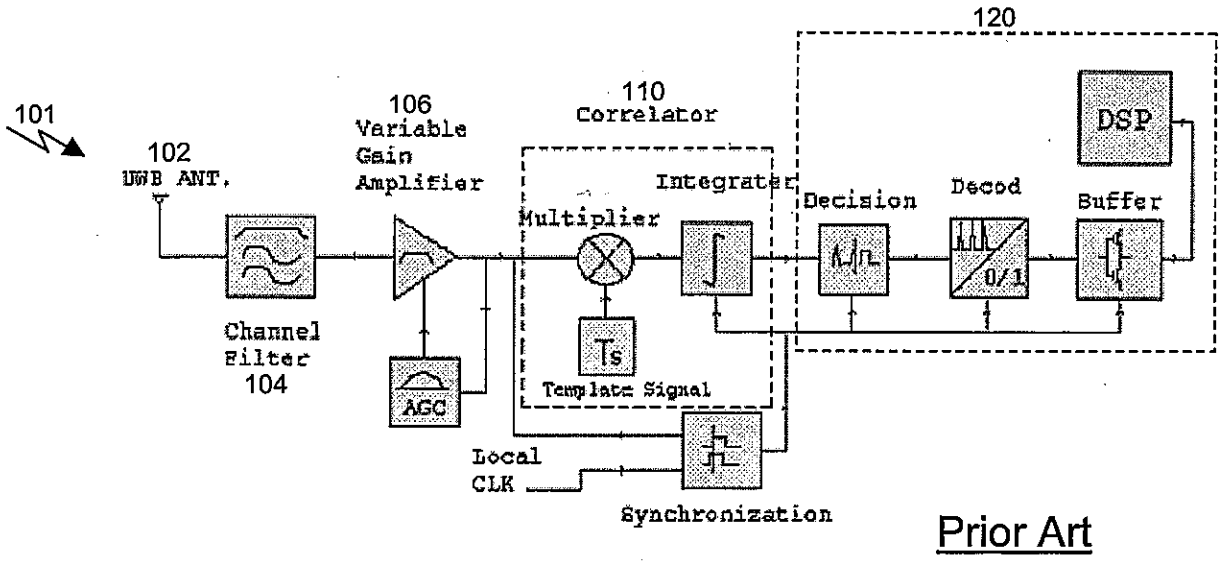
120
101
102
UWB ANT.
106
Variable
Gain
Amplifier
110
Correlator
DSP
Integrater
Decision
Decod
Buffer
Multiplier
0/1
Channel
Filter
104
AGC
Ts
Template Signal
Local
CLK
Synchronization
Prior Art

Fig. 1

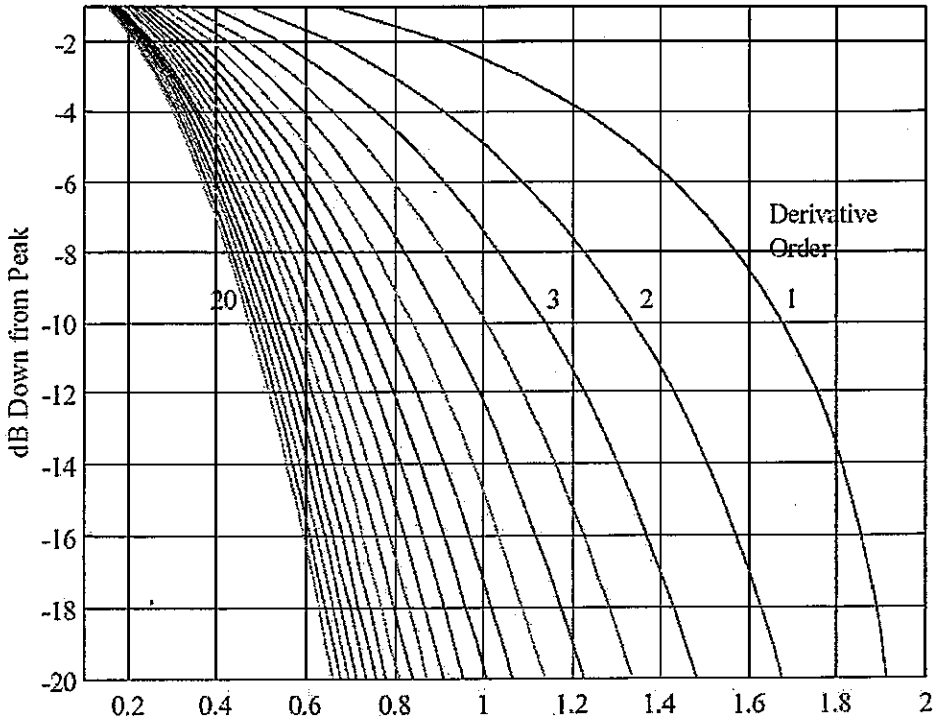
dB Down from Peak
-2
-4
-6
-8
-10
-12
-14
-16
-18
-20
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
Derivative
Order
20
3
2
1

Fig. 2

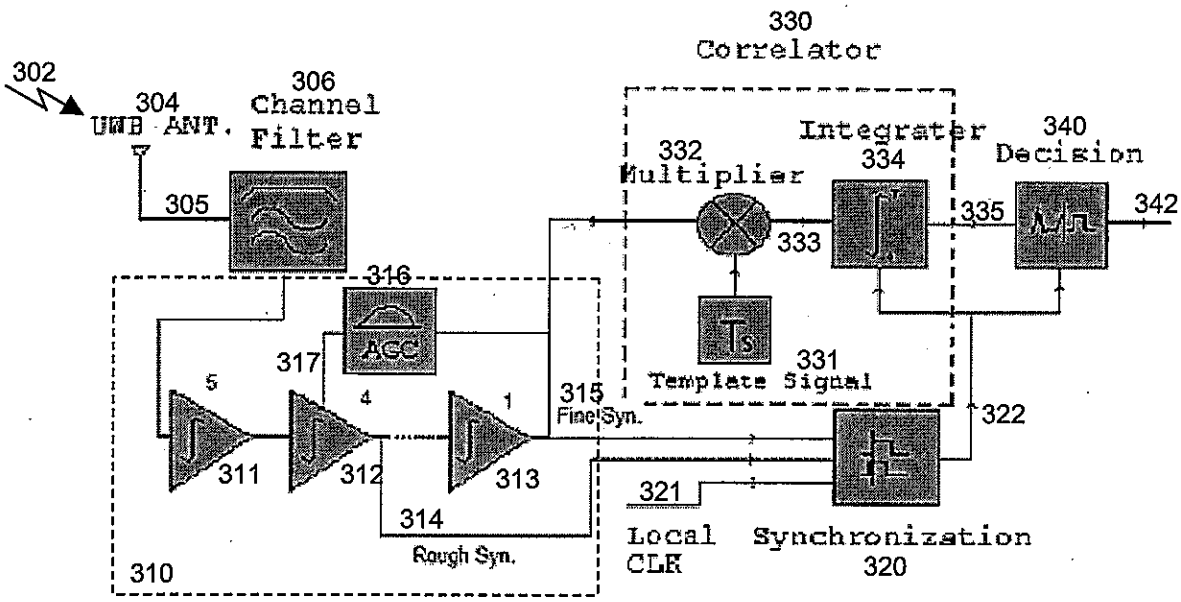
330
Correlator
302
304
UWB ANT.
306
Channel
Filter
305
316
AGC
317
5
4
1
311
312
313
314
Rough Syn.
310
315
Fine Syn.
332
Multiplier
333
Integrater
334
335
340
Decision
342
Ts
Template Signal
331
322
321
Local
CLK
Synchronization
320

Fig. 3A

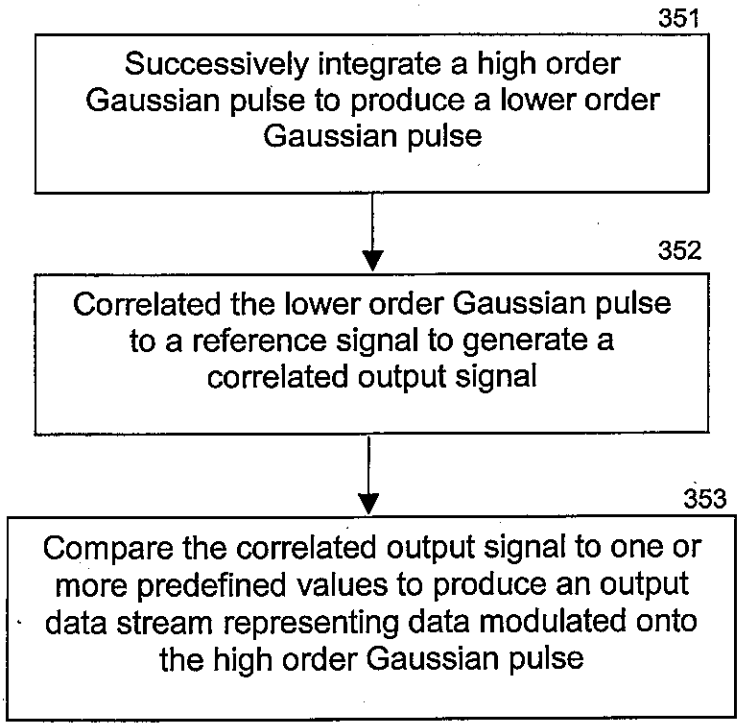
351
Successively integrate a high order Gaussian pulse to produce a lower order Gaussian pulse
352
Correlated the lower order Gaussian pulse to a reference signal to generate a correlated output signal
353
Compare the correlated output signal to one or more predefined values to produce an output data stream representing data modulated onto the high order Gaussian pulse

Fig. 3B

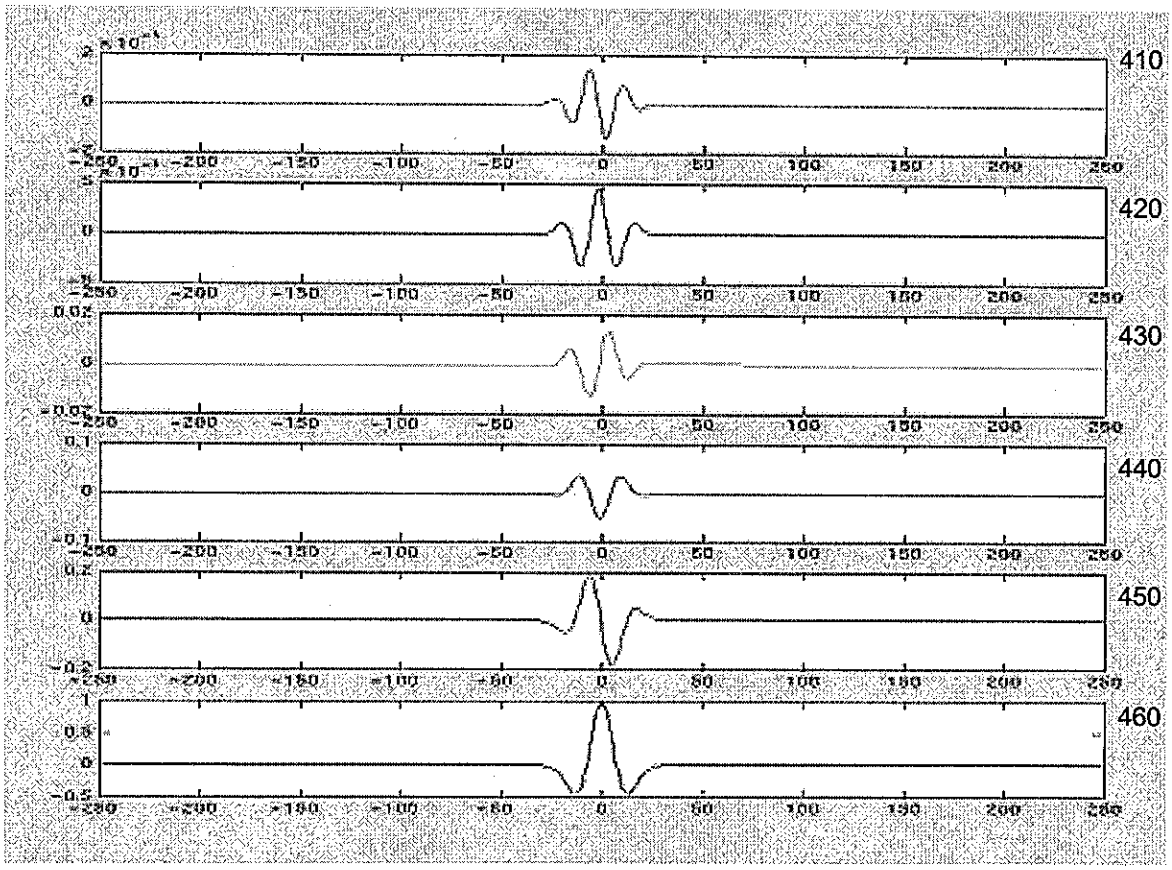

Fig. 4

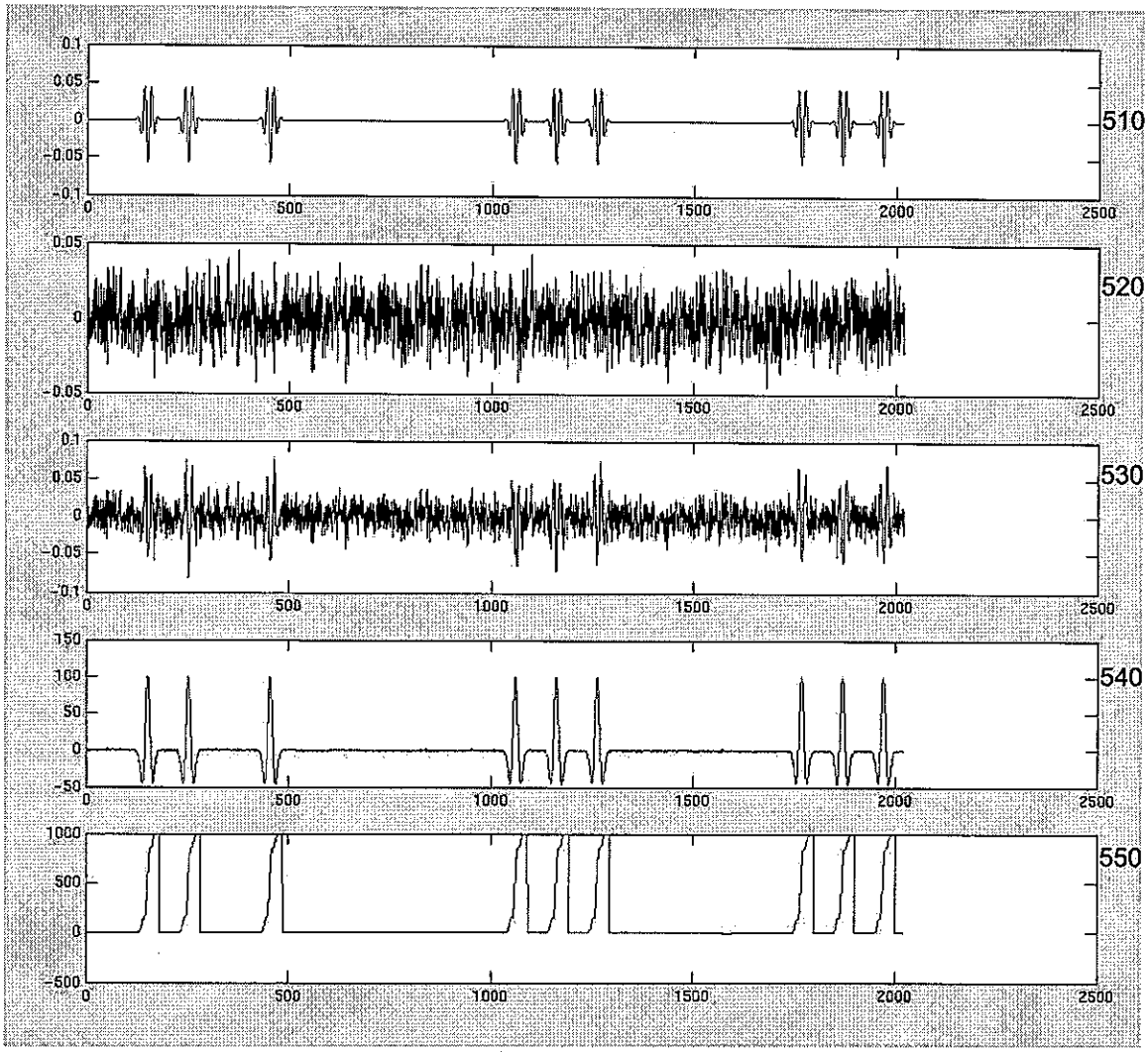

Fig. 5

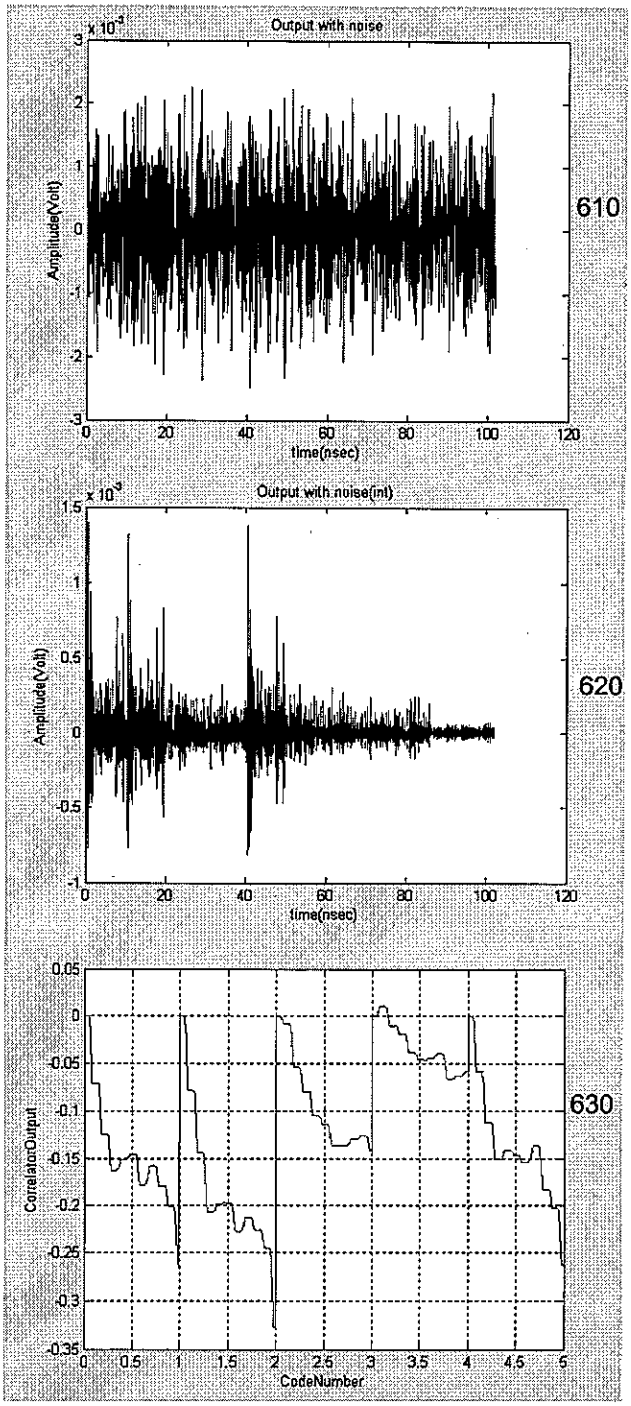
Output with noise
x 10^-3
Amplitude(Volt)
time(nsec)
610
Output with noise(int)
x 10^-3
Amplitude(Volt)
time(nsec)
620
CorrelatorOutput
CodeNumber
630

Fig. 6A

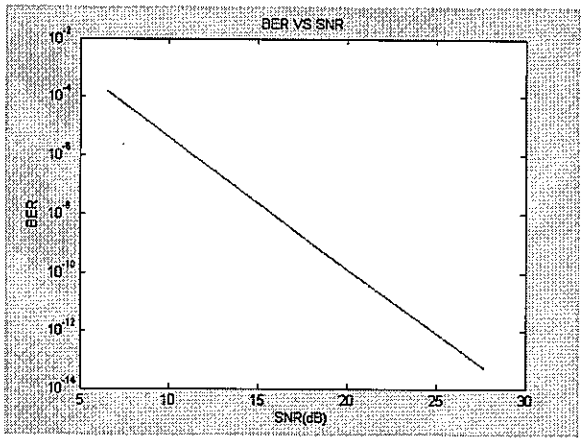
BER VS SNR
BER
SNR(dB)
10^-2
10^-4
10^-6
10^-8
10^-10
10^-12
10^-14
5
10
15
20
25
30

Fig. 6B