

# CPC COOPERATIVE PATENT CLASSIFICATION

**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 "micro-structural devices" and "micro-structural 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>	<b>2003/0071</b>	. . {of bulk acoustic wave and surface acoustic wave elements in the same process}
1/0007	. {of radio frequency interference filters}	3/0072	. . {of micro-electro-mechanical resonators or networks (micro-membranes or micro-beams <a href="#">B81B 2203/01</a> ; manufacture of micro-structural devices in general <a href="#">B81C</a> )}
2001/0014	. {Capacitor filters, i.e. capacitors whose parasitic inductance is of relevance to consider it as filter}	3/0073	. . . {Integration with other electronic structures}
2001/0021	. {Constructional details}	3/0075	. . . {Arrangements or methods specially adapted for testing micro-electro-mechanical resonators or networks}
2001/0028	. . {RFI filters with housing divided in two bodies}	3/0076	. . . {for obtaining desired frequency or temperature coefficients}
2001/0035	. . {Wound magnetic core}	3/0077	. . . . {by tuning of resonance frequency}
2001/0042	. . {Wound, ring or feed-through type capacitor}	3/0078	. . . . . {involving adjustment of the transducing gap}
2001/005	. . {Wound, ring or feed-through type inductor}	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)
2001/0057	. . {comprising magnetic material}	3/02	. . for the manufacture of piezo-electric or electrostrictive resonators or networks ( <a href="#">H03H 3/08</a> takes precedence)
2001/0064	. . {comprising semiconductor material}	2003/021	. . . {the resonators or networks being of the air-gap type}
2001/0071	. . {comprising zig-zag inductor}	2003/022	. . . {the resonators or networks being of the cantilever type}
2001/0078	. . {comprising spiral inductor on a substrate}	2003/023	. . . {the resonators or networks being of the membrane type}
2001/0085	. . {Multilayer, e.g. LTCC, HTCC, green sheets (inside PCB filters <a href="#">H05K</a> )}	2003/025	. . . {the resonators or networks comprising an acoustic mirror}
2001/0092	. {Inductor filters, i.e. inductors whose parasitic capacitance is of relevance to consider it as filter}	2003/026	. . . {the resonators or networks being of the tuning fork type}
1/02	. of RC networks, e.g. integrated networks	2003/027	. . . {the resonators or networks being of the micro-electro-mechanical [MEMS] type}
<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>	2003/028	. . . {for obtaining desired values of other parameters}
2/001	. {comprising magnetostatic wave network elements}	3/04	. . . for obtaining desired frequency or temperature coefficient
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> )}	2003/0407	. . . . {Temperature coefficient}
2/005	. {Coupling circuits between transmission lines or antennas and transmitters, receivers or amplifiers}	2003/0414	. . . . {Resonance frequency}
2/006	. . {Transmitter or amplifier output circuits}		
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>		
3/007	. for the manufacture of electromechanical resonators or networks		

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; automatic control of bandwidth in amplifiers <a href="#">H03G 5/16</a> )
2003/0464	. . . . . {operating on an additional circuit element, e.g. a passive circuit element connected to the resonator}	7/13	. . using electro-optic 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}	<b>WARNING</b> not complete, pending reorganisation, see provisionally also <a href="#">H03H 7/0107</a> , <a href="#">H03H 7/0123</a> - <a href="#">H03H 7/07</a> , <a href="#">H03H 7/09</a> - <a href="#">H03H 7/13</a> and <a href="#">H03H 7/42</a>	
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	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)}
<b>5/00</b>	<b>One-port networks comprising only passive electrical elements as network components</b>	7/1716	. . . {Comprising foot-point elements}
5/003	. {comprising distributed impedance elements together with lumped impedance elements}	7/1725	. . . . {Element to ground being common to different shunt paths, i.e. Y-structure}
5/006	. {comprising simultaneously tunable inductance and capacitance}	7/1733	. . . . {Element between different shunt or branch paths ( <a href="#">H03H 7/425</a> takes precedence)}
5/02	. without voltage- or current-dependent elements	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> )}
5/10	. . comprising at least one element with prescribed temperature coefficient	7/175	. . . . {Series LC in series path ( <a href="#">H03H 7/1783</a> takes precedence)}
5/12	. with at least one voltage- or current-dependent element	7/1758	. . . . {Series LC in shunt or branch path ( <a href="#">H03H 7/1791</a> takes precedence)}
<b>7/00</b>	<b>Multiple-port networks comprising only passive electrical elements as network components</b> (receiver input circuits <a href="#">H04B 1/18</a> ; networks simulating a length of communication cable <a href="#">H04B 3/40</a> )	7/1766	. . . . {Parallel LC in series path ( <a href="#">H03H 7/1783</a> takes precedence)}
7/002	. {Gyrators}	7/1775	. . . . {Parallel LC in shunt or branch path ( <a href="#">H03H 7/1791</a> takes precedence)}
7/004	. {Capacitive coupling circuits not otherwise provided for}	7/1783	. . . . {Combined LC in series path}
2007/006	. {MEMS}	7/1791	. . . . {Combined LC in shunt or branch path}
2007/008	. . {the MEMS being trimmable}	7/18	. Networks for phase shifting
7/01	. Frequency selective two-port networks	7/185	. . {comprising distributed impedance elements together with lumped impedance elements}
7/0107	. . {Non-linear filters}	7/19	. . Two-port phase shifters providing a predetermined phase shift, e.g. "all-pass" filters
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)}	7/20	. . Two-port phase shifters providing an adjustable phase shift
7/0123	. . {comprising distributed impedance elements together with lumped impedance elements}	7/21	. . providing two or more phase shifted output signals, e.g. n-phase output
2007/013	. . {Notch or bandstop filters}	7/24	. Frequency- independent attenuators
7/0138	. . {Electrical filters or coupling circuits}	7/25	. . comprising an element controlled by an electric or magnetic variable ( <a href="#">H03H 7/27</a> takes precedence)
7/0146	. . . {Coupling circuits between two tubes, not otherwise provided for}	7/251	. . . {the element being a thermistor}
7/0153	. . {Electrical filters; Controlling thereof}	7/253	. . . {the element being a diode}
7/0161	. . . {Bandpass filters ( <a href="#">H03H 7/12</a> takes precedence)}	7/255	. . . . {the element being a PIN diode}
7/0169	. . . . {Intermediate frequency filters}	7/256	. . . . {the element being a VARACTOR diode}
7/0176	. . . . {without magnetic core}	7/258	. . . {using a galvano-magnetic device}
7/0184	. . . . {with ferromagnetic core}	7/27	. . comprising a photo-electric element
2007/0192	. . {Complex filters}	7/30	. Time-delay networks {(analogue shift registers <a href="#">G11C 27/04</a> )}
7/03	. . comprising means for compensation of loss	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}	2009/02511	. . . . .	{Vertical, i.e. perpendicular to the substrate plane}
2009/02212	. . . . .	{Magnetically tuning}	2009/02519	. . . . .	{Torsional}
9/0222	. .	{of interface-acoustic, boundary, pseudo-acoustic or Stonely wave devices}	2009/02527	. . . . .	{Combined}
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}	9/02535	. .	{of surface acoustic wave devices}
9/02236	. .	{of surface skimming bulk wave devices}	9/02543	. . .	{Characteristics of substrate, e.g. cutting angles}
9/02244	. .	{of micro-electro-mechanical resonators}	9/02551	. . . . .	{of quartz substrates}
2009/02251	. . .	{Design}	9/02559	. . . . .	{of lithium niobate or lithium-tantalate substrates}
9/02259	. . .	{Driving or detection means}	9/02566	. . . . .	{of semiconductor substrates}
2009/02267	. . . . .	{having dimensions of atomic scale, e.g. involving electron transfer across vibration gap}	9/02574	. . . . .	{of combined substrates, multilayered substrates, piezo-electrical layers on not-piezo- electrical substrate}
9/02275	. . . . .	{Comb electrodes}	9/02582	. . . . .	{of diamond substrates}
2009/02283	. . .	{Vibrating means}	9/0259	. . . . .	{of langasite substrates}
2009/02291	. . . . .	{Beams}	9/02598	. . . . .	{of langatate substrates}
2009/02299	. . . . .	{Comb-like, i.e. the beam comprising a plurality of fingers or protrusions along its length}	9/02606	. . . . .	{of langanite substrates}
2009/02307	. . . . .	{Dog-bone-like structure, i.e. the elongated part of the "bone" is doubly clamped}	9/02614	. . .	{Treatment of substrates, e.g. curved, spherical, cylindrical substrates ensuring closed round-about circuits for the acoustical waves}
2009/02314	. . . . .	{forming part of a transistor structure}	9/02622	. . . . .	{of the surface, including back surface}
2009/02322	. . . . .	{Material}	9/02629	. . . . .	{of the edges}
2009/0233	. . . . .	{comprising perforations}	9/02637	. . .	{Details concerning reflective or coupling arrays}
9/02338	. . .	{Suspension means}	9/02645	. . . . .	{Waffle-iron or dot arrays}
2009/02346	. . . . .	{Anchors for ring resonators}	9/02653	. . . . .	{Grooves or arrays buried in the substrate}
2009/02354	. . . . .	{applied along the periphery, e.g. at nodal points of the ring}	9/02661	. . . . .	{being located inside the interdigital transducers}
9/02362	. . . . .	{Folded-flexure}	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}
2009/0237	. . . . .	{applied at the center}	9/02677	. . . . .	{having specially shaped edges, e.g. stepped, U-shaped edges}
9/02377	. . . . .	{Symmetric folded-flexure}	9/02685	. . . . .	{Grating lines having particular arrangements}
2009/02385	. . . . .	{Anchors for square resonators, i.e. resonators comprising a square vibrating membrane}	9/02692	. . . . .	{Arched grating lines}
9/02393	. . .	{Post-fabrication trimming of parameters, e.g. resonance frequency, Q factor}	9/027	. . . . .	{U-shaped grating lines}
9/02401	. . . . .	{by annealing}	9/02708	. . . . .	{Shifted grating lines}
9/02409	. . . . .	{by application of a DC-bias voltage ( <a href="#">H03H 9/02417</a> takes precedence)}	9/02716	. . . . .	{Tilted, fan shaped or slanted grating lines}
9/02417	. . . . .	{involving adjustment of the transducing gap}	9/02724	. . . . .	{Comb like grating lines}
9/02425	. . . . .	{by electrostatically pulling the beam}	9/02732	. . . . .	{Bilateral comb like grating lines}
9/02433	. . .	{Means for compensation or elimination of undesired effects}	9/0274	. . . . .	{Intra-transducers grating lines}
2009/0244	. . . . .	{Anchor loss}	9/02748	. . . . .	{Dog-legged reflectors}
9/02448	. . . . .	{of temperature influence}	9/02755	. . . . .	{Meandering floating or grounded grating lines}
2009/02456	. . . . .	{Parasitic elements or effects, e.g. parasitic capacitive coupling between input and output}	9/02763	. . . . .	{Left and right side electrically coupled reflectors}
2009/02464	. . . . .	{Pull-in}	9/02771	. . . . .	{Reflector banks}
2009/02472	. . . . .	{Stiction}	9/02779	. . . . .	{Continuous surface reflective arrays}
2009/0248	. . . . .	{Strain}	9/02787	. . . . .	{having wave guide like arrangements}
2009/02488	. . .	{Vibration modes}	9/02795	. . . . .	{Multi-strip couplers as track changers}
2009/02496	. . . . .	{Horizontal, i.e. parallel to the substrate plane}	9/02803	. . . . .	{Weighted reflective structures}
2009/02503	. . . . .	{Breath-like, e.g. Lam? mode, wine-glass mode}	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 ( <a href="#">cut angles H03H 9/02543</a> )}



- 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 micro-electro-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}	9/22	. Constructional features of resonators consisting of magnetostrictive material
9/14535	. . . . . {Position weighting}	9/24	. Constructional features of resonators of material which is not piezo-electric, electrostrictive, or magnetostrictive
9/14538	. . . . {Formation}	9/2405	. . {of micro-electro-mechanical resonators}
9/14541	. . . . . {Multilayer finger or busbar electrode}	2009/241	. . . {Bulk-mode MEMS resonators}
9/14544	. . . . {Transducers of particular shape or position (weighting <a href="#">H03H 9/14517</a> )}	2009/2415	. . . . {with concave shape [CBAR]}
9/14547	. . . . . {Fan shaped; Tilted; Shifted; Slanted; Tapered; Arched; Stepped finger transducers}	2009/2421	. . . . {with I shape [IBAR]}
9/1455	. . . . . {constituted of N parallel or series transducers}	9/2426	. . . {in combination with other electronic elements}
9/14552	. . . . . {comprising split fingers}	9/2431	. . . {Ring resonators}
9/14555	. . . . . {Chirped transducers ( <a href="#">H03H 9/6406</a> takes precedence)}	9/2436	. . . {Disk resonators}
9/14558	. . . . . {Slanted, tapered or fan shaped transducers ( <a href="#">H03H 9/14561</a> , <a href="#">H03H 9/14564</a> take precedence)}	2009/2442	. . . {Square resonators}
9/14561	. . . . . {Arched, curved or ring shaped transducers}	9/2447	. . . {Beam resonators ( <a href="#">H03H 9/2468</a> takes precedence)}
9/14564	. . . . . {Shifted fingers transducers}	9/2452	. . . . {Free-free beam resonators}
9/14567	. . . . . {Stepped-fan shaped transducers}	9/2457	. . . . {Clamped-free beam resonators}
9/1457	. . . . . {Transducers having different finger widths}	9/2463	. . . . {Clamped-clamped beam resonators}
9/14573	. . . . . {Arrow type transducers}	9/2468	. . . {Tuning fork resonators}
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}	9/2473	. . . . {Double-Ended Tuning Fork [DETF] resonators}
9/14579	. . . . . {the last fingers having a different shape}	9/2478	. . . . {Single-Ended Tuning Fork resonators}
9/14582	. . . . . {the last fingers having a different pitch}	9/2484	. . . . . {with two fork tines, e.g. Y-beam cantilever}
9/14585	. . . . . {the last fingers being split}	9/2489	. . . . . {with more than two fork tines}
9/14588	. . . . . {Horizontally-split transducers}	9/2494	. . . . {H-shaped, i.e. two tuning forks with common base}
9/14591	. . . . . {Vertically-split transducers}	9/25	. Constructional features of resonators using surface acoustic waves {(devices for manipulating acoustic surface waves in general <a href="#">G10K 11/36</a> )}
9/14594	. . . . . {Plan-rotated or plan-tilted transducers}	9/30	. Time-delay networks
9/14597	. . . . {Matching SAW transducers to external electrical circuits}	9/36	. . with non-adjustable delay time ( <a href="#">H03H 9/40</a> , <a href="#">H03H 9/42</a> take precedence)
9/15	. Constructional features of resonators consisting of piezo-electric or electrostrictive material ( <a href="#">H03H 9/25</a> takes precedence)	9/38	. . with adjustable delay time ( <a href="#">H03H 9/40</a> , <a href="#">H03H 9/42</a> take precedence)
2009/155	. . {using MEMS techniques}	9/40	. . Frequency dependent delay lines, e.g. dispersive delay lines ( <a href="#">H03H 9/42</a> takes precedence)
9/17	. . having a single resonator ( <a href="#">crystal tuning forks H03H 9/21</a> )	9/42	. . using surface acoustic waves {(devices for manipulating acoustic surface waves in general <a href="#">G10K 11/36</a> )}
9/171	. . . {implemented with thin-film techniques, i.e. of the film bulk acoustic resonator [FBAR] type}	9/423	. . . {with adjustable delay time}
9/172	. . . . {Means for mounting on a substrate, i.e. means constituting the material interface confining the waves to a volume}	9/426	. . . {Magneto-elastic surface waves}
9/173	. . . . . {Air-gaps}	9/44	. . . Frequency dependent delay lines, e.g. dispersive delay lines
9/174	. . . . . {Membranes}	9/46	. Filters ( <a href="#">multiple-port electromechanical filters H03H 9/70</a> )
9/175	. . . . . {Acoustic mirrors}	9/462	. . {Micro-electro-mechanical filters}
9/176	. . . {consisting of ceramic material ( <a href="#">H03H 9/177</a> , <a href="#">H03H 9/178</a> take precedence)}	9/465	. . . {in combination with other electronic elements}
9/177	. . . {of the energy-trap type}	9/467	. . . {Post-fabrication trimming of parameters, e.g. center frequency}
9/178	. . . {of a laminated structure of multiple piezoelectric layers with inner electrodes}	9/48	. . Coupling means therefor
9/19	. . . consisting of quartz	9/485	. . . {for micro-electro-mechanical filters}
9/205	. . having multiple resonators ( <a href="#">crystal tuning forks H03H 9/21</a> )	9/50	. . . Mechanical coupling means
9/21	. . Crystal tuning forks	9/505	. . . . {for micro-electro-mechanical filters}
9/215	. . . consisting of quartz	9/52	. . . Electric coupling means
		9/525	. . . . {for micro-electro-mechanical filters}
		9/54	. . comprising resonators of piezo-electric or electrostrictive material ( <a href="#">H03H 9/64</a> takes precedence)
		9/542	. . . {including passive elements ( <a href="#">H03H 9/545</a> 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}
- WARNING**
- Not complete, pending  
reorganisation, see provisionally also  
[H03H 11/1217](#) - [H03H 11/1252](#)
- 11/1252 . . . . . {Two integrator-loop-filters}
- 11/1256 . . . . . {Tow-Thomas biquad}
- WARNING**
- Not complete, pending  
reorganisation, see provisionally also  
[H03H 11/1217](#) - [H03H 11/1252](#)
- 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}
- WARNING**
- Not complete, pending  
reorganisation, see provisionally also  
[H03H 11/126](#) - [H03H 11/1282](#)
- 11/1291 . . . . . {Current or voltage controlled filters}
- 11/1295 . . . . . {Parallel-T filters}
- 11/14 . . . using electro-optic 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 (analogue shift registers  
[G11C 27/04](#))
- 11/265 . . . {with adjustable delay}
- 11/28 . . Impedance matching networks
- 11/30 . . . Automatic matching of source impedance to  
load impedance
- 11/32 . . Balance-unbalance networks
- 11/34 . . 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](#))
- 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 . . . Gyrators (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}	17/0202	. . . {Two or more dimensional filters; Filters for complex signals ( <a href="#">multidimensional convolutions G06F 17/153</a> )}
	<b>WARNING</b>	2017/0204	. . . {Comb filters}
	Not complete, pending reorganisation, see provisionally also <a href="#">H03H 11/48</a> - <a href="#">H03H 11/52</a>	2017/0205	. . . {Kalman filters}
11/486	. . . {Simulating inductances using transconductance amplifiers}	2017/0207	. . . {Median filters}
	<b>WARNING</b>	2017/0208	. . . {using neural networks}
	Not complete, pending reorganisation, see provisionally also <a href="#">H03H 11/48</a> - <a href="#">H03H 11/52</a>	2017/021	. . . {Wave digital filters}
11/488	. . . {Simulating inductances using current conveyors}	17/0211	. . . {using specific transformation algorithms, e.g. WALSH functions, Fermat transforms, Mersenne transforms, polynomial transforms, Hilbert transforms ( <a href="#">correlation computation G06F 17/156</a> )}
	<b>WARNING</b>	17/0213	. . . {Frequency domain filters using Fourier transforms}
	Not complete, pending reorganisation, see provisionally also <a href="#">H03H 11/48</a> - <a href="#">H03H 11/52</a>	2017/0214	. . . . {with input-sampling frequency and output-delivery frequency which differ, e.g. interpolation, extrapolation; anti-aliasing}
11/50	. . . using gyrators	17/0216	. . . {Quefrency domain filters}
11/52	. . . simulating negative resistances	17/0217	. . . {Number theoretic transforms}
11/525	. . . {Simulating frequency dependent negative resistance [FDNR]}	17/0219	. . . {Compensation of undesirable effects, e.g. quantisation noise, overflow ( <a href="#">stability problems H03H 17/0461</a> )}
	<b>WARNING</b>	2017/022	. . . {Rounding error}
	Not complete, pending reorganisation, see provisionally also <a href="#">H03H 11/52</a>	2017/0222	. . . {Phase error}
11/53	. . . {simulating resistances; simulating resistance multipliers}	17/0223	. . . {Computation saving measures; Accelerating measures ( <a href="#">computations per se G06F</a> )}
	<b>WARNING</b>	17/0225	. . . {Measures concerning the multipliers}
	Not complete, pending reorganisation, see provisionally also <a href="#">H03H 11/48</a> - <a href="#">H03H 11/52</a>	17/0226	. . . . {comprising look-up tables}
11/54	. Modifications of networks to reduce influence of variations of temperature	17/0227	. . . {Measures concerning the coefficients}
<b>15/00</b>	<b>Transversal filters</b> ( <a href="#">electromechanical filters H03H 9/46</a> , <a href="#">H03H 9/70</a> )	17/0229	. . . . {reducing the number of taps}
2015/002	. {Computation saving measures}	17/023	. . . . {reducing the wordlength, the possible values of coefficients}
2015/005	. {comprising capacitors implemented with MEMS technology}	2017/0232	. . . . . {Canonical signed digit [CSD] or power of 2 coefficients}
2015/007	. {Programmable filters}	17/0233	. . . {Measures concerning the signal representation}
15/02	. using analogue shift registers	17/0235	. . . . {reducing the wordlength of signals}
15/023	. . {with parallel-input configuration}	17/0236	. . . . {using codes}
2015/026	. {Matched filters in charge domain}	17/0238	. . . {Measures concerning the arithmetic used ( <a href="#">performing computations G06F 7/60</a> )}
<b>17/00</b>	<b>Networks using digital techniques</b>	17/0239	. . . . {Signed digit arithmetic}
17/0009	. {Time-delay networks}	17/0241	. . . . {Distributed arithmetic}
17/0018	. . {Realizing a fractional delay}	17/0242	. . . . {Residue number arithmetic}
17/0027	. . . {by means of a non-recursive filter}	2017/0244	. . . {Measures to reduce settling time}
17/0036	. . . {by means of a recursive filter}	2017/0245	. . . {Measures to reduce power consumption ( <a href="#">H03H 17/0223 takes precedence</a> )}
17/0045	. {Impedance matching networks}	2017/0247	. . . {Parallel structures using a slower clock}
17/0054	. {Attenuators}	17/0248	. . {Filters characterised by a particular frequency response or filtering method}
17/0063	. {R, L, C, simulating networks}	17/025	. . . {Notch filters}
2017/0072	. {Theoretical filter design}	17/0251	. . . {Comb filters}
2017/0081	. . {of FIR filters}	17/0252	. . . {Elliptic filters}
2017/009	. . {of IIR filters}	17/0254	. . . {Matched filters}
17/02	. Frequency selective networks {(digital computers for complex mathematical operations <a href="#">G06F 17/10</a> )}	17/0255	. . . {Filters based on statistics ( <a href="#">adaptive filters H03H 21/0029</a> )}
17/0201	. . {Wave digital filters}	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}	17/0621	. . . {with input-sampling frequency and output-delivery frequency which differ, e.g. extrapolation; Anti-aliasing}
17/0269	. . . . . {comprising recursive filters}	17/0628	. . . . {the input and output signals being derived from two separate clocks, i.e. asynchronous sample rate conversion}
17/027	. . . . {Complementary filters; Phase complementary filters}	17/0635	. . . . {characterized by the ratio between the input-sampling and output-delivery frequencies}
17/0272	. . . . {Quadrature mirror filters}	17/0642	. . . . . {the ratio being arbitrary or irrational}
17/0273	. . . . {Polyphase filters}	17/065	. . . . . {the ratio being integer}
17/0275	. . . . . {comprising non-recursive filters}	17/0657	. . . . . {where the output-delivery frequency is higher than the input sampling frequency, i.e. interpolation}
17/0276	. . . . . {having two phases}	17/0664	. . . . . {where the output-delivery frequency is lower than the input sampling frequency, i.e. decimation}
17/0277	. . . . . {comprising recursive filters}	17/0671	. . . . . {Cascaded integrator-comb [CIC] filters}
17/0279	. . . . . {having two phases}	2017/0678	. . . . . {with parallel structure, i.e. parallel CIC [PCIC]}
17/028	. . . {Polynomial filters}	17/0685	. . . . . {the ratio being rational}
17/0282	. . . {Sinc or gaussian filters ( <a href="#">H03H 17/0671</a> takes precedence)}	2017/0692	. . . {Transposed}
17/0283	. . {Filters characterised by the filter structure ( <a href="#">H03H 17/0202</a> , <a href="#">H03H 17/0219</a> - <a href="#">H03H 17/0248</a> take precedence)}	17/08	. Networks for phase shifting
17/0285	. . . {Ladder or lattice filters}	<b>19/00</b>	<b>Networks using time-varying elements, e.g. N-path filters</b>
17/0286	. . . {Combinations of filter structures}	19/002	. {N-path filters}
17/0288	. . . . {Recursive, non-recursive, ladder, lattice structures}	19/004	. {Switched capacitor networks}
17/0289	. . . . {Digital and active filter structures}	19/006	. . {simulating one-port networks}
17/0291	. . . . {Digital and sampled data filters}	19/008	. {with variable switch closing time}
17/0292	. . . {Time multiplexed filters; Time sharing filters}	<b>21/00</b>	<b>Adaptive networks</b>
17/0294	. . {Variable filters; Programmable filters}	21/0001	. {Analogue adaptive filters}
2017/0295	. . . {Changing between two filter characteristics}	21/0003	. . {comprising CCD devices}
2017/0297	. . . {Coefficients derived from input parameters}	21/0005	. . {comprising SAW devices}
2017/0298	. . {DSP implementation}	21/0007	. . {comprising switched capacitor [SC] devices}
17/04	. . Recursive filters	2021/0009	. . {Details}
17/0405	. . . {comprising a ROM addressed by the input and output data signals}	2021/001	. . . {Analog multipliers}
17/0411	. . . {using DELTA modulation}	21/0012	. {Digital adaptive filters}
17/0416	. . . {with input-sampling frequency and output-delivery frequency which differ, e.g. extrapolation; Anti-aliasing}	21/0014	. . {Lattice filters}
17/0422	. . . . {the input and output signals being derived from two separate clocks, i.e. asynchronous sample rate conversion}	21/0016	. . {Non linear filters}
17/0427	. . . . {characterized by the ratio between the input-sampling and output-delivery frequencies}	21/0018	. . {Matched filters}
17/0433	. . . . . {the ratio being arbitrary or irrational}	21/002	. . {Filters with a particular frequency response ( <a href="#">H03H 21/0014</a> - <a href="#">H03H 21/0018</a> take precedence)}
17/0438	. . . . . {the ratio being integer}	21/0021	. . . {Notch filters}
17/0444	. . . . . {where the output-delivery frequency is higher than the input sampling frequency, i.e. interpolation}	21/0023	. . . {Comb filters}
17/045	. . . . . {where the output-delivery frequency is lower than the input sampling frequency, i.e. decimation}	21/0025	. . {Particular filtering methods}
17/0455	. . . . . {the ratio being rational}	21/0027	. . . {filtering in the frequency domain}
17/0461	. . . {Quantisation; Rounding; Truncation; Overflow oscillations or limit cycles eliminating measures}	21/0029	. . . {based on statistics}
2017/0466	. . . . {Reduction of limit cycle oscillation}	21/003	. . . . {KALMAN filters}
2017/0472	. . . {based on allpass structures}	21/0032	. . . . {ARMA filters}
2017/0477	. . . {Direct form I}	2021/0034	. . . {Blind source separation}
2017/0483	. . . . {Transposed}	2021/0036	. . . . {of convolutive mixtures}
2017/0488	. . . {Direct form II}	2021/0038	. . . . {of instantaneous mixtures}
2017/0494	. . . . {Transposed}	2021/004	. . . . {using state space representation}
17/06	. . Non-recursive filters	2021/0041	. . . {Subband decomposition}
17/0607	. . . {comprising a ROM addressed by the input data signals}	21/0043	. . {Adaptive algorithms}
17/0614	. . . {using Delta-modulation}	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}	2218/06	. Multiple-input, multiple-output [MIMO]; Multiple-input, single-output [MISO]
2021/0054	. . . . . {Affine projection}	2218/08	. Resource sharing
2021/0056	. . . {Non-recursive least squares algorithm [LMS]}	2218/085	. . Multipliers
2021/0058	. . . . {Block LMS, i.e. in frequency domain}	2218/10	. Multiplier and or accumulator units
2021/0059	. . . . {Delayed LMS}	2218/12	. Signal conditioning
2021/0061	. . . . {Normalized LMS [NLMS]}	2218/14	. Non-uniform sampling
2021/0063	. . . . . {Proportionate NLMS}	<b>2220/00</b>	<b>Indexing scheme relating to structures of digital filters</b>
2021/0065	. . . . {Sign-sign LMS}	2220/02	. Modular, e.g. cells connected in cascade
21/0067	. . {Means or methods for compensation of undesirable effects}	2220/04	. Pipelined
2021/0069	. . . {Finite wordlength}	2220/06	. Systolic
2021/007	. . {Computation saving measures; Accelerating measures}	2220/08	. Variable filter length
2021/0072	. . . {Measures relating to the coefficients}	<b>2222/00</b>	<b>Indexing scheme relating to digital filtering methods</b>
2021/0074	. . . . {Reduction of the update frequency}	2222/02	. using fuzzy logic
2021/0076	. . . {Measures relating to the convergence time (H03H 2021/0072 takes precedence)}	2222/04	. using neural networks
2021/0078	. . . . {varying the step size}	2222/06	. using wavelets
2021/0079	. . . {using look-up tables}	<b>2240/00</b>	<b>Indexing scheme relating to filter banks</b>
2021/0081	. . {Details}	<b>2250/00</b>	<b>Indexing scheme relating to dual- or multi-band filters</b>
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}	<b>2260/00</b>	<b>Theory relating to impedance networks</b>
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}		
<b>2210/00</b>	<b>Indexing scheme relating to details of tunable filters</b>		
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		
<b>2218/00</b>	<b>Indexing scheme relating to details of digital filters</b>		
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		