

## SECTION H — ELECTRICITY

## H04 ELECTRIC COMMUNICATION TECHNIQUE

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

**Note(s)**

1. This subclass covers:
  - transmission of pictures or their transient or permanent reproduction either locally or remotely, by methods involving both the following steps:
    - step (a): the scanning of a picture, i.e. resolving the whole picture-containing area into individual picture-elements and the derivation of picture-representative electric signals related thereto, simultaneously or in sequence;
    - step (b): the reproduction of the whole picture-containing area by the reproduction of individual picture-elements into which the picture is resolved by means of picture-representative electric signals derived therefrom, simultaneously or in sequence;
  - (in group H04N 1/00) systems for the transmission or the reproduction of arbitrarily composed pictures or patterns in which the local light variations composing a picture are not subject to variation with time, e.g. documents (both written and printed), maps, charts, photographs (other than cinematograph films);
  - circuits specially designed for dealing with pictorial communication signals, e.g. television signals, as distinct from merely signals of a particular frequency range.
2. This subclass does not cover:
  - circuits or other parts of systems which form the subject of other subclasses, which are covered by the corresponding subclasses, e.g. H03C, H03F, H03J, H04B, H04H;
  - systems in which legible alphanumeric or like character forms are analysed according to step (a) of Note (1) to derive an electric signal from which the character is recognised by comparison with stored information, which are covered by subclass G06K;
  - systems for the direct photographic copying of an original picture in which an electric signal representative of the picture is derived according to the said step (a) and employed to modify the operation of the system, e.g. to control exposure, which are covered by class G03;
  - systems for the reproduction according to step (b) of Note (1) of pictures comprising alphanumeric or like character forms but involving the production of the equivalent of a signal which would be derived according to the above-mentioned step (a), e.g. by cams, punched card or tape, coded control signal, or other means, which are covered by the subclass for the application, e.g. G01D, G06T, H04L;
  - systems for the reproduction according to the above-mentioned step (b) of pictures comprising alphanumeric or like character forms and involving the generation according to the above-mentioned step (a) of picture-representative electric signals from a pre-arranged assembly of such characters, or records thereof, forming an integral part of the systems, which are covered by the subclass for the application, e.g. B41B, G06K, subject to those applications which are covered by this subclass;
  - printing, duplication or marking processes, or materials therefor, which are covered by the relevant subclasses, e.g. B41C, B41J, B41M, G03C, G03F, G03G.
3. In this subclass, the following expression is used with the meaning indicated:
  - "television systems" means those systems for the transmission and reproduction of arbitrarily composed pictures in which the local light variations composing a picture may change with time, e.g. natural "live" scenes, recordings of such scenes such as cinematograph films.

<b>Note(s)</b>	1/032 • • for picture-information reproduction [3, 4]
In groups H04N 1/00-H04N 17/00, it is desirable to add the indexing code of group H04N 101/00.	1/034 • • • using ink, e.g. ink-jet heads [5]
	1/036 • • • for optical reproduction [3, 4]
	1/04 • Scanning arrangements (H04N 1/387 takes precedence) [4]
<b>1/00 Scanning, transmission or reproduction of documents or the like, e.g. facsimile transmission; Details thereof [3, 4]</b>	1/047 • • Detection, control or error compensation of scanning velocity or position (H04N 1/17 takes precedence) [6]
1/024 • Details of scanning heads [3, 4]	1/053 • • • in main scanning direction, e.g. synchronisation of line start or picture elements in a line [6]
1/028 • • for picture-information pick-up [3, 4]	1/06 • • using cylindrical picture-bearing surfaces [4]
1/029 • • • Heads optically focused on only one picture element at a time [6]	1/08 • • • Mechanisms for mounting or holding the sheet around the drum [4]
1/03 • • • with photodetectors arranged in a substantially linear array (scanning of linear arrays H04N 1/19) [6]	1/10 • • using flat picture-bearing surfaces [4]
1/031 • • • • the photodetectors having a one-to-one and optically positive correspondence with the scanned picture elements, e.g. linear contact sensors [6]	1/107 • • • with manual scanning [6]
	1/113 • • using oscillating or rotating mirrors [6]

- 1/12 • • using the sheet-feed movement as the slow scanning component (using multi-element arrays H04N 1/19) [4, 6]
- 1/14 • • • using a rotating endless belt carrying the scanning heads [4]
- 1/16 • • • using a rotating helical element [4]
- 1/17 • • the scanning speed being dependent on content of picture [3, 4]
- 1/19 • • using multi-element arrays [6]
- 1/191 • • • the array comprising a one-dimensional array [6]
- 1/192 • • • • Simultaneously scanning picture elements on one main scanning line [6]
- 1/193 • • • • using electrically scanned linear arrays [6]
- 1/195 • • • the array comprising a two-dimensional array [6]
- 1/203 • • Simultaneous scanning of two or more separate pictures [6]
- 1/207 • • Simultaneous scanning of the original picture and the reproduced picture with a common scanning device [6]
- 1/21 • Intermediate information storage (H04N 1/387, H04N 1/41 take precedence) [4]
- 1/23 • Reproducing arrangements (details of scanning heads H04N 1/024; scanning arrangements therefor H04N 1/04) [4]
- 1/27 • • involving production of a magnetic intermediate picture [4]
- 1/29 • • involving production of an electrostatic intermediate picture [4]
- 1/31 • • Mechanical arrangements for picture transmission, e.g. adaptation of clutches, gearing, gear transmissions [4]
- 1/32 • Circuits or arrangements for control or supervision between transmitter and receiver
- 1/327 • • Initiating, continuing or ending a single-mode communication; Handshaking therefor [6]
- 1/333 • • Mode signalling or mode changing; Handshaking therefor [6]
- 1/34 • • for coin-freed systems
- 1/36 • • for synchronising or phasing transmitter and receiver
- 1/38 • Circuits or arrangements for blanking or otherwise eliminating unwanted parts of pictures (H04N 1/387 takes precedence) [4]
- 1/387 • Composing, repositioning or otherwise modifying originals [4]
- 1/393 • • Enlarging or reducing [4]
- 1/40 • Picture signal circuits (H04N 1/387 takes precedence) [4]
- 1/401 • • Compensating positionally unequal response of the pick-up or reproducing head (H04N 1/403 takes precedence) [6]
- 1/403 • • Discrimination between the two tones in the picture signal of a two-tone original [6]
- 1/405 • • Halftoning, i.e. converting the picture signal of a continuous-tone original into a corresponding signal showing only two levels [6]
- 1/407 • • Control or modification of tonal gradation or of extreme levels, e.g. background level [6]
- 1/409 • • Edge or detail enhancement; Noise or error suppression [6]
- 1/41 • Bandwidth or redundancy reduction (by scanning H04N 1/17) [3]
- 1/411 • • for the transmission or reproduction of two-tone pictures, e.g. black and white pictures [4]
- 1/413 • • • Systems or arrangements allowing the picture to be reproduced without loss or modification of picture-information [4]
- 1/415 • • • • in which the picture-elements are subdivided or grouped into fixed one-dimensional or two-dimensional blocks [4]
- 1/417 • • • • using predictive or differential encoding [4]
- 1/419 • • • • in which encoding of the length of a succession of picture-elements of the same value along a scanning line is the only encoding step [4]
- 1/42 • Systems for two-way working
- 1/44 • Secrecy systems
- 1/46 • Colour picture communication systems
- 1/48 • • Picture signal generators (for halftone screening H04N 1/52) [6]
- 1/50 • • Picture reproducers (for halftone screening H04N 1/52) [6]
- 1/52 • • Circuits or arrangements for halftone screening [6]
- 1/54 • • Conversion of colour picture signals to a plurality of signals some of which represent particular mixed colours, e.g. for textile printing [6]
- 1/56 • • Processing of colour picture signals (H04N 1/52 takes precedence) [6]
- 1/58 • • • Edge or detail enhancement; Noise or error suppression, e.g. colour misregistration correction (H04N 1/62 takes precedence) [6]
- 1/60 • • • Colour correction or control [6]
- 1/62 • • • • Retouching, i.e. modification of isolated colours only or in isolated picture areas only [6]
- 1/64 • • Systems for the transmission or the storage of the colour picture signal; Details therefor, e.g. coding or decoding means therefor [6]
- 3/00 Scanning details of television systems; Combination thereof with generation of supply voltages [4]**
- 3/02 • by optical-mechanical means only (H04N 3/36 takes precedence) [2]
- 3/04 • • having a moving aperture
- 3/06 • • having a moving lens or other refractor
- 3/08 • • having a moving reflector
- 3/09 • • • for electromagnetic radiation in the invisible region, e.g. infra-red [4]
- 3/10 • by means not exclusively optical-mechanical (H04N 3/36 takes precedence; devices or arrangements for the electro-, magneto- or acousto-optical modulation or deflection of light beams G02F) [2]
- 3/12 • • by switched stationary formation of lamps, photocells, or light relays
- 3/14 • • by means of electrically scanned solid-state devices (for picture generation H04N 5/335)
- 3/16 • • by deflecting electron beam in cathode-ray tube
- 3/18 • • • Generation of supply voltages, in combination with electron beam deflecting [4]
- 3/185 • • • • Maintaining dc voltage constant [4]
- 3/19 • • • • Arrangements or assemblies in supply circuits for the purpose of withstanding high voltages [3]
- 3/20 • • • Prevention of damage to cathode-ray tubes in event of failure of scanning
- 3/22 • • • Circuits for controlling dimensions, shape or centering of picture on screen
- 3/223 • • • • Controlling dimensions (by maintaining the cathode-ray tube high voltage constant H04N 3/185) [4]

- 3/227 • • • • Centering [4]
- 3/23 • • • • Distortion correction, e.g. for pincushion distortion correction, S-correction [4]
- 3/233 • • • • • using active elements [4]
- 3/237 • • • • • using passive elements [4]
- 3/24 • • • • Blanking circuits
- 3/26 • • • • Modifications of scanning arrangements to improve focusing
- 3/27 • • • • Circuits special to multi-standard receivers [3, 4]
- 3/28 • • • producing multiple scanning, i.e. using more than one spot at the same time
- 3/30 • • • otherwise than with constant velocity or otherwise than in pattern formed by unidirectional, straight, substantially horizontal or vertical lines
- 3/32 • • • • Velocity varied in dependence upon picture information
- 3/34 • • • • Elemental scanning area oscillated rapidly in direction transverse to main scanning direction
- 3/36 • • Scanning of motion picture films, e.g. for telecine [2]
- 3/38 • • • with continuously moving film [4]
- 3/40 • • • with intermittently moving film [4]
- 5/00 **Details of television systems** (scanning details or combination thereof with generation of supply voltages H04N 3/00; specially adapted for colour television H04N 9/00; servers specially adapted for the distribution of content H04N 21/20; client devices specially adapted for the reception of or interaction with content H04N 21/40) [4, 2011.01]
- 5/04 • • Synchronising (for television systems using pulse code modulation H04N 7/24) [4]
- 5/05 • • • Synchronising circuits with arrangements for extending range of synchronisation, e.g. by using switching between several time constants [2]
- 5/06 • • • Generation of synchronising signals
- 5/067 • • • • Arrangements or circuits at the transmitter end [4]
- 5/073 • • • • • for mutually locking plural sources of synchronising signals, e.g. studios or relay stations [4]
- 5/08 • • • Separation of synchronising signals from picture signals
- 5/10 • • • • Separation of line synchronising signal from frame synchronising signal
- 5/12 • • • Devices in which the synchronising signals are only operative if a phase difference occurs between synchronising and synchronised scanning devices, e.g. flywheel synchronising [2]
- 5/14 • • Picture signal circuitry for video frequency region (H04N 5/222 takes precedence) [2]
- 5/16 • • • Circuitry for reinsertion of dc and slowly varying components of signal; Circuitry for preservation of black or white level
- 5/18 • • • • by means of "clamp" circuit operated by switching circuit
- 5/20 • • • Circuitry for controlling amplitude response
- 5/202 • • • • Gamma control [4]
- 5/205 • • • • for correcting amplitude versus frequency characteristic [4]
- 5/208 • • • • • for compensating for attenuation of high frequency components, e.g. crispening, aperture distortion correction [4]
- 5/21 • • • Circuitry for suppressing or minimising disturbance, e.g. moire, halo (suppression of noise in television recording H04N 5/911)
- 5/213 • • • • Circuitry for suppressing or minimising impulsive noise (H04N 5/217 takes precedence) [4]
- 5/217 • • • • *in picture signal generation (noise reduction or noise suppression involving solid-state image sensors H04N 5/357) [4, 2011.01]*
- 5/222 • • Studio circuitry; Studio devices; Studio equipment [4]
- 5/225 • • • Television cameras [4]
- 5/228 • • • • Circuit details for pick-up tubes [4]
- 5/232 • • • • Devices for controlling television cameras, e.g. remote control (H04N 5/235 takes precedence) [4]
- 5/235 • • • • Circuitry for compensating for variation in the brightness of the object [4]
- 5/238 • • • • • by influencing optical part of the camera [4]
- 5/243 • • • • • by influencing the picture signal [4]
- 5/247 • • • • Arrangement of television cameras [4]
- 5/253 • • • Picture signal generating by scanning motion picture films or slide opaques, e.g. for telecine (scanning details therefor H04N 3/36) [4]
- 5/257 • • • Picture signal generators using flying-spot scanners (H04N 5/253 takes precedence) [4]
- 5/262 • • • Studio circuits, e.g. for mixing, switching-over, change of character of image, other special effects [4]
- 5/265 • • • • Mixing [4]
- 5/268 • • • • Signal distribution or switching (for broadcasting H04H 20/00) [4]
- 5/272 • • • • Means for inserting a foreground image in a background image, i.e. inlay, outlay [4]
- 5/275 • • • • • Generation of keying signals [4]
- 5/278 • • • • Subtitling [4]
- 5/28 • • • Mobile studios
- 5/30 • • • Transforming light or analogous information into electric information (H04N 5/222 takes precedence; scanning details H04N 3/00) [2, 4, 7]
- 5/32 • • • Transforming X-rays
- 5/321 • • • • with video transmission of fluoroscopic images [5]
- 5/325 • • • • • Image enhancement, e.g. by subtraction techniques using polyenergetic X-rays [5]
- 5/33 • • • Transforming infra-red radiation [2]
- 5/335 • • • *using solid-state image sensors [SSIS] (H04N 5/32, H04N 5/33 take precedence) [4, 2011.01]*
- Note(s) [2011.01]**  
*In this group, at each hierarchical level, in the absence of an indication to the contrary, classification is made in the first appropriate place.*
- 5/341 • • • • *Extracting pixel data from an image sensor by controlling scanning circuits, e.g. by modifying the number of pixels having been sampled or to be sampled [2011.01]*
- 5/343 • • • • • *by switching between different modes of operation using different resolutions or aspect ratios, e.g. between still and video mode or between interlaced and non-interlaced mode [2011.01]*
- 5/345 • • • • • *by partially reading an SSIS array [2011.01]*
- 5/347 • • • • • *by combining or binning pixels in SSIS [2011.01]*
- 5/349 • • • • • *for increasing resolution by shifting the sensor relative to the scene [2011.01]*
- 5/351 • • • • • *Control of the SSIS depending on the scene, e.g. brightness or motion in the scene [2011.01]*

- 5/353 • • • • Control of the integration time [2011.01]
- 5/355 • • • • Control of the dynamic range [2011.01]
- 5/357 • • • • Noise processing, e.g. detecting, correcting, reducing or removing noise [2011.01]
- 5/359 • • • • applied to excess charges produced by the exposure, e.g. smear, blooming, ghost image, crosstalk or leakage between pixels [2011.01]
- 5/361 • • • • applied to dark current [2011.01]
- 5/363 • • • • applied to reset noise, e.g. KTC noise [2011.01]
- 5/365 • • • • applied to fixed-pattern noise, e.g. non-uniformity of response [2011.01]
- 5/367 • • • • applied to defects, e.g. non-responsive pixels [2011.01]
- 5/369 • • • • SSIS architecture; Circuitry associated therewith [2011.01]
- 5/372 • • • • Charge-coupled device [CCD] sensors; Time delay and integration [TDI] registers or shift registers specially adapted for SSIS [2011.01]
- 5/3722 • • • • using frame interline transfer [FIT] [2011.01]
- 5/3725 • • • • using frame transfer [FT] [2011.01]
- 5/3728 • • • • using interline transfer [IT] [2011.01]
- 5/374 • • • • Addressed sensors, e.g. MOS or CMOS sensors [2011.01]
- 5/3745 • • • • having additional components embedded within a pixel or connected to a group of pixels within a sensor matrix, e.g. memories, A/D converters, pixel amplifiers, shared circuits or shared components [2011.01]
- 5/376 • • • • Addressing circuits [2011.01]
- 5/378 • • • • Readout circuits, e.g. correlated double sampling [CDS] circuits, output amplifiers or A/D converters [2011.01]
- 5/38 • Transmitter circuitry (H04N 5/14 takes precedence) [4]
- 5/40 • • Modulation circuits
- 5/42 • • for transmitting at will black-and-white or colour signals
- 5/44 • Receiver circuitry (H04N 5/14 takes precedence) [4, 2011.01]
- 5/445 • • for displaying additional information (H04N 5/50 takes precedence) [4, 2011.01]
- 5/45 • • • Picture in picture [4, 2011.01]
- 5/455 • • Demodulation-circuits [4]
- 5/46 • • for receiving on more than one standard at will (deflecting circuits of multi-standard receivers H04N 3/27) [4]
- 5/50 • • Tuning indicators; Automatic tuning control [4]
- 5/52 • • Automatic gain control [4]
- 5/53 • • • Keyed automatic gain control [4]
- 5/54 • • • for positively-modulated picture signals (H04N 5/53 takes precedence) [4]
- 5/56 • • • for negatively-modulated picture signals (H04N 5/53 takes precedence) [4]
- 5/57 • • Control of contrast or brightness [4]
- 5/58 • • • in dependence upon ambient light [4]
- 5/59 • • • in dependence upon beam current of cathode ray tube [4]
- 5/60 • • for the sound signals
- 5/62 • • • Inter-carrier circuits, i.e. heterodyning sound and vision carriers
- 5/63 • • Generation or supply of power specially adapted for television receivers (generation of supply voltages in combination with electron beam deflecting H04N 3/18) [4]
- 5/64 • • Constructional details of receivers, e.g. cabinets, dust covers (furniture aspects A47B, e.g. A47B 81/06) [2]
- 5/645 • • Mounting of picture tube on chassis or in housing
- 5/65 • • Holding-devices for protective discs or for picture masks
- 5/655 • • Construction or mounting of chassis, e.g. for varying the elevation of the tube
- 5/66 • • Transforming electric information into light information (scanning details H04N 3/00)
- 5/68 • • Circuit details for cathode-ray display tubes
- 5/70 • • Circuit details for electroluminescent devices
- 5/72 • • Modifying the appearance of television pictures by optical filters or diffusing screens
- 5/74 • • Projection arrangements for image reproduction, e.g. using eidophor
- 5/76 • • Television signal recording [3, 4]
- 5/761 • • Systems for programming the time at which predetermined television channels will be selected for recording [7]
- 5/7613 • • • by using data entered by the user and a reference timing clock incorporated in the recorder [7]
- 5/7617 • • • by using data entered by the user and reference data transmitted by the broadcasting station [7]
- 5/765 • • Interface circuits between an apparatus for recording and another apparatus (associated working of recording or reproducing apparatus with a television camera or receiver in which the television signal is not significantly involved G11B 31/00) [6]
- 5/77 • • • between a recording apparatus and a television camera [6]
- 5/775 • • • between a recording apparatus and a television receiver [6]
- 5/78 • • using magnetic recording (H04N 5/91 takes precedence) [3]
- 5/781 • • • on discs or drums [3]
- 5/782 • • • on tape [3]
- 5/7822 • • • • with stationary magnetic heads [6]
- 5/7824 • • • • with rotating magnetic heads [6]
- 5/7826 • • • • involving helical scanning of the magnetic tape [6]
- 5/7828 • • • • involving transversal scanning of the magnetic tape [6]
- 5/783 • • • Adaptations for reproducing at a rate different from the recording rate [3]
- 5/784 • • • on a sheet [6]
- 5/80 • • using electrostatic recording (H04N 5/91 takes precedence) [3]
- 5/82 • • • using deformable thermoplastic recording medium
- 5/83 • • • • on discs or drums [3]
- 5/84 • • using optical recording (H04N 5/80, H04N 5/89, H04N 5/91 take precedence) [3, 4]
- 5/85 • • • on discs or drums [3]
- 5/87 • • • Producing a motion picture film from a television signal [3, 4]
- 5/89 • • using holographic recording (H04N 5/91 take precedence) [3]
- 5/90 • • • on discs or drums [3]
- 5/903 • • using variable electrical capacitive recording (H04N 5/91 takes precedence) [4]

- 5/907 • • using static stores, e.g. storage tubes, semiconductor memories (H04N 5/91 takes precedence; based on relative movement between record carrier and transducer H04N 5/78-H04N 5/903) [4]
- 5/91 • • • Television signal processing therefor (of colour signals H04N 9/79) [3]
- 5/911 • • • for the suppression of noise [6]
- 5/913 • • • for scrambling [6]
- 5/915 • • • for field- or frame-skip recording or reproducing [6]
- 5/917 • • • for bandwidth reduction (using pulse code modulation H04N 7/24) [6]
- 5/919 • • • • by dividing samples or signal segments, e.g. television lines, among a plurality of recording channels [6]
- 5/92 • • • Transformation of the television signal for recording, e.g. modulation, frequency changing; Inverse transformation for playback [3]
- 5/921 • • • • by recording or reproducing the baseband signal [6]
- 5/922 • • • • by modulation of the signal on a carrier wave, e.g. amplitude or frequency modulation [6]
- 5/923 • • • • using preemphasis of the signal before modulation and deemphasis of the signal after demodulation [6]
- 5/924 • • • • using duty cycle modulation [6]
- 5/926 • • • • by pulse code modulation (H04N 5/919 takes precedence) [6]
- 5/928 • • • • the sound signal being pulse code modulated and recorded in time division multiplex with the modulated video signal [6]
- 5/93 • • • Regeneration of the television signal or of selected parts thereof [3]
- 5/931 • • • • for restoring the level of the reproduced signal [6]
- 5/932 • • • • Regeneration of analogue synchronisation signals [6]
- 5/935 • • • • Regeneration of digital synchronisation signals [6]
- 5/937 • • • • by assembling picture element blocks in an intermediate store [6]
- 5/94 • • • • Signal drop-out compensation [3]
- 5/945 • • • • for signals recorded by pulse code modulation [6]
- 5/95 • • • • Time-base error compensation [3]
- 5/953 • • • • • by using an analogue memory, e.g. a CCD-shift register, the delay of which is controlled by a voltage controlled oscillator [6]
- 5/956 • • • • • by using a digital memory with independent write-in and read-out clock generators [6]
- 7/00 **Television systems** (details H04N 3/00, H04N 5/00, specially adapted for colour television H04N 11/00; stereoscopic television systems H04N 13/00; selective content distribution H04N 21/00) [4, 2011.01]
- 7/01 • Conversion of standards [4]
- 7/015 • High-definition television systems [6]
- 7/025 • Systems for transmission of digital non-picture data, e.g. of text during the active part of a television frame [6]
- 7/03 • • Subscription systems therefor [6]
- 7/035 • • Circuits for the digital non-picture data signal, e.g. for slicing of the data signal, for regeneration of the data-clock signal, for error detection or correction of the data signal [6]
- 7/04 • Systems for the transmission of one television signal, i.e. both picture and sound, by a single carrier [4]
- 7/045 • • the carrier being frequency modulated [6]
- 7/06 • Systems for the simultaneous transmission of one television signal, i.e. both picture and sound, by more than one carrier [4]
- 7/08 • Systems for the simultaneous or sequential transmission of more than one television signal, e.g. additional information signals, the signals occupying wholly or partially the same frequency band [4, 6]
- 7/081 • • the additional information signals being transmitted by means of a subcarrier [6]
- 7/083 • • with signal insertion during the vertical and the horizontal blanking interval [6]
- 7/084 • • with signal insertion during the horizontal blanking interval [6]
- 7/085 • • • the inserted signal being digital [6]
- 7/087 • • with signal insertion during the vertical blanking interval [4]
- 7/088 • • • the inserted signal being digital [6]
- 7/10 • Adaptations for transmission by electrical cable (H04N 7/12 takes precedence) [4]
- 7/12 • Systems in which the television signal is transmitted via one channel or a plurality of parallel channels, the bandwidth of each channel being less than the bandwidth of the television signal (H04N 7/24 takes precedence; high-definition television systems H04N 7/015) [4]
- 7/14 • Systems for two-way working (H04N 7/173 takes precedence) [4]
- 7/15 • • Conference systems (telephonic conference arrangements H04M 3/56) [5]
- 7/16 • *Analogue secrecy systems; Analogue subscription systems* [1, 2011.01]
- 7/167 • • *Systems rendering the television signal unintelligible and subsequently intelligible* [4, 2011.01]
- 7/169 • • • *Systems operating in the time domain of the television signal* [6, 2011.01]
- 7/171 • • • *Systems operating in the amplitude domain of the television signal* [6, 2011.01]
- 7/173 • • • *with two-way working, e.g. subscriber sending a programme selection signal* [4, 2011.01]
- 7/18 • Closed-circuit television systems, i.e. systems in which the signal is not broadcast
- 7/20 • Adaptations for transmission via a GHz frequency band, e.g. via satellite [4]
- 7/22 • Adaptations for optical transmission [4]
- 7/24 • *Systems for the transmission of television signals using pulse code modulation* (H04N 21/00 takes precedence) [6, 2011.01]
- 7/26 • • using bandwidth reduction (information reduction by code conversion in general H03M 7/30) [6]
- 7/28 • • • using vector coding [6]
- 7/30 • • • involving transform coding (H04N 7/50 takes precedence; digital computers for performing complex mathematical operations, e.g. domain transformation, G06F 17/14) [6]
- 7/32 • • • involving predictive coding (H04N 7/48, H04N 7/50 take precedence) [6]
- 7/34 • • • • using spatial prediction [6]
- 7/36 • • • • using temporal prediction [6]
- 7/38 • • • • involving delta modulation [6]

- 7/40 • • • • adaptive [6]
- 7/42 • • • • involving differential modulation [6]
- 7/44 • • • • adaptive [6]
- 7/46 • • • • using subsampling at the coder and sample restitution by interpolation at the coder or decoder [6]
- 7/48 • • • involving pulse code modulation and predictive coding [6]
- 7/50 • • • involving transform and predictive coding [6]
- 7/52 • • *Systems for transmission of a pulse code modulated with one or more other pulse code modulated signals, e.g. an audio signal or a synchronizing signal (assembling of a multiplex stream by combining a video stream with other content or additional data, remultiplexing of multiplex streams, insertion of stuffing bits into the multiplex stream, assembling of a packetised elementary stream at server side H04N 21/236; disassembling of a multiplex stream, remultiplexing of multiplex streams, extraction or processing of Service Information, disassembling of packetised elementary stream at client side H04N 21/434) [6, 2011.01]*
- 7/54 • • • the signals being synchronous [6]
- 7/56 • • • • Synchronising systems therefor [6]
- 7/64 • • Systems for detection or correction of transmission errors (coding, decoding or code conversion for error detection or error correction in general H03M 13/00) [6]
- 7/66 • • • using redundant codes [6]
- 7/68 • • • using error concealment [6]
- 9/00 Details of colour television systems [4]**
- 9/04 • Picture signal generators [4]
- 9/07 • • with one pick-up device only [2, 4]
- 9/077 • • • whereby the colour signals are characterised by their phase [4]
- 9/083 • • • whereby the colour signals are characterised by their frequency [4]
- 9/09 • • with more than one pick-up device [4]
- 9/093 • • • Systems for avoiding or correcting misregistration of video signals [4]
- 9/097 • • • Optical arrangements associated therewith, e.g. for beam-splitting, for colour correction [4]
- 9/10 • • using optical-mechanical scanning means only (H04N 9/11 takes precedence) [2, 4]
- 9/11 • • Scanning of colour motion picture films, e.g. for telecine [2, 4]
- 9/12 • Picture reproducers (H04N 9/11 takes precedence) [2, 4]
- 9/14 • • using optical-mechanical scanning means only [2, 4]
- 9/16 • • using cathode ray tubes (H04N 9/11 takes precedence) [2, 4]
- 9/18 • • • using separate electron beams for the primary colour signals (H04N 9/27 takes precedence) [2, 4]
- 9/20 • • • • with more than one beam in a tube [4]
- 9/22 • • • using the same beam for more than one primary colour information (H04N 9/27 takes precedence) [2, 4]
- 9/24 • • • • using means, integral with, or external to, the tube, for producing signal indicating instantaneous beam position [4]
- 9/26 • • • • using electron-optical colour selection means, e.g. line grid, deflection means in or near the gun or near the phosphor screen [4]
- 9/27 • • • with variable depth of penetration of electron beam into the luminescent layer, e.g. penitrons [2, 4]
- 9/28 • • • Arrangements for convergence or focusing [4]
- 9/285 • • • • using quadrupole lenses [4]
- 9/29 • • • using demagnetisation or compensation of external magnetic fields [2, 4]
- 9/30 • • using solid-state colour display devices [4]
- 9/31 • • Projection devices for colour picture display [2, 4]
- 9/43 • Conversion of monochrome picture signals to colour picture signals for colour picture display [4]
- 9/44 • Colour synchronisation [4]
- 9/45 • • Generation or recovery of colour sub-carriers [4]
- 9/455 • • Generation of colour burst signals; Insertion of colour burst signals in colour picture signals or separation of colour burst signals from colour picture signals (H04N 9/45 takes precedence) [4]
- 9/465 • • Synchronisation of the PAL-switch [4]
- 9/47 • • for sequential signals [2, 4]
- 9/475 • • for mutually locking different synchronisation sources [4]
- 9/64 • Circuits for processing colour signals (H04N 9/77 takes precedence) [4]
- 9/65 • • for synchronous modulators [4]
- 9/66 • • for synchronous demodulators [4]
- 9/67 • • for matrixing [4]
- 9/68 • • for controlling the amplitude of colour signals, e.g. automatic chroma control circuits (H04N 9/71, H04N 9/73 take precedence) [4]
- 9/69 • • • for modifying the colour signals by gamma correction [4]
- 9/70 • • for colour killing [4]
- 9/71 • • • combined with colour gain control [4]
- 9/72 • • for reinsertion of dc and slowly varying components of colour signals [4]
- 9/73 • • colour balance circuits, e.g. white balance circuits, colour temperature control [4]
- 9/74 • • for obtaining special effects (H04N 9/65-H04N 9/73 take precedence) [4]
- 9/75 • • • Chroma key [4]
- 9/76 • • • for mixing of colour signals (H04N 9/75 takes precedence) [4]
- 9/77 • Circuits for processing the brightness signal and the chrominance signal relative to each other, e.g. adjusting the phase of the brightness signal relative to the colour signal, correcting differential gain or differential phase (circuits for matrixing H04N 9/67) [4]
- 9/78 • • for separating the brightness signal or the chrominance signal from the colour television signal, e.g. using comb filter [4]
- 9/79 • Processing of colour television signals in connection with recording [4]
- 9/793 • • for controlling the level of the chrominance signal, e.g. by means of automatic chroma control circuits [6]
- 9/797 • • for recording the signal in a plurality of channels, the bandwidth of each channel being less than the bandwidth of the signal (H04N 9/804, H04N 9/81, H04N 9/82 take precedence) [6]
- 9/80 • • Transformation of the television signal for recording, e.g. modulation, frequency changing; Inverse transformation for playback [4]
- 9/802 • • • involving processing of the sound signal (H04N 9/806, H04N 9/835 take precedence) [6]
- 9/804 • • • involving pulse code modulation of the colour picture signal components [6]

- 9/806 • • • • with processing of the sound signal [6]
- 9/808 • • • involving pulse code modulation of the composite colour video-signal [6]
- 9/81 • • • • the individual colour picture signal components being recorded sequentially only [4]
- 9/815 • • • • the luminance signal and the sequential colour component signals being recorded in separate recording channels [6]
- 9/82 • • • • the individual colour picture signal components being recorded simultaneously only [4]
- 9/825 • • • • the luminance and chrominance signals being recorded in separate channels [6]
- 9/83 • • • • the recorded chrominance signal occupying a frequency band under the frequency band of the recorded brightness signal [4]
- 9/835 • • • • • involving processing of the sound signal [6]
- 9/84 • • • • • the recorded signal showing a feature, which is different in adjacent track parts, e.g. different phase or frequency [4]
- 9/85 • • • • • the recorded brightness signal occupying a frequency band totally overlapping the frequency band of the recorded chrominance signal, e.g. frequency interleaving [4]
- 9/86 • • • • the individual colour picture signal components being recorded sequentially and simultaneously, e.g. corresponding to SECAM-system [4]
- 9/87 • • • Regeneration of colour television signals (H04N 9/80 takes precedence) [4]
- 9/873 • • • • for restoring the colour component sequence of the reproduced signal [6]
- 9/877 • • • • by assembling picture element blocks in an intermediate memory [6]
- 9/88 • • • • Signal drop-out compensation [4]
- 9/882 • • • • • the signal being a composite colour television signal [6]
- 9/885 • • • • • • using a digital intermediate memory [6]
- 9/888 • • • • • for signals recorded by pulse code modulation [6]
- 9/89 • • • • Time-base error compensation [4]
- 9/893 • • • • • using an analogue memory, e.g. a CCD-shift register, the delay of which is controlled by a voltage controlled oscillator [6]
- 9/896 • • • • • using a digital memory with independent write-in and read-out clock generators [6]
- 9/898 • • • • • using frequency multiplication of the reproduced colour signal with another auxiliary reproduced signal, e.g. a pilot signal carrier [6]
- 11/00 Colour television systems** (details H04N 9/00; stereoscopic H04N 15/00) [4]
- 11/02 • • • with bandwidth reduction (H04N 11/04 takes precedence) [4]
- 11/04 • • • using pulse code modulation [4]
- 11/06 • • • Transmission systems characterised by the manner in which the individual colour picture signal components are combined [4]
- 11/08 • • • using sequential signals only (dot sequential systems H04N 11/12) [4]
- 11/10 • • • • in which colour signals are inserted in the blanking interval of brightness signal [4]
- 11/12 • • • using simultaneous signals only [4]
- 11/14 • • • • in which one signal, modulated in phase and amplitude, conveys colour information and a second signal conveys brightness information, e.g. NTSC-system [4]
- 11/16 • • • • the chrominance signal alternating in phase, e.g. PAL-system [4]
- 11/18 • • • using simultaneous and sequential signals, e.g. SECAM-system [4]
- 11/20 • • • Conversion of the manner in which the individual colour picture signal components are combined, e.g. conversion of colour television standards [4]
- 11/22 • • • • in which simultaneous signals are converted into sequential signals or *vice versa* [4]
- 11/24 • • High-definition television systems [6]
- 13/00 Stereoscopic television systems; Details thereof** (specially adapted for colour television H04N 15/00) [4]
- 13/02 • • Picture signal generators [4]
- 13/04 • • Picture reproducers [4]
- 15/00 Stereoscopic colour television systems; Details thereof** [4]
- 17/00 Diagnosis, testing or measuring for television systems or their details** [4]
- 17/02 • • for colour television signals [4]
- 17/04 • • for receivers [4]
- 17/06 • • for recorders [4]
- 21/00 Selective content distribution, e.g. interactive television, VOD [Video On Demand]** (broadcast communication H04H; arrangements, apparatus, circuits or systems for communication control or processing being characterised by a protocol H04L 29/06; real-time bi-directional transmission of motion video data H04N 7/14) [2011.01]
- Note(s) [2011.01]**
- 1. *This group covers:*
  - *interactive video distribution processes, systems, or elements thereof, which are characterised by point-to-multipoint system configurations, and which are mainly used for motion video data unidirectional distribution or delivery resulting from interactions between systems operators, e.g. access or service providers, or users e.g. subscribers, and system elements.*
  - *such systems include dedicated communication systems, such as television distribution systems, which primarily distribute or deliver motion video data in the manner indicated, which may, in addition, provide a framework for further, diverse data communications or services in either unidirectional or bi-directional form. However, video will occupy most of the downlink bandwidth in the distribution process.*
  - *typically, system operators interface with transmitter-side elements or users' interface with receiver-side elements in order to facilitate, through interaction with such elements, the dynamic control of data processing or data flow at various points in the system. This interaction is typically occasional or intermittent in nature.*



- 21/262 • • • Content or additional data distribution scheduling, e.g. sending additional data at off-peak times, updating software modules, calculating the carousel transmission frequency, delaying a video stream transmission or generating play-lists **[2011.01]**
- 21/266 • • • Channel or content management, e.g. generation and management of keys and entitlement messages in a conditional access system or merging a VOD unicast channel into a multicast channel **[2011.01]**
- 21/2662 • • • Controlling the complexity of the video stream, e.g. by scaling the resolution or bitrate of the video stream based on the client capabilities **[2011.01]**
- 21/2665 • • • Gathering content from different sources, e.g. Internet and satellite **[2011.01]**
- 21/2668 • • • Creating a channel for a dedicated end-user group, e.g. by inserting targeted commercials into a video stream based on end-user profiles **[2011.01]**
- 21/27 • • Server based end-user applications **[2011.01]**
- 21/274 • • • Storing end-user specific content or additional data in response to end-user request **[2011.01]**
- 21/2743 • • • Video hosting of uploaded data from client **[2011.01]**
- 21/2747 • • • Remote storage of video programs received via the downstream path, e.g. from the server **[2011.01]**
- 21/278 • • • Content descriptor database or directory service for end-user access **[2011.01]**
- 21/40 • Client devices specifically adapted for the reception of, or interaction with, content, e.g. STB [set-top-box]; Operations thereof **[2011.01]**
- 21/41 • • Structure of client; Structure of client peripherals **[2011.01]**
- 21/414 • • • Specialised client platforms, e.g. receiver in car or embedded in a mobile appliance **[2011.01]**
- 21/4143 • • • PC [Personal Computer] **[2011.01]**
- 21/4147 • • • PVR [Personal Video Recorder] (H04N 5/76 takes precedence) **[2011.01]**
- 21/418 • • • External card to be used in combination with the client device, e.g. for conditional access **[2011.01]**
- 21/4185 • • • for payment **[2011.01]**
- 21/422 • • • Input-only peripherals, e.g. GPS [Global Positioning System] (input arrangements or combined input and output arrangements for interaction between user and computer G06F 3/01) **[2011.01]**
- 21/4223 • • • Cameras (H04N 5/225 takes precedence) **[2011.01]**
- 21/4227 • • • Remote input by a user located remotely from the client device, e.g. at work **[2011.01]**
- 21/426 • • • Internal components of the client (H04N 5/44 takes precedence) **[2011.01]**
- 21/43 • • Processing of content or additional data, e.g. demultiplexing additional data from a digital video stream; Elementary client operations, e.g. monitoring of home network or synchronizing decoder's clock; Client middleware **[2011.01]**
- 21/431 • • • Generation of visual interfaces; Content or additional data rendering (receiver circuitry for displaying additional information H04N 5/445) **[2011.01]**
- 21/432 • • • Content retrieval operation from a local storage medium, e.g. hard-disk **[2011.01]**
- 21/433 • • • Content storage operation, e.g. storage operation in response to a pause request or caching operations **[2011.01]**
- 21/4335 • • • Housekeeping operations, e.g. prioritizing content for deletion because of storage space restrictions **[2011.01]**
- 21/434 • • • Disassembling of a multiplex stream, e.g. demultiplexing audio and video streams or extraction of additional data from a video stream; Remultiplexing of multiplex streams; Extraction or processing of SI; Disassembling of packetised elementary stream **[2011.01]**
- 21/435 • • • Processing of additional data, e.g. decrypting of additional data or reconstructing software from modules extracted from the transport stream **[2011.01]**
- 21/436 • • • Interfacing a local distribution network, e.g. communicating with another STB or inside the home **[2011.01]**
- 21/4363 • • • Adapting the video stream to a specific local network, e.g. a IEEE 1394 or Bluetooth network **[2011.01]**
- 21/4367 • • • Establishing a secure communication between the client and a peripheral device or smart card (arrangements for secret or secure communication H04L 9/00; security arrangements for protecting computers or computer systems against unauthorised activity G06F 21/00) **[2011.01]**
- 21/437 • • • Interfacing the upstream path of the transmission network, e.g. for transmitting client requests to a VOD server **[2011.01]**
- 21/438 • • • Interfacing the downstream path of the transmission network originating from a server, e.g. retrieving MPEG packets from an IP network **[2011.01]**
- 21/4385 • • • Multiplex stream processing, e.g. multiplex stream decrypting **[2011.01]**
- 21/439 • • • Processing of audio elementary streams **[2011.01]**
- 21/44 • • • Processing of video elementary streams, e.g. splicing a video clip retrieved from local storage with an incoming video stream or rendering scenes according to MPEG-4 scene graphs **[2011.01]**
- 21/4402 • • • involving reformatting operations of video signals for household redistribution, storage or real-time display **[2011.01]**
- 21/4405 • • • involving video stream decryption (arrangements for secret or secure communication H04L 9/00) **[2011.01]**
- 21/4408 • • • involving video stream encryption, e.g. re-encrypting a decrypted video stream for redistribution in a home network (arrangements for secret or secure communication H04L 9/00) **[2011.01]**
- 21/441 • • • Acquiring end-user identification **[2011.01]**
- 21/4415 • • • using biometric characteristics of the user, e.g. by voice recognition or fingerprint scanning **[2011.01]**
- 21/442 • • • Monitoring of processes or resources, e.g. detecting the failure of a recording device, monitoring the downstream bandwidth, the number of times a movie has been viewed or the storage space available from the internal hard disk **[2011.01]**

- 21/4425 • • • • Monitoring of client processing errors or hardware failure (monitoring in electrical digital data processing G06F 11/00) **[2011.01]**
- 21/443 • • • • OS processes, e.g. booting a STB, implementing a Java virtual machine in a STB or power management in a STB (arrangements for program loading or initiating G06F 9/445) **[2011.01]**
- 21/45 • • • • Management operations performed by the client for facilitating the reception of or the interaction with the content or administrating data related to the end-user or to the client device itself, e.g. learning user preferences for recommending movies or resolving scheduling conflicts **[2011.01]**
- 21/454 • • • • Content filtering, e.g. blocking advertisements **[2011.01]**
- 21/4545 • • • • Input to filtering algorithms, e.g. filtering a region of the image **[2011.01]**
- 21/458 • • • • Scheduling content for creating a personalised stream, e.g. by combining a locally stored advertisement with an incoming stream; Updating operations, e.g. for OS modules **[2011.01]**
- 21/462 • • • • Content or additional data management e.g. creating a master electronic program guide from data received from the Internet and a Head-end or controlling the complexity of a video stream by scaling the resolution or bit-rate based on the client capabilities **[2011.01]**
- 21/4623 • • • • Processing of entitlement messages, e.g. ECM [Entitlement Control Message] or EMM [Entitlement Management Message] **[2011.01]**
- 21/4627 • • • • Rights management **[2011.01]**
- 21/466 • • • • Learning process for intelligent management, e.g. learning user preferences for recommending movies **[2011.01]**
- 21/47 • • • • End-user applications (interaction techniques for graphical user interfaces G06F 3/048; receiver circuitry for displaying additional information H04N 5/445) **[2011.01]**
- 21/472 • • • • End-user interface for requesting content, additional data or services; End-user interface for interacting with content, e.g. for content reservation or setting reminders, for requesting event notification or for manipulating displayed content **[2011.01]**
- 21/4722 • • • • for requesting additional data associated with the content **[2011.01]**
- 21/4725 • • • • using interactive regions of the image, e.g. hot spots **[2011.01]**
- 21/4728 • • • • for selecting a ROI [Region Of Interest], e.g. for requesting a higher resolution version of a selected region **[2011.01]**
- 21/475 • • • • End-user interface for inputting end-user data, e.g. PIN [Personal Identification Number] or preference data **[2011.01]**
- 21/478 • • • • Supplemental services, e.g. displaying phone caller identification or shopping application **[2011.01]**
- 21/4782 • • • • Web browsing **[2011.01]**
- 21/4784 • • • • receiving rewards **[2011.01]**
- 21/4786 • • • • e-mailing **[2011.01]**
- 21/4788 • • • • communicating with other users, e.g. chatting **[2011.01]**
- 21/482 • • • • End-user interface for program selection **[2011.01]**
- 21/485 • • • • End-user interface for client configuration **[2011.01]**
- 21/488 • • • • Data services, e.g. news ticker **[2011.01]**
- 21/60 • • • • Network structure or processes for video distribution between server and client or between remote clients (data switching networks H04L 12/00; wireless communication networks H04W); Control signaling between clients, server and network components; Transmission of management data between server and client; Communication details between server and client **[2011.01]**
- 21/61 • • • • Network physical structure; Signal processing (H04B takes precedence) **[2011.01]**
- 21/63 • • • • Control signaling between client, server and network components; Network processes for video distribution between server and clients, e.g. transmitting basic layer and enhancement layers over different transmission paths, setting up a peer-to-peer communication via Internet between remote STB's; Communication protocols; Addressing **[2011.01]**
- 21/633 • • • • Control signals issued by server directed to the network components or client **[2011.01]**
- 21/6332 • • • • directed to client **[2011.01]**
- 21/6334 • • • • for authorization, e.g. by transmitting a key (arrangements for secret or secure communication H04L 9/00) **[2011.01]**
- 21/6336 • • • • directed to decoder **[2011.01]**
- 21/6338 • • • • directed to network **[2011.01]**
- 21/637 • • • • Control signals issued by the client directed to the server or network components **[2011.01]**
- 21/6371 • • • • directed to network **[2011.01]**
- 21/6373 • • • • for rate control **[2011.01]**
- 21/6375 • • • • for requesting retransmission **[2011.01]**
- 21/6377 • • • • directed to server **[2011.01]**
- 21/6379 • • • • directed to encoder **[2011.01]**
- 21/64 • • • • Addressing **[2011.01]**
- 21/6402 • • • • Address allocation for clients **[2011.01]**
- 21/6405 • • • • Multicasting **[2011.01]**
- 21/6408 • • • • Unicasting **[2011.01]**
- 21/643 • • • • Communication protocols **[2011.01]**
- 21/6433 • • • • DSM-CC [Digital Storage Media - Command and Control Protocol] **[2011.01]**
- 21/6437 • • • • RTP [Real-time Transport Protocol] **[2011.01]**
- 21/647 • • • • Control signaling between network components and server or clients; Network processes for video distribution between server and clients, e.g. controlling the quality of the video stream, by dropping packets, protecting content from unauthorised alteration within the network, monitoring of network load or bridging between two different networks, e.g. between IP and wireless **[2011.01]**
- 21/65 • • • • Transmission of management data between client and server **[2011.01]**
- 21/654 • • • • Transmission by server directed to the client **[2011.01]**
- 21/6543 • • • • for forcing some client operations, e.g. recording **[2011.01]**
- 21/6547 • • • • comprising parameters, e.g. for client setup **[2011.01]**
- 21/658 • • • • Transmission by the client directed to the server **[2011.01]**
- 21/6583 • • • • Acknowledgement **[2011.01]**
- 21/6587 • • • • Control parameters, e.g. trick play commands or viewpoint selection **[2011.01]**

- 21/80 • Generation or processing of content or additional data by content creator independently of the distribution process; Content *per se* [2011.01]
- 21/81 • • Monomedia components thereof [2011.01]
- 21/83 • • Generation or processing of protective or descriptive data associated with content; Content structuring [2011.01]
- 21/835 • • • Generation of protective data, e.g. certificates [2011.01]
- 21/8352 • • • • involving content or source identification data, e.g. UMID [Unique Material Identifier] [2011.01]
- 21/8355 • • • • involving usage data, e.g. number of copies or viewings allowed [2011.01]
- 21/8358 • • • • involving watermark [2011.01]
- 21/84 • • • Generation or processing of descriptive data, e.g. content descriptors [2011.01]
- 21/8405 • • • • represented by keywords [2011.01]
- 21/845 • • • Structuring of content, e.g. decomposing content into time segments [2011.01]
- 21/85 • • Assembly of content; Generation of multimedia applications [2011.01]
- 21/854 • • • • Content authoring [2011.01]
- 21/8541 • • • • involving branching, e.g. to different story endings [2011.01]
- 21/8543 • • • • using a description language, e.g. MHEG [Multimedia and Hypermedia information coding Expert Group] or XML [eXtensible Markup Language] [2011.01]
- 21/8545 • • • • for generating interactive applications [2011.01]
- 21/8547 • • • • involving timestamps for synchronizing content [2011.01]
- 21/8549 • • • • Creating video summaries, e.g. movie trailer [2011.01]
- 21/858 • • • Linking data to content, e.g. by linking an URL to a video object or by creating a hotspot [2011.01]
- Indexing scheme associated with groups H04N 1/00-H04N 17/00, relating to still video cameras. [6]**
- 101/00 Still video cameras [6]**