CPC COOPERATIVE PATENT CLASSIFICATION

H03D DEMODULATION OR TRANSFERENCE OF MODULATION FROM ONE CARRIER TO ANOTHER (masers, lasers H01S; circuits capable of acting both as modulator and demodulator H03C; details applicable to both modulators and frequency-changers H03C; demodulating pulses H03K 9/00; transforming types of pulse modulation H03K 11/00; coding, decoding or code conversion, in general H03M; repeater stations H04B 7/14; demodulators adapted for ac systems of digital information transmission H04L 27/00; synchronous demodulators adapted for colour television H04N 9/66)

NOTE

This subclass covers only:

- demodulation or transference of signals modulated on a sinusoidal carrier or on electromagnetic waves;
- comparing phase or frequency of two mutually-independent oscillations.

H03D 1/00 **Demodulation of amplitude-modulated oscillations** (H03D 5/00, H03D 9/00, H03D 11/00 take precedence)

H03D 1/02 . Details

H03D 1/04 . . Modifications of demodulators to reduce interference by undesired signals

H03D 1/06 . . Modifications of demodulators to reduce distortion, e.g. by negative feedback

H03D 1/08 . by means of non-linear two-pole elements (H03D 1/22, H03D 1/26, H03D 1/28 take precedence)

H03D 1/10 . . of diodes

H03D 1/12 . . . with provision for equalising ac and dc loads

H03D 1/14 . by means of non-linear elements having more than two poles (H03D 1/22, H03D 1/26, H03D 1/28 take precedence)

H03D 1/16 . . of discharge tubes

H03D 1/18 . . of semiconductor devices

H03D 1/20 . . with provision for preventing undesired type of demodulation, e.g. preventing anode detection in a grid detection circuit

H03D 1/22 . Homodyne or synchrodyne circuits {(receiver circuits H04B 1/30)}

H03D 1/2209 . . {Decoders for simultaneous demodulation and decoding of signals composed of a sum-signal and a suppressed carrier, amplitude modulated by a difference signal, e.g. stereocoders}

H03D 1/2218 . . . {using diodes for the decoding}

H03D 1/2227 . . . {using switches for the decoding (diodes used as switches H03D 1/2218)}

H03D 1/2236 . . . {using a phase locked loop}

H03D 1/2245 . . {using two quadrature channels (H03D 1/2209 takes precedence)}

H03D 1/2254 . . . {and a phase locked loop}

H03D 2001/2263 . . . . {including a counter or a divider in the PLL }

H03D 1/2272 . . {using FET`s (H03D 1/2209, H03D 1/2245 and H03D 1/2281 take precedence)}

H03D 1/2281 . . {using a phase locked loop (H03D 1/2236 and H03D 1/2254 take precedence)}

H03D 1/229 . . {using at least a two emittor-coupled differential pair of transistors (H03D 1/2209 to H03D 1/2281 take precedence)}

H03D 1/24 . . for demodulation of signals wherein one sideband or the carrier has been wholly or partially suppressed {(receiver circuits H04B 1/302)}

H03D 1/26 . by means of transit-time tubes

H03D 1/28 . by deflecting an electron beam in a discharge tube (H03D 1/26 takes precedence)

H03D 3/00 **Demodulation of angle-, {frequency- or phase-} modulated oscillations** (H03D 5/00, H03D 9/00, H03D 11/00 take precedence)

H03D 3/001 . {Details of arrangements applicable to more than one type of frequency demodulator (H03D 3/28 takes precedence)}

H03D 3/002 . . {Modifications of demodulators to reduce interference by undesired signals (H03D 3/248 takes precedence)}

H03D 3/003 . . {Arrangements for reducing frequency deviation, e.g. by negative frequency feedback (combined with a phase locked loop demodulator H03D 3/242; changing frequency deviation for modulators H03C 3/06)}

H03D 3/004 . . . {wherein the demodulated signal is used for controlling an oscillator, e.g. the local oscillator}

H03D 3/005 . . . {wherein the demodulated signal is used for controlling a bandpass filter (automatic bandwidth control H03G; automatic frequency control H03J 7/02)}

H03D 3/006 . {by sampling the oscillations and further processing the samples, e.g. by computing techniques (H03D 3/007 takes precedence)}

H03D 3/007 . {by converting the oscillations into two quadrature related signals (H03D 3/245 takes precedence)}

H03D 3/008 . . {Compensating DC offsets}

H03D 3/009 . . {Compensating quadrature phase or amplitude imbalances}

H03D 3/02 . by detecting phase difference between two signals obtained from input signal (H03D 3/28 to H03D 3/32 take precedence; {muting in frequency-modulation receivers H03G 3/28}; limiting arrangements H03G 11/00)

H03D 3/04 . . by counting or integrating cycles of oscillations {arrangements for measuring frequencies G01R 23/10}

H03D 3/06 . . by combining signals additively or in product demodulators

H03D 3/08 . . . by means of diodes, e.g. Foster-Seeley discriminator

H03D 3/10 . . . . in which the diodes are simultaneously conducting during the same half period of the signal, e.g. radio detector

H03D 3/12 . . . by means of discharge tubes having more than two electrodes

H03D 3/14 . . . by means of semiconductor devices having more than two electrodes

H03D 3/16 . . . by means of electromechanical resonators

H03D 3/18 . . by means of synchronous gating arrangements

H03D 3/20 . . . producing pulses whose amplitude or duration depends on phase difference

H03D 3/22 . . by means of active elements with more than two electrodes to which two signals are applied derived from the signal to be demodulated and having a phase difference related to the frequency deviation, e.g. phase detector

H03D 3/24 . . Modifications of demodulators to reject or remove amplitude variations by means of locked-in oscillator circuits

H03D 3/241 . . . {the oscillator being part of a phase locked loop}

H03D 3/242 . . . . {combined with means for controlling the frequency of a further oscillator, e.g. for negative frequency feedback or AFC}

H03D 3/244 . . . . {combined with means for obtaining automatic gain control}

H03D 3/245 . . . . {using at least twophase detectors in the loop (H03D 3/244 takes precedence; in general H03L 7/087)}

H03D 3/247 . . . . {using a controlled phase shifter (in general H03L 7/081)}

H03D 3/248 . . . . {with means for eliminating interfering signals, e.g. by multiple phase locked loops (multiple loops in general H03L 7/07, H03L 7/22)}

H03D 3/26 . by means of sloping amplitude/frequency characteristic of tuned or reactive circuit (H03D 3/28 to H03D 3/32 takes precedence)

H03D 3/28 . Modifications of demodulators to reduce effects of temperature variations ({automatic frequency regulation in receivers H03J}; automatic frequency control H03L)

H03D 3/30 . by means of transit-time tubes

H03D 3/32 . by deflecting an electron beam in a discharge tube (H03D 3/30 takes precedence)

H03D 3/34 . by means of electromechanical devices (H03D 3/16 takes precedence)

H03D 5/00 **Circuits for demodulating amplitude-modulated or angle-modulated oscillations at will** (H03D 9/00, H03D 11/00 take precedence)

H03D 7/00 **Transference of modulation from one carrier to another, e.g. frequency-changing** (H03D 9/00, H03D 11/00 take precedence; dielectric amplifiers, magnetic amplifiers, parametric amplifiers used as a frequency-changers H03F)

H03D 7/005 . {by means of superconductive devices}

H03D 7/02 . by means of diodes (H03D 7/14 to H03D 7/22 take precedence)

H03D 7/04 . . having {a partially} negative resistance characteristic, e.g. tunnel diode

H03D 7/06 . by means of discharge tubes having more than two electrodes (H03D 7/14 to H03D 7/22 take precedence)

H03D 7/08 . . the signals to be mixed being applied between the same two electrodes

H03D 7/10 . . the signals to be mixed being applied between different pairs of electrodes

H03D 7/12 . by means of semiconductor devices having more than two electrodes (H03D 7/14 to H03D 7/22 take precedence)

H03D 7/125 . . {with field effect transistors}

H03D 7/14 . Balanced arrangements

H03D 7/1408 . . {with diodes}

H03D 7/1416 . . {with discharge tubes having more than two electrodes}

H03D 7/1425 . . {with transistors}

WARNING

H03D 7/1425 (continued) Subgroups H03D 7/1433 to H03D 7/1491 are incomplete pending reclassification; see also this group and its other subgroups

H03D 7/1433 . . . {using bipolar transistors (H03D 7/145 takes precedence)}

H03D 7/1441 . . . {using field-effect transistors (H03D 7/145 takes precedence)}

H03D 7/145 . . . {using a combination of bipolar transistors and field-effect transistors}

H03D 7/1458 . . . {Double balanced arrangements, i.e. where both input signals are differential}

H03D 7/1466 . . . {Passive mixer arrangements}

H03D 7/1475 . . . {Subharmonic mixer arrangements}

H03D 7/1483 . . . {comprising components for selecting a particular frequency component of the output}

H03D 7/1491 . . . {Arrangements to linearise a transconductance stage of a mixer arrangement}

H03D 7/16 . Multiple-frequency-changing

H03D 7/161 . . {all the frequency changers being connected in cascade}

H03D 7/163 . . . {the local oscillations of at least two of the frequency changers being derived from a single oscillator}

H03D 7/165 . . {at least two frequency changers being located in different paths, e.g. in two paths with carriers in quadrature (combined with amplitude demodulation H03D 1/2245, combined with angle demodulation H03D 3/007; N-path filters H03H 19/002)}

H03D 7/166 . . . {using two or more quadrature frequency translation stages}

H03D 7/168 . . . . {using a feedback loop containing mixers or demodulators}

H03D 7/18 . Modifications of frequency-changers for eliminating image frequencies {(H03D 7/16 takes precedence)}

H03D 7/20 . by means of transit-time tubes

H03D 7/22 . by deflecting an electron beam in a discharge tube (H03D 7/20 takes precedence)

H03D 9/00 **Demodulation or transference of modulation of modulated electromagnetic waves** (demodulating light, transferring modulation in light waves G02F 2/00)

H03D 9/02 . Demodulation using distributed inductance and capacitance, e.g. in feeder lines

H03D 9/04 . . for angle-modulated oscillations

H03D 9/06 . Transference of modulation using distributed inductance and capacitance

H03D 9/0608 . . {by means of diodes}

H03D 9/0616 . . . {mounted in a hollow waveguide (H03D 9/0641 takes precedence)}

H03D 9/0625 . . . {mounted in a coaxial resonator structure}

H03D 9/0633 . . . {mounted on a stripline circuit}

H03D 9/0641 . . . . {located in a hollow waveguide}

H03D 9/065 . . {by means of discharge tubes having more than two electrodes}

H03D 9/0658 . . {by means of semiconductor devices having more than two electrodes}

H03D 9/0666 . . . {using bipolar transistors (H03D 9/0683 takes precedence)}

H03D 9/0675 . . . {using field effect transistors (H03D 9/0683 takes precedence)}

H03D 9/0683 . . . {using a combination of bipolar transistors and field effect transistors}

H03D 2009/0691 . . {by means of superconductive devices }

H03D 11/00 **Super-regenerative demodulator circuits {applications in responders G01S}**

H03D 11/02 . for amplitude-modulated oscillations

H03D 11/04 . . by means of semiconductor devices having more than two electrodes

H03D 11/06 . for angle-modulated oscillations

H03D 11/08 . . by means of semiconductor devices having more than two electrodes

H03D 13/00 **Circuits for comparing the phase or frequency of two mutually-independant oscillations {**(measuring phase G01R 25/00; phase-discriminators with yes/no output G01R 25/005)**}**

H03D 13/001 . {in which a pulse counter is used followed by a conversion into an analog signal}

H03D 13/002 . . {the counter being an up-down counter}

H03D 13/003 . {in which both oscillations are converted by logic means into pulses which are applied to filtering or integrating means}

H03D 13/004 . . {the logic means delivering pulses at more than one terminal, e.g. up and down pulses}

H03D 13/005 . {in which one of the oscillations is, or is converted into, a signal having a special waveform, e.g. triangular}

H03D 13/006 . . {and by sampling this signal by narrow pulses obtained from the second oscillation}

H03D 13/007 . {by analog multiplication of the oscillations or by performing a similar analog operation on the oscillations}

H03D 13/008 . . {using transistors}

H03D 13/009 . . {using diodes}

H03D 99/00 **Subject matter not provided for in other groups of this subclass**

H03D 2200/00 **Indexing scheme relating to details of demodulation or transference of modulation from one carrier to another covered by H03D**

H03D 2200/0001 . Circuit elements of demodulators

H03D 2200/0003 . . Rat race couplers

H03D 2200/0005 . . Wilkinson power dividers or combiners

H03D 2200/0007 . . Dual gate field effect transistors

H03D 2200/0009 . . Emitter or source coupled transistor pairs or long tail pairs

H03D 2200/0011 . . Diodes

H03D 2200/0013 . . . Diodes connected in a ring configuration

H03D 2200/0015 . . . Diodes connected in a star configuration

H03D 2200/0017 . . Intermediate frequency filter

H03D 2200/0019 . . Gilbert multipliers

H03D 2200/0021 . . Frequency multipliers

H03D 2200/0023 . . Balun circuits

H03D 2200/0025 . . Gain control circuits

H03D 2200/0027 . . . including arrangements for assuring the same gain in two paths

H03D 2200/0029 . . Loop circuits with controlled phase shift

H03D 2200/0031 . . PLL circuits with quadrature locking, e.g. a Costas loop

H03D 2200/0033	. .	Current mirrors
H03D 2200/0035	. .	Digital multipliers and adders used for detection
H03D 2200/0037	. .	Diplexers
H03D 2200/0039	. .	Exclusive OR logic circuits
H03D 2200/0041	.	Functional aspects of demodulators
H03D 2200/0043	. .	Bias and operating point
H03D 2200/0045	. .	Calibration of demodulators
H03D 2200/0047	. .	Offset of DC voltage or frequency
H03D 2200/0049	. .	Analog multiplication for detection
H03D 2200/005	. .	Analog to digital conversion
H03D 2200/0052	. .	Digital to analog conversion
H03D 2200/0054	. .	Digital filters
H03D 2200/0056	. . .	including a digital decimation filter
H03D 2200/0058	. . .	using a digital filter with interpolation
H03D 2200/006	. .	Signal sampling
H03D 2200/0062	. . .	Computation of input samples, e.g. successive samples
H03D 2200/0064	. .	Detection of passages through null of a signal
H03D 2200/0066	. .	Mixing
H03D 2200/0068	. . .	by computation
H03D 2200/007	. . .	by using a logic circuit, e.g. flipflop, XOR
H03D 2200/0072	. . .	by complex multiplication
H03D 2200/0074	. . .	using a resistive mixer or a passive mixer
H03D 2200/0076	. . .	using a distributed mixer
H03D 2200/0078	. . .	using a switched phase shifter or delay line
H03D 2200/008	. .	Hilbert type transformation
H03D 2200/0082	. .	Quadrature arrangements
H03D 2200/0084	. .	Lowering the supply voltage and saving power
H03D 2200/0086	. .	Reduction or prevention of harmonic frequencies
H03D 2200/0088	. .	Reduction of intermodulation, nonlinearities, adjacent channel interference; intercept points of harmonics or intermodulation products
H03D 2200/009	. .	Reduction of local oscillator or RF leakage
H03D 2200/0092	. .	Detection or reduction of fading in multipath transmission arrangements
H03D 2200/0094	. .	Measures to address temperature induced variations of demodulation
H03D 2200/0096	. . .	by stabilising the temperature
H03D 2200/0098	. . .	by compensating temperature induced variations