

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.

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

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

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 H04B 1/66 ; in PCM-systems H04B 14/046 ; removal of redundancy in telegraph communication H03M 7/30)}	2011/0013	. . {with TDM/TDMA}
3/1694	. . {Allocation of channels in TDM/TDMA networks, e.g. distributed multiplexers (Passive Optical Networks H04Q 11/0062)}	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 G10L)}	2011/002	. . {Delay multiplexing}
3/172	. . {Digital speech interpolation, i.e. DSI}	11/0023	. {Interference mitigation or co-ordination (direct sequence spread spectrum [DSSS] systems H04B 1/7097 ; frequency hopping H04B 1/713 ; allocation criteria for ingress interference avoidance H04L 5/0062 ; frequency allocation criteria for requirements on out-of-channel emissions H04L 5/0066 ; arrangements for removing intersymbol interference or baseband equalisers H04L 25/03006 ; peak power aspects in multicarrier modulation H04L 27/2614 ; power management H04W 52/00 ; traffic scheduling H04W 72/54 , H04W 72/541)}
3/175	. . {Speech activity or inactivity detectors (echo suppressors H04B 3/20)}	11/0026	. . {of multi-user interference}
3/177	. . {Freeze-out systems, e.g. taking away active sources from transmission}	11/003	. . . {at the transmitter (transmission to multiple receive units in multiple input multiple output [MIMO] H04B 7/0452 ; transmit antenna weighting H04B 7/0615)}
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 Thomlinson-Harashima precoder (correlative coding in synchronous or start-stop systems H04L 25/497)}
3/20	. using resonant transfer	11/0036	. . . {at the receiver}
3/22	. in which the sources have different rates or codes (simultaneous speech and digital data or video transmission H04M 11/06 ; see provisional also H04J 3/16)}	11/004	. . . . {using regenerative subtractive interference cancellation}
3/24	. in which the allocation is indicated by an address (the different channels being transmitted sequentially)(H04J 3/17 takes precedence; in computers G06F 12/00 , G06F 13/00 {code multiplex systems H04J 13/00 ; selecting techniques H04Q ; relay systems H04B 7/14)}	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 (stations for satellite systems H04B 7/185)}	11/005	. . {of intercell interference}
3/247	. . {ATM or packet multiplexing}	11/0053	. . . {using co-ordinated multipoint transmission/reception (co-ordinated antenna or beam-forming aspects H04B 7/022)}
3/26	. . in which the information and the address are simultaneously transmitted	11/0056	. . . {Inter-base station aspects}
4/00	Combined time-division and frequency-division multiplex systems (H04J 13/00 takes precedence ; data transmission H04L 5/26 ; telemetry G08C 15/00)}	11/0059	. . . {Out-of-cell user aspects}
4/005	. {Transmultiplexing}	11/0063	. . {of multipath interference, e.g. Rake receivers}
7/00	Multiplex systems in which the amplitudes or durations of the signals in individual channels are characteristic of those channels	11/0066	. . {of narrowband interference (narrowband interference reduction H04B 1/1036)}
7/02	. in which the polarity of the amplitude is characteristic	11/0069	. {Cell search, i.e. determining cell identity [cell-ID] (design of multiplexing codes H04J 13/00 ; processing access restriction or access information H04W 48/16 ; discovery of network devices for network data management H04W 8/005 ; sounding signals for channel estimation H04L 25/0226 ; structure of reference signals in multicarrier modulation systems H04L 27/2613 ; frame, time or carrier synchronisation in multicarrier modulation systems H04L 27/2655)}
9/00	Multiplex systems in which each channel is represented by a different type of modulation of the carrier	11/0073	. . {Acquisition of primary synchronisation channel, e.g. detection of cell-ID within cell-ID group}
11/00	Orthogonal multiplex systems, {e.g. using WALSH codes} (H04J 13/00 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 (code acquisition in DSSS H04B 1/7075)}
		11/0089	. . {Search hardware arrangements, e.g. sharing of correlators to reduce complexity}

11/0093	. . {Neighbour cell search}	14/002	. {Coherencemultiplexing}
2011/0096	. {Network synchronisation}	14/005	. {Optical Code Multiplex}
13/00	Code division multiplex systems (for frequency hopping H04B 1/713)	14/007	. . {Orthogonal Optical Code Multiplex}
	NOTE	14/02	. Wavelength-division multiplex systems
	When classifying in this group, any aspect of spread spectrum techniques not specific to frequency hopping, and which is considered to represent information of interest for search, may also be classified in group H04B 1/69 .	14/0201	. . {Add-and-drop multiplexing}
13/0003	. {Code application, i.e. aspects relating to how codes are applied to form multiplexed channels}	14/0202	. . . {Arrangements therefor}
13/0007	. {Code type}	14/0204	. . . . {Broadcast and select arrangements, e.g. with an optical splitter at the input before adding or dropping}
	NOTE	14/0205	. . . . {Select and combine arrangements, e.g. with an optical combiner at the output after 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. H04J 13/14 , H04J 13/20 }	14/0206	. . . . {Express channels arrangements}
13/0011	. . {Complementary}	14/0208	. . . . {Interleaved arrangements}
13/0014	. . . {Golay}	14/0209	. . . . {Multi-stage arrangements, e.g. by cascading multiplexers or demultiplexers}
13/0018	. . {Chaotic}	14/021	. . . . {Reconfigurable arrangements, e.g. reconfigurable optical add/drop multiplexers [ROADM] or tunable optical add/drop multiplexers [TOADM]}
13/0022	. . {PN, e.g. Kronecker}	14/0212	. . . . . {using optical switches or wavelength selective switches [WSS]}
13/0025	. . . {M-sequences}	14/02122	. . . . . {Colourless, directionless or contentionless [CDC] arrangements}
13/0029	. . . {Gold}	14/02126	. . . . . {Multicast switch arrangements}
13/0033	. . . {Kasami}	14/0213	. . . . . {Groups of channels or wave bands arrangements}
2013/0037	. . {Multilevel codes}	14/0215	. . . {Architecture aspects}
13/004	. . {Orthogonal}	14/0216	. . . . {Bidirectional architectures}
13/0044	. . . {OVSF [orthogonal variable spreading factor]}	14/0217	. . . . {Multi-degree architectures, e.g. having a connection degree greater than two}
13/0048	. . . {Walsh}	14/0219	. . . . {Modular or upgradable architectures}
13/0051	. . . {Orthogonal gold}	14/022	. . . . {For interconnection of WDM optical networks}
13/0055	. . {ZCZ [zero correlation zone]}	14/0221	. . {Power control, e.g. to keep the total optical power constant}
13/0059	. . . {CAZAC [constant-amplitude and zero auto-correlation]}	14/02212	. . . {by addition of a dummy signal}
13/0062	. . . . {Zadoff-Chu}	14/02214	. . . {by re-allocation of data channels}
13/0066	. . . . {GCL [generalized chirp-like] sequences}	14/02216	. . . {by gain equalization}
13/007	. . . {LAS, i.e. LA, LS and LAS codes}	14/02218	. . . {Centralized control}
13/0074	. {Code shifting or hopping}	14/02219	. . . {Distributed control}
13/0077	. {Multicode, e.g. multiple codes assigned to one user}	14/0223	. . {Conversion to or from optical TDM}
2013/0081	. . {with FDM/FDMA}	14/0224	. . {Irregular wavelength spacing, e.g. to accommodate interference to all wavelengths}
2013/0085	. . {with TDM/TDMA}	14/0226	. . {Fixed carrier allocation, e.g. according to service}
2013/0088	. . {with FDM/FDMA and TDM/TDMA}	14/0227	. . {Operation, administration, maintenance or provisioning [OAMP] of WDM networks, e.g. media access, routing or wavelength allocation}
2013/0092	. . {Delay multiplexing}	14/0228	. . . {Wavelength allocation for communications one-to-all, e.g. broadcasting wavelengths}
2013/0096	. {Network synchronisation}	14/023	. . . . {in WDM passive optical networks [WDM-PON]}
13/10	. Code generation	14/0232	. . . . . {for downstream transmission}
13/102	. . {Combining codes}	14/0234	. . . . . {using multiple wavelengths}
13/105	. . . {by extending}	14/0235	. . . . . {for upstream transmission}
13/107	. . . {by concatenation}	14/0236	. . . . . {using multiple wavelengths}
13/12	. . Generation of orthogonal codes	14/0238	. . . {Wavelength allocation for communications one-to-many, e.g. multicasting wavelengths}
13/14	. . Generation of codes with a zero correlation zone	14/0239	. . . . {in WDM-PON sharing multiple downstream wavelengths for groups of optical network units [ONU], e.g. multicasting wavelengths}
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		
14/00	Optical multiplex systems		

- 14/0241 . . . {Wavelength allocation for communications one-to-one, e.g. unicasting wavelengths}
- 14/0242 {in WDM-PON}
- 14/0245 {for downstream transmission, e.g. optical line terminal [OLT] to ONU}
- 14/0246 {using one wavelength per ONU}
- 14/0247 {Sharing one wavelength for at least a group of ONUs}
- 14/0249 {for upstream transmission, e.g. ONU-to-OLT or ONU-to-ONU}
- 14/025 {using one wavelength per ONU, e.g. for transmissions from-ONU-to-OLT or from-ONU-to-ONU}
- 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}
- 2014/0253 {Allocation of downstream wavelengths for upstream transmission}
- 14/0254 . . . {Optical medium access}
- 14/0256 {at the optical channel layer}
- 14/0257 {Wavelength assignment algorithms}
- 14/0258 {Wavelength identification or labelling}
- 14/026 {using WDM channels of different transmission rates}
- 14/0261 {at the optical multiplex section layer}
- 14/0263 {Multiplex section layer wavelength assignment algorithms}
- 14/0264 {Multiplex identification or labelling}
- 14/0265 {Multiplex arrangements in bidirectional systems, e.g. interleaved allocation of wavelengths or allocation of wavelength groups}
- 14/0267 {Optical signaling or routing}
- 14/0268 {Restoration of optical paths, e.g. p-cycles}
- 14/0269 {using tables for routing}
- 14/0271 {Impairment aware routing}
- 14/0272 {Transmission of OAMP information}
- 14/0273 {using optical overhead, e.g. overhead processing}
- 14/0275 {using an optical service channel}
- 14/0276 {using pilot tones}
- 14/02762 {Spectrum slot allocation}
- 14/02764 {Multiplex arrangements for radio-frequency networks access; policies therefor ([radio over fibre arrangement H04B 10/2575](#))}
- 14/0278 . . {WDM optical network architectures}
- 14/0279 . . . {WDM point-to-point architectures}
- 14/028 . . . {WDM bus architectures}
- 14/0282 . . . {WDM tree architectures}
- 14/0283 . . . {WDM ring architectures}
- 14/0284 . . . {WDM mesh architectures}
- 14/0286 . . . {WDM hierarchical architectures}
- 14/02862 . . . {WDM data centre network [DCN] architectures}
- 14/0287 . . {Protection in WDM systems}
- 14/0289 . . . {Optical multiplex section protection}
- 14/029 {Dedicated protection at the optical multiplex section (1+1)}
- 14/0291 {Shared protection at the optical multiplex section (1:1, n:m)}
- 14/0293 . . . {Optical channel protection}
- 14/0294 {Dedicated protection at the optical channel (1+1)}
- 14/0295 {Shared protection at the optical channel (1:1, n:m)}
- 14/0297 {Optical equipment protection}
- 14/0298 . . . {with sub-carrier multiplexing [SCM]}
- 14/03 . . . {WDM arrangements ([ADM arrangements H04J 14/0202](#); [WDM network architectures H04J 14/0278](#))}
- 14/0305 {in end terminals}
- 14/0307 {Multiplexers; Demultiplexers}
- 14/04 . . . Mode multiplex systems
- 14/05 . . . {Spatial multiplexing systems}
- 14/052 . . . {using multicore fibre ([mode multiplex systems H04J 14/04](#))}
- 14/06 . . . Polarisation multiplex systems
- 14/07 . . . {Orbital angular momentum [OAM] multiplex systems}
- 14/08 . . . Time-division multiplex systems
- 14/083 . . . {Add and drop multiplexing}
- 14/086 . . . {Medium access ([H04J 3/16 takes precedence](#))}
- 99/00 Subject matter not provided for in other groups of this subclass**
- 2203/00 Aspects of optical multiplex systems other than those covered by [H04J 14/05](#) and [H04J 14/07](#)**
- 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
- 2203/0003 . . . Switching fabrics, e.g. transport network, control network
- 2203/0005 Switching elements
- 2203/0007 Space switch details
- 2203/0008 Time switch details
- 2203/001 using a shared central buffer
- 2203/0012 Switching modules and their interconnections
- 2203/0014 Clos
- 2203/0016 Crossbar
- 2203/0017 Parallel switch planes
- 2203/0019 Multicast/broadcast capabilities
- 2203/0021 Control mechanisms
- 2203/0023 Routing/path finding
- 2203/0025 Peripheral units
- 2203/0026 Physical details
- 2203/0028 Local loop
- 2203/003 Medium of transmission, e.g. fibre, cable, radio
- 2203/0032 Fibre
- 2203/0033 Metallic
- 2203/0035 Radio
- 2203/0037 Satellite
- 2203/0039 Topology
- 2203/0041 Star, e.g. cross-connect, concentrator, subscriber group equipment, remote electronics
- 2203/0042 Ring
- 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

H04J

- 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]