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 1: [Aviat Space Environ Med.](#) 2002 Mar; 73(3): 179-83.

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### Electromagnetic interference in pacemakers in single-engine fixed-wing aircraft: a European perspective.

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**BACKGROUND:** The aim of this study is to evaluate the possible interference by avionics with cardiac pacemakers of aircrew or passengers/patients in single-engine fixed-wing aircraft. Pacemakers which are implanted in patients are in part electromagnetic sensors and can be subject to interference from various external electromagnetic sources. Although modern (chip-based) pacemakers are effectively shielded from electromagnetic interference (EMI), the magnitude of electromagnetic radiation in cockpits of general aviation aircraft is higher and of a different nature than experienced in daily life. An increasing number of pacemaker-bearing individuals are being transported by air. However, the possible EMI with modern types of pacemakers during flight has not been investigated until now.

**METHOD:** In order to evaluate the effect of EMI on five modern types of pacemakers in the cockpit environment of a single-engine fixed-wing aircraft, we have subjected the pacemakers, each implanted into an artificial thorax, to a series of test flights. Each pacemaker was equipped with data logging capabilities which were used for detection of possible EMI. After each flight, the pacemakers were examined by means of the dedicated programmers. In addition, two single lead ventricular pacemakers (VVI) were analyzed by means of beat-to-beat Holter recordings during two separate flights. This enabled an exact analysis of pacemaker function and of possible EMI. **RESULTS:** No effect of EMI could be detected in any of the pacemakers by interrogating their internal counters after the test flights. In addition, no signs of EMI could be detected on the Holter recordings of the VVI pacemakers. **CONCLUSION:** We conclude that modern pacemakers are unaffected by EMI in the cockpit environment of single-engine fixed-wing aircraft.

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