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## DAMPER SELECTION FOR 477M 26/7 ACCR

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| OBJECTIVE | • To characterize 1704 and 1705 damper performance on 477M 26/7 ACCR conductor.<br>• To select most appropriate damper for minimizing vibration on 477M 26/7 ACCR. |

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| COMPONENTS TESTED | ALCOA 1704-7 damper<br>ALCOA 1705-7 damper |

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| PROCEDURE | Damping efficiency was determined according to IEEE STD 664 using the standing wave ratio method and the following conditions:<br>• conductor tension of 25% RBS<br>• damper spaced 39.3” from fixed suspension shoe<br>• damper spaced at 70% of the calculated loop length for 15 mph wind<br>• peak-to-peak amplitude equal to 3/F, where “F” is the span vibration frequency in hertz<br>• efficiency measurements at all undampened conductor harmonics between 7.66 and 57.46 hertz (equivalent of 2 to 15 mph wind speed) |

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| REQUIREMENT | Minimum overall damper efficiency of 15.5% based on the 15.5% acceptance curve. |

| TEST RESULTS 1704-7<br><br>OVERALL EFFICIENCY BASED ON 15.5% CURVE - 30.7% | WIND SPEED (mph) | DAMPER EFFICIENCY (%) | WIND SPEED (mph) | DAMPER EFFICIENCY (%) | WIND SPEED (mph) | DAMPER EFFICIENCY (%) |
|---|---|---|---|---|---|---|
| | 2.29 | 16.96 | 6.42 | 30.08 | 10.64 | 32.43 |
| | 2.72 | 18.75 | 6.89 | 34.51 | 11.12 | 37.14 |
| | 3.17 | 17.07 | 7.35 | 28.30 | 11.60 | 40.30 |
| | 3.64 | 14.42 | 7.82 | 26.73 | 12.10 | 40.63 |
| | 4.09 | 28.42 | 8.29 | 26.32 | 12.58 | 40.98 |
| | 4.55 | 45.66 | 8.74 | 22.73 | 13.07 | 42.37 |
| | 5.01 | 29.94 | 9.20 | 27.06 | 13.56 | 43.86 |
| | 5.48 | 29.58 | 9.68 | 25.00 | 14.08 | 45.45 |
| | 5.95 | 30.77 | 10.16 | 35.06 | 14.57 | 47.17 |

| TEST RESULTS 1705-7<br><br>OVERALL EFFICIENCY BASED ON 15.5% CURVE - 18.4% | WIND SPEED (mph) | DAMPER EFFICIENCY (%) | WIND SPEED (mph) | DAMPER EFFICIENCY (%) | WIND SPEED (mph) | DAMPER EFFICIENCY (%) |
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| | 2.29 | 31.20 | 6.42 | 26.23 | 10.64 | 32.43 |
| | 2.72 | 30.56 | 6.89 | 29.82 | 11.12 | 37.14 |
| | 3.17 | 24.19 | 7.35 | 27.10 | 11.60 | 38.24 |
| | 3.64 | 17.21 | 7.82 | 24.75 | 12.10 | 41.54 |
| | 4.09 | 18.75 | 8.29 | 22.11 | 12.58 | 39.68 |
| | 4.55 | 33.33 | 8.74 | 19.10 | 13.07 | 41.38 |
| | 5.01 | 56.41 | 9.20 | 15.29 | 13.56 | 42.86 |
| | 5.48 | 37.06 | 9.68 | 15.00 | 14.08 | 39.29 |
| | 5.95 | 30.30 | 10.16 | 22.08 | 14.57 | 40.74 |

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| CALCULATION OF OVERALL EFFICIENCY | The overall efficiency is determined by dividing the measured efficiency at each frequency by the acceptance curve value for that frequency and multiplying by the acceptance curve basis (15.5%). |

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| CONCLUSIONS | The 1704-7 damper provides the best damping performance over the range of frequencies equivalent to wind speeds between 2 and 15 mph based on its overall efficiency of 30.7%.<br><br>The chart below provides a graphical presentation of the 1704-7 and 1705-7 damping performance relative to the 15.5% and 26% curves. The 26% curve applied to larger conductors. |