Production Description

1. The product that SHINKO applies FCC part15 subpart C.

SHINKO is applied about the communication system of SSOHT-300 vehicle, which is the transportation system in such as semiconductor manufacturing.

2. General

It is stated about the outline of SSOHT-300 transportation system easily. The example of the typical SSOHT-300 system is shown in the fig. 1.

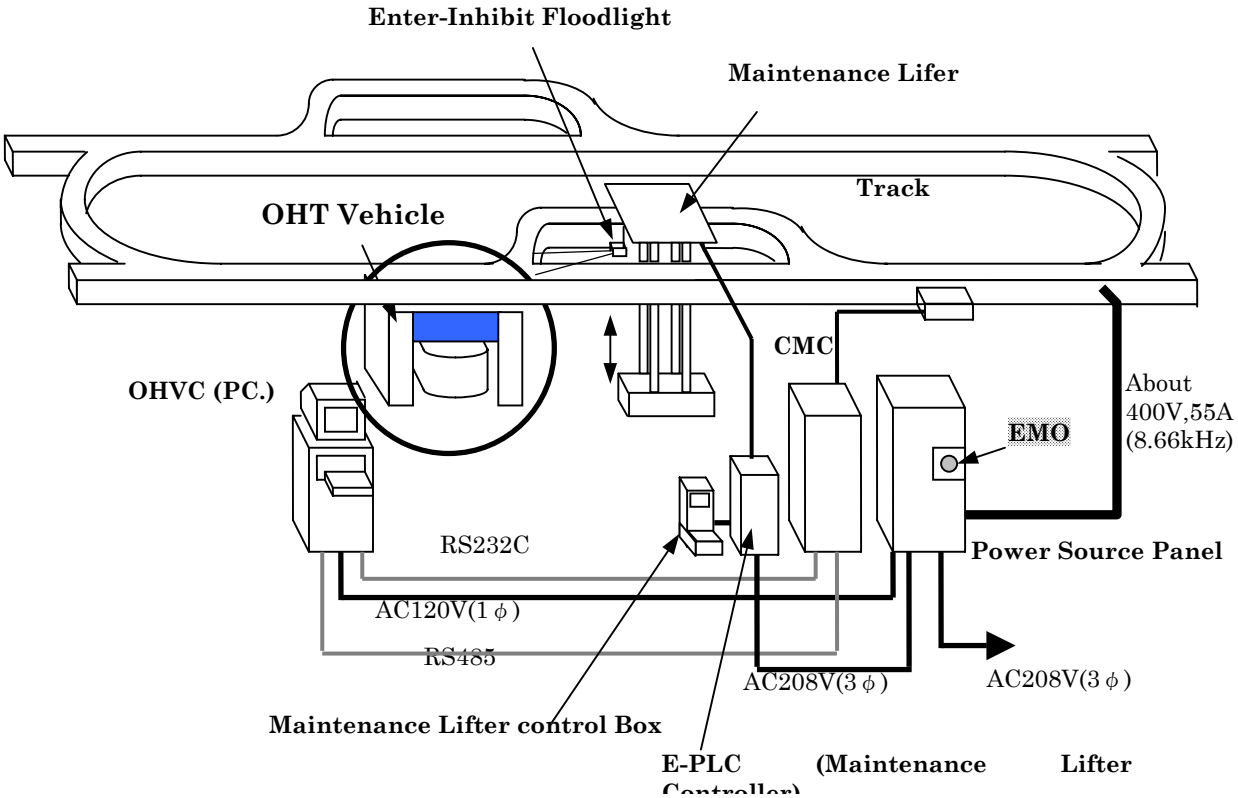

Fig.1 The example of the typical SSOHT-300 system

- SSOHT-300 transportation system is used in clean room, and it does the carriage of the semiconductor product.
- SSOHT-300 Vehicle is hung in track, and it runs. Then, vehicle can do the control of divergence joining by itself. Vehicle has hoist mechanism, and it can load and unload a baggage such as FOUP in Load Port of the manufacture equipment.
- The power of Vehicle is supplied by using the non-contact power supply technology in the frequency of 8.66kHz.
-OHVC gives vehicle a carriage order, and remote control does vehicles.
-Communication with vehicle and OHVC (OHT Vehicle Controller) is done by piling up a communication signal to the electric power line. As for the frequency of the career, a transmitting signal is 300.75kHz and receiving signal is 353.25kHz.

3. Communication system

The communication of SSOHT-300 system has two kinds of the next.

(1) Power line communication

Communication between OHVC (OHT Vehicle Controller) installed in the ground, and vehicle is done through Power-line-communication. Then, a communication such as a carriage order is done.

(2) Induction line communication

Communication between vehicles, which is done through Induction line in the divergence and the joining. It is done to decide the order of priority for vehicle to move forward.

3.1 The construction of the communication system

The construction of the communication system is shown in the fig. 2.

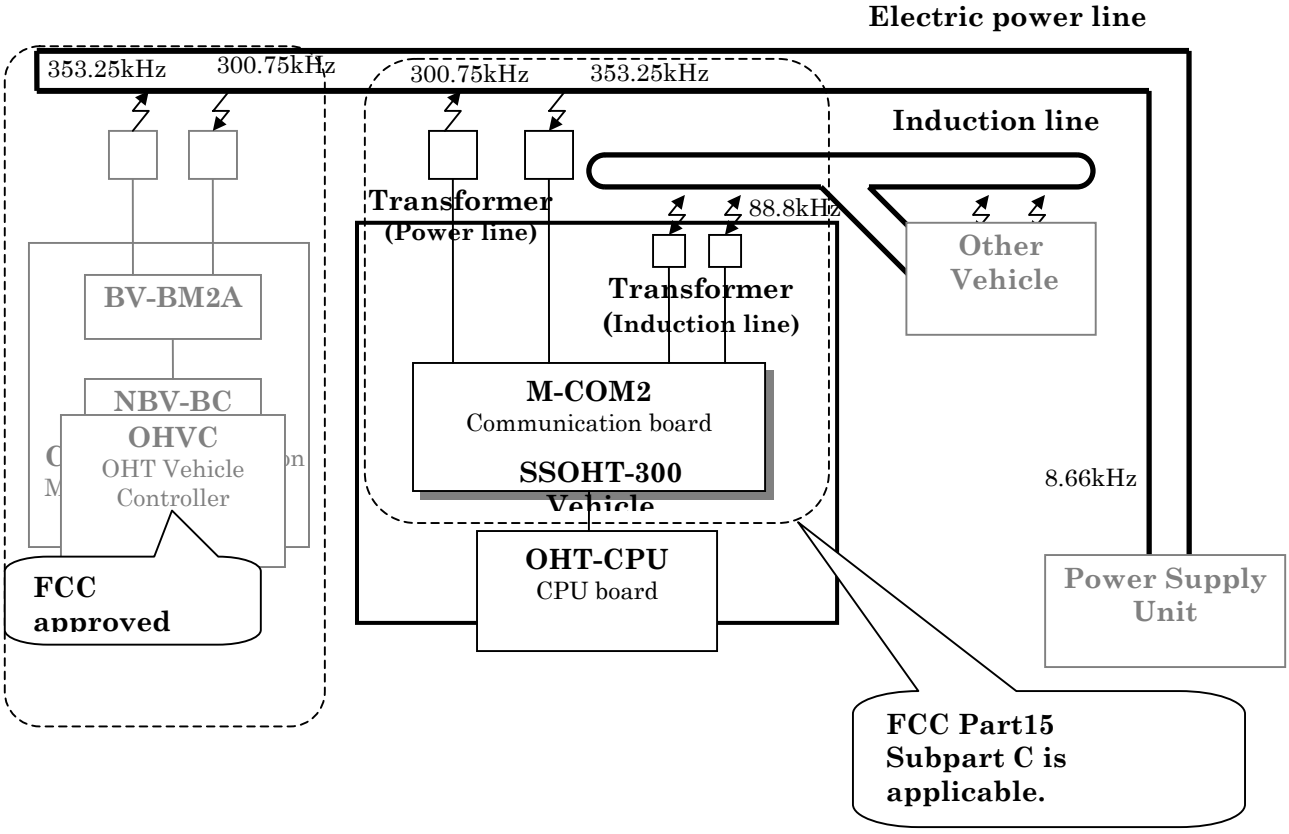

Fig.2 The construction of the communication system

M-COM2: The communication board installed in vehicle. Two kinds of communication are done by the control of the OHT-CPU.

Using frequency

-Power line communication (Adoption of Frequency Shift Keying Method)

Receive: Carrier frequency 300.75kHz
(Modulation frequency 285.7kHz and 315.8kHz)

Transmit: Carrier frequency 353.25kHz
(Modulation frequency 342.9kHz and 363.6kHz)

-Induction line communication (Adoption of On Off Keying Method)
88.8kHz

OHT-CPU: The main controller board of vehicle, which does the control of all the movements. Clock frequency is 133MHz.

CMC(Communication Modem Controller): It is power line communication device on the ground side. It has already been approved officially by FCC.

3.2 The movement of M-COM2

(1) Power line communication

-It does demodulation of the receiving signal and moderation of the transmitting signal.

- There are a transformer for the reception and a transformer for the transmission, and a communication signal is piled up to the electric power line through the transformer and received.

(2) Induction line communication

- A signal is transmitted and received by the order of the OHT-CPU.

-M-COM2 outputs the detection signal of one bit in the OHT-CPU when the existence of the signal which other vehicle transmitted.

- A Induction line is installed on both sides of the track. Therefore one transformer and circuit are each right and left, and they are equal.

- It can be changed if one transformer is used for the reception or it is used for the transmission.

-A left-right coil is combined with the loop line, and it can watch each other's transmitting signal. Then, a trouble such as the breakage of the transformer can be diagnosed.