

Technical Note – Emissions Compliance of SolarEdge Products

All SolarEdge products meet the established global standards for power quality and radio frequency emissions. In addition, in the absence of recognized standards regarding electromagnetic radiation, SolarEdge tested the magnetic fields around the SolarEdge inverter and found them to be lower than the strict IARC (The International Agency for Research on Cancer) guidelines. This document details these standards and test results.

Electromagnetic Emissions

- FCC part 15 Subpart B: the Federal Communications Commission standard which defines maximum permitted radiation levels for unintentional radiators – devices that do not deliberately generate radio frequencies emissions. FCC Part 15 Subpart B defines emissions in the range of 100kHz - 100GHz.

Two levels of radiation and conducted emissions limits are specified in FCC Part 15 Subpart B:

- Class A digital devices: for use in retail or industrial areas
- Class B digital devices: for use in home or office environments.
SolarEdge products conform to Class B limits, which are the stricter of the two.

- IEC 61000-6: the International Electrotechnical Commission standard for electromagnetic compatibility (EMC) of unintentional radiators. It defines emissions in the range of 150kHz - 100GHz.

Two emission limits are specified in IEC 61000-6:

- Part 6-3: emissions standard for residential and commercial environments (somewhat analogous to FCC Class B)
- Part 6-4: emissions standard for industrial environments (somewhat analogous to FCC Class B)

SolarEdge products conform to 61000-6-3, the stricter of the two.

Certificates of compliance to these standards can be found at the following links:

- Single Phase Inverters:
 - [Europe: SE2200-SE7300 Emissions Certificate](#)
- Single Phase Inverters with HD-Wave Technology:
 - [Europe: SE2200H-SE3680H HD-Wave Inverter Emissions Certificate](#)
 - [Europe: SE4000H-SE6000H HD-Wave Inverter Emissions Certificate](#)
 - [Europe: SE8000H-SE10000H Single Phase Inverter with HD-Wave Technology Emissions Certificate](#)
- Three Phase Inverters:
 - [Europe: SE3K-SE17K Emissions Certificate](#)
 - [Europe: SE25K-SE33.3K Emissions Certificate](#)
- Three Phase Inverters with Synergy Technology:
 - [SE50K-SE100K Emissions Certificate](#)

Emissions from the Grid

Electromagnetic fields are present near grid lines and transmission stations.

The World Health Organization (WHO) determined that the maximum permitted level of human exposure to a magnetic field with a frequency of 50Hz or 60 Hz, is 1000mG (milli-Gauss). The International Agency for Research on Cancer (IARC) set a lower level of 2mG for continuous exposure (24 hours a day).

The SolarEdge products were tested and found to comply with the strict IARC level:

- The field measured at a distance of less than 0.5m / 1.65 ft from the SolarEdge inverter is detailed in the following table:

Distance (m / ft)	Measure (mG)
0.10 / 0.32	56
0.20 / 0.65	40
0.30 / 1	12
0.40 / 1.3	4

- The field measured at a distance of 1m / 3.3ft from the SolarEdge inverter was lower than 1mG.
- The field measured at a distance of 1.5m / 4.9ft from the SolarEdge inverter was lower than 0.4mG.

Emissions to the Grid:

Harmonics

SolarEdge products conform to the following standards which stipulate permitted harmonics:

- IEC 61000-3-12: the International Electrotechnical Commission standard for harmonic currents produced by equipment connected to public low-voltage systems with input current > 16A and ≤75A per phase.
- IEEE 1547: the Institute of Electrical and Electronics Engineers standard for the interconnection of distributed generation resources into the power grid in the United States.
This standard limits the total harmonic distortion to less than 3%.

Instability

- IEC 61000-3-11: the International Electrotechnical Commission standard for voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, equipment with rated current ≤75A and subject to conditional connection.
- IEEE 1547: the Institute of Electrical and Electronics Engineers standard for the interconnection of distributed generation resources into the power grid in the United States.

Certificate of compliance to IEC-61000-3-11 and 3-12 can be found in the following links:

- Three Phase Inverters:
 - [Europe: SE4K-SE17K Emissions EN 61000-3-3, EN 61000-3-11 and EN 61000-3-12 Certificate](#)
 - [SE25K-SE33.3K Emissions EN 61000-3-11 and EN 61000-3-12 Certificate](#)
- Three Phase Inverters with Synergy Technology:
 - [Europe: SE50K-SE100K Certificate IEC61000](#)

Certificate of compliance to UL1741, which covers the IEEE 1547 requirements, can be found in the following link:

- Single Phase Inverters:
 - [SE3000A-US-SE7600A-US ATM – UL/CSA](#)
- Single Phase Inverters with HD-Wave Technology:
 - [SE3000H-US-SE11400H-US certificate ATM UL CSA](#)
- Three Phase Inverters:
 - [SE9kUS – SE33.3kUS ATM – UL/CSA](#)
- Three Phase Inverters with Synergy Technology:
 - [SE43.2KUS-SE100KUS Three Phase Inverter with Synergy Technology ATM UL/CSA](#)