

## **HOTTEST TECHNOLOGY**

### **Ferroelectric/Paraelectric Materials and Phase Shifter Devices, True Time Delay Devices and the Like Containing the Same**

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Ferroelectric materials are crystals that exhibit a permanent magnetic moment. Paraelectric materials are crystals that can align and strengthen an electrical field. The innovative materials protected by this patent are resistant to the effects of temperature variation and maintain a constant tunability, shrinking conductor loss. These materials have many telecommunication applications. Specific applications include fixed antennas such as cell phones and cell phone towers. The materials optimize power draw in cell phones, resulting in longer lasting batteries. Using the FE/PE materials in cell phone towers provides antennas with a wider effective range, reducing the overall number of base towers needed.

Features include:

- Eliminates the drawback of temperature variation in FE/PE devices
- Reduces the cost and size of FE/PE devices
- More constant tenability
- Contributes to the creation of devices that are extremely efficient and consume less power



Potential markets & applications include:

- Tunable Devices
- Phase Shifters
- True Time Delay Applications
- Steerable Beams
- Impedance Transformers
- Variable Control Oscillators
- Antennas
- Microwave TE-FE Voltage Controlled Oscillators
- Radios
- Microwave Variable Capacitors
- Radar Systems
- Electronic Warfare Sensors