

**CPC****COOPERATIVE PATENT CLASSIFICATION****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.

**H01P 1/00****Auxiliary devices** ( coupling devices of the waveguide type [H01P 5/00](#) )**H01P 1/005**

. { Diode mounting means }

**H01P 1/02**

. Bends; Corners; Twists

**H01P 1/022**

.. { in waveguides of polygonal cross-section ( [H01P 1/065](#) takes precedence )}

**H01P 1/025**

... { in the E-plane }

**H01P 1/027**

... { in the H-plane }

**H01P 1/04**

. Fixed joints ( { pipe joints [F16L](#) }; line connectors [H01R](#); cable fittings [H02G 15/00](#) )

**H01P 1/042**

.. { Hollow waveguide joints }

**H01P 1/045**

.. { Coaxial joints }

**H01P 1/047**

.. { Strip line joints }

**H01P 1/06**

. Movable joints, e.g. rotating joints

**H01P 1/061**

.. { the relative movement being a translation along an axis common to at least two rectilinear parts, e.g. expansion joints }

**H01P 1/062**

.. { the relative movement being a rotation }

**H01P 1/063**

... { with a limited angle of rotation }

**H01P 1/064**

.... { the axis of rotation being perpendicular to the transmission path, e.g. hinge joint }

**H01P 1/065**

.... { the axis of rotation being parallel to the transmission path, e.g. stepped twist }

**H01P 1/066**

... { with an unlimited angle of rotation }

**H01P 1/067**

.... { the energy being transmitted in only one line located on the axis of rotation }

**H01P 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](#) )}

- H01P 1/069 . . . . { the energy being transmitted in at least one ring-shaped transmission line located around an axial transmission line; Concentric coaxial systems }
- H01P 1/08 . Dielectric windows ( coupling devices for transit time tubes [H01J 23/36](#) )
- H01P 1/10 . for switching or interrupting {( in systems using reflection or reradiation of radio, acoustic or other waves [G01S 7/034](#) )}
- H01P 1/11 . . by ferromagnetic devices
- H01P 1/12 . . by mechanical chopper
- H01P 1/122 . . . { Waveguide switches }
- H01P 1/125 . . . { Coaxial switches }
- H01P 1/127 . . . { Strip line switches }
- H01P 1/14 . . by electric discharge devices ( discharge devices [H01J 17/64](#) )
- H01P 1/15 . . by semiconductor devices
- H01P 1/16 . for mode selection, e.g. mode suppression or mode promotion; for mode conversion ( linking dissimilar lines or devices [H01P 5/08](#) )
- H01P 1/161 . . sustaining two independent orthogonal modes, e.g. orthomode transducer {( combining or separating polarisations and frequencies [H01P 1/2131](#) )}
- H01P 1/162 . . absorbing spurious or unwanted modes of propagation
- H01P 1/163 . . specifically adapted for selection or promotion of the TE 01 circular-electric mode
- H01P 1/165 . for rotating the plane of polarisation
- H01P 1/17 . . for producing a continuously rotating polarisation, e.g. circular polarisation
- H01P 1/171 . . . { using a corrugated or ridged waveguide section }
- H01P 1/172 . . . { using a dielectric element }
- H01P 1/173 . . . { using a conductive element }
- H01P 1/174 . . . { using a magnetic element ( [H01P 1/175](#) takes precedence )}
- H01P 1/175 . . using Faraday rotators
- H01P 1/18 . Phase-shifters ( [H01P 1/165](#) takes precedence; coupling devices with variable coupling factor [H01P 5/04](#) )
- H01P 1/181 . . { using ferroelectric devices }
- H01P 1/182 . . { Waveguide phase-shifters ( [H01P 1/181](#), [H01P 1/185](#), [H01P 1/19](#) take precedence )}
- H01P 1/183 . . { Coaxial phase-shifters ( [H01P 1/181](#), [H01P 1/185](#), [H01P 1/19](#) take precedence )}
- H01P 1/184 . . { Strip line phase-shifters ( [H01P 1/181](#), [H01P 1/185](#), [H01P 1/19](#) take precedence )}
- H01P 1/185 . . using a diode or a gas filled discharge tube
- H01P 1/19 . . using a ferromagnetic device
- H01P 1/195 . . . having a toroidal shape
- H01P 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](#) )
- H01P 1/2002 . . { Dielectric waveguide filters ( [H01P 1/212](#), [H01P 1/213](#), [H01P 1/215](#), [H01P 1/219](#) take precedence )}
- H01P 1/2005 . . { Electromagnetic photonic bandgaps [EPB ], or photonic bandgaps [PBG] }

H01P 1/2007	..	{ Filtering devices for biasing networks or DC returns }
H01P 1/201	..	Filters for transverse electromagnetic waves ( <a href="#">H01P 1/212</a> , <a href="#">H01P 1/213</a> , <a href="#">H01P 1/215</a> , <a href="#">H01P 1/219</a> take precedence )
H01P 1/2013	...	{ Coplanar line filters }
H01P 1/2016	...	{ Slot line filters; Fin line filters }
H01P 1/202	...	Coaxial filters ( cascaded coaxial cavities <a href="#">H01P 1/205</a> )
H01P 1/203	...	Strip line filters
H01P 1/20309	....	{ with dielectric resonator }
H01P 1/20318	.....	{ with dielectric resonators as non-metallised opposite openings in the metallised surfaces of a substrate }
H01P 1/20327	....	{ Electromagnetic interstage coupling }
H01P 1/20336	.....	{ Comb or interdigital filters }
H01P 1/20345	.....	{ Multilayer filters }
H01P 1/20354	.....	{ Non-comb or non-interdigital filters }
H01P 1/20363	.....	{ Linear resonators }
H01P 1/20372	.....	{ Hairpin resonators }
H01P 1/20381	.....	{ Special shape resonators }
H01P 1/2039	....	{ Galvanic coupling between Input/Output }
H01P 1/205	...	Comb or interdigital filters; Cascaded coaxial cavities ( <a href="#">H01P 1/203</a> takes precedence )
H01P 1/2053	....	{ the coaxial cavity resonators being disposed parall to each other }
H01P 1/2056	....	{ Comb filters or interdigital filters with metallised resonator holes in a dielectric block }
H01P 1/207	..	Hollow waveguide filters ( <a href="#">H01P 1/212</a> , <a href="#">H01P 1/213</a> , <a href="#">H01P 1/215</a> , <a href="#">H01P 1/219</a> take precedence )
H01P 1/208	...	Cascaded cavities; Cascaded resonators inside a hollow waveguide structure ( <a href="#">H01P 1/205</a> takes precedence )
H01P 1/2082	....	{ with multimode resonators ( <a href="#">H01P 1/2086</a> takes precedence ) }
H01P 1/2084	....	{ with dielectric resonators }
H01P 1/2086	.....	{ multimode }
H01P 1/2088	....	{ Integrated in a substrate }
H01P 1/209	...	comprising one or more branching arms or cavities wholly outside the main waveguide
H01P 1/211	...	Waffle-iron filters; Corrugated structures
H01P 1/212	..	suppressing or attenuating harmonic frequencies ( <a href="#">H01P 1/215</a> takes precedence )
H01P 1/213	..	combining or separating two or more different frequencies ( <a href="#">H01P 1/215</a> takes precedence )
H01P 1/2131	...	{ with combining or separating polarisations }
H01P 1/2133	...	{ using coaxial filters ( <a href="#">H01P 1/2131</a> , <a href="#">H01P 1/2136</a> take precedence ) }
H01P 1/2135	...	{ using strip line filters ( <a href="#">H01P 1/2131</a> takes precedence ) }
H01P 1/2136	...	{ using comb or interdigital filters; using cascaded coaxial cavities ( <a href="#">H01P 1/2131</a> , <a href="#">H01P 1/2135</a> take precedence ) }
H01P 1/2138	...	{ using hollow waveguide filters ( <a href="#">H01P 1/2131</a> takes precedence ) }
H01P 1/215	..	using ferromagnetic material
H01P 1/217	...	the ferromagnetic material acting as a tuning element in resonators

- H01P 1/218 . . . the ferromagnetic material acting as a frequency selective coupling element, e.g. YIG-filters
- H01P 1/219 . . . Evanescent mode filters
- H01P 1/22 . . . Attenuating devices ( [dissipative terminating devices H01P 1/26](#) )
- H01P 1/222 . . . { [Waveguide attenuators \( H01P 1/23 takes precedence \)](#) }
- H01P 1/225 . . . { [Coaxial attenuators \( H01P 1/23 takes precedence \)](#) }
- H01P 1/227 . . . { [Strip line attenuators \( H01P 1/23 takes precedence \)](#) }
- H01P 1/23 . . . using ferromagnetic material
- H01P 1/24 . . . Terminating devices
- H01P 1/26 . . . Dissipative terminations
- H01P 1/262 . . . { [the dissipative medium being a liquid or being cooled by a liquid](#) }
- H01P 1/264 . . . { [Waveguide terminations \( H01P 1/262 takes precedence \)](#) }
- H01P 1/266 . . . { [Coaxial terminations \( H01P 1/262 takes precedence \)](#) }
- H01P 1/268 . . . { [Strip line terminations \( H01P 1/262 takes precedence \)](#) }
- H01P 1/28 . . . Short-circuiting plungers ( [coupling devices with variable coupling factor H01P 5/04](#) )
- H01P 1/30 . . . for compensation of, or protection against, temperature or moisture effects; { [for improving power handling capability \( H01P 1/04, H01P 1/08 take precedence \)](#) }
- H01P 1/32 . . . Non-reciprocal transmission devices ( [H01P 1/02 to H01P 1/30 take precedence](#) )
- H01P 1/36 . . . Isolators
- H01P 1/362 . . . { [Edge-guided mode devices](#) }
- H01P 1/365 . . . Resonance absorption isolators
- H01P 1/37 . . . Field displacement isolators
- H01P 1/375 . . . using Faraday rotators
- H01P 1/38 . . . Circulators
- H01P 1/383 . . . Junction circulators, e.g. Y-circulators
- H01P 1/387 . . . . . Strip line circulators
- H01P 1/39 . . . . . Hollow waveguide circulators
- H01P 1/393 . . . using Faraday rotators
- H01P 1/397 . . . using non- reciprocal phase shifters ( [H01P 1/393 takes precedence](#) )
- H01P 3/00 Waveguides; Transmission lines of the waveguide type**
- H01P 3/003 . . . { [Coplanar lines](#) }
- H01P 3/006 . . . { [Conductor backed coplanar waveguides](#) }
- H01P 3/02 . . . with two longitudinal conductors
- H01P 3/023 . . . { [Fin lines; Slot lines](#) }
- H01P 3/026 . . . { [Coplanar striplines \(CPS\)](#) }
- H01P 3/04 . . . Lines formed as Lecher wire pairs
- H01P 3/06 . . . Coaxial lines ( [not suitable for handling frequencies considerably beyond the audio](#) )

range, { coaxial cables in general } [H01B 11/18](#) )

### **NOTE**

This subgroup is only used for documents disclosing typical HF-features of coaxial cables, e.g. propagation of non-TEM-modes, multimoding, oversized coaxial cables, particular cross-section adapted for HF-propagation

- H01P 3/08 . . Microstrips; Strip lines
- H01P 3/081 . . . { Micro-striplines }
- H01P 3/082 . . . . { Multilayer dielectric }
- H01P 3/084 . . . . { Suspended micro-striplines }
- H01P 3/085 . . . { Triplate lines }
- H01P 3/087 . . . . { Suspended triplate lines }
- H01P 3/088 . . . { Stacked transmission lines }
  
- H01P 3/10 . Wire waveguides, i.e. with a single solid longitudinal conductor
  
- H01P 3/12 . Hollow waveguides ( [H01P 3/20](#) takes precedence )
- H01P 3/121 . . { integrated in a substrate }
- H01P 3/122 . . { Dielectric loaded ( not air ) }
- H01P 3/123 . . with a complex or stepped cross-section, e.g. ridged or grooved waveguides ( [H01P 3/14](#) takes precedence )
- H01P 3/127 . . with a circular, elliptic, or parabolic cross-section
- H01P 3/13 . . specially adapted for transmission of the TE<sub>01</sub> circular-electric mode { ( selection, promotion [H01P 1/163](#) ) }
- H01P 3/14 . . flexible
  
- H01P 3/16 . Dielectric waveguides, i.e. without a longitudinal conductor
- H01P 3/165 . . { Non-radiating dielectric waveguides }
  
- H01P 3/18 . built-up from several layers to increase operating surface, i.e. alternately conductive and dielectric layers
  
- H01P 3/20 . Quasi-optical arrangements for guiding a wave, e.g. focusing by dielectric lenses ( quasi-optical devices in general [H01Q 15/00](#) )
  
- H01P 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](#) )
  
- H01P 5/02 . with invariable factor of coupling ( [H01P 5/12](#) takes precedence { choke joints [H01P 1/04](#), [H01P 1/06](#) } )
- H01P 5/022 . . { Transitions between lines of the same kind and shape, but with different dimensions }
- H01P 5/024 . . . { between hollow waveguides }
- H01P 5/026 . . . { between coaxial lines }
- H01P 5/028 . . . { between strip lines }
  
- H01P 5/04 . with variable factor of coupling

- H01P 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](#) )
- H01P 5/082 .. { Transitions between hollow waveguides of different shape, e.g. between a rectangular and a circular waveguide }
- H01P 5/085 .. { Coaxial-line/strip-line transitions }
- H01P 5/087 .. { Transitions to a dielectric waveguide }
- H01P 5/10 .. for coupling balanced with unbalanced lines or devices
- H01P 5/1007 ... { Microstrip transitions to Slotline or finline }
- H01P 5/1015 ... { Coplanar line transitions to Slotline or finline }
- H01P 5/1022 ... { Transitions to dielectric waveguide }
- H01P 5/103 ... Hollow-waveguide/coaxial-line transitions
- H01P 5/107 ... Hollow-waveguide/strip-line transitions
  
- H01P 5/12 . Coupling devices having more than two ports ( [H01P 5/04](#) takes precedence )
- H01P 5/16 .. Conjugate devices, i.e. devices having at least one port decoupled from one other port
- H01P 5/18 ... consisting of two coupled guides, e.g. directional couplers
- H01P 5/181 .... { the guides being hollow waveguides }
- H01P 5/182 ..... { the waveguides being arranged in parallel }
- H01P 5/183 .... { at least one of the guides being a coaxial line }
- H01P 5/184 .... { the guides being strip lines or microstrips }
- H01P 5/185 ..... { Edge coupled lines }
- H01P 5/186 ..... { Lange couplers }
- H01P 5/187 ..... { Broadside coupled lines }
- H01P 5/188 .... { the guides being dielectric waveguides }
- H01P 5/19 ... of the junction type
- H01P 5/20 .... Magic-T junctions
- H01P 5/22 .... Hybrid ring junctions
- H01P 5/222 ..... { 180° rat race hybrid rings }
- H01P 5/225 ..... { 180° reversed phase hybrid rings }
- H01P 5/227 ..... { 90° branch line couplers }

**H01P 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](#) )

- H01P 7/005 . { Helical resonators; Spiral resonators }
- H01P 7/02 . Lecher resonators
- H01P 7/04 . Coaxial resonators
- H01P 7/06 . Cavity resonators

- H01P 7/065 . . { integrated in a substrate }
- H01P 7/08 . Strip line resonators
- H01P 7/082 . . { Microstripline resonators ( [H01P 7/088](#) takes precedence ) }
- H01P 7/084 . . { Triplate line resonators ( [H01P 7/088](#) takes precedence ) }
- H01P 7/086 . . { Coplanar waveguide resonators ( [H01P 7/088](#) takes precedence ) }
- H01P 7/088 . . { Tunable resonators }
- H01P 7/10 . Dielectric resonators
- H01P 7/105 . . { Multimode resonators }
- H01P 9/00** **Delay lines of the waveguide type** ( structurally associated with transit-time tubes and interacting with the discharge therein [H01J 23/24](#) )
- H01P 9/003 . { Delay equalizers }
- H01P 9/006 . { Meander lines }
- H01P 9/02 . Helical lines
- H01P 9/04 . Interdigital lines
- H01P 11/00** **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](#) )
- H01P 11/001 . { Manufacturing waveguides or transmission lines of the waveguide type }
- H01P 11/002 . . { Manufacturing hollow waveguides }
- H01P 11/003 . . { Manufacturing lines with conductors on a substrate, e.g. strip lines, slot lines }
- H01P 11/005 . . { Manufacturing coaxial lines }
- H01P 11/006 . . { Manufacturing dielectric waveguides }
- H01P 11/007 . { Manufacturing frequency-selective devices ( resonators [H01P 11/008](#) ) }
- H01P 11/008 . { Manufacturing resonators }