

Experience with Short-pulse laser and at REGAE

Laser Synchronization with DWC+SIS8300

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Scheme applied at two locations

	Short-pulse Laser	REGAE
Location	FLASH Injector	REGAE bunker
Type	Ytterbium (1030 nm)	Ti:Sapphire (800 nm)
Coarse Tuning	Temperature (Dig. IO)	Stepper Motor
Repetition Rate	54 MHz	83 MHz
RF Frequency @ DWC	1354 MHz (25th harmonic)	3000 MHz (36 th harmonic)
LO Frequency @ DWC	1300 MHz	3025 MHz
IF Frequency @ ADC	54 MHz	25 MHz
ADC Clock	81 MHz	125 MHz
Numerical Oscillator	27 MHz	25 MHz

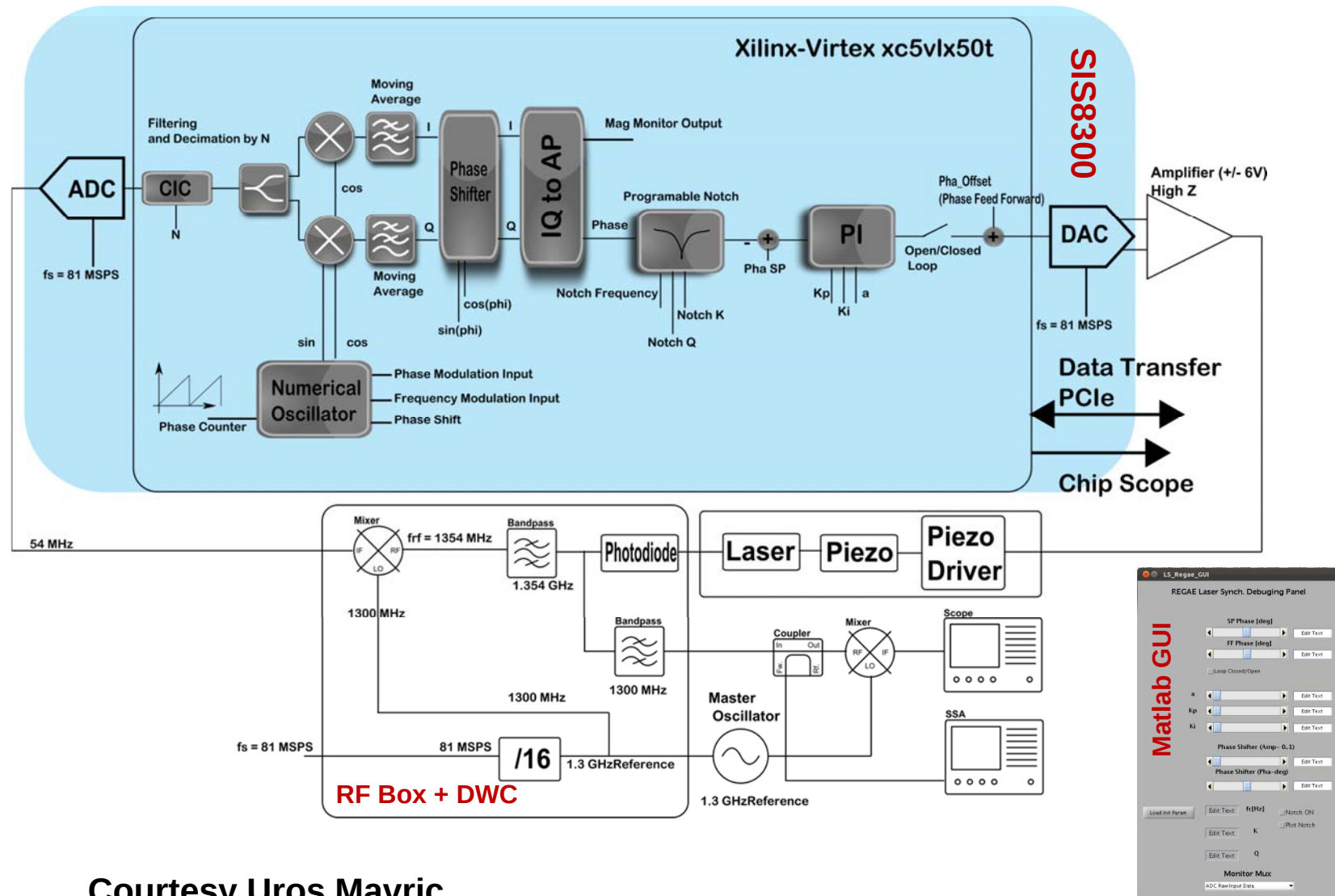


Piezo Driver

- > External module in 3 HE Eurocrate
- > Short-pulse laser
 - Up to now only “old type”
 - DAC of SIS8300 connected directly
- > REGAE
 - Broadband version
 - DAC output → SLP1.9 low pass → LNA



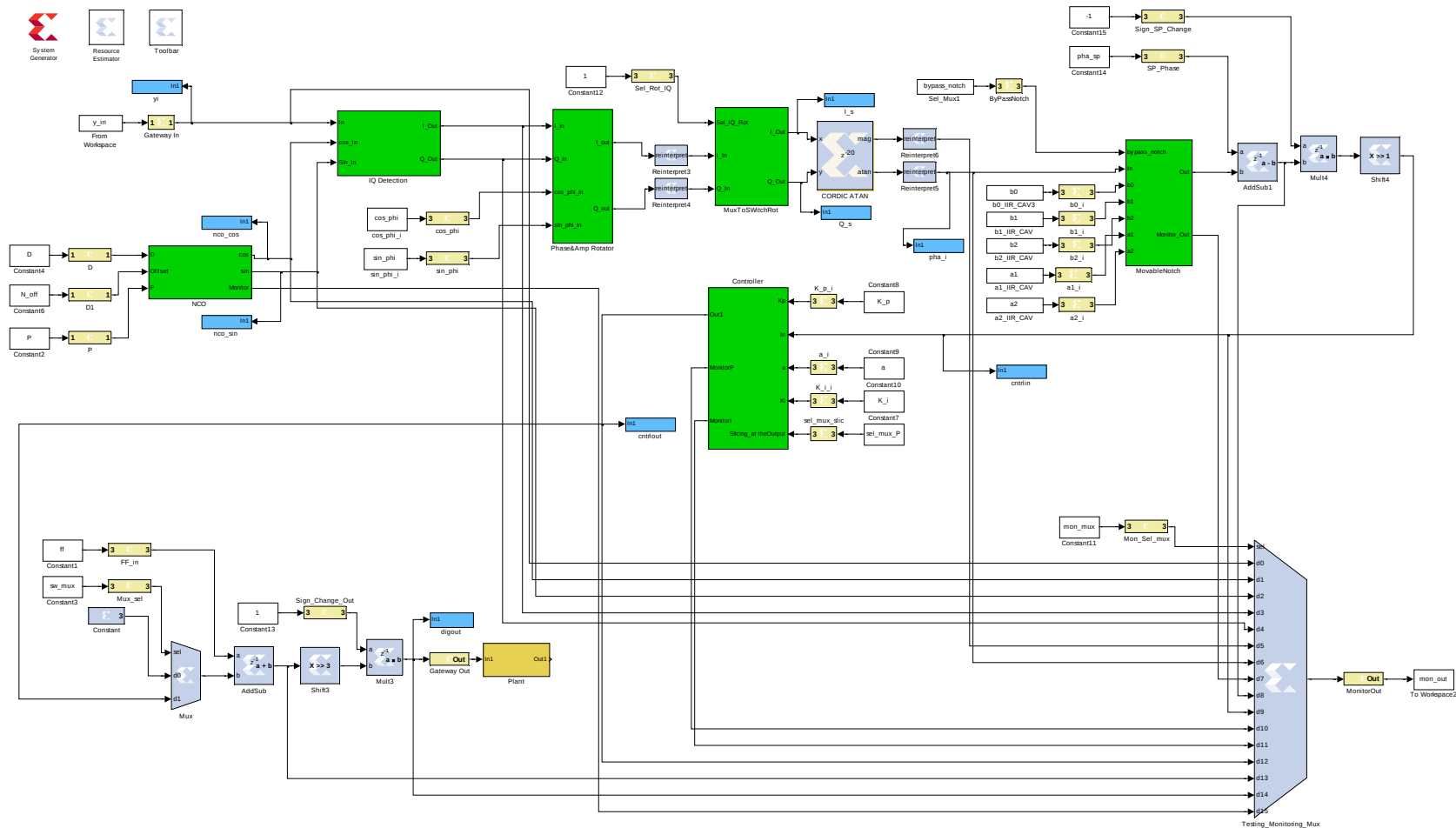
Laser-to-MO Locking Using DWC+SIS8300



Courtesy Uros Mavric



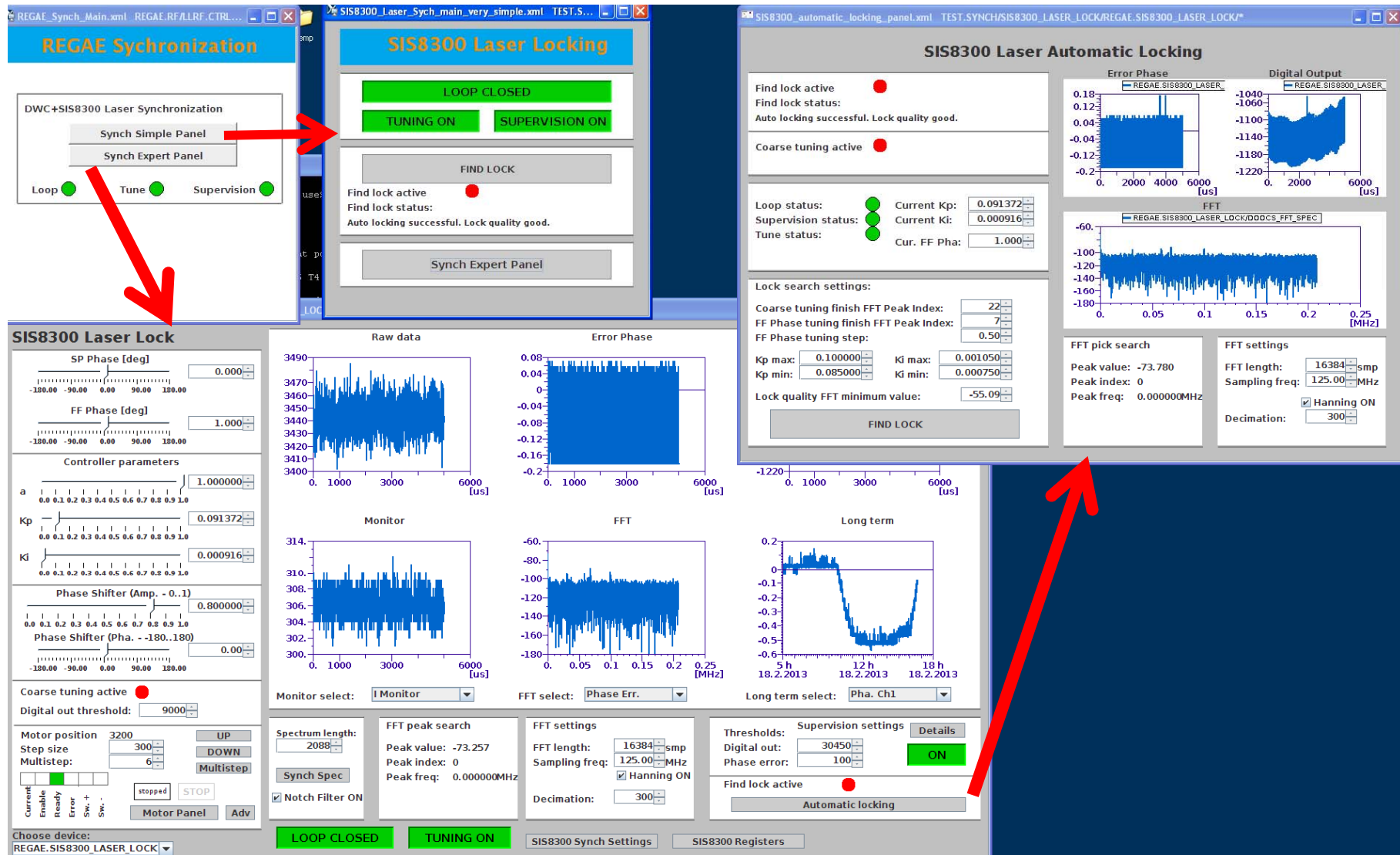
SysGen Model.



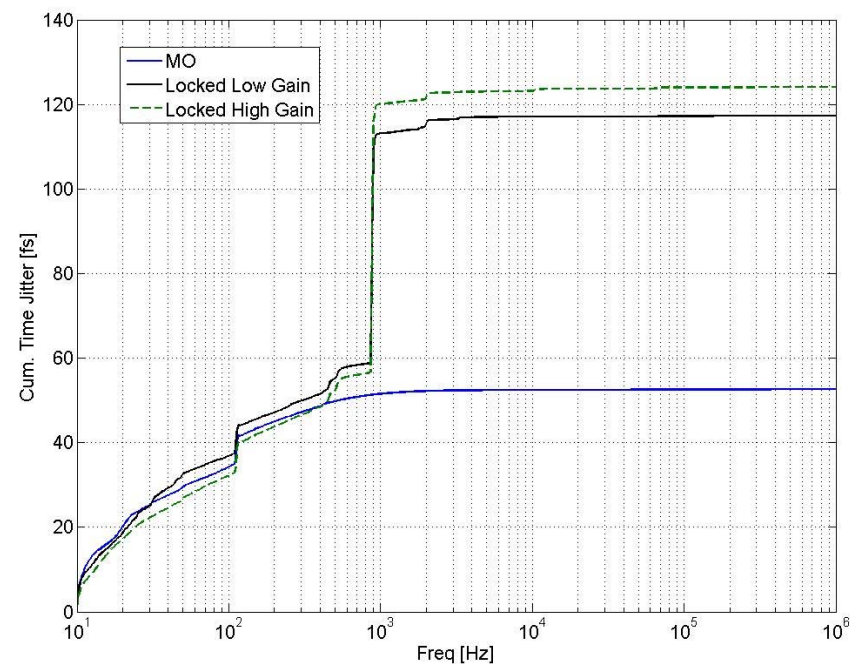
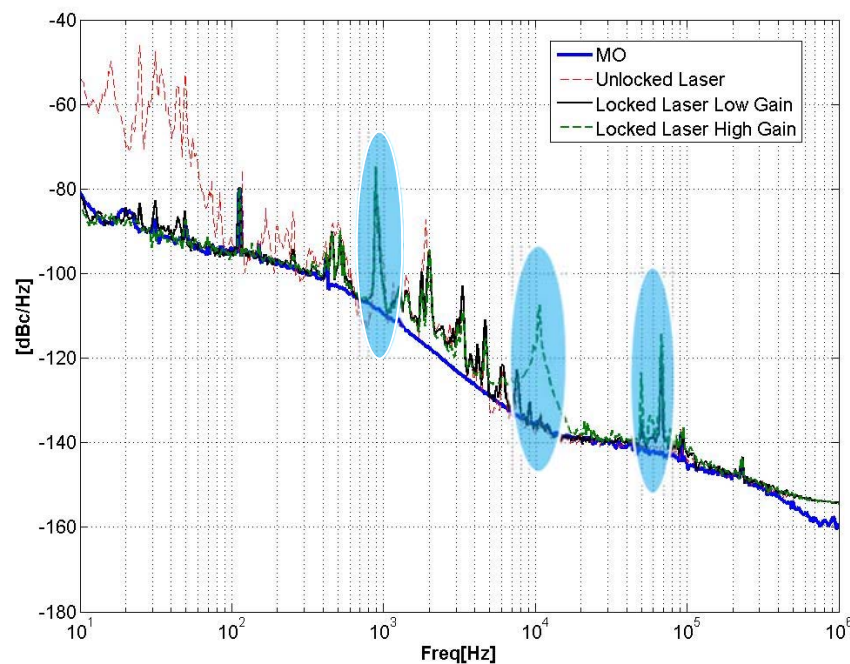
Courtesy Uros Mavric



Server



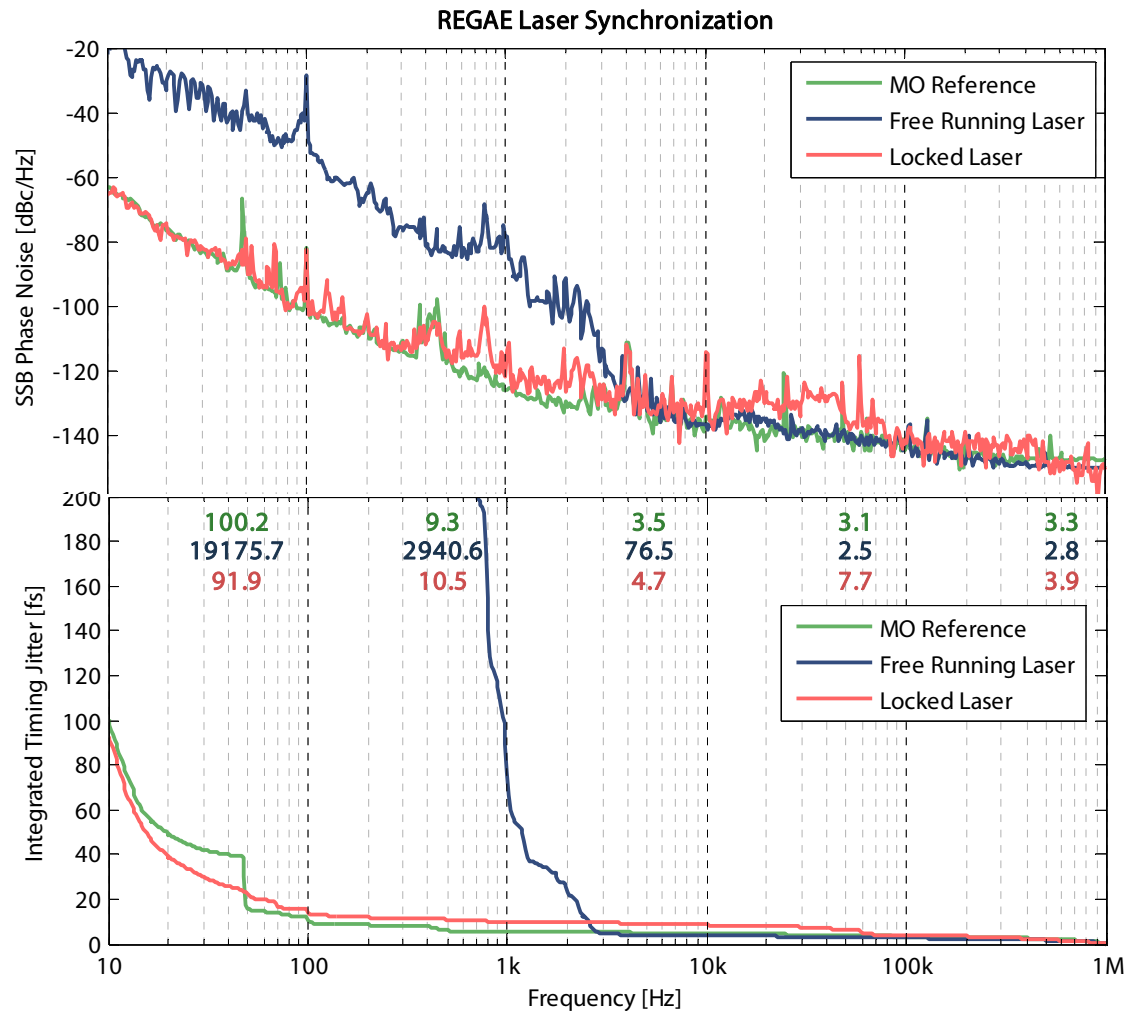
Preliminary Results at Short-pulse laser.



Courtesy Uros Mavric



Performance at REGAE



- > No instabilities observed
- > Synchronization in the order of 10 fs (?)

Summary

- > Setting the Lock no big problem
- > Fine tuning with FF phase useful
- > Performance at REGAE better than with the conventional setup
- > Robust long-term operation since server is installed at REGAE



Thank You

