## CPC - COOPERATIVE PATENT CLASSIFICATION

### H ELECTRICITY

#### H01 BASIC ELECTRIC ELEMENTS

##### H01P WAVEGUIDES; RESONATORS, LINES, OR OTHER DEVICES OF THE WAVEGUIDE TYPE (operating at optical frequencies G02B; aerials H01Q; {modulating electromagnetic waves in transmission line, waveguide, cavity resonator or radiation field of aerial H03C 7/02}; networks comprising lumped impedance elements H03H)

**NOTE**

In this subclass, the following expression is used with the meaning indicated:
- "waveguide type" as applied to transmission lines includes only high-frequency coaxial cables or Lecher lines, and as applied to resonators, delay lines, or other devices includes all devices having distributed inductance and capacitance.

**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.

| 1/00 | Auxiliary devices (coupling devices of the waveguide type H01P 5/00) | 1/10 | . for switching or interrupting { (in systems using reflection or reradiation of radio, acoustic or other waves G01S 7/034) } |
| 1/005 | . {Diode mounting means} | 1/11 | . by ferromagnetic devices |
| 1/02 | . Bends; Corners; Twists | 1/12 | . by mechanical chopper |
| 1/022 | . . [in waveguides of polygonal cross-section (H01P 1/065 takes precedence)] | 1/122 | . [Waveguide switches] |
| 1/025 | . . [in the E-plane] | 1/125 | . [Coaxial switches] |
| 1/027 | . . [in the H-plane] | 1/127 | . [Strip line switches] |
| 1/04 | . Fixed joints ([pipe joints F16L]; line connectors H01R; cable fittings H02G 15/00) | 1/14 | . by electric discharge devices (discharge devices H01J 17/64) |
| 1/042 | . . [Hollow waveguide joints] | 1/15 | . by semiconductor devices |
| 1/045 | . . [Coaxial joints] | 1/16 | . for mode selection, e.g. mode suppression or mode promotion; for mode conversion (linking dissimilar lines or devices H01P 5/08) |
| 1/047 | . . [Strip line joints] | 1/161 | . sustaining two independent orthogonal modes, e.g. orthomode transducer { (combining or separating polarisations and frequencies H01P 1/2131) } |
| 1/06 | . Movable joints, e.g. rotating joints | 1/162 | . absorbing spurious or unwanted modes of propagation |
| 1/061 | . . [the relative movement being a translation along an axis common to at least two rectilinear parts, e.g. expansion joints] | 1/163 | . specifically adapted for selection or promotion of the TE\(_{01}\) circular-electric mode |
| 1/062 | . . [the relative movement being a rotation] | 1/165 | . for rotating the plane of polarisation |
| 1/063 | . . . [with a limited angle of rotation] | 1/17 | . for producing a continuously rotating polarisation, e.g. circular polarisation |
| 1/064 | . . . . [the axis of rotation being perpendicular to the transmission path, e.g. hinge joint] | 1/171 | . . [using a corrugated or ridged waveguide section] |
| 1/065 | . . . . [the axis of rotation being parallel to the transmission path, e.g. stepped twist] | 1/172 | . . [using a dielectric element] |
| 1/066 | . . . . [with an unlimited angle of rotation] | 1/173 | . . [using a conductive element] |
| 1/067 | . . . . [the energy being transmitted in only one line located on the axis of rotation] | 1/174 | . . [using a magnetic element (H01P 1/175 takes precedence)] |
| 1/068 | . . . . [the energy being transmitted in at least one ring-shaped transmission line located around the axis of rotation, e.g. "around the mast" rotary joint (H01P 1/069 takes precedence; coaxial line with solid inner conductor H01P 1/067)] | 1/175 | . using Faraday rotators |
| 1/069 | . . . . [the energy being transmitted in at least one ring-shaped transmission line located around an axial transmission line; Concentric coaxial systems] | 1/176 | . Phase-shifters (H01P 1/165 takes precedence; coupling devices with variable coupling factor H01P 5/04) |
| 1/08 | . Dielectric windows (coupling devices for transit time tubes H01J 23/36) | 1/181 | . [using ferroelectric devices] |
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H01P

1/182 . . . [Waveguide phase-shifters (H01P 1/181, H01P 1/185, H01P 1/19 take precedence)]
1/183 . . . [Coaxial phase-shifters (H01P 1/181, H01P 1/185, H01P 1/19 take precedence)]
1/184 . . . [Strip line phase-shifters (H01P 1/181, H01P 1/185, H01P 1/19 take precedence)]
1/185 . . . using a diode or a gas filled discharge tube
1/19 . . . using a ferromagnetic device
1/195 . . . having a toroidal shape
1/20 . . . Frequency-selective devices, e.g. filters (variable impedance transformers, e.g. slug tuners or stub tuners H01P 5/04: resonators H01P 7/00)
1/2002 . . . [Dielectric waveguide filters (H01P 1/212, H01P 1/213, H01P 1/215, H01P 1/219 take precedence)]
1/2005 . . . [Electromagnetic photonic bandgaps (EPB), or photonic bandgaps (PBG)]
1/2007 . . . [Filtering devices for biasing networks or DC returns]
1/2001 . . . Filters for transverse electromagnetic waves (H01P 1/212, H01P 1/213, H01P 1/215, H01P 1/219 take precedence)
1/2013 . . . [Coplanar line filters]
1/2016 . . . [Slot line filters; Fin line filters]
1/202 . . . Coaxial filters (cascaded coaxial cavities H01P 1/205)
1/203 . . . Strip line filters
1/20309 . . . [with dielectric resonator]
1/20318 . . . [with dielectric resonators as non-metallised opposite openings in the metallised surfaces of a substrate]
1/20327 . . . [Electromagnetic interstage coupling]
1/20336 . . . [Comb or interdigital filters]
1/20345 . . . [Multilayer filters]
1/20354 . . . [Non-comb or non-interdigital filters]
1/20363 . . . [Linear resonators]
1/20372 . . . [Hairpin resonators]
1/20381 . . . [Special shape resonators]
1/2039 . . . [Galvanic coupling between Input/Output]
1/205 . . . Comb or interdigital filters; Cascaded coaxial cavities (H01P 1/203 takes precedence)
1/2053 . . . [the coaxial cavity resonators being disposed parallel to each other]
1/2056 . . . [Comb filters or interdigital filters with metallised resonator holes in a dielectric block]
1/207 . . . Hollow waveguide filters (H01P 1/212, H01P 1/213, H01P 1/215, H01P 1/219 take precedence)
1/208 . . . Cascaded cavities; Cascaded resonators inside a hollow waveguide structure (H01P 1/205 takes precedence)
1/2082 . . . [with multimode resonators (H01P 1/206 takes precedence)]
1/2084 . . . [with dielectric resonators]
1/2086 . . . [multimode]
1/2088 . . . [Integrated in a substrate]
1/209 . . . comprising one or more branching arms or cavities wholly outside the main waveguide
1/211 . . . Waffle-iron filters; Corrugated structures
1/212 . . . suppressing or attenuating harmonic frequencies (H01P 1/215 takes precedence)
1/213 . . . combining or separating two or more different frequencies (H01P 1/215 takes precedence)
1/2131 . . . [with combining or separating polarisations]
1/2133 . . . [using coaxial filters (H01P 1/2131, H01P 1/2136 take precedence)]
1/2135 . . . [using strip line filters (H01P 1/2131 takes precedence)]
1/2136 . . . [using comb or interdigital filters; using cascaded coaxial cavities (H01P 1/2131, H01P 1/2135 take precedence)]
1/2138 . . . [using hollow waveguide filters (H01P 1/2131 takes precedence)]
1/215 . . . [using ferromagnetic material]
1/217 . . . the ferromagnetic material acting as a tuning element in resonators
1/218 . . . the ferromagnetic material acting as a frequency selective coupling element, e.g. YIG-filters
1/219 . . . Evanescent mode filters
1/22 . . . Attenuating devices (dissipative terminating devices H01P 1/26)
1/222 . . . [Waveguide attenuators (H01P 1/22 takes precedence)]
1/225 . . . [Coaxial attenuators (H01P 1/23 takes precedence)]
1/227 . . . [Strip line attenuators (H01P 1/23 takes precedence)]
1/23 . . . using ferromagnetic material
1/24 . . . Terminating devices
1/26 . . . Dissipative terminations
1/262 . . . [the dissipative medium being a liquid or being cooled by a liquid]
1/264 . . . [Waveguide terminations (H01P 1/262 takes precedence)]
1/266 . . . [Coaxial terminations (H01P 1/262 takes precedence)]
1/268 . . . [Strip line terminations (H01P 1/262 takes precedence)]
1/28 . . . Short-circuiting plungers (coupling devices with variable coupling factor H01P 5/04)
1/30 . . . for compensation of, or protection against, temperature or moisture effects (for improving power handling capability H01P 1/04, H01P 1/08 takes precedence)
1/32 . . . Non-reciprocal transmission devices (H01P 1/02 - H01P 1/30 take precedence)
1/36 . . . Isolators
1/362 . . . [Edge-guided mode devices]
1/365 . . . [Resonance absorption isolators]
1/37 . . . [Field displacement isolators]
1/375 . . . using Faraday rotators
1/38 . . . Circulators
1/383 . . . [Junction circulators, e.g. Y-circulators]
1/387 . . . [Strip line circulators]
1/39 . . . [Hollow waveguide circulators]
1/393 . . . using Faraday rotators
1/397 . . . using non-reciprocal phase shifters (H01P 1/393 takes precedence)

3/00 Waveguides; Transmission lines of the waveguide type
3/003 . . . [Coplanar lines]
3/006 . . . [Conductor backed coplanar waveguides]
3/02 . . . with two longitudinal conductors
5/00 Coupling devices of the waveguide type (non-reciprocal devices H01P 1/32; for introducing or removing wave energy to or from the discharge in transit-time tubes H01J 23/36)

5/02 with invariable factor of coupling (H01P 5/12 takes precedence (choke joints H01J 1/04, H01J 1/06))
5/022 with variable factor of coupling (H01P 1/04)
5/024 between hollow waveguides
5/026 between coaxial lines
5/028 between strip lines
5/04 with variable factor of coupling
5/08 for linking dissimilar lines or devices (H01P 1/16, H01P 5/04 take precedence; linking lines of the same kind but with different dimensions H01P 5/02)
5/082 Transitions between hollow waveguides of different shape, e.g. between a rectangular and a circular waveguide
5/085 [Coaxial-line/strip-line transitions]
5/087 Transitions to a dielectric waveguide

5/10 for coupling balanced with unbalanced lines or devices
5/1007 [Microstrip transitions to Slotline or finline]
5/1015 [Coplanar line transitions to Slotline or finline]
5/1022 Transitions to dielectric waveguide
5/103 Hollow-waveguide/coaxial-line transitions
5/107 Hollow-waveguide/strip-line transitions
5/12 Coupling devices having more than two ports (H01P 5/04 takes precedence)
5/16 Conjugate devices, i.e. devices having at least one port decoupled from one other port
5/18 consisting of two coupled guides, e.g. directional couplers
5/181 [the guides being hollow waveguides]
5/182 [the guides being arranged in parallel]
5/183 [at least one of the guides being a coaxial line]
5/184 [the guides being strip lines or microstrips]
5/185 [Edge coupled lines]
5/186 [Lange couplers]
5/187 [Broadside coupled lines]
5/188 [the guides being dielectric waveguides]
5/19 of the junction type
5/20 Magic-T junctions
5/22 Hybrid ring junctions
5/222 [180° rat race hybrid rings]
5/225 [180° reversed phase hybrid rings]
5/227 [90° branch line couplers]

7/00 Resonators of the waveguide type (variable impedance transformers H01P 5/04; structurally associated with transit-time tubes and interacting with the discharge therein H01J 23/18; generators of electronic oscillations using resonators of this type H03B 5/18, H03B 7/14, H03B 9/14; electronic amplifiers using resonators of this type H03F 3/54; microwave heating devices H05B 6/64)

7/005 Helical resonators; Spiral resonators
7/02 Lecher resonators
7/04 Coaxial resonators
7/06 Cavity resonators
7/065 [integrated in a substrate]
7/08 Strip line resonators
7/082 Microstrip line resonators (H01P 7/088 takes precedence)
7/084 Triplate line resonators (H01P 7/088 takes precedence)
7/086 Coplanar waveguide resonators (H01P 7/088 takes precedence)
7/088 Tunable resonators
7/10 Dielectric resonators
7/105 Multimode resonators

9/00 Delay lines of the waveguide type (structurally associated with transit-time tubes and interacting with the discharge therein H01J 23/24)

9/003 Delay equalizers
9/006 Meander lines
9/02 Helical lines
9/04 Interdigital lines
Apparatus or processes specially adapted for manufacturing waveguides or resonators, lines, or other devices of the waveguide type (manufacture of coaxial cables H01B 13/00)

- 11/001  (Manufacturing waveguides or transmission lines of the waveguide type)
- 11/002  (Manufacturing hollow waveguides)
- 11/003  (Manufacturing lines with conductors on a substrate, e.g. strip lines, slot lines)
- 11/005  (Manufacturing coaxial lines)
- 11/006  (Manufacturing dielectric waveguides)
- 11/007  (Manufacturing frequency-selective devices (resonators H01P 11/008))
- 11/008  (Manufacturing resonators)