## QUICK GUIDE: Aperture Tuning

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### Capacitive & Inductive Tuning

**Tuning Location A** (Closer to the feed)
- **Inductor values for tuning**: Small
- **RON impact on antenna efficiency**: High
- **COFF & ROFF impacting antenna efficiency**: Low
- **Tuning range required**: Wide
- **Tuning steps required**: Large
- **Cmin impact on efficiency**: Low

**Tuning Location B** (Closer to the open end)
- **Inductive Tuning**: Using a Capacitor
- **Inductor values for tuning**: Large
- **RON impact on antenna efficiency**: Low
- **COFF & ROFF impacting antenna efficiency**: High
- **Tuning range required**: Narrow
- **Tuning steps required**: Small
- **Cmin impact on efficiency**: High

**Increasing Capacitance**
- Reducing Inductance

- **Natural Resonance**

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**When tuning closer to the feed, higher capacitance is required; antenna efficiency is sensitive to Q and RON, especially when tuning to a lower frequency that requires high capacitance.**

**Relatively high inductor values are required when tuning at the open end of the antenna, so care should be taken in selecting inductors with relatively high SRF.**

**Avoid using very high capacitance or very low inductor values as the Q of the tuning elements can reduce antenna efficiency.**

**Select tunable capacitors with low Cmin when placed at open end of the antenna.**

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