



V6.0.1 - 1.0.7455.19842

| <b>Type Test Report</b>                                                                                                                                                   |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |       | Date of Issue: 30.6.2020                         |         |                |          |                    |       |                                  |       |   |       |      |     |      |      |     |      |      |    |     |      |      |     |      |      |    |     |      |      |     |      |      |    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|--------------------------------------------------|---------|----------------|----------|--------------------|-------|----------------------------------|-------|---|-------|------|-----|------|------|-----|------|------|----|-----|------|------|-----|------|------|----|-----|------|------|-----|------|------|----|
| Tests have been carried out for motor no. 3G1R1935210444, which is identical in electrical design with motor type(s) stated in this report.                               |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |       | Type: M3AA 80B 8<br>Product Code: 3GAA084002-_SE |         |                |          |                    |       |                                  |       |   |       |      |     |      |      |     |      |      |    |     |      |      |     |      |      |    |     |      |      |     |      |      |    |
| Rating:                                                                                                                                                                   |             | <table border="1"> <thead> <tr> <th>V</th> <th>Hz</th> <th>kW</th> <th>r/min</th> <th>A</th> <th>cos φ</th> <th>Duty</th> </tr> </thead> <tbody> <tr> <td>400</td> <td>Y 50</td> <td>0,25</td> <td>675</td> <td>0,97</td> <td>0,61</td> <td>S1</td> </tr> <tr> <td>230</td> <td>D 50</td> <td>0,25</td> <td>675</td> <td>1,68</td> <td>0,61</td> <td>S1</td> </tr> <tr> <td>460</td> <td>Y 60</td> <td>0,25</td> <td>850</td> <td>0,91</td> <td>0,54</td> <td>S1</td> </tr> </tbody> </table> |       |                                                  |         |                |          | V                  | Hz    | kW                               | r/min | A | cos φ | Duty | 400 | Y 50 | 0,25 | 675 | 0,97 | 0,61 | S1 | 230 | D 50 | 0,25 | 675 | 1,68 | 0,61 | S1 | 460 | Y 60 | 0,25 | 850 | 0,91 | 0,54 | S1 |
| V                                                                                                                                                                         | Hz          | kW                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | r/min | A                                                | cos φ   | Duty           |          |                    |       |                                  |       |   |       |      |     |      |      |     |      |      |    |     |      |      |     |      |      |    |     |      |      |     |      |      |    |
| 400                                                                                                                                                                       | Y 50        | 0,25                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 675   | 0,97                                             | 0,61    | S1             |          |                    |       |                                  |       |   |       |      |     |      |      |     |      |      |    |     |      |      |     |      |      |    |     |      |      |     |      |      |    |
| 230                                                                                                                                                                       | D 50        | 0,25                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 675   | 1,68                                             | 0,61    | S1             |          |                    |       |                                  |       |   |       |      |     |      |      |     |      |      |    |     |      |      |     |      |      |    |     |      |      |     |      |      |    |
| 460                                                                                                                                                                       | Y 60        | 0,25                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 850   | 0,91                                             | 0,54    | S1             |          |                    |       |                                  |       |   |       |      |     |      |      |     |      |      |    |     |      |      |     |      |      |    |     |      |      |     |      |      |    |
| 3~Motor<br>Ins. Class F                                                                                                                                                   |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |       |                                                  |         |                |          |                    |       |                                  |       |   |       |      |     |      |      |     |      |      |    |     |      |      |     |      |      |    |     |      |      |     |      |      |    |
| Eff class IE2                                                                                                                                                             |             | 50Hz: IE2 - 50.6(100%) - 52.2(75%) - 46.4(50%)<br>60Hz: IE2 - 52.0(100%)                                                                                                                                                                                                                                                                                                                                                                                                                      |       |                                                  |         |                |          |                    |       |                                  |       |   |       |      |     |      |      |     |      |      |    |     |      |      |     |      |      |    |     |      |      |     |      |      |    |
| Winding resistance                                                                                                                                                        |             | Measured at<br>23 °C                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |       | Calculated at<br>20 °C                           |         |                |          |                    |       |                                  |       |   |       |      |     |      |      |     |      |      |    |     |      |      |     |      |      |    |     |      |      |     |      |      |    |
| U <sub>1</sub> - V <sub>1</sub>                                                                                                                                           |             | 63,190 Ω                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |       | 62,577 Ω                                         |         |                |          |                    |       |                                  |       |   |       |      |     |      |      |     |      |      |    |     |      |      |     |      |      |    |     |      |      |     |      |      |    |
| U <sub>1</sub> - W <sub>1</sub>                                                                                                                                           |             | 63,220 Ω                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |       | 62,606 Ω                                         |         |                |          |                    |       |                                  |       |   |       |      |     |      |      |     |      |      |    |     |      |      |     |      |      |    |     |      |      |     |      |      |    |
| V <sub>1</sub> - W <sub>1</sub>                                                                                                                                           |             | 63,240 Ω                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |       | 62,626 Ω                                         |         |                |          |                    |       |                                  |       |   |       |      |     |      |      |     |      |      |    |     |      |      |     |      |      |    |     |      |      |     |      |      |    |
|                                                                                                                                                                           |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |       |                                                  |         |                |          |                    |       |                                  |       |   |       |      |     |      |      |     |      |      |    |     |      |      |     |      |      |    |     |      |      |     |      |      |    |
| Test                                                                                                                                                                      | Torque [Nm] | Line U[V]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | f[Hz] | Input I[A]                                       | P1 [kW] | Output P2 [kW] | η[r/min] | cos φ              | η [%] | s [%]                            |       |   |       |      |     |      |      |     |      |      |    |     |      |      |     |      |      |    |     |      |      |     |      |      |    |
| No-load test                                                                                                                                                              |             | 399,9 Y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 50    | 0,82                                             | 0,09    |                |          | 0,17               |       |                                  |       |   |       |      |     |      |      |     |      |      |    |     |      |      |     |      |      |    |     |      |      |     |      |      |    |
| Short circuit test                                                                                                                                                        |             | 169,2 Y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 50    | 1,00                                             | 0,20    |                |          | 0,67               |       |                                  |       |   |       |      |     |      |      |     |      |      |    |     |      |      |     |      |      |    |     |      |      |     |      |      |    |
| Temp. rise test S1                                                                                                                                                        | 3,5         | 400,5 Y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 50    | 1,00                                             | 0,43    | 0,25           | 676      | 0,61               | 58,9  | 9,84                             |       |   |       |      |     |      |      |     |      |      |    |     |      |      |     |      |      |    |     |      |      |     |      |      |    |
| Partial load points:                                                                                                                                                      |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |       |                                                  |         |                |          |                    |       |                                  |       |   |       |      |     |      |      |     |      |      |    |     |      |      |     |      |      |    |     |      |      |     |      |      |    |
| ~75% load                                                                                                                                                                 | 2,7         | 400,2 Y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 50    | 0,92                                             | 0,33    | 0,20           | 700      | 0,52               | 60,2  | 6,63                             |       |   |       |      |     |      |      |     |      |      |    |     |      |      |     |      |      |    |     |      |      |     |      |      |    |
| ~50% load                                                                                                                                                                 | 1,8         | 400,3 Y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 50    | 0,86                                             | 0,25    | 0,14           | 718      | 0,42               | 55,3  | 4,24                             |       |   |       |      |     |      |      |     |      |      |    |     |      |      |     |      |      |    |     |      |      |     |      |      |    |
| ~25% load                                                                                                                                                                 | 0,9         | 400,3 Y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 50    | 0,83                                             | 0,17    | 0,07           | 734      | 0,30               | 41,4  | 2,10                             |       |   |       |      |     |      |      |     |      |      |    |     |      |      |     |      |      |    |     |      |      |     |      |      |    |
| Temperature rise at rated load.                                                                                                                                           |             | [°C]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |       | [K]                                              |         | Method         |          | Measurement method |       |                                  |       |   |       |      |     |      |      |     |      |      |    |     |      |      |     |      |      |    |     |      |      |     |      |      |    |
| Stator winding :                                                                                                                                                          |             | 50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |       | 1                                                |         |                |          | 1 Resistance       |       |                                  |       |   |       |      |     |      |      |     |      |      |    |     |      |      |     |      |      |    |     |      |      |     |      |      |    |
| Frame :                                                                                                                                                                   |             | 35                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |       | 2                                                |         |                |          | 2 Thermocouples    |       |                                  |       |   |       |      |     |      |      |     |      |      |    |     |      |      |     |      |      |    |     |      |      |     |      |      |    |
| Bearing N-end :                                                                                                                                                           |             | 24                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |       | 2                                                |         |                |          | 3 Thermometer      |       |                                  |       |   |       |      |     |      |      |     |      |      |    |     |      |      |     |      |      |    |     |      |      |     |      |      |    |
| Rotor :                                                                                                                                                                   |             | 45                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |       | 3                                                |         |                |          |                    |       |                                  |       |   |       |      |     |      |      |     |      |      |    |     |      |      |     |      |      |    |     |      |      |     |      |      |    |
| Ambient Temperature :                                                                                                                                                     |             | 23                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |       | 2                                                |         |                |          |                    |       |                                  |       |   |       |      |     |      |      |     |      |      |    |     |      |      |     |      |      |    |     |      |      |     |      |      |    |
| Starting current (I <sub>S</sub> / I <sub>N</sub> ) : 2,89<br>Locked rotor torque (T <sub>L</sub> / T <sub>N</sub> ) : 2,08<br><br>Current unbalance at full load: 0,68 % |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |       |                                                  |         |                |          |                    |       |                                  |       |   |       |      |     |      |      |     |      |      |    |     |      |      |     |      |      |    |     |      |      |     |      |      |    |
| Manufactured and tested acc. to IEC/EN 60034-1:2017 and IEC/EN 60034-2-1:2014 Method 2-1-1B.                                                                              |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |       |                                                  |         |                |          |                    |       |                                  |       |   |       |      |     |      |      |     |      |      |    |     |      |      |     |      |      |    |     |      |      |     |      |      |    |
| On behalf of customer                                                                                                                                                     |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |       |                                                  |         |                |          |                    |       |                                  |       |   |       |      |     |      |      |     |      |      |    |     |      |      |     |      |      |    |     |      |      |     |      |      |    |
| On behalf of manufacturer                                                                                                                                                 |             | Date of test:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |       | 3.3.2020                                         |         |                |          |                    |       |                                  |       |   |       |      |     |      |      |     |      |      |    |     |      |      |     |      |      |    |     |      |      |     |      |      |    |
| Tested by ABB Oy, Motors and Generators, Vaasa, Finland                                                                                                                   |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |       |                                                  |         |                |          |                    |       |                                  |       |   |       |      |     |      |      |     |      |      |    |     |      |      |     |      |      |    |     |      |      |     |      |      |    |
| Test laboratory has been certified acc. to ISO/IEC 17025:2005                                                                                                             |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |       |                                                  |         |                |          |                    |       | Tommi Pantti, Test Floor Manager |       |   |       |      |     |      |      |     |      |      |    |     |      |      |     |      |      |    |     |      |      |     |      |      |    |