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**Flagship model of 15-kHz-linewidth CW Ti:Sapphire laser by Tekhnoscan**
**Date announced:** 17 May 2006

Tekhnoscan commenced shipments of our new super-frequency-stable CW single-frequency Ti:Sapphire laser, model TIS-SF-777. For the first time in a commercial model of a Ti:Sapphire laser the developers approached the output line width of 10 kHz: the specification of the line width for laser model TIS-SF-777 is < 15 kHz rms.



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Frequency stabilisation of the laser output is done with a thermostated high-finesse reference cavity and special PZT actuators that have extended response bandwidth. The fast PZT-controlled mirrors allowed to avoid using an electro-optical modulator in the frequency stabilisation system, which would otherwise complicate the laser design and the electronic control boards as well as it would introduce certain additional radiation losses. Because of the foregoing laser TIS-SF-777 features relative simplicity and high reliability of design as well as high output efficiency: maximum output power of this laser exceeds 1.5 W with a 10-W DPSS laser pump (532/515 nm).

Besides the uniquely narrow radiation line width and high output power, TIS-SF-777 also features a unique function Smart Auto-Relock that allows uninterrupted laser operation in the frequency stabilisation mode under arbitrary external perturbations (acoustic, mechanic, etc.). The system of Smart Auto-Relock locks the TIS-SF-777 laser output frequency in each time when the frequency slips off the transmission peak of the reference interferometer. Because of this advanced Smart Auto-Relock function laser TIS-SF-777 offers the user a new level of comfort when working with precisely stabilised single-frequency Ti:Sapphire laser.

TIS-SF-777 is primarily designed for high-precision experiments and technologies that make use of cooled atoms and molecules, as well as for research in the new technologies of high-density information recording. The combination of laser TIS-SF-777 and the high-efficiency resonant radiation frequency doubler FD-SF-07 by Tekhnoscan delivers a 20-kHz line width at the output power of several hundreds of mW in the spectral range around 400 nm where relatively high-power sources of narrow-bandwidth radiation are in demand. These parameters are important in the development of new methods for high-capacity information carriers, in particular, with the use of holographic memory, which requires as narrow as possible radiation line width. In addition, the application field of TIS-SF-777 traditionally includes super-high-resolution spectroscopy and research/technologies dealing with super-selective action of laser radiation on matter.

On special order Tekhnoscan ships laser TIS-SF-777 with additional system of long-term radiation frequency stabilisation that uses ultra-narrow absorption resonances and other optical references. This allows reduction of the long-term drift of the laser radiation line down to the level of 1 MГц/hour and even less.

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