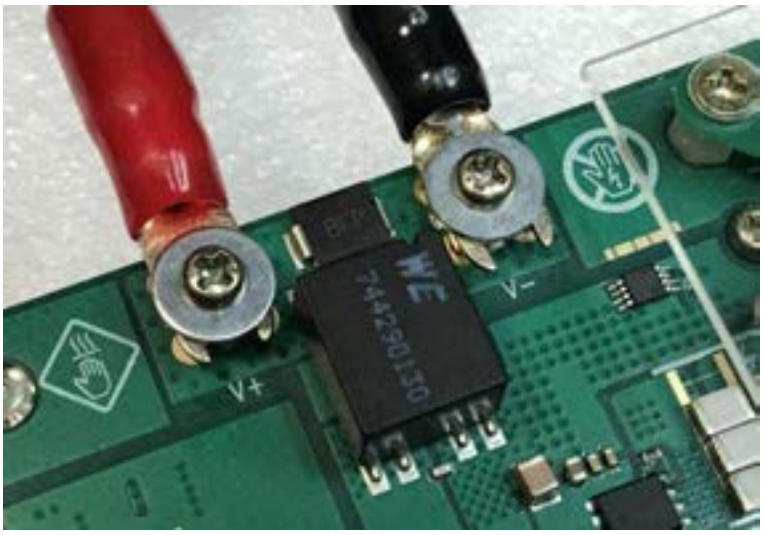
Wireless Power Reference Design

User Guide

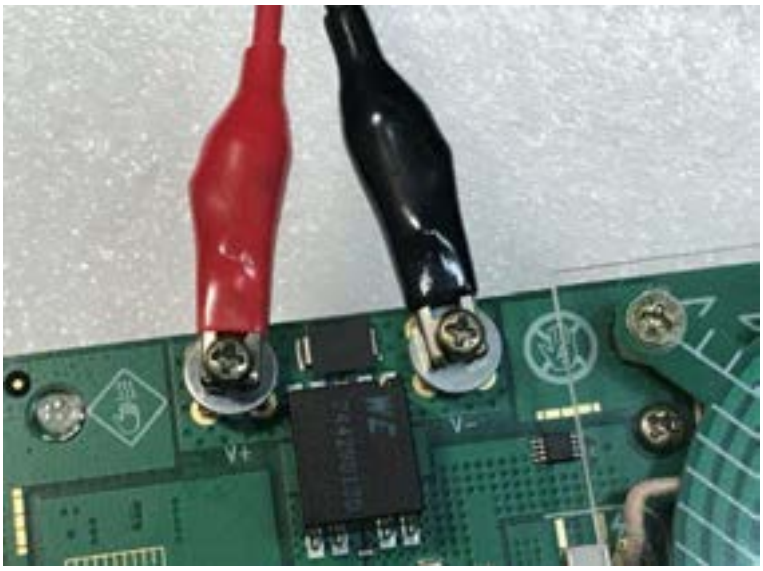
Part Number: EVB-WP300TX14 & EVB-WP300RX14 Rev #200304 August 11, 2020

Note!
Input voltage set in advance of wireless charging launch end is 24V, the input voltage higher than 37V will damage the circuit board.

Power supply connecting please use thick wire line and Y-type terminal lock connecting circuit board



use simple fixture connect power supply, operating can’t stabilize working when output big current



FCC Information
ID 2AVS4-FDT-EVB-WP300

https://fcc.report/FCC-ID/2AVS4-FDT-EVB-WP300

Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

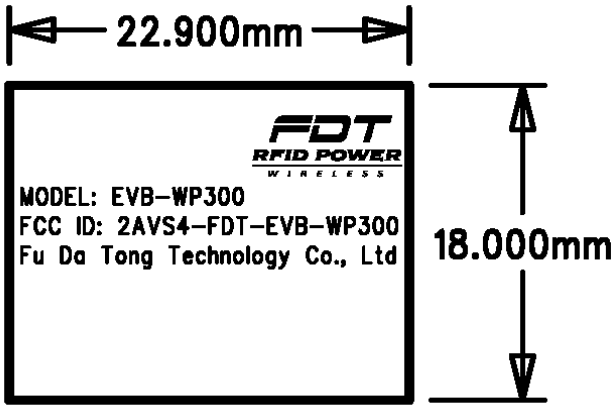
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

Federal Communication Commission (FCC) Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End user must follow the specific operating instructions for satisfying RF exposure compliance.



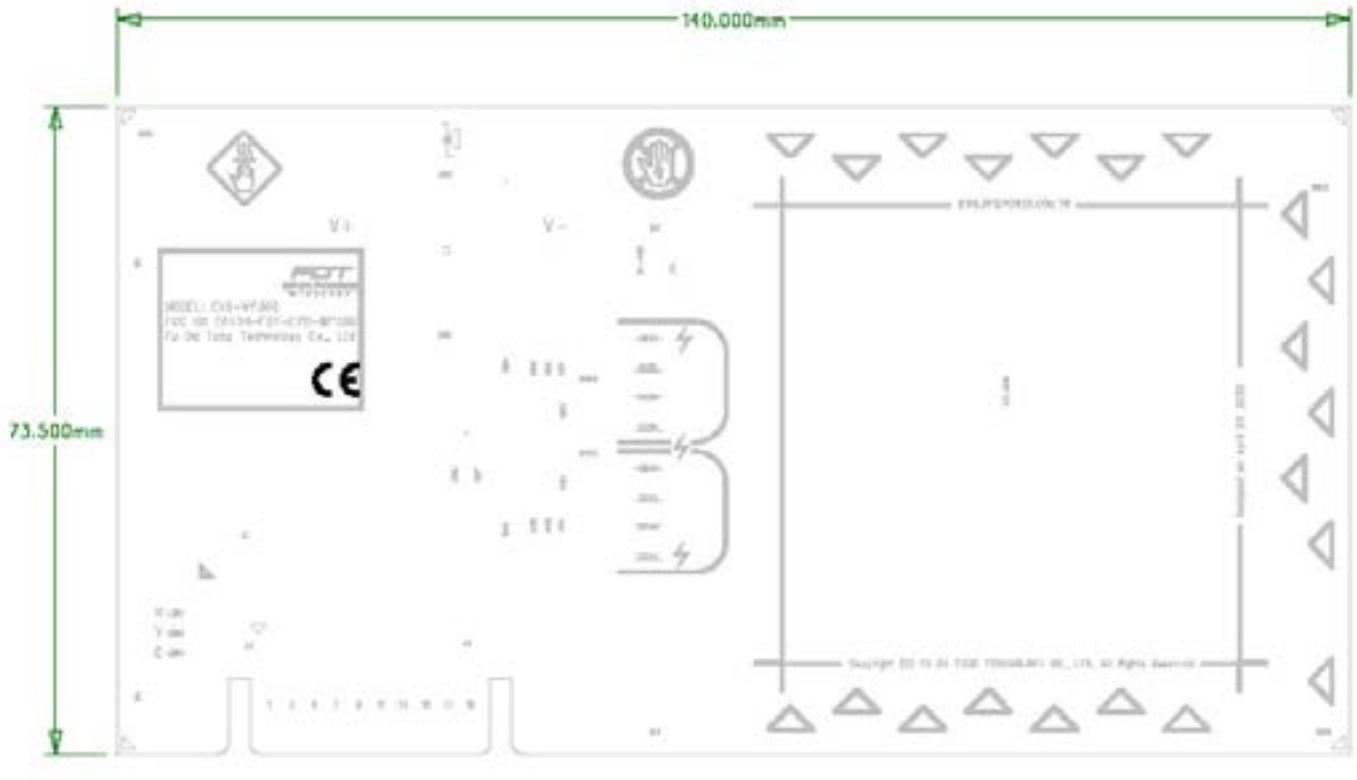
CE Information

This equipment should be installed and operated with minimum distance 10cm between the radiator & your body.

Compliance with 2014/53/EU Radio Equipment Directive (RED)
In accordance with Article 10.8(a) and 10.8(b) of the RED, the following table provides information on the frequency bands used and the maximum RF transmit power of the product for sale in the EU:

Frequency range (MHz)	Max. Transmit Power (dBuA/m)
0.110 - 0.140	3.55

The position of the CE mark on the transmission circuit board



RFID POWER
FuDaTong Technology

EU Declaration of Conformity

We,

Name of manufacturer:	Fu Da Tong Technology Co., Ltd
Address:	10F.-5, No.880, Zhongzheng Rd., Zhonghe Dist., New Taipei City, Taiwan, R.O.C.
Telephone number:	886-2-32344442

hereby, declare under our sole responsibility that the requirements set out in the Directive 2014/53/EU has been fully fulfilled on our product with indication below:

Product Name:	Wireless Power Reference Design
Model Number:	EVB-WP300
Serial Number:	NA
Object of the declaration	

The object of the declaration described above is in conformity with the relevant Union harmonization legislation:

Radio Equipment Directive (RED) 2014/53/EU

Restriction of Hazardous Substances Directive (RoHS) 2011/65/EU

Waste Electrical and Electronic Equipment Directive (WEEE) 2012/19/EU

The following standards and technical specifications have been applied:

Article 3.2 & 3.3 : EN 303 417 V1.1.1

Article 3.1(b) : EN 301 489-1 V2.1.0 / EN 301 489-3 V2.1.1 / EN 55032:2015/AC:2016(Class A)
/ EN 55024 : 2010/A1 : 2015 / EN 61000-3-2:2014 / EN 61000-3-3:2013

Article 3.1(a) : EN 62311: 2008 / EN 50665:2017

Article 3.1(a) : EN 60950-1: 2006+A11:2009+A1:2010+A12:2011+A2:2013

Notified Body (where applicable): (http://ec.europa.eu/growth/tools-databases/nando/index.cfm?fuseaction=notifiedbody.main)

Timco Engineering, Inc. 1177

EU-type examination certificate: 200188 with Module B+C

Signed for and on behalf of:

Signature : Tsai Ming Chiu

August 11, 2020, Taiwan

Name, Function(Title) : Tsai; Ming-Chiu, General Manager

E-mail : evb@rfidpower.com.tw

Packaging Information

FDT RFID POWER WIRELESS

Fu Da Tong Technology Co., Ltd.
10F.-5, No.880, Zhongzheng Rd., Zhonghe Dist., New Taipei City 23586, TAIWAN
Mali: EVB@rfidpower.com.tw http://www.rfidpower.com.tw

HANDLE WITH CARE
Loading products over the maximum capacity may cause damage to the products.

L:23.7cm W:12cm H:4.3cm

Weight : 0.6kg

Part Number : WP300TX & WP300RX

Made in Taiwan

Display introduce of setting board

PAGE 1 - Power-on status display

Power-on succeeds

Boot V+ 24.24V	Power-on voltage display. The voltage needs to be set in the rage and then it will continue to operate.
-8	Check the difference between value of coil resonance oscillation frequency and recorded value Complete equation is±0, will display +999~-999 when it has deviation If the difference bigger than set item 25 [Limit]L-C ACC GAP then will be locked and can't finish the start program
ResonantFreq 85.8KHz	Resonant frequency composed of TX and capacitors detected during power-on
P.O.S.T→OK	Power . On . Self . Test pass
FuDaTong A6	Product name
#200304	Software version number YYMMDD

supply voltage is too low

Pow SelfTest Failure	Power-on self-test failure
V+ 5.01V	Detected voltage
Vin is too LOW	Input Voltage is too low
Standard Vin =24.00V	Recommending voltage using

Supply voltage is too high

V+ 25.66V	Detected voltage
Vin is too HI	Input voltage is too high
Standard Vin =24.00V	Recommending voltage using

Part fault

MOSFET FAULT	Drive element fault
U4x 0.00	Fault in P/N U4 , the detected output voltage is 0.00V
[12]x	Pin12 Judging fault of IC corresponding port
U5 4.92	Part Number U5 is normal, the detected output voltage is 4.92V
[13] [14] [15]	No fault detected in Pin13, 14, and 15 of IC corresponding port

Part fault

U4 4.95	Part Number U4 is normal, the detected output voltage is 4.95V
[13]x	Pin13 Judging fault of IC corresponding port
U5x 0.00	Fault in part number U5, the detected output voltage is 0.00V
[12] [14] [15]	No fault detected in Pin 12, 14, and 15 of IC corresponding port

Part fault

U4 4.95	Part Number U4 is normal, the detected output voltage is 4.95V
[14]x	Judging fault in Pin14 of IC corresponding port
U5x 0.00	Fault in Part Number U5, the detected output voltage is 0.00V
[12] [13] [15]	No fault detected in Pin12, 13, and 15 of IC corresponding port

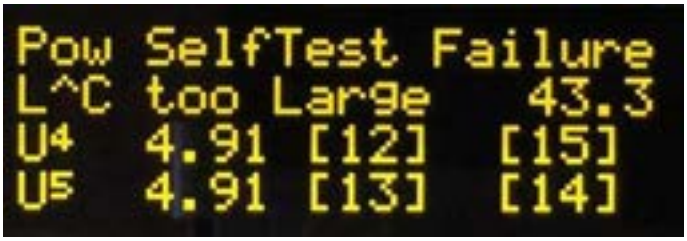
Part fault

U4 4.95	The Part Number U4 is normal, the detective output voltage is 4.95V
[15]x	Judging fault in Pin15 of IC corresponding port
U5 4.95	Part number U5 is normal, the detected output voltage is 4.95V
[12] [13] [14]	No fault detected in Pin12, 13, and 14 of IC corresponding port

Part fault

COIL FAULT	Coil fault *Usually it is because of the loop open circuit of the coil and the capacitance, or the fault of coil voltage detective divider resistance
U4 4.95	Part number U4 is normal, the detected output

	voltage is 4.95V
U5 4.95	Part number U5 is normal, the detected output voltage is 4.95V
[12] [13] [14] [15]	No fault detected in Pin12, 13, 14, and 15 of IC corresponding port



The coil and the capacitance is too large, which causes the resonant frequency becomes too low

L^C too Large	The inductance value of coil and the capacitance are too large
43.3	The measurement of resonant frequency is 43.3 KHz
U4 4.91	Part number U4 is normal, the detected output voltage is 4.91V
U5 4.91	Part number U5 is normal, the detected output voltage is 4.91V
[12] [13] [14] [15]	No fault is detected in Pin12, 13, 14 and 15 of IC corresponding port

The coil and the capacitance are too small, which caused the resonant frequency too high

L^C too Small	The coil inductance value and capacitance are too small
145.9	The measurement of resonant frequency is 145.9KHz
U4 24.19	Part number U4 is normal, the detected output voltage is 24.19V
U5 24.02	The part number U5 is normal, the detected output voltage is 24.02V
[12] [13] [14] [15]	No fault is detected in Pin12, 13, 14, and 15of IC corresponding port

PAGE 2 - Main operation status display

Standby surveillance mode

+24。C	The detected temperature, when there are more than one temperature sensors, they will display the highest temperature value among them and use the highest temperature to judge if to launch the excess temperature protection action
LCsacn	LC infers to the resonant TANK constituted by the coil and the capacitance, the mode is to scan such resonant frequency and use the gained value to judge if it is necessary to enter into the power supply action
74.3KHz	The current detected resonant frequency is 74.3KHz
24.02V	The current input voltage is 24.02 V
0.01A	The current input electricity is 0.01A
0.2W	The current input power is 0.2W
72.0/Hi	Set the upper resonant frequency limit of the RX launching electricity transmission
66.4/Lo	Set the lower resonant frequency of the RX launching electricity transmission The measurement of resonant frequency need to be between the upper and the lower limit, will it be launched to transmit the electricity
Search.	Searching if there is RX approaching
t	Already launched the control of thrust system *press C in the screen will switch to drive mode t is the thrust control mode (thrust control on) F is the full-thrust mode (thrust control off)

N	Already launched the NFC device detection protection function Under the situation that operating temperature changes or foreign matter on the coil when start machine, these will caused NFC detection can't running normally, and will close the NFC detection functional automatically, mark N not display
n	If the original N mark changed to be lower-case n, represent the current running temperature different to recorded value, differentiate ability will falling down.
@	Calibrate mark , the module which already finished coil calibration display this symbol The calibration program is writ the parameters of coil into ROM of A6 Only the module which finished calibration can start the NFC detection functional

Standby detection mode Metal foreign body detected

Metal-FOD	Metal foreign body is detected on the main coil, no electricity transmission conducted before removing the metal foreign body

Standby detection mode NFC signal detected

Find <NFC>	NFC signal reactor device is detected on the auxiliary coil, no electricity is conducted before the removal

Standby detection mode High frequency magnetic car is detected

[RF COIL]	The device of high frequency magnetic card is detected on the auxiliary coil, no electricity transmission is conducted before the removal

Standby detection mode RX coil is approaching

COIL MOVING	According to the result of resonant frequency scanning, judge that RX coil is approaching, the coil is still on moving, no power transmission detection is launched yet

Power transmission launching detection mode (thrust control on)

49.9↗V	The peak-to-peak value of the resonant on the coil
105.1 KHz	The working frequency of U4 and U5 output drive

↗	Upwards arrow shows the measurement result of the value compared to the last time is performing the uptrend
↘	Downwards arrow shows the measurement result of the value compared to the last time is performing the downtrend

Power transmission launching detection mode (thrust control off)

t-off	Thrust control off

Standby detection mode RX coil is approaching

COIL ERROR	RX device is approaching, after launching the power transmission detection the RX device has no response, if the result happens again and again that the RX is approaching, it might be the breakdown of the RX circuit

wireless power transmitting

FOD→▮	After RX is approaching and it starts to supply the power, turn on the detection status of the metal foreign body detection function There are four type of thickness, the thicker shows the higher possibility of metal foreign body If the sign is “?”, it shows invalid of the current detection

t88	Thrust control system; thrust decrement 99 is the lowest thrust, it shows the output waveform phase differentiates 90 degrees of U4 and U5 The smaller the number that shows the increase in thrust, the more the output waveform phase difference is approaching to 180 degree. When the biggest thrust output is 0, it will display FULL Under the thrust control, it will adjust the thrust application amount p to 50 which is the smallest value, if the thrust use quantity p is relatively small, it will increase the thrust decrement After the increase of system electric power, thrust control system will automatically increase thrust
p50	when the coil input thrust application amount p is no-load, the output of the coil waveform and U4, U5 is performing the same phase shift amount of phase position as 0 degree, the calculated thrust application amount is 0% After the output power increases, the output of coil waveform and U4, U5 will phase shift, when the largest phase shift is 90 degree, the calculated thrust application amount is 99% The largest thrust used in the system is having relations with coil design, sensor distance, and drive voltage. We suggest that no excess 80% in use, so that the system can be relatively stabled.
56	The nearest coil sensor distance of the delivery point and the receiving end is 99, and the farthest is 0, it is the value calculated by using the resonant frequency, when the distance is too far, it will directly cut off the electric power transmission
99	Continuous decoding success rate, the last 99 times of the decoding success rate, the largest is 99 and the smallest is 0, if the decoding success rate is lower than 10 it will cut off the electricity power transmission
T▉ 32.0↗V	T is the antenna signal intensity, block means full, and it shows the signal intensity is in a good status

	32.0 means 32.0 volt in the direct voltage behind the RX port rectifier
313	The system calculates the RX voltage regulation target value that is going to be set The quantitative value is calculated according to the system set value, which is used for corresponding the sensor power supply system load drive capability of the power supply and the receiving end

Wireless power transmitting (thrust control off)

t-off	Thrust control off
p07	Under the thrust application amount 07, the drive is the full-thrust output, so its thrust application amount will be relatively low

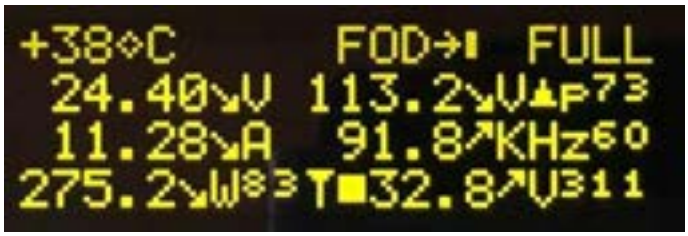
Wireless power transmitting

t61	Driver thrust decrement is 61
p49	Thrust application amount is 49

Wireless power transmitting

FULL	The driver is on full-thrust output
2.25A	The system current is 2.25A, when the system current increases, it will automatically complement the thrust, so the thrust application amount is lower than 50

p49	Thrust application amount 29



Wireless power transmitting

▲	High thrust application amount marking
83	Decoding success rate is 83%, because of the dynamic load or other interference factors, the decoding success rate will decrease

Wireless power transmitting

T4	Signal intensity 4, because of the dynamic load or other interference factors, the coding signal from RX will have changes between strong and weak, block means the signal is the strongest, the smaller the number shows the worse the signal

Wireless power transmitting

#4	The voltage value is breakaway from the scope count when receiving RX data, display 4 means it has already received 4 times of abnormal voltage data continuously, most of the reasons are dynamic load or other interference factors If this situation occurs continuously, it means the data decoding sensitivity is set as excessive sensible

Wireless power transmitting

Tx	No data signal from RX has been received
19/ 200	Under the condition of RX breaking signals, as long as the RX measuring coil position does not move, it will not immediately cut off electric the power transmission and it will enter into timing process, after time's up, if there is still no signal recovered then it will cut off the electric power. 19/200 means timing to 200 will cut off the electric power, and the current time counting is 19. At this moment the timer will increases 20 values in every second, and 200 is the time length of 10 seconds.

The end of wireless power transmission

RxEND27.6 V	After ending the electric power transmission, the last receiving RX port voltage data is 27.6V

Wireless power transmitting

+41。C	Detected temperature *the sample limits the temperature to be 40 degree
OT!2	Caution of over high temperature, time for the 2 second, when the time of the over high temperature reaches 10 seconds it will be locked for protection

Wireless power transmitting

+41。C	Detected temperature *in this sample, the temperature limitation is 40 degree
[OTP] LOCK	Due to the over high temperature, it has entered into lock status, and will not conduct the action of electric power transmission
Below 38。C to unlock	The system design is that it need to be 2 degrees lower than the limited temperature can it be unlocked protection

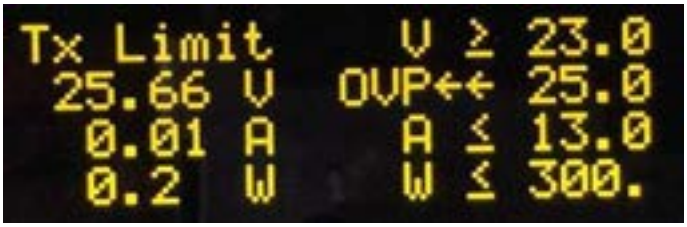
PAGE 3 - System limit value display

Limit value display list

Tx Limit	Tx indicates the power supply port, the content of this page is the limit value of power supply's input power
23.91 V	The current measured input voltage is 23.91V
9.01 A	The current measured input current is 9.01A
215.4 W	The input power calculated from the measured voltage and the current is 215.4W
V ≥ 23.0	Over low voltage protection limit value, if lower than the value it will launch the UVP
V ≤ 25.0	Over high voltage protection limit value, if higher than the value it will launch OVP
A ≤ 13.0	Over high current protection limit value, if higher than the value it will launch the OCP
W ≤ 300	Over high power protection limit value, if higher than the value it will launch the OPP

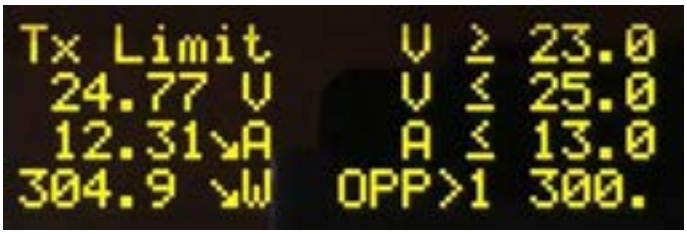
UVP launching

22.37 V	The current measured input voltage is 22.37 volt
UVP>7	Lower than the limit value, 10 seconds after starting counting the time it will launch UVP protection, the current timing is at the 7 second This is under the condition of the measured voltage is still close to the limit value, it will conduct counting second timing If the gap is too large, it will launch automatically



OVP launched

25.66 V	The current measured input voltage is 25.66 volt
OVP←←	Over high voltage protection OVP has been launched



OPP launching

304.9 V	The current measured input power is 304.9W
OPP>1	Higher than the limit value, 10 seconds after timing it will launch OPP protection, the current timing is at the 1 second

PAGE 4 - Input power monitoring display

Input power monitoring

Pow-IN Monitor	input power monitoring display
Idle 24.06 V	The input power voltage under standby is 24.06V
Load 24.05 V	The on-load voltage is 24.05V
Loss 0.01 V	The current measured wire loss amount
▲ 0.00V	The voltage change amount in the past 1 second, if excess 1V it will conduct the voltage instability protection
@0.15A	In the record, the largest occurred current value of voltage decreasing
→0.01V	In the record, the largest voltage value occurred the voltage decreasing On this screen, press C to reset the record value

Input power monitoring

▲ 0.01V	The voltage change amount in the past 1 second is 0.01V
@11.36A	In the record, the largest current decreasing has occurred under 11.36 ampere
→0.50V	In the record, the largest occurred voltage decreasing amount is 0.50V The value is the index of input current supply quality

Input power monitoring

@11.56A	In the record, the largest power decreasing has occurred under 11.56 ampere
→0.23V	In the record, the largest occurred voltage decreasing amount is 0.23V Smaller than the 0.05V in the last sample, which shows the power supply quality is relatively good

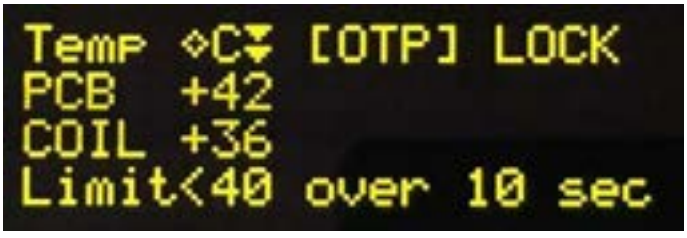
PAGE 5 - Temperature detection display

temperature monitoring

Temp 。C▼	Temperature monitor message
PCB +25	The temperature sensor that installed in PCB, the temperature is 25 degree
COIL +23	The temperature sensor that installed in COIL, the temperature is 23 degree
Limit<70	The system sets the upper temperature limit is 70 degree, the value can be set in the setting mode
◀	The higher temperature sensor in two temperature sensors select mark The over heating protection is select the higher temperature sensor to do judgement.

Caution of over high temperature

over 5 sec	The temperature of any sensor has over the upper limit and timed to the 5th second



Over high temperature lock

[OTP] LOCK	Over high temperature lock status, electric power transmission can be launched until wait after the cooling
over 10 sec	The temperature of any sensor has over the upper limit and time to second 10

PAGE 6 - Resonant frequency monitoring

Resonant frequency monitoring

L^C BOOT 72.6 KHz	The first-time measured resonant frequency after powering on for the circuit board of the power supply port
New PEAK 67.8	The latest measured resonant frequency, the unit is KHz
/4120	The period timer value in the internal IC of the latest measured resonant frequency
Hi 69.3	Under the system set wireless power transmission, the highest resonant frequency
Lo 66.1	Under the system set wireless power transmission, the lowest resonant frequency
alignment 45%	The current measured resonant frequency Equal to the value of Lo, which shows that the coil between RX and TX is the closest, the calculated value is 99% , Equal to the value of Hi, which shows that the coil between RX and TX is the farthest, the calculated value is 0% , No wireless power transmission will be conducted over this scope
PWMout/ 91.8	Driver output frequency

PAGE 7 - LED Status

LED display status

LED < 1s	Symbol <, every block that it turn left means the time of 0.1 second
1R	Code 1, red LED, when the closest block is cube, means lightening
2Y	Code 2, yellow LED, when the closest block is cube, means lightening
3G	Code 3, green LED, when the closest block is cube, means lightening

PAGE 8 - Pin Level status

Button status

[25]2A=H	The button 2A linked by Pin25 of IC port is currently a high potential
[26]2B=H	The button 2B linked by Pin26 of IC port is currently a high potential
[27]1A=H	The button 1A linked by Pin27 of IC port is currently a high potential
[28]1B=H	The button 1B linked by Pin28 of IC port is currently a high potential
[31]1C=H	The button 1C linked by Pin31 of IC port is currently a high potential
[20]BZ=L	The buzzer drive switch linked by Pin 20 of IC port is currently a low potential

PAGE 9 - Error Code Notice

Normal operation

NO ERROR	No error ; Normally operating

Error Occurrence

ERROR-1021	Error code 1021
V+ Input too Small	The input voltage is too small
After 3s5 Restartrd	Countdown, restart after 3.5 seconds

Error occurrence

ERROR-1051	Error code 1051
[TX-OPP] OVERPOWER	Over high power protection

Error occurrence

ERROR-2410	Error code 2410
V+ Input Unstable	TX current change amount in a short time is too large

Error code list

ERROR-	
ERROR-1021	Low voltage protection
ERROR-1031	Over voltage protection
ERROR-1041	Over current protection
ERROR-1051	Over power protection
ERROR-2040	[15] THDN-1 input abnormal, U4 over high temperature
ERROR-2050	[14] THDN-2 input abnormal, U5 over high temperature
ERROR-2100	coil voltage is too high
ERROR-2110	coil voltage is too low
ERROR-2123	[21] and [23] are occurring mismatching
ERROR-2410	TX current change amount in a short time is too large
ERROR-3100	Invalid waif, the coil voltage is too high
ERROR-3110	Invalid waif, the coil voltage is too low
ERROR-4010	Coil abnormal, open circuit
ERROR-4020	Capacitance abnormal, open circuit
ERROR-4030	The match between coil and capacitance is too large
ERROR-4040	The match between coil and capacitance is too small
ERROR-4050	U4 thrust output abnormal
ERROR-4060	U5 thrust output abnormal
ERROR-4070	[12] PWM1-H output abnormal
ERROR-4080	[13] PWM1-L output abnormal
ERROR-4090	[14] drive part temperature abnormal
ERROR-4100	[15] drive part temperature abnormal
ERROR-4110	Launching input power is too high
ERROR-4120	Launching input power is too low

PAGE A - (Foreign Object Detection) Metal foreign body detection status

The detection in the electric power transmission

Not in the electric power transmission

FOD RX Offline	If not in the electric power transmission, and under the RX offline condition, this page will be leave unused with no action taken

Electric power transmitting

FOD RX Online	RX online, in the wireless power transmission, in the metal foreign body analysis
METAL RATIO: 0.0%	The current judged metal foreign body probability is 0%, when the judging reaches to 99.9% it will cut off the electric power transmission
1 2 3 4 T ▓	Metal foreign body judging signal intensity, one block means in safe status, four full blocks means there is metal foreign body
CATCH→ 225	The larger the current metal foreign body measured value, the safer, there might not have the possibility of metal foreign body
↓184	In this page, it is the smallest value of the obtained metal foreign body measured value in the past Press C to reset, the value is used for observing that the minimum value that might be occurred in metal foreign body judging in system operation, it is used for assisting to set the critical value
LEVEL→ 140	Judging the critical value, if the measured value is lower than the value it will be judged having metal foreign body
+85	The gap between the measure value and the critical value 225-140=85

Approximate to the differentiate criticality

1 2 3 4 T	Differentiate block number is the observed resonant period frequency after stopping driving, the more times it stops the more accurate the can be differentiation, but it will decrease the power supply quality
+10	Gap between the measure value and the critical value

Approximate to the differentiate criticality

1 2 3 4 T	If the measured value is lower than the criticality, it will use the longest time of pausing for observing the change amount of resonant period
-1	The gap between measure value and critical value, negative value means there is metal
54.0%	It has started to accumulate the differentiate value, the metal foreign body differentiation is using the method of seize accumulation to conduct the differentiation evidence of the last closing electric power transmission action

Metal foreign body confirmed, close the electric power transmission

METAL RATIO: 99.9%	The metal foreign body differentiation accumulation device has reached to 99.9% of confirm
STOP OUTPUT	Stop the output drive signal
After 2s3 Restarted	Countdown timing, prepare for restart

PAGE B - (Foreign Object Detection) Metal foreign body detection status the detection before the electric power transmission

Wireless power transmitting

FOD LC SCAN Stop	RX online. Wireless power transmitting, stop the method of LC scanning and conduct the metal foreign body detection

Before the Wireless power transmission

FOD SCAN GO..	Before the Wireless power transmission, conduct the method of LC scanning and to conduct the metal foreign body detection
SETBASIC→065	Differentiate the critical set basic value
ADJLIMIT→098	The system automatically adjusted differentiate critical value, if lower than the value it will target that there is metal foreign body therefore not to launch the wireless power transmission
MEASURED→130	Measurement reading value, the bigger the value is shows the lower the possibility of having metal foreign body
4	Change volume during the LC scan frequency
3	Change volume during the LC detect the descend length of FOD
+ 30	Differentiate the gap from reading value to the critical value, the large the value is showing the lower possibility of having metal foreign body

possessing metal foreign body

→056 -39	If the measurement reading value is lower than the limit value, it will be judged as possessing metal foreign body, and stop electric power transmission

8	The change volume of NFC detect the signal on coil
1160	Up limit of NFC signal numerical value judge higher than this value then will enter into [RF COIL] lock status
1088	The latest one NFC signal detected numerical value
1024	Down limit of NFC signal numerical value judge lower than this value then will enter into [RF COIL] lock status

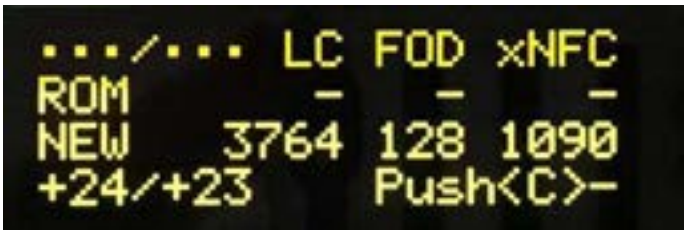
Possessing NFC signal

52	The reading number is the quantity of NFC data signal, if larger than 20 it will be judged as possessing NFC device

PAGE C - Paging of start status display

Boot Status	The start program detect displayed content
V+ 24.01V	The input voltage which detected by start program
RF 74.3	The coil resonance oscillation frequency which detected by start program
U4 24.48	Part number U4 is normal, the detected output voltage is 24.48V
U5 24.55	Part number U5 is normal, the detected output voltage is 24.55V
[12] [13] [14] [15]	No fault is detected in Pin12, 13, 14 and 15 of IC corresponding port

PAGE D - Page of coil calibration



.../...	The temperature record value in the calibration datum...is the content without records
LC	Coil resonance oscillation frequency recorded value
FOD	Metal foreign matter recorded value
x	NFC detection currently is close status
NFC	NFC detection datum recorded value
-	No datum
ROM	Datum in A6 internal memorizer
NEW	The latest detection datum
+24/+23	Detected PCB temperature is +24° Detected coil temperature is +23°
3764	The latest coil resonance oscillation frequency recorded value
128	The latest metal foreign matter recorded value
1090	The latest NFC detection datum detected value
Push<C>-	Currently not press down button C

Push<C>9	Start counting 0~9 after press down button C do save record value after counted to 9

Save OK	Save record value action finished

PAGE 0 - Operation Counter

Timing after starting-up

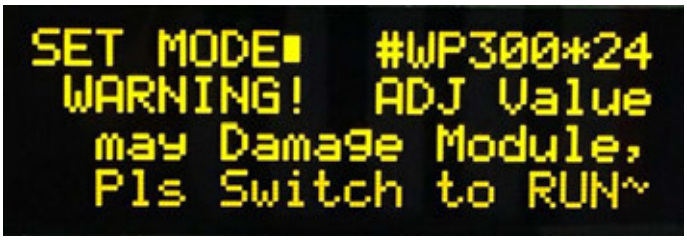
Run: 0d00h01m25s7	The time after starting-up will be eliminated in restart

Timing after electric power transmission

Rx: 0d00h00m13s9	The time after RX online will be eliminated after leaving the stop of electric power transmission

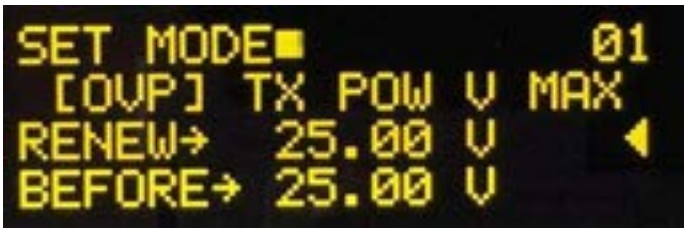
SET MODE - Set Mode Menu

- Attention! The set mode has no function of error prevention, wrong settings will lead to the abnormal work of system or cause the damage in hardware
- After having the uncertain value amendment, please use the set of recover to the original setting to recover it to the optimization status



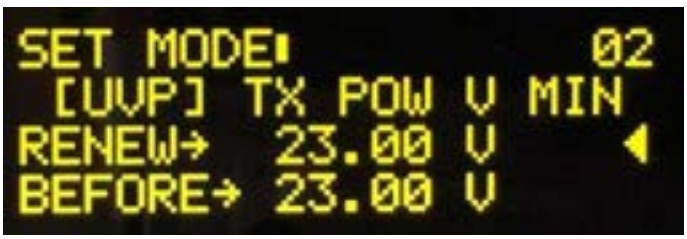
00

SET MODE	set mode
#EVB-v57*	The corresponding circuit board type of the current software setting
WARNING! ADJ Value May Damage Module, Pls Switch to Run~	Warning! Changing the set value might damage the circuit module, please cut the switch to operation for keeping running



01

[OVP] TX POW V MAX	Set the largest input voltage of the supply power port module
RENEW→	Renewed value
BEFORE→	The setting value in the system currently
◂	Nonius, press C to switch to the adjusted value mode



02

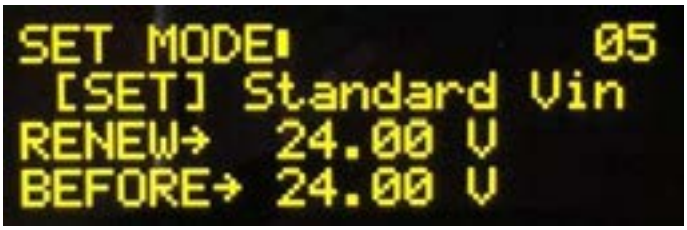
[UVP] TX POW V MIN	Set the power supply port module smallest input voltage

03

[OCP] TX POW I MAX	Set the largest input current of power supply port module

04

[OPP] TX POW W MAX	Set the largest input power of power supply port module



05

[SET] Standard Vin	Displayed on the starting-up page to notice the user about the suggesting use of voltage

06

[Limit] Temp	Limit the highest operation temperature

07

[Limit] B3 RXV MAX	Limit the largest voltage value behind the rectifier on the power receiving end RX

08

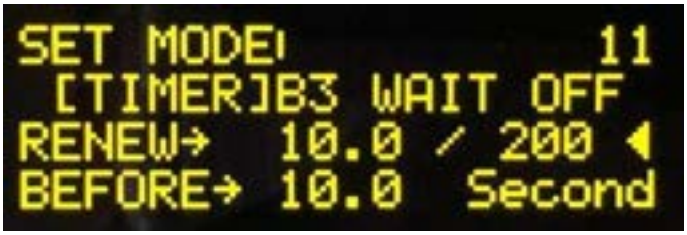
[Limit] B3 RXV MIN	Limit the smallest voltage value behind the rectifier on the power receiving end RX

09

[Ratio] CODE B3→RXV	The multiplying power switched from the value in the data coding to the voltage on the B3

10

[Ratio] CODE B3→RXV	The multiplying power switched from the value in the data coding to the voltage on the B3



11

[TIMER] B3 WAIT OFF	After losing the B3 data signal, it still need to maintain the time of continue the wireless power transmission

12

[ADJ] Demod Keen	Decoding sensitivity, the smaller the number is the more sensible it is

13

[Limit] OUT PWM HI	The highest operation frequency that inputted to the driver

14

[Limit] OUT PWM LOW	The lowest operation frequency that inputted to the driver

15

[Limit] LC RES HI	Limit the operational highest LC resonant frequency value

16

[Limit] LC RES LOW	Limit the operational lowest LC resonant frequency value

17

[Rx ON] LC RES FAR	Set the RX launched farthest resonant frequency of coil distance

18

[Rx ON] LC RES NEAR	Set the RX launched nearest resonant frequency of coil distance

19

[BOOT ACC] LC RES	Set the launched detective coil resonant frequency accuracy value

20

[RX] VD / TXVIN FAR	When the coil distance is the farthest, the RX set voltage is the multiplying power of TX input voltage

21

[RX] VD / TXVIN NER	When the coil distance is the nearest, the RX set voltage is the multiplying power of TX input voltage

22

[FOD] RX LINK LEVEL	Under the RX online, the critical value of the metal foreign body differentiation

23

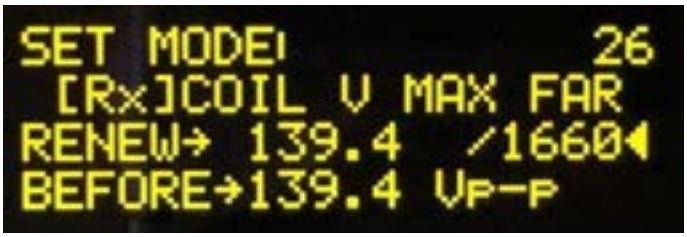
[FOD] LC SCAN BASIC	Under the LC scanning mode, differentiate the basic value of metal foreign body

24

[ADJ]21 ADC → COILv	The ADC reading number obtained in the IC port 21 switches to the multiplying power of coil peak-to-peak value.

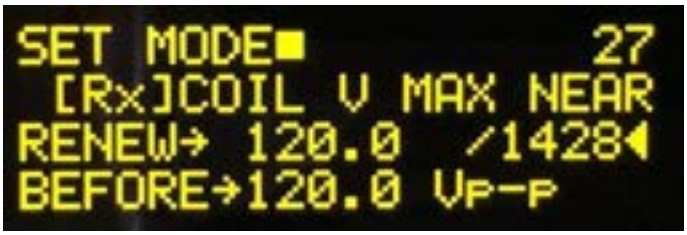
25

[Limit]L-C ACC GAP	Under the condition that having the starting-up lock L-C resonant frequency, the accepted differentiate space, if the number is small then it can be launched only when it is more accurate



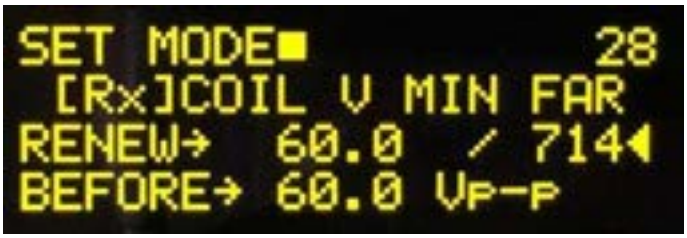
26

[RX]COIL V MAX FAR	When the coil distance is the farthest, limit the largest voltage value on the power supply coil



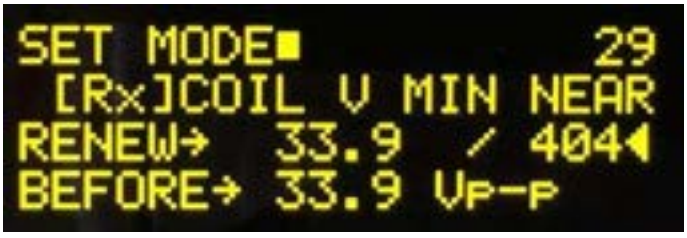
27

[RX]COIL V MAX NEAR	When the coil distance is the nearest, limit the largest voltage value on the power supply coil



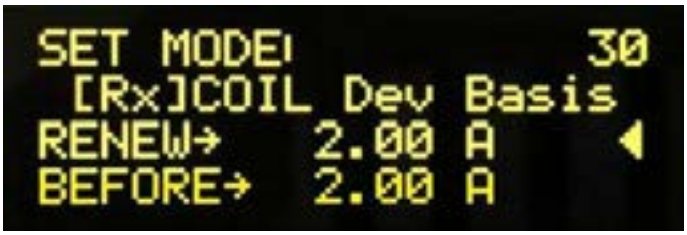
28

[RX]COIL V MIN FAR	When the coil distance is the farthest, limit the smallest voltage value on the power supply coil



29

[RX]COIL V MIN NEAR	When the coil distance is the nearest, limits the minimum voltage value on the power supply coil



30

[RX]COIL Dev Basis	The offset of coil decided by the current during the process of transport power. The set value is judge the up limit of offset of coil, use the critical size of increased current in current system to be the up limit

31

[02] LED1	Function switch of IC port Pin02, LED1 display

32

[03] LED2	Function switch of IC port Pin03, LED2 display

33

[04] LED3	Function switch of IC port Pin04, LED3 display

34

[05] BUZZER	Buzzer device function switch of IC port Pin05

35

Function - FOD	Switch of metal foreign body protection function

36

[Current Sensor]	Current detection IC type selection

37

[PID]THRUST CONTROL	Thrust control system launching switch

38

[FOD] NFC SCAN	NFC detection function switch

39

[BOOT] L-C LOCK	Power on testing L-C resonant frequency locking function, it is the protection function that can be operated only if conform to the ACC set value

40

[ROM]SAVE NEW SET	Save the set page
Push <C> Execution←	After pressing <C> it will start counting, execute the action at 10
SR/3002	The current internal set version code

41

[ROM]REPLY FACTORY	Reply to factory set value

42

[ROM]LOAD DEFAULT 1	Read the 1st team of default value parameter
#WP300*12	This set configuration as special for this model circuit board

43

[ROM]LOAD DEFAULT 2	Read the 2nd team of default value parameter
#WP300*24	This set configuration as special for this model circuit board

44

[ROM]LOAD DEFAULT 3	Read the 3rd team of default value parameter

#WP300*36	This set configuration as special for this model circuit board

45

[ROM]LOAD DEFAULT 4	Read the 4th team of default value parameter
#[CUSTON]	This set configuration is manual model, will close most of the advance functional

USB MODE - used for connecting the computer through USB

United States Patent

8,098,043 Induction type power supply device

8,217,621 Frequency modulation type wireless power supply and charger system

8,412,963 Power supplying and data transmitting method for induction type power supply system

8,417,359 Power transmission method of high-power wireless induction power supply system

8,461,802 Wireless driver system

8,519,667 Mobile wireless charger system

8,729,852 Method for identification of a light inductive charger

8,729,854 Slot-type induction charger

8,754,609 Wireless charging coil structure in electronic devices

8,772,979 Method for power self-regulation in a high-power induction type power source

8,810,072 High-power induction-type power supply system and its data transmission method

8,860,365 Inductive charging method for vehicles

8,941,267 High-power induction-type power supply system and its bi-phase decoding method

8,981,600 Low-loss data transmission method for high-power induction-type power supply system

9,045,050 Inductive charging method for vehicles

9,048,881 Method of time-synchronized data transmission in induction type power supply system

9,075,587 Induction type power supply system with synchronous rectification control for data transmission

9,413,197 Inductive power supply system and intruding metal detection method thereof

9,600,021 Operating clock synchronization adjusting method for induction type power supply system

9,600,022 Operating clock synchronization adjusting method for induction type power supply system

9,628,147 Method of automatically adjusting determination voltage and voltage adjusting device thereof

9,671,444 Current signal sensing method for supplying-end module of induction type power supply system

9,831,687 Supplying-end module for induction-type power supply system and signal analysis circuit therein

9,960,639 Supplying-end module of induction type power supply system and voltage measurement method thereof

10,002,707 Induction coil structure for wireless charging device

10,038,338 Signal modulation method and signal rectification and modulation device

10,056,944 Data determination method for supplying-end module of induction type power supply system and related supplying-end module

10,114,396 Induction type power supply system and intruding metal detection method thereof

10,153,665 Method for adjusting output power for induction type power supply system and related supplying-end module

10,289,142 Induction type power supply system and intruding metal detection method thereof

10,312,748 Signal analysis method and circuit

10,574,095 Decoding method for signal processing circuit and signal processing circuit using the same

10,587,153 Intruding metal detection method for induction type power supply system and related supplying-end module

10,594,168 Intruding metal detection method for induction type power supply system and related supplying-end module

10,600,547 Induction type power supply system and coil module thereof

10,615,645 Power supply device of induction type power supply system and NFC device identification method of the same

10,630,113 Power supply device of induction type power supply system and RF magnetic card identification method of the same

10,630,116 Intruding metal detection method for induction type power supply system and related supplying-end module

10,643,787 Induction type power supply system and coil module thereof

10,673,287 Method and supplying-end module for detecting receiving-end module

10,686,331 Signal modulation method and signal rectification and modulation device

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