CPC  COOPERATIVE PATENT CLASSIFICATION

H  ELECTRICITY
(NOTE omitted)

H01  BASIC ELECTRIC ELEMENTS
(NOTE omitted)

H01Q  ANTENNAS, i.e. RADIO AERIALS  (radiators or antennas for microwave heating  H05B 6/72)

NOTES
1. This subclass covers:
   • in addition to the primary active radiating elements,
     i. secondary devices for absorbing or for modifying the direction or polarisation of waves radiated from antennas, and
     ii. combinations with auxiliary devices such as earthing switches, lead-in devices, and lightning protectors;
   • both transmitting and receiving antennas.
2. This subclass does not cover devices of the waveguide type, such as resonators or lines, not designed as radiating elements, which are covered by subclass H01P.
3. In this subclass, the following expression is used with the meaning indicated:
   • “active radiating element” covers corresponding parts of a receiving antenna.

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  Details of, or arrangements associated with, antennas (arrangements for varying orientation of directional pattern  H01Q 3/00)

NOTES
1. This group covers only:
   • structural details or features of antennas not dependent on electric operation;
   • structural details or features applicable to more than one type of antenna or antenna element.
2. Structural details or features described with reference to, or clearly applicable only to antennas or antenna elements of a particular type are classified in the group appropriate to that type.

1/002  . . . (Protection against seismic waves, thermal radiation or other disturbances, e.g. nuclear explosion; Arrangements for improving the power handling capability of an antenna)
1/005  . . . (Damping of vibrations; Means for reducing wind-induced forces)
1/007  . . . (specially adapted for indoor communication)
1/02  . . . Arrangements for de-icing; Arrangements for drying-out (Arrangements for cooling; Arrangements for preventing corrosion)
1/04  . . . Adaptation for subterranean or subaqueous use
1/06  . . . Means for the lighting or illuminating of antennas, e.g. for purpose of warning
1/08  . . . Means for collapsing antennas or parts thereof (collapsible loop antennas  H01Q 7/02; means for collapsing H-antennas or Yagi antennas  H01Q 19/04)
1/081  . . . (Inflatable antennas)
1/082  . . . (Balloon antennas)
1/084  . . . (Pivotal antennas)
1/085  . . . (Flexible aerials; Whip aerials with a resilient base)
1/087  . . . {Extensible roll-up aerials}
1/088  . . . {Quick-releasable antenna elements}
1/10  . . . Telescopic elements
1/103  . . . {Latching means; ensuring extension or retraction thereof}
1/106  . . . {Means for locking or protecting against unauthorized extraction}
1/12  . . . Supports; Mounting means
1/1207  . . . {for fastening a rigid aerial element}
1/1214  . . . {through a wall}
1/1221  . . . {onto a wall}
1/1228  . . . {on a boom}
1/1235  . . . {Collapsible supports; Means for erecting a rigid antenna}
1/1242  . . . {Rigid masts specially adapted for supporting an aerial}
1/125  . . . {Means for positioning}
1/1257  . . . {using the received signal strength}
1/1264  . . . {Adjusting different parts or elements of an aerial unit}
1/1271  . . . {for mounting on windscreens}
1/1278  . . . {in association with heating wires or layers}
1/1285  . . . {with capacitive feeding through the windscreen}
1/1292  . . . {for mounting on balloons}
1/14  . . . {for wire or other non-rigid radiating elements
1/16  . . . Strainers, spreaders, or spacers
1/18  . . . Means for stabilising antennas on an unstable platform
1/185  . . . {by electronic means}
1/20  . . . Resilient mountings
1/22  . . . by structural association with other equipment or articles
H01Q

1/2208 . . . [associated with components used in interrogation type services, i.e. in systems for information exchange between an interrogator/reader and a tag/transponder, e.g. in Radio Frequency Identification (RFID) systems (methods or arrangements for sensing record carriers, e.g. for reading patterns G06K 7/00; record carrier for use with machines and with at least a part designed to carry digital markings G06K 19/00)]

1/2216 . . . [used in interrogator/reader equipment]

1/2225 . . . [used in active tags, i.e. provided with its own power source or in passive tags, i.e. deriving power from RF signal]

1/2233 . . . [used in consumption-meter devices, e.g. electricity, gas or water meters]

1/2241 . . . [used in or for vehicle tyres]

1/225 . . . [used in level-measurement devices, e.g. for level gauge measurement]

1/2258 . . . [used with computer equipment]

1/2266 . . . [disposed inside the computer]

1/2275 . . . [associated to expansion card or bus, e.g. in PCMCIA, PC cards, Wireless USB]

1/2283 . . . [mounted in or on the surface of a semiconductor substrate as a chip-type antenna or integrated with other components into an IC package]

1/2291 . . . [used in Bluetooth or WI-FI devices of Wireless Local Area Networks (WLAN) (H01Q 1/241 takes precedence; WLAN in general H04W)]

1/24 . . . with receiving set

1/241 . . . [used in mobile communications, e.g. GSM (H01Q 1/247, H01Q 1/248 take precedence)]

1/242 . . . [specially adapted for hand-held use]

1/243 . . . . . . . [with built-in antennas]

1/244 . . . . . . . [extendable from a housing along a given path]

1/245 . . . . . . . [with means for shaping the antenna pattern, e.g. in order to protect user against rf exposure]

1/246 . . . . . . . [specially adapted for base stations]

1/247 . . . . . . . [with frequency mixer, e.g. for direct satellite reception or Doppler radar]

1/248 . . . . . . . [provided with an AC/DC converting device, e.g. rectennas]

1/26 . . . with electric discharge tube

1/27 . . . Adaptation for use in or on movable bodies (H01Q 1/08, H01Q 1/12, H01Q 1/18 take precedence)

1/273 . . . . . . . [Adaptation for carrying or wearing by persons or animals]

1/276 . . . . . . . [for mounting on helmets]

1/28 . . . . . . . Adaptation for use in or on aircraft, missiles, satellites, or balloons

1/281 . . . . . . . [Nose antennas]

1/282 . . . . . . . [Modifying the aerodynamic properties of the vehicle, e.g. projecting type aerials]

1/283 . . . . . . . [Blade, stub antennas]

1/285 . . . . . . . [Aircraft wire antennas (means for steering H01Q 1/30)]

1/286 . . . . . . . [substantially flush mounted with the skin of the craft]

1/287 . . . . . . . [integrated in a wing or a stabiliser]

1/288 . . . . . . . [Satellite antennas]

1/30 . . . . . . . Means for trailing antennas

1/32 . . . . . . . Adaptation for use in or on road or rail vehicles

1/3208 . . . . . . . [characterised by the application wherein the antenna is used]

1/3216 . . . . . . . [where the road or rail vehicle is only used as transportation means]

1/3225 . . . . . . . [Cooperation with the rails or the road]

1/3233 . . . . . . . [particular used as a part of a sensor or in a security system, e.g. for automotive radar, navigation systems]

1/3241 . . . . . . . [particular used in keyless entry systems]

1/325 . . . . . . . [characterised by the location of the antenna on the vehicle]

1/3258 . . . . . . . [using the gutter of the vehicle; Means for clamping a whip aerial on the edge of a part of the vehicle]

1/3266 . . . . . . . [using the mirror of the vehicle]

1/3275 . . . . . . . [mounted on a horizontal surface of the vehicle, e.g. on roof, hood, trunk]

1/3283 . . . . . . . [side-mounted antennas, e.g. bumper-mounted, door-mounted (mounted on windscreens H01Q 1/1271)]

1/3291 . . . . . . . [mounted in or on other locations inside the vehicle or vehicle body]

1/34 . . . . . . . Adaptation for use in or on ships, submarines, buoys or torpedoes (for subaqueous use H01Q 1/04)

1/36 . . . Structural form of radiating elements, e.g. cone, spiral, umbrella; [Particular materials used therewith] (H01Q 1/08, H01Q 1/14 take precedence)

1/362 . . . . . . . [for broadside radiating helical antennas]

1/364 . . . . . . . [using a particular conducting material, e.g. superconductor]

1/366 . . . . . . . [using an ionized gas]

1/368 . . . . . . . [using carbon or carbon composite]

1/38 . . . . . . . formed by a conductive layer on an insulating support [(patch antennas H01Q 9/0407; microstrip dipole antennas H01Q 9/065; microstrip slot antennas H01Q 13/106; transmission line microstrip antennas H01Q 13/206; manufacturing reflecting surfaces using insulating material for supporting the reflecting surface H01Q 15/142)]

1/40 . . . Radiating elements coated with or embedded in protective material

1/405 . . . . . . . [Radome integrated radiating elements]

1/42 . . . Housings not intimately mechanically associated with radiating elements, e.g. radome

1/421 . . . . . . . [Means for correcting aberrations introduced by a radome]

1/422 . . . . . . . [comprising two or more layers of dielectric material (H01Q 1/425 takes precedence)]

1/424 . . . . . . . [comprising a layer of expanded material]

1/425 . . . . . . . [comprising a metallic grid]

1/427 . . . . . . . [Flexible radomes]

1/428 . . . . . . . [Collapsible radomes; rotatable, tiltable radomes]

1/44 . . . . . . . using equipment having another main function to serve additionally as an antenna, e.g. means for giving an antenna an aesthetic aspect (H01Q 1/27 - H01Q 1/34 take precedence)

1/46 . . . . . . . Electric supply lines or communication lines

1/48 . . . . . . . Earthing means; Earth screens; Counterpoises
1/50 . Structural association of antennas with earthing switches, lead-in devices or lightning protectors
1/52 . Means for reducing coupling between antennas; Means for reducing coupling between an antenna and another structure (absorbing means H01Q 17/00)
1/521 . . . [reducing the coupling between adjacent antennas]
1/523 . . . [between antennas of an array]
1/525 . . . [between emitting and receiving antennas]
1/526 . . . [Electromagnetic shields]
1/528 . . . [reducing the re-radiation of a support structure (in a parabolic reflector antenna H01Q 19/023)]

3/00 Arrangements for changing or varying the orientation or the shape of the directional pattern of the waves radiated from an antenna or antenna system (means for positioning H01Q 1/125)
3/005 . . . [using remotely controlled antenna positioning or scanning]
3/01 . varying the shape of the antenna or antenna system
3/02 . using mechanical movement of antenna or antenna system as a whole
3/04 . . . for varying one co-ordinate of the orientation
3/06 . . . over a restricted angle
3/08 . . . for varying two co-ordinates of the orientation
3/10 . . . to produce a conical or spiral scan
3/12 . using mechanical relative movement between primary active elements and secondary devices of antennas or antenna systems
3/14 . . . for varying the relative position of primary active element and a refracting or diffracting device
3/16 . . . for varying relative position of primary active element and a reflecting device
3/18 . . . wherein the primary active element is movable and the reflecting device is fixed
3/20 . . . wherein the primary active element is fixed and the reflecting device is movable
3/22 . . . varying the orientation in accordance with variation of frequency of radiated wave
3/24 . . . varying the orientation by switching energy from one active radiating element to another, e.g. for beam switching
3/242 . . . [Circumferential scanning]
3/245 . . . [in the focal plane of a focussing device]
3/247 . . . [by switching different parts of a primary active element]
3/26 . varying the relative phase or relative amplitude of energisation between two or more active radiating elements; varying the distribution of energy across a radiating aperture (H01Q 3/12, H01Q 3/22, H01Q 3/24 take precedence)
3/2605 . . . [Array of radiating elements provided with a feedback control over the element weights, e.g. adaptive arrays]
3/2611 . . . [Means for null steering; Adaptive interference nulling]
3/2617 . . . . . . [Array of identical elements]
3/2623 . . . . . . [composed of two antennas]
3/2629 . . . . . . [Combination of a main antenna unit with an auxiliary antenna unit]
3/2635 . . . . . . [the auxiliary unit being composed of a plurality of antennas]

3/2641 . . . . . . [being secondary elements, e.g. reactively steered]
3/2647 . . . [Retrodirective arrays]
3/2652 . . . [Self-phasing arrays]
3/2658 . . . [Phased-array focussing structure]
3/2664 . . . [electrically moving the phase centre of a radiating element in the focal plane of a focussing device (switching H01Q 3/245, phased-array feeds H01Q 3/268)]
3/267 . . . [Phased-array testing or checking devices]
3/2676 . . . [Optically controlled phased array]
3/2682 . . . [Time delay steered arrays]
3/2688 . . . [using acoustic or magnetostatic wave devices]
3/2694 . . . [using also variable phase-shifters (H01Q 3/2688 takes precedence)]
3/28 . . . varying the amplitude
3/30 . . . varying the [relative] phase [between the radiating elements of an array (H01Q 3/2605, H01Q 3/2658, H01Q 3/2682, H01Q 3/44 take precedence)]
3/32 . . . by mechanical means
3/34 . . . by electrical means (active lenses or reflecting arrays H01Q 3/46)
3/36 . . . . . . with variable phase-shifters
3/38 . . . . . . the phase-shifters being digital
3/385 . . . . . . [Scan control logics]
3/40 . . . . . . with phasing matrix
3/42 . . . . . . using frequency-mixing ((H01Q 3/2676 takes precedence))
3/44 . . . varying the electric or magnetic characteristics of reflecting, refracting, or diffracting devices associated with the radiating element
3/443 . . . [varying the phase velocity along a leaky transmission line (frequency scanning H01Q 3/22; non-resonant leaky-waveguide or transmission-line aerials H01Q 13/20)]
3/446 . . . [the radiating element being at the centre of one or more rings of auxiliary elements]
3/46 . . . Active lenses or relecting arrays

5/00 Arrangements for simultaneous operation of antennas on two or more different wavebands, e.g. dual-band or multi-band arrangements (combinations of separate active antenna units operating in different wavebands and connected to a common feeder system H01Q 21/30)
5/10 . . . Resonant antennas
5/15 . . . for operation of centre-fed antennas comprising one or more collinear, substantially straight or elongated active elements
5/20 . . . characterised by the operating wavebands
5/22 . . . RF wavebands combined with non-RF wavebands, e.g. infrared or optical
5/25 . . . Ultra-wideband [UWB] systems, e.g. multiple resonance systems; Pulse systems
5/28 . . . Arrangements for establishing polarisation or beam width over two or more different wavebands
5/30 . . . Arrangements for providing operation on different wavebands
5/307 . . . Individual or coupled radiating elements, each element being fed in an unspecified way
5/314 . . . using frequency dependent circuits or components, e.g. trap circuits or capacitors
consisting of conductive active radiating elements more than twice the operating wavelength and Electrically-short antennas having dimensions not perpendicular to the plane of the loop having a directional radiation pattern in a plane current distribution around the loop and

Non-resonant antennas takes precedence )

Screened antennas ( H01Q 7/02 take ), H01Q 7/06 Collapsible antennas; Retractable antennas { with variable reactance for tuning the antenna }

Vertical disposition of the antenna

Two collinear substantially straight active elements; Substantially straight single active elements ( H01Q 9/28 takes precedence) 22 . . . Rigid rod or equivalent tubular element or elements

9/24 . . . Shunt feed arrangements to single active elements, e.g. for delta matching

9/26 . . . with folded element or elements, the folded parts being spaced apart a small fraction of operating wavelength ( resonant loop antennas H01Q 7/00)

9/265 . . . { Open ring dipoles; Circular dipoles} 27 . . . Spiral antennas

28 . . . Conical, cylindrical, cage, strip, gauze, or like elements having an extended radiating surface; Elements comprising two conical surfaces having collinear axes and adjacent apices and fed by two-conductor transmission lines ( waveguide horns or mouths H01Q 13/00; slot antennas H01Q 13/00)

9/285 . . . { Planar dipole ( H01Q 9/065 takes precedence; patch antenna H01Q 9/0407) }, H01Q 9/44 takes precedence)

9/30 . . . with feed to end of elongated active element, e.g. unipole ( H01Q 9/44 takes precedence)

9/32 . . . Vertical arrangement of element ( H01Q 9/40 takes precedence)

9/34 . . . Mast, tower, or like self-supporting or stay-supported antennas

9/36 . . . with top loading

9/38 . . . with counterpoise ( with counterpoise comprising elongated elements coplanar with the active element H01Q 9/44)

9/40 . . . Element having extended radiating surface

9/42 . . . with folded element, the folded parts being spaced apart a small fraction of the operating wavelength

9/43 . . . Scimitar antennas
11/00 Electrically-long antennas having dimensions more than twice the shortest operating wavelength and consisting of conductive active radiating elements (leaky waveguides antennas or slot antennas H01Q 13/000)

11/02 . Non-resonant antennas, e.g. travelling-wave antenna (Yagi antennas H01Q 19/30)

11/04 . with parts bent, folded, shaped, screened or electrically loaded to obtain desired phase relation of radiation from selected sections of the antenna (H01Q 11/06 ~ H01Q 11/10 take precedence)

11/06 . Rhombic antennas; V-antennas

11/08 . Helical antennas

11/083 . [Tapered helical aerials, e.g. conical spiral aerials]

11/086 . [collapsible]

11/10 . Logperiodic antennas (H01Q 11/08 takes precedence)

11/105 . [using a dielectric support]

11/12 . Resonant antennas

11/14 . with parts bent, folded, shaped or screened or with phasing impedances, to obtain desired phase relation of radiation from selected sections of the antenna or to obtain desired polarisation effect (H01Q 11/20 takes precedence)

11/16 . in which the selected sections are collinear

11/18 . in which the selected sections are parallelly spaced

11/20 . V-antennas

13/00 Waveguide horns or mouths; Slot antennas; Leaky-waveguide antennas; Equivalent structures causing radiation along the transmission path of a guided wave

13/02 . Waveguide horns

13/0208 . [Corrugated horns (waveguide mouth antenna with corrugated flange H01Q 13/065; manufacturing details H01Q 13/0283)]

13/0216 . [Dual-depth corrugated horns]

13/0225 . [of non-circular cross-section (H01Q 13/0216 takes precedence)]

13/0233 . [Horns fed by a slotted waveguide array (biconical horns H01Q 13/06)]

13/0241 . [radiating a circularly polarised wave (H01Q 13/0258 takes precedence; polarisation converters H01Q 15/244, in a waveguide H01P 1/17)]

13/025 . [Multimode horn antennas: Horns using higher mode of propagation (H01Q 13/0241 takes precedence; multiple beam H01Q 25/04)]

13/0258 . [Orthomode horns (orthomode transducers H01P 1/161)]

13/0266 . [provided with a flange or a choke]

13/0275 . [Ridged horns (slot-line radiating ends H01Q 13/085)]

13/0283 . [Apparatus or processes specially provided for manufacturing horns]

13/0291 . [for corrugated horns]

13/04 . Biconical horns (biconical dipoles comprising two conical surfaces having collinear axes and adjacent apices and fed by a two-conductor transmission line H01Q 9/28)

13/06 . Waveguide mouths (horns H01Q 13/02)

13/065 . [provided with a flange or a choke]

13/08 . Radiating ends of two-conductor microwave transmission lines, e.g. of coaxial lines, of microstrip lines

13/085 . [Slot-line radiating ends]

13/10 . Resonant slot antennas

13/103 . [with variable reactance for tuning the antenna (tuning resonant circuits H03J)]

13/106 . [Microstrip slot antennas (patch antenna elements H01Q 9/0407)]

13/12 . Longitudinally slotted cylinder antennas; Equivalent structures

13/14 . . . Skeleton cylinder antennas

13/16 . Folded slot antennas

13/18 . . . the slot being backed by, or formed in boundary wall of, a resonant cavity (longitudinally slotted cylinder H01Q 13/12) ; Open cavity antennas

13/20 . Non-resonant leaky-waveguide or transmission-line antennas; Equivalent structures causing radiation along the transmission path of a guided wave

13/203 . [Leaky coaxial lines]

13/206 . [Microstrip transmission line antennas]

13/22 . Longitudinal slot in boundary wall of waveguide or transmission line (H01Q 13/203 takes precedence)

13/24 . . . constituted by a dielectric or ferromagnetic rod or pipe (H01Q 13/28 takes precedence)

13/26 . . . Surface waveguide constituted by a single conductor, e.g. strip conductor

13/28 . . . comprising elements constituting electric discontinuities and spaced in direction of wave propagation, e.g. dielectric elements or conductive elements forming artificial dielectric

15/00 Devices for reflection, refraction, diffraction or polarisation of waves radiated from an antenna, e.g. quasi-optical devices (variable for purpose of altering directivity H01Q 3/00; arrangements of such devices for guiding waves H01P 3/20; variable for purpose of modulation H03C 7/02)

15/0006 . [Devices acting selectively as reflecting surface, as diffracting or as refracting device, e.g. frequency filtering or angular spatial filtering devices (H01Q 15/12, H01Q 15/22, H01Q 15/24 take precedence)]

15/0013 . [said selective devices working as frequency-selective reflecting surfaces, e.g. FSS, dichroic plates, surfaces being partly transmissive and reflective]

15/002 . . . [said selective devices being reconfigurable or tunable, e.g. using switches or diodes]

15/0026 . . . [said selective devices having a stacked geometry or having multiple layers]

15/0033 . . . [used for beam splitting or combining, e.g. acting as a quasi-optical multiplexer (H01Q 19/191 and H01Q 19/195 take precedence)]

15/004 . . . [using superconducting materials or magnetised substrates]
Combination of primary active antenna elements and units with secondary devices, e.g., with quasi-optical devices, for giving antenna a desired directional characteristic. *Collapsible reflectors*

- Having a fractal shape
- Refracting or diffracting devices, e.g., lens, prism
- Comprising wave-guiding channel or channels bounded by effective conductive surfaces substantially perpendicular to the electric vector of the wave, e.g., parallel-plate waveguide lens
- Comprising plurality of wave-guiding channels of different length
- Formed of solid dielectric material
- Comprising three-dimensional array of impedance discontinuities, e.g., holes in conductive surfaces or conductive discs forming artificial dielectric
- Functioning also as polarisation filter
- Reflecting surfaces: Equivalent structures
- (Apparatus or processes specially adapted for manufacturing reflecting surfaces)
- Using insulating material for supporting the reflecting surface
- (With a honeycomb, cellular or foamed sandwich structure)
- Comprising a plurality of reflecting particles, e.g., radar chaff (missiles of the signal type provided with means for disseminating radar-reflecting chaff F42B 12/70)
- Provided with means for controlling or monitoring the shape of the reflecting surface (for scanning H01Q 3/01: aerials or aerial systems providing multiple beamwidths H01Q 25/002)
- With means for varying the reflecting properties (H01Q 15/147 takes precedence)
- Curved in two dimensions, e.g., paraboloidal
- Collapsible reflectors
- Composed of a plurality of rigid panels
- Inflatable
- Composed of a plurality of rigid panels (collapsible H01Q 15/161)
- Sector shaped
- Comprising a gap between adjacent panels or group of panels, e.g., stepped reflectors
- Mesh reflectors mounted on a non-conductive frame
- Comprising plurality of mutually inclined plane surfaces, e.g., corner reflector (H01Q 15/16 takes precedence)

Collapsible reflectors

- Functioning also as polarisation filter

Combination of reflecting surfaces with refracting or diffracting devices

- Polarising devices; Polarisation filters
- (H01Q 15/12, H01Q 15/22 take precedence)
- (Polarisation converters)
- Converting a linear polarised wave into a circular polarised wave (guided wave H01P 1/17)
- (Rotating the plane of polarisation of a linear polarised wave (guided wave H01P 1/165))
- Using a reflecting surface, e.g., twist reflector (combination with a polarisation filter in dual reflector antennas H01Q 19/195)

17/00 Devices for absorbing waves radiated from an antenna; Combinations of such devices with active antenna elements or systems

- For modifying the directional characteristic of an aerial
- Using short elongated elements as dissipative material, e.g., metallic threads or flake-like particles
- Using non-directional dissipative particles, e.g., ferrite powders (H01Q 17/005 takes precedence; flake-like H01Q 17/002)
- Using woven or wound filaments; impregnated nets or clothes
- With means for controlling the absorption
- (With a particular shape (H01Q 17/007 takes precedence))

19/00 Combinations of primary active antenna elements and units with secondary devices, e.g., with quasi-optical devices, for giving antenna a desired directional characteristic. *(Combination of horns with slotted waveguide array H01Q 13/023/33)*

- Patch antenna using one or more coplanar parasitic elements
- Details (fastening of an element on a boom H010 1/1228)
- Means for reducing undesirable effects
- For reducing the edge scattering of reflectors
- For reducing the scattering of mounting structures, e.g., of the struts
- For optimizing the matching of the primary feed, e.g., vertex plates
- For reducing the primary feed spill-over
- For compensating or reducing aperture blockage (offset feeding H01Q 19/132, H01Q 19/192)
- For reducing the cross polarisation
- Means for collapsing H-antennas or Yagi antennas
- Using refracting or diffracting devices, e.g., lens (radome H01Q 1/42)
- For focusing
- [Zone plate type antennas](H01Q 19/067)
- Using a hologram
- For modifying the radiation pattern of a radiating horn in which it is located ([corrugated horns H01Q 13/023/33]; producing a circular polarisation H01Q 13/024/14)]
19/09 . . . wherein the primary active element is coated with or embedded in a dielectric or magnetic material (protective material H01Q 1/40; varying the electric or magnetic characteristics of refracting or diffracting devices H01Q 3/44)

19/10 . . . using reflecting surfaces

19/102 . . . [wherein the surfaces are of convex toroidal shape (biconical horns H01Q 13/04)]

19/104 . . . [using a substantially flat reflector for deflecting the radiated beam, e.g. perisicopic antennas (perisopic fed Cassegrain antennas H01Q 19/191; passive relays H04B 7/145)]

19/106 . . . [using two or more intersecting plane surfaces, e.g. corner reflector antennas]

19/108 . . . [Combination of a dipole with a plane reflecting surface (H01Q 19/106 takes precedence; strip line H01Q 9/065)]

19/12 . . . wherein the surfaces are concave (H01Q 19/18 takes precedence)

19/13 . . . the primary radiating source being a single radiating element, e.g. a dipole, a slot, a waveguide termination (H01Q 19/15 takes precedence)

19/132 . . . [Horn reflector antennas; Off-set feeding]

19/134 . . . [Rear-feeding; Splash plate feeds]

19/136 . . . [cross-polarised]

19/138 . . . [Parallel-plate feeds, e.g. pill-box, cheese aerials]

19/15 . . . the primary radiating source being a line source, e.g. leaky waveguide antennas

19/17 . . . the primary radiating source comprising two or more radiating elements (H01Q 19/15, H01Q 25/00 take precedence)

19/175 . . . [arrayed along the focal line of a cylindrical focusing surface]

19/18 . . . having two or more spaced reflecting surfaces (H01Q 19/20 takes precedence)

19/185 . . . wherein the surfaces are plane

19/19 . . . comprising one main concave reflecting surface associated with an auxiliary reflecting surface

19/191 . . . [wherein the primary active element uses one or more deflecting surfaces, e.g. beam waveguide feeds]

19/192 . . . [with dual offset reflectors]

19/193 . . . [with feed supported subreflector (splash plate feeds H01Q 19/134)]

19/195 . . . wherein a reflecting surface acts also as a polarisation filter or a polarising device

19/20 . . Producing pencil beam by two cylindrical focusing devices with their focal lines orthogonally disposed

19/22 . . using a secondary device in the form of a single substantially straight conductive element

19/24 . . the primary active element being centre-fed and substantially straight, e.g. H-antenna

19/26 . . the primary active element being end-fed and elongated

19/28 . . using a secondary device in the form of two or more substantially straight conductive elements (log-periodic antennas H01Q 11/10; constituting a reflecting surface H01Q 19/10)

19/30 . . the primary active element being centre-fed and substantially straight, e.g. Yagi antenna

WARNING

Group H01Q 19/30 is incomplete pending reclassification of documents from group H01Q 21/12.

Groups H01Q 21/12 and H01Q 19/30 should be considered in order to perform a complete search.

19/32 . . the primary active element being end-fed and elongated

21/00 Antenna arrays or systems (arrangements for changing or varying the orientation or the shape of the directional pattern of the waves radiated from an antenna or antenna system H01Q 3/00)

NOTE

This group includes:

- arrays comprising two or more individually energised similar active aerial units spaced apart;
- combinations of different types of active aerials or arrays;
- combinations of substantially independent non-interacting active aerials or arrays.

21/0006 . . [Particular feeding systems]

21/0012 . . [Radial guide fed arrays]

21/0018 . . [Space-fed arrays]

21/0025 . . [Modular arrays]

21/0031 . . [Parallel-plate fed arrays; Lens-fed arrays (multibeam arrays H01Q 25/008)]

21/0037 . . [linear waveguide fed arrays]

21/0043 . . [Slotted waveguides (combination with horns H01Q 13/023)]

21/005 . . . [Slotted waveguides arrays]

21/0056 . . . [Conically or cylindrically arrayed]

21/0062 . . . [the slots being disposed around the feeding waveguide]

21/0068 . . . [Dielectric waveguide fed arrays]

21/0075 . . . [Stripline fed arrays (H01Q 21/065 takes precedence)]

21/0081 . . . [using suspended striplines]

21/0087 . . [Apparatus or processes specially adapted for manufacturing antenna arrays (manufacturing waveguides H01P 11/00)]

21/0093 . . [Monolithic arrays]

21/006 . . Arrays of individually energised antenna units similarly polarised and spaced apart

21/061 . . . [Two dimensional planar arrays]

21/062 . . . [using dipole aerials; (H01Q 21/067, H01Q 21/068 take precedence)]

21/064 . . . [using horn or slot aerials (slotted waveguides arrays H01Q 21/005)]

21/065 . . . [Patch antenna array]

21/067 . . . [using endfire radiating aerial units transverse to the plane of the array]

21/068 . . . [using parallel coplanar travelling wave or leaky wave aerial units (H01Q 21/065 takes precedence)]

21/08 . . . the units being spaced along or adjacent to a rectilineal path ([waveguide fed H01Q 21/0037])
Collinear arrangements of substantially straight elongated conductive units

Parallel arrangements of substantially straight elongated conductive units (travelling-wave antennas comprising transmission line loaded with transverse elements H01Q 11/02; Yagi antennas H01Q 19/30)

**WARNING**

Group H01Q 21/12 is impacted by reclassification into group H01Q 19/30. Groups H01Q 21/12 and H01Q 19/30 should be considered in order to perform a complete search.

Adcock antennas

U-type

H-type

the units being spaced along or adjacent to a curvilinear path (slotted waveguide arrays H01Q 21/005; circularly or helically slotted waveguides H01Q 21/0062)

[providing an omnidirectional coverage (turnstile aerials H01Q 21/26)]

Antenna units of the array energised non-uniformly in amplitude or phase, e.g. tapered array or binomial array

[Finite focus antenna arrays]

Combinations of antenna units polarised in different directions for transmitting or receiving circularly and elliptically polarised waves or waves linearly polarised in any direction (circularly polarised patch antennas H01Q 9/0428; circularly polarised horns H01Q 13/0241; cross-polarised horns H01Q 13/0258; polarisation converters H01Q 15/242; cross-polarised rear feeds H01Q 19/136; crossed polarisation dual antenna H01Q 25/001)

(provided with means for varying the polarisation (polarising devices H01Q 15/24; tracking by comparing linear polarisation compounds G01S 3/146; reducing depolarisation effects H04B 7/100 polarisation diversity H04B 7/10))

Turnstile or like antennas comprising arrangements of three or more elongated elements disposed radially and symmetrically in a horizontal plane about a common centre.

Combinations of substantially independent non-interacting antenna units or systems [(multiple beam H01Q 25/00)]

Combinations of different interacting antenna units for giving a desired directional characteristic (H01Q 25/00 takes precedence)

{one unit or more being an array of identical aerial elements (adaptive arrays H01Q 3/2605)}

{Multiplicative arrays}

Combinations of separate antenna units operating in different wavebands and connected to a common feeder system

Antennas with active circuits or circuit elements integrated within them or attached to them

**NOTES**

1. This group covers only such combinations in which the type of antenna or antenna element is immaterial.

2. Combinations with a particular type of antenna are classified in the group appropriate to that type.

Antennas or antenna systems providing at least two radiating patterns (arrangements for changing or varying the orientation or the shape of the directional pattern H01Q 3/00)

{Crossed polarisation dual antennas (orthomode horns H01Q 13/0258; cross-polarised rear feeds H01Q 19/136; orthomode transducers H01P 1/161)}

{providing at least two patterns of different beamwidth; Variable beamwidth antennas}

{providing two or four symmetrical beams for Janus application}

{providing two patterns of opposite direction; back to back antennas (H01Q 25/004 takes precedence)}

{using two or more primary active elements in the focal region of a focusing device (for operation on different wavebands H01Q 5/22)}

{Lens fed multibeam arrays}

providing sum and difference patterns (H01Q 25/04 takes precedence)

Multimode antennas ((corrugated horns H01Q 13/0208))