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| | File Name | Pages |
| | YN-42V15A Coil Specification | 10 |

YN-42V15A

Coil Specification

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Ltd Date: 2025-7-10

Document History

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| V1.0 | Tim Gao | 2025/7/10 | Initial release. |
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Contents

| | |
|---|---|
| Preface | 4 |
| 1. Transmitter Coil and Ferrite | 5 |
| 1.1. Transmitter Drawing | 5 |
| 1.2. Transmitter 3D Drawing | 6 |
| 1.3. Technical Parameters of Transmitter Coil | 6 |
| 2. Receiver Coil and Ferrite | 8 |
| 2.1. Receiver Drawing | 8 |
| 2.2. Receiver 3D Drawing | 9 |
| 2.3. Technical Parameters of Receiver Coil | 9 |

Preface

This specification document defines the dimensions and technical parameters of the lead wire coils and ferrite materials for the transmitting coil and receiving coil of the wireless power charger, its type is YN-42V15A.

The manufacturer and its factory information of the coil is as following,

| | |
|----------------------|--|
| Manufacturer | Etronicon (Zhejiang) Electronic Technologies Co., Ltd |
| Manufacturer Address | Floor 101, 201, 301, No. 1 Building, BINHE FORTUNE FACTORY, No. 88, Binhe Road, Qingshanhu Sub-district, Lin'an District, Hangzhou City, 311300 Zhejiang, P. R. China |
| Factory | Etronicon (Zhejiang) Electronic Technologies Co., Ltd |
| Factory Address | Floor 101, 201, 301, No. 1 Building, BINHE FORTUNE FACTORY, No. 88, Binhe Road, Qingshanhu Sub-district, Lin'an District, Hangzhou City, 311300 Zhejiang, P. R. China |

1. Transmitter Coil and Ferrite

The YN-42V15A wireless charger adopts the principle of electromagnetic induction. It couples energy through coils to achieve wireless transmission of electrical energy.

When the system is operating, the input end converts the alternating current from the mains power supply through a full-bridge rectifier circuit into direct current. The power management module then outputs the direct current, which is converted into high-frequency alternating current by an active crystal oscillator and supplied to the primary coil. The output current of the receiving coil is transformed into direct current through the receiving conversion circuit, and the energy is coupled through two inductor coils to charge the battery.

This wireless charger is safe and harmless. The resonance principle of wireless charging is magnetic resonance, and it only transmits between the resonance coils within the frequency range of $52\text{ kHz} \pm 0.5\text{ kHz}$. Other devices cannot receive this frequency band. In addition, the energy transmission magnetic field used by the wireless charger has no impact on the human body (such as SAR, EMF, etc. limits) within the limits set by laws and regulations.

1.1. Transmitter Drawing

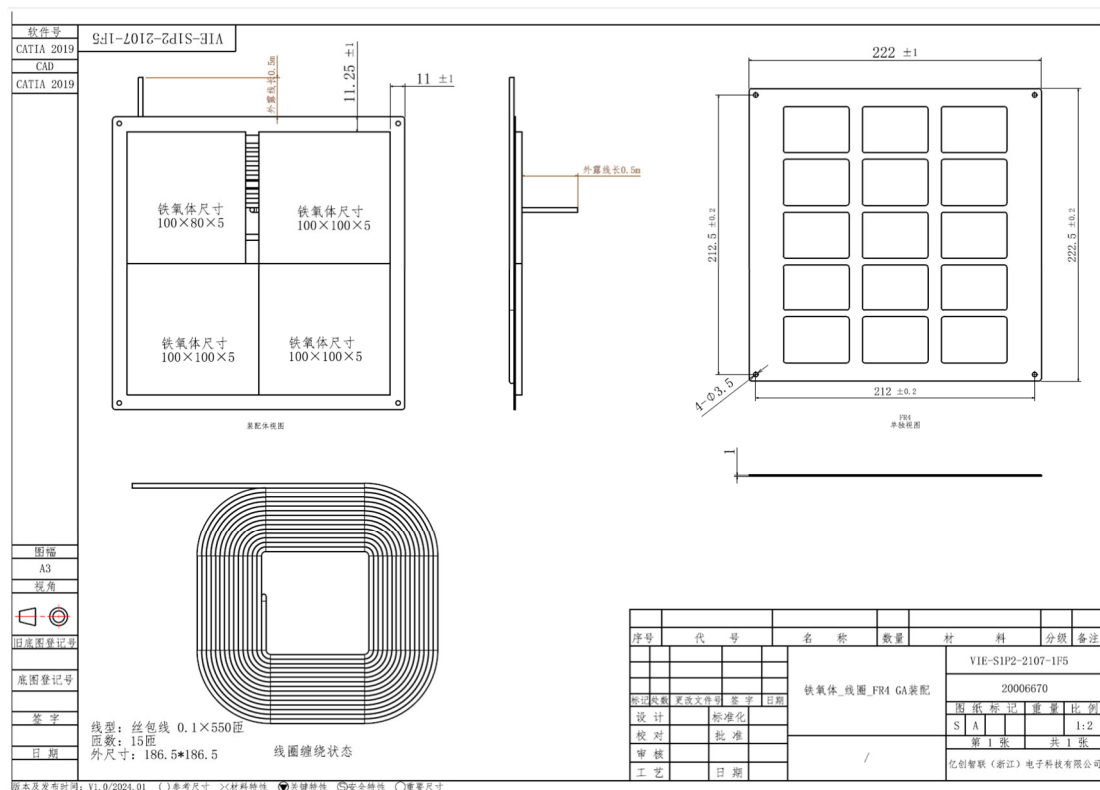


Figure1. Transmitter Coil and Ferrite Drawing

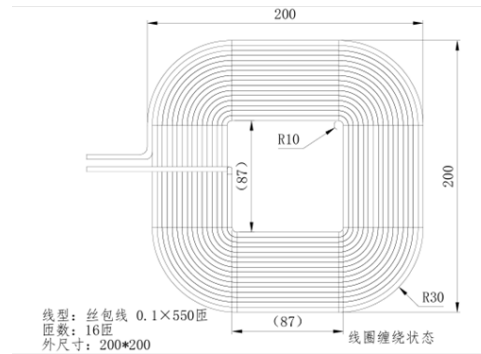


Figure 2 Transmitter Coil Drawing

1.2. Transmitter 3D Drawing

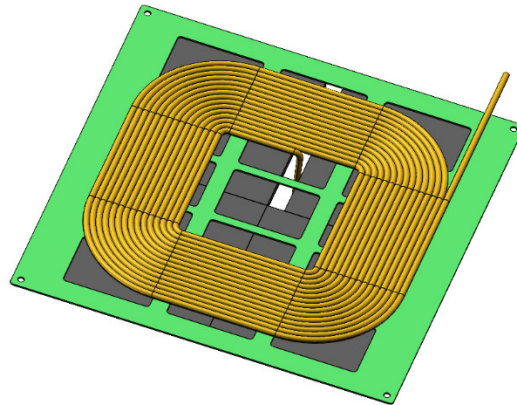


Figure 3. 3D Drawing of Transmitter Coil

1.3. Technical Parameters of Transmitter Coil

Table 1.3 Technical Parameters of Transmitter Coil

| Items | Technical parameters |
|-----------------------------|--|
| Litz wire type | USDC 0.1 mm*550 wrapped wire |
| Litz wire breakdown voltage | ≥ 1 kV |
| Litz wire resistor with DC | $\leq 4.37 \Omega/\text{km}$ |
| Litz wire winding | Turns:16 Layers: 1 |
| Dimensions of Ferrite | Parts: 100 mm*80 mm*5 mm,Qty: 1 100 mm*100 mm*5 mm,Qty: 3 |

| | |
|-----------------|-------------------------------|
| | Assembly: 200 mm *200 mm*5 mm |
| Self-inductance | 76.3 μ H |

Table 1.4 Technical Parameters of Ferrite

| Characteristics | Test condition | | Nominal value | Notes |
|------------------------------|--------------------|-----|-----------------|-------|
| Initial permeability | 10 kHz,B < 0.25 mT | 25℃ | 3 300±25% | |
| Saturation flux density | 50 Hz,1 194 A/m | | 530 | |
| Residual magnetic Br (mT) | | | 85 | |
| Coercivity | | | 9 | |
| Power loss(mW/cm³) | | | 100 kHz, 200 mT | 350 |
| Curie temperature(℃) | 10 kHz, B<0.25 mT | | >215 | |
| Density(g/cm³) | NA | | 4.82 | |

2. Receiver Coil and Ferrite

The receiver coil and ferrite consist the main body of the receiver component. When the wireless power charger is operating, together with the transmitter coil and ferrite, they form a coupled resonant magnetic field to complete the wireless transmission of power.

2.1. Receiver Drawing

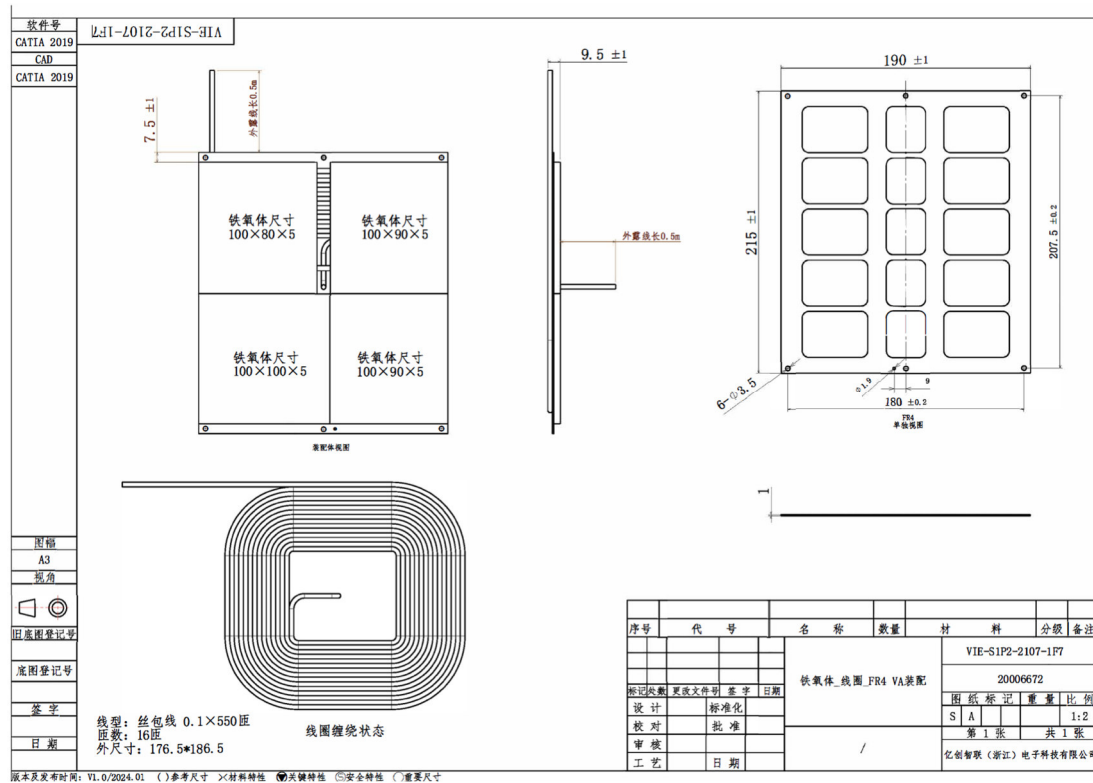


Figure 4. Receiver Coil and Ferrite Drawing

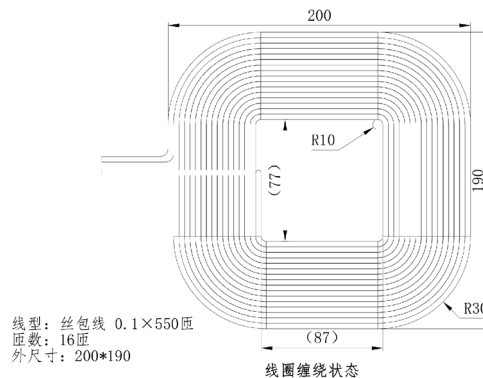


Figure 5. Receiver Coil drawing

2.2. Receiver 3D Drawing

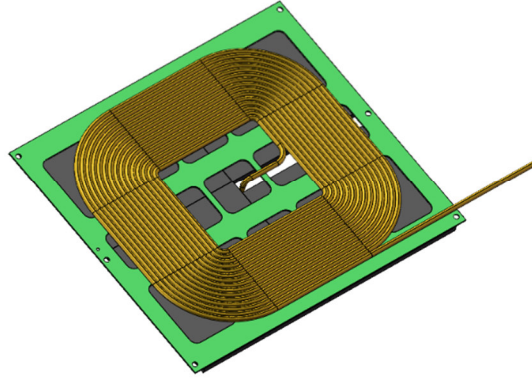


Figure 4. Receiver Coil 3D Drawing

2.3. Technical Parameters of Receiver Coil

Table 2.3 Technical Parameters of Receiver Coil

| Items 条目 | 技术参数 |
|-----------------------------|--|
| Litz wire type | USDC 0.1 mm*550 wrapped wire |
| Litz wire breakdown voltage | ≥ 1 kV |
| Litz wire resistor with DC | $\leq 4.37 \Omega/\text{km}$ |
| Litz wire winding | Turns: 16 Layer: 1 |
| Dimensions of Ferrite | Part: 100 mm*80 mm*5 mm, Qty: 1 100 mm*90 mm*5 mm, Qty: 2 100 mm*100 mm*5 mm, Qty: 1 |

| | |
|-----------------|--------------------------------|
| | Assembly : 200 mm *180 mm*5 mm |
| Self-inductance | 81.2 μ H |

The technical parameters of receiver ferrite is same as table 1.4.