

SECTION H — ELECTRICITY

H04 ELECTRIC COMMUNICATION TECHNIQUE

H04B TRANSMISSION (transmission systems for measured values, control or similar signals G08C; speech analysis or synthesis G10L; coding, decoding or code conversion, in general H03M; broadcast communication H04H; multiplex systems H04J; secret communication H04K; transmission of digital information H04L; wireless communication networks H04W) **[4]**

Note(s)

This subclass covers the transmission of information-carrying signals, the transmission being independent of the nature of the information, and includes monitoring and testing arrangements and the suppression and limitation of noise and interference.

Subclass index

DETAILS.....	1/00
SYSTEMS CHARACTERISED BY THE MEDIUM USED FOR TRANSMISSION	
Using conductors.....	3/00
Using free-space propagation.....	5/00-11/00
Others.....	13/00
SYSTEMS NOT CHARACTERISED BY THE MEDIUM USED FOR TRANSMISSION.....	14/00
SUPPRESSION OR LIMITATION OF NOISE OR INTERFERENCE.....	15/00
MONITORING, TESTING.....	17/00

1/00	Details of transmission systems, not covered by a single one of groups H04B 3/00-H04B 13/00; Details of transmission systems not characterised by the medium used for transmission (tuning resonant circuits H03J) [4]	1/26	• • •	for superheterodyne receivers (multiple frequency-changing H03D 7/16)
		1/28	• • • •	the receiver comprising at least one semiconductor device having three or more electrodes
1/02	• Transmitters (spatial arrangements of component circuits in radio pills for living beings A61B 5/07)	1/30	• • •	for homodyne or synchrodyne receivers (demodulator circuits H03D 1/22)
1/03	• • Constructional details, e.g. casings, housings [2]	1/38	•	Transceivers, i.e. devices in which transmitter and receiver form a structural unit and in which at least one part is used for functions of transmitting and receiving
1/034	• • • Portable transmitters [2]			
1/036	• • • Cooling arrangements (cooling transformers H01F 27/08; cooling discharge tubes H01J 7/24, H01J 19/74) [2]	1/40	• •	Circuits
1/04	• • Circuits (of television transmitters H04N 5/38)	1/44	• • •	Transmit/receive switching (in radar systems G01S; tubes therefor H01J 17/64; waveguide switches H01P 1/10) [2]
1/06	• Receivers (control of amplification H03G; television receivers H04N 5/44, H04N 5/64)	1/46	• • • •	by voice-frequency signals; by pilot signals
1/08	• • Constructional details, e.g. cabinet	1/48	• • • •	in circuit for connecting transmitter and receiver to a common transmission path, e.g. by energy of transmitter
1/10	• • Means associated with receiver for limiting or suppressing noise or interference	1/50	• • •	using different frequencies for the two directions of communication
1/12	• • • Neutralising, balancing, or compensation arrangements	1/52	• • • •	Hybrid arrangements, i.e. for transition from single-path two-way transmission to single transmission on each of two paths, or <u>vice versa</u>
1/14	• • • Automatic detuning arrangements			
1/16	• • Circuits	1/54	• • •	using the same frequency for both directions of communication (H04B 1/44 takes precedence)
1/18	• • • Input circuits, e.g. for coupling to an aerial or a transmission line (input circuits for amplifiers in general H03F; coupling networks between aerials or lines and receivers independent of the nature of the receiver H03H)	1/56	• • • •	with provision for simultaneous communication in both directions
1/20	• • • for coupling gramophone pick-up, recorder output, or microphone to receiver	1/58	• • • •	Hybrid arrangements, i.e. for transition from single-path two-way transmission to single transmission on each of two paths, or <u>vice versa</u>
1/22	• • • for receivers in which no local oscillation is generated			
1/24	• • • • the receiver comprising at least one semiconductor device having three or more electrodes	1/59	•	Responders; Transponders (relay systems H04B 7/14)

- 1/60 • Supervising unattended repeaters
- 1/62 • for providing a predistortion of the signal in the transmitter and corresponding correction in the receiver, e.g. for improving the signal/noise ratio
- 1/64 • • Volume compression or expansion arrangements
- 1/66 • for reducing bandwidth of signals (in speech analysis-synthesis techniques G10L 19/00; in pictorial communication systems H04N); for improving efficiency of transmission (H04B 1/68 takes precedence)
- 1/68 • for wholly or partially suppressing the carrier or one side band [4]
- 1/69 • Spread spectrum techniques [6, 2011.01]

Note(s) [2011.01]

When classifying in this group, any aspect of code division multiplexing, which is considered to represent information of interest for search, may also be classified in group H04J 13/00.

- 1/692 • • Hybrid techniques using combinations of two or more spread spectrum techniques [2011.01]
- 1/707 • • using direct sequence modulation [6, 2011.01]
- 1/7073 • • • Synchronisation aspects [2011.01]
- 1/7075 • • • • with code phase acquisition [2011.01]
- 1/7077 • • • • Multi-step acquisition, e.g. multi-dwell, coarse-fine or validation [2011.01]
- 1/708 • • • • Parallel implementation [2011.01]
- 1/7083 • • • • Cell search, e.g. using a three-step approach [2011.01]
- 1/7085 • • • • using a code tracking loop, e.g. a delay-locked loop [2011.01]
- 1/7087 • • • • Carrier synchronisation aspects [2011.01]
- 1/709 • • • Correlator structure [2011.01]
- 1/7093 • • • • Matched filter type [2011.01]
- 1/7095 • • • • Sliding correlator type [2011.01]
- 1/7097 • • • • Interference-related aspects [2011.01]
- 1/71 • • • • the interference being narrowband interference [2011.01]
- 1/7103 • • • • the interference being multiple access interference [2011.01]
- 1/7105 • • • • Joint detection techniques, e.g. linear detectors [2011.01]
- 1/7107 • • • • Subtractive interference cancellation [2011.01]
- 1/711 • • • • the interference being multi-path interference [2011.01]
- 1/7113 • • • • Determination of path profile [2011.01]
- 1/7115 • • • • Constructive combining of multi-path signals, i.e. RAKE receivers [2011.01]
- 1/7117 • • • • Selection, re-selection, allocation or re-allocation of paths to fingers, e.g. timing offset control of allocated fingers [2011.01]
- 1/712 • • • • Weighting of fingers for combining, e.g. amplitude control or phase rotation using an inner loop [2011.01]
- 1/713 • • using frequency hopping [6, 2011.01]
- 1/7136 • • Arrangements for generation of hop frequencies, e.g. using a bank of frequency sources, using continuous tuning or using a transform [2011.01]
- 1/7143 • • Arrangements for generation of hop patterns [2011.01]
- 1/715 • • Interference-related aspects [2011.01]
- 1/7156 • • Arrangements for sequence synchronisation [2011.01]

- 1/7163 • • using impulse radio [2011.01]
- 1/717 • • • Pulse-related aspects [2011.01]
- 1/7176 • • • Data mapping, e.g. modulation [2011.01]
- 1/7183 • • • Synchronisation [2011.01]
- 1/719 • • • Interference-related aspects [2011.01]
- 1/72 • Circuits or components for simulating aerials, e.g. dummy aerial (dissipative waveguide terminations H01P 1/26)
- 1/74 • for increasing reliability, e.g. using redundant or spare channels or apparatus [3]
- 1/76 • Pilot transmitters or receivers for control of transmission or for equalising [3]
- 3/00 Line transmission systems** (combined with near-field transmission systems H04B 5/00; constructional features of cables H01B 11/00)
- 3/02 • Details
- 3/03 • • Hybrid circuits (for transceivers H04B 1/52, H04B 1/58; hybrid junctions of the waveguide type H01P 5/16) [3]
- 3/04 • • Control of transmission; Equalising (control of amplification in general H03G)
- 3/06 • • • by the transmitted signal
- 3/08 • • • • in negative-feedback path of line amplifier
- 3/10 • • • by pilot signal
- 3/11 • • • • using pilot wire (H04B 3/12 takes precedence) [3]
- 3/12 • • • • in negative-feedback path of line amplifier
- 3/14 • • • characterised by the equalising network used
- 3/16 • • • characterised by the negative-impedance network used
- 3/18 • • • • wherein the network comprises semiconductor devices
- 3/20 • • Reducing echo effects or singing; Opening or closing transmitting path; Conditioning for transmission in one direction or the other
- 3/21 • • • using a set of bandfilters [3]
- 3/23 • • • using a replica of transmitted signal in the time domain, e.g. echo cancellers [3]
- 3/26 • • Improving frequency characteristic by the use of loading coils (loading coils *per se* H01F 17/08)
- 3/28 • • Reducing interference caused by currents induced in cable sheathing or armouring
- 3/30 • • Reducing interference caused by unbalance current in a normally balanced line
- 3/32 • • Reducing cross-talk, e.g. by compensating
- 3/34 • • • by systematic interconnection of lengths of cable during laying; by addition of balancing components to cable during laying
- 3/36 • • Repeater circuits (H04B 3/58 takes precedence; amplifiers therefor H03F)
- 3/38 • • • for signals in two different frequency ranges transmitted in opposite directions over the same transmission path
- 3/40 • • Artificial lines; Networks simulating a line of certain length
- 3/42 • • Circuits for by-passing of ringing signals
- 3/44 • • Arrangements for feeding power to a repeater along the transmission line
- 3/46 • • Monitoring; Testing
- 3/48 • • • Testing attenuation
- 3/50 • Systems for transmission between fixed stations *via* two-conductor transmission lines (H04B 3/54 takes precedence)
- 3/52 • Systems for transmission between fixed stations *via* waveguides

- 3/54 • Systems for transmission *via* power distribution lines (in alarm signalling systems G08B 25/06; remote indication of power network conditions, remote control of switching means in a power distribution network H02J 13/00)
- 3/56 • • Circuits for coupling, blocking, or by-passing of signals
- 3/58 • • Repeater circuits (amplifiers therefor H03F)
- 3/60 • Systems for communication between relatively movable stations, e.g. for communication with lift (H04B 3/54 takes precedence)
- 5/00 Near-field transmission systems, e.g. inductive loop type**
- 5/02 • using transceiver
- 5/04 • Calling systems, e.g. paging system
- 5/06 • using a portable transmitter associated with a microphone
- 7/00 Radio transmission systems, i.e. using radiation field (H04B 10/00, H04B 15/00 take precedence)**
- 7/005 • Control of transmission; Equalising [3]
- 7/01 • Reducing phase shift [3]
- 7/015 • Reducing echo effects [3]
- 7/02 • Diversity systems (for direction finding G01S 3/72; aerial arrays or systems H01Q)
- 7/04 • • using a plurality of spaced independent aerials
- 7/06 • • • at transmitting station
- 7/08 • • • at receiving station
- 7/10 • • using a single aerial system characterised by its polarisation or directive properties, e.g. polarisation diversity, direction diversity
- 7/12 • • Frequency-diversity systems
- 7/14 • Relay systems (interrogator-responder radar systems G01S 13/74) [2]
- 7/145 • • Passive relay systems [2]
- 7/15 • • Active relay systems [2]
- 7/155 • • • Ground-based stations (H04B 7/204 takes precedence) [2, 5]
- 7/165 • • • • employing angle modulation [2]
- 7/17 • • • • employing pulse modulation, e.g. pulse code modulation [2]
- 7/185 • • • Space-based or airborne stations (H04B 7/204 takes precedence) [2, 5]
- 7/19 • • • • Earth-synchronous stations [2]
- 7/195 • • • • Non-synchronous stations [2]
- 7/204 • • • Multiple access [5]
- 7/208 • • • • Frequency-division multiple access [5]
- 7/212 • • • • Time-division multiple access [5]
- 7/216 • • • • Code-division or spread-spectrum multiple access (spread spectrum techniques in general H04B 1/69) [5]
- 7/22 • Scatter propagation systems
- 7/24 • for communication between two or more posts (wireless communication networks H04W) [2]
- 7/26 • • at least one of which is mobile [2]
- 10/00 Transmission systems employing beams of corpuscular radiation, or electromagnetic waves other than radio waves, e.g. light, infra-red** (optical coupling, mixing or splitting G02B; light guides G02B 6/00; switching, modulation, demodulation of light beams G02B, G02F; devices or arrangements for the control, e.g. modulation, of light beams G02F 1/00; devices or arrangements for demodulating light, transferring the modulation or changing the frequency of light G02F 2/00; optical multiplex systems H04J 14/00) [5]
- 10/02 • Details [5]
- 10/04 • • Transmitters [5]
- 10/06 • • Receivers [5]
- 10/08 • • Equipment for monitoring, testing or fault measuring [5]
- 10/10 • Transmission through free space, e.g. through the atmosphere (H04B 10/22, H04B 10/24, H04B 10/30 take precedence) [5, 7]
- 10/105 • • specially adapted for satellite links [6]
- 10/12 • Transmission through light guides, e.g. optical fibres (H04B 10/22, H04B 10/24, H04B 10/30 take precedence) [5, 7]
- 10/13 • • using multimodal transmission [6]
- 10/135 • • using single mode transmission [6]
- 10/14 • • Terminal stations [5]
- 10/142 • • • Coherent homodyne or heterodyne systems [6]
- 10/145 • • • • Transmitters [6]
- 10/148 • • • • Receivers [6]
- 10/152 • • • Non-coherent direct-detection systems [6]
- 10/155 • • • • Transmitters [6]
- 10/158 • • • • Receivers [6]
- 10/16 • • Repeaters [5]
- 10/17 • • • in which processing or amplification is carried out without conversion of the signal from optical form [6]
- 10/18 • • Arrangements for reducing or eliminating distortion or dispersion, e.g. equalisers [5]
- 10/20 • • Arrangements for networking, e.g. bus or star coupling [5]
- 10/207 • • • using a star-type coupler [6]
- 10/213 • • • using a T-type coupler [6]
- 10/22 • Transmission between two stations which are mobile relative to each other (H04B 10/30 takes precedence) [5, 7]
- 10/24 • Bidirectional transmission (H04B 10/22, H04B 10/30 take precedence) [5, 7]
- 10/26 • • using a single light source for both stations involved [6]
- 10/28 • • using a single device as a light source or a light receiver [6]
- 10/30 • Transmission systems employing beams of corpuscular radiation (arrangements for handling beams of corpuscular radiation, e.g. focusing, moderating, G21K 1/00) [7]
- 11/00 Transmission systems employing ultrasonic, sonic or infrasonic waves**
- 13/00 Transmission systems characterised by the medium used for transmission, not provided for in groups H04B 3/00-H04B 11/00**
- 13/02 • Transmission systems in which the medium consists of the earth or a large mass of water thereon, e.g. earth telegraphy (line transmission systems with earth or water return H04B 3/00)

H04B

14/00	Transmission systems not characterised by the medium used for transmission (details thereof H04B 1/00) [4]	15/02	<ul style="list-style-type: none">Reducing interference from electric apparatus by means located at or near the interfering apparatus (structural association with dynamo-electric machines H02K 11/00; screening H05K 9/00)
14/02	<ul style="list-style-type: none">characterised by the use of pulse modulation (in radio transmission relays H04B 7/17) [4]	15/04	<ul style="list-style-type: none"><ul style="list-style-type: none">the interference being caused by substantially sinusoidal oscillations, e.g. in a receiver, in a tape-recorder (reducing parasitic oscillations H03B, H03F)
14/04	<ul style="list-style-type: none"><ul style="list-style-type: none">using pulse code modulation (analogue/digital or digital/analogue conversion H03M 1/00) [4]	15/06	<ul style="list-style-type: none"><ul style="list-style-type: none">by local oscillators of receivers
14/06	<ul style="list-style-type: none"><ul style="list-style-type: none">using differential modulation, e.g. delta modulation (conversion of analogue values to or from differential modulation H03M 3/00) [4]	17/00	Monitoring; Testing [2]
14/08	<ul style="list-style-type: none">characterised by the use of a sub-carrier [4]	17/02	<ul style="list-style-type: none">of relay systems [2]
15/00	Suppression or limitation of noise or interference (by means associated with receiver H04B 1/10)		