

ACOUSTIC WAVE ELEMENTS, ANTENNA DUPLEXERS AND ELECTRONIC DEVICES

ABSTRACT

5 An acoustic wave element comprising a lithium tantalate substrate having the Euler angles (φ, θ, ψ) , a first component φ satisfying $10^\circ \leq \varphi \leq 50^\circ$; and an electrode disposed on the lithium tantalate substrate and configured to excite a main acoustic wave of wavelength λ , the electrode having a density ρ_M satisfying $\rho_M \geq \rho_{Ti}$ where ρ_{Ti} represents a density of titanium (Ti), and a thickness h_M of the electrode satisfies $0.141 \times \exp(0.075\rho_M)\lambda \leq h_M \leq$
 10 0.134λ . Embodiments of the present disclosure minimize a thickness of the electrode and suppress a spurious Rayleigh wave signal.

[FIG. 1]