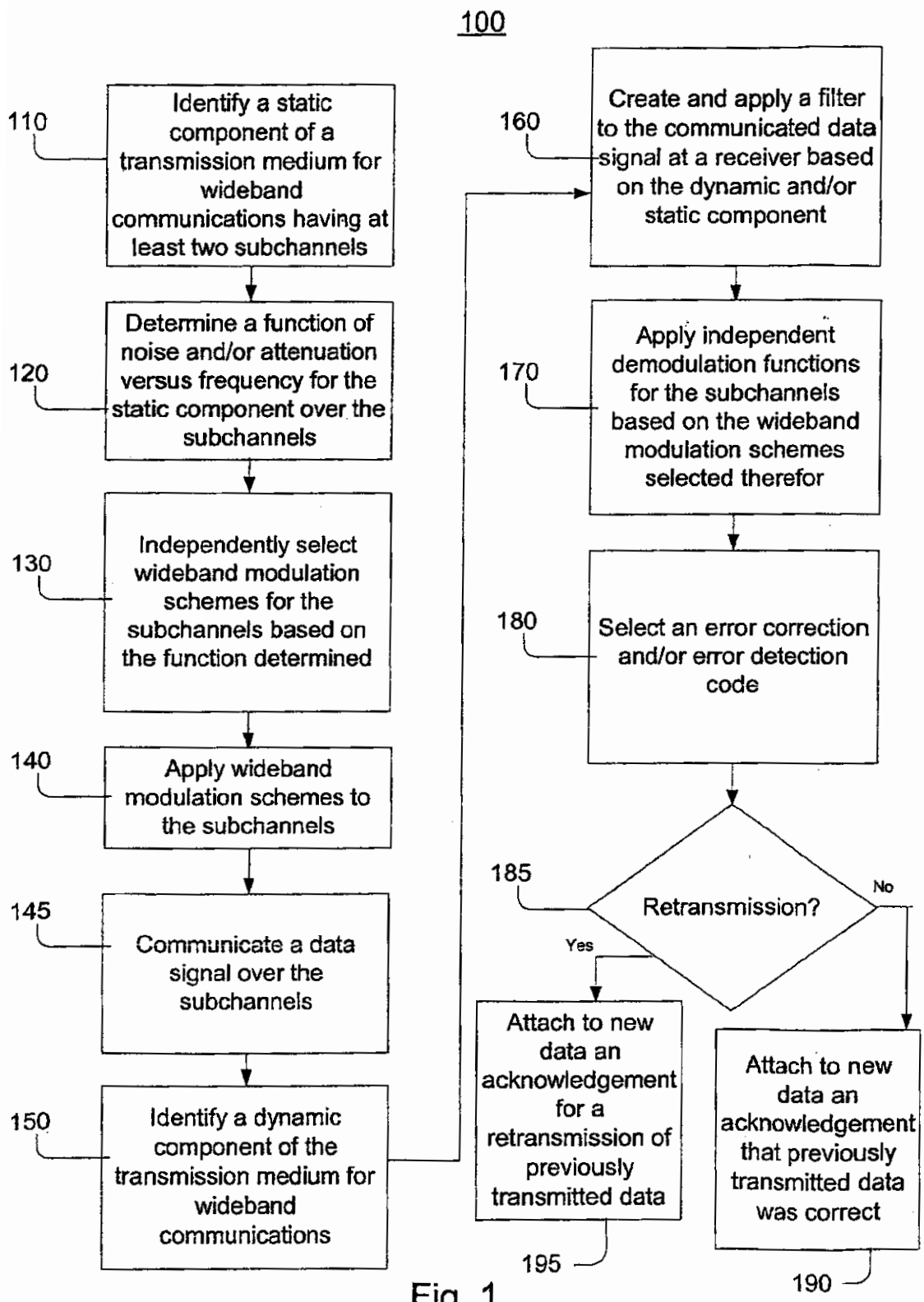

100
110
Identify a static component of a transmission medium for wideband communications having at least two subchannels
120
Determine a function of noise and/or attenuation versus frequency for the static component over the subchannels
130
Independently select wideband modulation schemes for the subchannels based on the function determined
140
Apply wideband modulation schemes to the subchannels
145
Communicate a data signal over the subchannels
150
Identify a dynamic component of the transmission medium for wideband communications
160
Create and apply a filter to the communicated data signal at a receiver based on the dynamic and/or static component
170
Apply independent demodulation functions for the subchannels based on the wideband modulation schemes selected therefor
180
Select an error correction and/or error detection code
185
Retransmission?
Yes
No
195
Attach to new data an acknowledgement for a retransmission of previously transmitted data
190
Attach to new data an acknowledgement that previously transmitted data was correct

Fig. 1

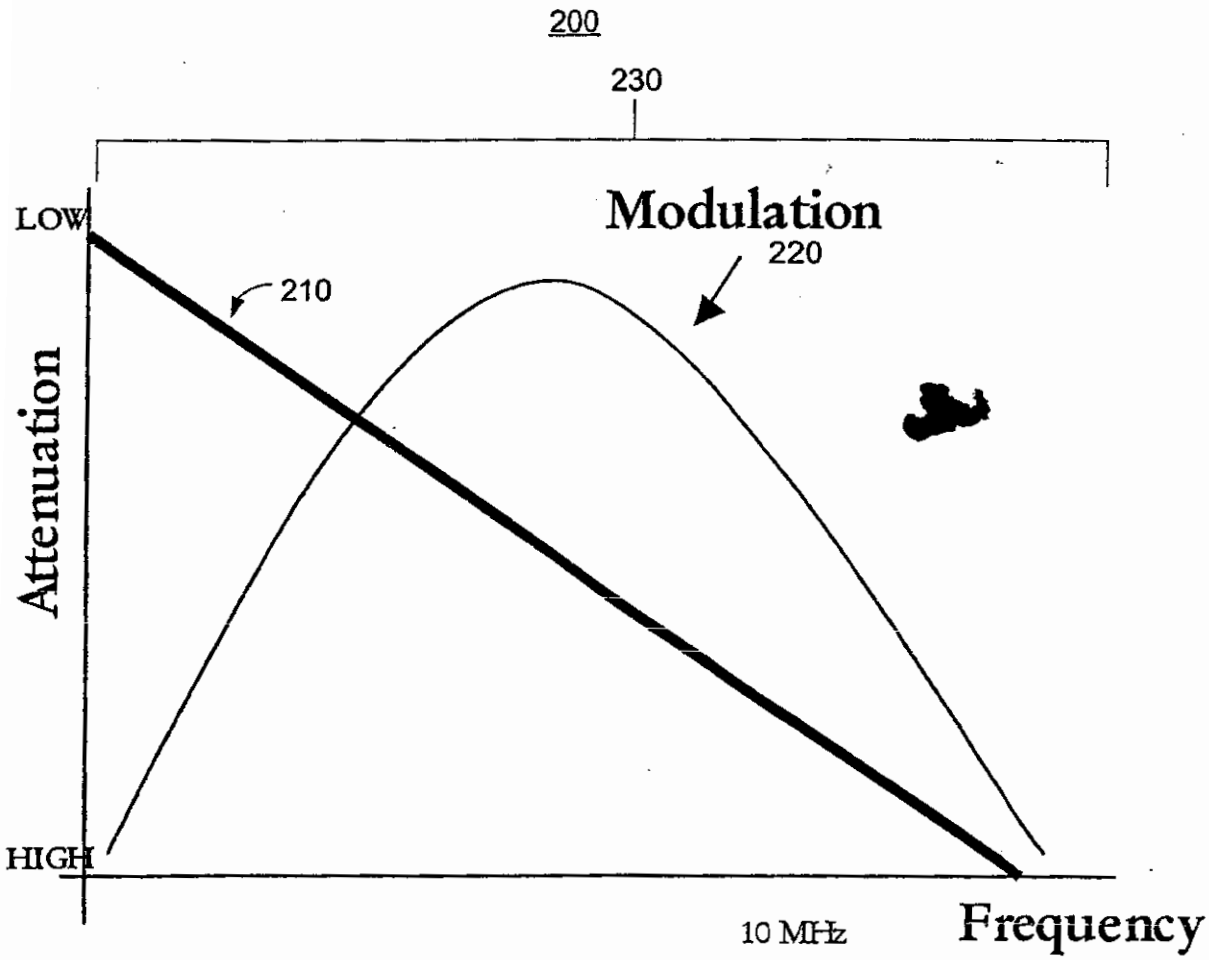

200
230
LOW
Modulation
220
210
Attenuation
HIGH
10 MHz
Frequency

Fig. 2

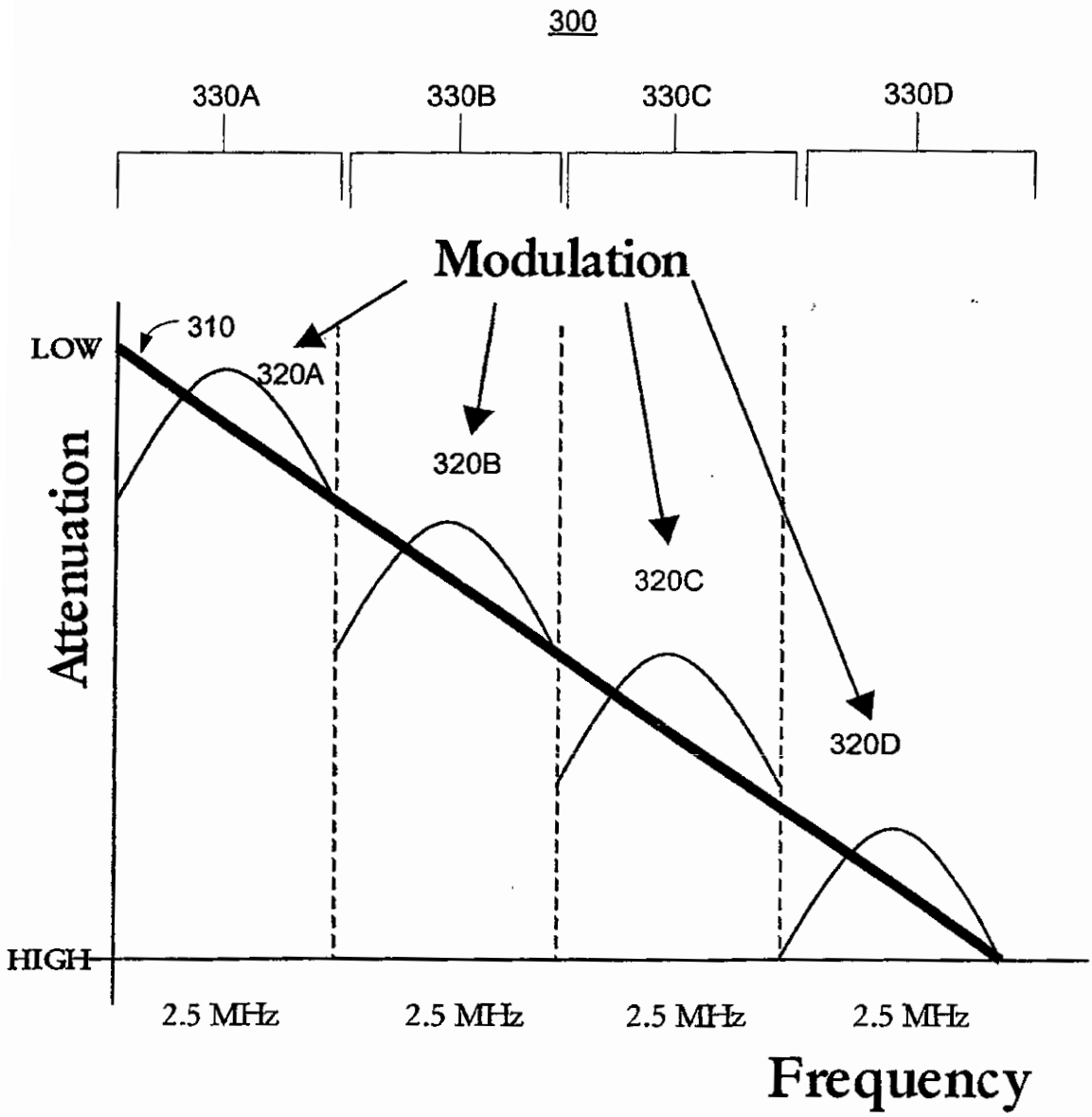

300
330A
330B
330C
330D
Modulation
310
LOW
320A
320B
320C
320D
Attenuation
HIGH
2.5 MHz
2.5 MHz
2.5 MHz
2.5 MHz
Frequency

Fig. 3

400

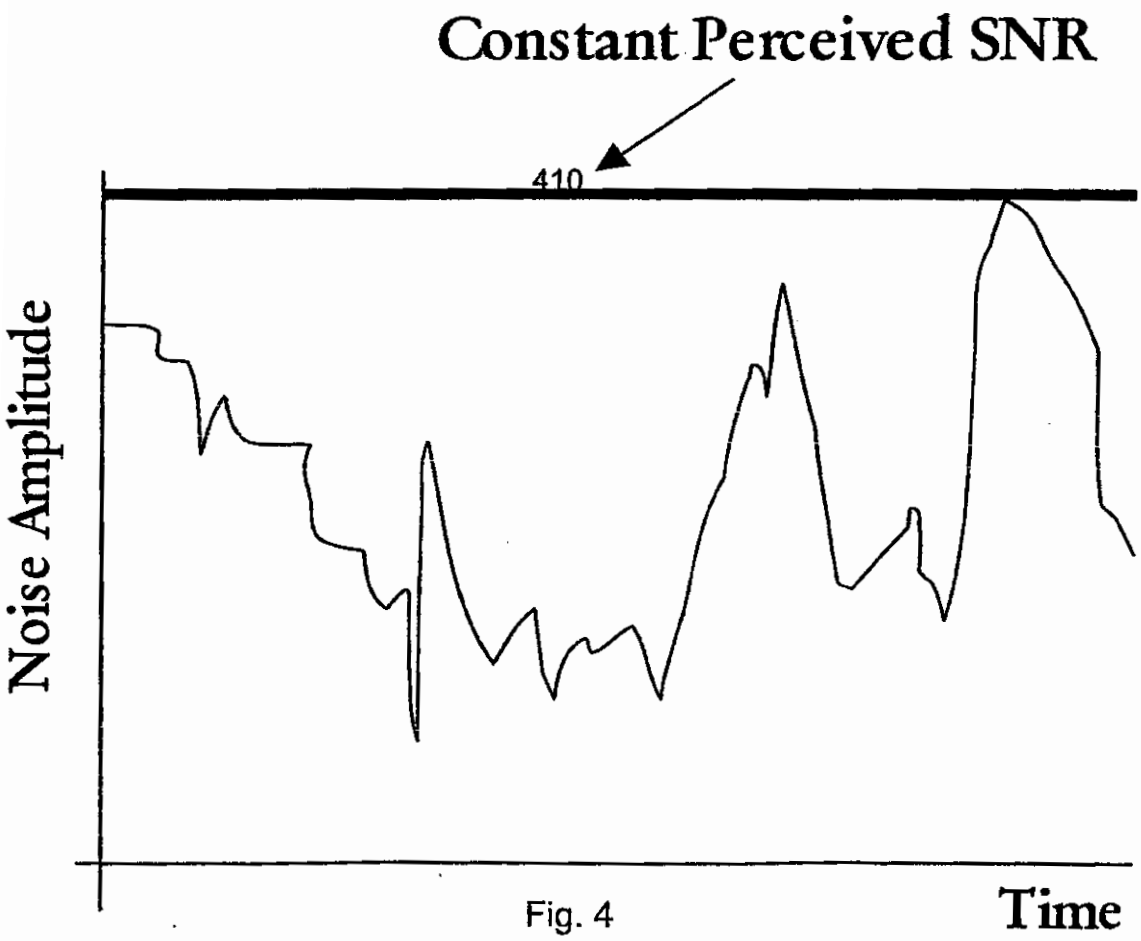


Fig. 4

500

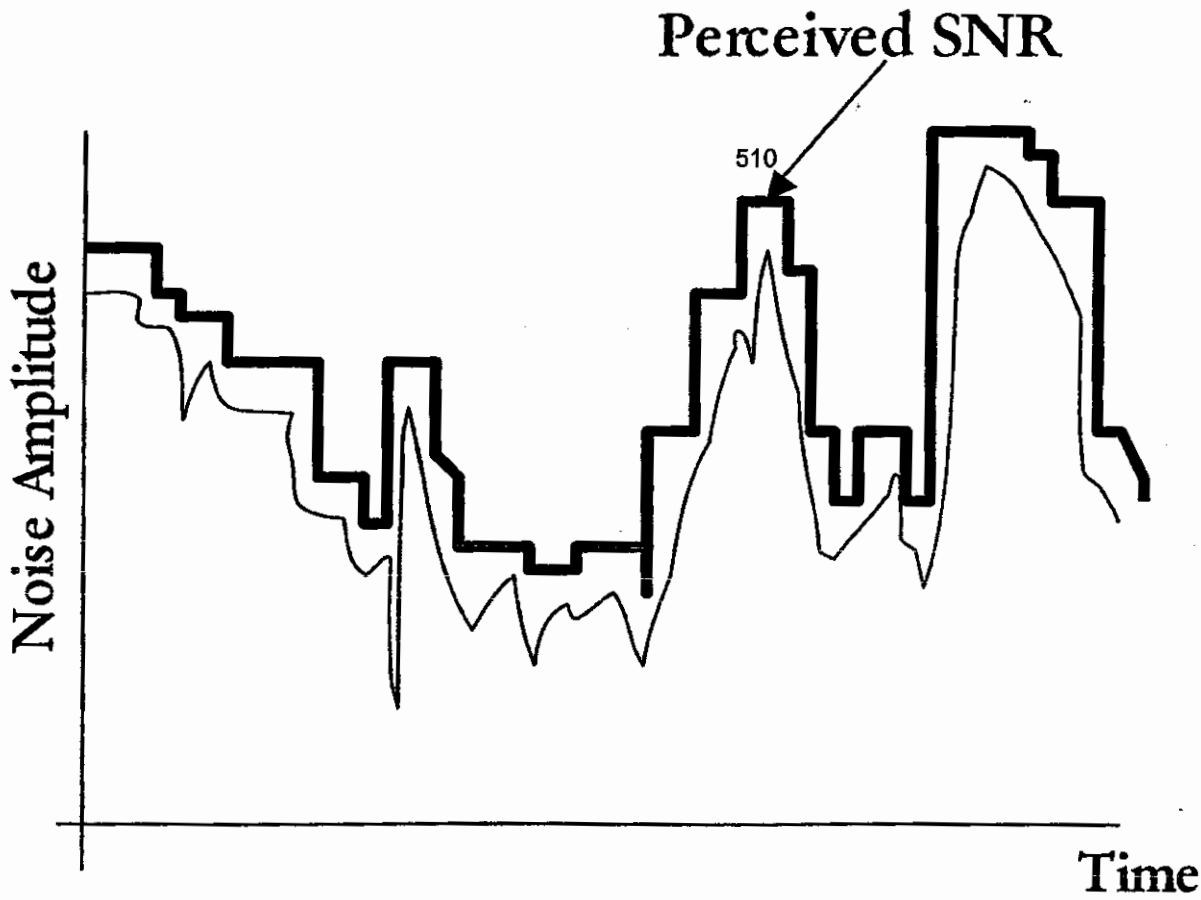


Fig. 5

600

Parameters

Raw Bit Rate	100 Mbps
FEC overhead	2:1
Propagation Delay @ 7.5 kft	11.43 μs
Block size (Header, Body, CRC) (bytes)	(2, 64, 2)
Blocks per frame	32

Throughput vs. Post-FEC BER

BER	**Block Error Rate**	**Throughput (Mbps)**
10^{-4}	5.4%	40.8
10^{-5}	.5%	42.9
10^{-6}	.05%	43.1

Fig. 6

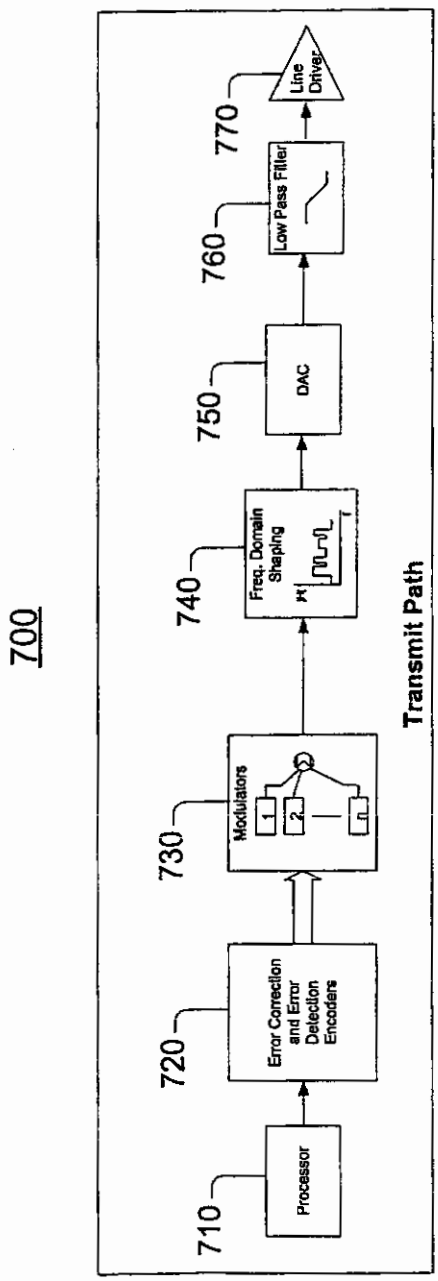

700
Transmit Path
710
Processor
720
Error Correction and Error Detection Encoders
730
Modulators
740
Freq. Domain Shaping
750
DAC
760
Low Pass Filter
770
Line Driver

Fig. 7

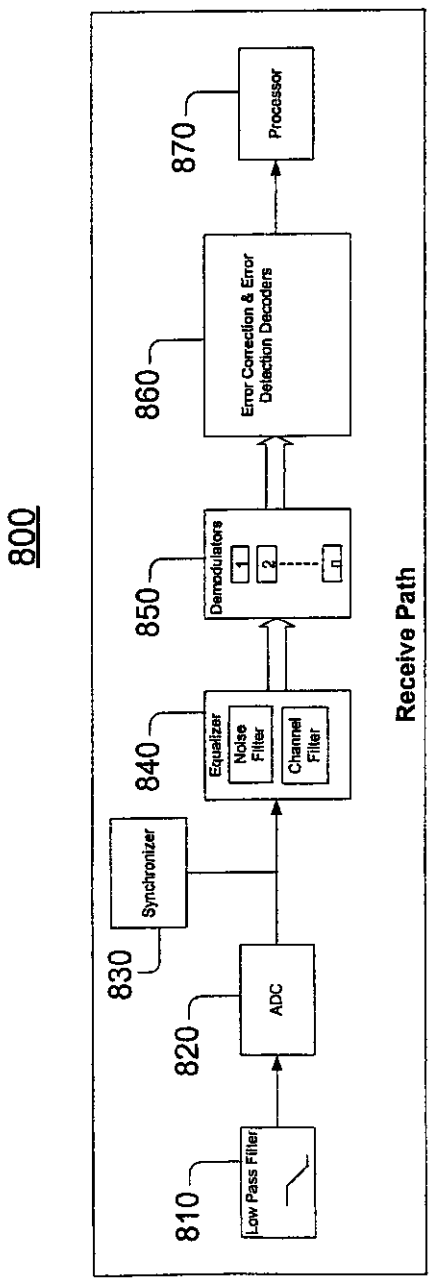

800
Receive Path
810
Low Pass Filter
820
ADC
830
Synchronizer
840
Equalizer
Noise Filter
Channel Filter
850
Demodulators
1
2
n
860
Error Correction & Error Detection Decoders
870
Processor

Fig. 8

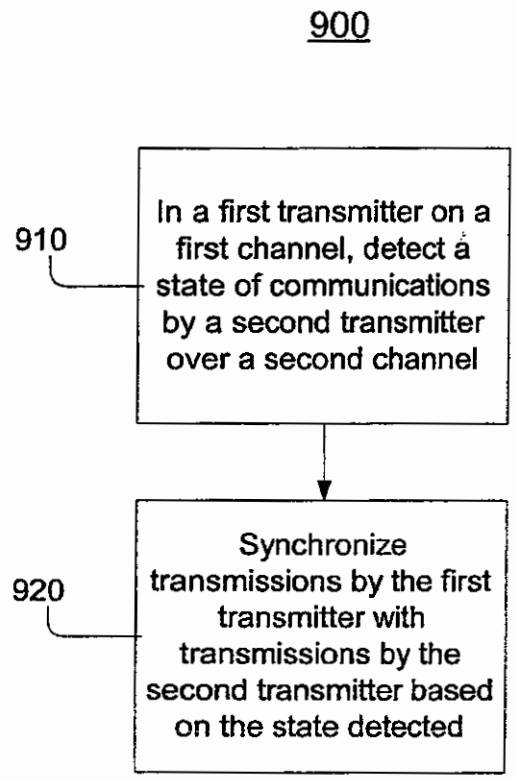

900
910
In a first transmitter on a first channel, detect a state of communications by a second transmitter over a second channel
920
Synchronize transmissions by the first transmitter with transmissions by the second transmitter based on the state detected

Fig. 9

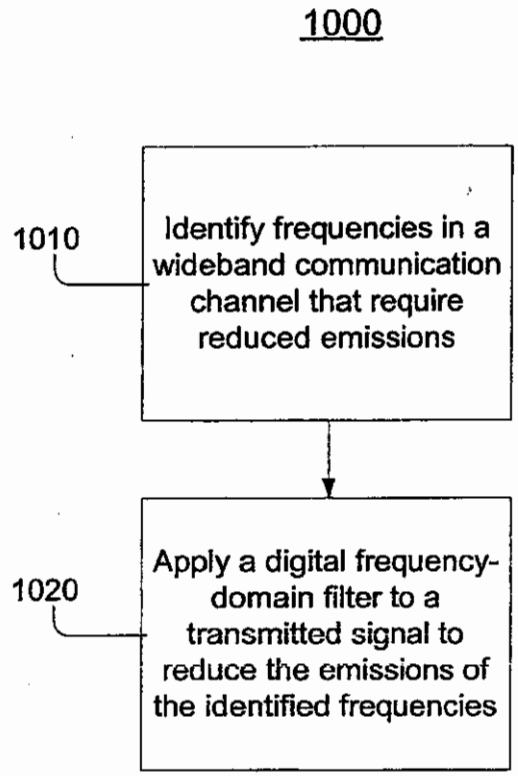

1000
1010
Identify frequencies in a wideband communication channel that require reduced emissions
1020
Apply a digital frequency-domain filter to a transmitted signal to reduce the emissions of the identified frequencies

Fig. 10