

# CPC COOPERATIVE PATENT CLASSIFICATION

## H ELECTRICITY

(NOTE omitted)

## H03 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.

### WARNING

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

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

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| 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)  | 7/004     | . {Capacitive coupling circuits not otherwise provided for}   |
| 3/02      | . . for the manufacture of piezo-electric or electrostrictive resonators or networks ( <a href="#">H03H 3/08</a> takes precedence)   | 2007/006  | . {MEMS}  |
| 2003/021  | . . . {the resonators or networks being of the air-gap type}   | 2007/008  | . . {the MEMS being trimmable}  |
| 2003/022  | . . . {the resonators or networks being of the cantilever type}  | 7/01      | . Frequency selective two-port networks   |
| 2003/023  | . . . {the resonators or networks being of the membrane type}  | 7/0107    | . . {Non-linear filters}  |
| 2003/025  | . . . {the resonators or networks comprising an acoustic mirror}   | 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)}                                |
| 2003/026  | . . . {the resonators or networks being of the tuning fork type}   | 7/0123    | . . {comprising distributed impedance elements together with lumped impedance elements}   |
| 2003/027  | . . . {the resonators or networks being of the microelectro-mechanical [MEMS] type}  | 2007/013  | . . {Notch or bandstop filters}   |
| 2003/028  | . . . {for obtaining desired values of other parameters}   | 7/0138    | . . {Electrical filters or coupling circuits}   |
| 3/04      | . . . for obtaining desired frequency or temperature coefficient   | 7/0146    | . . . {Coupling circuits between two tubes, not otherwise provided for}   |
| 2003/0407 | . . . . {Temperature coefficient}  | 7/0153    | . . {Electrical filters; Controlling thereof}   |
| 2003/0414 | . . . . {Resonance frequency}  | 7/0161    | . . . {Bandpass filters ( <a href="#">H03H 7/12</a> takes precedence)}  |
| 2003/0421 | . . . . {Modification of the thickness of an element}  | 7/0169    | . . . . {Intermediate frequency filters}  |
| 2003/0428 | . . . . . {of an electrode}  | 7/0176    | . . . . . {without magnetic core}   |
| 2003/0435 | . . . . . {of a piezoelectric layer}   | 7/0184    | . . . . . {with ferromagnetic core}   |
| 2003/0442 | . . . . . {of a non-piezoelectric layer}   | 2007/0192 | . . {Complex filters}   |
| 2003/045  | . . . . . {Modification of the area of an element}   | 7/03      | . . comprising means for compensation of loss   |
| 2003/0457 | . . . . . {of an electrode}  | 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)   |
| 2003/0464 | . . . . . {operating on an additional circuit element, e.g. a passive circuit element connected to the resonator}  | 7/065     | . . . Parallel T-filters  |
| 2003/0471 | . . . . . {of a plurality of resonators at different frequencies}  | 7/07      | . . . Bridged T-filters   |
| 2003/0478 | . . . . . {in a process for mass production}   | 7/075     | . . Ladder networks, e.g. electric wave filters   |
| 2003/0485 | . . . . . {during the manufacture of a cantilever}   | 7/09      | . . Filters comprising mutual inductance  |
| 2003/0492 | . . . . . {during the manufacture of a tuning-fork}  | 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> )    |
| 3/06      | . . for the manufacture of magnetostrictive resonators or networks   | 7/13      | . . using electro-optic elements  |
| 3/08      | . . for the manufacture of resonators or networks using surface acoustic waves   | 7/17      | . . {Structural details of sub-circuits of frequency selective networks}  |
| 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)}          |
| 5/00      | <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)}   |
| 7/00      | <b>Multiple-port networks comprising only passive electrical elements as network components (receiver input circuits <a href="#">H04B 1/18</a>; networks simulating a length of communication cable <a href="#">H04B 3/40</a>)</b> | 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)}   |
|           |  | 7/1783    | . . . . {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}   |

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| 7/19     | . . Two-port phase shifters providing a predetermined phase shift, e.g. "all-pass" filters   | 9/00      | <b>Networks comprising electromechanical or electro-acoustic devices; Electromechanical resonators</b> (making single crystals <a href="#">C30B</a> ; selection of materials thereof <a href="#">H01L</a> ; electromechanical transducers <a href="#">H04R</a> ; piezo-electric, electrostrictive or magnetostrictive devices <i>per se</i> <a href="#">H10N 30/00</a> ) |
| 7/20     | . . Two-port phase shifters providing an adjustable phase shift  | 9/0004    | . {Impedance-matching networks ( <a href="#">H03H 9/145</a> takes precedence)}   |
| 7/21     | . . providing two or more phase shifted output signals, e.g. n-phase output  | 9/0009    | . . {using surface acoustic wave devices}  |
| 7/24     | . Frequency-independent attenuators  | 9/0014    | . . {using bulk acoustic wave devices}   |
| 7/25     | . . comprising an element controlled by an electric or magnetic variable ( <a href="#">H03H 7/27</a> takes precedence)   | 2009/0019 | . {Surface acoustic wave multichip}  |
| 7/251    | . . . {the element being a thermistor}   | 9/0023    | . {Balance-unbalance or balance-balance networks}  |
| 7/253    | . . . {the element being a diode}  | 9/0028    | . . {using surface acoustic wave devices}  |
| 7/255    | . . . . {the element being a PIN diode}  | 9/0033    | . . . {having one acoustic track only}   |
| 7/256    | . . . . {the element being a VARACTOR diode}   | 9/0038    | . . . . {the balanced terminals being on the same side of the track}   |
| 7/258    | . . . {using a galvano-magnetic device}  | 9/0042    | . . . . {the balanced terminals being on opposite sides of the track}  |
| 7/27     | . . comprising a photo-electric element  | 9/0047    | . . . {having two acoustic tracks ( <a href="#">H03H 9/008</a> , <a href="#">H03H 9/0085</a> take precedence)}   |
| 7/30     | . Time-delay networks ({ <a href="#">analogue shift registers G11C 27/04</a> })  | 9/0052    | . . . . {being electrically cascaded}  |
| 7/32     | . . with lumped inductance and capacitance   | 9/0057    | . . . . {the balanced terminals being on the same side of the tracks}  |
| 7/325    | . . . {Adjustable networks}  | 9/0061    | . . . . {the balanced terminals being on opposite sides of the tracks}   |
| 7/34     | . . with lumped and distributed reactance  | 9/0066    | . . . . {being electrically parallel}  |
| 7/345    | . . . {Adjustable networks}  | 9/0071    | . . . . {the balanced terminals being on the same side of the tracks}  |
| 7/38     | . Impedance-matching networks  | 9/0076    | . . . . {the balanced terminals being on opposite sides of the tracks}   |
| 7/383    | . . {comprising distributed impedance elements together with lumped impedance elements}  | 9/008     | . . . {having three acoustic tracks ( <a href="#">H03H 9/0085</a> takes precedence)}   |
| 2007/386 | . . {Multiple band impedance matching}   | 9/0085    | . . . {having four acoustic tracks}  |
| 7/40     | . . Automatic matching of load impedance to source impedance   | 9/009     | . . . . {Lattice filters}  |
| 7/42     | . Balance/unbalance networks   | 9/0095    | . . {using bulk acoustic wave devices}   |
| 7/422    | . . {comprising distributed impedance elements together with lumped impedance elements}  | 9/02      | . Details  |
| 7/425    | . . {Balance-balance networks}   | 9/02007   | . . {of bulk acoustic wave devices}  |
| 7/427    | . . . {Common-mode filters ( <a href="#">H02J 3/01</a> and <a href="#">H02M 1/126</a> takes precedence)}   | 9/02015   | . . . {Characteristics of piezoelectric layers, e.g. cutting angles}   |
| 7/46     | . Networks for connecting several sources or loads, working on different frequencies or frequency bands, to a common load or source ( <i>for use in multiplex transmission systems</i> <a href="#">H04J 1/00</a> )       | 9/02023   | . . . . {consisting of quartz}   |
| 7/461    | . . {particularly adapted for use in common antenna systems}   | 9/02031   | . . . . {consisting of ceramic}  |
| 7/463    | . . {Duplexers}  | 9/02039   | . . . . {consisting of a material from the crystal group 32, e.g. langasite, langatate, langanite}   |
| 7/465    | . . . {having variable circuit topology, e.g. including switches}  | 9/02047   | . . . {Treatment of substrates}  |
| 7/466    | . . {particularly adapted as input circuit for receivers}  | 9/02055   | . . . . {of the surface including the back surface}  |
| 7/468    | . . {particularly adapted as coupling circuit between transmitters and antennas}   | 9/02062   | . . . {Details relating to the vibration mode}   |
| 7/48     | . Networks for connecting several sources or loads, working on the same frequency or frequency band, to a common load or source ( <i>phase shifters providing two or more output signals</i> <a href="#">H03H 7/21</a> ) | 9/0207    | . . . . {the vibration mode being harmonic}  |
| 7/482    | . . {particularly adapted for use in common antenna systems}   | 9/02078   | . . . . {the vibration mode being overmoded}   |
| 7/485    | . . {particularly adapted as input circuit for receivers}  | 9/02086   | . . . {Means for compensation or elimination of undesirable effects}   |
| 7/487    | . . {particularly adapted as coupling circuit between transmitters and antennas}   | 9/02094   | . . . . {of adherence}   |
| 7/52     | . One-way transmission networks, i.e. unilines   | 9/02102   | . . . . {of temperature influence ( <a href="#">cutting angles H03H 9/02015</a> )}   |
| 7/54     | . Modifications of networks to reduce influence of variations of temperature   | 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}   |

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| 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<br>(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}   | 9/176     | . . .   | {consisting of ceramic material ( <a href="#">H03H 9/177</a> , <a href="#">H03H 9/178</a> take precedence)}   |
| 9/14511  | . . . . . | {SAW transducers for non-piezoelectric substrates}  | 9/177     | . . .   | {of the energy-trap type}   |
| 9/14514  | . . . . . | {Broad band transducers}  | 9/178     | . . .   | {of a laminated structure of multiple piezoelectric layers with inner electrodes}   |
| 9/14517  | . . . . . | {Means for weighting}   | 9/19      | . . .   | consisting of quartz  |
| 9/1452   | . . . . . | {by finger overlap length, apodisation}   | 9/205     | . .     | having multiple resonators ( <a href="#">crystal tuning forks H03H 9/21</a> )   |
| 9/14523  | . . . . . | {Capacitive tap weighted transducers}   | 9/21      | . .     | Crystal tuning forks  |
| 9/14526  | . . . . . | {Finger withdrawal}   | 9/215     | . . .   | consisting of quartz  |
| 9/14529  | . . . . . | {Distributed tap}   | 9/22      | .       | Constructional features of resonators consisting of magnetostrictive material   |
| 9/14532  | . . . . . | {Series weighting; Transverse weighting}  | 9/24      | .       | Constructional features of resonators of material which is not piezo-electric, electrostrictive, or magnetostrictive  |
| 9/14535  | . . . . . | {Position weighting}  | 9/2405    | . .     | {of microelectro-mechanical resonators}   |
| 9/14538  | . . . . . | {Formation}   | 2009/241  | . . .   | {Bulk-mode MEMS resonators}   |
| 9/14541  | . . . . . | {Multilayer finger or busbar electrode}   | 2009/2415 | . . . . | {with concave shape [CBAR]}   |
| 9/14544  | . . . . . | {Transducers of particular shape or position ( <a href="#">weighting H03H 9/14517</a> )}  | 2009/2421 | . . . . | {with I shape [IBAR]}   |
| 9/14547  | . . . . . | {Fan shaped; Tilted; Shifted; Slanted; Tapered; Arched; Stepped finger transducers}   | 9/2426    | . . .   | {in combination with other electronic elements}   |
| 9/1455   | . . . . . | {constituted of N parallel or series transducers}   | 9/2431    | . . .   | {Ring resonators}   |
| 9/14552  | . . . . . | {comprising split fingers}  | 9/2436    | . . .   | {Disk resonators}   |
| 9/14555  | . . . . . | {Chirped transducers ( <a href="#">H03H 9/6406</a> takes precedence)}   | 2009/2442 | . . .   | {Square resonators}   |
| 9/14558  | . . . . . | {Slanted, tapered or fan shaped transducers ( <a href="#">H03H 9/14561</a> , <a href="#">H03H 9/14564</a> take precedence)}   | 9/2447    | . . .   | {Beam resonators ( <a href="#">H03H 9/2468</a> takes precedence)}   |
| 9/14561  | . . . . . | {Arched, curved or ring shaped transducers}   | 9/2452    | . . . . | {Free-free beam resonators}   |
| 9/14564  | . . . . . | {Shifted fingers transducers}   | 9/2457    | . . . . | {Clamped-free beam resonators}  |
| 9/14567  | . . . . . | {Stepped-fan shaped transducers}  | 9/2463    | . . . . | {Clamped-clamped beam resonators}   |
| 9/1457   | . . . . . | {Transducers having different finger widths}  | 9/2468    | . . .   | {Tuning fork resonators}  |
| 9/14573  | . . . . . | {Arrow type transducers}  | 9/2473    | . . . . | {Double-Ended Tuning Fork [DETF] 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} | 9/2478    | . . . . | {Single-Ended Tuning Fork resonators}   |
| 9/14579  | . . . . . | {the last fingers having a different shape}   | 9/2484    | . . . . | {with two fork tines, e.g. Y-beam cantilever}   |
| 9/14582  | . . . . . | {the last fingers having a different pitch}   | 9/2489    | . . . . | {with more than two fork tines}   |
| 9/14585  | . . . . . | {the last fingers being split}  | 9/2494    | . . . . | {H-shaped, i.e. two tuning forks with common base}  |
| 9/14588  | . . . . . | {Horizontally-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> )} |
| 9/14591  | . . . . . | {Vertically-split transducers}  | 9/30      | .       | Time-delay networks   |
| 9/14594  | . . . . . | {Plan-rotated or plan-tilted transducers}   | 9/36      | . .     | with non-adjustable delay time ( <a href="#">H03H 9/40</a> , <a href="#">H03H 9/42</a> take precedence)   |
| 9/14597  | . . . . . | {Matching SAW transducers to external electrical circuits}  | 9/38      | . .     | with 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)                           | 9/40      | . .     | Frequency dependent delay lines, e.g. dispersive delay lines ( <a href="#">H03H 9/42</a> takes precedence)  |
| 2009/155 | . .       | {using MEMS techniques}   | 9/42      | . .     | using surface acoustic waves {(devices for manipulating acoustic surface waves in general <a href="#">G10K 11/36</a> )}                                       |
| 9/17     | . .       | having a single resonator ( <a href="#">crystal tuning forks H03H 9/21</a> )  | 9/423     | . . .   | {with adjustable delay time}  |
| 9/171    | . . .     | {implemented with thin-film techniques, i.e. of the film bulk acoustic resonator [FBAR] type}   | 9/426     | . . .   | {Magneto-elastic surface waves}   |
| 9/172    | . . . .   | {Means for mounting on a substrate, i.e. means constituting the material interface confining the waves to a volume}   | 9/44      | . . .   | Frequency dependent delay lines, e.g. dispersive delay lines  |
| 9/173    | . . . . . | {Air-gaps}  | 9/46      | .       | Filters ( <a href="#">multiple-port electromechanical filters H03H 9/70</a> )   |
| 9/174    | . . . . . | {Membranes}   | 9/462     | . .     | {Microelectro-mechanical filters}   |
| 9/175    | . . . . . | {Acoustic mirrors}  | 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 ([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}

|           |   |        |  |
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| 11/0461   | . . . . {Current mode filters}  | 11/20  | . . . Two-port phase shifters providing an adjustable phase shift  |
| 11/0466   | . . . . {Filters combining transconductance amplifiers with other active elements, e.g. operational amplifiers, transistors, voltage conveyors}           | 11/22  | . . . providing two or more phase shifted output signals, e.g. n-phase output  |
| 11/0472   | . . . . {Current or voltage controlled filters}   | 11/24  | . . Frequency-independent attenuators  |
| 2011/0477 | . . . {using current feedback operational amplifiers}   | 11/245 | . . . {using field-effect transistor}  |
| 2011/0483 | . . . {using operational transresistance amplifiers [OTRA]}   | 11/26  | . . Time-delay networks ( <a href="#">analogue shift registers G11C 27/04</a> )  |
| 2011/0488 | . . . {Notch or bandstop filters}   | 11/265 | . . . {with adjustable delay}  |
| 2011/0494 | . . . {Complex filters}   | 11/28  | . . Impedance matching networks  |
| 11/06     | . . . comprising means for compensation of loss   | 11/30  | . . . Automatic matching of source impedance to load impedance   |
| 11/08     | . . . using gyrators  | 11/32  | . . Balance-unbalance networks   |
| 11/10     | . . . using negative impedance converters ( <a href="#">H03H 11/08 takes precedence</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> ) |
| 11/11     | . . . {using current conveyors}   | 11/342 | . . . {particularly adapted for use in common antenna systems}   |
| 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)           | 11/344 | . . . {Duplexers}  |
| 11/1204   | . . . . {Distributed RC filters}  | 11/346 | . . . {particularly adapted as input circuit for receivers}  |
| 11/1208   | . . . . {comprising an electromechanical resonator}   | 11/348 | . . . {particularly adapted as coupling circuit between transmitters and antenna}  |
| 11/1213   | . . . . {using transistor amplifiers ( <a href="#">H03H 11/1204 takes precedence</a> ; <a href="#">parallel-T filters H03H 11/1295</a> )}                 | 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> )      |
| 11/1217   | . . . . {using a plurality of operational amplifiers ( <a href="#">H03H 11/1204 takes precedence</a> ; <a href="#">parallel-T filters H03H 11/1295</a> )} | 11/362 | . . . {particularly adapted for use in common antenna systems}   |
| 11/1221   | . . . . . {Theory; Synthesis ( <a href="#">H03H 11/1226 - H03H 11/1252 take precedence</a> )}   | 11/365 | . . . {particularly adapted as input circuit for receivers}  |
| 11/1226   | . . . . . {Filters using operational amplifier poles}   | 11/367 | . . . {particularly adapted as coupling circuit between transmitters and antenna}  |
| 11/123    | . . . . . {Modifications to reduce sensitivity}   | 11/38  | . . One-way transmission networks, i.e. unilines   |
| 11/1234   | . . . . . {Modifications to reduce detrimental influences of amplifier imperfections, e.g. limited gain-bandwidth product, limited input impedance}       | 11/40  | . . Impedance converters   |
| 11/1239   | . . . . . {Modifications to reduce influence of variations of temperature}  | 11/405 | . . . {Positive impedance converters ( <a href="#">H03H 11/42 takes precedence</a> ; <a href="#">used in frequency selective networks H03H 11/0416</a> )}  |
| 11/1243   | . . . . . {Simulation of ladder networks}   | 11/42  | . . . Gyrators ( <a href="#">used in frequency selective networks H03H 11/08</a> )   |
| 11/1247   | . . . . . {Leapfrog structures}   | 11/44  | . . . Negative impedance converters ( <a href="#">H03H 11/42 takes precedence</a> ; <a href="#">used in frequency selective networks H03H 11/10</a> )  |
| 11/1252   | . . . . . {Two integrator-loop-filters}   | 11/46  | . . One-port networks  |
| 11/1256   | . . . . . {Tow-Thomas biquad}   | 11/48  | . . simulating reactances  |
| 11/126    | . . . . . {using a single operational amplifier ( <a href="#">H03H 11/1204 takes precedence</a> ; <a href="#">parallel-T filters H03H 11/1295</a> )}      | 11/481 | . . . {Simulating capacitances}  |
| 11/1265   | . . . . . {Synthesis ( <a href="#">H03H 11/1269 - H03H 11/1282 take precedence</a> )}   | 11/483 | . . . {Simulating capacitance multipliers}   |
| 11/1269   | . . . . . {Filters using the operational amplifier pole}  | 11/485 | . . . {Simulating inductances using operational amplifiers}  |
| 11/1273   | . . . . . {Modifications to reduce sensitivity}   | 11/486 | . . . {Simulating inductances using transconductance amplifiers}   |
| 11/1278   | . . . . . {Modifications to reduce detrimental influences of amplifier imperfections, e.g. limited gain-bandwidth product, limited input impedance}       | 11/488 | . . . {Simulating inductances using current conveyors}   |
| 11/1282   | . . . . . {Modifications to reduce influence of variations of temperature}  | 11/50  | . . . using gyrators   |
| 11/1286   | . . . . . {Sallen-Key biquad}   | 11/52  | . . simulating negative resistances  |
| 11/1291   | . . . . . {Current or voltage controlled filters}   | 11/525 | . . . {Simulating frequency dependent negative resistance [FDNR]}  |
| 11/1295   | . . . . . {Parallel-T filters}  | 11/53  | . . {simulating resistances; simulating resistance multipliers}  |
| 11/14     | . . . using electro-optic devices   | 11/54  | . Modifications of networks to reduce influence of variations of temperature   |
| 11/16     | . . Networks for phase shifting   |        |  |
| 11/18     | . . . Two-port phase shifters providing a predetermined phase shift, e.g. "all-pass" filters  |        |  |



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|--------------|---|-----------|---|
| <b>15/00</b> | <b>Transversal filters</b> ( <a href="#">electromechanical filters</a> <a href="#">H03H 9/46</a> , <a href="#">H03H 9/70</a> )  | 17/0238   | . . . {Measures concerning the arithmetic used (performing computations <a href="#">G06F 7/60</a> )}  |
| 2015/002     | . {Computation saving measures}   | 17/0239   | . . . . {Signed digit arithmetic}   |
| 2015/005     | . {comprising capacitors implemented with MEMS technology}  | 17/0241   | . . . . {Distributed arithmetic}  |
| 2015/007     | . {Programmable filters}  | 17/0242   | . . . . {Residue number arithmetic}   |
| 15/02        | . using analogue shift registers  | 2017/0244 | . . . {Measures to reduce settling time}  |
| 15/023       | . . {with parallel-input configuration}   | 2017/0245 | . . . {Measures to reduce power consumption ( <a href="#">H03H 17/0223</a> takes precedence)}   |
| 2015/026     | . {Matched filters in charge domain}  | 2017/0247 | . . . {Parallel structures using a slower clock}  |
| <b>17/00</b> | <b>Networks using digital techniques</b>  | 17/0248   | . . {Filters characterised by a particular frequency response or filtering method}  |
| 17/0009      | . {Time-delay networks}   | 17/025    | . . . {Notch filters}   |
| 17/0018      | . . {Realizing a fractional delay}  | 17/0251   | . . . {Comb filters}  |
| 17/0027      | . . . {by means of a non-recursive filter}  | 17/0252   | . . . {Elliptic filters}  |
| 17/0036      | . . . {by means of a recursive filter}  | 17/0254   | . . . {Matched filters}   |
| 17/0045      | . {Impedance matching networks}   | 17/0255   | . . . {Filters based on statistics ( <a href="#">adaptive filters</a> <a href="#">H03H 21/0029</a> )}   |
| 17/0054      | . {Attenuators}   | 17/0257   | . . . . {KALMAN filters}  |
| 17/0063      | . {R, L, C, simulating networks}  | 17/0258   | . . . . {ARMA filters}  |
| 2017/0072    | . {Theoretical filter design}   | 17/026    | . . . {Averaging filters}   |
| 2017/0081    | . . {of FIR filters}  | 17/0261   | . . . {Non linear filters}  |
| 2017/009     | . . {of IIR filters}  | 17/0263   | . . . . {Rank order filters}  |
| 17/02        | . Frequency selective networks {(digital computers for complex mathematical operations <a href="#">G06F 17/10</a> )}  | 17/0264   | . . . {Filter sets with mutual related characteristics}   |
| 17/0201      | . . {Wave digital filters}  | 17/0266   | . . . . {Filter banks}  |
| 17/0202      | . . {Two or more dimensional filters; Filters for complex signals ( <a href="#">multidimensional convolutions</a> <a href="#">G06F 17/153</a> )}  | 17/0267   | . . . . . {comprising non-recursive filters}  |
| 2017/0204    | . . . {Comb filters}  | 17/0269   | . . . . . {comprising recursive filters}  |
| 2017/0205    | . . . {Kalman filters}  | 17/027    | . . . . {Complementary filters; Phase complementary filters}  |
| 2017/0207    | . . . {Median filters}  | 17/0272   | . . . . {Quadrature mirror filters}   |
| 2017/0208    | . . . {using neural networks}   | 17/0273   | . . . . {Polyphase filters}   |
| 2017/021     | . . . {Wave digital filters}  | 17/0275   | . . . . . {comprising non-recursive filters}  |
| 17/0211      | . . {using specific transformation algorithms, e.g. WALSH functions, Fermat transforms, Mersenne transforms, polynomial transforms, Hilbert transforms ( <a href="#">correlation computation</a> <a href="#">G06F 17/156</a> )} | 17/0276   | . . . . . {having two phases}   |
| 17/0213      | . . . {Frequency domain filters using Fourier transforms}   | 17/0277   | . . . . . {comprising recursive filters}  |
| 2017/0214    | . . . . {with input-sampling frequency and output-delivery frequency which differ, e.g. interpolation, extrapolation; anti-aliasing}  | 17/0279   | . . . . . {having two phases}   |
| 17/0216      | . . . {Frequency domain filters}  | 17/028    | . . . {Polynomial filters}  |
| 17/0217      | . . . {Number theoretic transforms}   | 17/0282   | . . . {Sinc or gaussian filters ( <a href="#">H03H 17/0671</a> takes precedence)}   |
| 17/0219      | . . {Compensation of undesirable effects, e.g. quantisation noise, overflow ( <a href="#">stability problems</a> <a href="#">H03H 17/0461</a> )}  | 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)} |
| 2017/022     | . . . {Rounding error}  | 17/0285   | . . . {Ladder or lattice filters}   |
| 2017/0222    | . . . {Phase error}   | 17/0286   | . . . {Combinations of filter structures}   |
| 17/0223      | . . {Computation saving measures; Accelerating measures ( <a href="#">computations per se</a> <a href="#">G06F</a> )}   | 17/0288   | . . . . {Recursive, non-recursive, ladder, lattice structures}  |
| 17/0225      | . . . {Measures concerning the multipliers}   | 17/0289   | . . . . . {Digital and active filter structures}  |
| 17/0226      | . . . . {comprising look-up tables}   | 17/0291   | . . . . . {Digital and sampled data filters}  |
| 17/0227      | . . . {Measures concerning the coefficients}  | 17/0292   | . . . {Time multiplexed filters; Time sharing filters}  |
| 17/0229      | . . . . {reducing the number of taps}   | 17/0294   | . . {Variable filters; Programmable filters}  |
| 17/023       | . . . . {reducing the wordlength, the possible values of coefficients}  | 2017/0295 | . . . {Changing between two filter characteristics}   |
| 2017/0232    | . . . . . {Canonical signed digit [CSD] or power of 2 coefficients}   | 2017/0297 | . . . {Coefficients derived from input parameters}  |
| 17/0233      | . . . {Measures concerning the signal representation}   | 2017/0298 | . . {DSP implementation}  |
| 17/0235      | . . . . {reducing the wordlength of signals}  | 17/04     | . . Recursive filters   |
| 17/0236      | . . . . {using codes}   | 17/0405   | . . . {comprising a ROM addressed by the input and output data signals}   |
|              |   | 17/0411   | . . . {using DELTA modulation}  |
|              |   | 17/0416   | . . . {with input-sampling frequency and output-delivery frequency which differ, e.g. extrapolation; Anti-aliasing}   |
|              |   | 17/0422   | . . . . {the input and output signals being derived from two separate clocks, i.e. asynchronous sample rate conversion}   |

|              |   |                |   |
|--------------|---|----------------|---|
| 17/0427      | . . . . {characterized by the ratio between the input-sampling and output-delivery frequencies}                         | 21/0014        | . . {Lattice filters}   |
| 17/0433      | . . . . {the ratio being arbitrary or irrational}   | 21/0016        | . . {Non linear filters}  |
| 17/0438      | . . . . {the ratio being integer}   | 21/0018        | . . {Matched filters}   |
| 17/0444      | . . . . . {where the output-delivery frequency is higher than the input sampling frequency, i.e. interpolation}         | 21/002         | . . {Filters with a particular frequency response ( <a href="#">H03H 21/0014</a> - <a href="#">H03H 21/0018</a> take precedence)}   |
| 17/045       | . . . . . {where the output-delivery frequency is lower than the input sampling frequency, i.e. decimation}             | 21/0021        | . . . {Notch filters}   |
| 17/0455      | . . . . . {the ratio being rational}  | 21/0023        | . . . {Comb filters}  |
| 17/0461      | . . . {Quantisation; Rounding; Truncation; Overflow oscillations or limit cycles eliminating measures}                  | 21/0025        | . . {Particular filtering methods}  |
| 2017/0466    | . . . . {Reduction of limit cycle oscillation}  | 21/0027        | . . . {filtering in the frequency domain}   |
| 2017/0472    | . . . {based on allpass structures}   | 21/0029        | . . . {based on statistics}   |
| 2017/0477    | . . . {Direct form I}   | 21/003         | . . . . {KALMAN filters}  |
| 2017/0483    | . . . . {Transposed}  | 21/0032        | . . . . {ARMA filters}  |
| 2017/0488    | . . . {Direct form II}  | 2021/0034      | . . . {Blind source separation}   |
| 2017/0494    | . . . . {Transposed}  | 2021/0036      | . . . . {of convolutive mixtures}   |
| 17/06        | . . Non-recursive filters   | 2021/0038      | . . . . {of instantaneous mixtures}   |
| 17/0607      | . . . {comprising a ROM addressed by the input data signals}  | 2021/004       | . . . . {using state space representation}  |
| 17/0614      | . . . {using Delta-modulation}  | 2021/0041      | . . . {Subband decomposition}   |
| 17/0621      | . . . {with input-sampling frequency and output-delivery frequency which differ, e.g. extrapolation; Anti-aliasing}     | 21/0043        | . . {Adaptive algorithms}   |
| 17/0628      | . . . . {the input and output signals being derived from two separate clocks, i.e. asynchronous sample rate conversion} | 2021/0045      | . . . {Equation error}  |
| 17/0635      | . . . . {characterized by the ratio between the input-sampling and output-delivery frequencies}                         | 2021/0047      | . . . . {Combined output and equation error}  |
| 17/0642      | . . . . . {the ratio being arbitrary or irrational}   | 2021/0049      | . . . {Recursive least squares algorithm}   |
| 17/065       | . . . . . {the ratio being integer}   | 2021/005       | . . . . {with forgetting factor}  |
| 17/0657      | . . . . . {where the output-delivery frequency is higher than the input sampling frequency, i.e. interpolation}         | 2021/0052      | . . . . {combined with stochastic gradient algorithm}   |
| 17/0664      | . . . . . {where the output-delivery frequency is lower than the input sampling frequency, i.e. decimation}             | 2021/0054      | . . . . . {Affine projection}   |
| 17/0671      | . . . . . {Cascaded integrator-comb [CIC] filters}  | 2021/0056      | . . . {Non-recursive least squares algorithm [LMS]}   |
| 2017/0678    | . . . . . {with parallel structure, i.e. parallel CIC [PCIC]}   | 2021/0058      | . . . . {Block LMS, i.e. in frequency domain}   |
| 17/0685      | . . . . . {the ratio being rational}  | 2021/0059      | . . . . {Delayed LMS}   |
| 2017/0692    | . . . {Transposed}  | 2021/0061      | . . . . {Normalized LMS [NLMS]}   |
| 17/08        | . Networks for phase shifting   | 2021/0063      | . . . . . {Proportionate NLMS}  |
| <b>19/00</b> | <b>Networks using time-varying elements, e.g. N-path filters</b>  | 2021/0065      | . . . . {Sign-sign LMS}   |
| 19/002       | . {N-path filters}  | 21/0067        | . . {Means or methods for compensation of undesirable effects}  |
| 19/004       | . {Switched capacitor networks}   | 2021/0069      | . . . {Finite wordlength}   |
| 19/006       | . . {simulating one-port networks}  | 2021/007       | . . {Computation saving measures; Accelerating measures}  |
| 19/008       | . {with variable switch closing time}   | 2021/0072      | . . . {Measures relating to the coefficients}   |
| <b>21/00</b> | <b>Adaptive networks</b>  | 2021/0074      | . . . . {Reduction of the update frequency}   |
| 21/0001      | . {Analogue adaptive filters}   | 2021/0076      | . . . {Measures relating to the convergence time ( <a href="#">H03H 2021/0072</a> takes precedence)}  |
| 21/0003      | . . {comprising CCD devices}  | 2021/0078      | . . . . {varying the step size}   |
| 21/0005      | . . {comprising SAW devices}  | 2021/0079      | . . . {using look-up tables}  |
| 21/0007      | . . {comprising switched capacitor [SC] devices}  | 2021/0081      | . . {Details}   |
| 2021/0009    | . . {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} |
| 2021/001     | . . . {Analog multipliers}  | 2021/0085      | . . {Applications}  |
| 21/0012      | . {Digital adaptive filters}  | 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
  
- 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**