SECTION H — ELECTRICITY

H04 ELECTRIC COMMUNICATION TECHNIQUE

Note(s)

This class covers electrical communication systems with propagation paths employing beams of corpuscular radiation, acoustic waves or electromagnetic waves, e.g. radio or optical communication.

H04B **TRANSMISSION** (transmission systems for measured values, control or similar signals G08C; speech analysis or synthesis G10L; coding, decoding or code conversion, in general H03M; broadcast communication H04H; multiplex systems H04J; secret communication H04K; transmission of digital information H04L; wireless communication networks H04W) **[4]**

Note(s)

This subclass covers the transmission of information-carrying signals, the transmission being independent of the nature of the information, and includes monitoring and testing arrangements and the suppression and limitation of noise and interference.

Subclass index

1/00 **Details of transmission systems, not covered by a single one of groups H04B 3/00-H04B 13/00; Details of transmission systems not characterised by the medium used for transmission** (tuning resonant circuits H03J) **[4]**

1/02 • Transmitters (spatial arrangements of component circuits in radio pills for living beings A61B 5/07)

1/03 • • Constructional details, e.g. casings, housings **[2]**

1/034 • • • Portable transmitters **[2]**

1/036 • • • Cooling arrangements (cooling transformers H01F 27/08; cooling discharge tubes H01J 7/24, H01J 19/74) **[2]**

1/04 • • Circuits (of television transmitters H04N 5/38)

1/06 • Receivers (control of amplification H03G; television receivers H04N 5/44, H04N 5/64)

1/08 • • Constructional details, e.g. cabinet

1/10 • • Means associated with receiver for limiting or suppressing noise or interference

1/12 • • • Neutralising, balancing, or compensation arrangements

1/14 • • • Automatic detuning arrangements

1/16 • • Circuits

1/18 • • • Input circuits, e.g. for coupling to an aerial or a transmission line (input circuits for amplifiers in general H03F; coupling networks between aerials or lines and receivers independent of the nature of the receiver H03H)

1/20 • • • for coupling gramophone pick-up, recorder output, or microphone to receiver

1/22 • • • for receivers in which no local oscillation is generated

1/24 • • • • the receiver comprising at least one semiconductor device having three or more electrodes

1/26 • • • for superheterodyne receivers (multiple frequency-changing H03D 7/16)

1/28 • • • • the receiver comprising at least one semiconductor device having three or more electrodes

1/30 • • • for homodyne or synchrodyne receivers (demodulator circuits H03D 1/22)

1/38 • Transceivers, i.e. devices in which transmitter and receiver form a structural unit and in which at least one part is used for functions of transmitting and receiving

1/40 • • Circuits

1/44 • • • Transmit/receive switching (in radar systems G01S; tubes therefor H01J 17/64; waveguide switches H01P 1/10) **[2]**

1/46 • • • • by voice-frequency signals; by pilot signals

1/48 • • • • in circuit for connecting transmitter and receiver to a common transmission path, e.g. by energy of transmitter

1/50 • • • using different frequencies for the two directions of communication

1/52 • • • • Hybrid arrangements, i.e. for transition from single-path two-way transmission to single transmission on each of two paths, or vice versa

1/54 • • • using the same frequency for both directions of communication (H04B 1/44 takes precedence)

1/56 • • • • with provision for simultaneous communication in both directions

1/58 • • • • Hybrid arrangements, i.e. for transition from single-path two-way transmission to single transmission on each of two paths, or vice versa

1/59 • Responders; Transponders (relay systems H04B 7/14)

1/60 • Supervising unattended repeaters

1/62 • for providing a predistortion of the signal in the transmitter and corresponding correction in the receiver, e.g. for improving the signal/noise ratio

1/64 • • Volume compression or expansion arrangements

1/66 • for reducing bandwidth of signals (in speech analysis-synthesis techniques G10L 19/00; in pictorial communication systems H04N); for improving efficiency of transmission (H04B 1/68 takes precedence)

1/68 • for wholly or partially suppressing the carrier or one side band **[4]**

1/69 • *Spread spectrum techniques **[6, 2011.01]***

Note(s) [2011.01]

When classifying in this group, any aspect of code division multiplexing, which is considered to represent information of interest for search, may also be classified in group H04J 13/00.

1/692 • • *Hybrid techniques using combinations of two or more spread spectrum techniques **[2011.01]***

1/707 • • *using direct sequence modulation **[6, 2011.01]***

1/7073 • • • *Synchronisation aspects **[2011.01]***

1/7075 • • • • *with code phase acquisition **[2011.01]***

1/7077 • • • • • *Multi-step acquisition, e.g. multi-dwell, coarse-fine or validation **[2011.01]***

1/708 • • • • • *Parallel implementation **[2011.01]***

1/7083 • • • • *Cell search, e.g. using a three-step approach **[2011.01]***

1/7085 • • • • *using a code tracking loop, e.g. a delay-locked loop **[2011.01]***

1/7087 • • • • *Carrier synchronisation aspects **[2011.01]***

1/709 • • • *Correlator structure **[2011.01]***

1/7093 • • • • *Matched filter type **[2011.01]***

1/7095 • • • • *Sliding correlator type **[2011.01]***

1/7097 • • • *Interference-related aspects **[2011.01]***

1/71 • • • • *the interference being narrowband interference **[2011.01]***

1/7103 • • • • *the interference being multiple access interference **[2011.01]***

1/7105 • • • • • *Joint detection techniques, e.g. linear detectors **[2011.01]***

1/7107 • • • • • *Subtractive interference cancellation **[2011.01]***

1/711 • • • • *the interference being multi-path interference **[2011.01]***

1/7113 • • • • • *Determination of path profile **[2011.01]***

1/7115 • • • • • *Constructive combining of multi-path signals, i.e. RAKE receivers **[2011.01]***

1/7117 • • • • • • *Selection, re-selection, allocation or re-allocation of paths to fingers, e.g. timing offset control of allocated fingers **[2011.01]***

1/712 • • • • • • *Weighting of fingers for combining, e.g. amplitude control or phase rotation using an inner loop **[2011.01]***

1/713 • • *using frequency hopping **[6, 2011.01]***

1/7136 • • • *Arrangements for generation of hop frequencies, e.g. using a bank of frequency sources, using continuous tuning or using a transform **[2011.01]***

1/7143 • • • *Arrangements for generation of hop patterns **[2011.01]***

1/715 • • • *Interference-related aspects **[2011.01]***

1/7156 • • • *Arrangements for sequence synchronisation **[2011.01]***

1/7163 • • *using impulse radio **[2011.01]***

1/717 • • • *Pulse-related aspects **[2011.01]***

1/7176 • • • *Data mapping, e.g. modulation **[2011.01]***

1/7183 • • • *Synchronisation **[2011.01]***

1/719 • • • *Interference-related aspects **[2011.01]***

1/72 • Circuits or components for simulating aerials, e.g. dummy aerial (dissipative waveguide terminations H01P 1/26)

1/74 • for increasing reliability, e.g. using redundant or spare channels or apparatus **[3]**

1/76 • Pilot transmitters or receivers for control of transmission or for equalising **[3]**

3/00 **Line transmission systems** (combined with near-field transmission systems H04B 5/00; constructional features of cables H01B 11/00)

3/02 • Details

3/03 • • Hybrid circuits (for transceivers H04B 1/52, H04B 1/58; hybrid junctions of the waveguide type H01P 5/16) **[3]**

3/04 • • Control of transmission; Equalising (control of amplification in general H03G)

3/06 • • • by the transmitted signal

3/08 • • • • in negative-feedback path of line amplifier

3/10 • • • by pilot signal

3/11 • • • • using pilot wire (H04B 3/12 take precedence) **[3]**

3/12 • • • • in negative-feedback path of line amplifier

3/14 • • • characterised by the equalising network used

3/16 • • • characterised by the negative-impedance network used

3/18 • • • • wherein the network comprises semiconductor devices

3/20 • • Reducing echo effects or singing; Opening or closing transmitting path; Conditioning for transmission in one direction or the other

3/21 • • • using a set of bandfilters **[3]**

3/23 • • • using a replica of transmitted signal in the time domain, e.g. echo cancellers **[3]**

3/26 • • Improving frequency characteristic by the use of loading coils (loading coils per se H01F 17/08)

3/28 • • Reducing interference caused by currents induced in cable sheathing or armouring

3/30 • • Reducing interference caused by unbalance current in a normally balanced line

3/32 • • Reducing cross-talk, e.g. by compensating

3/34 • • • by systematic interconnection of lengths of cable during laying; by addition of balancing components to cable during laying

3/36 • • Repeater circuits (H04B 3/58 takes precedence; amplifiers therefor H03F)

3/38 • • • for signals in two different frequency ranges transmitted in opposite directions over the same transmission path
3/40 • • Artificial lines; Networks simulating a line of certain length
3/42 • • Circuits for by-passing of ringing signals
3/44 • • Arrangements for feeding power to a repeater along the transmission line
3/46 • • Monitoring; Testing
3/48 • • • Testing attenuation
3/50 • Systems for transmission between fixed stations via two-conductor transmission lines (H04B 3/54 takes precedence)
3/52 • Systems for transmission between fixed stations via waveguides
3/54 • Systems for transmission via power distribution lines (in alarm signalling systems G08B 25/06; remote indication of power network conditions, remote control of switching means in a power distribution network H02J 13/00)
3/56 • • Circuits for coupling, blocking, or by-passing of signals
3/58 • • Repeater circuits (amplifiers therefor H03F)
3/60 • Systems for communication between relatively movable stations, e.g. for communication with lift (H04B 3/54 takes precedence)

5/00 Near-field transmission systems, e.g. inductive loop type
5/02 • using transceiver
5/04 • Calling systems, e.g. paging system
5/06 • using a portable transmitter associated with a microphone

7/00 Radio transmission systems, i.e. using radiation field (H04B 10/00, H04B 15/00 take precedence)
7/005 • Control of transmission; Equalising **[3]**
7/01 • Reducing phase shift **[3]**
7/015 • Reducing echo effects **[3]**
7/02 • Diversity systems (for direction finding G01S 3/72; aerial arrays or systems H01Q)
7/04 • • using a plurality of spaced independent aerials
7/06 • • • at transmitting station
7/08 • • • at receiving station
7/10 • • using a single aerial system characterised by its polarisation or directive properties, e.g. polarisation diversity, direction diversity
7/12 • • Frequency-diversity systems
7/14 • Relay systems (interrogator-responder radar systems G01S 13/74) **[2]**
7/145 • • Passive relay systems **[2]**
7/15 • • Active relay systems **[2]**
7/155 • • • Ground-based stations (H04B 7/204 takes precedence) **[2, 5]**
7/165 • • • • employing angle modulation **[2]**
7/17 • • • • employing pulse modulation, e.g. pulse code modulation **[2]**
7/185 • • • Space-based or airborne stations (H04B 7/204 takes precedence) **[2, 5]**
7/19 • • • • Earth-synchronous stations **[2]**
7/195 • • • • Non-synchronous stations **[2]**
7/204 • • • Multiple access **[5]**
7/208 • • • • Frequency-division multiple access **[5]**
7/212 • • • • Time-division multiple access **[5]**
7/216 • • • • Code-division or spread-spectrum multiple access (spread spectrum techniques in general H04B 1/69) **[5]**
7/22 • Scatter propagation systems
7/24 • for communication between two or more posts (wireless communication networks H04W) **[2]**
7/26 • • at least one of which is mobile **[2]**

10/00 Transmission systems employing beams of corpuscular radiation, or electromagnetic waves other than radio waves, e.g. light, infra-red (optical coupling, mixing or splitting G02B; light guides G02B 6/00; switching, modulation, demodulation of light beams G02B, G02F; devices or arrangements for the control, e.g. modulation, of light beams G02F 1/00; devices or arrangements for demodulating light, transferring the modulation or changing the frequency of light G02F 2/00; optical multiplex systems H04J 14/00) **[5]**
10/02 • Details **[5]**
10/04 • • Transmitters **[5]**
10/06 • • Receivers **[5]**
10/08 • • Equipment for monitoring, testing or fault measuring **[5]**
10/10 • Transmission through free space, e.g. through the atmosphere (H04B 10/22, H04B 10/24, H04B 10/30 take precedence) **[5, 7]**
10/105 • • specially adapted for satellite links **[6]**
10/12 • Transmission through light guides, e.g. optical fibres (H04B 10/22, H04B 10/24, H04B 10/30 take precedence) **[5, 7]**
10/13 • • using multimodal transmission **[6]**
10/135 • • using single mode transmission **[6]**
10/14 • • Terminal stations **[5]**
10/142 • • • Coherent homodyne or heterodyne systems **[6]**
10/145 • • • • Transmitters **[6]**
10/148 • • • • Receivers **[6]**
10/152 • • • Non-coherent direct-detection systems **[6]**
10/155 • • • • Transmitters **[6]**
10/158 • • • • Receivers **[6]**
10/16 • • Repeaters **[5]**
10/17 • • • in which processing or amplification is carried out without conversion of the signal from optical form **[6]**
10/18 • • Arrangements for reducing or eliminating distortion or dispersion, e.g. equalisers **[5]**
10/20 • • Arrangements for networking, e.g. bus or star coupling **[5]**
10/207 • • • using a star-type coupler **[6]**
10/213 • • • using a T-type coupler **[6]**
10/22 • Transmission between two stations which are mobile relative to each other (H04B 10/30 takes precedence) **[5, 7]**
10/24 • Bidirectional transmission (H04B 10/22, H04B 10/30 take precedence) **[5, 7]**
10/26 • • using a single light source for both stations involved **[6]**
10/28 • • using a single device as a light source or a light receiver **[6]**
10/30 • Transmission systems employing beams of corpuscular radiation (arrangements for handling beams of corpuscular radiation, e.g. focusing, moderating, G21K 1/00) **[7]**

11/00 Transmission systems employing ultrasonic, sonic or infrasonic waves

13/00 **Transmission systems characterised by the medium used for transmission, not provided for in groups H04B 3/00-H04B 11/00**

13/02 • Transmission systems in which the medium consists of the earth or a large mass of water thereon, e.g. earth telegraphy (line transmission systems with earth or water return H04B 3/00)

14/00 **Transmission systems not characterised by the medium used for transmission** (details thereof H04B 1/00) **[4]**

14/02 • characterised by the use of pulse modulation (in radio transmission relays H04B 7/17) **[4]**

14/04 • • using pulse code modulation (analogue/digital or digital/analogue conversion H03M 1/00) **[4]**

14/06 • • using differential modulation, e.g. delta modulation (conversion of analogue values to or from differential modulation H03M 3/00) **[4]**

14/08 • characterised by the use of a sub-carrier **[4]**

15/00 **Suppression or limitation of noise or interference** (by means associated with receiver H04B 1/10)

15/02 • Reducing interference from electric apparatus by means located at or near the interfering apparatus (structural association with dynamo-electric machines H02K 11/00; screening H05K 9/00)

15/04 • • the interference being caused by substantially sinusoidal oscillations, e.g. in a receiver, in a tape-recorder (reducing parasitic oscillations H03B, H03F)

15/06 • • • by local oscillators of receivers

17/00 **Monitoring; Testing [2]**

17/02 • of relay systems **[2]**

H04H **BROADCAST COMMUNICATION** (multiplex communication H04J; pictorial communication aspectsof broadcast systems H04N)

Note(s)

1. In this subclass, the following terms or expressions are used with the meaning indicated:
   - "broadcast" is simultaneous distribution of identical signals to plural receiving stations. The term "broadcast" does not include distribution toreceiving stations which is controlled by requests or responses from the receiving stations;
   - "broadcast information" covers all kinds of information distributed by broadcast systems;
   - "broadcast-related information" is information required by services provided via broadcast systems, other than broadcast information;
   - "broadcast time" is a time when particular broadcast information exists and is available;
   - "broadcast channel" is a channel via which broadcast information is distributed, e.g. carrier waves, time slots, cables or wireless broadcast service areas;
   - "broadcast space" is either a set of broadcast channels in which particular broadcast information exists and is available or a geographical area determined by the set of broadcast channels;
   - "broadcast space-time" is space-time determined by broadcast space and broadcast time in which particular broadcast information exists and is available;
   - "broadcast system" is a system which consists of transmitter, transponder and receiver for broadcast;
   - "broadcast-related system" is a system which is directly affected by generation, broadcast, reception or use of broadcast information;
   - "broadcast service" is a service directly provided by a broadcast system, i.e. distribution service of broadcast information;
   - "broadcast-related service" is a service provided by broadcast-related systems;
   - "A with a direct linkage to B" means that A directly affects B or that A is directly affected by B.
2. In this subclass, multi-aspect classification is applied, so that subject matter characterised by aspects covered by more than one of its groups, which is considered to represent information of interest for search, may also be classified in each of those groups.

20/00 **Arrangements for broadcast or for distribution combined with broadcast [2008.01]**

20/02 • Arrangements for relaying broadcast information **[2008.01]**

20/04 • • from field pickup units [FPU] **[2008.01]**

20/06 • • among broadcast stations **[2008.01]**

20/08 • • among terminal devices **[2008.01]**

20/10 • Arrangements for replacing or switching information during the broadcast or duringthe distribution **[2008.01]**

20/12 • Arrangements for monitoring, testing or troubleshooting **[2008.01]**

20/14 • • for monitoring programmes **[2008.01]**

20/16 • Arrangements for broadcast or distribution of identical information repeatedly **[2008.01]**

20/18 • Arrangements for synchronising broadcast or distribution via plural systems **[2008.01]**

20/20 • Arrangements for broadcast or distribution of identical information via plural systems **[2008.01]**

20/22 • • Arrangements for broadcast of identical information via plural broadcast systems **[2008.01]**

20/24 • • Arrangements for distribution of identical information via broadcast system and non-broadcast system **[2008.01]**

20/26 • Arrangements for switching distribution systems **[2008.01]**

20/28 • Arrangements for simultaneous broadcast of plural pieces of information **[2008.01]**

20/30 • • by a single channel **[2008.01]**

20/31 • • • using in-band signals, e.g. subsonic or cue signal **[2008.01]**

20/33 • • by plural channels **[2008.01]**

20/34 • • • using an out-of-band subcarrier signal **[2008.01]**

20/36 • • for AM broadcasts **[2008.01]**

20/38 • Arrangements for distribution where lower stations, e.g. receivers, interact with the broadcast **[2008.01]**

20/40 • Arrangements for broadcast specially adapted for accumulation-type receivers **[2008.01]**

20/42 • Arrangements for resource management **[2008.01]**
20/44 • Arrangements characterised by circuits or components specially adapted for broadcast **[2008.01]**
20/46 • • specially adapted for broadcast systems covered by groups H04H 20/53-H04H 20/86 **[2008.01]**
20/47 • • • specially adapted for stereophonic broadcast systems **[2008.01]**
20/48 • • • • forFM stereophonic broadcast systems **[2008.01]**
20/49 • • • • forAM stereophonic broadcast systems **[2008.01]**
20/51 • • • specially adapted for satellite broadcast systems **[2008.01]**
20/53 • Arrangements specially adapted for specific applications, e.g. for traffic information or for mobile receivers **[2008.01]**
20/55 • • for traffic information **[2008.01]**
20/57 • • for mobile receivers **[2008.01]**
20/59 • • for emergency or urgency **[2008.01]**
20/61 • • for local area broadcast, e.g. instore broadcast **[2008.01]**
20/62 • • • for transportation systems, e.g. in vehicles **[2008.01]**
20/63 • • • to plural spots in a confined site, e.g. MATV [Master Antenna Television] **[2008.01]**
20/65 • Arrangements characterised by transmission systems for broadcast **[2008.01]**
20/67 • • Common-wave systems, i.e. using separate transmitters operating on substantially the same frequency **[2008.01]**
20/69 • • Optical systems **[2008.01]**
20/71 • • Wireless systems **[2008.01]**
20/72 • • • of terrestrial networks **[2008.01]**
20/74 • • • of satellite networks **[2008.01]**
20/76 • • Wired systems **[2008.01]**
20/77 • • • using carrier waves **[2008.01]**
20/78 • • • • CATV [Community Antenna Television] systems **[2008.01]**
20/79 • • • • • using downlink of the CATV systems, e.g. audio broadcast via CATV network **[2008.01]**
20/80 • • • • having frequencies in two or more frequency bands, e.g. medium wave and VHF **[2008.01]**
20/81 • • • • combined with telephone network over which the broadcast is continuously available **[2008.01]**
20/82 • • • using signals not modulated onto a carrier **[2008.01]**
20/83 • • • • not sharing the network with any other service **[2008.01]**
20/84 • • • combined with power distribution network **[2008.01]**
20/86 • Arrangements characterised by special technical features of the broadcast information, e.g. signal form or information format **[2008.01]**
20/88 • • Stereophonic broadcast systems **[2008.01]**
20/89 • • • using three or more audio channels, e.g. triphonic or quadraphonic **[2008.01]**
20/91 • • broadcasting computer programmes **[2008.01]**
20/93 • • which locates resources of other pieces of information, e.g. URL [Uniform Resource Locator] **[2008.01]**
20/95 • • characterised by a specific format, e.g. MP3 [MPEG-1 Audio Layer 3] **[2008.01]**

40/00 Arrangements specially adapted for receiving broadcast information [2008.01]
40/09 • Arrangements for receiving desired information automatically according to timetables **[2008.01]**
40/18 • Arrangements characterised by circuits or components specially adaptedfor receiving **[2008.01]**
40/27 • • specially adapted for broadcast systems covered by groups H04H 20/53-H04H 20/86 **[2008.01]**
40/36 • • • specially adapted for stereophonic broadcast receiving **[2008.01]**
40/45 • • • • for FM stereophonic broadcast receiving **[2008.01]**
40/54 • • • • • generating subcarriers **[2008.01]**
40/63 • • • • • for separation improvements or adjustments **[2008.01]**
40/72 • • • • • for noise suppression **[2008.01]**
40/81 • • • • • for stereo-monaural switching **[2008.01]**
40/90 • • • specially adapted for satellite broadcast receiving **[2008.01]**

60/00 Arrangements for broadcast applications with a direct linkage to broadcast information or to broadcast space-time; Broadcast-related systems [2008.01]
60/02 • Arrangements for generating broadcast information; Arrangements for generating broadcast-related information with a direct linkageto broadcast information or to broadcast space-time; Arrangements for simultaneous generation of broadcast information and broadcast-related information **[2008.01]**
60/04 • • Studio equipment; Interconnection of studios **[2008.01]**
60/05 • • • Mobile studios **[2008.01]**
60/06 • • Arrangements for schedulingbroadcast services or broadcast-related services **[2008.01]**
60/07 • • characterised by processes or methods for the generation **[2008.01]**
60/09 • Arrangements for device control with a direct linkage to broadcast information or to broadcast space-time; Arrangements for control of broadcast-related services **[2008.01]**
60/11 • • Arrangements for counter-measures when a portion of broadcast information is unavailable **[2008.01]**
60/12 • • • wherein another information is substituted for the portion of broadcast information **[2008.01]**
60/13 • • Arrangements for device control affected by the broadcast information **[2008.01]**
60/14 • • Arrangements for conditional access to broadcast information or to broadcast-related services **[2008.01]**
60/15 • • • on receiving information **[2008.01]**
60/16 • • • on playing information **[2008.01]**
60/17 • • • on recording information **[2008.01]**
60/18 • • • on copying information **[2008.01]**
60/19 • • • on transmission of information **[2008.01]**
60/20 • • • on secondary editing information **[2008.01]**
60/21 • • • Billing for the use of broadcast information or broadcast-related information **[2008.01]**
60/22 • • • • per use **[2008.01]**
60/23 • • • using cryptography, e.g. encryption, authentication or key distribution **[2008.01]**
60/25 • Arrangements for updating broadcast information or broadcast-related information **[2008.01]**

60/27 • Arrangements for recording or accumulating broadcast information or broadcast-related information **[2008.01]**
60/29 • Arrangements for monitoring broadcast services or broadcast-related services **[2008.01]**
60/31 • • Arrangements for monitoring the use made of the broadcast services **[2008.01]**
60/32 • • Arrangements for monitoring conditions of receiving stations, e.g. malfunction or breakdown of receiving stations **[2008.01]**
60/33 • • Arrangements for monitoring the users' behaviour or opinions **[2008.01]**
60/35 • Arrangements for identifying or recognising characteristics with a direct linkage to broadcast information or to broadcast space-time, e.g. for identifying broadcast stations or for identifying users **[2008.01]**
60/37 • • for identifying segments of broadcast information, e.g. scenes or extracting programme ID **[2008.01]**
60/38 • • for identifying broadcast time or space **[2008.01]**
60/39 • • • for identifying broadcast space-time (use ofElectronic Programme Guides H04H 60/72) **[2008.01]**
60/40 • • • for identifying broadcast time **[2008.01]**
60/41 • • • for identifying broadcast space, i.e. broadcast channels, broadcast stations or broadcast areas **[2008.01]**
60/42 • • • • for identifying broadcast areas **[2008.01]**
60/43 • • • • for identifying broadcast channels **[2008.01]**
60/44 • • • • for identifying broadcast stations **[2008.01]**
60/45 • • for identifying users **[2008.01]**
60/46 • • for recognising users' preferences **[2008.01]**
60/47 • • for recognising genres **[2008.01]**
60/48 • • for recognising items expressed in broadcast information **[2008.01]**
60/49 • • for identifying locations **[2008.01]**
60/50 • • • of broadcast or relay stations **[2008.01]**
60/51 • • • of receiving stations **[2008.01]**
60/52 • • • of users **[2008.01]**
60/53 • • • of destinations **[2008.01]**
60/54 • • • where broadcast information is generated **[2008.01]**
60/56 • Arrangements characterised by components specially adapted for monitoring, identification or recognition covered by groups H04H 60/29 or H04H 60/35 **[2008.01]**
60/58 • • of audio **[2008.01]**
60/59 • • of video **[2008.01]**
60/61 • Arrangements for services using the result of monitoring, identification or recognition covered by groups H04H 60/29 or H04H 60/35 **[2008.01]**
60/63 • • for services of sales **[2008.01]**
60/64 • • for providing detail information **[2008.01]**
60/65 • • for using the result on users' side **[2008.01]**
60/66 • • for using the result on distributors' side **[2008.01]**
60/68 • Systems specially adapted forusing specific information, e.g. geographical or meteorological information **[2008.01]**
60/70 • • using geographical information, e.g. maps, charts or atlases **[2008.01]**
60/71 • • using meteorological information **[2008.01]**
60/72 • • using EPGs[Electronic Programme Guides] (focusing on identifying broadcast space-time H04H 60/39) **[2008.01]**
60/73 • • using meta-information **[2008.01]**
60/74 • • • using programme related information, e.g. title, composer or interpreter **[2008.01]**
60/76 • Arrangements characterised by transmission systems other than for broadcast, e.g. the Internet **[2008.01]**
60/78 • • characterised by source locations or destination locations **[2008.01]**
60/79 • • • characterised by transmission among broadcast stations **[2008.01]**
60/80 • • • characterised by transmission among terminal devices **[2008.01]**
60/81 • • characterised by the transmission system itself **[2008.01]**
60/82 • • • the transmission system being the Internet **[2008.01]**
60/83 • • • • accessed over telephonic networks **[2008.01]**
60/84 • • • • • which are fixed telephone networks **[2008.01]**
60/85 • • • • • which are mobile communication networks **[2008.01]**
60/86 • • • • accessed over CATV networks **[2008.01]**
60/87 • • • • accessed over computer networks **[2008.01]**
60/88 • • • • • which are wireless networks **[2008.01]**
60/89 • • • • • which are wired networks **[2008.01]**
60/90 • • • Wireless transmission systems **[2008.01]**
60/91 • • • • Mobile communication networks (for accessing the Internet H04H 60/85) **[2008.01]**
60/92 • • • • for local area **[2008.01]**
60/93 • • • Wired transmission systems **[2008.01]**
60/94 • • • • Telephonic networks (for accessing the Internet H04H 60/84) **[2008.01]**
60/95 • • • • for local area **[2008.01]**
60/96 • • • • CATV systems (for accessing the Internet H04H 60/86) **[2008.01]**
60/97 • • • • • using uplink of the CATV systems **[2008.01]**
60/98 • • • Physical distribution of media, e.g. postcards, CDs or DVDs **[2008.01]**

H04J **MULTIPLEX COMMUNICATION** (peculiar to transmission of digital information H04L 5/00; systems for the simultaneous or sequential transmission of more than one television signal H04N 7/08; in exchanges H04Q 11/00)

Note(s)

This subclass covers:
- circuits or apparatus for combining or dividing signals for the purpose of transmitting them simultaneously or sequentially over the same transmission path;
- monitoring arrangements therefor.

1/00 **Frequency-division multiplex systems** (H04J 14/02 takes precedence) **[5]**
1/02 • Details
1/04 • • Frequency-transposition arrangements

1/05 • • • using digital techniques **[3]**
1/06 • • Arrangements for supplying the carrier waves
1/08 • • Arrangements for combining channels
1/10 • • Intermediate station arrangements, e.g. for branching, for tapping-off
1/12 • • Arrangements for reducing cross-talk between channels
1/14 • • Arrangements providing for calling or supervisory signals
1/16 • • Monitoring arrangements
1/18 • in which all the carriers are amplitude-modulated (H04J 1/02 takes precedence) **[3]**
1/20 • in which at least one carrier is angle-modulated (H04J 1/02 takes precedence) **[3]**

3/00 **Time-division multiplex systems** (H04J 14/08 takes precedence) **[4, 5]**
3/02 • Details
3/04 • • Distributors combined with modulators or demodulators
3/06 • • Synchronising arrangements
3/07 • • • using pulse stuffing for systems with different or fluctuating information rates **[3]**
3/08 • • Intermediate station arrangements, e.g. for branching, for tapping-off
3/10 • • Arrangements for reducing cross-talk between channels
3/12 • • Arrangements providing for calling or supervisory signals
3/14 • • Monitoring arrangements
3/16 • in which the time allocation to individual channels within a transmission cycle is variable, e.g. to accommodate varying complexity of signals, to vary number of channels transmitted (H04J 3/17, H04J 3/24 take precedence) **[4]**
3/17 • in which the transmission channel allotted to a first user may be taken away and re-allotted to a second user if the first user becomes inactive, e.g. TASI **[4]**
3/18 • using frequency compression and subsequent expansion of the individual signals
3/20 • using resonant transfer **[2]**
3/22 • in which the sources have different rates or codes **[4]**
3/24 • in which the allocation is indicated by an address (H04J 3/17 takes precedence) **[4]**
3/26 • • in which the information and the address are simultaneously transmitted **[4]**

4/00 **Combined time-division and frequency-division multiplex systems** (H04J 13/00 takes precedence) **[2]**

7/00 **Multiplex systems in which the amplitudes or durations of the signals in individual channels are characteristic of those channels**
7/02 • in which the polarity of the amplitude is characteristic

9/00 **Multiplex systems in which each channel is represented by a different type of modulation of the carrier**

11/00 **Orthogonal multiplex systems** (H04J 13/00 takes precedence) **[2]**

13/00 ***Code division multiplex systems*** *(for frequency hopping H04B 1/713)* ***[2, 2011.01]***

Note(s) [2011.01]

When classifying in this group, any aspect of spread spectrum techniques not specific to frequency hopping, and which is considered to represent information of interest for search, may also be classified in group H04B 1/69.

13/10 • *Code generation* ***[2011.01]***
13/12 • • *Generation of orthogonal codes* ***[2011.01]***
13/14 • • *Generation of codes with a zero correlation zone* ***[2011.01]***
13/16 • *Code allocation* ***[2011.01]***
13/18 • • *Allocation of orthogonal codes* ***[2011.01]***
13/20 • • • *having an orthogonal variable spreading factor [OVSF]* ***[2011.01]***
13/22 • • *Allocation of codes with a zero correlation zone* ***[2011.01]***

14/00 **Optical multiplex systems [5]**
14/02 • Wavelength-division multiplex systems **[5]**
14/04 • Mode multiplex systems **[5]**
14/06 • Polarisation multiplex systems **[5]**
14/08 • Time-division multiplex systems **[5]**

99/00 **Subject matter not provided for in other groups of this subclass [2009.01]**

H04K SECRET COMMUNICATION; JAMMING OF COMMUNICATION

Note(s)

In this subclass, the following expression is used with the meaning indicated:
- "secret communication" includes secret line and radiation transmission systems, i.e. those in which apparatus at the transmitting station modifies the signal in such a way that the information cannot be intelligibly received without corresponding modifying apparatus at the receiving station.

1/00 **Secret communication** (ciphering or deciphering apparatus per se G09C; systems with reduced bandwidth or suppressed carrier H04B 1/66; spread spectrum techniques H04B 1/69; by using a sub-carrier H04B 14/08; by multiplexing H04J; transmission systems for secret digital information H04L 9/00; secret or subscription television systems H04N 7/16, H04N 21/00)
1/02 • by adding a second signal to make the desired signal unintelligible
1/04 • by frequency scrambling, i.e. by transposing or inverting parts of the frequency band or by inverting the whole band
1/06 • by transmitting the information or elements thereof at unnatural speeds or in jumbled order or backwards
1/08 • by varying the polarisation of transmitted waves
1/10 • by using two signals transmitted simultaneously or successively

3/00 **Jamming of communication; Counter-measures** (counter-measures used in radar or analogous systems G01S 7/00)

H04L **TRANSMISSION OF DIGITAL INFORMATION, e.g. TELEGRAPHIC COMMUNICATION** (typewriters B41J; order telegraphs, fire or police telegraphs G08B; visual telegraphy G08B, G08C; teleautographic systems G08C; ciphering or deciphering apparatus per se G09C; coding, decoding or code conversion, in general H03M; arrangements common to telegraphic and telephonic communication H04M; selecting H04Q; wireless communicationnetworks H04W) **[4]**

Note(s)

This subclass covers transmission of signals having been supplied in digital form and includes data transmission, telegraphic communication, or methods or arrangements for monitoring.

Subclass index

1/00 **Arrangements for detecting or preventing errors in the information received** (correcting synchronisation H04L 7/00; arrangements in the transmission path H04B)

1/02 • by diversity reception (in general H04B 7/02)

1/04 • • using frequency diversity

1/06 • • using space diversity

1/08 • by repeating transmission, e.g. Verdan system

1/12 • by using return channel

1/14 • • in which the signals are sent back to the transmitter to be checked

1/16 • • in which the return channel carries supervisory signals, e.g. repetition request signals

1/18 • • • Automatic repetition systems, e.g. van Duuren system

1/20 • using signal-quality detector **[3]**

1/22 • using redundant apparatus to increase reliability **[3]**

1/24 • Testing correct operation **[3]**

5/00 **Arrangements affording multiple use of the transmission path** (multiplex communication in general H04J)

5/02 • Channels characterised by the type of signal

5/04 • • the signals being represented by different amplitudes or polarities, e.g. quadriplex

5/06 • • the signals being represented by different frequencies (combined with time-division multiplexing H04L 5/26)

5/08 • • • each combination of signals in different channels being represented by a fixed frequency

5/10 • • • with dynamo-electric generation of carriers; with mechanical filters or demodulators

5/12 • • the signals being represented by different phase modulations of a single carrier

5/14 • Two-way operation using the same type of signal, i.e. duplex (conditioning for two-way transmission in general H04B 3/20)

5/16 • • Half-duplex systems; Simplex/duplex switching; Transmission of break signals

5/18 • • Automatic changing of the traffic direction

5/20 • using different combinations of lines, e.g. phantom working

5/22 • using time-division multiplexing

5/24 • • with start-stop synchronous converters

5/26 • • combined with the use of different frequencies

7/00 **Arrangements for synchronising receiver with transmitter**

7/02 • Speed or phase control by the received code signals, the signals containing no special synchronisation information

7/027 • • extracting the synchronising or clock signal from the received signal spectrum, e.g. by using a resonant or bandpass circuit **[5]**

7/033 • • using the transitions of the received signal to control the phase of the synchronising-signal-generating means, e.g. using a phase-locked loop **[5]**

7/04 • Speed or phase control by synchronisation signals

7/06 • • the synchronisation signals differing from the information signals in amplitude, polarity, or frequency

7/08 • • the synchronisation signals recurring cyclically

7/10 • • Arrangements for initial synchronisation

9/00 **Arrangements for secret or secure communication** (spread spectrum techniques H04B 1/69)

Note(s)

In group H04L 9/06-H04L 9/32, in the absence of an indication to the contrary, classification is made in the last appropriate place.

9/06 • the encryption apparatus using shift registers or memories for blockwise coding, e.g. D.E.S. systems **[5]**

9/08 • • Key distribution **[5]**

9/10 • with particular housing, physical features or manual controls **[5]**
9/12 • Transmitting and receiving encryption devices synchronised or initially set up in a particular manner **[5]**
9/14 • using a plurality of keys or algorithms **[5]**
9/16 • • the keys or algorithms being changed during operation **[5]**
9/18 • Encryption by serially and continuously modifying data stream elements, e.g. stream cipher systems **[5]**
9/20 • • Pseudorandom key sequence combined element-for-element with data sequence **[5]**
9/22 • • • with particular pseudorandom sequence generator **[5]**
9/24 • • • • sequence produced by more than one generator **[5]**
9/26 • • • • producing a nonlinear pseudorandom sequence **[5]**
9/28 • using particular encryption algorithm **[5]**
9/30 • • Public key, i.e. encryption algorithm being computationally infeasible to invert and users' encryption keys not requiring secrecy **[5]**
9/32 • including means for verifying the identity or authority of a user of the system (security arrangements for protecting computers or computer systems against unauthorised activity G06F 21/00; dispensing apparatus actuated by coded identity card orcredit card G07F 7/08; specially adapted for wireless communication networks H04W 12/00) **[5]**
9/34 • Bits, or blocks of bits, of the telegraphic message being interchanged in time **[5]**
9/36 • with means for detecting characters not meant for transmission **[5]**
9/38 • Encryption being effected by mechanical apparatus, e.g. rotating cams, switches, keytape punchers **[5]**

12/00 **Data switching networks** (interconnection of, or transfer of information or other signals between, memories, input/output devices or central processing units G06F 13/00) **[5]**
12/02 • Details **[5]**
12/04 • • Switchboards **[5]**
12/06 • • Answer-back mechanisms or circuits **[5]**
12/08 • • Allotting numbers to messages; Counting characters, words or messages **[5]**
12/10 • • Current supply arrangements **[5]**
12/12 • • Arrangements for remote connection or disconnection of substations or of equipment thereof **[5]**
12/14 • • Charging arrangements **[5]**
12/16 • • Arrangements for providing special services to substations **[5]**
12/18 • • • for broadcast or conference **[5]**
12/20 • • • for converting transmission speed from the inherent speed of a substation to the inherent speed of other substations **[5]**
12/22 • • Arrangements for preventing the taking of data from a data transmission channel without authorisation (means for verifying the identity or the authority of a user of a secure or secret communication system H04L 9/32) **[5]**
12/24 • • Arrangements for maintenance or administration **[5]**
12/26 • • Monitoring arrangements; Testing arrangements **[5]**
12/28 • characterised by path configuration, e.g. LAN [Local Area Networks] or WAN [Wide Area Networks] (wireless communication networks H04W) **[5, 6]**
12/40 • • Bus networks **[5, 6]**
12/403 • • • with centralised control, e.g. polling **[6]**
12/407 • • • with decentralised control **[6]**
12/413 • • • • with random access, e.g. carrier-sense multiple-access with collision detection (CSMA-CD) **[6]**
12/417 • • • • with deterministic access, e.g. token passing **[6]**
12/42 • • Loop networks **[5, 6]**
12/423 • • • with centralised control, e.g. polling **[6]**
12/427 • • • with decentralised control **[6]**
12/43 • • • • with synchronous transmission, e.g. time division multiplex (TDM), slotted rings **[6]**
12/433 • • • • with asynchronous transmission, e.g. token ring, register insertion **[6]**
12/437 • • • Ring fault isolation or reconfiguration **[6]**
12/44 • • Star or tree networks **[5, 6]**
12/46 • • Interconnection of networks **[5, 6]**
12/50 • Circuit switching systems, i.e. systems in which the path is physically permanent during the communication **[5, 6]**
12/52 • • using time division techniques (in digital transmission systems H04L 5/22) **[5, 6]**
12/54 • Stored and forward switching systems **[5, 6]**
12/56 • • Packet switching systems **[5, 6]**
12/58 • • Message switching systems (permutation- code selecting H04Q 3/02) **[5, 6]**
12/60 • • • Manual relay systems, e.g. push-button switching **[5, 6]**
12/62 • • • • with perforated tape storage **[5, 6]**
12/64 • Hybrid switching systems **[5, 6]**
12/66 • Arrangements for connecting between networks having differing types of switching systems, e.g. gateways **[5, 6]**

13/00 **Details of the apparatus or circuits covered by groups H04L 15/00 or H04L 17/00**
13/02 • Details not particular to receiver or transmitter
13/04 • • Driving mechanisms; Clutches (in general F16)
13/06 • • Tape or page guiding or feeding devices
13/08 • • Intermediate storage means
13/10 • • Distributors
13/12 • • • Non-mechanical distributors, e.g. relay distributors
13/14 • • • • Electronic distributors (in general H03K 17/00)
13/16 • of transmitters, e.g. code-bars, code-discs
13/18 • of receivers

15/00 **Apparatus or local circuits for transmitting or receiving dot-and-dash codes, e.g. Morse code** (teaching apparatus therefor G09B; keyboard switches in general H01H 13/70, H03K 17/94; telegraph tapping keys H01H 21/86; coding in connection with keyboards or like devices, in general H03M 11/00)
15/03 • Keys structurally combined with sound generators **[2]**
15/04 • Apparatus or circuits at the transmitting end
15/06 • • with a restricted number of keys, e.g. separate key for each type of code element
15/08 • • • with a single key which transmits dots in one position and dashes in a second position
15/10 • • • combined with perforating apparatus
15/12 • • with keyboard co-operating with code-bars

15/14 • • • combined with perforating apparatus
15/16 • • with keyboard co-operating with code discs
15/18 • • Automatic transmitters, e.g. controlled by perforated tape
15/20 • • • with optical sensing means
15/22 • • Apparatus or circuits for sending one or a restricted number of signals, e.g. distress signals
15/24 • Apparatus or circuits at the receiving end
15/26 • • operating only on reception of predetermined code signals, e.g. distress signals, party-line call signals
15/28 • • Code reproducing apparatus
15/30 • • • Writing recorders
15/32 • • • Perforating recorders
15/34 • • Apparatus for recording received coded signals after translation, e.g. as type-characters

17/00 Apparatus or local circuits for transmitting or receiving codes wherein each character is represented by the same number of equal-length code elements, e.g. Baudot code (keyboard switches in general H01H 13/70, H03K 17/94; coding in connection with keyboards or like devices, in general H03M 11/00)

17/02 • Apparatus or circuits at the transmitting end
17/04 • • with keyboard co-operating with code-bars
17/06 • • • Contact operating means
17/08 • • • combined with perforating apparatus
17/10 • • with keyboard co-operating with code-discs
17/12 • • Automatic transmitters, e.g. controlled by perforated tape
17/14 • • • with optical sensing means
17/16 • Apparatus or circuits at the receiving end
17/18 • • Code selection mechanisms
17/20 • • using perforating recorders
17/22 • • using mechanical translation and type-bar printing
17/24 • • using mechanical translation and type-head printing, e.g. type-wheel, type-cylinder
17/26 • • using aggregate motion translation
17/28 • • using pneumatic or hydraulic translation
17/30 • • using electric or electronic translation

19/00 Apparatus or local circuits for step-by-step systems

21/00 Apparatus or local circuits for mosaic printer telegraph systems

21/02 • at the transmitting end
21/04 • at the receiving end

23/00 Apparatus or local circuits for systems other than those covered by groups H04L 15/00-H04L 21/00

23/02 • adapted for orthogonal signalling **[2]**

25/00 Baseband systems

25/02 • Details (circuits in general for handling pulses H03K; in line transmission systems in general H04B 3/02)
25/03 • • Shaping networks in transmitter or receiver, e.g. adaptive shaping networks (impedance networks per se H03H) **[2]**
25/04 • • • Passive shaping networks **[2]**
25/05 • • Electric or magnetic storage of signals before transmitting or retransmitting for changing the transmission rate **[7]**
25/06 • • Dc level restoring means; Bias distortion correction
25/08 • • Modifications for reducing interference; Modifications for reducing effects due to line faults
25/10 • • Compensating for variations in line balance
25/12 • • Compensating for variations in line impedance
25/14 • • Channel dividing arrangements
25/17 • • Interpolating arrangements **[4]**
25/18 • • Arrangements for inductively generating telegraphic signals (induction coil interrupters H01H 51/34; dynamo-electric generators H02K)
25/20 • • Repeater circuits; Relay circuits
25/22 • • • Repeaters for converting two wires to four wires (in general H04B); Repeaters for converting single current to double current
25/24 • • • Relay circuits using discharge tubes or semiconductor devices
25/26 • • • Circuits with optical sensing means
25/28 • • • Repeaters using modulation and subsequent demodulation
25/30 • Non-synchronous systems
25/32 • • characterised by the code employed
25/34 • • • using three or more different amplitudes, e.g. cable code
25/38 • Synchronous or start-stop systems, e.g. for Baudot code
25/40 • • Transmitting circuits; Receiving circuits (repeater circuits, relay circuits H04L 25/52)
25/42 • • • using mechanical distributors
25/44 • • • using relay distributors
25/45 • • • using electronic distributors (electronic distributors in general H03K 17/00) **[2]**
25/46 • • • using tuning forks or vibrating reeds
25/48 • • • characterised by the code employed (H04L 25/49 takes precedence) **[2]**
25/49 • • • using code conversion at the transmitter; using predistortion; using insertion of idle bits for obtaining a desired frequency spectrum; using three or more amplitude levels **[2]**
25/493 • • • • by transition coding, i.e. the time-position or direction of a transition being encoded before transmission **[3]**
25/497 • • • • by correlative coding, e.g. partial response coding or echo modulation coding **[3]**
25/52 • • Repeater circuits; Relay circuits
25/54 • • • using mechanical distributors
25/56 • • • Non-electrical regenerative repeaters
25/58 • • • using relay distributors
25/60 • • • Regenerative repeaters with electromagnetic switches
25/62 • • • using tuning forks or vibrating reeds
25/64 • • • Start-stop regenerative repeaters using discharge tubes or semiconductor devices
25/66 • • • Synchronous repeaters using discharge tubes or semiconductor devices

27/00 Modulated-carrier systems

27/01 • Equalisers **[5]**
27/02 • Amplitude-modulated carrier systems, e.g. using on/off keying; Single sideband or vestigial sideband modulation (H04L 27/32 takes precedence) **[2, 5]**
27/04 • • Modulator circuits (in general H03C); Transmitter circuits
27/06 • • Demodulator circuits (in general H03D); Receiver circuits
27/08 • • Amplitude regulation arrangements
27/10 • Frequency-modulated carrier systems, i.e. using frequency-shift keying (H04L 27/32 takes precedence) **[5]**
27/12 • • Modulator circuits (in general H03C); Transmitter circuits

27/14 • • Demodulator circuits (in general H03D); Receiver circuits
27/144 • • • with demodulation using spectral properties of the received signal, e.g. by using frequency selective- or frequency sensitive elements **[6]**
27/148 • • • • using filters, including PLL-type filters **[6]**
27/152 • • • • using controlled oscillators, e.g. PLL arrangements **[6]**
27/156 • • • with demodulation using temporal properties of the received signal, e.g. detecting pulse width **[6]**
27/16 • • Frequency regulation arrangements
27/18 • Phase-modulated carrier systems, i.e. using phase-shift keying (H04L 27/32 takes precedence) **[5]**
27/20 • • Modulator circuits (in general H03C); Transmitter circuits
27/22 • • Demodulator circuits (in general H03D); Receiver circuits
27/227 • • • using coherent demodulation **[6]**
27/233 • • • using non-coherent demodulation **[6]**
27/24 • • Half-wave signalling systems
27/26 • Systems using multi-frequency codes (H04L 27/32 takes precedence) **[5]**
27/28 • • with simultaneous transmission of different frequencies each representing one code element
27/30 • • wherein each code element is represented by a combination of frequencies
27/32 • Carrier systems characterised by combinations of two or more of the types covered by groups H04L 27/02, H04L 27/10, H04L 27/18, or H04L 27/26 **[5]**
27/34 • • Amplitude- and phase-modulated carrier systems, e.g. quadrature-amplitude modulated carrier systems **[5]**
27/36 • • • Modulator circuits; Transmitter circuits **[5]**
27/38 • • • Demodulator circuits; Receiver circuits **[5]**

29/00 Arrangements, apparatus, circuits or systems, not covered by a single one of groups H04L 1/00-H04L 27/00 (interconnection of, or transfer of information or other signals between, memories, input/output devices or central processing units G06F 13/00) **[5]**
29/02 • Communication control; Communication processing (H04L 29/12, H04L 29/14 take precedence) **[5]**
29/04 • • for plural communication lines **[5]**
29/06 • • characterised by a protocol **[5]**
29/08 • • • Transmission control procedure, e.g. data link level control procedure **[5]**
29/10 • • characterised by an interface, e.g. the interface between the data link level and the physical level **[5]**
29/12 • characterised by the data terminal **[5]**
29/14 • Counter-measures to a fault **[5]**

H04M TELEPHONIC COMMUNICATION (circuits for controlling other apparatus via a telephone cable and not involving telephone switching apparatus G08)

Note(s)

1. This subclass covers :
   - telephonic communication systems combined with other electrical systems;
   - testing arrangements specially adapted for telephonic communication systems.
2. In this subclass, the following terms or expressions are used with the meanings indicated:
   - "subscriber" is a general term for terminal equipment, e.g. telephones for public use;
   - "substation" means subscriber or monitoring equipment which may connect a single subscriber to a line without choice as to subscriber;
   - "satellite" is a type of exchange the operation of which depends upon control signals received from a supervisory exchange;
   - "switching centres" includes exchanges and satellites.

Subclass index

1/00 Substation equipment, e.g. for use by subscribers (subscriber services or facilities provided at exchanges H04M 3/00; prepayment telephone coin boxes H04M 17/00; current supply arrangements H04M 19/08) **[1, 7]**
1/02 • Constructional features of telephone sets
1/03 • • Constructional features of telephone transmitters or receivers, e.g. telephone hand-sets **[2]**
1/04 • • Supports for telephone transmitters or receivers
1/05 • • • specially adapted for use on head, throat or breast
1/06 • • • Hooks; Cradles
1/08 • • • • associated with switches operated by the weight of the receiver or hand-set
1/10 • • • • associated with switches operated by magnetic effect due to proximity of receiver or hand-set
1/11 • • Supports for sets, e.g. incorporating armrests
1/12 • • • Adjustable supports, e.g. extensible

1/13 • • • • pantographic
1/14 • • • with resilient means to eliminate extraneous vibrations
1/15 • • Protecting or guiding telephone cords **[5]**
1/17 • • Hygienic or sanitary devices on telephone equipment (for mouthpieces or earpieces H04R 1/12) **[2]**
1/18 • • Telephone sets specially adapted for use in ships, mines, or other places exposed to adverse environment (H04M 1/19 takes precedence)
1/19 • • Arrangements of transmitters, receivers, or complete sets to prevent eavesdropping, to attenuate local noise or to prevent undesired transmission; Mouthpieces or receivers specially adapted therefor (circuit arrangements for preventing eavesdropping H04M 1/68; telephone cabinets E04H 1/14)
1/20 • • Arrangements for preventing acoustic feedback (H04M 1/62 takes precedence)
1/21 • • Combinations with auxiliary equipment, e.g. with clocks ormemoranda pads
1/215 • • • by non-intrusive coupling means, e.g. acoustic couplers **[7]**
1/22 • • Illumination; Arrangements for improving the visibility of characters on dials
1/23 • • Construction or mounting of dials or of equivalent devices; Means for facilitating the use thereof (by improving visibility H04M 1/22)
1/24 • Arrangements for testing
1/247 • Telephone sets including user guidance or feature selection means facilitating their use **[7]**
1/253 • Telephone sets using digital voice transmission **[7]**
1/26 • Devices for calling a subscriber (H04M 1/66 takes precedence) **[1, 7]**
1/27 • • Devices whereby a plurality of signals may be stored simultaneously **[2]**
1/272 • • • with provision for storing only one subscriber number at a time, e.g. by keyboard or dial **[2]**
1/274 • • • with provision for storing more than one subscriber number at a time **[2]**
1/2745 • • • • using static electronic memories, i.e. memories whose operation does not require relative movement between storage means and a transducer, e.g. chips **[7]**
1/275 • • • • • implemented by means of portable electronic directories **[7]**
1/2755 • • • • • whose contents are provided by optical scanning **[7]**
1/276 • • • • using magnetic recording, e.g. on tape **[2]**
1/278 • • • • using punched cards or tapes **[2]**
1/30 • • Devices which can set up and transmit only one digit at a time
1/31 • • • by interrupting current to generate trains of pulses; by periodically opening and closing contacts to generate trains of pulses **[2]**
1/315 • • • • Clutches, spring assemblies, speed regulators, e.g. centrifugal brakes (H04M 1/32-H04M 1/40 take precedence) **[3]**
1/32 • • • • Locking setting devices during transmission to prevent interference by user
1/34 • • • • Lost-motion or other arrangements for ensuring a pause between successive digit transmissions
1/38 • • • • Pulses transmitted by a movement variably limited by the setting of a stop
1/40 • • • • wherein the setting-operation short-circuits or open-circuits the transmitting mechanism during a variable part of a cycle
1/50 • • • by generating or selecting currents of predetermined frequencies or combinations of frequencies **[2]**
1/515 • • by generating or selecting signals other than trains of pulses of similar shape, or signals other than currents of one or more different frequencies, e.g. generation of dc signals of alternating polarity, coded pulses or impedance dialling **[2]**
1/52 • • Arrangements wherein a dial or the like is mechanically coupled to a line selector
1/53 • • Generation of additional signals, e.g. additional pulses **[2]**
1/54 • • • Arrangements wherein a dial or the like generates identifying signals, e.g. in party-line systems **[2]**
1/56 • Arrangements for indicating or recording the called number at the calling subscriber's set
1/57 • Arrangements for indicating or recording the number of the calling subscriber at the called subscriber's set (at the operator set in a manual exchange H04M 5/20) **[2]**
1/58 • Anti-side-tone circuits
1/60 • including speech amplifiers
1/62 • • Constructional arrangements
1/64 • Automatic arrangements for answering calls; Automatic arrangements for recording messages for absent subscribers; Arrangements for recording conversations (centralised dictation systems H04M 11/10) **[1, 7]**
1/65 • • Recording arrangements **[2, 7]**
1/652 • • • Means for playing back the recorded messages by remote control over a telephone line (H04M 1/658 takes precedence) **[7]**
1/654 • • • Telephone line monitoring circuits therefor, e.g. ring detectors **[7]**
1/656 • • • for recording conversations **[7]**
1/658 • • • Means for redirecting recorded messages to other extensions or equipment **[7]**
1/66 • with means for preventing unauthorised or fraudulent calling (verifying user identity or authority in secret or secure digital communications H04L 9/32) **[1, 7]**
1/663 • • Preventing unauthorised calls to a telephone set **[7]**
1/665 • • • by checking the validity of a code **[7]**
1/667 • • Preventing unauthorised calls from a telephone set (H04M 1/677 takes precedence) **[7]**
1/67 • • • by electronic means **[7]**
1/673 • • • • the user being required to key in a code **[7]**
1/675 • • • • the user being required to insert a coded card, e.g. a smart card carrying an integrated circuit chip **[7]**
1/677 • • Preventing the dialling or sending of predetermined telephone numbers or selected types of telephone numbers, e.g. long distance numbers **[7]**
1/68 • Circuit arrangements for preventing eavesdropping
1/70 • • Lock-out or secrecy arrangements in party-line systems
1/72 • Substation extension arrangements; Cordless telephones, i.e. devices for establishing wireless links to base stations without route selecting **[1, 7]**
1/723 • • using two or more extensions per line (H04M 1/725 takes precedence) **[7]**
1/725 • • Cordless telephones **[7]**

1/727 • • • Identification code transfer arrangements **[7]**
1/73 • • • Battery saving arrangements **[7]**
1/733 • • • with a plurality of base stations connected to a plurality of lines **[7]**
1/737 • • • characterised by transmission of electromagnetic waves other than radio waves, e.g. infra-red waves **[7]**
1/738 • Interface circuits for coupling substations to external telephone lines (H04M 1/78 takes precedence) **[7]**
1/74 • • with means for reducing interference; with means for reducing effects due to line faults
1/76 • • Compensating for differences in line impedance
1/78 • Circuit arrangements in which low-frequency speech signals proceed in one direction on the line, while speech signals proceeding in the other direction on the line are modulated on a high-frequency carrier signal **[2]**
1/80 • Telephone line holding circuits **[7]**
1/82 • Line monitoring circuits for call progress or status discrimination **[7]**

3/00 Automatic or semi-automatic exchanges
3/02 • Calling substations, e.g. by ringing (selective calling H04Q)
3/04 • • the calling signal being supplied from the final selector
3/06 • • the calling signal being supplied from the subscriber's line circuit
3/08 • Indicating faults in circuits or apparatus
3/10 • • Providing fault- or trouble-signals
3/12 • • Marking faulty circuits "busy"; Enabling equipment to disengage itself from faulty circuits
3/14 • • Signalling existence of persistent "off-hook" condition
3/16 • with lock-out or secrecy provision in party-line systems
3/18 • with means for reducing interference; with means for reducing effects due to line faults
3/20 • with means for interrupting existing connections; with means for breaking-in on conversations
3/22 • Arrangements for supervision, monitoring or testing
3/24 • • with provision for checking the normal operation
3/26 • • with means for applying test signals
3/28 • • • Automatic routine testing
3/30 • • • • for subscribers' lines
3/32 • • • • for lines between exchanges
3/34 • • • Testing for cross-talk
3/36 • • Statistical metering, e.g. recording occasions when traffic exceeds capacity of trunks
3/38 • Graded-service arrangements, i.e. some subscribers prevented from establishing certain connections (queuing arrangements H04Q 3/64)
3/40 • Applications of speech amplifiers
3/42 • Systems providing special services or facilities to subscribers (specially adapted for wireless communication networks H04W 4/00)
3/424 • • Arrangements for automatic redialling (at the subscriber's set H04M 1/27) **[7]**
3/428 • • Arrangements for placing incoming calls on hold **[7]**
3/432 • • Arrangements for calling a subscriber at a specific time, e.g. morning call service **[7]**
3/436 • • Arrangements for screening incoming calls **[7]**
3/44 • • Additional connecting arrangements for providing access to frequently-wanted subscribers, e.g. abbreviated dialling (at the subscriber's set H04M 1/27; automatic redialling H04M 3/424) **[1, 7]**
3/46 • • Arrangements for calling a number of substations in a predetermined sequence until an answer is obtained
3/48 • • Arrangements for recalling a calling subscriber when the wanted subscriber ceases to be busy
3/487 • • Arrangements for providing information services, e.g. recorded voice services or time announcements **[7]**
3/493 • • • Interactive information services, e.g. directory enquiries **[7]**
3/50 • • Centralised arrangements for answering calls; Centralised arrangements for recording messages for absent or busy subscribers (H04M 3/487 takes precedence; centralised dictation systems H04M 11/10) **[1, 7]**
3/51 • • • Centralised call answering arrangements requiring operator intervention **[7]**
3/52 • • • • Arrangements for routing dead number calls to operators
3/523 • • • • with call distribution or queuing **[7]**
3/527 • • • Centralised call answering arrangements not requiring operator intervention **[7]**
3/53 • • • Centralised arrangements for recording incoming messages **[7]**
3/533 • • • • Voice mail systems **[7]**
3/537 • • • • Arrangements for indicating the presence of a recorded message **[7]**
3/54 • • Arrangements for diverting calls for one subscriber to another predetermined subscriber
3/56 • • Arrangements for connecting several subscribers to a common circuit, i.e. affording conference facilities (video conference systems H04N 7/15)
3/58 • • Arrangements for transferring received calls from one subscriber to another; Arrangements affording interim conversations between either the calling or the called party and a third party (substation line holding circuits H04M 1/80) **[1, 7]**
3/60 • Semi-automatic systems, i.e. systems in which the numerical selection of the outgoing line is under the control of an operator
3/62 • • Keyboard equipment
3/64 • • Arrangements for signalling the number or class of the calling line to the operator (between operators in inter-exchange working H04M 5/18)

5/00 Manual exchanges (substation equipment in general H04M 1/00)
5/02 • Constructional details (jacks, jack-plugs H01R 24/58)
5/04 • Arrangements for indicating calls or supervising connections for calling or clearing
5/06 • • affording automatic call distribution
5/08 • using connecting means other than cords
5/10 • using separate plug for each subscriber
5/12 • Calling substations, e.g. by ringing
5/14 • Applications of speech amplifiers
5/16 • with means for reducing interference; with means for reducing effects due to line faults
5/18 • Arrangements for signalling the class or number of called or calling line from one exchange to another
5/20 • • Arrangements for indicating the numbers of the incoming lines

7/00 Arrangements for interconnection between switching centres

7/02 • for compensating differences of ground potential
7/04 • for compensating differences of line impedance
7/06 • using auxiliary connections for control or supervision
7/08 • for phantom working
7/10 • for two-way working, i.e. calls may be set-up in either direction over the same connection
7/12 • for working between exchanges having different types of switching equipment, e.g. power-driven and step by step or decimal and non-decimal
7/14 • in systems involving main and subordinate switching centres (current supply source at subordinate switching centre charged from main exchange H04M 19/06)
7/16 • in systems employing carrier frequencies

9/00 Arrangements for interconnection not involving centralised switching

9/02 • involving a common line for all parties
9/04 • involving a separate line for each pair of parties
9/06 • involving combinations of interconnecting lines
9/08 • Two-way loud-speaking telephone systems with means for conditioning the signal, e.g. for suppressing echoes for one or both directions of traffic
9/10 • • with switching of direction of transmission by voice frequency

11/00 Telephonic communication systems specially adapted for combination with other electrical systems

11/02 • with bell or annunciator systems
11/04 • with alarm systems, e.g. fire, police or burglar alarm systems
11/06 • Simultaneous speech and data transmission, e.g. telegraphictransmission over the same conductors
11/08 • specially adapted for optional reception of entertainment or informative matter
11/10 • with dictation recording and playback systems

13/00 Party-line systems (substation equipment H04M 1/00; exchange equipment H04M 3/00, H04M 5/00; metering arrangements H04M 15/36)

15/00 Arrangements for metering, time-control or time-indication

15/02 • Severing connection after a predetermined time
15/04 • Recording calls in printed, perforated, or other permanent form
15/06 • • Recording class or number of calling party orcalled party
15/08 • Metering calls to called party
15/10 • Metering calls from calling party
15/12 • • Discriminative metering
15/14 • • • according to class of calling party
15/16 • • • according to connection obtained
15/18 • • • according to duration of call
15/20 • • • • Operator's time recording or indicating arrangements
15/22 • • • according to time of day
15/24 • • • preventing metering of tax-free calls to certain lines, e.g. to fire or ambulance stations
15/26 • • with a meter at the exchange controlled by an operator
15/28 • with meter at substation
15/30 • • the meter not being controlled from an exchange
15/32 • Metering arrangements for satellites or concentrators which connect one or more exchange lines with a group of local lines
15/34 • Metering arrangements for private branch exchanges
15/36 • Metering arrangements for party-lines
15/38 • Metering by apparatus other thanmechanical step-by-step counter type

17/00 Prepayment telephone systems (using a coded card to authorise calls from a telephone set H04M 1/675) **[1, 7]**

17/02 • Coin-freed or check-freed systems

19/00 Current supply arrangements for telephone systems (for selecting equipment H04Q 1/28)

19/02 • providing ringing current or supervisory tones, e.g. dialling tone or busy tone
19/04 • • the ringing-current being generated at the substations
19/06 • in which current supply sources at subordinate switching centres are charged from the main exchange
19/08 • with current supply sources at the substations (generating ringing current H04M 19/04) **[1, 7]**

99/00 Subject matter not provided for in other groups of this subclass [2006.01]

H04N PICTORIAL COMMUNICATION, e.g. TELEVISION [4]

Note(s)

1. This subclass covers:
   - transmission of pictures or their transient or permanent reproduction either locally or remotely, by methods involving both the following steps:
     step (a): the scanning of a picture, i.e. resolving the whole picture-containing area into individual picture-elements and the derivation of picture-representative electric signals related thereto, simultaneously or in sequence;
     step (b): the reproduction of the whole picture-containing area by the reproduction of individual picture-elements into which the picture is resolved by means of picture-representative electric signals derived therefrom, simultaneously or in sequence;
   - (in group H04N 1/00) systems for the transmission or the reproduction of arbitrarily composed pictures or patterns in which the local light variations composing a picture are not subject to variation with time, e.g. documents (both written and printed), maps, charts, photographs (other than cinematograph films);
   - circuits specially designed for dealing with pictorial communication signals, e.g. television signals, as distinct from merely signals of a particular frequency range.
2. This subclass does not cover:
   - circuits or other parts of systems which form the subject of other subclasses, which are covered by the corresponding subclasses, e.g. H03C, H03F, H03J, H04B, H04H;

- systems in which legible alphanumeric or like character forms are analysed according to step (a) of Note (1) to derive an electric signal from which the character is recognised by comparison with stored information, which are covered by subclass G06K;
- systems for the direct photographic copying of an original picture in which an electric signal representative of the picture is derived according to the said step (a) and employed to modify the operation of the system, e.g. to control exposure, which are covered by class G03;
- systems for the reproduction according to step (b) of Note (1) of pictures comprising alphanumeric or like character forms but involving the production of the equivalent of a signal which would be derived according to the above-mentioned step (a), e.g. by cams, punched card or tape, coded control signal, or other means, which are covered by the subclass for the application, e.g. G01D, G06T, H04L;
- systems for the reproduction according to the above-mentioned step (b) of pictures comprising alphanumeric or like character forms and involving the generation according to the above-mentioned step (a) of picture-representative electric signals from a pre-arranged assembly of such characters, or records thereof, forming an integral part of the systems, which are covered by the subclass for the application, e.g. B41B, G06K, subject to those applications which are covered by this subclass;
- printing, duplication or marking processes, or materials therefor, which are covered by the relevant subclasses, e.g. B41C, B41J, B41M, G03C, G03F, G03G.

3. In this subclass, the following expression is used with the meaning indicated:
   - "television systems" means those systems for the transmission and reproduction of arbitrarily composed pictures in which the local light variations composing a picture may change with time, e.g. natural "live" scenes, recordings of such scenes such as cinematograph films.

Note(s)

In groups H04N 1/00-H04N 17/00, it is desirable to add the indexing code of group H04N 101/00.

1/00 Scanning, transmission or reproduction of documents or the like, e.g. facsimile transmission; Details thereof [3, 4]

1/024 • Details of scanning heads **[3, 4]**
1/028 • • for picture-information pick-up **[3, 4]**
1/029 • • • Heads optically focused on only one picture element at a time **[6]**
1/03 • • • with photodetectors arranged in a substantially linear array (scanning of linear arrays H04N 1/19) **[6]**
1/031 • • • • the photodetectors having a one-to-one and optically positive correspondence with the scanned picture elements, e.g. linear contact sensors **[6]**
1/032 • • for picture-information reproduction **[3, 4]**
1/034 • • • using ink, e.g. ink-jet heads **[5]**
1/036 • • • for optical reproduction **[3, 4]**
1/04 • Scanning arrangements (H04N 1/387 takes precedence) **[4]**
1/047 • • Detection, control or error compensation of scanning velocity or position (H04N 1/17 takes precedence) **[6]**
1/053 • • • in main scanning direction, e.g. synchronisation of line start or picture elements in a line **[6]**
1/06 • • using cylindrical picture-bearing surfaces **[4]**
1/08 • • • Mechanisms for mounting or holding the sheet around the drum **[4]**
1/10 • • using flat picture-bearing surfaces **[4]**
1/107 • • • with manual scanning **[6]**
1/113 • • using oscillating or rotating mirrors **[6]**
1/12 • • using the sheet-feed movement as the slow scanning component (using multi-element arrays H04N 1/19) **[4, 6]**
1/14 • • • using a rotating endless belt carrying the scanning heads **[4]**
1/16 • • • using a rotating helical element **[4]**
1/17 • • the scanning speed being dependent on content of picture **[3, 4]**
1/19 • • using multi-element arrays **[6]**
1/191 • • • the array comprising a one-dimensional array **[6]**
1/192 • • • • Simultaneously scanning picture elements on one main scanning line **[6]**
1/193 • • • • • using electrically scanned linear arrays **[6]**
1/195 • • • the array comprising a two-dimensional array **[6]**
1/203 • • Simultaneous scanning of two or more separate pictures **[6]**
1/207 • • Simultaneous scanning of the original picture and the reproduced picture with a common scanning device **[6]**
1/21 • Intermediate information storage (H04N 1/387, H04N 1/41 take precedence) **[4]**
1/23 • Reproducing arrangements (details of scanning heads H04N 1/024; scanning arrangements therefor H04N 1/04) **[4]**
1/27 • • involving production of a magnetic intermediate picture **[4]**
1/29 • • involving production of an electrostatic intermediate picture **[4]**
1/31 • • Mechanical arrangements for picture transmission, e.g. adaptation of clutches, gearing, gear transmissions **[4]**
1/32 • Circuits or arrangements for control or supervision between transmitter and receiver
1/327 • • Initiating, continuing or ending a single-mode communication; Handshaking therefor **[6]**
1/333 • • Mode signalling or mode changing; Handshaking therefor **[6]**
1/34 • • for coin-freed systems
1/36 • • for synchronising or phasing transmitter and receiver
1/38 • Circuits or arrangements for blanking or otherwise eliminating unwanted parts of pictures (H04N 1/387 takes precedence) **[4]**
1/387 • Composing, repositioning or otherwise modifying originals **[4]**
1/393 • • Enlarging or reducing **[4]**
1/40 • Picture signal circuits (H04N 1/387 takes precedence) **[4]**
1/401 • • Compensating positionaly unequal response of the pick-up or reproducing head (H04N 1/403 takes precedence) **[6]**
1/403 • • Discrimination between the two tones in the picture signal of a two-tone original **[6]**
1/405 • • Halftoning, i.e. converting the picture signal of a continuous-tone original into a corresponding signal showing only two levels **[6]**
1/407 • • Control or modification of tonal gradation or of extreme levels, e.g. background level **[6]**

1/409 • • Edge or detail enhancement; Noise or error suppression **[6]**
1/41 • Bandwidth or redundancy reduction (by scanning H04N 1/17) **[3]**
1/411 • • for the transmission or reproduction of two-tone pictures, e.g. black and white pictures **[4]**
1/413 • • • Systems or arrangements allowing the picture to be reproduced without loss or modification of picture-information **[4]**
1/415 • • • • in which the picture-elements are subdivided or grouped into fixed one-dimensional or two-dimensional blocks **[4]**
1/417 • • • • using predictive or differential encoding **[4]**
1/419 • • • • in which encoding of the length of a succession of picture-elements of the same value along a scanning line is the only encoding step **[4]**
1/42 • Systems for two-way working
1/44 • Secrecy systems
1/46 • Colour picture communication systems
1/48 • • Picture signal generators (for halftone screening H04N 1/52) **[6]**
1/50 • • Picture reproducers (for halftone screening H04N 1/52) **[6]**
1/52 • • Circuits or arrangements for halftone screening **[6]**
1/54 • • Conversion of colour picture signals to a plurality of signals some of which represent particular mixed colours, e.g. for textile printing **[6]**
1/56 • • Processing of colour picture signals (H04N 1/52 takes precedence) **[6]**
1/58 • • • Edge or detail enhancement; Noise or error suppression, e.g. colour misregistration correction (H04N 1/62 takes precedence) **[6]**
1/60 • • • Colour correction or control **[6]**
1/62 • • • • Retouching, i.e. modification of isolated colours only or in isolated picture areas only **[6]**
1/64 • • Systems for the transmission or the storage of the colour picture signal; Details therefor, e.g. coding or decoding means therefor **[6]**

3/00 Scanning details of television systems; Combination thereof with generation of supply voltages [4]
3/02 • by optical-mechanical means only (H04N 3/36 takes precedence) **[2]**
3/04 • • having a moving aperture
3/06 • • having a moving lens or other refractor
3/08 • • having a moving reflector
3/09 • • • for electromagnetic radiation in the invisible region, e.g. infra-red **[4]**
3/10 • by means not exclusively optical-mechanical (H04N 3/36 takes precedence; devices or arrangements for the electro-, magneto- or acousto-optical modulation or deflection of light beams G02F) **[2]**
3/12 • • by switched stationary formation of lamps, photocells, or light relays
3/14 • • by means of electrically scanned solid-state devices (for picture generation H04N 5/335)
3/16 • • by deflecting electron beam in cathode-ray tube
3/18 • • • Generation of supply voltages, in combination with electron beam deflecting **[4]**
3/185 • • • • Maintaining dc voltage constant **[4]**
3/19 • • • • Arrangements or assemblies in supply circuits for the purpose of withstanding high voltages **[3]**
3/20 • • • Prevention of damage to cathode-ray tubes in event of failure of scanning
3/22 • • • Circuits for controlling dimensions, shape or centering of picture on screen
3/223 • • • • Controlling dimensions (by maintaining the cathode-ray tube high voltage constant H04N 3/185) **[4]**
3/227 • • • • Centering **[4]**
3/23 • • • • Distortion correction, e.g. for pincushion distortion correction, S-correction **[4]**
3/233 • • • • • using active elements **[4]**
3/237 • • • • • using passive elements **[4]**
3/24 • • • Blanking circuits
3/26 • • • Modifications of scanning arrangements to improve focusing
3/27 • • • Circuits special to multi-standard receivers **[3, 4]**
3/28 • • producing multiple scanning, i.e. using more than one spot at the same time
3/30 • • otherwise than with constant velocity or otherwise than in pattern formed by unidirectional, straight, substantially horizontal or vertical lines
3/32 • • • Velocity varied in dependence upon picture information
3/34 • • • Elemental scanning area oscillated rapidly in direction transverse to main scanning direction
3/36 • Scanning of motion picture films, e.g. for telecine **[2]**
3/38 • • with continuously moving film **[4]**
3/40 • • with intermittently moving film **[4]**

5/00 ***Details of television systems*** *(scanning details or combination thereof with generation of supply voltages H04N 3/00; specially adapted for colour television H04N 9/00; servers specially adapted for the distribution of content H04N 21/20; client devices specially adapted for the reception of or interaction with content H04N 21/40)* ***[4, 2011.01]***
5/04 • Synchronising (for television systems using pulse code modulation H04N 7/24) **[4]**
5/05 • • Synchronising circuits with arrangements for extending range of synchronisation, e.g. by using switching between several time constants **[2]**
5/06 • • Generation of synchronising signals
5/067 • • • Arrangements or circuits at the transmitter end **[4]**
5/073 • • • • for mutually locking plural sources of synchronising signals, e.g. studios or relay stations **[4]**
5/08 • • Separation of synchronising signals from picture signals
5/10 • • • Separation of line synchronising signal from frame synchronising signal
5/12 • • Devices in which the synchronising signals are only operative if a phase difference occurs between synchronising and synchronised scanning devices, e.g. flywheel synchronising **[2]**
5/14 • Picture signal circuitry for video frequency region (H04N 5/222 takes precedence) **[2]**
5/16 • • Circuitry for reinsertion of dc and slowly varying components of signal; Circuitry for preservation of black or white level
5/18 • • • by means of "clamp" circuit operated by switching circuit
5/20 • • Circuitry for controlling amplitude response
5/202 • • • Gamma control **[4]**
5/205 • • • for correcting amplitude versus frequency characteristic **[4]**

5/208 • • • • for compensating for attenuation of high frequency components, e.g. crispening, aperture distortion correction **[4]**
5/21 • • Circuitry for suppressing or minimising disturbance, e.g. moire, halo (suppression of noise in television recording H04N 5/911)
5/213 • • • Circuitry for suppressing or minimising impulsive noise (H04N 5/217 takes precedence) **[4]**
5/217 • • • *in picture signal generation (noise reduction or noise suppression involving solid-state image sensors H04N 5/357)* ***[4, 2011.01]***
5/222 • Studio circuitry; Studio devices; Studio equipment **[4]**
5/225 • • Television cameras **[4]**
5/228 • • • Circuit details for pick-up tubes **[4]**
5/232 • • • Devices for controlling television cameras, e.g. remote control (H04N 5/235 takes precedence) **[4]**
5/235 • • • Circuitry for compensating for variation in the brightness of the object **[4]**
5/238 • • • • by influencing optical part of the camera **[4]**
5/243 • • • • by influencing the picture signal **[4]**
5/247 • • • Arrangement of television cameras **[4]**
5/253 • • Picture signal generating by scanning motion picture films or slide opaques, e.g. for telecine (scanning details therefor H04N 3/36) **[4]**
5/257 • • Picture signal generators using flying-spot scanners (H04N 5/253 takes precedence) **[4]**
5/262 • • Studio circuits, e.g. for mixing, switching-over, change of character of image, other special effects **[4]**
5/265 • • • Mixing **[4]**
5/268 • • • Signal distribution or switching (for broadcasting H04H 20/00) **[4]**
5/272 • • • Means for inserting a foreground image in a background image, i.e. inlay, outlay **[4]**
5/275 • • • • Generation of keying signals **[4]**
5/278 • • • Subtitling **[4]**
5/28 • • Mobile studios
5/30 • Transforming light or analogous information into electric information (H04N 5/222 takes precedence; scanning details H04N 3/00) **[2, 4, 7]**
5/32 • • Transforming X-rays
5/321 • • • with video transmission of fluoroscopic images **[5]**
5/325 • • • • Image enhancement, e.g. by subtraction techniques using polyenergetic X-rays **[5]**
5/33 • • Transforming infra-red radiation **[2]**
5/335 • • *using solid-state image sensors [SSIS] (H04N 5/32, H04N 5/33 take precedence)* ***[4, 2011.01]***

Note(s) [2011.01]

In this group, at each hierarchical level, in the absence of an indication to the contrary, classification is made in the first appropriate place.

5/341 • • • *Extracting pixel data from an image sensor by controlling scanning circuits, e.g. by modifying the number of pixels having been sampled or to be sampled* ***[2011.01]***
5/343 • • • • *by switching between different modes of operation using different resolutions or aspect ratios, e.g. between still and video mode or between interlaced and non-interlaced mode* ***[2011.01]***
5/345 • • • • *by partially reading an SSIS array* ***[2011.01]***
5/347 • • • • *by combining or binning pixels in SSIS* ***[2011.01]***
5/349 • • • • *for increasing resolution by shifting the sensor relative to the scene* ***[2011.01]***
5/351 • • • *Control of the SSIS depending on the scene, e.g. brightness or motion in the scene* ***[2011.01]***
5/353 • • • • *Control of the integration time* ***[2011.01]***
5/355 • • • • *Control of the dynamic range* ***[2011.01]***
5/357 • • • *Noise processing, e.g. detecting, correcting, reducing or removing noise* ***[2011.01]***
5/359 • • • • *applied to excess charges produced by the exposure, e.g. smear, blooming, ghost image, crosstalk or leakage between pixels* ***[2011.01]***
5/361 • • • • *applied to dark current* ***[2011.01]***
5/363 • • • • *applied to reset noise, e.g. KTC noise* ***[2011.01]***
5/365 • • • • *applied to fixed-pattern noise, e.g. non-uniformity of response* ***[2011.01]***
5/367 • • • • • *applied to defects, e.g. non-responsive pixels* ***[2011.01]***
5/369 • • • *SSIS architecture; Circuitry associated therewith* ***[2011.01]***
5/372 • • • • *Charge-coupled device [CCD] sensors; Time delay and integration [TDI] registers or shift registers specially adapted for SSIS* ***[2011.01]***
5/3722 • • • • • *using frame interline transfer [FIT]* ***[2011.01]***
5/3725 • • • • • *using frame transfer [FT]* ***[2011.01]***
5/3728 • • • • • *using interline transfer [IT]* ***[2011.01]***
5/374 • • • • *Addressed sensors, e.g. MOS or CMOS sensors* ***[2011.01]***
5/3745 • • • • • *having additional components embedded within a pixel or connected to a group of pixels within a sensor matrix, e.g. memories, A/D converters, pixel amplifiers, shared circuits or shared components* ***[2011.01]***
5/376 • • • • *Addressing circuits* ***[2011.01]***
5/378 • • • • *Readout circuits, e.g. correlated double sampling [CDS] circuits, output amplifiers or A/D converters* ***[2011.01]***
5/38 • Transmitter circuitry (H04N 5/14 takes precedence) **[4]**
5/40 • • Modulation circuits
5/42 • • for transmitting at will black-and-white or colour signals
5/44 • *Receiver circuitry (H04N 5/14 takes precedence)* ***[4, 2011.01]***
5/445 • • *for displaying additional information (H04N 5/50 takes precedence)* ***[4, 2011.01]***
5/45 • • • *Picture in picture* ***[4, 2011.01]***
5/455 • • Demodulation-circuits **[4]**
5/46 • • for receiving on more than one standard at will (deflecting circuits of multi-standard receivers H04N 3/27) **[4]**
5/50 • • Tuning indicators; Automatic tuning control **[4]**
5/52 • • Automatic gain control **[4]**
5/53 • • • Keyed automatic gain control **[4]**
5/54 • • • for positively-modulated picture signals (H04N 5/53 takes precedence) **[4]**
5/56 • • • for negatively-modulated picture signals (H04N 5/53 takes precedence) **[4]**
5/57 • • Control of contrast or brightness **[4]**
5/58 • • • in dependence upon ambient light **[4]**

5/59 • • • in dependence upon beam current of cathode ray tube **[4]**
5/60 • • for the sound signals
5/62 • • • Intercarrier circuits, i.e. heterodyning sound and vision carriers
5/63 • Generation or supply of power specially adapted for television receivers (generation of supply voltages in combination with electron beam deflecting H04N 3/18) **[4]**
5/64 • Constructional details of receivers, e.g. cabinets, dust covers (furniture aspects A47B, e.g. A47B 81/06) **[2]**
5/645 • • Mounting of picture tube on chassis or in housing
5/65 • • Holding-devices for protective discs or for picture masks
5/655 • • Construction or mounting of chassis, e.g. for varying the elevation of the tube
5/66 • Transforming electric information into light information (scanning details H04N 3/00)
5/68 • • Circuit details for cathode-ray display tubes
5/70 • • Circuit details for electroluminescent devices
5/72 • Modifying the appearance of television pictures by optical filters or diffusing screens
5/74 • Projection arrangements for image reproduction, e.g. using eidophor
5/76 • Television signal recording **[3, 4]**
5/761 • • Systems for programming the time at which predetermined television channels will be selected for recording **[7]**
5/7613 • • • by using data entered by the user and a reference timing clock incorporated in the recorder **[7]**
5/7617 • • • by using data entered by the user and reference data transmitted by the broadcasting station **[7]**
5/765 • • Interface circuits between an apparatus for recording and another apparatus (associated working of recording or reproducing apparatus with a television camera or receiver in which the television signal is not significantly involved G11B 31/00) **[6]**
5/77 • • • between a recording apparatus and a television camera **[6]**
5/775 • • • between a recording apparatus and a television receiver **[6]**
5/78 • • using magnetic recording (H04N 5/91 takes precedence) **[3]**
5/781 • • • on discs or drums **[3]**
5/782 • • • on tape **[3]**
5/7822 • • • • with stationary magnetic heads **[6]**
5/7824 • • • • with rotating magnetic heads **[6]**
5/7826 • • • • • involving helical scanning of the magnetic tape **[6]**
5/7828 • • • • • involving transversal scanning of the magnetic tape **[6]**
5/783 • • • • Adaptations for reproducing at a rate different from the recording rate **[3]**
5/784 • • • on a sheet **[6]**
5/80 • • using electrostatic recording (H04N 5/91 takes precedence) **[3]**
5/82 • • • using deformable thermoplastic recording medium
5/83 • • • • on discs or drums **[3]**
5/84 • • using optical recording (H04N 5/80, H04N 5/89, H04N 5/91 take precedence) **[3, 4]**
5/85 • • • on discs or drums **[3]**
5/87 • • • Producing a motion picture film from a television signal **[3, 4]**
5/89 • • using holographic recording (H04N 5/91 take precedence) **[3]**
5/90 • • • on discs or drums **[3]**
5/903 • • using variable electrical capacitive recording (H04N 5/91 takes precedence) **[4]**
5/907 • • using static stores, e.g. storage tubes, semiconductor memories (H04N 5/91 takes precedence; based on relative movement between record carrier and transducer H04N 5/78-H04N 5/903) **[4]**
5/91 • • Television signal processing therefor (of colour signals H04N 9/79) **[3]**
5/911 • • • for the suppression of noise **[6]**
5/913 • • • for scrambling **[6]**
5/915 • • • for field- or frame-skip recording or reproducing **[6]**
5/917 • • • for bandwidth reduction (using pulse code modulation H04N 7/24) **[6]**
5/919 • • • • by dividing samples or signal segments, e.g. television lines, among a plurality of recording channels **[6]**
5/92 • • • Transformation of the television signal for recording, e.g. modulation, frequency changing; Inverse transformation for playback **[3]**
5/921 • • • • by recording or reproducing the baseband signal **[6]**
5/922 • • • • by modulation of the signal on a carrier wave, e.g. amplitude or frequency modulation **[6]**
5/923 • • • • using preemphasis of the signal before modulation and deemphasis of the signal after demodulation **[6]**
5/924 • • • • using duty cycle modulation **[6]**
5/926 • • • • by pulse code modulation (H04N 5/919 takes precedence) **[6]**
5/928 • • • • the sound signal being pulse code modulated and recorded in time division multiplex with the modulated video signal **[6]**
5/93 • • • Regeneration of the television signal or of selected parts thereof **[3]**
5/931 • • • • for restoring the level of the reproduced signal **[6]**
5/932 • • • • Regeneration of analogue synchronisation signals **[6]**
5/935 • • • • Regeneration of digital synchronisation signals **[6]**
5/937 • • • • by assembling picture element blocks in an intermediate store **[6]**
5/94 • • • • Signal drop-out compensation **[3]**
5/945 • • • • • for signals recorded by pulse code modulation **[6]**
5/95 • • • • Time-base error compensation **[3]**
5/953 • • • • • by using an analogue memory, e.g. a CCD-shift register, the delay of which is controlled by a voltage controlled oscillator **[6]**
5/956 • • • • • by using a digital memory with independent write-in and read-out clock generators **[6]**

7/00 ***Television systems*** *(details H04N 3/00, H04N 5/00, specially adapted for colour television H04N 11/00; stereoscopic television systems H04N 13/00; selective content distribution H04N 21/00)* ***[4, 2011.01]***
7/01 • Conversion of standards **[4]**
7/015 • High-definition television systems **[6]**

7/025 • Systems for transmission of digital non-picture data, e.g. of text during the active part of a television frame **[6]**

7/03 • • Subscription systems therefor **[6]**

7/035 • • Circuits for the digital non-picture data signal, e.g. for slicing of the data signal, for regeneration of the data-clock signal, for error detection or correction of the data signal **[6]**

7/04 • Systems for the transmission of one television signal, i.e. both picture and sound, by a single carrier **[4]**

7/045 • • the carrier being frequency modulated **[6]**

7/06 • Systems for the simultaneous transmission of one television signal, i.e. both picture and sound, by more than one carrier **[4]**

7/08 • Systems for the simultaneous or sequential transmission of more than one television signal, e.g. additional information signals, the signals occupying wholly or partially the same frequency band **[4, 6]**

7/081 • • the additional information signals being transmitted by means of a subcarrier **[6]**

7/083 • • with signal insertion during the vertical and the horizontal blanking interval **[6]**

7/084 • • with signal insertion during the horizontal blanking interval **[6]**

7/085 • • • the inserted signal being digital **[6]**

7/087 • • with signal insertion during the vertical blanking interval **[4]**

7/088 • • • the inserted signal being digital **[6]**

7/10 • Adaptations for transmission by electrical cable (H04N 7/12 takes precedence) **[4]**

7/12 • Systems in which the television signal is transmitted via one channel or a plurality of parallel channels, the bandwidth of each channel being less than the bandwidth of the television signal (H04N 7/24 takes precedence; high-definition television systems H04N 7/015) **[4]**

7/14 • Systems for two-way working (H04N 7/173 takes precedence) **[4]**

7/15 • • Conference systems (telephonic conference arrangements H04M 3/56) **[5]**

7/16 • *Analogue secrecy systems; Analogue subscription systems **[1, 2011.01]***

7/167 • • *Systems rendering the television signal unintelligible and subsequently intelligible **[4, 2011.01]***

7/169 • • • *Systems operating in the time domain of the television signal **[6, 2011.01]***

7/171 • • • *Systems operating in the amplitude domain of the television signal **[6, 2011.01]***

7/173 • • *with two-way working, e.g. subscriber sending a programme selection signal **[4, 2011.01]***

7/18 • Closed-circuit television systems, i.e. systems in which the signal is not broadcast

7/20 • Adaptations for transmission via a GHz frequency band, e.g. via satellite **[4]**

7/22 • Adaptations for optical transmission **[4]**

7/24 • *Systems for the transmission of television signals using pulse code modulation (H04N 21/00 takes precedence) **[6, 2011.01]***

7/26 • • using bandwidth reduction (information reduction by code conversion in general H03M 7/30) **[6]**

7/28 • • • using vector coding **[6]**

7/30 • • • involving transform coding (H04N 7/50 takes precedence; digital computers for performing complex mathematical operations, e.g. domain transformation, G06F 17/14) **[6]**

7/32 • • • involving predictive coding (H04N 7/48, H04N 7/50 take precedence) **[6]**

7/34 • • • • using spatial prediction **[6]**

7/36 • • • • using temporal prediction **[6]**

7/38 • • • • involving delta modulation **[6]**

7/40 • • • • • adaptive **[6]**

7/42 • • • • involving differential modulation **[6]**

7/44 • • • • • adaptive **[6]**

7/46 • • • • using subsampling at the coder and sample restitution by interpolation at the coder or decoder **[6]**

7/48 • • • involving pulse code modulation and predictive coding **[6]**

7/50 • • • involving transform and predictive coding **[6]**

7/52 • • *Systems for transmission of a pulse code modulated with one or more other pulse code modulated signals, e.g. an audio signal or a synchronizing signal (assembling of a multiplex stream by combining a video stream with other content or additional data, remultiplexing of multiplex streams, insertion of stuffing bits into the multiplex stream, assembling of a packetised elementary stream at server side H04N 21/236; disassembling of a multiplex stream, remultiplexing of multiplex streams, extraction or processing of Service Information, disassembling of packetised elementary stream at client side H04N 21/434) **[6, 2011.01]***

7/54 • • • the signals being synchronous **[6]**

7/56 • • • • Synchronising systems therefor **[6]**

7/64 • • Systems for detection or correction of transmission errors (coding, decoding or code conversion for error detection or error correction in general H03M 13/00) **[6]**

7/66 • • • using redundant codes **[6]**

7/68 • • • using error concealment **[6]**

9/00 Details of colour television systems [4]

9/04 • Picture signal generators **[4]**

9/07 • • with one pick-up device only **[2, 4]**

9/077 • • • whereby the colour signals are characterised by their phase **[4]**

9/083 • • • whereby the colour signals are characterised by their frequency **[4]**

9/09 • • with more than one pick-up device **[4]**

9/093 • • • Systems for avoiding or correcting misregistration of video signals **[4]**

9/097 • • • Optical arrangements associated therewith, e.g. for beam-splitting, for colour correction **[4]**

9/10 • • using optical-mechanical scanning means only (H04N 9/11 takes precedence) **[2, 4]**

9/11 • • Scanning of colour motion picture films, e.g. for telecine **[2, 4]**

9/12 • Picture reproducers (H04N 9/11 takes precedence) **[2, 4]**

9/14 • • using optical-mechanical scanning means only **[2, 4]**

9/16 • • using cathode ray tubes (H04N 9/11 takes precedence) **[2, 4]**

9/18 • • • using separate electron beams for the primary colour signals (H04N 9/27 takes precedence) **[2, 4]**

9/20 • • • • with more than one beam in a tube **[4]**

9/22 • • • using the same beam for more than one primary colour information (H04N 9/27 takes precedence) **[2, 4]**

9/24 • • • • using means, integral with, or external to, the tube, for producing signal indicating instantaneous beam position **[4]**

9/26 • • • • using electron-optical colour selection means, e.g. line grid, deflection means in or near the gun or near the phosphor screen **[4]**

9/27 • • • with variable depth of penetration of electron beam into the luminescent layer, e.g. penetrons **[2, 4]**

9/28 • • • Arrangements for convergence or focusing **[4]**

9/285 • • • • using quadrupole lenses **[4]**

9/29 • • • using demagnetisation or compensation of external magnetic fields **[2, 4]**

9/30 • • using solid-state colour display devices **[4]**

9/31 • • Projection devices for colour picture display **[2, 4]**

9/43 • Conversion of monochrome picture signals to colour picture signals for colour picture display **[4]**

9/44 • Colour synchronisation **[4]**

9/45 • • Generation or recovery of colour sub-carriers **[4]**

9/455 • • Generation of colour burst signals; Insertion of colour burst signals in colour picture signals or separation of colour burst signals from colour picture signals (H04N 9/45 takes precedence) **[4]**

9/465 • • Synchronisation of the PAL-switch **[4]**

9/47 • • for sequential signals **[2, 4]**

9/475 • • for mutually locking different synchronisation sources **[4]**

9/64 • Circuits for processing colour signals (H04N 9/77 takes precedence) **[4]**

9/65 • • for synchronous modulators **[4]**

9/66 • • for synchronous demodulators **[4]**

9/67 • • for matrixing **[4]**

9/68 • • for controlling the amplitude of colour signals, e.g. automatic chroma control circuits (H04N 9/71, H04N 9/73 take precedence) **[4]**

9/69 • • • for modifying the colour signals by gamma correction **[4]**

9/70 • • for colour killing **[4]**

9/71 • • • combined with colour gain control **[4]**

9/72 • • for reinsertion of dc and slowly varying components of colour signals **[4]**

9/73 • • colour balance circuits, e.g. white balance circuits, colour temperature control **[4]**

9/74 • • for obtaining special effects (H04N 9/65-H04N 9/73 take precedence) **[4]**

9/75 • • • Chroma key **[4]**

9/76 • • • for mixing of colour signals (H04N 9/75 takes precedence) **[4]**

9/77 • Circuits for processing the brightness signal and the chrominance signal relative to each other, e.g. adjusting the phase of the brightness signal relative to the colour signal, correcting differential gain or differential phase (circuits for matrixing H04N 9/67) **[4]**

9/78 • • for separating the brightness signal or the chrominance signal from the colour television signal, e.g. using comb filter **[4]**

9/79 • Processing of colour television signals in connection with recording **[4]**

9/793 • • for controlling the level of the chrominance signal, e.g. by means of automatic chroma control circuits **[6]**

9/797 • • for recording the signal in a plurality of channels, the bandwidth of each channel being less than the bandwidth of the signal (H04N 9/804, H04N 9/81, H04N 9/82 take precedence) **[6]**

9/80 • • Transformation of the television signal for recording, e.g. modulation, frequency changing; Inverse transformation for playback **[4]**

9/802 • • • involving processing of the sound signal (H04N 9/806, H04N 9/835 take precedence) **[6]**

9/804 • • • involving pulse code modulation of the colour picture signal components **[6]**

9/806 • • • • with processing of the sound signal **[6]**

9/808 • • • involving pulse code modulation of the composite colour video-signal **[6]**

9/81 • • • the individual colour picture signal components being recorded sequentially only **[4]**

9/815 • • • • the luminance signal and the sequential colour component signals being recorded in separate recording channels **[6]**

9/82 • • • the individual colour picture signal components being recorded simultaneously only **[4]**

9/825 • • • • the luminance and chrominance signals being recorded in separate channels **[6]**

9/83 • • • • the recorded chrominance signal occupying a frequency band under the frequency band of the recorded brightness signal **[4]**

9/835 • • • • • involving processing of the sound signal **[6]**

9/84 • • • • • the recorded signal showing a feature, which is different in adjacent track parts, e.g. different phase or frequency **[4]**

9/85 • • • • the recorded brightness signal occupying a frequency band totally overlapping the frequency band of the recorded chrominance signal, e.g. frequency interleaving **[4]**

9/86 • • • the individual colour picture signal components being recorded sequentially and simultaneously, e.g. corresponding to SECAM-system **[4]**

9/87 • • Regeneration of colour television signals (H04N 9/80 takes precedence) **[4]**

9/873 • • • for restoring the colour component sequence of the reproduced signal **[6]**

9/877 • • • by assembling picture element blocks in an intermediate memory **[6]**

9/88 • • • Signal drop-out compensation **[4]**

9/882 • • • • the signal being a composite colour television signal **[6]**

9/885 • • • • • using a digital intermediate memory **[6]**

9/888 • • • • for signals recorded by pulse code modulation **[6]**

9/89 • • • Time-base error compensation **[4]**

9/893 • • • • using an analogue memory, e.g. a CCD-shift register, the delay of which is controlled by a voltage controlled oscillator **[6]**

9/896 • • • • using a digital memory with independent write-in and read-out clock generators **[6]**

9/898 • • • using frequency multiplication of the reproduced colour signal with another auxiliary reproduced signal, e.g. a pilot signal carrier **[6]**

11/00 **Colour television systems** (details H04N 9/00; stereoscopic H04N 15/00) **[4]**

11/02 • with bandwidth reduction (H04N 11/04 takes precedence) **[4]**

11/04 • using pulse code modulation **[4]**

11/06 • Transmission systems characterised by the manner in which the individual colour picture signal components are combined **[4]**

11/08 • • using sequential signals only (dot sequential systems H04N 11/12) **[4]**

11/10 • • • in which colour signals are inserted in the blanking interval of brightness signal **[4]**
11/12 • • using simultaneous signals only **[4]**
11/14 • • • in which one signal, modulated in phase and amplitude, conveys colour information and a second signal conveys brightness information, e.g. NTSC-system **[4]**
11/16 • • • • the chrominance signal alternating in phase, e.g. PAL-system **[4]**
11/18 • • using simultaneous and sequential signals, e.g. SECAM-system **[4]**
11/20 • • Conversion of the manner in which the individual colour picture signal components are combined, e.g. conversion of colour television standards **[4]**
11/22 • • • in which simultaneous signals are converted into sequential signals or vice versa **[4]**
11/24 • High-definition television systems **[6]**

13/00 Stereoscopic television systems; Details thereof (specially adapted for colour television H04N 15/00) **[4]**
13/02 • Picture signal generators **[4]**
13/04 • Picture reproducers **[4]**

15/00 Stereoscopic colour television systems; Details thereof [4]

17/00 Diagnosis, testing or measuring for television systems or their details [4]
17/02 • for colour television signals **[4]**
17/04 • for receivers **[4]**
17/06 • for recorders **[4]**

21/00 Selective content distribution, e.g. interactive television, VOD [Video On Demand] *(broadcast communication H04H; arrangements, apparatus, circuits or systems for communication control or processing being characterised by a protocol H04L 29/06; real-time bi-directional transmission of motion video data H04N 7/14)* ***[2011.01]***

Note(s) [2011.01]

1. This group covers :
- *interactive video distribution processes, systems, or elements thereof, which are characterised by point-to-multipoint system configurations, and which are mainly used for motion video data unidirectional distribution or delivery resulting from interactions between systems operators, e.g. access or service providers, or users e.g. subscribers, and system elements.*
- *such systems include dedicated communication systems, such as television distribution systems, which primarily distribute or deliver motion video data in the manner indicated, which may, in addition, provide a framework for further, diverse data communications or services in either unidirectional or bi-directional form. However, video will occupy most of the downlink bandwidth in the distribution process.*
- *typically, system operators interface with transmitter-side elements or users' interface with receiver-side elements in order to facilitate, through interaction with such elements, the dynamic control of data processing or data flow at various points in the system. This interaction is typically occasional or intermittent in nature.*
- *processes, systems or elements thereof specially adapted to the generation, distribution and processing of data, which is either associated with video content, e.g. metadata, ratings, or related to the user or his environment and which has been actively or passively gathered. This data is either used to facilitate interaction or to alter or target the content.*

2. In this main group, at each hierarchical level, in the absence of an indication to the contrary, classification is made in the first appropriate place.

21/20 • Servers specifically adapted for the distribution of content, e.g. VOD servers; Operations thereof ***[2011.01]***
21/21 • • Server components or server architectures ***[2011.01]***
21/214 • • • Specialised server platform, e.g. server located in an airplane, hotel or hospital ***[2011.01]***
21/218 • • • Source of audio or video content, e.g. local disk arrays ***[2011.01]***
21/2183 • • • • Cache memory ***[2011.01]***
21/2187 • • • • Live feed ***[2011.01]***
21/222 • • • Secondary servers, e.g. proxy server or cable television Head-end ***[2011.01]***
21/2225 • • • • Local VOD servers ***[2011.01]***
21/226 • • • Internal components of the server ***[2011.01]***
21/23 • • Processing of content or additional data; Elementary server operations; Server middleware ***[2011.01]***
21/231 • • • Content storage operation, e.g. caching movies for short term storage, replicating data over plural servers or prioritizing data for deletion ***[2011.01]***
21/2312 • • • • Data placement on disk arrays ***[2011.01]***
21/2315 • • • • • using interleaving ***[2011.01]***
21/2318 • • • • • using striping ***[2011.01]***
21/232 • • • Content retrieval operation within server, e.g. reading video streams from disk arrays ***[2011.01]***
21/233 • • • Processing of audio elementary streams ***[2011.01]***
21/234 • • • Processing of video elementary streams, e.g. splicing of video streams or manipulating MPEG-4 scene graphs (video encoding or transcoding processes per se H04N 7/26) ***[2011.01]***
21/2343 • • • • involving reformatting operations of video signals for distribution or compliance with end-user requests or end-user device requirements ***[2011.01]***
21/2347 • • • • involving video stream encryption (arrangements for secret or secure communication H04L 9/00; analogue secrecy systems H04N 7/16) ***[2011.01]***
21/235 • • • Processing of additional data, e.g. scrambling of additional data or processing content descriptors ***[2011.01]***

21/236 • • • *Assembling of a multiplex stream, e.g. transport stream, by combining a video stream with other content or additional data, e.g. inserting a URL [Uniform Resource Locator] into a video stream, multiplexing software data into a video stream; Remultiplexing of multiplex streams; Insertion of stuffing bits into the multiplex stream, e.g. to obtain a constant bit-rate; Assembling of a packetised elementary stream* ***[2011.01]***

21/2362 • • • • *Generation or processing of SI [Service Information]* ***[2011.01]***

21/2365 • • • • *Multiplexing of several video streams* ***[2011.01]***

21/2368 • • • • *Multiplexing of audio and video streams* ***[2011.01]***

21/237 • • • *Communication with additional data server* ***[2011.01]***

21/238 • • • *Interfacing the downstream path of the transmission network, e.g. adapting the transmission rate of a video stream to network bandwidth; Processing of multiplex streams* ***[2011.01]***

21/2381 • • • • *Adapting the multiplex stream to a specific network, e.g. an IP [Internet Protocol] network* ***[2011.01]***

21/2383 • • • • *Channel coding of digital bit-stream, e.g. modulation* ***[2011.01]***

21/2385 • • • • *Channel allocation (H04N 21/266 takes precedence); Bandwidth allocation (H04N 21/24 takes precedence)* ***[2011.01]***

21/2387 • • • • *Stream processing in response to a playback request from an end-user, e.g. for trick-play* ***[2011.01]***

21/2389 • • • • *Multiplex stream processing, e.g. multiplex stream encrypting* ***[2011.01]***

21/239 • • • *Interfacing the upstream path of the transmission network, e.g. prioritizing client requests* ***[2011.01]***

21/24 • • • *Monitoring of processes or resources, e.g. monitoring of server load, available bandwidth or upstream requests* ***[2011.01]***

21/241 • • • *OS [Operating System] processes, e.g. server setup (arrangements for programme control G06F 9/00)* ***[2011.01]***

21/242 • • • *Synchronization processes, e.g. processing of PCR [Program Clock References]* ***[2011.01]***

21/25 • • *Management operations performed by the server for facilitating the content distribution or administrating data related to end-users or client devices, e.g. end-user or client device authentication or learning user preferences for recommending movies* ***[2011.01]***

21/254 • • • *Management at additional data server, e.g. shopping server or rights management server* ***[2011.01]***

21/2543 • • • • *Billing* ***[2011.01]***

21/2547 • • • • • *Third party billing, e.g. billing of advertiser* ***[2011.01]***

21/258 • • • *Client or end-user data management, e.g. managing client capabilities, user preferences or demographics or processing of multiple end-users preferences to derive collaborative data* ***[2011.01]***

21/262 • • • *Content or additional data distribution scheduling, e.g. sending additional data at off-peak times, updating software modules, calculating the carousel transmission frequency, delaying a video stream transmission or generating play-lists* ***[2011.01]***

21/266 • • • *Channel or content management, e.g. generation and management of keys and entitlement messages in a conditional access system or merging a VOD unicast channel into a multicast channel* ***[2011.01]***

21/2662 • • • • *Controlling the complexity of the video stream, e.g. by scaling the resolution or bitrate of the video stream based on the client capabilities* ***[2011.01]***

21/2665 • • • • *Gathering content from different sources, e.g. Internet and satellite* ***[2011.01]***

21/2668 • • • • *Creating a channel for a dedicated end-user group, e.g. by inserting targeted commercials into a video stream based on end-user profiles* ***[2011.01]***

21/27 • • *Server based end-user applications* ***[2011.01]***

21/274 • • • *Storing end-user specific content or additional data in response to end-user request* ***[2011.01]***

21/2743 • • • • *Video hosting of uploaded data from client* ***[2011.01]***

21/2747 • • • • *Remote storage of video programs received via the downstream path, e.g. from the server* ***[2011.01]***

21/278 • • • *Content descriptor database or directory service for end-user access* ***[2011.01]***

21/40 • *Client devices specifically adapted for the reception of, or interaction with, content, e.g. STB [set-top-box]; Operations thereof* ***[2011.01]***

21/41 • • *Structure of client; Structure of client peripherals* ***[2011.01]***

21/414 • • • *Specialised client platforms, e.g. receiver in car or embedded in a mobile appliance* ***[2011.01]***

21/4143 • • • • *PC [Personal Computer]* ***[2011.01]***

21/4147 • • • • *PVR [Personal Video Recorder] (H04N 5/76 takes precedence)* ***[2011.01]***

21/418 • • • *External card to be used in combination with the client device, e.g. for conditional access* ***[2011.01]***

21/4185 • • • • *for payment* ***[2011.01]***

21/422 • • • *Input-only peripherals, e.g. GPS [Global Positioning System] (input arrangements or combined input and output arrangements for interaction between user and computer G06F 3/01)* ***[2011.01]***

21/4223 • • • • *Cameras (H04N 5/225 takes precedence)* ***[2011.01]***

21/4227 • • • • *Remote input by a user located remotely from the client device, e.g. at work* ***[2011.01]***

21/426 • • • *Internal components of the client (H04N 5/44 takes precedence)* ***[2011.01]***

21/43 • • *Processing of content or additional data, e.g. demultiplexing additional data from a digital video stream; Elementary client operations, e.g. monitoring of home network or synchronizing decoder's clock; Client middleware* ***[2011.01]***

21/431 • • • *Generation of visual interfaces; Content or additional data rendering (receiver circuitry for displaying additional information H04N 5/445)* ***[2011.01]***

21/432 • • • *Content retrieval operation from a local storage medium, e.g. hard-disk* ***[2011.01]***

21/433 • • • *Content storage operation, e.g. storage operation in response to a pause request or caching operations* ***[2011.01]***

21/4335 • • • • *Housekeeping operations, e.g. prioritizing content for deletion because of storage space restrictions* ***[2011.01]***

21/434 • • • *Disassembling of a multiplex stream, e.g. demultiplexing audio and video streams or extraction of additional data from a video stream; Remultiplexing of multiplex streams; Extraction or processing of SI; Disassembling of packetised elementary stream* ***[2011.01]***

21/435 • • • *Processing of additional data, e.g. decrypting of additional data or reconstructing software from modules extracted from the transport stream* ***[2011.01]***

21/436 • • • *Interfacing a local distribution network, e.g. communicating with another STB or inside the home* ***[2011.01]***

21/4363 • • • • *Adapting the video stream to a specific local network, e.g. a IEEE 1394 or Bluetooth network* ***[2011.01]***

21/4367 • • • • *Establishing a secure communication between the client and a peripheral device or smart card (arrangements for secret or secure communication H04L 9/00; security arrangements for protecting computers or computer systems against unauthorised activity G06F 21/00)* ***[2011.01]***

21/437 • • • *Interfacing the upstream path of the transmission network, e.g. for transmitting client requests to a VOD server* ***[2011.01]***

21/438 • • • *Interfacing the downstream path of the transmission network originating from a server, e.g. retrieving MPEG packets from an IP network* ***[2011.01]***

21/4385 • • • • *Multiplex stream processing, e.g. multiplex stream decrypting* ***[2011.01]***

21/439 • • • *Processing of audio elementary streams* ***[2011.01]***

21/44 • • • *Processing of video elementary streams, e.g. splicing a video clip retrieved from local storage with an incoming video stream or rendering scenes according to MPEG-4 scene graphs* ***[2011.01]***

21/4402 • • • • *involving reformatting operations of video signals for household redistribution, storage or real-time display* ***[2011.01]***

21/4405 • • • • *involving video stream decryption (arrangements for secret or secure communication H04L 9/00)* ***[2011.01]***

21/4408 • • • • *involving video stream encryption, e.g. re-encrypting a decrypted video stream for redistribution in a home network (arrangements for secret or secure communication H04L 9/00)* ***[2011.01]***

21/441 • • • *Acquiring end-user identification* ***[2011.01]***

21/4415 • • • • *using biometric characteristics of the user, e.g. by voice recognition or fingerprint scanning* ***[2011.01]***

21/442 • • • *Monitoring of processes or resources, e.g. detecting the failure of a recording device, monitoring the downstream bandwidth, the number of times a movie has been viewed or the storage space available from the internal hard disk* ***[2011.01]***

21/4425 • • • • *Monitoring of client processing errors or hardware failure (monitoring in electrical digital data processing G06F 11/00)* ***[2011.01]***

21/443 • • • *OS processes, e.g. booting a STB, implementing a Java virtual machine in a STB or power management in a STB (arrangements for program loading or initiating G06F 9/445)* ***[2011.01]***

21/45 • • *Management operations performed by the client for facilitating the reception of or the interaction with the content or administrating data related to the end-user or to the client device itself, e.g. learning user preferences for recommending movies or resolving scheduling conflicts* ***[2011.01]***

21/454 • • • *Content filtering, e.g. blocking advertisements* ***[2011.01]***

21/4545 • • • • *Input to filtering algorithms, e.g. filtering a region of the image* ***[2011.01]***

21/458 • • • *Scheduling content for creating a personalised stream, e.g. by combining a locally stored advertisement with an incoming stream; Updating operations, e.g. for OS modules* ***[2011.01]***

21/462 • • • *Content or additional data management e.g. creating a master electronic program guide from data received from the Internet and a Head-end or controlling the complexity of a video stream by scaling the resolution or bit-rate based on the client capabilities* ***[2011.01]***

21/4623 • • • • *Processing of entitlement messages, e.g. ECM [Entitlement Control Message] or EMM [Entitlement Management Message]* ***[2011.01]***

21/4627 • • • • *Rights management* ***[2011.01]***

21/466 • • • *Learning process for intelligent management, e.g. learning user preferences for recommending movies* ***[2011.01]***

21/47 • • *End-user applications (interaction techniques for graphical user interfaces G06F 3/048; receiver circuitry for displaying additional information H04N 5/445)* ***[2011.01]***

21/472 • • • *End-user interface for requesting content, additional data or services; End-user interface for interacting with content, e.g. for content reservation or setting reminders, for requesting event notification or for manipulating displayed content* ***[2011.01]***

21/4722 • • • • *for requesting additional data associated with the content* ***[2011.01]***

21/4725 • • • • • *using interactive regions of the image, e.g. hot spots* ***[2011.01]***

21/4728 • • • • *for selecting a ROI [Region Of Interest], e.g. for requesting a higher resolution version of a selected region* ***[2011.01]***

21/475 • • • *End-user interface for inputting end-user data, e.g. PIN [Personal Identification Number] or preference data* ***[2011.01]***

21/478 • • • *Supplemental services, e.g. displaying phone caller identification or shopping application* ***[2011.01]***

21/4782 • • • • *Web browsing* ***[2011.01]***

21/4784 • • • • *receiving rewards* ***[2011.01]***

21/4786 • • • • *e-mailing* ***[2011.01]***

21/4788 • • • • *communicating with other users, e.g. chatting* ***[2011.01]***

21/482 • • • *End-user interface for program selection* ***[2011.01]***

21/485 • • • *End-user interface for client configuration* ***[2011.01]***
21/488 • • • *Data services, e.g. news ticker* ***[2011.01]***
21/60 • *Network structure or processes for video distribution between server and client or between remote clients (data switching networks H04L 12/00; wireless communication networks H04W); Control signaling between clients, server and network components; Transmission of management data between server and client; Communication details between server and client* ***[2011.01]***
21/61 • • *Network physical structure; Signal processing (H04B takes precedence)* ***[2011.01]***
21/63 • • *Control signaling between client, server and network components; Network processes for video distribution between server and clients, e.g. transmitting basic layer and enhancement layers over different transmission paths, setting up a peer-to-peer communication via Internet between remote STB's; Communication protocols; Addressing* ***[2011.01]***
21/633 • • • *Control signals issued by server directed to the network components or client* ***[2011.01]***
21/6332 • • • • *directed to client* ***[2011.01]***
21/6334 • • • • • *for authorization, e.g. by transmitting a key (arrangements for secret or secure communication H04L 9/00)* ***[2011.01]***
21/6336 • • • • • *directed to decoder* ***[2011.01]***
21/6338 • • • • *directed to network* ***[2011.01]***
21/637 • • • *Control signals issued by the client directed to the server or network components* ***[2011.01]***
21/6371 • • • • *directed to network* ***[2011.01]***
21/6373 • • • • *for rate control* ***[2011.01]***
21/6375 • • • • *for requesting retransmission* ***[2011.01]***
21/6377 • • • • *directed to server* ***[2011.01]***
21/6379 • • • • • *directed to encoder* ***[2011.01]***
21/64 • • • *Addressing* ***[2011.01]***
21/6402 • • • • *Address allocation for clients* ***[2011.01]***
21/6405 • • • • *Multicasting* ***[2011.01]***
21/6408 • • • • *Unicasting* ***[2011.01]***
21/643 • • • *Communication protocols* ***[2011.01]***
21/6433 • • • • *DSM-CC [Digital Storage Media - Command and Control Protocol]* ***[2011.01]***
21/6437 • • • • *RTP [Real-time Transport Protocol]* ***[2011.01]***
21/647 • • • *Control signaling between network components and server or clients; Network processes for video distribution between server and clients, e.g. controlling the quality of the video stream, by dropping packets, protecting content from unauthorised alteration within the network, monitoring of network load or bridging between two different networks, e.g. between IP and wireless* ***[2011.01]***
21/65 • • *Transmission of management data between client and server* ***[2011.01]***
21/654 • • • *Transmission by server directed to the client* ***[2011.01]***
21/6543 • • • • *for forcing some client operations, e.g. recording* ***[2011.01]***
21/6547 • • • • *comprising parameters, e.g. for client setup* ***[2011.01]***
21/658 • • • *Transmission by the client directed to the server* ***[2011.01]***
21/6583 • • • • *Acknowledgement* ***[2011.01]***
21/6587 • • • • *Control parameters, e.g. trick play commands or viewpoint selection* ***[2011.01]***
21/80 • *Generation or processing of content or additional data by content creator independently of the distribution process; Content per se* ***[2011.01]***
21/81 • • *Monomedia components thereof* ***[2011.01]***
21/83 • • *Generation or processing of protective or descriptive data associated with content; Content structuring* ***[2011.01]***
21/835 • • • *Generation of protective data, e.g. certificates* ***[2011.01]***
21/8352 • • • • *involving content or source identification data, e.g. UMID [Unique Material Identifier]* ***[2011.01]***
21/8355 • • • • *involving usage data, e.g. number of copies or viewings allowed* ***[2011.01]***
21/8358 • • • • *involving watermark* ***[2011.01]***
21/84 • • • *Generation or processing of descriptive data, e.g. content descriptors* ***[2011.01]***
21/8405 • • • • *represented by keywords* ***[2011.01]***
21/845 • • • *Structuring of content, e.g. decomposing content into time segments* ***[2011.01]***
21/85 • • *Assembly of content; Generation of multimedia applications* ***[2011.01]***
21/854 • • • *Content authoring* ***[2011.01]***
21/8541 • • • • *involving branching, e.g. to different story endings* ***[2011.01]***
21/8543 • • • • *using a description language, e.g. MHEG [Multimedia and Hypermedia information coding Expert Group] or XML [eXtensible Markup Language]* ***[2011.01]***
21/8545 • • • • *for generating interactive applications* ***[2011.01]***
21/8547 • • • • *involving timestamps for synchronizing content* ***[2011.01]***
21/8549 • • • • *Creating video summaries, e.g. movie trailer* ***[2011.01]***
21/858 • • • *Linking data to content, e.g. by linking an URL to a video object or by creating a hotspot* ***[2011.01]***

Indexing scheme associated with groups H04N 1/00-H04N 17/00, relating to still video cameras. [6]

101/00 Still video cameras [6]

H04Q SELECTING (switches, relays, selectors H01H; wireless communication networks H04W) **[1, 2009.01]**

Note(s) [1, 2009.01]

1. This subclass covers :
   - methods, circuits, or apparatus for establishing selectively a connection between a desired number of stations (normally two), or between a main station and a desired number of substations (normally one) for the purpose of transferring information via this connection after it has been established;

- selective calling arrangements over connections already established.

2. In this subclass, the following terms or expressions are used with the meanings indicated:
   - "subscriber" is a general term for terminal equipment, e.g. telephone for public use;
   - "substation" means a subscriber or monitoring equipment which may connect a single subscriber to a line without choice as to subscriber;
   - "satellite" is a kind of exchange the operation of which depends upon control signals received from a supervisory exchange;
   - "switching centres" includes exchanges and satellites.

Subclass index

1/00 Details of selecting apparatus or arrangements

1/02 • Constructional details
1/04 • • Frames or mounting racks for selector switches; Accessories therefor, e.g. frame cover
1/06 • • Cable ducts or mountings specially adapted for exchange installations
1/08 • • Frames or mounting racks for relays; Accessories therefor
1/10 • • Exchange station construction
1/12 • • Arrangements of multiple bars with or without pivotable frames
1/14 • • Distribution frames
1/16 • • Wiring arrangements for selector switches or relays in frames
1/18 • Electrical details
1/20 • • Testing circuits or apparatus; Circuits or apparatus for detecting, indicating, or signalling faults or troubles
1/22 • • • Automatic arrangements
1/24 • • • • for connection devices
1/26 • • • • for signalling trouble in unoccupied sub-exchanges
1/28 • • Current-supply circuits or arrangements for selection equipment at exchanges
1/30 • • Signalling arrangements; Manipulation of signalling currents (multiplex systems providing for calling or supervisory signals H04J 1/14, H04J 3/12)
1/32 • • • using trains of dc pulses (H04Q 1/39 takes precedence) **[3]**
1/34 • • • • Impulse regenerators with mechanical or other non-electrical marking arrangements
1/36 • • • • Pulse-correcting arrangements, e.g. for reducing effects due to interference
1/38 • • • using combinations of direct currents of different amplitudes or polarities over line conductors or combination of line conductors
1/39 • • • using coded pulse groups **[3]**
1/40 • • • whereby duration of pulse or interval between two pulses is variable
1/42 • • • • involving the position of a pulse in a cycle
1/44 • • • using ac (H04Q 1/50 takes precedence) **[3]**
1/442 • • • • with out-of-voice band signalling frequencies **[3]**
1/444 • • • • with voice-band signalling frequencies **[3]**
1/446 • • • • • using one signalling frequency (H04Q 1/46 takes precedence) **[3]**
1/448 • • • • • • with conversion of a single frequency signal into a digital signal **[3]**
1/45 • • • • • using multi-frequency signalling (H04Q 1/46 takes precedence) **[3]**
1/453 • • • • • • in which m-out-of-n signalling frequencies are transmitted **[3]**
1/457 • • • • • • with conversion of multi-frequency signals into digital signals **[3]**
1/46 • • • • • comprising means for distinguishing between a signalling current of predetermined frequency and a complex current containing that frequency, e.g. speech current **[3]**
1/48 • • • Induced-current signalling arrangements
1/50 • • • Conversion between different kinds of signals
1/54 • • Amplifier switched-on automatically in dependence on automatically selected lines
1/56 • • Balancing circuitry switched-on automatically in dependence on automatically selected lines

3/00 Selecting arrangements (H04Q 5/00-H04Q 11/00 take precedence)
3/02 • Circuit arrangements for selectors responsive to a permutation code
3/04 • Circuit arrangements for receivers of routing digits
3/06 • • for group or trunk group selectors
3/08 • • for local or long-distance selectors
3/10 • • for PBX selectors, i.e. private branch exchange selectors
3/12 • • for line selectors providing transfer of routing digits
3/14 • • for two-way operation selectors
3/16 • • for marking-switches
3/18 • Circuit arrangements for first stage of hunting switching
3/20 • • for preselectors
3/22 • • • comprising common calling and disconnecting circuit
3/24 • • for line finders
3/26 • • • comprising common calling and disconnecting circuit
3/28 • • • comprising main groups and subgroups
3/30 • • Selector finders, i.e. allotters
3/32 • Circuit arrangements for second or subsequent stages of hunting switching **[2]**
3/34 • • for the second preselection stage
3/36 • • for the second line-finder stage
3/38 • • for stages after the group-selector stage
3/40 • • for stages after the line selector, e.g. for extension selector
3/42 • Circuit arrangements for indirect selecting controlled by common circuits, e.g. register controller, marker
3/44 • • using revertive control

3/46 • • using signals other than revertive impulses
3/47 • • using translators
3/48 • • using markers
3/49 • • • for end-to-end marking
3/495 • • • for routing connecting paths
3/52 • • using static devices in switching stages, e.g. electronic switching arrangements **[2]**
3/54 • • in which the logic circuitry controlling the exchange is centralised
3/545 • • • using a stored programme **[4]**
3/55 • • • using wired logic circuitry **[4]**
3/555 • • • • being comprised by electro-magnetic devices **[4]**
3/56 • • in which the control signals are multiplexed **[2]**
3/58 • Arrangements providing connection between main exchange and sub-exchange or satellite
3/60 • • for connecting to satellites or concentrators which connect one or more exchange lines with a group of local lines
3/62 • • for connecting to private branch exchanges
3/64 • Distributing or queuing
3/66 • • Traffic distributors
3/68 • • Grouping or interlacing selector groups or stages
3/70 • Identification of class of calling subscriber
3/72 • Finding out and indicating number of calling subscriber
3/74 • • Identification of subscriber calling from a party-line
3/76 • Translation from the called subscriber's number to the outgoing or incoming control information **[4]**
3/78 • Temporary storage of information of calling or called subscriber (intermediate storage means for telegraphic communication H04L 13/08) **[4]**

5/00 Selecting arrangements wherein two or more subscriber stations are connected by the same line to the exchange

5/02 • with direct connection for all subscribers, i.e. party-line system (H04Q 5/24 takes precedence)
5/04 • • Signalling by currents in one or other or both line wires or additional wires
5/06 • • Signalling by amplitude or polarity of dc
5/08 • • Signalling by continuous ac
5/10 • • • using single frequencies for different subscribers
5/12 • • • using combinations of frequencies
5/14 • • Signalling by pulses
5/16 • • • by predetermined number of pulses
5/18 • with indirect connection, i.e. through subordinate switching centre
5/20 • • the subordinate centre permitting interconnection of subscribers connected thereto
5/22 • • the subordinate centre not permitting interconnection of subscribers connected thereto
5/24 • for two-party-line systems

9/00 Arrangements in telecontrol or telemetry systems for selectively calling a substation from a main station, in which substation desired apparatus is selected for applying a control signal thereto or for obtaining measured values therefrom

9/02 • Automatically-operated arrangements
9/04 • Arrangements for synchronous operation
9/06 • Calling by using amplitude or polarity of dc
9/08 • Calling by using continuous ac
9/10 • • using single different frequencies
9/12 • • using combinations of frequencies
9/14 • Calling by using pulses
9/16 • • by predetermined number of pulses

11/00 Selecting arrangements for multiplex systems (multiplex systems H04J)

11/02 • for frequency-division multiplexing
11/04 • for time-division multiplexing
11/06 • • Time-space-time switching **[5]**
11/08 • • Time only switching **[5]**

H04R LOUDSPEAKERS, MICROPHONES, GRAMOPHONE PICK-UPS OR LIKE ACOUSTIC ELECTROMECHANICAL TRANSDUCERS; DEAF-AID SETS; PUBLIC ADDRESS SYSTEMS (generating mechanical vibrations in general B06B; transducers for measuring particular variables G01; transducers in clocks G04; producing sounds with frequency not determined by supply frequency G10K; transducers in recording or reproducing heads G11B; transducers in motors H02) **[6]**

Note(s)

1. This subclass covers:
   - loudspeakers, microphones, gramophone pick-ups or like transducers producing acoustic waves or variations of electric current or voltage;
   - arrangements actuated by variations of electric current or voltage for cutting grooves in records;
   - circuits for the above-mentioned arrangements;
   - monitoring or testing the above-mentioned equipment.
2. Attention is drawn to the Notes following the titles of class B81 and subclass B81B relating to "micro-structural devices" and "micro-structural systems".

Subclass index

TYPES OF TRANSDUCER
With magnetic circuit:
moving coil; moving armature; magnetisable diaphragm; magnetostriction.....9/00, 11/00, 13/00, 15/00
Without magnetic circuit:
piezo-electric; electrostatic; with variable resistance.....17/00, 19/00, 21/00
Other types.....23/00
Details
general; circuits; diaphragms and cones.....1/00, 3/00, 7/00

1/00 **Details of transducers** (diaphragms H04R 7/00; characterised by the nature of the transducer, see the relevant group of main groups H04R 9/00-H04R 23/00; mounting radio sets or communication systems in helmets A42B 3/30; mountings specially adapted for telephone equipment H04M 1/02)

1/02 • Casings; Cabinets; Mountings therein (H04R 1/28 takes precedence)

1/04 • • Structural association of microphone with electric circuitry therefor (in deaf-aid sets H04R 25/00)

1/06 • Arranging circuit leads; Relieving strain on circuit leads

1/08 • Mouthpieces; Attachments therefor

1/10 • Earpieces; Attachments therefor

1/12 • Sanitary or hygienic devices for mouthpieces or earpieces, e.g. for protecting against infection

1/14 • Throat mountings for microphones

1/16 • Mounting or connecting stylus to transducer with or without damping means

1/18 • • Holders for styli; Mounting holders on transducers

1/20 • Arrangements for obtaining desired frequency or directional characteristics (for stereophonic purposes H04R 5/00; speech enhancement by processing of the speech signal G10L 21/02)

1/22 • • for obtaining desired frequency characteristic only (circuits for combining transducers having different responses H04R 3/00)

1/24 • • • Structural combinations of separate transducers or of parts of the same transducer and responsive respectively to two or more frequency ranges

1/26 • • • Spatial arrangement of separate transducers responsive to two or more frequency ranges

1/28 • • • Transducer mountings or enclosures designed for specific frequency response; Transducer enclosures modified by provision of mechanical or acoustic impedances, e.g. resonator, damping means

1/30 • • • Combinations of transducers with horns, e.g. with mechanical matching means (horns in general G10K)

1/32 • • for obtaining desired directional characteristic only

1/34 • • • by using a single transducer with sound reflecting, diffracting, directing or guiding means

1/36 • • • • by using a single aperture of dimensions not greater than the shortest operating wavelength

1/38 • • • • in which sound waves act upon both sides of a diaphragm and incorporating acoustic phase-shifting means, e.g. pressure-gradient microphone

1/40 • • • by combining a number of identical transducers

1/42 • Combinations of transducers with fluid-pressure or other non-electrical amplifying means

1/44 • Special adaptations for subaqueous use, e.g. for hydrophone

1/46 • Special adaptations for use as contact microphones, e.g. on musical instrument, on stethoscope (throat mountings H04R 1/14)

3/00 **Circuits for transducers** (for stereophonic arrangements H04R 5/04; arrangements for producing a reverberation or echo sound G10K 15/08; amplifiers H03F)

3/02 • for preventing acoustic reaction

3/04 • for correcting frequency response

3/06 • • of electrostatic transducers

3/08 • • of electromagnetic transducers

3/10 • • of variable-resistance microphones

3/12 • for distributing signals to two or more loudspeakers

3/14 • • Cross-over networks

5/00 **Stereophonic arrangements** (stereophonic pick-ups H04R 9/16, H04R 11/12, H04R 17/08, H04R 19/10)

Note(s)

In this group, the following expression is used with the meaning indicated:

- "stereophonic arrangements" covers quadraphonic or similar arrangements.

5/02 • Spatial or constructional arrangements of loudspeakers

5/027 • Spatial or constructional arrangements of microphones, e.g. in dummy heads **[3]**

5/033 • Headphones for stereophonic communication **[3]**

5/04 • Circuit arrangements (combinations of amplifiers H03F 3/68; stereophonic systems H04S)

7/00 **Diaphragms for electromechanical transducers** (in general F16J 3/00)**; Cones** (for musical instruments G10)

7/02 • characterised by the construction

7/04 • • Plane diaphragms

7/06 • • • comprising a plurality of sections or layers

7/08 • • • • comprising superposed layers separated by air or other fluid

7/10 • • • • comprising superposed layers in contact

7/12 • • Non-planar diaphragms or cones

7/14 • • • corrugated, pleated, or ribbed

7/16 • Mounting or tensioning of diaphragms or cones

7/18 • • at the periphery

7/20 • • • Securing diaphragm or cone resiliently to support by flexible material, springs, cords, or strands

7/22 • • • Clamping rim of diaphragm or cone against seating

7/24 • • Tensioning by means acting directly on free portion of diaphragm or cone

7/26 • Damping by means acting directly on free portion of diaphragm or cone (air damping H04R 1/28)

9/00 **Transducers of moving-coil, moving-strip, or moving-wire type**

9/02 • Details

9/04 • • Construction, mounting, or centering of coil

9/06 • Loudspeakers

9/08 • Microphones

9/10 • Telephone receivers

9/12 • Gramophone pick-ups using a stylus; Recorders using a stylus

9/14 • • comprising two or more styli or transducers (H04R 9/16 takes precedence)
9/16 • • signals being recorded or played-back by vibration of a stylus in two orthogonal directions simultaneously
9/18 • Resonant transducers, i.e. adapted to produce maximum output at a predetermined frequency

11/00 **Transducers of moving-armature or moving-core type** (acoustic diaphragm of magnetisable material directly co-acting with electromagnet H04R 13/00)
11/02 • Loudspeakers
11/04 • Microphones
11/06 • Telephone receivers
11/08 • Gramophone pick-ups using a stylus; Recorders using a stylus
11/10 • • comprising two or more styli or transducers (H04R 11/12 takes precedence)
11/12 • • signals being recorded or played-back by vibration of a stylus in two orthogonal directions simultaneously
11/14 • Resonant transducers, i.e. adapted to produce maximum output at a predetermined frequency

13/00 **Transducers having an acoustic diaphragm of magnetisable material directly co-acting with electromagnet**
13/02 • Telephone receivers

15/00 **Magnetostrictive transducers** (magnetostrictive elements in general H01L 41/00)
15/02 • Resonant transducers, i.e. adapted to produce maximum output at a predetermined frequency

17/00 **Piezo-electric transducers; Electrostrictive transducers** (piezo-electric or electrostrictive elements in general H01L 41/00; details of piezo-electric or electrostrictive motors, generators or positioners H02N 2/00)
17/02 • Microphones
17/04 • Gramophone pick-ups using a stylus; Recorders using a stylus
17/06 • • comprising two or more styli or transducers (H04R 17/08 takes precedence)
17/08 • • signals being recorded or played-back by vibration of a stylus in two orthogonal directions simultaneously
17/10 • Resonant transducers, i.e. adapted to produce maximum output at a predetermined frequency

19/00 **Electrostatic transducers**
19/01 • characterised by the use of electrets **[3]**
19/02 • Loudspeakers (H04R 19/01 takes precedence) **[3]**
19/04 • Microphones (H04R 19/01 takes precedence) **[3]**
19/06 • Gramophone pick-ups using a stylus; Recorders using a stylus (H04R 19/01 takes precedence) **[3]**
19/08 • • comprising two or more styli or transducers (H04R 19/10 takes precedence)
19/10 • • signals being recorded or played-back by vibration of a stylus in two orthogonal directions simultaneously

21/00 **Variable-resistance transducers** (gaseous-resistance transducers H04R 23/00; magneto-resistive transducers H04R 23/00)
21/02 • Microphones
21/04 • Gramophone pick-ups using a stylus; Recorders using a stylus

23/00 **Transducers other than those covered by groups H04R 9/00-H04R 21/00**
23/02 • Transducers using more than one principle simultaneously

25/00 **Deaf-aid sets** (constructions of transducers per se H04R 9/00-H04R 23/00; structural combination with spectacle frames G02C 11/06; processing of speech signals G10L 21/00)
25/02 • adapted to be supported entirely by ear
25/04 • comprising pocket amplifiers

27/00 **Public address systems** (circuits for preventing acoustic reaction H04R 3/02; circuits for distributing signals to loudspeakers H04R 3/12; amplifiers H03F)
27/02 • Amplifying systems for the deaf
27/04 • Electric megaphones

29/00 **Monitoring arrangements; Testing arrangements**

31/00 **Apparatus or processes specially adapted for the manufacture of transducers or diaphragms therefor** (processes or apparatus specially adapted for the manufacture of micro-structural devices or systems, e.g. in combination with electrical devices, B81C)

H04S **STEREOPHONIC SYSTEMS** (information storage on discs or tapes G11B; broadcast systems for the distribution of stereophonic information H04H 20/88; multiplex systems in general H04J) **[3]**

Note(s)

In this subclass, the following expression is used with the meaning indicated:
- "stereophonic systems" covers quadraphonic or similar systems.

1/00 **Two-channel systems** (H04S 5/00, H04S 7/00 take precedence) **[3]**

3/00 **Systems employing more than two channels, e.g. quadraphonic** (H04S 5/00, H04S 7/00 take precedence) **[3]**
3/02 • of the matrix type, i.e. in which input signals are combined algebraically, e.g. after having been phase shifted with respect to each other **[3]**

5/00 **Pseudo-stereo systems, e.g. in which additional channel signals are derived from monophonic signals by means of phase shifting, time delay or reverberation** (arrangements for producing a reverberation or echo sound G10K 15/08) **[3]**
5/02 • of the pseudo four-channel type, e.g. in which rear channel signals are derived from two-channel stereo signals **[3]**

7/00 **Indicating arrangements; Control arrangements, e.g. balance control [3]**

H04W WIRELESS COMMUNICATION NETWORKS [2009.01]

Note(s) [2009.01]

1. This subclass covers:
   - communication networks for selectively establishing one or a plurality of wireless communication links between a desired number of users or between users and network equipment, for the purpose of transferring information via these wireless communication links;
   - networks deploying an infrastructure for mobility management of wireless users connected thereto, e.g. cellular networks, WLAN [Wireless Local Area Network], wireless access networks, e.g. WLL [Wireless Local Loop] or self-organising wireless communication networks, e.g. ad hoc networks;
   - planning or deployment specially adapted for the above-mentioned wireless networks;
   - services or facilities specially adapted for the above-mentioned wireless networks;
   - arrangements or techniques specially adapted for the operation of the above-mentioned wireless networks.
2. This subclass does not cover :
   - communication systems using wireless extensions, i.e. wireless links without selective communication, e.g. cordless telephones, which are covered by group H04M 1/72;
   - broadcast communication, which iscovered by subclass H04H.
3. In this subclass, at each hierarchical level, in the absence of an indication to the contrary, classification is made in the first appropriate place.

4/00 Services or facilities specially adapted for wireless communication networks [2009.01]

4/02 • Services making use of the location of users or terminals **[2009.01]**

4/04 • • in a dedicated environment, e.g. buildings or vehicles **[2009.01]**

4/06 • Selective distribution of broadcast; Services to user groups; One-way selective calling services **[2009.01]**

4/08 • • User group management **[2009.01]**

4/10 • • Push-to-Talk or Push-on-Call services **[2009.01]**

4/12 • Messaging, e.g. SMS [Short Messaging Service]; Mailboxes; Announcements, e.g. informing users on the status or progress of a communication request **[2009.01]**

4/14 • • Short messaging services, e.g. SMS or USSD [Unstructured Supplementary Service Data] **[2009.01]**

4/16 • Communication-related supplementary services, e.g. call-transfer orcall-hold **[2009.01]**

4/18 • Information format or content conversion, e.g. adaptation by the network of the transmitted or received information for the purpose of wireless delivery to users or terminals **[2009.01]**

4/20 • Auxiliary data signalling, i.e. transmitting data via a non-traffic channel **[2009.01]**

4/22 • Emergency connection handling **[2009.01]**

4/24 • Accounting or billing **[2009.01]**

4/26 • • Usage measurement **[2009.01]**

8/00 Network data management [2009.01]

8/02 • Processing of mobility data, e.g. registration information at HLR [Home Location Register] or VLR [Visitor Location Register]; Transfer of mobility data, e.g. between HLR, VLR or external networks **[2009.01]**

8/04 • • Registration atHLR or HSS [Home Subscriber Server] **[2009.01]**

8/06 • • Registration at servingnetwork Location Register,VLR oruser mobility server **[2009.01]**

8/08 • • Mobility data transfer **[2009.01]**

8/10 • • • between location register and external networks **[2009.01]**

8/12 • • • between location registers or mobility servers **[2009.01]**

8/14 • • • between corresponding nodes **[2009.01]**

8/16 • • • selectively restricting mobility tracking **[2009.01]**

8/18 • Processing of user or subscriber data, e.g. subscribed services, user preferences or user profiles; Transfer of user or subscriber data **[2009.01]**

8/20 • • Transfer of user or subscriber data **[2009.01]**

8/22 • Processing or transfer of terminal data, e.g. status or physical capabilities **[2009.01]**

8/24 • • Transfer of terminal data **[2009.01]**

8/26 • Network addressing or numbering for mobility support **[2009.01]**

8/28 • • Number portability **[2009.01]**

8/30 • Network data restoration **[2009.01]**

12/00 Security arrangements, e.g. access security or fraud detection; Authentication, e.g. verifying user identity or authorisation; Protecting privacy or anonymity [2009.01]

12/02 • Protecting privacy or anonymity **[2009.01]**

12/04 • Key management **[2009.01]**

12/06 • Authentication **[2009.01]**

12/08 • Access security **[2009.01]**

12/10 • Integrity **[2009.01]**

12/12 • Fraud detection **[2009.01]**

16/00 Network planning, e.g. coverage or traffic planning tools; Network deployment, e.g. resource partitioning or cell structures [2009.01]

16/02 • Resource partitioning among network components, e.g. reuse partitioning **[2009.01]**

16/04 • • Traffic adaptive resource partitioning **[2009.01]**

16/06 • • Hybrid resource partitioning, e.g. channel borrowing **[2009.01]**

16/08 • • • Load shedding arrangements **[2009.01]**

16/10 • • Dynamic resource partitioning **[2009.01]**

16/12 • • Fixed resource partitioning **[2009.01]**

16/14 • Spectrum sharing arrangements **[2009.01]**

16/16 • • for PBS [Private Base Station] arrangements **[2009.01]**

16/18 • Network planning tools **[2009.01]**

16/20 • • for indoor coverage or short range network deployment **[2009.01]**

16/22 • Traffic simulation tools or models **[2009.01]**

16/24 • Cell structures **[2009.01]**

16/26 • • Cell enhancers, e.g. for tunnels orbuilding shadow **[2009.01]**
16/28 • • using beam steering **[2009.01]**
16/30 • • Special cell shapes, e.g. doughnuts orring cells **[2009.01]**
16/32 • • Hierarchical cell structures **[2009.01]**

24/00 Supervisory, monitoring or testing arrangements [2009.01]
24/02 • Arrangements for optimising operational condition **[2009.01]**
24/04 • Arrangements for maintaining operational condition **[2009.01]**
24/06 • Testing using simulated traffic **[2009.01]**
24/08 • Testing using real traffic **[2009.01]**
24/10 • Scheduling measurement reports **[2009.01]**

28/00 Network traffic or resource management [2009.01]
28/02 • Traffic management, e.g. flow control or congestion control **[2009.01]**
28/04 • • Error control **[2009.01]**
28/06 • • Optimising, e.g. header compression, information sizing **[2009.01]**
28/08 • • Load balancing or load distribution **[2009.01]**
28/10 • • Flow control **[2009.01]**
28/12 • • • using signalling between network elements **[2009.01]**
28/14 • • • using intermediate storage **[2009.01]**
28/16 • Central resource management; Negotiation of resources, e.g. negotiating bandwidth or QoS [Quality of Service] **[2009.01]**
28/18 • • Negotiating wireless communication parameters **[2009.01]**
28/20 • • • Negotiating bandwidth **[2009.01]**
28/22 • • • Negotiating communication rate **[2009.01]**
28/24 • • Negotiating SLA [Service Level Agreement]; Negotiating QoS [Quality of Service] **[2009.01]**
28/26 • • Resource reservation **[2009.01]**

36/00 Handoff or reselecting arrangements [2009.01]
36/02 • Buffering or recovering information during reselection **[2009.01]**
36/04 • Reselecting a cell layer in multi-layered cells **[2009.01]**
36/06 • Reselecting a communication resource in the serving access point **[2009.01]**
36/08 • Reselecting an access point **[2009.01]**
36/10 • Reselecting an access point controller **[2009.01]**
36/12 • Reselecting a serving backbone network switching or routing node **[2009.01]**
36/14 • Reselecting a network or an air interface **[2009.01]**
36/16 • Performing reselection for specific purposes **[2009.01]**
36/18 • • for allowing seamless reselection, e.g. soft reselection **[2009.01]**
36/20 • • for optimising the interference level **[2009.01]**
36/22 • • for handling the traffic **[2009.01]**
36/24 • Reselection being triggered by specific parameters **[2009.01]**
36/26 • • by agreed or negotiated communication parameters **[2009.01]**
36/28 • • • involving a plurality of connections, e.g. multi-call or multi-bearer connections **[2009.01]**
36/30 • • by measured or perceived connection quality data **[2009.01]**
36/32 • • by location or mobility data, e.g. speed data **[2009.01]**
36/34 • Reselection control **[2009.01]**
36/36 • • by user or terminal equipment **[2009.01]**
36/38 • • by fixed network equipment **[2009.01]**

40/00 Communication routing or communication path finding [2009.01]
40/02 • Communication route or path selection, e.g. power-based or shortest path routing **[2009.01]**
40/04 • • based on wireless node resources **[2009.01]**
40/06 • • • based on characteristics of available antennas **[2009.01]**
40/08 • • • based on transmission power **[2009.01]**
40/10 • • • based on available power or energy **[2009.01]**
40/12 • • based on transmission quality or channel quality **[2009.01]**
40/14 • • • based on stability **[2009.01]**
40/16 • • • based on interference **[2009.01]**
40/18 • • based on predicted events **[2009.01]**
40/20 • • based on geographic position or location **[2009.01]**
40/22 • • using selective relaying for reaching a BTS [Base Transceiver Station] or an access point **[2009.01]**
40/24 • Connectivity information management, e.g. connectivity discovery or connectivity update **[2009.01]**
40/26 • • for hybrid routing by combining proactive and reactive routing **[2009.01]**
40/28 • • for reactive routing **[2009.01]**
40/30 • • for proactive routing **[2009.01]**
40/32 • • for defining a routing cluster membership **[2009.01]**
40/34 • Modification of an existing route **[2009.01]**
40/36 • • due to handover **[2009.01]**
40/38 • • adapting due to varying relative distances between nodes **[2009.01]**

48/00 Access restriction; Network selection; Access point selection [2009.01]
48/02 • Access restriction performed under specific conditions **[2009.01]**
48/04 • • based on user or terminal location or mobility data, e.g. moving direction or speed **[2009.01]**
48/06 • • based on traffic conditions **[2009.01]**
48/08 • Access restriction or access information delivery, e.g. discovery data delivery **[2009.01]**
48/10 • • using broadcasted information **[2009.01]**
48/12 • • using downlink control channel **[2009.01]**
48/14 • • using user query **[2009.01]**
48/16 • Discovering; Processing access restriction or access information **[2009.01]**
48/18 • Selecting a network or a communication service **[2009.01]**
48/20 • Selecting an access point **[2009.01]**

52/00 Power management, e.g. TPC [Transmission Power Control], power saving or power classes [2009.01]
52/02 • Power saving arrangements **[2009.01]**
52/04 • TPC [Transmission power control] **[2009.01]**
52/06 • • TPC algorithms **[2009.01]**
52/08 • • • Closed loop power control **[2009.01]**
52/10 • • • Open loop power control **[2009.01]**
52/12 • • • Outer and inner loops **[2009.01]**
52/14 • • • Separate analysis of uplink or downlink **[2009.01]**

52/16 • • • Deriving transmission power values from another channel **[2009.01]**
52/18 • • TPC being performed according to specific parameters **[2009.01]**
52/20 • • • using error rate **[2009.01]**
52/22 • • • taking into account previous information or commands **[2009.01]**
52/24 • • • using SIR [Signal to Interference Ratio] or other wireless path parameters **[2009.01]**
52/26 • • • using transmission rate or quality of service QoS [Quality of Service] **[2009.01]**
52/28 • • • using user profile, e.g. mobile speed, priority or network state, e.g. standby, idle or non-transmission **[2009.01]**
52/30 • • using constraints in the total amount of available transmission power **[2009.01]**
52/32 • • • TPC of broadcast or control channels **[2009.01]**
52/34 • • • TPC management, i.e. sharing limited amount of power among users or channels or data types, e.g. cell loading **[2009.01]**
52/36 • • • with a discrete range or set of values, e.g. step size, ramping or offsets **[2009.01]**
52/38 • • TPC being performed in particular situations **[2009.01]**
52/40 • • • during macro-diversity or soft handoff **[2009.01]**
52/42 • • • in systems with time, space, frequency or polarisation diversity **[2009.01]**
52/44 • • • in connection with interruption of transmission **[2009.01]**
52/46 • • • in multi-hop networks, e.g. wireless relay networks **[2009.01]**
52/48 • • • during retransmission after error or non-acknowledgment **[2009.01]**
52/50 • • • at the moment of starting communication in a multiple access environment **[2009.01]**
52/52 • • using AGC [Automatic Gain Control] circuits or amplifiers **[2009.01]**
52/54 • • Signalisation aspects of the TPC commands, e.g. frame structure **[2009.01]**
52/56 • • • Detection of errors of TPC bits **[2009.01]**
52/58 • • • Format of the TPC bits **[2009.01]**
52/60 • • • using different transmission rates for TPC commands **[2009.01]**

56/00 Synchronisation arrangements [2009.01]

60/00 Registration, e.g. affiliation to network; De-registration, e.g. terminating affiliation [2009.01]
60/02 • by periodical registration **[2009.01]**
60/04 • using triggered events **[2009.01]**
60/06 • De-registration or detaching **[2009.01]**

64/00 Locating users or terminals for network management purposes, e.g. mobility management [2009.01]

68/00 Notification of users, e.g. alerting for incoming communication or change of service [2009.01]
68/02 • Arrangements for increasing efficiency of notification or paging channel **[2009.01]**
68/04 • multi-step notification using statistical or historical mobility data **[2009.01]**
68/06 • using multi-step notification by changing the notification area **[2009.01]**
68/08 • using multi-step notification by increasing the notification area **[2009.01]**
68/10 • using simulcast notification **[2009.01]**
68/12 • Inter-network notification **[2009.01]**

72/00 Local resource management, e.g. selection or allocation of wireless resources or wireless traffic scheduling [2009.01]
72/02 • Selection of wireless resources by user or terminal **[2009.01]**
72/04 • Wireless resource allocation **[2009.01]**
72/06 • • based on ranking criteria of the wireless resources **[2009.01]**
72/08 • • based onquality criteria **[2009.01]**
72/10 • • based on priority criteria **[2009.01]**
72/12 • Wireless traffic scheduling **[2009.01]**
72/14 • • using a grant channel **[2009.01]**

74/00 Wireless channel access, e.g. scheduled or random access [2009.01]
74/02 • Hybrid access techniques **[2009.01]**
74/04 • Scheduled access **[2009.01]**
74/06 • • using polling **[2009.01]**
74/08 • Non-scheduled access, e.g. random access, ALOHA or CSMA [Carrier Sense Multiple Access] **[2009.01]**

76/00 Connection management, e.g. connection set-up, manipulation or release [2009.01]
76/02 • Connection set-up **[2009.01]**
76/04 • Connection manipulation **[2009.01]**
76/06 • Connection release **[2009.01]**

80/00 Wireless network protocols or protocol adaptations to wireless operation, e.g. WAP [Wireless Application Protocol] [2009.01]
80/02 • Data link layer protocols **[2009.01]**
80/04 • Network layer protocols, e.g. mobile IP [Internet Protocol] **[2009.01]**
80/06 • Transport layer protocols, e.g. TCP [Transport Control Protocol] over wireless **[2009.01]**
80/08 • Upper layer protocols **[2009.01]**
80/10 • • adapted for session management, e.g. SIP [Session Initiation Protocol] **[2009.01]**
80/12 • • Application layer protocols, e.g. WAP **[2009.01]**

84/00 Network topologies [2009.01]
84/02 • Hierarchically pre-organised networks, e.g. paging networks, cellular networks, WLAN [Wireless Local Area Network] or WLL [Wireless Local Loop] **[2009.01]**
84/04 • • Large scale networks; Deep hierarchical networks **[2009.01]**
84/06 • • • Airborne or Satellite Networks **[2009.01]**
84/08 • • • Trunked mobile radio systems **[2009.01]**
84/10 • • Small scale networks; Flat hierarchical networks **[2009.01]**
84/12 • • • WLAN [Wireless Local Area Networks] **[2009.01]**
84/14 • • • WLL [Wireless Local Loop]; RLL [Radio Local Loop] **[2009.01]**
84/16 • • • WPBX [Wireless Private Branch Exchange] **[2009.01]**
84/18 • Self-organising networks, e.g. ad hoc networks or sensor networks **[2009.01]**
84/20 • • Master-slave arrangements **[2009.01]**
84/22 • • with access to wired networks **[2009.01]**

88/00 Devices specially adapted for wireless communication networks, e.g. terminals, base stations or access point devices [2009.01]

88/02 • Terminal devices **[2009.01]**

88/04 • • adapted for relaying to or from another terminal or user **[2009.01]**

88/06 • • adapted for operation in multiple networks, e.g. multi-mode terminals **[2009.01]**

88/08 • Access point devices **[2009.01]**

88/10 • • adapted for operation in multiple networks, e.g. multi-mode access points **[2009.01]**

88/12 • Access point controller devices **[2009.01]**

88/14 • Backbone network devices **[2009.01]**

88/16 • Gateway arrangements **[2009.01]**

88/18 • Service support; Network management devices **[2009.01]**

92/00 Interfaces specially adapted for wireless communication networks [2009.01]

92/02 • Inter-networking arrangements **[2009.01]**

92/04 • Interfaces between hierarchically different network devices **[2009.01]**

92/06 • • between gateways and public network devices **[2009.01]**

92/08 • • between user and terminal device **[2009.01]**

92/10 • • between terminal device and access point, i.e. wireless air interface **[2009.01]**

92/12 • • between access points and access point controllers **[2009.01]**

92/14 • • between access point controllers and backbone network device **[2009.01]**

92/16 • Interfaces between hierarchically similar devices **[2009.01]**

92/18 • • between terminal devices **[2009.01]**

92/20 • • between access points **[2009.01]**

92/22 • • between access point controllers **[2009.01]**

92/24 • • between backbone network devices **[2009.01]**

99/00 Subject matter not provided for in other groups of this subclass [2009.01]