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Title: Integrated high-frequency generator system for use in e.g. MRI system, has high-frequency generator positioned in high-frequency generator zone and utilizing magnet field of magnetic resonance magnet to generate high-frequency radiation

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Abstract: NOVELTY - The system has a magnetic resonance magnet (42) having an application zone (44) and a high-frequency generator zone i.e. microwave/terahertz zone, in a magnetic field. A high-frequency generator e.g. gyrotron, is positioned in the high-frequency generator zone, and utilizes the magnet field of the magnetic resonance magnet to generate high-frequency radiation. An auxiliary magnetic field source (16) is adapted for modifying a magnetic field profile in the high-frequency generator zone, and includes a winding mounted on the high-frequency generator.

USE - Integrated high-frequency generator system for use in a magnetic resonance system such as nuclear magnetic resonance (NMR) system, MRI system and electron paramagnetic/spin resonance (EPR/ESR) system.

ADVANTAGE - The system utilizes the magnetic field of the target application, which reduces number and cost of magnets and size or footprint of the system while shortening or eliminating the microwave waveguide, reducing necessary power and increasing efficiency.

DESCRIPTION OF DRAWING(S) - The drawing shows a sectional view of a microwave generator zone in a fringe field of a magnetic resonance magnet device.

Auxiliary magnetic field source (16)

Magnetic resonance magnet (42)

Application zone (44)

Magnetic coil (60)

Air core (62)

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