CLASS 375, PULSE OR DIGITAL COMMUNICATIONS

SECTION I - CLASS DEFINITION

GENERAL STATEMENT OF THE CLASS SUBJECT MATTER

This is the generic class for pulse or digital communication systems using electrical or electromagnetic signals. Such communication includes transmitting an intelligence bearing signal from one point to another in the form of discrete variations in some parameter of the electrical or electromagnetic signal.

SECTION II - LINES WITH OTHER CLASSES AND WITHIN THIS CLASS

Telegraph and printing telegraph systems which include transmission or reception of a carrier are classified in Class 375 except for those systems specifically provided elsewhere, such as a spark gap and a coherer. See References to Other Classes, below.

A carrier which is modulated by a continuously variable (analog) signal is classified elsewhere (See References to Other Classes, below). A device which is convertible from analog to pulse or digital may have a time related parameter (e.g., pulse width, or repetition rate) continuously variable and be classified herein.

Light Wave Communication is classified elsewhere (See References to Other Classes, below), regardless of the type of modulation.

Duplexing or Multiplexing systems which utilize pulse or digital information signals are classified elsewhere (See References to Other Classes, below).

Code converters which may be utilized in a pulse or digital communication system, are classified elsewhere (See References to Other Classes, below).

Addressing of a particular pulse receiver is classified elsewhere (See References to Other Classes, below).

The combination of the subject matter of this class (375) and another art environment is generally classified with the other art environment where that environment is significant by virtue of the claimed relationship. For example: Error checking systems; Electroacoustic geophysical systems; Dynamic Magnetic Information Storage or Retrieval; Radar systems; Directive systems; Telemetering systems; Television. See References to Other Classes, below.

Significantly claimed pulse or digital communication handling techniques in combination with the subject matter of 700, Data Processing: Generic Control Systems or Specific Applications; 701, Data Processing: Vehicles, Navigation, and Relative Location; 702, Data Processing: Measuring, Calibrating, or Testing; 703, Data Processing: Structural Design, Modeling, Simulation, and Emulation; 704, Data Processing: Speech Signal Processing, Linguistics, Language Translation, and Audio Compression/Decompression; 705, Data Processing: Financial, Business Practice, Management, or Cost/Price Determination; 706, Data Processing: Artificial Intelligence; 707, Data Processing: Database and File Management or Data Structures, or Document Processing; 708, Electrical Computers: Arithmetic Processing and Calculating; 709, Electrical Computers and Digital Processing Systems: Multicomputer Data Transferring; 710, Electrical Computers and Digital Data Processing Systems: Input/Output; 711, Electrical Computers and Digital Processing Systems: Memory; 712, Electrical Computers and Digital Processing Systems: Processing Architectures and Instruction Processing (e.g., Processors); 713, Electrical Computers and Digital Processing Systems: Support; 714, Error Detection/Correction and Fault Detection/Recovery; 716, Data Processing: Design and Analysis of Circuit or Semiconductor Mask; or 717, Data Processing: Software Development, Installation, and Management, are classified in these external classes.

Remote control of a transmitter and/or receiver is classified herein; however, the remote control of a device external to a communication system is classified elsewhere. Remote control of an external device by light wave communications is classified elsewhere. See References to Other Classes, below.

Electrical circuits or devices which may use pulse or digital handling techniques, but are not unique to communications, are classified in the appropriate classes. For example: Pulse characteristic discriminating, comparing or selecting. Pulse responsive selective systems; Pulse demodulation, per se; Pulse modulation converters to FM; Pulse modulation, per se; Pulse generating oscillator; pulse counting circuits and systems; Pulse counters and dividers; Pulse shaping or converting; Digital comparator systems; Data conversion. See References to Other Classes, below.

Digital television bandwidth reduction or expansion system is classified in Class 375, subclasses 240.01-

240.29; analog television bandwidth reduction or expansion is classified with the television art. See References to Other Classes, below.

SECTION III - REFERENCES TO OTHER CLASSES

SEE OR SEARCH CLASS:

178,　　Telegraphy, appropriate subclasses for noncarrier wave telegraphic signalling. subclass 116 for a spark gap; subclass 117 for a coherer.

181,　　Acoustics, is the generic class for inventions directed to mechanical sound wave radiations, transmission, or reception.

235,　　Registers, for data conversion.

250,　　Radiant Energy, subclasses 200+ provide for photoelectric cell circuits.

318,　　Electricity: Motive Power Systems, subclasses 560+ for pulse controlled servo systems.

324,　　Electricity: Measuring and Testing, subclasses 76.12+ for analysis of complex waves; subclasses 76.39+ for measuring the repetition rate of pulses; and subclasses 76.77+ for the phase comparison of pulse voltages.

327,　　Miscellaneous Active Electrical Nonlinear Devices, Circuits, and Systems, subclasses 1+ for pulse characteristic discriminating or selecting and subclasses 100+ for miscellaneous pulse characteristic control.

329,　　Demodulators, subclasses 311+ for pulse demodulators, per se.

331,　　Oscillators, appropriate subclasses for pulsed or pulse generating oscillators.

332,　　Modulators, subclasses 106+ for pulse modulators, per se; subclass 183, for pulse modulation, per se and for pulse modulation converters to FM.

340,　　Communications: Electrical, subclasses 9.1 through 9.17 for addressing of a particular pulse receiver; subclasses 12.1 through 13.38 for pulse responsive selective actuation systems, especially subclasses 12.22-12.55 for remote control of a device external to a communication system (e.g., model airplane, etc.); subclass 146.2 for digital comparator systems; subclasses 870.01-870.44 for telemetering systems; and subclasses 870.18-870.24 for pulse modulated telemetering systems.

341,　　Coded Data Generation or Conversion, for code transmission, generation or conversion, including code converters which may be utilized in a pulse or digital communication system.

342,　　Communicatiions: Directive Radio Wave Systems and Devices, subclasses 5+ for radar systems.

348,　　Television, subclasses 471 and 472 and subclasses 488-494 for color television systems utilizing pulse modulation and having receivers to detect same, subclasses 384.1-440.1 for analog bandwidth reduction systems, and subclasses 725-738 for noncolor television receivers.

358,　　Facsimile and Static Presentation Processing, subclasses 426.01 through 426.16 in facsimile systems for circuitry peculiar to the receiver.

360,　　Dynamic Magnetic Information Storage or Retrieval, subclasses 39+ for general processing of digital signals in a magnetic recording system.

361,　　Electricity: Electrical Systems and Devices, subclasses 166+ for plural pulse responsive relays sequentially operated.

365,　　Static Information Storage and Retrieval, subclasses 189.011+ and 230.01+ for a read/write or addressing circuit which uses pulse signals in a static storage system.

367,　　Communications, Electrical: Acoustic Wave Systems and Devices, appropriate subclass for the communication of information in the form of traveling stresses in an elastic medium; subclasses 14+ for electroacoustic geophysical systems.

370,　　Multiplex Communications, subclasses 320, 335, 342, 441, and 479 for code division multiplexing with spread spectrum techniques.

377,　　Electrical Pulse Counters, Pulse Dividers, or Shift Registers: Circuits and Systems, for pulse counters and dividers.

380,　　Cryptography, subclasses 255 through 276 for a communication system using cryptography.

398,　　Optical Communications, various subclasses for light wave communication; subclasses 106 through 114 for remote control of an external device by light wave communications.

455,　　Telecommunications, for a carrier which is modulated by a continuously variable (analog) signal. however, simultaneous transmission of independent analog and pulse or digital information bearing signals is classified elsewhere.

709,　　Electrical Computers and Digital Data Processing Systems: Multicomputer Data Transferring, appropriate subclasses for data transferring among multiple computer systems.

710, Electrical Computers and Digital Data Processing Systems: Input/Output, subclasses 1 through 74 for Input/Output data processing involving peripherals and digital data processing systems.

714, Error Detection/Correction and Fault Detection/Recovery, appropriate subclasses for generic error checking of digital devices.

SECTION IV - GLOSSARY

COMMUNICATIONS

The transmission of information from one point to another.

DIGITAL

Of or pertaining to the class of devices or circuits in which the output varies in discrete steps (i.e., pulses or "on-off" operation).

PULSE

A variation of a voltage or current normally having a constant value. This variation is characterized by a rise and a decay approaching infinitesimal duration.

SUBCLASSES

130 SPREAD SPECTRUM:
This subclass is indented under the class definition. Subject matter utilizing a data modulated signal which has its energy spread over a transmitted bandwidth which is much greater than the bandwidth or rate of information being sent.

(1) Note. Four general types of modulation that are in the spread spectrum variety:

(a) Modulation of a carrier by a data modulation signal whose bit rate is much higher than the maximum possible repetition rate of the pulses or discrete steps. Such systems are called "direct sequence" modulated systems.

(b) Carrier frequency shifting in discrete increments in a pattern dictated by a code sequence. These are called "frequency hoppers." The transmitter jumps from frequency to frequency within some predetermined set; the order of frequency usage is determined by a code sequence.

(c) Pulse-FM or "chirp" modulation, in which a carrier is swept over a wideband during a given pulse interval.

(d) Ultra-wideband or ultra-short pulse modulation, in which information is transmitted using extremely short-duration signals.

(2) Note. Wideband FM (or FSK) is not classified here, see search this class, subclass below.

(3) Note. Closely akin to the frequency hoppers are "time hopping" and "time-frequency hopping" systems, whose chief distinguishing feature is that their time of transmission (usually of low duty cycle and short duration) is governed by a code sequence. In time-frequency hoppers it follows that the code sequence determines both the transmitted frequency and the time of transmission.

(4) Note. Spread-spectrum multiple-access systems are not classified here, see search class below.

(5) Note. Chirp signal processing techniques (e.g., chirp z-transforms) are not classified here unless they are specifically used in spread-spectrum communications.

SEE OR SEARCH THIS CLASS, SUBCLASS:
260, for systems transmitting a single message over multiple channels, including orthogonal frequency division multiplexing (also known as multicarrier modulation or discrete multitone modulation).
272 through 278, 303-307 and 334-337, for wideband FM (or FSK).
285, 296 and 346-351,for noise or distortion reduction which may include related subject matter.
343, for correlative or matched-filter-type receivers, which may include related or overlapping subject matter.

367,   for synchronization (bit, symbol, epoch, frame, etc.) using pseudo-noise as a synchronization word.

SEE OR SEARCH CLASS:

327,   Miscellaneous Active Electrical Non-linear Devices, Circuits and Systems, subclass 164, for hardware-based pseudo-random signal generators.

342,   Communications: Directive Radio Wave Systems and Devices, for subject matter relating to radar, navigation and direction-finding systems using spread-spectrum signaling.

370,   Multiplex Communications, subclasses 203, 208, 209, 320, 335, 342, 441 and 479, for spread spectrum multiple access systems.

380,   Cryptography, subclasses 200 through 251 and 255-53, for subject matter involving electric signal modification, including enciphering using pseudo-random codes, or using plural shifting frequencies, et al.

455,   Telecommunications, subclasses 42 through 45 , 110-113 and subclasses 205-216, for wideband FM, subclasses 422.1-466 and subclasses 507-526, for subject matter relating to zoned or cellular communication systems.

701,   Data Processing: Vehicles, Navigation and Relative Location, subclasses 400 through 541 for subject matter relating to navigation systems using spread-spectrum signaling.

708,   Electrical Computers: Arithmetic Processing and Calculating, subclasses 250 through 256, 314, and 422-426, respectively, for random number or sequence generation, matched filtering and correlators implemented in the types of systems found in this class. Chirp signal processing techniques per se are classified in subclasses 400-410.

131   Hybrid form:
This subclass is indented under subclass130. Subject matter wherein the spread spectrum signals are made up of at least two different spread spectrum techniques.

(1)   Note. Examples of hybrid forms may include: (a) simultaneous frequency hopping and direct sequence modulations, (b) simultaneous time and frequency hopping, or (c) simultaneous time-hopping and direct sequence modulations.

132   Frequency hopping:
This subclass is indented under subclass 130. Subject matter including a system in which the wide band signal is generated by jumping from one frequency to another over multiple number of frequency choices.

133   End-to-end transmission system:
This subclass is indented under subclass 132. Subject matter comprising at least two stations where signals are transmitted and received between stations.

134   Having specific code acquisition or tracking:
This subclass is indented under subclass 133. Subject matter comprising synchronization of hopping patterns used in signal transmission.

135   Transmitter:
This subclass is indented under subclass 132. Subject matter comprising formation and sending of signals.

136   Receiver:
This subclass is indented under subclass 132. Subject matter comprising recovery, demodulation and decoding of signals.

137   Having specific code acquisition or tracking:
This subclass is indented under subclass 136. Subject matter comprising synchronization of hopping patterns used in signal transmission.

138   Time hopping:
This subclass is indented under subclass 130. Subject matter including a system wherein waveforms are transmitted at times which are selected from among a plurality of time slots, with the selection of time slot being pseudo-random, if desired.

139   Chirp:
This subclass is indented under subclass 130. Subject matter including a signal format in which a pulsed carrier is transmitted and is var-

ied continuously in frequency in a known way during the transmission of a given pulse.

140   Direct sequence:
This subclass is indented under subclass 130. Subject matter including a form of modulation wherein a code sequence is used to directly modulate a carrier, usually by some form of phase-shift keying.

141   End-to-end transmission system:
This subclass is indented under subclass 140. Subject matter comprising at least two stations where signals are transmitted and received between stations.

142   Having correlation-type receiver:
This subclass is indented under subclass 141. Subject matter in which transmitted signals are recovered using a structure or method that compares a transmitted spreading code sequence with a local spreading code sequence, generally by multiplicative means.

143   Having matched-filter-type receiver:
This subclass is indented under subclass 141. Subject matter in which transmitted signals are recovered using a structure or method that is designed to pass only the specific transmitted signal (i.e., spreading code), that is matched to the spreading code used to transmit the signal.

144   Having multi-receiver or interference cancellation:
This subclass is indented under subclass 141. Subject matter in which transmitted signals are recovered using a structure or method that either recovers multiple simultaneously-transmitted signals or recovers a transmitted signal and rejects spurious signals.

145   Having specific signaling for code synchronization:
This subclass is indented under subclass 141. Subject matter in which methods, involving the transmission of specific types of patterns or waveforms, are used to insure that proper spreading sequence timing is used at the receiver.

146   Transmitter:
This subclass is indented under subclass 140. Subject matter comprising formation and sending of signals.

147   Receiver:
This subclass is indented under subclass 140. Subject matter comprising recovery, demodulation and decoding of signals.

148   Multi-receiver or interference cancellation:
This subclass is indented under subclass 147. Subject matter in which transmitted signals are recovered using a structure or method that either recovers multiple simultaneously-transmitted signals or recovers a transmitted signal and rejects spurious signals.

149   Having specific code synchronization:
This subclass is indented under subclass 147. Subject matter comprising acquisition or tracking of spreading sequences.

150   Correlation-type receiver:
This subclass is indented under subclass 147. Subject matter in which transmitted signals are recovered using a structure or method that compares a transmitted spreading code sequence with a local spreading code sequence, generally by multiplicative means.

151   Having SAW or charge-transfer device:
This subclass is indented under subclass 150. Subject matter in which the receiver is implemented using at least one surface acoustic wave or charge-transfer (e.g., CCD) structure.

SEE OR SEARCH CLASS:
333,   Wave Transmission Lines and Networks, subclasses 150 through 155 and 193-196 for SAW devices.

152   Matched-filter-type receiver:
This subclass is indented under subclass 147. Subject matter in which transmitted signals are recovered using a structure or method that is designed to pass only the specific transmitted signal (i.e., spreading code), that is, it is a matched to the spreading code used to transmit the signal.

153   Having SAW or charge-transfer device:
This subclass is indented under subclass 152. Subject matter in which the receiver is implemented using at least one surface acoustic wave or charge-transfer (e.g., CCD) structure.

SEE OR SEARCH CLASS:
333, Wave Transmission Lines and Networks, subclasses 150 through 155 and 193-196 for SAW devices.

211 REPEATERS:
This subclass is indented under the class definition. Subject matter including apparatus wherein a pulse signal is received and retransmitted usually at a higher energy level.

SEE OR SEARCH CLASS:
178, Telegraphy, subclasses 70+ for telegraph repeaters.
370, Multiplex Communications, subclasses 279 and 293 for wireless and wired duplex repeaters respectively, subclass 315 for a wireless multiplex repeater, subclass 492 for a frequency division multiplexing repeater, and subclass 501 for a time division multiplexing repeater.
379, Telephonic Communications, subclasses 338+ for telephone repeaters.
455, Telecommunications, subclasses 7+ for modulated carrier wave repeaters.

212 Ring or star configuration:
This subclass is indented under subclass 211. Subject matter wherein the repeaters are formed in a loop or a star communication link.

213 Testing:
This subclass is indented under subclass 211. Subject matter for testing a pulse or digital signal repeater.

SEE OR SEARCH THIS CLASS, SUBCLASS:
224+, for other testing of pulse or digital communication equipment.

214 Including pulse regeneration or conversion:
This subclass is indented under subclass 211. Subject matter including conversion (e.g., multilevel to binary or parallel-serial-parallel) or where signal pulses are regenerated as regards shape and instant of occurrence.

SEE OR SEARCH CLASS:
178, Telegraphy, subclasses 70+ for telegraph repeaters.

327, Miscellaneous Active Electrical Nonlinear Devices, Circuits, and Systems, subclasses 165+ for miscellaneous rectangular or clock waveform regeneration and subclass 317 for distortion by limiting or clipping.
341, Coded Data Generation or Conversion, appropriate subclasses for code converters, per se.

215 Phase locked loop:
This subclass is indented under subclass 214. Subject matter having a closed-loop electronic servomechanism the output of which locks onto and tracks a received clock signal to provide the frequency and phase aligned receiver clock.

216 APPARATUS CONVERTIBLE TO ANALOG:
This subclass is indented under the class definition. Subject matter wherein the transmission system, transmitter, or receiver may be altered to alternately send either digital or analog information.

(1) Note. Systems or elements that simultaneously convey analog and digital information are not in this class but in Class 370, Multiplex. Systems wherein the digital data is the address signal for the analog message are not here but in Class 340, subclasses 7.2-7.63.

217 Muting circuit and squelch:
This subclass is indented under subclass 216. Subject matter including a means to automatically quiet the receiver by reducing its gain in response to a specified characteristic of the input digital signal.

218 EARTH OR WATER MEDIUM:
This subclass is indented under the class definition. Subject matter where the ground or water supplies the natural medium for the transmission of pulse or digital signals.

(1) Note. The subject matter of this subclass has a specific underground or underwater structure at each station.

SEE OR SEARCH CLASS:

343,   Communications: Radio Wave Antennas, subclass 719 for antenna systems buried underground or submerged underwater.

367,   Communications, Electrical: Acoustic Wave Systems and Devices, subclasses 141+, for signal transducers under water type.

455,   Telecommunications, subclass 40 for analog communications via an earth or water medium.

219   **TRANSCEIVERS:**
This subclass is indented under the class definition. Subject matter in which a transmitter and a receiver are at the same location and transmit and receive over the same medium to-and-from the same remote station.

(1)   Note. The simultaneous operation of a transmitter and receiver is a duplex operation and is classified in Class 370, Multiplex Communications, subclasses 276+.

(2)   Note. This and indented subclasses accept nominal recitation of a digital data processing system or function in combination with transceivers and data sets. Significant digital data pre- and postprocessing in combination with transceivers are classified elsewhere.

SEE OR SEARCH CLASS:

455,   Telecommunications, subclasses 73+ for analog carrier wave transceivers.

710,   Electrical Computers and Digital Data Processing Systems: Input/Output, subclasses 1+ for transferring data from one or more peripherals to one or more computers or digital data processing systems for the latter to process, store, or further transfer or for transferring data from the computers or digital data processing systems to the peripheral of information processing system.

220   **Transmission interface between two stations or terminals:**
This subclass is indented under subclass 219. Subject matter including an interfacing means for communicating between two stations.

221   **Loopback mode:**
This subclass is indented under subclass 219. Subject matter wherein the transceiver or transceiver's component is compared by connecting a received path to a transmitted path and monitoring the output as an indication of the condition of the transceiver or transceiver's component.

222   **Modems (data sets):**
This subclass is indented under subclass 219. Subject matter including a device that transform a characteristic of a typical two level pulse or digital data signal into another form suitable for transmission over a transmission circuit.

(1)   Note. An example of a modem is a device which converts two level pulse signals into two tone signals.

SEE OR SEARCH THIS CLASS, SUBCLASS:

257+,   for cable systems and components.

SEE OR SEARCH CLASS:

329,   Demodulators, for demodulators only.

332,   Modulators, for modulators, per se.

379,   Telephonic Communications, subclasses 90.01+ where data is sent over lines specifically claimed as telephone lines.

709,   Electrical Computers and Digital Data Processing Systems: Multicomputer Data Transferring, appropriate subclasses for data transferring among multiple computer or digital data processing system.

710,   Electrical Computers and Digital Data Processing Systems: Input/Output, subclasses 1+ for transferring data from one or more peripherals to one or more computers or digital data processing systems for the latter to process, store, or further transfer or for transferring data from the computers or digital data processing systems to

the peripheral of information processing system.

223   Angle modulation:
This subclass is indented under subclass 222. Subject matter in which the transmitted characteristic or pulses to be transmitted vary the phase or frequency of a carrier wave.

SEE OR SEARCH THIS CLASS, SUBCLASS:
211,   for angle modulated pulse repeaters.
271+,   for pulse modulated carrier systems which are angle modulated.
302+,   for angle modulated carrier pulse transmitters.
322+,   for angle modulated carrier pulse receivers.

SEE OR SEARCH CLASS:
398,   Optical Communications, subclass 187 and 188 for frequency and phase modulated light wave transmitter.

224   TESTING:
This subclass is indented under the class definition. Subject matter in which at least part of the system is tested.

SEE OR SEARCH THIS CLASS, SUBCLASS:
231,   for calibration of automatic equalizers.

SEE OR SEARCH CLASS:
324,   Electricity: Measuring and Testing, for electrical testing or measuring in general.
370,   Multiplex Communications, subclasses 241+ for diagnostic testing of a multiplexing system.
379,   Telephonic Communications, subclasses 90.01+ testing of telephone systems, some of which may be digital.
455,   Telecommunications, subclasses 67.11 through 67.7 for modulated carrier system testing; subclasses 115.1-115.4 for transmitter testing; and subclasses 226.1-226.4 for receiver testing.

702,   Data Processing: Measuring, Calibrating, or Testing, subclass 79 for a time-related parameter (e.g., pulse width, period, delay, etc.) measurement.

225   Data rate:
This subclass is indented under subclass 224. Subject matter including a means for measuring the speed at which digital information is transmitted or received.

226   Phase error or phase jitter:
This subclass is indented under subclass 224. Subject matter including a means for measuring abrupt, spurious variations in the phase of the frequency modulation of successive pulses referenced to the phase of a continuous oscillator.

227   Signal noise:
This subclass is indented under subclass 224. Subject matter including a means for measuring a signal-to-noise ratio.

228   With indicator:
This subclass is indented under subclass 224. Subject matter including a means for displaying to a human observer digital information concerning the system characteristics being measured.

229   EQUALIZERS:
This subclass is indented under the class definition. Subject matter including a delay line tapped at the pulse or discrete step interval; a set of adjustable attenuators connected to each tap, except for a main tap, which attenuators can be used to multiply remaining tap signals by any number between 1 and minus 1; and a summing network.

(1)   Note. Equalizers, per se, if they include a means to perform mathematical calculations, are found in Class 708, subclasses 300+ and 819.

(2)   Note. Equalizers, per se, are classified in Class 333. See 'SEARCH CLASS' below. To be classified here, there must be a pulse or digital communication apparatus.

SEE OR SEARCH CLASS:
333,   Wave Transmission Lines and Networks, subclass 18 for automatically controlled systems with control of equalizers or delay network; and subclass 28 for coupling networks with equalizer.

230   **Automatic:**
This subclass is indented under subclass 229. Subject matter having means responsive to the received pulses for adjustment of the attenuators (i.e., nonmanual).

231   **Training period or initial set up:**
This subclass is indented under subclass 230. Subject matter in which there is an initial adjustment of the automatic equalizer prior to use or where a test pulse is sent through the communication channel to determine what the equalizer settings should be.

232   **Adaptive:**
This subclass is indented under subclass 230. Subject matter where the equalizer tap adjustment is automatically changed for optimum equalization using the normal message data signals.

(1)   Note. The term 'normal message data signals' excludes special calibration signals.

SEE OR SEARCH THIS CLASS, SUBCLASS:
230,   for automatic equalizers using special calibration signals.

233   **Decision feedback equalizer:**
This subclass is indented under subclass 232. Subject matter wherein the equalized signal is the sum of the outputs of the forward and feedback part of the equalizer.

(1)   Note. The forward part is a linear transversal equalizer. Decisions made on the equalized signal are fed back via a second transversal filter (i.e., feeback part).

(2)   Note. The DFE generally eliminates the intersymbol interference(ISI).

234   **Fractionally spaced equalizer:**
This subclass is indented under subclass 232. Subject matter wherein the delay line taps of the equalizer are spaced at an interval T which is less than, or a fraction of the symbol interval.

(1)   Note. The cascaded equalizers combined with a fractionally spaced equalizer claimed is classified herein.

235   **Quadrature channels:**
This subclass is indented under subclass 232. Subject matter in which the received signal is processed to provide two components, one which differs in phase from the other by 90 degrees.

236   **Accumulator or up/down counter:**
This subclass is indented under subclass 232. Subject matter including either a device which stores a number and which, on receipt of another number, adds the two and stores the sum, or a counter with the capability of counting in an ascending or descending order.

237   **PULSE NUMBER MODULATION:**
This subclass is indented under the class definition. Subject matter where the number of pulses in a group conveys the information to be transmitted.

SEE OR SEARCH CLASS:
327,   Miscellaneous Active Electrical Nonlinear Devices, Circuits, and Systems, subclasses 1+ for miscellaneous pulse characteristic discriminating and subclasses 100+ for miscellaneous pulse charateristic modifying.
329,   Demodulators, subclasses 311+ for pulse demodulation.
370,   Multiplex Communications, appropriate subclass for multiplexing systems using pulse modulation.

238   **PULSE WIDTH MODULATION:**
This subclass is indented under the class definition. Subject matter in which the width of a transmitted pulse conveys the transmitted information.

SEE OR SEARCH CLASS:

327,   Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclasses 31+ for miscellaneous circuits providing pulse width or spacing discriminating and subclasses 172+ for miscellaneous rectangular or pulse waveform width control.

329,   Demodulators, subclass 312 for pulse width demodulators.

370,   Multiplex Communications, subclass 205 for a multiplexing system using both pulse width and pulse position modulations, and subclass 212 for a multiplexing system using pulse width modulation.

239   PULSE POSITION, FREQUENCY, OR SPACING MODULATION:
This subclass is indented under the class definition. Subject matter in which the information to be transmitted is conveyed by means of the relative position of the pulses in a series of transmitted pulses, the time or spacing between pulses, or the repetition rate (frequency) of the pulses.

SEE OR SEARCH CLASS:

327,   Miscellaneous Active Electrical Non-linear Devices, Circuits, and Systems, subclasses 1+ for miscellaneous pulse characteristic discriminating and subclasses 100+ for miscellaneous pulse characteristic modifying.

329,   Demodulators, subclasses 313+ for pulse rate or position demodulators.

332,   Modulators, subclasses 112+ for a pulse position, frequency or spacing modulator, per se.

370,   Multiplex Communications, subclass 205 for a multiplexing system using both pulse width and pulse position modulations, and subclass 213 for a multiplexing system using pulse position modulation.

240   BANDWIDTH REDUCTION OR EXPANSION:
This subclass is indented under the class definition. Subject matter where the width of the frequency spectrum of a pulse or digital signal is either reduced or expanded.

SEE OR SEARCH THIS CLASS, SUBCLASS:

130   through 153, for spread spectrum communications.

SEE OR SEARCH CLASS:

704,   Data Processing: Speech Signal Processing, Linguistics, Language Translation, and Audio Compression/Decompression, subclasses 500+ for bandwidth reduction or expansion of audio signals.

240.01   Television or motion video signal:
This subclass is indented under subclass 240. Subject matter wherein the signal source is a sequence of images which normally vary with time and are intended to portray motion.

(1)   Note. The signal source is originally in or converted to digital format before the frequency range compression process.

240.02   Adaptive:
This subclass is indented under subclass 240.01. Subject matter wherein a coding process varies according to changes in the input or output signal.

240.03   Quantization:
This subclass is indented under subclass 240.02. Subject matter wherein the varied process is the number of discrete signal amplitudes.

240.04   Feed forward:
This subclass is indented under subclass 240.03. Subject matter wherein the number of discrete signal amplitudes is varied according to signal characteristics determined upstream from the quantization process.

240.05   Feed back:
This subclass is indented under subclass 240.03. Subject matter wherein the number of discrete signal amplitudes is varied according to signal characteristics determined downstream from the quantization process.

240.06   Feed forward:
This subclass is indented under subclass 240.02. Subject matter wherein the coding process is varied according to signal character-

istics determined upstream from the coding process.

240.07 Feed back:
This subclass is indented under subclass 240.02. Subject matter wherein the coding process is varied according to signal characteristics determined downstream from the coding process.

240.08 Feature based:
This subclass is indented under subclass 240.01. Subject matter wherein coding is performed on the basis of shapes, objects, or other features contained within images.

240.09 Polygonal approximation:
This subclass is indented under subclass 240.08. Subject matter wherein objects in images are coded by approximating the shape of each object by polygons.

240.1 Separate coders:
This subclass is indented under subclass 240.08. Subject matter wherein separate coding processes are performed for different portions of an image.

240.11 Subband coding:
This subclass is indented under subclass 240.1. Subject matter wherein the image signal is divided into a plurality of frequency bands.

240.12 Predictive:
This subclass is indented under subclass 240.01. Subject matter wherein the value of an image portion is predicted based on the value of an earlier or later image portion.

240.13 Intra/inter selection:
This subclass is indented under subclass 240.12. Subject matter wherein intra-picture and inter-picture coding processes are selectively switched.

240.14 Plural:
This subclass is indented under subclass 240.12. Subject matter wherein more than a single predicted value for an image portion is generated.

240.15 Bidirectional:
This subclass is indented under subclass 240.1. Subject matter wherein the value of an image

portion is predicted based on the values of both earlier and later (transmitted/received) image portions.

240.16 Motion vector:
This subclass is indented under subclass 240.12. Subject matter wherein a signal is produced which represents the spatial change of an image portion.

240.17 Half-pixel refinement:
This subclass is indented under subclass 240.16. Subject matter wherein the spatial change has increments equal to half the distance between two picture elements.

240.18 Transform:
This subclass is indented under subclass 240.01. Subject matter wherein image values are remapped using a mathematical transformation.

240.19 Wavelet:
This subclass is indented under subclass 240.18. Subject matter wherein the mathematical transformation involves the use of an oscillation waveform which persists only one or a few cycles.

240.2 Discrete cosine:
This subclass is indented under subclass 240.18. Subject matter wherein the mathematical transformation involves the discrete cosine transformation.

240.21 Subsampling:
This subclass is indented under subclass 240.01. Subject matter wherein less than a complete number of samples are used to represent an entire image.

240.22 Vector quantization:
This subclass is indented under subclass 240.01. Subject matter wherein a limited number of image values are stored in a codebook and used to represent the input image values.

240.23 Variable length coding:
This subclass is indented under subclass 240.01. Subject matter wherein image data are selectively assigned codes such that the most frequently occurring values receive the shortest codes.

240.24   Block coding:
This subclass is indented under subclass 240.01. Subject matter wherein data is processed in units of matrices consisting of plural picture elements.

240.25   Specific decompression process:
This subclass is indented under subclass 240.01. Subject matter involving details of a decoding process which is not merely the converse of the coding process.

240.26   Associated signal processing:
This subclass is indented under subclass 240.01. Subject matter involving additional signal processing unique to the coding process.

240.27   Error detection or correction:
This subclass is indented under subclass 240.26. Subject matter wherein the additional signal processing involves the detection or correction of errors in the coding process.

240.28   Synchronization:
This subclass is indented under subclass 240.26. Subject matter wherein the additional signal processing involves maintaining a proper time or phase correspondence between the coded signals.

240.29   Pre/post filtering:
This subclass is indented under subclass 240.26. Subject matter wherein the additional signal processing involves blocking or separating data or signals before or after the coding process.

241   Pulse code modulation:
This subclass is indented under subclass 240. Subject matter wherein the pulse or digital signal to be transmitted is sampled or compared and then converted into a digital pulse train which represents the amplitude of the sampled signal at the instant of sampling or comparison, and this digital pulse train is transmitted so it may be reconverted into a duplicate of the original signal at a receiver.

242   PULSE CODE MODULATION:
This subclass is indented under the class definition. Subject matter in which a signal to be transmitted is sampled or compared and then converted into a digital pulse train which repre-
sents the amplitude of the sampled signal at the instant of sampling or comparison, and this digital pulse train is transmitted so it may be reconverted into a duplicate of the original signal at a receiver.

SEE OR SEARCH CLASS:
332,   Modulators, subclasses 106+ for a pulse modulator, per se.
341,   Coded Data Generation or Conversion, for code converters to convert from analog or digital information appropriate subclasses to pulse code.
348,   Television, subclasses 488+ for pulse code modulation television transmission.
370,   Multiplex Communications, appropriate subclass for pulse code type modulation.

243   Correcting or reducing quantizing errors:
This subclass is indented under subclass 242. Subject matter in which there is a correction made for errors or inaccuracies in the encoding of the analog signal.

SEE OR SEARCH THIS CLASS, SUBCLASS:
254,   for pulse code modulation noise reduction.

SEE OR SEARCH CLASS:
714,   Error Detection/Correction and Fault Detection/Recovery, appropriate subclasses for error correction in general.

244   Differential:
This subclass is indented under subclass 242. Subject matter where the difference between the actual amplitude and a predicted, or locally decoded, value of the amplitude is encoded and transmitted.

SEE OR SEARCH THIS CLASS, SUBCLASS:
240+,   for predictive bandwidth compression of a digital signal.

245   Quantizer or inverse quantizer:
This subclass is indented under subclass 244. Subject matter including a means for converting the instantaneous amplitude of the transmitted signal to the nearest of a fixed number

of discrete amplitude levels, or reverse quantizer.

246   **Length coding:**
This subclass is indented under subclass 244. Subject matter wherein words of the converted digital signal are in a bit length.

247   **Single bit (delta):**
This subclass is indented under subclass 244. Subject matter where there is transmitted at most one pulse for each sample of the analog signal.

   (1)   Note. The pulses transmitted represent the variations of the analog signal and not their real amplitude.

   (2)   Note. Usually a pulse is transmitted only when the analog signal has changed by an incremental amount.

SEE OR SEARCH CLASS:
341,   Coded Data Generation or Conversion, subclass 77 for delta code converters and subclass 143 for analog to or from delta code conversion.

248   **Nonamplitude delta (area, etc.):**
This subclass is indented under subclass 247. Subject matter where whether a pulse is sent or not is determined by a criteria other than the amplitude difference of the sampled and locally decoded waveforms.

249   **Compand (overload prevention):**
This subclass is indented under subclass 247. Subject matter in which the size of the incremental amount is variable over a wide dynamic range in response to predetermined patterns in the transmitted series of digital bits or 'delta bits' (delta modulation pulse train).

SEE OR SEARCH CLASS:
333,   Wave Transmission Lines and Networks, subclass 14 for companders, per se.

250   **Redundancy removal:**
This subclass is indented under subclass 249. Subject matter where the delta modulation pulse train is replaced, for transmission purposes, by a derived pulse train containing fewer pulses, and converting the derived pulse train back to the delta modulation pulse train at the receiver.

251   **Syllabic:**
This subclass is indented under subclass 249. Subject matter in which the companding is instantaneous.

   (1)   Note. There are two types of syllabic adaptative modulators namely, the analog syllabic adaptative modulators and the digital syllabic adaptative modulators depending on whether the gain control signal of the amplifier is derived from the input analog input signal or from the coded digital output signal. The gain control signal may be derived from the input analog signal using a simple envelope detector. Similarly, the gain control signal may be derived from the digital output by means of a syllabic filter. Such syllabic adaptative modulators will provide a continuous adaptation of the gain of the amplifier so as to vary the amplitude of the steps of the integrator accordingly. The instantaneous adaptation or companding is derived from the digital output signal on a short time basis.

252   **Plural feedback loops:**
This subclass is indented under subclass 247. Subject matter having more than one signal path which feeds part of an output signal back to its input.

253   **Length coding:**
This subclass is indented under subclass 242. Subject matter wherein words of the converted digital signal are in a bit length.

254   **Noise or distortion reduction:**
This subclass is indented under subclass 242. Subject matter where there is provision for removing or correcting for the effects of extraneous pulses or distortion.

256   **PULSE TRANSMISSION VIA RADIATED BASEBAND:**
This subclass is indented under the class definition. Subject matter where pulses are radiated into free space but are not modulated onto a carrier wave.

257　CABLE SYSTEMS AND COMPONENTS:
This subclass is indented under the class definition. Subject matter where pulses are transmitted on a cable or transmission line.

SEE OR SEARCH THIS CLASS, SUBCLASS:
222+,　for modems which can be used with a cable system.

SEE OR SEARCH CLASS:
370,　Multiplex Communications, appropriate subclasses for multiplex communication systems using cables.

258　Transformer coupling:
This subclass is indented under subclass 257. Subject matter including an inductive coupling which is used between the driver and the transmission line or between the receiver and the transmission line for isolating the d.c. value.

259　SYSTEMS USING ALTERNATING OR PULSATING CURRENT:
This subclass is indented under the class definition. Subject matter using alternating, sine, or similar wave currents or using pulsating currents in the transmission and reception of pulse or digital communications.

(1)　Note. A system includes both a transmitter and a receiver.

SEE OR SEARCH CLASS:
178,　Telegraphy, subclasses 66.1+ for telegraph systems using alternating current.
327,　Miscellaneous Active Electrical Devices, Circuits, and Systems, subclasses 1+ for miscellaneous pulse characteristic discriminating and subclasses 100+ for miscellaneous pulse characteristic modifying.

260　Plural channels for transmission of a single pulse train:
This subclass is indented under subclass 259. Subject matter in which more than one transmission channel is utilized to convey one pulse train.

(1)　Note. A channel is a normally independent transmission path.

(2)　Note. Multi-carrier modulation techniques (also known as orthogonal frequency division multiplexing or discrete multi-tone modulation) are properly classified here, rather than in Class 370, unless they are used to transmit multiple sources of information data.

SEE OR SEARCH CLASS:
370,　Multiplex Communications, appropriate subclasses for frequency division multiplexing where multiple sources of information data are transmitted over a common transmission medium.
455,　Telecommunications, subclass 59 for single analog signal transmission via plural carrier waves.

261　Quadrature amplitude modulation:
This subclass is indented under subclass 260. Subject matter in which the transmitted signal can be represented as the superposition of two modulated signals, each being obtained by pulse amplitude modulation of a signal sequence on a sinusoidal carrier, the two signal sequences being generated in synchronization at the same rate, and the two carriers being of the same frequency but 90 degrees apart in phase.

SEE OR SEARCH THIS CLASS, SUBCLASS:
298,　for quadrature amplitude modulation transmitters.
316+,　for quadrature amplitude modulation receivers.

SEE OR SEARCH CLASS:
370,　Multiplex Communications, subclass 20 for independent signals on quadrature carriers.
455,　Telecommunications, subclass 60 for analog transmission via plural phases of one carrier.

262　Maximum likelihood decoder or viterbi decoder:
This subclass is indented under subclass 261. Subject matter for choosing an estimate code word for each possible received sequence of a demodulation output.

(1)   Note. This method is generally used for decoding the convolution codes.

SEE OR SEARCH CLASS:
714,   Error Detection/Correction and Fault Detection/Recovery, subclasses 786+ for digital data error correction having a convolution code, particularly subclasses 794 and 795 for maximum likelihood and Viterbi decoding.

263   Partial response:
This subclass is indented under subclass 261. Subject matter where the binary data rate is above the Nyquist rate (equal to twice the transmission bandwidth, and commonly regarded as the upper limit on the rate of binary data transmission) thereby dispersing the individual input pulses over more than one signalling interval.

264   Multilevel:
This subclass is indented under subclass 261. Subject matter in which the transmitted pulse waveform has more than two discrete amplitude levels.

265   Trellis encoder or Trellis decoder:
This subclass is indented under subclass 261. Subject matter for improving the noise immunity of digital transmission system without bandwidth expansion or reduction of data rate.

(1)   Note. The encoder employs redundant nonbinary modulation in combination with a finite-state encoder which governs the selection of modulation signals to generate the coded signal sequence.

267   Diversity:
This subclass is indented under subclass 260. Subject matter where the two or more channels carrying the same message go from the transmitter to the receiver via different paths, frequencies, or times of transmission.

SEE OR SEARCH CLASS:
455,   Telecommunications, subclasses 132+ for diversity receivers and subclasses 504+ for fading elimination in a diversity system.

268   Amplitude modulation:
This subclass is indented under subclass 259. Subject matter in which the pulses are multiplied with a carrier wave so as to produce and transmit at least one sideband equal to the carrier plus or minus the baseband.

(1)   Note. In amplitude modulation the amplitude of the carrier wave does not change. The carrier wave can represent the average amplitude of the envelope and, since this is the same irrespective of the presence or absence of modulation, the carrier wave transmits no information. The information is carried by the sidebands.

SEE OR SEARCH CLASS:
332,   Modulators, for amplitude modulation and pulse modulators.
455,   Telecommunications, for nonpulse amplitude modulation systems, transmitters, and receivers.

269   With phase or frequency shift keying:
This subclass is indented under subclass 268. Subject matter wherein the phase or frequency of the amplitude modulated carrier wave is shifted between at least two phases or frequencies.

SEE OR SEARCH THIS CLASS, SUBCLASS:
273,   for phase shift keying with additional frequency shift keying.

SEE OR SEARCH CLASS:
332,   Modulators, subclasses 120+ for a frequency modulator incorporating amplitude modulation and subclass 145 for a phase modulator incorporating amplitude modulation.

270   Vestigial or single sideband or suppressed carrier:
This subclass is indented under subclass 268. Subject matter where less than two complete sidebands are transmitted, with or without the carrier or two complete sidebands are transmitted without the carrier.

SEE OR SEARCH THIS CLASS, SUB-CLASS:
277,   for vestigial, or single sideband-frequency shift keyed systems.

SEE OR SEARCH CLASS:
332,   Modulators, subclasses 167+ or 170+ for a suppressed carrier type or a single or vestigial sideband type amplitude modulator, per se.
348,   Television, appropriate subclasses for television systems and transmitters that use vestigial sidebands.
455,   Telecommunications, subclasses 46 and 47 for suppressed carrier and single or vestigial sideband systems; subclass 109 for amplitude modulation transmitters; and subclasses 202 through 204 for amplitude modulated receivers.

271   Angle modulation:
This subclass is indented under subclass 259. Subject matter where the digital information or pulses to be transmitted vary the phase angle or frequency of a carrier wave.

(1)   Note.   In angle modulation, the total energy content of the output spectrum is generally kept constant. The amplitude of the carrier component depends on the modulation index.

SEE OR SEARCH THIS CLASS, SUB-CLASS:
211,   for angle modulated repeaters.
223,   for angle modulated carrier pulse transceivers.
302,   for angle modulated carrier pulse transmitters.
322,   for angle modulated carrier pulse receivers.

SEE OR SEARCH CLASS:
329,   Demodulators, subclasses 315+   for frequency demodulators, subclasses 300+ for a frequency shift keying demodulator, per se, and subclasses 304+ for a phase shift keying demodulator, per se.
332,   Modulators, subclasses 117+ for a frequency modulator, per se, and sub-

classes 144+ for a phase modulator, per se.
370,   Multiplex Communications, subclass 215 for phase modulation, and subclass 483 for angle modulation.
398,   Optical Communications, subclasses 187 and 188 for frequency and phase modulated light wave transmitter.

272   Frequency shift keying:
This subclass is indented under subclass 271. Subject matter where the instantaneous frequency of the pulse or digitally modulated carrier wave is shifted (generally between two frequencies) according to the presence or absence of a pulse, or a mark or space, being transmitted.

SEE OR SEARCH THIS CLASS, SUB-CLASS:
211,   for frequency shift keyed repeaters.
223,   for frequency shift keyed transceivers.
303+,   for frequency shift keyed transmitters.
334+,   for frequency shift keyed receivers.

SEE OR SEARCH CLASS:
398,   Optical Communications, subclass 187 for frequency modulated light wave transmitter.

273   Combined with phase shift keying:
This subclass is indented under subclass 272. Subject matter where phase shift keying is combined with the frequency shift keying.

274   Minimum shift keying:
This subclass is indented under subclass 272. Subject matter wherein the difference between the mark and space frequencies is at the minimum value still presenting orthogonality (zero cross-correlation) between the mark and space signals and thus providing for efficient detection of the data.

(1)   Note.   Continuous phase is maintained at the mark-space transitions.

SEE OR SEARCH THIS CLASS, SUB-CLASS:
305,   for minimum shift keyed transmitter.
336,   for minimum shift keyed receivers.

275   **More than two frequencies:**
This subclass is indented under subclass 272. Subject matter in which the carrier wave is shifted between more than two frequencies.

276   **One cycle or less per bit:**
This subclass is indented under subclass 272. Subject matter in which the carrier frequency is shifted after one or less cycle of the carrier has been transmitted.

SEE OR SEARCH THIS CLASS, SUB-CLASS:
274,   and 336, for minimum shift keying.
240,   for band width conservation of a digital signal.

277   **Vestigial or single sideband, or suppressed carrier:**
This subclass is indented under subclass 272. Subject matter wherein one complete sideband, with or without the carrier wave and with or without the complimentary sideband, is utilized.

SEE OR SEARCH THIS CLASS, SUB-CLASS:
270,   for vestigial or single sideband, or suppressed carrier pulse amplitude modulated carrier systems.

278   **Antinoise or distortion:**
This subclass is indented under subclass 272. Subject matter with provision for correction or reduction of distortion or for removing or correcting for the effects of extraneous pulses.

SEE OR SEARCH THIS CLASS, SUB-CLASS:
284+,   for antinoise or distortion in a phase shift keying system.
285,   for antinoise or distortion in a pulse modulated carrier system.
313,   for key click prevention in a keying circuit.
346+,   for antinoise or distortion in pulse modulated carrier wave receivers.

279   **Phase shift keying:**
This subclass is indented under subclass 271. Subject matter wherein the instantaneous phase of the carrier wave departs from a reference phase in accordance with the transmission of pulses.

SEE OR SEARCH THIS CLASS, SUB-CLASS:
223,   for phase shift keyed transceivers.
273,   for phase shift keyed combined with frequency shift keyed systems.
308,   for phase shift keyed transmitter.
329+,   for phase shift keyed receivers.

SEE OR SEARCH CLASS:
398,   Optical Communications, subclass 188 for phase modulated light wave transmitter
455,   Telecommunications, subclass 23 for phase shift keyed repeaters.

280   **More than two phases:**
This subclass is indented under subclass 279. Subject matter in which the phase of the carrier wave is shifted between three or more phases.

281   **Quaternary:**
This subclass is indented under subclass 280. Subject matter where the phases are 90 degrees apart.

282   **Biphase (manchester codes):**
This subclass is indented under subclass 279. Subject matter where the carrier is an elementary alternating current signal having for each data bit a zero crossing in the same direction at the beginning of each bit and also at the end of each bit, a constant duration, a zero crossing only once intermediate the beginning and the end of each bit, the intermediate zero crossing representing one of the two signalling conditions when occurring before the middle of the data bit and the other of the two signalling conditions when occurring after the middle of the data bit.

283   **Differential phase shift keying (diphase):**
This subclass is indented under subclass 279. Subject matter where the reference phase is the phase used to transmit the previous data pulse.

SEE OR SEARCH THIS CLASS, SUB-CLASS:
244,   for differential pulse code modulation.
330,   for differential phase shift keyed receivers.

284   Antinoise or distortion:
This subclass is indented under subclass 279. Subject matter where there is provision for correction or reduction of the effects of extraneous pulses or of distortion of the wave shape of the transmitted signals.

SEE OR SEARCH THIS CLASS, SUBCLASS:
278,   for antinoise or distortion in a frequency shift keyed system.
285,   for antinoise or distortion in pulse modulated carrier systems in general.
313,   for key click prevention in a pulse modulated carrier transmitter.
346+,   for pulse modulated carrier wave receivers with antinoise or antidistortion provisions.
353,   for transmitter/receiver feedback compensation in a repeater.

285   Antinoise or distortion:
This subclass is indented under subclass 259. Subject matter with provision for correction or reduction of distortion of the wave shape of the carrier wave or for the correction or reduction of the effects of extraneous pulses.

SEE OR SEARCH THIS CLASS, SUBCLASS:
267,   for pulse modulated carrier wave systems with diversity.
278,   for frequency shift keyed systems with antinoise or antidistortion.
284,   for phase shift keyed systems with antinoise or antidistortion.
313,   for transmitters with key click prevention.
346,   for receivers with interference or noise reduction.

SEE OR SEARCH CLASS:
333,   Wave Transmission Lines and Networks, subclass 28 for passive equalizers; and subclasses 165 through 212 for filters, per se.
455,   Telecommunications, subclasses 63.1 through 65 for noise reduction systems; and subclasses 296-312 for noise reducing receivers.

708,   Electrical Computers: Arithmetic Processing and Calculating, subclasses 300+ and 819 for filters and equalizers which perform mathematical functions during operation.

286   MULTILEVEL:
This subclass is indented under the class definition. Subject matter in which the transmitted pulse waveform has more than two discrete amplitude levels.

287   With threshold level:
This subclass is indented under subclass 286. Subject matter wherein the received or transmitted signal is compared with a reference voltage to determine the discrete amplitude level.

288   Transmission line:
This subclass is indented under subclass 286. Subject matter including one or more insulated conductors arranged to transmit the pulse waveform from one locality to another.

289   Bipolar signal:
This subclass is indented under subclass 286. Subject matter wherein the transmitted pulse waveform has two level-signaling.

290   Partial response:
This subclass is indented under subclass 286. Subject matter where the binary data rate is above the Nyquist rate (equal to twice the transmission bandwidth, and commonly regarded as the upper limit on the rate of binary data transmission) thereby dispersing the individual input pulses over more than one signalling interval.

291   Duobinary:
This subclass is indented under subclass 290. Subject matter wherein the binary data rate is at half the baud rate ($w=p/T$).

(1)   Note. The duobinary signaling is generally used for controlling the intersymbol interference (ISI).

292   Disparity reduction:
This subclass is indented under subclass 286. Subject matter where the average transmitted amplitude level for a predetermined group of

bits is reduced as far as possible in attempting to reduce d.c. components.

293   **Synchronized:**
This subclass is indented under subclass 286. Subject matter in which the transmitter (coder) and receiver (decoder) operate in predetermined timed relationship.

SEE OR SEARCH THIS CLASS, SUBCLASS:
354+,   for synchronizers in general.

SEE OR SEARCH CLASS:
370,   Multiplex Communications, subclasses 503+ for synchronization in multiplex communications.

294   **Phase locked loop:**
This subclass is indented under subclass 293. Subject matter having a closed-loop electronic servomechanism the output of which locks onto and tracks a received clock signal to provide the frequency and phase aligned receiver clock.

295   **TRANSMITTERS:**
This subclass is indented under the class definition. Subject matter for forming and transmitting pulses.

SEE OR SEARCH CLASS:
327,   Miscellaneous Active Electrical Nonlinear Devices, Circuits, and Systems, subclasses 291+ for miscellaneous circuits producing a clock or a pulse wave form.
332,   Modulators, subclasses 106+ for pulse modulators, per se.
341,   Coded Data Generation or Conversion, subclasses 20+ and 173+ for code transmitters.

296   **Antinoise or distortion (includes predistortion):**
This subclass is indented under subclass 295. Systems where any undesired modulation components accompanying a desired modulated carrier wave signal, which components are due to electrical disturbances within the useful frequency band or any undesired carrier wave distortion and which may originate at a source external to the transmitter or which may be generated internally in the transmitter, are reduced, eliminated or compensated for, or where the transmitted signal may, prior to transmission, be distorted in a manner complementary to the distortion introduced in the transmission medium.

297   **Power amplifier:**
This subclass is indented under subclass 296. Subject matter including an amplifier which is used for the modulation process in the transmitter.

(1)   Note. Compensation is made to the amplifier due to amplifier nonlinearality characteristics.

298   **Quadrature amplitude modulation:**
This subclass is indented under subclass 295. Subject matter in which the transmitted signal can be represented as the superposition of two modulated signals, each being obtained by pulse amplitude modulation of a signal sequence on a sinusoidal carrier, the two signal sequences being generated in synchronization at the same rate, and the two carriers being of the same frequency but 90 degrees apart in phase.

SEE OR SEARCH THIS CLASS, SUBCLASS:
261,   for quadrature amplitude modulation system using alternating or pulsating current.
316+,   for quadrature amplitude modulation receivers.

SEE OR SEARCH CLASS:
370,   Multiplex Communications, subclass 206 for multiplex communications using quadrature carriers.
455,   Telecommunications, subclass 60 for analog transmission via plural phases of one carrier.

299   **Plural diversity:**
This subclass is indented under subclass 295. Subject matter including two or more transmitters transmit the same messages through two or more channels via different paths, frequencies or times of transmission.

300   Amplitude modulation:
This subclass is indented under subclass 295. Subject matter in which the pulses are multiplied with a carrier wave so as to produce and transmit at least one sideband equal to the carrier plus or minus the baseband.

(1)   Note.   In amplitude modulation the amplitude of the carrier wave does not change. The carrier wave can represent the average amplitude of the envelope and, since this is the same irrespective of the presence or absence of modulation, the carrier wave transmits no information. The information is carried by the sidebands.

SEE OR SEARCH CLASS:
332,   Modulators, for amplitude modulation and pulse modulators.
455,   Telecommunications, for   nonpulse amplitude modulation systems, transmitters, and receivers.

301   Single or vestigial sideband or suppressed carrier:
This subclass is indented under subclass 300. Subject matter where less than two complete sidebands are transmitted, with or without the carrier, or two complete sidebands are transmitted without the carrier.

SEE OR SEARCH CLASS:
332,   Modulators, subclasses 167+ or 170+ for a suppressed carrier type or a single or vestigial sideband type amplitude modulator, per se.
455,   Telecommunications, subclass 109 for single sideband amplitude modulated carrier wave transmitters.

302   Angle modulation:
This subclass is indented under subclass 295. Subject matter where the digital information or pulses to be transmitted vary the phase angle or frequency of a carrier wave.

(1)   Note.   In angle modulation, the total energy content of the output spectrum is generally kept constant. The amplitude of the carrier component depends on the modulation index.

SEE OR SEARCH THIS CLASS, SUBCLASS:
211,   for angle modulated repeaters.
223,   for angle modulated carrier pulse transceivers.
271,   for angle modulated carrier pulse system using alternating or pulsating current.
322,   for angle modulated carrier pulse receivers.

SEE OR SEARCH CLASS:
329,   Demodulators, subclasses 315+   for frequency demodulators, subclasses 300+ for a frequency shift keying demodulator, per se, and subclasses 304+ for a phase shift keying demodulator, per se.
332,   Modulators, subclasses 117+ for a frequency modulator, per se, and subclasses 144+ for a phase modulator, per se.
370,   Multiplex Communications, subclass 215 for phase modulation, and subclass 483 for angle modulation.
398,   Optical Communications, subclass 187 and 188 for frequency and phase modulated light wave transmitter.

303   Frequency shift keying:
This subclass is indented under subclass 302. Subject matter where the frequency of the carrier wave shifts between predetermined values in accordance with the value of the modulating pulse wave.

SEE OR SEARCH THIS CLASS, SUBCLASS:
211,   for frequency shift keyed repeaters.
272,   for frequency shift keyed systems.
334+,   for frequency shift keyed receivers.

SEE OR SEARCH CLASS:
398,   Optical Communications, subclass 187 for frequency modulated light wave transmitter.

304   Antenna tuning with frequency shift:
This subclass is indented under subclass 303. Subject matter where the transmitter is connected to an antenna circuit which is tuned to the instantaneous frequency of the transmitted carrier wave.

305   Minimum shift keying:
This subclass is indented under subclass 303. Subject matter wherein the differences between the mark and space frequencies is at the minimum value still preserving orthogonality (zero cross-correlations) between the mark and space signals and thus providing for efficient detection of the data. Continuous phase is maintained at the mark-space transitions.

SEE OR SEARCH THIS CLASS, SUBCLASS:
274,   for minimum shift keyed systems.
336,   for minimum shift keyed receivers.

306   One oscillator:
This subclass is indented under subclass 303. Subject matter where the modulated carrier wave is generated by altering the frequency of an oscillator in the transmitter.

307   Two or more oscillators:
This subclass is indented under subclass 303. Subject matter where the carrier wave is generated by switching between two or more oscillators of differing frequency

308   Phase shift keying:
This subclass is indented under subclass 302. Subject matter where the carrier wave is modulated by varying its phase in accordance with the pulses to be transmitted.

SEE OR SEARCH THIS CLASS, SUBCLASS:
239,   for phase shift keyed repeaters.
279,   for phase shift keyed systems.
329+,   for phase shift keyed receivers.

309   Keying circuits:
This subclass is indented under subclass 295. Subject matter wherein the output signal of the transmitter is initiated and terminated by a keying device, such as a manually or automatically operated switch.

(1)   Note. The keying device may control the active elements of the transmitter (oscillator or modulator) or the coupling circuits.

(2)   Note. Where the claims are drawn to a keying device controlling an oscillator or

an amplifier without additional details of the transmitter, classification is in Class 331, subclasses 172+ or Class 330, respectively.

SEE OR SEARCH CLASS:
178,   Telegraphy, subclass 116 for keyed spark gap or arc converter transmitters.
398,   Optical Communications, subclasses 187 and 188 for frequency and phase modulated light wave transmitter.

310   Remote controlled:
This subclass is indented under subclass 309. Subject matter wherein the keying device has its control part located at a point some distance removed from the transmitter.

(1)   Note. This subclass includes relay controlled keying, wherein the operator key controls the relay, the armature controlled contacts being in the transmitter circuit.

(2)   Note. This distance between the operator key and the transmitter circuit controlled thereby may be considerable or the distance may be small as with relay controlled keying.

311   Automatic:
This subclass is indented under subclass 309. Subject matter wherein the keying of the transmitter is automatically controlled as opposed, for example, to a manual control.

(1)   Note. The automatic keying devices of this subclass include rotating cylinders, disks, etc., with cams or conductive segments arranged in a predetermined fashion for closing contacts in the transmitter circuit and controlling the transmission of intelligence.

312   Power or bias voltage supply keying:
This subclass is indented under subclass 309. Subject matter wherein the keying device for controlling the operation of the transmitter is in the power or bias voltage supply circuit.

SEE OR SEARCH CLASS:
331,   Oscillators, subclasses 173+ for oscillators controlled by keying the power supply circuit.
332,   Modulators, subclass 181 for plate circuit modulation in an amplitude modulator.

313   Key shock or click prevention:
This subclass is indented under subclass 309. Subject matter including provision to eliminate or prevent the electrical disturbances produced by abrupt operation of the key.

314   Including auxiliary control tube:
This subclass is indented under subclass 309. Subject matter including an auxiliary electron discharge tube in the keying circuit, the conduction of which controls the operation of the transmitter and is responsive to the keying means.

315   Modulation by absorption of signal, changing antenna dimension or changing antenna impedance:
This subclass is indented under subclass 309. Subject matter including means controlled by the keying operation to absorb the oscillations during spacing periods as when the transmission of intelligence is by marks and spaces, or to change the impedance or dimension of the antenna to cause modulation of the carrier.

316   RECEIVERS:
This subclass is indented under the class definition. Subject matter including apparatus to decode, demodulate, or otherwise recover the transmitted intelligence.

SEE OR SEARCH THIS CLASS, SUBCLASS:
238,   for pulse width receivers.
239,   for pulse position, frequency, or number receivers.
242+,   for pulse code modulation and delta receivers.
256,   for radiated baseband receivers.
257,   for cable receivers.
286+,   for multilevel receivers.
353,   for pulse amplitude receivers.

SEE OR SEARCH CLASS:
178,   Telegraphy, subclasses 63 and 118 for telegraphy receivers.
307,   Electrical Transmission or Interconnection Systems, subclasses 200.1+ for miscellaneous pulse circuits.
329,   Demodulators, subclasses 311+ for pulse demodulators, subclasses 300+ for a frequency shift keying demodulator, per se, and subclasses 304+ for a phase shift keying demodulator, per se.
332,   Modulators, subclasses 106+ for a pulse modulator, per se.
341,   Coded Data Generation or Conversion, subclasses 126+ for digital to analog converters.
342,   Communications: Directive Radio Wave Systems and Devices (e.g., Radar, Radio Navigation), appropriate subclasses for radar receivers in which ranging or position determining is claimed.
370,   Multiplex Communications, for receivers used for multiplex systems.
455,   Telecommunications, subclasses 130+ for nonpulse radio receivers.

317   Automatic baseline or threshold adjustment:
This subclass is indented under subclass 316. Subject matter where the received signal is compared to a reference voltage or current level, the reference level being automatically adjusted.

SEE OR SEARCH CLASS:
329,   Demodulators, appropriate subclasses for automatically controlled demodulators.

318   Differential amplifier:
This subclass is indented under subclass 317. Subject matter including a circuit that amplifies the difference between the received signal and the reference signal.

319   Automatic bias circuit for DC restoration:
This subclass is indented under subclass 317. Subject matter including a means for eliminating unwanted DC offset voltages in a receiver for decoding the digitally modulated signals.

320   **Amplitude modulation:**
This subclass is indented under subclass 316. Subject matter wherein the receiver extracts a modulating signal from an input AM signal whose amplitude of a carrier varies over a continuum of values in accordance with the modulating signal.

321   **Single or vestigial sideband or suppressed carrier:**
This subclass is indented under subclass 320. Subject matter in which the receiver is responsive to pulses which are amplitude modulated onto a carrier wave in such a manner that less than a full carrier or less than two complete sidebands are created by the modulation process.

SEE OR SEARCH THIS CLASS, SUB-CLASS:
270,   for similar systems.
301,   for similar transmitters.

SEE OR SEARCH CLASS:
455,   Telecommunications, subclasses 202 through 204 for similar analog carrier wave receivers.

322   **Angle modulation:**
This subclass is indented under subclass 316. Subject matter where the angle of the sine wave carrier is varied in accordance with the pulse or digital information.

SEE OR SEARCH CLASS:
329,   Demodulators, subclasses 315+ for frequency demodulators and subclasses 345+ for phase demodulators, per se.

323   **Combined phase shift keyed and frequency shift keyed:**
This subclass is indented under subclass 322. Subject matter in which the received carrier has been modulated both as to its phase and frequency.

SEE OR SEARCH THIS CLASS, SUB-CLASS:
273,   for frequency shift and phase shift keyed systems.

SEE OR SEARCH CLASS:
370,   Multiplex Communications, subclass 204 for multiplex communications with plural diverse modulation techniques.

324   **Particular demodulator:**
This subclass is indented under subclass 322. Subject matter including a specified type of circuit for recovering the pulse or digital signal from the modulated carrier wave.

SEE OR SEARCH CLASS:
329,   Demodulators, subclasses 311+ for pulse demodulators, subclasses 315+ for frequency demodulators, subclasses 345+ for phase demodulators, and subclasses 347+ for amplitude demodulators.
455,   Telecommunications, subclass 214 for analog frequency modulation receivers with particular discriminator.

325   **Including coherent detector:**
This subclass is indented under subclass 324. Subject matter including a detecting circuit for deriving additional information from the phase of the carrier signal.

326   **Carrier recovery circuit or carrier tracking:**
This subclass is indented under subclass 324. Subject matter including means for extracting a carrier signal from the modulated signal.

327   **Phase locked loop:**
This subclass is indented under subclass 324. Subject matter wherein the demodulator includes a local oscillator synchronized in phase and frequency with the received signal.

SEE OR SEARCH CLASS:
327,   Miscellaneous Active Electrical Nonlinear Devices, Circuits, and Systems, subclasses 156+ for miscellaneous synchronizing circuits having a phase lock loop.
329,   Demodulators, particularly subclasses 307+, 325+, and 360+ for locked oscillator demodulators.

328 Including switching or gating (digital circuits):
This subclass is indented under subclass 324. Subject matter including circuits such as logic gates and counters for processing the angle modulated wave in the receiver.

SEE OR SEARCH THIS CLASS, SUBCLASS:
303, for frequency shift keying transmitters with digital circuits.

SEE OR SEARCH CLASS:
326, Electronic Digital Logic Circuitry, appropriate subclasses for electronic digital logic circuits.
327, Miscellaneous Active Electrical Nonlinear Devices, Circuits, and Systems, subclasses 365+ for miscellaneous gating circuits.

329 Phase shift keying:
This subclass is indented under subclass 322. Subject matter in which the phase of the carrier detected has been varied according to the pulse or digital information.

SEE OR SEARCH THIS CLASS, SUBCLASS:
279+, for phase shift systems.
308, for phase shift keyed transmitters.

SEE OR SEARCH CLASS:
329, Demodulators, subclasses 304+ for a phase shift keying or quadrature amplitude demodulator, per se.
455, Telecommunications, subclass 205 for frequency modulation receivers.

330 Differential (diphase):
This subclass is indented under subclass 329. Subject matter in which the bit interval representing one of the two binary levels is formed by a change in the phase of the received signal relative to the preceding bit interval, and the bit interval representing the other of the two binary levels is formed by the absence of a change of phase of the received signal.

SEE OR SEARCH THIS CLASS, SUBCLASS:
283, for diphase systems.

331 More than two phases:
This subclass is indented under subclass 330. Subject matter in which there are at least three possible phases that the received signal can assume.

332 Plural phase (>2):
This subclass is indented under subclass 329. Subject matter where the received signal can assume one of at least three possible phases during a bit interval.

333 Biphase (manchester code):
This subclass is indented under subclass 329. Subject matter wherein the data to be detected has been encoded as a 0-1 transition for one bit of information and a 1-0 transition for the other bit.

SEE OR SEARCH THIS CLASS, SUBCLASS:
282, for biphase systems.

334 Frequency shift keying:
This subclass is indented under subclass 322. Subject matter where the carrier has been modulated by shifting its frequency in accordance with the pulses transmitted.

SEE OR SEARCH THIS CLASS, SUBCLASS:
211, for frequency shift keying repeaters.
223, for frequency shift keying transceivers.
272+, for frequency shift keying systems.
303+, for frequency shift keying transmitters.

SEE OR SEARCH CLASS:
331, Oscillators, subclass 179 for frequency shift keying of oscillators.
398, Optical Communications, subclass 187 for frequency modulated light wave transmitter.

335 More than two frequencies:
This subclass is indented under subclass 334. Subject matter in which the input signal detected has three or more frequencies representing three or more pieces of information.

336   Minimum shift keying:
This subclass is indented under subclass 334. Subject matter for receiving a signal having frequency shifts equal to the minimum necessary to distinguish a mark from a space.

SEE OR SEARCH THIS CLASS, SUBCLASS:
274,   for minimum shift keying systems.

337   Separate mark and space channels:
This subclass is indented under subclass 334. Subject matter in which one frequency is received over one channel and the other frequency is received over another separate channel within the receiver.

(1)   Note. Systems with entirely independent paths between the transmitter and receiver will not be found here but in subclass 260.

338   Interrupted carrier wave:
This subclass is indented under subclass 316. Subject matter in which the pulse or digital information is received on a carrier wave which is turned on and off at a rate much higher than the signal rate.

339   Carrier controlling local generator:
This subclass is indented under subclass 338. Subject matter comprising means whereby the local generator or oscillator is triggered, gated, or otherwise controlled by the received signal.

(1)   Note. This controlled generator signal is then recorded or otherwise used.

SEE OR SEARCH CLASS:
331,   Oscillators, subclasses 172+   for means for triggering oscillators.

340   Particular pulse demodulator or detector:
This subclass is indented under subclass 316. Subject matter including specific details of the apparatus to convert the pulse signal back to baseband.

(1)   Note. Angle modulation demodulators are not found here but in subclass 324.

341   Maximum likelihood decoder or viterbi decoder:
This subclass is indented under subclass 340. Subject matter wherein a decoding method is used for choosing an estimate code word for each possible received sequence of a demodulation output.

(1)   Note. This method is generally used for decoding the convolution codes.

SEE OR SEARCH THIS CLASS, SUBCLASS:
262,   for maximum likelihood decoder or viterbi decoder of systems using alternating or pulsating current.

SEE OR SEARCH CLASS:
714,   Error Detection/Correction and Fault Detection/Recovery, subclasses 786+ for digital data error correction having a convolution code, particularly subclasses 794 and 795 for maximum likelihood and Viterbi decoding.

342   Locating predetermined portion of pulse:
This subclass is indented under subclass 340. Subject matter in which the demodulator locates a predetermined portion of the pulse such as a maxima, minima, or zero crossing.

343   Correlative or matched filter:
This subclass is indented under subclass 340. Subject matter where a signal to be demodulated is compared point to point with an internally generated reference signal which is constructed in such a way that it is at all times a prediction of what the signal to be demodulated should be at that time.

SEE OR SEARCH CLASS:
370,   Multiplex Communications, subclasses 320, 335, 342, 441, 479, and 515 for correlation detection in multiplex environment.
708,   Electrical Computers: Arithmetic Processing and Calculating, subclasses 300+ for digital filters, per se, subclasses 422+ for digital correlators, subclasses 813+ for analog correlation, and subclass 819 for analog filtering.

344 Automatic frequency control:
This subclass is indented under subclass 316. Subject matter where a receiver frequency response characteristic is set or adjusted in response to frequency changes in the input signal or charges in the receiver parameters.

345 Automatic gain control:
This subclass is indented under subclass 316. Subject matter where the amplification of the receiver is automatically adjusted in accordance with the strength of the received signal.

SEE OR SEARCH CLASS:
330, Amplifiers, subclasses 129+ and 254 for gain controlled amplifiers.
455, Telecommunications, subclasses 234.1+ for nonpulse carrier wave automatic gain control.

346 Interference or noise reduction:
This subclass is indented under subclass 316. Subject matter where the deleterious effects of extraneous signals are eliminated or suppressed at the receiver.

SEE OR SEARCH THIS CLASS, SUBCLASS:
285, for systems with antinoise provisions.

SEE OR SEARCH CLASS:
327, Miscellaneous Active Electrical Nonlinear Devices, Circuits, and Systems, appropriate subclasses and particularly subclasses 310+, 384+, and 551+ for miscellaneous or unwanted signal suppression.
348, Television, subclasses 607+ for noise or undesired signal reduction.
455, Telecommunications, subclasses 296+ for carrier wave receivers with noise reduction not limited to or claiming pulse type signal.

347 Diversity (frequency or time):
This subclass is indented under subclass 346. Subject matter including two separate receivers receiving the same signal on two different frequencies or at two different locations on the same frequency or one receiver receiving the same signal at different times and combining the two thus received signals into a more noise free signal.

SEE OR SEARCH CLASS:
455, Telecommunications, subclass 132 for general diversity; and subclasses 296+ for receiver diversity.

348 Intersymbol interference:
This subclass is indented under subclass 346. Subject matter to prevent successive data bits or symbols from interleaving or influencing one another.

SEE OR SEARCH THIS CLASS, SUBCLASS:
229+, for equalizers.
290+, for partial response system.

SEE OR SEARCH CLASS:
455, Telecommunications, subclass 296 for anti-multipath receivers.

349 Plural signal paths in receiver:
This subclass is indented under subclass 346. Subject matter including more than one signal channel included between the receiver input and output.

350 By filtering (e.g., digital):
This subclass is indented under subclass 346. Subject matter wherein the noise is reduced by a frequency domain or digital sequence filter. The filter may remove interference or pass only desired signals.

SEE OR SEARCH CLASS:
455, Telecommunications, subclass 307 for carrier wave receivers with filters for noise reduction.
708, Electrical Computers: Arithmetic Processing and Calculating, subclasses 300+ for digital filter.

351 Gating, blanking, etc.:
This subclass is indented under subclass 346. Subject matter where noise pulses are eliminated by the operation of switches to open or short the signal path to delete the undesired signals.

SEE OR SEARCH CLASS:
455, Telecommunications, subclasses 218+ for squelch and noise blankers.

352 With electromagnetic relay or solenoid:
This subclass is indented under subclass 316. Subject matter including an electromagnetically operated switch or an electromagnet with an armature which reciprocates within and along the axis of an energized coil.

SEE OR SEARCH CLASS:
361, Electricity: Electrical Systems and Devices, subclasses 139+ for control circuits for electromagnetic devices.

353 PULSE AMPLITUDE MODULATION:
This subclass is indented under the class definition. Subject matter in which the amplitude of the transmitted pulses represents the transmitted information.

SEE OR SEARCH CLASS:
327, Miscellaneous Active Electrical Nonlinear Devices, Circuits, and Systems, subclasses 50+ for miscellaneous pulse amplitude discriminating and subclasses 178+ for miscellaneous rectangular or pulse waveform amplitude control.
329, Demodulators, subclass 311 for pulse amplitude demodulation.
332, Modulators, subclasses 115+ for a pulse amplitude modulator, per se.
370, Multiplex Communications, subclass 533 for a multiplexer or distributor using pulse amplitude modulation.

354 SYNCHRONIZERS:
This subclass is indented under the class definition. Subject matter for synchronizing the operation of the receiving and transmitting mechanisms.

(1) Note. This subclass may include multiplex techniques used to control synchronization of the transmitter and receiver; however, when the information content is multiplexed, classification is in Class 370.

SEE OR SEARCH CLASS:
327, Miscellaneous Active Electrical Devices, Circuits, and Systems, particularly subclasses 141+ for miscellaneous synchronizing circuits.

348, Television, for synchronization TV system.
358, Facsimile and Static Presentation Processing, subclasses 409 through 424 for synchronization in facsimile.
370, Multiplex Communications, subclasses 503+ for synchronizing multiplex communications.
704, Data Processing: Speech Signal Processing, Linguistics, Language Translation, And Audio Compression/Decompression, subclass 270.1 for speech assisted network.
709, Electrical Computers and Digital Processing Systems: Multicomputer Data Transferring, subclass 248 for synchronization of plural computers.
713, Electrical Computers and Digital Processing Systems: Support, subclasses 375 through 601 for digital data processing system timing, per se.
714, Error Detection/Correction and Fault Detection/Recovery, subclass 12 for synchronization fault recovery.

355 Synchronizing the sampling time of digital data:
This subclass is indented under subclass 354. Subject matter wherein the sampling time of a sampler is synchronized to the transmission baud rate, or twice, or more of the transmission baud rate.

356 Network synchronizing more than two stations:
This subclass is indented under subclass 354. Subject matter for synchronizing more than two input or output points along a communication system.

(1) Note. This subclass does not include multiplex synchronization.

SEE OR SEARCH CLASS:
704, Data Processing: Speech Signal Processing, Linguistics, Language Translation, And Audio Compression/Decompression, subclass 270.1 for speech assisted network.

357 Synchronization failure prevention:
This subclass is indented under subclass 354. Subject matter in which there is apparatus to prevent the failure of the synchronization apparatus.

358 Feedback, receiver to transmitter:
This subclass is indented under subclass 354. Subject matter in which there is a signal sent from the receiver to the transmitter to control the synchronization of the system.

359 Self-synchronizing signal (self-clocking codes, etc.):
This subclass is indented under subclass 354. Subject matter that receives the synchronizing information from the information signal itself rather than requiring the transmission and ultimate reception and separation of a special synchronizing signal interleaved with the incoming information signal.

360 With transition detector:
This subclass is indented under subclass 359. Subject matter including a circuit for detecting the changes of a signal level of the received encoded signal.

361 Manchester code or biphase code:
This subclass is indented under subclass 359. Subject matter wherein the information signal is encoded as a 0-1 transition for one bit of information and a 1-0 transition for the other bit.

362 Frequency or phase control using synchronizing signal:
This subclass is indented under subclass 354. Subject matter which uses the transmission and ultimate reception and separation of a special synchronizing signal interleaved with the incoming information signal.

SEE OR SEARCH CLASS:
370, Multiplex Communications, subclasses 491 and 500 for pilot insertion in a multiplex communications using frequency or time channels.

363 Synchronization bit insertion into artificially created gaps:
This subclass is indented under subclass 362. Subject matter where there are gaps created in the transmitted bit stream in which synchronization bits are transmitted.

SEE OR SEARCH CLASS:
370, Multiplex Communications, subclass 504 for multiplex synchronization where a gap is the synchronization reference point.

364 Synchronization signals with unique amplitude, polarity, length, or frequency:
This subclass is indented under subclass 362. Subject matter where the synchronization signals are distinguishable from data signals by a differing amplitude, polarity, length, or frequency.

365 Synchronization word:
This subclass is indented under subclass 362. Subject matter in which the synchronization signal is a multidigit word which is not a member of the set of valid data words.

366 Plurality of synchronization words:
This subclass is indented under subclass 365. Subject matter having at least two or more sync words.

367 Pseudo noise:
This subclass is indented under subclass 365. Subject matter where the unique synchronizing word has the property of being produced by a definite calculation process while simultaneously satisfying one or more of the standard tests for statistical randomness.

SEE OR SEARCH CLASS:
370, Multiplex Communications, subclass 515 for a pseudo-random sync word in a multiplex environment.

368 Synchronizer pattern recognizers:
This subclass is indented under subclass 365. Subject matter which includes apparatus for recognizing the unique synchronizing word.

369   **Start - stop:**
This subclass is indented under subclass 362. Subject matter where there are synchronization signals at both the start and the end of a data word.

SEE OR SEARCH CLASS:
370,   Multiplex Communications, subclasses 305+ for start-stop synchronization of a low speed asynchronous data system.

370   **With asynchronous data:**
This subclass is indented under subclass 369. Subject matter having a variable time interval between successive bits, characters or events of the incoming data stream.

371   **Phase displacement, slip or jitter correction:**
This subclass is indented under subclass 354. Subject matter which corrects for errors in the time of occurrence of transmitted pulses.

372   **Elastic buffer:**
This subclass is indented under subclass 371. Subject matter wherein a first in-first out (FIFO) storage is operated to receive data that is synchronized with a write clock from the input signal and therefrom synchronized with the read clock of the FIFO storage.

373   **Phase locking:**
This subclass is indented under subclass 371. Subject matter wherein the receiver clock and received data are brought into frequency and phase alignment or coherence.

374   **With charge pump or up and down counters:**
This subclass is indented under subclass 373. Subject matter including a means for controlling the voltage which applied to the voltage control oscillator (VCO) as to change the frequency of the phase lock loop.

375   **With frequency detector and phase detector:**
This subclass is indented under subclass 373. Subject matter including a frequency detecting device to ensure the frequency alignment before a phase detector adjusts the phase locking.

376   **Phase locked loop:**
This subclass is indented under subclass 373. Subject matter having a closed-loop electronic servomechanism the output of which locks onto and tracks a received signal to provide the frequency and phase aligned receiver clock.

377   **MISCELLANEOUS:**
This subclass is indented under the class definition. Subject matter not provided for in any of the preceding subclasses of this class.

E-SUBCLASSES

The E-subclasses in U.S. Class 375 provide for Spread Spectrum techniques in signal modulation for transmission and systems for the transmission of digital video signal using pulse code modulation.

E1.001   **SPREAD SPECTRUM TECHNIQUES IN GENERAL (EPO):**
This maingroup provides for subject matter utilizing a data modulated signal which has its energy spread over a transmitted bandwidth which is much greater than the bandwidth or rate of information being sent. This subclass is substantially the same in scope as ECLA classification H04B1/69.

E1.002   **Using direct sequence modulation (EPO):**
This subclass is indented under subclass E1.001. This subclass is substantially the same in scope as ECLA classification H04B1/707.

E1.003   **With code acquisition (EPO):**
This subclass is indented under subclass E1.002. This subclass is substantially the same in scope as ECLA classification H04B1/707A.

E1.004   **Setting of lock conditions, e.g., threshold (EPO):**
This subclass is indented under subclass E1.003. This subclass is substantially the same in scope as ECLA classification H04B1/707A7.

E1.005   **Code identification (EPO):**
This subclass is indented under subclass E1.003. This subclass is substantially the same in scope as ECLA classification H04B1/707A11.

E1.006 Multimode search, i.e., using multiple search strategies (EPO):
This subclass is indented under subclass E1.003. This subclass is substantially the same in scope as ECLA classification H04B1/707A15.

E1.007 Using partial detection (EPO):
This subclass is indented under subclass E1.003. This subclass is substantially the same in scope as ECLA classification H04B1/707A1.

E1.008 Partial correlation (EPO):
This subclass is indented under subclass E1.007. This subclass is substantially the same in scope as ECLA classification H04B1/707A1A.

E1.009 Partial phase search (EPO):
This subclass is indented under subclass E1.007. This subclass is substantially the same in scope as ECLA classification H04B1/707A1C.

E1.01 Multistage acquisition (EPO):
This subclass is indented under subclass E1.003. This subclass is substantially the same in scope as ECLA classification H04B1/707A3.

E1.011 Multidwell schemes, i.e., multiple accumulation times (EPO):
This subclass is indented under subclass E1.01. This subclass is substantially the same in scope as ECLA classification H04B1/707A3A.

E1.012 Parallel schemes (EPO):
This subclass is indented under subclass E1.01. This subclass is substantially the same in scope as ECLA classification H04B1/707A3C.

E1.013 Setting of search window, i.e., range of code offsets to be searched (EPO):
This subclass is indented under subclass E1.003. This subclass is substantially the same in scope as ECLA classification H04B1/707A5.

E1.014 Masking/slewing, i.e., jumping within the code (EPO):
This subclass is indented under subclass E1.003. This subclass is substantially the same

in scope as ECLA classification H04B1/707A9.

E1.015 With increased resolution, i.e., higher than half a chip (EPO):
This subclass is indented under subclass E1.003. This subclass is substantially the same in scope as ECLA classification H04B1/707A13.

E1.016 Using a code tracking loop, e.g., a delay locked loop (EPO):
This subclass is indented under subclass E1.002. This subclass is substantially the same in scope as ECLA classification H04B1/707B.

E1.017 With demodulation by means of convolvers, e.g., of the SAW type, etc. (EPO):
This subclass is indented under subclass E1.002. This subclass is substantially the same in scope as ECLA classification H04B1/707C.

E1.018 With demodulation by means of matched filters (EPO):
This subclass is indented under subclass E1.002. This subclass is substantially the same in scope as ECLA classification H04B1/707D.

E1.019 With asynchronous demodulation, i.e., not requiring code synchronisation (EPO):
This subclass is indented under subclass E1.002. This subclass is substantially the same in scope as ECLA classification H04B1/707E.

E1.02 Interference-related aspects (EPO):
This subclass is indented under subclass E1.002. This subclass is substantially the same in scope as ECLA classification H04B1/707F.

E1.021 The interference being narrowband (EPO):
This subclass is indented under subclass E1.02. This subclass is substantially the same in scope as ECLA classification H04B1/707F1.

E1.022 With estimation filters (EPO):
This subclass is indented under subclass E1.021. This subclass is substantially the same in scope as ECLA classification H04B1/707F1E.

E1.023 With transform to frequency domain (EPO):
This subclass is indented under subclass E1.021. This subclass is substantially the same

in scope as ECLA classification H04B1/707F1T.

E1.024   The interference being multiple access interference (EPO):
This subclass is indented under subclass E1.02. This subclass is substantially the same in scope as ECLA classification H04B1/707F2.

E1.025   Using joint detection techniques, e.g., linear detectors (EPO):
This subclass is indented under subclass E1.024. This subclass is substantially the same in scope as ECLA classification H04B1/707F2J.

E1.026   Using decorrelation matrix (EPO):
This subclass is indented under subclass E1.025. This subclass is substantially the same in scope as ECLA classification H04B1/707F2J1.

E1.027   Using minimum mean squared error (MMSE) detector (EPO):
This subclass is indented under subclass E1.025. This subclass is substantially the same in scope as ECLA classification H04B1/707F2J2.

E1.028   Using maximum-likelihood sequence estimation (MLSE) (EPO):
This subclass is indented under subclass E1.025. This subclass is substantially the same in scope as ECLA classification H04B1/707F2J3.

E1.029   Using subtractive interference cancellation (EPO):
This subclass is indented under subclass E1.024. This subclass is substantially the same in scope as ECLA classification H04B1/707F2S.

E1.03   Successive interference cancellation (EPO):
This subclass is indented under subclass E1.029. This subclass is substantially the same in scope as ECLA classification H04B1/707F2S1.

E1.031   Parallel interference cancellation (EPO):
This subclass is indented under subclass E1.029. This subclass is substantially the same in scope as ECLA classification H04B1/707F2S2.

E1.032   The interference being multi path interference, e.g., RAKE receivers (EPO):
This subclass is indented under subclass E1.02. This subclass is substantially the same in scope as ECLA classification H04B1/707F3.

E1.033   Using frequency hopping (EPO):
This subclass is indented under subclass E1.001. This subclass is substantially the same in scope as ECLA classification H04B1/713.

E1.034   Arrangements for generation of hop frequencies (EPO):
This subclass is indented under subclass E1.033. This subclass is substantially the same in scope as ECLA classification H04B1/713C.

E1.035   Arrangements for generation of hop sequences (EPO):
This subclass is indented under subclass E1.033. This subclass is substantially the same in scope as ECLA classification H04B1/713D.

E1.036   Interference related aspects (EPO):
This subclass is indented under subclass E1.033. This subclass is substantially the same in scope as ECLA classification H04B1/713F.

E1.037   Arrangements for sequence synchronization (EPO):
This subclass is indented under subclass E1.033. This subclass is substantially the same in scope as ECLA classification H04B1/713S.

E7.001   SYSTEMS FOR THE TRANSMISSION OF TELEVISION SIGNALS USING PULSE CODE MODULATION (EPO):
This main group provides for systems for the transmission of television signals using pulse code modulation, i.e. transmission systems wherein the television signal is a digital video signal or a bit stream carrying visual content; e.g., systems, devices and methods for video bit stream assembling, disassembling, transport, processing, delivery or control, for source coding or decoding of digital video signal, for error protection, detection or correction of digital video signal, for channel coding or decoding of digital video signal. This subclass is substantially the same in scope as ECLA classification H04N7/24.

E7.002 **Arrangements for interfacing to the transmission channel or to the communication network (EPO):**
This subclass is indented under subclass E7.001. This subclass is substantially the same in scope as ECLA classification H04N7/24A.

E7.003 **Bitstream control arrangements (EPO):**
This subclass is indented under subclass E7.001. This subclass is substantially the same in scope as ECLA classification H04N7/24C.

E7.004 **Involving pointers to the video stream (EPO):**
This subclass is indented under subclass E7.003. This subclass is substantially the same in scope as ECLA classification H04N7/24C10.

E7.005 **Involving the control of media objects (EPO):**
This subclass is indented under subclass E7.003. This subclass is substantially the same in scope as ECLA classification H04N7/24C12.

E7.006 **Presentation therefor, e.g., on the basis of a scene description (EPO):**
This subclass is indented under subclass E7.005. This subclass is substantially the same in scope as ECLA classification H04N7/24C12C.

E7.007 **User interaction therefor (EPO):**
This subclass is indented under subclass E7.005. This subclass is substantially the same in scope as ECLA classification H04N7/24C12M.

E7.008 **With hot-spots (EPO):**
This subclass is indented under subclass E7.007. This subclass is substantially the same in scope as ECLA classification H04N7/24C12M2.

E7.009 **Intellectual Property Rights management and protection therefor (EPO):**
This subclass is indented under subclass E7.005. This subclass is substantially the same in scope as ECLA classification H04N7/24C12P.

E7.01 **Synchronization therefor, e.g., synchronization of elementary stream objects at the sync layer with time stamps (EPO):**
This subclass is indented under subclass E7.005. This subclass is substantially the same in scope as ECLA classification H04N7/24C12S.

E7.011 **Involving control of the complexity properties of the video bitstream, e.g., spatial or temporal resolution, SNR, bit rate, region of interest selection (EPO):**
This subclass is indented under subclass E7.003. This subclass is substantially the same in scope as ECLA classification H04N7/24C14.

SEE OR SEARCH THIS CLASS, SUBCLASS:
E7.09, E7.091 and E7.078 for scalable encoding of video.

E7.012 **Where the control is performed by the receiver of the video, e.g., active selection by the receiver from a scalable bitstream or selective multicast subscription (EPO):**
This subclass is indented under subclass E7.011. This subclass is substantially the same in scope as ECLA classification H04N7/24C14R.

E7.013 **Where the control is performed by the transmitter of the video, e.g., active selection by the transmitter of parts of scalable bitstream to be sent (EPO):**
This subclass is indented under subclass E7.011. This subclass is substantially the same in scope as ECLA classification H04N7/24C14T.

E7.014 **Involving buffer level management (EPO):**
This subclass is indented under subclass E7.003. This subclass is substantially the same in scope as ECLA classification H04N7/24C2.

E7.015 **Involving a control signal to the decoder, e.g., from the medium specific interface unit, or from the network (EPO):**
This subclass is indented under subclass E7.003. This subclass is substantially the same in scope as ECLA classification H04N7/24C4.

E7.016 Involving a control signal to the encoder, e.g., from the medium specific interface unit, or from the network (EPO):
This subclass is indented under subclass E7.003. This subclass is substantially the same in scope as ECLA classification H04N7/24C6.

E7.017 Involving an exchange of control commands (EPO):
This subclass is indented under subclass E7.003. This subclass is substantially the same in scope as ECLA classification H04N7/24C8.

E7.018 Bitstream embedding arrangements, e.g., arrangements for blending, replacing, hiding, compositing or associating at bitstream level (EPO):
This subclass is indented under subclass E7.001. This subclass is substantially the same in scope as ECLA classification H04N7/24E.

SEE OR SEARCH THIS CLASS, SUBCLASS:
E7.089, for arrangements involving bandwidth reduction signal processing.

E7.019 Bitstream network arrangements (EPO):
This subclass is indented under subclass E7.001. This subclass is substantially the same in scope as ECLA classification H04N7/24N.

E7.02 Bitstream transport arrangements (EPO):
This subclass is indented under subclass E7.001. This subclass is substantially the same in scope as ECLA classification H04N7/24T.

E7.021 Bitstream processing (EPO):
This subclass is indented under subclass E7.02. This subclass is substantially the same in scope as ECLA classification H04N7/24T2.

E7.022 Involving modification of bitstream parameters, e.g., restamping of time stamps, remapping of identifiers transmultiplexing (EPO):
This subclass is indented under subclass E7.021. This subclass is substantially the same in scope as ECLA classification H04N7/24T2M.

E7.023 Involving switching between bitstreams (EPO):
This subclass is indented under subclass E7.021. This subclass is substantially the same in scope as ECLA classification H04N7/24T2S.

E7.024 Involving transporting of additional information over the bitstream (EPO):
This subclass is indented under subclass E7.02. This subclass is substantially the same in scope as ECLA classification H04N7/24T4.

E7.025 Involving transporting of the bitstream over a delivery medium (EPO):
This subclass is indented under subclass E7.02. This subclass is substantially the same in scope as ECLA classification H04N7/24T6.

E7.026 Using bandwidth reduction; source coding or decoding of digital video signal, e.g., digital video signal compression; Pre- or post-processing therefor (EPO):
This subclass is indented under subclass E7.001. This subclass is substantially the same in scope as ECLA classification H04N7/26.

E7.027 Decoder-specific arrangements (EPO):
This subclass is indented under subclass E7.026. This subclass is substantially the same in scope as ECLA classification H04N7/26D.

E7.028 For compensating inverse transform mismatch, e.g., IDCT mismatch (EPO):
This subclass is indented under subclass E7.027. This subclass is substantially the same in scope as ECLA classification H04N7/26D2.

E7.029 Involving sub-band coding (EPO):
This subclass is indented under subclass E7.026. This subclass is substantially the same in scope as ECLA classification H04N7/26H.

E7.03 In combination with temporal predictive coding, e.g., in 'inter' mode (EPO):
This subclass is indented under subclass E7.029. This subclass is substantially the same in scope as ECLA classification H04N7/26H50.

E7.031 With motion compensated temporal filtering (EPO):
This subclass is indented under subclass E7.03. This subclass is substantially the same in scope as ECLA classification H04N7/26H50A.

E7.032 With at least one adaptive element (EPO):
This subclass is indented under subclass E7.03. This subclass is substantially the same in scope as ECLA classification H04N7/26H50E.

E7.033 Involving variable length or entropy coding, e.g., Huffmann or arithmetic coding (EPO):
This subclass is indented under subclass E7.032. This subclass is substantially the same in scope as ECLA classification H04N7/26H50E2.

E7.034 Involving normalization or quantizing (EPO):
This subclass is indented under subclass E7.032. This subclass is substantially the same in scope as ECLA classification H04N7/26H50E4.

E7.035 Involving a bit-rate or bit-amount target (EPO):
This subclass is indented under subclass E7.032. This subclass is substantially the same in scope as ECLA classification H04N7/26H50E5.

E7.036 With adaptive target allocation among the components (EPO):
This subclass is indented under subclass E7.035. This subclass is substantially the same in scope as ECLA classification H04N7/26H50E5A.

E7.037 With interframe prediction not only of coefficient values (EPO):
This subclass is indented under subclass E7.03. This subclass is substantially the same in scope as ECLA classification H04N7/26H50F.

E7.038 Suited to an interframe bitstream syntax (EPO):
This subclass is indented under subclass E7.03. This subclass is substantially the same in scope as ECLA classification H04N7/26H50M.

E7.039 Using sub-band domain temporal integration (EPO):
This subclass is indented under subclass E7.03. This subclass is substantially the same in scope as ECLA classification H04N7/26H50T.

E7.04 Of a single image (EPO):
This subclass is indented under subclass E7.029. This subclass is substantially the same in scope as ECLA classification H04N7/26H30.

E7.041 In more than two frequency dimensions (EPO):
This subclass is indented under subclass E7.04. This subclass is substantially the same in scope as ECLA classification H04N7/26H30A.

E7.042 Of arbitrarily shaped image segments (EPO):
This subclass is indented under subclass E7.04. This subclass is substantially the same in scope as ECLA classification H04N7/26H30B.

E7.043 With details relating to the sub-band filter (EPO):
This subclass is indented under subclass E7.04. This subclass is substantially the same in scope as ECLA classification H04N7/26H30D.

E7.044 Concerning filter definition (EPO):
This subclass is indented under subclass E7.043. This subclass is substantially the same in scope as ECLA classification H04N7/26H30D1.

E7.045 Concerning filter implementation (EPO):
This subclass is indented under subclass E7.043. This subclass is substantially the same in scope as ECLA classification H04N7/26H30D2.

E7.046 With at least one adaptive element (EPO):
This subclass is indented under subclass E7.04. This subclass is substantially the same in scope as ECLA classification H04N7/26H30E.

E7.047 Involving variable length or entropy coding, e.g., Huffmann or arithmetic coding (EPO):
This subclass is indented under subclass E7.046. This subclass is substantially the same in scope as ECLA classification H04N7/26H30E2.

E7.048 Involving normalization or quantizing (EPO):
This subclass is indented under subclass E7.046. This subclass is substantially the same

in scope as ECLA classification H04N7/26H30E4.

E7.049 Involving a bit-rate or bit-amount target (EPO):
This subclass is indented under subclass E7.046. This subclass is substantially the same in scope as ECLA classification H04N7/26H30E5.

E7.05 With adaptive target allocation among the components (EPO):
This subclass is indented under subclass E7.049. This subclass is substantially the same in scope as ECLA classification H04N7/26H30E5A.

E7.051 Control aspects therefor (EPO):
This subclass is indented under subclass E7.04. This subclass is substantially the same in scope as ECLA classification H04N7/26H30C.

E7.052 Controlled element (EPO):
This subclass is indented under subclass E7.051. This subclass is substantially the same in scope as ECLA classification H04N7/26H30C1.

E7.053 Subband structure, e.g., number of sub-bands (EPO):
This subclass is indented under subclass E7.052. This subclass is substantially the same in scope as ECLA classification H04N7/26H30C1B.

E7.054 Filter type or filtering coefficients (EPO):
This subclass is indented under subclass E7.052. This subclass is substantially the same in scope as ECLA classification H04N7/26H30C1D.

E7.055 Error protection, detection or correction (EPO):
This subclass is indented under subclass E7.052. This subclass is substantially the same in scope as ECLA classification H04N7/26H30C1K.

E7.056 Scan or transmission order of coefficients or bitplanes (EPO):
This subclass is indented under subclass E7.052. This subclass is substantially the same in scope as ECLA classification H04N7/26H30C1S.

E7.057 Switching of direction, e.g., horizontal, diagonal, vertical (EPO):
This subclass is indented under subclass E7.056. This subclass is substantially the same in scope as ECLA classification H04N7/26H30C1S3.

E7.058 Unit of control (EPO):
This subclass is indented under subclass E7.051. This subclass is substantially the same in scope as ECLA classification H04N7/26H30C2.

E7.059 Relating to sub-band structure (EPO):
This subclass is indented under subclass E7.058. This subclass is substantially the same in scope as ECLA classification H04N7/26H30C2B.

E7.06 Hierarchical level (EPO):
This subclass is indented under subclass E7.059. This subclass is substantially the same in scope as ECLA classification H04N7/26H30C2B6.

E7.061 Directional tree, e.g., low-high (LH), high-low (HL), high-high (HH) (EPO):
This subclass is indented under subclass E7.059. This subclass is substantially the same in scope as ECLA classification H04N7/26H30C2B8.

E7.062 Object or region (EPO):
This subclass is indented under subclass E7.058. This subclass is substantially the same in scope as ECLA classification H04N7/26H30C2J.

E7.063 Element used for control (EPO):
This subclass is indented under subclass E7.051. This subclass is substantially the same in scope as ECLA classification H04N7/26H30C3.

E7.064 Position or location within image, e.g., center or periphery of picture (EPO):
This subclass is indented under subclass E7.063. This subclass is substantially the same in scope as ECLA classification H04N7/26H30C3R.

E7.065 Involving user interaction or information input by receiving side (EPO):
This subclass is indented under subclass E7.063. This subclass is substantially the same in scope as ECLA classification H04N7/ 26H30C3V.

E7.066 With prediction other than mere runlength (EPO):
This subclass is indented under subclass E7.04. This subclass is substantially the same in scope as ECLA classification H04N7/26H30F.

E7.067 Intraband (EPO):
This subclass is indented under subclass E7.066. This subclass is substantially the same in scope as ECLA classification H04N7/ 26H30F1.

E7.068 Interband (EPO):
This subclass is indented under subclass E7.066. This subclass is substantially the same in scope as ECLA classification H04N7/ 26H30F2.

E7.069 Involving the arranging of coefficients or bits, e.g., for scalability or progressive transmission (EPO):
This subclass is indented under subclass E7.04. This subclass is substantially the same in scope as ECLA classification H04N7/26H30H.

E7.07 Involving scan according to levels, e.g., breadth-first (EPO):
This subclass is indented under subclass E7.069. This subclass is substantially the same in scope as ECLA classification H04N7/ 26H30H1.

E7.071 Involving scan according to trees, e.g., depth-first (EPO):
This subclass is indented under subclass E7.069. This subclass is substantially the same in scope as ECLA classification H04N7/ 26H30H2.

E7.072 Coding of bitplanes or significance, e.g., zero tree (EPO):
This subclass is indented under subclass E7.069. This subclass is substantially the same in scope as ECLA classification H04N7/ 26H30H6.

E7.073 Involving error protection, detection or correction (EPO):
This subclass is indented under subclass E7.04. This subclass is substantially the same in scope as ECLA classification H04N7/26H30K.

E7.074 Suited to a bitstream syntax (EPO):
This subclass is indented under subclass E7.04. This subclass is substantially the same in scope as ECLA classification H04N7/26H30M.

E7.075 With grouping into blocks (EPO):
This subclass is indented under subclass E7.04. This subclass is substantially the same in scope as ECLA classification H04N7/26H30Q.

E7.076 Involving video objects (EPO):
This subclass is indented under subclass E7.026. This subclass is substantially the same in scope as ECLA classification H04N7/26J.

E7.077 Involving both synthetic and natural picture components, e.g., synthetic natural hybrid coding (SNHC) (EPO):
This subclass is indented under subclass E7.076. This subclass is substantially the same in scope as ECLA classification H04N7/26J10.

E7.078 Scalability, e.g., involving base and at least one enhancement video object layers (VOL) (EPO):
This subclass is indented under subclass E7.076. This subclass is substantially the same in scope as ECLA classification H04N7/26J14.

E7.079 Spatial scalability (EPO):
This subclass is indented under subclass E7.078. This subclass is substantially the same in scope as ECLA classification H04N7/ 26J14S.

E7.08 Temporal scalability, e.g., layered VOP frame rate (EPO):
This subclass is indented under subclass E7.078. This subclass is substantially the same in scope as ECLA classification H04N7/ 26J14T.

E7.081 Shape coding therefor (EPO):
This subclass is indented under subclass E7.076. This subclass is substantially the same in scope as ECLA classification H04N7/26J2.

E7.082 Using binary alpha-plane coding, e.g., Context based Arithmetic Encoding (CAE) (EPO):
This subclass is indented under subclass E7.081. This subclass is substantially the same in scope as ECLA classification H04N7/26J2A.

E7.083 Model based coding therefor (EPO):
This subclass is indented under subclass E7.076. This subclass is substantially the same in scope as ECLA classification H04N7/26J4.

E7.084 Using a three-dimensional model (EPO):
This subclass is indented under subclass E7.083. This subclass is substantially the same in scope as ECLA classification H04N7/26J4T.

E7.085 Coding of regions that are present throughout a whole video segment, e.g., sprites (EPO):
This subclass is indented under subclass E7.076. This subclass is substantially the same in scope as ECLA classification H04N7/26J6.

E7.086 Of static sprites, e.g., background, mosaic (EPO):
This subclass is indented under subclass E7.085. This subclass is substantially the same in scope as ECLA classification H04N7/26J6B.

E7.087 Scene description coding, e.g., binary format for scenes (BIFS) compression (EPO):
This subclass is indented under subclass E7.076. This subclass is substantially the same in scope as ECLA classification H04N7/26J8.

SEE OR SEARCH THIS CLASS, SUBCLASS:
E7.003, for command descriptors and the like.

E7.088 Involving coding of different picture or data components (EPO):
This subclass is indented under subclass E7.026. This subclass is substantially the same in scope as ECLA classification H04N7/26E.

E7.089 Involving the insertion of extra data, e.g., in the video data, in the coding parameters or
by modification of said video data or parameters (EPO):
This subclass is indented under subclass E7.088. This subclass is substantially the same in scope as ECLA classification H04N7/26E10.

SEE OR SEARCH THIS CLASS, SUBCLASS:
E7.018, for arrangements for embedding at bitstream level.

E7.09 Involving separate coding of the error signal, i.e., the difference between the original picture and the locally reconstructed one (EPO):
This subclass is indented under subclass E7.088. This subclass is substantially the same in scope as ECLA classification H04N7/26E2.

E7.091 Involving arrangements for adaptive allocation of coded information to different channels (EPO):
This subclass is indented under subclass E7.088. This subclass is substantially the same in scope as ECLA classification H04N7/26E4.

E7.092 Involving multi-layer decomposition; subsequent reconstruction (EPO):
This subclass is indented under subclass E7.088. This subclass is substantially the same in scope as ECLA classification H04N7/26E6.

E7.093 Implementation arrangements, e.g., implementation by hardware of software (EPO):
This subclass is indented under subclass E7.026. This subclass is substantially the same in scope as ECLA classification H04N7/26L.

E7.094 Memory arrangements (EPO):
This subclass is indented under subclass E7.093. This subclass is substantially the same in scope as ECLA classification H04N7/26L2.

E7.095 Memory downsizing methods (EPO):
This subclass is indented under subclass E7.094. This subclass is substantially the same in scope as ECLA classification H04N7/26L2D.

E7.096 Display on the fly, e.g., simultaneous writing to and reading from decoder memory (EPO):
This subclass is indented under subclass E7.095. This subclass is substantially the same in scope as ECLA classification H04N7/26L2D2.

E7.097 With 3:2 pulldown (EPO):
This subclass is indented under subclass E7.096. This subclass is substantially the same in scope as ECLA classification H04N7/26L2D2P.

E7.098 Recompression (EPO):
This subclass is indented under subclass E7.095. This subclass is substantially the same in scope as ECLA classification H04N7/26L2D4.

E7.099 Decimation (EPO):
This subclass is indented under subclass E7.098. This subclass is substantially the same in scope as ECLA classification H04N7/26L2D4D.

E7.1 Motion estimation and/or compensation hardware (EPO):
This subclass is indented under subclass E7.093. This subclass is substantially the same in scope as ECLA classification H04N7/26L4.

E7.101 Data flow inside motion estimator (EPO):
This subclass is indented under subclass E7.1. This subclass is substantially the same in scope as ECLA classification H04N7/26L4A.

E7.102 Access to external memory (EPO):
This subclass is indented under subclass E7.1. This subclass is substantially the same in scope as ECLA classification H04N7/26L4B.

E7.103 Parallel arrangements (EPO):
This subclass is indented under subclass E7.093. This subclass is substantially the same in scope as ECLA classification H04N7/26L6.

E7.104 Motion estimation therefor; processing of motion vectors for bandwidth reduction purposes (EPO):
This subclass is indented under subclass E7.026. This subclass is substantially the same in scope as ECLA classification H04N7/26M.

E7.105 Methods (EPO):
This subclass is indented under subclass E7.104. This subclass is substantially the same in scope as ECLA classification H04N7/26M2.

E7.106 Global motion vector estimation (EPO):
This subclass is indented under subclass E7.105. This subclass is substantially the same in scope as ECLA classification H04N7/26M2G.

E7.107 Multiresolution or hierarchical method (EPO):
This subclass is indented under subclass E7.105. This subclass is substantially the same in scope as ECLA classification H04N7/26M2H.

E7.108 Multistep search method, e.g., 3-step, 2D-log, One-at-a-Time Search (OTS) (EPO):
This subclass is indented under subclass E7.105. This subclass is substantially the same in scope as ECLA classification H04N7/26M2M.

E7.109 Non block-based processing (EPO):
This subclass is indented under subclass E7.105. This subclass is substantially the same in scope as ECLA classification H04N7/26M2N.

E7.11 Using feature points or meshes (EPO):
This subclass is indented under subclass E7.109. This subclass is substantially the same in scope as ECLA classification H04N7/26M2N2.

E7.111 Using regions (EPO):
This subclass is indented under subclass E7.109. This subclass is substantially the same in scope as ECLA classification H04N7/26M2N4.

E7.112 Contour motion estimation (EPO):
This subclass is indented under subclass E7.111. This subclass is substantially the same in scope as ECLA classification H04N7/26M2N4C.

E7.113 Sub-pixel accuracy (EPO):
This subclass is indented under subclass E7.105. This subclass is substantially the same

in scope as ECLA classification H04N7/26M2S.

E7.114 Transform domain motion estimation (EPO):
This subclass is indented under subclass E7.105. This subclass is substantially the same in scope as ECLA classification H04N7/26M2T.

E7.115 Details (EPO):
This subclass is indented under subclass E7.104. This subclass is substantially the same in scope as ECLA classification H04N7/26M4.

E7.116 Spatially constrained motion estimation, e.g., at image or region borders (EPO):
This subclass is indented under subclass E7.115. This subclass is substantially the same in scope as ECLA classification H04N7/26M4C.

E7.117 Dealing with occlusions (EPO):
This subclass is indented under subclass E7.115. This subclass is substantially the same in scope as ECLA classification H04N7/26M4D.

E7.118 Early exit, i.e., stopping a systematic computation based on a certain criteria, e.g., error magnitude is too large (EPO):
This subclass is indented under subclass E7.115. This subclass is substantially the same in scope as ECLA classification H04N7/26M4E.

E7.119 Search initialization, i.e., estimating a good candidate to initiate a search (EPO):
This subclass is indented under subclass E7.115. This subclass is substantially the same in scope as ECLA classification H04N7/26M4I.

E7.12 Padding, i.e., filling non object values in an arbitrary shaped block for motion estimation purposes (EPO):
This subclass is indented under subclass E7.115. This subclass is substantially the same in scope as ECLA classification H04N7/26M4P.

E7.121 Rate-distortion criteria (EPO):
This subclass is indented under subclass E7.115. This subclass is substantially the same

in scope as ECLA classification H04N7/26M4R.

E7.122 Variable search window size or shape (EPO):
This subclass is indented under subclass E7.115. This subclass is substantially the same in scope as ECLA classification H04N7/26M4V.

E7.123 Processing of motion vectors (EPO):
This subclass is indented under subclass E7.104. This subclass is substantially the same in scope as ECLA classification H04N7/26M6.

E7.124 Encoding (EPO):
This subclass is indented under subclass E7.123. This subclass is substantially the same in scope as ECLA classification H04N7/26M6E.

E7.125 Predictive encoding (EPO):
This subclass is indented under subclass E7.124. This subclass is substantially the same in scope as ECLA classification H04N7/26M6E2.

E7.126 Adaptive or control aspects therefor (EPO):
This subclass is indented under subclass E7.026. This subclass is substantially the same in scope as ECLA classification H04N7/26A.

E7.127 Methods, elements or tools for adaptive control (EPO):
This subclass is indented under subclass E7.126. This subclass is substantially the same in scope as ECLA classification H04N7/26A10.

E7.128 LaGrangian method (EPO):
This subclass is indented under subclass E7.127. This subclass is substantially the same in scope as ECLA classification H04N7/26A10L.

E7.129 Side information (EPO):
This subclass is indented under subclass E7.127. This subclass is substantially the same in scope as ECLA classification H04N7/26A10S.

E7.13 Iterative methods (EPO):
This subclass is indented under subclass E7.127. This subclass is substantially the same

in scope as ECLA classification H04N7/26A10T.

E7.131 Two pass methods (EPO):
This subclass is indented under subclass E7.13. This subclass is substantially the same in scope as ECLA classification H04N7/26A10T2.

E7.132 Controlled element or parameter (EPO):
This subclass is indented under subclass E7.126. This subclass is substantially the same in scope as ECLA classification H04N7/26A4.

E7.133 Predictor (EPO):
This subclass is indented under subclass E7.132. This subclass is substantially the same in scope as ECLA classification H04N7/26A4B.

E7.134 Target code amount (EPO):
This subclass is indented under subclass E7.132. This subclass is substantially the same in scope as ECLA classification H04N7/26A4E.

E7.135 Filtering, e.g., for pre- or post-processing (EPO):
This subclass is indented under subclass E7.132. This subclass is substantially the same in scope as ECLA classification H04N7/26A4F.

SEE OR SEARCH THIS CLASS, SUB-CLASS:
E7.054, for subband or wavelet filter banks.

E7.136 Grid, i.e., regular pattern of elementary coding units in a picture, e.g., block grid (EPO):
This subclass is indented under subclass E7.132. This subclass is substantially the same in scope as ECLA classification H04N7/26A4G..

E7.137 Encoder, i.e., selection among a plurality of heterogeneous encoders (EPO):
This subclass is indented under subclass E7.132. This subclass is substantially the same in scope as ECLA classification H04N7/26A4K.

E7.138 Encoding parameters processing, e.g., initialization, alteration, compression (EPO):
This subclass is indented under subclass E7.132. This subclass is substantially the same

E7.139 Quantizer (EPO):
This subclass is indented under subclass E7.132. This subclass is substantially the same in scope as ECLA classification H04N7/26A4Q.

E7.14 Details of quantization, normalization or weighting functions, e.g., normalization parameters or matrices, variable uniform quantizes, weighting matrices (EPO):
This subclass is indented under subclass E7.139. This subclass is substantially the same in scope as ECLA classification H04N7/26A4Q2.

E7.141 Resource allocation (EPO):
This subclass is indented under subclass E7.132. This subclass is substantially the same in scope as ECLA classification H04N7/26A4R.

E7.142 Transform coefficients scan, e.g., zig-zag scan (EPO):
This subclass is indented under subclass E7.132. This subclass is substantially the same in scope as ECLA classification H04N7/26A4S.

E7.143 Transformer, e.g., 8x8 or 2x4x8 DCT, selection among a plurality of different transform operations (EPO):
This subclass is indented under subclass E7.132. This subclass is substantially the same in scope as ECLA classification H04N7/26A4T.

E7.144 Variable length coding (VLC) or entropy coding, e.g., Huffmann or arithmetic coding (EPO):
This subclass is indented under subclass E7.132. This subclass is substantially the same in scope as ECLA classification H04N7/26A4V.

E7.145 Skipping or zeroing of coding units, e.g., adaptive decimation, frame skipping, transform coefficient masking (EPO):
This subclass is indented under subclass E7.132. This subclass is substantially the same in scope as ECLA classification H04N7/26A4Z.

E7.146 **Coding or prediction mode selection (EPO):**
This subclass is indented under subclass E7.132. This subclass is substantially the same in scope as ECLA classification H04N7/26A4C.

E7.147 **Intra coding, e.g., selection among a plurality of spatially predictive coding modes (EPO):**
This subclass is indented under subclass E7.146. This subclass is substantially the same in scope as ECLA classification H04N7/26A4C1.

E7.148 **Refresh, i.e., intra-coding mode decision, e.g., at macroblock or picture level (EPO):**
This subclass is indented under subclass E7.146. This subclass is substantially the same in scope as ECLA classification H04N7/26A4C2.

E7.149 **Inter coding, i.e., selection among a plurality of temporally predictive coding modes (EPO):**
This subclass is indented under subclass E7.146. This subclass is substantially the same in scope as ECLA classification H04N7/26A4C3.

E7.15 **Picture structure, e.g., interlaced/progressive (EPO):**
This subclass is indented under subclass E7.146. This subclass is substantially the same in scope as ECLA classification H04N7/26A4C4.

E7.151 **Group-of-pictures (GOP) structure (EPO):**
This subclass is indented under subclass E7.146. This subclass is substantially the same in scope as ECLA classification H04N7/26A4C6.

E7.152 **Controlling element, parameter or criteria (EPO):**
This subclass is indented under subclass E7.126. This subclass is substantially the same in scope as ECLA classification H04N7/26A6.

E7.153 **Rate distortion criteria (EPO):**
This subclass is indented under subclass E7.152. This subclass is substantially the same in scope as ECLA classification H04N7/26A6D.

E7.154 **Data rate or code amount (EPO):**
This subclass is indented under subclass E7.152. This subclass is substantially the same in scope as ECLA classification H04N7/26A6E.

E7.155 **Using a combination of feedforward and feedback control (EPO):**
This subclass is indented under subclass E7.154. This subclass is substantially the same in scope as ECLA classification H04N7/26A6E2.

E7.156 **Using feedforward control (EPO):**
This subclass is indented under subclass E7.154. This subclass is substantially the same in scope as ECLA classification H04N7/26A6E4.

E7.157 **Based on model-estimated code amount (EPO):**
This subclass is indented under subclass E7.156. This subclass is substantially the same in scope as ECLA classification H04N7/26A6E4E.

E7.158 **Based on off-line generated code amount (EPO):**
This subclass is indented under subclass E7.156. This subclass is substantially the same in scope as ECLA classification H04N7/26A6E4G.

E7.159 **Feedback control, i.e. control using output code amount, e.g., buffer fullness (EPO):**
This subclass is indented under subclass E7.154. This subclass is substantially the same in scope as ECLA classification H04N7/26A6E6.

E7.16 **Single-pass constant bit rate (CBR) encoding (EPO):**
This subclass is indented under subclass E7.159. This subclass is substantially the same in scope as ECLA classification H04N7/26A6E6S.

E7.161 **Input video signal characteristics (EPO):**
This subclass is indented under subclass E7.152. This subclass is substantially the same in scope as ECLA classification H04N7/26A6C.

E7.162 Complexity, e.g., activity, edges (EPO):
This subclass is indented under subclass E7.161. This subclass is substantially the same in scope as ECLA classification H04N7/26A6C2.

E7.163 Motion, e.g., field or frame difference (EPO):
This subclass is indented under subclass E7.161. This subclass is substantially the same in scope as ECLA classification H04N7/26A6C4.

E7.164 Using motion vectors (EPO):
This subclass is indented under subclass E7.163. This subclass is substantially the same in scope as ECLA classification H04N7/26A6C4C.

E7.165 Scene cut (EPO):
This subclass is indented under subclass E7.161. This subclass is substantially the same in scope as ECLA classification H04N7/26A6C6.

SEE OR SEARCH THIS CLASS, SUB-CLASS:
E7.192, scene cut detection in conjunction with bandwidth reduction.

E7.166 Chrominance (EPO):
This subclass is indented under subclass E7.161. This subclass is substantially the same in scope as ECLA classification H04N7/26A6C8.

E7.167 Visual quality (EPO):
This subclass is indented under subclass E7.152. This subclass is substantially the same in scope as ECLA classification H04N7/26A6Q.

E7.168 Resource availability (EPO):
This subclass is indented under subclass E7.152. This subclass is substantially the same in scope as ECLA classification H04N7/26A6R.

E7.169 Coding mode (EPO):
This subclass is indented under subclass E7.152. This subclass is substantially the same in scope as ECLA classification H04N7/26A6S.

E7.17 Picture or macroblock type, e.g., I,P,B (EPO):
This subclass is indented under subclass E7.169. This subclass is substantially the same in scope as ECLA classification H04N7/26A6S2.

E7.171 Picture structure, e.g., interlaced/progressive (EPO):
This subclass is indented under subclass E7.169. This subclass is substantially the same in scope as ECLA classification H04N7/26A6S4.

E7.172 User input (EPO):
This subclass is indented under subclass E7.152. This subclass is substantially the same in scope as ECLA classification H04N7/26A6U.

E7.173 Receiver or channel (EPO):
This subclass is indented under subclass E7.152. This subclass is substantially the same in scope as ECLA classification H04N7/26A6W.

E7.174 Transmission errors (EPO):
This subclass is indented under subclass E7.173. This subclass is substantially the same in scope as ECLA classification H04N7/26A6W2.

E7.175 Unit of control, i.e., structural or semantic portion of the video signal being the object of the control (EPO):
This subclass is indented under subclass E7.126. This subclass is substantially the same in scope as ECLA classification H04N7/26A8.

E7.176 Block or macroblock (EPO):
This subclass is indented under subclass E7.175. This subclass is substantially the same in scope as ECLA classification H04N7/26A8B.

E7.177 Transform coefficient (EPO):
This subclass is indented under subclass E7.175. This subclass is substantially the same in scope as ECLA classification H04N7/26A8C.

E7.178 Pixel (EPO):
This subclass is indented under subclass E7.175. This subclass is substantially the same in scope as ECLA classification H04N7/26A8E.

E7.179 Group-of-pictures (GOP) (EPO):
This subclass is indented under subclass E7.175. This subclass is substantially the same in scope as ECLA classification H04N7/26A8G.

E7.18 Slice, e.g., line of blocks, group of blocks (EPO):
This subclass is indented under subclass E7.175. This subclass is substantially the same in scope as ECLA classification H04N7/26A8L.

E7.181 Picture (EPO):
This subclass is indented under subclass E7.175. This subclass is substantially the same in scope as ECLA classification H04N7/26A8P.

E7.182 Image region, e.g., region of interest (ROI), object (EPO):
This subclass is indented under subclass E7.175. This subclass is substantially the same in scope as ECLA classification H04N7/26A8R.

E7.183 Scene or shot (EPO):
This subclass is indented under subclass E7.175. This subclass is substantially the same in scope as ECLA classification H04N7/26A8S.

SEE OR SEARCH THIS CLASS, SUB-CLASS:
E7.192, for scene cut detection in conjunction with bandwidth reduction.

E7.184 Bit (EPO):
This subclass is indented under subclass E7.175. This subclass is substantially the same in scope as ECLA classification H04N7/26A8T.

E7.185 Chrominance (EPO):
This subclass is indented under subclass E7.175. This subclass is substantially the same in scope as ECLA classification H04N7/26A8U.

E7.186 Layer (EPO):
This subclass is indented under subclass E7.175. This subclass is substantially the same in scope as ECLA classification H04N7/26A8Y.

E7.187 Compressed domain processing (EPO):
This subclass is indented under subclass E7.026. This subclass is substantially the same in scope as ECLA classification H04N7/26C.

E7.188 Involving subsampling at the transmitter and restitution of the omitted samples by interpolation (EPO):
This subclass is indented under subclass E7.026. This subclass is substantially the same in scope as ECLA classification H04N7/26N.

E7.189 Involving preprocessing or postprocessing therefor (EPO):
This subclass is indented under subclass E7.026. This subclass is substantially the same in scope as ECLA classification H04N7/26P.

E7.19 Involving reduction of coding artifacts, e.g., of blockiness (EPO):
This subclass is indented under subclass E7.189. This subclass is substantially the same in scope as ECLA classification H04N7/26P4.

E7.191 Involving cinematographic video sequences, e.g., sequences originated from film and converted to video through 3:2 pulldown (EPO):
This subclass is indented under subclass E7.189. This subclass is substantially the same in scope as ECLA classification H04N7/26P6.

E7.192 Involving scene cut detection in conjunction with bandwidth reduction (EPO):
This subclass is indented under subclass E7.189. This subclass is substantially the same in scope as ECLA classification H04N7/26P8.

E7.193 Filtering (EPO):
This subclass is indented under subclass E7.026. This subclass is substantially the same in scope as ECLA classification H04N7/26F.

E7.194 In a prediction loop (EPO):
This subclass is indented under subclass E7.193. This subclass is substantially the same in scope as ECLA classification H04N7/26F2.

E7.195 Standard related documents (EPO):
This subclass is indented under subclass E7.026. This subclass is substantially the same in scope as ECLA classification H04N7/26S.

E7.196 Normative references, e.g., working documents of standardization bodies like ISO/ IEC, ITU-T, SMPTE in the domain of digital image and video coding   (EPO):
This subclass is indented under subclass E7.195. This subclass is substantially the same in scope as ECLA classification H04N7/26S1.

E7.197 Illustrative references, e.g., overviews, reviews (EPO):
This subclass is indented under subclass E7.195. This subclass is substantially the same in scope as ECLA classification H04N7/26S2.

E7.198 Transcoding therefor, i.e., conversion of video data, coding parameters, syntax or the like in order to realize interoperability between different video coding standards (EPO):
This subclass is indented under subclass E7.026. This subclass is substantially the same in scope as ECLA classification H04N7/26T.

E7.199 Syntax aspects, e.g., source coding bistream syntax (EPO):
This subclass is indented under subclass E7.026. This subclass is substantially the same in scope as ECLA classification H04N7/26Y.

SEE OR SEARCH THIS CLASS, SUB-CLASS:
E7.001+,and E7.267+, for syntax aspects related to a packetized or transport video stream.

E7.2   Miscellaneous of specific spread spectrum techniques using bandwidth reduction; source coding or decoding of digital video signal, e.g., digital video signal compression; or pre- or post processing therefor (EPO):
This subclass is indented under subclass E7.026. This subclass is substantially the same in scope as ECLA classification H04N7/26Z.

SEE OR SEARCH THIS CLASS, SUB-CLASS:
E7.026, includes specific techniques for spread spectrum using bandwidth reduction not provided elsewhere.

E7.201 Involving N-Tree coding, e.g., quadtree, octree (EPO):
This subclass is indented under subclass E7.2. This subclass is substantially the same in scope as ECLA classification H04N7/26Z10.

E7.202 Involving run length coding (EPO):
This subclass is indented under subclass E7.2. This subclass is substantially the same in scope as ECLA classification H04N7/26Z12.

E7.203 Involving matching pursuit (EPO):
This subclass is indented under subclass E7.2. This subclass is substantially the same in scope as ECLA classification H04N7/26Z14.

E7.204 Involving fractal coding (EPO):
This subclass is indented under subclass E7.2. This subclass is substantially the same in scope as ECLA classification H04N7/26Z16.

E7.205 Adaptive dynamic range coding (ADRC) (EPO):
This subclass is indented under subclass E7.2. This subclass is substantially the same in scope as ECLA classification H04N7/26Z2.

E7.206 Involving both PCM encoding and DPCM encoding (EPO):
This subclass is indented under subclass E7.2. This subclass is substantially the same in scope as ECLA classification H04N7/26Z4.

E7.207 Using a dither signal (EPO):
This subclass is indented under subclass E7.2. This subclass is substantially the same in scope as ECLA classification H04N7/26Z6.

E7.208 Using noise or error feedback, e.g., quantization noise feedback, etc. (EPO):
This subclass is indented under subclass E7.2. This subclass is substantially the same in scope as ECLA classification H04N7/26Z8.

E7.209 Using vector coding (EPO):
This subclass is indented under subclass E7.026. This subclass is substantially the same in scope as ECLA classification H04N7/28.

E7.21 Involving pulse code modulation and predictive coding (EPO):
This subclass is indented under subclass E7.026. This subclass is substantially the same in scope as ECLA classification H04N7/48.

E7.211 Involving transform and predictive coding, e.g., hybrid coding, Motion Picture Experts Group (MPEG) coding (EPO):
This subclass is indented under subclass E7.026. This subclass is substantially the same in scope as ECLA classification H04N7/50.

E7.212 Involving the use of at least one adaptive element (EPO):
This subclass is indented under subclass E7.211. This subclass is substantially the same in scope as ECLA classification H04N7/50E.

E7.213 Involving variable length or entropy coding, e.g., Huffmann or arithmetic coding (EPO):
This subclass is indented under subclass E7.212. This subclass is substantially the same in scope as ECLA classification H04N7/50E2.

E7.214 Quantization, normalization or weighting techniques therefor, e.g., normalization parameters or matrices, variable uniform quantizers, weighting matrices (EPO):
This subclass is indented under subclass E7.212. This subclass is substantially the same in scope as ECLA classification H04N7/50E4.

E7.215 The output data rate being minimized down to or below the channel capacity (EPO):
This subclass is indented under subclass E7.212. This subclass is substantially the same in scope as ECLA classification H04N7/50E5.

E7.216 With feedback control only of the data rate, e.g., buffer fullness being used (EPO):
This subclass is indented under subclass E7.215. This subclass is substantially the same in scope as ECLA classification H04N7/50E5B.

E7.217 With feedforward control only of the data rate, e.g., formation amount estimator or sorter being used (EPO):
This subclass is indented under subclass E7.215. This subclass is substantially the same in scope as ECLA classification H04N7/50E5F.

E7.218 With feedforward and feedback control of the data rate (EPO):
This subclass is indented under subclass E7.215. This subclass is substantially the same in scope as ECLA classification H04N7/50E5H.

E7.219 With iterative control of the data rate, e.g., multipass (EPO):
This subclass is indented under subclass E7.215. This subclass is substantially the same in scope as ECLA classification H04N7/50E5L.

E7.22 Involving adaptive allocation of the frame type, e.g., adaptive group-of-pictures (GOP) structure (EPO):
This subclass is indented under subclass E7.212. This subclass is substantially the same in scope as ECLA classification H04N7/50E6.

E7.221 Motion adaptive (EPO):
This subclass is indented under subclass E7.212. This subclass is substantially the same in scope as ECLA classification H04N7/50E8.

E7.222 Multiplexing arrangements therefor, e.g., suited to a video bitstream syntax (EPO):
This subclass is indented under subclass E7.211. This subclass is substantially the same in scope as ECLA classification H04N7/50M.

E7.223 Using nontransform coding for certain blocks (EPO):
This subclass is indented under subclass E7.211. This subclass is substantially the same in scope as ECLA classification H04N7/50N.

E7.224 Forced updating therefor, e.g., refresh techniques, intra/inter-coding mode selection at macroblock or picture level (EPO):
This subclass is indented under subclass E7.211. This subclass is substantially the same in scope as ECLA classification H04N7/50R.

E7.225   Using transform domain integration, i.e., the transform being operated outside the prediction loop (EPO):
This subclass is indented under subclass E7.211. This subclass is substantially the same in scope as ECLA classification H04N7/50T.

E7.226   Involving transform coding, e.g., using discrete cosine transform (DCT) (EPO):
This subclass is indented under subclass E7.026. This subclass is substantially the same in scope as ECLA classification H04N7/30.

E7.227   Transforming in more than two dimensions (EPO):
This subclass is indented under subclass E7.226. This subclass is substantially the same in scope as ECLA classification H04N7/30A.

E7.228   Of arbitrarily shaped image segments (EPO):
This subclass is indented under subclass E7.226. This subclass is substantially the same in scope as ECLA classification H04N7/30B.

E7.229   Involving the use of at least one adaptive element, e.g., Joint Photographic Experts Group (JPEG) coding (EPO):
This subclass is indented under subclass E7.226. This subclass is substantially the same in scope as ECLA classification H04N7/30E.

E7.23   Adaptive scanning order of DCT coefficients, e.g., alternate scanning (EPO):
This subclass is indented under subclass E7.229. This subclass is substantially the same in scope as ECLA classification H04N7/30E10.

E7.231   Involving variable length or entropy coding, e.g., Huffmann or arithmetic coding (EPO):
This subclass is indented under subclass E7.229. This subclass is substantially the same in scope as ECLA classification H04N7/30E2.

E7.232   Quantization, normalization or weighting techniques therefor, e.g., normalization parameters or matrices, variable uniform quantizers, weighting matrices (EPO):
This subclass is indented under subclass E7.229. This subclass is substantially the same in scope as ECLA classification H04N7/30E4.

E7.233   The output data rate being minimized down to or below the channel capacity (EPO):
This subclass is indented under subclass E7.229. This subclass is substantially the same in scope as ECLA classification H04N7/30E5.

E7.234   With feedback control only of the data rate, e.g., buffer fullness being used (EPO):
This subclass is indented under subclass E7.233. This subclass is substantially the same in scope as ECLA classification H04N7/30E5B.

E7.235   With feedforward control only of the data rate, e.g., information amount estimator or sorter being used (EPO):
This subclass is indented under subclass E7.233. This subclass is substantially the same in scope as ECLA classification H04N7/30E5F.

E7.236   With feedforward and feedback control of the data rate (EPO):
This subclass is indented under subclass E7.233. This subclass is substantially the same in scope as ECLA classification H04N7/30E5H.

E7.237   With iterative control of the data rate (EPO):
This subclass is indented under subclass E7.233. This subclass is substantially the same in scope as ECLA classification H04N7/30E5L.

E7.238   The output quality being above a minimum (EPO):
This subclass is indented under subclass E7.229. This subclass is substantially the same in scope as ECLA classification H04N7/30E7.

E7.239   Involving hierarchical transmission of the transform coefficients, e.g., progressive JPEG (EPO):
This subclass is indented under subclass E7.226. This subclass is substantially the same in scope as ECLA classification H04N7/30H.

E7.24   Involving error detection or error correction (EPO):
This subclass is indented under subclass E7.226. This subclass is substantially the same in scope as ECLA classification H04N7/30K.

E7.241 Involving pre-processing of the picture element samples before transform coding or post-processing of the same after transform decoding (EPO):

This subclass is indented under subclass E7.226. This subclass is substantially the same in scope as ECLA classification H04N7/30P.

E7.242 Involving zonal sampling (EPO):

This subclass is indented under subclass E7.226. This subclass is substantially the same in scope as ECLA classification H04N7/30S.

E7.243 Involving predictive coding (EPO):

This subclass is indented under subclass E7.026. This subclass is substantially the same in scope as ECLA classification H04N7/32.

E7.244 At least one coding element being controlled by the buffer fullness (EPO):

This subclass is indented under subclass E7.243. This subclass is substantially the same in scope as ECLA classification H04N7/32B.

E7.245 With an adaptive quantizer characteristic, e.g., controlled by forward or backward adaptation (EPO):

This subclass is indented under subclass E7.243. This subclass is substantially the same in scope as ECLA classification H04N7/32E.

E7.246 With error correction (EPO):

This subclass is indented under subclass E7.243. This subclass is substantially the same in scope as ECLA classification H04N7/32K.

E7.247 Involving delta modulation (EPO):

This subclass is indented under subclass E7.243. This subclass is substantially the same in scope as ECLA classification H04N7/38.

E7.248 Using subsampling at the coder or sample restitution by interpolation at the coder or decoder (EPO):

This subclass is indented under subclass E7.243. This subclass is substantially the same in scope as ECLA classification H04N7/46.

E7.249 With adaptive prediction (EPO):

This subclass is indented under subclass E7.248. This subclass is substantially the same in scope as ECLA classification H04N7/46A.

E7.25 With motion compensated interpolation, e.g., involving bidirectional frame interpolation, i.e., use of B-pictures (EPO):

This subclass is indented under subclass E7.248. This subclass is substantially the same in scope as ECLA classification H04N7/46E.

E7.251 Involving a generalized motion field, e.g., nonblock-based processing (EPO):

This subclass is indented under subclass E7.25. This subclass is substantially the same in scope as ECLA classification H04N7/46E6.

E7.252 Involving spatial subsampling or upsampling; Alteration of picture size or resolution (EPO):

This subclass is indented under subclass E7.248. This subclass is substantially the same in scope as ECLA classification H04N7/46S.

E7.253 Involving temporal subsampling, e.g., frame decimation (EPO):

This subclass is indented under subclass E7.248. This subclass is substantially the same in scope as ECLA classification H04N7/46T.

E7.254 With control of frame rate, skipping or repetition at encoding or decoding side (EPO):

This subclass is indented under subclass E7.253. This subclass is substantially the same in scope as ECLA classification H04N7/46T2.

E7.255 Using temporal prediction (EPO):

This subclass is indented under subclass E7.243. This subclass is substantially the same in scope as ECLA classification H04N7/36.

E7.256 Using motion compensation, e.g., by means of motion vectors (EPO):

This subclass is indented under subclass E7.255. This subclass is substantially the same in scope as ECLA classification H04N7/36C.

SEE OR SEARCH THIS CLASS, SUBCLASS:
E7.1,   for hardware implementations of the subject matter of this subclass type.

E7.257 Long-term prediction (EPO):

This subclass is indented under subclass E7.256. This subclass is substantially the same in scope as ECLA classification H04N7/36C10.

E7.258 Block-based (EPO):
This subclass is indented under subclass E7.256. This subclass is substantially the same in scope as ECLA classification H04N7/36C2.

E7.259 Using overlapping blocks (EPO):
This subclass is indented under subclass E7.258. This subclass is substantially the same in scope as ECLA classification H04N7/36C2V.

E7.26 With sub-pixel accuracy (EPO):
This subclass is indented under subclass E7.256. This subclass is substantially the same in scope as ECLA classification H04N7/36C4.

E7.261 Non block-based (EPO):
This subclass is indented under subclass E7.256. This subclass is substantially the same in scope as ECLA classification H04N7/36C6.

E7.262 Multiple frame prediction (EPO):
This subclass is indented under subclass E7.256. This subclass is substantially the same in scope as ECLA classification H04N7/36C8.

E7.263 Using motion detection, e.g., with detection of moving zones (EPO):
This subclass is indented under subclass E7.255. This subclass is substantially the same in scope as ECLA classification H04N7/36D.

E7.264 Involving conditional replenishment (EPO):
This subclass is indented under subclass E7.263. This subclass is substantially the same in scope as ECLA classification H04N7/36D2.

E7.265 Using spatial prediction (EPO):
This subclass is indented under subclass E7.243. This subclass is substantially the same in scope as ECLA classification H04N7/34.

E7.266 By separate coding of pixel blocks (EPO):
This subclass is indented under subclass E7.265. This subclass is substantially the same in scope as ECLA classification H04N7/34B.

E7.267 Systems for transmission of a pulse code modulated video signal with one or more other pulse code modulated signals, e.g., an audio signal, a synchronizing signal (EPO):
This subclass is indented under subclass E7.001. This subclass is substantially the same in scope as ECLA classification H04N7/52.

(1) Note: Subject matter of this subclass includes assembling of a system multiplex stream from mono-media streams or disassembling of a system multiplex stream into mono-media streams.

E7.268 Involving more than one video signal (EPO):
This subclass is indented under subclass E7.267. This subclass is substantially the same in scope as ECLA classification H04N7/58.

E7.269 The signals being asynchronous (EPO):
This subclass is indented under subclass E7.268. This subclass is substantially the same in scope as ECLA classification H04N7/58A.

E7.27 The signals being synchronous (EPO):
This subclass is indented under subclass E7.268. This subclass is substantially the same in scope as ECLA classification H04N7/58S.

E7.271 Said other signal being a related audio signal (EPO):
This subclass is indented under subclass E7.267. This subclass is substantially the same in scope as ECLA classification H04N7/52A.

E7.272 Said other signal being a private data stream, e.g., teletext, graphics (EPO):
This subclass is indented under subclass E7.267. This subclass is substantially the same in scope as ECLA classification H04N7/52D.

E7.273 According to geometrical constraints of the communication medium, e.g., data formatting for subsequent transmission to a digital storage medium (EPO):
This subclass is indented under subclass E7.267. This subclass is substantially the same in scope as ECLA classification H04N7/52R.

E7.274 Isochronously with the horizontal video sync, e.g., according to bit-parallel or bit-serial interface formats, as SMPTE 259M (EPO):
This subclass is indented under subclass E7.267. This subclass is substantially the same in scope as ECLA classification H04N7/52S.

E7.275 The signals being synchronous (EPO):
This subclass is indented under subclass E7.267. This subclass is substantially the same in scope as ECLA classification H04N7/54.

E7.276 Synchronizing systems therefor (EPO):
This subclass is indented under subclass E7.275. This subclass is substantially the same in scope as ECLA classification H04N7/56.

E7.277 The signals being asynchronous (EPO):
This subclass is indented under subclass E7.267. This subclass is substantially the same in scope as ECLA classification H04N7/60.

E7.278 Synchronizing systems therefor (EPO):
This subclass is indented under subclass E7.277. This subclass is substantially the same in scope as ECLA classification H04N7/62.

E7.279 Systems for detection or correction of transmission errors (EPO):
This subclass is indented under subclass E7.001. This subclass is substantially the same in scope as ECLA classification H04N7/64.

E7.28 Using redundant codes (EPO):
This subclass is indented under subclass E7.279. This subclass is substantially the same in scope as ECLA classification H04N7/66.

E7.281 Using error concealment (EPO):
This subclass is indented under subclass E7.279. This subclass is substantially the same in scope as ECLA classification H04N7/68.

FOREIGN ART COLLECTIONS

Any Foreign patents or non-patent literature from subclasses that have been classified have been transferred directly to FOR Collections listed below. These collections contain only foreign patents or non-patent literature. The parenthetical references in the collection titles refer to the abolished subclasses from which these collections were derived.

FOR 100 SPREAD SPECTRUM:
Subject matter utilizing a data modulated signal which has its energy spread over a trans bandwidth which is much greater than the bandwidth or rate of information being sent.

FOR 101 Hybrid forms:
Subject matter wherein the spread spectrum signals are made up of at least two different spread spectrum techniques such as (a) simultaneous frequency hopping and direct sequence modulations, (b) simultaneous time and fre hopping, or (c) simultaneous time-hop and direct sequence modulations.

FOR 102 Frequency hopping:
Subject matter including a system in which the wideband signal is generated by jumping from one frequency to another over a large number of frequency choices

FOR 103 Time hopping:
Subject matter including a system wherein waveforms are transmitted at times which are selected from among a plurality of time slots, with the selection of time slot being pseudo-random if desired.

FOR 104 Pulsed FM or chirp:
Subject matter including a signal format in which a pulsed carrier is transmitted and is varied in frequency in a known way during the transmission.

FOR 105 Direct sequence:
Subject matter including a form of modulation wherein a code sequence is used to directly modulate a carrier, usually by phase-shift keying.

FOR 106 Matched filter:
Subject matter including a filtering means for passing a specific signal with minimum loss while passing minimum noise.

FOR 107 Pseudo-noise correlation:
Subject matter including a time domain analyzing means for detecting a periodic information signal buried in pseudo-noise.

FOR 108 Auto-correlation:
Subject matter including a means for measuring the similarity between a signal and a phase-shifted replica of itself.

FOR 109 Cross-correlation:
Subject matter including a means for measuring the similarity between two different signals.

END