kHz Routine Tracking at Changchun and Shanghai Stations

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- On Last workshop at Poznan, Yang, etc. reported ‘upgrading Plans of the Chinese SLR Network’. The report introduced most of stations in China to be developed on kHz ranging and daylight tracking in two years.

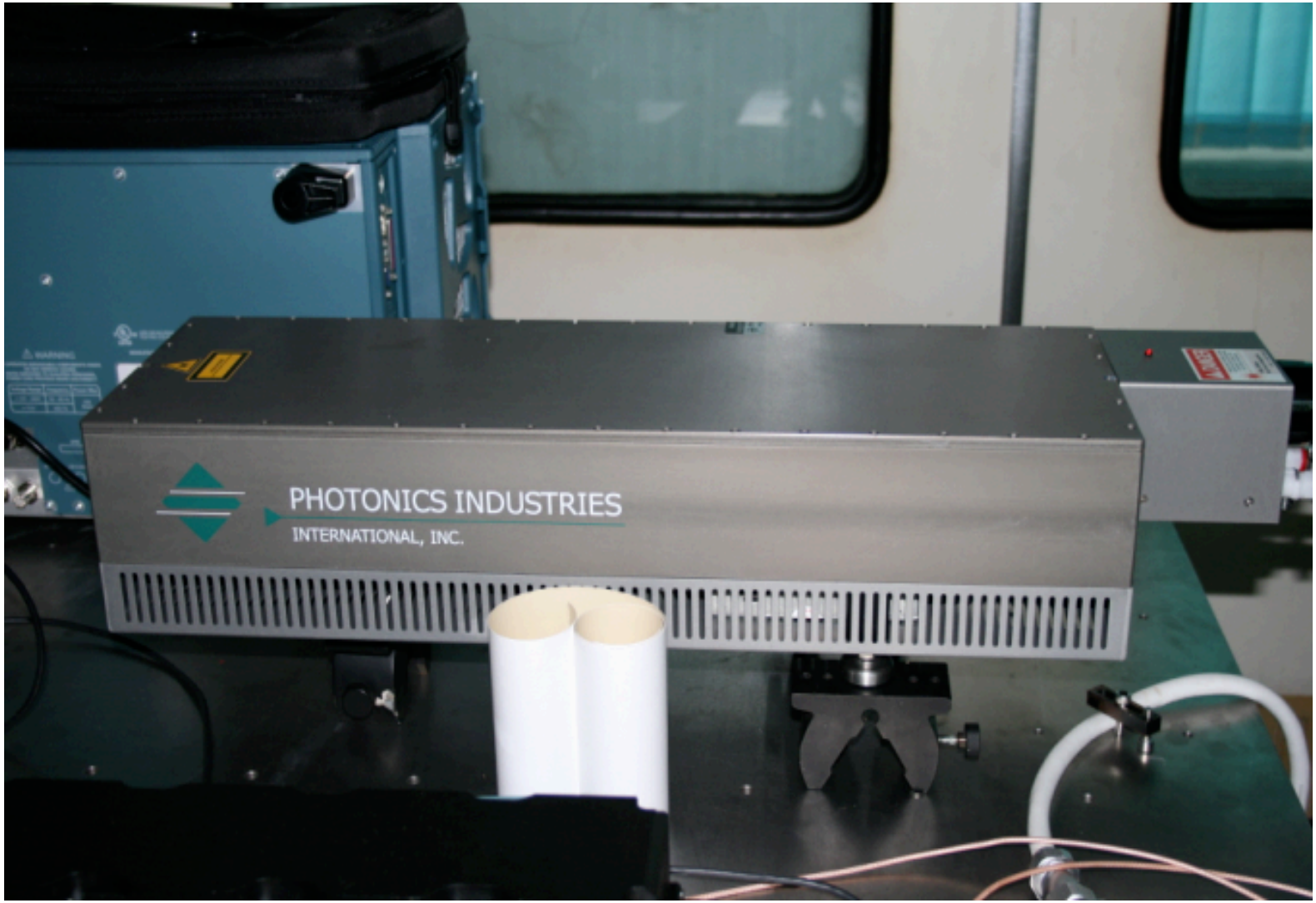
- Zhang, etc. reported ‘the Experiment of kHz Laser Ranging with Nanosecond Pulses at Shanghai’. It presented the Shanghai station had the capability to track satellites up to Lageos

- In March of this year, four stations (Shanghai, Changchun, Kunming, Wuhan) signed the contracts with the Photonics Industries Company, US to order 4 sets of kHz laser. TROS had ordered a kHz laser before from the same company. Beijing station ordered a HighQ kHz laser (will arrive soon).

- Two months ago, three stations above mentioned got new lasers from Photonics Industries.

- Last month, Shanghai received the laser, but unfortunately, the laser had some problems: cooling system, some small pulses besides the main pulse etc.

- Changchun station has used the laser to routine tracking and testing daylight tracking since end of July. Shanghai station began to satellite tracking at night time since last month and will start daylight tracking soon.



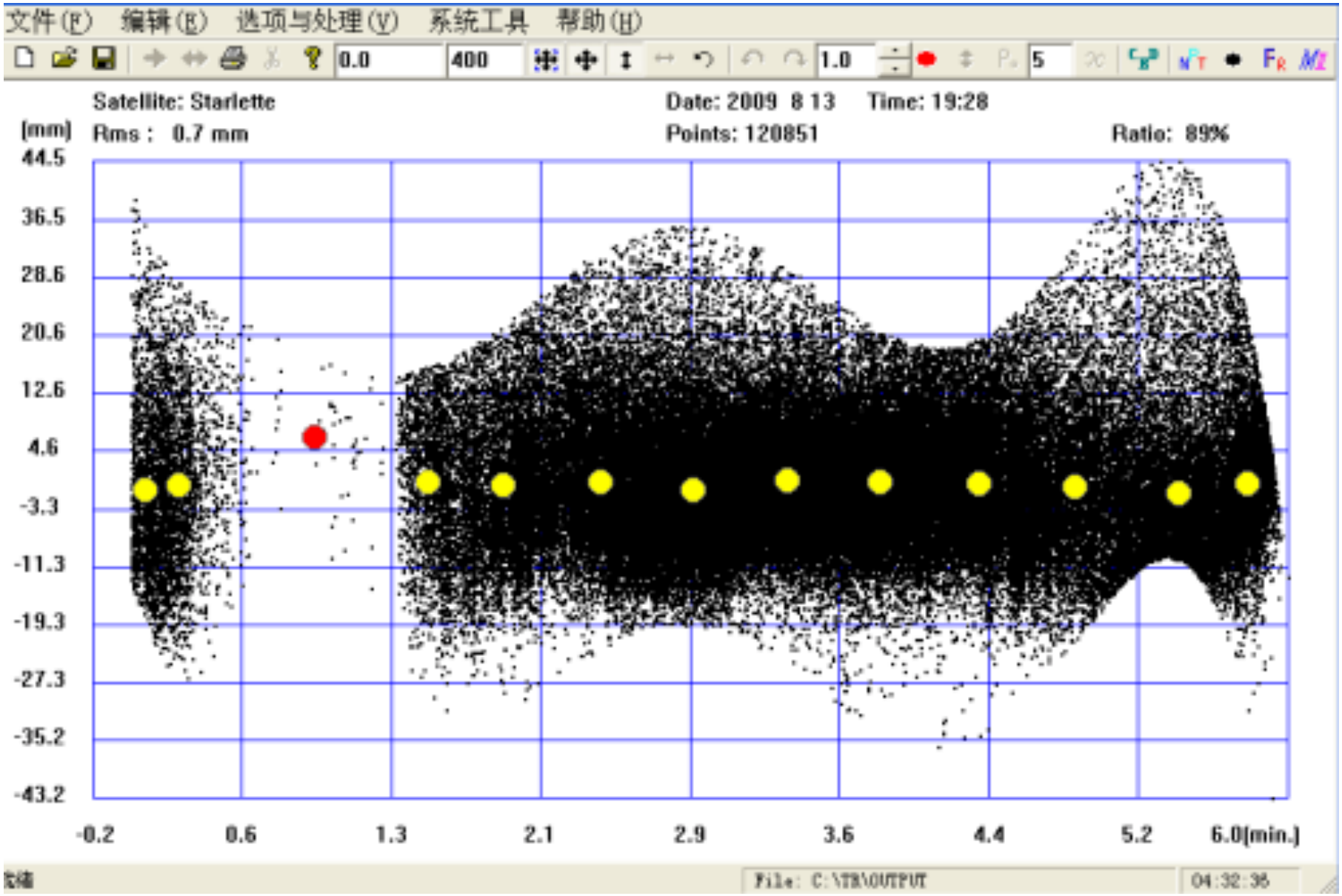
kHz laser made by Photonics Industries,US

Control/driver

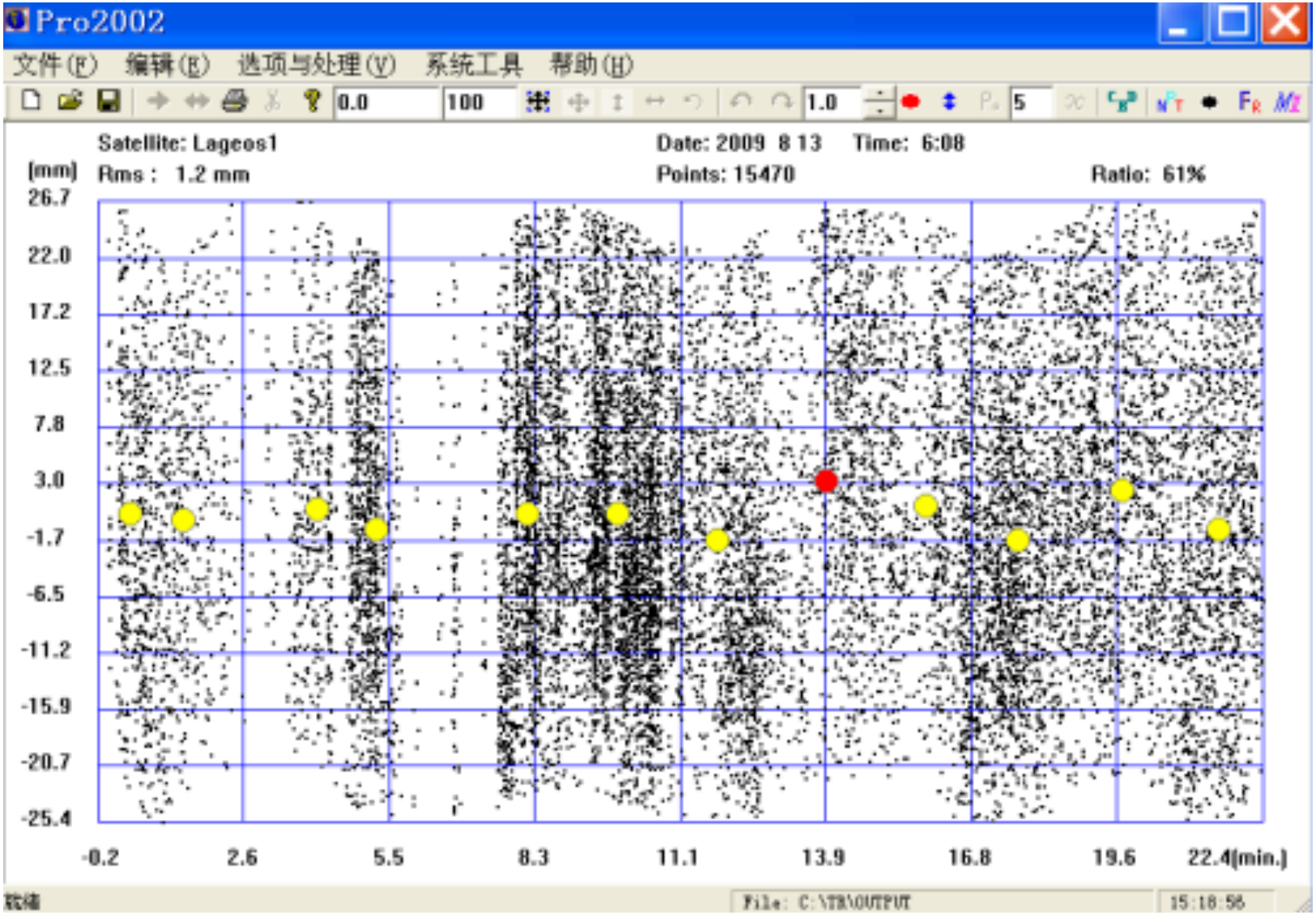
Cooling

Characteristics of PHOTONICS RG30-532

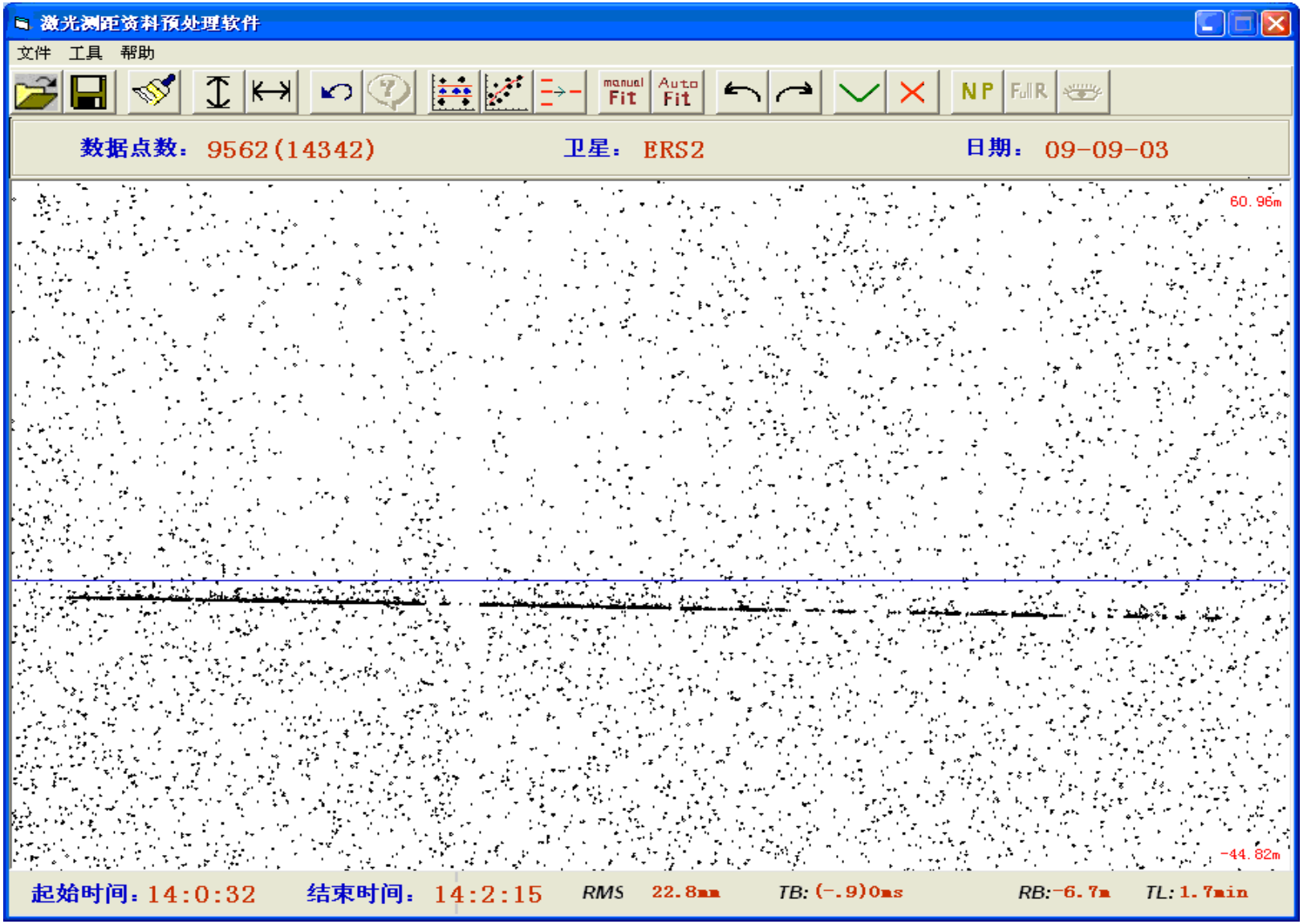
Energy per pulse	3mJ (@532nm)
Pulse width	20 ps
Repetition	1KHz
Divergence	0.5 mrad
Beam Stability	<50 urad (typical 5urad)



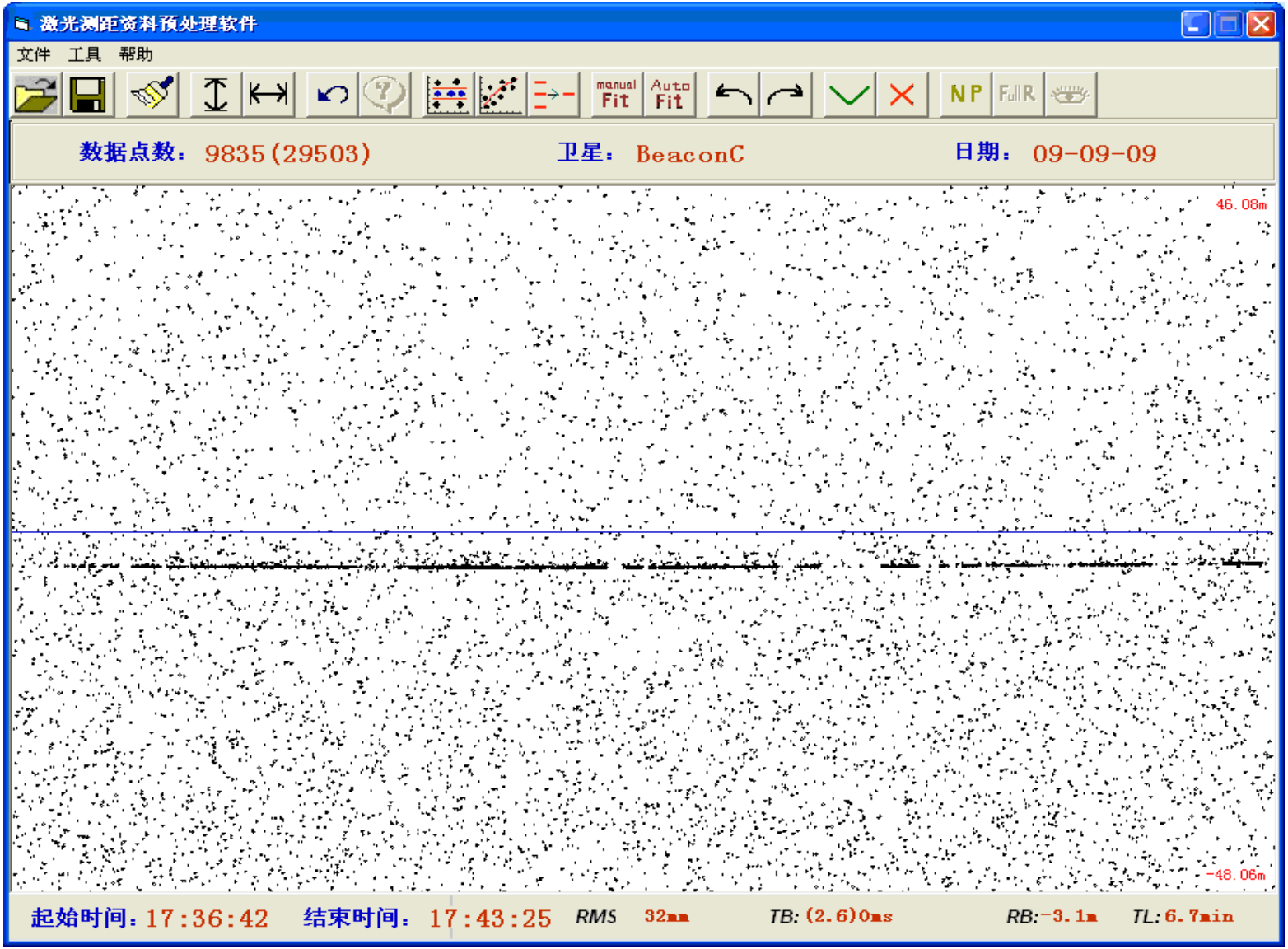
Changchun Station nighttime ranging results from Starlette



Changchun Station daylight ranging results from Lageos1



Shanghai Station nighttime ranging results from ERS2



Shanghai Station nighttime ranging results from BeaconC

Some Problems of the kHz Lasers

- Output energy is getting down
  - Changchun's laser, the output energy decreased from 3mJ to 1.2mJ in 1.5 months
  - TROS's laser had the same result
- The lasers are airtight, not allow to open, we can wait the Company people to fix it only. They promised to send a new laser to Shanghai to replace it soon.
- The quality of the laser is uncertain…

Thanks