(54) **SENSING AND ANALYSIS OF AMBIENT CONTEXTUAL SIGNALS FOR DISCRIMINATING BETWEEN INDOOR AND OUTDOOR LOCATIONS**

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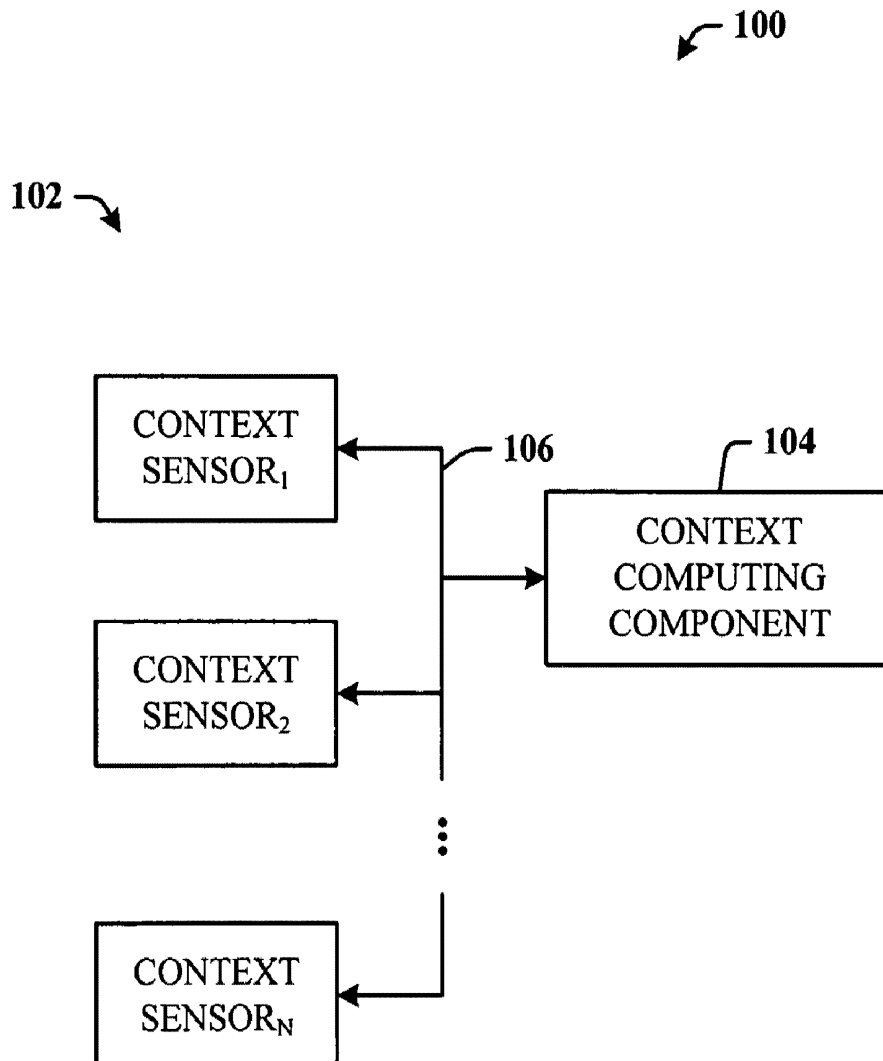
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(57) **ABSTRACT**

Methods and systems that determine automatically the likelihood that a device is inside or outside of a structure or building. The system uses one or more sensors to detect ambient conditions, and make the determination. The inference can be used to save power or suppress services from certain devices, which are irrelevant, cannot be used effectively, or do not function under certain circumstances. In support thereof, the system includes one or more context sensors that measure parameters associated probabilistically with the context of a device. A context computing component considers one or more context sensors and facilitates determination of ideal actions, policies, and situations associated with the device. A service provided by the subject invention is the inference from one or more available observations the probability that the device is inside versus outside.
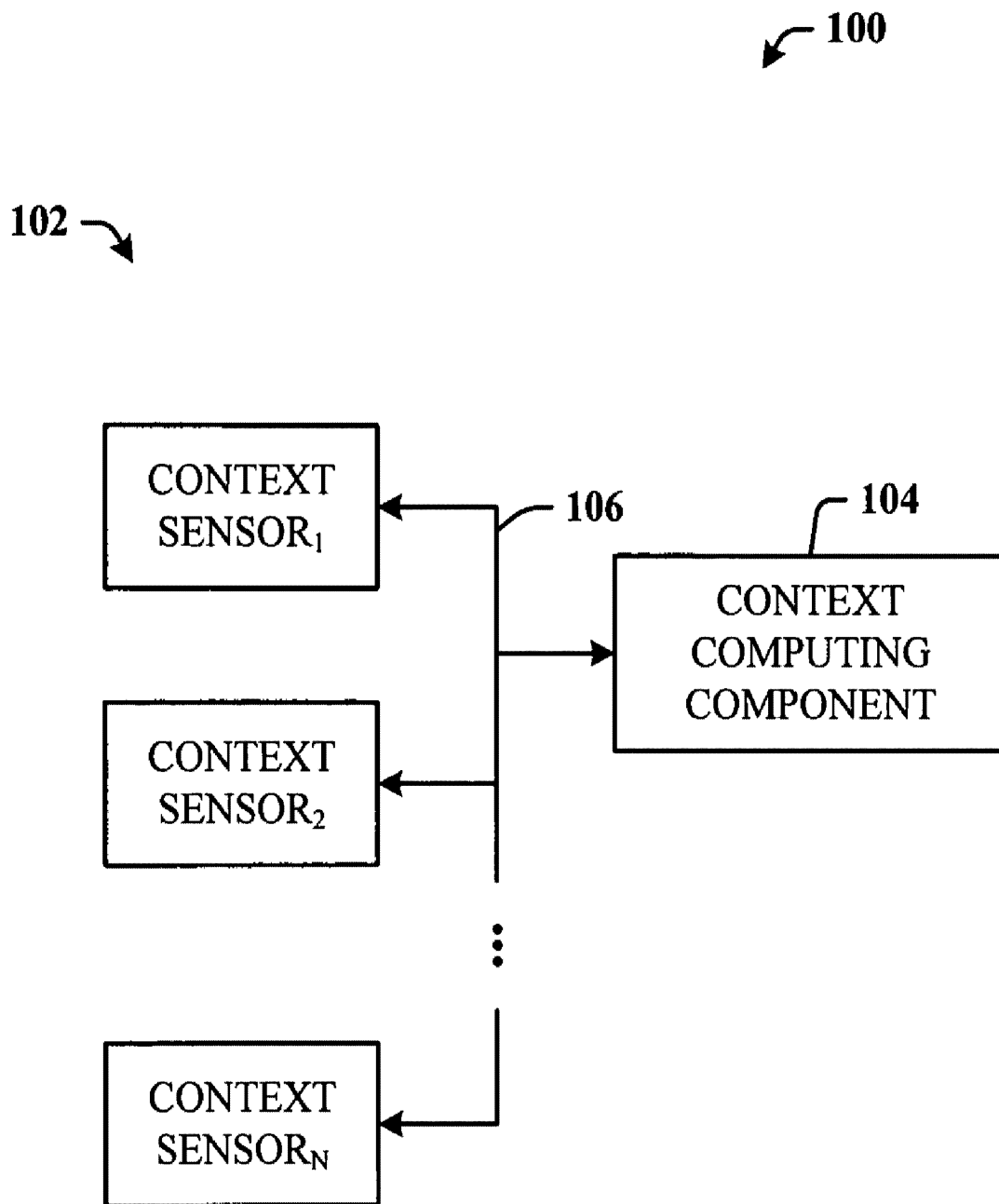
**FIG. 1**

START

DETERMINE FIRST CONTEXT
DATA OF FIRST CONTEXT — 200

COMPUTE CONFIDENCE ESTIMATION
FOR FIRST CONTEXT DATA — 202

DETERMINE SECOND CONTEXT
DATA OF SECOND CONTEXT — 204

COMPUTE CONFIDENCE ESTIMATION
FOR SECOND CONTEXT DATA — 206

DETERMINE AMBIENT
DATA VIA DEVICE — 208

COMPUTE INFERENCE THAT
DEVICE IS IN SECOND CONTEXT — 210

OPERATE DEVICE ACCORDING
TO INFERENCE — 212

STOP

FIG. 2

FIG. 3

START

DETERMINE EXPECTED OUTSIDE TEMPERATURE AT THAT LOCATION — 400

COMPUTE PROBABILITY DISTRIBUTION FOR OUTSIDE TEMPERATURE AT THAT LOCATION — 402

DETERMINE EXPECTED INSIDE TEMPERATURE — 404

COMPUTE PROBABILITY DISTRIBUTION FOR INSIDE TEMPERATURE FOR THAT LOCATION — 406

MEASURE AMBIENT INSIDE TEMPERATURE WITH DEVICE — 408

COMPUTE PROBABILITY DISTRIBUTION OF DEVICE ACCURACY — 410

COMPUTE PROBABILITY INFERENCE THAT DEVICE IS INSIDE — 412
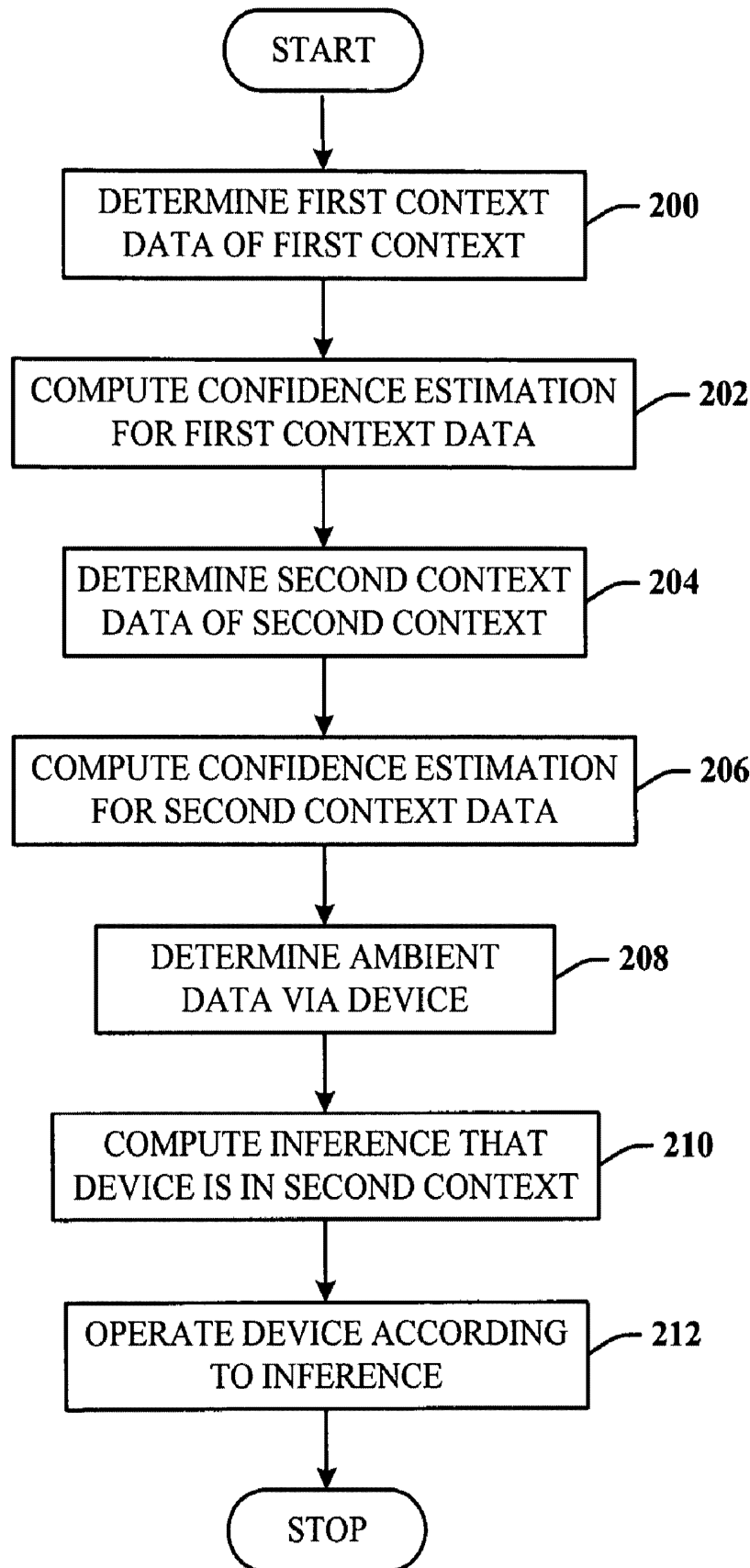
OPERATE DEVICE ACCORDING TO INFERENCE — 414

STOP

FIG. 4

# DOCKET ALARM
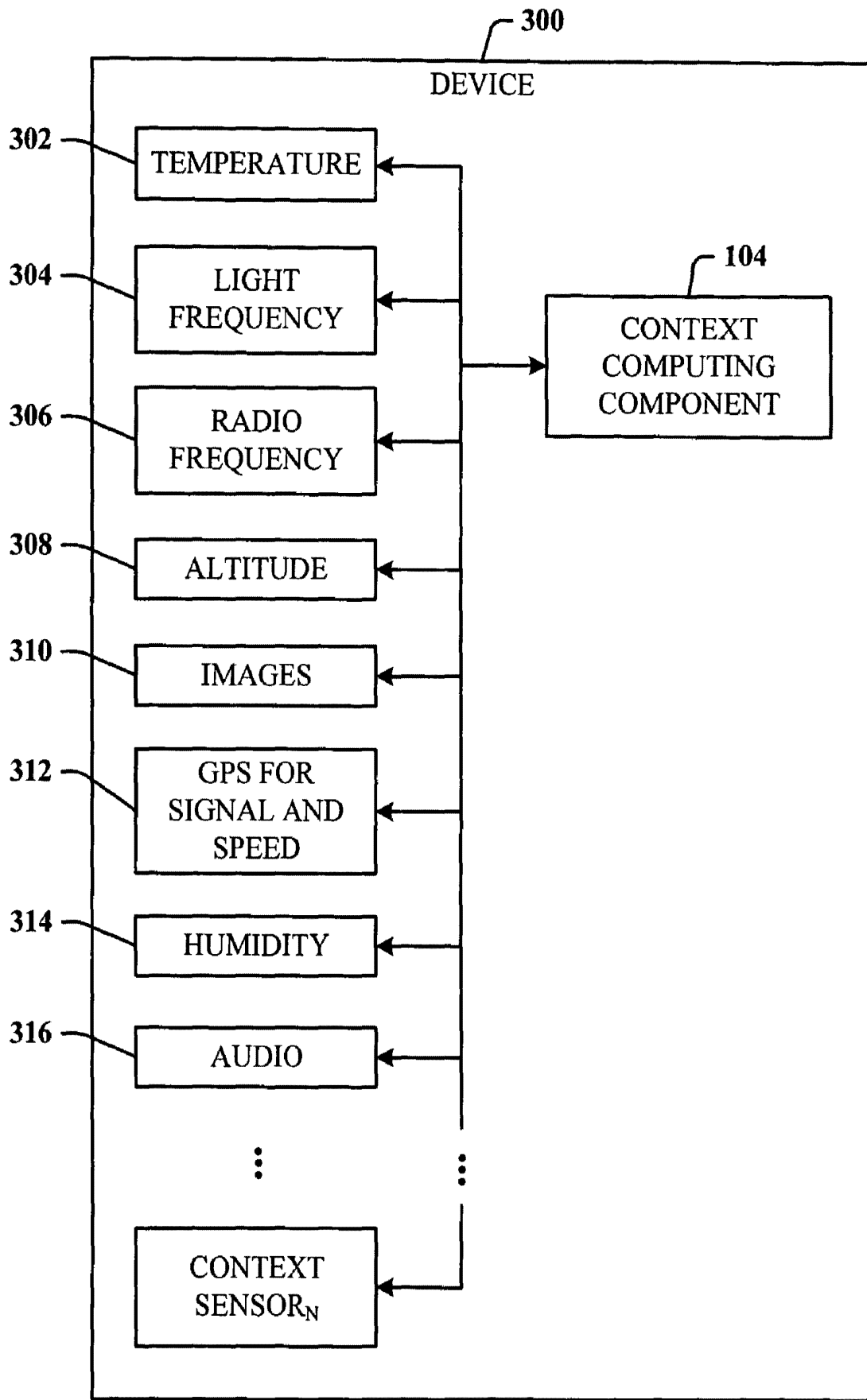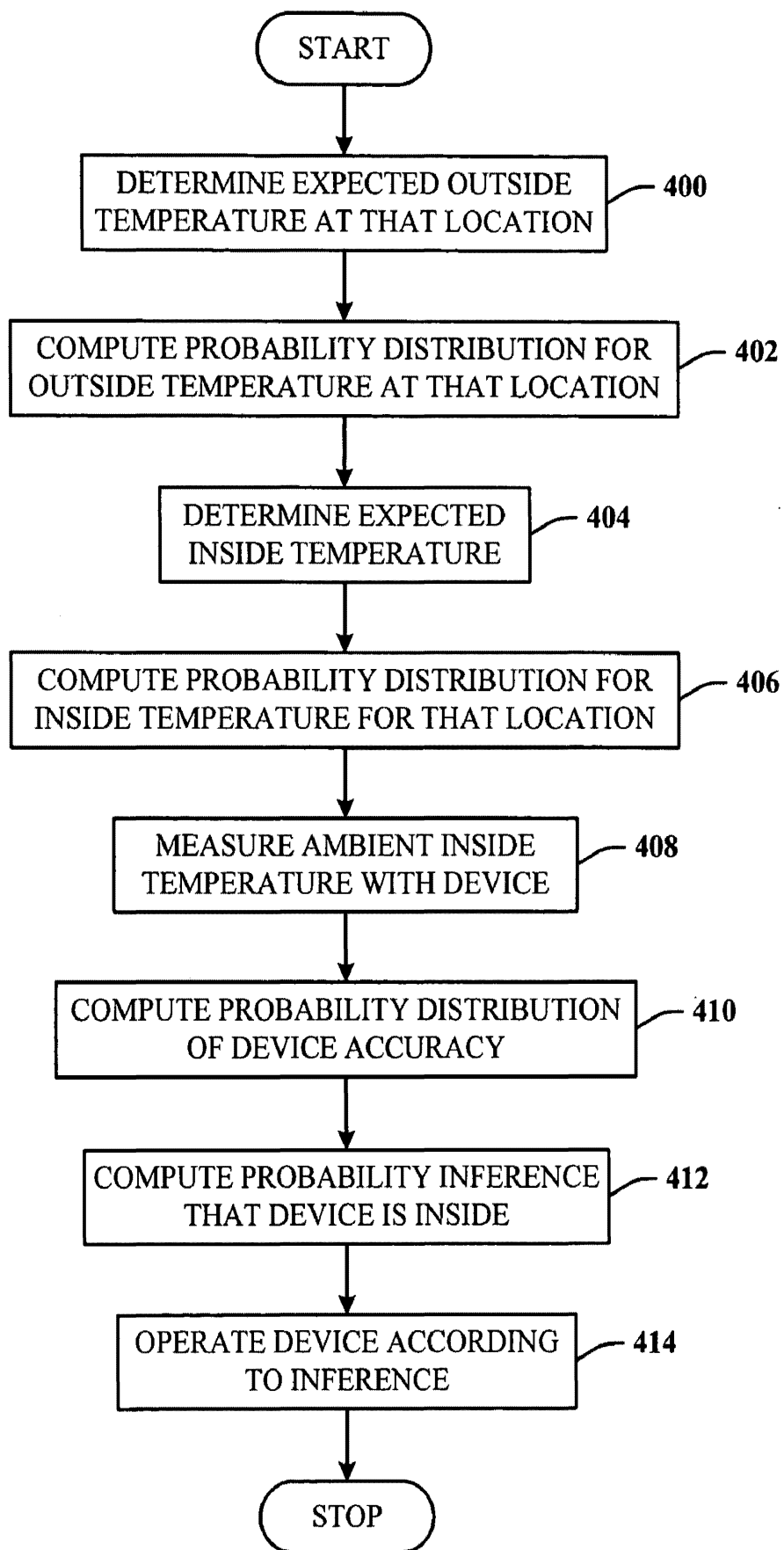
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