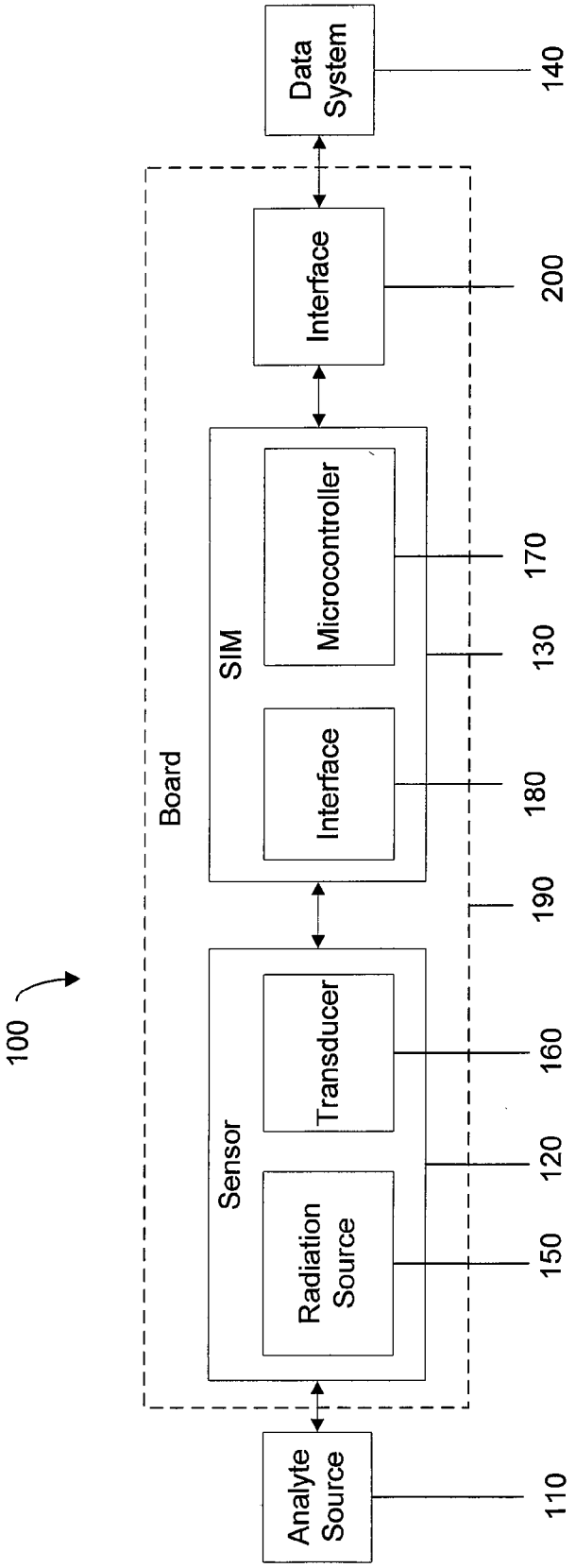

100
Analyte Source
110
Board
Sensor
Radiation Source
150
Transducer
160
120
SIM
Interface
180
Microcontroller
170
130
190
Interface
200
Data System
140

FIG. 1

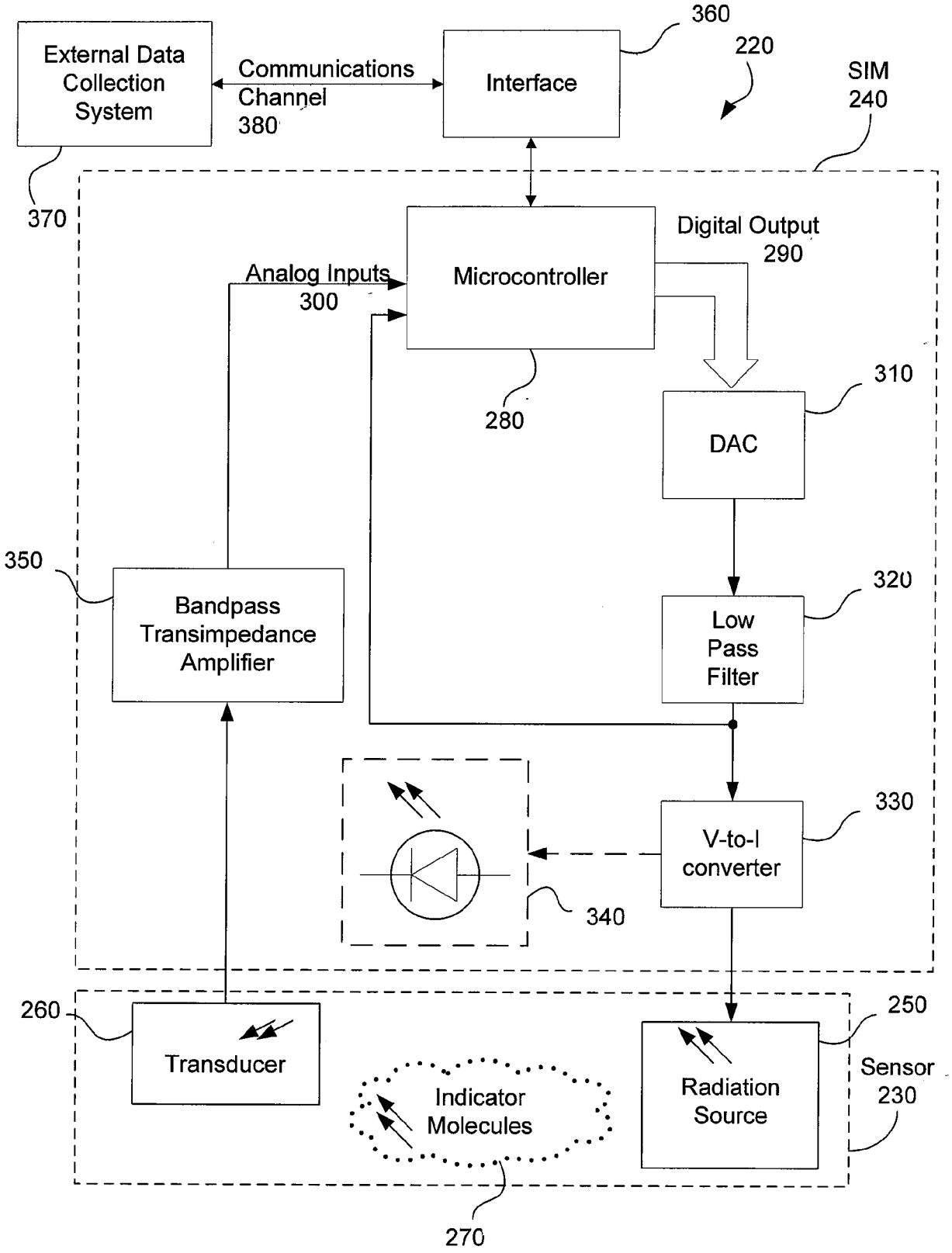

External Data Collection System
Communications Channel 380
Interface
360
220
SIM 240
370
Digital Output 290
Analog Inputs 300
Microcontroller
280
310
DAC
350
Bandpass Transimpedance Amplifier
320
Low Pass Filter
330
V-to-I converter
340
260
Transducer
Indicator Molecules
250
Radiation Source
Sensor 230
270

FIG. 2

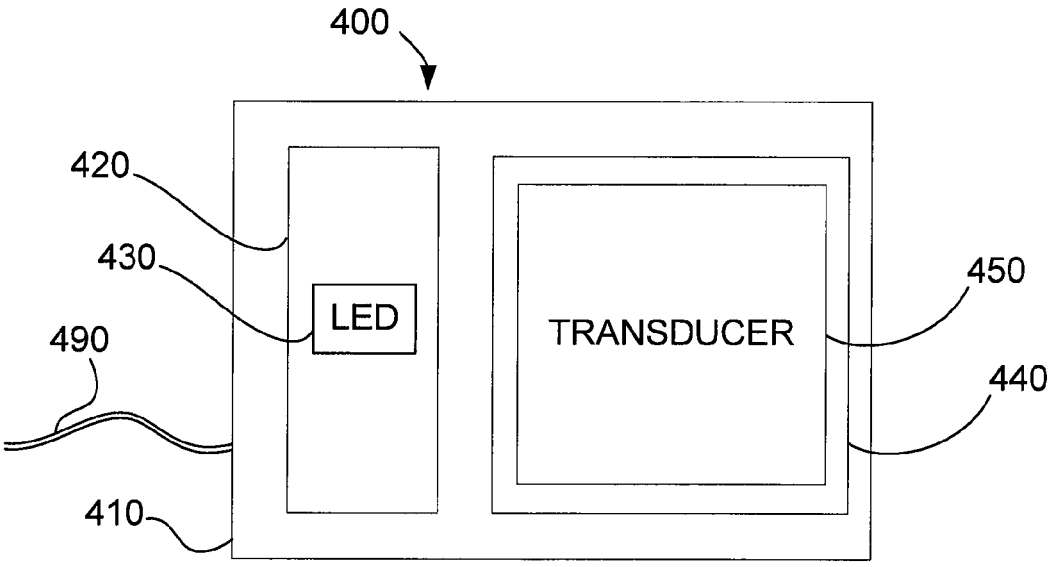

400
420
430
490
410
LED
TRANSDUCER
450
440

FIG. 3

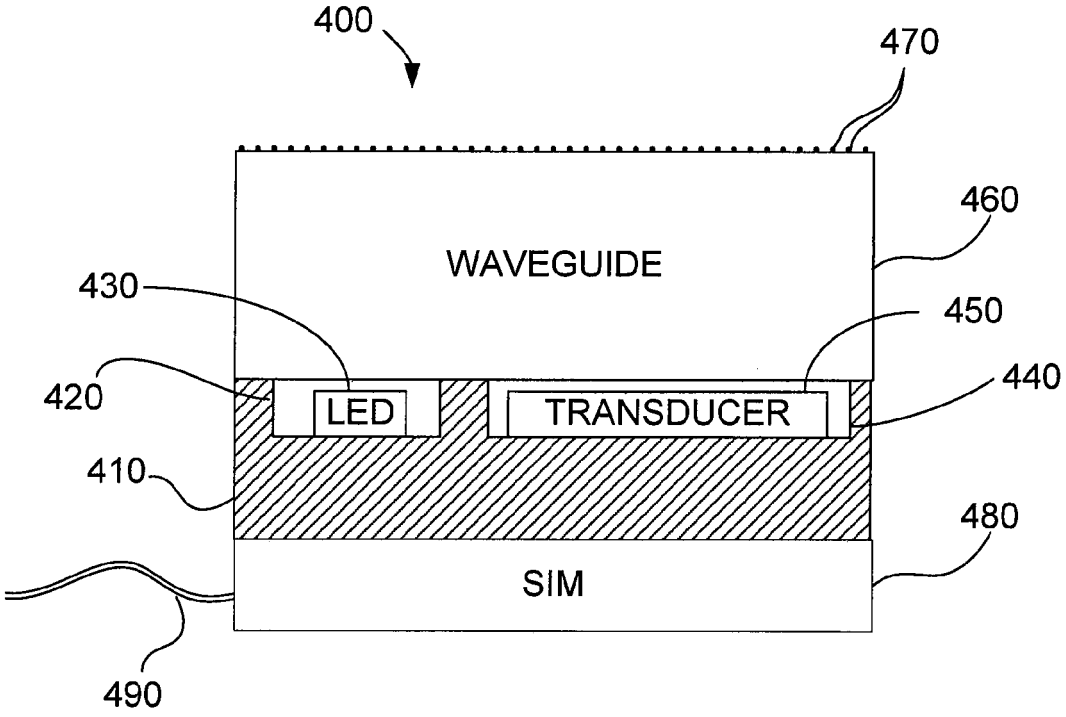

400
470
460
WAVEGUIDE
430
450
420
LED
TRANSDUCER
440
410
480
SIM
490

FIG. 4

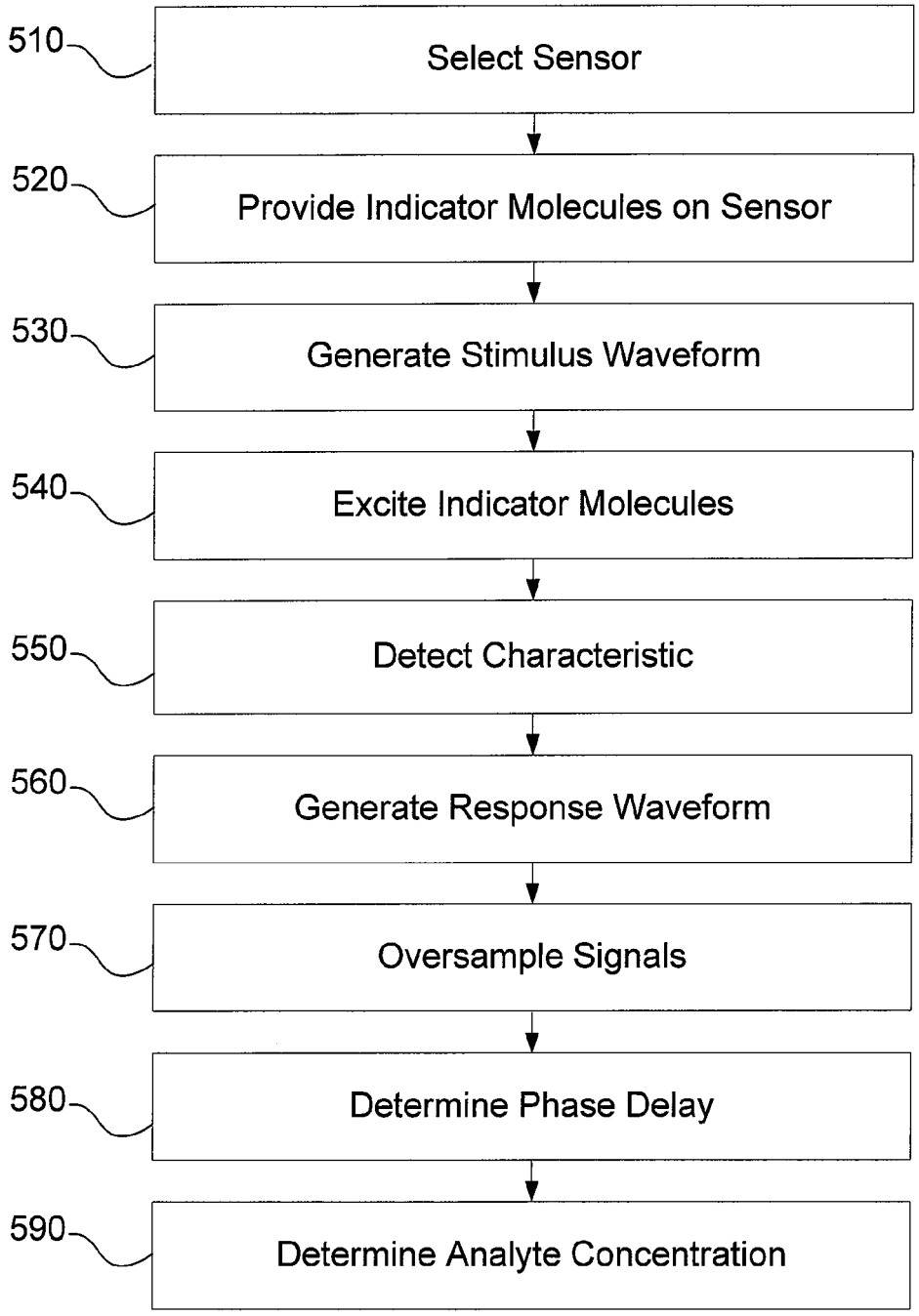

510
Select Sensor
520
Provide Indicator Molecules on Sensor
530
Generate Stimulus Waveform
540
Excite Indicator Molecules
550
Detect Characteristic
560
Generate Response Waveform
570
Oversample Signals
580
Determine Phase Delay
590
Determine Analyte Concentration

FIG. 5

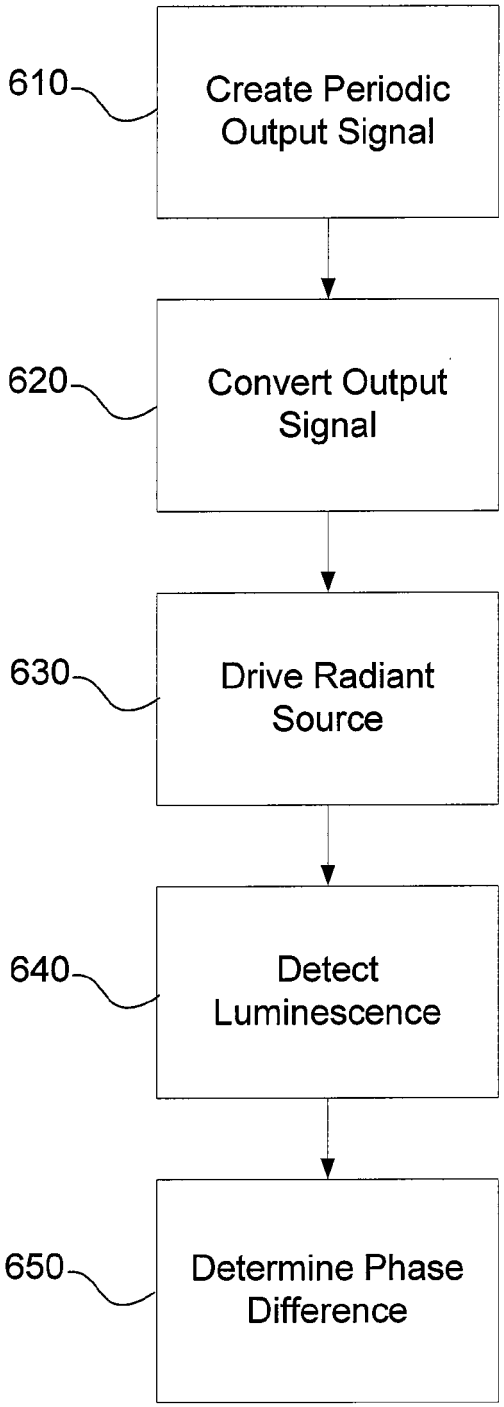

610
Create Periodic Output Signal
620
Convert Output Signal
630
Drive Radiant Source
640
Detect Luminescence
650
Determine Phase Difference

FIG. 6

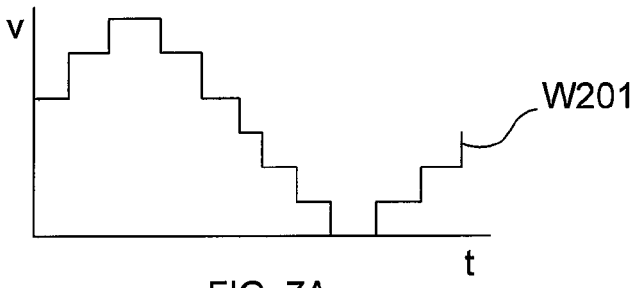


FIG. 7A

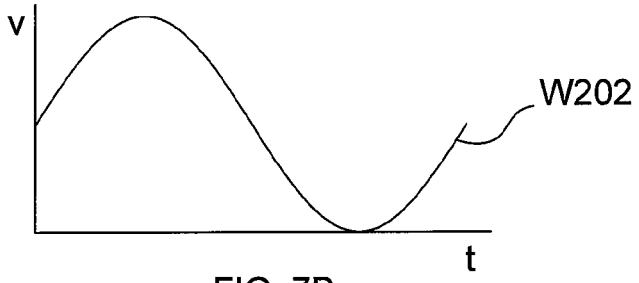


FIG. 7B

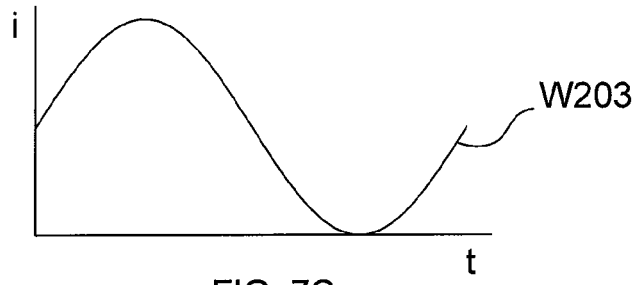


FIG. 7C

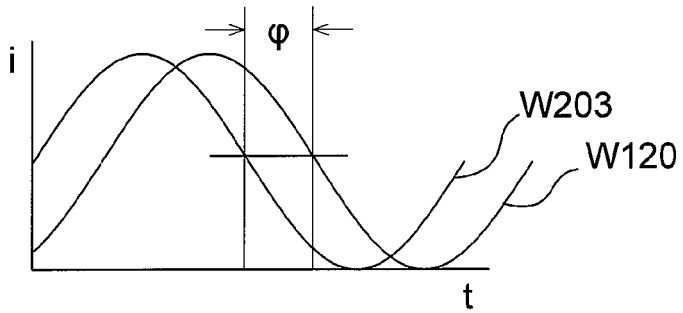


FIG. 7D

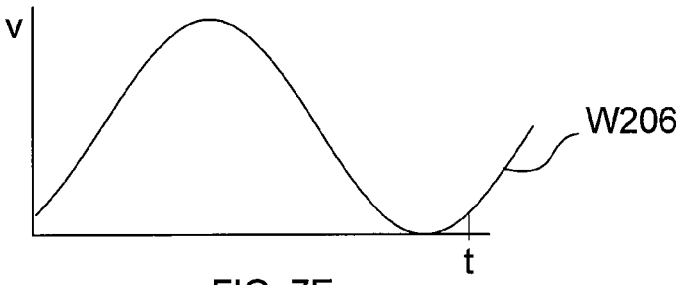


FIG. 7E

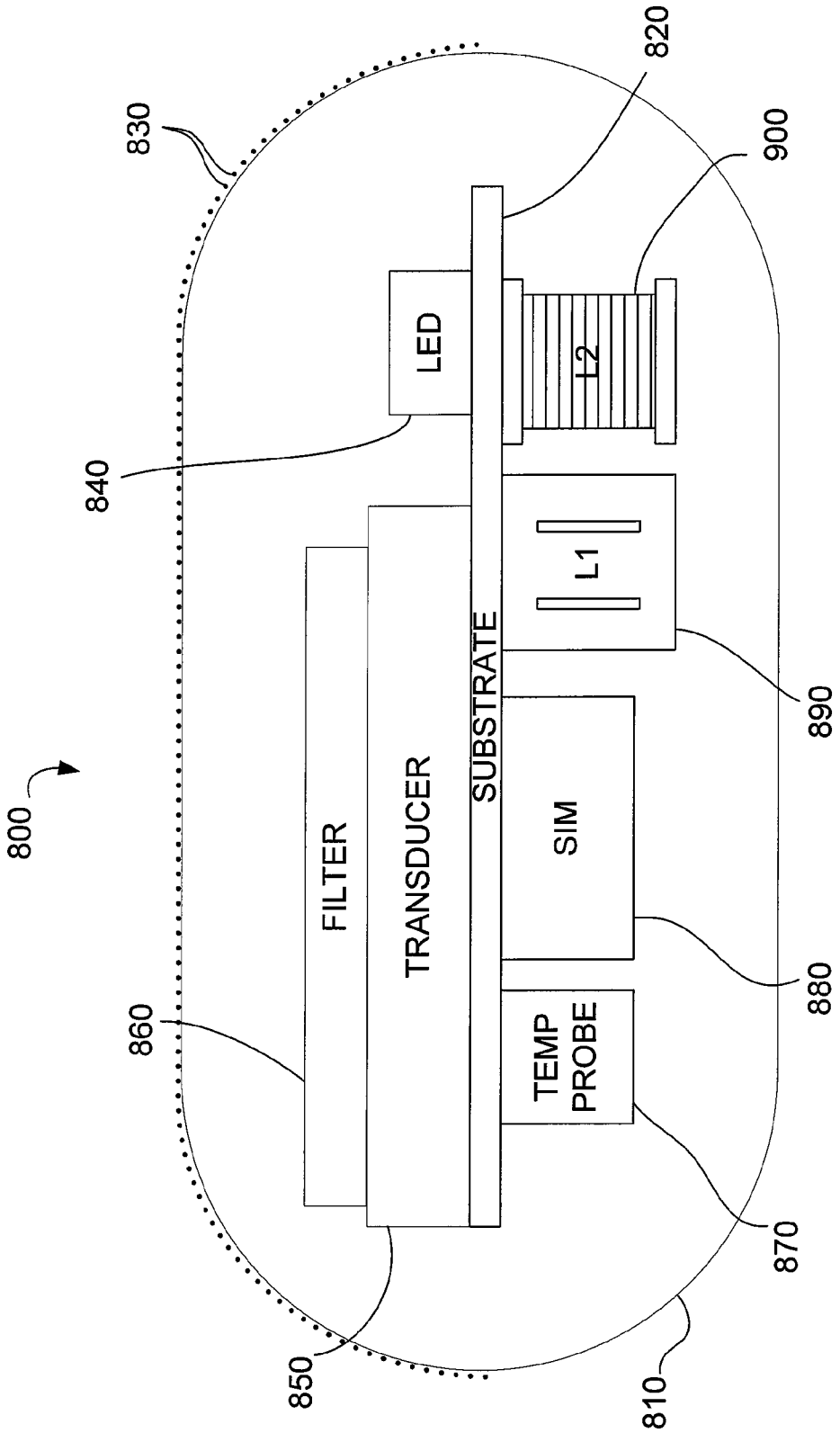

800
810
820
830
840
850
860
870
880
890
900
FILTER
TRANSDUCER
SUBSTRATE
LED
L1
L2
SIM
TEMP PROBE

FIG. 8