0.2
3	0.13	<b>1</b>

**Table 5.27** - Differences in IACC<sub>E3</sub> and LF<sub>E4</sub> results between Stonegate 3 with and without wagons. Values in bold indicate significant differences. Cells in orange indicate an increase in values when a wagon structure is added whereas blue cells indicate a decrease in values. The cells that are not highlighted indicate that the difference is below 1JND.

Stonegate 4		
Receiver	IACC <sub>E3</sub>	LF <sub>E4</sub>
<b>Without wagon</b>		
1	0.61	0.04
2	0.42	0.09
3	0.58	0.20
<b>Cl.Si.-Src. B0</b>		
1	0.50	0.10
2	0.44	0.20
3	0.64	0.09
<b>Cl.Fr.-Src. B0</b>		
1	0.45	0.15
2	0.55	0.06
3	0.48	0.25
<b>Op.Si.-Src. B0</b>		
1	0.60	0.05
2	0.40	0.13
3	0.66	0.07
<b>Op.Fr.-Src. B0</b>		
1	0.37	0.15
2	0.29	0.14
3	0.31	0.18
<b>Cl.Si.-Src. B1</b>		
1	0.58	0.08
2	0.30	0.12
3	0.69	0.09

<b>Cl.Fr.-Src. B1</b>		
1	0.48	0.13
2	0.49	0.06
3	0.27	0.16
<b>Op.Si.-Src. B1</b>		
1	0.57	0.06
2	0.41	0.11
3	0.62	0.05
<b>Op.Fr.-Src. B1</b>		
1	0.41	0.14
2	0.47	0.07
3	0.36	0.22
<b>Cl.Si.-Src. B2</b>		
1	0.47	0.05
2	0.40	0.14
3	0.53	0.08
<b>Cl.Fr.-Src. B2</b>		
1	0.58	0.11
2	0.63	0.06
3	0.60	0.11
<b>Op.Si.-Src. B2</b>		
1	0.54	0.06
2	0.27	0.10
3	0.49	0.16
<b>Op.Fr.-Src. B2</b>		
1	0.53	0.10
2	0.61	0.07
3	0.54	0.10
<b>Cl.Si.-Src. B3</b>		
1	0.70	0.06
2	0.49	0.09
3	0.59	0.06
<b>Cl.Fr.-Src. B3</b>		
1	0.31	0.25
2	0.23	0.16
3	0.32	0.14
<b>Cl.Si.-Src. B4</b>		
1	0.67	0.05
2	0.30	0.12
3	0.56	0.07
<b>Cl.Fr.-Src. B4</b>		
1	0.31	0.21
2	0.30	0.17
3	0.36	0.14

**Table 5.28 – IACC<sub>E3</sub> and LF<sub>E4</sub> values for Stonegate 4, combined with the different wagons.**

Stonegate 4		
Receiver	IACC <sub>E3</sub> (JNDs)	LF <sub>E4</sub> (JNDs)
<b>No Wagon- Cl.Si.-B0</b>		
1	<b>1.47</b>	<b>1.2</b>
2	0.27	<b>2.2</b>
3	0.8	<b>2.2</b>
<b>No Wagon- Cl.Si.-B1</b>		
1	0.4	0.8
2	<b>1.6</b>	0.6
3	<b>1.47</b>	<b>2.2</b>
<b>No Wagon- Cl.Si.-B2</b>		
1	<b>1.87</b>	0.2
2	0.27	<b>1</b>
3	0.67	<b>2.4</b>

No Wagon- Cl.Si.-B3		
1	<b>1.2</b>	0.4
2	0.93	0
3	0.13	<b>2.8</b>
No Wagon- Cl.Si.-B4		
1	0.8	0.2
2	<b>1.6</b>	0.6
3	0.27	<b>2.6</b>
No Wagon- Cl.Fr.- B0		
1	<b>2.13</b>	<b>2.2</b>
2	<b>1.73</b>	0.6
3	<b>1.33</b>	1
No Wagon- Cl.Fr.- B1		
1	<b>1.73</b>	<b>1.8</b>
2	0.93	0.6
3	<b>4.13</b>	0.8
No Wagon- Cl.Fr.- B2		
1	0.4	<b>1.4</b>
2	<b>2.8</b>	0.6
3	0.27	<b>1.8</b>
No Wagon- Cl.Fr.- B3		
1	<b>4</b>	<b>4.2</b>
2	<b>2.53</b>	<b>1.4</b>
3	<b>3.47</b>	1.2
No Wagon- Cl.Fr.- B4		
1	<b>4</b>	<b>3.4</b>
2	<b>1.6</b>	<b>1.6</b>
3	<b>2.93</b>	1.2
No Wagon- Op.Si.-B0		
1	0.13	0.2
2	0.27	0.8
3	<b>1.07</b>	<b>2.6</b>
No Wagon- Op.Si.-B1		
1	0.53	0.4
2	0.13	0.4
3	0.53	3
No Wagon- Op.Si.-B2		
1	0.93	0.4
2	<b>2</b>	0.2
3	<b>1.2</b>	0.8
No Wagon- Op.Fr.-B0		
1	<b>3.2</b>	<b>2.2</b>
2	<b>1.73</b>	1
3	<b>3.6</b>	0.4
No Wagon- Op.Fr.-B1		
1	<b>2.67</b>	<b>2</b>
2	0.67	0.4
3	<b>2.93</b>	0.4
No Wagon- Op.Fr.-B2		
1	<b>1.07</b>	<b>1.2</b>
2	<b>2.53</b>	0.4
3	0.53	<b>2</b>

**Table 5.29** - Differences in IACC<sub>E3</sub> and LF<sub>E4</sub> results between Stonegate 4 with and without wagons. Values in bold indicate significant differences. Cells in orange indicate an increase in values when a wagon structure is added whereas blue cells indicate a decrease in values. The cells that are not highlighted indicate that the difference is below 1JND.

Virtual Model		Percentage of results with significant differences when the structure of side-on wagons is modified					
		T <sub>20</sub>		T <sub>30</sub>			
Stonegate 1		38%		38%			
Stonegate 2		21%		29%			
Stonegate 3		33%		8%			
Stonegate 4		46%		29%			

**Table 5.30** – Impact of the change in structure of side-on wagons on T<sub>20</sub> and T<sub>30</sub> values, expressed in percentages. The percentages are calculated across all source positions and frequency bands after averaging the results for receivers 1-3.

Stonegate 1 - T <sub>20</sub> (s) and T <sub>30</sub> (s)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
CL-SI Src. B0	T20	0.58	0.63	0.67	0.64	0.61	0.52	0.39	0.28
	T30	0.61	0.60	0.67	0.66	0.63	0.53	0.40	0.31
OP-SI Src. B0	T20	0.58	0.65	0.64	0.66	0.62	0.56	0.4	0.31
	T30	0.62	0.64	0.63	0.66	0.65	0.57	0.42	0.32
CL-SI Src. B1	T20	0.61	0.63	0.64	0.67	0.66	0.55	0.42	0.33
	T30	0.61	0.62	0.65	0.68	0.65	0.57	0.43	0.33
OP-SI Src. B1	T20	0.68	0.64	0.65	0.67	0.67	0.59	0.46	0.34
	T30	0.64	0.67	0.65	0.70	0.68	0.6	0.45	0.35
CL-SI Src. B2	T20	0.58	0.6	0.66	0.64	0.58	0.51	0.38	0.31
	T30	0.60	0.62	0.65	0.67	0.63	0.53	0.40	0.31
OP-SI Src. B2	T20	0.59	0.64	0.61	0.64	0.61	0.52	0.38	0.31
	T30	0.63	0.65	0.63	0.67	0.65	0.55	0.41	0.32

**Table 5.31** – T<sub>20</sub> and T<sub>30</sub> values for Stonegate 1, combined with the CL-SI and the OP-SI wagons.

Stonegate 1 - T <sub>20</sub> (JNDs) and T <sub>30</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Source B0 CL-SI compared to OP-SI	T20	0	0.67	1	0.67	0.33	1.33	0.33	1
	T30	0.33	1.33	1.33	0	0.67	1.33	0.67	0.33
Source B1 CL-SI compared to OP-SI	T20	2.33	0.33	0.33	0	0.33	1.33	1.33	0.33
	T30	1	1.67	0	0.67	1	1	0.67	0.67
Source B2 CL-SI compared to OP-SI	T20	0.33	1.33	1.67	0	1	0.33	0	0
	T30	1	1	0.67	0	0.67	0.67	0.33	0.33

**Table 5.32**- Differences in T<sub>20</sub> and T<sub>30</sub> results between Stonegate 1-CL-SI and Stonegate 1-OP-SI simulations. Values in bold indicate significant differences. Cells in orange indicate an increase in reverberation time values when a CL-SI wagon is added and blue cells indicate an increase when an OP-SI wagon is used. The cells that are not highlighted indicate that the difference is below 1JND.

Stonegate 2 - T <sub>20</sub> (s) and T <sub>30</sub> (s)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
CL-SI	T20	0.46	0.48	0.5	0.48	0.45	0.42	0.30	0.23

Src. B0	T30	0.46	0.49	0.48	0.50	0.47	0.43	0.32	0.26
OP-SI	T20	0.49	0.52	0.51	0.49	0.45	0.40	0.31	0.25
Src. B0	T30	0.5	0.5	0.52	0.51	0.49	0.43	0.33	0.27
CL-SI	T20	0.56	0.49	0.49	0.49	0.48	0.44	0.35	0.28
Src. B1	T30	0.51	0.48	0.50	0.51	0.48	0.44	0.35	0.29
OP-SI	T20	0.54	0.47	0.47	0.47	0.48	0.44	0.36	0.29
Src. B1	T30	0.52	0.46	0.47	0.48	0.49	0.45	0.37	0.3
CL-SI	T20	0.6	0.53	0.55	0.4	0.47	0.43	0.34	0.28
Src. B2	T30	0.56	0.53	0.52	0.50	0.48	0.42	0.35	0.28
OP-SI	T20	0.49	0.47	0.50	0.49	0.46	0.42	0.34	0.29
Src. B2	T30	0.47	0.49	0.49	0.48	0.47	0.44	0.34	0.28

**Table 5.33 – T<sub>20</sub> and T<sub>30</sub> values for Stonegate 2, combined with the CL-SI and the OP-SI wagons.**

Stonegate 2 - T <sub>20</sub> (JNDs) and T <sub>30</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Source B0 CL-SI compared to OP-SI	T20	<b>1</b>	<b>1.33</b>	0.33	0.33	0	0.67	0.33	0.67
	T30	<b>1.33</b>	0.33	<b>1.33</b>	0.33	0.67	0	0.33	0.33
Source B1 CL-SI compared to OP-SI	T20	0.67	0.67	0.67	0.67	0	0	0.33	0.33
	T30	0.33	0.67	<b>1</b>	<b>1</b>	0.33	0.33	0.67	0.33
Source B2 CL-SI compared to OP-SI	T20	<b>3.67</b>	<b>2</b>	<b>1.67</b>	0.33	0.33	0.33	0	0.33
	T30	<b>3</b>	<b>1.33</b>	<b>1</b>	0.67	0.33	0.67	0.33	0

**Table 5.34-** Differences in T<sub>20</sub> and T<sub>30</sub> results between Stonegate 2-CL-SI and Stonegate 2-OP-SI simulations. Values in bold indicate significant differences. Cells in orange indicate an increase in reverberation time values when a CL-SI wagon is added and blue cells indicate an increase when an OP-SI wagon is used. The cells that are not highlighted indicate that the difference is below 1JND.

Stonegate 3 - T <sub>20</sub> (s) and T <sub>30</sub> (s)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
CL-SI Src. B0	T20	0.74	0.74	0.78	0.77	0.73	0.62	0.43	0.31
	T30	0.76	0.73	0.78	0.77	0.76	0.64	0.47	0.35
OP-SI Src. B0	T20	0.73	0.74	0.76	0.76	0.73	0.62	0.46	0.33
	T30	0.75	0.74	0.77	0.77	0.75	0.63	0.48	0.36
CL-SI Src. B1	T20	0.81	0.77	0.77	0.81	0.77	0.67	0.51	0.39
	T30	0.76	0.76	0.76	0.79	0.75	0.64	0.51	0.39
OP-SI Src. B1	T20	0.76	0.72	0.85	0.82	0.75	0.65	0.48	0.37
	T30	0.79	0.75	0.77	0.79	0.77	0.65	0.50	0.38
CL-SI Src. B2	T20	0.76	0.73	0.77	0.8	0.75	0.61	0.45	0.32
	T30	0.76	0.72	0.76	0.83	0.75	0.63	0.47	0.35
OP-SI Src. B2	T20	0.77	0.75	0.81	0.74	0.73	0.61	0.44	0.35
	T30	0.72	0.74	0.77	0.76	0.75	0.62	0.47	0.36

**Table 5.35 – T<sub>20</sub> and T<sub>30</sub> values for Stonegate 3, combined with the CL-SI and the OP-SI wagons.**

Stonegate 3 - T <sub>20</sub> (JNDs) and T <sub>30</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Source B0 CL-SI compared to OP-SI	T20	0.25	0	0.5	0.25	0	0	<b>1</b>	0.67
	T30	0.25	0.25	0.25	0	0.25	0.33	0.33	0.33
Source B1 CL-SI compared to OP-SI	T20	<b>1.25</b>	<b>1.25</b>	<b>2</b>	0.25	0.5	0.67	<b>1</b>	0.67
	T30	0.75	0.25	0.25	0	0.5	0.33	0.33	0.33
Source B2 CL-SI compared to OP-SI	T20	0.25	0.5	<b>1</b>	<b>1.5</b>	0.5	0	0.33	<b>1</b>
	T30	<b>1</b>	0.5	0.25	<b>1.75</b>	0	0.33	0	0.33

**Table 5.36-** Differences in T<sub>20</sub> and T<sub>30</sub> results between Stonegate 3-CL-SI and Stonegate 3-OP-SI simulations. Values in bold indicate significant differences. Cells in orange indicate an increase in reverberation time values when a CL-SI wagon is added and blue cells indicate an increase when an OP-SI wagon is used. The cells that are not highlighted indicate that the difference is below 1JND.

Stonegate 4 - T <sub>20</sub> (s) and T <sub>30</sub> (s)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
CL-SI Src. B0	T20	0.53	0.56	0.60	0.54	0.53	0.47	0.35	0.26
	T30	0.58	0.59	0.60	0.57	0.56	0.49	0.39	0.30
OP-SI Src. B0	T20	0.55	0.57	0.61	0.59	0.55	0.50	0.37	0.29
	T30	0.56	0.57	0.57	0.60	0.57	0.50	0.40	0.31
CL-SI Src. B1	T20	0.68	0.62	0.65	0.62	0.58	0.53	0.43	0.35
	T30	0.68	0.60	0.63	0.61	0.58	0.52	0.42	0.35
OP-SI Src. B1	T20	0.57	0.57	0.55	0.57	0.57	0.51	0.42	0.32
	T30	0.61	0.57	0.57	0.57	0.55	0.50	0.41	0.33
CL-SI Src. B2	T20	0.66	0.58	0.59	0.57	0.52	0.48	0.37	0.28
	T30	0.61	0.58	0.57	0.59	0.56	0.50	0.39	0.29
OP-SI Src. B2	T20	0.54	0.54	0.57	0.58	0.56	0.48	0.38	0.30
	T30	0.59	0.58	0.55	0.59	0.57	0.50	0.40	0.31

**Table 5.37 –** T<sub>20</sub> and T<sub>30</sub> values for Stonegate 3, combined with the CL-SI and the OP-SI wagons.

Stonegate 4 - T <sub>20</sub> (JNDs) and T <sub>30</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Source B0 CL-SI compared to OP-SI	T20	0.67	0.33	0.33	<b>1.67</b>	0.67	<b>1</b>	0.67	<b>1</b>
	T30	0.67	0.67	<b>1</b>	<b>1</b>	0.33	0.33	0.33	0.33
Source B1 CL-SI compared to OP-SI	T20	<b>3.67</b>	<b>1.67</b>	<b>3.33</b>	<b>1.67</b>	0.33	0.67	0.33	<b>1</b>
	T30	<b>2.33</b>	<b>1</b>	<b>2</b>	<b>1.33</b>	<b>1</b>	0.67	0.33	0.67
Source B2	T20	<b>4</b>	<b>1.33</b>	0.67	0.33	<b>1.33</b>	0	0.33	0.67

CL-SI compared to OP-SI	T30	0.67	0	0.67	0	0.33	0	0.33	0.67
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**Table 5.38-** Differences in  $T_{20}$  and  $T_{30}$  results between Stonegate 4-CL-SI and Stonegate 4-OP-SI simulations. Values in bold indicate significant differences. Cells in orange indicate an increase in reverberation time values when a CL-SI wagon is added and blue cells indicate an increase when an OP-SI wagon is used. The cells that are not highlighted indicate that the difference is below 1JND.

Virtual Model	Percentage of results with significant differences when the structure of side-on wagons is modified	
	$C_{50}$	$C_{80}$
Stonegate 1	46%	46%
Stonegate 2	63%	63%
Stonegate 3	54%	50%
Stonegate 4	38%	50%

**Table 5.39 –** Impact of the change in structure of side-on wagons on  $C_{50}$  and  $C_{80}$  values, expressed in percentages. The percentages are calculated across all source positions and frequency bands after averaging the results for receivers 1-3.

Stonegate 1 – $C_{50}$ (dB) and $C_{80}$ (dB)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
CL-SI	C50	6.79	5.76	7.26	7.92	8.37	10.52	13.32	14.89
	C80	10.20	10.09	11.13	11.34	12.13	14.07	18.11	21.77
OP-SI	C50	2.88	7.17	5.74	6.65	7.64	9.07	11.6	13.09
	C80	5.94	10.63	9.93	10.43	10.75	12.63	16.39	19.66
Src. B0	C50	6.82	5.66	5.95	5.72	7	9.2	12.05	13.68
	C80	8.93	10.58	8.83	9.25	10.53	12.31	16.09	19.21
Src. B1	C50	5.86	8.27	6.21	6.35	6.24	8.68	11.39	12.72
	C80	9.43	12.04	8.6	10.01	9.19	11.44	15.2	18.12
CL-SI	C50	7.13	5.75	7.12	7.4	7.37	8.97	11.82	13.29
	C80	10.32	9.87	10.91	11.03	11.03	13	16.9	19.81
Src. B2	C50	9.03	7.85	6.78	7.67	7.13	8.3	10.7	12.51
	C80	12.87	10.53	10.05	11.35	10.7	12.75	16.26	18.69

**Table 5.40 –**  $C_{50}$  and  $C_{80}$  values for Stonegate 1, combined with the CL-SI and the OP-SI wagons.

Stonegate 1 – $C_{50}$ (JNDs) and $C_{80}$ (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Source B0	C50	<b>3.55</b>	<b>1.28</b>	<b>1.38</b>	<b>1.15</b>	0.66	<b>1.32</b>	<b>1.56</b>	<b>1.64</b>
	C80	<b>4.26</b>	0.54	<b>1.2</b>	0.91	<b>1.38</b>	<b>1.44</b>	<b>1.72</b>	<b>2.11</b>
Source B1	C50	0.87	<b>2.37</b>	0.24	0.57	0.69	0.47	0.60	0.87
	C80	0.5	<b>1.46</b>	0.23	0.76	<b>1.34</b>	0.87	0.89	<b>1.09</b>
Source B2	C50	<b>1.73</b>	<b>1.91</b>	0.31	0.25	0.22	0.61	<b>1.02</b>	0.71

CL-SI compared to OP-SI	C80	<b>2.55</b>	0.66	0.86	0.32	0.33	0.25	0.64	<b>1.12</b>
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**Table 5.41-** Differences in C<sub>50</sub> and C<sub>80</sub> results between Stonegate 1-CL-SI and Stonegate 1-OP-SI simulations. Values in bold indicate significant differences. Cells in orange indicate an increase in clarity values when a CL-SI wagon is added and blue cells indicate an increase when an OP-SI wagon is used. The cells that are not highlighted indicate that the difference is below 1JND.

Stonegate 2 – C <sub>50</sub> (dB) and C <sub>80</sub> (dB)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
CL-SI	C50	7.82	8.59	10.26	10.98	11.91	13.62	16.64	18.63
	C80	13.32	13.15	14.11	15.59	16.56	18.2	22.6	25.5
OP-SI	C50	7.94	10.38	9.65	9.55	10.6	11.41	14.1	15.53
	C80	13.05	14.41	13.49	14.59	15.16	16.57	20.13	23.03
CL-SI	C50	7.15	8.10	7.72	8.35	9.75	11.72	14.43	15.58
	C80	12.54	14	12.3	12.44	13.81	16.1	19.61	22.41
OP-SI	C50	9.76	10.67	9.11	8.51	9.54	11.26	13.85	15.28
	C80	13.86	14.95	13.85	13.35	14.64	16.70	20.16	22.59
CL-SI	C50	8.8	6.04	8.86	8.57	9.25	10.36	12.76	13.82
	C80	12.51	9.63	13.02	12.78	13.83	15.08	18.54	20.80
OP-SI	C50	8.5	6.94	10.70	10.41	11.66	12.85	15.13	16.31
	C80	13.21	11.68	14.64	14.22	15.12	17.08	20.17	22.27

**Table 5.42 –** C<sub>50</sub> and C<sub>80</sub> values for Stonegate 2, combined with the CL-SI and the OP-SI wagons.

Stonegate 2 – C <sub>50</sub> (JNDs) and C <sub>80</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Source B0 CL-SI compared to OP-SI	C50	0.11	<b>1.63</b>	0.55	<b>1.3</b>	<b>1.19</b>	<b>2.01</b>	<b>2.31</b>	<b>2.82</b>
	C80	0.27	<b>1.26</b>	0.62	<b>1</b>	<b>1.4</b>	<b>1.63</b>	<b>2.47</b>	<b>2.47</b>
Source B1 CL-SI compared to OP-SI	C50	<b>2.37</b>	<b>2.34</b>	<b>1.26</b>	0.15	0.19	0.42	0.53	0.27
	C80	<b>1.32</b>	0.95	<b>1.55</b>	0.91	0.83	0.60	0.55	0.18
Source B2 CL-SI compared to OP-SI	C50	0.27	0.82	<b>1.67</b>	<b>1.67</b>	<b>2.19</b>	<b>2.26</b>	<b>2.15</b>	<b>2.26</b>
	C80	0.7	<b>2.05</b>	<b>1.62</b>	<b>1.44</b>	<b>1.29</b>	<b>2</b>	<b>1.63</b>	<b>1.47</b>

**Table 5.43-** Differences in C<sub>50</sub> and C<sub>80</sub> results between Stonegate 2-CL-SI and Stonegate 2-OP-SI simulations. Values in bold indicate significant differences. Cells in orange indicate an increase in clarity values when a CL-SI wagon is added and blue cells indicate an increase when an OP-SI wagon is used. The cells that are not highlighted indicate that the difference is below 1JND.

Stonegate 3 – C <sub>50</sub> (dB) and C <sub>80</sub> (dB)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
CL-SI	C50	5.16	5.37	6.56	7.26	8.22	9.97	12.8	15.22

Src. B0	C80	9.34	8.34	9.7	10.07	11.43	13.37	17.18	20.77
OP-SI	C50	6.23	6.31	4.75	5.99	6.53	8.25	10.71	12.51
Src. B0	C80	9.67	9.07	7.99	8.5	9.62	11.37	15.51	18.94
CL-SI	C50	3.84	4.77	3.51	4.33	4.46	6.48	9.42	11.32
Src. B1	C80	7.39	7.47	6.64	7.56	7.71	9.49	13.41	16.49
OP-SI	C50	6.39	7.09	5.71	4.90	5.66	7.38	10.4	11.68
Src. B1	C80	9.22	9.61	8.12	8.11	8.26	10.14	13.78	16.65
CL-SI	C50	5.81	5.38	5.18	5.93	6.47	8.52	11.45	12.95
Src. B2	C80	8.54	9.12	8.15	9.20	9.41	11.96	15.89	18.22
OP-SI	C50	4.19	5.09	6.89	5.7	6.63	7.75	10.02	12.22
Src. B2	C80	8.26	7.97	9.37	8.55	9.44	11.65	14.71	17.73

**Table 5.44 – C<sub>50</sub> and C<sub>80</sub> values for Stonegate 3, combined with the CL-SI and the OP-SI wagons.**

Stonegate 3 – C <sub>50</sub> (JNDs) and C <sub>80</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Source B0 CL-SI compared to OP-SI	C50	0.97	0.85	<b>1.65</b>	<b>1.15</b>	<b>1.54</b>	<b>1.56</b>	<b>1.9</b>	<b>2.46</b>
	C80	0.33	0.73	<b>1.71</b>	<b>1.57</b>	<b>1.81</b>	2	<b>1.67</b>	<b>1.83</b>
Source B1 CL-SI compared to OP-SI	C50	<b>2.32</b>	<b>2.11</b>	<b>2</b>	0.52	<b>1.09</b>	0.82	0.84	0.33
	C80	<b>1.83</b>	<b>2.14</b>	<b>1.48</b>	0.55	0.55	0.65	0.37	0.16
Source B2 CL-SI compared to OP-SI	C50	<b>1.47</b>	0.26	<b>1.55</b>	0.21	0.15	0.7	<b>1.3</b>	0.66
	C80	0.28	<b>1.15</b>	<b>1.22</b>	0.65	0.03	0.31	<b>1.18</b>	0.49

**Table 5.45-** Differences in C<sub>50</sub> and C<sub>80</sub> results between Stonegate 3-CL-SI and Stonegate 3-OP-SI simulations. Values in bold indicate significant differences. Cells in orange indicate an increase in clarity values when a CL-SI wagon is added and blue cells indicate an increase when an OP-SI wagon is used. The cells that are not highlighted indicate that the difference is below 1JND.

Stonegate 4 – C <sub>50</sub> (dB) and C <sub>80</sub> (dB)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
CL-SI Src. B0	C50	7.3	7.95	9.43	9.73	11.46	12.40	15.33	17.13
	C80	10.56	11.40	12.52	13.31	15.52	16.93	20.74	23.77
OP-SI Src. B0	C50	8.45	7.18	7.39	8.6	10.02	11.31	13.90	15.44
	C80	12.84	10.06	10.63	12.24	13.50	14.80	18.52	21.18
CL-SI Src. B1	C50	3.28	6.01	5.69	6.85	6.79	8.42	10.98	12.73
	C80	6.25	8.96	9.75	10.90	10.52	12.61	15.85	18.49
OP-SI Src. B1	C50	6.36	6.61	5.7	6.91	7.84	9.12	11.27	12.68
	C80	10.03	10.00	10.47	10.75	11.51	12.91	16.23	19.06
CL-SI Src. B2	C50	9.72	7.44	8.02	9.24	9.6	11.97	13.75	15.39
	C80	13.34	11.44	11.89	12.70	13.48	15.56	18.85	20.91
OP-SI Src. B2	C50	7.99	8.79	8.28	9.68	10.28	11.44	14.25	15.54
	C80	11.64	12.48	11.31	13.01	13.83	15.90	18.97	21.32

**Table 5.46 – C<sub>50</sub> and C<sub>80</sub> values for Stonegate 4, combined with the CL-SI and the OP-SI wagons.**

Stonegate 4 – C <sub>50</sub> (JNDs) and C <sub>80</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Source B0 CL-SI compared to OP-SI	C50	<b>1.05</b>	0.7	<b>1.85</b>	<b>1.03</b>	<b>1.31</b>	0.99	<b>1.3</b>	<b>1.54</b>
	C80	<b>2.28</b>	<b>1.34</b>	<b>1.89</b>	<b>1.07</b>	<b>2.02</b>	<b>2.13</b>	<b>2.22</b>	<b>2.59</b>
Source B1 CL-SI compared to OP-SI	C50	<b>2.8</b>	0.55	0.01	0.05	0.95	0.64	0.26	0.05
	C80	<b>3.78</b>	<b>1.04</b>	0.72	0.15	0.99	0.30	0.38	0.57
Source B2 CL-SI compared to OP-SI	C50	<b>1.57</b>	<b>1.23</b>	0.24	0.4	0.62	0.48	0.45	0.14
	C80	<b>1.70</b>	<b>1.04</b>	0.58	0.31	0.35	0.34	0.12	0.41

**Table 5.47-** Differences in C<sub>50</sub> and C<sub>80</sub> results between Stonegate 4-CL-SI and Stonegate 4-OP-SI simulations. Values in bold indicate significant differences. Cells in orange indicate an increase in clarity values when a CL-SI wagon is added and blue cells indicate an increase when an OP-SI wagon is used. The cells that are not highlighted indicate that the difference is below 1JND.

Virtual Model	Percentage of results with significant differences when the structure of side-on wagons is modified	
	IACC <sub>E3</sub>	LF <sub>E4</sub>
Stonegate 1	56%	11%
Stonegate 2	11%	0%
Stonegate 3	67%	11%
Stonegate 4	33%	33%

**Table 5.48 –** Impact of the change in structure of side-on wagons on IACC<sub>E3</sub> and LF<sub>E4</sub> values, expressed in percentages. No averaging across receiver positions was conducted prior to the analysis and comparisons were made per receiver.

Stonegate 1		
Receiver	IACC <sub>E3</sub>	LF <sub>E4</sub>
<b>CL-SI - B0</b>		
1	0.59	0.09
2	0.38	0.11
3	0.66	0.1
<b>OP-SI - B0</b>		
1	0.67	0.06
2	0.38	0.21
3	0.56	0.08
<b>CL-SI - B1</b>		
1	0.50	0.05
2	0.32	0.12
3	0.64	0.09
<b>OP-SI - B1</b>		
1	0.55	0.05
2	0.38	0.09
3	0.54	0.09
<b>CL-SI - B2</b>		
1	0.5	0.04

2	0.28	0.11
3	0.68	0.08
<b>OP-SI - B2</b>		
1	0.51	0.06
2	0.38	0.08
3	0.59	0.07

**Table 5.49** – IACC<sub>E3</sub> and LF<sub>E4</sub> values for Stonegate 1, combined with the CL-SI and the OP-SI wagons.

Stonegate 1		
Receiver	IACC <sub>E3</sub> (JNDs)	LF <sub>E4</sub> (JNDs)
<b>CL-SI compared to OP-SI / B0</b>		
1	<b>1.07</b>	0.6
2	0	<b>2</b>
3	<b>1.33</b>	0.4
<b>CL-SI compared to OP-SI / B1</b>		
1	0.67	0
2	0.8	0.6
3	<b>1.33</b>	0
<b>CL-SI compared to OP-SI / B2</b>		
1	0.13	0.4
2	<b>1.33</b>	0.6
3	<b>1.2</b>	0.2

**Table 5.50** - Differences in IACC<sub>E3</sub> and LF<sub>E4</sub> results between Stonegate 1-CL-SI and Stonegate 1-OP-SI simulations. Values in bold indicate significant differences. Cells in orange indicate an increase in values for the CL-SI wagon whereas blue cells indicate higher values with the use of the OP-SI wagon. The cells that are not highlighted indicate that the difference is below 1JND.

Stonegate 2		
Receiver	IACC <sub>E3</sub>	LF <sub>E4</sub>
<b>CL-SI - B0</b>		
1	0.62	0.1
2	0.38	0.09
3	0.66	0.09
<b>OP-SI - B0</b>		
1	0.67	0.06
2	0.44	0.11
3	0.62	0.08
<b>CL-SI - B1</b>		
1	0.47	0.07
2	0.4	0.13
3	0.73	0.09
<b>OP-SI - B1</b>		
1	0.6	0.05
2	0.43	0.1
3	0.72	0.06
<b>CL-SI - B2</b>		
1	0.5	0.04
2	0.29	0.13
3	0.71	0.07
<b>OP-SI - B2</b>		
1	0.53	0.05
2	0.32	0.1
3	0.66	0.09

**Table 5.51** – IACC<sub>E3</sub> and LF<sub>E4</sub> values for Stonegate 2, combined with the CL-SI and the OP-SI wagons.

Stonegate 2		
Receiver	IACC <sub>E3</sub> (JNDs)	LF <sub>E4</sub> (JNDs)
<b>CL-SI compared to OP-SI / B0</b>		
1	0.67	0.6
2	0.8	0.4
3	0.53	0.2
<b>CL-SI compared to OP-SI / B1</b>		
1	<b>1.73</b>	0.4
2	0.4	0.6
3	0.13	0.6
<b>CL-SI compared to OP-SI / B2</b>		
1	0.4	0.2
2	0.4	0.6
3	0.67	0.4

**Table 5.52** - Differences in IACC<sub>E3</sub> and LF<sub>E4</sub> results between Stonegate 2-CL-SI and Stonegate 2-OP-SI simulations. Values in bold indicate significant differences. Cells in blue indicate higher values with the use of the OP-SI wagon. The cells that are not highlighted indicate that the difference is below 1JND.

Stonegate 3		
Receiver	IACC <sub>E3</sub>	LF <sub>E4</sub>
<b>CL-SI - B0</b>		
1	0.58	0.1
2	0.44	0.13
3	0.58	0.09
<b>OP-SI - B0</b>		
1	0.68	0.05
2	0.5	0.09
3	0.47	0.08
<b>CL-SI - B1</b>		
1	0.51	0.08
2	0.3	0.12
3	0.63	0.08
<b>OP-SI - B1</b>		
1	0.43	0.05
2	0.42	0.09
3	0.43	0.06
<b>CL-SI - B2</b>		
1	0.5	0.05
2	0.3	0.09
3	0.51	0.07
<b>OP-SI - B2</b>		
1	0.53	0.05
2	0.54	0.1
3	0.58	0.11

**Table 5.53** – IACC<sub>E3</sub> and LF<sub>E4</sub> values for Stonegate 3, combined with the CL-SI and the OP-SI wagons.

Stonegate 3		
Receiver	IACC <sub>E3</sub> (JNDs)	LF <sub>E4</sub> (JNDs)
<b>CL-SI compared to OP-SI / B0</b>		
1	<b>1.33</b>	<b>1</b>
2	0.8	0.8
3	<b>1.47</b>	0.2
<b>CL-SI compared to OP-SI / B1</b>		
1	<b>1.07</b>	0.6
2	<b>1.6</b>	0.6
3	<b>2.67</b>	0.4

CL-SI compared to OP-SI / B2		
1	0.4	0
2	3.2	0.2
3	0.93	0.8

**Table 5.54** - Differences in IACC<sub>E3</sub> and LF<sub>E4</sub> results between Stonegate 3-CL-SI and Stonegate 3-OP-SI simulations. Values in bold indicate significant differences. Cells in orange indicate an increase in values for the CL-SI wagon whereas blue cells indicate higher values with the use of the OP-SI wagon. The cells that are not highlighted indicate that the difference is below 1JND.

Stonegate 4		
Receiver	IACC <sub>E3</sub>	LF <sub>E4</sub>
<b>CL-SI - B0</b>		
1	0.5	0.1
2	0.44	0.2
3	0.64	0.09
<b>OP-SI - B0</b>		
1	0.6	0.05
2	0.4	0.13
3	0.66	0.07
<b>CL-SI - B1</b>		
1	0.58	0.08
2	0.3	0.12
3	0.69	0.09
<b>OP-SI - B1</b>		
1	0.57	0.06
2	0.41	0.11
3	0.62	0.05
<b>CL-SI - B2</b>		
1	0.47	0.05
2	0.4	0.14
3	0.53	0.08
<b>OP-SI - B2</b>		
1	0.54	0.06
2	0.27	0.1
3	0.49	0.16

**Table 5.55** – IACC<sub>E3</sub> and LF<sub>E4</sub> values for Stonegate 4, combined with the CL-SI and the OP-SI wagons.

Stonegate 4		
Receiver	IACC <sub>E3</sub> (JNDs)	LF <sub>E4</sub> (JNDs)
<b>CL-SI compared to OP-SI / B0</b>		
1	<b>1.33</b>	1
2	0.53	<b>1.4</b>
3	0.27	0.4
<b>CL-SI compared to OP-SI / B1</b>		
1	0.13	0.4
2	<b>1.47</b>	0.2
3	0.93	0.8
<b>CL-SI compared to OP-SI / B2</b>		
1	0.93	0.2
2	<b>1.73</b>	0.8
3	0.53	<b>1.6</b>

**Table 5.56** - Differences in IACC<sub>E3</sub> and LF<sub>E4</sub> results between Stonegate 4-CL-SI and Stonegate 4-OP-SI simulations. Values in bold indicate significant differences. Cells in orange indicate an increase in values for the CL-SI

wagon whereas blue cells indicate higher values with the use of the OP-SI wagon. The cells that are not highlighted indicate that the difference is below 1JND.

Virtual Model	Percentage of results with significant differences when the structure of front-on wagons is modified	
	T <sub>20</sub>	T <sub>30</sub>
Stonegate 1	58%	58%
Stonegate 2	33%	21%
Stonegate 3	58%	54%
Stonegate 4	42%	67%

**Table 5.57 –** Impact of the change in structure of front-on wagons on T<sub>20</sub> and T<sub>30</sub> values, expressed in percentages. The percentages are calculated across all source positions and frequency bands after averaging the results for receivers 1-3.

Stonegate 1 - T <sub>20</sub> (s) and T <sub>30</sub> (s)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
CL-FR	T20	0.53	0.57	0.54	0.56	0.51	0.42	0.34	0.27
	T30	0.57	0.57	0.56	0.57	0.54	0.45	0.36	0.29
OP-FR	T20	0.60	0.59	0.64	0.61	0.58	0.48	0.36	0.28
	T30	0.63	0.62	0.62	0.65	0.62	0.51	0.39	0.3
CL-FR	T20	0.61	0.60	0.56	0.61	0.52	0.49	0.39	0.33
	T30	0.58	0.6	0.58	0.62	0.58	0.49	0.39	0.32
OP-FR	T20	0.64	0.55	0.60	0.62	0.58	0.48	0.38	0.32
	T30	0.63	0.60	0.62	0.63	0.61	0.50	0.40	0.32
CL-FR	T20	0.64	0.55	0.63	0.57	0.50	0.41	0.31	0.26
	T30	0.59	0.60	0.61	0.60	0.55	0.45	0.35	0.27
OP-FR	T20	0.66	0.63	0.65	0.59	0.53	0.44	0.34	0.29
	T30	0.61	0.65	0.63	0.62	0.58	0.49	0.37	0.30

**Table 5.58 –** T<sub>20</sub> and T<sub>30</sub> values for Stonegate 1, combined with the CL-FR and the OP-FR wagons.

Stonegate 1 - T <sub>20</sub> (JNDs) and T <sub>30</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Source B0 CL-FR compared to OP-FR	T20	<b>2.33</b>	0.67	<b>3.33</b>	<b>1.67</b>	<b>2.33</b>	<b>2</b>	0.67	0.33
	T30	<b>2</b>	<b>1.67</b>	<b>2</b>	<b>2.67</b>	<b>2.67</b>	<b>2</b>	<b>1</b>	0.33
Source B1 CL-FR compared to OP-FR	T20	<b>1</b>	<b>1.67</b>	<b>1.33</b>	0.33	<b>2</b>	0.33	0.33	0.33
	T30	<b>1.67</b>	0	<b>1.33</b>	0.33	<b>1</b>	0.33	0.33	0
Source B2 CL-FR compared to OP-FR	T20	0.67	<b>2.67</b>	0.67	0.67	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
	T30	0.67	<b>1.67</b>	0.67	0.67	<b>1</b>	<b>1.33</b>	0.67	<b>1</b>

**Table 5.59-** Differences in T<sub>20</sub> and T<sub>30</sub> results between Stonegate 1-CL-FR and Stonegate 1-OP-FR simulations. Values in bold indicate significant differences. Cells in orange indicate an increase in reverberation time values when the CL-FR wagon is added and blue cells indicate an increase

when an OP-FR wagon is used. The cells that are not highlighted indicate that the difference is below 1JND.

Stonegate 2 - T <sub>20</sub> (s) and T <sub>30</sub> (s)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
CL-FR Src. B0	T20	0.46	0.45	0.48	0.44	0.41	0.35	0.28	0.25
	T30	0.48	0.47	0.50	0.47	0.45	0.38	0.30	0.26
OP-FR Src. B0	T20	0.50	0.43	0.46	0.44	0.42	0.36	0.28	0.23
	T30	0.51	0.45	0.47	0.46	0.44	0.39	0.30	0.25
CL-FR Src. B1	T20	0.47	0.48	0.45	0.45	0.42	0.37	0.30	0.27
	T30	0.44	0.48	0.47	0.47	0.43	0.38	0.31	0.36
OP-FR Src. B1	T20	0.51	0.47	0.46	0.47	0.47	0.37	0.31	0.27
	T30	0.52	0.49	0.49	0.48	0.46	0.40	0.32	0.28
CL-FR Src. B2	T20	0.53	0.47	0.54	0.45	0.43	0.38	0.31	0.27
	T30	0.50	0.48	0.49	0.45	0.44	0.38	0.31	0.26
OP-FR Src. B2	T20	0.48	0.40	0.48	0.44	0.41	0.35	0.29	0.23
	T30	0.50	0.43	0.47	0.46	0.44	0.37	0.30	0.25

**Table 5.60** – T<sub>20</sub> and T<sub>30</sub> values for Stonegate 2, combined with the CL-FR and the OP-FR wagons.

Stonegate 2 - T <sub>20</sub> (JNDs) and T <sub>30</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Source B0 CL-FR compared to OP-FR	T20	<b>1.33</b>	0.67	0.67	0	0.33	0.33	0	0.67
	T30	<b>1</b>	0.67	<b>1</b>	0.33	0.33	0.33	0	0.33
Source B1 CL-FR compared to OP-FR	T20	<b>1.33</b>	0.33	0.33	0.67	<b>1.67</b>	0	0.33	0
	T30	<b>2.67</b>	0.33	0.67	0.33	<b>1</b>	0.67	0.33	0.67
Source B2 CL-FR compared to OP-FR	T20	<b>1.67</b>	<b>2.33</b>	<b>2</b>	0.33	0.67	<b>1</b>	0.67	<b>1.33</b>
	T30	0	<b>1.67</b>	0.67	0.33	0	0.33	0.33	0.33

**Table 5.61**- Differences in T<sub>20</sub> and T<sub>30</sub> results between Stonegate 2-CL-FR and Stonegate 2-OP-FR simulations. Values in bold indicate significant differences. Cells in orange indicate an increase in reverberation time values when the CL-FR wagon is added and blue cells indicate an increase when an OP-FR wagon is used. The cells that are not highlighted indicate that the difference is below 1JND.

Stonegate 3 - T <sub>20</sub> (s) and T <sub>30</sub> (s)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
CL-FR Src. B0	T20	0.61	0.58	0.65	0.64	<b>0.61</b>	0.50	0.38	0.31
	T30	0.69	0.64	0.66	0.68	0.65	0.53	0.41	0.32
OP-FR Src. B0	T20	0.75	0.74	0.77	0.71	0.68	0.57	0.41	0.33
	T30	0.74	0.72	0.74	0.74	0.69	0.59	0.44	0.34
CL-FR Src. B1	T20	0.68	0.67	0.66	0.68	0.67	0.58	0.46	0.38
	T30	0.75	0.68	0.71	0.71	0.66	0.57	0.45	0.37
OP-FR Src. B1	T20	0.69	0.73	0.74	0.71	0.69	0.58	0.42	0.32
	T30	0.69	0.74	0.75	0.74	0.70	0.59	0.45	0.34
CL-FR	T20	0.71	0.63	0.74	0.69	0.62	0.50	0.36	0.30

Src. B2	T30	0.67	0.65	0.72	0.71	0.65	0.53	0.40	0.31
OP-FR	T20	0.61	0.69	0.75	0.69	0.62	0.50	0.38	0.31
Src. B2	T30	0.67	0.69	0.74	0.72	0.67	0.55	0.41	0.32

**Table 5.62** – T<sub>20</sub> and T<sub>30</sub> values for Stonegate 3, combined with the CL-FR and the OP-FR wagons.

Stonegate 3 - T <sub>20</sub> (JNDs) and T <sub>30</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Source B0 CL-FR compared to OP-FR	T20	<b>4.67</b>	<b>5.33</b>	<b>4</b>	<b>2.33</b>	<b>2.33</b>	<b>2.33</b>	<b>1</b>	0.67
	T30	<b>1.67</b>	<b>2.67</b>	<b>2.67</b>	<b>2</b>	<b>1.33</b>	<b>2</b>	<b>1</b>	0.67
Source B1 CL-FR compared to OP-FR	T20	0.33	<b>2</b>	<b>2.67</b>	<b>1</b>	0.67	0	<b>1.33</b>	<b>2</b>
	T30	<b>1.5</b>	<b>2</b>	<b>1</b>	0.75	<b>1.33</b>	0.67	0	<b>1</b>
Source B2 CL-FR compared to OP-FR	T20	<b>2.5</b>	<b>2</b>	0.25	0	0	0	0.67	0.33
	T30	0.33	<b>1.33</b>	0.5	0.25	0.67	0.67	0.33	0.33

**Table 5.63-** Differences in T<sub>20</sub> and T<sub>30</sub> results between Stonegate 3-CL-FR and Stonegate 3-OP-FR simulations. Values in bold indicate significant differences. Cells in orange indicate an increase in reverberation time values when the CL-FR wagon is added and blue cells indicate an increase when an OP-FR wagon is used. The cells that are not highlighted indicate that the difference is below 1JND.

Stonegate 4 - T <sub>20</sub> (s) and T <sub>30</sub> (s)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
CL-FR Src. B0	T20	0.53	0.49	0.56	0.51	0.48	0.39	0.32	0.28
	T30	0.55	0.52	0.53	0.53	0.48	0.42	0.34	0.28
OP-FR Src. B0	T20	0.62	0.60	0.57	0.52	0.53	0.43	0.33	0.27
	T30	0.64	0.58	0.56	0.56	0.54	0.46	0.36	0.28
CL-FR Src. B1	T20	0.60	0.51	0.51	0.50	0.47	0.41	0.32	0.28
	T30	0.58	0.51	0.53	0.53	0.48	0.42	0.53	0.27
OP-FR Src. B1	T20	0.41	0.58	0.55	0.53	0.48	0.43	0.34	0.29
	T30	0.48	0.57	0.56	0.55	0.51	0.44	0.36	0.30
CL-FR Src. B2	T20	0.49	0.54	0.57	0.49	0.45	0.38	0.31	0.27
	T30	0.48	0.54	0.53	0.5	0.49	0.40	0.33	0.27
OP-FR Src. B2	T20	0.52	0.54	0.52	0.51	0.47	0.4	0.32	0.28
	T30	0.55	0.55	0.54	0.53	0.52	0.44	0.35	0.29

**Table 5.64** – T<sub>20</sub> and T<sub>30</sub> values for Stonegate 4, combined with the CL-FR and the OP-FR wagons.

Stonegate 4 - T <sub>20</sub> (JNDs) and T <sub>30</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Source B0 CL-FR compared to OP-FR	T20	<b>3</b>	<b>3.67</b>	0.33	0.33	<b>1.67</b>	<b>1.33</b>	0.33	0.33
	T30	<b>3</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>1.33</b>	0.67	0

Source B1 CL-FR compared to OP-FR	T20	<b>6.33</b>	2.33	1.33	<b>1</b>	0.33	0.67	0.67	0.33
	T30	<b>3.33</b>	2	1	0.67	<b>1</b>	0.67	<b>5.67</b>	<b>1</b>
Source B2 CL-FR compared to OP-FR	T20	<b>1</b>	0	<b>1.67</b>	0.67	0.67	0.67	0.33	0.33
	T30	<b>2.33</b>	0.33	0.33	<b>1</b>	<b>1</b>	<b>1.33</b>	0.67	0.67

**Table 5.65-** Differences in  $T_{20}$  and  $T_{30}$  results between Stonegate 4-CL-FR and Stonegate 4-OP-FR simulations. Values in bold indicate significant differences. Cells in orange indicate an increase in reverberation time values when the CL-FR wagon is added and blue cells indicate an increase when an OP-FR wagon is used. The cells that are not highlighted indicate that the difference is below 1JND.

Virtual Model	Percentage of results with significant differences when the structure of front-on wagons is modified	
	$C_{50}$	$C_{80}$
Stonegate 1	50%	58%
Stonegate 2	75%	75%
Stonegate 3	50%	79%
Stonegate 4	46%	46%

**Table 5.66 –** Impact of the change in structure of front-on wagons on  $C_{50}$  and  $C_{80}$  values, expressed in percentages. The percentages are calculated across all source positions and frequency bands after averaging the results for receivers 1-3.

Stonegate 1 – $C_{50}$ (dB) and $C_{80}$ (dB)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
CL-FR Src. B0	$C_{50}$	4.68	3.77	6.28	9.14	11.40	13.57	16.91	19.04
	$C_{80}$	7.68	7.84	9.77	12.28	15.36	17.22	21.33	24.49
OP-FR Src. B0	$C_{50}$	5.62	6.39	6.44	7.65	9.06	9.98	13.13	15.86
	$C_{80}$	9.29	10.56	9.7	11.54	12.44	14.16	18.10	21.78
CL-FR Src. B1	$C_{50}$	4.21	3.63	4.53	7.01	8.57	9.91	12.90	14.27
	$C_{80}$	7.68	8.15	8.36	10.45	11.67	13.47	17.30	19.88
OP-FR Src. B1	$C_{50}$	7.95	7	6.99	8.29	9.47	10.88	14.01	16
	$C_{80}$	11.50	11.28	10.42	11.92	12.93	14.30	18.37	21.21
CL-FR Src. B2	$C_{50}$	7.79	9.16	9.85	11.51	12.73	14.49	17.57	19.05
	$C_{80}$	10.37	12.90	13.90	14.90	16.27	18.16	22.32	24.94
OP-FR Src. B2	$C_{50}$	8.08	8.53	9.94	11.31	13.31	14.32	17.15	19.11
	$C_{80}$	10.83	12.67	12.43	14.66	16.29	18.22	21.66	24.28

**Table 5.67 –**  $C_{50}$  and  $C_{80}$  values for Stonegate 1, combined with the CL-FR and the OP-FR wagons.

Stonegate 1 – $C_{50}$ (JNDs) and $C_{38}$ (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Source B0 CL-FR compared to OP-FR	$C_{50}$	0.85	<b>2.38</b>	0.15	<b>1.35</b>	<b>2.13</b>	<b>3.26</b>	<b>3.44</b>	<b>2.89</b>
	$C_{80}$	<b>1.61</b>	<b>2.72</b>	0.07	0.74	<b>2.92</b>	<b>3.06</b>	<b>3.23</b>	<b>2.71</b>

Source B1 CL-FR compared to OP-FR	C50	<b>3.4</b>	<b>3.06</b>	<b>2.24</b>	<b>1.16</b>	0.82	0.88	<b>1.01</b>	<b>1.57</b>
	C80	<b>3.82</b>	<b>3.13</b>	<b>2.06</b>	<b>1.47</b>	<b>1.26</b>	0.83	<b>1.07</b>	<b>1.33</b>
Source B2 CL-FR compared to OP-FR	C50	0.26	0.57	0.08	0.18	0.53	0.15	0.38	0.05
	C80	0.46	0.23	<b>1.47</b>	0.24	0.02	0.06	0.66	0.66

**Table 5.68-** Differences in C<sub>50</sub> and C<sub>80</sub> results between Stonegate 1-CL-FR and Stonegate 1-OP-FR simulations. Values in bold indicate significant differences. Cells in orange indicate an increase in clarity when the CL-FR wagon is added and blue cells indicate an increase when an OP-FR wagon is used. The cells that are not highlighted indicate that the difference is below 1JND.

Stonegate 2 – C <sub>50</sub> (dB) and C <sub>80</sub> (dB)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
CL-FR Src. B0	C50	5.55	5.50	8.73	11	12.28	14.64	17.72	19.62
	C80	9.94	9.54	12.90	14.87	17.05	19.19	23.17	25.61
OP-FR Src. B0	C50	10.18	9.77	9.43	10.67	10.95	12.07	14.65	16.64
	C80	15.08	12.80	13.39	14.78	15.63	16.95	20.73	23.69
CL-FR Src. B1	C50	6.43	6.77	6.86	9.35	11.15	12.86	15.34	16.68
	C80	9.58	10.82	11.66	13.51	15.58	17.72	20.94	23.15
OP-FR Src. B1	C50	9.30	8.73	10.68	11.14	12.34	13.53	16.39	18.18
	C80	14.76	13.87	14.25	15.58	16.78	18.17	21.61	24.24
CL-FR Src. B2	C50	8.25	11.13	11.65	11.48	13.43	14.57	17.23	18.52
	C80	13.25	15.51	14.88	16.03	17.66	18.99	22.49	25.18
OP-FR Src. B2	C50	10.58	11.01	11.28	14.11	15.13	16.07	18.76	20.24
	C80	15.08	15.31	15.21	17.92	18.98	20.28	24.09	26.68

**Table 5.69 –** C<sub>50</sub> and C<sub>80</sub> values for Stonegate 2, combined with the CL-FR and the OP-FR wagons.

Stonegate 2 – C <sub>50</sub> (JNDs) and C <sub>80</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Source B0 CL-FR compared to OP-FR	C50	<b>4.21</b>	<b>3.88</b>	0.64	0.3	<b>1.21</b>	<b>2.34</b>	<b>2.79</b>	<b>2.71</b>
	C80	<b>5.14</b>	<b>3.26</b>	0.49	0.09	<b>1.42</b>	<b>2.24</b>	<b>2.44</b>	<b>1.92</b>
Source B1 CL-FR compared to OP-FR	C50	<b>2.61</b>	<b>1.78</b>	<b>3.47</b>	<b>1.63</b>	<b>1.08</b>	0.61	0.95	<b>1.36</b>
	C80	<b>5.18</b>	<b>3.05</b>	<b>2.59</b>	<b>2.07</b>	<b>1.2</b>	0.45	0.67	<b>1.09</b>
Source B2 CL-FR compared to OP-FR	C50	<b>2.12</b>	0.11	0.34	<b>2.39</b>	<b>1.55</b>	<b>1.36</b>	<b>1.39</b>	<b>1.56</b>
	C80	<b>1.83</b>	0.20	0.33	<b>1.89</b>	<b>1.32</b>	<b>1.29</b>	<b>1.60</b>	<b>1.50</b>

**Table 5.70-** Differences in C<sub>50</sub> and C<sub>80</sub> results between Stonegate 2-CL-FR and Stonegate 2-OP-FR simulations. Values in bold indicate significant differences. Cells in orange indicate an increase in clarity when the CL-FR wagon is added and blue cells indicate an increase when an OP-FR wagon is

used. The cells that are not highlighted indicate that the difference is below 1JND.

Stonegate 3 – C <sub>50</sub> (dB) and C <sub>80</sub> (dB)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
CL-FR Src. B0	C50	4.16	2.60	5.29	7.82	9.62	11.96	15.6	17.63
	C80	7.18	7.60	8.54	11.31	13.23	15.37	19.70	22.55
OP-FR Src. B0	C50	4.52	6.55	5.52	5.53	6.53	7.96	11.36	13.97
	C80	7.94	9.81	8.67	8.57	9.81	11.52	15.97	19.48
CL-FR Src. B1	C50	2.7	4	4.05	6.31	7.67	9.52	12.51	14.89
	C80	8.28	7.42	7.02	8.91	10.04	12.30	16.06	18.77
OP-FR Src. B1	C50	6.18	6.05	6.35	7.12	8.68	9.9	12.82	14.86
	C80	9.49	10.02	9.73	9.71	11.77	13.46	17.09	20.15
CL-FR Src. B2	C50	6.83	7.02	8.70	10.08	12.06	13.95	16.96	18.13
	C80	8.88	9.65	10.94	13.48	15.06	17.22	21.07	23.39
OP-FR Src. B2	C50	6.54	7.64	8.27	9.27	10.86	12.86	15.63	16.61
	C80	10.58	10.77	10.82	11.92	14.18	16.06	19.71	22.07

**Table 5.71** – C<sub>50</sub> and C<sub>80</sub> values for Stonegate 3, combined with the CL-FR and the OP-FR wagons.

Stonegate 3 – C <sub>50</sub> (JNDs) and C <sub>80</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Source B0 CL-FR compared to OP-FR	C50	0.33	<b>3.59</b>	0.21	<b>2.08</b>	<b>2.81</b>	<b>3.64</b>	<b>3.85</b>	<b>3.33</b>
	C80	0.76	<b>2.21</b>	0.13	<b>2.74</b>	<b>3.42</b>	<b>3.85</b>	<b>3.73</b>	<b>3.07</b>
Source B1 CL-FR compared to OP-FR	C50	<b>3.16</b>	<b>1.86</b>	<b>2.09</b>	0.74	0.92	0.35	0.28	0.03
	C80	<b>1.21</b>	<b>2.60</b>	<b>2.71</b>	0.80	<b>1.73</b>	<b>1.16</b>	<b>1.03</b>	<b>1.38</b>
Source B2 CL-FR compared to OP-FR	C50	0.26	0.56	0.39	0.74	<b>1.09</b>	0.99	<b>1.21</b>	<b>1.38</b>
	C80	<b>1.70</b>	<b>1.12</b>	0.12	<b>1.56</b>	0.88	<b>1.16</b>	<b>1.36</b>	<b>1.32</b>

**Table 5.72**- Differences in C<sub>50</sub> and C<sub>80</sub> results between Stonegate 3-CL-FR and Stonegate 3-OP-FR simulations. Values in bold indicate significant differences. Cells in orange indicate an increase in clarity when the CL-FR wagon is added and blue cells indicate an increase when an OP-FR wagon is used. The cells that are not highlighted indicate that the difference is below 1JND.

Stonegate 4 – C <sub>50</sub> (dB) and C <sub>80</sub> (dB)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
CL-FR Src. B0	C50	5.53	4.52	6.86	9.38	11.42	13.73	17.08	18.41
	C80	9.56	9.99	10.35	13.22	15.17	17.92	21.77	24.53
OP-FR Src. B0	C50	7.63	8.56	7.41	8.45	9.66	10.40	13.86	19.06
	C80	11.99	11.44	10.76	12.50	13.41	15.16	19.42	22.47
CL-FR Src. B1	C50	3.83	6.43	7.14	8.92	10.68	12.48	15.22	15.98
	C80	9.8	9.62	10.11	12.96	14.49	16.65	20.61	22.58
OP-FR Src. B1	C50	6.98	8.28	8.25	8.97	10.14	11.81	14.53	16.35
	C80	12.21	12.56	12.23	12.8	14.55	15.89	19.78	22.52
CL-FR	C50	5.71	10.36	11.12	11.72	14.06	15.33	18.16	19.16

Src. B2	C80	13.66	14.92	13.99	15.18	17.79	19.27	22.89	25.23
OP-FR	C50	7.65	8.90	9.48	11.53	13.44	15.03	17.38	18.62
Src. B2	C80	12.22	13.52	13.71	14.96	16.92	18.80	22.01	24.14

**Table 5.73 – C<sub>50</sub> and C<sub>80</sub> values for Stonegate 4, combined with the CL-FR and the OP-FR wagons.**

Stonegate 4 – C <sub>50</sub> (JNDs) and C <sub>80</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Source B0 CL-FR compared to OP-FR	C50	<b>1.91</b>	<b>3.67</b>	0.5	0.85	<b>1.6</b>	<b>3.03</b>	<b>2.93</b>	0.59
	C80	<b>2.43</b>	<b>1.45</b>	0.41	0.72	<b>1.76</b>	<b>2.76</b>	<b>2.35</b>	<b>2.06</b>
Source B1 CL-FR compared to OP-FR	C50	<b>2.86</b>	<b>1.68</b>	<b>1.01</b>	0.05	0.49	0.61	0.63	0.34
	C80	<b>2.41</b>	<b>2.94</b>	<b>2.12</b>	0.16	0.06	0.76	0.83	0.06
Source B2 CL-FR compared to OP-FR	C50	<b>1.76</b>	<b>1.33</b>	<b>1.49</b>	0.17	0.56	0.27	0.71	0.49
	C80	<b>1.44</b>	<b>1.40</b>	0.28	0.22	0.87	0.47	0.88	<b>1.09</b>

**Table 5.74-** Differences in C<sub>50</sub> and C<sub>80</sub> results between Stonegate 4-CL-FR and Stonegate 4-OP-FR simulations. Values in bold indicate significant differences. Cells in orange indicate an increase in clarity when the CL-FR wagon is added and blue cells indicate an increase when an OP-FR wagon is used. The cells that are not highlighted indicate that the difference is below 1JND.

Virtual Model	Percentage of results with significant differences when the structure of front-on wagons is modified	
	IACC <sub>E3</sub>	LF <sub>E4</sub>
Stonegate 1	33%	11%
Stonegate 2	44%	0%
Stonegate 3	44%	11%
Stonegate 4	44%	33%

**Table 5.75 -** Impact of the change in structure of front-on wagons on IACC<sub>E3</sub> and LF<sub>E4</sub> values, expressed in percentages. No averaging across receiver positions was conducted prior to the analysis and comparisons were made per receiver.

Stonegate 1		
Receiver	IACC <sub>E3</sub>	LF <sub>E4</sub>
<b>CL-FR - B0</b>		
1	0.4	0.15
2	0.5	0.1
3	0.47	0.2
<b>OP-FR - B0</b>		
1	0.38	0.17
2	0.25	0.15
3	0.25	0.23
<b>CL-FR - B1</b>		
1	0.45	0.13
2	0.46	0.08
3	0.28	0.2

OP-FR - B1		
1	0.41	0.12
2	0.41	0.09
3	0.24	0.19
CL-FR - B2		
1	0.42	0.14
2	0.59	0.07
3	0.39	0.17
OP-FR - B2		
1	0.56	0.11
2	0.56	0.07
3	0.46	0.16

**Table 5.76** – IACC<sub>E3</sub> and LF<sub>E4</sub> values for Stonegate 1, combined with the CL-FR and the OP-FR wagons.

Stonegate 1		
Receiver	IACC <sub>E3</sub> (JNDs)	LF <sub>E4</sub> (JNDs)
CL-FR compared to OP-FR / B0		
1	0.27	0.4
2	<b>3.33</b>	<b>1</b>
3	<b>2.93</b>	0.6
CL-FR compared to OP-FR / B1		
1	0.53	0.2
2	0.67	0.2
3	0.53	0.2
CL-FR compared to OP-FR / B2		
1	<b>1.87</b>	0.6
2	0.4	0
3	0.93	0.2

**Table 5.77** - Differences in IACC<sub>E3</sub> and LF<sub>E4</sub> results between Stonegate 1-CL-FR and Stonegate 1-OP-FR simulations. Values in bold indicate significant differences. Cells in orange indicate an increase in values for the CL-FR wagon whereas blue cells indicate higher values with the use of the OP-FR wagon. The cells that are not highlighted indicate that the difference is below 1JND.

Stonegate 2		
Receiver	IACC <sub>E3</sub>	LF <sub>E4</sub>
CL-FR - B0		
1	0.48	0.15
2	0.52	0.07
3	0.45	0.15
OP-FR - B0		
1	0.35	0.14
2	0.31	0.1
3	0.2	0.19
CL-FR - B1		
1	0.46	0.17
2	0.46	0.07
3	0.35	0.15
OP-FR - B1		
1	0.53	0.15
2	0.48	0.07
3	0.37	0.14
CL-FR - B2		
1	0.57	0.09
2	0.61	0.07
3	0.58	0.13

OP-FR - B2		
1	0.52	0.1
2	0.66	0.05
3	0.43	0.1

**Table 5.78** – IACC<sub>E3</sub> and LF<sub>E4</sub> values for Stonegate 2, combined with the CL-FR and the OP-FR wagons.

Stonegate 2		
Receiver	IACC <sub>E3</sub> (JNDs)	LF <sub>E4</sub> (JNDs)
<b>CL-FR compared to OP-FR / B0</b>		
1	<b>1.73</b>	0.2
2	<b>2.8</b>	0.6
3	<b>3.33</b>	0.8
<b>CL-FR compared to OP-FR / B1</b>		
1	0.93	0.4
2	0.27	0
3	0.27	0.2
<b>CL-FR compared to OP-FR / B2</b>		
1	0.67	0.2
2	0.67	0.4
3	<b>2</b>	0.6

**Table 5.79** - Differences in IACC<sub>E3</sub> and LF<sub>E4</sub> results between Stonegate 2-CL-FR and Stonegate 2-OP-FR simulations. Values in bold indicate significant differences. Cells in orange indicate an increase in values for the CL-FR wagon. The cells that are not highlighted indicate that the difference is below 1JND.

Stonegate 3		
Receiver	IACC <sub>E3</sub>	LF <sub>E4</sub>
<b>CL-FR - B0</b>		
1	0.47	0.19
2	0.49	0.08
3	0.45	0.13
<b>OP-FR - B0</b>		
1	0.28	0.16
2	0.37	0.13
3	0.25	0.14
<b>CL-FR - B1</b>		
1	0.44	0.14
2	0.44	0.1
3	0.35	0.15
<b>OP-FR - B1</b>		
1	0.37	0.11
2	0.41	0.08
3	0.28	0.18
<b>CL-FR - B2</b>		
1	0.57	0.16
2	0.61	0.06
3	0.61	0.13
<b>OP-FR - B2</b>		
1	0.5	0.14
2	0.55	0.08
3	0.5	0.13

**Table 5.80** – IACC<sub>E3</sub> and LF<sub>E4</sub> values for Stonegate 3, combined with the CL-FR and the OP-FR wagons.

Stonegate 3		
Receiver	IACC <sub>E3</sub> (JNDs)	LF <sub>E4</sub> (JNDs)
<b>CL-FR compared to OP-FR / B0</b>		
1	<b>2.53</b>	0.6
2	<b>1.6</b>	1
3	<b>2.67</b>	0.2
<b>CL-FR compared to OP-FR / B1</b>		
1	0.93	0.6
2	0.4	0.4
3	0.93	0.6
<b>CL-FR compared to OP-FR / B2</b>		
1	0.93	0.4
2	0.8	0.4
3	<b>1.47</b>	0

**Table 5.81** - Differences in IACC<sub>E3</sub> and LF<sub>E4</sub> results between Stonegate 3-CL-FR and Stonegate 3-OP-FR simulations. Values in bold indicate significant differences. Cells in orange indicate an increase in values for the CL-FR wagon whereas blue cells indicate higher values with the use of the OP-FR wagon. The cells that are not highlighted indicate that the difference is below 1JND.

Stonegate 4		
Receiver	IACC <sub>E3</sub>	LF <sub>E4</sub>
<b>CL-FR - B0</b>		
1	0.45	0.15
2	0.55	0.06
3	0.48	0.25
<b>OP-FR - B0</b>		
1	0.37	0.15
2	0.29	0.14
3	0.31	0.18
<b>CL-FR - B1</b>		
1	0.48	0.13
2	0.49	0.06
3	0.27	0.16
<b>OP-FR - B1</b>		
1	0.41	0.14
2	0.47	0.07
3	0.36	0.22
<b>CL-FR - B2</b>		
1	0.58	0.11
2	0.63	0.06
3	0.6	0.11
<b>OP-FR - B2</b>		
1	0.53	0.1
2	0.61	0.07
3	0.54	0.1

**Table 5.82** – IACC<sub>E3</sub> and LF<sub>E4</sub> values for Stonegate 4, combined with the CL-FR and the OP-FR wagons.

Stonegate 4		
Receiver	IACC <sub>E3</sub> (JNDs)	LF <sub>E4</sub> (JNDs)
<b>CL-FR compared to OP-FR / B0</b>		
1	<b>1.07</b>	0
2	<b>3.47</b>	<b>1.6</b>
3	<b>2.27</b>	<b>1.4</b>
<b>CL-FR compared to OP-FR / B1</b>		
1	0.93	0.2
2	0.27	0.2

3	<b>1.2</b>	<b>1.2</b>
<b>CL-FR compared to OP-FR / B2</b>		
1	0.67	0.2
2	0.27	0.2
3	0.8	0.2

**Table 5.83** - Differences in IACC<sub>E3</sub> and LF<sub>E4</sub> results between Stonegate 4-CL-FR and Stonegate 4-OP-FR simulations. Values in bold indicate significant differences. Cells in orange indicate an increase in values for the CL-FR wagon whereas blue cells indicate higher values with the use of the OP-FR wagon. The cells that are not highlighted indicate that the difference is below 1JND.

Virtual Model	Percentage of results with significant differences when the orientation of the closed wagon is modified	
	T <sub>20</sub>	T <sub>30</sub>
Stonegate 1	88%	78%
Stonegate 2	68%	63%
Stonegate 3	85%	85%
Stonegate 4	90%	90%

**Table 5.84** – Impact of the change in orientation of closed wagons on T<sub>20</sub> and T<sub>30</sub> values, expressed in percentages. The percentages are calculated across all source positions and frequency bands after averaging the results for receivers 1-3.

Stonegate 1 - T <sub>20</sub> (s) and T <sub>30</sub> (s)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
CL-SI	T20	0.58	0.63	0.67	0.64	0.61	0.52	0.39	0.28
	T30	0.61	0.60	0.67	0.66	0.63	0.53	0.40	0.31
Src. B0	T20	0.53	0.57	0.54	0.56	0.51	0.42	0.34	0.27
	T30	0.57	0.57	0.56	0.57	0.54	0.45	0.36	0.29
CL-FR	T20	0.61	0.63	0.64	0.67	0.66	0.55	0.42	0.33
	T30	0.61	0.62	0.65	0.68	0.65	0.57	0.43	0.33
Src. B1	T20	0.61	0.60	0.56	0.61	0.52	0.49	0.39	0.33
	T30	0.58	0.60	0.58	0.62	0.58	0.49	0.39	0.32
CL-SI	T20	0.58	0.60	0.66	0.64	0.58	0.51	0.38	0.31
	T30	0.60	0.62	0.65	0.67	0.63	0.53	0.40	0.31
Src. B2	T20	0.64	0.55	0.63	0.57	0.50	0.41	0.31	0.26
	T30	0.59	0.60	0.61	0.60	0.55	0.45	0.35	0.27
CL-FR	T20	0.75	0.68	0.71	0.67	0.63	0.56	0.42	0.32
	T30	0.72	0.66	0.69	0.67	0.65	0.55	0.43	0.33
Src. B3	T20	0.60	0.59	0.63	0.61	0.55	0.46	0.37	0.30
	T30	0.58	0.60	0.63	0.65	0.59	0.49	0.38	0.31
CL-SI	T20	0.62	0.70	0.64	0.63	0.59	0.51	0.40	0.31
	T30	0.59	0.68	0.64	0.66	0.61	0.52	0.41	0.32
Src. B4	T20	0.57	0.61	0.57	0.56	0.55	0.45	0.36	0.29
	T30	0.57	0.61	0.60	0.61	0.58	0.48	0.38	0.30

**Table 5.85** – T<sub>20</sub> and T<sub>30</sub> values for Stonegate 1, combined with the CL-SI and the CL-FR wagons.

Stonegate 1 - T <sub>20</sub> (JNDs) and T <sub>30</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Source B0	T20	<b>1.67</b>	<b>2</b>	<b>4.33</b>	<b>2.67</b>	<b>3.33</b>	<b>3.33</b>	<b>1.67</b>	0.33

CL-SI compared to CL-FR	T30	<b>1.33</b>	1	<b>3.67</b>	3	3	<b>2.67</b>	<b>1.33</b>	0.67
Source B1 CL-SI compared to CL-FR	T20	0	1	<b>2.67</b>	2	<b>4.67</b>	2	1	0
	T30	<b>1</b>	0.67	<b>2.33</b>	2	<b>2.33</b>	<b>2.67</b>	<b>1.33</b>	0.33
Source B2 CL-SI compared to CL-FR	T20	<b>2</b>	<b>1.67</b>	1	2.33	<b>2.67</b>	3.33	2.33	<b>1.67</b>
	T30	0.33	0.67	<b>1.33</b>	<b>2.33</b>	<b>2.67</b>	<b>2.67</b>	<b>1.67</b>	<b>1.33</b>
Source B3 CL-SI compared to CL-FR	T20	<b>3.75</b>	3	2	2	<b>2.67</b>	3.33	<b>1.67</b>	0.67
	T30	<b>3.5</b>	2	2	0.67	<b>2</b>	2	<b>1.67</b>	0.67
Source B4 CL-SI compared to CL-FR	T20	<b>1.67</b>	3	<b>2.33</b>	<b>2.33</b>	<b>1.33</b>	2	<b>1.33</b>	0.67
	T30	0.67	<b>2.33</b>	<b>1.33</b>	<b>1.67</b>	1	<b>1.33</b>	1	0.67

**Table 5.86-** Differences in T<sub>20</sub> and T<sub>30</sub> results between Stonegate 1-CL-SI and Stonegate 1-CL-FR simulations. Values in bold indicate significant differences. Cells in orange indicate an increase in reverberation time values when the CL-SI wagon is added and blue cells indicate an increase when an CL-FR wagon is used. The cells that are not highlighted indicate that the difference is below 1JND.

Stonegate 2 - T <sub>20</sub> (s) and T <sub>30</sub> (s)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
CL-SI Src. B0	T20	0.46	0.48	0.50	0.48	0.45	0.42	0.30	0.23
	T30	0.46	0.49	0.48	0.50	0.47	0.43	0.32	0.26
CL-FR Src. B0	T20	0.46	0.45	0.48	0.44	0.41	0.35	0.28	0.25
	T30	0.48	0.47	0.50	0.47	0.45	0.38	0.30	0.26
CL-SI Src. B1	T20	0.56	0.49	0.49	0.49	0.48	0.44	0.35	0.28
	T30	0.51	0.48	0.50	0.51	0.48	0.44	0.35	0.29
CL-FR Src. B1	T20	0.47	0.48	0.45	0.45	0.42	0.37	0.30	0.27
	T30	0.44	0.48	0.47	0.47	0.43	0.38	0.31	0.26
CL-SI Src. B2	T20	0.60	0.53	0.55	0.50	0.47	0.43	0.34	0.28
	T30	0.56	0.53	0.52	0.50	0.48	0.42	0.35	0.28
CL-FR Src. B2	T20	0.53	0.47	0.54	0.45	0.43	0.38	0.31	0.27
	T30	0.50	0.48	0.49	0.45	0.44	0.38	0.31	0.26
CL-SI Src. B3	T20	0.50	0.47	0.52	0.54	0.48	0.42	0.33	0.27
	T30	0.51	0.44	0.53	0.51	0.50	0.43	0.35	0.27
CL-FR Src. B3	T20	0.52	0.49	0.46	0.46	0.39	0.36	0.30	0.25
	T30	0.52	0.51	0.46	0.47	0.43	0.38	0.30	0.25
CL-SI Src. B4	T20	0.48	0.50	0.51	0.46	0.45	0.42	0.36	0.29
	T30	0.48	0.50	0.49	0.47	0.46	0.42	0.35	0.29
CL-FR Src. B4	T20	0.51	0.53	0.47	0.51	0.44	0.38	0.32	0.28
	T30	0.48	0.51	0.49	0.51	0.44	0.38	0.32	0.27

**Table 5.87 –** T<sub>20</sub> and T<sub>30</sub> values for Stonegate 2, combined with the CL-SI and the CL-FR wagons.

Stonegate 2 - T <sub>20</sub> (JNDs) and T <sub>30</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Source B0 CL-SI compared to CL-FR	T20	0	1	0.67	1.33	1.33	2.33	0.67	0.67
	T30	0.67	0.67	0.67	1	0.67	1.67	0.67	0
Source B1 CL-SI compared to CL-FR	T20	3	0.33	1.33	1.33	2	2.33	1.67	0.33
	T30	2.33	0	1	1.33	1.67	2	1.33	1
Source B2 CL-SI compared to CL-FR	T20	2.33	2	0.33	1.67	1.33	1.67	1	0.33
	T30	2	1.67	1	1.67	1.33	1.33	1.33	0.67
Source B3 CL-SI compared to CL-FR	T20	0.67	0.67	2	2.67	3	2	1	0.67
	T30	0.33	2.33	2.33	1.33	2.33	1.67	1.67	0.67
Source B4 CL-SI compared to CL-FR	T20	1	1	1.33	1.67	0.33	1.33	1.33	0.33
	T30	0	0.33	0	1.33	0.67	1.33	1	0.67

**Table 5.88-** Differences in T<sub>20</sub> and T<sub>30</sub> results between Stonegate 2-CL-SI and Stonegate 2-CL-FR simulations. Values in bold indicate significant differences. Cells in orange indicate an increase in reverberation time values when the CL-SI wagon is added and blue cells indicate an increase when an CL-FR wagon is used. The cells that are not highlighted indicate that the difference is below 1JND.

Stonegate 3 - T <sub>20</sub> (s) and T <sub>30</sub> (s)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
CL-SI Src. B0	T20	0.74	0.74	0.78	0.77	0.73	0.62	0.43	0.31
	T30	0.76	0.73	0.78	0.77	0.76	0.64	0.47	0.35
CL-FR Src. B0	T20	0.61	0.58	0.65	0.64	0.61	0.50	0.38	0.31
	T30	0.69	0.64	0.66	0.68	0.65	0.53	0.41	0.32
CL-SI Src. B1	T20	0.81	0.77	0.77	0.81	0.77	0.67	0.51	0.39
	T30	0.76	0.76	0.76	0.79	0.75	0.64	0.51	0.39
CL-FR Src. B1	T20	0.68	0.67	0.66	0.68	0.67	0.58	0.46	0.38
	T30	0.75	0.68	0.71	0.71	0.66	0.57	0.45	0.37
CL-SI Src. B2	T20	0.76	0.73	0.77	0.80	0.75	0.61	0.45	0.32
	T30	0.76	0.72	0.76	0.83	0.75	0.63	0.47	0.35
CL-FR Src. B2	T20	0.71	0.63	0.74	0.69	0.62	0.50	0.36	0.30
	T30	0.68	0.65	0.72	0.71	0.65	0.53	0.40	0.31
CL-SI Src. B3	T20	0.74	0.75	0.78	0.86	0.79	0.69	0.55	0.42
	T30	0.75	0.75	0.80	0.83	0.77	0.68	0.54	0.41
CL-FR Src. B3	T20	0.80	0.76	0.76	0.72	0.67	0.55	0.42	0.33
	T30	0.73	0.72	0.77	0.77	0.70	0.58	0.44	0.34
CL-SI Src. B4	T20	0.70	0.79	0.84	0.82	0.79	0.69	0.52	0.39
	T30	0.74	0.75	0.84	0.82	0.77	0.68	0.52	0.40
CL-FR Src. B4	T20	0.78	0.74	0.71	0.70	0.69	0.55	0.43	0.34
	T30	0.72	0.70	0.71	0.72	0.71	0.58	0.45	0.35

**Table 5.89 –** T<sub>20</sub> and T<sub>30</sub> values for Stonegate 3, combined with the CL-SI and the CL-FR wagons.

Stonegate 3 - T <sub>20</sub> (JNDs) and T <sub>30</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Source B0 CL-SI compared to CL-FR	T20	<b>3.25</b>	4	3.25	3.25	3	<b>4</b>	<b>1.67</b>	0
	T30	<b>1.75</b>	2.25	3	2.25	2.75	3.67	2	<b>1</b>
Source B1 CL-SI compared to CL-FR	T20	<b>3.25</b>	2.5	2.75	3.25	2.5	3	<b>1.67</b>	0.33
	T30	0.25	2	<b>1.25</b>	2	2.25	2.33	2	0.67
Source B2 CL-SI compared to CL-FR	T20	<b>1.25</b>	2.5	0.75	2.75	3.25	<b>3.67</b>	3	0.67
	T30	2	<b>1.75</b>	1	3	<b>2.50</b>	3.33	2.33	<b>1.33</b>
Source B3 CL-SI compared to CL-FR	T20	<b>1.5</b>	0.25	0.50	<b>3.50</b>	3	<b>4.67</b>	4.33	3
	T30	0.50	0.75	0.75	<b>1.50</b>	1.75	3.33	3.33	<b>2.33</b>
Source B4 CL-SI compared to CL-FR	T20	<b>2.67</b>	<b>1.25</b>	<b>3.25</b>	3	<b>2.50</b>	<b>4.67</b>	3	<b>1.67</b>
	T30	0.50	<b>1.25</b>	3.25	2.50	<b>1.50</b>	3.33	2.33	<b>1.67</b>

**Table 5.90-** Differences in T<sub>20</sub> and T<sub>30</sub> results between Stonegate 3-CL-SI and Stonegate 3-CL-FR simulations. Values in bold indicate significant differences. Cells in orange indicate an increase in reverberation time values when the CL-SI wagon is added and blue cells indicate an increase when an CL-FR wagon is used. The cells that are not highlighted indicate that the difference is below 1JND.

Stonegate 4 - T <sub>20</sub> (s) and T <sub>30</sub> (s)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
CL-SI Src. B0	T20	0.53	0.56	0.60	0.54	0.53	0.47	0.35	0.26
	T30	0.58	0.59	0.60	0.57	0.56	0.49	0.39	0.30
CL-FR Src. B0	T20	0.53	0.49	0.56	0.51	0.48	0.39	0.32	0.28
	T30	0.55	0.52	0.53	0.53	0.48	0.42	0.34	0.28
CL-SI Src. B1	T20	0.68	0.62	0.65	0.62	0.58	0.53	0.43	0.35
	T30	0.68	0.60	0.63	0.61	0.58	0.52	0.42	0.35
CL-FR Src. B1	T20	0.60	0.51	0.51	0.50	0.47	0.41	0.32	0.28
	T30	0.58	0.51	0.53	0.53	0.48	0.42	0.53	0.27
CL-SI Src. B2	T20	0.66	0.58	0.59	0.57	0.52	0.48	0.37	0.28
	T30	0.61	0.58	0.57	0.59	0.56	0.50	0.39	0.29
CL-FR Src. B2	T20	0.49	0.54	0.57	0.49	0.45	0.38	0.31	0.27
	T30	0.48	0.54	0.53	0.50	0.49	0.40	0.33	0.27
CL-SI Src. B3	T20	0.65	0.62	0.62	0.67	0.63	0.56	0.45	0.34
	T30	0.62	0.55	0.62	0.66	0.61	0.54	0.44	0.34
CL-FR Src. B3	T20	0.55	0.59	0.57	0.54	0.51	0.44	0.35	0.29
	T30	0.53	0.61	0.60	0.56	0.53	0.46	0.36	0.29
CL-SI Src. B4	T20	0.62	0.62	0.66	0.67	0.64	0.57	0.45	0.35
	T30	0.60	0.60	0.64	0.64	0.63	0.55	0.45	0.35
CL-FR Src. B4	T20	0.55	0.56	0.55	0.55	0.50	0.43	0.36	0.29
	T30	0.59	0.57	0.56	0.56	0.52	0.44	0.36	0.29

**Table 5.91 –** T<sub>20</sub> and T<sub>30</sub> values for Stonegate 3, combined with the CL-SI and the CL-FR wagons.

Stonegate 4 - T <sub>20</sub> (JNDs) and T <sub>30</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Source B0 CL-SI compared to CL-FR	T20	0	2.33	1.33	1	1.67	2.67	1	0.67
	T30	1	2.33	2.33	1.33	2.67	2.33	1.67	0.67
Source B1 CL-SI compared to CL-FR	T20	2.67	3.67	4.67	4	3.67	4	3.67	2.33
	T30	3.33	3	3.33	2.67	3.33	3.33	3.67	2.67
Source B2 CL-SI compared to CL-FR	T20	5.67	1.33	0.67	2.67	2.33	3.33	2	0.33
	T30	4.33	1.33	1.33	3	2.33	3.33	2	0.67
Source B3 CL-SI compared to CL-FR	T20	3.33	1	1.67	4.33	4	4	3.33	1.67
	T30	3	2	0.67	3.33	2.67	2.67	2.67	1.67
Source B4 CL-SI compared to CL-FR	T20	2.33	2	3.67	4	4.67	4.67	3	2
	T30	0.33	1	2.67	2.67	3.67	3.67	3	2

**Table 5.92-** Differences in T<sub>20</sub> and T<sub>30</sub> results between Stonegate 4-CL-SI and Stonegate 4-CL-FR simulations. Values in bold indicate significant differences. Cells in orange indicate an increase in reverberation time values when the CL-SI wagon is added and blue cells indicate an increase when an CL-FR wagon is used. The cells that are not highlighted indicate that the difference is below 1JND.

Virtual Model	Percentage of results with significant differences when the orientation of the closed wagon is modified	
	C <sub>50</sub>	C <sub>80</sub>
Stonegate 1	65%	70%
Stonegate 2	50%	55%
Stonegate 3	78%	83%
Stonegate 4	78%	78%

**Table 5.93 –** Impact of the change in orientation of closed wagons on C<sub>50</sub> and C<sub>80</sub> values, expressed in percentages. The percentages are calculated across all source positions and frequency bands after averaging the results for receivers 1-3.

Stonegate 1 – C <sub>50</sub> (dB) and C <sub>80</sub> (dB)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
CL-SI Src. B0	C50	6.79	5.76	7.26	7.92	8.37	10.52	13.32	14.89
	C80	10.20	10.09	11.13	11.34	12.13	14.07	18.11	21.77
CL-FR Src. B0	C50	4.68	3.77	6.28	9.14	11.40	13.57	16.91	19.04
	C80	7.68	7.84	9.77	12.28	15.36	17.22	21.33	24.49
CL-SI Src. B1	C50	6.82	5.66	5.95	5.72	7	9.20	12.05	13.68
	C80	8.93	10.58	8.83	9.25	10.53	12.31	16.09	19.21

CL-FR	C50	4.21	3.63	4.53	7.01	8.57	9.91	12.90	14.27
Src. B1	C80	7.68	8.15	8.36	10.45	11.67	13.47	17.30	19.88
CL-SI	C50	7.13	5.75	7.12	7.40	7.37	8.97	11.82	13.29
Src. B2	C80	10.32	9.87	10.91	11.03	11.03	13	16.9	19.81
CL-FR	C50	7.79	9.16	9.85	11.51	12.73	14.49	17.57	19.05
Src. B2	C80	10.37	12.90	13.90	14.90	16.27	18.16	22.32	24.94
CL-SI	C50	8.22	5.61	6.62	6.06	7	8.75	11.91	13.37
Src. B3	C80	11.03	8.81	9.73	8.19	10.12	12.08	15.92	18.68
CL-FR	C50	8.03	7.76	7.36	7.81	8.46	8.79	11.05	12.45
Src. B3	C80	10.97	10.54	10.78	11.65	12.39	13.80	16.76	19.15
CL-SI	C50	4.16	8.32	6.83	6.87	6.98	8.47	10.74	11.93
Src. B4	C80	7.07	11.43	10.81	10.97	10.77	12.86	15.84	18.34
CL-FR	C50	7.33	7.44	7.65	7.65	9.16	10.14	12.06	12.11
Src. B4	C80	10.79	11.03	10.32	11.66	13.08	14.52	17.18	18.79

**Table 5.94 – C<sub>50</sub> and C<sub>80</sub> values for Stonegate 1, combined with the CL-SI and the CL-FR wagons.**

Stonegate 1 – C <sub>50</sub> (JNDs) and C <sub>80</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Source B0 CL-SI compared to CL-FR	C50	<b>1.92</b>	<b>1.81</b>	0.89	<b>1.11</b>	<b>2.75</b>	<b>2.77</b>	<b>3.26</b>	<b>3.77</b>
	C80	<b>2.52</b>	<b>2.25</b>	<b>1.36</b>	0.94	<b>3.23</b>	<b>3.15</b>	<b>3.22</b>	<b>2.72</b>
Source B1 CL-SI compared to CL-FR	C50	<b>2.37</b>	<b>1.85</b>	<b>1.29</b>	<b>1.17</b>	<b>1.43</b>	0.65	0.77	0.54
	C80	<b>1.25</b>	<b>2.43</b>	0.47	<b>1.20</b>	<b>1.14</b>	<b>1.16</b>	<b>1.21</b>	0.67
Source B2 CL-SI compared to CL-FR	C50	0.6	<b>3.1</b>	<b>2.48</b>	<b>3.74</b>	<b>4.87</b>	<b>5.02</b>	<b>5.23</b>	<b>5.24</b>
	C80	0.05	<b>3.03</b>	<b>2.99</b>	<b>3.87</b>	<b>5.24</b>	<b>5.16</b>	<b>5.42</b>	<b>5.13</b>
Source B3 CL-SI compared to CL-FR	C50	0.17	<b>1.95</b>	0.67	<b>1.59</b>	<b>1.33</b>	0.04	0.78	0.84
	C80	0.06	<b>1.73</b>	<b>1.05</b>	<b>3.46</b>	<b>2.27</b>	<b>1.72</b>	0.84	0.47
Source B4 CL-SI compared to CL-FR	C50	<b>2.88</b>	0.8	0.75	0.71	<b>1.98</b>	<b>1.52</b>	<b>1.2</b>	0.16
	C80	<b>3.72</b>	0.4	0.49	0.69	<b>2.31</b>	<b>1.66</b>	<b>1.34</b>	0.45

**Table 5.95-** Differences in C<sub>50</sub> and C<sub>80</sub> results between Stonegate 1-CL-SI and Stonegate 1-CL-FR simulations. Values in bold indicate significant differences. Cells in orange indicate an increase in clarity values when the CL-SI wagon is added and blue cells indicate an increase when a CL-FR wagon is used. The cells that are not highlighted indicate that the difference is below 1JND.

Stonegate 2 – C <sub>50</sub> (dB) and C <sub>80</sub> (dB)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
CL-SI Src. B0	C50	7.82	8.59	10.26	10.98	11.91	13.62	16.64	18.63
	C80	13.32	13.15	14.11	15.59	16.56	18.20	22.60	25.50
CL-FR Src. B0	C50	5.55	5.50	8.73	11	12.28	14.64	17.72	19.62
	C80	9.94	9.54	12.90	14.87	17.05	19.19	23.17	25.61
CL-SI	C50	7.15	8.10	7.72	8.35	9.75	11.72	14.43	15.58

Src. B1	C80	12.54	14.00	12.30	12.44	13.81	16.10	19.61	22.41
CL-FR	C50	6.43	6.77	6.86	9.35	11.15	12.86	15.34	16.68
Src. B1	C80	9.58	10.82	11.66	13.51	15.58	17.72	20.94	23.15
CL-SI	C50	8.80	6.04	8.86	8.57	9.25	10.36	12.76	13.82
Src. B2	C80	12.51	9.63	13.02	12.78	13.83	15.08	18.54	20.80
CL-FR	C50	8.25	11.13	11.65	11.48	13.43	14.57	17.23	18.52
Src. B2	C80	13.25	15.51	14.88	16.03	17.66	18.99	22.49	25.18
CL-SI	C50	7.71	7.83	9.56	10.28	10.84	11.98	14.91	16.34
Src. B3	C80	11.76	11.12	13.34	13.26	14.49	16.31	20.05	23.26
CL-FR	C50	9.81	8.49	8.50	9.37	10.08	11.40	13.09	14.14
Src. B3	C80	14.64	12.52	12.93	13.47	14.99	16.36	19.11	21.20
CL-SI	C50	8.26	10.62	9.75	9.98	9.71	11.35	13.59	14.38
Src. B4	C80	12.44	13.36	13.05	13.94	14.92	16.46	19.08	21.86
CL-FR	C50	10.49	8.04	9.69	9.57	10.48	11.07	12.54	12.89
Src. B4	C80	13.52	12.89	13.81	12.91	14.65	16.20	18.72	19.95

**Table 5.96 – C<sub>50</sub> and C<sub>80</sub> values for Stonegate 2, combined with the CL-SI and the CL-FR wagons.**

Stonegate 2 – C <sub>50</sub> (JNDs) and C <sub>80</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Source B0 CL-SI compared to CL-FR	C50	<b>2.06</b>	<b>2.81</b>	<b>1.39</b>	0.02	0.34	0.93	0.98	0.90
	C80	<b>3.38</b>	<b>3.61</b>	<b>1.21</b>	0.72	0.49	0.99	0.57	0.11
Source B1 CL-SI compared to CL-FR	C50	0.65	<b>1.21</b>	0.78	0.91	<b>1.27</b>	<b>1.04</b>	0.83	<b>1</b>
	C80	<b>2.96</b>	<b>3.18</b>	0.64	<b>1.07</b>	<b>1.77</b>	<b>1.62</b>	<b>1.33</b>	0.74
Source B2 CL-SI compared to CL-FR	C50	0.50	<b>4.63</b>	<b>2.54</b>	<b>2.65</b>	<b>3.80</b>	<b>3.83</b>	<b>4.06</b>	<b>4.27</b>
	C80	0.74	<b>5.88</b>	<b>1.86</b>	<b>3.25</b>	<b>3.83</b>	<b>3.91</b>	<b>3.95</b>	<b>4.38</b>
Source B3 CL-SI compared to CL-FR	C50	<b>1.91</b>	0.6	0.96	0.83	0.69	0.53	<b>1.65</b>	<b>2</b>
	C80	<b>2.88</b>	<b>1.40</b>	0.41	0.21	0.50	0.05	0.94	<b>2.06</b>
Source B4 CL-SI compared to CL-FR	C50	<b>2.03</b>	<b>2.35</b>	0.05	0.37	0.7	0.25	0.95	<b>1.35</b>
	C80	<b>1.08</b>	0.47	0.76	<b>1.03</b>	0.27	0.26	0.36	<b>1.91</b>

**Table 5.97-** Differences in C<sub>50</sub> and C<sub>80</sub> results between Stonegate 2-CL-SI and Stonegate 2-CL-FR simulations. Values in bold indicate significant differences. Cells in orange indicate an increase in clarity values when the CL-SI wagon is added and blue cells indicate an increase when a CL-FR wagon is used. The cells that are not highlighted indicate that the difference is below 1JND.

Stonegate 3 – C <sub>50</sub> (dB) and C <sub>80</sub> (dB)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
CL-SI Src. B0	C50	5.16	5.37	6.56	7.26	8.22	9.97	12.80	15.22
	C80	9.34	8.34	9.70	10.07	11.43	13.37	17.18	20.77
CL-FR Src. B0	C50	4.16	2.60	5.29	7.82	9.62	11.96	15.60	17.63
	C80	7.18	7.60	8.54	11.31	13.23	15.37	19.70	22.55

CL-SI	C50	3.84	4.77	3.51	4.33	4.46	6.48	9.42	11.32
Src. B1	C80	7.39	7.47	6.64	7.56	7.71	9.49	13.41	16.49
CL-FR	C50	2.70	4.0	4.05	6.31	7.67	9.52	12.51	14.89
Src. B1	C80	8.28	7.42	7.02	8.91	10.04	12.30	16.06	18.77
CL-SI	C50	5.81	5.38	5.18	5.93	6.47	8.52	11.45	12.95
Src. B2	C80	8.54	9.12	8.15	9.20	9.41	11.96	15.89	18.22
CL-FR	C50	6.83	7.02	8.70	10.08	12.06	13.95	16.96	18.13
Src. B2	C80	8.88	9.65	10.94	13.48	15.06	17.22	21.07	23.39
CL-SI	C50	2.97	0.42	3.81	2.83	3.68	4.83	8.30	10.75
Src. B3	C80	5.72	3.84	6.35	5.88	5.83	7.37	11.58	15.31
CL-FR	C50	3.44	4.61	5.40	4.76	6.28	6.96	9.22	10.84
Src. B3	C80	7.76	7.80	8.02	7.49	9.51	11.12	14.23	17.20
CL-SI	C50	3.15	4	3.53	3.10	3.11	4.44	6.84	8.55
Src. B4	C80	5.53	6.36	6.11	5.77	6.16	7.89	11.02	13.79
CL-FR	C50	6.09	4.81	5.66	5.42	6.88	7.92	9.78	11.20
Src. B4	C80	8.68	7.91	8.77	8.77	10.39	11.65	14.39	16.77

**Table 5.98 – C<sub>50</sub> and C<sub>80</sub> values for Stonegate 3, combined with the CL-SI and the CL-FR wagons.**

Stonegate 3 – C <sub>50</sub> (JNDs) and C <sub>80</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Source B0 CL-SI compared to CL-FR	C50	0.91	<b>2.52</b>	<b>1.15</b>	0.51	<b>1.27</b>	<b>1.81</b>	<b>2.55</b>	<b>2.19</b>
	C80	<b>2.16</b>	0.74	<b>1.16</b>	<b>1.24</b>	<b>1.8</b>	2	<b>2.52</b>	<b>1.78</b>
Source B1 CL-SI compared to CL-FR	C50	<b>1.04</b>	0.70	0.49	<b>1.8</b>	<b>2.92</b>	<b>2.76</b>	<b>2.81</b>	<b>3.25</b>
	C80	0.89	0.05	0.38	<b>1.35</b>	<b>2.33</b>	<b>2.81</b>	<b>2.65</b>	<b>2.28</b>
Source B2 CL-SI compared to CL-FR	C50	0.93	<b>1.49</b>	<b>3.2</b>	<b>3.77</b>	<b>5.08</b>	<b>4.94</b>	<b>5.01</b>	<b>4.71</b>
	C80	0.34	0.53	<b>2.79</b>	<b>4.28</b>	<b>5.65</b>	<b>5.26</b>	<b>5.18</b>	<b>5.17</b>
Source B3 CL-SI compared to CL-FR	C50	0.43	<b>3.81</b>	<b>1.45</b>	<b>1.75</b>	<b>2.36</b>	<b>1.94</b>	0.84	0.08
	C80	<b>2.04</b>	<b>3.96</b>	<b>1.67</b>	<b>1.61</b>	<b>3.68</b>	<b>3.75</b>	<b>2.65</b>	<b>1.89</b>
Source B4 CL-SI compared to CL-FR	C50	<b>2.67</b>	0.74	<b>1.94</b>	<b>2.11</b>	<b>3.43</b>	<b>3.16</b>	<b>2.67</b>	<b>2.41</b>
	C80	<b>3.15</b>	<b>1.55</b>	<b>2.66</b>	3	<b>4.23</b>	<b>3.76</b>	<b>3.37</b>	<b>2.98</b>

**Table 5.99-** Differences in C<sub>50</sub> and C<sub>80</sub> results between Stonegate 3-CL-SI and Stonegate 3-CL-FR simulations. Values in bold indicate significant differences. Cells in orange indicate an increase in clarity values when the CL-SI wagon is added and blue cells indicate an increase when a CL-FR wagon is used. The cells that are not highlighted indicate that the difference is below 1JND.

Stonegate 4 – C <sub>50</sub> (dB) and C <sub>80</sub> (dB)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
CL-SI	C50	7.3	7.95	9.43	9.73	11.46	12.40	15.33	17.13

Src. B0	C80	10.56	11.4	12.52	13.31	15.52	16.93	20.74	23.77
CL-FR	C50	5.53	4.52	6.86	9.38	11.42	13.73	17.08	18.41
Src. B0	C80	9.56	9.99	10.35	13.22	15.17	17.92	21.77	24.53
CL-SI	C50	3.28	6.01	5.69	6.85	6.79	8.42	10.98	12.73
Src. B1	C80	6.25	8.96	9.75	10.9	10.52	12.61	15.85	18.49
CL-FR	C50	3.83	6.43	7.14	8.92	10.68	12.48	15.22	15.98
Src. B1	C80	9.8	9.62	10.11	12.96	14.49	16.65	20.61	22.58
CL-SI	C50	9.72	7.44	8.02	9.24	9.6	11.97	13.75	15.39
Src. B2	C80	13.34	11.44	11.89	12.7	13.48	15.56	18.85	20.91
CL-FR	C50	5.71	10.36	11.12	11.72	14.06	15.33	18.16	19.16
Src. B2	C80	13.66	14.92	13.99	15.18	17.79	19.27	22.89	25.23
CL-SI	C50	5.9	2.18	6.19	6.57	7.07	7.96	11.24	13.41
Src. B3	C80	9	6.32	9.77	9.54	10.13	11.32	15.04	18.82
CL-FR	C50	4.41	6.78	6.94	7.34	8.75	9.46	11.25	12.23
Src. B3	C80	6.98	9.8	10.74	10.7	12.74	13.57	16.95	15.66
CL-SI	C50	6.03	5.64	5.2	6.49	5.7	6.91	8.76	9.65
Src. B4	C80	8.19	8.79	9.22	9.65	9.32	10.67	13.75	15.82
CL-FR	C50	8.02	6.28	7.59	7.58	9.38	10.3	11.6	12.75
Src. B4	C80	11.73	10.88	10.99	11.35	13.24	14.99	17	19.28

**Table 5.100 – C<sub>50</sub> and C<sub>80</sub> values for Stonegate 4, combined with the CL-SI and the CL-FR wagons.**

Stonegate 4 - C <sub>50</sub> (JNDs) and C <sub>80</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Source B0 CL-SI compared to CL-FR	C50	<b>1.61</b>	<b>3.12</b>	<b>2.34</b>	0.32	0.04	<b>1.21</b>	<b>1.59</b>	<b>1.16</b>
	C80	<b>1</b>	<b>1.41</b>	<b>2.17</b>	0.09	0.35	0.99	<b>1.03</b>	0.76
Source B1 CL-SI compared to CL-FR	C50	0.5	0.38	<b>1.32</b>	<b>1.88</b>	<b>3.54</b>	<b>3.69</b>	<b>3.85</b>	<b>2.95</b>
	C80	<b>3.55</b>	0.66	0.36	<b>2.06</b>	<b>3.97</b>	<b>4.04</b>	<b>4.76</b>	<b>4.09</b>
Source B2 CL-SI compared to CL-FR	C50	<b>3.65</b>	<b>2.65</b>	<b>2.82</b>	<b>2.25</b>	<b>4.05</b>	<b>3.05</b>	<b>4.01</b>	<b>3.43</b>
	C80	0.32	<b>3.48</b>	<b>2.1</b>	<b>2.48</b>	<b>4.31</b>	<b>3.71</b>	<b>4.04</b>	<b>4.32</b>
Source B3 CL-SI compared to CL-FR	C50	<b>1.35</b>	<b>4.18</b>	0.68	0.7	<b>1.53</b>	<b>1.36</b>	0.01	<b>1.07</b>
	C80	<b>2.02</b>	<b>3.48</b>	0.97	<b>1.16</b>	<b>2.61</b>	<b>2.25</b>	<b>1.91</b>	0.16
Source B4 CL-SI compared to CL-FR	C50	<b>1.81</b>	0.58	<b>2.17</b>	0.99	<b>3.35</b>	<b>3.08</b>	<b>2.58</b>	<b>2.82</b>
	C80	<b>3.54</b>	<b>2.09</b>	<b>1.77</b>	<b>1.7</b>	<b>3.92</b>	<b>4.32</b>	<b>3.25</b>	<b>3.46</b>

**Table 5.101- Differences in C<sub>50</sub> and C<sub>80</sub> results between Stonegate 4-CL-SI and Stonegate 4-CL-FR simulations. Values in bold indicate significant differences. Cells in orange indicate an increase in clarity values when the CL-SI wagon is added and blue cells indicate an increase when a CL-FR wagon is used. The cells that are not highlighted indicate that the difference is below 1JND.**

Virtual Model	Percentage of results with significant differences when the orientation of the closed wagon is modified	
	IACC <sub>E3</sub>	LF <sub>E4</sub>
Stonegate 1	93%	73%
Stonegate 2	73%	87%
Stonegate 3	73%	73%
Stonegate 4	80%	87%

**Table 5.102 –** Impact of the change in orientation of closed wagons on IACC<sub>E3</sub> and LF<sub>E4</sub> values, expressed in percentages. No averaging across receiver positions was conducted prior to the analysis and comparisons were made per receiver.

Stonegate 1		
Receiver	IACC <sub>E3</sub>	LF <sub>E4</sub>
<b>CL-SI - B0</b>		
1	0.59	0.09
2	0.38	0.11
3	0.66	0.1
<b>CL-FR - B0</b>		
1	0.4	0.15
2	0.5	0.1
3	0.47	0.2
<b>CL-SI - B1</b>		
1	0.5	0.05
2	0.32	0.12
3	0.64	0.09
<b>CL-FR - B1</b>		
1	0.45	0.13
2	0.46	0.08
3	0.28	0.2
<b>CL-SI - B2</b>		
1	0.5	0.04
2	0.28	0.11
3	0.68	0.08
<b>CL-FR - B2</b>		
1	0.42	0.14
2	0.59	0.07
3	0.39	0.17
<b>CL-SI - B3</b>		
1	0.76	0.05
2	0.55	0.08
3	0.56	0.08
<b>CL-FR - B3</b>		
1	0.27	0.13
2	0.26	0.17
3	0.33	0.13
<b>CL-SI - B4</b>		
1	0.74	0.05
2	0.35	0.08
3	0.62	0.07
<b>CL-FR - B4</b>		
1	0.24	0.19
2	0.27	0.12
3	0.35	0.14

**Table 5.103 –** IACC<sub>E3</sub> and LF<sub>E4</sub> values for Stonegate 1, combined with the CL-SI and the CL-FR wagons.

Stonegate 1		
Receiver	IACC <sub>E3</sub> (JNDs)	LF <sub>E4</sub> (JNDs)
<b>CL-SI compared to CL-FR / B0</b>		
1	<b>2.53</b>	<b>1.2</b>
2	<b>1.6</b>	0.2
3	<b>2.53</b>	<b>2</b>
<b>CL-SI compared to CL-FR / B1</b>		
1	0.67	<b>1.6</b>
2	<b>1.87</b>	0.8
3	<b>4.8</b>	<b>2.2</b>
<b>CL-SI compared to CL-FR / B2</b>		
1	<b>1.07</b>	<b>2</b>
2	<b>4.13</b>	0.8
3	<b>3.87</b>	<b>1.8</b>
<b>CL-SI compared to CL-FR / B3</b>		
1	<b>6.53</b>	<b>1.6</b>
2	<b>3.87</b>	<b>1.8</b>
3	<b>3.07</b>	<b>1</b>
<b>CL-SI compared to CL-FR / B4</b>		
1	<b>6.67</b>	<b>2.8</b>
2	<b>1.07</b>	0.8
3	<b>3.6</b>	<b>1.4</b>

**Table 5.104** - Differences in IACC<sub>E3</sub> and LF<sub>E4</sub> results between Stonegate 1-CL-SI and Stonegate 1-CL-FR simulations. Values in bold indicate significant differences. Cells in orange indicate an increase in values for the CL-SI wagon whereas blue cells indicate higher values with the use of the CL-FR wagon. The cells that are not highlighted indicate that the difference is below 1JND.

Stonegate 2		
Receiver	IACC <sub>E3</sub>	LF <sub>E4</sub>
<b>CL-SI - B0</b>		
1	0.62	0.1
2	0.38	0.09
3	0.66	0.09
<b>CL-FR - B0</b>		
1	0.48	0.15
2	0.52	0.07
3	0.45	0.15
<b>CL-SI - B1</b>		
1	0.47	0.07
2	0.4	0.13
3	0.73	0.09
<b>CL-FR - B1</b>		
1	0.46	0.17
2	0.46	0.07
3	0.35	0.15
<b>CL-SI - B2</b>		
1	0.5	0.04
2	0.29	0.13
3	0.71	0.07
<b>CL-FR - B2</b>		
1	0.57	0.09
2	0.61	0.07
3	0.58	0.13
<b>CL-SI - B3</b>		
1	0.72	0.05
2	0.55	0.06
3	0.63	0.06

CL-FR - B3		
1	0.33	0.17
2	0.25	0.18
3	0.36	0.16
CL-SI - B4		
1	0.73	0.03
2	0.34	0.1
3	0.69	0.06
CL-FR - B4		
1	0.28	0.18
2	0.31	0.11
3	0.36	0.15

**Table 5.105 – IACC<sub>E3</sub> and LF<sub>E4</sub> values for Stonegate 2, combined with the CL-SI and the CL-FR wagons.**

Stonegate 2		
Receiver	IACC <sub>E3</sub> (JNDs)	LF <sub>E4</sub> (JNDs)
<b>CL-SI compared to CL-FR / B0</b>		
1	<b>1.87</b>	<b>1</b>
2	<b>1.87</b>	0.4
3	<b>2.8</b>	<b>1.2</b>
<b>CL-SI compared to CL-FR / B1</b>		
1	0.13	<b>2</b>
2	0.8	<b>1.2</b>
3	<b>5.07</b>	<b>1.2</b>
<b>CL-SI compared to CL-FR / B2</b>		
1	0.93	<b>1</b>
2	<b>4.27</b>	<b>1.2</b>
3	<b>1.73</b>	<b>1.2</b>
<b>CL-SI compared to CL-FR / B3</b>		
1	<b>5.2</b>	<b>2.4</b>
2	<b>4</b>	<b>2.4</b>
3	<b>3.6</b>	<b>2</b>
<b>CL-SI compared to CL-FR / B4</b>		
1	<b>6</b>	<b>3</b>
2	0.4	0.2
3	<b>4.4</b>	<b>1.8</b>

**Table 5.106 - Differences in IACC<sub>E3</sub> and LF<sub>E4</sub> results between Stonegate 2-CL-SI and Stonegate 2-CL-FR simulations. Values in bold indicate significant differences. Cells in orange indicate an increase in values for the CL-SI wagon whereas blue cells indicate higher values with the use of the CL-FR wagon. The cells that are not highlighted indicate that the difference is below 1JND.**

Stonegate 3		
Receiver	IACC <sub>E3</sub>	LF <sub>E4</sub>
<b>CL-SI - B0</b>		
1	0.58	0.1
2	0.44	0.13
3	0.58	0.09
<b>CL-FR - B0</b>		
1	0.47	0.19
2	0.49	0.08
3	0.45	0.13
<b>CL-SI - B1</b>		
1	0.51	0.08
2	0.3	0.12
3	0.63	0.08

CL-FR - B1		
1	0.44	0.14
2	0.44	0.1
3	0.35	0.15
CL-SI - B2		
1	0.5	0.05
2	0.3	0.09
3	0.51	0.07
CL-FR - B2		
1	0.57	0.16
2	0.61	0.06
3	0.61	0.13
CL-SI - B3		
1	0.65	0.05
2	0.49	0.08
3	0.5	0.07
CL-FR - B3		
1	0.33	0.13
2	0.27	0.19
3	0.33	0.15
CL-SI - B4		
1	0.68	0.07
2	0.4	0.15
3	0.5	0.08
CL-FR - B4		
1	0.25	0.17
2	0.33	0.18
3	0.28	0.15

**Table 5.107** – IACC<sub>E3</sub> and LF<sub>E4</sub> values for Stonegate 3, combined with the CL-SI and the CL-FR wagons.

Stonegate 3		
Receiver	IACC <sub>E3</sub> (JNDs)	LF <sub>E4</sub> (JNDs)
<b>CL-SI compared to CL-FR / B0</b>		
1	<b>1.47</b>	<b>1.8</b>
2	0.67	<b>1</b>
3	<b>1.73</b>	0.8
<b>CL-SI compared to CL-FR / B1</b>		
1	0.93	<b>1.2</b>
2	<b>1.87</b>	0.4
3	<b>3.73</b>	<b>1.4</b>
<b>CL-SI compared to CL-FR / B2</b>		
1	0.93	<b>2.2</b>
2	<b>4.13</b>	0.6
3	<b>1.33</b>	<b>1.2</b>
<b>CL-SI compared to CL-FR / B3</b>		
1	<b>4.27</b>	<b>1.6</b>
2	<b>2.93</b>	2.2
3	<b>2.27</b>	<b>1.6</b>
<b>CL-SI compared to CL-FR / B4</b>		
1	<b>5.73</b>	<b>2</b>
2	0.93	0.6
3	<b>2.93</b>	<b>1.4</b>

**Table 5.108** - Differences in IACC<sub>E3</sub> and LF<sub>E4</sub> results between Stonegate 3-CL-SI and Stonegate 3-CL-FR simulations. Values in bold indicate significant differences. Cells in orange indicate an increase in values for the CL-SI wagon whereas blue cells indicate higher values with the use of the CL-FR wagon. The cells that are not highlighted indicate that the difference is below 1JND.

Stonegate 4		
Receiver	IACC <sub>E3</sub>	LF <sub>E4</sub>
<b>CL-SI - B0</b>		
1	0.5	0.1
2	0.44	0.09
3	0.64	0.09
<b>CL-FR - B0</b>		
1	0.45	0.15
2	0.55	0.06
3	0.48	0.25
<b>CL-SI - B1</b>		
1	0.58	0.08
2	0.3	0.12
3	0.69	0.09
<b>CL-FR - B1</b>		
1	0.48	0.13
2	0.49	0.06
3	0.27	0.16
<b>CL-SI - B2</b>		
1	0.47	0.05
2	0.4	0.14
3	0.53	0.08
<b>CL-FR - B2</b>		
1	0.58	0.11
2	0.63	0.06
3	0.6	0.11
<b>CL-SI - B3</b>		
1	0.7	0.06
2	0.49	0.09
3	0.59	0.06
<b>CL-FR - B3</b>		
1	0.31	0.25
2	0.23	0.16
3	0.32	0.14
<b>CL-SI - B4</b>		
1	0.67	0.05
2	0.3	0.12
3	0.56	0.07
<b>CL-FR - B4</b>		
1	0.31	0.21
2	0.3	0.17
3	0.36	0.14

**Table 5.109 – IACC<sub>E3</sub> and LF<sub>E4</sub> values for Stonegate 4, combined with the CL-SI and the CL-FR wagons.**

Stonegate 4		
Receiver	IACC <sub>E3</sub> (JNDs)	LF <sub>E4</sub> (JNDs)
<b>CL-SI compared to CL-FR / B0</b>		
1	0.67	1
2	1.47	0.6
3	2.13	3.2
<b>CL-SI compared to CL-FR / B1</b>		
1	1.33	1
2	2.53	1.2
3	5.6	1.4
<b>CL-SI compared to CL-FR / B2</b>		
1	1.47	1.2
2	3.07	1.6
3	0.93	0.6

CL-SI compared to CL-FR / B3		
1	5.2	3.8
2	3.47	1.4
3	3.6	1.6
CL-SI compared to CL-FR / B4		
1	4.8	3.2
2	0	1
3	2.67	1.4

**Table 5.110** - Differences in IACC<sub>E3</sub> and LF<sub>E4</sub> results between Stonegate 4-CL-SI and Stonegate 4-CL-FR simulations. Values in bold indicate significant differences. Cells in orange indicate an increase in values for the CL-SI wagon whereas blue cells indicate higher values with the use of the CL-FR wagon. The cells that are not highlighted indicate that the difference is below 1JND.

Virtual Model	Percentage of results with significant differences when the orientation of the open wagon is modified	
	T <sub>20</sub>	T <sub>30</sub>
Stonegate 1	79%	58%
Stonegate 2	63%	67%
Stonegate 3	79%	67%
Stonegate 4	71%	71%

**Table 5.111** – Impact of the change in orientation of open wagons on T<sub>20</sub> and T<sub>30</sub> values, expressed in percentages. The percentages are calculated across all source positions and frequency bands after averaging the results for receivers 1-3.

Stonegate 1 - T <sub>20</sub> (s) and T <sub>30</sub> (s)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
OP-SI Src. B0	T20	0.58	0.65	0.64	0.66	0.62	0.56	0.40	0.31
	T30	0.62	0.64	0.63	0.66	0.65	0.57	0.42	0.32
OP-FR Src. B0	T20	0.60	0.59	0.64	0.61	0.58	0.48	0.36	0.28
	T30	0.63	0.62	0.62	0.65	0.62	0.51	0.39	0.30
OP-SI Src. B1	T20	0.68	0.64	0.65	0.67	0.67	0.59	0.46	0.34
	T30	0.64	0.67	0.65	0.70	0.68	0.60	0.45	0.35
OP-FR Src. B1	T20	0.64	0.55	0.60	0.62	0.58	0.48	0.38	0.32
	T30	0.63	0.60	0.62	0.63	0.61	0.50	0.40	0.32
OP-SI Src. B2	T20	0.59	0.64	0.61	0.64	0.61	0.52	0.38	0.31
	T30	0.63	0.65	0.63	0.67	0.65	0.55	0.41	0.32
OP-FR Src. B2	T20	0.66	0.63	0.65	0.59	0.53	0.44	0.34	0.29
	T30	0.61	0.65	0.63	0.62	0.58	0.49	0.37	0.30

**Table 5.112** – T<sub>20</sub> and T<sub>30</sub> values for Stonegate 1, combined with the OP-SI and the OP-FR wagons.

Stonegate 1 - T <sub>20</sub> (JNDs) and T <sub>30</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Source B0 OP-SI compared to OP-FR	T20	0.67	2	0	1.67	1.33	2.67	1.33	1
	T30	0.33	0.67	0.33	0.33	1	2	1	0.67

Source B1 OP-SI compared to OP-FR	T20	<b>1.33</b>	3	<b>1.67</b>	<b>1.67</b>	3	<b>3.67</b>	<b>2.67</b>	0.67
	T30	0.33	<b>2.33</b>	1	<b>2.33</b>	<b>2.33</b>	3.33	<b>1.67</b>	<b>1</b>
Source B2 OP-SI compared to OP-FR	T20	<b>2.33</b>	0.33	<b>1.33</b>	<b>1.67</b>	<b>2.67</b>	<b>2.67</b>	<b>1.33</b>	0.67
	T30	0.67	0	0	<b>1.67</b>	<b>2.33</b>	2	<b>1.33</b>	0.67

**Table 5.113-** Differences in T<sub>20</sub> and T<sub>30</sub> results between Stonegate 1-OP-SI and Stonegate 1-OP-FR simulations. Values in bold indicate significant differences. Cells in orange indicate an increase reverberation time when the OP-SI wagon is added and blue cells indicate an increase when a OP-FR wagon is used. The cells that are not highlighted indicate that the difference is below 1JND.

Stonegate 2 - T <sub>20</sub> (s) and T <sub>30</sub> (s)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
OP-SI Src. B0	T20	0.49	0.52	0.51	0.49	0.45	0.40	0.31	0.25
	T30	0.50	0.50	0.52	0.51	0.49	0.43	0.33	0.27
OP-FR Src. B0	T20	0.50	0.43	0.46	0.44	0.42	0.36	0.28	0.23
	T30	0.51	0.45	0.47	0.46	0.44	0.39	0.30	0.25
OP-SI Src. B1	T20	0.54	0.47	0.47	0.47	0.48	0.44	0.36	0.29
	T30	0.52	0.46	0.47	0.48	0.49	0.45	0.37	0.30
OP-FR Src. B1	T20	0.51	0.47	0.46	0.47	0.47	0.37	0.31	0.27
	T30	0.52	0.49	0.49	0.48	0.46	0.40	0.32	0.28
OP-SI Src. B2	T20	0.49	0.47	0.50	0.49	0.46	0.42	0.34	0.29
	T30	0.47	0.49	0.49	0.48	0.47	0.44	0.34	0.28
OP-FR Src. B2	T20	0.48	0.40	0.48	0.44	0.41	0.35	0.29	0.23
	T30	0.50	0.43	0.47	0.46	0.44	0.37	0.30	0.25

**Table 5.114 –** T<sub>20</sub> and T<sub>30</sub> values for Stonegate 2, combined with the OP-SI and the OP-FR wagons.

Stonegate 2 - T <sub>20</sub> (JNDs) and T <sub>30</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Source B0 OP-SI compared to OP-FR	T20	0.33	<b>3</b>	<b>1.67</b>	<b>1.67</b>	1	<b>1.33</b>	<b>1</b>	0.67
	T30	0.33	<b>1.67</b>	<b>1.67</b>	<b>1.67</b>	<b>1.67</b>	<b>1.33</b>	<b>1</b>	0.67
Source B1 OP-SI compared to OP-FR	T20	<b>1</b>	0	0.33	0	0.33	<b>2.33</b>	<b>1.67</b>	0.67
	T30	0	<b>1</b>	0.67	0	<b>1</b>	<b>1.67</b>	<b>1.67</b>	0.67
Source B2 OP-SI compared to OP-FR	T20	0.33	<b>2.33</b>	0.67	<b>1.67</b>	<b>1.67</b>	2.33	<b>1.67</b>	2
	T30	<b>1</b>	<b>2</b>	0.67	0.67	1	2.33	<b>1.33</b>	<b>1</b>

**Table 5.115-** Differences in T<sub>20</sub> and T<sub>30</sub> results between Stonegate 2-OP-SI and Stonegate 2-OP-FR simulations. Values in bold indicate significant differences. Cells in orange indicate an increase in reverberation time when the OP-SI wagon is added and blue cells indicate an increase when a OP-FR

wagon is used. The cells that are not highlighted indicate that the difference is below 1JND.

Stonegate 3 - T <sub>20</sub> (s) and T <sub>30</sub> (s)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
OP-SI Src. B0	T20	0.73	0.74	0.76	0.76	0.73	0.62	0.46	0.33
	T30	0.75	0.74	0.77	0.77	0.75	0.63	0.48	0.36
OP-FR Src. B0	T20	0.75	0.74	0.77	0.71	0.68	0.57	0.41	0.33
	T30	0.74	0.72	0.74	0.74	0.69	0.59	0.44	0.34
OP-SI Src. B1	T20	0.76	0.72	0.85	0.82	0.75	0.65	0.48	0.37
	T30	0.79	0.75	0.77	0.79	0.77	0.65	0.50	0.38
OP-FR Src. B1	T20	0.69	0.73	0.74	0.71	0.69	0.58	0.42	0.32
	T30	0.69	0.74	0.75	0.74	0.70	0.59	0.45	0.34
OP-SI Src. B2	T20	0.77	0.75	0.81	0.74	0.73	0.61	0.44	0.35
	T30	0.72	0.74	0.77	0.76	0.75	0.62	0.47	0.36
OP-FR Src. B2	T20	0.61	0.69	0.75	0.69	0.62	0.50	0.38	0.31
	T30	0.67	0.69	0.74	0.72	0.67	0.55	0.41	0.32

**Table 5.116** – T<sub>20</sub> and T<sub>30</sub> values for Stonegate 3, combined with the OP-SI and the OP-FR wagons.

Stonegate 3 - T <sub>20</sub> (JNDs) and T <sub>30</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Source B0 OP-SI compared to OP-FR	T20	0.50	0	0.25	<b>1.25</b>	<b>1.25</b>	<b>1.67</b>	<b>1.67</b>	0
	T30	0.25	0.50	0.75	0.75	<b>1.50</b>	<b>1.33</b>	<b>1.33</b>	0.67
Source B1 OP-SI compared to OP-FR	T20	<b>1.75</b>	0.25	<b>2.75</b>	<b>2.75</b>	<b>1.50</b>	<b>2.33</b>	2	<b>1.67</b>
	T30	<b>2.50</b>	0.25	0.50	<b>1.25</b>	<b>1.75</b>	2	<b>1.67</b>	<b>1.33</b>
Source B2 OP-SI compared to OP-FR	T20	<b>4</b>	<b>1.50</b>	<b>1.50</b>	<b>1.25</b>	<b>2.75</b>	<b>3.67</b>	2	<b>1.33</b>
	T30	<b>1.25</b>	<b>1.25</b>	0.75	1	2	<b>2.33</b>	2	<b>1.33</b>

**Table 5.117** - Differences in T<sub>20</sub> and T<sub>30</sub> results between Stonegate 3-OP-SI and Stonegate 3-OP-FR simulations. Values in bold indicate significant differences. Cells in orange indicate an increase in reverberation time when the OP-SI wagon is added. The cells that are not highlighted indicate that the difference is below 1JND.

Stonegate 4 - T <sub>20</sub> (s) and T <sub>30</sub> (s)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
OP-SI Src. B0	T20	0.55	0.57	0.61	0.59	0.55	0.50	0.37	0.29
	T30	0.56	0.57	0.57	0.60	0.57	0.50	0.40	0.31
OP-FR Src. B0	T20	0.62	0.60	0.57	0.52	0.53	0.43	0.33	0.27
	T30	0.64	0.58	0.56	0.56	0.54	0.46	0.36	0.28
OP-SI Src. B1	T20	0.57	0.57	0.55	0.57	0.57	0.51	0.42	0.32
	T30	0.61	0.57	0.57	0.57	0.55	0.50	0.41	0.33
OP-FR Src. B1	T20	0.41	0.58	0.55	0.53	0.48	0.43	0.34	0.29
	T30	0.48	0.57	0.56	0.55	0.51	0.44	0.36	0.30
OP-SI Src. B2	T20	0.54	0.54	0.57	0.58	0.56	0.48	0.38	0.30
	T30	0.59	0.58	0.55	0.59	0.57	0.50	0.40	0.31

OP-FR	T20	0.52	0.54	0.52	0.51	0.47	0.40	0.32	0.28
Src. B2	T30	0.55	0.55	0.54	0.53	0.52	0.44	0.35	0.29

**Table 5.118** – T<sub>20</sub> and T<sub>30</sub> values for Stonegate 4, combined with the OP-SI and the OP-FR wagons.

Stonegate 4 - T <sub>20</sub> (JNDs) and T <sub>30</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Source B0 OP-SI compared to OP-FR	T20	<b>2.33</b>	<b>1</b>	<b>1.33</b>	<b>2.33</b>	0.67	<b>2.33</b>	<b>1.33</b>	0.67
	T30	<b>2.67</b>	0.33	0.33	<b>1.33</b>	<b>1</b>	<b>1.33</b>	<b>1.33</b>	<b>1</b>
Source B1 OP-SI compared to OP-FR	T20	<b>5.33</b>	0.33	0	<b>1.33</b>	<b>3</b>	<b>2.67</b>	<b>2.67</b>	<b>1</b>
	T30	<b>4.33</b>	0	0.33	0.67	<b>1.33</b>	<b>2</b>	<b>1.67</b>	<b>1</b>
Source B2 OP-SI compared to OP-FR	T20	0.67	0	<b>1.67</b>	<b>2.33</b>	<b>3</b>	<b>2.67</b>	<b>2</b>	0.67
	T30	<b>1.33</b>	<b>1</b>	0.33	<b>2</b>	<b>1.67</b>	<b>2</b>	<b>1.67</b>	0.67

**Table 5.119**- Differences in T<sub>20</sub> and T<sub>30</sub> results between Stonegate 4-OP-SI and Stonegate 4-OP-FR simulations. Values in bold indicate significant differences. Cells in orange indicate an increase in reverberation time when the OP-SI wagon is added and blue cells indicate an increase when an OP-FR wagon is used. The cells that are not highlighted indicate that the difference is below 1JND.

Virtual Model	Percentage of results with significant differences when the orientation of the open wagon is modified	
	C <sub>50</sub>	C <sub>80</sub>
Stonegate 1	71%	88%
Stonegate 2	71%	63%
Stonegate 3	63%	63%
Stonegate 4	63%	71%

**Table 5.120** – Impact of the change in orientation of open wagons on C<sub>50</sub> and C<sub>80</sub> values, expressed in percentages. The percentages are calculated across all source positions and frequency bands after averaging the results for receivers 1-3.

Stonegate 1 – C <sub>50</sub> (dB) and C <sub>80</sub> (dB)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
OP-SI Src. B0	C <sub>50</sub>	2.88	7.17	5.74	6.65	7.64	9.07	11.6	13.09
	C <sub>80</sub>	5.94	10.63	9.93	10.43	10.75	12.63	16.39	19.66
OP-FR Src. B0	C <sub>50</sub>	5.62	6.39	6.44	7.65	9.06	9.98	13.13	15.86
	C <sub>80</sub>	9.29	10.56	9.7	11.54	12.44	14.16	18.1	21.78
OP-SI Src. B1	C <sub>50</sub>	5.86	8.27	6.21	6.35	6.24	8.68	11.39	12.72
	C <sub>80</sub>	9.43	12.04	8.6	10.01	9.19	11.44	15.2	18.12
OP-FR Src. B1	C <sub>50</sub>	7.95	7	6.99	8.29	9.47	10.88	14.01	16
	C <sub>80</sub>	11.5	11.28	10.42	11.92	12.93	14.3	18.37	21.21
OP-SI Src. B2	C <sub>50</sub>	9.03	7.85	6.78	7.67	7.13	8.3	10.7	12.51
	C <sub>80</sub>	12.87	10.53	10.05	11.35	10.7	12.75	16.26	18.69

OP-FR	C50	8.08	8.53	9.94	1131	13.31	14.32	17.15	19.11
Src. B2	C80	10.83	12.67	12.43	14.66	16.29	18.22	21.66	24.28

**Table 5.121 – C<sub>50</sub> and C<sub>80</sub> values for Stonegate 1, combined with the OP-SI and the OP-FR wagons.**

Stonegate 1 – C <sub>50</sub> (JNDs) and C <sub>80</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Source B0 OP-SI compared to OP-FR	C50	<b>2.49</b>	0.71	0.64	0.91	<b>1.29</b>	0.83	<b>1.39</b>	<b>2.52</b>
	C80	<b>3.35</b>	0.07	0.23	<b>1.11</b>	<b>1.69</b>	<b>1.53</b>	<b>1.71</b>	<b>2.12</b>
Source B1 OP-SI compared to OP-FR	C50	<b>1.9</b>	<b>1.15</b>	0.71	<b>1.76</b>	<b>2.94</b>	2	<b>2.38</b>	<b>2.98</b>
	C80	<b>2.07</b>	0.76	<b>1.82</b>	<b>1.91</b>	<b>3.74</b>	<b>2.86</b>	3.17	<b>3.09</b>
Source B2 OP-SI compared to OP-FR	C50	0.86	0.62	<b>2.87</b>	<b>3.31</b>	<b>5.62</b>	<b>5.47</b>	<b>5.86</b>	6
	C80	<b>2.04</b>	<b>2.14</b>	<b>2.38</b>	<b>3.31</b>	<b>5.59</b>	<b>5.47</b>	<b>5.4</b>	<b>5.59</b>

**Table 5.122 - Differences in C<sub>50</sub> and C<sub>80</sub> results between Stonegate 1-OP-SI and Stonegate 1-OP-FR simulations. Values in bold indicate significant differences. Cells in orange indicate an increase in reverberation time when the OP-SI wagon is added and blue cells indicate an increase when a OP-FR wagon is used. The cells that are not highlighted indicate that the difference is below 1JND.**

Stonegate 2 – C <sub>50</sub> (dB) and C <sub>80</sub> (dB)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
OP-SI Src. B0	C50	7.94	10.38	9.65	9.55	10.6	11.41	14.1	15.53
	C80	13.05	14.41	13.49	14.59	15.16	16.57	20.13	23.03
OP-FR Src. B0	C50	10.18	9.77	9.43	10.67	10.95	12.07	14.65	16.64
	C80	15.08	12.8	13.39	14.78	15.63	16.95	20.73	23.69
OP-SI Src. B1	C50	9.76	10.67	9.11	8.51	9.54	11.26	13.85	15.28
	C80	13.86	14.95	13.85	13.35	14.64	16.7	20.16	22.59
OP-FR Src. B1	C50	9.3	8.73	10.68	11.14	12.34	13.53	16.39	18.18
	C80	14.76	13.87	14.25	15.58	16.78	18.17	21.61	24.24
OP-SI Src. B2	C50	8.5	6.94	10.7	10.41	11.66	12.85	15.13	16.31
	C80	13.21	11.68	14.64	14.22	15.12	17.08	20.17	22.27
OP-FR Src. B2	C50	10.58	11.01	11.28	14.11	15.13	16.07	18.76	20.24
	C80	15.08	15.31	15.21	17.92	18.98	20.28	24.09	26.68

**Table 5.123 – C<sub>50</sub> and C<sub>80</sub> values for Stonegate 2, combined with the OP-SI and the OP-FR wagons.**

Stonegate 2 – C <sub>50</sub> (JNDs) and C <sub>80</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Source B0 OP-SI compared to OP-FR	C50	<b>2.04</b>	0.55	0.2	<b>1.02</b>	0.32	0.6	0.5	<b>1.01</b>
	C80	<b>2.03</b>	<b>1.61</b>	0.1	0.19	0.47	0.38	0.6	0.66

Source B1 OP-SI compared to OP-FR	C50	0.42	<b>1.76</b>	<b>1.43</b>	<b>2.39</b>	<b>2.55</b>	<b>2.06</b>	<b>2.31</b>	<b>2.64</b>
	C80	0.9	<b>1.08</b>	0.4	<b>2.23</b>	<b>2.14</b>	<b>1.47</b>	<b>1.45</b>	<b>1.65</b>
Source B2 OP-SI compared to OP-FR	C50	<b>1.89</b>	<b>3.7</b>	0.53	<b>3.36</b>	<b>3.15</b>	<b>2.93</b>	<b>3.3</b>	<b>3.57</b>
	C80	<b>1.87</b>	<b>3.63</b>	0.57	<b>3.7</b>	<b>3.86</b>	<b>3.2</b>	<b>3.92</b>	<b>4.41</b>

**Table 5.124-** Differences in C<sub>50</sub> and C<sub>80</sub> results between Stonegate 2-OP-SI and Stonegate 2-OP-FR simulations. Values in bold indicate significant differences. Cells in orange indicate an increase in reverberation time when the OP-SI wagon is added and blue cells indicate an increase when an OP-FR wagon is used. The cells that are not highlighted indicate that the difference is below 1JND.

Stonegate 3 – C <sub>50</sub> (dB) and C <sub>80</sub> (dB)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
OP-SI Src. B0	C50	6.23	6.31	4.75	5.99	6.53	8.25	10.71	12.51
	C80	9.67	9.07	7.99	8.5	9.62	11.37	15.51	18.94
OP-FR Src. B0	C50	4.52	6.55	5.52	5.53	6.53	7.96	11.36	13.97
	C80	7.94	9.81	8.67	8.57	9.81	11.52	15.97	19.48
OP-SI Src. B1	C50	6.39	7.09	5.71	4.9	5.66	7.38	10.34	11.68
	C80	9.22	9.61	8.12	8.11	8.26	10.14	13.78	16.65
OP-FR Src. B1	C50	6.18	6.05	6.35	7.12	8.68	9.9	12.82	14.86
	C80	9.49	10.02	9.73	9.71	11.77	13.46	17.09	20.15
OP-SI Src. B2	C50	4.19	5.09	6.89	5.7	6.63	7.75	10.02	12.22
	C80	8.26	7.97	9.37	8.55	9.44	11.65	14.71	17.73
OP-FR Src. B2	C50	6.54	7.64	8.27	9.27	10.86	12.86	15.63	16.61
	C80	10.58	10.77	10.82	11.92	14.18	16.06	19.71	22.07

**Table 5.125 –** C<sub>50</sub> and C<sub>80</sub> values for Stonegate 3, combined with the OP-SI and the OP-FR wagons.

Stonegate 3 – C <sub>50</sub> (JNDs) and C <sub>80</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Source B0 OP-SI compared to OP-FR	C50	<b>1.55</b>	0.22	0.7	0.42	0	0.26	0.59	<b>1.33</b>
	C80	<b>1.73</b>	0.74	0.68	0.07	0.19	0.15	0.46	0.54
Source B1 OP-SI compared to OP-FR	C50	0.19	0.95	0.58	<b>2.02</b>	<b>2.75</b>	<b>2.29</b>	<b>2.25</b>	<b>2.89</b>
	C80	0.27	0.41	<b>1.61</b>	<b>1.6</b>	<b>3.51</b>	<b>3.32</b>	<b>3.31</b>	<b>3.5</b>
Source B2 OP-SI compared to OP-FR	C50	<b>2.14</b>	<b>2.32</b>	<b>1.25</b>	<b>3.25</b>	<b>3.85</b>	<b>4.65</b>	<b>5.1</b>	<b>3.99</b>
	C80	<b>2.32</b>	<b>2.8</b>	<b>1.45</b>	<b>3.37</b>	<b>4.74</b>	<b>4.41</b>	<b>5</b>	<b>4.34</b>

**Table 5.126-** Differences in C<sub>50</sub> and C<sub>80</sub> results between Stonegate 3-OP-SI and Stonegate 3-OP-FR simulations. Values in bold indicate significant differences. Cells in orange indicate an increase in reverberation time when the OP-SI wagon is added and blue cells indicate an increase when an OP-FR wagon is used. The cells that are not highlighted indicate that the difference is below 1JND.

Stonegate 4 – C <sub>50</sub> (dB) and C <sub>80</sub> (dB)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
OP-SI Src. B0	C50	8.45	7.18	7.39	8.6	10.02	11.31	13.9	15.44
	C80	12.84	10.06	10.63	12.24	13.5	14.8	18.52	21.18
OP-FR Src. B0	C50	7.63	8.56	7.41	8.45	9.66	10.4	13.86	19.06
	C80	11.99	11.44	10.76	12.5	13.41	15.16	19.42	22.47
OP-SI Src. B1	C50	6.36	6.61	5.7	6.91	7.84	9.12	11.27	12.68
	C80	10.03	10	10.47	10.75	11.51	12.91	16.23	19.06
OP-FR Src. B1	C50	6.98	8.28	8.25	8.97	10.14	11.81	14.53	16.35
	C80	12.21	12.56	12.23	12.8	14.55	15.89	19.78	22.52
OP-SI Src. B2	C50	7.99	8.79	8.28	9.68	10.28	11.44	14.25	15.54
	C80	11.64	12.48	11.31	13.01	13.83	15.9	18.97	21.32
OP-FR Src. B2	C50	7.65	8.9	9.48	11.53	13.44	15.03	17.38	18.62
	C80	12.22	13.52	13.71	14.96	16.92	18.8	22.01	24.14

**Table 5.127** – C<sub>50</sub> and C<sub>80</sub> values for Stonegate 4, combined with the OP-SI and the OP-FR wagons.

Stonegate 4 – C <sub>50</sub> (JNDs) and C <sub>80</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Source B0 OP-SI compared to OP-FR	C50	0.75	<b>1.25</b>	0.02	0.14	0.33	0.83	0.04	<b>3.29</b>
	C80	0.85	<b>1.38</b>	0.13	0.26	0.09	0.36	0.9	<b>1.29</b>
Source B1 OP-SI compared to OP-FR	C50	0.56	<b>1.52</b>	2.32	<b>1.87</b>	<b>2.09</b>	<b>2.45</b>	<b>2.96</b>	<b>3.34</b>
	C80	<b>2.18</b>	<b>2.56</b>	1.76	2.05	3.04	2.98	3.55	<b>3.46</b>
Source B2 OP-SI compared to OP-FR	C50	0.31	0.1	<b>1.09</b>	<b>1.68</b>	<b>2.87</b>	3.26	<b>2.85</b>	<b>2.8</b>
	C80	0.58	<b>1.04</b>	2.4	1.95	<b>3.09</b>	2.9	<b>3.04</b>	<b>2.82</b>

**Table 5.128**- Differences in C<sub>50</sub> and C<sub>80</sub> results between Stonegate 4-OP-SI and Stonegate 4-OP-FR simulations. Values in bold indicate significant differences. Cells in blue indicate an increase when an OP-FR wagon is used. The cells that are not highlighted indicate that the difference is below 1JND.

Virtual Model	Percentage of results with significant differences when the orientation of the open wagon is modified	
	IACC <sub>E3</sub>	LF <sub>E4</sub>
Stonegate 1	78%	78%
Stonegate 2	67%	67%
Stonegate 3	56%	56%
Stonegate 4	67%	67%

**Table 5.129** – Impact of the change in orientation of open wagons on IACC<sub>E3</sub> and LF<sub>E4</sub> values, expressed in percentages. No averaging across receiver positions was conducted prior to the analysis and comparisons were made per receiver.

Stonegate 1		
Receiver	IACC <sub>E3</sub>	LF <sub>E4</sub>
<b>OP-SI - B0</b>		
1	0.67	0.06
2	0.38	0.21
3	0.56	0.08
<b>OP-FR - B0</b>		
1	0.38	0.17
2	0.25	0.15
3	0.25	0.23
<b>OP-SI - B1</b>		
1	0.55	0.05
2	0.38	0.09
3	0.54	0.09
<b>OP-FR - B1</b>		
1	0.41	0.12
2	0.41	0.09
3	0.24	0.19
<b>OP-SI - B2</b>		
1	0.51	0.06
2	0.38	0.08
3	0.59	0.07
<b>OP-FR - B2</b>		
1	0.56	0.11
2	0.56	0.07
3	0.46	0.16

**Table 5.130** – IACC<sub>E3</sub> and LF<sub>E4</sub> values for Stonegate 1, combined with the OP-SI and the OP-FR wagons.

Stonegate 1		
Receiver	IACC <sub>E3</sub> (JNDs)	LF <sub>E4</sub> (JNDs)
<b>OP-SI compared to OP-FR / B0</b>		
1	<b>3.87</b>	<b>2.2</b>
2	<b>1.73</b>	<b>1.2</b>
3	<b>4.13</b>	<b>3</b>
<b>OP-SI compared to OP-FR / B1</b>		
1	<b>1.87</b>	<b>1.4</b>
2	0.4	0
3	<b>4</b>	<b>2</b>
<b>OP-SI compared to OP-FR / B2</b>		
1	0.67	<b>1</b>
2	<b>2.4</b>	0.2
3	<b>1.73</b>	<b>1.8</b>

**Table 5.131** - Differences in IACC<sub>E3</sub> and LF<sub>E4</sub> results between Stonegate 1-OP-SI and Stonegate 1-OP-FR simulations. Values in bold indicate significant differences. Cells in orange indicate an increase in values for the OP-SI wagon whereas blue cells indicate higher values with the use of the OP-FR wagon. The cells that are not highlighted indicate that the difference is below 1JND.

Stonegate 2		
Receiver	IACC <sub>E3</sub>	LF <sub>E4</sub>
<b>OP-SI - B0</b>		
1	0.67	0.06
2	0.44	0.11
3	0.62	0.08
<b>OP-FR - B0</b>		
1	0.35	0.14
2	0.31	0.1

3	0.2	0.19
<b>OP-SI - B1</b>		
1	0.6	0.05
2	0.43	0.1
3	0.72	0.06
<b>OP-FR - B1</b>		
1	0.53	0.15
2	0.48	0.07
3	0.37	0.14
<b>OP-SI - B2</b>		
1	0.53	0.05
2	0.32	0.1
3	0.66	0.09
<b>OP-FR - B2</b>		
1	0.52	0.1
2	0.66	0.05
3	0.43	0.1

**Table 5.132** – IACC<sub>E3</sub> and LF<sub>E4</sub> values for Stonegate 2, combined with the OP-SI and the OP-FR wagons.

Stonegate 2		
Receiver	IACC <sub>E3</sub> (JNDs)	LF <sub>E4</sub> (JNDs)
<b>OP-SI compared to OP-FR / B0</b>		
1	<b>4.27</b>	<b>1.6</b>
2	<b>1.73</b>	0.2
3	<b>5.6</b>	<b>2.2</b>
<b>OP-SI compared to OP-FR / B1</b>		
1	0.93	<b>2</b>
2	0.67	0.6
3	<b>4.67</b>	<b>1.6</b>
<b>OP-SI compared to OP-FR / B2</b>		
1	0.13	<b>1</b>
2	<b>4.53</b>	<b>1</b>
3	<b>3.07</b>	0.2

**Table 5.133** - Differences in IACC<sub>E3</sub> and LF<sub>E4</sub> results between Stonegate 2-OP-SI and Stonegate 2-OP-FR simulations. Values in bold indicate significant differences. Cells in orange indicate an increase in values for the OP-SI wagon whereas blue cells indicate higher values with the use of the OP-FR wagon. The cells that are not highlighted indicate that the difference is below 1JND.

Stonegate 3		
Receiver	IACC <sub>E3</sub>	LF <sub>E4</sub>
<b>OP-SI - B0</b>		
1	0.68	0.05
2	0.5	0.09
3	0.47	0.08
<b>OP-FR - B0</b>		
1	0.28	0.16
2	0.37	0.13
3	0.25	0.14
<b>OP-SI - B1</b>		
1	0.43	0.05
2	0.42	0.09
3	0.43	0.06
<b>OP-FR - B1</b>		
1	0.37	0.11
2	0.41	0.08
3	0.28	0.18
<b>OP-SI - B2</b>		

1	0.53	0.05
2	0.54	0.1
3	0.58	0.11
<b>OP-FR - B2</b>		
1	0.5	0.14
2	0.55	0.08
3	0.5	0.13

**Table 5.134** – IACC<sub>E3</sub> and LF<sub>E4</sub> values for Stonegate 3, combined with the OP-SI and the OP-FR wagons.

Stonegate 3		
Receiver	IACC <sub>E3</sub> (JNDs)	LF <sub>E4</sub> (JNDs)
<b>OP-SI compared to OP-FR / B0</b>		
1	5.33	2.2
2	1.73	0.8
3	2.93	1.2
<b>OP-SI compared to OP-FR / B1</b>		
1	0.8	1.2
2	0.13	0.2
3	2	2.4
<b>OP-SI compared to OP-FR / B2</b>		
1	0.4	1.8
2	0.13	0.4
3	1.07	0.4

**Table 5.135** - Differences in IACC<sub>E3</sub> and LF<sub>E4</sub> results between Stonegate 3-OP-SI and Stonegate 3-OP-FR simulations. Values in bold indicate significant differences. Cells in orange indicate an increase in values for the OP-SI wagon whereas blue cells indicate higher values with the use of the OP-FR wagon. The cells that are not highlighted indicate that the difference is below 1JND.

Stonegate 4		
Receiver	IACC <sub>E3</sub>	LF <sub>E4</sub>
<b>OP-SI - B0</b>		
1	0.6	0.05
2	0.4	0.13
3	0.66	0.07
<b>OP-FR - B0</b>		
1	0.37	0.15
2	0.29	0.14
3	0.31	0.18
<b>OP-SI - B1</b>		
1	0.57	0.06
2	0.41	0.11
3	0.62	0.05
<b>OP-FR - B1</b>		
1	0.41	0.14
2	0.47	0.07
3	0.36	0.22
<b>OP-SI - B2</b>		
1	0.54	0.06
2	0.27	0.1
3	0.49	0.16
<b>OP-FR - B2</b>		
1	0.53	0.11
2	0.61	0.07
3	0.54	0.1

**Table 5.136** – IACC<sub>E3</sub> and LF<sub>E4</sub> values for Stonegate 4, combined with the OP-SI and the OP-FR wagons.

Stonegate 4		
Receiver	IACC <sub>E3</sub> (JNDs)	LF <sub>E4</sub> (JNDs)
<b>OP-SI compared to OP-FR / B0</b>		
1	<b>3.07</b>	<b>2</b>
2	<b>1.47</b>	0.2
3	<b>4.67</b>	<b>2.2</b>
<b>OP-SI compared to OP-FR / B1</b>		
1	<b>2.13</b>	<b>1.6</b>
2	0.8	0.8
3	<b>3.47</b>	<b>3.4</b>
<b>OP-SI compared to OP-FR / B2</b>		
1	0.13	<b>1</b>
2	<b>4.53</b>	0.6
3	0.67	<b>1.2</b>

**Table 5.137** - Differences in IACC<sub>E3</sub> and LF<sub>E4</sub> results between Stonegate 4-OP-SI and Stonegate 4-OP-FR simulations. Values in bold indicate significant differences. Cells in orange indicate an increase in values for the OP-SI wagon whereas blue cells indicate higher values with the use of the OP-FR wagon. The cells that are not highlighted indicate that the difference is below 1JND.

Percentage of results with significant differences when source positions for the CL-SI wagon are changed		
Model	T <sub>20</sub>	T <sub>30</sub>
<b>B0-B1</b>		
Stonegate 1	88%	25%
Stonegate 2	50%	38%
Stonegate 3	75%	25%
Stonegate 4	100%	75%
<b>B0-B2</b>		
Stonegate 1	38%	0%
Stonegate 2	63%	50%
Stonegate 3	0%	13%
Stonegate 4	25%	25%
<b>B1-B2</b>		
Stonegate 1	75%	25%
Stonegate 2	38%	25%
Stonegate 3	63%	50%
Stonegate 4	88%	50%
<b>B3-B4</b>		
Stonegate 1	63%	50%
Stonegate 2	50%	63%
Stonegate 3	75%	13%
Stonegate 4	25%	13%
<b>B2-B3</b>		
Stonegate 1	88%	50%
Stonegate 2	50%	25%
Stonegate 3	63%	50%
Stonegate 4	88%	88%
<b>B2-B4</b>		
Stonegate 1	25%	13%
Stonegate 2	50%	50%
Stonegate 3	88%	50%

Stonegate 4	100%	75%
B0-B3		
Stonegate 1	88%	38%
Stonegate 2	63%	63%
Stonegate 3	63%	50%
Stonegate 4	88%	88%
B1-B4		
Stonegate 1	50%	38%
Stonegate 2	38%	25%
Stonegate 3	25%	25%
Stonegate 4	50%	63%

**Table 5.138 – Impact of the change in source position of the CL-SI wagon on T<sub>20</sub> and T<sub>30</sub> values.**

CL-SI wagon – T <sub>20</sub> (s) and T <sub>30</sub> (s)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1 B0	T20	0.58	0.63	0.67	0.647	0.61	0.52	0.39	0.28
	T30	0.61	0.60	0.67	0.66	0.63	0.53	0.40	0.31
Model 2 B0	T20	0.46	0.48	0.50	0.48	0.45	0.42	0.30	0.23
	T30	0.46	0.49	0.48	0.50	0.47	0.43	0.32	0.26
Model 3 B0	T20	0.74	0.74	0.78	0.77	0.73	0.62	0.43	0.31
	T30	0.76	0.73	0.78	0.77	0.76	0.64	0.47	0.35
Model 4 B0	T20	0.53	0.56	0.6	0.54	0.53	0.47	0.35	0.26
	T30	0.58	0.59	0.6	0.57	0.56	0.49	0.39	0.3
Model 1 B1	T20	0.61	0.63	0.64	0.67	0.66	0.55	0.42	0.33
	T30	0.61	0.62	0.65	0.68	0.65	0.57	0.43	0.33
Model 2 B1	T20	0.56	0.49	0.49	0.49	0.48	0.44	0.35	0.28
	T30	0.51	0.48	0.50	0.51	0.48	0.44	0.35	0.29
Model 3 B1	T20	0.81	0.77	0.77	0.81	0.77	0.67	0.51	0.39
	T30	0.76	0.76	0.76	0.79	0.75	0.64	0.51	0.39
Model 4 B1	T20	0.68	0.62	0.65	0.62	0.58	0.53	0.43	0.35
	T30	0.68	0.6	0.63	0.61	0.58	0.52	0.42	0.35
Model 1 B2	T20	0.58	0.60	0.66	0.64	0.58	0.51	0.38	0.31
	T30	0.60	0.62	0.65	0.67	0.63	0.53	0.40	0.31
Model 2 B2	T20	0.60	0.53	0.55	0.50	0.47	0.43	0.34	0.28
	T30	0.56	0.53	0.52	0.50	0.48	0.42	0.35	0.28
Model 3 B2	T20	0.76	0.73	0.77	0.80	0.75	0.61	0.45	0.32
	T30	0.76	0.72	0.76	0.83	0.75	0.63	0.47	0.35
Model 4 B2	T20	0.66	0.58	0.59	0.57	0.52	0.48	0.37	0.28
	T30	0.61	0.58	0.57	0.59	0.56	0.5	0.39	0.29
Model 1 B3	T20	0.75	0.68	0.71	0.67	0.63	0.56	0.42	0.32
	T30	0.72	0.66	0.69	0.67	0.65	0.55	0.43	0.33
Model 2 B3	T20	0.50	0.47	0.52	0.54	0.48	0.42	0.33	0.27
	T30	0.51	0.44	0.53	0.51	0.50	0.43	0.35	0.27
Model 3 B3	T20	0.74	0.75	0.78	0.86	0.79	0.69	0.55	0.42
	T30	0.75	0.75	0.8	0.83	0.77	0.68	0.54	0.41
Model 4 B3	T20	0.65	0.62	0.62	0.67	0.63	0.56	0.45	0.34
	T30	0.62	0.55	0.62	0.66	0.61	0.54	0.44	0.34
Model 1 B4	T20	0.62	0.70	0.64	0.63	0.59	0.51	0.40	0.31
	T30	0.59	0.68	0.64	0.66	0.61	0.52	0.41	0.32
Model 2 B4	T20	0.48	0.50	0.51	0.46	0.45	0.42	0.36	0.29
	T30	0.48	0.50	0.49	0.47	0.46	0.42	0.35	0.29
Model 3 B4	T20	0.70	0.79	0.84	0.82	0.79	0.69	0.52	0.39
	T30	0.74	0.75	0.84	0.82	0.77	0.68	0.52	0.4
Model 4 B4	T20	0.62	0.62	0.66	0.67	0.64	0.57	0.45	0.35
	T30	0.6	0.6	0.64	0.64	0.63	0.55	0.45	0.35

**Table 5.139 – T<sub>20</sub> and T<sub>30</sub> values for the CL-SI wagon.**

CL-SI wagon – T <sub>20</sub> (JNDs) and T <sub>30</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1- B0-B1	T20	<b>1</b>	0	<b>1</b>	<b>1</b>	<b>1.67</b>	<b>1</b>	<b>1</b>	<b>1.67</b>
	T30	0	0.67	0.67	0.67	0.67	<b>1.33</b>	1	0.67
Model 2- B0-B1	T20	<b>3.33</b>	0.33	0.33	0.33	<b>1</b>	0.67	<b>1.67</b>	<b>1.67</b>
	T30	<b>1.67</b>	0.33	0.67	0.33	0.33	0.33	<b>1</b>	<b>1</b>
Model 3- B0-B1	T20	<b>1.75</b>	0.75	0.25	<b>1</b>	<b>1</b>	<b>1.67</b>	<b>2.67</b>	<b>2.67</b>
	T30	0	0.75	0.5	0.5	0.25	0	<b>1.33</b>	<b>1.33</b>
Model 4- B0-B1	T20	<b>5</b>	<b>2</b>	<b>1.67</b>	<b>2.67</b>	<b>1.67</b>	<b>2</b>	<b>2.67</b>	3
	T30	<b>3.33</b>	0.33	<b>1</b>	<b>1.33</b>	0.67	<b>1</b>	1	<b>1.67</b>

**Table 5.140** – Differences in T<sub>20</sub> and T<sub>30</sub> results between sources B0 and B1 for the CL-SI wagon. Values in bold indicate significant differences. Cells in orange indicate an increase in values for source B0 whereas blue cells indicate higher values with the use of source B1. The cells that are not highlighted indicate that the difference is below 1JND.

CL-SI wagon – T <sub>20</sub> (JNDs) and T <sub>30</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1- B0-B2	T20	0	<b>1</b>	0.33	0	<b>1</b>	0.33	0.33	<b>1</b>
	T30	0.33	0.67	0.67	0.33	0	0	0	0
Model 2- B0-B2	T20	<b>4.67</b>	<b>1.67</b>	<b>1.67</b>	0.67	0.67	0.33	<b>1.33</b>	<b>1.67</b>
	T30	<b>3.33</b>	<b>1.33</b>	<b>1.33</b>	0	0.33	0.33	<b>1</b>	0.67
Model 3- B0-B2	T20	0.50	0.25	0.25	0.75	0.50	0.33	0.67	0.33
	T30	0	0.25	0.5	<b>1.5</b>	0.25	0.33	0	0
Model 4- B0-B2	T20	<b>4.33</b>	0.67	0.33	<b>1</b>	0.33	0.33	0.67	0.67
	T30	<b>1</b>	0.33	<b>1</b>	0.67	0	0.33	0	0.33

**Table 5.141** – Differences in T<sub>20</sub> and T<sub>30</sub> results between sources B0 and B2 for the CL-SI wagon. Values in bold indicate significant differences. Cells in orange indicate an increase in values for source B0 whereas blue cells indicate higher values with the use of source B2. The cells that are not highlighted indicate that the difference is below 1JND.

CL-SI wagon – T <sub>20</sub> (JNDs) and T <sub>30</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1- B1-B2	T20	<b>1</b>	<b>1</b>	0.67	<b>1</b>	<b>2.67</b>	<b>1.33</b>	<b>1.33</b>	0.67
	T30	0.33	0	0	0.33	0.67	<b>1.33</b>	<b>1</b>	0.67
Model 2- B1-B2	T20	<b>1.33</b>	<b>1.33</b>	<b>2</b>	0.33	0.33	0.33	0.33	0
	T30	<b>1.67</b>	<b>1.67</b>	0.67	0.33	0	0.67	0	0.33
Model 3- B1-B2	T20	<b>1.25</b>	<b>1</b>	0	0.25	0.5	<b>2</b>	<b>2</b>	<b>2.33</b>
	T30	0	<b>1</b>	0	<b>1</b>	0	0.33	<b>1.33</b>	1.33
Model 4- B1-B2	T20	0.67	<b>1.33</b>	<b>2</b>	<b>1.67</b>	<b>2</b>	<b>1.67</b>	<b>2</b>	<b>2.33</b>
	T30	<b>2.33</b>	0.67	<b>2</b>	0.67	0.67	0.67	<b>1</b>	2

**Table 5.142** – Differences in T<sub>20</sub> and T<sub>30</sub> results between sources B1 and B2 for the CL-SI wagon. Values in bold indicate significant differences. Cells in orange indicate an increase in values for source B1 whereas blue cells indicate higher values with the use of source B2. The cells that are not highlighted indicate that the difference is below 1JND.

CL-SI wagon – T <sub>20</sub> (JNDs) and T <sub>30</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1- B3-B4	T20	<b>3.25</b>	0.67	<b>1.75</b>	<b>1.33</b>	<b>1.33</b>	<b>1.67</b>	0.67	0.33
	T30	<b>3.25</b>	0.67	<b>1.67</b>	0.33	<b>1.33</b>	<b>1</b>	0.67	0.33
Model 2- B3-B4	T20	0.67	<b>1</b>	0.33	<b>2.67</b>	<b>1</b>	0	<b>1</b>	0.67
	T30	<b>1</b>	<b>2</b>	<b>1.33</b>	<b>1.33</b>	<b>1.33</b>	0.33	0	0.67

Model 3- B3-B4	T20	<b>1</b>	<b>1</b>	<b>1.50</b>	<b>1</b>	0	0	<b>1</b>	<b>1</b>
	T30	0.25	0	<b>1</b>	0.25	0	0	0.67	0.33
Model 4- B3-B4	T20	<b>1</b>	0	<b>1.33</b>	0	0.33	0.33	0	0.33
	T30	0.67	<b>1.67</b>	0.67	0.67	0.67	0.33	0.33	0.33

**Table 5.143** – Differences in T<sub>20</sub> and T<sub>30</sub> results between sources B3 and B4 for the CL-SI wagon. Values in bold indicate significant differences. Orange cells indicate an increase in values for source B3 whereas blue cells indicate higher values with the use of source B4. The cells that are not highlighted indicate that the difference is below 1JND.

CL-SI wagon – T <sub>20</sub> (JNDs) and T <sub>30</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1- B2-B3	T20	<b>5.67</b>	<b>2.67</b>	<b>1.67</b>	<b>1</b>	<b>1.67</b>	<b>1.67</b>	<b>1.33</b>	0.33
	T30	<b>4</b>	<b>1.33</b>	<b>1.33</b>	0	0.67	0.67	<b>1</b>	0.67
Model 2- B2-B3	T20	<b>3.33</b>	<b>2</b>	<b>1</b>	<b>1.33</b>	0.33	0.33	0.33	0.33
	T30	<b>1.67</b>	<b>3</b>	0.33	0.33	0.67	0.33	0	0.33
Model 3- B2-B3	T20	0.5	0.5	0.25	<b>1.5</b>	<b>1</b>	<b>2.67</b>	<b>3.33</b>	<b>3.33</b>
	T30	0.25	0.75	<b>1</b>	0	0.5	<b>1.67</b>	<b>2.33</b>	<b>2</b>
Model 4 B2-B3	T20	0.33	<b>1.33</b>	<b>1</b>	<b>3.33</b>	<b>3.67</b>	<b>2.67</b>	<b>2.67</b>	<b>2</b>
	T30	0.33	<b>1</b>	<b>1.67</b>	<b>2.33</b>	<b>1.67</b>	<b>1.33</b>	<b>1.67</b>	<b>1.67</b>

**Table 5.144** – Differences in T<sub>20</sub> and T<sub>30</sub> results between sources B2 and B3 for the CL-SI wagon. Values in bold indicate significant differences. Orange cells indicate an increase in values for source B2 whereas blue cells indicate higher values with the use of source B3. The cells that are not highlighted indicate that the difference is below 1JND.

CL-SI – T <sub>20</sub> (JNDs) and T <sub>30</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1 B2-B4	T20	<b>1.33</b>	<b>3.33</b>	0.67	0.33	0.33	0	0.67	0
	T30	0.33	<b>2</b>	0.33	0.33	0.67	0.33	0.33	0.33
Model 2 B2-B4	T20	<b>4</b>	<b>1</b>	<b>1.33</b>	<b>1.33</b>	0.67	0.33	0.67	0.33
	T30	<b>2.67</b>	<b>1</b>	<b>1</b>	<b>1</b>	0.67	0	0	0.33
Model 3 B2-B4	T20	<b>1.5</b>	<b>1.5</b>	<b>1.75</b>	0.5	<b>1</b>	<b>2.67</b>	<b>2.33</b>	<b>2.33</b>
	T30	0.5	0.75	<b>2</b>	0.25	0.5	<b>1.67</b>	<b>1.67</b>	<b>1.67</b>
Model 4 B2-B4	T20	<b>1.33</b>	<b>1.33</b>	<b>2.33</b>	<b>3.33</b>	<b>4</b>	<b>3</b>	<b>2.67</b>	<b>2.33</b>
	T30	0.33	0.67	<b>2.33</b>	<b>1.67</b>	<b>2.33</b>	<b>1.67</b>	<b>2</b>	<b>2</b>

**Table 5.145** – Differences in T<sub>20</sub> and T<sub>30</sub> results between sources B2 and B4 for the CL-SI wagon. Values in bold indicate significant differences. Orange cells indicate an increase in values for source B2 whereas blue cells indicate higher values with the use of source B4. The cells that are not highlighted indicate that the difference is below 1JND.

CL-SI – T <sub>20</sub> (JNDs) and T <sub>30</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1 B0-B3	T20	<b>5.67</b>	<b>1.67</b>	<b>1.33</b>	<b>1</b>	0.67	<b>1.33</b>	<b>1</b>	<b>1.33</b>
	T30	<b>3.67</b>	<b>2</b>	0.67	0.33	0.67	0.67	<b>1</b>	0.67
Model 2 B0-B3	T20	<b>1.33</b>	0.33	0.67	<b>2</b>	<b>1</b>	0	<b>1</b>	<b>1.33</b>
	T30	<b>1.67</b>	<b>1.67</b>	<b>1.67</b>	0.33	<b>1</b>	0	<b>1</b>	0.33
Model 3 B0-B3	T20	0	0.25	0	<b>2.25</b>	<b>1.5</b>	<b>2.33</b>	4	<b>3.67</b>
	T30	0.25	0.5	0.5	<b>1.5</b>	0.25	<b>1.33</b>	<b>2.33</b>	<b>2</b>
Model 4 B0-B3	T20	<b>4</b>	<b>2</b>	0.67	<b>4.33</b>	<b>3.33</b>	<b>3</b>	<b>3.33</b>	<b>2.67</b>
	T30	<b>1.33</b>	<b>1.33</b>	0.67	<b>3</b>	<b>1.67</b>	<b>1.67</b>	<b>1.67</b>	<b>1.33</b>

**Table 5.146** – Differences in T<sub>20</sub> and T<sub>30</sub> results between sources B0 and B3 for the CL-SI wagon. Values in bold indicate significant differences. Orange

cells indicate an increase in values for source B0 whereas blue cells indicate higher values with the use of source B3. The cells that are not highlighted indicate that the difference is below 1JND.

CL-SI - T <sub>20</sub> (JNDs) and T <sub>30</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1 B1-B4	T20	0.33	<b>2.33</b>	0	<b>1.33</b>	<b>2.33</b>	<b>1.33</b>	0.67	0.67
	T30	0.67	<b>2</b>	0.33	0.67	<b>1.33</b>	<b>1.67</b>	0.67	0.33
Model 2 B1-B4	T20	<b>2.67</b>	0.33	0.67	<b>1</b>	<b>1</b>	0.67	0.33	0.33
	T30	<b>1</b>	0.67	0.33	<b>1.33</b>	0.67	0.67	0	0
Model 3 B1-B4	T20	<b>2.75</b>	0.5	<b>1.75</b>	0.25	0.5	0.67	0.33	0
	T30	0.5	0.25	<b>2</b>	0.75	0.5	<b>1.33</b>	0.33	0.33
Model 4 B1-B4	T20	<b>2</b>	0	0.33	<b>1.67</b>	<b>2</b>	<b>1.33</b>	0.67	0
	T30	<b>2.67</b>	0	0.33	<b>1</b>	<b>1.67</b>	<b>1</b>	<b>1</b>	0

**Table 5.147** – Differences in T<sub>20</sub> and T<sub>30</sub> results between sources B1 and B4 for the CL-SI wagon. Values in bold indicate significant differences. Orange cells indicate an increase in values for source B1 whereas blue cells indicate higher values with the use of source B4. The cells that are not highlighted indicate that the difference is below 1JND.

Virtual Model	Percentage of results with significant differences when source positions for the CL-SI wagon are changed	
	C <sub>50</sub>	C <sub>80</sub>
B0-B1		
Stonegate 1	75%	88%
Stonegate 2	75%	75%
Stonegate 3	88%	88%
Stonegate 4	100%	100%
B0-B2		
Stonegate 1	38%	50%
Stonegate 2	88%	88%
Stonegate 3	75%	63%
Stonegate 4	63%	63%
B1-B2		
Stonegate 1	25%	38%
Stonegate 2	75%	50%
Stonegate 3	88%	100%
Stonegate 4	100%	100%
B3-B4		
Stonegate 1	50%	50%
Stonegate 2	50%	25%
Stonegate 3	38%	25%
Stonegate 4	50%	38%
B2-B3		
Stonegate 1	13%	50%
Stonegate 2	75%	50%
Stonegate 3	100%	100%
Stonegate 4	100%	100%
B2-B4		
Stonegate 1	38%	50%
Stonegate 2	25%	63%

Stonegate 3	100%	100%
Stonegate 4	100%	100%
B0-B3		
Stonegate 1	75%	88%
Stonegate 2	38%	88%
Stonegate 3	100%	100%
Stonegate 4	100%	100%
B1-B4		
Stonegate 1	63%	38%
Stonegate 2	63%	25%
Stonegate 3	63%	88%
Stonegate 4	50%	75%

**Table 5.148 – Impact of the change in source position of the CL-SI wagon on C<sub>50</sub> and C<sub>80</sub> values.**

CL-SI – C <sub>50</sub> (dB) and C <sub>80</sub> (dB)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1 B0	C50	6.79	5.76	7.26	7.92	8.37	10.52	13.32	14.89
	C80	10.2	10.09	11.13	11.34	12.13	14.07	18.11	21.77
Model 2 B0	C50	7.82	8.59	10.26	10.98	11.91	13.62	16.64	18.63
	C80	13.32	13.15	14.11	15.59	16.56	18.2	22.6	25.5
Model 3 B0	C50	5.16	5.37	6.56	7.26	8.22	9.97	12.8	15.22
	C80	9.34	8.34	9.7	10.07	11.43	13.37	17.18	20.77
Model 4 B0	C50	7.3	7.95	9.43	9.73	11.46	12.4	15.33	17.13
	C80	10.56	11.4	12.52	13.31	15.52	16.93	20.74	23.77
Model 1 B1	C50	6.82	5.66	5.95	5.72	7	9.2	12.05	13.68
	C80	8.93	10.58	8.83	9.25	10.53	12.31	16.09	19.21
Model 2 B1	C50	7.15	8.1	7.72	8.35	9.75	11.72	14.43	15.58
	C80	12.54	14	12.3	12.44	13.81	16.1	19.61	22.41
Model 3 B1	C50	3.84	4.77	3.51	4.33	4.46	6.48	9.42	11.32
	C80	7.39	7.47	6.64	7.56	7.71	9.49	13.41	16.49
Model 4 B1	C50	3.28	6.01	5.69	6.85	6.79	8.42	10.98	12.73
	C80	6.25	8.96	9.75	10.9	10.52	12.61	15.85	18.49
Model 1 B2	C50	7.13	5.75	7.12	7.4	7.37	8.97	11.82	13.29
	C80	10.32	9.87	10.91	11.03	11.03	13	16.9	19.81
Model 2 B2	C50	8.8	6.04	8.86	8.57	9.25	10.36	12.76	13.82
	C80	12.51	9.63	13.02	12.78	13.83	15.08	18.54	20.8
Model 3 B2	C50	5.81	5.38	5.18	5.93	6.47	8.52	11.45	12.95
	C80	8.54	9.12	8.15	9.2	9.41	11.96	15.89	18.22
Model 4 B2	C50	9.72	7.44	8.02	9.24	9.6	11.97	13.75	15.39
	C80	13.34	11.44	11.89	12.7	13.48	15.56	18.85	20.91
Model 1 B3	C50	8.22	5.61	6.62	6.06	7	8.75	11.91	13.37
	C80	11.03	8.81	9.73	8.19	10.12	12.08	15.92	18.68
Model 2 B3	C50	7.71	7.83	9.56	10.28	10.84	11.98	14.91	16.34
	C80	11.76	11.12	13.34	13.26	14.49	16.31	20.05	23.26
Model 3 B3	C50	2.97	0.42	3.81	2.83	3.68	4.83	8.3	10.75
	C80	5.72	3.84	6.35	5.88	5.83	7.37	11.58	15.31
Model 4 B3	C50	5.9	2.18	6.19	6.57	7.07	7.96	11.24	13.41
	C80	9	6.32	9.77	9.54	10.13	11.32	15.04	18.82
Model 1 B4	C50	4.16	8.32	6.83	6.87	6.98	8.47	10.74	11.93
	C80	7.07	11.43	10.81	10.97	10.77	12.86	15.84	18.34
Model 2 B4	C50	8.26	10.62	9.75	9.98	9.71	11.35	13.59	14.38
	C80	12.44	13.36	13.05	13.94	14.92	16.46	19.08	21.86
Model 3 B4	C50	3.15	4	3.53	3.1	3.11	4.44	6.84	8.55
	C80	5.53	6.36	6.11	5.77	6.16	7.89	11.02	13.79
Model 4 B4	C50	6.03	5.64	5.2	6.49	5.7	6.91	8.76	9.65
	C80	8.19	8.79	9.22	9.65	9.32	10.67	13.75	15.82

**Table 5.149 – C<sub>50</sub> and C<sub>80</sub> values for the CL-SI wagon.**

CL-SI - C <sub>50</sub> (JNDs) and C <sub>80</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1 B0-B1	C50	0.03	0.09	<b>1.19</b>	<b>2</b>	<b>1.25</b>	<b>1.2</b>	<b>1.15</b>	<b>1.1</b>
	C80	<b>1.27</b>	0.49	<b>2.3</b>	<b>2.09</b>	1.6	1.76	2.02	<b>2.56</b>
Model 2 B0-B1	C50	0.61	0.45	<b>2.31</b>	<b>2.39</b>	<b>1.96</b>	<b>1.73</b>	<b>2.01</b>	<b>2.77</b>
	C80	0.78	0.85	<b>1.81</b>	<b>3.15</b>	<b>2.75</b>	<b>2.1</b>	<b>2.99</b>	<b>3.09</b>
Model 3 B0-B1	C50	<b>1.2</b>	0.55	<b>2.77</b>	<b>2.66</b>	<b>3.42</b>	<b>3.17</b>	<b>3.07</b>	<b>3.55</b>
	C80	<b>1.95</b>	0.87	<b>3.06</b>	<b>2.51</b>	<b>3.72</b>	<b>3.88</b>	<b>3.77</b>	<b>4.28</b>
Model 4 B0-B1	C50	<b>3.65</b>	<b>1.76</b>	<b>3.4</b>	<b>2.62</b>	<b>4.25</b>	<b>3.62</b>	<b>3.95</b>	<b>4</b>
	C80	<b>4.31</b>	<b>2.44</b>	<b>2.77</b>	<b>2.41</b>	<b>5</b>	<b>4.32</b>	<b>4.89</b>	<b>5.28</b>

**Table 5.150** – Differences in C<sub>50</sub> and C<sub>80</sub> results between sources B0 and B1 for the CL-SI wagon. Values in bold indicate significant differences. Cells in orange indicate an increase in values for source B0. The cells that are not highlighted indicate that the difference is below 1JND.

CL-SI - C <sub>50</sub> (JNDs) and C <sub>80</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1 B0-B2	C50	0.31	0.01	0.13	0.47	0.91	<b>1.41</b>	<b>1.36</b>	<b>1.45</b>
	C80	0.12	0.22	0.22	0.31	<b>1.1</b>	<b>1.07</b>	<b>1.21</b>	<b>1.96</b>
Model 2 B0-B2	C50	0.89	<b>2.32</b>	<b>1.27</b>	<b>2.19</b>	<b>2.42</b>	<b>2.96</b>	3.53	<b>4.37</b>
	C80	0.81	<b>3.52</b>	<b>1.09</b>	<b>2.81</b>	<b>2.73</b>	<b>3.12</b>	<b>4.06</b>	4.7
Model 3 B0-B2	C50	0.59	0.01	<b>1.25</b>	<b>1.21</b>	<b>1.59</b>	<b>1.32</b>	<b>1.23</b>	<b>2.06</b>
	C80	0.8	0.78	<b>1.55</b>	0.87	<b>2.02</b>	<b>1.41</b>	<b>1.29</b>	<b>2.55</b>
Model 4 B0-B2	C50	<b>2.2</b>	0.46	<b>1.28</b>	0.45	<b>1.69</b>	0.39	<b>1.44</b>	<b>1.58</b>
	C80	<b>2.78</b>	0.04	0.63	0.61	<b>2.04</b>	<b>1.37</b>	<b>1.89</b>	<b>2.86</b>

**Table 5.151** – Differences in C<sub>50</sub> and C<sub>80</sub> results between sources B0 and B2 for the CL-SI wagon. Values in bold indicate significant differences. Cells in orange indicate an increase in values for source B0 whereas blue cells indicate higher values with the use of source B2. The cells that are not highlighted indicate that the difference is below 1JND.

CL-SI - C <sub>50</sub> (JNDs) and C <sub>80</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1 B1-B2	C50	0.28	0.08	<b>1.06</b>	<b>1.53</b>	0.34	0.21	0.21	0.35
	C80	<b>1.39</b>	0.71	<b>2.08</b>	<b>1.78</b>	0.5	0.69	0.81	0.6
Model 2 B1-B2	C50	<b>1.5</b>	<b>1.87</b>	<b>1.04</b>	0.2	0.45	<b>1.24</b>	<b>1.52</b>	<b>1.6</b>
	C80	0.03	<b>4.37</b>	0.72	0.34	0.02	<b>1.02</b>	<b>1.07</b>	<b>1.61</b>
Model 3 B1-B2	C50	<b>1.79</b>	0.55	<b>1.52</b>	<b>1.45</b>	<b>1.83</b>	<b>1.85</b>	<b>1.85</b>	<b>1.48</b>
	C80	<b>1.15</b>	<b>1.65</b>	<b>1.51</b>	<b>1.64</b>	1.7	<b>2.47</b>	<b>2.48</b>	<b>1.73</b>
Model 4 B1-B2	C50	<b>5.85</b>	1.3	<b>2.12</b>	<b>2.17</b>	<b>2.55</b>	<b>3.23</b>	<b>2.52</b>	<b>2.42</b>
	C80	<b>7.09</b>	<b>2.48</b>	<b>2.14</b>	<b>1.8</b>	<b>2.96</b>	<b>2.95</b>	3	<b>2.42</b>

**Table 5.152** – Differences in C<sub>50</sub> and C<sub>80</sub> results between sources B1 and B2 for the CL-SI wagon. Values in bold indicate significant differences. Cells in orange indicate an increase in values for source B1 whereas blue cells indicate higher values with the use of source B2. The cells that are not highlighted indicate that the difference is below 1JND.

CL-SI - C <sub>50</sub> (JNDs) and C <sub>80</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1 B3-B4	C50	<b>3.69</b>	<b>2.46</b>	0.19	0.74	0.02	0.25	<b>1.06</b>	<b>1.31</b>
	C80	<b>3.96</b>	<b>2.62</b>	<b>1.08</b>	<b>2.78</b>	0.65	0.78	0.08	0.34
Model 2 B3-B4	C50	0.5	<b>2.54</b>	0.17	0.27	<b>1.03</b>	0.57	<b>1.2</b>	<b>1.78</b>
	C80	0.68	<b>2.24</b>	0.29	0.68	0.43	0.15	0.97	<b>1.4</b>
Model 3	C50	0.16	<b>3.25</b>	0.25	0.25	0.52	0.35	<b>1.33</b>	2

B3-B4	C80	0.19	<b>2.52</b>	0.24	0.11	0.33	0.52	0.56	<b>1.52</b>
Model 4	C50	0.12	<b>3.15</b>	0.9	0.07	<b>1.25</b>	0.95	<b>2.25</b>	<b>3.42</b>
B3-B4	C80	0.81	<b>2.47</b>	0.55	0.11	0.81	0.65	<b>1.29</b>	3

**Table 5.153** – Differences in C<sub>50</sub> and C<sub>80</sub> results between sources B3 and B4 for the CL-SI wagon. Values in bold indicate significant differences. Cells in orange indicate an increase in values for source B3 whereas blue cells indicate higher values with the use of source B4. The cells that are not highlighted indicate that the difference is below 1JND.

CL-SI – C <sub>50</sub> (JNDs) and C <sub>80</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1	C50	0.99	0.13	0.45	<b>1.22</b>	0.34	0.2	0.08	0.07
	C80	0.71	<b>1.06</b>	<b>1.18</b>	<b>2.84</b>	0.91	0.92	0.98	<b>1.13</b>
Model 2	C50	0.99	<b>1.63</b>	0.64	<b>1.55</b>	<b>1.45</b>	<b>1.47</b>	<b>1.95</b>	<b>2.29</b>
	C80	0.75	<b>1.49</b>	0.32	0.48	0.66	<b>1.23</b>	<b>1.51</b>	<b>2.46</b>
Model 3	C50	<b>2.58</b>	<b>4.51</b>	<b>1.25</b>	<b>2.82</b>	<b>2.54</b>	<b>3.35</b>	<b>2.86</b>	2
	C80	<b>2.82</b>	<b>5.28</b>	<b>1.8</b>	<b>3.32</b>	<b>3.58</b>	<b>4.59</b>	<b>4.31</b>	<b>2.91</b>
Model 4	C50	<b>3.47</b>	<b>4.78</b>	<b>1.66</b>	<b>2.43</b>	2.3	<b>3.65</b>	<b>2.28</b>	<b>1.8</b>
	C80	<b>4.34</b>	<b>5.12</b>	<b>2.12</b>	<b>3.16</b>	<b>3.35</b>	<b>4.24</b>	<b>3.81</b>	<b>2.09</b>

**Table 5.154** – Differences in C<sub>50</sub> and C<sub>80</sub> results between sources B2 and B3 for the CL-SI wagon. Values in bold indicate significant differences. Cells in orange indicate an increase in values for source B2 whereas blue cells indicate higher values with the use of source B3. The cells that are not highlighted indicate that the difference is below 1JND.

CL-SI – C <sub>50</sub> (JNDs) and C <sub>80</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1	C50	<b>2.7</b>	<b>2.34</b>	0.26	0.48	0.35	0.45	0.98	<b>1.24</b>
	C80	<b>3.25</b>	<b>1.56</b>	0.1	0.06	0.26	0.14	<b>1.06</b>	<b>1.47</b>
Model 2	C50	0.49	<b>4.16</b>	0.81	<b>1.28</b>	0.42	0.9	0.75	0.51
	C80	0.07	<b>3.73</b>	0.03	<b>1.16</b>	<b>1.09</b>	<b>1.38</b>	0.54	<b>1.06</b>
Model 3	C50	<b>2.42</b>	<b>1.25</b>	<b>1.5</b>	2.57	3.05	3.71	<b>4.19</b>	4
	C80	<b>3.01</b>	2.76	<b>2.04</b>	3.43	3.25	4.07	<b>4.87</b>	<b>4.43</b>
Model 4	C50	<b>3.35</b>	<b>1.64</b>	<b>2.56</b>	<b>2.5</b>	<b>3.55</b>	<b>4.6</b>	<b>4.54</b>	<b>5.22</b>
	C80	<b>5.15</b>	<b>2.65</b>	<b>2.67</b>	<b>3.05</b>	<b>4.16</b>	<b>4.89</b>	<b>5.1</b>	<b>5.09</b>

**Table 5.155** – Differences in C<sub>50</sub> and C<sub>80</sub> results between sources B2 and B4 for the CL-SI wagon. Values in bold indicate significant differences. Cells in orange indicate an increase in values for source B2 whereas blue cells indicate higher values with the use of source B4. The cells that are not highlighted indicate that the difference is below 1JND.

CL-SI – C <sub>50</sub> (JNDs) and C <sub>80</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1	C50	<b>1.3</b>	0.14	0.58	<b>1.69</b>	<b>1.25</b>	<b>1.61</b>	<b>1.28</b>	<b>1.38</b>
	C80	0.83	<b>1.28</b>	<b>1.4</b>	<b>3.15</b>	<b>2.01</b>	<b>1.99</b>	<b>2.19</b>	<b>3.09</b>
Model 2	C50	0.1	0.69	0.64	0.64	0.97	<b>1.49</b>	<b>1.57</b>	<b>2.08</b>
	C80	<b>1.56</b>	<b>2.03</b>	0.77	<b>2.33</b>	<b>2.07</b>	<b>1.89</b>	2.55	<b>2.24</b>
Model 3	C50	<b>1.99</b>	<b>4.5</b>	2.5	<b>4.03</b>	<b>4.13</b>	<b>4.67</b>	<b>4.09</b>	<b>4.06</b>
	C80	<b>3.62</b>	<b>4.5</b>	<b>3.35</b>	<b>4.19</b>	<b>5.6</b>	6	<b>5.6</b>	<b>5.46</b>
Model 4	C50	<b>1.27</b>	<b>5.25</b>	<b>2.95</b>	<b>2.87</b>	<b>3.99</b>	<b>4.04</b>	<b>3.72</b>	<b>3.38</b>
	C80	<b>1.56</b>	<b>5.08</b>	2.75	<b>3.77</b>	<b>5.39</b>	<b>5.61</b>	5.7	<b>4.95</b>

**Table 5.156** – Differences in C<sub>50</sub> and C<sub>80</sub> results between sources B0 and B3 for the CL-SI wagon. Values in bold indicate significant differences. Cells in orange indicate an increase in values for source B0 whereas blue cells

indicate higher values with the use of source B3. The cells that are not highlighted indicate that the difference is below 1JND.

		CL-SI - C <sub>50</sub> (JNDs) and C <sub>80</sub> (JNDs)							
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1 B1-B4	C50	<b>2.42</b>	<b>2.42</b>	0.8	<b>1.05</b>	0.02	0.66	<b>1.19</b>	<b>1.59</b>
	C80	<b>1.86</b>	0.85	<b>1.98</b>	<b>1.72</b>	0.24	0.55	0.25	0.87
Model 2 B1-B4	C50	<b>1.01</b>	<b>2.29</b>	<b>1.85</b>	<b>1.48</b>	0.04	0.34	0.76	<b>1.09</b>
	C80	0.1	0.64	0.75	<b>1.5</b>	<b>1.11</b>	0.36	0.53	0.55
Model 3 B1-B4	C50	0.63	0.7	0.02	<b>1.12</b>	<b>1.23</b>	<b>1.85</b>	<b>2.35</b>	<b>2.52</b>
	C80	<b>1.86</b>	<b>1.11</b>	0.53	<b>1.79</b>	<b>1.55</b>	<b>1.6</b>	<b>2.39</b>	2.7
Model 4 B1-B4	C50	<b>2.5</b>	0.34	0.44	0.33	0.99	<b>1.37</b>	<b>2.02</b>	<b>2.8</b>
	C80	<b>1.94</b>	0.17	0.53	<b>1.25</b>	<b>1.2</b>	<b>1.94</b>	2.1	<b>2.67</b>

**Table 5.157 – Differences in C<sub>50</sub> and C<sub>80</sub> results between sources B1 and B4 for the CL-SI wagon. Values in bold indicate significant differences. Cells in orange indicate an increase in values for source B1 whereas blue cells indicate higher values with the use of source B4. The cells that are not highlighted indicate that the difference is below 1JND.**

Virtual Model	Percentage of results with significant differences when source positions for the CL-SI wagon are changed	
	IACC <sub>E3</sub>	LF <sub>E4</sub>
B0-B1		
Stonegate 1	33%	0%
Stonegate 2	33%	0%
Stonegate 3	33%	0%
Stonegate 4	67%	33%
B0-B2		
Stonegate 1	67%	33%
Stonegate 2	67%	33%
Stonegate 3	67%	33%
Stonegate 4	33%	67%
B1-B2		
Stonegate 1	0%	0%
Stonegate 2	33%	0%
Stonegate 3	33%	0%
Stonegate 4	100%	0%
B3-B4		
Stonegate 1	33%	0%
Stonegate 2	33%	0%
Stonegate 3	33%	33%
Stonegate 4	33%	0%
B2-B3		
Stonegate 1	100%	0%
Stonegate 2	100%	33%
Stonegate 3	67%	0%
Stonegate 4	67%	33%
B2-B4		
Stonegate 1	33%	0%
Stonegate 2	33%	0%
Stonegate 3	67%	33%

Stonegate 4	67%	0%
B0-B3		
Stonegate 1	100%	0%
Stonegate 2	67%	33%
Stonegate 3	33%	67%
Stonegate 4	33%	33%
B1-B4		
Stonegate 1	33%	0%
Stonegate 2	33%	0%
Stonegate 3	100%	0%
Stonegate 4	67%	0%

**Table 5.158 – Impact of the change in source position of the CL-SI wagon on IACC<sub>E3</sub> and LF<sub>E4</sub> values.**

CL-SI		
Receiver	IACC <sub>E3</sub>	LF <sub>E4</sub>
<b>Stonegate 1- B0</b>		
1	0.59	0.09
2	0.38	0.11
3	0.66	0.1
<b>Stonegate 2- B0</b>		
1	0.62	0.1
2	0.38	0.09
3	0.66	0.09
<b>Stonegate 3- B0</b>		
1	0.58	0.1
2	0.44	0.13
3	0.58	0.09
<b>Stonegate 4- B0</b>		
1	0.5	0.1
2	0.44	0.2
3	0.64	0.09
<b>Stonegate 1- B1</b>		
1	0.5	0.05
2	0.32	0.12
3	0.64	0.09
<b>Stonegate 2- B1</b>		
1	0.47	0.07
2	0.4	0.13
3	0.73	0.09
<b>Stonegate 3- B1</b>		
1	0.51	0.08
2	0.3	0.12
3	0.63	0.08
<b>Stonegate 4- B1</b>		
1	0.58	0.08
2	0.3	0.12
3	0.69	0.09
<b>Stonegate 1- B2</b>		
1	0.5	0.04
2	0.28	0.11
3	0.68	0.08
<b>Stonegate 2- B2</b>		
1	0.5	0.04
2	0.29	0.13
3	0.71	0.07
<b>Stonegate 3- B2</b>		
1	0.5	0.05
2	0.3	0.09

3	0.51	0.07
<b>Stonegate 4- B2</b>		
1	0.47	0.05
2	0.4	0.14
3	0.53	0.08
<b>Stonegate 1- B3</b>		
1	0.76	0.05
2	0.55	0.08
3	0.56	0.08
<b>Stonegate 2- B3</b>		
1	0.72	0.05
2	0.55	0.06
3	0.63	0.06
<b>Stonegate 3- B3</b>		
1	0.65	0.05
2	0.49	0.08
3	0.5	0.07
<b>Stonegate 4- B3</b>		
1	0.7	0.06
2	0.49	0.09
3	0.59	0.06
<b>Stonegate 1- B4</b>		
1	0.74	0.05
2	0.35	0.08
3	0.62	0.07
<b>Stonegate 2- B4</b>		
1	0.73	0.03
2	0.34	0.1
3	0.69	0.06
<b>Stonegate 3- B4</b>		
1	0.68	0.07
2	0.4	0.15
3	0.5	0.08
<b>Stonegate 4- B4</b>		
1	0.67	0.05
2	0.3	0.12
3	0.56	0.07

**Table 5.159 – IACC<sub>E3</sub> and LF<sub>E4</sub> values for Stonegate 1, combined with the OP-SI and the OP-FR wagons.**

Receiver	CL-SI	
	IACC <sub>E3</sub> (JNDs)	LF <sub>E4</sub> (JNDs)
<b>Stonegate 1 B0-B1</b>		
1	<b>1.2</b>	0.8
2	0.8	0.2
3	0.27	0.2
<b>Stonegate 2 B0-B1</b>		
1	<b>2</b>	0.6
2	0.27	0.8
3	0.93	0
<b>Stonegate 3 B0-B1</b>		
1	0.93	0.4
2	<b>1.87</b>	0.2
3	0.67	0.2
<b>Stonegate 4 B0-B1</b>		
1	<b>1.07</b>	0.4
2	<b>1.87</b>	<b>1.6</b>
3	0.67	0

**Table 5.160 – Differences in IACC<sub>E3</sub> and LF<sub>E4</sub> results between sources B0 and B1 for the CL-SI wagon. Values in bold indicate significant differences. Cells in orange indicate an increase in values for source B0 whereas blue**

cells indicate higher values with the use of source B1. The cells that are not highlighted indicate that the difference is below 1JND.

CL-SI		
Receiver	IACC <sub>E3</sub> (JNDs)	LF <sub>E4</sub> (JNDs)
<b>Stonegate 1 B0-B2</b>		
1	<b>1.2</b>	<b>1</b>
2	<b>1.33</b>	0
3	0.27	0.4
<b>Stonegate 2 B0-B2</b>		
1	<b>1.6</b>	<b>1.2</b>
2	<b>1.2</b>	0.8
3	0.67	0.4
<b>Stonegate 3 B0-B2</b>		
1	<b>1.07</b>	<b>1</b>
2	<b>1.87</b>	0.8
3	0.93	0.4
<b>Stonegate 4 B0-B2</b>		
1	0.4	<b>1</b>
2	0.53	<b>1.2</b>
3	<b>1.47</b>	0.2

**Table 5.161** – Differences in IACC<sub>E3</sub> and LF<sub>E4</sub> results between sources B0 and B2 for the CL-SI wagon. Values in bold indicate significant differences. Cells in orange indicate an increase in values for source B0. The cells that are not highlighted indicate that the difference is below 1JND.

CL-SI		
Receiver	IACC <sub>E3</sub> (JNDs)	LF <sub>E4</sub> (JNDs)
<b>Stonegate 1 B1-B2</b>		
1	0	0.2
2	0.53	0.2
3	0.53	0.2
<b>Stonegate 2 B1-B2</b>		
1	0.4	0.6
2	<b>1.47</b>	0
3	0.27	0.4
<b>Stonegate 3 B1-B2</b>		
1	0.13	0.6
2	0	0.6
3	<b>1.6</b>	0.2
<b>Stonegate 4 B1-B2</b>		
1	<b>1.47</b>	0.6
2	<b>1.33</b>	0.4
3	<b>2.13</b>	0.2

**Table 5.162** – Differences in IACC<sub>E3</sub> and LF<sub>E4</sub> results between sources B1 and B2 for the CL-SI wagon. Values in bold indicate significant differences. Cells in orange indicate an increase in values for source B1 whereas blue cells indicate higher values with the use of source B2. The cells that are not highlighted indicate that the difference is below 1JND.

CL-SI		
Receiver	IACC <sub>E3</sub> (JNDs)	LF <sub>E4</sub> (JNDs)
<b>Stonegate 1 B3-B4</b>		
1	0.27	0
2	<b>2.67</b>	0
3	0.8	0.2
<b>Stonegate 2 B3-B4</b>		
1	0.13	0.4
2	<b>2.8</b>	0.8
3	0.8	0

Stonegate 3 B3-B4		
1	0.4	0.4
2	<b>1.2</b>	<b>1.4</b>
3	0	0.2
Stonegate 4 B3-B4		
1	0.4	0.2
2	<b>2.53</b>	0.6
3	0.4	0.2

**Table 5.163** – Differences in IACC<sub>E3</sub> and LF<sub>E4</sub> results between sources B3 and B4 for the CL-SI wagon. Values in bold indicate significant differences.

Cells in orange indicate an increase in values for source B3 whereas blue cells indicate higher values with the use of source B4. The cells that are not highlighted indicate that the difference is below 1JND.

CL-SI		
Receiver	IACC <sub>E3</sub> (JNDs)	LF <sub>E4</sub> (JNDs)
<b>Stonegate 1 B2-B3</b>		
1	<b>3.47</b>	0.2
2	<b>3.6</b>	0.6
3	<b>1.6</b>	0
<b>Stonegate 2 B2-B3</b>		
1	<b>2.93</b>	0.2
2	<b>3.47</b>	<b>1.4</b>
3	<b>1.07</b>	0.2
<b>Stonegate 3 B2-B3</b>		
1	<b>2</b>	0
2	<b>2.53</b>	0.2
3	0.13	0
<b>Stonegate 4 B2-B3</b>		
1	<b>3.07</b>	0.2
2	<b>1.2</b>	<b>1</b>
3	0.8	0.4

**Table 5.164** – Differences in IACC<sub>E3</sub> and LF<sub>E4</sub> results between sources B2 and B3 for the CL-SI wagon. Values in bold indicate significant differences.

Cells in orange indicate an increase in values for source B2 whereas blue cells indicate higher values with the use of source B3. The cells that are not highlighted indicate that the difference is below 1JND.

CL-SI		
Receiver	IACC <sub>E3</sub> (JNDs)	LF <sub>E4</sub> (JNDs)
<b>Stonegate 1 B2-B4</b>		
1	<b>3.2</b>	0.2
2	0.93	0.6
3	0.8	0.2
<b>Stonegate 2 B2-B4</b>		
1	<b>3.07</b>	0.2
2	0.67	0.6
3	0.27	0.2
<b>Stonegate 3 B2-B4</b>		
1	<b>2.4</b>	0.4
2	<b>1.33</b>	<b>1.2</b>
3	0.13	0.2
<b>Stonegate 4 B2-B4</b>		
1	<b>2.67</b>	0
2	<b>1.33</b>	0.4
3	0.4	0.2

**Table 5.165** – Differences in IACC<sub>E3</sub> and LF<sub>E4</sub> results between sources B2 and B4 for the CL-SI wagon. Values in bold indicate significant differences.

Cells in orange indicate an increase in values for source B2 whereas blue cells indicate higher values with the use of source B4. The cells that are not highlighted indicate that the difference is below 1JND.

CL-SI		
Receiver	IACC <sub>E3</sub> (JNDs)	LF <sub>E4</sub> (JNDs)
<b>Stonegate 1 B0-B3</b>		
1	<b>2.27</b>	0.8
2	<b>2.27</b>	0.6
3	<b>1.33</b>	0.4
<b>Stonegate 2 B0-B3</b>		
1	<b>1.33</b>	<b>1</b>
2	<b>2.27</b>	0.6
3	0.4	0.6
<b>Stonegate 3 B0-B3</b>		
1	0.93	<b>1</b>
2	0.67	<b>1</b>
3	<b>1.07</b>	0.4
<b>Stonegate 4 B0-B3</b>		
1	<b>2.67</b>	0.8
2	0.67	<b>2.2</b>
3	0.67	0.6

**Table 5.166** – Differences in IACC<sub>E3</sub> and LF<sub>E4</sub> results between sources B0 and B3 for the CL-SI wagon. Values in bold indicate significant differences.

Cells in orange indicate an increase in values for source B0 whereas blue cells indicate higher values with the use of source B3. The cells that are not highlighted indicate that the difference is below 1JND.

CL-SI		
Receiver	IACC <sub>E3</sub> (JNDs)	LF <sub>E4</sub> (JNDs)
<b>Stonegate 1 B1-B4</b>		
1	<b>3.2</b>	0
2	0.4	0.8
3	0.27	0.4
<b>Stonegate 2 B1-B4</b>		
1	<b>3.47</b>	0.8
2	0.8	0.6
3	0.53	0.6
<b>Stonegate 3 B1-B4</b>		
1	<b>2.27</b>	0.2
2	<b>1.33</b>	0.6
3	<b>1.73</b>	0
<b>Stonegate 4 B1-B4</b>		
1	<b>1.2</b>	0.6
2	0	0
3	<b>1.73</b>	0.4

**Table 5.167** – Differences in IACC<sub>E3</sub> and LF<sub>E4</sub> results between sources B1 and B4 for the CL-SI wagon. Values in bold indicate significant differences.

Cells in orange indicate an increase in values for source B1 whereas blue cells indicate higher values with the use of source B4. The cells that are not highlighted indicate that the difference is below 1JND.

Virtual Model	Percentage of results with significant differences when source positions for the CL-FR wagon are changed	
	T <sub>20</sub>	T <sub>30</sub>
B0-B1		
Stonegate 1	75%	75%

Stonegate 2	25%	25%
Stonegate 3	88%	88%
Stonegate 4	25%	25%
B0-B2		
Stonegate 1	38%	38%
Stonegate 2	50%	0%
Stonegate 3	50%	25%
Stonegate 4	38%	25%
B1-B2		
Stonegate 1	88%	63%
Stonegate 2	25%	13%
Stonegate 3	88%	63%
Stonegate 4	50%	50%
B3-B4		
Stonegate 1	38%	25%
Stonegate 2	50%	38%
Stonegate 3	13%	25%
Stonegate 4	13%	38%
B2-B3		
Stonegate 1	88%	63%
Stonegate 2	25%	25%
Stonegate 3	88%	100%
Stonegate 4	75%	88%
B2-B4		
Stonegate 1	88%	50%
Stonegate 2	38%	25%
Stonegate 3	75%	75%
Stonegate 4	63%	88%
B0-B3		
Stonegate 1	88%	63%
Stonegate 2	25%	38%
Stonegate 3	88%	88%
Stonegate 4	63%	63%
B1-B4		
Stonegate 1	63%	0%
Stonegate 2	38%	38%
Stonegate 3	75%	13%
Stonegate 4	75%	63%

**Table 5.168 – Impact of the change in source position of the CL-FR wagon on T<sub>20</sub> and T<sub>30</sub> values.**

CL-FR – T <sub>20</sub> (s) and T <sub>30</sub> (s)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1 B0	T20	0.53	0.57	0.54	0.56	0.51	0.42	0.34	0.27
	T30	0.57	0.57	0.56	0.57	0.54	0.45	0.36	0.29
Model 2 B0	T20	0.46	0.45	0.48	0.44	0.41	0.35	0.28	0.25
	T30	0.48	0.47	0.50	0.47	0.45	0.38	0.30	0.26
Model 3 B0	T20	0.61	0.58	0.65	0.64	0.61	0.5	0.38	0.31
	T30	0.69	0.64	0.66	0.68	0.65	0.53	0.41	0.32
Model 4 B0	T20	0.53	0.49	0.56	0.51	0.48	0.39	0.32	0.28
	T30	0.55	0.52	0.53	0.53	0.48	0.42	0.34	0.28
Model 1	T20	0.61	0.60	0.56	0.61	0.52	0.49	0.39	0.33

B1	T30	0.58	0.60	0.58	0.62	0.58	0.49	0.39	0.32
Model 2 B1	T20	0.47	0.48	0.45	0.45	0.42	0.37	0.30	0.27
	T30	0.44	0.48	0.47	0.47	0.43	0.38	0.31	0.26
Model 3 B1	T20	0.68	0.67	0.66	0.68	0.67	0.58	0.46	0.38
	T30	0.75	0.68	0.71	0.71	0.66	0.57	0.45	0.37
Model 4 B1	T20	0.6	0.51	0.51	0.5	0.47	0.41	0.32	0.28
	T30	0.58	0.51	0.53	0.53	0.48	0.42	0.53	0.27
Model 1 B2	T20	0.64	0.55	0.63	0.57	0.50	0.41	0.31	0.26
	T30	0.59	0.60	0.61	0.60	0.55	0.45	0.35	0.27
Model 2 B2	T20	0.53	0.47	0.54	0.45	0.43	0.38	0.31	0.27
	T30	0.50	0.48	0.49	0.45	0.44	0.38	0.31	0.26
Model 3 B2	T20	0.71	0.63	0.74	0.69	0.62	0.50	0.36	0.30
	T30	0.68	0.65	0.72	0.71	0.65	0.53	0.40	0.31
Model 4 B2	T20	0.49	0.54	0.57	0.49	0.45	0.38	0.31	0.27
	T30	0.48	0.54	0.53	0.5	0.49	0.4	0.33	0.27
Model 1 B3	T20	0.60	0.59	0.63	0.61	0.55	0.46	0.37	0.30
	T30	0.58	0.60	0.63	0.65	0.59	0.49	0.38	0.31
Model 2 B3	T20	0.52	0.49	0.46	0.46	0.39	0.36	0.3	0.25
	T30	0.52	0.51	0.46	0.47	0.43	0.38	0.30	0.25
Model 3 B3	T20	0.80	0.76	0.76	0.72	0.67	0.55	0.42	0.33
	T30	0.73	0.72	0.77	0.77	0.70	0.58	0.44	0.34
Model 4 B3	T20	0.55	0.59	0.57	0.54	0.51	0.44	0.35	0.29
	T30	0.53	0.61	0.60	0.56	0.53	0.46	0.36	0.29
Model 1 B4	T20	0.57	0.61	0.57	0.56	0.55	0.45	0.36	0.29
	T30	0.57	0.61	0.60	0.61	0.58	0.48	0.38	0.30
Model 2 B4	T20	0.51	0.53	0.47	0.51	0.44	0.38	0.32	0.28
	T30	0.48	0.51	0.49	0.51	0.44	0.38	0.32	0.27
Model 3 B4	T20	0.78	0.74	0.71	0.70	0.69	0.55	0.43	0.34
	T30	0.72	0.70	0.71	0.72	0.71	0.58	0.45	0.35
Model 4 B4	T20	0.55	0.56	0.55	0.55	0.50	0.43	0.36	0.29
	T30	0.59	0.57	0.56	0.56	0.52	0.44	0.36	0.29

**Table 5.169 – T<sub>20</sub> and T<sub>30</sub> values for the CL-FR wagon.**

CL-FR – T <sub>20</sub> (JNDs) and T <sub>30</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1 B0-B1	T20	<b>2.67</b>	<b>1</b>	0.67	<b>1.67</b>	0.33	<b>2.33</b>	<b>1.67</b>	<b>2</b>
	T30	0.33	<b>1</b>	0.67	<b>1.67</b>	<b>1.33</b>	<b>1.33</b>	<b>1</b>	<b>1</b>
Model 2 B0-B1	T20	0.33	<b>1</b>	<b>1</b>	0.33	0.33	0.67	0.67	0.67
	T30	<b>1.33</b>	0.33	<b>1</b>	0	0.67	0	0.33	0
Model 3 B0-B1	T20	<b>2.33</b>	<b>3</b>	0.33	<b>1.33</b>	<b>2</b>	<b>2.67</b>	<b>2.67</b>	<b>2.33</b>
	T30	<b>2</b>	<b>1.33</b>	<b>1.67</b>	<b>1</b>	0.33	<b>1.33</b>	<b>1.33</b>	<b>1.67</b>
Model 4 B0-B1	T20	<b>2.33</b>	0.67	<b>1.67</b>	0.33	0.33	0.67	0	0
	T30	<b>1</b>	0.33	0	0	0	0	<b>6.33</b>	0.33

**Table 5.170 – Differences in T<sub>20</sub> and T<sub>30</sub> results between sources B0 and B1 for the CL-FR wagon. Values in bold indicate significant differences. Cells in orange indicate an increase in values for source B0 whereas blue cells indicate higher values with the use of source B1. The cells that are not highlighted indicate that the difference is below 1JND.**

CL-FR – T <sub>20</sub> (JNDs) and T <sub>30</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1 B0-B2	T20	<b>3.67</b>	0.67	<b>3</b>	0.33	0.33	0.33	<b>1</b>	0.01
	T30	0.67	<b>1</b>	<b>1.67</b>	<b>1</b>	0.33	0	0.33	0.67
Model 2 B0-B2	T20	<b>2.33</b>	0.67	<b>2</b>	0.33	0.67	<b>1</b>	<b>1</b>	0.67
	T30	0.67	0.33	0.33	0.67	0.33	0	0.33	0
Model 3 B0-B2	T20	<b>3.33</b>	<b>1.67</b>	<b>3</b>	<b>1.67</b>	0.33	0	0.67	0.33
	T30	0.33	0.33	<b>2</b>	<b>1</b>	0	0	0.33	0.33
Model 4	T20	<b>1.33</b>	<b>1.67</b>	0.33	0.67	<b>1</b>	0.33	0.33	0.33

B0-B2	T30	<b>2.33</b>	0.67	0	<b>1</b>	0.33	0.67	0.33	0.33
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**Table 5.171** – Differences in T<sub>20</sub> and T<sub>30</sub> results between sources B0 and B2 for the CL-FR wagon. Values in bold indicate significant differences. Cells in orange indicate an increase in values for source B0 whereas blue cells indicate higher values with the use of source B2. The cells that are not highlighted indicate that the difference is below 1JND.

CL-FR – T <sub>20</sub> (JNDs) and T <sub>30</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1 B1-B2	T20	<b>1</b>	<b>1.67</b>	<b>2.33</b>	<b>1.33</b>	0.67	<b>2.67</b>	<b>2.67</b>	<b>2.33</b>
	T30	0.33	0	<b>1</b>	0.67	<b>1</b>	<b>1.33</b>	<b>1.33</b>	<b>1.67</b>
Model 2 B1-B2	T20	<b>2</b>	0.33	<b>3</b>	0	0.33	0.33	0.33	0
	T30	<b>2</b>	0	0.67	0.67	0.33	0	0	0
Model 3 B1-B2	T20	<b>1</b>	<b>1.33</b>	<b>2.67</b>	0.33	<b>1.67</b>	<b>2.67</b>	<b>3.33</b>	<b>2.67</b>
	T30	<b>1.75</b>	<b>1</b>	0.25	0	0.33	<b>1.33</b>	<b>1.67</b>	<b>2</b>
Model 4 B1-B2	T20	<b>3.67</b>	<b>1</b>	<b>2</b>	0.33	0.67	<b>1</b>	0.33	0.33
	T30	<b>3.33</b>	<b>1</b>	0	<b>1</b>	0.33	0.67	<b>6.67</b>	0

**Table 5.172** – Differences in T<sub>20</sub> and T<sub>30</sub> results between sources B1 and B2 for the CL-FR wagon. Values in bold indicate significant differences. Cells in orange indicate an increase in values for source B1 whereas blue cells indicate higher values with the use of source B2. The cells that are not highlighted indicate that the difference is below 1JND.

CL-FR – T <sub>20</sub> (JNDs) and T <sub>30</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1 B3-B4	T20	<b>1</b>	0.67	<b>2</b>	<b>1.67</b>	0	0.33	0.33	0.33
	T30	0.33	0.33	<b>1</b>	<b>1.33</b>	0.33	0.33	0	0.33
Model 2 B3-B4	T20	0.33	<b>1.33</b>	0.33	<b>1.67</b>	<b>1.67</b>	0.67	0.67	<b>1</b>
	T30	<b>1.33</b>	0	<b>1</b>	<b>1.33</b>	0.33	0	0.67	0.67
Model 3 B3-B4	T20	0.5	0.5	<b>1.25</b>	0.5	0.67	0	0.33	0.33
	T30	0.25	0.5	<b>1.5</b>	<b>1.25</b>	0.33	0	0.33	0.33
Model 4 B3-B4	T20	0	<b>1</b>	0.67	0.33	0.33	0.33	0.33	0
	T30	<b>2</b>	<b>1.33</b>	<b>1.33</b>	0	0.33	0.67	0	0

**Table 5.173** – Differences in T<sub>20</sub> and T<sub>30</sub> results between sources B3 and B4 for the CL-FR wagon. Values in bold indicate significant differences. Cells in orange indicate an increase in values for source B3 whereas blue cells indicate higher values with the use of source B4. The cells that are not highlighted indicate that the difference is below 1JND.

CL-FR – T <sub>20</sub> (JNDs) and T <sub>30</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1 B2-B3	T20	<b>1.33</b>	<b>1.33</b>	0	<b>1.33</b>	<b>1.67</b>	<b>1.67</b>	2	<b>1.33</b>
	T30	0.33	0	0.67	<b>1.67</b>	<b>1.33</b>	<b>1.33</b>	<b>1</b>	<b>1.33</b>
Model 2 B2-B3	T20	0.33	0.67	<b>2.67</b>	0.33	<b>1.33</b>	0.67	0.33	0.67
	T30	0.67	<b>1</b>	<b>1</b>	0.67	0.33	0	0.33	0.33
Model 3 B2-B3	T20	<b>2.25</b>	<b>4.33</b>	0.5	<b>1</b>	<b>1.67</b>	<b>1.67</b>	2	<b>1</b>
	T30	<b>1.67</b>	<b>2.33</b>	<b>1.25</b>	<b>1.5</b>	<b>1.67</b>	<b>1.67</b>	<b>1.33</b>	<b>1</b>
Model 4 B2-B3	T20	<b>2</b>	<b>1.67</b>	0	<b>1.67</b>	2	2	<b>1.33</b>	0.67
	T30	<b>1.67</b>	<b>2.33</b>	<b>2.33</b>	2	<b>1.33</b>	2	<b>1</b>	0.67

**Table 5.174** – Differences in T<sub>20</sub> and T<sub>30</sub> results between sources B2 and B3 for the CL-FR wagon. Values in bold indicate significant differences. Cells in orange indicate an increase in values for source B2 whereas blue cells

indicate higher values with the use of source B3. The cells that are not highlighted indicate that the difference is below 1JND.

CL-FR – T <sub>20</sub> (JNDs) and T <sub>30</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1 B2-B4	T20	<b>2.33</b>	<b>2</b>	<b>2</b>	0.33	<b>1.67</b>	<b>1.33</b>	<b>1.67</b>	<b>1</b>
	T30	0.67	0.33	0.33	0.33	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
Model 2 B2-B4	T20	0.67	<b>2</b>	<b>2.33</b>	<b>2</b>	0.33	0	0.33	0.33
	T30	0.67	<b>1</b>	0	<b>2</b>	0	0	0.33	0.33
Model 3 B2-B4	T20	<b>1.75</b>	<b>3.67</b>	0.75	0.33	<b>2.33</b>	<b>1.67</b>	<b>2.33</b>	<b>1.33</b>
	T30	<b>1.33</b>	<b>1.67</b>	0.25	0.25	<b>2</b>	<b>1.67</b>	<b>1.67</b>	<b>1.33</b>
Model 4 B2-B4	T20	2	0.67	0.67	<b>2</b>	<b>1.67</b>	<b>1.67</b>	<b>1.67</b>	0.67
	T30	<b>3.67</b>	<b>1</b>	<b>1</b>	2	1	<b>1.33</b>	1	0.67

**Table 5.175** – Differences in T<sub>20</sub> and T<sub>30</sub> results between sources B2 and B4 for the CL-FR wagon. Values in bold indicate significant differences. Cells in orange indicate an increase in values for source B2 whereas blue cells indicate higher values with the use of source B4. The cells that are not highlighted indicate that the difference is below 1JND.

CL-FR – T <sub>20</sub> (JNDs) and T <sub>30</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1 B0-B3	T20	<b>2.33</b>	0.67	<b>3</b>	<b>1.67</b>	<b>1.33</b>	<b>1.33</b>	<b>1</b>	<b>1</b>
	T30	0.33	<b>1</b>	<b>2.33</b>	<b>2.67</b>	<b>1.67</b>	<b>1.33</b>	0.67	0.67
Model 2 B0-B3	T20	<b>2</b>	<b>1.33</b>	0.67	0.67	0.67	0.33	0.67	0
	T30	<b>1.33</b>	<b>1.33</b>	<b>1.33</b>	0	0.67	0	0	0.33
Model 3 B0-B3	T20	<b>6.33</b>	6	<b>3.67</b>	<b>2.67</b>	<b>2</b>	<b>1.67</b>	<b>1.33</b>	0.67
	T30	<b>1.33</b>	<b>2.67</b>	<b>3.67</b>	<b>3</b>	<b>1.67</b>	<b>1.67</b>	<b>1</b>	0.67
Model 4 B0-B3	T20	0.67	<b>3.33</b>	0.33	<b>1</b>	<b>1</b>	<b>1.67</b>	<b>1</b>	0.33
	T30	0.67	<b>3</b>	<b>2.33</b>	<b>1</b>	<b>1.67</b>	<b>1.33</b>	0.67	0.33

**Table 5.176** – Differences in T<sub>20</sub> and T<sub>30</sub> results between sources B0 and B3 for the CL-FR wagon. Values in bold indicate significant differences. Cells in orange indicate an increase in values for source B0 whereas blue cells indicate higher values with the use of source B3. The cells that are not highlighted indicate that the difference is below 1JND.

CL-FR – T <sub>20</sub> (JNDs) and T <sub>30</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1 B1-B4	T20	<b>1.33</b>	<b>1.33</b>	<b>1</b>	0	<b>1.33</b>	<b>1</b>	0.67	0.67
	T30	0.33	0.33	0.67	0.33	0	0.33	0.33	0.67
Model 2 B1-B4	T20	<b>1.33</b>	<b>1.67</b>	0.67	<b>2</b>	0.67	0.33	0.67	0.33
	T30	<b>1.33</b>	<b>1</b>	0.67	<b>1.33</b>	0.33	0	0.33	0.33
Model 3 B1-B4	T20	<b>3.33</b>	<b>2.33</b>	<b>1.67</b>	0.67	0.67	<b>1</b>	<b>1</b>	<b>1.33</b>
	T30	0.75	0.67	0	0.25	<b>1.67</b>	0.33	0	0.67
Model 4 B1-B4	T20	<b>1.67</b>	<b>1.67</b>	<b>1.33</b>	<b>1.67</b>	<b>1</b>	0.67	<b>1.33</b>	0.33
	T30	0.33	<b>2</b>	<b>1</b>	<b>1</b>	<b>1.33</b>	0.67	<b>5.67</b>	0.67

**Table 5.177** – Differences in T<sub>20</sub> and T<sub>30</sub> results between sources B1 and B4 for the CL-FR wagon. Values in bold indicate significant differences. Cells in orange indicate an increase in values for source B1 whereas blue cells indicate higher values with the use of source B4. The cells that are not highlighted indicate that the difference is below 1JND.

Virtual Model	Percentage of results with significant differences when source positions for the CL-FR wagon are changed	
	C <sub>50</sub>	C <sub>80</sub>
B0-B1		
Stonegate 1	75%	75%
Stonegate 2	88%	88%
Stonegate 3	100%	88%
Stonegate 4	63%	38%
B0-B2		
Stonegate 1	63%	50%
Stonegate 2	63%	50%
Stonegate 3	88%	88%
Stonegate 4	63%	88%
B1-B2		
Stonegate 1	100%	100%
Stonegate 2	100%	100%
Stonegate 3	100%	88%
Stonegate 4	100%	100%
B3-B4		
Stonegate 1	13%	0%
Stonegate 2	25%	25%
Stonegate 3	13%	13%
Stonegate 4	13%	38%
B2-B3		
Stonegate 1	88%	88%
Stonegate 2	100%	100%
Stonegate 3	88%	100%
Stonegate 4	100%	100%
B2-B4		
Stonegate 1	88%	88%
Stonegate 2	100%	88%
Stonegate 3	88%	88%
Stonegate 4	100%	100%
B0-B3		
Stonegate 1	88%	88%
Stonegate 2	88%	88%
Stonegate 3	75%	63%
Stonegate 4	88%	75%
B1-B4		
Stonegate 1	50%	88%
Stonegate 2	75%	75%
Stonegate 3	63%	38%
Stonegate 4	75%	88%

**Table 5.178 – Impact of the change in source position of the CL-FR wagon on C<sub>50</sub> and C<sub>80</sub> values.**

CL-FR – C <sub>50</sub> (dB) and C <sub>80</sub> (dB)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1	C <sub>50</sub>	4.68	3.77	6.28	9.14	11.4	13.57	16.91	19.04

B0	C80	7.68	7.84	9.77	12.28	15.36	17.22	21.33	24.49
Model 2 B0	C50	5.55	5.5	8.73	11	12.28	14.64	17.72	19.62
	C80	9.94	9.54	12.9	14.87	17.05	19.19	23.17	25.61
Model 3 B0	C50	4.16	2.6	5.29	7.82	9.62	11.96	15.6	17.63
	C80	7.18	7.6	8.54	11.31	13.23	15.37	19.7	22.55
Model 4 B0	C50	5.53	4.52	6.86	9.38	11.42	13.73	17.08	18.41
	C80	9.56	9.99	10.35	13.22	15.17	17.92	21.77	24.53
Model 1 B1	C50	4.21	3.63	4.53	7.01	8.57	9.91	12.9	14.27
	C80	7.68	8.15	8.36	10.45	11.67	13.47	17.3	19.88
Model 2 B1	C50	6.43	6.77	6.86	9.35	11.15	12.86	15.34	16.68
	C80	9.58	10.82	11.66	13.51	15.58	17.72	20.94	23.15
Model 3 B1	C50	2.7	4	4.05	6.31	7.67	9.52	12.51	14.89
	C80	8.28	7.42	7.02	8.91	10.04	12.3	16.06	18.77
Model 4 B1	C50	3.83	6.43	7.14	8.92	10.68	12.48	15.22	15.98
	C80	9.8	9.62	10.11	12.96	14.49	16.65	20.61	22.58
Model 1 B2	C50	7.79	9.16	9.85	11.51	12.73	14.49	17.57	19.05
	C80	10.37	12.9	13.9	14.9	16.27	18.16	22.32	24.94
Model 2 B2	C50	8.25	11.13	11.65	11.48	13.43	14.57	17.23	18.52
	C80	13.25	15.51	14.88	16.03	17.66	18.99	22.49	25.18
Model 3 B2	C50	6.83	7.02	8.7	10.08	12.06	13.95	16.96	18.13
	C80	8.88	9.65	10.94	13.48	15.06	17.22	21.07	23.39
Model 4 B2	C50	5.71	10.36	11.12	11.72	14.06	15.33	18.16	19.16
	C80	13.66	14.92	13.99	15.18	17.79	19.27	22.89	25.23
Model 1 B3	C50	8.03	7.76	7.36	7.81	8.46	8.79	11.05	12.45
	C80	10.97	10.54	10.78	11.65	12.39	13.8	16.76	19.15
Model 2 B3	C50	9.81	8.49	8.5	9.37	10.08	11.4	13.09	14.14
	C80	14.64	12.52	12.93	13.47	14.99	16.36	19.11	21.2
Model 3 B3	C50	3.44	4.61	5.4	4.76	6.28	6.96	9.22	10.84
	C80	7.76	7.8	8.02	7.49	9.51	11.12	14.23	17.2
Model 4 B3	C50	4.41	6.78	6.94	7.34	8.75	9.46	11.25	12.23
	C80	6.98	9.8	10.74	10.7	12.74	13.57	16.95	18.66
Model 1 B4	C50	7.33	7.44	7.65	7.65	9.16	10.14	12.06	12.11
	C80	10.79	11.03	10.32	11.66	13.08	14.52	17.18	18.79
Model 2 B4	C50	10.49	8.04	9.69	9.57	10.48	11.07	12.54	12.89
	C80	13.52	12.89	13.81	12.91	14.65	16.2	18.72	19.95
Model 3 B4	C50	6.09	4.81	5.66	5.42	6.88	7.92	9.78	11.2
	C80	8.68	7.91	8.77	8.77	10.39	11.65	14.39	16.77
Model 4 B4	C50	8.02	6.28	7.59	7.58	9.38	10.3	11.6	12.75
	C80	11.73	10.88	10.99	11.35	13.24	14.99	17	19.28

**Table 5.179 – C<sub>50</sub> and C<sub>80</sub> values for the CL-FR wagon.**

CL-FR – C <sub>50</sub> (JNDs) and C <sub>80</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1 B0-B1	C50	0.43	0.13	<b>1.59</b>	<b>1.94</b>	<b>2.57</b>	<b>3.33</b>	<b>3.65</b>	<b>4.34</b>
	C80	0	0.31	<b>1.41</b>	<b>1.83</b>	<b>3.69</b>	<b>3.75</b>	<b>4.03</b>	<b>4.61</b>
Model 2 B0-B1	C50	0.8	<b>1.15</b>	<b>1.7</b>	<b>1.5</b>	<b>1.03</b>	<b>1.62</b>	<b>2.16</b>	<b>2.67</b>
	C80	0.36	<b>1.28</b>	<b>1.24</b>	<b>1.36</b>	<b>1.47</b>	<b>1.47</b>	<b>2.23</b>	<b>2.46</b>
Model 3 B0-B1	C50	<b>1.33</b>	<b>1.27</b>	<b>1.13</b>	<b>1.37</b>	<b>1.77</b>	<b>2.22</b>	<b>2.81</b>	<b>2.49</b>
	C80	<b>1.1</b>	0.18	<b>1.52</b>	<b>2.4</b>	<b>3.19</b>	<b>3.07</b>	<b>3.64</b>	<b>3.78</b>
Model 4 B0-B1	C50	<b>1.55</b>	<b>1.74</b>	0.25	0.42	0.67	<b>1.14</b>	<b>1.69</b>	<b>2.21</b>
	C80	0.24	0.37	0.24	0.26	0.68	<b>1.27</b>	<b>1.16</b>	<b>1.95</b>

**Table 5.180 – Differences in C<sub>50</sub> and C<sub>80</sub> results between sources B0 and B1 for the CL-FR wagon. Values in bold indicate significant differences. Cells in orange indicate an increase in values for source B0 whereas blue cells indicate higher values with the use of source B1. The cells that are not highlighted indicate that the difference is below 1JND.**

CL-FR – C <sub>50</sub> (JNDs) and C <sub>80</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1 B0-B2	C50	<b>2.83</b>	<b>4.9</b>	<b>3.25</b>	<b>2.15</b>	<b>1.21</b>	0.84	0.6	0.01
	C80	<b>2.69</b>	<b>5.06</b>	<b>4.13</b>	<b>2.62</b>	0.91	0.94	0.99	0.45
Model 2 B0-B2	C50	<b>2.45</b>	<b>5.12</b>	<b>2.65</b>	0.44	<b>1.05</b>	0.06	0.45	<b>1</b>
	C80	<b>3.31</b>	<b>5.97</b>	<b>1.98</b>	<b>1.16</b>	0.61	0.2	0.68	0.43
Model 3 B0-B2	C50	<b>2.43</b>	<b>4.02</b>	<b>3.1</b>	<b>2.05</b>	<b>2.22</b>	<b>1.81</b>	<b>1.24</b>	0.45
	C80	<b>1.7</b>	<b>2.05</b>	<b>2.4</b>	<b>2.17</b>	<b>1.83</b>	<b>1.85</b>	<b>1.37</b>	0.84
Model 4 B0-B2	C50	0.16	<b>5.31</b>	<b>3.87</b>	<b>2.13</b>	<b>2.4</b>	<b>1.45</b>	0.98	0.68
	C80	<b>4.1</b>	<b>4.93</b>	<b>3.64</b>	<b>1.96</b>	<b>2.62</b>	<b>1.35</b>	<b>1.12</b>	0.7

**Table 5.181** – Differences in C<sub>50</sub> and C<sub>80</sub> results between sources B0 and B2 for the CL-FR wagon. Values in bold indicate significant differences. Cells in orange indicate an increase in values for source B0 whereas blue cells indicate higher values with the use of source B2. The cells that are not highlighted indicate that the difference is below 1JND.

CL-FR – C <sub>50</sub> (JNDs) and C <sub>80</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1 B1-B2	C50	<b>3.25</b>	<b>5.03</b>	<b>4.84</b>	<b>4.09</b>	<b>3.78</b>	<b>4.16</b>	<b>4.25</b>	<b>4.35</b>
	C80	<b>2.69</b>	<b>4.75</b>	<b>5.54</b>	<b>4.45</b>	<b>4.6</b>	<b>4.69</b>	<b>5.02</b>	<b>5.06</b>
Model 2 B1-B2	C50	<b>1.65</b>	<b>3.96</b>	<b>4.35</b>	<b>1.94</b>	<b>2.07</b>	<b>1.55</b>	<b>1.72</b>	<b>1.67</b>
	C80	<b>3.67</b>	<b>4.69</b>	<b>3.22</b>	<b>2.52</b>	<b>2.08</b>	<b>1.27</b>	<b>1.55</b>	<b>2.03</b>
Model 3 B1-B2	C50	<b>3.75</b>	<b>2.75</b>	<b>4.23</b>	<b>3.43</b>	<b>3.99</b>	<b>4.03</b>	<b>4.05</b>	<b>2.95</b>
	C80	0.6	<b>2.23</b>	<b>3.92</b>	<b>4.57</b>	<b>5.02</b>	<b>4.92</b>	<b>5.01</b>	<b>4.62</b>
Model 4 B1-B2	C50	<b>1.71</b>	<b>3.57</b>	<b>3.62</b>	<b>2.55</b>	<b>3.07</b>	<b>2.59</b>	<b>2.67</b>	<b>2.89</b>
	C80	<b>3.86</b>	<b>5.3</b>	<b>3.88</b>	<b>2.22</b>	<b>3.3</b>	<b>2.62</b>	<b>2.28</b>	<b>2.65</b>

**Table 5.182** – Differences in C<sub>50</sub> and C<sub>80</sub> results between sources B1 and B2 for the CL-FR wagon. Values in bold indicate significant differences. Cells in blue indicate higher values with the use of source B2. The cells that are not highlighted indicate that the difference is below 1JND.

CL-FR – C <sub>50</sub> (JNDs) and C <sub>80</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1 B3-B4	C50	0.64	0.29	0.26	0.15	0.64	<b>1.23</b>	0.92	0.31
	C80	0.18	0.49	0.46	0.01	0.69	0.72	0.42	0.36
Model 2 B3-B4	C50	0.62	0.41	<b>1.08</b>	0.18	0.36	0.3	0.5	<b>1.14</b>
	C80	<b>1.12</b>	0.37	0.88	0.56	0.34	0.16	0.39	<b>1.25</b>
Model 3 B3-B4	C50	<b>2.41</b>	0.18	0.24	0.6	0.55	0.87	0.51	0.33
	C80	0.92	0.11	0.75	<b>1.28</b>	0.88	0.53	0.16	0.43
Model 4 B3-B4	C50	<b>3.28</b>	0.45	0.59	0.22	0.57	0.76	0.32	0.47
	C80	<b>4.75</b>	<b>1.08</b>	0.25	0.65	0.5	<b>1.42</b>	0.05	0.62

**Table 5.183** – Differences in C<sub>80</sub> and C<sub>80</sub> results between sources B3 and B4 for the CL-FR wagon. Values in bold indicate significant differences. Cells in orange indicate an increase in values for source B3 whereas blue cells indicate higher values with the use of source B4. The cells that are not highlighted indicate that the difference is below 1JND.

CL-FR – C <sub>50</sub> (JNDs) and C <sub>80</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1 B2-B3	C50	0.22	<b>1.27</b>	<b>2.26</b>	<b>3.36</b>	<b>3.88</b>	<b>5.18</b>	<b>5.93</b>	<b>6</b>
	C80	0.6	<b>2.36</b>	<b>3.12</b>	<b>3.25</b>	<b>3.88</b>	<b>4.36</b>	<b>5.56</b>	<b>5.79</b>
Model 2 B2-B3	C50	<b>1.42</b>	<b>2.4</b>	<b>2.86</b>	<b>1.92</b>	<b>3.05</b>	<b>2.88</b>	<b>3.76</b>	<b>3.98</b>
	C80	<b>1.39</b>	<b>2.99</b>	<b>1.95</b>	<b>2.56</b>	<b>2.67</b>	<b>2.63</b>	<b>3.38</b>	<b>3.98</b>
Model 3	C50	<b>3.08</b>	<b>2.19</b>	<b>3</b>	<b>4.84</b>	<b>5.25</b>	<b>6.35</b>	<b>7.04</b>	<b>6.63</b>

B2-B3	C80	<b>1.12</b>	<b>1.85</b>	<b>2.92</b>	<b>5.99</b>	<b>5.55</b>	<b>6.1</b>	<b>6.84</b>	<b>6.19</b>
Model 4	C50	<b>1.18</b>	<b>3.25</b>	<b>3.8</b>	<b>3.98</b>	<b>4.83</b>	<b>5.34</b>	<b>6.28</b>	<b>6.3</b>
B2-B3	C80	<b>6.68</b>	<b>5.12</b>	<b>3.25</b>	<b>4.48</b>	<b>5.05</b>	<b>5.7</b>	<b>5.94</b>	<b>6.57</b>

**Table 5.184** – Differences in C<sub>50</sub> and C<sub>80</sub> results between sources B2 and B3 for the CL-FR wagon. Values in bold indicate significant differences. Cells in orange indicate an increase in values for source B2 whereas blue cells indicate higher values with the use of source B3. The cells that are not highlighted indicate that the difference is below 1JND.

CL-FR – C <sub>50</sub> (JNDs) and C <sub>80</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1	C50	0.42	<b>1.56</b>	<b>2</b>	<b>3.51</b>	<b>3.25</b>	<b>3.95</b>	<b>5.01</b>	<b>6.31</b>
	C80	0.42	<b>1.87</b>	<b>3.58</b>	<b>3.24</b>	<b>3.19</b>	<b>3.64</b>	<b>5.14</b>	<b>6.15</b>
Model 2	C50	<b>2.04</b>	<b>2.81</b>	<b>1.78</b>	<b>1.74</b>	<b>2.68</b>	<b>3.18</b>	<b>4.26</b>	<b>5.12</b>
	C80	0.27	<b>2.62</b>	<b>1.07</b>	<b>3.12</b>	<b>3.01</b>	<b>2.79</b>	<b>3.77</b>	<b>5.23</b>
Model 3	C50	0.67	<b>2.01</b>	<b>2.76</b>	<b>4.24</b>	<b>4.71</b>	<b>5.48</b>	<b>6.53</b>	<b>6.3</b>
	C80	0.2	<b>1.74</b>	<b>2.17</b>	<b>4.71</b>	<b>4.67</b>	<b>5.57</b>	<b>6.68</b>	<b>6.62</b>
Model 4	C50	<b>2.1</b>	<b>3.71</b>	<b>3.21</b>	<b>3.76</b>	<b>4.25</b>	<b>4.57</b>	<b>5.96</b>	<b>5.83</b>
	C80	<b>1.93</b>	<b>4.04</b>	<b>3</b>	<b>3.83</b>	<b>4.55</b>	<b>4.28</b>	<b>5.89</b>	<b>5.95</b>

**Table 5.185** – Differences in C<sub>50</sub> and C<sub>80</sub> results between sources B2 and B4 for CL-FR wagon. Values in bold indicate significant differences. Cells in orange indicate an increase in values for source B2 whereas blue cells indicate higher values with the use of source B4. The cells that are not highlighted indicate that the difference is below 1JND.

CL-FR – C <sub>50</sub> (JNDs) and C <sub>80</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1	C50	<b>3.05</b>	<b>3.63</b>	0.98	<b>1.21</b>	<b>2.67</b>	<b>4.35</b>	<b>5.33</b>	<b>5.99</b>
	C80	<b>3.29</b>	<b>2.7</b>	<b>1.01</b>	0.63	<b>2.97</b>	<b>3.42</b>	<b>4.57</b>	<b>5.34</b>
Model 2	C50	<b>3.87</b>	<b>2.72</b>	0.21	<b>1.48</b>	<b>2</b>	<b>2.95</b>	<b>4.21</b>	<b>4.98</b>
	C80	<b>4.7</b>	<b>2.98</b>	0.03	<b>1.4</b>	<b>2.06</b>	<b>2.83</b>	<b>4.06</b>	<b>4.41</b>
Model 3	C50	0.65	<b>1.83</b>	0.1	<b>2.78</b>	<b>3.04</b>	<b>4.55</b>	<b>5.8</b>	<b>6.17</b>
	C80	0.58	0.2	0.52	<b>3.82</b>	<b>3.72</b>	<b>4.25</b>	<b>5.47</b>	<b>5.35</b>
Model 4	C50	<b>1.02</b>	<b>2.05</b>	0.07	<b>1.85</b>	<b>2.43</b>	<b>3.88</b>	<b>5.3</b>	<b>5.62</b>
	C80	<b>2.58</b>	0.19	0.39	<b>2.52</b>	<b>2.43</b>	<b>4.35</b>	<b>4.82</b>	<b>5.87</b>

**Table 5.186** – Differences in C<sub>50</sub> and C<sub>80</sub> results between sources B0 and B3 for CL-FR wagon. Values in bold indicate significant differences. Cells in orange indicate an increase in values for source B0 whereas blue cells indicate higher values with the use of source B3. The cells that are not highlighted indicate that the difference is below 1JND.

CL-FR – C <sub>50</sub> (JNDs) and C <sub>80</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1	C50	<b>2.84</b>	<b>3.46</b>	<b>2.84</b>	0.58	0.54	0.21	0.76	<b>1.96</b>
	C80	<b>3.11</b>	<b>2.88</b>	<b>1.96</b>	<b>1.21</b>	<b>1.41</b>	<b>1.05</b>	0.12	<b>1.09</b>
Model 2	C50	<b>3.69</b>	<b>1.15</b>	<b>2.57</b>	0.2	0.61	<b>1.63</b>	<b>2.55</b>	<b>3.45</b>
	C80	<b>3.94</b>	<b>2.07</b>	<b>2.15</b>	0.6	0.93	<b>1.52</b>	2.22	3.2
Model 3	C50	<b>3.08</b>	0.74	<b>1.46</b>	0.81	0.72	<b>1.45</b>	<b>2.48</b>	<b>3.35</b>
	C80	0.4	0.49	<b>1.75</b>	0.14	0.35	0.65	<b>1.67</b>	2
Model 4	C50	<b>3.81</b>	0.14	0.41	<b>1.22</b>	<b>1.18</b>	<b>1.98</b>	<b>3.29</b>	<b>2.94</b>
	C80	<b>1.93</b>	<b>1.26</b>	0.88	<b>1.61</b>	<b>1.25</b>	<b>1.66</b>	<b>3.61</b>	3.3

**Table 5.187** – Differences in C<sub>50</sub> and C<sub>80</sub> results between sources B1 and B4 for CL-FR wagon. Values in bold indicate significant differences. Cells in

orange indicate an increase in values for source B1 whereas blue cells indicate higher values with the use of source B4. The cells that are not highlighted indicate that the difference is below 1JND.

Virtual Model	Percentage of results with significant differences when source positions for the CL-FR wagon are changed	
	IACC <sub>E3</sub>	LF <sub>E4</sub>
B0-B1		
Stonegate 1	33%	0%
Stonegate 2	33%	0%
Stonegate 3	33%	33%
Stonegate 4	33%	33%
B0-B2		
Stonegate 1	67%	0%
Stonegate 2	100%	33%
Stonegate 3	100%	0%
Stonegate 4	100%	33%
B1-B2		
Stonegate 1	67%	0%
Stonegate 2	100%	33%
Stonegate 3	100%	0%
Stonegate 4	100%	33%
B3-B4		
Stonegate 1	0%	67%
Stonegate 2	0%	33%
Stonegate 3	33%	0%
Stonegate 4	0%	0%
B2-B3		
Stonegate 1	67%	33%
Stonegate 2	100%	67%
Stonegate 3	100%	33%
Stonegate 4	100%	67%
B2-B4		
Stonegate 1	67%	67%
Stonegate 2	67%	33%
Stonegate 3	100%	33%
Stonegate 4	100%	67%
B0-B3		
Stonegate 1	100%	67%
Stonegate 2	100%	33%
Stonegate 3	100%	67%
Stonegate 4	100%	100%
B1-B4		
Stonegate 1	100%	67%
Stonegate 2	67%	0%
Stonegate 3	67%	33%
Stonegate 4	67%	67%

**Table 5.188 – Impact of the change in source position of the CL-FR wagon on IACC<sub>E3</sub> and LF<sub>E4</sub> values.**

CL-FR		
Receiver	IACC <sub>E3</sub>	LF <sub>E4</sub>
<b>Stonegate 1- B0</b>		
1	0.4	0.15
2	0.5	0.1
3	0.47	0.2
<b>Stonegate 2- B0</b>		
1	0.48	0.15
2	0.52	0.07
3	0.45	0.15
<b>Stonegate 3- B0</b>		
1	0.47	0.19
2	0.49	0.08
3	0.45	0.13
<b>Stonegate 4- B0</b>		
1	0.45	0.15
2	0.55	0.06
3	0.48	0.25
<b>Stonegate 1- B1</b>		
1	0.45	0.13
2	0.46	0.08
3	0.28	0.2
<b>Stonegate 2- B1</b>		
1	0.46	0.17
2	0.46	0.07
3	0.35	0.15
<b>Stonegate 3- B1</b>		
1	0.44	0.14
2	0.44	0.1
3	0.35	0.15
<b>Stonegate 4- B1</b>		
1	0.48	0.13
2	0.49	0.06
3	0.27	0.16
<b>Stonegate 1- B2</b>		
1	0.42	0.14
2	0.59	0.07
3	0.39	0.17
<b>Stonegate 2- B2</b>		
1	0.57	0.09
2	0.61	0.07
3	0.58	0.13
<b>Stonegate 3- B2</b>		
1	0.57	0.16
2	0.61	0.06
3	0.61	0.13
<b>Stonegate 4- B2</b>		
1	0.58	0.11
2	0.63	0.06
3	0.6	0.11
<b>Stonegate 1- B3</b>		
1	0.27	0.13
2	0.26	0.17
3	0.33	0.13
<b>Stonegate 2- B3</b>		
1	0.33	0.17
2	0.25	0.18
3	0.36	0.16
<b>Stonegate 3- B3</b>		
1	0.33	0.13
2	0.27	0.19
3	0.33	0.15

Stonegate 4- B3		
1	0.31	0.25
2	0.23	0.16
3	0.32	0.14
Stonegate 1- B4		
1	0.24	0.19
2	0.27	0.12
3	0.35	0.14
Stonegate 2- B4		
1	0.28	0.18
2	0.31	0.11
3	0.36	0.15
Stonegate 3- B4		
1	0.25	0.17
2	0.33	0.18
3	0.28	0.15
Stonegate 4- B4		
1	0.31	0.21
2	0.3	0.17
3	0.36	0.14

**Table 5.189** – IACC<sub>E3</sub> and LF<sub>E4</sub> values for the CL-FR wagon.

CL-FR		
Receiver	IACC <sub>E3</sub> (JNDs)	LF <sub>E4</sub> (JNDs)
<b>Stonegate 1 B0-B1</b>		
1	0.67	0.4
2	0.53	0.4
3	<b>2.53</b>	0
<b>Stonegate 2 B0-B1</b>		
1	0.27	0.4
2	0.8	0
3	<b>1.33</b>	0
<b>Stonegate 3 B0-B1</b>		
1	0.4	<b>1</b>
2	0.67	0.4
3	<b>1.33</b>	0.4
<b>Stonegate 4 B0-B1</b>		
1	0.4	0.4
2	0.8	0
3	<b>2.8</b>	<b>1.8</b>

**Table 5.190** – Differences in IACC<sub>E3</sub> and LF<sub>E4</sub> results between sources B0 and B1 for the CL-FR wagon. Values in bold indicate significant differences. Cells in orange indicate an increase in values for source B0. The cells that are not highlighted indicate that the difference is below 1JND.

CL-FR		
Receiver	IACC <sub>E3</sub> (JNDs)	LF <sub>E4</sub> (JNDs)
<b>Stonegate 1 B0-B2</b>		
1	0.27	0.2
2	<b>1.2</b>	0.6
3	<b>1.07</b>	0.6
<b>Stonegate 2 B0-B2</b>		
1	<b>1.2</b>	<b>1.2</b>
2	<b>1.2</b>	0
3	<b>1.73</b>	0.4
<b>Stonegate 3 B0-B2</b>		
1	<b>1.33</b>	0.6
2	<b>1.6</b>	0.4
3	<b>2.13</b>	0
<b>Stonegate 4 B0-B2</b>		
1	<b>1.73</b>	0.8

2	<b>1.07</b>	0
3	<b>1.6</b>	<b>2.8</b>

**Table 5.191** – Differences in IACC<sub>E3</sub> and LF<sub>E4</sub> results between sources B0 and B2 for the CL-FR wagon. Values in bold indicate significant differences.

Cells in orange indicate an increase in values for source B0 whereas blue cells indicate higher values with the use of source B2. The cells that are not highlighted indicate that the difference is below 1JND.

CL-FR		
Receiver	IACC <sub>E3</sub> (JNDs)	LF <sub>E4</sub> (JNDs)
<b>Stonegate 1 B1-B2</b>		
1	0.4	0.2
2	<b>1.73</b>	0.2
3	<b>1.47</b>	0.6
<b>Stonegate 2 B1-B2</b>		
1	<b>1.47</b>	<b>1.6</b>
2	2	0
3	<b>3.07</b>	0.4
<b>Stonegate 3 B1-B2</b>		
1	<b>1.73</b>	0.4
2	<b>2.27</b>	0.8
3	<b>3.47</b>	0.4
<b>Stonegate 4 B1-B2</b>		
1	<b>1.33</b>	0.4
2	<b>1.87</b>	0
3	<b>4.4</b>	<b>1</b>

**Table 5.192** – Differences in IACC<sub>E3</sub> and LF<sub>E4</sub> results between sources B1 and B2 for the CL-FR wagon. Values in bold indicate significant differences.

Cells in orange indicate an increase in values for source B1 whereas blue cells indicate higher values with the use of source B2. The cells that are not highlighted indicate that the difference is below 1JND.

CL-FR		
Receiver	IACC <sub>E3</sub> (JNDs)	LF <sub>E4</sub> (JNDs)
<b>Stonegate 1 B3-B4</b>		
1	0.4	<b>1.2</b>
2	0.13	<b>1</b>
3	0.27	0.2
<b>Stonegate 2 B3-B4</b>		
1	0.67	0.2
2	0.8	<b>1.4</b>
3	0	0.2
<b>Stonegate 3 B3-B4</b>		
1	<b>1.07</b>	0.8
2	0.8	0.2
3	0.67	0
<b>Stonegate 4 B3-B4</b>		
1	0	0.8
2	0.93	0.2
3	0.53	0

**Table 5.193** – Differences in IACC<sub>E3</sub> and LF<sub>E4</sub> results between sources B3 and B4 for the CL-FR wagon. Values in bold indicate significant differences.

Cells in orange indicate an increase in values for source B3 whereas blue cells indicate higher values with the use of source B4. The cells that are not highlighted indicate that the difference is below 1JND.

CL-FR		
Receiver	IACC <sub>E3</sub> (JNDs)	LF <sub>E4</sub> (JNDs)

Stonegate 1 B2-B3		
1	<b>2</b>	0.2
2	<b>4.4</b>	<b>2</b>
3	0.8	0.8
Stonegate 2 B2-B3		
1	<b>3.2</b>	<b>1.6</b>
2	<b>4.8</b>	<b>2.2</b>
3	<b>2.93</b>	0.6
Stonegate 3 B2-B3		
1	<b>3.2</b>	0.6
2	<b>4.53</b>	<b>2.6</b>
3	<b>3.73</b>	0.4
Stonegate 4 B2-B3		
1	<b>3.6</b>	<b>2.8</b>
2	<b>5.33</b>	<b>2</b>
3	<b>3.73</b>	0.6

**Table 5.194** – Differences in IACC<sub>E3</sub> and LF<sub>E4</sub> results between sources B2 and B3 for the CL-FR wagon. Values in bold indicate significant differences.

Cells in orange indicate an increase in values for source B2 whereas blue cells indicate higher values with the use of source B3. The cells that are not highlighted indicate that the difference is below 1JND.

CL-FR		
Receiver	IACC <sub>E3</sub> (JNDs)	LF <sub>E4</sub> (JNDs)
Stonegate 1 B2-B4		
1	<b>2.4</b>	<b>1</b>
2	<b>4.27</b>	<b>1</b>
3	0.53	0.6
Stonegate 2 B2-B4		
1	<b>3.87</b>	<b>1.8</b>
2	0.08	0.8
3	<b>2.93</b>	0.4
Stonegate 3 B2-B4		
1	<b>4.27</b>	0.2
2	<b>3.73</b>	<b>2.4</b>
3	<b>4.4</b>	0.4
Stonegate 4 B2-B4		
1	<b>3.6</b>	<b>2</b>
2	<b>4.4</b>	<b>2.2</b>
3	<b>3.2</b>	0.6

**Table 5.195** – Differences in IACC<sub>E3</sub> and LF<sub>E4</sub> results between sources B2 and B4 for the CL-FR wagon. Values in bold indicate significant differences.

Cells in orange indicate an increase in values for source B2 whereas blue cells indicate higher values with the use of source B4. The cells that are not highlighted indicate that the difference is below 1JND.

CL-FR		
Receiver	IACC <sub>E3</sub> (JNDs)	LF <sub>E4</sub> (JNDs)
Stonegate 1 B0-B3		
1	<b>1.73</b>	0.4
2	<b>3.2</b>	<b>1.4</b>
3	<b>1.87</b>	<b>1.4</b>
Stonegate 2 B0-B3		
1	<b>2</b>	0.4
2	<b>3.6</b>	<b>2.2</b>
3	<b>1.2</b>	0.2
Stonegate 3 B0-B3		
1	<b>1.87</b>	<b>1.2</b>
2	<b>2.93</b>	<b>2.2</b>
3	<b>1.6</b>	0.4

Stonegate 4 B0-B3		
1	<b>1.87</b>	2
2	<b>4.27</b>	2
3	<b>2.13</b>	2.2

**Table 5.196** – Differences in IACC<sub>E3</sub> and LF<sub>E4</sub> results between sources B0 and B3 for the CL-FR wagon. Values in bold indicate significant differences.

Cells in orange indicate an increase in values for source B0 whereas blue cells indicate higher values with the use of source B3. The cells that are not highlighted indicate that the difference is below 1JND.

CL-FR		
Receiver	IACC <sub>E3</sub> (JNDs)	LF <sub>E4</sub> (JNDs)
<b>Stonegate 1 B1-B4</b>		
1	<b>2.8</b>	1.2
2	<b>2.53</b>	0.8
3	0.93	<b>1.2</b>
<b>Stonegate 2 B1-B4</b>		
1	<b>2.4</b>	0.2
2	<b>2</b>	0.8
3	0.13	0
<b>Stonegate 3 B1-B4</b>		
1	<b>2.53</b>	0.6
2	<b>1.47</b>	1.6
3	0.93	0
<b>Stonegate 4 B1-B4</b>		
1	<b>2.27</b>	1.6
2	<b>2.53</b>	2.2
3	<b>1.2</b>	0.4

**Table 5.197** – Differences in IACC<sub>E3</sub> and LF<sub>E4</sub> results between sources B1 and B4 for the CL-FR wagon. Values in bold indicate significant differences.

Cells in orange indicate an increase in values for source B1 whereas blue cells indicate higher values with the use of source B4. The cells that are not highlighted indicate that the difference is below 1JND.

Virtual Model	Percentage of results with significant differences when source positions for the OP-SI wagon are changed	
	T <sub>20</sub>	T <sub>30</sub>
B0-B1		
Stonegate 1	63%	75%
Stonegate 2	88%	63%
Stonegate 3	50%	13%
Stonegate 4	38%	25%
B0-B2		
Stonegate 1	25%	0%
Stonegate 2	38%	38%
Stonegate 3	25%	0%
Stonegate 4	25%	13%
B1-B2		
Stonegate 1	88%	63%
Stonegate 2	25%	38%
Stonegate 3	50%	38%
Stonegate 4	50%	0%

**Table 5.198** – Impact of the change in source position of the OP-SI wagon on T<sub>20</sub> and T<sub>30</sub> values.

		OP-SI – T <sub>20</sub> (s) and T <sub>30</sub> (s)							
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1 B0	T20	0.58	0.65	0.64	0.66	0.62	0.56	0.40	0.31
	T30	0.62	0.64	0.63	0.66	0.65	0.57	0.42	0.32
Model 2 B0	T20	0.49	0.52	0.51	0.49	0.45	0.40	0.31	0.25
	T30	0.50	0.50	0.52	0.51	0.49	0.43	0.33	0.27
Model 3 B0	T20	0.73	0.74	0.76	0.76	0.73	0.62	0.46	0.33
	T30	0.75	0.74	0.77	0.77	0.75	0.63	0.48	0.36
Model 4 B0	T20	0.55	0.57	0.61	0.59	0.55	0.5	0.37	0.29
	T30	0.56	0.57	0.57	0.6	0.57	0.5	0.4	0.31
Model 1 B1	T20	0.68	0.64	0.65	0.67	0.67	0.59	0.46	0.34
	T30	0.64	0.67	0.65	0.70	0.68	0.60	0.45	0.35
Model 2 B1	T20	0.54	0.47	0.47	0.47	0.48	0.44	0.36	0.29
	T30	0.52	0.46	0.47	0.48	0.49	0.45	0.37	0.30
Model 3 B1	T20	0.76	0.72	0.85	0.82	0.75	0.65	0.48	0.37
	T30	0.79	0.75	0.77	0.79	0.77	0.65	0.5	0.38
Model 4 B1	T20	0.57	0.57	0.55	0.57	0.57	0.51	0.42	0.32
	T30	0.61	0.57	0.57	0.57	0.55	0.5	0.41	0.33
Model 1 B2	T20	0.59	0.64	0.61	0.64	0.61	0.52	0.38	0.31
	T30	0.63	0.65	0.63	0.67	0.65	0.55	0.41	0.32
Model 2 B2	T20	0.49	0.47	0.50	0.49	0.46	0.42	0.34	0.29
	T30	0.47	0.49	0.49	0.48	0.47	0.44	0.34	0.2828
Model 3 B2	T20	0.77	0.75	0.81	0.74	0.73	0.61	0.44	0.35
	T30	0.72	0.74	0.77	0.76	0.75	0.62	0.47	0.36
Model 4 B2	T20	0.54	0.54	0.57	0.58	0.56	0.48	0.38	0.3
	T30	0.59	0.58	0.55	0.59	0.57	0.5	0.4	0.31

**Table 5.199** – T<sub>20</sub> and T<sub>30</sub> values for the OP-SI wagon.

		OP-SI – T <sub>20</sub> (JNDs) and T <sub>30</sub> (JNDs)							
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1 B0-B1	T20	<b>3.33</b>	0.33	0.33	0.33	<b>1.67</b>	<b>1</b>	<b>2</b>	<b>1</b>
	T30	0.67	<b>1</b>	0.67	<b>1.33</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
Model 2 B0-B1	T20	<b>1.67</b>	<b>1.67</b>	<b>1.33</b>	0.67	<b>1</b>	<b>1.33</b>	<b>1.67</b>	<b>1.33</b>
	T30	0.67	<b>1.33</b>	<b>1.67</b>	<b>1</b>	0	0.67	<b>1.33</b>	<b>1</b>
Model 3 B0-B1	T20	0.75	0.5	<b>2.25</b>	<b>1.5</b>	0.5	<b>1</b>	0.67	<b>1.33</b>
	T30	<b>1</b>	0.25	0	0.5	0.5	0.67	0.67	0.67
Model 4 B0-B1	T20	0.67	0	<b>2</b>	0.67	0.67	0.33	<b>1.67</b>	<b>1</b>
	T30	<b>1.67</b>	0	0	<b>1</b>	0.67	0	0.33	0.67

**Table 5.200** – Differences in T<sub>20</sub> and T<sub>30</sub> results between sources B0 and B1 for the OP-SI wagon. Values in bold indicate significant differences. Cells in orange indicate an increase in values for source B0 whereas blue cells indicate higher values with the use of source B1. The cells that are not highlighted indicate that the difference is below 1JND.

		OP-SI – T <sub>20</sub> (JNDs) and T <sub>30</sub> (JNDs)							
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1 B0-B2	T20	0.33	0.33	<b>1</b>	0.67	0.33	<b>1.33</b>	0.67	0
	T30	0.33	0.33	0	0.33	0	0.67	0.33	0
Model 2 B0-B2	T20	0	<b>1.67</b>	0.33	0	0.33	0.67	<b>1</b>	<b>1.33</b>
	T30	<b>1</b>	0.33	<b>1</b>	<b>1</b>	0.67	0.33	0.33	0.33
Model 3 B0-B2	T20	<b>1</b>	0.25	<b>1.25</b>	0.5	0	0.33	0.67	0.67
	T30	0.75	0	0	0.25	0	0.33	0.33	0
Model 4 B0-B2	T20	0.33	<b>1</b>	<b>1.33</b>	0.33	0.33	0.67	0.33	0.33
	T30	<b>1</b>	0.33	0.67	0.33	0	0	0	0

**Table 5.201** – Differences in T<sub>20</sub> and T<sub>30</sub> results between sources B0 and B2 for the OP-SI wagon. Values in bold indicate significant differences. Cells in

orange indicate an increase in values for source B0 whereas blue cells indicate higher values with the use of source B2. The cells that are not highlighted indicate that the difference is below 1JND.

OP-SI - T <sub>20</sub> (JNDs) and T <sub>30</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1 B1-B2	T20	<b>3</b>	0	<b>1.33</b>	<b>1</b>	<b>2</b>	<b>2.33</b>	<b>2.67</b>	<b>1</b>
	T30	0.33	0.67	0.67	<b>1</b>	<b>1</b>	<b>1.67</b>	<b>1.33</b>	<b>1</b>
Model 2 B1-B2	T20	<b>1.67</b>	0	<b>1</b>	0.67	0.67	0.67	0.67	0
	T30	<b>1.67</b>	<b>1</b>	0.67	0	0.67	0.33	<b>1</b>	0.67
Model 3 B1-B2	T20	0.25	0.75	<b>1</b>	<b>2</b>	0.5	<b>1.33</b>	<b>1.33</b>	0.67
	T30	<b>1.75</b>	0.25	0	0.75	0.5	<b>1</b>	<b>1</b>	0.67
Model 4 B1-B2	T20	<b>1</b>	<b>1</b>	0.67	0.33	0.33	<b>1</b>	<b>1.33</b>	0.67
	T30	0.67	0.33	0.67	0.67	0.67	0	0.33	0.67

**Table 5.202** – Differences in T<sub>20</sub> and T<sub>30</sub> results between sources B1 and B2 for the OP-SI wagon. Values in bold indicate significant differences. Cells in orange indicate an increase in values for source B1 whereas blue cells indicate higher values with the use of source B2. The cells that are not highlighted indicate that the difference is below 1JND.

Virtual Model	Percentage of results with significant differences when source positions for the OP-SI wagon are changed	
	C <sub>50</sub>	C <sub>80</sub>
B0-B1		
Stonegate 1	38%	88%
Stonegate 2	13%	13%
Stonegate 3	0%	50%
Stonegate 4	88%	75%
B0-B2		
Stonegate 1	13%	13%
Stonegate 2	25%	25%
Stonegate 3	38%	50%
Stonegate 4	13%	38%
B1-B2		
Stonegate 1	25%	88%
Stonegate 2	88%	13%
Stonegate 3	38%	63%
Stonegate 4	100%	88%

**Table 5.203** – Impact of the change in source position of the OP-SI wagon on C<sub>50</sub> and C<sub>80</sub> values.

OP-SI - C <sub>50</sub> (dB) and C <sub>80</sub> (dB)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1 B0	C50	2.88	7.17	5.74	6.65	7.64	9.07	11.6	13.09
	C80	5.94	10.63	9.93	10.43	10.75	12.63	16.39	19.66
Model 2 B0	C50	7.94	10.38	9.65	9.55	10.6	11.41	14.1	15.53
	C80	13.05	14.41	13.49	14.59	15.16	16.57	20.13	23.03
Model 3 B0	C50	6.23	6.31	4.75	5.99	6.53	8.25	10.71	12.51
	C80	9.67	9.07	7.99	8.5	9.62	11.37	15.51	18.94
Model 4 B0	C50	8.45	7.18	7.39	8.6	10.02	11.31	13.9	15.44
	C80	12.84	10.06	10.63	12.24	13.5	14.8	18.52	21.18
Model 1 B1	C50	5.86	8.27	6.21	6.35	6.24	8.68	11.39	12.72
	C80	9.43	12.04	8.6	10.01	9.19	11.44	15.2	18.12

Model 2	C50	9.76	10.67	9.11	8.51	9.54	11.26	13.85	15.28
B1	C80	13.86	14.95	13.85	13.35	14.64	16.7	20.16	22.59
Model 3	C50	6.39	7.09	5.71	4.9	5.66	7.38	10.34	11.68
B1	C80	9.22	9.61	8.12	8.11	8.26	10.14	13.78	16.65
Model 4	C50	6.36	6.61	5.7	6.91	7.84	9.12	11.27	12.68
B1	C80	10.03	10	10.47	10.75	11.51	12.91	16.23	19.06
Model 1	C50	9.03	7.85	6.78	7.67	7.13	8.3	10.7	12.51
B2	C80	12.87	10.53	10.05	11.35	10.7	12.75	16.26	18.69
Model 2	C50	8.5	6.94	10.7	10.41	11.66	12.85	15.13	16.31
B2	C80	13.21	11.68	14.64	14.22	15.12	17.08	20.17	22.27
Model 3	C50	4.19	5.09	6.89	5.7	6.63	7.75	10.02	12.22
B2	C80	8.26	7.97	9.37	8.55	9.44	11.65	14.71	17.73
Model 4	C50	7.99	8.79	8.28	9.68	10.28	11.44	14.25	15.54
B2	C80	11.64	12.48	11.31	13.01	13.83	15.9	18.97	21.32

**Table 5.204 – C<sub>50</sub> and C<sub>80</sub> values for the OP-SI wagon.**

OP-SI – C <sub>50</sub> (JNDs) and C <sub>80</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1	C50	<b>2.71</b>	<b>1</b>	0.43	0.27	<b>1.27</b>	0.35	0.19	0.34
	C80	<b>3.49</b>	<b>1.41</b>	<b>1.33</b>	0.42	<b>1.56</b>	<b>1.19</b>	<b>1.19</b>	<b>1.54</b>
Model 2	C50	<b>1.65</b>	0.26	0.49	0.95	0.96	0.14	0.23	0.23
	C80	0.81	0.54	0.36	<b>1.24</b>	0.52	0.13	0.03	0.44
Model 3	C50	0.15	0.71	0.87	0.99	0.79	0.79	0.34	0.75
	C80	0.45	0.54	0.13	0.39	<b>1.36</b>	<b>1.23</b>	<b>1.73</b>	<b>2.29</b>
Model 4	C50	<b>1.9</b>	0.52	<b>1.54</b>	<b>1.54</b>	<b>1.98</b>	<b>1.99</b>	<b>2.39</b>	<b>2.51</b>
	C80	<b>2.81</b>	0.06	0.16	<b>1.49</b>	<b>1.99</b>	<b>1.89</b>	<b>2.29</b>	<b>2.12</b>

**Table 5.205 – Differences in C<sub>50</sub> and C<sub>80</sub> results between sources B0 and B1 for the OP-SI wagon. Values in bold indicate significant differences. Cells in orange indicate an increase in values for source B0 whereas blue cells indicate higher values with the use of source B1. The cells that are not highlighted indicate that the difference is below 1JND.**

OP-SI – C <sub>50</sub> (JNDs) and C <sub>80</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1	C50	<b>5.59</b>	0.62	0.95	0.93	0.46	0.7	0.82	0.53
	C80	<b>6.93</b>	0.1	0.12	0.92	0.05	0.12	0.13	0.97
Model 2	C50	0.51	<b>3.13</b>	0.95	0.78	0.96	<b>1.31</b>	0.94	0.71
	C80	0.16	<b>2.73</b>	<b>1.15</b>	0.37	0.04	0.51	0.04	0.76
Model 3	C50	<b>1.85</b>	<b>1.11</b>	<b>1.95</b>	0.26	0.09	0.45	0.63	0.26
	C80	<b>1.41</b>	<b>1.1</b>	<b>1.38</b>	0.05	0.18	0.28	0.8	<b>1.21</b>
Model 4	C50	0.42	<b>1.46</b>	0.81	0.98	0.24	0.12	0.32	0.09
	C80	<b>1.2</b>	<b>2.42</b>	0.68	0.77	0.33	<b>1.1</b>	0.45	0.14

**Table 5.206 – Differences in C<sub>50</sub> and C<sub>80</sub> results between sources B0 and B2 for the OP-SI wagon. Values in bold indicate significant differences. Cells in orange indicate an increase in values for source B0 whereas blue cells indicate higher values with the use of source B2. The cells that are not highlighted indicate that the difference is below 1JND.**

OP-SI – C <sub>50</sub> (JNDs) and C <sub>80</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1	C50	<b>2.88</b>	0.38	0.52	<b>1.2</b>	0.81	0.35	0.63	0.19
	C80	<b>3.44</b>	<b>1.51</b>	<b>1.45</b>	<b>1.34</b>	<b>1.51</b>	<b>1.31</b>	<b>1.06</b>	0.57
Model 2	C50	<b>1.15</b>	<b>3.39</b>	<b>1.45</b>	<b>1.73</b>	<b>1.93</b>	<b>1.45</b>	<b>1.16</b>	0.94
	C80	0.65	<b>3.27</b>	0.79	0.87	0.48	0.38	0.01	0.32
Model 3	C50	<b>2</b>	<b>1.82</b>	<b>1.07</b>	0.73	0.88	0.34	0.29	0.49
	C80	0.96	<b>1.64</b>	<b>1.25</b>	0.44	<b>1.18</b>	<b>1.51</b>	0.93	<b>1.08</b>

Model 4	C50	<b>1.48</b>	<b>1.98</b>	<b>2.35</b>	<b>2.52</b>	<b>2.22</b>	<b>2.11</b>	<b>2.71</b>	<b>2.6</b>
B1-B2	C80	<b>1.61</b>	<b>2.48</b>	0.84	<b>2.26</b>	<b>2.32</b>	<b>2.99</b>	<b>2.74</b>	<b>2.26</b>

**Table 5.207** – Differences in C<sub>50</sub> and C<sub>80</sub> results between sources B1 and B2 for the OP-SI wagon. Values in bold indicate significant differences. Cells in orange indicate an increase in values for source B1 whereas blue cells indicate higher values with the use of source B2. The cells that are not highlighted indicate that the difference is below 1JND.

Virtual Model	Percentage of results with significant differences when source positions for the OP-SI wagon are changed	
	IACC <sub>E3</sub>	LF <sub>E4</sub>
B0-B1		
Stonegate 1	33%	33%
Stonegate 2	33%	0%
Stonegate 3	67%	0%
Stonegate 4	0%	0%
B0-B2		
Stonegate 1	33%	33%
Stonegate 2	67%	0%
Stonegate 3	67%	0%
Stonegate 4	67%	33%
B1-B2		
Stonegate 1	0%	0%
Stonegate 2	33%	0%
Stonegate 3	100%	33%
Stonegate 4	67%	33%

**Table 5.208** – Impact of the change in source position of the OP-SI wagon on IACC<sub>E3</sub> and LF<sub>E4</sub> values.

OP-SI		
Receiver	IACC <sub>E3</sub>	LF <sub>E4</sub>
<b>Stonegate 1- B0</b>		
1	0.67	0.06
2	0.38	0.21
3	0.56	0.08
<b>Stonegate 2- B0</b>		
1	0.67	0.06
2	0.44	0.11
3	0.62	0.08
<b>Stonegate 3- B0</b>		
1	0.68	0.05
2	0.5	0.09
3	0.47	0.08
<b>Stonegate 4- B0</b>		
1	0.6	0.05
2	0.4	0.13
3	0.66	0.07
<b>Stonegate 1- B1</b>		
1	0.55	0.05
2	0.38	0.09
3	0.54	0.09
<b>Stonegate 2- B1</b>		
1	0.6	0.05
2	0.43	0.1
3	0.72	0.06
<b>Stonegate 3- B1</b>		

1	0.43	0.05
2	0.42	0.09
3	0.43	0.06
<b>Stonegate 4- B1</b>		
1	0.57	0.06
2	0.41	0.11
3	0.62	0.05
<b>Stonegate 1- B2</b>		
1	0.51	0.06
2	0.38	0.08
3	0.59	0.07
<b>Stonegate 2- B2</b>		
1	0.53	0.05
2	0.32	0.1
3	0.66	0.09
<b>Stonegate 3- B2</b>		
1	0.53	0.05
2	0.54	0.1
3	0.58	0.11
<b>Stonegate 4- B2</b>		
1	0.54	0.06
2	0.27	0.1
3	0.49	0.16

**Table 5.209** – IACC<sub>E3</sub> and LF<sub>E4</sub> values for the OP-SI wagon.

OP-SI		
Receiver	IACC <sub>E3</sub> (JNDs)	LF <sub>E4</sub> (JNDs)
<b>Stonegate 1 B0-B1</b>		
1	<b>1.6</b>	0.2
2	0	<b>2.4</b>
3	0.27	0.2
<b>Stonegate 2 B0-B1</b>		
1	0.93	0.2
2	0.13	0.2
3	<b>1.33</b>	0.4
<b>Stonegate 3 B0-B1</b>		
1	<b>3.33</b>	0
2	<b>1.07</b>	0
3	0.53	0.4
<b>Stonegate 4 B0-B1</b>		
1	0.4	0.2
2	0.13	0.4
3	0.53	0.4

**Table 5.210** – Differences in IACC<sub>E3</sub> and LF<sub>E4</sub> results between sources B0 and B1 for the OP-SI wagon. Values in bold indicate significant differences.

Cells in orange indicate an increase in values for source B0 whereas blue cells indicate higher values with the use of source B1. The cells that are not highlighted indicate that the difference is below 1JND.

OP-SI		
Receiver	IACC <sub>E3</sub> (JNDs)	LF <sub>E4</sub> (JNDs)
<b>Stonegate 1 B0-B2</b>		
1	<b>2.13</b>	0
2	0	<b>2.6</b>
3	0.4	0.2
<b>Stonegate 2 B0-B2</b>		
1	<b>1.87</b>	0.2
2	<b>1.6</b>	0.2
3	0.53	0.2
<b>Stonegate 3 B0-B2</b>		
1	<b>2</b>	0

2	0.53	0.2
3	<b>1.47</b>	0.6
<b>Stonegate 4 B0-B2</b>		
1	0.8	0.2
2	<b>1.73</b>	0.6
3	<b>2.27</b>	<b>1.8</b>

**Table 5.211** – Differences in IACC<sub>E3</sub> and LF<sub>E4</sub> results between sources B0 and B2 for the OP-SI wagon. Values in bold indicate significant differences. Cells in orange indicate an increase in values for source B0 whereas blue cells indicate higher values with the use of source B2. The cells that are not highlighted indicate that the difference is below 1JND.

OP-SI		
Receiver	IACC <sub>E3</sub> (JNDs)	LF <sub>E4</sub> (JNDs)
<b>Stonegate 1 B1-B2</b>		
1	0.53	0.2
2	0	0.2
3	0.67	0.4
<b>Stonegate 2 B1-B2</b>		
1	0.93	0
2	<b>1.47</b>	0
3	0.8	0.6
<b>Stonegate 3 B1-B2</b>		
1	<b>1.33</b>	0
2	<b>1.6</b>	0.2
3	2	<b>1</b>
<b>Stonegate 4 B1-B2</b>		
1	0.4	0
2	<b>1.87</b>	0.2
3	<b>1.73</b>	<b>2.2</b>

**Table 5.212** – Differences in IACC<sub>E3</sub> and LF<sub>E4</sub> results between sources B1 and B2 for the OP-SI wagon. Values in bold indicate significant differences. Cells in orange indicate an increase in values for source B1 whereas blue cells indicate higher values with the use of source B2. The cells that are not highlighted indicate that the difference is below 1JND.

Virtual Model	Percentage of results with significant differences when source positions for the OP-FR wagon are changed	
	T <sub>20</sub>	T <sub>30</sub>
B0-B1		
Stonegate 1	50%	0%
Stonegate 2	63%	25%
Stonegate 3	13%	13%
Stonegate 4	25%	25%
B0-B2		
Stonegate 1	50%	38%
Stonegate 2	13%	0%
Stonegate 3	63%	38%
Stonegate 4	63%	38%
B1-B2		
Stonegate 1	88%	38%
Stonegate 2	63%	38%
Stonegate 3	63%	50%
Stonegate 4	50%	13%

**Table 5.213** – Impact of the change in source position of the OP-FR wagon on T<sub>20</sub> and T<sub>30</sub> values.

		OP-FR – T <sub>20</sub> (s) and T <sub>30</sub> (s)							
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1 B0	T20	0.6	0.59	0.64	0.61	0.58	0.48	0.36	0.28
	T30	0.63	0.62	0.62	0.65	0.62	0.51	0.39	0.3
Model 2 B0	T20	0.5	0.43	0.46	0.44	0.42	0.36	0.28	0.23
	T30	0.51	0.45	0.47	0.46	0.44	0.39	0.3	0.25
Model 3 B0	T20	0.75	0.74	0.77	0.71	0.68	0.57	0.41	0.33
	T30	0.74	0.72	0.74	0.74	0.69	0.59	0.44	0.34
Model 4 B0	T20	0.62	0.6	0.57	0.52	0.53	0.43	0.33	0.27
	T30	0.64	0.58	0.56	0.56	0.54	0.46	0.36	0.28
Model 1 B1	T20	0.64	0.55	0.6	0.62	0.58	0.48	0.38	0.32
	T30	0.63	0.6	0.62	0.63	0.61	0.5	0.4	0.32
Model 2 B1	T20	0.51	0.47	0.46	0.47	0.47	0.37	0.31	0.27
	T30	0.52	0.49	0.49	0.48	0.46	0.4	0.32	0.28
Model 3 B1	T20	0.69	0.73	0.74	0.71	0.69	0.58	0.42	0.32
	T30	0.69	0.74	0.75	0.74	0.7	0.59	0.45	0.34
Model 4 B1	T20	0.41	0.58	0.55	0.53	0.48	0.43	0.34	0.29
	T30	0.48	0.57	0.56	0.55	0.51	0.44	0.36	0.3
Model 1 B2	T20	0.66	0.63	0.65	0.59	0.53	0.44	0.34	0.29
	T30	0.61	0.65	0.63	0.62	0.58	0.49	0.37	0.3
Model 2 B2	T20	0.48	0.4	0.48	0.44	0.41	0.35	0.29	0.23
	T30	0.5	0.43	0.47	0.46	0.44	0.37	0.3	0.25
Model 3 B2	T20	0.61	0.69	0.75	0.69	0.62	0.5	0.38	0.31
	T30	0.67	0.69	0.74	0.72	0.67	0.55	0.41	0.32
Model 4 B2	T20	0.52	0.54	0.52	0.51	0.47	0.4	0.32	0.28
	T30	0.55	0.55	0.54	0.53	0.52	0.44	0.35	0.29

**Table 5.214** – T<sub>20</sub> and T<sub>30</sub> values for the OP-FR wagon.

		OP-FR – T <sub>20</sub> (JNDs) and T <sub>30</sub> (JNDs)							
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1 B0-B1	T20	<b>1.33</b>	<b>1.33</b>	<b>1.33</b>	0.33	0	0	0.67	<b>1.33</b>
	T30	0	0.67	0	0.67	0.33	0.33	0.33	0.67
Model 2 B0-B1	T20	0.33	<b>1.33</b>	0	<b>1</b>	<b>1.67</b>	0.33	<b>1</b>	<b>1.33</b>
	T30	0.33	<b>1.33</b>	0.67	0.67	0.67	0.33	0.67	<b>1</b>
Model 3 B0-B1	T20	<b>1.5</b>	0.25	0.75	0	0.33	0.33	0.33	0.33
	T30	<b>1.25</b>	0.5	0.25	0	0.33	0	0.33	0
Model 4 B0-B1	T20	<b>7</b>	0.67	0.67	0.33	<b>1.67</b>	0	0.33	0.67
	T30	<b>5.33</b>	0.33	0	0.33	<b>1</b>	0.67	0	0.67

**Table 5.215** – Differences in T<sub>20</sub> and T<sub>30</sub> results between sources B0 and B1 for the OP-FR wagon. Values in bold indicate significant differences. Cells in orange indicate an increase in values for source B0 whereas blue cells indicate higher values with the use of source B1. The cells that are not highlighted indicate that the difference is below 1JND.

		OP-FR – T <sub>20</sub> (JNDs) and T <sub>30</sub> (JNDs)							
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1 B0-B2	T20	<b>2</b>	<b>1.33</b>	0.33	0.67	<b>1.67</b>	<b>1.33</b>	0.67	0.33
	T30	0.67	<b>1</b>	0.33	<b>1</b>	<b>1.33</b>	0.67	0.67	0
Model 2 B0-B2	T20	0.67	<b>1</b>	0.67	0	0.33	0.33	0.33	0
	T30	0.33	0.67	0	0	0	0.67	0	0
Model 3 B0-B2	T20	<b>3.5</b>	<b>1.25</b>	0.5	0.5	<b>2</b>	<b>2.33</b>	<b>1</b>	0.67
	T30	<b>1.75</b>	0.75	0	0.5	0.67	<b>1.33</b>	<b>1</b>	0.67
Model 4	T20	<b>3.33</b>	<b>2</b>	<b>1.67</b>	0.33	<b>2</b>	<b>1</b>	0.33	0.33

B0-B2	T30	<b>3</b>	<b>1</b>	0.67	<b>1</b>	0.67	0.67	0.33	0.33
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**Table 5.216** – Differences in  $T_{20}$  and  $T_{30}$  results between sources B0 and B2 for the OP-FR wagon. Values in bold indicate significant differences. Cells in orange indicate an increase in values for source B0 whereas blue cells indicate higher values with the use of source B2. The cells that are not highlighted indicate that the difference is below 1JND.

OP-FR – $T_{20}$ (JNDs) and $T_{30}$ (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1 B1-B2	T20	0.67	<b>2.67</b>	<b>1.67</b>	<b>1</b>	<b>1.67</b>	<b>1.33</b>	<b>1.33</b>	<b>1</b>
	T30	0.67	<b>1.67</b>	0.33	0.33	<b>1</b>	0.33	<b>1</b>	0.67
Model 2 B1-B2	T20	<b>1</b>	<b>2.33</b>	0.67	<b>1</b>	<b>2</b>	0.67	0.67	<b>1.33</b>
	T30	0.67	<b>2</b>	0.67	0.67	0.67	<b>1</b>	0.67	<b>1</b>
Model 3 B1-B2	T20	<b>2.67</b>	<b>1</b>	0.25	0.5	<b>2.33</b>	<b>2.67</b>	<b>1.33</b>	0.33
	T30	0.67	<b>1.25</b>	0.25	0.5	<b>1</b>	<b>1.33</b>	<b>1.33</b>	0.67
Model 4 B1-B2	T20	<b>3.67</b>	<b>1.33</b>	<b>1</b>	0.67	0.33	<b>1</b>	0.67	0.33
	T30	<b>2.33</b>	0.67	0.67	0.67	0.33	0	0.33	0.33

**Table 5.217** – Differences in  $T_{20}$  and  $T_{30}$  results between sources B1 and B2 for the OP-FR wagon. Values in bold indicate significant differences. Cells in orange indicate an increase in values for source B1 whereas blue cells indicate higher values with the use of source B2. The cells that are not highlighted indicate that the difference is below 1JND.

Virtual Model	Percentage of results with significant differences when source positions for the OP-FR wagon are changed	
	$C_{50}$	$C_{80}$
B0-B1		
Stonegate 1	13%	13%
Stonegate 2	63%	38%
Stonegate 3	63%	75%
Stonegate 4	25%	38%
B0-B2		
Stonegate 1	100%	100%
Stonegate 2	88%	88%
Stonegate 3	88%	88%
Stonegate 4	63%	88%
B1-B2		
Stonegate 1	88%	88%
Stonegate 2	88%	75%
Stonegate 3	88%	88%
Stonegate 4	75%	75%

**Table 5.218** – Impact of the change in source position of the OP-FR wagon on  $C_{50}$  and  $C_{80}$  values.

OP-FR – $C_{50}$ (dB) and $C_{80}$ (dB)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1 B0	$C_{50}$	5.62	6.39	6.44	7.65	9.06	9.98	13.13	15.86
	$C_{80}$	9.29	10.56	9.7	11.54	12.44	14.16	18.1	21.78
Model 2 B0	$C_{50}$	10.18	9.77	9.43	10.67	10.95	12.07	14.65	16.64
	$C_{80}$	15.08	12.8	13.39	14.78	15.63	16.95	20.73	23.69
Model 3 B0	$C_{50}$	4.52	6.55	5.52	5.53	6.53	7.96	11.36	13.97
	$C_{80}$	7.94	9.81	8.67	8.57	9.81	11.52	15.97	19.48

Model 4	C50	7.63	8.56	7.41	8.45	9.66	10.4	13.86	19.06
B0	C80	11.99	11.44	10.76	12.5	13.41	15.16	19.42	22.47
Model 1	C50	7.95	7	6.99	8.29	9.47	10.88	14.01	16
B1	C80	11.5	11.28	10.42	11.92	12.93	14.3	18.37	21.21
Model 2	C50	9.3	8.73	10.68	11.14	12.34	13.53	16.39	18.18
B1	C80	14.76	13.87	14.25	15.58	16.78	18.17	21.61	24.24
Model 3	C50	6.18	6.05	6.35	7.12	8.68	9.9	12.82	14.86
B1	C80	9.49	10.02	9.73	9.71	11.77	13.46	17.09	20.15
Model 4	C50	6.98	8.28	8.25	8.97	10.14	11.81	14.53	16.35
B1	C80	12.21	12.56	12.23	12.8	14.55	15.89	19.78	22.52
Model 1	C50	8.08	8.53	9.94	11.31	13.31	14.32	17.15	19.11
B2	C80	10.83	12.67	12.43	14.66	16.29	18.22	21.66	24.28
Model 2	C50	10.58	11.01	11.28	14.11	15.13	16.07	18.76	20.24
B2	C80	15.08	15.31	15.21	17.92	18.98	20.28	24.09	26.68
Model 3	C50	6.54	7.64	8.27	9.27	10.86	12.86	15.63	16.61
B2	C80	10.58	10.77	10.82	11.92	14.18	16.06	19.71	22.07
Model 4	C50	7.65	8.9	9.48	11.53	13.44	15.03	17.38	18.62
B2	C80	12.22	13.52	13.71	14.96	16.92	18.8	22.01	24.14

**Table 5.219 – C<sub>50</sub> and C<sub>80</sub> values for the OP-FR wagon.**

OP-FR – C <sub>50</sub> (JNDs) and C <sub>80</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1	C50	<b>2.12</b>	0.55	0.5	0.58	0.37	0.82	0.8	0.13
	C80	<b>2.21</b>	0.72	0.72	0.38	0.49	0.14	0.27	0.57
Model 2	C50	0.8	0.95	<b>1.14</b>	0.43	<b>1.26</b>	<b>1.33</b>	<b>1.58</b>	<b>1.4</b>
	C80	0.32	<b>1.07</b>	0.86	0.8	<b>1.15</b>	<b>1.22</b>	0.88	0.55
Model 3	C50	<b>1.51</b>	0.45	0.75	<b>1.45</b>	<b>1.95</b>	<b>1.76</b>	<b>1.33</b>	0.81
	C80	<b>1.55</b>	0.21	<b>1.06</b>	<b>1.14</b>	<b>1.96</b>	<b>1.94</b>	<b>1.12</b>	0.67
Model 4	C50	0.59	0.25	0.76	0.47	0.44	<b>1.28</b>	0.61	<b>2.46</b>
	C80	0.22	<b>1.12</b>	<b>1.47</b>	0.3	<b>1.14</b>	0.73	0.36	0.05

**Table 5.220 – Differences in C<sub>50</sub> and C<sub>80</sub> results between sources B0 and B1 for the OP-FR wagon. Values in bold indicate significant differences. Cells in orange indicate an increase in values for source B0 whereas blue cells indicate higher values with the use of source B1. The cells that are not highlighted indicate that the difference is below 1JND.**

OP-FR – C <sub>50</sub> (JNDs) and C <sub>80</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1	C50	<b>2.24</b>	<b>1.95</b>	<b>3.18</b>	<b>3.33</b>	<b>3.86</b>	<b>3.95</b>	<b>3.65</b>	<b>2.95</b>
	C80	<b>1.54</b>	<b>2.11</b>	<b>2.73</b>	<b>3.12</b>	<b>3.85</b>	<b>4.06</b>	<b>3.56</b>	<b>2.5</b>
Model 2	C50	0.36	<b>1.13</b>	<b>1.68</b>	<b>3.13</b>	<b>3.8</b>	<b>3.64</b>	<b>3.74</b>	<b>3.28</b>
	C80	0	<b>2.51</b>	<b>1.82</b>	<b>3.14</b>	<b>3.35</b>	<b>3.33</b>	<b>3.36</b>	<b>2.99</b>
Model 3	C50	<b>1.84</b>	0.99	<b>2.5</b>	<b>3.4</b>	<b>3.94</b>	<b>4.45</b>	<b>3.88</b>	<b>2.4</b>
	C80	<b>2.64</b>	0.96	<b>2.15</b>	<b>3.35</b>	<b>4.37</b>	<b>4.54</b>	<b>3.74</b>	<b>2.59</b>
Model 4	C50	0.02	0.31	<b>1.88</b>	<b>2.8</b>	<b>3.44</b>	<b>4.21</b>	3.2	0.4
	C80	0.23	<b>2.08</b>	<b>2.95</b>	<b>2.46</b>	<b>3.51</b>	<b>3.64</b>	<b>2.59</b>	<b>1.67</b>

**Table 5.221 – Differences in C<sub>50</sub> and C<sub>80</sub> results between sources B0 and B2 for the OP-FR wagon. Values in bold indicate significant differences. Cells in blue indicate higher values with the use of source B2. The cells that are not highlighted indicate that the difference is below 1JND.**

OP-FR – C <sub>50</sub> (JNDs) and C <sub>80</sub> (JNDs)									
Model / Parameter		125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	16kHz
Model 1	C50	0.12	<b>1.39</b>	<b>2.68</b>	<b>2.75</b>	<b>3.49</b>	<b>3.13</b>	<b>2.85</b>	<b>2.83</b>
	C80	0.67	<b>1.39</b>	<b>2.01</b>	<b>2.74</b>	<b>3.36</b>	<b>3.92</b>	<b>3.29</b>	<b>3.07</b>
Model 2	C50	<b>1.16</b>	<b>2.07</b>	0.55	<b>2.7</b>	<b>2.54</b>	<b>2.31</b>	<b>2.15</b>	<b>1.87</b>

B1-B2	C80	0.32	<b>1.44</b>	0.96	<b>2.34</b>	<b>2.2</b>	<b>2.11</b>	<b>2.48</b>	<b>2.44</b>
Model 3	C50	0.33	<b>1.45</b>	<b>1.75</b>	<b>1.95</b>	<b>1.98</b>	<b>2.69</b>	2.55	<b>1.59</b>
	C80	<b>1.09</b>	0.75	<b>1.09</b>	<b>2.21</b>	<b>2.41</b>	2.6	<b>2.62</b>	<b>1.92</b>
Model 4	C50	0.61	0.56	<b>1.12</b>	<b>2.33</b>	3	<b>2.93</b>	<b>2.59</b>	<b>2.06</b>
	C80	0.01	0.96	<b>1.48</b>	<b>2.16</b>	<b>2.37</b>	<b>2.91</b>	2.23	<b>1.62</b>

**Table 5.222 – Differences in C<sub>50</sub> and C<sub>80</sub> results between sources B1 and B2 for the OP-FR wagon. Values in bold indicate significant differences. Cells in blue indicate higher values with the use of source B2. The cells that are not highlighted indicate that the difference is below 1JND.**

<b>Virtual Model</b>	<b>Percentage of results with significant differences when source positions for the OP-FR wagon are changed</b>	
	IACC <sub>E3</sub>	LF <sub>E4</sub>
<b>B0-B1</b>		
Stonegate 1	33%	67%
Stonegate 2	100%	33%
Stonegate 3	33%	67%
Stonegate 4	33%	33%
<b>B0-B2</b>		
Stonegate 1	100%	100%
Stonegate 2	100%	67%
Stonegate 3	100%	33%
Stonegate 4	100%	100%
<b>B1-B2</b>		
Stonegate 1	100%	0%
Stonegate 2	33%	33%
Stonegate 3	100%	33%
Stonegate 4	100%	33%

**Table 5.223 – Impact of the change in source position of the OP-FR wagon on IACC<sub>E3</sub> and LF<sub>E4</sub> values.**

<b>OP-FR</b>		
<b>Receiver</b>	IACC <sub>E3</sub>	LF <sub>E4</sub>
<b>Stonegate 1- B0</b>		
1	0.38	0.17
2	0.25	0.15
3	0.25	0.23
<b>Stonegate 2- B0</b>		
1	0.35	0.14
2	0.31	0.1
3	0.2	0.19
<b>Stonegate 3- B0</b>		
1	0.28	0.16
2	0.37	0.13
3	0.25	0.14
<b>Stonegate 4- B0</b>		
1	0.37	0.15
2	0.29	0.14
3	0.31	0.18
<b>Stonegate 1- B1</b>		
1	0.41	0.12
2	0.41	0.09
3	0.24	0.19
<b>Stonegate 2- B1</b>		
1	0.53	0.15

2	0.48	0.07
3	0.37	0.14
<b>Stonegate 3- B1</b>		
1	0.37	0.11
2	0.41	0.08
3	0.28	0.18
<b>Stonegate 4- B1</b>		
1	0.41	0.14
2	0.47	0.07
3	0.36	0.22
<b>Stonegate 1- B2</b>		
1	0.56	0.11
2	0.56	0.07
3	0.46	0.16
<b>Stonegate 2- B2</b>		
1	0.52	0.1
2	0.66	0.05
3	0.43	0.1
<b>Stonegate 3- B2</b>		
1	0.5	0.14
2	0.55	0.08
3	0.5	0.13
<b>Stonegate 4- B2</b>		
1	0.53	0.1
2	0.61	0.07
3	0.54	0.1

**Table 5.224** – IACC<sub>E3</sub> and LF<sub>E4</sub> values for the OP-FR wagon.

Receiver	OP-FR	
	IACC <sub>E3</sub> (JNDs)	LF <sub>E4</sub> (JNDs)
<b>Stonegate 1 B0-B1</b>		
1	0.4	<b>1</b>
2	<b>2.13</b>	<b>1.2</b>
3	0.13	0.8
<b>Stonegate 2 B0-B1</b>		
1	<b>2.4</b>	0.2
2	<b>2.27</b>	0.6
3	<b>2.27</b>	<b>1</b>
<b>Stonegate 3 B0-B1</b>		
1	<b>1.2</b>	<b>1</b>
2	0.53	<b>1</b>
3	0.4	0.8
<b>Stonegate 4 B0-B1</b>		
1	0.53	0.2
2	<b>2.4</b>	<b>1.4</b>
3	0.67	0.8

**Table 5.225** – Differences in IACC<sub>E3</sub> and LF<sub>E4</sub> results between sources B0 and B1 for the OP-FR wagon. Values in bold indicate significant differences.

Cells in orange indicate an increase in values for source B0 whereas blue cells indicate higher values with the use of source B1. The cells that are not highlighted indicate that the difference is below 1JND.

Receiver	OP-FR	
	IACC <sub>E3</sub> (JNDs)	LF <sub>E4</sub> (JNDs)
<b>Stonegate 1 B0-B2</b>		
1	<b>2.4</b>	<b>1.2</b>
2	<b>4.13</b>	<b>1.6</b>
3	<b>2.8</b>	<b>1.4</b>
<b>Stonegate 2 B0-B2</b>		
1	<b>2.27</b>	0.8
2	<b>4.67</b>	<b>1</b>

3	<b>3.07</b>	<b>1.8</b>
<b>Stonegate 3 B0-B2</b>		
1	<b>2.93</b>	0.4
2	<b>2.4</b>	<b>1</b>
3	<b>3.33</b>	0.2
<b>Stonegate 4 B0-B2</b>		
1	<b>2.13</b>	<b>1</b>
2	<b>4.27</b>	<b>1.4</b>
3	<b>3.07</b>	<b>1.6</b>

**Table 5.226** – Differences in IACC<sub>E3</sub> and LF<sub>E4</sub> results between sources B0 and B2 for the OP-FR wagon. Values in bold indicate significant differences.

Cells in orange indicate an increase in values for source B0 whereas blue cells indicate higher values with the use of source B2. The cells that are not highlighted indicate that the difference is below 1JND.

OP-FR		
Receiver	IACC <sub>E3</sub> (JNDs)	LF <sub>E4</sub> (JNDs)
<b>Stonegate 1 B1-B2</b>		
1	<b>2</b>	0.2
2	<b>2</b>	0.4
3	<b>2.93</b>	0.6
<b>Stonegate 2 B1-B2</b>		
1	0.13	<b>1</b>
2	<b>2.4</b>	0.4
3	0.8	0.8
<b>Stonegate 3 B1-B2</b>		
1	<b>1.73</b>	0.6
2	<b>1.87</b>	0
3	<b>2.93</b>	<b>1</b>
<b>Stonegate 4 B1-B2</b>		
1	<b>1.6</b>	0.8
2	<b>1.87</b>	0
3	<b>2.4</b>	<b>2.4</b>

**Table 5.227** – Differences in IACC<sub>E3</sub> and LF<sub>E4</sub> results between sources B1 and B2 for the OP-FR wagon. Values in bold indicate significant differences.

Cells in orange indicate an increase in values for source B1 whereas blue cells indicate higher values with the use of source B2. The cells that are not highlighted indicate that the difference is below 1JND.

## Appendix – Guide to Memory Stick

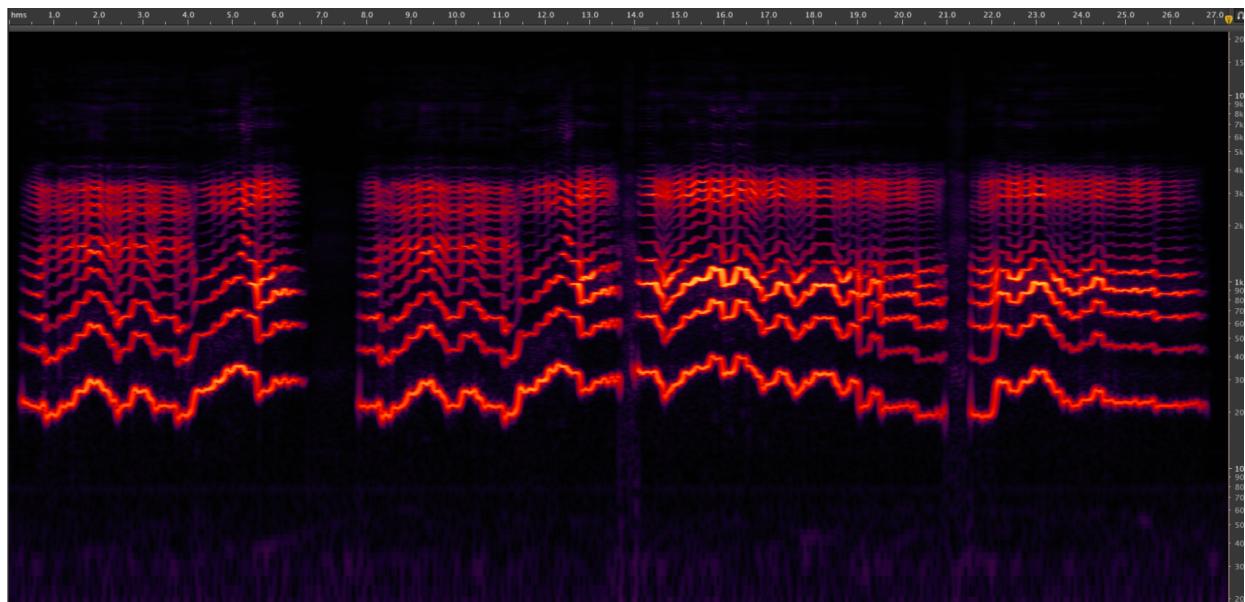
The memory stick attached to Volume 2 of this thesis includes the following files:

- Anechoic Recordings. The files included are listed below together with details on their duration, spectral content and dynamics. These anechoic files were used for the auralizations that formed the basis of the listening test.

### Alleluia Christus Resurgens-Anechoic

Length: 27 seconds

Spectral Content:

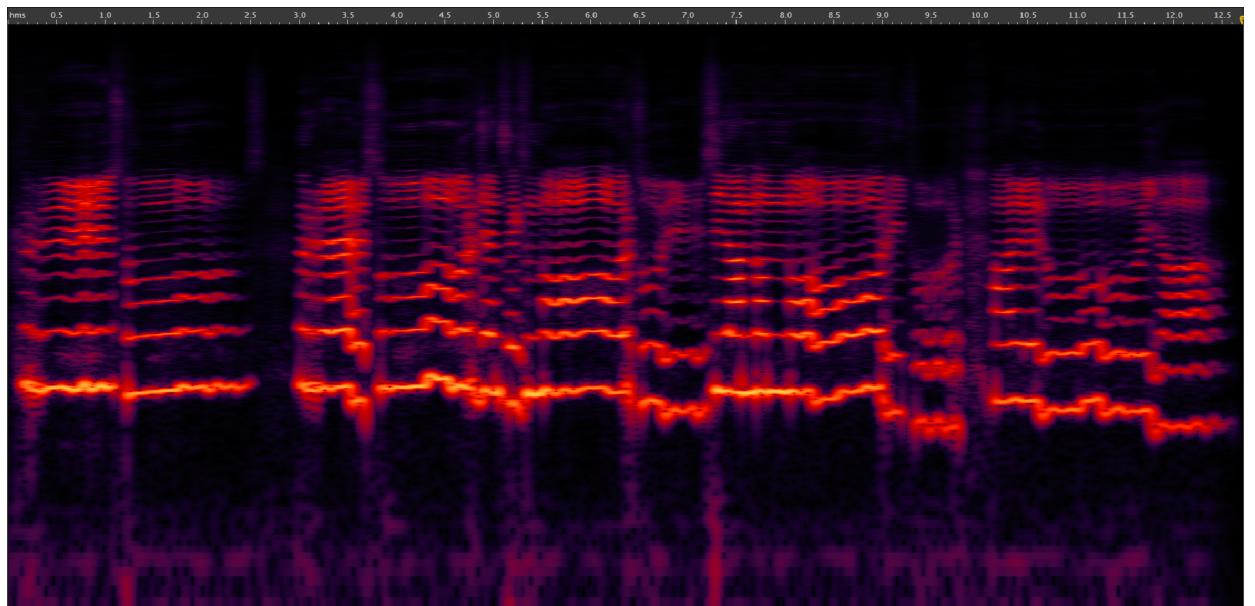


Dynamics	
Peak Amplitude	-9.29dB
Maximum RMS Amplitude	-16.82dB
Minimum RMS Amplitude	-96.84dB
Average RMS Amplitude	-33.32dB
Dynamic Range	80.01dB
Dynamic Range Used	64.40dB

### Christus Resurgens-Anechoic

Length: 13 seconds

Spectral Content:

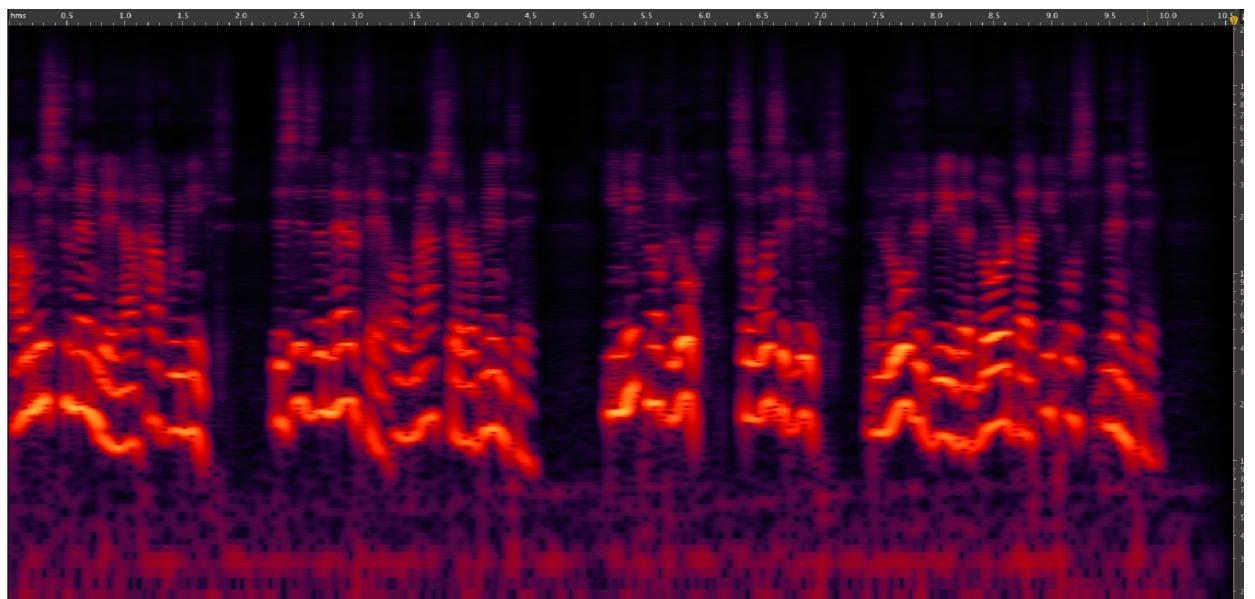


Dynamics	
Peak Amplitude	-12.03dB
Maximum RMS Amplitude	-21.56dB
Minimum RMS Amplitude	-105.20dB
Average RMS Amplitude	-34.61dB
Dynamic Range	83.64dB
Dynamic Range Used	67.55dB

Pentecost-Anechoic

Length: 11 seconds

Spectral Content:

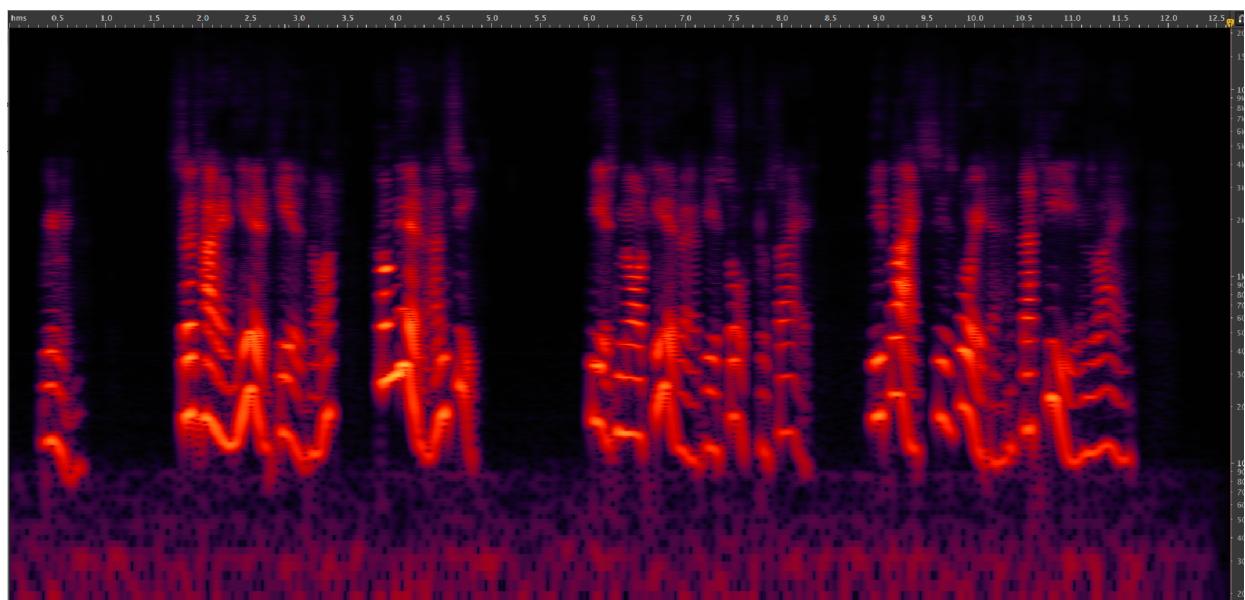


Dynamics	
Peak Amplitude	-16.07dB
Maximum RMS Amplitude	-22.20dB
Minimum RMS Amplitude	-91.79dB
Average RMS Amplitude	-39.89dB
Dynamic Range	69.58dB
Dynamic Range Used	55.75dB

### The Resurrection-Anechoic

Length: 13 seconds

Spectral Content:

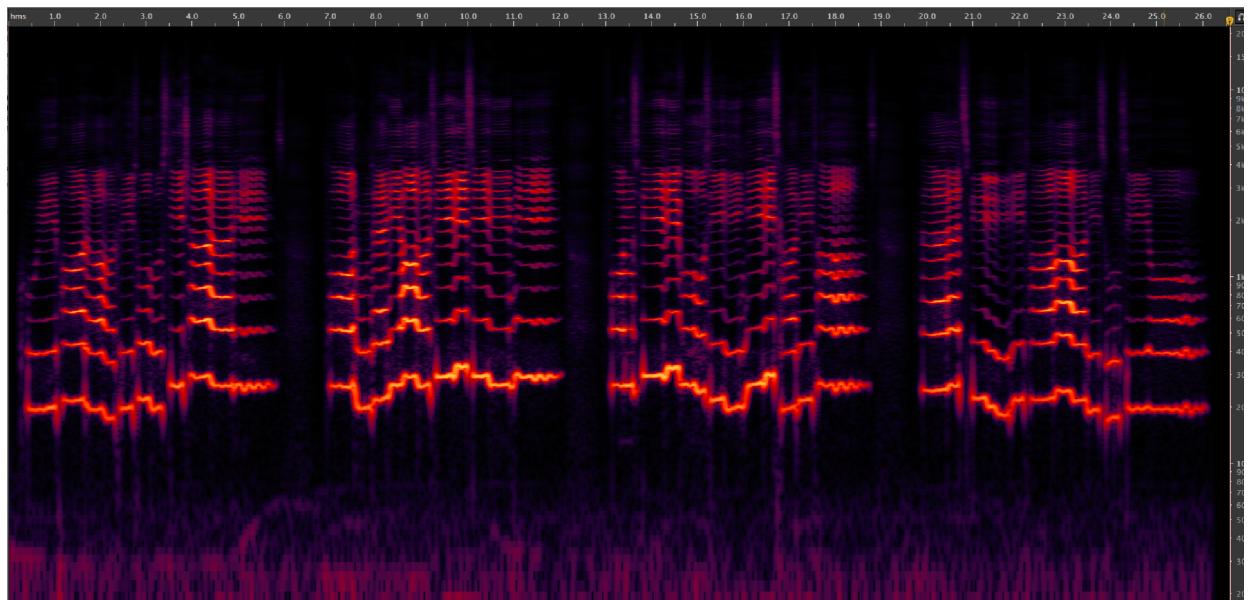


Dynamics	
Peak Amplitude	-8.09dB
Maximum RMS Amplitude	-20.86dB
Minimum RMS Amplitude	-73.45dB
Average RMS Amplitude	-41.94dB
Dynamic Range	52.60dB
Dynamic Range Used	44.65dB

### Veni Creator-Anechoic

Length: 27 seconds

Spectral Content:

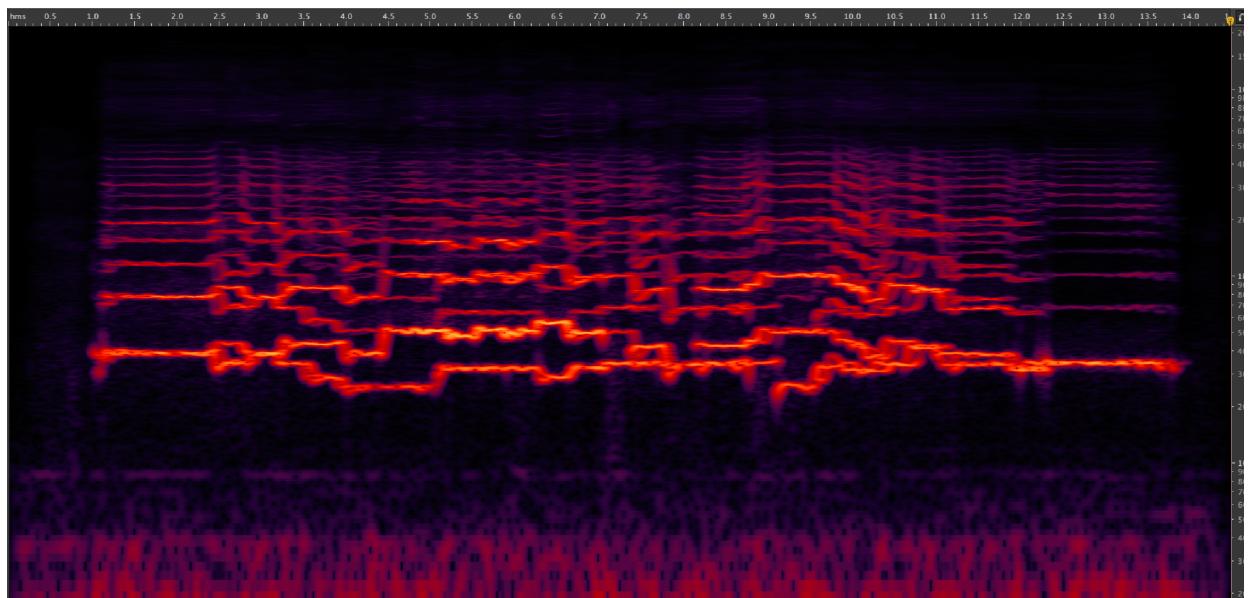


Dynamics	
Peak Amplitude	-6.45dB
Maximum RMS Amplitude	-15.92dB
Minimum RMS Amplitude	-137.75
Average RMS Amplitude	-38.86dB
Dynamic Range	121.83dB
Dynamic Range Used	51.90dB

Veni de Libano-Anechoic

Length: 14 seconds

Spectral Content:



Dynamics	
Peak Amplitude	-12.68dB
Maximum RMS Amplitude	-20.00dB
Minimum RMS Amplitude	-79.34dB
Average RMS Amplitude	-31.33dB
Dynamic Range	59.35dB
Dynamic Range Used	47.55dB

- Auralizations derived from the acoustic measurements (AM) conducted in Stonegate. The files included are listed below and these same files were used for the listening tests:

AM – Alleluia Christus Resurgens Receiver 1      AM – The Resurrection Receiver 1

AM – Alleluia Christus Resurgens Receiver 2      AM – The Resurrection Receiver 2

AM – Alleluia Christus Resurgens Receiver 3      AM – The Resurrection Receiver 3

AM – Christus Resurgens Receiver 1      AM – Veni Creator Receiver 1

AM – Christus Resurgens Receiver 2      AM – Veni Creator Receiver 2

AM – Christus Resurgens Receiver 3      AM – Veni Creator Receiver 3

AM – Pentecost Receiver 1      AM – Veni de Libano Receiver 1

AM – Pentecost Receiver 2      AM – Veni de Libano Receiver 2

AM – Pentecost Receiver 3      AM – Veni de Libano Receiver 3

- Auralizations derived from the Virtual Model (VM) of Modern Stonegate. The files included are listed below and these same files were used for the listening tests:

VM – Alleluia Christus Resurgens Receiver 1      VM – The Resurrection Receiver 1

VM – Alleluia Christus Resurgens Receiver 2      VM – The Resurrection Receiver 2

VM – Alleluia Christus Resurgens Receiver 3      VM – The Resurrection Receiver 3

VM – Christus Resurgens Receiver 1      VM – Veni Creator Receiver 1

VM – Christus Resurgens Receiver 2      VM – Veni Creator Receiver 2

VM – Christus Resurgens Receiver 3	VM – Veni Creator Receiver 3
VM – Pentecost Receiver 1	VM – Veni de Libano Receiver 1
VM – Pentecost Receiver 2	VM – Veni de Libano Receiver 2
VM – Pentecost Receiver 3	VM – Veni de Libano Receiver 3
<ul style="list-style-type: none"> <li>• Auralizations – Sixteenth-Century Stonegate. These files show the impact of different versions of the street space on an extract from the plays. These files include the following:</li> </ul>	
The Resurrection – Anechoic	
The Resurrection – Stonegate 1-Receiver 2	
The Resurrection – Stonegate 2-Receiver 2	
The Resurrection – Stonegate 3-Receiver 2	
The Resurrection – Stonegate 4-Receiver 2	
<ul style="list-style-type: none"> <li>• Impulse Responses. This folder includes four subfolders whose content is described below:</li> </ul>	
<ol style="list-style-type: none"> <li>1) Acoustic Measurements On Site: these are the impulse responses derived from the measurements conducted in Stonegate. The folder includes the measurements conducted with the Kemar dummy head and the Soundfield microphone (W and WY channels). The files include all acoustic measurements for all source-receiver combinations.</li> </ol>	
<ol style="list-style-type: none"> <li>2) Simulations of Sixteenth-Century Stonegate: these are the impulse responses derived from the virtual models of sixteenth-century Stonegate. The folder includes Binaural, W-channel and Y-channel impulse responses for all source-receiver combinations in relation to the following virtual models:</li> </ol>	

Sixteenth-Century Stonegate-Version 1	Sixteenth-Century Stonegate-Version 5
Sixteenth-Century Stonegate-Version 2	Sixteenth-Century Stonegate-Version 6
Sixteenth-Century Stonegate-Version 3	Sixteenth-Century Stonegate-Version 7

Sixteenth-Century Stonegate-Version 4	Sixteenth-Century Stonegate-Version 8
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The file names include the number of the version of sixteenth-century Stonegate, an indication of the type of impulse response (Bin, W, Y), the source number (B0) and the receiver number (01-03). For example, the file *Sixteenth-Century Stonegate Version 1\_BIN\_B0\_01*, refers to the binaural impulse response corresponding to source B0, receiver 1 and that was derived from the first version of sixteenth-century Stonegate.

3) Simulations of Sixteenth-Century Stonegate with Wagons: these are the impulse responses derived from the virtual models that included a wagon structure. The names of the virtual models are listed below. Binaural, W-channel and Y-channel impulse responses for all source-receiver combinations are included.

Stonegate 1-CL-FR Wagon	Stonegate 3-CL-FR Wagon
Stonegate 1-CL-FR-Aud	Stonegate 3-CL-FR-Aud
Stonegate 1-CL-SI Wagon	Stonegate 3-CL-SI Wagon
Stonegate 1-CL-SI-Aud	Stonegate 3-CL-SI-Aud
Stonegate 1-OP-FR Wagon	Stonegate 3-OP-FR Wagon
Stonegate 1-OP-FR-Aud	Stonegate 3-OP-FR-Aud
Stonegate 1-OP-SI Wagon	Stonegate 3-OP-SI Wagon
Stonegate 1-OP-SI-Aud	Stonegate 3-OP-SI-Aud
Stonegate 2-CL-FR Wagon	Stonegate 4-CL-FR Wagon
Stonegate 2-CL-FR-Aud	Stonegate 4-CL-FR-Aud
Stonegate 2-CL-SI Wagon	Stonegate 4-CL-SI Wagon
Stonegate 2-CL-SI-Aud	Stonegate 4-CL-SI-Aud
Stonegate 2-OP-FR Wagon	Stonegate 4-OP-FR Wagon
Stonegate 2-OP-FR-Aud	Stonegate 4-OP-FR-Aud
Stonegate 2-OP-SI Wagon	Stonegate 4-OP-SI Wagon
Stonegate 2-OP-SI-Aud	Stonegate 4-OP-SI-Aud

The nomenclature used to refer to the virtual models is the same than the one presented in Chapter 5 of the thesis. Below is a summary of the abbreviations:

**AUD:** virtual model that includes a wagon structure as well as audience areas.

**CL:** virtual model that includes a wagon structure that is closed on three sides.

**FR:** virtual model that includes a wagon with a front-on orientation.

**OP:** virtual model that includes a wagon open on four sides.

**SI:** virtual model that includes a wagon with a side-on orientation.

The file names include the number of the version of sixteenth-century Stonegate, an indication of the type of wagon modelled and whether an audience area is included, an indication of the type of impulse response (Bin, W, Y), the source number (B0-B4) and the receiver number (01-38). For example, the file *Stonegate 1-CL-FR Wagon\_BIN\_B0\_01*, refers to the binaural impulse response corresponding to source B0, receiver 1 and that was derived from the first version of sixteenth-century Stonegate that includes a closed wagon with a front-on orientation.

4) Virtual Model of Modern Stonegate: these are the impulse responses derived from the simulation of modern Stonegate. Binaural, W-channel and Y-channel impulse responses for all source-receiver combinations are included. The file names include an indication of the type of impulse response (Bin, W, Y), the source number (B0) and the receiver number (01-03). For example, the file *Modern Stonegate\_BIN\_B0\_01*, refers to the binaural impulse response corresponding to source B0, receiver 1 and that was derived from the simulation of modern Stonegate.

- Volumes 1 and 2 of the thesis in pdf format.
- Virtual Models. This folder includes all virtual models discussed in the thesis. These files can only be opened using CATT-A and TUCT.  
The files listed below can be found in this folder.

### 1) Simulations of Sixteenth-Century Stonegate

Sixteenth-Century Stonegate- Version 1	Sixteenth-Century Stonegate- Version 5
Sixteenth-Century Stonegate- Version 2	Sixteenth-Century Stonegate- Version 6
Sixteenth-Century Stonegate- Version 3	Sixteenth-Century Stonegate- Version 7
Sixteenth-Century Stonegate- Version 4	Sixteenth-Century Stonegate- Version 8

### 2) Simulations of Sixteenth-Century Stonegate with Wagons

Stonegate 1-CL-FR Wagon	Stonegate 3-CL-FR Wagon
Stonegate 1-CL-FR-Aud	Stonegate 3-CL-FR-Aud
Stonegate 1-CL-SI Wagon	Stonegate 3-CL-SI Wagon
Stonegate 1-CL-SI-Aud	Stonegate 3-CL-SI-Aud
Stonegate 1-OP-FR Wagon	Stonegate 3-OP-FR Wagon
Stonegate 1-OP-FR-Aud	Stonegate 3-OP-FR-Aud
Stonegate 1-OP-SI Wagon	Stonegate 3-OP-SI Wagon
Stonegate 1-OP-SI-Aud	Stonegate 3-OP-SI-Aud
Stonegate 2-CL-FR Wagon	Stonegate 4-CL-FR Wagon
Stonegate 2-CL-FR-Aud	Stonegate 4-CL-FR-Aud
Stonegate 2-CL-SI Wagon	Stonegate 4-CL-SI Wagon
Stonegate 2-CL-SI-Aud	Stonegate 4-CL-SI-Aud
Stonegate 2-OP-FR Wagon	Stonegate 4-OP-FR Wagon
Stonegate 2-OP-FR-Aud	Stonegate 4-OP-FR-Aud
Stonegate 2-OP-SI Wagon	Stonegate 4-OP-SI Wagon
Stonegate 2-OP-SI-Aud	Stonegate 4-OP-SI-Aud

### 3) Virtual Model of Modern Stonegate