

The Apollo system is designed to be safe for individuals with pacemakers and implantable cardioverter defibrillators (ICDs). Its electromagnetic fields (EMFs) are kept below the limits set by the ISO 14117:2019 standard, which is specifically designed to prevent interference with these devices.

ELECTROMAGNETIC FIELD LIMITS

Frequency Range: $0 \text{ Hz} \leq f < 385 \text{ MHz}$

Induced Lead Current:

- $16.6 \text{ Hz} \leq f \leq 1 \text{ kHz}$: Maximum current induced in the lead is $50 \mu\text{A RMS}$.
- $1 \text{ kHz} \leq f \leq 20 \text{ kHz}$: Maximum current is $50 \mu\text{A} \times (f / 1 \text{ kHz})$.

Voltage Induced in Leads:

- $16.6 \text{ Hz} \leq f \leq 20 \text{ kHz}$: Maximum voltage is 1 V peak-to-peak.
- $20 \text{ kHz} \leq f \leq 140 \text{ kHz}$: Maximum voltage is $1 \text{ V} \times (f / 20 \text{ kHz})$.
- $140 \text{ kHz} \leq f \leq 10 \text{ MHz}$: Maximum voltage is $7 \text{ V} \times (f / 140 \text{ kHz})^{0.1624}$.

Frequency Range: $385 \text{ MHz} \leq f \leq 3 \text{ 000 MHz}$

- Proximity Fields at 15 cm Separation:
 - Net dipole power: 120 mW RMS .

Optional Characterization Testing:

- $385 \text{ MHz} \leq f < 1 \text{ 000 MHz}$: Net dipole power of 8 W RMS .
- $1 \text{ 000 MHz} \leq f \leq 3 \text{ 000 MHz}$: Net dipole power of 2 W RMS .

Frequency Range: $f \geq 3 \text{ 000 MHz}$

- Testing above 3 GHz is not required due to reduced sensitivity and shielding effects.

STATIC MAGNETIC FIELDS

Flux Density up to 1 mT:

- The device remains uninfluenced and continue functioning normally.

Flux Density up to 50 mT:

- This device recovers its original functionality after exposure without adjustment.

AC MAGNETIC FIELDS (1 KHZ TO 140 KHZ)

Magnetic field strength:

- $1 \text{ kHz} \leq f \leq 100 \text{ kHz}$: 150 A/m RMS.
- $100 \text{ kHz} \leq f \leq 140 \text{ kHz}$: $150 \text{ A/m} \times (100 \text{ kHz} / f)$.

CONTINUOUS WAVE (CW) SOURCES

Frequency Range: 16.6 Hz to 167 kHz:

- Maximum test signal amplitude:
 - Unipolar/Common Mode: 1 V peak-to-peak.
 - Bipolar Differential Mode: 0.1 V peak-to-peak.

RESULTS

Measure EMF Emissions Results:

- Apollo's electromagnetic field strength stays below the limits specified above.
- Frequencies Below 1 kHz: PASS (These frequencies are particularly sensitive for pacemakers and ICDs)