

**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 <a href="#">H01P 5/04</a> }; resonators <a href="#">H01P 7/00</a> )
H01P 1/2002	.. { Dielectric 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 1/2005	.. { 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 ( <a href="#">dissipative terminating devices H01P 1/26</a> )
H01P 1/222	..	{ Waveguide attenuators ( <a href="#">H01P 1/23</a> takes precedence)}
H01P 1/225	..	{ Coaxial attenuators ( <a href="#">H01P 1/23</a> takes precedence)}
H01P 1/227	..	{ Strip line attenuators ( <a href="#">H01P 1/23</a> 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 ( <a href="#">H01P 1/262</a> takes precedence)}
H01P 1/266	...	{ Coaxial terminations ( <a href="#">H01P 1/262</a> takes precedence)}
H01P 1/268	...	{ Strip line terminations ( <a href="#">H01P 1/262</a> takes precedence)}
H01P 1/28	..	Short-circuiting plungers ( <a href="#">coupling devices with variable coupling factor H01P 5/04</a> )
H01P 1/30	.	for compensation of, or protection against, temperature or moisture effects; { for improving power handling capability ( <a href="#">H01P 1/04</a> , <a href="#">H01P 1/08</a> take precedence)}
H01P 1/32	.	Non-reciprocal transmission devices ( <a href="#">H01P 1/02</a> to <a href="#">H01P 1/30</a> 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 ( <a href="#">H01P 1/393</a> 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 ( <a href="#">H01P 7/088</a> takes precedence)}
H01P 7/084	..	{ Triplate line resonators ( <a href="#">H01P 7/088</a> takes precedence)}
H01P 7/086	..	{ Coplanar waveguide resonators ( <a href="#">H01P 7/088</a> 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 }
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- 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 }