

CPC COOPERATIVE PATENT CLASSIFICATION

H ELECTRICITY

(NOTE omitted)

H04 ELECTRIC COMMUNICATION TECHNIQUE

(NOTE omitted)

H04Q SELECTING (switches, relays, selectors [H01H](#); wireless communication networks [H04W](#))

NOTES

- This subclass covers:
 - methods, circuits, or apparatus for establishing selectively a connection between a desired number of stations (normally two), or between a main station and a desired number of substations (normally one) for the purpose of transferring information via this connection after it has been established;
 - selective calling arrangements over connections already established.

In either case, the connection may be made by means of electric conductors or electromagnetic waves.
- In this subclass, the following terms or expressions are used with the meanings indicated:
 - "subscriber" is a general term for terminal equipment, e.g. telephone for public use;
 - "substation" means a subscriber or monitoring equipment which may connect a single subscriber to a line without choice as to subscriber;
 - "satellite" is a kind of exchange the operation of which depends upon control signals received from a supervisory exchange;
 - "switching centres" includes exchanges and satellites.

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	Details of selecting apparatus or arrangements	1/116	. . . {lightning or EMI protection, e.g. shielding or grounding}
1/02	. Constructional details		
1/021	. . {using pivoting mechanisms for accessing the interior of the apparatus}	1/118	. . . {heat or sun protection}
1/023	. . {using sliding mechanisms for accessing the interior of the apparatus}	1/12	. . Arrangements of multiple bars with or without pivotable frames
1/025	. . {Cabinets}	1/13	. . {Patch panels for monitoring, interconnecting or testing circuits, e.g. patch bay, patch field or jack field; Patching modules}
1/026	. . . {characterized by door details}		
1/028	. . {Subscriber network interface devices}	1/131	. . . {being pivotable}
1/03	. . {Power distribution arrangements}	1/133	. . . {being slidable}
1/032	. . . {power failure protection}	1/135	. . . {characterized by patch cord details}
1/035	. . {Cooling of active equipments, e.g. air ducts}	1/136	. . . . {having patch field management or physical layer management arrangements}
1/04	. . Frames or mounting racks for selector switches; Accessories therefor, e.g. frame cover	1/138	. . . . . {using RFID}
1/06	. . Cable ducts or mountings specially adapted for exchange installations	1/14	. . Distribution frames
1/062	. . . {vertical management arrangements}	1/141	. . . {Details of connexions between cable and distribution frame}
1/064	. . . {horizontal management arrangements}	1/142	. . . {Terminal blocks for distribution frames}
1/066	. . . {arranged on the front side}	1/143	. . . {with contacts on circular surface}
1/068	. . . {arranged on the rear side}	1/144	. . . {Plugs used in distribution frames}
1/08	. . Frames or mounting racks for relays; Accessories therefor	1/145	. . . {with switches arranged in a matrix configuration}
1/09	. . {Frames or mounting racks not otherwise provided for}	1/146	. . . {with line protection means}
1/10	. . Exchange station construction	1/147	. . . {using robots for distributing}
1/11	. . {Protection against environment}	1/148	. . . {Identification strips for distribution frames}
1/112	. . . {mechanical protection, e.g. resistance to earthquakes}	1/149	. . . {Wireguides in connector blocks}
1/114	. . . {flooding protection, e.g. using water proof provision}	1/15	. . {Backplane arrangements}
		1/155	. . . {characterised by connection features}
		1/16	. . Wiring arrangements for selector switches or relays in frames
		1/18	. Electrical details

- 1/20 . . Testing circuits or apparatus; Circuits or apparatus for detecting, indicating, or signalling faults or troubles
- 1/22 . . . Automatic arrangements
- 1/24 for connection devices
- 1/245 {in time-division multiplex systems}
- 1/26 for signalling trouble in unoccupied sub-exchanges
- 1/28 . . Current-supply circuits or arrangements for selection equipment at exchanges
- 1/30 . . Signalling arrangements; Manipulation of signalling currents (multiplex systems providing for calling or supervisory signals [H04J 1/14](#), [H04J 3/12](#))
- 1/32 . . . using trains of dc pulses ([H04Q 1/39](#) takes precedence)
- 1/34 Impulse regenerators with mechanical or other non-electrical marking arrangements
- 1/36 Pulse-correcting arrangements, e.g. for reducing effects due to interference
- 1/38 . . . using combinations of direct currents of different amplitudes or polarities over line conductors or combination of line conductors
- 1/39 . . . using coded pulse groups
- 1/40 . . . whereby duration of pulse or interval between two pulses is variable
- 1/42 involving the position of a pulse in a cycle
- 1/44 . . . using alternate current ([H04Q 1/50](#) takes precedence)
- 1/442 with out-of-voice band signalling frequencies
- 1/4423 {using one signalling frequency}
- 1/4426 {using two or more signalling frequencies, transmitted in succession or simultaneously}
- 1/444 with voice-band signalling frequencies
- 1/446 using one signalling frequency ([H04Q 1/46](#) takes precedence)
- 1/4465 {the same frequency being used for all signalling information, e.g. A.C. nr.9 system}
- 1/448 with conversion of a single frequency signal into a digital signal
- 1/4485 {which is transmitted in digital form}
- 1/45 using multi-frequency signalling ([H04Q 1/46](#) takes precedence)
- 1/453 in which m-out-of-n signalling frequencies are transmitted
- 1/4535 {with an additional signal transmitted for voice protection}
- 1/457 with conversion of multifrequency signals into digital signals
- 1/4575 {which are transmitted in digital form}
- 1/46 comprising means for distinguishing between a signalling current of predetermined frequency and a complex current containing that frequency, e.g. speech current
- 1/48 . . . Induced-current signalling arrangements
- 1/50 . . . Conversion between different kinds of signals
- 1/54 . . Amplifier switched-on automatically in dependence on automatically-selected lines
- 1/56 . . Balancing circuitry switched-on automatically in dependence on automatically-selected lines
- 3/00** **Selecting arrangements ([H04Q 5/00](#) - [H04Q 11/00](#) take precedence)**
- 3/0004 . . {using crossbar selectors in the switching stages}
- 3/0008 . . {using relay selectors in the switching stages}
- 3/0012 . . . {in which the relays are arranged in a matrix configuration}
- 3/0016 . . {Arrangements providing connection between exchanges}
- 3/002 . . . {Details}
- 3/0025 . . . {Provisions for signalling}
- 3/0029 . . . {Provisions for intelligent networking}
- 3/0033 {customer-controlled}
- 3/0037 {involving call modelling techniques, e.g. modifications to the basic call state model [BCSM]}
- 3/0041 {involving techniques for avoiding interaction of call service features}
- 3/0045 {involving hybrid, i.e. a mixture of public and private, or multi-vendor systems}
- 3/005 {Personal communication services, e.g. provisions for portability of subscriber numbers}
- 3/0054 {Service creation techniques}
- 3/0058 {using service-independent building blocks (SIBBs) or "primitives"}
- 3/0062 . . . {Provisions for network management}
- 3/0066 {Bandwidth allocation or management}
- 3/007 {customer-controlled}
- 3/0075 {Fault management techniques}
- 3/0079 {involving restoration of networks, e.g. disaster recovery, self-healing networks}
- 3/0083 {Network planning or design; Modelling of planned or existing networks}
- 3/0087 {Network testing or monitoring arrangements}
- 3/0091 {Congestion or overload control}
- 3/0095 {Specification, development or application of network management software, e.g. software re-use}
- 3/02 . . Circuit arrangements for selectors responsive to a permutation code
- 3/04 . . Circuit arrangements for receivers of routing digits
- 3/06 . . . for group or trunk group selectors
- 3/08 . . . for local or long-distance selectors
- 3/10 . . . for PBX selectors, i.e. private branch exchange selectors
- 3/12 . . . for line selectors providing transfer of routing digits
- 3/14 . . . for two-way operation selectors
- 3/16 . . . for marking-switches
- 3/18 . . Circuit arrangements for first stage of hunting switching
- 3/20 . . . for preselectors
- 3/22 comprising common calling and disconnecting circuit
- 3/24 . . . for line finders
- 3/26 comprising common calling and disconnecting circuit
- 3/28 comprising main groups and subgroups
- 3/30 . . . Selector finders, i.e. alloters
- 3/32 . . Circuit arrangements for second or subsequent stages of hunting switching

- 3/34 . . for the second preselection stage
- 3/36 . . for the second line-finder stage
- 3/38 . . for stages after the group selector stage
- 3/40 . . for stages after the line selector, e.g. for extension selector
- 3/42 . Circuit arrangements for indirect selecting controlled by common circuits, e.g. register controller, marker
- 3/44 . . using revertive control
- 3/46 . . using signals other than revertive impulses
- 3/47 . . using translators
- 3/48 . . using markers
- 3/49 . . . for end-to-end marking
- 3/495 . . . for routing connecting paths
- 3/52 . . using static devices in switching stages, e.g. electronic switching arrangements
- 3/521 . . . {using semiconductors in the switching stages}
- 3/523 {Details}
- 3/525 . . . {using tubes in the switching stages}
- 3/526 . . . {Optical switching systems}
- 3/528 {Details}
- 3/54 . . in which the logic circuitry controlling the exchange is centralised
- 3/542 . . . {Logic circuits or arrangements therefor}
- 3/545 . . . using a stored programme
- 3/54508 {Configuration, initialisation}
- 3/54516 {Initialization, software or data downloading ([G06F 9/445 takes precedence](#))}
- 3/54525 {Features introduction}
- 3/54533 {Configuration data, translation, passwords, databases}
- 3/54541 {using multi-processor systems}
- 3/5455 {Multi-processor, parallelism, distributed systems}
- 3/54558 {Redundancy, stand-by}
- 3/54566 {Intelligent peripherals, adjunct processors}
- 3/54575 {Software application}
- 3/54583 {Software development, e.g. procedural, object oriented, software generation, software testing}
- 3/54591 {Supervision, e.g. fault localisation, traffic measurements, avoiding errors, failure recovery, monitoring, statistical analysis}
- 3/55 . . . using wired logic circuitry
- 3/552 {Wired circuits or arrangements therefor}
- 3/555 being comprised by electro-magnetic devices
- 3/56 . . in which the control signals are multiplexed
- 3/58 . Arrangements providing connection between main exchange and sub-exchange or satellite
- 3/60 . . for connecting to satellites or concentrators which connect one or more exchange lines with a group of local lines
- 3/602 . . . {Circuit arrangements therefor}
- 3/605 . . . {Arrangements in the satellite or concentrator}
- 3/607 {Details}
- 3/62 . . for connecting to private branch exchanges
- 3/622 . . . {Circuit arrangements therefor}
- 3/625 . . . {Arrangements in the private branch exchange}
- 3/627 {Details}
- 3/64 . Distributing or queueing
- 3/645 . . {Circuit arrangements therefor}
- 3/66 . . Traffic distributors
- 3/665 {Circuit arrangements therefor}
- 3/68 . . Grouping or interlacing selector groups or stages
- 3/685 {Circuit arrangements therefor}
- 3/70 . Identification of class of calling subscriber
- 3/72 . Finding out and indicating number of calling subscriber
- 3/74 . . Identification of subscriber calling from a party-line
- 3/76 . Translation from the called subscriber's number to the outgoing or incoming control information
- 3/78 . Temporary storage of information of calling or called subscriber ([intermediate storage means for telegraphic communication H04L 13/08](#))
- 5/00** **Selecting arrangements wherein two or more subscriber stations are connected by the same line to the exchange**
- 5/02 . with direct connection for all subscribers, i.e. party-line systems ([H04Q 5/24 takes precedence](#))
- 5/04 . . Signalling by currents in one or other or both line wires or additional wires
- 5/06 . . Signalling by amplitude or polarity of dc
- 5/08 . . Signalling by continuous ac
- 5/10 . . . using single frequencies for different subscribers
- 5/12 . . . using combinations of frequencies
- 5/14 . . Signalling by pulses
- 5/16 . . . by predetermined number of pulses
- 5/18 . with indirect connection, i.e. through subordinate switching centre
- 5/20 . . the subordinate centre permitting interconnection of subscribers connected thereto
- 5/22 . . the subordinate centre not permitting interconnection of subscribers connected thereto
- 5/24 . for two-party-line systems
- 5/245 . . {Circuit arrangements in which for one subscriber low frequency speech and/or signalling signals proceed on the line, while for the other subscriber the low frequency speech and/or signalling signals are modulated upon a high frequency carrier signal}
- 9/00** **Arrangements in telecontrol or telemetry systems for selectively calling a substation from a main station, in which substation desired apparatus is selected for applying a control signal thereto or for obtaining measured values therefrom**
- 9/02 . Automatically-operated arrangements
- 9/04 . Arrangements for synchronous operation
- 9/06 . Calling by using amplitude or polarity of dc
- 9/08 . Calling by using continuous ac
- 9/10 . . using single different frequencies
- 9/12 . . using combinations of frequencies
- 9/14 . Calling by using pulses
- 9/16 . . by predetermined number of pulses
- 11/00** **Selecting arrangements for multiplex systems ([multiplex systems H04J](#))**
- 11/0001 . {using optical switching}
- 11/0003 . . {Details}
- 11/0005 . . {Switch and router aspects}
- 2011/0007 {Construction}
- 2011/0009 {using wavelength filters}
- 2011/0011 {using wavelength conversion}

2011/0013	. . . . {using gating amplifiers}	11/02	. for frequency-division multiplexing {(H04Q 11/0001 takes precedence)}
2011/0015	. . . . {using splitting combining}	11/023	. . {using a stored programme control}
2011/0016	. . . . {using wavelength multiplexing or demultiplexing}	11/026	. . . {Details}
2011/0018	. . . . {using tunable transmitters or receivers}	11/04	. for time-division multiplexing {(H04Q 11/0001 takes precedence)}
2011/002	. . . . {using optical delay lines or optical buffers or optical recirculation}	11/0407	. . {using a stored programme control}
2011/0022	. . . . {using fibre gratings}	11/0414	. . . {Details}
2011/0024	. . . . {using space switching}	11/0421	. . {Circuit arrangements therefor}
2011/0026	. . . . {using free space propagation (e.g. lenses, mirrors)}	11/0428	. . {Integrated services digital network, i.e. systems for transmission of different types of digitised signals, e.g. speech, data, telecentral, television signals}
2011/0028	. . . . . {using holograms}	11/0435	. . . {Details}
2011/003	. . . . . {using switches based on microelectro-mechanical systems [MEMS]}	11/0442	. . . . {Exchange access circuits}
2011/0032	. . . . {using static wavelength routers (e.g. arrayed waveguide grating router [AWGR])}	11/045	. . . . {Selection or connection testing arrangements}
2011/0033	. . . . {using time division switching}	11/0457	. . . . {Connection protocols}
2011/0035	. . . . {using miscellaneous components, e.g. circulator, polarisation, acousto/thermo optical}	11/0464	. . . . {Primary rate access circuits}
2011/0037	. . . {Operation}	11/0471	. . . . {Terminal access circuits}
2011/0039	. . . . {Electrical control}	11/0478	. . . {Provisions for broadband connections}
2011/0041	. . . . {Optical control}	11/0485	. . . . {Circuit arrangements therefor}
2011/0043	. . . . {Fault tolerance}	11/0492	. . . . . {Details}
2011/0045	. . . . {Synchronisation}	11/06	. . Time-space-time switching
2011/0047	. . . . {Broadcast; Multicast}	11/08	. . Time only switching
2011/0049	. . . . {Crosstalk reduction; Noise; Power budget}	2201/00	Constructional details of selecting arrangements
2011/005	. . . . {Arbitration and scheduling}	2201/02	. Details of frames
2011/0052	. . . {Interconnection of switches}	2201/04	. Modular construction
2011/0054	. . . . {Distribute-route}	2201/06	. Cooling arrangements
2011/0056	. . . . {Clos}	2201/08	. Pivotal parts
2011/0058	. . . . {Crossbar; Matrix}	2201/10	. Housing details
2011/006	. . . . {Full mesh}	2201/12	. Printed circuits
11/0062	. . {Network aspects}	2201/14	. Screening, grounding or crosstalk reduction details
2011/0064	. . . {Arbitration, scheduling or medium access control aspects}	2201/16	. Coaxial cable connectors
11/0066	. . . {Provisions for optical burst or packet networks}	2201/18	. Rails
11/0067	. . . {Provisions for optical access or distribution networks, e.g. Gigabit Ethernet Passive Optical Network (GE-PON), ATM-based Passive Optical Network (A-PON), PON-Ring}	2201/80	. in specific systems
2011/0069	. . . {using dedicated optical channels}	2201/802	. . in data transmission systems
11/0071	. . . {Provisions for the electrical-optical layer interface}	2201/804	. . in optical transmission systems
2011/0073	. . . {Provisions for forwarding or routing, e.g. lookup tables}	2201/806	. . in PBX or KTS systems
2011/0075	. . . {Wavelength grouping or hierarchical aspects}	2201/808	. . in wireless transmission systems
2011/0077	. . . {Labelling aspects, e.g. multiprotocol label switching [MPLS], G-MPLS, MPAS}	2209/00	Arrangements in telecontrol or telemetry systems
2011/0079	. . . {Operation or maintenance aspects}	2209/10	. using a centralized architecture
2011/0081	. . . . {Fault tolerance; Redundancy; Recovery; Reconfigurability}	2209/20	. using a distributed architecture
2011/0083	. . . . {Testing; Monitoring}	2209/25	. . using a mesh network, e.g. a public urban network such as public lighting, bus stops or traffic lights
2011/0084	. . . {Quality of service aspects}	2209/30	. using a wired architecture
2011/0086	. . . {Network resource allocation, dimensioning or optimisation}	2209/40	. using a wireless architecture
2011/0088	. . . {Signalling aspects}	2209/43	. . using wireless personal area networks [WPAN], e.g. 802.15, 802.15.1, 802.15.4, Bluetooth or ZigBee
2011/009	. . . {Topology aspects}	2209/47	. . using RFID associated with sensors
2011/0092	. . . . {Ring}	2209/50	. using a mobile data collecting device, e.g. walk by or drive by
2011/0094	. . . . {Star}	2209/60	. for transmitting utility meters data, i.e. transmission of data from the reader of the utility meter
2011/0096	. . . . {Tree}	2209/70	. Arrangements in the main station, i.e. central controller
2011/0098	. . . . {Mesh}	2209/75	. . by polling or interrogating the sub-stations
		2209/753	. . . where the polling of the sub-stations is synchronous

- 2209/756 . . . where the polling of the sub-stations is cyclic, e.g. round-robin
- 2209/80 . Arrangements in the sub-station, i.e. sensing device
- 2209/82 . . where the sensing device takes the initiative of sending data
- 2209/823 . . . where the data is sent when the measured values exceed a threshold, e.g. sending an alarm
- 2209/826 . . . where the data is sent periodically
- 2209/84 . . Measuring functions
- 2209/845 . . . where the measuring is synchronized between sensing devices
- 2209/86 . . Performing a diagnostic of the sensing device
- 2209/88 . . Providing power supply at the sub-station
- 2209/883 . . . where the sensing device enters an active or inactive mode
- 2209/886 . . . using energy harvesting, e.g. solar, wind or mechanical
- 2213/00 Indexing scheme relating to selecting arrangements in general and for multiplex systems**
- 2213/001 . Motorselectors
- 2213/002 . Graphical representation
- 2213/003 . Constructional details
- 2213/011 . Periodic optical structures, e.g. gratings, holograms
- 2213/012 . Tunable optical systems
- 2213/013 . Optical shutters, e.g. LCD arrays
- 2213/014 . Optical storage, not delay lines
- 2213/015 . 3D-optical arrangement
- 2213/016 . Optical subcarrier modulation
- 2213/017 . Optical polarisation
- 2213/02 . Relay switches
- 2213/03 . PAM
- 2213/031 . PCM
- 2213/032 . Delta modulation
- 2213/033 . Other modulation methods
- 2213/034 . Codec; PCM compression
- 2213/036 . Series parallel conversion; Parallel bit transmission
- 2213/037 . Resonant transfer; Sample and hold
- 2213/038 . Optical modulation
- 2213/04 . Coordinate switches; Crossbar switches
- 2213/042 . Elements placed in matrix relation, not serving as connection switch
- 2213/046 . Binary switch (Beta element)
- 2213/05 . Software aspects
- 2213/052 . Multi-tasking
- 2213/053 . Priority levels
- 2213/054 . Expert systems, e.g. neural networks
- 2213/055 . Linked lists
- 2213/056 . Software routines, e.g. finite state machines
- 2213/058 . IRQ
- 2213/061 . Preselector; Second line switch
- 2213/062 . Finder switch (e.g. line finder, call finder)
- 2213/063 . Strowger-switch as finder switch
- 2213/064 . Cascaded finder or preselector switches
- 2213/065 . Group selector
- 2213/066 . Switch with two or more wipersets
- 2213/067 . Finder switch serving as final selector
- 2213/068 . Final selector
- 2213/069 . Panel switches
- 2213/07 . Call distribution; Call detection; Call signalling by common apparatus
- 2213/072 . Sequence circuits
- 2213/076 . Distributing frame; Cross connect
- 2213/08 . Power supply
- 2213/082 . Phantom circuits
- 2213/09 . Subscriber related equipment; Analog terminal
- 2213/091 . Indication of kind/number of subscriber
- 2213/092 . Scanning of (subscriber) lines, registers, translators
- 2213/093 . Personal computer
- 2213/094 . Range extender
- 2213/095 . User access; PIN code
- 2213/096 . Digital subscriber terminal
- 2213/097 . Numbering
- 2213/098 . Mobile subscriber
- 2213/099 . Loop multiplexer (not ISDN BRI/PRI; not 381), e.g. loop splitter
- 2213/10 . Register
- 2213/101 . Discriminating selectors
- 2213/102 . Common translator
- 2213/103 . Memories
- 2213/104 . Central control; Computer control
- 2213/106 . Microcomputer; Microprocessor
- 2213/107 . Control equipment for part of the connection
- 2213/109 . Initialising; Downloading of parameters or program routines
- 2213/11 . Sequence switches
- 2213/12 . Call indicator, e.g. number indicator
- 2213/121 . Marker
- 2213/124 . Pulse distributor
- 2213/13 . Charging
- 2213/13001 . Step by step switches
- 2213/13003 . Constructional details of switching devices
- 2213/1301 . Optical transmission, optical switches
- 2213/13012 . Hybrid fiber coax, HFC
- 2213/13016 . Optical subcarrier modulation
- 2213/1302 . Relay switches
- 2213/1303 . Pulse amplitude modulation, PAM
- 2213/13031 . Pulse code modulation, PCM
- 2213/13034 . A/D conversion, code compression/expansion
- 2213/13036 . Serial/parallel conversion, parallel bit transmission
- 2213/13038 . Optical modulation
- 2213/13039 . Asymmetrical two-way transmission, e.g. ADSL, HDSL
- 2213/1304 . Coordinate switches, crossbar, 4/2 with relays, coupling field
- 2213/13046 . Binary switch, β -element
- 2213/1305 . Software aspects
- 2213/13051 . Software generation
- 2213/13052 . Multitasking
- 2213/13053 . Priority levels
- 2213/13054 . Expert system
- 2213/13056 . Routines, finite state machines
- 2213/13057 . Object-oriented software
- 2213/13058 . Interrupt request
- 2213/1307 . Call setup
- 2213/13072 . Sequence circuits for call signaling, ACD systems
- 2213/13076 . Distributing frame, MDF, cross-connect switch
- 2213/1308 . Power supply
- 2213/13082 . Power supply via phantom line
- 2213/1309 . Apparatus individually associated with a subscriber line, line circuits
- 2213/13091 . CLI, identification of calling line
- 2213/13092 . Scanning of subscriber lines, monitoring
- 2213/13093 . Personal computer, PC

- 2213/13094 . Range extender
- 2213/13095 . PIN / Access code, authentication
- 2213/13096 . Digital apparatus individually associated with a subscriber line, digital line circuits
- 2213/13097 . Numbering, addressing
- 2213/13098 . Mobile subscriber
- 2213/13099 . Loop multiplexer
- 2213/131 . Register
- 2213/13102 . Common translator
- 2213/13103 . Memory
- 2213/13104 . Central control, computer control
- 2213/13106 . Microprocessor, CPU
- 2213/13107 . Control equipment for a part of the connection, distributed control, co-processing
- 2213/13109 . Initializing, personal profile
- 2213/13121 . Marker
- 2213/13124 . Pulse distributor
- 2213/1313 . Metering, billing
- 2213/13134 . Coin boxes, payphone, prepaid
- 2213/13136 . Collect call ([information service H04Q 2213/13376](#))
- 2213/13138 . Least cost routing, LCR
- 2213/13139 . Fraud detection/prevention
- 2213/13141 . Hunting for free outlet, circuit or channel
- 2213/13144 . Searching path through number of switching stages or nodes, e.g. revertive blocking
- 2213/13145 . Rerouting upon failure
- 2213/13146 . Rerouting upon blocking/overload, rearrangement
- 2213/13148 . Maximum profit routing
- 2213/13149 . Change of provider, e.g. network or service
- 2213/1315 . Call waiting
- 2213/13152 . Callback
- 2213/13156 . Automatic digit redialling, automatic call retry
- 2213/1316 . Service observation, testing
- 2213/13162 . Fault indication and localisation
- 2213/13163 . Fault alarm
- 2213/13164 . Traffic (registration, measurement,...)
- 2213/13166 . Fault prevention
- 2213/13167 . Redundant apparatus
- 2213/13168 . Error Correction
- 2213/13172 . Supervisory signals
- 2213/13173 . Busy signals
- 2213/13174 . Data transmission, file transfer
- 2213/13175 . Graphical user interface [GUI], WWW interface, visual indication
- 2213/13176 . Common channel signaling, CCS7
- 2213/13178 . Control signals
- 2213/13179 . Fax, still picture
- 2213/1318 . Ringing
- 2213/1319 . Amplifier, attenuation circuit, echo suppressor
- 2213/13191 . Repeater
- 2213/13194 . Four wire connection, transmission
- 2213/13196 . Connection circuit/link/trunk/junction, bridge, router, gateway
- 2213/13199 . Modem, modulation
- 2213/132 . Multiple-zone-metering
- 2213/13201 . Change-over of service during connection
- 2213/13202 . Network termination [NT]
- 2213/13203 . Exchange termination [ET]
- 2213/13204 . Protocols
- 2213/13205 . Primary rate access, PRI
- 2213/13206 . User-to-user signaling, UUS
- 2213/13208 . Inverse multiplexing, channel bonding, e.g. TSSI aspects
- 2213/13209 . ISDN
- 2213/13213 . Counting, timing circuits
- 2213/13214 . Clock signals
- 2213/13215 . Code checking, CRC
- 2213/13216 . Code signals, frame structure
- 2213/13217 . Cranckback in routing, trombone connection, loopback circuit
- 2213/1322 . PBX
- 2213/13222 . PBX circuits in public exchange, centrex
- 2213/13224 . Off-net subscriber, dial in to/out from network, teleworking
- 2213/1323 . Party line
- 2213/1324 . Conference call
- 2213/13242 . Broadcast, diffusion, multicast, point-to-multipoint (1 : N)
- 2213/13246 . Instant speaker's algorithm [ISA]
- 2213/13248 . Multimedia
- 2213/1325 . Priority service
- 2213/13251 . Restricted service, class of service
- 2213/13256 . Call screening
- 2213/1326 . Consultation call, broker's call, call hold, toggling
- 2213/1327 . Release and resetting of connection
- 2213/13271 . Forced release
- 2213/13272 . Premature release
- 2213/13274 . Call rejection, call barring
- 2213/1328 . Call transfer, e.g. in PBX
- 2213/13281 . Call transfer/forward at night
- 2213/13282 . Call forward, follow-me, call diversion
- 2213/13284 . Call tracing
- 2213/13286 . Direct in-dialling in PBX, DDI
- 2213/13287 . Wake-up call service
- 2213/13288 . Closed user groups, CUG
- 2213/1329 . Asynchronous transfer mode, ATM
- 2213/13291 . Frequency division multiplexing, FDM
- 2213/13292 . Time division multiplexing, TDM
- 2213/13293 . TASI, irregular time division, burst switching
- 2213/13294 . CDMA, code division multiplexing, i.e. combinations of [H04Q 2213/13291](#) and/or [H04Q 2213/13292](#) with space division
- 2213/13295 . Wavelength multiplexing, WDM
- 2213/13296 . Packet switching, X.25, frame relay
- 2213/13297 . Coupling different rates in TDM systems, data rate adaptation
- 2213/13298 . Local loop systems, access network
- 2213/13299 . Bus
- 2213/133 . Multiple-time-metering
- 2213/13302 . Magnetic elements
- 2213/13305 . Transistors, semiconductors in general
- 2213/13306 . Ferro-electric elements
- 2213/1331 . Delay elements, shift registers
- 2213/1332 . Logic circuits
- 2213/13322 . Integrated circuits
- 2213/1333 . Random systems
- 2213/13331 . Abbreviated dialling
- 2213/13332 . Broadband, CATV, dynamic bandwidth allocation
- 2213/13333 . Earth satellites
- 2213/13334 . Key telephone systems
- 2213/13335 . Simulation, emulation
- 2213/13336 . Store & forward, messaging systems ([email H04Q 2213/13375](#))

- 2213/13337 . Picturephone, videotelephony
- 2213/13338 . Do-not-disturb
- 2213/13339 . Ciphering, encryption, security
- 2213/1334 . Configuration within the switch
- 2213/13341 . Connections within the switch
- 2213/13342 . Arrangement of switches in the network
- 2213/13343 . Neural networks
- 2213/13344 . Overflow
- 2213/13345 . Intelligent networks, SCP
- 2213/13348 . Channel/line reservation
- 2213/13349 . Network management
- 2213/13352 . Self-routing networks, real-time routing
- 2213/13353 . Routing table, map memory
- 2213/1336 . Synchronisation
- 2213/13361 . Synchronous systems
- 2213/13362 . Asynchronous systems
- 2213/13363 . Pulse stuffing, bit stuffing
- 2213/13367 . Hierarchical multiplexing, add-drop multiplexing
- 2213/1337 . Operator, emergency services
- 2213/13372 . Intercepting operator
- 2213/13374 . Paging
- 2213/13375 . Electronic mail
- 2213/13376 . Information service, downloading of information, 0800/0900 services
- 2213/13377 . Recorded announcement
- 2213/13378 . Speech recognition, speech analysis
- 2213/1338 . Inter-exchange connection
- 2213/13381 . Pair-gain system, digital loop carriers
- 2213/13383 . Hierarchy of switches, main and subexchange, e.g. satellite exchange
- 2213/13384 . Inter-PBX traffic, PBX networks, e.g. corporate networks
- 2213/13385 . Off-net subscriber
- 2213/13386 . Line concentrator
- 2213/13387 . Call gapping
- 2213/13388 . Saturation signaling systems
- 2213/13389 . LAN, internet
- 2213/1339 . Fixed association of channels
- 2213/13391 . Channel assigned to connections
- 2213/13392 . Channels assigned according to rules
- 2213/13393 . Time slot switching, T-stage, time slot interchanging, TSI
- 2213/13395 . Permanent channel, leased line
- 2213/13396 . Signaling in general, in-band signalling
- 2213/13399 . Virtual channel/circuits
- 2213/134 . Coin box
- 2213/13402 . Data transmission out of voice frequency band ([ADSL H04Q 2213/13039](#))
- 2213/13405 . Dual frequency signaling, DTMF
- 2213/13407 . Detection of data transmission mode
- 2213/135 . Service creation
- 2213/13501 . Feature interactions
- 2213/13502 . primitives - inc. service-independent building blocks [SIBBs]
- 2213/13503 . object-oriented systems
- 2213/13504 . client/server architectures
- 2213/13505 . management information base [MIB]
- 2213/13511 . reservation
- 2213/13512 . 800 - freefone
- 2213/13513 . UPT - personal as opposed to terminal mobility, inc. number portability
- 2213/13514 . quality of service - inc. grade of service
- 2213/13515 . authentication, authorisation - fraud prevention
- 2213/13516 . agents or brokers - user, terminal etc., also OSI agent/managers
- 2213/13517 . SLEE - service logic execution
- 2213/13521 . fault management
- 2213/13522 . traffic management
- 2213/13523 . bandwidth management, e.g. capacity management
- 2213/13524 . cost management ([least cost H04Q 2213/13138](#))
- 2213/13525 . GUI - graphical user interface, inc. for service creation
- 2213/13526 . resource management
- 2213/13527 . protocols - X.25, TCAP etc.
- 2213/13528 . SCP architecture
- 2213/13531 . virtual networks - inc. PVN
- 2213/13532 . mobile networks
- 2213/13533 . multivendor and hybrid, e.g. public/private, networks, inc. international
- 2213/13534 . Internet - WWW, HTML, browsers etc.
- 2213/13535 . distributed systems - also domains in service creation
- 2213/13541 . routing
- 2213/13542 . numbering plans, e.g. number re-allocation
- 2213/13543 . network planning, configuration management, e.g. for growth
- 2213/13544 . modeling or simulation, particularly of networks
- 2213/13545 . monitoring of signaling messages, intelligent network
- 2213/13546 . Intelligent Peripheral
- 2213/13547 . subscriber, e.g. profile, database, database access
- 2213/13548 . call modeling, e.g. Basic Call State Model
- 2213/13561 . congestion - inc. overflow
- 2213/13562 . blocking
- 2213/13563 . call gapping, e.g. to prevent congestion
- 2213/13564 . load balancing
- 2213/13565 . restoration, e.g. disaster recovery, self-healing networks
- 2213/13566 . mediation
- 2213/13567 . negotiation, management policy, goals
- 2213/136 . Collect call, e.g. 800 service
- 2213/138 . Least cost routing
- 2213/14 . Busy test, e.g. marking busy
- 2213/141 . Hunting for free outlet, circuit, channel
- 2213/144 . Searching a free path through cascaded switching stages
- 2213/145 . Rerouting, e.g. on failure
- 2213/146 . Rearrangement
- 2213/15 . Waiting
- 2213/152 . Automatic call retry
- 2213/156 . Automatic redialling
- 2213/16 . Service observation; Fault circuit; Testing
- 2213/161 . Blocking or cutoff of faulty apparatus, e.g. timed out
- 2213/162 . Fault indication, e.g. localisation
- 2213/163 . Fault alarm
- 2213/164 . Traffic registration; Adaptation of traffic possibilities
- 2213/166 . Prevention of faults
- 2213/167 . Redundancy
- 2213/171 . Number indicating signals (no dial signals)
- 2213/172 . Supervisory signals
- 2213/173 . Busy signal
- 2213/174 . Data transmission

- 2213/175 . Other signals
- 2213/176 . Common channel signalling
- 2213/177 . Number sending signals, e.g. dialling tone, proceed to send
- 2213/178 . Control signals, e.g. also service connection
- 2213/179 . Facsimile; Fax, e.g. still picture
- 2213/18 . Ringing
- 2213/182 . Ring trip
- 2213/19 . Echo-cancelling; Hybrid; Amplifier; Attenuator
- 2213/191 . Repeater
- 2213/192 . Common amplifier for bidirectional traffic
- 2213/194 . Four-wire connection or transmission
- 2213/196 . Connection-circuit; Trunk; Junction circuit
- 2213/197 . Ping-pong transmission
- 2213/198 . Temporary associated devices; Pooled adapters
- 2213/199 . Modem
- 2213/20 . ISDN
- 2213/201 . Change-over service
- 2213/202 . Network termination [NT]
- 2213/203 . Exchange termination [ET]
- 2213/204 . ISDN protocol; ISO 7
- 2213/205 . Primary rate access
- 2213/206 . User-to-user signalling
- 2213/208 . Inverse multiplexing; Time slot sequence integrity [TSSI] aspects
- 2213/21 . Impulse transmission
- 2213/211 . Impulse correction or reshaping
- 2213/212 . Absorbing of digits
- 2213/214 . Phase shifted impulses; Clock signals; Timing
- 2213/215 . Code checking
- 2213/216 . Code signals; Framing (not synchronizing)
- 2213/217 . Setting of switch by means of pulses
- 2213/218 . Bistable relays, e.g. Ferreed
- 2213/22 . PBX
- 2213/222 . PBX circuits in public exchange (Centrex)
- 2213/23 . Partyline
- 2213/24 . Conference circuit
- 2213/242 . Broadcast and multicast (1:N)
- 2213/243 . Con-cast, e.g. multipoint-point (N:1)
- 2213/246 . Instant speaker's algorithm [ISA]
- 2213/25 . Preferential service
- 2213/251 . Restricted service
- 2213/252 . Breaking-in on existing connection
- 2213/256 . Call screening
- 2213/26 . Call-back
- 2213/27 . Release
- 2213/271 . Forced release
- 2213/272 . Premature release
- 2213/274 . Call rejection
- 2213/28 . Call transfer
- 2213/281 . Prepared call transfer, e.g. night service, intercepting service
- 2213/282 . Call forwarding
- 2213/284 . Call tracing
- 2213/286 . Direct inward dialling [PBX]
- 2213/287 . Call service, e.g. morning call service
- 2213/29 . ATM
- 2213/291 . Frequency division multiplex
- 2213/292 . Time (de)multiplexing
- 2213/293 . Irregular time switching, e.g. TASI; Burst switching
- 2213/294 . Other multiplexing systems, e.g. codemultiplex, TDM, FDM, FDM and Space division, TDM and Space division
- 2213/295 . Wavelength division multiplex
- 2213/296 . Packet switching
- 2213/297 . Coupling circuits between different (rate) TDM systems
- 2213/298 . Loop or ring system
- 2213/299 . Bus
- 2213/301 . Tubes and other non-linear elements with 2 electrodes, e.g. diodes
- 2213/302 . Magnetic elements
- 2213/303 . Tubes and other non-linear elements with more than two electrodes
- 2213/304 . Superconductors; Thermistors; Varistors
- 2213/305 . Transistors
- 2213/306 . Ferro-electric elements
- 2213/307 . Hall elements
- 2213/308 . Photo conductors; Photo elements
- 2213/31 . Delay devices; Circuits, e.g. shift memories
- 2213/32 . Logic elements
- 2213/322 . Integrated circuit
- 2213/33 . Special systems; Special service
- 2213/331 . Abbreviated dialing
- 2213/332 . Broadband system
- 2213/333 . Systems with earth-satellites
- 2213/334 . Key telephone system
- 2213/335 . Simulation
- 2213/336 . Store and forward, e.g. message switching
- 2213/337 . Picturephone
- 2213/338 . Do not disturb
- 2213/339 . Ciphering/encryption
- 2213/34 . General scheme; Position of components in an exchange
- 2213/341 . Contactbank connections
- 2213/342 . General scheme; Position of exchanges
- 2213/343 . Neural network
- 2213/344 . Overflow
- 2213/345 . Intelligent network
- 2213/346 . Switch with inverted grouping
- 2213/347 . Nodal network
- 2213/348 . Reservation of lines/channels
- 2213/349 . Network management; Expert system
- 2213/35 . Separate control and speech paths, e.g. route-searching planes
- 2213/352 . Self-routing switch
- 2213/353 . Map memory
- 2213/36 . Synchronisation
- 2213/361 . Synchronous system
- 2213/362 . Asynchronous system
- 2213/363 . Bit or pulse stuffing
- 2213/366 . Integrated systems, e.g. transparency
- 2213/367 . Multiple multiplexing; Hierarchical multiplexing
- 2213/37 . Operator
- 2213/372 . Intervention by operator; Intercepting operator
- 2213/374 . Paging
- 2213/375 . Electronic mail
- 2213/376 . Information service
- 2213/377 . Recorded announcement
- 2213/378 . Speech recognition; Speech analysis
- 2213/38 . Interexchange connections, e.g. connections of different kinds of networks

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- 2213/381 . Pair gain system
- 2213/382 . Provisions for interexchange traffic in the local exchange
- 2213/383 . Main and subexchange, e.g. satellite exchanges
- 2213/384 . Inter-PBX traffic; PBX networks
- 2213/385 . Traffic in PBX to and from public exchange
- 2213/386 . Line concentrator
- 2213/388 . Saturation signalling system
- 2213/39 . Channels assigned to subscribers
- 2213/391 . Channel allocation to connections
- 2213/392 . Channel allocation - special rules
- 2213/393 . Channel interchanging, e.g. time slot switching
- 2213/394 . Channel assignment without time slot switching
- 2213/395 . (Semi)permanent channels, e.g. leased lines
- 2213/396 . Signalling in general; Special register channel
- 2213/399 . Virtual channel allocation
- 2213/401 . DC and voltages of different kinds or values
- 2213/402 . AC outside voice band
- 2213/403 . Voice frequency
- 2213/405 . Voice frequency current used for digit selection
- 2213/407 . Push-button dialling ([not H04Q 2213/405](#))