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Construction of Earth's field NMR signal transmission system

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The NMR signal transmission system at earth magnetic field was constructed. The system consists of 5 important components: Arduino Mega 2560 microcontroller, frequency generator module (DDS synthesizerAD9850), switching integrated circuit (DG419), operational amplifier (THS3001) and audio-power amplifier. The microcontroller was programmed to receive the pulsed width values from computer and control the frequency generator connected to the microcontroller. The two signals from the digital pin of Arduino (square waves) and the AD9850 synthesizer (sine waves) were then mixed together using DG419 to give pulsed-audio frequencies. Afterwards the signal was sent to the op-amp circuit and continually transmitted to the audio-power amplifier to achieve 40 Watts power. It was found that, the constructed system can be performed the radio pulses in the range of audio frequencies which corresponds to the Larmor frequency for earth'field NMR.

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