

Wels, October 13th 2020

MAINS HARMONICS FRONIUS SYMO ADVANCED 24.0-3 480

EUT type: Fronius Symo Advanced 24.0-3 480

EUT operation mode: feeding nominal power, 480 V, 60 Hz

| frequency [Hz] | harmonic order | EUT max. current [A] | IEEE 1547 limit [A] | EUT max. current [%] | IEEE 1547 limit [%] | result |
|----------------|----------------|----------------------|---------------------|----------------------|---------------------|--------|
| 60 | 1 | 29.24 | - | - | - | - |
| 120 | 2 | 0.060 | 0.290 | 0.205 | 1 | pass |
| 180 | 3 | 0.051 | 1.160 | 0.176 | 4 | pass |
| 240 | 4 | 0.040 | 0.290 | 0.139 | 1 | pass |
| 300 | 5 | 0.364 | 1.160 | 1.256 | 4 | pass |
| 360 | 6 | 0.023 | 0.290 | 0.080 | 1 | pass |
| 420 | 7 | 0.211 | 1.160 | 0.729 | 4 | pass |
| 480 | 8 | 0.038 | 0.290 | 0.130 | 1 | pass |
| 540 | 9 | 0.064 | 1.160 | 0.220 | 4 | pass |
| 600 | 10 | 0.015 | 0.290 | 0.053 | 1 | pass |
| 660 | 11 | 0.113 | 0.580 | 0.390 | 2 | pass |
| 720 | 12 | 0.033 | 0.145 | 0.113 | 0.5 | pass |
| 780 | 13 | 0.082 | 0.580 | 0.281 | 2 | pass |
| 840 | 14 | 0.009 | 0.145 | 0.031 | 0.5 | pass |
| 900 | 15 | 0.034 | 0.580 | 0.118 | 2 | pass |
| 960 | 16 | 0.034 | 0.145 | 0.118 | 0.5 | pass |
| 1020 | 17 | 0.084 | 0.435 | 0.291 | 1.5 | pass |
| 1080 | 18 | 0.015 | 0.109 | 0.052 | 0.375 | pass |
| 1140 | 19 | 0.030 | 0.435 | 0.103 | 1.5 | pass |
| 1200 | 20 | 0.027 | 0.109 | 0.092 | 0.375 | pass |
| 1260 | 21 | 0.023 | 0.363 | 0.079 | 1.5 | pass |
| 1320 | 22 | 0.017 | 0.109 | 0.059 | 0.375 | pass |
| 1380 | 23 | 0.026 | 0.174 | 0.091 | 0.6 | pass |
| 1440 | 24 | 0.024 | 0.044 | 0.081 | 0.15 | pass |
| 1500 | 25 | 0.030 | 0.174 | 0.103 | 0.6 | pass |
| 1560 | 26 | 0.015 | 0.044 | 0.052 | 0.15 | pass |
| 1620 | 27 | 0.015 | 0.174 | 0.050 | 0.6 | pass |
| 1680 | 28 | 0.017 | 0.044 | 0.059 | 0.15 | pass |
| 1740 | 29 | 0.016 | 0.174 | 0.056 | 0.6 | pass |
| 1800 | 30 | 0.013 | 0.044 | 0.045 | 0.15 | pass |
| 1860 | 31 | 0.025 | 0.174 | 0.086 | 0.6 | pass |
| 1920 | 32 | 0.015 | 0.044 | 0.052 | 0.15 | pass |
| 1980 | 33 | 0.015 | 0.174 | 0.051 | 0.6 | pass |
| 2040 | 34 | 0.012 | 0.044 | 0.040 | 0.15 | pass |
| 2100 | 35 | 0.019 | 0.087 | 0.065 | 0.3 | pass |
| 2160 | 36 | 0.012 | 0.022 | 0.040 | 0.075 | pass |
| 2220 | 37 | 0.016 | 0.087 | 0.055 | 0.3 | pass |
| 2280 | 38 | 0.009 | 0.022 | 0.033 | 0.075 | pass |
| 2340 | 39 | 0.009 | 0.087 | 0.031 | 0.3 | pass |
| 2400 | 40 | 0.010 | 0.022 | 0.034 | 0.075 | pass |

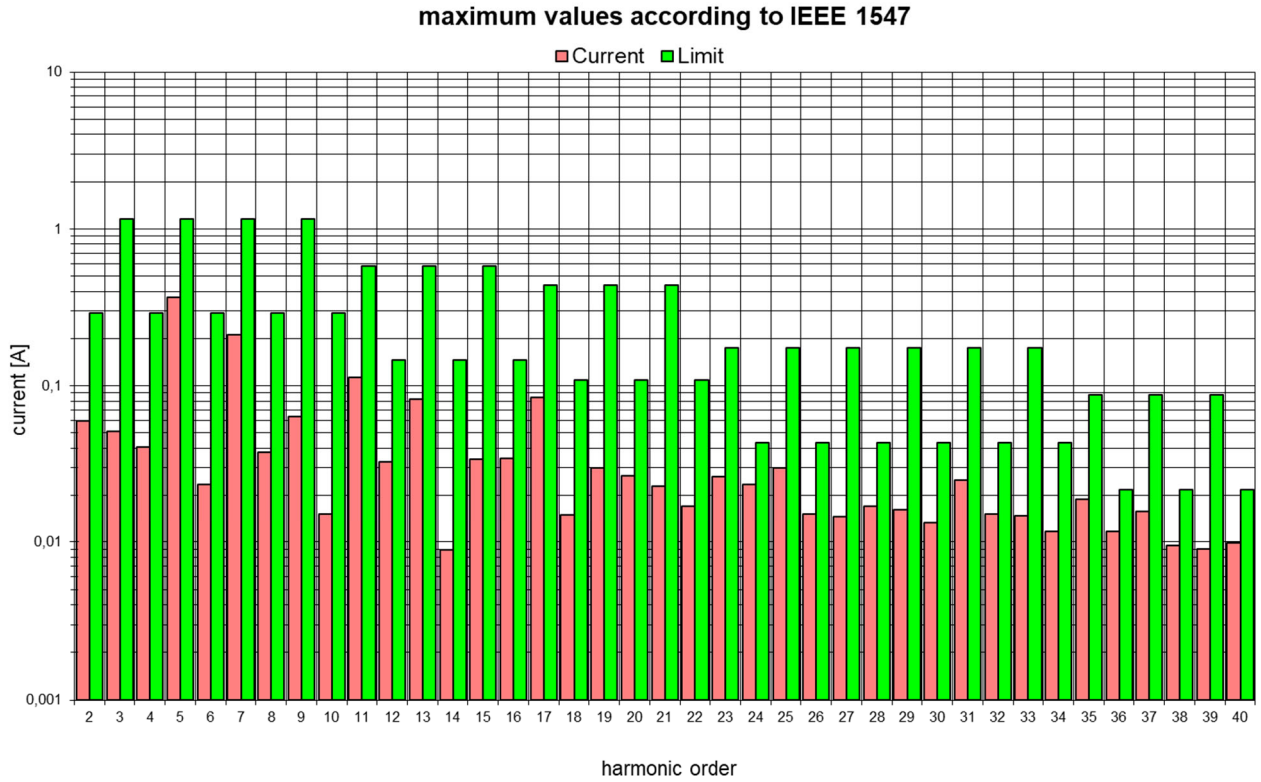
I_{eff} [A] 29,25

THC [A] 0.44
PWHC [A] 0.54

THD [%] 1.51
PWHD [%] 1,86



Test result chart at 480 V mains voltage, 100 % of nominal power, according to IEEE 1547:





EUT type: Fronius Symo Advanced 24.0-3 480

EUT operation mode: feeding 66 % power, 480 V, 60 Hz

| frequency [Hz] | harmonic order | EUT max. current [A] | IEEE 1547 limit [A] | EUT max. current [%] | IEEE 1547 limit [%] | result |
|----------------|----------------|----------------------|---------------------|----------------------|---------------------|--------|
| 60 | 1 | 20.12 | - | - | - | - |
| 120 | 2 | 0.046 | 0.290 | 0.158 | 1 | pass |
| 180 | 3 | 0.046 | 1.160 | 0.159 | 4 | pass |
| 240 | 4 | 0.034 | 0.290 | 0.118 | 1 | pass |
| 300 | 5 | 0.329 | 1.160 | 1.133 | 4 | pass |
| 360 | 6 | 0.025 | 0.290 | 0.088 | 1 | pass |
| 420 | 7 | 0.191 | 1.160 | 0.659 | 4 | pass |
| 480 | 8 | 0.019 | 0.290 | 0.066 | 1 | pass |
| 540 | 9 | 0.034 | 1.160 | 0.118 | 4 | pass |
| 600 | 10 | 0.035 | 0.290 | 0.122 | 1 | pass |
| 660 | 11 | 0.104 | 0.580 | 0.358 | 2 | pass |
| 720 | 12 | 0.010 | 0.145 | 0.036 | 0.5 | pass |
| 780 | 13 | 0.090 | 0.580 | 0.312 | 2 | pass |
| 840 | 14 | 0.030 | 0.145 | 0.104 | 0.5 | pass |
| 900 | 15 | 0.043 | 0.580 | 0.149 | 2 | pass |
| 960 | 16 | 0.011 | 0.145 | 0.037 | 0.5 | pass |
| 1020 | 17 | 0.048 | 0.435 | 0.164 | 1.5 | pass |
| 1080 | 18 | 0.025 | 0.109 | 0.087 | 0.375 | pass |
| 1140 | 19 | 0.032 | 0.435 | 0.111 | 1.5 | pass |
| 1200 | 20 | 0.011 | 0.109 | 0.037 | 0.375 | pass |
| 1260 | 21 | 0.021 | 0.435 | 0.074 | 1.5 | pass |
| 1320 | 22 | 0.020 | 0.109 | 0.069 | 0.375 | pass |
| 1380 | 23 | 0.021 | 0.174 | 0.074 | 0.6 | pass |
| 1440 | 24 | 0.012 | 0.044 | 0.042 | 0.15 | pass |
| 1500 | 25 | 0.030 | 0.174 | 0.103 | 0.6 | pass |
| 1560 | 26 | 0.018 | 0.044 | 0.063 | 0.15 | pass |
| 1620 | 27 | 0.011 | 0.174 | 0.037 | 0.6 | pass |
| 1680 | 28 | 0.016 | 0.044 | 0.057 | 0.15 | pass |
| 1740 | 29 | 0.020 | 0.174 | 0.069 | 0.6 | pass |
| 1800 | 30 | 0.012 | 0.044 | 0.043 | 0.15 | pass |
| 1860 | 31 | 0.011 | 0.174 | 0.037 | 0.6 | pass |
| 1920 | 32 | 0.015 | 0.044 | 0.051 | 0.15 | pass |
| 1980 | 33 | 0.015 | 0.174 | 0.052 | 0.6 | pass |
| 2040 | 34 | 0.009 | 0.044 | 0.030 | 0.15 | pass |
| 2100 | 35 | 0.009 | 0.087 | 0.030 | 0.3 | pass |
| 2160 | 36 | 0.013 | 0.022 | 0.046 | 0.075 | pass |
| 2220 | 37 | 0.011 | 0.087 | 0.037 | 0.3 | pass |
| 2280 | 38 | 0.009 | 0.022 | 0.032 | 0.075 | pass |
| 2340 | 39 | 0.012 | 0.087 | 0.040 | 0.3 | pass |
| 2400 | 40 | 0.009 | 0.022 | 0.032 | 0.075 | pass |

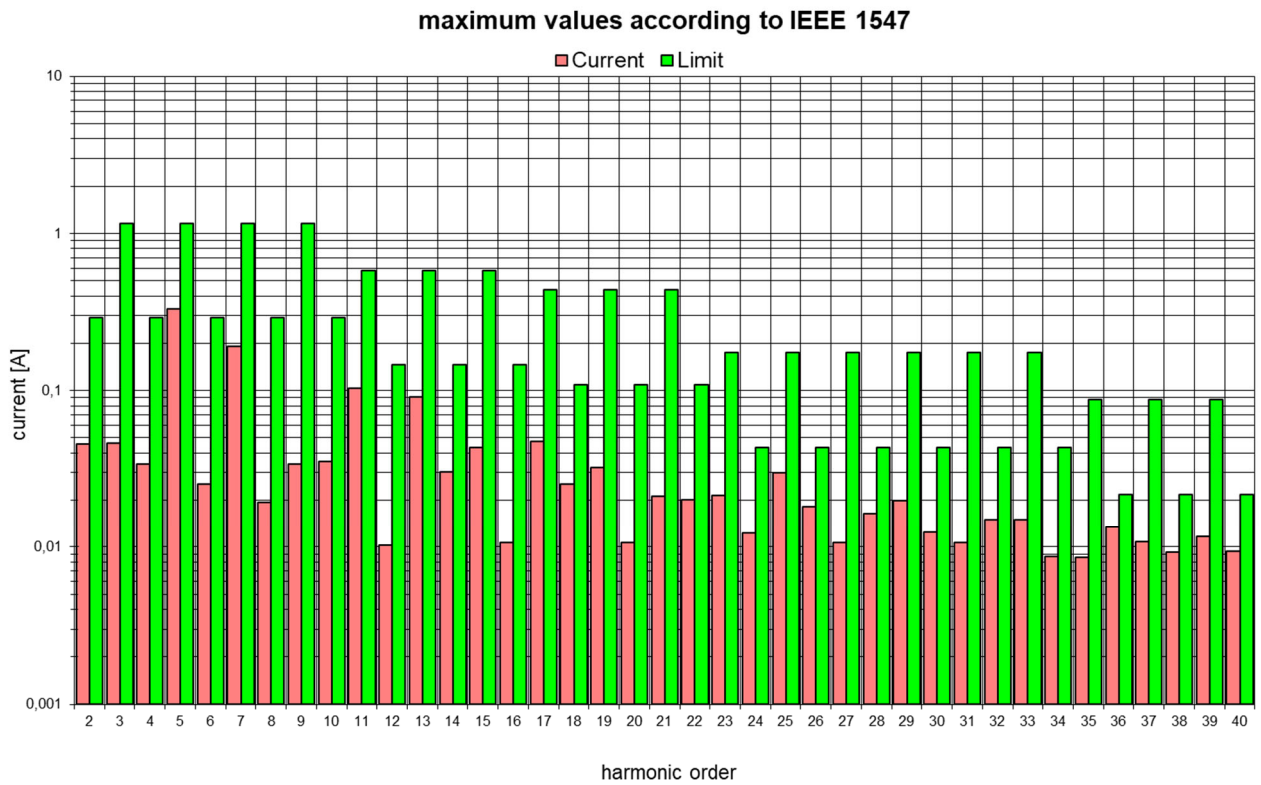
I_{eff} [A] 20.13

THC [A] 0.39
PWHC [A] 0.43

THD [%] 1.35
PWHD [%] 1.47



Test result chart at 480 V mains voltage, 66 % of nominal power, according to IEEE 1547:





EUT type: Fronius Symo Advanced 24.0-3 480

EUT operation mode: feeding 33 % power, 480 V, 60 Hz

| frequency [Hz] | harmonic order | EUT max. current [A] | IEEE 1547 limit [A] | EUT max. current [%] | IEEE 1547 limit [%] | result |
|----------------|----------------|----------------------|---------------------|----------------------|---------------------|--------|
| 60 | 1 | 9.99 | - | - | - | - |
| 120 | 2 | 0.041 | 0.290 | 0.143 | 1 | pass |
| 180 | 3 | 0.042 | 1.160 | 0.145 | 4 | pass |
| 240 | 4 | 0.033 | 0.290 | 0.114 | 1 | pass |
| 300 | 5 | 0.250 | 1.160 | 0.863 | 4 | pass |
| 360 | 6 | 0.025 | 0.290 | 0.087 | 1 | pass |
| 420 | 7 | 0.122 | 1.160 | 0.422 | 4 | pass |
| 480 | 8 | 0.019 | 0.290 | 0.064 | 1 | pass |
| 540 | 9 | 0.034 | 1.160 | 0.119 | 4 | pass |
| 600 | 10 | 0.036 | 0.290 | 0.123 | 1 | pass |
| 660 | 11 | 0.041 | 0.580 | 0.143 | 2 | pass |
| 720 | 12 | 0.009 | 0.145 | 0.029 | 0.5 | pass |
| 780 | 13 | 0.030 | 0.580 | 0.104 | 2 | pass |
| 840 | 14 | 0.028 | 0.145 | 0.096 | 0.5 | pass |
| 900 | 15 | 0.040 | 0.580 | 0.138 | 2 | pass |
| 960 | 16 | 0.011 | 0.145 | 0.038 | 0.5 | pass |
| 1020 | 17 | 0.024 | 0.435 | 0.083 | 1.5 | pass |
| 1080 | 18 | 0.024 | 0.109 | 0.084 | 0.375 | pass |
| 1140 | 19 | 0.017 | 0.435 | 0.057 | 1.5 | pass |
| 1200 | 20 | 0.011 | 0.109 | 0.037 | 0.375 | pass |
| 1260 | 21 | 0.022 | 0.435 | 0.076 | 1.5 | pass |
| 1320 | 22 | 0.018 | 0.109 | 0.061 | 0.375 | pass |
| 1380 | 23 | 0.019 | 0.174 | 0.065 | 0.6 | pass |
| 1440 | 24 | 0.013 | 0.044 | 0.045 | 0.15 | pass |
| 1500 | 25 | 0.025 | 0.174 | 0.086 | 0.6 | pass |
| 1560 | 26 | 0.017 | 0.044 | 0.060 | 0.15 | pass |
| 1620 | 27 | 0.011 | 0.174 | 0.036 | 0.6 | pass |
| 1680 | 28 | 0.016 | 0.044 | 0.056 | 0.15 | pass |
| 1740 | 29 | 0.018 | 0.174 | 0.061 | 0.6 | pass |
| 1800 | 30 | 0.011 | 0.044 | 0.037 | 0.15 | pass |
| 1860 | 31 | 0.014 | 0.174 | 0.049 | 0.6 | pass |
| 1920 | 32 | 0.015 | 0.044 | 0.052 | 0.15 | pass |
| 1980 | 33 | 0.013 | 0.174 | 0.045 | 0.6 | pass |
| 2040 | 34 | 0.008 | 0.044 | 0.029 | 0.15 | pass |
| 2100 | 35 | 0.009 | 0.087 | 0.030 | 0.3 | pass |
| 2160 | 36 | 0.012 | 0.022 | 0.040 | 0.075 | pass |
| 2220 | 37 | 0.013 | 0.087 | 0.046 | 0.3 | pass |
| 2280 | 38 | 0.009 | 0.022 | 0.029 | 0.075 | pass |
| 2340 | 39 | 0.012 | 0.087 | 0.043 | 0.3 | pass |
| 2400 | 40 | 0.010 | 0.022 | 0.035 | 0.075 | pass |

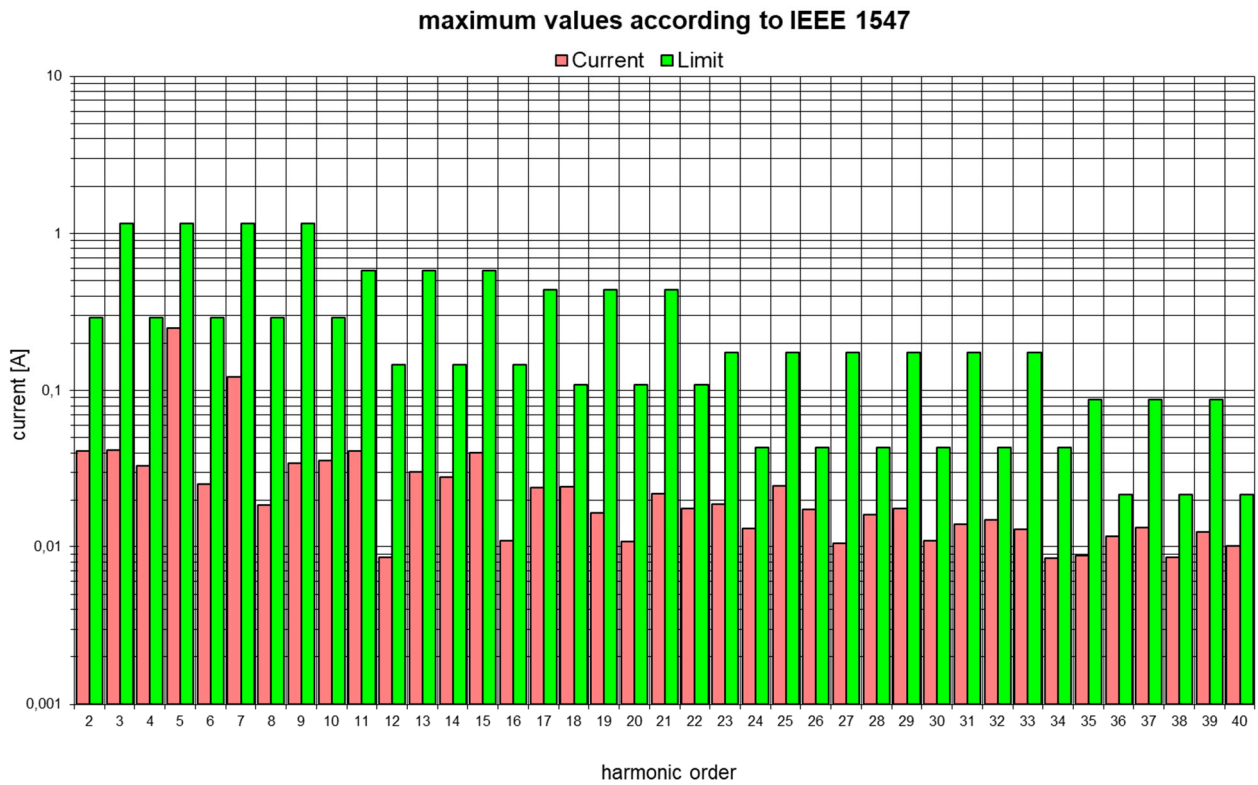
I_{eff} [A] 10.01

THC [A] 0.29
PWHC [A] 0.38

THD [%] 1.01
PWHD [%] 1.32



Test result chart at 480 V mains voltage, 33 % of nominal power, according to IEEE 1547:



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