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Abstract:We describe the design and test results of the transmission line for liquid-state (LS) and solid-state (SS) DNP spectrometers with the second-harmonic 258.6 GHz gyrotron at the Institute of the Biophysical Chemistry Center of Goethe University (Frankfurt). The 13-meter line includes a mode converter, HE11 waveguides, 4 mitre bends, a variable polarizer-attenuator, directional couplers, a water-flow calorimeter and a mechanical switch. A microwave power of about 15 W was obtained in the pure HE11 mode at the spectrometer inputs. © 2011 Springer Science+Business Media, LLC.