**Additional file 1: Temperature rise values**

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| **The values of temperature rise recorded during resin composite polymerization (℃)** |
| **Curing mode** | **Dentin thickness (mm)** |
|  | **Stage 1 curing** | **Stage 2 curing** |
|  | **0.5** | **1** | **0.5** | **1** |
| **Standard** | 7.4 | 6.2 | 4.3 | 3.7 |
|  | 7.5 | 6.8 | 4.4 | 4.3 |
|  | 7.6 | 7.5 | 5.3 | 5.1 |
|  | 8.0 | 7.1 | 5 | 4.6 |
|  | 7.5 | 7.7 | 4.9 | 5.3 |
| **Ramp** | 7.4 | 6.8 | 3.4 | 4.2 |
|  | 7.4 | 6.7 | 3.9 | 4.1 |
|  | 7.3 | 6.4 | 4.3 | 3.9 |
|  | 7.8 | 6.4 | 4.4 | 3.2 |
|  | 7.7 | 6.5 | 4.5 | 3.8 |
| **Pulse** | 6.2 | 4.5 | 3.1 | 2.8 |
|  | 5.7 | 4.4 | 3.7 | 2.1 |
|  | 6.8 | 5.3 | 2.7 | 4.1 |
|  | 6.2 | 5.3 | 3.2 | 3.9 |
|  | 6.7 | 4.5 | 3.4 | 2.9 |