# ACCEL LLRF Cavity Measurement with RFSoC

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## Forward and Reflection Signals with I=1,Q=1



DAC signal coupler

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#### Forward and Reflection Signals with I=2,Q=2

DAC signal coupler Magnitude Magnitude Δ Phase(Deg) Phase(Deg) -100 -100Time (us) Time (us)

**Reflection coupler** 



## Forward and Reflection Signals with I=1,Q=-1

DAC signal coupler



#### **Reflection coupler**

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## Forward and Reflection Signals with I=-1,Q=-1

Magnitude Magnitude л Phase(Deg) Phase(Deg) -100 -100 З Time (us) Time (us)

**Reflection coupler** 

DAC signal coupler

-SLAC

#### **NCO Tunned to Resonance**



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- Resonance of cavity drifts with temperature
- Resonant frequency measured by VNA
- DAC datapath NCO frequency tunned to 5.710203750 GHz
- ADC datapath NCO frequency 795,003,750 Hz
- Generate new bit file and remote update the RFSoC board

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# **Cavity Reflection with RF Pulse on/off Resonance**

#### NCO 5710.2 MHz



#### NCO 5712 MHz



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#### Drift with Time ...

Day 1 Magnitude 100 20 Magnitude 100 0 . Phase(Deg) Phase(Deg) -100 -100 Time (us) Time (us)

Day 2

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# Thank you!

