SECTION H — ELECTRICITY

H04   ELECTRIC COMMUNICATION TECHNIQUE

Note(s) [4]

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

H04B   TRANSMISSION [4]

Note(s)

This subclass <u>covers</u> 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 [1, 4, 2006.01]**

1/02   • Transmitters **[1, 2006.01]**

1/03   • • Constructional details, e.g. casings, housings **[2, 2006.01]**

1/034   • • • Portable transmitters **[2, 2006.01]**

1/036   • • • Cooling arrangements **[2, 2006.01]**

1/04   • • Circuits **[1, 2006.01]**

1/06   • Receivers **[1, 2006.01]**

1/08   • • Constructional details, e.g. cabinet **[1, 2006.01]**

1/10   • • Means associated with receiver for limiting or suppressing noise or interference **[1, 2006.01]**

1/12   • • • Neutralising, balancing, or compensation arrangements **[1, 2006.01]**

1/14   • • • Automatic detuning arrangements **[1, 2006.01]**

1/16   • • Circuits **[1, 2006.01]**

1/18   • • • Input circuits, e.g. for coupling to an antenna or a transmission line (coupling networks between antennas or lines and receivers independent of the nature of the receiver H03H) **[1, 2006.01]**

1/20   • • • for coupling gramophone pick-up, recorder output, or microphone to receiver **[1, 2006.01]**

1/22   • • • for receivers in which no local oscillation is generated **[1, 2006.01]**

1/24   • • • • the receiver comprising at least one semiconductor device having three or more electrodes **[1, 2006.01]**

1/26   • • • for superheterodyne receivers (multiple frequency-changing H03D 7/16) **[1, 2006.01]**

1/28   • • • • the receiver comprising at least one semiconductor device having three or more electrodes **[1, 2006.01]**

1/30   • • • for homodyne or synchrodyne receivers (demodulator circuits H03D 1/22) **[1, 2006.01]**

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, 2006.01, 2015.01]**

1/3805   • • with built-in auxiliary receivers **[2015.01]**

1/3816   • • Mechanical arrangements for accommodating identification devices, e.g. cards or chips; with connectors for programming identification devices **[2015.01]**

1/3818   • • • Arrangements for facilitating insertion or removal of identification devices **[2015.01]**

1/3822   • • specially adapted for use in vehicles (H04B 1/3827 takes precedence) **[2015.01]**

1/3827   • • Portable transceivers **[2015.01]**

1/3877   • • • Arrangements for enabling portable transceivers to be used in a fixed position, e.g. cradles or boosters **[2015.01]**

1/3883   • • • Arrangements for mounting batteries or battery chargers **[2015.01]**

1/3888   • • • Arrangements for carrying or protecting transceivers **[2015.01]**

1/40   • • Circuits **[1, 2006.01, 2015.01]**

1/401   • • • for selecting or indicating operating mode **[2015.01]**

1/403	• • •	using the same oscillator for generating both the transmitter frequency and the receiver local oscillator frequency **[2015.01]**
1/405	• • • •	with multiple discrete channels **[2015.01]**
1/408	• • • •	the transmitter oscillator frequency being identical to the receiver local oscillator frequency **[2015.01]**
1/44	• • •	Transmit/receive switching **[1, 2, 2006.01]**
1/46	• • • •	by voice-frequency signals; by pilot signals **[1, 2006.01]**
1/48	• • • •	in circuits for connecting transmitter and receiver to a common transmission path, e.g. by energy of transmitter **[1, 2006.01]**
1/50	• • •	using different frequencies for the two directions of communication **[1, 2006.01]**
1/52	• • • •	Hybrid arrangements, i.e. arrangements for transition from single-path two-direction transmission to single-direction transmission on each of two paths or <u>vice versa</u> **[1, 2006.01, 2015.01]**
1/525	• • • • •	with means for reducing leakage of transmitter signal into the receiver **[2015.01]**
1/54	• • •	using the same frequency for two directions of communication (H04B 1/44 takes precedence) **[1, 2006.01]**
1/56	• • • •	with provision for simultaneous communication in two directions **[1, 2006.01]**
1/58	• • • •	Hybrid arrangements, i.e. arrangements for transition from single-path two-direction transmission to single-direction transmission on each of two paths or <u>vice versa</u> **[1, 2006.01]**
1/59	•	Responders; Transponders **[1, 2006.01]**
1/60	•	Supervising unattended repeaters **[1, 2006.01]**
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, 2006.01]**
1/64	• •	Volume compression or expansion arrangements **[1, 2006.01]**
1/66	•	for reducing bandwidth of signals; for improving efficiency of transmission (H04B 1/68 takes precedence) **[1, 2006.01]**
1/68	•	for wholly or partially suppressing the carrier or one side band **[1, 4, 2006.01]**
1/69	•	Spread spectrum techniques **[6, 2006.01, 2011.01]**

<u>Note(s)</u> **[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, 2006.01, 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, 2018.01]**
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, 2006.01, 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 antennas, e.g. dummy antennas **[1, 2006.01]**
1/74	•	for increasing reliability, e.g. using redundant or spare channels or apparatus **[3, 2006.01]**
1/76	•	Pilot transmitters or receivers for control of transmission or for equalising **[3, 2006.01]**

3/00		**Line transmission systems** (combined with near-field transmission systems H04B 5/00) **[1, 2006.01]**
3/02	•	Details **[1, 2006.01]**
3/03	• •	Hybrid circuits (for transceivers H04B 1/52, H04B 1/58) **[3, 2006.01]**
3/04	• •	Control of transmission; Equalising **[1, 2006.01]**
3/06	• • •	by the transmitted signal **[1, 2006.01]**
3/08	• • • •	in negative-feedback path of line amplifier **[1, 2006.01]**
3/10	• • •	by pilot signal **[1, 2006.01]**
3/11	• • • •	using pilot wire (H04B 3/12 take precedence) **[3, 2006.01]**
3/12	• • • •	in negative-feedback path of line amplifier **[1, 2006.01]**
3/14	• • •	characterised by the equalising network used **[1, 2006.01]**
3/16	• • •	characterised by the negative-impedance network used **[1, 2006.01]**

3/18	• • • • wherein the network comprises semiconductor devices **[1, 2006.01]**
3/20	• • Reducing echo effects or singing; Opening or closing transmitting path; Conditioning for transmission in one direction or the other **[1, 2006.01]**
3/21	• • • using a set of bandfilters **[3, 2006.01]**
3/23	• • • using a replica of transmitted signal in the time domain, e.g. echo cancellers **[3, 2006.01]**
3/26	• • Improving frequency characteristic by the use of loading coils **[1, 2006.01]**
3/28	• • Reducing interference caused by currents induced in cable sheathing or armouring **[1, 2006.01]**
3/30	• • Reducing interference caused by unbalance current in a normally balanced line **[1, 2006.01]**
3/32	• • Reducing cross-talk, e.g. by compensating **[1, 2006.01]**
3/34	• • • by systematic interconnection of lengths of cable during laying; by addition of balancing components to cable during laying **[1, 2006.01]**
3/36	• • Repeater circuits (H04B 3/58 takes precedence) **[1, 2006.01]**
3/38	• • • for signals in two different frequency ranges transmitted in opposite directions over the same transmission path **[1, 2006.01]**
3/40	• • Artificial lines; Networks simulating a line of certain length **[1, 2006.01]**
3/42	• • Circuits for by-passing of ringing signals **[1, 2006.01]**
3/44	• • Arrangements for feeding power to a repeater along the transmission line **[1, 2006.01]**
3/46	• • Monitoring; Testing **[1, 2006.01, 2015.01]**
3/462	• • • Testing group delay or phase shift, e.g. timing jitter **[2015.01]**
3/466	• • • • Testing attenuation in combination with at least one of group delay and phase shift **[2015.01]**
3/48	• • • Testing attenuation (H04B 3/466 takes precedence) **[1, 2006.01, 2015.01]**
3/487	• • • Testing crosstalk effects **[2015.01]**
3/493	• • • Testing echo effects or singing **[2015.01]**
3/50	• Systems for transmission between fixed stations via two-conductor transmission lines (H04B 3/54 takes precedence) **[1, 2006.01]**
3/52	• Systems for transmission between fixed stations via waveguides **[1, 2006.01]**
3/54	• Systems for transmission via power distribution lines (in alarm signalling systems G08B 25/06) **[1, 2006.01]**
3/56	• • Circuits for coupling, blocking, or by-passing of signals **[1, 2006.01]**
3/58	• • Repeater circuits **[1, 2006.01]**
3/60	• Systems for communication between relatively movable stations, e.g. for communication with lift (H04B 3/54 takes precedence) **[1, 2006.01]**

5/00   Near-field transmission systems, e.g. inductive loop type [1, 2006.01]

5/02	• using transceiver **[1, 2006.01]**
5/04	• Calling systems, e.g. paging system **[1, 2006.01]**
5/06	• using a portable transmitter associated with a microphone **[1, 2006.01]**

7/00   Radio transmission systems, i.e. using radiation field (H04B 10/00, H04B 15/00 take precedence) **[1, 2006.01]**

7/005	• Control of transmission; Equalising **[3, 2006.01]**
7/01	• Reducing phase shift **[3, 2006.01]**
7/015	• Reducing echo effects **[3, 2006.01]**
7/02	• Diversity systems; Multi-antenna systems, i.e. transmission or reception using multiple antennas (RAKE receivers H04B 1/7115) **[1, 2006.01, 2017.01, 2018.01]**
7/022	• • Site diversity; Macro-diversity (using two or more spaced independent antennas H04B 7/04) **[2017.01]**
7/024	• • • Co-operative use of antennas at several sites, e.g. in co-ordinated multipoint or co-operative multiple-input multiple-output [MIMO] systems **[2017.01]**
7/026	• • • Co-operative diversity, e.g. using fixed or mobile stations as relays **[2017.01]**
7/04	• • using two or more spaced independent antennas **[1, 2006.01, 2017.01]**
7/0404	• • • the mobile station comprising multiple antennas, e.g. to provide uplink diversity **[2017.01]**
7/0408	• • • using two or more beams, i.e. beam diversity **[2017.01]**
7/0413	• • • MIMO systems **[2017.01]**
7/0417	• • • • Feedback systems **[2017.01]**
7/0426	• • • • Power distribution **[2017.01]**
7/0452	• • • • Multi-user MIMO systems **[2017.01]**
7/0456	• • • • Selection of precoding matrices or codebooks, e.g. using matrices for antenna weighting **[2017.01]**
7/0491	• • • using two or more sectors, i.e. sector diversity **[2017.01]**
7/0495	• • • • using overlapping sectors in the same base station to implement MIMO antennas **[2017.01]**
7/06	• • • at the transmitting station **[1, 2006.01]**
7/08	• • • at the receiving station **[1, 2006.01]**
7/10	• • Polarisation diversity; Directional diversity **[1, 2006.01, 2017.01]**
7/12	• • Frequency diversity **[1, 2006.01]**
7/14	• Relay systems **[1, 2, 2006.01]**
7/145	• • Passive relay systems **[2, 2006.01]**
7/15	• • Active relay systems **[2, 2006.01]**
7/155	• • • Ground-based stations (H04B 7/204 takes precedence) **[2, 5, 2006.01]**
7/165	• • • • employing angle modulation **[2, 2006.01]**
7/17	• • • • employing pulse modulation, e.g. pulse code modulation **[2, 2006.01]**
7/185	• • • Space-based or airborne stations (H04B 7/204 takes precedence) **[2, 5, 2006.01]**
7/19	• • • • Earth-synchronous stations **[2, 2006.01]**
7/195	• • • • Non-synchronous stations **[2, 2006.01]**
7/204	• • • Multiple access **[5, 2006.01]**
7/208	• • • • Frequency-division multiple access **[5, 2006.01]**
7/212	• • • • Time-division multiple access **[5, 2006.01]**
7/216	• • • • Code-division or spread-spectrum multiple access **[5, 2006.01]**
7/22	• Scatter propagation systems **[1, 2006.01]**
7/24	• for communication between two or more posts (wireless communication networks H04W) **[2, 2006.01]**
7/26	• • at least one of which is mobile **[2, 2006.01]**

10/00　**Transmission systems employing electromagnetic waves other than radio-waves, e.g. infrared, visible or ultraviolet light, or employing corpuscular radiation, e.g. quantum communication [5, 2006.01, 2013.01]**

　　Note(s) [2013.01]

　　In this group, non-optical transmission systems are classified in group H04B 10/90.

10/03　• Arrangements for fault recovery **[2013.01]**
10/032　• • using working and protection systems **[2013.01]**
10/035　• • using loopbacks **[2013.01]**
10/038　• • using bypasses **[2013.01]**
10/07　• Arrangements for monitoring or testing transmission systems; Arrangements for fault measurement of transmission systems **[2013.01]**
10/071　• • using a reflected signal, e.g. using optical time domain reflectometers [OTDR] **[2013.01]**
10/073　• • using an out-of-service signal (H04B 10/071 takes precedence) **[2013.01]**
10/075　• • using an in-service signal (H04B 10/071 takes precedence) **[2013.01]**
10/077　• • • using a supervisory or additional signal **[2013.01]**
10/079　• • • using measurements of the data signal **[2013.01]**
10/11　• Arrangements specific to free-space transmission, i.e. transmission through air or vacuum **[2013.01]**
10/112　• • Line-of-sight transmission over an extended range **[2013.01]**
10/114　• • Indoor or close-range type systems **[2013.01]**
10/116　• • • Visible light communication **[2013.01]**
10/118　• • specially adapted for satellite communication **[2013.01]**
10/25　• Arrangements specific to fibre transmission **[2013.01]**
10/2507　• • for the reduction or elimination of distortion or dispersion **[2013.01]**
10/2513　• • • due to chromatic dispersion **[2013.01]**
10/2519　• • • • using Bragg gratings **[2013.01]**
10/2525　• • • • using dispersion-compensating fibres **[2013.01]**
10/2531　• • • • using spectral inversion **[2013.01]**
10/2537　• • • due to scattering processes, e.g. Raman or Brillouin scattering **[2013.01]**
10/2543　• • • due to fibre non-linearities, e.g. Kerr effect **[2013.01]**
10/255　• • • • Self-phase modulation [SPM] **[2013.01]**
10/2557　• • • • Cross-phase modulation [XPM] **[2013.01]**
10/2563　• • • • Four-wave mixing [FWM] **[2013.01]**
10/2569　• • • due to polarisation mode dispersion [PMD] **[2013.01]**
10/2575　• • Radio-over-fibre, e.g. radio frequency signal modulated onto an optical carrier **[2013.01]**
10/2581　• • Multimode transmission **[2013.01]**
10/2587　• • using a single light source for multiple stations **[2013.01]**
10/27　• Arrangements for networking **[2013.01]**
10/272　• • Star-type networks **[2013.01]**
10/275　• • Ring-type networks **[2013.01]**
10/278　• • Bus-type networks **[2013.01]**
10/29　• Repeaters **[2013.01]**
10/291　• • in which processing or amplification is carried out without conversion of the main signal from optical form **[2013.01]**
10/293　• • • Signal power control **[2013.01]**

10/294　• • • • in a multiwavelength system, e.g. gain equalisation **[2013.01]**
10/296　• • • • • Transient power control, e.g. due to channel add/drop or rapid fluctuations in the input power **[2013.01]**
10/297　• • • Bidirectional amplification **[2013.01]**
10/299　• • • Signal waveform processing, e.g. reshaping or retiming **[2013.01]**
10/40　• Transceivers **[2013.01]**
10/43　• • using a single component as both light source and receiver, e.g. using a photoemitter as a photoreceiver **[2013.01]**
10/50　• Transmitters **[2013.01]**
10/508　• • Pulse generation, e.g. generation of solitons **[2013.01]**
10/516　• • Details of coding or modulation **[2013.01]**
10/524　• • • Pulse modulation **[2013.01]**
10/532　• • • Polarisation modulation **[2013.01]**
10/54　• • • Intensity modulation **[2013.01]**
10/548　• • • Phase or frequency modulation **[2013.01]**
10/556　• • • • Digital modulation, e.g. differential phase shift keying [DPSK] or frequency shift keying [FSK] **[2013.01]**
10/564　• • Power control **[2013.01]**
10/572　• • Wavelength control **[2013.01]**
10/58　• • Compensation for non-linear transmitter output **[2013.01]**
10/588　• • • in external modulation systems **[2013.01]**
10/60　• Receivers **[2013.01]**
10/61　• • Coherent receivers **[2013.01]**
10/63　• • • Homodyne **[2013.01]**
10/64　• • • Heterodyne **[2013.01]**
10/66　• • Non-coherent receivers, e.g. using direct detection **[2013.01]**
10/67　• • • Optical arrangements in the receiver **[2013.01]**
10/69　• • • Electrical arrangements in the receiver **[2013.01]**
10/70　• Photonic quantum communication **[2013.01]**
10/80　• Optical aspects relating to the use of optical transmission for specific applications, not provided for in groups H04B 10/03-H04B 10/70, e.g. optical power feeding or optical transmission through water **[2013.01]**
10/85　• • Protection from unauthorised access, e.g. eavesdrop protection **[2013.01]**
10/90　• Non-optical transmission systems, e.g. transmission systems employing non-photonic corpuscular radiation **[2013.01]**

11/00　**Transmission systems employing ultrasonic, sonic or infrasonic waves [1, 2006.01]**

13/00　**Transmission systems characterised by the medium used for transmission, not provided for in groups H04B 3/00-H04B 11/00 [1, 2006.01]**
13/02　• Transmission systems in which the medium consists of the earth or a large mass of water thereon, e.g. earth telegraphy **[1, 2006.01]**

14/00　**Transmission systems not characterised by the medium used for transmission** (details thereof H04B 1/00) **[4, 2006.01]**
14/02　• characterised by the use of pulse modulation (in radio transmission relays H04B 7/17) **[4, 2006.01]**
14/04　• • using pulse code modulation **[4, 2006.01]**
14/06　• • using differential modulation, e.g. delta modulation **[4, 2006.01]**

14/08	• characterised by the use of a sub-carrier **[4, 2006.01]**
15/00	**Suppression or limitation of noise or interference** (by means associated with receiver H04B 1/10) **[1, 2006.01]**
15/02	• Reducing interference from electric apparatus by means located at or near the interfering apparatus **[1, 2006.01]**
15/04	• • the interference being caused by substantially sinusoidal oscillations, e.g. in a receiver or in a tape-recorder **[1, 2006.01]**
15/06	• • • by local oscillators of receivers **[1, 2006.01]**
17/00	**Monitoring; Testing** (of line transmission systems H04B 3/46; arrangements for monitoring or testing transmission systems employing electromagnetic waves other than radio waves H04B 10/07) **[2, 2006.01, 2015.01]**
17/10	• of transmitters **[2015.01]**
17/11	• • for calibration **[2015.01]**
17/12	• • • of transmit antennas, e.g. of amplitude or phase **[2015.01]**
17/13	• • • of power amplifiers, e.g. of gain or non-linearity **[2015.01]**
17/14	• • • of the whole transmission and reception path, e.g. self-test loop-back **[2015.01]**
17/15	• • Performance testing **[2015.01]**
17/16	• • • Test equipment located at the transmitter **[2015.01]**
17/17	• • • Detection of non-compliance or faulty performance, e.g. response deviations (H04B 17/18 takes precedence) **[2015.01]**
17/18	• • • Monitoring during normal operation **[2015.01]**

17/19	• • • Self-testing arrangements **[2015.01]**
17/20	• of receivers **[2015.01]**
17/21	• • for calibration; for correcting measurements **[2015.01]**
17/23	• • Indication means, e.g. displays, alarms or audible means **[2015.01]**
17/24	• • with feedback of measurements to the transmitter **[2015.01]**
17/26	• • using historical data, averaging values or statistics **[2015.01]**
17/27	• • for locating or positioning the transmitter **[2015.01]**
17/29	• • Performance testing **[2015.01]**
17/30	• of propagation channels **[2015.01]**
17/309	• • Measuring or estimating channel quality parameters **[2015.01]**
17/318	• • • Received signal strength **[2015.01]**
17/327	• • • • Received signal code power [RSCP] **[2015.01]**
17/336	• • • Signal-to-interference ratio [SIR] or carrier-to-interference ratio [CIR] **[2015.01]**
17/345	• • • Interference values (H04B 17/336 takes precedence) **[2015.01]**
17/354	• • • Adjacent channel leakage power **[2015.01]**
17/364	• • • Delay profiles **[2015.01]**
17/373	• • Predicting channel quality parameters **[2015.01]**
17/382	• • for resource allocation, admission control or handover **[2015.01]**
17/391	• • Modelling the propagation channel **[2015.01]**
17/40	• of relay systems **[2015.01]**

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

Note(s) [2008.01]

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 to receiving 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.

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 during the 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	• • • • for FM stereophonic broadcast systems **[2008.01]**
20/49	• • • • for AM 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 adapted for 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 linkage to 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 scheduling broadcast 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 of Electronic 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 for using 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 electronic programme guides [EPG] (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)

<u>**Note(s)**</u>

This subclass <u>covers</u>:
- 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) **[1, 5, 2006.01]**
1/02	• Details **[1, 2006.01]**
1/04	• • Frequency-transposition arrangements **[1, 2006.01]**
1/05	• • • using digital techniques **[3, 2006.01]**
1/06	• • Arrangements for supplying the carrier waves **[1, 2006.01]**
1/08	• • Arrangements for combining channels **[1, 2006.01]**
1/10	• • Intermediate station arrangements, e.g. for branching, for tapping-off **[1, 2006.01]**
1/12	• • Arrangements for reducing cross-talk between channels **[1, 2006.01]**
1/14	• • Arrangements providing for calling or supervisory signals **[1, 2006.01]**
1/16	• • Monitoring arrangements **[1, 2006.01]**
1/18	• in which all the carriers are amplitude-modulated (H04J 1/02 takes precedence) **[1, 3, 2006.01]**
1/20	• in which at least one carrier is angle-modulated (H04J 1/02 takes precedence) **[1, 3, 2006.01]**
3/00	**Time-division multiplex systems** (H04J 14/08 takes precedence) **[1, 4, 5, 2006.01]**
3/02	• Details **[1, 2006.01]**
3/04	• • Distributors combined with modulators or demodulators **[1, 2006.01]**
3/06	• • Synchronising arrangements **[1, 2006.01]**
3/07	• • • using pulse stuffing for systems with different or fluctuating information rates **[3, 2006.01]**
3/08	• • Intermediate station arrangements, e.g. for branching, for tapping-off **[1, 2006.01]**
3/10	• • Arrangements for reducing cross-talk between channels **[1, 2006.01]**
3/12	• • Arrangements providing for calling or supervisory signals **[1, 2006.01]**
3/14	• • Monitoring arrangements **[1, 2006.01]**
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) **[1, 4, 2006.01]**
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, 2006.01]**
3/18	• using frequency compression and subsequent expansion of the individual signals **[1, 2006.01]**
3/20	• using resonant transfer **[2, 2006.01]**

3/22	• in which the sources have different rates or codes **[4, 2006.01]**
3/24	• in which the allocation is indicated by an address (H04J 3/17 takes precedence) **[4, 2006.01]**
3/26	• • in which the information and the address are simultaneously transmitted **[4, 2006.01]**
4/00	**Combined time-division and frequency-division multiplex systems** (H04J 13/00 takes precedence) **[2, 2006.01]**
7/00	**Multiplex systems in which the amplitudes or durations of the signals in individual channels are characteristic of those channels [1, 2006.01]**
7/02	• in which the polarity of the amplitude is characteristic **[1, 2006.01]**
9/00	**Multiplex systems in which each channel is represented by a different type of modulation of the carrier [1, 2006.01]**
11/00	**Orthogonal multiplex systems** (H04J 13/00 takes precedence) **[2, 2006.01]**
13/00	**Code division multiplex systems** (for frequency hopping H04B 1/713) **[2, 2006.01, 2011.01]**

<u>**Note(s) [2011.01]**</u>

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, 2006.01]**
14/02	• Wavelength-division multiplex systems **[5, 2006.01]**
14/04	• Mode multiplex systems **[5, 2006.01]**
14/06	• Polarisation multiplex systems **[5, 2006.01]**
14/08	• Time-division multiplex systems **[5, 2006.01]**
99/00	**Subject matter not provided for in other groups of this subclass [2009.01]**

H04K   SECRET COMMUNICATION; JAMMING OF COMMUNICATION

<u>Note(s)</u>

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 [1, 2006.01]**
1/02	• by adding a second signal to make the desired signal unintelligible **[1, 2006.01]**
1/04	• by frequency scrambling, i.e. by transposing or inverting parts of the frequency band or by inverting the whole band **[1, 2006.01]**
1/06	• by transmitting the information or elements thereof at unnatural speeds or in jumbled order or backwards **[1, 2006.01]**

1/08	• by varying the polarisation of transmitted waves **[1, 2006.01]**
1/10	• by using two signals transmitted simultaneously or successively **[1, 2006.01]**
3/00	**Jamming of communication; Counter-measures [1, 2006.01]**

H04L   TRANSMISSION OF DIGITAL INFORMATION, e.g. TELEGRAPHIC COMMUNICATION (arrangements common to telegraphic and telephonic communication H04M) **[4]**

<u>Note(s)</u>

1.   This subclass <u>covers</u> transmission of signals having been supplied in digital form and includes data transmission, telegraphic communication, or methods or arrangements for monitoring.
2.   In this subclass it is desirable to add the indexing codes of group H04L 101/00.

<u>Subclass index</u>

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1/00	**Arrangements for detecting or preventing errors in the information received [1, 2006.01]**
1/02	• by diversity reception **[1, 2006.01]**
1/04	• • using frequency diversity **[1, 2006.01]**
1/06	• • using space diversity **[1, 2006.01]**
1/08	• by repeating transmission, e.g. Verdan system **[1, 2006.01]**
1/12	• by using return channel **[1, 2006.01]**
1/14	• • in which the signals are sent back to the transmitter to be checked **[1, 2006.01]**

1/16	• • *in which the return channel carries supervisory signals, e.g. repetition request signals* **[1, 2006.01, 2023.01]**
1/1607	• • • *Details of the supervisory signal* **[2023.01]**
1/18	• • • *Automatic repetition systems, e.g. Van Duuren systems* **[1, 2006.01, 2023.01]**
1/1803	• • • • *Stop-and-wait protocols* **[2023.01]**
1/1806	• • • • *Go-back-N protocols* **[2023.01]**
1/1809	• • • • *Selective-repeat protocols* **[2023.01]**
1/1812	• • • • *Hybrid protocols; Hybrid automatic repeat request [HARQ]* **[2023.01]**

1/1822 • • • • *involving configuration of automatic repeat request [ARQ] with parallel processes [2023.01]*

1/1825 • • • • *Adaptation of specific ARQ protocol parameters according to transmission conditions [2023.01]*

1/1829 • • • • *Arrangements specially adapted for the receiver end [2023.01]*

1/1867 • • • • *Arrangements specially adapted for the transmitter end [2023.01]*

1/20 • using signal-quality detector **[3, 2006.01]**

1/22 • using redundant apparatus to increase reliability **[3, 2006.01]**

1/24 • Testing correct operation **[3, 2006.01]**

5/00 **Arrangements affording multiple use of the transmission path [1, 2006.01]**

5/02 • Channels characterised by the type of signal **[1, 2006.01]**

5/04 • • the signals being represented by different amplitudes or polarities, e.g. quadriplex **[1, 2006.01]**

5/06 • • the signals being represented by different frequencies (combined with time-division multiplexing H04L 5/26) **[1, 2006.01]**

5/08 • • • each combination of signals in different channels being represented by a fixed frequency **[1, 2006.01]**

5/10 • • • with dynamo-electric generation of carriers; with mechanical filters or demodulators **[1, 2006.01]**

5/12 • • the signals being represented by different phase modulations of a single carrier **[1, 2006.01]**

5/14 • Two-way operation using the same type of signal, i.e. duplex **[1, 2006.01]**

5/16 • • Half-duplex systems; Simplex/duplex switching; Transmission of break signals **[1, 2006.01]**

5/18 • • Automatic changing of the traffic direction **[1, 2006.01]**

5/20 • using different combinations of lines, e.g. phantom working **[1, 2006.01]**

5/22 • using time-division multiplexing **[1, 2006.01]**

5/24 • • with start-stop synchronous converters **[1, 2006.01]**

5/26 • • combined with the use of different frequencies **[1, 2006.01]**

7/00 **Arrangements for synchronising receiver with transmitter [1, 2006.01]**

7/02 • Speed or phase control by the received code signals, the signals containing no special synchronisation information **[1, 2006.01]**

7/027 • • extracting the synchronising or clock signal from the received signal spectrum, e.g. by using a resonant or bandpass circuit **[5, 2006.01]**

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, 2006.01]**

7/04 • Speed or phase control by synchronisation signals **[1, 2006.01]**

7/06 • • the synchronisation signals differing from the information signals in amplitude, polarity, or frequency **[1, 2006.01]**

7/08 • • the synchronisation signals recurring cyclically **[1, 2006.01]**

7/10 • • Arrangements for initial synchronisation **[1, 2006.01]**

9/00 **Arrangements for secret or secure communications; Network security protocols [1, 2006.01, 2022.01]**

Note(s) [5]

In group H04L 9/06-H04L 9/32, the last place priority rule is applied, i.e. at each hierarchical level, 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, 2006.01]**

9/08 • Key distribution **[5, 2006.01]**

9/10 • with particular housing, physical features or manual controls **[5, 2006.01]**

9/12 • Transmitting and receiving encryption devices synchronised or initially set up in a particular manner **[5, 2006.01]**

9/14 • using a plurality of keys or algorithms **[5, 2006.01]**

9/16 • • the keys or algorithms being changed during operation **[5, 2006.01]**

9/18 • Encryption by serially and continuously modifying data stream elements, e.g. stream cipher systems **[5, 2006.01]**

9/20 • • Pseudorandom key sequence combined element-for-element with data sequence **[5, 2006.01]**

9/22 • • • with particular pseudorandom sequence generator **[5, 2006.01]**

9/24 • • • • sequence produced by more than one generator **[5, 2006.01]**

9/26 • • • • producing a nonlinear pseudorandom sequence **[5, 2006.01]**

9/28 • using particular encryption algorithm **[5, 2006.01]**

9/30 • • Public key, i.e. encryption algorithm being computationally infeasible to invert and users' encryption keys not requiring secrecy **[5, 2006.01]**

9/32 • including means for verifying the identity or authority of a user of the system **[5, 2006.01]**

9/34 • Bits, or blocks of bits, of the telegraphic message being interchanged in time **[5, 2006.01]**

9/36 • with means for detecting characters not meant for transmission **[5, 2006.01]**

9/38 • Encryption being effected by mechanical apparatus, e.g. rotating cams, switches, keytape punchers **[5, 2006.01]**

9/40 • Network security protocols **[2022.01]**

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, 2006.01]**

12/02 • Details **[5, 2006.01]**

12/04 • • Switchboards **[5, 2006.01]**

12/06 • • Answer-back mechanisms or circuits **[5, 2006.01]**

12/08 • • Allotting numbers to messages; Counting characters, words or messages **[5, 2006.01]**

12/10 • • Current supply arrangements **[5, 2006.01]**

12/12 • • Arrangements for remote connection or disconnection of substations or of equipment thereof **[5, 2006.01]**

12/14 • • Charging arrangements **[5, 2006.01]**

12/16 • • Arrangements for providing special services to substations **[5, 2006.01]**

12/18 • • • for broadcast or conference **[5, 2006.01]**

12/20 • • • for converting transmission speed from the inherent speed of a substation to the inherent speed of other substations **[5, 2006.01]**

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, 2006.01]**
12/28	• characterised by path configuration, e.g. LAN [Local Area Networks] or WAN [Wide Area Networks] (wireless communication networks H04W) **[5, 6, 2006.01]**
12/40	• • Bus networks **[5, 6, 2006.01]**
12/403	• • • with centralised control, e.g. polling **[6, 2006.01]**
12/407	• • • with decentralised control **[6, 2006.01]**
12/413	• • • • with random access, e.g. carrier-sense multiple-access with collision detection (CSMA-CD) **[6, 2006.01]**
12/417	• • • • with deterministic access, e.g. token passing **[6, 2006.01]**
12/42	• • Loop networks **[5, 6, 2006.01]**
12/423	• • • with centralised control, e.g. polling **[6, 2006.01]**
12/427	• • • with decentralised control **[6, 2006.01]**
12/43	• • • • with synchronous transmission, e.g. time division multiplex (TDM), slotted rings **[6, 2006.01]**
12/433	• • • • with asynchronous transmission, e.g. token ring, register insertion **[6, 2006.01]**
12/437	• • • Ring fault isolation or reconfiguration **[6, 2006.01]**
12/44	• • Star or tree networks **[5, 6, 2006.01]**
12/46	• • Interconnection of networks **[5, 6, 2006.01]**
12/50	• Circuit switching systems, i.e. systems in which the path is physically permanent during the communication **[5, 6, 2006.01]**
12/52	• • using time division techniques (in digital transmission systems H04L 5/22) **[5, 6, 2006.01]**
12/54	• Store-and-forward switching systems (packet switching systems H04L 45/00, H04L 47/00) **[5, 6, 2006.01, 2013.01, 2022.01]**
12/64	• Hybrid switching systems **[5, 6, 2006.01]**
12/66	• Arrangements for connecting between networks having differing types of switching systems, e.g. gateways **[5, 6, 2006.01]**

13/00	**Details of the apparatus or circuits covered by groups H04L 15/00 or H04L 17/00 [1, 2006.01]**
13/02	• Details not particular to receiver or transmitter **[1, 2006.01]**
13/04	• • Driving mechanisms; Clutches **[1, 2006.01]**
13/06	• • Tape or page guiding or feeding devices **[1, 2006.01]**
13/08	• • Intermediate storage means **[1, 2006.01]**
13/10	• • Distributors **[1, 2006.01]**
13/12	• • • Non-mechanical distributors, e.g. relay distributors **[1, 2006.01]**
13/14	• • • • Electronic distributors **[1, 2006.01]**
13/16	• of transmitters, e.g. code-bars, code-discs **[1, 2006.01]**
13/18	• of receivers **[1, 2006.01]**

15/00	**Apparatus or local circuits for transmitting or receiving dot-and-dash codes, e.g. Morse code** (teaching apparatus therefor G09B; telegraph tapping keys H01H 21/86) **[1, 2006.01]**
15/03	• Keys structurally combined with sound generators **[2, 2006.01]**

15/04	• Apparatus or circuits at the transmitting end **[1, 2006.01]**
15/06	• • with a restricted number of keys, e.g. separate key for each type of code element **[1, 2006.01]**
15/08	• • • with a single key which transmits dots in one position and dashes in a second position **[1, 2006.01]**
15/10	• • • combined with perforating apparatus **[1, 2006.01]**
15/12	• • with keyboard co-operating with code-bars **[1, 2006.01]**
15/14	• • • combined with perforating apparatus **[1, 2006.01]**
15/16	• • with keyboard co-operating with code discs **[1, 2006.01]**
15/18	• • Automatic transmitters, e.g. controlled by perforated tape **[1, 2006.01]**
15/20	• • • with optical sensing means **[1, 2006.01]**
15/22	• • Apparatus or circuits for sending one or a restricted number of signals, e.g. distress signals **[1, 2006.01]**
15/24	• Apparatus or circuits at the receiving end **[1, 2006.01]**
15/26	• • operating only on reception of predetermined code signals, e.g. distress signals, party-line call signals **[1, 2006.01]**
15/28	• • Code reproducing apparatus **[1, 2006.01]**
15/30	• • • Writing recorders **[1, 2006.01]**
15/32	• • • Perforating recorders **[1, 2006.01]**
15/34	• • Apparatus for recording received coded signals after translation, e.g. as type-characters **[1, 2006.01]**

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 [1, 2006.01]**
17/02	• Apparatus or circuits at the transmitting end **[1, 2006.01]**
17/04	• • with keyboard co-operating with code-bars **[1, 2006.01]**
17/06	• • • Contact operating means **[1, 2006.01]**
17/08	• • • combined with perforating apparatus **[1, 2006.01]**
17/10	• • with keyboard co-operating with code-discs **[1, 2006.01]**
17/12	• • Automatic transmitters, e.g. controlled by perforated tape **[1, 2006.01]**
17/14	• • • with optical sensing means **[1, 2006.01]**
17/16	• Apparatus or circuits at the receiving end **[1, 2006.01]**
17/18	• • Code selection mechanisms **[1, 2006.01]**
17/20	• • using perforating recorders **[1, 2006.01]**
17/22	• • using mechanical translation and type-bar printing **[1, 2006.01]**
17/24	• • using mechanical translation and type-head printing, e.g. type-wheel, type-cylinder **[1, 2006.01]**
17/26	• • using aggregate motion translation **[1, 2006.01]**
17/28	• • using pneumatic or hydraulic translation **[1, 2006.01]**
17/30	• • using electric or electronic translation **[1, 2006.01]**

19/00	**Apparatus or local circuits for step-by-step systems [1, 2006.01]**

21/00	**Apparatus or local circuits for mosaic printer telegraph systems [1, 2006.01]**
21/02	• at the transmitting end **[1, 2006.01]**
21/04	• at the receiving end **[1, 2006.01]**
23/00	**Apparatus or local circuits for telegraphic systems other than those covered by groups H04L 15/00-H04L 21/00 [1, 2006.01]**
23/02	• adapted for orthogonal signalling **[2, 2006.01]**
25/00	**Baseband systems [1, 2006.01]**
25/02	• Details **[1, 2006.01]**
25/03	• • Shaping networks in transmitter or receiver, e.g. adaptive shaping networks **[2, 2006.01]**
25/04	• • • Passive shaping networks **[1, 2, 2006.01]**
25/05	• • Electric or magnetic storage of signals before transmitting or retransmitting for changing the transmission rate **[7, 2006.01]**
25/06	• • Dc level restoring means; Bias distortion correction **[1, 2006.01]**
25/08	• • Modifications for reducing interference; Modifications for reducing effects due to line faults **[1, 2006.01]**
25/10	• • Compensating for variations in line balance **[1, 2006.01]**
25/12	• • Compensating for variations in line impedance **[1, 2006.01]**
25/14	• • Channel dividing arrangements **[1, 2006.01]**
25/17	• • Interpolating arrangements **[4, 2006.01]**
25/18	• • Arrangements for inductively generating telegraphic signals **[1, 2006.01]**
25/20	• • Repeater circuits; Relay circuits **[1, 2006.01]**
25/22	• • • Repeaters for converting two wires to four wires; Repeaters for converting single current to double current **[1, 2006.01]**
25/24	• • • Relay circuits using discharge tubes or semiconductor devices **[1, 2006.01]**
25/26	• • • Circuits with optical sensing means **[1, 2006.01]**
25/28	• • • Repeaters using modulation and subsequent demodulation **[1, 2006.01]**
25/30	• Non-synchronous systems **[1, 2006.01]**
25/32	• • characterised by the code employed **[1, 2006.01]**
25/34	• • • using three or more different amplitudes, e.g. cable code **[1, 2006.01]**
25/38	• Synchronous or start-stop systems, e.g. for Baudot code **[1, 2006.01]**
25/40	• • Transmitting circuits; Receiving circuits **[1, 2006.01]**
25/42	• • • using mechanical distributors **[1, 2006.01]**
25/44	• • • using relay distributors **[1, 2006.01]**
25/45	• • • using electronic distributors **[2, 2006.01]**
25/46	• • • using tuning forks or vibrating reeds **[1, 2006.01]**
25/48	• • • characterised by the code employed (H04L 25/49 takes precedence) **[1, 2, 2006.01]**
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, 2006.01]**
25/493	• • • • by transition coding, i.e. the time-position or direction of a transition being encoded before transmission **[3, 2006.01]**
25/497	• • • • by correlative coding, e.g. partial response coding or echo modulation coding **[3, 2006.01]**
25/52	• • Repeater circuits; Relay circuits **[1, 2006.01]**

25/54	• • • using mechanical distributors **[1, 2006.01]**
25/56	• • • Non-electrical regenerative repeaters **[1, 2006.01]**
25/58	• • • using relay distributors **[1, 2006.01]**
25/60	• • • Regenerative repeaters with electromagnetic switches **[1, 2006.01]**
25/62	• • • using tuning forks or vibrating reeds **[1, 2006.01]**
25/64	• • • Start-stop regenerative repeaters using discharge tubes or semiconductor devices **[1, 2006.01]**
25/66	• • • Synchronous repeaters using discharge tubes or semiconductor devices **[1, 2006.01]**
27/00	**Modulated-carrier systems [1, 2006.01]**
27/01	• Equalisers **[5, 2006.01]**
27/02	• Amplitude-modulated carrier systems, e.g. using on/off keying; Single sideband or vestigial sideband modulation (H04L 27/32 takes precedence) **[1, 2, 5, 2006.01]**
27/04	• • Modulator circuits; Transmitter circuits **[1, 2006.01]**
27/06	• • Demodulator circuits; Receiver circuits **[1, 2006.01]**
27/08	• • Amplitude regulation arrangements **[1, 2006.01]**
27/10	• Frequency-modulated carrier systems, i.e. using frequency-shift keying (H04L 27/32 takes precedence) **[1, 5, 2006.01]**
27/12	• • Modulator circuits; Transmitter circuits **[1, 2006.01]**
27/14	• • Demodulator circuits; Receiver circuits **[1, 2006.01]**
27/144	• • • with demodulation using spectral properties of the received signal, e.g. by using frequency selective- or frequency sensitive elements **[6, 2006.01]**
27/148	• • • • using filters, including PLL-type filters **[6, 2006.01]**
27/152	• • • • using controlled oscillators, e.g. PLL arrangements **[6, 2006.01]**
27/156	• • • with demodulation using temporal properties of the received signal, e.g. detecting pulse width **[6, 2006.01]**
27/16	• • Frequency regulation arrangements **[1, 2006.01]**
27/18	• Phase-modulated carrier systems, i.e. using phase-shift keying (H04L 27/32 takes precedence) **[1, 5, 2006.01]**
27/20	• • Modulator circuits; Transmitter circuits **[1, 2006.01]**
27/22	• • Demodulator circuits; Receiver circuits **[1, 2006.01]**
27/227	• • • using coherent demodulation **[6, 2006.01]**
27/233	• • • using non-coherent demodulation **[6, 2006.01]**
27/24	• • Half-wave signalling systems **[1, 2006.01]**
27/26	• Systems using multi-frequency codes (H04L 27/32 takes precedence) **[1, 5, 2006.01]**
27/28	• • with simultaneous transmission of different frequencies each representing one code element **[1, 2006.01]**
27/30	• • wherein each code element is represented by a combination of frequencies **[1, 2006.01]**
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, 2006.01]**

27/34	• •	Amplitude- and phase-modulated carrier systems, e.g. quadrature-amplitude modulated carrier systems **[5, 2006.01]**
27/36	• • •	Modulator circuits; Transmitter circuits **[5, 2006.01]**
27/38	• • •	Demodulator circuits; Receiver circuits **[5, 2006.01]**

41/00   **Arrangements for maintenance, administration or management of data switching networks, e.g. of packet switching networks [2022.01]**

41/02	•	Standardisation; Integration **[2022.01]**
41/0213	• •	Standardised network management protocols, e.g. simple network management protocol [SNMP] **[2022.01]**
41/022	• •	Multivendor or multi-standard integration **[2022.01]**
41/0226	• •	Mapping or translating multiple network management protocols **[2022.01]**
41/0233	• •	Object-oriented techniques, for representation of network management data, e.g. common object request broker architecture [CORBA] **[2022.01]**
41/0246	• •	Exchanging or transporting network management information using the Internet; Embedding network management web servers in network elements; Web-services-based protocols **[2022.01]**
41/0253	• • •	using browsers or web-pages for accessing management information **[2022.01]**
41/026	• • •	using e-messaging for transporting management information, e.g. email, instant messaging or chat **[2022.01]**
41/0266	• • •	using meta-data, objects or commands for formatting management information, e.g. using eXtensible markup language [XML] **[2022.01]**
41/0273	• • •	using web services for network management, e.g. simple object access protocol [SOAP] **[2022.01]**
41/04	•	Network management architectures or arrangements **[2022.01]**
41/042	• •	comprising distributed management centres cooperatively managing the network **[2022.01]**
41/044	• •	comprising hierarchical management structures **[2022.01]**
41/045	• •	comprising client-server management architectures **[2022.01]**
41/046	• •	comprising network management agents or mobile agents therefor **[2022.01]**
41/052	• •	using standardised network management architectures, e.g. telecommunication management network [TMN] or unified network management architecture [UNMA] **[2022.01]**
41/06	•	Management of faults, events, alarms or notifications **[2022.01]**
41/0604	• •	using filtering, e.g. reduction of information by using priority, element types, position or time **[2022.01]**
41/0631	• •	using root cause analysis; using analysis of correlation between notifications, alarms or events based on decision criteria, e.g. hierarchy, tree or time analysis **[2022.01]**
41/0654	• •	using network fault recovery (ring fault isolation or reconfiguration in loop networks without recovery actions by a network management system H04L 12/437) **[2022.01]**
41/0659	• • •	by isolating or reconfiguring faulty entities **[2022.01]**
41/0663	• • •	Performing the actions predefined by failover planning, e.g. switching to standby network elements **[2022.01]**
41/0668	• • •	by dynamic selection of recovery network elements, e.g. replacement by the most appropriate element after failure **[2022.01]**
41/0677	• •	Localisation of faults **[2022.01]**
41/0681	• •	Configuration of triggering conditions **[2022.01]**
41/0686	• •	Additional information in the notification, e.g. enhancement of specific meta-data **[2022.01]**
41/069	• •	using logs of notifications; Post-processing of notifications **[2022.01]**
41/0695	• •	the faulty arrangement being the maintenance, administration or management system **[2022.01]**
41/08	•	Configuration management of networks or network elements (address allocation H04L 61/50) **[2022.01]**
41/0803	• •	Configuration setting **[2022.01]**
41/0806	• • •	for initial configuration or provisioning, e.g. plug-and-play **[2022.01]**
41/0813	• • •	characterised by the conditions triggering a change of settings **[2022.01]**
41/0816	• • • •	the condition being an adaptation, e.g. in response to network events **[2022.01]**
41/082	• • • •	the condition being updates or upgrades of network functionality **[2022.01]**
41/0823	• • •	characterised by the purposes of a change of settings, e.g. optimising configuration for enhancing reliability (for optimising operational conditions of wireless networks H04W 24/02) **[2022.01]**
41/0826	• • • •	for reduction of network costs (H04L 41/0833 takes precedence) **[2022.01]**
41/083	• • • •	for increasing network speed **[2022.01]**
41/0833	• • • •	for reduction of network energy consumption **[2022.01]**
41/084	• • •	Configuration by using pre-existing information, e.g. using templates or copying from other elements **[2022.01]**
41/085	• •	Retrieval of network configuration; Tracking network configuration history **[2022.01]**
41/0853	• • •	by actively collecting configuration information or by backing up configuration information **[2022.01]**
41/0859	• • •	by keeping history of different configuration generations or by rolling back to previous configuration versions **[2022.01]**
41/0866	• •	Checking the configuration **[2022.01]**
41/0869	• • •	Validating the configuration within one network element **[2022.01]**
41/0873	• • •	Checking configuration conflicts between network elements **[2022.01]**
41/0893	• •	Assignment of logical groups to network elements **[2022.01]**
41/0894	• •	Policy-based network configuration management **[2022.01]**
41/0895	• •	Configuration of virtualised networks or elements, e.g. virtualised network function or OpenFlow elements **[2022.01]**
41/0896	• •	Bandwidth or capacity management, i.e. automatically increasing or decreasing capacities (flow or congestion control using dynamic resource allocation, e.g. in-call renegotiation, H04L 47/76) **[2022.01]**
41/0897	• • •	by horizontal or vertical scaling of resources, or by migrating entities, e.g. virtual resources or entities **[2022.01]**

41/12	•	Discovery or management of network topologies **[2022.01]**
41/122	• •	of virtualised topologies e.g. software-defined networks [SDN] or network function virtualisation [NFV] **[2022.01]**
41/14	•	Network analysis or design **[2022.01]**
41/142	• •	using statistical or mathematical methods **[2022.01]**
41/147	• •	for predicting network behaviour **[2022.01]**
41/149	• •	for prediction of maintenance **[2022.01]**
41/16	•	using machine learning or artificial intelligence **[2022.01]**
41/18	•	Delegation of network management function, e.g. customer network management [CNM] **[2022.01]**
41/22	•	comprising specially adapted graphical user interfaces [GUI] **[2022.01]**
41/28	•	Restricting access to network management systems or functions, e.g. using authorisation function to access network configuration **[2022.01]**
41/34	•	Signalling channels for network management communication **[2022.01]**
41/342	• •	between virtual entities, e.g. orchestrators, SDN or NFV entities **[2022.01]**
41/344	• •	Out-of-band transfers **[2022.01]**
41/40	•	using virtualisation of network functions or resources, e.g. SDN or NFV entities **[2022.01]**
41/50	•	Network service management, e.g. ensuring proper service fulfilment according to agreements **[2022.01]**
41/5003	• •	Managing SLA; Interaction between SLA and QoS **[2022.01]**
41/5006	• • •	Creating or negotiating SLA contracts, guarantees or penalties **[2022.01]**
41/5009	• • •	Determining service level performance parameters or violations of service level contracts, e.g. violations of agreed response time or mean time between failures [MTBF] **[2022.01]**
41/5019	• • •	Ensuring fulfilment of SLA **[2022.01]**
41/5022	• • • •	by giving priorities, e.g. assigning classes of service **[2022.01]**
41/5025	• • • •	by proactively reacting to service quality change, e.g. by reconfiguration after service quality degradation or upgrade **[2022.01]**
41/5041	• •	characterised by the time relationship between creation and deployment of a service **[2022.01]**
41/5051	• • •	Service on demand, e.g. definition and deployment of services in real time **[2022.01]**
41/5054	• • •	Automatic deployment of services triggered by the service manager, e.g. service implementation by automatic configuration of network components **[2022.01]**
41/5061	• •	characterised by the interaction between service providers and their network customers, e.g. customer relationship management **[2022.01]**
41/5067	• • •	Customer-centric QoS measurements **[2022.01]**
41/507	• • •	Filtering out customers affected by service problems **[2022.01]**
41/5074	• • •	Handling of user complaints or trouble tickets **[2022.01]**

43/00		**Arrangements for monitoring or testing data switching networks [2022.01]**
43/02	•	Capturing of monitoring data **[2022.01]**
43/022	• •	by sampling **[2022.01]**
43/024	• • •	by adaptive sampling **[2022.01]**
43/026	• •	using flow identification **[2022.01]**
43/028	• •	by filtering **[2022.01]**

43/04	•	Processing captured monitoring data, e.g. for logfile generation **[2022.01]**
43/045	• •	for graphical visualisation of monitoring data **[2022.01]**
43/06	•	Generation of reports **[2022.01]**
43/062	• •	related to network traffic **[2022.01]**
43/065	• •	related to network devices **[2022.01]**
43/067	• •	using time frame reporting **[2022.01]**
43/08	•	Monitoring or testing based on specific metrics, e.g. QoS, energy consumption or environmental parameters **[2022.01]**
43/0805	• •	by checking availability **[2022.01]**
43/0811	• • •	by checking connectivity **[2022.01]**
43/0817	• • •	by checking functioning **[2022.01]**
43/0823	• •	Errors, e.g. transmission errors **[2022.01]**
43/0829	• • •	Packet loss **[2022.01]**
43/0852	• •	Delays **[2022.01]**
43/0864	• • •	Round trip delays **[2022.01]**
43/087	• • •	Jitter **[2022.01]**
43/0876	• •	Network utilisation, e.g. volume of load or congestion level **[2022.01]**
43/0882	• • •	Utilisation of link capacity **[2022.01]**
43/0888	• • •	Throughput **[2022.01]**
43/0894	• • •	Packet rate **[2022.01]**
43/091	• •	Measuring contribution of individual network components to actual service level **[2022.01]**
43/10	•	Active monitoring, e.g. heartbeat, ping or trace-route **[2022.01]**
43/103	• •	with adaptive polling, i.e. dynamically adapting the polling rate **[2022.01]**
43/106	• •	using time related information in packets, e.g. by adding timestamps **[2022.01]**
43/12	•	Network monitoring probes **[2022.01]**
43/16	•	Threshold monitoring **[2022.01]**
43/18	•	Protocol analysers **[2022.01]**
43/20	•	the monitoring system or the monitored elements being virtualised, abstracted or software-defined entities, e.g. SDN or NFV **[2022.01]**
43/50	•	Testing arrangements **[2022.01]**
43/55	• •	Testing of service level quality, e.g. simulating service usage **[2022.01]**

45/00		**Routing or path finding of packets in data switching networks** (routing or path finding in wireless networks H04W 40/00) **[2022.01]**
45/02	•	Topology update or discovery **[2022.01]**
45/021	• •	Ensuring consistency of routing table updates, e.g. by using epoch numbers **[2022.01]**
45/023	• •	Delayed use of routing table updates **[2022.01]**
45/028	• •	Dynamic adaptation of the update intervals, e.g. event-triggered updates **[2022.01]**
45/03	• •	by updating link state protocols **[2022.01]**
45/033	• •	by updating distance vector protocols **[2022.01]**
45/036	• •	Updating the topology between route computation elements, e.g. between OpenFlow controllers **[2022.01]**
45/037	• • •	Routes obligatorily traversing service-related nodes **[2022.01]**
45/0377	• • • •	for service chaining **[2022.01]**
45/12	•	Shortest path evaluation **[2022.01]**
45/121	• •	by minimising delays **[2022.01]**
45/122	• •	by minimising distances, e.g. by selecting a route with minimum of number of hops **[2022.01]**
45/125	• •	based on throughput or bandwidth **[2022.01]**
45/128	• •	for finding disjoint paths **[2022.01]**

45/16 • Multipoint routing **[2022.01]**

45/17 • Shortcut routing, e.g. using next hop resolution protocol [NHRP] **[2022.01]**

45/18 • Loop-free operations **[2022.01]**

45/24 • Multipath **[2022.01]**

45/243 • • using M+N parallel active paths **[2022.01]**

45/247 • • using M:N active or standby paths **[2022.01]**

45/28 • using route fault recovery **[2022.01]**

45/30 • Routing of multiclass traffic **[2022.01]**

45/302 • Route determination based on requested QoS **[2022.01]**

45/42 • Centralised routing **[2022.01]**

45/44 • Distributed routing **[2022.01]**

45/48 • Routing tree calculation **[2022.01]**

45/484 • • using multiple routing trees **[2022.01]**

45/488 • • using root node determination **[2022.01]**

45/50 • using label swapping, e.g. multi-protocol label switch [MPLS] **[2022.01]**

45/52 • Multiprotocol routers **[2022.01]**

45/58 • Association of routers **[2022.01]**

45/586 • • of virtual routers **[2022.01]**

45/60 • Router architectures **[2022.01]**

45/64 • using an overlay routing layer **[2022.01]**

45/645 • Splitting route computation layer and forwarding layer, e.g. routing according to path computational element [PCE] or based on OpenFlow functionality **[2022.01]**

45/655 • • Interaction between route computation entities and forwarding entities, e.g. for route determination or for flow table update **[2022.01]**

45/74 • Address processing for routing **[2022.01]**

45/741 • • Routing in networks with a plurality of addressing schemes, e.g. with both IPv4 and IPv6 **[2022.01]**

45/745 • • Address table lookup; Address filtering **[2022.01]**

45/7452 • • • Multiple parallel or consecutive lookup operations (lookup operation involving Bloom filters H04L 45/7459) **[2022.01]**

45/7453 • • • using hashing **[2022.01]**

45/7459 • • • • using Bloom filters **[2022.01]**

45/748 • • • using longest matching prefix **[2022.01]**

45/76 • Routing in software-defined topologies, e.g. routing between virtual machines **[2022.01]**

45/80 • Ingress point selection by the source endpoint, e.g. selection of ISP or POP **[2022.01]**

45/85 • • Selection among different networks **[2022.01]**

45/851 • • • Dynamic network selection or re-selection, e.g. after degradation of quality **[2022.01]**

47/00 Traffic control in data switching networks (arrangements for detecting or correcting errors in the information received H04L 1/00) **[2022.01]**

47/10 • Flow control; Congestion control **[2022.01]**

47/11 • • Identifying congestion **[2022.01]**

47/12 • • Avoiding congestion; Recovering from congestion **[2022.01]**

47/122 • • • by diverting traffic away from congested entities **[2022.01]**

47/125 • • • by balancing the load, e.g. traffic engineering **[2022.01]**

47/127 • • • by using congestion prediction **[2022.01]**

47/129 • • • at the destination endpoint, e.g. reservation of terminal resources or buffer space **[2022.01]**

47/17 • • Interaction among intermediate nodes, e.g. hop by hop **[2022.01]**

47/19 • • at layers above the network layer (network arrangements for networked applications for scheduling or organising the servicing of application requests H04L 67/60) **[2022.01]**

47/193 • • • at the transport layer, e.g. TCP related **[2022.01]**

47/20 • • Traffic policing **[2022.01]**

47/21 • • using leaky-bucket **[2022.01]**

47/215 • • using token-bucket **[2022.01]**

47/22 • • Traffic shaping **[2022.01]**

47/24 • • Traffic characterised by specific attributes, e.g. priority or QoS **[2022.01]**

47/2408 • • • for supporting different services, e.g. a differentiated services [DiffServ] type of service **[2022.01]**

47/2416 • • • Real-time traffic **[2022.01]**

47/2425 • • • for supporting services specification, e.g. SLA **[2022.01]**

47/2441 • • • relying on flow classification, e.g. using integrated services [IntServ] **[2022.01]**

47/2466 • • • using signalling traffic **[2022.01]**

47/2475 • • • for supporting traffic characterised by the type of applications **[2022.01]**

47/2483 • • • involving identification of individual flows **[2022.01]**

47/2491 • • • Mapping quality of service [QoS] requirements between different networks **[2022.01]**

47/25 • • with rate being modified by the source upon detecting a change of network conditions **[2022.01]**

47/26 • • using explicit feedback to the source, e.g. choke packets **[2022.01]**

47/263 • • • Rate modification at the source after receiving feedback **[2022.01]**

47/265 • • • sent by intermediate network nodes **[2022.01]**

47/267 • • • sent by the destination endpoint (network streaming of media packets with control of the source by the destination H04L 65/613) **[2022.01]**

47/27 • • Evaluation or update of window size, e.g. using information derived from acknowledged [ACK] packets **[2022.01]**

47/28 • • in relation to timing considerations **[2022.01]**

47/283 • • • in response to processing delays, e.g. caused by jitter or round trip time [RTT] **[2022.01]**

47/30 • • in combination with information about buffer occupancy at either end or at transit nodes **[2022.01]**

47/31 • • by tagging of packets, e.g. using discard eligibility [DE] bits **[2022.01]**

47/32 • • by discarding or delaying data units, e.g. packets or frames **[2022.01]**

47/33 • • using forward notification **[2022.01]**

47/34 • • ensuring sequence integrity, e.g. using sequence numbers **[2022.01]**

47/35 • • by embedding flow control information in regular packets, e.g. piggybacking **[2022.01]**

47/36 • • by determining packet size, e.g. maximum transfer unit [MTU] **[2022.01]**

47/38 • • by adapting coding or compression rate **[2022.01]**

47/40 • • using split connections **[2022.01]**

47/41 • • by acting on aggregated flows or links **[2022.01]**

47/43 • • Assembling or disassembling of packets, e.g. segmentation and reassembly [SAR] **[2022.01]**

47/431 • • • using padding or de-padding **[2022.01]**

47/50 • Queue scheduling **[2022.01]**

47/52	• •	by attributing bandwidth to queues **[2022.01]**
47/525	• • •	by redistribution of residual bandwidth **[2022.01]**
47/56	• •	implementing delay-aware scheduling **[2022.01]**
47/60	• •	implementing hierarchical scheduling **[2022.01]**
47/62	• •	characterised by scheduling criteria **[2022.01]**
47/625	• • •	for service slots or service orders **[2022.01]**
47/6275	• • • •	based on priority **[2022.01]**
47/628	• • • •	based on packet size, e.g. shortest packet first **[2022.01]**
47/629	• • •	Ensuring fair share of resources, e.g. weighted fair queuing [WFQ] **[2022.01]**
47/6295	• • •	using multiple queues, one for each individual QoS, connection, flow or priority **[2022.01]**
47/70	•	Admission control; Resource allocation **[2022.01]**
47/72	• •	using reservation actions during connection setup **[2022.01]**
47/722	• • •	at the destination endpoint, e.g. reservation of terminal resources or buffer space **[2022.01]**
47/724	• • •	at intermediate nodes, e.g. resource reservation protocol [RSVP] **[2022.01]**
47/726	• • •	Reserving resources in multiple paths to be used simultaneously (by balancing the load H04L 47/125) **[2022.01]**
47/74	• •	measures in reaction to resource unavailability **[2022.01]**
47/76	• •	using dynamic resource allocation, e.g. in-call renegotiation requested by the user or requested by the network in response to changing network conditions **[2022.01]**
47/762	• • •	triggered by the network **[2022.01]**
47/765	• • •	triggered by the end-points **[2022.01]**
47/78	• •	Architectures of resource allocation **[2022.01]**
47/783	• • •	Distributed allocation of resources, e.g. bandwidth brokers **[2022.01]**
47/785	• • • •	among multiple network domains, e.g. multilateral agreements **[2022.01]**
47/80	• •	Actions related to the user profile or the type of traffic **[2022.01]**
47/83	• •	based on usage prediction **[2022.01]**
49/00		**Packet switching elements [2022.01]**
49/10	•	characterised by the switching fabric construction **[2022.01]**
49/101	• •	using crossbar or matrix **[2022.01]**
49/102	• •	using shared medium, e.g. bus or ring **[2022.01]**
49/103	• •	using a shared central buffer; using a shared memory **[2022.01]**
49/104	• •	Asynchronous transfer mode [ATM] switching fabrics **[2022.01]**
49/109	• •	Integrated on microchip, e.g. switch-on-chip **[2022.01]**
49/111	• •	Switch interfaces, e.g. port details **[2022.01]**
49/112	• •	Switch control, e.g. arbitration **[2022.01]**
49/113	• •	Arrangements for redundant switching, e.g. using parallel planes **[2022.01]**
49/115	• • •	Transferring a complete packet or cell through each plane **[2022.01]**
49/116	• • •	Transferring a part of the packet through each plane, e.g. by bit-slicing **[2022.01]**
49/118	• • •	Address processing within a device, e.g. using internal ID or tags for routing within a switch **[2022.01]**
49/15	•	Interconnection of switching modules **[2022.01]**
49/1515	• •	Non-blocking multistage, e.g. Clos **[2022.01]**
49/1546	• • •	using pipelined operation **[2022.01]**

49/20	•	Support for services **[2022.01]**
49/201	• •	Multicast operation; Broadcast operation **[2022.01]**
49/25	•	Routing or path finding in a switch fabric **[2022.01]**
49/253	• •	using establishment or release of connections between ports **[2022.01]**
49/35	•	Switches specially adapted for specific applications **[2022.01]**
49/351	• •	for local area network [LAN], e.g. Ethernet switches **[2022.01]**
49/354	• •	for supporting virtual local area networks [VLAN] **[2022.01]**
49/356	• •	for storage area networks **[2022.01]**
49/40	•	Constructional details, e.g. power supply, mechanical construction or backplane **[2022.01]**
49/45	•	Arrangements for providing or supporting expansion **[2022.01]**
49/50	•	Overload detection or protection within a single switching element **[2022.01]**
49/505	• •	Corrective measures **[2022.01]**
49/506	• • •	Backpressure **[2022.01]**
49/55	•	Prevention, detection or correction of errors **[2022.01]**
49/552	• •	by ensuring the integrity of packets received through redundant connections **[2022.01]**
49/60	•	Software-defined switches **[2022.01]**
49/65	•	Re-configuration of fast packet switches **[2022.01]**
49/90	•	Buffering arrangements **[2022.01]**
49/9005	• •	using dynamic buffer space allocation **[2022.01]**
49/901	• •	using storage descriptor, e.g. read or write pointers **[2022.01]**
49/9015	• •	for supporting a linked list **[2022.01]**
49/9023	• •	for implementing a jitter-buffer **[2022.01]**
49/9047	• •	including multiple buffers, e.g. buffer pools **[2022.01]**
49/9057	• •	Arrangements for supporting packet reassembly or resequencing **[2022.01]**
51/00		**User-to-user messaging in packet-switching networks, transmitted according to store-and-forward or real-time protocols, e.g. e-mail [2022.01]**
51/02	•	using automatic reactions or user delegation, e.g. automatic replies or chatbot-generated messages **[2022.01]**
51/04	•	Real-time or near real-time messaging, e.g. instant messaging [IM] **[2022.01]**
51/043	• •	using or handling presence information **[2022.01]**
51/046	• •	Interoperability with other network applications or services **[2022.01]**
51/06	•	Message adaptation to terminal or network requirements **[2022.01]**
51/063	• •	Content adaptation, e.g. replacement of unsuitable content **[2022.01]**
51/066	• •	Format adaptation, e.g. format conversion or compression **[2022.01]**
51/07	•	characterised by the inclusion of specific contents **[2022.01]**
51/08	• •	Annexed information, e.g. attachments **[2022.01]**
51/10	• •	Multimedia information **[2022.01]**
51/18	• •	Commands or executable codes **[2022.01]**
51/21	•	Monitoring or handling of messages **[2022.01]**
51/212	• •	using filtering or selective blocking **[2022.01]**
51/214	• •	using selective forwarding **[2022.01]**
51/216	• •	Handling conversation history, e.g. grouping of messages in sessions or threads **[2022.01]**

51/222	• •	using geographical location information, e.g. messages transmitted or received in proximity of a certain spot or area **[2022.01]**
51/224	• •	providing notification on incoming messages, e.g. pushed notifications of received messages **[2022.01]**
51/226	• •	Delivery according to priorities **[2022.01]**
51/23	• •	Reliability checks, e.g. acknowledgments or fault reporting **[2022.01]**
51/234	• •	for tracking messages **[2022.01]**
51/42	•	Mailbox-related aspects, e.g. synchronisation of mailboxes **[2022.01]**
51/48	•	Message addressing, e.g. address format or anonymous messages, aliases **[2022.01]**
51/52	•	for supporting social networking services **[2022.01]**
51/56	•	Unified messaging, e.g. interactions between e-mail, instant messaging or converged IP messaging [CPM] **[2022.01]**
51/58	•	Message adaptation for wireless communication **[2022.01]**

61/00 **Network arrangements, protocols or services for addressing or naming [2022.01]**

61/09	•	Mapping addresses **[2022.01]**
61/10	• •	of different types **[2022.01]**
61/103	• • •	across network layers, e.g. resolution of network layer into physical layer addresses or address resolution protocol [ARP] **[2022.01]**
61/106	• • •	across networks, e.g. mapping telephone numbers to data network addresses **[2022.01]**
61/25	• •	of the same type **[2022.01]**
61/2503	• • •	Translation of Internet protocol [IP] addresses **[2022.01]**
61/251	• • • •	between different IP versions **[2022.01]**
61/2514	• • • •	between local and global IP addresses **[2022.01]**
61/2517	• • • •	using port numbers **[2022.01]**
61/2521	• • • •	Translation architectures other than single NAT servers **[2022.01]**
61/2539	• • • •	Hiding addresses; Keeping addresses anonymous **[2022.01]**
61/2546	• • • •	Arrangements for avoiding unnecessary translation **[2022.01]**
61/255	• • • •	Maintenance or indexing of mapping tables **[2022.01]**
61/2553	• • • • •	Binding renewal aspects, e.g. using keep-alive messages **[2022.01]**
61/2557	• • • •	Translation policies or rules **[2022.01]**
61/256	• • • •	NAT traversal **[2022.01]**
61/2567	• • • • •	for reachability, e.g. inquiring the address of a correspondent behind a NAT server **[2022.01]**
61/2575	• • • • •	using address mapping retrieval, e.g. simple traversal of user datagram protocol through session traversal utilities for NAT [STUN] **[2022.01]**
61/2578	• • • • •	without involvement of the NAT server **[2022.01]**
61/2582	• • • • •	through control of the NAT server, e.g. using universal plug and play [UPnP] **[2022.01]**
61/2585	• • • • •	through application level gateway [ALG] **[2022.01]**
61/2589	• • • • •	over a relay server, e.g. traversal using relay for network address translation [TURN] **[2022.01]**
61/2592	• • • •	using tunnelling or encapsulation **[2022.01]**

61/2596	• • •	Translation of addresses of the same type other than IP, e.g. translation from MAC to MAC addresses **[2022.01]**
61/30	•	Managing network names, e.g. use of aliases or nicknames (name-to-address mapping H04L 61/45) **[2022.01]**
61/301	• •	Name conversion **[2022.01]**
61/3015	• •	Name registration, generation or assignment **[2022.01]**
61/45	•	Network directories; Name-to-address mapping **[2022.01]**
61/4505	• •	using standardised directories; using standardised directory access protocols **[2022.01]**
61/4511	• • •	using domain name system [DNS] **[2022.01]**
61/4517	• • •	using open systems interconnection [OSI] directories, e.g. X.500 **[2022.01]**
61/4523	• • •	using lightweight directory access protocol [LDAP] **[2022.01]**
61/4535	• •	using an address exchange platform which sets up a session between two nodes, e.g. rendezvous servers, session initiation protocols [SIP] registrars or H.323 gatekeepers **[2022.01]**
61/4541	• •	Directories for service discovery **[2022.01]**
61/4552	• •	Lookup mechanisms between a plurality of directories; Synchronisation of directories, e.g. metadirectories **[2022.01]**
61/4557	• •	Directories for hybrid networks, e.g. including telephone numbers **[2022.01]**
61/4588	• •	containing mobile subscriber information, e.g. home subscriber server [HSS] **[2022.01]**
61/4594	• •	Address books, i.e. directories containing contact information about correspondents (telephone directories in user terminals H04M 1/27453) **[2022.01]**
61/50	•	Address allocation **[2022.01]**
61/5007	• •	Internet protocol [IP] addresses **[2022.01]**
61/5014	• • •	using dynamic host configuration protocol [DHCP] or bootstrap protocol [BOOTP] **[2022.01]**
61/503	• • •	using an authentication, authorisation and accounting [AAA] protocol, e.g. remote authentication dial-in user service [RADIUS] or Diameter **[2022.01]**
61/5038	• •	for local use, e.g. in LAN or USB networks, or in a controller area network [CAN] **[2022.01]**
61/5046	• •	Resolving address allocation conflicts; Testing of addresses (testing when self-assigning an address H04L 61/5092) **[2022.01]**
61/5053	• •	Lease time; Renewal aspects **[2022.01]**
61/5061	• •	Pools of addresses **[2022.01]**
61/5069	• •	for group communication, multicast communication or broadcast communication **[2022.01]**
61/5076	• •	Update or notification mechanisms, e.g. DynDNS **[2022.01]**
61/5084	• •	Providing for device mobility (network addressing or numbering for mobility support in wireless networks H04W 8/26; mobile IP H04W 80/04) **[2022.01]**
61/5092	• •	by self-assignment, e.g. picking addresses at random and testing if they are already in use **[2022.01]**
61/58	•	Caching of addresses or names **[2022.01]**
61/59	•	using proxies for addressing **[2022.01]**

65/00 **Network arrangements, protocols or services for supporting real-time applications in data packet communication** (real-time or near real-time messaging, e.g. instant messaging [IM] H04L 51/04; selective video distribution H04N 21/00) **[2022.01]**

65/10 • Architectures or entities **[2022.01]**

65/1016 • • IP multimedia subsystem [IMS] **[2022.01]**

65/102 • • Gateways (arrangements for connecting between networks having differing types of switching systems, e.g. gateways, H04L 12/66) **[2022.01]**

65/1023 • • • Media gateways **[2022.01]**

65/1033 • • • Signalling gateways **[2022.01]**

65/1043 • • • Gateway controllers, e.g. media gateway control protocol [MGCP] controllers **[2022.01]**

65/1045 • • Proxies, e.g. for session initiation protocol [SIP] **[2022.01]**

65/1046 • • Call controllers; Call servers **[2022.01]**

65/1053 • • IP private branch exchange [PBX] functionality entities or arrangements (circuit switched PBXs H04M 3/00) **[2022.01]**

65/1055 • • • Single-site **[2022.01]**

65/1056 • • • Multi-site **[2022.01]**

65/1059 • • End-user terminal functionalities specially adapted for real-time communication **[2022.01]**

65/1063 • • Application servers providing network services (systems providing special services to telephonic subscribers H04M 3/42) **[2022.01]**

65/1066 • Session management **[2022.01]**

65/1069 • • Session establishment or de-establishment **[2022.01]**

65/1073 • • Registration or de-registration **[2022.01]**

65/1076 • • Screening of IP real time communications, e.g. spam over Internet telephony [SPIT] **[2022.01]**

65/1083 • • In-session procedures **[2022.01]**

65/1089 • • • by adding media; by removing media **[2022.01]**

65/1093 • • • by adding participants; by removing participants **[2022.01]**

65/1094 • • • Inter-user-equipment sessions transfer or sharing **[2022.01]**

65/1095 • • • Inter-network session transfer or sharing **[2022.01]**

65/1096 • • Supplementary features, e.g. call forwarding or call holding (systems providing special services or facilities to telephony subscribers H04M 3/42) **[2022.01]**

65/1101 • • Session protocols **[2022.01]**

65/1104 • • • Session initiation protocol [SIP] **[2022.01]**

65/1106 • • • Call signalling protocols; H.323 and related **[2022.01]**

65/1108 • • • Web based protocols, e.g. webRTC **[2022.01]**

65/40 • Support for services or applications **[2022.01]**

65/401 • • wherein the services involve a main real-time session and one or more additional parallel real-time or time sensitive sessions, e.g. white board sharing or spawning of a subconference **[2022.01]**

65/402 • • wherein the services involve a main real-time session and one or more additional parallel non-real time sessions, e.g. downloading a file in a parallel FTP session, initiating an email or combinational services **[2022.01]**

65/403 • • Arrangements for multi-party communication, e.g. for conferences (data switching systems for conference H04L 12/18; arrangements for connecting several subscribers to a common circuit, i.e. affording conference facilities H04M 3/56; television conferencing systems H04N 7/15) **[2022.01]**

65/4038 • • • with floor control **[2022.01]**

65/4053 • • • without floor control **[2022.01]**

65/4061 • • Push-to services, e.g. push-to-talk or push-to-video **[2022.01]**

65/60 • Network streaming of media packets **[2022.01]**

65/61 • • for supporting one-way streaming services, e.g. Internet radio **[2022.01]**

65/611 • • • for multicast or broadcast (arrangements for broadcast or distribution combined with broadcast H04H 20/00; arrangements for broadcast applications with a direct linkage to broadcast information or to broadcast space-time H04H 60/00; systems for broadcast or conference H04L 12/18; selective distribution of broadcast services, e.g. multimedia broadcast multicast service [MBMS], H04W 4/06) **[2022.01]**

65/612 • • • for unicast **[2022.01]**

65/613 • • • for the control of the source by the destination (control signals issued by the client directed to the server or network components specially adapted for selective content distribution H04N 21/637) **[2022.01]**

65/65 • • Network streaming protocols, e.g. real-time transport protocol [RTP] or real-time control protocol [RTCP] **[2022.01]**

65/70 • • Media network packetisation **[2022.01]**

65/75 • • Media network packet handling **[2022.01]**

65/752 • • • adapting media to network capabilities **[2022.01]**

65/756 • • • adapting media to device capabilities **[2022.01]**

65/80 • Responding to QoS **[2022.01]**

67/00 **Network arrangements or protocols for supporting network services or applications** (user-to-user messaging H04L 51/00; network arrangements, protocols or services for supporting real-time applications in data packet communications networks H04L 65/00) **[2022.01]**

67/01 • Protocols **[2022.01]**

67/02 • • based on web technology, e.g. hypertext transfer protocol [HTTP] **[2022.01]**

67/025 • • • for remote control or remote monitoring of applications **[2022.01]**

67/04 • • specially adapted for terminals or networks with limited capabilities; specially adapted for terminal portability **[2022.01]**

67/06 • • specially adapted for file transfer, e.g. file transfer protocol [FTP] **[2022.01]**

67/08 • • specially adapted for terminal emulation, e.g. Telnet **[2022.01]**

67/10 • • in which an application is distributed across nodes in the network (multiprogramming arrangements G06F 9/46; software deployment G06F 8/60) **[2022.01]**

67/1001 • • • for accessing one among a plurality of replicated servers **[2022.01]**

67/1004 • • • • Server selection for load balancing **[2022.01]**

67/1006 • • • • • with static server selection, e.g. the same server being selected for a specific client **[2022.01]**

67/1008 • • • • • based on parameters of servers, e.g. available memory or workload (monitoring of computer activity G06F 11/30) **[2022.01]**

67/101 • • • • • based on network conditions **[2022.01]**

67/1012 • • • • • based on compliance of requirements or conditions with available server resources **[2022.01]**

67/1014 • • • • • based on the content of a request **[2022.01]**

67/1017 • • • • • based on a round robin mechanism **[2022.01]**

67/1019 • • • • • Random or heuristic server selection **[2022.01]**

67/1021 • • • • • based on client or server locations **[2022.01]**

67/1023 • • • • • based on a hash applied to IP addresses or costs **[2022.01]**

67/1025 • • • • Dynamic adaptation of the criteria on which the server selection is based **[2022.01]**

67/1027 • • • • Persistence of sessions during load balancing **[2022.01]**

67/1029 • • • • using data related to the state of servers by a load balancer **[2022.01]**

67/1031 • • • • Controlling of the operation of servers by a load balancer, e.g. adding or removing servers that serve requests **[2022.01]**

67/1034 • • • • Reaction to server failures by a load balancer **[2022.01]**

67/1036 • • • • Load balancing of requests to servers for services different from user content provisioning, e.g. load balancing across domain name servers **[2022.01]**

67/1038 • • • • Load balancing arrangements to avoid a single path through a load balancer **[2022.01]**

67/104 • • • Peer-to-peer [P2P] networks **[2022.01]**

67/1042 • • • • using topology management mechanisms **[2022.01]**

67/1061 • • • • using node-based peer discovery mechanisms (static access to replicated servers H04L 67/1006; service discovery H04L 67/51) **[2022.01]**

67/1074 • • • • for supporting data block transmission mechanisms (file transfer H04L 67/06) **[2022.01]**

67/1087 • • • • using cross-functional networking aspects **[2022.01]**

67/1095 • • • Replication or mirroring of data, e.g. scheduling or transport for data synchronisation between network nodes **[2022.01]**

67/1097 • • • for distributed storage of data in networks, e.g. transport arrangements for network file system [NFS], storage area networks [SAN] or network attached storage [NAS] **[2022.01]**

67/12 • • specially adapted for proprietary or special-purpose networking environments, e.g. medical networks, sensor networks, networks in vehicles or remote metering networks **[2022.01]**

67/125 • • • involving control of end-device applications over a network **[2022.01]**

67/131 • • Protocols for games, networked simulations or virtual reality **[2022.01]**

67/133 • • Protocols for remote procedure calls [RPC] **[2022.01]**

67/1396 • • specially adapted for monitoring users' activity **[2022.01]**

67/14 • Session management (for real-time applications in data packet communications networks H04L 65/1066) **[2022.01]**

67/141 • • Setup of application sessions (admission control or resource allocation in data switching networks H04L 47/70) **[2022.01]**

67/142 • • Managing session states for stateless protocols; Signalling session states; State transitions; Keeping-state mechanisms **[2022.01]**

67/143 • • Termination or inactivation of sessions, e.g. event-controlled end of session **[2022.01]**

67/145 • • • avoiding end of session, e.g. keep-alive, heartbeats, resumption message or wake-up for inactive or interrupted session **[2022.01]**

67/146 • • Markers for unambiguous identification of a particular session, e.g. session cookie or URL-encoding **[2022.01]**

67/147 • • Signalling methods or messages providing extensions to protocols defined by standardisation **[2022.01]**

67/148 • • Migration or transfer of sessions **[2022.01]**

67/2866 • Architectures; Arrangements **[2022.01]**

67/2869 • • Terminals specially adapted for communication **[2022.01]**

67/2871 • • Implementation details of single intermediate entities **[2022.01]**

67/2876 • • Pairs of inter-processing entities at each side of the network, e.g. split proxies **[2022.01]**

67/288 • • Distributed intermediate devices, i.e. intermediate devices for interaction with other intermediate devices on the same level **[2022.01]**

67/2885 • • Hierarchically arranged intermediate devices, e.g. for hierarchical caching **[2022.01]**

67/289 • • Intermediate processing functionally located close to the data consumer application, e.g. in same machine, in same home or in same sub-network **[2022.01]**

67/2895 • • Intermediate processing functionally located close to the data provider application, e.g. reverse proxies **[2022.01]**

67/30 • • Profiles **[2022.01]**

67/303 • • • Terminal profiles **[2022.01]**

67/306 • • • User profiles **[2022.01]**

67/50 • Network services **[2022.01]**

67/51 • • Discovery or management thereof, e.g. service location protocol [SLP] or web services **[2022.01]**

67/52 • • specially adapted for the location of the user terminal **[2022.01]**

67/53 • • using third party service providers **[2022.01]**

67/54 • • Presence management, e.g. monitoring or registration for receipt of user log-on information, or the connection status of the users **[2022.01]**

67/55 • • Push-based network services **[2022.01]**

67/56 • • Provisioning of proxy services (store-and-forward switching systems in data switching networks H04L 12/54) **[2022.01]**

67/561 • • • Adding application-functional data or data for application control, e.g. adding metadata **[2022.01]**

67/562 • • • Brokering proxy services **[2022.01]**

67/563 • • • Data redirection of data network streams **[2022.01]**

67/564 • • • Enhancement of application control based on intercepted application data **[2022.01]**

67/565 • • • Conversion or adaptation of application format or content (adding application control or application functional data H04L 67/561) **[2022.01]**

67/5651 • • • • Reducing the amount or size of exchanged application data **[2022.01]**

67/566 • • • Grouping or aggregating service requests, e.g. for unified processing **[2022.01]**

67/567 • • • Integrating service provisioning from a plurality of service providers **[2022.01]**

67/568 • • • Storing data temporarily at an intermediate stage, e.g. caching **[2022.01]**

67/5681 • • • • Pre-fetching or pre-delivering data based on network characteristics **[2022.01]**

67/5682 • • • • Policies or rules for updating, deleting or replacing the stored data **[2022.01]**

67/5683 • • • • Storage of data provided by user terminals, i.e. reverse caching **[2022.01]**

67/59 • • • Providing operational support to end devices by off-loading in the network or by emulation, e.g. when they are unavailable **[2022.01]**

67/60 • • Scheduling or organising the servicing of application requests, e.g. requests for application data transmissions using the analysis and optimisation of the required network resources (admission control or resource allocation H04L 47/70) **[2022.01]**

67/61 • • • taking into account QoS or priority requirements **[2022.01]**

67/62 • • • Establishing a time schedule for servicing the requests **[2022.01]**

67/63 • • • Routing a service request depending on the request content or context **[2022.01]**

67/75 • • Indicating network or usage conditions on the user display **[2022.01]**

69/00 Network arrangements, protocols or services independent of the application payload and not provided for in the other groups of this subclass (networks security protocols H04L 9/40; wireless communication networks H04W) **[2022.01]**

69/04 • Protocols for data compression, e.g. ROHC **[2022.01]**

69/06 • Notations for structuring of protocol data, e.g. abstract syntax notation one [ASN.1] **[2022.01]**

69/08 • Protocols for interworking; Protocol conversion **[2022.01]**

69/085 • • specially adapted for interworking of IP-based networks with other networks **[2022.01]**

69/10 • Streamlined, light-weight or high-speed protocols, e.g. express transfer protocol [XTP] or byte stream **[2022.01]**

69/12 • Protocol engines **[2022.01]**

69/14 • Multichannel or multilink protocols **[2022.01]**

69/16 • Implementation or adaptation of Internet protocol [IP], of transmission control protocol [TCP] or of user datagram protocol [UDP] **[2022.01]**

69/163 • • In-band adaptation of TCP data exchange; In-band control procedures **[2022.01]**

69/164 • • Adaptation or special uses of UDP protocol **[2022.01]**

69/165 • • Combined use of TCP and UDP protocols; selection criteria therefor **[2022.01]**

69/166 • • IP fragmentation; TCP segmentation **[2022.01]**

69/167 • • Adaptation for transition between two IP versions, e.g. between IPv4 and IPv6 (translation of Internet protocol [IP] addresses H04L 61/2503) **[2022.01]**

69/168 • • specially adapted for link layer protocols, e.g. asynchronous transfer mode [ATM], synchronous optical network [SONET] or point-to-point protocol [PPP] **[2022.01]**

69/18 • Multiprotocol handlers, e.g. single devices capable of handling multiple protocols **[2022.01]**

69/22 • Parsing or analysis of headers **[2022.01]**

69/24 • Negotiation of communication capabilities **[2022.01]**

69/28 • Timers or timing mechanisms used in protocols **[2022.01]**

69/30 • Definitions, standards or architectural aspects of layered protocol stacks **[2022.01]**

69/32 • • Architecture of open systems interconnection [OSI] 7-layer type protocol stacks, e.g. the interfaces between the data link level and the physical level **[2022.01]**

69/321 • • • Interlayer communication protocols or service data unit [SDU] definitions; Interfaces between layers **[2022.01]**

69/322 • • • Intralayer communication protocols among peer entities or protocol data unit [PDU] definitions **[2022.01]**

69/323 • • • • in the physical layer [OSI layer 1] **[2022.01]**

69/324 • • • • in the data link layer [OSI layer 2], e.g. HDLC **[2022.01]**

69/325 • • • • in the network layer [OSI layer 3], e.g. X.25 (H04L 69/16 takes precedence) **[2022.01]**

69/326 • • • • in the transport layer [OSI layer 4] (H04L 69/16 takes precedence) **[2022.01]**

69/327 • • • • in the session layer [OSI layer 5] **[2022.01]**

69/328 • • • • in the presentation layer [OSI layer 6] **[2022.01]**

69/329 • • • • in the application layer [OSI layer 7] **[2022.01]**

69/40 • for recovering from a failure of a protocol instance or entity, e.g. service redundancy protocols, protocol state redundancy or protocol service redirection (management of faults, events, alarms or notifications in data switching networks H04L 41/06) **[2022.01]**

Indexing scheme associated with group H04L 61/00 [2022.01]

101/00 Indexing scheme associated with group H04L 61/00 [2022.01]

101/30 • Types of network names **[2022.01]**

101/32 • • containing non-Latin characters, e.g. Chinese domain names **[2022.01]**

101/33 • • containing protocol addresses or telephone numbers **[2022.01]**

101/345 • • containing wildcard characters **[2022.01]**

101/35 • • containing special prefixes **[2022.01]**

101/355 • • containing special suffixes **[2022.01]**

101/365 • • Application layer names, e.g. buddy names, unstructured names chosen by a user or home appliance name **[2022.01]**

101/37 • • E-mail addresses **[2022.01]**

101/375 • • Access point names [APN] **[2022.01]**

101/38 • • Telephone uniform resource identifier [URI] **[2022.01]**

101/385 • • Uniform resource identifier for session initiation protocol [SIP URI] **[2022.01]**

101/39 • • Globally routable user-agent uniform resource identifier [GRUU] for the session initiation protocol [SIP] **[2022.01]**

101/395 • • Internet protocol multimedia private identity [IMPI]; Internet protocol multimedia public identity [IMPU] **[2022.01]**

101/60 • Types of network addresses **[2022.01]**

101/604 • • Address structures or formats **[2022.01]**

101/618 • • Details of network addresses **[2022.01]**

101/622	• • •	Layer-2 addresses, e.g. medium access control [MAC] addresses **[2022.01]**
101/627	• • •	Controller area network [CAN] identifiers **[2022.01]**
101/631	• • •	Small computer system interface [SCSI] addresses **[2022.01]**
101/636	• • •	IEEE1394 identification numbers **[2022.01]**
101/64	• • •	Asynchronous transfer mode [ATM] addresses **[2022.01]**
101/645	• • •	Fibre channel identifiers **[2022.01]**
101/65	• • •	Telephone numbers **[2022.01]**
101/654	• • •	International mobile subscriber identity [IMSI] numbers **[2022.01]**
101/659	• • •	Internet protocol version 6 [IPv6] addresses **[2022.01]**

101/663	• • •	Transport layer addresses, e.g. aspects of transmission control protocol [TCP] or user datagram protocol [UDP] ports **[2022.01]**
101/668	• •	Internet protocol [IP] address subnets **[2022.01]**
101/672	• •	Short addresses **[2022.01]**
101/677	• •	Multiple interfaces, e.g. multihomed nodes **[2022.01]**
101/681	• •	using addresses for wireless personal area networks or wireless sensor networks, e.g. Zigbee addresses **[2022.01]**
101/686	• •	using dual-stack hosts, e.g. in Internet protocol version 4 [IPv4]/Internet protocol version 6 [IPv6] networks **[2022.01]**
101/69	• •	using geographic information, e.g. room number **[2022.01]**
101/695	• •	using masks or ranges of addresses **[2022.01]**

H04M   **TELEPHONIC COMMUNICATION** (circuits for controlling other apparatus <u>via</u> a telephone cable and not involving telephone switching apparatus G08)

<u>Note(s)</u>

1. This subclass <u>covers</u>:
   - substation equipment;
   - 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. fixed, wireless, mobile or cellular phones, or for a user of terminal equipment;
   - "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" include exchanges and satellites.

<u>Subclass index</u>

———————————————————————

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, 2006.01]**
1/02	•	Constructional features of telephone sets **[1, 2006.01]**
1/03	• •	Constructional features of telephone transmitters or receivers, e.g. telephone hand-sets **[2, 2006.01]**
1/04	• •	Supports for telephone transmitters or receivers **[1, 2006.01]**
1/05	• • •	specially adapted for use on head, throat or breast **[1, 2006.01]**
1/06	• • •	Hooks; Cradles **[1, 2006.01]**
1/08	• • • •	associated with switches operated by the weight of the receiver or hand-set **[1, 2006.01]**
1/10	• • • •	associated with switches operated by magnetic effect due to proximity of receiver or hand-set **[1, 2006.01]**

1/11	• •	Supports for sets, e.g. incorporating armrests **[1, 2006.01]**
1/12	• • •	Adjustable supports, e.g. extensible **[1, 2006.01]**
1/13	• • • •	pantographic **[1, 2006.01]**
1/14	• • •	with resilient means to eliminate extraneous vibrations **[1, 2006.01]**
1/15	• •	Protecting or guiding telephone cords **[1, 5, 2006.01]**
1/17	• •	Hygienic or sanitary devices on telephone equipment (for mouthpieces or earpieces H04R 1/12) **[2, 2006.01]**
1/18	• •	Telephone sets specially adapted for use in ships, mines, or other places exposed to adverse environment (H04M 1/19 takes precedence) **[1, 2006.01]**

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, 2006.01]**

1/20 • • Arrangements for preventing acoustic feedback (H04M 1/62 takes precedence) **[1, 2006.01]**

1/21 • • Combinations with auxiliary equipment, e.g. with clocks or memoranda pads **[1, 2006.01]**

1/215 • • • by non-intrusive coupling means, e.g. acoustic couplers **[7, 2006.01]**

1/22 • • Illumination; Arrangements for improving the visibility of characters on dials **[1, 2006.01]**

1/23 • • Construction or mounting of dials or of equivalent devices; Means for facilitating the use thereof (by improving visibility H04M 1/22) **[1, 2006.01]**

1/24 • Arrangements for testing **[1, 2006.01]**

1/247 • Telephone sets including user guidance or feature selection means facilitating their use (user interfaces specially adapted for cordless or mobile telephones H04M 1/724) **[7, 2006.01, 2021.01]**

1/253 • Telephone sets using digital voice transmission **[7, 2006.01]**

1/26 • Devices for calling a subscriber (H04M 1/66 takes precedence) **[1, 7, 2006.01]**

1/27 • • Devices whereby a plurality of signals may be stored simultaneously **[2, 2006.01]**

1/272 • • • with provision for storing only one subscriber number at a time, e.g. by keyboard or dial **[2, 2006.01]**

1/274 • • • with provision for storing more than one subscriber number at a time **[2, 2006.01]**

1/2745 • • • • using static electronic memories, e.g. chips **[7, 2006.01, 2020.01]**

1/27453 • • • • • Directories allowing storage of additional subscriber data, e.g. metadata **[2020.01]**

1/27457 • • • • • • Management thereof, e.g. manual editing of data **[2020.01]**

1/2746 • • • • • • Sorting, e.g. according to history or frequency of use **[2020.01]**

1/27467 • • • • • Methods of retrieving data **[2020.01]**

1/2747 • • • • • • Scrolling on a display **[2020.01]**

1/27475 • • • • • • using interactive graphical means or pictorial representations **[2020.01]**

1/2748 • • • • • • by matching character strings **[2020.01]**

1/27485 • • • • • Appending a prefix to or inserting a pause into a dialling sequence **[2020.01]**

1/2749 • • • • • Automatic dialling or redialling systems, e.g. on off-hook or redial on busy **[2020.01]**

1/27495 • • • • • implemented by means of discrete electronic components, i.e. neither programmable nor microprocessor-controlled (H04M 1/27457-H04M 1/2749 take precedence) **[2020.01]**

1/275 • • • • • implemented by means of portable electronic directories **[7, 2006.01]**

1/2753 • • • • • providing data content **[2020.01]**

1/2755 • • • • • • by optical scanning **[7, 2006.01]**

1/2757 • • • • • • by data transmission, e.g. downloading **[2020.01]**

1/276 • • • • using magnetic recording, e.g. on tape **[2, 2006.01]**

1/278 • • • • using punched cards or tapes **[2, 2006.01]**

1/30 • • Devices which can set up and transmit only one digit at a time **[1, 2006.01]**

1/31 • • • by interrupting current to generate trains of pulses; by periodically opening and closing contacts to generate trains of pulses **[2, 2006.01]**

1/315 • • • • Clutches; Spring assemblies; Speed regulators, e.g. centrifugal brakes (H04M 1/32-H04M 1/40 take precedence) **[3, 2006.01]**

1/32 • • • • Locking setting devices during transmission to prevent interference by user **[1, 2006.01]**

1/34 • • • • Lost-motion or other arrangements for ensuring a pause between successive digit transmissions **[1, 2006.01]**

1/38 • • • • Pulses transmitted by a movement variably limited by the setting of a stop **[1, 2006.01]**

1/40 • • • • wherein the setting-operation short-circuits or open-circuits the transmitting mechanism during a variable part of a cycle **[1, 2006.01]**

1/50 • • • by generating or selecting currents of predetermined frequencies or combinations of frequencies **[1, 2, 2006.01]**

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, 2006.01]**

1/52 • • Arrangements wherein a dial or the like is mechanically coupled to a line selector **[1, 2006.01]**

1/53 • • Generation of additional signals, e.g. additional pulses **[2, 2006.01]**

1/54 • • • Arrangements wherein a dial or the like generates identifying signals, e.g. in party-line systems **[1, 2, 2006.01]**

1/56 • Arrangements for indicating or recording the called number at the calling subscriber's set **[1, 2006.01]**

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, 2006.01]**

1/58 • Anti-side-tone circuits **[1, 2006.01]**

1/60 • including speech amplifiers **[1, 2006.01]**

1/62 • • Constructional arrangements **[1, 2006.01]**

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, 2006.01]**

1/65 • • Recording arrangements **[2, 7, 2006.01]**

1/652 • • • Means for playing back the recorded messages by remote control over a telephone line (H04M 1/658 takes precedence) **[7, 2006.01]**

1/654 • • • Telephone line monitoring circuits therefor, e.g. ring detectors **[7, 2006.01]**

1/656 • • • for recording conversations **[7, 2006.01]**

1/658 • • • Means for redirecting recorded messages to other extensions or equipment **[7, 2006.01]**

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, 2006.01]**

1/663 • • Preventing unauthorised calls to a telephone set **[7, 2006.01]**

1/665 • • • by checking the validity of a code **[7, 2006.01]**

1/667 • • Preventing unauthorised calls from a telephone set (H04M 1/677 takes precedence) **[7, 2006.01]**

1/67 • • • by electronic means **[7, 2006.01]**

1/673 • • • • the user being required to key in a code **[7, 2006.01]**

1/675 • • • • the user being required to insert a coded card, e.g. a smart card carrying an integrated circuit chip **[7, 2006.01]**

1/677 • • Preventing the dialling or sending of predetermined telephone numbers or selected types of telephone numbers, e.g. long distance numbers **[7, 2006.01]**

1/68 • Circuit arrangements for preventing eavesdropping **[1, 2006.01]**

1/70 • • Lock-out or secrecy arrangements in party-line systems **[1, 2006.01]**

1/71 • Substation extension arrangements **[2021.01]**

1/715 • • using two or more extensions per line (cordless telephones H04M 1/725) **[2021.01]**

1/72 • Mobile telephones; Cordless telephones, i.e. devices for establishing wireless links to base stations without route selection **[1, 7, 2006.01, 2021.01]**

1/724 • • User interfaces specially adapted for cordless or mobile telephones **[2021.01]**

1/72403 • • • with means for local support of applications that increase the functionality **[2021.01]**

1/72406 • • • • by software upgrading or downloading **[2021.01]**

1/72409 • • • • by interfacing with external accessories (hands-free H04M 1/60) **[2021.01]**

1/72412 • • • • • using two-way short-range wireless interfaces **[2021.01]**

1/72415 • • • • • for remote control of appliances **[2021.01]**

1/72418 • • • • for supporting emergency services **[2021.01]**

1/72421 • • • • • with automatic activation of emergency service functions, e.g. upon sensing an alarm **[2021.01]**

1/72424 • • • • • with manual activation of emergency-service functions **[2021.01]**

1/72427 • • • • for supporting games or graphical animations **[2021.01]**

1/7243 • • • • with interactive means for internal management of messages **[2021.01]**

1/72433 • • • • • for voice messaging, e.g. dictaphones (for answering incoming calls H04M 1/64) **[2021.01]**

1/72436 • • • • • for text messaging, e.g. SMS or e-mail **[2021.01]**

1/72439 • • • • • for image or video messaging **[2021.01]**

1/72442 • • • • for playing music files **[2021.01]**

1/72445 • • • • for supporting Internet browser applications **[2021.01]**

1/72448 • • • with means for adapting the functionality of the device according to specific conditions **[2021.01]**

1/72451 • • • • according to schedules, e.g. using calendar applications **[2021.01]**

1/72454 • • • • according to context-related or environment-related conditions **[2021.01]**

1/72457 • • • • according to geographic location **[2021.01]**

1/7246 • • • • by connection of exchangeable housing parts **[2021.01]**

1/72463 • • • • to restrict the functionality of the device **[2021.01]**

1/72466 • • • • with selection means, e.g. keys, having functions defined by the mode or the status of the device **[2021.01]**

1/72469 • • • for operating the device by selecting functions from two or more displayed items, e.g. menus or icons **[2021.01]**

1/72472 • • • • wherein the items are sorted according to specific criteria, e.g. frequency of use **[2021.01]**

1/72475 • • • specially adapted for disabled users **[2021.01]**

1/72478 • • • • for hearing-impaired users **[2021.01]**

1/72481 • • • • for visually impaired users **[2021.01]**

1/72484 • • • wherein functions are triggered by incoming communication events **[2021.01]**

1/725 • • Cordless telephones (user interfaces specially adapted therefor H04M 1/724) **[7, 2006.01, 2021.01]**

1/72502 • • • with one base station connected to a single line **[2021.01]**

1/72505 • • • • Radio link set-up procedures **[2021.01]**

1/72508 • • • • • using a control channel **[2021.01]**

1/72511 • • • • • Searching for available channels **[2021.01]**

1/72513 • • • • • On-hold, intercom or transfer communication modes **[2021.01]**

1/72516 • • • • with means for out-of-range alerting **[2021.01]**

1/727 • • • Identification code transfer arrangements **[7, 2006.01]**

1/73 • • • Battery saving arrangements **[7, 2006.01]**

1/733 • • • with a plurality of base stations connected to a plurality of lines **[7, 2006.01]**

1/737 • • • characterised by transmission of electromagnetic waves other than radio waves, e.g. infrared waves **[7, 2006.01]**

1/738 • Interface circuits for coupling substations to external telephone lines (H04M 1/78 takes precedence) **[7, 2006.01]**

1/74 • • with means for reducing interference; with means for reducing effects due to line faults **[1, 2006.01]**

1/76 • • Compensating for differences in line impedance **[1, 2006.01]**

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, 2006.01]**

1/80 • Telephone line holding circuits **[7, 2006.01]**

1/82 • Line monitoring circuits for call progress or status discrimination **[7, 2006.01]**

3/00 Automatic or semi-automatic exchanges [1, 2006.01]

3/02 • Calling substations, e.g. by ringing (selective calling H04Q) **[1, 2006.01]**

3/04 • • the calling signal being supplied from the final selector **[1, 2006.01]**

3/06 • • the calling signal being supplied from the subscriber's line circuit **[1, 2006.01]**

3/08 • Indicating faults in circuits or apparatus **[1, 2006.01]**

3/10 • • Providing fault- or trouble-signals **[1, 2006.01]**

3/12 • • Marking faulty circuits "busy"; Enabling equipment to disengage itself from faulty circuits **[1, 2006.01]**

3/14 • • Signalling existence of persistent "off-hook" condition **[1, 2006.01]**

3/16 • with lock-out or secrecy provision in party-line systems **[1, 2006.01]**

3/18 • with means for reducing interference; with means for reducing effects due to line faults **[1, 2006.01]**

3/20 • with means for interrupting existing connections; with means for breaking-in on conversations **[1, 2006.01]**

3/22 • Arrangements for supervision, monitoring or testing **[1, 2006.01]**

3/24 • • with provision for checking the normal operation **[1, 2006.01]**

3/26 • • with means for applying test signals **[1, 2006.01]**

3/28 • • • Automatic routine testing **[1, 2006.01]**

3/30 • • • • for subscribers' lines **[1, 2006.01]**

3/32 • • • • for lines between exchanges **[1, 2006.01]**

3/34 • • • Testing for cross-talk **[1, 2006.01]**

3/36 • • Statistical metering, e.g. recording occasions when traffic exceeds capacity of trunks **[1, 2006.01]**

3/38 • Graded-service arrangements, i.e. some subscribers prevented from establishing certain connections (queuing arrangements H04Q 3/64) **[1, 2006.01]**

3/40 • Applications of speech amplifiers **[1, 2006.01]**

3/42 • Systems providing special services or facilities to subscribers (specially adapted for wireless communication networks H04W 4/00) **[1, 2006.01]**

3/424 • • Arrangements for automatic redialling (at the subscriber's set H04M 1/27) **[7, 2006.01]**

3/428 • • Arrangements for placing incoming calls on hold **[7, 2006.01]**

3/432 • • Arrangements for calling a subscriber at a specific time, e.g. morning call service **[7, 2006.01]**

3/436 • • Arrangements for screening incoming calls **[7, 2006.01]**

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, 2006.01]**

3/46 • • Arrangements for calling a number of substations in a predetermined sequence until an answer is obtained **[1, 2006.01]**

3/48 • • Arrangements for recalling a calling subscriber when the wanted subscriber ceases to be busy **[1, 2006.01]**

3/487 • • Arrangements for providing information services, e.g. recorded voice services or time announcements **[7, 2006.01]**

3/493 • • • Interactive information services, e.g. directory enquiries **[7, 2006.01]**

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, 2006.01]**

3/51 • • • Centralised call answering arrangements requiring operator intervention **[7, 2006.01]**

3/52 • • • • Arrangements for routing dead number calls to operators **[1, 2006.01]**

3/523 • • • • with call distribution or queuing **[7, 2006.01]**

3/527 • • • Centralised call answering arrangements not requiring operator intervention **[7, 2006.01]**

3/53 • • • Centralised arrangements for recording incoming messages **[7, 2006.01]**

3/533 • • • • Voice mail systems **[7, 2006.01]**

3/537 • • • • Arrangements for indicating the presence of a recorded message **[7, 2006.01]**

3/54 • • Arrangements for diverting calls for one subscriber to another predetermined subscriber **[1, 2006.01]**

3/56 • • • Arrangements for connecting several subscribers to a common circuit, i.e. affording conference facilities (video conference systems H04N 7/15) **[1, 2006.01]**

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, 2006.01]**

3/60 • Semi-automatic systems, i.e. systems in which the numerical selection of the outgoing line is under the control of an operator **[1, 2006.01]**

3/62 • • Keyboard equipment **[1, 2006.01]**

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) **[1, 2006.01]**

5/00 **Manual exchanges** (substation equipment in general H04M 1/00) **[1, 2006.01]**

5/02 • Constructional details (jacks, jack-plugs H01R 24/58) **[1, 2006.01]**

5/04 • Arrangements for indicating calls or supervising connections for calling or clearing **[1, 2006.01]**

5/06 • • affording automatic call distribution **[1, 2006.01]**

5/08 • using connecting means other than cords **[1, 2006.01]**

5/10 • using separate plug for each subscriber **[1, 2006.01]**

5/12 • Calling substations, e.g. by ringing **[1, 2006.01]**

5/14 • Applications of speech amplifiers **[1, 2006.01]**

5/16 • with means for reducing interference; with means for reducing effects due to line faults **[1, 2006.01]**

5/18 • Arrangements for signalling the class or number of called or calling line from one exchange to another **[1, 2006.01]**

5/20 • • Arrangements for indicating the numbers of the incoming lines **[1, 2006.01]**

7/00 **Arrangements for interconnection between switching centres [1, 2006.01]**

7/02 • for compensating differences of ground potential **[1, 2006.01]**

7/04 • for compensating differences of line impedance **[1, 2006.01]**

7/06 • using auxiliary connections for control or supervision **[1, 2006.01]**

7/08 • for phantom working **[1, 2006.01]**

7/10 • for two-way working, i.e. calls may be set-up in either direction over the same connection **[1, 2006.01]**

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 **[1, 2006.01]**

7/14 • in systems involving main and subordinate switching centres (current supply source at subordinate switching centre charged from main exchange H04M 19/06) **[1, 2006.01]**

7/16 • in systems employing carrier frequencies **[1, 2006.01]**

9/00 **Arrangements for interconnection not involving centralised switching [1, 2006.01]**

9/02 • involving a common line for all parties **[1, 2006.01]**

9/04 • involving a separate line for each pair of parties **[1, 2006.01]**

9/06 • involving combinations of interconnecting lines **[1, 2006.01]**

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 **[1, 2006.01]**

9/10 • • with switching of direction of transmission by voice frequency **[1, 2006.01]**

11/00 Telephonic communication systems specially adapted for combination with other electrical systems [1, 2006.01]

11/02 • with bell or annunciator systems **[1, 2006.01]**

11/04 • with alarm systems, e.g. fire, police or burglar alarm systems **[1, 2006.01]**

11/06 • Simultaneous speech and data transmission, e.g. telegraphic transmission over the same conductors **[1, 2006.01]**

11/08 • specially adapted for optional reception of entertainment or informative matter **[1, 2006.01]**

11/10 • with dictation recording and playback systems **[1, 2006.01]**

13/00 Party-line systems (substation equipment H04M 1/00; exchange equipment H04M 3/00, H04M 5/00; metering arrangements H04M 15/36) **[1, 2006.01]**

15/00 Arrangements for metering, time-control or time-indication [1, 2006.01]

15/02 • Severing connection after a predetermined time **[1, 2006.01]**

15/04 • Recording calls in printed, perforated, or other permanent form **[1, 2006.01]**

15/06 • • Recording class or number of calling party or called party **[1, 2006.01]**

15/08 • Metering calls to called party **[1, 2006.01]**

15/10 • Metering calls from calling party **[1, 2006.01]**

15/12 • • Discriminative metering **[1, 2006.01]**

15/14 • • • according to class of calling party **[1, 2006.01]**

15/16 • • • according to connection obtained **[1, 2006.01]**

15/18 • • • according to duration of call **[1, 2006.01]**

15/20 • • • • Operator's time recording or indicating arrangements **[1, 2006.01]**

15/22 • • • according to time of day **[1, 2006.01]**

15/24 • • • preventing metering of tax-free calls to certain lines, e.g. to fire or ambulance stations **[1, 2006.01]**

15/26 • • with a meter at the exchange controlled by an operator **[1, 2006.01]**

15/28 • with meter at substation **[1, 2006.01]**

15/30 • • the meter not being controlled from an exchange **[1, 2006.01]**

15/32 • Metering arrangements for satellites or concentrators which connect one or more exchange lines with a group of local lines **[1, 2006.01]**

15/34 • Metering arrangements for private branch exchanges **[1, 2006.01]**

15/36 • Metering arrangements for party-lines **[1, 2006.01]**

15/38 • Metering by apparatus other than mechanical step-by-step counter type **[1, 2006.01]**

17/00 Prepayment telephone systems (using a coded card to authorise calls from a telephone set H04M 1/675) **[1, 7, 2006.01]**

17/02 • Coin-freed or check-freed systems **[1, 2006.01]**

19/00 Current supply arrangements for telephone systems (for selecting equipment H04Q 1/28) **[1, 2006.01]**

19/02 • providing ringing current or supervisory tones, e.g. dialling tone or busy tone **[1, 2006.01]**

19/04 • • the ringing-current being generated at the substations **[1, 2006.01]**

19/06 • in which current supply sources at subordinate switching centres are charged from the main exchange **[1, 2006.01]**

19/08 • with current supply sources at the substations (generating ringing current H04M 19/04) **[1, 7, 2006.01]**

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

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

Note(s) [4]

1. This subclass <u>covers</u>:
    •   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 <u>not</u> subject to variation with time, e.g. documents, 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 <u>does not cover</u>:
    •   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 <u>equivalent</u> 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 <u>may</u> change with time, e.g. natural "live" scenes, recordings of such scenes such as cinematograph films.

Note(s) [6]

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 [1, 3, 4, 2006.01]**

1/024 • Details of scanning heads **[3, 4, 2006.01]**

1/028 • • for picture-information pick-up **[3, 4, 2006.01]**

1/029 • • • Heads optically focused on only one picture element at a time **[6, 2006.01]**

1/03 • • • with photodetectors arranged in a substantially linear array **[6, 2006.01]**

1/031 • • • • the photodetectors having a one-to-one and optically positive correspondence with the scanned picture elements, e.g. linear contact sensors **[6, 2006.01]**

1/032 • • for picture-information reproduction **[3, 4, 2006.01]**

1/034 • • • using ink, e.g. ink-jet heads **[5, 2006.01]**

1/036 • • • for optical reproduction **[3, 4, 2006.01]**

1/04 • Scanning arrangements (H04N 1/387 takes precedence) **[1, 4, 2006.01]**

1/047 • • Detection, control or error compensation of scanning velocity or position (H04N 1/17 takes precedence) **[6, 2006.01]**

1/053 • • • in main scanning direction, e.g. synchronisation of line start or picture elements in a line **[6, 2006.01]**

1/06 • • using cylindrical picture-bearing surfaces **[1, 4, 2006.01]**

1/08 • • • Mechanisms for mounting or holding the sheet around the drum **[1, 4, 2006.01]**

1/10 • • using flat picture-bearing surfaces **[1, 4, 2006.01]**

1/107 • • • with manual scanning **[6, 2006.01]**

1/113 • • using oscillating or rotating mirrors **[6, 2006.01]**

1/12 • • using the sheet-feed movement as the slow scanning component (using multi-element arrays H04N 1/19) **[1, 4, 6, 2006.01]**

1/14 • • • using a rotating endless belt carrying the scanning heads **[1, 4, 2006.01]**

1/16 • • • using a rotating helical element **[1, 4, 2006.01]**

1/17 • • the scanning speed being dependent on content of picture **[3, 4, 2006.01]**

1/19 • • using multi-element arrays **[6, 2006.01]**

1/191 • • • the array comprising a one-dimensional array **[6, 2006.01]**

1/192 • • • • Simultaneously scanning picture elements on one main scanning line **[6, 2006.01]**

1/193 • • • • • using electrically scanned linear arrays **[6, 2006.01]**

1/195 • • • the array comprising a two-dimensional array **[6, 2006.01]**

1/203 • • Simultaneous scanning of two or more separate pictures **[6, 2006.01]**

1/207 • • Simultaneous scanning of the original picture and the reproduced picture with a common scanning device **[6, 2006.01]**

1/21 • Intermediate information storage (H04N 1/387, H04N 1/41 take precedence) **[4, 2006.01]**

1/23 • Reproducing arrangements **[4, 2006.01]**

1/27 • • involving production of a magnetic intermediate picture **[4, 2006.01]**

1/29 • • involving production of an electrostatic intermediate picture **[4, 2006.01]**

1/31 • • Mechanical arrangements for picture transmission, e.g. adaptation of clutches, gearing, gear transmissions **[4, 2006.01]**

1/32 • Circuits or arrangements for control or supervision between transmitter and receiver **[1, 2006.01]**

1/327 • • Initiating, continuing or ending a single-mode communication; Handshaking therefor **[6, 2006.01]**

1/333 • • Mode signalling or mode changing; Handshaking therefor **[6, 2006.01]**

1/34 • • for coin-freed systems **[1, 2006.01]**

1/36 • • for synchronising or phasing transmitter and receiver **[1, 2006.01]**

1/38 • Circuits or arrangements for blanking or otherwise eliminating unwanted parts of pictures (H04N 1/387 takes precedence) **[1, 4, 2006.01]**

1/387 • Composing, repositioning or otherwise modifying originals **[4, 2006.01]**

1/393 • • Enlarging or reducing **[4, 2006.01]**

1/40 • Picture signal circuits (H04N 1/387 takes precedence) **[1, 4, 2006.01]**

1/401 • • Compensating positionaly unequal response of the pick-up or reproducing head (H04N 1/403 takes precedence) **[6, 2006.01]**

1/403 • • Discrimination between the two tones in the picture signal of a two-tone original **[6, 2006.01]**

1/405 • • Halftoning, i.e. converting the picture signal of a continuous-tone original into a corresponding signal showing only two levels **[6, 2006.01]**

1/407 • • Control or modification of tonal gradation or of extreme levels, e.g. background level **[6, 2006.01]**

1/409 • • Edge or detail enhancement; Noise or error suppression **[6, 2006.01]**

1/41 • Bandwidth or redundancy reduction (by scanning H04N 1/17) **[3, 2006.01]**

1/411 • • for the transmission or reproduction of two-tone pictures, e.g. black and white pictures **[4, 2006.01]**

1/413 • • • Systems or arrangements allowing the picture to be reproduced without loss or modification of picture-information **[4, 2006.01]**

1/415 · · · · in which the picture-elements are subdivided or grouped into fixed one-dimensional or two-dimensional blocks **[4, 2006.01]**

1/417 · · · · using predictive or differential encoding **[4, 2006.01]**

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, 2006.01]**

1/42 · Systems for two-way working **[1, 2006.01]**

1/44 · Secrecy systems **[1, 2006.01]**

1/46 · Colour picture communication systems **[1, 2006.01]**

1/48 · · Picture signal generators (for halftone screening H04N 1/52) **[6, 2006.01]**

1/50 · · Picture reproducers (for halftone screening H04N 1/52) **[6, 2006.01]**

1/52 · · Circuits or arrangements for halftone screening **[6, 2006.01]**

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, 2006.01]**

1/56 · · Processing of colour picture signals (H04N 1/52 takes precedence) **[6, 2006.01]**

1/58 · · · Edge or detail enhancement; Noise or error suppression, e.g. colour misregistration correction (H04N 1/62 takes precedence) **[6, 2006.01]**

1/60 · · · Colour correction or control **[6, 2006.01]**

1/62 · · · · Retouching, i.e. modification of isolated colours only or in isolated picture areas only **[6, 2006.01]**

1/64 · · Systems for the transmission or the storage of the colour picture signal; Details therefor, e.g. coding or decoding means therefor **[6, 2006.01]**

3/00 **Scanning details of television systems; Combination thereof with generation of supply voltages [1, 4, 2006.01]**

3/02 · by optical-mechanical means only (H04N 3/36 takes precedence) **[1, 2, 2006.01]**

3/04 · · having a moving aperture **[1, 2006.01]**

3/06 · · having a moving lens or other refractor **[1, 2006.01]**

3/08 · · having a moving reflector **[1, 2006.01]**

3/09 · · · for electromagnetic radiation in the invisible region, e.g. infrared **[4, 2006.01]**

3/10 · by means not exclusively optical-mechanical (H04N 3/36 takes precedence) **[1, 2, 2006.01]**

3/12 · · by switched stationary formation of lamps, photocells, or light relays **[1, 2006.01]**

3/14 · · by means of electrically scanned solid-state devices (for picture generation H04N 25/00) **[1, 2006.01]**

3/16 · · by deflecting electron beam in cathode-ray tube **[1, 2006.01]**

3/18 · · · Generation of supply voltages, in combination with electron beam deflecting **[1, 4, 2006.01]**

3/185 · · · · Maintaining dc voltage constant **[4, 2006.01]**

3/19 · · · · Arrangements or assemblies in supply circuits for the purpose of withstanding high voltages **[3, 2006.01]**

3/20 · · · Prevention of damage to cathode-ray tubes in event of failure of scanning **[1, 2006.01]**

3/22 · · · Circuits for controlling dimensions, shape or centering of picture on screen **[1, 2006.01]**

3/223 · · · · Controlling dimensions (by maintaining the cathode-ray tube high voltage constant H04N 3/185) **[4, 2006.01]**

3/227 · · · · Centering **[4, 2006.01]**

3/23 · · · · Distortion correction, e.g. for pincushion distortion correction, S-correction **[4, 2006.01]**

3/233 · · · · · using active elements **[4, 2006.01]**

3/237 · · · · · using passive elements **[4, 2006.01]**

3/24 · · · Blanking circuits **[1, 2006.01]**

3/26 · · · Modifications of scanning arrangements to improve focusing **[1, 2006.01]**

3/27 · · · Circuits special to multi-standard receivers **[3, 4, 2006.01]**

3/28 · · producing multiple scanning, i.e. using more than one spot at the same time **[1, 2006.01]**

3/30 · · otherwise than with constant velocity or otherwise than in pattern formed by unidirectional, straight, substantially horizontal or vertical lines **[1, 2006.01]**

3/32 · · · Velocity varied in dependence upon picture information **[1, 2006.01]**

3/34 · · · Elemental scanning area oscillated rapidly in direction transverse to main scanning direction **[1, 2006.01]**

3/36 · Scanning of motion picture films, e.g. for telecine **[2, 2006.01]**

3/38 · · with continuously moving film **[4, 2006.01]**

3/40 · · with intermittently moving film **[4, 2006.01]**

5/00 **Details of television systems** (scanning details or combination thereof with generation of supply voltages H04N 3/00) **[1, 4, 2006.01, 2011.01]**

5/04 · Synchronising (for television systems using pulse code modulation H04N 7/56) **[1, 4, 2006.01]**

5/05 · · Synchronising circuits with arrangements for extending range of synchronisation, e.g. by using switching between several time constants **[2, 2006.01]**

5/06 · · Generation of synchronising signals **[1, 2006.01]**

5/067 · · · Arrangements or circuits at the transmitter end **[4, 2006.01]**

5/073 · · · · for mutually locking plural sources of synchronising signals, e.g. studios or relay stations **[4, 2006.01]**

5/08 · · Separation of synchronising signals from picture signals **[1, 2006.01]**

5/10 · · · Separation of line synchronising signal from frame synchronising signal **[1, 2006.01]**

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 **[1, 2, 2006.01]**

5/14 · Picture signal circuitry for video frequency region (cameras or camera modules comprising electronic image sensors, or control thereof H04N 23/00) **[1, 2, 2006.01]**

5/16 · · Circuitry for reinsertion of dc and slowly varying components of signal; Circuitry for preservation of black or white level **[1, 2006.01]**

5/18 · · · by means of "clamp" circuit operated by switching circuit **[1, 2006.01]**

5/20 · · Circuitry for controlling amplitude response **[1, 2006.01]**

5/202 • • • *Gamma control (circuits for controlling camera response irrespective of the scene brightness H04N 23/82)* **[4, 2006.01, 2023.01]**

5/205 • • • for correcting amplitude <u>versus</u> frequency characteristic **[4, 2006.01]**

5/208 • • • • for compensating for attenuation of high frequency components, e.g. crispening, aperture distortion correction **[4, 2006.01]**

5/21 • • Circuitry for suppressing or minimising disturbance, e.g. moire or halo **[1, 2006.01]**

5/213 • • • Circuitry for suppressing or minimising impulsive noise (for suppressing or minimising disturbance in image signal generation H04N 23/81) **[4, 2006.01]**

5/222 • Studio circuitry; Studio devices; Studio equipment (cameras or camera modules comprising electronic image sensors, or control thereof H04N 23/00) **[4, 2006.01]**

5/253 • • Picture signal generating by scanning motion picture films or slide opaques, e.g. for telecine (scanning details therefor H04N 3/36) **[4, 2006.01]**

5/257 • • Picture signal generators using flying-spot scanners (H04N 5/253 takes precedence) **[4, 2006.01]**

5/262 • • Studio circuits, e.g. for mixing, switching-over, change of character of image, other special effects **[4, 2006.01]**

5/265 • • • Mixing **[4, 2006.01]**

5/268 • • • Signal distribution or switching **[4, 2006.01]**

5/272 • • • Means for inserting a foreground image in a background image, i.e. inlay, outlay **[4, 2006.01]**

5/275 • • • • Generation of keying signals **[4, 2006.01]**

5/278 • • • Subtitling **[4, 2006.01]**

5/28 • • Mobile studios **[1, 2006.01]**

5/30 • Transforming light or analogous information into electric information (scanning details H04N 3/00; cameras or camera modules comprising electronic image sensors, or control thereof H04N 23/00; circuitry of solid-state image sensors [SSIS] or control thereof H04N 25/00) **[1, 2, 4, 7, 2006.01]**

5/32 • • *Transforming X-rays (cameras or camera modules for generating image signals from X-rays H04N 23/30; circuitry of SSIS for transforming X-rays into image signals H04N 25/30)* **[1, 2006.01, 2023.01]**

5/321 • • • with video transmission of fluoroscopic images **[5, 2006.01]**

5/325 • • • • Image enhancement, e.g. by subtraction techniques using polyenergetic X-rays **[5, 2006.01]**

5/33 • • *Transforming infrared radiation (cameras or camera modules for generating image signals from infrared radiation H04N 23/20; circuitry of SSIS for transforming infrared radiation into image signals H04N 25/20)* **[2, 2006.01, 2023.01]**

5/38 • Transmitter circuitry (H04N 5/14 takes precedence) **[1, 4, 2006.01]**

5/40 • • Modulation circuits **[1, 2006.01]**

5/42 • • for transmitting at will black-and-white or colour signals **[1, 2006.01]**

5/44 • Receiver circuitry (H04N 5/14 takes precedence) **[1, 4, 2006.01, 2011.01]**

5/445 • • for displaying additional information (H04N 5/50 takes precedence) **[4, 2006.01, 2011.01]**

5/45 • • • Picture in picture **[4, 2006.01, 2011.01]**

5/455 • • Demodulation-circuits **[4, 2006.01]**

5/46 • • for receiving on more than one standard at will (deflecting circuits of multi-standard receivers H04N 3/27) **[1, 4, 2006.01]**

5/50 • • Tuning indicators; Automatic tuning control **[1, 4, 2006.01]**

5/52 • • Automatic gain control **[1, 4, 2006.01]**

5/53 • • • Keyed automatic gain control **[4, 2006.01]**

5/54 • • • for positively-modulated picture signals (H04N 5/53 takes precedence) **[1, 4, 2006.01]**

5/56 • • • for negatively-modulated picture signals (H04N 5/53 takes precedence) **[1, 4, 2006.01]**

5/57 • • Control of contrast or brightness **[4, 2006.01]**

5/58 • • • in dependence upon ambient light **[1, 4, 2006.01]**

5/59 • • • in dependence upon beam current of cathode ray tube **[4, 2006.01]**

5/60 • • for the sound signals **[1, 2006.01]**

5/62 • • • Intercarrier circuits, i.e. heterodyning sound and vision carriers **[1, 2006.01]**

5/63 • Generation or supply of power specially adapted for television receivers **[4, 2006.01]**

5/64 • Constructional details of receivers, e.g. cabinets or dust covers (furniture aspects A47B 81/06) **[1, 2, 2006.01]**

5/645 • • Mounting of picture tube on chassis or in housing **[1, 2006.01]**

5/65 • • Holding-devices for protective discs or for picture masks **[1, 2006.01]**

5/655 • • Construction or mounting of chassis, e.g. for varying the elevation of the tube **[1, 2006.01]**

5/66 • Transforming electric information into light information (scanning details H04N 3/00) **[1, 2006.01]**

5/68 • • Circuit details for cathode-ray display tubes **[1, 2006.01]**

5/70 • • Circuit details for electroluminescent devices **[1, 2006.01]**

5/72 • Modifying the appearance of television pictures by optical filters or diffusing screens **[1, 2006.01]**

5/74 • Projection arrangements for image reproduction, e.g. using eidophor **[1, 2006.01]**

5/76 • Television signal recording **[1, 3, 4, 2006.01]**

5/761 • • Systems for programming the time at which predetermined television channels will be selected for recording **[7, 2006.01]**

5/7613 • • • by using data entered by the user and a reference timing clock incorporated in the recorder **[7, 2006.01]**

5/7617 • • • by using data entered by the user and reference data transmitted by the broadcasting station **[7, 2006.01]**

5/765 • • Interface circuits between an apparatus for recording and another apparatus **[6, 2006.01]**

5/77 • • • between a recording apparatus and a television camera **[6, 2006.01]**

5/775 • • • between a recording apparatus and a television receiver **[6, 2006.01]**

5/78 • • using magnetic recording (H04N 5/91 takes precedence) **[1, 3, 2006.01]**

5/781 • • • on disks or drums **[3, 2006.01]**

5/782 • • • on tape **[3, 2006.01]**

5/7822 • • • • with stationary magnetic heads **[6, 2006.01]**

5/7824 • • • • with rotating magnetic heads **[6, 2006.01]**

5/7826 • • • • • involving helical scanning of the magnetic tape **[6, 2006.01]**

5/7828 • • • • • involving transversal scanning of the magnetic tape **[6, 2006.01]**

5/783 • • • • Adaptations for reproducing at a rate different from the recording rate **[3, 2006.01]**

5/784 • • • on a sheet **[6, 2006.01]**

5/80 • • using electrostatic recording (H04N 5/91 takes precedence) **[1, 3, 2006.01]**

5/82 • • • using deformable thermoplastic recording medium **[1, 2006.01]**

5/83 • • • • on disks or drums **[3, 2006.01]**

5/84 • • using optical recording (H04N 5/80, H04N 5/89, H04N 5/91 take precedence) **[1, 3, 4, 2006.01]**

5/85 • • • on discs or drums **[3, 2006.01]**

5/87 • • • Producing a motion picture film from a television signal **[3, 4, 2006.01]**

5/89 • • using holographic recording (H04N 5/91 take precedence) **[3, 2006.01]**

5/90 • • • on discs or drums **[3, 2006.01]**

5/903 • • using variable electrical capacitive recording (H04N 5/91 takes precedence) **[4, 2006.01]**

5/907 • • using static stores, e.g. storage tubes or semiconductor memories (H04N 5/91 takes precedence) **[4, 2006.01]**

5/91 • • Television signal processing therefor **[3, 2006.01]**

5/911 • • • for the suppression of noise **[6, 2006.01]**

5/913 • • • for scrambling **[6, 2006.01]**

5/915 • • • for field- or frame-skip recording or reproducing **[6, 2006.01]**

5/917 • • • for bandwidth reduction **[6, 2006.01]**

5/919 • • • • by dividing samples or signal segments, e.g. television lines, among a plurality of recording channels **[6, 2006.01]**

5/92 • • • Transformation of the television signal for recording, e.g. modulation, frequency changing; Inverse transformation for playback **[3, 2006.01]**

5/921 • • • • by recording or reproducing the baseband signal **[6, 2006.01]**

5/922 • • • • by modulation of the signal on a carrier wave, e.g. amplitude or frequency modulation **[6, 2006.01]**

5/923 • • • • using preemphasis of the signal before modulation and deemphasis of the signal after demodulation **[6, 2006.01]**

5/924 • • • • using duty cycle modulation **[6, 2006.01]**

5/926 • • • • by pulse code modulation (H04N 5/919 takes precedence) **[6, 2006.01]**

5/928 • • • • the sound signal being pulse code modulated and recorded in time division multiplex with the modulated video signal **[6, 2006.01]**

5/93 • • • Regeneration of the television signal or of selected parts thereof **[3, 2006.01]**

5/931 • • • • for restoring the level of the reproduced signal **[6, 2006.01]**

5/932 • • • • Regeneration of analogue synchronisation signals **[6, 2006.01]**

5/935 • • • • Regeneration of digital synchronisation signals **[6, 2006.01]**

5/937 • • • • by assembling picture element blocks in an intermediate store **[6, 2006.01]**

5/94 • • • • Signal drop-out compensation **[3, 2006.01]**

5/945 • • • • • for signals recorded by pulse code modulation **[6, 2006.01]**

5/95 • • • • Time-base error compensation **[3, 2006.01]**

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, 2006.01]**

5/956 • • • • • by using a digital memory with independent write-in and read-out clock generators **[6, 2006.01]**

7/00 **Television systems** (details H04N 3/00, H04N 5/00; methods or arrangements, for coding, decoding, compressing or decompressing digital video signals H04N 19/00; selective content distribution H04N 21/00) **[1, 4, 2006.01, 2011.01]**

7/01 • Conversion of standards **[4, 2006.01]**

7/015 • High-definition television systems **[6, 2006.01]**

7/025 • Systems for transmission of digital non-picture data, e.g. of text during the active part of a television frame **[6, 2006.01]**

7/03 • • Subscription systems therefor **[6, 2006.01]**

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, 2006.01]**

7/04 • Systems for the transmission of one television signal, i.e. both picture and sound, by a single carrier **[1, 4, 2006.01]**

7/045 • • the carrier being frequency modulated **[6, 2006.01]**

7/06 • Systems for the simultaneous transmission of one television signal, i.e. both picture and sound, by more than one carrier **[1, 4, 2006.01]**

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 **[1, 4, 6, 2006.01]**

7/081 • • the additional information signals being transmitted by means of a subcarrier **[6, 2006.01]**

7/083 • • with signal insertion during the vertical and the horizontal blanking interval **[6, 2006.01]**

7/084 • • with signal insertion during the horizontal blanking interval **[6, 2006.01]**

7/085 • • • the inserted signal being digital **[6, 2006.01]**

7/087 • • with signal insertion during the vertical blanking interval **[4, 2006.01]**

7/088 • • • the inserted signal being digital **[6, 2006.01]**

7/10 • Adaptations for transmission by electrical cable (H04N 7/12 takes precedence) **[1, 4, 2006.01]**

7/12 • Systems in which the television signal is transmitted <u>via</u> 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) **[1, 4, 2006.01]**

7/14 • Systems for two-way working (H04N 7/173 takes precedence) **[1, 4, 2006.01]**

7/15 • • Conference systems **[5, 2006.01]**

7/16 • Analogue secrecy systems; Analogue subscription systems **[1, 2006.01, 2011.01]**

7/167 • • Systems rendering the television signal unintelligible and subsequently intelligible **[4, 2006.01, 2011.01]**

7/169 • • • Systems operating in the time domain of the television signal **[6, 2006.01, 2011.01]**

7/171 • • • Systems operating in the amplitude domain of the television signal **[6, 2006.01, 2011.01]**

7/173 • • with two-way working, e.g. subscriber sending a programme selection signal **[4, 2006.01, 2011.01]**

7/18 • Closed-circuit television [CCTV] systems, i.e. systems in which the video signal is not broadcast **[1, 2006.01]**

7/20 • Adaptations for transmission via a GHz frequency band, e.g. via satellite **[4, 2006.01]**

7/22 • Adaptations for optical transmission **[4, 2006.01]**

7/24 • Systems for the transmission of television signals using pulse code modulation (H04N 21/00 takes precedence) **[6, 2006.01, 2011.01]**

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, 2006.01, 2011.01]**

7/54 • • • the signals being synchronous **[6, 2006.01]**

7/56 • • • • Synchronising systems therefor **[6, 2006.01]**

9/00 Details of colour television systems [1, 4, 2006.01]

9/01 • *Circuitry for demodulating colour component signals modulated spatially by colour striped filters by phase separation [2023.01]*

9/03 • *Circuitry for demodulating colour component signals modulated spatially by colour striped filters by frequency separation [2023.01]*

9/11 • Scanning of colour motion picture films, e.g. for telecine **[2, 4, 2006.01]**

9/12 • Picture reproducers (H04N 9/11 takes precedence) **[1, 2, 4, 2006.01]**

9/14 • • using optical-mechanical scanning means only **[1, 2, 4, 2006.01]**

9/16 • • using cathode ray tubes (H04N 9/11 takes precedence) **[1, 2, 4, 2006.01]**

9/18 • • • using separate electron beams for the primary colour signals (H04N 9/27 takes precedence) **[1, 2, 4, 2006.01]**

9/20 • • • • with more than one beam in a tube **[1, 4, 2006.01]**

9/22 • • • using the same beam for more than one primary colour information (H04N 9/27 takes precedence) **[1, 2, 4, 2006.01]**

9/24 • • • • using means, integral with, or external to, the tube, for producing signal indicating instantaneous beam position **[1, 4, 2006.01]**

9/26 • • • • using electron-optical colour selection means, e.g. line grid, deflection means in or near the gun or near the phosphor screen **[1, 4, 2006.01]**

9/27 • • • with variable depth of penetration of electron beam into the luminescent layer, e.g. penetrons **[2, 4, 2006.01]**

9/28 • • • Arrangements for convergence or focusing **[1, 4, 2006.01]**

9/285 • • • • using quadrupole lenses **[4, 2006.01]**

9/29 • • • using demagnetisation or compensation of external magnetic fields **[2, 4, 2006.01]**

9/30 • • using solid-state colour display devices **[1, 4, 2006.01]**

9/31 • • Projection devices for colour picture display **[2, 4, 2006.01]**

9/43 • Conversion of monochrome picture signals to colour picture signals for colour picture display **[4, 2006.01]**

9/44 • Colour synchronisation **[1, 4, 2006.01]**

9/45 • • Generation or recovery of colour sub-carriers **[4, 2006.01]**

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, 2006.01]**

9/465 • • Synchronisation of the PAL-switch **[4, 2006.01]**

9/47 • • for sequential signals **[2, 4, 2006.01]**

9/475 • • for mutually locking different synchronisation sources **[4, 2006.01]**

9/64 • *Circuits for processing colour signals (H04N 9/77 takes precedence; camera processing pipelines for processing colour signals H04N 23/84) [4, 2006.01, 2023.01]*

9/65 • • for synchronous modulators **[4, 2006.01]**

9/66 • • for synchronous demodulators **[4, 2006.01]**

9/67 • • *for matrixing (camera processing pipelines for matrixing of colour signals H04N 23/85) [4, 2006.01, 2023.01]*

9/68 • • *for controlling the amplitude of colour signals, e.g. automatic chroma control circuits (H04N 9/71, H04N 9/73 take precedence; camera processing pipelines for controlling the colour saturation of colour signals H04N 23/86) [4, 2006.01, 2023.01]*

9/69 • • • *for modifying the colour signals by gamma correction (controlling camera response for colour signals H04N 23/83) [4, 2006.01, 2023.01]*

9/70 • • for colour killing **[4, 2006.01]**

9/71 • • • combined with colour gain control **[4, 2006.01]**

9/72 • • *for reinsertion of DC and slowly varying components of colour signals (camera processing pipelines for reinsertion of DC or slowly varying components of colour signals H04N 23/87) [4, 2006.01, 2023.01]*

9/73 • • *Colour balance circuits, e.g. white balance circuits or colour temperature control (camera processing pipelines for colour balance H04N 23/88) [4, 2006.01, 2023.01]*

9/74 • • for obtaining special effects (H04N 9/65-H04N 9/73 take precedence) **[4, 2006.01]**

9/75 • • • Chroma key **[4, 2006.01]**

9/76 • • • for mixing of colour signals (H04N 9/75 takes precedence) **[4, 2006.01]**

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, 2006.01]**

9/78 • • for separating the brightness signal or the chrominance signal from the colour television signal, e.g. using comb filter **[4, 2006.01]**

9/79 • Processing of colour television signals in connection with recording **[4, 2006.01]**

9/793 • • for controlling the level of the chrominance signal, e.g. by means of automatic chroma control circuits **[6, 2006.01]**

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, 2006.01]**

9/80	• •	Transformation of the television signal for recording, e.g. modulation, frequency changing; Inverse transformation for playback **[4, 2006.01]**
9/802	• • •	involving processing of the sound signal (H04N 9/806, H04N 9/835 take precedence) **[6, 2006.01]**
9/804	• • •	involving pulse code modulation of the colour picture signal components **[6, 2006.01]**
9/806	• • • •	with processing of the sound signal **[6, 2006.01]**
9/808	• • •	involving pulse code modulation of the composite colour video-signal **[6, 2006.01]**
9/81	• • •	the individual colour picture signal components being recorded sequentially only **[4, 2006.01]**
9/815	• • • •	the luminance signal and the sequential colour component signals being recorded in separate recording channels **[6, 2006.01]**
9/82	• • •	the individual colour picture signal components being recorded simultaneously only **[4, 2006.01]**
9/825	• • • •	the luminance and chrominance signals being recorded in separate channels **[6, 2006.01]**
9/83	• • • •	the recorded chrominance signal occupying a frequency band under the frequency band of the recorded brightness signal **[4, 2006.01]**
9/835	• • • • •	involving processing of the sound signal **[6, 2006.01]**
9/84	• • • • •	the recorded signal showing a feature, which is different in adjacent track parts, e.g. different phase or frequency **[4, 2006.01]**
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, 2006.01]**
9/86	• • •	the individual colour picture signal components being recorded sequentially and simultaneously, e.g. corresponding to SECAM-system **[4, 2006.01]**
9/87	• •	Regeneration of colour television signals (H04N 9/80 takes precedence) **[4, 2006.01]**
9/873	• • •	for restoring the colour component sequence of the reproduced signal **[6, 2006.01]**
9/877	• • •	by assembling picture element blocks in an intermediate memory **[6, 2006.01]**
9/88	• • •	Signal drop-out compensation **[4, 2006.01]**
9/882	• • • •	the signal being a composite colour television signal **[6, 2006.01]**
9/885	• • • • •	using a digital intermediate memory **[6, 2006.01]**
9/888	• • • •	for signals recorded by pulse code modulation **[6, 2006.01]**
9/89	• • •	Time-base error compensation **[4, 2006.01]**
9/893	• • • •	using an analogue memory, e.g. a CCD-shift register, the delay of which is controlled by a voltage controlled oscillator **[6, 2006.01]**
9/896	• • • •	using a digital memory with independent write-in and read-out clock generators **[6, 2006.01]**
9/898	• • •	using frequency multiplication of the reproduced colour signal with another auxiliary reproduced signal, e.g. a pilot signal carrier **[6, 2006.01]**

11/00		**Colour television systems** (details H04N 9/00) **[4, 2006.01]**
11/02	•	with bandwidth reduction (H04N 11/04 takes precedence) **[4, 2006.01]**
11/04	•	using pulse code modulation **[4, 2006.01]**
11/06	•	Transmission systems characterised by the manner in which the individual colour picture signal components are combined **[4, 2006.01]**
11/08	• •	using sequential signals only (dot sequential systems H04N 11/12) **[4, 2006.01]**
11/10	• • •	in which colour signals are inserted in the blanking interval of brightness signal **[4, 2006.01]**
11/12	• •	using simultaneous signals only **[4, 2006.01]**
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, 2006.01]**
11/16	• • • •	the chrominance signal alternating in phase, e.g. PAL-system **[4, 2006.01]**
11/18	• •	using simultaneous and sequential signals, e.g. SECAM-system **[4, 2006.01]**
11/20	• •	Conversion of the manner in which the individual colour picture signal components are combined, e.g. conversion of colour television standards **[4, 2006.01]**
11/22	• • •	in which simultaneous signals are converted into sequential signals or vice versa **[4, 2006.01]**
11/24	•	High-definition television systems **[6, 2006.01]**

13/00		**Stereoscopic video systems; Multi-view video systems; Details thereof [4, 2006.01, 2018.01]**

Note(s) [2018.01]

This group covers systems providing a three-dimensional [3D] effect, or different views to one or more viewers by means of electronic signals representing images, which could be taken from different viewpoints, or by means of signals including depth information.

13/10	•	Processing, recording or transmission of stereoscopic or multi-view image signals **[2018.01]**
13/106	• •	Processing image signals (for multi-view video sequence encoding H04N 19/597) **[2018.01]**
13/111	• • •	Transformation of image signals corresponding to virtual viewpoints, e.g. spatial image interpolation **[2018.01]**
13/117	• • • •	the virtual viewpoint locations being selected by the viewers or determined by viewer tracking **[2018.01]**
13/122	• • •	Improving the 3D impression of stereoscopic images by modifying image signal contents, e.g. by filtering or adding monoscopic depth cues (H04N 13/128 takes precedence) **[2018.01]**
13/125	• • • •	for crosstalk reduction **[2018.01]**
13/128	• • •	Adjusting depth or disparity **[2018.01]**
13/133	• • •	Equalising the characteristics of different image components, e.g. their average brightness or colour balance **[2018.01]**
13/139	• • •	Format conversion, e.g. of frame-rate or size **[2018.01]**
13/144	• • •	for flicker reduction **[2018.01]**
13/15	• • •	for colour aspects of image signals **[2018.01]**
13/156	• • •	Mixing image signals **[2018.01]**

13/161 • • • Encoding, multiplexing or demultiplexing different image signal components (for multi-view video sequence encoding H04N 19/597) **[2018.01]**

13/167 • • • Synchronising or controlling image signals **[2018.01]**

13/172 • • • image signals comprising non-image signal components, e.g. headers or format information **[2018.01]**

13/178 • • • • Metadata, e.g. disparity information **[2018.01]**

13/183 • • • • On-screen display [OSD] information, e.g. subtitles or menus **[2018.01]**

13/189 • • Recording image signals; Reproducing recorded image signals **[2018.01]**

13/194 • • Transmission of image signals **[2018.01]**

13/20 • Image signal generators **[2018.01]**

13/204 • • using stereoscopic image cameras (stereoscopic photography G03B 35/00) **[2018.01]**

13/207 • • • using a single 2D image sensor **[2018.01]**

13/211 • • • • using temporal multiplexing **[2018.01]**

13/214 • • • • using spectral multiplexing **[2018.01]**

13/218 • • • • using spatial multiplexing **[2018.01]**

13/221 • • • • using the relative movement between cameras and objects **[2018.01]**

13/225 • • • • using parallax barriers **[2018.01]**

13/229 • • • • using lenticular lenses, e.g. arrangements of cylindrical lenses **[2018.01]**

13/232 • • • • using fly-eye lenses, e.g. arrangements of circular lenses **[2018.01]**

13/236 • • • • using varifocal lenses or mirrors **[2018.01]**

13/239 • • • using two 2D image sensors having a relative position equal to or related to the interocular distance (H04N 13/243 takes precedence) **[2018.01]**

13/243 • • • using three or more 2D image sensors **[2018.01]**

13/246 • • • Calibration of cameras **[2018.01]**

13/25 • • • using two or more image sensors with different characteristics other than in their location or field of view, e.g. having different resolutions or colour pickup characteristics; using image signals from one sensor to control the characteristics of another sensor **[2018.01]**

13/254 • • • in combination with electromagnetic radiation sources for illuminating objects **[2018.01]**

13/257 • • Colour aspects **[2018.01]**

13/261 • • with monoscopic-to-stereoscopic image conversion **[2018.01]**

13/264 • • • using the relative movement of objects in two video frames or fields **[2018.01]**

13/268 • • • based on depth image-based rendering [DIBR] **[2018.01]**

13/271 • • wherein the generated image signals comprise depth maps or disparity maps **[2018.01]**

13/275 • • from 3D object models, e.g. computer-generated stereoscopic image signals **[2018.01]**

13/279 • • • the virtual viewpoint locations being selected by the viewers or determined by tracking **[2018.01]**

13/282 • • for generating image signals corresponding to three or more geometrical viewpoints, e.g. multi-view systems **[2018.01]**

13/286 • • having separate monoscopic and stereoscopic modes **[2018.01]**

13/289 • • • Switching between monoscopic and stereoscopic modes **[2018.01]**

13/293 • • • Generating mixed stereoscopic images; Generating mixed monoscopic and stereoscopic images, e.g. a stereoscopic image overlay window on a monoscopic image background **[2018.01]**

13/296 • • • Synchronisation thereof; Control thereof **[2018.01]**

13/30 • Image reproducers (optical systems for producing stereoscopic or other three-dimensional effects G02B 30/00) **[2018.01]**

13/302 • • for viewing without the aid of special glasses, i.e. using autostereoscopic displays **[2018.01]**

13/305 • • • using lenticular lenses, e.g. arrangements of cylindrical lenses **[2018.01]**

13/307 • • • using fly-eye lenses, e.g. arrangements of circular lenses **[2018.01]**

13/31 • • • using parallax barriers **[2018.01]**

13/312 • • • • the parallax barriers being placed behind the display panel, e.g. between backlight and spatial light modulator [SLM] **[2018.01]**

13/315 • • • • the parallax barriers being time-variant **[2018.01]**

13/317 • • • using slanted parallax optics **[2018.01]**

13/32 • • • using arrays of controllable light sources; using moving apertures or moving light sources **[2018.01]**

13/322 • • • using varifocal lenses or mirrors **[2018.01]**

13/324 • • Colour aspects **[2018.01]**

13/327 • • Calibration thereof **[2018.01]**

13/332 • • Displays for viewing with the aid of special glasses or head-mounted displays [HMD] **[2018.01]**

13/334 • • • using spectral multiplexing **[2018.01]**

13/337 • • • using polarisation multiplexing **[2018.01]**

13/339 • • • using spatial multiplexing (H04N 13/337 takes precedence) **[2018.01]**

13/341 • • • using temporal multiplexing **[2018.01]**

13/344 • • • with head-mounted left-right displays **[2018.01]**

13/346 • • using prisms or semi-transparent mirrors **[2018.01]**

13/349 • • Multi-view displays for displaying three or more geometrical viewpoints without viewer tracking (for viewing without the aid of special glasses using fly-eye lenses H04N 13/307) **[2018.01]**

13/351 • • • for displaying simultaneously **[2018.01]**

13/354 • • • for displaying sequentially **[2018.01]**

13/356 • • having separate monoscopic and stereoscopic modes **[2018.01]**

13/359 • • • Switching between monoscopic and stereoscopic modes **[2018.01]**

13/361 • • Reproducing mixed stereoscopic images; Reproducing mixed monoscopic and stereoscopic images, e.g. a stereoscopic image overlay window on a monoscopic image background **[2018.01]**

13/363 • • using image projection screens (volumetric displays H04N 13/388) **[2018.01]**

13/365 • • using digital micromirror devices [DMD] **[2018.01]**

13/366 • • using viewer tracking **[2018.01]**

13/368 • • • for two or more viewers **[2018.01]**

13/371 • • • for tracking viewers with different interocular distances; for tracking rotational head movements around the vertical axis **[2018.01]**

13/373 • • • for tracking forward-backward translational head movements, i.e. longitudinal movements **[2018.01]**

13/376 • • • for tracking left-right translational head movements, i.e. lateral movements **[2018.01]**

13/378	• • •	for tracking rotational head movements around an axis perpendicular to the screen **[2018.01]**
13/38	• • •	for tracking vertical translational head movements **[2018.01]**
13/383	• • •	for tracking with gaze detection, i.e. detecting the lines of sight of the viewer's eyes **[2018.01]**
13/385	• •	alternating rapidly the location of the left-right image components on the display screens (for viewing without the aid of special glasses using time variant parallax barriers H04N 13/315; displays for viewing with the aid of special glasses or head-mounted displays using temporal multiplexing H04N 13/341) **[2018.01]**
13/388	• •	Volumetric displays, i.e. systems where the image is built up from picture elements distributed through a volume **[2018.01]**
13/39	• • •	the picture elements emitting light at places where a pair of light beams intersect in a transparent material **[2018.01]**
13/393	• • •	the volume being generated by a moving, e.g. vibrating or rotating, surface **[2018.01]**
13/395	• • •	with depth sampling, i.e. the volume being constructed from a stack or sequence of 2D image planes **[2018.01]**
13/398	• •	Synchronisation thereof; Control thereof **[2018.01]**

17/00 Diagnosis, testing or measuring for television systems or their details [4, 2006.01]

17/02	•	for colour television signals **[4, 2006.01]**
17/04	•	for receivers **[4, 2006.01]**
17/06	•	for recorders **[4, 2006.01]**

19/00 Methods or arrangements for coding, decoding, compressing or decompressing digital video signals [2014.01]

19/10	•	using adaptive coding **[2014.01]**

Note(s) [2014.01]

When classifying in this group, each aspect relating to adaptive coding should, insomuch as possible, be classified in each one of subgroups H04N 19/102, H04N 19/134, H04N 19/169 and H04N 19/189.

19/102	• •	characterised by the element, parameter or selection affected or controlled by the adaptive coding **[2014.01]**
19/103	• • •	Selection of coding mode or of prediction mode **[2014.01]**
19/105	• • • •	Selection of the reference unit for prediction within a chosen coding or prediction mode, e.g. adaptive choice of position and number of pixels used for prediction **[2014.01]**
19/107	• • • •	between spatial and temporal predictive coding, e.g. picture refresh **[2014.01]**
19/109	• • • •	among a plurality of temporal predictive coding modes **[2014.01]**
19/11	• • • •	among a plurality of spatial predictive coding modes **[2014.01]**
19/112	• • • •	according to a given display mode, e.g. for interlaced or progressive display mode **[2014.01]**
19/114	• • • •	Adapting the group of pictures [GOP] structure, e.g. number of B-frames between two anchor frames (H04N 19/107 takes precedence) **[2014.01]**
19/115	• • •	Selection of the code volume for a coding unit prior to coding **[2014.01]**

19/117	• • •	Filters, e.g. for pre-processing or post-processing (sub-band filter banks H04N 19/635) **[2014.01]**
19/119	• • •	Adaptive subdivision aspects e.g. subdivision of a picture into rectangular or non-rectangular coding blocks **[2014.01]**
19/12	• • •	Selection from among a plurality of transforms or standards, e.g. selection between discrete cosine transform [DCT] and sub-band transform or selection between H.263 and H.264 **[2014.01]**

Note(s) [2014.01]

When classifying in this group, each compression algorithm is further classified in the relevant subgroups of groups H04N 19/60 or H04N 19/90.

19/122	• • • •	Selection of transform size, e.g. 8x8 or 2x4x8 DCT; Selection of sub-band transforms of varying structure or type **[2014.01]**
19/124	• • •	Quantisation **[2014.01]**
19/126	• • • •	Details of normalisation or weighting functions, e.g. normalisation matrices or variable uniform quantisers **[2014.01]**
19/127	• • •	Prioritisation of hardware or computational resources **[2014.01]**
19/129	• • •	Scanning of coding units, e.g. zig-zag scan of transform coefficients or flexible macroblock ordering [FMO] **[2014.01]**
19/13	• • •	Adaptive entropy coding, e.g. adaptive variable length coding [AVLC] or context adaptive binary arithmetic coding [CABAC] **[2014.01]**
19/132	• • •	Sampling, masking or truncation of coding units, e.g. adaptive resampling, frame skipping, frame interpolation or high-frequency transform coefficient masking **[2014.01]**
19/134	• •	characterised by the element, parameter or criterion affecting or controlling the adaptive coding **[2014.01]**
19/136	• • •	Incoming video signal characteristics or properties **[2014.01]**
19/137	• • • •	Motion inside a coding unit, e.g. average field, frame or block difference **[2014.01]**
19/139	• • • • •	Analysis of motion vectors, e.g. their magnitude, direction, variance or reliability **[2014.01]**
19/14	• • • •	Coding unit complexity, e.g. amount of activity or edge presence estimation (H04N 19/146 takes precedence) **[2014.01]**
19/142	• • •	Detection of scene cut or scene change **[2014.01]**
19/146	• • •	Data rate or code amount at the encoder output **[2014.01]**
19/147	• • • •	according to rate distortion criteria (rate-distortion as a criterion for motion estimation H04N 19/567) **[2014.01]**
19/149	• • • •	by estimating the code amount by means of a model, e.g. mathematical model or statistical model **[2014.01]**
19/15	• • • •	by monitoring actual compressed data size at the memory before deciding storage at the transmission buffer **[2014.01]**
19/152	• • • •	by measuring the fullness of the transmission buffer **[2014.01]**
19/154	• • •	Measured or subjectively estimated visual quality after decoding, e.g. measurement of distortion (use of rate-distortion criteria H04N 19/147) **[2014.01]**

19/156 • • • Availability of hardware or computational resources, e.g. encoding based on power-saving criteria **[2014.01]**

19/157 • • • Assigned coding mode, i.e. the coding mode being predefined or preselected to be further used for selection of another element or parameter **[2014.01]**

19/159 • • • • Prediction type, e.g. intra-frame, inter-frame or bidirectional frame prediction **[2014.01]**

19/16 • • • • for a given display mode, e.g. for interlaced or progressive display mode **[2014.01]**

19/162 • • • User input **[2014.01]**

19/164 • • • Feedback from the receiver or from the transmission channel **[2014.01]**

19/166 • • • • concerning the amount of transmission errors, e.g. bit error rate [BER] **[2014.01]**

19/167 • • • Position within a video image, e.g. region of interest [ROI] **[2014.01]**

19/169 • • characterised by the coding unit, i.e. the structural portion or semantic portion of the video signal being the object or the subject of the adaptive coding **[2014.01]**

19/17 • • • the unit being an image region, e.g. an object **[2014.01]**

19/172 • • • • the region being a picture, frame or field **[2014.01]**

19/174 • • • • the region being a slice, e.g. a line of blocks or a group of blocks **[2014.01]**

19/176 • • • • the region being a block, e.g. a macroblock **[2014.01]**

19/177 • • • the unit being a group of pictures [GOP] **[2014.01]**

19/179 • • • the unit being a scene or a shot **[2014.01]**

19/18 • • • the unit being a set of transform coefficients **[2014.01]**

19/182 • • • the unit being a pixel **[2014.01]**

19/184 • • • the unit being bits, e.g. of the compressed video stream **[2014.01]**

19/186 • • • the unit being a colour or a chrominance component **[2014.01]**

19/187 • • • the unit being a scalable video layer **[2014.01]**

19/189 • • characterised by the adaptation method, adaptation tool or adaptation type used for the adaptive coding **[2014.01]**

19/19 • • • using optimisation based on Lagrange multipliers **[2014.01]**

19/192 • • • the adaptation method, adaptation tool or adaptation type being iterative or recursive **[2014.01]**

19/194 • • • • involving only two passes **[2014.01]**

19/196 • • • being specially adapted for the computation of encoding parameters, e.g. by averaging previously computed encoding parameters (processing of motion vectors H04N 19/513) **[2014.01]**

19/20 • using video object coding **[2014.01]**

19/21 • • with binary alpha-plane coding for video objects, e.g. context-based arithmetic encoding [CAE] **[2014.01]**

19/23 • • with coding of regions that are present throughout a whole video segment, e.g. sprites, background or mosaic **[2014.01]**

19/25 • • with scene description coding, e.g. binary format for scenes [BIFS] compression **[2014.01]**

19/27 • • involving both synthetic and natural picture components, e.g. synthetic natural hybrid coding [SNHC] **[2014.01]**

19/29 • • involving scalability at the object level, e.g. video object layer [VOL] **[2014.01]**

19/30 • using hierarchical techniques, e.g. scalability (H04N 19/63 takes precedence) **[2014.01]**

19/31 • • in the temporal domain **[2014.01]**

19/33 • • in the spatial domain **[2014.01]**

19/34 • • Scalability techniques involving progressive bit-plane based encoding of the enhancement layer, e.g. fine granular scalability [FGS] **[2014.01]**

19/36 • • Scalability techniques involving formatting the layers as a function of picture distortion after decoding, e.g. signal-to-noise [SNR] scalability **[2014.01]**

19/37 • • with arrangements for assigning different transmission priorities to video input data or to video coded data **[2014.01]**

19/39 • • involving multiple description coding [MDC], i.e. with separate layers being structured as independently decodable descriptions of input picture data **[2014.01]**

19/40 • using video transcoding, i.e. partial or full decoding of a coded input stream followed by re-encoding of the decoded output stream **[2014.01]**

19/42 • characterised by implementation details or hardware specially adapted for video compression or decompression, e.g. dedicated software implementation (H04N 19/635 takes precedence) **[2014.01]**

19/423 • • characterised by memory arrangements (H04N 19/433 takes precedence) **[2014.01]**

19/426 • • • using memory downsizing methods **[2014.01]**

19/43 • • Hardware specially adapted for motion estimation or compensation **[2014.01]**

19/433 • • • characterised by techniques for memory access **[2014.01]**

19/436 • • using parallelised computational arrangements **[2014.01]**

19/44 • Decoders specially adapted therefor, e.g. video decoders which are asymmetric with respect to the encoder **[2014.01]**

19/46 • Embedding additional information in the video signal during the compression process (H04N 19/517, H04N 19/68, H04N 19/70 take precedence) **[2014.01]**

19/463 • • by compressing encoding parameters before transmission **[2014.01]**

19/467 • • characterised by the embedded information being invisible, e.g. watermarking **[2014.01]**

19/48 • using compressed domain processing techniques other than decoding, e.g. modification of transform coefficients, variable length coding [VLC] data or run-length data (motion estimation in a transform domain H04N 19/547; processing of decoded motion vectors H04N 19/513) **[2014.01]**

19/50 • using predictive coding (H04N 19/61 takes precedence) **[2014.01]**

19/503 • • involving temporal prediction (adaptive coding with adaptive selection between spatial and temporal predictive coding H04N 19/107; adaptive coding with adaptive selection among a plurality of temporal predictive coding modes H04N 19/109) **[2014.01]**

19/507 • • • using conditional replenishment **[2014.01]**

19/51 • • • Motion estimation or motion compensation **[2014.01]**

19/513 • • • • Processing of motion vectors **[2014.01]**

19/517 • • • • • by encoding **[2014.01]**

19/52 • • • • • • by predictive encoding **[2014.01]**

19/523 • • • • with sub-pixel accuracy **[2014.01]**

19/527 • • • • Global motion vector estimation **[2014.01]**

19/53 • • • • Multi-resolution motion estimation; Hierarchical motion estimation **[2014.01]**

19/533 • • • • Motion estimation using multistep search, e.g. 2D-log search or one-at-a-time search [OTS] **[2014.01]**

19/537 • • • • Motion estimation other than block-based **[2014.01]**

19/54 • • • • • using feature points or meshes **[2014.01]**

19/543 • • • • • using regions **[2014.01]**

19/547 • • • • Motion estimation performed in a transform domain **[2014.01]**

19/55 • • • • Motion estimation with spatial constraints, e.g. at image or region borders **[2014.01]**

19/553 • • • • Motion estimation dealing with occlusions **[2014.01]**

19/557 • • • • Motion estimation characterised by stopping computation or iteration based on certain criteria, e.g. error magnitude being too large or early exit **[2014.01]**

19/56 • • • • Motion estimation with initialisation of the vector search, e.g. estimating a good candidate to initiate a search **[2014.01]**

19/563 • • • • Motion estimation with padding, i.e. with filling of non-object values in an arbitrarily shaped picture block or region for estimation purposes **[2014.01]**

19/567 • • • • Motion estimation based on rate distortion criteria **[2014.01]**

19/57 • • • • Motion estimation characterised by a search window with variable size or shape **[2014.01]**

19/573 • • • • Motion compensation with multiple frame prediction using two or more reference frames in a given prediction direction **[2014.01]**

19/577 • • • • Motion compensation with bidirectional frame interpolation, i.e. using B-pictures **[2014.01]**

19/58 • • • • Motion compensation with long-term prediction, i.e. the reference frame for a current frame not being the temporally closest one (H04N 19/23 takes precedence) **[2014.01]**

19/583 • • • • Motion compensation with overlapping blocks **[2014.01]**

19/587 • • involving temporal sub-sampling or interpolation, e.g. decimation or subsequent interpolation of pictures in a video sequence **[2014.01]**

19/59 • • involving spatial sub-sampling or interpolation, e.g. alteration of picture size or resolution **[2014.01]**

19/593 • • involving spatial prediction techniques **[2014.01]**

19/597 • • specially adapted for multi-view video sequence encoding **[2014.01]**

19/60 • using transform coding **[2014.01]**

19/61 • • in combination with predictive coding **[2014.01]**

19/615 • • • using motion compensated temporal filtering [MCTF] **[2014.01]**

19/62 • • by frequency transforming in three dimensions (H04N 19/63 takes precedence) **[2014.01]**

19/625 • • using discrete cosine transform [DCT] **[2014.01]**

19/63 • • using sub-band based transform, e.g. wavelets **[2014.01]**

19/635 • • • characterised by filter definition or implementation details **[2014.01]**

19/64 • • • characterised by ordering of coefficients or of bits for transmission **[2014.01]**

19/645 • • • • by grouping of coefficients into blocks after the transform **[2014.01]**

19/65 • using error resilience **[2014.01]**

19/66 • • involving data partitioning, i.e. separation of data into packets or partitions according to importance **[2014.01]**

19/67 • • involving unequal error protection [UEP], i.e. providing protection according to the importance of the data **[2014.01]**

19/68 • • involving the insertion of resynchronisation markers into the bitstream **[2014.01]**

19/69 • • involving reversible variable length codes [RVLC] **[2014.01]**

19/70 • characterised by syntax aspects related to video coding, e.g. related to compression standards **[2014.01]**

19/80 • Details of filtering operations specially adapted for video compression, e.g. for pixel interpolation (H04N 19/635, H04N 19/86 take precedence) **[2014.01]**

19/82 • • involving filtering within a prediction loop **[2014.01]**

19/85 • using pre-processing or post-processing specially adapted for video compression **[2014.01]**

19/86 • • involving reduction of coding artifacts, e.g. of blockiness **[2014.01]**

19/87 • • involving scene cut or scene change detection in combination with video compression **[2014.01]**

19/88 • • involving rearrangement of data among different coding units, e.g. shuffling, interleaving, scrambling or permutation of pixel data or permutation of transform coefficient data among different blocks **[2014.01]**

19/89 • • involving methods or arrangements for detection of transmission errors at the decoder **[2014.01]**

19/895 • • • in combination with error concealment **[2014.01]**

19/90 • using coding techniques not provided for in groups H04N 19/10-H04N 19/85, e.g. fractals **[2014.01]**

19/91 • • Entropy coding, e.g. variable length coding [VLC] or arithmetic coding **[2014.01]**

19/93 • • Run-length coding **[2014.01]**

19/94 • • Vector quantisation **[2014.01]**

19/96 • • Tree coding, e.g. quad-tree coding **[2014.01]**

19/97 • • Matching pursuit coding **[2014.01]**

19/98 • • Adaptive-dynamic-range coding [ADRC] **[2014.01]**

21/00 **Selective content distribution, e.g. interactive television or video on demand [VOD]** (real-time bi-directional transmission of motion video data H04N 7/14) **[2011.01]**

Note(s) [2011.01]

1. This group <u>covers</u> :
   • 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, the first place priority rule is applied, i.e. 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 **[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 **[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 • • • Operating system [OS] processes, e.g. server setup **[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. global positioning system [GPS] **[2011.01]**

21/4223 • • • • Cameras (H04N 23/00 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 **[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 **[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 **[2011.01]**

21/4408 • • • • involving video stream encryption, e.g. re-encrypting a decrypted video stream for redistribution in a home network **[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 **[2011.01]**

21/443 • • • OS processes, e.g. booting an STB, implementing a Java virtual machine in an STB or power management in an STB **[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 **[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; Control signalling 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 **[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 authorisation, e.g. by transmitting a key **[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]**

23/00 **Cameras or camera modules comprising electronic image sensors; Control thereof [2023.01]**

23/10 • *for generating image signals from different wavelengths [2023.01]*

23/11 • • *for generating image signals from visible and infrared light wavelengths [2023.01]*

23/12 • • *with one sensor only [2023.01]*

23/13 • • *with multiple sensors [2023.01]*

23/15 • • • *Image signal generation with circuitry for avoiding or correcting image misregistration [2023.01]*

23/16 • • • *Optical arrangements associated therewith, e.g. for beam-splitting or for colour correction [2023.01]*

23/17 • • *using opto-mechanical scanning means only [2023.01]*

23/20 • *for generating image signals from infrared radiation only [2023.01]*

23/21 • • *from near infrared [NIR] radiation [2023.01]*

23/23 • • *from thermal infrared radiation [2023.01]*

23/30 • *for generating image signals from X-rays [2023.01]*

23/40 • *Circuit details for pick-up tubes [2023.01]*

23/45 • *for generating image signals from two or more image sensors being of different type or operating in different modes, e.g. with a CMOS sensor for moving images in combination with a charge-coupled device [CCD] for still images [2023.01]*

23/50 • *Constructional details [2023.01]*

23/51 • • *Housings [2023.01]*

23/52 • • *Elements optimising image sensor operation, e.g. for electromagnetic interference [EMI] protection or temperature control by heat transfer or cooling elements [2023.01]*

23/53 • • *of electronic viewfinders, e.g. rotatable or detachable [2023.01]*

23/54 • • *Mounting of pick-up tubes, electronic image sensors, deviation or focusing coils [2023.01]*

23/55 • • *Optical parts specially adapted for electronic image sensors; Mounting thereof [2023.01]*

23/56 • *provided with illuminating means [2023.01]*

23/57 • *Mechanical or electrical details of cameras or camera modules specially adapted for being embedded in other devices [2023.01]*

23/58 • *Means for changing the camera field of view without moving the camera body, e.g. nutating or panning of optics or image sensors [2023.01]*

23/60 • *Control of cameras or camera modules [2023.01]*

23/61 • • *based on recognised objects [2023.01]*

23/611 • • • *where the recognised objects include parts of the human body [2023.01]*

23/617 • • *Upgrading or updating of programs or applications for camera control [2023.01]*

23/62 • • *Control of parameters via user interfaces [2023.01]*

23/63 • • *by using electronic viewfinders [2023.01]*

23/65 • • *Control of camera operation in relation to power supply [2023.01]*

23/66 • • *Remote control of cameras or camera parts, e.g. by remote control devices [2023.01]*

23/661 • • • *Transmitting camera control signals through networks, e.g. control via the Internet [2023.01]*

23/663 • • • *for controlling interchangeable camera parts based on electronic image sensor signals [2023.01]*

23/667 • • *Camera operation mode switching, e.g. between still and video, sport and normal or high and low resolution modes [2023.01]*

23/67 • • *Focus control based on electronic image sensor signals [2023.01]*

23/68 • • *for stable pick-up of the scene, e.g. compensating for camera body vibrations [2023.01]*

23/69 • • *Control of means for changing angle of the field of view, e.g. optical zoom objectives or electronic zooming [2023.01]*

23/695 • • *Control of camera direction for changing a field of view, e.g. pan, tilt or based on tracking of objects [2023.01]*

23/698 • • *for achieving an enlarged field of view, e.g. panoramic image capture [2023.01]*

23/70 • *Circuitry for compensating brightness variation in the scene [2023.01]*

23/71 • • *Circuitry for evaluating the brightness variation [2023.01]*

23/72 • • *Combination of two or more compensation controls [2023.01]*

23/73 • • *by influencing the exposure time [2023.01]*

23/74 • • *by influencing the scene brightness using illuminating means [2023.01]*

23/741 • • *by increasing the dynamic range of the image compared to the dynamic range of the electronic image sensors [2023.01]*

23/743 • • *Bracketing, i.e. taking a series of images with varying exposure conditions [2023.01]*

23/745 • • *Detection of flicker frequency or suppression of flicker wherein the flicker is caused by illumination, e.g. due to fluorescent tube illumination or pulsed LED illumination [2023.01]*

23/75 • • *by influencing optical camera components [2023.01]*

23/76 • • *by influencing the image signals [2023.01]*

23/80 • *Camera processing pipelines; Components thereof [2023.01]*

23/81 • • *for suppressing or minimising disturbance in the image signal generation [2023.01]*

23/82 • • *for controlling camera response irrespective of the scene brightness, e.g. gamma correction [2023.01]*

23/83 • • • *specially adapted for colour signals [2023.01]*

23/84	• • • *for processing colour signals [2023.01]*
23/85	• • • *for matrixing [2023.01]*
23/86	• • • *for controlling the colour saturation of colour signals, e.g. automatic chroma control circuits [2023.01]*
23/87	• • • *for reinsertion of DC or slowly varying components of colour signals [2023.01]*
23/88	• • • *for colour balance, e.g. white-balance circuits or colour temperature control [2023.01]*
23/90	• *Arrangement of cameras or camera modules, e.g. multiple cameras in TV studios or sports stadiums [2023.01]*
23/95	• *Computational photography systems, e.g. light-field imaging systems [2023.01]*
23/951	• • *by using two or more images to influence resolution, frame rate or aspect ratio [2023.01]*
23/955	• • *for lensless imaging [2023.01]*
23/957	• • *Light-field or plenoptic cameras or camera modules [2023.01]*
23/958	• • *for extended depth of field imaging [2023.01]*
23/959	• • • *by adjusting depth of field during image capture, e.g. maximising or setting range based on scene characteristics [2023.01]*

25/00 Circuitry of solid-state image sensors [SSIS]; Control thereof [2023.01]

25/10	• *for transforming different wavelengths into image signals [2023.01]*
25/11	• • *Arrangement of colour filter arrays [CFA]; Filter mosaics [2023.01]*
25/13	• • • *characterised by the spectral characteristics of the filter elements [2023.01]*
25/131	• • • • *including elements passing infrared wavelengths [2023.01]*
25/133	• • • • *including elements passing panchromatic light, e.g. filters passing white light [2023.01]*
25/17	• • *Colour separation based on photon absorption depth, e.g. full colour resolution obtained simultaneously at each pixel location [2023.01]*
25/20	• *for transforming only infrared radiation into image signals [2023.01]*
25/21	• • *for transforming thermal infrared radiation into image signals [2023.01]*
25/30	• *for transforming X-rays into image signals [2023.01]*
25/40	• *Extracting pixel data from image sensors by controlling scanning circuits, e.g. by modifying the number of pixels sampled or to be sampled [2023.01]*
25/42	• • *by switching between different modes of operation using different resolutions or aspect ratios, e.g. switching between interlaced and non-interlaced mode [2023.01]*
25/44	• • *by partially reading an SSIS array [2023.01]*
25/441	• • • *by reading contiguous pixels from selected rows or columns of the array, e.g. interlaced scanning [2023.01]*
25/443	• • • *by reading pixels from selected 2D regions of the array, e.g. for windowing or digital zooming [2023.01]*
25/445	• • • *by skipping some contiguous pixels within the read portion of the array [2023.01]*
25/447	• • • *by preserving the colour pattern with or without loss of information [2023.01]*
25/46	• • *by combining or binning pixels [2023.01]*
25/47	• *Image sensors with pixel address output; Event-driven image sensors; Selection of pixels to be read out based on image data [2023.01]*

25/48	• *Increasing resolution by shifting the sensor relative to the scene [2023.01]*
25/50	• *Control of the SSIS exposure [2023.01]*
25/51	• • *Control of the gain [2023.01]*
25/53	• • *Control of the integration time [2023.01]*
25/531	• • • *by controlling rolling shutters in CMOS SSIS [2023.01]*
25/532	• • • *by controlling global shutters in CMOS SSIS [2023.01]*
25/533	• • • *by using differing integration times for different sensor regions [2023.01]*
25/534	• • • • *depending on the spectral component [2023.01]*
25/535	• • • • *by dynamic region selection [2023.01]*
25/57	• • *Control of the dynamic range [2023.01]*
25/571	• • • *involving a non-linear response [2023.01]*
25/58	• • • *involving two or more exposures [2023.01]*
25/581	• • • • *acquired simultaneously [2023.01]*
25/583	• • • • • *with different integration times [2023.01]*
25/585	• • • • • *with pixels having different sensitivities within the sensor, e.g. fast or slow pixels or pixels having different sizes [2023.01]*
25/587	• • • • *acquired sequentially, e.g. using the combination of odd and even image fields [2023.01]*
25/589	• • • • • *with different integration times, e.g. short and long exposures [2023.01]*
25/59	• • • *by controlling the amount of charge storable in the pixel, e.g. modification of the charge conversion ratio of the floating node capacitance [2023.01]*
25/60	• *Noise processing, e.g. detecting, correcting, reducing or removing noise [2023.01]*
25/61	• • *the noise originating only from the lens unit, e.g. flare, shading, vignetting or "cos4" [2023.01]*
25/611	• • • *Correction of chromatic aberration [2023.01]*
25/615	• • • *involving a transfer function modelling the optical system, e.g. optical transfer function [OTF], phase transfer function [PhTF] or modulation transfer function [MTF] [2023.01]*
25/616	• • *involving a correlated sampling function, e.g. correlated double sampling [CDS] or triple sampling [2023.01]*
25/617	• • *for reducing electromagnetic interference, e.g. clocking noise [2023.01]*
25/618	• • *for random or high-frequency noise [2023.01]*
25/62	• • *Detection or reduction of noise due to excess charges produced by the exposure, e.g. smear, blooming, ghost image, crosstalk or leakage between pixels [2023.01]*
25/621	• • • *for the control of blooming [2023.01]*
25/625	• • • *for the control of smear [2023.01]*
25/626	• • • *Reduction of noise due to residual charges remaining after image readout, e.g. to remove ghost images or afterimages [2023.01]*
25/627	• • • *Detection or reduction of inverted contrast or eclipsing effects [2023.01]*
25/628	• • • *for reducing horizontal stripes caused by saturated regions of CMOS sensors [2023.01]*
25/63	• • *applied to dark current [2023.01]*
25/633	• • • *by using optical black pixels [2023.01]*
25/65	• • *applied to reset noise, e.g. KTC noise related to CMOS structures by techniques other than CDS [2023.01]*
25/67	• • *applied to fixed-pattern noise, e.g. non-uniformity of response [2023.01]*

25/671 · · · for non-uniformity detection or correction **[2023.01]**	25/72 · · · using frame transfer [FT] **[2023.01]**
	25/73 · · · using interline transfer [IT] **[2023.01]**
25/672 · · · · between adjacent sensors or output registers for reading a single image **[2023.01]**	25/74 · · · Circuitry for scanning or addressing the pixel array **[2023.01]**
25/673 · · · · by using reference sources **[2023.01]**	25/75 · · · Circuitry for providing, modifying or processing image signals from the pixel array **[2023.01]**
25/674 · · · · · based on the scene itself, e.g. defocusing **[2023.01]**	
25/677 · · · · for reducing the column or line fixed pattern noise **[2023.01]**	25/76 · · Addressed sensors, e.g. MOS or CMOS sensors **[2023.01]**
25/68 · · applied to defects **[2023.01]**	25/766 · · · comprising control or output lines used for a plurality of functions, e.g. for pixel output, driving, reset or power **[2023.01]**
25/683 · · · by defect estimation performed on the scene signal, e.g. real time or on the fly detection **[2023.01]**	
	25/767 · · · Horizontal readout lines, multiplexers or registers **[2023.01]**
25/69 · · · SSIS comprising testing or correcting structures for circuits other than pixel cells **[2023.01]**	25/768 · · · for time delay and integration [TDI] **[2023.01]**
25/70 · SSIS architectures; Circuits associated therewith **[2023.01]**	25/77 · · · Pixel circuitry, e.g. memories, A/D converters, pixel amplifiers, shared circuits or shared components **[2023.01]**
25/701 · · Line sensors **[2023.01]**	
25/702 · · SSIS architectures characterised by non-identical, non-equidistant or non-planar pixel layout **[2023.01]**	25/771 · · · · comprising storage means other than floating diffusion **[2023.01]**
	25/772 · · · · comprising A/D, V/T, V/F, I/T or I/F converters **[2023.01]**
25/703 · · SSIS architectures incorporating pixels for producing signals other than image signals **[2023.01]**	25/773 · · · · · comprising photon counting circuits, e.g. single photon detection [SPD] or single photon avalanche diodes [SPAD] **[2023.01]**
25/704 · · · Pixels specially adapted for focusing, e.g. phase difference pixel sets **[2023.01]**	
25/705 · · · Pixels for depth measurement, e.g. RGBZ **[2023.01]**	25/778 · · · · comprising amplifiers shared between a plurality of pixels, i.e. at least one part of the amplifier must be on the sensor array itself **[2023.01]**
25/706 · · · Pixels for exposure or ambient light measuring **[2023.01]**	
25/707 · · · Pixels for event detection **[2023.01]**	25/779 · · · Circuitry for scanning or addressing the pixel array **[2023.01]**
25/708 · · · Pixels for edge detection **[2023.01]**	
25/709 · · Circuitry for control of the power supply **[2023.01]**	25/78 · · · Readout circuits for addressed sensors, e.g. output amplifiers or A/D converters **[2023.01]**
25/71 · · Charge-coupled device [CCD] sensors; Charge-transfer registers specially adapted for CCD sensors **[2023.01]**	25/79 · · Arrangements of circuitry being divided between different or multiple substrates, chips or circuit boards, e.g. stacked image sensors **[2023.01]**
25/711 · · · Time delay and integration [TDI] registers; TDI shift registers **[2023.01]**	
25/713 · · · Transfer or readout registers; Split readout registers or multiple readout registers **[2023.01]**	**Indexing scheme associated with groups H04N 1/00-H04N 17/00, relating to still video cameras. [6]**
25/715 · · · using frame interline transfer [FIT] **[2023.01]**	**101/00 Still video cameras [6, 2006.01]**

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

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1/00	**Details of selecting apparatus or arrangements [1, 2006.01]**

1/02	•	Constructional details **[1, 2006.01]**
1/04	• •	Frames or mounting racks for selector switches; Accessories therefor, e.g. frame cover **[1, 2006.01]**
1/06	• •	Cable ducts or mountings specially adapted for exchange installations **[1, 2006.01]**
1/08	• •	Frames or mounting racks for relays; Accessories therefor **[1, 2006.01]**
1/10	• •	Exchange station construction **[1, 2006.01]**
1/12	• •	Arrangements of multiple bars with or without pivotable frames **[1, 2006.01]**
1/14	• •	Distribution frames **[1, 2006.01]**
1/16	• •	Wiring arrangements for selector switches or relays in frames **[1, 2006.01]**
1/18	•	Electrical details **[1, 2006.01]**
1/20	• •	Testing circuits or apparatus; Circuits or apparatus for detecting, indicating, or signalling faults or troubles **[1, 2006.01]**
1/22	• • •	Automatic arrangements **[1, 2006.01]**
1/24	• • • •	for connection devices **[1, 2006.01]**
1/26	• • • •	for signalling trouble in unoccupied sub-exchanges **[1, 2006.01]**
1/28	• •	Current-supply circuits or arrangements for selection equipment at exchanges **[1, 2006.01]**
1/30	• •	Signalling arrangements; Manipulation of signalling currents (multiplex systems providing for calling or supervisory signals H04J 1/14, H04J 3/12) **[1, 2006.01]**
1/32	• • •	using trains of dc pulses (H04Q 1/39 takes precedence) **[1, 3, 2006.01]**
1/34	• • • •	Impulse regenerators with mechanical or other non-electrical marking arrangements **[1, 2006.01]**
1/36	• • • •	Pulse-correcting arrangements, e.g. for reducing effects due to interference **[1, 2006.01]**
1/38	• • •	using combinations of direct currents of different amplitudes or polarities over line conductors or combination of line conductors **[1, 2006.01]**
1/39	• • •	using coded pulse groups **[3, 2006.01]**
1/40	• • •	whereby duration of pulse or interval between two pulses is variable **[1, 2006.01]**
1/42	• • • •	involving the position of a pulse in a cycle **[1, 2006.01]**
1/44	• • •	using ac (H04Q 1/50 takes precedence) **[1, 3, 2006.01]**
1/442	• • • •	with out-of-voice band signalling frequencies **[3, 2006.01]**
1/444	• • • •	with voice-band signalling frequencies **[3, 2006.01]**
1/446	• • • • •	using one signalling frequency (H04Q 1/46 takes precedence) **[3, 2006.01]**
1/448	• • • • • •	with conversion of a single frequency signal into a digital signal **[3, 2006.01]**
1/45	• • • • •	using multi-frequency signalling (H04Q 1/46 takes precedence) **[1, 3, 2006.01]**

1/453	• • • • • •	in which m-out-of-n signalling frequencies are transmitted **[3, 2006.01]**
1/457	• • • • •	with conversion of multi-frequency signals into digital signals **[3, 2006.01]**
1/46	• • • • •	comprising means for distinguishing between a signalling current of predetermined frequency and a complex current containing that frequency, e.g. speech current **[1, 3, 2006.01]**
1/48	• • •	Induced-current signalling arrangements **[1, 2006.01]**
1/50	• • •	Conversion between different kinds of signals **[1, 2006.01]**
1/54	• •	Amplifier switched-on automatically in dependence on automatically selected lines **[1, 2006.01]**
1/56	• •	Balancing circuitry switched-on automatically in dependence on automatically selected lines **[1, 2006.01]**

3/00	**Selecting arrangements** (H04Q 5/00-H04Q 11/00 take precedence) **[1, 2006.01]**

3/02	•	Circuit arrangements for selectors responsive to a permutation code **[1, 2006.01]**
3/04	•	Circuit arrangements for receivers of routing digits **[1, 2006.01]**
3/06	• •	for group or trunk group selectors **[1, 2006.01]**
3/08	• •	for local or long-distance selectors **[1, 2006.01]**
3/10	• •	for PBX selectors, i.e. private branch exchange selectors **[1, 2006.01]**
3/12	• •	for line selectors providing transfer of routing digits **[1, 2006.01]**
3/14	• •	for two-way operation selectors **[1, 2006.01]**
3/16	• •	for marking-switches **[1, 2006.01]**
3/18	•	Circuit arrangements for first stage of hunting switching **[1, 2006.01]**
3/20	• •	for preselectors **[1, 2006.01]**
3/22	• • •	comprising common calling and disconnecting circuit **[1, 2006.01]**
3/24	• •	for line finders **[1, 2006.01]**
3/26	• • •	comprising common calling and disconnecting circuit **[1, 2006.01]**
3/28	• • •	comprising main groups and subgroups **[1, 2006.01]**
3/30	• •	Selector finders, i.e. allotters **[1, 2006.01]**
3/32	•	Circuit arrangements for second or subsequent stages of hunting switching **[1, 2, 2006.01]**
3/34	• •	for the second preselection stage **[1, 2006.01]**
3/36	• •	for the second line-finder stage **[1, 2006.01]**
3/38	• •	for stages after the group-selector stage **[1, 2006.01]**
3/40	• •	for stages after the line selector, e.g. for extension selector **[1, 2006.01]**
3/42	•	Circuit arrangements for indirect selecting controlled by common circuits, e.g. register controller, marker **[1, 2006.01]**
3/44	• •	using revertive control **[1, 2006.01]**
3/46	• •	using signals other than revertive impulses **[1, 2006.01]**
3/47	• •	using translators **[1, 2006.01]**
3/48	• •	using markers **[1, 2006.01]**
3/49	• • •	for end-to-end marking **[1, 2006.01]**

3/495 • • • • for routing connecting paths **[1, 2006.01]**

3/52 • • using static devices in switching stages, e.g. electronic switching arrangements **[2, 2006.01]**

3/54 • • in which the logic circuitry controlling the exchange is centralised **[1, 2006.01]**

3/545 • • • using a stored programme **[4, 2006.01]**

3/55 • • • using wired logic circuitry **[4, 2006.01]**

3/555 • • • • being comprised by electro-magnetic devices **[4, 2006.01]**

3/56 • • in which the control signals are multiplexed **[2, 2006.01]**

3/58 • Arrangements providing connection between main exchange and sub-exchange or satellite **[1, 2006.01]**

3/60 • • for connecting to satellites or concentrators which connect one or more exchange lines with a group of local lines **[1, 2006.01]**

3/62 • • for connecting to private branch exchanges **[1, 2006.01]**

3/64 • Distributing or queuing **[1, 2006.01]**

3/66 • • Traffic distributors **[1, 2006.01]**

3/68 • • Grouping or interlacing selector groups or stages **[1, 2006.01]**

3/70 • Identification of class of calling subscriber **[1, 2006.01]**

3/72 • Finding out and indicating number of calling subscriber **[1, 2006.01]**

3/74 • • Identification of subscriber calling from a party-line **[1, 2006.01]**

3/76 • Translation from the called subscriber's number to the outgoing or incoming control information **[4, 2006.01]**

3/78 • Temporary storage of information of calling or called subscriber (intermediate storage means for telegraphic communication H04L 13/08) **[4, 2006.01]**

5/00 **Selecting arrangements wherein two or more subscriber stations are connected by the same line to the exchange [1, 2006.01]**

5/02 • with direct connection for all subscribers, i.e. party-line system (H04Q 5/24 takes precedence) **[1, 2006.01]**

5/04 • • Signalling by currents in one or other or both line wires or additional wires **[1, 2006.01]**

5/06 • • Signalling by amplitude or polarity of dc **[1, 2006.01]**

5/08 • • Signalling by continuous ac **[1, 2006.01]**

5/10 • • • using single frequencies for different subscribers **[1, 2006.01]**

5/12 • • • using combinations of frequencies **[1, 2006.01]**

5/14 • • Signalling by pulses **[1, 2006.01]**

5/16 • • • by predetermined number of pulses **[1, 2006.01]**

5/18 • with indirect connection, i.e. through subordinate switching centre **[1, 2006.01]**

5/20 • • the subordinate centre permitting interconnection of subscribers connected thereto **[1, 2006.01]**

5/22 • • the subordinate centre not permitting interconnection of subscribers connected thereto **[1, 2006.01]**

5/24 • for two-party-line systems **[1, 2006.01]**

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 [1, 2006.01]**

9/02 • Automatically-operated arrangements **[1, 2006.01]**

9/04 • Arrangements for synchronous operation **[1, 2006.01]**

9/06 • Calling by using amplitude or polarity of dc **[1, 2006.01]**

9/08 • Calling by using continuous ac **[1, 2006.01]**

9/10 • • using single different frequencies **[1, 2006.01]**

9/12 • • using combinations of frequencies **[1, 2006.01]**

9/14 • Calling by using pulses **[1, 2006.01]**

9/16 • • by predetermined number of pulses **[1, 2006.01]**

11/00 **Selecting arrangements for multiplex systems** (multiplex systems H04J) **[1, 2006.01]**

11/02 • for frequency-division multiplexing **[1, 2006.01]**

11/04 • for time-division multiplexing **[1, 2006.01]**

11/06 • • Time-space-time switching **[5, 2006.01]**

11/08 • • Time only switching **[5, 2006.01]**

H04R **LOUDSPEAKERS, MICROPHONES, GRAMOPHONE PICK-UPS OR LIKE ACOUSTIC ELECTROMECHANICAL TRANSDUCERS; DEAF-AID SETS; PUBLIC ADDRESS SYSTEMS** (producing sounds with frequency not determined by supply frequency G10K) **[6]**

Note(s) [7]

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 "microstructural devices" and "microstructural systems".

Subclass index

1/00 **Details of transducers** (diaphragms H04R 7/00; characterised by the nature of the transducer, <u>see</u> the relevant group of main groups H04R 9/00-H04R 23/00; mountings specially adapted for telephone equipment H04M 1/02) **[1, 2006.01]**

1/02 • Casings; Cabinets; Mountings therein (H04R 1/28 takes precedence) **[1, 2006.01]**

1/04 • • Structural association of microphone with electric circuitry therefor (in deaf-aid sets H04R 25/00) **[1, 2006.01]**

1/06 • Arranging circuit leads; Relieving strain on circuit leads **[1, 2006.01]**

1/08 • Mouthpieces; Attachments therefor **[1, 2006.01]**

1/10 • Earpieces; Attachments therefor **[1, 2006.01]**

1/12 • Sanitary or hygienic devices for mouthpieces or earpieces, e.g. for protecting against infection **[1, 2006.01]**

1/14 • Throat mountings for microphones **[1, 2006.01]**

1/16 • Mounting or connecting stylus to transducer with or without damping means **[1, 2006.01]**

1/18 • • Holders for styli; Mounting holders on transducers **[1, 2006.01]**

1/20 • Arrangements for obtaining desired frequency or directional characteristics (for stereophonic purposes H04R 5/00) **[1, 2006.01]**

1/22 • • for obtaining desired frequency characteristic only **[1, 2006.01]**

1/24 • • • Structural combinations of separate transducers or of parts of the same transducer and responsive respectively to two or more frequency ranges **[1, 2006.01]**

1/26 • • • Spatial arrangement of separate transducers responsive to two or more frequency ranges **[1, 2006.01]**

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, 2006.01]**

1/30 • • • Combinations of transducers with horns, e.g. with mechanical matching means **[1, 2006.01]**

1/32 • • for obtaining desired directional characteristic only **[1, 2006.01]**

1/34 • • • by using a single transducer with sound reflecting, diffracting, directing or guiding means **[1, 2006.01]**

1/36 • • • • by using a single aperture of dimensions not greater than the shortest operating wavelength **[1, 2006.01]**

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, 2006.01]**

1/40 • • • by combining a number of identical transducers **[1, 2006.01]**

1/42 • Combinations of transducers with fluid-pressure or other non-electrical amplifying means **[1, 2006.01]**

1/44 • Special adaptations for subaqueous use, e.g. for hydrophone **[1, 2006.01]**

1/46 • Special adaptations for use as contact microphones, e.g. on musical instrument, on stethoscope (throat mountings H04R 1/14) **[1, 2006.01]**

3/00 **Circuits for transducers** (arrangements for producing a reverberation or echo sound G10K 15/08; amplifiers H03F) **[1, 2006.01]**

3/02 • for preventing acoustic reaction **[1, 2006.01]**

3/04 • for correcting frequency response **[1, 2006.01]**

3/06 • • of electrostatic transducers **[1, 2006.01]**

3/08 • • of electromagnetic transducers **[1, 2006.01]**

3/10 • • of variable-resistance microphones **[1, 2006.01]**

3/12 • for distributing signals to two or more loudspeakers **[1, 2006.01]**

3/14 • • Cross-over networks **[1, 2006.01]**

5/00 **Stereophonic arrangements** (stereophonic pick-ups H04R 9/16, H04R 11/12, H04R 17/08, H04R 19/10) **[1, 2006.01]**

Note(s) [3]

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 **[1, 2006.01]**

5/027 • Spatial or constructional arrangements of microphones, e.g. in dummy heads **[3, 2006.01]**

5/033 • Headphones for stereophonic communication **[3, 2006.01]**

5/04 • Circuit arrangements (stereophonic systems H04S) **[1, 2006.01]**

7/00 **Diaphragms for electromechanical transducers; Cones [1, 2006.01]**

7/02 • characterised by the construction **[1, 2006.01]**

7/04 • • Plane diaphragms **[1, 2006.01]**

7/06 • • • comprising a plurality of sections or layers **[1, 2006.01]**

7/08 • • • • comprising superposed layers separated by air or other fluid **[1, 2006.01]**

7/10 • • • • comprising superposed layers in contact **[1, 2006.01]**

7/12 • • Non-planar diaphragms or cones **[1, 2006.01]**

7/14 • • • corrugated, pleated, or ribbed **[1, 2006.01]**

7/16 • Mounting or tensioning of diaphragms or cones **[1, 2006.01]**

7/18 • • at the periphery **[1, 2006.01]**

7/20 • • • Securing diaphragm or cone resiliently to support by flexible material, springs, cords, or strands **[1, 2006.01]**

7/22 • • • Clamping rim of diaphragm or cone against seating **[1, 2006.01]**

7/24 • • Tensioning by means acting directly on free portion of diaphragm or cone **[1, 2006.01]**

7/26 • Damping by means acting directly on free portion of diaphragm or cone **[1, 2006.01]**

9 / 00	**Transducers of moving-coil, moving-strip, or moving-wire type [1, 2006.01]**
9 / 02	• Details **[1, 2006.01]**
9 / 04	• • Construction, mounting, or centering of coil **[1, 2006.01]**
9 / 06	• Loudspeakers **[1, 2006.01]**
9 / 08	• Microphones **[1, 2006.01]**
9 / 10	• Telephone receivers **[1, 2006.01]**
9 / 12	• Gramophone pick-ups using a stylus; Recorders using a stylus **[1, 2006.01]**
9 / 14	• • comprising two or more styli or transducers (H04R 9/16 takes precedence) **[1, 2006.01]**
9 / 16	• • signals being recorded or played-back by vibration of a stylus in two orthogonal directions simultaneously **[1, 2006.01]**
9 / 18	• Resonant transducers, i.e. adapted to produce maximum output at a predetermined frequency **[1, 2006.01]**
11 / 00	**Transducers of moving-armature or moving-core type [1, 2006.01]**
11 / 02	• Loudspeakers **[1, 2006.01]**
11 / 04	• Microphones **[1, 2006.01]**
11 / 06	• Telephone receivers **[1, 2006.01]**
11 / 08	• Gramophone pick-ups using a stylus; Recorders using a stylus **[1, 2006.01]**
11 / 10	• • comprising two or more styli or transducers (H04R 11/12 takes precedence) **[1, 2006.01]**
11 / 12	• • signals being recorded or played-back by vibration of a stylus in two orthogonal directions simultaneously **[1, 2006.01]**
11 / 14	• Resonant transducers, i.e. adapted to produce maximum output at a predetermined frequency **[1, 2006.01]**
13 / 00	**Transducers having an acoustic diaphragm of magnetisable material directly co-acting with electromagnet [1, 2006.01]**
13 / 02	• Telephone receivers **[1, 2006.01]**
15 / 00	**Magnetostrictive transducers [1, 2006.01]**
15 / 02	• Resonant transducers, i.e. adapted to produce maximum output at a predetermined frequency **[1, 2006.01]**
17 / 00	**Piezoelectric transducers; Electrostrictive transducers [1, 2006.01]**
17 / 02	• Microphones **[1, 2006.01]**
17 / 04	• Gramophone pick-ups using a stylus; Recorders using a stylus **[1, 2006.01]**

17 / 06	• • comprising two or more styli or transducers (H04R 17/08 takes precedence) **[1, 2006.01]**
17 / 08	• • signals being recorded or played-back by vibration of a stylus in two orthogonal directions simultaneously **[1, 2006.01]**
17 / 10	• Resonant transducers, i.e. adapted to produce maximum output at a predetermined frequency **[1, 2006.01]**
19 / 00	**Electrostatic transducers [1, 2006.01]**
19 / 01	• characterised by the use of electrets **[3, 2006.01]**
19 / 02	• Loudspeakers (H04R 19/01 takes precedence) **[1, 3, 2006.01]**
19 / 04	• Microphones (H04R 19/01 takes precedence) **[1, 3, 2006.01]**
19 / 06	• Gramophone pick-ups using a stylus; Recorders using a stylus (H04R 19/01 takes precedence) **[1, 3, 2006.01]**
19 / 08	• • comprising two or more styli or transducers (H04R 19/10 takes precedence) **[1, 2006.01]**
19 / 10	• • signals being recorded or played-back by vibration of a stylus in two orthogonal directions simultaneously **[1, 2006.01]**
21 / 00	**Variable-resistance transducers** (gaseous-resistance transducers H04R 23/00; magneto-resistive transducers H04R 23/00) **[1, 2006.01]**
21 / 02	• Microphones **[1, 2006.01]**
21 / 04	• Gramophone pick-ups using a stylus; Recorders using a stylus **[1, 2006.01]**
23 / 00	**Transducers other than those covered by groups H04R 9/00-H04R 21/00 [1, 2006.01]**
23 / 02	• Transducers using more than one principle simultaneously **[1, 2006.01]**
25 / 00	**Deaf-aid sets [1, 2006.01]**
25 / 02	• adapted to be supported entirely by ear **[1, 2006.01]**
25 / 04	• comprising pocket amplifiers **[1, 2006.01]**
27 / 00	**Public address systems** (circuits for preventing acoustic reaction H04R 3/02) **[1, 2006.01]**
27 / 02	• Amplifying systems for the deaf **[1, 2006.01]**
27 / 04	• Electric megaphones **[1, 2006.01]**
29 / 00	**Monitoring arrangements; Testing arrangements [1, 2006.01]**
31 / 00	**Apparatus or processes specially adapted for the manufacture of transducers or diaphragms therefor [1, 2006.01]**

H04S   **STEREOPHONIC SYSTEMS [3]**

Note(s) [3]

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, 2006.01]**
3 / 00	**Systems employing more than two channels, e.g. quadraphonic** (H04S 5/00, H04S 7/00 take precedence) **[3, 2006.01]**

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, 2006.01]**
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 [3, 2006.01]**

5/02 • of the pseudo four-channel type, e.g. in which rear channel signals are derived from two-channel stereo signals **[3, 2006.01]**

7/00 **Indicating arrangements; Control arrangements, e.g. balance control [3, 2006.01]**

H04W **WIRELESS COMMUNICATION NETWORKS** (broadcast communication H04H; communication systems using wireless links for non-selective communication, e.g. wireless extensions H04M 1/72) **[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 is covered by subclass H04H.

4/00 **Services specially adapted for wireless communication networks; Facilities therefor [2009.01, 2018.01]**

4/02 • Services making use of location information **[2009.01, 2018.01]**

4/021 • • Services related to particular areas, e.g. point of interest [POI] services, venue services or geofences **[2018.01]**

4/024 • • Guidance services **[2018.01]**

4/029 • • Location-based management or tracking services **[2018.01]**

4/06 • Selective distribution of broadcast services, e.g. multimedia broadcast multicast service [MBMS]; Services to user groups; One-way selective calling services **[2009.01]**

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

4/10 • • Push-to-talk [PTT] or push-on-call services **[2009.01]**

4/12 • Messaging; Mailboxes; Announcements **[2009.01]**

4/14 • • Short messaging services, e.g. short message service [SMS] or unstructured supplementary service data [USSD] **[2009.01]**

4/16 • Communication-related supplementary services, e.g. call-transfer or call-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 • Services signalling; Auxiliary data signalling, i.e. transmitting data via a non-traffic channel **[2009.01, 2018.01]**

4/21 • • for social networking applications **[2018.01]**

4/23 • • for mobile advertising **[2018.01]**

4/24 • Accounting or billing **[2009.01, 2018.01]**

4/30 • Services specially adapted for particular environments, situations or purposes **[2018.01]**

4/33 • • for indoor environments, e.g. buildings **[2018.01]**

4/35 • • for the management of goods or merchandise **[2018.01]**

4/38 • • for collecting sensor information **[2018.01]**

4/40 • • for vehicles, e.g. vehicle-to-pedestrians [V2P] **[2018.01]**

4/42 • • • for mass transport vehicles, e.g. buses, trains or aircraft **[2018.01]**

4/44 • • • for communication between vehicles and infrastructures, e.g. vehicle-to-cloud [V2C] or vehicle-to-home [V2H] **[2018.01]**

4/46 • • • for vehicle-to-vehicle communication [V2V] **[2018.01]**

4/48 • • • for in-vehicle communication **[2018.01]**

4/50 • Service provisioning or reconfiguring **[2018.01]**

4/60 • Subscription-based services using application servers or record carriers, e.g. SIM application toolkits **[2018.01]**

4/70 • Services for machine-to-machine communication [M2M] or machine type communication [MTC] **[2018.01]**

4/80 • Services using short range communication, e.g. near-field communication [NFC], radio-frequency identification [RFID] or low energy communication **[2018.01]**

4/90 • Services for handling of emergency or hazardous situations, e.g. earthquake and tsunami warning systems [ETWS] **[2018.01]**

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 at HLR or HSS [Home Subscriber Server] **[2009.01]**

8/06 • • Registration at serving network Location Register, VLR or user 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; Authentication; Protecting privacy or anonymity [2009.01, 2021.01]**

12/02	• Protecting privacy or anonymity, e.g. protecting personally identifiable information [PII] **[2009.01]**
12/03	• Protecting confidentiality, e.g. by encryption **[2021.01]**
12/033	• • of the user plane, e.g. user's traffic **[2021.01]**
12/037	• • of the control plane, e.g. signalling traffic **[2021.01]**
12/04	• Key management, e.g. using generic bootstrapping architecture [GBA] **[2009.01, 2021.01]**
12/041	• • Key generation or derivation **[2021.01]**
12/043	• • using a trusted network node as an anchor **[2021.01]**
12/0431	• • • Key distribution or pre-distribution; Key agreement **[2021.01]**
12/0433	• • • Key management protocols **[2021.01]**
12/047	• • without using a trusted network node as an anchor **[2021.01]**
12/0471	• • • Key exchange **[2021.01]**
12/06	• Authentication **[2009.01, 2021.01]**
12/062	• • Pre-authentication **[2021.01]**
12/065	• • Continuous authentication **[2021.01]**
12/069	• • using certificates or pre-shared keys **[2021.01]**
12/08	• Access security **[2009.01, 2021.01]**
12/082	• • using revocation of authorisation **[2021.01]**
12/084	• • using delegated authorisation, e.g. open authorisation [OAuth] protocol **[2021.01]**
12/086	• • using security domains **[2021.01]**
12/088	• • using filters or firewalls **[2021.01]**
12/10	• Integrity **[2009.01, 2021.01]**
12/102	• • Route integrity, e.g. using trusted paths **[2021.01]**
12/104	• • Location integrity, e.g. secure geotagging **[2021.01]**
12/106	• • Packet or message integrity **[2021.01]**
12/108	• • Source integrity **[2021.01]**
12/12	• Detection or prevention of fraud **[2009.01, 2021.01]**
12/121	• • Wireless intrusion detection systems [WIDS]; Wireless intrusion prevention systems [WIPS] **[2021.01]**
12/122	• • • Counter-measures against attacks; Protection against rogue devices **[2021.01]**
12/125	• • Protection against power exhaustion attacks **[2021.01]**
12/126	• • Anti-theft arrangements, e.g. protection against subscriber identity module [SIM] cloning **[2021.01]**
12/128	• • Anti-malware arrangements, e.g. protection against SMS fraud or mobile malware **[2021.01]**
12/30	• Security of mobile devices; Security of mobile applications **[2021.01]**
12/33	• • using wearable devices, e.g. using a smartwatch or smart-glasses **[2021.01]**

12/37	• • Managing security policies for mobile devices or for controlling mobile applications **[2021.01]**
12/40	• Security arrangements using identity modules **[2021.01]**
12/42	• • using virtual identity modules **[2021.01]**
12/43	• • using shared identity modules, e.g. SIM sharing **[2021.01]**
12/45	• • using multiple identity modules **[2021.01]**
12/47	• • using near field communication [NFC] or radio frequency identification [RFID] modules **[2021.01]**
12/48	• • using secure binding, e.g. securely binding identity modules to devices, services or applications **[2021.01]**
12/50	• Secure pairing of devices **[2021.01]**
12/55	• • involving three or more devices, e.g. group pairing **[2021.01]**
12/60	• Context-dependent security **[2021.01]**
12/61	• • Time-dependent **[2021.01]**
12/63	• • Location-dependent; Proximity-dependent **[2021.01]**
12/64	• • • using geofenced areas **[2021.01]**
12/65	• • Environment-dependent, e.g. using captured environmental data **[2021.01]**
12/67	• • Risk-dependent, e.g. selecting a security level depending on risk profiles **[2021.01]**
12/68	• • Gesture-dependent or behaviour-dependent **[2021.01]**
12/69	• • Identity-dependent **[2021.01]**
12/71	• • • Hardware identity **[2021.01]**
12/72	• • • Subscriber identity **[2021.01]**
12/73	• • • Access point logical identity **[2021.01]**
12/75	• • • Temporary identity **[2021.01]**
12/76	• • • Group identity **[2021.01]**
12/77	• • • Graphical identity **[2021.01]**
12/79	• • • Radio fingerprint **[2021.01]**
12/80	• Arrangements enabling lawful interception [LI] **[2021.01]**

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 or building shadow **[2009.01]**
16/28	• • using beam steering **[2009.01]**
16/30	• • Special cell shapes, e.g. doughnuts or ring 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 management; Network 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 (transferring a connection for handling the traffic H04W 36/22; wireless traffic scheduling H04W 72/12) [2009.01, 2023.01]*
28/082	• • • *among bearers or channels [2023.01]*
28/084	• • • *among network function virtualisation [NFV] entities; among edge computing entities, e.g. multi-access edge computing [2023.01]*
28/086	• • • *among access entities [2023.01]*
28/088	• • • *among core entities [2023.01]*
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 or communication parameters, 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** (access security to prevent unauthorised access H04W 12/08)**; 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 (signalling during connection H04W 76/00) **[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 [2009.01]**
52/02	• Power saving arrangements **[2009.01]**
52/04	• Transmission power control [TPC] **[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	**Affiliation to network, e.g. registration; Terminating affiliation with the network, e.g. de-registration [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	**User notification, e.g. alerting or paging, for incoming communication, change of service or the like [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 [2009.01, 2023.01]***
72/02	•	Selection of wireless resources by user or terminal **[2009.01]**
72/04	•	*Wireless resource allocation [2009.01, 2023.01]*
72/044	• •	*based on the type of the allocated resource [2023.01]*
72/0446	• • •	*Resources in time domain, e.g. slots or frames [2023.01]*
72/0453	• • •	*Resources in frequency domain, e.g. a carrier in FDMA [2023.01]*
72/0457	• • •	*Variable allocation of band or rate [2023.01]*
72/11	• •	*Semi-persistent scheduling [2023.01]*
72/115	• •	*Grant-free or autonomous transmission [2023.01]*
72/12	•	*Wireless traffic scheduling [2009.01, 2023.01]*
72/121	• •	*for groups of terminals or users [2023.01]*
72/1263	• •	*Mapping of traffic onto schedule, e.g. scheduled allocation or multiplexing of flows [2023.01]*
72/1268	• • •	*of uplink data flows [2023.01]*
72/1273	• • •	*of downlink data flows [2023.01]*
72/20	•	*Control channels or signalling for resource management [2023.01]*
72/21	• •	*in the uplink direction of a wireless link, i.e. towards the network [2023.01]*
72/23	• •	*in the downlink direction of a wireless link, i.e. towards a terminal [2023.01]*
72/231	• • •	*the control data signalling from the layers above the physical layer, e.g. RRC or MAC-CE signalling [2023.01]*
72/232	• • •	*the control data signalling from the physical layer, e.g. DCI signalling [2023.01]*
72/25	• •	*between terminals via a wireless link, e.g. sidelink [2023.01]*
72/27	• •	*between access points [2023.01]*
72/29	• •	*between an access point and the access point controlling device [2023.01]*
72/30	•	*Resource management for broadcast services [2023.01]*
72/40	•	*Resource management for direct mode communication, e.g. D2D or sidelink [2023.01]*
72/50	•	*Allocation or scheduling criteria for wireless resources [2023.01]*
72/51	• •	*based on terminal or device properties [2023.01]*
72/512	• • •	*for low-latency requirements, e.g. URLLC [2023.01]*
72/52	• •	*based on load [2023.01]*
72/53	• •	*based on regulatory allocation policies [2023.01]*
72/54	• •	*based on quality criteria [2023.01]*
72/541	• • •	*using the level of interference [2023.01]*
72/542	• • •	*using measured or perceived quality [2023.01]*
72/543	• • •	*based on requested quality, e.g. QoS [2023.01]*
72/56	• •	*based on priority criteria [2023.01]*
72/563	• • •	*of the wireless resources [2023.01]*
72/566	• • •	*of the information or information source or recipient [2023.01]*

74/00	**Wireless channel access, e.g. scheduled or random access [2009.01]**

74/02 • Hybrid access techniques **[2009.01]**

74/04 • Scheduled access (H04W 74/02 takes precedence) **[2009.01]**

74/06 • • using polling **[2009.01]**

74/08 • Non-scheduled access, e.g. random access, ALOHA or CSMA [Carrier Sense Multiple Access] (H04W 74/02 takes precedence) **[2009.01]**

76/00 Connection management [2009.01, 2018.01]

76/10 • Connection setup **[2018.01]**

76/11 • • Allocation or use of connection identifiers **[2018.01]**

76/12 • • Setup of transport tunnels **[2018.01]**

76/14 • • Direct-mode setup **[2018.01]**

76/15 • • Setup of multiple wireless link connections **[2018.01]**

76/16 • • • involving different core network technologies, e.g. a packet-switched [PS] bearer in combination with a circuit-switched [CS] bearer **[2018.01]**

76/18 • • Management of setup rejection or failure **[2018.01]**

76/19 • • Connection re-establishment **[2018.01]**

76/20 • Manipulation of established connections **[2018.01]**

76/22 • • Manipulation of transport tunnels **[2018.01]**

76/23 • • Manipulation of direct-mode connections **[2018.01]**

76/25 • • Maintenance of established connections **[2018.01]**

76/27 • • Transitions between radio resource control [RRC] states **[2018.01]**

76/28 • • Discontinuous transmission [DTX]; Discontinuous reception [DRX] **[2018.01]**

76/30 • Connection release **[2018.01]**

76/32 • • Release of transport tunnels **[2018.01]**

76/34 • • Selective release of ongoing connections **[2018.01]**

76/36 • • • for reassigning the resources associated with the released connections **[2018.01]**

76/38 • • triggered by timers **[2018.01]**

76/40 • for selective distribution or broadcast **[2018.01]**

76/45 • • for push-to-talk [PTT] or push-to-talk over cellular [PoC] services **[2018.01]**

76/50 • for emergency connections **[2018.01]**

80/00 Wireless network protocols or protocol adaptations to wireless operation [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 [Wireless Application Protocol] **[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 (space-based or airborne stations for active relay systems H04B 7/185) **[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 devices; 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]