

# CPC COOPERATIVE PATENT CLASSIFICATION

## H ELECTRICITY

(NOTE omitted)

## H04 ELECTRIC COMMUNICATION TECHNIQUE

(NOTE omitted)

## H04J MULTIPLEX COMMUNICATION (transmission in general [H04B](#); peculiar to transmission of digital information [H04L 5/00](#); systems for the simultaneous or sequential transmission of more than one television signal [H04N 7/08](#); in exchanges [H04Q 11/00](#); stereophonic systems [H04S](#))

### NOTE

This subclass covers

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

### WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

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|-------------|--|-------------|---|
| <b>1/00</b> | <b>Frequency-division multiplex systems (<a href="#">H04J 14/00</a> takes precedence)</b>  | <b>1/16</b> | • . Monitoring arrangements {(for transmission in general <a href="#">H04B 17/00</a> ; for amplifiers <a href="#">H03F 1/52</a> , <a href="#">H03F 1/523</a> )}   |
| 1/02        | • Details  | <b>1/18</b> | • in which all the carriers are amplitude-modulated ( <a href="#">H04J 1/02</a> takes precedence {in telephony <a href="#">H04Q 11/02</a> , <a href="#">H04Q 11/023</a> ; in stereophony <a href="#">H04H</a> ; in telegraphy <a href="#">H04L 5/06</a> ; in telemetry <a href="#">G08C 15/02</a> , <a href="#">G08C 15/04</a> )}   |
| 1/04        | • . Frequency-transposition arrangements {(modulation with carrier or side-band suppression <a href="#">H03C 1/52</a> , <a href="#">H03C 1/60</a> ; single-band suppression <a href="#">H04B 1/00</a> , <a href="#">H04B 15/00</a> ; telegraphic communication <a href="#">H04L 27/02</a> , <a href="#">H04L 25/49</a> ; transference of modulation from one carrier to another, e.g. frequency- changing <a href="#">H03D 7/00</a> ; demodulation or transference of modulation of modulated electromagnetic waves <a href="#">H03D 9/00</a> )} | <b>1/20</b> | • in which at least one carrier is angle-modulated ( <a href="#">H04J 1/02</a> takes precedence; FM without multiplex <a href="#">H04B 1/00</a> , <a href="#">H04B 14/006</a> , <a href="#">H04B 15/00</a> ; PSK <a href="#">H04L 5/12</a> ; impulse-modulation without multiplex <a href="#">H04B 14/02</a> ; time-division multiplexing for data transmission <a href="#">H04L 5/22</a> ; telemetry <a href="#">G08C 15/06</a> - <a href="#">G08C 15/12</a> ; telephony <a href="#">H04Q 11/00</a> , <a href="#">H04Q 11/04</a> , <a href="#">H04Q 11/0407</a> )} |
| 1/045       | • . . {Filters applied to frequency transposition}   | <b>3/00</b> | <b>Time-division multiplex systems (<a href="#">H04J 14/00</a> takes precedence; relay systems <a href="#">H04B 7/14</a>; selecting techniques <a href="#">H04Q</a>)</b>  |
| 1/05        | • . . using digital techniques   | 3/02        | • Details (electronic switching or gating <a href="#">H03K 17/00</a> )  |
| 1/06        | • . Arrangements for supplying the carrier waves {Arrangements for supplying synchronisation signals (carrier supply <a href="#">H04L 5/10</a> ; frequency multiplication <a href="#">H03B 19/00</a> , <a href="#">H03B 21/00</a> ; mixing <a href="#">H03D 7/00</a> , <a href="#">H03D 9/00</a> ; synchronisation in general <a href="#">H03B</a> )}  | 3/025       | • . {Filter arrangements ( <a href="#">H04J 3/08</a> takes precedence; filters per se <a href="#">H03H 7/00</a> , <a href="#">H03H 9/00</a> )}  |
| 1/065       | • . . {Synchronisation of carrier sources at the receiving station with the carrier source at the transmitting station}  | 3/04        | • . Distributors combined with modulators or demodulators {(pulse distributors in general <a href="#">H03K 5/15</a> ; pulse counters <a href="#">H03K 21/00</a> - <a href="#">H03K 29/06</a> ; for telegraphy <a href="#">H04L 5/22</a> , <a href="#">H04L 13/00</a> - <a href="#">H04L 23/00</a> , <a href="#">H04L 25/45</a> ; for telephony <a href="#">H04Q 11/04</a> )}  |
| 1/08        | • . Arrangements for combining channels {(branching filters <a href="#">H01P 1/213</a> , <a href="#">H03H 7/46</a> )}  | 3/042       | • . . {Distributors with electron or gas discharge tubes}   |
| 1/085       | • . . {Terminal station; Combined modulator and demodulator circuits}  | 3/045       | • . . {Distributors with CRT}   |
| 1/10        | • . Intermediate station arrangements, e.g. for branching, for tapping-off {(repeater circuits <a href="#">H04B 3/36</a> , <a href="#">H04B 3/58</a> ; two-way amplifiers <a href="#">H03F 3/62</a> )}   | 3/047       | • . . {Distributors with transistors or integrated circuits}  |
| 1/12        | • . Arrangements for reducing cross-talk between channels {(in line transmission systems <a href="#">H04B 3/32</a> ; in cables or lines <a href="#">H04B 3/26</a> - <a href="#">H04B 3/30</a> )}   | 3/06        | • . Synchronising arrangements {(for television systems <a href="#">H04N 5/04</a> ; bit-synchronisation <a href="#">H04L 7/00</a> )}  |
| 1/14        | • . Arrangements providing for calling or supervisory signals  |             |   |

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|--------|---|--------|---|
| 3/0602 | . . . {Systems characterised by the synchronising information used}   | 3/0673 | . . . . . {using intermediate nodes, e.g. modification of a received timestamp before further transmission to the next packet node, e.g. including internal delay time or residence time into the packet}   |
| 3/0605 | . . . . {Special codes used as synchronising signal}  | 3/0676 | . . . . {Mutual}  |
| 3/0608 | . . . . {Detectors therefor, e.g. correlators, state machines}  | 3/0679 | . . . . {by determining clock distribution path in a network}   |
| 3/0611 | . . . . . {PN codes ( <a href="#">H04J 3/0608</a> takes precedence)}  | 3/0682 | . . . . {by delay compensation, e.g. by compensation of propagation delay or variations thereof, by ranging}  |
| 3/0614 | . . . . {the synchronising signal being characterised by the amplitude, duration or polarity}   | 3/0685 | . . . . {Clock or time synchronisation in a node; Intranode synchronisation}  |
| 3/0617 | . . . . {the synchronising signal being characterised by the frequency or phase}  | 3/0688 | . . . . . {Change of the master or reference, e.g. take-over or failure of the master}  |
| 3/062  | . . . {Synchronisation of signals having the same nominal but fluctuating bit rates, e.g. using buffers (pulse-stuffing <a href="#">H04J 3/07</a> ; asynchronous-synchronous conversion <a href="#">H04L 5/24</a> ; speed conversion <a href="#">H04L 25/05</a> ; speed conversion in computers <a href="#">G06F 5/06</a> )}  | 3/0691 | . . . . . {Synchronisation in a TDM node}   |
| 3/0623 | . . . . {Synchronous multiplexing systems, e.g. synchronous digital hierarchy/ synchronous optical network (SDH/SONET), synchronisation with a pointer process}   | 3/0694 | . . . . . {Synchronisation in a TDMA node, e.g. TTP}  |
| 3/0626 | . . . . {plesiochronous multiplexing systems, e.g. plesiochronous digital hierarchy [PDH], jitter attenuators}  | 3/0697 | . . . . . {Synchronisation in a packet node}  |
| 3/0629 | . . . . . {in a network, e.g. in combination with switching or multiplexing, slip buffers}  | 3/07   | . . . using pulse stuffing for systems with different or fluctuating information rates {or bit rates}   |
| 3/0632 | . . . . {Synchronisation of packets and cells, e.g. transmission of voice via a packet network, circuit emulation service [CES] ( <a href="#">queuing arrangements in packet switching elements</a> <a href="#">H04L 49/90</a> ; synchronising systems for the synchronous transmission of a pulse code modulated video signal with one or more other pulse code modulated signals <a href="#">H04N 7/56</a> )} | 3/073  | . . . . . {Bit stuffing, e.g. PDH}  |
| 3/0635 | . . . {Clock or time synchronisation in a network (timer in protocols <a href="#">H04L 69/28</a> )}   | 3/076  | . . . . . {Bit and byte stuffing, e.g. SDH/PDH desynchronisers, bit-leaking}  |
| 3/0638 | . . . . {Clock or time synchronisation among nodes; Internode synchronisation (synchronization for ring networks <a href="#">H04L 12/422</a> ; data switching networks with synchronous transmission <a href="#">H04L 12/43</a> )}  | 3/08   | . . Intermediate station arrangements, e.g. for branching, for tapping-off  |
| 3/0641 | . . . . . {Change of the master or reference, e.g. take-over or failure of the master}  | 3/085  | . . . {for ring networks, e.g. SDH/SONET rings, self-healing rings, meshed SDH/SONET networks}  |
| 3/0644 | . . . . . {External master-clock}   | 3/10   | . . Arrangements for reducing cross-talk between channels   |
| 3/0647 | . . . . . {Synchronisation among TDM nodes}   | 3/12   | . . Arrangements providing for calling or supervisory signals   |
| 3/065  | . . . . . {using timestamps}  | 3/125  | . . . {One of the channel pulses or the synchronisation pulse is also used for transmitting monitoring or supervisory signals}  |
| 3/0652 | . . . . . {Synchronisation among time division multiple access [TDMA] nodes, e.g. time triggered protocol [TTP] ( <a href="#">bus network with centralized control in which slots are of a TDMA packet structure</a> <a href="#">H04L 12/4035</a> )}  | 3/14   | . . Monitoring arrangements {(for SDH/SONET rings <a href="#">H04J 3/085</a> )}   |
| 3/0655 | . . . . . {using timestamps}  | 3/16   | . . in which the time allocation to individual channels within a transmission cycle is variable, e.g. to accommodate varying complexity of signals, to vary number of channels transmitted ( <a href="#">H04J 3/17</a> , <a href="#">H04J 3/24</a> take precedence) |
| 3/0658 | . . . . . {Clock or time synchronisation among packet nodes}  | 3/1605 | . . {Fixed allocated frame structures}  |
| 3/0661 | . . . . . {using timestamps}  | 3/1611 | . . . {Synchronous digital hierarchy [SDH] or SONET ( <a href="#">H04J 3/1664</a> takes precedence for interactions with OTN)}  |
| 3/0664 | . . . . . {unidirectional timestamps}   | 3/1617 | . . . . {carrying packets or ATM cells}   |
| 3/0667 | . . . . . {Bidirectional timestamps, e.g. NTP or PTP for compensation of clock drift and for compensation of propagation delays (arrangements for monitoring round trip delays in packet switching networks <a href="#">H04L 43/0864</a> )}   | 3/1623 | . . . {Plesiochronous digital hierarchy [PDH]}  |
| 3/067  | . . . . . {Details of the timestamp structure}  | 3/1629 | . . . . {Format building algorithm}   |
|        |   | 3/1635 | . . . . {Format conversion, e.g. CEPT/US}   |
|        |   | 3/1641 | . . . . {Hierarchical systems}  |
|        |   | 3/1647 | . . . . {Subrate or multislot multiplexing}   |
|        |   | 3/1652 | . . . {Optical Transport Network [OTN]}   |
|        |   | 3/1658 | . . . . {carrying packets or ATM cells; ( <a href="#">H04J 3/1664</a> takes precedence for payloads with different packet types)}   |
|        |   | 3/1664 | . . . . {carrying hybrid payloads, e.g. different types of packets or carrying frames and packets in the payload}   |
|        |   | 3/167  | . . . . {interaction with SDH/SONET, e.g. carrying SDH/SONET frames, interfacing with SDH/SONET ( <a href="#">H04J 3/1664</a> takes precedence)}  |

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| 3/1676    | . . {Time-division multiplex with pulse-position, pulse-interval, or pulse-width modulation}  | 2011/0006 | . . {with CDM/CDMA}   |
| 3/1682    | . . {Allocation of channels according to the instantaneous demands of the users, e.g. concentrated multiplexers, statistical multiplexers}  | 2011/0009 | . . {with FDM/FDMA}   |
| 3/1688    | . . . {the demands of the users being taken into account after redundancy removal, e.g. by predictive coding, by variable sampling (reducing bandwidth of signals in general <a href="#">H04B 1/66</a> ; in PCM-systems <a href="#">H04B 14/046</a> ; removal of redundancy in telegraph communication <a href="#">H03M 7/30</a> )}   | 2011/0013 | . . {with TDM/TDMA}   |
| 3/1694    | . . {Allocation of channels in TDM/TDMA networks, e.g. distributed multiplexers (Passive Optical Networks <a href="#">H04Q 11/0062</a> )}   | 2011/0016 | . . {with FDM/FDMA and TDM/TDMA}  |
| 3/17      | . in which the transmission channel allotted to a first user may be taken away and re-allotted to a second user if the first user becomes inactive, e.g. TASI ({speech analysis or identification <a href="#">G10L</a> })   | 2011/002  | . . {Delay multiplexing}  |
| 3/172     | . . {Digital speech interpolation, i.e. DSI}  | 11/0023   | . {Interference mitigation or co-ordination ( <a href="#">traffic scheduling H04W 72/082</a> , <a href="#">H04W 72/1226</a> ; power management <a href="#">H04W 52/00</a> ; allocation criteria for ingress interference avoidance <a href="#">H04L 5/0062</a> ; frequency allocation criteria for requirements on out-of-channel emissions <a href="#">H04L 5/0066</a> ; peak power aspects in multicarrier modulation <a href="#">H04L 27/2614</a> ; arrangements for removing intersymbol interference or baseband equalisers <a href="#">H04L 25/03006</a> ; direct sequence spread spectrum [DSSS] systems <a href="#">H04B 1/7097</a> ; frequency hopping <a href="#">H04B 1/713</a> )} |
| 3/175     | . . {Speech activity or inactivity detectors ( <a href="#">echo suppressors H04B 3/20</a> )}  | 11/0026   | . . {of multi-user interference}  |
| 3/177     | . . {Freeze-out systems, e.g. taking away active sources from transmission}   | 11/003    | . . . {at the transmitter ( <a href="#">transmission to multiple receive units in multiple input multiple output [MIMO] H04B 7/0452</a> ; transmit antenna weighting <a href="#">H04B 7/0615</a> )}   |
| 3/18      | . using frequency compression and subsequent expansion of the individual signals  | 11/0033   | . . . . {by pre-cancellation of known interference, e.g. using a matched filter, dirty paper coder or Tomlinson-Harashima precoder ( <a href="#">correlative coding in synchronous or start-stop systems H04L 25/497</a> )}   |
| 3/20      | . using resonant transfer   | 11/0036   | . . . {at the receiver}   |
| 3/22      | . in which the sources have different rates or codes ({ <a href="#">simultaneous speech and digital data or video transmission H04M 11/06</a> ; see provisional also <a href="#">H04J 3/16</a> )}   | 11/004    | . . . . {using regenerative subtractive interference cancellation}  |
| 3/24      | . in which the allocation is indicated by an address {the different channels being transmitted sequentially} ( <a href="#">H04J 3/17</a> takes precedence; in computers <a href="#">G06F 12/00</a> , <a href="#">G06F 13/00</a> {code multiplex systems <a href="#">H04J 13/00</a> ; selecting techniques <a href="#">H04Q</a> ; relay systems <a href="#">H04B 7/14</a> }) | 11/0043   | . . . . . {by grouping or ordering the users}   |
| 3/242     | . . {the frames being of variable length}   | 11/0046   | . . . . {using joint detection algorithms}  |
| 3/245     | . . {in which the allocation protocols between more than two stations share the same transmission medium ( <a href="#">stations for satellite systems H04B 7/185</a> )}   | 11/005    | . . {of intercell interference}   |
| 3/247     | . . {ATM or packet multiplexing}  | 11/0053   | . . . {using co-ordinated multipoint transmission/reception ( <a href="#">co-ordinated antenna or beam-forming aspects H04B 7/022</a> )}  |
| 3/26      | . . in which the information and the address are simultaneously transmitted   | 11/0056   | . . . {Inter-base station aspects}  |
| 4/00      | <b>Combined time-division and frequency-division multiplex systems</b> ( <a href="#">H04J 13/00</a> takes precedence ; <a href="#">data transmission H04L 5/26</a> ; <a href="#">telemetry G08C 15/00</a> )   | 11/0059   | . . . {Out-of-cell user aspects}  |
| 4/005     | . {Transmultiplexing}   | 11/0063   | . . {of multipath interference, e.g. Rake receivers}  |
| 7/00      | <b>Multiplex systems in which the amplitudes or durations of the signals in individual channels are characteristic of those channels</b>  | 11/0066   | . . {of narrowband interference ( <a href="#">narrowband interference reduction H04B 1/1036</a> )}  |
| 7/02      | . in which the polarity of the amplitude is characteristic  | 11/0069   | . {Cell search, i.e. determining cell identity [cell-ID] ( <a href="#">design of multiplexing codes H04J 13/00</a> ; processing access restriction or access information <a href="#">H04W 48/16</a> ; discovery of network devices for network data management <a href="#">H04W 8/005</a> ; sounding signals for channel estimation <a href="#">H04L 25/0226</a> ; structure of reference signals in multicarrier modulation systems <a href="#">H04L 27/2613</a> ; frame, time or carrier synchronisation in multicarrier modulation systems <a href="#">H04L 27/2655</a> )}   |
| 9/00      | <b>Multiplex systems in which each channel is represented by a different type of modulation of the carrier</b>  | 11/0073   | . . {Acquisition of primary synchronisation channel, e.g. detection of cell-ID within cell-ID group}  |
| 11/00     | <b>Orthogonal multiplex systems, {e.g. using WALSH codes}</b> ( <a href="#">H04J 13/00</a> takes precedence)  | 11/0076   | . . {Acquisition of secondary synchronisation channel, e.g. detection of cell-ID group}   |
| 2011/0003 | . {Combination with other multiplexing techniques}  | 11/0079   | . . {Acquisition of downlink reference signals, e.g. detection of cell-ID}  |
|           |   | 11/0083   | . . {Multi-mode cell search, i.e. where several modes or systems can be used, e.g. backwards compatible, dual mode or flexible systems}   |
|           |   | 11/0086   | . . {Search parameters, e.g. search strategy, accumulation length, range of search, thresholds ( <a href="#">code acquisition in DSSS H04B 1/7075</a> )}  |
|           |   | 11/0089   | . . {Search hardware arrangements, e.g. sharing of correlators to reduce complexity}  |

|              |  |         |   |
|--------------|--|---------|---|
| 11/0093      | . . {Neighbour cell search}  | 14/00   | <b>Optical multiplex systems (optical coupling, mixing or splitting, per se G02B)</b>   |
| 2011/0096    | . {Network synchronisation}  | 14/002  | . {Coherencemultiplexing}   |
| <b>13/00</b> | <b>Code division multiplex systems (for frequency hopping <a href="#">H04B 1/713</a>)</b>  | 14/005  | . {Optical Code Multiplex}  |
|              | <b>NOTE</b>  | 14/007  | . . {Orthogonal Optical Code Multiplex}   |
|              | When classifying in this group, any aspect of spread spectrum techniques not specific to frequency hopping, and which is considered to represent information of interest for search, may also be classified in group <a href="#">H04B 1/69</a> . | 14/02   | . Wavelength-division multiplex systems   |
| 13/0003      | . {Code application, i.e. aspects relating to how codes are applied to form multiplexed channels}  | 14/0201 | . . {Add-and-drop multiplexing}   |
| 13/0007      | . {Code type}  | 14/0202 | . . . {Arrangements therefor}   |
|              | <b>NOTE</b>  | 14/0204 | . . . . {Broadcast and select arrangements, e.g. with an optical splitter at the input before adding or dropping}                                 |
|              | Code type information should be classified in addition to other relevant aspects. This should also be done in cases where the other relevant symbol refers to code type, e.g. <a href="#">H04J 13/14</a> , <a href="#">H04J 13/20</a> )          | 14/0205 | . . . . {Select and combine arrangements, e.g. with an optical combiner at the output after adding or dropping}                                   |
| 13/0011      | . . {Complementary}  | 14/0206 | . . . . {Express channels arrangements}   |
| 13/0014      | . . . {Golay}  | 14/0208 | . . . . {Interleaved arrangements}  |
| 13/0018      | . . {Chaotic}  | 14/0209 | . . . . {Multi-stage arrangements, e.g. by cascading multiplexers or demultiplexers}  |
| 13/0022      | . . {PN, e.g. Kronecker}   | 14/021  | . . . . {Reconfigurable arrangements, e.g. reconfigurable optical add/drop multiplexers [ROADM] or tunable optical add/drop multiplexers [TOADM]} |
| 13/0025      | . . . {M-sequences}  | 14/0212 | . . . . . {using optical switches or wavelength selective switches [WSS]}   |
| 13/0029      | . . . {Gold}   | 14/0213 | . . . . . {Groups of channels or wave bands arrangements}   |
| 13/0033      | . . . {Kasami}   | 14/0215 | . . . . {Architecture aspects}  |
| 2013/0037    | . . {Multilevel codes}   | 14/0216 | . . . . {Bidirectional architectures}   |
| 13/004       | . . {Orthogonal}   | 14/0217 | . . . . {Multi-degree architectures, e.g. having a connection degree greater than two}  |
| 13/0044      | . . . {OVSF [orthogonal variable spreading factor]}  | 14/0219 | . . . . {Modular or upgradable architectures}   |
| 13/0048      | . . . {Walsh}  | 14/022  | . . . . {For interconnection of WDM optical networks}   |
| 13/0051      | . . . {Orthogonal gold}  | 14/0221 | . . {Power control, e.g. to keep the total optical power constant}  |
| 13/0055      | . . {ZCZ [zero correlation zone]}  | 14/0223 | . . {Conversion to or from optical TDM}   |
| 13/0059      | . . . {CAZAC [constant-amplitude and zero auto-correlation]}   | 14/0224 | . . {Irregular wavelength spacing, e.g. to accommodate interference to all wavelengths}   |
| 13/0062      | . . . . {Zadoff-Chu}   | 14/0226 | . . {Fixed carrier allocation, e.g. according to service}   |
| 13/0066      | . . . . {GCL [generalized chirp-like] sequences}   | 14/0227 | . . {Operation, administration, maintenance or provisioning [OAMP] of WDM networks, e.g. media access, routing or wavelength allocation}          |
| 13/007       | . . . {LAS, i.e. LA, LS and LAS codes}   | 14/0228 | . . . {Wavelength allocation for communications one-to-all, e.g. broadcasting wavelengths}  |
| 13/0074      | . {Code shifting or hopping}   | 14/023  | . . . . {in WDM passive optical networks [WDM-PON]}   |
| 13/0077      | . {Multicode, e.g. multiple codes assigned to one user}  | 14/0232 | . . . . . {for downstream transmission}   |
| 2013/0081    | . . {with FDM/FDMA}  | 14/0234 | . . . . . {using multiple wavelengths}  |
| 2013/0085    | . . {with TDM/TDMA}  | 14/0235 | . . . . . {for upstream transmission}   |
| 2013/0088    | . . {with FDM/FDMA and TDM/TDMA}   | 14/0236 | . . . . . {using multiple wavelengths}  |
| 2013/0092    | . . {Delay multiplexing}   | 14/0238 | . . . {Wavelength allocation for communications one-to-many, e.g. multicasting wavelengths}   |
| 2013/0096    | . {Network synchronisation}  | 14/0239 | . . . . {in WDM-PON sharing multiple downstream wavelengths for groups of optical network units [ONU], e.g. multicasting wavelengths}             |
| 13/10        | . Code generation  | 14/0241 | . . . {Wavelength allocation for communications one-to-one, e.g. unicasting wavelengths}  |
| 13/102       | . . {Combining codes}  | 14/0242 | . . . . {in WDM-PON}  |
| 13/105       | . . . {by extending}   | 14/0245 | . . . . . {for downstream transmission, e.g. optical line terminal [OLT] to ONU}  |
| 13/107       | . . . {by concatenation}   | 14/0246 | . . . . . {using one wavelength per ONU}  |
| 13/12        | . . Generation of orthogonal codes   |         |   |
| 13/14        | . . Generation of codes with a zero correlation zone   |         |   |
| 13/16        | . Code allocation  |         |   |
| 2013/165     | . . {Joint allocation of code together with frequency or time}   |         |   |
| 13/18        | . . Allocation of orthogonal codes   |         |   |
| 13/20        | . . . having an orthogonal variable spreading factor [OVSF]  |         |   |
| 13/22        | . . Allocation of codes with a zero correlation zone   |         |   |



|           |           |   |                |           |   |
|-----------|-----------|---|----------------|-----------|---|
| 14/0247   | . . . . . | {Sharing one wavelength for at least a group of ONUs}   | 14/0295        | . . . . . | {Shared protection at the optical channel (1:1, n:m)}   |
| 14/0249   | . . . . . | {for upstream transmission, e.g. ONU-to-OLT or ONU-to-ONU}  | 14/0297        | . . . . . | {Optical equipment protection}  |
| 14/025    | . . . . . | {using one wavelength per ONU, e.g. for transmissions from-ONU-to-OLT or from-ONU-to-ONU}   | 14/0298        | . . . . . | {with sub-carrier multiplexing [SCM]}   |
| 14/0252   | . . . . . | {Sharing one wavelength for at least a group of ONUs, e.g. for transmissions from-ONU-to-OLT or from-ONU-to-ONU}  | 14/04          | . . . . . | Mode multiplex systems  |
| 2014/0253 | . . . . . | {Allocation of downstream wavelengths for upstream transmission (optical transmission using a single light source for multiple stations <a href="#">H04B 10/2587</a> )} | 14/06          | . . . . . | Polarisation multiplex systems  |
| 14/0254   | . . . . . | {Optical medium access}   | 14/08          | . . . . . | Time-division multiplex systems   |
| 14/0256   | . . . . . | {at the optical channel layer}  | 14/083         | . . . . . | {Add and drop multiplexing}   |
| 14/0257   | . . . . . | {Wavelength assignment algorithms}  | 14/086         | . . . . . | {Medium access ( <a href="#">H04J 3/16</a> takes precedence)}   |
| 14/0258   | . . . . . | {Wavelength identification or labelling}  | <b>15/00</b>   |           | <b>{Multiplex systems not otherwise provided for}</b>   |
| 14/026    | . . . . . | {using WDM channels of different transmission rates}  | <b>2203/00</b> |           | <b>Aspects of optical multiplex systems other than those covered by <a href="#">H04J 14/00</a></b>  |
| 14/0261   | . . . . . | {at the optical multiplex section layer}  | 2203/0001      | . . . . . | Provisions for broadband connections in integrated services digital network using frames of the Optical Transport Network [OTN] or using synchronous transfer mode [STM], e.g. SONET, SDH |
| 14/0263   | . . . . . | {Multiplex section layer wavelength assignment algorithms}  | 2203/0003      | . . . . . | Switching fabrics, e.g. transport network, control network  |
| 14/0264   | . . . . . | {Multiplex identification or labelling}   | 2203/0005      | . . . . . | Switching elements  |
| 14/0265   | . . . . . | {Multiplex arrangements in bidirectional systems, e.g. interleaved allocation of wavelengths or allocation of wavelength groups}  | 2203/0007      | . . . . . | Space switch details  |
| 14/0267   | . . . . . | {Optical signaling or routing (routing or path finding of packets in data switching networks <a href="#">H04L 45/00</a> )}  | 2203/0008      | . . . . . | Time switch details   |
| 14/0268   | . . . . . | {Restoration of optical paths, e.g. p-cycles (route fault recovery of packets in data switching networks <a href="#">H04L 45/28</a> )}                                  | 2203/001       | . . . . . | using a shared central buffer   |
| 14/0269   | . . . . . | {using tables for routing (organization of routing tables of packets in data switching networks <a href="#">H04L 45/54</a> )}   | 2203/0012      | . . . . . | Switching modules and their interconnections  |
| 14/0271   | . . . . . | {Impairment aware routing}  | 2203/0014      | . . . . . | Clos  |
| 14/0272   | . . . . . | {Transmission of OAMP information (using a supervisory or additional signal for monitoring of optical transmission parameters in general <a href="#">H04B 10/077</a> )} | 2203/0016      | . . . . . | Crossbar  |
| 14/0273   | . . . . . | {using optical overhead, e.g. overhead processing}  | 2203/0017      | . . . . . | Parallel switch planes  |
| 14/0275   | . . . . . | {using an optical service channel}  | 2203/0019      | . . . . . | Multicast/broadcast capabilities  |
| 14/0276   | . . . . . | {using pilot tones}   | 2203/0021      | . . . . . | Control mechanisms  |
| 14/0278   | . . . . . | {WDM optical network architectures}   | 2203/0023      | . . . . . | Routing/path finding  |
| 14/0279   | . . . . . | {WDM point-to-point architectures}  | 2203/0025      | . . . . . | Peripheral units  |
| 14/028    | . . . . . | {WDM bus architectures}   | 2203/0026      | . . . . . | Physical details  |
| 14/0282   | . . . . . | {WDM tree architectures}  | 2203/0028      | . . . . . | Local loop  |
| 14/0283   | . . . . . | {WDM ring architectures}  | 2203/003       | . . . . . | Medium of transmission, e.g. fibre, cable, radio  |
| 14/0284   | . . . . . | {WDM mesh architectures}  | 2203/0032      | . . . . . | Fibre   |
| 14/0286   | . . . . . | {WDM hierarchical architectures}  | 2203/0033      | . . . . . | Metallic  |
| 14/0287   | . . . . . | {Protection in WDM systems}   | 2203/0035      | . . . . . | Radio   |
| 14/0289   | . . . . . | {Optical multiplex section protection}  | 2203/0037      | . . . . . | Satellite   |
| 14/029    | . . . . . | {Dedicated protection at the optical multiplex section (1+1)}   | 2203/0039      | . . . . . | Topology  |
| 14/0291   | . . . . . | {Shared protection at the optical multiplex section (1:1, n:m)}   | 2203/0041      | . . . . . | Star, e.g. cross-connect, concentrator, subscriber group equipment, remote electronics  |
| 14/0293   | . . . . . | {Optical channel protection}  | 2203/0042      | . . . . . | Ring  |
| 14/0294   | . . . . . | {Dedicated protection at the optical channel (1+1)}   | 2203/0044      | . . . . . | Bus, e.g. DQDB  |
|           |           |   | 2203/0046      | . . . . . | User Network Interface  |
|           |           |   | 2203/0048      | . . . . . | Network termination, e.g. NT1, NT2, PBX   |
|           |           |   | 2203/005       | . . . . . | Terminal equipment, e.g. codecs, synch  |
|           |           |   | 2203/0051      | . . . . . | Network Node Interface, e.g. tandem connections, transit switching  |
|           |           |   | 2203/0053      | . . . . . | Routing   |
|           |           |   | 2203/0055      | . . . . . | Network design, dimensioning, topology or optimisation  |
|           |           |   | 2203/0057      | . . . . . | Operations, administration and maintenance [OAM]  |
|           |           |   | 2203/0058      | . . . . . | Network management, e.g. Intelligent nets   |
|           |           |   | 2203/006       | . . . . . | Fault tolerance and recovery  |
|           |           |   | 2203/0062      | . . . . . | Testing   |
|           |           |   | 2203/0064      | . . . . . | Admission Control   |
|           |           |   | 2203/0066      | . . . . . | Signalling, e.g. protocols, reference model   |
|           |           |   | 2203/0067      | . . . . . | Resource management and allocation  |
|           |           |   | 2203/0069      | . . . . . | Channel allocation  |
|           |           |   | 2203/0071      | . . . . . | Monitoring  |

- 2203/0073 . . Services, e.g. multimedia, GOS, QOS
- 2203/0075 . . . Connection-oriented
- 2203/0076 . . . Channel characteristics, e.g. BER, error detection, error correction, delay, jitter
- 2203/0078 . . . Support of N-ISDN
- 2203/008 . . . Support of video
- 2203/0082 . . . Interaction of SDH with non-ATM protocols
- 2203/0083 . . . . Support of the IP protocol
- 2203/0085 . . . . Support of Ethernet
- 2203/0087 . . . Support of voice
- 2203/0089 . . Multiplexing, e.g. coding, scrambling, SONET
- 2203/0091 . . . Time slot assignment
- 2203/0092 . . . Code Division Multiple Access [CDMA]
- 2203/0094 . . . Virtual Concatenation
- 2203/0096 . . . Serial Concatenation
- 2203/0098 . . Traffic aspects, e.g. arbitration, load balancing, smoothing, buffer management
- 2211/00      Orthogonal indexing scheme relating to orthogonal multiplex systems**
- 2211/001 . . using small cells within macro cells, e.g. femto, pico or microcells
- 2211/003 . . within particular systems or standards
- 2211/005 . . Long term evolution [LTE]
- 2211/006 . . Single carrier frequency division multiple access [SC FDMA]
- 2211/008 . . Interleaved frequency division multiple access [IFDMA]