

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 ([H01P 1/212](#), [H01P 1/213](#), [H01P 1/215](#), [H01P 1/219](#) 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 H01P 1/205)
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 (H01P 1/203 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 (H01P 1/212 , H01P 1/213 , H01P 1/215 , H01P 1/219 take precedence)
H01P 1/208	. . .	Cascaded cavities; Cascaded resonators inside a hollow waveguide structure (H01P 1/205 takes precedence)
H01P 1/2082	. . . .	{with multimode resonators (H01P 1/2086 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 (H01P 1/215 takes precedence)
H01P 1/213	. .	combining or separating two or more different frequencies (H01P 1/215 takes precedence)
H01P 1/2131	. . .	{with combining or separating polarisations}
H01P 1/2133	. . .	{using coaxial filters (H01P 1/2131 , H01P 1/2136 take precedence)}
H01P 1/2135	. . .	{using strip line filters (H01P 1/2131 takes precedence)}
H01P 1/2136	. . .	{using comb or interdigital filters; using cascaded coaxial cavities (H01P 1/2131 , H01P 1/2135 take precedence)}
H01P 1/2138	. . .	{using hollow waveguide filters (H01P 1/2131 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

H01P 3/06

(continued)

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 TE₀₁ 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}