The outline of working principle:

The wireless charging system is composed of a transmitting unit (see the transmitting unit block diagram) and the receiving unit. It is based on the QI (WPC 1.2.4) standard using near-field electromagnetic coupling and the power carrier amplitude modulation method to implement power transmission between the transmitting and receiving units;

The receiving unit receives the power electromagnetic energy transmitted by the transmitting unit and converts it into a DC current output to the power consumption part, and the receiving unit determines whether the received power requirement is met by detecting and calculating the received voltage and current, and converting the requirements into signal modulation on the power carrier, the transmitting unit returns the signal of the carrier amplitude change to the communication digital signal to the main control chip of the receiving unit, and the main control chip adjusts the output power according to the received information until meet power requirements at the receiving end;

After the wireless charger transmits part, in a short period of time, the main control chip completes the communication between the self-test and the power adapter, determines the power range that can be output, and then starts sending the detection signal to the load: such as the detection signal and the PIN information. The control chip sends a PIN control signal to the full bridge power part ,converting it into the electromagnetic power carrier , and if there is no load, it is sent intermittently;

When there is load, the load receives the power electromagnetic energy and responds to the information according to the requirements of the QI standard. The information is modulated on the power carrier by the receiving coil. The modulation of the receiving end causes a slight amplitude change of the voltage amplitude of the power carrier. [Signal detection and filtering] part detect part of the signal and send it to the [voltage demodulation] part to restore the digital signal that can be recognized by the main control chip to the [master chip] part; and the other signal outputted by [Signal Detection and Filtering] part is directly sent to the [main control chip] part,and the auxiliary control main control part further completes the control of power transmission; the [voltage adjustment] part is for adjusting the voltage of the receiving part to adapt to more different types of loads; The input current is collected by the current sampling resistor to collect the input current after sending to the [current amplification] part amplified and sent to the [main control chip] part for input power calculation; At the same time, the current modulation part is sent to the [main control chip] part after demodulation and together with the voltage signal transfer the communication information to the [main control chip] part, so that the [main control chip] part can achieve accurate control and effectively transfer the required power to the receiving part;

[LDO Voltage Regulation] part supplies power to the parts which need it of the whole machine;

[Input voltage detection] part: Collecting input voltage;

[Voltage Adaptation Network] part is used to contact the adapter and adjust the output power;

[Main temperature detection] part: This part can be not needed, in QI wireless charging there can have a better detection method to detect FOD, unless the customer must need, generally it can be not added;

[Status indication] Part: Used to indicate the working status of the charging system.