

Reference Timing

Jeff Gronberg

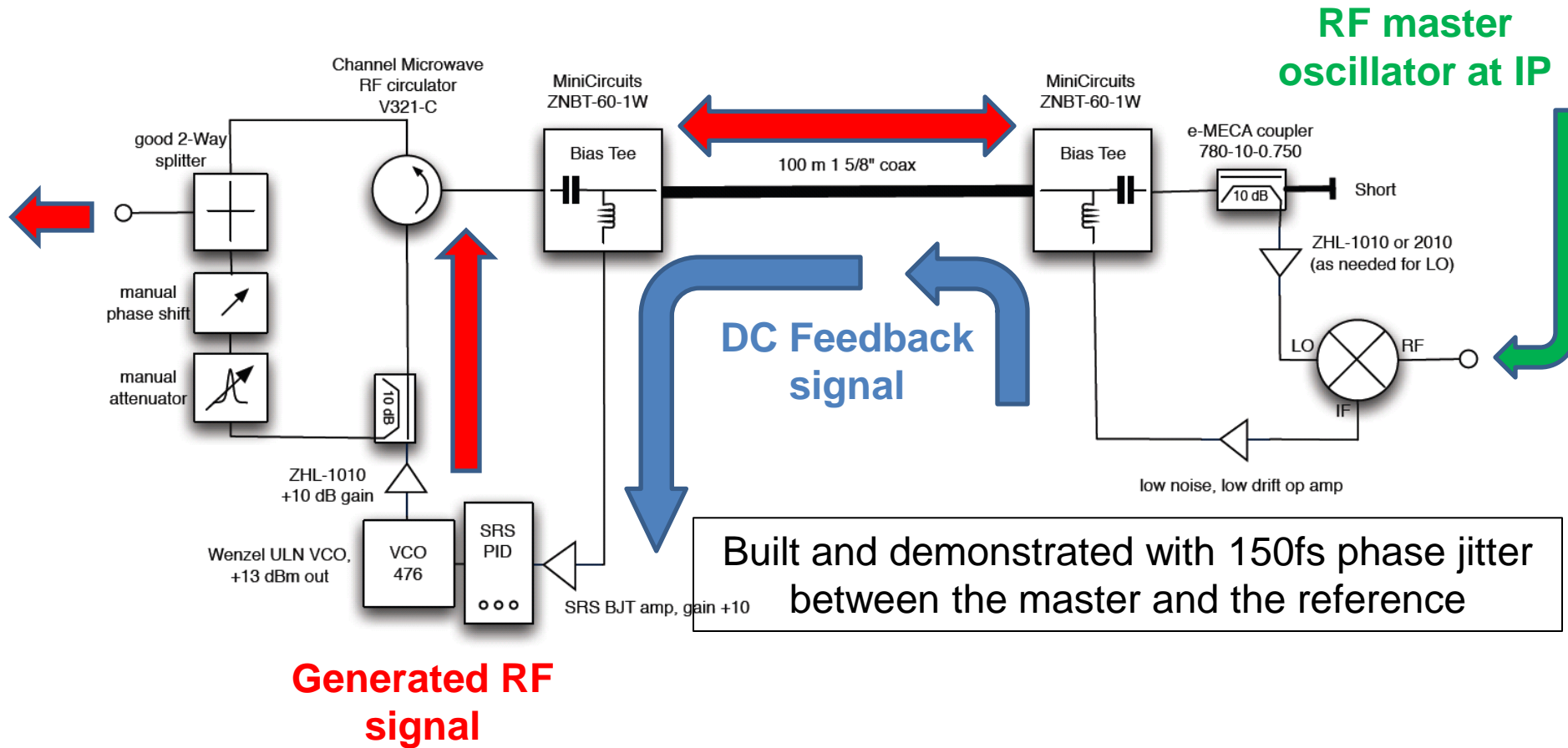
LLNL

December 12-14, 2010

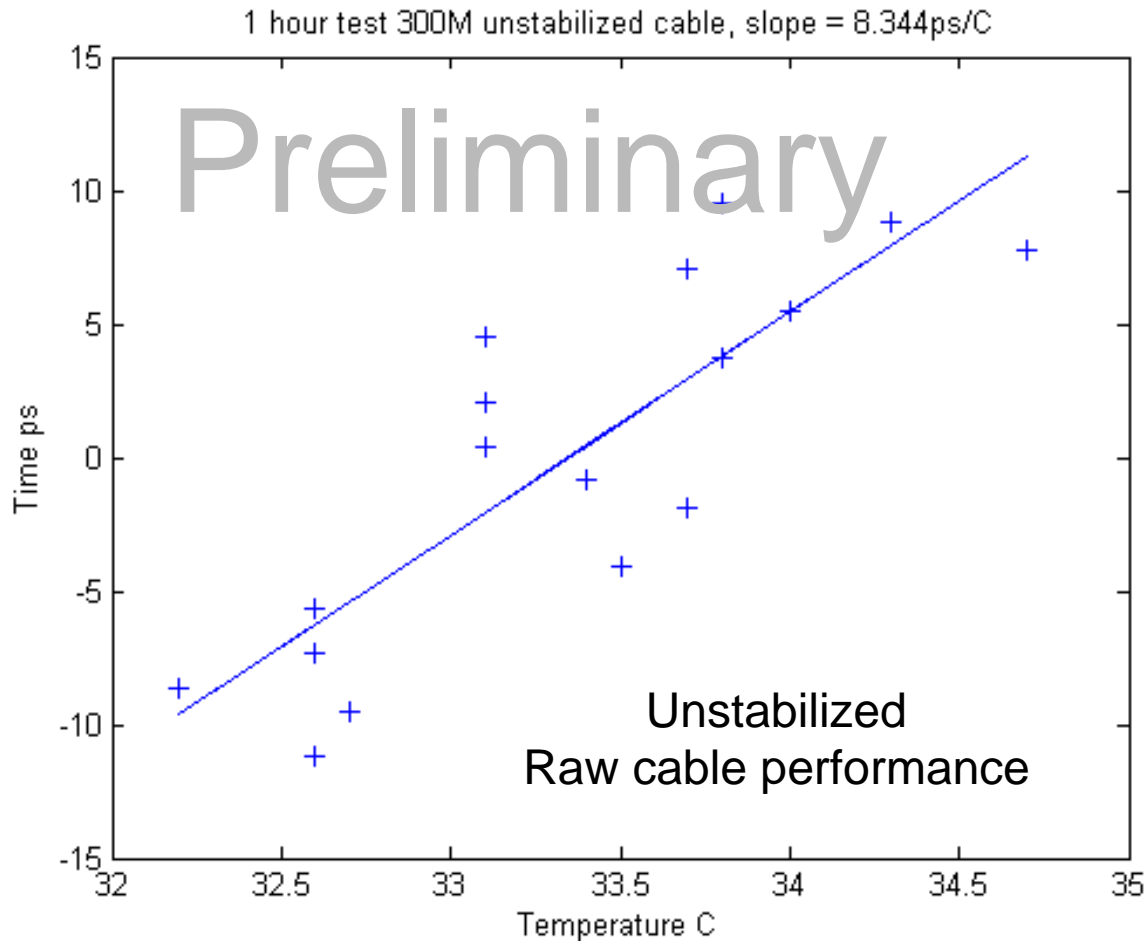
S&T Principal Directorate

Current SLAC RF timing setup

Courtesy of Tonee Smith, SLAC



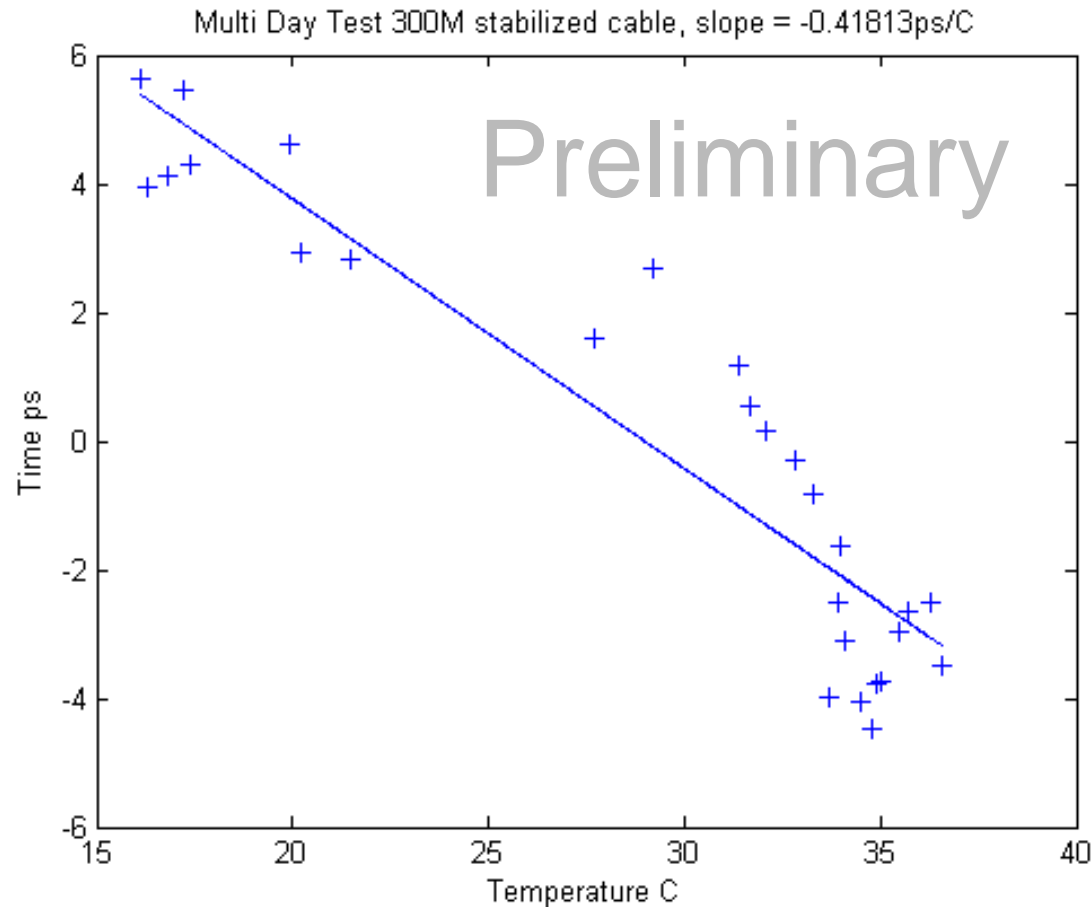
Latest SLAC results



- Heliax cable
 - 7/8"
 - 300 m
 - Total attenuation 7.5dB
- Unstabilized cable
 - 83 ps / 10 °C

J. Frisch et al., SLAC

Stabilization system active



- Cable left outside for day/night temperature extremes
- 4ps / 10°C

J. Frisch et al., SLAC

We have selected a cable vendor

Andrews AVA7RK-50 1-5/8" Heliax
1.4 dB/100m
Non-halogenated Polyolefin jacket



Product Specifications



AVA7RK-50

AVA7-50, HELIAX® Andrew Virtual Air™ Coaxial Cable, corrugated copper, 1-5/8 in, black non-halogenated, fire retardant polyolefin jacket



CHARACTERISTICS

Construction Materials

Jacket Material	Non-halogenated, fire retardant polyolefin
Outer Conductor Material	Corrugated copper
Dielectric Material	Foam PE
Flexibility	Standard
Inner Conductor Material	Corrugated copper tube
Jacket Color	Black

Dimensions

Nominal Size	1-5/8 in
Cable Weight	0.77 lb/ft 1.20 kg/m
Diameter Over Dielectric	44.450 mm 1.750 in
Diameter Over Jacket	51.054 mm 2.010 in
Inner Conductor OD	18.1610 mm 0.7150 in
Outer Conductor OD	46.355 mm 1.825 in

Electrical Specifications

Cable Impedance	50 ohm ±1 ohm
Capacitance	22.0 pF/ft 72.2 pF/m
dc Resistance, Inner Conductor	0.410 ohms/kft 1.435 ohms/km
dc Resistance, Outer Conductor	0.160 ohms/kft 0.525 ohms/km
dc Test Voltage	15000 V
Inductance	0.187 µH/m 0.057 µH/ft
Insulation Resistance	100000 MOhm
Jacket Spark Test Voltage (rms)	8000 V
Operating Frequency Band	1 – 2700 MHz

www.commscope.com/andrew

©2010 CommScope, Inc. All rights reserved.
All trademarks identified by ® or ™ are registered trademarks or trademarks, respectively, of CommScope. All specifications are subject to change.
See www.commscope.com/andrew for the most current information.

page 1 of 4
12/10/2010



Current Test Schedule

- **Funded Activity:**
 - 520m of cable ordered
 - Arrival at SLAC Jan 1
 - January – test at SLAC with spare LCLS 476 MHz system
- **Need Funding:**
 - Build 2 400MHz systems, cut cable into 2x260m, demonstrate 2 arm system
 - Delivery 5 months after funding secured (some long lead time items)
 - Generate timing trigger logic to run TDC
 - Demonstrate system stability

