MEMS Timing Solutions for Open RAN (ORAN) – Macro and Small Cells

SiTime MEMS timing benefits

Complete MEMS clock tree
- Precision MEMS TCXO
- Stratum 3E MEMS OCXO
- MEMS clock IC/PLL

Most Robust in real world conditions
- 4x better dF/dT for accurate IEEE1588
- Resistant to airflow, heat, vibration
- Smart clock monitoring and hitless switching for redundancy

Integrated MEMS, easy to use
- No external quartz
- No quartz reliability issues
- No cover or shielding needed

ORAN RRU, Fronthaul HUB and BBU (DU/CU)

<table>
<thead>
<tr>
<th>Application</th>
<th>Devices</th>
<th>Type</th>
<th>Function</th>
<th>Key Features</th>
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</thead>
<tbody>
<tr>
<td>NIC</td>
<td>SIT535x</td>
<td>Super-TCXO</td>
<td>IEEE1588 and high speed SERDES reference clock</td>
<td>20 MHz, ±20 ppb up to 70 °C, operable to 105°C</td>
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<tr>
<td>ORAN RRU &amp; Fronthaul HUB</td>
<td>SIT535x</td>
<td>Super-TCXO</td>
<td>Reference clock for jitter cleaner and IEEE1588</td>
<td>1 to 220 MHz, ±100 ppb, ±1 ppb/°C 105°C</td>
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<tr>
<td></td>
<td>SIT57xx</td>
<td>OCXO</td>
<td></td>
<td>1 to 60 MHz, ±5 ppb, ±0.04 ppb/°C</td>
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<td></td>
<td>SIT95147</td>
<td>Jitter cleaner</td>
<td>Ethernet, processor</td>
<td>4-in, 11-out, 4-PLL, 8 kHz to 2.1GHz</td>
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</tbody>
</table>
MEMS Timing Outperforms Quartz

Better Stability

![Graph showing better stability for Emerald OCXO compared to Quartz TCXO.](image)

Better Frequency Slope

![Graph showing better frequency slope for Emerald OCXO compared to Quartz TCXO.](image)

Better Vibration Resistance

![Graph showing better vibration resistance for Elite Super-TCXO compared to Quartz TCXO.](image)

Better Aging

![Graph showing better aging for Emerald and Elite Oscillators compared to Quartz TCXO.](image)

Better Allan Deviation

![Graph showing better Allan deviation for Elite Super-TCXO compared to Quartz TCXO.](image)

Better PSNR (Power Supply Noise Rejection)

![Graph showing better PSNR for Elite Differential Oscillator compared to Quartz Differential Oscillator.](image)