THE NETHERLANDS
(N E D E R L A N D)

E4

COMMUNICATION

Concerning [1]:

- approval granted
- ~~approval extended~~
- ~~approval refused~~
- ~~approval withdrawn~~
- ~~production definitely discontinued~~

of a type of ~~electrical~~/electronic sub-assembly [1] with regard to Regulation number 10.

Approval number: E4*10R06/00*4608*00

1.	Make (trade name of manufacturer)	:	TBB
2.	Type and general commercial description(s)	:	SP100-40 MPPT charge controller
3.	Means of identification of type, if marked on the ~~vehicle~~/component/ separate technical unit [1]	:	SP100-40, SP100-20
3.1.	Location of that marking	:	Label affixed to the housing
4.	Category of vehicle	:	N/A
5.	Name and address of manufacturer	:	TBB Power Co., Ltd. NO.15, Shishan North Road Dongfu of Haicang District 361027, Xiamen China(PRC)
6.	In the case of components and separate technical units, location and method of affixing of the approval mark	:	Label affixed to the housing
7.	Address(es) of assembly plant(s)	:	TBB Power Co., Ltd. NO.15, Shishan North Road Dongfu of Haicang District 361027, Xiamen China(PRC)

P.O. Box 777
2700 AT Zoetermeer
The Netherlands

Tel. + 31 79 345 83 02
E-mail typeapproval@rdw.nl
www.rdw.nl

Type-approval Department

8.	Additional information (where applicable)	:	see Appendix below
9.	Technical service responsible for carrying out the tests	:	TÜV SÜD Auto Service GmbH Westendstraße 199 D-80686 München Germany
10.	Date of test report	:	2020-08-03
11.	Number of test report	:	20-01287-CX-SHA-00
12.	Remarks (if any)	:	see Appendix
13.	Place	:	Zoetermeer
14.	Date	:	19 August 2020
15.	Signature	:	L. Vellekoop

16. The index to the information package lodged with the approval authority, which may be obtained on request, is attached.

17.	Reasons for extension	:	N/A

(1) Strike out what does not apply.

APPENDIX

to type-approval communication form number: E4*10R06/00*4608*00

concerning the type-approval of an ~~electrical~~/electronic sub-assembly [1] under Regulation number 10.

1.	Additional information	:
1.1.	Electrical system rated voltage	: 12VDC ~~pos./~~neg. ground [1]
1.2.	This ESA can be used on any vehicle type with the following restrictions	: No restrictions
1.2.1.	Installation conditions, if any	: No restrictions
1.3.	This ESA can be used only on the following vehicle types	: N/A
1.3.1.	Installation conditions, if any	: N/A
1.4.	The specific test method(s) used and the frequency ranges covered to determine immunity were	: Measured by bulk current injection (20 MHz - 400 MHz) and in the anechoic chamber (400 MHz – 2 GHz) as described in Annex 9 of ECE Regulation No. 10 respectively Annex IX of Directive 2009/19/EC
1.5.	Laboratory accredited to ISO 17025 and recognized by the Approval Authority responsible for carrying out the tests	: TÜV SÜD Auto Service GmbH Westendstrasse 199 D-80686 München Germany
2.	Remarks	: N/A

[1] Strike out what does not apply.

RDW

Test Report

No.: 20-01287-CX-SHA-00

Test of a type of component
with regard to **UN/ECE Regulation No. 10**

including all amendments up to
06 series of amendments

Approval subject:
Electromagnetic Compatibility

Approval status	
☑	Granting of a type approval
☐	Extension/correction to type approval no. :

I. General

Make (trade name of manufacturer)	:	TBB
Type	:	SP100-40
Variant(s)	:	SP100-20
Commercial description(s)	:	MPPT charge controller
Name and address of manufacturer	:	TBB Power Co., Ltd. NO.15, Shishan North Road Dongfu of Haicang District 361027, Xiamen China(PRC)
Name and address of manufacturer's representative (if applicable)	:	N/A
Address(es) of assembly plant(s)	:	TBB Power Co., Ltd. NO.15, Shishan North Road Dongfu of Haicang District 361027, Xiamen China(PRC)
Location and method of affixing of the approval mark	:	Label affixed to the housing

II. Test results

Refer to the Annex II

III. Enclosures

Information folder No. SP100-40-00 dated 06.07.2020 (dd.mm.yyyy)

IV. Statement of conformity

The mentioned information folder and the type described therein are in accordance with the test basis mentioned above. The worst-case was selected in accordance with document "Requirements for Test Reports (AS-PB-T-02)".

The test report may be reproduced and published in full and by the client only. It can be reproduced partially with the written permission of the test laboratory only.

TÜV SÜD Auto Service GmbH is designated as Technical Service by:

Approval authority	Country	Registration number
Kraftfahrt-Bundesamt (KBA)	Germany	KBA-P 00100-10
Vehicle Certification Agency (VCA)	United Kingdom	VCA-TS-006
Approval Authority of the Netherlands (RDW)	The Netherlands	RDWT-082-xx
National Standards Authority of Ireland (NSAI)	Ireland	Technical Service Number: 49
Société Nationale de Certification et d'Homologation (SNCH)	Luxembourg	13/B(g)

München, 03.08.2020 (dd.mm.yyyy)

Joe Zhou

Annex I Reason of Extension

Correction of : ---

Modification of : ---

Addition of : ---

Deletion of : ---

Annex II Test results

1. Description of the test object

1.1. Representative ESA : SP100-40

1.2. Tested variant (if any) : N/A

2. Test conditions

2.1. Test equipment :

No.	Name Test Apparatus	Model	Serial No.	Expiry Date
1	EMI Test Receiver	ESR 3	102311	2020.08.06
2	Artificial Network	ESH3-Z6	847250/006	2021.01.29
3	Artificial Network	ESH3-Z6	846422/021	2021.01.29
4	Biconical Antenna	VHBB 9124	01015	2021.07.14
5	Log Periodic Broadband Antenna	VULP 9118B	873	2021.07.17
6	DC Power supply	WYK-12050K	1711110212050	2021.05.04
7	Transient Emissions Test System	VTE 743T1	EC9801605	2021.01.29
8	Oscilloscope	TDS 3054B	B027279	2021.01.29
9	High-voltage probe	109T	TEK P6139A	2021.05.10
10	DC Power supply	WYK-3020H	171111043020	2021.04.28
11	Throw the load generator	LD-200N	P1305111365	2021.01.29
12	Automobile transient simulators	UCS-200N50	P1251107169	2021.01.29
13	Voltage change simulator	VDS-200N15	P1305111139	2021.01.29

2.2. Ambient condition : In accordance to the standard above

2.3. Carrying out of the test :

2.3.1. Broadband electromagnetic interference generated by ESA

2.3.1.1. Method of measurement : Measured by the method described in Annex 7 of ECE-R10.

2.3.1.2. Results : The measured values, expressed in dBµV/m, are below the reference limits.
The test was passed.

2.3.2. Narrowband electromagnetic interference generated by ESA

2.3.2.1.	Method of measurement	:	Measured by the method described in Annex 8 of ECE-R10.
2.3.2.2.	Results	:	The measured values, expressed in dBµV/m, are below the reference limits. The test was passed.
2.3.3.	Immunity of ESA to electromagnetic radiation		
2.3.3.1.	Method of measurement	:	No examinations were accomplished, since the ESA does not have influence on direct control of vehicles and/or the system cannot be affected due to its specific structure by electromagnetic disturbances.
2.3.3.2.	Performance criteria	:	N/A
2.3.3.3.	Results	:	N/A
2.3.4.	Immunity of ESA to conducted transient interferences		
2.3.4.1.	Method of measurement	:	Measured as described in Annex 10 of ECE-R10.
2.3.4.2.	Results	:	The ESA has not exhibited any unacceptable malfunction. The claimed functional state was fulfilled during the test. The test was passed.
2.3.5.	Conducted transient interferences generated by ESA		
2.3.5.1.	Method of measurement	:	Measured as described in Annex 10 of ECE-R10.
2.3.5.2.	Results	:	The measured values are below the reference limits. The test was passed.

3. Test results

The results of the tests are attached in the diagrams of the enclosure.

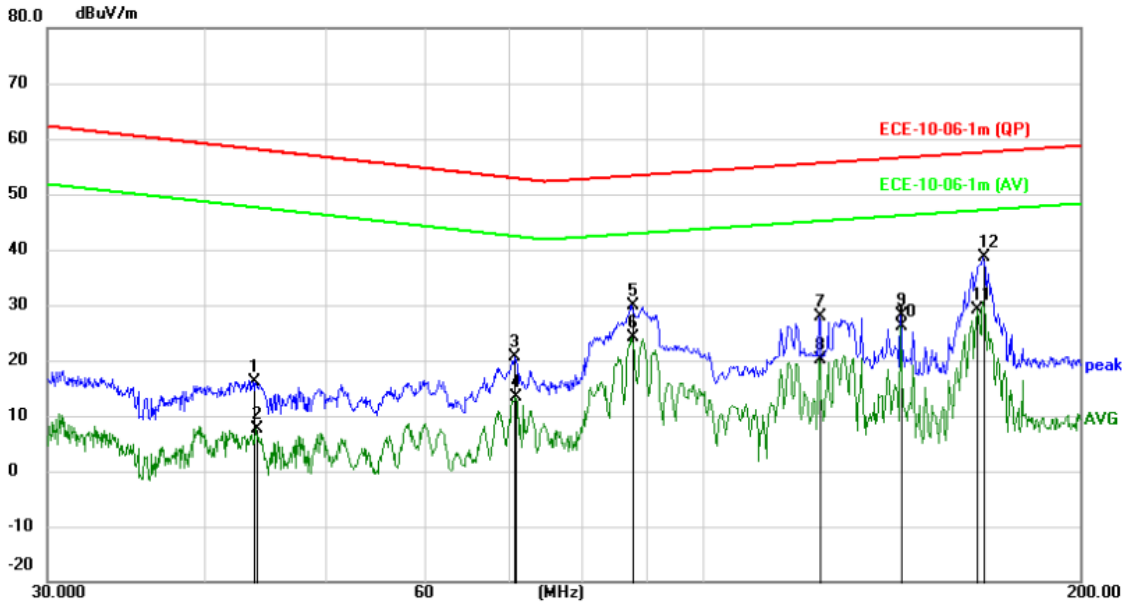
4. Place and date of the test

: Guangzhou LCS Compliance Testing Laboratory Ltd.
01.07.2020 to 03.07.2020 (dd.mm.yyyy)

Appendix 2a Measurement diagrams of the radio interference 30 MHz - 1 GHz

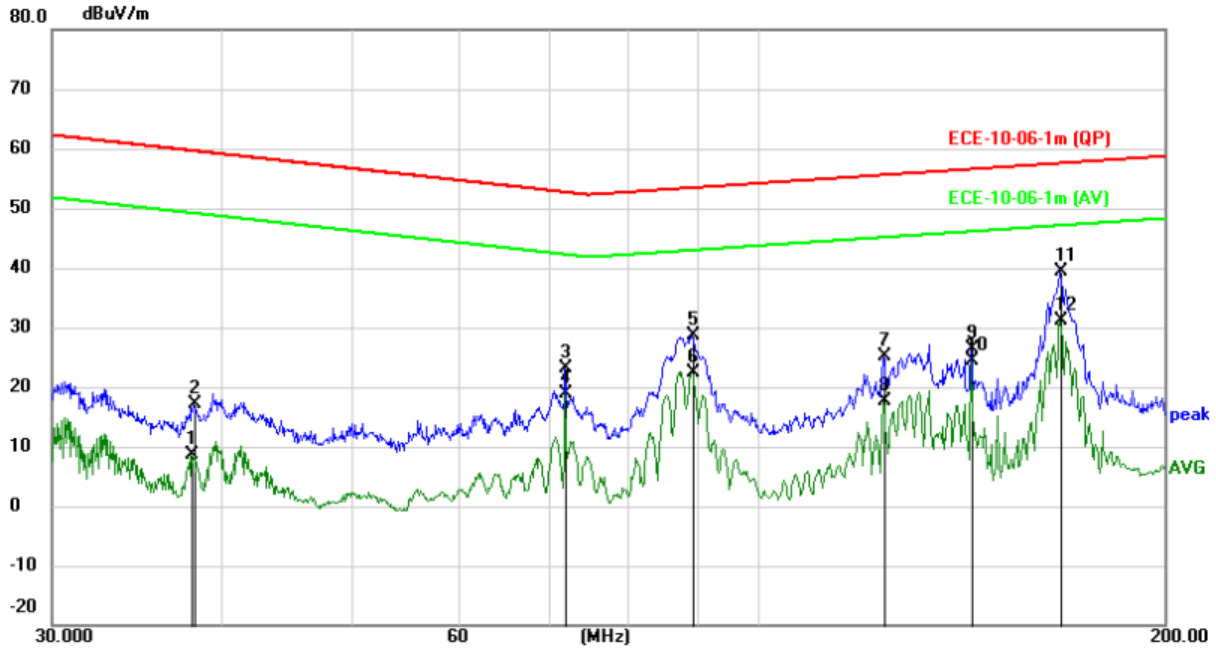
DUT Model:	SP100-40	Test Voltage:	13.5V
Test Mode:	On	Test Result:	Pass

30 to 200MHz - Horizontal:



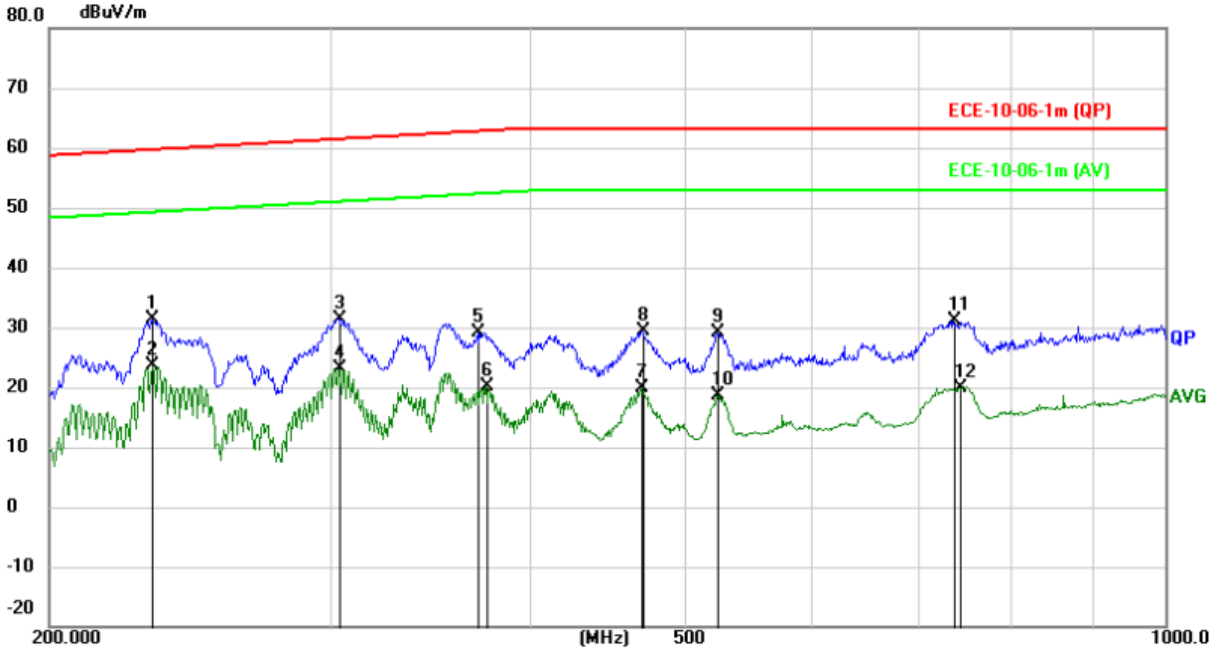
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		43.8400	3.69	12.38	16.07	57.86	-41.79	QP
2		44.0800	-4.76	12.36	7.60	47.80	-40.20	AVG
3		70.7200	8.64	11.91	20.55	52.64	-32.09	QP
4		70.8800	1.52	11.91	13.43	42.62	-29.19	AVG
5		87.8000	17.53	12.34	29.87	53.04	-23.17	QP
6		87.8000	11.80	12.34	24.14	43.04	-18.90	AVG
7		123.9600	13.49	14.35	27.84	55.30	-27.46	QP
8		123.9600	5.69	14.35	20.04	45.30	-25.26	AVG
9		144.0000	13.31	14.79	28.10	56.29	-28.19	QP
10		144.0000	11.39	14.79	26.18	46.29	-20.11	AVG
11	*	165.7200	12.56	16.57	29.13	47.21	-18.08	AVG
12		167.5200	22.10	16.52	38.62	57.28	-18.66	QP

30 to 200MHz - Vertical:



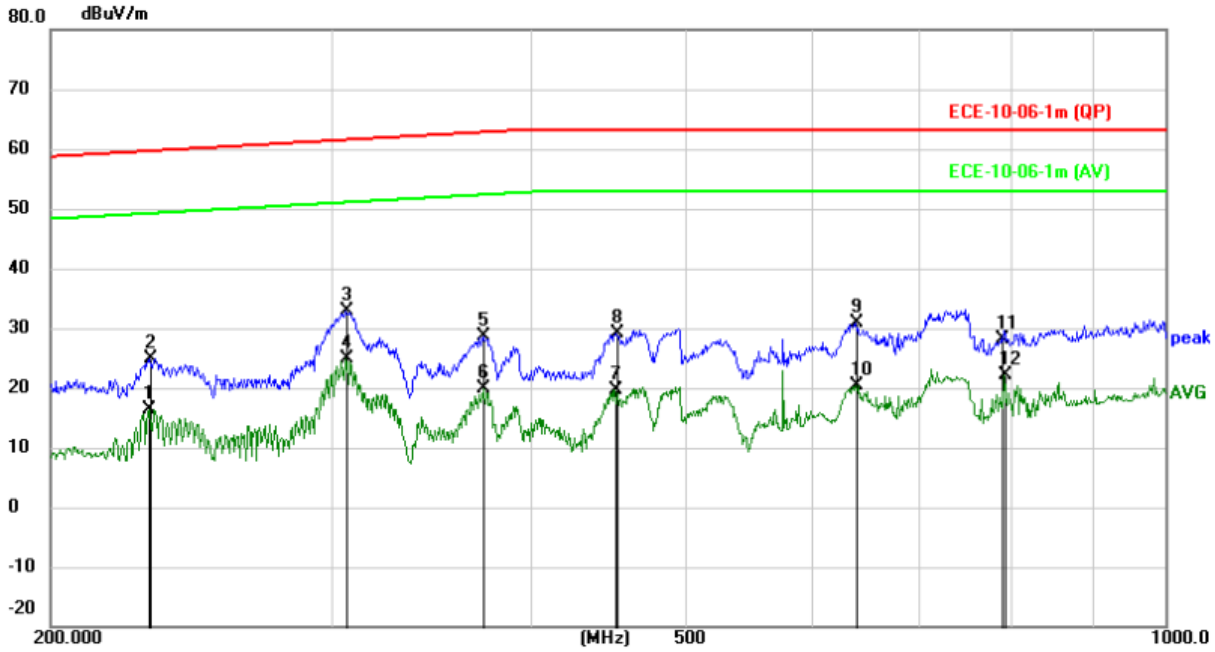
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		38.0800	-4.05	12.63	8.58	49.40	-40.82	AVG
2		38.2400	4.57	12.66	17.23	59.35	-42.12	QP
3		72.0000	11.24	11.78	23.02	52.45	-29.43	QP
4		72.0000	7.18	11.78	18.96	42.45	-23.49	AVG
5		89.4000	16.16	12.37	28.53	53.15	-24.62	QP
6		89.4000	10.11	12.37	22.48	43.15	-20.67	AVG
7		123.9600	11.04	14.13	25.17	55.30	-30.13	QP
8		123.9600	3.45	14.13	17.58	45.30	-27.72	AVG
9		144.0000	11.49	14.79	26.28	56.29	-30.01	QP
10		144.0000	9.60	14.79	24.39	46.29	-21.90	AVG
11		167.5200	23.35	16.12	39.47	57.28	-17.81	QP
12	*	167.5200	15.09	16.12	31.21	47.28	-16.07	AVG

200 to 1000MHz - Horizontal:



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		232.2800	14.79	16.56	31.35	59.43	-28.08	QP
2	*	232.2800	7.17	16.56	23.73	49.43	-25.70	AVG
3		303.8800	13.11	18.25	31.36	61.19	-29.83	QP
4		303.8800	4.86	18.25	23.11	51.19	-28.08	AVG
5		371.0799	8.81	20.22	29.03	62.51	-33.48	QP
6		375.3200	-0.19	20.26	20.07	52.58	-32.51	AVG
7		469.8000	-1.95	21.83	19.88	53.00	-33.12	AVG
8		470.2400	7.41	21.85	29.26	63.00	-33.74	QP
9		524.0800	6.36	22.66	29.02	63.00	-33.98	QP
10		524.0800	-3.97	22.66	18.69	53.00	-34.31	AVG
11		736.9600	5.73	25.34	31.07	63.00	-31.93	QP
12		742.8000	-5.63	25.45	19.82	53.00	-33.18	AVG

200 to 1000MHz - Vertical:



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		230.5200	0.21	16.23	16.44	49.38	-32.94	AVG
2		230.8400	8.69	16.25	24.94	59.39	-34.45	QP
3		306.6800	14.55	18.26	32.81	61.25	-28.44	QP
4	*	306.6800	6.67	18.26	24.93	51.25	-26.32	AVG
5		373.8800	8.26	20.33	28.59	62.56	-33.97	QP
6		373.8800	-0.50	20.33	19.83	52.56	-32.73	AVG
7		451.6400	-2.54	22.15	19.61	53.00	-33.39	AVG
8		452.3600	6.99	22.11	29.10	63.00	-33.90	QP
9		640.0800	6.19	24.69	30.88	63.00	-32.12	QP
10		640.0800	-4.39	24.69	20.30	53.00	-32.70	AVG
11		790.3600	1.53	26.66	28.19	63.00	-34.81	QP
12		792.0400	-4.57	26.69	22.12	53.00	-30.88	AVG

Appendix 2b Immunity of ESA to conducted transient interferences

DUT Model:	SP100-40	Test Voltage:	13.5V
Test Mode:	On	Test Result:	Pass

Measurement result:

Test pulse	Test level	Number of pulse / test time	Burst cycle / pulse Repetition time	Required minimum function status*	Status of function true value
1	-75V	5000 pulses	0.5s	D	C
2a	+37V	5000 pulses	0.2s	D	A
2b	+10V	10 pulses	0.5s	D	C
3a	-112V	1h	90ms	D	A
3b	+75V	1h	90ms	D	A
4	-6V	1 pulses	2s	D	A

Remark:
"A": all functions of EUT perform as designed during and after exposure to disturbance.
"B": all functions of EUT perform as designed during exposure. However, one or more of them can go beyond specified tolerance. All functions return automatically to within normal limits after exposure is removed. Memory functions shall remain class A.
"C": EUT power off during exposure but return automatically to normal operation after exposure is removed.
"D": one or more functions of a device/system do not perform as designed during exposure and do not return to normal operation until exposure is removed and the device/system is reset by simple "operator/use" action

Appendix 2c Conducted transients from ESAs to the vehicle power supply

DUT Model:	SP100-40	Test Voltage:	13.5V
Test Mode:	On	Test Result:	Pass

Measurement result:

Polarity of pulse amplitude	Maximum allowed value for vehicles with 12V systems	Measured Pulse amplitude True Value (Fast)	Measured Pulse amplitude True Value (Slow)
Positive	+75V	+15.36V	+15.68V
Negative	-100V	-0.48V	-6.4V

APPLICATION FOR APPROVAL

PURSUANT TO THE ECE REGULATION No. 10.06

UNIFORM PROVISIONS CONCERNING THE APPROVAL OF MOTOR VEHICLES WITH REGARD TO ELECTROMAGNETIC COMPATIBILITY

Company name: TBB Power Co., Ltd.

Type: SP100-40

Xiamen, 6 July, 2020

林振火

List of documentation

Confirmation Page 3

Information document Page 4

List of attachments Page 5

Drawings Page 6-15

Bill of material Page 16-25

JE MAINTIENDRAI
RDW

Confirmation

We hereby declare that the product of TBB Power Co., Ltd., type SP100-40 submitted for the type approval.

1. is compatible with the enclosed documentation

   and

2. has been manufactured under condition of mass production.

JE MAINTIENDRAI
RDW

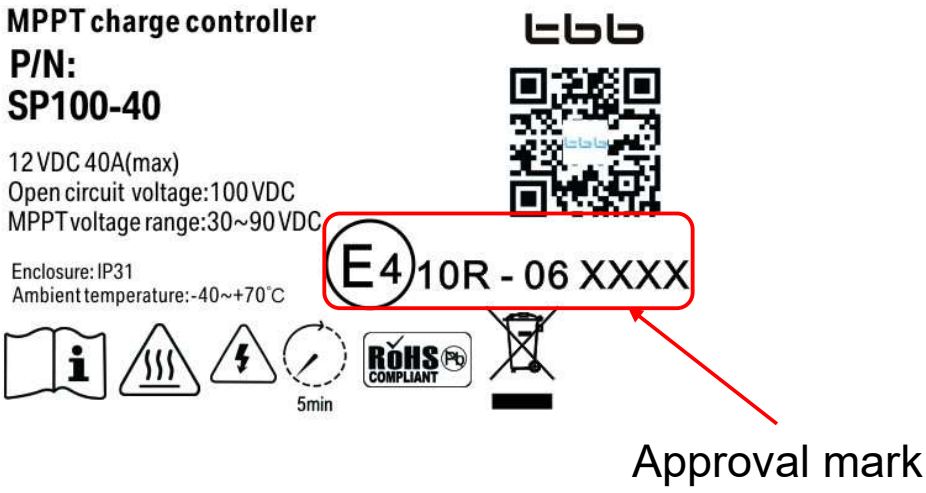
INFORMATION DOCUMENT FOR TYPE-APPROVAL OF AN ELECTRIC/ELECTRONIC SUB-ASSEMBLY WITH RESPECT TO ELECTROMAGNETIC COMPATIBILITY ACCORDING ANNEX 2B

1.	Make (trade name of the manufacturer)	: TBB
2.	Type	: SP100-40
2.1.	Variants (if applicable)	: SP100-20
2.2.	General commercial description(s)	: MPPT charge controller
3.	Means of identification of type if marked on the ~~vehicle~~/component/~~STU~~	: SP100-40, SP100-20
3.1.	Location of that marking	: Label affixed to the housing
4	Name and address of the manufacturer	: TBB Power Co., Ltd. NO.15, Shishan North Road Dongfu of Haicang District 361027, Xiamen China(PRC)
5	In the case of components and separate technical units, location and method of affixing of the approval mark	: Label affixed to the housing
6.	Address(es) of assembly plant(s)	: TBB Power Co., Ltd. NO.15, Shishan North Road Dongfu of Haicang District 361027, Xiamen China(PRC)
7.	This ESA shall be approved as a	: Component
8.	Any restrictions of use and conditions for fitting	: No restrictions
9.	Electrical system rated voltage	: 12V DC ~~pos.~~/neg. ground (1)
10.	Charger: on board/external	: N/A
11.	Charging current: DC/AC (number of phases/frequency)	: N/A
12.	Maximal nominal current (in each mode if necessary)	: N/A
13.	Nominal charging voltage	: N/A
14.	Basic ESA interface functions: ex. L1/L2/L3/N/PE/control pilot	: N/A
15.	Minimum R_{sce} value (see paragraph 7.11. of this Regulation)	: N/A
16	Statement for model difference (if applicable)	: All the models use the same circuit diagram and one type of PCB layout. The differents between models are current and power.

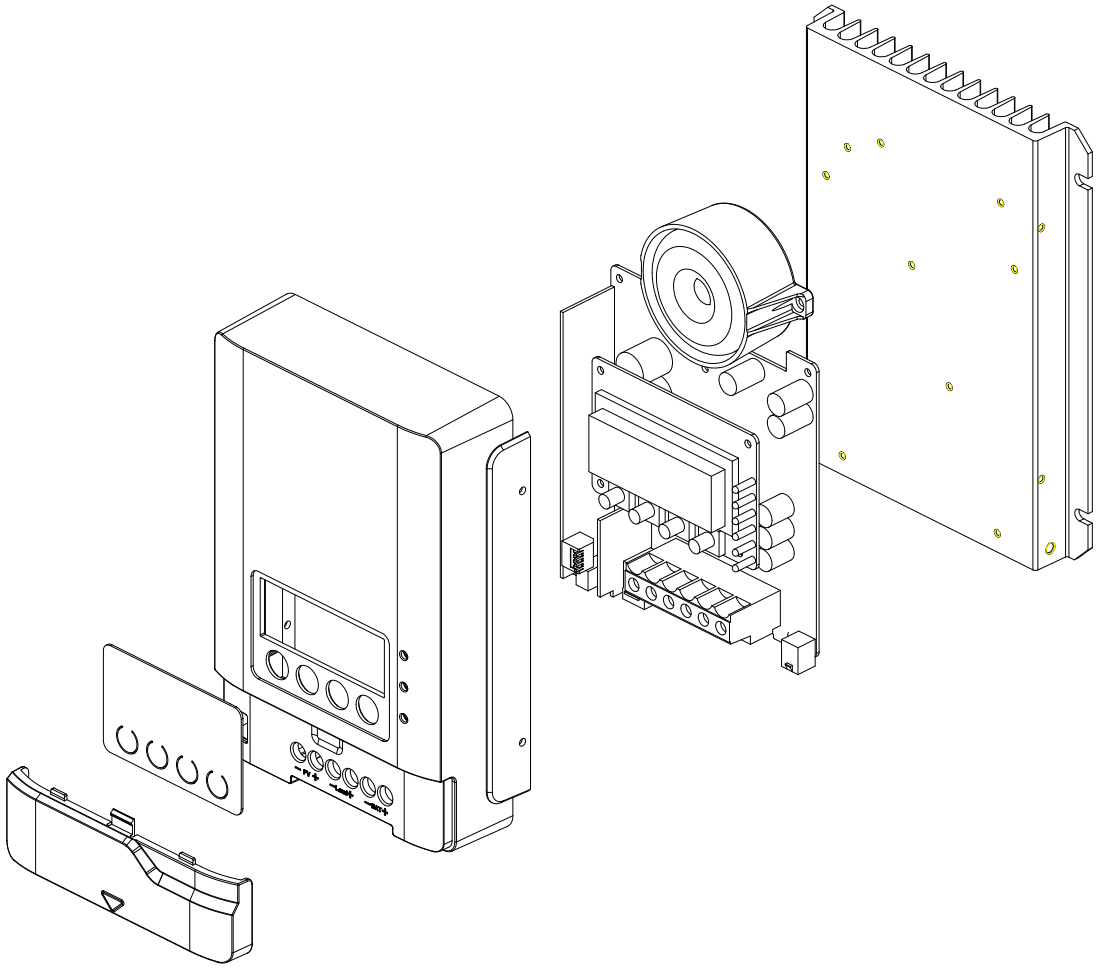
JE MAINTIENDRAI
RDW

List of attachments

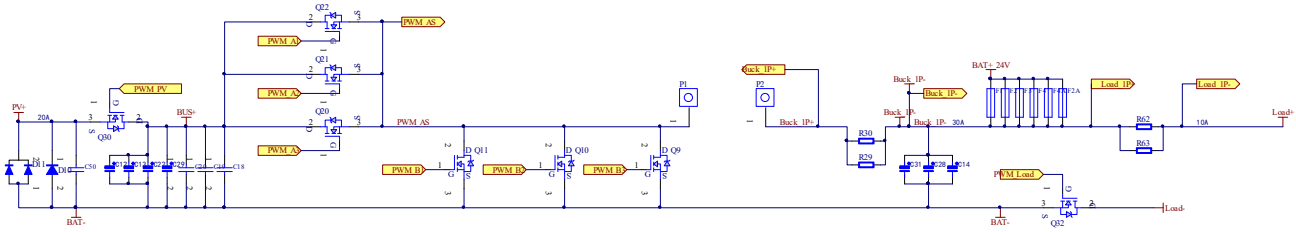
Label Drawing	Drawing No.1
Explosion Drawing	Drawing No.2
Circuit Diagram	Drawing No.3-4
PCB Layout	Drawing No.5-10
Bill of Material	Consist of 10 pages



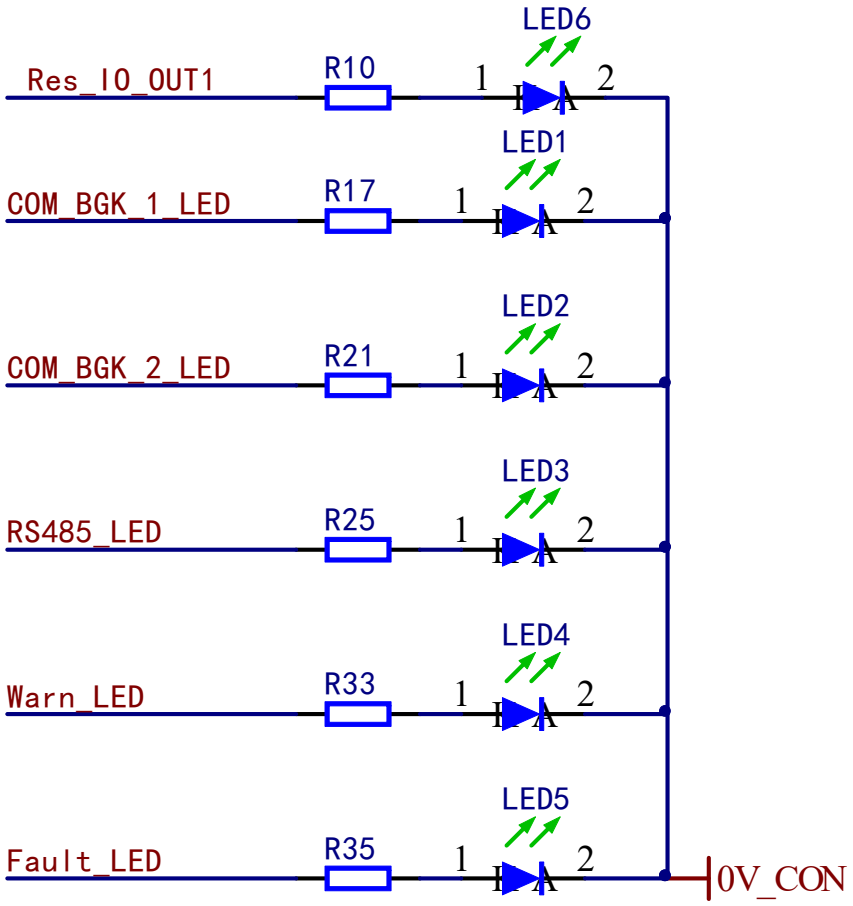
	DRW.	1	Label Drawing



	DRW.	2	Explosion Drawing

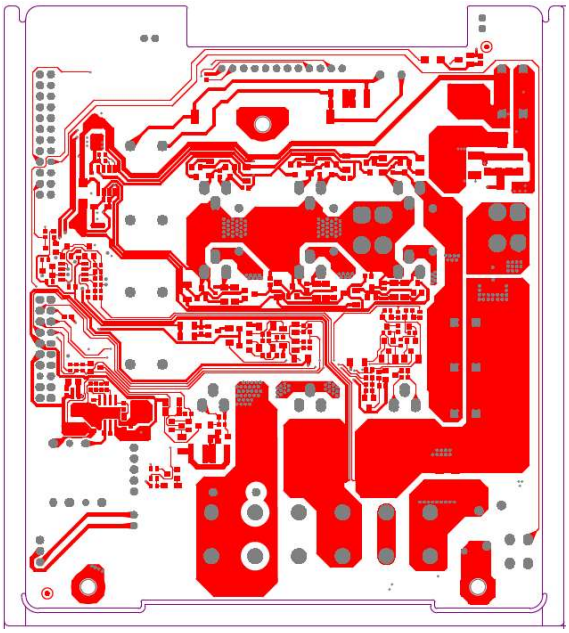


	DRW.	3	Circuit Diagram

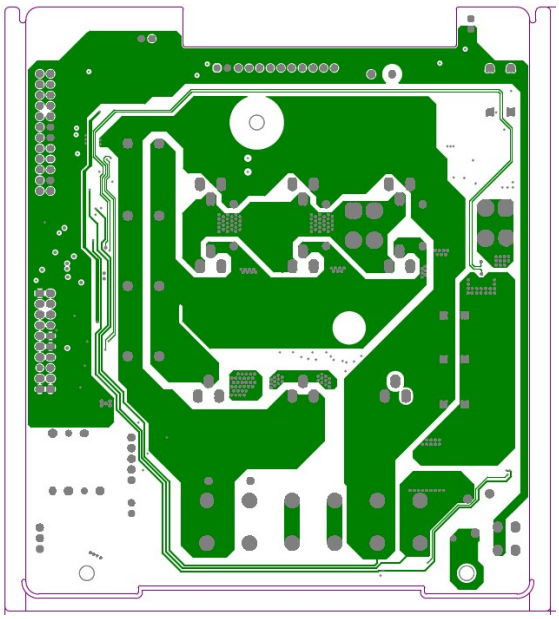


	DRW.	4	Circuit Diagram

PCB-18410

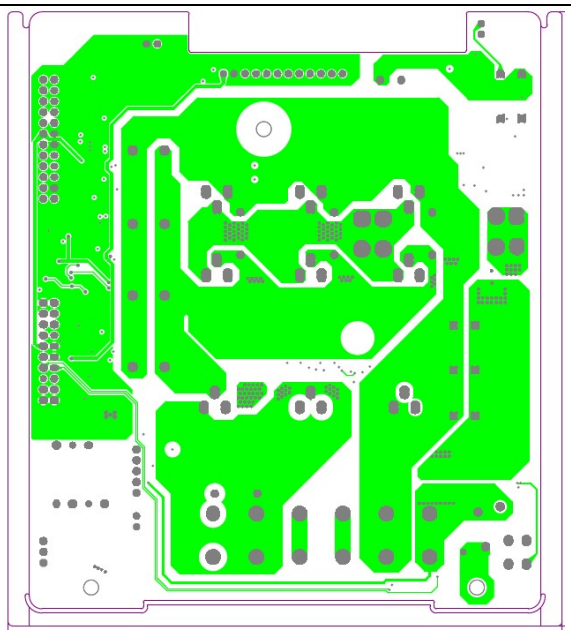


Top Layer

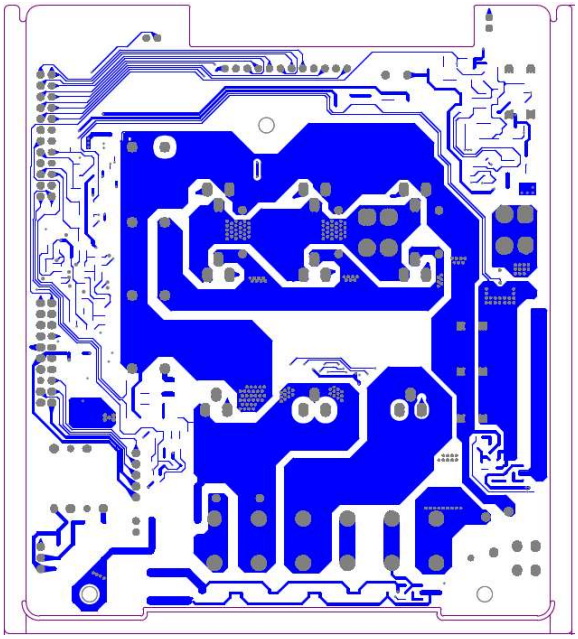


Mid-Layer1

	DRW.	5	PCB Layout



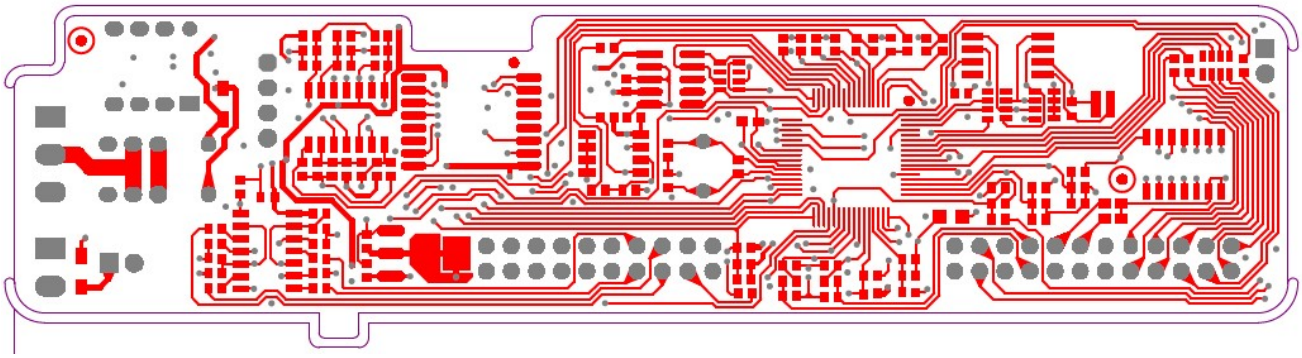
Mid-Layer2



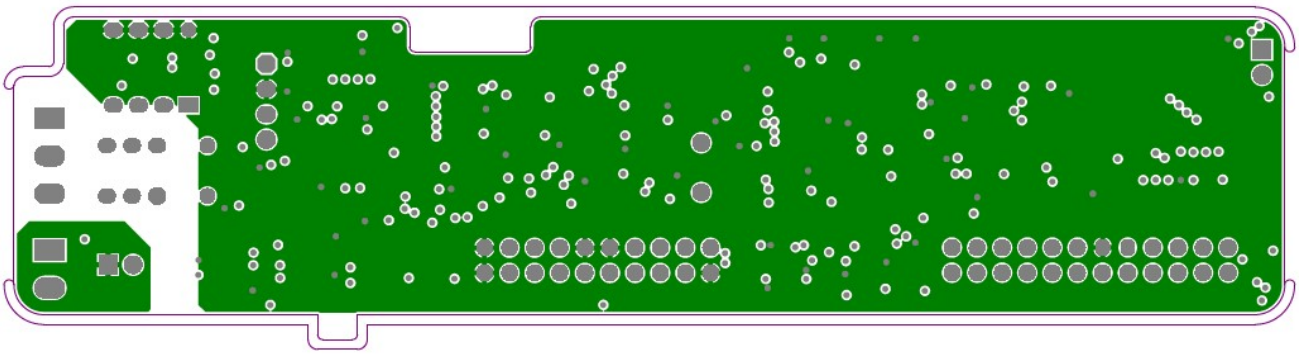
Bottom Layer

	DRW.	6	PCB Layout

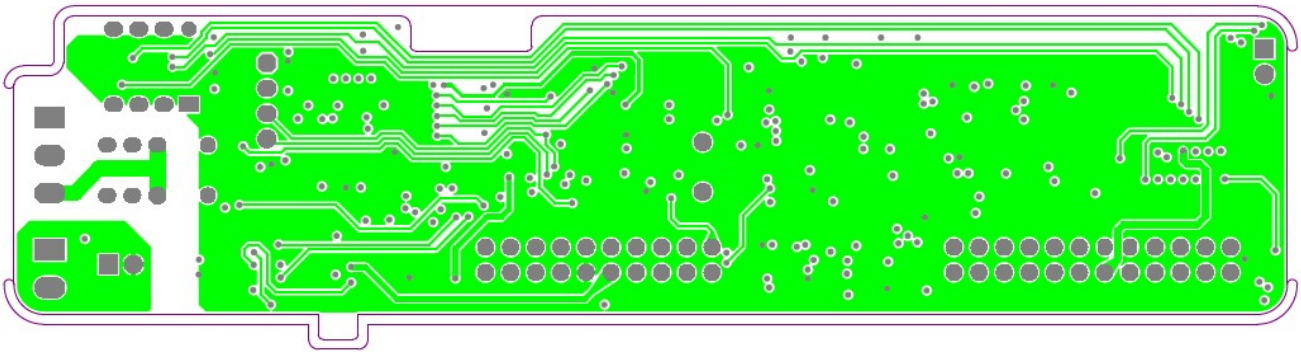
PCB-18411



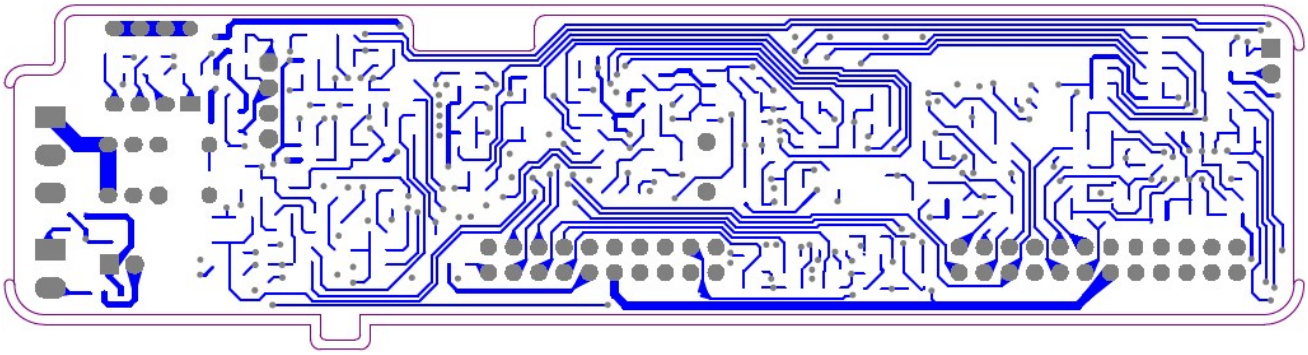
Top Layer



Mid-Layer1



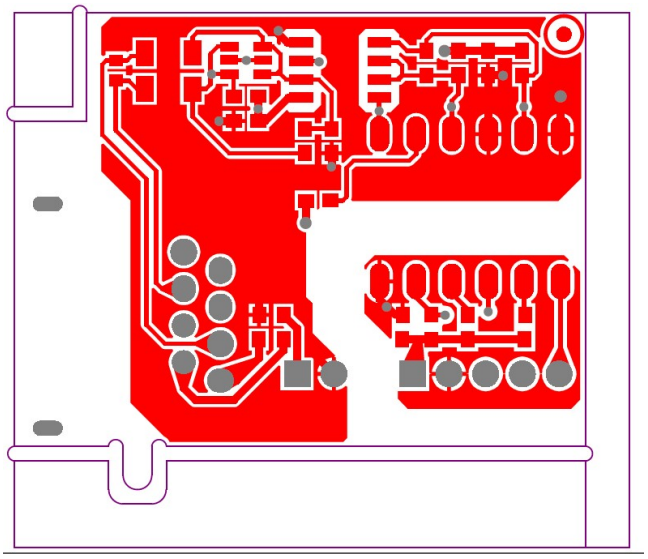
Mid-Layer2



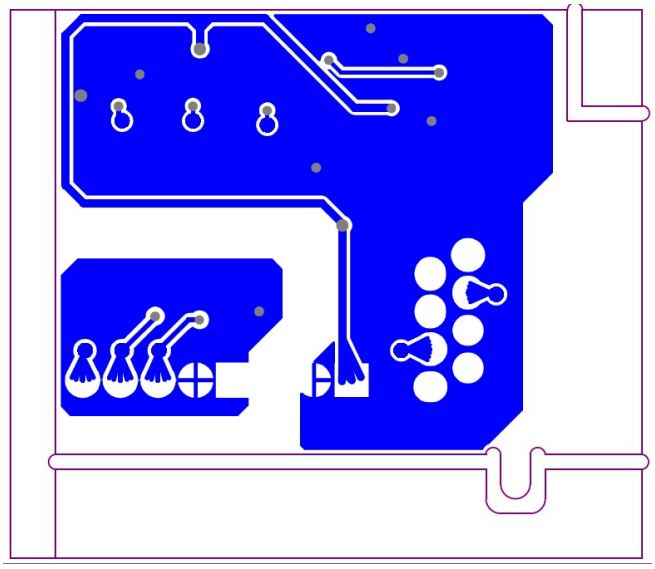
Bottom Layer

	DRW.	8	PCB Layout

PCB-18414



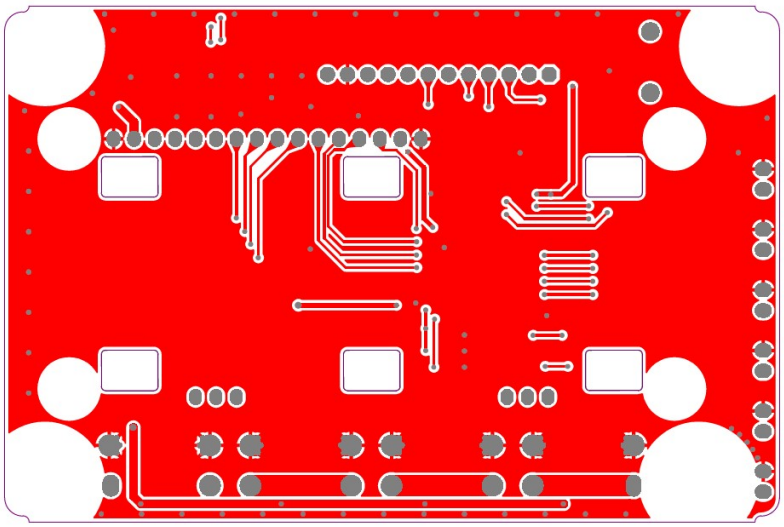
Top Layer



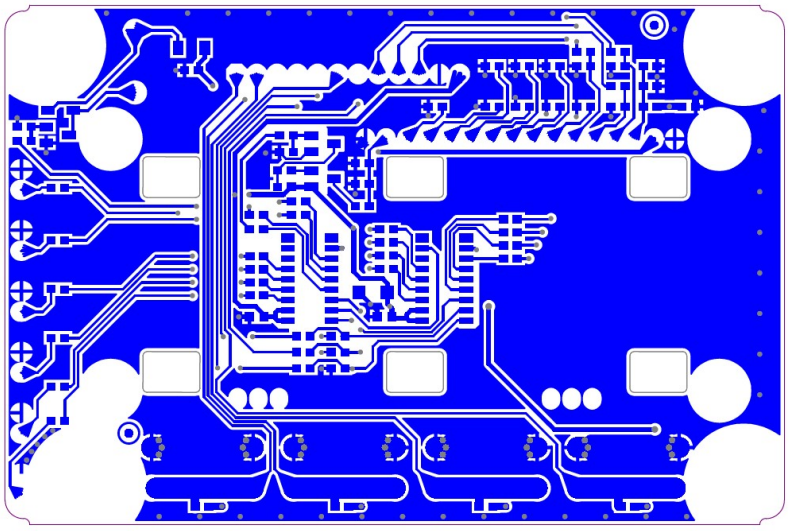
Bottom Layer

	DRW.	9	PCB Layout

PCB-18113



Top Layer



Bottom Layer

	DRW.	10	PCB Layout

Bill of Material					
Item	**Material Name**	**Specification**	**Position**	**Quantity**	**Remarks**
1	Lithium battery	3.0V,5.8mAH		1	
2	Capacitor	0603，50V，100pF		21	
3	Capacitor	0603，50V，100nF		26	
4	Capacitor	0603，50V，22pF		5	
5	Capacitor	0603，25V，220nF		2	
6	Capacitor	0603，25V,1uF		4	
7	Capacitor	1206,25V,10uF		2	
8	Capacitor	0603,50V,1nF		5	
9	Capacitor	0603,50V,4700pF		5	
10	Capacitor	0603,50V,2.2nF		2	
11	Socket	2*5P*2.5		1	
12	Socket	2P*2.54		1	
13	Socket	2*10P*2.54		1	
14	Socket	2*30P*2.54		0.5	
15	connector	3P*3.81		1	
16	connector	2P*3.81		1	
17	Socket	10P*2.54		0.3	
18	Diode	BAT54C,SOT-23		6	
19	Diode	1N4148W, SOD-123		1	
20	IC	LM2901DR2G		1	
21	IC	LM2902D		1	

JE MAINTIENDRAI
RDW

22	IC	SN74HCT08DR		1	
23	IC	TLV809K33DBVR		1	
24	LED	0805,Green		1	
25	NTC	TSM2A153G3952RZA		1	
26	Transistor	LMBT4401LT1(2X),SOT-23		1	
27	Resistor	0603, 10KΩ		33	
28	Resistor	0603, 4.7KΩ		10	
29	Resistor	0603,100Ω		25	
30	Resistor	0603, 12KΩ		1	
31	Resistor	0603, 15KΩ		1	
32	Resistor	0603,1KΩ		2	
33	Resistor	0603, 20KΩ		2	
34	Resistor	0603,27KΩ		1	
35	Resistor	0603,1MΩ		1	
36	Resistor	0603,10Ω		12	
37	Resistor	0603, 7.5KΩ		2	
38	Resistor	0603, 0Ω		2	
39	Resistor	0603,2KΩ		3	
40	Resistor	0603, 11KΩ		1	
41	Resistor	0603, 51KΩ		5	
42	Resistor	0603, 5.1KΩ		1	
43	Resistor	0603, 2.7KΩ		4	
44	Resistor	0603, 36KΩ		3	
45	Resistor	0603, 75KΩ		2	

JE MAINTIENDRAI
RDW

46	relay	HFD3/12,2A30VDC		1	
47	Resistor	0603-4, 100Ω*4		2	
48	Resistor	0603-4, 10KΩ*4		2	
49	IC	SD3078A		1	
50	IC	AT24C256C-SSHL-T		1	
51	IC	MKE04Z128VLH4		1	
52	IC	TLV431BFTA		1	
53	Optocoupler	EL817S(B)(TU)-F, SMD-4		1	
54	Crystal oscillator	HC-49S,9.600MHz		1	
55	Diode	BZT52C6V2-E3,SOD-123		1	
56	Switch	YJD-04H		1	
57	Resistor	0603, 3.3KΩ		1	
58	PCB	PCB-18411		1	
59	Buzzer	Min.85dB,5.0VDC		1	
60	Capacitor	0603,50V,100nF		5	
61	Capacitor	0603,50V,100pF		1	
62	Capacitor	0603,50V,1uF		3	
63	Capacitor	1206,25V,10uF		1	
64	Socket	12P*2.5		1	
65	Diode	1N4148W, SOD-123		1	
66	LED	Green		2	
67	LED	Red		1	
68	Plastics	4*6,H=6.0mm,NYLON66,Black		3	
69	Transistor	LMBT4403LT1G,SOT-23		1	

JE MAINTIENDRAI
RDW

70	Transistor	LMBT4401LT1(2X),SOT-23		2	
71	Resistor	0603,5.1KΩ		6	
72	Resistor	0603,100Ω		23	
73	Resistor	0603, 510Ω，		1	
74	Resistor	1206,100Ω		1	
75	Resistor	0603,1KΩ		4	
76	Resistor	0603,10KΩ		4	
77	IC	74HC4094D		2	
78	Switch	12*12*12		4	
79	LCD	STCXE16256FL3WHB-03		1	
80	Socket	16P*2.54		1	
81	Socket	3P*2.54		2	
82	PCB	PCB-18113		1	
83	Capacitor	0603,50V,100nF		4	
84	Capacitor	0603,50V,100pF		2	
85	Transistor	LMBT4401LT1,2X,SOT-23		4	
86	Resistor	0603,5.1KΩ		5	
87	Resistor	0603, 4.7KΩ		2	
88	Resistor	0603,1KΩ		3	
89	Resistor	0603, 10KΩ		7	
90	Resistor	0603,0Ω		2	
91	IC	HY40R204P		1	
92	IC	TLV1117-33IDCYR		1	
93	Socket	8P*2.54		1	

JE MAINTIENDRAI
RDW

94	Capacitor	0603,50V,22pF		1	
95	Capacitor	0603,50V,100nF		3	
96	Socket	10P*2.54		0.7	
97	Socket	5722SH,8P		1	
98	Diode	BZA456A, SOT457		1	
99	Resistor	1206, 20Ω		2	
100	Resistor	0603,3KΩ		3	
101	Resistor	0603, 2KΩ		3	
102	Resistor	0603,3.3KΩ		2	
103	Resistor	0603, 1KΩ		1	
104	Optocoupler	EL817S(B)(TU)-F,SMD-4		3	
105	IC	SN65HVD82DR		1	
106	PCB	PCB-18414		1	
107	Capacitor	0603,50V,100nF		17	
108	Capacitor	25V,470uF,Φ10*16		2	
109	Capacitor	50V,47uF, 6.3*7.7mm		4	
110	Capacitor	1206,500V,2.2nF		5	
111	Capacitor	100V ,270uF,Φ16*16		4	
112	Capacitor	80V,100uF,Φ10*12.5		3	
113	Capacitor	100V,47uF, Φ10*16		1	
114	Capacitor	0603,50V,1nF		5	
115	Capacitor	100V,1uF, 13.0*11.0*5.0,P=10		4	
116	Capacitor	1206,25V,10uF		3	
117	Capacitor	0603,25V,1uF		5	

JE MAINTIENDRAI
RDW

118	Capacitor	1206,50V,1uF		2	
119	Capacitor	0603,50V,22pF		1	
120	Capacitor	Y2, 300V ,10000PF		2	
121	Capacitor	1206, 1000V,100pF		1	
122	Capacitor	0603,50V,100pF		2	
123	Socket	12P*2.5		1	
124	Connecter	6P*10.16, 600V,57A		1	
125	Socket	5557-2*2P		1	
126	Socket	2P*2.54		1	
127	Diode	RS1JA, A-SMA		3	
128	Diode	BAT54C,SOT-23		1	
129	Diode	SS14-E3/61T, A-SMA		2	
130	Diode	BAV99LT1G, A7		2	
131	Diode	5.0SMDJ110CA, SMC/DO-214AB		1	
132	Diode	PTR30L100CT,TO-220AB, 100V,30A		1	
133	Diode	LBZT52C12T1G, SOD-123		2	
134	Diode	BZT52C6V2-E3, SOD-123		3	
135	Fuse	2410,65V,20A		4	
136	IC	IRS2181SPBF		1	
137	Inductor	330uH,12.5*12.5*7.5mm		1	
138	LED	Green		1	
139	Terminal	M4, 8*8*10*0.8mm		2	
140	Transistor	MJD5731T4G,DPAK		1	
141	Transistor	LMBT4401LT1,2X,SOT-23		13	

JE MAINTIENDRAI
RDW

142	Transistor	LMBT2907A,2F,SOT-23		8	
143	MOSFET	MMBF170LT1G,SOT-23		1	
144	MOSFET	FTP07N10ND,TO-220		7	
145	Transistor	LMBTA42LT1G,SOT23		7	
146	Transistor	LMBT4403LT1G,SOT-23		3	
147	Transistor	LMBTA92LT1G,SOT-23		2	
148	Resistor	0603, 10KΩ		17	
149	Resistor	1206,2.61Ω		4	
150	Resistor	1206, 10Ω		19	
151	Resistor	1206, 100KΩ		9	
152	Resistor	0603, 510KΩ		1	
153	Resistor	0603, 200KΩ		3	
154	Resistor	0603, 330KΩ		2	
155	Resistor	0603, 300KΩ		1	
156	Resistor	0603, 100KΩ		1	
157	Resistor	2512,2mΩ,2W		2	
158	Resistor	0603, 4.7KΩ		6	
159	Resistor	1206, 100Ω		2	
160	Resistor	0603, 100Ω		1	
161	Resistor	0603, 2.7KΩ		1	
162	Resistor	0603, 15KΩ		2	
163	Resistor	0603, 82KΩ		1	
164	Resistor	0603, 150KΩ		1	
165	Resistor	0603, 1KΩ		3	

JE MAINTIENDRAI
RDW

166	Resistor	0603, 47KΩ		4	
167	Resistor	1206,1KΩ		2	
168	Resistor	1206, 240KΩ		2	
169	Resistor	1206, 2KΩ		2	
170	Resistor	1206, 0Ω		1	
171	Resistor	1206, 330Ω		2	
172	Resistor	1206, 150KΩ		1	
173	Resistor	1206, 20KΩ		5	
174	Resistor	1206,10KΩ		1	
175	Resistor	1206, 15KΩ		2	
176	Resistor	0603, 51KΩ		1	
177	Resistor	0603, 2.4KΩ		1	
178	Resistor	0603, 75KΩ		2	
179	Transformer	turn ratio:5:10:5,EFD15		1	
180	IC	BA10358F-E2		1	
181	IC	TPS54227DDAR		1	
182	IC	TLV431BFTA		1	
183	Diode	LBZT52C18T1G,SOD-123		1	
184	Diode	LBZT52C15T1G,SOD-123		1	
185	Capacitor	Y1, 500VAC,1000pF. 8*6mm		2	
186	PCB	PCB-18410		1	
187	Copper cylinder	M3*5+6		6	
188	Screw	M3*6		6	
189	Insulating trip	97.5x64.5x1.0m		1	

JE MAINTIENDRAI
RDW

190	Radiator	SP100-30, 205*160*20.5mm		1	
191	Screw	4*8mm		2	
192	Screw	3*8mm		4	
193	Plastics	SP100-30, 79.7*63.5*30mm,black		1	
194	Inductor	50uH, Φ46*23mm		1	
195	Pouring sealant	SC-8501		0.08	
196	Signal wire	3239,24#, 150mm		1	
197	Screw	3*8mm		4	
198	Plastics	SP100-40, plastic shell 1		1	
199	Plastics	SP100-30,wiring cover plate, 207.3*139.6*53mm		1	
200	Acrylic film	SP100 series,80.5*51.0*1.0mm		1	
201	Label	30*50mm		2	
202	EPE	SP100 series, 250*200*50mm		2	
203	Carton	SP100 series, 250*200*110mm		1	
204	Manual	SP100 series		1	
205	Label	SP100 series,100*100mm		1	
206	Desiccant	8g,4.5*6.5cm		1	
207	Label	Qcpassed, 20*10mm		1	
208	Plastic bag	200*280		1	
209	Label	Φ10		1	
210	Connector	2P-3.81		1	
211	Connector	3P-3.81		1	
212	Label	50*10mm		2	
213	Screw	3*12mm		2	

JE MAINTIENDRAI
RDW

214	Plastic bag	50*70mm		1	
215	Label	triangle		1	
216					

(1) Strike out what does not apply.

JE MAINTIENDRAI
RDW