

# CPC COOPERATIVE PATENT CLASSIFICATION

## H ELECTRICITY

(NOTE omitted)

### H03 ELECTRONIC CIRCUITRY

#### H03H IMPEDANCE NETWORKS, e.g. RESONANT CIRCUITS; RESONATORS (waveguides, resonators, lines or other devices of the waveguide type [H01P](#))

##### NOTES

- This subclass covers:
  - networks comprising lumped impedance elements;
  - networks comprising distributed impedance elements together with lumped impedance elements;
  - networks comprising electromechanical or electro-acoustic elements;
  - networks simulating reactances and comprising discharge tubes or semiconductor devices;
  - constructions of electromechanical resonators.
- In this subclass, the following expression is used with the meaning indicated:  
"passive elements" means resistors, capacitors, inductors, mutual inductors or diodes.
- Attention is drawn to the Notes following the titles of class [B81](#) and subclass [B81B](#) relating to "microstructural devices" and "microstructural systems".
- In this subclass, main groups with a higher number take precedence.

##### WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

<p><b>1/00</b>    <b>Constructional details of impedance networks whose electrical mode of operation is not specified or applicable to more than one type of network</b> (<a href="#">constructional details of electromechanical transducers H03H 9/00</a>)</p> <p>1/0007    . {of radio frequency interference filters}</p> <p>2001/0014    . {Capacitor filters, i.e. capacitors whose parasitic inductance is of relevance to consider it as filter}</p> <p>2001/0021    . {Constructional details}</p> <p>2001/0028    . . {RFI filters with housing divided in two bodies}</p> <p>2001/0035    . . {Wound magnetic core}</p> <p>2001/0042    . . {Wound, ring or feed-through type capacitor}</p> <p>2001/005    . . {Wound, ring or feed-through type inductor}</p> <p>2001/0057    . . {comprising magnetic material}</p> <p>2001/0064    . . {comprising semiconductor material}</p> <p>2001/0071    . . {comprising zig-zag inductor}</p> <p>2001/0078    . . {comprising spiral inductor on a substrate}</p> <p>2001/0085    . . {Multilayer, e.g. LTCC, HTCC, green sheets}</p> <p>2001/0092    . {Inductor filters, i.e. inductors whose parasitic capacitance is of relevance to consider it as filter}</p> <p>1/02    . RC networks, e.g. filters</p> <p><b>2/00</b>    <b>Networks using elements or techniques not provided for in groups <a href="#">H03H 3/00</a> - <a href="#">H03H 21/00</a></b></p> <p>2/001    . {comprising magnetostatic wave network elements}</p> <p>2/003    . {comprising optical fibre network elements (<a href="#">optical elements per se G02B, G02F</a>; <a href="#">transmission systems using light waves H04B 10/00</a>)}</p> <p>2/005    . {Coupling circuits between transmission lines or antennas and transmitters, receivers or amplifiers}</p> <p>2/006    . . {Transmitter or amplifier output circuits}</p> <p>2/008    . . {Receiver or amplifier input circuits}</p>	<p><b>3/00</b>    <b>Apparatus or processes specially adapted for the manufacture of impedance networks, resonating circuits, resonators</b></p> <p>3/007    . for the manufacture of electromechanical resonators or networks</p> <p>2003/0071    . . {of bulk acoustic wave and surface acoustic wave elements in the same process}</p> <p>3/0072    . . {of microelectro-mechanical resonators or networks (<a href="#">micromembranes or microbeams B81B 2203/01</a>; <a href="#">manufacture of microstructural devices in general B81C</a>)}</p> <p>3/0073    . . . {Integration with other electronic structures}</p> <p>3/0075    . . . {Arrangements or methods specially adapted for testing microelectro-mechanical resonators or networks}</p> <p>3/0076    . . . {for obtaining desired frequency or temperature coefficients}</p> <p>3/0077    . . . . {by tuning of resonance frequency}</p> <p>3/0078    . . . . . {involving adjustment of the transducing gap}</p> <p>3/013    . . for obtaining desired frequency or temperature coefficient (<a href="#">H03H 3/0076</a> <a href="#">H03H 3/04</a>, <a href="#">H03H 3/10</a> take precedence)</p> <p>3/02    . . for the manufacture of piezoelectric or electrostrictive resonators or networks (<a href="#">H03H 3/08</a> takes precedence)</p> <p>2003/021    . . . {the resonators or networks being of the air-gap type}</p> <p>2003/022    . . . {the resonators or networks being of the cantilever type}</p> <p>2003/023    . . . {the resonators or networks being of the membrane type}</p> <p>2003/025    . . . {the resonators or networks comprising an acoustic mirror}</p>
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## H03H

2003/026	. . . {the resonators or networks being of the tuning fork type}	7/0161	. . . {Bandpass filters ( <a href="#">H03H 7/12</a> takes precedence)}
2003/027	. . . {the resonators or networks being of the microelectro-mechanical [MEMS] type}	7/0169	. . . . {Intermediate frequency filters}
2003/028	. . . {for obtaining desired values of other parameters}	7/0176	. . . . . {without magnetic core}
3/04	. . . for obtaining desired frequency or temperature coefficient	7/0184	. . . . . {with ferromagnetic core}
2003/0407	. . . . {Temperature coefficient}	2007/0192	. . . {Complex filters}
2003/0414	. . . . {Resonance frequency}	7/03	. . comprising means for compensation of loss
2003/0421	. . . . . {Modification of the thickness of an element}	7/06	. . including resistors ( <a href="#">H03H 7/075</a> , <a href="#">H03H 7/09</a> , <a href="#">H03H 7/12</a> , <a href="#">H03H 7/13</a> take precedence)
2003/0428	. . . . . . {of an electrode}	7/065	. . . Parallel T-filters
2003/0435	. . . . . . {of a piezoelectric layer}	7/07	. . . Bridged T-filters
2003/0442	. . . . . . {of a non-piezoelectric layer}	7/075	. . Ladder networks, e.g. electric wave filters
2003/045	. . . . . {Modification of the area of an element}	7/09	. . Filters comprising mutual inductance
2003/0457	. . . . . . {of an electrode}	7/12	. . Bandpass or bandstop filters with adjustable bandwidth and fixed centre frequency ( <a href="#">H03H 7/09</a> takes precedence)
2003/0464	. . . . . {operating on an additional circuit element, e.g. a passive circuit element connected to the resonator}	7/13	. . using electro-optical elements
2003/0471	. . . . . {of a plurality of resonators at different frequencies}	7/17	. . {Structural details of sub-circuits of frequency selective networks}
2003/0478	. . . . . {in a process for mass production}	7/1708	. . . {Comprising bridging elements, i.e. elements in a series path without own reference to ground and spanning branching nodes of another series path ( <a href="#">H03H 7/07</a> takes precedence)}
2003/0485	. . . . . {during the manufacture of a cantilever}	7/1716	. . . {Comprising foot-point elements}
2003/0492	. . . . . {during the manufacture of a tuning-fork}	7/1725	. . . . {Element to ground being common to different shunt paths, i.e. Y-structure}
3/06	. . for the manufacture of magnetostrictive resonators or networks	7/1733	. . . . {Element between different shunt or branch paths ( <a href="#">H03H 7/425</a> takes precedence)}
3/08	. . for the manufacture of resonators or networks using surface acoustic waves	7/1741	. . . {Comprising typical LC combinations, irrespective of presence and location of additional resistors (when resistors are present, also classify in <a href="#">H03H 7/06</a> - <a href="#">H03H 7/07</a> )}
3/10	. . . for obtaining desired frequency or temperature coefficient	7/175	. . . . {Series LC in series path ( <a href="#">H03H 7/1783</a> takes precedence)}
<b>5/00</b>	<b>One-port networks comprising only passive electrical elements as network components</b>	7/1758	. . . . {Series LC in shunt or branch path ( <a href="#">H03H 7/1791</a> takes precedence)}
5/003	. {comprising distributed impedance elements together with lumped impedance elements}	7/1766	. . . . {Parallel LC in series path ( <a href="#">H03H 7/1783</a> takes precedence)}
5/006	. {comprising simultaneously tunable inductance and capacitance}	7/1775	. . . . {Parallel LC in shunt or branch path ( <a href="#">H03H 7/1791</a> takes precedence)}
5/02	. without voltage- or current-dependent elements	7/1783	. . . . {Combined LC in series path}
5/10	. . comprising at least one element with prescribed temperature coefficient	7/1791	. . . . {Combined LC in shunt or branch path}
5/12	. with at least one voltage- or current-dependent element	7/18	. Networks for phase shifting
<b>7/00</b>	<b>Multiple-port networks comprising only passive electrical elements as network components</b>	7/185	. . {comprising distributed impedance elements together with lumped impedance elements}
7/002	. {Gyrators}	7/19	. . Two-port phase shifters providing a predetermined phase shift, e.g. "all-pass" filters
7/004	. {Capacitive coupling circuits not otherwise provided for}	7/20	. . Two-port phase shifters providing an adjustable phase shift
2007/006	. {MEMS}	7/21	. . providing two or more phase shifted output signals, e.g. n-phase output
2007/008	. . {the MEMS being trimmable}	7/24	. Frequency- independent attenuators
7/01	. Frequency selective two-port networks	7/25	. . comprising an element controlled by an electric or magnetic variable ( <a href="#">H03H 7/27</a> takes precedence)
7/0107	. . {Non-linear filters}	7/251	. . . {the element being a thermistor}
7/0115	. . {comprising only inductors and capacitors ( <a href="#">H03H 7/075</a> , <a href="#">H03H 7/09</a> , <a href="#">H03H 7/12</a> , <a href="#">H03H 7/13</a> take precedence)}	7/253	. . . {the element being a diode}
7/0123	. . {comprising distributed impedance elements together with lumped impedance elements}	7/255	. . . . {the element being a PIN diode}
2007/013	. . {Notch or bandstop filters}	7/256	. . . . {the element being a VARACTOR diode}
7/0138	. . {Electrical filters or coupling circuits}	7/258	. . . {using a galvano-magnetic device}
7/0146	. . . {Coupling circuits between two tubes, not otherwise provided for}	7/27	. . comprising a photo-electric element
7/0153	. . {Electrical filters; Controlling thereof}	7/30	. Time-delay networks { ( <a href="#">analogue shift registers G11C 27/04</a> ) }
		7/32	. . with lumped inductance and capacitance

- 7/325 . . . {Adjustable networks}
- 7/34 . . with lumped and distributed reactance
- 7/345 . . . {Adjustable networks}
- 7/38 . Impedance-matching networks
- 7/383 . . {comprising distributed impedance elements together with lumped impedance elements}
- 2007/386 . . {Multiple band impedance matching}
- 7/40 . . Automatic matching of load impedance to source impedance
- 7/42 . Networks for transforming balanced signals into unbalanced signals and *vice versa*, e.g. baluns
- 7/422 . . {comprising distributed impedance elements together with lumped impedance elements}
- 7/425 . . {Balance-balance networks}
- 7/427 . . . {Common-mode filters ([H02J 3/01](#) and [H02M 1/126](#) takes precedence)}
- 7/46 . Networks for connecting several sources or loads, working on different frequencies or frequency bands, to a common load or source
- 7/461 . . {particularly adapted for use in common antenna systems}
- 7/463 . . {Duplexers}
- 7/465 . . . {having variable circuit topology, e.g. including switches}
- 7/466 . . {particularly adapted as input circuit for receivers}
- 7/468 . . {particularly adapted as coupling circuit between transmitters and antennas}
- 7/48 . Networks for connecting several sources or loads, working on the same frequency or frequency band, to a common load or source ([phase shifters providing two or more output signals H03H 7/21](#))
- 7/482 . . {particularly adapted for use in common antenna systems}
- 7/485 . . {particularly adapted as input circuit for receivers}
- 7/487 . . {particularly adapted as coupling circuit between transmitters and antennas}
- 7/52 . One-way transmission networks, i.e. unilines
- 7/54 . Modifications of networks to reduce influence of variations of temperature
- 9/00 Networks comprising electromechanical or electro-acoustic elements; Electromechanical resonators (electro-acoustic transducers such as loudspeakers, microphones or gramophone pick-ups [H04R](#); piezoelectric, electrostrictive or magnetostrictive devices with mechanical input or output, e.g. actuators or sensors, [H10N 30/00](#), [H10N 35/00](#))**
- 9/0004 . {Impedance-matching networks ([H03H 9/145](#) takes precedence)}
- 9/0009 . . {using surface acoustic wave devices}
- 9/0014 . . {using bulk acoustic wave devices}
- 2009/0019 . {Surface acoustic wave multichip}
- 9/0023 . {Networks for transforming balanced signals into unbalanced signals and *vice versa*, e.g. baluns, or networks having balanced input and output}
- 9/0028 . . {using surface acoustic wave devices}
- 9/0033 . . . {having one acoustic track only}
- 9/0038 . . . . {the balanced terminals being on the same side of the track}
- 9/0042 . . . . {the balanced terminals being on opposite sides of the track}
- 9/0047 . . . . {having two acoustic tracks ([H03H 9/008](#), [H03H 9/0085](#) take precedence)}
- 9/0052 . . . . {being electrically cascaded}
- 9/0057 . . . . . {the balanced terminals being on the same side of the tracks}
- 9/0061 . . . . . {the balanced terminals being on opposite sides of the tracks}
- 9/0066 . . . . . {being electrically parallel}
- 9/0071 . . . . . {the balanced terminals being on the same side of the tracks}
- 9/0076 . . . . . {the balanced terminals being on opposite sides of the tracks}
- 9/008 . . . . {having three acoustic tracks ([H03H 9/0085](#) takes precedence)}
- 9/0085 . . . . {having four acoustic tracks}
- 9/009 . . . . . {Lattice filters}
- 9/0095 . . . {using bulk acoustic wave devices}
- 9/02 . Details
- 9/02007 . . . {of bulk acoustic wave devices}
- 9/02015 . . . . {Characteristics of piezoelectric layers, e.g. cutting angles}
- 9/02023 . . . . . {consisting of quartz}
- 9/02031 . . . . . {consisting of ceramic}
- 9/02039 . . . . . {consisting of a material from the crystal group 32, e.g. langasite, langatate, langanite}
- 9/02047 . . . . {Treatment of substrates}
- 9/02055 . . . . . {of the surface including the back surface}
- 9/02062 . . . . {Details relating to the vibration mode}
- 9/0207 . . . . . {the vibration mode being harmonic}
- 9/02078 . . . . . {the vibration mode being overmoded}
- 9/02086 . . . . {Means for compensation or elimination of undesirable effects}
- 9/02094 . . . . . {of adherence}
- 9/02102 . . . . . {of temperature influence ([cutting angles H03H 9/02015](#))}
- 9/0211 . . . . . {of reflections}
- 9/02118 . . . . . {of lateral leakage between adjacent resonators}
- 9/02125 . . . . . {of parasitic elements}
- 9/02133 . . . . . {of stress}
- 9/02141 . . . . . {of electric discharge due to pyroelectricity}
- 9/02149 . . . . . {of ageing changes of characteristics, e.g. electro-acousto-migration}
- 9/02157 . . . . {Dimensional parameters, e.g. ratio between two dimension parameters, length, width or thickness}
- 2009/02165 . . . {Tuning}
- 2009/02173 . . . . {of film bulk acoustic resonators [FBAR]}
- 2009/02181 . . . . . {by application of heat from a heat source}
- 2009/02188 . . . . . {Electrically tuning}
- 2009/02196 . . . . . {operating on the FBAR element, e.g. by direct application of a tuning DC voltage}
- 2009/02204 . . . . . {operating on an additional circuit element, e.g. applying a tuning DC voltage to a passive circuit element connected to the resonator}
- 2009/02212 . . . . . {Magnetically tuning}
- 9/0222 . . . {of interface-acoustic, boundary, pseudo-acoustic or Stonely wave devices}
- 9/02228 . . . {Guided bulk acoustic wave devices or Lamb wave devices having interdigital transducers situated in parallel planes on either side of a piezoelectric layer}

### H03H

- 9/02236 . . . {of surface skimming bulk wave devices}
- 9/02244 . . . {of microelectro-mechanical resonators}
- 2009/02251 . . . {Design}
- 9/02259 . . . {Driving or detection means}
- 2009/02267 . . . . {having dimensions of atomic scale, e.g. involving electron transfer across vibration gap}
- 9/02275 . . . . {Comb electrodes}
- 2009/02283 . . . {Vibrating means}
- 2009/02291 . . . . {Beams}
- 2009/02299 . . . . . {Comb-like, i.e. the beam comprising a plurality of fingers or protrusions along its length}
- 2009/02307 . . . . . {Dog-bone-like structure, i.e. the elongated part of the "bone" is doubly clamped}
- 2009/02314 . . . . . {forming part of a transistor structure}
- 2009/02322 . . . . . {Material}
- 2009/0233 . . . . {comprising perforations}
- 9/02338 . . . {Suspension means}
- 2009/02346 . . . . {Anchors for ring resonators}
- 2009/02354 . . . . . {applied along the periphery, e.g. at nodal points of the ring}
- 9/02362 . . . . {Folded-flexure}
- 2009/0237 . . . . . {applied at the center}
- 9/02377 . . . . . {Symmetric folded-flexure}
- 2009/02385 . . . . . {Anchors for square resonators, i.e. resonators comprising a square vibrating membrane}
- 9/02393 . . . {Post-fabrication trimming of parameters, e.g. resonance frequency, Q factor}
- 9/02401 . . . . {by annealing}
- 9/02409 . . . . {by application of a DC-bias voltage ([H03H 9/02417](#) takes precedence)}
- 9/02417 . . . . {involving adjustment of the transducing gap}
- 9/02425 . . . . . {by electrostatically pulling the beam}
- 9/02433 . . . {Means for compensation or elimination of undesired effects}
- 2009/0244 . . . . {Anchor loss}
- 9/02448 . . . . {of temperature influence}
- 2009/02456 . . . . {Parasitic elements or effects, e.g. parasitic capacitive coupling between input and output}
- 2009/02464 . . . . {Pull-in}
- 2009/02472 . . . . {Stiction}
- 2009/0248 . . . . {Strain}
- 2009/02488 . . . {Vibration modes}
- 2009/02496 . . . . {Horizontal, i.e. parallel to the substrate plane}
- 2009/02503 . . . . . {Breath-like, e.g. Lam? mode, wine-glass mode}
- 2009/02511 . . . . {Vertical, i.e. perpendicular to the substrate plane}
- 2009/02519 . . . . {Torsional}
- 2009/02527 . . . . {Combined}
- 9/02535 . . . {of surface acoustic wave devices}
- 9/02543 . . . {Characteristics of substrate, e.g. cutting angles}
- 9/02551 . . . . {of quartz substrates}
- 9/02559 . . . . {of lithium niobate or lithium-tantalate substrates}
- 9/02566 . . . . {of semiconductor substrates}
- 9/02574 . . . . . {of combined substrates, multilayered substrates, piezoelectrical layers on not-piezoelectrical substrate}
- 9/02582 . . . . . {of diamond substrates}
- 9/0259 . . . . . {of langasite substrates}
- 9/02598 . . . . . {of langatate substrates}
- 9/02606 . . . . . {of langanite substrates}
- 9/02614 . . . . {Treatment of substrates, e.g. curved, spherical, cylindrical substrates ensuring closed round-about circuits for the acoustical waves}
- 9/02622 . . . . . {of the surface, including back surface}
- 9/02629 . . . . . {of the edges}
- 9/02637 . . . . {Details concerning reflective or coupling arrays}
- 9/02645 . . . . . {Waffle-iron or dot arrays}
- 9/02653 . . . . . {Grooves or arrays buried in the substrate}
- 9/02661 . . . . . {being located inside the interdigital transducers}
- 9/02669 . . . . . {Edge reflection structures, i.e. resonating structures without metallic reflectors, e.g. Bleustein-Gulyaev-Shimizu [BGS], shear horizontal [SH], shear transverse [ST], Love waves devices}
- 9/02677 . . . . . {having specially shaped edges, e.g. stepped, U-shaped edges}
- 9/02685 . . . . . {Grating lines having particular arrangements}
- 9/02692 . . . . . {Arched grating lines}
- 9/027 . . . . . {U-shaped grating lines}
- 9/02708 . . . . . {Shifted grating lines}
- 9/02716 . . . . . {Tilted, fan shaped or slanted grating lines}
- 9/02724 . . . . . {Comb like grating lines}
- 9/02732 . . . . . {Bilateral comb like grating lines}
- 9/0274 . . . . . {Intra-transducers grating lines}
- 9/02748 . . . . . {Dog-legged reflectors}
- 9/02755 . . . . . {Meandering floating or grounded grating lines}
- 9/02763 . . . . . {Left and right side electrically coupled reflectors}
- 9/02771 . . . . . {Reflector banks}
- 9/02779 . . . . . {Continuous surface reflective arrays}
- 9/02787 . . . . . {having wave guide like arrangements}
- 9/02795 . . . . . {Multi-strip couplers as track changers}
- 9/02803 . . . . . {Weighted reflective structures}
- 9/02811 . . . . . {Chirped reflective or coupling arrays}
- 9/02818 . . . . {Means for compensation or elimination of undesirable effects}
- 9/02826 . . . . . {of adherence}
- 9/02834 . . . . . {of temperature influence ([cut angles H03H 9/02543](#))}
- 9/02842 . . . . . {of reflections ([H03H 9/6406](#) takes precedence)}
- 9/0285 . . . . . {of triple transit echo}
- 9/02858 . . . . . {of wave front distortion}
- 9/02866 . . . . . {of bulk wave excitation and reflections}
- 9/02874 . . . . . {of direct coupling between input and output transducers}
- 9/02881 . . . . . {of diffraction of wave beam}
- 9/02889 . . . . . {of influence of mass loading}
- 9/02897 . . . . . {of strain or mechanical damage, e.g. strain due to bending influence}

- 9/02905 . . . . {Measures for separating propagation paths on substrate}
- 9/02913 . . . . {Measures for shielding against electromagnetic fields ([shielding of electrical components in general H05K 9/00](#))}
- 9/02921 . . . . {Measures for preventing electric discharge due to pyroelectricity}
- 9/02929 . . . . {of ageing changes of characteristics, e.g. electro-acousto-migration}
- 9/02937 . . . . {of chemical damage, e.g. corrosion}
- 9/02944 . . . . {of ohmic loss}
- 9/02952 . . . . {of parasitic capacitance}
- 9/0296 . . . . {Surface acoustic wave [SAW] devices having both acoustic and non-acoustic properties}
- 9/02968 . . . . {with optical devices ([mounting in enclosures H03H 9/12](#))}
- 9/02976 . . . . {with semiconductor devices}
- 9/02984 . . . . {Protection measures against damaging}
- 9/02992 . . . . {Details of bus bars, contact pads or other electrical connections for finger electrodes}
- 9/05 . . . . Holders or supports
- 9/0504 . . . . {for bulk acoustic wave devices}
- 9/0509 . . . . {consisting of adhesive elements}
- 9/0514 . . . . {consisting of mounting pads or bumps}
- 9/0519 . . . . {for cantilever ([H03H 9/1021 takes precedence](#))}
- 9/0523 . . . . {for flip-chip mounting}
- 9/0528 . . . . {consisting of clips}
- 9/0533 . . . . {consisting of wire}
- 9/0538 . . . . {Constructional combinations of supports or holders with electromechanical or other electronic elements}
- 9/0542 . . . . {consisting of a lateral arrangement ([H03H 9/0566 takes precedence](#))}
- 9/0547 . . . . {consisting of a vertical arrangement ([H03H 9/0566 takes precedence](#))}
- 9/0552 . . . . {the device and the other elements being mounted on opposite sides of a common substrate}
- 9/0557 . . . . {the other elements being buried in the substrate}
- 9/0561 . . . . {consisting of a multilayered structure}
- 9/0566 . . . . {for duplexers}
- 9/0571 . . . . {including bulk acoustic wave [BAW] devices}
- 9/0576 . . . . {including surface acoustic wave [SAW] devices}
- 9/058 . . . . {for surface acoustic wave devices}
- 9/0585 . . . . {consisting of an adhesive layer}
- 9/059 . . . . {consisting of mounting pads or bumps}
- 9/0595 . . . . {the holder support and resonator being formed in one body}
- 9/08 . . . . Holders with means for regulating temperature
- 9/09 . . . . Elastic or damping supports
- 9/10 . . . . Mounting in enclosures ([constructional combinations of enclosure with electromechanical and other electronic elements H03H 9/0538](#))}
- 9/1007 . . . . {for bulk acoustic wave [BAW] devices}
- 9/1014 . . . . {the enclosure being defined by a frame built on a substrate and a cap, the frame having no mechanical contact with the BAW device}
- 9/1021 . . . . {the BAW device being of the cantilever type}
- 9/1028 . . . . {the BAW device being held between spring terminals}
- 9/1035 . . . . {the enclosure being defined by two sealing substrates sandwiching the piezoelectric layer of the BAW device}
- 9/1042 . . . . {the enclosure being defined by a housing formed by a cavity in a resin}
- 9/105 . . . . {the enclosure being defined by a cover cap mounted on an element forming part of the BAW device}
- 9/1057 . . . . {for microelectro-mechanical devices}
- 9/1064 . . . . {for surface acoustic wave [SAW] devices}
- 9/1071 . . . . {the enclosure being defined by a frame built on a substrate and a cap, the frame having no mechanical contact with the SAW device}
- 9/1078 . . . . {the enclosure being defined by a foil covering the non-active sides of the SAW device}
- 9/1085 . . . . {the enclosure being defined by a non-uniform sealing mass covering the non-active sides of the SAW device}
- 9/1092 . . . . {the enclosure being defined by a cover cap mounted on an element forming part of the surface acoustic wave [SAW] device on the side of the IDT's}
- 9/12 . . . . for networks with interaction of optical and acoustic waves
- 9/125 . . . . Driving means, e.g. electrodes, coils
- 9/13 . . . . for networks consisting of piezoelectric or electrostrictive materials ([for networks using surface acoustic waves H03H 9/145](#))}
- 9/131 . . . . {consisting of a multilayered structure}
- 9/132 . . . . {characterized by a particular shape}
- 9/133 . . . . {for electromechanical delay lines or filters}
- 9/135 . . . . for networks consisting of magnetostrictive materials ([H03H 9/145 takes precedence](#))}
- 9/145 . . . . for networks using surface acoustic waves
- 9/14502 . . . . {Surface acoustic wave [SAW] transducers for a particular purpose}
- 9/14505 . . . . {Unidirectional SAW transducers}
- 9/14508 . . . . {Polyphase SAW transducers}
- 9/14511 . . . . {SAW transducers for non-piezoelectric substrates}
- 9/14514 . . . . {Broad band transducers}
- 9/14517 . . . . {Means for weighting}
- 9/1452 . . . . {by finger overlap length, apodisation}
- 9/14523 . . . . {Capacitive tap weighted transducers}
- 9/14526 . . . . {Finger withdrawal}
- 9/14529 . . . . {Distributed tap}
- 9/14532 . . . . {Series weighting; Transverse weighting}
- 9/14535 . . . . {Position weighting}
- 9/14538 . . . . {Formation}
- 9/14541 . . . . {Multilayer finger or busbar electrode}
- 9/14544 . . . . {Transducers of particular shape or position ([weighting H03H 9/14517](#))}
- 9/14547 . . . . {Fan shaped; Tilted; Shifted; Slanted; Tapered; Arched; Stepped finger transducers}
- 9/1455 . . . . {constituted of N parallel or series transducers}

- 9/14552 . . . . . {comprising split fingers}
- 9/14555 . . . . . {Chirped transducers ([H03H 9/6406 takes precedence](#))}
- 9/14558 . . . . . {Slanted, tapered or fan shaped transducers ([H03H 9/14561, H03H 9/14564 take precedence](#))}
- 9/14561 . . . . . {Arched, curved or ring shaped transducers}
- 9/14564 . . . . . {Shifted fingers transducers}
- 9/14567 . . . . . {Stepped-fan shaped transducers}
- 9/1457 . . . . . {Transducers having different finger widths}
- 9/14573 . . . . . {Arrow type transducers}
- 9/14576 . . . . . {Transducers whereby only the last fingers have different characteristics with respect to the other fingers, e.g. different shape, thickness or material, split finger}
- 9/14579 . . . . . {the last fingers having a different shape}
- 9/14582 . . . . . {the last fingers having a different pitch}
- 9/14585 . . . . . {the last fingers being split}
- 9/14588 . . . . . {Horizontally-split transducers}
- 9/14591 . . . . . {Vertically-split transducers}
- 9/14594 . . . . . {Plan-rotated or plan-tilted transducers}
- 9/14597 . . . . . {Matching SAW transducers to external electrical circuits}
- 9/15 . . . . . Constructional features of resonators consisting of piezoelectric or electrostrictive material ([H03H 9/25 takes precedence](#))
- 2009/155 . . . . . {using MEMS techniques}
- 9/17 . . . . . having a single resonator ([crystal tuning forks H03H 9/21](#))
- 9/171 . . . . . {implemented with thin-film techniques, i.e. of the film bulk acoustic resonator [FBAR] type}
- 9/172 . . . . . {Means for mounting on a substrate, i.e. means constituting the material interface confining the waves to a volume}
- 9/173 . . . . . {Air-gaps}
- 9/174 . . . . . {Membranes}
- 9/175 . . . . . {Acoustic mirrors}
- 9/176 . . . . . {consisting of ceramic material ([H03H 9/177, H03H 9/178 take precedence](#))}
- 9/177 . . . . . {of the energy-trap type}
- 9/178 . . . . . {of a laminated structure of multiple piezoelectric layers with inner electrodes}
- 9/19 . . . . . consisting of quartz
- 9/205 . . . . . having multiple resonators ([crystal tuning forks H03H 9/21](#))
- 9/21 . . . . . Crystal tuning forks
- 9/215 . . . . . consisting of quartz
- 9/22 . . . . . Constructional features of resonators consisting of magnetostrictive material
- 9/24 . . . . . Constructional features of resonators of material which is not piezoelectric, electrostrictive, or magnetostrictive
- 9/2405 . . . . . {of microelectro-mechanical resonators}
- 2009/241 . . . . . {Bulk-mode MEMS resonators}
- 2009/2415 . . . . . {with concave shape [CBAR]}
- 2009/2421 . . . . . {with I shape [IBAR]}
- 9/2426 . . . . . {in combination with other electronic elements}
- 9/2431 . . . . . {Ring resonators}
- 9/2436 . . . . . {Disk resonators}
- 2009/2442 . . . . . {Square resonators}
- 9/2447 . . . . . {Beam resonators ([H03H 9/2468 takes precedence](#))}
- 9/2452 . . . . . {Free-free beam resonators}
- 9/2457 . . . . . {Clamped-free beam resonators}
- 9/2463 . . . . . {Clamped-clamped beam resonators}
- 9/2468 . . . . . {Tuning fork resonators}
- 9/2473 . . . . . {Double-Ended Tuning Fork [DETF] resonators}
- 9/2478 . . . . . {Single-Ended Tuning Fork resonators}
- 9/2484 . . . . . {with two fork tines, e.g. Y-beam cantilever}
- 9/2489 . . . . . {with more than two fork tines}
- 9/2494 . . . . . {H-shaped, i.e. two tuning forks with common base}
- 9/25 . . . . . Constructional features of resonators using surface acoustic waves ({[devices for manipulating acoustic surface waves in general G10K 11/36](#)})
- 9/30 . . . . . Time-delay networks
- 9/36 . . . . . with non-adjustable delay time ([H03H 9/40, H03H 9/42 take precedence](#))
- 9/38 . . . . . with adjustable delay time ([H03H 9/40, H03H 9/42 take precedence](#))
- 9/40 . . . . . Frequency dependent delay lines, e.g. dispersive delay lines ([H03H 9/42 takes precedence](#))
- 9/42 . . . . . using surface acoustic waves ({[devices for manipulating acoustic surface waves in general G10K 11/36](#)})
- 9/423 . . . . . {with adjustable delay time}
- 9/426 . . . . . {Magneto-elastic surface waves}
- 9/44 . . . . . Frequency dependent delay lines, e.g. dispersive delay lines
- 9/46 . . . . . Filters ([multiple-port electromechanical filters H03H 9/70](#))
- 9/462 . . . . . {Microelectro-mechanical filters}
- 9/465 . . . . . {in combination with other electronic elements}
- 9/467 . . . . . {Post-fabrication trimming of parameters, e.g. center frequency}
- 9/48 . . . . . Coupling means therefor
- 9/485 . . . . . {for microelectro-mechanical filters}
- 9/50 . . . . . Mechanical coupling means
- 9/505 . . . . . {for microelectro-mechanical filters}
- 9/52 . . . . . Electric coupling means
- 9/525 . . . . . {for microelectro-mechanical filters}
- 9/54 . . . . . comprising resonators of piezoelectric or electrostrictive material ([comprising resonators using surface acoustic waves H03H 9/64](#))
- 9/542 . . . . . {including passive elements ([H03H 9/545 takes precedence](#))}
- 9/545 . . . . . {including active elements}
- 9/547 . . . . . {Notch filters, e.g. notch BAW or thin film resonator filters}
- 9/56 . . . . . Monolithic crystal filters
- 9/562 . . . . . {comprising a ceramic piezoelectric layer}
- 9/564 . . . . . {implemented with thin-film techniques}
- 9/566 . . . . . {Electric coupling means therefor ([H03H 9/0095 takes precedence](#))}
- 9/568 . . . . . {consisting of a ladder configuration}
- 9/58 . . . . . Multiple crystal filters
- 9/581 . . . . . {comprising ceramic piezoelectric layers}
- 9/582 . . . . . {implemented with thin-film techniques}

- 9/583 . . . . . {comprising a plurality of piezoelectric layers acoustically coupled}
- 9/584 . . . . . {Coupled Resonator Filters [CFR]}
- 9/585 . . . . . {Stacked Crystal Filters [SCF]}
- 9/586 . . . . . {Means for mounting to a substrate, i.e. means constituting the material interface confining the waves to a volume}
- 9/587 . . . . . {Air-gaps}
- 9/588 . . . . . {Membranes}
- 9/589 . . . . . {Acoustic mirrors}
- 9/60 . . . . . Electric coupling means therefor  
{(H03H 9/0095 takes precedence)}
- 9/605 . . . . . {consisting of a ladder configuration}
- 9/62 . . . . . comprising resonators of magnetostrictive material (H03H 9/64 takes precedence)
- 9/64 . . . . . using surface acoustic waves
- 9/6403 . . . . . {Programmable filters}
- 9/6406 . . . . . {Filters characterised by a particular frequency characteristic}
- 9/6409 . . . . . {SAW notch filters}
- 9/6413 . . . . . {SAW comb filters}
- 9/6416 . . . . . {SAW matched filters, e.g. surface acoustic wave compressors, chirped or coded surface acoustic wave filters}
- 9/642 . . . . . {SAW transducers details for remote interrogation systems, e.g. surface acoustic wave transducers details for ID-tags (remote interrogation systems per se G06K 7/10009, G01S 13/74)}
- 9/6423 . . . . . {Means for obtaining a particular transfer characteristic}
- 9/6426 . . . . . {Combinations of the characteristics of different transducers}
- 9/643 . . . . . {the transfer characteristic being determined by reflective or coupling array characteristics}
- 9/6433 . . . . . {Coupled resonator filters}
- 9/6436 . . . . . {having one acoustic track only}
- 9/644 . . . . . {having two acoustic tracks}
- 9/6443 . . . . . {being acoustically coupled}
- 9/6446 . . . . . {by floating multistrip couplers (H03H 9/645, H03H 9/6453 take precedence)}
- 9/645 . . . . . {by grating reflectors overlapping both tracks}
- 9/6453 . . . . . {by at least an interdigital transducer overlapping both tracks}
- 9/6456 . . . . . {being electrically coupled}
- 9/6459 . . . . . {via one connecting electrode}
- 9/6463 . . . . . {the tracks being electrically cascaded}
- 9/6466 . . . . . {each track containing more than two transducers}
- 9/6469 . . . . . {via two connecting electrodes}
- 9/6473 . . . . . {the electrodes being electrically interconnected}
- 9/6476 . . . . . {the tracks being electrically parallel}
- 9/6479 . . . . . {Capacitively coupled SAW resonator filters}
- 9/6483 . . . . . {Ladder SAW filters}
- 9/6486 . . . . . {having crossing or intersecting acoustic tracks, e.g. intersection in a perpendicular or diagonal orientation}
- 9/6489 . . . . . {Compensation of undesirable effects}
- 9/6493 . . . . . {Side lobe suppression}
- 9/6496 . . . . . {Reducing ripple in transfer characteristic}
- 9/66 . . . . . Phase shifters
- 9/68 . . . . . using surface acoustic waves
- 9/70 . . . . . Multiple-port networks for connecting several sources or loads, working on different frequencies or frequency bands, to a common load or source
- 9/703 . . . . . {Networks using bulk acoustic wave devices}
- 9/706 . . . . . {Duplexers}
- 9/72 . . . . . Networks using surface acoustic waves
- 9/725 . . . . . {Duplexers}
- 9/74 . . . . . Multiple-port networks for connecting several sources or loads, working on the same frequency or frequency band, to a common load or source (networks for phase shifting H03H 9/66)
- 9/76 . . . . . Networks using surface acoustic waves
- 11/00 Networks using active elements**
- 11/02 . . . . . Multiple-port networks
- 11/025 . . . . . {using current conveyors}
- 11/04 . . . . . Frequency selective two-port networks
- 11/0405 . . . . . {Non-linear filters}
- 2011/0411 . . . . . {Rank order or median filters}
- 11/0416 . . . . . {using positive impedance converters (H03H 11/08 takes precedence)}
- 11/0422 . . . . . {using transconductance amplifiers, e.g. gmC filters}
- 11/0427 . . . . . {Filters using a single transconductance amplifier; Filters derived from a single transconductor filter, e.g. by element substitution, cascading, parallel connection (H03H 11/0433 - H03H 11/0472 take precedence)}
- 11/0433 . . . . . {Two integrator loop filters (H03H 11/0455 takes precedence)}
- 11/0438 . . . . . {Tow-Thomas biquad}
- 11/0444 . . . . . {Simulation of ladder networks}
- 11/045 . . . . . {Leapfrog structures}
- 11/0455 . . . . . {Multiple integrator loop feedback filters}
- 11/0461 . . . . . {Current mode filters}
- 11/0466 . . . . . {Filters combining transconductance amplifiers with other active elements, e.g. operational amplifiers, transistors, voltage conveyors}
- 11/0472 . . . . . {Current or voltage controlled filters}
- 2011/0477 . . . . . {using current feedback operational amplifiers}
- 2011/0483 . . . . . {using operational transresistance amplifiers [OTRA]}
- 2011/0488 . . . . . {Notch or bandstop filters}
- 2011/0494 . . . . . {Complex filters}
- 11/06 . . . . . comprising means for compensation of loss
- 11/08 . . . . . using gyrators
- 11/10 . . . . . using negative impedance converters (H03H 11/08 takes precedence)
- 11/11 . . . . . {using current conveyors}
- 11/12 . . . . . using amplifiers with feedback ((H03H 11/0422), H03H 11/08, H03H 11/10 take precedence)
- 11/1204 . . . . . {Distributed RC filters}
- 11/1208 . . . . . {comprising an electromechanical resonator}
- 11/1213 . . . . . {using transistor amplifiers (H03H 11/1204 takes precedence; parallel-T filters H03H 11/1295)}

- 11/1217 . . . . {using a plurality of operational amplifiers ([H03H 11/1204](#) takes precedence; parallel-T filters [H03H 11/1295](#))}
- 11/1221 . . . . {Theory; Synthesis ([H03H 11/1226](#) - [H03H 11/1252](#) take precedence)}
- 11/1226 . . . . {Filters using operational amplifier poles}
- 11/123 . . . . {Modifications to reduce sensitivity}
- 11/1234 . . . . {Modifications to reduce detrimental influences of amplifier imperfections, e.g. limited gain-bandwidth product, limited input impedance}
- 11/1239 . . . . {Modifications to reduce influence of variations of temperature}
- 11/1243 . . . . {Simulation of ladder networks}
- 11/1247 . . . . {Leapfrog structures}
- 11/1252 . . . . {Two integrator-loop-filters}
- 11/1256 . . . . {Tow-Thomas biquad}
- 11/126 . . . . {using a single operational amplifier ([H03H 11/1204](#) takes precedence; parallel-T filters [H03H 11/1295](#))}
- 11/1265 . . . . {Synthesis ([H03H 11/1269](#) - [H03H 11/1282](#) take precedence)}
- 11/1269 . . . . {Filters using the operational amplifier pole}
- 11/1273 . . . . {Modifications to reduce sensitivity}
- 11/1278 . . . . {Modifications to reduce detrimental influences of amplifier imperfections, e.g. limited gain-bandwidth product, limited input impedance}
- 11/1282 . . . . {Modifications to reduce influence of variations of temperature}
- 11/1286 . . . . {Sallen-Key biquad}
- 11/1291 . . . . {Current or voltage controlled filters}
- 11/1295 . . . . {Parallel-T filters}
- 11/14 . . . using electro-optical devices
- 11/16 . . Networks for phase shifting
- 11/18 . . . Two-port phase shifters providing a predetermined phase shift, e.g. "all-pass" filters
- 11/20 . . . Two-port phase shifters providing an adjustable phase shift
- 11/22 . . . providing two or more phase shifted output signals, e.g. n-phase output
- 11/24 . . Frequency-independent attenuators
- 11/245 . . . {using field-effect transistor}
- 11/26 . . Time-delay networks
- 11/265 . . . {with adjustable delay}
- 11/28 . . Impedance matching networks
- 11/30 . . . Automatic matching of source impedance to load impedance
- 11/32 . . Networks for transforming balanced signals into unbalanced signals and *vice versa*, e.g. baluns
- 11/34 . . Networks for connecting several sources or loads working on different frequencies or frequency bands, to a common load or source
- 11/342 . . . {particularly adapted for use in common antenna systems}
- 11/344 . . . {Duplexers}
- 11/346 . . . {particularly adapted as input circuit for receivers}
- 11/348 . . . {particularly adapted as coupling circuit between transmitters and antenna}
- 11/36 . . Networks for connecting several sources or loads, working on the same frequency band, to a common load or source ([phase shifters providing two or more output signals](#) [H03H 11/22](#))
- 11/362 . . . {particularly adapted for use in common antenna systems}
- 11/365 . . . {particularly adapted as input circuit for receivers}
- 11/367 . . . {particularly adapted as coupling circuit between transmitters and antenna}
- 11/38 . . One-way transmission networks, i.e. unilines
- 11/40 . . Impedance converters
- 11/405 . . . {Positive impedance converters ([H03H 11/42](#) takes precedence; used in frequency selective networks [H03H 11/0416](#))}
- 11/42 . . . Gyration (used in frequency selective networks [H03H 11/08](#))
- 11/44 . . . Negative impedance converters ([H03H 11/42](#) takes precedence)
- 11/46 . One-port networks
- 11/48 . . simulating reactances
- 11/481 . . . {Simulating capacitances}
- 11/483 . . . {Simulating capacitance multipliers}
- 11/485 . . . {Simulating inductances using operational amplifiers}
- 11/486 . . . {Simulating inductances using transconductance amplifiers}
- 11/488 . . . {Simulating inductances using current conveyors}
- 11/50 . . . using gyrators
- 11/52 . . simulating negative resistances
- 11/525 . . . {Simulating frequency dependent negative resistance [FDNR]}
- 11/53 . . {simulating resistances; simulating resistance multipliers}
- 11/54 . . Modifications of networks to reduce influence of variations of temperature
- 15/00** **Transversal filters (electromechanical filters**  
[H03H 9/46](#), [H03H 9/70](#))
- 2015/002 . . {Computation saving measures}
- 2015/005 . . {comprising capacitors implemented with MEMS technology}
- 2015/007 . . {Programmable filters}
- 15/02 . . using analogue shift registers
- 15/023 . . {with parallel-input configuration}
- 2015/026 . . {Matched filters in charge domain}
- 17/00** **Networks using digital techniques**
- 17/0009 . . {Time-delay networks}
- 17/0018 . . {Realizing a fractional delay}
- 17/0027 . . . {by means of a non-recursive filter}
- 17/0036 . . . {by means of a recursive filter}
- 17/0045 . . {Impedance matching networks}
- 17/0054 . . {Attenuators}
- 17/0063 . . {R, L, C, simulating networks}
- 2017/0072 . . {Theoretical filter design}
- 2017/0081 . . {of FIR filters}
- 2017/009 . . {of IIR filters}
- 17/02 . . Frequency selective networks {(digital computers for complex mathematical operations [G06F 17/10](#))}
- 17/0201 . . {Wave digital filters}

- 17/0202 . . . {Two or more dimensional filters; Filters for complex signals ([multidimensional convolutions G06F 17/153](#))}
- 2017/0204 . . . {Comb filters}
- 2017/0205 . . . {Kalman filters}
- 2017/0207 . . . {Median filters}
- 2017/0208 . . . {using neural networks}
- 2017/021 . . . {Wave digital filters}
- 17/0211 . . . {using specific transformation algorithms, e.g. WALSHP functions, Fermat transforms, Mersenne transforms, polynomial transforms, Hilbert transforms ([correlation computation G06F 17/156](#))}
- 17/0213 . . . {Frequency domain filters using Fourier transforms}
- 2017/0214 . . . . {with input-sampling frequency and output-delivery frequency which differ, e.g. interpolation, extrapolation; anti-aliasing}
- 17/0216 . . . {Quefrequency domain filters}
- 17/0217 . . . {Number theoretic transforms}
- 17/0219 . . . {Compensation of undesirable effects, e.g. quantisation noise, overflow ([stability problems H03H 17/0461](#))}
- 2017/022 . . . {Rounding error}
- 2017/0222 . . . {Phase error}
- 17/0223 . . . {Computation saving measures; Accelerating measures ([computations per se G06F](#))}
- 17/0225 . . . {Measures concerning the multipliers}
- 17/0226 . . . . {comprising look-up tables}
- 17/0227 . . . {Measures concerning the coefficients}
- 17/0229 . . . . {reducing the number of taps}
- 17/023 . . . . {reducing the wordlength, the possible values of coefficients}
- 2017/0232 . . . . . {Canonical signed digit [CSD] or power of 2 coefficients}
- 17/0233 . . . {Measures concerning the signal representation}
- 17/0235 . . . . {reducing the wordlength of signals}
- 17/0236 . . . . {using codes}
- 17/0238 . . . {Measures concerning the arithmetic used ([performing computations G06F 7/60](#))}
- 17/0239 . . . . {Signed digit arithmetic}
- 17/0241 . . . . {Distributed arithmetic}
- 17/0242 . . . . {Residue number arithmetic}
- 2017/0244 . . . {Measures to reduce settling time}
- 2017/0245 . . . {Measures to reduce power consumption}
- 2017/0247 . . . {Parallel structures using a slower clock}
- 17/0248 . . . {Filters characterised by a particular frequency response or filtering method}
- 17/025 . . . {Notch filters}
- 17/0251 . . . {Comb filters}
- 17/0252 . . . {Elliptic filters}
- 17/0254 . . . {Matched filters}
- 17/0255 . . . {Filters based on statistics ([adaptive filters H03H 21/0029](#))}
- 17/0257 . . . . {KALMAN filters}
- 17/0258 . . . . {ARMA filters}
- 17/026 . . . {Averaging filters}
- 17/0261 . . . {Non linear filters}
- 17/0263 . . . . {Rank order filters}
- 17/0264 . . . {Filter sets with mutual related characteristics}
- 17/0266 . . . . {Filter banks}
- 17/0267 . . . . . {comprising non-recursive filters}
- 17/0269 . . . . . {comprising recursive filters}
- 17/027 . . . . {Complementary filters; Phase complementary filters}
- 17/0272 . . . . {Quadrature mirror filters}
- 17/0273 . . . . {Polyphase filters}
- 17/0275 . . . . . {comprising non-recursive filters}
- 17/0276 . . . . . {having two phases}
- 17/0277 . . . . . {comprising recursive filters}
- 17/0279 . . . . . {having two phases}
- 17/028 . . . . {Polynomial filters}
- 17/0282 . . . . {Sinc or gaussian filters ([H03H 17/0671](#) takes precedence)}
- 17/0283 . . . {Filters characterised by the filter structure ([H03H 17/0202](#), [H03H 17/0219](#) - [H03H 17/0248](#) take precedence)}
- 17/0285 . . . . {Ladder or lattice filters}
- 17/0286 . . . . {Combinations of filter structures}
- 17/0288 . . . . . {Recursive, non-recursive, ladder, lattice structures}
- 17/0289 . . . . . {Digital and active filter structures}
- 17/0291 . . . . . {Digital and sampled data filters}
- 17/0292 . . . . {Time multiplexed filters; Time sharing filters}
- 17/0294 . . . . {Variable filters; Programmable filters}
- 2017/0295 . . . . {Changing between two filter characteristics}
- 2017/0297 . . . . {Coefficients derived from input parameters}
- 2017/0298 . . . . {DSP implementation}
- 17/04 . . . Recursive filters
- 17/0405 . . . . {comprising a ROM addressed by the input and output data signals}
- 17/0411 . . . . {using DELTA modulation}
- 17/0416 . . . . {with input-sampling frequency and output-delivery frequency which differ, e.g. extrapolation; Anti-aliasing}
- 17/0422 . . . . . {the input and output signals being derived from two separate clocks, i.e. asynchronous sample rate conversion}
- 17/0427 . . . . . {characterized by the ratio between the input-sampling and output-delivery frequencies}
- 17/0433 . . . . . {the ratio being arbitrary or irrational}
- 17/0438 . . . . . {the ratio being integer}
- 17/0444 . . . . . . {where the output-delivery frequency is higher than the input sampling frequency, i.e. interpolation}
- 17/045 . . . . . . {where the output-delivery frequency is lower than the input sampling frequency, i.e. decimation}
- 17/0455 . . . . . . {the ratio being rational}
- 17/0461 . . . . {Quantisation; Rounding; Truncation; Overflow oscillations or limit cycles eliminating measures}
- 2017/0466 . . . . . {Reduction of limit cycle oscillation}
- 2017/0472 . . . . {based on allpass structures}
- 2017/0477 . . . . {Direct form I}
- 2017/0483 . . . . . {Transposed}
- 2017/0488 . . . . {Direct form II}
- 2017/0494 . . . . . {Transposed}
- 17/06 . . . Non-recursive filters
- 17/0607 . . . . {comprising a ROM addressed by the input data signals}
- 17/0614 . . . . {using Delta-modulation}

- 17/0621 . . . {with input-sampling frequency and output-delivery frequency which differ, e.g. extrapolation; Anti-aliasing}
- 17/0628 . . . . {the input and output signals being derived from two separate clocks, i.e. asynchronous sample rate conversion}
- 17/0635 . . . . {characterized by the ratio between the input-sampling and output-delivery frequencies}
- 17/0642 . . . . . {the ratio being arbitrary or irrational}
- 17/065 . . . . . {the ratio being integer}
- 17/0657 . . . . . {where the output-delivery frequency is higher than the input sampling frequency, i.e. interpolation}
- 17/0664 . . . . . {where the output-delivery frequency is lower than the input sampling frequency, i.e. decimation}
- 17/0671 . . . . . {Cascaded integrator-comb [CIC] filters}
- 2017/0678 . . . . . {with parallel structure, i.e. parallel CIC [PCIC]}
- 17/0685 . . . . . {the ratio being rational}
- 2017/0692 . . . {Transposed}
- 17/08 . Networks for phase shifting
- 19/00 Networks using time-varying elements, e.g. N-path filters**
- 19/002 . {N-path filters}
- 19/004 . {Switched capacitor networks}
- 19/006 . . {simulating one-port networks}
- 19/008 . {with variable switch closing time}
- 21/00 Adaptive networks**
- 21/0001 . {Analogue adaptive filters}
- 21/0003 . . {comprising CCD devices}
- 21/0005 . . {comprising SAW devices}
- 21/0007 . . {comprising switched capacitor [SC] devices}
- 2021/0009 . . {Details}
- 2021/001 . . . {Analog multipliers}
- 21/0012 . {Digital adaptive filters}
- 21/0014 . . {Lattice filters}
- 21/0016 . . {Non linear filters}
- 21/0018 . . {Matched filters}
- 21/002 . . {Filters with a particular frequency response ([H03H 21/0014](#) - [H03H 21/0018](#) take precedence)}
- 21/0021 . . . {Notch filters}
- 21/0023 . . . {Comb filters}
- 21/0025 . . {Particular filtering methods}
- 21/0027 . . . {filtering in the frequency domain}
- 21/0029 . . . {based on statistics}
- 21/003 . . . . {KALMAN filters}
- 21/0032 . . . . {ARMA filters}
- 2021/0034 . . . {Blind source separation}
- 2021/0036 . . . . {of convolutive mixtures}
- 2021/0038 . . . . {of instantaneous mixtures}
- 2021/004 . . . . {using state space representation}
- 2021/0041 . . . {Subband decomposition}
- 21/0043 . . {Adaptive algorithms}
- 2021/0045 . . . {Equation error}
- 2021/0047 . . . . {Combined output and equation error}
- 2021/0049 . . . {Recursive least squares algorithm}
- 2021/005 . . . . {with forgetting factor}
- 2021/0052 . . . . {combined with stochastic gradient algorithm}
- 2021/0054 . . . . . {Affine projection}
- 2021/0056 . . . {Non-recursive least squares algorithm [LMS]}
- 2021/0058 . . . . {Block LMS, i.e. in frequency domain}
- 2021/0059 . . . . {Delayed LMS}
- 2021/0061 . . . . {Normalized LMS [NLMS]}
- 2021/0063 . . . . . {Proportionate NLMS}
- 2021/0065 . . . . {Sign-sign LMS}
- 21/0067 . . {Means or methods for compensation of undesirable effects}
- 2021/0069 . . . {Finite wordlength}
- 2021/007 . . {Computation saving measures; Accelerating measures}
- 2021/0072 . . . {Measures relating to the coefficients}
- 2021/0074 . . . . {Reduction of the update frequency}
- 2021/0076 . . . {Measures relating to the convergence time ([H03H 2021/0072](#) takes precedence)}
- 2021/0078 . . . . {varying the step size}
- 2021/0079 . . . {using look-up tables}
- 2021/0081 . . {Details}
- 2021/0083 . . . {Shadow filter, i.e. one of two filters which are simultaneously adapted, wherein the results of adapting the shadow filter are used for adapting the other filter}
- 2021/0085 . . {Applications}
- 2021/0087 . . . {Prediction}
- 2021/0089 . . . {System identification, i.e. modeling}
- 2021/009 . . . . {with recursive filters}
- 2021/0092 . . . {Equalization, i.e. inverse modeling}
- 2021/0094 . . . {Interference Cancelling}
- 2021/0096 . . {with input-sampling frequency and output-delivery frequency which differ, e.g. extrapolation; anti-aliasing}
- 2021/0098 . {Adaptive filters comprising analog and digital structures}
- 2210/00 Indexing scheme relating to details of tunable filters**
- 2210/01 . Tuned parameter of filter characteristics
- 2210/012 . . Centre frequency; Cut-off frequency
- 2210/015 . . Quality factor or bandwidth
- 2210/017 . . Amplitude, gain or attenuation
- 2210/02 . Variable filter component
- 2210/021 . . Amplifier, e.g. transconductance amplifier
- 2210/023 . . . Tuning of transconductance via tail current source
- 2210/025 . . Capacitor
- 2210/026 . . Inductor
- 2210/028 . . Resistor
- 2210/03 . Type of tuning
- 2210/033 . . Continuous
- 2210/036 . . Stepwise
- 2210/04 . Filter calibration method
- 2210/043 . . by measuring time constant
- 2210/046 . . Leader-follower
- 2218/00 Indexing scheme relating to details of digital filters**
- 2218/02 . Coefficients
- 2218/025 . . updated selectively, e.g. by, in the presence of noise, temporally cancelling the update and outputting a predetermined value
- 2218/04 . In-phase and quadrature [I/Q] signals

## H03H

- 2218/06 . Multiple-input, multiple-output [MIMO]; Multiple-input, single-output [MISO]
- 2218/08 . Resource sharing
- 2218/085 . . Multipliers
- 2218/10 . Multiplier and or accumulator units
- 2218/12 . Signal conditioning
- 2218/14 . Non-uniform sampling

### **2220/00 Indexing scheme relating to structures of digital filters**

- 2220/02 . Modular, e.g. cells connected in cascade
- 2220/04 . Pipelined
- 2220/06 . Systolic
- 2220/08 . Variable filter length

### **2222/00 Indexing scheme relating to digital filtering methods**

- 2222/02 . using fuzzy logic
- 2222/04 . using neural networks
- 2222/06 . using wavelets

### **2240/00 Indexing scheme relating to filter banks**

### **2250/00 Indexing scheme relating to dual- or multi-band filters**

### **2260/00 Theory relating to impedance networks**