受験番号：30IPE012

【問１】

1. An artificial satellite, comprising:

a Doppler compensation circuit including:

a Doppler estimation unit that acquires a received power level of a received wave and a time variation of the received power level, and derives a Doppler frequency of the satellite based on the received power level of the received wave and the time variation of the received power level to output the Doppler frequency as an estimated Doppler frequency; and

a multiplication unit that, by multiplying a signal of the estimated Doppler frequency and a signal of a local frequency for demodulation, offsets the local frequency by the estimated Doppler frequency.

2. The artificial satellite according to claim 1, wherein the Doppler estimation unit acquires the received power level of the received wave and the time variation of the received power level, treats a speed of light, a position of a transmitting station, a carrier wavelength λ, a transmission equivalent isotropic radiant power, and a receiving antenna gain Gr as fixed parameters, and calculates the Doppler frequency of the satellite to output the Doppler frequency of the satellite to the multiplication unit as the estimated Doppler frequency based on the received power level of the received wave and the time variation of the received power level.

3. The artificial satellite according to claim 1, wherein the Doppler estimation unit acquires the received power level of the received wave and the time variation of the received power level, refers to reference information in which estimated Doppler frequency candidates prepared in advance in association with the received power level are recorded, calculates a candidate for the estimated Doppler frequency based on the acquired received power level of the received wave, selects an estimated Doppler frequency from within the candidates based on the time variation of the received power level to output the estimated Doppler frequency to the multiplication unit.

【問２】

In recent years, as a next-generation energy, a fuel battery device including a fuel battery cell that can obtain electric power using a fuel gas (hydrogen-containing gas) and an oxygen-containing gas (air) has been proposed. A power conditioner is used in a power generation system in order for the fuel battery device, which is a distributed power source, to supply power to a load in cooperation with a system power source. The power conditioner has various functions such as an inverter function for converting a direct current output from the fuel battery device into an alternating current and a control function for performing interconnection control with the system power source.

The power conditioner cooperates with the system power supply to supply the electric power generated by the fuel battery device to the external load. At this time, the output power is increased or decreased so as not to generate a reverse power flow to the grid, thereby outputting the power according to a power request from the external load. When the output power from the power conditioner to the external load increases, the output current from the fuel battery device to the power conditioner decreases. When the fuel battery device detects this decrease in output current, the fuel battery device attempts to increase the amount of power generation by increasing the amount of oxygen gas and fuel gas supplied to the fuel battery cells by controlling the operation of the auxiliary machinery. However, it is difficult to instantaneously increase the amounts of oxygen gas and fuel gas, and a state in which oxygen gas and fuel gas for power generation are insufficient will occur in the fuel battery device. Power generation in the state where the oxygen gas and the fuel gas are insufficient causes damage to the fuel battery cell and arises problems such as increasing the risk of damage to the fuel battery device, and shortening the service life of the fuel battery device.

【問３】

The business bird's-eye view BV, which will be described later in detail, is an overall view of the business to be systemized, abstracted by the "events", "cores", and figures showing their relationships, and is a bird's-eye view of the entire business of a company in a macro manner and in a form that can be understood by multiple people. The pre-processing engine 100 has a role of clearly identifying the business and the target during the core business when constructing the core business application and expressing the business and the target in the form of a business overhead view.

The SVO list E1 is a list that displays what operations the roles on the scenario chart perform on the operation target. The SVO list E1 is a list that expands with the same granularity as the roles on the scenario chart D4, in other words, with the “function” when systematizing the roles on the scenario chart D4 as granularity. Further, the activity definition E2 is a definition regarding a process (step) for completing a role on the scenario chart D4.

コメント

問１について

・請求項１～３とも、各構成要素（ドップラー推定部、乗算部等）を、より装置クレームらしい記載「例：～configured to」とすることも考えられますが、原文の表現に従って訳出しております。

・請求項１第３行目の「導出処理」は、内容から「導出」のみで足りると考えられるため「処理」の語を訳出致しませんでした。