

# CPC COOPERATIVE PATENT CLASSIFICATION

## H ELECTRICITY

(NOTE omitted)

### H03 BASIC ELECTRONIC CIRCUITRY

**H03H IMPEDANCE NETWORKS, e.g. RESONANT CIRCUITS; RESONATORS** (measuring, testing [G01R](#); arrangements for producing a reverberation or echo sound [G10K 15/08](#); impedance networks or resonators consisting of distributed impedances, e.g. of the waveguide type, [H01P](#); control of amplification, e.g. bandwidth control of amplifiers, [H03G](#); tuning resonant circuits, e.g. tuning coupled resonant circuits, [H03J](#); networks for modifying the frequency characteristics of communication systems [H04B](#))

#### NOTES

1. 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.
2. In this subclass, the following expression is used with the meaning indicated:  
"passive elements" means resistors, capacitors, inductors, mutual inductors or diodes.
3. Attention is drawn to the Notes following the titles of class [B81](#) and subclass [B81B](#) relating to "microstructural devices" and "microstructural systems".
4. In this subclass, main groups with a higher number take precedence.

<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 (constructional details of electromechanical transducers <a href="#">H03H 9/00</a>)</b>	2/008	. . {Receiver or amplifier input circuits}
		<b>3/00</b>	<b>Apparatus or processes specially adapted for the manufacture of impedance networks, resonating circuits, resonators</b>
1/0007	. {of radio frequency interference filters}	3/007	. for the manufacture of electromechanical resonators or networks
2001/0014	. {Capacitor filters, i.e. capacitors whose parasitic inductance is of relevance to consider it as filter}	2003/0071	. . {of bulk acoustic wave and surface acoustic wave elements in the same process}
2001/0021	. {Constructional details}	3/0072	. . {of microelectro-mechanical resonators or networks (micromembranes or microbeams <a href="#">B81B 2203/01</a> ; manufacture of microstructural devices in general <a href="#">B81C</a> )}
2001/0028	. . {RFI filters with housing divided in two bodies}	3/0073	. . . {Integration with other electronic structures}
2001/0035	. . {Wound magnetic core}	3/0075	. . . {Arrangements or methods specially adapted for testing microelectro-mechanical resonators or networks}
2001/0042	. . {Wound, ring or feed-through type capacitor}	3/0076	. . . {for obtaining desired frequency or temperature coefficients}
2001/005	. . {Wound, ring or feed-through type inductor}	3/0077	. . . . {by tuning of resonance frequency}
2001/0057	. . {comprising magnetic material}	3/0078	. . . . {involving adjustment of the transducing gap}
2001/0064	. . {comprising semiconductor material}	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)
2001/0071	. . {comprising zig-zag inductor}	3/02	. . for the manufacture of piezo-electric or electrostrictive resonators or networks ( <a href="#">H03H 3/08</a> takes precedence)
2001/0078	. . {comprising spiral inductor on a substrate}	2003/021	. . . {the resonators or networks being of the air-gap type}
2001/0085	. . {Multilayer, e.g. LTCC, HTCC, green sheets (inside PCB filters <a href="#">H05K</a> )}	2003/022	. . . {the resonators or networks being of the cantilever type}
2001/0092	. {Inductor filters, i.e. inductors whose parasitic capacitance is of relevance to consider it as filter}		
1/02	. of RC networks, e.g. integrated networks		
<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>		
2/001	. {comprising magnetostatic wave network elements}		
2/003	. {comprising optical fibre network elements (optical elements per se <a href="#">G02B</a> , <a href="#">G02F</a> ; transmission systems using light waves <a href="#">H04B 10/00</a> )}		
2/005	. {Coupling circuits between transmission lines or antennas and transmitters, receivers or amplifiers}		
2/006	. . {Transmitter or amplifier output circuits}		

## H03H

- 2003/023 . . . {the resonators or networks being of the membrane type}
- 2003/025 . . . {the resonators or networks comprising an acoustic mirror}
- 2003/026 . . . {the resonators or networks being of the tuning fork type}
- 2003/027 . . . {the resonators or networks being of the microelectro-mechanical [MEMS] type}
- 2003/028 . . . {for obtaining desired values of other parameters}
- 3/04 . . . for obtaining desired frequency or temperature coefficient
- 2003/0407 . . . . {Temperature coefficient}
- 2003/0414 . . . . {Resonance frequency}
- 2003/0421 . . . . . {Modification of the thickness of an element}
- 2003/0428 . . . . . {of an electrode}
- 2003/0435 . . . . . {of a piezoelectric layer}
- 2003/0442 . . . . . {of a non-piezoelectric layer}
- 2003/045 . . . . . {Modification of the area of an element}
- 2003/0457 . . . . . {of an electrode}
- 2003/0464 . . . . . {operating on an additional circuit element, e.g. a passive circuit element connected to the resonator}
- 2003/0471 . . . . . {of a plurality of resonators at different frequencies}
- 2003/0478 . . . . . {in a process for mass production}
- 2003/0485 . . . . . {during the manufacture of a cantilever}
- 2003/0492 . . . . . {during the manufacture of a tuning-fork}
- 3/06 . . for the manufacture of magnetostrictive resonators or networks
- 3/08 . . for the manufacture of resonators or networks using surface acoustic waves
- 3/10 . . . for obtaining desired frequency or temperature coefficient
- 5/00 One-port networks comprising only passive electrical elements as network components**
- 5/003 . {comprising distributed impedance elements together with lumped impedance elements}
- 5/006 . {comprising simultaneously tunable inductance and capacitance}
- 5/02 . without voltage- or current-dependent elements
- 5/10 . . comprising at least one element with prescribed temperature coefficient
- 5/12 . with at least one voltage- or current-dependent element
- 7/00 Multiple-port networks comprising only passive electrical elements as network components (receiver input circuits [H04B 1/18](#); networks simulating a length of communication cable [H04B 3/40](#))**
- 7/002 . {Gyrators}
- 7/004 . {Capacitive coupling circuits not otherwise provided for}
- 2007/006 . {MEMS}
- 2007/008 . . {the MEMS being trimmable}
- 7/01 . Frequency selective two-port networks
- 7/0107 . . {Non-linear filters}
- 7/0115 . . {comprising only inductors and capacitors ([H03H 7/075](#), [H03H 7/09](#), [H03H 7/12](#), [H03H 7/13](#) take precedence)}
- 7/0123 . . {comprising distributed impedance elements together with lumped impedance elements}
- 2007/013 . . {Notch or bandstop filters}
- 7/0138 . . {Electrical filters or coupling circuits}
- 7/0146 . . . {Coupling circuits between two tubes, not otherwise provided for}
- 7/0153 . . {Electrical filters; Controlling thereof}
- 7/0161 . . . {Bandpass filters ([H03H 7/12](#) takes precedence)}
- 7/0169 . . . . {Intermediate frequency filters}
- 7/0176 . . . . . {without magnetic core}
- 7/0184 . . . . . {with ferromagnetic core}
- 2007/0192 . . {Complex filters}
- 7/03 . . comprising means for compensation of loss
- 7/06 . . including resistors ([H03H 7/075](#), [H03H 7/09](#), [H03H 7/12](#), [H03H 7/13](#) take precedence)
- 7/065 . . . Parallel T-filters
- 7/07 . . . Bridged T-filters
- 7/075 . . Ladder networks, e.g. electric wave filters
- 7/09 . . Filters comprising mutual inductance
- 7/12 . . Bandpass or bandstop filters with adjustable bandwidth and fixed centre frequency ([H03H 7/09](#) takes precedence; automatic control of bandwidth in amplifiers [H03G 5/16](#))
- 7/13 . . using electro-optic elements
- 7/17 . . {Structural details of sub-circuits of frequency selective networks}
- WARNING**
- not complete, pending reorganisation, see provisionally also [H03H 7/0107](#), [H03H 7/0123](#) - [H03H 7/07](#), [H03H 7/09](#) - [H03H 7/13](#) and [H03H 7/42](#)
- 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 ([H03H 7/07](#) takes precedence)}
- 7/1716 . . . {Comprising foot-point elements}
- 7/1725 . . . . {Element to ground being common to different shunt paths, i.e. Y-structure}
- 7/1733 . . . . . {Element between different shunt or branch paths ([H03H 7/425](#) takes precedence)}
- 7/1741 . . . {Comprising typical LC combinations, irrespective of presence and location of additional resistors (when resistors are present, also classify in [H03H 7/06](#) - [H03H 7/07](#))}
- 7/175 . . . . . {Series LC in series path ([H03H 7/1783](#) takes precedence)}
- 7/1758 . . . . . {Series LC in shunt or branch path ([H03H 7/1791](#) takes precedence)}
- 7/1766 . . . . . {Parallel LC in series path ([H03H 7/1783](#) takes precedence)}
- 7/1775 . . . . . {Parallel LC in shunt or branch path ([H03H 7/1791](#) takes precedence)}
- 7/1783 . . . . . {Combined LC in series path}
- 7/1791 . . . . . {Combined LC in shunt or branch path}
- 7/18 . . Networks for phase shifting
- 7/185 . . {comprising distributed impedance elements together with lumped impedance elements}
- 7/19 . . Two-port phase shifters providing a predetermined phase shift, e.g. "all-pass" filters
- 7/20 . . Two-port phase shifters providing an adjustable phase shift

- 7/21 . . providing two or more phase shifted output signals, e.g. n-phase output
- 7/24 . Frequency- independent attenuators
- 7/25 . . comprising an element controlled by an electric or magnetic variable ([H03H 7/27](#) takes precedence)
- 7/251 . . . {the element being a thermistor}
- 7/253 . . . . {the element being a diode}
- 7/255 . . . . {the element being a PIN diode}
- 7/256 . . . . {the element being a VARACTOR diode}
- 7/258 . . . {using a galvano-magnetic device}
- 7/27 . . comprising a photo-electric element
- 7/30 . Time-delay networks ({[analogue shift registers G11C 27/04](#)})
- 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 . Balance/unbalance networks
- 7/422 . . {comprising distributed impedance elements together with lumped impedance elements}
- 7/425 . . {Balance-balance networks}
- WARNING**  
not complete, pending reorganisation, see provisionally also [H03H 1/00](#) - [H03H 1/0007](#), [H03H 7/0107](#), [H03H 7/0123](#) - [H03H 7/07](#), [H03H 7/09](#) - [H03H 7/13](#), [H03H 7/42](#) and [H03H 7/422](#)
- 7/427 . . . {Common-mode filters ([H02J 3/01](#) and [H02M 1/126](#) takes precedence)}
- WARNING**  
not complete, pending reorganisation, see provisionally also [H03H 1/00](#) - [H03H 1/0007](#), [H03H 7/0107](#), [H03H 7/0123](#) - [H03H 7/07](#), [H03H 7/09](#) - [H03H 7/13](#) and [H03H 7/42](#)
- 7/46 . Networks for connecting several sources or loads, working on different frequencies or frequency bands, to a common load or source (for use in multiplex transmission systems [H04J 1/00](#))
- 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 devices; Electromechanical resonators (making single crystals [C30B](#); selection of materials thereof [H01L](#); piezo-electric, electrostrictive or magnetostrictive devices per se [H01L 41/00](#); electromechanical transducers [H04R](#))**
- 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 . {Balance-unbalance or balance-balance networks}
- 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}
- 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, piezo-electrical layers on not-piezo- electrical 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; 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 BAW 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 piezo-electric or electrostrictive materials ([H03H 9/145](#) takes precedence)
- 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 piezo-electric 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 piezo-electric, 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 piezo-electric or electrostrictive material ([H03H 9/64 takes precedence](#))
- 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 ( <a href="#">H03H 11/0433</a> - <a href="#">H03H 11/0472</a> take precedence)}	11/1256 . . . . .	{Tow-Thomas biquad}
11/0433 . . . .	{Two integrator loop filters ( <a href="#">H03H 11/0455</a> takes precedence)}		<b>WARNING</b>
11/0438 . . . . .	{Tow-Thomas biquad}		Not complete, pending reorganisation, see provisionally also <a href="#">H03H 11/1217</a> - <a href="#">H03H 11/1252</a>
11/0444 . . . .	{Simulation of ladder networks}	11/126 . . . . .	{using a single operational amplifier ( <a href="#">H03H 11/1204</a> takes precedence; parallel-T filters <a href="#">H03H 11/1295</a> )}
11/045 . . . . .	{Leapfrog structures}	11/1265 . . . . .	{Synthesis ( <a href="#">H03H 11/1269</a> - <a href="#">H03H 11/1282</a> take precedence)}
11/0455 . . . .	{Multiple integrator loop feedback filters}	11/1269 . . . . .	{Filters using the operational amplifier pole}
11/0461 . . . .	{Current mode filters}	11/1273 . . . . .	{Modifications to reduce sensitivity}
11/0466 . . . .	{Filters combining transconductance amplifiers with other active elements, e.g. operational amplifiers, transistors, voltage conveyors}	11/1278 . . . . .	{Modifications to reduce detrimental influences of amplifier imperfections, e.g. limited gain-bandwidth product, limited input impedance}
11/0472 . . . .	{Current or voltage controlled filters}	11/1282 . . . . .	{Modifications to reduce influence of variations of temperature}
2011/0477 . . .	{using current feedback operational amplifiers}	11/1286 . . . . .	{Sallen-Key biquad}
2011/0483 . . .	{using operational transresistance amplifiers [OTRA]}		<b>WARNING</b>
2011/0488 . . .	{Notch or bandstop filters}		Not complete, pending reorganisation, see provisionally also <a href="#">H03H 11/126</a> - <a href="#">H03H 11/1282</a>
2011/0494 . . .	{Complex filters}		
11/06 . . . .	comprising means for compensation of loss		
11/08 . . . .	using gyrators		
11/10 . . . .	using negative impedance converters ( <a href="#">H03H 11/08</a> takes precedence)		
11/11 . . . .	{using current conveyors}	11/1291 . . . . .	{Current or voltage controlled filters}
11/12 . . . .	using amplifiers with feedback ( <a href="#">H03H 11/0422</a> , <a href="#">H03H 11/08</a> , <a href="#">H03H 11/10</a> take precedence)	11/1295 . . . . .	{Parallel-T filters}
11/1204 . . . .	{Distributed RC filters}	11/14 . . . .	using electro-optic devices
11/1208 . . . .	{comprising an electromechanical resonator}	11/16 . . . .	Networks for phase shifting
11/1213 . . . .	{using transistor amplifiers ( <a href="#">H03H 11/1204</a> takes precedence; parallel-T filters <a href="#">H03H 11/1295</a> )}	11/18 . . . .	Two-port phase shifters providing a predetermined phase shift, e.g. "all-pass" filters
11/1217 . . . .	{using a plurality of operational amplifiers ( <a href="#">H03H 11/1204</a> takes precedence; parallel-T filters <a href="#">H03H 11/1295</a> )}	11/20 . . . .	Two-port phase shifters providing an adjustable phase shift
11/1221 . . . . .	{Theory; Synthesis ( <a href="#">H03H 11/1226</a> - <a href="#">H03H 11/1252</a> take precedence)}	11/22 . . . .	providing two or more phase shifted output signals, e.g. n-phase output
11/1226 . . . . .	{Filters using operational amplifier poles}	11/24 . . . .	Frequency-independent attenuators
11/123 . . . . .	{Modifications to reduce sensitivity}	11/245 . . . .	{using field-effect transistor}
11/1234 . . . . .	{Modifications to reduce detrimental influences of amplifier imperfections, e.g. limited gain-bandwidth product, limited input impedance}	11/26 . . . .	Time-delay networks ( <a href="#">analogue shift registers G11C 27/04</a> )
11/1239 . . . . .	{Modifications to reduce influence of variations of temperature}	11/265 . . . .	{with adjustable delay}
11/1243 . . . . .	{Simulation of ladder networks}	11/28 . . . .	Impedance matching networks
11/1247 . . . . .	{Leapfrog structures}	11/30 . . . .	Automatic matching of source impedance to load impedance
	<b>WARNING</b>	11/32 . . . .	Balance-unbalance networks
	Not complete, pending reorganisation, see provisionally also <a href="#">H03H 11/1217</a> - <a href="#">H03H 11/1252</a>	11/34 . . . .	Networks for connecting several sources or loads working on different frequencies or frequency bands, to a common load or source ( <a href="#">for use in multiplex transmission systems H04J 1/00</a> )
11/1252 . . . . .	{Two integrator-loop-filters}	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 ( <a href="#">phase shifters providing two or more output signals H03H 11/22</a> )
		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; used in frequency selective networks [H03H 11/10](#))
- 11/46 . One-port networks
- 11/48 . . simulating reactances
- 11/481 . . . {Simulating capacitances}
- WARNING**
- Not complete, pending reorganisation, see provisionally also [H03H 11/48](#) - [H03H 11/52](#)
- 11/483 . . . {Simulating capacitance multipliers}
- WARNING**
- Not complete, pending reorganisation, see provisionally also [H03H 11/48](#) - [H03H 11/52](#)
- 11/485 . . . {Simulating inductances using operational amplifiers}
- WARNING**
- Not complete, pending reorganisation, see provisionally also [H03H 11/48](#) - [H03H 11/52](#)
- 11/486 . . . {Simulating inductances using transconductance amplifiers}
- WARNING**
- Not complete, pending reorganisation, see provisionally also [H03H 11/48](#) - [H03H 11/52](#)
- 11/488 . . . {Simulating inductances using current conveyors}
- WARNING**
- Not complete, pending reorganisation, see provisionally also [H03H 11/48](#) - [H03H 11/52](#)
- 11/50 . . . using gyrators
- 11/52 . . simulating negative resistances
- 11/525 . . . {Simulating frequency dependent negative resistance [FDNR]}
- WARNING**
- Not complete, pending reorganisation, see provisionally also [H03H 11/52](#)
- 11/53 . . {simulating resistances; simulating resistance multipliers}
- WARNING**
- Not complete, pending reorganisation, see provisionally also [H03H 11/48](#) - [H03H 11/52](#)
- 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. WALSH 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}	17/0405	. . . . {comprising a ROM addressed by the input and output data signals}
17/023	. . . . {reducing the wordlength, the possible values of coefficients}	17/0411	. . . . {using DELTA modulation}
2017/0232	. . . . . {Canonical signed digit [CSD] or power of 2 coefficients}	17/0416	. . . . {with input-sampling frequency and output-delivery frequency which differ, e.g. extrapolation; Anti-aliasing}
17/0233	. . . . {Measures concerning the signal representation}	17/0422	. . . . . {the input and output signals being derived from two separate clocks, i.e. asynchronous sample rate conversion}
17/0235	. . . . . {reducing the wordlength of signals}	17/0427	. . . . . {characterized by the ratio between the input-sampling and output-delivery frequencies}
17/0236	. . . . . {using codes}	17/0433	. . . . . {the ratio being arbitrary or irrational}
17/0238	. . . . {Measures concerning the arithmetic used (performing computations G06F 7/60)}	17/0438	. . . . . {the ratio being integer}
17/0239	. . . . . {Signed digit arithmetic}	17/0444	. . . . . . {where the output-delivery frequency is higher than the input sampling frequency, i.e. interpolation}
17/0241	. . . . . {Distributed arithmetic}	17/045	. . . . . . {where the output-delivery frequency is lower than the input sampling frequency, i.e. decimation}
17/0242	. . . . . {Residue number arithmetic}	17/0455	. . . . . . {the ratio being rational}
2017/0244	. . . . {Measures to reduce settling time}	17/0461	. . . . {Quantisation; Rounding; Truncation; Overflow oscillations or limit cycles eliminating measures}
2017/0245	. . . . {Measures to reduce power consumption (H03H 17/0223 takes precedence)}	2017/0466	. . . . . {Reduction of limit cycle oscillation}
2017/0247	. . . . {Parallel structures using a slower clock}	2017/0472	. . . . . {based on allpass structures}
17/0248	. . {Filters characterised by a particular frequency response or filtering method}	2017/0477	. . . . . {Direct form I}
17/025	. . . . {Notch filters}	2017/0483	. . . . . {Transposed}
17/0251	. . . . {Comb filters}	2017/0488	. . . . . {Direct form II}
17/0252	. . . . {Elliptic filters}	2017/0494	. . . . . {Transposed}
17/0254	. . . . {Matched filters}	17/06	. . . Non-recursive filters
17/0255	. . . . {Filters based on statistics (adaptive filters H03H 21/0029)}	17/0607	. . . . {comprising a ROM addressed by the input data signals}
17/0257	. . . . . {KALMAN filters}	17/0614	. . . . {using Delta-modulation}
17/0258	. . . . . {ARMA filters}	17/0621	. . . . {with input-sampling frequency and output-delivery frequency which differ, e.g. extrapolation; Anti-aliasing}
17/026	. . . . {Averaging filters}	17/0628	. . . . . {the input and output signals being derived from two separate clocks, i.e. asynchronous sample rate conversion}
17/0261	. . . . {Non linear filters}	17/0635	. . . . . {characterized by the ratio between the input-sampling and output-delivery frequencies}
17/0263	. . . . . {Rank order filters}	17/0642	. . . . . {the ratio being arbitrary or irrational}
17/0264	. . . . {Filter sets with mutual related characteristics}	17/065	. . . . . {the ratio being integer}
17/0266	. . . . . {Filter banks}	17/0657	. . . . . . {where the output-delivery frequency is higher than the input sampling frequency, i.e. interpolation}
17/0267	. . . . . . {comprising non-recursive filters}	17/0664	. . . . . . {where the output-delivery frequency is lower than the input sampling frequency, i.e. decimation}
17/0269	. . . . . . {comprising recursive filters}	17/0671	. . . . . . {Cascaded integrator-comb [CIC] filters}
17/027	. . . . . {Complementary filters; Phase complementary filters}	2017/0678	. . . . . . {with parallel structure, i.e. parallel CIC [PCIC]}
17/0272	. . . . . {Quadrature mirror filters}	17/0685	. . . . . . {the ratio being rational}
17/0273	. . . . . {Polyphase filters}	2017/0692	. . . . . {Transposed}
17/0275	. . . . . . {comprising non-recursive filters}	17/08	. Networks for phase shifting
17/0276	. . . . . . . {having two phases}	<b>19/00</b>	<b>Networks using time-varying elements, e.g. N-path filters</b>
17/0277	. . . . . . . {comprising recursive filters}	19/002	. {N-path filters}
17/0279	. . . . . . . {having two phases}	19/004	. {Switched capacitor networks}
17/028	. . . . {Polynomial filters}	19/006	. . {simulating one-port networks}
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		

- 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 . . Master -slave
- 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
- 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**