CLAIMS

What is claimed is:

1. An acoustic wave device comprising a main resonator and a sub resonator each having a substrate, a lower electrode provided on the substrate, a piezoelectric film provided on the lower electrode, and an upper electrode provided on an upper side of the piezoelectric film,

a frequency control film being provided on an upper side of a resonance area in which the upper electrode and the lower electrode face each other in at least one of the main resonator and the sub resonator,

the frequency control film having multiple convex patterns, and

the convex patterns being arranged with a common pitch for spurious adjustment and with different areas in the main resonator and the sub resonator, and

the pitch for spurious adjustment having a value within a range of 1.0 to 1.5 times a wavelength λ of an acoustic wave excited by the piezoelectric film.

2. An acoustic wave device comprising a main resonator and a sub resonator each having a substrate, a lower electrode provided on the substrate, a piezoelectric film provided on the lower electrode, and an upper electrode provided on an upper side of the piezoelectric film,

a frequency control film being provided on an upper side of a resonance area in which the upper electrode and the lower electrode face each other in at least one of the main resonator and the sub resonator,

the frequency control film having multiple hole patterns, and

the hole patterns being arranged with a common pitch for spurious adjustment and with different opening areas in the main resonator and the sub resonator, and

the pitch for spurious adjustment having a value within a range of 1.0 to 1.5 times a wavelength λ of an acoustic wave excited by the piezoelectric film.

3. The acoustic wave device as claimed in claim 1, wherein the convex patterns are formed so that an area S' of the frequency control film has the following to an area S of a mutually facing area:

$0 < S' < 0.5S$.

4. The acoustic wave device as claimed in claim 2, wherein the hole patterns are formed so that an area S' of the frequency control film has the following to an area S of a mutually facing area:

$0.5S < S' < S$.

CLAIMS

What is claimed is:

1. An acoustic wave device comprising a main resonator and a sub resonator each having a substrate, a lower electrode provided on the substrate, a piezoelectric film provided on the lower electrode, and an upper electrode provided on an upper side of the piezoelectric film,

a frequency control film being provided on an upper side of a resonance area in which the upper electrode and the lower electrode face each other in at least one of the main resonator and the sub resonator,

the frequency control film having multiple convex patterns, and

the convex patterns being arranged with a common pitch for spurious adjustment and with different areas in the main resonator and the sub resonator.

2. An acoustic wave device comprising a main resonator and a sub resonator each having a substrate, a lower electrode provided on the substrate, a piezoelectric film provided on the lower electrode, and an upper electrode provided on an upper side of the piezoelectric film,

a frequency control film being provided on an upper side of a resonance area in which the upper electrode and the lower electrode face each other in at least one of the main resonator and the sub resonator,

the frequency control film having multiple hole patterns, and

the hole patterns being arranged with a common pitch for spurious adjustment and with different opening areas in the main resonator and the sub resonator.

3. The acoustic wave device as claimed in claim 1, wherein the convex patterns are formed so that an area S' of the frequency control film has the following to an area S of a mutually facing area:

$0 < S' < 0.5S$.

4. The acoustic wave device as claimed in claim 2, wherein the hole patterns are formed so that an area S' of the frequency control film has the following to an area S of a mutually facing area:

$0.5S < S' < S$.

5. The acoustic wave device as claimed in any of claims 1 to 4, wherein a shape of the frequency control film has a height corresponding to a thickness of the frequency control film.

6. The acoustic wave device as claimed in any of claims 1 to 5, wherein the pitch for spurious adjustment is equal to or longer than a wavelength λ excited by the piezoelectric film.